EN

PRM-X.2

I/O extension module

User guide

PRM-X.2_3-EN-127842-1.8

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

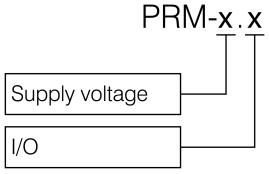
Extension modules of the PRM series are designed solely for the intended use described in this manual, and may only be used accordingly. The technical specifications contained in this manual must be observed.
The module may be operated only in properly installed condition.

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

230	–	230 (90…264) V AC
24	–	24 (19…30) V DC

I/O

2	–	4 AI, 4 DO

2.3 Front indicators

There are 10 LEDs on the front panel.

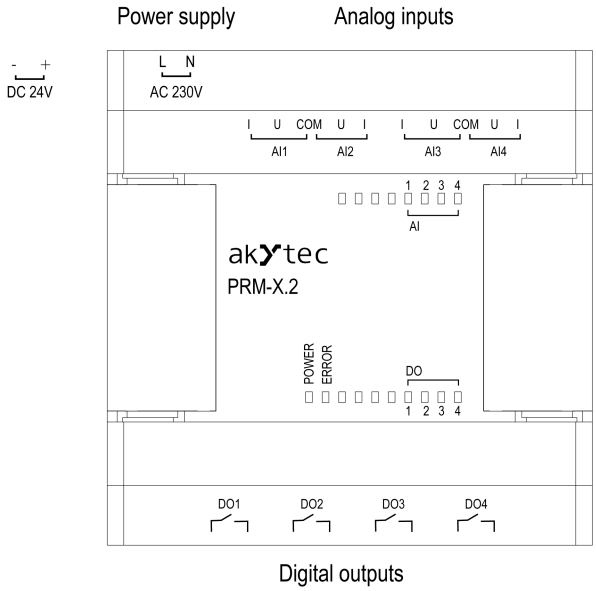


Fig. 2.1 Front view

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 1...4	Green	ON	Analog input is set as digital. HIGH on the corresponding input
DO 1...4	Green	ON	HIGH on the corresponding output

3 Specifications

3.1 Specifications

Table 3.1 General specification

Device		PRM-230.2	PRM-24.2
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	4	
	Analog	—	
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	

3.2 Analog inputs

Table 3.2 Analog inputs (AI)

Parameter		Value
ADC resolution		12 bit
Sampling time, max.		1 ms
Galvanic isolation		no
Analog mode 1 (Linear input)		
Input signal		0-10 V, 4-20 mA
Input resistance for 0-10 V input		10 kΩ
Basic error		±0.5 %
Temperature influence per each 10 °C		0.5 of basic error
Analog mode 2 (Temperature sensors)		
Input signal		see *Tab. 3.3*
Measurement range		0…300 kΩ
Least significant bit value, max.		1 °C
Basic error	0…150 kΩ	±1.0 %
	151…300 kΩ	±2.0 %
	RTD, NTC and PTC	±1.5 %
Temperature influence per each 10 °C		0.5 of basic error
Digital mode		
Nominal input voltage		24 V DC
HIGH/LOW threshold (adjustable in ALP)		1…8 V
LOW/HIGH threshold (adjustable in ALP)		2…9 V
Input current		2…15 mA
Pulse length, min.		5 ms
Signal frequency, max.		100 Hz

Table 3.3 Sensors (analog mode 2)

Sensor	Measurement range
RTD	
Pt 500 (α = 0.00385 °C⁻¹)*	–200…+850 °C
500P (α = 0.00391 °C⁻¹)	–200…+850 °C
Cu 500 (α = 0.00426 °C⁻¹)	–50…+200 °C
500M (α = 0.00428 °C⁻¹)	–180…+200 °C
Ni500 (α = 0.00617 °C⁻¹)	–60…+180 °C
Cu 1000 (α = 0.00426 °C⁻¹)	–50…+200 °C
1000M (α = 0.00428 °C⁻¹)	–180…+200 °C
Pt 1000 (α = 0.00385 °C⁻¹)	–200…+850 °C
1000P (α = 0.00391 °C⁻¹)	–200…+850 °C
Ni 1000 (α = 0.00617 °C⁻¹)	–60…+180 °C
Thermistors / NTC	
B57861S series, 2 kΩ, $B_{25/100}$ = 3560K	–55…+100 °C
B57861S series, 3 kΩ, $B_{25/100}$ = 3988K	–55…+125 °C
B57861S series, 5 kΩ, $B_{25/100}$ = 3988K	–35…+140 °C
B57861S series, 10 kΩ, $B_{25/100}$ = 3988K	–35…+155 °C
B57861S series, 30 kΩ, $B_{25/100}$ = 3964K	–20…+155 °C
B57861S series, 50 kΩ, $B_{25/100}$ = 3760K	–10…+155 °C
NTC 3435, 10 kΩ	–40…+105 °C
NTC 3977, 10 kΩ	–40…+125 °C
Thermistors / PTC	
KTY82-110	–55…+150 °C
KTY82-120	
KTY82-121	
KTY82-122	
KTY82-150	
KTY82-151	

NOTE

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

$$\alpha = \frac{R_{100} - R_0}{R_0 \cdot 100\ ^\circ C}$$

, 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.

3.3 Digital outputs

Table 3.4 Digital outputs (DO)

Parameter		Value
Type		relay (NO)
Maximum switching load voltage	AC	250 V (resistive load)
	DC	30 V (resistive load)
Maximum load current	AC	5 A, 250 V AC and cos(φ) > 0,95
	DC	3 A, 30 V DC
Load current at 5 V DC, min.		10 mA
Service life, electrical		200 000 switching cycles at 250 V AC, 5 A 50 000 switching cycles at 250 V AC, 7 A 100 000 switching cycles at 30 V DC, 3 A (resistive load)
Galvanic isolation against other circuits		2300 V

3.4 Galvanic isolation

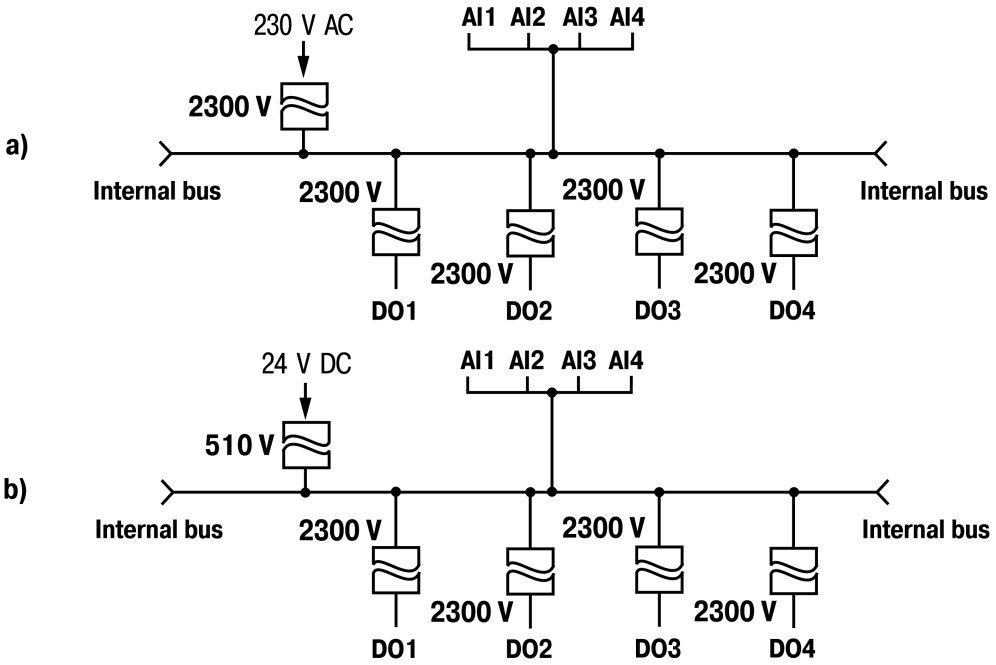


Fig. 3.1 Galvanic isolation of PRM-230.2 (a) and PRM-24.2 (b)

3.5 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

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.

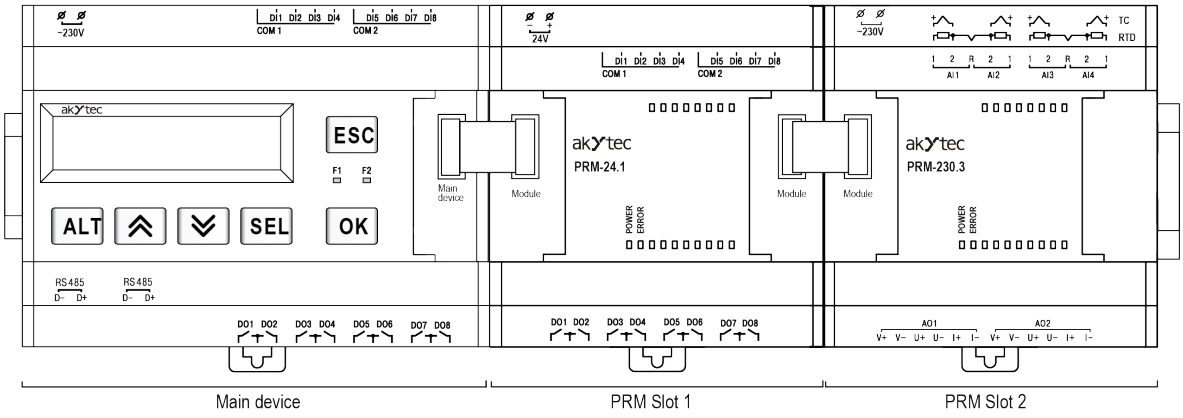
Fig. 4.1

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*).

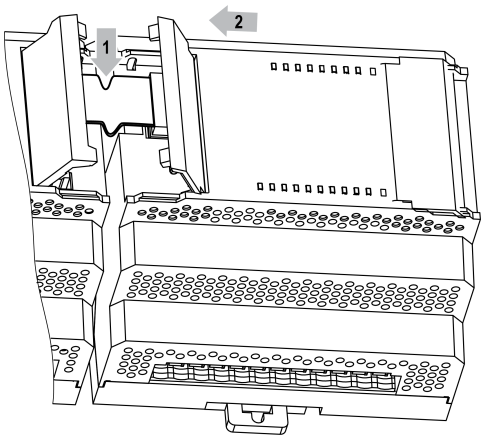


Fig. 4.2

4.2 Terminal block layout

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

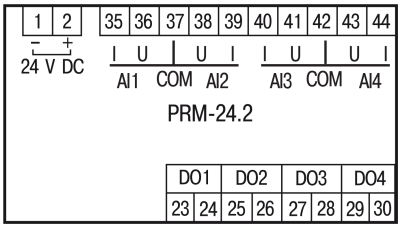


Fig. 4.3 PRM-24.2 terminal block layout

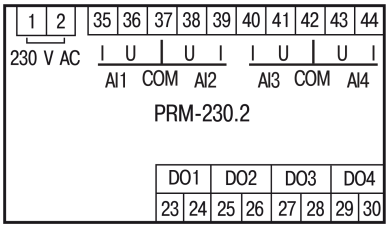


Fig. 4.4 PRM-230.2 terminal block layout

Table 4.1 Terminal assignment

No.	Marking	Description	No.	Marking	Description
1	DC 24 V / - or AC 230 V	Power supply	23	DO1	Digital output DO1
2	DC 24 V / + or AC 230 V	Power supply	24		
35	AI1 / I	AI1 terminal 1	25	DO2	Digital output DO4
36	AI1 / U	AI1 terminal 2	26		
37	COM	AI1 / AI2 common terminal	27	DO3	Digital output DO3
38	AI2 / U	AI2 terminal 1	28		
39	AI2 / I	AI2 terminal 2	29	DO4	Digital output DO4
40	AI3 / I	AI3 terminal 1	30		
41	AI3 / U	AI3 terminal 2	—	—	—
42	COM	AI3 / AI4 common terminal	—	—	—
43	AI4 / U	AI4 terminal 1	—	—	—
44	AI4 / I	AI4 terminal 2	—	—	—

4.2.1 Analog inputs wiring

NOTICE
Before connecting analog sensors, ensure the input signal selected in configuration corresponds to the connected one. Wrong signal can cause the device damage.
The COM terminals are internally connected.

Table 4.2 Sensor cable requirements

Signal	Cable length, max. (m)	Total resistance, max. (Ω)
4-20 mA	100	5
0-10 V	100	100
2-wire RTD, thermistors, other resistive signals	100	—

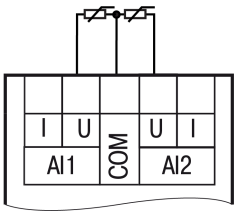


Fig. 4.5 RTD wiring

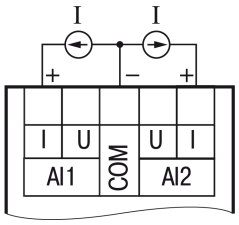


Fig. 4.6 I sensor wiring

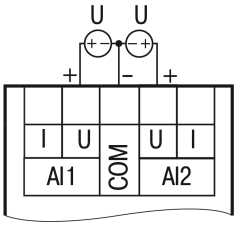


Fig. 4.7 U sensor wiring

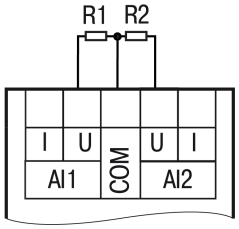


Fig. 4.8 Resistance sensor wiring

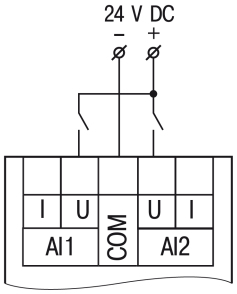


Fig. 4.9 Switch contact wiring

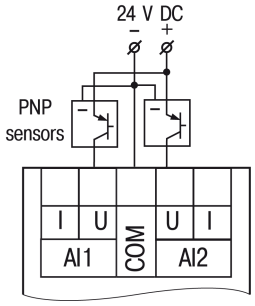


Fig. 4.10 3-wire sensor with PNP output

4.2.2 Digital output wiring

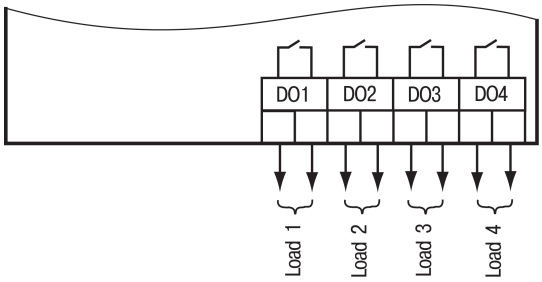


Fig. 4.11 Relay output wiring

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 programmable relay 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*)

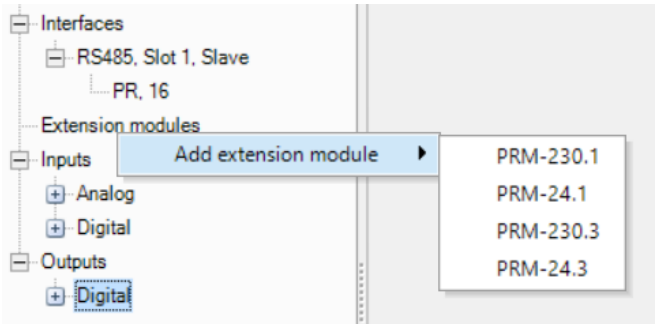


Fig. 5.1

Parameter **Slot number** (*Fig. 5.2*) is the position of PRM when counting from left to right from the main device. The module close 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.

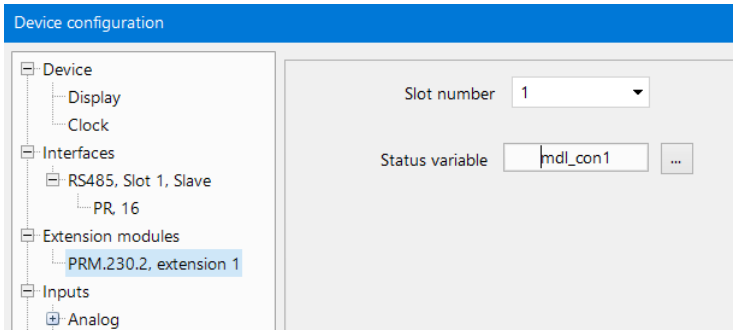


Fig. 5.2

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.
PRM position 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 Q1...Q4 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.

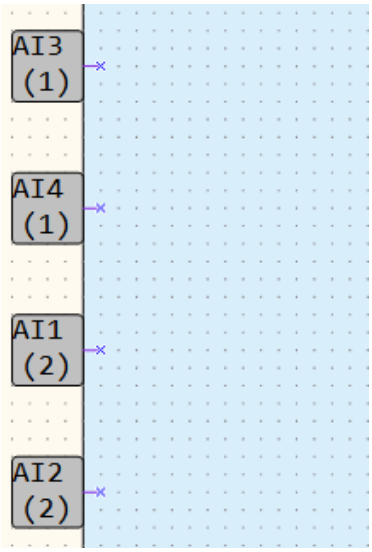


Fig. 5.3

5.1 Analog inputs

Analog input settings are available in the **Device/Device configuration** tab.

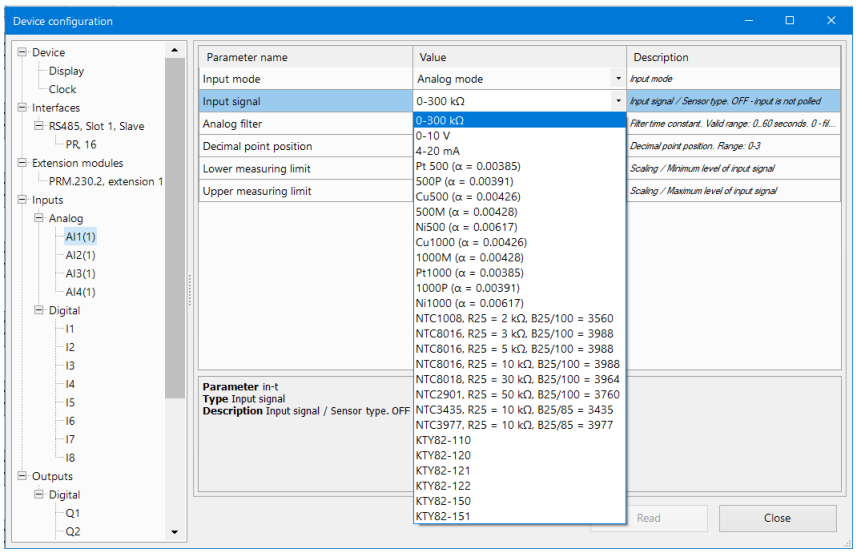


Fig. 5.4 Device configuration window

In ALP, select **Input signal** to choose a sensor type.

Table 5.1 AI configuration parameters

Parameter	Description
Input mode	AI mode selection: analog mode or digital mode
Analog mode configuration parameters	
Input signal	Selection of the input signal type from sensors: 0...300 kΩ 0...10 V 4...20 mA RTD and NTC/PTC digital DC signals

Parameter	Description
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. On the other hand, increasing the time constant value reduces the input channel bandwidth, thus resulting in a slower device response while processing fast changing analog input signals.
Decimal point position	Parameter Decimal point position (DP) for Modbus request
Lower measuring limit	Minimum level of the input signal
Upper measuring limit	Maximum level of the input signal
Digital mode configuration parameters	
LOW	Switching threshold from HIGH to LOW
HIGH	Switching threshold from LOW to HIGH

5.1.1 Analog mode

In order to ensure measuring the 4...20 mA current signals, each analog input channel of the device is equipped with the built-in 121 Ω shunt resistor.
The device supports scaling of the measured 0...10 V and 4...20 mA input signals by setting the lower and upper measuring limit parameters. Thus, as the scaling is applied, the measured input signals are displayed in initial units of input parameters measured by sensors, e.g. atm (kg/cm^2), kPa, etc. The lower and upper measuring limits should be set for each sensor.

– **Lower measuring limit** – minimum level of the sensor output signal
– **Upper measuring limit** – maximum level of the sensor output signal.

For the 4...20 mA input signals, parameter **Decimal point offset (DP)** has to be set to determine the accuracy, if the measured value is requested over Modbus as integer.
Please refer to the example below for the explanation of the signal scaling.

Example:
Given the following:
– the used sensor: 4...20 mA output pressure sensor having input measurement range of 0... 25 atm
– the “Lower measuring limit” parameter value set: 0.00
– the “Upper measuring limit” parameter value set: 25.00

The analog input signal is now measured to correspond to the unit of atm (see the figure below).

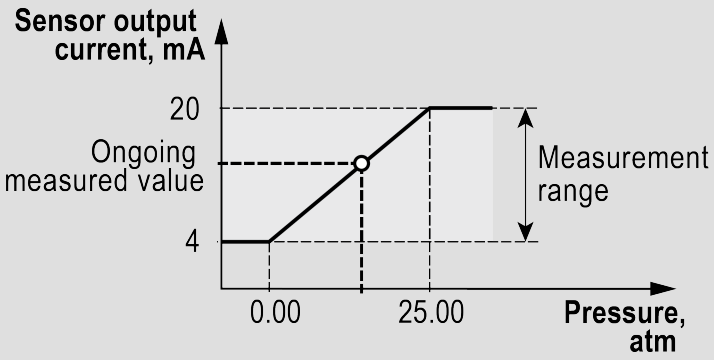


Fig. 5.5 Input signal scaling

The device is operating with absolute parameter values (FLOAT32) of parameters.
The resistive signals are measured by the 2-wire resistance measurement method, for this reason the additional measurement error caused by the resistance of sensor wires must be taken into account. The value of the additional measurement error depends on the used sensor type and the length of the sensor wires. A correction of the additional measurement error must be implied in the user program.

5.1.2 Digital mode

The input operates as a comparator with parameters ***LOW*** and ***HIGH*** which determine the hysteresis (see the figure).

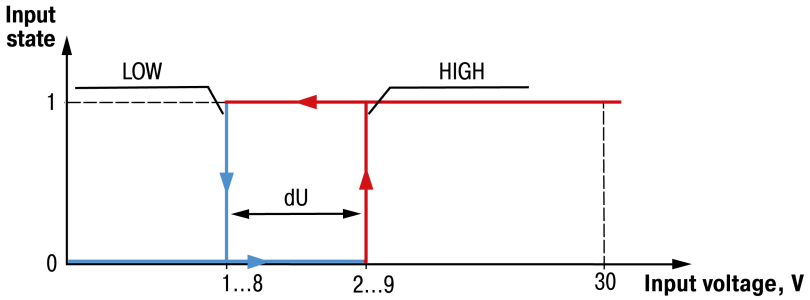


Fig. 5.6 Analog input, digital mode diagram

To avoid the ambiguity of determining the input state, parameter ***HIGH*** must be set higher than parameter ***LOW*** by at least 0.5 V.
The input state will not change if the input voltage is within the dU interval. The input state will change:

– from **LOW** to **HIGH** only if the input voltage reaches the parameter ***HIGH*** set value.
– from **HIGH** to **LOW** only if the input voltage reaches the parameter ***LOW*** set value.

5.1.3 Connected sensor error detection

In the analog mode, the device analog inputs ensure the detection of errors caused by sensors connected to the device. The sensor detection error codes are given in the table below.

Table 5.2 Sensor error codes

Input signal	Value	Description
0...300 kΩ	99 999 999	Broken circuit
RTD, NTC, PTC	9999	Computed value is above HIGH
	–9999	Computed value is below LOW

NOTE
Error detection for the 0…10 V and 4…20 mA input signals is not provided.

5.1.4 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.

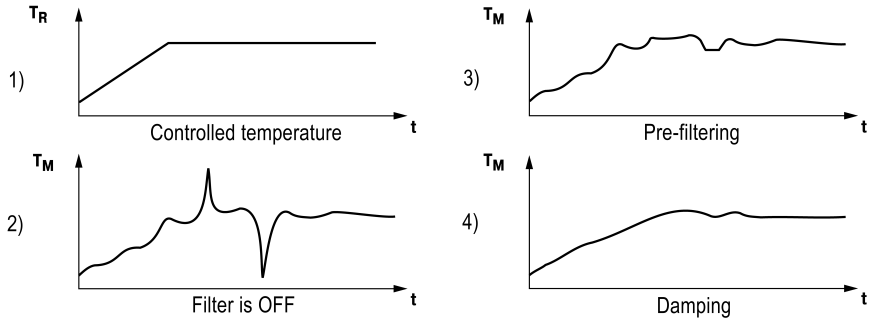


Fig. 5.7 Filter operation

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 Digital outputs

Safe state can be assigned to digital outputs of the PRM extension module (see the table below).

Table 5.3 Module DO configuration parameters

Parameter	Description
Safe state	The parameter is to assign an output state to the PRM extension module digital outputs when communication is lost. The setting is available in the **Device/Device configuration/Outputs** menu. Possible values: value “0” – DO is open value “1” – DO is closed value “2” – unchanged (DO remains unchanged)

5.3 Module status

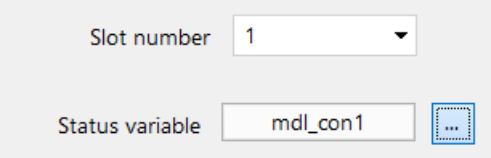


Fig. 5.8 Module status

Parameter	Description
Device status	Module connection status. This parameter 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

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 device 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 of the main device.

CAUTION
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.
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, 0-300 kΩ.
To calibrate input:

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

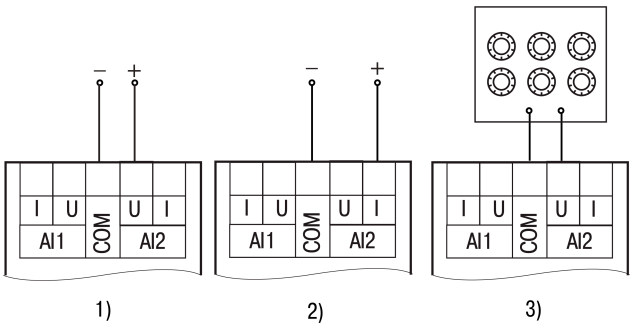


Fig. 7.1 Connection of the reference signal source to an input

2. Connect the module to the main device over an 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*).

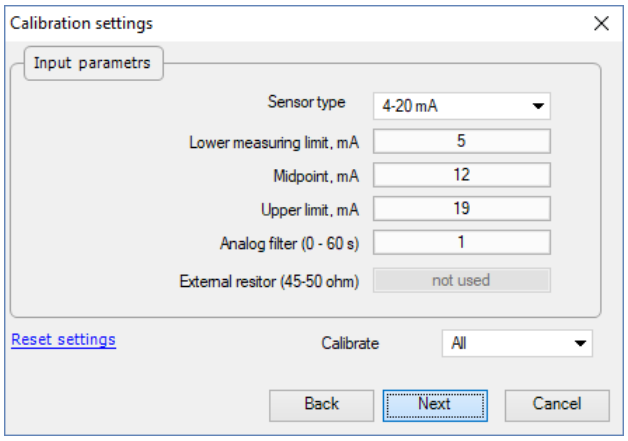


Fig. 7.2 Parameter configuration

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.

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

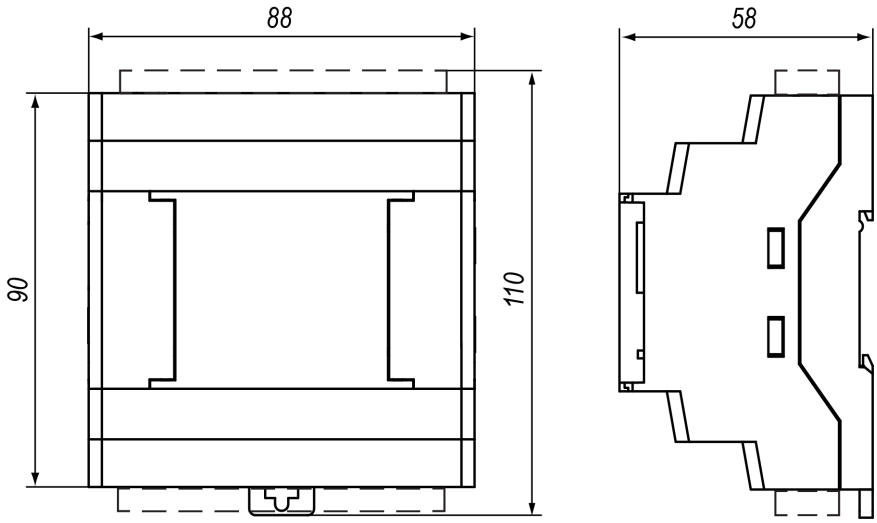


Fig. A.1

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
Unsigned 8	1	1	Unsigned integer
Float 32	2	4	Single-precision floating-point format

Table B.3 PRM-2 Modbus registers

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
PRM-230.2							
Slot 1							
Device status	PRM-230.2, slot 1	6768	0x1A70	1	3	-	Enum 2: 0 - Off 1 - On
Connection	PRM-230.2, slot 1	6769	0x1A71	1	3	-	Enum 6: 1 - Initialization 2 - Found 3 - Inappropriate module type 4 - Invalid FW version 5 - Operation
Input bitmask	Analog inputs	6760	0x1A68	1	3	-	Unsigned 8
Inversion bitmask	Analog inputs	6762	0x1A6A	1	3	16	Unsigned 8
Input mode	AI 1	6700	0x1A2C	1	3	16	Enum 2: 0 - Analog mode 1 - Digital mode
Debounce filter	Digital mode	6732	0x1A4C	1	3	16	Unsigned 8

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
LOW	Digital mode	6744	0x1A58	2	3	16	Float 32
HIGH	Digital mode	6736	0x1A50	2	3	16	Float 32
Input signal	Analog mode	6704	0x1A30	1	3	16	Enum 28: 0 – 0-300 kΩ 1 – 0-10 V 2 – 4-20 mA 3 – Pt500 (a = 0.00385) 4 - 500P (a = 0.00391) 5 – Cu500 (a = 0.00426) 6 – 500M (a = 0.00428) 7 – Ni 500 (a = 0.00617) 8 – Cu1000 (a = 0.00426) 9 – 1000M (a = 0.00428) 10 – Pt1000 (a = 0.00385) 11 – 1000P (a = 0.00391) 12 – Ni 1000 (a = 0.00617) 13 – NTC1008, R25 = 2 kΩ, B25/100 = 3560 14 – NTC8016, R25 = 3 kΩ, B25/100 = 3988 15 - NTC8016, R25 = 5 kΩ, B25/100 = 3988 16 - NTC8016, R25 = 10 kΩ, B25/100 = 3988 17 - NTC8018, R25 = 30 kΩ, B25/100 = 3964 18 – NTC2901, R25 = 50 kΩ, B25/100 = 3760 19 – NTC3435, R25 = 10 kΩ, B25/85 = 3435 20 – NTC3977, R25 = 10 kΩ, B25/85 = 3977 21 – KTY82-110 22 – KTY82-120 23 – KTY82-121 24 – KTY82-122 25 – KTY82-150

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
							26 – KTY82-151 27 – KTY82-152
Analog filter	Analog mode	6724	0x1A44	2	3	16	Float 32
Lower measuring limit	Analog mode	6716	0x1A3C	2	3	16	Float 32
Upper measuring limit	Analog mode	6708	0x1A34	2	3	16	Float 32
Input mode	AI 2	6701	0x1A2D	1	3	16	Enum 2: 0 - Analog mode 1 - Digital mode
Debounce filter	Digital mode	6733	0x1A4D	1	3	16	Unsigned 8
LOW	Digital mode	6746	0x1A5A	2	3	16	Float 32
HIGH	Digital mode	6738	0x1A52	2	3	16	Float 32
Input signal	Analog mode	6705	0x1A31	1	3	16	Enum 28: 0 – 0-300 kΩ 1 – 0-10 V 2 – 4-20 mA 3 – Pt500 (a = 0.00385) 4 - 500P (a = 0.00391) 5 – Cu500 (a = 0.00426) 6 – 500M (a = 0.00428) 7 – Ni 500 (a = 0.00617) 8 – Cu1000 (a = 0.00426) 9 – 1000M (a = 0.00428) 10 – Pt1000 (a = 0.00385) 11 – 1000P (a = 0.00391) 12 – Ni 1000 (a = 0.00617) 13 – NTC1008, R25 = 2 kΩ, B25/100 = 3560 14 – NTC8016, R25 = 3 kΩ, B25/100 = 3988 15 - NTC8016, R25 = 5 kΩ, B25/100 = 3988

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
							16 - NTC8016, R25 = 10 kΩ, B25/100 = 3988 17 - NTC8018, R25 = 30 kΩ, B25/100 = 3964 18 – NTC2901, R25 = 50 kΩ, B25/100 = 3760 19 – NTC3435, R25 = 10 kΩ, B25/85 = 3435 20 – NTC3977, R25 = 10 kΩ, B25/85 = 3977 21 – KTY82-110 22 – KTY82-120 23 – KTY82-121 24 – KTY82-122 25 – KTY82-150 26 – KTY82-151 27 – KTY82-152
Analog filter	Analog mode	6726	0x1A46	2	3	16	Float 32
Lower measuring limit	Analog mode	6718	0x1A3E	2	3	16	Float 32
Upper measuring limit	Analog mode	6710	0x1A36	2	3	16	Float 32
Input mode	AI 3	6702	0x1A2E	1	3	16	Enum 2
Debounce filter	Digital mode	6734	0x1A4E	1	3	16	Unsigned 8
LOW	Digital mode	6748	0x1A5C	2	3	16	Float 32
HIGH	Digital mode	6740	0x1A54	2	3	16	Float 32
Input signal	Analog mode	6706	0x1A32	1	3	16	Enum 28: 0 – 0-300 kΩ 1 – 0-10 V 2 – 4-20 mA 3 – Pt500 (a = 0.00385) 4 - 500P (a = 0.00391) 5 – Cu500 (a = 0.00426) 6 – 500M (a = 0.00428) 7 – Ni 500 (a = 0.00617) 8 – Cu1000 (a = 0.00426)

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
							9 – 1000M (a = 0.00428) 10 – Pt1000 (a = 0.00385) 11 – 1000P (a = 0.00391) 12 – Ni 1000 (a = 0.00617) 13 – NTC1008, R25 = 2 kΩ, B25/100 = 3560 14 – NTC8016, R25 = 3 kΩ, B25/100 = 3988 15 - NTC8016, R25 = 5 kΩ, B25/100 = 3988 16 - NTC8016, R25 = 10 kΩ, B25/100 = 3988 17 - NTC8018, R25 = 30 kΩ, B25/100 = 3964 18 – NTC2901, R25 = 50 kΩ, B25/100 = 3760 19 – NTC3435, R25 = 10 kΩ, B25/85 = 3435 20 – NTC3977, R25 = 10 kΩ, B25/85 = 3977 21 – KTY82-110 22 – KTY82-120 23 – KTY82-121 24 – KTY82-122 25 – KTY82-150 26 – KTY82-151 27 – KTY82-152
Analog filter	Analog mode	6728	0x1A48	2	3	16	Float 32
Lower measuring limit	Analog mode	6720	0x1A40	2	3	16	Float 32
Upper measuring limit	Analog mode	6712	0x1A38	2	3	16	Float 32
Input mode	AI 4	6703	0x1A2F	1	3	16	Enum 2: 0 - Analog mode 1 - Digital mode
Debounce filter	Digital mode	6735	0x1A4F	1	3	16	Unsigned 8
LOW	Digital mode	6750	0x1A5E	2	3	16	Float 32

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
HIGH	Digital mode	6742	0x1A56	2	3	16	Float 32
Input signal	Analog mode	6707	0x1A33	1	3	16	Enum 28: 0 – 0-300 kΩ 1 – 0-10 V 2 – 4-20 mA 3 – Pt500 (a = 0.00385) 4 - 500P (a = 0.00391) 5 – Cu500 (a = 0.00426) 6 – 500M (a = 0.00428) 7 – Ni 500 (a = 0.00617) 8 – Cu1000 (a = 0.00426) 9 – 1000M (a = 0.00428) 10 – Pt1000 (a = 0.00385) 11 – 1000P (a = 0.00391) 12 – Ni 1000 (a = 0.00617) 13 – NTC1008, R25 = 2 kΩ, B25/100 = 3560 14 – NTC8016, R25 = 3 kΩ, B25/100 = 3988 15 - NTC8016, R25 = 5 kΩ, B25/100 = 3988 16 - NTC8016, R25 = 10 kΩ, B25/100 = 3988 17 - NTC8018, R25 = 30 kΩ, B25/100 = 3964 18 – NTC2901, R25 = 50 kΩ, B25/100 = 3760 19 – NTC3435, R25 = 10 kΩ, B25/85 = 3435 20 – NTC3977, R25 = 10 kΩ, B25/85 = 3977 21 – KTY82-110 22 – KTY82-120 23 – KTY82-121 24 – KTY82-122 25 – KTY82-150 26 – KTY82-151 27 – KTY82-152

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
Analog filter	Analog mode	6730	0x1A4A	2	3	16	Float 32
Lower measuring limit	Analog mode	6722	0x1A42	2	3	16	Float 32
Upper measuring limit	Analog mode	6714	0x1A3A	2	3	16	Float 32
AI 1	Measured values	6752	0x1A60	2	3	-	Float 32
AI 2	Measured values	6754	0x1A62	2	3	-	Float 32
AI 3	Measured values	6756	0x1A64	2	3	-	Float 32
AI 4	Measured values	6758	0x1A66	2	3	-	Float 32
New output bitmask	Digital outputs	6767	0x1A6F	1	3	16	Unsigned 8
DO 1	Safe state	6763	0x1A6B	1	3	16	Enum 3: 0 - open 1 - closed 2 - unchanged
DO 2	Safe state	6764	0x1A6C	1	3	16	Enum 3: 0 - open 1 - closed 2 - unchanged
DO 3	Safe state	6765	0x1A6D	1	3	16	Enum 3: 0 - open 1 - closed 2 - unchanged
DO 4	Safe state	6766	0x1A6E	1	3	16	Enum 3: 0 - open 1 - closed 2 - unchanged
Slot 2							
Device status	PRM-230.2, slot 2	6838	0x1AB6	1	3	-	Enum 2: 0 - Off 1 - On
Connection	PRM-230.2, slot 2	6839	0x1AB7	1	3	-	Enum 6: 1 - Initialization 2 - Found 3 - Inappropriate module type 4 - Invalid FW version 5 - Operation
Input bitmask	Analog inputs	6830	0x1AAE	1	3	-	Unsigned 8

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
Inversion bitmask	Analog inputs	6832	0x1AB0	1	3	16	Unsigned 8
Input mode	AI 1	6770	0x1A72	1	3	16	Enum 2: 0 - Analog mode 1 - Digital mode
Debounce filter	Digital mode	6802	0x1A92	1	3	16	Unsigned 8
LOW	Digital mode	6814	0x1A9E	2	3	16	Float 32
HIGH	Digital mode	6806	0x1A96	2	3	16	Float 32
Input signal	Analog mode	6774	0x1A76	1	3	16	Enum 28: 0 – 0-300 kΩ 1 – 0-10 V 2 – 4-20 mA 3 – Pt500 (a = 0.00385) 4 - 500P (a = 0.00391) 5 – Cu500 (a = 0.00426) 6 – 500M (a = 0.00428) 7 – Ni 500 (a = 0.00617) 8 – Cu1000 (a = 0.00426) 9 – 1000M (a = 0.00428) 10 – Pt1000 (a = 0.00385) 11 – 1000P (a = 0.00391) 12 – Ni 1000 (a = 0.00617) 13 – NTC1008, R25 = 2 kΩ, B25/100 = 3560 14 – NTC8016, R25 = 3 kΩ, B25/100 = 3988 15 - NTC8016, R25 = 5 kΩ, B25/100 = 3988 16 - NTC8016, R25 = 10 kΩ, B25/100 = 3988 17 - NTC8018, R25 = 30 kΩ, B25/100 = 3964 18 – NTC2901, R25 = 50 kΩ, B25/100 = 3760

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
							19 – NTC3435, R25 = 10 kΩ, B25/85 = 3435 20 – NTC3977, R25 = 10 kΩ, B25/85 = 3977 21 – KTY82-110 22 – KTY82-120 23 – KTY82-121 24 – KTY82-122 25 – KTY82-150 26 – KTY82-151 27 – KTY82-152
Analog filter	Analog mode	6794	0x1A8A	2	3	16	Float 32
Lower measuring limit	Analog mode	6786	0x1A82	2	3	16	Float 32
Upper measuring limit	Analog mode	6778	0x1A7A	2	3	16	Float 32
Input mode	AI 2	6771	0x1A73	1	3	16	Enum 2: 0 - Analog mode 1 - Digital mode
Debounce filter	Digital mode	6803	0x1A93	1	3	16	Unsigned 8
LOW	Digital mode	6816	0x1AA0	2	3	16	Float 32
HIGH	Digital mode	6808	0x1A98	2	3	16	Float 32
Input signal	Analog mode	6775	0x1A77	1	3	16	Enum 28: 0 – 0-300 kΩ 1 – 0-10 V 2 – 4-20 mA 3 – Pt500 (a = 0.00385) 4 - 500P (a = 0.00391) 5 – Cu500 (a = 0.00426) 6 – 500M (a = 0.00428) 7 – Ni 500 (a = 0.00617) 8 – Cu1000 (a = 0.00426) 9 – 1000M (a = 0.00428) 10 – Pt1000 (a = 0.00385) 11 – 1000P (a = 0.00391)

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
							12 – Ni 1000 (a = 0.00617) 13 – NTC1008, R25 = 2 kΩ, B25/100 = 3560 14 – NTC8016, R25 = 3 kΩ, B25/100 = 3988 15 - NTC8016, R25 = 5 kΩ, B25/100 = 3988 16 - NTC8016, R25 = 10 kΩ, B25/100 = 3988 17 - NTC8018, R25 = 30 kΩ, B25/100 = 3964 18 – NTC2901, R25 = 50 kΩ, B25/100 = 3760 19 – NTC3435, R25 = 10 kΩ, B25/85 = 3435 20 – NTC3977, R25 = 10 kΩ, B25/85 = 3977 21 – KTY82-110 22 – KTY82-120 23 – KTY82-121 24 – KTY82-122 25 – KTY82-150 26 – KTY82-151 27 – KTY82-152
Analog filter	Analog mode	6796	0x1A8C	2	3	16	Float 32
Lower measuring limit	Analog mode	6788	0x1A84	2	3	16	Float 32
Upper measuring limit	Analog mode	6780	0x1A7C	2	3	16	Float 32
Input mode	AI 3	6772	0x1A74	1	3	16	Enum 2: 0 - Analog mode 1 - Digital mode
Debounce filter	Digital mode	6804	0x1A94	1	3	16	Unsigned 8
LOW	Digital mode	6818	0x1AA2	2	3	16	Float 32
HIGH	Digital mode	6810	0x1A9A	2	3	16	Float 32
Input signal	Analog mode	6776	0x1A78	1	3	16	Enum 28

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
Analog filter	Analog mode	6798	0x1A8E	2	3	16	Float 32
Lower measuring limit	Analog mode	6790	0x1A86	2	3	16	Float 32
Upper measuring limit	Analog mode	6782	0x1A7E	2	3	16	Float 32
Input mode	AI 4	6773	0x1A75	1	3	16	Enum 2: 0 - Analog mode 1 - Digital mode
Debounce filter	Digital mode	6805	0x1A95	1	3	16	Unsigned 8
LOW	Digital mode	6820	0x1AA4	2	3	16	Float 32
HIGH	Digital mode	6812	0x1A9C	2	3	16	Float 32
Input signal	Analog mode	6777	0x1A79	1	3	16	Enum 28: 0 – 0-300 kΩ 1 – 0-10 V 2 – 4-20 mA 3 – Pt500 (a = 0.00385) 4 - 500P (a = 0.00391) 5 – Cu500 (a = 0.00426) 6 – 500M (a = 0.00428) 7 – Ni 500 (a = 0.00617) 8 – Cu1000 (a = 0.00426) 9 – 1000M (a = 0.00428) 10 – Pt1000 (a = 0.00385) 11 – 1000P (a = 0.00391) 12 – Ni 1000 (a = 0.00617) 13 – NTC1008, R25 = 2 kΩ, B25/100 = 3560 14 – NTC8016, R25 = 3 kΩ, B25/100 = 3988 15 - NTC8016, R25 = 5 kΩ, B25/100 = 3988 16 - NTC8016, R25 = 10 kΩ, B25/100 = 3988

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
							17 - NTC8018, R25 = 30 kΩ, B25/100 = 3964 18 – NTC2901, R25 = 50 kΩ, B25/100 = 3760 19 – NTC3435, R25 = 10 kΩ, B25/85 = 3435 20 – NTC3977, R25 = 10 kΩ, B25/85 = 3977 21 – KTY82-110 22 – KTY82-120 23 – KTY82-121 24 – KTY82-122 25 – KTY82-150 26 – KTY82-151 27 – KTY82-152
Analog filter	Analog mode	6800	0x1A90	2	3	16	Float 32
Lower measuring limit	Analog mode	6792	0x1A88	2	3	16	Float 32
Upper measuring limit	Analog mode	6784	0x1A80	2	3	16	Float 32
AI 1	Measured values	6822	0x1AA6	2	3	-	Float 32
AI 2	Measured values	6824	0x1AA8	2	3	-	Float 32
AI 3	Measured values	6826	0x1AAA	2	3	-	Float 32
AI 4	Measured values	6828	0x1AAC	2	3	-	Float 32
New output bitmask	Digital outputs	6837	0x1AB5	1	3	16	Unsigned 8
DO 1	Safe state	6833	0x1AB1	1	3	16	Enum 3: 0 - open 1 - closed 2 - unchanged
DO 2	Safe state	6834	0x1AB2	1	3	16	Enum 3: 0 - open 1 - closed 2 - unchanged
DO 3	Safe state	6835	0x1AB3	1	3	16	Enum 3: 0 - open 1 - closed 2 - unchanged
DO 4	Safe state	6836	0x1AB4	1	3	16	Enum 3:

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
							0 - open 1 - closed 2 - unchanged
PRM-24.2							
Slot 1							
Device status	PRM-24.2, slot 1	6768	0x1A70	1	3	-	Enum 2: 0 - Off 1 - On
Connection	PRM-24.2, slot 1	6769	0x1A71	1	3	-	Enum 6: 1 - Initialization 2 - Found 3 - Inappropriate module type 4 - Invalid FW version 5 - Operation
Input bitmask	Analog inputs	6760	0x1A68	1	3	-	Unsigned 8
Inversion bitmask	Analog inputs	6762	0x1A6A	1	3	16	Unsigned 8
Input mode	AI 1	6700	0x1A2C	1	3	16	Enum 2: 0 - Analog mode 1 - Digital mode
Debounce filter	Digital mode	6732	0x1A4C	1	3	16	Unsigned 8
LOW	Digital mode	6744	0x1A58	2	3	16	Float 32
HIGH	Digital mode	6736	0x1A50	2	3	16	Float 32
Input signal	Analog mode	6704	0x1A30	1	3	16	Enum 28: 0 – 0-300 kΩ 1 – 0-10 V 2 – 4-20 mA 3 – Pt500 (a = 0.00385) 4 - 500P (a = 0.00391) 5 – Cu500 (a = 0.00426) 6 – 500M (a = 0.00428) 7 – Ni 500 (a = 0.00617) 8 – Cu1000 (a = 0.00426) 9 – 1000M (a = 0.00428) 10 – Pt1000 (a = 0.00385)

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
							11 – 1000P (a = 0.00391) 12 – Ni 1000 (a = 0.00617) 13 – NTC1008, R25 = 2 kΩ, B25/100 = 3560 14 – NTC8016, R25 = 3 kΩ, B25/100 = 3988 15 - NTC8016, R25 = 5 kΩ, B25/100 = 3988 16 - NTC8016, R25 = 10 kΩ, B25/100 = 3988 17 - NTC8018, R25 = 30 kΩ, B25/100 = 3964 18 – NTC2901, R25 = 50 kΩ, B25/100 = 3760 19 – NTC3435, R25 = 10 kΩ, B25/85 = 3435 20 – NTC3977, R25 = 10 kΩ, B25/85 = 3977 21 – KTY82-110 22 – KTY82-120 23 – KTY82-121 24 – KTY82-122 25 – KTY82-150 26 – KTY82-151 27 – KTY82-152
Analog filter	Analog mode	6724	0x1A44	2	3	16	Float 32
Lower measuring limit	Analog mode	6716	0x1A3C	2	3	16	Float 32
Upper measuring limit	Analog mode	6708	0x1A34	2	3	16	Float 32
Input mode	AI 2	6701	0x1A2D	1	3	16	Enum 2: 0 - Analog mode 1 - Digital mode
Debounce filter	Digital mode	6733	0x1A4D	1	3	16	Unsigned 8
LOW	Digital mode	6746	0x1A5A	2	3	16	Float 32
HIGH	Digital mode	6738	0x1A52	2	3	16	Float 32

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
Input signal	Analog mode	6705	0x1A31	1	3	16	Enum 28: 0 – 0-300 kΩ 1 – 0-10 V 2 – 4-20 mA 3 – Pt500 (a = 0.00385) 4 - 500P (a = 0.00391) 5 – Cu500 (a = 0.00426) 6 – 500M (a = 0.00428) 7 – Ni 500 (a = 0.00617) 8 – Cu1000 (a = 0.00426) 9 – 1000M (a = 0.00428) 10 – Pt1000 (a = 0.00385) 11 – 1000P (a = 0.00391) 12 – Ni 1000 (a = 0.00617) 13 – NTC1008, R25 = 2 kΩ, B25/100 = 3560 14 – NTC8016, R25 = 3 kΩ, B25/100 = 3988 15 - NTC8016, R25 = 5 kΩ, B25/100 = 3988 16 - NTC8016, R25 = 10 kΩ, B25/100 = 3988 17 - NTC8018, R25 = 30 kΩ, B25/100 = 3964 18 – NTC2901, R25 = 50 kΩ, B25/100 = 3760 19 – NTC3435, R25 = 10 kΩ, B25/85 = 3435 20 – NTC3977, R25 = 10 kΩ, B25/85 = 3977 21 – KTY82-110 22 – KTY82-120 23 – KTY82-121 24 – KTY82-122 25 – KTY82-150 26 – KTY82-151 27 – KTY82-152
Analog filter	Analog mode	6726	0x1A46	2	3	16	Float 32

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
Lower measuring limit	Analog mode	6718	0x1A3E	2	3	16	Float 32
Upper measuring limit	Analog mode	6710	0x1A36	2	3	16	Float 32
Input mode	AI 3	6702	0x1A2E	1	3	16	Enum 2: 0 - Analog mode 1 - Digital mode
Debounce filter	Digital mode	6734	0x1A4E	1	3	16	Unsigned 8
LOW	Digital mode	6748	0x1A5C	2	3	16	Float 32
HIGH	Digital mode	6740	0x1A54	2	3	16	Float 32
Input signal	Analog mode	6706	0x1A32	1	3	16	Enum 28: 0 – 0-300 kΩ 1 – 0-10 V 2 – 4-20 mA 3 – Pt500 (a = 0.00385) 4 - 500P (a = 0.00391) 5 – Cu500 (a = 0.00426) 6 – 500M (a = 0.00428) 7 – Ni 500 (a = 0.00617) 8 – Cu1000 (a = 0.00426) 9 – 1000M (a = 0.00428) 10 – Pt1000 (a = 0.00385) 11 – 1000P (a = 0.00391) 12 – Ni 1000 (a = 0.00617) 13 – NTC1008, R25 = 2 kΩ, B25/100 = 3560 14 – NTC8016, R25 = 3 kΩ, B25/100 = 3988 15 - NTC8016, R25 = 5 kΩ, B25/100 = 3988 16 - NTC8016, R25 = 10 kΩ, B25/100 = 3988 17 - NTC8018, R25 = 30 kΩ, B25/100 = 3964 18 –

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
							NTC2901, R25 = 50 kΩ, B25/100 = 3760 19 – NTC3435, R25 = 10 kΩ, B25/85 = 3435 20 – NTC3977, R25 = 10 kΩ, B25/85 = 3977 21 – KTY82-110 22 – KTY82-120 23 – KTY82-121 24 – KTY82-122 25 – KTY82-150 26 – KTY82-151 27 – KTY82-152
Analog filter	Analog mode	6728	0x1A48	2	3	16	Float 32
Lower measuring limit	Analog mode	6720	0x1A40	2	3	16	Float 32
Upper measuring limit	Analog mode	6712	0x1A38	2	3	16	Float 32
Input mode	AI 4	6703	0x1A2F	1	3	16	Enum 2: 0 - Analog mode 1 - Digital mode
Debounce filter	Digital mode	6735	0x1A4F	1	3	16	Unsigned 8
LOW	Digital mode	6750	0x1A5E	2	3	16	Float 32
HIGH	Digital mode	6742	0x1A56	2	3	16	Float 32
Input signal	Analog mode	6707	0x1A33	1	3	16	Enum 28: 0 – 0-300 kΩ 1 – 0-10 V 2 – 4-20 mA 3 – Pt500 (a = 0.00385) 4 - 500P (a = 0.00391) 5 – Cu500 (a = 0.00426) 6 – 500M (a = 0.00428) 7 – Ni 500 (a = 0.00617) 8 – Cu1000 (a = 0.00426) 9 – 1000M (a = 0.00428) 10 – Pt1000 (a = 0.00385)

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
							11 – 1000P (a = 0.00391) 12 – Ni 1000 (a = 0.00617) 13 – NTC1008, R25 = 2 kΩ, B25/100 = 3560 14 – NTC8016, R25 = 3 kΩ, B25/100 = 3988 15 - NTC8016, R25 = 5 kΩ, B25/100 = 3988 16 - NTC8016, R25 = 10 kΩ, B25/100 = 3988 17 - NTC8018, R25 = 30 kΩ, B25/100 = 3964 18 – NTC2901, R25 = 50 kΩ, B25/100 = 3760 19 – NTC3435, R25 = 10 kΩ, B25/85 = 3435 20 – NTC3977, R25 = 10 kΩ, B25/85 = 3977 21 – KTY82-110 22 – KTY82-120 23 – KTY82-121 24 – KTY82-122 25 – KTY82-150 26 – KTY82-151 27 – KTY82-152
Analog filter	Analog mode	6730	0x1A4A	2	3	16	Float 32
Lower measuring limit	Analog mode	6722	0x1A42	2	3	16	Float 32
Upper measuring limit	Analog mode	6714	0x1A3A	2	3	16	Float 32
AI 1	Measured values	6752	0x1A60	2	3	-	Float 32
AI 2	Measured values	6754	0x1A62	2	3	-	Float 32
AI 3	Measured values	6756	0x1A64	2	3	-	Float 32
AI 4	Measured values	6758	0x1A66	2	3	-	Float 32
New output bitmask	Digital outputs	6767	0x1A6F	1	3	16	Unsigned 8

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
DO 1	Safe state	6763	0x1A6B	1	3	16	Enum 3: 0 - open 1 - closed 2 - unchanged
DO 2	Safe state	6764	0x1A6C	1	3	16	Enum 3: 0 - open 1 - closed 2 - unchanged
DO 3	Safe state	6765	0x1A6D	1	3	16	Enum 3: 0 - open 1 - closed 2 - unchanged
DO 4	Safe state	6766	0x1A6E	1	3	16	Enum 3: 0 - open 1 - closed 2 - unchanged
Slot 2							
Device status	PRM-24.2, slot 2	6838	0x1AB6	1	3	-	Enum 2: 0 - Off 1 - On
Connection	PRM-24.2, slot 2	6839	0x1AB7	1	3	-	Enum 6: 1 - Initialization 2 - Found 3 - Inappropriate module type 4 - Invalid FW version 5 - Operation
Input bitmask	Analog inputs	6830	0x1AAE	1	3	-	Unsigned 8
Inversion bitmask	Analog inputs	6832	0x1AB0	1	3	16	Unsigned 8
Input mode	AI 1	6770	0x1A72	1	3	16	Enum 2: 0 - Analog mode 1 - Digital mode
Debounce filter	Digital mode	6802	0x1A92	1	3	16	Unsigned 8
LOW	Digital mode	6814	0x1A9E	2	3	16	Float 32
HIGH	Digital mode	6806	0x1A96	2	3	16	Float 32
Input signal	Analog mode	6774	0x1A76	1	3	16	Enum 28: 0 – 0-300 kΩ 1 – 0-10 V 2 – 4-20 mA 3 – Pt500 (a = 0.00385)

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
							4 - 500P (a = 0.00391) 5 – Cu500 (a = 0.00426) 6 – 500M (a = 0.00428) 7 – Ni 500 (a = 0.00617) 8 – Cu1000 (a = 0.00426) 9 – 1000M (a = 0.00428) 10 – Pt1000 (a = 0.00385) 11 – 1000P (a = 0.00391) 12 – Ni 1000 (a = 0.00617) 13 – NTC1008, R25 = 2 kΩ, B25/100 = 3560 14 – NTC8016, R25 = 3 kΩ, B25/100 = 3988 15 - NTC8016, R25 = 5 kΩ, B25/100 = 3988 16 - NTC8016, R25 = 10 kΩ, B25/100 = 3988 17 - NTC8018, R25 = 30 kΩ, B25/100 = 3964 18 – NTC2901, R25 = 50 kΩ, B25/100 = 3760 19 – NTC3435, R25 = 10 kΩ, B25/85 = 3435 20 – NTC3977, R25 = 10 kΩ, B25/85 = 3977 21 – KTY82-110 22 – KTY82-120 23 – KTY82-121 24 – KTY82-122 25 – KTY82-150 26 – KTY82-151 27 – KTY82-152
Analog filter	Analog mode	6794	0x1A8A	2	3	16	Float 32
Lower measuring limit	Analog mode	6786	0x1A82	2	3	16	Float 32

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
Upper measuring limit	Analog mode	6778	0x1A7A	2	3	16	Float 32
Input mode	AI 2	6771	0x1A73	1	3	16	Enum 2: 0 - Analog mode 1 - Digital mode
Debounce filter	Digital mode	6803	0x1A93	1	3	16	Unsigned 8
LOW	Digital mode	6816	0x1AA0	2	3	16	Float 32
HIGH	Digital mode	6808	0x1A98	2	3	16	Float 32
Input signal	Analog mode	6775	0x1A77	1	3	16	Enum 28: 0 – 0-300 kΩ 1 – 0-10 V 2 – 4-20 mA 3 – Pt500 (a = 0.00385) 4 - 500P (a = 0.00391) 5 – Cu500 (a = 0.00426) 6 – 500M (a = 0.00428) 7 – Ni 500 (a = 0.00617) 8 – Cu1000 (a = 0.00426) 9 – 1000M (a = 0.00428) 10 – Pt1000 (a = 0.00385) 11 – 1000P (a = 0.00391) 12 – Ni 1000 (a = 0.00617) 13 – NTC1008, R25 = 2 kΩ, B25/100 = 3560 14 – NTC8016, R25 = 3 kΩ, B25/100 = 3988 15 - NTC8016, R25 = 5 kΩ, B25/100 = 3988 16 - NTC8016, R25 = 10 kΩ, B25/100 = 3988 17 - NTC8018, R25 = 30 kΩ, B25/100 = 3964 18 – NTC2901, R25 = 50 kΩ, B25/100 = 3760

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
							19 – NTC3435, R25 = 10 kΩ, B25/85 = 3435 20 – NTC3977, R25 = 10 kΩ, B25/85 = 3977 21 – KTY82-110 22 – KTY82-120 23 – KTY82-121 24 – KTY82-122 25 – KTY82-150 26 – KTY82-151 27 – KTY82-152
Analog filter	Analog mode	6796	0x1A8C	2	3	16	Float 32
Lower measuring limit	Analog mode	6788	0x1A84	2	3	16	Float 32
Upper measuring limit	Analog mode	6780	0x1A7C	2	3	16	Float 32
Input mode	AI 3	6772	0x1A74	1	3	16	Enum 2: 0 - Analog mode 1 - Digital mode
Debounce filter	Digital mode	6804	0x1A94	1	3	16	Unsigned 8
LOW	Digital mode	6818	0x1AA2	2	3	16	Float 32
HIGH	Digital mode	6810	0x1A9A	2	3	16	Float 32
Input signal	Analog mode	6776	0x1A78	1	3	16	Enum 28: 0 – 0-300 kΩ 1 – 0-10 V 2 – 4-20 mA 3 – Pt500 (a = 0.00385) 4 - 500P (a = 0.00391) 5 – Cu500 (a = 0.00426) 6 – 500M (a = 0.00428) 7 – Ni 500 (a = 0.00617) 8 – Cu1000 (a = 0.00426) 9 – 1000M (a = 0.00428) 10 – Pt1000 (a = 0.00385) 11 – 1000P (a = 0.00391)

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
							12 – Ni 1000 (a = 0.00617) 13 – NTC1008, R25 = 2 kΩ, B25/100 = 3560 14 – NTC8016, R25 = 3 kΩ, B25/100 = 3988 15 - NTC8016, R25 = 5 kΩ, B25/100 = 3988 16 - NTC8016, R25 = 10 kΩ, B25/100 = 3988 17 - NTC8018, R25 = 30 kΩ, B25/100 = 3964 18 – NTC2901, R25 = 50 kΩ, B25/100 = 3760 19 – NTC3435, R25 = 10 kΩ, B25/85 = 3435 20 – NTC3977, R25 = 10 kΩ, B25/85 = 3977 21 – KTY82-110 22 – KTY82-120 23 – KTY82-121 24 – KTY82-122 25 – KTY82-150 26 – KTY82-151 27 – KTY82-152
Analog filter	Analog mode	6798	0x1A8E	2	3	16	Float 32
Lower measuring limit	Analog mode	6790	0x1A86	2	3	16	Float 32
Upper measuring limit	Analog mode	6782	0x1A7E	2	3	16	Float 32
Input mode	AI 4	6773	0x1A75	1	3	16	Enum 2: 0 - Analog mode 1 - Digital mode
Debounce filter	Digital mode	6805	0x1A95	1	3	16	Unsigned 8
LOW	Digital mode	6820	0x1AA4	2	3	16	Float 32
HIGH	Digital mode	6812	0x1A9C	2	3	16	Float 32
Input signal	Analog mode	6777	0x1A79	1	3	16	Enum 28: 0 – 0-300 kΩ 1 – 0-10 V

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
							2 – 4-20 mA 3 – Pt500 (a = 0.00385) 4 - 500P (a = 0.00391) 5 – Cu500 (a = 0.00426) 6 – 500M (a = 0.00428) 7 – Ni 500 (a = 0.00617) 8 – Cu1000 (a = 0.00426) 9 – 1000M (a = 0.00428) 10 – Pt1000 (a = 0.00385) 11 – 1000P (a = 0.00391) 12 – Ni 1000 (a = 0.00617) 13 – NTC1008, R25 = 2 kΩ, B25/100 = 3560 14 – NTC8016, R25 = 3 kΩ, B25/100 = 3988 15 - NTC8016, R25 = 5 kΩ, B25/100 = 3988 16 - NTC8016, R25 = 10 kΩ, B25/100 = 3988 17 - NTC8018, R25 = 30 kΩ, B25/100 = 3964 18 – NTC2901, R25 = 50 kΩ, B25/100 = 3760 19 – NTC3435, R25 = 10 kΩ, B25/85 = 3435 20 – NTC3977, R25 = 10 kΩ, B25/85 = 3977 21 – KTY82-110 22 – KTY82-120 23 – KTY82-121 24 – KTY82-122 25 – KTY82-150 26 – KTY82-151 27 – KTY82-152
Analog filter	Analog mode	6800	0x1A90	2	3	16	Float 32
Lower measuring limit	Analog mode	6792	0x1A88	2	3	16	Float 32

Name	Description	Address (DEC)	Address (HEX)	Number of registers	Read function	Write function	Data type
Upper measuring limit	Analog mode	6784	0x1A80	2	3	16	Float 32
AI 1	Measured values	6822	0x1AA6	2	3	-	Float 32
AI 2	Measured values	6824	0x1AA8	2	3	-	Float 32
AI 3	Measured values	6826	0x1AAA	2	3	-	Float 32
AI 4	Measured values	6828	0x1AAC	2	3	-	Float 32
New output bitmask	Digital outputs	6837	0x1AB5	1	3	16	Unsigned 8
DO 1	Safe state	6833	0x1AB1	1	3	16	Enum 3: 0 - open 1 - closed 2 - unchanged
DO 2	Safe state	6834	0x1AB2	1	3	16	Enum 3: 0 - open 1 - closed 2 - unchanged
DO 3	Safe state	6835	0x1AB3	1	3	16	Enum 3: 0 - open 1 - closed 2 - unchanged
DO 4	Safe state	6836	0x1AB4	1	3	16	Enum 3: 0 - open 1 - closed 2 - unchanged