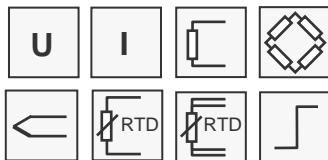


The ISM 112 is a multi-channel module for measuring up to four analog inputs and two digital I/Os and an analog current output. Analog inputs can be independently configured to measure current, voltage, resistance, Pt100 (2, 3, and 4-wire), thermocouple and bridge inputs. The two digital channels can be set as inputs to monitor status, frequency, and counters, or as output to control actuators and displays. The current output enables the ISM 112 to be used as a multi-function math module, PID controller, or a general process controller. Measurement, linearization, and scaling is all 16 bit and all readings are accessible the via RS 485 fieldbus interface.

Local intelligence enables the ISM 112 to perform complex mathematical and logic functions using both measured inputs and internally calculated variables. The module supports the industry standard protocols of Profibus-DP, Modbus-RTU, and ASCII.



ISM 112



### Up to 4 analog Inputs

Voltage, current, resistance, Pt100, Pt1000, thermocouples, bridges

### 2 general-purpose digital I/O

Status, frequency, counter, control signals

### Analog output

Output of measured and calculated values, PID controller

### Logically and mathematically functions

Complex combination of the channels

### RS 485 fieldbus interface

Profibus-DP, Modbus-RTU, ASCII

### Order Information:

Product	Article No.
ISM 112	323917
Accessories	
Configuration Software	
ICP 100	633214
Cold Junction Compensation	
ICJ 108	516214
Converter RS 485 / RS 232 or USB	
ISK 200	229682
ISK 101	689326

### Additional Features

- ADC resolution of 16 bit
- DAC resolution of 14 bit
- Total signal conditioning like customized linearization, scaling, and formatting
- Stand alone external trip relay
- Mathematical functions and operations on all channels
- PID controller
- Fieldbus interface RS-485 for simultaneous connection of up to 32 modules at one line
- Galvanic Isolation of I/O signals, power supply, and interface
- PC software for easy configuration of the modules

# ISM 112 Technical Data

## Analog Inputs

Number of inputs	4
Accuracy	0.01 %
<b>Types of measurement</b>	
Voltage	single ended, differential
Ranges	±10 V; ±5 V; ±2.5 V; ±1.25 V; ±625 mV; ±312.5 mV; ±100 mV; ±25 mV; ±6.25 mV
Current	
Ranges	25 mA; 12.5 mA; 6.25 mA; 3.125 mA; 1 mA; 250 µA, 62.5 µA
Resistance	2, 3 and 4 wire
Ranges	20 kΩ; 10 kΩ; 5 kΩ, 2.5 kΩ; 1.25 kΩ; 625 Ω; 312.5 Ω; 200 Ω
Output current	0.5 mA DC
Bridge	4 and 6 wire
Ranges	1 V/V; 500 mV/V; 250 mV/V; 125 mV/V; 62.5 mV/V; 31.25 mV/V; 10 mV/V; 2.5 mV/V; 625 µV/V
Force output	voltage
Voltage	+5 VDC
Current	50 mA
accuracy	2 %
Linearity deviation	0.01 %
Temperature influence	0.025 % / 10 °K

## Analog/Digital-Conversion

Resolution	16 bit 0.003 %
Sample times	
for 1 analog input	min. 5 ms
for 2 analog inputs	min. 50 ms
for 3 analog inputs	min. 75 ms
for 4 analog inputs	min. 100 ms

## Digital Inputs/Outputs

Number of I/O	2
Input	status, counter (up, up/down, quadrature), frequency measurement
Input voltage	max. 30 VDC
Input current	max. 1.5 mA
Switching threshold	> 3.5 V (high)
Switching threshold	< 1.0 V (low)
Input frequency	max. 25 kHz
Up/down and quadrature	max. 2 kHz
Output	process or host controlled, pulse width modulated PWM only I/O 1 and I/O 2
Type of output	open-collector
Output current	max. 100 mA
Output voltage	max. 30 VDC
Output frequency	max. 100 Hz

## Analog Output

Output	configurable current output
Output current	max. 30 mA
Accuracy	0.05 %
Linearity deviation	0.05 %
Resolution	0.01 %
Setting time	10 ms

## Communication Interface

Standard	RS 485 (2 wire), RS 232
Data format	selectable 8E1, 8N1
Protocols	ASCII, Profibus Level 2 or Profibus-DP or Modbus-RTU,
Baud rates	max 187.5 kBaud
Connectable devices	max. 32 w/o, max. 127 with Repeater
Galvanic Isolation	500 V

## Power Supply

Supply voltage	10 up to 30 VDC
Power consumption	approx. 3 W
Protection	overvoltage and overload protection reversible semiconductor

## Mechanical

Material	Aluminium and ABS
Dimensions (W x H x D)	69 x 90 x 83 mm ( 2.72 x 3.54 x 3.27 in)
Weight	285 g (0.63 lb)
Protective system	IP20
Mounting	DIN EN-Rail mounting
Connection	plug-in screw terminals max. 1.5 mm <sup>2</sup>

## Environmental

Operating temperature	-20 °C to +60 °C
Storing temperature	-30 °C to +85 °C
Humidity	5 % to 95 % at 50 °C non condensing

## Electromagnetic Compatibility (EMC)

Electro static discharge (ESD)	level 2 acc. IEC 801-2: 4 kV
Radiated electromagnetic fields	level 3 acc. IEC 801-3: 10 V/m
Electrical fast transients	level 3 acc. IEC 801-3: 2 kV / 1 kV
Radiated RFI/EMI	level B acc. VDE 0871-1/CISPR 11

## Warm Up Time

All declarations are valid after a warm up time of 45 minutes.

Valid from October 2006. Specification subject to change without notice.  
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