EN

PRM-X.3

Analog I/O extension module

User guide

PRM-X.3_3-EN-59334-1.18

Contents

1 Introduction

1.1 Terms and abbreviations

- **ALP** – programming software akYtec ALP for programming PR series relays, based on Function Block Diagram (FBD) programming language
- **Application** – user program created using ALP software
- **ADC** – analog-digital converter
- **DAC** – digital-analog converter
- **Slot 1, Slot 2** – position of the module relative to the main device

1.2 Symbols and key words

WARNING
WARNING indicates a potentially dangerous situation that could result in death or serious injuries.

CAUTION
CAUTION indicates a potentially dangerous situation that could result in minor injuries.

NOTICE
NOTICE indicates a potentially dangerous situation that could result in damage to property.

NOTE
NOTE indicates helpful tips and recommendations, as well as information for efficient and trouble-free operation.

1.3 Recycling and disposal

The device is considered an electronics device for disposal in terms of European Directive 2012/19/EU and may not be disposed of as domestic garbage.

- Dispose of the device through channels provided for this purpose.
- Comply with all local and currently applicable laws and regulations.

2 Overview

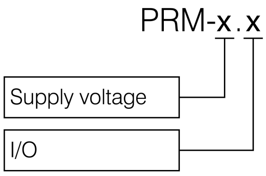
PRM extension module provides additional inputs and outputs for the main device. The module inputs and outputs are controlled by a program running on the main device. To enable control, the module should be added to the device configuration in ALP (*Section 5*).
The module is a passive device and cannot be used without connection with the main device over an internal bus.
All models are designed in a plastic housing for DIN rail mounting.
Each PRM module is powered independently of the main device. The main device and the modules can be operated with different supply voltages.

2.1 Intended use

Extension modules of the PRM series are designed solely for the intended use described in this manual, and may only be used accordingly. The technical specifications contained in this manual must be observed.
The module may be operated only in properly installed condition.
Improper use
Any other use is considered improper. Especially to note:

– This device should not be used for medical devices which receive, control or otherwise affect human life or physical health.
– The device should not be used in an explosive environment.
– The device should not be used in an atmosphere with chemically active substances.

2.2 Ordering code



Supply voltage			**I/O**		
230	–	230 (90…264) V AC	3	–	4 AI, 2 AO
24	–	24 (19…30) V DC			

2.3 Front indicators

There are 8 LEDs on the front panel.

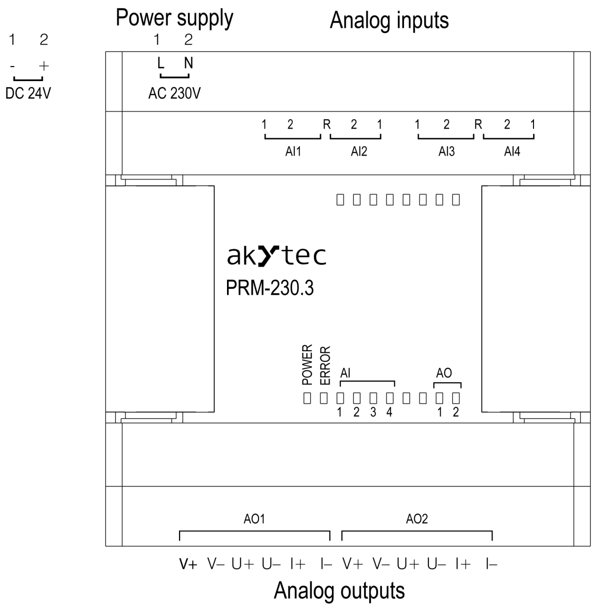


Fig. 2.1 Front view

Table 2.1 LED indicators

Indicator	Color	State	Value
POWER	Green	ON	Power on
ERROR	Red	Flashing	No communication with the main device
			Device model does not match the model specified in the project
			The firmware version of the main device and the module are incompatible
AI	Yellow	ON	Input signal is selected and configured in ALP
		OFF	Parameter **Input signal** is set to **OFF**. The current input value in the program is replaced with code **55555**.
		Flashing	Sensor fault (*Table 2.2*)
AO	Yellow	ON	Output signal is selected
		OFF	Parameter **Output mode** is set to **Off**
		Flashing	Output fault: – No output voltage supply – DAC high temperature – Load break in current mode

Table 2.2 Analog inputs fault codes

Code	Description
33333	Short circuit
44444	Sensor break
66666	Input value is outside the ADC valid range
77777	Input value is outside the sensor valid range
88888	Cold junction sensor fault

3 Specifications

Table 3.1 General specification

Device		PRM-230.3	PRM-24.3
Power supply		~230 (90…264) V AC; 50 Hz ~230 (127…373) V DC	=24 (19 … 30) V DC
Power consumption, max.		8 VA	4 W
Galvanic isolation		2300 V	510 V
Reverse polarity protection		—	yes
Inputs	Digital	—	
	Analog	4	
Outputs	Digital	—	
	Analog	2	
Internal bus	Frequency	2.25 MHz	
	Packet rate (each 16 bit)	4000 packet/s	
	Module number, max.	2	
Programming software		akYtec ALP	
IP Code		IP20	
Dimensions		88 × 90 × 58 mm	
Mounting		DIN rail (35 mm)	
Weight, max.		400 g	

Table 3.2 Analog inputs (AI)

Input signal		see *Table 3.4*
ADC resolution		16 bit
Basic error	RTD	±0.25 %
	TC	±0.5 %
	I/U signals	±0.25 %
Temperature influence per each 10 °C		0.5 of basic error
Sampling time for one input, max.	RTD	0.8 s
	TC	0.6 s
	I/U signals	0.6 s
Analog input resistance, min.		10 kΩ
External resistance for current measurement		45…50 Ω
Galvanic isolation		—

Table 3.3 Analog outputs (AO)

Signal types for actuator control		0-20 mA 4-20 mA 0-24 mA 0-5 V 0-10 V
DAC resolution		12 bit
Basic error		±0.5 %
Temperature influence		0.25 of basic error
Galvanic isolation between outputs (*Section 3.2*)		510 V
Voltage supply (external, each output separately)		15…30 V DC
Output load (max.)	4-20 mA	300 Ω
Output load (min.)	0-10 V	1000 Ω

Table 3.4 Sensors and input signals

Sensor or input signal	Measurement range	Accuracy
Resistive signals		
0 … 3950 Ω	0…100%	±0.25 %
Direct voltage signal		
-50-50 mV	0…100%	±0.25 %
Standard I/U signals		
0-1 V	0…100 %	±0.25 %
0-5 mA	0…100 %	
0-20 mA	0…100 %	
4-20 mA	0…100 %	
RTD		
Cu 50 (α = 0.00426 $°C^{-1}$)*	–50…+200 °C	±0.25 %
Cu 50 (α = 0.00428 $°C^{-1}$)	–180…+200 °C	
Pt 50 (α = 0.00385 $°C^{-1}$)	–200…+850 °C	
Pt 50 (α = 0.00391 $°C^{-1}$)	–200…+850 °C	
Cu 100 (α = 0.00426 $°C^{-1}$)	–50…+200 °C	
Cu 100 (α = 0.00428 $°C^{-1}$)	–180…+200 °C	
Pt 100 (α = 0.00385 $°C^{-1}$)	–200…+850 °C	
Pt 100 (α = 0.00391 $°C^{-1}$)	–200…+850 °C	
Ni 100 (α = 0.00617 $°C^{-1}$)	–60…+180 °C	
Pt 500 (α = 0.00385 $°C^{-1}$)	–200…+850 °C	
Pt 500 (α = 0.00391 $°C^{-1}$)	–200…+850 °C	
Cu 500 (α = 0.00426 $°C^{-1}$)	–50…+200 °C	
Cu 500 (a = 0.00428 $°C^{-1}$)	–180…+200 °C	
Ni 500 (α = 0.00617 $°C^{-1}$)	–60…+180 °C	
Cu 1000 (α = 0.00426 $°C^{-1}$)	–50…+200 °C	
Cu 1000 (α = 0.00428 $°C^{-1}$)	–180…+200 °C	
Pt 1000 (α = 0.00385 $°C^{-1}$)	–200…+850 °C	
Pt 1000 (α = 0.00391 $°C^{-1}$)	–200…+850 °C	
Ni 1000 (α = 0.00617 $°C^{-1}$)	–60…+180 °C	
TC		
L	–200 … +800 °C	±0.5 % (± 0.25 %)**
J	–200 … +1200 °C	
N	–200 … +1300 °C	
K	–200 … +1360 °C	
S	–50 … +1750 °C	
R	–50 … +1750 °C	

Sensor or input signal	Measurement range	Accuracy
T	–250 … + 400 °C	
B	+200 … +1800 °C	
A-1	0 … + 2500 °C	
A-2	0 … +1800 °C	
A-3	0 … +1800 °C	

NOTE
***** Temperature coefficient of resistance (α) is determined by the formula:***

$\alpha = \frac{R_{100} - R_0}{R_0 \cdot 100\ °C}$***, where** R_{100}**,** R_0 **are RTD performance curve resistance values at 100 °C and 0 °C correspondingly. The coefficient value is rounded to the fifth significant figure.***

*****Accuracy without cold junction correction.***

3.1 Environmental conditions

The device is designed for natural convection cooling. It should be taken into account when choosing the installation site.
The following environment conditions must be observed:

– clean, dry and controlled environment, low dust level
– closed non-hazardous areas, free of corrosive or flammable gases

Conditions	Permissible range
Ambient operating temperature	-20…+55°C
Storage temperature	-20…+55°C
Relative humidity	up to 80% (non-condensing)
Altitude	up to 2000 m above sea level
EMC immunity	conforms to IEC 61000-6-2
EMC emission	conforms to IEC 61000-6-4

3.2 Galvanic isolation

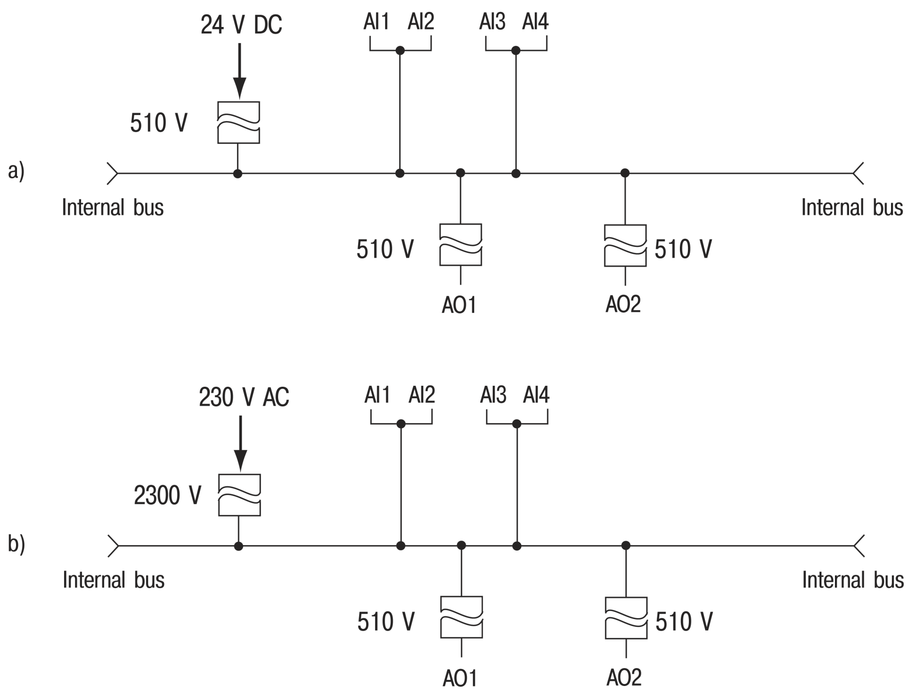


Fig. 3.1 Galvanic isolation of PRM-24.3 (a) and PRM-230.3 (b)

4 Installation

WARNING
Electric shock could kill or seriously injure.
All electrical connections must be performed by a fully qualified electrician.
Ensure that the mains voltage matches the voltage marked on the nameplate.
Ensure that the device is provided with its own power supply line and electric fuse.

CAUTION
The device must be powered off before connecting to internal bus or peripheral devices. Switch on the power supply only after the wiring of the device has been completed.
Remove the terminal blocks only after powering off the device and all connected equipment.
Do not feed any external devices from the power contacts of the device.

NOTICE
Supply voltage for 24 VDC models may not exceed 30 V. Higher voltage can damage the device.
If the supply voltage is lower than 19 VDC, the device cannot operate properly but will not be damaged.

NOTICE
Signal cables should be routed separately or screened from the supply cables.
Shielded cable should be used for the signal lines to ensure the EMC precautions.

NOTE
Before switching on, make sure that the device was stored at the specified ambient temperature for at least 1 hour.

The PRM series extension module should be mounted on a DIN rail to the right of the main device.

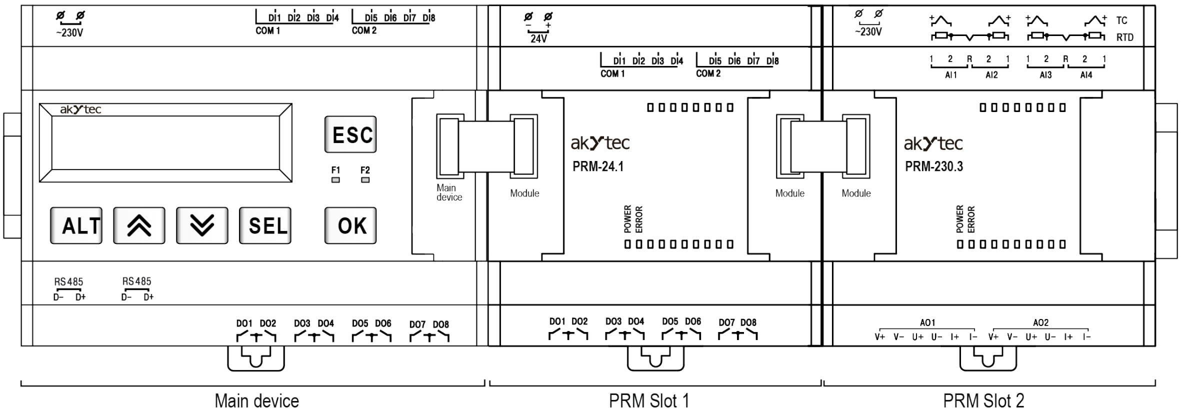
Fig. 4.1

After mounting the module on the DIN-rail, an internal bus connection between the main device and the module should be arranged (*Sect. 4.1*). Then the power supply and the peripheral devices should be connected to the module terminal blocks (*Sect. 4.2*).
For dimensional drawings, see *Appendix A.*.

4.1 Internal bus

An internal high-speed bus provides the same high-speed performance of the module as that of the main device. It allows reading of the input values and writing of the output values of the module within one program cycle.
The PRM modules are connected to the main device in series, in slot 1 and slot 2. Maximum two modules can be connected. To implement the internal bus, connect PRM to the main device, using the supplied 4.5 cm flat cable.
PRM has two **EXT** connectors located under the right and left covers on the device front. The connector under the left cover is used to connect the 1st PRM to the main device or the 2nd PRM to

the 1st one. The connector under the right cover is used to connect the 2nd PRM. The module next to main device is always in slot 1. PRM cannot be connected in slot 2 without a module in slot 1.



When connected, the flat cable should be placed in a special recess under the cover to enable PRM to be pushed close to the main device (*Fig. 4.2*).

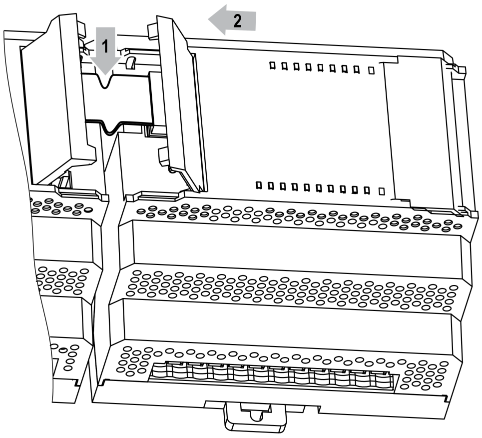


Fig. 4.2

4.2 Terminal block layout

For terminal block layout see *Fig. 4.3 and 4.4*.
For terminal assignment see *Tab. 4.1*

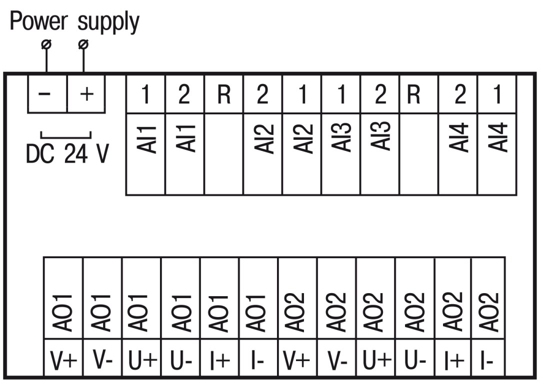


Fig. 4.3 PRM-24.3 terminal block layout

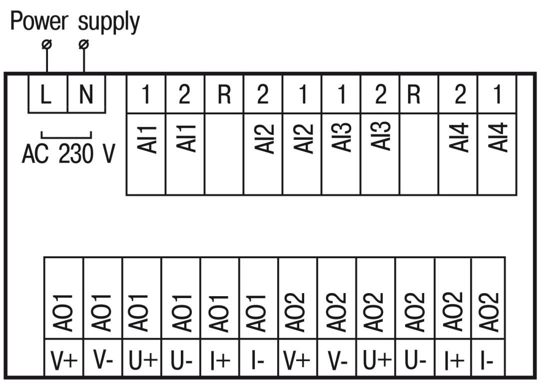


Fig. 4.4 PRM-230.3 terminal block layout

Table 4.1 Terminal assignment

Marking	Description	Marking	Description
DC 24 V / - or AC 230 V	Power supply	AO1 / V+	24 VDC supply AO1+
DC 24 V / + or AC 230 V	Power supply	AO1 / V-	24 VDC supply AO1-
AI1 / 1	AI1 terminal 1	AO1 / U+	Voltage output AO1+
AI1 / 2	AI1 terminal 2	AO1 / U-	Voltage output AO1-
R	AI1 / AI2 common terminal	AO1 / I+	Current output AO1+
AI2 / 2	AI2 terminal 1	AO1 / I-	Current output AO1-
AI2 / 1	AI2 terminal 2	AO2 / V-	24 VDC supply AO2+
AI3 / 1	AI3 terminal 1	AO2 / V+	24 VDC supply AO2-
AI3 / 2	AI3 terminal 2	AO2 / U+	Voltage output AO2+
R	AI3 / AI4 common terminal	AO2 / U-	Voltage output AO2-
AI4 / 2	AI4 terminal 1	AO2 / I+	Current output AO2+
AI4 / 1	AI4 terminal 2	AO2 / I-	Current output AO2-

4.2.1 Resistance thermometer

2- or 3-wire sensors can be connected.

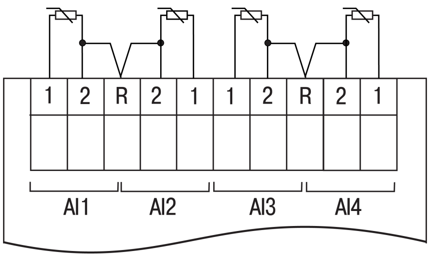


Fig. 4.5 RTD wiring

4.2.2 Thermocouple

NOTICE
Do not use a TC with not insulated hot junction. It can damage the module.

Cold junction compensation is provided for using with thermocouples. The built-in cold junction temperature sensor is placed next to the terminal block.

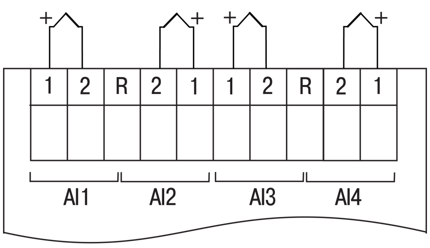


Fig. 4.6 TC wiring

4.2.3 I/U sensors

Voltage signal can be connected directly to the input terminals.

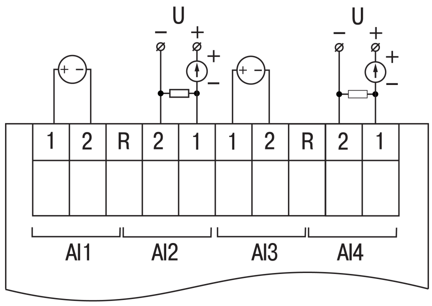


Fig. 4.7 I/U sensor wiring

To measure a current signal a shunt resistance of 49.9 Ω (±0.1%) has to be connected in parallel (see *Fig. 4.8*).

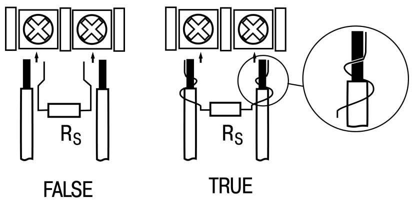


Fig. 4.8 Shunt resistance connection

You can connect a resistor 45…50 Ω, whose value should be noted in the properties of the input in ALP. It is recommended to calibrate the input with the shunt (*Section 5*)

NOTICE
It is necessary to provide safe contact between signal wires and resistor wires. Otherwise the input can be damaged.

4.2.4 Resistance sensor

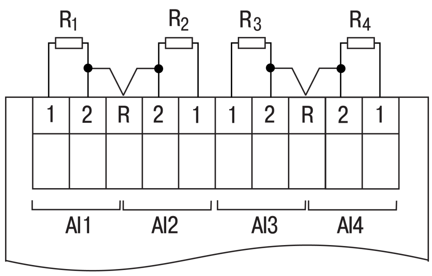


Fig. 4.9 Resistance sensor wiring

4.2.5 Output wiring

The analog outputs are galvanically isolated. Each output can be powered separately if necessary. The negative contacts V-, U- and I- of different outputs are interconnected inside the device.

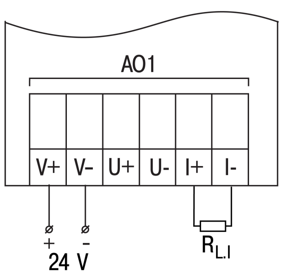


Fig. 4.10 Current output wiring

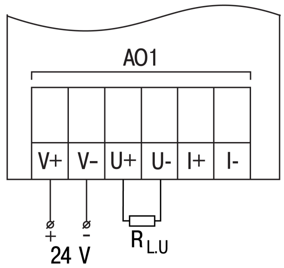


Fig. 4.11 Voltage output wiring

4.3 Quick replacement

PRM is equipped with plug-in terminal blocks which enable quick replacement of the device without disconnecting the existing wiring.
To replace the device:

1. Power off all connected lines including power supply.
2. Remove all detachable parts of the terminal blocks.
3. Replace PRM.
4. Connect detachable parts with existing wiring to the device.

5 Configuration

To add a module to the main device configuration:

1. Open a device project in ALP.
2. Open **Device configuration**.
3. Select item **Extension modules** in the structure tree.
4. Add a PRM module using the context menu (*Fig. 5.1*)

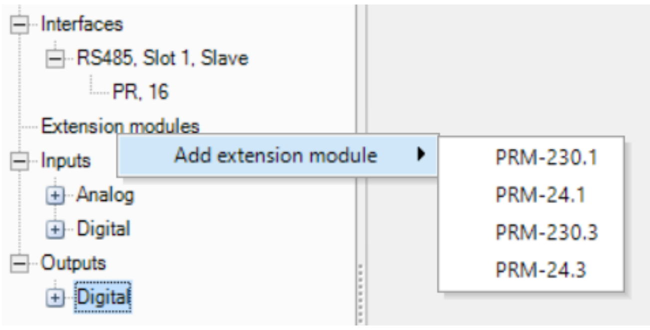


Fig. 5.1

Parameter **Slot number** (*Fig. 5.2*) is the position of PRM, when counting from left to right from the main device. The module next to the main device should be added to the configuration first with No.1 (Slot 1). The next added module is always assigned as No.2 (Slot 2). If there is no module assigned as No.1, a new module cannot be assigned as No.2.

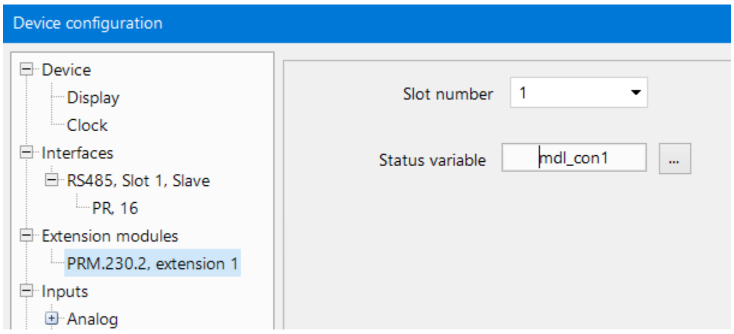


Fig. 5.2

Data exchange between the main device and PRM No.2 is carried out through PRM No. 1. If PRM No.1 is powered off, the data exchange between the main device and PRM No.2 is interrupted.
PRM can be removed from the project only after disconnecting all the variables assigned to its inputs and outputs.
The position of PRM in the configuration can be changed using the context menu.
The project can be transferred to the main device irrespective of whether the modules are connected or not.
When a module is added to the configuration, additional inputs AI1...AI4 and outputs AO1...AO2 with the module number in brackets appear in the workspace (*Fig. 5.3*).
When a module is added to the project, its inputs and outputs become available for polling.
To read the inputs or change the status of the outputs, create variables of the appropriate type and associate them with module I/Os. If it is necessary to sample the module I/Os over the network, they have to be associated with network variables.

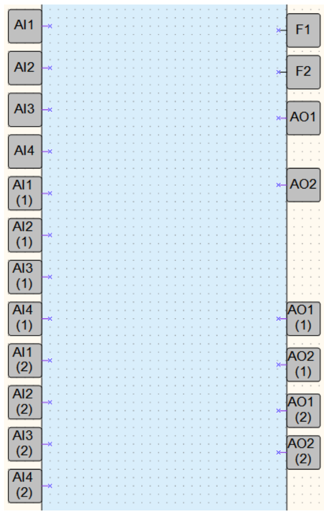
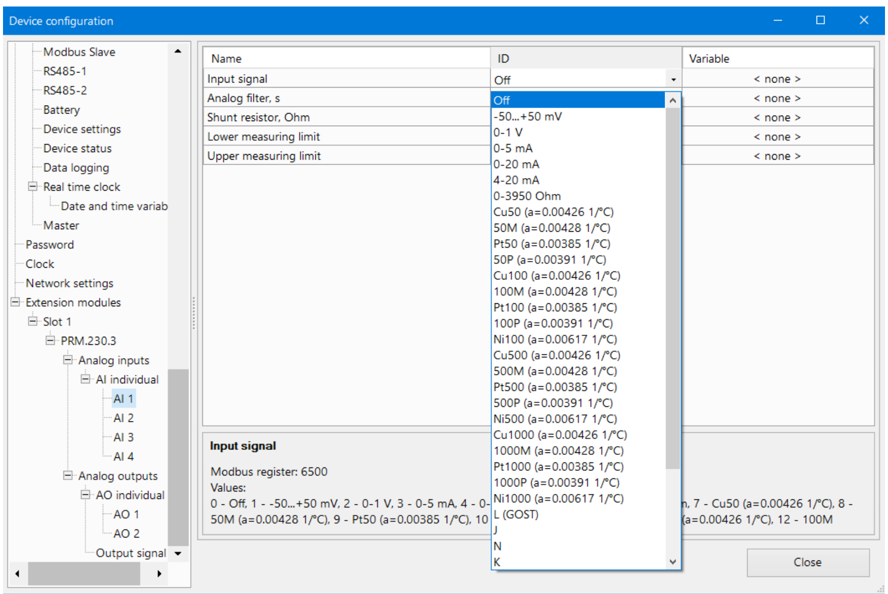


Fig. 5.3

Table 5.1 Module parameters

Parameter	Description
Common	
Device status	Module connection status can be associated with a BOOL variable for the user program. The value is 1 when communication with the module is established or the module model corresponds to the one specified in ALP. Status variable is 0 when: – Communication with the module is lost. – Module position does not correspond to the position specified in the ALP project.
Inputs	
Input signal	Selection of the input signal type from the sensors to be connected. The input value will be converted into the unit corresponding to the sensor type (for example, with RTD or thermocouple, the input values will be converted into degrees Celsius).  *Fig. 5.4 Selection of sensor type*

Parameter	Description
	Default setting **OFF** means that the input is disabled and will not be sampled. Setting **OFF** for unused channels increases the sampling rate. For example, if the interval between measurements of one channel is 0.8 s, it will take 0.8 × 4 = 3.2 s to sample four channels, 2.4 s to sample three channels, and 1.6 s to sample two channels.
Analog filter	The time constant of the built-in digital anti-aliasing filter. The time constant value sets the time of the input signal processing. The more the time constant value, the better the input channel noise immunity. 0…65 seconds, 0 – filter disabled (see *Section 5.1*)
Shunt resistor	External current measurement resistor 45…50 Ω
Lower measuring limit	Minimum level of sensor output signal
Upper measuring limit	Maximum level of sensor output signal
Outputs	
Safe state	The parameter is to assign an output state to each of the PRM extension module outputs when communication with the main device is lost. The setting is available in the **Device/Device configuration/Outputs** menu.
Output mode	The type of output signal determines the calibration coefficients used for signal conversion

5.1 Signal processing

To protect against electromagnetic interference, the module is equipped with a digital low-pass filter. Digital filtering is carried out in two stages.

1. At the first stage, the pronounced "dips" and "overshoots" are filtered out from the useful signal. The difference between the last two measurements is compared with the Filter bandwidth parameter. If the difference exceeds the bandwidth, the measurement is repeated with the doubled bandwidth. If the new measuring confirms the correctness of the previous one, its result will be taken as a new stable state to which the bandwidth reduced back to the set value will be applied. If not, the result will be discarded. This algorithm protects the input from the single-pulse interferences often generated by industrial plants.
2. At the second stage of filtering, the signal is smoothed (damped) in order to eliminate electromagnetic noise components. The main parameter of the damping filter is ***Analog filter***, which is the interval during which the change in the output signal reaches a value of 0.63 of the change in the input signal.

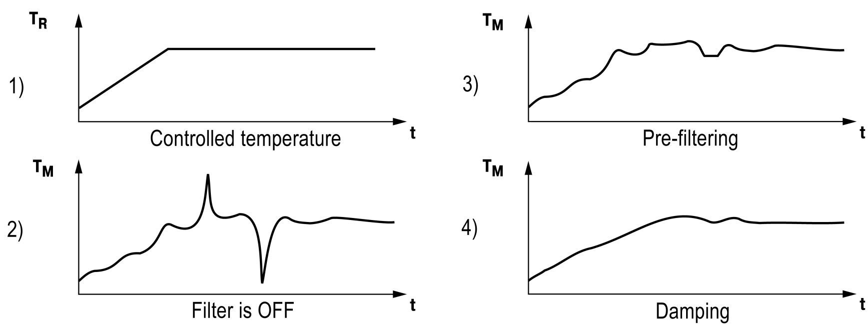


Fig. 5.5 Filter operation

The **Analog filter** parameter is set in seconds for each input. The increasing of the filter constant improves the noise immunity of the input, but at the same time increases its inertia i.e. slows down the reaction to rapid changes in the input signal. To disable the smoothing filter, set the **Analog filter** parameter to 0.

5.2 Signal correction

To eliminate the error in converting input or output signals, the resulting value can be corrected. The module provides corrections that allow offset, slope and fitting of the characteristic curve of the measured signal. Corrections are automatically applied to the measured signal after calibration.

The offset correction (*Fig. 5.6*) is carried out by adding/subtracting a certain value δ to the measured value, which appears due to the resistance of the supply wires.

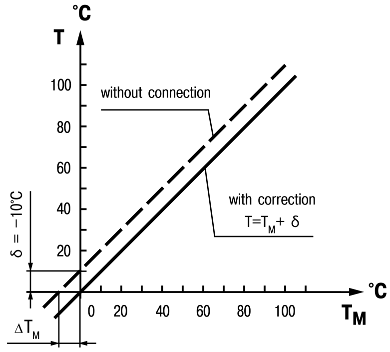


Fig. 5.6 Offset

The slope correction (*Fig. 5.7*) is carried out by multiplying by the correction factor β according to the formula:

$$T = T_{MEAS} \cdot \beta$$

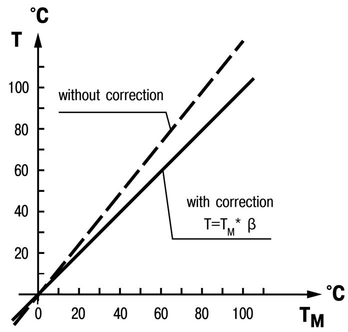


Fig. 5.7 Slope

The fitting correction (*Fig. 5.8*) is carried out by multiplying by the correction factor ζ according to the formula:

$$T = T_{MEAS^*} \cdot \zeta^2$$

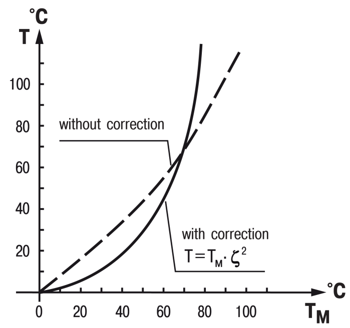


Fig. 5.8 Fitting

Slope and fitting corrections are used to compensate for errors in the sensors themselves (for example, in the case of a deviation of the resistance constant α of an RTD) or errors associated with the spread in the resistance of shunt resistors (in the case of working with converters whose output signal is current).

6 Firmware update

If a new project is loaded into the device and the firmware of the device and extension module are incompatible, the connection between them will be interrupted and the red **ERROR** indicator on the module will start flashing.
To update the firmware:

1. Connect the module to the main device over an internal bus.
2. Connect the main device to the PC.
3. Switch on the power supplies of the main device and the module.
4. Start ALP and select menu item **Device > Firmware update**.
5. Open tab **Extension modules**, select the extension number and the device model and confirm with **Select**.

NOTICE
Ensure reliable power supply of the main device and modules during the update. If it failed, the update should be probably repeated.

7 Calibration

If the accuracy of the input or output of the module is no longer in accordance with the specification, it can be calibrated. The module must be connected to the main device to be calibrated. The calibration is carried out the same way as with the main device.

NOTICE
Ensure reliable power supply of the main device and modules during the calibration. If it fails, the calibration should be repeated.

Each analog input and output has its own calibration coefficients for each sensor type.
Calibration is performed using a reference signal source connected to the device input or output.
The calibration coefficients are calculated based on the ratio between the current input signal and the reference signal and stored in the non-volatile device memory.
If the calculated coefficients go beyond the permissible limits, a message about the error cause will be displayed.

7.1 Input calibration

Input signals: 4-20 mA, 0-10 V, 0-4000 Ω.
To calibrate input:

1. Connect the reference signal source to the input (*Fig. 7.1*).

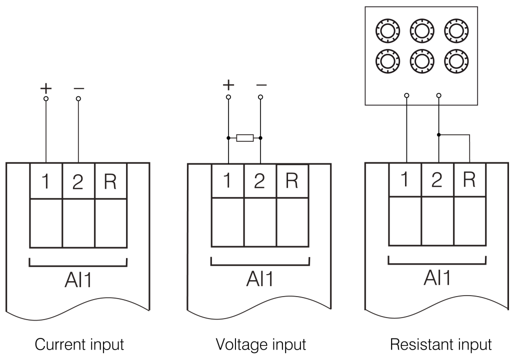


Fig. 7.1 Connection of the reference signal source to an input

2. Connect the module to the main device over internal bus.
3. Connect the main device to the PC.
4. Switch on the power supplies of the main device and the module.
5. Start ALP and select the menu item **Device > Calibration** to start the calibration tool.
6. Select the appropriate PRM model in the dialog window.
7. Select **Analog inputs** as calibration target.
8. Select the type of input signal and other calibration parameters (*Fig. 7.2*).

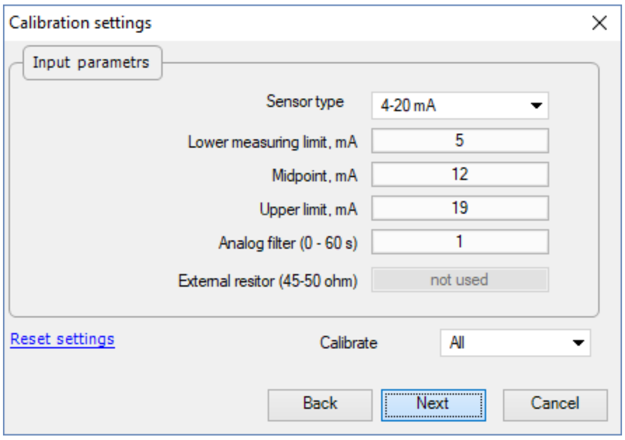


Fig. 7.2 Parameter configuration

Set the three points for calibration curve and the filter time constant. The greater the filter time constant, the longer the calibration process will take, but the more accurate calculation of the coefficients will be achieved.

Select the input to calibrate. If you select **All**, all inputs will be calibrated sequentially, therefore the appropriate reference signal has to be applied to all inputs.

9. Click **Next** and follow the instructions.

Click the item **Reset settings** to use the default calibration settings.

7.2 Output calibration

To calibrate output:

1. Connect the reference signal source according to *Fig. 7.3 or 7.4* to the output.

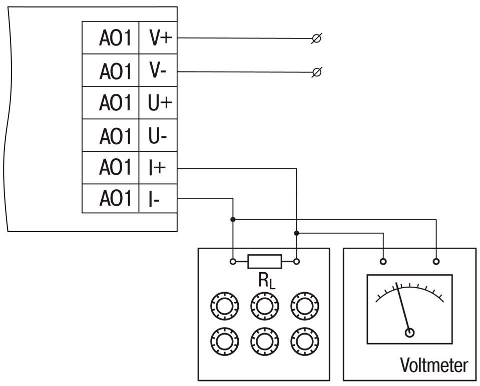


Fig. 7.3 Connection of the current reference signal source to an output (R_L < 300 Ω)

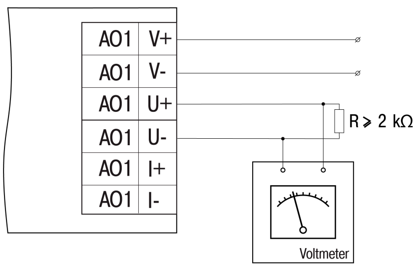


Fig. 7.4 Connection of the voltage reference signal source to an output

2. Connect the module to the main device over internal bus.

3. Connect the main device to the PC.
4. Switch on the power supplies of the main device and the module.
5. Start ALP and select the menu item **Device > Calibration** to start the calibration tool.
6. Select the appropriate PRM model in the dialog window.
7. Select **Analog outputs** as calibration target.
8. Select the type of output signal and the output to be calibrated. If you select **All**, all outputs will be calibrated sequentially, so the appropriate reference signal has to be applied to all outputs.
9. Measure the signal on the output indicated in the upper right window corner, enter the value in the input field.

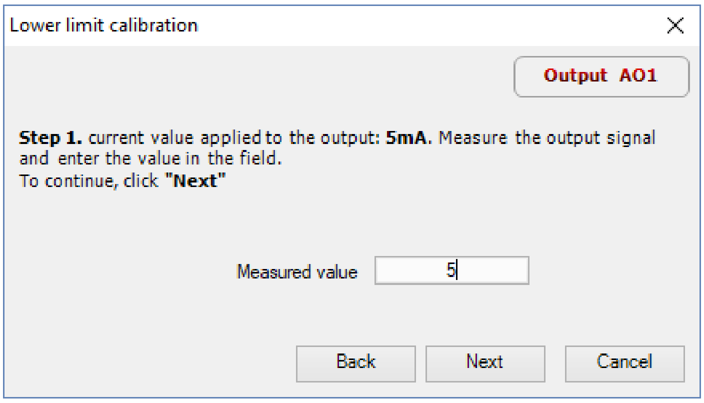


Fig. 7.5 Lower limit calibration

10. Click **Next** and follow the instructions.

8 Maintenance

The safety requirements (see *Section 4*) must be observed when the maintenance is carried out.

WARNING
Cut off all power before maintenance.

The maintenance includes:

– Cleaning of the housing and terminal blocks from dust, dirt and debris
– Checking the device fastening
– Checking the wiring (connecting wires, terminal connections, absence of mechanical damages)

NOTICE
The device should be cleaned with a dry or slightly damp cloth only. No abrasives or solvent-containing cleaners may be used.

9 Transportation and storage

Pack the device in such a way as to protect it reliably against impact for storage and transportation. The original packaging provides optimum protection.
If the device is not taken immediately after delivery into operation, it must be carefully stored at a protected location. The device should not be stored in an atmosphere with chemically active substances.
Permitted storage temperature: -20...+55 °C.

NOTE
The device may have been damaged during transportation.
Check the device for transport damage and completeness!
Report the transport damage immediately to the shipper and akYtec GmbH!

10 Scope of delivery

PRM	1
Short guide	1
Connection cable	1
Terminal blocks (set)	1

NOTE
The manufacturer reserves the right to introduce amendments to the scope of delivery.

Appendix A. Dimensions

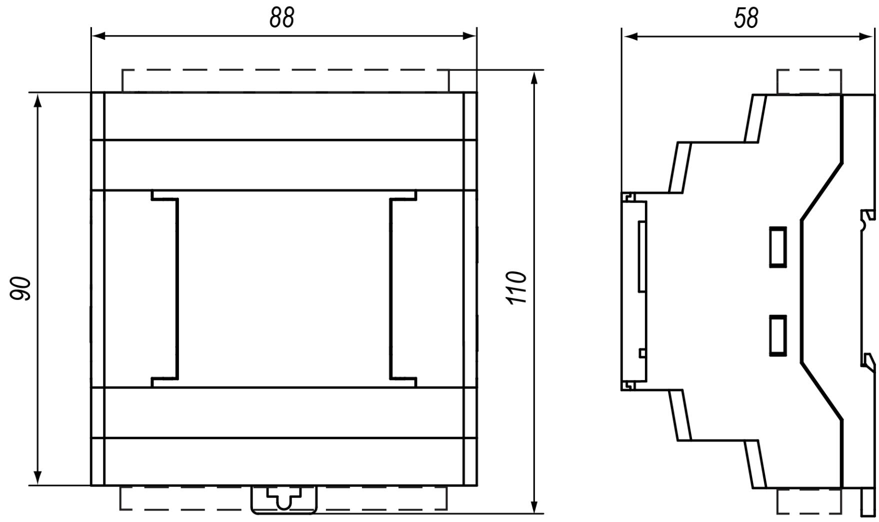


Fig. A.1

Appendix B. Modbus register map

When the module is connected to the main device operating in Slave mode, the module registers for remote control are available via network interface.

Table B.1 Modbus functions

Name	Code	Description
MODBUS_READ_HOLDING_REGISTERS	3 (0x03)	Read data from one or more holding registers
MODBUS_WRITE_MULTIPLE_REGISTERS	16 (0x10)	Write a block of contiguous registers

Table B.2 Data types

Data type	Size (registers)	Size (Byte)	Description
Enum X	1	1	Specifies a selected parameter position in the list of parameters
Float 32	2	4	Single-precision floating-point format

Table B.3 PRM-3 Modbus registers

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
PRM-230.3							
Slot 1							
Device status	PRM-230.3, slot 1	6598	0x19C6	1	3	-	Enum 2: 0 - Off 1 - On
Connection	PRM-230.3, slot 1	6599	0x19C7	1	3	-	Enum 6: 1 - Initialization 2 - Found 3 - Inappropriate module type 4 - Invalid FW version 5 - Operation
Input signal	AI 1	6500	0x1964	1	3	16	Enum 37: 0 - Off 1 - –50 +50 mV 2 - 0–1 V 3 - 0–5 mA 4 - 0–20 mA 5 - 4–20 mA 6 - 0–3950 Ω 7 - Cu50 (a= 0.00426) 8 - 50M (a= 0.00428) 9 - Pt50 (a= 0.00385)

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
							10 - 50P (a= 0.00391) 11 - Cu100 (a= 0.00426) 12 - 100M (a= 0.00428) 13 - Pt100 (a= 0.00385) 14 - 100P (a= 0.00391) 15 - Ni100 (a= 0.00617) 16 - Cu500 (a= 0.00426) 17 - 500M (a= 0.00428) 18 - Pt500 (a= 0.00385) 19 - 500P (a= 0.00391) 20 - Ni500 (a= 0.00617) 21 - Cu1000 (a= 0.00426) 22 - 1000M (a= 0.00428) 23 - Pt1000 (a= 0.00385) 24 - 1000P (a= 0.00391) 25 - Ni1000 (a= 0.00617) 26 - L 27 - J 28 - N 29 - K 30 - S 31 - R 32 - B 33 - A-1 34 - A-2 35 - A-3 36 - T
Analog filter	AI 1	6504	0x1968	2	3	16	Float 32
Shunt resistor	AI 1	6512	0x1970	2	3	16	Float 32
Lower measuring limit	AI 1	6520	0x1978	2	3	16	Float 32
Upper measuring limit	AI 1	6528	0x1980	2	3	16	Float 32
Input signal	AI 2	6501	0x1965	1	3	16	Enum 37: 0 - Off

Name	Descrip-tion	Ad-dress (DEC)	Address (HEX)	Number of regis-ters	Read func-tion	Write func-tion	Data type
							1 - –50 +50 mV 2 - 0–1 V 3 - 0–5 mA 4 - 0–20 mA 5 - 4–20 mA 6 - 0–3950 Ω 7 - Cu50 (a= 0.00426) 8 - 50M (a= 0.00428) 9 - Pt50 (a= 0.00385) 10 - 50P (a= 0.00391) 11 - Cu100 (a= 0.00426) 12 - 100M (a= 0.00428) 13 - Pt100 (a= 0.00385) 14 - 100P (a= 0.00391) 15 - Ni100 (a= 0.00617) 16 - Cu500 (a= 0.00426) 17 - 500M (a= 0.00428) 18 - Pt500 (a= 0.00385) 19 - 500P (a= 0.00391) 20 - Ni500 (a= 0.00617) 21 - Cu1000 (a= 0.00426) 22 - 1000M (a= 0.00428) 23 - Pt1000 (a= 0.00385) 24 - 1000P (a= 0.00391) 25 - Ni1000 (a= 0.00617) 26 - L 27 - J 28 - N 29 - K 30 - S 31 - R 32 - B 33 - A-1 34 - A-2 35 - A-3 36 - T

Name	Descrip-tion	Ad-dress (DEC)	Address (HEX)	Number of regis-ters	Read func-tion	Write func-tion	Data type
Analog filter	AI 2	6506	0x196A	2	3	16	Float 32
Shunt resistor	AI 2	6514	0x1972	2	3	16	Float 32
Lower measuring limit	AI 2	6522	0x197A	2	3	16	Float 32
Upper measuring limit	AI 2	6530	0x1982	2	3	16	Float 32
Input signal	AI 3	6502	0x1966	1	3	16	Enum 37: 0 - Off 1 - –50 +50 mV 2 - 0–1 V 3 - 0–5 mA 4 - 0–20 mA 5 - 4–20 mA 6 - 0–3950 Ω 7 - Cu50 (a= 0.00426) 8 - 50M (a= 0.00428) 9 - Pt50 (a= 0.00385) 10 - 50P (a= 0.00391) 11 - Cu100 (a= 0.00426) 12 - 100M (a= 0.00428) 13 - Pt100 (a= 0.00385) 14 - 100P (a= 0.00391) 15 - Ni100 (a= 0.00617) 16 - Cu500 (a= 0.00426) 17 - 500M (a= 0.00428) 18 - Pt500 (a= 0.00385) 19 - 500P (a= 0.00391) 20 - Ni500 (a= 0.00617) 21 - Cu1000 (a= 0.00426) 22 - 1000M (a= 0.00428) 23 - Pt1000 (a= 0.00385) 24 - 1000P (a= 0.00391)

Name	Descrip-tion	Ad-dress (DEC)	Address (HEX)	Number of regis-ters	Read func-tion	Write func-tion	Data type
							25 - Ni1000 (a= 0.00617) 26 - L 27 - J 28 - N 29 - K 30 - S 31 - R 32 - B 33 - A-1 34 - A-2 35 - A-3 36 - T
Analog filter	AI 3	6508	0x196C	2	3	16	Float 32
Shunt resistor	AI 3	6516	0x1974	2	3	16	Float 32
Lower measuring limit	AI 3	6524	0x197C	2	3	16	Float 32
Upper measuring limit	AI 3	6532	0x1984	2	3	16	Float 32
Input signal	AI 4	6503	0x1967	1	3	16	Enum 37: 0 - Off 1 - –50 +50 mV 2 - 0–1 V 3 - 0–5 mA 4 - 0–20 mA 5 - 4–20 mA 6 - 0–3950 Ω 7 - Cu50 (a= 0.00426) 8 - 50M (a= 0.00428) 9 - Pt50 (a= 0.00385) 10 - 50P (a= 0.00391) 11 - Cu100 (a= 0.00426) 12 - 100M (a= 0.00428) 13 - Pt100 (a= 0.00385) 14 - 100P (a= 0.00391) 15 - Ni100 (a= 0.00617) 16 - Cu500 (a= 0.00426) 17 - 500M (a= 0.00428)

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
							18 - Pt500 (a= 0.00385) 19 - 500P (a= 0.00391) 20 - Ni500 (a= 0.00617) 21 - Cu1000 (a= 0.00426) 22 - 1000M (a= 0.00428) 23 - Pt1000 (a= 0.00385) 24 - 1000P (a= 0.00391) 25 - Ni1000 (a= 0.00617) 26 - L 27 - J 28 - N 29 - K 30 - S 31 - R 32 - B 33 - A-1 34 - A-2 35 - A-3 36 - T
Analog filter	AI 4	6510	0x196E	2	3	16	Float 32
Shunt resistor	AI 4	6518	0x1976	2	3	16	Float 32
Lower measuring limit	AI 4	6526	0x197E	2	3	16	Float 32
Upper measuring limit	AI 4	6534	0x1986	2	3	16	Float 32
AI 1	Measured values	6564	0x19A4	2	3	-	Float 32
AI 2	Measured values	6566	0x19A6	2	3	-	Float 32
AI 3	Measured values	6568	0x19A8	2	3	-	Float 32
AI 4	Measured values	6570	0x19AA	2	3	-	Float 32
Safe state	AO 1	6538	0x198A	2	3	16	Float 32
Output mode	AO 1	6536	0x1988	1	3	16	Enum 3: 0 - Off 1 - 0..10 V 2 - 4..20 mA
Safe state	AO 2	6540	0x198C	2	3	16	Float 32

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
Output mode	AO 2	6537	0x1989	1	3	16	Enum 3: 0 - Off 1 - 0..10 V 2 - 4..20 mA
AO 1	Output signal	6580	0x19B4	2	3	16	Float 32
AO 2	Output signal	6582	0x19B6	2	3	16	Float 32
Slot 2							
Device status	PRM-230.3, slot 2	6698	0x1A2A	1	3	-	Enum 2: 0 - Off 1 - On
Connection	PRM-230.3, slot 2	6699	0x1A2B	1	3	-	Enum 6: 1 - Initialization 2 - Found 3 - Inappropriate module type 4 - Invalid FW version 5 - Operation
Input signal	AI 1	6600	0x19C8	1	3	16	Enum 37: 0 - Off 1 - –50 +50 mV 2 - 0–1 V 3 - 0–5 mA 4 - 0–20 mA 5 - 4–20 mA 6 - 0–3950 Ω 7 - Cu50 (a= 0.00426) 8 - 50M (a= 0.00428) 9 - Pt50 (a= 0.00385) 10 - 50P (a= 0.00391) 11 - Cu100 (a= 0.00426) 12 - 100M (a= 0.00428) 13 - Pt100 (a= 0.00385) 14 - 100P (a= 0.00391) 15 - Ni100 (a= 0.00617) 16 - Cu500 (a= 0.00426) 17 - 500M (a= 0.00428) 18 - Pt500 (a= 0.00385)

Name	Descrip-tion	Ad-dress (DEC)	Address (HEX)	Number of regis-ters	Read func-tion	Write func-tion	Data type
							19 - 500P (a= 0.00391) 20 - Ni500 (a= 0.00617) 21 - Cu1000 (a= 0.00426) 22 - 1000M (a= 0.00428) 23 - Pt1000 (a= 0.00385) 24 - 1000P (a= 0.00391) 25 - Ni1000 (a= 0.00617) 26 - L 27 - J 28 - N 29 - K 30 - S 31 - R 32 - B 33 - A-1 34 - A-2 35 - A-3 36 - T
Analog filter	AI 1	6604	0x19CC	2	3	16	Float 32
Shunt resistor	AI 1	6612	0x19D4	2	3	16	Float 32
Lower measuring limit	AI 1	6620	0x19DC	2	3	16	Float 32
Upper measuring limit	AI 1	6628	0x19E4	2	3	16	Float 32
Input signal	AI 2	6601	0x19C9	1	3	16	Enum 37: 0 - Off 1 - –50 +50 mV 2 - 0–1 V 3 - 0–5 mA 4 - 0–20 mA 5 - 4–20 mA 6 - 0–3950 Ω 7 - Cu50 (a= 0.00426) 8 - 50M (a= 0.00428) 9 - Pt50 (a= 0.00385) 10 - 50P (a= 0.00391) 11 - Cu100 (a= 0.00426)

Name	Descrip-tion	Ad-dress (DEC)	Address (HEX)	Number of regis-ters	Read func-tion	Write func-tion	Data type
							12 - 100M (a= 0.00428) 13 - Pt100 (a= 0.00385) 14 - 100P (a= 0.00391) 15 - Ni100 (a= 0.00617) 16 - Cu500 (a= 0.00426) 17 - 500M (a= 0.00428) 18 - Pt500 (a= 0.00385) 19 - 500P (a= 0.00391) 20 - Ni500 (a= 0.00617) 21 - Cu1000 (a= 0.00426) 22 - 1000M (a= 0.00428) 23 - Pt1000 (a= 0.00385) 24 - 1000P (a= 0.00391) 25 - Ni1000 (a= 0.00617) 26 - L 27 - J 28 - N 29 - K 30 - S 31 - R 32 - B 33 - A-1 34 - A-2 35 - A-3 36 - T
Analog filter	AI 2	6606	0x19CE	2	3	16	Float 32
Shunt resistor	AI 2	6614	0x19D6	2	3	16	Float 32
Lower measuring limit	AI 2	6622	0x19DE	2	3	16	Float 32
Upper measuring limit	AI 2	6630	0x19E6	2	3	16	Float 32
Input signal	AI 3	6602	0x19CA	1	3	16	Enum 37: 0 - Off 1 - –50 +50 mV 2 - 0–1 V 3 - 0–5 mA

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
							4 - 0–20 mA 5 - 4–20 mA 6 - 0–3950 Ω 7 - Cu50 (a= 0.00426) 8 - 50M (a= 0.00428) 9 - Pt50 (a= 0.00385) 10 - 50P (a= 0.00391) 11 - Cu100 (a= 0.00426) 12 - 100M (a= 0.00428) 13 - Pt100 (a= 0.00385) 14 - 100P (a= 0.00391) 15 - Ni100 (a= 0.00617) 16 - Cu500 (a= 0.00426) 17 - 500M (a= 0.00428) 18 - Pt500 (a= 0.00385) 19 - 500P (a= 0.00391) 20 - Ni500 (a= 0.00617) 21 - Cu1000 (a= 0.00426) 22 - 1000M (a= 0.00428) 23 - Pt1000 (a= 0.00385) 24 - 1000P (a= 0.00391) 25 - Ni1000 (a= 0.00617) 26 - L 27 - J 28 - N 29 - K 30 - S 31 - R 32 - B 33 - A-1 34 - A-2 35 - A-3 36 - T
Analog filter	AI 3	6608	0x19D0	2	3	16	Float 32
Shunt resistor	AI 3	6616	0x19D8	2	3	16	Float 32

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
Lower measuring limit	AI 3	6624	0x19E0	2	3	16	Float 32
Upper measuring limit	AI 3	6632	0x19E8	2	3	16	Float 32
Input signal	AI 4	6603	0x19CB	1	3	16	Enum 37: 0 - Off 1 - –50 +50 mV 2 - 0–1 V 3 - 0–5 mA 4 - 0–20 mA 5 - 4–20 mA 6 - 0–3950 Ω 7 - Cu50 (a= 0.00426) 8 - 50M (a= 0.00428) 9 - Pt50 (a= 0.00385) 10 - 50P (a= 0.00391) 11 - Cu100 (a= 0.00426) 12 - 100M (a= 0.00428) 13 - Pt100 (a= 0.00385) 14 - 100P (a= 0.00391) 15 - Ni100 (a= 0.00617) 16 - Cu500 (a= 0.00426) 17 - 500M (a= 0.00428) 18 - Pt500 (a= 0.00385) 19 - 500P (a= 0.00391) 20 - Ni500 (a= 0.00617) 21 - Cu1000 (a= 0.00426) 22 - 1000M (a= 0.00428) 23 - Pt1000 (a= 0.00385) 24 - 1000P (a= 0.00391) 25 - Ni1000 (a= 0.00617) 26 - L 27 - J 28 - N 29 - K

Name	Descrip-tion	Ad-dress (DEC)	Address (HEX)	Number of regis-ters	Read func-tion	Write func-tion	Data type
							30 - S 31 - R 32 - B 33 - A-1 34 - A-2 35 - A-3 36 - T
Analog filter	AI 4	6610	0x19D2	2	3	16	Float 32
Shunt resistor	AI 4	6618	0x19DA	2	3	16	Float 32
Lower measuring limit	AI 4	6626	0x19E2	2	3	16	Float 32
Upper measuring limit	AI 4	6634	0x19EA	2	3	16	Float 32
AI 1	Measured values	6664	0x1A08	2	3	-	Float 32
AI 2	Measured values	6666	0x1A0A	2	3	-	Float 32
AI 3	Measured values	6668	0x1A0C	2	3	-	Float 32
AI 4	Measured values	6670	0x1A0E	2	3	-	Float 32
Safe state	AO 1	6638	0x19EE	2	3	16	Float 32
Output mode	AO 1	6636	0x19EC	1	3	16	Enum 3: 0 - Off 1 - 0..10 V 2 - 4..20 mA
Safe state	AO 2	6640	0x19F0	2	3	16	Float 32
Output mode	AO 2	6637	0x19ED	1	3	16	Enum 3: 0 - Off 1 - 0..10 V 2 - 4..20 mA
AO 1	Output signal	6680	0x1A18	2	3	16	Float 32
AO 2	Output signal	6682	0x1A1A	2	3	16	Float 32
PRM-24.3							
Slot 1							
Device status	PRM-24.3, slot 1	6398	0x18FE	1	3	-	Enum 2: 0 - Off 1 - On
Connection	PRM-24.3, slot 1	6399	0x18FF	1	3	-	Enum 6: 1 - Initialization 2 - Found

Name	Descrip-tion	Ad-dress (DEC)	Address (HEX)	Number of regis-ters	Read func-tion	Write func-tion	Data type
							3 - Inappropriate module type 4 - Invalid FW version 5 - Operation
Input signal	AI 1	6300	0x189C	1	3	16	Enum 37: 0 - Off 1 - –50 +50 mV 2 - 0–1 V 3 - 0–5 mA 4 - 0–20 mA 5 - 4–20 mA 6 - 0–3950 Ω 7 - Cu50 (a= 0.00426) 8 - 50M (a= 0.00428) 9 - Pt50 (a= 0.00385) 10 - 50P (a= 0.00391) 11 - Cu100 (a= 0.00426) 12 - 100M (a= 0.00428) 13 - Pt100 (a= 0.00385) 14 - 100P (a= 0.00391) 15 - Ni100 (a= 0.00617) 16 - Cu500 (a= 0.00426) 17 - 500M (a= 0.00428) 18 - Pt500 (a= 0.00385) 19 - 500P (a= 0.00391) 20 - Ni500 (a= 0.00617) 21 - Cu1000 (a= 0.00426) 22 - 1000M (a= 0.00428) 23 - Pt1000 (a= 0.00385) 24 - 1000P (a= 0.00391) 25 - Ni1000 (a= 0.00617) 26 - L 27 - J 28 - N 29 - K 30 - S

Name	Descrip-tion	Ad-dress (DEC)	Address (HEX)	Number of regis-ters	Read func-tion	Write func-tion	Data type
							31 - R 32 - B 33 - A-1 34 - A-2 35 - A-3 36 - T
Analog filter	AI 1	6304	0x18A0	2	3	16	Float 32
Shunt resistor	AI 1	6312	0x18A8	2	3	16	Float 32
Lower measuring limit	AI 1	6320	0x18B0	2	3	16	Float 32
Upper measuring limit	AI 1	6328	0x18B8	2	3	16	Float 32
Input signal	AI 2	6301	0x189D	1	3	16	Enum 37: 0 - Off 1 - –50 +50 mV 2 - 0–1 V 3 - 0–5 mA 4 - 0–20 mA 5 - 4–20 mA 6 - 0–3950 Ω 7 - Cu50 (a= 0.00426) 8 - 50M (a= 0.00428) 9 - Pt50 (a= 0.00385) 10 - 50P (a= 0.00391) 11 - Cu100 (a= 0.00426) 12 - 100M (a= 0.00428) 13 - Pt100 (a= 0.00385) 14 - 100P (a= 0.00391) 15 - Ni100 (a= 0.00617) 16 - Cu500 (a= 0.00426) 17 - 500M (a= 0.00428) 18 - Pt500 (a= 0.00385) 19 - 500P (a= 0.00391) 20 - Ni500 (a= 0.00617) 21 - Cu1000 (a= 0.00426)

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
							22 - 1000M (a= 0.00428) 23 - Pt1000 (a= 0.00385) 24 - 1000P (a= 0.00391) 25 - Ni1000 (a= 0.00617) 26 - L 27 - J 28 - N 29 - K 30 - S 31 - R 32 - B 33 - A-1 34 - A-2 35 - A-3 36 - T
Analog filter	AI 2	6306	0x18A2	2	3	16	Float 32
Shunt resistor	AI 2	6314	0x18AA	2	3	16	Float 32
Lower measuring limit	AI 2	6322	0x18B2	2	3	16	Float 32
Upper measuring limit	AI 2	6330	0x18BA	2	3	16	Float 32
Input signal	AI 3	6302	0x189E	1	3	16	Enum 37: 0 - Off 1 - –50 +50 mV 2 - 0–1 V 3 - 0–5 mA 4 - 0–20 mA 5 - 4–20 mA 6 - 0–3950 Ω 7 - Cu50 (a= 0.00426) 8 - 50M (a= 0.00428) 9 - Pt50 (a= 0.00385) 10 - 50P (a= 0.00391) 11 - Cu100 (a= 0.00426) 12 - 100M (a= 0.00428) 13 - Pt100 (a= 0.00385) 14 - 100P (a= 0.00391)

Name	Descrip-tion	Ad-dress (DEC)	Address (HEX)	Number of regis-ters	Read func-tion	Write func-tion	Data type
							15 - Ni100 (a= 0.00617) 16 - Cu500 (a= 0.00426) 17 - 500M (a= 0.00428) 18 - Pt500 (a= 0.00385) 19 - 500P (a= 0.00391) 20 - Ni500 (a= 0.00617) 21 - Cu1000 (a= 0.00426) 22 - 1000M (a= 0.00428) 23 - Pt1000 (a= 0.00385) 24 - 1000P (a= 0.00391) 25 - Ni1000 (a= 0.00617) 26 - L 27 - J 28 - N 29 - K 30 - S 31 - R 32 - B 33 - A-1 34 - A-2 35 - A-3 36 - T
Analog filter	AI 3	6308	0x18A4	2	3	16	Float 32
Shunt resistor	AI 3	6316	0x18AC	2	3	16	Float 32
Lower measuring limit	AI 3	6324	0x18B4	2	3	16	Float 32
Upper measuring limit	AI 3	6332	0x18BC	2	3	16	Float 32
Input signal	AI 4	6303	0x189F	1	3	16	Enum 37: 0 - Off 1 - –50 +50 mV 2 - 0–1 V 3 - 0–5 mA 4 - 0–20 mA 5 - 4–20 mA 6 - 0–3950 Ω 7 - Cu50 (a= 0.00426)

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
							8 - 50M (a= 0.00428) 9 - Pt50 (a= 0.00385) 10 - 50P (a= 0.00391) 11 - Cu100 (a= 0.00426) 12 - 100M (a= 0.00428) 13 - Pt100 (a= 0.00385) 14 - 100P (a= 0.00391) 15 - Ni100 (a= 0.00617) 16 - Cu500 (a= 0.00426) 17 - 500M (a= 0.00428) 18 - Pt500 (a= 0.00385) 19 - 500P (a= 0.00391) 20 - Ni500 (a= 0.00617) 21 - Cu1000 (a= 0.00426) 22 - 1000M (a= 0.00428) 23 - Pt1000 (a= 0.00385) 24 - 1000P (a= 0.00391) 25 - Ni1000 (a= 0.00617) 26 - L 27 - J 28 - N 29 - K 30 - S 31 - R 32 - B 33 - A-1 34 - A-2 35 - A-3 36 - T
Analog filter	AI 4	6310	0x18A6	2	3	16	Float 32
Shunt resistor	AI 4	6318	0x18AE	2	3	16	Float 32
Lower measuring limit	AI 4	6326	0x18B6	2	3	16	Float 32

Name	Descrip-tion	Ad-dress (DEC)	Address (HEX)	Number of regis-ters	Read func-tion	Write func-tion	Data type
Upper measuring limit	AI 4	6334	0x18BE	2	3	16	Float 32
AI 1	Measured values	6364	0x18DC	2	3	-	Float 32
AI 2	Measured values	6366	0x18DE	2	3	-	Float 32
AI 3	Measured values	6368	0x18E0	2	3	-	Float 32
AI 4	Measured values	6370	0x18E2	2	3	-	Float 32
Safe state	AO 1	6338	0x18C2	2	3	16	Float 32
Output mode	AO 1	6336	0x18C0	1	3	16	Enum 3: 0 - Off 1 - 0..10 V 2 - 4..20 mA
Safe state	AO 2	6340	0x18C4	2	3	16	Float 32
Output mode	AO 2	6337	0x18C1	1	3	16	Enum 3: 0 - Off 1 - 0..10 V 2 - 4..20 mA
AO 1	Output signal	6380	0x18EC	2	3	16	Float 32
AO 2	Output signal	6382	0x18EE	2	3	16	Float 32
Slot 2							
Device status	PRM-24.3, slot 2	6498	0x1962	1	3	-	Enum 2: 0 - Off 1 - On
Connection	PRM-24.3, slot 2	6499	0x1963	1	3	-	Enum 6: 1 - Initialization 2 - Found 3 - Inappropriate module type 4 - Invalid FW version 5 - Operation
Input signal	AI 1	6400	0x1900	1	3	16	Enum 37: 0 - Off 1 - –50 +50 mV 2 - 0–1 V 3 - 0–5 mA 4 - 0–20 mA 5 - 4–20 mA 6 - 0–3950 Ω 7 - Cu50 (a= 0.00426)

Name	Descrip-tion	Ad-dress (DEC)	Address (HEX)	Number of regis-ters	Read func-tion	Write func-tion	Data type
							8 - 50M (a= 0.00428) 9 - Pt50 (a= 0.00385) 10 - 50P (a= 0.00391) 11 - Cu100 (a= 0.00426) 12 - 100M (a= 0.00428) 13 - Pt100 (a= 0.00385) 14 - 100P (a= 0.00391) 15 - Ni100 (a= 0.00617) 16 - Cu500 (a= 0.00426) 17 - 500M (a= 0.00428) 18 - Pt500 (a= 0.00385) 19 - 500P (a= 0.00391) 20 - Ni500 (a= 0.00617) 21 - Cu1000 (a= 0.00426) 22 - 1000M (a= 0.00428) 23 - Pt1000 (a= 0.00385) 24 - 1000P (a= 0.00391) 25 - Ni1000 (a= 0.00617) 26 - L 27 - J 28 - N 29 - K 30 - S 31 - R 32 - B 33 - A-1 34 - A-2 35 - A-3 36 - T
Analog filter	AI 1	6404	0x1904	2	3	16	Float 32
Shunt resistor	AI 1	6412	0x190C	2	3	16	Float 32
Lower measuring limit	AI 1	6420	0x1914	2	3	16	Float 32

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
Upper measuring limit	AI 1	6428	0x191C	2	3	16	Float 32
Input signal	AI 2	6401	0x1901	1	3	16	Enum 37: 0 - Off 1 - –50 +50 mV 2 - 0–1 V 3 - 0–5 mA 4 - 0–20 mA 5 - 4–20 mA 6 - 0–3950 Ω 7 - Cu50 (a= 0.00426) 8 - 50M (a= 0.00428) 9 - Pt50 (a= 0.00385) 10 - 50P (a= 0.00391) 11 - Cu100 (a= 0.00426) 12 - 100M (a= 0.00428) 13 - Pt100 (a= 0.00385) 14 - 100P (a= 0.00391) 15 - Ni100 (a= 0.00617) 16 - Cu500 (a= 0.00426) 17 - 500M (a= 0.00428) 18 - Pt500 (a= 0.00385) 19 - 500P (a= 0.00391) 20 - Ni500 (a= 0.00617) 21 - Cu1000 (a= 0.00426) 22 - 1000M (a= 0.00428) 23 - Pt1000 (a= 0.00385) 24 - 1000P (a= 0.00391) 25 - Ni1000 (a= 0.00617) 26 - L 27 - J 28 - N 29 - K 30 - S 31 - R 32 - B 33 - A-1

Name	Descrip-tion	Ad-dress (DEC)	Address (HEX)	Number of regis-ters	Read func-tion	Write func-tion	Data type
							34 - A-2 35 - A-3 36 - T
Analog filter	AI 2	6406	0x1906	2	3	16	Float 32
Shunt resistor	AI 2	6414	0x190E	2	3	16	Float 32
Lower measuring limit	AI 2	6422	0x1916	2	3	16	Float 32
Upper measuring limit	AI 2	6430	0x191E	2	3	16	Float 32
Input signal	AI 3	6402	0x1902	1	3	16	Enum 37: 0 - Off 1 - –50 +50 mV 2 - 0–1 V 3 - 0–5 mA 4 - 0–20 mA 5 - 4–20 mA 6 - 0–3950 Ω 7 - Cu50 (a= 0.00426) 8 - 50M (a= 0.00428) 9 - Pt50 (a= 0.00385) 10 - 50P (a= 0.00391) 11 - Cu100 (a= 0.00426) 12 - 100M (a= 0.00428) 13 - Pt100 (a= 0.00385) 14 - 100P (a= 0.00391) 15 - Ni100 (a= 0.00617) 16 - Cu500 (a= 0.00426) 17 - 500M (a= 0.00428) 18 - Pt500 (a= 0.00385) 19 - 500P (a= 0.00391) 20 - Ni500 (a= 0.00617) 21 - Cu1000 (a= 0.00426) 22 - 1000M (a= 0.00428)

Name	Descrip-tion	Ad-dress (DEC)	Address (HEX)	Number of regis-ters	Read func-tion	Write func-tion	Data type
							23 - Pt1000 (a= 0.00385) 24 - 1000P (a= 0.00391) 25 - Ni1000 (a= 0.00617) 26 - L 27 - J 28 - N 29 - K 30 - S 31 - R 32 - B 33 - A-1 34 - A-2 35 - A-3 36 - T
Analog filter	AI 3	6408	0x1908	2	3	16	Float 32
Shunt resistor	AI 3	6416	0x1910	2	3	16	Float 32
Lower measuring limit	AI 3	6424	0x1918	2	3	16	Float 32
Upper measuring limit	AI 3	6432	0x1920	2	3	16	Float 32
Input signal	AI 4	6403	0x1903	1	3	16	Enum 37: 0 - Off 1 - –50 +50 mV 2 - 0–1 V 3 - 0–5 mA 4 - 0–20 mA 5 - 4–20 mA 6 - 0–3950 Ω 7 - Cu50 (a= 0.00426) 8 - 50M (a= 0.00428) 9 - Pt50 (a= 0.00385) 10 - 50P (a= 0.00391) 11 - Cu100 (a= 0.00426) 12 - 100M (a= 0.00428) 13 - Pt100 (a= 0.00385) 14 - 100P (a= 0.00391) 15 - Ni100 (a= 0.00617)

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
							16 - Cu500 (a= 0.00426) 17 - 500M (a= 0.00428) 18 - Pt500 (a= 0.00385) 19 - 500P (a= 0.00391) 20 - Ni500 (a= 0.00617) 21 - Cu1000 (a= 0.00426) 22 - 1000M (a= 0.00428) 23 - Pt1000 (a= 0.00385) 24 - 1000P (a= 0.00391) 25 - Ni1000 (a= 0.00617) 26 - L 27 - J 28 - N 29 - K 30 - S 31 - R 32 - B 33 - A-1 34 - A-2 35 - A-3 36 - T
Analog filter	AI 4	6410	0x190A	2	3	16	Float 32
Shunt resistor	AI 4	6418	0x1912	2	3	16	Float 32
Lower measuring limit	AI 4	6426	0x191A	2	3	16	Float 32
Upper measuring limit	AI 4	6434	0x1922	2	3	16	Float 32
AI 1	Measured values	6464	0x1940	2	3	-	Float 32
AI 2	Measured values	6466	0x1942	2	3	-	Float 32
AI 3	Measured values	6468	0x1944	2	3	-	Float 32
AI 4	Measured values	6470	0x1946	2	3	-	Float 32
Safe state	AO 1	6438	0x1926	2	3	16	Float 32
Output mode	AO 1	6436	0x1924	1	3	16	Enum 3: 0 - Off

Name	Descrip-tion	Ad-dress (DEC)	Address (HEX)	Number of regis-ters	Read func-tion	Write func-tion	Data type
							1 - 0..10 V 2 - 4..20 mA
Safe state	AO 2	6440	0x1928	2	3	16	Float 32
Output mode	AO 2	6437	0x1925	1	3	16	Enum 3: 0 - Off 1 - 0..10 V 2 - 4..20 mA
AO 1	Output signal	6480	0x1950	2	3	16	Float 32
AO 2	Output signal	6482	0x1952	2	3	16	Float 32