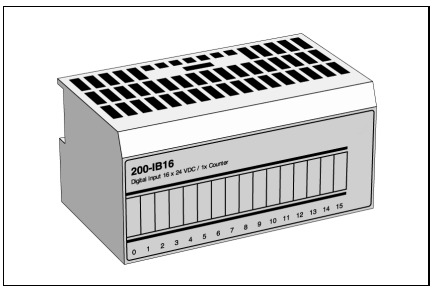
I/O Units

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. Power for the internal logic is provided on the serial bus via the adapter for the I/O system.

The use of I/O units and their functionality with SattCon 200 and SattLine systems is dependent on certain system versions and configurations. Please refer to the relevant manuals or data sheets.

200-IB16



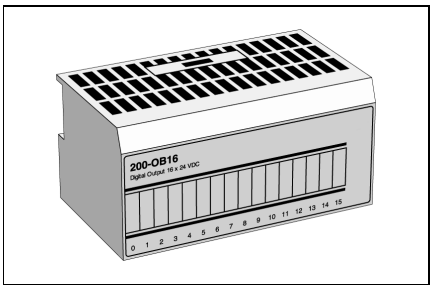
I/O unit for 16 digital input signals. The status of each input signal is indicated by a yellow LED.

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 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).

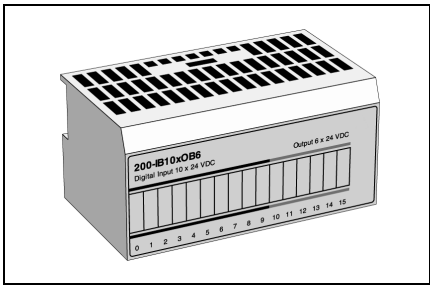
The status of each output signal is indicated by a yellow LED if +24 V DC is supplied.

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.

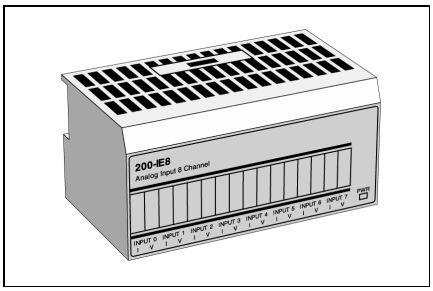
The outputs can deliver up to 2 A to the I/O system.



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-IE8

I/O unit for eight analogue 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.



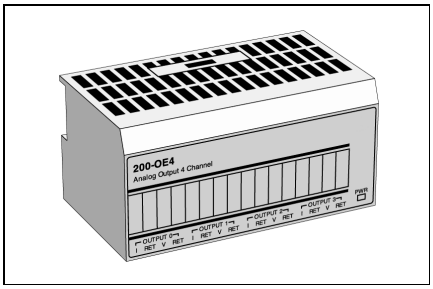
One green LED indicates power on/off.

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 analogue 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.

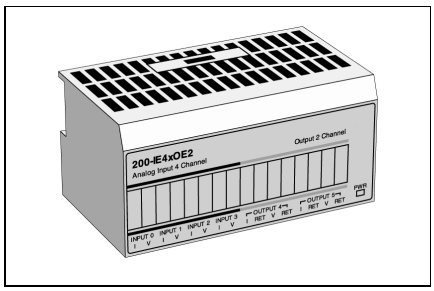
An additional power supply is required.

200-IE4xOE2

I/O unit for four analogue input and two analogue 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.



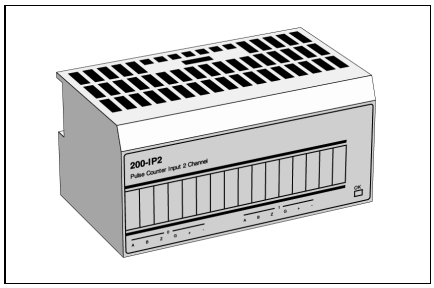
The inputs and the outputs are, as a group, galvanically isolated from the system by optocouplers.

An additional power supply is required.

200-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.

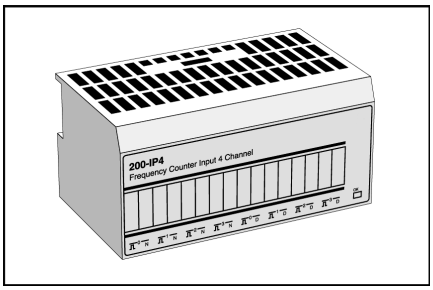


200-IP2 has two 16-bit up/down counters, which are individually programmable. The number of edges to be counted in a pulse train can be specified to x1, x2 or x4.

Complementary or non-complementary pulse transmitters can be connected.

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

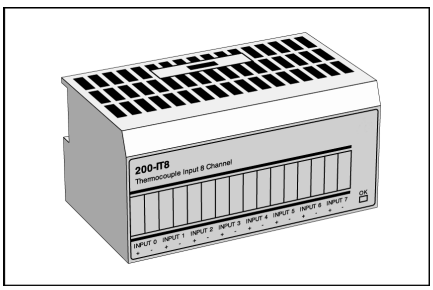
200-IP4 can be adapted for a wide range of applications, for example, for counting pulses from flow and density meters, quantity counting and speed calculation.

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-coloured LED indicates function status.

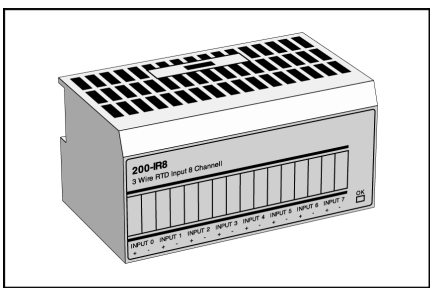
200-IT8



I/O unit for eight thermocouple input signals with programmable filters and 16-bit resolution. One bi-coloured LED indicates power on/off.

Terminal base unit TB3T must always be used. An additional power supply is required.

200-IR8

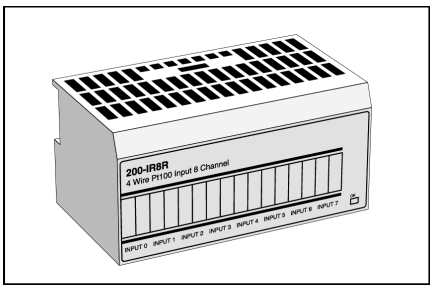


I/O unit for eight three-wire RTD input signals with programmable filters and 16-bit resolution. A number of sensors are supported. One bi-coloured LED indicates function status.

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-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.

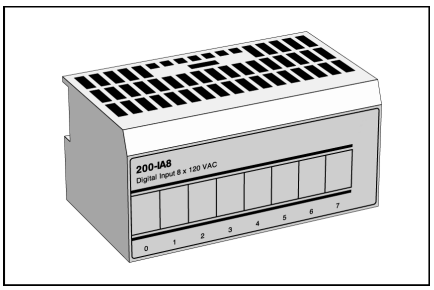
The status of each input signal is indicated by a yellow LED. A green LED indicates function status.

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-IA8

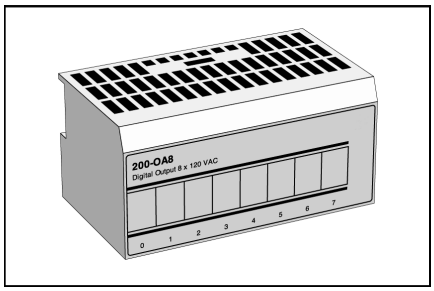
I/O unit for eight digital 120 V AC input signals. The status of each input signal is indicated by a yellow LED. Each signal is filtered with a low-pass filter.



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-OA8



I/O unit for eight digital 120 V AC output signals. The status of each output signal is indicated by a yellow LED.

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

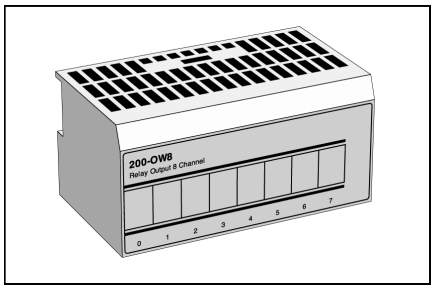
The eight outputs share a common 0 V AC connection.

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.



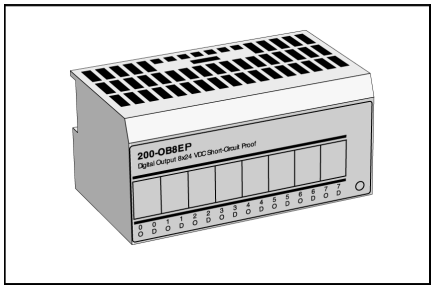
200-OB8EP

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	H133 x W133 x D93 mm (1.65 dm^3)
10 units	H278 x W470 x D150 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 24V 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	281H
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	191H
200-OB16P	108H
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	100H
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.
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.
Output current rating	2 A per output, 10 A per unit
Surge current	4 A for 50 ms each, repeatable ev. 2 s
OFF-stage leakage	0.5 mA max.
ON-stage voltage drop	2 V DC at 2 A, 1 V DC at 1 A

200-IP2, 200-IP4

Number of inputs	
200-IP2	2 pulse counter interfaces, each with 4 inputs
200-IP4	4 frequency counter interfaces, each with 2 inputs
Counting frequency	Max. 100 kHz. Each signal condition must be stable for at least 2 µs to be recognized by the counter logic
200-IP4 only	Min. 15.3 Hz for a 16 time period measurement and internal clock = 1 MHz. Only one period can be measured. Min. 153 Hz for int. clock = 10 MHz
Galvanic isolation	Yes (via optocouplers)
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 indicators	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 kΩ
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	1924H
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 (typ.)
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 indicators	One green LED for Power
Resolution	12-bit 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	1125H
Backplane key code	4