ATEÏS

DELIVERING YOUR MESSAGE!

BCU-4830A
BCU-4875A

Advanced Monitored Battery Charger

User Manual

Revision History

v1.16

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 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.

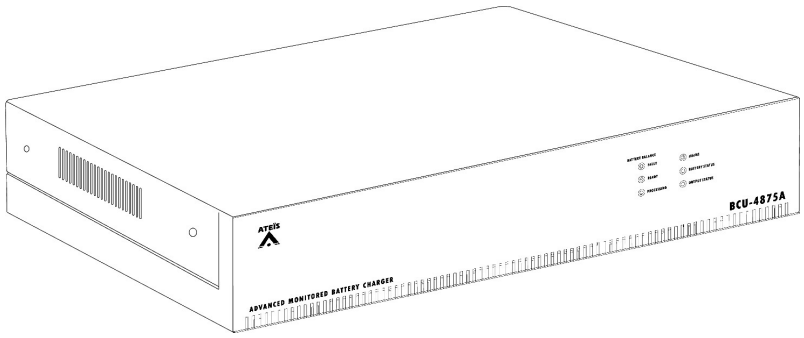
1.2 Safety instructions

- 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 (Indoor only) with a free-air temperature of between -5°C ~ +55°C (+23°F ~ +131°F).
- The charging characteristic of BCU-4830A and BCU-4875A are 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)
- 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.
- The components of BCU-4830A and BCU-4875A are complied with class 3K5 of "EN 60721-3-3:1995".

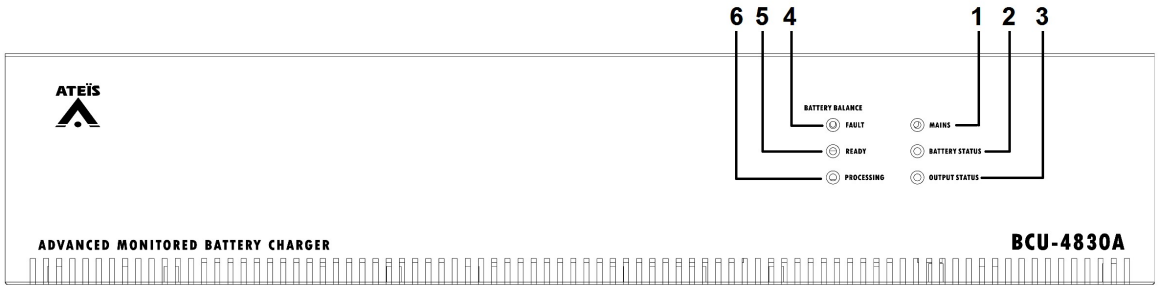
2 BCU-4830A/BCU-4875A battery charger



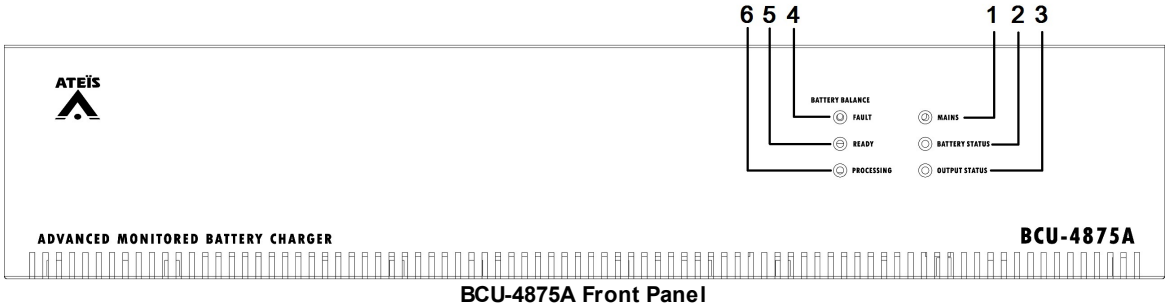
The BCU-4830A/BCU-4875A battery chargers (48VDC) are designed for secured battery backup and power sharing to PA/VA system. The microprocessor-based design is capable to program the charging process and optimize by sensing the battery status and temperature. With Battery Balance function, the capacity utilization of the battery cells can be maximized and increases the longevity as well.

The two (BCU-4830A)/six (BCU-4875A) 48V outputs provide the controllers or power amplifiers with a maximum current 30A (BCU-4830A)/75A (BCU-4875A) per unit, 20A per output. And three 24V outputs provide auxiliary or remote units with a maximum current 8A per unit, 3A per output. The maximum charging current of BCU-4830A is 3A and 6A for BCU-4875A. In addition, four fault contact outputs (GENERAL/MAINS/BATTERY/OUTPUT) are equipped for remote status monitoring.

2.1 Front panel



BCU-4830A Front Panel



BCU-4875A Front Panel

1. Mains LED:

   This LED lights up in yellow if one of the following conditions are satisfied:

   - The AC mains is not present (AC voltage: 100~240 VAC, ±10%, 50/60 Hz).
   - Mains voltage threshold <65 VAC ±5% (auto reconnect at >75 VAC ±5%).
   - The AC mains power board is broken.

- The mains fuse is blown.
- The power supply unit is overheat.

This LED lights up in Green if the BCU-4830A/BCU-4875A is powered by AC without the situations listed above.

2. Battery status LED:

This LED lights up in yellow if one of the following conditions are satisfied:

- The temperature of the batteries is too high (> 65°C).
- The temperature sensor is not connected.
- The mains power is present and the battery voltage is normally operated in Vbat (voltage of the battery) ≤ 43.2 VDC, Vbat ≥ 60 VDC (±3%), then the battery breaker will cutoff.
- Reverse the polarity of battery connection (+/- terminals).
- The impedance of battery and its connection is too high, see Resistance Measurement for details.

This LED lights up in green if the situations listed above do not happen.

3. Output status LED:

This LED lights up in yellow if one of the following conditions are satisfied:

- The 24/48VDC power output is overloaded, and lights up in green if it's not overloaded.
- The output fuse is blown.

4. Balance fault LED:

This LED lights up in yellow when using the battery balance function (4th DIP switch is set "ON") and one of following conditions are satisfied:

- The batteries are connected to 48VDC battery terminal, but the MAIN-BATTERY terminals on Battery Balance are not.
- The auxiliary battery does not connect to the AUX Battery terminal.
- The battery voltage is undervoltage (<38V) and overvoltage (> 60VDC) during the Balance Battery operation.

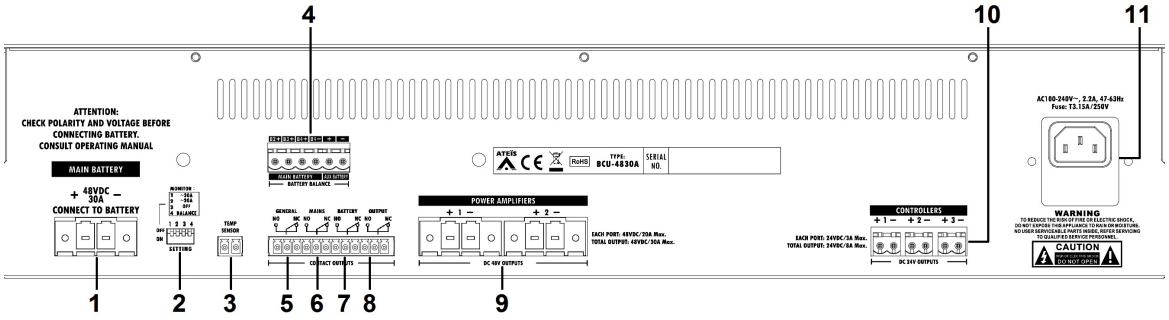
5. Balance ready LED:

If the Battery Balance function is enabled and the four batteries are charged in the same voltage, this LED will light up in green.

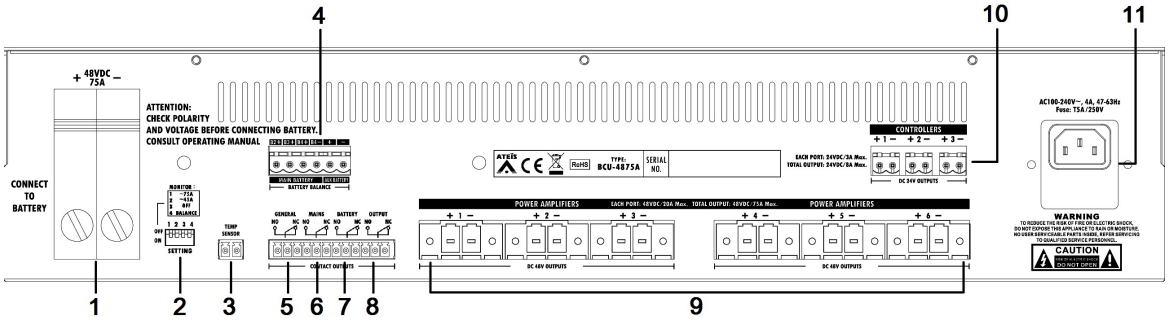
6. Balance processing LED:

If the Battery Balance function is enabled and the Battery Balance terminals are connected to the batteries, this LED will light up in green.

2.2 Rear panel



BCU-4830A Rear Panel



BCU-4875A Rear Panel

1. Battery terminal:

   Connect the four 12VDC batteries to this terminal. The wiring should be kept as short as possible to minimize cable losses.

   - 48VDC, 30A battery terminal (BCU-4830A).
   - 48VDC, 75A battery terminal (BCU-4875A).

2. Monitor DIP switch setting:

Set "ON"	DIP-1	DIP-2	DIP-3	DIP-4
BCU-4830A	30A	20A	Disable the detection of battery status (battery voltage)	Enable the Battery Balance function
BCU-4875A	75A	45A		

If DIP-1 and DIP-2 switches are both set ON, the system will use the max. output current on DIP-1 setting: 30A for BCU-4830A and 75A for BCU-4875A.

3. Temperature sensor terminal:

   Connect the temperature sensor to this terminal. The battery will stop charging if the temperature is > 65°C. See temperature sensor wiring for details.

4. Battery balance terminal:

   The Battery Balance function maximizes the capacity utilization of the 4 battery cells and increase the battery's life.

   Connect the B4-, B4+, B3+ and B2+ terminals to the 4 batteries and connect a 12V battery to the AUX Battery terminal directly. See the wiring connection from Battery Balance Charging.

5-8. Contact outputs:

   Each dry contact is a DPDT switch (NO-NC), allowing 1.25A @ 30VDC or 1A @ 125VAC.

   5. General: For mains power fault, battery power fault, 48VDC/24VDC output fault and battery

balance fault.

6. Mains: For mains power fault, see Mains LED.
7. Battery: For battery power fault, see Battery Status LED.
8. Output: For 48VDC power amplifier outputs/24VDC aux output fault, such as overload or fuses blow.

The contact output will open/close when one of the contact outputs (Mains, Battery, Output) occur faults.

Contact Outputs	Mains/Battery/Output LED				General Fault LED			
	Green		Yellow		Green		Yellow	
Mains	NO (open)	NC (close)	NO (close)	NC (open)	-	-	-	-
Battery	NO (open)	NC (close)	NO (close)	NC (open)	-	-	-	-
Output	NO (open)	NC (close)	NO (close)	NC (open)	-	-	-	-
General	-	-	-	-	NO (open)	NC (close)	NO (close)	NC (open)

9. 48VDC outputs:

Connect a 48VDC backup power input terminals of any PA/VA controller or power amplifier to one of the 2 output terminals (BCU-4830A) / 6 output terminals (BCU-4875A).

The outputs are protected by a fuse, see Technical Data chapter.

Model	Max. current (each port)	Max. current (total output)
BCU-4830A	20A	30A
BCU-4875A	20A	75A

The max. output current on BCU-4830A (30A) and BCU-4875A (75A) is summed with 48VDC and 24VDC together.

10. 24VDC outputs:

Connect the 24VDC backup power input terminals of any PA/VA controller/secondary unit to one of the 3 output terminals.

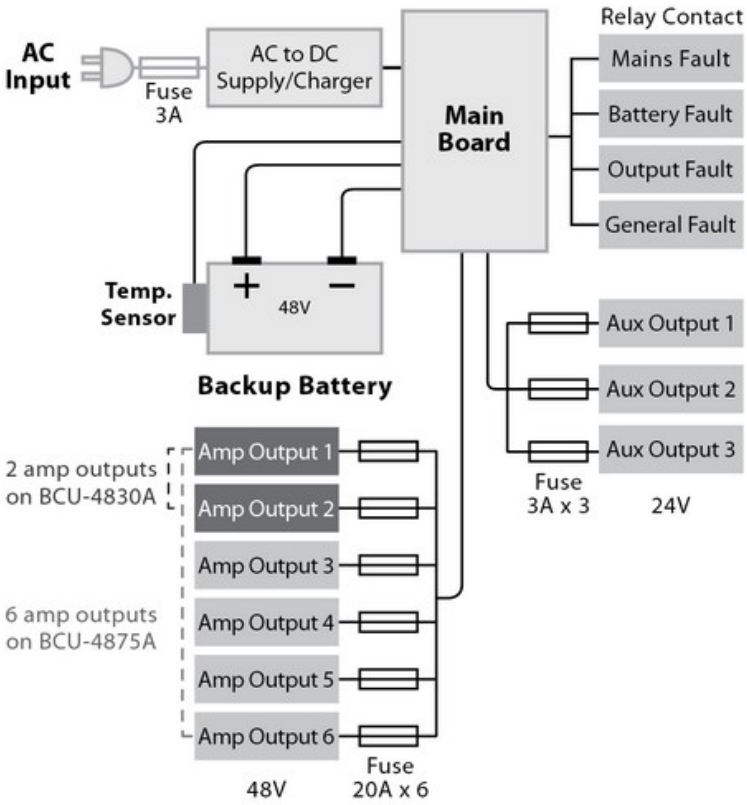
The outputs are protected by a fuse, see Technical Data chapter.

Model	Max. current (each port)	Max. current (total output)
BCU-4830A BCU-4875A	3A	8A

11. Mains power inlet:

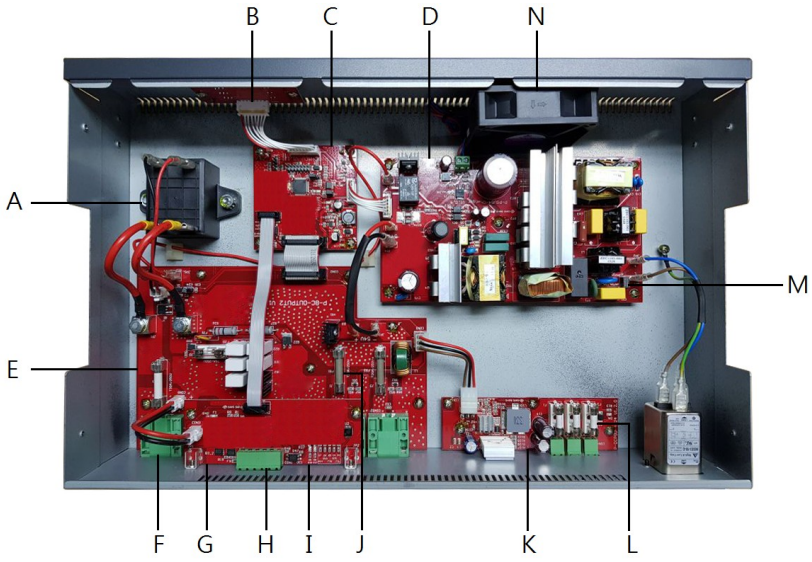
Connect the mains power to this power socket. The 48VDC and 24VDC output will use AC mains first, and switch to battery backup power if the AC mains is not present or the max. current load of power supply unit is not enough. To calculate the current of power supply (Imax a) which has left, see Battery charging for details.

2.3 Block diagram

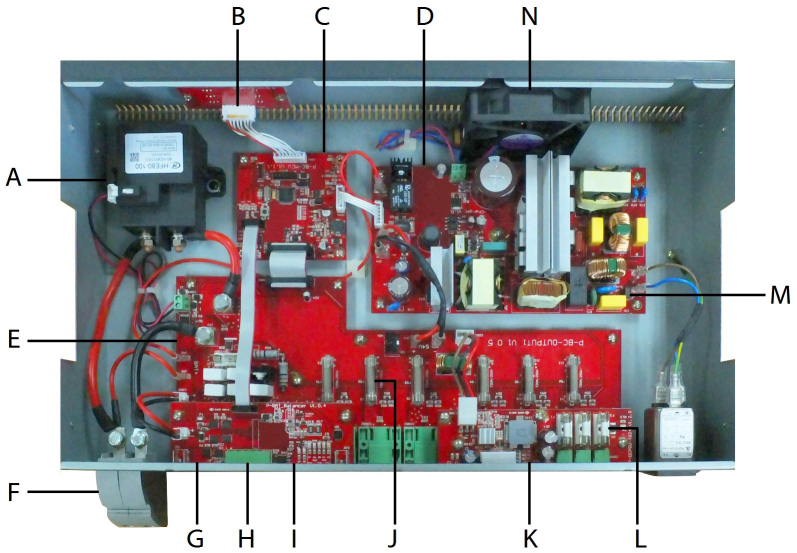


❖ Please go to Battery Balance chapter to know the wiring example of Battery Balance function.

2.4 Top view



BCU-4830A



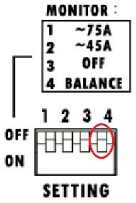
BCU-4875A

Indication	Description
A	Battery fuse breaker (60A for BCU-4830A) or (100A for BCU-4875A)
B	Status LEDs
C	MCU control board
D	Power charging board
E	Controller/power amplifier output board (48VDC)
F	Battery connection (+Batt and -Batt)
G	Temperature sensor (under the controller/power amp output board)
H	Battery balance terminal
I	Contact outputs: general, mains, battery and output (under the controller/power amp out board)
J	Main output fuses (2 x 20A for BCU-4830A) or (6 x 20A for BCU-4875A)
K	Auxiliary output board (24VDC)
L	Auxiliary output fuses (3 x 3A)
M	Mains fuse (3A for BCU-4830A and 5A for BCU-4875A)
N	Fan (BCU-4830A & BCU-4875A)

3 Hardware installation

See the following steps to do the hardware wiring of BCU-4830A/BCU-4875A.

1. Open the mains circuit-breaker before wiring.
2. Set the monitor DIP switch (refer to rear panel > monitor DIP switch setting).



3. Connect the temperature sensor (refer to connect the temperature sensor).
4. Connect the 24VDC/48VDC outputs on BCU-4830A/BCU-4875A to the 24VDC/48VDC Battery Input on PA devices and amplifiers (refer to connect to PA system).
5. Connect the batteries on BCU-4830A/BCU-4875A (refer to connect to batteries). If using the battery balance charging, please refer to battery balance charging.

When using the battery balance charging function, make sure the 4th monitored DIP switch is set "ON".

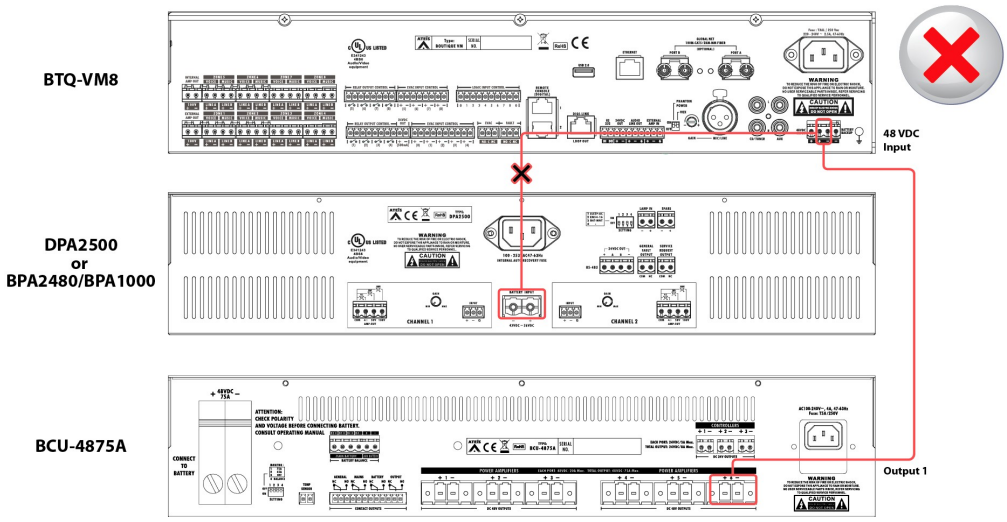
6. Connect the AC mains power to the power inlet of BCU-4830A/BCU-4875A.
7. After the electrical connections are made (mains, outputs and batteries), close the upstream mains circuit-breaker.
8. Check the loading of output voltage (refer to rear panel > 48VDC outputs & 24VDC outputs) and the LED indicators on front panel (refer to front panel).

3.1 Connect to PA system

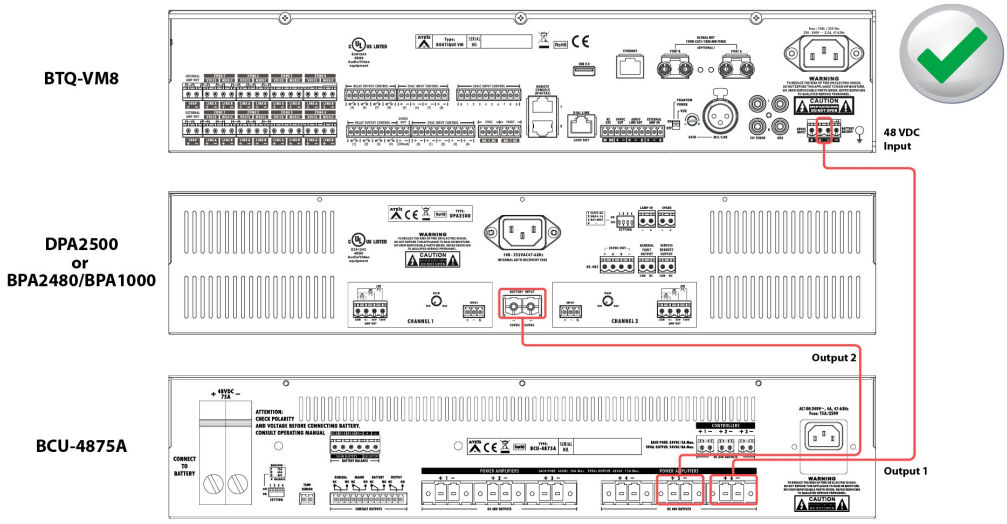
The BCU-4830A/BCU-4875A battery charger has two/six terminals (48VDC outputs) for connecting to PA devices and amplifiers.

⚠ For DC battery backup power sharing, DO NOT connect the BCU-4830A/BCU-4875A battery charger to PA/VA devices & amplifiers in paralleled, see [Picture 1] as below.

[Picture 2] is a wiring example using a BTQ-VM8 voice alarm controller and a DPA2500 power amplifier.



[Picture 1]



[Picture 2]

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

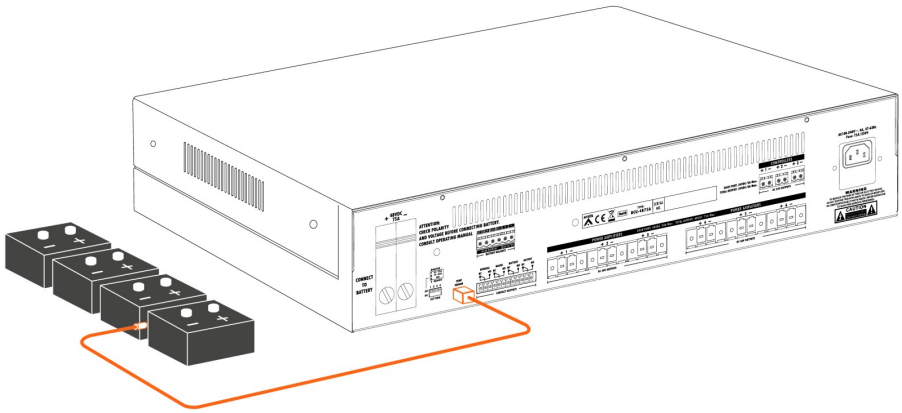
1. Connect the four 12VDC batteries to BCU-4830A/BCU-4875A battery charger.
2. Connect the 48VDC backup power input terminals of BTQ-VM4/8 or BPA/DPA to the 2 output terminals on BCU-4830A or the 6 output terminals on BCU-4875A.
3. Plug in the AC mains power of BTQ-VM4/8 and BPA/DPA.
4. Plug in the AC 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.

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.

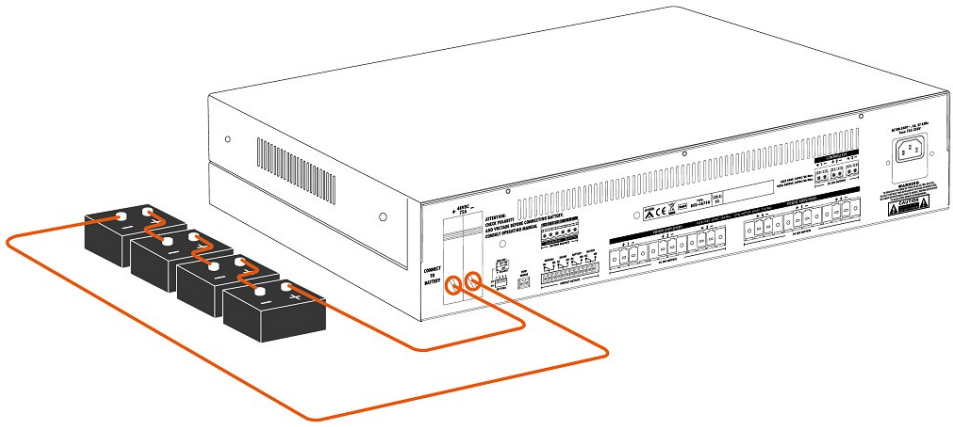
1. Plug the temperature sensor into the temperature sensor terminal on BCU-4830A/BCU-4875A battery charger.
2. Attach the sensor body close to the battery. E.g. connect the sensor to the battery tray, or place it between the batteries. See the picture below.



⚠ 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 battery charger will detect it as a battery fault.

3.3 Connect to batteries



When connecting to the batteries, please see the following notes:

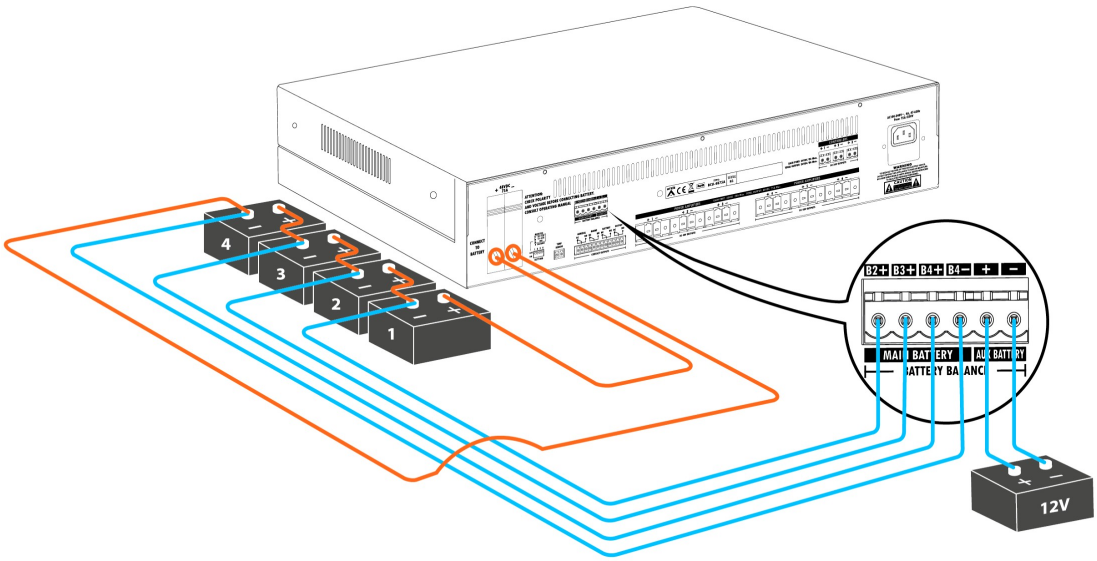
- Only use the four 12VDC batteries (48VDC total) in the same voltage, capacity, type, brand and age.
- Always connect the batteries in series. See the example of connecting the four batteries to BCU-4875A as the picture above.
- The BCU-4830A/BCU-4875A is equipped with a built-in battery breaker.
  - For BCU-4830A: the max. breaking current of the built-in battery breaker is 60A.
  - For BCU-4875A: the max breaking current of the built-in battery breaker is 100A.

- The battery charger has two screw terminals (+/-) for connecting to the battery.

1. Connect Terminal + to the + terminal of the battery.
2. Connect Terminal - to the - terminal of the battery, see the picture above.

3.4 Battery balance charging

The Battery Balance charging is able to maximize the capacity utilization of the battery cells and increase the longevity as well.



1. First, connect the four batteries to BCU-4830A/BCU-4875A.
2. Connect the B4-, B4+, B3+ and B2+ terminals (Battery Balance) to the 4 batteries, see the picture above.
   - Connect the first battery to B2 + terminal.
   - Connect the second battery to B3+ terminal.
   - Connect the third battery to B4+ terminal.
   - Connect the fourth battery to B4- terminal.
3. At last, connect an auxiliary battery to AUX Battery terminal, this battery will be used as an alternative storage cell to transfer charge to other battery.
4. If the voltage of the batteries are not in the range as below, the Balance Fault LED will light up in yellow.

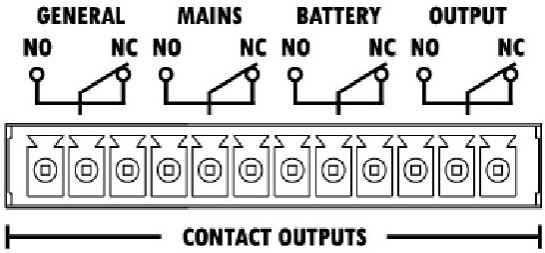
	1st battery	1st+2nd batteries	1st+2nd+3rd batteries	1st+2nd+3rd+4th batteries
Voltage	10V~14V	20V~28V	30V~42V	40V~56V

Battery Status LED	Battery Balance Fault LED	Description
yellow	yellow	The LEDs light up when the Battery Balance function is enabled, however, the four batteries is low voltage.
green	yellow	If the Balanced Fault LED continues to light up after the batteries are fully charged, please check which connected battery is under voltage (<10V).

3.5 Connect the contact outputs

The battery charger has three-pole DPDT switch (NO-NC), allowing 1.25A @ 30VDC for remote monitoring.

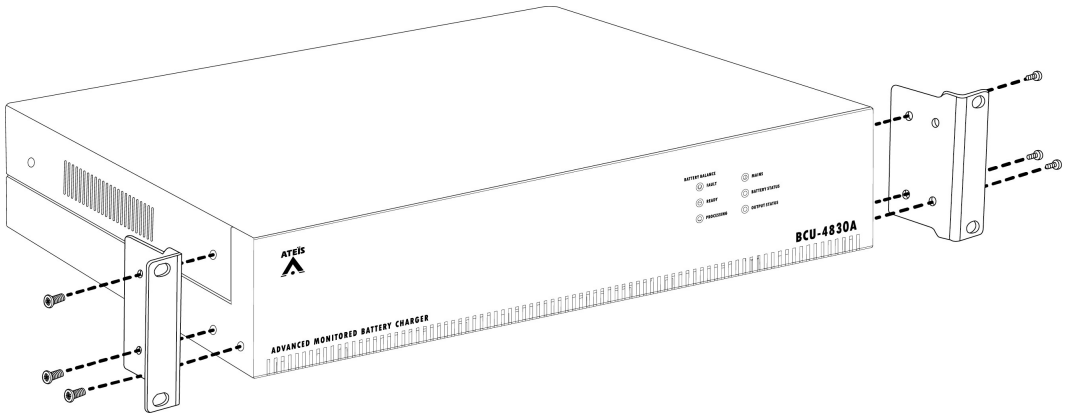
Each output has three terminals: Normally Open (NO) and Normally Closed (NC). Connection is done via euro-block terminal connector.



Contact Outputs	Mains/Battery/Output LED				General Fault LED			
	Green		Yellow		Green		Yellow	
Mains	NO (open)	NC (close)	NO (close)	NC (open)	-	-	-	-
Battery	NO (open)	NC (close)	NO (close)	NC (open)	-	-	-	-
Output	NO (open)	NC (close)	NO (close)	NC (open)	-	-	-	-
General	-	-	-	-	NO (open)	NC (close)	NO (close)	NC (open)

3.6 BCU-4830A/4875A mounting

The BCU-4830A/4875A are suitable for 19-inch 2U rack-mounting installation.
Attach the two rack-ears to the BCU unit using the four supplied screws.
And, consider leaving enough ventilation space above and below the unit.



4 Resistance measurement

The BCU-4830A/BCU-4875A 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

If the measured resistance is greater than the threshold (Ri) as the table below, a fault will be generated.

Model		Mode 1 (DIP switch-1)	Mode 2 (DIP switch-2)
BCU-4830A	Battery capacity	15Ah to 55Ah	10Ah to 55Ah
	Threshold (Ri)	133 mΩ	200 mΩ
BCU-4875A	Battery capacity	43Ah to 120Ah	26Ah to 120Ah
	Threshold (Ri)	53 mΩ	88 mΩ

To avoid initiating this fault, please note the following:

1. Use recommended batteries.
2. The resistance varies with the diameter and the cross-sectional area of cables, see the following table.

- Use 10~24 AWG for the battery wire size on BCU-4830A, and use 2~10 AWG on BCU-4875A.

AWG	Diameter (mm)	Cross-sectional Area (mm^2)	Resistance (mΩ/m)
1	7.348	42.4	0.4066
2	6.544	33.6	0.5127
3	5.827	26.7	0.6465
4	5.189	21.2	0.8152
5	4.621	16.8	1.028
6	4.115	13.3	1.296
7	3.665	10.5	1.634
8	3.264	8.37	2.061
9	2.906	6.63	2.599
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

- Example: For battery cables (+ and -) 2 meter in length and with a cross-section of 10.5 mm², the resistance is 6.536 mΩ (1.634 x 2 x 2 = 6.536 mΩ).
- Please do the cable wiring as low resistance as possible.

5 Battery charging

- Normal charging mode: The BCU-4830A/BCU-4875A (re)charges the batteries and maintains them when they are fully charged. The maximum current that can be provided to the user outputs is Imax a.
- Back-up operating mode: If the mains power is not present, the system will turn on the back-up operating mode. The total operating current is provided by the batteries and may not exceed 'Imax b'.

BCU-4830A	
Imax a	The maximum available current which may be drawn continuously while charging the battery: • Imax a = 3A – Icharge • Icharge = C/20 (C = battery capacity)
Imax b	The maximum available output current which may be drawn a short time, during which the battery may not be charged, but not discharged. • Imax b (mains present): 3A The maximum available output current which may be drawn from the batteries when the mains supply is not available. • Imax b (mains not present): 30A (Mode 1/DIP Switch-1: ON, DIP Switch-2: OFF). • Imax b (mains not present): 20A (Mode 2/DIP Switch-1: OFF, DIP Switch-2: ON).

For BCU-4830A, please use batteries with a capacity of 10Ah to 55Ah.

BCU-4875A	
Imax a	The maximum available current which may be drawn continuously while charging the battery: • Imax a = 6A – Icharge • Icharge = C/20 (C = battery capacity)
Imax b	The maximum available output current which may be drawn a short time, during which the battery may not be charged, but not discharged. • Imax b (mains present): 6A The maximum available output current which may be drawn from the batteries when the mains supply is not available. • Imax b (mains not present): 75A (Mode 1/DIP Switch-1: ON, DIP Switch-2: OFF). • Imax b (mains not present): 45A (Mode 2/DIP Switch-1: OFF, DIP Switch-2: ON).

For BCU-4875A, please use batteries with a capacity of 26Ah to 120Ah.

6 Battery test

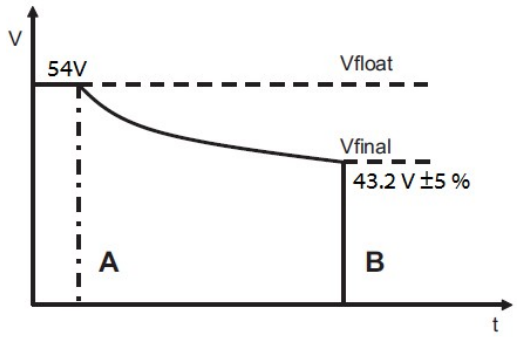
To make sure the batteries are working properly, the battery charger will test the batteries by using the following methods:

- In normal condition, the battery charger will test the batteries every 3 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 5 seconds until the fault is resolved. Then the test will return to normal condition.

If the mains power is present and the output current is <3A (BCU-4830A) / <6A (BCU-4875A), the impedance is measured every 4 hours. Please see Resistance Measurement for details.

7 Battery undervoltage protection

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



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

A	The mains power of BCU-4830A/BCU-4875A is off.
B	Undervoltage Protection active: the battery breaker is cutoff and all outputs are shut down.

8 Maintenance

❖ Cleaning

 Make sure to unplug the main power supply of battery charger 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 battery charger.

If any loose parts rattle around on the inside when the battery charger is turned over in all directions, please shut down the battery charger immediately, as a loose part could lodge in a dangerous place and cause further damage or shock hazard.

❖ Require service

If the battery charger isn't working properly, please diagnose the problem from Troubleshooting.

If proper operation cannot be restored, the battery charger 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.

9 Troubleshooting

Problem	Troubleshooting
When the AC mains power is connected, the BCU-4830A/ BCU-4875A doesn't power on (Mains LED lights off).	Check the following items: 1. Firstly, disconnect the power cord of BCU-4830A/BCU-4875A. 2. Check if the mains voltage is under the normal range (100~240 VAC). 3. Use multimeter to check whether the fuse of the AC power is blown or not, see the following steps as below, 1) Set a multimeter (Figure 1) to Ω (Ohms) setting, then perform a quick test of multimeter by touching the leads of fuse together until you see <1 ohm. In normal condition, if the reading of impedance measurement on multimeter is <1 ohm, it means the fuse is still good. A higher reading indicates a bad or degraded fuse. If the multimeter reads OL (Over Limit), then the fuse is blown. 2) If the fuse is blown, please replace a fuse with an identical type. Do not use larger capacity of fuse than the original fuse for substitute, this may result in circuit failure.
The 48VDC main output/ 24VDC aux output can't provide power to any PA/VA controller or power amplifier.	Check the following items: 1. Firstly, disconnect the power cord of BCU-4830A/BCU-4875A. 2. Use multimeter to check whether the fuse of the DC power is blown or not, see the following steps as below, 1) Set a multimeter (Figure 1) to Ω (Ohms) setting, then perform a quick test of multimeter by touching the leads of fuse together until you see <1 ohm. In normal condition, if the reading of impedance measurement on multimeter is <1 ohm, it means the fuse is still good. A higher reading indicates a bad or degraded fuse. If the multimeter reads OL (Over Limit), then the fuse is blown. 2) If the fuse is blown, please replace a fuse with an identical type. Do not use larger capacity of fuse than the original fuse for substitute, this may result in circuit failure.
No back-up power when battery charger is connected.	Check if the battery voltage is under the normal range (<40VDC and > 60VDC).
Mains LED remains yellow.	Check if the voltage threshold is <65 VAC ±5% (auto reconnect at >75 VAC ±5%).
Battery Status LED remains yellow.	Check the following items: 1. The batteries are not connected to battery charger. 2. The temperature of the batteries is too high (> 65°C). 3. The temperature sensor is not connected. 4. The mains power is present and the battery voltage is normally operated in Vbat (voltage of the battery) ≤ 43.2 VDC, Vbat ≥ 60 VDC (±3%), but the battery breaker is cutoff. 5. The polarity of battery connection (+/- terminals) is connected reversely. 6. The impedance of battery is too high or the resistance of cable wiring is too high (eg. the cable is too long), see Resistance Measurement for details.
Output status LED remains yellow.	Check the following items: 1. The 48VDC power output is overloaded. 2. The 24VDC power output is overloaded.
Balance fault LED remains	Check the following items:

Problem	Troubleshooting
yellow.	1. The batteries are connected to 48VDC battery terminal, but the MAIN-BATTERY terminals on Battery Balance are not. 2. The auxiliary battery does not connect to the aux battery terminal. 3. The battery voltage is under-voltage (<40VDC) and over-voltage (> 60VDC) during the Balance Battery operation. 4. If this LED continues to light up after the batteries are fully charged within 24 hours, check which connected battery is under voltage (<10V).

10 Technical data

- Electrical

AC power input:	Voltage: 100~240 VAC, ±10%, 50/60 Hz
Power consumption (AC):	• Full power: ○ BCU-4830A: 220W ○ BCU-4875A: 410W • Standby mode: ○ BCU-4830A: 5W ○ BCU-4875A: 8W
Power consumption (discharging):	• Full power: ○ BCU-4830A: 1440W ○ BCU-4875A: 3600W • Standby mode: ○ BCU-4830A: 4W ○ BCU-4875A: 6.5W
Charging:	Voltage: 48 VDC
	• Maximum charging current: ○ BCU-4830A: 3A ○ BCU-4875A: 6A

- Max. output current

	48V (per unit)	48V (per output)	24V (per unit)	24V (per output)
BCU-4830A:	30A	20A	8A	3A
BCU-4875A:	75A	20A	8A	3A

*Note 48V voltage range:43V~56V / 24V voltage range:21V~29V

- Battery

Capacity (4 x 12VDC):	• BCU-4830A: 10Ah to 55Ah ○ DIP-1: 15Ah to 55Ah ○ DIP-2: 10Ah to 55Ah
	• BCU-4875A: 26Ah to 120Ah ○ DIP-1: 43Ah to 120Ah ○ DIP-2: 26Ah to 120Ah
Recommended brands:	Yuasa NPL Series, Power-Sonic GB Series, ABT TM Series, EnerSys VE Series, E ekta BTL Series, Long GB Series

- Fuse

Model	AC input	Power amp output	AUX output
BCU-4830A	3A	20A	3A
BCU-4875A	5A	20A	3A

- Mechanical

Dimensions (W x H x D):	• BCU-4830A/BCU-4875A: 437 x 88 x 270 mm (17.2 x 3.5 x 10.6 inch)
Weight:	• BCU-4830A: 5.5 kg (12.1 lbs) • BCU-4875A: 6 kg (13 lbs)
Mounting:	• 19" 2U rack
Color:	RAL 7016

- Environmental

Operating temperature:	-5ºC ~ +55ºC (+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:	• BCU-4830A: 102 BTU/hr • BCU-4875A: 205 BTU/hr

11 Standard and certification

The products or the system is approved pending and complied to the following.

Europe	Voice Alarm	EN54-4
USA	Mass Notification Systems	UL2572
USA	Safety	UL60065
Europe	CE/EMI	EN55032:2015/AC:2016 Class A
Europe	CE/EMS	EN61000-4-2 (ESD)
Europe	CE/LVD	EN60065:2014

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