PROGRAMMABLE TRANSDUCER OF STANDARD SIGNALS WITH RS-485 INTERFACE

P12S

45 × 120 × 100 mm

CE

ISO9001

1. APPLICATION

The P12S programmable transducer is intended to the conversion of standards signals into a d.c. current or voltage standard signal. The output signal is galvanically isolated from the input signal and the supply. The read-out field can be an LCD 2 x 8 display (only in P12S-2 execution).

The P12S transducer is programmed by the producer according the ordered execution code but it is possible to change the parameters by means of the keyboard in the P12S-2 execution or the computer through the PD11 programmer.

The PD11 programmer is a universal device serving to program all the P11 and P12 family and it must be ordered separately.

2. FEATURES

P12S transducers also realize following functions:

- conversion of the measured quantity into any optional output signal on the base of the individual linear characteristic,
- recalculation of the input signal into any optional indication on the base of the individual linear characteristic,
- signalling of the set up alarm value exceedings,
- recording of the input signal in programmed time lengths,
- programming of the indication resolution (only for P12S-2),
- preview of set up parameter values,
- storage of maximal and minimal values,
- programming of the measurement averaging time,
- display of the unit,
- handling of the RS-485 interface in the MODBUS protocol, both in ASCII either in RTU mode,
- interlocking of the parameter introduction by means of a password.

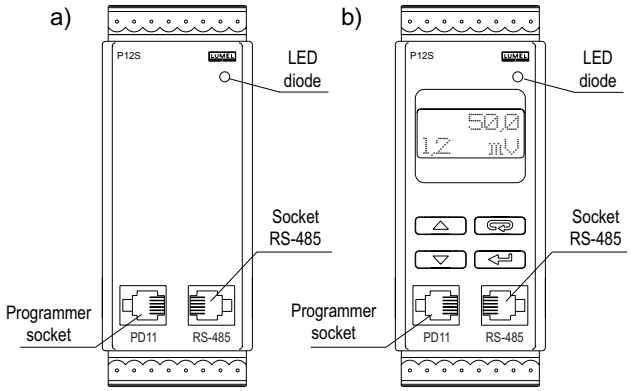


Fig.1 View of the P12S transducer: a) P12S-1, b) P12S-2

3. INSTALLATION

P12S transducers are designed to be installed on a 35 mm DIN rail acc. DIN EN 50 022-35.

On the external side of the transducer, there are screw or self-locking terminal strips enabling the connection of 2.5 mm^2 cross-section conductors. Overall dimensions and the fixing way are shown on the fig.2.

The lighted diode situated on the upper front of the transducer signals the connection of this transducer to the mains.

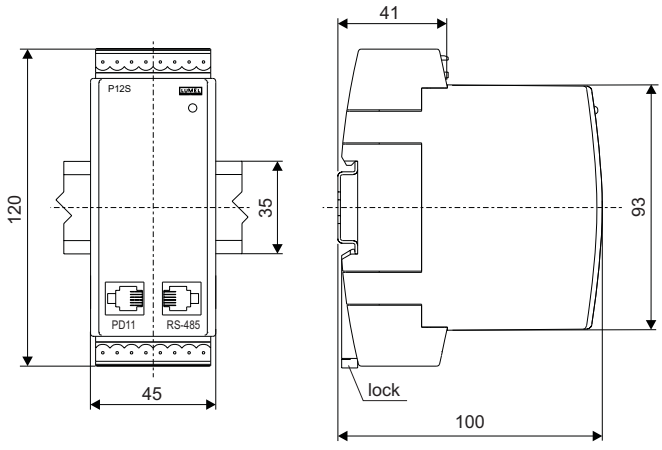


Fig.2. Overall dimensions and fixing way of P12S transducers

4. CONNECTION DIAGRAMS

The P12S transducer has two sockets of terminal strips which two connectors with screw or self-locking terminals are connected to, depending on the order execution code. The fig.3 shows the connection way of external signals. This scheme is also placed on the transducer case.

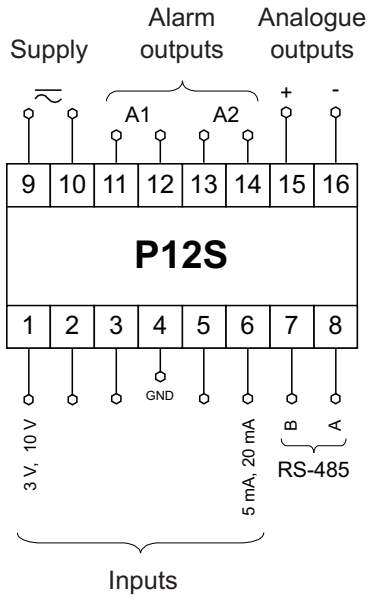
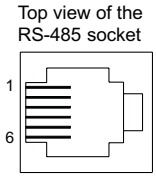


Fig.3. Connection of external signals



No	Description
1	NC
2	B
3	A
4	GND
5	NC
6	NC

Fig.4. Description of terminal strips of the P12S transducer

5. TECHNICAL DATA

■ **Inputs:**

- voltage measurement -3... 3 V, input resistance > 1.3 MΩ
- voltage measurement -10... 10 V, input resistance > 1.3 MΩ
- current measurement -5... 5 mA, input resistance < 4 Ω
- current measurement -20... 20 mA, input resistance < 4 Ω

■ **Analogue outputs:**
galvanically isolated with a range resolution of 0.025%:

- current programmed 0/4...20 mA load resistance ≤ 500 Ω
- voltage programmed 0...10 V load resistance ≥ 500 Ω

■ **Relay outputs (2 outputs)**

- programmable alarm thresholds,
- three types of alarms ,
- hysteresis defined by means of the lower and upper alarm threshold,
- signalling of alarm operation on the LCD display,
- two relay outputs,
- voltagless contacts - short-circuited maximal load:
  - voltage 250 V a.c., 150 V d.c.
  - current 5 A, 30 V d.c., 250 V a.c.
  - resistance load 1250 VA, 150 W

■ **Digital output**

- interface RS-485
- transmission protocol MODBUS
- ASCII 8N1, 7E1, 7O1
- RTU 8N2, 8E1, 8O1, 8N1
- baud rate 2400, 4800, 9600 bit/s
- max. response time to the query frame 300 ms

■ **Storage parameters**

- transducer storage 750 samples
- minimal storage interval 1 s

■ **Accuracy class** 0.2

■ **Additional error from ambient temperature changes** ± (0.1 % of the range/10 K)

■ **Conversion time:**

- P12S-1 < 200 ms
- P12S-2 min. 200 ms (min.100 ms averaging time of measurement + 100 ms output response time)

■ **Rated operating conditions:**

- supply voltage depending on the execution code 85...230...253 V a.c./d.c.
  20...24...40 V a.c./d.c.
- supply voltage frequency 40...50...440 Hz
- ambient temperature -25...23...+55°C
- storage temperature -25...+85°C
- air relative humidity < 95% (no condensation)
- preheating time 10 min
- working position any (on a 35 mm DIN rail)

■ **Sustained overload** 20%

■ **Short duration overload (3 s):**

- voltage input 10 Un
- current input 10 In

■ **Display fields (in P12S-2)** LCD 2x8 display
indication range:
- 99999...99999

■ **Servicing** (in P12S-2 only) 

■ **Communication parameters of the programmer socket with the computer:**

- interface: RS-232, 8N1 mode
  - data bit 8
  - even parity none
  - stop bit 1
- baud rate 9600 bit/s
- flow control none

■ **Ensured protection degree:**

- through the case IP 40

- **Dimensions** 45 x 120 x 100 mm
- **Mass** < 300 g
- **Fixing** on a 35 mm DIN rail
- **Power consumption** < 4 VA
- **Current decay immunity** acc. EN 50082-2
- **Electromagnetic compatibility:**
  - immunity acc. EN 50082-2
  - emission acc. EN 50081-2
- **Security requirements acc. EN 61010-1:**
  - installation category III
  - pollution degree 2
  - max. working voltage in relation to ground 300 V a.c.

6. EXECUTION CODES

Execution codes of the P12S transducer

P12S PROGRAMMABLE TRANSDUCER	X	X	X	X	X	XX	X
Kind of transducer:							
without a display 1							
with a display 2							
Input signal*:							
voltage measurement -3... 3 V 1							
voltage measurement -10... 10 V 2							
current measurement -5... 5 mA 3							
current measurement -20... 20 mA 4							
on order** X							
Output signal:							
voltage 0... 10 V 1							
current 0... 20 mA 2							
current 4... 20 mA 3							
current 0... 5 mA 4							
on order** X							
Supply:							
85...253 V a.c./d.c. 1							
20...40 V a.c./d.c. 2							
Kind of terminals:							
socket - screw plug 0							
on order*** X							
Execution:							
standard 00							
custom-made** XX							
Acceptance tests:							
without an extra quality inspection certificate 0							
with an extra quality inspection certificate 1							
acc user's agreement** X							

* The transducer has an universal input. When ordering, one must give the output signal code which is to be programmed.

** After agreeing with the producer.

*** Possible execution with self-locking terminal sockets

The transducer maintains its class index up to a four-fold decrease of the input signal of the basic range. In the P12S-1 transducer, besides the basic range, one must give the required sub-range.
In case when the given sub-range is lower than the basic range divided by four, one must specify the input signal in the order as XX.

CODING EXAMPLES:

Transducer with a basic range:

P12S 2 4 1 1 0 00 0 code means:
The execution of a P12S transducer programmed by the producer, with a display, with an input signal: -20... 20 mA, with an output signal: 0...10 V, 85...253 V a.c./d.c. supply voltage, socket-screw plug terminals, standard execution, without an extra quality inspection certificate.

Transducer with a measuring sub-range:

P12S 1 1 4 2 0 00 1, for a -1... 1 V sub-range, means:
The execution of a P12S transducer programmed by the producer, without a display, for the measurement of the (-1... 1 V) sub-range in the basic (-3... 3 V) range, with an output signal: 0... 5 mA, supply voltage: 20... 40 V a.c. d.c., with socket-screw plug terminals, standard execution, with an extra quality inspection certificate.

In case of a custom-made execution or to obtain more detailed information, please contact our Export Dept - tel. (48-68) 325 40 91