PROGRAMMABLE TRANSDUCER OF D.C. CURRENT AND D.C. VOLTAGE WITH RS-485 INTERFACE

P12H

45 × 120 × 100 mm

CE

ISO9001

1. APPLICATION

The P12H programmable transducer is intended to the conversion of d.c. current and d.c. voltage into a d.c. current or d.c. 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 P12H-2 execution).

The P12H 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 P12H-2 execution or the computer through the PD11 programmer, or the RS-485 interface.

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

2. FEATURES

P12H 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 P12H-2),
- preview of set up parameter values,
- storage of maximal and minimal values,
- programming of the measurement averaging time,
- display of the unit,
- servicing 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.

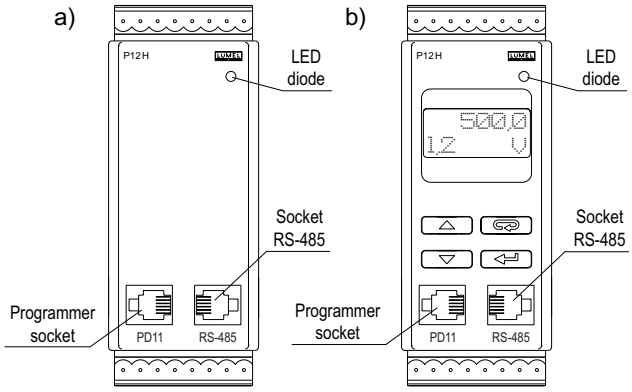


Fig.1 View of the P12H transducer: a) P12H-1, b) P12H-2

3. INSTALLATION

P12H 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.

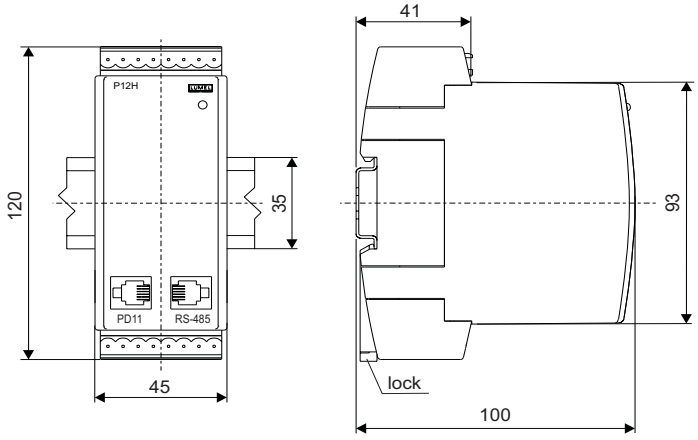


Fig.2. Overall dimensions and fixing way of P12H transducers

4. CONNECTION DIAGRAMS

The P12H 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.

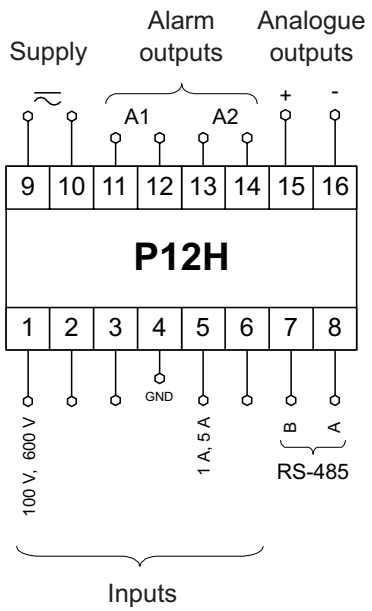
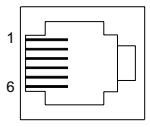


Fig.3. Connection of external signals

Top view of the RS-485 socket



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

Fig.4. Description of terminal strips of the P12H transducer

5. TECHNICAL DATA

■ **Input signals:**

-100... 100 V	input resistance > 4.2 MΩ
-600... 600 V	input resistance > 4.2 MΩ
-1... 1 A	input resistance = 10 mΩ ±10%
-5... 5 A	input resistance = 10 mΩ ±10%

■ **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**
- programmable alarm thresholds,
- three types of alarms ,
- hysteresis defined by means of the lower and upper alarm threshold,
- signalling of alarm operation on a LCD display,
- two relay outputs,
- voltagless make contacts
- 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 (recording)	750 samples
- minimal recording interval	1 s

■ **Accuracy class** 0.2

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

■ **Conversion time:**

- P12H-1	< 200ms
- P12H-2	min. 200 ms (min.100 ms averaging time of measurement + 100 ms output response time)

■ **Preheating time of the transducer** 10 min.

■ **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 of the transducer	10 min.
- working position	any (on a 35 mm DIN rail)

■ **Sustained overload:** 20 %

■ **Short duration overload (3 sec.):**

- voltage measurement	20 Un (< 1000 V)
- current input	10 In

■ **Display fields** LCD 2x8 displays
indication range:
- 99999...99999

■ **Servicing** (in P12H-2 only)

■ **Communication parameters**

of the programmer socket:

- 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: 600 V a.c.

6. EXECUTION CODES

Execution codes of the P12H transducer

P12H PROGRAMMABLE TRANSDUCER	X	X	X	X	X	XX	X
Kind of transducer:							
without a display 1							
with a display 2							
Input signal*:							
Voltage measurement -100... 100 V 0							
Voltage measurement -600... 600 V 1							
Current measurement -1... 1 A 2							
Current measurement -5... 5 A 3							
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							
other requirements** 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.

CODING EXAMPLES:

Transducer with a basic range:

P12H 2 0 1 1 0 00 0 code, means:
The execution of a P12H transducer programmed by the producer, with a display, with an input signal: -100 ... 100 V, 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:

P12H 1 1 2 1 0 00 1 code, for a -200... 200 V sub-range, means:
The execution of a P12H transducer programmed by the producer, without a display, for the measurement of the -200... 200 V sub-range in the basic -600... 600 V range, with an output signal: 0... 20 mA, supply voltage: 85... 253 V a.c./d.c., with socket-screw plug terminals, standard execution, with an extra quality inspection certificate.