



MEASURING TRANSDUCCERS

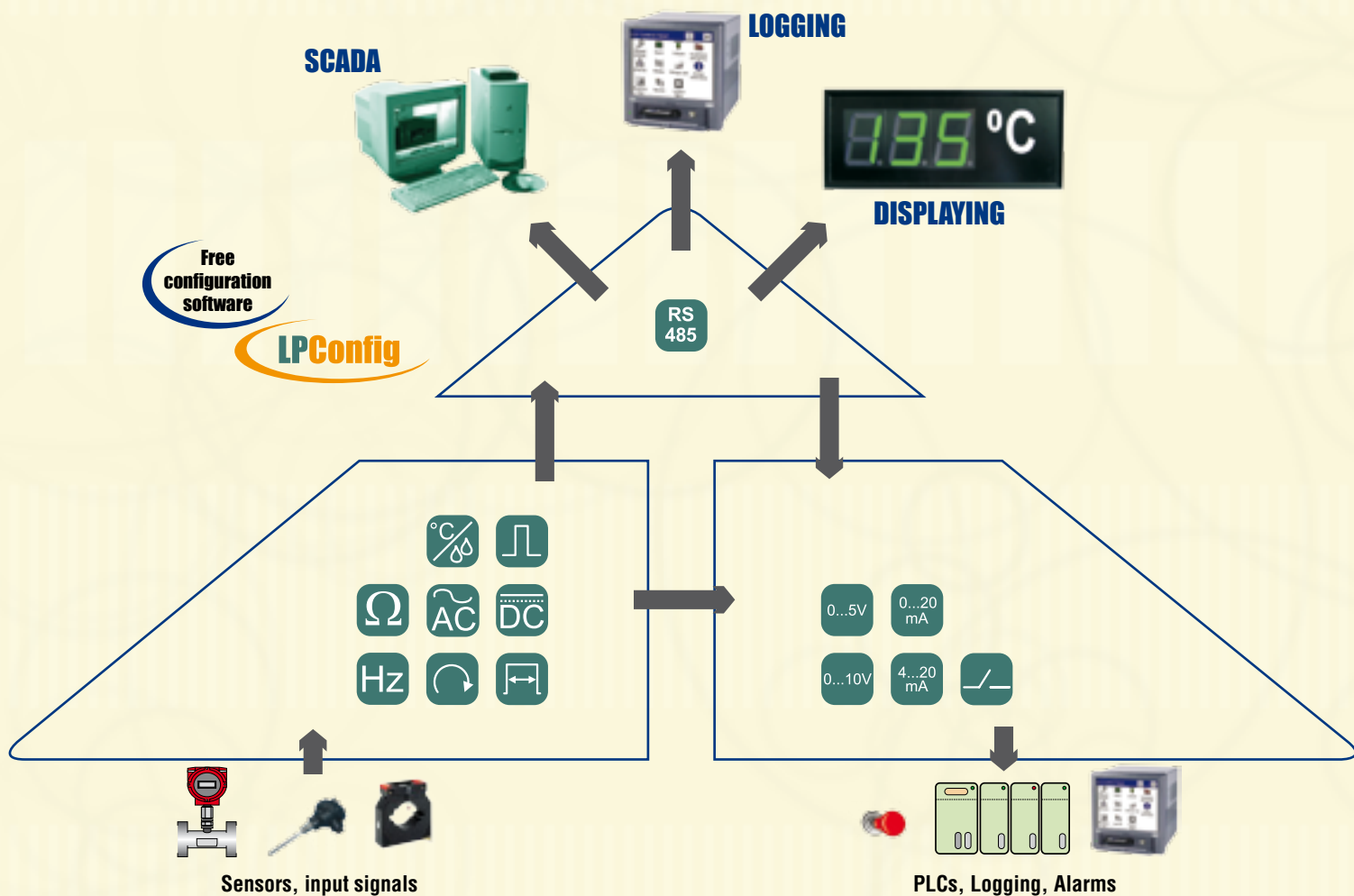


Application:

- food industry
- storage of food, drugs, etc.
- power engineering (substation telemechanics)
- power plants
- mines
- automotive industry
- drying plants
- boiler plants, heat plants
- monitoring systems (SCADA)
- object data gathering

Functionality:

- signals standardization in automation systems
- galvanic isolation between input and output
- signal conversion with rescaling (individual characteristic) – linear (2-point) or multi-point (P12)
- programmability
- alarming (relay outputs)
- RS485 digital interface (P12, P43)
- measured values logging (P12)
- 15 minute power logging (P43)



Measuring transducers

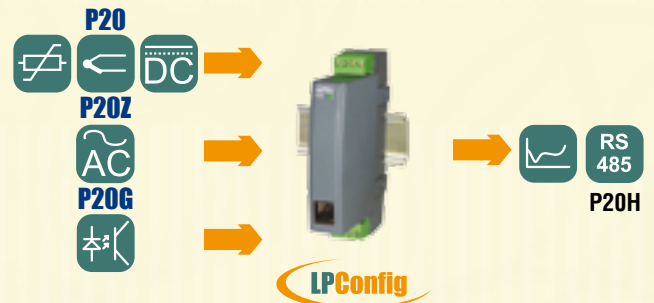
P17, P17G and P18, P18L

- P17 temperature or resistance transducer, P17G galvanic isolator and P18L temperature or humidity transducer – current loop supplied.
- P18 programmable temperature and humidity transducer with RS485 interface.



P20, P20Z P20H and P20G - NEW

- Conversion into standard d.c. signals (0/4..20mA, 0..10V, etc.) of:
 - a.c. voltage or current (P20Z),
 - d.c. voltage or current (P20),
 - temperature or resistance (P20),
 - d.c. current (5A), d.c. voltage (600V) (P20H)
- P20G programmable transducer provides galvanic isolation for d.c. voltage and current signals.
- Configuration of a measuring range and sensor type using PD14 programmer and free LPConfig software.



P11P and P33P

- Conversion of active or reactive power for 1-phase and 3-phase networks (P11P, P13P).



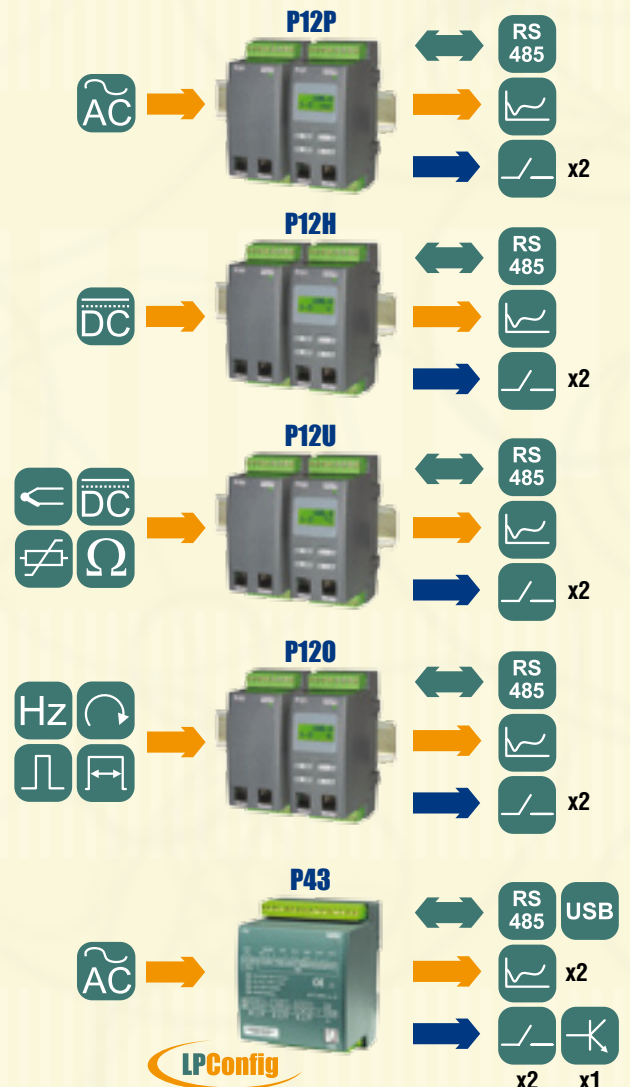
Programmable measuring transducers

P12P, P12H, P12U and P12O

- Conversion into standard d.c. signal (0/4..20mA, 0..10V, etc.) and digital signal (RS485 MODBUS) of:
 - a.c. voltage or current (P12P),
 - d.c. voltage or current (P12H, P12U),
 - temperature or resistance (P12U),
 - power, energy, power factor, phase angle (P12P),
 - rotations, pulses, frequency, period (P12O),
 - rotational speed, working time (P12O).
- Outputs: relays, analog, digital (RS485 MODBUS).
- Measured values logging up to 750 samples (P12).
- Measuring inputs and alarm outputs configuration using pushbuttons, PD14 programmer (USB) or RS485 interface.
- 21-point rescaling (P12U).
- Version with (or without) LCD display (P12).

P43 - NEW

- Analyser of 3-phase network parameters.
- 1000 samples memory for 15-minute power.
- Configuration using free LPConfig software.
- Outputs: relays (2), analog (2), pulse output (OC).
- RS485 MODBUS and USB digital interfaces.



Description

Measurement of power network parameters:

- **P20Z** – a.c. voltage or current measurement,
- **P11P** – 1-phase power measurement,
- **P33P** – 3-phase power measurement,
- **P12P** – measurement of voltage, current, frequency, active, reactive and apparent power, phase angle, active, reactive and apparent energy for 1-phase networks,
- **P43** – measurement of voltage, current, frequency, active, reactive and apparent power, phase angle, active, reactive and apparent energy for 3-phase networks, additionally 1000 samples memory for 15 minute power.

Temperature measurement using thermoresistors and thermocouples:

- **P20** – standard voltage or current outputs,
- **P12U** – RS485 MODBUS digital interface, 21-point input rescaling,
- **P17** – current loop supplied transducer,
- **P18** – temperature and humidity transducer with analog outputs and RS485 MODBUS digital interface.

Measurement of d.c. voltage, current or standard signals 4..20mA, 0..10V:

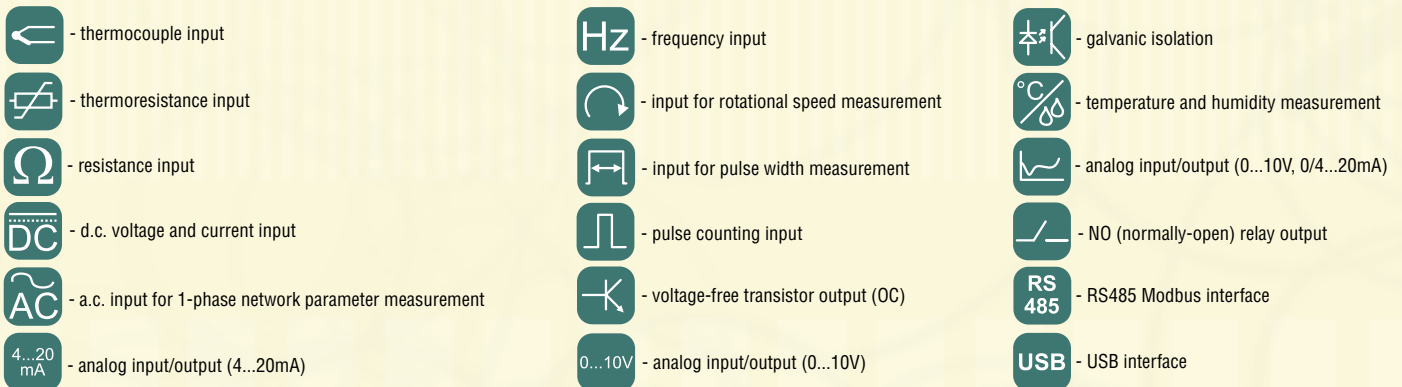
- **P20** – standard voltage or current outputs,
- **P20H** – current (5A), voltage (600V), RS-485 MODBUS digital interface,
- **P12U** – standard signals transducer, RS485 MODBUS digital interface, 21-point input rescaling,
- **P12H** – d.c. voltage or current transducer, RS485 MODBUS digital interface, 21-point input rescaling.

Pulses or rotations measurement:

- **P120** – conversion of pulses, rotations, working time, frequency, period or rotational speed into standard voltage or current signal.

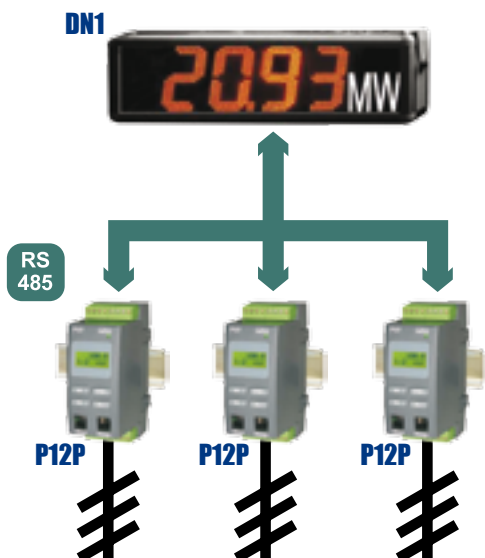
Galvanic isolation:

- **P17G** – passive galvanic isolator,
- **P20G** – programmable standard signals transducer with galvanic isolaton.

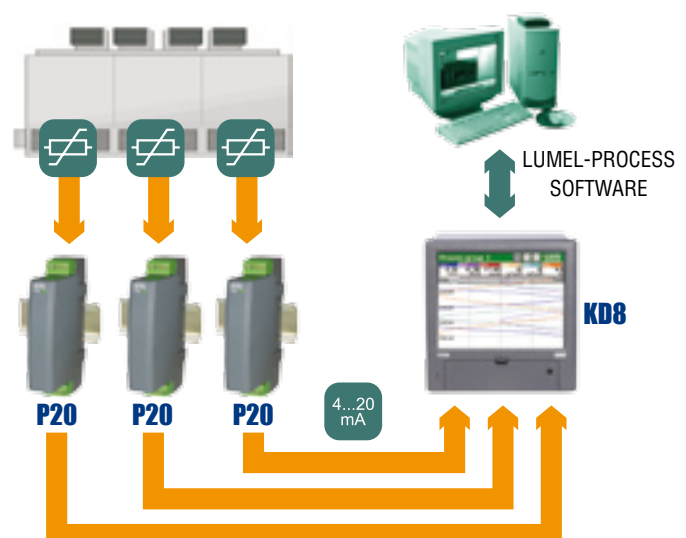


APPLICATIONS

Ordered power monitoring

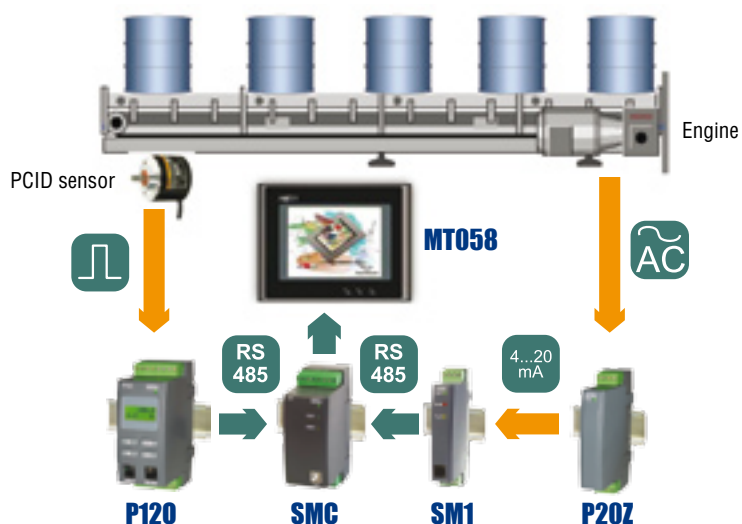


Temperature logging in a drying process

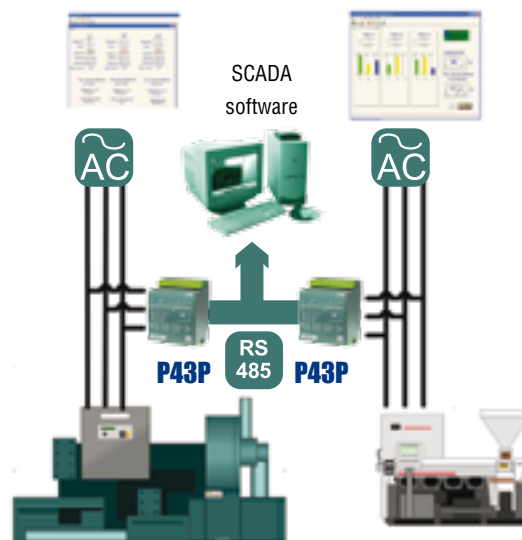


APPLICATIONS

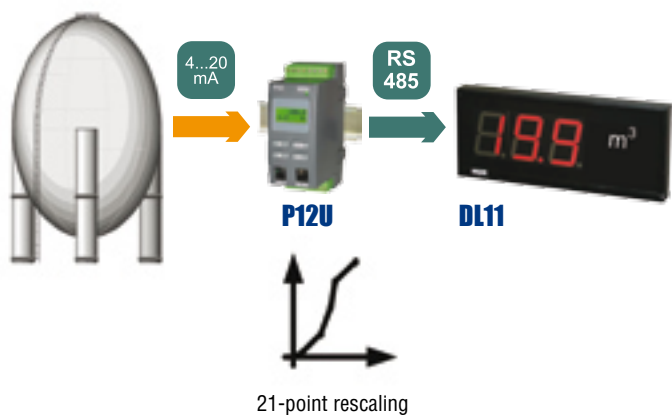
Measurement of conveyor belt speed and engine load



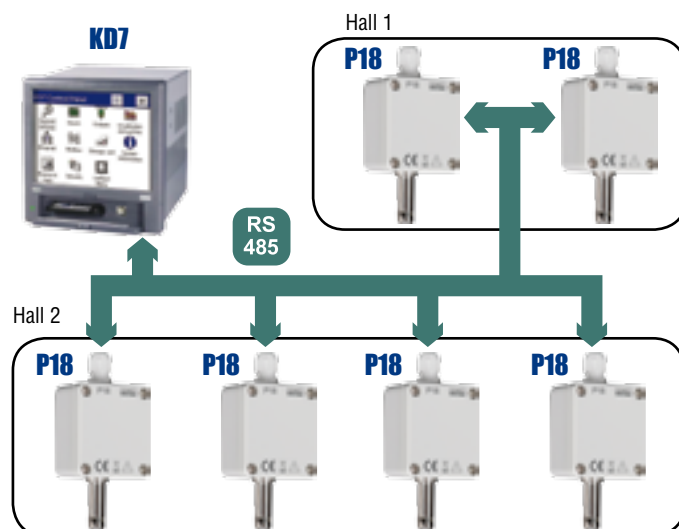
Measurement of 3-phase network parameters



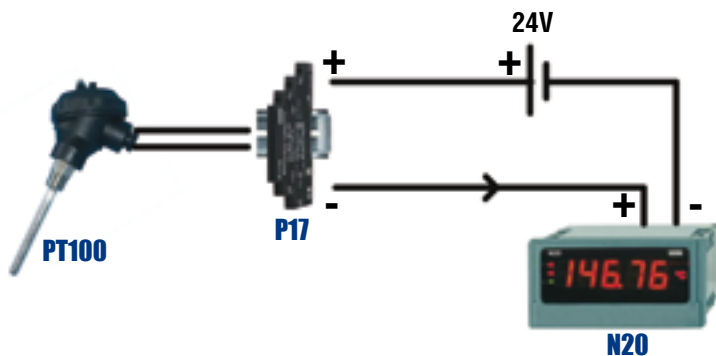
Liquid volume measurement in a tank with irregular shape



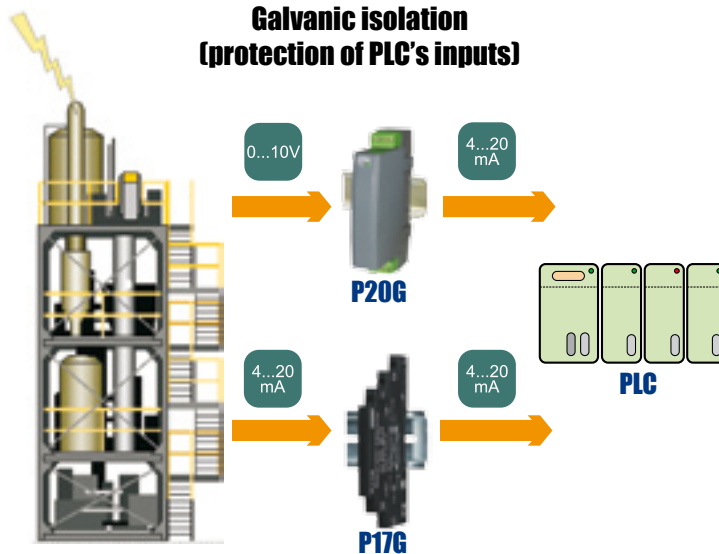
Measurement and logging of temperature and humidity



Current loop supplied transducer



Galvanic isolation (protection of PLC's inputs)



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**P18 AND P18L TEMPERATURE AND HUMIDITY TRANSDUCERS
P17 TRANSDUCER AND P17G SEPARATOR**

TABLE 1. P17 ORDERING CODES:

	P17 -	XX	XX	X
Input:				
voltage (0...10 V)		00		
thermocouple J (-100...1200°C)		01		
thermocouple K (-100...1370°C)		02		
thermocouple N (-100...1300°C)		03		
thermocouple E (-100...90°C)		04		
Pt100 (-50...100°C)		05		
Pt100 (-50...400°C)		06		
resistance (0...150 Ω)		07		
resistance (0...250 Ω)		08		
voltage (0...60 mV)		09		
Version:				
standard		00		
custom-made*		XX		
Acceptance tests:				
without extra requirements			8	
with an extra quality inspection certificate			7	
acc. to customer's request*			X	

TABLE 2. P17G ORDERING CODES:

	P17G -	XX	X
Version:			
standard		00	
custom-made*		XX	
Acceptance tests:			
without extra requirements			8
with an extra quality inspection certificate			7
acc. to customer's request*			X

TABLE 3. P18L ORDERING CODES:

	P18L -	XX	X
Version:			
standard		00	
custom-made*		XX	
Acceptance tests:			
without extra requirements			8
with an extra quality inspection certificate			7
acc. to customer's request*			X

TABLE 4. P18 ORDERING CODES:

	P18 -	X	XX	X
Outputs:				
without analog output		0		
current outputs 4...20 mA			1	
voltage outputs 0...10 V			2	
Version:				
standard			00	
custom-made*			XX	
Acceptance tests:				
without extra requirements				8
with an extra quality inspection certificate				7
acc. to customer's request*				X

* - After agreeing with manufacturer

P20 SERIES TRANSDUCERS

TABLE 6. P20 ORDERING CODES:

	P20 -	X	X	XX	XX	X
Analog output:						
0...20 mA		1				
4...20 mA		2				
0...10 V		3				
Supply voltage:						
85...253 V a.c./d.c.			1			
20...40 V a.c./d.c.			2			
Kind of input:						
write the code from table 9				XX		
Version:						
standard				00		
custom-made*				XX		
Acceptance tests:						
without extra requirements					8	
with an extra quality inspection certificate					7	
acc. to customer's request*					X	

TABLE 5. P20G ORDERING CODES:

	P20G -	XX	XX	X	XX	X	X
Input:							
kind of programmed input: see table 10		XX					
Output:							
kind of programmed output: see table 10			XX				
Supply:							
85...253 V a.c./d.c.				1			
20...40 V a.c./d.c.				2			
Version:							
standard				00			
non-standard settings				NS			
custom-made*				XX			
Language:							
Polish					P		
English					E		
other*					X		
Acceptance tests:							
without extra requirements						0	
with an extra quality inspection certificate						1	
acc. to customer's request*						X	

TABLE 7. P20Z ORDERING CODES:

	P20Z -	XX	X	X	X	XX	X
Input range:							
0...60 V		01					
0...100 V		02					
0...150 V		03					
0...250 V		04					
0...400 V		05					
0...500 V		06					
0...600 V		07					
1 A		08					
5 A		09					
Output range:							
0...5 mA			1				
0...20 mA			2				
4...20 mA			3				
0...10 V			4				
Supply voltage:							
85...253 V ac/dc				1			
20...40 V ac/dc				2			
Kind of terminals:							
inseparable screws					1		
socket-plug screws					2		
Version:							
standard					00		
custom-made*					XX		
Acceptance tests:							
without extra requirements						8	
with an extra quality inspection certificate						7	
acc. to customer's request*						X	

TABLE 8. P20H ORDERING CODES:

	P20H -	X	X	X	XX	X	X
Input signal:							
+/- 10 V			1				
+/- 250 V			2				
+/- 400 V			3				
+/- 1 A			4				
+/- 5 A			5				
0...100 V			6				
0...250 V			7				
0...400 V			8				
Output:							
0...20 mA				1			
4...20 mA				2			
0...10 V				3			
RS-485				4			
Supply:							
85...253 V a.c./d.c.					1		
20...40 V a.c./d.c.					2		
Version:							
standard					00		
non-standard settings					NS		
custom-made*					XX		
Language:							
Polish					P		
English					E		
other*					X		
Acceptance tests:							
without extra requirements						0	
with an extra quality inspection certificate						1	
acc. to customer's request*						X	

TABLE 9. P20 INPUT SIGNALS

Type of sensor/ input [unit]	Range	Code	Type of sensor/ input [unit]	Range	Code
Pt100 [°C]	-200..850	01	TC of K type [°C]	-200..1370	36
	0..850	02		0..1200	37
	0..600	03		0..1000	38
	0..400	04		0..800	39
	0..200	05		0..600	40
	-200..200	06		0..400 ¹	41
	-100..100 ¹	07		-200..200 ¹	42
Pt250 [°C]	-200..850	08	TC of S type [°C]	0..1760	43
	0..850	09		0..1600	44
	0..600	10		0..1400 ¹	45
	0..400	11		0..1200 ¹	46
	0..200	12		0..1000 ¹	47
	-200..200	13		-200..1200	48
	-100..100	14		0..1200	49
Pt500 [°C]	-200..850	15	TC of N type [°C]	0..1000	50
	0..850	16		0..800	51
	0..600	17		0..600 ¹	52
	0..400	18		0..400 ¹	53
	0..200	19		-200..200 ¹	54
	-200..200	20		0..10	55
	-100..100	21		0..5	56
Pt1000 [°C]	-200..850	22	d.c. voltage [V]	-10..10	57
	0..850	23		-5..5	58
	0..600	24		0..60	59
	0..400	25		-60..60	60
	0..200	26		0..150	61
	-200..200	27		-150..150	62
	-100..100	28		0..20	63
TC of J type [°C]	-200..1200	29	d.c. current [mA]	4..20	64
	0..1200	30		0..5	65
	0..1000	31		-20..20	66
	0..800	32		0..400	67
	0..600	33		0..4000	68
	0..400 ¹	34		Custom made	XX
	-200..200 ¹	35			

¹ accuracy class 0.5

TABLE 10. CODING OF THE P20G SEPARATOR KIND OF INPUT AND OUTPUT

Range	Input code	Output code
0...1 V	01	01**
0...5 V	02	02
0...10 V	03	03
±1 V	04	04**
±5 V	05	05
±10 V	06	06
0...5 mA	07	07**
0...20 mA	08	08
±5 mA	09	09**
±20 mA	10	10
4...20 mA	11	11
Custom-made version*	XX	XX

* - After agreeing with manufacturer
** - conversion class > 0,2

P12 TRANSDUCERS SERIES

TABLE 11. P12U ORDERING CODES:

P12U -	X	XX	X	X	X	XX	X
Kind of transducer:							
without a display	1						
with a display	2						
Input:							
Pt100	00						
Pt500	01						
Pt1000	02						
Cu100	03						
Ni100	04						
thermocouple J (Fe-CuNi)	05						
thermocouple K (NiCr-NiAl)	06						
thermocouple N (NiCrSi-CuNi)	07						
thermocouple E (NiCr-CuNi)	08						
thermocouple R (PtRh13-Pt)	09						
thermocouple S (PtRh10-Pt)	10						
thermocouple T (Cu-CuNi)	11						
resistance: 0...400	12						
resistance: 0...4000	13						
voltage: -10...70 mV	14						
voltage: 0...3 V	15						
voltage: 0...10 V	16						
current: 0...5 mA	17						
current: 0...20 mA	18						
voltage: 0...200 V	19						
voltage: 0...600 V	20						
current: 0...1 A	21						
current: 0...5 A	22						
Custom version (please check data-sheet for more details)	XX						
Output:							
0...10V	1						
0...20mA	2						
4...20mA	3						
0...5 mA	4						
Supply:							
85...253 V d.c. or a.c.	1						
20...50 V d.c. or a.c.	2						
Kind of terminals:							
socket-plug screws							0
Version:							
standard							00
custom-made*							XX
Acceptance tests:							
without extra requirements							8
with an extra quality inspection certificate							7
acc. to customer's request*							X

TABLE 15. P12S ORDERING CODES:

P12S -	X	XX	X	X	X	XX	X
Kind of transducer:							
without a display	1						
with a display	2						
Input:							
-3...3 V	00						
-10...10 V	01						
-5...5 mA	02						
-20...20 mA	03						
custom version (please check data-sheet for more details)	XX						
Output:							
0..10V	1						
0..20mA	2						
4..20mA	3						
0..5 mA	4						
Supply:							
85..253 V d.c. or a.c.	1						
20..50 V d.c. or a.c.	2						
Kind of terminals:							
socket-plug screws							0
Version:							
standard							00
custom-made*							XX
Acceptance tests:							
without extra requirements							8
with an extra quality inspection certificate							7
acc. to customer's request*							X

TABLE 12. P12H ORDERING CODES:

P12H -	X	XX	X	X	X	XX	X
Kind of transducer:							
without a display	1						
with a display	2						
Input:							
-100...100 V	00						
-600...600 V	01						
-1...1 A	02						
-5...5 A	03						
custom version (please check data-sheet for more details)	XX						
Output:							
0...10V	1						
0...20mA	2						
4...20mA	3						
0...5 mA	4						
Supply:							
85...253 V d.c. or a.c.	1						
20...50 V d.c. or a.c.	2						
Kind of terminals:							
socket-plug screws							0
Version:							
standard							00
custom-made*							XX
Acceptance tests:							
without extra requirements							8
with an extra quality inspection certificate							7
acc. to customer's request*							X

TABLE 14. P12O ORDERING CODES:

P12O -	X	XX	X	X	X	XX	X
Kind of transducer:							
without a display	1						
with a display	2						
Input:							
number of pulses: 0...99999	00						
frequency: 0.1...3000 Hz	01						
number of turns: 0...99999 t	02						
rotation speed: 0.99999 t/min	03						
period: 0.3...9999.9 ms	04						
long period >10s: 0...99999 s	05						
worktime counter: 0...99999 h	06						
Custom version (please check data-sheet for more details)	XX						
Output:							
0...10V	1						
0...20mA	2						
4...20mA	3						
0...5 mA	4						
Supply:							
85...253 V d.c. or a.c.	1						
20...50 V d.c. or a.c.	2						
Kind of terminals:							
socket-plug screws							0
Version:							
standard							00
custom-made*							XX
Acceptance tests:							
without extra requirements							8
with an extra quality inspection certificate							7
acc. to customer's request*							X

TABLE 13. P12P ORDERING CODES:

P12P -	X	X	XX	X	X	X	XX	X
Kind of transducer:								
without a display	1							
with a display	2							
Input:								
100V 1A	1							
100V 5A	2							
400V 1A	3							
400V 5A	4							
Custom-made versions								
600V 5A	5							
10V 5A	6							
120V 5A	7							
50V 5A	8							
Programmed converted parameter:								
voltage								00
current								01
frequency								02
active power								03
reactive power								04
apparent power								05
3-phase active power								06
3-phase reactive power								07
3-phase apparent power								08
cos φ								09
tg φ								10
φ								11
active energy								12
reactive energy								13
apparent energy								14
3-phase active energy								15
3-phase reactive energy								16
3-phase apparent energy								17
Output:								
0...10V	1							
0...20mA	2							
4...20mA	3							
0...5 mA	4							
Supply:								
85...253 V d.c. or a.c.	1							
20...50 V d.c. or a.c.	2							
Kind of terminals:								
socket-plug screws								0
Version:								
standard								00
custom-made*								XX
Acceptance tests:								
without extra requirements								8
with an extra quality inspection certificate								7
acc. to customer's request*								X

* - After agreeing with manufacturer

P43 AND OTHER PRODUCTS

TABLE 16. P43 ORDERING CODES:

P43 -	X	X	X	XX	X
Current input:					
1 A (X/1A)	1				
5 A (X/5A)	2				
Voltage input:					
57.7/100 V	1				
230/400 V	2				
Supply:					
85..253 V a.c./d.c.	1				
20..40 V a.c./d.c.	2				
Version:					
standard					00
custom-made*					XX
Acceptance tests:					
without extra requirements					8
with an extra quality inspection certificate					7
acc. to customer's request*					X

* - After agreeing with manufacturer

For datasheets and ordering codes of other LUMEL's products please visit:

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