



IPA 412 T / 424 T

INSTALLATION DSP POWER AMPLIFIER

LDIPA412T / LDIPA424T

FEATURES

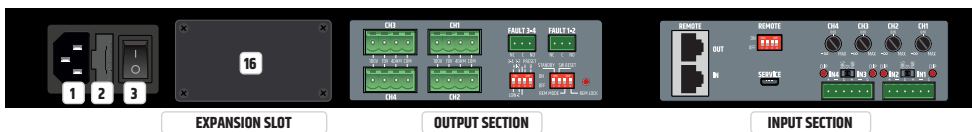
- Professional 4-channel DSP-based class D power amplifier
- 4 x 240W (IPA 424 T) or 4 x 120W (IPA 412 T) @ 4 Ohm / 100V / 70V
- 4 balanced line inputs and 4 speaker outputs with terminal block connections
- User-friendly front panel design with signal, limit, protection, mute and bridge mode LEDs per channel
- Clip LEDs for the inputs and level controls for the outputs on the back
- On/off switchable auto standby mode
- Stereo/parallel/bridge mode selector per channel pair
- Toroidal output transformer per channel
- Low-impedance outputs, completely separated from the output transformers, for optimal audio quality in Low-Z applications
- DSP presets with HP and LP filter which can be activated via DIP switch
- Speaker protection circuits: DSP limiter, overcurrent, direct current, overheating, short circuit
- The REMOTE audio and control bus is based on CAN architecture (Controller Area Network) and enables interaction with future remote control panels and paging microphones
- Slot for future optional expansion cards:
 - An Ethernet expansion card providing access to all internal DSP settings and the analog input gain and increases the input dynamic range by up to 10 dB
 - An Ethernet + Dante expansion card with the same functionality as the Ethernet expansion card plus Dante connectivity
- Fault relays with terminal block connections per channel pair
- Universal wide-range PFC switching power supply
- Temperature-controlled active cooling with low-noise fans in 2 zones

PACKAGING CONTENT

- 1 x LD Systems IPA 424 T or IPA 412 T installation amplifier with pre-assembled rack brackets
- 2 x 6-pole terminal blocks for the audio inputs (pitch 3.81 mm)
- 4 x 4-pole terminal blocks for the speaker outputs (pitch 5.08 mm)
- 2 x 3-pole terminal blocks for the fault relay connections (pitch 3.81 mm)
- 1 x RJ45 REMOTE bus terminating resistor
- 1 x IEC power cable
- 1 x user manual

CONNECTIONS, CONTROLS AND DISPLAY ELEMENTS

Note: The connections, controls and display elements for both models IPA 424 T and IPA 412 T are identical.



1 POWER CONNECTOR

IEC power connector for the device's power supply. A suitable power cable is provided.

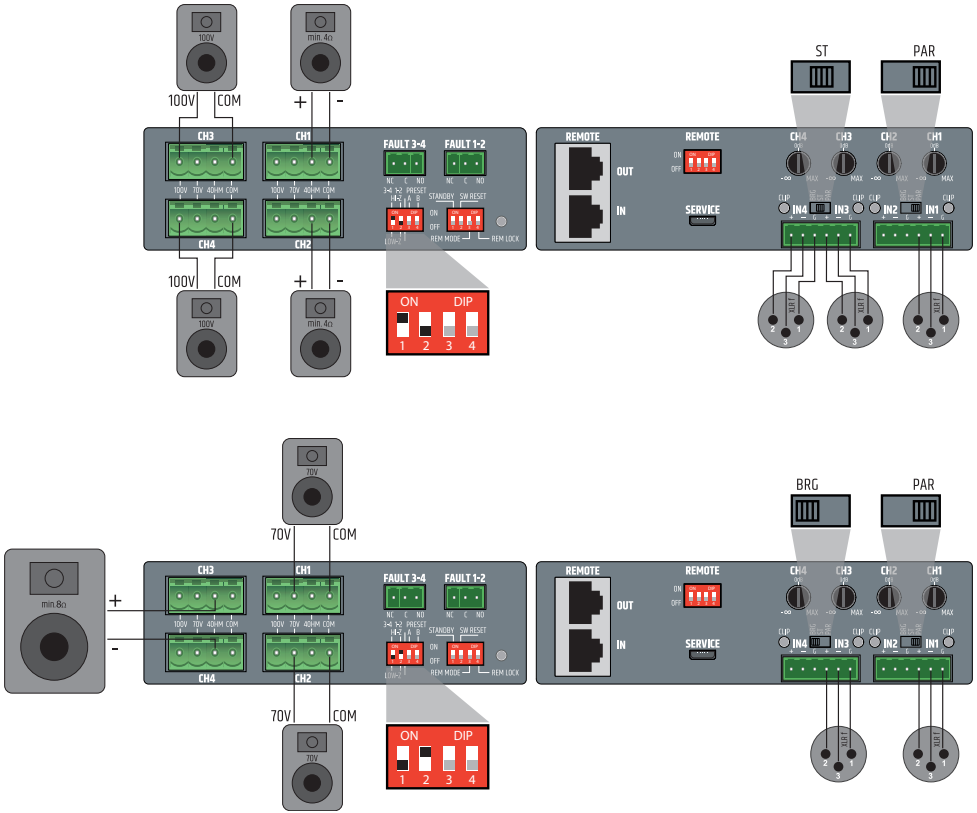
2 FUSE

Fuse holder for 250 V miniature fuses (5 × 20 mm). CAUTION: Only replace the fuse with a fuse of the same type (T10AL/100-120V; T5AL/220-240V). See information on the housing. If the fuse blows repeatedly, please contact an authorised service centre.

3 ON / OFF

Rocker switch to turn the device on and off.

ASSIGNMENT OF THE TERMINAL BLOCK CONNECTIONS AND SETUP EXAMPLES



TECHNICAL DATA

Item description:	LDIPA424T	LDIPA412T
Product type:	Power amplifier for fixed installations	
General data		
Audio channels:	4	
Output circuit:	Class D	
Power supply:	Wide-range switching power supply with PFC (power factor correction filter)	
Power supply connector:	3-pole power supply socket (IEC)	
Auto standby mode:	Yes. Switchable (On-Off)	
Time to auto standby:	20 min. without audio input signal	
DSP:	Yes	

Item description:	LDIPA424T	LDIPA412T
Remote bus:	Yes	
Display elements:	Back: 4 x input signal clip LEDs, remote lock LED (red). Front: "PROT", "LIMIT", "SIG", "BRIDGE" and mute symbol LEDs Power On/Standby LED	
Front panel controls:	Standby, On/Off switch (Power On/Off)	
Rear panel controls:	Potentiometer for output volume. Amplifier channel mode: "PAR" (Parallel), "ST" (Stereo), "BRG" (Bridge). Remote ON/OFF. Remote locking switch. Remote mode. Standby On/Off. Switch for preset A and B. Low-Z and high-Z switch (Per pair of channels).	
Inputs:	4 x balanced line inputs, remote bus audio input	
Input connections:	6-pole terminal block, pitch 3.81 mm, remote ON/OFF RJ45, service connector micro USB type B	
Outputs:	4 x powered speaker outputs: Low-Z (minimum 4 Ohm), high-Z (70 V and 100 V). Fault detection: 2 x NO/NC relay outputs (connected).	
Output connections:	Speaker outputs: 4-pole terminal block connections, pitch 5.08 mm. Fault relays: 2 x 3-pole terminal block, pitch 3.81 mm.	
Speaker cable diameter	Minimum diameter (max AWG) of cable cross section is 1.5 mm ² (16 AWG) Maximum diameter (min AWG) of cable cross section is 3.31 mm ² (12 AWG)	
Expansion slots:	Yes. For optional Ethernet or Ethernet + Dante cards	
Cooling:	Passive + temperature-controlled active two-zone cooling, with airflow from front to back/to the side	
Operating voltage:	100 – 240 V~	
Mains fuse:	T10AL/100-120 V; T5AL/220-240 V	
Inrush current OFF-standby:	2.8 A	
Inrush current standby-ON:	0.5 A	
Power consumption in standby:	0.9 W	
Power consumption in idle mode:	30 W	25 W
Power consumption at full load:	1000 W	790 W
Operating temperature:	0 °C ... +40 °C (max. 60% relative humidity).	
Width:	19" rack (483 mm)	
Height:	1 HE (44.5 mm)	
Depth:	425 mm (with terminal block connections)	
Weight:	11.36 kg	8.7 kg
Rack distance to the next device (height):	1 HE	
Rack depth (required):	500 mm	

Output specifications for the speakers, all outputs driven and loaded

Output power (1 kHz at 4 Ohm):	4 x 240 W (1.5 second sine burst)	4 x 120 W (1.5 second sine burst)
Output power (1 kHz at 8 Ohm):	4 x 120 W (1.5 second sine burst)	4 x 60 W (1.5 second sine burst)
Output power (1 kHz at 16 Ohm):	4 x 60 W (1.5 second sine burst)	4 x 30 W (1.5 second sine burst)

Item description:	LDIPA424T	LDIPA412T
Output power (1 kHz at 8 Ohm, bridge):	2 x 490 W (1.5 second sine burst)	2 x 235 W (1.5 second sine burst)
Output power (1 kHz at 100 V/70 V):	4 x 240 W, transformer-coupled output	4 x 120 W, transformer-coupled output
Protection circuits:	Audio limiter, temperature limiter, HPF (High-Z), HF protection, overheating, short circuit, direct current protection	
Minimum load impedance per channel:	Low-Z: 4 Ohm single-ended, 8 Ohm Bridge	Low-Z: 4 Ohm single-ended, 8 Ohm Bridge
	70V: 21 Ohm	70V: 42 Ohm
	100V: 42 Ohm	100V: 84 Ohm

Performance specifications

Nominal input sensitivity:	+5 dBu (Sine wave, 1 kHz, max. gain)	
Nominal input clipping:	19 dBu (Sine wave, 1 kHz)	
Harmonic distortion (THD+N):	< 0.03 % (Low-Z SPK OUT, +18 dBu, 20 Hz – 20 kHz)	
Intermodulation distortion (IMD), SMPTE:	0.04% at 1 W power (Low-Z, max. gain), 0.1% at full power (-1 dB under clip) and min. load (4 Ohm), analyzer bandwidth 90 kHz	
Frequency response:	18 Hz – 22 kHz (Low-Z OUT, -3 dB)	
	50 Hz – 23 kHz (High-Z OUT, -3 dB)	
Input impedance:	40 kOhm (symmetrical), input design instrumentation speaker	
Signal-to-noise ratio:	>105 dB (Low-Z SPK OUT, +18 dBu, CH gain center (0 dB), 20 kHz bandwidth, A-rated)	>104 dB (Low-Z SPK OUT, +18 dBu, CH gain center (0 dB), 20 kHz bandwidth, A-rated)
Channel crosstalk:	83 dB at 1 kHz	
Common mode rejection, CMRR IEC:	>55 dB (1 kHz)	
Gain:	-Inf to 27dB, IN-OUT, Potentiometer range: -inf to +14dB	
Standby wakeup threshold (wake up):	-45 dBu	

Digital specifications

DSP:	ADAU1452 Sigma DSP
System latency:	6.2 ms
Resolution AD/DA converter:	24 Bit PCM1865 (AD), 24 Bit PCM1690 (DA)
Sampling rate AD/DA converter:	48 kHz

Remote bus specifications, measured between REM In and SPK Out

Nominal input sensitivity:	20 dBu
Nominal input clipping:	20 dBu
Harmonic distortion (THD+N):	< 0.006 % (Low-Z SPK OUT, +18 dBu, 20 Hz – 20 kHz)
Frequency response:	20 Hz – 20 kHz (0.1 dB)
Input impedance:	50 kOhm (symmetrical)
Signal-to-noise ratio:	>105 dB (Low-Z SPK OUT, +20 dBu, 20 kHz bandwidth, A-rated)
Common mode rejection, CMRR IEC:	> 65 dB at 1 kHz
Gain:	0 dB
Phantom power:	+48 V DC/500 mA
Protection circuits:	Resettable fuse protection (internal)