

PCD3.W315

Analog input module, 7 channel, 12 bit, 0 ... 20 mA, electrically isolated from the CPU

High-speed input modules for general use with 7 channels, each with 12 bit resolution and 0 \dots 20 mA. Electrically isolated from the CPU.

Technical specifications	Technical	specifications
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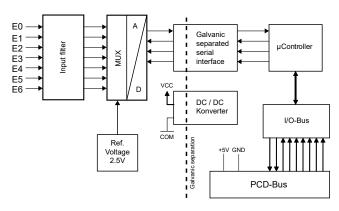
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Number of inputs (channels)	7							
Signal range	020 mA							
Resolution (representation)	12 bit (0 4095)							
Resolution (value of least significant bit(LSB))	5 μΑ							
Galvanic separation	500 V, electrical isolation of outputs to CPU, channels themselves not separated							
Measuring principle	non-differential, single-ended							
Input resistance	120 Ω / 0.1 %							
Accuracy at 25 °C	± 0.15 %							
Repeating accuracy (under same conditions)	± 0.05 %							
Temperature error (0 +55 °C)	± 0.25 %							
Conversion time A/D	≤ 2 ms							
Overcurrent protection	±35 mA (permanent)							
EMV protection	yes							
Time constant of input filter	typisch 2.4 ms							
Internal current consumption (from +5 V bus)	< 60 mA							
Internal current consumption (from V+ bus)	0 mA							
External current consumption	0 mA							
Terminals	Pluggable 10-pole spring terminal block for Ø up to 2.5 mm², plug type E (4 405 4998 0)							

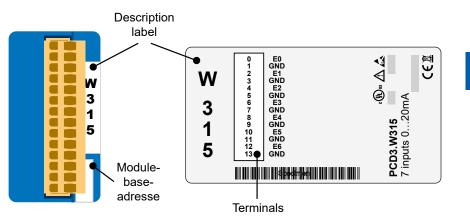


PCD3.W315

Block schematic



Indicators and connections



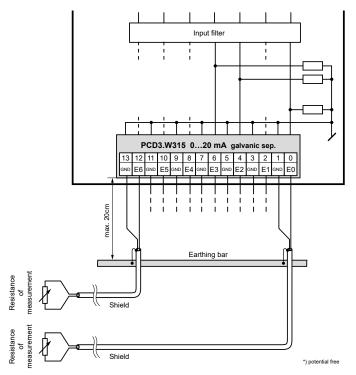


The GND connections are connected together in the module and are galvanically isolated from the CPU. These GNDs must not be connected to the CPU, process GNDs or ground !

Connection concept for voltage inputs

The voltage input signals are connected directly to the 14-pole terminal block (E0 ... E6 and GND). To minimize the amount of interference coupled into the module via the transmission lines, connection should be made according to the principle explained below.

Connection for 0...20 mA

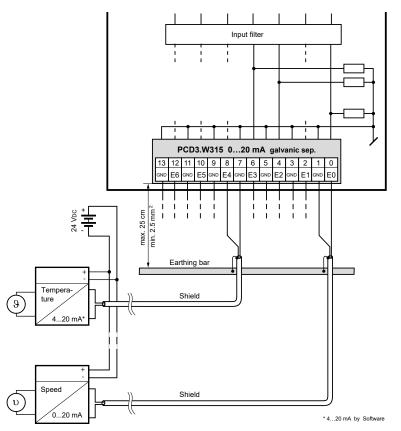




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If shielded cables are used, the shielding should be connected to an earthing rail.

Connection for 0...20 mA with two-wire transducers



Configuration

m Eva	aluation	
	e evaluation is performed	
	eads the values according	
(De	evice Configurator or Netw	ork Configurator).
P	roperties	- 0
Sk	ot 1 : PCD3.W315, 7 Analogue Inpu	ts, 020mA, Isolated
~	General	
	BaseAddress Filter	16 Off
	Under-/OverflowAvoidance	Off
	Connector Type	Type E, Spring Terminals 14-pole
Ť	Power Consumption Power Consumption 5V [mA]	60
~	Media Mapping Analogue Inputs	
	Media Mapping For Inputs Enabled Media Type For Inputs	No Register
	Number Of Media For Inputs	7
~	Media Mapping Status/Diagnost	
	Media Type For Status/Diagnostic Number Of Media For Status/Diagno	Register stic 2
~	Analogue Input 0	
	Input 0 Range Minimum Value Input 0	020mA in uA resolution
	Maximum Value Input 0	20000
~	Analogue Input 1	
	Input 1 Range Minimum Value Input 1	020mA in uA resolution
	Maximum Value Input 1	20000
~	Analogue Input 2	12 Bit recolution
	Input 2 Range Minimum Value Input 2	12 Bit resolution 0
	Maximum Value Input 2	4095
~	Analogue Input 3 Input 3 Range	12 Bit resolution
	Minimum Value Input 3	0
	Maximum Value Input 3	4095
~	Analogue Input 4 Input 4 Range	User defined range
	Minimum Value Input 4	0
	Maximum Value Input 4 Analogue Input 5	1000
	Input 5 Range	User defined range
	Minimum Value Input 5	0 500
~	Maximum Value Input 5 Analogue Input 6	Joh
	Input 6 Range	User defined range
	Minimum Value Input 6 Maximum Value Input 6	-10000
		10000
	aximum Value Input 5 aximal value for the conversion of the	analogue input 5.
	conversion of the	
	FBox "PCD2/3.W3x5" exi	sts for evaluation
ly An	1 DUX FOD2/3.403X3 EXI	ata ioi evaluation.
FB	ox for PCD3.W315 (Input	s 07 selectable)
P	CD2/3.W3x5	PCD2/3.W3x5
	in0-	in0
	in1-	Error
	in2—	Add I16
	in3—	
	in4	
	in5-	
	in6	
	in6	
	in6 Error Add 180	

Saia QronoX ECS **Engineering and Commisioning Suite** PCD-System The evaluation is performed by the firmware. It reads the Controller values according to the configuration (Device Configurator) Information * * X * W315 x Rames PC033/216 Venden San Burgess Controls AG Categories: Analogus UD Roduks Type: 5704 Bit 125 4015 Vename 1.0.6.1 Onder namber: PC033/2015 Onder namber: PC033/2015 A. Clopic Applicat. Applicat. Applicat. Application w ©-∆≜ 28282828282828 3 1 5 -PCD0.MD16 7 Figure P.20M Prameter • • × • ₩ PCD3 W315 Paran Data Sheet Sat number Paser cons 1 60 mA Braches Raches Raches Rectas 4015 4015 1800 1800 30 Mapping The Tex Tex Defect Days Count (C) Die Tex Tex Defect Days Count (C) Die Ext Tex Defect Days Count (C) rember Device (PCD3.M885) D System Configuration D Sustem Information L Device User Hanagemen PLC Low All Appe Address Spee Subress Sef Channel Ansiege Tryot & Ansiege Tryot Tat. Ansiege Tryot 2 Ansiege Tryot 2 Ansiege Tryot 4 Ansiege Tryot 5 Status Tryot 0 Status Tryot 0 Status Tryot 3 Status Tryot 5 * 1031 * 1035 * 1035 * 1030 * 1030 * 1030 * 1030 * 1030 * 1030 * 1030 .105. J Applics Library. D Macrosol Teld Configure. Teld Configure. Teld Configure. Teld Configure. Tel Possibility ----oping Always up data variables Last bull: O 0 8 0 Persengle 🗸 🥳 Project user 0

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Configuration of the modules

The module has a resolution of 12 bits. This corresponds to 4096 possible measured values.

With a measuring range of 0...20 mA, this results in a resolution of 4,88 $\mu\text{A/bit}.$

The module can output much more precise values than the 12-bit resolution allows by using suitable algorithms (moving averages, etc.). With PG5 and QronoX, a measuring range of 0...20 mA with a resolution of 1 μ A is achieved as standard.

In the configurator you can choose whether you want to use the measurement results in μA or in bits.

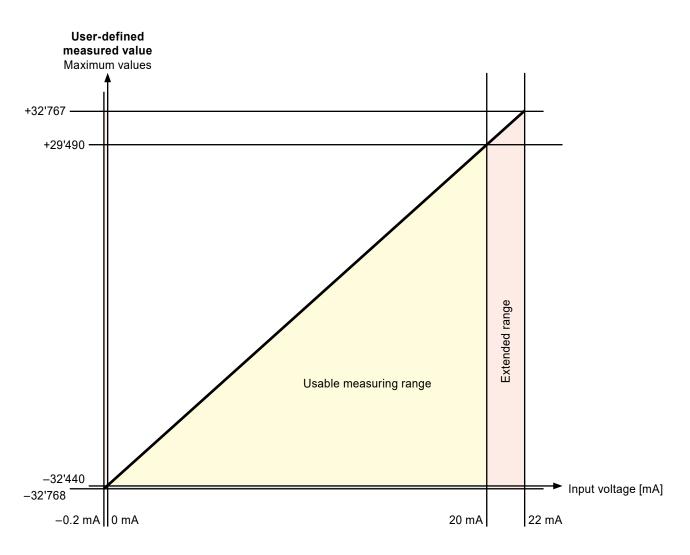
A user-defined range can also be displayed for special applications. The user can make specifications:

- Lower value: Displayed value with an input signal of 0 mA.
- ▶ Upper value: Displayed value at an input signal of 20 mA.

Any integer value (-32'768 up to +32'767) can be entered for both values, but the lower value must be smaller than the upper value. However, to avoid error messages when outputting in the extended range (-1% up to +110%), the following values should be used:

- ▶ Lower value: greater than -32'440
- ▶ Upper value: less than +29'490

All values in between are converted directly proportional to these two basic values and indicated as measured value.



Graph with the maximum possible user-defined measured values

Measurement filter: In the function boxes of PG5, you can select whether the measurement filter for the entire module should be switched on or off (with QronoX, the measurement filter is always activated).

Extended output value format: The module can measure from -1% to +110%. In PG5, the output of the measured values can also be limited to 0...100% (with QronoX, the output of the measured values cannot be limited).

- ▶ If the measured value is below 0 mA, 0 (or the user-defined "lower value") is displayed and the underrange flag is set.
- If the measured value is above 20 mA, 10000, 4095 bits (or the user-defined "upper value") is displayed and the overrange flag is set.

The modules can also be used on old PCD controllers with Step®7 compatible operating systems (Saia® PCD series xx7) (See table).

Input signals [mA]	12 bit resolution	020mA in 1 μV resolution	xx7	Simatic
0	0	0	0	0
8	1637	4000	1638	11074
10	2047	5000	2047	13842
20	4095	10000	4095	27684

Media mapping - symbol name and description

Error register

To use the module diagnosis in the programme, the error output can be used. The meaning of the bits is as follows:

Error register																																
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	6	8	7	9	5	4	3	2	1	0
	No response from the W3x5 module.	Initialisation failed	Calibration error	Internal error	Not used	Not used	Overrange	Underrange	Not used	Not used	Overrange	Underrange	Not used	Not used	Overrange	Underrange	Not used	Not used	Overrange	Underrange	Not used	Not used	Overrange	Underrange	Not used	Not used	Overrange	Underrange	Not used	Not used	Overrange	Underrange
Nibble		-	7			6	6		5			4	4			3	3			2	2			1	1			C)			
			dule nosis	6		Chan Diagr				Channel 5 Diagnostic				nnel 4 nostio				nel 3 nostic			Char Diagr				Chan Diagr				Chan Diagr			



Galvanic separation of inputs to CPU, channels themselves not separated.

I/O modules and I/O terminal blocks may only be plugged in and removed when the CPU and the external +24 V are disconnected from the power supply.

Further information

This can be found in the Manual "27-600_I/O-modules for PCD1 / PCD2 series and for PCD3".



ATTENTION

These devices must only be installed by a professional electrician, otherwise there is the risk of fire or the risk of an electric shock.



WARNING

Product is not intended to be 0used in safety critical applications, using it in safety critical applications is unsafe.



WARNING - SAFETY

The unit is not suitable for the explosion-proof areas and the areas of use excluded in EN61010 Part 1.



WARNING - SAFETY

Check compliance with nominal voltage before commissioning the device (see type label). Check that connection cables are free from damage and that, when wiring up the device, they are not connected to voltage. Do not use a damaged device !



NOTE

In order to avoid moisture in the device due to condensate build-up, acclimatise the device at room temperature for about half an hour before connecting.



CLEANING

The device can be cleaned in dead state with a dry cloth or cloth soaked in soap solution. Do not use caustic or solvent-containing substances for cleaning.



MAINTENANCE

These devices are maintenance-free. If damaged during, no repairs should be undertaken by the user.



GUARANTEE

Opening the module invalidates the guarantee.



Observe this instructions (data sheet) and keep them in a safe place. Pass on the instructions (data sheet) to any future user.



WEEE Directive 2012/19/EC Waste Electrical and Electronic Equipment directive The product should not be disposed of with other household waste. Check for the nearest authorized collection centers or authorized recyclers. The correct disposal of end-of-life equipment will help prevent potential negative consequences for the environment and human health.



EAC Mark of Conformity for Machinery Exports to Russia, Kazakhstan or Belarus.



PCD3.W315



4 405 4998 0

Ordering information									
Туре	Short description	Description	Weight						
PCD3.W315	7 analogue inputs, 0 20 mA, 12 bit, electrical isolation	Analog input module with electrical isolation, 7 channels (the channels are not isolated from each other), resolution 12 bit, range 020 mA, connection with pluggable spring terminals, connector type E (4 405 4998 0) supplied	100 g						

Ordering information equipment										
Туре	Short description	Description	Weight							
4 405 4998 0	Plug-in, type E	Plug-in I/O spring terminal block, 14-pole up to 1.5 mm ² , labelled 0 13	13 g							

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