POSITAL
FRABA

DIMOD-A DISPLAY COUNTER

Electronic Display for Sensors with Analog Output

DiMod-A is a programmable electronic display designed for IXARC, LINARIX and TILTIX sensors with analog outputs (0…10 V or 0(4)…20 mA). The display has two analog inputs in order to connecting two sensors with one output or one sensor with two outputs (e.g. TILTIX 2-axis sensor) – measured values can be displayed alternately. DiMod-A has scaling function – signal 0…10 V, 0…20 mA or 4…20 mA can be converted to SI unit (mm, m, deg, …). Typical application for DiMod with analog encoder: measuring the position and setting up a pre-programmed alarm.

- Dedicated for sensors with analog output
- 2 measuring channels (0…10 V or 0(4)…20 mA)
- Scaling function (from V/mA to SI units)
- Green LED display
- 2 alarm LED lights (status of outputs)
- 2 programmable relay outputs
- RS-485 (MODBUS RTU)
- User-friendly menu (all parameters configurable from menu; password locking function)

User Manual

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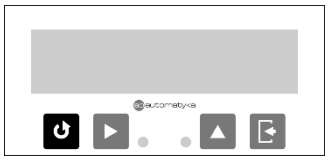
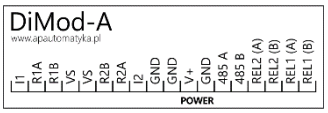
Technical Data

Power supply (display)	8…26 VDC
Power supply (sensors)	Power supply (display)
Interface	RS-485 (Modbus RTU)
Measuring channel	2 measuring channels
Inputs standard	0…10 V, 0…20 mA, 4…20 mA (configurable)
Resolution	12 bits
Measuring frequency	Up to 100 Hz (configurable)
Mathematic function	Operations on the measured values
Filter function	Continuous and average filter
Measuring range	-9999 to 99999 with adjustable decimal point
Display	6 digits (incl. 1 sign of measuring channel) green 7-segment LED display 14,4 mm
Relay outputs	2 (programmable)
Case material	Noryl SE1GFN2
Protection class	IP54 (front)
Case dimension	96 x 48 x 65 [mm] (without connector)
Panel cut-out dimension	92x 43 [mm]
Operating temperature	0…+50 ºC
Storage temperature	-10…+60 ºC

DIMOD-A DISPLAY COUNTER

Display Elements' Description





Buttons	Escape / Reset | Menu-buttons | Menu-enter
LED	2 diodes (relay outputs status)
Display	6 digits
TB: I1, R1A, R1B, I2, R2A,	Sensors inputs
TB: GND	Power output (GND) for sensor
TB: OUT(V+)	Power output (V+) for sensor
TB: V+	Power input (V+ = 8…26 VDC)
TB: GND	Power input (GND)
TB: 485 A, 485 B	RS-485
TB: REL2 (A), REL2 (B)	Relay output (#2)
TB: REL1 (A), REL1 (B)	Relay output (#1)

TB – Terminal Block

Inputs and Outputs

Power supply

Please look at figure 1.

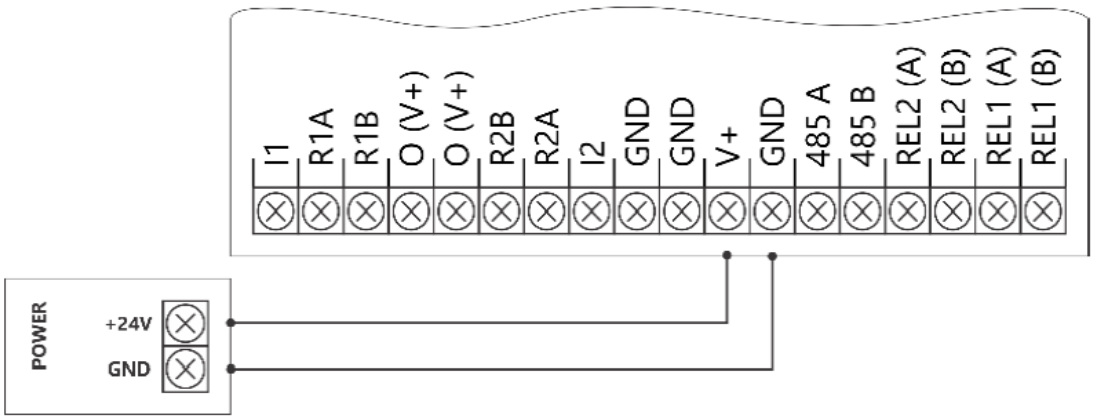


Figure 1. Power supply – scheme of connection

Before any connections you should disconnect the device from main electricity.

Interface RS-485

Please look at figure 2.

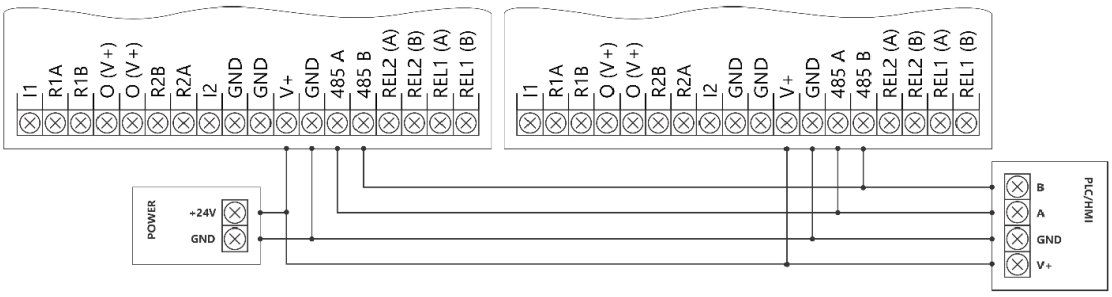


Figure 2. RS-485 – scheme of connection

Before any connections you should disconnect the device from main electricity.

Analog inputs 0…10 V

Please look at figure 3.

Remember to **DISCONNECT** pins R1A+R1B and/or R2A+R2B (R1A, R1B – input I1, R2A, R2B – input I2) and set the appropriate operating mode from the device MENU.

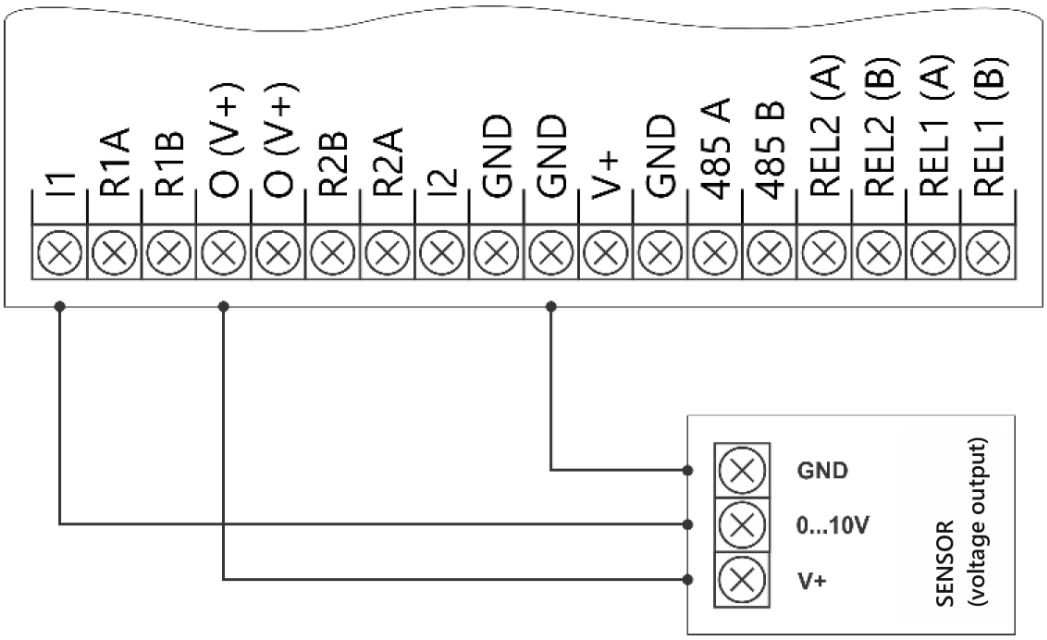


Figure 3. Connection of two sensors with voltage output to the transmitter – scheme of connection

Before any connections you should disconnect the device from main electricity.

Analog inputs 0(4)…20 mA

Please look at figure 4.

Remember to **CONNECT** pins R1A+R1B and/or R2A+R2B (R1A, R1B – input I1, R2A, R2B – input I2) and set the appropriate operating mode from the device MENU.

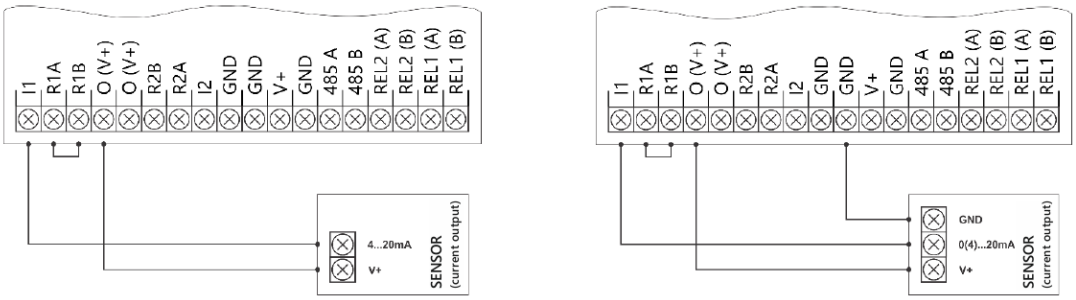


Figure 4. Connection of two sensors with current output (2 and 3 wire) to the transmitter – scheme of connection

Before any connections you should disconnect the device from main electricity.

Relay outputs

Please look at figure 5.

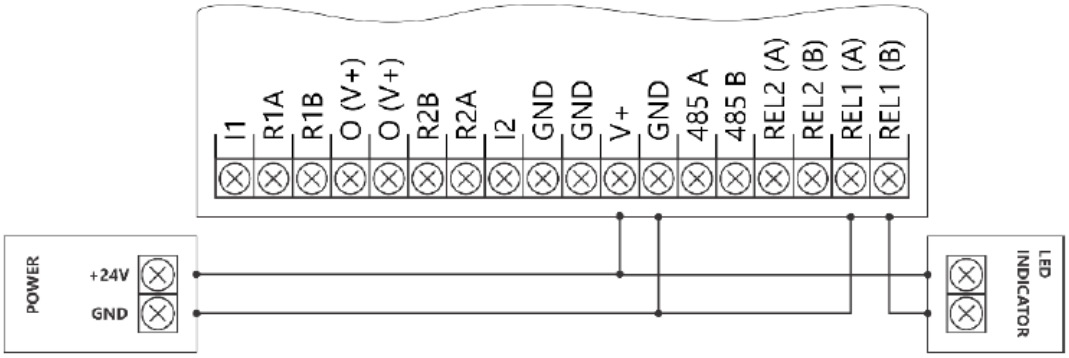


Figure 5. Relay outputs – scheme of connection

Before any connections you should disconnect the device from main electricity.

LEDs

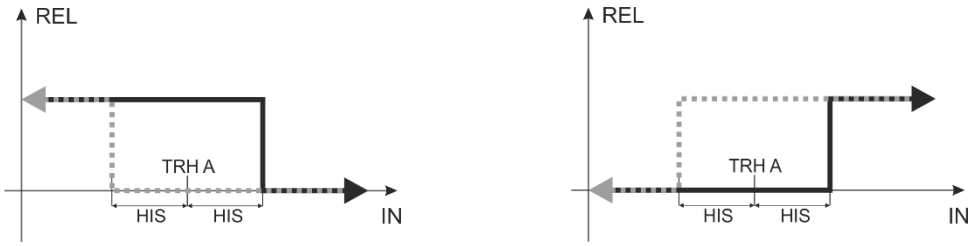
- LED green (leftmost) - indicator of relay REL1 activation
- LED green (rigthmost) - indicator of relay REL2 activation

Regulation of relay outputs

The parameters 04-0 1rG (for output 1) and 10-02rG (for output 2) define the type of regulation for display's relay outputs. These parameters are configured from Menu of display or PC software. The display offers four types (option) of regulation:

- 04-0 1rG , 10-02rG = 1-oFF – relay outputs are always turned-off
- 04-0 1rG , 10-02rG = 2-on – relay outputs are always turned-on
- 04-0 1rG , 10-02rG = 3-nod – relay outputs are controlled by RS-485 (Modbus RTU)
- 04-0 1rG , 10-02rG = 4-uAr 1 – relay outputs in depending on measured value and setting one threshold
- 04-0 1rG , 10-02rG = 5-uAr2 – relay outputs in depending on measured value and setting two thresholds

The option 04-0 1rG , 10-02rG = 4-uAr 1 gives two ways of relay outputs' work. The parameters 06-o 1dr (for output 1) and 12-02dr (for output 2) define these ways. Please look at figure 6.



06-o 1dr, 12-o2dr = 1-RCLo and 04-0 1rG, 10-02rG =4-uAr 1

06-o 1dr, 12-o2dr =2-RCH 1 and 04-0 1rG, 10-02rG =4-uAr 1

Figure 6. Regulation of relay outputs (option 4-uAr 1)

Legend: IN – measuring value, REL – status of relay output, TRH A – threshold, HIS – hysteresis.

The option S-uRr2 of these parameters gives also two ways of relay outputs' work. The parameters 06-o Idr (for output 1) and 12-02dr (for output 2) define these ways. Please look at figure 7.

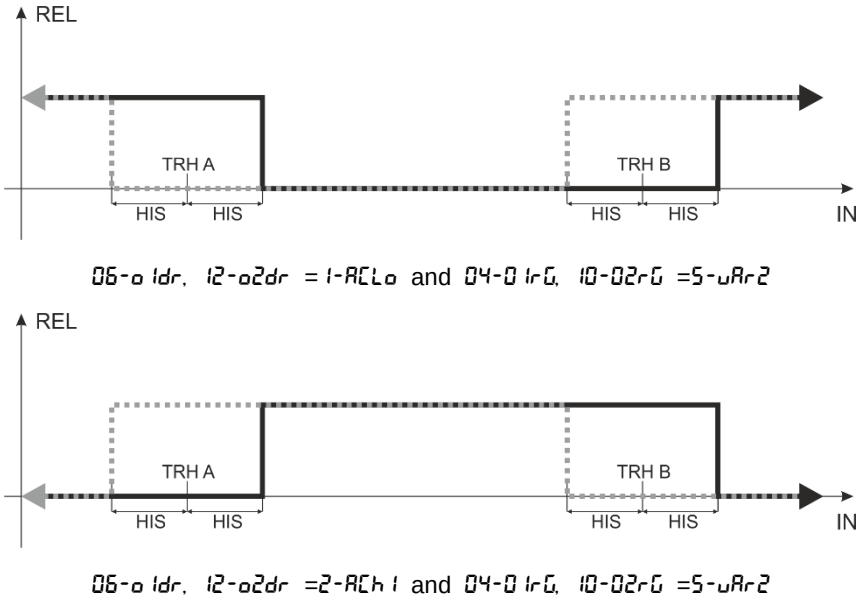


Figure 7. Regulation of relay outputs (option S-uRr2)

Legend: IN – measuring value, REL – status of relay output, TRH A, TRH B – thresholds, HIS – hysteresis.

Filtration of measurements

Continuous and average filter

Please look at figure 8.

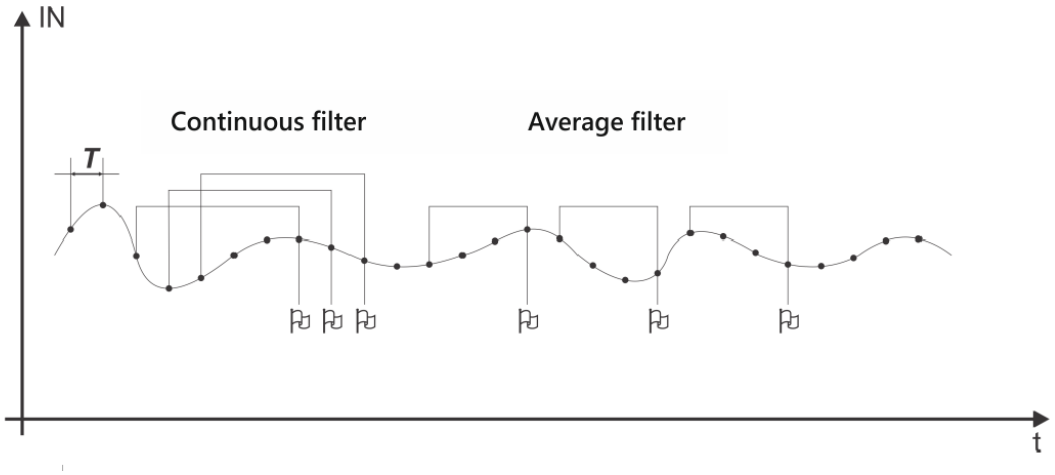


Figure 5. Continuous and average filter

Legend: ● – sample, ⚑ – control of digital outputs (comparing the measured value with the set threshold, transfer to communication register), **T** – time between samples

Menu

Button's functions

Button	Name	Function :: Main view	Function :: Menu	Function :: Changing of parameters
	**ESC/RST**	In depending on settings: Reset (press and hold button by 5 sec. = reseting of position and cycles)	Menu exit	Parameter abortion
	**NEXT 2**	Non active	Non active	Digit selection
	**NEXT 1**	Change of displayed value: No sign = position [sign = cycles µ sign = velocity	Next parameter	Change value
	**ENT**	Menu entry (press and hold buton by 5 sec.)	Parameter selection	Parameter confirmation

Table 1. Button's functions

DIMOD-A DISPLAY COUNTER

Menu map

Menu	Parameter configuration	Description
Relay Output No 1		
		Threshold A: Range: -99999…99999 (position of decimal point is changed by parameter 33.ddot)
		Threshold B: Range: -99999…99999 (position of decimal point is changed by parameter 33.ddot)
		Hysteresis (HIS): Range: 0…99999 (position of decimal point is changed by parameter 33.ddot)
		Type of regulation for relay output: 1-oFF – relay output is off 2-on – relay output is on 3-nod – relay output is controlled by RS-485 (MODBUS) 4-UAr 1 – relay output is on/off in depending on threshold A, hysteresis and measuring value 5-UAr2 – relay output is on/off in depending on thresholds (A and B), hysteresis and measuring value
		Type of measuring value which is correlated with relay output: 1- I1 – analog input 1 2- I2 – analog input 2 3-n1 – mathematical function 1 4-n2 – mathematical function 2
		Way of relay output's work: 1-ACLo – Input active, when measuring value is out of range 2-ACH 1 – Input active, when measuring value is in of range
Relay output no. 2		
		Threshold A: Range: -99999…99999 (position of decimal point is changed by parameter 33.ddot)
		Threshold B: Range: -99999…99999 (position of decimal point is changed by parameter 33.ddot)

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09.o2h1	123.45	Hysteresis: Range: 0…99999 (position of decimal point is changed by parameter 33.ddot)
10.o2rG	1-oFF	Type of regulation for relay output: 1-oFF – relay output is off 2-on – relay output is on 3-nod – relay output is controlled by RS-485 (MODBUS) 4-UAr1 – relay output is on/off in depending on threshold A, hysteresis and measuring value 5-UAr2 – relay output is on/off in depending on thresholds (A and B), hysteresis and measuring value
11.o2tP	1-UPo5	Type of measuring value which is correlated with relay output: 1- i1 – analog input 1 2- i2 – analog input 2 3-n1 – mathematical function 1 4-n2 – mathematical function 2
12.o2dr	1-ACLo	Way of relay output's work: 1-ACLo – Input active, when measuring value is out of range 2-ACH1 – Input active, when measuring value is in of range
Analog input 1		
13.1Inn	= 123.45	Coefficient input MIN to linear characteristics analog input 1: Range: -99999…99999 (position of decimal point is changed by parameter 33.ddot)
14.1InH	= 123.45	Coefficient input MAX to linear characteristics analog input 1: Range: -99999…99999 (position of decimal point is changed by parameter 33.ddot)
15.o1nn	= 123.45	Coefficient output MIN to linear characteristics analog input 1: Range: -99999…99999 (position of decimal point is changed by parameter 33.ddot)
16.o1nH	= 123.45	Coefficient output MAX to linear characteristics analog input 1: Range: -99999…99999 (position of decimal point is changed by parameter 33.ddot)
17.1Ind	1- 10U	Operating mode analog input 1: 1- 10u – voltage 0…10 V 2-20nA – current 0(4)…20 mA

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18.1 1Ad	= 123.45	Analog input calibration function 1 NOTE: When supplying voltage or current, set the unit in the appropriate mode. (position of decimal point is changed by parameter 33.ddot)
Analog input 2		
19.12nn	= 123.45	Coefficient input MIN to linear characteristics analog input 2: Range: -99999…99999 (position of decimal point is changed by parameter 33.ddot)
20.12nH	= 123.45	Coefficient input MAX to linear characteristics analog input 2: Range: -99999…99999 (position of decimal point is changed by parameter 33.ddot)
21.o2nn	= 123.45	Coefficient output MIN to linear characteristics analog input 2: Range: -99999…99999 (position of decimal point is changed by parameter 33.ddot)
22.o2nH	= 123.45	Coefficient output MAX to linear characteristics analog input 2: Range: -99999…99999 (position of decimal point is changed by parameter 33.ddot)
23.12nd	1- 10U	Operating mode analog input 2: 1- 10u – voltage 0…10 V 2-20nA – current 0(4)…20 mA
24.12Ad	= 123.45	Analog input calibration function 2 NOTE: When supplying voltage or current, set the unit in the appropriate mode. (position of decimal point is changed by parameter 33.ddot)
Mathematical function 1		
25.n 1H	= 123.45	Coefficient K for mathematical function 1: Range: -99999…99999 (position of decimal point is changed by parameter 33.ddot)
26.n 1nd	1-n01	Mathematical function 1: 1-n01 – mathematical operation: K+A1 2-n02 – mathematical operation: K+A2 3-n03 – mathematical operation: K-A1 4-n04 – mathematical operation: K-A2 5-n05 – mathematical operation: K*A1 6-n06 – mathematical operation: K*A2 7-n07 – mathematical operation: A1+A2 8-n08 – mathematical operation: A1-A2 9-n09 – mathematical operation: A2-A1 0-n10 – mathematical operation: -A1-A2

		1-n11 – mathematical operation: K-A1-A2 2-n12 – mathematical operation: K+A1+A2 3-n13 – mathematical operation: K+A1-A2 4-n14 – mathematical operation: K-A1+A2 5-n15 – mathematical operation: K*(A1+A2) 6-n16 – mathematical operation: K*(A1-A2) 7-n17 – mathematical operation: K*(A2-A1) 8-n18 – mathematical operation: absolute value A1 9-n19 – mathematical operation: absolute value A2 A1 – analog input 1, A2 – analog input 2, K – constant for functions 1
Mathematical function 2		
27.n2K	= 123.45	Coefficient K for mathematical function 2: Range: -99999…99999 (position of decimal point is changed by parameter 33.ddot)
28.n2nd	1-n01	Mathematical function 2: 1-n01 – mathematical operation: K+A1 2-n02 – mathematical operation: K+A2 3-n03 – mathematical operation: K-A1 4-n04 – mathematical operation: K-A2 5-n05 – mathematical operation: K*A1 6-n06 – mathematical operation: K*A2 7-n07 – mathematical operation: A1+A2 8-n08 – mathematical operation: A1-A2 9-n09 – mathematical operation: A2-A1 0-n10 – mathematical operation: -A1-A2 1-n11 – mathematical operation: K-A1-A2 2-n12 – mathematical operation: K+A1+A2 3-n13 – mathematical operation: K+A1-A2 4-n14 – mathematical operation: K-A1+A2 5-n15 – mathematical operation: K*(A1+A2) 6-n16 – mathematical operation: K*(A1-A2) 7-n17 – mathematical operation: K*(A2-A1) 8-n18 – mathematical operation: absolute value A1 9-n19 – mathematical operation: absolute value A2 A1 – analog input 1, A2 – analog input 2, K – constant for functions 2
Filtration / Frequency		
29.1FCn	000100	Continuous filter for analog inputs Range: 1…100 [samples]
30.1FAU	000100	Average filter for analog inputs Range: 1…400 [samples]
31.1Fr.E		Measuring frequency Range: 1…100 [Hz]
Display		
32.dbU2	1-boFF	Sound signal of buttons: 1-boFF – Off 2-boN – On
33.ddot	1-dot0	Position of decimal point: 1-dot0 – no decimal point (integer): XXXXXX 2-dot1 – displayed 1 place after decimal point: XXXXX.X 3-dot2 – displayed 1 place after decimal point: XXXX.XX 4-dot3 – displayed 1 place after decimal point: XXX.XXX
34.dUAL	1-A14	Main view (after turn-on of display): 1-i1 – analog input 1 2-i2 – analog input 2 3-n1 – mathematical function 1 4-n2 – mathematical function 2

		5-b i2 – analog input 1+2 6-b34 – mathematical function 1+2 7-b i4 – analog input 1+2, mathematical function 1+2 8-A i2 – analog input 1+2 (automatic scrolling ever 2 sec) 9-A34 – mathematical function 1+2 (automatic scrolling ever 2 sec) 0-A i4 – analog input 1+2, mathematical function 1+2 (automatic scrolling ever 2 sec)
35.nAdr	000 123	MODBUS address: Range: 1…255
36.nbAU	1-96br	MODBUS baudrate: 1-96br – 9600 bps 2- i9br – 19200 bps 3-38br – 38400 bps 4-57br – 57600 bps 5- i1br – 115200 bps
37.PASS	000 123	Password: Range: 1-999 000 – non active

Table 2. Menu map

Contact

FRABA America
T +1 609 750-8705
info@posital.com

FRABA Europe
T +49 221 96213-0
info@posital.eu

FRABA Asia
T +65 6514 8880
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The picture and drawing are for general presentation purposes only. Please refer to the "Download" section for detailed technical drawings. All dimension in [inch] mm.