

GENERAL SPECIFICATIONS

| | TX6n | | TX5n | | TX4n | |
|------------------------------|--------------------------|-------------|---------------------------|-------------|----------|-------------|
| | 120V(US) | 230V(EU) *1 | 120V(US) | 230V(EU) *1 | 120V(US) | 230V(EU) *1 |
| Output Power (W) | 2Ωper channel | 2750 | 2750 | 2500 | 2200 | 2200 |
| | 4Ωper channel | 3000 | 3000 | 2200 | 2300 | 1900 |
| | 8Ωper channel | 1800 | 1800 | 1300 | 1300 | 1100 |
| | 1kHz 4Ωbridge | 5500 | 5500 | 5000 | 5000 | 4400 |
| | THD+N=1% 8Ωbridge | 6000 | 6000 | 4400 | 4600 | 3800 |
| | 1kHz 2Ωper channel | 4100 | 4120 | 3480 | 3600 | 2990 |
| 20mS burst 4Ωbridge | 8200 | 8240 | 6960 | 7200 | 5980 | 6100 |
| Constant voltage line | STEREO mode: | | 100V line, 1250W / 8Ω | | - | |
| | BRIDGE mode: | | 200V line, 2500W / 16Ω | | - | |
| SN ratio | 20Hz-20kHz (DIN AUDIO) | | 108dB | 107dB | 106dB | |
| Power consumption (W) | Stand-by | | 20W | | | |
| | Idle | | 100W | | | |
| | 1/8*2 (2 Ω / Pink noise) | | 1800W | 1600W | 1500W | |

1/8 = Power consumption at 1/8 maximum output power

| All Models | | |
|-----------------------------------|--|---|
| THD+N | 20Hz-20kHz, Half Power RL=4Ω, 8Ω | 0.2% |
| Intermodulation Distortion | 60Hz: 7kHz, 4:1, Half Power *2 | 0.25% |
| Frequency response | MAX | +0.5dB |
| | TYP | 0dB |
| | MIN | -0.5dB |
| Channel Separation | Half Power RL=8Ω, 1kHz Att. max input 600Ω shunt | 65dB |
| Damping Factor | RL=8Ω 1kHz | 800 |
| Voltage Gain | | 43.8dB ~ 19.8dB, 0.1dB step |
| Maximum Input Voltage | | +24dBu*4 |
| Input Impedance | | 20kΩ (balanced) 10kΩ (unbalanced) |
| Controls | Front Panel | POWER switch (push on / push off), Rotary encoder x 2, Function button x 4, HOME button x 1, EXIT button x 1, ENTER button x 1, Mute button x 2 |
| Connectors | Analog input In | XLR-3-31 type x 2 |
| | Thru | XLR-3-32 type x 2 |
| | AES/EBU input/output In | XLR-3-31 type x 1 (2 channels, 24-bit 96kHz ~ 44.1kHz) |
| | Thru | XLR-3-32 type x 1 (2 channels) |
| | Out | XLR-3-32 type x 1 (2 channels, 24-bit 96kHz ~ 44.1kHz) |
| | Speaker output | Neutrik® SPEAKON® NL4 x 2, 5-way binding post x 2 pairs |
| Ethernet | RJ45 x 1 | |
| Fault output | Euroblock connector (3P) x 1 | |
| Indicators | | IDENTIFY, NETWORK, PROTECTION, BRIDGE, PARALLEL, POWER, STANDBY, MUTE, ALERT, CLIP, SIGNAL, |
| Load protection | | POWER switch on / off mute, DC-fault: Amplifier shuts down automatically. clip limiting: THD ≥ 0.5% |
| Amplifier protection | | Thermal: Mute the output (heatsink temp 90°C) (return automatically). VI limiter (RL ≤ 1Ω) : Limit the output |
| Power supply protection | | Thermal: Amplifier shuts down automatically. (heatsink temp ≥ 100°C) |
| Cooling | | Variable speed fan: x 2 |
| Power requirements | | US : 120V (60Hz) 30A Twist lock connector EU : 220V ~ 230V (50Hz / 60Hz) |
| Dimensions(W×H×D) | | 480 x 88 x 461mm (18.9" x 3.46" x 18.1" : 2U) |
| Weight | | 16.0kg (35 lbs) |
| Accessory | | Handle x 2 (with flat-head screw x 4), Euroblock connector (3P) x 1, Owner's Manual |

(*1) Output power depends on the power supply voltage. These figures are based on 230V. If the power supply voltage is 220V, output power can be 8% less than the power shown in the spreadsheet. Output power can be 7% more in case of 240V.
 (*2) 1/8 power = 9dB below rated power
 (*3) Half power = 3dB below rated power
 (*4) 0dBu = 0.775Vrms

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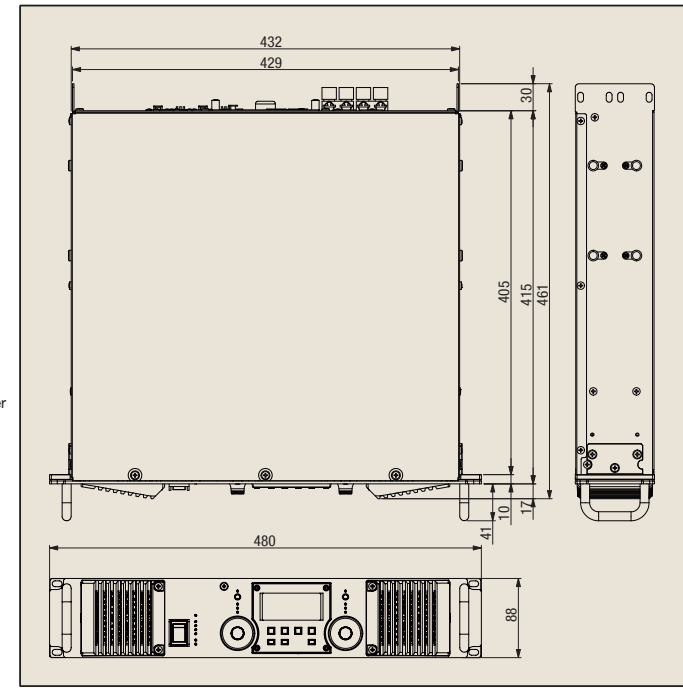
Specifications and appearance are subject to change without notice.

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Dimensions

unit : mm



TXn series

POWER AMPLIFIERS

High Power Amplifiers with Internal DSP and Advanced Networking Capabilities



YAMAHA CORPORATION
P.O.BOX 1, Hamamatsu Japan
<http://www.yamahaproaudio.com>



Printed in Japan



TX6n — 3000 Watts per Channel into 4 ohms
TX5n — 2500 Watts per Channel into 2 Ohms
TX4n — 2200 Watts per Channel into 2 Ohms

- High power for touring applications plus stable 2-ohm drive capability for line array speaker systems.
- Yamaha DSP technology provides extensive monitoring, control, input/speaker processing, and protection functions built in.
- Card slot makes it easy to match the amplifier's I/O configuration to the system — analog or digital.
- Failsafe redundant input configuration using both the analog XLR and the card slot inputs.
- Legendary Yamaha quality control for consistently superior sonic quality and reliability.

Solid Power and Stunning Audio Quality with Built In Processing

There was a time — not so long ago — when all a professional power amplifier had to do was amplify. But with increasing system demands and requirements for reproduction quality, the need for additional support equipment increased dramatically, leading to configurations of mind-boggling complexity. Racks of mixers, equalizers, crossovers, limiters, delays, and more became necessary just to handle output processing.

Yamaha TXn series power amplifiers combine outstanding audio power performance with industry-leading Yamaha digital signal processing technology to give you total output capability in astonishingly compact 2U-size amplifiers. But there's more. You also get unmatched flexibility to choose the input/output configuration and format that best suits your needs, while comprehensive networking capability lets you monitor and control complex multi-amp systems from a laptop computer. With the appropriate I/O cards these advanced amplifiers are also fully compatible with CobraNet or EtherSound audio networks. And if you're driving line array speaker systems you'll appreciate the fact that every one of these amplifiers can comfortably drive 2-ohm loads with total stability and reliability.

These revolutionary power amplifiers not only deliver high power and staggering sonic quality, but they also feature all monitoring, control, processing, and protection functions you need to achieve optimum performance in systems of any size or complexity built right in. The power amp of the future does much more than just amplify. The power amp of the future is here.



Rear panel (TX6n)

Superlative Power Performance Combined with Cutting-edge DSP and Unrivalled Flexibility



Always maintaining headroom - Stable operation at 2 ohms

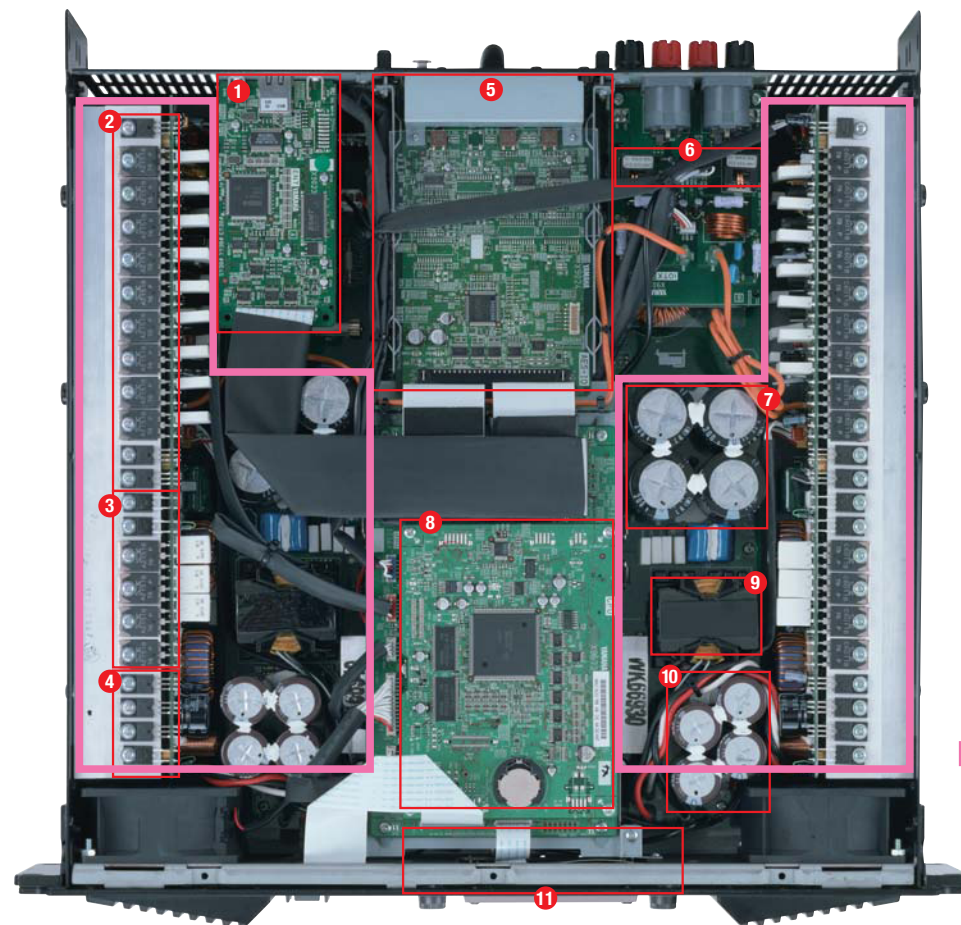
When speakers are connected in parallel, often the case with subwoofers or line arrays, stability at lower impedance becomes extremely important. The actual impedance curve of a speaker unit is complex and its load varies greatly depending on frequency. The actual impedance of a speaker is often lower than its nominal impedance under certain frequencies, putting excessive stress on the amplifier especially if multiple speakers are connected in parallel. The TXn

series are designed to perform with ease even under demanding low impedance conditions, always maintaining top quality performance. Some of the many refinements implemented to provide stable low-impedance drive capability include newly developed thin-film power transistors and flat-wire power transformer windings to minimize heat loss. Many other details contribute, but the final result is totally stable drive capability down to two ohms.

Dual-mono Configuration with Independent Power Supplies

The TXn amplifiers feature a dual mono configuration: the mono amplifiers are arranged symmetrically on each side of the chassis, each with its own independent power supply. This configuration effectively eliminates performance-degrading interference between channels while maintaining optimum separation and superior definition under all operating conditions

and with all types of source material. Sudden high power demands in one channel will not affect the performance of the other, for example. The two power supplies operate in opposing phases to cancel noise while minimizing electromagnetic interference.



TX6n internal layout

- 1 Ethernet device
 - 2 Class AB power amplifier
 - 3 EEEngine high speed voltage buffer
 - 4 EEEngine high speed current buffer
 - 5 MY card slot
 - 6 Precision current sensor (load monitor)
 - 7 200V primary capacitor
 - 8 DSP7+SharcDSP
 - 9 Transformer
 - 10 250V secondary capacitor
 - 11 LCD 0.5dB step attenuator
- Mono Amp x 2 = Dual Mono Amp structure

EEEngine Efficiency

Original Yamaha EEEngine technology reduces power consumption by approximately 50% compared to conventional amplifiers while maintaining full Class AB reproduction quality and fast response. Power mains quality and capacity become significant issues in large-scale live sound systems, but the ability of the TXn series amplifiers to deliver high power output with dramatically reduced power consumption goes a long way towards alleviating

the problem. In addition to less susceptibility to imperfect mains supplies, lower power consumption also achieves reduced heat generation, significantly increasing part life and reliability. In order to achieve stable 2-ohm drive capability the EEEngine circuitry in the TXn series amplifiers features a newly developed high-efficiency FET current buffer drive circuit. Only Yamaha can deliver this level of high efficiency and stability with low-impedance loads.

Versatile Onboard DSP

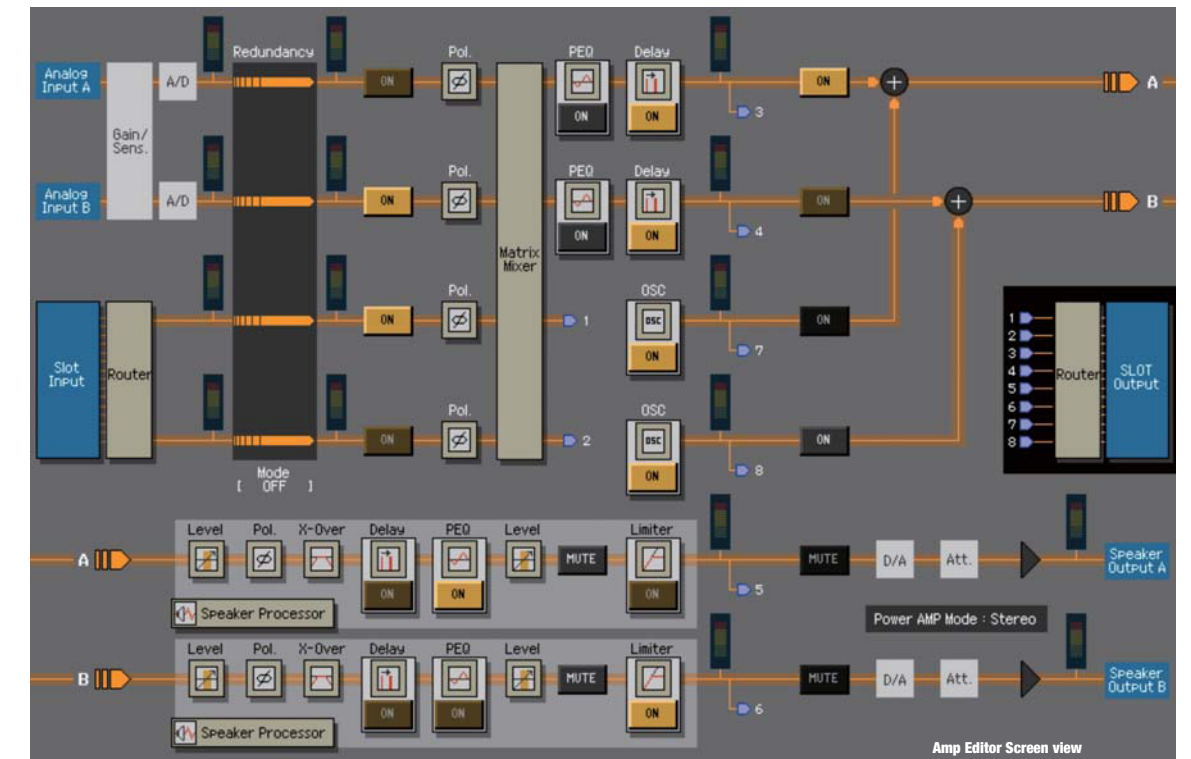
On top of the outstanding basic performance offered by the TXn series power amps, they are equipped with some of the most advanced and flexible DSP (Digital Signal Processing) capabilities available. Yamaha is an acknowledged leader in the field of digital signal processing, and the full weight of that technology has been brought to bear in these cutting-edge power amplifiers. All three TXn models incorporate advanced 24-bit 96-kHz DSP capability that employs Yamaha's own DSP7 LSI (the same LSI that provides the processing power for Yamaha's industry-standard digital mixing consoles) as well as powerful SHARC processing technology. In addition to outstanding sound quality and low latency, an extraordinary selection of control and processing

capabilities are provided, ranging from basic amplifier settings through input and speaker processing to comprehensive status monitoring. The built-in input and speaker processing capabilities are so extensive and powerful, in fact, that external processors will be unnecessary in many applications. The onboard DSP parameters and functions can be accessed directly through the LCD and button interface provided on the front panel of the amplifier, or via Yamaha's Amp Editor software running on a computer connected via Ethernet. Amp Editor control provides additional advantages and capabilities for controlling large systems that employ numerous amplifiers (Amp Editor is discussed in more detail on the following page).

DSP Features and Functions

The chart below lists most of the monitoring, control, and processing functions provided by the TXn series amplifiers. Unless otherwise noted these functions can be accessed directly via the amplifier's own display and controls. The

Amp Editor software described on the following page offers more comprehensive displays and easier control, as well as centralized management of entire multi-amplifier systems.



Amplifier Control & Settings

- Input Attenuator** (0.5 dB steps)
- Gain/Sensitivity** (0.1 dB steps)
- Input Type:**
 - Card Slot
 - (AES/EBU, EtherSound*, CobraNet*, Analog*)
 - * Optional MY card required.
- Signal redundancy:**
 - Card slot with analog backup
 - Card slot with analog override
- Amplifier Mode:** • Stereo • Bridge • Parallel
- Input Mixer**
- Attenuator Link and Limits**
- Selectable Metering**

- Input Card Routing**
- Mute**
- Polarity**
- Level**
- 4-in/4-out Matrix Mixer**
- Polarity**
- EQ (8 Bands per Input Channel):**
 - 6-band Parametric EQ
 - 2-band Selectable EQ (PEQ, Low/High Shelving, LPF/HPF)
- Delay:**
 - Up to 1300 milliseconds in 0.01 millisecond increments (1 sample, 0.1 meter, or 0.1 feet steps selectable via Amp Editor).
- Oscillator:**
 - Pink Noise • Burst Noise
 - Variable Frequency Sine Wave
- Polarity**
- 4-in/2-out Matrix Mixer**

Speaker Processing

- Level, Mute**
- Polarity**
- Crossover (LPF/HPF):**
 - 6 dB/Oct • Adjustable Fc Gain* • Bessel*
 - Butterworth* • Linkwitz-Riley
- Delay:**
 - Up to 500 milliseconds in 0.01 millisecond increments (1 sample, 0.1 meter, or 0.1 feet steps selectable via Amp Editor).
- EQ (6 Bands per Output Channel):**
 - PEQ • Low/High Shelving (6 or 12 dB/Oct)
 - All Pass (for phase matching) • Horn EQ
- Limiter**
- Speaker Library:**
 - Yamaha speaker libraries pre-installed
 - Other libraries can be loaded as required
 - Edit security provided

DSP/CPU-based Protection

- Switchable Clip Limiter**
- Voltage Limiter**
- Power Limiter**
- Overheat Limiter**
- Low Impedance/Short Circuit Mute (1-sec. reset)**
- Output DC Mute**
- VHF Limiter**
- Current Limiter**
- Security**
- Password Lockout of Display and Mute Button**

* 12, 18, 24, 36, or 48 dB/Oct



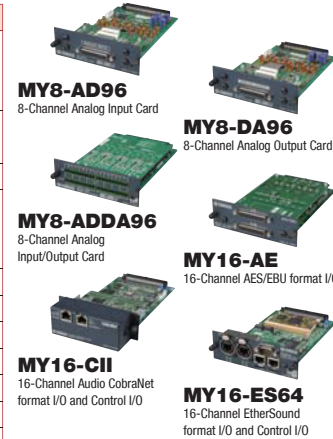
Flexible Input Configuration

In addition to balanced analog inputs and throughputs that are permanently installed on the rear panel, the TXn series amplifiers feature a Yamaha mini-YGDAI standard card slot that comes supplied with an AES/EBU I/O card for digital input and throughput. The analog and digital inputs can be used independently, or signals can be applied to both and mixed or switched

automatically for emergency announcements, for example. The original AES/EBU I/O card can be replaced with compatible Yamaha mini-YGDAI cards that provide other digital or analog input/output formats, or with network cards that allow full compatibility with CobraNet or EtherSound audio networks.

Yamaha Mini-YGDAI cards

| MY card | format | I/O | Connector | Note / Application |
|------------|--------------------|------------|---------------|--|
| MY4-AD | Analog | 4in | XLR | Analog redundancy |
| MY8-AD24 | | 8in | TRS Phone | |
| MY8-AD96 | | 8in | D-sub 25pin | |
| MY4-DA | | 4out | XLR | |
| MY8-DA96 | AES/EBU | 8out | D-sub 25pin | Processor output to other analog amplifier |
| MY8-ADDA96 | | 8in 8out | Euro block | |
| MY8-AE | | 8in 8out | D-sub 25pin | |
| MY8-AE96 | | 8in 8out | D-sub 25pin | |
| MY8-AE96S | Video | 8in 8out | D-sub 25pin | Redundancy, processor output |
| MY8-AEB | | 8in 8out | BNC | |
| MY16-AE | | 16in 16out | D-sub 25pin | |
| MY16-CII | | CobraNet | 16in 16out | |
| MY16-ES64 | EtherSound | 16in 16out | RJ45 | |
| MY16-EX | YAMAHA proprietary | 16in 16out | RJ45 | |
| AVY16-ES | EtherSound | 16in 16out | RJ45 | By AuviTran |
| MY16-MD64 | MADI | 16in 16out | BNC, SC fiber | By Audio Service |



Amp Editor for Comprehensive Central Control

Amp Editor is a software application that lets you monitor, manage, and control all TXn amplifier functions and DSP parameters. If you will be combining TXn series amplifiers with Yamaha Tn, PC-1N, XP, XM and/or XH series amplifiers, the available functions of those amplifiers can be accessed as well if they are connected to the network via a Yamaha ACD1 Amplifier Controller Device.

The Amp Editor software runs on Windows based computers. No special drivers are required: simply connect your computer's Ethernet port to a standard high-speed Ethernet hub, and then the hub ports can be directly connected to the TXn amplifiers to be controlled/monitored. Once set up you can use the software's efficient, intuitive graphical interface to remotely monitor and control each device on the network.



In addition to comprehensive control and monitoring capability, the Amp Editor software also provides a number of features that make managing and controlling large multi-amp systems easy and efficient. You can name amps according to their function within your system, group amplifiers for simultaneous control, and name the groups for easy identification. For example, you might want to mute just the left FOH high-frequency stack, or solo just the right FOH low-frequency stack during a sound check. Amp Editor makes this type of control fast and easy.

There are also many advanced, flexible monitoring functions. Amp Editor can, for example, warn you when a parameter exceeds a pre-defined voltage, wattage, temperature, or impedance (upper/lower) value. This lets you keep track of all amplifiers in the system from a central computer display in real time. Warnings are automatically logged to an info file so it's easy to pinpoint and troubleshoot problems.

Status & Fault Monitoring

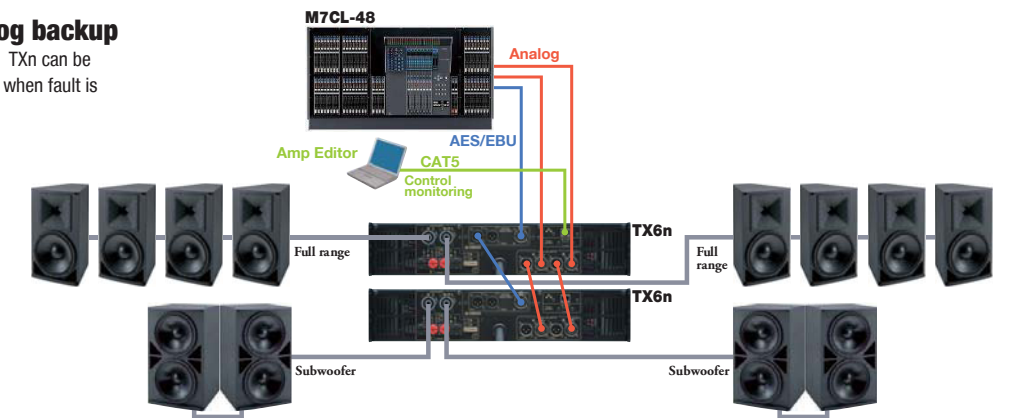
= Fault thresholds can be specified, and fault alerts provided via software and the rear-panel GPI outputs =

- Power mains supply voltage (V)
- Signal Input Level (dBu)
- Load Impedance (ohms)
- Speaker Output Voltage and Power (W)
- Automatic Connection Diagnostics Using Pilot Tone
- Internal Temperature
- Fan Speed
- Alerts with Event Logging

System Examples

Basic AES/EBU setup with analog backup

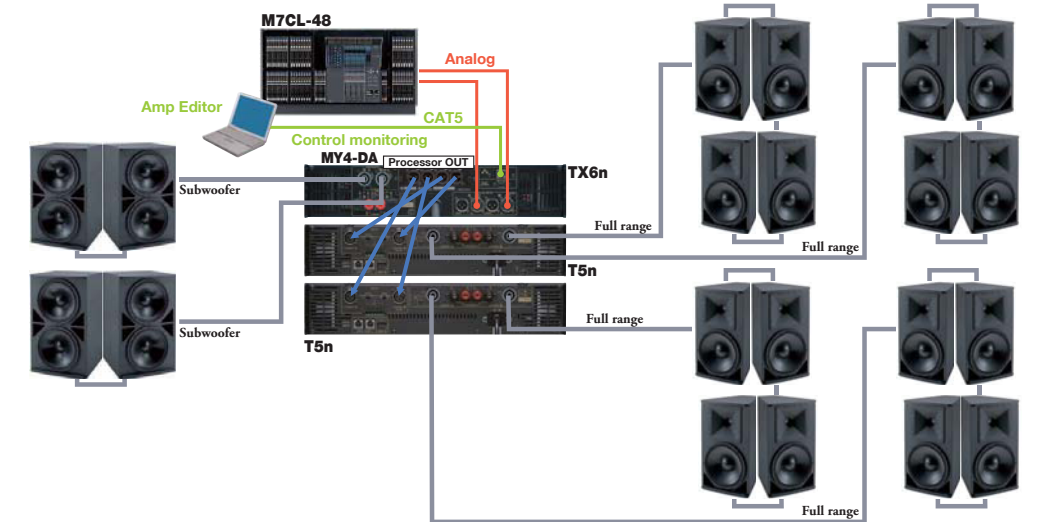
TXn amplifiers are fed digital signals via AES/EBU. TXn can be configured to automatically switch to analog input when fault is detected on the AES/EBU input.



Analog setup using TXn and Tn amplifiers

This analog setup is supplied an analog source signal directly from the mixing console.

The TXn is driving subwoofers, with channels A and B driven in parallel mode. The Tn amplifiers are driving full range speakers, receiving processed signal from the TXn using the MY4-DA analog output card. This example is a mono setup, as all channels on the T5n amplifiers are receiving the same processed signal from the TXn.



Optional ACD1 unit is required for remote control and monitoring of the Tn amplifiers.

A digital PA system

Digital domain of your PA system is now expanded to keep signal digital right from the input(AD8HR), the mixing console, and to the amplifiers(TXn). The combination of AD8HR and NAI48ES may be used as a stagebox solution to send signals to the FOH mixing console via EtherSound. Mixed signals are sent back to the NAI48ES, and then on to the TXn amplifiers for processing and amplification.

Amp Editor software is used for status monitoring and control, connected to the amplifiers via standard Ethernet switches.

