SENATOR™

Fully Digital & Networked
Conference, Meeting and Presentation
DSP System

AS A LEADING COMPANY IN THE DEVELOPMENT AND MANUFACTURING OF AUDIO / VIDEO SOLUTIONS FOR PROFESSIONAL AUDIO AND CONFERENCING MARKETS, XAVTEL HAS OVER 10 BRANCH OFFICES AND MORE THAN 40 REPRESENTATIVES AROUND THE WORLD

Leveraging its expertise in development and manufacturing high-end audio products. Xavtel also offers a line of highly reliable conference speakerphones. Xavtel's proprietary extreme fast Acoustic Echo Cancellation algorithm achieves excellent conferencing audio quality and voice clarity.

Xavtel is constantly expanding its organization, portfolio and geographical presence to achieve "best in class" technology, delivery, and customer support.

At Xavtel innovation never stops. Our mission is to constantly develop innovative products that improve on what is currently in the market place and delight installer and end-user alike.

DEVELOPMENT

Building on 30 years' experience in the development and manufacturing of electronics for the audio industry and with a development team with massive dedicated and highly experienced engineers, Xavtel operates state of the art R&D and manufacturing facilities in USA, Europe and Asia. We are able to respond rapidly to the demands of our various vertical markets with specific solutions, creativive innovation and advanced technology. You can rest assured that our technology is always cutting-edge with a view to the future.

Xavtel®
PAX ProAV Group

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PRODUCTS AND SERVICES

Xavtel excels in true integration of audio/video: pro audio, AV DSP and conferencing. We put a premium on quality, innovation and functionality in everything as a highly integrated system.

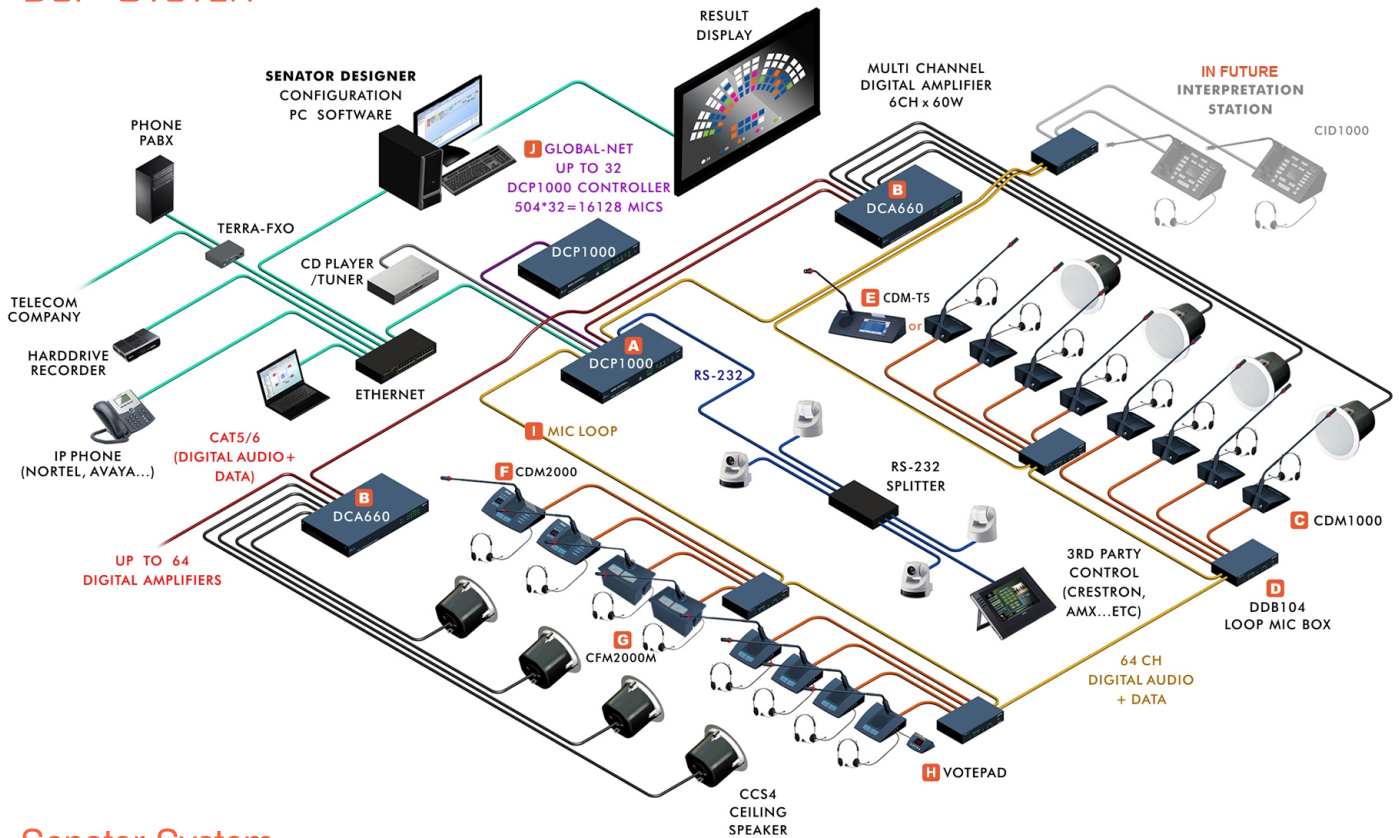## XAVTEL CONFERENCE SYSTEM MARKETS

- Office Environment
- Education Institution
- Conference Rooms with Simultaneous Interpretation
- University and campus applications

...or any other project which requires a secure, high fidelity integrated conferencing system.

SENATOR™

Fully Digital & Networked Conference, Meeting and Presentation DSP System

Diagram labels:
- RESULT DISPLAY
- SENATOR DESIGNER CONFIGURATION PC SOFTWARE
- MULTI CHANNEL DIGITAL AMPLIFIER 6CH x 60W
- IN FUTURE INTERPRETATION STATION
- CID1000
- PHONE PABX
- J GLOBAL-NET UP TO 32 DCP1000 CONTROLLER 504*32=16128 MICS
- TERRA-FXO
- CD PLAYER /TUNER
- DCP1000
- DCA660 B
- TELECOM COMPANY
- HARDDRIVE RECORDER
- ETHERNET
- E CDM-T5 or
- A DCP1000
- RS-232
- IP PHONE (NORTEL, AVAYA…)
- CAT5/6 (DIGITAL AUDIO+ DATA)
- I MIC LOOP
- F CDM2000
- RS-232 SPLITTER
- C CDM1000
- B DCA660
- UP TO 64 DIGITAL AMPLIFIERS
- 3RD PARTY CONTROL (CRESTRON, AMX…ETC)
- D DDB104 LOOP MIC BOX
- G CFM2000M
- 64 CH DIGITAL AUDIO + DATA
- H VOTEPAD
- CCS4 CEILING SPEAKER

Senator System

The Senator System is a fully integrated, digital and networked conference system. Using a single DCP1000 processor, it is capable to connect up to 504 pcs. of the CDM delegate units and up to 64 pcs. of DCA660 digital amplifiers. An entire system can be expanded up to 32 processors via a 64 Ch digital audio network. To highest audio quality, each microphone can be individually processed with functions such as: Automatic Gain Control (AGC), 8 Band PEQ, Voice Activated Gate, Hi/Lo Pass Filter, Feedback Suppressor, Gain-Sharing Auto Mixer. The Senator System also incorporates our "industry first" self adjusting "**Mix-Minus Auto Calibration**" feature, which will automatically calibrate the system after installation, to the perfect "gain before feedback" setting for the room. This feature also includes measuring the room acoustics of each and every room! Due to the fact that the installation and tweaking of the system is as easy as turning on the radio and auto-searching a radio-station. The Senator system supports up to 8 microphones to be activated at same time (Maximum NOM = 8 Channels). The DCP1000 processor also contains independent Stereo Line In/Out channels and a separated Mic In/Out on XLR connectors, which allows to adapt to various applications such as Conference, Lecture or Presentation. The DCP1000 uses two redundant Audio-Network Loops (CDM-Net-Loop) to deal with unexpected cable disconnection. These loops will be connected via the CDM-Net-Loop Cards, which will be available with either CAT cable connection or fibre optics connection. External accessories provide Recording, Voting, Delegate Sign-In, etc. Xavtel's optional **AEC-Card** module which uses the brand new developed **RAPIDO™** AEC algorithm, will simply be placed on the main board of the DCP1000 processor and allow for easy integration of Acoustic Echo Cancellation (AEC) without the need for an external DSP processor !

This is a true "industry first" and a real innovation, which helps installing and setting up the system in a really short time! It will also enable VoIP functions for full duplex remote conferencing in high quality via various audio codecs. The "Senator Designer"software suite can be used on a PC or Laptop that connects via Ethernet (CAT5 cable) to the processor and enables the technician to easily program and setup the Senator System, or change all available DSP settings. To quickly engage the Senator System for a meeting or discussion, it provides 6 types of predefined conference modes: FIFS 'first in first serve', FIFO 'first in first out', PTT 'push to talk', PRIORITY 'priority per delegate', RQ 'delegates request' and CHAIRMAN for a 'chairman mode'.

Meeting and Conferencing has never been easier and faster!

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A DCP1000
DIGITAL CONGRESS PROCESSOR

- 8 microphone audio channels simultaneously or 4 microphone audio channels with AEC.
- 46 interpretation audio channels.
- 2 redundant loops.
- Characteristic voice activated gate, filters, AGC, PEQ, AEC & mix minus, etc.

B DCA660
DIGITAL CONGRESS AMPLIFIER

- 6 channels, each channel is 60W.
- Connect up to 64 units per processor.

C CDM1000
CONGRESS DIGITAL MICBASE - TABLETOP

- 3-pin XLR connector supports third party microphones.
- Including speaker, function-oriented & talk buttons with LEDs.

D DDB104
DIGITAL DELEGATE MIC JUNCTION BOX

- 4 devices are able to be handled.
- The connection between each DDB104 from DCP1000 processor is a redundant loop.

E CDM-T5
CONGRESS DIGITAL MICBASE-5" TOUCH TFT LCD

- Compact delegate or chairman microphone.
- Including a speaker, a 5" LCD touch screen, a RFID reader and voting buttons.

F CDM2000
CONGRESS DIGITAL MICBASE - TABLETOP

- 3-pin XLR connector supports third party microphones.
- Including a speaker, a RFID card reader and voting buttons.

G CFM2000M
CONGRESS FLUSHMOUNT MICBASE

- 3-pin XLR connector supports third party microphone.
- 2 buttons with LED for talking and function-oriented.

H VOTEPAD (AT/DR)
VOTEPAD (ATTACHED/DIRECT)

- Include a RFID card reader, 5 voting buttons and a LCD screen.
- Votepad AT connects to CDM1000; Votepad DR connects to DDB104.

I MICROPHONE LOOP (CDM-Net-Loop)

One DCP1000 can handle up to 2 CDM-Net redundant loops. Each loop can connect up to 63 DDB104 boxes; each DDB104 can connect 4 microphones. That is to say, a single DCP1000 processor supports 504 microphones in total.

J Global-Net (DCP-Net-Loop)

With proprietary DCP-Net redundant loop, Senator offers high-security network and provides either CAT5/6 or fiber optical connections with distances up to 330ft (100m) and 6.6ft~ 66Kft (2km~20km) in between DCP1000 processors.

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Sophisticated Congress System

- One DCP1000 processor is able to connect with 63 DDB104 microphone junction boxes, 64 DCA660 amplifiers and 504 microphones.
- The "Senator Designer" software provides flexible DSP settings and intuitive GUI to easily setup the system.
- The DCP1000 offers multiple interfaces: USB2.0 connector, XLR Mic In/Out, RCA line in/out, RS485, RS232.
- 46 simultaneous interpretation channels without external IR system (in future).
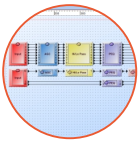
Breathtaking DSP Functions

- Each delegate units parameters can be individually adjusted, such as Voice Gate, PEQ, AGC, Feedback Suppressor (FBX), Hi/Lo Pass Filters, etc.
- Xavtel's high-speed network "CDM-Net-Loop" allows the setting for each microphone to be stored individually, and perform the recall of them only when the microphone is activated.
- An advanced 'Voice Activated Gate' enables the microphones to only turn on while human voice is detected. No other "noise" will turn on the mics' gate.
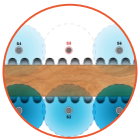
Mix-Minus Auto Calibration

- Avoids feedback in the room, by setting the right "gain before feedback" for every room.
- This proprietary technology makes the setup and sound adjustments all on its own!
- Avoids feedback and reverberation in the room.
- Each microphone or parameter setting can always be individually and manually adjusted after the "Auto-Calibration" process.

Acoustic Echo Cancellation and VoIP functions

(AEC Module incl. RAPIDO™ algorithm)

- With the optional AEC-Card (Acoustic Echo Cancellation) which includes our latest technology, the RAPIDO™ AEC algorithm, the Senator System will work independently of any external AEC DSP device, and support VoIP functions for remote conferencing. (SIP3 protocol)
- The ultra-fast converging RAPIDO ™ AEC algorithm can handle up to 353ms of tail length for up to 4 mics (CDM delegate units) simultaneously! (Max. NOM = 4)
- There are four ways to have remote conferencing with a Senator system using the AEC-Card:
  (1) Another Senator System
  (2) SIP IP phones (VoIP)
  (3) Analog phone line (via Terra-FXO)
  (4) TERRACOM devices

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Network Redundancy

Senator system has two redundant loops wiring to deal with unexpected cable disconnection and make it continually functional.

- CDM-Net loop: The connection between DDB104 microphone junction boxes to DCP1000 processor.
- DCP-Net loop: The connection between DCP1000 processors.

See pictures below, it takes CDM-Net loop for example:

Even the connection between DCP1000 processor and DDB104 boxes or between DDB104 boxes is disconnecting, the rest CDM-Net loop is functional.
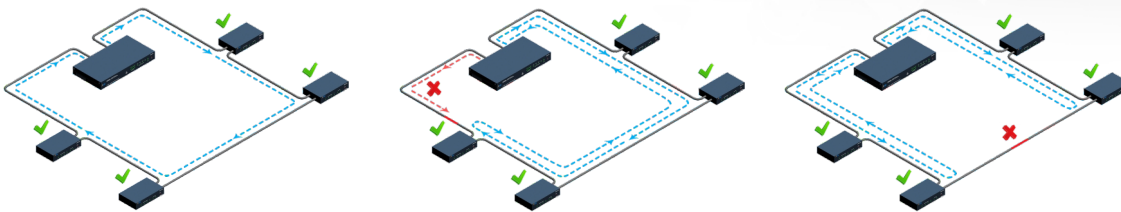
More Functions & Accessories

- Interactive speed dome cameras can be connected to the DCP1000 via RS232, RS485, or the Ethernet port. The Senator System supports 3 different types of protocols including: PELCO-D, PELCO-P and VISCA.
- Two optional Votepads which is VotePad AT (Attached to CDM1000) and VotePad DR (Directly connected to DDB104). Both provides voting and sign-in functions to the Senator System. They will also display the results of the Voting.
- A USB 2.0 port located at the front of the DCP1000 allows for either Recording or Message playback using a USB flash drive with up to 256GB capacity.

FULLY DIGITAL & NETWORKED
CONFERENCE, MEETING AND PRESENTATION
DSP SYSTEM

DCP1000
Digital Congress Processor

The DCP1000 Digital Congress Processor is the central controller of the Senator System. One processor has 2 CDM-Net-Loop card slots: One card is on board and a second optional card can be integrated to expand the system having 2 redundant loops for up to 504 microphones. Using the MDA digital link between the DCP1000 and the DCA660 amplifier, DCA660 can cascade up to 64 pcs. via CAT5/6 cable. Besides, the processor has multiple interfaces for recording, an external microphone and loudspeakers, interactive speed dome cameras, etc. In addition, the processor integrates DSP functions such as Voice Gate, AEC, PEQ, AGC, FBX and Mix-Minus auto calibration. Each of them can be adjusted, stored and processed individually for each microphone. With Xavtel's optional AEC-Card using our ultra-fast RAPIDO™ AEC algorithm, the Senator system will be prepared to be used for remote conferencing with the VoIP SIP3 protocol. Installing the AEC-Card into the DCP1000 will allow Senator system to have 4 mic channels of AEC simultaneously (max. NOM = 4) which is absolutely perfect for each type of Tele/Video Conference.

Features

- Loop wired architecture with star wired benefits.
- Connects up to 504 delegate units and 64 DCA660 amplifiers.
- Up to 32 DCP1000 can be connected in a redundant loop.
- All DSP processing functions are adjustable for each microphone.
- DSP functions include: PEQ, AGC, AEC, FBX, Gain Sharing Auto Mixer, Mix-Minus auto calibration, etc.
- Optional AEC-Card available using the ultra-fast RAPIDO™ AEC Algorithm and enabeling the integrated VoIP functions. (SIP3)
- Multiple interfaces on board, such as USB 2.0, RCA In/Out and XLR input/output for recording, external speakers and an external mics.
- RS485 and RS232 for third party control and/or interactive speed dome cameras. (PELCO-P, PELCO-D and VISCA protocols)
- 46 simultaneous translation channels available. (no IR system required)

Electrical
- Mains power: 100~240VAC±10%, 50/60Hz
- Power consumption: 12watts
- Maximum supply: 130W for DDB104 boxes and microphones.
- Frequency response: 20Hz~20KHz @ -1dB
- THD+N: <0.05% (1KHz @ 0dBu)

Certifications
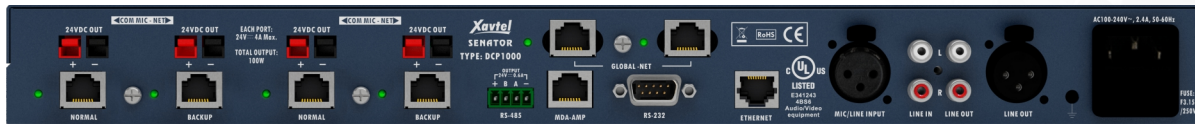CE marked, UL listed, RoHs nt.

Audio Charateristic
- Sample rate: 48Hz
- A/D-D/A converts: 24bit

Dimension & Wight
- Width: 19" (482mm)
- Height: 8.25" (210mm)
- Depth: 1.75" (44mm)
- Wight: 5.5lbs (2.5Kg)

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Front Panel

- USB 2.0 connector.
- Power LED.
- REC LED.
- Eight activated mic channel LED.
- 5 types of LED indicator about network: network LED, mic-link LED, ethernet LED, MDA LED, and input LED.

Rear Panel

- CAT5/6 or fiber optic connector for CDM-Net loop x2.
- RS485 and RS232 connector for third party control.
- CAT5/6 connector for DCA660 amplifiers.
- RJ45 connector for ethernet.
- XLR connector for mic input and line output.
- RCA connector for line input and line output.
- AC power connector with 5A fuse.

Ordering Information

The 7 available DCP-Net-Loop Cards for the DCP1000 to connect other DCP1000s (see Local Net Card at P.16):
CAT/CAT, CAT/FO S, CAT/FO M, FO/FO S, FO/FO M, FO M/CAT, FO S/CAT

The 14 available CDM-Net-Loop Cards (2 loops) for the DCP1000 to connect the DDB104:

- DCP1000: DCP1000 without Net-Loop-Card
- DCP1000L1: DCP1000 (1XCDM Net-Loop--Card CAT/CAT)
- DCP1000L2: DCP1000 (1XCDM Net-Loop--Card CAT/FO Multi Mode)
- DCP1000L2S: DCP1000 (1XCDM Net-Loop–Card CAT/FO Single Mode)
- DCP1000L3: DCP1000 (1XCDM Net-Loop--Card FO/FO Multi Mode)
- DCP1000L3S: DCP1000 (1XCDM Net-Loop–Card FO/FO Single Mode)
- DCP1000L4: DCP1000 (1XCDM Net-Loop--Card FO Multi Mode/CAT)
- DCP1000L4S: DCP1000 (1XCDM Net-Loop–Card FO Single Mode/CAT)
- DCP10002L1: DCP1000 (2XCDM Net-Loop--Card CAT/CAT)
- DCP10002L2: DCP1000 (2XCDM Net-Loop--Card CAT/FO Multi Mode)
- DCP10002L2S: DCP1000 (2XCDM Net-Loop–Card CAT/FO Single Mode)
- DCP10002L3: DCP1000 (2XCDM Net-Loop--Card FO/FO Multi Mode)
- DCP10002L3S: DCP1000 (2XCDM Net-Loop–Card FO/FO Single Mode)
- DCP10002L4: DCP1000 (2XCDM Net-Loop--Card FO Multi Mode/CAT)
- DCP10002L4S: DCP1000 (2XCDM Net-Loop–Card FO Single Mode/CAT)

DCA660
Digital Congress Amplifier

Up to 64 DCA660 digital amplifiers can be connected to a single DCP1000 with CAT5/6 cable via the MDA digital link (max. cable length is 330feet). Each DCA660 contains its own AC power supply and offers 60W amplification per each of its 6 Channels on a 4 Ohm load. It also has the ability to detect overloading or overheating and will protect the device against all potential hazards. Besides, the overload or overheat LEDs will be lighted up when any failure occurs. The DCA660 only works in conjunction with the DCP1000, to allow the auto calibration of the Mix-Minus feature to be performed. This unique function will maximize the volume before feedback, and users can easily setup and adjust it via intuitive Senator Designer software on PC, which connects to the Senator System.

Features

- Up to 64 DCA660 amplifiers can be connected to a single DCP1000 processor.
- RJ45 connectors for digital link to processor and further to other DCA660s.
- 6 output channels for loudspeakers on Phoenix connectors
- Individual DSP functions for each channel such as PEQ, Gain Sharing Auto Mixer and Mix-Minus auto calibration.
- One 'click' to setup the Mix-Minus auto calibration on the Senator Designer software suite.
- LED signal to show that channels are overheating or other potential hazards.

Electrical
- Mains power: 100~240VAC±10%, 50/60Hz
- Nominal output power: 60W x 6 channels
- Power consumption: 500W
- Maximum supply: 500W
- Frequency response: 20Hz~20KHz @ -3dB
- THD+N: 0.2% (20Hz~20KHz @ -3dBu)

Front Panel
- Amp channel LED for status x 6.
- Amp channel LED for signal x 6.
- Power LED and digilink LED.

Rear Panel
- 2 RJ45 connectors for MDA network.
- Device ID for DCA660 identification.
- 6 Euroblock connectors for loudspeakers.
- AC power connector with 5A fuse.

Dimension & Wight
- Width: 19" (482mm)
- Height: 10.2" (260mm)
- Depth: 1.75" (44mm)
- Wight: 7.7lbs (3.5Kg)

Maximum Connection length
328 ft (100m) for CAT5 cable

Certifications
CE marked, UL listed, RoHs compliant.

Ordering Information
DCA 660: DCA660 Digital Amplifier

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DDB104
Digital Delegate Mic Junction Box

DDB104 is the main network connection box between the DCP1000 digital congress processor and the CDM delegate units. It will be connected by using the CDM-Net-Loop cables. The cables can transport power, digital audio and data between CDM devices and the DCP1000. Due to the high-speed network, it allows to store all data of each delegate unit into the DCP1000 and recall the data at the moment the CDM unit is engaged. It saves a lot of processing power, but allows the System for unique DSP functions! To prevent unexpected cable disconnection, the DDB104 can communicate to one DCP1000 processor by 2 CDM-Net-Loop connections (Closed Ring). This makes the whole System completely redundant! Up to 63 DDB104 units can be connected to a single CDM-Net-Loop card. Each unit can handle 4 microphones or other devices such as VotePad DR. It has the LED indicator on the front panel to recognize faulty disconnection. There are 2 types of interfaces available for the DDB104: CAT5/6 or Fiber Optic connections.

Features
- 2 CDM-Net-Loops possible with one DCP1000 by using a second CDM-Net-Loop-Card.
- Connect up to 63 DDB104 units in one CDM-Net-Loop card.
- Supports additional devices such as Votepad DR.
- 4 XLR microphone connectors to connect CDM delegate units
- 2 types of connection interface for CDM-Net-Loop available: CAT5/6 or Fiber Optic (Single or Multi Mode).
- LED signal for indication of CDM-Net-Loop status.

Fiber optic   CAT5/6

Electrical
- Local power: 24VDC
- Power consumption: 230mA, 5.5W
- Maximum supply*: 6A

Front Panel
- Four activie mic channel LEDs.
- 2 Mic link LED for CDM-Net loop.
- A Power LED.

Side Panel
2 types of interface for CDM-Net:
- RJ45 connector + powerpole connector (24VDC)
- Fiber optic connector + powerpole connector (24VDC)

Rear Panel
- 24VDC, 3.81mm Euroblock connector for external power supply.
- 4 mini-XLR connectors for microphones.

*Normally, the power of DDB104 mic junction box is supplied by processor, but if large amounts of DDB104 boxes are connected, the external power supply will be necessary. However, the maximum current for CDM-Net is 6A.

Dimension & Wight
- Width: 3.6" (92mm)
- Height: 1.5" (37mm)
- Depth: 6.9" (175mm)
- Wight: 3.1lbs (1.4Kg)

Maximum Connection length
- 328 ft (100m) for CAT5 cable.
- 6561 ft (2000m) for fiber optic.

Certifications
CE marked, UL listed, RoHs compliant.

Ordering Information
7 different connection types of DDB104 which connects to the CDM-Net-Loop-Card(s) of the DCP1000:
- DDB104L1: DDB104 CAT/CAT
- DDB104L2: DDB104 CAT/FO Multi Mode
- DDB104L2S: DDB104 CAT/FO Single Mode
- DDB104L3: DDB104 FO/FO Multi Mode
- DDB104L3S: DDB104 FO/FO Single Mode
- DDB104L4: DDB104 Multi Mode/CAT
- DDB104L4S: DDB104 Single Mode/CAT

CDM1000
Congress Digital MicBase - Tabletop

Features

- Each CDM1000 can be assigned a role as: 'Chairman' or 'Delegate'.
- Connect Votepad AT to have voting function.
- Supports external microphone and headphone via 3.5 mm phone jacks.
- A 3-pin XLR connector for changeable Gooseneck microphones.
- Integrated AEC function
- A built-in loudspeaker
- All DSP functions and "name" can be stored and processed individually for each CDM1000 delegate unit.
- LED indicators to recognize the current status.

A single DCP1000 processor can handle up to 504 CDM1000 digital conference desktop microphone bases. The CDM1000 has standard 3-pin XLR connector for a gooseneck designed microphone. User can choose between tailor-made Gooseneck mics (see CGM Microphone at P.16) from Xavtel, providing an LED ring and a wind screen. Also a user preferred third party microphone can be used. This device consists of 2 buttons: one for talk, and one for functions, such as priority, speech request confirmation or interpretation (in future). Besides, the CDM1000 microphone features a built-in loudspeaker and 2 LED indicators on the front panel, which allows users to identify the current status. It has an integrated AEC function to avoid feedback from the built-in speaker to its microphone. Each microphone base can be adjusted and processed DSP individually via the Senator Designer Software. Located at the right side of the unit, you will also find a level Control for the internal speaker, a special 4 Pin mini jack connector to connect a Votepad AT, and 2 mini Jack connectors to connect a headphone and a external microphone.

Electrical
- Mains power: 24VDC
- Power consumption: 3.5watts @ max.
- Frequency response: 40kz~18kHz @ -2dB
- THD+N: <0.05%(40Hz~18KHz @ 0dBu)

Front Panel
- 2 buttons with LED, namely function-oriented and talk.
- 3-pin standard XLR connector for microphone.

Side Panel
- Volume control for built-in loudspeaker.
- A 3.5mm female phone jack/mic input.
- A 3.5mm female phone jack/headphone output.
- 4-pin, 3.5mm pad connector for accessories such as VotePad AT.

Rear Panel
5-pin XLR connector for connecting to DDB104.

Dimension & Wight
- Width: 5-1/2" (140mm)
- Height: 4-3/4" (120mm)
- Depth: 3" (78mm)
- Wight: 1.76lbs (0.8kg)

Certifications
CE marked, UL listed, RoHs compliant.

Ordering Information
CDM1000: CDM1000 w/o Mic

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CDM2000
Congress Digital MicBase - Tabletop

Features

- Each microphone can be assigned a role: 'Chairman' or 'Delegate'.
- Supports a external microphone and aheadphone via 3.5mm phone jacks.
- A 3-pin XLR connector for changeable Gooseneck microphones
- A RFID card reader for delegate sign-in.
- 5 buttons for voting and grading. (++|+|0|-|--)
- A built-in loudspeaker
- Integrated AEC function
- All DSP functions and ,name' can be stored and processed individually for eachCDM2000 delegate unit.
- LED indicators to recognize the current status.
- 2 digit LED display to see listening channel selection, Volume settings, Intercom channels
- "General" simultaneous interpreter functions (in future).

Up to 504 CDM2000 digital conference desktop microphone bases can be handled by a single DCP1000 processor. The CDM2000 includes a built-in loudspeaker and an RFID card reader for delegate sign-in.The user can choose between tailor-made Gooseneck mics (see CGM Microphones at P.16) from Xavtel, providing an LED ring and a wind screen. Also a user preferred third party microphone can be used. The CDM2000 device has also an integrated AEC function to avoid feedback from the built-in speaker to it's microphone. It has 2 main buttons for talking and functions, 5 buttons for voting or grading on the right hand side, and 4 buttons on the left hand side with an LED display to adjust the volume, or to select a translation listening channel (in future) or to select a private intercom channel (in future). The unit also includes 2 mini Jack connectors to connect a headphone or an external mic. This unit can also be used as a chairman/delegate unit or even as a small simultaneous interpreter desk (in future).

Electrical
- Mains power: 24VDC
- Power consumption: 3.5watts @ max.
- Frequency response: 40~18kHz @ -2dB
- THD+N: <0.05%(40Hz~18KHz @ 0dBu)

Dimension & Wight
- Width: 8" (205 mm)
- Height: 5.6" (142 mm)
- Depth: 2.2" (57 mm)
- Wight: 1.98 lbs (0.9 kg)

Certifications
CE marked, UL listed, RoHs compliant.

Ordering Information
CDM2000: CDM2000; RFID; Voting; Desktop w/o Mic

Front Panel
- 2 buttons with LED: function-oriented and talk.
- 3-pin standard XLR connector for microphone.
- 5 buttons for voting or grading.
- 2 buttons with LED indicator for selecting speaker mode, headphone mode, and intercom mode.
- 2 buttons for adjusting volume with LED display.
- RFID card reader for sign-in.

Side Panel
- 3.5mm female phone jack/mic input.
- 3.5mm female phone jack/headphone output.

Rear Panel
5-pin XLR connector for connecting to DDB104.

FULLY DIGITAL & NETWORKED
CONFERENCE, MEETING AND PRESENTATION
DSP SYSTEM

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CDM-T5
Congress Digital MicBase - 5" Touch TFT LCD

With a 5" LCD Touch Screen, the CDM-T5 digital conference desktop microphone base enables chairmans to easily manage a meeting or conference via the programmable Touch Screen for priority and delegate speech request, or to quickly change between the 6 conference modes. It also supports intercom function, VoIP phone call (Dialer), and many more functions. Besides, up to 504 CDM-T5 microphones can be handled by a single DCP1000 processor. It features a built-in loudspeaker, an RFID card reader for delegate sign-in, and a standard 3pin XLR connector. The user can choose between tailor-made Gooseneck mics (see CGM Microphones at P.16) from Xavtel, providing an LED ring and a wind screen. Also a user preferred third party microphone can be used. The device has integrated AEC to avoid feedback from built-in speaker to it's microphone. The latest version of the CDM-T5 will also contain a USB connection to handle easy to use skype™ for business' calls and use the Senator System as the AEC Sound system to cancel the Echo between the PC/Laptop connected and the loudspeakers in the room. The CDM-T5 is our flagship if a Conference System needs to be simply clever, but easy to use. With the CDM-T5 connected, there will be no need to have the Software running on an external PC! The whole system can be preprogrammed off site, and driven and controlled via the CDM-T5. Also the Mix-Minus auto calibration can be initiated via the CDM-T5!

Skype name and associated trade mark are trade marks of Skype and Xavtel is not affiliated, sponsored, authorised or otherwise associated by/with the Skype group of companies.

Features
- Each microphone can be assigned a role: 'Chairman' or 'Delegate'.
- Supports external microphone and headphone via 3.5mm phone jacks.
- A 3-pin XLR connector for changeable Gooseneck microphones.
- RFID card reader for delegate sign-in.
- 5 buttons for voting and grading. (++|+|0|-|--).
- A built-in loudspeaker.
- Integrated AEC function.
- All DSP functions and "name" can be stored and processed individually for each CDM2000 delegate unit.
- LED indicators to recognize the current status.
- 2 digit LED display to see listening channel selection, volume settings, intercom channels.
- "General" Simultaneous Interpreter functions (in future).

Electrical
- Mains power: 24VDC
- Power consumption: 3.5watts @ max.
- Frequency response: 40~18kHz @ -2dB
- THD+N: <0.05% (40Hz~18KHz @ 0dBu)

Front Panel
- 5" LCD touch screen.
- 3-pin standard XLR connector for microphone.
- 3 LED for recognizing status of microphone.
- RFID card reader for sign-in.

Side Panel
- 3.5mm female phone jack/mic input.
- 3.5mm female phone jack/headphone output.

Rear Panel
5-pin XLR connector for connecting to DDB104.

Dimension & Wight
- Width: 9.86" (284mm)
- Height: 5.5" (174mm)
- Depth: 3.14" (80mm)
- Wight: 2.42 lbs (1.1Kg)

Certifications
CE marked, UL listed, RoHs compliant.

Ordering Information
CDM-T5: CDM-T5; w/o Mic

SENATOR™

CFM2000 M/SP/VK
Congress FlushMount
-Microphone/Speaker/VoteKeypad


CFM2000M   CFM2000SP   CFM2000VK

The CFM2000 series are our flush-mount series of conference delegate units. To be able to really customize the use or application of a conference or presentation system, the 3 different CFM2000xunits can work as stand alone, or as a group of two or 3 units. The CFM2000M (MicBase) includes a standard 3-pin XLR connector to attach Xavtel's Gooseneck mics (see CGM Mics at P.16) or user preferred third party microphones. The 2 buttons with LED indicators for talking and functions. The CFM2000VK includes 5 buttons for voting (++|+|0|-|--)and an RFID card reader for delegate sign-in. The CFM2000SP includes a loudspeaker. The CFM2000 series provides flexible combination, such as one CFM2000M with a CFM2000SP and one CFM2000M with a CFM2000VK.

Votepad AT/DR
Vote pad Attached/Direct
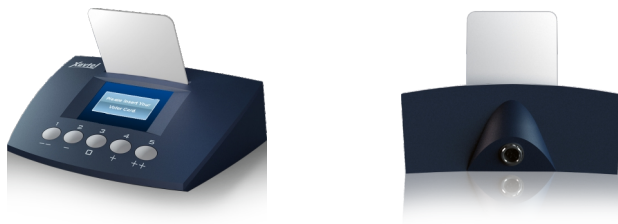
VotePad is a small tabletop voting console with 5 buttons for voting, RFID card reader for delegate sign-in, and an LCD screen for displaying the voting results in real-time. This device has 2 types of connections, depending on way it needs to be used with the Senator system. The **Votepad DR** has a mini 5-pin XLR connector to directly connect to the DDB104. The **Votepad AT** has a small Jack connector to attach it to the CDM1000.The **Votepad DR** will be your first choice if you need the Votepad to be decentralized in a different location then the CDM1000 mic base. The **Votepad AT** is made to use it directly next to the CDM1000 if voting is needed.

CFM2000M
- 2 buttons with LED: function-oriented and talk.
- A 3-pin standard XLR connector for microphone.
- Width: 3.93" (100mm)
- Height: 2.99" (76mm)
- Depth: 1.98" (50.5mm)
- Wight: 1.98lbs (0.9kg)

CFM2000SP
- A built-in speaker
- Width: 3.93" (100mm)
- Height: 2.67" (68mm)
- Depth: 1.98" (50.5mm)
- Wight: 1.98lbs (0.9kg)

CFM2000VK
- 5 buttons for voting and grading
- Width: 3.93" (100mm)
- Height: 2.95" (75mm)
- Depth: 1.98" (50.5mm)
- Wight: 1.98 lbs (0.9kg)

Certifications
CE marked, UL listed, RoHs compliant.

Ordering Information
- Congress FlushMount- Microphone (CFM2000M)
- Congress FlushMount- Speaker (CFM2000SP)
- Congress FlushMount- VoteKeypad (CFM2000VK)

Electrical
- Mains power: 24VDC
- Power consumption: 2.5watts @ normal

Front Panel
- 5 buttons for voting and grading.
- LCD screen for displaying voting result.
- RFID card reader for sign-in.

Votepad AT- Side Panel
3.5mm female phone jack for attaching to microphone.

Votepad DR- Rear Panel
Mini XLR connector for directly connecting to DDB104.

Dimension & Wight
- Width: 5.5" (140mm)
- Height: 4.75" (120mm)
- Depth: 3" (78mm)
- Wight: 1.76 lbs (0.8kg)

Certifications
CE marked, UL listed, RoHs compliant.

Ordering Information
- Votepad AT: Votepad AT (Connect to CDM1000)
- Votepad DR: Votepad DR (Connect to DDB104)

FULLY DIGITAL & NETWORKED
CONFERENCE, MEETING AND PRESENTATION
DSP SYSTEM

CGM Gooseneck Microphone

The CGM gooseneck microphone is a unbalanced microphone. It was designed to have a red LED indicator for recognizing the current status such as light up when the microphone activating, or blinking when waiting for activating. It has a foam windscreen to reduce wind noise and 'popping'. The microphone has 4 types of length for selection. The termination of microphone is 3-pin male XLR, suited for all Senator delegate units: CDM1000, CDM-T5, and CFM2000M, etc.

Microphone Type
Uni-directional electret condenser microphone.
Termination
3-pin male XLR.
Electrical
• Power requirement: 9~48V
• Frequency response: 50~18KHz
• Impedance: <130Ω
Length
3 types of Length: 40cm/48cm/60cm

Audio Characteristics
• Polar pattern: Cardioid
• Shaft diameter: 6mm
• Sensitivity: -47 (±4dBu) @ 1KHz (0dBu=1VPa)
• Maximum SPL: 128dBu
• Input dynamic range: 113dB
Ordering Information
• CGM-400L: CDM Gooseneck Mic 40cm
• CGM-480L: CDM Gooseneck Mic 48cm
• CGM-600L: CDM Gooseneck Mic 60cm

Local Net Card

Ordering Information (CDM-Net)
• CNET-L1: CDM Net-Loop-Card CAT/CAT
• CNET-L2: CDM Net-Loop-Card CAT/FO Multi Mode
• CNET-L2S: CDM Net-Loop-Card CAT/FO Single Mode
• CNET-L3: CDM Net-Loop-Card FO/FO Multi Mode
• CNET-L3S: CDM Net-Loop-Card FO/FO Single Mode
• CNET-L4: CDM Net-Loop-Card FO Multi Mode/CAT
• CNET-L4S: CDM Net-Loop-Card FO Single Mode/CAT
Ordering Information (DCP-Net)
• DNET-L1: DCP Net-Card CAT/CAT
• DNET-L2: DCP Net-Card CAT/FO Multi Mode
• DNET-L2S: DCP Net-Card CAT/FO Single Mode
• DNET-L3: DCP Net-Card FO/FO Multi Mode
• DNET-L3S: DCP Net-Card FO/FO Single Mode
• DNET-L4: DCP Net-Card FO Multi Mode/CAT
• DNET-L4S: DCP Net-Card FO Single Mode/CAT

Cables and Connector

Ordering Information
• DLCA-100L: DCP-Loop Cable Ass'ly 1m (CAT+Power)
• DLCA-300L: DCP-Loop Cable Ass'ly 3m (CAT+Power)
• DLCA-1000L: DCP-Loop Cable Ass'ly 10m (CAT+Power)
• DLCA-2000L: DCP-Loop Cable Ass'ly 20m (CAT+Power)
• DLCA-5000L: DCP-Loop Cable Ass'ly 50m (CAT+Power)
• DLCR: DCP-Loop Cable Roll 100m (CAT+Power)
• CMC: CDM Mic-Cable 2.5m (Delegate Unit-to-DDB104)
• DLC-PCS: DCP-Loop Cable Power Connector Set
  (3 x BLACK/3 x RED)

CDM Mic-Cable   CDM Net Loop Cable (CAT5)

Senator Designer Software Suite

In order to manage the entire Senator system simply and efficiency, Senator Designer software suite was created in human centered design. First, it has intuitive usage such as automatically searching and listing the connecting devices, by 'drag & drop' the list to have the topology in graphical model. Second, based on the Senator is a fully integrated system, Senator Designer completely displays all DSP components by clicking the corresponding device's graphic. Third, for easily adjusting DSP parameters to each devices, the software provides dynamically displaying the adjustment of DSP component. Besides, Senator Designer has global setting function to select parts of microphones or speakers for adjusting its DSP parameter once a time. The software suite also supports users to quickly engage in meeting by providing 6 types of conference model: 'Discussion-FIFS', 'Discussion-FIFO', 'Discussion-PTT', 'Meeting-Priority', 'Meeting-Delegate RQ' , and 'Meeting-Chairman'. Moreover, it provides users to design the operation area for its own conference scene.

Senator Designer compatible with Windows XP/ Vista/ Win7/ Win8 or above.

Human Centered
Intuitive
Dynamical
Complete

1 Appearance of Senator Designer
2 **3** Examples of designed operation area
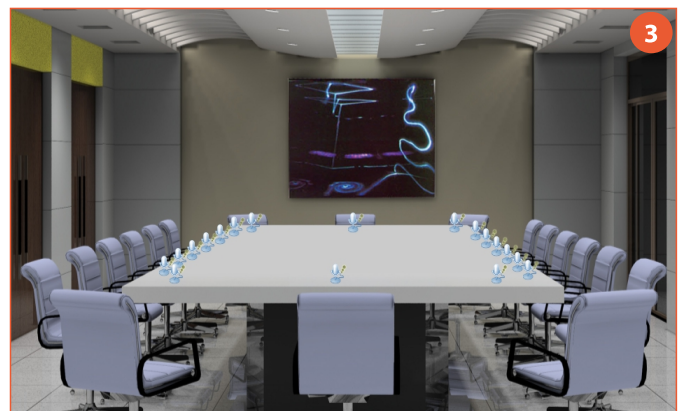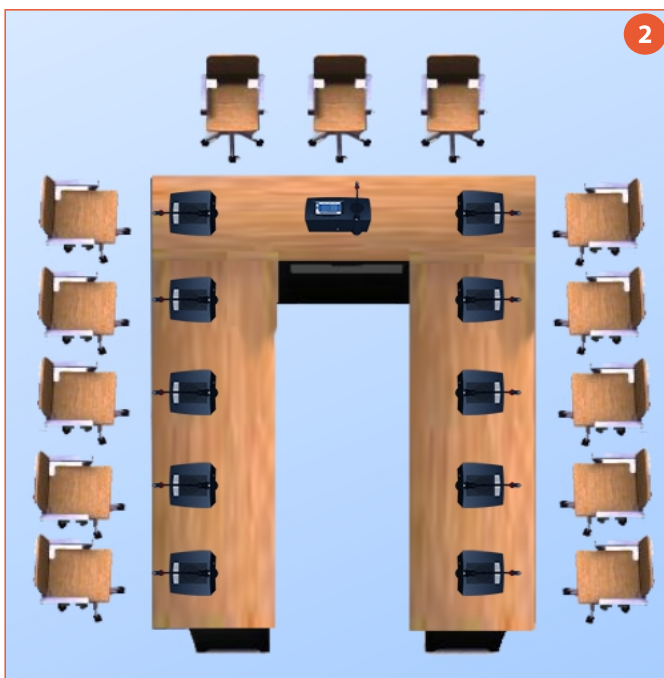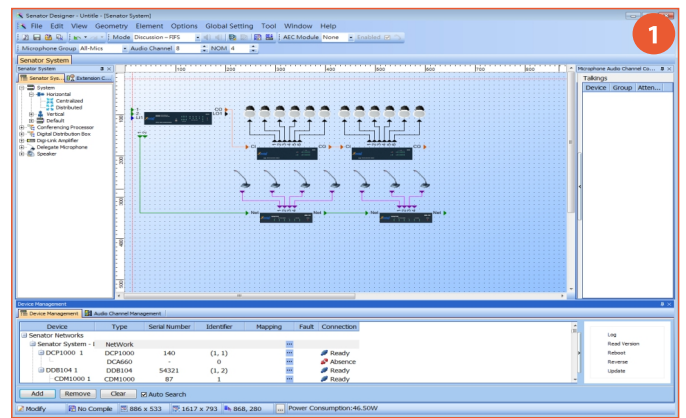
Embedded Digital Signal Processing

The state-of-the-art Senator system is a fully integrated digital conference system. The DSP functions such as AGC, 8 band PEQ, voice activated gate, feedback suppressor, gain-sharing auto mixer, and mix-minus are all integrates in the system, and the external device is not required. To improve audio quality, Senator handles the DSP function more than just floor channel, each delegate microphone can be individually processed each DSP function. With an optional AEC module (Acoustic Echo Cancellation) on processor enables Senator system to use VoIP function with good quality of teleconferencing. The Senator Designer software suite on PC/laptop connect to processor via ethernet enables to program the entire system and adjust DSP parameters.

Voice Activated Gate

Activate microphones when recognizing the human voice
– Proprietary Technology

Voice Gate is an application that carries and recognizes the audio spectrum to activate the delegate microphone only matching with human voice and avoiding false activating from unexpected noise.

8 Band Parametric Equalizer (PEQ)

Optimizing personal setting with dynamic GUI

Parametric Equalizer (PEQ) enables the specific central frequency to be selected and its amplitude with the affected range of the frequencies to be adjusted. Senator system provides 4 types of PEQ component:
- 2 band PEQ for Microphone input from the rear panel of DCP1000 processor.
- 8 band PEQ for stereo line-in from the rear panel of DCP1000 processor.
- 6 band PEQ + 2 band personal PEQ for microphones on CDM-Net.
- 4 band PEQ for RCA/XLR output from the rear panel of DCP1000 processor.
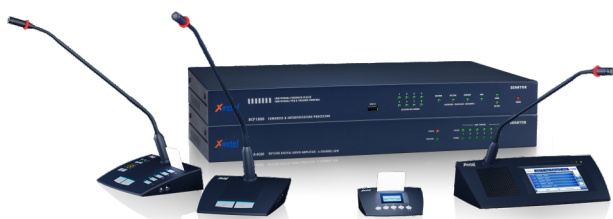
Auto Gain Control (AGC)

Automatically adjusting volume for steady sound

The Auto Gain Control (AGC) component enables the volume level of the microphone input signal that is directly connecting to the rear panel of DCP1000 digital congress processor to be increased or decreased to close the target level, then make the fluctuation of volume steadily.

Feedback Suppressor

Automatically adjust filter and suppress feedback

The function of feedback suppressor is to evaluate the feedback characteristics of the audio system and adjusts the filters as necessary to suppress feedback. In the Senator system, there are 2 feedback components: one for the microphone input signal, one for the sum of 8 audio signals.

Mix Minus auto calibration

Enough volume without echoes, feedback and audio distortion.
– Proprietary Technology

The 'Mix minus auto calibration' function is designed to avoid feedback and echoes in a conference. The technology is able to figure out all potential sound sources of feedback and echoes, then automatically measure and fix the calibration value to prevent echoes or feedback from reverberating, howling and squealing through the broadcast or sound reinforcement system. With Senator Designer software suite , mix minus whole system by clicking one button.

Situation A   Situation B
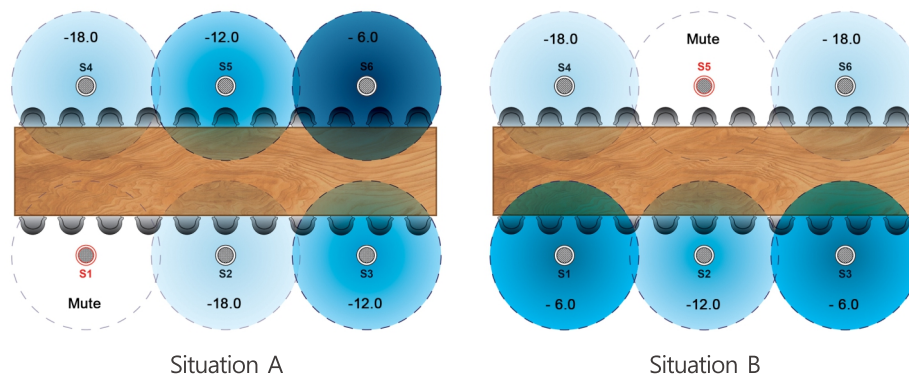
For example as picture above, the microphones near to 'S1' speaker is activate as situation A, 'S1' speaker may off the audio, the other speakers will reduce its volume level depending on the distance to the activated microphone. As the picture of situation A, except 'S1' speaker, the nearest distance from microphone to speaker is zone 'S2' and 'S4', so the 'S2' and 'S4' speaker reduce the most calibrated sound level than the other speakers to avoid feedback. In situation B, if microphones near to 'S5' speaker is activate, 'S5' speaker may off the audio; meanwhile, the other speakers will also reduce its volume level depending on the distance to the activated microphone.

Fully Digital & Networked
Conference, Meeting and Presentation
Dsp System

Acoustic Echo Cancellation (incl. RAPIDO™ algorithm)
Optional AEC module for teleconferencing without echo annoying
– Proprietary Technology

Acoustic Echo Cancellation (AEC) is to eliminate the audible echo when under the duplex teleconferencing. This component is to compare the far-end signal to the near-end echo, which the near- end microphone picks up from far-end via the near-end loudspeaker, and remove the echoes. With the optional AEC-Card which includes our latest technology, the RAPIDO™ AEC algorithm, the Senator System will work independently of any external AEC DSP device, and support VoIP functions for remote conferencing. The ultra-fast converging RAPIDO™ AEC algorithm can handle up to 353ms of tail length for up to 4 microphones (CDM delegate units) simultaneously! (Max. NOM = 4)

For example, see the pictures at next page (P.21), if room A and room B are under teleconferencing. Speech from room A transmits via room B's open microphone with the reverberation, and is sent right back to room A. This process will continue again and again. So the extremely fast converge RAPIDO™ algorithm in the Senator system will filter out all audio from room A preventing room B's microphone from transmitting it back to room A and vice versa.

VoIP
### Add AEC module to enable VoIP SIP phone

Once DCP1000 processor integrated an optional RAPIDO™ AEC (Acoustic Echo Cancellation) module, the VoIP (Voice over Internet Protocol) function is enabled for remote conferencing. The extremely fast converge RAPIDO™ AEC module can handle up to 353ms tail time for up to 4 microphones at same time (Max. NOM=4) to ensure crystal-clear voice communication.

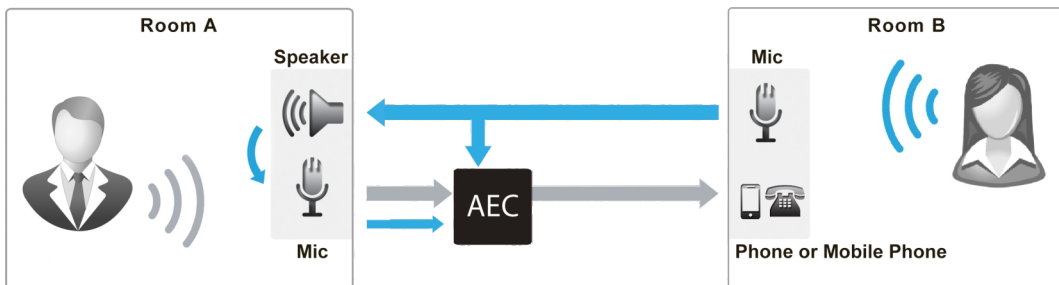Senator system can have conference remotely with :
1. Another remote Senator system
2. Terra devices
3. SIP IP phone
4. Land line telephone via Terra-FXO

▲ Without any Acoustic Echo Cancellation, Echo will be heard on both ends.
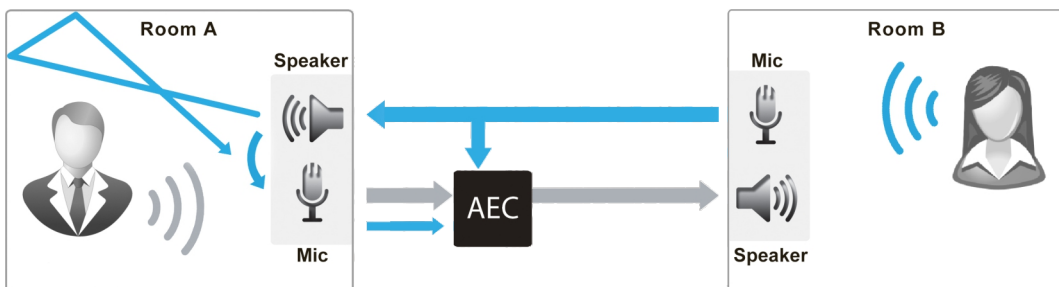

▲ Using an Acoustic Echo cancellation on one end, it will always benefits the other end, so no echo will be here there!

▲ Using an Acoustic Echo Cancellation on one end in the room, and the other end is a Phone or a Mobile Phone, the AEC eliminates all echoes on the far end and no AEC needed for a phone or a mobile phone!
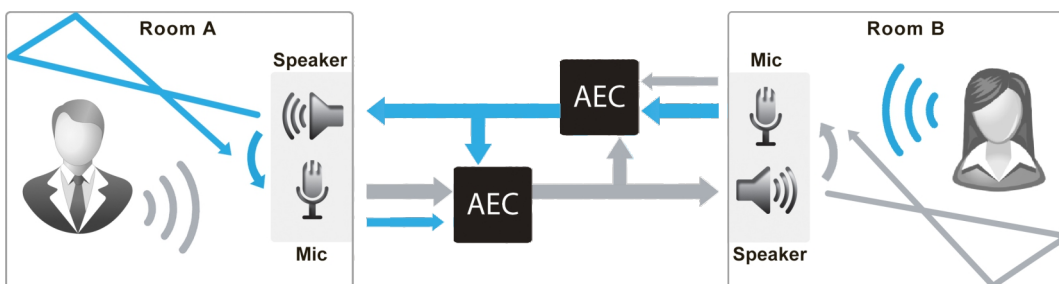
▲ Using an Acoustic Echo Cancellation on one both ends, it will eliminate all echoes on both ends!
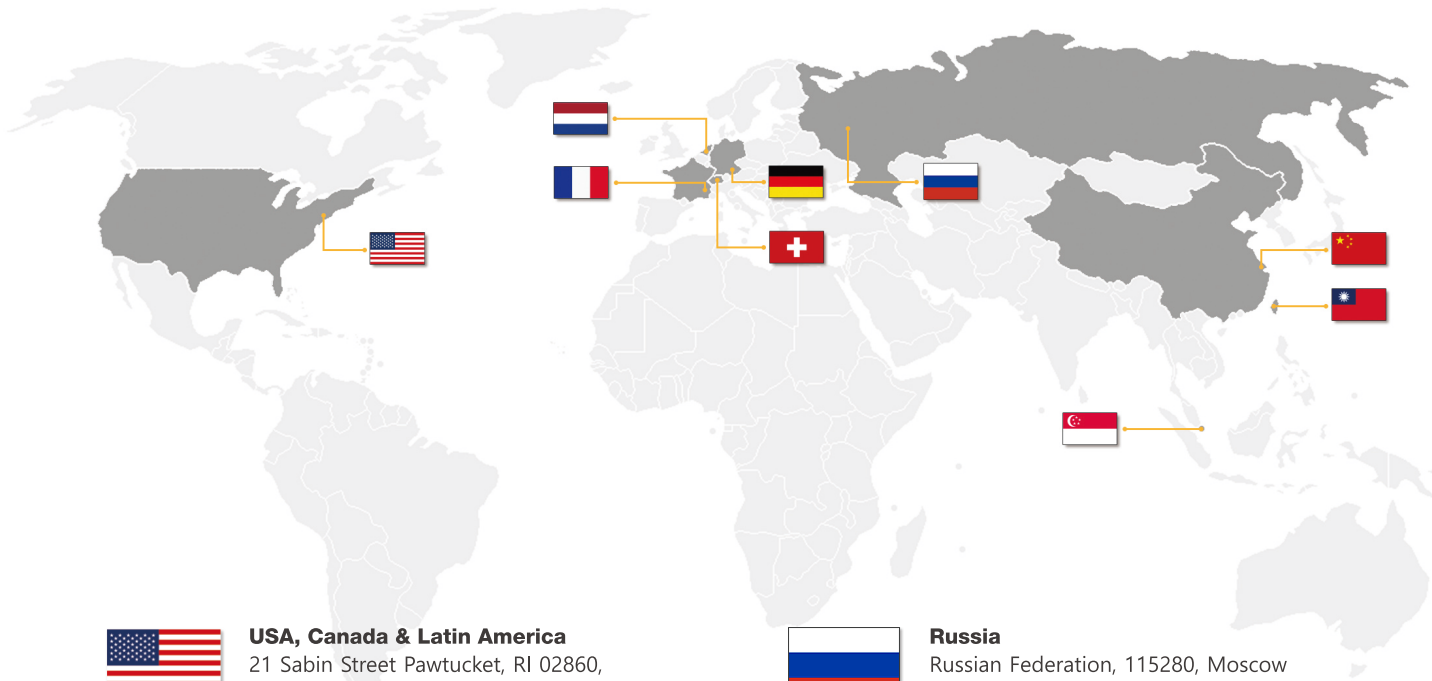
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