

Accessories and options

PCA20xx-A1, PCIO2001-A1, PCO2001-A1, PNA20xx-A1



Accessories and optional components for the EN 54-16-certified Novigo digital multi-channel audio system.

- Accessories and optional components specifically tailored to the requirements of the Novigo multi-channel audio system
- Media for storing and expanding the audio library of a Novigo system
- I/O interfaces for expanding the inputs and outputs of digital audio matrices
- Components for automatic volume control
- Components for monitoring remote system components for open lines, ground faults, and short-circuits
- DC/DC converter for protecting remote system components from short-circuit on the external power supply
- Insulation components for isolating and maintaining the function of speakers in the event of a short-circuit on a speaker line
- Network repeater for extending network lines in the 'PACE-Net' and 'PACE-Bus'

Call stations / operating terminals

Ground fault monitoring (24V) PCA2001-A1

The ground fault monitoring (24 V) PCA2001-A1 is a module for monitoring 24 V lines outside of the system cabinets for supplying remote system components (e.g., call stations). It measures the resistance of both wires in the lines to the protective conductor (PE).

According to the corresponding standard, a ground fault is detected when a resistance of <50 kOhm is measured to the protective conductor. A fault message is transmitted by the relay changeover contact and indicated on the printed circuit board via LED.

MeanWell SD-50B-24 DC/DC PCA2011-A1

MeanWell SD-100B-24 DC/DC PCA2018-A1

The DC/DC converters PCA2011-A1 and PCA2018-A1 are required to electrically isolate DC 24 V lines exiting the system cabinet from the internal DC 24 V power supply. Any short-circuit or ground fault that occurs outside the system cabinet will therefore not affect the internal 24 V supply.

The devices are protected against short-circuits, overload and overvoltage.

Matrix

Backup extension PC2003 PCA2014-A1

The PCA2014-A1 plug in module for Digital audio matrix (4/4/16) PC2003-A1 is to connect a backup amplifier and still use all 4 amplifier channels. It is for sites that only have one PC2003-A1 matrix. The PCA2014-A1 switches the correct audio signal to the backup amplifier in case of an amplifier fault of the 4 regular amplifiers.

The module is controlled by 2 digital outputs of the PC2003-A1.

I/O interfaces

Input/Output extension (digital 16) PCIO2001-A1

The input/output extension PCIO2001-A1 extends the number of digital inputs and outputs for each audio matrix by additional 16 inputs and 16 outputs.

A OUT extension relay (8) PCO2001-A1 card can be connected via a provided RS232-based 'PACE-Bus' interface.

It was specifically developed for use with the digital audio matrices PC2001-A1, PC2002-A1, PC2003-A1, PC2005-A1, and PC2006-A1.

The PCIO2001-A1 and the audio matrix are connected via the RS485-based 'PACE-Bus'.

Output extension relay (8) PCO2001-A1

The PCO2001-A1 relay card adds a further 8 electrically isolated outputs to the existing digital outputs of each audio matrix.

The 8 outputs are controlled via relays with changeover contacts. All three changeover contacts are routed externally: NC, NO and center.

The PCO2001-A1 was specifically developed for use with the digital audio matrices PC2001-A1, PC2002-A1, PC2003-A1, PC2005-A1 and PC2006-A1. The connection between the PCO2001-A1 and the audio matrix is established via the RS232-based 'PACE-Bus'.

Automatic volume control

The 'Automatic Volume Control' (AVC) function is used if background noise can be expected to fluctuate a lot, such as on train platforms and in airports and shopping malls.

The AVC function is required as a way of adjusting the sound level of the audio signal to suit the current situation in the event of huge fluctuations in background noise. This ensures that the wanted signal is always louder than any background noise so that it will be possible to understand what is being said. Plus, announcements will not be too loud for people in quiet buildings.

Automatic volume control module PCA2008-A1

The automatic volume control module PCA2008-A1 receives the audio level of the measuring microphones PCA2007-A1. The PCA2008-A1 uses the received audio levels to calculate the average, which is then forwarded to the connected audio matrix for further processing. The input sensitivity can be set to line level or microphone level.

It is possible to connect up to four PCA2007-A1 to one PCA2008-A1. The connected microphone wiring is monitored for short-circuits, interruptions and earth faults. Inactive lines can be excluded via jumper. A fault is reported with the fault indication relay.

The PCA2008-A1 was specifically developed for use with the digital audio matrices PC2001-A1, PC2003-A1 and PC2005-A1.

Automatic volume control microphone PCA2007-A1

The AVC microphone PCA2007-A1 is a measuring microphone that was specifically developed for use with the digital audio matrices PC2001-A1, PC2003-A1 and PC2005-A1. It constantly records the levels in the surrounding area within a set frequency range and transmits the value to the receiver assembly PCA2008-A1 for further processing.

The output level can be set to line level or microphone level.

Extras

ATP AF2GUD-2* SD 2 GB Card PCA2002-A1 (Preferred)**

Swissbit SFSD2048N1 SD 2 GB Card PCA2017-A1 (Second source)

The SD cards PCA2002-A1 and PCA2017-A1 are digital Micro-SD memory cards with a capacity of 2 gigabytes. The cards store up to 3 hours' worth of audio files. The cards can hold up to 256 individual audio files. The SD cards satisfy the industry standard, providing a guaranteed data storage period of over 10 years.

The SD cards PCA2002-A1 and PCA2017-A1 can be mounted in all audio matrices PC200x-A1 and in the 'PACE-Net' call stations PT2001-A1 and PT2002-A1.

EOL modules

EOL3 (active) PCA2004-A1

The EOL3 (active) PCA2004-A1 ensures that the speaker lines are monitored without interruption in accordance with EN 54-16.

The device is addressable. The 16 addresses are created by DIP switch.

Up to 16 PCA2004-A1 can be installed per speaker line. The PCA2004-A1 was specifically developed for use with the digital audio matrices PC2001-A1, PC2002-A1, and PC2003-A1.

Loop isolators

Loop isolator (100V) PCA2005-A1

The loop isolator (100 V) PCA2005-A1 is an isolating element in accordance with EN 54-17 for use in a 100 V speaker line. The isolator rapidly detects and isolates short-circuits affecting the line. It monitors the speaker line connected to the loop isolator for open lines and short-circuits. The status of the PCA2005-A1 is shown on an optical display.

Two-pole standard wires are used as cables for the speaker loop. A speaker loop can accommodate up to 80 isolators. The maximum loop length is 1000 m per amplifier output.

The PCA2005-A1 was specifically developed for use with the PC2003-A1 digital audio matrices.

Spelsberg i 16-L loop isolator Box PCA2013-A1

IP55 housing for loop isolator (100 V) PCA2005-A1. It is required for the PCA2005-A1 to meet the EN 54-17.

PACE-Net

The Novigo 'PACE-Net' network is based on a standard Ethernet with 100 Mbit/sec and CAT5 cables.

Repeater (CAT5) PNA2007-A1

A standard Ethernet is usually limited to a length of 100 m. The PNA2007-A1 makes it possible to extend the CAT5 cable by an extra 100 m.

The PNA2007-A1 requires a line voltage of DC 24 V.

Camdenboss RJ45 Interface PNA2008-A1

A standard CAT5 Ethernet cable comes with a standard RJ45 connector. PNA2008-A1 is an interface from RJ45 connector to screw terminals to connect cables with single wires (e.g. E30).

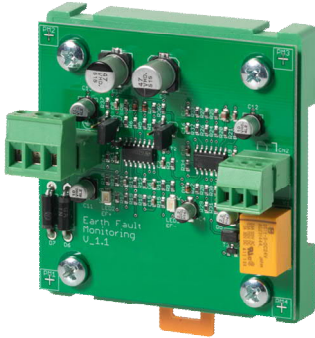
PACE-Bus


ICPDAS I-7510 (RS485, isolated) PNA2009-A1


The isolated RS485 repeater PNA2009-A1 is required to electrically isolate 'PACE-Bus' signals exiting the system cabinet from the internal 'PACE-Bus'. Any short-circuit that occurs outside the system cabinet will therefore not affect the internal 'PACE-Bus'.

The PNA2009-A1 requires a supply voltage of DC 24 V.


Call stations / operating terminals

<p>PCA2001-A1</p>	<p>'Ground fault monitoring (24V)'</p>
 <p>The image shows a green printed circuit board (PCB) mounted on a DIN rail. It features several green terminal blocks for wiring, a yellow component, and various electronic components like resistors and capacitors. The text 'Earth Fault Monitoring U-1.1' is visible on the board.</p>	<ul style="list-style-type: none"> • Monitoring of the DC 24 V line for ground faults • Used with remote system components (Required when the 24 V line exits the system cabinet to supply energy to components such as the fire brigade microphone) • Fault message via relay changeover contact (Fault / Okay) • Fault indicated via LED on module • Switch to a lower sensitivity of 10 kOhm via jumper setting • Installation in a system cabinet (TS35 DIN-rail-ready) • All connections on plug-in terminal blocks

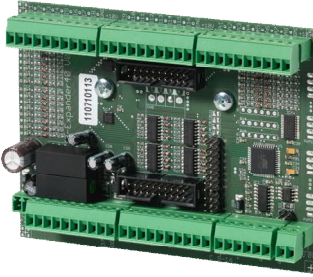
<p>PCA2011-A1</p>	<p>'MeanWell SD-50B-24 DC/DC'</p>
 <p>The image shows a silver metal DC/DC converter module with a perforated front panel. It has a green PCB on the right side with several terminal blocks. The text 'SD-50B-24' is visible on the top of the module.</p>	<ul style="list-style-type: none"> • Controlled DC 24 V (50 W) output voltage, electrically isolated • Internal 24 V energy supply protected against short-circuits on the external 24 V supply line outside the system cabinet • Protected against short-circuit, overloading and overvoltage • DC 1500 V I/O isolation • 100 % full load burn-in test • Fixed switch frequency of 83 kHz

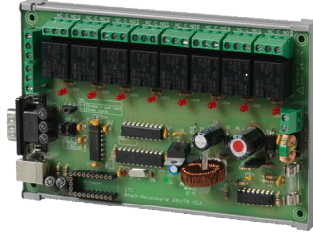
<p>PCA2018-A1</p>	<p>'MeanWell SD-100B-24 DC/DC'</p>
 <p>The image shows a silver metal DC/DC converter module with a perforated front panel, similar to the PCA2011-A1 but larger. It has a green PCB on the right side with several terminal blocks. The text 'SD-100B-24' is visible on the top of the module.</p>	<ul style="list-style-type: none"> • Controlled DC 24 V (100 W) output voltage, electrically isolated • Internal 24 V energy supply protected against short-circuits on the external 24 V supply line outside the system cabinet • Protected against short-circuit, overloading and overvoltage • DC 1500 V I/O isolation • 100 % full load burn-in test • Fixed switch frequency of 83 kHz

Matrix


<p>PCA2014-A1</p>	<p>'Backup extension PC2003'</p>
 <p>The image shows a green PCB module with four green terminal blocks arranged in a 2x2 grid. It also features an LED and various electronic components. The text 'PC2003' is visible on the board.</p>	<ul style="list-style-type: none"> • Extends the audio matrix PC2003 with an additional backup amplifier input • Allows addition of a backup amplifier with use of all 4 amplifier channels


I/O interfaces

PCIO2001-A1	'Input/Output extension (digital 16)'
 <p>The image shows the PCIO2001-A1 module, a green printed circuit board (PCB) with a DIN rail connector on the left side. It features several integrated circuits, resistors, and other electronic components. The board is populated with various components, including a large black component on the left and several smaller components scattered across the surface.</p>	<ul style="list-style-type: none"> • For use with the digital audio matrices PC2001-A1, PC2002-A1, PC2003-A1, PC2005-A1 and PC2006-A1 • Communication via 'PACE-Bus' RS485 or RS232 interfaces • Extends a digital audio matrix by additional 16 digital outputs • Outputs are electrically isolated • Extends a digital audio matrix by additional 16 digital inputs • Extends a digital audio matrix by additional 8 analog inputs • Provides a 'PACE-Bus' RS232 interface to communicate with PCO2001-A1

PCO2001-A1	'Output extension relay (8)'
 <p>The image shows the PCO2001-A1 module, a green PCB with a DIN rail connector. It features eight relays with changeover contacts, several integrated circuits, and other electronic components. The board is populated with various components, including a large black component on the left and several smaller components scattered across the surface.</p>	<ul style="list-style-type: none"> • Digital output extension for the audio matrices PC2001-A1, PC2002-A1, PC2003-A1, PC2005-A1 and PC2006-A1 • The assembly includes eight relays with changeover contact • The maximum permissible switching current for each changeover contact is 7 A for AC or DC 24 V • Communication via 'PACE-Bus' RS232 interface

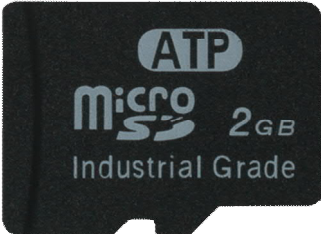
Automatic volume control

PCA2008-A1	'Automated volume control module'
 <p>The image shows the PCA2008-A1 module, a green PCB with a DIN rail connector. It features several microphones, integrated circuits, and other electronic components. The board is populated with various components, including a large black component on the left and several smaller components scattered across the surface.</p>	<ul style="list-style-type: none"> • Supports automatic volume control to suit levels of background noise • Measures the noise level in a designated area • Connection of up to four microphones PCA2007-A1 • Supports microphone and line level • Supplies the connected microphones with DC 12 V phantom voltage • Monitors the microphone wiring for short, interruption and ground fault • Fault message via relay changeover contact (Fault / Okay) • Installation in the system cabinet (TS35 DIN-rail-ready) • All connections on plug-in terminal blocks • For use with the audio matrices PC2001-A1, PC2003-A1 and PC2005-A1

PCA2007-A1	'Automated volume control microphone'
	<ul style="list-style-type: none"> • Supports automatic volume control to suit levels of background noise • For use with the digital audio matrices PC2001-A1, PC2003-A1, and PC2005-A1 • Connection to PCA2008-A1 with a 3-pin terminal • Power supply via phantom voltage through automatic volume control module PCA2008-A1 (no separate power supply required) • Electret microphone in an IP54 protective housing • Symmetrical output: selectable microphone / line level • Microphone or line level (high resistance to faults) • Simple mounting and installation • Linear frequency band of 100 Hz to 10 kHz


Extras (Preferred)

NOTICE! These extras are to be preferably ordered.


PCA2002-A1	'ATP AF2GUD-2*** SD 2 GB Card'
	<ul style="list-style-type: none"> • 2 GB micro SD memory card • Up to 256 audio files with a total duration of 3 h • For industrial applications • Water-tight • Dust-tight • Guaranteed data storage: >10 years

Extras (Second source)

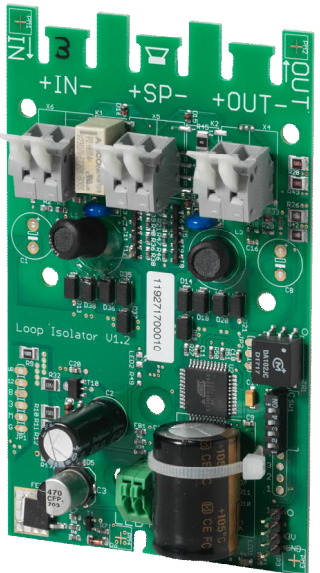
NOTICE! Order alternatives only if the preference is not available.


PCA2017-A1	'Swissbit SFSD2048N1 SD 2 GB Card'
	<ul style="list-style-type: none"> • 2 GB micro SD memory card for Novigo • Up to 256 audio files with a total duration of 3 h • For industrial applications • Water-tight • Dust-tight • Guaranteed data storage: >10 years

EOL modules


PCA2004-A1	'EOL3 (active)'
 <p>The image shows a black rectangular module with a white label that reads 'EOL 3', 'SN: 1766', 'HW: 1.0', and 'SW: 1.0'. Two red wires are connected to the top of the module.</p>	<ul style="list-style-type: none"> • Monitoring the speaker line for open lines and short-circuits • Monitoring in accordance with EN 54-16 • Addressable: up to 16 different addresses can be configured • Addressing compatible with any structure with up to 16 line ends, in addition to the stub line • Reliable cable break detection in any branch of a speaker line • No other wiring needed; works with standard two-wire speaker line • No need to route line back to control panel


Loop isolators

PCA2005-A1	'Loop isolator (100V)'
 <p>The image shows a green printed circuit board (PCB) for a loop isolator. It features three terminal blocks labeled '+IN-', '+SP-', and '+OUT-'. There are also two circular optical displays on the board. The PCB is populated with various electronic components including resistors, capacitors, and integrated circuits.</p>	<ul style="list-style-type: none"> • Isolating element in accordance with EN 54-17 for use in a 100 V speaker line with PC2003-A1 • Rapidly detects and isolates short-circuits affecting the 100 V speaker line • Monitors the speaker and cables connected to the loop isolator for open lines and short-circuits • Two-pole standard lines used as cables for the speaker loop • Optical display of isolator status


PCA2013-A1	'Spelsberg i 16-L loop isolator Box'
 <p>The image shows a white, rectangular plastic enclosure for a loop isolator. It has a hinged lid and a mounting bracket on top. The front panel has some technical markings and a small indicator window.</p>	<ul style="list-style-type: none"> • Housing for loop isolator (100 V) PCA2005-A1 • IP55

PACE-Net

PNA2007-A1	'Repeater (CAT5)'
 A white, rectangular metal enclosure with two RJ45 ports on the right side. The front panel features a green logo and technical specifications: 250 W, 25 A, 250 V, and 250 V AC.	<ul style="list-style-type: none">• Extension of 100 Mbit/sec Ethernet line by 100 m

PNA2008-A1	'Camdenboss RJ45 Interface'
 A green plastic module with an RJ45 port at the top and two rows of screw terminals below. The top row has terminals labeled 1, 2, 3, 4, 5, 6, 7, 8. The bottom row has terminals labeled 1, 3, 5, 7, SHLD. The module is labeled with 'ES300721 94V-0 3'.	<ul style="list-style-type: none">• Interface from RJ45 connector to screw terminals• 35 mm DIN rail mounting

PACE-Bus

PNA2009-A1	'ICPDAS I-7510 (RS485, isolated)'
 A blue plastic module with orange screw terminals on the top and bottom. The front panel features the ICPCon logo, a CE mark, and the model number 'I-7510'. Below the model number, it lists 'RS-485 Repeater', 'Variable Bus Pair', '10k - 100k', and 'Variable Data Format'. At the bottom, it says '2000V Isolation'.	<ul style="list-style-type: none">• 2-way optical isolated 'PACE-Bus' (RS-485) repeater• 35 mm DIN rail mounting

Type Overview

Device combinations

Type	Designation	Digital audio matrix		
		PC2001-A1 Digital audio matrix (4/4/4)	PC2002-A1 Digital audio matrix (0/4/4)	PC2003-A1 Digital audio matrix (4/4/16)
PCA2004-A1	EOL3 (active)	•	•	•
PCA2005-A1	Loop isolator (100V)	–	–	•
PCA2007-A1	Automated volume control microphone	•	–	•
PCA2008-A1	Automated volume control module	•	–	•
PCA2014-A1	Backup extension PC2003	–	–	•
PCIO2001-A1	Input/Output extension (digital 16)	•	•	•
PCO2001-A1	Output extension relay (8)	•	•	•

Type	Designation	Digital audio matrix	
		PC2005-A1 Digital audio matrix no supervision (4/4/4)	PC2006-A1 Digital audio matrix no supervision (0/4/4)
PCA2004-A1	EOL3 (active)	–	–
PCA2005-A1	Loop isolator (100V)	–	–
PCA2007-A1	Automated volume control microphone	•	–
PCA2008-A1	Automated volume control module	•	–
PCA2014-A1	Backup extension PC2003	–	–
PCIO2001-A1	Input/Output extension (digital 16)	•	•
PCO2001-A1	Output extension relay (8)	•	•

- Compatible
- Not compatible



All other devices can be used with all digital audio matrices.

Order numbers

Type	Designation	Order number
Preferred extras ¹		
PCA2002-A1	ATP AF2GUD-2*** SD 2 GB	OFB:NOVIGO_2158
Second source extras ¹		
PCA2017-A1	Swissbit SFSD2048N1 SD 2 GB	OFB:NOVIGO_2374
Accessories for operating terminals / call stations		
PCA2001-A1	Ground fault monit. (24V)	OFB:NOVIGO_2157
PCA2011-A1	MeanWell SD-50B-24 DC/DC	OFB:NOVIGO_2165
PCA2018-A1	MeanWell SD-100B-24 DC/DC	OFB:NOVIGO_2373
PCA2014-A1	Backup extension PC2003	OFB:NOVIGO_2122
I/O interfaces		
PCIO2001-A1	IN/OUT extent. (digital 16)	OFB:NOVIGO_2166
PCO2001-A1	OUT extension relay (8)	OFB:NOVIGO_2167
Automatic volume control		
PCA2008-A1	Autom. volume control modul	OFB:NOVIGO_2163
PCA2007-A1	Autom. volume control micro	OFB:NOVIGO_2164
EOL modules		
PCA2004-A1	EOL3 (active)	OFB:NOVIGO_2159
Loop isolators		
PCA2005-A1	Loop isolator (100V)	OFB:NOVIGO_2160
PCA2013-A1	Spelsberg i 16-L Li Box	OFB:NOVIGO_2161
Accessories for 'PACE-Net'		
PNA2007-A1	Repeater (CAT5)	OFB:NOVIGO_2124
PNA2008-A1	Camdenboss RJ45 Interface	OFB:NOVIGO_2375
Accessories for 'PACE-Bus'		
PNA2009-A1	ICPDAS I-7510 (RS485, isol)	OFB:NOVIGO_2372

¹

- The preferred components are to be ordered preferably.
- Order the alternative second source components only in case the preference is not available.

You will find more information on the Novigo system and its components in the following documents:


Title	Document ID
IT security policies	
Novigo – IT security policies	A6V11773711
System documentation	
Novigo – planning	A6V11467812
'PACE-Design' – configuration	A6V11474760
Novigo – mounting / installation	A6V11467817
Novigo – operation	A6V11467803
Data sheets	
System data sheet	A6V11467196
19" cabinets	A6V11467209
Digital audio matrix	A6V11467202
Power amplifier	A6V11467204
Operating terminals	A6V11467198
Call stations and extensions	A6V11467200
Power supply and batteries	A6V11467207
Accessories and options	A6V11467211
Loop isolator (100V)	
Loop isolator (100V) - technical manual	A6V11571319
Environmental declaration	
Novigo – environmental declaration	A6V11948779

Download center


Related documents such as environmental declarations, CE declarations, etc., can be downloaded at the following Internet address:

<http://siemens.com/bt/download>

Safety

	⚠ CAUTION
	National safety regulations Failure to comply with national safety regulations may result in personal injury and property damage. <ul style="list-style-type: none">• Observe national provisions and comply with the appropriate safety regulations.

Disposal

	The device is considered an electronic device for disposal in accordance with the European Guidelines and may not be disposed of as domestic garbage. <ul style="list-style-type: none">• Dispose of the device through channels provided for this purpose.• Comply with all local and currently applicable laws and regulations.
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Environmental compatibility

The Environmental Product Declaration (EPD) for 'Novigo VANSYS' contains data and information on the product's environmentally compatible design features and its ratings; for example, its RoHS conformity, composition, packaging, environmental benefits, and disposal information.

You can obtain the document A6V11948779 via the following Internet address:

<https://siemens.com/bt/download>

Enter the document ID in the search field.

Guarantee

The application-specific technical data is guaranteed only in combination with the Siemens products listed in the 'Device combinations' section. If third-party products are used, any guarantee provided by Siemens will be invalidated.

Extras

SD cards

	PCA2002-A1	PCA2017-A1
Ordering	Preferred	Second source
Supply		
Power supply	2.7...3.6 V	2.7...3.6 V
Current consumption	<50 mA	<110 mA
Cycle frequency	50 Mhz max.	50 Mhz max.
Performance data		
Storage capacity	2 GB	2 GB
Number of insertions	At least 10,000 insertions	At least 20,000 insertions
Data storage period	10 years	10 years
Service life	10,000 sequences (read/write/delete)	10,000 sequences (read/write/delete)
Shock resistance	1000 G	1500 G
Vibration	Maximum 15 G peak-to-peak	Maximum 50 G peak-to-peak
Resistance	Water-tight Dust-tight ESD protection	
Interfaces		
Plug-in contacts	8 pins	
Ambient conditions		
Operating temperature	0...+70 °C	-25...+85 °C
Storage temperature	0...+70 °C	-25...+85 °C
Operation in humid environments (without moisture condensation)	10...90 % rel.	10...85 % rel.
Storage in humid environments (without moisture condensation)	5...90 % rel.	5...85 % rel.
Dimensions and weights		
W x H x D mm	11 x 1 x 15 (+/- 0.1)	
Weight	0.4 g	

Ground fault monitoring (24V)

	PCA2001-A1
Supply	
Power supply	DC 24 V (corresponds to the voltage to be monitored)
Current consumption	100 mA
Threshold	50 kohm (10 kohm if JP1 and JP2 closed)
Relay contact	Max. 48 V / 500 mA
Fault indicator relay	Changeover contact (fault / OK) Can be switched to a lower sensitivity of 10 kohm for each jumper
Ambient conditions	
Operating temperature	-5...+40 °C
Storage temperature	-20...+70 °C
Operation in humid environments (without moisture condensation)	10...90 % rel.
Storage in humid environments (without moisture condensation)	5...90 % rel.
Housing type	Open frame design
Mounting	DIN rail mounting (TS35)
Dimensions and weights	
W x H x D mm	75 x 70 x 40
Weight	100 g
Standards	EN 54-16

DC/DC converter (24 V/50 W), (24 V/100 W)

	PCA2011-A1	PCA2018-A1
Output		
Nominal output voltage	DC 24 V	DC 24 V
Maximum output current	2.1 A	4.2 A
Nominal output	50.4 W	100.8 W
Residual ripple and noise	150 mVp-p	150 mVp-p
Adjustable output voltage range	DC 23...30 V	DC 23...30 V
Input		
Voltage range	DC 19...36 V	DC 19...36 V
Input current	3.0 A / 24 V	4.8 A / 24 V
Efficiency	80 % / 24 V	78 % / 24 V
Protection		
Overload*	105...150 % nominal output	105...135 % nominal output
Overvoltage*	31.5...37.5 V / 10 % load	31.5...37.5 V / 10 % load
* Protection category: Hiccup mode, automatically recovers once error has been resolved		
Ambient conditions		
Operating temperature	-10...+60 °C	
Storage temperature	-20...+85 °C	
Operation in humid environments (without moisture condensation)	20...90 %	
Storage in humid environments (without moisture condensation)	10...95 %	
Temperature coefficient	±0.03 % / °C	
Vibration	10...500 Hz, 2G 10min. / 1 cycle, 60 min. on the X, Y or Z axis	
Dimensions and weights		
W x H x D mm	159 x 38 x 97	199 x 38 x 98
Weight	480 g	650 g
Security		
Electric strength	I/P-O/P: 1.5 kVAC I/P-FG: 1.5 kVAC O/P-FG: 0.5 kVAC	I/P-O/P: 1.5 kVAC I/P-FG: 2.0 kVAC O/P-FG: 0.5 kVAC
Insulation resistance	I/P-O/P, I/P-FG, O/P-FG: 100 Mohm / DC 500 V / 25 / 70 % RH	
MTBF	At least 357,500 h / 25 °C	At least 356,700 h / 25 °C
Standards	EN 55032: 2015, class B EN 61000-4-2,3,4,5,6,8	

Backup extension PC2003

	PCA2014-A1
Audio inputs / outputs	
Number of audio inputs 0 dB (Output from PC2003)	4
Number of audio outputs 0 dB	4 (to regular amplifier) 1 (to backup amplifier)
Max input or output level	+15 dB (symmetrical)
Digital inputs	
Numer of inputs	2
Function	Audio input selection for backup amplifier
Logic level	Logic off: <1.6 V Logic on: >8 V
Input voltage range	DC 0...18 V
Input current at 10 V	0.2 mA
Ambient conditions	
Operating temperature	-5...+40 °C
Storage temperature	-20...+70 °C
Operation in humid environments (without moisture condensation)	10...90 % rel.
Storage in humid environments (without moisture condensation)	10...90 % rel.
Dimensions and weights	
W x H x D mm	35 x 45 x 35
Weight	22 g
Standards	EN 54-16

Input/Output extension (digital 16)

	PCIO2001-A1
Supply	
Power supply	DC 24 V (18 V <36 V)
Current consumption	56 mA
Internal power supply	DC 10 V
Maximum load	100 mA / DC 10 V
Digital inputs	
Logic level	Logic off: <1.6 V Logic on: >8 V
Input voltage range	DC 0...36 V
Input current at 12 V / 24 V	0.5 mA at 12 V 1 mA at 24 V
Digital outputs	
Number and type	16 electrically isolated open collector outputs
Max. voltage	DC 35 V
Max. current per output	80 mA
Isolation voltage	3.75 kV
Analog inputs	
Input voltage range	DC 0...10 V
Number	8 (max. 15 / matrix)
Resolution	8 bit
Input current at 10 V	0.2 mA
Interface RS485	
Serial interface to matrices	1x RS485
Baud rate	9600, 19200, 56700, 115200 baud
Module connections	Up to 4 modules via RS485
Max. cable length	500 m
Interface RS232	
Serial interface to PCO2001-A1	1x RS232
Baud rate	19200 baud
Module connections	1 module via RS232
Max. cable length	3 m
Ambient conditions	
Operating temperature	-5...+40 °C
Storage temperature	-20...+70 °C
Operation in humid environments (without moisture condensation)	10...90 % rel.
Storage in humid environments (without moisture condensation)	5...90 % rel.

	PCIO2001-A1
Mounting	
Attachment	DIN rail mounting (TS35)
Maximum conductor cross-section	1.5 mm ² Compatible with CAT5 cables (VDC+, GND, DATA+, DATA- signals)
Dimensions and weights	
W x H x D mm	125 x 95 x 35 (125 x 95 x 65 with optional analog output level)
Weight	150 g
Standards	EN 54-16

OUT extension relay (8)

	PCO2001-A1
Supply	
Power supply	DC 12...24 V
Current consumption	200 mA at 24 V and 8 relays switched on
Output	AC 24 V, 7 A or DC 24V, 7 A
Fine fuses	5x 20 mm, 1 A, slow-blow, 250 V
Interfaces	
Serial interfaces	RS232
Baud rate	19200 baud
Max. cable length	3 m
Ambient conditions	
Operating temperature	-5...+40 °C
Storage temperature	-20...+70 °C
Operation in humid environments (without moisture condensation)	10...90 % rel.
Storage in humid environments (without moisture condensation)	5...90 % rel.
Mounting	DIN rail mounting (TS35)
Dimensions and weights	
W x H x D mm	100 x 40 x 160 (Eurocard)
Weight	250 g
Standards	EN 54-16

Automated volume control module

	PCA2008-A1
Supply	
Power supply	DC 24 V
Current consumption	100 mA
Microphone connection	
Max PCA2007-A1 connected	4
Microphone power supply	DC 12 V phantom power Electrically isolated from the power supply.
Microphone input sensitivity selectable	Line level or microphone level
Max. input level (MIC)	12 µV/Pa
Max. input level (LINE)	+ 25 dB
Monitoring of each microphone wiring	Interruption, short-circuit, ground fault
Fault indicator relay	Changeover contact (fault / OK) Inactive lines can be excluded via jumper
Relay contact	Max. 48 V / 500 mA
Cable connection	Plug-in terminal blocks
Ambient conditions	
Operating temperature	-5...+40 °C
Storage temperature	-20...+70 °C
Operation in humid environments (without moisture condensation)	10...90 % rel.
Storage in humid environments (without moisture condensation)	5...90 % rel.
Housing type	Open frame design
Mounting	DIN rail mounting (TS35)
Dimensions and weights	
W x H x D mm	75 x 70 x 40
Weight	100...110 g
Standards	EN 54-16

Automatic volume control microphone

	PCA2007-A1
Type	Electret microphone
Supply	
Power supply	DC 12 V phantom power (up to 48 V possible)
Current consumption	2 mA at 12 V
Cable connection	3-pin terminal: Cable gland PG 9 (cable diameter 2.5...8 mm)
Audio properties	
Frequency band	100 Hz... 10 kHz +/-6 dB
Outputs:	
• Max. output level (MIC)	12 µV/Pa
• Max. output level (LINE)	+ 25 dB
• Output impedance	Symmetrical output
Ambient conditions	
Operating temperature	-5...+40 °C
Storage temperature	-20...+70 °C
Operation in humid environments (without moisture condensation)	10...90 % rel.
Storage in humid environments (without moisture condensation)	5...90 % rel.
Housing material	ABS
Dimensions and weights	
W x H x D mm	36 x 64 x 98
Weight	140 g
Protection category and color	
Protection category (IEC 60529)	IP54
Color	Light grey, comparable to RAL 7035
Standards	EN 54-16

EOL3 (active)

	PCA2004-A1
Supply	
Power supply	AC 8...100 V
Power consumption	Max. 150 mW Typ. 100 mW
Max. line output (corresponds to max. amplifier output on speaker line)	500 W
Cable connection	Max. 2x 1.5 mm ²
Maximum number of modules in use	
Max. number of modules per amplifier	16
Max. number of modules per speaker line	16
Max. number of modules per matrix PC2001-A1, PC2002-A1 or PC2003-A1	64
Ambient conditions	
Operating temperature	-5...+40 °C
Storage temperature	-20...+70 °C
Operation in humid environments (without moisture condensation)	10...90 % rel.
Storage in humid environments (without moisture condensation)	5...90 % rel.
Dimensions and weights	
W x H x D mm	71 x 61 x 30
Weight	100 g
Protection category (IEC 60529)	IP41
Standards	EN 54-16

Loop isolator (100V)

	PCA2005-A1
Supply	
Power supply	AC 16...100 V
Power consumption	150 mW on startup 75 mW during operation
Line separating function	
Line voltage @ 20 kHz or 21 kHz:	
Nominal	AC 25 V
Minimum	AC 16 V
Maximum	AC 100 V
Line voltage at which the loop isolator (100 V) opens @ 20 kHz or 21 kHz:	
Minimum	AC 7 V
Maximum	AC 9 V
Line voltage at which the loop isolator (100 V) closes @ 20 kHz or 21 kHz:	
Minimum	AC 4 V
Maximum	AC 5.5 V
Currents:	
Max. switching current	2 A
Leakage current	150 µA
Max. serial impedance when switches are closed	0.2 Ohm
Technical data for each speaker tap on the loop isolator (100 V)	
Max. speaker output	12 W
Min. speaker output	0.75 W
Maximum cable length with monitoring	0.8 m
Maximum cable length without monitoring	100 m
Technical data for external LED connector	
Recommended LED color	Red
Diode conducting-state voltage	<2.2 V
Power supply	3 V
Power supply	5 mA
Internal series resistance	150 Ohm

PCA2005-A1	
Technical data for loop, amplifier and audio matrix	
Maximum number of speaker loops:	
Per amplifier channel	2
PC2003-A1, audio matrix	8
PC2003-A1, audio matrix, supplied with internal pilot sound	4
Maximum number of loop isolators (100 V) per audio matrix PC2003-A1:	
Per loop	80
All loops	480
Maximum number of loop isolators (100 V) per amplifier output:	
1x 150 W (PV2003-A1)	80
1x 250 W (PV2001-A1, PV2007-A1)	80
1x 300 W (PV2003-A1 bridge mode)	80
1x 500 W (PV2001-A1 bridge mode, PV2002-A1)	80 with 1 loop 120 with 2 loops
Amplifier power calculation for loop isolator (100 V)	
Per loop isolator (100 V)	0.5 W
Maximum audio payload (according to calculation method below): ¹⁾	
1x 150 W (PV2003-A1)	110 W with 80 loop isolators (100 V)
1x 250 W (PV2001-A1, PV2007-A1)	210 W with 80 loop isolators (100 V)
1x 300 W (PV2003-A1 bridge mode)	260 W with 80 loop isolators (100 V)
1x 500 W (PV2001-A1 bridge mode, PV2002-A1)	460 W with 80 loop isolators (100 V) 440 W with 120 loop isolators (100 V)
Connections	
Design	Spring type
Cable diameter	Min.: 0.75 mm ² Max.: 2.5 mm ²
Loudspeaker cable: ²⁾	
Maximum cable length per amplifier output	1000 m
Cable types, untwisted only	FP30/60 NYM, 2 x 1.5 mm ² ISTY 2 x 2 x 0.8 mm ²
Ambient conditions	
Operating temperature	-5...+40 °C
Storage temperature	-20...+70 °C
Operation in humid environments (without moisture condensation)	10...90 % rel.
Storage in humid environments (without moisture condensation)	5...90 % rel.

	PCA2005-A1
Dimensions and weights	
W x H x D mm	70 x 116 x 25
W x H x D mm (housing)	85 x 135 x 37
Weight	80 g
Weight (with housing)	138 g
Standards	EN 54-17 with housing PCA2013-A1

1) Calculation of the maximum audio payload:

- The maximum audio payload per amplifier channel depends on how many loop isolators (100 V) are connected.

'Audio payload' [W] = 'power of the amplifier channel' – ('number of loop isolators' * 0.5 W)

2) Twisted cable types are not permitted.

Spelsberg i 16-L Li Box

	PCA2013-A1
Rated insulation voltage	AC 400 V
Conductor cross-section	Max. 2.5 mm ²
Ambient conditions	
Operating temperature	-25...+40 °C
Max. operating temperature (24 hours)	35 °C
Max. air humidity at 25 °C (short-term)	95 % rel.
Max. air humidity at 40 °C	50 % rel.
Dimensions and weights	
W x H x D mm	130 x 85 x 37
Material	
Box	Polyethylene
Cover	Polypropylene
Protection category and color	
Protection category (IEC 60529)	IP55
Color	Gray

Repeater (CAT5), Camdenboss RJ45 Interface

	PNA2007-A1	PNA2008-A1
Supply		
Power supply	DC 24 V (18...32 V)	–
Current consumption	80 mA when idling 10 mA per active port 130 mA at full load	–
Interfaces		
Serial interfaces	RS232 (for configuration only)	–
Connections		
Copper	4 connections on RJ45 connector	1 RJ45 connector 9 screw terminals 0.2...4 mm ²
Fiber-optic ports	One TX and one RX port with SC connector Wavelength: 1310 nm Fiber type: MM	–
Network standards	Conforms to IEEE 802.3, 100Base-TX, 100Base-FX, 10Base	Conforms to IEEE 802.3, 100Base-TX, 10Base
Ambient conditions		
Operating temperature	-5...+40 °C	-20...+70 °C
Storage temperature	-20...+70 °C	-20...+70 °C
Operation in humid environments (without moisture condensation)	10...90 % rel.	10...90 % rel.
Storage in humid environments (without moisture condensation)	5...90 % rel.	5...90 % rel.
Dimensions and weights		
W x H x D mm	200 x 115 x 250	34 x 45 x 83
Weight	900 g	40 g
Standards	EN 54-16	EN 54-16

ICPDAS I-7510 (RS485, isolated)

	PNA2009-A1
Supply	
Power supply	DC 24 V (10...30 V)
Power consumption	2.2 W
Current consumption	90 mA at 24 V
Protection	Power reverse Over-voltage Brown-out
Interfaces	
Serial interfaces	Asynchronous half-duplex 2-wire RS-485
Transmission speed	300...115200 bps
Max. cable length	400 m at 115200 bps
Isolation	
Isolation type	2-way optical isolation
Isolation voltage	DC 3000 V
Connections	
Screw terminals	2 x plug-in 10 pin connector block
Ambient conditions	
Operating temperature	-25...+75 °C
Storage temperature	-25...+75 °C
Operation in humid environments (without moisture condensation)	10...90 % rel.
Storage in humid environments (without moisture condensation)	10...90 % rel.
Dimensions and weights	
W x H x D mm	72 x 122 x 35
Weight	900 g
Standards	EN 54-16

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Smart Infrastructure
Global Headquarters
Theilerstrasse 1a
CH-6300 Zug
Tel. +41 58 724 2424
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