SENEATOR™

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 solutions. Xavtel’s proprietary extreme fast RAPIDO™ 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, creative innovation and advanced technology. You can rest assured that our technology is always cutting-edge with a view to the future.
APPLICATIONS

• Enterprise Meeting Room
• 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
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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 CDM delegate units and up to 64 DCA660 digital amplifiers. An entire system can be expanded up to 32 processors via a 64 channels digital audio network. To highest audio quality, each delegate unit can be individually processed with functions including Automatic Gain Control(AGC), 8 Band PEQ, Voice Activated Gate, Hi/Lo Pass Filter, Feedback Suppressor and 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, to the perfect “gain before feedback” for the room, and also includes measuring the room acoustics of each and every room.

The Senator system supports an NOM of 8 microphones activated simultaneously(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 adapts to multi-purpose conference, presentation and meeting. 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 for either CAT cable connection or fibre optics connection.

Xavtel’s optional AEC-Card module offers the brand new developed RAPIDO™ AEC algorithm, which can be installed 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!

The DCP1000 also contains an RS232 port for 3rd party control(cameras, projectors, etc.), or as the interface to provide VoIP and SIP functionality if the optional AEC-Card is installed. The PC/Laptop based Senator Designer suite software will enable the user to program and control the entire system configuration and any DSP parameter adjustment. The Senator system provides 5 different conferencing modes(FIFS, FIFO, Priority, Delegate Request RQ and Chairman Mode). Meeting and Conferencing has never been easier and faster!
**A** DCP1000
DIGITAL CONFERENCE & AEC PROCESSOR
- 8 NOM simultaneously or 4 NOM when AEC-Card installed
- 6 channels simultaneous translation built-in
- 2 redundant loops
- Voice activated gate, filters, AGC, PEQ, AEC & mix minus, etc.

**B** DCA660
DIGITAL CONFERENCE AMPLIFIER
- 6 channels, each channel is with 60W of power on a 4 Ohm load
- Connect up to 64 DCA660 units per processor
- Industry first Auto-Mix-Minus-Calibration for every room setup

**C** CDM1000
DIGITAL CONFERENCE MICBASE - TABLETOP
- Support 3rd party XLR gooseneck microphones
- Including built-in speaker, function-oriented & talk buttons with LEDs
- Desktop delegate unit with 3 selectable functions: delegate, chairman or interpreter

**D** DDB104
DIGITAL NETWORK MIC JUNCTION BOX
- Up to 63 DDB104 can be cascaded to a single CDM-Net-Loop card in the DCP1000 processor
- Redundant loop connection between DCP1000 processor and DDB104

**E** CDM-T5
DIGITAL CONFERENCE MICBASE - 5" TOUCH TFT LCD
- Desktop delegate unit with 3 selectable functions: delegate, chairman or interpreter
- Including a speaker, a 5" LCD touch screen, a RFID reader and voting buttons
- Full system control unit including dialer, volume controls and conference management
- USB audio connection for web-conferencing applications

**F** CDM2000
DIGITAL CONFERENCE MICBASE - TABLETOP
- Support 3rd party XLR gooseneck microphones
- Desktop delegate unit with 3 selectable functions: delegate, chairman or interpreter
- 5 voting buttons and RFID card reader for sign-in

**G** CFM2000M/CFM2000VK
CONFERENCE FLUSHMOUNT MICBASE/VOTE PAD
- Support 3rd party XLR gooseneck microphones
- CFM2000M: Function buttons and status LEDs
- CFM2000VK: Voting buttons and RFID card reader

**H** VOTEPAD(AT/DR)
VOTEPAD with LCD
- RFID card reader, 5 voting buttons and 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 delegate units. Hence, up to 504 delegate units can be connected per DCP1000.

**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 6.6 ft ~ 66 kft(2 km~20 km) in between DCP1000 processors.
**Sophisticated Conference System**

- One DCP1000 processor is able to connect to up to 504 Delegate Units via 63 DDB104 Mic Junction Boxes and up to 64 DCA660 digital 6 channels amplifiers.
- The Senator Designer software provides flexible DSP settings and intuitive GUI to setup the system.
- The DCP1000 offers multiple interfaces: USB2.0 connector, XLR Mic In/Out, RCA line in/out, RS485, RS232 and RJ45 Ethernet port.
- 6 channels simultaneous translation built-in without external IR system.

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**Breathtaking DSP Functions**

- Each delegate unit can be individually processed with AGC, 8 Band PEQ, Voice Activated Gate, Hi/Lo Pass Filters, Feedback Suppressors and Gain-Sharing Auto Mixers and AEC(Acoustic Echo Cancellation).
- "Voice Activated Gate" enables the delegate units to only turn on while human voice is detected. No other noise will turn on the mics' gate.

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**Mix-Minus Auto Calibration**

- Avoid feedback by automatically setting the suitable gain parameters before feedback for every room.
- Each delegate unit or parameter setting can be individually and manually adjusted after auto calibration.

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**Acoustic Echo Cancellation and VoIP functions (AEC Module with RAPIDO™ Algorithm)**

- Optional AEC-Card 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 a NOM of 4 microphones simultaneously.
- Four kinds of solution to proceed a 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
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

CDM-Net Loop:
Even the connection between DCP1000 processor and DDB104 boxes or between DDB104 boxes is disconnected, the rest of CDM-Net loop will continue to function.

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.
- The VotePad AT (Attached to CDM1000) and VotePad DR (Directly connected to DDB104) provides voting and sign-in functions, allowing to display the results of voting and rating.
- A USB 2.0 port located at the front of the DCP1000 for either recording or message playback using a USB flash drive with up to 256GB memory storage.
The DCP1000 Digital DSP Processor is the central controller of theSenator System. One processor has 2 CDM-Net-Loop card slots, and the second optional card can be integrated to expand the system having 2 redundant loops for up to 504 delegate units. Using the digital link(MDA) between DCP1000 and DCA660 distribution amplifiers allows to cascade up to 64 units via CAT5/6. The DCP1000 supports multiple interfaces like recording, XLR balanced line In/Out, RCA stereo line In/Out, RS485, RS232 and an RJ45 Ethernet port, 3rd party control, controlling PTZ cameras can be easily handled. The DCP1000 integrates DSP functions such as Voice Activated Gate, AEC, PEQ, AGC, FBX and Mix-Minus calibration, each of them can be adjusted, stored and processed individually for each delegate unit. With Xavtel’s optional AEC-Card using our ultra-fast RAPIDO™ AEC algorithm, the Senator system is capable to use VoIP and SIP functionality for distance and web conferencing applications. The Senator system supports an NOM of 8 microphones activated simultaneously(changes to NOM of 4 if AEC is activated).

**Feathers**
- Up to 504 delegate units and 64 DCA660 amplifier can be connected to a single DCP1000
- Up to 32 DCP1000 can be connected in a redundant loop
- DSP functions include: PEQ, AGC, AEC, FBX, Gain Sharing Auto Mixer, Mix-Minus auto calibration, etc.
- The DSP parameters of each connected delegate unit will be processed individually
- Optional AEC-Card available using the ultra-fast RAPIDO™ AEC algorithm, enabling SIP and VoIP for distance and web conferencing
- Special features like Auto-Mix-Minus Calibration, USB recording, 6Ch. simultaneous translation built-in
- RS485 and RS232 for third party control and/or interactive speed dome cameras(PELCO-P, PELCO-D and VISCA protocols)

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

**Certifications**
- CE marked, UL listed, RoHs compliant

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

**Dimension & Weight**
- Width: 18.97”(482 mm)
- Height: 8.26”(210 mm)
- Depth: 1.73”(44 mm)
- Weight: 5.5 lbs(2.5 kg)
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
There are 7 types of DCP-Net-Loop Cards model available for the connection between DCP1000s (see Local Net Card at P.16):

There are 14 types of CDM-Net-Loop Cards (2 loops) model available for the connection between DCP1000 and DDB104:
- DCP1000: DCP1000 without Net-Loop-Card
- DCP1000L1: DCP1000(CDM Net-Loop Card CAT/CAT)
- DCP1000L2: DCP1000(CDM Net-Loop Card CAT/FO Multi Mode)
- DCP1000L2S: DCP1000(CDM Net-Loop Card CAT/FO Single Mode)
- DCP1000L3: DCP1000(CDM Net-Loop Card FO/FO Multi Mode)
- DCP1000L3S: DCP1000(CDM Net-Loop Card FO/FO Single Mode)
- DCP1000L4: DCP1000(CDM Net-Loop Card FO Multi Mode/CAT)
- DCP1000L4S: DCP1000(CDM Net-Loop Card FO Single Mode/CAT)
- DCP1000L1: DCP1000(2 x CDM Net-Loop Card CAT/CAT)
- DCP1000L2: DCP1000(2 x CDM Net-Loop Card CAT/FO Multi Mode)
- DCP1000L2S: DCP1000(2 x CDM Net-Loop Card CAT/FO Single Mode)
- DCP1000L3: DCP1000(2 x CDM Net-Loop Card FO/FO Multi Mode)
- DCP1000L3S: DCP1000(2 x CDM Net-Loop Card FO/FO Single Mode)
- DCP1000L4: DCP1000(2 x CDM Net-Loop Card FO Multi Mode/CAT)
- DCP1000L4S: DCP1000(2 x CDM Net-Loop Card FO Single Mode/CAT)
The DCA660 is a digital 6 channel distribution amplifier which comes with 6 x 60W of power on a 4 Ohm load. Up to 64 units can be daisy chained via standard CAT5/6 cable to the DCP1000 DSP processor. The different ID numbers of each DCA660 will be set via the DIP switch located on the rear side of each amplifier. The DCA660 also has all necessary protection circuits on board to detect the issue of overload or overheat and protect the device against all potential hazards. The overload or overheat LEDs will light up when this status might occur. The DCA660 comes with extra DSP power and will provide the industry first Auto-Mix-Minus-Calibration function of the Senator system. This unique function will automatically adjust the suitable parameters to prevent the feedback of the system for every room setup. Due to the fact that Xavtel uses a proprietary digital audio protocol to connect the DCA660 via the MDA Link connection, the distance between the DCP1000 and each connected DCA660 amplifier can be up to 100m, this will allow for the most flexible and distant installations.

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

### 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
- DIP switch for device identification
- 6 Euro-block connectors for loudspeakers
- AC power connector with 5A fuse

### Feathers
- Up to 64 DCA660 amplifiers can be connected to a single DCP1000 processor
- Fully digital audio link to the DCP1000 processor and to other DCA660s
- 6 output channels for loudspeakers on Phoenix connectors
- Additional DSP functions like Gain-Sharing Auto Mixer, 5 Band PEQ, Feedback Suppressor and Delay
- Industry first Auto-Mix-Minus-Calibration for every room setup
- LED indicators to recognizing each amplifier channel status

### Dimension & Weight
- Width: 18.97" (482 mm)
- Height: 10.23" (260 mm)
- Depth: 1.73" (44 mm)
- Weight: 7.7 lbs (3.5 kg)

### Maximum Connection Length
- 328 ft (100m) for CAT5 cable

### Certifications
- CE marked, UL listed, RoHs nt

### Ordering Information
- DCA 660: DCA660 Digital Amplifier
DDB104 is the main network connection box between the DCP1000 digital conference 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 delegate units 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

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

Front Panel
- Four active 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 delegate units

Dimension & Weight
- Width: 3.62" (92 mm)
- Height: 1.45" (37 mm)
- Depth: 6.88" (175 mm)
- Weight: 3.1 lbs (1.4 kg)

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

Certifications
- CE marked, UL listed, RoHs compliant

Ordering Information
There are 7 types of model available for the connection between the DDB104 and the CDM-Net-Loop-Card(s) of 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

*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.
The CDM1000 is a multi-usable desktop microphone base. It comes with two buttons and status LEDs for speaking or function selection, and an XLR connection to connect to Xavtel’s gooseneck microphones, the mic is available in different length (26cm/40cm/48cm/60cm), 3rd party microphones can also be supported. The CDM1000 contains a built-in loudspeaker for smaller applications with no external amplification. The volume setting for this loudspeaker can be done with the volume pot at the right side of the unit. At the same side, there are 3 mini jack connectors, one is a microphone input, the second a line output, the third is for future use (Votepad AT). The Senator Designer software allows the CDM1000 to be programmed and switched from the standard “Delegate mode” into an “Interpreter mode”, making it as an easy and cost effective interpreter station. In this case, either the internal loudspeaker and microphone of CDM1000 can be used for the interpreter(sitting in a different room) or the mini jack connections can be used to connect to a 3rd party headset; therefore, the interpreter can sit in the same room and listen to the floor channel while translating into another language. The two LEDs placed over the talk and the function buttons will indicate the status of the CDM1000.

**Feathers**
- With 3 selectable function roles: delegate, chairman or interpreter
- Connections for headset and votepad (future option) and volume control
- Support external microphone and headphone via mini phone jacks
- XLR connector connects to any of Xavtel’s gooseneck microphones (3rd party mics will also be supported)
- Built-in loudspeaker with integrated AEC (Acoustical Echo Cancellation)
- All DSP functions can be stored and processed individually for each CDM1000
- The two buttons and LEDs for speaking or function selection

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

**Front Panel**
- 2 buttons with LED: speak and function selection
- 3-pin standard XLR connector for delegate unit

**Rear 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 Votepad AT

**Certifications**
- CE marked, UL listed, RoHs compliant

**Ordering Information**
CDM1000: CDM1000 w/o Mic

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**CDM1000**
Digital Conference Micbase - Tabletop
CDM2000
Digital Conference Micbase- Tabletop

The CDM2000 is a multi-function desktop microphone base. It comes with a built-in loudspeaker, two buttons and status LEDs for speaking or function selection, a RFID card reader, five buttons for voting and rating, four buttons with LED for displaying channel selection/volume adjustment, and a XLR connection to connect to Xavtel’s gooseneck microphones, the mic is available in different length(26cm/40cm/48cm/60cm), 3rd party microphones can also be supported. There are two mini jack connectors, one is a microphone input, the other is a line output.

The Senator Designer software allows the CDM2000 to be programmed and switched from the standard “Delegate mode” into an “Interpreter mode”, making it as an easy and cost effective Interpreter station. In this case, either the internal loudspeaker and microphone of CDM2000 can be used for the interpreter(sitting in a different room) or the mini jack connections can be used to connect to a 3rd party headset; therefore, the interpreter can sit in the same room and listen to the floor channel while translating into another language. The two LEDs placed over the talk and the function buttons will indicate the status of the CDM2000.

Features
- With 3 selectable function roles: delegate, chairman or interpreter
- Support external microphone and headphone via mini phone jacks
- XLR connector connects to any of Xavtel’s gooseneck microphones (3rd party mics will also be supported)
- A RFID card reader for delegate sign-in
- 5 buttons for voting and rating (++|+|0|--|--)
- Built in loudspeaker with integrated AEC(Acoustical Echo Cancellation)
- All DSP functions can be stored and processed individually for each CDM2000
- The two buttons and LEDs for speaking or function selection
- 2 digit LED display for listening channel selection, intercom channel and volume settings

Electrical
- Main power: 24 VDC
- Power consumption: 250 mA @ Max.
- Frequency response: 40 ~ 18 kHz @ -2 dB
- THD+N: < 0.05 % (40 Hz ~ 18 kHz @ 0 dBu)

Front Panel
- 2 buttons with LED: speak and function selection
- 3-pin standard XLR connector for delegate unit
- 5 buttons for voting or rating
- 2 buttons with LED indicator for selecting speaker mode, headphone mode, and intercom mode
- 2 buttons with LED display for volume adjustment
- 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 & Weight
- Width: 9.05”(230 mm)
- Height: 2.24”(57 mm)
- Depth: 5.59”(142 mm)
- Weight: 1.98 lbs(0.9 kg)

Certifications
CE marked, UL listed, RoHs compliant

Ordering Information
CDM2000: CDM2000; RFID; Voting; Desktop w/o Mic
The CDM-T5 Desktop Chairman Delegate comes with 5" LCD touch screen, a built-in loudspeaker, XLR connection for the Xavtel’s gooseneck microphones, the mic is available in different length, and also includes the connection for an external headset. The CDM-T5 allows for the full system control of the Senator System, from the capability of volumes changes, settings, paging and dialing if used in a distance or web-conference. The CDM-T5 has a mini USB connector, allowing for an easy-to-setup web-conferencing system with the use of optional AEC-Card of DCP1000 for a direct connection to any PC/Laptop. This unique feature allows every standard conference to become either a distance conferencing or a web conferencing system at the same time. No more integration or extra cabling of the system will be needed! The CDM-T5 also offers a dedicated paging button, which allows for preselected zone paging. The dialer section has either a speed dial page or a numeric page to either recall preprogrammed connections via SIP Server (WAN) and direct to VoIP Phones or VoIP PBX systems, or to directly dial any number needed to make a distance conference connection. The CDM-T5 is capable to start the Auto-Mix-Minus calibration with the push of one button. Once the system is cabled and programmed, it will work as a stand-alone system and make all necessary adjustments. The CDM-T5 also offers 2 mini jack connectors next to the mini USB to connect any 3rd party headsets to the system.

**Feathers**
- Desktop Chairman Delegate Unit with 5" touch screen
- With 3 selectable function roles: delegate, chairman or interpreter
- Full system control unit including dialer, volume controls and conference management
- Multi language interface(every language possible)
- Support external microphone and headphone via mini phone jacks
- RFID card reader for delegate sign-in
- XLR connector connects to any of Xavtel’s gooseneck microphones (3rd party mics will also be supported)
- Built in loudspeaker with integrated AEC(Acoustical Echo Cancellation)
- All DSP functions can be stored and processed individually for each CDM2000
- USB audio connection for easy to use web-conferencing applications(needs AEC-Card installed into DCP1000)

**Electrical**
- Power: 24 VDC
- Power consumption: 3.5 watts @ max.
- Frequency response: 40 kHz ~ 18 kHz @ -1 dB
- THD+N: < 0.05% (40 Hz ~ 18 kHz @ 0 dBu)

**Front Panel**
- 5" LCD touch screen
- 3-pin standard XLR connector for delegate unit
- 3 LED for recognizing status of delegate unit
- 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 & Weight**
- Width: 9.86"(284 mm)
- Height: 6.85"(174 mm)
- Depth: 3.14"(80 mm)
- Weight: 2.42 lbs(1.1 kg)

**Certifications**
- CE marked, UL listed, RoHs compliant

**Ordering Information**
- CDM-T5: CDM-T5; w/o Mic
The CFM2000 flush-mount series is designed for the customized application of a conference or presentation system, the 2 different CFM2000 units can work as stand-alone, or as a group of two units. The CFM2000M micbase comes with a standard 3-pin XLR connection to connect to Xavtel’s gooseneck microphones, the mic is available in different length (26cm/40cm/48cm/60cm), 3rd party microphones can also be supported, and has two buttons with LED indicators for speaking and function selection. The CFM2000M can also connect to a speaker driver/speaker output. The CFM2000VK has five buttons for voting and rating, and a RFID card reader for delegate sign-in.

### CFM2000M
- 2 buttons with LED: speak and function selection
- A 3-pin standard XLR connector for delegate unit
- Width: 3.93”(100 mm)
- Height: 2.99”(76 mm)
- Depth: 1.98”(50.5 mm)
- Weight: 1.98 lbs(0.9 kg)

### CFM2000VK
- 5 buttons for voting and rating
- Width: 3.93”(100 mm)
- Height: 2.95”(75 mm)
- Depth: 1.98”(50.5 mm)
- Weight: 1.98 lbs(0.9 kg)

### Certifications
CE marked, UL listed, RoHs compliant

### Dimension & Weight
- Width: 5.12”(130 mm)
- Height: 1.57”(40 mm)
- Depth: 3.46”(88 mm)
- Weight: 1.76 lbs(0.8 kg)

### Certifications
CE marked, UL listed, RoHs compliant

### Ordering Information
- CFM2000M: CFM2000 Flush Mount w/o Mic
- CFM2000VK: CFM2000 Flush Mount Vote Keypad

### Votepad AT/DR
- 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 real-time voting results. The Votepad AT and Votepad DR has different type of connection, the Votepad DR has a mini 5-pin XLR connector to directly connect to the DDB104, and 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 from the CDM1000. The Votepad AT is made to use it directly next to the CDM1000.

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

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

### Votepad AT- Side Panel
3.5mm female phone jack for attaching to delegate unit

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

**Electrical**
- Power requirement: 9 to 48V
- Frequency response: 50 ~ 18 kHz
- Impedance: < 130Ω

**Length**
- CGM-260L = 1.02”(26 cm)
- CGM-400L = 1.57”(40 cm)
- CGM-480L = 1.88”(48 cm)
- CGM-600L = 2.36”(60 cm)

**Microphone Characteristics**
- Type: Uni-directional electret condenser microphone
- Polar pattern: Cardioid
- Termination: 3 pin male XLR
- Shaft diameter: 6 mm

**Performance**
- Sensitivity: -47(±4 dBu) @ 1 kHz (0 dBu = 1 VPa)
- Maximum SPL: 128 dBu
- Input dynamic range: 113 dB

**Ordering Information**
- CGM-260L: CDM Gooseneck Mic 26cm
- 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/Multi Mode
- CNET-L3S: CDM Net-Loop-Card FO/Multi Mode
- CNET-L4: CDM Net-Loop-Card FO/Multi Mode/CAT
- CNET-L4S: CDM Net-Loop-Card FO/Multi Mode/CAT

**Cable and Connector**

**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/Multi Mode
- DNET-L3S: DCP Net-Card FO/Multi Mode
- DNET-L4: DCP Net-Card FO/Multi Mode/CAT
- DNET-L4S: DCP Net-Card FO/Multi Mode/CAT

**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)
Senatorial Designer Software Suite

The Senator Designer software is a PC/Laptop based which can be compatible with Windows XP/Vista/Win7/Win8 or above, the software allows to program and control the entire Senator system configuration and any DSP parameter adjustment dynamically. The connected devices will be displayed in a topology graphically, creating an intuitive UI configuration layout. System setup with auto network deploy shall be configured using the fixed DSP function on software. The Senator Designer also has a Global Setting function for adjusting the selected the delegate units or speakers once a time. The software provides 5 different conferencing modes (FIFS, FIFO, Priority, Request RQ and Chairman Mode). Moreover, it allows to design the operation area for its own conference scene.
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, no external devices or hardware is required. To improve audio quality, Senator handles the DSP function more than just floor channel, all the DSP function can be processed individually for each delegate unit. With an optional AEC module (Acoustic Echo Cancellation) installed on processor, the Senator can achieve teleconferencing using VoIP and SIP functionality. The Senator Designer software can be operated on PC/Laptop.

**Embedded Digital Signal Processing**

**Voice Activated Gate**
- Proprietary Technology
Voice Gate allows to carry and recognize the audio spectrum to activate the delegate unit which match with human voice only and avoid false activation from unexpected noise.

**8 Band Parametric Equalizer (PEQ)**
Parametric Equalizer (PEQ) enables the specific central frequency to be selected and dynamically adjusts its amplitude with the affected range of frequencies. Senator system provides 4 types of PEQ component:
- 2 band PEQ for Mic In on DCP1000 processor
- 8 band PEQ for Stereo Line In on DCP1000 processor
- 6 band PEQ + 2 band personal PEQ for the delegate units on CDM-Net
- 4 band PEQ for RCA/XLR output from the rear panel of DCP1000 processor

**Auto Gain Control (AGC)**
The Auto Gain Control (AGC) component allows to automatically adjust the volume of the microphone input signal which is connected to the DCP1000 processor to be increased or decreased to close the target level, then make the fluctuation of volume steadily.

**Feedback Suppressor (FBX)**
The Feedback Suppressor will evaluate is to evaluate the feedback characteristics of system and automatically adjust 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.

When the delegate units are placed close to the 'S1' loudspeaker, the mic activation will be as the picture above, the 'S1', 'S2' and 'S4' speaker will automatically set the suitable parameters which will reduce the most calibrated sound level to avoid feedback of the activated delegate units.

**Mix-Minus Auto Calibration**
- 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 the potential sound sources of feedback and echoes, then automatically set the suitable calibration value to prevent echoes or feedback.
**Acoustic Echo Cancellation** *(incl. RAPIDO™ algorithm)*

Acoustic Echo Cancellation (AEC) helps to eliminate the audible echo during the duplex teleconferencing. This component is to compare the far-end signal to the near-end echo, which the near-end delegate unit will pick up from the 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 as below. If Room A and Room B are under the teleconferencing, the speech from Room A will transmit via Room B’s open mic with its reverberation, and will send right back to Room A. This process will continue again and again. With the extremely fast RAPIDO™ algorithm, the Senator system will filter out all audio from Room A preventing Room B’s microphone from transmitting it back to Room A.

*Using the Acoustic Echo cancellation on one end, it will eliminates echo on the far end.*

*Using the Acoustic Echo Cancellation on one end in the room, and the other end is a Phone or a Mobile Phone, the AEC will eliminate all echoes on the far end and no AEC needed for a phone or a mobile phone.*

*Using the Acoustic Echo Cancellation on one both ends, it will eliminate all echoes on both ends.*

**VoIP**

If the optional RAPIDO™ AEC (Acoustic Echo Cancellation) module is installed in DCP1000, the remote conferencing can be achieved using the VoIP (Voice over Internet Protocol). 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 supports remote conferencing with:
1. Another remote Senator system
2. Terracom devices
3. IP phone
4. Land line telephone via Terra-FXO device