

S200 I/O System Units



S200 I/O is a range of cost effective I/O units which are bus compatible with S200L I/O and can be mixed with them in any order on the same DIN rail.

The S200 I/O System features a number of interface units for various process applications. The units in the I/O system are intended for use in industrial environment and they fulfil the EMC directive 89/336/EEC. The I/O units may be mounted centrally at the Controller or remotely.

The inputs and outputs are filtered and galvanically isolated by optocouplers.

Configuration of the I/O units' functions and measuring ranges is performed using the system software.

The S200 I/O System features:

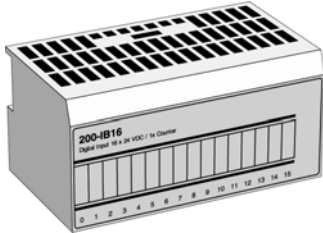
- Replacement under system power
- CE and UL approval
- Software configurable function
- Mechanical coding for safe replacement
- Safety function on outputs in remote configuration
- Variety of termination options
- The same I/O units in central and remote configurations
- Compatible with S200L I/O

I/O Units

The in/outputs are filtered and galvanically isolated by optocouplers. LEDs are located on the front.

It is possible under system power to remove/insert the units. The process is connected to the units via the terminal base.

200-IB16



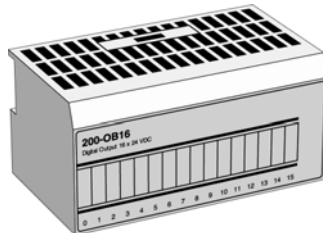
I/O unit for 16 digital input signals. The status of each input signal is indicated by a yellow LED.

Each signal is isolated from the logic circuits by an optocoupler and filtered with a low-pass filter. The inputs share a common ground connection.

The input signals are sampled at intervals determined by a filter time. The signal status is changed only if two consecutive samples are the same. The filter time is set with the programming software.

200-IB16 contains a 16-bit counter.

200-OB16, 200-OB16P

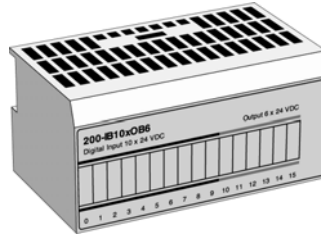


I/O units for 16 digital output signals. The outputs of 200-OB16P are short-circuit proof. Up to four outputs can be connected in parallel (the total load must, however, not exceed 1.8 A).

The status of each output signal is indicated by a yellow LED if +24 V DC is supplied.

The 16 outputs share a common ground connection.

200-IB10xOB6

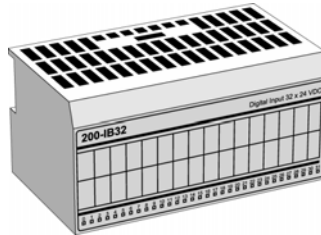


I/O unit for ten digital input and six digital output signals. The status of each signal is indicated by a yellow LED.

The outputs can deliver up to 2 A to the I/O system.

Each signal is isolated from the logic circuits by an optocoupler and filtered with a low-pass filter. The inputs have a programmable filter time.

200-IB32

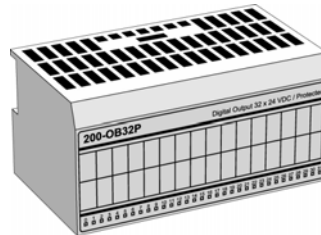


I/O unit for 32 digital input signals. The status of each input signal is indicated by a yellow LED.

The signals are isolated from the logic circuits in two groups by optocouplers and filtered with a low-pass filter. Each of the two input groups share common power and ground connections.

The input signals are sampled at intervals determined by a filter time common for all 31 input signals. The filter time is set with the programming software.

200-OB32P

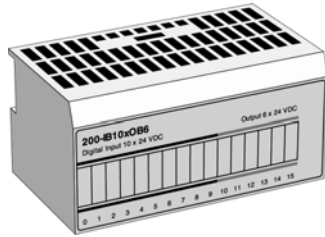


I/O units for 32 digital protected output signals. The outputs are short-circuit proof and are isolated from the logic circuits in two groups by optocouplers.

The status of each output signal is indicated by a yellow LED if +24 V DC is supplied.

Each of the two output groups share common power and ground connections.

200-IB16xOB16P

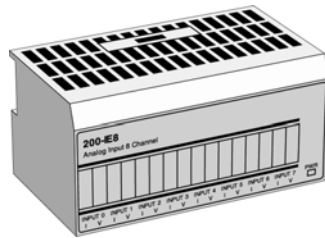


I/O unit for 16 digital input signals and 16 digital protected output signals. The status of each signal is indicated by a yellow LED.

The outputs can deliver up to 0.5 A to the I/O system.

Input channels are isolated from output channels. The inputs have a programmable filter time.

200-IE8



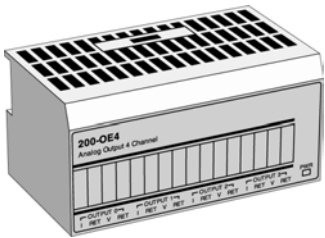
I/O unit for eight analog input signals. The unit has 12-bit resolution and each of the inputs can be either a voltage (0–10 V DC, ± 10 V DC) or a current (0–20 mA, 4–20 mA) input. Selection of voltage or current is made both by the programming software and by the input on the terminal base unit.

One green LED indicates power on/off.

The inputs are, as a group of eight, galvanically isolated from the system by optocouplers and the eight inputs are single ended.

An additional power supply is required.

200-OE4



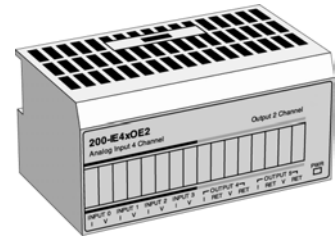
I/O unit for four analog output signals. The unit has 12-bit resolution and each of the outputs can be either a voltage (0–10 V DC, ± 10 V DC) or a current (0–20 mA, 4–20 mA) output. Selection of voltage or current is made both by the programming software and by the output on the terminal base unit.

One green LED indicates power on/off.

The outputs are, as a group of four, galvanically isolated from the system by optocouplers.

An additional power supply is required.

200-IE4xOE2



I/O unit for four analog input and two analog output signals.

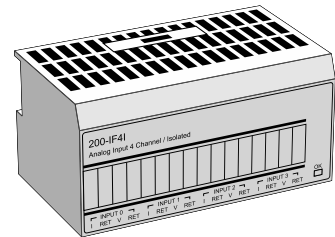
Selection of voltage or current is made both by the programming software and directly on the terminal base unit.

One green LED indicates power on/off.

The inputs and the outputs are, as a group, galvanically isolated from the system by optocouplers.

An additional power supply is required.

200-IF4I



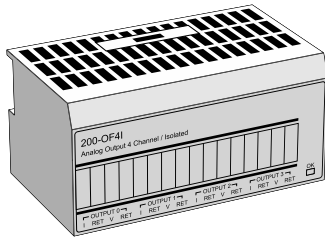
I/O unit for four analog input signals. The unit has up to 16-bit resolution and each of the inputs can be either a voltage (0–5 V DC, ± 5 V DC / 0–10 V DC, ± 10 V DC) or a current (0–20 mA, 4–20 mA) input. Selection of voltage or current is made both by the programming software and by the input on the terminal base unit.

One bi-colored LED indicates function status.

The inputs are individually galvanically isolated from the serial bus by optocouplers.

An additional power supply for the analog port is required.

200-OF4I



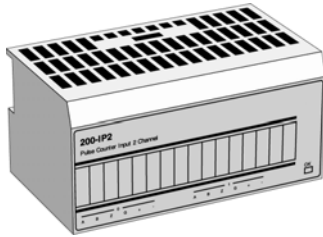
I/O unit for four analog output signals. The unit has a resolution of 15 bits plus sign, and each of the outputs can be either a voltage (0–5 V DC, ± 5 V DC / 0–10 V DC, ± 10 V DC) or a current (0–20 mA, 4–20 mA) output. Selection of voltage or current is made both by the programming software and by the output on the terminal base unit.

One bi-colored LED indicates function status.

The outputs are individually galvanically isolated from the system by optocouplers.

An additional power supply for the analog port is required.

200-IP2



I/O unit with two pulse transmitter interfaces, each with four optocoupled inputs. The maximum pulse frequency is 100 kHz. The I/O unit is configured using the control system program.

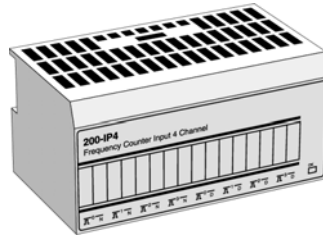
200-IP2 can be adapted for a wide range of applications, for example, for counting pulses from pulse transmitters or incremental encoders with one or two pulse trains. Quantity counting, positioning and speed calculation are examples of other applications.

200-IP2 has two 16-bit up/down counters, which are individually programmable. The number of edges to be counted in a pulse train can be specified to x1, x2 or x4.

Complementary or non-complementary pulse transmitters can be connected.

The status of each input signal is indicated by a yellow LED. One bi-colored LED indicates function status.

200-IP4



I/O unit with four pulse transmitter interfaces, each with two optocoupled inputs. The maximum pulse frequency is 100 kHz. The I/O unit is configured using the control system program.

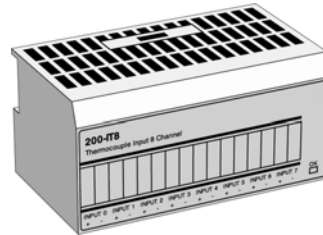
200-IP4 can be adapted for a wide range of applications, for example, for counting pulses from flow and density meters, quantity counting and speed calculation.

200-IP4 has two 16-bit counters per channel. Each can be individually configured for either period time measurement, using one 16-bit counter and accumulating pulse counting using the other 16-bit counter or period time measurement using a 32-bit counter.

An internal clock (1 or 10 MHz) is used for the period time measurement.

The status of each input signal is indicated by a yellow LED. One bi-colored LED indicates function status.

200-IT8



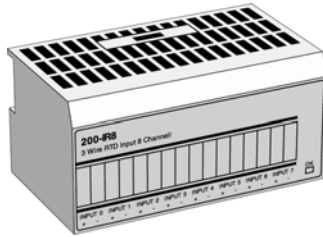
I/O unit for eight thermocouple input signals with programmable filters and 16-bit resolution. One bi-colored LED indicates function status.

The inputs are, as a group of eight, galvanically isolated from the system by optocouplers. Each channel can be turned off to improve system throughput.

Terminal base unit 200-TB2 or TB3 can be used with the thermocouple/mV unit in millivolt mode only. To also obtain ability to connect the two cold junction sensors, terminal base unit 200-TB3T must be used.

An additional power supply is required.

200-IR8

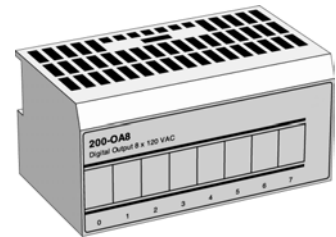


I/O unit for eight three-wire RTD input signals with programmable filters and 16-bit resolution. A number of sensor types are supported. One bi-colored LED indicates function status.

The inputs are, as a group of eight, galvanically isolated from the system by optocouplers. Each channel can be turned off to improve system throughput.

An additional power supply is required.

200-OA8, 200-OM8

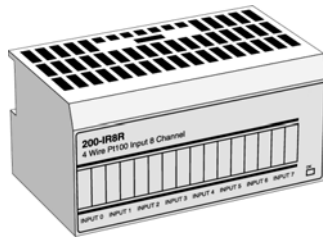


I/O unit for eight digital 120 V AC (200-OA8) or 230 V AC (200-OM8) output signals. The status of each output signal is indicated by a yellow LED.

Output indicators will not work unless 120/230 V AC is supplied.

The eight outputs share a common 0 V AC connection.

200-IR8R



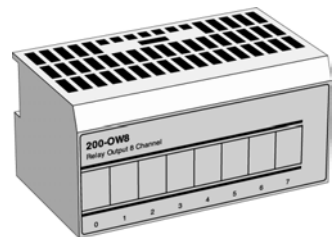
I/O unit for eight four-wire RTD input signals. The inputs have programmable filters and 16-bit resolution. One sensor type is supported.

The status of each input signal is indicated by a yellow LED. A green LED indicates function status.

The inputs are, as a group of eight, galvanically isolated from the system by optocouplers. Each channel can be turned off to improve system throughput.

An additional power supply is required.

200-OW8

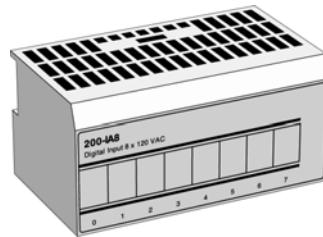


I/O unit for eight relay output signals. The status of each output signal is indicated by a yellow LED.

If the voltage exceeds 132 V, terminal base unit 200-TBN or 200-TBNF must be used.

An additional power supply is required.

200-IA8, 200-IM8

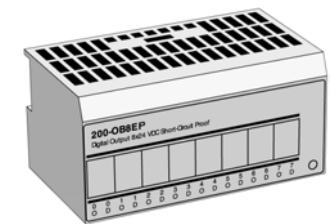


I/O unit for eight digital 120 V AC (200-IA8) or 230 V AC (200-IM8) input signals. The status of each input signal is indicated by a yellow LED. Each signal is filtered with a low-pass filter.

The input signals are sampled at intervals determined by the filter time. The signal status is changed only if two consecutive samples are the same. The filter time is set with the programming software.

The eight inputs share a common voltage connection.

200-OB8EP



I/O unit for eight short-circuit proof output signals. The unit is intended for detection of short-circuit condition in its output circuit or low impedance loads causing excessive current drain. Each of the eight output channels has a current sensing circuit. The unit is designed to allow up to 2.0 A current per channel.

The status of each output signal is indicated by a yellow LED. Diagnostics are carried out for each output and a fault is indicated by a red LED.

By pressing a manual reset button, all output faults are reset simultaneously. Diagnostics and reset functions are fully accessible from the application.

The eight outputs share a common ground connection.

Technical Data

General specifications

Power supply	24 V DC (19.2–30 V DC) incl. 5 % ripple acc. to EN 61131-2 standard i.e. +20 %, –15 % and max. 5 % ripple
Temperature (unless stated otherwise)	
Operating	±0 °C to +55 °C
Non-operating	–40 °C to +85 °C
Protection rating	IP20
Environment	Industrial areas
Approvals (when product or packaging is marked)	CE marked and meets EMC directive 89/336/EEC according to EN 50081-2 and EN 50082-2. Low Voltage Directive 73/23/EEC with suppl. 93/68/EEC acc. to EN 61131-2 (only appl. for units connected to 50–1000 V AC and/or 75–1500 V DC). UL listed according to UL 508. CSA certified; class 1 div. 2 hazardous locations.
Package volume	
1 unit	H 133 x W 133 x D 93 mm (1.65 dm ³)
10 units	H 278 x W 470 x D 150 mm (19.60 dm ³)
Dimensions	H 46 x W 94 x D 53 mm
Weight (unless stated otherwise)	0.085 kg excl. package 0.180 kg incl. package

200-IB16

Number of inputs	16 positive logic
Galvanic isolation	Yes (via optocouplers)
Status indicators	16 yellow LEDs for input indications
ON-state input voltage	10.0 V DC min., 24 V DC nominal, 31.2 V DC max.
ON-state input current	2.0 mA min., 8.0 mA nominal at 24 V DC, 12.0 mA max.
OFF-state input voltage	5.0 V DC max.
OFF-state input current	Current must be ≤1.5 mA to be defined as being in OFF state
Filter time	Software programmable
Filter	First-order, low-pass filter with time constant 5 μs
Input impedance	4.6 kΩ max.
Isolation voltage	100 % tested at 850 V DC for 1 s between user and system. No isolation between individual channels
Internal current consumption (from serial bus)	30 mA max.
Power dissipation	6.1 W at 31.2 V DC max.
Unit identity	0281 (hex.)
Counter	5 bits on channel 15. 500 Hz max. Min. pulse width 1 ms
Backplane key code	2
Humidity	Max. 5–95 %, non-condensing
Order code	200-IB16

200-OB16, 200-OB16P

Number of outputs	16 positive logic
Galvanic isolation	Yes (via optocouplers)
Status indicators	16 yellow LEDs for output indications
ON-state voltage range	10 V DC min., 24 V DC nominal, 31.2 V DC max.
ON-state voltage drop	0.5 V DC max.
Output current rating	8 A (16 outputs at 0.5 A)
ON-state current	1.0 mA min. per channel 450 mA max. per channel when in parallel 500 mA max. per channel

OFF-state voltage	31.2 V DC max.
Surge current	
200-OB16	2 A for 50 ms, repeatable every 2 s
200-OB16P	1.5 A for 50 ms, repeatable every 2 s
OFF-state leakage	0.5 mA max.
Isolation voltage	100 % tested at 850 V DC for 1 s between plant and system. No isolation between individual channels
Output signal delay	
OFF to ON	0.5 ms max.
ON to OFF	1.0 ms max.
Internal current consumption (from serial bus)	
200-OB16	80 mA max.
200-OB16P	60 mA max.
Power dissipation	5.3 W at 31.2 V DC max.
Unit identity	
200-OB16	0191 (hex.)
200-OB16P	0108 (hex.)
Backplane key code	2
External DC power	
Supply voltage	24 V DC nom. (19.2–31.2 V DC)
Supply current	49 mA at 24 V DC (38 mA–65 mA)
Humidity	
	Max. 5–95 %, non-condensing
Fuse	
200-OB16	800 mA (when used in TBNF)
200-OB16P	Outputs are electronically protected
Order codes	200-OB16 200-OB16P

200-IB10xOB6

General specifications:

Galvanic isolation	Yes (via optocouplers)
Status indicators	16 yellow LEDs for in/output indications
Isolation voltage	100 % tested at 2100 V DC for 1 s between plant and system
Internal current consumption (from the serial bus)	35 mA max.
Power dissipation	4.0 W at 31.2 V DC max.
Unit identity	0100 (hex.)
Backplane key code	2
External DC Power	
Supply voltage	24 V DC nom. (19.2–31.2 V DC)
Supply current	70 mA at 24 V DC (not incl. outputs)
Humidity	Max. 5–95 %, non-condensing
Order code	200-IB10xOB6

Input specifications:

Number of inputs	10 positive logic, non-isolated
ON-state input voltage	10 V DC min., 24 V DC nominal, 31.2 V DC max.
ON-state input current	2.0 mA min., 8.0 mA nominal, 11.0 mA max.
OFF-state input voltage	5 V DC max.
OFF-state input current	Current ≤ 1.5 mA to be defined as being in OFF state
Input impedance	4.4 kΩ max.
Filter time	Software programmable
Filter	First-order, low-pass filter with time constant 100 μs (i.e. time to reach 63 % of FS)

Output specifications:

Number of outputs	6 positive logic
ON-state voltage range	10 V DC min., 24 V DC nominal, 31.2 V DC max.
Output current rating	2 A per output, 10 A per unit
ON-state current	1.0 mA per output min., 2.0 A per output max., 10 A per unit max.
OFF-state voltage	31.2 V DC max.
Surge current	4 A for 50 ms, repeatable every 2 s
OFF-state leakage	0.5 mA max.
ON-state voltage drop	2 V DC at 2 A, 1 V DC at 1 A

200-IB32

Number of inputs	32 inputs
Galvanic isolation	Yes, in two groups via optocouplers
Status indicators	32 yellow LEDs for input indications
ON-state input voltage	19.2 V DC min, 24 V DC nominal, 31.2 V DC max.
ON-state input current	2.0 mA min., 4.1 mA nominal at 24 V DC, 6.0 mA max.
OFF-state input voltage	5.0 V DC max.
OFF-state input current	Current must be ≤ 1.5 mA to be defined as being in OFF state
Filter time	0.25 ms, 0.5 ms, 1 ms, 2 ms, 4 ms, 8 ms, 16 ms, 32 ms, software programmable
Input impedance	6.0 k Ω max.
Isolation voltage	1250 V AC for inputs to backplane; 100 % tested at 2121 V DC for 1 s between user and system, no isolation between individual channels
Internal current consumption (from serial bus)	35 mA max.
Power dissipation	6.0 W max at 31.2 V DC
Unit identity	0211 (hex.)
Backplane key code	2
Humidity	5–95 %, non-condensing
Order code	200-IB32

200-OB32P

Number of outputs	32 positive logic	
Galvanic isolation	Yes, in two groups via optocouplers	
Status indicators	32 yellow LEDs for output indications	
ON-state voltage range	10 V DC min., 24 V DC nominal, 31.2 V DC max.	
ON-state voltage drop	0.5 V DC max.	
Output current rating	8 A (16 outputs at 0.5 A)	
ON-state current	1.0 mA min. and 500 mA max. per channel 14 A max. per module (6 A total for channels 0–15; 8 A total for channels 16–31)	
OFF-state voltage	31.2 V DC max.	
Surge current	2 A for 50 ms, repeatable every 2 s	
OFF-state leakage	0.5 mA max.	
Isolation voltage	1250 V AC for outputs to backplane; 100 % tested at 2121 V DC for 1 s between user and system, no isolation between individual channels	
Output signal delay	OFF to ON ON to OFF	0.5 ms max. 1.0 ms max.
Internal current consumption (from serial bus)	80 mA max.	
Power dissipation	5.3 W max. at 31.2 V DC	
Unit identity	0001 (hex.)	
Backplane key code	2	

External DC power

Supply voltage	24 V DC nom. (19.2–31.2 V DC)
Supply current	49 mA at 24 V DC (38 mA–65 mA)
Humidity	5–95 %, non-condensing
Fuse	Outputs are electronically protected
Order code	200-OB32P

200-IB16xOB16P

General specifications:

Galvanic isolation	Input channels are isolated from output channels	
Status indicators	16 yellow LEDs for input indications, and 16 for output indications	
Isolation voltage	1250 V AC for inputs or outputs to backplane and between input and output channels 100 % tested at 2121 V DC for 1 s between user and system, no isolation between individual channels	
Internal current consumption (from the serial bus)	100 mA max.	
Power dissipation	7.0 W max. at 31.2 V DC	
Unit identity	011C (hex.)	
Backplane key code	2	
External DC Power	Supply voltage Supply current	24 V DC nom. (19.2–31.2 V DC) 28 mA at 24 V DC (not incl. outputs)
Humidity	5–95 %, non-condensing	
Order code	200-IB16xOB16P	

Input specifications:

Number of inputs	16 non-isolated
ON-state input voltage	10 V DC min., 24 V DC nominal, 31.2 V DC max.
ON-state input current	2.0 mA min., 8.8 mA nominal, 12.1 mA max.
OFF-state input voltage	5 V DC max.
OFF-state input current	Current ≤ 1.5 mA to be defined as being in OFF state
Input impedance	2.5 k Ω max.
Filter time	0.25 ms, 0.5 ms, 1 ms, 2 ms, 4 ms, 8 ms, 16 ms, 32 ms, software programmable

Output specifications:

Number of outputs	16 non-isolated, positive logic	
ON-state voltage range	10 V DC min., 24 V DC nominal, 31.2 V DC max.	
Output current rating	0.5 A per output, 8 A per unit	
ON-state current	1.0 mA min. and 0.5 A max. per channel; 8 A max. per module	
OFF-state voltage	31.2 V DC max.	
Surge current	1.5 A for 50 ms, repeatable every 2 s	
OFF-state leakage	0.5 mA max.	
ON-state voltage drop	Max. 0.5 V DC at 1 A	
Output signal delay	OFF to ON ON to OFF	0.5 ms max. 1.0 ms max.

200-IP2, 200-IP4

Number of inputs	200-IP2 200-IP4	2 pulse counter interfaces, each with 4 inputs 4 frequency counter interfaces, each with 2 inputs
Counting frequency		Max. 100 kHz. Each signal condition must be stable for at least 2 μ s to be recognized by the counter logic

200-IP4 only	Min. 15.3 Hz for a 16-bits time period measurement and internal clock = 1 MHz. Only one period can be measured Min. 153 Hz for int. clock = 10 MHz Yes (via optocouplers)
Galvanic isolation Status indicators	
200-IP2	2 x 6 yellow LEDs for I/O status 1 red/green LED for OK status
200-IP4	4 x 2 yellow LEDs for I/O status 4 x 2 yellow LEDs for selected measurement function 1 red/green LED for OK status
Input range (2 x 4 input signals) Terminal “+” and “-” for each input	
Input ON (active)	Max. +26.4 V DC, (24 V DC +10 %). Min. +6 V DC
Input OFF (inactive)	Max. +3.0 V DC Min. -26.4 V DC
Input current	Typ. 3 mA at 6 V DC Typ. 8 mA at 12 V DC Typ. 15 mA at 24 V DC
Voltage range – external power supply	12–24 V DC ±10 %
Current consumption – external power supply	150 mA at 12 V DC 75 mA at 24 V DC
Isolation voltage	500 V DC
Internal current consumption (from serial bus)	5 mA
Power dissipation	Max. 5 W (at 24 V input voltage at all inputs)
Unit identity	
200-IP2	1800 (hex)
200-IP4	1A00 (hex)
Backplane key code	1
Temperature	
Operating	+5 °C to +55 °C
Non-operating	-25 °C to +70 °C
Humidity	5–95 %, non-condensing
Weight	0.12 kg excl. package 0.20 kg incl. package
Order codes	200-IP2 200-IP4

200-IE8

Number of inputs	8 single-ended
Galvanic isolation	Yes (via optocouplers)
Status indicator	One green LED for Power
Resolution	12-bit
Input current range	4–20 mA, 0–20 mA
Input voltage range	2–10 V DC, ±10 V DC, 0–10 V DC
Input resistance	
Voltage	200 k Ω
Current	238 Ω
Filter	First-order, low-pass filter with time constant 100 ms (i.e. time to reach 63 % of FS)
Non-linearity	
Voltage	0.05 % max.
Current	0.10 % max.
Accuracy	
Voltage terminal	± 0.2 % FS at 25 °C
Current terminal	± 0.2 % FS at 25 °C
Accuracy drift with temperature	
Voltage terminal	± 0.0043 % FS/°C
Current terminal	± 0.0041 % FS/°C
Repeatability	± 0.05 % of FS
Overload (without damage)	
Voltage	30 V DC continuously
Current	32 mA continuously, one channel at a time max.

Isolation voltage	Type-test voltage: 850 V DC for 1 s between user and system. No isolation between individual channels
Internal current consumption (from serial bus)	20 mA max.
Power dissipation	3 W at 31.2 V DC max.
Unit identity	1924 (hex.)
Backplane key code	3
External DC Power	
Supply voltage	24 V DC nom. (19.2–31.2 V DC)
Supply current	60 mA at 24 V DC (typically)
Humidity	Non-condensing
Operating	Max. 5–95 %
Non-operating	Max. 5–80 %
Order code	200-IE8

200-OE4

Number of outputs	4
Galvanic isolation	Yes (via optocouplers)
Status indicator	One green LED for Power
Resolution	12-bits plus sign
Output voltage range	2–10 V DC, ±10 V DC, 0–10 V DC
Output current range	4–20 mA, 0–20 mA
Time to reach 63 % of FS	24 ms (first-order, low-pass filter time constant)
Current load on voltage output	3 mA max.
Resistive load on mA output	15–750 Ω
Non-linearity	
Voltage	0.1 %
Current	0.1 %
Accuracy	
Voltage terminal	± 0.13 % FS at 25 °C
Current terminal	± 0.43 % FS at 25 °C
Accuracy drift with temperature	
Voltage terminal	± 0.005 % FS/°C
Current terminal	± 0.007 % FS/°C
Isolation Voltage	Type-test voltage: 850 V DC for 1 s between user and system. No isolation between individual channels
Internal current consumption (from serial bus)	20 mA max.
Power dissipation	4.5 W at 31.2 V DC max.
Unit identity	1125 (hex.)
Backplane key code	4
External DC Power	
Supply voltage	24 V DC nom. (19.2–31.2 V DC)
Supply current	70 mA at 24 V DC (not incl. outputs)
Humidity	Non-condensing
Operating	Max. 5–95 %
Non-operating	Max. 5–80 %
Order code	200-OE4

200-IE4xOE2

General specifications:

Number of inputs	4 single-ended
Number of outputs	2 single-ended
Galvanic isolation	Yes (via optocouplers)
Status indicator	One green LED for Power
Resolution	12-bits
Isolation Voltage	Type-test voltage: 850 V DC for 1 s between user and system. No isolation between individual channels

Internal current consumption (from serial bus)	20 mA max.
Power dissipation	4.0 W at 31.2 V DC max.
Unit identity	1526 (hex.)
Backplane key code	5
External DC Power	
Supply voltage	24 V DC nom. (19.2–31.2 V DC)
Supply current	70 mA at 24 V DC (not incl. outputs)
Humidity	Non-condensing
Operating	Max. 5–95 %
Non-operating	Max. 5–80 %
Order code	200-IE4xOE2
Input specifications:	
Number of inputs	4 single-ended
Input voltage range	2–10 V DC, ± 10 V DC, 0–10 V DC
Input current range	4–20 mA, 0–20 mA
Input resistance	
Voltage	200 k Ω
Current	238 Ω
Filter	First-order, low-pass filter with time constant 100 ms (i.e. time to reach 63 % of FS)
Accuracy	
Voltage terminal	± 0.3 % FS at 25 °C
Current terminal	± 0.3 % FS at 25 °C
Accuracy drift with temperature	
Voltage terminal	± 0.0045 % FS/°C
Current terminal	± 0.0045 % FS/°C
Overload without damage	
Voltage	30 V DC continuously
Current	32 mA continuously, one channel at a time max.
Output specifications:	
Number of outputs	2 single-ended, non-isolated
Output current range	4–20 mA, 0–20 mA
Output voltage range	2–10 V DC, ± 10 V DC, 0–10 V DC
Time to reach 63 % of FS	24 ms (first-order, low-pass filter time constant)
Current load on voltage output	3 mA max.
Resistive load on mA output	15–750 Ω
Non-linearity	
Current	0.1 %
Voltage	0.1 %
Accuracy	
Voltage terminal	± 0.14 % FS at 25 °C
Current terminal	± 0.43 % FS at 25 °C
Accuracy drift with temperature	
Voltage terminal	± 0.005 % FS/°C
Current terminal	± 0.007 % FS/°C

200-IF4I

Number of inputs	4
Galvanic isolation	Yes (via optocouplers)
Status indicator	Bi-color (green/red) LED for OK
Resolution	16 bits unipolar, 15 bits plus sign bipolar
Input current range	4–20 mA, 0–20 mA
Input voltage range	0–5 V DC, ± 5 V DC, 0–10 V DC, ± 10 V DC
Input resistance	
Voltage	>10 M Ω
Current	<100 Ω
Filter	First-order, low-pass filter with time constant 100 ms, 500 ms or 1000 ms (i.e. time to reach 63 % of FS), or no low-pass filter function

Accuracy	Including offset, gain, non-linearity and repeatability errors
Voltage terminal	± 0.1 % FS at 25 °C
Current terminal	± 0.1 % FS at 25 °C
Accuracy drift with temperature	
Voltage terminal	± 0.0028 % FS/°C
Current terminal	± 0.0038 % FS/°C
Overload (without damage)	
Voltage	30 V DC continuously
Current	32 mA continuously, one channel at a time max.
Isolation voltage	Factory test voltage: 2550 V DC for 1 s between channel to channel, channel to user power, channel to system, or user power to system.
Internal current consumption (from serial bus)	50 mA max.
Power dissipation	2 W at 31.2 V DC max.
Unit identity	1720 (hex.)
Backplane key code	3
External DC Power	
Supply voltage	24 V DC nom. (19.2–31.2 V DC)
Supply current	80 mA at 24 V DC (typ.)
Humidity	Non-condensing
Operating	Max. 5–95 %
Non-operating	Max. 5–80 %
Order code	200-IF4I

200-OF4I

Number of outputs	4
Galvanic isolation	Yes (via optocouplers)
Status indicator	Bi-color (green/red) LED for OK
Resolution	15 bits plus sign
Output voltage range	0–5 V DC, ± 5 V DC, 0–10 V DC, ± 10 V DC
Output current range	4–20 mA, 0–20 mA
Filter	Step response to 63 % of FS < 25 μ s
Current load on voltage output	3 mA max.
Resistive load on mA output	0–750 Ω
Accuracy	Including offset, gain, non-linearity and repeatability errors
Voltage terminal	± 0.1 % FS at 25 °C
Current terminal	± 0.1 % FS at 25 °C
Accuracy drift with temperature	
Voltage terminal	± 0.0012 % FS/°C
Current terminal	± 0.0025 % FS/°C
Isolation Voltage	Factory test voltage: 2550 V DC for 1 s between channel to channel, channel to user power, channel to system or user power to system.
Internal current consumption (from serial bus)	50 mA max.
Power dissipation	4.7 W at 31.2 V DC max.
Unit identity	1621 (hex.)
Backplane key code	4
External DC Power	
Supply voltage	24 V DC nom. (19.2–31.2 V DC)
Supply current	210 mA at 24 V DC
Humidity	Non-condensing
Operating	Max. 5–95 %
Non-operating	Max. 5–80 %
Order code	200-OF4I

200-IT8	
Number of inputs	8
Galvanic isolation	Yes
Status indicator	Bi-color (green/red) LED for OK
Resolution	16-bits
Input voltage range	± 76.5 mV DC
Overvoltage capability	35 V DC, 25 V AC continuous at 25 °C, 250 V peak transient
Accuracy with filter	0.025 % of FSR ± 0.5 °C max.
Accuracy without filter	0.05 % of FSR ± 0.5 °C max.
Filter	Programmable
Internal current consumption (from serial bus)	20 mA max.
Normal mode noise rejection	-60 dB at 60 Hz
Common mode rejection	-115 dB at 60 Hz; -100 dB at 50 Hz
System throughput	Programmable 28–325 ms for 1 channel; 2.6 s for 8 channels
Open thermocouple detection	Out of range reading (upscale)
Open-thermocouple detection time	1 s, typically
Input offset drift with temperature	± 6 µV/°C max.
Gain drift with temperature	10 ppm/°C
Overall drift with temperature	50 ppm 1 °C of span max.
Supported thermocouple types	Millivolt ± 76.5 mV Type B: +300–+1800 °C Type C: ±0–+2315 °C Type E: -270–+1000 °C Type J: -210–+1200 °C Type K: -270–+1372 °C Type N: -270–+1300 °C Type R: -50–+1768 °C Type S: -50–+1768 °C Type T: -270–+400 °C
Power dissipation	3 W at 31.2 V DC max.
Unit identity	1B00 (hex.)
Backplane key code	3
External DC Power	
Supply voltage	24 V DC nom. (19.2–31.2 V DC)
Supply current	60 mA at 24 V DC
Humidity	
Operating	5–95 %, non-condensing
Non-operating	5–80 %, non-condensing
Order code	200-IT8

200-IR8	
Number of inputs	8
Galvanic isolation	Yes (via optocouplers)
Status indicator	Bi-color (green/red) LED for OK
Resolution	16-bits across 435 Ω
Input range	1–433 Ω
Overvoltage capability	±35 V DC, 25 V AC continuous at 25 °C, 250 V peak transient
Filter	Programmable
Accuracy without calibration and at low humidity levels	0.05 % of FSR max. in normal mode (0.01 % of FSR typ. in enhanced mode) at 25 °C
Internal current consumption (from serial bus)	20 mA max.
Normal mode noise rejection	60 dB at 60 Hz
Calibration	Programmable
Common mode rejection	120 dB at 60 Hz, 100 dB at 50 Hz. For A/D filter cut-off at 10 Hz

System throughput	Normal mode, programmable 28 ms–325 ms/channel. Enhanced mode, programmable 56 ms–650 ms/channel
Open-wire detection	Out of range reading (upscale)
Open-wire detection time	< 1 s
RTD excitation current	718 µA
Input offset drift with temperature	1.5 mΩ/°C max.
Gain drift with temperature	Normal mode 20 ppm/°C Enhanced mode 10 ppm/°C
Supported sensors (resistance)	1–433 Ω 500 Ω Pt Euro -200–+630 °C 200 Ω Pt Euro -200–+630 °C 100 Ω Pt Euro -200–+870 °C 100 Ω Pt U.S. -200–+630 °C 500 Ω Ni -60–+250 °C 200 Ω Ni -60–+250 °C 120 Ω Ni -80–+290 °C 100 Ω Ni -60–+250 °C 10 Ω Cu -200–+260 °C
Unit identity	1B01 (hex.)
Power dissipation	3 W at 31.2 V DC max.
Backplane key code	3
External DC power	
Supply voltage	24 V DC nominal
Supply current	140 mA at 24 V DC
Humidity	Non-condensing
Operating	Max. 5–95 %
Non-operating	Max. 5–80 %
Order code	200-IR8

200-IR8R	
Number of inputs	8
Galvanic isolation	Yes
Status indicators	8 yellow LEDs for I/O status 1 green LED for OK
Resolution	16-bits
Input range	0–100 % (0–65535) corresponding to -60 °C to +160 °C
Overvoltage capability	±35 V DC, 25 V AC continuous at 25 °C, 250 V peak transient
Filter	Programmable
Accuracy	±0.1 °C in the range -5 to +100 °C Pt100 sensor: Type IEC 751
Long term stability	1 year ±0.006 °C 3 years ±0.013 °C
Internal current consumption (from serial bus)	20 mA max.
Normal mode noise rejection	60 dB at 50 Hz for A/D filter cut-off at 10 Hz
Calibration	Factory calibrated
Common mode rejection	120 dB at 60 Hz; 100 dB at 50 Hz for A/D filter cut-off at 10 Hz
System throughput	150 ms per channel at 50 Hz
Open or short-circuit RTD detection	Out of range reading and individual fault indication
Open-wire detection or short-circuit detection time	< 1 s
RTD excitation current	About 1.8 mA, alternating direction
RTD algorithm	ITS 90
Supported sensors (resistance)	100 Ω Pt Euro -60–+160 °C (α = 0.00385) IEC 751
Unit identity	1900 (hex.)
Power dissipation	3 W at 30.0 V DC max.
Backplane key code	3

External DC power	
Supply voltage	24 V DC nominal (19.2–30.0 V DC)
Supply current	100 mA at 24 V DC
Temperature	
Operating	+5 °C to +55 °C
Non-operating	–25 °C to +70 °C
Humidity	Non-condensing
Operating	Max. 5–95%
Non-operating	Max. 5–80%
Order code	200-IR8R

200-IA8

Number of inputs	8 (1 group of 8), non-isolated
Galvanic isolation	Yes (via optocouplers)
Status indicators	8 yellow LEDs (field side indication)
ON-state voltage	65 V AC min.
OFF-state voltage	43 V AC max.
ON-state current	7.1 mA min.
OFF-state current	2.9 mA max.
Filter time	Software programmable
Filter	First-order, low-pass filter with time constant 8 ms
Isolation voltage	100 % tested at 2150 V AC for 1 s between user and system. No isolation between individual channels
Input impedance	10.6 kΩ nominal
Internal current consumption (from serial bus)	30 mA max.
Power dissipation	4.5 W at 132 V AC max.
Unit identity	0285 (hex.)
Backplane key code	8
External AC Power	
Supply voltage	120 V AC nominal
Input frequency	47–63 Hz
Voltage range	85–132 V AC
Humidity	Max 5–95 %, non-condensing
Order code	200-IA8

200-IM8

Number of inputs	8 (1 group of 8)
Galvanic isolation	Yes (via optocouplers)
Status indicators	8 yellow LEDs (field side indication)
ON-state voltage	159 V AC min.
OFF-state voltage	40 V AC max.
ON-state current	11 mA min.
OFF-state current	2.6 mA max.
Input delay time	Software programmable
OFF to ON	Max. time from valid input signal to recognition by the logic: 7.5 ms (default), 8 ms, 9 ms, 10 ms, 12 ms, 16 ms, 24.5 ms, 42 ms.
ON to OFF	Max. time from input dropping below valid level to recognition by the logic: 26.5 ms (default), 27 ms, 28 ms, 29 ms, 31 ms, 35 ms, 44 ms, 60.5 ms.
Isolation voltage	100 % tested at 2600 V DC for 1 s between user and system. No isolation between individual channels and no isolation between customer power to input channels
Input impedance	22.3 kΩ nominal
Internal current consumption (from serial bus)	30 mA max. at 5 V DC
Power dissipation	4.7 W at 264 V AC max.
Unit identity	0205 (hex.)
Backplane key code	8

External AC Power	
Supply voltage	230 V AC nominal
Input frequency	47–63 Hz
Voltage range	159–264 V AC
Humidity	Max 5–95%, non-condensing
Order code	200-IM8

200-OA8

Number of outputs	8 (1 group of 8), non-isolated
Galvanic isolation	Yes (via optocouplers)
Status indicators	8 yellow LEDs
Output voltage range	85–132 V AC, 47–63 Hz
Output current range	4.0 A (8 outputs at 500 mA)
ON-state voltage drop	1.0 V AC at 0.5 A min.
Inrush current	7 A for 45 ms, repeatable every 8 s
OFF-state leakage	2.25 mA max.
Isolation voltage	100 % tested at 1250 V AC for 1 s between user and system. No isolation between individual channels
Output signal delay	
OFF to ON	1/2 cycle max.
ON to OFF	1/2 cycle max.
Internal current consumption (from serial bus)	80 mA max.
Power dissipation	5.2 W at 132 V AC
Unit identity	0195 (hex.)
Backplane key code	8
External AC Power	
Supply voltage	120 V AC nominal
Input frequency	47–63 Hz
Voltage range	85–132 V AC
Supply current	150 mA min.
Surge current capability	50 A for 1/2 cycle at power-up max.
Humidity	Max. 5–95 %, non-condensing
Fuse	1.6 A, slow (when used in TBNF)
Order code	200-OA8

200-OM8

Number of outputs	8 (1 group of 8), non-isolated
Galvanic isolation	Yes (via optocouplers)
Status indicators	8 yellow LEDs
Output voltage range	159–264 V AC, 47–63 Hz
ON-state current	50 mA per output min. 500 mA per output max. at 55 °C
ON-state voltage drop	1.5 V AC at 0.5 A
Inrush current	7 A for 40 ms, repeatable every 8 s
OFF-state leakage	2.5 mA max.
Isolation voltage	100 % tested at 2600 V DC for 1 s between user and system. No isolation between individual channels or between user power and output channels
Output signal delay	
OFF to ON	1/2 cycle max.
ON to OFF	1/2 cycle max.
Internal current consumption (from serial bus)	60 mA max.
Power dissipation	5 W at 0.5 A
Unit identity	0105 (hex.)
Backplane key code	8
External AC Power	
Supply voltage	230 V AC nominal
Input frequency	47–63 Hz
Voltage range	159–264 V AC
Surge current capability	7 A for 40 ms each, repeatable every 8 s
Humidity	Max. 5–95 %, non-condensing
Fuse	0,8 A
Order code	200-OM8

200-OW8

Number of outputs	8 (1 group of 8), normally open electromechanical relays
Galvanic isolation	Yes (via optocouplers and relays)
Status indicators	8 yellow LEDs
Output voltage range (load dependent)	5–30 V DC at 2.0 A resistive 48 V DC at 0.5 A resistive 125 V DC at 0.25 A resistive 125 V AC at 2.0 A resistive 240 V AC at 2.0 A resistive
Output current rating (at rated power)	
Resistive	2 A at 5–30 V DC 0.5 A at 48 V DC 0.25 A at 125 V DC 2 A at 125 V AC 2 A at 240 V AC
Inductive (steady state)	2.0 A at 5–30 V DC, L/R = 7 ms 0.5 A at 48 V DC, L/R = 7 ms 0.25 A at 125 V DC, L/R = 7 ms 2.0 A, 15 A at operation of a relay at 125 V AC, $\cos \varphi = 0.4$ 2.0 A, 15 A at operation of a relay at 240 V AC, $\cos \varphi = 0.4$
Power rating (steady state)	
Resistive	250 W max. for 125 V AC 480 W max. for 240 V AC 60 W max. for 30 V DC 24 W max. for 48 V DC 31 W max. for 125 V DC
Inductive	250 VA max. for 125 V AC 480 VA max. for 240 V AC 60 VA max. for 30 V DC 24 VA max. for 48 V DC 31 VA max. for 125 V DC
Initial contact resistance	30 m Ω
Switching frequency	1 operation/3 s (0.3 Hz at rated load) max.
Operate/release time	10 ms, max.
Bounce time	1.2 ms, mean
Contact load	100 μ A at 100 mV DC min.
Expected life of electrical contacts	100,000 operations min. at rated loads
OFF-state leakage current	1 mA max. at 240 V AC through snubber circuit
Isolation voltage	
between any 2 sets of contacts	2550 V DC for 1 s
customer load to logic	2550 V DC for 1 s
customer load to 24 V DC supply	2550 V DC for 1 s
customer 24 V DC supply to logic	850 V DC for 1 s
Internal current consumption (from serial bus)	69 mA max.

Output signal delay

OFF to ON	8 ms max. (time from a valid output on signal-to-relay energization by the unit)
ON to OFF	26 ms max. (time from a valid output on signal-to-relay de-energization by the unit)
Power dissipation	5.5 W max.
Unit identity	0199 (hex.)
Backplane key code	8
External DC Power	
Supply voltage	24 V DC
Voltage range	19.2 to 31.2 V DC (incl. 5 % ripple)
Supply current	125 mA max.
Fuse	Max. 3 A (when used in TBNF)
Humidity	Max. 5–95 %, non-condensing
Order code	200-OW8

200-OB8EP

Number of outputs	8 (1 group of 8)
Galvanic isolation	Yes (via optocouplers)
Status indicators	8 yellow LEDs for status indications and 8 red LEDs for diagnostic fault indication
ON-state voltage range	19.2 V DC min., 24 V DC nominal, 31.2 V DC max.
ON-state voltage drop	0.2 V DC max.
Output current rating	10 A (e.g. 8 outputs at 1.25 A, 5 outputs at 2.0 A or similar output/A combinations, totally \leq 10 A)
ON-state current	1.0 A min. per channel 2.0 A max. per channel
OFF-state voltage	31.2 V DC max.
Surge current	4 A for 10 ms, repeatable every 3 s
OFF-state leakage	0.5 mA max.
Isolation voltage	100 % tested at 850 V DC for 1 s between plant and system. No isolation between individual channels
Output signal delay	
OFF to ON	0.4 ms max.
ON to OFF	0.2 ms max.
Internal current consumption (from serial bus)	73 mA max.
Power dissipation	5.5 W at 31.2 V DC max.
Unit identity	019D (hex.)
Backplane key code	2
External DC Power	
Supply voltage	24 V DC
Voltage range	19.2 to 31.2 V DC
Supply current	80 mA at 24 V DC
Humidity	Max. 5–95 %, non-condensing
Order code	200-OB8EP



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