LUMEL

TRANSDUCER OF TEMPERATURE AND STANDARD SIGNALS P30U TYPE

QUICK START MANUAL

CE

Note! The full version of the user's manual is inserted in the www.lumel.com.pl/en/ web site.

1. TRANSDUCER SET

1. transducer P30U ..... 1 pc
2. quick start manual ..... 1 pc
3. guarantee card ..... 1 pc
4. plug with screw terminals ..... 4 pcs

2. OPERATIONAL SAFETY

In the safety service scope, the transducer meets to requirements of the EN 61010-1 standard.

Observations concerning the operational safety:

- All operations concerning transport, installation and commissioning as well as maintenance must be carried out by qualified, skilled personnel, and national regulations for the prevention of accidents must be observed.
- Before switching the transducer on, one must check the correctness of connections to the network.
- The removal of the transducer casing during the guarantee contract period causes its cancellation.
- The device is destined to be installed and used in industrial electro-magnetic environment conditions.
- A switch or a circuit-breaker should be located near the device, easy accessible by the operator and suitably marked.

3. TRANSDUCER DIMENSIONS AND FIXING WAY

The P30U transducer is adapted to be mounted on a 35 mm rail acc. to EN 60715.

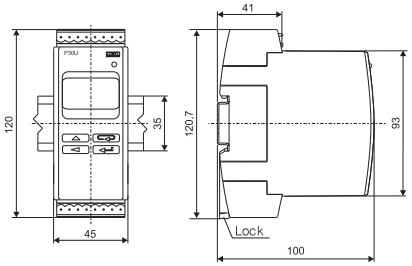
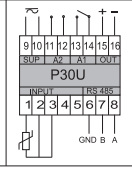
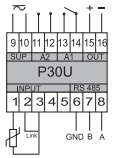
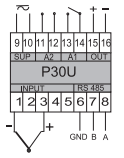


Fig.1. Dimensions and fixing way of transducer P30U.

4. CONNECTION DIAGRAMS

Measured signal	Thermoresistor in 3 wire system	Thermoresistor in 2 wire system or resistance measurement	Thermocouple or voltage -60...60 mV, 0...60 mV, -150...150 mV 0...150 mV
Connection diagram			

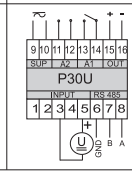
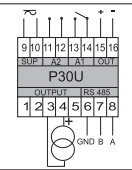
Measured signal	Voltage -10...10 V 0...10 V 0...5 V	Current -20...20 mA 0...20 mA 4...20 mA	SUP - supply A1 - NO relay No. 1 OUT - voltage or current analog output INPUT - measuring input RS 485 - interface Rs485
Connection diagram			P30U-XX1XXXXX A2 - NO relay No.2  P30U-XX2XXXXX A2 - auxiliary supply 24 V d.c. 30 mA 

Fig.2. Transducer connection diagram

5. TRANSDUCER CONFIGURATION

The transducer configuration can be carried out by the free LPCon program available on our website www.lumel.com.pl/en/ or through the transducer menu acc. to the user's manual.

Transmission of the configuration through the RS-485 interface

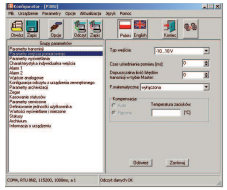


Fig. 3. Transducer configuration by LPCon program.

6. STARTING TO WORK

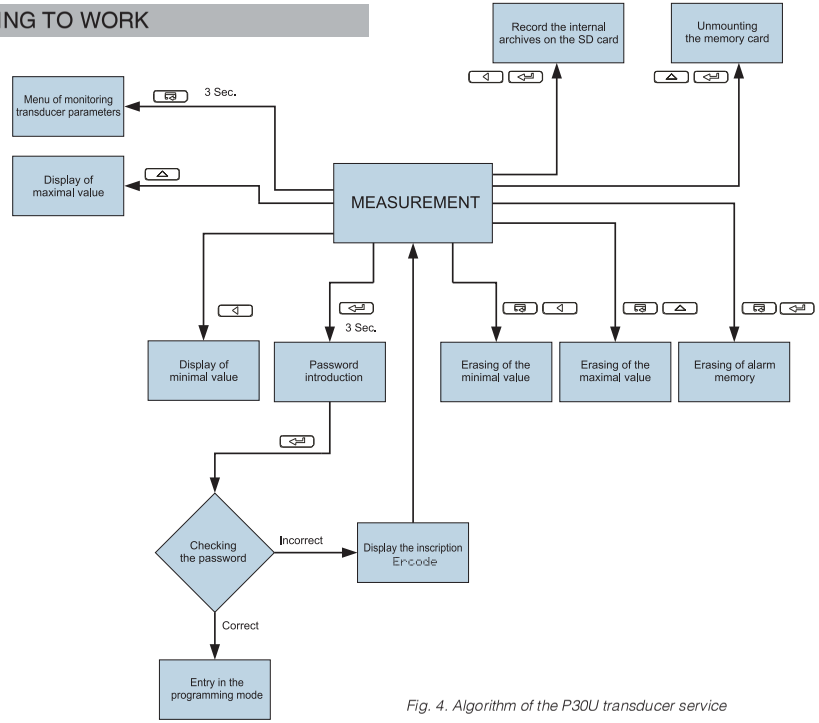


Fig. 4. Algorithm of the P30U transducer service

Settings Input Parameters of main input	Input Measured value type	AvgTime Averaging time of measured value	Compens. Compensation type	Comp.Val Manual compensation value	No.ofErr Admissible number of incorrect requests for the input RS485 Master	Math Fun Operation of mathematical function on the measured value				
Settings Ind.Char Parameters of the individual characteristic	Point No Number of points of the individual characteristic	X1 First point of the individual characteristic. Point x.	Y1 First point of the individual characteristic Point y.	....	X21 Last point of the individual characteristic	Y21 Last point of the individual characteristic				
Settings Display Display parameters	DecimalP Minimum decimal point	Unit Diplayed unit	Over Lo Lower threshold of display range	Over Hi Upper threshold of display range	Bcklight Backlight time of display	Bckl.Int. Backlight intensity of LCD display	Disp.Reg. Number of register displayed on the lower line of the display			
Settings Alarm 1 Parameters of alarm 1	Param.A1 Type of input quantity of alarm 1	Type A1 Type of alarm 1	OverLoA1 Lower threshold of alarm 1	OverHiA1 Upper threshold of alarm 1	DlyOnA1 Delay of switching on the alarm 1	DlyOffA1 Delay of switching off the alarm 1	OnLockA1 Delay of reswitching on the alarm 1	SgKeepA1 Support of alarm 1 signaling		
Settings Alarm 2 Parameters of alarm 2	Param.A2 Type of input quantity of alarm 2	Type A2 Type of alarm 2	OverLoA2 Lower threshold of alarm 2	OverHiA2 Upper threshold of alarm 2	DlyOnA2 Delay of switching on the alarm 2	DlyOffA2 Delay of switching off the alarm 2	OnLockA2 Delay of reswitching on the alarm 2	SgKeepA2 Support of alarm 2 signaling		
Settings Output Outputs parameters	Param.An Type of input quantity for the analog output	AnIn Lo Lower threshold of the output	AnIn Hi Upper threshold of the input	AnOut Lo Lower threshold of the output	AnOut Hi Upper threshold of the output	OverServ Overflow options turning on	OvrIn Lo Lower overflow of input	OvrIn Hi Upper overflow of input	OvrOutLo Value expected on the output during lower overflow of input	OvrOutHi Value expected on the output during upper overflow of input
Settings Modbus Parameters of RS485 interface	Address Device address	ModeUnit Kind of frame	BaudRate Baud rate	Reg.No Register address to be read out (Master mode)	No.ofReg. Number of read out registers (Master mode)	TypeReg Type of read out register (Master mode)	Interval. Read out interval (Master mode)	AnswTime Maximal time of reply (Master mode)		
Settings Archive Archiving parameters	Arch.Val Selection of archived volumes	Param.Ar Type of value which will turn on conditional archiving	Ar.Mode Archiving type	OverLoAr Lower threshold of archiving	OverHiAr Upper threshold of archiving	Ar.Time Archiving time	Ar.Erase Erasing of internal archive	Rec.ToSD Manual copying of internal archive to the SD/SDHC card	Param.SD Fulfilment percentage of internal archive, which will turn on automatic record on the SD/SDHC card	
Settings Service Service parameters	ParFact Write standard parameters	Security Enter the password	Time Setting the actual time	Date Setting the actual date	AutoTime Automatic change of time - summer/winter and inversely	DispTest Test of the LCD display and diodes	Language Selection of menu language			

Fig. 5. Programming matrix.

7. DISPLAY FORMAT

P30U transducer is equipped with backlighted LCD display, consisted of two lines, 8 signs each. The top row is used to display measured value (floating point format, 5 digits) and symbol of SD/SDHC card status. After pressing button ▲ or ◄ symbol and value of maximal or minimal value will be displayed.

Table 1

Symbol	Display method	Meaning
	permanent	SD/SDHC card mounted and ready to work
	pulsating	SD/SDHC card mounted and ready to be removed
	pulsating	Karta SD/SDHC card protected against record
	pulsating	SD/SDHC card full
	permanent	Display the maximal value
	permanent	Display the minimal value

Display lower line in the P30U transducer is multifunctional. After pressing the button ↵ or ↵, the lower line functions are periodically switched: *unit, time, date, bargraph indicating the percent value of analog output, the value of any register in the transducer.*

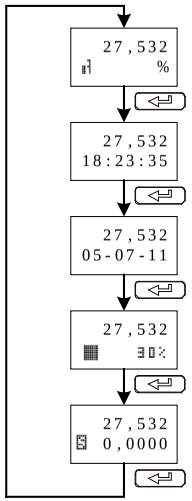


Fig.6 Data switching scheme displayed on display lower line.

8. ARCHIVING

The P30 tranducers are standard equipped with internal memory designed to storage the data, registered by transducer. Downloading of archival data from internal memory can be done using memory card SD/SDHC (option) or by using RS485 interface. For the transducers with SD/SDHC memory card option there is possibility of fast rewriting the archive to the SD/SDHC card after pressing the buttons combination: ↵ and ◄.

9. ACCESSORIES

As additional accessory to the transducers with SD/SDHC memory card option (version P30U-X1XXXXXX) can be ordered the industrial SD card with the capacity adapted to the user needs, according to the table below.

Table 2

	Order code	Capacity
1	0923-611-193	1 GB
2	0923-611-194	2 GB

10. TECHNICAL DATA

Inputs:

Table 3

Input type	Nominal measuring range	Maximal measuring range	Coeffi-cant *k*	Accu-racy class
Voltage 10V	-10...10 V	-12...12 V	5	0.1
Voltage 24V	-24...24 V	-28...28 V	10	
Current	-20...20 mA	-24...24 mA	10	
Resistance 400 Ω	0...400 Ω	0...420 Ω	4	
Resistance 2000 Ω	0...2000 Ω	0...2050 Ω	2	
Resistance 5500 Ω	0...5500 Ω	0...5550 Ω	2	
Pt100	-200...850 °C	-205...855 °C	5	
Pt250	-200...600 °C	-205...605 °C	4	
	-200...850 °C	-205...855 °C	3	
Pt500	-200...180 °C	-205...185 °C	3	
	-200...850 °C	-205...855 °C	3	
Pt1000	-200...250 °C	-205...255 °C	4	
	-200...850 °C	-205...855 °C	2	
Ni100	-60...180 °C	-65...185 °C	1	
Ni1000	-60...150 °C	-65...155 °C	2	
Ni100-LG	-60...180 °C	-65...185 °C	1	
Ni1000-LG	-60...180 °C	-65...185 °C	2	
Cu100	-50...180 °C	-55...185 °C	1	
Voltage mV	-5...20 mV	-6...21 mV	1	
	-75...75 mV	-80...80 mV	4	
	-200...200 mV	-210...210 mV	4	

Table 3

Thermocouple J	0...400 °C	-20...420 °C	1	0.1
	-200...1200 °C	-220...1210 °C	2	
Thermocouple K	0...400 °C	-20...420 °C	1	
	-200...1370 °C	-280...1382 °C	2	
Thermocouple S	0...1760 °C	-55...1775 °C	2	0.5
Thermocouple N	-20...420 °C	-50...450 °C	1	0.1
	-200...1300 °C	-240...1350 °C	1	
Thermocouple E	-40...260 °C	-50...280 °C	1	
	-200...1000 °C	-210...1010 °C	2	
Thermocouple R	0...1760 °C	-55...1765 °C	2	0.5
Thermocouple T	-200...400 °C	-210...410 °C	1	0.1
Thermocouple B	400...1800 °C	390...1820 °C	1	0.5
Master RS485	In the Master RS-485 mode the transducer can read out one device with implemented Modbus protocol with RS-485 interface. In this mode there is no possibility to connect master device to transducer.			
Monitor RS485	RS-485 monitoring mode provides possibility of monitoring the frames sent between Master and Slave in RS-485 network. Value of any register read by Master from Slave can be displayed on transducer's screen. In this mode there is no possibility of reading by Master device any data from the transducer.			

Outputs:
- analog, programmable, galvanically isolated current (0/4...20 mA, load resistance ≤ 500 Ω) or voltage (0...10 V, load resistance ≥ 500 Ω),

- class of analog output 0.1;

- processing time < 200 ms
- relay - 1 or 2 relays; NO voltageless contacts - maximal load 5A 30V d.c., 250V a.c.
- digital – RS-485 interface (Modbus RTU)

Power consumption: < 5 VA

Overall dimensions: 120 x 45 x 100 mm

Fixing way: 35 mm rail acc. to EN 60715

Readout field: backlighted LCD, 2 x 8 signs

Reference and rated operating conditions
- supply voltage: 85...253 V d.c./a.c.(40...400 Hz) or 20...40 V a.c.(40...400 Hz), 20...60 V d.c.,
- ambient temperature: -25...23...+55 °C
- storage temperature: -30...+70 °C
- relative humidity: 25...95 % (condensation inadmissible)
- working position: any

Safety Requirements:
acc. to EN61010-1
- isolation between circuits: basic,
- installation category: III,
- pollution level: 2,
- maximal phase-to-hearth voltage: 300 V for supply circuit and 50 V for other circuit
- altitude above sea level: <2000 m

Remark: *Detailed technical data available in the service manual*

11. ORDERING CODES

P30U -	X	XX	X	X	XX	X	X
Analog output:							
current (0/4...20 mA)	1						
voltage (0...10 V)	2						
SD/SDHC card:							
without slot for SD/SDHC card		0					
with slot for SD/SDHC card		1					
Additional output:							
NO relay, 5 A 30 V d.c., 250 V a.c.			1				
supply 24 V d.c. / 30 mA			2				
Supply:							
85...253 V a.c./d.c.				1			
20...40 V a.c., 20...60 V d.c.				2			
Version:							
standard					00		
custom-made*					XX		
Language:							
Polish						P	
English						E	
Acceptance tests:							
without extra requirements							0
with an extra quality inspection certificate							1
according to customer's request*							X

* after agreeing with the manufacturer

Order example:

Code P30U-111100E0 means transducer execution with current output, slot for SD/SDHC card, with 2 alarm relays, 85..253 V a.c. / d.c. (40...400 Hz) power supply, standard version, English language, without extra requirements.

NOTES