PMOD 1600 XPA 001

IP AMPLIFIER

The XPA IP amplifier is an integral part of INDUSTRONIC's modular INTRON-X platform for scalable, safety-critical public address and general alarm systems for industrial applications.

Its compact design with high power density is suitable for centralized system topologies with limited installation space as well as for decentralized applications to reduce cable routes.

With a total output power of 1,600 W, four 400 W amplifier channels enable independent and targeted sound coverage of different areas simultaneously. By adding up to four optional XPAZ zone selector modules, each providing 16 circuits, the output power of one XPA can be flexibly distributed to up to 64 individually addressable speaker circuits.



- 1,600 W total output power
- 4 independent 400 W amplifier channels
- Compact 19", 2 RU design
- Expandable via XPAZ zone selector modules to up to 64 individually addressable speaker circuits
- Integrated speaker monitoring available
- Flexible N+1 redundancy with internal or external backup amplifier options
- Integrated dual network interfaces
- High-efficiency, transformerless Class-D amplifier technology

IP AMPLIFIER 1600 XPA 001

Type number	344-060-200

MECHANICAL DATA

Mounting	19" rack mounting, 2 RU
Width x height x depth	483 mm x 88 mm x 310 mm (19.02" x 3.46" x 12.20")
Weight	Approx. 9,6 kg (approx. 21.16 lbs)
Frame material	Galvanized sheet steel
Front plate color	RAL 7016, fine-textured matt

POWER CONSUMPTION

Quiescent	30 VA
Maximum	1,800 VA at 230 V AC or 1,150 VA at 115 V AC

FLEXIBLE N+1 REDUNDANCY OPTIONS

The XPA supports two different N+1 redundancy concepts. Either by using a dedicated backup amplifier that covers up to ten operational amplifiers, or via an integrated redundancy, where one amplifier channel automatically takes over if one of the other device channels fails.

In case of a fault, the XPA redundancy and backup control performs an immediate automatic switchover. All critical alarm and warning functions remain fully operational during the switchover.

AC POWER SUPPLY (XD2)

Supply voltage	85 V AC to 276 V AC
Power frequency	47 Hz to 63 Hz
Power factor correction (PFC)	0.95

DC POWER SUPPLY (XD1)

Supply voltage	42 V DC to 59 V DC
Current consumption at 48 V DC	Quiescent: 0.6 A, Max.: 2 x 19 A (38 A in total)

AMPLIFIER OUTPUTS (XG1)

Quantity	4 x 400 W
Total output power	1,600 W at 230 V AC, 1,000 W at 115 V AC
Output voltage	100 V_{rms}
Frequency range	100 Hz to 20 kHz (+/- 3 dB)
Efficiency	> 85 %
Signal-to-noise ratio	> 80 dB
Distortion factor	< 0.5 %

DUAL ETHERNET PORTS

Two Ethernet interfaces enable a redundant network connection. If one network interface fails, data is transmitted via the second one.

NETWORK INTERFACES (XF1 AND XF2)

Quantity	2 x RJ45
Type	10Base-T/100Base-TX Ethernet, IEEE 802.3
Pre-conditions	IPv4 network
	Support of UDP, TCP, RTP and RTCP protocols
	Quality of Service (QoS) Ideal latency value < 20 ms (max. 50 ms) Jitter: max. 10 ms
	200 kBit/s basic bandwidth and 100 kBit/s per active audio channel

INTRON-X SERVICE TOOL (XST)

Secure local and remote access is provided via the INTRON-X Service Tool, the standard software for all INDUSTRONIC IP terminal devices to perform device commissioning, status monitoring, diagnostics and software updates.

SERVICE INTERFACE (SVC)

Quantity	1 x Mini USB

SPEAKER CIRCUIT MONITORING

Speaker monitoring can be optionally activated to reliably detect short circuits, ground leakages, open circuit as well as impedance changes without the use of end-of-line modules.

SPEAKER CIRCUIT MONITORING DATA

Speaker monitoring (activation required)	Short circuits, ground leakages, open circuit, impedance changes
Detection mode	Impedance measurement
Ground leakage detection	< 50 kOhms
Min. monitoring impedance	6 W / 1,660 Ohms
Impedance variation tolerance	5 % to 50 % (adjustable in 5 % increments)
Measurement intervals	1 min to 24 h (configurable)

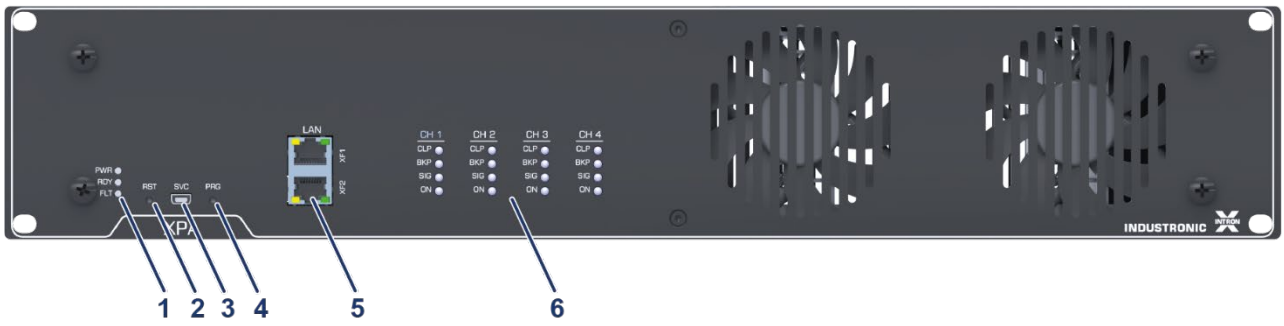
DEVICE PROTECTION AND SUPERVISION

Controller watchdog
DC power input
AC power input
Overheating protection, short circuit protection, no-load protection
Fan monitoring

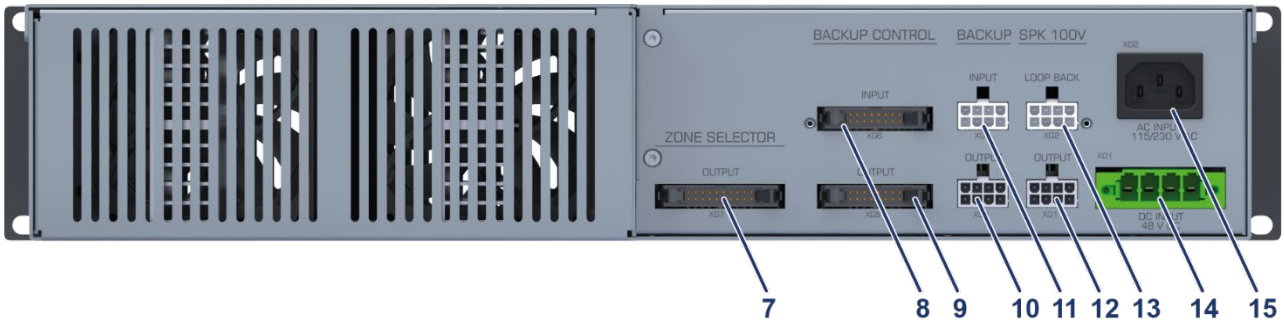
ENVIRONMENTAL REQUIREMENTS AND STANDARDS

Ambient temperature during operation	-15 °C to +55 °C (+5 °F to +131 °F)
Storage temperature	-25 °C to +70 °C (-13 °F to +158 °F)
Relative humidity (non-condensing)	Max. 95 %
Degree of protection	IP20
Vibration resistance	2 Hz to 13.2 Hz, +/-1.5 mm, 13.2 Hz to 200 Hz, 1 g
Electrical safety	EN 62368-1
EMC	EN 61000-6-2, EN 61000-6-4, EN 55032 Class B, EN 55035, EN 50130-4

FRONT/REAR



1	LEDs for device status PWR (green) = Operating voltage applied RDY (green) = Device ready for operation FLT (yellow) = Fault detected
2	Reset button
3	Service interface (Mini USB) for local access via INTRON-X Service Tool software
4	Service button
5	Dual Ethernet interfaces
6	LEDs for channel status indication CLP (red) = Clipping BKP (yellow) = Backup active SIG (yellow) = Audio signal present ON (green) = Amplifier channel powered and ready



7	Control output to zone selector module 16 XPAZ 001
8	N+1 backup control input from backup amplifier or preceding operative amplifier
9	N+1 backup control output to the next operative amplifier
10	N+1 backup amplifier output to the next operative amplifier
11	N+1 backup amplifier input from backup amplifier or preceding operative amplifier
12	Amplifier output for connection to zone selector module 16 XPAZ 001 or direct connection of XPA LINE connection kit (4 LNCK 01) or XPA LOOP connection kit (4 LPCK 01)
13	Loopback input (only applicable when using XPA LOOP connection kit 4 LCPK 01)
14	DC power supply input
15	AC power supply input

ACCESSORIES (INCLUDED)



16 XCBL 071 0.17m

Backup control cable for connecting the XPA amplifier to its external backup amplifier, either directly or looped through other operative XPA amplifiers in the same N+1 redundancy group.

Flat ribbon cable, 16 poles, 0.17 m (0.56 ft)

Type number	244-960-170

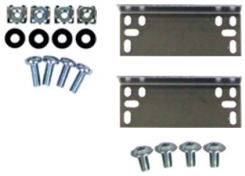


8 XCBL 461 0.21m

100 V audio connection cable for connecting XPA amplifiers in series along the backup path to a shared external backup amplifier, or for connecting to XPAZ zone selector module inputs.

8 poles, 0.21 m (0.69 ft), 0.5 mm², 2 x connectors

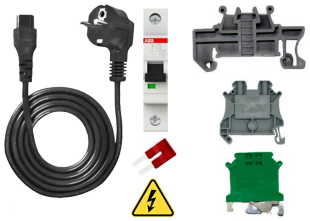
Type number	244-962-210



1 MKR 01

Rack mounting kit for XPA amplifier including two slide-in supports and a set of mounting screws with cage nuts

Type number	218-073-150



1 PSK 02

Power distribution and protection kit including 5 m (16.40 ft) AC power cable, 10 A circuit breaker, protective earth terminal, neutral terminal with jumper and end bracket

Type number	218-073-200

ACCESSORIES (NOT INCLUDED, REQUIRED)

Please note: Connection kits are required to connect amplifier outputs to speaker lines or speaker loops. Please order them according to your requirements.



4 LNCK 01

XPA LINE Connection Kit for direct connection of 4 speaker lines to one XPA amplifier. Including:

1 x amplifier output connection cable with 8-pole connector to flying leads, length 4.0 m (13.12 ft)

1 x screw terminal block with integrated knife disconnecting function and surge protection, 16 poles + ground terminal, clamping range 0.14 mm² to 4 mm²

Type number	344-360-104



4 LPCK 01

XPA LOOP Connection Kit for direct connection of 4 speaker loops to one XPA amplifier. Including:

2 x amplifier output connection cable with 8-pole connector to flying leads, length 4.0 m (13.12 ft)

1 x screw terminal block with integrated knife disconnecting function and surge protection, 16 poles + ground terminal, clamping range 0.14 mm² to 4 mm²

Type number	344-360-105

ACTIVATIONS

Please note: To commission the modules, you require INDUSTRONIC activations (not included in the scope of delivery) and the INTRON-X Service Tool software (included in the scope of delivery)!

Required Activations for PMODs	ACT-IP Devices	ACT-XPA Speaker Circuit Monitoring
PMOD 1600 XPA 001	1x	1x (optional)
PMOD 1600 XPA 001/EBA	1x	-
PMOD 1200 XPA 001/IBA	1x	1x (optional)
Type number	101-100-002	101-200-102

SCOPE OF DELIVERY

Description / Application	Type	PMOD 1600 XPA 001	PMOD 1600 XPA 001/EBA	PMOD 1200 XPA 001/IBA
1600 W XPA IP amplifier	1600 XPA 001	1x	1x	1x
Backup control cable	16 XCBL 071 0.17m	1x		
100 V audio connection cable	8 XCBL 461 0.21m	1x		
Rack mounting kit	1 MKR 01	1x	1x	1x
Power distribution and protection kit	1 PSK 02	1x	1x	1x
XPA LINE connection kit	4 LNCK 01	Not included	Not included	Not included
XPA LOOP connection kit	4 LPCK 01	Not included	Not included	Not included
PMOD type number		326-060-001	326-060-003	326-060-004

Please note:

1) The **XPA LINE connection kit (4 LNCK 01)** or **XPA LOOP connection kit (4 LPCK 01)** must be ordered separately depending on the specific project requirements.

2) Patch cables for Ethernet connectivity are not included, as required lengths depend on the individual cabinet layout and must be selected and provided accordingly on site. If the cabinet is assembled by INDUSTRONIC, suitable patch cables will be selected and included as part of the assembly.