ATEÏS

DELIVERING YOUR MESSAGE!

BOUTIQUE™

Compact and Self-Amplified
Public Address and Voice Alarm System

User Manual

Revision History
v1.30

Table of Contents

Page

1 About this manual

This user manual will explicitly describe the hardware installation and the software configuration, provides installers and users the necessary information to setup and configure the system.

1.1 Firmware version

Version
v2.70

1.2 Notice signs

WARNING

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK,
DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.
NO USER SERVICEABLE PARTS INSIDE, REFER SERVICING
TO QUALIFIED SERVICE PERSONNEL.

** The above warning is located on the back of the unit.

Explanation of Graphical Symbols

 The equipment or the property can be damaged, or persons can be lightly injured if the alert is not observed.	 To alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

1.3 Safety instructions

- Do not expose the device to extreme temperatures, direct sunlight, humidity, or dust, which could cause fire or electrical shock hazard.
- Keep away water or other liquids from the device. Otherwise fire or electrical shock may result.
- Connect the power cord only to an AC outlet of the type stated in this manual or as marked on the unit. Otherwise fire and electrical shock hazard results.
- When disconnecting the power cord from an AC outlet always grab the plug. Never pull the cord. A damaged power cord is a potential risk of fire and electrical shock hazard.
- Avoid touching power plugs with wet hands. Doing so is a potential electrical shock hazard.
- Take care for correct polarity when operating the device from a DC power source. Reversed polarity may cause damage to the unit or the batteries.
- Avoid placing heavy objects on power cords. A damaged power cord is a fire and electrical shock hazard.
- Do not cut, scratch, bend, twist, pull, or heat the power cord. A damaged power cord is a fire and electrical shock hazard. Ask your ATEÏS dealer for replacement.
- Turn off the unit immediately, remove the power cord from the AC outlet and contact your ATEÏS dealer in any of the following circumstances, if you continue using the device, fire and electrical

shock may result.

- Smoke, odor, or noise getting out of the unit.
- Foreign objects or liquids get inside the device.
- The unit has been dropped or the shell is damaged.

- Do not drop or insert metallic objects or flammable materials into the unit as this may result in fire and electrical shock.
- Do not remove the device's cover, as there are exposed parts inside carrying high voltages that may cause an electrical shock. Contact your ATEÏS dealer if internal inspection, maintenance or repair is necessary.
- Do not try to make any modifications to the device. This is a potential fire and electrical shock hazard.
- Avoid the device's ventilation slots to be blocked. Blocking the ventilation slots is a potential fire hazard.
- To prevent the unit from falling down and causing personal injury and/or property damage, avoid installing or mounting the unit in unstable locations.
- Leave enough space above and below the unit to provide good ventilation of the device. If the airflow is not adequate, the device will heat up inside and may cause a fire.
- Operate the device in an environment with a free-air temperature of between -5°C ~ +55°C (+23°F ~ +131°F).
- The charging characteristic of BTQ-VMW (wall mount type) is within the manufacturer's specification for the range of battery temperatures reach with the ambient temperature (i.e. outside the standby power source enclosure) from -5°C to +40°C. (Compliant EN54-4 clause 5.3.1.c)
- The components of BTQ-VMW (wall mount type) is complied with class 3K5 of "EN 60721-3-3:1995".
- Turn off all audio equipment when making any connections to the device, and make sure to use adequate cables.
- Do not use benzene, thinner or chemicals to clean the device. Use only a soft, dry cloth.
- If the device is moved from a cold place (e.g., overnight in a car) to a warmer environment, condensation may form inside the unit, which may affect performance. Allow the device to acclimatize for about one hour before use.

1.4 Related documentation

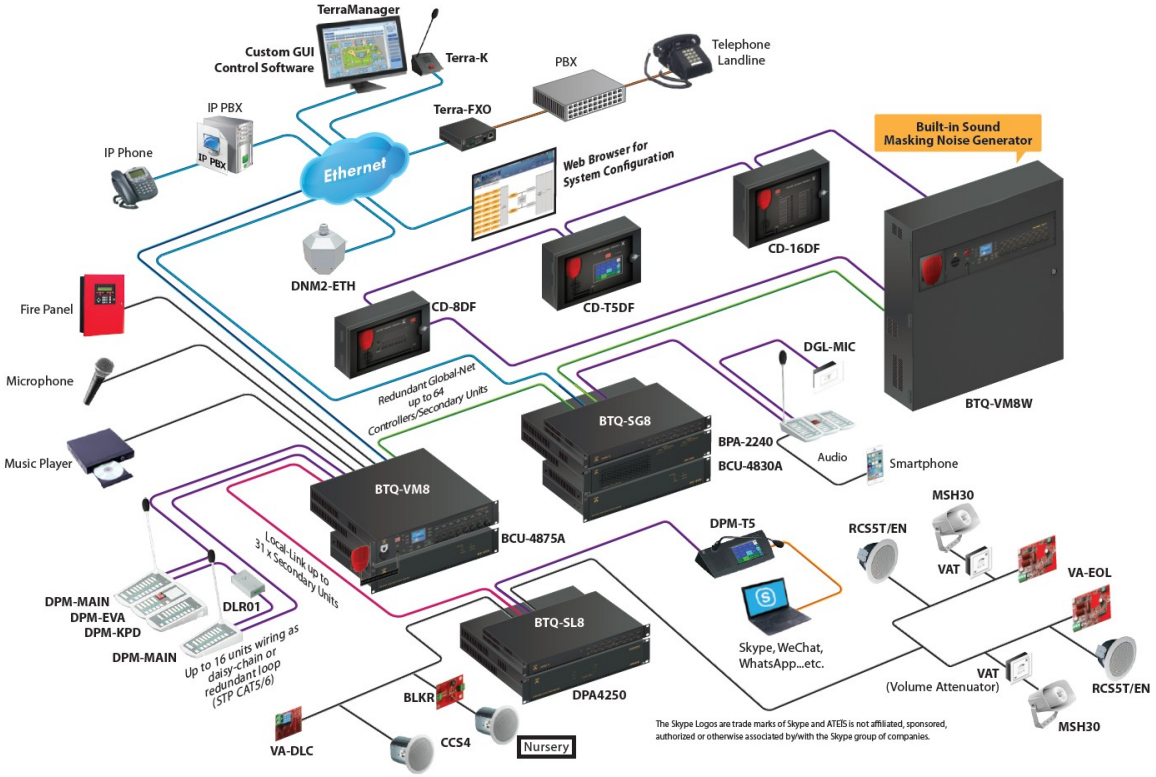
The following related documents are available:

- BOUTIQUE Quick Start Guide.
- Refer to the product related information on www.ateis.com

2 System overview

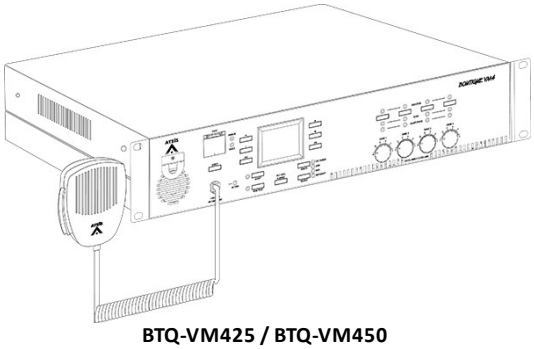
2.1 BOUTIQUE PA/VA system

The BOUTIQUE is an integrated, self-amplified PA/VA system. It has all the essential functionalities to comply with EN 54-16 requirements including speaker lines monitoring, EVAC microphone capsule and cable surveillance, micro controller watchdog and surveillance for programmed message files etc..

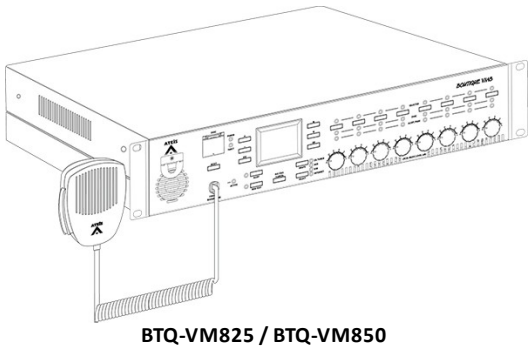


2.2 BTQ-VM4/VM8 - PAVA controller

The BTQ-VM4/8 is an compact public address and voice alarm controller with 250W or 500W high efficiency Class-D amplifier built-in. Varies functions such as system "easy setup" function, providing installer an ease of installation and configuration directly from LCD front panel. The BOUTIQUE system expands from a single controller capable of as little as 4 zones, to a larger networked system of up to 16,384 zones, making the system suitable for a wide variety of applications. The controller features EVAC paging, event and bell scheduler, audio routing, paging with priority management, network redundancy, low cost amplifier switching, amplifier monitor, backup, optional Sound Masking module etc. can be configured via web browser.



BTQ-VM425 / BTQ-VM450



BTQ-VM825 / BTQ-VM850

Components included:

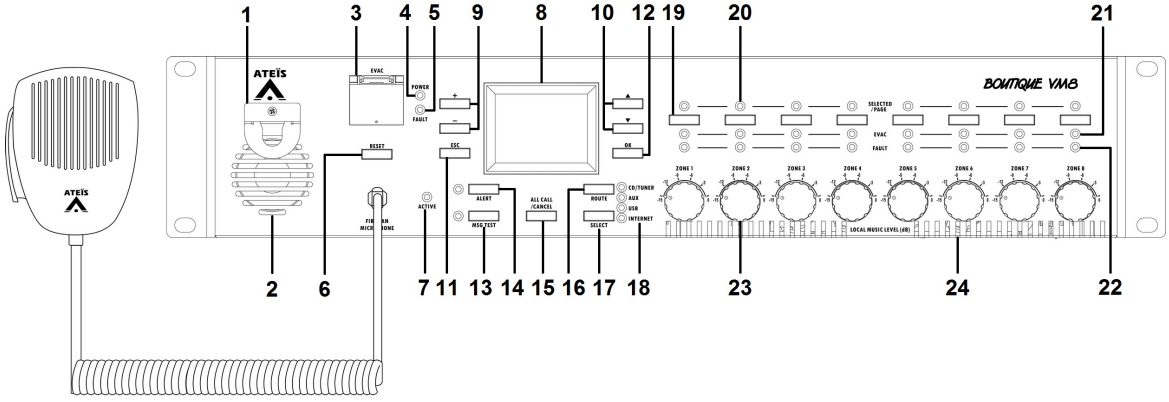
- Fireman microphone and evacuation button
- Amplifier built-in

  250W or 500W high efficiency Class-D amp built-in and is capable of handling 1000W speaker load per zone and 2000W max. per unit.
- Internal digital message storage with 200MB* of audio file (MP3/ WAV/ G.722) capacity and USB interface available.

*The 200MB capacity of BTQ-VM4/VM8 is equal to 100 minutes of WAV audio files with 16bit/16KHz quality.

- Supervision
  - Advanced configuration, diagnostics and logging via web browser.
  - Enhanced loudspeaker line surveillance (short, open, bad impedance) for speaker zone wiring (A/B).
  - Full monitoring of paging microphones and auto backup for external power amplifiers when one of them breaks down.
  - Multiple volume attenuators can be installed on a monitored speaker lines without the need for a loopback cable. For branching speaker lines using the VA-EOL module, please order the "EOL driver" version of BTQ unit such as BTQ-VMD/SGD/SLD controller/second ary unit, in order to provide more power to drive the VA-EOL module.

2.2.1 Front panel



1. Fireman microphone & U-shape bracket:

   A fully monitored microphone is designed for EVAC paging. The paging button supports both

press-to-talk and lock-to-talk mode. The talk mode can be set via web browser.

2. Monitoring speaker:

   This built-in speaker is to monitor the zone audio including message and BGM. When the faults detected by the system, the system will generate a buzzer sound (tone) as warning.

3. Evacuation button:

   Once this button is pushed, the system will enter to emergency state. Its LED will light up and play the EVAC messages.

4. Power LED:

   This LED lights up when the controller is powered.

5. Fault LED:

   This LED lights up when a fault (either general fault or system fault) is detected.

6. Reset button:

   This button is used to reset the emergency state. The EVAC message playing will be canceled, and the red evacuation button will light off.

7. Active LED (fireman microphone):

   The LED will light up when the fireman microphone is under paging.

8. Touch screen panel:

   2.2" color touch panel offers a graphical interface to control, configure and display the status of system.

9. + - button:

   Navigate as volume up/down or increase/decrease control.

10. ▲▼ button:

    Navigate as up/down control.

11. ESC button:

    Navigate as go back to previous page.

12. OK button:

    Navigate as next/save action. See more details about the LCD Front Panel.

13. MSG Test button and LED:

    A button to manually play the testing alert message to the selected or pre-defined zones, and a LED will light up as long as the button is pushed.

14. Alert button and LED:

    A button to manually play the alert message to selected or pre-defined zones, and a LED will light up as long as the button is pushed.

15. All Call/Cancel button:

    A button to select all the zones in the entire BOUTIQUE system or reset the current zone selection.

16. Route button:

    A button to manually route the selected music source (CD/Tuner/Aux/USB/Internet) to selected or pre-defined zones.

17. Select button:

    A button to manually select the music source (CD/Tuner/Aux/USB/Internet) to be routed.

18. CD/Tuner/Aux/USB/Internet LED:

    Four LEDs to indicate which music source is active.

19. Selected zone button:

    Select or deselect the zone for manual music routing or message/EVAC paging (CD/Tuner/Aux/USB/Internet/fireman mic/XLR mic).

    If none of the zones among controllers and secondary units are selected on the front panel, the system will route to the zones configured by web browser.

20~22. VACIE indicator LED:

    There are 4 or 8 rows of 3 LEDs that show real-time mode of the status of zone:

    20. Selected/Page LED (4 or 8 zones):
        - The blue LED will flash if zone is selected.
        - The blue LED will light up if the zone is under paging (except for evacuation paging).
    21. EVAC LED: The red LED will light up if the zone is in evacuation paging.
    22. Fault LED: The orange LED will light up if the zone fault is detected.

23. Volume control knob (4 or 8 zones):

    Individual zone rotary knobs to set the volume of BGM.

This knob is for audio source using internal amplifier, normally it's background music.

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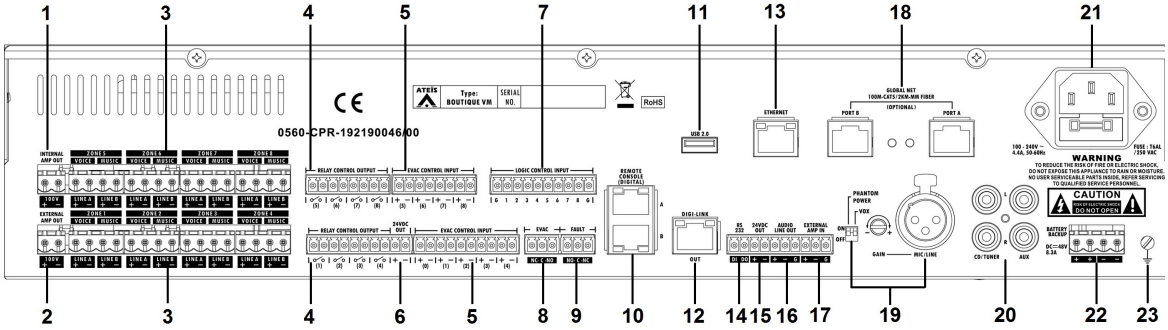
24. Air inlet holes:

    The BTQ-VM4/8 controller has a cooling fan that takes in air from the front panel and exhausts it from the rear panel. Please make sure that these inlet holes are not obstructed.

2.2.2 Rear panel



1. Internal Amp Out terminal:

    This terminal provides the 100V (EU type)/70V (US type) audio signal of internal power amplifier to BTQ-SL8 secondary units. Or it can connect to an external amplifier.

2. External Amp Out terminal:

    This terminal connects to the amp output of external amplifier (isolation amplifier).

We recommend that the BTQ-VM connects to the floating output amplifier.
- E.g. built-in transformer output for driving 70V and 100V loudspeakers such as BPA and DPA.
- E.g. the amplifier module's AC/DC power supply and ground is floating ground from BTQ-VM.

If the BTQ-VM is connecting to non-floating output amplifier, please disable the leakage monitor function on BTQ web browser > Monitor > Leakage.

3. A/B line zone outputs:

The BTQ-VM4 has 4 zones and BTQ-VM8 has 8 zones. Connect the loudspeakers to the zone outputs. Each zone output is consisted of two loudspeaker line outputs. The open, short and bad impedance faults can be detected by system for both speaker lines.

The controller is capable of handling 1000W speaker load per zone, 2000W max. per unit.

4. Relay control output:

There are eight relay outputs on BTQ-VM8 controller and four on BTQ-VM4 controller, they can be programmed as close/open contact to an external device.

When the BTQ-VM4/8 controller is turned off, the relay control output is open.

5. EVAC control input:

There are nine EVAC inputs on BTQ-VM8 and five EVAC inputs on BTQ-VM4. The evac inputs are N.O. (normally open) contact. They can be programmed for phase evacuation and to monitor the external contact.

Each channel supports 3 modes:

- Monitored contact mode: The system can monitor the evac input and detect faults (4 status: on, off, open and short).
- Disable: The cables which connect to evacuation input will not be monitored (faults will not be detected).
- Voltage mode: Trigger the input by a voltage change (OPEN/CLOSE) with an external 24VDC source provided by external devices. The cable is not monitored in this mode.

6. 24VDC output:

Provide 24VDC (max. 1.3A) power for external devices. Please note the power is shared by the two 24VDC outputs on BTQ-VM4/8 controller and the remote consoles.

7. Logic control input:

There are eight logic inputs designed to work with simple contact or button, and the two states input (open contact, close contact) can be specified to any of those logic input to monitor security devices such as power supply, then those control inputs can put the system into a security mode for power saving purpose.

8/9. Evac & Fault contacts output:

The Evac and Fault output contact will reflect the evacuation status and the general fault status of the BOUTIQUE system.

8. EVAC contact: This contact is closed if the system is under EVAC paging.

9. Fault contact: This contact is opened if a system or major fault is detected.

	EVAC output		FAULT output	
	N.C.	N.O.	N.C.	N.O.
Power off	Close	Open	Open	Close
Power on (default)	Close	Open	Close	Open
Power on (during EVAC)	Open	Close		
Power on (fault detected)			Open	Close

10. Remote console (digital):

The remote port(s) allows the paging consoles or accessories to be connected to BTQ-VM4/8

unit. Each RJ45 remote port on BTQ-VM4/8 controller and BTQ-SL8/SG8 unit can address up to 16 DPM-MAIN remote consoles in one daisy-chain and 32 DPM-MAIN units for 2 daisy-chain or up to 16 units in redundant loop using 2 ports.

Max. remotes per BTQ-VM4/8:	• Daisy-chain wiring: ○ 16 DPM sets (DPM-MAIN + EVA + KPD) for each remote port. ○ 32 DPM sets (DPM-MAIN + EVA + KPD) for 2 remote ports. • Redundant loop: ○ 16 DPM sets (DPM-MAIN + EVA + KPD)
Max. DPM sets (MAIN + EVA + KPD):	• Max. 16 DPM sets: ○ 1 DPM-MAIN attaches 1 DPM-EVA and 14 DPM-KPD. ○ 1 DPM-MAIN attaches 15 DPM-KPD. • Max. 128 keys for each DPM set. • Connection via flat cable.
Max. distance between remote unit:	• Max. communication cable length: 250m* (metal shielded RJ45 connector, STP CAT5/6)

*The distance of cable length will affect how many remote units can be powered by BTQ-VM.

(1) The longer the cable is, the less power the BTQ-VM can supply to the remote units.

(2) The more the remote units has cascaded in daisy-chain/redundant loop, the less power the BTQ-VM can supply to the remote units.

For example, if the cable length between the BTQ-VM and DPM-MAIN is within 250m, the DPM-MAIN can be powered by BTQ-VM. If the cable length is beyond 250m, please connect the DLR01 digital loop repeater and **PSU65-27** 27VDC power adapter, ensuring the control signal and power supply of DPM-MAIN units are enough. To know the max. distance between BTQ-VM and DPM-MAIN unit(s) and the max. distance which the DPM-MAIN can be powered by DLR01 unit, please refer to Hardware Connection > DLR01 for details.

11. USB 2.0 interface:

    Connect a USB flash drive for configuration backup and storage of music/message files and playback (G.711, G.722, G.726, G.727, MP3 and WAV).

12. Digi-Link Out port (RJ45):

    The local digi-link network is used for linking the BTQ-VM4/8 controller and BTQ-SL8 secondary units together.

    - Max. local-net units: 32
    - Max. distance between local-net units: 10m (metal shielded RJ45 connector, STP CAT5/6).
    - Max. audio channel for entire BTQ local-net system:
        - 600MHz MCU version: 2CH for paging + 2CH for BGM
        - 900MHz MCU version: 2CH for paging + 6CH for BGM
        - If the 2CH paging channel is currently occupied, and any of the BGM channel(s) are not in use (BGM setting is required via BTQ web browser), then the BGM channel(s) which is not in use can act as the paging channel, and transmits the paging audio.

13. Ethernet connector (RJ45):

    Connect the BTQ-VM4/VM8 controller to Ethernet network.

14. RS232:

This port is used for connecting to 3rd party device for controlling the BOUTIQUE system.

15. 24VDC Out:

    Provide 24VDC (max. 1.35A) power for external devices. Please note the power is shared by the two 24VDC outputs on BTQ-VM4/8 controller and the remote consoles.

16. Audio Line Out:

    Connect an external device such as earphone, speaker or recording device etc. to listen and monitor the audio during zone paging.

17. External Amp In:

    This terminal outputs the balanced 0 dB audio channel to an external power amplifier.

18. Global Net (RJ45 or fiber-optic):

    The global network (redundant loops) is used for linking the BTQ-VM4/8 controller to the next connected BTQ-VM4/8 or BTQ-SG8 units.

    - Max. global-net units: 64
    - Max. distance between global-net units: 100m (CAT5/6), 2 km (multi-mode fiber optic) and 20 km (single-mode fiber optic).
    - Max. audio channel for entire BTQ global-net system: 42

19. Mic/Line Input with VOX & Gain Control Knob:

    Connect a mic input or line input (with 48VDC phantom power) to this XLR socket with voice-activated (VOX). When the mic is connected and the VOX setting is set as ON, remember to rotate the gain knob and adjust the volume.

20. CD/Tuner music inputs:

    Connect this two inputs to the BGM sources.

21. AC power supply inlet:

    Connect the AC power supply to this socket. If the AC mains and 48VDC are used at the same time, the BTQ-VM4/VM8 controller will use AC mains first, and switch to DC power if the AC mains is not present.

Model	AC Power Input	Fuse
BTQ-VM425 BTQ-VM825	100-240VAC 4.4A, 50-60Hz	T6AL/250VAC
BTQ-VM450 BTQ-VM850	100-240VAC 7.5A, 50-60Hz	T10AL/250VAC

⚠ Users "MUST" follow the orders below to connect the BTQ-VM4/8 and BPA/DPA with BCU-4830A/BCU-4875A battery charger.

1. First, make sure that the power supply of all the equipment (BTQ-VM, BPA, BCU etc.) are not plugged in.
2. Connect the four 12VDC batteries to BCU-4830A/BCU-4875A battery charger.
3. Connect the 48VDC backup power input terminals of BTQ-VM4/8 or BPA/DPA to the 2 output terminals on BCU-4830A or the 6 output terminals on BCU-4875A.
4. Plug in the AC mains power of BTQ-VM4/8 and BPA/DPA.
5. Plug in the AC mains power of BCU-4830A/BCU-4875A.

⚠ Once the 48VDC battery backup input of BTQ-VM4/8 is connected to BTQ-VM4/8 directly without connecting to AC mains power, it may cause large inrush current. Therefore, install a soft starter device, which protects the electric components and PCB boards of BTQ-VM4/8 from

sudden inrush current. Please choose the correct soft starter device, which fulfills to support the max. DC power consumption (full power) of BTQ-VM4/8.

22. 48VDC Battery Backup Input:

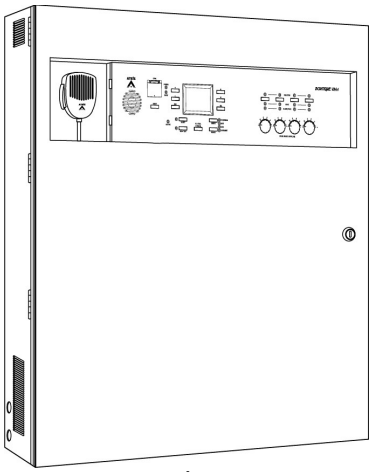
    Connect the 48VDC battery charger for battery backup and power sharing.

23. Ground (GND) socket.

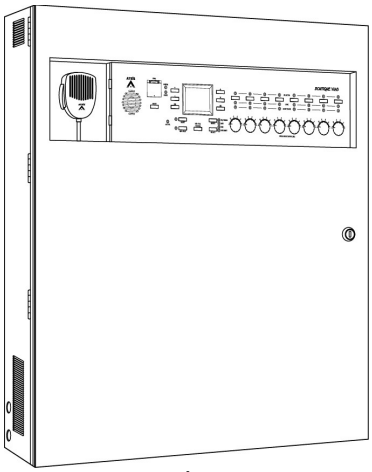
2.3 BTQ-VM4W/VM8W - wallmount PAVA controller

The BTQ-VM4W/VM8W is a wallmount controller with 250W or 500W Class-D amplifier built-in, integrated battery charging unit for secured battery backup and power sharing. All components contain within one heavy-duty metal housing with a lockable cover.
Varies functions such as system "easy setup" function, providing installer an ease of installation and configuration directly from LCD front panel. The BOUTIQUE system expands from a single controller capable of as little as 4 zones, to a larger networked system of up to 16,384 zones, making the system suitable for a wide variety of applications. The controller features EVAC paging, event and bell scheduler, audio routing, paging with priority management, network redundancy, low cost amplifier switching, amplifier monitor, backup, optional Sound Masking module etc. can be configured via web browser.

Multiple volume attenuators can be installed on a monitored speaker lines without the need for a loopback cable. For branching speaker lines using the VA-EOL module, please order the "EOL driver" version of BTQ unit such as BTQ-VMD/SGD/SLD controller/second ary unit, in order to provide more power to drive the VA-EOL module.



BTQ-VM425W / BTQ-VM450W



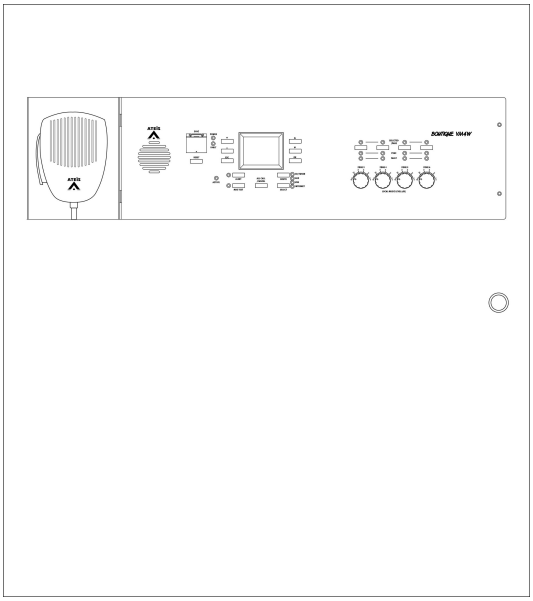
BTQ-VM825W / BTQ-VM850W

The available models:

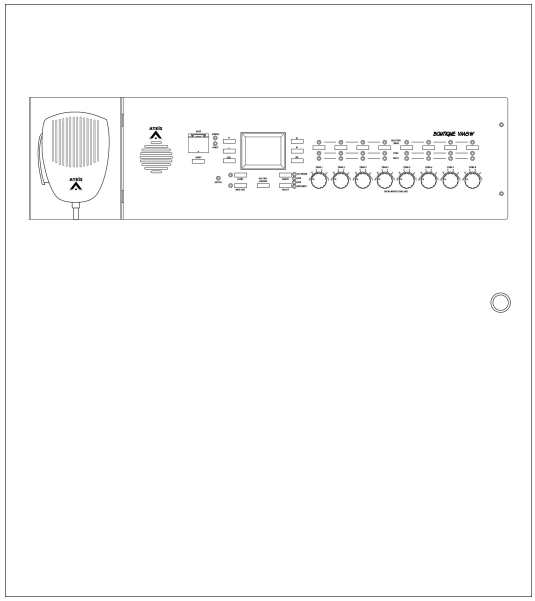
- BTQ-VM425W1 / BTQ-VM825W1
- BTQ-VM825W1 / BTQ-VM850W1
- BTQ-VM425W2 / BTQ-VM825W2
- BTQ-VM825W2 / BTQ-VM850W2

The **W1** indicates as 1 optional amp is included, and **W2** indicates as 2 optional amp are included.

2.3.1 Front panel



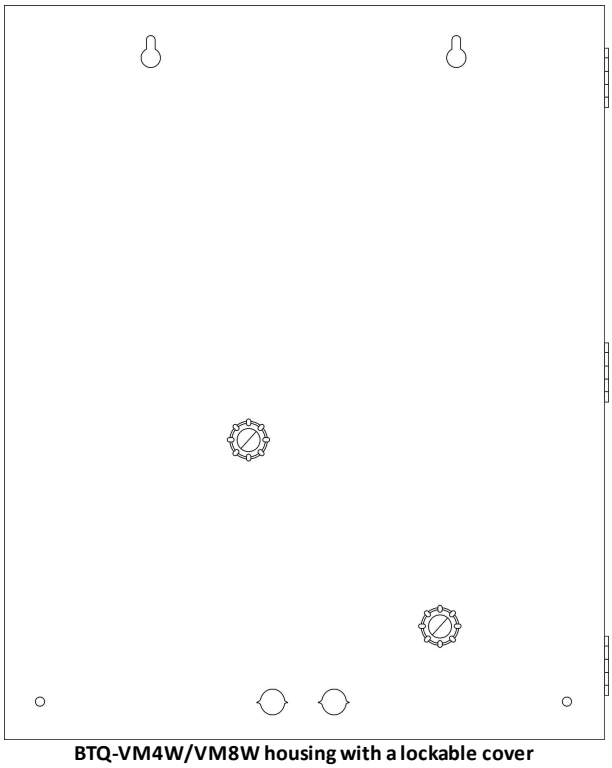
BTQ-VM4W housing with a lockable cover



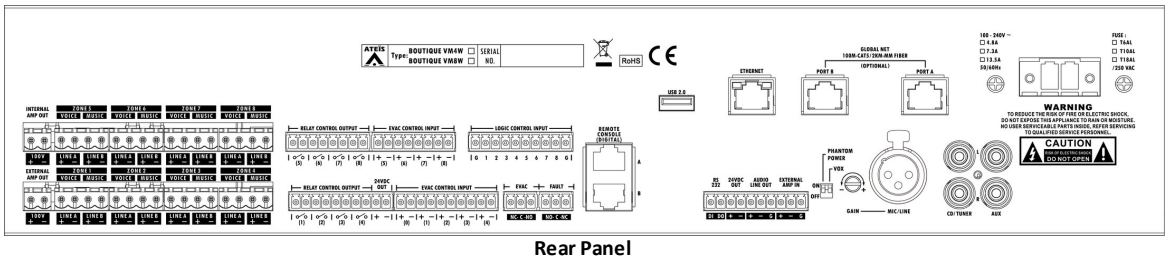
BTQ-VM8W housing with a lockable cover

The front panel of BTQ-VM4W/VM8W controller is also identical to BTQ-VM4/VM8 controller, see BTQ-VM4/VMW Front Panel.

2.3.2 Rear panel



BTQ-VM4W/VM8W housing with a lockable cover



Rear Panel

1. Internal Amp Out terminal:

   This terminal provides the 100V (EU type)/70V (US type) audio signal of internal power amplifier to BTQ-VM4W/VM8W controller.

2. External Amp Out terminal:

   - If 1 optional amp is included in controller, this terminal is used for connecting to the amp output of external amplifier.
   - If 2 optional amps are included in controller, this terminal provides the 100V (EU type)/70V (US type) audio signal of internal power amplifier to BTQ-VM4W/VM8W controller.

3. AC power supply inlet (euroblock connector):

   Connect the AC power supply to this euroblock connector. If the AC mains and battery are used at the same time, the BTQ-VM4W/VM8W controller will use AC mains first, and switch to DC power if the AC mains is not present.

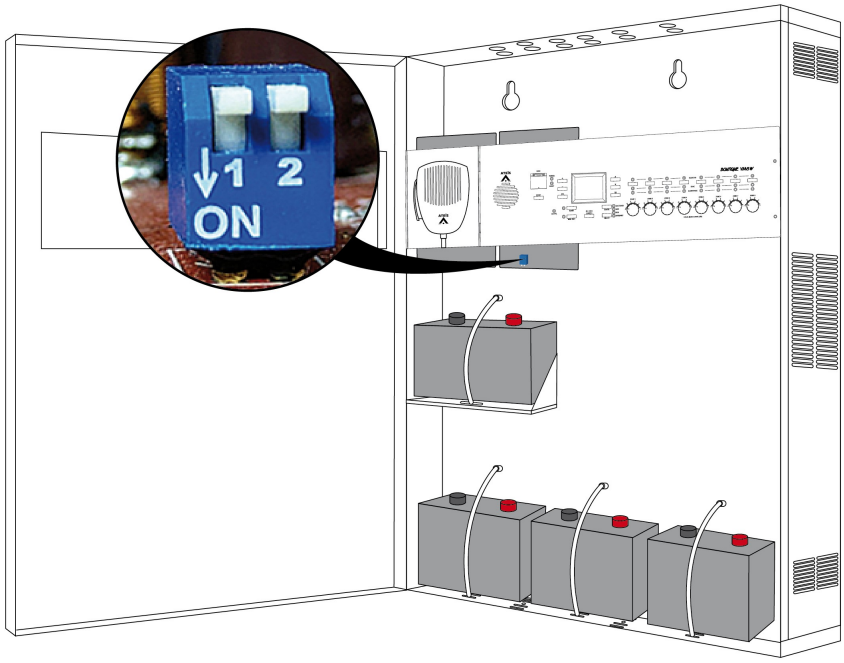
Model	BTQ-VM250W1	BTQ-VM250W2 BTQ-VM500W1	BTQ-VM500W2
AC mains	100~240V, 50/60Hz 4.8A	100~240V, 50/60Hz 7.3A	100~240V, 50/60Hz 13.5A
Mains Fuse	T6AL	T10AL	T18AL

⚠ Make sure to unplug the AC mains power before plugging the 48VDC battery backup power.

⚠ Please note the power supply inlet of BTQ-VM4W/VM8W (euroblock terminal) can be connected to AC mains **ONLY**, DC input is not allowed.

The rest of interface of BTQ-VM4W/VM8W controller is also identical to BTQ-VM4/VM8 controller, see BTQ-VM4/VM8 Rear Panel.

2.3.2.1 Monitor DIP switch setting

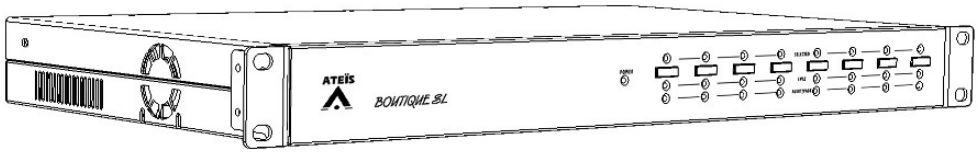


DIP-1	No function
DIP-2	• Switch UP: Default setting. Activate the detection of battery status. • Switch DOWN: Deactivate the detection of battery status.

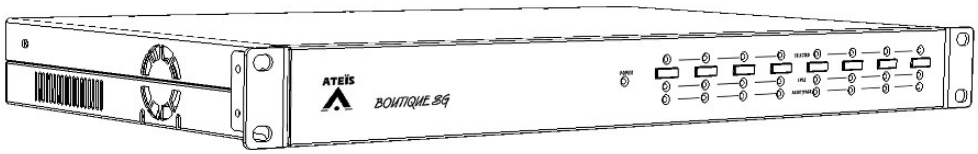
Once the four 12VDC batteries are connected to BTQ-VM4W/VM8W and the DIP-2 switch UP, the realtime battery status includes voltage/charger (A)/impedance/temperature will be shown on BTQ web browser > System > Status, see this chapter to know about the battery status and the corresponded faults, etc.

2.4 BTQ-SG8/BTQ-SL8 - PAVA secondary global/local unit

To increase the number of zones, EVAC inputs, logic inputs and relay outputs in the system, connect to BTQ-SL8 or BTQ-SG8 secondary unit.



BTQ- SL8 (Local-Link)



BTQ-SG8 (Global-Net)

❖ Loudspeaker zones

To increase the number of zones in the system, one or more BTQ-SL8 or BTQ-SG8 secondary units can be connected to the BTQ-VM controller. Each BTQ-SL8/SG8 adds additional 8 zones to the system.

- Support to connect up to 64 x BTQ-VM4/8 controllers or BTQ-SG8 via redundant-global-net.

- Support to connect up to 31 x BTQ-SL8 via digi-link local-net.

❖ EVAC inputs and logic inputs

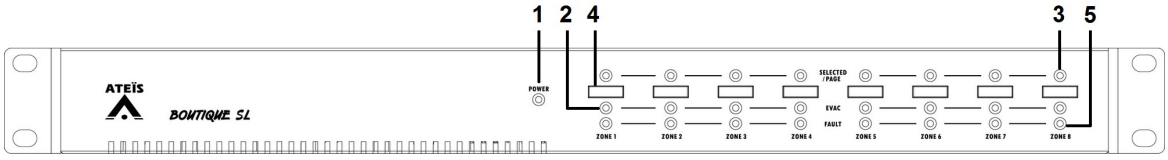
Each secondary unit adds additional 9 EVAC control inputs and 8 logic inputs to the system.

❖ Remote console interfaces

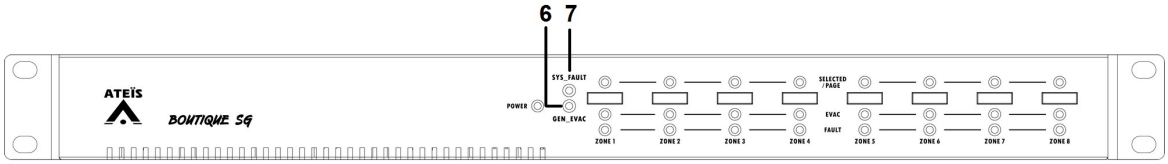
The BTQ-SG8 contains two sockets, and BTQ-SL8 contains one.

❖ Multiple volume attenuators can be installed on a monitored speaker lines without the need for a loopback cable. For branching speaker lines using the VA-EOL module, please order the "EOL driver" version of BTQ unit such as BTQ-VMD/SGD/SLD controller/second ary unit, in order to provide more power to drive the VA-EOL module.

2.4.1 Front panel



BTQ- SL8 (Local-Link)



BTQ-SG8 (Global-Net)

1. Power LED:

This green LED lights up if the BTQ-SL8/SG8 is connected to the power adapter or 24VDC input battery supply.

2~5. VACIE indicator LED:

There are eight rows of 3 LEDs that show in real-time mode of the status of zone:

2. EVAC LED: The red LED lights up if the zone is in evacuation paging.

3. Selected/Page LED:

- The blue LED will flash if zone is selected.
- The blue LED will light up if the zone is under paging (except for evacuation paging).

5. Fault LED: The orange LED will light up if the zone fault is detected.

4. Eight zones selection buttons:

Select or deselect the zone for manual music routing or message/EVAC paging (CD/Tuner/Aux/ USB/Internet/fireman mic/XLR mic).

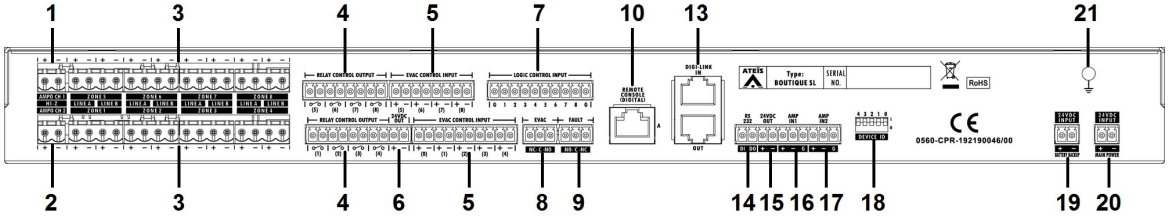
If none of the zones among controllers and secondary units are selected on the front panel, the system will route to the zones configured by web browser.

The control keys and LED indicators on the front panel of BTQ-SL8 and BTQ-SG8 is identical.

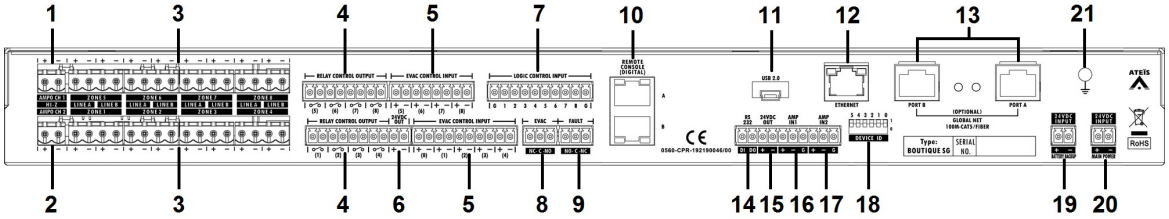
6. Sys_Fault: This orange LED will light up if the system fault is detected by BTQ system.

7. Gen_EVAC: This red LED will light up if a EVAC paging is detected under the BTQ system.

2.4.2 Rear panel



BTQ- SL8 (Local-Link)



BTQ-SG8 (Global-Net)

1/2. AMPO CH1 terminal / AMPO CH2 terminal:

This terminal receives the 100V (EU type)/70V (US type) audio signal from power amplifier, CH1 is for internal amplifier channel, and CH2 is for external amplifier channel.

Please note the BTQ-VM4/8 controller can only share the internal amplifier to BTQ-SL8 secondary unit only, the BTQ-SG8 secondary unit is not applicable.

We recommend that the BTQ-SG8/SL8 connects to the floating output amplifier.

- E.g. built-in transformer output for driving 70V and 100V loudspeakers such as BPA and DPA.
- E.g. the amplifier module's power supply and ground is floating ground from BTQ-SG8/ SL8.

If the BTQ-SG8/SL8 is connecting to non-floating output amplifier, please disable the leakage monitor function on BTQ web browser > Monitor > Leakage.

---

3. A/B line zone outputs (zone1~zone8):

Connect the loudspeakers to the zone outputs. Each zone output is consisted of two loudspeaker line outputs. The open, short and bad impedance faults can be detected by system for both speaker lines.

The secondary unit is capable of handling 1000W speaker load per zone, 2000W max. per unit.

---

4. Relay control output:

There are eight relay outputs, and they can be programmed as close/open contact to an external device.

5. EVAC control input:

There are nine EVAC inputs on BTQ-SG8/SL8, they can be programmed for phase evacuation and to monitor the external contact. Each channel supports 3 modes:

- Monitored contact mode: The system can monitor the EVAC input and detect faults (4 status: on, off, open and short).
- Disable: The cables which connect to evacuation input will not be monitored (faults will not be detected).

- Voltage mode: Trigger the input by a voltage change (OPEN/CLOSE) with an external 24VDC source provided by external devices. The cable is not monitored in this mode.

6. 24VDC output:

The 24VDC (max. 0.8A) power is shared by the two 24VDC outputs on BTQ-SG8/SL8 and the remote consoles.

If the BTQ-SG8/SL8 is connected to an external 24VDC power supply such as connect to the battery charger, then the max. current will be 1.3A.

7. Logic control input:

There are eight logic inputs designed to work with simple contact or button, that are two states input (open contact, close contact), which can be specified as logic input to monitor security devices such as power supply, and those control input can put the system into a security mode for power saving purpose

8/9. EVAC & Fault contacts output:

- EVAC contact: This contact is closed if the system is under EVAC paging.
- Fault contact: This contact is open if a system or major fault is detected.

	EVAC output		FAULT output	
	N.C.	N.O.	N.C.	N.O.
Power off	Close	Open	Open	Close
Power on (default)	Close	Open	Close	Open
Power on (during EVAC)	Open	Close		
Power on (fault detected)			Open	Close

10. Remote console (digital):

The remote port allows the paging consoles or accessories to be connected to BTQ-SG8/SL8. The BTQ-SG8 contains two sockets, and BTQ-SL8 contains one.

Each RJ45 remote port on BTQ-SG8/SL8 unit can address up to 16 DPM-MAIN remote consoles in daisy-chain or up to 16 units in redundant loop using 2 ports (BTQ-SG8 only).

Max. digi-link remotes units (BTQ-SL8):	• Daisy-chain wiring: 16 DPM sets (DPM-MAIN + EVA + KPD) for single remote port.
Max. digi-link remotes units (BTQ-SG8):	• Daisy-chain wiring: ○ 16 DPM sets (DPM-MAIN + EVA + KPD) for 1 remote port. ○ 32 DPM sets (DPM-MAIN + EVA + KPD) for 2 remote ports. • Redundant loop: 16 DPM sets (DPM-MAIN + EVA + KPD)
Max. DPM sets (MAIN + EVA + KPD):	• Max. 16 DPM sets: ○ 1 DPM-MAIN attaches 1 DPM-EVA and 14 DPM-KPD. ○ 1 DPM-MAIN attaches 15 DPM-KPD. • Max. 128 keys for each DPM set. • Connection via flat cable.
Max. distance between remote unit:	• Max. communication cable length: 250m* (metal shielded RJ45 connector, STP CAT5/6)

*The distance of cable length will affect how many remote units can be powered by BTQ-SL8/SG8.

(1) The longer the cable is, the less power the BTQ-SL8/SG8 can supply to the remote units.

(2) The more the remote units has cascaded in daisy-chain/redundant loop, the less power the BTQ-SL8/SG8 can supply to the remote units.

For example, if the cable length between the BTQ-SG8/SL8 and DPM-MAIN is within 250m, the DPM-MAIN can be powered by BTQ-SG8/SL8. If the cable length is beyond 250m, please connect the DLR01 digital loop repeater with **PSU65-27** 27VDC power adapter, ensuring the control signal and power supply of DPM-MAIN units are enough. To know the max. distance between BTQ-SG8/SL8 and DPM-MAIN unit(s) and the max. distance which the DPM-MAIN can be powered by DLR01 unit, please refer to Hardware Connection > DLR01 for details.

11. USB 2.0 interface:

    Connect a USB flash drive on BTQ-SG8 for external storage of music/message files and playback (G.711, G.722, G.726, G.727, MP3 and WAV).

12. Ethernet connector:

    Connect the BTQ-SG8 unit to Ethernet network.

13. Global Net / Digi-Link In & Out:

    - Global Net: The global network (redundant loops) is used for linking the BTQ-VM4/8 controller to the next connected BTQ-VM4/8 or BTQ-SG8 units. It supports both RJ45 plug and fiber-optics.
      - Max. global-net units: 64
      - Max. distance between global-net units: 100m (CAT5/6), 2 km (multi-mode fiber optic) and 20 km (single-mode fiber optic).
    - Digi-Link In & Out (RJ45): The local digi-link network is used for linking the BTQ-VM4/8 controller and BTQ-SL8 secondary units together.
      - Max. local-net units: 32
      - Max. distance between local-net units: 10m (metal shielded RJ45 connector, STP CAT5/6).

14. RS232:

    This port is used to connect to 3rd party device for controlling the BOUTIQUE system.

15. 24VDC Out:

    The 24VDC (max. 0.8A) power is shared by the two 24VDC outputs on BTQ-SG8/SL8 and the remote consoles.

    If the BTQ-SG8/SL8 is connected to an external 24VDC power supply such as connect to the battery charger, then the max. current will be 1.3A.

16/17. Amp In1 / Amp In2:

    There are two outputs which can output the balanced 0 dB audio channel to two individual external power amplifiers.

18. Device ID (DIP switch):

    When connecting multiple secondary units with BTQ-VM4/8 controller, the device ID can identify the connection among the units.

19. 24VDC Input (battery backup):

    Connect the 24VDC battery charger for battery backup.

20. 24VDC Input (main power):

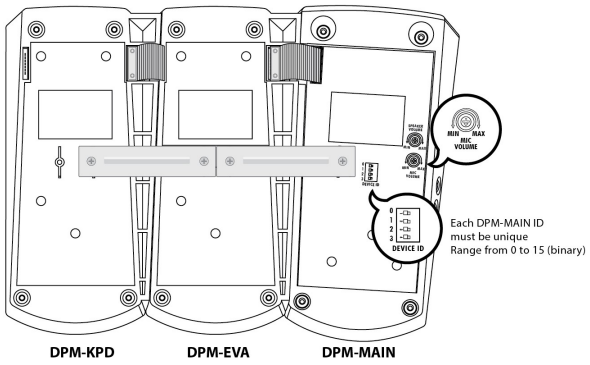
    This input is to connect to the external power adapter.

21. Ground (GND) socket.

2.5 Digital paging console

2.5.1 DPM paging microphone/microphone keypad/speaker pad

DPM-MAIN / DPM-EVA / DPM-KPD



DPM-KPD / DPM-EVA / DPM-MAIN

The DPM consists of three units: DPM-MAIN, DPM-EVA and DPM-KPD. The DPM-MAIN is the digital paging console, the DPM-KPD is an expansion keypad used to expand the DPM-MAIN, and the DPM-EVA is a monitoring speaker pad with an EVAC button and 5 programmable buttons.

Each remote port on BTQ-VM/SL/SG can address up to 16 DPM-MAIN remote consoles in one daisy-chain and 32 DPM-MAIN units for 2 daisy-chain or up to 16 units in redundant loop using 2 ports.

The DPM-MAIN can attach 1 DPM-EVA and 14 DPM-KPD or 1 DPM-MAIN can attach 15 DPM-KPD by the flat cable (max. 128 keys).

The maximum communication cable length is 250M* (820 ft.) between the BTQ-VM/SG/SL and DPM, DPM and DPM via STP CAT5/6 cable with metal shielded RJ45 connector.

The programmable buttons represent a single zone or a group of zones, the buttons can also act as zone paging, event triggering, recording, message routing, message playing button etc. and can be easily configured via web browser.

⚠*The distance of cable length will affect how many remote units can be powered by BTQ-VM/SL8/SG8.

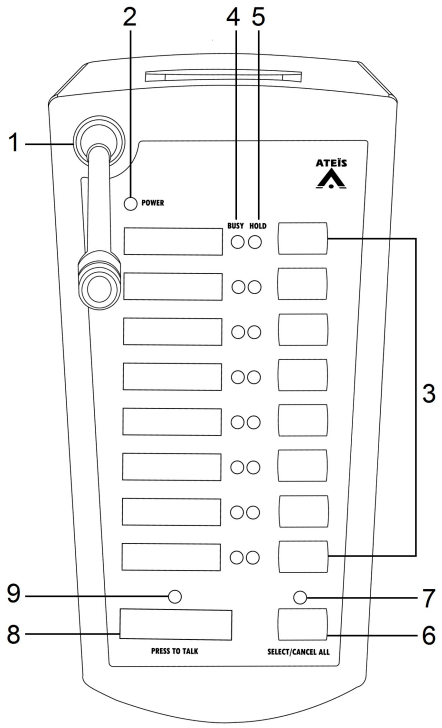
(1) The longer the cable is, the less power the BTQ-VM/SL8/SG8 can supply to the remote units.

(2) The more the remote units has cascaded in daisy-chain/redundant loop, the less power the BTQ-VM/SL8/SG8 can supply to the remote units.

For example, if the cable length between the BTQ-VM/SL8/SG8 and DPM-MAIN is within 250m, the DPM-MAIN can be powered by BTQ-VM/SL8/SG8. If the cable length is beyond 250m, please connect the DLR01 digital loop repeater with **PSU65-27** 27VDC power adapter, ensuring

the control signal and power supply of DPM-MAIN units are enough. To know the max. distance between BTQ-VM/SL8/SG8 and DPM-MAIN unit(s) and the max. distance which the DPM-MAIN can be powered by DLR01 unit, please refer to Hardware Connection > DLR01 for details.

2.5.1.1 DPM-MAIN - digital redundant loop paging microphone-main



❖ Front panel:

1. Microphone:

   The unidirectional condenser gooseneck microphone warrants high quality directive signal pick-up and less interference from the surroundings.

2. Power LED:

   The LED will light up in green when the DPM-MAIN is powered.

3. Programmable button:

   There are eight programmable buttons for zone paging, event triggering, message routing, message play, level control etc..

4. Busy LED:

   The LEDs will light up when the zones are occupied by the other audio sources.

   - Green LED: The paging zones are occupied by the other audio sources which have lower priority, and is able to page.
   - Continuous blink in green: The selected zones on DPM are under paging now.
   - Red LED: The paging zones are occupied by the other audio sources which have higher priority, and is not able to page.

5. Hold LED:

   - The LEDs will light up blue when the zones/zone group are selected and allowed to distribute.
   - The LEDs will blink once in blue when the event is triggered.

6. Select/Cancel All button:

   This button is used for select/deselect all zones.

7. Select/Cancel All LED:

   The LED will light up in blue/light off if all the zones are selected/deselected.

8.Talk button (press-to-talk):

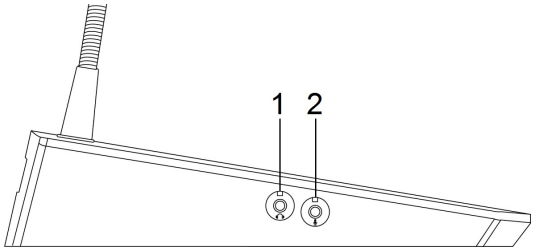
- Start paging via press-to-talk mode or lock-to-talk mode. The talk mode can be set via web browser.
- Long press the Talk key on DPM-MAIN for 5~6 seconds to enter [Lamp Test] mode. This mode can help to test if the LEDs of device are under normal behavior. Also, it can be performed only when no paging is currently proceeding now.

9. Talk LED:

- After the Talk button is pressed, this LED will light up to indicate the mic is active and the DPM is able to page.
- The LED will blink when the chime is playing.

If the paging request is granted, zones under paging can still be occupied by other sources with higher priority, and the Busy LED will light up in red.

❖ Side panel:



1. Headphone jack output:

   External headphone 3.5mm jack output.

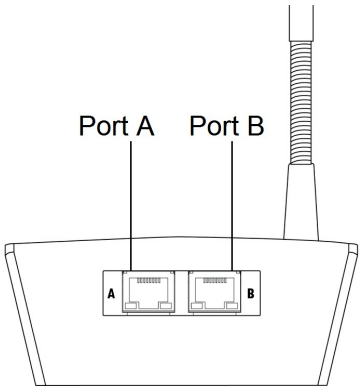
2. Microphone jack input:

   External microphone 3.5mm jack input.

When the external microphone is connected, the gooseneck mic on DPM-MAIN will be disable; when external headphone is connected, the loudspeaker on DPM-EVA will also be disable.

The 3.5mm line input of DPM-MAIN can be used as the BGM source, and proceed audio routing to BTQ-VM controller. This setting is located on BTQ web browser > Function > BGM window > Zone setting tab.

❖ Rear panel:

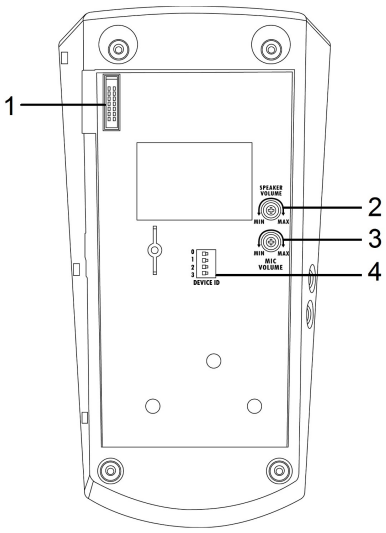


- Remote console sockets:

  Connect the DPM-MAIN to BTQ-VM/SL/SG or cascade the next DPM-MAIN, DPM-T5, CD-8DF/16DF/T5DF, DGL-MIC via this redundant RJ45 sockets (A and B port). See the wiring connection from Hardware Installation > DPM.

The distance of cable length will affect how many remote units can be powered by BTQ-VM/SL/SG. The longer the cable is, the less power the BTQ-VM/SL/SG can supply to the remote units. For example, if the cable length between the BTQ-VM/SL8/SG8 and DPM-MAIN is within 250m, the DPM-MAIN can be powered by BTQ-VM/SL8/SG8. If the cable length is beyond 250m, please connect the DLR01 digital loop repeater with **PSU65-27** 27VDC power adapter, ensuring the control signal and power supply of DPM-MAIN units are enough.
To know the max. distance between BTQ-VM/SL8/SG8 and DPM-MAIN unit(s) and the max. distance which the DPM-MAIN can be powered by DLR01 unit, please refer to Hardware Connection > DLR01 for details.

❖ Bottom panel:



1. IDC connector:

   Transmit the power and data to the next DPM-EVA or DPM-KPD unit via flat cable.

⚠ **DO NOT** plug in or plug out the flat cable of DPM-MAIN/KPD/EVA when the DPM-MAIN is powered, in order to protect the electric components and PCB boards of DPM-MAIN/KPD/EVA from sudden inrush current.

2. Speaker volume control.

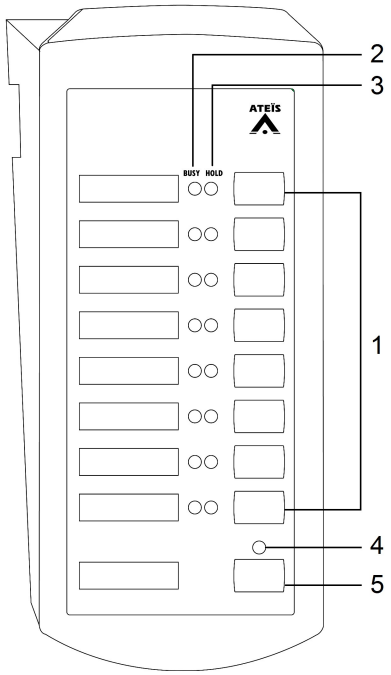
3. Mic volume control.

The [Speaker Volume] and [Mic Volume] attenuators located at the bottom of DPM-MAIN are only using for the volume adjustment of built-in speaker and gooseneck microphone on DPM-MAIN. The volume control for external 3.5mm line input and line output is not applicable.

4. Device ID:

   Set the DIP switch to identify the connection of multiple DPM-MAIN. The DIP switch is followed by the binary code with 4 digit. The ID cannot be repeated, and the range of ID is from 0 to 15. See Device ID.

2.5.1.2 DPM-KPD - additional 8+1 microphone keypad



❖ Front panel:

1. Programmable button:

   There are eight programmable buttons for zone paging, event triggering, message routing, message play, level control etc..

2. Busy LED:

   The LEDs will light up when the zones are occupied by the other audio sources.

   - Green LED: The paging zones are occupied by the other audio sources which have lower priority, and is able to page.
   - Continuous blink in green: The selected zones on DPM are under paging now.
   - Red LED: The paging zones are occupied by the other audio sources which have higher priority, and is not able to page.

3. Hold LED:

   - The LEDs will light up blue when the zones/zone group are selected and allowed to distribute.
   - The LEDs will blink once in blue when the the event is triggered.

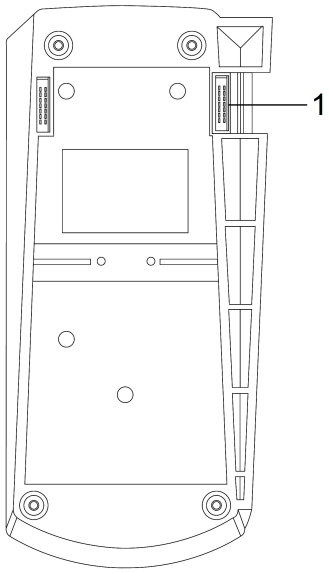
4. Select/Cancel All LED:

   The LED will light up/off if all the zones are selected/deselected.

5. Select/Cancel All button:

   This button is used for select/deselect all zones.

❖ Bottom panel:

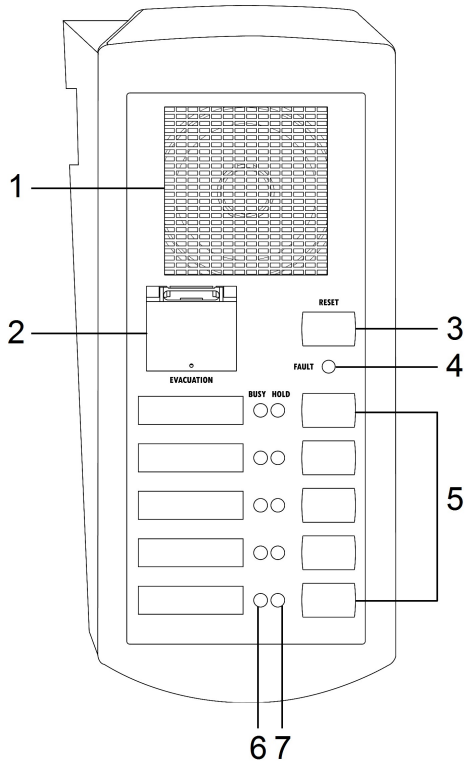


1. IDC cable:

   The connector is used for transmitting power and data to the next DPM unit via flat cable.

⚠**DO NOT** plug in or plug out the flat cable of DPM-MAIN/KPD/EVA when the DPM-MAIN is powered, in order to protect the electric components and PCB boards of DPM-MAIN/ KPD/EVA from sudden inrush current.

2.5.1.3 DPM-EVA - EVAC unit with speaker and extra buttons



❖ Front panel:

1. Monitoring speaker:

   This built-in speaker is to monitor the zone audio including message, BGM and paging. When the faults detected by the system, the system will generate a buzzer sound (tone) as warning.

2. Evacuation button:

   Once this button is pushed, the system will enter to emergency state. The red LED will light up and play/route the EVAC messages.

3. Reset button:

   This button is used for cancelling the EVAC message paging.

4. Fault LED:

   The LED will light up when one or more system faults are detected.

5. Programmable button:

   There are five programmable buttons for zone paging, event triggering, message routing, message play, level control etc..

6. Busy LED:

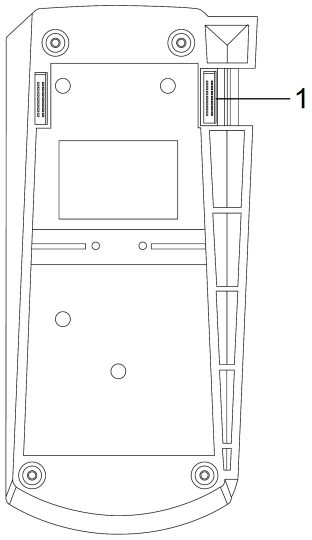
   The LEDs will light up when the zones are occupied by the other audio sources.

   - Green LED: The paging zones are occupied by the other audio sources which have lower priority, and is able to page.
   - Continuous blink in green: The selected zones on DPM are under paging now.
   - Red LED: The paging zones are occupied by the other audio sources which have higher priority, and is not able to page.

7. Hold LED:

   - The LEDs will light up blue when the zones/zone group are selected and allowed to distribute.
   - The LEDs will blink once in blue when the the event is triggered.

❖ Bottom panel:

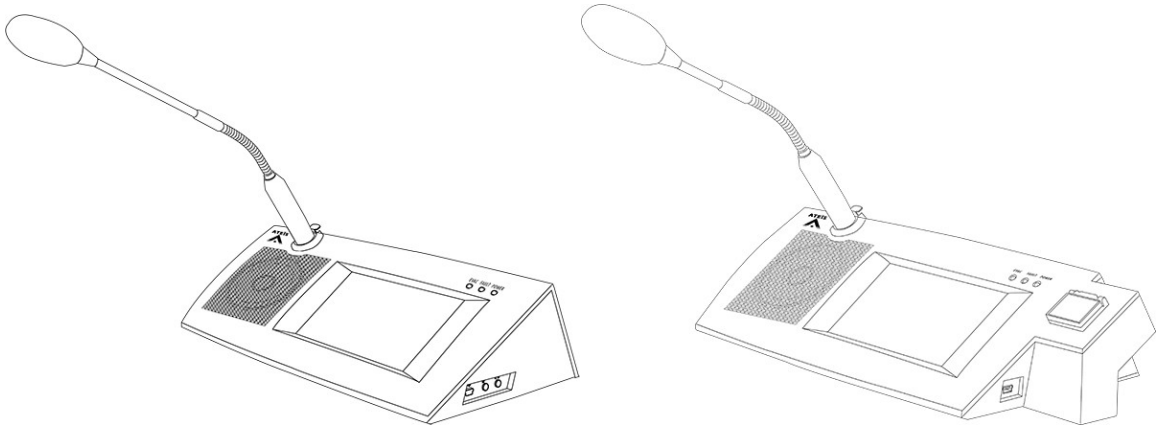


1. IDC cable:

   The connector is used for transmitting power and data to the next DPM unit via flat cable.

⚠ **DO NOT** plug in or plug out the flat cable of DPM-MAIN/KPD/EVA when the DPM-MAIN is powered, in order to protect the electric components and PCB boards of DPM-MAIN/ KPD/EVA from sudden inrush current.

2.5.2 DPM-T5/DPM-T5F touchpanel paging mic



DPM-T5 DPM-T5F

The DPM-T5/DPM-T5F 5" TFT touch screen paging mic console provides call-paging, message broadcasting, event triggering, recording, message routing, message play, level control etc.. Up to 16 DPM-T5/DPM-T5F can be connected to BTQ-SL8 via daisy-chain, and 32 on BTQ-VM4/VM8/SG8 via 2 daisy-chain; or up to 16 DPM-T5/DPM-T5F units in redundant loop. The maximum communication cable length between the controller/secondary units and DPM-T5/DPM-T5F is 250M* via STP CAT5/6 cable with metal shielded RJ45 connector.

The DPM-T5/DPM-T5F is equipped with a 3.5mm phone jack mic input and a speaker output for the connection of external headset. Both DPM-T5 and DPM-T5F have a mini-USB port for PC/Laptop connection, making the far-end device using Skype, QQ, WhatsApp etc. be paged to BOUTIQUE system. In addition, the DPM-T5F has an evacuation button. The backlit full color touch screen panel is designed for user-friendly operation and offers multiple pages for the selection of a zone/a group of zones.

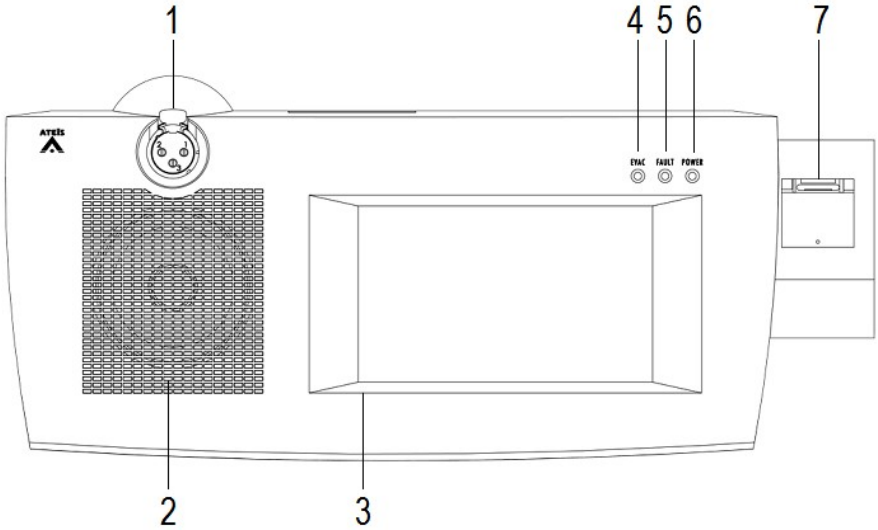
⚠*The distance of cable length will affect how many remote units can be powered by BTQ-VM/SL8/SG8.

(1) The longer the cable is, the less power the BTQ-VM/SL8/SG8 can supply to the remote units.

(2) The more the remote units has cascaded in daisy-chain/redundant loop, the less power the BTQ-VM/SL8/SG8 can supply to the remote units.

For example, if the cable length between the BTQ-VM/SL8/SG8 and DPM-T5/DPM-T5F is within 125m, the DPM-T5/DPM-T5F can be powered by BTQ-VM/SL8/SG8. If the cable length is beyond 125m, please connect the DLR01 digital loop repeater with **PSU65-27** 27VDC power adapter, ensuring the control signal and power supply of DPM-T5/DPM-T5F units are enough. To know the max. distance between BTQ-VM/SL8/SG8 and DPM-T5/DPM-T5F unit(s) and the max. distance which the DPM-T5/DPM-T5F can be powered by DLR01 unit, please refer to Hardware Connection > DLR01 for details.

2.5.2.1 Front panel



1. Microphone:

   The unidirectional condenser gooseneck microphone warrants high quality directive signal pick-up and less interference from the surroundings.

2. Monitoring speaker:

   This built-in speaker is to monitor the zone audio including message, BGM and paging. When the faults detected by the system, the system will generate a buzzer sound (tone) as warning.

3. Touch screen panel:

   A 5" LCD touch screen, and each pages on the panel can be pre-programmed to zone paging, trigger events etc..

See DPM-T5/DPM-T5F/CD-T5DF LCD panel for details.

4. EVAC LED:

   This LED lights up in red when system is under the evacuation paging.

5. Fault LED:

   This LED lights up in yellow when one or more system faults are detected.

6. Power LED:

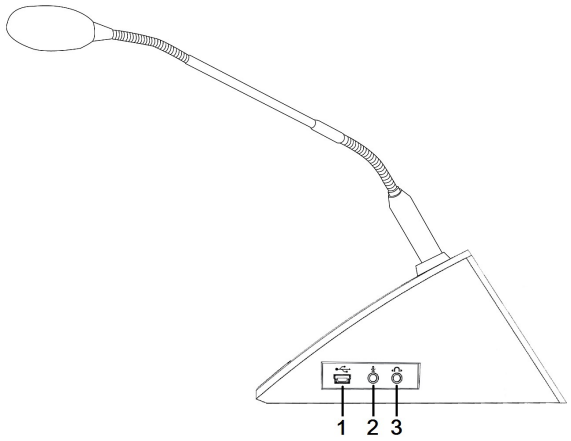
   This LED lights up in green when the DPM-T5/DPM-T5F is powered.

7. Evacuation button (DPM-T5F only):

   Once this button is pushed, the system will enter to emergency state. The red LED will light up and play/route the EVAC messages.

2.5.2.2 Side & rear panel

❖ Side panel:



1. Mini-USB port:

   Connect to PC/Laptop for remote conferencing via Skype, WhatsApp etc.. Use the built-in mic and speaker of DPM-T5/DPM-T5F as the mic input and speaker output.

The mini-USB interface of DPM-T5 can be used as a BGM source, and proceed audio routing to BTQ-VM controller. Add a folder /USB_MSG/folder in root directory, and put the BGM files under this folder, then once the USB flash drive is connected to DPM-T5, and this USB source has been chosen as the BGM source on on BTQ web browser > Function > BGM window > Zone setting tab, the audio files shall be automatically played in sequence. (Supported audio codec: G711/G722/WAV/MP3. Max number of audio files: 999).

2. Microphone (DPM-T5 only):

   3.5mm (1/8 inch) phone jack female for external microphone.

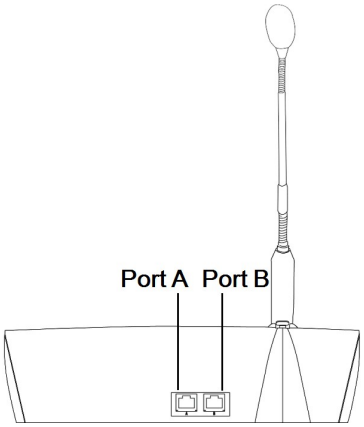
The 3.5mm line input of DPM-T5 can be used as the BGM source, and proceed audio routing to BTQ-VM controller. This setting is located on BTQ web browser > Function > BGM window > Zone setting tab.

If both 3.5mm line input and USB flash drive are connected to DPM-T5 at the same time, the source of USB flash drive will override the source of 3.5mm line input.

3. Headphone (DPM-T5 only):

   3.5mm (1/8 inch) phone jack female for external headphone.

❖ Rear panel:

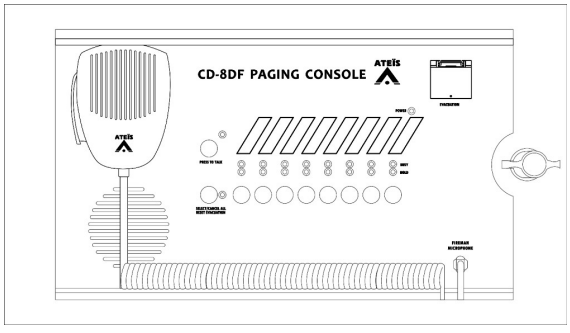


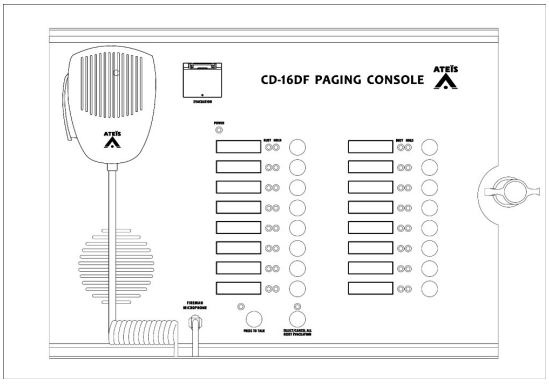
- Remote console sockets:

  Connect the DPM-T5/DPM-T5F to BTQ-VM/SL/SG or cascade the next DPM-T5/DPM-T5F, DPM-MAIN, CD-8DF/16DF/T5DF, DGL-MIC via this RJ45 redundant sockets (A and B port).

The distance of cable length will affect how many remote units can be powered by BTQ-VM/SL/SG. The longer the cable is, the less power the BTQ-VM/SL/SG can supply to the remote units. For example, if the cable length between the BTQ-VM/SL8/SG8 and DPM-T5/DPM-T5F is within 125m, the DPM-T5/DPM-T5F can be powered by BTQ-VM/SL8/SG8. If the cable length is beyond 125m, please connect the DLR01 digital loop repeater with **PSU65-27** 27VDC power adapter, ensuring the control signal and power supply of DPM-T5/DPM-T5F units are enough.
To know the max. distance between BTQ-VM/SL8/SG8 and DPM-T5/DPM-T5F unit(s) and the max. distance which the DPM-T5/DPM-T5F can be powered by DLR01 unit, please refer to Hardware Connection > DLR01 for details.

2.5.3 CD-8DF/CD-16DF wallmount paging mic





The CD-8DF/CD-16DF is a digital wall-mount paging console. It is designed with an encased IP30 heavy-duty metal box with a lockable cover. The 8/16 programmable zone buttons represent a single zone or a group of zones, the buttons can also act as zone paging, event triggering, recording, message routing, message playing button etc., and can be configured via web browser. In addition, it is equipped with a fireman microphone and an evacuation button.

Up to 16 CD-8DF/CD-16DF can be connected to a remote port of BTQ-VM/SG/SL via daisy-chain and up to 16 CD-8DF/CD-16DF in redundant loop. The maximum communication cable length between the BTQ-VM/SG/SL and remote units is 250M* (820 ft.) via STP CAT5/6 cable with metal shielded RJ45 connector.

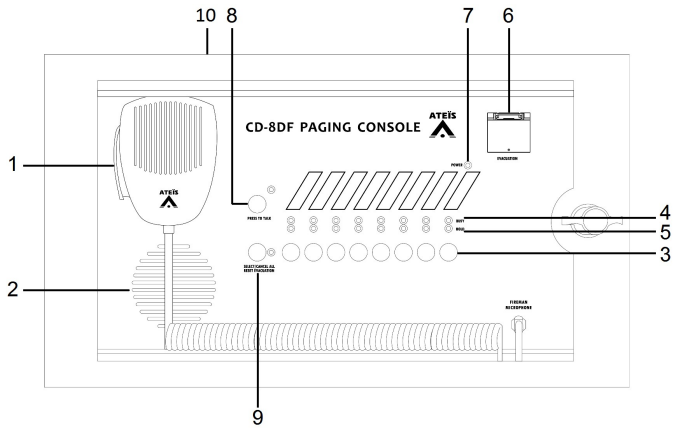
⚠*The distance of cable length will affect how many remote units can be powered by BTQ-VM/SL8/SG8.

(1) The longer the cable is, the less power the BTQ-VM/SL8/SG8 can supply to the remote units.

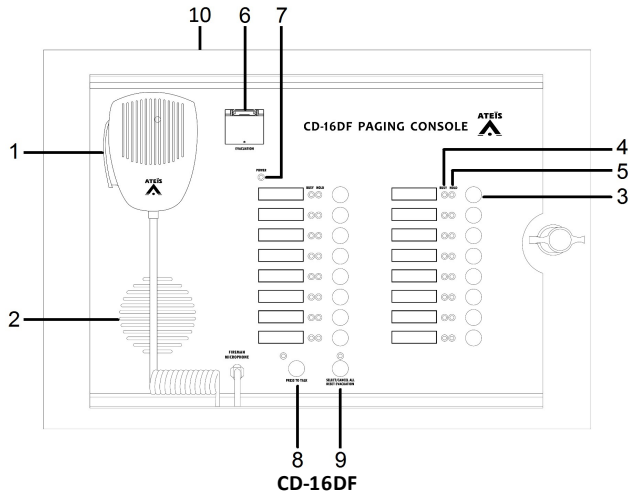
(2) The more the remote units has cascaded in daisy-chain/redundant loop, the less power the BTQ-VM/SL8/SG8 can supply to the remote units.

For example, if the cable length between the BTQ-VM/SL8/SG8 and CD-8DF/CD-16DF is within 250m, the CD-8DF/CD-16DF can be powered by BTQ-VM/SL8/SG8. If the cable length is beyond 250m, please connect the DLR01 digital loop repeater with **PSU65-27** 27VDC power adapter, ensuring the control signal and power supply of CD-8DF/CD-16DF units are enough. To know the max. distance between BTQ-VM/SL8/SG8 and CD-8DF/CD-16DF unit(s) and the max. distance which the CD-8DF/CD-16DF can be powered by DLR01 unit, please refer to Hardware Connection > DLR01 for details.

2.5.3.1 Front panel



CD-8DF



CD-16DF

1. Fireman microphone & U-shape bracket:

   A fully monitored microphone is designed for EVAC paging. The paging button supports both

press-to-talk and lock-to-talk mode. The talk mode can be set via web browser.

2. Monitoring speaker:

   This built-in speaker is to monitor the zone audio including message and BGM. When the faults detected by the system, the system will generate a buzzer sound (tone) as warning.

3. Programmable button:

   There are 8 (CD-8DF) / 16 (CD-816F) programmable buttons for zone paging, event triggering, message routing, message play, level control etc..

4. Busy LED:

   The LEDs will light up when the zones are occupied by the other audio sources.

   - Green LED: The paging zones are occupied by the other audio sources which has lower priority, and is able to page.
   - Continuous blink in green: The selected zones on CD-8DF/CD-816F are under paging now.
   - Red LED: The paging zones are occupied by the other audio sources which has higher priority, and is not able to page.

5. Hold LED:

   - The LEDs will light up blue when the zones/zone group are selected and allowed to distribute.
   - The LEDs will blink once in blue when the the event is triggered.

6. Evacuation button:

   Once this button is pushed, the system will enter to emergency state. The red LED will light up and play/route the EVAC messages. To cancel the emergency state, press [Select/Cancel All/ Reset Evacuation] button, and the EVAC message playing will be canceled.

7. Power LED:

   The LED will light up in green when CD-8DF/CD-816F is powered.

8. Press to talk button & LED:

   - Start a EVAC paging via press-to-talk mode or lock-to-talk mode. The talk mode can be set via web browser.
   - Long press the Talk key on CD-8DF/CD-16-DF for 5~6 seconds to enter [Lamp Test] mode. This mode can help to test if the LEDs of device are under normal behavior. Also, it can be performed only when no paging is currently proceeding now.

9. Select/cancel all/reset evacuation button & LED:

   - This button is used for select/deselect all zones. The LED will light up in blue/light off if all the zones are selected/deselected.
   - During the evacuation state, if users wish to cancel the EVAC message playing, press [Select/Cancel All/Reset Evacuation] button to stop playing the EVAC message.

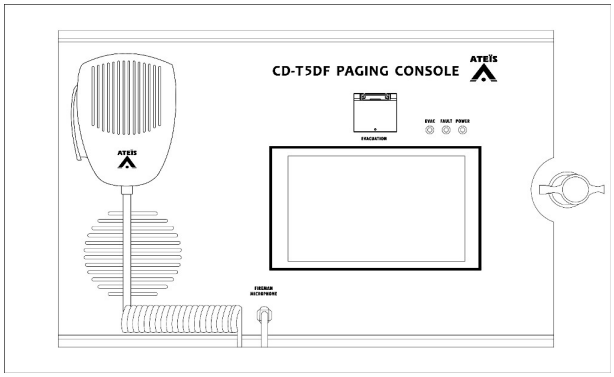
10. Remote console sockets (located at the top view of panel):

    Connect the CD-8DF/CD-16DF to BTQ-VM/SL/SG or cascade the next DPM-T5/DPM-T5F, DPM-MAIN, CD-8DF/16DF/T5DF, DGL-MIC via this RJ45 redundant sockets (A and B port).

The distance of cable length will affect how many remote units can be powered by BTQ-VM/ SL/SG. The longer the cable is, the less power the BTQ-VM/SL/SG can supply to the remote units. For example, if the cable length between the BTQ-VM/SL8/SG8 and CD-8DF/ CD-16DF is within 250m, the CD-8DF/CD-16DF can be powered by BTQ-VM/SL8/SG8. If the cable length is beyond 250m, please connect the DLR01 digital loop repeater with **PSU65-27** 27VDC power adapter, ensuring the control signal and power supply of CD-8DF/CD-16DF units are enough.

To know the max. distance between BTQ-VM/SL8/SG8 and CD-8DF/CD-16DF unit(s) and the max. distance which the CD-8DF/CD-16DF can be powered by DLR01 unit, please refer to Hardware Connection > DLR01 for details.

2.5.4 CD-T5DF wallmount touchpanel paging mic



The CD-T5DF wall-mount paging console comes with a LCD touch screen panel, fireman microphone and evacuation button. It is designed with an encased IP30 heavy-duty metal box with a lockable cover. The 5" TFT touch screen panel provides call-paging, message broadcasting, event triggering, recording, message routing, message play, level control etc..

All paging functions and parameters for site operation such as naming zone buttons, zone group buttons, zone paging, pre/post chime settings can be pre-programmed via web browser. Moreover, several user levels with password protection make the CD-T5DF a versatile console that fits well in a commercial shopping centre or an industrial high-security facility.

Up to 16 CD-T5DF can be connected to a remote port of BTQ-VM/SG/SL via daisy-chain and up to 16 CD-T5DF in redundant loop. The maximum communication cable length between the BTQ-VM/SG/SL and remote units is 250M* (820 ft.) via STP CAT5/6 cable with metal shielded RJ45 connector.

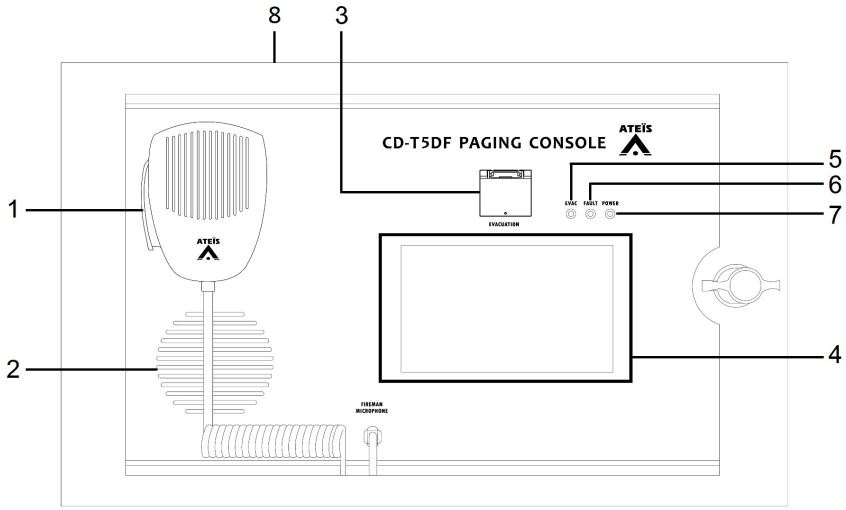
⚠ *The distance of cable length will affect how many remote units can be powered by BTQ-VM/SL8/SG8.

(1) The longer the cable is, the less power the BTQ-VM/SL8/SG8 can supply to the remote units.

(2) The more the remote units has cascaded in daisy-chain/redundant loop, the less power the BTQ-VM/SL8/SG8 can supply to the remote units.

For example, if the cable length between the BTQ-VM/SL8/SG8 and CD-T5DF is within 125m, the CD-T5DF can be powered by BTQ-VM/SL8/SG8. If the cable length is beyond 125m, please connect the DLR01 digital loop repeater with **PSU65-27** 27VDC power adapter, ensuring the control signal and power supply of CD-T5DF units are enough. To know the max. distance between BTQ-VM/SL8/SG8 and CD-T5DF unit(s) and the max. distance which the CD-T5DF can be powered by DLR01 unit, please refer to Hardware Connection > DLR01 for details.

2.5.4.1 Front panel



1. Fireman microphone & U-shape bracket:

   A fully monitored microphone is designed for EVAC paging. The paging button supports both push to talk and lock to talk mode. The talk mode can be set via web browser.

2. Monitoring speaker:

   This built-in speaker is to monitor the zone audio including message and BGM. When a fault is detected in the system, it will generate a buzzer sound (tone) as warning.

3. Evacuation button:

   Once this button is pushed, the system will enter to emergency state. The red LED will light up and play/route the EVAC messages.

4. Touch screen panel:

   A 5" LCD touch screen, and each pages on the panel can be pre-programmed to zone paging, trigger events etc..

See DPM-T5/DPM-T5F/CD-T5DF LCD panel for details.

---

5. EVAC LED:

   This LED lights up in red when system is under the evacuation paging.

6. Fault LED:

   This LED lights up in yellow when one or more system faults are detected.

7. Power LED:

   This LED lights up in green when CD-T5DF is powered.

8. Remote console sockets (located at the top view of panel):

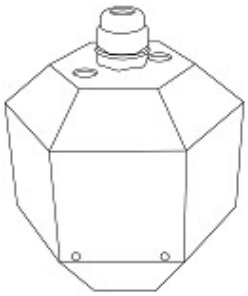
   Connect the CD-T5DF to BTQ-VM/SL/SG or cascade the next DPM-T5/DPM-T5F, DPM-MAIN, CD-8DF/16DF/T5DF, DGL-MIC via this RJ45 redundant sockets (A and B port).

The distance of cable length will affect how many remote units can be powered by BTQ-VM/SL/SG. The longer the cable is, the less power the BTQ-VM/SL/SG can supply to the remote units. For example, if the cable length between the BTQ-VM/SL8/SG8 and CD-T5DF is within 125m, the CD-T5DF can be powered by BTQ-VM/SL8/SG8. If the cable length is beyond 125m, please connect the DLR01 digital loop repeater with **PSU65-27** 27VDC power adapter, ensuring the control signal and power supply of CD-T5DF units are enough.
To know the max. distance between BTQ-VM/SL8/SG8 and CD-T5DF unit(s) and the max.

distance which the CD-T5DF can be powered by DLR01 unit, please refer to Hardware Connection > DLR01 for details.

2.6 Accessories

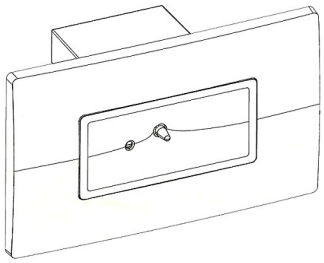
2.6.1 DNM2-ETH digital ambient noise sensing mic, Ethernet



With built-in electronic condenser microphone (omni-directional), the DNM2-ETH enhances the ability to detect the background noise and automatically adjusts the output level of loudspeaker to achieve the optimal intelligibility of sound. The DNM2-ETH is powered by using CAT5/6 cable with a max. distance of up to 100m via Ethernet (PoE).

Click DNM2-ETH installation to see more details.

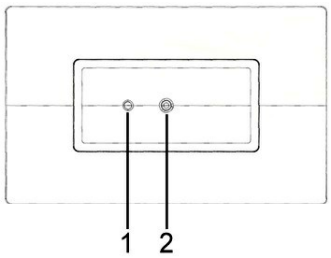
2.6.2 DGL-MIC flush/ceiling mount microphone



With built-in electronic condenser microphone (omni-directional), the DGL-MIC enhances the ability to detect the background noise and automatically adjusts the output level of loudspeaker to achieve the optimal intelligibility of sound. One DGL-MIC can be connected to the remote console port of BTQ-VM4/VM8 or connect one DGL-MIC at the end of daisy-chain remote bus. The maximum communication cable length is 250M (820 ft.) between the BTQ-VM and DGL-MIC via STP CAT5/6 cable with metal shielded RJ45 connector.

Click DNM2-ETH installation to see more details.

2.6.2.1 DGL-MIC front panel/rear panel

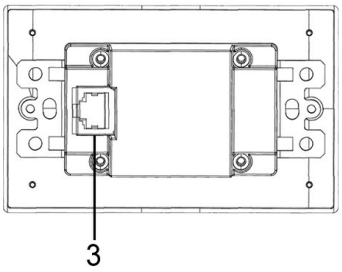


1. Power & Status LED:

Light up in green when the DGL-MIC is powered. The LED will flash if the communication with BTQ-VM does not function.

2. Microphone:

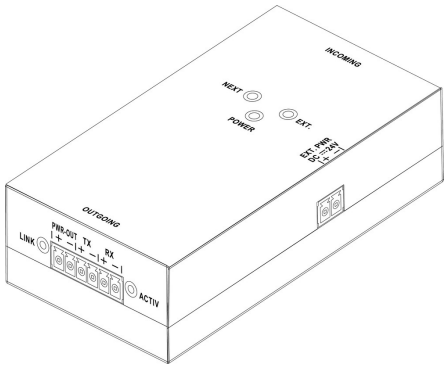
The built-in electronic condenser microphone input (omnidirectional) to pick up sound around the microphone.



3. RJ45 connector:

Connect one DGL-MIC to the remote port of BTQ-VM4/VM8 controller or connect it at the end of daisy-chain remote bus such as DPM-MAIN/DPM-T5 etc., using STP CAT5/6 cable with metal shielded RJ45 connector.

2.6.3 DLR01 - digital loop repeater

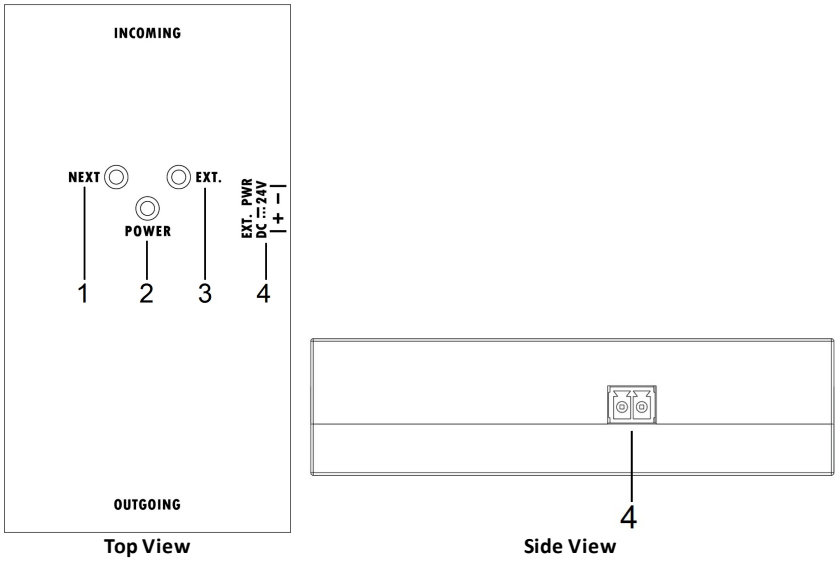


The DLR01 is a digital loop repeater, it can extend the wiring distances of peripherals such as DPM-MAIN, DPM-T5 paging consoles etc. on BOUTIQUE system.
If the control signal of remotes in a daisy-chain wiring is not strong enough, the DLR01 can extend the distance of remotes 250m longer. In addition, the DLR01 has an external power input (max. 3A), providing local power to the remotes.

The DLR01 is **NOT** shipped with the 27VDC power adapter, please order the **PSU65-27** power adapter if necessary.

Power Adapter Model	
PSU65-27	Power Supply/Wire/100~240V/DC 27.5V/2.36A

2.6.3.1 Top & side panel



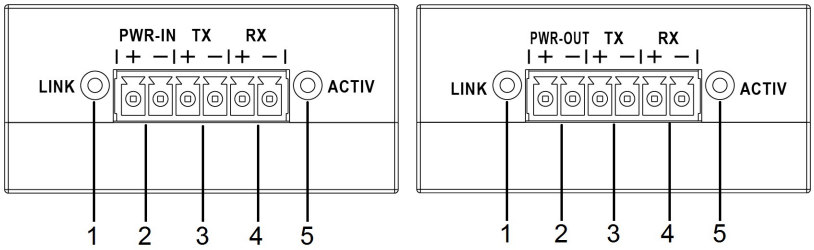
1. NEXT LED: Light up when the DLR01 provides power to the [OUTGOING] output.

2. Power LED: Light up when the DLR01 is powered.

3. EXT. LED: Light up when the DLR01 receives 24VDC external power from [Ext PWR].
4. Ext PWR connector: Connect the 27VDC external power adapter to this input connector.
   - DC power input: 21 VDC ~ 29 VDC.
   - Max power supply of external power adapter: 72W (3A).

The DLR01 is **NOT** shipped with the power adapter, please order the **PSU65-27** power adapter if necessary.

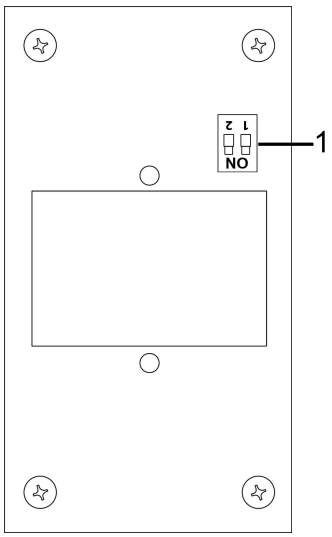
2.6.3.2 Front & rear panel



1. Link LED: Light up when the DLR01 receives the data successfully.
2. Pwrin/Pwrout connector: The 24VDC power in/out connector and ground connector.
3. Transmitter interface.
4. Receiver interface.
5. Active LED: Light up when the DLR01 receives the TX and RX communication successfully.

See DLR01 Connection Diagram for details.

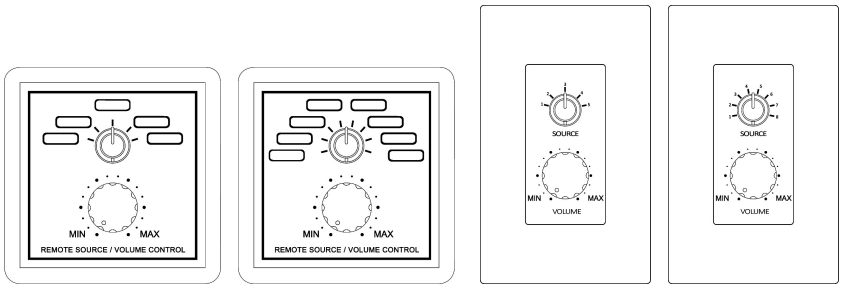
2.6.3.3 Bottom panel



1. DIP Switch: please set the DIP switch of DLR01 as below.

2.6.4 RAC 5/RAC 8 remote controller

The RAC flush-mount remote can be used to adjust the source settings such as level and parameters remotely. The two types of 5/8 steps knobs on RAC can be programmed via web browser. The RAC 5/8 is available for US and EU type, and powered by 24VDC.

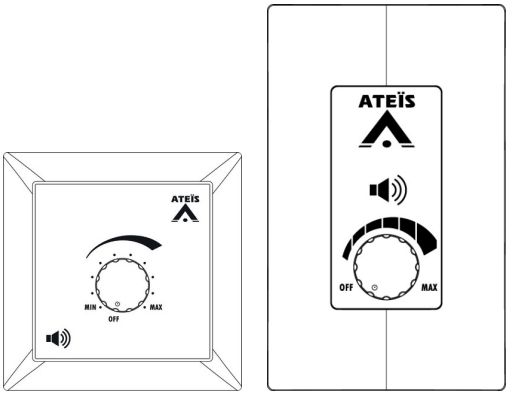


RAC 5/RAC 8 (EU Type)

RAC 5/RAC 8 (US Type)

See RAC 5/RAC 8 wiring connection.

2.6.5 VAT volume attenuator



VAT-35E/120E/200E (EU Type)

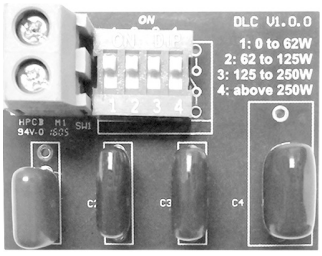
VAT-35U/120U/200U (US Type)

The VAT is a volume attenuator equipped with a 5-step attenuation plus a OFF step, it offers precise level control and excellent frequency response to the speaker lines, making it fit in the environment whether in a noisy warehouse or a quiet office.

- The VAT is applicable for 100 volt/70.7 volt application system.
- The VAT fits in both standard US and EU type of flush-mount boxes, and is available in 35W, 120W and 200W options.

See VAT & VA-EOL installation & connection.

2.6.6 VA-DLC dummy load capacitor module



The VA-DLC dummy load capacitor is used for the speaker line surveillance based on impedance measurement. When a number of speakers are installed with long wires, the VA-DLC can provide a reliable monitoring method to detect the open circuit of entire speaker line even the last speaker.
The VA-DLC has a 4-step DIP switch, and each step refers to individual speaker line power load.

See VA-DLC installation & connection.

2.6.7 VA-EOL end of SP-line module for multi-branch/3-wire

To monitor the long speaker lines, the VA-DLC-100/VA-DLC-70 dummy load capacitor module can be added on the PA/VA system to detect the open and short circuit of speaker lines even the last speaker. However, for advanced configuration such as install the VAT volume attenuators in the 3 wire speaker line for volume control, the impedance of speaker line is changed after adjusting the volume on VAT volume attenuators. Furthermore, for branching the speaker line wiring, a cut of

partial branching may not change the overall impedance that obviously. Therefore, the VA-EOL is the only solution which can adapt the changing impedance and detect open or short circuit for each branch.

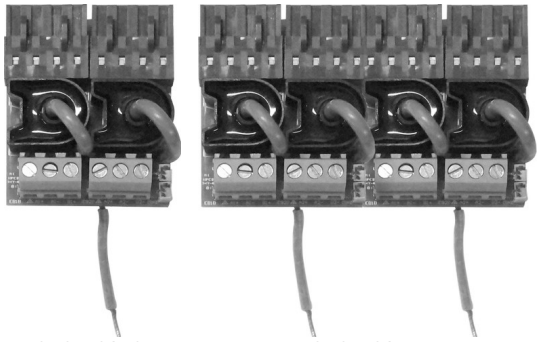
By installing the VA-EOL at the end of speaker lines, the system can indicate which speaker line is open or short circuit, helping to save the analysis time. In addition, the installation does not require additional loopback cabling and is powered by BTQ-VMD/SGD/SLD via speaker line without affecting the audio signal.

See VA-EOL installation & connection.

Please note the supervision of speaker lines is not included the wires which are connected to the VAT volume attenuators.

Please order the "EOL driver" version of BTQ unit such as BTQ-VMD/SGD/SLD controller/ secondary unit when using with VA-EOL module, in order to provide more power to drive the VA-EOL module.

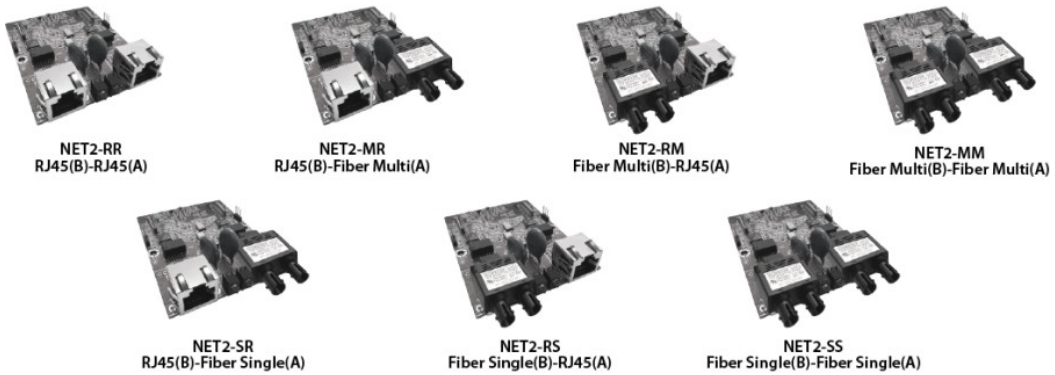
2.6.8 SL-SENSOR2/SL-SENSOR4



By installing the VA-EOL at the end of speaker lines and SL-SENSOR2/SL-SENSOR4 on the zone board of BTQ-VMD/SGD/SLD unit, the system can indicate whether speaker line is open or short circuit within 90 seconds (EN 54-16 requirement), helping to save the analysis time.

The installation does not require additional loopback cabling and is powered by BTQ-VMD/SGD/SLD via speaker line without affecting the audio signal.

2.7 Network cards



The ATEÏS BOUTIQUE network is a monitored and ultra-fast audio network, it is capable to simultaneously transmit 64 audio channels (32 bit, 48 kHz sampling rate) of audio and data with low latency < 0.08 ms per node over STP CAT5/6 cable or Fiber-Optic. Up to 64 BTQ-VM4/8 controllers or BTQ-SG8 secondary units can be connected under the ATEÏS BOUTIQUE global network. Thanks to the benefits of ATEÏS redundant network algorithm, the redundant network loop on BTQ-VM/SG

units makes sure the system be continually functional when occurs unexpected cable disconnection.

The installation of NET2-RR card (RJ45 to RJ45 port) is suitable with a maximum distance of 100m in global network. For installation with longer distances, the NET2-MR, NET2-RM, NET2-MM, NET2-SR, NET2-RS or NET2-SS are used to extend the distances via fiber-optic for a distance up to 2 km between units (multi-mode) or 20 km (single-mode).

When purchasing the network card, please note the copper pillar is not shipped with the network card, please order copper pillar if necessary.

To assemble the netcard to BTQ-VM/VMW, the copper pillar 35 mm x 2pcs are required to purchase.

To assemble the netcard to BTQ-SG8, the copper pillar 15 mm x 2pcs are needed.

Copper Pillar Ordering Information	
CP-PILLAR 15	Copper pillar 15 mm x 50
CP-PILLAR 35	Copper pillar 35 mm x 50

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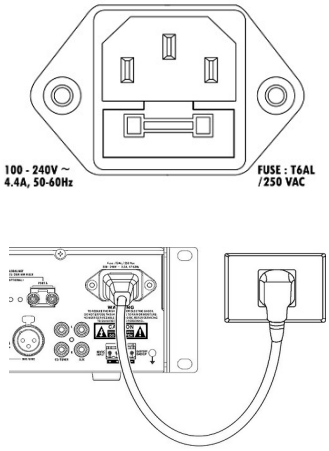
3 Hardware installation & connection

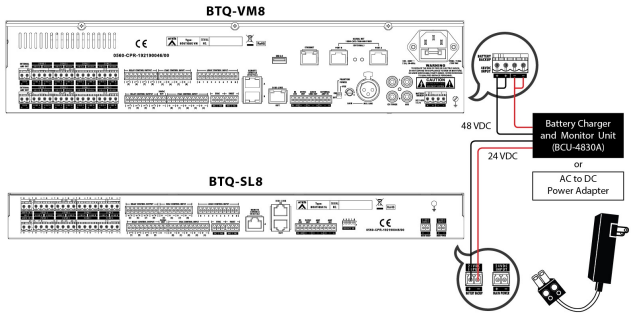
3.1 BTQ-VM/SG/SL power supply

The BTQ-VM controller has two types of power supply input, AC mains and 48VDC for battery backup via phoenix euro-block connector, and secondary unit by 24VDC.

❖ Connection-mains power



❖ Connection-battery backup

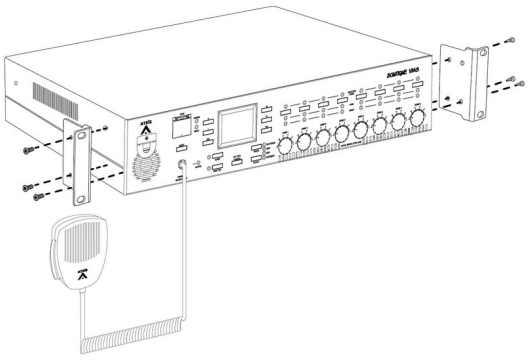


To activate the power supply of BTQ-VMW wallmount controller, connect the AC mains power first, then 48VDC battery backup input. If the order is not correct, the BTQ-VMW can not be operated.

Model	AC Power Input	Fuse
BTQ-VM425 BTQ-VM825	100-240VAC 4.4A, 50-60Hz	T6AL/250VAC
BTQ-VM450 BTQ-VM850	100-240VAC 7.5A, 50-60Hz	T10AL/250VAC

3.2 BTQ-VM/SG/SL mounting

The BTQ-VM4/8 controller is suitable for 19-inch 2U rack-mounting installation. Attach the two rack-ears to the BTQ-VM4/8 using the four supplied screws. Consider leaving enough ventilation space above and below the unit. Do not mount the controller directly above the heat generating devices like power supplies or power amplifiers.



Installing a BTQ-SL8/SG8 secondary unit is similar to installing a BTQ-VM4/VM8 controller, except the secondary units are installed in 19-inch 1U rack-mounting.

3.3 BTQ-VM4W/VM8W

See the following steps to do the hardware wiring of BTQ-VM4W/VM8W.

1. Open the mains circuit-breaker before wiring.
2. Open the monitor DIP switch (refer to BTQ-VM4W/VM8W rear panel > monitor DIP switch setting).
3. Connect the temperature sensor (refer to connect the temperature sensor).

4. Connect the batteries on BTQ-VM4W/VM8W (refer to connect to batteries).
5. Connect the mains power to the power inlet of BTQ-VM4W/VM8W (refer to mains power wiring).
6. After the electrical connections are made (mains power and batteries), close the upstream mains circuit-breaker.
7. Check the battery status and the corresponded faults etc.. on BTQ web browser (refer to BTQ web browser > system > status).

3.3.1 Mounting

⚠ This mounting and connection must be carried out in accordance with all applicable standards and regulations by an electrically skilled person.

⚠ Danger – Electrical shock! The installation of BTQ-VM4W/VM8W must "only" be operated when the AC power supply is closed.

3.3.1.1 Locating the BTQ-VM4W/VM8W

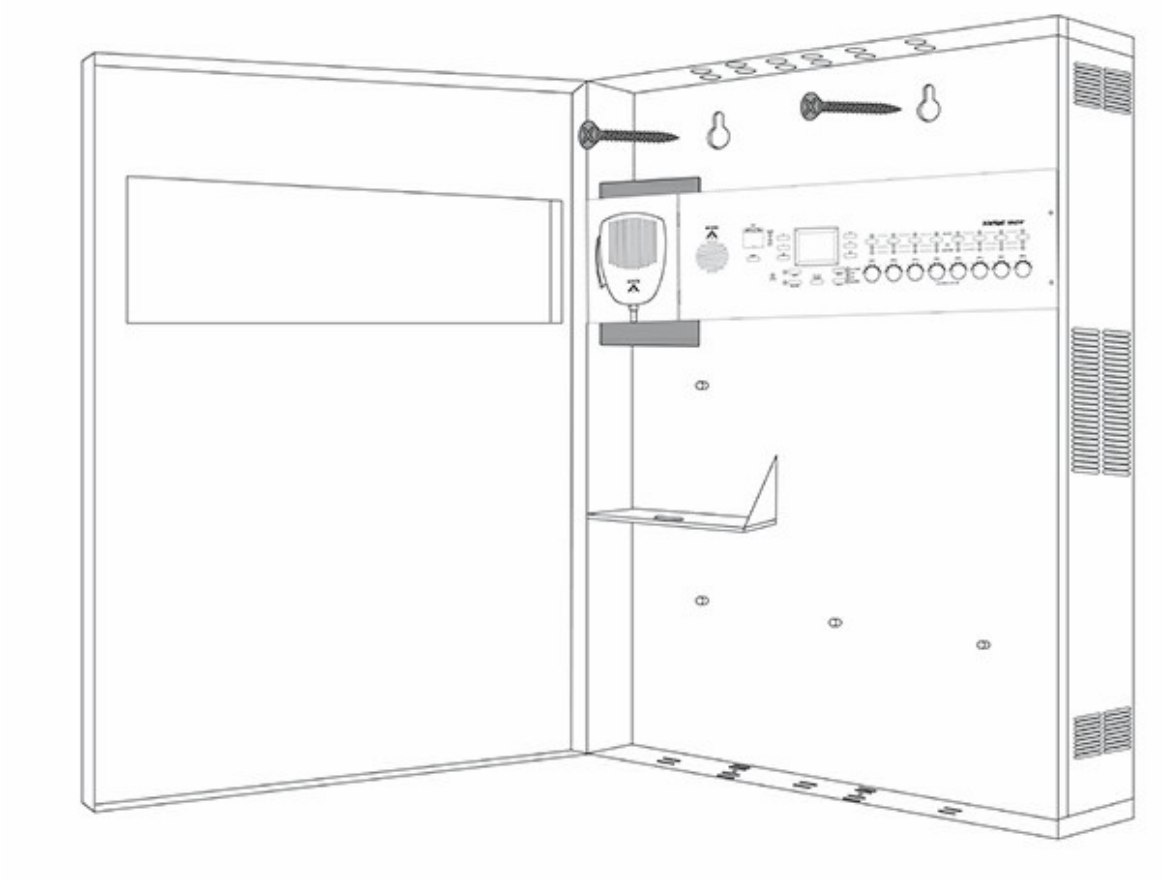
1. Locate the BTQ-VM4W/VM8W controller that is near the AC power terminal, and make sure the wattage load of power outlet is **1.2 multiples** from the needs of BTQ-VM4W/VM8W, see the following table.

AC power input:	100 VAC ~ 240 VAC, 50/60 Hz	
power consumption (AC):	full power	wattage load of power outlet
BTQ-VM425/825W1 BTQ-VM425/825W2	W1: 390W W2: 740W	**W1: 468W** **W2: 888W**
BTQ-VM450/850W1 BTQ-VM450/850W2	W1: 750W W2: 1460W	**W1: 900W** **W2: 1752W**

2. Check if the dimension and weight of BTQ-VM4W/VM8W can fit on the wall, The wall must have sufficient strength to support the entire weight of the BTQ-VM4W/VM8W (including the four 12VDC batteries).The dimension of BTQ-VM4W/VM8W is W:653 mm H:735 mm D:130 mm, the weight is about 22 kg without 4 batteries.

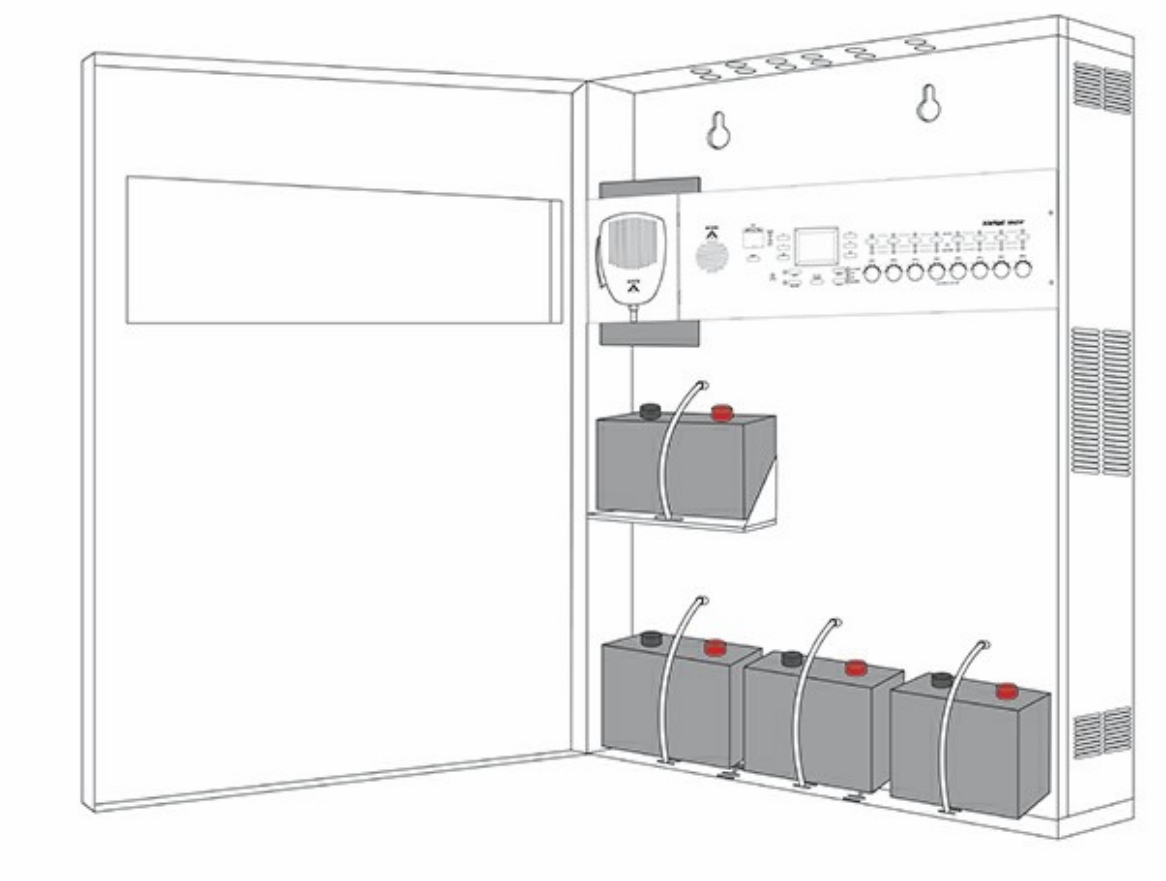
Depending on the used battery capacity and the resulting weight of the batteries, please make sure the drywall have sufficient strength to support the entire weight of this load.

3. Drive the nails into the wall stud for fixing the BTQ-VM4W/VM8W on wall, see the picture as below.



3.3.1.2 Mounting the batteries in BTQ-VM4W/VM8W

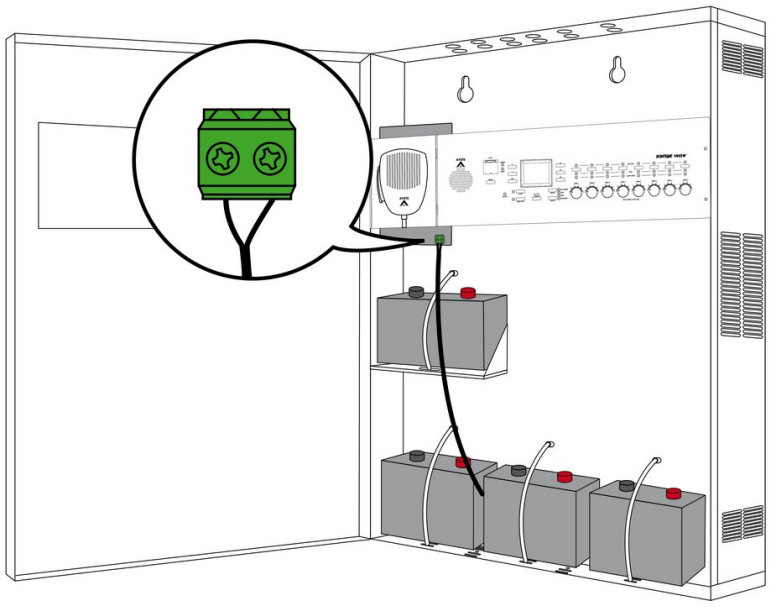
Mount the four 12VDC batteries (10Ah to 18.9Ah) in series inside the BTQ-VM4W/VM8W. And use cable ties for fixing the batteries, see the picture as below.



3.3.2 Connect the temperature sensor

The battery temperature sensor must be installed as close to the battery as possible, otherwise the heat does not transfer well which may cause the sensor not to function properly.

1. Plug the temperature sensor into the temperature sensor terminal on BTQ-VM4W/VM8W.
2. Attach the sensor body close to the battery. E.g. connect the sensor to the battery tray, or place it between the batteries. See the picture below.



⚠ The temperature sensor must be connected, otherwise the battery may be damaged or reduce it's lifetime during operation.

If the temperature sensor is not connected, broken or has a short circuit, the BTQ-VM4W/VM8W will detect it as a battery fault, see BTQ web browser > system > status for details.

3.3.3 Connect to batteries

Connect the four 12VDC batteries (10Ah to 18.9Ah).

⚠ Only connect the four 12VDC batteries of the same voltage, capacity, type, brand and age.

⚠ Danger – Electrical shock! The installation and wiring of batteries must "only" be operated when the AC power supply is closed.

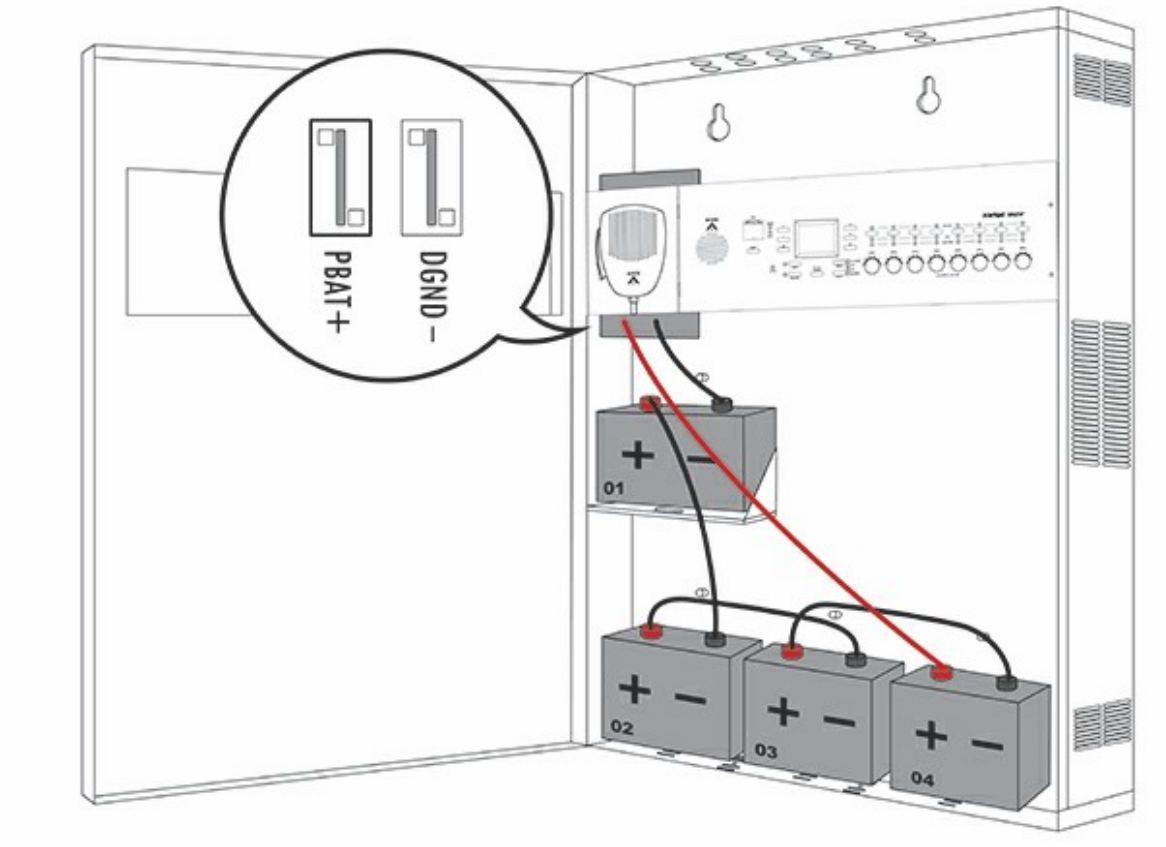
⚠ Before powered on the BTQ-VM4W/VM8W, please use the electric meter to measure the battery voltage (43.2VDC ~ 60VDC total).

The BTQ-VM4W/VM8W has two terminals (PBAT+ / DGND-) for connecting to the batteries.

1) Connect the DGND- terminal to the - terminal of the first battery.

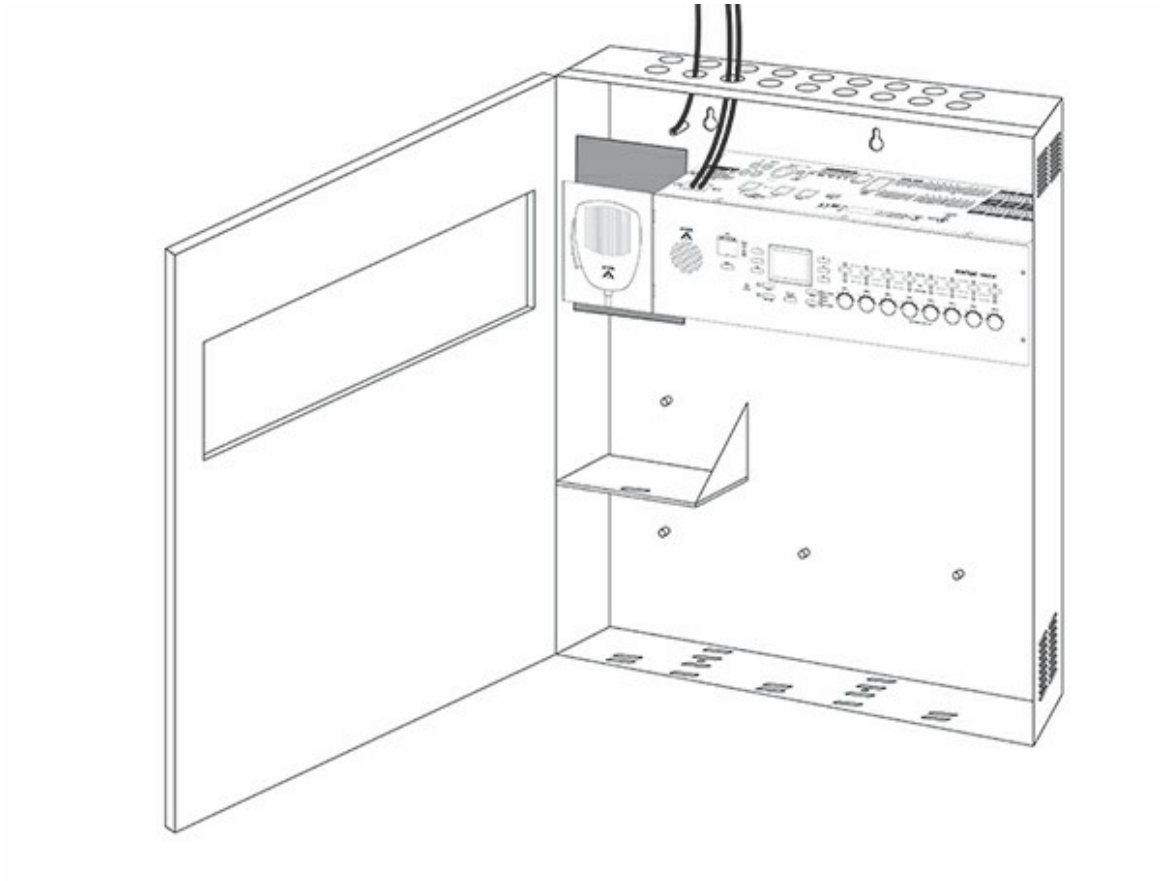
2) Connect the PBAT+ terminal to the + terminal of the last battery.

3) Connect the the rest of three batteries in series, see the picture as below.

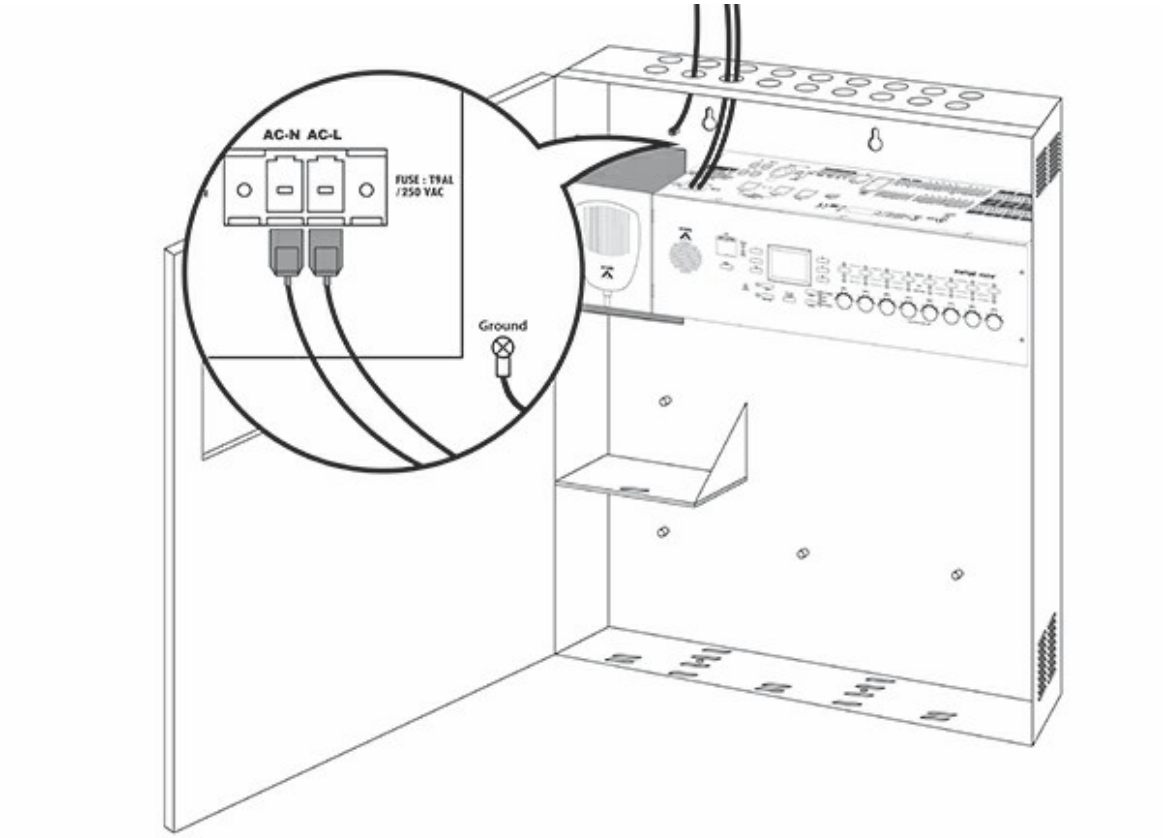


3.3.4 Mains power wiring

1. Observe the position of the necessary cables including L wire, N (Neutral) wire, G (Ground) wire on AC power terminal, signalling cables etc., these cables will be connected to the BTQ-VM4W/ VM8W through the cable entries of BTQ-VM4W/VM8W.
2. Use separate cable entries for the AC main cables (L wire/N wire/G wire), see the picture as below.

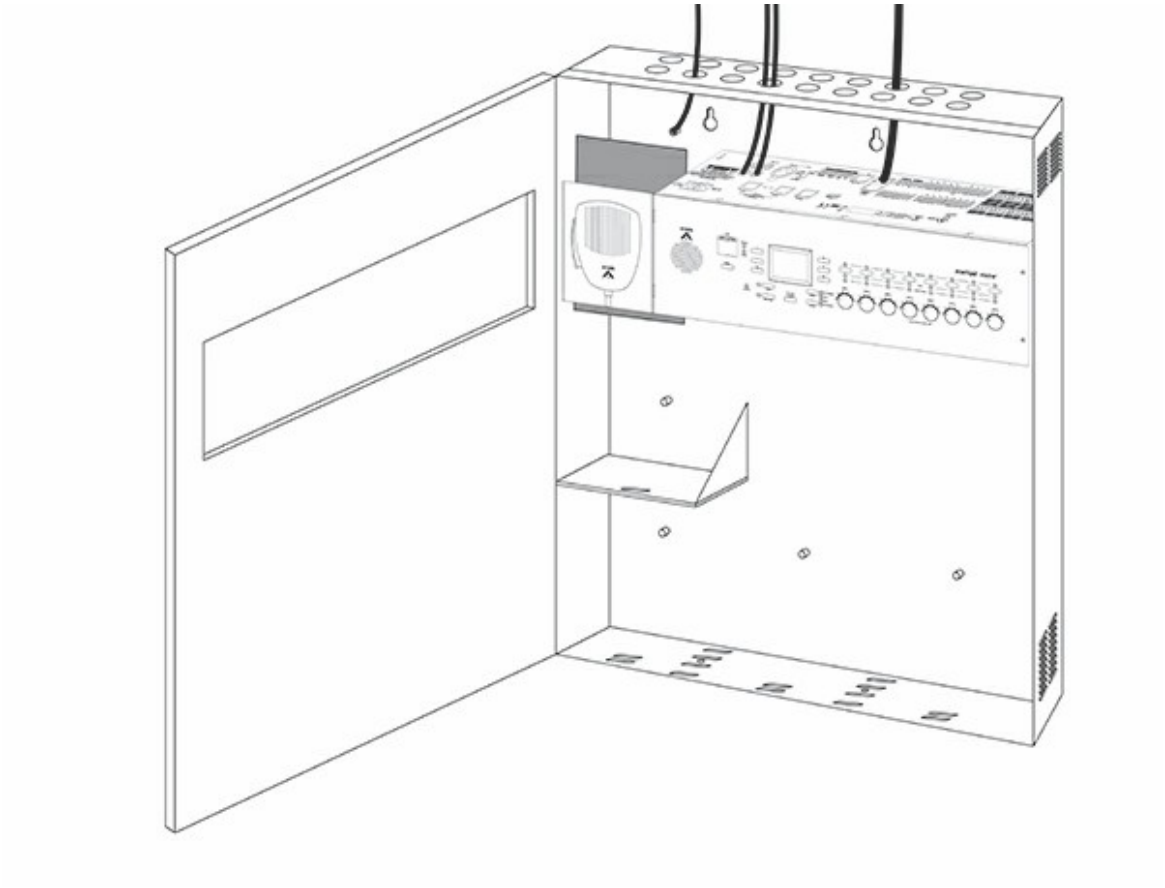


3. Make sure that length of L wire/N (Neutral) wire/G (Ground) wire on the AC input terminal is sufficient for the connection of BTQ-VM4W/VM8W.
4. Connect the L wire and N (Neutral) wire on the AC input terminal to the AC-L, AC-N power wires of BTQ-VM4W/VM8W (euroblock connector).
5. Connect the G (Ground) wire on BTQ-VM4W/VM8W, see the picture as below.



⚠ Danger – Electrical shock! The wiring of BTQ-VM4W/VM8W must "only" be operated when the AC power supply is closed.

6. Use other cable entries for connecting the rest of essential signalling cables such as audio cables, Ethernet cables etc. to BTQ-VM4W/VM8W, see the picture as below.



3.4 Resistance measurement

The BTQ-VM4W/VM8W takes a resistance measurement (Ri) of the battery including its cable connection and battery fuse every 4 hours. The resistance measurement can detect the following situations:

1. Battery is aging (charging becomes slower)
2. Battery damage
3. Battery is not present
4. Cable is broken

Battery Specification of BTQ-VM4W/VM8W	
Battery capacity (4 x 12V)	10Ah to 18.9Ah
Threshold (Ri)	120 mΩ
*Imax	30A
*Imax = Max. battery current	

If the measured resistance is greater than the threshold (Ri) as the table above, a [Bad Impedance] fault will be generated.

To avoid initiating [Bad Impedance] fault, please note the following:

1. Use recommended battery brands: Yuasa NPL Series, Power-Sonic GB Series, ABT TM Series, EnerSys VE Series, E ekta BTL Series, Long GB Series.
2. The resistance varies with the diameter and the cross-sectional area of cables, see the following table.

AWG	Diameter (mm)	Cross-sectional Area (mm^2)	Resistance (mΩ/m)
10	2.588	5.26	3.277

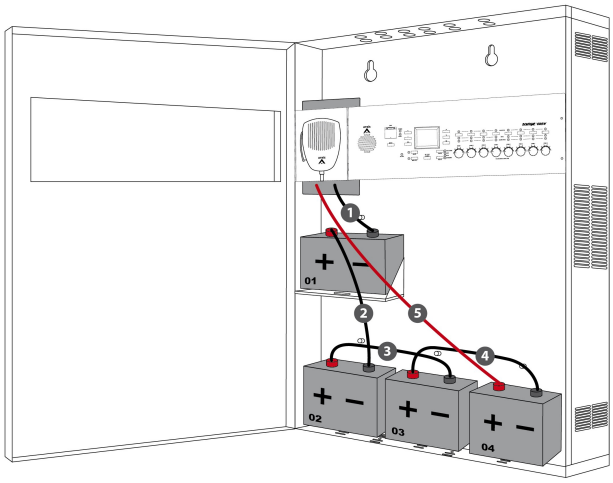
AWG	Diameter (mm)	Cross-sectional Area (mm^2)	Resistance (mΩ/m)
11	2.305	4.17	4.132
12	2.053	3.31	5.211
13	1.828	2.62	6.571
14	1.628	2.08	8.286
15	1.450	1.65	10.45
16	1.291	1.31	13.17
17	1.150	1.04	16.61
18	1.024	0.823	20.95
19	0.912	0.653	26.42
20	0.812	0.518	33.31
21	0.723	0.410	42.00
22	0.644	0.326	52.96
23	0.573	0.258	66.79
24	0.511	0.205	84.22

Note:

- 1 mΩ = 0.001 Ω
- Please do the cable wiring as low resistance as possible.

❖ Example

1. The cable AWG is 10, so the resistance is 3.277 mΩ.
2. Sum up the battery cables (the total length of the 5 cables), here we use 10m for example.
3. To calculate the battery cable resistance, 3.277 mΩ x 10m = 3 mΩ.



3.5 Battery charging & battery test

❖ Battery charging

- Normal charging mode: The BTQ-VM4W/VM8W (re)charges the batteries and maintains them when they are fully charged.
- Back-up operating mode: If the mains power is not present, the system will turn on the back-up operating mode.

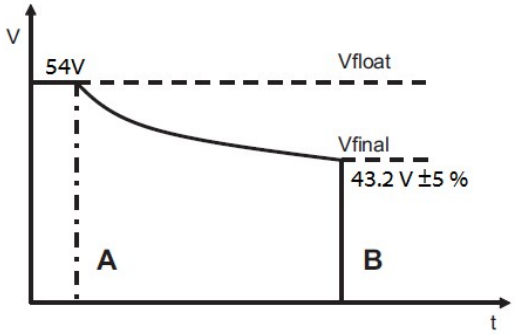
❖ Battery test

To make sure the batteries are working properly, the BTQ-VM4W/VM8W will test the batteries by using the following methods:

- In normal condition, the battery charger will test the batteries every 10 minutes when the AC mains power and batteries are present.
- If a fault is detected (AC mains power and batteries are not present), the batteries will be tested every 3 seconds until the fault is resolved. Then the test will return to normal condition.
- If the mains power is present, the impedance is measured every 4 hours.

3.6 Battery undervoltage protection

The picture below shows how the changes of voltage during the discharging and the condition which the battery charging is disable.



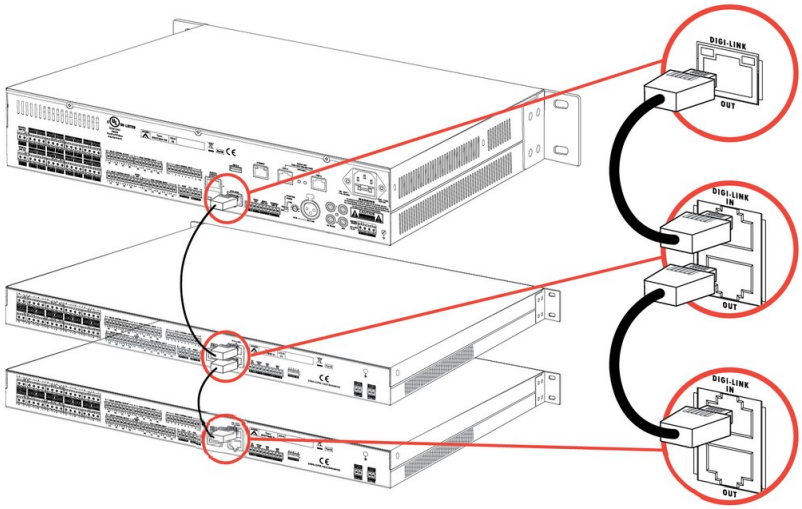
- V: the voltage of batteries
- T: the time of discharging

A	The mains power of BTQ-VM4W/VM8W is off.
B	Undervoltage Protection active: the battery supply is disable.

3.7 ATEIS network (digilink and global-net)

3.7.1 DIGI-LINK

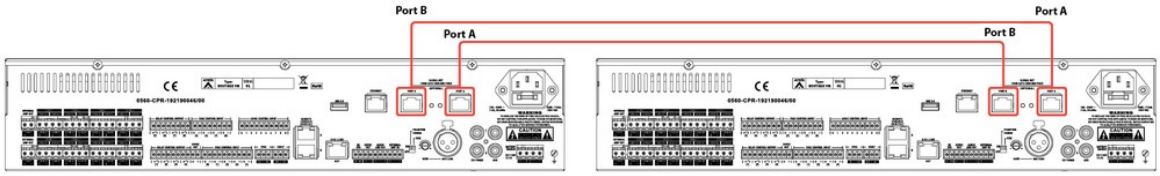
The BTQ-VM4/8 controller has 1 digi-link port for BTQ-SL8 secondary unit. Use STP CAT5/6 cable with metal shielded RJ45 connector to connect a BTQ-SL8 secondary unit to BTQ-VM4/8 controller. Up to 31 BTQ-SL8 units can be connected under the local digi-link network.



To identify the connection among the secondary units, each secondary unit has an unique ID. And the ID must be set orderly based on the Digi-link connection. For example, if the ID of BTQ-VM8 controller is 1:1, then the ID of the first connected BTQ-SL8 unit on BTQ-VM8 will be 1:2, and 1:3 for the second BTQ-SL8 unit. See Hardware Configuration > Secondary Unit > Device ID to know the ID configuration.

3.7.2 GLOBAL-NET

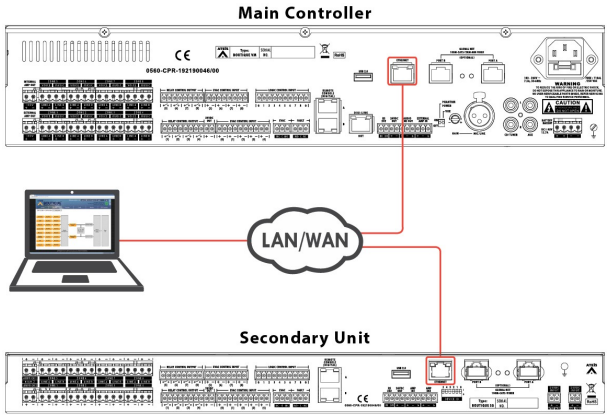
Connect the BTQ-VM4/8 controller and SG8 secondary unit together through A, B port via global-net.



To identify the connection among the BTQ-VM controllers, each controller has an unique net ID. And the ID must be set orderly based on the Global-Net connection. For example, if the net ID of BTQ-VM8/BTQ-SG8 is 1, then the ID of the first connected BTQ-VM8/BTQ-SG8 on BTQ-VM8 will be 2, and 3 for the second BTQ-VM8/BTQ-SG8 unit. See Hardware Configuration > Net ID (BTQ-VM Global-Net) to know the ID configuration.

3.8 Ethernet (RJ45)

Connect the BTQ-VM4/8 controller and BTQ-SG8 unit to Ethernet by using CAT5/6 cable.



3.9 Digital paging console

The BTQ-VM4/8 controller and BTQ-SG8 secondary unit has 2 remote connections with RJ45 connectors, and the BTQ-SL8 secondary unit has 1. Each remote port can address up to 16 DPM-MAIN remote consoles in one daisy-chain and 32 DPM-MAIN units for 2 daisy-chain or up to 16 units in redundant loop using 2 ports. Each DPM-MAIN can attach 1 DPM-EVA and 14 DPM-KPD or 1 DPM-MAIN can attach 15 DPM-KPD by the flat cable (max. 128 keys).

The maximum communication cable length is 250M* (820 ft.) between the controller/secondary unit and DPM console, DPM and DPM via STP CAT5/6 cable with metal shielded RJ45 connector, subjects to the power supply is sufficient. If the control signal of DPM units is not strong enough, the DPM needs to connect to DLR01 digital loop repeater for expanding the distance to 250M longer. And if the power of DPM units is not enough, connect the **PSU65-27** power adapter on DLR01.

When the power supply and cable length of other remote consoles such as DPM-T5, DPM-T5F, CD-8DF, CD-16DF, CD-T5DF are not enough, please connect the DLR01 digital loop repeater with **PSU65-27** 27VDC power adapter, too.

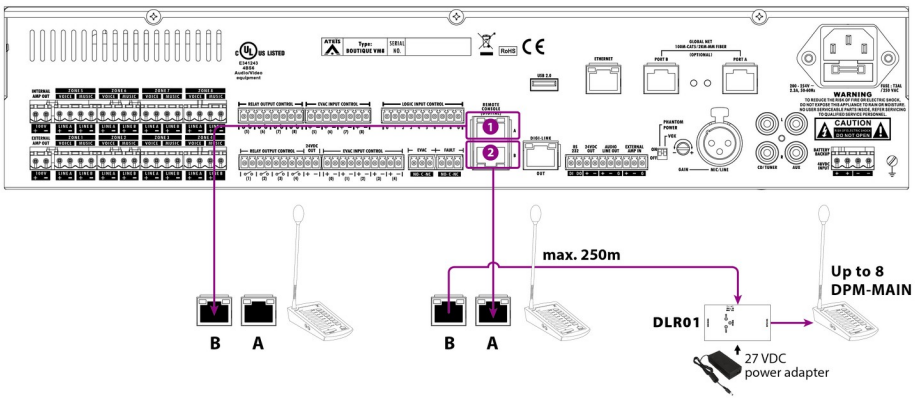
- Network

Max. remotes units (BTQ-SL8):	• Daisy-chain wiring: 16 DPM sets (DPM-MAIN + EVA + KPD) for single remote port.
Max. remotes units (BTQ-VM/BTQ-SG8):	• Daisy-chain wiring: ○ 16 DPM sets (DPM-MAIN + EVA + KPD) for 1 remote port. ○ 32 DPM sets (DPM-MAIN + EVA + KPD) for 2 remote

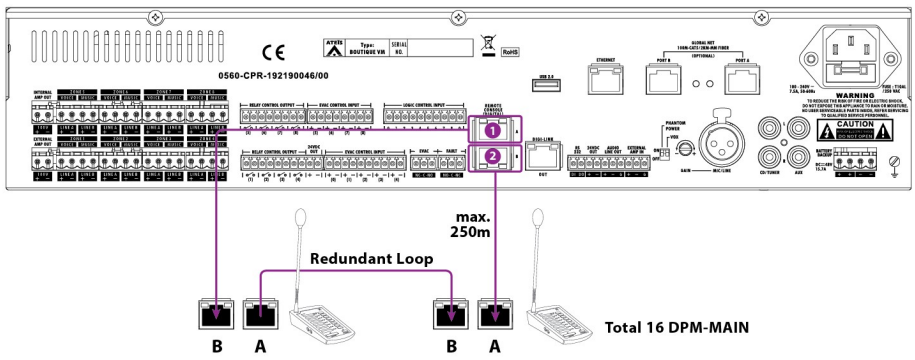
Max. remotes units (BTQ-SL8):	• Daisy-chain wiring: 16 DPM sets (DPM-MAIN + EVA + KPD) for single remote port.
	ports. • Redundant loop: 16 DPM sets (DPM-MAIN + EVA + KPD)
Max. DPM sets (MAIN + EVA + KPD):	• Max. 16 DPM sets: ○ 1 DPM-MAIN attaches 1 DPM-EVA and 14 DPM-KPD. ○ 1 DPM-MAIN attaches 15 DPM-KPD. • Max. 128 keys for each DPM set. • Connection via flat cable.
Max. communication distance between remote units:	• 250M* (metal shielded RJ45 connector, STP CAT5/6) *The distance of cable length will directly affect the quantity and power requirement of remote unit. (1) The longer the cable is, the less power the BTQ-VM/SL8/SG8 can supply to the remote units. (2) The more the remote units has cascaded in daisy-chain/redundant loop, the less power the BTQ-VM/SL8/SG8 can supply to the remote units. For example, if the cable length between the BTQ-VM/SL8/SG8 and DPM-MAIN is within 250m, the DPM-MAIN can be powered by BTQ-VM/SL8/SG8. If the cable length is beyond 250m, please connect the DLR01 digital loop repeater and **PSU65-27** 27VDC power adapter, ensuring the control signal and power supply of DPM-MAIN units are enough. To know the max. distance between BTQ-VM/SL8/SG8 and DPM-MAIN unit(s) and the max. distance which the DPM-MAIN can be powered by DLR01 unit, please refer to Hardware Connection > DLR01 for details.

3.9.1 Redundant loop/daisy-chain wiring

- Daisy-chain



- Redundant loop



1. Use STP CAT5/6 with metal shielded RJ45 plug to connect the [Remote Port 1] on BTQ-VM4/VM8/SG8 to the [Remote Port B] on the first set of DPM-MAIN.
2. Then connect the [Remote Port A] on the last set of DPM-MAIN to the [Remote Port 2] on BTQ-VM4/VM8/SG8 via redundant loop.

When the BTQ-VM/VMW/SL/SG unit is currently booting, we recommend NOT TO unplug and plug in the remote port of remote console, in order to protect the electric components and PCB boards of remote console from sudden inrush current.

DO NOT plug in or plug out the flat cable of DPM-MAIN/KPD/EVA when the DPM-MAIN is powered, in order to protect the electric components and PCB boards of DPM-MAIN/KPD/EVA from sudden inrush current.

If the paging consoles are wired in a redundant loop, and the remote connection of DPM-MIAN/DPM-T5 is broken, the system will not take extra time to detect the remote network and it will make sure the paging is proceeded continuously. In addition, if the MCU of one of the paging console is not working, the rest of paging consoles will not be affected and continue to function.

3.9.2 DPM-T5/DPM-T5F/CD-8DF/CD-16DF/CD-T5DF

Connection

When connects more than 2 DPM-T5/DPM-T5F/CD-8DF/CD-16DF/CD-T5DF units, they can be wired in a daisy-chain or as a redundant loop. The installation is similar to installing a DPM, see Redundant loop/daisy-chain wiring.

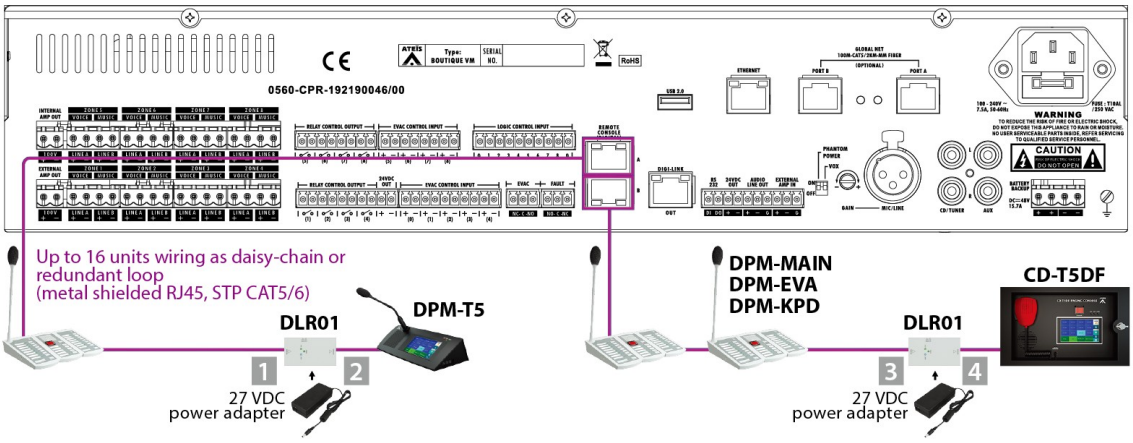
3.10 DLR01

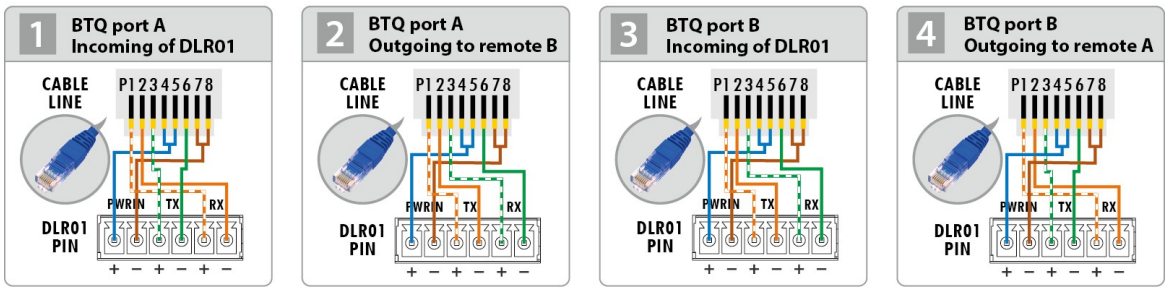
The DLR01 is a digital loop repeater, it can extend the wiring distances of peripherals such as DPM-MAIN, DPM-T5/DPM-T5F, CD-8DF/CD-16DF/CD-T5DF.
If the control signal of remotes in a daisy-chain wiring is not strong enough, the DLR01 can extend the communication distance distance of remotes 250m longer. In addition, the DLR01 has a 24VDC external power input, providing local power to the remotes.

The maximum external power supply of 24VDC power input connector is 72W (3A).

The DLR01 is **NOT** shipped with the power adapter, please order the **PSU65-27** power adapter if necessary.

Power Adapter Model	
PSU65-27	Power Supply/Wire/100~240V/DC 27.5V/2.36A





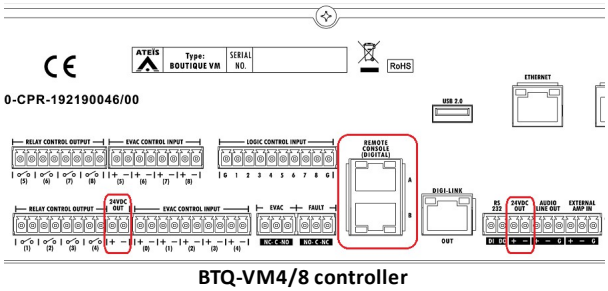
For redundant loop wiring, please connect all the DLR01 units either based on [Figure 1 & 2] or [Figure 3 & 4].

3.10.1 Max. quantity and cable length of remotes powered by BTQ-VM

Question - How do we know if the BTQ-VM4/8 controller can provide enough power for remote consoles? Please see the following how-to and examples.

❖**Step 1** - Calculate the total power requirement of the connected remote consoles.

We use BTQ-VM4/8 for example, the BTQ-VM4/8 controller provides 24VDC power (**max. 32W, 1.35A**) for digital remotes and other external devices.
The power is shared by the 2 digital remote ports and the two 24VDC outputs on BTQ-VM4/8 controller, see the picture on the right.



BTQ-VM4/8 controller

- Firstly, calculate the power consumption of all the remote consoles which are connected via the digital remote port at first.
  See **[Table 1]** as below, if 2 DPM-MAIN units are connected to the remote port of BTQ-VM controller, it shall consume 10W power. Due to the max. 24VDC power from BTQ-VM controller is

32W, therefore, the power requirement of 2 DPM-MAIN units is able to be provided from BTQ-VM controller.

Table 1 (max. cable length of remote & the power provided by BTQ-VM)					
Model	Connect 1 unit/ set	Cascade 2 units/set	Cascade 3 units/set	Cascade 4 units/set	Cascade 5 units/set
DPM-MAIN	max. 250m (5W)	max. 185m (10W)	max. 125m (15W)	max. 90m (20W)	max. 70m (25W)
DPM-EVA					
DPM-KPD					
CD-8DF					
DPM-MAIN + EVA + KPD	max. 250m (6.5W)	max. 140m (13W)	max. 95m (19.5W)	max. 70m (26W)	X
CD-16DF					
DPM-T5	max. 125m (15W)	max. 60m (30W)	X	X	X
DPM-T5F					
CD-T5F					

[Table 1] is using the standard CAT5 24AWG wire diameter for example. Please note the cable wire diameter (AWG) users are using with will affect the total power requirement.

❖**Step 2** - The distance of cable length will also affect the quantity and power requirement of remote unit.

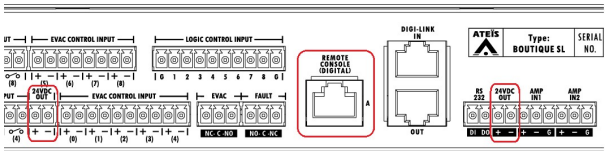
- From **[Table 1]** we can know that the cable length will affect how many remote units can be powered by BTQ-VM controller. The longer the cable length is, the less remote console(s) which can be connected in the daisy-chain wiring will be, see the examples as below.
- **Example-1 & Example-2**
  Based on **[Table 1]**, if 1 DPM-MAIN unit is connected in a remote port, the max. length of wiring cable of this remote port is 250m in total.
  If there are 3 DPM-MAIN units are connected in a remote port, the max. cable length of this remote port is 125m in total.

3.10.2 Max. quantity and cable length of remotes powered by BTQ-SL8/SG8

Question - How do we know if the BTQ-SL8/SG8 unit can provide enough power for remote consoles? Please see the following how-to and examples.

❖**Step 1** - Calculate the total power requirement of the connected remote consoles.

We use BTQ-SL8 for example, the BTQ-SL8 unit provides 24VDC power (**max. 19W, 0.8A**) for digital remotes and other external devices.
The power is shared by the 1 digital remote port and the two 24VDC outputs on BTQ-SL8 unit, see the picture on the right.



BTQ-SL8 unit

If the BTQ-SG8/SL8 is connected to an external 24VDC power supply such as connect to the battery charger, then the max. current will be max. 1.3A (31W).

- Firstly, calculate the power consumption of all the remote consoles which are connected via the digital remote port at first.
  See **[Table 3]** as below, if 2 DPM-MAIN units are connected to the remote port of BTQ-SL8 unit, it shall consume 10W power. Due to the max. 24VDC power from BTQ-SL8 unit is 19W, therefore, the power requirement of 2 DPM-MAIN units is able to be provided from BTQ-SL8 unit.

Table 3
(max. cable length of remote & the power provided by BTQ-SL8/SG8)

Model	Connect 1 unit/ set	Cascade 2 units/set	Cascade 3 units/set	Cascade 4 units/set	Cascade 5 units/set
DPM-MAIN	max. 120m (5W)	max. 60m (10W)	max. 40m (15W)	X	X
DPM-EVA					
DPM-KPD					
CD-8DF					
DPM-MAIN + EVA + KPD	max. 90m (6.5W)	max. 45m (13W)	X	X	X
CD-16DF					
DPM-T5	max. 40m (15W)	X	X	X	X
DPM-T5F					
CD-T5F					

[Table 3] is using the standard CAT5 24AWG wire diameter for example. Please note the cable wire diameter (AWG) users are using with will affect the total power requirement.

❖**Step 2** - The distance of cable length will also affect the quantity and power requirement of remote unit.

- From **[Table 3]** we can know that the cable length will affect how many remote units can be powered by BTQ-SL8 unit. The longer the cable length is, the less remote console(s) which can be connected in the daisy-chain wiring will be, see the examples as below.
- **Example-1 & Example-2**
  Based on **[Table 3]**, if 1 DPM-MAIN unit is connected in a remote port, the max. length of wiring cable of this remote port is 120m in total.
  If there are 3 DPM-MAIN units are connected in a remote port, the max. cable length of this remote port is 40m in total.

3.10.3 Max. quantity and cable length of remotes powered by DLR01

❖If the power provided from BTQ-VM4/8 or BTQ-SL8/SG8 is not enough or the wiring cable needs to be extended, connect the DLR01 digital loop repeater with 27VDC power adapter.

1) Firstly, calculate the power consumption of all the remote console which are connected via the digital remote port, and if the total power in one of the remote port is **above 32W (BTQ-VM4/8) or 19W (BTQ-SL8/SG8)**, which is greater than the power that a BTQ unit can provide to the remote port, please connect a DLR01 with 27VDC power adapter in order to provide external local power for the rest of connected remotes.

If the DLR01 is connected to the external power supply, it can provide additional max. 72W (3A) for remote consoles. Please see the following power adapter model that you can purchase from Ateis.

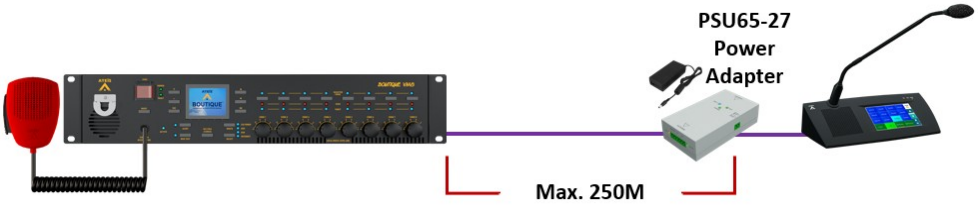
Power Adapter Model	
PSU65-27	Power Supply/Wire/100~240V/DC 27.5V/2.36A

If using **PSU65-27** power adapter on DLR01, please refer to the following **[Table 2]** to know the max. cable length of remote & the power provided by DLR01.

Table 2
(max. cable length of remote & the power provided by DLR01 with PSU65-27 PSU)

Model	Connect 1 unit/ set	Cascade 2 units/set	Cascade 3 units/set	Cascade 4 units/set	Cascade 5 units/set
DPM-MAIN	max. 250m (5W)	max. 185m (10W)	max. 125m (15W)	max. 90m (20W)	max. 70m (25W)
DPM-EVA					
DPM-KPD					
CD-8DF					
DPM-MAIN + EVA + KPD	max. 250m (6.5W)	max. 140m (13W)	max. 95m (19.5W)	max. 70m (26W)	max. 55m (32.5W)
CD-16DF					
DPM-T5	max. 125m (15W)	max. 60m (30W)	max. 40m (45W)	max. 30m (60W)	X
DPM-T5F					
CD-T5F					

2. Secondly, add up the required cable length of all the remote consoles which is connected via the digital remote port, and if the cable length is beyond the max. cable length based on **[Table 2]**, please connect a DLR01 to extend the distance of remotes 250m longer. See the example picture below.

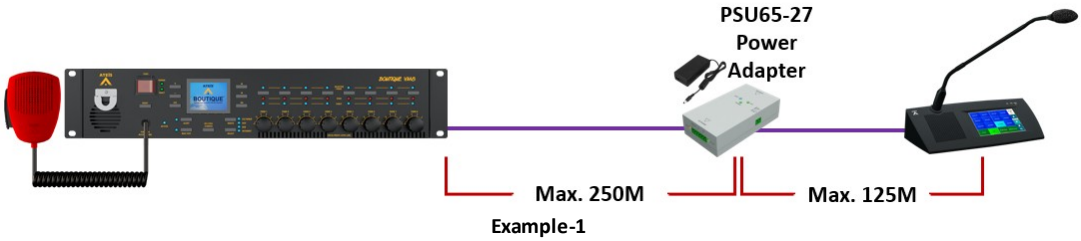


See DLR01 Examples (max. quantity and cable length of remotes) chapter for details.

3.10.4 DLR01 examples (max. quantity and cable length of remotes)

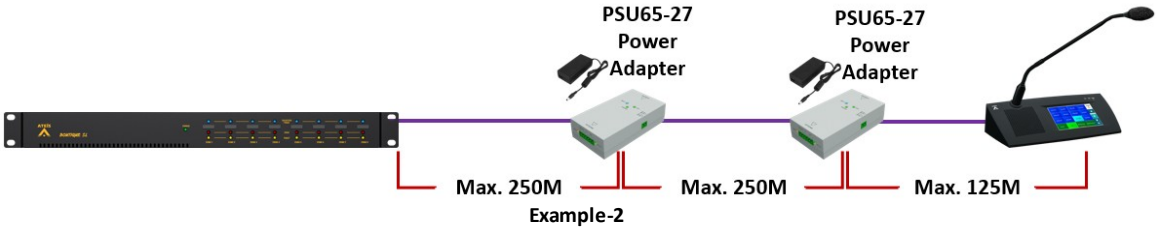
❖ **Example-1**

If 1 DPM-T5 unit is connected in 250M long, one DLR01 needs to be connected in the middle of BTQ-VM/SL8/SG8 and DPM-T5 unit. Base on **[Table 2]**, the distance between the DLR01 and DPM-T5 is max. 125m.



❖ **Example-2**

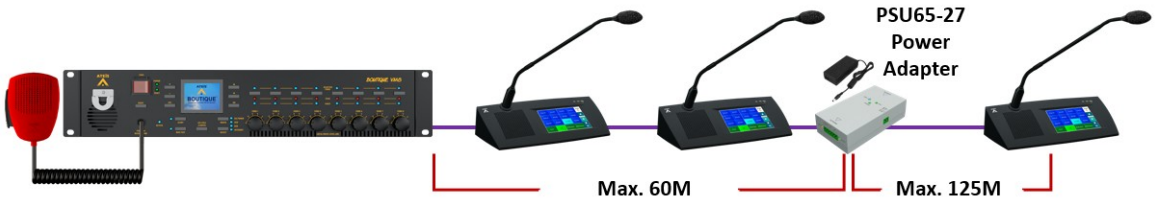
If 1 DPM-T5 unit is connected more than 500M long, two DLR01 units are required to be connected for cable extension. Base on **[Table 2]**, the distance between the DLR01 and DPM-T5 is max. 125m.



- **Example-3**

If there are 3 DPM-T5 units are connected to the remote port, which consumes 45W (15W power x 3 units). Due to the max. 24VDC power from BTQ-VM controller is 32W, therefore, the power supply of the 3rd DPM-T5 shall to be provided from DLR01 with 27VDC power adapter. Please connect the DLR01 with PSU65-27 power adapter in the middle of 2nd DPM-T5 and the 3rd DPM-T5, providing 13W (45W - 32W = 13W) power supply for the 3rd DPM-T5.

  - Based on **[Table 1]**, the distance between the BTQ-VM controller and 1st & 2nd DPM-T5 is max. 60m.
  - Based on **[Table 2]**, the distance between the DLR01 and last DPM-T5 is max. 125m.



Example-3

- **Example-4**

  Take Example-3 for another example, if users want to add another DPM-T5 unit and wish to extend its cable length, please connect another set of DLR01 unit with PSU65-27 power adapter.

  - Based on **[Table 1]**, the distance between the BTQ-VM controller and 1st & 2nd DPM-T5 is max. 60m.
  - Based on **[Table 2]**, the distance between the 1st DLR01 and 3rd DPM-T5 is max. 125m (the max. cable length between the 2nd DLR01 and 4th DPM-T5 is also identical).

Example-4

3.11 External power amplifiers

The BTQ-VM4/8 controllers have an internal 250W or 500W amplifier built-in. For system power sharing and/or backup, connect a second power amplifier (DPA or BPA) externally.

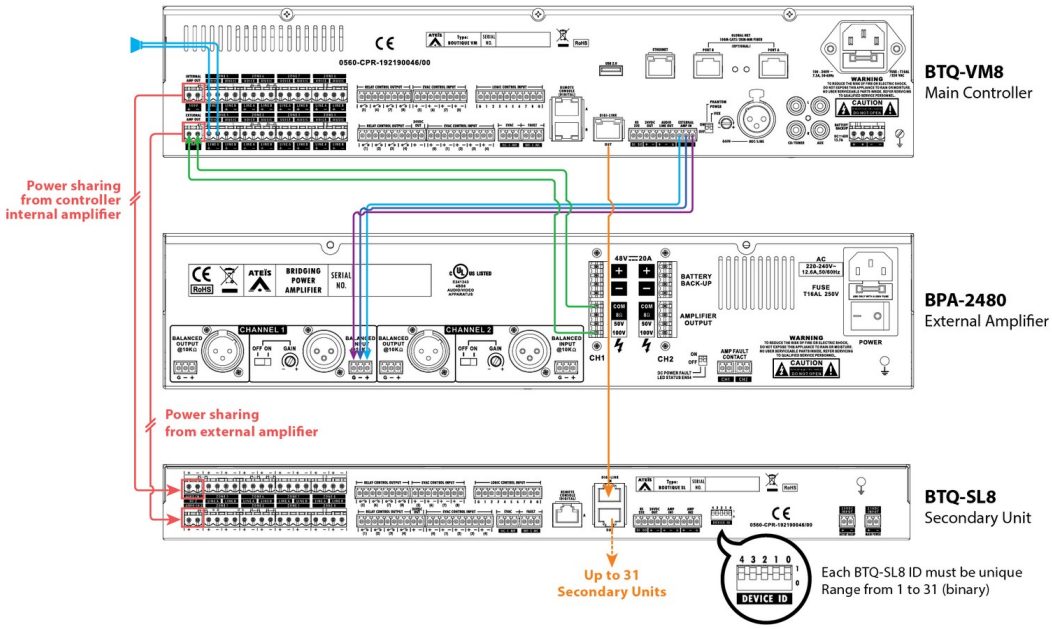
The BTQ-SL8 secondary unit can share power amplifier from BTQ-VM4/8 controller, secondary units or connect to an external power amplifier.

Both of the controller and secondary unit are capable to handle the power up to 1000W per speaker zone, 2000W per unit.

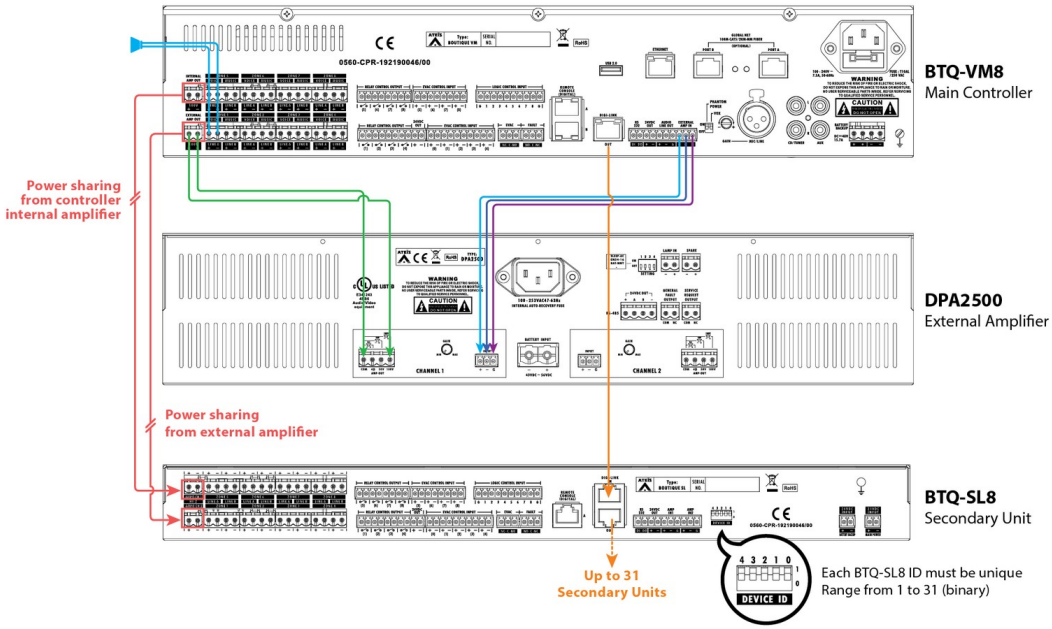
⚠We recommend that the BTQ-VM/SG8/SL8 connects to the floating output amplifier.

- E.g. built-in transformer output for driving 70V and 100V loudspeakers such as BPA and DPA.
- E.g. the amplifier module's AC/DC power supply and ground is floating ground from BTQ-VM/SG8/SL8.

If the BTQ-VM/SG8/SL8 is connecting to non-floating output amplifier, please disable the leakage monitor function on BTQ web browser > Monitor > Leakage.



Connection between BTQ-VM and BPA



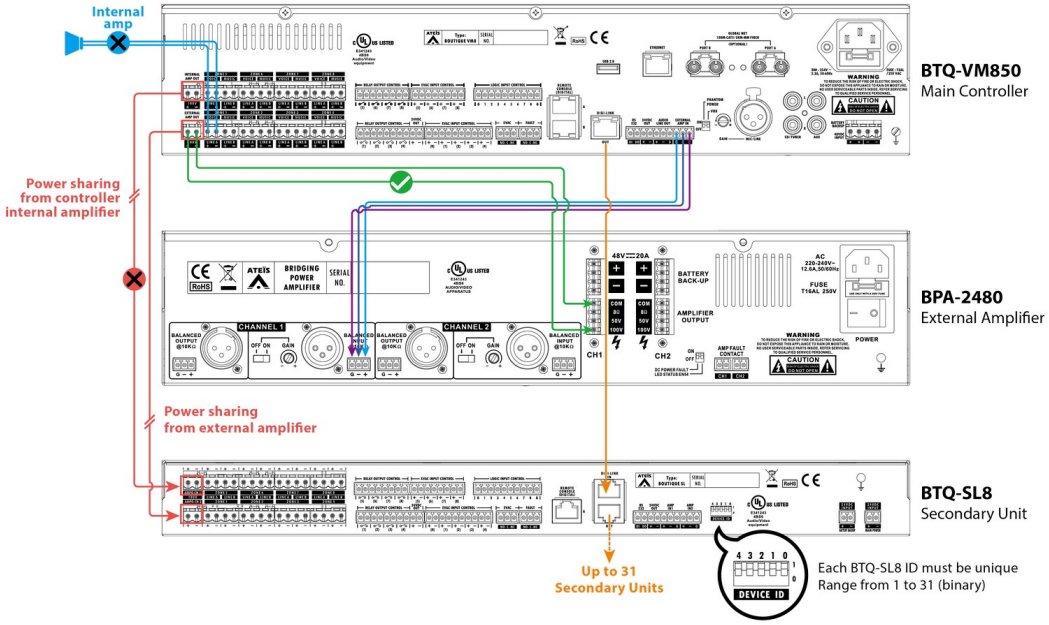
Connection between BTQ-VM and DPA

The internal amplifier of the main controller can also be used as external power amplifier for the secondary unit, see web configuration -> settings -> controllers/secondary units.

3.12 Backup amplifier

In most of the cases, the power is provided by the internal amplifier of main controller. Once the internal amplifier fails, the connected external amplifier will act as a backup amplifier and replace the failed internal amplifier automatically, this ensures the system continues functioning.

The figure below shows the case of the internal amplifier of main controller fails, the backup amplifier will automatically switch over and share the power to main controller and secondary unit.



Connection between BTQ-VM and BPA

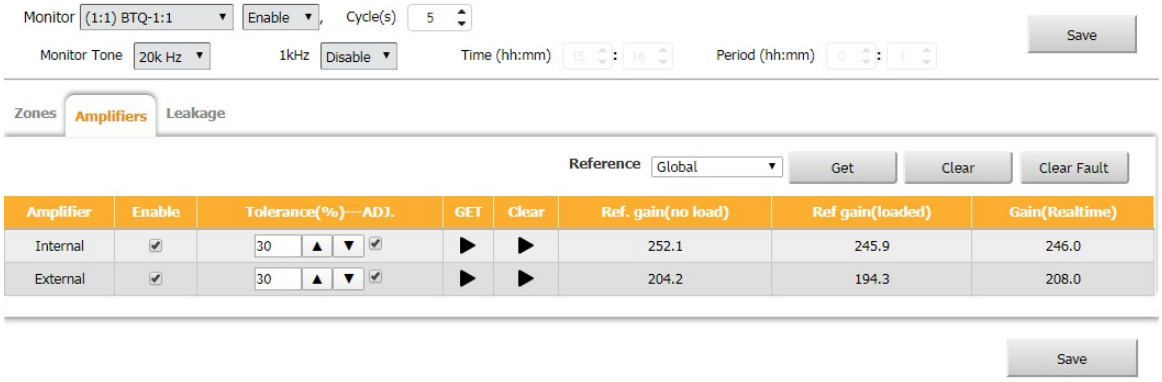
3.13 EN 54-16 amplifier requirement

EN 54-16 Requirement	Compliance
Redundant power amplifiers (option with requirements)	BOUTIQUE system in compliant.
The VACIE may have provision for at least one spare power amplifier. In this case:	The BTQ-VM controller has 1 External Amp Out input and 1 External Amp In input for backup amplifier. Once the internal amplifier fails, the controller shall automatically switch the loudspeaker load from the original amplifier output to the external backup amplifier output.
a) in the event of the failure of a power amplifier, the faulty amplifier shall be capable of being replaced automatically with a spare amplifier within 10 s of the fault being detected;	If no sound is coming from loudspeaker during paging, the BOUTIQUE system will automatically switched all loudspeaker lines to the backup amplifier (if connected and configured) within 10 s.
b) the spare power amplifier(s) shall have at least the same functionality and output power as the replaced amplifier.	The technician shall install the backup amplifier which has the same functionality and output power, for example, we recommend to install BPA series or DPA series power amplifier with the same output power or higher output power than the built-in amp of controller. The technician shall make sure the wiring connection between main controller and external backup amplifier is correct, and configure the [External AMP - AMP2 channel] power wattage setting in BOUTIQUE web browser. In this way, the backup power amplifier will have the same functionality and output power as the replaced amplifier.

EN 54-16 Requirement	Compliance
Every fault of an amplifier shall be indicated by the general fault warning indicator as specified in 8.2.	The internal amplifier of main controller and external backup amplifier from ATEIS such as DPA series, BPA series are supervised for power supply (AC mains/DC backup power), overload and overheat. For example, if the internal amplifier fails, the following warnings will be indicated by BOUTIQUE system. 1. The [Int. AMP Fault] fault shall be recorded in log list. 2. The fault LED on the front panel of main controller shall light up, and the system will generate a buzzer sound (tone) as warning. 3. The LCD panel of main controller shall display the message of [Int. AMP Fault] fault.
Supervision of the spare amplifier(s) shall be maintained during the functional condition whilst the VACIE is powered by either the mains or standby power supplies.	The external backup amplifier is supervised, whether it is in standby mode or active state. The EVAC inputs on controller and secondary unit can be programmed to supervise the external backup amplifier. If a general fault is detected in external amplifier, the Fault_Active event shall be displayed in the LCD panel of BTQ-VM controller.

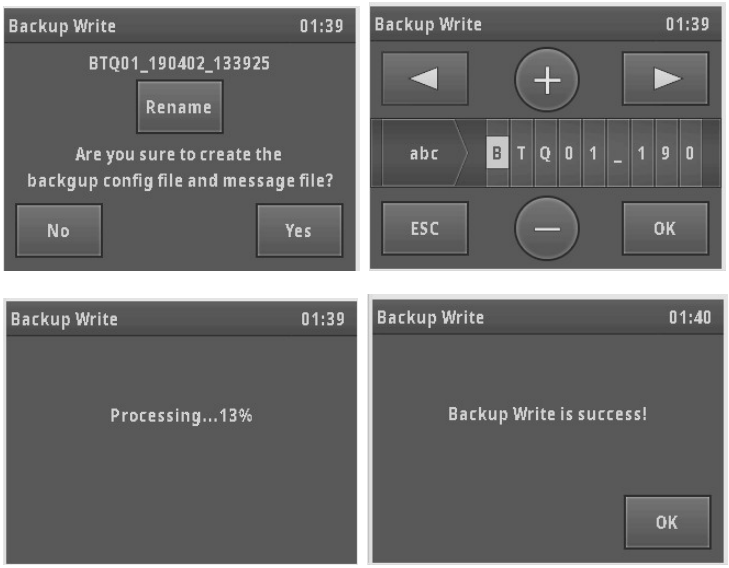
3.14 Amplifier replacement procedure

1. If no sound is coming from loudspeaker during paging, check if the current gain of amplifier on BOUTIQUE web browser > Monitor > Amplifier webpage. If the gain displays as 0 on [Internal] amplifier, please replace a BTQ-VM controller; if the gain displays as 0 on [External] amplifier, please replace an external amplifier.



2. To replace an external backup amplifier, simply disconnect the AC mains power input, External Amp output and Balanced Audio Input from the faulty external amplifier, then replace it with the same model type of external amplifier as the replaced one. To replace an main controller (with faulty built-in amp), please save the current config. files (incl. audio files) into the connected USB flash drive before replacement.
   Path -> BTQ main controller > LCD panel > Setting > Backup > Backup Write

- Backup write: Create a backup config. file and save it into the connected USB flash drive. If users wish to set the file with a custom file name, press [Rename] button on touch panel, see the pictures as below.

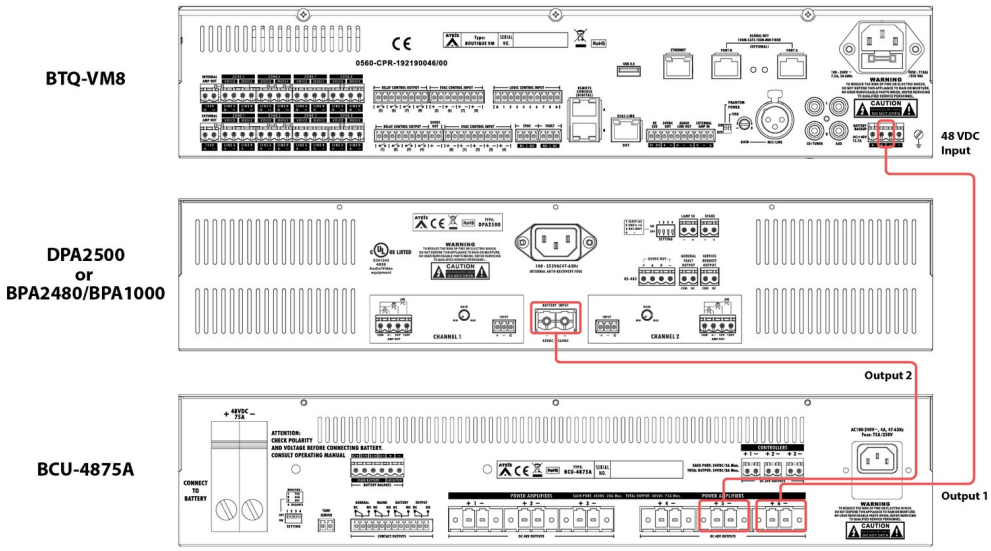


3. Disconnect the controller (with faulty built-in amp), then replace it with the same model of controller as the replaced one.
4. After the wiring connection of the controller (with new built-in amp) is completed, proceed the Setup Wizard > Replace > Step 1 (net ID) & Step 2 (backup read/recovery) to apply the config. file into a single controller/entire system.
5. If more than one main controllers/secondary units are connected under the BOUTIQUE system, please proceed the synchronization function, see Table synchronization for details.

3.15 Battery charger (power sharing)

For DC battery backup power sharing, connect the battery charger to BTQ-VM4/8 controller and external power amplifier as the picture below.

The example below is using the BCU-4830A/BCU-4875A battery charger and BPA or DPA power amplifier from ATEÏS.



⚠ Users "MUST" follow the orders below to connect the BTQ-VM4/8 and BPA/DPA with BCU-4830A/BCU-4875A battery charger.

1. First, make sure that the power supply of all the equipment (BTQ-VM, BPA, BCU etc.) are not plugged in.
2. Connect the four 12VDC batteries to BCU-4830A/BCU-4875A battery charger.
3. Connect the 48VDC backup power input terminals of BTQ-VM4/8 or BPA/DPA to the 2 output terminals on BCU-4830A or the 6 output terminals on BCU-4875A.
4. Plug in the AC mains power of BTQ-VM4/8 and BPA/DPA.
5. Plug in the AC mains power of BCU-4830A/BCU-4875A.

⚠ Once the 48VDC battery backup input of BTQ-VM4/8 is connected to BTQ-VM4/8 directly without connecting to AC mains power, it may cause large inrush current. Therefore, install a soft starter device, which protects the electric components and PCB boards of BTQ-VM4/8 from sudden inrush current. Please choose the correct soft starter device, which fulfills to support the max. DC power consumption (full power) of BTQ-VM4/8.

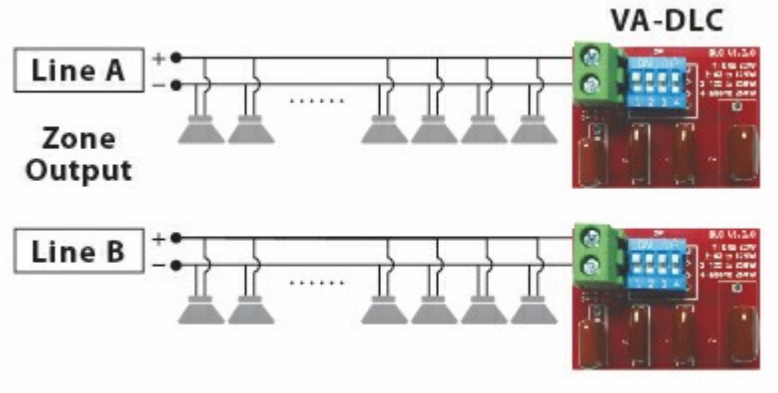
- For BTQ-VMx25: use the soft starter device which supports for a minimum of 325W power consumption.
- For BTQ-VMx50: use the soft starter device which supports for a minimum of 580W power consumption.

3.16 Loudspeakers

In a case of BTQ-VM8 controller, it has 8 speaker zone outputs (Z1 to Z8). Each zone output consists of 2 redundant loudspeaker lines (line A and line B). Normally, the paging calls and BGM are distributed to a zone over both loudspeaker lines. If one of the loudspeaker lines of a zone fails, it is still possible to distribute the paging calls and BGM to the zone over the remaining loudspeaker line.

3.17 VA-DLC dummy load capacitor module

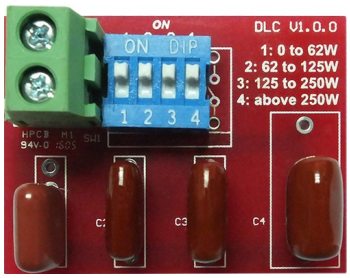
When more than 5 speakers are installed with long wires, each zone (A/B) requires a VA-DLC dummy load capacitor at the end of speaker line for speaker line surveillance based on impedance measurement.



When branching speaker lines are connected to BTQ-VM4/VM8/SG8/SL8, please install VA-EOL end of line supervision board instead.

❖ See the following how-to to install the VA-DLC.

1. The BOUTIQUE system will auto calculate the total speaker line load; therefore, do not connect the wiring between the VA-DLC and BTQ-VM4/VM8/SG8/SL8 at this moment.
2. Proceed the Setup Wizard on front LCD panel of BTQ-VM4/8 or web browser, see Setup Wizard > Net Setup > Step 5: Dummy Load Capacitor, and it will automatically calculate the total speaker line load (watt).
3. After completed the Step 5 of Setup Wizard, follow the recommended data for the DIP switch of VA-DLC displayed on LCD panel of controller or web browser, and set "ON" position on the corresponding DIP switch of VA-DLC.

Table 1		
VA-DLC DIP Switch	Zone Load (watt)	
1	0 to 62W	
2	62 to 125W	
3	125 to 250W	
4	above 250W	

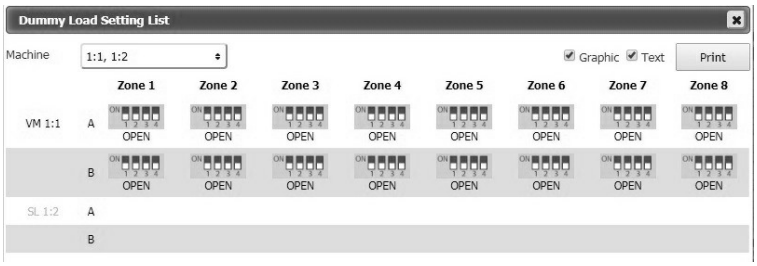
4. Connect the wiring between the VA-DLC and BTQ-VM4/VM8/SG8/SL8.

After connected the VA-DLC at the end of speaker line, the speaker line load (watt) for each zone shall be increased. See **[Table 2]** to know the calculated monitoring result (watt, in 1kHz) for each DIP switch setting of VA-DLC.

Table 2			
VA-DLC DIP Switch	Monitoring Load (watt, 1kHz)	250W AMP	500W AMP
1	increase 1.45W	0.58%	0.29%
2	increase 2.95W	1.18%	0.59%
3	increase 6.28W	2.51%	1.26%
4	increase 13.82W	N/A	2.76%

5. Continue to proceed the Step 6 of Setup Wizard on LCD panel of controller or web browser, see Setup Wizard > Net Setup > Step 6: Monitoring to get monitor reference.
6. The VA-DLC DIP switch setting can also be read from BTQ web browser > Monitor window. Click

[Get Reference] first, then click [DLC Load Setting] to see the VA-DLC setting.



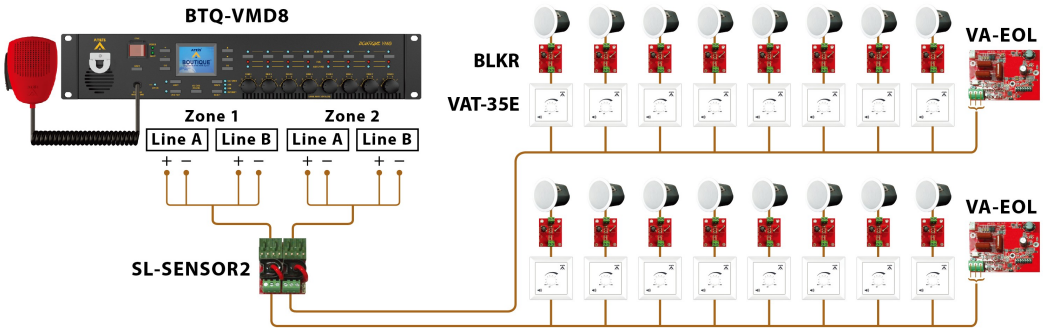
3.18 VA-EOL multi-branch/3-wire

To monitor the long speaker lines, the VA-DLC dummy load capacitor can be added on the BOUTIQUE PA/VA system to detect the open and short circuit of speaker line even the last speaker. However, for advanced configuration such as installs the VAT volume attenuators in the speaker line for volume control, the impedance of speaker line is changed after the volume attenuators adjustment. Furthermore, for branching the speaker line wiring, a cut of partial branching may not change the overall impedance that obviously. Therefore, the VA-EOL is the only solution which can adapt the changing impedance and detect each branch.

Please note the supervision of speaker lines is not included the wires which are connected to the VAT volume attenuators.

Please order the "EOL driver" version of BTQ unit such as BTQ-VMD/SGD/SLD controller/ secondary unit when using with VA-EOL module, in order to provide more power to drive the VA-EOL module.

3.18.1 VA-EOL 3w-2c/4c wiring with VAT

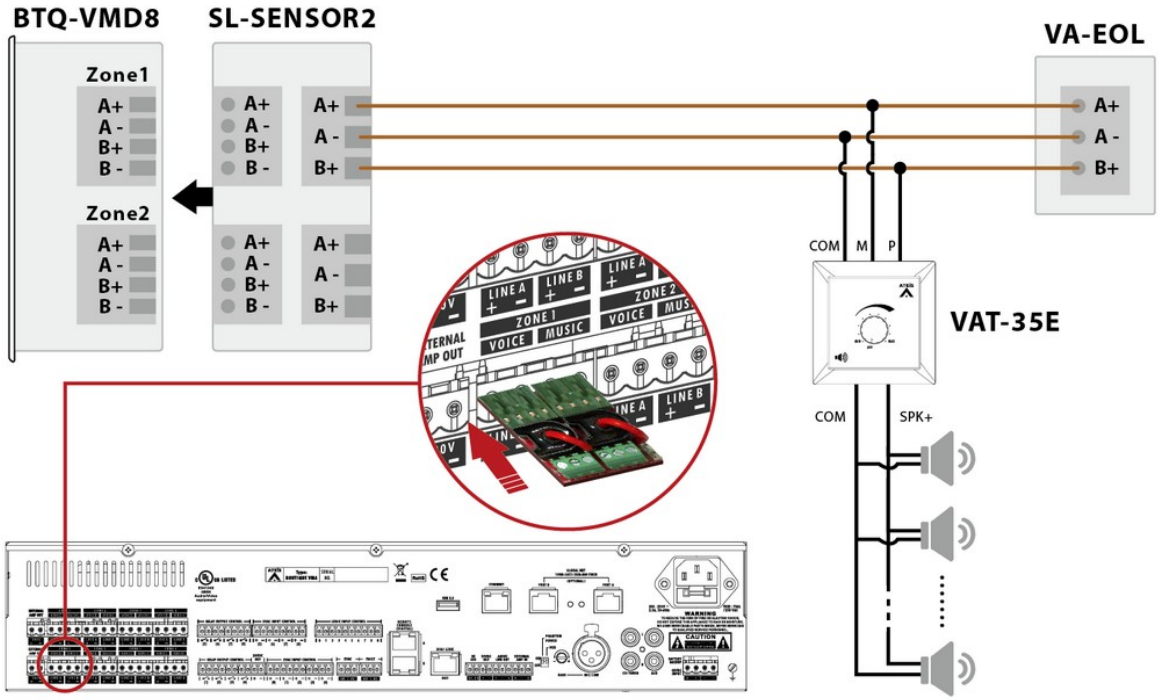


The VAT remote volume attenuator use 3-wire connection, and is compatible with 100V and 70V loudspeaker lines.The installation of 3-wire connection on SL-SENSOR, VA-EOL, BLKR (blocker) and VAT volume attenuator is capable to increase/decrease the volume of background music remotely during BGM broadcasting, and the volume will not be attenuated during EVAC message broadcasting. In addition, by installing the VA-EOL at the end of speaker lines, the system can quickly indicate which speaker line is open/short circuit in every branch. For some application like Nursery, baby may sensitive with 20 kHz monitoring tone. The speaker lines can install BLKR-60/ BLKR-200 to filter it.

Please note the supervision of speaker lines is not included the wires which are connected to the

VAT volume attenuators.

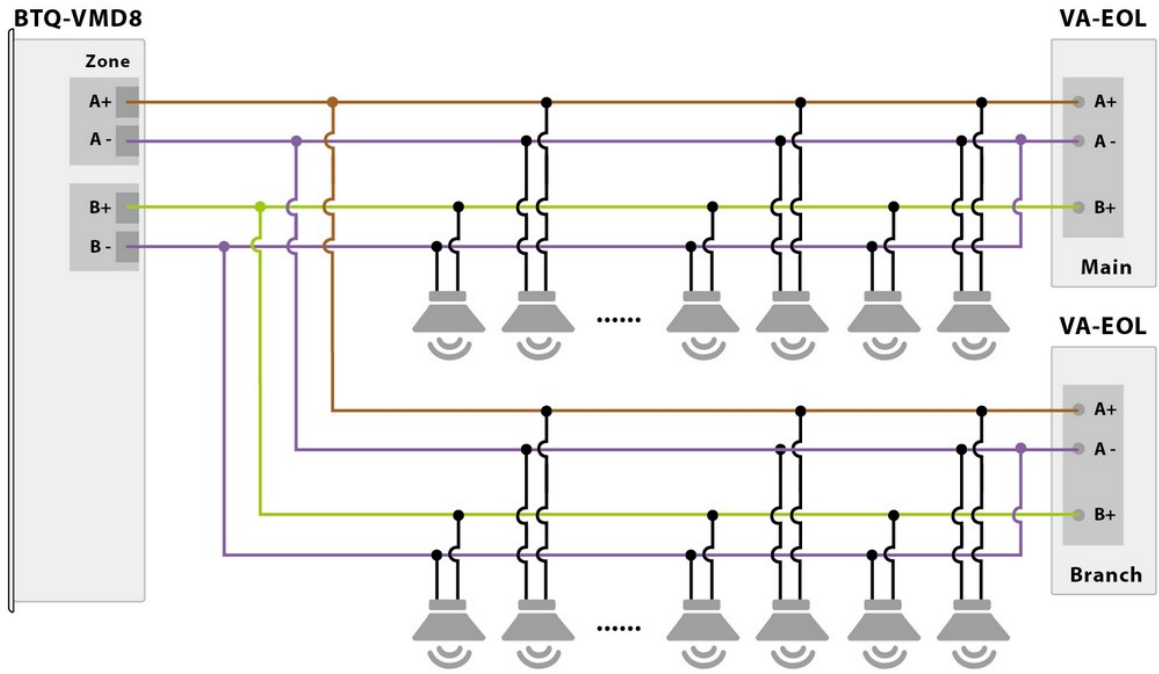
Each zone can connect to a maximum of 3 branches when using VA-EOL plus VAT volume attenuator.



3.18.2 VA-EOL A/B zone & branching

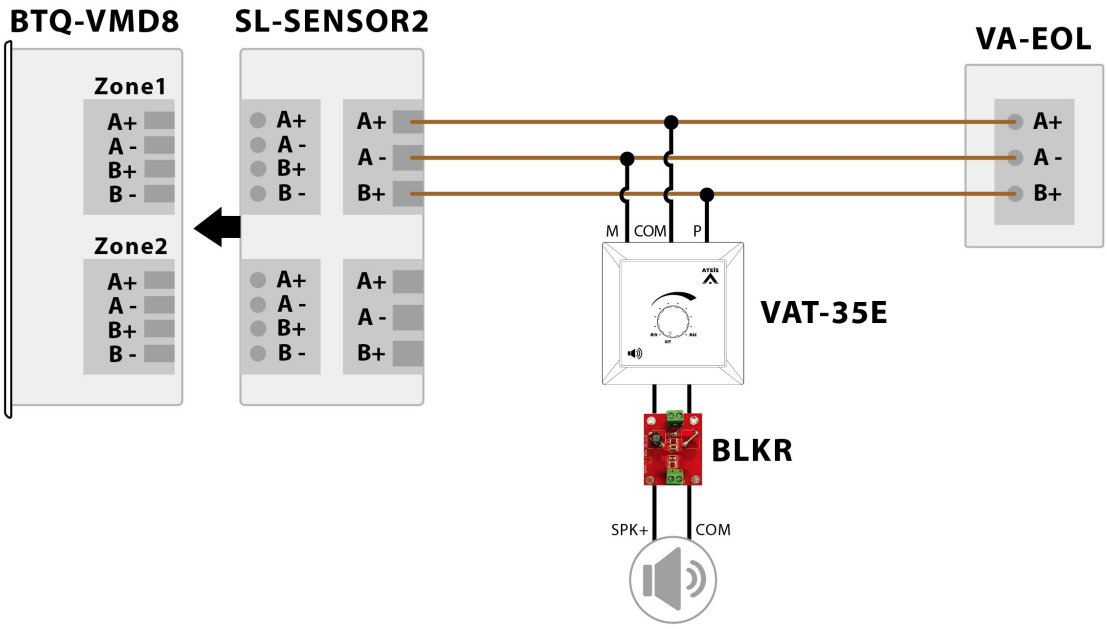
By the case of A/B zone wiring and branching, it needs to add the VA-EOL on the end of each speaker line branch, see the picture below.

Each zone can connect 16 VA-EOL (max.).



3.18.3 VA-EOL 3w-2c/4c speaker wiring with VAT

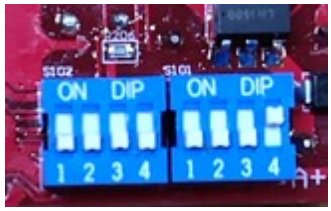
The speaker lines will be monitored when the system is under [EVAC mode] or [VO3 mode], but the system will **NOT** detect speaker lines open/short circuit under [BGM mode].



- EVAC mode: Evacuation paging. Or an paging event is programmed with [Evacuation] option, and plays the evac messages to the pre-defined zones if the zones has chosen to use the evac paging source (eg. fireman mic source).
- VO3 mode: No paging event is currently detected.
- BGM mode: BGM broadcasting.

3.18.4 Device ID setting

Each VA-EOL must have unique ID, set the 8 bit DIP switch for each VA-EOL.



3.18.5 Maximum VA-EOL per BTQ unit/entire system

1. Max. 16 speaker line branches per BTQ-VMD/SGD/SLD zone when using VA-EOL plus VAT volume attenuator.

2. For single BTQ-VMD/SGD/SLD unit:

- Max. 50 VA-EOL per BTQ-VMD/SGD/SLD unit (10W load of connecting the VA-EOL on BTQ zone).
- Max. 15 VA-EOL per BTQ-VMD/SGD/SLD unit (500W load of connecting the VA-EOL on BTQ zone).

❖ Formula:
(max. power consumption of VO3_AMP - speaker load per BTQ unit) / power consumption of

single VA-EOL

- The max. power consumption of VO3_AMP is 20W
- Speaker load per BTQ unit: 289V / the resistance of BTQ speaker zone (speaker impedance & cable resistance)
- Power consumption of single VA-EOL: 0.38W

3. For entire BTQ system:

- Max. 97 VA-EOL entire local-net system.
- Max. 6,028 VA-EOL entire global-net system

Formula: **97** (max. VA-EOL modules entire local-net system) x **64** (max. connected BTQ-VMD/SGD/SLD units under global-net system) = **6,028** VA-EOL

❖ Detection of monitoring time:

❖ Formula:
The total number of VA-EOL * 0.8 seconds (detection time) + the number of VA-EOL on BTQ-SL8 * 0.17 seconds (communication time) + the total number of VA-EOL on BTQ zone * 0.5 seconds (charging time)

- Total no. of VA-EOL: The total number of VA-EOL on BTQ-VM and BTQ-SL8

- See the 2 following examples of how to calculate the detection of monitoring time

In order to comply the EN54-16 requirement, the system needs to detect faults whether speaker line is open or short circuit **within 90 seconds**, and up to 50 VA-EOL modules can be connected to single BTQ-VMD/SGD/SLD unit under VO3_AMP channel.

(Example-1)Connect 50 VA-EOL modules (the max. number of VA-EOL per BTQ-VMD/SGD/SLD unit):

Here we connect 50 VA-EOL on the 5 zones of BTQ-VMD controller and 47 VA-EOL on the 3 zones of BTQ-SLD8 for example.

Total number of VA-EOL	Detection time	The number of VA-EOL on BTQ-SL8	Communication time	The total number of VA-EOL on BTQ zone	charging time	Total monitoring time
97	0.8	47	0.17	8	0.5	**89.59 s (less than 90s)**

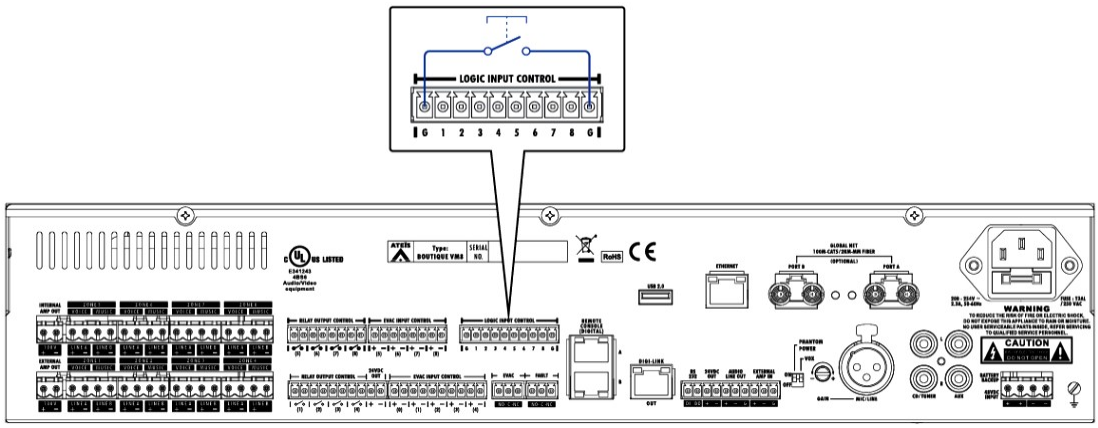
(Example-2)Connect 3~4 VA-EOL modules on each BTQ zone:

Here we connect 27 VA-EOL on the 8 zones of BTQ-VMD controller and 57 VA-EOL on the 18 zones of BTQ-SLD8 for example.

Total number of VA-EOL	Detection time	The number of VA-EOL on BTQ-SL8	Communication time	The total number of VA-EOL on BTQ zone	charging time	Total monitoring time
84	0.8	57	0.17	26	0.5	**89.89 s (less than 90s)**

3.19 Logic inputs

The logic control Inputs are designed to work with simple contact or button, see the wiring connection as below.



See the wiring connection between RAC 5/RAC 8 and BTQ-VM4/8 from Hardware installation & connection > RAC 5/RAC 8.

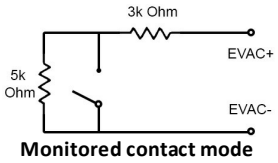
3.20 EVAC inputs

The 9 evac inputs on BTQ-VM8/SG8/SL8 and 4 on BTQ-VM4 can let the third party systems to signal the BOUTIQUE system for triggering events, start evac paging or message announcement. The settings of evac inputs requires to be set on web browser.

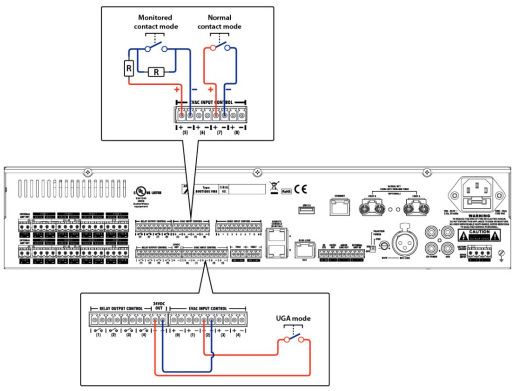
The EVAC inputs have a higher priority than the Logic inputs.

Each channel supports 3 modes:

- Monitored contact mode: The system can monitor the evac input and detect faults (4 status: on, off, open and short).



- Disable: The cables which connect to evacuation input will not be monitored (faults will not be detected).
- Voltage mode: Trigger the input by a voltage change (OPEN/CLOSE) with an external 24VDC source provided by external devices. The cable is not monitored in this mode.

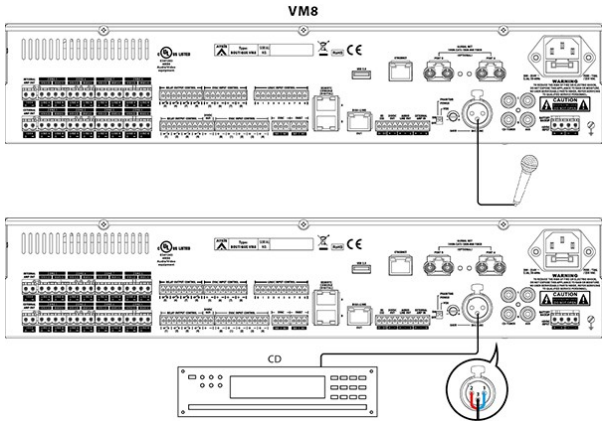


3.21 Mic/Line input with VOX (XLR)

The BTQ-VM4/VM8 controller has 1 Mic/ Line balanced XLR input with voice-activated (VOX).

When connecting the MIC/Line input, please switch "ON" on [VOX] setting, and adjust the mic volume by the gain knob.

The BTQ-VM4/VM8 also provides 48VDC phantom power for MIC/Line input. If the MIC/Line input requires phantom power supply, set the [Phantom Power] switch in ON position. If the microphone does not applicable for phantom power supply, leave

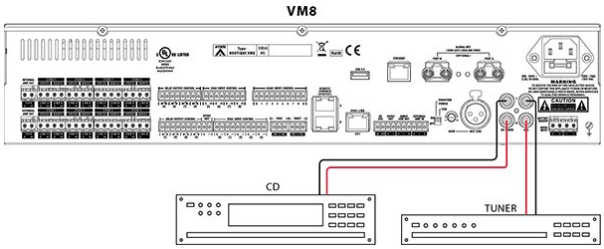


the switch in OFF position.

Make sure to choose the [Modulation] paging mode on Function > Paging > Singular Type > Mic Source, so that the VOX setting will automatically activate the mic/line input if the level of audio is above the specified threshold.

3.22 BGM inputs (RCA)

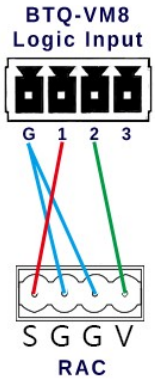
❖ The main controller has 2 BGM inputs. Each BGM input has a double cinch socket which converts stereo to mono. Connect the background music source on these cinch input such as CD player or tuner.



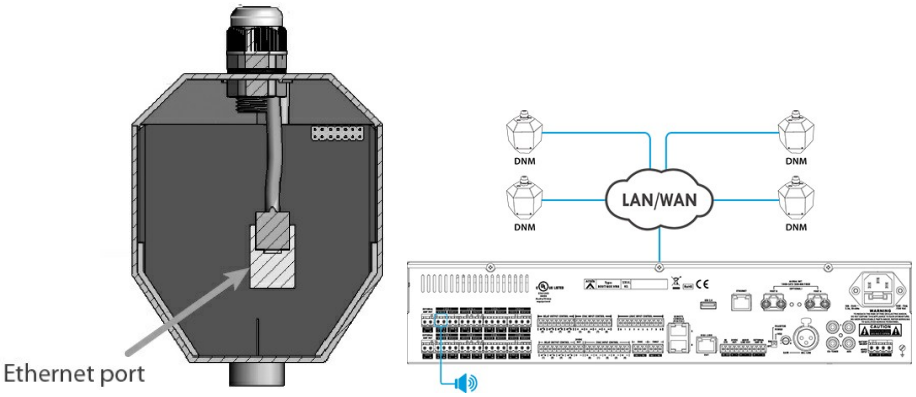
Input	Source
CD/Tuner	CD or tuner
AUX	Auxiliary source

3.23 RAC 5/RAC 8

❖ The RAC 5/RAC 8 is using in analogue connection. Connect the pins of RAC 5/ RAC 8 to the logic input control of BTQ-VM4/8, see the picture on the right.



3.24 DNM2-ETH



Connect the DNM2-ETH noise sensing microphones(s) using CAT5/6 cable to the network switch via LAN, then the DNM2-ETH microphones(s) will be discovered by BOUTIQUE system automatically and displayed on the web browser.

3.24.1 Installation notice

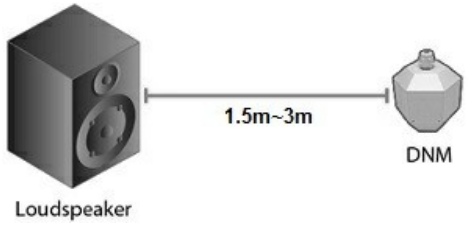
Install the DNM2-ETH to the position in which the DNM2-ETH can detect the background noise and automatically adjust the speaker level. Up to 8 DNM2-ETH devices can connect to each BOUTIQUE local network, and up to 256 DNM2-ETH devices can connect to a BOUTIQUE system (8 DNM2-ETH x 32 local networks).

When the loudspeakers are placed in a big area such as railway station hall, loudspeakers are put in different locations, which requires to install multiple DNM2-ETH units for having clear enough sound for each position of the area. Then users need to assign multiple DNM2-ETH units in a DNM group. Please note a DNM group can only be applicable to one BOUTIQUE zone.

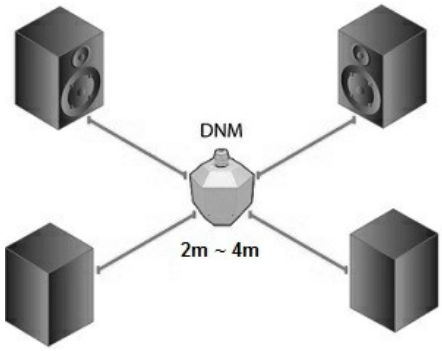
The distance between DNM2-ETH and speaker also relies on the power of the amplifier and loudspeaker. If it is a high-power loudspeaker (sound is louder), then the distance should be increased, and vice versa.

- Examples of installation:

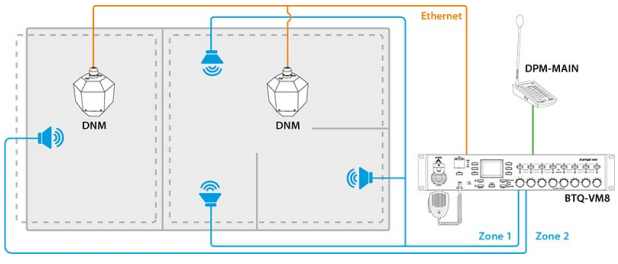
1. Install the DNM2-ETH in front of the loudspeaker about 1.5~3 meters.



2. Install the loudspeakers by circularity and the distance is not far from the loudspeakers, then the DNM2-ETH can be installed in the center of loudspeakers (eg: a small conference room etc.).



3. To avoid the problem that if the DNM2-ETH is installed at a quiet place, and the level of broadcasting is too small for the loud side, users can divide the zone to several area, and one DNM2-ETH for one divided area.
4. Also, users can set the gain value based on the loudest noise which is detected by DNM2-ETH, so that every section in the same area can hear the broadcasting clearly.



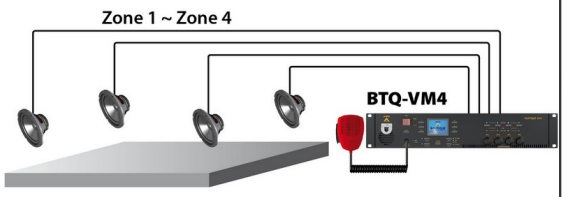
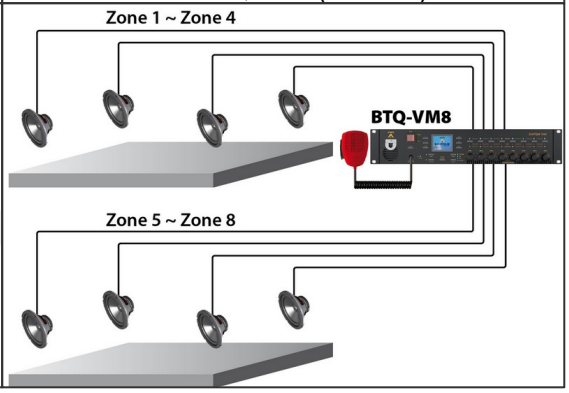

See DNM2-ETH web configuration to set the Group Rule (maximum/minimum/average) on DNM2-ETH units.

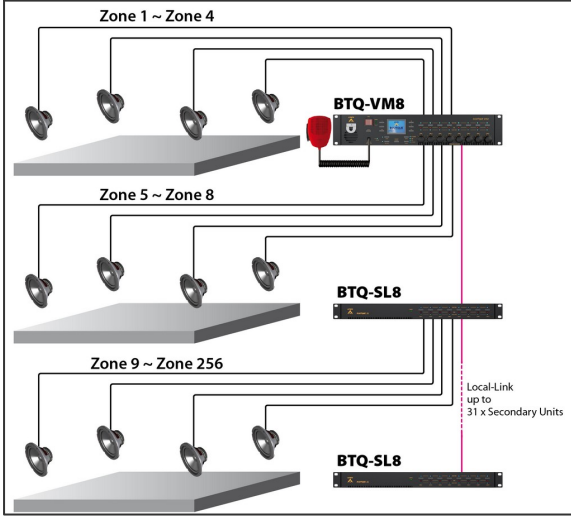
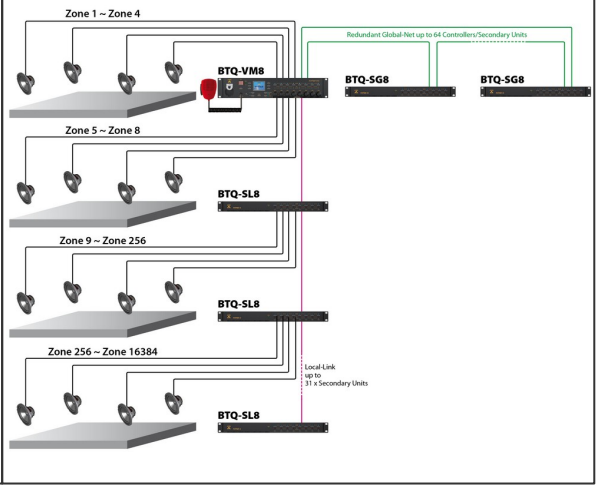
3.25 How-to: BTQ hardware configuration

See the following tips to choose the BTQ hardware.

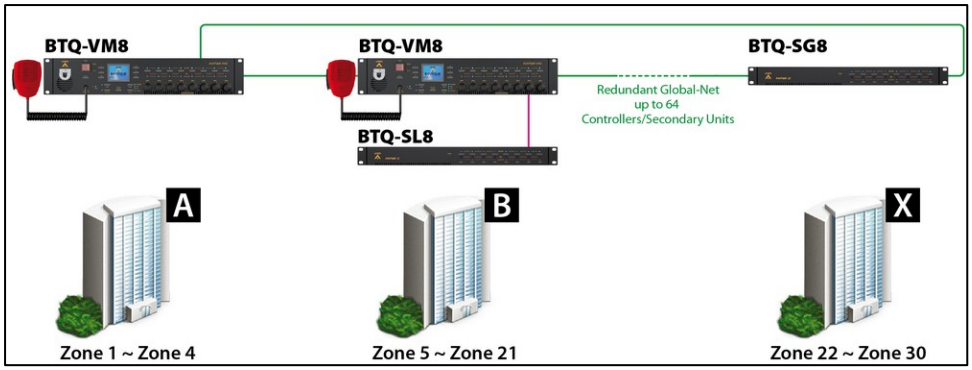
1. The number of distributed zones (BTQ-VM4xx/BTQ-VM8xx/BTQ-SL8/BTQ-SG8).
2. Internal amp of main controller (BTQ-VMx25/BTQ-VMx50).
3. Does your system require to distribute two sources (BGM/EVAC Paging) to different group of zones at the same time?

3.25.1 Step 1 - distributed zones

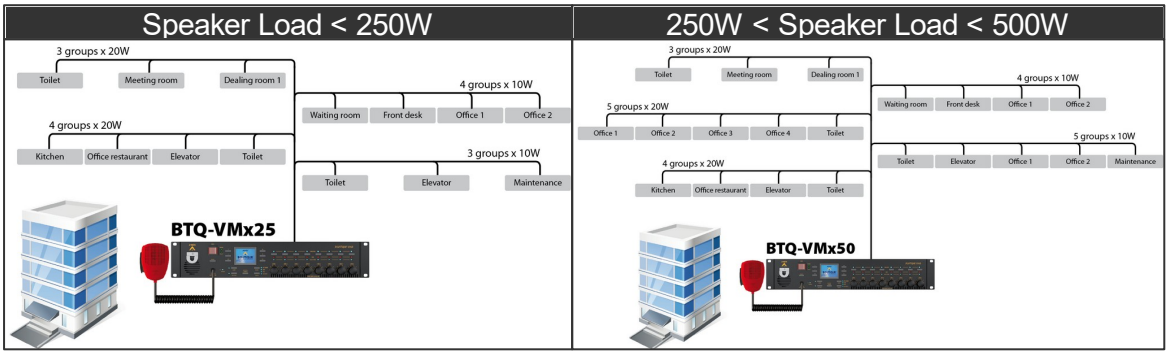
<table>
<tr><th colspan="2">Distributed Zones are Located in the Same Area</th></tr>
<tr><td>Number of zones < 4
One BTQ-VM4 (4 Zones)</td><td>5 < Number of zones < 8
One BTQ-VM8 (8 Zones)</td></tr>
<tr><td> 
</td><td> 
</td></tr>
</table>

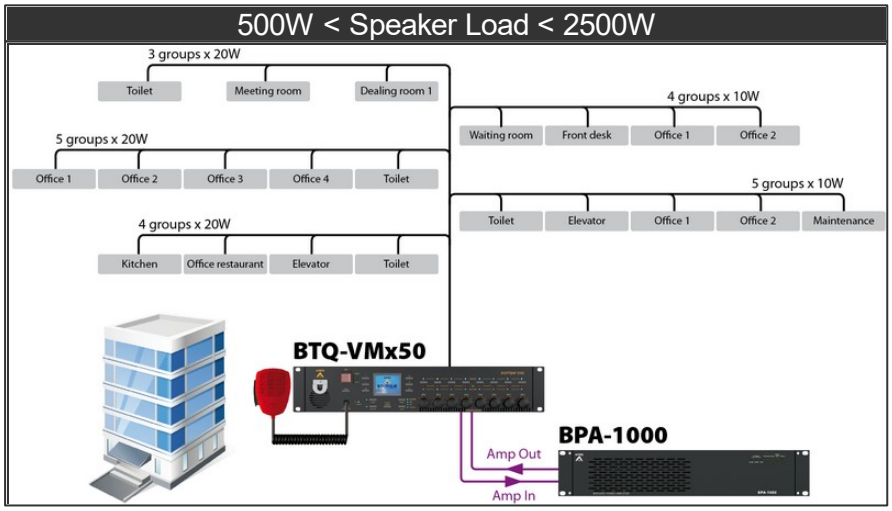
<table>
<tr><th colspan="2">Distributed Zones are Located in the Same Area</th></tr>
<tr><td>9 < Number of Zones < 256
One Local Network</td><td>257 < Number of Zones < 16384
Global + Local Network</td></tr>
<tr><td> 
</td><td> 
</td></tr>
</table>

<table>
<tr><th>Distributed Zones are Located in the Different Area</th></tr>
<tr><td>Number of Zones < 16384
Global + Local Network</td></tr>
</table>



3.25.2 Step 2 - controller with built-in amp





Note:

1. The BOUTIQUE system will auto define to use the internal amp of controller, external amp or use both internal and external amp based on the speaker load of each zone.
2. In some cases, the output level will be decreased. For example, Group 1 requires 750W, Group 2 requires 750W, and use the internal amp (500W) of controller to paging to one of the Group.
3. BGM and voice paging can be distributed to different group of zones by using 2 amps (internal and external amp).
4. When the internal or external amp breaks down:
   - BGM playing cannot be distributed during voice paging, and continue the BGM playing only when the voice paging stops.
   - When the total speaker loading of paging zones goes beyond the power capability of the

internal and external amps, the output level will auto decrease 3dB.

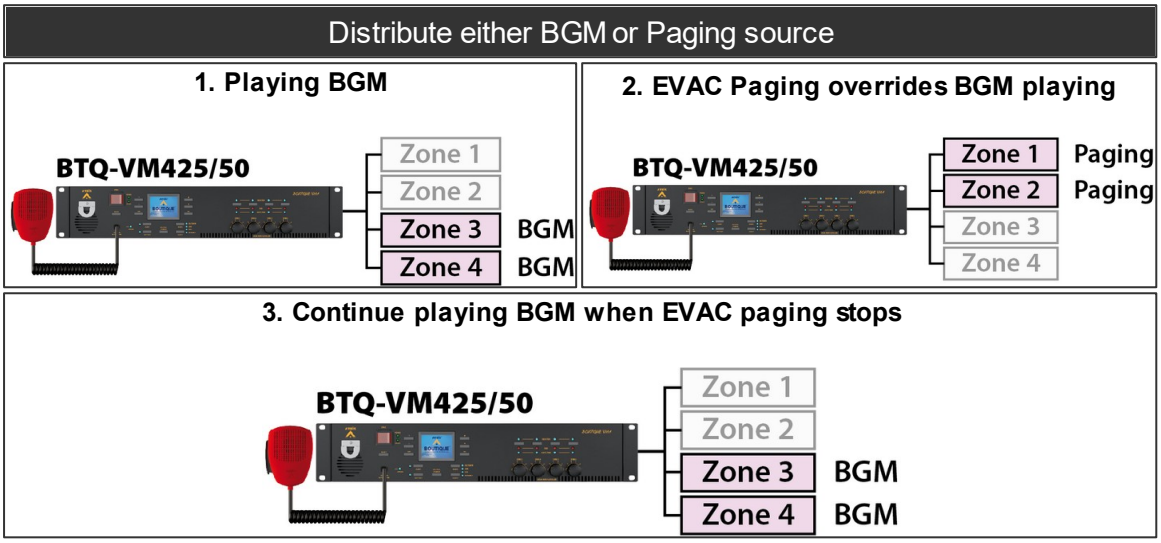
3.25.3 Step 3 - paging with 1 or 2 sources

❖ **Question:**

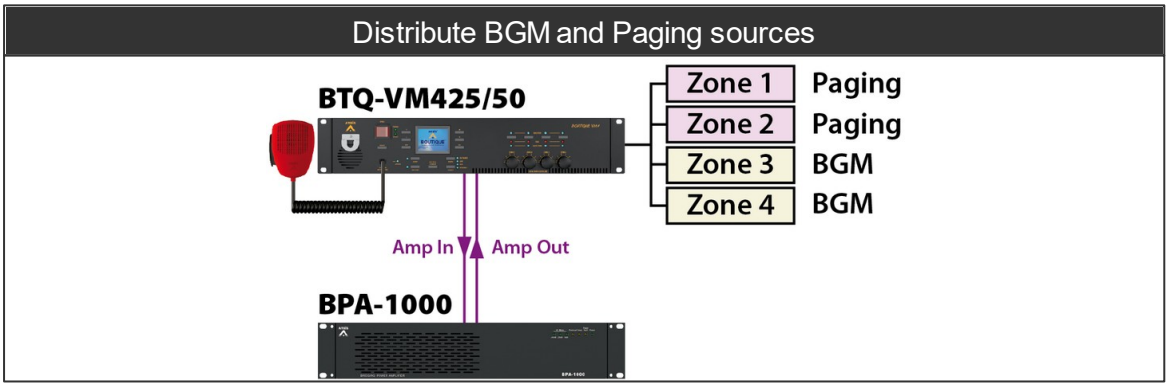
Does your system require to distribute two sources to different group of zones at the same time?

For example, the BGM source playing is using the intl. amp of BTQ-VM, and the EVAC paging source is using the external amp (AMP CH1) which is connected to the BTQ-SL8.

❖ **Answer: NO**



❖ **Answer: YES**



4 Hardware configuration & operation

After completed the hardware connection in the previous chapters, please proceed the hardware configuration. If this is the first-time setup configuration of your BOUTIQUE system, users can easily do the hardware configuration directly from LCD touch panel of BTQ-VM4/8 controller, see Setup Wizard.

More advanced configuration such as DSP parameters adjustment, event and bell scheduler etc.. can be configured by a dedicated ATEÏS web browser, see Configuration.

4.1 BTQ-VM LCD panel

4.1.1 Setup wizard

The LCD touch panel on main controller provides system configuration, control and system status display.

- After completed the hardware wiring, the LCD panel will activate automatically once it is powered.
- Press the touch panel to start the system setup.
  1. New Setup (Setup Wizard)
  2. Replace (replace the broken main controller with the new one)

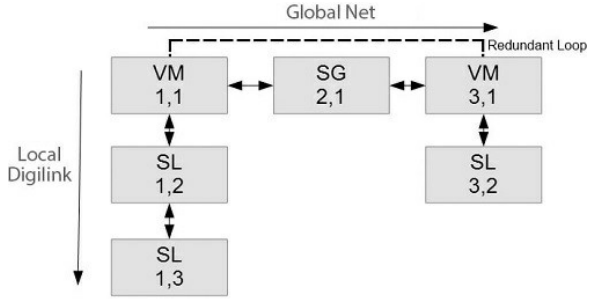
4.1.1.1 New setup

4.1.1.1.1 Step 1: language

- Press [▲ ▼] on touch panel to set the language.
- Press [OK].

4.1.1.1.2 Step 2: number of main and secondary units & ID

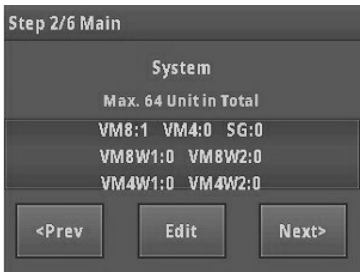
Set the number of main controller and secondary unit and its ID in the system. The ID is composed of the number of X, Y. X indicates the global net ID and Y is the local net ID.

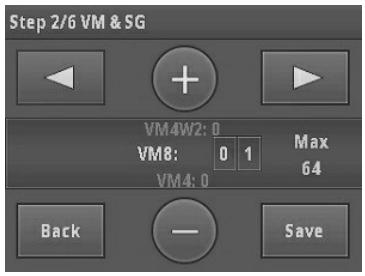


Network	
Local Network: *for BTQ-SL8 connection	• Max. digi-link units: 31 • Max. cable length: 10m between units (metal shielded RJ45 connector, STP CAT5/6)
Global Network:	• Max. global net units: 64

Network	
*for BTQ-VMxx/BTQ-SG8 connection	• Max. cable length: 100m between units (CAT5/6), multi-mode (2km), single-mode (20km) fibre optics

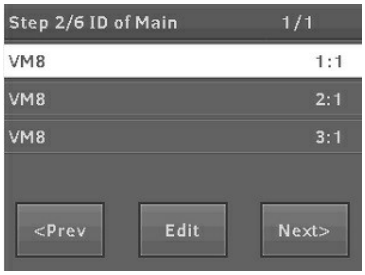
- Set the number of controllers (VM4/VM8/VM8W1/VM8W2) and secondary global units (SG).





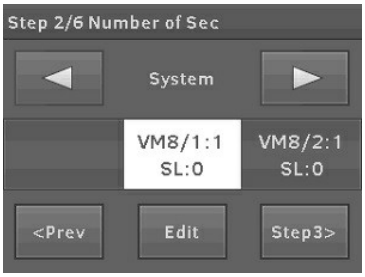
1. Press [Edit] to change the number of VM4/VM8/VM8W1/VM8W2 and SG units.
2. Press [Save] to apply settings.

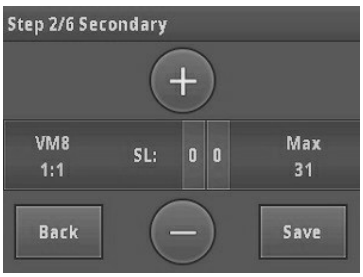
- Set the ID of BTQ-VM4/VM8/VM8W1/VM8W2 controller and SG unit.



1. Select the unit, and press [Edit] to change its ID.
2. Press [Save] to apply settings.

- Set the number of secondary local units (SL).

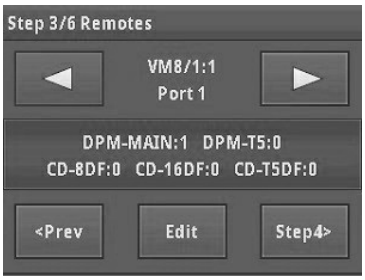




1. Select [VM8/SL] block via [◄ ►] button, and press [Edit] to change the number of SL units.
2. Press [Save] to apply settings.
3. Press [Step 3].

4.1.1.1.3 Step 3: number of remotes

- Set the number of DPM-MAIN/DPM-T5/CD-8DF/CD-16DF/CD-T5DF on [VM8/1:1 Port 1].

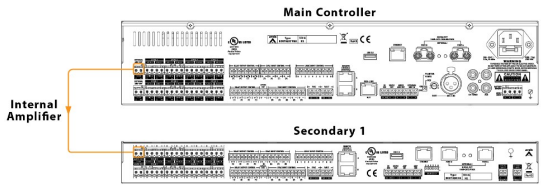
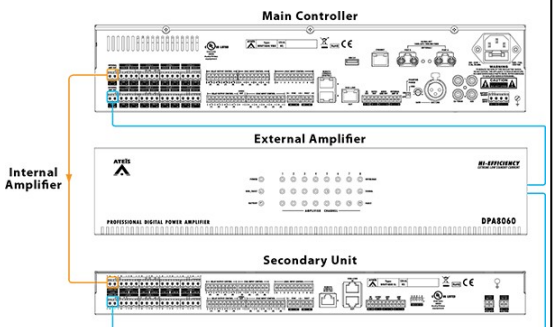


1. Press [Edit] to change the number of DPM-MAIN/DPM-T5/CD-8DF/CD-16DF/CD-T5DF.
2. Press [Save] to apply settings.

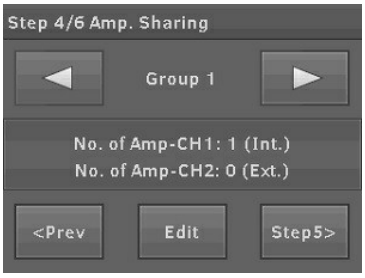
- Select [VM8/1:1 Port 2] block via [◄ ►] button, and set the number of DPM-MAIN/DPM-T5/CD-8DF/CD-16DF/CD-T5DF on [VM8/1:1 Port 2].
- Press [Save] to apply settings.
- Press [Step 4].

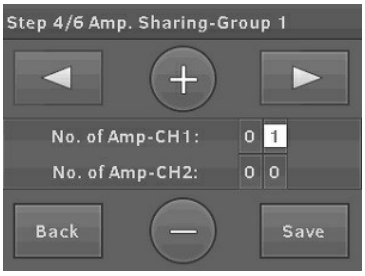
4.1.1.1.4 Step 4: power amplifier(s) sharing

The power amplifier from internal amplifier of main controller and external amplifier can be shared among the main controllers and secondary local units.

Single Amplifier	Dual Channel Amplifier
The internal amplifier in the main controller can share power amplifier with secondary local unit(s) to expand speaker zones.	Except the internal amplifier in the main controller, it is possible to have second amplifier externally for system power sharing and/or backup.
	

- Set the group based on the number of local-net the BOUTIQUE system has. The Group 1 indicates the amplifiers in the first local network (the internal amplifier is belonged to CH1), the Group 2 indicates the second local network, and so on.



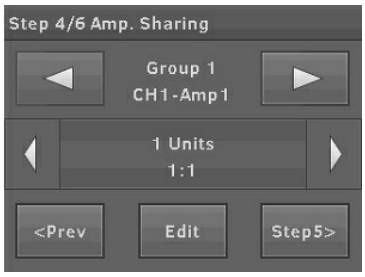


1. Press [Edit] to change the number of amplifier for Int. amp channel and Ext. amp channel

in the selected group.

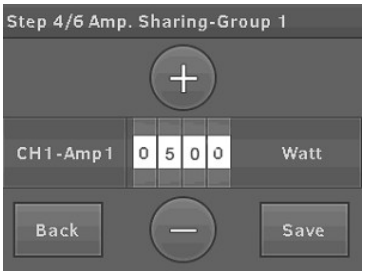
2. Press [Save] to apply settings.

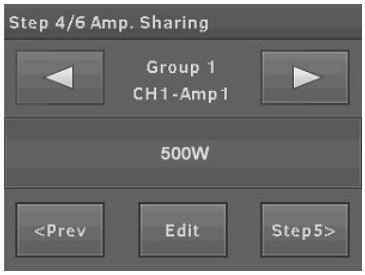
- Add device and set the unit ID for power amplifier sharing.



1. Press [Edit].
2. Press [⊕ ⊖] to set ID for the device unit, then press [Add]/[Delete] to add or remove the unit for power sharing in the amplifier.
3. Repeat #2 to add/delete more units.
4. Press [Save] to apply settings.

- Set CH1: Amp 1 power.

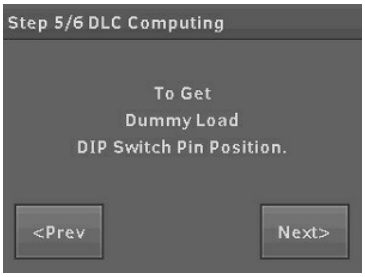


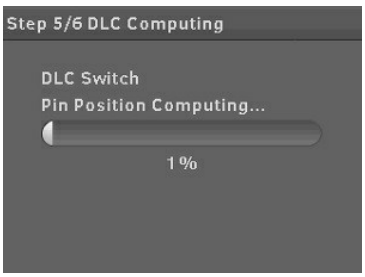


1. Press [⊕ ⊖] to change the power (wattage) of which Int./Ext. amplifier channel, and [Save] the settings.
2. Press [►] for the CH1, Amp2 settings, and repeat the same procedure for other amplifier (s) settings.
3. Press [Step 5].

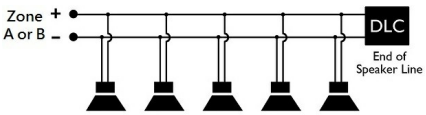
4.1.1.1.5 Step 5: dummy load capacitor

- Calculate dummy load capacitance and DIP switch setting.





Zone A/B
Set DIP Switch
Pin4 ON for Zone
6/A and 6/B

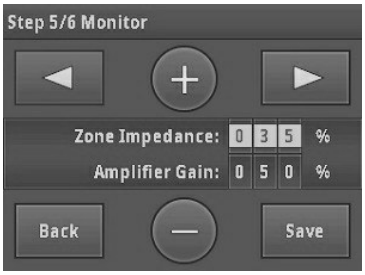


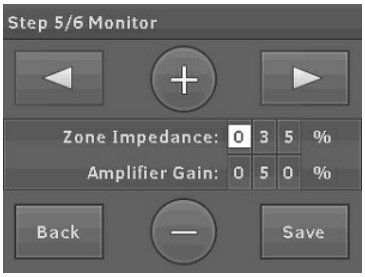
DLC Installation

1. Each speaker zone has A/B sub zones. Each sub zone requires a dummy load capacitor in the end of speaker line.
2. Set the indicated number to ON position on the DIP switch.
3. Press [Next].

4.1.1.1.6 Step 6: monitoring

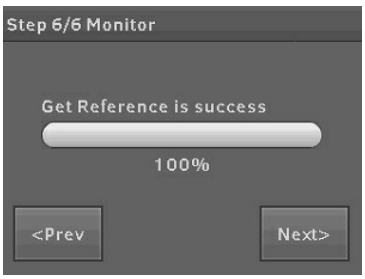
- Set the monitor tolerance of speaker line impedance and power amplifier.



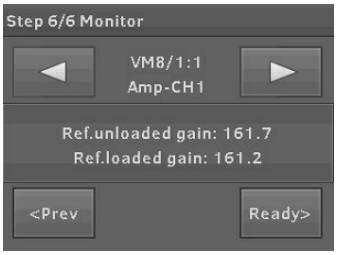


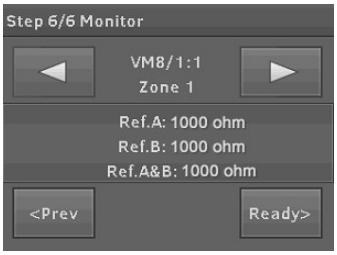
1. Press [Next] to apply the preset tolerance, impedance and amplifier gain.
   Or press [Edit] to change the tolerance of percentage.
2. Press [Save] to apply settings.

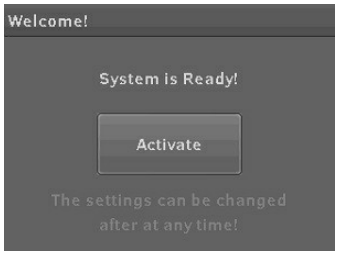
- Press [Next] to get monitor reference.



- Press [Ready] and [Activate] to enter the menu window.







4.1.1.2 Replace

When replacing the broken main controller with the new one, proceed the Replace function to configure and synchronize the system with the broken device only.

1. If the USB flash drive is connected on BTQ-VM4/ VM8/SG8, click [Yes] to use the config. file from USB to replace (figure 1).

figure 1

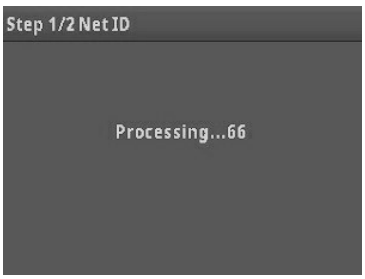
If the USB flash drive is not connected, the system will display the alert window (figure 2).

2. If not using the file from USB flash drive, click [Skip] to skip the step.

figure 2

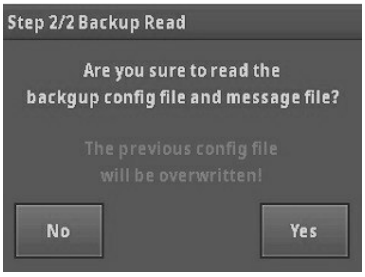
4.1.1.2.1 Step 1: net ID

- Select the netcard ID of the "new" BTQ-VM4/VM8 controller used to replace the broken one.
- Click [Next] to apply the setting.

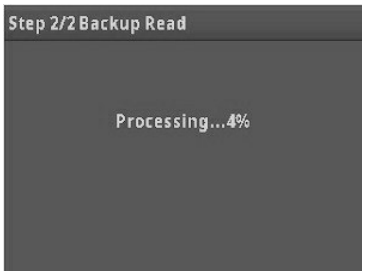


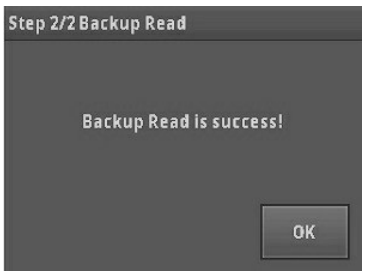
4.1.1.2.2 Step 2: backup read

- The config. files will be automatically appeared on the LCD panel once the USB flash drive is connected to.



1. Select the config. file, and press [OK].
2. Press [Yes] to apply the config. file to the system.





3. Press [OK] to enter the menu window.

4.1.2 LCD menu

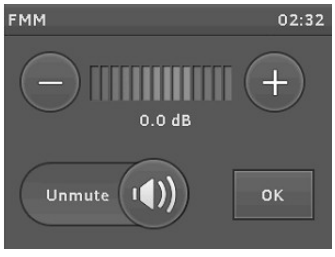
4.1.2.1 Mic Line/FMM/Recovery/Log List/Fault Info/Logout Login

- Mic/Line:

  Adjust the volume or mute/unmute the Mic/Line.

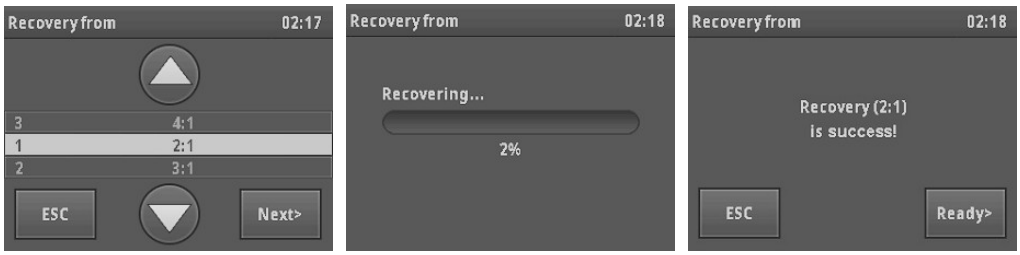
- FMM:

  Adjust the volume or mute/unmute the fireman microphone.



- Recovery:

  Select the chosen main controller used as the default configuration for synchronization to the broken one(s).



- Log list:

  Display the content of log list.

- Fault Info:
  - Fault list: Display the list of general faults. Click [Fault List] button and enter its display window (Figure 1 & Figure 2).
  - Click Details button to view the details of each fault (Figure 3).

Figure 1 **Figure 2** **Figure 3**

  - State indicator: When CH1~CH8 zone fault is detected by system, the corresponded [Zone Fault] indicator will light up (Figure 4).
  - If the fireman microphone is currently being used for EVAC paging or an paging event with [Evacuation] option is being triggered, and plays the evac messages, the [General EVAC] indicator will light up, and [E] icon will be shown on the right top section (Figure 5).
  - If a system fault is detected by system, the [System Fault] indicator will light up, and [S.F] icon will be shown on the right top section (Figure 6).

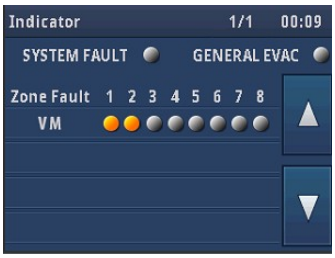


Figure 4

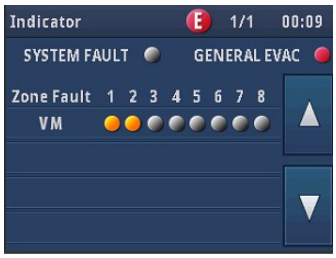


Figure 5

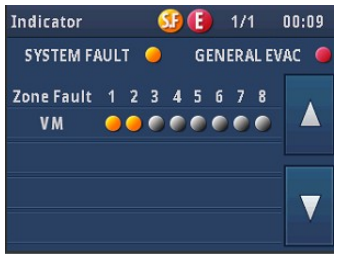


Figure 6

When a zone fault is detected by system, the [State Indicator] window will auto pop-up on the LCD panel of BTQ-VM controller.

Please see the system faults from the following table. To know the troubleshooting of faults, see Fault Lists for details.

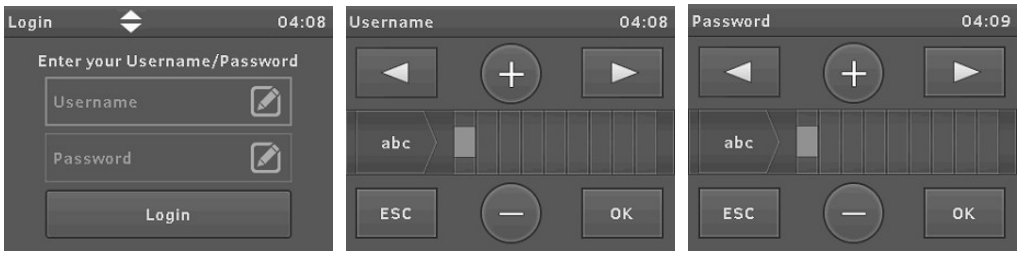
System Fault
NAND FLASH ERROR
SSI ERROR
I2C ERROR
FPGA CODE NO EXIT
FPGA CODE ERROR
FPGA COMMUNICATION ERROR
NT FPGA CODE NO EXIT
NT FPGA CODE ERROR
NT FPGA COMMUNICATION ERROR
Battery Charge Error
Battery Charge Code Error
Watchdog

- Logout:

  Click to logout. In case of multi-users with different level, you can logout from the current user session in order to login in an other one.

- Login:

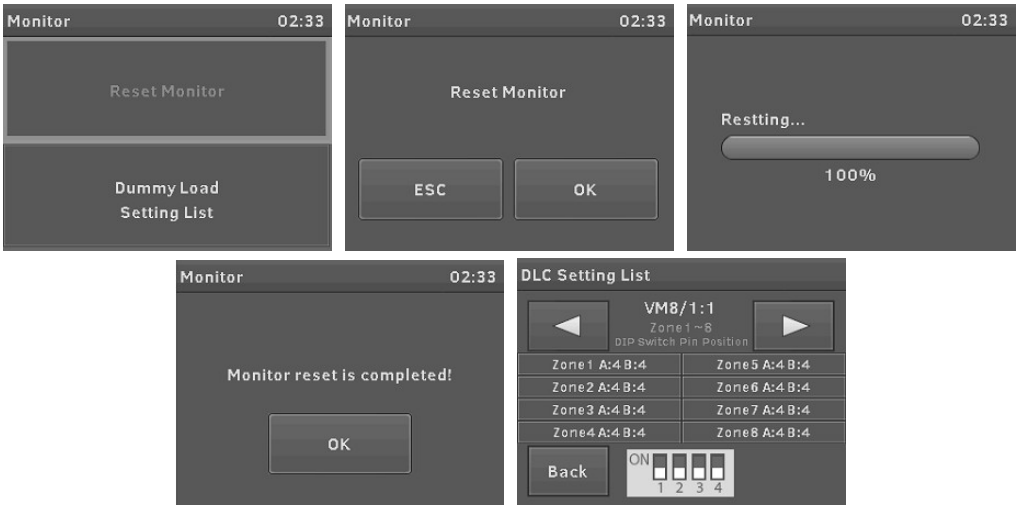
  Login the LCD display by entering the username and password.



4.1.2.2 Monitor/System Reset/Paging Reset/LAMP Test/Setup Replace

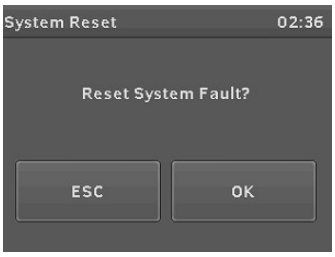
- Monitor:

  Click to reset the monitoring of amplifier and speaker line again.



- System reset:

  Clean the system fault list, the System Fault LED will light off as well.

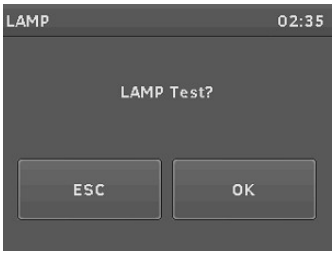


- Paging reset:

  Cancel all the paging in the system.

- Lamp test:

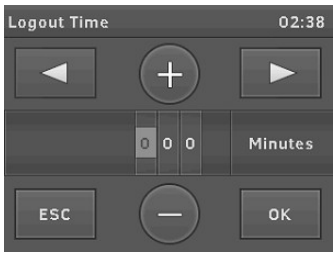
  Test the lighting of LED, LCD display, relay output of all the connected controllers and secondary units.
  - LED: Light on/off the LED.
  - LCD display: Change the color of display in red > green > blue > white > black.
  - Relay output: Change the relay output channel on LCD display to open/short.



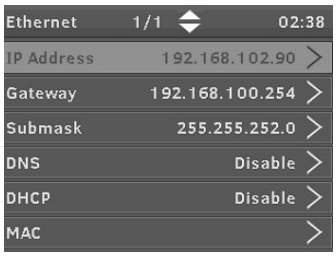
4.1.2.3 Setting

- Language/time: Set the language/time.

- Logout time: Set the time of auto logout when the BTQ-VM4/8 controller is not operating.



- Ethernet: Set the IP address/Gateway/Submask/DNS/DHCP/MAC.



Default Setting	BTQ-VM	BTQ-SG8
IP address	192.168.102.125	192.168.102.124
Subnet Mask	255.255.252.0	255.255.252.0
Gateway	192.168.100.254	192.168.100.254
DNS	0.0.0.0	0.0.0.0

When changing the Ethernet settings, the BOUTIQUE system needs to reboot.

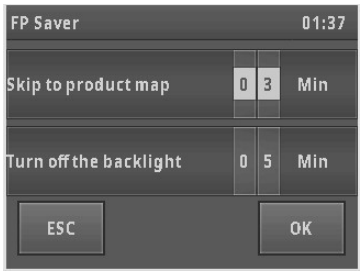
- Net ID: The BTQ-VM4/8 controllers are identified by net ID through the ATEÏS global-net, see Hardware Configuration > Net ID (BTQ-VM Global-Net) for details.

- Brightness: Set the brightness of LCD display.
- Enter security: Choose to operate which type of security mode (Auto/Manual). See Security mode (power saving) chapter.

- Security mode: Enable/disable the power saving mode on BOUTIQUE system. See Security mode (power saving) chapter.
- Info: List the current firmware version of main controller.
- Buzzer volume: Adjust the volume or mute/unmute the buzzer sound from the built-in speaker of

BTQ-VM4/8 controller when a fault is detected.

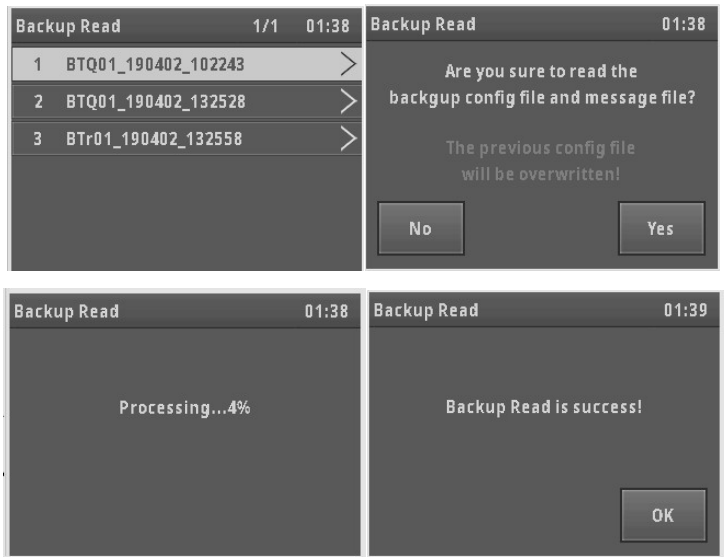
- FP saver:



  - Skip to product map: Set the time to let the LCD panel return to the welcome page automatically.
  - Turn off the backlight: Set the time to turn off the LCD panel of main controller automatically. To activate the LCD panel again, users can press any button on the front panel of main controller.

- Backup:

  - Backup read: The config. files will be automatically appeared on the LCD panel once the USB flash drive is connected to. Select a file and apply it to the system.



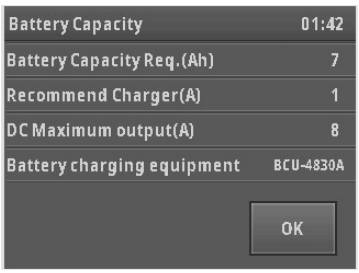
  - Backup write: Create a backup config. file and save it into the connected USB flash drive. If users wish to set the file with a custom file name, press [Rename] button on touch panel, see the pictures as below.

- USB-BGM:

  Use the digital message file(s) from the connected USB flash drive to proceed routing. Multiple message files can be selected and routed (max. 999 files). Please make sure the USB flash drive is connected on the main controller.

  - SEL: Display the number of files which user has chosen.
  - : Press this button to select/deselect all the listed files.

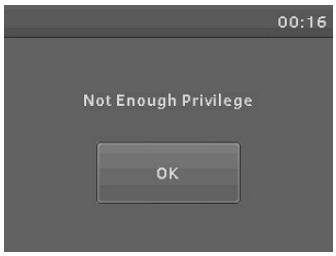
- Battery capacity: Display the total battery capacity (AH)/charging current (A)/DC maximum output current (A)/recommended battery charger model which the selected local-net system(s) require.



If the system is not using the BCU-4830A/BCU-4875A battery charger from ATEÏS, please make sure the charger current(A) of battery charger is sufficient.

4.1.2.4 Privilege setting

- Privilege setting: When accessing the menu settings which you are not authorized, it will display [Not Enough Privilege]. Please logout first, and login with an user level which is qualified for the functions.



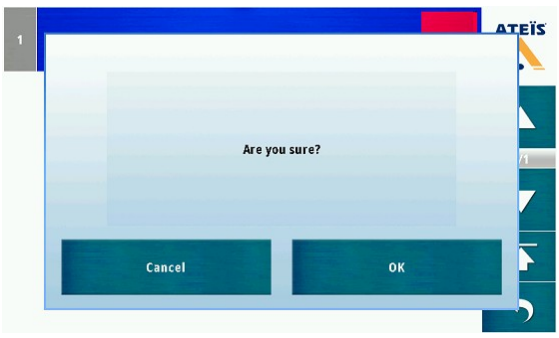
4.2 DPM-T5/DPM-T5F/CD-T5DF LCD panel

All the zone buttons on the LCD panel of DPM-T5/DPM-T5F/CD-T5DF can be configured via web browser, and used for displaying and operation.

Before operating the DPM-T5/DPM-T5F/CD-T5DF, please note the settings of zone buttons such as pre/post-announcement chime, talk mode (lock to talk/push to talk), priority, button name, event function etc. needs to be configured on Configuration > Integration Paging first.

1. Button/event key: The buttons represent the following action: a zone, a group of zones, and an event. If a button represents a zone or group or zones, press this button for zone selection; if it represents an event, press this button to trigger the event.
2. Page up / Page down
3. Back to top page
4. Press to display the selected zone information.
5. Chime: Press the zone buttons first, then press the [Chime] button to play pre/post-announcement before paging, see Chime/Talk page.
6. Talk: Press the zone buttons first, then press [Talk] button to paging, see Chime/Talk page.
7. Modify zone: Press this button if users wish to add or remove the zone buttons from the current paging, see Modify Zone page.
8. Multi function:

1. Monitor: Here you can monitor the paging zones and audio sources of BOUTIQUE from the built-in speaker of DPM-T5/DPM-T5F/CD-T5DF, see Monitor page.
2. Message: Play the audio messages to the selected zones, see Message page.
3. Routing: Here you can audio routing to the selected zones, see Routing page.
4. Fault: Display all the faults detected by BOUTIQUE units, see Fault page.
5. Setting: Press to enter Setting page.
6. Cancel all zone: Press to select/deselect all the zone buttons.
7. TTF list: Display all the supported font files (.ttf) for the LCD panel display of DPM-T5/DPM-T5F/CD-T5DF, see the pictures below.

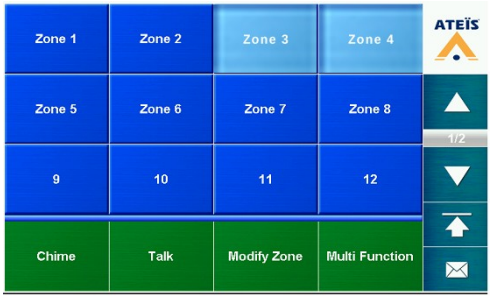


Press − to delete the selected font file.

4.2.1 Button status

The color of zone buttons displayed on the LCD panel will indicate as different status, see as below.

1. The zone button is not selected.
2. The zone button is selected.



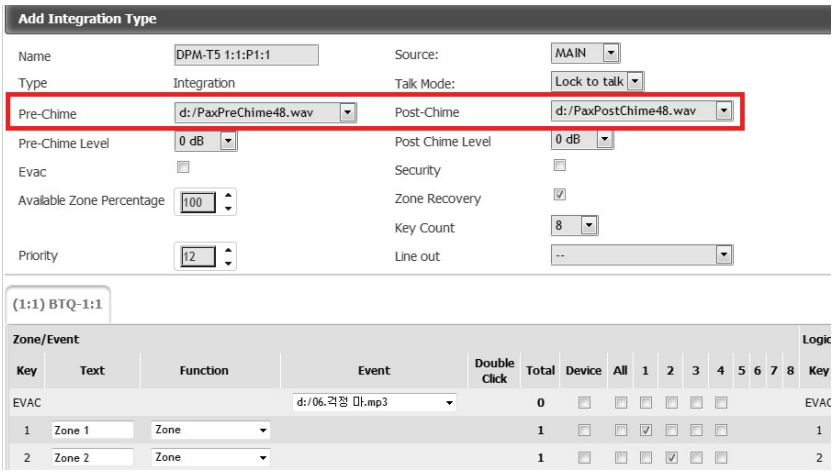
- The priority of this DPM-T5/DPM-T5F/CD-T5DF is lower than other sources, which the unselected zone button / selected zone button cannot be paging.

- The priority of this DPM-T5/DPM-T5F/CD-T5DF is higher than other sources, which the unselected zone button / selected zone button can be paging.
- When the unselected zone button / selected zone button is paging or playing the messages from DPM-T5/DPM-T5F/CD-T5DF.
- When this unselected button / selected button is an event button on DPM-T5/DPM-T5F/CD-T5DF.

4.2.2 Chime/talk

To page to the selected zones with a chime tone, see the steps of Chime Paging example as below.

1. First, upload the chime files on web browser > message management.
2. Choose the pre-chime file and post-chime file on web browser > Function > Paging (Integration Event). See the picture below.



3. Select the zone buttons you wish to paging by DPM-T5/DPM-T5F/CD-T5DF.
4. Press [Chime] button, and after the pre-announcement chime has ended, you can start paging using the DPM-T5/DPM-T5F/CD-T5DF.
5. To end the paging, press [Chime] button again. Then a post-announcement chime will be played.

Click Stack Paging to know more details.

4.2.3 Modify zone

Press [Modify Zone] button if users wish to add or remove the zone buttons from the current paging, see the steps as below.

1. Select the zone buttons you wish to add or remove on the LCD panel.
2. Press [Modify Zone] button to activate.

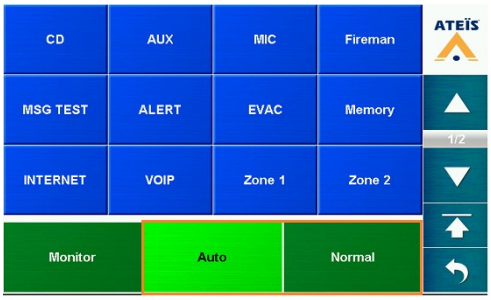
4.2.4 Monitor

Monitor the paging zones and audio sources of BOUTIQUE from the built-in speaker of DPM-T5/DPM-T5F/CD-T5DF, see the steps as below.

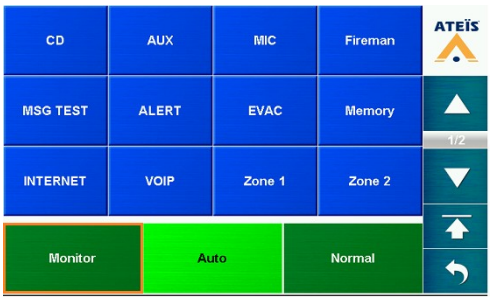
1. Choose a BOUTIQUE unit.

2. Choose [Auto] or [Normal] mode.

- Auto: Press [Auto] to automatically monitor the audio source which pages to the selected zones.
- Normal: Press [Normal] button and manually monitor the source which pages to the selected zones.



3. Press [Monitor] button to start the Monitor function.
4. To cancel the Monitor function, press [Monitor] button again.



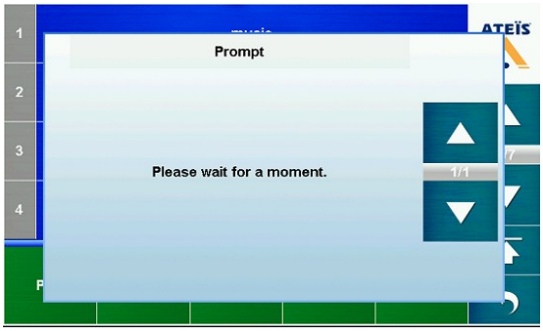
4.2.5 Message

Message Playing:

1. Select the message file or a message folder you wish to be played to the zones on [Msg Window] page.

2) Press ▦ button on the bottom menu and set the count of [message play].

Click [Refresh Message List] to refresh the message list.



3. Switch to [Zone Window] page, and select the zone buttons you wish to be played the message files, see as below.

   If users wish to play the messages to all the zones, press [Select All Zone] button.

4. To preview the audio messages, press [Listen] button.
5. Press [Play/Stop] button to start playing messages to zones.
6. To cancel this message playing, press [Play/Stop] button again.

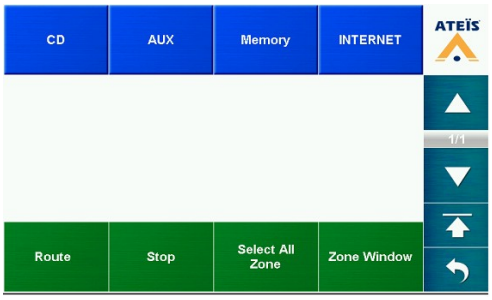
4.2.6 Routing

Select a audio input source of BOUTIQUE, and route this audio source to the zones of BOUTIQUE system.

1. Choose a BOUTIQUE unit.

2. Select the audio source (CD/AUX/Memory/Internet).
3. Press [Zone Window] page, and select the zone buttons you wish to be routing.

   If users wish to routing to all the zones, press [Select All Zone] button.



4. After selected the zone buttons, press [Route] button to start routing audio source to zones.

5. Press [Route/Modify] button if users wish to add or remove the zone buttons from the current routing, see Modify Zone.
6. To cancel this audio routing, press [Stop] button.

4.2.7 Fault

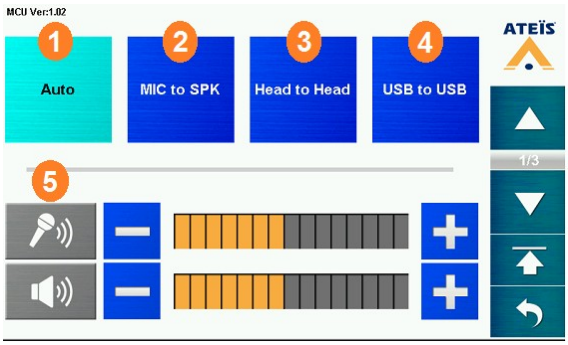
When a fault has detected, this page will show all the fault details.

Press the selected fault, it will show the fault detail.

See Fault Lists to know more about the troubleshooting.

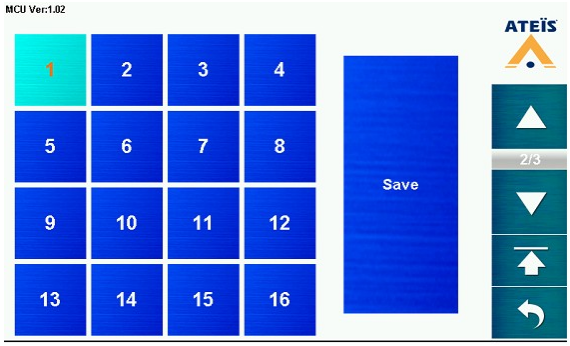
4.2.8 Setting

1. Auto: The DPM-T5/DPM-T5F/CD-T5DF will detect whether the external headset or USB is plugged in, and auto switch to headset or USB I/O connection if it's plugged in. If the headset and USB are plugged in DPM-T5/ DPM-T5F/CD-T5DF at the same time, the audio I/O connection will switch to USB.
2. MIC to SPK: Use the mic and speaker of DPM-T5/DPM-T5F/CD-T5DF as input and output.
3. Head to head: Use the external headset.

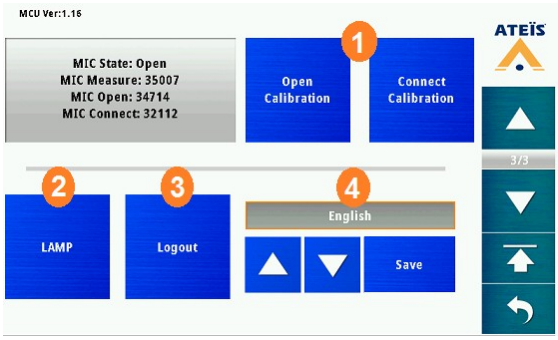


4. USB to USB: Replace the mic and speaker of DPM-T5/DPM-T5F/CD-T5DF by PC/Laptop.
5. Mic/speaker volume: The level control of the built-in microphone/speaker of DPM-T5/DPM-T5F/CD-T5DF.

- Set the Remote ID of this DPM-T5/DPM-T5F/CD-T5DF. Up to 8 DPM-T5/DPM-T5F/CD-T5DF can be connected to BTQ-SL8, and 16 on BTQ-VM4/VM8/SG8.



Please note the remote ID you set here needs to be the same you set on the web browser, otherwise, the DPM-T5/DPM-T5F/CD-T5DF will display in offline status on web browser > Device Management .



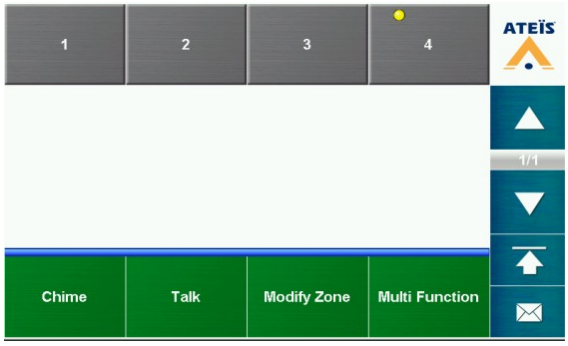
1. Mic calibration: To let the detection of gooseneck mic be more accurate, users can proceed this function.
   - First, plug out the gooseneck mic from DPM-T5/DPM-T5F/CD-T5DF first, and press [Open Calibration] button to get the [Open] value.
   - Then plug in the mic on DPM-T5/DPM-T5F/CD-T5DF again, then press [Connect Calibration] to get the [Connect] value.
   - The [Open] and [Connect] value will be used for reference when detects a mic fault (open/short fault).
2. Lamp: Press it to test if the color of LCD panel and the 3 LEDs on the front panel is under normal behavior. Press the LCD panel again stop the lamp testing.
3. Logout: Click to logout.
4. Choose the language via ▲▼ button, then click [Save]. Please reboot the device after modification, so that the setting will be applied to DPM-T5/DPM-T5F/CD-T5DF device.

4.2.9 Stack paging

When there are other paging sources with higher priority has occupied the zones which DPM-T5/DPM-T5F/CD-T5DF desires to paging, users can pre-record the paging message and temporarily save it in DPM-T5/DPM-T5F/CD-T5DF, then the recorded messages can be played after the paging source with higher priority has ended.

Note: The Stack Paging function requires to enable on BOUTIQUE web browser first, see System > Device Management > Add Remote > Stack Paging, see the example of Stack Paging as below.

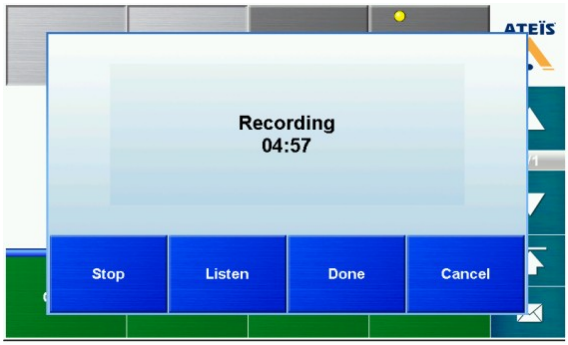
1. Select the zone buttons you wish to paging by DPM-T5/DPM-T5F/CD-T5DF.
2. Then press [Talk] button to proceed the Stack Paging.



3. Press [Start] to record.

4. Once finished the recording, press [Stop].

   Press [Cancel] to cancel the stack paging and go back to the zone paging page.



5. Press [Listen] to use the loudspeaker of DPM-T5/DPM-T5F/CD-T5DF to listen the recorded message users have just recorded.
6. Press [Stop Listen] to cancel listening the recorded message. Press [Restart] to record the paging message again.
7. Press [Done] button to let this recorded message wait for the stack paging.

8. The recorded messages will be waiting for the stack paging and display a countdown timer based on the time you set on web browser.

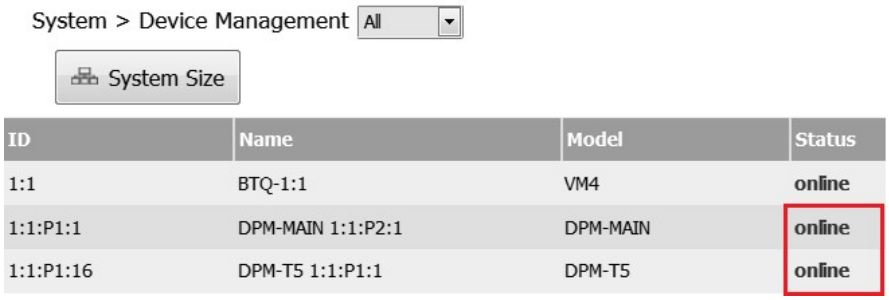
   The waiting time can be set from web browser > System > Device Management > Add Remote > Stack Paging > Wait Time.

9. If the recorded message does not paging within the waiting time, this stack paging will be automatically canceled, and return to the Zone Paging window.

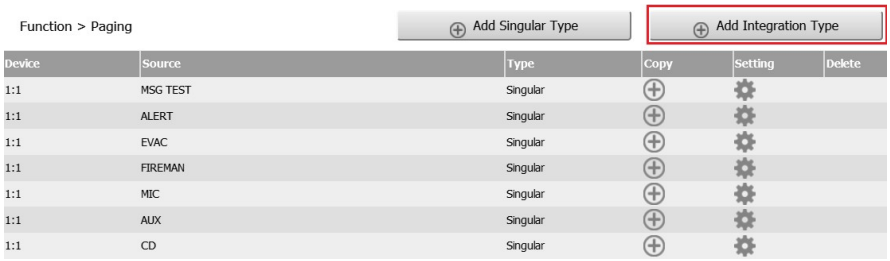
4.3 DPM/DPM-T5 key configuration

The key buttons on DPM-MAIN/DPM-EVA/DPM-KPD/CD-8DF/CD-16DF and the keys on the LCD panel of DPM-T5/DPM-T5F/CD-T5DF can be configured with various function including zone paging, chime paging, record, preview the recorded file, delete,, level adjustment etc.. Please ow tosee the following steps bel do the key configuration.

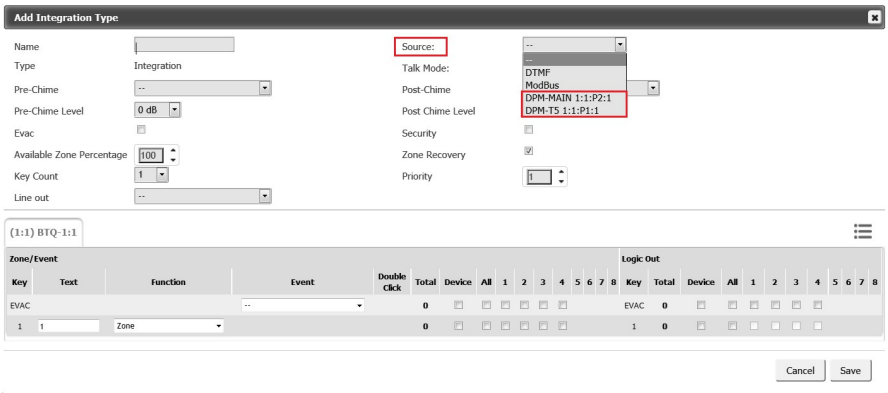
1. Please check if the hardware wiring between the DPM or DPM-T5 and the BTQ-VM4/VM8 controller/BTQ-SG8/SL8 secondary unit is correct, then go to Web Browser > System > Device Management to check if the status of devices is online, see the picture below.



2. Create an [Integration Paging] event on Function > Paging > Add Integration Type.



3. Choose a source type for this integration paging event.



4) The following key functions as below can be configured into the DPM and DPM-T5/DPM-T5F/CD-T5DF.

DPM-MAIN/DPM-EVA/DPM-KPD/CD-8DF/CD-16DF	Key Function
1	Zone
2	Event
3	Wave Record
4	Wave Listen
5	Wave Delete
6	Wave Paging
7	Push to Talk
8	Push to Talk with Chime
9	None

DPM-T5/DPM-T5F/CD-T5DF	Key Function
1	Zone
2	Event
3	Wave Record
4	Wave Listen
5	Wave Delete
6	Wave Paging
7	Wave Level
8	Jump Page
9	Push to Talk
10	Push to Talk with Chime
11	None

5) To know about the key functions and other advanced settings of DPM and DPM-T5/DPM-T5F/CD-T5DF, see Add integration type for details.

4.4 Net ID (BTQ-VM/BTQ-SG8 Global-Net)

The BTQ-VM4/8 controllers and BTQ-SG8 secondary units are identified by unique network ID through the ATEÏS global-net.

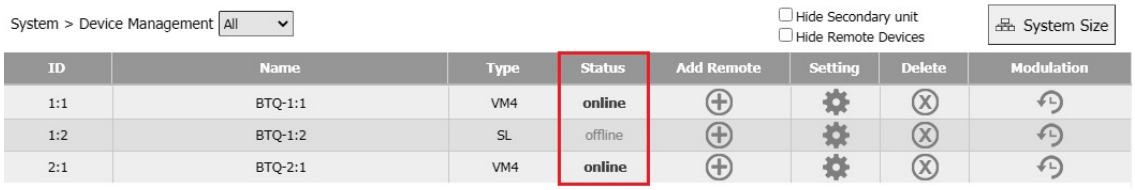
❖Example-1

*We'll take 2 BTQ-VM4/8 controllers for example

1. Go to BTQ-VM LCD menu > Setting > Net ID, and set the network ID. Please proceed this settings on each BTQ-VM4/8 controller, see the pictures as below.

The net ID needs to be set orderly, starting by the first number. For example, the net ID of the first connected BTQ-VM controller is set as 1, and the net ID of the second connected BTQ-VM controller is set as 2.

2. After the network ID setting for each BTQ-VM controller is completed, then proceed the hardware wiring connection of the BTQ-VM controllers, see Hardware Installation > Ateis Net > Global-Net for details.
3. Reboot the 2 BTQ-VM controllers, so that the network card setting will be applied.
4. If this is the first-time setup configuration of your BOUTIQUE system, please run the hardware configuration directly from the LCD touch panel on the first BTQ-VM4/8 controller or via BTQ web browser:
   - See LCD Panel > Setup Wizard for details.
   - See BTQ Web Browser > Setup Wizard for details (recommend).
5. Then go to BTQ web browser > Device Management window to check if the BTQ-VM controllers are "online".



❖Example-2

*We'll take 1 BTQ-VM4/8 controller and 1 BTQ-SG8 secondary unit for example

1. Go to BTQ-VM LCD menu > Setting > Net ID, and set the network ID of the first BTQ-VM4/8 controller, see the pictures as below.

The net ID needs to be set orderly, starting by the first number. For example, the net ID of the first connected BTQ-VM controller is set as 1.

2. Set the net ID of BTQ-SG8 secondary unit via its DIP switch which is located at the rear panel of BTQ-SG8. The DIP switch of device ID is followed by the binary code with 6 digit (BTQ-SG8).
   For example, if the net ID of BTQ-SG8 is 2, the order (6~0) of the device ID is set as 000001 by

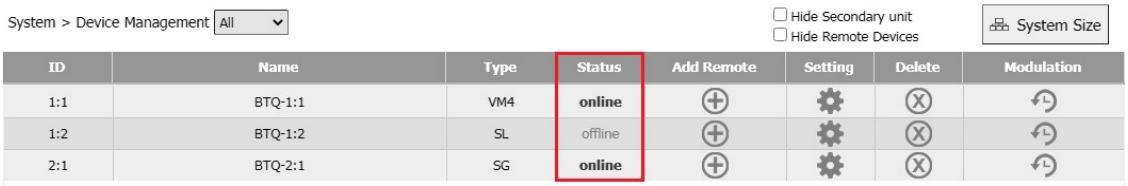
the binary code. And the ID will be converted by the decimal code as 2, that is to say this device will be identified with the ID number of 2. See the picture below.

BTQ-SG8

Model	DIP switch
BTQ-SG8	0~63

The Device ID cannot be repeated. The range of ID can be set as the table above.

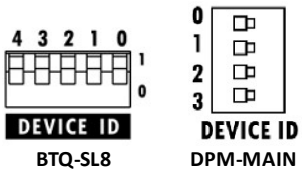
3. After the network ID setting for BTQ-VM controller and BTQ-SG8 secondary unit are completed, then proceed the hardware wiring connection between the BTQ-VM and BTQ-SG8, see Hardware Installation > Ateis Net > Global-Net for details.
4. Reboot the BTQ-VM controller and BTQ-SG8 secondary unit, so that the network card setting will be applied.
5. If this is the first-time setup configuration of your BOUTIQUE system, please run the hardware configuration directly from the LCD touch panel on the first BTQ-VM4/8 controller or via BTQ web browser:
   - See LCD Panel > Setup Wizard for details.
   - See BTQ Web Browser > Setup Wizard for details (recommend).
6. Then go to BTQ web browser > Device Management window to check if the BTQ-VM controller and BTQ-SG8 secondary unit are "online".



To know the configuration of device ID (DIP switch) among the BTQ-SL8 secondary units and DPM-MAIN, see Device ID (BTQ-SL8/BTQ-SG8/DPM-MAIN) for details.

4.5 Device ID (BTQ-SL8/DPM-MAIN)

The BTQ-SL8 secondary units and DPM-MAIN paging consoles are identified by device ID, which is configured by a DIP switch.



BTQ-SL8 DPM-MAIN

The DIP switch of device ID is followed by the binary code with 5 digit (BTQ-SL8) and 4 digit (DPM-MAIN).

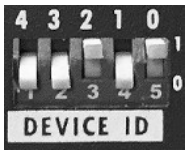
The Device ID cannot be repeated. The range of ID can be set as the table on the right.

	DIP switch
BTQ-SL8	1~31
DPM-MAIN	0~15

Please set the ID of BTQ-SL8 and DPM-MAIN orderly, starting by the first number.

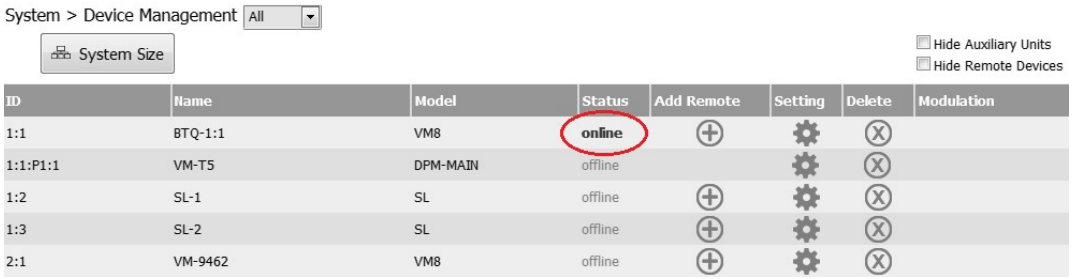
❖ How-to:

1. Set the device ID for BTQ-SL8 and DPM-MAIN. See the example of BTQ-SL8 as the picture below, the order (4~0) of the device ID is set as 00101 by the binary code. And the ID will be converted by the decimal code as 5, that is to say this device will be identified with the ID number of 5.



BTQ-SL8

2. After the device ID setting and the rest of the device hardware wiring are completed, please reboot the BTQ-VM controller/BTQ-SG8 secondary unit which the BTQ-SL8/DPM-MAIN are connected, so that the network card setting will be applied.
3. Go to Web Browser > Device Management > System Size to build a BOUTIQUE system by adding the number of controller/secondary units in the same group based on the hardware wiring.
4. Then go to Device Management to check if all the BOUTIQUE units are "online".



ID	Name	Model	Status	Add Remote	Setting	Delete	Modulation
1:1	BTQ-1:1	VM8	online	⊕	⚙	⊗	
1:1:P1:1	VM-T5	DPM-MAIN	offline		⚙	⊗	
1:2	SL-1	SL	offline	⊕	⚙	⊗	
1:3	SL-2	SL	offline	⊕	⚙	⊗	
2:1	VM-9462	VM8	offline	⊕	⚙	⊗	

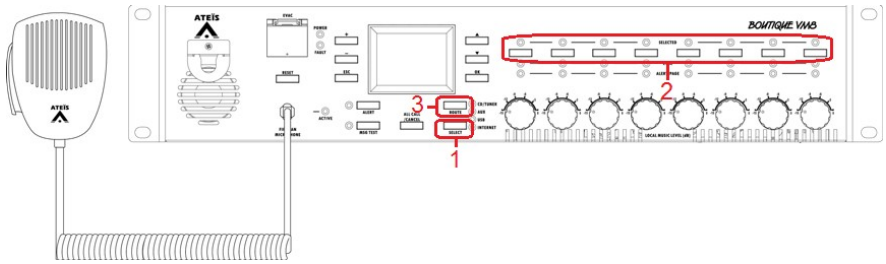
To identify the connection among the secondary units, each secondary unit has an unique ID. And the ID must be set orderly based on the Digi-link connection. For example, if the ID of BTQ-VM8 controller is 1:1, then the ID of the first connected BTQ-SL8 unit on BTQ-VM8 will be 1:2, and 1:3 for the second BTQ-SL8 unit.

4.6 Route BGM sources to zones

❖ Route the BGM (background music) sources such as CD, USB, etc. to the selected zone(s).

The music sources need to be set as "Route Key" mode on web browser first, see Paging Mode: CD/AUX.

Follow the steps below to route audio source to zones



1. Select the BGM source:

   Press [SELECT] button to select the BGM source. The LED will light up in blue and indicate that the BGM source that is selected.

2. Select the zones:

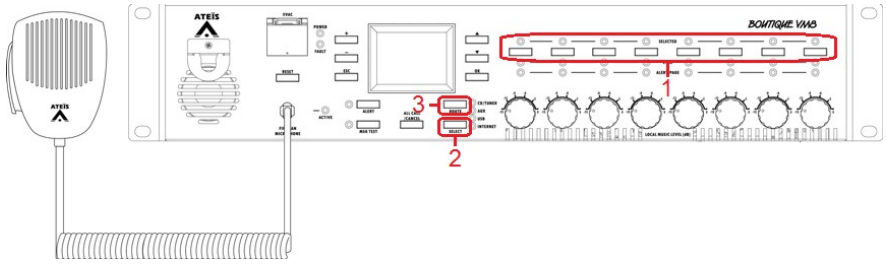
   Press the zone button on [Zone Selector], and the BGM will be routed to the selected zones on main controller and/or secondary units. The blue LED will light up if the zone is selected.

3. Start the routing by pressing the [ROUTE] button.

   During the BGM routing, the [Zone Select] button(s) can be dynamically added in/removed from the routing.

Cancel a BGM source to a zone

1. To cancel the routing for specific zones, press its zone selection button, and its corresponded blue LED will light off.
2. Press [SELECT] button and make sure the BGM Source button lights off.
3. Press the [ROUTE] button again to cancel the routing.



Zone attenuators (volume knobs)

When using a BGM source (CD/AUX/USB etc.) to paging to zones, and the Evacuation option on this source is disable, then users can change the volume of corresponding zones to the desired attenuation level from the front panel of controller. The attenuators offer 6 attenuation positions: 0, -3, -6, -9, -12, -15 dB.

4.7 Messages and microphone calls

❖ Choose to play the four types of messages or do a zone call with the fireman mic on main controller.

- EVAC: Press it to play a EVAC message broadcasting.
- ALERT: Press it to play the alert message to selected or pre-defined zones.
- MSG TEST: Press it to play the testing alert message.
- Fireman mic: Press the fireman mic to start the zone call to selected or pre-defined zones.
- RESET: Press it to reset the emergency state. The evac message playing will be canceled, and the red evacuation button will light off.

4.7.1 EVAC

To start a message playing, it can be done by manual zone selection or with pre-defined zone on web browser.

- **Play message to"pre-define zones"**

  1. Press [EVAC] button and the "Paging NOW?" message will be displayed on LCD panel, and press [OK].
  2. Then the message will be played in the pre-defined zone(s).

- **Play message with "manual" zones selection**

  1. First, press the zone buttons to select the zones which you wish the message to be

played. The corresponded zone LEDs shall light up in blue.

2. Press [EVAC] button and the "Paging NOW?" message will be displayed on LCD panel, and press [OK].
3. Then the message will be played in the manually selected zone(s).

- **Cancel a EVAC message playing**

  Press [RESET] button and the "Cancel Paging NOW?" message will be displayed on LCD panel, and press [OK] to stop the message playing.

4.7.2 Alert

To start a message playing, it can be done by manual zone selection or with pre-defined zone on web browser.

- **Play message to"pre-define zones"**

  1. Press [ALERT] button and the "Paging NOW?" message will be displayed on LCD panel, and press [OK].
  2. Then the message will be played in the pre-defined zone(s).

- **Play message with "manual" zones selection**

  1. First, press the zone buttons to select the zones which you wish the message to be played. The corresponded zone LEDs shall light up in blue.
  2. Press [ALERT] button and the "Paging NOW?" message will be displayed on LCD panel, and press [OK].
  3. Then the message will be played in the pre-defined zone(s).

- **Cancel a alert message playing**

  Press [ALERT] or [MSG TEST] button and the "Cancel Paging NOW?" message will be displayed on LCD panel, and press [OK] to stop the message playing.

4.7.3 MSG test

To start a message playing, it can be done by manual zone selection or with pre-defined zone on web browser.

- **Play message to"pre-define zones"**

  1. Press [MSG TEST] button and the "Paging NOW?" message will be displayed on LCD panel, and press [OK].
  2. Then the message will be played in the pre-defined zone(s).

- **Play message with "manual" zones selection**

  1. First, press the zone buttons to select the zones which you wish the message to be played. The corresponded zone LEDs shall light up in blue.
  2. Press [MSG TEST] button and the "Paging NOW?" message will be displayed on LCD panel, and press [OK].
  3. Then the message will be played in the pre-defined zone(s).

- **Cancel MSG TEST message playing**

  Press [ALERT] or [MSG TEST] button and the "Cancel Paging NOW?" message will be

displayed on LCD panel, and press [OK] to stop the message playing.

4.7.4 Fireman microphone

To start a fireman microphone paging, it can be done by manual zone selection or with pre-defined zone on web browser.

To learn how to set pre-defined zone selection for fireman microphone, please read Paging Mode: Fireman microphone.

- **Start a call with pre-define zones**

  Press the fireman microphone to start calling in the pre-defined zones, the EVAC LEDs with the corresponded zones will light up (see the evac setting of EVAC LED from Singular type paging).

The fireman mic paging can be defined as evac call and general broadcasting via web browser.

- **Start a call with manual zones selection**

  1. Press the zone buttons for selection. The corresponded LEDs of the selected zone buttons will light up.
  2. Press the fireman microphone to start calling in the selected zones, the EVAC LEDs with the corresponded zones will light up.

- **Stop a fireman microphone call**

  1. [Push to Talk] mode: Release the fireman microphone to stop the fireman mic paging.
  2. [Lock to Talk] mode: Press the fireman microphone again to release the fireman mic paging.

If the fireman microphone is using a pre and/or post chime message, the LED will blink during the chime broadcasting.

5 Configuration

More advanced configuration such as volume, PEQ, audio routing, monitor, control, event and bell scheduler and paging with priority management etc.. can be configured by a dedicated web browser.

If this is the first web configuration, please update the BOUTIQUE firmware to the latest version. Go to System > Update > Firmware for more details.

5.1 Web browser

5.1.1 Setup wizard

1. Click ★ icon to open the setup window.
2. Choose New Setup or Replace.

Replace: When replacing the broken main controller with the new one, proceed the Replace Setup to configure and synchronize the process again only with the broken device.

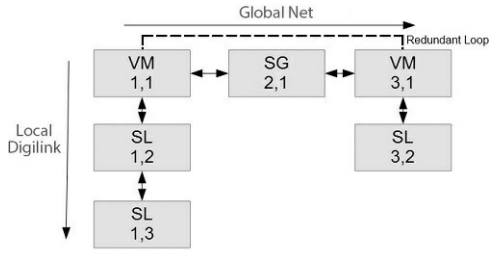
5.1.1.1 New setup

5.1.1.1.1 Step 1: language

1. Select the drop-down box to choose the language.
2. Press [Next] to move to [Step 2: number of main and secondary unit] settings.

5.1.1.1.2 Step 2: number of main and secondary unit

❖ Set the number of main controller and secondary unit. Each unit has its own ID in the system.



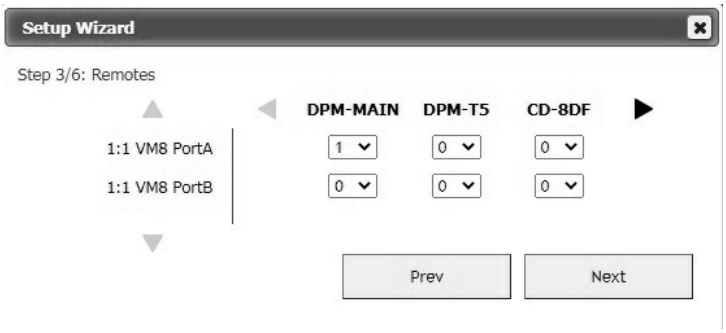
System Structure

1. Set the number of controller (BTQ-VM4/VM8/VM8W1/VM8W2) and secondary global unit (BTQ-SG8) from [Main] drop-down box. Then the device ID of the main controller/SG unit will be dynamically allocated.
2. Set the type of connected controller/BTQ-SG8 unit from [VM] drop-down box.

3. Set the number of secondary local unit (BTQ-SL8) connected to the main controller/BTQ-SG8 unit.
4. Last, the total number of the connected secondary units will be automatically sum up and display in the row of [SEC].
5. After completed all the settings, click [Next] to move to [Step 3: number of remotes] settings.

5.1.1.1.3 Step 3: number of remotes

❖ Set the number of DPM-MAIN/DPM-T5/CD-8DF/CD-16DF/CD-T5DF for your BOUTIQUE system, the default number of DPM-MAIN is 1, and DPM-T5/CD-8DF/CD-16DF/CD-T5DF is 0.

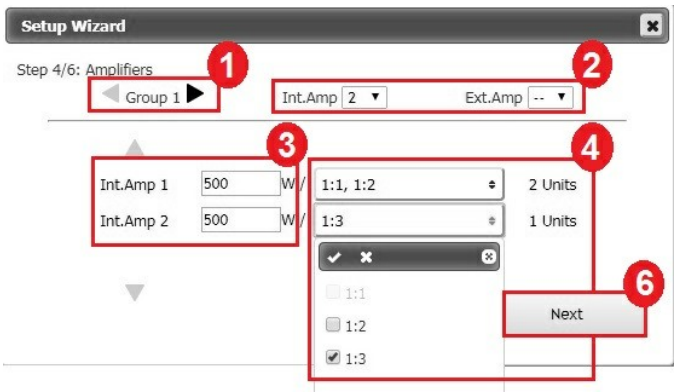


1. Set the number of DPM-MAIN/DPM-T5/CD-8DF/CD-16DF/CD-T5DF which are connected to the corresponded main controller and secondary units.
2. Click [Next] to move to [Step 4: power amplifiers sharing] settings.

5.1.1.1.4 Step 4: power amplifier(s) sharing

❖ Set the group of internal/external power amplifier connected to the BOUTIQUE system.

All the paging calls and BGM can be amplified by internal power amplifier from the main controller and the external power amplifier. The internal amplifier can also share its power with other secondary unit. An external amplifier can also be connected for spare switching. Therefore, you can define which amplifier in the same group in order to share its power.



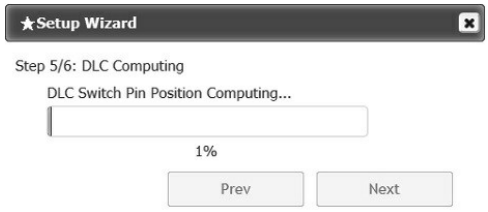
1. Set the group based on the number of local-net the BOUTIQUE system has. The Group 1 indicates the amplifiers in the first local network, the Group 2 indicates the second local network, and so on.
2. Set the number of amplifier for Int. amp channel and Ext. amp channel in the selected group.
3. Set the power (wattage) of which Int./Ext. amplifier channel.
4. Then select which device shall be used for power sharing by choosing the ID from the drop-down box. For example, see the picture above, the main controller (1:1) will share the power with the secondary unit (1:2) through Int. Amp 1 channel. And an external amplifier will be connected to another secondary unit (1:3) through Int. Amp 2 channel.

5. Proceed the same steps to set the power sharing for the rest of external amplifiers.
6. Click [Next] to move to [Step 5: dummy load capacitor] settings.

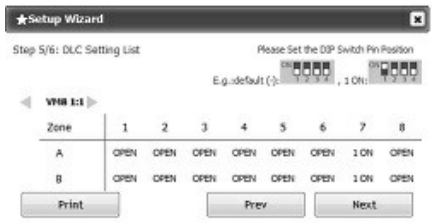
5.1.1.1.5 Step 5: dummy load capacitor

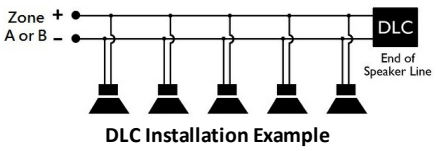
❖ To calculate dummy load capacitance and DIP switch setting.

If the VA-DLC dummy load capacitor is not connected in the end of speaker line, please ignore this step, and move to [Step 6: Monitoring] settings.



1. Click [Next] to get reference value.

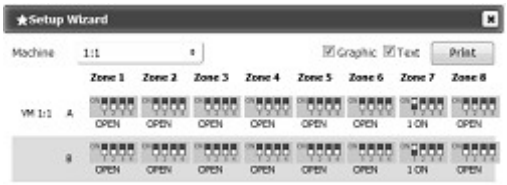




DLC Installation Example

1. Each speaker zone has A/B sub zones. We recommend to install a VA-DLC dummy load capacitor in the end of speaker line for each sub zone.
2. Set the indicated number to ON position on the DIP switch.
3. Click [Next] to move to [Step 6: Monitoring] settings.

❖ Printing Setting of dummy load capacitance.



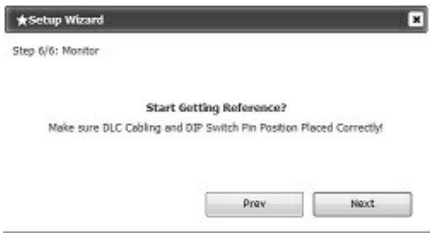
Tick [Graphic] checkbox and [Text] checkbox to display the DLC setting for printing.

5.1.1.1.6 Step 6: Monitoring

❖ Set the monitor tolerance of speaker line impedance and power amplifier.

1. Click [Next] to apply the preset tolerance, impedance and amplifier gain.
   Or select the drop-down box to change the tolerance of percentage.
2. Click [Next] button for next settings.

❖ Click [Next] to get speaker impedance for reference.



1. After the process has completed successfully, click [Next].
2. The reference results will be displayed on the window. If the results are correct, then click [Ready] and [Activate] to enter the menu window.

5.1.1.2 Replace

5.1.1.2.1 Step 1: net ID

1. Select the netcard ID of the "new" BTQ-VM4/VM8 controller used to replace the broken one.
2. Click [Next] to move to [Step 2: backup read/recovery] settings.

Click [Skip] if users have already set the netcard ID of the "new" BTQ-VM4/VM8 controller from the LCD panel of BTQ-VM4/VM8.

5.1.1.2.2 Step 2: backpup read/recovery

- Backup read

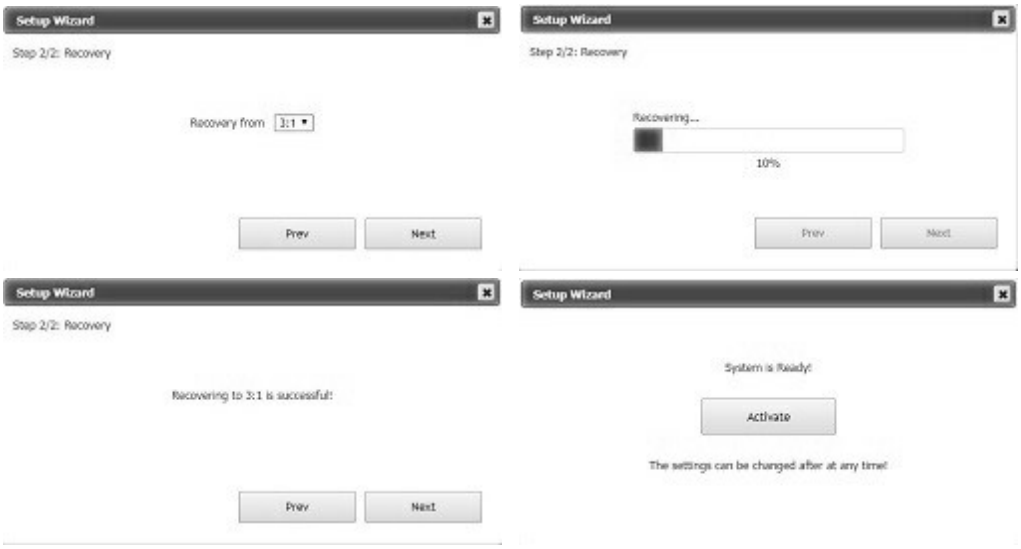
  Use the config file from the USB flash drive which is connected on the "new" BTQ-VM4/VM8 unit.

  1. Select the config file from the drop-down box.
  2. Click [Next] to start to apply the selected config. file to the "new" BTQ-VM4/VM8 unit.

- Recovery

  Use the config file from other connected BTQ-VM4/VM8 unit, and use it as the default configuration for synchronization to the broken one.

  1. Select the netcard ID of the BTQ-VM4/VM8 (as the default configuration) from the drop-down box.
  2. Click [Next] to apply the setting.
  3. Click [Active] to enter the main webpage.



5.1.2 Getting started

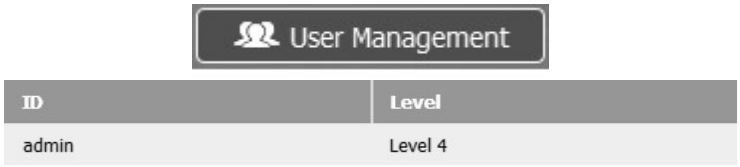
- Network connection: Connect the BTQ-VM4/VM8/SG8 to network switch via STP CAT5/6 cable with shielded RJ45 connector. Open the web browser on your PC/laptop (we recommend Mozilla Firefox or Google Chrome). Enter the default IP address into the address bar. You can visualize the webpages of the BOUTIQUE system after connecting.

Default Setting	BTQ-VM	BTQ-SG8
IP address	192.168.102.125	192.168.102.124
Subnet Mask	255.255.252.0	255.255.252.0
Gateway	192.168.100.254	192.168.100.254
DNS	0.0.0.0	0.0.0.0

- IP address: Assign the IP address to the BOUTIQUE device and change the IP address of device, go to Machine > Settings > IP.
- SIP settings: The BOUTIQUE streaming can be done using a SIP Server. To change the IP address of device, go to Machine > Settings > SIP.

5.1.3 User management

To access [User Management] function, click [User Management] button on the top right section. When configures and operates the system via web browser/LCD display panel, you will be requested to login (enter username and password) first, see Login/logout via web browser/LCD display. In this function, you will be able to add new user account, modify account settings and delete account.



- User ID: Display the account name.
- Level: Display the authorization level of the user.

The user accounts are created based on the four types of level, see User Level > LCD Panel & Web Browser.

If more than one user level has been created, you will be requested to login if you wish to operate/modify the system settings from the LCD menu of main controller, see LCD Menu.

5.1.3.1 User level

❖ The web browser and LCD display can be set by the 4 types of user level.

- Level 4 (the highest priority)
- Level 3
- Level 2
- Level 1 (the lowest priority)

❖ In order to comply to the EN 54-16 standard, the user level has been set as described:

- Level 1 is the lowest level.
  - Level 1 has the authority to control the parameters such as DSP adjustment, read log & fault list etc. on web page.
  - To enter level 1, a password is needed.
- Level 2 is defined to be for person having a specific responsibility for safety. Level 2 has all the authority of level 1.
  - To enter level 2, a password is needed.
- Level 3 is for specific maintenance operator and trained persons. Level 3 has all the authority of level 2.
  - To enter level 3, a password is needed.
- Level 4 is for authorized by the manufacturer to either repair the unit and/or alter its firmware. Level 4 has all the authority of level 3.
  - To enter level 4, a password is needed.

The user accounts are created based on the four types of level, see User Level > LCD Panel & Web Browser.

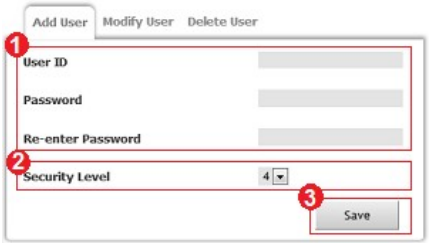
5.1.3.1.1 LCD panel & web browser

The functions/actions listed on LCD panel and web browser are based on the authority of user Level. Users with the equal or higher level are allowed to operate the function.

LCD panel	
Function	Level
Mic/Line	1
Scheduler	1
Log list	1
Fault list	1
Logout	1
Setting-Info	1
Monitor Reset	2
Setting-Language/Region/Time/Logout Time/ Brightness	2
Paging Reset	3
System Fault Reset	3
Paging Reset	3
Setting-Ethernet/Net ID/Run Wizard/Power Save/ Configuration File	3
Table Synchronization	3
FMM	4
Lamp	4

Web browser	
Function	Level
Info-Fault List/Log Book/About	1
DSP function	1
Machine Setting-General/Date/Time/Zone Settings	2
Message-Management/Playlists	2
Scheduler	2
Evac	2
Paging	2
Event	2
Monitor	2
Device management	3
Update operation	3
Skin file operation	3
Table synchronization	3
Machine Setting-IP/SIP/RS232 Port/Third Party Controls/Power Saving	3
Configuration File	3
Wizard Setting	3
User Manager operation	4

5.1.3.2 Add user

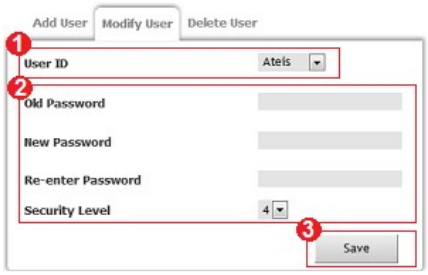


1. Enter the User ID and the password.
   - The passwords must contain at least one number or letter, and cannot leave blank on Password field.
   - Letters are case sensitive, and always filled in capital letters.
2. Select the Security level.
3. Click [Save].
   - After a new user account has been created, you will be asked to login again by entering the account and

password.

5.1.3.3 Modify user

1. Select the user ID first.
2. Modify the password and security level.
3. Click [Save].



5.1.3.4 Delete user

Select the user ID and click [Save] to delete it.

5.1.3.5 Login/logout

❖ When trying to operate the authorized functions such as FMM action, you will be requested to login.

- Login from LCD front panel display:
  1. Use the ▲ ▼ arrow keys to select the right letter or number for user ID, and click [OK].
  2. Press the ▼ arrow key to find "Login". Press OK, this will validate you entry.
  3. The LCD display will request you to enter your password, repeat the same procedure to enter the password.
- Login from ATEÏS web browser:
  1. Enter a valid user ID and password.
  2. To logout, go to the right top section, and click [Logout].

  ❖ Click ? if users forget the password, but you need to enter the account first.

5.1.4 Synchronize icon

The Synchronization icon on the right top section of the webpage indicates whether the system configuration is synchronized (green icon) or asynchronous (red icon). If the configuration is not synchronized, please see Table Synchronization to proceed Sync Configuration.

5.1.5 Factory setting

The current configuration file shall be deleted and return to factory setting when clicking the [Factory Setting] button. An alert window will appeared before proceed the [Factory Setting] action.

Please note only the Level-3 and Level-4 authorized users can access this function.

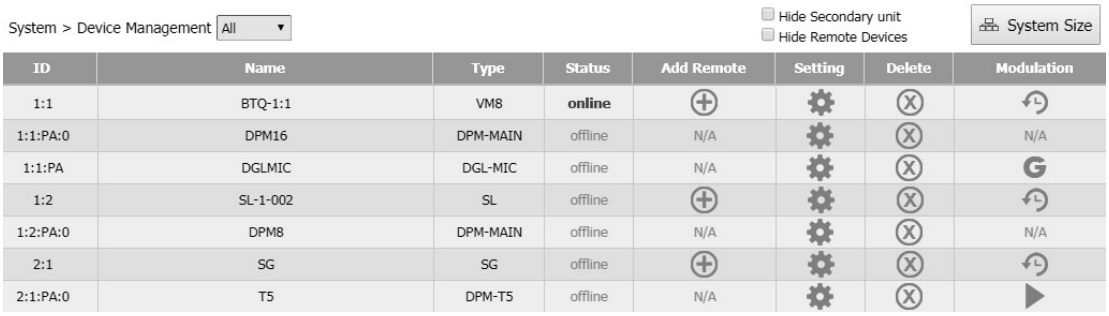
5.1.6 Configuration file upload/download

Click icon and then click [Upload] button to load the configuration file from the selected path of PC/Laptop to web browser or click [Download] button to download the configuration file to the selected path of PC/Laptop.

5.1.7 System

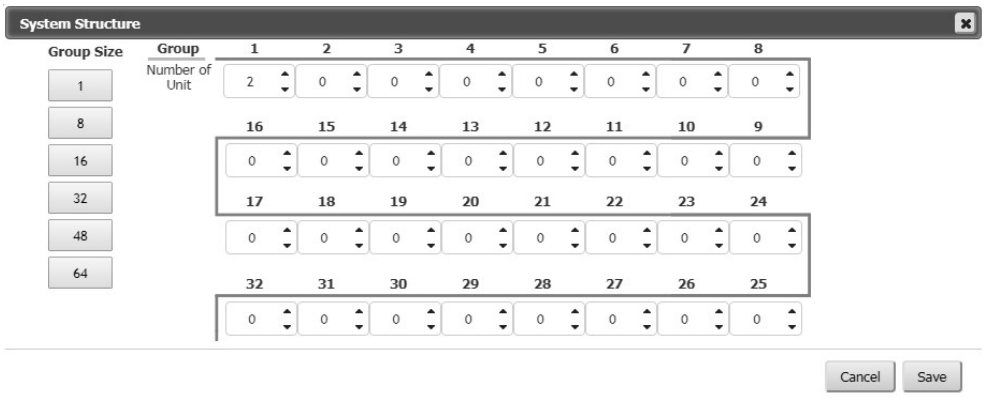
5.1.7.1 Device management

Allow to deploy the BOUTIQUE units, paging consoles, amplifiers and other accessories such as DNM2-ETH, and show their information (status, system structure).



5.1.7.1.1 System size

Allow to quickly build a BOUTIQUE system by adding the number of main controller/secondary units in the same group, the setting can be dynamically modified and adapted to the current setting.



The max. number of group is 64.

5.1.7.1.2 Hide units

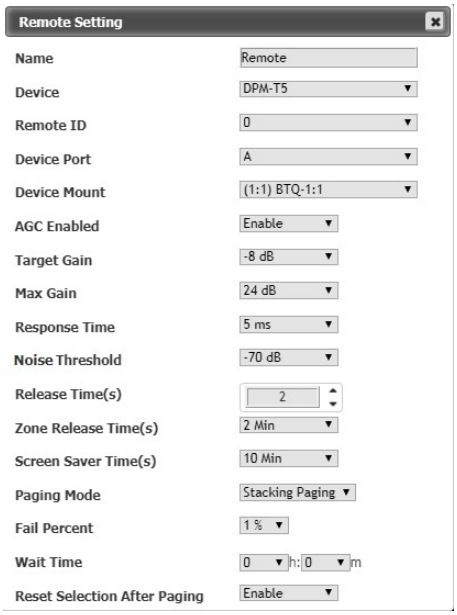
Click the checkbox to proceed the [Hide Secondary Unit] and [Hide Remote Devices] option.

5.1.7.1.3 Add/delete remotes

⊕ [Add Remote] button: Add a new remote.

⊗ [Delete Remote] button: Delete the selected remotes. An alert window will appear before proceed the delete action.

5.1.7.1.3.1 Add a DPM-MAIN/DPM-T5/CD-8DF/CD-16DF/CD-T5DF



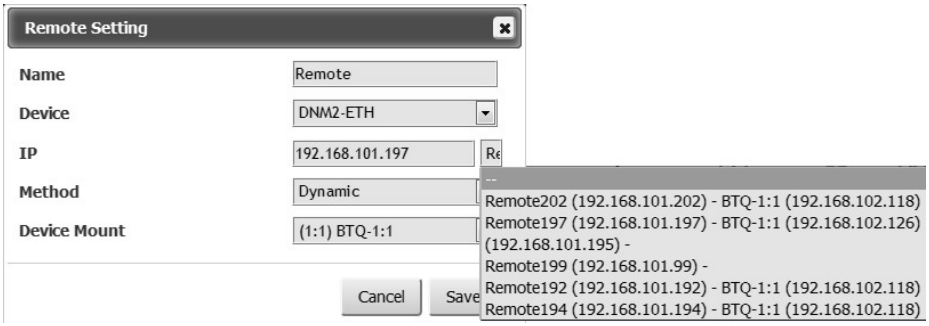
- Name: The name of remote (DPM-MAIN/DPM-T5/CD-8DF/CD-16DF/CD-T5DF/DNM2-ETH/DGL-MIC).
- Device: The type of remote (DPM-MAIN/DPM-T5/CD-8DF/CD-16DF/CD-T5DF/DNM2-ETH/DGL-MIC).
- Remote ID: Set the ID number of remote for a BOUTIQUE system. The max. ID number of remote is 15.
- Device port: Set which remote console port (Port A or Port B) on main controller/secondary unit to connect to this remotes.
- Device mount: Select which main controller/secondary unit is connected to the remote.
- AGC enabled: Enable/disable the AGC (Automatic Gain Control) function of microphone, it will effectively reduce the volume if the signal is strong or raises the volume when it's weak. The input signal can be increased/decreased to a target level. You can adjust the gain of the source automatically by setting a target level.
- Target gain: The level will be increased up to target level when audio level is above the threshold value.
- Max gain: The maximum gain of AGC function. This function keeps a natural and dynamic audio.
- Response time: If the audio input level is continually greater than Noise threshold for this period of time, the gain operation will be active.
- Noise threshold: Enable the AGC function when the audio input level is above this value.

⚠ Don't set the level too low otherwise it will hear unexpected sounds such as breathing sounds or

ambient noise.

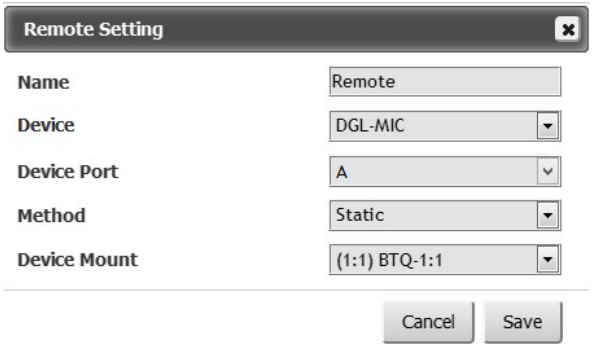
- Release time(s): Set the release time when the volume is under the noise threshold of AGC, and the gain decreases to 0 dB.
- Zone release time(s): Set the time to auto deselect the zones which are selected on DPM-MAIN/ DPM before paging.
- Screen saver time(s): Set the time to activate the screen saver on DPM-T5/CD-T5DF.
- Paging mode:
  - Normal: The default paging mode. Select the zone button(s) on the LCD panel of DPM-T5/CD-T5DF, then press [Play] to start the paging.
  - Stacking paging: If the selected zones are occupied by the source with higher priority and the user requests a paging, users can pre-record the paging message and temporarily save the message in DPM-T5/CD-T5DF, then the recorded messages can be played after the paging with higher priority has ended.
    - Fail percent: When the selected zones are occupied by the source with higher priority, users can set the percentage of the occupied zones, if this percentage goes beyond your setting, the [Stacking Paging] function will be activated.
    - Wait time: Set the waiting time (countdown timer) of the recorded paging message from [Stack Paging] function. If the stack paging does not play within the [Wait Time], it will be automatically canceled.
  - Paging stacking: Pre-record the paging message and play it using the built-in speaker of DPM-T5/CD-T5DF for confirmation first.
- Reset selection after paging: Enable/disable to auto deselect the zones after the paging ends.

5.1.7.1.3.2 Add a DNM2-ETH



- Name: The name of DNM2-ETH.
- Device: The type of remote. Choose [DNM2-ETH] here.
- IP: Select the IP address of this DNM2-ETH from [...] drop-down box.
- Method:
  - Dynamic: Dynamically increase/decrease the level of speaker based on the background noise during the paging.
  - Static: Detect the background noise in the beginning of paging, and use the fixed gain based on [Over Noise Level] setting to increase/decrease the level of speaker.
- Device mount: Select which main controller/secondary unit is connected to the DNM2-ETH.

5.1.7.1.3.3 Add a DGL-MIC

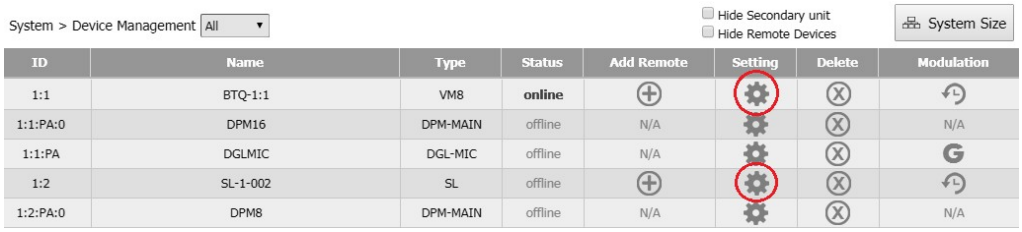


- Name: The name of DGL-MIC.
- Device: The type of remote. Choose [DGL-MIC] here.
- Device port: Set which remote console port (Port A or Port B) on main controller/secondary unit to connect to this DGL-MIC remotes.
- Method:
  - Dynamic: Dynamically increase/decrease the level of speaker based on the background noise during the paging.
  - Static: Detect the background noise when starts paging, and use the fixed gain based on [Over Noise Level] setting to increase/decrease the level of speaker.
- Device mount: Select which main controller/secondary unit is connected to the DGL-MIC.

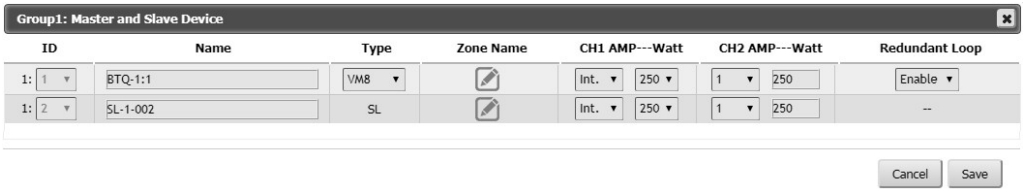
5.1.7.1.4 Setting

The BOUTIQUE system provides a flexible and low-cost switchable amplifier solution, all paging calls and BGM can be defined to be amplified by internal amplifier or the external amplifier. The internal amplifier can also share its power amplifier with other secondary units. Moreover, an external power amplifier can also be connected for backup. Therefore, you can define which amplifier in the same group in order to share its power.

1. Go to System > Device Management > Setting (controller or secondary unit).

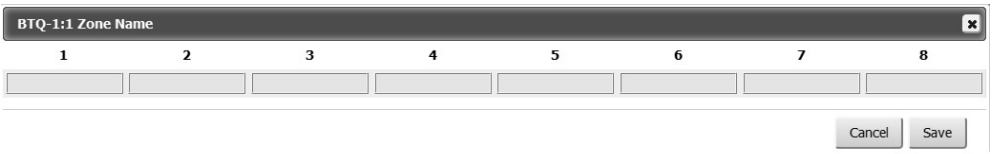


2. Click [Setting] button on Device Management to enter the setting window of controller/ secondary unit, see the picture below.



- ID: The ID of BTQ-VM4/VM8/VM8W1/VM8W2/SG8.
- Name: The display name of BTQ-VM4/VM8/VM8W1/VM8W2/SG8/SL8 on web browser.

- Type: Choose the model (BTQ-VM4/VM8/VM8W1/VM8W2/SG8) as the master unit. The BTQ-SL8 model will automatically display if it has been configured on Setup Wizard or [Device Management > System Size].
- Zone name: Click [Edit] button to open the Zone Name window, see the picture below. Users can enter the zone name in the empty box, and click Save button to save the changes. The zone names will be applied on the log list, fault list, LCD panel of controller.



- CH1 AMP---Watt: Use internal amplification (int. AMP) from main controller or an external amplifier (by its ID). The default setting of [CH1 AMP] is to use the internal amplifier on BTQ-VM4/VM8/VM8W1/VM8W2; and the BTQ-SL8 can choose either [int. AMP] or [external AMP]. The system will automatically detect the internal amplifier output power of BTQ-VM controller (240W/250W/480W/500W); please set the amplifier output power of external amplifier on [CH1 AMP] channel.
- CH2 AMP---Watt: Choose a ID to identify the connected external amplifier for BTQ-VM4/VM8/VM8W1/VM8W2/SG8/SL8. And set the amplifier output power of external amplifier on [CH2 AMP] channel.

If no external amplifier is connected on the system, please choose [--] option.

- Redundant loop: Enable this option if DPM remotes are connected to the main controller via redundant loop.

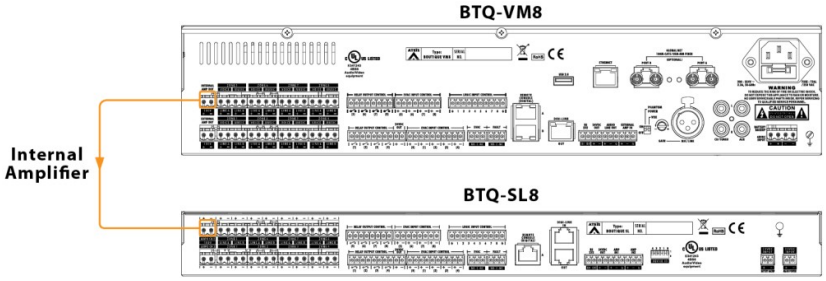
5.1.7.1.4.1 Application1: economic type

❖ The internal amplifier in the main controller can share power amplifier with secondary local unit(s).

- Equipment
  - One BTQ-VM850 main controller unit.
  - One BTQ-SL8 secondary unit.
- Web browser setting

Type	CH1 AMP	CH1 AMP-Watt	CH2 AMP	CH2 AMP-Watt
VM8 (with built-in amp)	Int.	500	-	-
SL-1	Int.			

- Connection



5.1.7.1.4.2 Application2: medium scale type

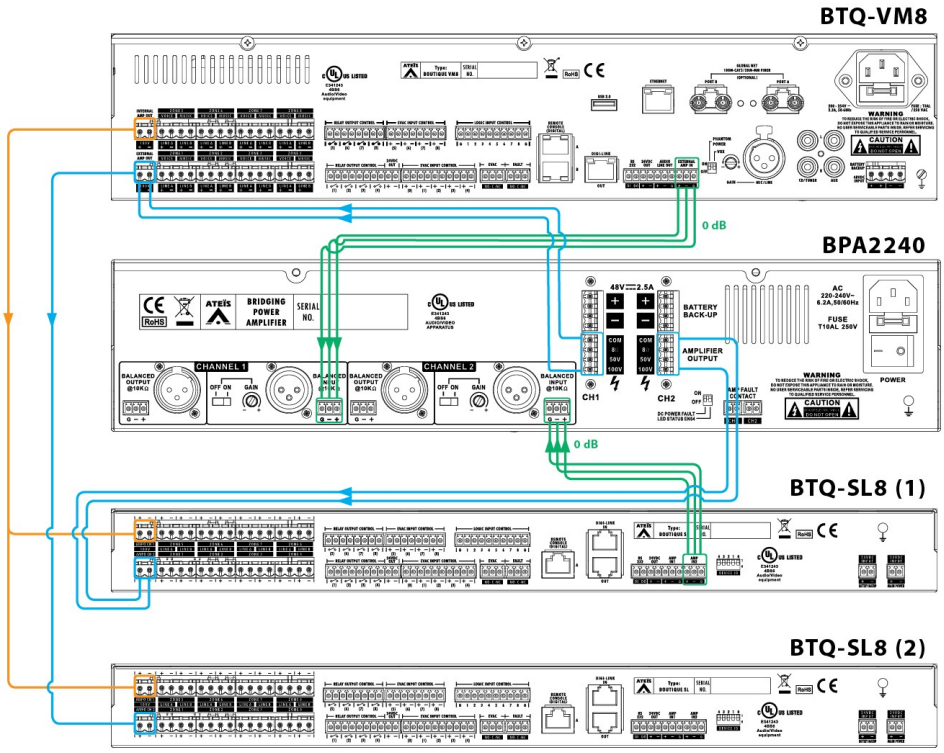
This application is used for multiple zones such as shopping mall or several floors building, which require to use additional amplifier to play the message, chime etc.

For example, the first amplifier (internal amp of main controller) will be used to play the background music for all the floors, and the external amplifier will be used for general paging for specific floors while the background music by using the internal amplification can be continued to play.

- Equipment
  - One BTQ-VM850 main controller unit.
  - Two BTQ-SL8 secondary units.
  - One external power amplifier.
- Web browser setting

Type	CH1 AMP	CH1 AMP-Watt	CH2 AMP	CH2 AMP-Watt
VM8 (with built-in amp)	Int.	500	1	user defined
BTQ-SL8(1)	Int.		2	
BTQ-SL8(2)	Int.		1	

- Connection



5.1.7.1.4.3 Application3: large scale type

❖ This application is used for multiple zones such as airport, railway station which requires mass amplification to play the message, chime in single ground floor. For example as airport, the zone of Terminal 1 requires to connect two amplifiers (internal. amp and external amp), zones of Terminal 2 requires another two amplifiers, and zone of Gate01~030 requires two amplifiers.

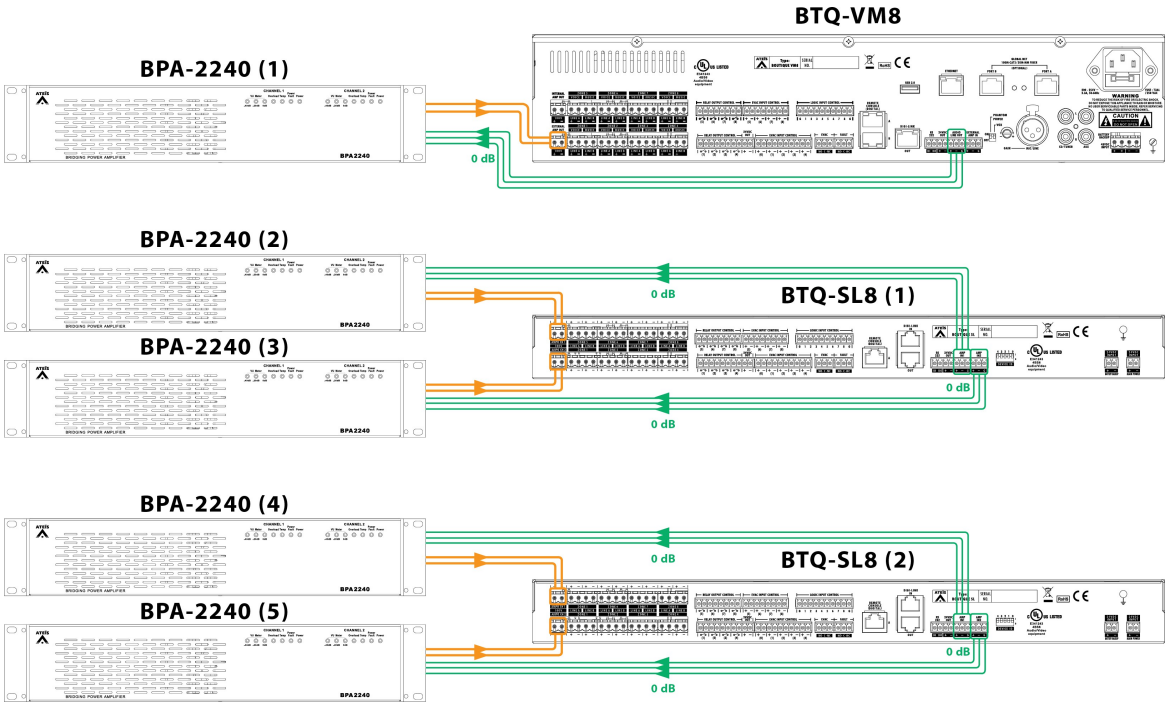
- Equipment
  - One BTQ-VM850 main controller unit.

- Two BTQ-SL8 secondary units.
- Five external power amplifiers.

- Web browser setting

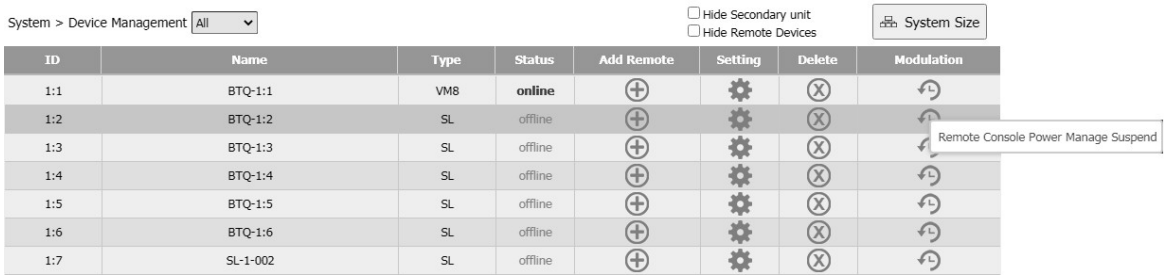
Type	CH1 AMP	CH1 AMP-Watt	CH2 AMP	CH2 AMP-Watt
VM8 (with built-in amp)	Int.-1	500	1	user defined
BTQ-SL8(1)	2	user defined	3	user defined
BTQ-SL8(2)	4	user defined	5	user defined

- Connection



5.1.7.1.5 Modulation

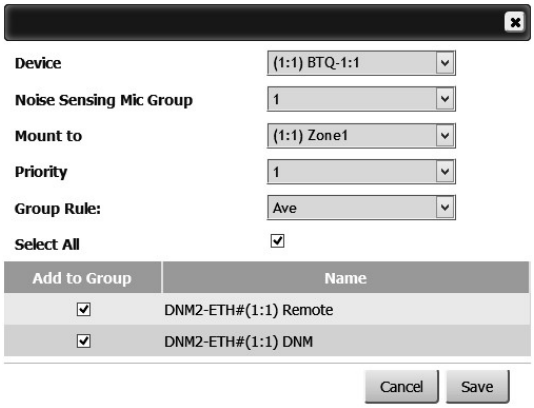
5.1.7.1.5.1 BTQ-VM / BTQ-SG8 / BTQ-SL8



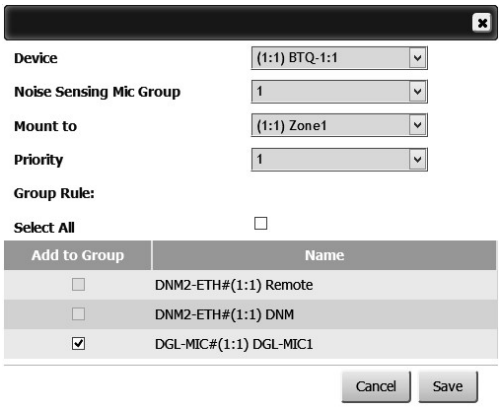
- Remote Console Power Manage Suspend:

  After updating the program code of the DPM-T5/CD-T5DF on BTQ web browser (original version v1.19 or before v1.19), the DPM-T5/CD-T5DF will reboot itself. During the rebooting time of remote device, click [Remote Console Power Manage Suspend] button on BTQ web browser > Device Management window. The purpose is to lengthen the waiting time of the BTQ unit and allow the internal program code of DPM-T5/CD-T5DF to be converted. This action only needs to be executed when the program code is updated. If the process fails, please press the [Remote Console Power Manage Suspend] button again when the remote device reboots.

5.1.7.1.5.2 DNM2-ETH/DGL-MIC



DNM2-ETH



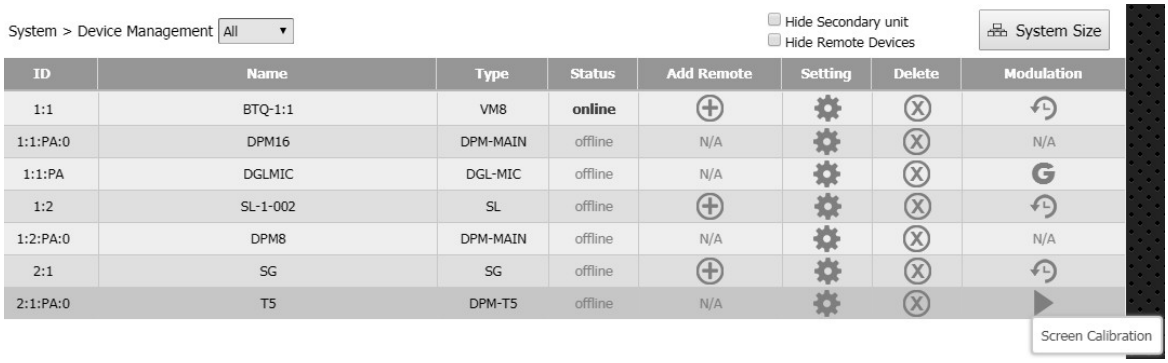
DGL-MIC

- Device: The main controller/secondary unit which is connected to this DNM2-ETH/DGL-MIC group.
- Noise sensing mic group: Set the group to be edited by it's ID (max. 8 groups).
- Mount to: Set a paging zone to work with a selected noise sensing mic group.
- Priority: If multiple zones are under paging from one source, use the priority to decide which group to detect the background ambient noise and auto adjust the output level. The 1 is the highest priority.
  - If the priority among the groups is the same, the small number of the group will be in higher priority. For example, the Group '1' has higher priority than Group '2'.
  - The priority basis will be based on first-in, first-served if the priority between multiple groups is the same.
- Group rule: When multiple DNM2-ETH units are installed with different position in the same area, users can use Group Rule to define the detection method of noise ratio.
  - Avg: Calculate the average among the detected gain value of DNM units, and use this gain value to adjust the level of speaker output.
  - Max:
    - Dynamic: If the DNM2-ETH is a dynamic type, it will use the maximum ANG gain value which has detected among the DNM2-ETH units during paging, and use the gain vale to adjust the level of speaker output.
    - Static: If the DNM2-ETH is a static type, it will use the maximum level of ambient noise which has detected by DNM2-ETH units in the beginning of paging, and use the gain vale to adjust the level of speaker output.
  - Min:
    - Dynamic: If the DNM2-ETH is a dynamic type, it will use the minimum ANG gain value which has detected among the DNM2-ETH units during paging, and use the gain vale to adjust the level of speaker output.
    - Static: If the DNM2-ETH is a static type, it will use the minimum level of ambient noise which has detected by DNM2-ETH units in the beginning paging, and use the gain vale to adjust the level of speaker output.
- Select all: Click to select all the listed DNM2-ETH units or a DGL-MIC unit.
- Add to group: Tick the checkbox to add the DNM2-ETH/DGL-MIC into the selected group.

Please note when using the DGL-MIC unit, only "ONE" DGL-MIC can be added to a group.

❖ Please see DNM2-ETH/DGL-MIC DSP configuration and see how to proceed the DNM2-ETH/DGL-MIC calibration.

5.1.7.1.5.3 DPM-T5/CD-T5DF screen calibration

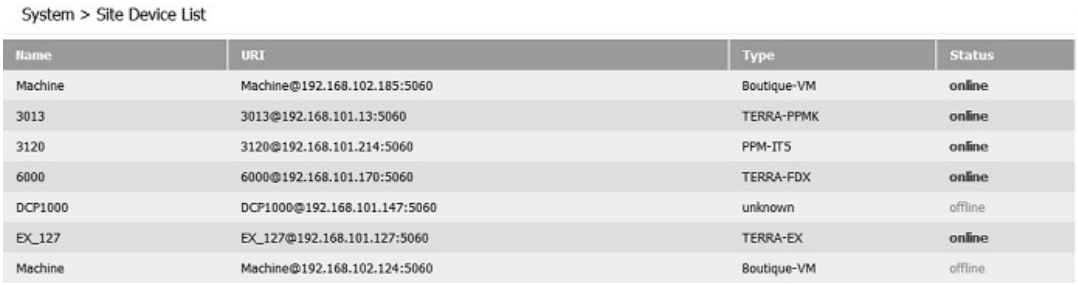


Calibrate the position of the LCD touch screen panel on DPM-T5/CD-T5DF.

1. Click [Screen Calibration] on Modulation grid.
2. Then the touch panel of DPM-T5/CD-T5DF will display [Runtime calibration, please touch the screen at the center of the ring] message.
3. Follow the message instruction and press the rings (dots) at the top-left corner and the bottom-right corner on the panel.

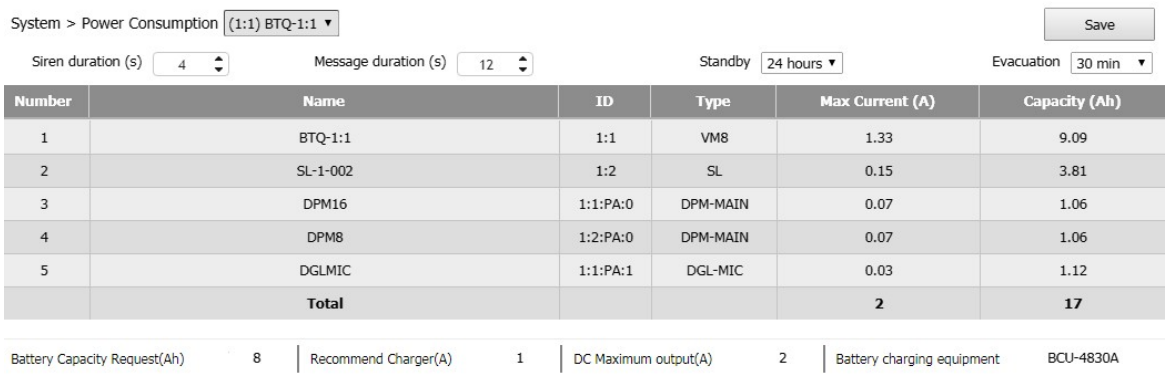
5.1.7.2 Site device list

List the status of all the devices such as BOUTIQUE devices, Terracom devices located in the same LAN. Please go to [Device Management] if attempting to modify the setting.



5.1.7.3 Power consumption

Display the used power consumption of BOUTIQUE local-net system(s) and it gives user the recommend battery capacity for the DC backup power of the system.



- Siren duration (sec.): Set the duration of siren warning sound before distributes the EVAC message.

- Message duration (sec.): Set the duration of the EVAC message.

Please note the duration of siren sound and EVAC message will affect the battery capacity for system operation. To know what battery capacity you need to purchase, please ask your dealer for the calculation sheet of power consumption.

- Standby: Set the time duration of standby, the system will calculate the the power consumption and recommend capacity of battery.
- Evacuation: Set the time duration of Evacuation, the system will calculate the the power consumption and recommend capacity of battery.

❖ Example: If the system is set as the following table:

When the system enters to emergency state, the siren sound will start buzzing for 5 seconds and silence after, then the EVAC message for emergency evacuation will be played. This evacuation process will continue till it passes 30 minutes.

siren duration	message duration	standby	evacuation
5 seconds	30 seconds	24 hours	30 minutes

- Power consumption (Max Current A): Display the maximum power consumption of the device.
- Power consumption (Capacity Ah): Display the power consumption of the selected local-net system which is under the security mode.

❖ Power requirement & recommendation

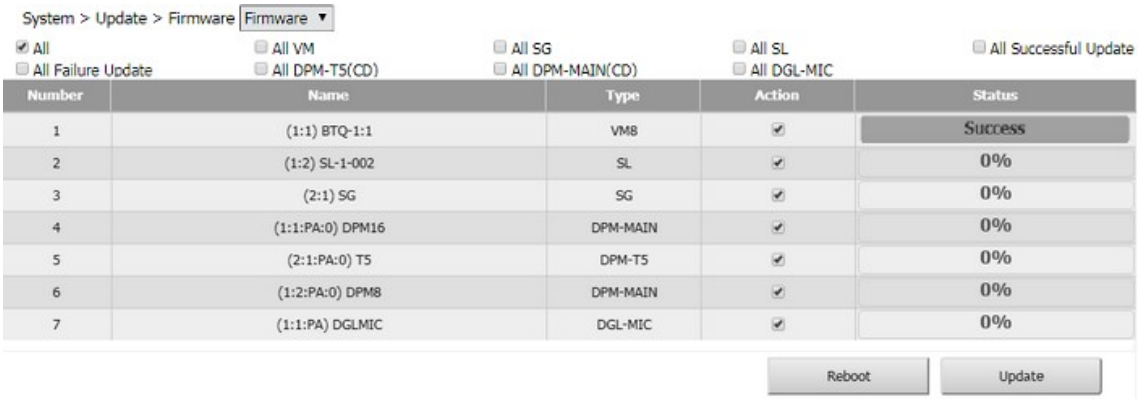
Display the total battery capacity (Ah)/recommended charging current (A)/DC max. output (A)/ recommended battery charger model which the selected local-net system(s) require.

If the system is not using the BCU-4830A/BCU-4875A battery charger from ATEÏS, please make sure the charger current(A) of battery charger is sufficient.

5.1.7.4 Update

5.1.7.4.1 Firmware

Update the BOUTIQUE firmware to the latest version.



When starting a new project or using a BOUTIQUE unit for the first time,

Follow the steps of [Update] as below:

1. Select the model in [Action] checkbox.
2. Click [Update] button, and a Update window will pop up.
3. Click [Browse File...] button to choose the firmware path specified to the one corresponding to the device.

4. Click [Start] to proceed this action.
5. At last, click [Reboot] button.

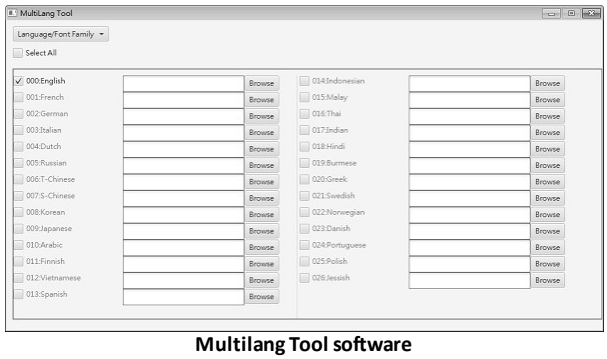
Remember to click [Reboot] button after the [Update] action has finished, so that it will apply to the BOUTIQUE device(s).

The checkbox on the top section allows users to filter multiple options and devices (main controller/secondary unit/console/succeeded update/failed update), and the devices listed in the table will be based on the filter option.

5.1.7.4.2 Language

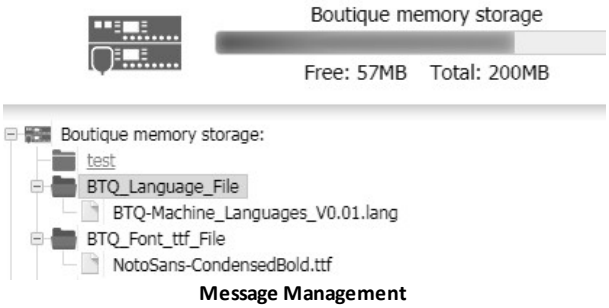
Update the custom language file (.lang) and the font file (.ttf) for the LCD panel display on BTQ-VM4/8 and DPM-T5/CD-T5DF.

To create a custom language file (.lang), please contact us for the Multilang Tool software, this software allows your ATEÏS sales to edit and translate the texts displayed on BTQ-VM4/8 and DPM-T5/CD-T5DF and export it in a .lang file. Then they can upload this .lang file here.



Multilang Tool software

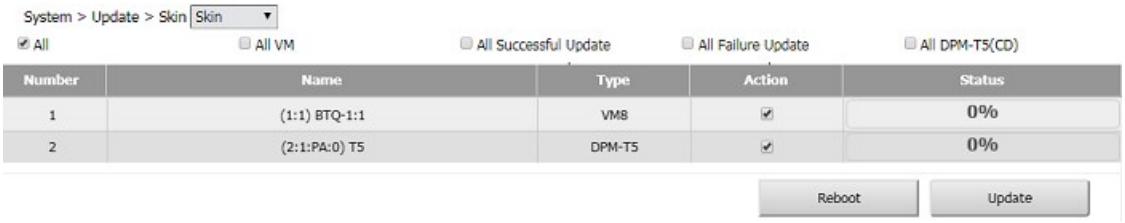
The new language file (.lang) which ATEÏS sales/users have updated here will overwrite the default language file (.lang) stored in the BTQ-VM4/8. Users can find the .lang file and font files from Machine > Message > Management, see the picture below. Multiple font files (.ttf) can be uploaded into the BTQ-VM4/8 without limits.



Message Management

5.1.7.4.3 Skin

Update the User Interface (UI) skin of the LCD panel on BTQ-VM4/8 controller and DPM-T5/CD-T5DF to the latest version. The GUI update is similar to a firmware update, see Update > Firmware.



The text indicates as the latest User Interface (UI) skin version of BTQ-VM4/8 and DPM-T5/CD-T5DF. Please always upload the latest skin version on BTQ web browser.

5.1.7.5 Table synchronization

When the configuration on BOUTIQUE devices have been changed, this table will display either [Synchronize] or [Asynchrone] on device status.

Please note the synchronization function is applicable to the system which has more than one BTQ-VM4/8 controllers are connected.

System > Table Synchronisation

Number	Name	ID	Type	Status	Sync confguration
1	BTQ-1:1	1:1	VM8	Synchronised	
2	BTQ-2:1	2:1	VM8	asynchrone	
3	BTQ-3:1	3:1	VM8	asynchrone	
4	BTQ-4:1	4:1	VM8	asynchrone	

- Asynchronous: The [Sync Configuration] field will show [Asynchrone] status if the device setting has been modified. Users can click the [ ] button on a chosen device as the base configuration, and let the rest of devices in this table be synchronized with this machine.

The [Table Syn] icon on the right top of the webpage shall indicate whether the system configuration is synchronized (green icon) or asynchronous (red icon), see the pictures below.

Synchronized

Asynchronous

5.1.8 Machine

5.1.8.1 Settings

5.1.8.1.1 General

Machine > Settings > General

ID	Name	Type	Language	FP EVAC Button Trigger	USB Backup	Ethernet Monitor	Alert/Page LED Flash	FMM Monitor
1:1	BTQ-1:1	VM8	English	Double	Enable	Disable	Disable	Disable
2:1	BTQ-2:1	SG	English	Double	Disable	Disable	Disable	Disable

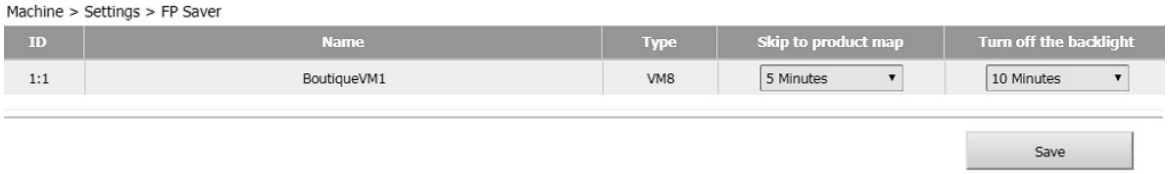
Save

- Language: Choose the language (English, French, German, Italian etc.).

Please reboot the BTQ-VM4/8 after changing the language selection, so that this setting will be applied.

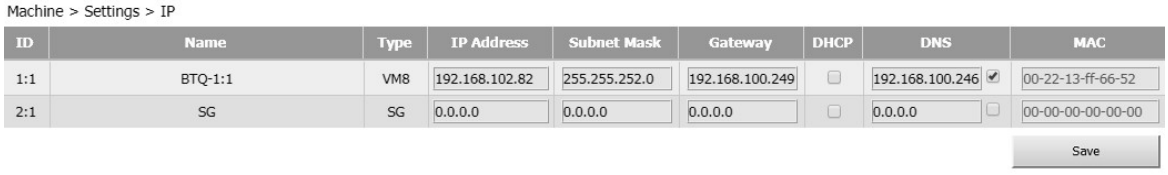
- FP EVAC button trigger: When proceeding the EVAC paging, Alert paging or MSG test via LCD front panel of BTQ-VM4/VM8, tick the checkbox to display a window of confirmation message on front panel again.
- USB backup: Activate/deactivate to auto backup the config file, message files, language file and font files (.ttf) to the connected USB flash drive.
- Ethernet monitor: When this option is activated, and the Ethernet cable on BTQ-VM/BTQ-SG8 is not fully connected or loose, the system will detect and recognize it as a fault.
- Alert/Page LED flash: In order to comply the fire alarm regulation in specific country, the Alert/ Page LED on the front panel of BTQ-VM controller can be programmed (activated) to flashing LED when a fault is detected.
- FMM monitor: Normally when taking apart the fireman microphone from the front panel of BTQ-VM controller, the system will report the [Fireman Error] fault. However, once this option is set [Disable], the [Fireman Error] fault will not be reported by system if users remove the fireman microphone from the front panel of BTQ-VM controller.

5.1.8.1.2 FP saver



- Skip to product map: Set the idle time to let the LCD panel return to the welcome page automatically.
- Turn off the backlight: Set the idle time to turn off the LCD panel of main controller automatically. To activate the LCD panel again, users can press any button on the front panel of main controller.

5.1.8.1.3 IP



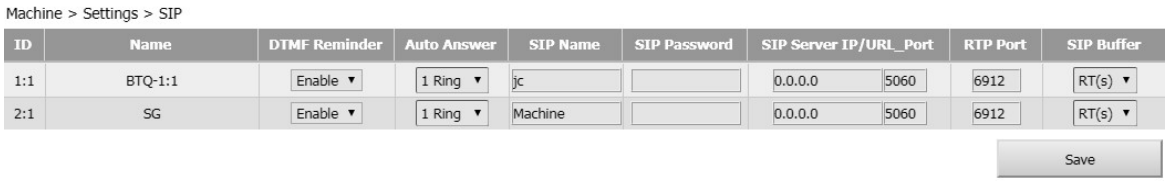
Each BOUTIQUE device is shipped from the factory with a default IP address/Subnet Mask/ Gateway/DNS/MAC. Please reboot the device once the data have changed.

Default Setting	BTQ-VM	BTQ-SG8
IP address	192.168.102.125	192.168.102.124
Subnet Mask	255.255.252.0	255.255.252.0
Gateway	192.168.100.254	192.168.100.254
DNS	0.0.0.0	0.0.0.0

- Enable DHCP/ DNS: Tick the checkbox to enable/disable the Dynamic Host Configuration Protocol and DNS server.

You can also change the IP address or other Ethernet settings from the LCD display of main controller, see LCD Menu.

5.1.8.1.4 SIP

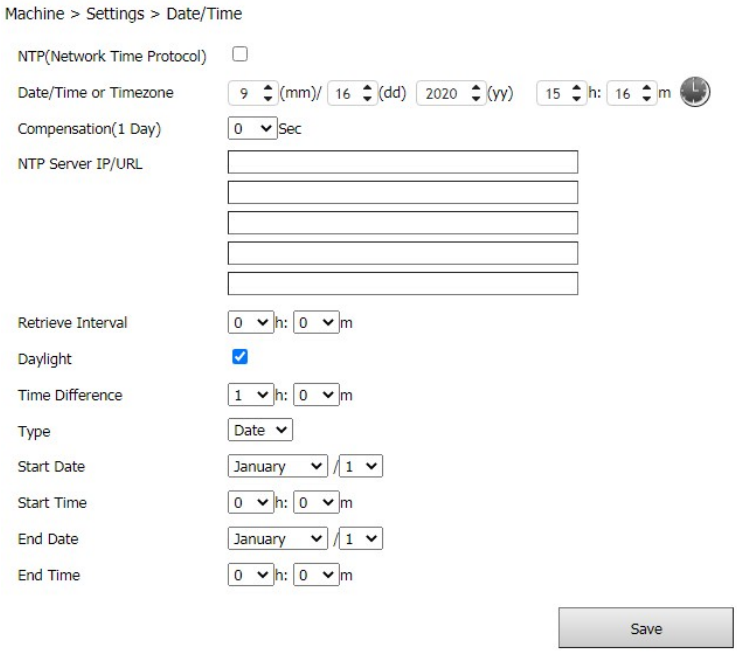


- DTMF reminder: Enable to let the zones which has assigned in the DTMF keys to hear the sound of DTMF tones from PPM-IT5 or IP phone. See how to create DTMF intercom call.
- Auto answer: Set how many call rings before picking up the SIP call (1 ring by default).

The [0 ring] option indicates the incoming SIP call will be auto picked up without any ring.

- SIP name: The name of SIP caller.
- SIP port: The network port for SIP protocol.
- SIP password: The password for using to connect to the SIP server.
- SIP server IP/URI port: The IP of SIP server. If not using the SIP server, please enter 0.0.0.0 in the blank space.
- RTP port: The network port for RTP protocol for receiving and transmitting audio.
- SIP buffer: The delay time (by second) before the receiving input sources.

5.1.8.1.5 Date/time



- NTP (Network Time Protocol): Enable the NTP setting. If the NTP is activated, the system date/time of BOUTIQUE will be synchronized by NTP server.
- Date/time or timezone: Manually set the time and the timezone of your BOUTIQUE devices.
  - : This button allows the date/time setting of BTQ-VM controller to be the same as the date/time setting of the current PC/laptop.

The changes in [System Time] will also affect the Scheduler function on web browser.

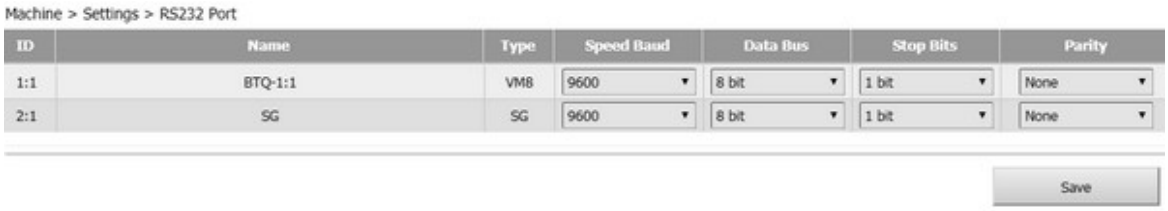
- Compensation (1 day): Improve the accuracy of system time by setting the compensation time (sec.) of machine, and the system shall compensate the time based on user's setting per day.
- NTP server IP/URL: The IP address of NTP Server.
- Retrieve interval: The time interval which BOUTIQUE unit will update from NTP server.
- Daylight: Enable/disable the Daylight Saving Time function on BOUTIQUE device.
  - Time difference: Define the time to be an hour/a minute earlier or more.
  - Type:Choose [Date] or [Week] option to define the period of Daylight Saving Time.
  - Start Date/End Date: Set the start/end date of Daylight Saving Time.
  - Start Time/End Time: Set the start/end time of Daylight Saving Time.

5.1.8.1.6 Syslog (central log service)

The syslog function will record all the logs in the BOUTIQUE global-net and local-net system, and transmit to remote PC/laptop with TerraManager software.

- Enable: Enable/disable the syslog function.
- IP: Set the IP address using the remote PC/laptop with TerraManager software.

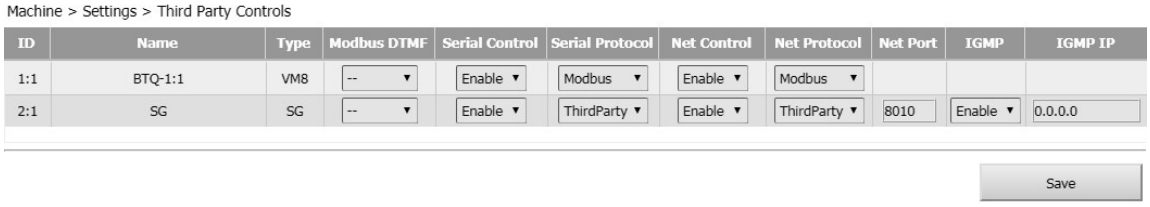
5.1.8.1.7 RS232 port



- Speed baud, date bits, stop bits, parity: Set the settings for 3rd party control.

5.1.8.1.8 Third party controls

Allow 3rd party devices to control the paging events via RS232, Modbus and Ethernet (UDP).



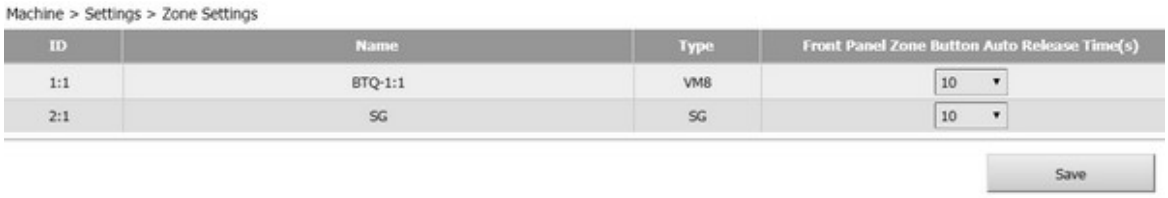
- RS232 & Modbus serial type:
  - Modbus DTMF: Choose which DTMF code to proceed the zone paging via Modbus, see DTMF paging call via Modbus to set the DTMF codes.
  - Serial control: Enable/disable the 3rd party control from the serial link of BTQ-VM4/VM8 controller. Once enabled, the "Serial Protocol" setting area is required.
  - Serial protocol: Choose to use which 3rd party protocol (Modbus/RS232 3rd party).
- Ethernet & Mobus type:

- Net control: Enable/disable the 3rd party control function via UDP/IP or TCP/IP connection. Once enabled, the "Net Port" setting is required.
- Net protocol & port: Choose the 3rd party protocol (Ethernet 3rd party/Modbus) and set the network port.

- IGMP/IGMP IP:

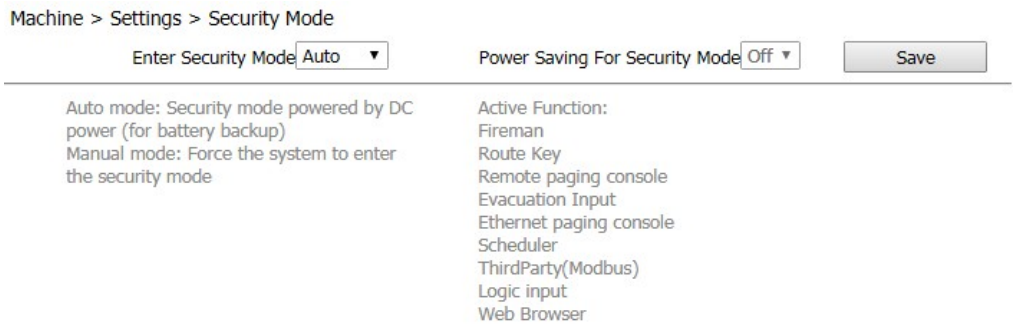
  Enable/disable the action of using the IGMP address. When it's enable, please set the fix IGMP IP address, if it's disable, the system will use the random IGMP address during paging.

5.1.8.1.9 Zone settings



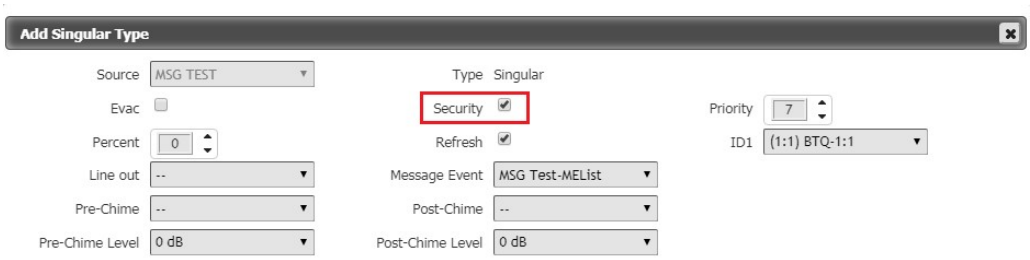
When manually selected the zone buttons on front panel of main controllers and secondary units for audio routing and playing message. The zone selection will be canceled automatically if it doesn't proceed a paging or routing over [Release time], and the LED selection will light off, too.

5.1.8.1.10 Security mode (power saving)



- Enter security mode:
  - Auto: If the AC mains power is not present, the controller will switch to DC power (for battery backup). Once switch to DC power, the system will automatically enter the security mode.
  - Manual: Force the system to enter the security mode.
- Power saving for security mode: This option is available for [Manual] mode only.
  - Select [ON] to enter the security mode for system power saving, and let the listed functions such as Fireman, Route Key etc. which has ticked the [Security] checkbox to be activated only.

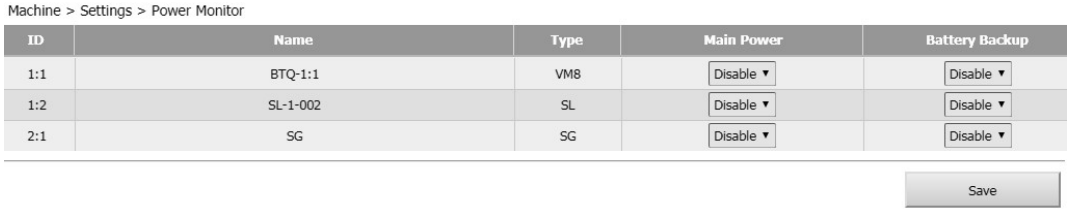
Please note the active functions which are under the security mode can only be activated unless the [Security] option on their setting window (Event/Paging/Scheduler/Evac input setting window) is also enabled, see the picture below.



- If selects [OFF], the system will not enter the security mode for system power saving. In other words, all the BOUTIQUE functions can be fully operated.

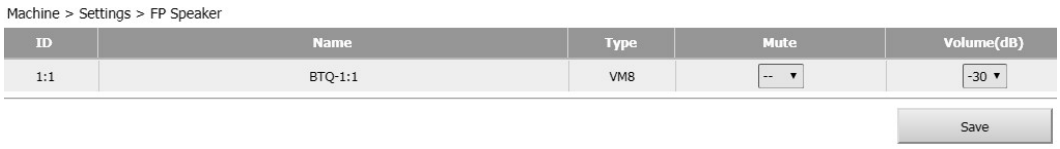
This mode will be automatically canceled if the BOUTIQUE controller is rebooted.

5.1.8.1.11 Power monitor



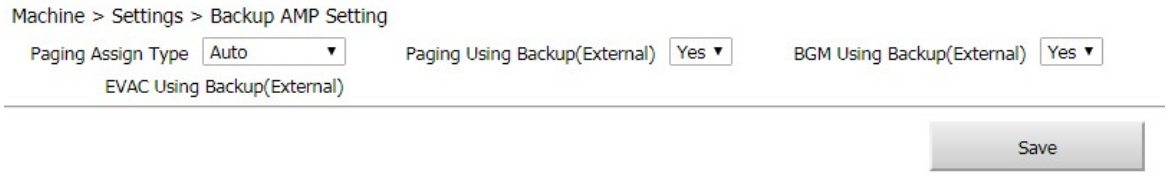
Allow to monitor the 2 types of power supply of controller (AC mains power and 48VDC battery backup). When the power input is not connected to the controller, a fault will be recognized by system, and the fault LED on front panel of controller will light up, output the warning tone, and record this Power fault on fault list and log book.

5.1.8.1.12 FP speaker



- Mute: Enable/disable to mute the buzzer sound which comes from the built-in speaker of BTQ-VM4/8 controller when a fault is detected.
- Volume (dB): Adjust the volume of the buzzer sound which comes from the built-in speaker of BTQ-VM4/8.

5.1.8.1.13 Backup amp setting



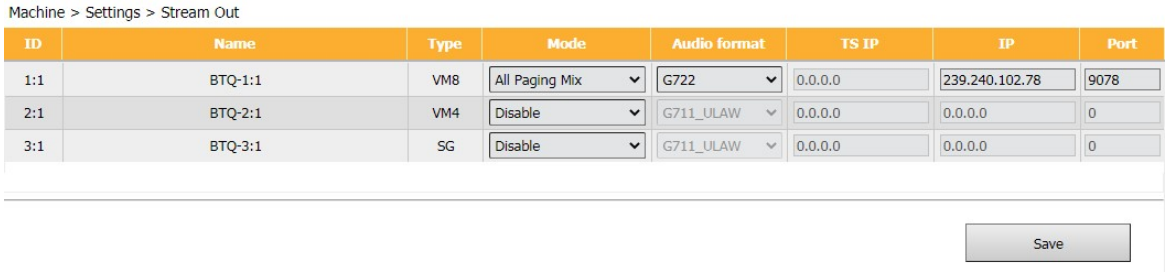
- Paging Assign Type:
  - [Auto] mode: When one of the amplifier (AMP 1/AMP 2) of BTQ-VM controller breaks down, the system will automatically use the working amplifier for general paging or evac paging.
  - [AMP 1 Priority] mode: AMP 1 is used for general paging or evac paging, and AMP 2 is used for backup amplifier.
  - [AMP 2 Priority] mode: AMP 2 is used for general paging or evac paging,and AMP 1 is used for backup amplifier.
- Paging using backup (external): Set [Yes] or [No] to only route the paging sources using the external amplifier (AMP2) when the internal amplifier (AMP1) of controller breaks down.
- BGM using backup (external): Set [Yes] or [No] to only route the BGM sources using the external amplifier (AMP2) when the internal amplifier (AMP1) of controller breaks down.

When the option is set [Yes], the output of EVAC/BGM/paging source will become very loud

instantly due to the external amplifier (AMP2) does not have attenuator.

5.1.8.1.14 Stream out

Send the audio output of BTQ-VM4/8 to network, and use TERRACOM devices etc. to play the audio remotely.



- Mode:
  - Disable: Disable to stream out the audio to network.
  - All Paging Mix: Stream out all the paging sources under the BTQ local-net system.
  - (TS) First Paging: Allow sending the stream audio of BTQ controller to TerraServer software, and TerraServer software will save the stream audio as a recorded file.
- Audio format: Choose which audio codec (G711/G722/L16) the BTQ-VM4/8 streams out to network.
- TS IP: Set the IP address of the remote PC/laptop which has installed with TerraServer software.
- IP: Set the Multicast IP address (225.0.0.0 ~ 239.255.255.255) or Unicast IP address which the BTQ-VM4/8 streams out to network.
- Port: Set the network port for RTP protocol for receiving and transmitting audio.

5.1.8.2 Message

5.1.8.2.1 Management

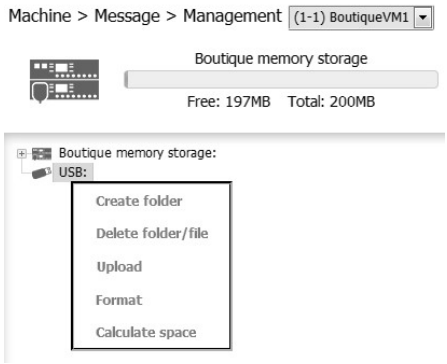
Display all the message files stored in the BTQ-VM4/8 controller or USB flash drive.

- BOUTIQUE internal storage memory: The internal storage memory (max. 200 MB) of main controller.

- USB external memory: The USB flash drive (format FAT32) connected to the main controller.
- Delete folder/file: Select the folder/file on the list, and click this button to delete it.
- Create folder: Create a new folder under the selected folder.
- Download: Select the audio file and click this [Download] button to download it.
- Upload: Upload an audio file under the selected folder.

The BOUTIQUE system supports simultaneously decoding in a max. of 4CH MP3 audio codec, or 3CH MP3 audio codec and 1CH G.722 audio codec.

You can also right click [BOUTIQUE Memory Storage] or [USB] option to create/delete folder and download/upload file, see the picture below.

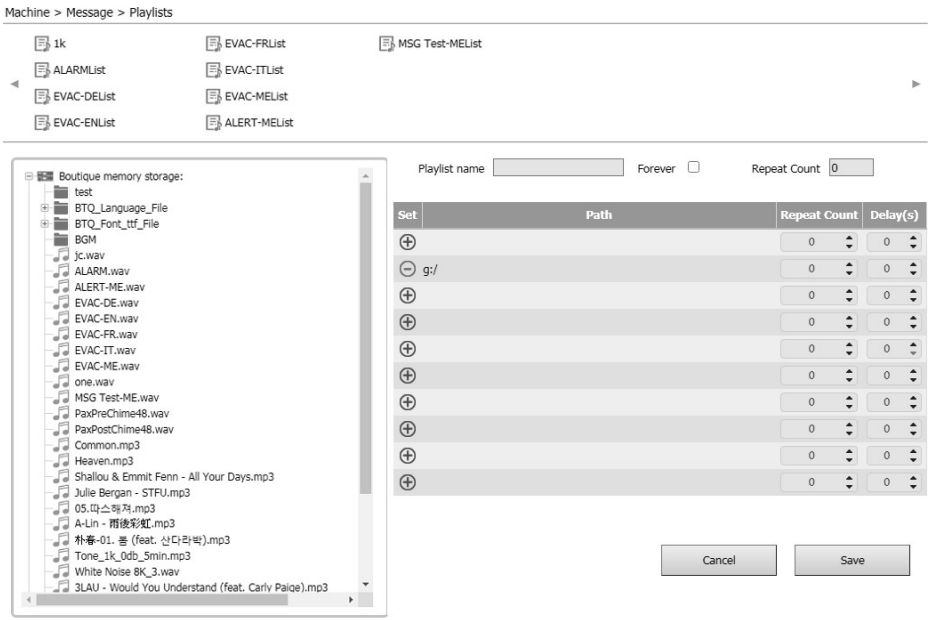


- Format: Click to format the USB memory/BOUTIQUE internal storage memory.

Please note all the audio files/folders which are stored under USB memory/BOUTIQUE internal storage memory will be deleted.

- Calculate space: If the USB memory calculated by BOUTIQUE system is different from the actual USB flash drive, click this item to recalculate (refresh) the free memory of USB.

5.1.8.2.2 Playlists



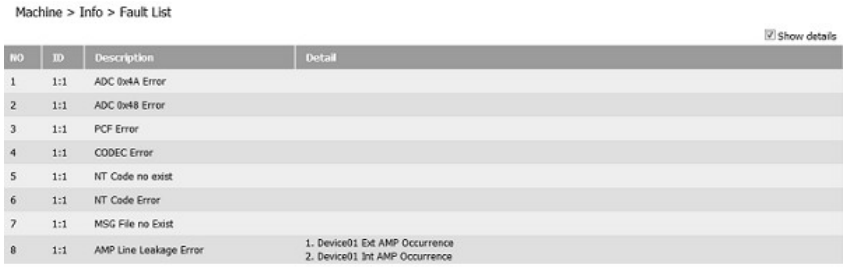
- Playlist name: Enter the name of your playlist.
- Forever: Enable this button to continuously playing the playlist.
- Repeat count: Set the repeat count of the selected playlist. The range of repeat count is 0~30000, 0 by default setting.
- Delay (s): Set the delay time (sec) for each audio song. If the audio is set as 5 second for delay, it will delay 5 seconds before playing a next audio file.
- Add file
- Delete file
- Select the playlist

❖Example of creating a playlist

To create a playlist, first, you need to create a new playlist, then select the audio file you want to have it on your list, the list is located on the left side of the window, then click button to add the audio file in, click Delete button to delete it. And click Save button to complete the setting.

5.1.8.3 Info

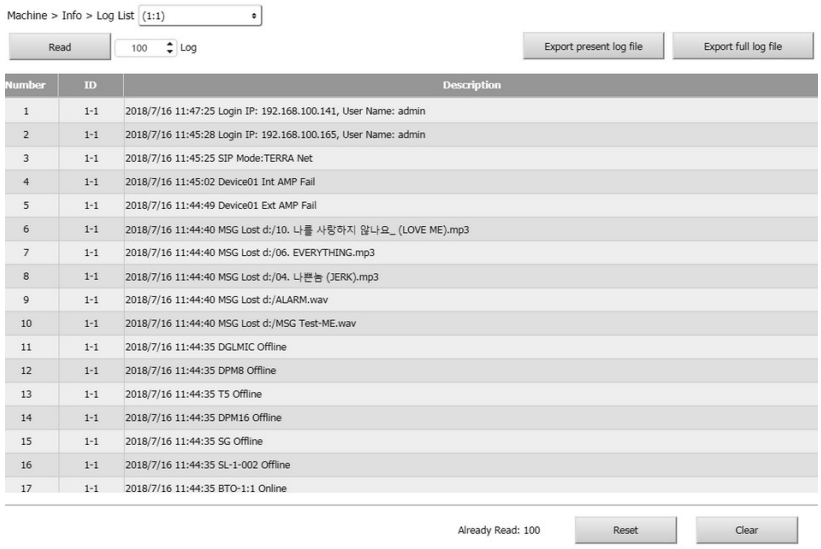
5.1.8.3.1 Fault list



- Show details: Enable/disable to show the detailed description of faults.

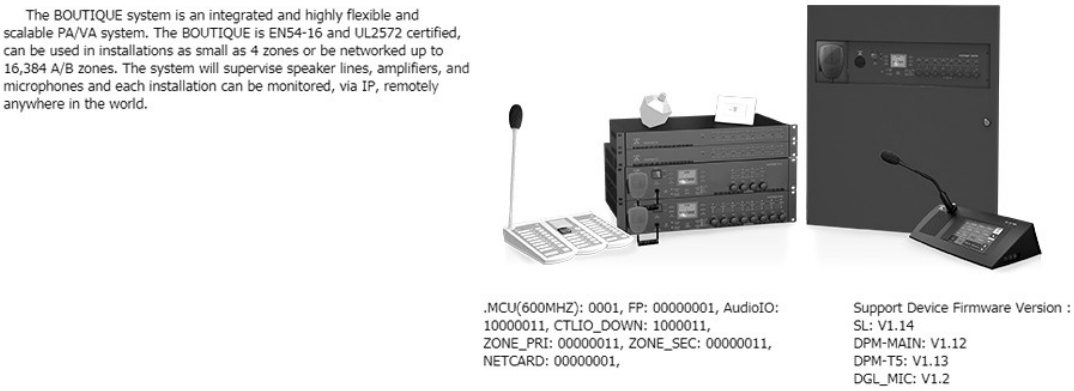
To know the troubleshooting of faults, see Fault Lists for details.

5.1.8.3.2 Log list



- Read: Set the range of the log number and click [Read] button to read the logs. Click this button again to read the previous log within the same range. For example, if the range of logs is 100, click [Read] button to read from 1 to 100 logs; click [Read] button again, then the list will show 1~200 logs on the list.
- Already read: List the total logs displayed on the log list.
- Reset: Click this button to reset the log list. The [Already Read] log will also be reset.
- Clear: Click this button to clear the log. The [Already Read] log will remain from the last [Read] count.
- Export present log file: Export the device logs displayed on current log list to a text file.
- Export full log file: Export all the device logs to a text file. The additional information of BTQ-VM controller including type, zone number, amp watt, serial number, MAC address will be listed on this .txt file.

5.1.8.3.3 About



5.1.8.4 Status

❖ General tab

Display the general information of BTQ-VM4/VM8/SL8/SG8/DPM devices etc. such as model name, online/offline status, FW ver. (firmware version), AC mains/battery DC power and temperature of audio IO/AMP1/AMP2 on [General] tab.

Machine > Status

General | Battery

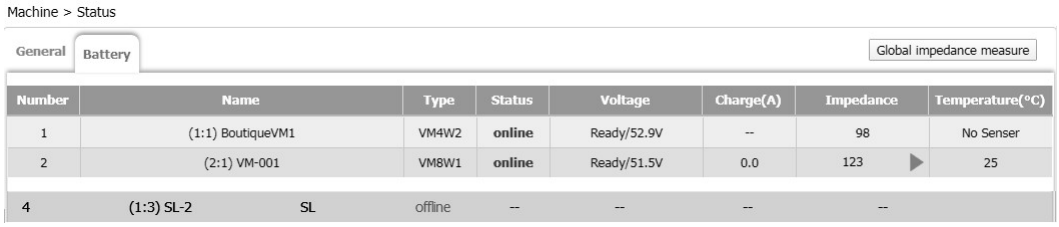
Number	Name	Type	Status	FW Ver.	Power	Temperature(°C) AudioIO/AMP1/AMP2
1	(1:1) BTQ-1:1	VM8	online	2.21	Main	36 / -- / --
2	(1:1:PA:0) DPM16	DPM-MAIN	offline	--	--	--
3	(1:1:PA:1) DGLMIC	DGL-MIC	offline	--	--	--
4	(1:2) SL-1-002	SL	offline	--	--	--

[General] tab

If the FW ver. of remote device is not compatible with the ver. of main controller, it will display in red.

❖ Battery tab

When the BTQ-VM4W/VM8W controller has connected to the four 12VDC batteries, its battery status includes voltage/charger (A)/impedance/temperature will be shown here.



[Battery] tab

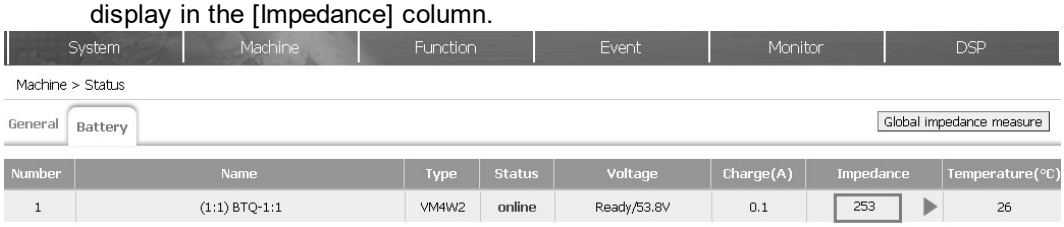
- Voltage:
  - Ready: The battery voltage is 48~60V.
  - Not Ready: The battery voltage is 40~48V.
  - Bad: The battery voltage is 10~40V or above 60V.

If either [Not Ready] status or [Bad] status is present, the [Battery Bad Voltage Value] fault will be detected by system.

If the mains power of BTQ-VMW is present and the battery voltage is not normally operated in <43.2VDC or >60VDC (±3%), then the battery will be cutoff by the circuit protection of BTQ-VMW.

- Charge (A): Display the current charging status of batteries.
  - --: The BTQ-VM4W/VM8W is currently using the battery power (AC mains is not present).
  - 0.0: The batteries are fully charged.
- Impedance: The battery impedance value will be measured after the BTQ-VM controller is powered on, then measured again every 4 hours automatically.

If the battery impedance is <10mΩ or >120mΩ, [Bad Impedance] fault will be detected by system. And, if the value of battery impedance is too high (> 255mΩ), [253] will display in the [Impedance] column.

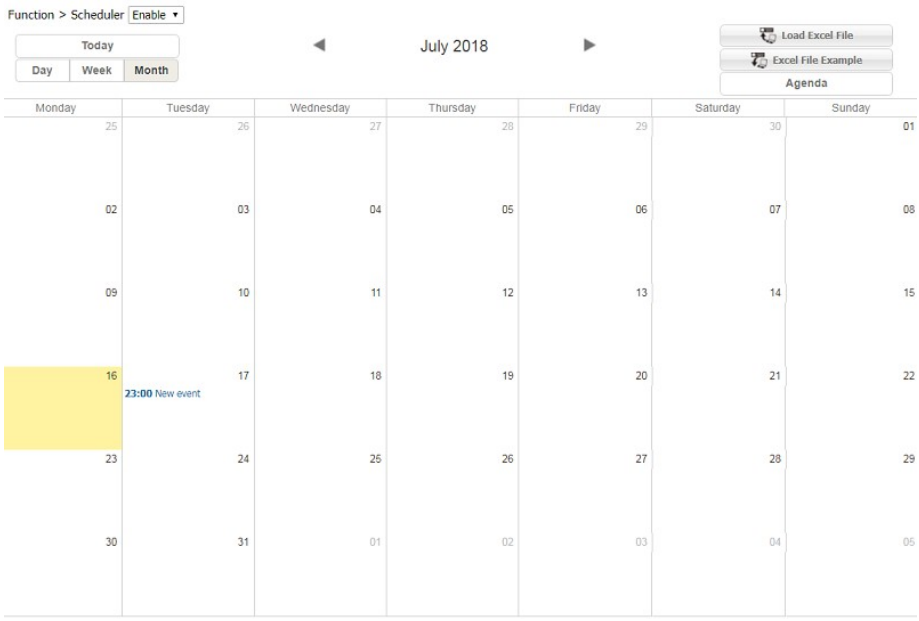


  - ▶ button: Click ▶ button to measure the battery impedance value manually.
- Temperature (°C): Display the current temperature of the batteries.
  - Over temperature: The temperature of the batteries is too high (> 65°C).
  - No sensor: The temperature sensor is not connected.
- Global impedance measure: Click this button to measure the battery impedance value on all the connected BTQ-VM4W/VM8W or BTQ-VM4/VM8. The battery impedance value will be measured after the BTQ-VM controller is powered on, then measured again every 4 hours automatically.

5.1.9 Function

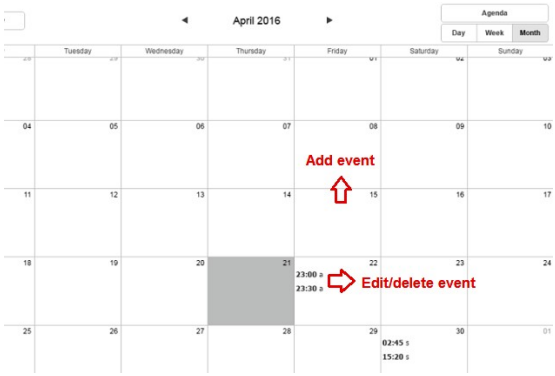
5.1.9.1 Scheduler

The Scheduler allows to schedule the events such as messages playing, commands triggering etc..

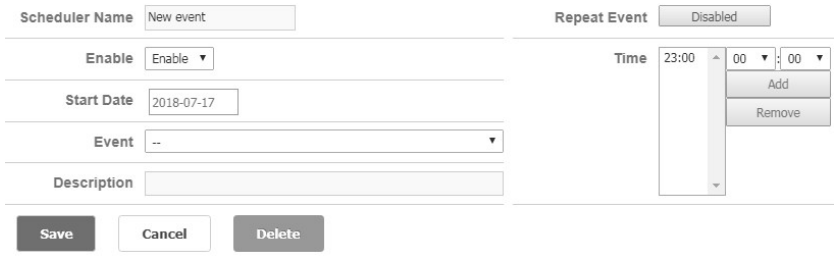


- Scheduler enable/disable: Enable/disable the scheduler function.
- Today: Click to go back to the area which displays the today's schedule.
- Day/week/month: Choose from the three types of display window template on scheduler. The default window is Month.
- Load Excel file: Click to load an excel sheet with the listed events you want to create on Scheduler.
- Excel file example: The listed events on the excel sheet must be followed by the order. Click to download the excel file of examples.
- Agenda: Switch to [Agenda] template for editing schedules.

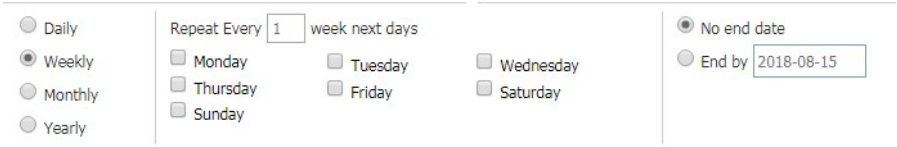
5.1.9.1.1 Add/edit/delete



- Add: Double click the date you wish to add a event, then the Event window will be opened.
- Edit: Double click the event you wish its parameters to be modified.
- Delete: Double click the event you wish to delete first, and click [Delete] button to delete it.



- Enable: Enable/disable this event.
- Start date: Click the date to open a calendar window, and select a date to start this schedule
- Event: Display which event is affiliated to the schedule action, see Event for more details.
- Description: Memo area.
- Repeat event: Enable/disable the [Repeat Event] function.
- Repeat event: The event can be repeatable by daily, monthly, weekly and yearly. The weekly option has days of the week activation options, see the picture below.

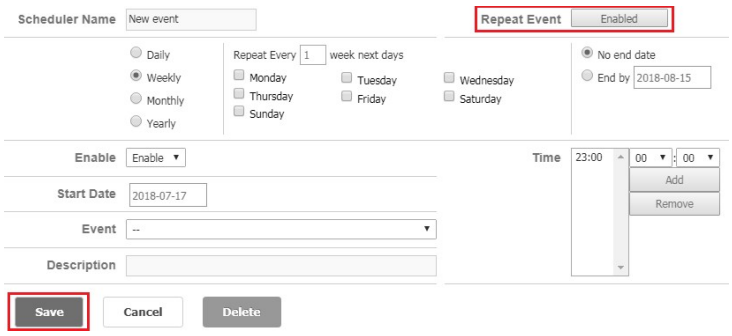


- Time: Add/remove the activation time. The format is HH:MM.

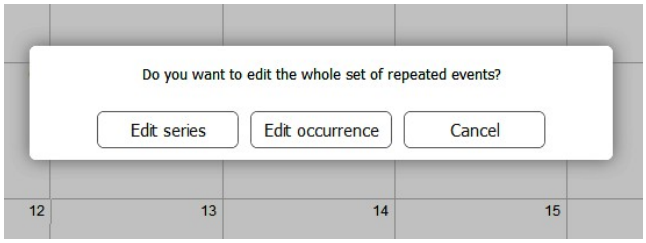
The criteria of the event name and description:
- Event name: Contain a max. number or letter of 40.
- Description: Contain a max. number or letter of 100.

5.1.9.1.2 Edit repeated event

Edit the date of the repeated event individually or edit in a whole set. See the steps below:



1. First, enable [Repeat event] option on the event window, and click [Save] to save this schedule setting.
2. Double click this event on scheduler window again, it will pop-up a message window as the picture below. Here you can choose either to edit a series event or edit in occurrence.



- Edit series: Edit the date of a series repeated event.
- Edit occurrence: Edit the date with the selected event Individually.

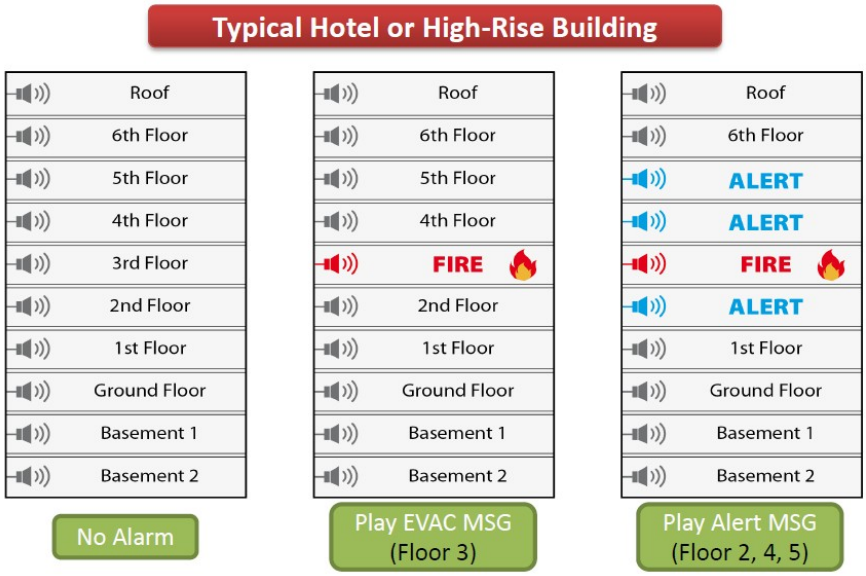
5.1.9.2 Logic I/O

The logic inputs are a way to trigger any type of events by external devices.

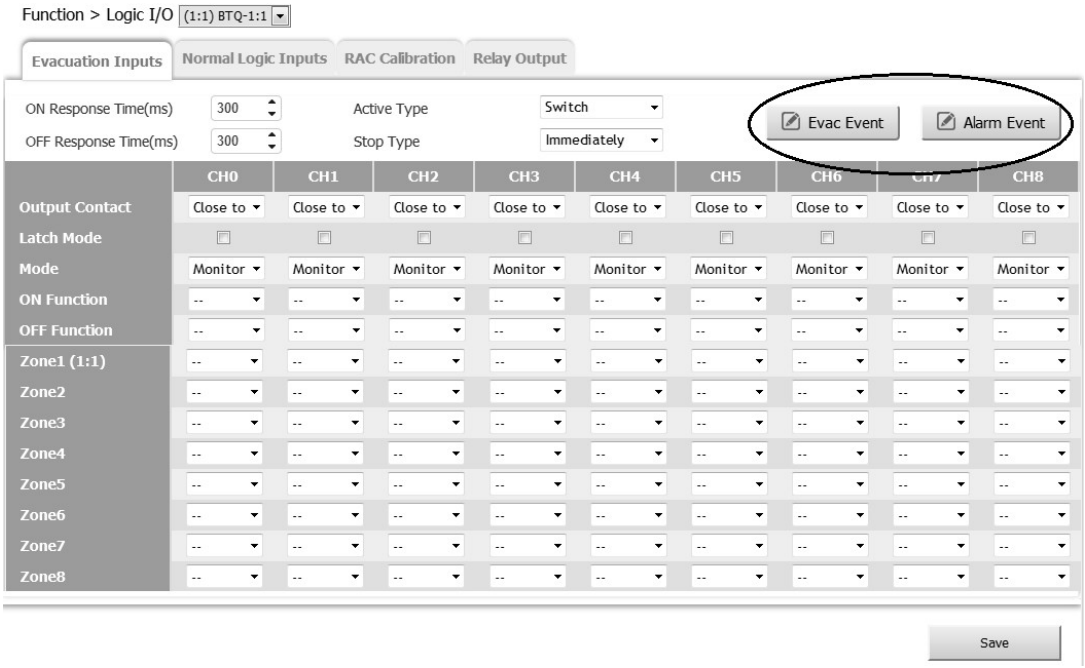
1. Evacuation inputs: The nine evacuation inputs can be used as simple logical inputs as well as monitored logical inputs. There are three monitoring types:
   1) Monitored contact mode: The system can monitor the evac input and detect faults (4 status: on, off, open and short).
      - Faulty-open circuit: > 2.7 VDC
      - Faulty-short circuit: < 0.6 VDC
      - Inactive voltage: 2 ~ 2.5 VDC
      - Active voltage: 1.35 ~ 1.7 VDC
   2) Disable: The cables which connect to evacuation input will not be monitored (faults will not be detected).
   3) Voltage mode: Trigger the input by a voltage change (OPEN/CLOSE) with an external 24VDC source provided by external devices. The cable is not monitored in this mode.
2. Normal logic inputs: The eight normal logical inputs are simple logical inputs with no monitoring options. Users can use it to trigger the events by connecting to a push button.
3. RAC calibration: Or it can connect to RAC 5/RAC 8 device by using the normal logic input, and controls the volume and trigger the events remotely.
4. Relay outputs: The 4 relay outputs can be programmed and send a pulse or a static closing/ opening to an external device (NO = normally open and NC = normally close).

5.1.9.2.1 Evacuation inputs

The Evacuation inputs allows you to easily designed the phased evacuation or any evacuation scheme. See the building application below for example, each floor indicates as a zone in BTQ-VM4/ VM8/SG8/SL8. If the 3th floor is on fire, it will play the evac message for emergency evacuation; and the 2th, 4th and 5th floor will play alarm message to alert people.



Click [Evac Event] and [Alarm Event] button on the top right area of Evacuation Inputs window. Its control window will be opened, see as below.



The purpose of [Evacuation Input] configuration is to use 2 different play message events (Evac and Alarm) and to use them with evacuation input in order to create phase evacuation. When using this configuration, users need to create two dedicated play message events (Evac and Alarm).

- Edit Evac Event: Click to edit the Evac message event, see Edit Evac/Alarm Event first.
- Edit Alarm Event: Click to edit the alarm message event, see Edit Evac/Alarm Event first.

There are five EVAC input channels (CH0~CH4) on BTQ-VM4 controller and nine EVAC input channels (CH0~CH8) on BTQ-VM8 controller and BTQ-SG8/SL8 secondary unit.

- ON/OFF response time: Set the response time to avoid triggering the Evac inputs accidentally. When the input voltage is continuously above the range of triggering signal, the event will be triggered by system.

The trigger signal should be at least as long as the response time to activate the corresponded Evac input. The range of response time is from 300ms to 5000ms. The shorter the response time has set, the response action will be more sensitivity.

- Active type: Select a type to activate the [ON/OFF Function] of the Evac event/Alarm event.
  - Trigger: Start the event which selects from [ON Function] drop-down box. To stop the event, trigger the Evac Input Reset All event which selects from [OFF function].
  - Switch: Start the event which selects from [ON function] drop-down box, and stop the event which selects from [OFF Function] drop-down box.
- Stop type: Select a type to deactivate the Evac event/Alarm event.
  - Immediately: The Evac/alarm message playing on Evac event or Alarm event will be stopped immediately.
  - End of single: The Evac/alarm message playing on Evac event or Alarm event will be stopped after the current audio message ends.
  - End of round: The Evac/alarm message playing on Evac event or Alarm event will be stopped after playing this round of the pre-chime, post-chime, and channel 0~channel 8.
- Output contact:
  - Close to trigger: The [ON Function] event will be triggered when the evac input is close,

and open to trigger the [OFF Function] event.

- Open to trigger: The [ON Function] event will be triggered when the evac input is open, and close to trigger the [OFF Function] event.

- Latch mode: Set the normal logic input to be in latch mode for this event when connecting to a latching ON-OFF switch button, it requires to input state from Hi to Low to start the event, and input state from Low to Hi to stop the event.
- Mode: Monitor, Disable (contact without monitor) and Voltage.

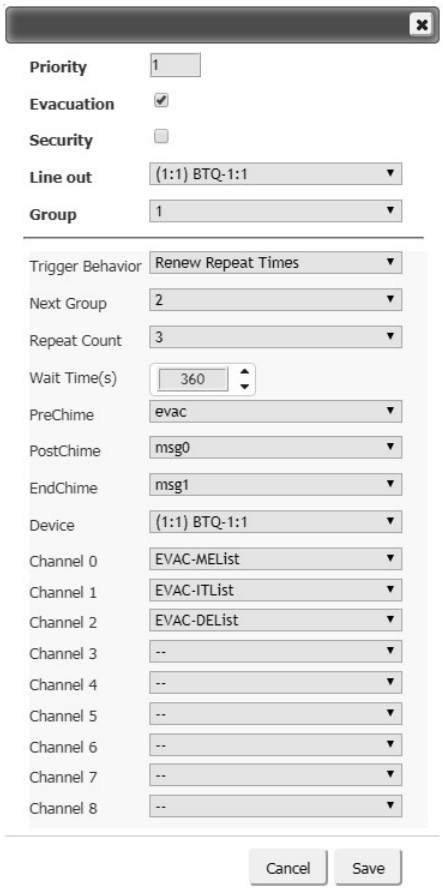
---

1. Monitor: The cables which connect to evacuation input are monitored (4 status: open, short, off, on).
2. Disable: The cables which connect to evacuation input will not be monitored (faults will not be detected).
3. Voltage: Trigger the input by a voltage change with an external 24VDC source provided by external devices. The Voltage mode is an alternative way of using contact. The cable is not monitored in this mode.

- ON/OFF function: Select the event which will be triggered by this Evac input.
- Zone selection (Z1-Z8): Select zones of paging for Evacuation or Alarm event.

5.1.9.2.1.1 Edit evac/alarm event

Here you can configure the messages for Evac event and Alarm event. For example, when a building is on fire, this Evac event/Alarm event will play a pre-chime, evac/alert message files (channel0~channel8) and post-chime in order to help evacuation.



- Priority: Set the priority of the event. 1 is the highest, and 99 is the lowest.
- Evacuation: If a triggered event enables the Evacuation option, the system will enter the evacuation

mode, see Security/Evacuation option for details.

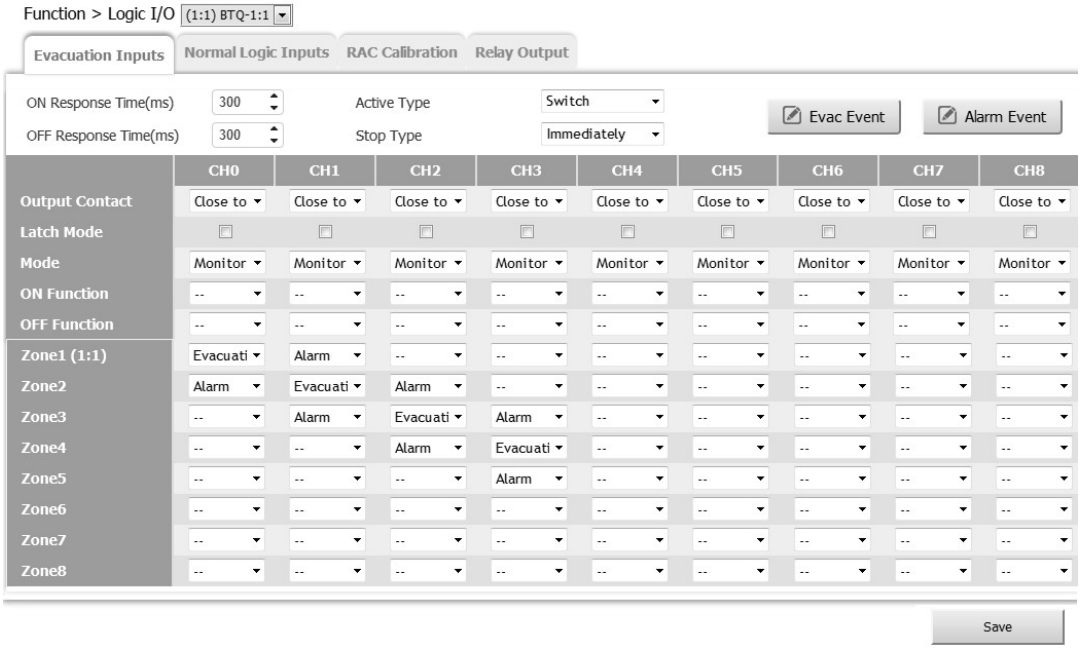
- Security: Enable this option to let the triggered event still be proceeded under Security mode (power saving).
- Line out: Select a line output channel on which main controller, and output the audio to an external device such as earphone, speaker etc. when triggering this paging event.
- Group: Each group can be programmed to different pre-chime/post-chime and message file/folder. In some application or regulation, 2 layers of group is required. See How-to: set 2 layers of evac/ alarm group for details.
- Trigger behavior: This option is to define when an evac input (CH0~CH8) is being triggered, and a sequence of audio (pre-chime -> evac/alert message files channel0~channel8 -> post-chime) is currently playing, then in the meantime, there's another evac input (CH0~CH8) is being triggered.
  - Renew repeat times: Start all over again to play a sequence of audio (pre-chime -> evac/alert message files channel0~channel8 -> post-chime) again.
  - None: Play a sequence of audio (pre-chime -> evac/alert message files channel0~channel8 -> post-chime) without starting all over again.
- Next group: The Next Group setting is to define the group which will be play after the current [Group].
- Repeat count: Set the repeat count to play a sequence of audio (pre-chime -> evac/alert message files channel0~channel8 -> post-chime).

Users can also choose [Forever] option on [Repeat Count] setting to play a sequence of audio continuously.

- Wait time(s): Set the delay time after a sequence of audio (pre-chime -> evac/alert message files channel0~channel8 -> post-chime) has ended.
- Pre Chime/Post Chime: Activate a pre-chime/post-chime when triggering the Evac/Alarm event.
- End Chime: After playing a sequence of audio (pre-chime -> evac/alert message files channel0~channel8 -> post-chime), the End Chime will be played at the end. This chime setting is used as a final confirmation, allowing the administrator to know this is the end of the evac/alarm event.
- Device: Choose a BTQ-VM controller from the drop-down box, each controller can be programmed with different message file/folder when the corresponded evac input (CH0~CH8).
- Channel 0 ~ Channel 8: Choose to play a message file/folder when the corresponded evac input (CH0~CH8) is triggered. The messages will be played by order if multiple evac inputs are triggered.

❖ Application

After completed the setting of Evac event/Alarm event as above, you need to define which zones of these Evac/Alarm messages will be played. For each evacuation input (CH0 to CH8), select the Evacuation or Alarm event for each zone from the drop-down box. See the picture as below,



The picture of a phase evacuation configuration will act as follow:

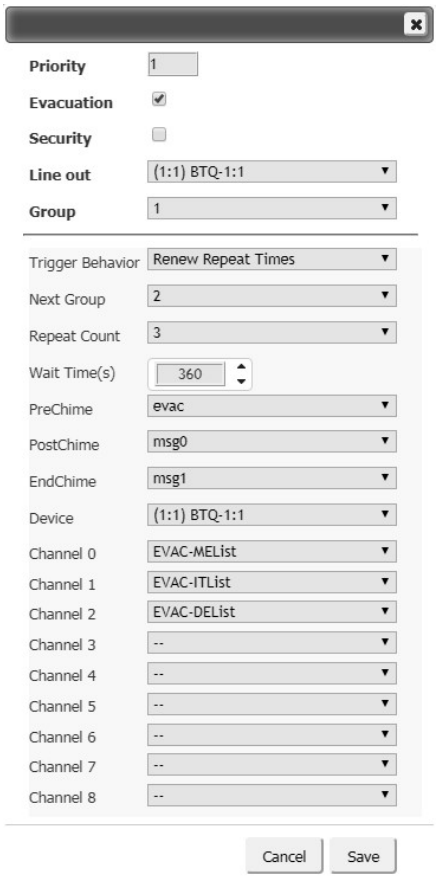
- Evacuation Input 0 (CH0) activated: The Evac message is played in zone1, Alarm message in zone2.
- Evacuation Input 1 (CH1) activated: If CH0 is still activated, the Evac message is played in zone1 and zone2, Alarm message is played in zone3.
- Evacuation Input 2 (CH2) activated: If CH1 and Ch2 are still activated, the Evac message is played in zone1, 2 and 3, Alarm message is played in zone4.
- Evacuation Input 3 (CH3) activated: If CH1, CH2 and Ch3 are still activated, the Evac message is played in zone1, 2, 3 and 4, Alarm message is played in zone5.

In order to avoid any sensitivity issue like unwanted triggering of input, you can set a response time (from 300ms to 5000ms) on Normal Logic inputs or Evacuation Inputs.

5.1.9.2.1.2 Evac/alarm application- Group

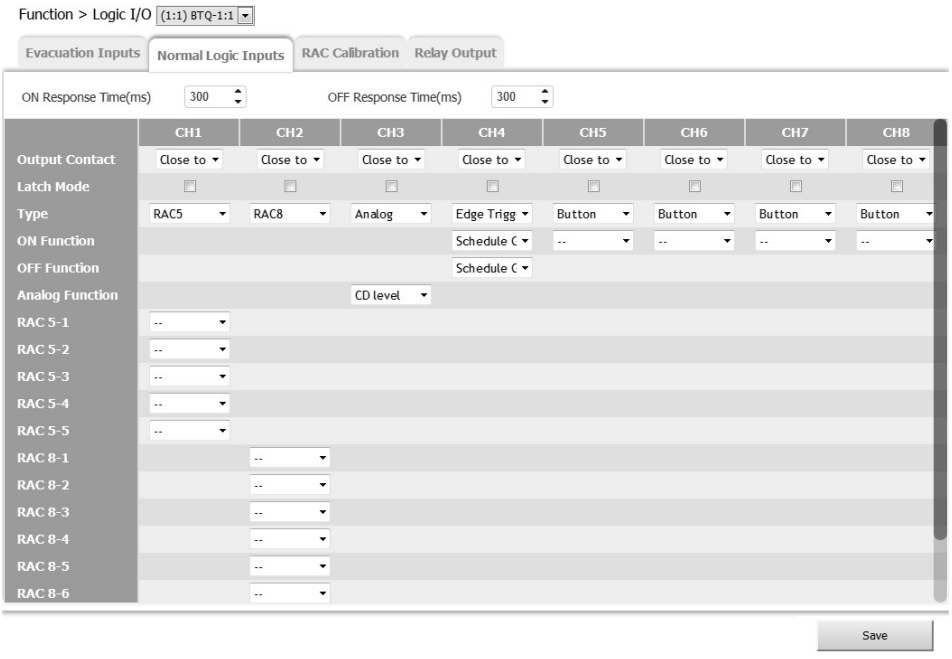
In some application or regulation, 2 layers of group is required. We'll use shopping mall as an example, see the following steps as below,

1. If someone in the 3rd floor has triggered the fire alarm panel, the BTQ system will start to play a sequence of audio (pre-chime -> evac/alert message files channel0~channel8 -> post-chime) on Group-1. After this sequence of audio has ended, a [Wait Time] setting will be triggered.
2. Normally, the [Wait Time] can be used for letting the building administrator to confirm if this fire alarm triggering is a true/false fire alarm. If it's a false fire alarm, the building administrator will deactivate the false fire alarm manually. Then a [End Chime] setting will be triggered, it is used as a final confirmation, letting the building administrator to know this is the end of the evac/alarm event.
3. However, if the building administrator has confirmed this fire alarm triggering is a true fire alarm and the [Wait Time] setting has passed, then the system will play a sequence of audio (pre-chime -> evac/alert message files channel0~channel8 -> post-chime) on Group-2. After this sequence of audio has ended, a [Wait Time] setting will be triggered.
4. At last, a [End Chime] setting will be triggered, letting the building administrator to know this is the end of the evac/ alarm event.



5.1.9.2.2 Normal logic inputs

The Normal Logic Inputs (control Inputs) have been designed to work with simple contact, button or RAC 5/RAC 8. Each logic input channel can be assigned as an event, users need to create the event before assigning the control function here.



- ON/OFF response time: Set the response time to avoid triggering the Evac inputs accidentally. When the input voltage is continuously above the range of triggering signal, the event will be triggered by system.

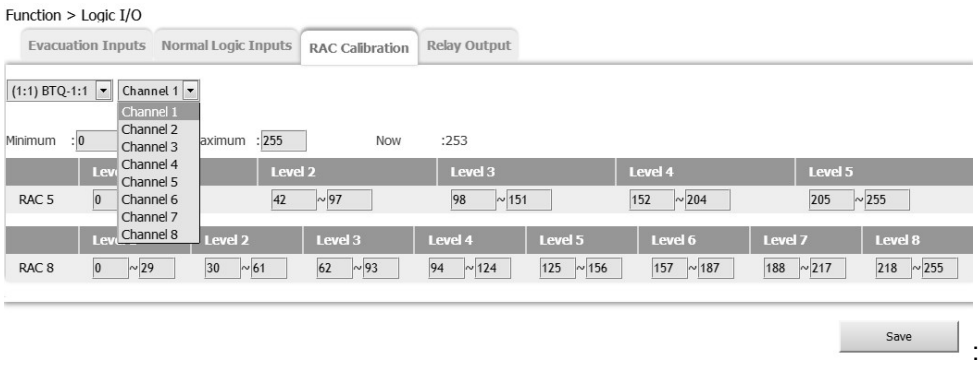
The trigger signal should be at least as long as the response time to activate the corresponded Evac input. The range of response time is from 300ms to 5000ms. The shorter the response time has set, the response action will be more sensitivity.

1. Output contact:
   - Close to trigger: The [ON Function] event will be triggered when the evac input is close, and open to trigger the [OFF Function] event.
   - Open to trigger: The [ON Function] event will be triggered when the evac input is open, and close to trigger the [OFF Function] event.
2. Latch mode: Set the normal logic input to be in latch mode for this event when connecting to a latching ON-OFF switch button, it requires to input state from Hi to Low to start the event, and input state from Low to Hi to stop the event.
3. Type:
   - Button: Trigger the event by a voltage change (Hi/Low). Trigger in Hi and cancel in Low or cancel in Hi and trigger in Low.
   - Edge Trigger: Trigger the event by [ON Function] event and cancel it by [OFF Function] event.
   - Analog: Control a DSP Element Adjust event to adjust the parameter such as level by RAC remote.
   - RAC5/RAC8: Control a DSP Element Adjust event, which will be triggered to control the event on RAC remote.
4. ON/OFF function: Select the event which will be triggered by this logic input.
5. Analog function: Choose a DSP Element event, which will be triggered to control the volume on RAC remote by logic input.
6. RAC5-1~RAC5-5/RAC8-1~RAC8-8: Choose a DSP Element Adjust event, which will be triggered to control the event on RAC remote by logic input.

5.1.9.2.3 RAC calibration

Manually set the calibrated level value of each channel(knob) on RAC 5/RAC 8.

This function is available for BTQ-VM8 controller only due to that it requires to work with the normal logic inputs.

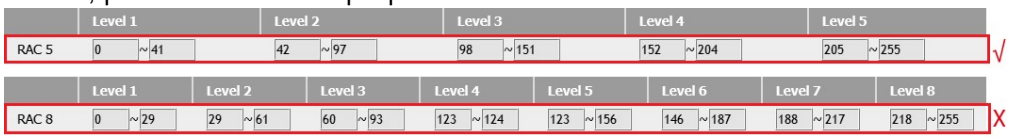


:

- Select device/channel: Choose which BTQ-VM8 controller and which normal logic input channel (CH1~CH8) will be set for RAC 5/RAC 8.
- Minimum/maximum/now: Set the minimum and maximum value (between 0~255) of each knob on RAC 5/RAC 8, and it will display the current value.

- Level: This Indicates the range of each level of RAC 5/RAC 8. Manually set the minimum and maximum value of each level.

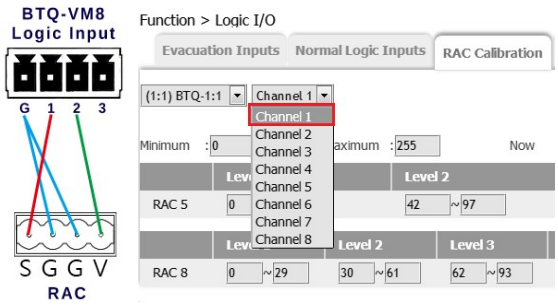
The level value cannot be set in too close or overlap with other level value. To set the correct values, please see the example picture as below.



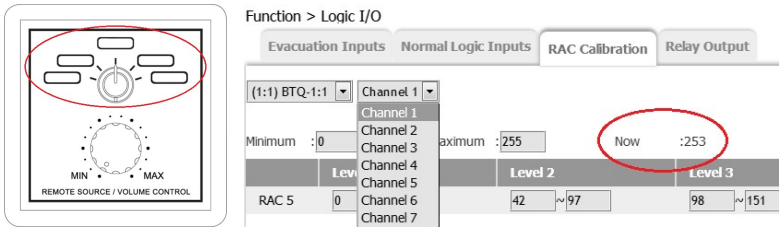
- RAC5: The Level1 (0~41) on Channel 1 does not overlap the Level2 (42~97), and so does other values on on RAC 5.
- RAC8: The Level2 (29~61) on Channel 2 is overlapped the Level3 (60~93), and so does other values on RAC 8, therefore, please adjust the level values again.

❖ How-to:

1. Choose to calibrate the level value on which logic input channel (CH1~CH8) of BTQ-VM8 controller. We use CH1 logic input for example, see the pictures below.



2. To fulfill the accuracy of RAC 5/8 calibration, please rotate the source selector knob on RAC 5/8, and record the current impedance value of every step displayed on [Now].

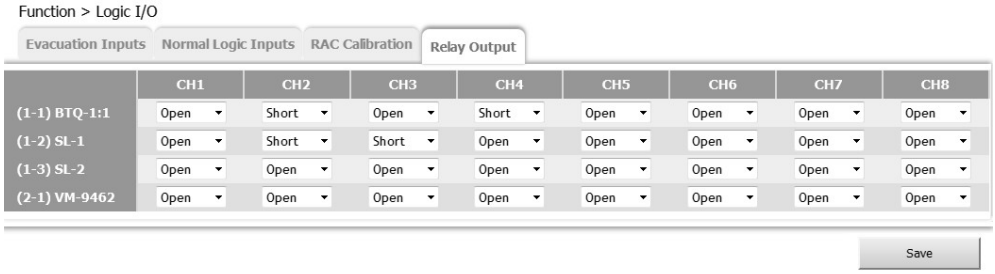


3. Then manually set the range of Level1~5/Level1~8 by using the formula (Level1 + Level 2)/2.
   - Example-1: If the current impedance value of 1-step and 2-step on RAC 5 are 25 and 57, then set the Level 1 of RAC 5 as 0~ 41 (25+57/2).
   - Example-2: If the current impedance value of 3-step and 4-step on RAC 5 are 45 and 61, then set the Level 2 of RAC 5 as 42~ 53 (45+61/2).
4. Follow Step 3 and calibrate the rest of the level value for Level1~5 (RAC 5) or Level1~8 (RAC 8).

5.1.9.2.4 Relay outputs

There are 4 logic relay outputs on BTQ-VM4 and 8 on BTQ-VM8/SG8/SL8, these outputs can be programmed to open or close the contact for signaling the external system.
Set the default state (open or close) of logic relay outputs after the BTQ-VM4/VM8/SG8/SL8 is

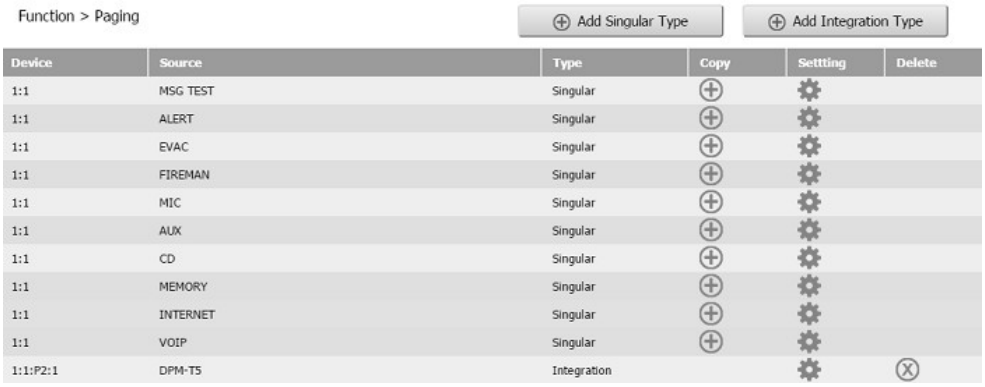
powered.



When the BTQ-VM4/8 controller is turned off, the relay control output is open.

5.1.9.3 Paging

The system will build the default Singular paging events including MSG TEST, ALERT, EVAC, FIREMAN, MIC etc. for the first connected main controller. See the picture below.



- There are two types of paging events:
  1. Integration: An integration paging event is used for multiple codes (keys) for zone selection. Each code can assign the key of the paging consoles such as DPM-MAIN and DPM-T5.
  2. Singular: This paging event is similar to the integration paging event except that it "only has one code (key)".
- ⊕ Copy: When multiple main controllers are connected on the BOUTIQUE system, and require to use different kinds of audio input for paging, click [Copy] button to add (create) a paging source in the same source category (MSG TEST, ALERT, EVAC etc.) for other main controllers.
- ⚙ Setting: Click it to edit the paging event.
- ⊗ Delete: Click it to delete the paging event.

5.1.9.3.1 Add singular type

1. When multiple controllers are connected on the BOUTIQUE system, users can create additional paging sources for main controllers. Click [Add Singular Type] button on the top right area of Paging window, and its control window will displayed as the picture below.

- Source: Choose the paging source of controller.
- Evac/Security: See Security/Evacuation option to learn more about the two options.
- Priority: Set the priority of the event. 99 is the lowest, 1 is the highest. When two paging sources attempt to page to the same zone, the source with higher priority can proceed the paging.
- Percent: This is to determine a paging request which can be allowed or denied by the percentage. If the percentage of available zones is greater than the number set at "Percent", the paging event will be performed successfully. On the opposite, the paging request will be denied.

The available zones means the selected paging zones are not occupied by other sources or not occupied by other sources with lower priority.

- Refresh: Enable this option to let the paging source takes back the zones from the occupied zones when their paging event has finished.
- ID1: Select which main controller/secondary unit is working with this [Singular Type] paging.
- Line out: Select to use which [Audio Line out] on main controller to monitor the sound by using external device such as earphone, speaker etc. when this paging event is triggered.
- Message event: Select the audio message or a message event. The message event can be created from Message > Playlists.
- Pre-chime/post-chime: Add a chime message at the beginning of a mic/MSG TEST/alert/evac/ fireman paging and also at the end of the call.
- Pre-chime/post chime level: The level of pre-chime/post-chime message.
- Zone: By ticking the pre-defined zones in which the paging call will be made.
  - All: Select all the zones of main controller and/or secondary unit.
  - 1-8: Allow to select zone 1 to 8 independently from a main controller and/or secondary unit.

2. Logic: Select the logic output(s) to be triggered when the corresponded zone is triggered.
3. Click [Save] to save the settings, and click [Cancel] to annul the current settings.

5.1.9.3.1.1 MSG TEST/ALERT/EVAC

Configure the paging event of MSG TEST/ALERT/EVAC is identical to a Singular type of paging event, see Add Singular Type.

5.1.9.3.1.2 FIREMAN

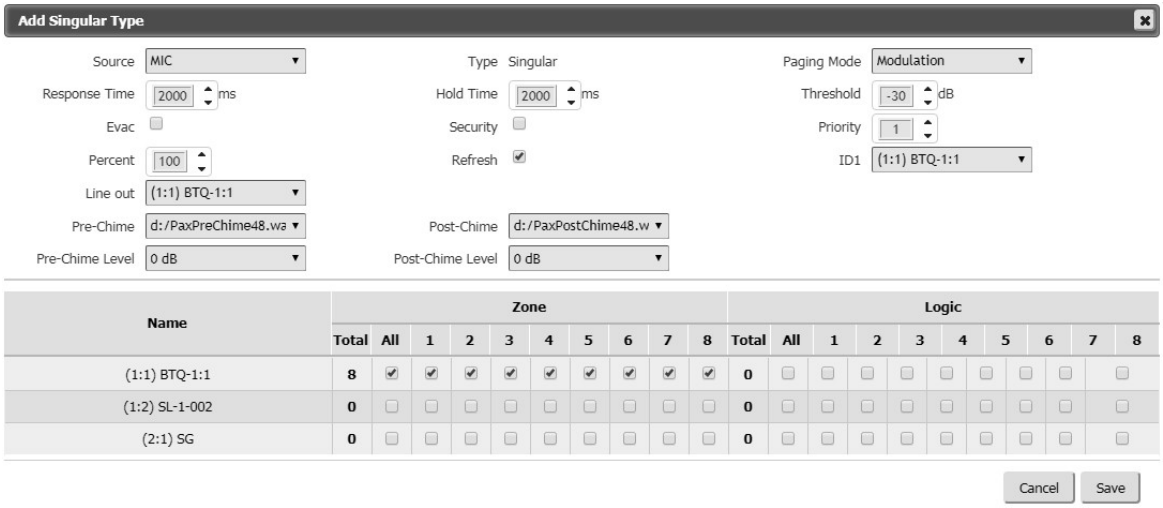
- Talk mode: Select the talk behavior.
  - Push to talk: Talk only while pushing the microphone button.
  - Lock to talk: Talk after pushing the microphone button one time and stop talking by pushing the microphone button again.

The fireman microphone have been designed for emergency paging, please double check when changing its priority and security settings. The default talk mode of the fireman microphone is always "Push To Talk". By default, the priority of the fireman microphone is set to 1 (the highest priority) and its security and evacuation options are also ticked here.

The rest of the configuration setting of Fireman mic paging event is also identical to a Singular type of paging event, see Add Singular Type.

5.1.9.3.1.3 MIC

The mic/line input can be used as a direct input for one external microphone and as an additional music input. The input gain can be adjusted by means of the VOX volume control on the rear panel of main controller.



- Paging mode:
  - Modulation: The [Modulation] mode is applicable when the voice-activated (VOX) volume settings is ON. The VOX setting allows to automatically activate the mic/line input if the level of audio is above the specified threshold.

When choosing [Modulation] mode, please make sure the VOX setting on the rear panel of

BTQ-VM4/8 controller is set as ON.

After choosing [Modulation] mode and the 1~8 paging zones for this mode have been programmed, users can easily click the zone buttons on BTQ-VM front panel to choose the paging zones, then proceed voice paging.

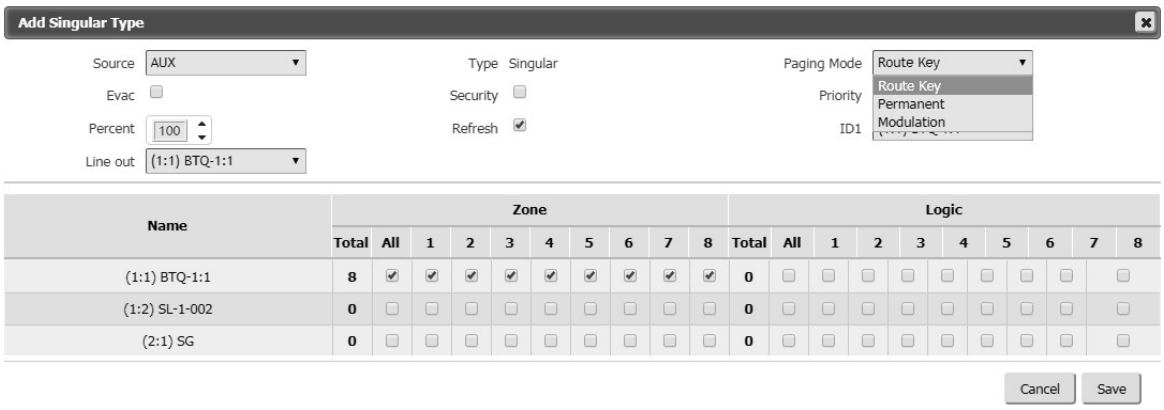
- Event: Use event to activate the mic/line input. In other words, the VOX setting will be disable when choosing [Event] mode.

- Response time (for modulation mode only): If the level of mic/line input is continuously great than the [Threshold] and is beyond the [Response time], the mic/line input will be routed to pre-defined zones. A correct setting of the response time can avoid false activation of the Mic/Line source (peak signal activation). Its range can be set from 50 ms to 5000 ms.
- Hold time (for modulation mode only): As opposed to the response time. The time when the level of mic/line input is continuously less than the [Threshold] and lower than the [Response time] before. A correct setting of hold time can avoid inopportune deactivation of the music source (pause in speech). Its range can be set from 50 ms to 5000 ms.
- Threshold (for modulation mode only): When the input volume is greater than the threshold, the mic/line input will be routed to pre-defined zones. If the threshold is set to -10 dB, the activation of Mic/Line source will take place when the level of Mic/Line is over -10dB.

The rest of configuration setting of MIC paging event is also identical to a Singular type of paging event, see Add Singular Type.

5.1.9.3.1.4 CD/AUX

Music sources routing can be performed from the front panel of controller, DPM-T5 and logic input.



- Paging mode:
  - Route key: The [Route Key] mode will enable the Music Route function on the front panel of BTQ-VM4/8 and from the DPM-T5 microphone console.
  - Permanent: The [Permanent] mode allows the paging source is always requested for paging. You can choose this option if the source is background music and keep playing for zones.
  - Modulation: The [Modulation] mode is applicable when the voice-activated (VOX) volume settings is ON. The VOX setting allows to automatically activate the mic/line input if the level of audio is above the specified threshold.

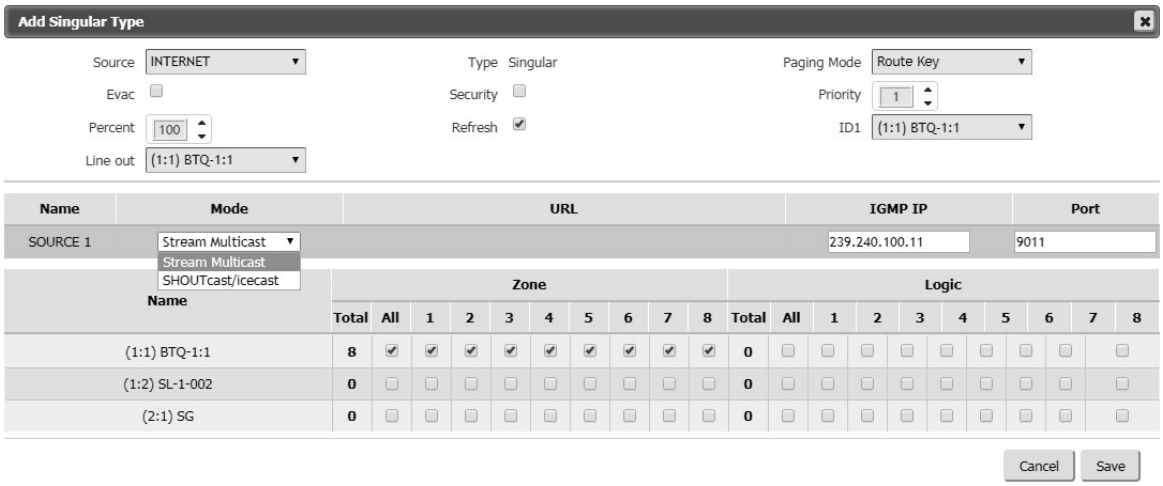
The rest of configuration setting of CD/AUX paging event is also identical to a Singular type of paging event, see Add Singular Type.

5.1.9.3.1.5 MEMORY

Use the digital message from internal memory of main controller and optional external storage USB flash drive to proceed paging. The configuration setting of this paging event is also identical to a Singular type of paging event, see Add Singular Type.

5.1.9.3.1.6 INTERNET

The Internet paging will receive the audio stream and play the streaming source composed in RTP packet (Real-time Transport Protocol).



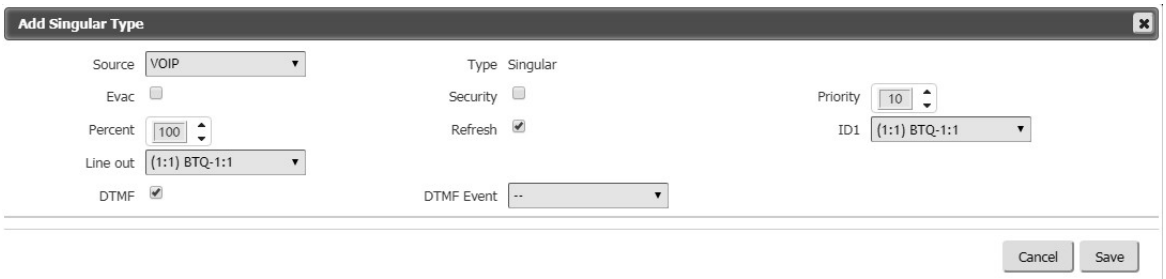
- Source: The network stream source.
- Mode: Choose a source type (Stream Multicast or SHOUTcast/Icecast) to receive the network streaming source and packet.
  - Stream Multicast: Stream Multicast receives the RTP (Real-time Transport Protocol) packet from IGMP IP address. Enter the IGMP IP address and its port. It supports the TERRACOM system or TerraManager to play the Internet streaming via Stream Multicast.
  - SHOUTcast/Icecast: Set the URL of SHOUTcast or Icecast.

It may cause sound quality problem if the received audio from the SHOUTcast/icecast isn't in 48k sampling.

The rest of the configuration setting of INTERNET paging event is also identical to a Singular type of paging event, see Add Singular Type.

5.1.9.3.1.7 VOIP

Support zone paging or intercom via VoIP with standard SIP protocol to TERRACOM device such as PPM-IT5 paging console.

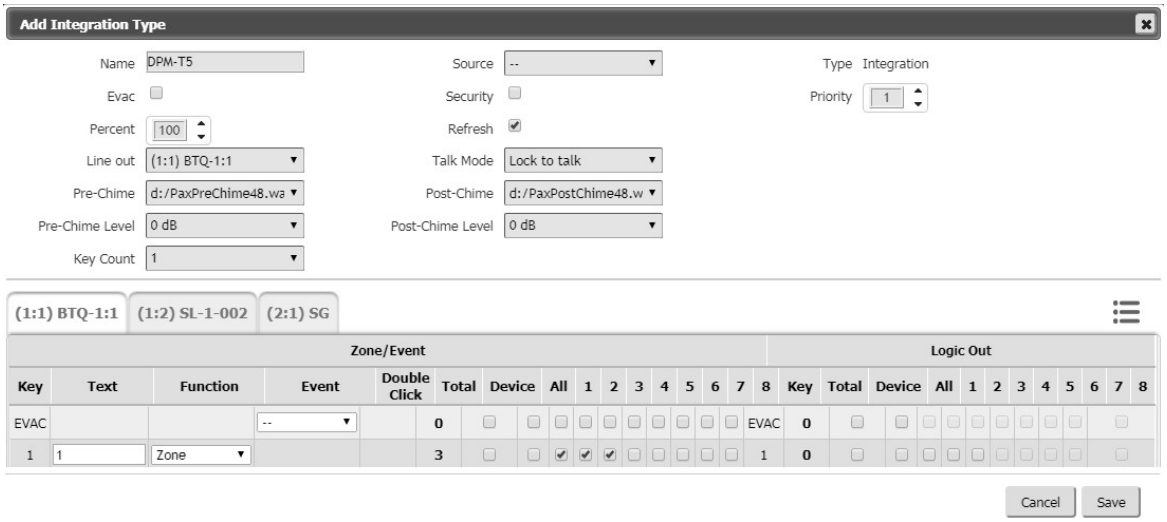


- Source: Select VOIP for VoIP paging configuration.
- Evac/Security: See Security/Evacuation option to learn more about the two options.
- Line out: Select a line output channel on which main controller, and output the audio to an external device such as earphone, speaker etc. when triggering this paging event.
- DTMF: Enable this option to use the DTMF code for zone selection during the intercom.
- DTMF event: Select a [DTMF Integration] event to dynamically add or remove the paging zones on BOUTIQUE system via VoIP.

The rest of the configuration setting of VoIP paging event is also identical to a Singular type of paging event, see Add Singular Type.

5.1.9.3.2 Add integration type

1. Click [Add Integration Type] button on the top right area of Paging window, and its control window will displayed as the picture below.



- Source: Choose a paging source (Modbus/DTMF/DPM-MAIN/DPM-T5/CD-8DF/CD-16DF/CD-T5DF) for this integration paging.
  - DTMF: See how to create DTMF intercom call.
- Post-chime/pre-chime: Add a chime message at the beginning of a DTMF/DPM-MAIN/DPM-T5/CD-8DF/CD-16DF/CD-T5DF paging and also at the end of the call.
- Pre-chime/post chime level: The level of pre-chime/post-chime message.
- Key count: The number of key button. For instance, there are eight keys on DPM-MAIN, and the keys can be individually programmed.
- Talk mode: Select the talk behavior between "Push To Talk" or "Lock To Talk".
  - Push to talk: Talk only while pushing the microphone button.
  - Lock to talk: Talk after pushing the microphone button one time and stop talking by pushing the microphone button again.

The fireman microphone is used for emergency paging, please double check when changing priority and security settings, the default talk mode of fireman microphone is always "Push To Talk" mode. And the priority of the fireman microphone is set to 1 (the highest priority) and its security and evacuation options are also ticked here.

- Text: Set the name of the key displayed on web browser interface or LCD panel (DPM-T5/CD-T5DF only).
- Function:
  - Zone: Set this key on DPM-MAIN/DPM-T5/CD-8DF/CD-16DF/CD-T5DF as a zone selection button.
  - Event: Set this key to trigger an event to the pre-defined zones. The listed events from the drop-down box requires to pre-defined on Event first.
  - Wave record: Set this key to record the audio via DPM-MAIN/DPM-T5/CD-8DF/CD-16DF/CD-T5DF paging console, the recorded file will be stored to the path you set on the Wave

Select event.

- Wave listen: Set this key to preview the wave audio file which has recorded via DPM-MAIN/DPM-T5/CD-8DF/CD-16DF/CD-T5DF.
- Wave delete: Set this key to delete the wave audio file which has recorded via DPM-MAIN/ DPM-T5/CD-8DF/CD-16DF/CD-T5DF.
- Wave paging: Set this key to use the recorded wave file to paging to the pre-defined zones.
- Wave level: Set this key to adjust the level of recorded wave file via DPM-T5/CD-T5DF, it will auto display the volume bar on LCD panel of DPM-T5/CD-T5DF.
- Jump page: Set this key to create a jumping page button on DPM-T5/CD-T5DF, this allows to quickly switch to the page.
- Push to talk: Set this key to start a paging to pre-defined zones via Push-to-Talk mode.
- Push to talk with chime: Set this key to start a paging with pre-chime and post-chime to pre-defined zones via Press-to-Talk mode.
- None: Disable the key on DPM-MAIN/DPM-T5/CD-8DF/CD-16DF/CD-T5DF.

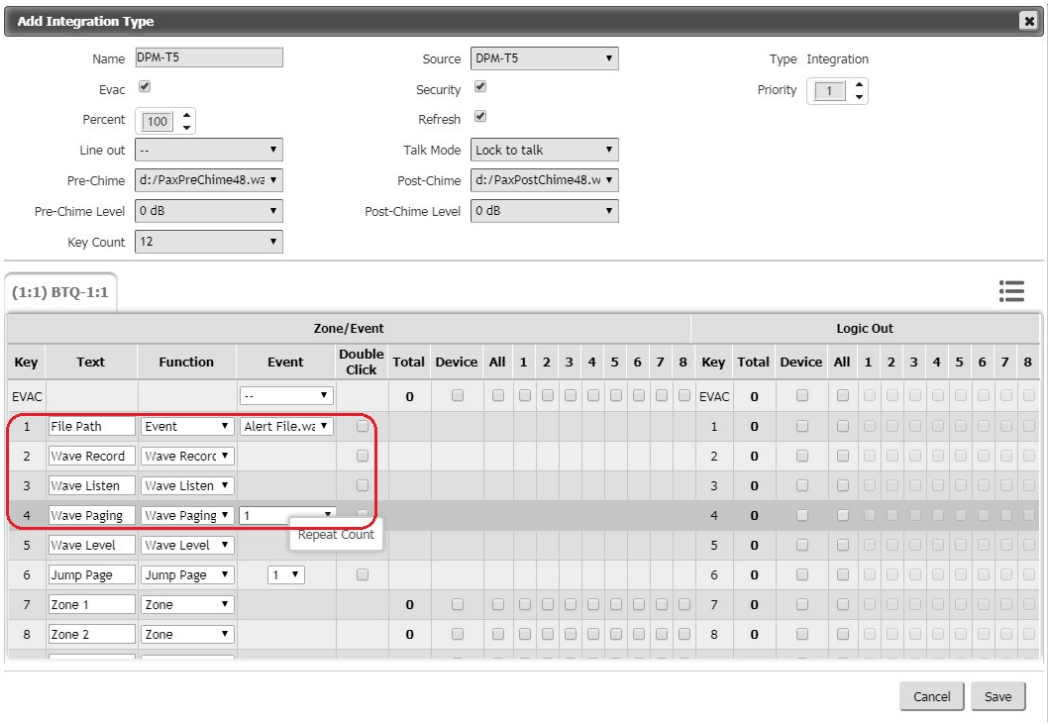
- Double click: Enable to activate the key function by double click on the button of DPM-MAIN/ DPM-T5/CD-8DF/CD-16DF/CD-T5DF. If not, the key button will use the single click mode by default.
- Zone/Event: Set the pre-defined zones/events of this key. When a call in non pre-defined zone is finished, the pre-defined zone will apply for next paging automatically.
  - Device: Select all the zones of all the connected main controllers and/or secondary units as pre-defined zones.
  - All: Select all the zones of main controller and/or secondary unit as pre-defined zones.
  - 1-8: Allow to select zone 1 to zone 8 independently from a main controller and/or secondary unit as pre-defined zones.

2. Logic out: The logic output will signal the external devices when the corresponding zone is being paged if this checkbox be ticked.
3. Click [Save] to save the settings, click [Cancel] to annul the current settings.

The rest of the configuration setting of fireman mic paging event is also identical to a Singular type of paging event, see Add Singular Type.

5.1.9.3.2.1 DPM-T5 Record/Listen/Paging

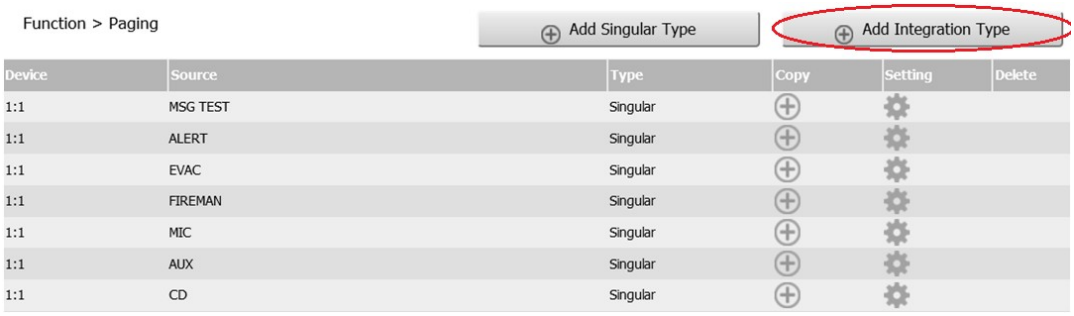
1. First, create a Wave Select event on Event Set > Wave Select window to let the recorded message file be stored under the specific file path in BTQ-VM4/8.
2. Select [Wave Record], [Wave Listen] and [Wave paging] key function on the corresponded key of DPM-T5 in [Integration Paging] event, see the picture below.
3. For example, when assigning a [Wave Record] key function on the [Integration Paging] event of DPM-T5, click this key on the LCD panel of DPM-T5, it will start recording and the message file will be stored under the specific file path.



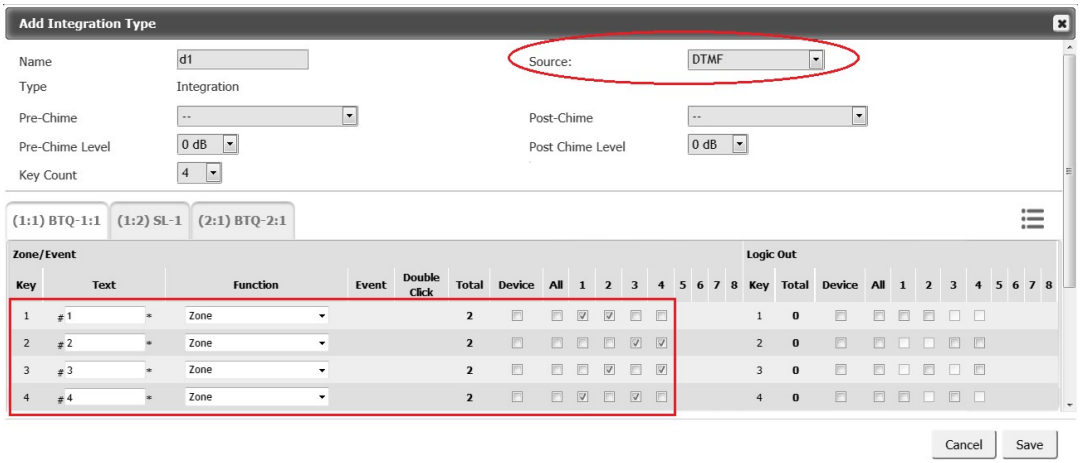
5.1.9.3.2.2 DTMF intercom call

Use the external device such as PPM-IT5 IP console to make the intercom call via VoIP, and select the paging zones by using the DTMF keys.

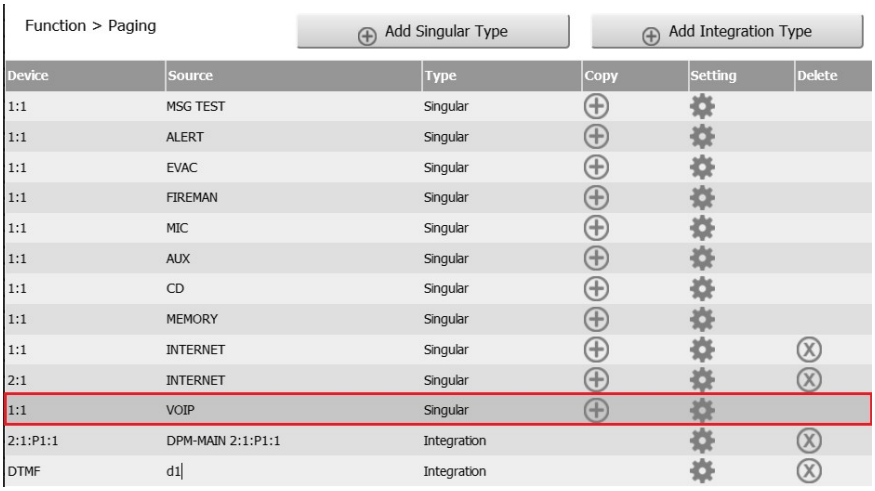
1. First, create an [Integration Type] event.



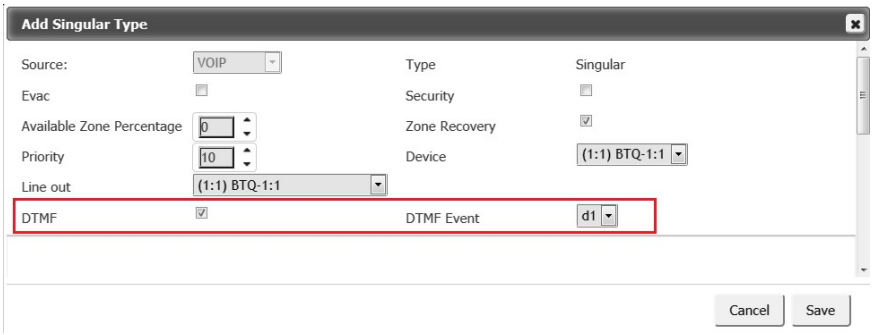
2. Choose [DTMF] on [Source] option, and select the zones which the intercom call will be made by the corresponding DTMF keys.



3. Click [Setting] button on [VoIP Paging] event.

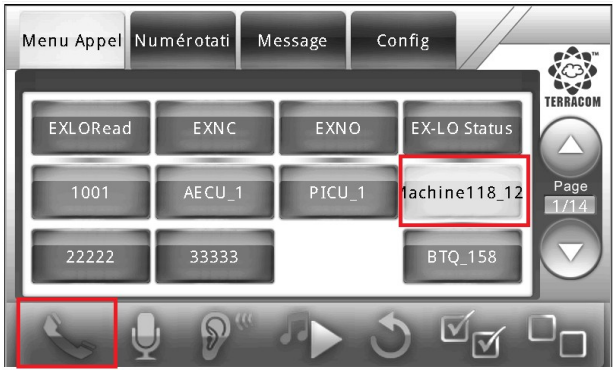


4. Enable [DTMF] option and choose [DTMF Integration] event you have created from drop-down box.



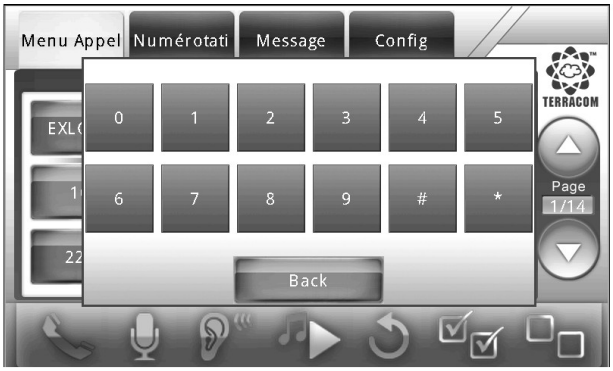
5. Select a button which indicates as the BTQ-VM4/VM8 controller on PPM-IT5 console.

6. Then press button to call the BTQ-VM4/VM8 controller.



7. Press [DTMF] button.

8. Press the DTMF keys, and the intercom call will be called to the zones based on the settings you set on BOUTIQUE web browser (Step 2).



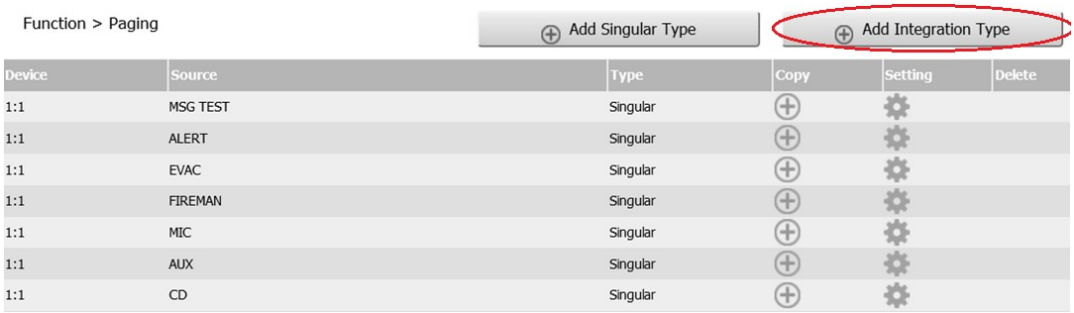
❖ The instruction of DTMF key

1. Dial = #X∗
   - # = start
   - ∗ = end
   - Example:
     - If you would like to paging to Code [2], then dial #2∗
     - The paging function will be activated right way after finishing dialing.
2. Cancel the call = #∗
   - Example:
     - If you would like to cancel the paging, then enter #∗
     - The paging function will be canceled right way after finishing dialing.
3. Redial: When dialing the wrong code, simply redial the correct code again after the wrong code.
   - Example: If you dial the Code [3] to the wrong Code [2], you only need to redial the correct code again (2) after the wrong one. The situation might be shown as #2#3∗

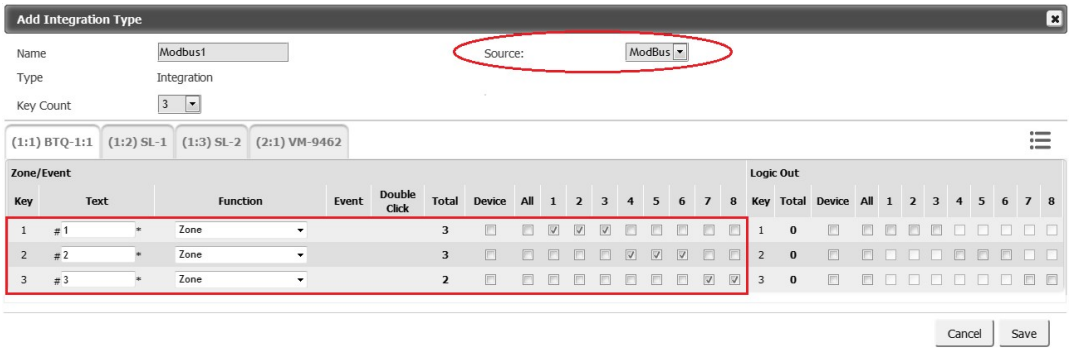
5.1.9.3.2.3 DTMF paging call via Modbus

Proceed the zone paging by using the programmed DTMF keys via ModBus protocol.

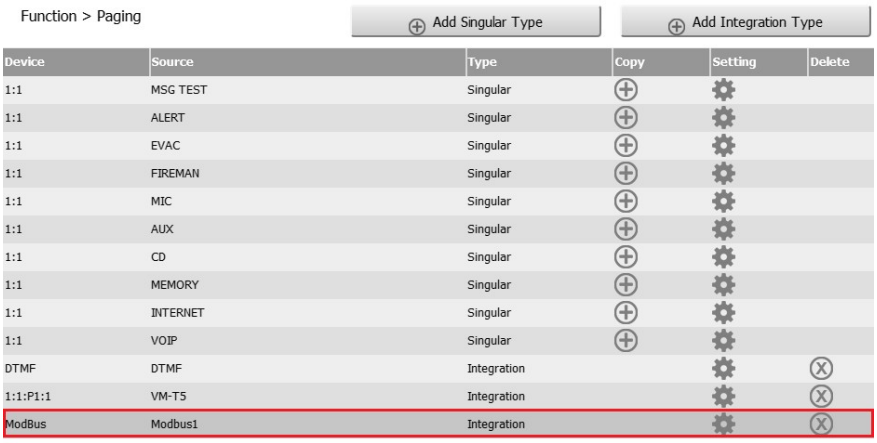
1. First, create an [Integration Type] event.



2. Choose [ModBus] on [Source] option, and select the zones which the paging call will be made by the corresponding DTMF keys.



3. Click [Setting] button on [ModBus Paging] event.



4. Go to Machine > Settings > Third Party Controls, and enable the Modbus 3rd party control to control the paging events via DTMF keys (supported by RS232 and Ethernet).

❖ The instruction of DTMF key

1) Dial = #X∗
   - # = start
   - ∗ = end
   - Example:
     - If you would like to paging to Code [2], then dial #2∗
     - The paging function will be activated right way after finishing dialing.

2) Cancel the call = #∗
   - Example:
     - If you would like to cancel the paging, then enter #∗
     - The paging function will be canceled right way after finishing dialing.

3) Redial: When dialing the wrong code, simply redial the correct code again after the wrong code.
   - Example: If you dial the Code [3] to the wrong Code [2], you only need to redial the correct code again (2) after the wrong one. The situation might be shown as #2#3∗

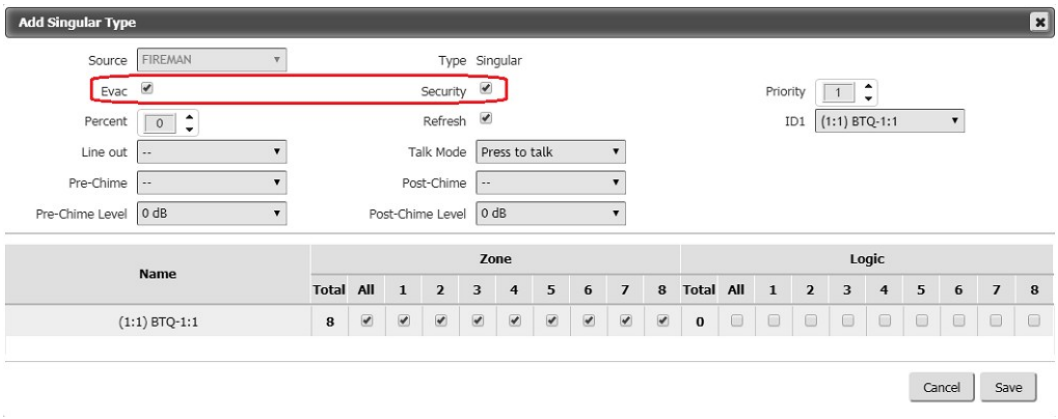
5.1.9.3.3 Security/evacuation option

❖ Security option:

Please choose [Manual] option on [Machine > Settings > Security Mode > Enter Security Mode]

setting first, the security mode is activated when under [Security Mode Manual] mode only.

For example, if the Security mode is enabled in a evac/alarm paging event, this paging event will continue working even the system is under the power saving mode (sleep mode), see the picture below.



❖ Evacuation option:

If an paging event with Evacuation option has been triggered, the system will enter the evacuation mode.

- The EVAC LED on the front panel of BTQ-VM4/VM8/SG8/SL8/DPM-T5/CD-T5DF will light up.
- Play the evac messages to the pre-defined zones if the zones has chosen to use the evac paging source.
- The volume of the rotary knobs on BTQ-VM4/8 will bypass, and make sure the volume of paging does not attenuate.
- The 3-wire type of speaker lines will bypass, and make sure the the volume set by the VAT volume attenuator does not attenuate.

The Evacuation option can be used for all kinds of "play message" event, and on all events which are related to audio sources.

- Enter security mode:
  - Auto: If the AC mains power is not present, the controller will switch to DC power (for battery backup). Once switch to DC power, the system will automatically operate the security mode.
  - Manual: Select [Manual] mode to allow the system to operate the security mode function.
- Power saving for security mode: This option is available for [Manual] mode only.
  - Select [ON] to activate the security mode for system power saving, and let the listed functions such as Fireman, Route Key etc., to be activated only.
  - If selects [OFF], the system will not activate the security mode for system power saving. In other words, all the BOUTIQUE functions can be fully operated.

5.1.9.4 BGM

This function allows the system to simultaneously play individual background music sources to different group of zone using the internal amplifier and external amplifiers under the BTQ local-net system (BTQ-VM4/8 controller + BTQ-SL8 units).

For example, if 1 BTQ-SL8 secondary unit is connected to the BTQ-VM controller, and the BTQ-SL8 unit is connected to 2 external amplifiers, this shall provide individual 4CH BGM sources for system (2CH from controller and 2CH from secondary units). The number of external amplifier that the controller or secondary unit has connected, the number of additional BGM sources the system can

use.

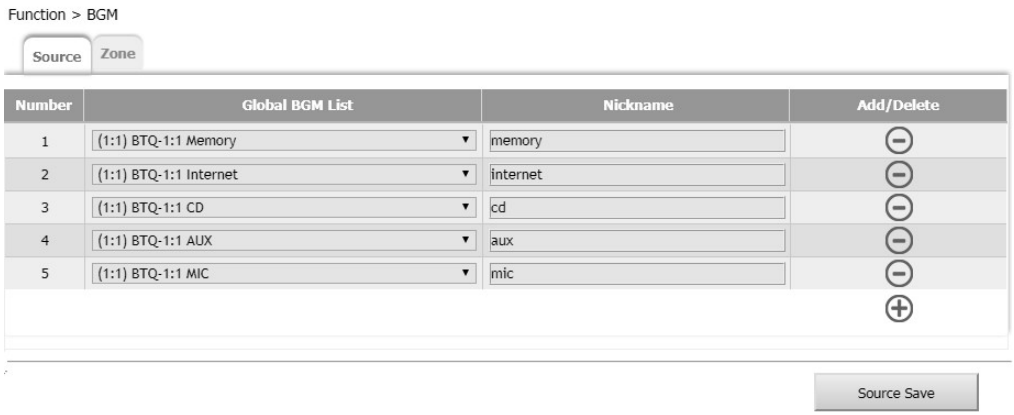
Max. audio channel for entire BTQ local-net system:

- 600MHz MCU version: 2CH for local paging + 2CH for BGM sources -> Max. 4CH in total
- 900MHz MCU version: 2CH for local paging + 6CH for BGM sources -> Max. 8CH in total
- If the 2CH paging channel is currently occupied, and any of the BGM channel(s) are not in use (BGM setting is required via BTQ web browser), then the BGM channel(s) which is not in use can act as the paging channel, and transmits the paging audio.

The BOUTIQUE system supports simultaneously decoding only 1CH MP3 audio codec if the MCU version of BTQ-VM is 600M; or max. 3CH MP3 audio codec if the MCU version of BTQ-VM is 900M.

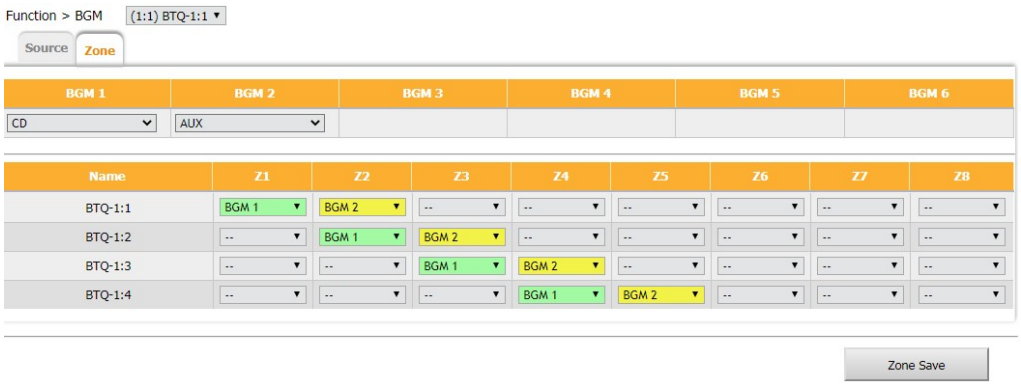
The MCU version of BTQ-VM controller can be looked up from BTQ web browser > Info > About window.

❖ Source tab

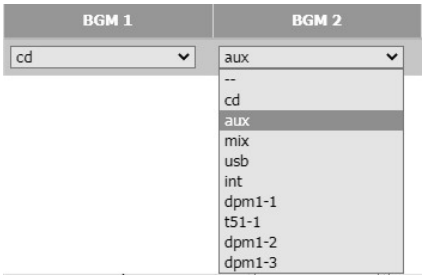


- Global BGM list: Choose a BGM source (Memory, Internet, CD, AUX, MIC, DPM-MAIN, DPM-T5) from the Global-Net system.
- Nickname: Set a nickname for the chosen BGM source, this displayed nickname will be shown on [Zone] tab.
- Add/delete: Click ⊕ to add a new BGM source. Click ⊖ to delete the selected BGM source.

❖ Zone tab

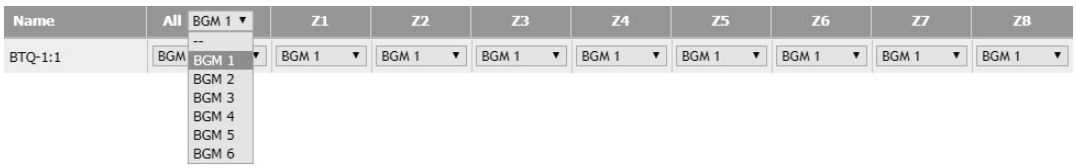


- BGM 1 ~ BGM 2: Assign the BGM source(s) which are created on [Source] combo box, see the example picture as below,



- From the example picture above, the DPMx-x is referred as the connected DPM-MAIN device which its 3.5mm line input on the side panel is used as a BGM source. The display name of BGM source can be user-fined on [Zone] tab > [Nickname] setting.
- From the example picture above, the T5x-x is referred as the connected DPM-T5 device which its 3.5mm line input source or mini-USB interface source on the side panel are used as a BGM source. The display name of BGM source can be user-fined on [Zone] tab > [Nickname] setting.

- All BGM: If all the zones of BTQ units are using the same BGM source(s), users can quickly assign the BGM source(s) for all the zones from [All BGM] option.



- Name: The name of BTQ-VM main controller(s) or BTQ-SL8/SG8 secondary unit(s).
- Z1 ~ Z8: Choose a pre-defined BGM source (BGM 1 ~ BGM 2) for each zone.

The different background color of each Z1~Z8 combo box is used for showing the current status of zone distribution (paging/BGM playing).

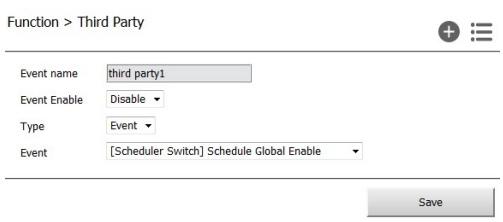
- Green: BGM playing using internal amplifier of BTQ-VM
- Yellow: BGM playing using external amplifier of BTQ-VM or BTQ-SL8/SG8
- Blue: Normal paging
- Red: EVAC paging
- Purple: Sound masking

To adjust individual DSP parameter settings of each BGM source channel such as volume, overload threshold etc., go to DSP Function > DIGI-Link (BGM) chapter for details.

5.1.10 Third party

Allows other devices to control the BOUTIQUE system through 3rd party control.

- Event name: The event name is the triggering code for a 3rd party action, this triggering code sent from the 3rd party device must be the same as the [Event Name] here.
- Event enable: Enable/disable the 3rd Party Control action.
- Type: The [Event] type allows other devices



to control the BOUTIQUE system via 3rd party.

- Event: Choose an event from the drop-down box and allow the 3rd party device to control this action.

5.1.11 Event

The action of BOUTIQUE is based on the Event philosophy. The event can be started by different type of interface such as logic, schedule, remote and 3rd party.
In the Event management, you can create, manage and control the events including set permanent event like message routing, event sequences, priority etc. The different types of event will be explain in the following chapters.

BOUTIQUE event	Name	Logic trigger	Schedule trigger	DPM/DPM-T5/ CD remote trigger	3rd party trigger
1	Security Mode	√	√	X	√
2	Scheduler Switch	√	√	√	√
3	Wave Select	X	X	√	X
4	Stop Paging	√	√	√	√
5	Fault Active	√	√	√	√
6	Fault Inactive	√	√	√	√
7	Evac Input Reset	√	√	√	√
8	USB Backup	√	√	√	√
9	Logic Out	√	√	√	√
10	Command String	√	√	√	√
11	Macro	√	√	√	√
12	Stop Macro	√	√	√	√
13	DSP Element	√	√	√	√
14	Message Routing	√	√	√	√
15	Singular Paging	√	√	√	√
16	Singular Paging On By Zone	√	√	√	√
17	Singular Paging Off By Zone	√	√	√	√

5.1.11.1 Event set

5.1.11.1.1 Security mode

The [Security Mode] event is used for letting the system activate/deactivate the security mode for system power saving.

Please refer to Security Options to understand the [Security Mode].

- Event name: The name of this event.
- Security enable/disable: Enable (activate) or disable (deactivate) the security mode when the event

is triggered.

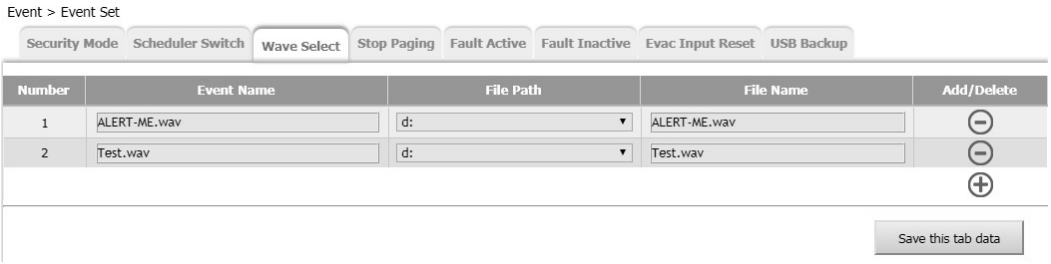
5.1.11.1.2 Scheduler switch

The [Scheduler Switch] event is used for enabling/disabling the scheduler function of system.

- Event name: The name of this event.
- Scheduler enable/disable: Enable or disable the scheduler function of the system.

5.1.11.1.3 Wave select

The [Wave Select] event is used for assigning the file path of the recorded message file when using the DPM-T5/DPM-MAIN for recording. See DPM-T5 Record/Listen/Paging chapter for details.



- Event name: The name of this event.
- File path: Select the file path of the recorded message on BTQ-VM4/8. The recorded message file will be displayed on Message Management, too.
- File Name: The name of the recorded message file.

5.1.11.1.4 Stop paging

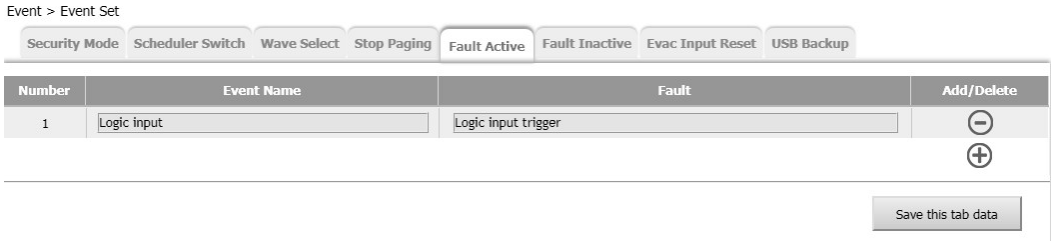
The [Stop Paging] event is used for stopping all the paging sources or the specific paging source.

- Event name: The name of this event.
- Stop all source: Tick this option to stop all the paging sources.
- Stop target source: Choose to stop one specific target source.

5.1.11.1.5 Fault active

The [Fault Active] event allows users to set the customized fault for monitoring purpose. When this event is activated, the custom message of this fault will display on LCD panel, as well as the fault LED will light up, and along with other warning indications such fault reply, record the fault on fault

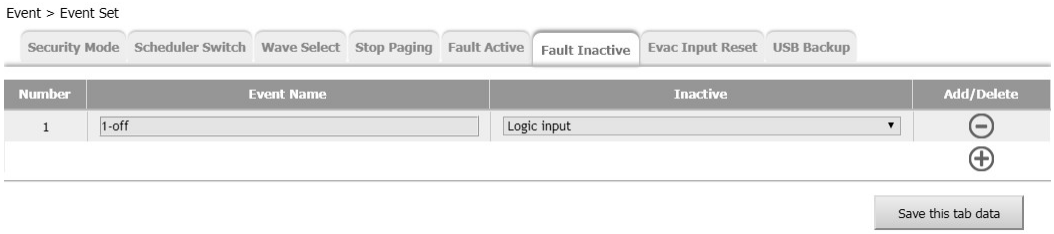
list, and trigger the warning tone.



- Event name: The name of this event.
- Fault: Set the display message when this event is triggered.

5.1.11.1.6 Fault inactive

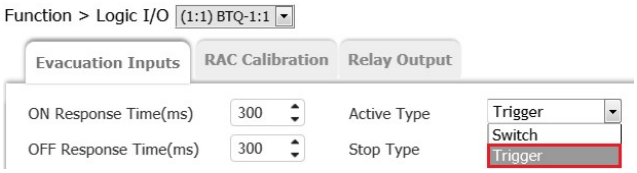
The [Fault Inactive] event is used for deactivating the Fault Active event. After deactivate the selected [Fault active] event, the fault LED on front panel will light off, and the fault relay will be switched to non-fault status, and the warning tone will stop output.

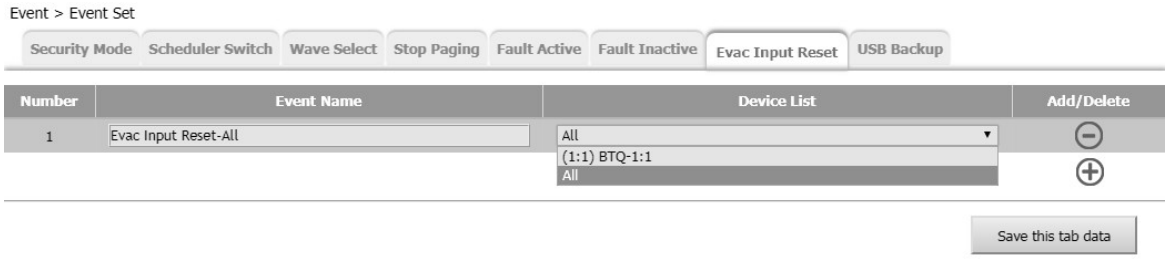


- Event name: The name of this event.
- Inactive: Choose a [Fault Active] event you wish to cancel from the drop-down box.

5.1.11.1.7 Evac input reset all

If the [Evac Input Reset] event is activated, it will cancel the [ON Function] event which is under Evacuation inputs > Active type > Trigger mode, see the picture below.





- Event name: The name of this event.
- Device list: Choose to reset all the evac inputs of the BTQ-VM4/VM8/SG8 or all the controllers.
  - All: All BTQ-VM4/VM8/SG8 units.
  - Controller: The selected BTQ-VM4/VM8/SG8 unit.
  - --: Indicate none of device or system is selected.

Please note if the [Evac Input Reset] event is activated on a selected BTQ-VM4/8, the evac inputs of the connected BTQ-SL8 will also be reset, too.

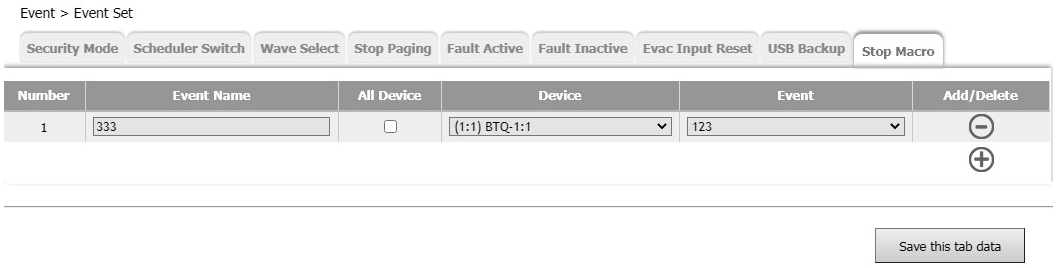
5.1.11.1.8 USB backup

The [USB Backup] event is used for auto backup the configuration file, message files, language file and font files (.ttf) to the connected USB flash drive.

- Event name: The name of this event.
- Device list: Choose to auto backup the selected BTQ-VM4/VM8/SG8 or all the controllers.
- Directory path: Choose the file path of under the by [default directory name] or by [default date name].

5.1.11.1.9 Stop macro

This [Stop Macro] event is used for stopping all the programmed [Macro] events or specific [Macro] event. Please note the [Macro] event which is currently executed cannot be stopped by [Stop Macro] event.



- Event name: The name of this event.
- All device: All BTQ-VM4/VM8/SG8 units.
- Device: Choose to stop the [Macro] event on which BTQ-VM4/VM8/SG8.

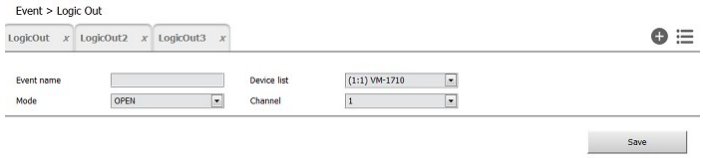
- Event: Choose to stop which selected programmed [Macro] event.

5.1.11.2 Add event & zone selection settings

❖ Add event

1. Click ⊕ button.

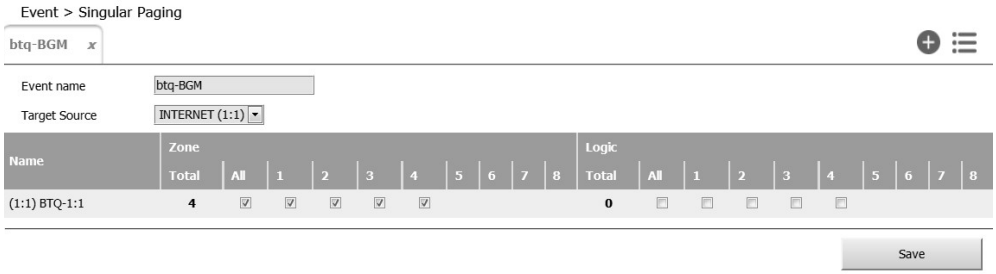
2. A new [Add] layout will appear. Now enter the information of new event, and click [Save] button.



3. An new event will be created and displayed as the picture above.

❖ Zone selection

All the events which relate to paging have the identical zone setting, this setting informs the BOUTIQUE system that which zones will be distributed audio when proceeds a paging.



- Device: The device name (main controller or secondary units).
- Zone: Tick the zones checkbox to select them into pre-define zones. As soon as a call in non pre-defined zone is finished, the next call will be automatically rerouted in the pre-defined zone.
  - All: Select all the zones of main controller and/or secondary unit.
- 1-8: Allow to select zone 1 to 8 independently from a main controller and/or secondary unit.
- Logic out: Select the logic output(s) to be triggered when the pre-define zone is triggered.

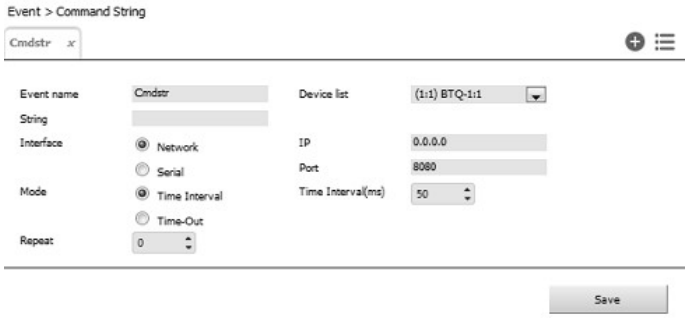
5.1.11.3 Logic out

BOUTIQUE has 8 output channels that can be configured with 4 modes.

- Event name: The name of this event.
- Mode (cycle is from OPEN to CLOSE):
  - OPEN: The contact output's channel is open when the event is triggered.
  - CLOSE: The contact output's channel is close when the event is triggered.
  - TOGGLE: Trigger the event contact output's channel relay switch between open and close.
  - PULSE: The contact is close during the [Close] period then open during [Open] period.
    - Close period (ms): Set the time to close the contact output's channel.
    - Open period (ms): Set the time to open the contact output's channel.
    - Times: The times of OPEN-CLOSE phase.
- Device list & channel: Choose the device target and its channel to perform this logic out event.

5.1.11.4 Command string

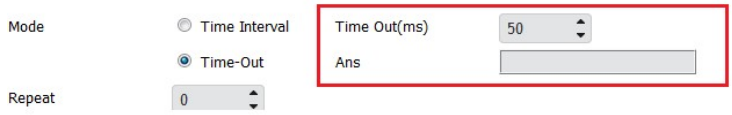
Send the commands by RS232/Ethernet to 3rd party device.



- Event name: The name of this event.
- String: Set the command strings which the BOUTIQUE will use it to 3rd party device.

The BOUTIQUE system accepts to receive the command string in ASCII.

- Interface: Users can send the command string through the network IP or serial port (RS232).
- Mode:
  - Time interval: The period (ms) of sending the command string to 3rd party device repeatedly.
  - Time out: The device will stop sending the command string after receiving the answer string from the target.

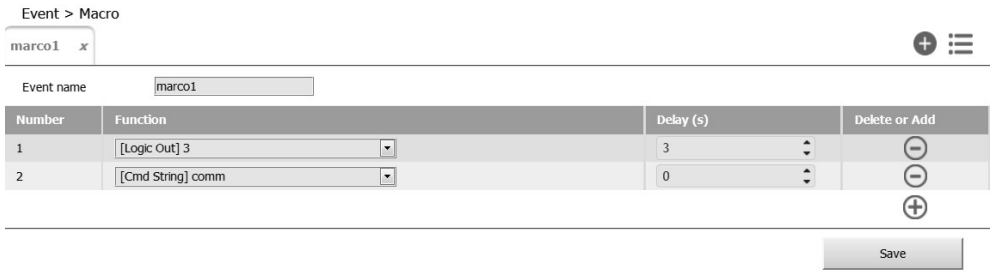


- Time out: Set the time to resend the command string when not receiving the [+Ans] response.
- Ans: The answer string which sends to BOUTIQUE device when 3rd party device has received the command string.

- Repeat: Set the "repeat time" to resend the command string when not receiving the [+Ans] response.

5.1.11.5 Macro

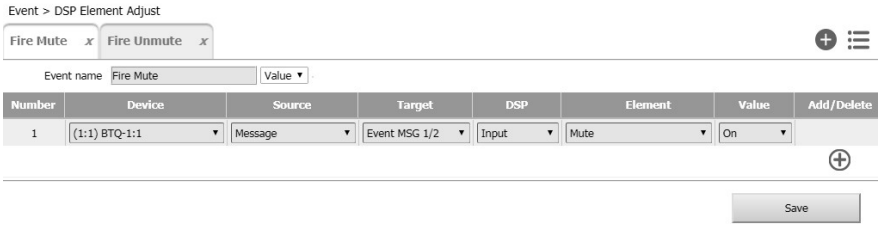
Create a group of action by adding multiple events, and the events will be triggered in order.



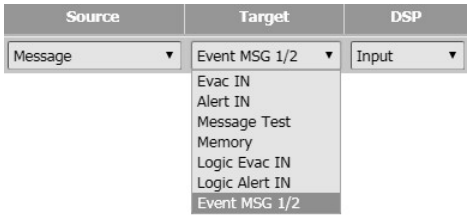
- Event name: The name of this event.
- Function: The event will be triggered in order.
- Delay (second): The delay time between the next upcoming event in this list.

5.1.11.6 DSP element adjust

The [DSP Element Adjust] event is used for adjusting the DSP parameter such as the audio level of input source.



- Value/Step: Choose the adjust mode of this event.
  - Value: Set the parameter to the assigned value such as level control and mute on/mute off.
  - Step: Increase/decrease the DSP parameter by step. When the event is triggered, the value will increase/decrease by step. This mode can be used for the element such as Level(dB) and Overload Threshold(dB).
- Source: Select a source (CD/TUNER, AUX, MIC/LINE, Fireman MIC, Message, Paging Console, VOIP, Internet, Internal Amp CH output, External Amp CH Output, Ducker, Sound Masking, BGM and Stream Out) which you wish its element such as level, mute etc. to be adjusted.
- Target: The [Target] grid will be activated when choosing the [Paging Console] and [Message] option on [Source] grid. Choose once of the connected paging console or choose one of the message source as the target.
  - Message Target



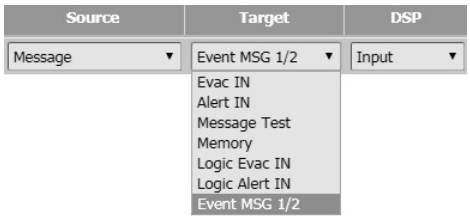
- Evac IN, Alert In, Message Test, Memory: The paging source of BTQ-VM4/8 controller.
- Logic Evac In, Logic Alert In: The source of evac input.
- Event MSG 1/2: The source of Message Routing event.

- DSP: Choose a type of DSP component (Input/Equalizer/Dynamic) which you wish to adjust the element of this chosen DSP component.
- Element: The type of elements include Mute, Bypass, Level(dB) and Overload Threshold(dB).

5.1.11.7 DSP element read

The [DSP Element Read] event is used for reading back the DSP parameter such as the audio level of input source.

- Source: Select a source (CD/TUNER, AUX, MIC/LINE, Fireman MIC, Message, Paging Console, VOIP, Internet, Internal Amp CH output, External Amp CH Output, Ducker, Sound Masking, BGM and Stream Out) which you wish its element such as level, mute etc. to be read back.
- Target: The [Target] grid will be activated when choosing the [Paging Console] and [Message] option on [Source] grid. Choose one of the connected paging console or choose one of the message source as the target.
  - Message Target

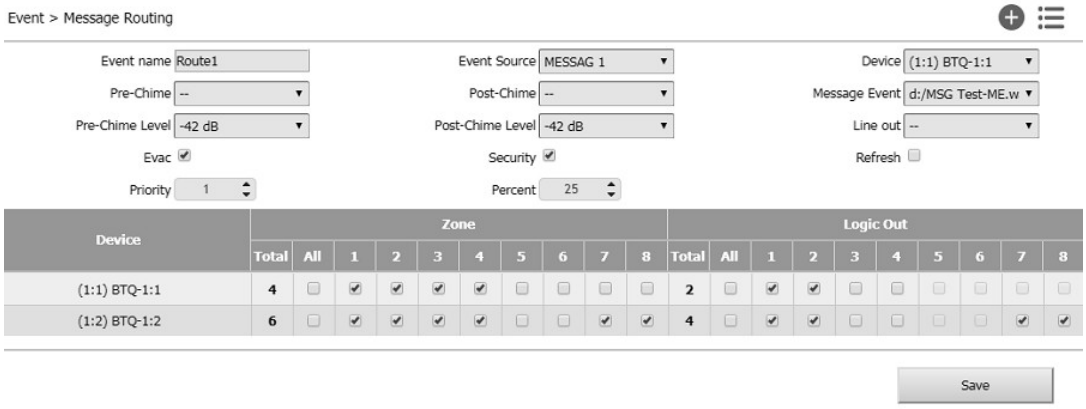


- Evac IN, Alert In, Message Test, Memory: The paging source of BTQ-VM4/8 controller.
- Logic Evac In, Logic Alert In: The source of evac input.
- Event MSG 1/2: The source of Message Routing event.

- DSP: Choose a type of DSP component (Input/Equalizer/Dynamic) which you wish to read back the element of this chosen DSP component.
- Element: The type of elements include Mute, Bypass, Level(dB) and Overload Threshold(dB).

5.1.11.8 Message routing

The [Message Routing] event is used for playing the selected message to pre-defined zones.

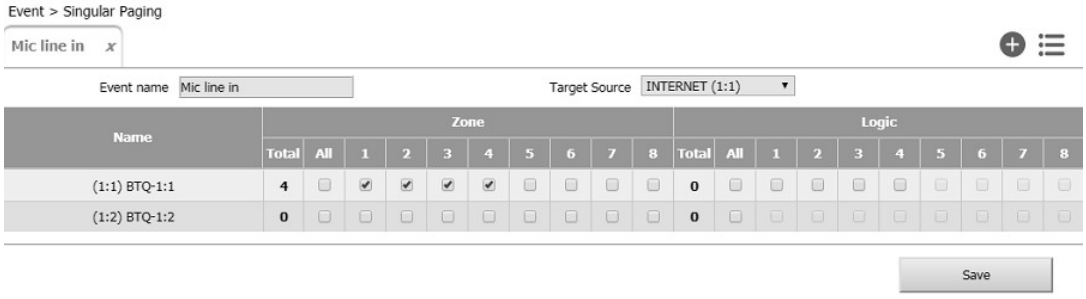


- Event source: There are two Message (MESSAG 1 and MESSAG 2) in BOUTIQUE system, when the two message source are occupied, user needs to schedule the events separately.

The rest of configuration setting of MIC paging event is also identical to a Singular type of paging event, see Add Singular Type.

5.1.11.9 Singular paging

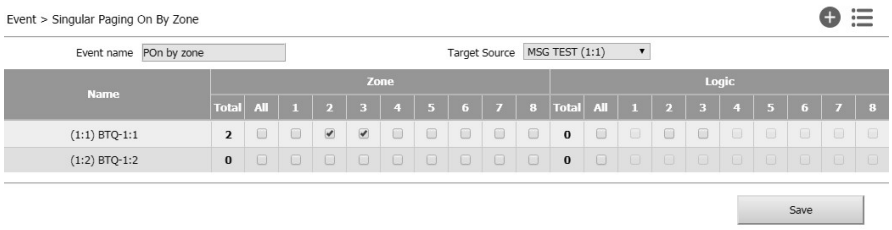
This event is for paging to pre-defined zones, please refer to Paging for more details.



5.1.11.10 Singular paging on by zone

This event can be used for dynamically adding the paging zones in Singular Paging event.

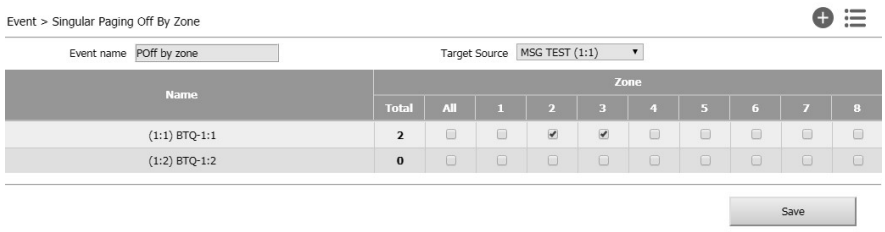
For example, If Zone1~Zone2 are set as the pre-defined zones in [Singular Paging] event, users can use [Singular paging on by zone] event to add Zone2~Zone3 when this event is triggered.



5.1.11.11 Singular paging off by zone

This event can be used for dynamically cancelling the zones which add on Singular Paging event and Singular paging on by zone event.

For example, if Zone1~Zone4 are [****] set as the pre-defined zones in [Singular Paging] and [Singular paging on by zone] event, users can use [Singular paging off by zone] event to cancel Zone2 and Zone3 when this event is triggered.



5.1.12 Monitor

The BOUTIQUE system has all the essential functions to comply with EN 54-16 requirements including loudspeaker lines monitoring, EVAC microphone capsule, cable surveillance, and supervision with remote devices.

Make sure the system connection is correct, so that the monitored results will be accurate for further reference.

5.1.12.1 Global settings

- Monitor: Enable/disable the monitoring function on all the connected BTQ-VM4/8 controllers.
- Monitor cycle (s): The interval(sec.) that the connected BOUTIQUE system perform monitoring each time.
- Monitor tone (Hz): Choose the frequency of monitoring tone signal between 18K or 20K Hz.
- 1kHz: Enable the 1K tone for monitoring. If this option is on, a 1K tone signal will be sent to the amplifier for monitoring during the time and period.

We recommend to measure the 1K monitoring when no one is around due to the 1K monitoring will cause high pitch sounds.

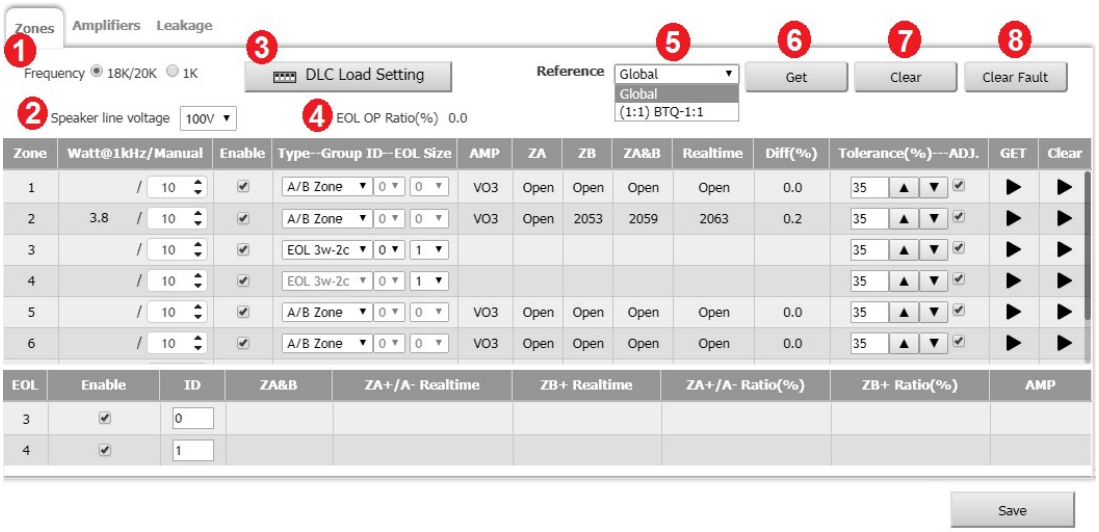
- Time (hh:mm): The time to start the 1K tone monitoring.
- Period (hh:mm): The time interval to monitor the 1K tone.

5.1.12.2 Zones

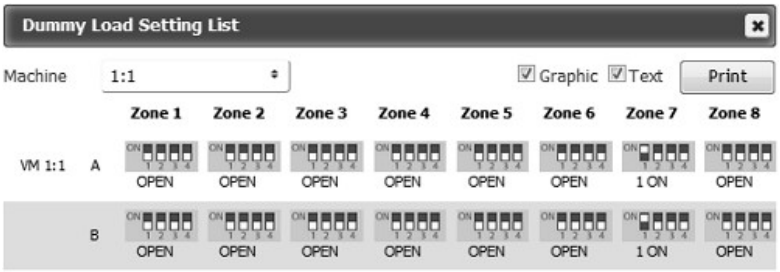
The zone monitoring is based on the impedance measurement. It has three different reference values: Line A, Line B and Line A/B. Reference for Line A and Line B are the individual impedance measurement of speaker lines. Reference Line A/B correspond to the Line A and B in parallel.

- Line A = Za
- Line B = Zb
- Line A/B = 1/((1/Za) + (1/Zb))

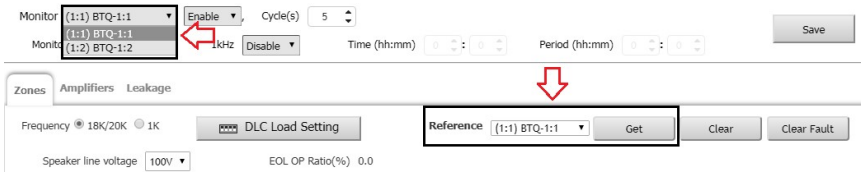
5.1.12.2.1 Control



1. Frequency (Hz): Choose 18K/20K or 1 K monitoring.
2. Speaker line voltage: The 25V/70V/100V audio signal through the amplifier and back to main controller/secondary unit.
3. DLC (dummy load calculation) setting list: Set the dummy load setting based on monitoring result listed on [DLC] window.
4. EOL OP ratio (%): Display the wattage load of the connected VA-EOL unit and loudspeakers in ratio. If the ratio is reach 100%, it indicates as Over Power (OP).



5. Reference: Select the devices either all the BTQ-VM4/VM8/SG8/SL8 units (global-net) or the selected BTQ-VM4/VM8/SL8 units (local-net) from drop-down box.
   - Global (global-net):
     6. Get: Get all the reference of impedance value on all the BTQ-VM4/VM8/SG8/SL8 units (global-net).
     7. Clear: Clear all the reference of impedance value on all the BTQ-VM4/VM8/SG8/SL8 units (global-net).
     8. Clear fault: Clear the fault state of all zones on BTQ-VM4/VM8/SG8/SL8 units (global-net).
   - BOUTIQUE device (local-net):
     6. Get: Get the reference of impedance value from the selected BOUTIQUE local-net system (BTQ-VM4/VM8/SL8), see the picture below.

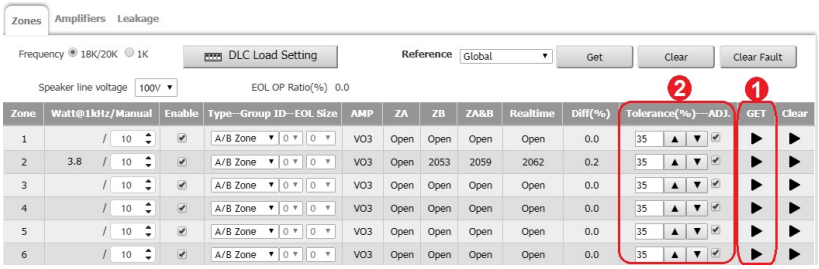


7. Clear: Clear the reference of impedance value from the selected BOUTIQUE local-net system (BTQ-VM4/VM8/SL8).
8. Clear fault: Clear the fault state of selected zones on BOUTIQUE local-net system (BTQ-VM4/VM8/SL8).

In the case of zone short-circuit, the main controller/secondary unit will open the internal relay to stop the output of the audio signal to speaker. After the relay is opened, the controller/secondary unit cannot monitor and detect whether the problem is solved or not. Therefore, after this problem has been solved, users needs to reset the monitoring to close the relay to the output audio signal to the speaker and monitor the speaker line again.

❖ How to setup the monitoring for one zone:

1. Press [GET] button on the selected zone.
2. If the variation of impedance measurement on [Realtime] field is big due to the unstable environment or condition, users can manually define the tolerance value to detect a bad impedance fault. See the picture below.

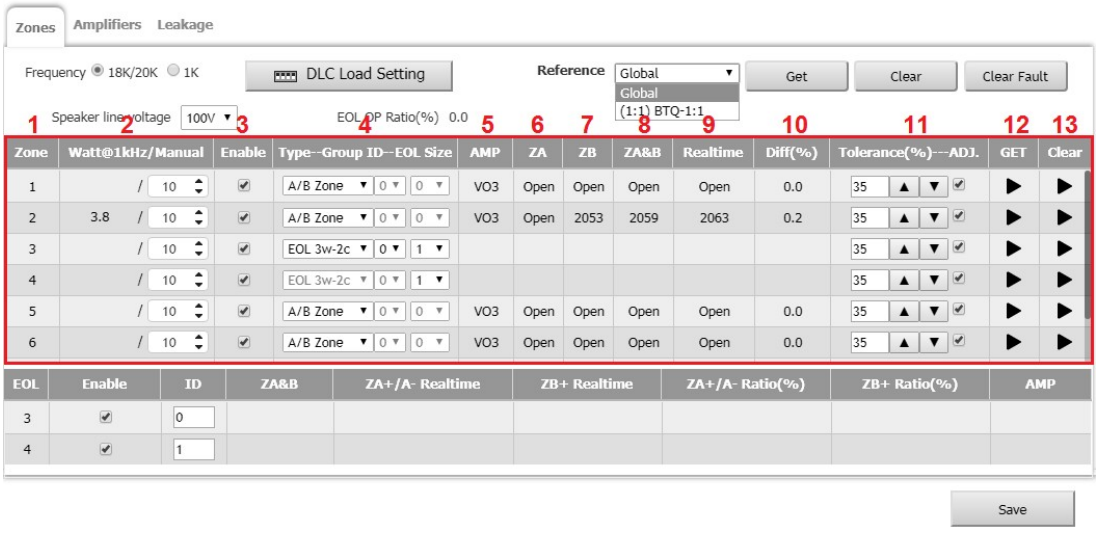


❖ How to setup the monitoring for all zones:

1. Press [Global Get reference] to get reference.
2. If the variation of impedance measurement on [Realtime] field is big due to the unstable environment or condition, users can manually define the tolerance value for each zone to detect a bad impedance fault

The references should be taken only on zone with the connected speaker lines. Otherwise, the zone will be open.

5.1.12.2.2 Monitoring settings of zone (A/B zone)



1. Zone: Indicate the number of zone.
2. Watt@1kHz/manual: Display the wattage value when the zones are connected to the loudspeakers or define the value manually.
3. Enable: Enable/disable the zone monitoring. If the monitoring of a zone is disable, the BOUTIQUE will not detect the faults of that zone.
4. Type/group ID--EOL size:
   - Type: Choose the hardware installation of VA-EOL/SL-SENSOR2/SL-SENSOR4 (3-wire or A/B zone), see the wiring examples from VA-EOL multi-branch/3-wire.
     - A/B zone: Each speaker line is A/B zone line detection.
     - EOL 3w-2c/4c: The speaker which is connected after the VAT remote will NOT be monitored (open circuit).
     - EOL A/B Zone: Each speaker line is A/B zone line detection with VA-EOL.
     - EOL SPK 2CH/EOL SPK 4CH: The speaker lines will be monitored when the system is under [EVAC mode] or [VO3 mode], but the system will NOT detect speaker lines open/short circuit under [BGM mode].
   - Group ID: The ID (0~3) of the connected SL-SENSOR2/SL-SENSOR4.
   - EOL---size: The quantity of VA-EOL board which has connected in a zone (max. 16 VA-EOL per zone).
5. AMP: The amplifier source which is connected to the zone (external amplifier, VO3 etc.).

VO3 is channel that only generate the pilot tone in case no amplifier channel is in used.

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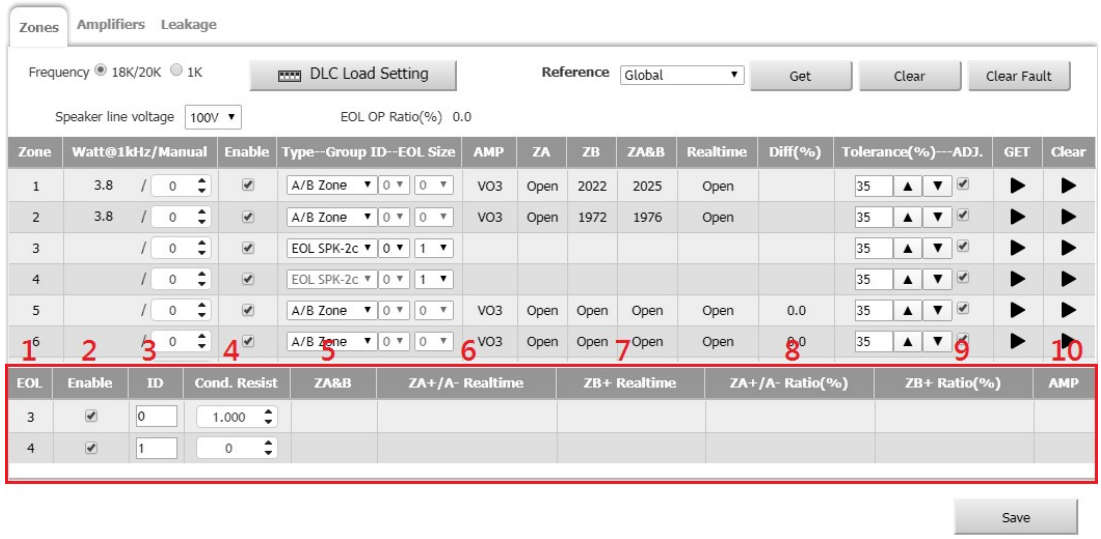
6. ZA: The impedance value (ohm) for Line A of one zone.
7. ZB: The impedance value (ohm) for Line B of one zone.
8. ZA&B: The impedance value (ohm) for Line A and Line B in parallel.
9. Realtime: The realtime impedance measurement of Line A and Line B in parallel.
10. Diff (%): The difference between Reference A/B and Measure value (ohm) in percentage.
11. Tolerance (%)---ADJ.: Define the tolerance of impedance value to detect a bad impedance fault. For instance, if the reference is 1000 ohm and the tolerance is set to 15%, the range of good impedance will be 850 ~ 1150 ohm. If the measured impedance is 1300 ohm, a bad impedance fault will be recognized by the main controller/secondary unit.
    - ▲▼: Set the tolerance of impedance value via arrow up/down button.
    - ☑ Synchronized adjustment: If the zones enable this option, their tolerance value will be adjusted synchronously.
12. GET.: When the system is constructed, users needs to get the impedance value of the speaker lines for further reference. This value will be utilized to detect faults of zones.
13. Clear.: Reset the reference value. This will disable the zone monitoring, but the measured value is still updated.

5.1.12.2.3 Monitoring settings of VA-EOL (3 wire)



1. EOL: Indicate the zone of VA-EOL. The displayed number on [EOL] column depends on the quantity of VA-EOL users have set on [EOL Size].
2. Enable: Enable/disable the monitoring of each speaker line branch by using VA-EOL.
3. ID: Set the ID of the connected VA-EOL.
4. Condition Resistance (ohm): Users can set the resistance of speaker cables due to the resistance will vary with the diameter and the cross-sectional area of cables, and let the BTQ controller compensate the insufficient voltage which the VA-EOL requires for operation.

Example of resistance measurement

AWG	Diameter (mm)	Cross-sectional Area (mm^2)	Resistance (mΩ/m)
10	2.588	5.26	3.277
11	2.305	4.17	4.132
12	2.053	3.31	5.211
13	1.828	2.62	6.571
14	1.628	2.08	8.286
15	1.450	1.65	10.45
16	1.291	1.31	13.17
17	1.150	1.04	16.61
18	1.024	0.823	20.95
19	0.912	0.653	26.42
20	0.812	0.518	33.31
21	0.723	0.410	42.00
22	0.644	0.326	52.96
23	0.573	0.258	66.79
24	0.511	0.205	84.22

Note:

- 1 mΩ = 0.001 Ω
- Please do the cable wiring as low resistance as possible.

1. If the cable AWG is 10, the resistance is 3.277 mΩ (0.003277 Ω).
2. Sum up the speaker cables, here we use 10m in total length for example.
3. To calculate the resistance of speaker cable, 0.003277 Ω x 10m = 0.033 Ω.

5. ZA&B (ohm): Detect the impedance value of speaker line A and line B when the connected VA-EOL switches off.
6. ZA + /A - realtime (ohm): Detect the impedance value of paralleling speaker line A+ and line A- when connects to the VA-EOL.
7. ZB+ realtime (ohm): Detect the impedance value of paralleling speaker line B+ when connects to the VA-EOL.
8. ZB + /A - ratio (%): Calculate the ratio of speaker open circuit (line A+ and line A-) based on the [Tolerance (%)---ADJ] setting for reference.
9. ZB + ratio (%): Calculate the ratio of speaker open circuit (line B+ and line A-) based on the [Tolerance (%)---ADJ] setting for reference.
10. Amp: The amplifier source which is connected to the zone (external amplifier, VO3 etc.).

5.1.12.2.4 Faults

If the impedance of Line A/B becomes abnormal, the main controller/secondary unit will detect and recognize that error, then generate a [Line A/B Error] global fault. There are three kinds of Line A/B Errors listed as below:

- Line A/B open:

  If the value on [Realtime] is greater than 5000 ohm, this fault can be recognized by the main controller/secondary unit. The "OPEN" error will be shown on [Realtime].

- Line A/B short:

  The voltage of pin +, - is monitored by the main controller/secondary unit, if the impedance is approximate to zero. This means there is a short-circuit on main controller/secondary unit. The "S.C." error will be shown on [Realtime]. If this fault is detected, the internal relay of a zone will be open to stop output the audio signals to the speaker. Then user needs to click Clear Fault in order to close the internal relay, resulting in output the audio signal.

- Line A/B bad impedance:

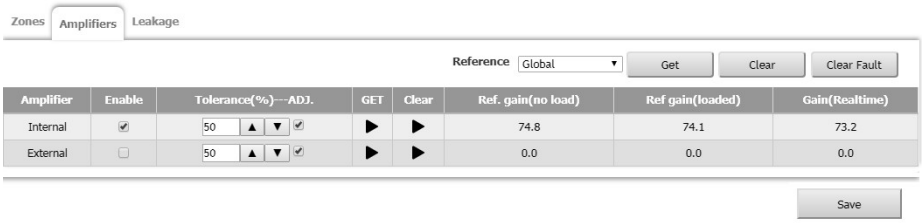
  If the value of [Realtime] is greater than [ZA&B] + [Tolerance (%)], or the value of [Realtime] is less than [ZA&B] - [Tolerance (%)], this fault will be recognized by the main controller/secondary unit.

See Fault Lists to know more about the troubleshooting.

5.1.12.3 Amplifiers

The amplifier monitoring is based on the measurement of amplifier's gain.

5.1.12.3.1 Control & display



- Reference:
  - Global (global-net):
    - Get reference: Get all the reference of gain value on all the amplifiers.
    - Clear reference: Clear all the reference of gain value on all the amplifiers.

- Clear fault: Clear the fault state on all the amplifiers.

- BOUTIQUE device (local-net):
  - Get reference: Get the reference of gain value on the amplifiers of local net.
  - Clear reference: Clear the reference of gain value on the amplifiers of local net.
  - Clear fault: Clear the fault state on the amplifiers of local net.

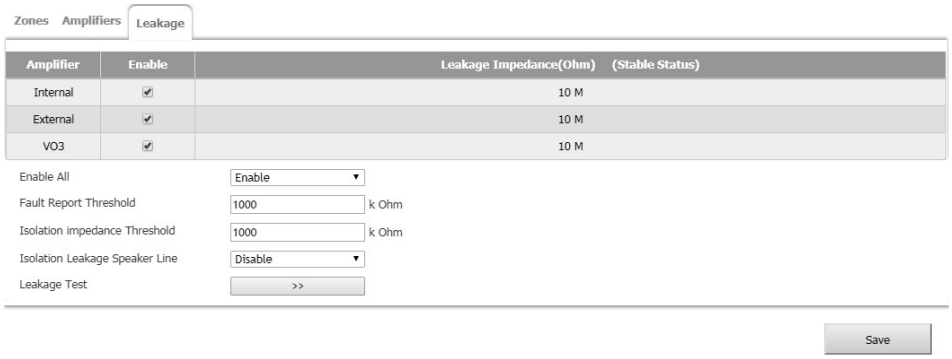
- Amplifier: Indicate the internal or external amplifier.
- Enable: Enable/disable the amplifier monitoring. If the monitoring of amplifier is disable, the main controller/secondary unit will not detect the faults of amplifiers.
- Tolerance(%)---ADJ.: Define the value of the tolerance wherein the measured gain of amplifier has to stay before generating a fault state.
  - ▲▼: Set the tolerance of gain value via arrow up/down button.
  - ☑ Synchronized adjustment: If the zones enable this option, their tolerance value will be adjusted synchronously.
- GET: When the system is constructed, users needs to get the gain value for further reference. This value will be utilized to detect faults of zones.
- Clear: Clear the reference value. This will disable the amplifier monitoring, but the measured value is still updated.
- Ref. gain (no load): Display the value of an unloaded reference, which the value is the gain of an amplifier when there is no load to the zone. This value is used for determining if there is a fault of amplifier.
- Ref gain (loaded): Display the value of a full loaded reference, which the value is the gain of an amplifier when there is a full load to the zone. This value is used for determining if there is a fault of amplifier.
- Gain (realtime): Display the measured value of the current gain of an amplifier.

5.1.12.3.2 Faults

- Amplifier gain too high: If the measurement > (Unloaded Reference x (100% + Tolerance%)), the [Amplifier Gain Too High] fault is recognized by the system.
- Amplifier gain too low: If the measurement < (Full Unloaded Reference x (100% - Tolerance%)), an [Amplifier Gain Too Low] fault is recognized by the system.
- Amplifier fail: If the measurement < (Unloaded Reference / 10), an fault is recognized by the system.
- Gain rating too low: If the measurement of ref. gain is too low while getting the references, the [Rating Too Low] fault is recognized by the system.

See Fault Lists to know more about the troubleshooting.

5.1.12.4 Leakage



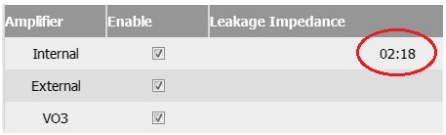
- Amplifier: Indicate the internal amplifier/external amplifier/VO3 channel.

  Note: The VO3 is the channel that only generates the pilot tone in case no amplifier channel is in used.

- Enable: Enable/disable the leakage detection on the corresponded internal/external amplifier/ VO3 channel.

- Leakage impedance (ohm): The impedance between the Line A or Line B port and ground wire causes the current leakage.

  Note: Due to the device component requires to charge, the leakage detection will be mandatory begin in 3 minutes after the device is powered, so that the leakage impedance result will be accurate. You will see a countdown time first as the picture below, and the value of leakage impedance will be shown after 3 minutes. If users do not wish to wait for the result which is displayed after 3 minutes, click [Leakage Test] button to see the instant detection of leakage impedance.



- Enable all: Enable the leakage detection on all the internal/external amplifier amplifiers.
- Fault report threshold: A threshold value for leakage detection. If the measured impedance is lower than this value, a leakage fault is recognized.
- Isolation impedance threshold: If the measured leakage impedance is lower than this threshold, a leakage fault is recognized and the relay will be opened, this will result in no audio sound and show in fault list.
- Isolation leakage speaker line: By enabling this option, the relay will open to stop audio output if a leakage fault is detected.
- Leakage test: Click this button to start the leakage detection process, the progress status will show on [Leakage impedance] grid.

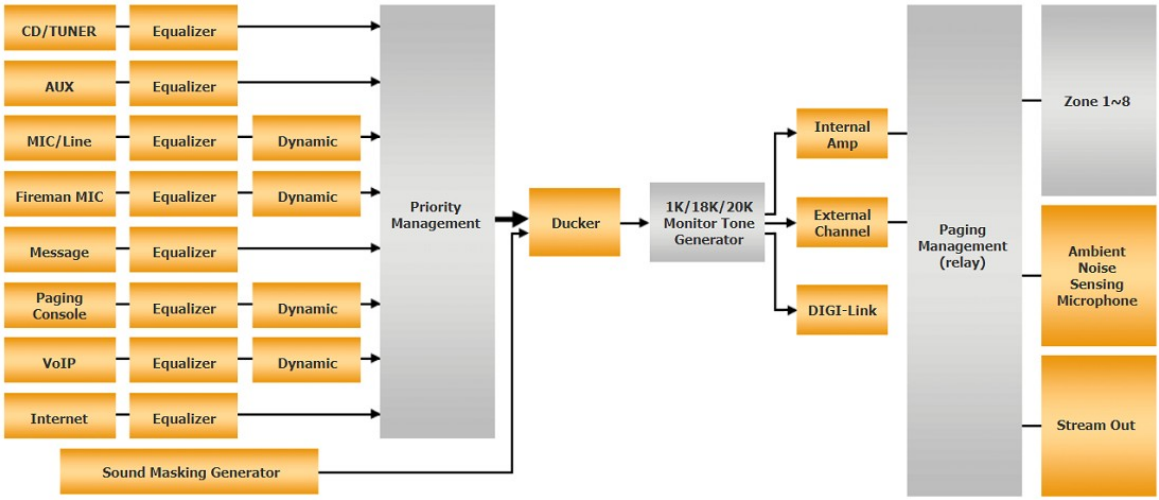
5.1.12.4.1 Faults

- Leakage occurrence: If the leakage impedance is lower the [Fault Report Threshold] which is defined on [Leak to Ground] window, then a [Leakage Occurrence] fault is recognized.
- Leakage open: The measurement of speaker lines has short-circuit fault due to the + speaker line is connected to ground wire, and - is connected to ground wire, then a [Leakage Open] fault is recognized.

See Fault Lists to know more about the troubleshooting.

5.1.13 DSP function

5.1.13.1 DSP Structure

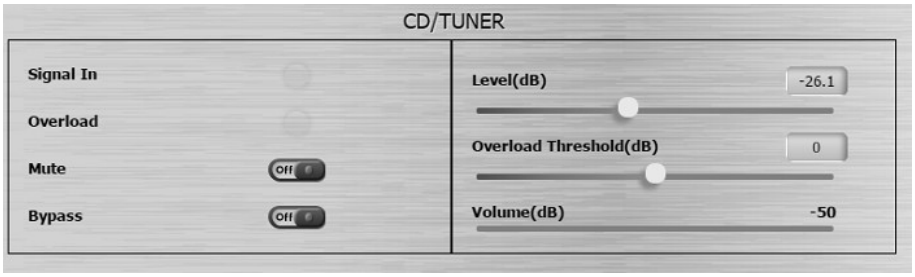


The BOUTIQUE web browser provides a various DSP configuration and adjustment. Click the component button, and the DSP configuration window will pop up.

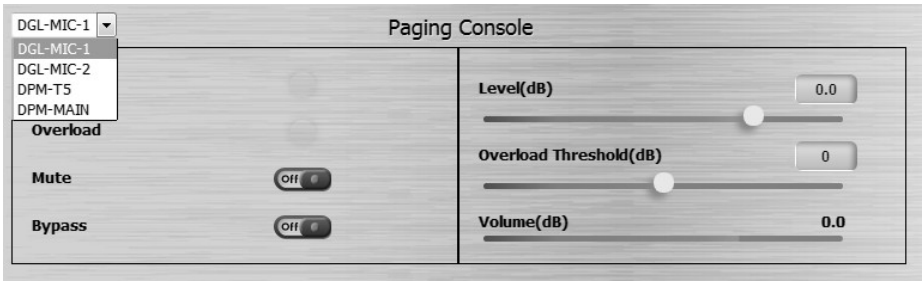
5.1.13.1.1 Source settings

The source settings are used to edit the settings of the audio sources. The sources you can edit are include the CD/Tuner, Aux, Mic/Line, Fireman Mic, Message, Paging Console, VoIP and Internet. The control window of the source settings are identical, see as below.

- Click the source button to enter the setting window.



Paging console: The paging console setting window allows to edit the audio settings of each connected paging console (DPM-T5, DPM-MAIN etc.).

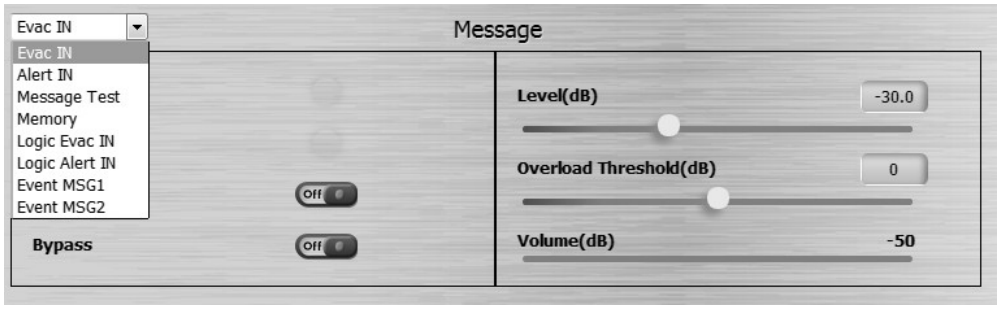


- Signal in: Indicate if there is audio signal input or not.
- Overload: Indicate the level of the input source is over the Overload Threshold (dB).
- Mute: Mute or unmute the source output, the LED will light in red while the source channel is muted, and light in green while the source channel is activated.
- Bypass: Click to bypass the input signal to the output of source channel.

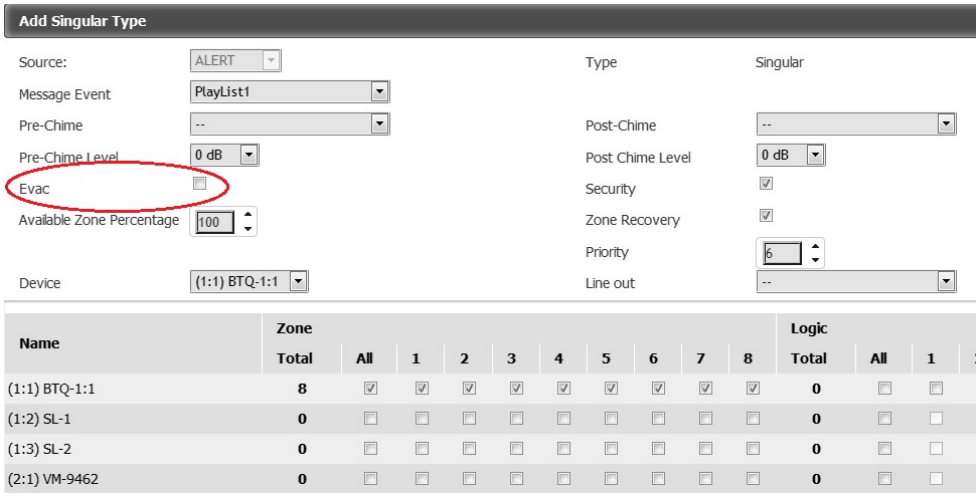
- Level (dB): Set the gain of the source channel.
- Overload threshold (dB): Set the threshold of the overload (dB).
- Volume (dB): Display the input volume by meter.

5.1.13.1.1.1 Message

Message: The message setting window allows to edit the audio settings of each message source.



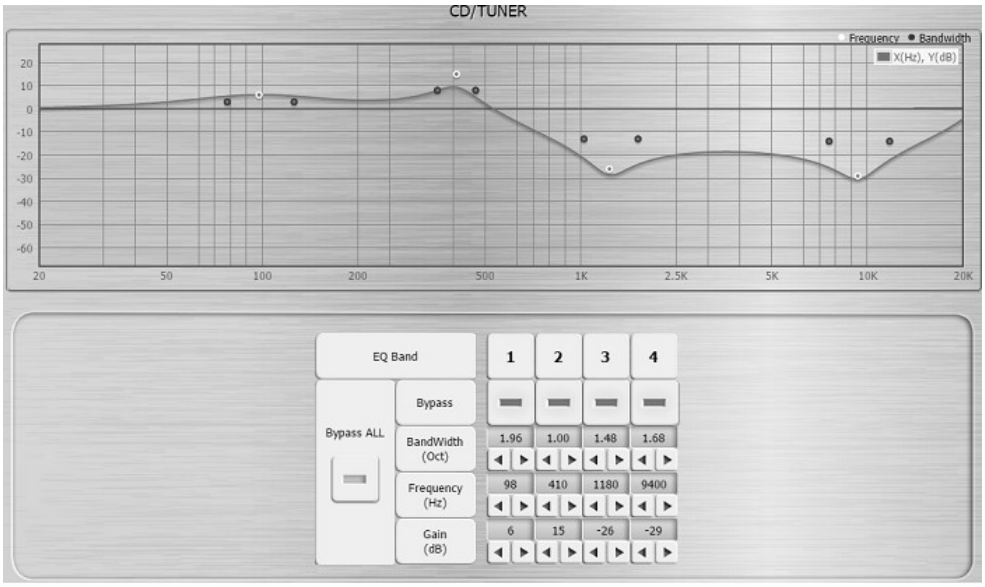
Please note if the Evac option is enable on EVAC In/Alert In/Message Test/Logic Evac In/Logic Alert In/Event MSG 2/Event MSG2 paging events, the DSP audio control on this setting window will be bypassed.



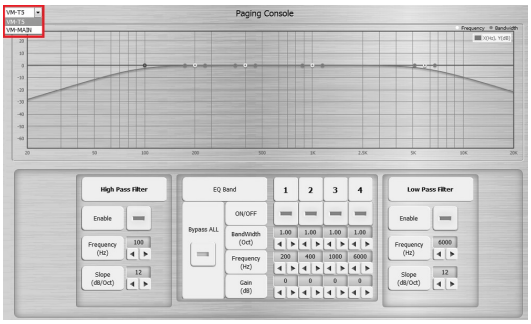
5.1.13.1.2 Compoments

5.1.13.1.2.1 Equalizer

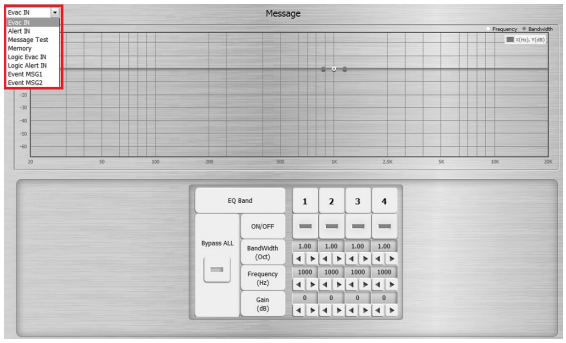
There are 4 bands of Equalizer on the inputs for adding the peaking equalization. Click Equalizer button on each audio source (CD/Tuner, Aux, Mic/Line, Fireman Mic, Message, Paging Console, VoIP and Internet) to open the control window, see as below.



- The [Paging Console > Equalizer] setting window allows to edit the Equalizer settings of each connected paging console (DPM-T5, DPM-MAIN etc.).



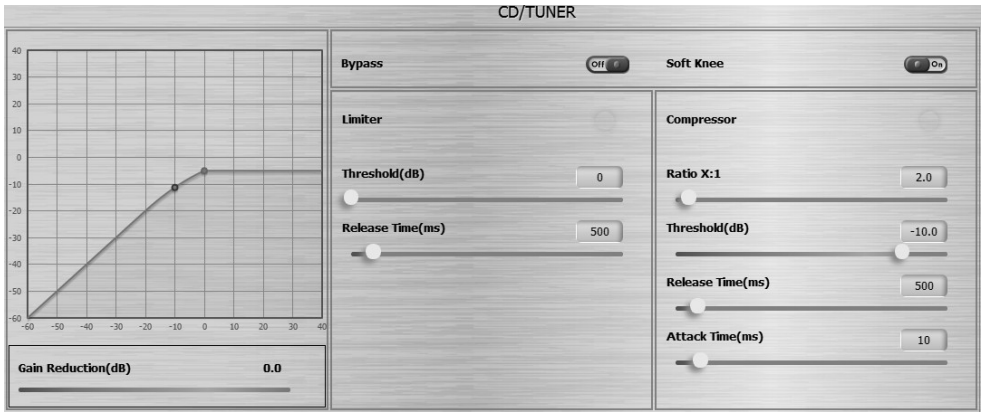
- Message: The [Message > Equalizer] setting window allows to edit the Equalizer settings of each message source.



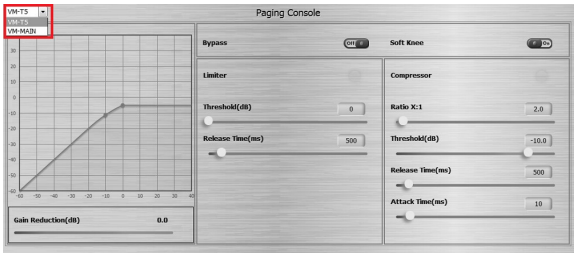
- Bandwidth (Oct): Set the width around the frequency (Q factor) of the selected frequency band.
- Frequency (Hz): Set the central frequency of a band.
- Gain (dB): Set the EQ gain (attenuate or increase the gain of selected frequency).
- Bypass/bypass all: Bypass the input signal/all the input signal to the output of Equalizer component.

5.1.13.1.2.2 Dynamic

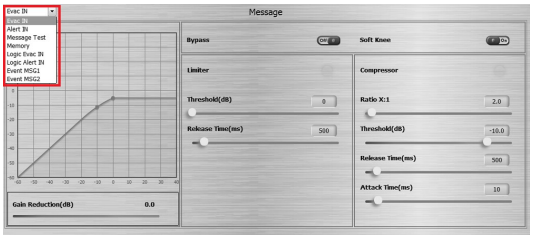
Click Dynamic button audio source (Mic/Line, Fireman Mic, Paging Console and VoIP) to enter the control window, see as below.



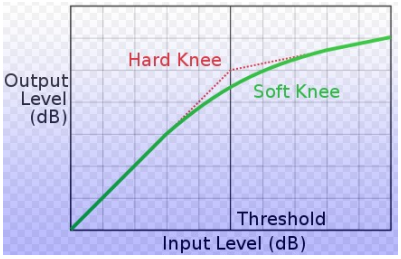
- The [Paging Console > Dynamic] setting window allows to edit the Dynamic settings of each connected paging console.



- Message: The [Message > Dynamic] setting window allows to edit the Dynamic settings of each message source.



- Bypass: Click [Bypass] button to bypass the input signal to the output of Dynamic component.
- Soft knee: Enable/disable the “Soft Knee” mode. This element controls whether the bend in the response curve is a sharp angle or has a rounded edge. A soft knee slowly increases the compression ratio as the level increases and eventually reaches the compression ratio set by user. A soft knee reduces the audible change from uncompressed to compressed, especially for higher ratios where the changeover is more noticeable.



Enable to smoothly increase the audio level to reduce distortion.

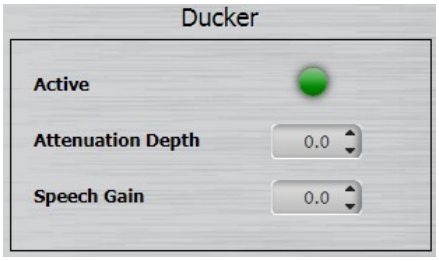
- Limiter:
  - Threshold (dB): Activate the Limiter function when input level above this threshold.
  - Release time (ms): Set the fade-out time it takes to release the gain reduction (dB).
- Compressor:
  - Ratio X:1: Set the compression ratio.
  - Threshold (dB): Set the level of threshold from where the compressor will start activating.
  - Release time (ms): The time to stop compressing after the input signal is below the threshold level.

- Attack time (ms): Set the time it takes to respond to the input signal. The response time is the period when the compressor has decreased gain to reach the level that is determined by the ratio.

- Graphic: Adjust the threshold level by moving the blue (Compressor) and red (Limiter) cursors.
- Gain reduction (dB): This bar indicates the current amount of gain reduction.

5.1.13.1.2.3 Ducker

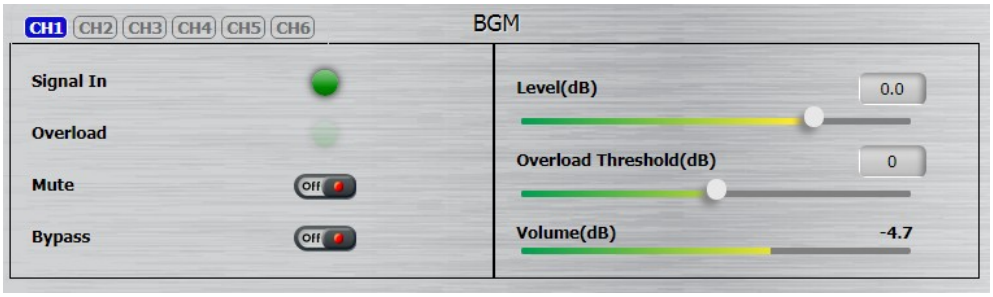
Ducker is a type of switch that allows the background music attenuates to a low level or switch off when someone needs to make an announcement.



- Active: Light up when Ducker is activated while the source signal has been detected.
- Attenuation Depth (dB): Set the attenuated level of Sound Masking channel when Ducker is activated.
- Speech Gain (dB): Set the level of source channel when Ducker is activated.

5.1.13.1.2.4 DIGI-Link (BGM)

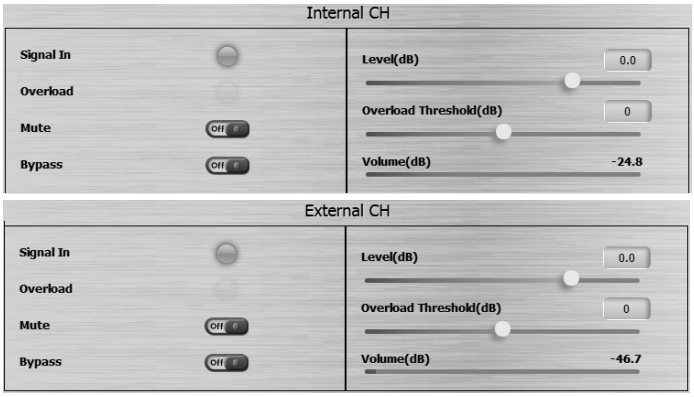
The BGM DSP setting is dedicated to the BGM function. Its DSP setting provides individual element settings for each BGM source channel (CH1~CH6).



- CH1~CH6: The DSP setting tab of the 6 BGM source channels.
- Signal In: Indicate if there is audio signal input or not.
- Overload: Indicate the level of the input source is over the Overload Threshold (dB).
- Mute: Mute or unmute the source output.
- Bypass: Click to bypass the input signal to the output of source channel.
- Level (dB): Set the gain of the source channel.
- Overload Threshold (dB): Set the threshold of the overload (dB).
- Volume (dB): Display the input volume by meter.

5.1.13.1.2.5 Internal/external CH output

Click the [Internal CH Output]/[External CH Output] button to enter the setting window, see as below.



- Signal in: Indicate the audio is being output or not.
- Overload: Indicate the level of the internal/external CH output is above the [Overload Threshold].
- Mute: Mute or unmute the CH output, the LED will light in red while the internal/external CH output channel is muted, and light in green while the output channel is activated.
- Bypass: Click to bypass the input signal to the output of internal/external CH.
- Level (dB): The output level of the internal/external CH.
- Overload threshold (dB): Set the threshold of the overload (dB).
- Volume (dB): Indicate the meter to show this level of internal/external CH output.

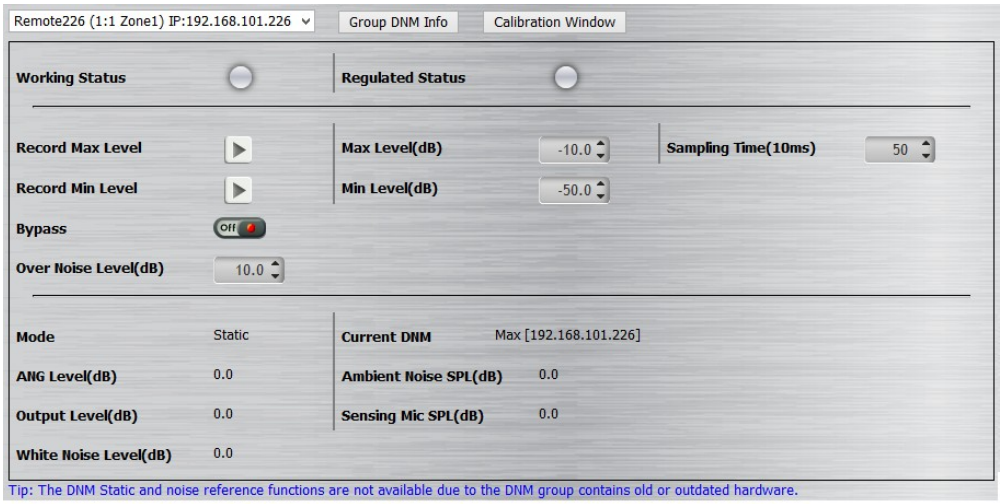
5.1.13.1.2.6 Ambient noise sensing microphone (static & dynamic)

To use the ANS MIC function, please do the following steps first.

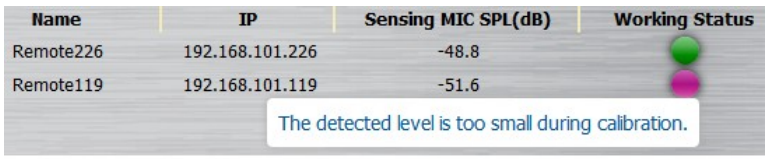
1. Add a DNM2-ETH or DGL-MIC device on [Device Management] window.
2. Set the noise sensing mic group, priority settings etc. of DNM2-ETH/DGL-MIC on Modulation.
3. Then the ANS MIC function on DSP layout will be activated.

Methods:

- Static: Detect the background noise when it is in the beginning of paging, and use the fixed gain based on [Over Noise Level] setting to increase/decrease the level of speaker.
- Dynamic: Dynamically increase/decrease the level of speaker based on the background noise during the paging.

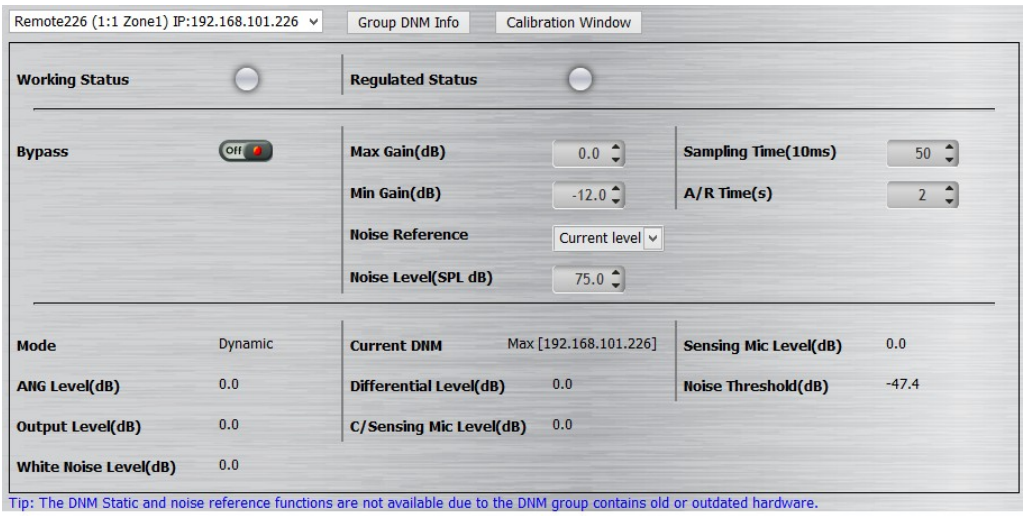


- Group DNM info: Click this button to open the window which displays the information of the DNM2-ETH/DGL-MIC. All the DNM2-ETH/DGL-MIC listed in this window are in the same group.

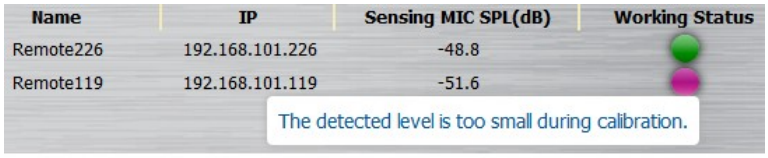


- Calibration window: Click to open the DNM Calibration window.
- Working status:
  - Light in green: The selected DNM2-ETH is connected.
  - Light in yellow: The calibration is in progress.
  - Light in black: The selected DNM2-ETH is disconnected.
  - Light in purple: The detected level is too small during calibration.
- Regulated status:
  - Light off: The level (dB) of ambient sounds (ANG level) detected by DNM2-ETH/DGL-MIC is in stable condition and has no change.
  - Light in green: The level (dB) of ambient sounds (ANG level) detected by DNM2-ETH/DGL-MIC has increased.
  - Light in blue: The level (dB) of ambient sounds (ANG level) detected by DNM2-ETH/DGL-MIC has decreased.
  - Light in red if the zone is under paging but DNM2-ETH of the zone is not active due to the following conditions:
    - When multiple zones are under paging, and the priority of the DNM group is lower than the other DNM group.
    - The zone is in Evac status.
    - A DNM2-ETH slave unit is disconnected. Please click [Group DNM Info] to check for details.
- Record max./min. level: Set max./min. level to limit the level of speaker output is within this level range, and avoid the speaker output is too loud or too small. See the how-to from the following steps below,
  1. First, enable [Bypass] button.
  2. Then proceed the paging action for testing purpose (we recommend to use the white noise for testing).
  3. Adjust the level of white noise to heard big enough and Click [Max. level] to record the level value, do the same procedure but smallest level for[Min. level]. The recorded level value will be shown on [Max. Level]/[Min. Level].
  4. Users can also manually set the [Max. Level]/[Min. Level].
- Bypass: To record the max./min. level which the DNM2-ETH/DGL-MIC can support, you need to enable [Bypass] button first.
- Over noise level (dB): Set how much level should the level of DNM2-ETH/DGL-MIC be above to the background noise.
- Max/min. level (dB): The minimum/maximum gain recorded by DNM2-ETH/DGL-MIC.
- Sampling time:The average time by measuring the level of DNM2-ETH/DGL-MIC, this value smaller will be more sensitive of ambient noise.

- ANG (Auto Noise Gain) level: The level which the DNM2-ETH/DGL-MIC will increase/decrease under paging.
- Output level: Display the output level.
- White noise level: The level which is automatically adjusted in the calibration process.
- Current DNM: Display the method of Group Rule (average/maximum/minimum) configured on DNM2-ETH > Modulation, and the IP address of DNM2-ETH which is currently used.
- Ambient noise SPL: The measurement of background noise level when the [Calibration] button is enabled.
- Sensing mic SPL: The ambient sound level measured by DNM2-ETH/DGL-MIC.



- Group DNM info: If there are multiple DNM2-ETH/DGL-MIC units are added in a group (master DNM2-ETH/DGL-MIC and other slave DNM2-ETH/DGL-MIC ones), click [Group DNM info] to see the info. list of the slave DNM2-ETH/DGL-MIC units.



- Noise reference:
  - [Current level]: Choose to use the current level which DNM2-ETH has detected for reference.
  - [Manual]: Manually set the noise level on [Noise Level (SPL dB)] setting for reference.
- A/R time (s): After the ambient noise is detected by DNM2-ETH/DGL-MIC, set the A/R time to define the gain level which will be increased from the current paging level to the level that DNM2-ETH/DGL-MIC has detected..

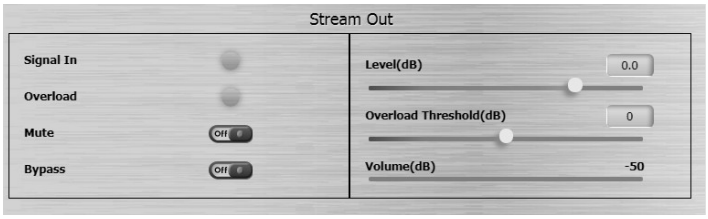
- Differential level: The difference level between the Output Level and the C/Sensing Mic Level.
- C/Sensing mic level: Display the level which is calculated by dynamic DNM2-ETH/DGL-MIC algorithm.
- Sensing mic level: Display the current level detected by DNM2-ETH/DGL-MIC.
- Noise threshold: If the level of background noise is over/below this [Noise threshold] after the [Calibration] action, the BOUTIQUE system will use this threshold to increase/decrease the output level.

The rest of configuration setting of ANS MIC (dynamic) is also identical to a ANS MIC (static), see ANS MIC > Static.

- Int. (internal amplifier) status/Ext. (external amplifier) status:
  - Light off: The calibration has not proceeded yet.
  - Light in green: The calibration succeeded.
  - Light in red: The calibration failed.
  - Light in yellow: The calibration is progressing.
- Int. (internal amplifier) error status/et. (external amplifier) error status:
  - Light in red: The level which the DNM/DGL-MIC has detected is too loud.
  - Light in blue: The level which the DNM/DGL-MIC has detected is too small.
  - Light in black: A DNM/DGL-MIC unit is disconnected under the DNM group. See [Group DNM Info] window for details.
  - Light in purple: Some of the DNM units are unable to work normally due to the detected level is too small. See [Group DNM Info] window for details.
- Calibration: Click to start the calibration process.
- Calibration all: Click to start the calibration for all the listed the DNM2-ETH units.
- Stop calibration: Click to stop the current calibration process.

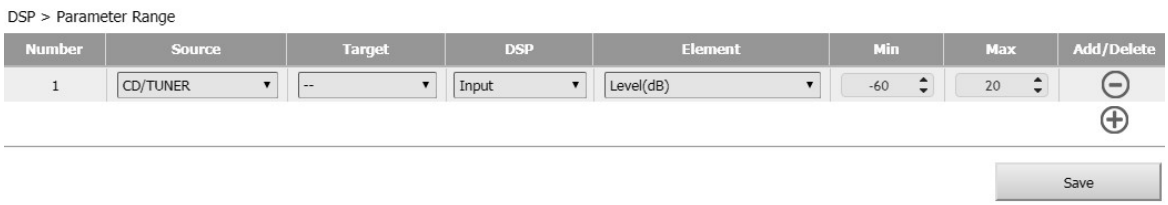
5.1.13.1.3 Stream out

Click [Stream Out] button to enter the setting window, see as below.



- Signal in: Indicate if there is audio signal output or not.
- Overload: Indicate the level of the output channel is over the Overload Threshold (dB).
- Mute: Mute or unmute the output channel, its LED will light in red while the output channel is muted, and light in green while the output channel is activated.
- Bypass: Click to bypass level of Stream Out.
- Level (dB): Set the gain of the output channel.
- Overload threshold (dB): Set the threshold of the overload (dB).
- Volume (dB): Display the output volume by meter.

5.1.13.2 Parameter range



This function allows users to define the parameter range of source including CD/TUNER, AUX, MIC/

LINE, Fireman MIC, Message, Paging Console, VoIP, Internet, Internal Amp, External Channel and Stream out.

- Target: Define the target of which message source (EVAC In/Alert In/Message Test/Logic Evac In/Logic Alert In/Event MSG 2/Event MSG2). This option is applicable to [Message] source only.
- DSP: Define which type of DSP (Input/Equalizer/Dynamic) from the drop-down box.
- Element: Define which type of element (Level dB/Overload Threshold dB) from the drop-down box.
- Min/Max: Set the minimum/maximum parameter range.

6 Maintenance

❖ Cleaning

⚠ Make sure to unplug the main power supply of main controller/secondary unit prior to cleaning.

The panels and chassis can be cleaned with a soft cloth and mild non-abrasive cleaning solution.

Avoid cleaning powders or scrubbing pads, as these will scratch and dull the paint. Do not apply liquid directly to the surface. Dampen the cloth with the cleaning solution and wipe gently.

❖ Dust removal

After used the unit for a long-time, especially in dusty environments, the heat sinks may become clogged with dust. This will interfere with cooling from the air inlets, and lead to higher temperature operation and reduced life.

Dust can be most easily removed by brushing or directing an air jet between the fins of the heat sinks.

❖ User maintenance

User maintenance should be done by qualified personnel only.

⚠ Dangerous mains voltages are present inside the units. Unplug the main power supply before you do any maintenance.

Users can inspect if any broken connectors, ground, cable connections, or loose screws on the outside of main controller/secondary unit.

If any loose parts rattle around on the inside when the main controller/secondary unit is turned over in all directions, please shut down the main controller/secondary unit immediately, as a loose part could lodge in a dangerous place and cause further damage or shock hazard.

❖ Require service

If the main controller/secondary unit isn't working properly, please diagnose the problem from Troubleshooting.

If proper operation cannot be restored, the main controller/secondary unit may require service from ATEÏS Technical Support. This must be examined by qualified technical personnel, to avoid shock hazard or improper repairs. Please contact your ATEÏS dealer or ATEÏS Feedback.

7 Fault lists & troubleshooting

The following table explains the faults and detailed diagnosis displayed in Web browser > Machine > Info > Fault List.

Faults	Diagnosis (details)	Supported Version	Troubleshooting
Nand Flash Error	Internal parts of IC does not function or cause by static electricity.	v2.13	Reboot device.
FPGA SSI Zone Error	Internal parts of IC does not function or cause by static electricity.	v2.13	Reboot device.
FPGA SSI FP Error	Internal parts of IC does not function or cause by static electricity.	v2.13	Reboot device.
FPGA Code no exist	IC codes do not function or cause by static electricity.	v2.13	Reboot device.
FPGA Code Error	IC codes do not function or cause by static electricity.	v2.13	Reboot device.
FPGA Communication Error	IC communication does not function.	v2.13	Shutdown the device first, and check if the FPGA cable is connected tightly and correctly.
NT Code no exist	IC codes do not function or cause by static electricity.	v2.13	Update firmware again, and reboot the device.
NT Code Error	IC codes do not function or cause by static electricity.	v2.13	Update firmware again, and reboot the device.
NT Communication Error	IC communication does not function.	v2.13	Shutdown the device first, and check if the FPGA cable is connected tightly and correctly.
Ateis Net Port Occurrence	Wrong direction: The global-net wiring connection among the connected BTQ-VM/SG devices is not correct.	v2.13	Check if the wiring connection is correct (Port B to Port A) and does not loosen.
	Shutdown: The communication does not function.		1. Check if the cables are connected tightly and correctly. 2. If the wiring is correct, reboot the devices, and check if the communication of Port B to Port A is normal. 3. Check all the hardware connection again. • Unplug and re-connect the Ethernet cables. • Reboot the devices. • Use CAT5/6 cables and link PORT-A to PORT-B on controller (bypass). 4. Check if this fault is not listed on Web Browser > Machine > Info > Fault List.
MSG File no Exist	The programmed message files does not exist anymore.	v2.13	1. Check if the file is stored in the internal memory (Web Browser > Message Management). 2. If the file is stored in USB drive, please plug in the USB, and check if this file is accessible.
Device Offline	Machine: The connected BTQ-VM/SG/SL is offline.	v2.13	1. Check if the power supply is present. 2. Check if the wiring of global-net ports on BTQ-VM/SG is connected tightly and correctly and the LEDs on RJ45 connector flashes, too. 3. Check if the digi-link port (local-net) linked to
	Remote: The connected DPM/DGL-MIC/DNM cannot		

Faults	Diagnosis (details)	Supported Version	Troubleshooting
	communicate with the BTQ-VM/SG/SL.		the BTQ-SL8 is connected tightly and correctly, and the LED on RJ45 connector flashes, too. 4. Check if the wiring of remotes is connected tightly and correctly. 5. DNM: • Check if the Ethernet port of remote is connected tightly and correctly, and the LEDs on RJ45 connector flashes, too. • Check if the connected DNM and BTQ-VM is under the same LAN. • Check the Ethernet setting of DNM and BTQ-VM on web browser, they must under the same LAN.
Fireman Error	Audio Line Error/Button Error: The fireman mic does not function.	v2.13	1. Check if the fireman cable connected to the audio IO board and front panel board is correct and not loosen.
Int. AMP Fault	Over Current	v2.13	1. Stop all the paging sources, and reboot the device. 2. Decrease the output volume of internal amplifier.
	Identify Fault: The internal amp. cannot be identified by system.	v2.13	1. Check if the cable connected to the audio IO board is correct and not loosen. 2. Reboot the device.
	Watt Setting Not Match HW	v2.16	1. Check if the wattage setting of internal amp matches the wattage setting of the actual hardware.
AteisNet ID Duplex	A duplicated device ID has been detected on global-net.	v2.13	1. Check if there's duplicated net ID among the BTQ-VM/SG. ○ The ID setting of BTQ-VM can be set from front panel. ○ The ID setting of BTQ-SG can be set from the device ID of rear panel.
DIGI-LINK Error	The digi-link connection (local-net) is not stable.	v2.13	1. Check if the wiring of digi-link ports on BTQ-VM/SL is connected correctly and tightly. 2. Unplug all the connected digi-link ports first, and connect them one by one again, please diagnose which digi-link port on BTQ-SL8 has the connection problem.
Fan Error	The fan does not function.	v2.13	Shutdown the device first, and check if the wiring cables are connected correctly and tightly.
ADC 0x4B Error	IC communication does not function.	v2.13	Shutdown the device first, and check if the FPGA cables are connected correctly and tightly.
ADC 0x4A Error	IC communication does not function.	v2.13	Shutdown the device first, and check if the TTL cables are connected correctly and tightly.
ADC 0x48 Error	IC communication does not function.	v2.13	Shutdown the device first, and check if the CTLIO cables are connected correctly and tightly.
ADT Error	IC communication does not function.	v2.13	Shutdown the device first, and check if the FPGA cables are connected correctly and tightly.
PCF Error	IC communication does not function.	v2.13	Shutdown the device first, and check if the CTLIO cables are connected correctly and tightly.

Faults	Diagnosis (details)	Supported Version	Troubleshooting
CODEC Error	IC communication does not function.	v2.13	Shutdown the device first, and check if the FPGA cables are connected correctly and tightly.
Int Amp1 Error	IC communication does not function or the amp board is damaged.	v2.13	Shutdown the device.
ADC 0x49 Error	IC communication does not function.	v2.13	
Watchdog Fault	An unexpected device shutdown has been detected.	v2.13	Reboot the device.
Int Amp2 Error (for wall-mount W2 type)	IC communication does not function or the amp board is damaged.	v2.16	Shutdown the device.
Battery IC Error (for wall-mount type)	IC communication does not function or the BCMCU board is damaged.	v2.16	1. Check if the wiring of battery in BTQ-VM4W/ VM8W is correct, see Connect to batteries. 2. Relace the battery.
Battery Error (for wall-mount type)	Impedance	v2.38	1. Check if the wiring of battery in BTQ-VM4W/ VM8W is correct, see Connect to batteries. 2. Relace the battery.
	Temperature		1. Check whether the temperature of operation environment is too high. 2. Check whether the temperature of battery is too high (> 65°C). If yes, replace the battery.
	DIP switch		1. Check whether the setting of DIP switch on battery charger is correct.
	Battery voltage is not under the normal range (<40VDC and > 60VDC).		1. Check whether the batteries are connected correctly and tightly. 2. If the voltage of battery is too high, replace a new battery. 3. If the voltage of battery is too low, charge the battery.
	Impedance Measure		1. Check whether the wiring of battery in BTQ-VM4W/VM8W is correct, see Connect to batteries. 2. Relace the battery.
	Temperature Sensor		Check whether the wiring of temperature sensor is connected, see Connect to temperature sensor.
	Battery Charge		1. Check if the wiring of battery in BTQ-VM4W/ VM8W is correct, see Connect to batteries. 2. Relace the battery.
VO3 AMP Error	The [VA-EOL] settings on BTQ web browser is incorrect. The VO3 Amp board does not install in controller. The VO3 AMP board installed is damaged.	v2.30	1. Check whether the VO3 AMP board is installed in controller. 2. Check whether the [VA-EOL type] setting in [BTQ web browser > Monitoring > Zone] is correct. The [VA-EOL] option includes EOL 3w-2c, EOL 3w-4c and EOL A/B Zone. 3. Replace a new VO3 AMP board.
AMP Error	Gain Too High Error: The difference of [Ref. gain] and [Measure] is greater than [Tolerance %] on Amplifier window, which unexpectedly causes the output level to be increased.	v2.13	1. If the external amplifier is connected, check the gain value on [Gain-Realtime] has increased. If the fault still exists, see Step 2. 2. If the gain setting on connected external amplifier has changed, and results in the output level is under normal condition, click [Get Reference] to get the current gain value, or you can increase/decrease the percentage value on [Tolerance %]. If the

Faults	Diagnosis (details)	Supported Version	Troubleshooting
			fault still exists, see Step 3. 3. Replace a new external amplifier for testing purpose.
	Gain Too Low Error: The difference of [Ref. gain] and [Measure] is less than [Tolerance %] on Amplifier window, which unexpectedly causes the output level to be decreased.		1. If the external amplifier is connected, check the gain value on [Amplifier Gain] has decreased. 2. If the output level is under normal condition, click [Get Reference], and increase the percentage value on [Tolerance %]. 3. Replace a new external amplifier for testing purpose.
	Amp Fail: The measurement of amplifier gain is too low.		1. When using the internal amp of BTQ-VM, reboot the device first. If the fault still exists, see Step 2. 2. When connected to the external amp, check if the wiring of EXTERNAL AMP IN and EXTERNAL AMP OUT is connected correctly and tightly. If the fault still exists, see Step 3. 3. Check if the power supply of external amplifier is present. If the fault still exists, see Step 4. 4. Check if the value of amplifier gain is too low.
	Gain Rating too Low Error: When clicking [Get Reference], the gain is too low.		
Line A Error	Bad Impedance Error: The measurement of speaker impedance is beyond its tolerance.	v2.13	1. Check if the wiring of LINE A is connected correctly and tightly. If the fault still exists, see Step 2. 2. Check if the impedance of actual speaker has changed. If the fault still exists, see Step 3. 3. If the connected speaker cables have aged, and the output level is not under normal condition, click [Get Zone Reference] to get the current impedance value based on the current environment, or you can increase/ decrease the percentage value on [Tolerance %]. If the fault still exists, see Step 4 . 4. If the output level is too small, replace a new speaker for testing purpose.
	Open-Circuit		1. Check if the wiring of LINE A is connected correctly and tightly. If the fault still exists, see Step 2. 2. Replace a new speaker for testing purpose.
	Short-Circuit		1. Plug out the LINE A speaker lines, and proceed [Reset Monitor]. Then wait for 30 seconds and check if there's [Open-Circuit] fault. 2. If there's [Open-Circuit] fault, please check if the speaker lines are short-circuit.
	Leakage: The measurement of speaker lines has short-circuit fault due to the + speaker line is connected to ground, or - is connected to ground.		1. Plug out the LINE A speaker line, and wait for 90 seconds to check if the Leakage fault has cleared out or still exists. 2. If there's no Leakage fault, check if the + speaker line is connected to ground wire, and - is connected to ground wire.
	Leakage Open: The measurement of speaker lines has short-		1. Plug out the LINE A speaker line, and proceed [Reset Monitor]. Then wait for 90 seconds to check if the Leakage fault has

Faults	Diagnosis (details)	Supported Version	Troubleshooting
	circuit fault due to the + speaker line is connected to ground, or - is connected to ground.		cleared out. 2. If there's no Leakage fault, check if the + speaker line is connected to ground wire, and - is connected to ground wire.
Line B Error	Bad Impedance Error: The measurement of speaker impedance is beyond its tolerance.	v2.13	1. Check if the wiring of LINE B is connected correctly and tightly. If the fault still exists, see Step 2. 2. Check if the impedance of actual speaker has changed. If the fault still exists, see Step 3. 3. If the connected speaker cables have aged, and the output level is not under normal condition, click [Get Zone Reference] to get the current impedance value based on the current environment, or you can increase/ decrease the percentage value on [Tolerance %]. If the fault still exists, see Step 4 . 4. If the output level is too small, replace a new speaker for testing purpose.
	Open-Circuit		1. Check if the wiring of LINE A is connected correctly and tightly. If the fault still exists, see Step 2. 2. Replace a new speaker for testing purpose.
	Short-Circuit		1. Plug out the LINE A speaker lines, and proceed [Reset Monitor]. Then wait for 30 seconds and check if there's [Open-Circuit] fault. 2. If there's [Open-Circuit] fault, please check if the speaker lines are short-circuit.
	Leakage: The measurement of speaker lines has short-circuit fault due to the + speaker line is connected to ground, or - speaker line is connected to ground.		1. Plug out the LINE A speaker line, and wait for 90 seconds to check if the Leakage fault has cleared out or still exists. 2. If there's no Leakage fault, check if the + speaker line is connected to ground wire, and - speaker line is connected to ground wire.
	Leakage Open: The measurement of speaker lines has short-circuit fault due to the + speaker line is connected to ground, or - speaker line is connected to ground.		1. Plug out the LINE A speaker line, and proceed [Reset Monitor]. Then wait for 90 seconds to check if the Leakage fault has cleared out. 2. If there's no Leakage fault, check if the + speaker line is connected to ground wire, and - speaker line is connected to ground wire.
VO3 Fail	The detection of VO3 signal does not function.	v2.13	Reboot the device first, and check if the VO3 cables are connected correctly and tightly.
AMP Line Leakage Error	Ext. Amp Occurrence: The + speaker line is connected to ground, and - speaker line is connected to ground wire on external amplifier.	v2.13	1. Reboot the device, and wait for 200 seconds. If the fault still exists, see Step 2. 2. Plug out the EXTERNAL AMP OUT on BTQ-VM rear panel. then wait for 90 seconds and check if there's no Leakage fault. 3. If there's no Leakage fault, check the wiring of External AMP, and see if the line is connected to ground wire.
	Int. Amp Occurrence: The + speaker line is connected to ground, and -		1. Reboot the device, and wait for 200 seconds. If the fault still exists, see Step 2. 2. Plug out the wire of INTERNAL AMP OUT on

Faults	Diagnosis (details)	Supported Version	Troubleshooting
	speaker line is connected to ground wire on internal amplifier.		BTQ-VM rear panel. then wait for 90 seconds and check if there's no Leakage fault.
	VO3 Occurrence/Ext. Amp Inner Fail/Int. Amp Inner Fail/ VO3 Inner Fail: Occur Leakage fault on internal/external amplifier.		1. Reboot the device, and wait for 200 seconds. 2. Reboot the device, and check the wiring of AMP cables and VO3 cables are connected correctly and tightly.
Evac Input Error	Open	v2.13	1. Check if the wiring of the evac input terminal is connected correctly and tightly. 2. If the wiring is correct, disconnect the wiring of evac input terminal, and measure the voltage (should be 3.3V). 3. Check if the wiring of evac inputs is based on Monitored Contact Mode.
	Short		
Power Error	Main	v2.16	1. Check if the AC mains power input and DC battery input on the rear panel are connected correctly and tightly. 2. Check if the voltage is normal.
	Battery		
AteisNet Broken	Port A Broken	v2.36	1. Check the wire connection (Port-A/Port-B) among all the BTQ-VM4/8 on global-net is correct and does not loosen. 2. Replace the wires.
	Port B Broken		
User Fault	The user-defined fault has been triggered.	v2.13	The user-defined fault has been triggered.
Remote Error	Microphone Open Fail	v2.13	1. Shutdown the remote first, and check if the MIC cables are connected correctly and tightly. 2. If the mic level of DPM-T5/DPM-T5F is under normal condition, proceed MIC Calibration action from LCD touch panel of DPM-T5/ DPM-T5F.
	Microphone Short Fail		
	DNM Deploy Fail		1. Check the firmware version of DNM, it must be v1.0.0.9 or above. 2. Check if multiple BTQ/VM/SG/SL device has assigned the same DNM remote.
	Fireman Open Fail		1. Shutdown the device first, and check if the wiring of the remote FMM cables is connected correctly and tightly. 2. If the mic level of CD-T5DF is under normal condition, proceed MIC Calibration action from LCD touch panel of CD-T5DF.
	Fireman Short Fail		
	DGL-MIC No Setting Group		Assign the DGL-MIC to a group on web browser > Device Management.
	DNM No Setting Group		Assign the DNM to a group on web browser > Device Management.
EOL Error	The speaker line A+/A- of VA-EOL/3 wire has error.	v2.38	1. Check whether the volume knob on the front panel of BTQ-VM is set as 0. 2. Check whether the wiring connection of A+/A- speaker line on VA-EOL is correct and does not loosen. See VA-EOL/3 wire wiring for details. 3. Check whether the ID of VA-EOL on its DIP switch and BTQ web browser is the same.
	The speaker line B+ of VA-EOL/3 wire has error.		Check whether the wiring connection of B+ speaker line on VA-EOL is correct and does not loosen. See VA-EOL/3 wire wiring for details.

Faults	Diagnosis (details)	Supported Version	Troubleshooting
	The impedance measurement of VA-EOL is beyond its tolerance.		1. Check whether the volume knob on the front panel of BTQ-VM is set as 0. 2. Check whether the wiring connection of B+ speaker line on VA-EOL is correct and does not loosen. See VA-EOL/3 wire wiring for details. 3. Replace a new VA-EOL board.
	Line Leakage: The measurement of VA-EOL/3 wire has short-circuit fault due to the + speaker line is connected to ground, or the - speaker line is connected to ground.		1. Plug out the speaker zone lines, and wait for 90 seconds to check if the Leakage fault has cleared out or still exists. 2. If there's no Leakage fault, check if the + speaker line is connected to ground wire, and - is connected to ground wire.
	Leakage Open: The measurement of VA-EOL/3 wire has short-circuit fault due to the + speaker line is connected to ground, or the - speaker line is connected to ground.		1. Plug out the speaker zone lines, and proceed [Reset Monitor]. Then wait for 90 seconds to check if the Leakage fault has cleared out. 2. If there's no Leakage fault, check if the + speaker line is connected to ground wire, and - speaker line is connected to ground wire.
	Line Short: The speaker line A+/A-/B+ of VA-EOL/3 wire has short.		1. Check whether the volume knob on the front panel of BTQ-VM is set as 0. 2. Plug out the speaker zone lines, and proceed [Reset Monitor]. Then wait for 30 seconds and check if there's [Short-Circuit] fault. 3. If there's [Short-Circuit] fault, please check if the speaker lines are short-circuit. .
	Line A Short: The speaker line A+/A- of VA-EOL/3 A/B zone wiring has short.		1. Check whether the volume knob on the front panel of BTQ-VM is set as 0. 2. Plug out the speaker zone lines, and proceed [Reset Monitor]. Then wait for 30 seconds and check if there's [Short-Circuit] fault. 3. If there's [Short-Circuit] fault, please check if the speaker lines are short-circuit.
	Line B Short: The speaker line B+/B- of VA-EOL/3 A/B zone wiring has short.		1. Check whether the volume knob on the front panel of BTQ-VM is set as 0. 2. Plug out the speaker zone lines, and proceed [Reset Monitor]. Then wait for 30 seconds and check if there's [Short-Circuit] fault. 3. If there's [Short-Circuit] fault, please check if the speaker lines are short-circuit. .
Battery Code Error	IC communication does not function.	v2.38	1. Update the BTQ machine. 2. Reboot the BTQ machine.
EOL SCMTR Error	Offline	v2.38	Check whether the wire connection of SL-SENSOR board is correct and does not loosen.
	SCMTR Error		1. Check whether the ID setting on the DIP switch of SL-SENSOR board and on BTQ web browser is the same. 2. Each SL-SENSOR must have unique ID, check whether the ID is repeated or not.
Remote Console No Setting	The remote device is connected to the remote port, but the remote port setting	v2.38	Check whether the remote port setting on web browser is the same as the actual hardware connection.

Faults	Diagnosis (details)	Supported Version	Troubleshooting
	has not set the same on BTQ web browser.		
Int. AMP On Protection Mode	The int. AMP has over circuit frequently in a period of short time.	v2.38	1. Cancel all the paging action. 2. Decrease the level of output. 3. Press [Reset] on the front panel of BTQ-VM to cancel all the faults.
Ethernet Broken	The Ethernet cable is not connected.	v2.38	1. Check if the Ethernet cable connected to the switch and BTQ-VM is correct and does not loosen. 2. Ping the BTQ-VM, and check whether it has responded. If no, check the Ethernet switch/ router. 3. Check whether the [Ethernet Monitoring] setting on BTQ web browser is set as [Disable] on the certain BTQ-VM unit(s) which are not connected to network.
IP Attack	A certain IP has been sending too much data traffic packet to BTQ-VM in a period of short time.	v2.38	1. Confirm whether this IP device has been sending too much data traffic packet to BTQ-VM in a period of short time. 2. Reboot the IP device (it could be PC/laptop or any IP device in the LAN).
NTP Fault	If all the NTP server's IP/URL which users have set on BTQ web browser > Machine > Setting > Date/Time window are disconnected, the system will report [NTP] fault.	v2.44	1. Check if the Ethernet cable connected to the switch and BTQ-VM is correct and does not loosen. 2. Check if the chosen NTP servers are working.
USB No Mount	After assigned a message event (file/playlist) which is stored in the USB drive on BTQ web browser > Function > Paging event, but the system cannot detect the message file.	v2.62	1. Check whether the USB drive has plugged in tightly and correctly. 2. Check if the message file exists in [BTQ web browser > Message Management].

8 Technical data

8.1 BTQ-VM4/VM8

- Electrical

AC power input:	100 VAC ~ 240 VAC, 50/60 Hz		
power consumption (AC):	idle	1/2 full power	full power
BTQ-VM425 / BTQ-VM825 (250W)	24VA	195VA	365VA
BTQ-VM450 / BTQ-VM850 (500W)	24VA	345VA	645VA
Idle: pilot tone -36 dB, 1/2 full power: alarm tone			

DC power input:	43 ~ 56 VDC (type: 48VDC)				
power consumption (DC):	standby mode	idle	1/8 full power	1/2 full power	full power
BTQ-VM425 / BTQ-VM825 (250W)	6.4W	22W	65W	175W	325W
BTQ-VM450 / BTQ-VM850 (500W)	6.4W	22W	95W	310W	580W
Idle: pilot tone -36 dB, 1/8 full power: speech, 1/2 full power: alarm tone					

Model	Imax A	Imax B
BTQ-VM425 / BTQ-VM825 BTQ-VM450 / BTQ-VM850	6.5A / 11.5A	N/A
Imax A: the rated maximum output current which can be supplied continuously.		

- Audio characteristics (general)

A/D-D/A bit resolution:	24 Bit
Sampling rate:	48 kHz
Frequency response:	20 Hz - 20 kHz (±1) dB @ 0 dBu
SNR:	> 80 dB
THD+N:	< 0.02 % @ 30 dB gain, -24 dBu (1 kHz) in
EIN:	< -86 dBrA @ 0 dB gain
Maximum input level (CD/AUX/mic):	17 dBu
Maximum output level (line out):	17 dBu
Crosstalk:	> 70 dB @ 42 dB gain, 0 dBu (10 kHz) in

- Audio characteristics (CD/AUX)

Input impedance:	5K ohm

- Audio characteristics (MIC)

EIN:	< -112 dBrA @ 24 dB gain
Input impedance:	8K ohm
Input gain range:	0 ~ 40 dB (adjust with mic/line gain)
CMRR:	< -80 dB @ 40 dB gain, -40 dBu (1 kHz) in
Phantom power:	48 VDC, 7 mA

- Audio characteristics (EX. AMP/LINE OUT)

Output impedance (balanced):	30 ohm

- Wattage capacity (input)

Speaker load per zone (max.):	1000W @ 70V/100V line
Speaker load per unit (max.):	2000W @ 70V/100V line

- Internal power amplifier

Rated output power:	250W/500W (Class-D)
Frequency response:	50Hz ~ 18kHz (±3 dB) @ 0 dBu
THD+N:	< 0.1 % @ 42 dB gain, 0 dBu (1 kHz) in
SNR:	> 90 dB

- Network

Max. local-net units:	32
Max. distance between local-net units:	10m (metal shielded RJ45 connector, STP CAT5/6)
Max. global-net units:	64
Max. distance between global-net units:	100m (CAT5/6), 2 km (multi-mode fiber optic) and 20 km (single-mode fiber optic)
Max. digi-link remotes units:	• Daisy-chain wiring: ○ 16 DPM sets (DPM-MAIN + EVA + KPD) for each remote port. ○ 32 DPM sets (DPM-MAIN + EVA + KPD) for 2 remote ports. • Redundant loop: 16 DPM sets (DPM-MAIN + EVA + KPD)
Max. DPM sets (MAIN + EVA + KPD):	• Max. 16 DPM sets: ○ 1 DPM-MAIN attaches 1 DPM-EVA and 14 DPM-KPD. ○ 1 DPM-MAIN attaches 15 DPM-KPD. • Max. 128 keys for each DPM set. • Connection via flat cable.
Max. communication distance between digi-link remote unit:	• Max. communication cable length: 250m* (metal shielded RJ45 connector, STP CAT5/6) *The distance of cable length will directly affect the quantity and power requirement of remote unit. (1) The longer the cable is, the less power the BTQ-VM can supply to the remote units. (2) The more the remote units has cascaded in daisy-chain/redundant loop, the less power the BTQ-VM can supply to the remote units. For example, if the cable length between the BTQ-VM and DPM-MAIN is within 250m, the DPM-MAIN can be powered by BTQ-VM. If the cable length is beyond 250m, please connect the DLR01 digital loop repeater with **PSU65-27** 27VDC power adapter, ensuring the control signal and power supply of DPM-MAIN units are enough. To know the max. distance between BTQ-VM and DPM-MAIN unit(s) and the max. distance which the DPM-MAIN can be powered by DLR01 unit, please refer to Hardware Connection > DLR01 for

Max. local-net units:	32
	details.

- Loudspeaker outputs

Number of zones:	4 (BTQ-VM4) or 8 (BTQ-VM8)
Number of loudspeaker lines:	8 or 16, A/B speaker lines per zone

Model	Rated output power	Rated load capacitance
BTQ-VM425 BTQ-VM825	250W	30 nF (100V); 62 nF (70V)
BTQ-VM450 BTQ-VM850	500W	62 nF (100V); 120 nF (70V)

- Relay outputs (include Relay Out Control, Evac Contact Out and Fault Contact Out)

Maximum voltage:	100 V
Maximum current:	0.5 A

- EVAC inputs

Voltage mode:	• Maximum voltage: 72 VDC • Active voltage: 18 VDC ~ 72 VDC • Inactive voltage: < 0.8 VDC
Contact mode	• Non-isolated analogue interfaces with internal pull-up to +5V by 10k ohm
	• Monitored analogue contact thresholds ○ Faulty-open circuit: > 2.7 VDC ○ Inactive voltage: 2 ~ 2.5 VDC ○ Active voltage: 1.35 ~ 1.7 VDC ○ Faulty-short circuit: < 0.6 VDC

- Mechanical

Dimensions (W x H x D):	• BTQ-VM425/VM825: 437 x 88 x 396 mm (17.2 x 3.5 x 15.6 inch) • BTQ-VM450/VM850: 437 x 88 x 412 mm (17.2 x 3.5 x 16.2 inch)
Weight:	• BTQ-VM425: 8.8 kg (19.4 lbs) • BTQ-VM450: 9.9 kg (21.8 lbs) • BTQ-VM825: 9.3 kg (20.5 lbs) • BTQ-VM850: 10.4 kg (23 lbs)
Mounting:	19" 2U rack
Color:	RAL 7016

- Environmental

Operating temperature:	-5 ºC ~ +55 ºC (+23 ºF ~ +131 ºF)
Storage temperature:	-40 ºC ~ +70 ºC (-40 ºF ~ +158 ºF)
Relative humidity:	20% to 95%
Air pressure:	600 to 1100 hPa
Heat dissipation:	BTQ-VM425/VM825: 375 BTU/hr BTQ-VM450/VM850: 495 BTU/hr

- Standard & certification

Europe	Voice Alarm	EN 54-16 (in process)
Europe	CE/EMI	EN 55032
Europe	CE/EMC	EN 61000-3-2 EN 61000-3-3 EN 55020
Europe	CE/LVD	EN 60065
USA	Safety	UL 60065 (in process)

8.2 BTQ-VM4W/VM8W

- Electrical

AC power input:	100 VAC ~ 240 VAC, 50/60 Hz		
power consumption (AC):	idle	1/2 full power	full power
BTQ-VM425/825W1 BTQ-VM425/825W2	W1/W2: 24VA	W1: 200VA W2: 380VA	W1: 390VA W2: 740VA
BTQ-VM450/850W1 BTQ-VM450/850W2	W1/W2: 24VA	W1: 380VA W2: 740VA	W1: 750VA W2: 1460VA
Idle: pilot tone -36 dB, 1/2 full power: alarm tone			

DC power input:	44 ~ 52 VDC				
power consumption (DC):	standby mode	idle	1/8 full power	1/2 full power	full power
BTQ-VM425W1/W2 BTQ-VM825W1/W2	W1/W2: 6.4W	W1/W2: 22W	W1: 46W W2: 86W	W1: 180W W2: 342W	W1: 350W W2: 666W
BTQ-VM450W1/W2 BTQ-VM850W1/W2	W1/W2: 6.4W	W1/W2: 22W	W1: 85W W2: 168W	W1: 342W W2: 666W	W1: 675W W2: 1314W
Idle: pilot tone -36 dB, 1/8 full power: speech, 1/2 full power: alarm tone					

Model	Imax A	Imax B
BTQ-VMD425W2 / BTQ-VMD825W2	12A	10.5A
BTQ-VMD450W2 / BTQ-VMD850W2	23A	21.5A

- Imax A: the rated maximum output current which can be supplied continuously.
- Imax B: the rated maximum output current, higher than Imax A, which can be supplied while battery charging is not required.

- Integrated battery charger

Charging:	Voltage: 54VDC
	Charging current: 1.5A
Maximum output current:	30A
Battery capacity (4 x 12V):	10Ah to 18.9Ah
Recommended brands:	Yuasa NPL Series, Power-Sonic GB Series, ABT TM Series, EnerSys VE Series, Eekta BTL Series, Long GB Series

- Audio characteristics (general)

A/D-D/A bit resolution:	24 Bit
Sampling rate:	48 kHz
Frequency response:	20 Hz - 20 kHz (±1) dB @ 0 dBu
SNR:	> 80 dB
THD+N:	< 0.02 % @ 30 dB gain, -24 dBu (1 kHz) in

A/D-D/A bit resolution:	24 Bit
EIN:	< -86 dBrA @ 0 dB gain
Maximum input level (CD/AUX/mic):	17 dBu
Maximum output level (line out):	17 dBu
Crosstalk:	> 70 dB @ 42 dB gain, 0 dBu (10 kHz) in

- Audio characteristics (CD/AUX)

Input impedance:	5K ohm

- Audio characteristics (MIC)

EIN:	< -112 dBrA @ 24 dB gain
Input impedance:	8K ohm
Input gain range:	0 ~ 40 dB (adjust with mic/line gain)
CMRR:	< -80 dB @ 40 dB gain, -40 dBu (1 kHz) in
Phantom power:	48 VDC, 7 mA

- Audio characteristics (EX. AMP/LINE OUT)

Output impedance (balanced):	30 ohm

- Wattage capacity (input)

BTQ-VM4/8W1:	1000W per zone/2000W (max.) per unit

- Internal power amplifier

Rated output power:	250W/500W (Class-D)
Frequency response:	50Hz ~ 18kHz (±3 dB) @ 0 dBu
THD+N:	< 0.1 % @ 42 dB gain, 0 dBu (1 kHz) in
SNR:	> 90 dB

Model	Rated output power	Rated load capacitance
BTQ-VM425/825W1 BTQ-VM425/825W2	250W	30 nF (100V); 62 nF (70V)
BTQ-VM450/850W1 BTQ-VM450/850W2	500W	62 nF (100V); 120 nF (70V)

- Network

Max. global-net units:	64
Max. distance between global-net units:	100m (CAT5/6), 2 km (multi-mode fiber optic) and 20 km (single-mode fiber optic)

Max. digi-link remotes units:	• Daisy-chain wiring:
	  ○ 16 DPM sets (DPM-MAIN + EVA + KPD) for each remote port.
	  ○ 32 DPM sets (DPM-MAIN + EVA + KPD) for 2 remote ports.
	• Redundant loop: 16 DPM sets (DPM-MAIN + EVA + KPD)

Max. DPM sets (MAIN + EVA + KPD):	• Max. 16 DPM sets:
	  ○ 1 DPM-MAIN attaches 1 DPM-EVA and 14 DPM-KPD.
	  ○ 1 DPM-MAIN attaches 15 DPM-KPD.
	• Max. 128 keys for each DPM set.

Max. global-net units:	64
	• Connection via flat cable.
Max. communication distance between digi-link remote unit:	• Max. communication cable length: 250m* (metal shielded RJ45 connector, STP CAT5/6) *The distance of cable length will directly affect the quantity and power requirement of remote unit. (1) The longer the cable is, the less power the BTQ-VMW can supply to the remote units. (2) The more the remote units has cascaded in daisy-chain/redundant loop, the less power the BTQ-VMW can supply to the remote units. For example, if the cable length between the BTQ-VMW and DPM-MAIN is within 250m, the DPM-MAIN can be powered by BTQ-VMW. If the cable length is beyond 250m, please connect the DLR01 digital loop repeater with **PSU65-27** 27VDC power adapter, ensuring the control signal and power supply of DPM-MAIN units are enough. To know the max. distance between BTQ-VMW and DPM-MAIN unit(s) and the max. distance which the DPM-MAIN can be powered by DLR01 unit, please refer to Hardware Connection > DLR01 for details.

- Loudspeaker outputs

Number of zones:	4 (BTQ-VM4W) or 8 (BTQ-VM8W)
Number of loudspeaker lines:	8 or 16, A/B speaker lines per zone

- Relay outputs (include Relay Out Control, Evac Contact Out and Fault Contact Out)

Maximum voltage:	100 V
Maximum current:	0.5 A

- EVAC inputs

Voltage mode:	• Maximum voltage: 72 VDC • Active voltage: 18 VDC ~ 72 VDC • Inactive voltage: < 0.8 VDC
Contact mode	• Non-isolated analogue interfaces with internal pull-up to +5V by 10k ohm
	• Monitored analogue contact thresholds ○ Faulty-open circuit: > 2.7 VDC ○ Inactive voltage: 2 ~ 2.5 VDC ○ Active voltage: 1.35 ~ 1.7 VDC ○ Faulty-short circuit: < 0.6 VDC

- Mechanical

Dimensions (W x H x D):	• BTQ-VM4W/VM8W: 653 x 735 x 130 mm (25.7 x 28.9 x 5.1 inch)
Weight:	• BTQ-VM425W1: 19.3 kg (42.5 lbs) • BTQ-VM450W1: 20.9 kg (46.1 lbs) • BTQ-VM425W2: 19.6 kg (43.2 lbs) • BTQ-VM450W2: 21.2 kg (46.7 lbs) • BTQ-VM825W1: 20 kg (44.1 lbs) • BTQ-VM850W1: 21.6 kg (47.6 lbs

Dimensions (W x H x D):	• BTQ-VM4W/VM8W: 653 x 735 x 130 mm (25.7 x 28.9 x 5.1 inch)
	• BTQ-VM825W2: 20.3 kg (44.6 lbs) • BTQ-VM850W2: 21.9 kg (48.3 lbs)
Mounting:	Wall-mount
Color:	RAL 7016

- Environmental

Operating temperature:	-5 ºC ~ +55 ºC (+23 ºF ~ +131 ºF)
Storage temperature:	-40 ºC ~ +70 ºC (-40 ºF ~ +158 ºF)
Relative humidity:	20% to 95%
Air pressure:	600 to 1100 hPa
Heat dissipation:	• BTQ-VM425/825W1: 478 BTU/hr • BTQ-VM450/850W1: 853 BTU/hr • BTQ-VM425/825W2: 819 BTU/hr • BTQ-VM450/850W2: 1570 BTU/hr

- Standard & certification

Europe	Voice Alarm	EN 54-16 (in process)
Europe	CE/EMI	EN 55032 (in process)
Europe	CE/EMC	EN 61000-3-2 EN 61000-3-3 EN 55020 (in process)
Europe	CE/LVD	EN 60065 (in process)
USA	Safety	UL 60065 (in process)

8.3 BTQ-SG8/BTQ-SL8

- Electrical

DC power input:	21VDC~29VDC
Power consumption:	• BTQ-SG8: ○ Full power: 15W ○ Standby mode: 4W • BTQ-SL8: ○ Full power: 13.5W ○ Standby mode: 3.5W
Battery backup power input:	24 VDC

- Audio characteristics

A/D-D/A bit resolution:	24 Bit
Sampling rate:	48 kHz
Frequency response:	20 Hz ~ 20 kHz (±1 dB) @ 0 dBu
THD+N:	< 0.01 % @ 0 dB gain, 4 dBu (1 kHz) in
EIN:	< -80 dBrA @ 0 dB gain
SNR:	> 80 dB
Maximum output level:	17 dBu
Crosstalk:	> 93 dB @ 0 dB gain, 0 dBu (10 kHz) in
Output impedance:	30 ohm

- Wattage capacity (input)

Speaker load per zone (max.):	1000W @ 70V/100V line
Speaker load per unit (max.):	2000W @ 70V/100V line

- Network

Max. local-net units (BTQ-SL8):	32 (1 x BTQ-VM4/8 and 31 x BTQ-SL8)
Max. distance between BTQ-SL8 local-net units:	10m (metal shielded RJ45 connector, STP CAT5/6)
Max. global-net units (BTQ-SG8):	64
Max. distance between BTQ-SG8 global-net units:	100m (CAT5/6), 2 km (multi-mode fiber optic) and 20 km (single-mode fiber optic)
Max. digi-link remotes units (BTQ-SL8):	Daisy-chain wiring: 16 DPM sets (DPM-MAIN + EVA + KPD) for single remote port.
Max. digi-link remotes units (BTQ-SG8):	• Daisy-chain wiring: ○ 16 DPM sets (DPM-MAIN + EVA + KPD) for 1 remote port. ○ 32 DPM sets (DPM-MAIN + EVA + KPD) for 2 remote ports. • Redundant loop: 16 DPM sets (DPM-MAIN + EVA + KPD)
Max. DPM sets (MAIN + EVA + KPD):	• Max. 16 DPM sets: ○ 1 DPM-MAIN attaches 1 DPM-EVA and 14 DPM-KPD. ○ 1 DPM-MAIN attaches 15 DPM-KPD. • Max. 128 keys for each DPM set. • Connection via flat cable.
Max. communication distance between digi-link remote unit:	• Max. communication cable length: 250m* (metal shielded RJ45 connector, STP CAT5/6) *The distance of cable length will directly affect the quantity and power requirement of remote unit. (1) The longer the cable is, the less power the BTQ-SL8/SG8 can supply to the remote units. (2) The more the remote units has cascaded in daisy-chain/redundant loop, the less power the BTQ-SL8/SG8 can supply to the remote units. For example, if the cable length between the BTQ-SL8/SG8 and DPM-MAIN is within 250m, the DPM-MAIN can be powered by BTQ-SL8/SG8. If the cable length is beyond 250m, please connect the DLR01 digital loop repeater with **PSU65-27** 27VDC power adapter, ensuring the control signal and power supply of DPM-MAIN units are enough. To know the max. distance between BTQ-SL8/SG8 and DPM-MAIN unit (s) and the max. distance which the DPM-MAIN can be powered by DLR01 unit, please refer to Hardware Connection > DLR01 for details.

- Loudspeaker outputs

Number of zones:	8
Number of loudspeaker lines:	16 A/B speaker lines for each zone

- EVAC/FAULT outputs

Maximum voltage:	30 V
Maximum current:	1 A

- Relay outputs (include Relay Out Control, Evac Contact Out and Fault Contact Out)

Maximum voltage:	100 V
Maximum current:	0.5 A

- EVAC inputs

Voltage mode:	• Maximum voltage: 72 VDC • Active voltage: 18 VDC ~ 72 VDC • Inactive voltage: < 0.8 VDC
Contact mode:	• Non-isolated analogue interfaces with internal pull-up to +5V by 10k ohm
	• Monitored analogue contact thresholds ○ Faulty-open circuit: > 2.7 VDC ○ Inactive voltage: 2 ~ 2.5 VDC ○ Active voltage: 1.35 ~ 1.7 VDC ○ Faulty-short circuit: < 0.6 VDC

- Mechanical

Dimensions (W x H x D):	437 x 44 x 260 mm (17.2 x 1.7 x 10.2 inch)
Weight:	2.6 kg (5.7 lbs)
Mounting:	19" 1U rack
Color:	RAL 7016

- Environmental

Operating temperature:	-5 ºC ~ +55 ºC (+23 ºF ~ +131 ºF)
Storage temperature:	-40 ºC ~ +70 ºC (-40 ºF ~ +158 ºF)
Relative humidity:	20% to 95%
Air pressure:	600 to 1100 hPa
Heat dissipation:	BTQ-SG8: 51 BTU/hr BTQ-SL8: 48 BTU/hr

- Standard & certification

Europe	Voice Alarm	EN 54-16 (in process)
Europe	CE/EMI	EN 55032
Europe	CE/EMC	EN 55020 IEC 61000-4-2 IEC 61000-4-4
Europe	CE/LVD	EN 60065 (in process)
USA	Safety	UL 60065 (in process)

8.4 Digital paging consoles

8.4.1 DPM-MAIN

- Electrical

DC power input:	21VDC~29VDC
Power consumption:	Full power: 1.8W
	Standby mode: 1W

- Audio characteristics (general)

A/D-D/A bit resolution:	24 Bit
Sampling rate:	48 kHz
Frequency response:	20 Hz ~ 20 kHz (±1 dB) @ 0 dBu
SNR:	> 85 dB
THD+N:	< 0.2 % @ 26 dB gain, -26 dBu (1 kHz) in
Max. speaker SPL:	90 dBA @ 3m
Max. mic SPL:	105 dBA @ 3m
Capsule type:	Electret condenser
Capsule Sensitivity:	-15 dBu/Pa @1 kHz
Capsule directivity:	Uni-directional
Polar pattern:	Cardioid

- Audio characteristics (headset-jack)

Maximum input level:	-3 dBu
Maximum output level:	2.5 dBu
Input gain (fixed):	3 dB
Input impedance:	2k ohm
Output impedance:	25 ohm
Delivering power:	150 mW

- Network

Max. digi-link remotes units (BTQ-SL8):	• Daisy-chain wiring: 16 DPM sets (DPM-MAIN + EVA + KPD) for single remote port.
Max. digi-link remotes units (BTQ-VM/ BTQ-SG8):	• Daisy-chain wiring: ○ 16 DPM sets (DPM-MAIN + EVA + KPD) for 1 remote port. ○ 32 DPM sets (DPM-MAIN + EVA + KPD) for 2 remote ports. • Redundant loop: 16 DPM sets (DPM-MAIN + EVA + KPD)
Max. DPM sets (MAIN + EVA + KPD):	• Max. 16 DPM sets: ○ 1 DPM-MAIN attaches 1 DPM-EVA and 14 DPM-KPD. ○ 1 DPM-MAIN attaches 15 DPM-KPD. • Max. 128 keys for each DPM set. • Connection via flat cable.
Max. communication distance between BTQ-VM/SL8/SG8 and DPM-MAIN:	• Max. communication cable length: 250M* (metal shielded RJ45 connector, STP CAT5/6) *The distance of cable length will directly affect the quantity and power requirement of remote unit. (1) The longer the cable is, the less power the BTQ-VM/SL8/SG8 can supply to the remote units. (2) The more the remote units has cascaded in daisy-chain/redundant loop, the less power the BTQ-VM/ SL8/SG8 can supply to the remote units. For example, if the cable length between the BTQ-VM/ SL8/SG8 and DPM-MAIN is within 250m, the DPM-MAIN can be powered by BTQ-VM/SL8/SG8. If the cable length is beyond 250m, please connect the DLR01 digital loop repeater with **PSU65-27** 27VDC power adapter, ensuring the control signal and power

Max. digi-link remotes units (BTQ-SL8):	• Daisy-chain wiring: 16 DPM sets (DPM-MAIN + EVA + KPD) for single remote port.
	supply of DPM-MAIN units are enough. To know the max. distance between BTQ-VM/SL8/SG8 and DPM-MAIN unit(s) and the max. distance which the DPM-MAIN can be powered by DLR01 unit, please refer to Hardware Connection > DLR01 for details.

- Mechanical

Dimensions (W x H x D):	• DPM-MAIN base: 108 x 46 x 200 mm (4.3 x 1.8 x 7.9 inch) • DPM-MAIN with mic: 108 x 319 x 200 mm (4.3 x 12.6 x 7.9 inch)
Weight:	0.5 kg (1.1 lbs)
Color:	RAL 7035

- Environmental

Operating temperature:	-5 ºC ~ +55 ºC (+23 ºF ~ +131 ºF)
Storage temperature:	-40 ºC ~ +70 ºC (-40 ºF ~ +158 ºF)
Relative humidity:	20% to 95%
Air pressure:	600 to 1100 hPa
Heat dissipation:	0.87 BTU/hr

- Standard & certification

Europe	Voice Alarm	EN 54-16 (in process)
Europe	CE/EMI	EN 55032
Europe	CE/EMC	EN 55020 IEC 61000-4-2
Europe	CE/LVD	EN 60065 (in process)
USA	Safety	UL 60065 (in process)

8.4.2 DPM-EVA/DPM-KPD

- Electrical

DC power input:	21VDC~29VDC
Power consumption:	Full power • DPM-EVA: 3.7W • DPM-KPD: 1W
	Standby mode • DPM-EVA: 0.3W • DPM-KPD: 0.5W

- Audio characteristics (general)

A/D-D/A bit resolution:	24 Bit
Sampling rate:	48 kHz
Frequency response:	20 Hz ~ 20 kHz (±1 dB) @ 0 dBu
SNR:	> 85 dB
THD+N:	< 0.2 % @ 26 dB gain, -26 dBu (1 kHz) in
Max. speaker SPL:	90 dBA @ 3m
Max. mic SPL:	105 dBA @ 3m
Capsule type:	Electret condenser
Capsule Sensitivity:	-15 dBu/Pa @1 kHz

A/D-D/A bit resolution:	24 Bit
Capsule directivity:	Uni-directional
Polar pattern:	Cardioid

- Network

Max. DPM sets (MAIN + EVA + KPD):	• Max. 16 DPM sets: ○ 1 DPM-MAIN attaches 1 DPM-EVA and 14 DPM-KPD. ○ 1 DPM-MAIN attaches 15 DPM-KPD. • Max. 128 keys for each DPM set. • Connection via flat cable.
Interconnection:	Flat cable

- Mechanical

Dimensions (W x H x D):	DPM-KPD/DPM-EVA: 96 x 46 x 200 mm (3.8 x 1.8 x 7.9 inch)
Weight (DPM-EVA/DPM-KPD):	0.5 kg (1.1 lbs)
Color:	RAL 7035

- Environmental

Operating temperature:	-5 ºC ~ +55 ºC (+23 ºF ~ +131 ºF)
Storage temperature:	-40 ºC ~ +70 ºC (-40 ºF ~ +158 ºF)
Relative humidity:	20% to 95%
Air pressure:	600 to 1100 hPa
Heat dissipation:	• DPM-EVA: 0.76 BTU/hr • DPM-KPD: 0.02 BTU/hr

- Standard & certification

Europe	Voice Alarm	EN 54-16 (in process)
Europe	CE/EMI	EN 55032
Europe	CE/EMC	EN 55020 IEC 61000-4-2
Europe	CE/LVD	EN 60065 (in process)
USA	Safety	UL 60065 (in process)

8.4.3 DPM-T5/DPM-T5F

- Electrical

DC power input:	21VDC~29VDC
Power consumption:	Full power: 15W
	Standby mode: 1W

- Audio characteristics (general)

A/D-D/A bit resolution:	24 Bit
Sampling rate:	48 kHz
Frequency response:	20 Hz ~ 20 kHz (±1 dB) @ 0 dBu
SNR:	> 85 dB
THD+N:	< 0.2 % @ 26 dB gain, -26 dBu (1 kHz) in
Max. speaker SPL:	90 dBA @ 3m

A/D-D/A bit resolution:	24 Bit
Max. mic SPL:	105 dBA @ 3m
Capsule type:	Electret condenser
Capsule Sensitivity:	-15 dBu/Pa @1 kHz
Capsule directivity:	Uni-directional
Polar pattern:	Cardioid

- Audio characteristics (headset-jack)

Maximum input level:	-3 dBu
Maximum output level:	2.5 dBu
Input gain (fixed):	3 dB
Input impedance:	2k ohm
Output impedance:	25 ohm
Delivering power:	150 mW

- Network

Max. digi-link remotes units (BTQ-SL8):	• Daisy-chain wiring: 16 DPM-T5/T5F units for single remote port.
Max. digi-link remotes units (BTQ-VM/ BTQ-SG8):	• Daisy-chain wiring: ○ 16 DPM-T5/T5F units for 1 remote port. ○ 32 DPM-T5/T5F units for 2 remote ports. • Redundant loop: 16 DPM-T5/T5F units
Max. communication distance between BTQ-VM/SL8/SG8 and DPM-T5/T5F:	• Max. communication cable length: 250M* (metal shielded RJ45 connector, STP CAT5/6) *The distance of cable length will directly affect the quantity and power requirement of remote unit. (1) The longer the cable is, the less power the BTQ-VM/SL8/SG8 can supply to the remote units. (2) The more the remote units has cascaded in daisy-chain/redundant loop, the less power the BTQ-VM/ SL8/SG8 can supply to the remote units. For example, if the cable length between the BTQ-VM/ SL8/SG8 and DPM-T5/DPM-T5F is within 125m, the DPM-T5/DPM-T5F can be powered by BTQ-VM/SL8/ SG8. If the cable length is beyond 125m, please connect the DLR01 digital loop repeater with **PSU65-27** 27VDC power adapter, ensuring the control signal and power supply of DPM-T5/DPM-T5F units are enough. To know the max. distance between BTQ-VM/ SL8/SG8 and DPM-T5/DPM-T5F unit(s) and the max. distance which the DPM-T5/DPM-T5F can be powered by DLR01 unit, please refer to Hardware Connection > DLR01 for details.

- Mechanical

Dimensions (W x H x D):	• DPM-T5 base: 284 x 80 x 174 mm (11.2 x 3.1 x 6.9 inch) • DPM-T5F base: 320 x 174 x 170 mm (13 x 6.9 x 6.7 inch) • DPM-T5 with mic: 284 x 332 x 174 mm (11.2 x 13 x 6.9

	inch) • DPM-T5F with mic: 320 x 332 x 174 mm (13 x 13 x 6.9 inch)
Weight:	• DPM-T5: 1.1 kg (2.4 lbs) • DPM-T5F: 1.5 kg (3.3 lbs)
Color:	RAL 7016

- Environmental

Operating temperature:	-5 ºC ~ +55 ºC (+23 ºF ~ +131 ºF)
Storage temperature:	-40 ºC ~ +70 ºC (-40 ºF ~ +158 ºF)
Relative humidity:	20% to 95%
Air pressure:	600 to 1100 hPa
Heat dissipation:	4.3 BTU/hr

- Standard & certification

Europe	Voice Alarm	EN 54-16 (in process)
Europe	CE/EMI	EN 55032 (in process)
Europe	CE/EMC	EN 61000-3-2 EN 61000-3-3 EN 55020 (in process)
Europe	CE/LVD	EN 60065 (in process)
USA	Safety	UL 60065 (in process)

8.4.4 CD-8DF/CD-16DF

- Electrical

DC power input:	21VDC~29VDC
Power consumption:	Full power: 5W (CD-8DF) / 6W (CD-16DF)
	Standby mode: 1W (CD-8DF) / 1.5W (CD-16DF)

- Audio characteristics

A/D-D/A bit resolution:	24 Bit
Sampling rate:	48 kHz
Frequency response:	20 Hz ~ 20 kHz (±1 dB) @ 0 dBu
SNR:	> 85 dB
THD+N:	< 0.2 % @ 26 dB gain, -26 dBu (1 kHz) in
Max. speaker SPL:	90 dBA @ 3m
Max. mic SPL:	105 dBA @ 3m

- Network

Max. digi-link remotes units (BTQ-SL8):	• Daisy-chain wiring: 16 CD-8DF/16DF units for single remote port.
Max. digi-link remotes units (BTQ-VM/ BTQ-SG8):	• Daisy-chain wiring: ○ 16 CD-8DF/16DF units for 1 remote port. ○ 32 CD-8DF/16DF units for 2 remote ports. • Redundant loop: 16 CD-8DF/16DF units
Max. communication distance between BTQ-VM/SL8/SG8 and CD-8DF/16DF:	• Max. communication cable length: 250M* (metal shielded RJ45 connector, STP CAT5/6) *The distance of cable length will directly affect the quantity and power requirement of remote unit.

Max. digi-link remotes units (BTQ-SL8):	• Daisy-chain wiring: 16 CD-8DF/16DF units for single remote port.
	(1) The longer the cable is, the less power the BTQ-VM/SL8/SG8 can supply to the remote units. (2) The more the remote units has cascaded in daisy-chain/redundant loop, the less power the BTQ-VM/SL8/SG8 can supply to the remote units. For example, if the cable length between the BTQ-VM/SL8/SG8 and CD-8DF/CD-16DF is within 250m, the CD-8DF/CD-16DF can be powered by BTQ-VM/SL8/SG8. If the cable length is beyond 250m, please connect the DLR01 digital loop repeater with **PSU65-27** 27VDC power adapter, ensuring the control signal and power supply of CD-8DF/CD-16DF units are enough. To know the max. distance between BTQ-VM/SL8/SG8 and CD-8DF/CD-16DF unit(s) and the max. distance which the CD-8DF/CD-16DF can be powered by DLR01 unit, please refer to Hardware Connection > DLR01 for details.

- Mechanical

Dimensions (W x H x D):	• CD-8DF: 329 x 187 x 101 mm (13 x 7.4 x 4 inch) • CD-16DF: 349 x 241 x 101 mm (13.7 x 9.5 x 4 inch)
Weight:	• CD-8DF: 3.4 kg (7.5 lbs) • CD-16DF: 4.1 kg (9 lbs)
Color:	RAL 7016

- Environmental

Operating temperature:	-5 ºC ~ +55 ºC (+23 ºF ~ +131 ºF)
Storage temperature:	-40 ºC ~ +70 ºC (-40 ºF ~ +158 ºF)
Relative humidity:	20% to 95%
Air pressure:	600 to 1100 hPa
Heat dissipation:	• CD-8DF: 0.87 BTU/hr • CD-16DF: 0.89 BTU/hr

- Standard & certification

Europe	Voice Alarm	EN 54-16 (in process)
Europe	CE/EMI	EN 55032
Europe	CE/EMC	EN 55020 IEC 61000-4-2
Europe	CE/LVD	EN 60065 (in process)
USA	Safety	UL 60065 (in process)

8.4.5 CD-T5DF

- Electrical

DC power input:	21VDC~29VDC
Power consumption:	Full power: 15W
	Standby mode: 1W

- Audio characteristics

A/D-D/A bit resolution:	24 Bit
Sampling rate:	48 kHz
Frequency response:	20 Hz ~ 20 kHz (±1 dB) @ 0 dBu
SNR:	> 85 dB
THD+N:	< 0.2 % @ 26 dB gain, -26 dBu (1 kHz) in
Max. speaker SPL:	90 dBA @ 3m
Max. mic SPL:	105 dBA @ 3m

- Network

Max. digi-link remotes units (BTQ-SL8):	• Daisy-chain wiring: 16 CD-T5DF units for single remote port.
Max. digi-link remotes units (BTQ-VM/ BTQ-SG8):	• Daisy-chain wiring: ○ 16 CD-T5DF units for 1 remote port. ○ 32 CD-T5DF units for 2 remote ports. • Redundant loop: 16 CD-T5DF units
Max. communication distance between BTQ-VM/SL8/SG8 and CD-T5DF:	• Max. communication cable length: 250M* (metal shielded RJ45 connector, STP CAT5/6) *The distance of cable length will directly affect the quantity and power requirement of remote unit. (1) The longer the cable is, the less power the BTQ-VM/SL8/SG8 can supply to the remote units. (2) The more the remote units has cascaded in daisy-chain/redundant loop, the less power the BTQ-VM/ SL8/SG8 can supply to the remote units. For example, if the cable length between the BTQ-VM/ SL8/SG8 and CD-T5DF is within 125m, the CD-T5DF can be powered by BTQ-VM/SL8/SG8. If the cable length is beyond 125m, please connect the DLR01 digital loop repeater with **PSU65-27** 27VDC power adapter, ensuring the control signal and power supply of CD-T5DF units are enough. To know the max. distance between BTQ-VM/SL8/SG8 and CD-T5DF unit(s) and the max. distance which the CD-T5DF can be powered by DLR01 unit, please refer to Hardware Connection > DLR01 for details.

- Mechanical

Dimensions (W x H x D):	339 x 208 x 101 mm (13.3 x 8.2 x 4 inch)
Weight:	3.4 kg (7.5 lbs)
Color:	RAL 7016

- Environmental

Operating temperature:	-5 ºC ~ +55 ºC (+23 ºF ~ +131 ºF)
Storage temperature:	-40 ºC ~ +70 ºC (-40 ºF ~ +158 ºF)
Relative humidity:	20% to 95%
Air pressure:	600 to 1100 hPa
Heat dissipation:	4.3 BTU/hr

- Standard & certification

Europe	Voice Alarm	EN 54-16 (in process)
Europe	CE/EMI	EN 55032 (in process)

Europe	Voice Alarm	EN 54-16 (in process)
Europe	CE/EMC	EN 61000-3-2 EN 61000-3-3 EN 55020 (in process)
Europe	CE/LVD	EN 60065 (in process)
USA	Safety	UL 60065 (in process)

8.5 Accessories

8.5.1 DNM2-ETH

Electrical:	Powered by PoE (Conform IEEE 802.3af)
Microphone characteristics:	• Capsule type: Electret condenser • Capsule directivity: Omni-directional • Ambient noise measurement range: 55 dBA ~ 88 dBA • Deviation of mic pickup directivity: 0 ~ -1.5 dB (±30°), 0 ~ -3.7 dB (±45°), 0 ~ -5.3 dB (±90°)
Network:	CAT5/6 cable, RJ45 connector via Ethernet port Max. distance length: 100m
Dimension:	• Diameter: 105 mm (4.1 inch) • Height: 130 mm (5.1 inch)
Weight:	0.13 kg (0.28 lbs)
Environmental:	Operating temperature: -5ºC ~ +55ºC (+23 ºF ~ +131 ºF)
	Storage temperature: -40 ºC ~ +70 ºC (-40 ºF ~ +158 ºF)
	Relative humidity: 20%~95%
	Air pressure: 600 to 1100 hPa
	Heat dissipation: 20 BTU/hr

8.5.2 DGL-MIC

DC power input:	18~30VDC
Max. power consumption:	2.4W
Ambient noise measurement range:	55 dBA~105 dBA
Network:	• STP CAT5/6 cable with metal shielded RJ45 connector • Max. distance length: 250m
Dimension (W x H x D):	110 x 70 x 52 mm (4.3 x 2.6 x 2 inch)
Weight:	0.1 Kg (0.22 lbs)
Environmental:	Operating temperature: -5ºC ~ +55ºC (+23 ºF ~ +131 ºF)
	Storage temperature: -40 ºC ~ +70 ºC (-40 ºF ~ +158 ºF)
	Relative humidity: 20%~95%
	Air pressure: 600 to 1100 hPa
	Heat dissipation: 8 BTU/hr

8.5.3 DLR01

DC power input:	21~29VDC	
Power consumption:	0.8W	
Network:	Extend max. 250m communication distance (shielded cable)	
Dimension (W x H x D):	56 x 27 x 102 mm (2.2 x 1.1 x 4 inch)	
Weight:	0.2 kg (0.4 lbs)	
Colour:	RAL 7035	
Environmental:	Operating temperature: -5 ºC ~ +55 ºC (+23 ºF ~ +131 ºF)	
	Storage temperature: -40 ºC ~ +70 ºC (-40 ºF ~ +158 ºF)	
	Relative humidity: 20%~95%	
	Air pressure: 600 to 1100 hPa	
	Heat dissipation: 2.73 BTU/hr	
Certification:	Voice Alarm	EN 54-16 (pending)
	CE/EMI	EN 55032 (pending)
	CE/EMC	EN 61000-3-2 EN 61000-3-3 EN 55020 (pending)
	CE/LVD	EN 60065 (pending)
	Safety	UL 60065 (pending)

8.5.4 VAT-35U

- Electrical

Rated power:	100 volt/70.7 volt line: 40 watts

- Characteristics

Attenuation position @ 100 volt line, volts:	100/70.7/50/35.3/25/OFF
Attenuation per step:	3 dB
Total attenuation:	15 dB
Attenuation positions:	5 plus OFF

- Mechanical

Dimensions (H x W x D):	115 x 70 x 51 mm
Weight:	0.57 lbs (0.26kg)

8.5.5 VA-DLC

- Electrical

Voltage:	100V or 70V loudspeaker line
Load:	62W, 125W, 250W, above 250W

- DIP switch setting

1 step:	0 to 62W speaker load
2 step:	62 to 125W speaker load
3 step:	125 to 250W speaker load
4 step:	above 250W speaker load

- Mechanical & environmental

Dimensions (H x W x D):	10 x 80 x 60 mm (0.4 x 3.1 x 2.4 inch)
Weight:	0.1 kg (0.22 lbs)
Operating temperature:	-5 ºC ~ +55 ºC (+23 ºF ~ +131 ºF)
Storage temperature:	-40 ºC ~ +70 ºC (-40 ºF ~ +158 ºF)

Dimensions (H x W x D):	10 x 80 x 60 mm (0.4 x 3.1 x 2.4 inch)
Relative humidity:	20% to 95%

- Standard & certification

Europe	Voice Alarm	EN 54-16 (pending)
Europe	CE/EMI	EN 55032 (pending)
Europe	CE/EMC	EN 61000-3-2 EN 61000-3-3 EN 55020 (pending)
Europe	CE/LVD	EN 60065 (pending)
USA	Safety	UL 60065 (pending)

8.5.6 VA-EOL

- Electrical & control

Power source:	Supplied from BTQ-VMD/SGD/SLD
Max. power consumption:	0.38W
Maximum input voltage:	120 VRMS
Voltage:	70V or 100V loudspeaker line
Loudspeaker cable:	• Maximum length: 1000m • Maximum capacitance: 330nF
Pilot tone detection:	• Frequency: 20 kHz • Level: 1.5 - 2.5 VRMS
Max. VA-EOL units:	• Per BTQ-VMD/SGD/SLD unit ▪ Max. 50 VA-EOL (10W load of connecting the VA-EOL on BTQ zone) ▪ Max. 15 VA-EOL (500W load of connecting the VA-EOL on BTQ zone) • Entire BTQ system ▪ Max. 97 VA-EOL entire local-net system. ▪ Max. 6,028 VA-EOL entire global-net system • Max. 16 speaker line branches per BTQ-VMD/SGD/SLD zone when using VA-EOL plus VAT volume attenuator.

- Mechanical & environmental

Dimensions (H x W x D):	10 x 80 x 60 mm (0.4 x 3.1 x 2.4 inch)
Weight:	0.1 kg (0.22 lbs)
Operating temperature:	-5 ºC ~ +55 ºC (+23 ºF ~ +131 ºF)
Storage temperature:	-40 ºC ~ +70 ºC (-40 ºF ~ +158 ºF)
Relative humidity:	20% to 95%

- Standard & certification

Europe	Voice Alarm	EN 54-16 (pending)
Europe	CE/EMI	EN55032 (pending)
Europe	CE/EMC	EN61000-3-2 EN61000-3-3 EN55020 (pending)
Europe	CE/LVD	EN60065 (pending)
USA	Safety	UL60065 (pending)

8.5.7 SL-SENSOR2/SL-SENSOR4

- Electrical

Power source:	Supplied from BTQ-VM/SG/SL
Max. power consumption:	90 mW
Voltage:	70V or 100V loudspeaker line

- Mechanical & environmental

Dimensions (W x H x D):	• SL-SENSOR2: 41 x 35 x 50 mm (1.6 x 1.4 x 2 inch) • SL-SENSOR4: 84 x 35 x 50 mm (3.3 x 1.4 x 2 inch)
Weight:	• SL-SENSOR2: 0.41 kg (0.9 lbs) • SL-SENSOR4: 0.77 kg (1.69 lbs)
Operating temperature:	-5 ºC ~ +55 ºC (+23 ºF ~ +131 ºF)
Storage temperature:	-40 ºC ~ +70 ºC (-40 ºF ~ +158 ºF)
Relative humidity:	20% to 95%

- Standard & certification

Europe	Voice Alarm	EN 54-16 (pending)
Europe	CE/EMI	EN 55032 (pending)
Europe	CE/EMC	EN 61000-3-2 EN 61000-3-3 EN 55020 (pending)
Europe	CE/LVD	EN 60065 (pending)
USA	Safety	UL 60065 (pending)

8.5.8 Network cards

- Network

Max. distance between global-net units:	• 100m (CAT5/6) • 2 km (multi-mode fiber optic) • 20 km (single-mode fiber optic)
Fiber optic:	• Connector type: Straight Tip • Fiber size: 62.5/125 um (multi-mode), 9/125 um (single-mode) • Center wavelength: 1310 nm (multi-mode/single-mode)

- Mechanical & environmental

Dimension (W x H x D):	63 x 15 x 82 mm (2.5 x 0.6 x 3.2 inch)
Weight:	0.2 kg (0.4 lbs)
Environmental:	Operating temperature: -5°C~ +55°C (+23°F~ +131°F)
	Storage temperature: -40 ºC ~ +70 ºC (-40 ºF ~ +158 ºF)
	Relative humidity: 20%~95%
	Air pressure: 600 to 1100 hPa

- Standard & certification

Europe	Voice Alarm	EN 54-16 (in process)
Europe	CE/EMI	EN 55032
Europe	CE/EMC	EN 61000-3-2 EN 61000-3-3 EN 55020
Europe	CE/LVD	EN 60065 (in process)

Europe	Voice Alarm	EN 54-16 (in process)
USA	Safety	UL 60065 (in process)

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