![Inter-M Professional logo]

4CH Professional Power Amplifier with
Digital Signal Processing and Dante™ Digital Audio Networking

# DSA Series

**DSA-500Q**
**DSA-2000Q**

# 4CH Professional Power Amplifier with Digital Signal Processing and Dante™ Digital Audio Networking

# DSA-500Q/2000Q

The DSA series is a high-power 4-channel professional amplifier that can deliver high performance in environments such as school auditoriums, music rooms, government offices, cultural centers, and religious facilities that require high-quality sound.

You can input 4 analogue audio channels and Dante™ digital audio, and you can use the built-in DSP to tune the system to suit your environment for better sound quality.

In addition, high efficiency digital amplifier technology and various protection circuits enable stable operation

**Cultural Center**
Small and Medium Performance Hall, Cultural Center

**Religious Facilities**
Churches, Cathedral, Auditoriums, etc.

**Sports Facilities**
Gym

# KEY TECHNOLOGY

### Complete protection circuit for stable amplifier operation

In order to reproduce powerful and vivid sound, you need an amplifier that is capable of high power output and stable operation. Therefore, Inter-M has provided various protection circuits to provide stable operation and sufficient sound pressure even in harsh environments, ensuring the reliability of the amplifier.
In case of over-current (OCP-over-current protection), over-voltage (OVP-over-voltage protection), over-temperature (OTP-over temperature-protection), protection circuits kick in to ensure stability. In addition, the LIMITER function protects the system perfectly.

### Built-In DSP/Dante™

Sound distortion from the sound system due to the influence of the installed space may occur. This distortion can be compensated by the various functions of the internal DSP (Parametric EQ, Xover, Delay, Compressor / Limiter, etc.) precisely to achieve even more vivid and powerful sound.
With PC software , various DSP functions can be easily controlled, and preset function is provided to enhance user convenience.
With Dante™, you can transfer multi-channel high-quality audio over a single UTP cable instead of the conventional complex audio cable wiring.

### High-quality audio system starts with Class-D Amplifier

Pro audio speakers that convey an impression to the audience require a high power amplifier that is sufficiently higher than the speaker's power handling for good sound quality and powerful sound  reproduction.
The DSA series complements Inter-M's know-how in high-efficiency, high-power SMPS power supply design and Class-D amplifier technology, the heart of digital amplifiers.
A Class-D amplifier design with excellent sound quality and high output power can reduce the power loss dramatically, resulting in more than 90% efficiency (about 20% efficiency for Class -A) and lightweight, low-power consumption amplifier. In addition, the embedded DSP function enables the best sound system.

### Thorough quality testing for reliability and stability

In order to provide reliable products based on stability, Inter-M conducts quality tests on various environments that products may experience to evaluate performance and check for  problems beforehand.
The DSA series has undergone rigorous quality testing, from testing for durability, such as drop / vibration, and field testing to ensure environmental behavior, such as quenching / temperature. For thorough quality control, only products that have passed all the tests are given a PASS and shipped.
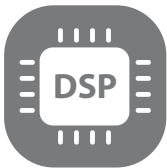
## High quality CLASS-D 4CH Professional Amplifier

DSA-500Q / 2000Q is a High Performance Class-D Power Amplifier using SMPS power and can reproduce high-quality audio in various environments such as auditorium and performance hall.

## 4CH Dante™ Digital Audio Input

You can input 4CH Dante™ digital audio through the network port and 4CH analog audio inputs.

## Built-in DSP

Parametric 8 band EQ, crossover filtear using HPF and LPF,delay, attack / release adjustable limiter.

## Easy control of equipment through front panel with OLED and PC GUI

Using OLED and operation switches installed on the front, and DSA-500Q / 2000Q dedicated software, various parameters can be adjusted.

## Simultaneous control of multiple amplifiers via PC GUI

The PC GUI allows intuitive manipulation of various functions of the DSP, and simultaneous control of multiple amplifiers through IP registration of the equipments.

## Up to 340 ms delay time adjustable

When configuring a system with multiple speakers, you can adjust the Delay function to control the audio transmission time up to 340 msec for clear sound.

## Frequency band adjustment using HPF and LPF

You can use the Butterworth / Bassel / Linkwithz-Riley filter to adjust the frequency band required for your speakers.

## Unlimited preset creation for environment-optimization

Up to 10 presets can be saved to the internal memory of the device.
In addition, environment parameters can be saved to a PC as a file via the PC GUI and can be easily managed without restriction on the number of files.

# PC GUI for DSA remote control

You can conveniently set up DSA–500Q / 2000Q Equipment and its DSP remotely via PC GUI. Connect the network terminal (CONTROL) on the back of the DSA–500Q / 2000Q and the PC 1: 1 to the LAN CABLE. Or, if multiple devices are connected to the same network via a switch, multiple DSA amplifiers can be easily controlled by a single PC. You must set the IP address of each device.



PC

SWITCH
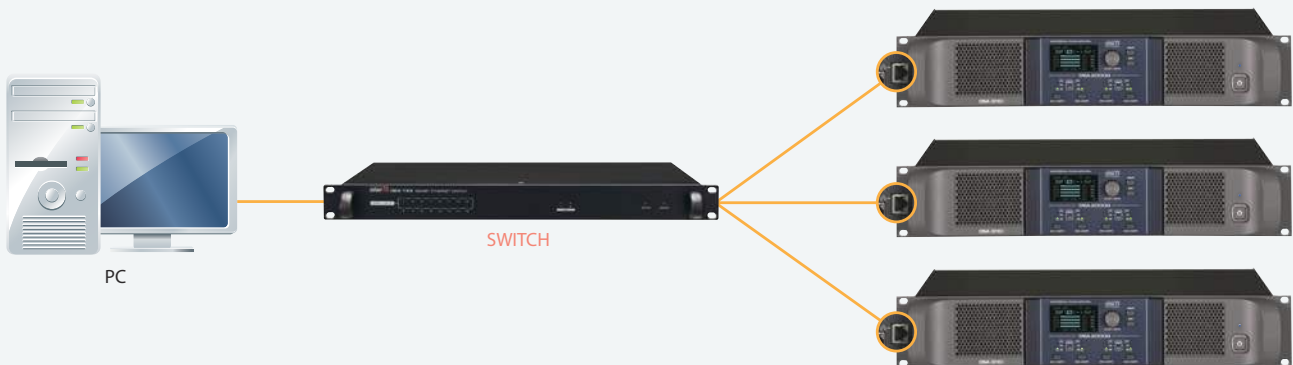
## Configuration Setup



Operation and connection status
- Equipment network connection status
- Dante™ connection status
- Fault, Clip, Level Meter status

1. Amplifier Mode Setting
2. Input signal setting
3. Component status display - Filter, PEQ, Delay, Limit
4. Volume, Delay, Polarity, Channel Link setting

# Filter / Crossover



1. Crossover graph display
2. Selection Channel link
3. HPF / LPF frequency adjustment range
   : 20Hz ~ 20kHz
4. Filter type selection : Off, Butterworth,
   Bassel, Linkwitz-Riley
5. Filter slope adjustment:12dB/18dB/24dB
6. Adjustment

# Parametric EQ
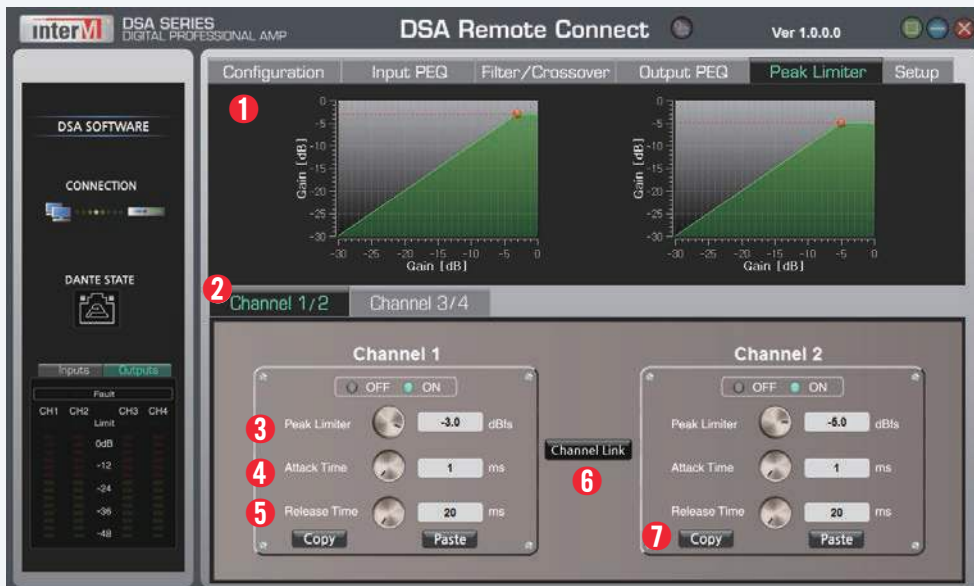


1. 8-Band PEQ Graph Display
2. Selection Bypass / Defeat
3. GAIN control range : -15dB to + 15dB
4. Frequency control range : 20Hz ~ 20kHz
5. Q factor adjustment range : 0.1 ~ 10
6. Type selection : Low / High shelving
   support

# Setup
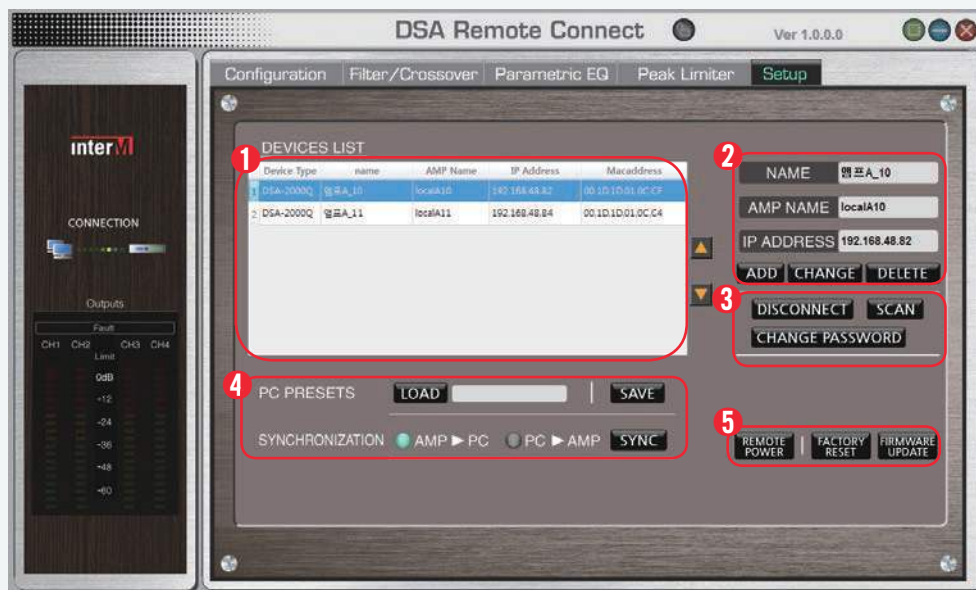


1. Device information display : Name, IP address
2. PC Presets : Preset settings and saving
3. Synchronization : PC-device information synchronization
5. Scan : Search network for devices
6. Change Password
7. Remote Power, Factory Reset, Firmware Update

# FRONT/REAR PANEL

## FRONT PANEL



❶ Vents
- Vents for amplifier temperature control

❷ LCD
- Check or control the status of the equipment

❸ Equipment control button
- SELECT / ENTER: Moving / adjusting / selecting menu
- MENU : Executing setting menu
- ESC : Terminate control

❹ Operation indicator LED (PROT / CLIP / SIG)
- PROT : Lights up during protection operation
- CLIP : Lights when audio is clipped
- SIG : Lights up when audio is input

❺ Channel select / mute button
- Short press : Select the channel to control
- Long press : To mute the channel's output

❻ Bridge Mode Indication LED
Lights when corresponding channel bridge mode is set

❼ Power LED
Turns on when amplifier power is turned on

❽ Power switch
Control amplifier power

## REAR PANEL
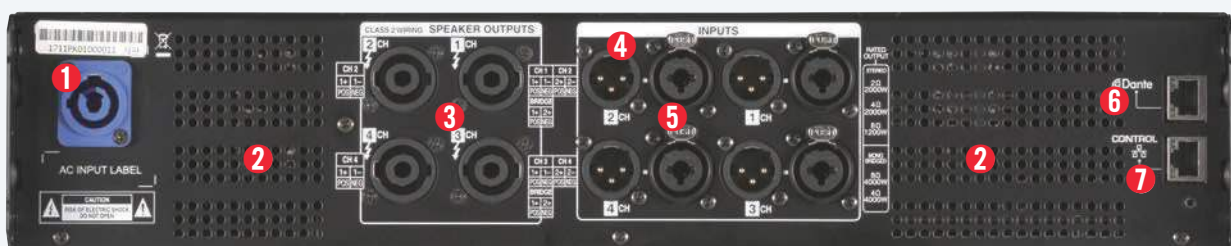


❶ AC power input terminal
Connected using connector

❷ Vents
Vents for amplifier temperature control

❸ Amp output terminal
4 Pole Speakon connector

❹ Analog audio pass-through terminal
- XLR male (balanced) connector
- pass-through the input analog audio to another device

❺ Analog audio input terminal
XLR Female / TRS COMBI (balanced) connector

❻ Digital audio input jack
- RJ45 connector
- Dante™ digital audio input

❼ Ethernet terminal
- RJ45 connector
- Ethernet network connection for equipment control

# CONNECTION

## · Various operation mode selection and application

### STEREO MODE

Signals input to CH1 and CH2 inputs are independently amplified and output to OUTPUTS CH1 and CH2

Connect to speakers using 4Pole Speaker Socket for each of CH1 and CH2 inputs
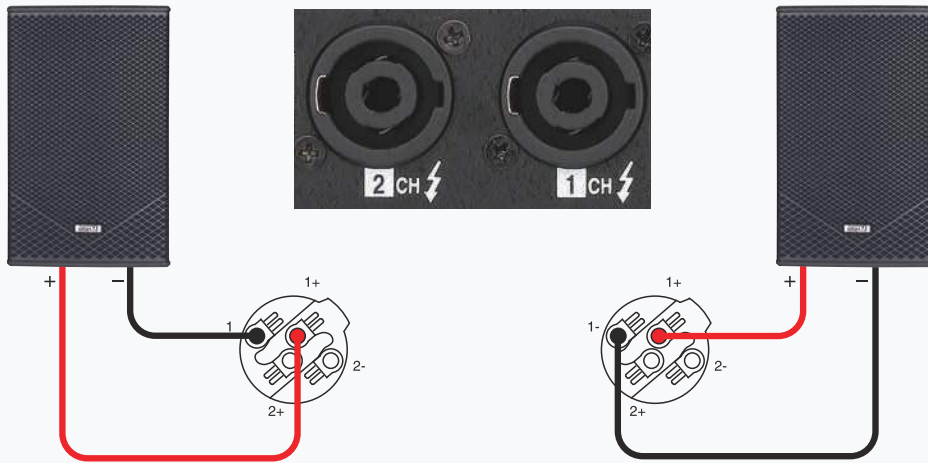


*Using two 4Pole Speaker Sockets
*2 Do not use + and 2−.

### BRIDGE MODE

Signal input by the CH1 input is combined with the two amplifier modules into two outputs

In BRIDGE MODE, the input signal is amplified by two amplifier modules.
Connected one speaker to the CH1 output using only one 4Pole Speaker Connector

## When driving a Bi-amp type speaker with STEREO MODE

Low Frequency Signal

High Frequency Signal
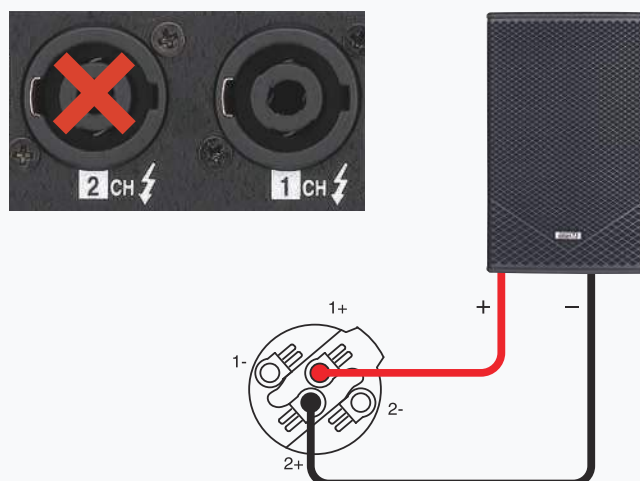
Bi-Amp type speaker

| 1- |
| 1+ |
| 2- |
| 2+ |

| 1+ | 1- | 2+ | 2- | 1+ | 1- | 2+ | 2- |
|----|----|----|----|----|----|----|----|
| CH2 | | | | CH1 | | | |
| Output Chanel | | | | | | | |

INPUTS

CLASS 2 WIRING SPEAKER OUTPUTS

High Frequency
Signal

Low Frequency
Signal
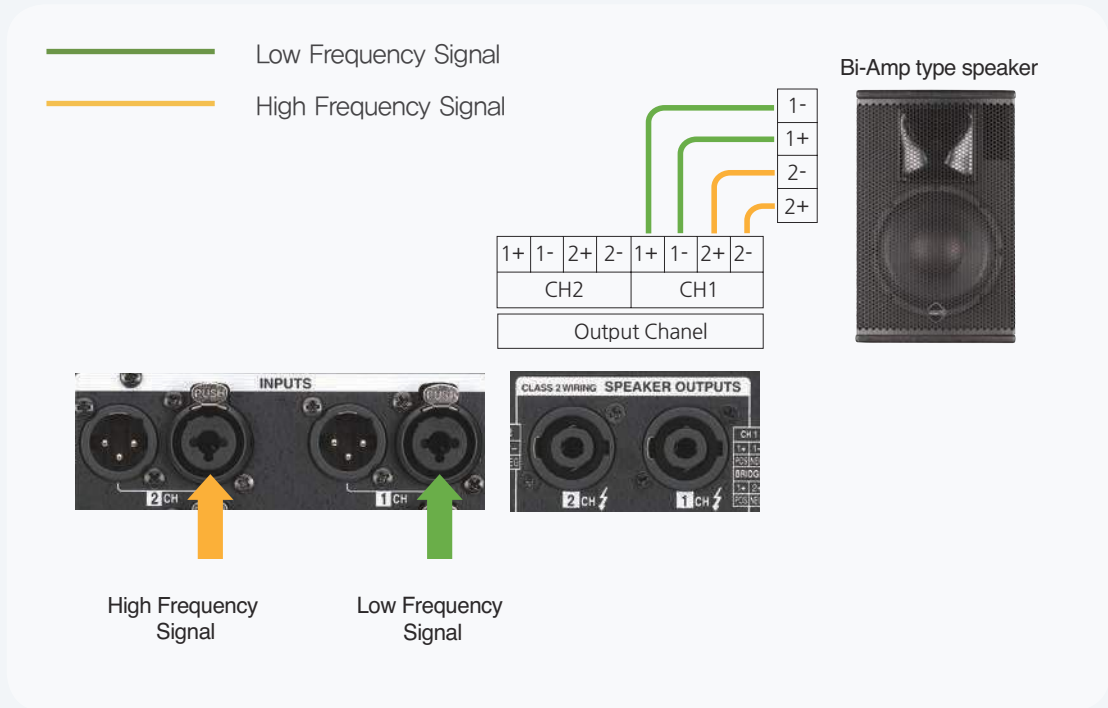
## When driving a subwoofer speaker using BRIDGE MODE

| 1- |
| 1+ |
| 2- |
| 2+ |

| 2- | 2+ | 1- | 1+ | 2- | 2+ | 1- | 1+ |
|----|----|----|----|----|----|----|----|
| CH2 | | | | CH1 | | | |

INPUTS

Low Frequency Signal
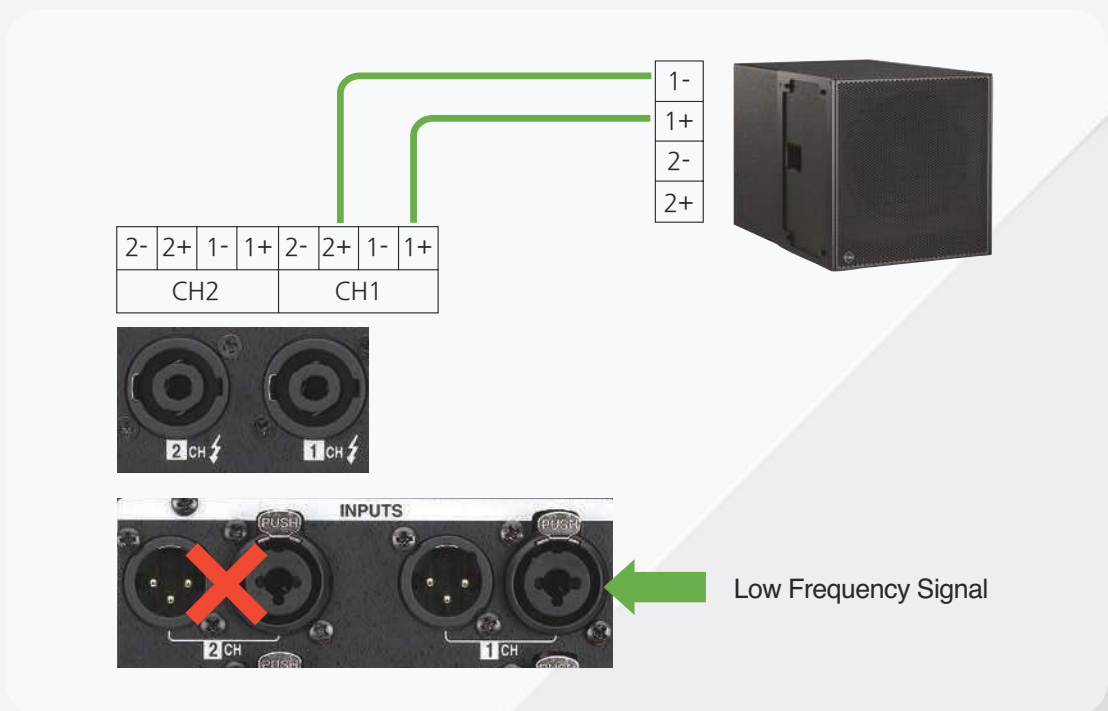
# LCD CONTROL

## · Home Screen and Buttons



1) CH / MUTE : On the LCD initial screen, go to the Volume Set screen to adjust the GAIN (volume) of the CH
2) SELECT / ENTER Button
   * By rotating left and right, you can move the scroll to the top, bottom, left, or right and set the character.
   * Press and hold the button to select the function and move to the sub-item.
3) MENU button: On the LCD initial screen, moves to the MENU screen to set the function.
4) ESC button: Moves to the previous screen.

## 1. Channel GAIN / MUTE Setting

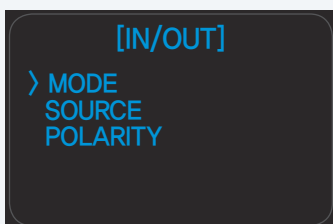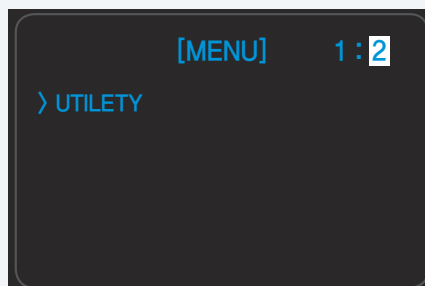On the LCD initial screen, press the CH / MUTE button to move to [CHANNEL GAIN / MUTE].



   * GAIN can be adjusted by left / right adjustment of the SELECT / ENTER button.
   * If you press and hold the CH / MUTE button after selecting a channel, the corresponding channel's
     MUTE function can be used. In the MUTE state, you can return to the original level.
   * Press ESC button to return to the previous screen.

# 2. Select MENU / FUNCTION

On the LCD initial screen, press the MENU button to move to [MENU / FUNCTION].

```
        [MENU]    1 : 2
〉IN/OUT
 FILTER/X-OVER
 PEQ
 DELAY
 LIMITER
 PRESET
```

```
        [MENU]    1 : 2
〉UTILETY
```

```
        [IN/OUT]
〉MODE
 SOURCE
 POLARITY
```

## ① IN/OUT
MODE : MONO, STREO, BI-AMP1, BI-AMP2, BRIDGE Setting
SOURCE : Set input signal to desired channel / Use signal link function
POLARITY : Set the phase of each channel
(Normal : Normal-phase / Invert : inverse-phase)

```
     [FIL.XOVER CH1]
〉FILTER : HPF
 FREQUENCY : 20.0HZ
 TYPE : OFF
 SLOPE : 12dB
```
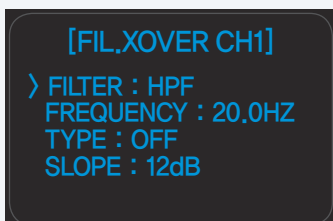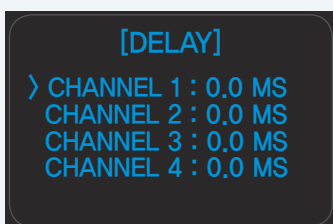
## ② Filiter/X-OVER
FILTER: Channel-specific HPF, LPF settings
FREQUENCY: Within 20Hz to 20KHz, adjustable to 0.1Hz STEP
TYPE : Select filters
Choose from BASSEL, LINKWITHZ-RILEY, BUTTERWORTH or OFF
SLOPE : 12dB/oct, 18dB/oct, 24dB/oct slope select

```
       [EQ CH1 B1]
〉BANK BYPASS : ON
 TYPE : PEQ
 GAIN : 0.0dB
 FREQUENCY : 40.0HZ
 Q.FACTOR : 1.0
```
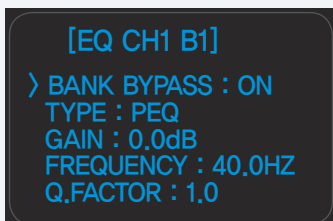
## ③ PEQ
Eight banks selectable per channel
BANK BYPASS ON : Default value,
BANK BYPASS OFF : Set frequency value (DSP operation)
GAIN : -15dB to + 15dB range, adjustable to 0.1dB step
FREQUENCY : Within 20Hz to 20KHz, adjustable to 0.1Hz STEP
FACTOR : Adjustable from 0.1 to 10.0 in 0.1 step

```
        [DELAY]
〉CHANNEL 1 : 0.0 MS
 CHANNEL 2 : 0.0 MS
 CHANNEL 3 : 0.0 MS
 CHANNEL 4 : 0.0 MS
```

## ④ DELAY
0 ~ 300ms for each channel, adjustable in 0.1ms step
Default : 0.0ms

```
      [LIMITER CH1]
〉LIMITER : ON
 RELEASE : 20msec
 ATTACK : 1msec
 THRESHOLD
              0.0 dBfs
```

## ⑤ LIMITER
ON / OFF setting for each channel is available.
RELEASE TIME : Adjustable from 20ms to 400ms in 1ms step
ATTACK TIME : Adjustable from 1ms to 50ms in 1ms step
 - THRESHOLD : Adjustable from 0.0dBfs to -25dBfs, 0.1dBfs Step

```
        [PRESET]
〉LOAD PRESET
 SAVE PRESET
 PRESET LIST
```
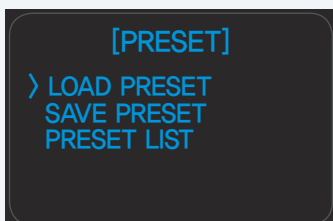
## ⑥ PRESET
LOAD PRESET : Load preset data
SAVE PRESET : Save preset data (Up to 10pcs can be saved)
VIEW PRESET : Check preset data

# APLLICATION #1

## · Point Source Speaker System

You can use DSA-500Q/2000Q and Inter-M's PE / HE / TE Series speakers for small and medium auditoriums, seminar rooms, and multi-purpose lecture rooms for speeches and musical performances.
For main speakers and stage monitors, High-output DSA-2000Q is suitable, and for delay speakers, DSA-500Q is ideal for even sound pressure to all audiences.



Main Speaker

Main Speaker

DSA-2000Q

HE15

HE15

PE08

PE08

Stage Monitor Speaker



Delay Speaker

Delay Speaker

8Ω Bridge

DSA-500Q

8Ω Bridge

TE15

TE15

# APLLICATION #2

## · Line Array Speaker System

Using the DSA-2000Q 4 Channel amplifier, it can be applied to various environments that require professional audio ranging from medium size auditoriums and banquet halls to performance stages. Using Line array and subwoofer. The NLA series is designed as a main speaker for rich and powerful sound pressure. We used the PE series of Point source speakers to operate monitor speakers for performancers and delay speakers for relatively low sound pressure areas.



Main Speaker

Main Speaker

DSA-2000Q

DSA-2000Q

NLA-15S
NLA-5

NLA-15S
NLA-5

PE12

Stage Monitor Speaker



Delay Speaker

Delay Speaker

DSA-2000Q

PE15

PE15

# RECOMMENED SPEAKERS

| Speker Model | Power Handling (W) | Recommended Amplifier output(W) | DSA-2000Q Stereo 1200W (8Ω) | DSA-2000Q Bridge 4000W (8Ω) | DSA-500Q Stereo 300W (8Ω) | DSA-500Q Bridge 1000W (8Ω) |
|---|---|---|---|---|---|---|
| TE08 | 130 | 260 | o | o | o | o |
| TE10 | 160 | 320 | o | o | o | o |
| TE12 | 300 | 600 | o | o | | o |
| TE15 | 400 | 800 | o | o | | o |
| HE08 | 200 | 400 | o | o | | o |
| HE10 | 250 | 500 | o | o | | o |
| HE12 | 400 | 800 | o | o | | o |
| HE15 | 500 | 1000 | o | o | | o |
| PE08 | 250 | 500 | o | o | | o |
| PE10 | 300 | 600 | o | o | | o |
| PE12 | 500 | 1000 | o | o | | o |
| PE15 | 600 | 1200 | o | o | | |
| MS-80 | 80 | 160 | o | o | o | o |
| MS-100 | 100 | 200 | o | o | o | o |
| MS-130 | 130 | 260 | o | o | o | o |
| MS-200S | 200 | 400 | o | o | | o |
| MS-400S | 400 | 800 | o | o | | o |
| IX8 | 125 | 250 | o | o | o | o |
| IX12 | 200 | 400 | o | o | | o |
| IX15 | 300 | 600 | o | o | | o |
| IX8H | 225 | 450 | o | o | | o |
| IX12H | 400 | 800 | o | o | | o |
| IX15H | 600 | 1200 | o | o | | |
| CSB-12K | 500 | 1000 | o | o | | o |
| CSB-15K | 600 | 1200 | o | o | | o |
| CSB-18K | 800 | 1600 | o | o | | |
| CMM-12K | 350 | 700 | o | o | | o |
| CMM-15K | 450 | 900 | o | o | | o |

# SPECIFICATIONS

| | | DSA-500Q | DSA-2000Q |
|---|---|---|---|
| Rated Power -20ms burst | 8Ω, STEREO MODE | 300W | 1200W |
| | 4Ω, STEREO MODE | 500W | 2000W |
| | 2Ω, STEREO MODE | 800W | 2000W |
| | 8Ω, BRIDGED MONO MODE | 1000W | 4000W |
| | 4Ω, BRIDGED MONO MODE | 1600W | 4000W |
| Input Sensitivity | | +4dBu | +10dBu |
| GAIN(STEREO,MONO) | | 32dB | |
| GAIN(BRIDGE) | | 38dB | |
| S/N | | More than 92dB | |
| THD | 1/3W Rated power | Less than 0.5% | Less than 0.7% |
| Frequency Response(1W, 0±2dB / 8Ω) | | 20Hz~20kHz | |
| DSP Precision | | 32bit Fixed Point(8.24 format) | |
| A/D, D/A | | 24bit conversion, sampling rate : 48kHz | |
| DSP Function | | input gain, Parametric EQ, HPF, LPF, Limiter, Delay | |
| Operating Temperature/Humidity | | -10℃~+40℃ / 0%~90% | |
| Operating Power | | AC 220-240V, 50/60Hz | |
| Operating Power(1/8 rated output power@2Ω) | | 390W | 700W |
| Weight(Set) | | 10.48kg | 11.79kg |
| Dimensions(Set) | | 482(W) x 88(H) x 420(D)mm | |

inter M
PROFESSIONAL

※ Design and specification are subject to be changed for the improvement of product quality without pre notice.    2019. 12.  V4