Rack-based I/O

I/O System

The rack-based I/O system consists of a central rack and one or two 19 inch expansion racks intended for double size Euro boards. Each rack is equipped with a power supply unit PSF.

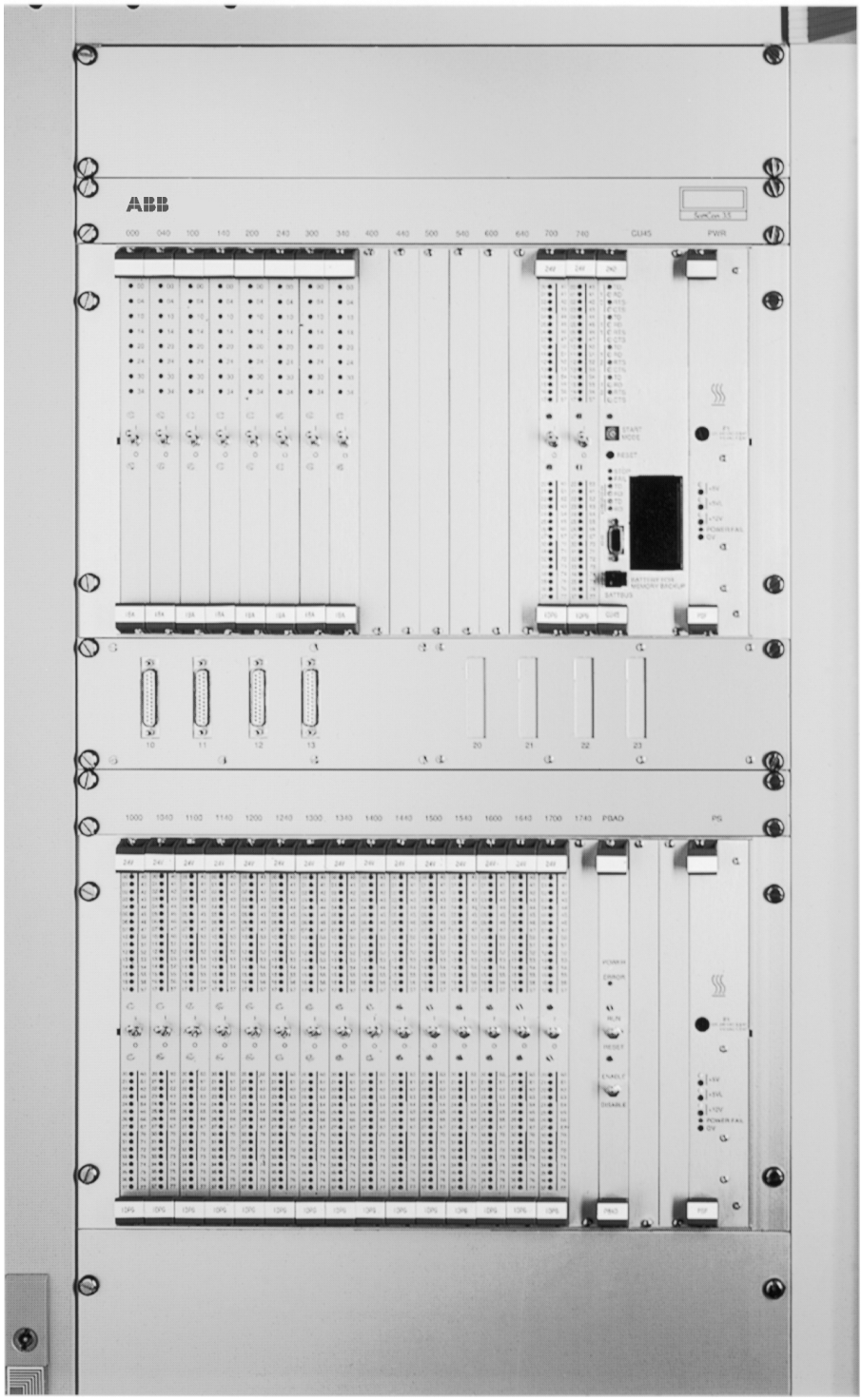
For a SattCon 35 system the control unit CU45 is connected to the central rack.

For a Series 200 system connected to a central rack-based I/O, a rack adapter board 200-RANN is mounted in the central rack. This board communicates with the Series 200 CPU via the system bus.

For a Series 200 system connected to a remote rack-based I/O, a rack adapter board 200-RACN is mounted in the central rack. This board communicates with the Series 200 via the ControlNet™ network.

Two expansion racks can be connected to the central rack in a central I/O system and one in a remote I/O system. Each expansion rack is equipped with a bus decoder board PBAD, which communicates with CU45, 200-RANN or 200-RACN in the central rack through a parallel bus cable.

The rack-based system is intended for industrial use and meets the EMC directive 89/336/EEC and the Low Voltage Directive, LVD, 73/23/EEG.



The rack-based I/O has the following main features:

- High density I/O system
- Replacement with power on
- Large number of I/O boards and accessories
- Central or Remote I/O
- Compatible with both SattCon 35 and Series 200
- Digital and analogue I/O boards are galvanically separated
- Easy connection of shielded cables
- Simple upgrading of older I/O systems

CE

ABB

Bus decoders

PBAD

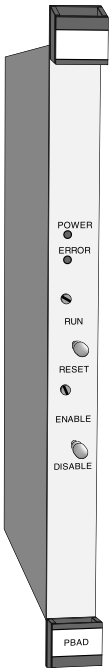
Bus decoder board including bus interconnection socket XPIOS. Handles analogue and digital communication between the central rack and the expansion rack. Also supervises the expansion rack's internal bus.

The board is powered by +12 V DC from the power supply unit PSF.

Two LEDs on the front indicate power and error.

Two switches on the front are intended for fault diagnosis in the system. The Run/Reset switch resets all the outputs in the expansion rack. The Enable/Disable switch disconnects a faulty rack for diagnostics without shutting down the rest of the system.

A DIP switch on the side of the board determines the identity of connected expansion racks.



200-RACN

Rack adapter board for Series 200 system. Handles the communication between system Series 200 and remote rack-based I/O system, and controls the scanning of digital and analogue I/O signals on the local I/O bus.

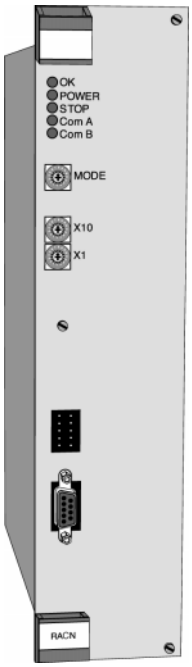
Each 200-RACN can handle two racks – the central rack where it is installed and one expansion rack.

The board is powered from the PSF power supply.

Five LEDs on the front indicate fail, power, disabled I/O copy (stop) and communication status.

Two connectors and the "MODE" rotary switch on the front are used for test and service purposes only.

The other two rotary switches on the front are used to set the network node address.



200-RACN/A

Rack adapter board 200-RACN with analogue to digital converter, ADSF, included.

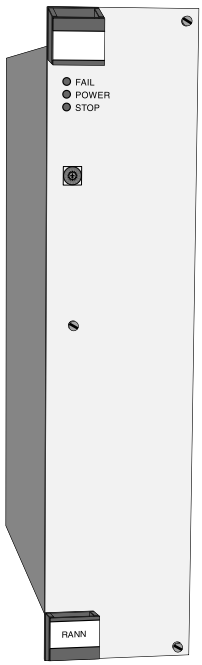
200-RANN

Rack adapter board for Series 200 system. Handles the communication between system Series 200 and central rack-based I/O system, and controls the scanning of digital and analogue I/O signals on the local I/O bus.

Each 200-RANN can handle three racks – the central rack where it is installed and two expansion racks.

The board is powered from two sources. Series 200 powers the onboard CPU, memory and related logic whereas the PSF powers the interface between the CPU part of the board and the local I/O bus.

Three LEDs on the front indicate fail, power and disabled I/O copy (stop).



200-RANN/A

Rack adapter board 200-RANN with analogue to digital converter, ADSF, included.

Power supply

PSF

Power supply unit for the PIOS35 rack. One is required in each rack.

The board is powered either from 230 V AC mains or from a separate 24 V DC power unit and produces 5 VDC and 12 V DC, together with a power failure signal.

Maximum load is 50 W when supplied with 230 V AC and 70 W at 24 V DC.

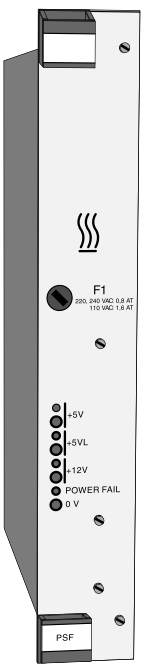
Four LEDs on the front panel indicate supply for +5 V, +5 VL, +12 V and power failure.

Four sockets for test purposes are located next to the LEDs.

Mains supply selection 110, 220/230 or 240 V is made with a switch on the side of the board.

The mains supply is protected by a fuse fitted in the front for easy access.

The secondary side of the mains transformer and the 24 V DC source are also protected by fuses, located on the side of the board.



I/O boards

General information

Boards can be replaced during operation. The switch on the front panel should be set in the “0” position, where the input status is frozen in the central unit and the outputs are set to zero. During normal operation, the switch should be in the “1” position.

LEDs on the front of the board indicate input/output status. The octal address of the input/output is marked beside each LED.

IDPG24 / IDPG48

Digital input board with 32 direct current inputs using positive logic. The inputs are galvanically isolated with optocouplers. The board is available in two versions for signal levels of 24 and 48 V.

IDPG may be used in applications where the plant 0 V is not connected to the system 0 V, or where there is a special requirement for galvanic signal isolation. IDPG is used to interface signals from devices such as limit switches, photocells etc.

IAPG 230

Digital input board with 16 AC inputs (230 V) using positive logic. The inputs are galvanically isolated with optocouplers.

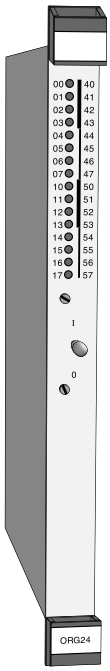
IAPG 230 is used to interface signals from devices such as power switches, relay contacts etc.

ODPG.8

Digital output board for DC voltage with 32 optocoupled outputs, divided into four separate groups of eight. The maximum output capacity is 0.8 A per output, subject to maximum 3.2 A per group and 8 A for the entire board.

ODPG.8 is designed for supply voltages between 10–60 V. Since the four groups are completely separated from each other, it is possible to use four different supply voltages for the same board.

Several outputs can be connected to the same load if they are fed from the same voltage source. If not, they need to have a protective diode in series with the output.



ORG24

Digital output board with 16 relay outputs. The relays have single-pole change-over contacts and are provided with varistor protection.

Maximum relay contact current is 2 A and maximum relay contact voltage is 250 V AC alternatively 120 V DC.

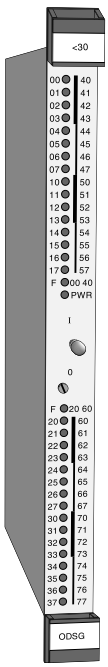
The supply voltage to the relay coils (24 V DC) is connected to a terminal located on the rear side of the rack.

ODSG

Digital short-circuit proof output board with two groups of 16 optocoupled outputs powered by an external supply (+19–30 V DC). Each group is monitored by an overload/short circuit detection bistable. The maximum load is 0.8 A for each output and 16 A for the complete board.

ODSG is intended for loads such as lamps, relays, solenoid valves etc.

When an overload or short circuit condition occurs, the output is switched off and the LED for the corresponding channel dims. If the Man/Auto input is active, a yellow LED for that group lights.



IPA4

IPA4 is a digital input board designed to count pulses. The maximum pulse frequency is 10 kHz.

IPA4 has four inputs, each with an 8-bit counter, capable of counting up to 255 pulses. The inputs can be combined in pairs to make two 16-bit counters with a capacity of up to 65535 pulses.

To suppress electrical interference, transmitters with complementary signals should be used.

Phase displaced pulse trains can be used for up/down-counting. The counters can be started, stopped and reset individually.

The common signal reference voltage level can be adjusted and detection of positive and/or negative-going edges can be selected individually for each input.

IPA4 can be used in applications for pulse counting, quantity counting, positioning and speed calculation.

16 LEDs on the front panel show the four counter channels, each with two inputs A and B. The inputs A and B can be combined in different ways, to measure motion in two directions, for instance.

Three sockets for test purposes are located on the front.

The counter channels also have gate inputs to start and stop the counting, and clear inputs to reset the respective counter.

All the input circuits are provided with comparators for transmitters with complementary signals, a means to effectively suppress electrical noise.

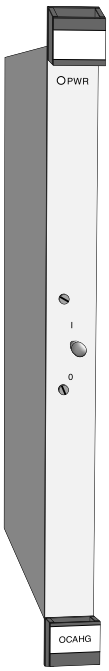
IBA

Analogue input board with eight inputs. IBA can either be used on its own or with associated modules. The plug-in modules are for galvanic isolation (MCVG), differential input (MCV200), temperature measurement (MP, MN) or resistance measurement (MR).

When IBA is used without associated modules, the following inputs can be connected: 0–20 mA, 4–20 mA, 0–10 V, 0–5 V and 1–5 V. Each channel is individually selectable by straps, located on the board.

IBA has high flexibility, very high repeatability and high temperature stability.

If the LED input (current) is used, the intensity of the LED varies with the value of the input signal.



OCAHG

Analogue output board with four channels for voltage signals 0–10 V and current signals 0–20 or 4–20 mA, selectable with straps on the board. The resolution is 8 bits.

The analogue circuits are electrically isolated from the digital control logic and the control system. The channels are not galvanically separated from each other.

OCAHG generates analogue signals to control devices, instruments, etc. By means of the signals DDC and MAN, control can either be automatic (from the control system) or manual via the INCREASE/DECREASE inputs.

Manual control can be executed from a hand module, push-buttons or a digital output board.

OCAHG retains its output values in the event of a CPU failure.

OCVA

Analogue output board with two channels for current signals 0–20 mA or 4–20 mA and voltage signals ±10 V or 0–10 V. The various ranges are selected using connections in the process connector cable.

Each channel can supply both current and voltage output signals at the same time. When using a current output the corresponding voltage range must be set to 0–10 V.

The analogue circuits are electrically isolated from the digital control logic and the control system. The channels are not galvanically separated from each other.

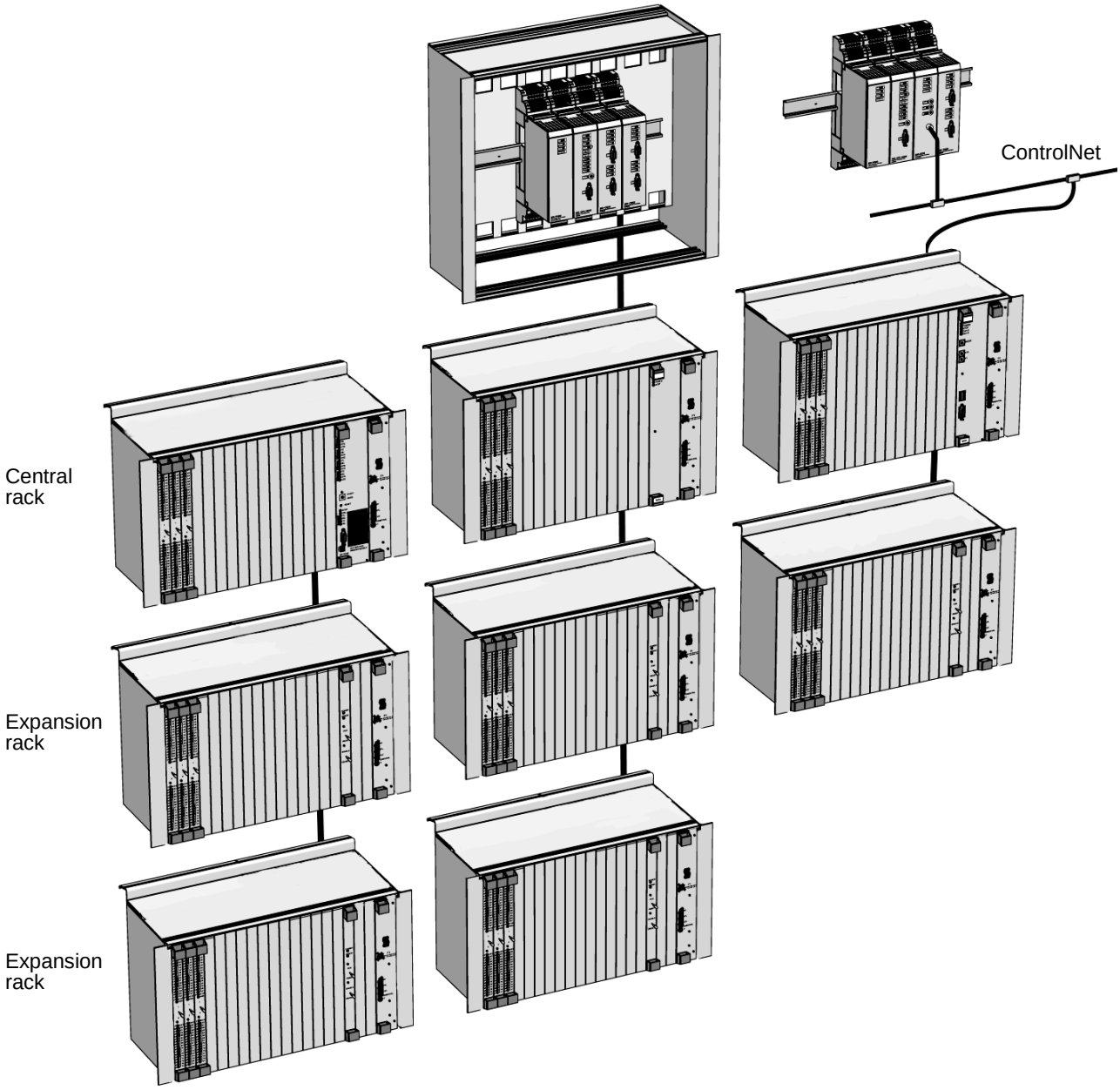
OCVA can be set up so that the outputs either go to zero or remain at the selected safety state values during CPU shut down.

The board has 12-bit resolution for the ±10 V ranges and 11-bit resolution for the other current and voltage ranges.

Accessories

Order codes	Function
PIOS/R	Basic rack PIOS35 with address panel, power supply PSF and 200-RANN.
PIOS/RA	Basic rack PIOS35 with address panel, power supply PSF and 200-RANN/A.
PIOS/RC	Basic rack PIOS35 with address panel, power supply PSF and 200-RACN.
PIOS/RCA	Basic rack PIOS35 with address panel, power supply PSF and 200-RACN/A.
PIOS/P	Basic rack PIOS35 with address panel, power supply PSF, bus interconnection socket XPIOS and bus decoder board, PBAD (also includes screws and mounting devices).
PIOS35	Empty basic rack (for use as expansion or central rack).
XPIOS	Bus interconnection socket. To be mounted on the rear part of the rack to enable connection of two bus cables to PBAD. Always included with PBAD.
ADSF	Central A/D converter. To be mounted on rack adapter board 200-RANN.
IOC351.0M	Assembly kit with the following parts: an expansion cable (1 metre) connecting the central rack to the first expansion rack, a bus extension unit XPBAD, a connector and a cover.
IOC352.5M	D:o 2.5 metre.
CPIOS1.0M	Cable (1 metre) for parallel bus connection between two expansion racks.
CPIOS2.5M	D:o 2.5 metre.
200-CBR/R600	Cable (0.6 metre) for connecting the Series 200 system to the rack adapter board 200-RANN located in a central rack.
200-CBR/R1000	D:o 1 metre.

Order codes	Function
Modules for IBA	Five accessory modules for analogue input board IBA:
MCV200	Analogue module which permits up to 200 VDC common-mode voltage for each channel, individually.
MCVG	Analogue module which provides individual galvanic isolation of up to 750 VDC per channel.
MP	Measures temperature with a Pt100 sensor. MP is linearized. Six ranges.
MN	Measures temperature with a Ni1000 sensor. MN is not linearized.
MR	Measures resistance and is used for position sensing, pressure measurement etc. Three ranges.
PTU2	Two ready wired I/O connectors with cables and screw terminal blocks mounted on an aluminium profile.
200-MOUNTKIT	Mounting kit for mounting Series 200 central system in a 19” rack.
PTC	Digital simulation board with a panel which has 32 switches for simulation of digital signals.
IVAPOT	Analogue simulation board with eight potentiometers for simulation of analogue signals.



A SattCon 35 control system combined with two expansion racks

A Series 200 central system combined with a central rack-based I/O system

A Series 200 Central system combined with a remote rack-based I/O system

Configuration

The central and the expansion racks are of a common type called PIOS35. The rack has space for 16 I/O boards and all input/output boards fit in any slot intended for I/O boards.

The I/O boards are connected to the rack via two different connectors. The lower connector (X2) is used for connecting the rack's internal bus and power supply. The upper connector (X1) is used for connection of input/output signals for the process using crimp sleeves.

For more detailed information, see the manual "Rack-based I/O, Installation and Maintenance".

Bus system

The signals between the racks are distributed via parallel bus cables. Two expansion racks can be connected to the parallel bus. If RACN or RACN/A is used, only one expansion rack may be connected.

There are two lengths of the cables to be used between the central rack and the expansion rack, or between the expansion racks. Their lengths are 1 and 2.5 metres, although only one 2.5 metres cable may be connected in a system.

Mains supply

Each rack contains a power supply PSF, located at the right hand side of the rack. It can be supplied via the mains or 24 V DC. Filters and mains connections are fitted at rear of the rack.

Technical data

General

Temperature	
Operating	+5°C to +55°C (max. mean temperature over 24 hours is 50°C)
Non-operating	–25°C to +70°C
Humidity	Max. 90%, non-condensing
Protection class	IP20
Design standard	Fulfils the EMC directive 89/336/EEC and the Low Voltage Directive, LVD, 73/23/EEG for industrial environments
Rated current for crimp sleeves	5 A
Board type	Double size Euro board
Order code	
Manual “Rack-based I/O Installation and Maintenance”	RACKIO-IME

PBAD

The inaccuracy of bus decoder board PBAD is insignificantly low compared with that of the analogue boards and A/D converters, i.e. the board has no influence on the overall technical specification

Current consumption from PSF	Max. 50 mA
Dimensions (incl. panel)	H 262 x W 20 x D 190 mm
Order code	PBAD

200-RANN

Current consumption from NNbus	
200-RANN	400 mA
200-RANN/A	600 mA
Current consumption from PSF	Max. 100 mA
Dimensions (incl. panel)	H 262 x W 60 x D 190 mm
Order codes	200-RANN 200-RANN/A

200-RACN

Number of channels	1
Communication protocol	ControlNet
Serial interface	Separated via a signal transformer
Speed of transfer	5 Mbit/sec.
Power supply	From Power supply unit PSF
Current consumption	
200-RACN	400 mA/+5 V; max. 100 mA/+12 V
200-RACN/A	600 mA/+5 V; max. 100 mA/+12 V
ControlNet connector	BNC 75 Ω
Dimensions (incl. panel)	H 262 x W 60 x D 190 mm
Order codes	200-RACN 200-RACN/A

PSF

Supply voltage	
Mains supply	110/220/240 V AC +15/–10% selectable, 220 V AC accepts also 230 V AC +10/–15%
Frequency	50 Hz ±5% or 60 Hz ±5%
24 V DC	24 V DC +20/–15% excl. ripple
Ripple on 24 V DC	Peak 5% of nominal voltage
Current consumption (nominal input voltage)	
230 V AC mains	Typ. 0.5 A for max. load 50 W
24 V DC supply	Typ. 3.5 A for max. load 70 W
Output voltages[a]	
+5 V DC, +5 VL	5.1 V DC +0.1/–0.3 V DC during normal operation
Max. current output	4 A (+5 V DC and +5 VL combined)
Min. current output	0.2 A
+12 V DC	12.5 V DC ±5 V DC max. 4 A, min. 0.2 A
Output power	
Mains supply	Max. 50 W
24 V DC	Max. 70 W
Continuous working voltage	240 V AC
Isolation test voltage	1776 V AC for one second, between mains input and protective ground and DC side.
Front panel temperature	< 40°C above ambient
Dimensions (incl. panel)	H 262 x W 40 x D 190 mm
Order code	PSF

a. (the total output power can limit the current)

IDPG24 / IDPG48

Number of inputs	32
Input voltages	
IDPG24	24 V DC +20/–25%
IDPG48	48 V DC +20/–25%
Overvoltage rating	220 V AC max. 10 s.
Input current “1” level	Typ. 10 mA (+20/–25%)
Filter time constant	Typ. 10 ms
Logical levels	
IDPG24	0 < 5 V DC, 1 > 16 V DC
IDPG48	0 < 10 V DC, 1 > 32 V DC
Continuous working voltage	< 75 V DC relative to system logic
Isolation test voltage	500 V DC (one minute)
Current consumption	40 mA (internal +12 V DC)
System power	4 mA/active input +5 VL (= typ. 130 mA, max. 190 mA +5 VL)
Miscellaneous	Galvanic isolation in pairs with one common connection
Dimensions (incl. panel)	H 262 x W 20 x D 190 mm
Order codes	IDPG24 IDPG48

IAPG230

Number of inputs	16 optocoupled
Input voltage	230 V AC +10/–15%
Overvoltage rating	500 V AC max. 10 s.
Input current for activated input	6.5–14 mA, typ. 10 mA (230 V AC +10/–15%, 47–63 Hz)
Frequency range	47–63 Hz
Filter time constant	Typ. 20 ms
Logical levels	Typ. 0 < 70 V DC, 1 > 130 V DC
Continuous working voltage	230 V AC
Isolation test voltage	1752 V AC for one second, between inputs and between any system logic and front panel.
Current consumption	20 mA (internal +12 V DC)
System power	5–15 mA/active input +5 VL (typ. 160 mA, tot. max. 80–240 mA)
Dimensions (incl. panel)	H 262 x W 20 x D 190 mm
Order code	IAPG230

ODPG.8

Number of outputs	32 optocoupled
Number of separate groups	4
Supply voltage	10–60 V DC. The groups can have common or separate supplies
Peak voltage	75 V DC (mean value), max. 60 V DC as above
Load current	Max. 0.8 A per output Max. 3.2 A per group Max. 8 A per board
Surge current	Max. 2 A for 50 ms
Leakage current	Max. 2 mA typ. < 0.5 mA
Recommended external fuses	3.2 A fast-blow per group
Voltage drop, output	Max. 2.5 V DC typ. < 1 V DC
Activation time	Max. 10 µs typ. 5 µs
Deactivation time	Max. 400 µs typ. 200 µs
Continuous working voltage	< 75 V DC relative to system ground
Isolation test voltage	500 V DC for one minute, betweeen each group and system logic
Current consumption	30 mA (internal +12 V DC) 2–7 mA/active output (+5 VL). Totally 60–230 mA, typ. 140 mA
Dimensions (incl. panel)	H 262 x W 20 x D 190 mm
Order code	ODPG.8

ORG24

Number of outputs	16
Relay coil supply	24 V DC
Current drawn from relay supply (VR) per energized relay coil	17–25 mA at 24 V DC (VR = 24 V DC, +20/–15%)
Contact voltage ratings	
AC	250 V max.
DC	120 V max.
Contact current ratings (resistive load)	
AC	2 A max.
DC	2 A max. (24 V DC +20%)
DC	0.6 A max. (48 V DC +20%)
	Internal varistor for surge suppression. External overload protection required for all loads and external surge suppression for inductive loads
Min. contact current	100 mA at 12 V DC
Relay operating time	15 ms max., typ. 8 ms
Relay release time	10 ms, typ. 4 ms
Contact bounce period	2.5 ms max.
Relay working life (resistive load)	
DC	2 A: 1500000 operations
AC	2 A: 800000 operations
Continuous working voltage	250 V AC max.
Isolation test voltage	1800 V AC for one second, between each individual relay contact and between any relay contact and system logic or front panel.
Current consumption	20 mA (+12 V DC). 5–15 mA/active output, typ. 10 mA (+5 VL). Totally 80–240 mA, typ. 160 mA
Dimensions (incl. panel)	H 262 x W 20 x D 190 mm
Order code	ORG24

ODSG

Number of outputs	32 optocoupled and 2 optocoupled error bistables
Number of inputs	2 optocoupled 24 V DC. 10 mA reset signals
External supply voltage	19–30 V DC
Voltage limit	Max. 50 V DC for 1 min. (25°C)
Load current	Max. 0.8 A per output Max. 16 A per board
Short circuit current	Typ. 4 A, max. 10 A, fuse trip delay ≤ 20 ms (25°C)
Leakage current	Max. 100 µA, typ. 10 µA. Typical value for a short circuited output is 10 mA
Recommended external fuses	16 A (slow) per board
Resistance	Typ. 0.4 Ω, max. 0.6 Ω at 0.5 A. Typ. 0.6 Ω at 0.8 A (25°C)
Activation time	Typ. 10 µs
Deactivation time	Typ. 150 µs
Current consumption	
System (12 V DC)	40 mA
LED (5 VL)	7 mA/active output, typ. 140 mA
Continuous working voltage	< 75 V DC relative to system ground
Isolation test voltage	500 V DC for one minute, between I/O and system logic
Dimensions (incl. panel)	H 262 x W 20 x D 190 mm
Order code	ODSG

IBA

Number of inputs	8
Input impedance	
Current	250 Ω without LED
Voltage	300 kΩ
Voltage drop	Max. 5 V DC without LED Max. 8 V with LED
Accuracy	±0.2% FS at 25°C
Temperature stability	±0.002% FS per °C
Max. permanent permissible overload	
Current	30 mA
Voltage	30 V DC
Input type	Single-ended common type
Input filter (time to 63% of FS)	70 ms ± 10% filter of first order. Breaking point at ≈ 2.3 Hz
Input connector	Harting, crimp-pin
Crosstalk between channels	79 dB attenuation
Non-linearity	0.02% FS
Repeating accuracy	0.001% FS
RFI immunity	Error of less than 0.8% of FS at 10 V/m, 27–1000 MHz
Current consumption	Typ. 90 mA (+12 V DC) for the board. When modules are used, the current consumption increases
Dimensions (incl. panel)	H 262 x W 20 x D 190 mm
Order code	IBA

IPA4

Number of inputs	4 (with 8-bit counter) 2 (with 16-bit counter)
Galvanic isolation	No
Input impedance	1 kΩ or ≈ 90 Ω
Power dissipation	Max. 0.25 W across connected terminating resistor
Max. pulse amplitude, complementary inputs	33 V DC (1 kΩ input impedance) or 10 V DC (90 Ω impedance)
Max. pulse amplitude, non-complementary inputs	24 V DC
Input voltage difference	Min. 1 V DC rel. inverted input or rel. transition level
Max pulse frequency	10 kHz
Process cabling	Twisted-pair cable with individual shielding for each pair of wires
Current consumption	150 mA (+12 V DC, 1.8 W)
Reference voltage level	0–10.5 V DC, adjustable
Dimensions (incl. panel)	H 262 x W 20 x D 190 mm
Order code	IPA4

IBA-module MCV200

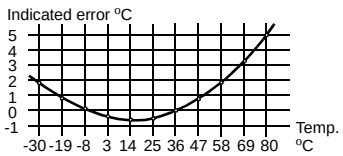
Common mode suppression	72 dB attenuation with 0–10 V ± 5 V DC, otherwise 66 dB
Continuous working voltage	< 75 V DC relative to system ground
Common mode voltage relative to ground	Max. 200 V DC (by design)
Impedance	
Common mode	400 kΩ
Differential mode	800 kΩ
Temperature stability	Max. ±0.003% FS per °C
Current consumption	4 mA (+12 V DC) per module
Miscellaneous	All other technical data are the same as for the IBA
Dimensions	H 107 x W 18 x D 13 mm
Order code	MCV200

IBA-module MCVG

Continuous working voltage	< 75 V DC relative to system ground
Common mode voltage relative to ground	750 V DC without LEDs (by design) 250 V DC with LEDs (by design)
Common mode suppression	94 dB attenuation
Leakage current	220 V, 50 Hz, 2 µA typ.
Accuracy	±0.3% FS at 25°C
Temperature stability	Max. ±0.002% FS per °C
Non-linearity	Max. 0.1% FS
Current consumption	18 mA (+12 V DC) per module
Miscellaneous	All other technical data are the same as for the IBA
Dimensions	H 107 x W 18 x D 13 mm
Order code	MCVG

IBA-modules MP, MN and MR

Input impedance	Min. 10 MΩ
Accuracy at 25°C	
MP100-MP400	±0.4% FS, DIN 43760, $\alpha = 0.00385$
MP600	±0.6% FS, DIN 43760, $\alpha = 0.00385$
MN80	Follows the curve, ±0.4% FS



1000 Ω = 0°C
871.7 Ω = –30°C
1390.1 Ω = 80°C

MR100-MR1000	±0.5% FS
Temperature stability	Max. ±0.01% FS per °C
Influence of conductor resistance	Max. ±0.1% FS per 10 Ω
Sensor current (typical)	
MP160	4 mA
MN80	0.5 mA
MR1000	0.5 mA
Other	3 mA
Measuring ranges	
MP100	±0 to +100°C
MP130	–30 to +130°C
MP160	±0 to +160°C
MP200	±0 to +200°C
MP400	±0 to +400°C
MP600	±0 to +600°C
MN80	–30 to +80°C
MR100	0 to 100 Ω
MR140	0 to 140 Ω
MR1000	0 to 1000 Ω
Input filter (time to 63% of FS)	Second order filter ± 20%, first breakpoint
MP100	500 ms
MP130	300 ms
MP160	300 ms
MP200	300 ms
MP400	200 ms
MP600	180 ms
MN80	200 ms
MR100	200 ms
MR140	200 ms
MR1000	150 ms
All	Second breakpoint at 3.4 Hz
Cabling	Shielded, no joints. Max. conductor resistance 50 Ω. Uniform length
Non-linearity	
MP	Max. 0.3% FS
MN	See curve above
MR	Max. 0.3% FS
Current consumption	+12 V DC.
MP160 with transmitter	24 mA
MP160 without transmitter	34 mA. Note that with MP160 it is not possible to have more than 14 boards in a rack, each with 8 MP160 modules.
Other with transmitter	20 mA
Other without transmitter	30 mA
Miscellaneous	All other technical data are the same as for the IBA
Dimensions	H 107 x W 18 x D 13 mm
Order codes	MP100 MP200 MP400 MP600 MP130 MP160 MN80 MR100 MR140 MR1000

OCAHG

Number of outputs	4
Supply voltage	20–30 V DC
Supply current	Max. 200 mA at 24 V DC (except MAN/DDC ind.)
Analogue outputs (time to 63% of FS in DDC mode)	≈ 150 ms
Load current for voltage outputs	Max. 7 mA per output
Load resistance for current outputs	Max. 750 Ω
MAN/DDC indication	Max. 50 mA per output
Accuracy	±0.5% of FS within the temperature range +5 to +55°C
Resolution	8 bits
Current consumption	1 mA (+12 V DC)
Continuous working voltage	< 75 V DC relative to system ground
Common mode voltage relative to ground	500 V DC
Dimensions (incl. panel)	H 262 x W 20 x D 190 mm
Order code	OCAHG

OCVA

Number of outputs	2
Supply voltage	24 V DC +20 to –10%
Max. ripple	5% of nominal voltage
Supply current	Max. 140 mA at 24 V DC
Response time to 63% of FS of output	1.5 ms
Load current for voltage outputs	Max. 5 mA per output
Load resistance for current outputs	Max. 750Ω
Max. recommended cable length	500 m
Accuracy	Max. ±0.3%, typ. ±0.15% of FS at 25°C
Temperature stability	±0.002% of FS per °C
Linearity error	Max. 0.05%, typ. 0.02% of FS within the temperature range +5 to +55°C
Offset	Max. 19.5 mV, 19.5 µA (±4 LSB)
Resolution	
–10 V – +10 V DC	12 bits
0–10 V DC	11 bits
4–20 mA	11 bits
0–20 mA	11 bits
Current consumption	45 mA (+12 V DC) 70 mA (+5 VL)
Continuous working voltage	< 75 V DC relative to system ground
Common mode voltage relative to ground	500 V DC
Dimensions (incl. panel)	H 262 x W 20 x D 190 mm
Order code	OCVA

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