

*Intelligent
Power*

BITTNER

AUDIO

Bittner Audio – Quality that Goes beyond.

Amplifiers are made to deliver voltage and current. However, to achieve convincing results it takes a lot more than a few years of experimentation. In addition it asks for the determination to use only the finest quality components.

To achieve a transparent and well-balanced sound it takes great care and a production process that pays careful attention to the highest quality workmanship. All components will be of excellent quality and over-dimensioned in all important sections.



All Bittner Audio products are manufactured using the most modern production methods, focusing on the uncompromising application of quality management principles.

Since its foundation in 1989, Bittner Audio pursues the goal to meet the demanding requirements of the European market. Whether it be VDE 0828, EN 60849 or the new EN 54-16 standard, whether EMC, CE or TQM, Bittner strives to meet or exceed these standards and guidelines.

As Europeans we understand the needs and demands of our multi-national community. We are close by and try our very best to serve and to build a relation of trust and reliability with our valued customers.

Bittner Power Amplifiers

Meet the Highest Standards.

SMT circuit design

Clear and powerful sound and impulse response

»Discretely« designed power modules

Bittner Audio rejects the use of commercial hybrid building blocks

Protection circuitry for any conceivable situation

DC, HF, Infra Sound, Shorted Outputs, Open Outputs, Thermal Overload
Stable into reactive or mismatched loads

For event or installation

Operation mode(s):

- 100 V/constant voltage units: Stereo/Parallel operating mode
- Low impedance units: Stereo/Bridge/Parallel operating mode

All connectors (mains, inputs, outputs) detachable

LED indicators for SIGNAL, CLIP, PROTECT, POWER

Low noise variable speed fans

Suitable for studio control rooms

Perfect weight/output power ratio

Load protection:

On/Off muting, DC-fault power supply shutdown

All models only 2 RU

Softstart*

Alive contacts*

Sequential remote power On/Off*

High-end, high efficiency switched power supplies with PFC*

Advanced monitoring and control when used with an SXL II*

Separate individual channels on all multi-channel amplifier models*

EQ slot*

Dante™ networking (4Xi / 4Xe)

Two separate power supplies for high operational safety of multi-channel amplifiers (4X DUAL, 8X)

24 volts operation (XV DC, 4DXV)

DC power-fail signalization (XV DC)

Floating 100 volts direct outputs (4DXV)

High-end DSP (XR)

3 years warranty

*not applicable in some products

Bittner Power Amplifiers: Greater than the Sum of their Parts.



BASIC

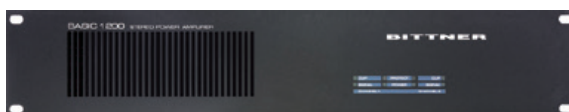
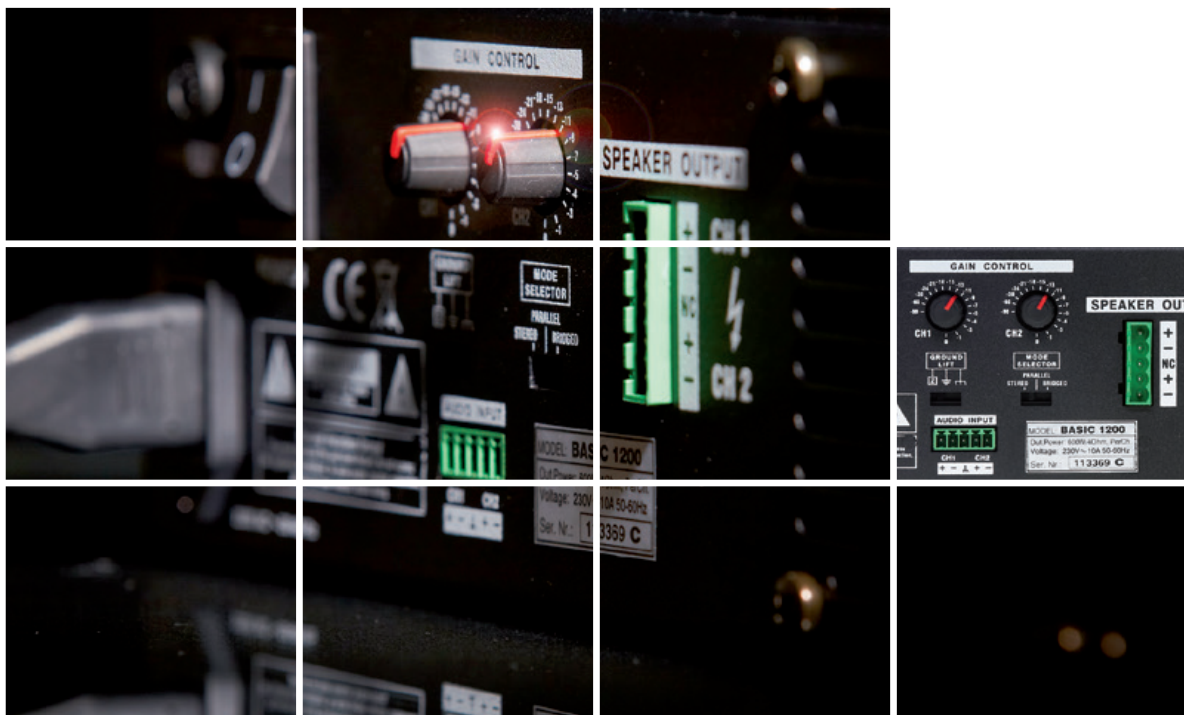
No Compromises!



Meeting the tightest budgets and professional requirements in reliability, flexibility, and sound.

Alone or in combination with other products of the Bittner portfolio.

First-rate workmanship and the use of high-class components made the BASIC Series a standard and the choice of many contractors worldwide.



BASIC 200	2 x 130 watts @ 4 Ω
BASIC 400	2 x 250 watts @ 4 Ω
BASIC 800	2 x 490 watts @ 4 Ω
BASIC 1200	2 x 840 watts @ 4 Ω

- Ground lift
- Analog volume controls
- Stable steel chassis
- BASIC 200/400/800 only 32 cm (12.6") deep

XB

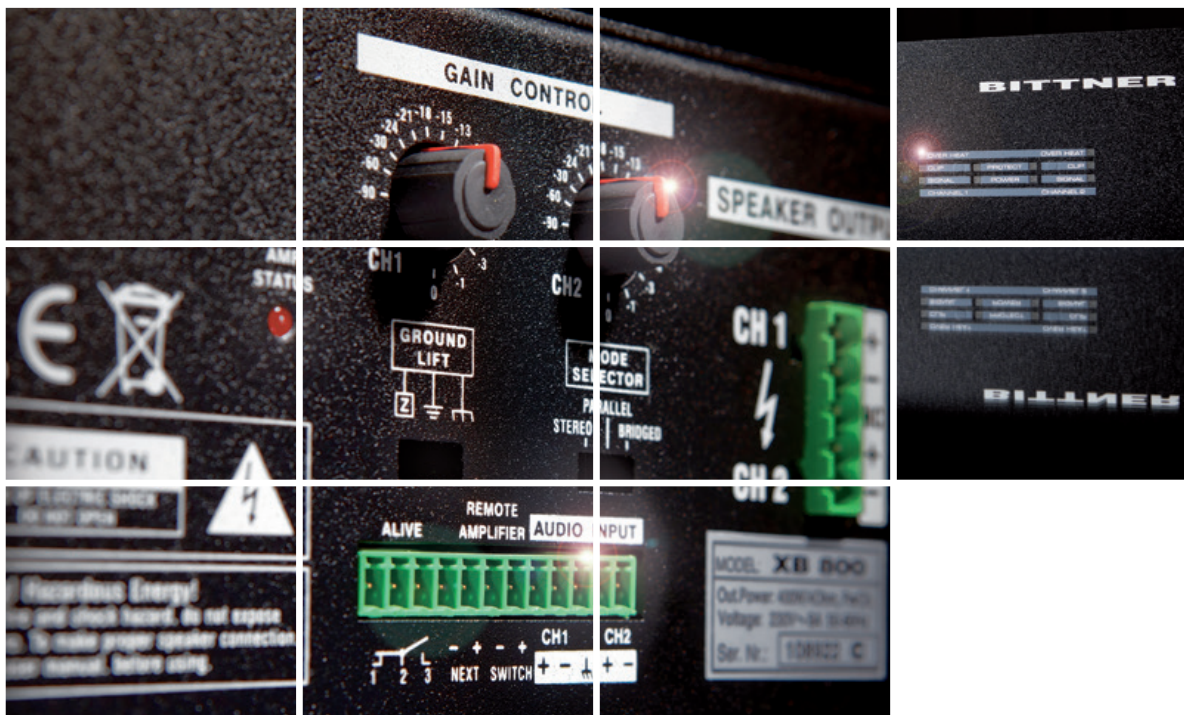
Straight. Powerful!



Versatile, dynamic, stable. For a maximum in operational safety and quality.

Sequential remote power On/Off and an alive contact to provide permanent evaluation of its operational condition. The XB solves all jobs.

One-for-All!



XB 400	2 x 360 watts @ 4 Ω
XB 800	2 x 530 watts @ 4 Ω
XB 1600	2 x 1250 watts @ 2 Ω
XB 2500	2 x 1570 watts @ 2 Ω

- XB 1600/2500: High-end, high power SMPS with PFC
- Ground lift
- Analog volume controls
- Sequential remote power On/Off
- Alive contact

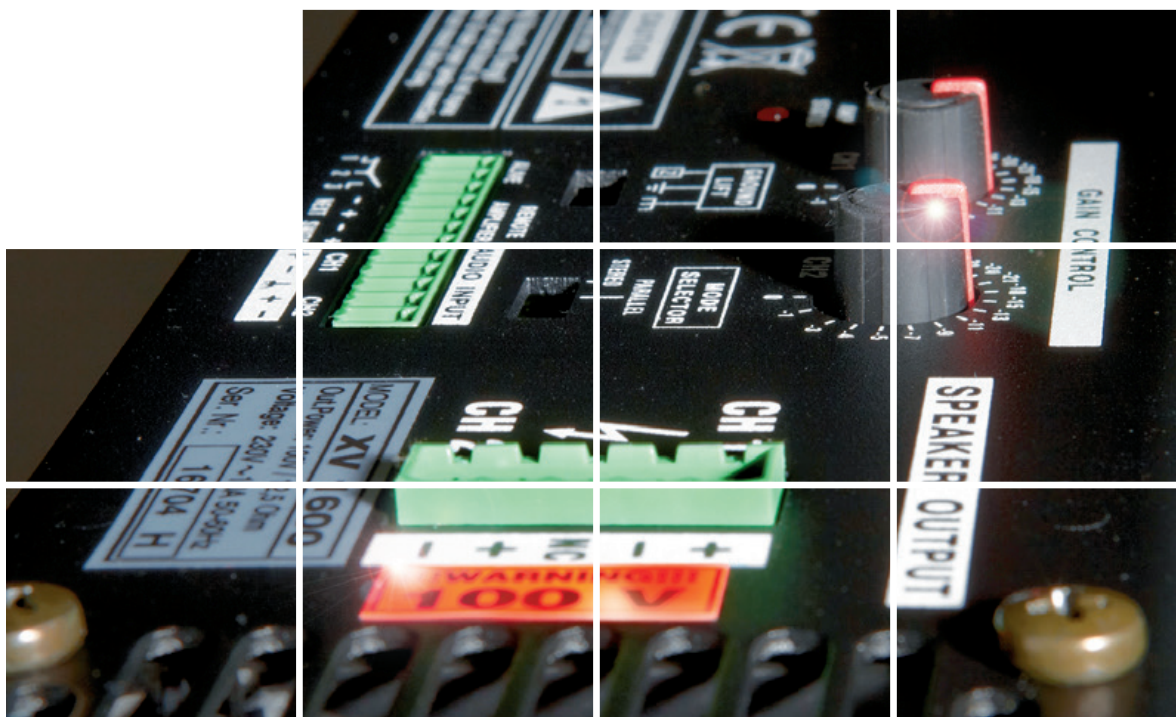
XV

Power for Professionals.



**Made for PA/VA applications, BGM, music and acoustic alarm signals.
Stable, constantly monitored, versatile, and dynamic.**

Needless to say that the XV high-end toroidal output transformers are some of the very best. The XV effortlessly deals with all situations and jobs.



XV 200	2 x 100 watts / 100 V
XV 400	2 x 200 watts / 100 V
XV 600	2 x 300 watts / 100 V
XV 1000	2 x 500 watts / 100 V
XV 1600	2 x 800 watts / 100 V

- Ground lift
- Analog volume controls
- Sequential remote power On/Off
- Alive contact
- High-end toroidal output transformers

XV DC

When the Going Gets Tough.

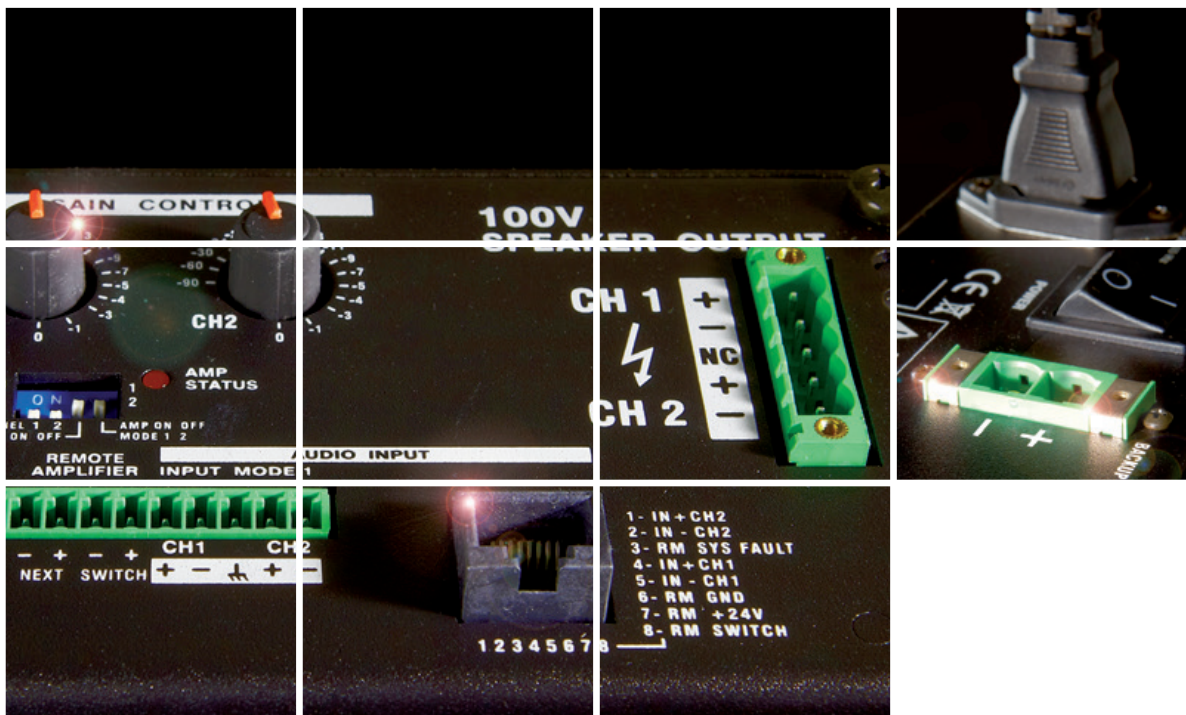


Sovereign dependability and seamless switching over to 24 VDC in case of a loss of mains power. Without diminishing its performance or a reduction of output power.

In accordance with the most stringent safety regulations (EN 54-16).

Designed for voice evacuation, public announcements and background music (BGM) with uncompromised audio performance.

Reliability has a new face.



XV 500 DC	2 x 250 watts / 100 V
XV 1000 DC	2 x 500 watts / 100 V

- 24 volts backup power
- High power, high efficiency SMPS with PFC
- Analog volume controls
- Sequential remote power On/Off
- Alive contact
- DC power-fail signalization
- High-end toroidal output transformers

4DXV

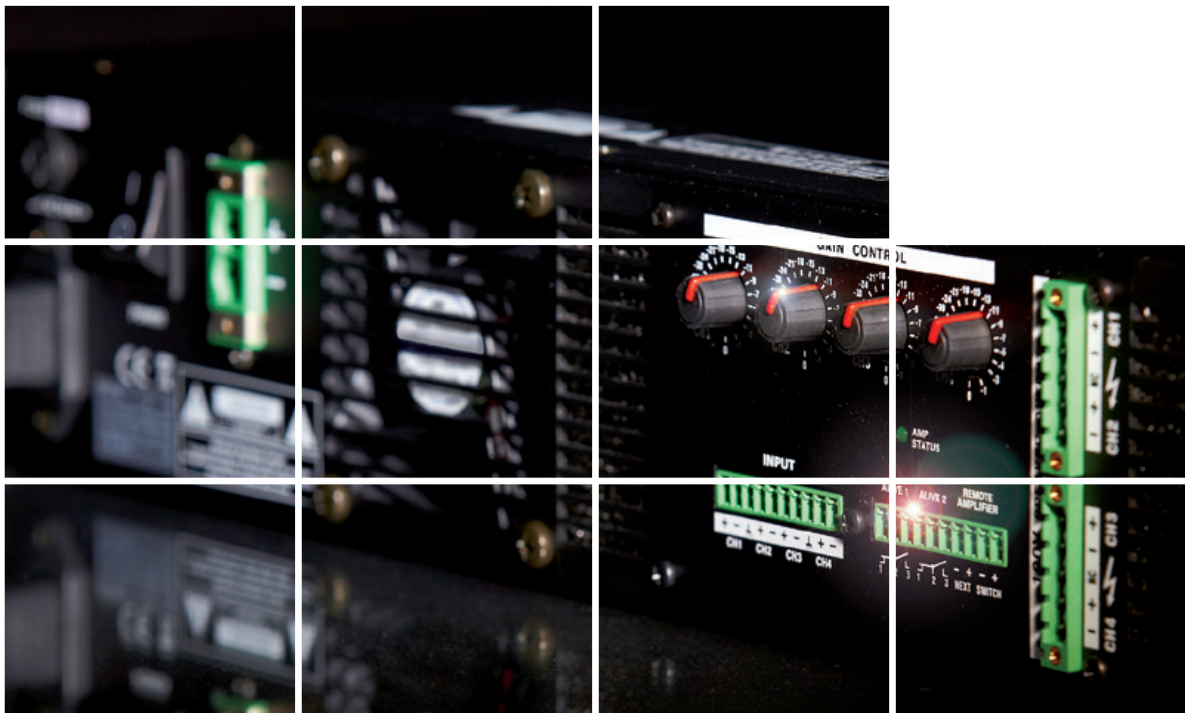
Exceeding Expectations.



A class of its own. Class D amplifier modules made of discrete components and circuits! No pre-fabricated building blocks. Powerful without any losses even under the most demanding conditions.

Its reduced weight due to floating 100 volts direct outputs (transformerless) will allow for a cost effective installation. In addition, Bittner's High Efficiency Technology reduces the energy consumption to a minimum.

Ask for more.



4DXV 250	4 x 250 watts / 100 V
4DXV 500	4 x 500 watts / 100 V

- Class D
- 100 volts floating direct outputs
- 24 volts backup power
- High power, high efficiency SMPS with PFC
- Clip limiter
- Analog volume controls
- Sequential remote power On/Off
- 2 alive contacts

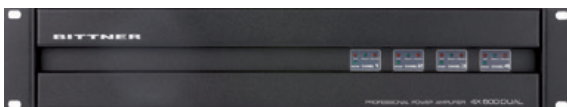
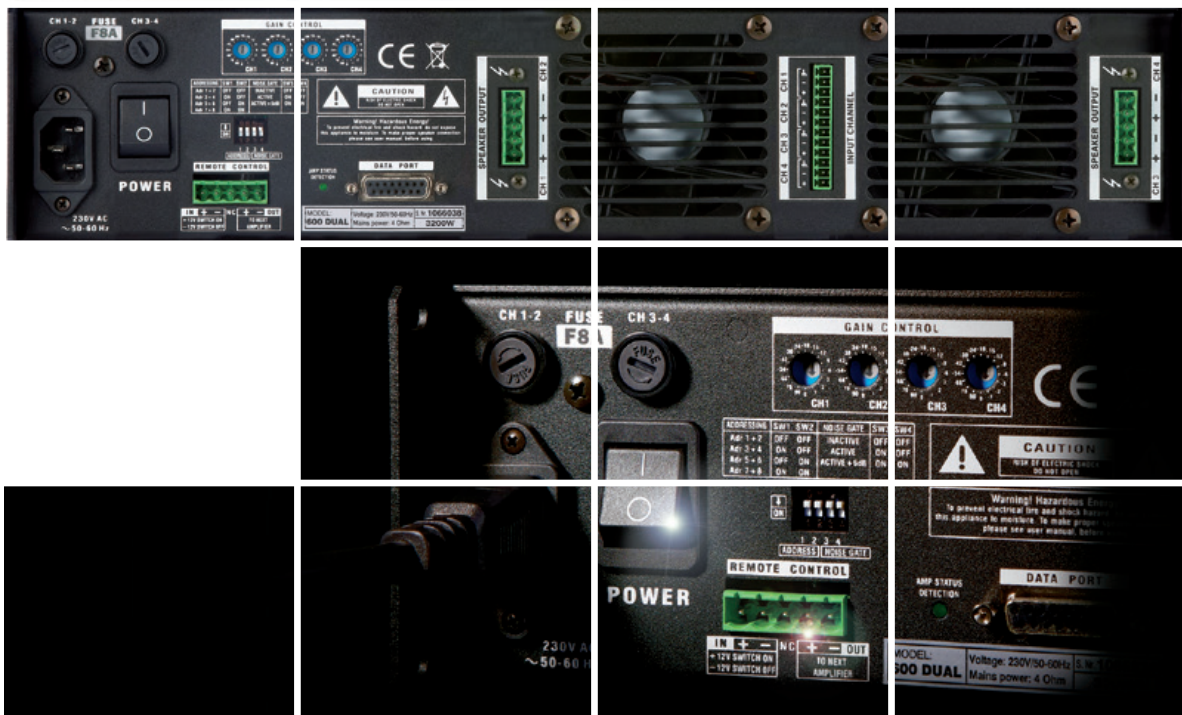
4X DUAL

Two for One.



Straight forward. No compromises.
The 4X DUAL combines two separate 2-channel amplifiers in one chassis.

Peak performance in a double pack.



4X 400 DUAL	4 x 450 watts @ 4 Ω
4X 600 DUAL	4 x 630 watts @ 4 Ω

- 2 separate power supplies
- Wear-free digital volume controls
- Sequential remote power On/Off
- SXL data port (I²C)
- Noise gate (switchable)

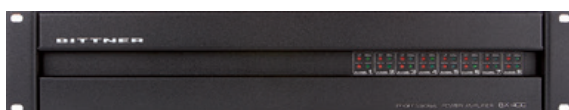
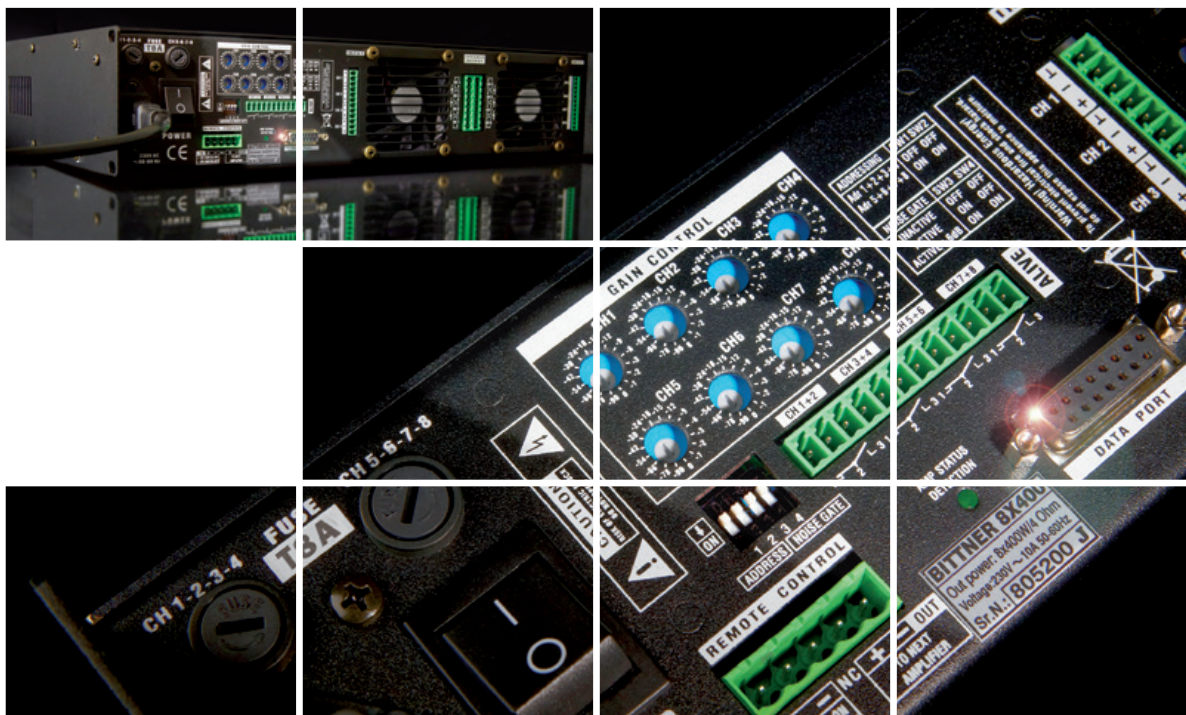
8X Setting Standards.



Multiple reliability. Meeting the highest demands in sound and flexibility.

With two separate power supplies, an integrated noise gate per channel, sequential remote power On/Off, alive contacts for every channel pair, and computer control.

To master a complete installation with only one power pack – that's what we call a standard.



8X 100	8 x 130 watts @ 4 Ω
8X 200	8 x 250 watts @ 4 Ω
8X 400	8 x 490 watts @ 4 Ω

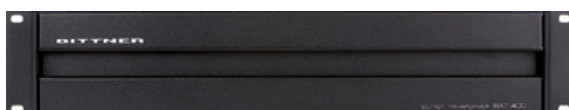
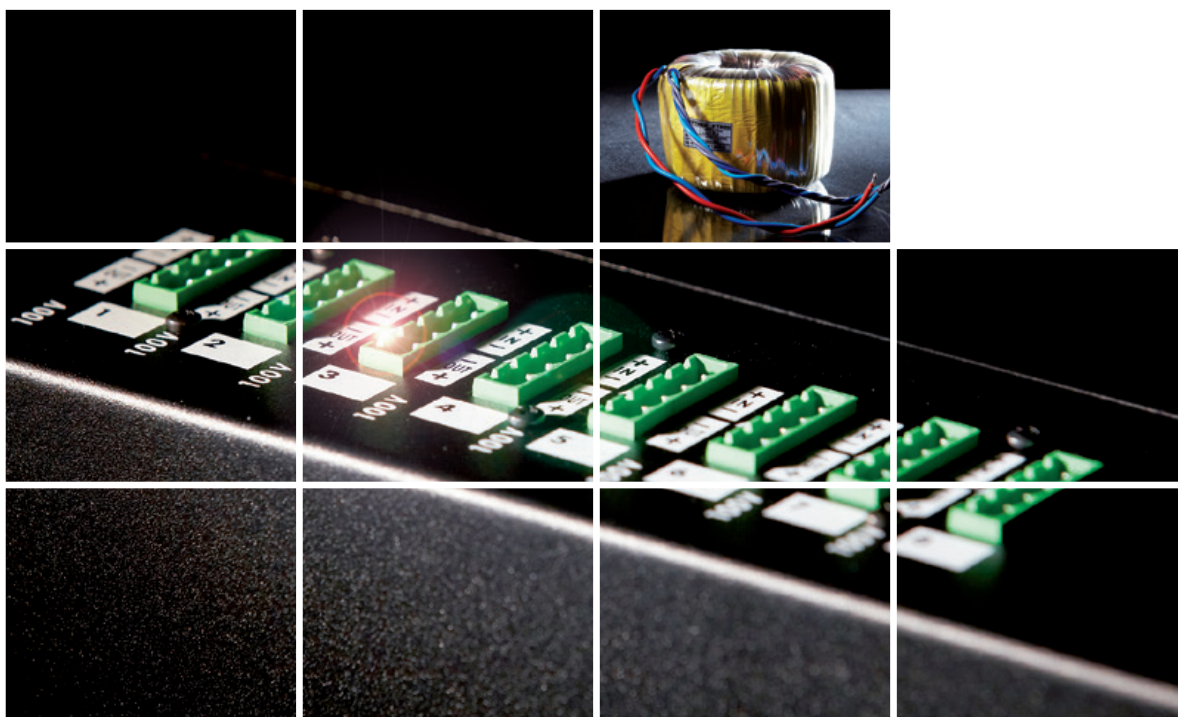
- 2 separate power supplies
- 4 alive contacts
- Wear-free digital volume controls
- Sequential remote power On/Off
- SXL data port (I²C)
- Noise gate (switchable)

XT / 8XT

Simply the Best.

Perfect frequency response and sound. Individually tested.

For the use in XV und XV-DC series and as the ideal complementary product for the 8X multi-channel amplifiers.



XT 100 – XT 800	1 x 100 – 1 x 800 Watt / 100 V
8XT 100	8 x 100 watts / 100 V
8XT 200	8 x 200 watts / 100 V
8XT 400	8 x 400 watts / 100 V

- XT: High quality toroidal output transformers for XV and XV-DC or as stand-alone products
- 8XT: 2 RU – multi-channel chassis matching the power rating of the 8X Series
- Ultra linear frequency response
- Flux free quality
- 4 ohms input impedance

4Xi / 4Xe

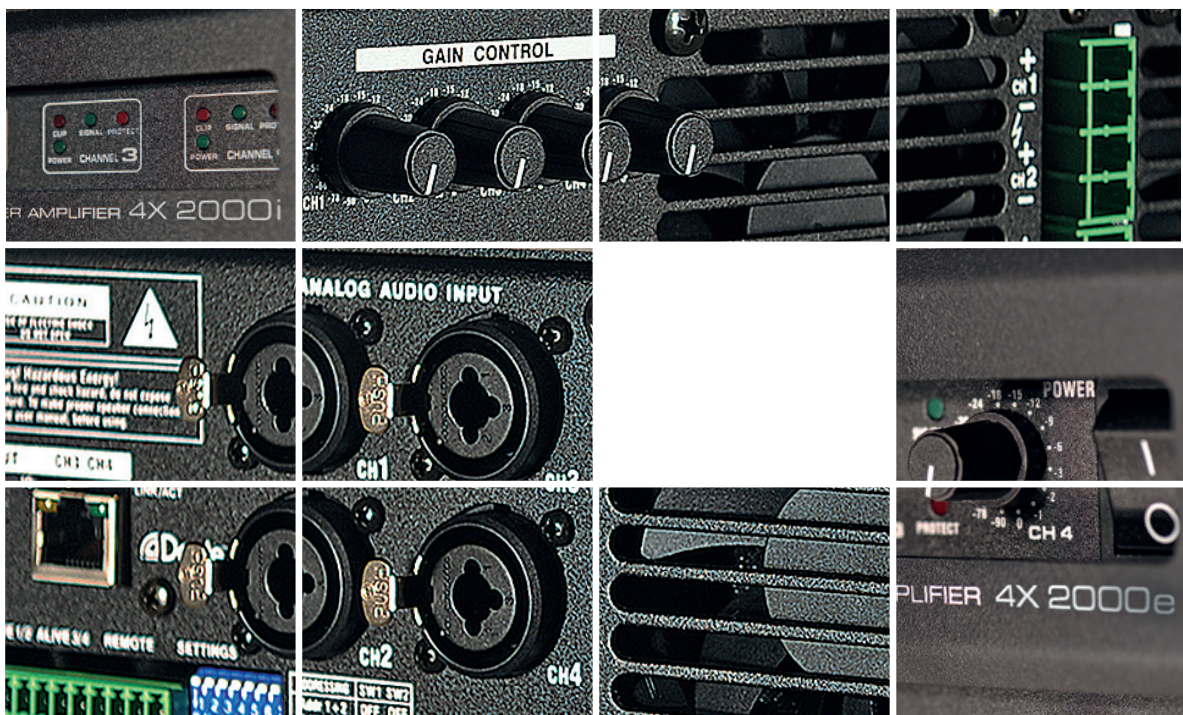
Groundbreaking. For Event and Installation.



More than just power. 4x top sound. Solid.

Audio networking with Dante™. Control, diagnostics, configuration: Internet.

Sometimes answers come easy.



4X 1200 i/e	4 x 1400 Watt @ 2 Ω
4X 2000 i/e	4 x 2000 Watt @ 2 Ω

- 2 versions: event (e) and installation (i)
- 4-channel Dante™ inputs (optional)
- Selectable Clip limiter (hard/soft)
- Impedance monitoring
- 2 alive contacts
- SXL II data port (RS485)
- Sequential remote power On/Off

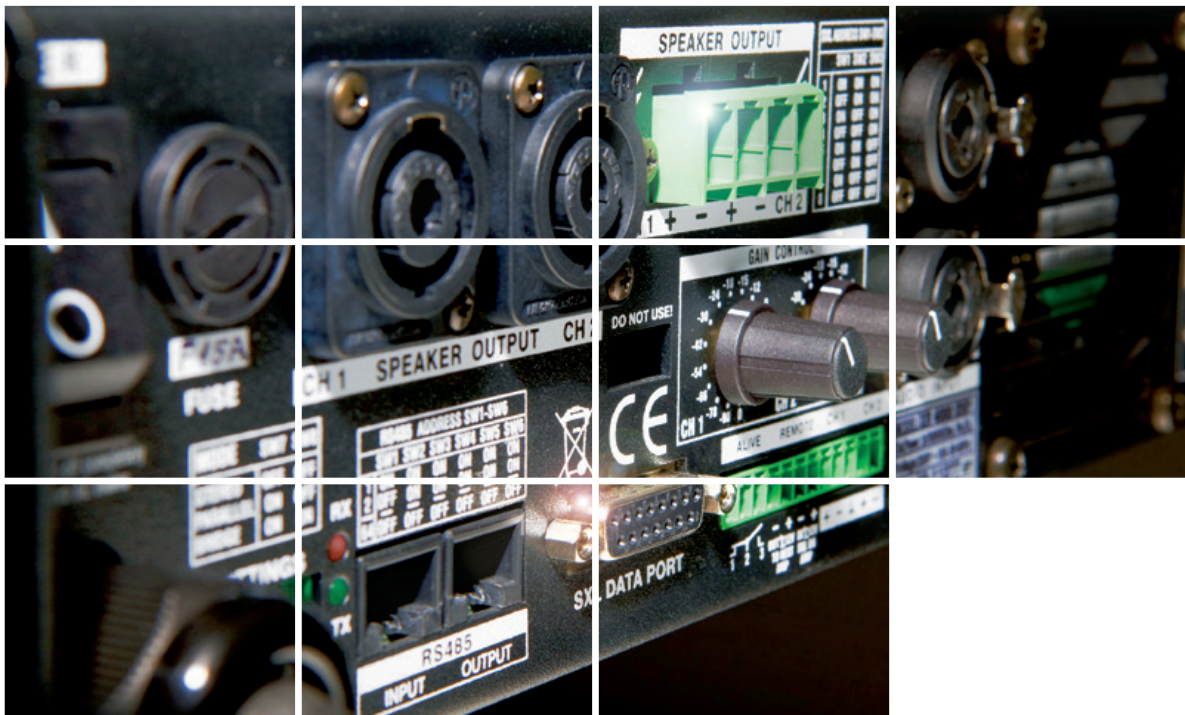
XR

New Horizons.



A lightweight power horse. Combined with sophisticated digital signal processing. For all types of loudspeakers and venues. Line monitoring and extensive control included.

A new definition of powerful intelligence.



XR 1500	2 x 1220 watts @ 2 Ω
XR 2500	2 x 1570 watts @ 2 Ω
XR 4000	2 x 1950 watts @ 2 Ω

- Premium DSP with extensive functions
- Impedance monitoring
- Alive contact
- Paging Input
- Monitor output
- SXL data ports (I²C, RS 485)
- Sequential remote power On/Off

AX 16

Going Beyond.



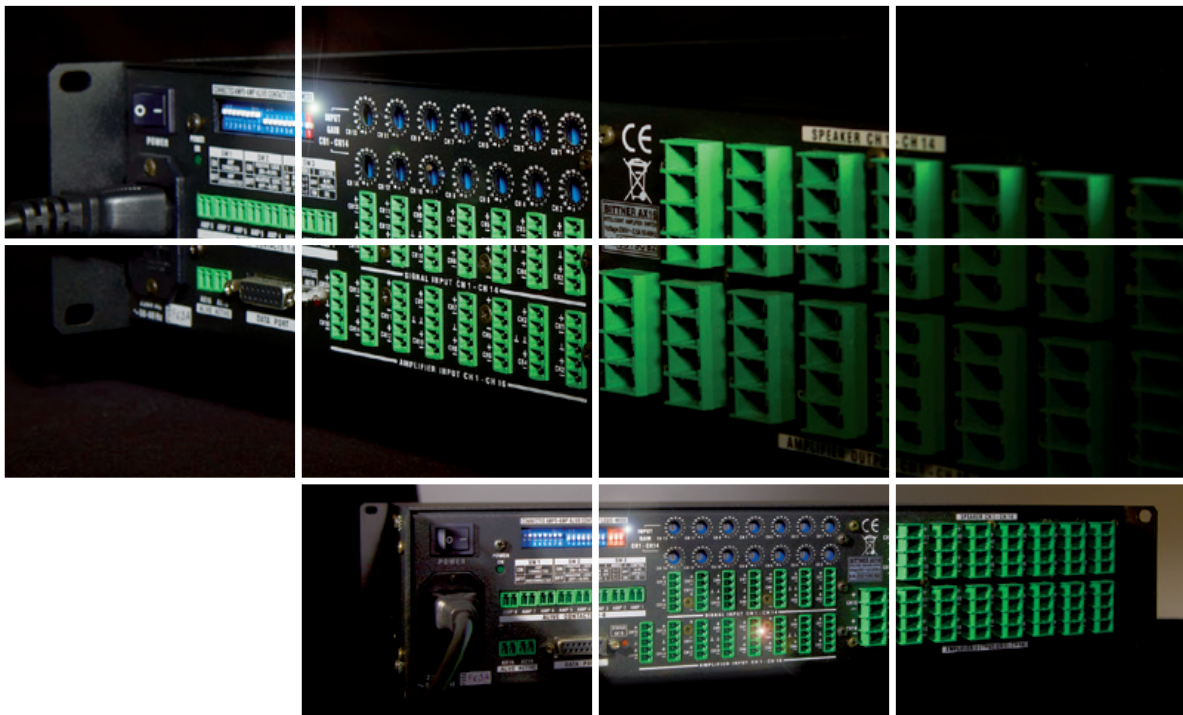
The new paradigm for a maximum of operational safety. The inputs and outputs of a defective amplifier will be inaudibly switched to an assigned backup amplifier.

The correct level of the defective amplifier will be transferred to the backup unit to provide the smoothest transition imaginable.

Self monitoring – granted.

The connection to a Bittner SXL II, shows the full potential of this unique device. No matter what the situation requires.

Absolutely. Safe!



- Microprocessor controlled amplifier switch for 16 channels
- Backup modes:
 - 1 x 14 signal + 2 backup channels
 - 2 x 6 signal + 2 backup channels
 - 4 x 2 signal + 2 backup channels
- Controlled via contact closures (alive contact) and SXL II
- Wear-free digital volume controls
- 2 fault indication contacts: alive and backup mode
- Output relays with a max. of 20 A/240 V, 100 V compatible
- Comprehensive LED indicators for all operation modes
- All connectors (PHOENIX) on the backside of the unit
- SXL data port (I²C)



Normal operation



Error



Error detection



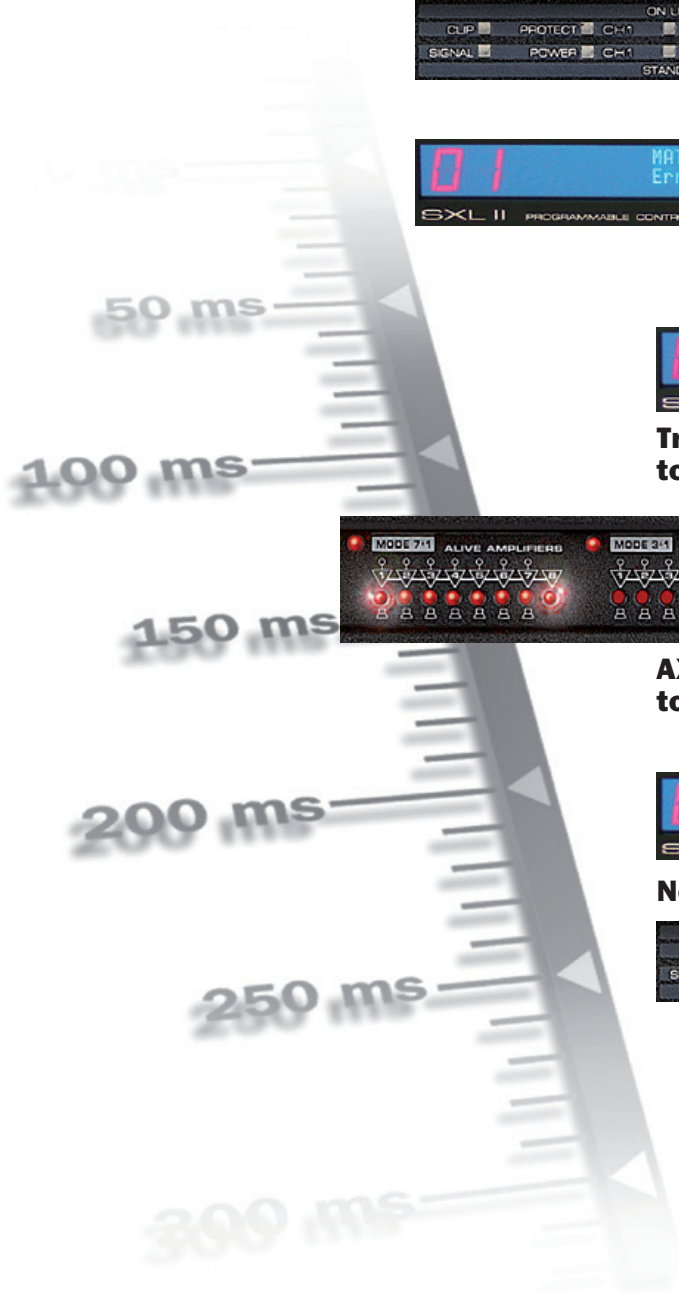
Transfer of all settings to backup amplifier



AX16 switches to backup amplifier



Normal operation



SXL II

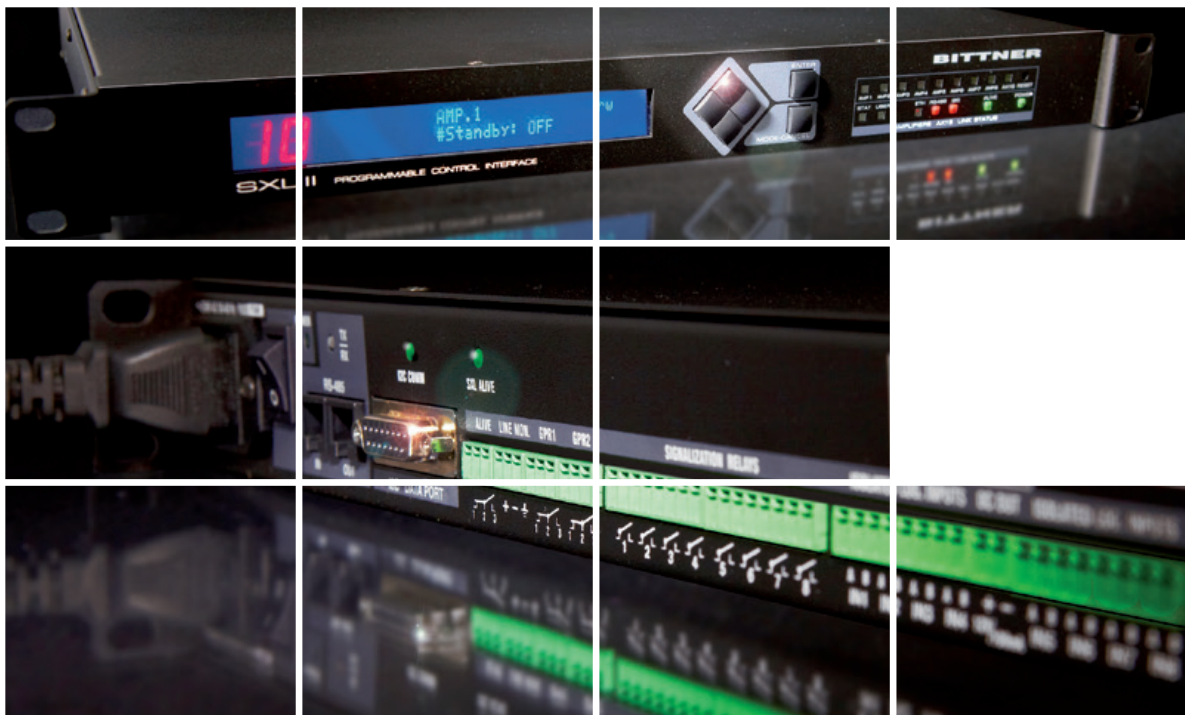
Trust but verify.



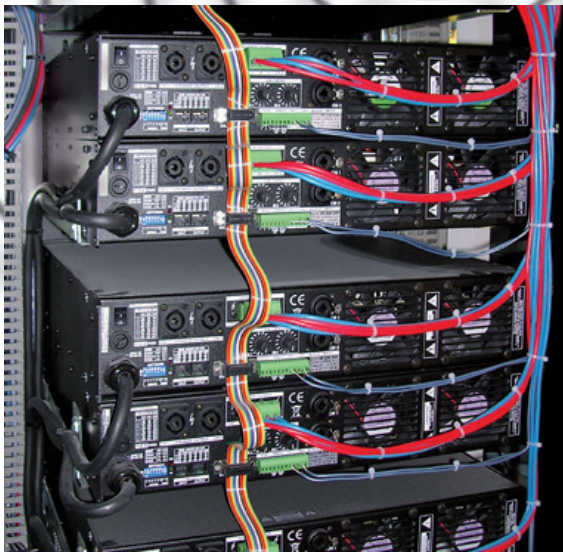
Power management, amplifier control and monitoring designed for venues of any size. Meeting all requirements. Embedded into a network or stand-alone. Controlled via the internet or by the push of a button.

Effortless communication with the high performance DSPs of the XR or the line monitoring facilities of the 4X Series. Up to 15 complex scenarios may be recalled manually or via the net. All activities will be logged and sent as an e-Mail to a destination of your choice. For seamless control, no matter where you are.

The information age meets power.



- Network management
- Integration into Ethernet LAN
- Communication with amplifiers via RS485 or I²C
- Independent backup modes
- Computer free operation
- Local configuration without the need for a computer
- SD card for storage of configurations
- Logging of all events
- Forwards log-events via e-Mail and SNMP syslog
- Integrated web server
- Fast dynamic user configurable web interface with integrated help system
- Simple integration into object orientated programming languages
- Monitoring of voltage and current
- Logic inputs 5 - 24 volts
- Logic relay outputs
- Alive contact
- Display of active configuration, alive and status LED



Essentials

Load-to-Power Relation in 100 V Systems

$$\begin{array}{l|l|l}
 10 \Omega = 1000 \text{ W} & 20 \Omega = 500 \text{ W} & 25 \Omega = 400 \text{ W} \\
 40 \Omega = 250 \text{ W} & 50 \Omega = 200 \text{ W} & 100 \Omega = 100 \text{ W}
 \end{array}$$

Crest Factor

The Crest Factor of an amp represents the relation between the peak voltage and the RMS value. It can be taken as a measurement of the quality of the response of an amp.

$$\text{Crest Factor} = \frac{\text{Peak}}{\text{RMS}} = \frac{1}{\sqrt{2}} \times \text{Peak}$$

Resistance - Power

Ohm's Law: $U = I \times R \quad I = \frac{U}{R} \quad R = \frac{U}{I}$

Power: $P = I^2 \times R \quad P = \frac{U^2}{R} \quad P = U \times I$

Resistors in series: $R_{\text{ges}} = R_1 + R_2 + \dots + R_n$

Resistors parallel: $R_{\text{ges}} = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \dots + \frac{1}{R_n}}$

Voltages in dBu and dBV

$$\begin{array}{lcl}
 10 \text{ V} & = & 20 \text{ dBV} = 22.2 \text{ dBu} \\
 1.55 \text{ V} & = & 4.2 \text{ dBV} = 6 \text{ dBu} \\
 1 \text{ V} & = & 0 \text{ dBV} = 2.2 \text{ dBu} \\
 775 \text{ mV} & = & -2.2 \text{ dBV} = 0 \text{ dBu} \\
 316 \text{ mV} & = & -10 \text{ dBV} = -7.8 \text{ dBu}
 \end{array}$$

»dB«-Relations

Voltage: $\text{dB} = 20 \log_{10} \frac{E_1}{E_2}$ Power: $\text{dB} = 10 \log_{10} \frac{P_1}{P_2}$

Conversion of THD to »dB below signal level«

THD %	dB below signal	THD %	dB below signal	THD %	dB below signal
100	0	0.5	-46	0.01	-80
10	-20	0.25	-52	0.005	-86
5	-26	0.1	-60	0.002	-92
1	-40	0.05	-66	0.001	-100

Voltage to Power

Volt	Watt 4 Ω	Watt 8 Ω	Volt	Watt 4 Ω	Watt 8 Ω
63.2	1000	500	20	100	50
44.8	500	250	14.1	50	25
31.6	250	125	10	25	12.5
28.2	200	100	6.3	10	5
22.4	125	62.5	2	1	0.5

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