



PRODUCT CATALOG

*Measuring Instruments
and Electronic Manufacturing Services*



LUMEL

For over sixty years we have been providing you with all what you need, working in accordance with the highest standards. Every day thousands of our clients all over the world get our safe and user-friendly products. It wouldn't be possible without power and skills of our best specialists. We remember about every single detail

b e c a u s e

E V E R Y T H I N G C O U N T S

GUARANTEE OF THE HIGHEST QUALITY OF PRODUCTION AND SERVICES

To meet the expectations of our customers **we continuously improve the quality management system.** It takes place at every activity level, from the identification of the customer's needs, through the production process, to the research of the recipients satisfaction.

To guarantee the highest quality we continuously supervise the production processes, we aim at the permanent parameter improving and we use materials from suppliers, who meet the highest global standards.

We work in accordance with:

- Certificate ISO 9001:2008,
- Certificate ISO 14001:2004,
- Technical specification ISO/TS 16949:2009.

We fulfill all requirements of 2002/95/EC Directive about limiting Hazardous Substances in our products.

Our products fulfill requirements:

- **Electromagnetic compatibility acc. to:**
 - immunity against electromagnetic interference EN 61000-6-2,
 - emission of electromagnetic interference EN 61000-6-4.
- **Safety acc. to:** EN 61010.
- **Category III instalation acc. to:** safety requirements for electrical equipment for measurement, control and laboratory use EN 61010.

CONTENTS

MEASUREMENT.....	4	MEASUREMENT.....	32
Meters and Analyzers of Power Network Parameters.....	4	Analog Meters.....	32
Synchronization Meters.....	6	Current Transformers.....	38
Digital Meters.....	9	Shunts.....	40
Transducers, Separators.....	14	Adapter for DIN rail.....	40
TEMPERATURE CONTROL.....	18	VISUALIZATION.....	41
Controllers.....	18	Displays.....	41
Controllers for Injection Moulds.....	22	SERVICES.....	44
Power Controllers.....	23	Electronic Manufacturing Services.....	44
RECORDING.....	24	Production of Plastic Parts.....	45
Recorders.....	24	Mechanical Treatment.....	46
PROCESS CONTROL.....	27	CASTING.....	47
I/O Modules, Communication Modules.....	27	Offer of High Pressure Die-Casting and CNC Machining.....	47
SOFTWARE TOOLS	30		
eCon - Free Software for Configuration of Lumel Products.....	30		
PROCESS VISUALIZATION SOFTWARE.....	30		
PowerVis.....	30		
LUMEL-PROCESS.....	31		

ICON LEGEND

	- TC and RTD input		- voltage-free transistor output (OC)		- logic input
	- resistance signal measurement		- thermoresistance input		- Real Time Clock
	- DC signal input		- relay output		- internal memory
	- AC signal input (1- or 3-phase Network parameters)		- temperature and humidity measurement		- USB port
	- 0...10 V analog input/output		- temperature input		- RS-485 interface
	- 4...20 mA analog input/output		- pulse counting input		- RS-232 interface
	- analog output (0...10 V, 0/4...20 mA)		- relative humidity measurement		- Modbus protocol

METERS AND ANALYZERS OF POWER NETWORK PARAMETERS



	N43	N14	ND10	ND20LITE	ND20	ND30	ND30PNET
Measured parameters (detailed information in user's manuals)	U _{LN} / U _{LL}	✓/✓	✓/✓	✓/✓	✓/✓	✓/✓	✓/✓
	average U _{LN} / U _{LL}	✓/✓	✓/✓	✓/✓	@/@	✓/✓	✓/✓
	I _L / average I _L / I _N	✓/✓/ @	✓/✓/-	✓/✓/✓	✓/✓/✓	✓/✓/✓	✓/✓/✓
	P / Q / S	✓/✓/✓	✓/✓/✓	✓/✓/✓	✓/✓/✓	✓/✓/✓	✓/✓/✓
	E _P / E _Q / E _S	✓/✓/✓	✓/✓/-	✓/✓/-	✓/✓/-	✓/✓/✓	✓/✓/✓
	4-quadrant measurement	@	✓	✓	✓	✓	✓
	PF / tgφ / cosφ / φ	✓/✓/-/-	✓/✓/-/-	✓/✓/@/@	✓/✓/✓/@	✓/✓/-/-	✓/✓/✓
	f / THD U / THD I	✓/✓/✓	✓/-/-	✓/✓/✓	✓/✓/✓	✓/✓/✓	✓/✓/✓
	Harmonics	-	-	-	-	✓ 21	✓ 51
	P (15/30/60 min.)	✓/✓/✓	✓/-/-	✓/✓/✓	✓/✓/✓	✓/✓/✓	✓/✓/✓
	Q (15/30/60 min.)	-	-	-	-	-	-
	S (15/30/60 min.)	✓/✓/✓	-	-	-	✓/✓/✓	✓/✓/✓
	I (15/30/60 min.)	✓/✓/✓	-	-	-	✓/✓/✓	✓/✓/✓
	Time/Date/Temp.	✓/@/-	-	✓/✓/-	✓/-/-	✓/✓/-	✓/✓/✓
	Dips / Swells / Overvoltages	-	-	-	-	-	-
	Tariffs / Voltage asymmetry	-	-	-	-	-	-
	Memory of min. and max. values	-	✓	✓	✓	✓	✓
Inputs	1 A / 5 A or 63 A 57.7/100 V or 230/400 V or 290/500 V	1 A or 5 A 57.7/100 V or 230/400 V or 400/690 V	1 A or 5 A 57.7/100 V or 230/400 V or 290/500 V	1 A or 5 A 57.7/100 V or 230/400 V or 290/500 V	1 A or 5 A 57.7/100 V or 230/400 V or 290/500 V or 63.5/110 V or 69.3/120 V	1 A / 5 A 57.7/100 V 230/400 V or 110/190 V 400/690 V	2 x Pt100 - option
Outputs	3 x relay 1 x pulse	1 x relay 1 x pulse	2 x relays 1 x pulse	1 x relay 1 x pulse	1 x 0/4...20 mA (option) 1 x relay 1 x pulse	1 x 0/4...20 mA (option); 2 x relay	
Interface	RS-485 Modbus Slave	RS-485 Modbus Slave	RS-485 Modbus Slave - option	RS-485 Modbus Slave	RS-485 Modbus Slave	RS-485 Modbus Slave	
	-	-	-	-	-	Ethernet 10/100 Base-T Modbus TCP, www, FTP - option	Ethernet ICMP (Ping) / Profinet ver. 2.2
Display	LCD 4x3 digits + 1x7 digits	LED 3x3 digits (14 mm)	3.5"LCD 3x4 digits (16 mm)	3.5"LCD 3x4 (11 mm) + 1x5 digits (9 mm)	3.5" colour TFT LCD 320x240 pixel		
Supply voltage	85...253 V a.c./ 90...300 V d.c. or 20...40 V a.c./ 20...60 V d.c.	85...253 V a.c./d.c.	50...64 V a.c. or 195...253 V a.c. or 246...300 V a.c.	85...253 V a.c./ 90...300 V d.c. or 20...40 V a.c./ 20...60 V d.c.	85...253 V a.c., 90...300 V d.c. or 20...40 V a.c., 20...60 V d.c.		
Protection IP	IP50	IP40			IP65		
Ext. dimensions	105 x 110 x 60 mm	96 x 96 x 70.5 mm			96 x 96 x 77 mm		
Programming	free eCon software (using miniUSB) or using buttons	free eCon software (using RS-485) or using buttons		free eCon software (using RS-485) or using buttons		free eCon software, (using RS-485 or Ethernet) or using buttons	
Additional functions	• connection with S4AO module (module of 4 analog outputs)	• galvanic isolation of current inputs			• memory 9000 samples samples for mean power • galvanic isolation of current inputs	• selection of displayed quantities on each of the 12 programmable pages • temperature measurement - 2 x input Pt100, • galvanic isolation between input/output, supply and interface	
					• data archiving in the internal memory 8 GB	-	

@ - parameter available only through digital interface RS-485 and/or Ethernet

METERS AND ANALYZERS OF POWER NETWORK PARAMETERS



	N100	ND1	ND40
Measured parameters (detailed information in user's manuals)	✓/✓	✓/✓	✓/✓
	average U_{LN}/U_{LL}	@/✓	✓/-
	$I_L/\text{average } I_L/I_N$	✓/✓/✓	✓/✓/✓
	P/Q/S	✓/✓/✓	✓/✓/✓
	$E_p/E_Q/E_S$	✓/✓/✓	✓/✓/✓
	4-quadrant measurement	✓	✓
	PF/tgφ/cosφ/φ	✓/✓/-/-	✓/✓/-/✓
	f / THD U / THD I	✓/✓/✓	✓/✓/✓
	Harmonics	✓ 51	✓ 51
	P(15/30/60 min.)	✓/✓/✓	✓/✓/✓
	Q(15/30/60 min.)	-	-
	S(15/30/60 min.)	✓/✓/✓	-
	I(15/30/60 min.)	✓/✓/✓	-
	Time/Date/Temp.	✓/✓/-	✓/✓/-
	Dips / Swells/Overvoltages	-	✓/✓/✓
	Tariffs / Voltage asymmetry	-	✓/✓
	Memory of min. and max. values	✓	-
Inputs	1 A/5 A 57.7/100 V or 230/400 V or 400/690 V	1 A or 5 A 57.7/100 V or 230/400 V or 400/690 V	1 A / 5 A 230/400 V
	pulse 0/12...36 V	12 x logic	2 x Pt100/Pt1000/5k Ω 6 x logic - option
Outputs	1 x pulse, 1 x 0/4...20 mA + 3 x relay or 3 x -20...0...20 mA + 1 x relay	4 x 0/4...20 mA 6 x relays 2 x supplying outputs	3 x 0/4...20 mA; or 8 x relay
	RS-485 Modbus Slave	RS-485 Modbus 1 x Master, 1 x Slave, USB Device	RS-485 Modbus Slave, USB Device & Host
Interface	Ethernet 10/100 Base-T Modbus TCP, www, FTP - option	Ethernet 10 Base-T Modbus TCP, www, FTP, NTP	Ethernet 10/100 Base-T Modbus TCP, www, FTP, NTP
	-	-	-
Display	LED 4 x 4 1/2 digit, backlight unit, 2-colour display (red, green) (14 mm)	5.7" TFT touch screen, 320x240 pixel 256 colours	5.6" LCD TFT colour touch screen 640 x 480 pixel
Supply voltage	85...253 V a.c. / 90...300 V d.c.	85...253 V a.c. / 90...300 V d.c.	85 V...240 V a.c. / 90 V...320 V d.c.
Protection IP	IP40	IP65	
Ext.dimensions	144 x 144 x 77 mm	144 x 144 x 155 mm	144 x 144 x 104 mm
Programming	free eCon software, (using RS-485 or Ethernet) or using buttons	NDSetup program (using USB or CF card) or using touch screen	dedicated software or using touch screen
Additional functions	<ul style="list-style-type: none"> selection of displayed quantities on each of the 20 programmable pages galvanic isolation of current and voltage inputs data archiving in the internal memory 8 GB 	<ul style="list-style-type: none"> measurement and logging of energy quality acc. to EN50160 memory - CF card 4GB oscilloscope galvanic isolation of current and voltage inputs 	<ul style="list-style-type: none"> measurement class A/S measurement and logging of energy quality acc to EN 50160, EN 61000-4-30, EN 6100-4-7 oscilloscope galvanic isolation of measuring current and voltage inputs data archiving on SD card

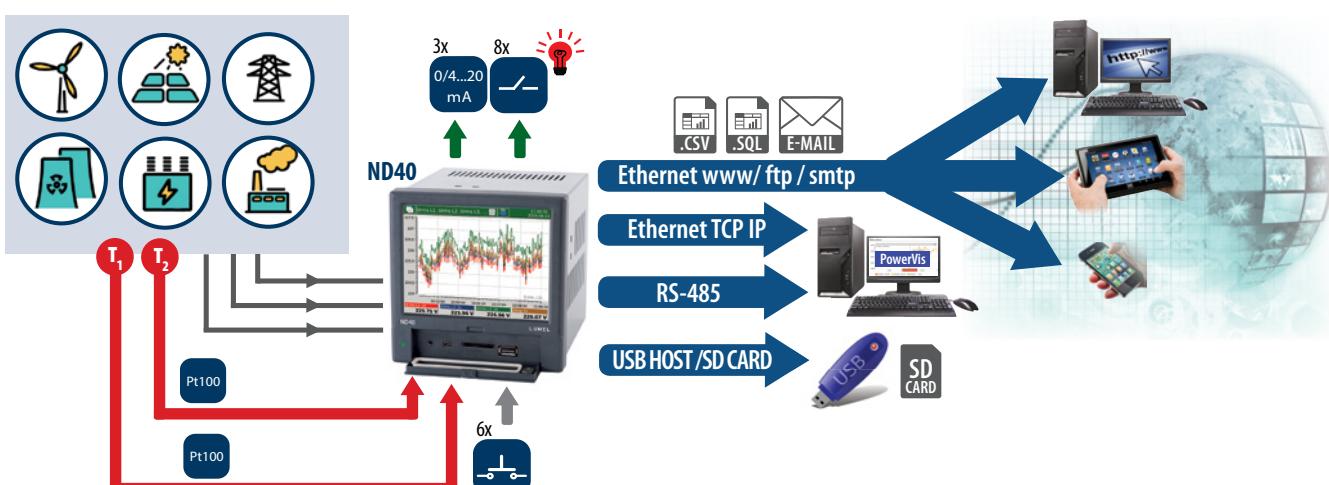
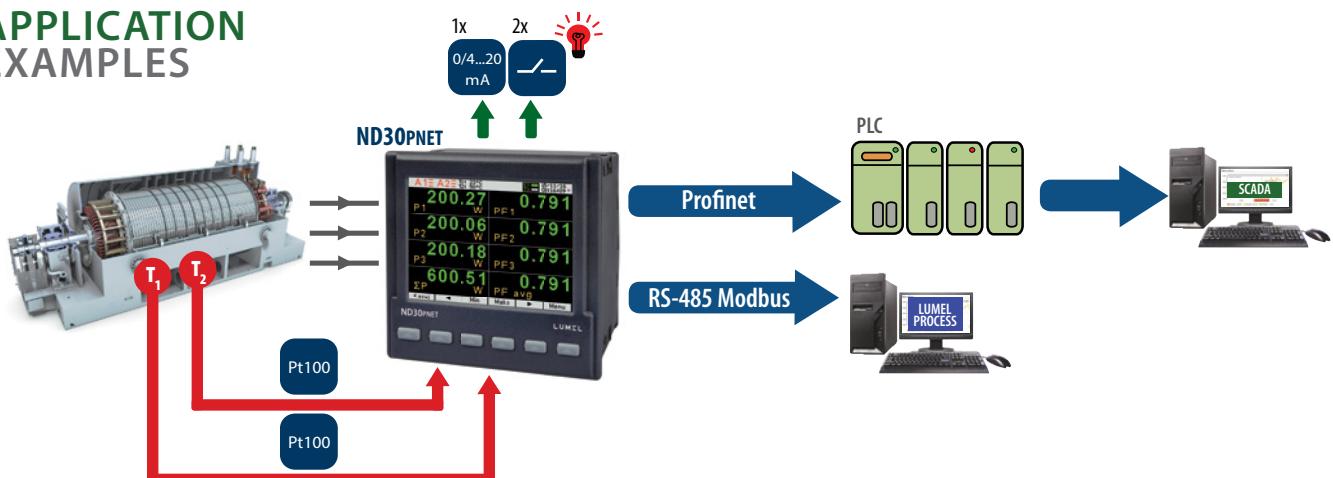
NP40	
Measurement	voltage: phase , mean 3-phase, phase-to-phase, mean phase-to-phase current: phase, mean 3-phase, in neutral wire power: active, reactive, apparent 3-phase power, power factor, angle, cos φ, tg φ frequency, 15-min. active power 3-phase active, reactive and apparent energy THD U, I harmonics up to 50th voltage dips and swells
Inputs	1...1000 V 1...3000 A or 1...5000 A - with Rogowski coil as option 5 A or 50 A or 1...100 A or 1...1000 A - with current clamps as option
Output	-
Interface	USB, USB host Ethernet
Display	5,6" TFT colour LCD; 320x240 pixel
Supply voltage	90...264 V a.c. (adapter input)
Protection rating	IP51 (housing) / IP00 (terminals)
External dimensions	262 x 173 x 66 mm
Programming	dedicated software <ul style="list-style-type: none"> waveform real-time display (4 voltages/4 currents) measurement in 1-phase and 3-phase systems (3- and 4-wire) graphical presentation of data in a waveform and vector diagram record of events: dips, swells, overvoltages power quality measurement according to EN-50160 or user-defined limit internal memory for data logging (continuous recording from 2 hours to 7 days) recording frequency from 1 second up to 60 minutes built-in 8GB memory card USB host to move archive data and screenshots to an external USB memory safety standards: EN 61010-1, CAT III 1000V / CAT IV 600V analyzer set: analyzer, voltage tests leads crocodile clips (5x), DC power adapter, CD with software, user's manual
Additional informations	

SYNCHRONIZATION METERS



	KS31	KS32	KS5
Input	100.0 V (Ku=1) 110.0 V (Ku=1) 240.0 V (Ku=1) 400.0 V (Ku=1)		50...150 V 150...400 V
Output	2 x relays		2 x relays
Interface	RS-485 Modbus - option	-	RS-485 Modbus Ethernet 10/100 Base-T Modbus TCP, www - option
Display	4 x 5 digits LED (14 mm), red colour	synchronoscope: circle with 72 diodes; differential voltage and frequency: bargraph with zero in the middle (68 diodes)	3.5" colour TFT LCD 320x240 pixel
Supply voltage	85...253 V a.c./d.c. or 20...40 V a.c./d.c.		85...253 V a.c., 90...300 V d.c. or 20...40 V a.c., 20...60 V d.c.
Protection rating	IP40		IP65
External dimensions	144 x 144 x 77 mm		96 x 96 x 77 mm
Programming	-		free eCon software, (using RS-485 or Ethernet) or using buttons
Additional functions	<ul style="list-style-type: none"> signalling of synchronizing condition (AL1) signalling of any network voltage range exceeding beyond 80-120% of the rated value (AL2) 	<ul style="list-style-type: none"> programmable parameters measurement of min. and max. values of voltage and frequency 	<ul style="list-style-type: none"> memory of min. and max. values many forms of data presentation bargraph, digital additional control inputs

APPLICATION EXAMPLES



ORDERING CODES

Table 1. N43 ordering code:

	N43 -	X	X	X	XX	X	X
Input current In:							
1 A/5 A (X/1; X/5)	1						
63 A	2						
Input voltage (phase/phase-to-phase) Un:							
3 x 57.7/100 V	1						
3 x 230/400 V	2						
3 x 290/500 V	3						
Supply voltage:							
85...253 V a.c., 90...300 V 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						
other*	X						
Acceptance tests:							
without extra requirements	0						
with an extra quality inspection certificate	1						
acc. to customer's request	X						

Table 2. N14 ordering code:

	N14 -	X	X	XX	X
Current input In:					
1 A (X/1)	1				
5 A (X/5)	2				
Voltage input (phase/phase-to-phase) Un:					
3 x 57.7/100 V	1				
3 x 230/400 V	2				
3 x 400/690 V**	3				
Version:					
standard	00				
input voltage 3 x 110 / 190 V	01				
custom-made*	XX				
Acceptance tests:					
without extra requirements	8				
with an extra quality inspection certificate	7				
acc. to customer's request	X				

** - version only for direct measurement

* - after agreeing with the manufacturer

Table 3. ND10 ordering code:

	ND10 -	X	X	X	XX	X	X
Current input In:							
1 A (X/1)	1						
5 A (X/5)	2						
Voltage input (phase/phase-to-phase) Un:							
3 x 57.7/100 V	1						
3 x 230/400 V	2						
3 x 290/500 V	3						
Digital output:							
without RS-485 interface	0						
with RS-485 interface	1						
Version:							
standard	00						
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 4. ND20LITE ordering code:

	ND20LITE -	X	X	X	XX	X	X
Current input In:							
1 A	1						
5 A	2						
Voltage input (phase/phase-to-phase) Un:							
3 x 57.7/100 V	1						
3 x 230/400 V	2						
Supply voltage:							
85..253 V a.c., 90..300 V 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						
other*	X						
Acceptance tests:							
without extra requirements	0						
with an extra quality inspection certificate	1						
acc. to customer's request	X						

Table 5. ND20 ordering code:

	ND20 -	X	X	X	X	XX	X	X
Current input In:								
1 A	1							
5 A	2							
Voltage input (phase/phase-to-phase) Un:								
3 x 57.7/100 V	1							
3 x 230/400 V	2							
3 x 290/500 V	3							
3 x 63.5/110 V	4							
3 x 69.3/120 V	5							
Analog current output:								
without analog output	0							
with programmable output 0(4)..20 mA	1							
Supply voltage:								
85..253 V a.c., 90..300 V 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							
other*	X							
Acceptance tests:								
without extra requirements	0							
with an extra quality inspection certificate	1							
acc. to customer's request	X							

Table 6. ND30 ordering code:

	ND30 -	X	X	X	X	XX	X	X
Input voltage (phase/phase-to-phase) Un:								
3 x 57.7 / 100 V, 3 x 230 / 400 V	1							
3 x 110 / 190 V, 3 x 400 / 690 V	2							
Additional outputs/inputs:								
2 relays	1							
2 relays, 1 analog output, 2 PT100 inputs	2							
Interfaces:								
RS-485	1							
RS-485 and Ethernet, internal memory	2							
Supply:								
85...253 V a.c., 90..300 V 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							
other*	X							
Acceptance tests:								
without extra requirements	0							
with an extra quality inspection certificate	1							
acc. to customer's request	X							

Table 7. ND30NET ordering code:

	ND30NET -	X	X	X	XX	X	X
Input voltage (phase/phase-to-phase) Un:							
3 x 57.7 / 100 V, 3 x 230 / 400 V	1						
3 x 110 / 190 V, 3 x 400 / 690 V	2						
Additional outputs/inputs:							
2 relays	1						
2 relays, 1 analog output, 2 PT100 inputs	2						
Supply:							
85...253 V a.c., 90..300 V 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						
other*	X						
Acceptance tests:							
without extra requirements	0						
with an extra quality inspection certificate	1						
acc. to customer's request	X						

* - after agreeing with the manufacturer

ORDERING CODES

Table 8. N100 ordering code:

	N100 -	X	X	X	XX	X	X
Input voltage (phase/phase-to-phase) Un:							
3 x 57,7 / 100 V		1					
3 x 230 / 400 V		2					
3 x 400 / 690 V		3					
Outputs:							
3 x relay, 1 x analog, 1x pulse input, 1 x pulse output		1					
3 x analog, 1 x relay		2					
Additional equipment:							
without Ethernet interface		0					
with Ethernet interface, internal memory		1					
Version:							
standard		00					
custom-made*		XX					
Language:							
Polish		P					
English		E					
other*		X					
Acceptance tests:							
without additional quality requirements		0					
with an extra quality inspection certificate		1					
acc.to customer's request		X					

* - after agreeing with the manufacturer

Notice:

- for output version: 3 x relay, 1 x analog output, 1 x pulse input, 1 x pulse output – the analog output has the range of 0...20 mA.
- for output version: 3 x analog output, 1 x relay – the analog outputs have the range of -20..0..20 mA.

For both version the analog outputs are programmable.

N100 meter has in standard:

- universal current input 1/5 A,
- interface RS-485,
- supply 85...253 V a.c. (40...400 Hz) or 90...300 V d.c.

Table 9. ND1 ordering code:

	ND1 -	X	X	XX	X	X
Input current:						
1 A		1				
5 A		2				
Input voltage:						
57,7/100 V			1			
230/400 V			2			
400/690 V			3			
Version:						
standard		00				
custom-made (supply: 18...30 v d.c.)		01				
in a portable case, without RJ45 socket		PO				
in a portable case, with RJ45 socket		PE				
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				

* - after agreeing with the manufacturer

Note!

Each ND1 analyser is equipped with 6 alarms (electromechanic relays), 4 analog outputs, 12 logic inputs and Ethernet interface.

Table 10. ND40 ordering code:

	ND40 -	X	X	XX	X	X
Measuring class:						
class S		0				
class A/S		1				
Input/Outputs:						
none		0				
8 relay outputs		1				
6 logic inputs, 4 relay outputs		2				
6 logic inputs, 3 analog outputs		3				
Version:						
standard		00				
custom-made		XX				
Language:						
Polish		P				
English		E				
German		G				
Russian		R				
other*		X				
Acceptance tests:						
without extra requirements		0				
with an extra quality inspection certificate		1				
acc. to customer's request		X				

* - after agreeing with the manufacturer

Table 11. NP40 ordering code:

	NP40 -	X	XX	X	X
Additional equipment:					
lack		0			
4 pcs. Rogowski coils PY 3000 A		1			
4 pcs. Rogowski coils PY 5000 A		2			
4 pcs. current clamps KLC8C 5 A		3			
4 pcs. current clamps CTC0080 50 A		4			
4 pcs. current clamps CTC0130 100 A		5			
4 pcs. current clamps CTC1535 1000 A		6			
Version:					
standard		00			
custom-made*		XX			
Language:					
Multilanguage (Polish/ English)		M			
other*		X			
Acceptance tests:					
without extra requirements		0			
with an extra quality inspection certificate		1			
acc. to customer's request		X			

* - after agreeing with the manufacturer

Synchronization meters

Table 12. KS3 ordering code:

	KS3 -	X	XX	X	X	XX	X
Kind of display:							
digital display		1					
bargraphs (diode lines)		2					
Voltage input:							
100 V		01					
110 V		02					
240 V		03					
400 V		04					
Digital output:							
without interface		0					
with RS-485 interface		1					
Supply voltage:							
85 ... 250 V d.c./a.c.		0					
24 V d.c./a.c.		1					
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					

* only after agreeing with the manufacturer

Table 13. KSS ordering code:

	KSS -	X	X	X	XX	X	X
Input voltage (phase/phase-to-phase) Un*:							
50...150 V		1					
150...400 V		2					
Interfaces:							
RS-485		1					
RS-485 and Ethernet		2					
Supply:							
85...253 V a.c., 90...300 V 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			
other**				X			
Acceptance tests:							
without extra requirements					0		
with an extra quality inspection certificate					1		
acc. to customer's request*					X		

* Un - programmable in the selected range; maximal phase-to-earth voltage 300 V

** only after agreeing with the manufacturer

DIGITAL METERS



	N24	N25	N20	N20Z	N21	N27D
Input	fixed N24T, N25T: Pt100, J, K N24S, N25S: 0/4...20 mA, ±60 mV d.c., ±10 V d.c. N24H, N25H: ±100, ±250, ±400 V d.c., ±1/5 A d.c. N24Z, N25Z: 100, 250, 400 V a.c., 1/5 A a.c., 20...500 Hz	fixed Pt100, J, K 0/4...20 mA, ±20 mA 0...60 mV, 0...10 V, ±10 V	fixed 1 A, 5 A a.c. 100 V, 250 V, 400 V a.c. 20...500 Hz	programmable Pt100 J, K ±20 mA, ±10 V, ±60 mV	fixed 0...500 V a.c. 0...63 A a.c. -31.5...31.5 kW 45...500 Hz	
Output	supplying output (24 V/ 30 mA) for S and T versions (option)	• 2 x OC • supplying output (24 V/ 30 mA)	2 x OC	• 1 x relay NO, 250 V~/0.5 A~, • supplying output 24 V d.c. ± 5%, 30 mA	-	-
Display	red LED 4 digits (20 mm)	red LED 5 digits (14 mm)	3-colour programmable LED 5 digits (14 mm)	OLED 128 x 32 pixels in amber colour	yellow LED 4 digits (8.5 mm)	
Supply voltage	24 V a.c., 110 V a.c., 230 V a.c., 85...253 V a.c./d.c., 20...40 V a.c./d.c. (option)	85...253 V or 20...40 V a.c./d.c.	universal 22..60 V a.c. / 20..60 V d.c. (terminals 12-13) 60..253 V a.c. / 60..300 V d.c. (terminals 13-14)	230 V a.c.		
Protection rating		IP65			IP00	
External dimensions		96 x 48 x 64 mm			110 x 53 x 60 mm	
Programming		free eCon software (using PD14 programmer)		free eCon software (using miniUSB)	-	
Additional functions		rescaling			selection of displayed quantities (kW, V, A, Hz)	



	N30U	N30H	N30o	N30P	N27P
Input	programmable Pt100/500/1000 J, K, N, E, R, S ±20 mA 0...10 V, -10...60 mV 400, 4000 Ω	programmable 1/5 A d.c., 100/500 V d.c.	programmable pulse input (pulses, frequency, rotational speed, period, operating time counter, encoder)	programmable 1/5 A 100/400 V 1-phase power network parameters	programmable 1/5 A or direct measurement 32/63 A 100 V/400 V a.c. 1-phase power network parameters
Output	4 x relays (2 NO + optional 2 NOC), 1 x analog 0/4...20 mA or 0...10 V - option, 1 x pulse in N30P meter - option, supplying output (24 V/ 30 mA) in N30U and N30o (for supply 85...253 V)				2 relays (2 NO) or 1 x relay (NO) + 1 x output 0/4...20 mA
Interface		RS-485 Modbus Slave - option			RS-485 Modbus Slave
Display		3-colour programmable LED 5 digits (14 mm)			OLED 0.96" yellow
Supply voltage	85...253 V a.c./d.c. or 20...40 V a.c., 20...60 V d.c.	85...253 V a.c./d.c. or 20...40 V a.c./d.c.			85...253 V a.c. 90...300 V d.c.
Protection rating		IP65			IP50 (1/5 A) or IP00 (32/63 A)
External dimensions		96 x 48 x 93 mm			110 x 53 x 60 mm
Programming		free eCon software (using RS-485) or using buttons			free eCon software (using miniUSB, RS-485 or buttons)
Additional functions	• Conversion of any measured value into a current or voltage analog signal. • Storage of minimal and maximal values for all measured quantities. • 21-point rescaling for the measured value (does not apply to N30P and N27P)		• Password protection. • Programmable current and voltage transformer ratio (applies to N27P and N30P)		

DIGITAL METERS



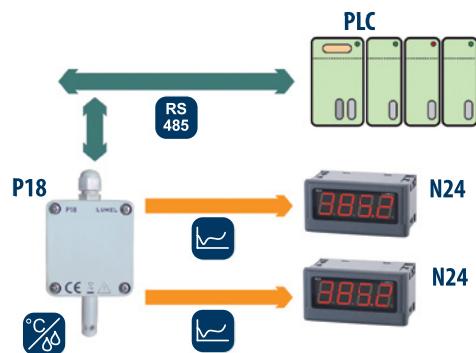
	NA3	NA5	NA6	
Input	programmable Pt100/500/1000, J, K, N, E, R, S, T 0...5/20 mA d.c., 0...2/5 A d.c., 0...60 mV d.c., 0...10/600 V d.c., 0...3/10/600 V d.c. 0...4 kΩ	programmable Pt100/500/1000, J, K, N, E, R, S, T ± 40 mA d.c., ± 5 A d.c., ± 300 mV d.c., ±0...600 V d.c., 0...10 kΩ		
Output	1 x relay or 2 x OC (option); 1 x analog (option)	4 x relay or 8 x OC (option); 1 x analog (option)		
Interface	RS-485 Modbus Slave - option			
Bargraph	3 or 7-colour programmable horizontal	3 or 7-colour programmable vertical	2 x 3 or 7-colour programmable vertical	
Display	LED 4 digits (7 mm) or 4 digits (14 mm)	LED 4 digits (7 mm)	2 x LED 4 digits (7 mm)	
Supply voltage	95...253 V a.c./d.c., 20...40 V a.c./d.c.			
Protection rating	IP40	IP50		
External dimensions	96 x 24 x 125 mm	48 x 144 x 100 mm		
Programming	free eCon software (using RS-485) or using buttons			
Additional functions	• 2-point rescaling • arithmetical functions x^2 , \sqrt{x} , $(+/-, *, / -$ only in NA6) • logging of the measured signal in programmed time intervals (750 samples)	• memory of minimal and maximal values for all measured quantities • password protection • conversion of any measured value into a current or voltage analog signal		

APPLICATION EXAMPLES

Temperature and flow measurement in a pipeline



Air temperature and humidity measurement



Current measurement in an electroplating plant



Measurement, alarming and logging of load current for a 1-phase engine



ORDERING CODES

N24 and N25 meters

Table 14. N24 ordering code:

N24 -	X	X	X	XX	XX	X	X
Kind of input signal:							
standard: voltage, current	S						
temperature: thermocouples, resistance	T						
thermometers							
a.c. signals	Z						
d.c. signals: high voltage/current	H						
Input signal:							
see table 16							X
Supply voltage:							
230 V a.c.	1						
110 V a.c.	2						
24 V a.c.	3						
85...253 V a.c./d.c. with supply output 24 V/30 mA**	4						
20...40 V a.c./d.c. with supply output 24 V/30 mA**	5						
Unit:							
see table 17							XX
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 15. N25 ordering code:

N25 -	X	X	X	XX	XX	X	X
Kind of input signal:							
standard: voltage, current	S						
temperature: thermocouples, resistance	T						
thermometers							
a.c. signals	Z						
d.c. signals: high voltage/current	H						
Input signal:							
see table 16							X
Supply voltage:							
230 V a.c.	1						
110 V a.c.	2						
24 V a.c.	3						
85...253 V a.c./d.c. with supply output 24 V/30 mA**	4						
20...40 V a.c./d.c. with supply output 24 V/30 mA**	5						
Unit:							
see table 17							XX
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 16. Meter type

Nr	N24S/N25S	N24T/N25T
1	0...20 mA	Pt100: -50...150°C
2	4...20 mA	Pt100: -50...400°C
3	0...60 mV	thermocouple J
4	0...10 V	thermocouple K
5	± 60 mV	
6	± 10 V	
7		
Nr	N24Z/N25Z	N24H/N25H
1	100 V a.c.	±100 V d.c.
2	250 V a.c.	±250 V d.c.
3	400 V a.c.	±400 V d.c.
4	1 A a.c.	±1 A d.c.
5	5 A a.c.	±5 A d.c.
6	20...500 Hz	0...100 V d.c.
7		0...250 V d.c.

Table 17. Codes of printed units:

Code	Unit	Code	Unit
00	without unit	08	kV
01	°C	09	Hz
02	%	10	turns
03	A	11	rpm
04	V	12	bar
05	mV	13	kPa
06	mA	14	MPa
07	kA	XX	on order*

* - after agreeing with the manufacturer

** - the output is only in N24S/N25S and N24T/N25T meters

N20 and N20Z meters

Table 18. N20 ordering code:

N20 -	X	X	XX	XX	X
Input:					
Pt100: -50...400°C	1				
Thermocouple J: -50...1200°C	2				
Thermocouple K: -50...1370°C	3				
0...20 mA	4				
4...20 mA	5				
± 20 mA	6				
0...60 mV	7				
0...10 V	8				
± 10 V	9				
Supply voltage:					
85...253 V a.c./d.c.	1				
20...40 V a.c./d.c.	2				
Unit:					
unit code acc. to the table 20					XX
Version:					
standard	00				
custom-made*	XX				
non-standard settings	99				
Acceptance tests:					
without extra requirements	8				
with an extra quality inspection certificate	7				
acc. to customer's request*	X				

Table 19. N20Z ordering code:

N20Z -	X	X	XX	XX	X
Input:					
100 V	1				
250 V	2				
400 V	3				
1 A	4				
5 A	5				
frequency: 20...500 Hz	6				
Supply voltage:					
85...253 V a.c./d.c.	1				
20...40 V a.c./d.c.	2				
Unit:					
unit code acc. to the table 20					XX
Version:					
standard	00				
custom-made*	XX				
non-standard settings	99				
Acceptance tests:					
without extra requirements	8				
with an extra quality inspection certificate	7				
acc. to customer's request*	X				

Table 20. Codes of highlighted unit:

Code	Unit	Code	Unit
00	without unit	24	l/h
01	V	25	ms
02	A	26	s
03	mV	27	h
04	kV	28	N
05	MV	29	kN
06	mA	30	Pa
07	kA	31	hPa
08	MA	32	kPa
09	°C	33	MPa
10	°F	34	bar
11	K	35	rad
12	Hz	36	Ω
13	kHz	37	kΩ
14	Ah	38	%
15	kAh	39	°
16	m/s	40	obr
17	µm	41	rps
18	mm	42	rpm
19	cm	43	rph
20	m	44	m/h
21	km	45	km/h
22	l	46	imp
23	l/s	XX	on roder*

* - after agreeing with the manufacturer

N21 meter has in standard:

- universal input
- relay output
- power output 24 V d.c.
- supply voltage 24 V a.c./d.c., 230 V a.c./d.c.
- miniUSB port for programming

ORDERING CODES

N27D and N27P meters

Table 22. N27D ordering code:

	N27D -	XX	X	X
Version:				
standard	00			
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 23. N27P ordering code:

	N27P -	X	X	XX	X	X
Current measuring range:						
1 A/5 A a.c.	1					
32 A/63 A a.c.	2					
Outputs:						
2 relays	1					
1 relay and 1 analog 0/4...20 mA	2					
Version:						
standard	00					
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					

N30 meter series

Table 24. N30U ordering code:

	N30U -	X	X	XX	XX	X	X
Supply voltage:							
85...253 V a.c./d.c.	1						
20...40 V a.c., 20...60 V d.c.	2						
Additional outputs:							
lack	0						
OC output, RS-485, analog outputs	1						
OC output, RS-485, analog outputs and change-over relay outputs	2						
Unit:							
unit code acc. to the table 26	XX						
Version:							
standard	00						
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 25. N30H ordering code:

	N30H -	X	X	XX	XX	X	X
Supply voltage:							
85...253 V a.c./d.c.	1						
20...40 V a.c., 20...60 V d.c.	2						
Additional outputs:							
lack	0						
OC output, RS-485, analog outputs	1						
OC output, RS-485, analog outputs and change-over relay outputs	2						
Unit:							
unit code acc. to the table 26	XX						
Version:							
standard	00						
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 26. Codes of highlighted unit:

Code	Unit	Code	Unit
00	without unit	29	%
01	V	30	%RH
02	A	31	pH
03	mV	32	kg
04	kV	33	bar
05	mA	34	m
06	kA	35	l
07	W	36	s
08	kW	37	h
09	MW	38	m³
10	var	39	obr
11	kvar	40	pcs
12	Mvar	41	imp
13	VA	42	rps
14	kVA	43	m/s
15	MVA	44	l/s
16	kWh	45	obr/min
17	MWh	46	rpm
18	kvarh	47	mm/min
19	Mvarh	48	m/min
20	kVAh	49	l/min
21	MVAh	50	m³/min
22	Hz	51	szt./h
23	kHz	52	m/h
24	Ω	53	km/h
25	kΩ	54	m³/h
26	°C	55	kg/h
27	°F	56	l/h
28	K	XX	on order*

* - after agreeing with the manufacturer

Table 27. N30P ordering code:

	N30P -	X	X	XX	XX	X	X
Supply voltage:							
85...253 V a.c./d.c.	1						
20...40 V a.c./d.c.	2						
Additional outputs:							
lack	0						
OC output, RS-485, analog outputs	1						
OC output, RS-485, analog outputs and change-over relay outputs	2						
Unit:							
unit code acc. to the table 26	XX						
Version:							
standard	00						
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 28. N30o ordering code:

	N30o -	X	X	XX	XX	X	X
Supply voltage:							
85...253 V a.c./d.c.	1						
20...40 V a.c./d.c.	2						
Additional outputs:							
lack	0						
OC output, RS-485, analog outputs	1						
OC output, RS-485, analog outputs and change-over relay outputs	2						
Unit:							
unit code acc. to the table 26	XX						
Version:							
standard	00						
custom-made*	XX						
Language:							
Polish	P						
English	E						
other*	X						
Acceptance tests:							
without extra requirements	0						
with an extra quality inspection certificate	1						

ORDERING CODES

NA3, NA5 and NA6 meters

Table 29. NA3 ordering code:

NA3 -	X	X	X	X	X	X	X	XX	X
Meter version:									
with a bargraph and digital display	F								
with a bargraph*	B								
with a digital display	D								
Bargraph colour:									
without bargraph (NA3D)	0								
3-colour (R, G, R+G)	T								
7-colour (R, G, B, R+G, R+B, G+B, R+G+B)	M								
Display colour:									
without display	0								
red	R								
green	G								
blue	B								
Input signal:									
universal input	U								
Analog output:									
lack	0								
current programmable 0/4...20 mA	1								
voltage programmable 0...10 V	2								
Additional output:									
lack*	0								
RS-485 digital output + 1 relay	1								
RS-485 digital output + 1 output of OC type	2								
2 relays*	3								
2 outputs of OC type*	4								
Supply voltage:									
95...253 V a.c./d.c.	1								
20...40 V a.c./d.c.	2								
on order**	X								
Kind of terminals:									
screwed plug-in sockets	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								

* - in case of a NA3-B X XXX (0, 3 or 4), one must fill the table 2 in the NA3 data sheet available on our website www.lumel.com.pl

** - after agreeing with the manufacturer

Table 30. NA5 ordering code:

NA5 -	X	X	X	X	X	X	X	XX	X
Bargraph colour:									
3-colour (R, G, R+G)	T								
7-colour (R, G, B, R+G, R+B, G+B, R+G+B)	M								
Display colour:									
without display*	0								
red	R								
green	G								
blue	B								
Input signal:									
universal input	U								
Analog output:									
lack	0								
current programmable 0/4...20mA	1								
voltage programmable 0...10V	2								
Digital output:									
lack	0								
RS-485 digital output	1								
Additional output:									
lack*	0								
4 relays	4								
8 outputs of OC type	8								
Supply voltage:									
95...253 V a.c./d.c.	1								
20...40 V a.c./d.c.	2								
Kind of terminals:									
screwed plug-in sockets	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								

* - in case of meters without displays, one must order an RS-485 digital output

** - after agreeing with the manufacturer

Table 31. NA6 ordering code:

NA6 -	X	XX	X	X	X	X	X	XX	X
Bargraph colour:									
3-colour (R, G, R+G)	T								
7-colour (R, G, B, R+G, R+B, G+B, R+G+B)	M								
Display colour on channels 1 and 2:									
without display*	00								
red-red	RR								
red-green	RG								
red-blue	RB								
green-red	GR								
green-green	GG								
green-blue	GB								
blue-red	BR								
blue-green	BG								
blue-blue	BB								
Input signal:									
universal input	U								
Analog output:									
lack	0								
current programmable 0/4...20mA	1								
voltage programmable 0...10V	2								
Digital output:									
lack	0								
RS-485 output signal	1								
Additional output:									
lack*	0								
4 relays	4								
8 outputs of OC type	8								
Supply voltage:									
95...253 V a.c./d.c.	1								
20...40 V a.c./d.c.	2								
Kind of terminals:									
screwed plug-in sockets	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								

* - in case of meters without displays, one must order an RS-485 digital output

** - after agreeing with the manufacturer

TRANSDUCERS, SEPARATORS



	P20 and P17 transducers					Separators	
	P20	P20Z	P21Z	P20H	P17	P20G	P17G
Input	programmable Pt100/250/500/1000, J, K, S, N 0/4...20, ±20 mA 0...5/10, ±5, ±10 V ±60, ±150 mV 0...400/4000 Ω	fixed 0..60/100/150/250/ 400/500/ 600 V a.c. 0.1/5 A a.c.	fixed 0...100/250/ 400 V a.c. 0...1/5 A a.c. 20...500 Hz	fixed 100, 250, 400 V d.c. ±100, ±250, ±400 V d.c. ±1, ±5 A d.c.	fixed Pt100 J, K, N, E, 0...10 V 0...60 mV	programmable 0/4...20 mA ±20 mA 0...5/10 V ±5V, ±10 V	0/4...20 mA
Output	0/4...20 mA or 0...10 V			0/4...20 mA or 0...10 V or RS-485 Modbus Slave	passive 0/4...20 mA	programmable -20...20 mA -10...10 V	active output 0/4...20 mA
Supply voltage	85...253 V a.c./d.c. or 20...85 V d.c., 20...65 V a.c.	85...253 V a.c./d.c. or 20...40 V a.c./d.c.		85...253 V a.c. / 90...300 V d.c. or 20...40 V a.c. / 20...60 V d.c.	supplied from output current loop	85...253 V a.c./d.c. or 20...85 V d.c., 20...65 V a.c.	supplied from input current loop
Protection rating	IP40				IP50	IP40	IP50
External dimensions	22.5 x 120 x 100 mm				6.2 x 77.5 x 100 mm	22.5 x 120 x 100 mm	6.2 x 77.5 x 100 mm
Additional functions	free eCon software (using PD14 programmer)	-		free eCon software (using PD14 programmer)	-	free eCon software (using PD14 programmer)	-



P30U and P300 series

P30H and P30P series

	P30 and P12 transducers			
	P30U	P300	P30H	P30P
Input	programmable Pt100/250/500/1000, Cu100, Ni100, Ni1000 J, K, N, E, R, S, T, B 0...4/20, ±20 mA -5...20, ±75, ±200 mV, ±10 V, ±24 V 400, 2000, 5500 Ω, RS-485 Master or Slave	2 programmable inputs: pulse counter, frequency, rotational speed, period, operating time counter, pulse differential counter on inputs or encoder	d.c. network parameters programmable current using shunt ± 200 mV voltage 0...12/48/100/250 V voltage 0...600/1000 V in set with additional D5 resistor	1-phase power network parameters fixed 1A (X/1A), 5A (X/5A) 100 V(x/100 V) or 250 V
Output	1 x analog 0/4...20 mA or 0...10 V 1 x relay NO 1 x additional NO relay optionally exchangeable with 24 V, 30 mA supplying output		1 x analog 0/4...20 mA or 0...10 V 1 x relay NO optionally exchangeable with additional analog output 0/4...20 mA or 0...10 V 1 x additional NO relay optionally exchangeable with 24 V, 30 mA supplying output	
Interface		RS-485 Modbus (Slave or Master) - standard Ethernet 10/100 Base-T - option		
Display		LCD 2x8 characters with LED backlight		
Supply voltage	85...253 V a.c./d.c. or 20...40 V a.c./20...60 V d.c.		85...253 V a.c. , 85...300 V d.c. or 20...40 V a.c., 20...60 V d.c.	
Protection rating	IP40			
External dimensions	45 x 120 x 100 mm			
Programming	using buttons or free eCon software using RS-485 Modbus, Ethernet (option)			
Additional functions	<ul style="list-style-type: none"> alarms indicated on the display internal memory 534336 samples WWW server, FTP, Modbus TCP/IP Slave (optionally) data logging in internal memory or on SD card (optionally) 		<ul style="list-style-type: none"> rescaling (up to 21 points) memory of min. and max. values (with time stamp) mathematic functions independent for both inputs filtration of periodic signals (only P300) 	

TRANSDUCERS, SEPARATORS

NEW



Power transducers

	P41	P30P	P43
Input	programmable 1/5 A, 100/400 V 1-phase power network parameters	fixed 1/5 A, 100 or 250 V 1-phase power network parameters	fixed 1 or 5 A, 100 or 400 V 3-phase power network parameters
Output	1 x analog programmable ±20 mA	1 x analog 0/4...20 mA or 0...10 V 1 x NO relay optionally exchangeable with additional analog output 0/4...20 mA or 0...10 V 1 x additional NO relay optionally exchangeable with 24 V, 30 mA supplying output	4 x relays or 2 x relay + 2 x analog programmable ±20 mA or 4 x analog programmable ±20 mA
Interface	RS-485 Modbus Slave	RS-485 Modbus (Slave or Master) - standard Ethernet 10/100 Base-T - option	RS-485 Modbus Slave
Display	-	LCD 2x8 characters with LED backlight	-
Supply voltage	85...253 V a.c./90...300 V d.c. or 20...40 V a.c./20...60 V d.c.	85...253 V a.c., 85...300 V d.c. or 20...40 V a.c., 20...60 V d.c.	85...253 V a.c./90...300 V d.c. or 20...40 V a.c./20...60 V d.c.
Protection rating	IP40		
External dimensions	45 x 120 x 100mm		
Programming	free eCon software using USB or RS-485	using buttons or free eCon software using RS-485 Modbus, HTTP (option)	free eCon software using USB or RS-485
Additional functions	<ul style="list-style-type: none"> memory for selected measured value – 9 000 samples memory of minimal and maximal values programmable current and voltage transformer ratios 	<ul style="list-style-type: none"> alarms indicated on the display internal memory 534336 samples programmable current and voltage transformer ratios WWW server, FTP, Modbus TCP/IP Slave (optionally) data logging in internal memory or on SD card (optionally) 	<ul style="list-style-type: none"> memory for average power – 9 000 samples memory of minimal and maximal values programmable current and voltage transformer ratios pulse output



P18 and P19 temperature and humidity transducers

	P18L	P18	P18D	P19
Measurement range	-30 ... -20 ... 60 ... 85°C or 0...100% RH	-30 ... -20 ... 60 ... 85°C, 0...100% RH	-30 ... -20 ... 60 ... 85°C, 0...100% RH	-20 ... 60 °C, 0...100% RH
Output	passive 4...20 mA	2 x 4...20 mA or 0...10 V (option)	2 x 4...20 mA or 0...10 V (option)	-
Interface	-	-	RS-485 Modbus	-
Galvanic isolation	-	-	supply/ RS-485 (for version without analog outputs)	-
Supply voltage	19...30 V d.c. (supplied by a current loop)	-	9 ... 24 V d.c./a.c	-
Protection rating	IP65			IP20
External dimensions	38 x 58 x 118 mm			120 x 80 x 25 mm
Additional functions	<ul style="list-style-type: none"> calculation of other quantities (dew-point temp.; absolute humidity) available version with sensor mounted on the wire 0.5 m 	<ul style="list-style-type: none"> memory of measured and calculated min. and max. values - data presentation on a LCD display configuration of transmission parameters using the capacitive button 	<ul style="list-style-type: none"> - - - - 	<ul style="list-style-type: none"> - - - -

Humidity and temperature monitor

HT20

Measurement range	-20...60 °C, 0...100% RH
Interface	Ethernet (WWW, FTP, SMTP, DHCP)
Supply voltage	6 V d.c. or PoE IEEE 802.3af - option
Protection rating	IP20
External dimensions	150 x 100 x 30 mm
Additional functions	<ul style="list-style-type: none"> data presentation on a LCD display and on website acoustic signaling of alarm events data logging in internal memory 8GB email messages in case of alarm occurs parameter configuration through a web browser



ORDERING CODES

P20 and P17 transducer series

Table 32. P20 ordering code:

	P20 -	X	X	XX	XX	X
Analog output:						
current 0...20 mA	1					
current 4...20 mA	2					
voltage 0...10 V	3					
Supply:						
85...253 V a.c./d.c.	1					
20...85 V d.c., 20...65 V a.c.	2					
Kind of input:						
write the code from table 33		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 35. P20H ordering code:

	P20H -	X	X	X	XX	X
Input signal:						
+/- 100 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 voltage:						
85...253 V a.c. 40...400 Hz; 90...300 V d.c.	1					
20...85 V d.c., 20...60 V a.c.	2					
Version:						
standard	00					
non-standard settings	NS					
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 the manufacturer

Table 33. Input signals P20

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
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	Voltage d.c. [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
TC of J type [°C]	-200...200	27	Current d.c. [mA]	-150..150	62
	-100..100	28		0..20	63
	-200..1200	29		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			

Table 36. P17 ordering code:

	P17 -	XX	XX	X
Input signal:				
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...900°C)	04			
Pt100 (-50...100°C)	05			
Pt100 (-50...400°C)	06			
voltage (0...60 mV)	09			
Version:				
standard	00			
on order*		XX		
Acceptance tests:				
without extra requirements	8			
with an extra quality inspection certificate	7			
acc. to customer's request*	X			

Table 34. P20Z ordering code:

	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						
0..1 A	08						
0..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 a.c./d.c.	1						
20..40 V a.c. 40..400 Hz; 20..60 V d.c.	2						
Kind of terminals:							
inseparable screws	1						
screwed plug-in sockets	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 37. P21Z ordering code:

	P21Z -	X	X	X	XX	X	X
Input signal:							
100 V a.c.	1						
250 V a.c.	2						
400 V a.c.	3						
1 A a.c.	4						
5 A a.c.	5						
frequency 20...500 Hz	6						
Output:							
0..20 mA	1						
4..20 mA	2						
0..10 V	3						
RS-485	4						
Supply voltage:							
85..253 V a.c. 40..400 Hz; 90..300 V d.c.	1						
20..40 V a.c. 40..400 Hz; 20..60 V 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 38. P20G ordering code:

	P20G -	XX	X	XX	X	X
Input:						
input code acc. to the table 39	XX					
Output:						
output code acc. to the table 39	XX					
Supply voltage:						
85..253 V a.c./d.c.	1					
20..85 V d.c., 20..65 V a.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					

* - after agreeing with the manufacturer

** - conversion class > 0.2

Table 39. 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

Table 40. P17G ordering code:

P17G -	XX	X
Version:		

ORDERING CODES

Table 41. P30U ordering code:

P30U -	X	X	X	X	XX	X	X
Analog output:							
current (0/4...20 mA)	1						
voltage (0...10 V)	2						
Additional equipment:							
without any	0						
with external SD/SDHC slot	1						
with Ethernet interface and internal file system memory	2						
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 d.c.	2						
Version:							
standard	00						
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 44. P30H ordering code:

P30H -	X	X	X	X	XX	X	X
Analog outputs OUT1:							
current (0/4...20 mA)	1						
voltage (0...10 V)	2						
Additional equipment:							
without	0						
with external SD/SDHC slot	1						
with Ethernet interface and internal file system memory	2						
Output OUT2:							
relay A1 NO, 5 A 30 V d.c., 250 V a.c.	1						
analog current output (0/4...20 mA)	2						
analog voltage output (0...10 V)	3						
Output OUT3:							
relay A2 NO, 5 A 30 V d.c., 250 V a.c.	1						
power output 24 V d.c. / 30 mA	2						
Supply:							
85...253 V a.c., 85...300 V d.c.	1						
20...40 V a.c., 20...60 d.c.	2						
Version:							
standard	00						
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 42. P30o ordering code:

P30o -	X	X	X	X	XX	X	X
Analog output:							
current (0/4...20 mA)	1						
voltage (0...10 V)	2						
Additional equipment:							
without any	0						
with external SD/SDHC slot	1						
with Ethernet interface and internal file system memory	2						
Additional output:							
relay (NO), 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 d.c.	2						
Version:							
standard	00						
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 43. P30P ordering code:

P30P -	X	X	X	X	X	X	X
Inputs:							
voltage 100 V, current 1/5 A	1						
voltage 250 V, current 1/5 A	2						
Analog outputs OUT1:							
current (0/4...20 mA)	1						
voltage (0...10 V)	2						
Additional equipment:							
without	0						
with external SD/SDHC slot	1						
with Ethernet interface and internal file system memory	2						
Output OUT2:							
relay A1, 5 A 30 V d.c., 250 V a.c.	1						
analog current output (0/4...20 mA)	2						
analog voltage output (0...10 V)	3						
Supply:							
85...253 V a.c., 85...300 V d.c.	1						
20...40 V a.c., 20...60 d.c.	2						
Version:							
standard	00						
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						

* - after agreeing with the manufacturer

P41 and P43 power transducers

P43 -	X	X	X	X	XX	X	X
Current input In:							
1 A (X/1)	1						
5 A (X/5)	2						
Voltage input (phase/phase-to-phase) Un:							
3 x 57.7/100 V	1						
3 x 230/400 V	2						
Supply voltage:							
85...253 V a.c.; 90...300 V d.c.	1						
20...40 V a.c.; 20...60 d.c.	2						
Kind of outputs:							
without analog outputs, 4 relays	1						
2 analog outputs, 2 relays	2						
4 analog outputs, without relays	3						
Version:							
standard	00						
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 46. P41 ordering code:

P41 -	X	XX	X	X
Supply:				
85...253 V a.c. 40...400 Hz; 90...300 V d.c.	1			
20...40 V a.c. 40...400 Hz; 20...60 d.c.	2			
Version:				
standard	00			
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			

P18, P18D and P18L temperature and humidity transducers

P18(D) -	X	XX	X	X
Analog outputs - sensors:				
without outputs, with sensor mounted on the housing	0			
current 4...20 mA, with sensor mounted on the housing	1			
voltage 0...10 V, with sensor mounted on the housing	2			
without outputs, with probe on the wire 0.5 m	3			
current 4...20 mA, with probe on the wire 0.5 m	4			
voltage 0...10 V, with probe on the wire 0.5 m	5			
Version:				
standard	00			
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 49. P19 ordering code:

P19 -	XX	X	X
Version:			
standard	00		
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		

Temperature and humidity monitor

HT20 -	X	X	XX	X	X
Supply*:					
6 V d.c.	1				
6 V d.c., PoE IEEE 802.3af	2				
Accessories:					
none	0				
adapter 6 V d.c.	1				
Version:					
standard	00				
custom-made**	XX				
Language:					
Polish	P				
English	E				
other**	X				
Acceptance tests:					
without additional quality requirements	0				
with an extra quality inspection certificate	1				
acc. to customer's request	X				

* - Monitors in version HT20 1XXXX require an external power supply 6 V d.c., in version HT20 2XXXX they can be powered either from Ethernet PoE (Power over Ethernet), as well as from the external power supply 6V,DC.
 ** - after

CONTROLLERS



Industrial process controllers

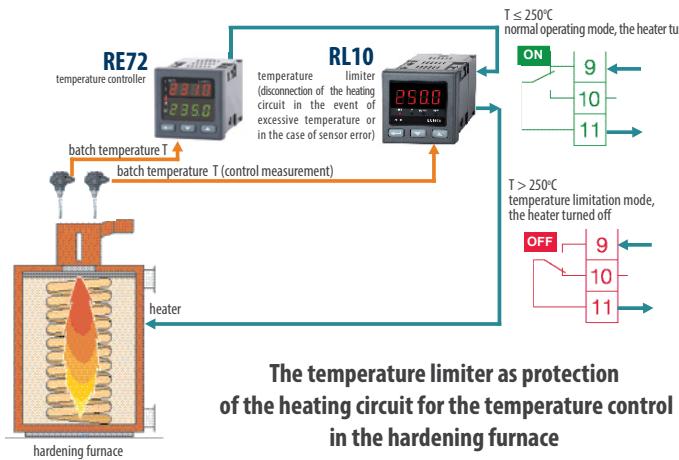
	RE22	RE70	RE71	RE81	RE72	RE82	RE92	RE19
Number of channels	1	1	1	1	1	1	2	2
Input	programmable Pt100/1000 J,T,K,S,R, B,E,N,L or 0/4...20mA, 0...5/10V	programmable Pt100/1000 J,T,K,S,R, B,N	fixed Pt100 J, K, S		programmable Pt100/1000 J, T, K, S, R, B, E, N, L 0/4...20 mA 0...5/10 V		programmable 2 x Pt100/500/1000, Ni100, Cu100 J, T, K, S, R, B, E, N, L 0/4...20 mA 0...5/10 V	programmable 2 x Pt100/500/1000, Ni100, Cu100 J, T, K, S, R, B, E, N, 0/4...20 mA 0...5/10 V
Additional input	-	-	-	-	logic/ current transformer input/ 0/4...20 mA (option)	2 x logic/ current transformer input/ 0/4...20 mA	3x logic and 0/4...20 mA / 0...5/10 V / potentiometer (100)1000 Ω (option)	2x logic and 0...5/10 V / 0/4...20 mA / potentiometer (100)1000 Ω (option)
Output	relay or logic 0/5 V	relay	relays or logic 0/6 V	2 x relays or 1 x relay + 1 x logic 0/6 V	2 x relays / logic 0/5 V / analog 0/4...20mA / 0...10 V / supplying output 24V d.c. 30 mA - option	2 x relays and 2 x relays / logic 0/5V / analog 0/4...20 mA / 0...10 V (option) supplying output 24V d.c. 30 mA - option	max. 6 x relays / 2 x logic / 2 x analog 0(4)...20 mA / 0...10 V (option) supplying output 24V d.c. 30 mA - option	max. 4 x relays / 4 x OC / 2x logic 0/15 V / 2x analog 0/4...20 mA, 0...10 V - option
Interface	-	RS-485 Modbus (only for configuration)	-	-	RS-485 Modbus		RS-485 Modbus, Ethernet - option	RS-485 Modbus - option
Alarm	-	-	-	1	max. 2	max. 3	max. 6	max. 3
Control	on/ off or PID with self-tuning, heating or cooling							
	-	-	-	-	step-by-step			
	-	-	-	-	programmed			
Display	red LED 4 digits (9,2 mm)	red LED 4 digits (7,6 mm)		red and green LED 2 x 4 digits (7,6 mm)	red and green LED 2 x 4 digits (7,6 mm) + 2 bargraphs	colour LCD 3.5" TFT 320 x 240 pixels	red and green LED 2 x 5 digits (10 mm) + LCD 2 x 16 characters	
Supply voltage	230 or 110 or 24 V a.c.	230 V a.c.		85...253 V a.c./ d.c. or 20...40 V a.c./d.c.		85...253 V a.c./d.c.	85...253 V a.c./d.c. or 18...23 V d.c.	
Protection rating	IP40	IP65					IP40	
External dimensions	48 x 48 x 93 mm			48x96x93 mm	48 x 48 x 93 mm	48 x 96 x 93 mm	96 x 96 x 99 mm	96x96x81 mm
Additional functions	• soft start				• soft start	• 6 types of alarms	• alarm LATCH function	
					• profile control (15 programs with 15 segments in each)		• parameter logging on SD card • FTP server - option	• profile control (15 programs with 15 segments in each)

CONTROLLERS



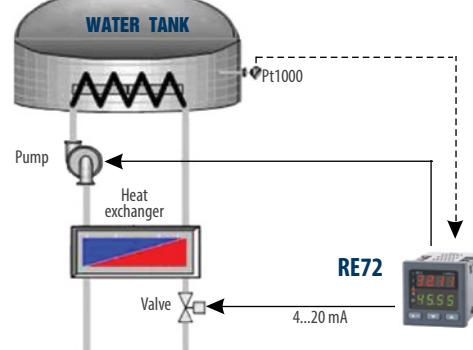
Industrial process controllers

	RE55	RE60	RE62	RE01	RL10
Number of channels	1	1	1	1	1
Input	fixed Pt100 J, K, S		programmable Pt100 J, K $\pm 20 \text{ mA}, \pm 10 \text{ V}, \pm 60 \text{ mV}$	fixed Pt100, Pt1000 NTC	programmable Pt100/1000 J, T, K, S, R, B, N
Additional input	-	-	-	logic	-
Output	2 x relay or 1 x logic 0/5 V + 1 x relay	1 x relay or 1 x logic 0/5 V 1 or 2 x relay - option	max 3 x relay or 2 x relay and 1 x analog supply 24 V d.c. - option	2 x relay (1 x NOC 10 A/230 V, 1 x NO 5 A/230 V)	relay
Interface	-	-	RS-485 (option)	-	RS-485
Alarm	1	max 2 - option	max 3	max 2	-
Control	on/off, PID, heating or cooling				on/off
Display	green LED 4 digits (10 mm)	LCD (2 x 8 characters)	OLED 128 x 64 pixel, amber color	red LED 4 digits (14 mm)	red LED 4 digits (9,2 mm)
Supply voltage	85 .. 253 V d.c./a.c.	24 or 110 or 230 V a.c. or 18..72 V d.c.	22..60 V a.c. / 20..60 V d.c. or 60..253 V a.c. / 60..300 V d.c.	230 V a.c.	230 V a.c.
Protection rating	IP40		IP30	IP65	
External dimensions	96 x 96 x 65 mm	45 x 100 x 120 mm	53 x 110 x 60.5 mm	76 x 34 x 80 mm	48 x 48 x 93 mm

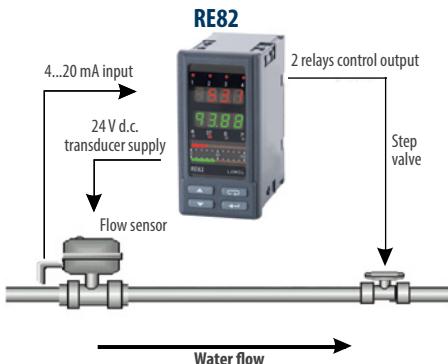


APPLICATION EXAMPLES

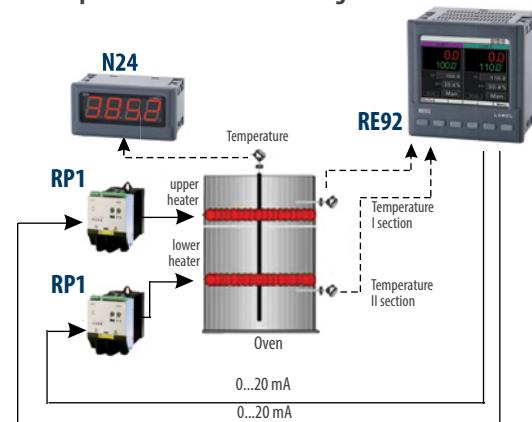
Temperature measurement and control in a water tank



Water flow measurement and 3-stage valve control



Batch temperature measurement with a smooth heater power control in a hardening furnace



ORDERING CODES

Industrial process controllers

Table 51. RE22 ordering code:

	RE22 -	X	X	X	XX	X
Input:						
universal for RTD and TC sensors	1					
universal linear:						
- current: 0/4...20 mA	2					
- voltage: 0...5/10V						
on order*	X					
Output:						
relay	1					
logic 0/5 V for SSR control	2					
on order*	X					
Supply:						
230 V 50/60 Hz		1				
110 V 50/60 Hz		2				
24 V 50/60 Hz		3				
on order*	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 52. RE71 ordering code:

	RE71 -	XX	X	X	X	X
Input:						
Pt100 (-50...100 °C)		01				
Pt100 (0...250 °C)		02				
Pt100 (0...600 °C)		03				
thermocouple J (Fe-CuNi)(0...250°C)		04				
thermocouple J (Fe-CuNi)(0...600°C)		05				
thermocouple J (Fe-CuNi)(0...900°C)		06				
thermocouple K (NiCr-NiAl)(0...600°C)		07				
thermocouple K (NiCr-NiAl)(0...900°C)		08				
thermocouple K (NiCr-NiAl)(0...1300°C)		09				
thermocouple S (PtRh10-Pt)(0...1600°C)		10				
Output:						
relay		1				
logic 0/6 V to SSR control		2				
Version:						
standard		00				
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 53. RE81 ordering code:

	RE81 -	XX	X	X	X	X
Input:						
Pt100 (-50..100 °C)		01				
Pt100 (0..250 °C)		02				
Pt100 (0..600 °C)		03				
thermocouple J (Fe-CuNi)(0...250°C)		04				
thermocouple J (Fe-CuNi)(0...600°C)		05				
thermocouple J (Fe-CuNi)(0...900°C)		06				
thermocouple K (NiCr-NiAl)(0...600°C)		07				
thermocouple K (NiCr-NiAl)(0...900°C)		08				
thermocouple K (NiCr-NiAl)(0...1300°C)		09				
thermocouple S (PtRh10-Pt)(0...1600°C)		10				
Output 1**:						
relay		1				
logic 0/6 V to SSR control		2				
Version:						
standard		00				
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					

** - output 2: relay

Table 54. RE70 ordering code:

	RE70 -	X	X
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		

* - after agreeing with the manufacturer

Table 55. RE72 ordering code:

	RE72 -	X	X	X	X	X	X	X
Output 1:								
relay		1						
voltage 0/5 V		2						
continuous current 0/4 ... 20 mA		3						
continuous voltage 0 ... 10 V		4						
Output 2:								
relay ¹⁾		1						
voltage 0/5 V		2						
continuous current 0/4 ... 20 mA		3						
continuous voltage 0 ... 10 V		4						
Options:								
none		0						
output 3 - relay		1						
logic input		2						
current transformer input ¹⁾		3						
additional current input 0/4 .. 20 mA		4						
transducer supply 24V d.c. / 30 mA		5						
Supply:								
85 ... 253 V a.c./ d.c.		1						
20 ... 40 V a.c./ d.c.		2						
Version:								
standard		00						
custom-made ²⁾		XX						
Language:								
Polish		P						
English		E						
other ²⁾		X						
Acceptance tests:								
without extra requirements		0						
with an extra quality inspection certificate		1						
acc. to customer's request ²⁾	X							

Table 56. RE82 ordering code:

	RE82 -	X	X	X	X	X	X	X
Output 1:								
relay		1						
voltage 0/5 V		2						
continuous current 0/4 .. 20 mA		3						
continuous voltage 0 .. 10 V		4						
Output 2:								
relay ¹⁾		1						
voltage 0/5 V		2						
continuous current 0/4 ... 20 mA		3						
continuous voltage 0 ... 10 V		4						
Transducer supply:								
none		0						
supply of relays 24V d.c. / 30 mA		1						
Supply:								
85 ... 253 V a.c./ d.c.		1						
20 ... 40 V a.c./ d.c.		2						
Version:								
standard		00						
custom-made ²⁾		XX						
Language:								
Polish		P						
English		E						
other ²⁾		X						
Acceptance tests:								
without extra requirements		0						
with an extra quality inspection certificate		1						
acc. to customer's request ²⁾	X							

1) only, when on the output 1, a relay or voltage 0/5 V is also selected

2) after agreeing with the manufacturer

1) - only, when a relay or voltage output 0/5 V is also selected
2) - after agreeing with the manufacturer

ORDERING CODES

Table 57. RE92 ordering code:

	RE92 -	X	X	X	X	XX	X	X
Additional input:								
lack	0							
current: 0/4...20 mA	1							
voltage: 0...5/10 V	2							
potentiometric transmitter: 100/1000 Ω	3							
Output 1 and 2:								
2 relays	1							
2 logic outputs 0/5 V	2							
Analog output:								
lack	0							
2 continuous 0/4...20 mA and 0...10 V	1							
Ethernet:								
lack	0							
with Ethernet	1							
Transducer supply:								
lack	0							
24 V d.c.	1							
Version:								
standard	00							
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 58. RE19 ordering code:

	RE19 -	X	X	X	X	X	X
Version:							
constant-valued control	S						
step-by-step control	V						
programmable control	P						
on order*	X						
Additional input:							
without input	0						
current: 0/4...20 mA	1						
voltage: 0...10 V, 0...5 V, 1...5 V							
potentiometric transmitter: 100 Ω	2						
potentiometric transmitter: 1000 Ω							
on order*	X						
Outputs:							
4 relays	1						
4 OC transistors	2						
1 transistor 0/15 V + 3 relays	3						
2 transistors 0/15 V + 2 relays	4						
1 continuous + 3 relays	5						
1 continuous + 3 OC transistors	6						
2 continuous + 2 relays	7						
2 continuous + 2 OC transistors	8						
1 continuous + 1 transistor 0/15 V + 2 relays	9						
on order*	X						
Interface RS-485:							
without Interface	0						
with MODBUS protocol	1						
Supply voltage:							
85...253 V a.c./d.c.	1						
18...30 V d.c.	2						
Acceptance tests:							
without extra requirements	8						
with an extra quality inspection certificate	7						
acc. to customer's request*	X						

Table 59. RE55 ordering code:

	RE55 -	XX	X	X	XX	X
Input:						
Pt100 (-50...100 °C)	01					
Pt100 (0...100 °C)	02					
Pt100 (0...150 °C)	03					
Pt100 (0...250 °C)	04					
Pt100 (0...400 °C)	05					
Pt100 (0...600 °C)	06					
thermocouple J - Fe-CuNi (0...250 °C)	07					
thermocouple J - Fe-CuNi (0...400 °C)	08					
thermocouple J - Fe-CuNi (0...600 °C)	09					
thermocouple J - Fe-CuNi (0...900 °C)	10					
thermocouple K - NiCr-NiAl (0...600 °C)	11					
thermocouple K - NiCr-NiAl (0...900 °C)	12					
thermocouple K - NiCr-NiAl (0...1300 °C)	13					
thermocouple S - PtRh10-Pr (0...1600 °C)	14					
on order*	99					
Version:						
on-off controller	1					
PID controller	2					
PID controller configurable by buttons and with alarm output	3					
Control output:						
relay	1					
voltage 0/5 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					

Table 60. RE60 ordering code:

	RE60 -	XX	X	X	X	X
Input:						
Pt100 (-50...100 °C)	01					
Pt100 (0...250 °C)	02					
Pt100 (0...600 °C)	03					
thermocouple J - Fe-CuNi (0...250 °C)	04					
thermocouple J - Fe-CuNi (0...600 °C)	05					
thermocouple J - Fe-CuNi (0...900 °C)	06					
thermocouple K - NiCr-NiAl (0...600 °C)	07					
thermocouple K - NiCr-NiAl (0...900 °C)	08					
thermocouple K - NiCr-NiAl (0...1300 °C)	09					
thermocouple S - PtRh10-Pr (0...1600 °C)	10					
on order	XX					
Main output:						
relay	1					
logic 0/5 V to SSR control	2					
on order	X					
Alarm outputs:						
without outputs	0					
1 relay	1					
2 relays	2					
on order	X					
Supply:						
230 V a.c. 50/60 Hz	1					
110 V a.c. 50/60 Hz	2					
24 V a.c. 50/60 Hz	3					
18...72 V d.c.	4					
on order	X					
Acceptance tests:						
without extra requirements	8					
with an extra quality inspection certificate	7					
acc. to customer's request*	X					

Table 61. RE62 ordering code:

	RE62 -	X	X	X	XX	X	X
Additional output OUT1:							
without additional output	0						
relay 5 A 230 V	1						
0/4...20 mA (galvanic isolated)	2						
0...10 V (galvanic isolated)	3						
0/5 V 30 mA (for SSR, galvanic isolated)	4						
Additional output OUT3:							
without additional output	0						
relay 5 A 230 V	1						
supply output 24 V d.c. / 40 mA (galvanic isolated)	2						
Interface RS-485:							
without Interface	0						
with RS-485 (galvanic isolated)	1						
Version:							
standard	00						
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						

* - after agreeing with the manufacturer

Table 62. RE01 ordering code:

	RE01 -	X	XX	X	X
Input:					
Pt100	1				
Pt1000	2				
NTC 2.7k	3				
Version:					
standard	00				
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 63. RL10 ordering code:

	RL10 -	XX	X	X
Version:				
standard	00			
custom-made*	XX			
Language:				

CONTROLLER FOR INJECTION MOULDS



System for injection moulds with heated channels

SR11

Number of channels	1...8
Input	fixed Fe-CuNi (J) logic 24 V d.c.
Output	1 output per control zone (15 A)
Control	Fuzzy Logic, PID with self-tuning
Interface	RS-485 with Modbus protocol (option)
Display	LED 14 mm 2 x 3 digits
Supply voltage	230 V a.c. (for system with 1 control zone) 3 x 230/ 400 V a.c. (for system with 2...8 control zones)
Protection rating	IP30
External dimensions	77.5 x 200 x 355 mm (1 control zone) 215 x 197 x 355 mm (2 or 3 control zones) 365 x 197 x 355 mm (4, 5 or 6 control zones) 465 x 197 x 355 mm (7 or 8 control zones)
Additional functions	<ul style="list-style-type: none"> • Fuzzy Logic algorythm ensures a high accuracy temperature control and optimal energy consumption • soft-start function and leakage current monitoring ensure prolonged heaters reliability and operation safety for users • during a break in system operation, a decreased temperature is maintained, what ensures a fast restart of the system • damage detection: <ul style="list-style-type: none"> - too high heater leakage current, - damage of the load circuit, - short-circuit, break or inverse polarization in the sensor circuit.

APPLICATION EXAMPLES

ORDERING CODES

System for injection moulds with heated channels

Table 64. SR11 ordering code:

SR11-	X	X	X	X	X
Housing dimensions:					
housing width: 77.5 mm, number of controllers: 1	1				
housing width: 215 mm, number of controllers: 2, 3	3				
housing width: 365 mm, number of controllers: 4, 5, 6	6				
housing width: 465 mm, number of controllers: 7, 8	8				
Number of controllers:					
1 controller	1				
2 controllers	2				
3 controllers	3				
4 controllers	4				
5 controllers	5				
6 controllers	6				
7 controllers	7				
8 controllers	8				
Interface RS-485:					
without interface	0				
with interface	1				
Mould connectors:					
common connectors for thermocouples and heaters	1				
separate connectors for thermocouples and heaters ¹⁾	2				
Acceptance tests:					
without extra requirements	8				
with an extra quality inspection certificate	7				
acc. to customer's request ²⁾	X				

¹⁾ concerns only versions with 365 mm and 465 mm housing width mm

²⁾ after agreeing with the manufacturer



SR11 system



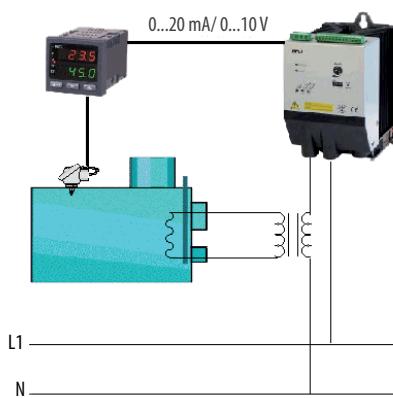
Injection mould

POWER CONTROLLERS

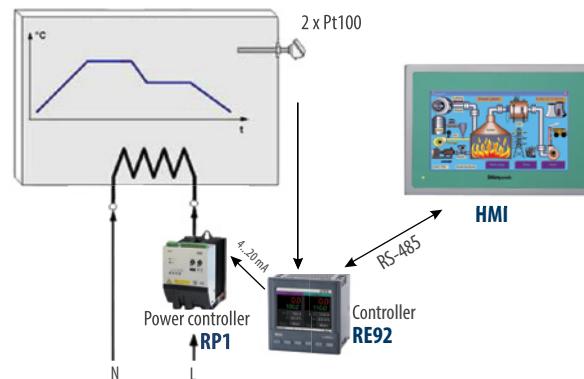


	RP7	RP1	RPL1	RP3
Version		1-phase		3-phase
Control	phase		phase, pulse, on/off	
Input signal		0.5/10V, 0/4..20mA potentiometer		
Output	-		2 x relays	
Output current	5-15 A		25-125 A	3 x 40-450 A
Load supply voltage	230 V	230 V, 400 V a.c.	230, 400, 500 V a.c.	400 V a.c.
Load configuration	2-wire		2 or 3-wire	3, 4 or 6-wire
External dimensions	50 x 105 x 105 mm	135 x 201 x 199 mm 135 x 231 x 199 mm	135 x 201 x 199 mm 135 x 231 x 199 mm - RPL1-x4xx (version with fan)	212 x 318 x 177 mm (40, 70, 125 A versions) 383 x 433 x 281 mm (200, 300, 450 A versions)

Continuous temperature control in furnace



Program following temperature control in a high power oven with electrical heaters



APPLICATION EXAMPLES

ORDERING CODES

Power controllers						
Table 65. RP7 ordering code:						
RP7 -	X	X				
Maximal current output:						
5 A	1					
10 A	2					
15 A	3					
Acceptance tests:						
without extra requirements	8					
with an extra quality inspection certificate	7					
acc. to customer's request*	X					
Table 66. RP1 ordering code:						
RP1 -	X	X	X			
Maximal current output:						
25 A	1					
40 A		2				
70 A		3	load voltage: 24...400 V a.c. 50/60 Hz			
125 A	4					
Gate triggering system (GTS):						
supply voltage 85...115...135 V a.c.	1					
supply voltage 195...230...253 V a.c.	2					
Acceptance tests:						
without extra requirements	8					
with an extra quality inspection certificate	7					
acc. to customer's request	X					
Table 67. RPL1 ordering code:						
RPL1 -	X	X	XX	X	X	X
Control:						
phase	1					
pulse/ on/off	2					
Current range:						
maximal current output 25 A	1					
maximal current output 40 A	2					
maximal current output 70 A	3					
maximal current output 125 A*	4					
Load voltage:						
supply voltage - 195...230...253 V a.c.	1					
supply voltage - 340...400...440 V a.c.	2					
supply voltage - 425...500...550 V a.c.	3					
Version:						
standard	00					
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					

* the version RPL1-x4xx has a fixed fan

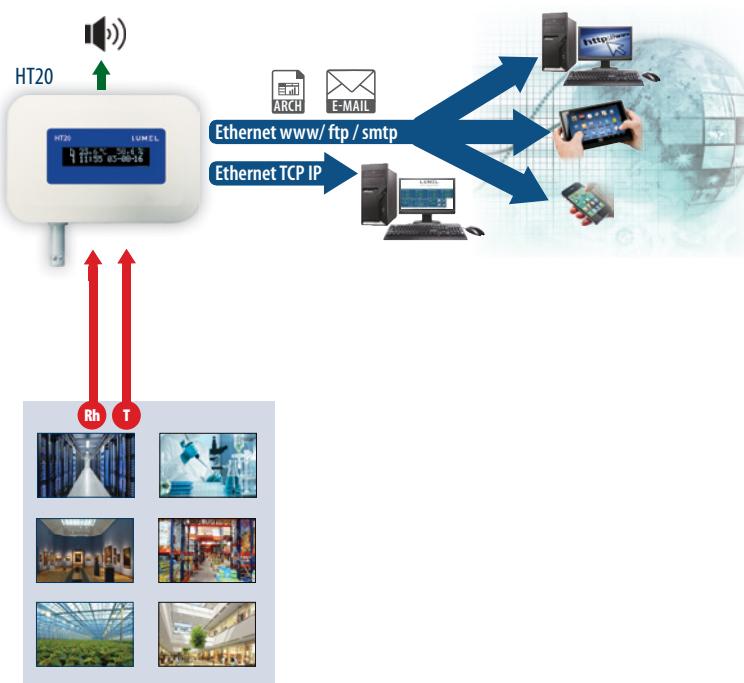
** after agreeing with the manufacturer

RECORDERS

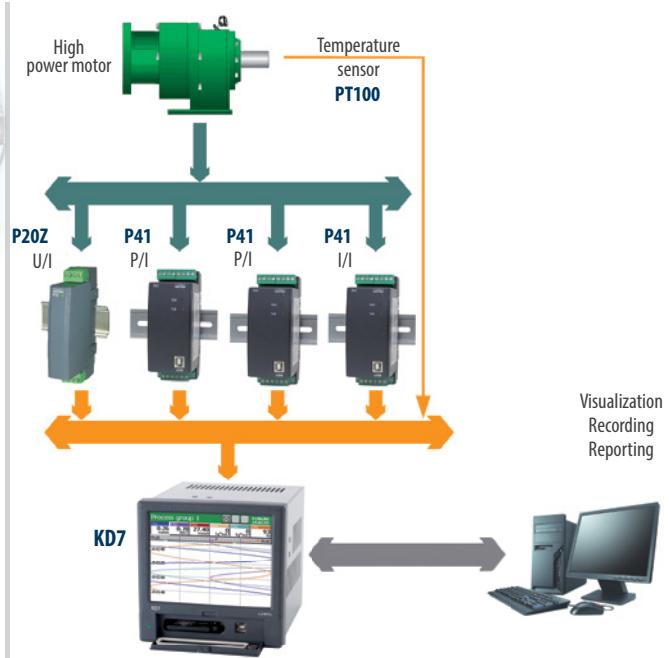


	HT20	N30B	KD7	KD8	SM61
Number of channels	-	up to 100	up to 24 channels (max. 12 analog channels and/or max. 24 digital channels)	up to 6	up to 2500
Input	built-in temperature and humidity sensor	Modbus RTU Master 10 groups 10 registers each	programmable (3, 6, 9 or 12 inputs) Pt100/500/1000, Ni100, Cu100, J, K, N, E, R, S, T, B, L, ± 20mA ± 9999mV 50...2000 Ω 0...2000 Ω logic input 0/...24V d.c. (8 or 16 pcs.) Modbus RTU Master (24 registers)	programmable (3 or 6 inputs) Pt100/500/1000 Ni100, Cu100, J, K, N, E, R, S, T, B, L, ± 20mA ± 9999mV 50...2000 Ω 0...2000 Ω logic 0/5...24V d.c. (4 or 8 pcs.)	Port II: Modbus RTU Master, (100 groups 25 registers each) 2 x logic (option)
Output	-	4 x relays (2 NO + optionally 2 changeover), 1 x analog (option)	relays (8 or 16) relays OptoMOS (8 or 16) analog (4 or 8) 0...5, 0/4...20 mA 0... 5 V, 1...5 V, 0...10 V supplying output (2 x 24 V d.c. 30 mA)	relays (6 or 12)	Port I: Modbus RTU/TCP Slave, 2 x relays (option)
Measurement range	-20...60 °C, 0...100% RH	-	-	-	-
Interface	Ethernet (WWW, FTP, SMTP, DHCP)	max 2 x RS-485 Modbus Master and Slave (option)	2 x RS-485 (Modbus Slave and Master) 1 x RS-232 (Modbus Slave) USB Device 1.1. Ethernet 10 Base-T	RS-485 (Modbus Slave) USB Device 1.1.	2 x RS-485 (Modbus Slave and Master) 1 x RS-232 (Modbus Slave) USB Device 1.1. Ethernet 10/100 Base-T
Memory	internal - 8GB	internal - 308000 samples external – MMC/SD card up to 4 GB	internal – up to 6 MB external – CF card up to 4 GB		1 GB
Display	LCD 2 x 16 characters	3-colour LED 5 digits (14 mm)	LCD 5,7" TFT type 320 x 240 pixels with touch panel		-
Supply voltage	6V d.c. or PoE IEEE 802.3af - option	85...253 V a.c., 90...320 V d.c. or 20...40 V a.c., 20...60 V d.c.	90...253 V a.c., 90...300 V d.c. or 18...30 V d.c.		85...253 V a.c., 90...300 V d.c. or 20...40 V a.c., 20...60 V d.c. or 10...16 V a.c., 10...20 V d.c.
Protecting rating	IP20		IP65		IP40/IP20
External dimensions	150 x 100 x 30 mm	96 x 48 x 93 mm	144 x 144 x 171 mm	144 x 144 x 171 mm	45 x 120 x 100 mm
Additional functions	<ul style="list-style-type: none"> • data presentation on a LCD display and on website • email messages in case of alarm occurs • acoustic signaling of alarm events • parameter configuration through a web browser 	<ul style="list-style-type: none"> • 21-point rescaling • free software for data analysis • data logging on PC in MySQL database 	<ul style="list-style-type: none"> • many forms of data presentation: linear, bargraph, chart, digital and analog indicators, • WWW and FTP Server (KD7) • Windows® CE operating system • PC software: KD SETUP, KD CHECK, KD CONNECT, KD ARCHIVE • user access levels • menu available in 8 language versions 	<ul style="list-style-type: none"> • HTTP (WEB server -visualization in format of synoptic maps), • DHCP • ftp server, • RTC 	

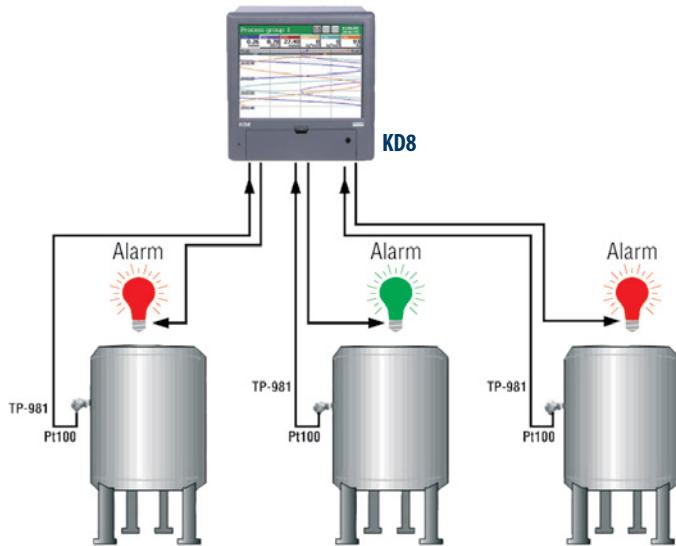
Access to the device from anywhere in the world thanks to the built-in web server.



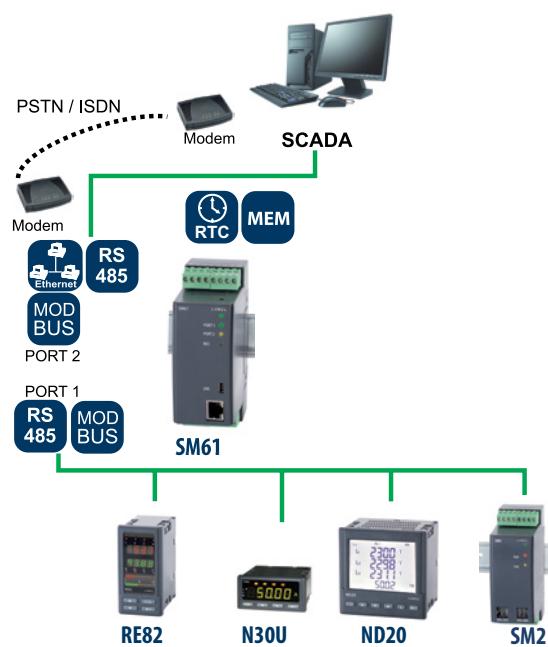
Measurement and visualization of motor working parameters (temperature and motor load)



Temperature measurement, logging and alarming



Archiving of process data



ORDERING CODES

Tabela 69. HT20 ordering code:

	HT20 -	X	X	XX	X	X
Supply*:						
6 V d.c.	1					
6 V d.c., PoE IEEE 802.3af	2					
Accessories:						
none	0					
adapter 6 V d.c.	1					
Version:						
standard	00					
custom-made**	XX					
Language:						
Polish	P					
English	E					
other**	X					
Acceptance tests:						
without additional quality requirements	0					
with an extra quality inspection certificate	1					
acc.to customer's request	X					

Table 70. N30B ordering code:

	N30B -	X	X	XX	XX	X	X
Supply voltage:							
85...253 V a.c. (40 ... 400 Hz); 90 ... 320 V d.c.	1						
20...40 V a.c. (40 ... 400 Hz); 20 ... 60 V d.c.	2						
Additional outputs:							
lack	0						
OC output, RS-485 (port 2), analog output	1						
OC output, RS-485 (port 2), analog output							
switched-over relay outputs	2						
Unit:							
unit code acc. to the table 71				XX			
Version:							
standard	00						
custom-made*	XX						
Language:							
Polish	P						
English	E						
other*	X						
Acceptance tests:							
without extra requirements	0						
with an extra quality inspection certificate	1						

* - after agreeing with the manufacturer

Table 72. KD7 ordering code:

	KD7 -	X	X	X	X	X	X	X	X	X	X
Measuring input (slot 1):											
without measuring inputs	0										
6 programmable measuring inputs	1										
6 standard measuring inputs: 0...10 V	2										
6 standard measuring inputs: 0...20 mA	3										
6 standard measuring inputs: 4...20 mA	4										
6 standard measuring inputs: 3 x 0...10 V + 3 x 0...20 mA	5										
6 standard measuring inputs: 3 x 0...10 V + 3 x 4...20 mA	6										
3 programmable measuring inputs	7										
Measuring inputs (slot 2):											
without measuring inputs	0										
6 programmable measuring inputs	1										
6 standard measuring inputs ¹⁾	2..6										
3 programmable measuring inputs	7										
Interface input:											
RS-485 (1) for measuring inputs				1							
Digital signals/analog outputs (slot 3):											
without digital signals and analog outputs	0										
8 alarms (NO relays) + 8 alarms (OptoMos)	1										
8 alarms (NC relays) + 8 alarms (OptoMos)	2										
8 digital inputs + 4 analog outputs: 0...5 mA	3										
8 digital inputs + 4 analog outputs: 0...20 mA	4										
8 digital inputs + 4 analog outputs: 4...20 mA	5										
8 digital inputs + 4 analog outputs: 0...5 V	6										
8 digital inputs + 4 analog outputs: 0...10 V	7										
Digital signals/analog outputs (slot 4):											
without digital signals and analog outputs	0										
8 alarms (NO relays) + 8 alarms (OptoMos)	1										
8 alarms (NC relays) + 8 alarms (OptoMos)	2										
8 digital inputs + 4 analog output ²⁾	3..7										
Interface:											
USB				1							
USB + Ethernet + RS-485 (2)				2							
USB + Ethernet + RS-232				3							
Memory for measuring data:											
with a 4 GB CF card ³⁾				6							
as per order ⁴⁾				X							
Supply:											
90...253 V a.c.				1							
Recorder firmware:											
without mathematical functions ⁵⁾				0							
with mathematical functions				1							
Softwares servicing the recorder from PC:											
KD Connect, KD Check					1						
KD Connect, KD Check, KD Archive, KD7 Setup					2						
Acceptance tests:											
without extra quality inspection requirements											0
with an extra quality inspection certificate											1
acc. to customer's request											X

Table 71. Codes of highlighted unit:

Code	Unit	Code	Unit	Code	Unit
00	without unit	20	kVAh	40	szt
01	V	21	MVAh	41	imp
02	A	22	Hz	42	rps
03	mV	23	kHz	43	m/s
04	kV	24	Ω	44	l/s
05	mA	25	kΩ	45	obr/min
06	kA	26	°C	46	rpm
07	W	27	°F	47	mm/min
08	kW	28	K	48	m/min
09	MW	29	%	49	l/min
10	var	30	%RH	50	m³/min
11	kvar	31	pH	51	szt/h
12	Mvar	32	kg	52	m/h
13	VA	33	bar	53	km/h
14	kVA	34	m	54	m³/h
15	MVA	35	l	55	kg/h
16	kWh	36	s	56	l/h
17	MWh	37	h		
18	kvarh	38	m³		
19	Mvarh	39	obr		

Table 73. KD8 ordering code:

	KD8 -	X	X	X	X	XX	X
Measuring inputs:							
3 programmable measuring inputs	1						
6 programmable measuring inputs	2						
Alarms and logic inputs:							
without alarms and logic inputs	0						
alarms (NO relays) + logic inputs ¹⁾	1						
Supply:							
90...253 V a.c.				1			
Softwares servicing the recorder from PC:							
KD Connect, KD Check				1			
KD Connect, KD Check, KD Archive, KD8 Setup				2			
Version:							
standard				00			
custom-made ²⁾				XX			
Acceptance tests:							
without extra requirements							8
with an extra quality inspection certificate							7
acc. to customer's request							X

- * after agreeing with the manufacturer
- 1) - write the range code from the item 2...6 as above: (Slot 1)
- 2) - write the range code from the item 3...7 as above: (Slot 3)
- 3) - CF card with the lowest capacity from currently accessible cards on the market
- 4) - after agreeing with the manufacturer (it is recommended to use a 4 GB CompactFlash card from ScanDisk company)
- 5) - a key for the activation of mathematical functions can be ordered separately

I/O MODULES, COMMUNICATION MODULES



	Input/Output modules						
	SM1	SM2	SM3	SM5	SM4	S4AI	S4AO
Number of channels	2	4	2	8	4 or 8	4	4
Inputs/outputs	fixed inputs: Pt100(-200...850°C), 0...400 Ω or 0/4...20 mA or 0...10 V	programmable inputs: logic on/off or pulse counter up to 1 kHz 0...4294967295 pulses	fixed inputs: logic on/off	fixed outputs: 4 x relay or 8 x OC	programmable inputs: 4 x ± 10 V, ± 20mA or 4 x Pt100, Pt500, Pt1000 J, K, S, ± 150 mV	fixed outputs: 4 x 0/4...20 mA or 4 x 0...10 V or 2 x 0/4...20 mA + 2 x 0...10 V	
Interface	RS-485 Modbus Slave, RS-232 for configuration					RS-485 Modbus (Slave), USB for configuration	2 x RS-485 Modbus (Slave, Master) USB for configuration
Baud rate	2400; 4800; 9600; 19.2 k; 38.4 k; 57.6 k; 115 k bit/s					1200; 2400; 4800; 9600; 19.2 k, 38.4 k, 57.6 k, 115.2 k bit/s	
Supply voltage	85...253 V a.c./d.c.; 20...50 V a.c./d.c.					85...253 V a.c./ 90...300 V d.c. 20...40 V a.c./ 20...60 V d.c.	
Protection rating	IP40						
External dimensions	22.5 x 120 x 100 mm	45 x 120 x 100 mm	22.5 x 120 x 100 mm	45 x 120 x 100 mm	45 x 120 x 100 mm	53 x 110 x 60 mm	



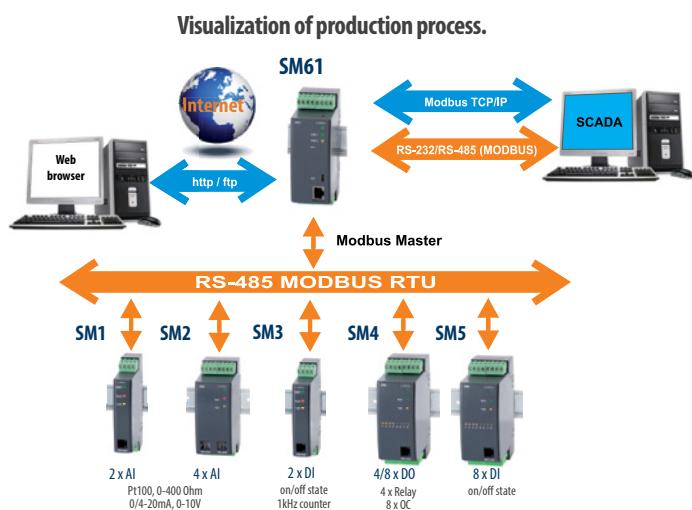
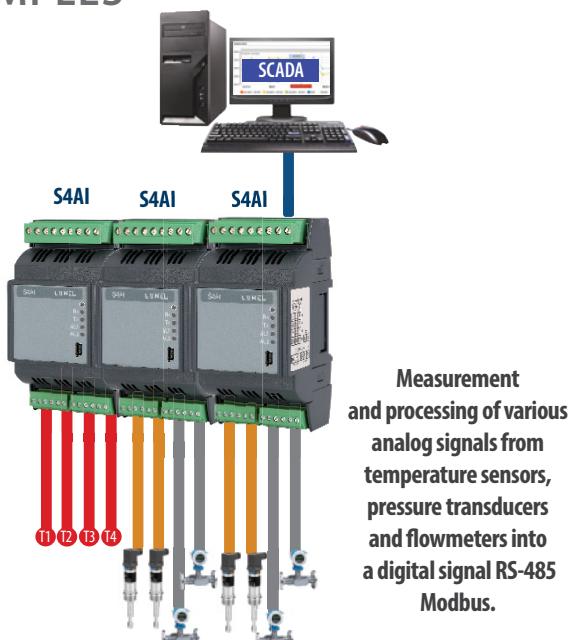
	Data logger	
	PD22	SM61
Number of channels	up to 1000 digital channels	
Input	Port I: Modbus RTU Master (50 groups 20 register each)	
Output	Port II: Modbus RTU Slave	
Interface	3 x RS-485 (Modbus Slave and Master) 1 x RS-232 (Modbus Slave) USB Device 1.1.	
Memory	512 kB, 390.000 samples, 44.000 events	
Supply voltage	85...253 V a.c./d.c. or 20...50 V a.c./d.c.	
Protection rating	IP40	
External dimensions	45 x 120 x 100 mm	
Additional functions	<ul style="list-style-type: none"> • RTC 	
	<ul style="list-style-type: none"> • HTTP (web server - visualization in format of synoptic maps), • DHCP, • FTP server, • RTC 	

I/O MODULES, COMMUNICATION MODULES



	Interface/protocol converters			Radio transmission module
	PD51	PD8	PD10	MR03
Interface 1	RS-232	RS-485, RS-232	RS-485	RS-232; RS-485
Interface 2	RS-485	Ethernet RJ45	USB	radio frequency 869.4 – 869.65 MHz
Interface 3	-	USB	-	-
Power output	-	-	-	500 mW
Baud rate	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 [bit/s]	300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 56000 bit/s (RS-485) 10, 100 Mbit/s (Ethernet)	to 1 Mb/s	Port 1 - RS-232 1200...115200 bit/s Port 2 - RS-485 1200...115200 bit/s radio band 4800 bit/s
Distance	-	-	-	up to 1.5 km
Supply voltage	7...35 V d.c. or 20...24...40 V a.c./d.c. or 85...230...253 V a.c./d.c.	85..230..253 V a.c./d.c. 20..24..50 V a.c./d.c.	supplied from USB port	8..30 V a.c./d.c.
Protection rating frontal	IP40			IP54
Ambient temperature	0...23...55°C	-20...23...45°C	0...55°C	0...23...50°C
External dimensions	22.5 x 120 x 100 mm	45 x 120x 100 mm	52x44x24mm	115x65x40 mm
Additional functions	<ul style="list-style-type: none"> • converter/repeater • galvanic isolation 	<ul style="list-style-type: none"> • galvanic isolation • Digi RealPort®, TCP/IP, HTTP, ICMP, DHCP, ARP 	<ul style="list-style-type: none"> • galvanic isolation 	-

APPLICATION EXAMPLES



ORDERING CODES

Input/output modules

Table 75. SM1 ordering code:

	SM1 -	XX	X	X
Input:				
2 voltage inputs: 0...10V	00			
2 current inputs: 0/4...20mA	01			
1 voltage input + 1 current input: 0...10V + 0/4...20 mA	02			
2 resistance 0...400 Ω or Pt100 inputs	03			
custom-made*	XX			
Supply:				
85...253 V a.c./d.c.	1			
20...50 V a.c./d.c.	2			
Acceptance tests:				
without extra requirements	8			
with an extra quality inspection certificate	7			
acc. to customer's request*	X			

Table 76. SM2 ordering code:

	SM2 -	XX	X	X
Input:				
4 voltage inputs: 0...10V	00			
4 current inputs: 0/4...20mA	01			
2 voltage inputs + 2 current inputs: 0...10V + 0/4...20 mA	02			
4 resistance 0...400 Ω or Pt100 inputs	03			
custom-made*	XX			
Supply:				
85...253 V a.c./d.c.	1			
20...50 V a.c./d.c.	2			
Acceptance tests:				
without extra requirements	8			
with an extra quality inspection certificate	7			
acc. to customer's request*	X			

Table 77. SM3 ordering code:

	SM3 -	X	XX	X
Supply voltage:				
85...253 V a.c./d.c.	1			
20...50 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			

Table 78. SM4 ordering code:

	SM4 -	X	X	XX	X
Supply:					
85...253 V a.c./d.c.	1				
20...50 V a.c./d.c.	2				
Outputs:					
8 outputs of OC type	1				
4 relays	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 79. SM5 ordering code:

	SM5 -	X	XX	X
Supply:				
85...230...253 V a.c./d.c.	1			
20...24...50 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			

Table 80. S4AI ordering code:

	S4AI -	X	X	XX	X	X
Inputs:						
4 programmable analog inputs: ±10 V - ±20 mA	1					
4 programmable analog inputs: Pt100, Pt500, Pt1000, J, K, S, ±150 mV	2					
acc. to customer's request*	X					
Supply voltage:						
85...253 V a.c., 90...300 V 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					
other*	X					
Acceptance tests:						
without additional quality requirements	0					
with an extra quality inspection certificate	1					
acc. to customer's request	X					

Table 81. S4AO ordering code:

	S4AO -	X	X	XX	X	X
Outputs:						
4 current outputs, 0...20 mA	1					
4 voltage outputs, 0...10 V	2					
2 sets of 1 voltage + 1 current output: 0...10 V / 0...20 mA	3					
acc. to customer's requirements*	X					
Supply voltage:						
85...253 V a.c., 90...300 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					
other*	X					
Acceptance tests:						
without extra requirements	0					
with an extra quality inspection certificate	1					
acc. to customer's requirements*	X					

Data logger

Table 82. SM61 ordering code:

	SM61 -	X	X	XX	X	X
Supply:						
85...253 V a.c., 90...300 V d.c.	1					
20...40 V a.c., 20...60 V d.c.	2					
10...16 V a.c., 10...20 V d.c.	3					
Input/output:						
2 relays	1					
2 logic inputs	2					
Version:						
standard	00					
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 83. PD22 ordering code:

	PD22 -	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		

* - after agreeing with the manufacturer

Table 84. PD51 ordering code:

	PD51 -	XX	X
Supply voltage:			
on-rail version: 85...230...253 V a.c/d.c.	A1		
20...24...40 V a.c./d.c.	A2		
7...24...35 V d.c.	A3		
portable version 9 V d.c.	B1		
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 85. PD8 ordering code:

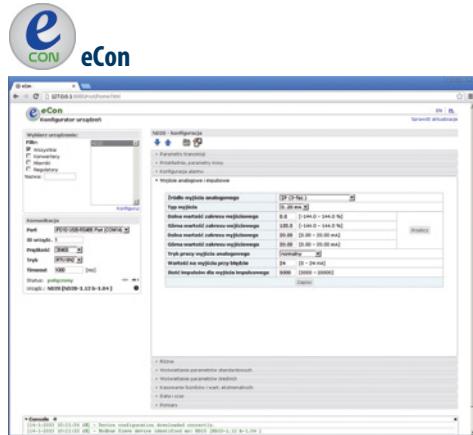
	PD8 -	X	XX	X
Supply voltage:				
85...230...253 V a.c./d.c.	1			
20...24...50 V a.c./d.c.	2			
Version:				
standard	00			
custom-made*	XX			
Acceptance tests:				
without extra requirements	8			
with an extra quality inspection certificate	7			
acc. to customer's request*	X			
Galvanic isolation:				
with isolation	1			
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 the manufacturer

* - after agreeing with the manufacturer

eCon - Free Software for Configuration of Lumel Products

- Easy configuration of Lumel products
- Upload / download full configuration of a device connected to a PC computer using RS-485, Ethernet, USB or PD14 programmer (USB)
- Full device configuration can be saved to a file and stored on a PC computer for later use
- Firmware update for Lumel products
- Work over the web browser



PD10 – RS-485 to USB converter that can be used to configure using eCon a device equipped with RS-485



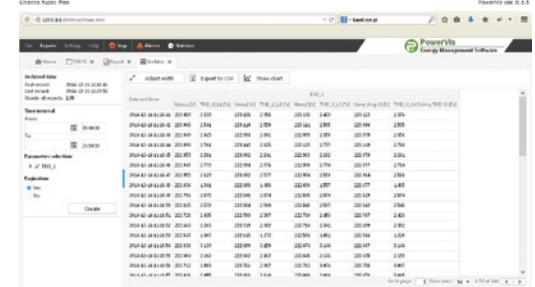
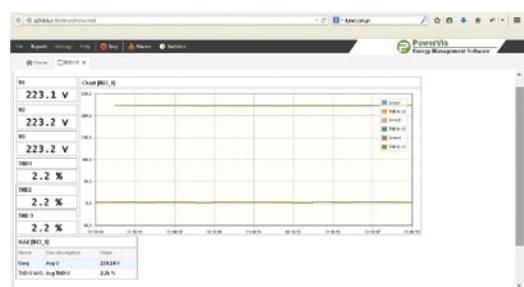
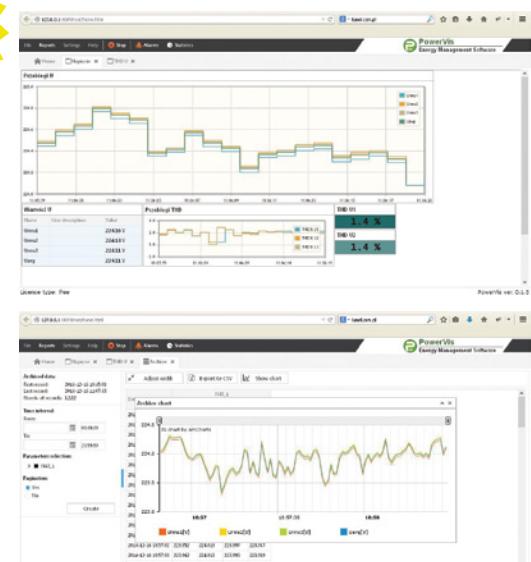
PD14 – programmer to configure non RS-485 devices using eCon



PROCESS VISUALIZATION SOFTWARE

PowerVis Software

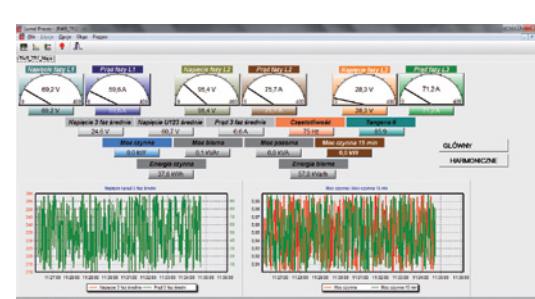
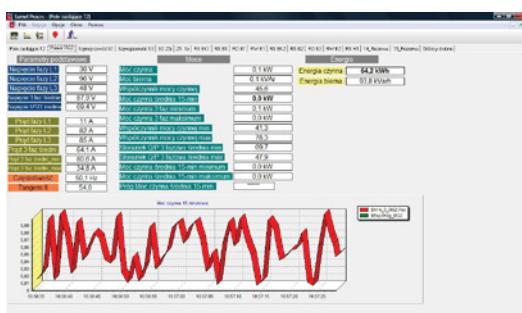
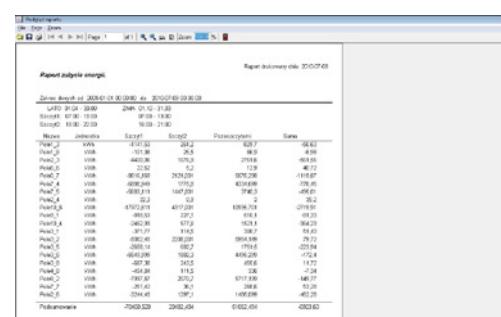
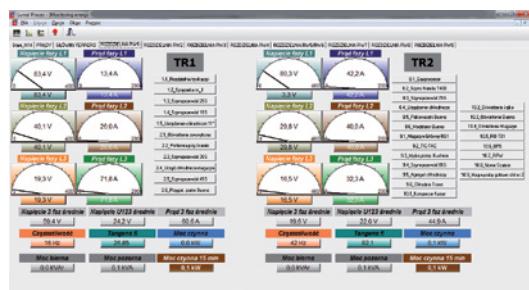
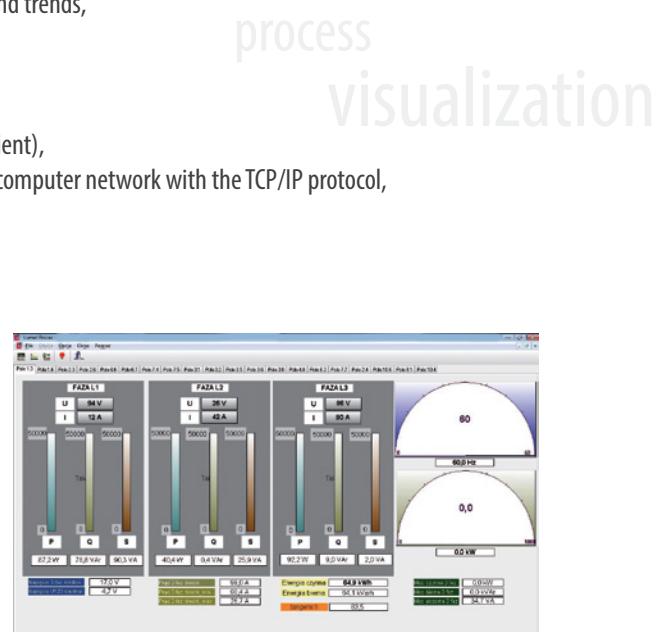
- **NEW FUNCTION**: multiple user access with varying levels of authorization
- meant for monitoring of power network parameters
- works on all web browsers
- simple and user-friendly configuration (specialist knowledge is not required)
- user-friendly interface
- dedicated for LUMEL meters and transducers
- dedicated for other producers devices with Modbus or Modbus TCP protocols
- visualization of parameters through: digital indications, trends and tables
- data archiving
- presentation of archived data through: tables and trends
- export of archived data to CSV files
- **NEW FUNCTION**: signalling of alarm events (directly on computer screen or remotely via e-mail)
- remote access to PowerVis software through a web browser



LUMEL-PROCESS Software

- modern integration and data presentation system,
- control and measurement applications for industrial installations, intelligent buildings, heat engineering, gas engineering, power engineering and laboratories,
- for systems built with the application of LUMEL's instruments, compatible with devices from other manufacturers,
- data exchange using Modbus transmission protocol,
- visualization of process parameters in form of mimic maps, tables, bargraphs and trends,
- remote configuration and control of devices,
- data logging,
- recording of alarm events in the system,
- data sharing with other applications using DDE data exchange protocol (DDE client),
- sharing data with other computers with a LUMEL Process software in the local computer network with the TCP/IP protocol,
- report templates,
- report monitoring on the base of archived data,
- report printing and export to pdf, txt, html formats,
- view of synoptic map via web browser!**

LUMEL-PROCESS
software



ANALOG PANEL METERS / SCALE: 90°



Moving-iron meters

	EB16	EA16	EA17	EA19	EA12
Type of scale			90°		
External dimensions	45 x 85 mm	48 x 48 mm	72 x 72 mm	96 x 96 mm	144 x 144 mm
Interchangeable scale	-	✓ *	✓ *	✓ *	-
Measuring ranges:					
- current: · direct · through a transformer*		100 mA ... 25 A xA x/5 A; xA/1 A			100 mA ... 100 A xA x/5 A; xA x/1A
(on request, with twice or six-times overload)					
- voltage: · direct · through a transformer		6 V ... 600 V xV/100 V; xV/110 V			6 V ... 1000 V xV/100 V; xV/110 V
Proof voltage	3 kV	2 kV			3 kV
Frequency of measured value			40...45..65...72 Hz		
Protection rating	IP52		IP52 (on request IP65)		IP52
Climate version	normal or tropical			normal, tropical or similar to marine	
Class			1.5		

* for current measurement up to ranges: 1 A, 1/2 A, 5 A, 5/10 A), for voltage measurement - all ranges

** see our current transformers (page 24)



Moving-iron meters

	MA17(P)	MA19(P)	MA12(P)
Type of scale		90°	
External dimensions	72 x 72 mm	96 x 96 mm	144 x 144 mm
Interchangeable scale	✓	✓	✓
Measuring ranges			
(direct):			
- current:	400 µA...1 A (30...1000...10 000 Hz) 1 A...6 A (49...50...51 Hz)		400 µA...1 A (30...1000...10 000 Hz)
- voltage:	60 mV...1.5 V (49...50...51 Hz) 2.5V...600 V (30...1000...10 000 Hz)		2.5 V...600 V (30...1000...10 000 Hz)
Proof voltage	2 kV		2 kV
Protection rating	IP52 (on request IP65)		IP52
Climate version		normal, tropical or similar to marine	
Class		1.5	



3-phase voltmeters

	EP27	EP29
Type of scale		90°
External dimensions	72 x 72 mm	96 x 96 mm
Interchangeable scale	✓	✓
Voltage measuring ranges:		
- direct phase-to-phase: - through a transformer:	500 V xV/100 V; xV/110 V	
Frequency	40...45..65...72 Hz	
Proof voltage	3 kV	
Protection rating	IP52	
Climate version	normal	
Class	1.5	

Power meter

	PA39
Type of scale	90°
External dimensions	96 x 96 mm
Interchangeable scale	✓
Power measuring ranges	50W...1000 MW or 50 var...1000 Mvar
Frequency	50 Hz, 60 Hz or 400 Hz
Proof voltage	2 kV
Protection rating	IP52 (on request IP65)
Climate version	normal, tropical or similar to marine
Class	1.5

ANALOG PANEL METERS / SCALE: 90°



Moving-coil meters

	MB16	MA16	MA17	MA19	MA12
--	-------------	-------------	-------------	-------------	-------------

Type of scale	90°				
External dimensions	45 x 85 mm	48 x 48 mm	72 x 72 mm	96 x 96 mm	144 x 144 mm
Interchangeable scale	-	✓	✓	✓	-
Measuring ranges:					
- current:					
· direct measurement					
· indirect measurement (through the shunt*)					
- voltage:					
· direct measurement					
· indirect measurement (through the shunt*)					
Proof voltage	3 kV			2 kV	
Protection rating	IP52		IP52 (on request IP65)		IP52
Climate version	normal or tropical		normal, tropical or similar to marine		
Rated operational conditions:					
- ambient temperature			5...23...55°C		
- relative air humidity			25...85%		
Class			1.5		

* see our shunts (page 26)



Max demand ammeters - Bimetalic or Bimetalic and moving-iron

	BA27	BA39	BE27	BE39
--	-------------	-------------	-------------	-------------

Type of scale	90°				
External dimensions	72 x 72 mm	96 x 96 mm	72 x 72 mm	96 x 96 mm	
Interchangeable scale	✓	✓	✓	✓	
Measuring ranges:					
- bimetallic element:					
· direct measurement					
· indirect measurement (through a transformer*)		0...1.2 A or 0...6 A 0...1.2(x) A x/1 A or 0...1.2(x) A x/5 A			0...1.2 A or 0...6 A 1.2(x) A x/1 A or 1.2(x) A x/5 A
- moving-iron element:		-			0...1/2 A or 0...5/10 A 0...2(x) A x/1 A or 0...2(x) A x/5 A
Proof voltage		3 kV			
Protection rating			IP40 (on request IP65)		
Climate version			normal or tropical		
Class	3			3 (1.5)	

* see our current transformers (page 24)



Power factor and frequency meters

	FA39	FA32	CA37	CA39	CA32
--	-------------	-------------	-------------	-------------	-------------

Type of scale	90°				
External dimensions	96 x 96 mm	144 x 144 mm	72 x 72 mm	96 x 96 mm	144 x 144 mm
Interchangeable scale	✓	✓	✓	✓	✓
Measuring ranges				Class 0.5: 45...55 Hz; 45...65 Hz; 55...65 Hz; 360...440 Hz; Class 0.2: 48...52 Hz; 58...62 Hz; 140...160 Hz; 180...220 Hz; 380...420 Hz	
Frequency	0.5 _{Cap} ...1...0.5 _{IND} . 0.8 _{Cap} ...1...0.2 _{IND} . 0.85 _{Cap} ...1...0.85 _{IND} . 0 _{IND} ...1				
	45...50...60...65 Hz				
Proof voltage		2 kV			
Protection rating	IP52 (IP65 on request)	IP52		IP52 (IP65 on request)	IP52
Climate version			normal, tropical or similar to marine		
Class	1.5			0.5	

ANALOG PANEL METERS / SCALE: 240°



Moving-coil meters

	MA16L	MA17L	MA19L	MA12L
Type of scale			240°	
External dimensions	48 x 48 mm	72 x 72 mm	96 x 96 mm	144 x 144 mm
Interchangeable scale	✓	✓	✓	✓
Measuring ranges:				
- current:			40 μA...60 A	
- voltage:			60 mV...600 V	
Proof voltage	2 kV		3 kV	
Protection rating		IP52 (IP65 on request)		IP52
Climate version			normal	
Rated operational conditions:				
- ambient temperature			5...23...55°C	
- relative air humidity			25...85%	
Class			1.5	



Moving-iron meters

	MA16L(P)	MA17L(P)	MA19L(P)	MA12L(P)
Type of scale			240°	
External dimensions	48 x 48 mm	72 x 72 mm	96 x 96 mm	144 x 144 mm
Interchangeable scale	-	-	-	-
Measuring ranges:				
- current:			100 mA, 1 A 5 A, 10 A	
- voltage:			6 V...600 V	
Proof voltage			2 kV	
Protection rating		IP52 (IP65 on request)		IP52
Climate version			normal	
Class			1.5	



Power factor and frequency meters

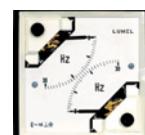
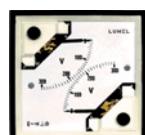
	FA39L	FA32L	CA39L	CA32L
Type of scale			240°	
External dimensions	96 x 96 mm	144 x 144 mm	96 x 96 mm	144 x 144 mm
Interchangeable scale	✓	✓	✓	✓
Measuring ranges:				
	0.5 _{CAP}1....0.5 _{IND} .		45....50....55Hz	
	0.8 _{CAP}1....0.3 _{IND} .		45....55....65Hz	
	0.8 _{CAP}1....0.8 _{IND} .		55....60....65Hz	
Frequency	49...51 Hz (1-phase)		360...400...440Hz	
	45...65 Hz (3-phase)		380...400...420Hz	
Proof voltage		2 kV		
Protection rating	IP52 (IP65 on request)	IP52	IP52 (IP65 on request)	IP52
Climate version			normal	
Class			0.5	

ANALOG PANEL METERS / SCALE: 240°



	Power meter	
	PA39L	PA32L
Type of scale		240°
External dimensions	96 x 96 mm	144 x 144 mm
Interchangeable scale	✓	
Power measuring ranges	50 W...1000 MW or 50 var...1000 Mvar	
Frequency	50 Hz, 60 Hz or 400 Hz	
Proof voltage	2 kV	
Protection rating	IP52 (on request IP65)	IP52
Climate version	normal	
Class	1.5	

DUAL ANALOG PANEL METERS / 2 IN 1 / SCALE: 90°



	Dual moving-iron meters EA19D	Dual frequency meters CA39D	Dual moving-coil meters MA19D
Type of scale		90°	
External dimensions		96 x 96 mm	
Interchangeable scale	✓	✓	✓
Measuring ranges	150...600 V; xV/100V ; xV/110V 4...60 A; xA x/5A; xA/1A	45....50....55 Hz 45....55....65 Hz 55....60....65 Hz 360...400...440 Hz 380...400...420 Hz	1000 μ A...30 A 60 mV...600 V 40 mV...1000 V
Proof voltage	3 kV	2 kV	3 kV
Parameters of measured signal	45...65 Hz	-	-
Protection rating		IP52 (on request IP65)	
Climate version		normal	
Class	1.5	0.5	1.5

ORDERING CODES

D.C. Ammeters and D.C. Voltmeters EA and EB

Please, specify in the order:

- name and meter type
- measuring range
- overload value – only for current ranges
- data of measuring transformers – if the meter is foreseen to co-operate with transformers
- working position
- meter climate version - only for tropical versions or similar to marine
- extra requirements if necessary.

Ordering example: voltmeter of EA17 type, 500 V range, direct measurement, vertical 90° working position, scale consistent to the range, without extra requirements.

D.C. and A.C. Ammeters and Voltmeters MA, MB

Please, specify in the order:

- name and meter type
- measuring range
- zero position or data of the shunt – if the meter is foreseen to co-operate with an interchangeable shunt
- working position
- meter climate version - only for tropical versions or similar to marine
- extra requirements if necessary

One must order the shunt separately.

When ordering meters for a.c. current or voltage, add „with rectifier” to the meter name.

Ordering example: ammeter of MA16 type, 40 A range, to co-operate with shunt of B2 40 A/60 mV type, vertical 90° working position, scale consistent to the range, without extra requirements. If the shunt has to be delivered with the meter, one must place it in the order as a separate item, e.g. shunt B2 40 A/60 mV.

A.C. VOLTMETERS EP

Please, specify in the order:

- name and meter type
- measuring range
- data of measuring transformers – if the meter is foreseen to co-operate with transformers
- working position
- meter climate version - only for tropical versions or similar to marine
- extra requirements if necessary.

Ordering example: voltmeter of EP27 type, 500 V range, direct measurement, vertical 90° working position, scale according to the range, without extra requirements.

DEFAULT PARAMETERS

- climate version: normal
- protection grade: IP52
- working position: 90°
- scale according to the measuring range
- without an inspection certificate and extra requirements

POWER METERS PA39

PA39 -	X	X	X	X	X	X	XX	X
Kind of measured power and measuring element:								
measurement of active power in 1-phase network								
A								
measurement of active power in a 3-phase network, 3-wire balanced network								
B								
measurement of active power in a 3-phase network, 3-wire unbalanced network								
C								
measurement of active power in a 3-phase network, 4-wire balanced network								
D								
measurement of active power in a 3-phase network, 4-wire unbalanced network								
E								
measurement of reactive power in a 3-phase network, 3-wire balanced network								
F								
measurement of reactive power in a 3-phase network, 3-wire unbalanced network								
G								
measurement of reactive power in a 3-phase network, 4-wire balanced network								
H								
measurement of reactive power in a 3-phase network, 4-wire unbalanced network								
K								
Input voltage:								
write in the range code Un from the table 90								
X								
Frequency of the input voltage:								
50 Hz								
0								
60 Hz								
1								
400 Hz								
2								
Input current:								
write in the range code In from the table 90								
X								
Power flow direction:								
unidirectional, zero on the left side of the scale								
0								
bidirectional, zero in the middle side of the scale								
1								
Work position:								
write in the position code from the table 93								
X								
Version:								
standard								
00								
custom-made								
XX								
Acceptance tests:								
without extra requirements								
8								
with an extra quality inspection certificate								
7								
other requirements								
X								

TABLE 90

In/x	IN Code	Power unit	Un Code																		
			T	U	A	V	W	B	C	D	E	F	G	H	I	K	L	M	N	P	R
x=5	x=1		50	100	200	250	400	600	800	1,2	5	10	15	25	30	50	80	100	200	400	800
5;5x	B5 B1	W	250	500	1	1,2	2	3	4	6	25	50	60	120	150	250	400	500	1	2	4
10/x	C5 C1		500	1	2	2,5	4	4	6	8	12	50	100	150	250	300	500	800	1	2	4
15/x	D5 D1		800	1,5	3	4	6	8	10	12	15	80	150	250	400	500	800	1,2	1,5	2,5	5
20/x	E5 E1		1,2	2	4	6	8	12	15	20	100	200	300	500	600	1	1,5	2	4	8	
30/x	F5 F1		1,5	3	6	8	12	12	20	25	30	150	300	500	800	1,2	1,5	2,5	4	5	
50/x	G5 G1																		10	20	
75/x	H5 H1																		40	60	
100/x	I5 I1																		60	100	
150/x	J5 J1																		120	200	
200/x	K5 K1																		120	200	
300/x	L5 L1																		200	300	
400/x	M5 M1																		200	300	
600/x	N5 N1																		200	300	
800/x	P5 P1																		300	500	
1000/x	R5 R1																		400	600	
1200/x	S5 S1																		500	800	
1500/x	T5 T1																		600	1000	
2000/x	U5 U1																		800	1200	
3000/x	V5 V1																		1,2	2,5	
4000/x	W5 W1																		3	5	
6000/x	X5 X1																		2	4	
10000/x	Y5 Y1																		4	6	
20000/x	Z5 Z1	MW/Mvar																	8	12	
																			15	20	
																			20	30	
																			300	400	
																			600	800	
																			1000	1200	

ORDERING CODES

MAX DEMAND AMMETERS BA AND BE

TABLE 91. BIMETALLIC METERS BA27, BE27, BA39, BE39

BA27, BE27, BA39, BE39 -		X	X	XXXX	X	X	X	X
Version:								
standard, to fix in a panel	1							
direct fixing on the transformer (only BA27)	2							
custom-made version ¹⁾	X							
Climatic categories:								
standard version	N							
tropical version	T							
custom-made version ²⁾	X							
Ranges:								
acc. to the table 92 (write the code, e.g.: F205)			XXXX					
Setting time of the bimetallic element:								
15 minutes				0				
8 minutes				2				
Working position:					X			
acc. to the table 93								
Signs on the dial and markings:								
dial with a standard scale (consistent to the range)				0				
dial execution acc. to the order ³⁾				X				
Acceptance tests:								
without extra requirements				8				
with an extra quality inspection certificate				7				
other requirements ³⁾				X				

1) - the code number is established by the manufacturer

2), 3) - all extra requirements must be agreed with the manufacturer

TABLE 93

Work position	Code			
	EB16	MB16	MA16 EA16	other meters
c3, α = 90°	A	A	A	0
c1, α = 0°		B	B	A
c2, α = 15°			C	B
c2, α = 30°			D	C
c2, α = 45°			E	D
c2, α = 60°			F	E
c2, α = 75°			G	F
c4, α = 105°			H	H
c4, α = 120°			I	I

POWER FACTOR METERS FA

TABLE 94. POWER FACTOR METERS FA39 AND FA32

FA39 and FA32 -		X	X	X	XX	X	XX	X
Measurement of power factor:								
in 1-phase system		1						
in 3-phase system, in a 3-phase balanced network		3						
Measuring range:								
0.5 cap...1...0.5 ind			A					
0.8 cap ...1...0.2 ind			B					
0.85 cap ...1...0.85 ind			C					
0 _{cap} ...1			D					
Input current:								
1 A				1				
5 A					5			
Input voltage:								
60 V (only for measurement in a 1-phase system)				01				
100 V				02				
110 V				03				
230 V				04				
400 V				05				
415 V (only for measurement in a 3-phase system)				06				
440 V (only for measurement in a 3-phase system)				07				
500 V (only for measurement in a 3-phase system)				08				
on request - after agreeing with the manufacturer				XX				
Working position:								
acc. to the table 93					X			
Version:								
standard				00				
custom-made*				XX				
Acceptance tests:								
without extra requirements				8				
with an extra quality inspection certificate				7				
other requirements*				X				

* - after agreeing with the manufacturer

TABLE 92

CODE RANGE	RANGE DESCRIPTION (MEASURING RANGE)	CODE RANGE	RANGE DESCRIPTION (MEASURING RANGE)
F201	1.2 A	F366	1920 A 1.6k/1
F205	6 A	F4	1.2 XA X/5
F3	1.2X A X/1	F405	6 A 5/5
F301	1.2 A 1/1	F406	7.2 A 6/5
F305	6 A 5/1	F407	12 A 10/5
F306	7.2 A 6/1	F408	18 A 15/5
F307	12 A 10/1	F409	24 A 20/5
F308	18 A 15/1	F411	36 A 30/5
F309	24 A 20/1	F412	48 A 40/5
F311	36 A 30/1	F413	60 A 50/5
F312	48 A 40/1	F414	72 A 60/5
F313	60 A 50/1	F415	96 A 80/5
F314	72 A 60/1	F416	120 A 100/5
F315	96 A 80/1	F417	180 A 150/5
F316	120 A 100/1	F418	240 A 200/5
F317	180 A 150/1	F420	360 A 300/5
F318	240 A 200/1	F421	480 A 400/5
F320	360 A 300/1	F422	600 A 500/5
F321	480 A 400/1	F423	720 A 600/5
F322	600 A 500/1	F424	960 A 800/5
F323	720 A 600/1	F450	1200 A 1k/5
F324	960 A 800/1	F451	1800 A 1.5k/5
F350	1200 A 1k/1	F452	2400 A 2k/5
F351	1800 A 1.5k/1	F454	3600 A 3k/5
F352	2400 A 2k/1	F455	4800 A 4k/5
F354	3600 A 3k/1	F456	6000 A 5k/5
F355	4800 A 4k/1	F457	7200 A 6k/5
F356	6000 A 5k/1	F459	12000 A 10k/5
F357	7200 A 6k/1	F465	1440 A 1.2k/5
F359	12000 A 10k/1	F466	1920 A 1.6k/5
F365	1440 A 1.2k/1		

FREQUENCY METERS CA

TABLE 95. FREQUENCY METERS CA32, CA37, CA39

CA32, CA37, CA39 -	X	X	X	XX	X
Frequency range:					
45...55 Hz		1			
45...65 Hz		2			
48...52 Hz		3			
55...65 Hz		4			
58...62 Hz		5			
140...160 Hz		6			
180...220 Hz		7			
360...440 Hz		8			
380...420 Hz		9			
Range voltage:					
60 V			1		
100 V			2		
110 V			3		
230 V			4		
400 V			5		
415 V			6		
440 V			7		
500 V			8		
690 V			9		
Working position:					X
acc. to the table 93					X
Version:					
standard					00
custom-made*					XX
Acceptance tests:					
without extra requirements					8
with an extra quality inspection certificate					7
other requirements*					X
* - after agreeing with the manufacturer					

CURRENT TRANSFORMERS



LCTM series

LCTM current transformers with a primary winding		
	LCTM 62/W (40)	LCTM 74W (45)
Primary current [A]	1...30	1...60
External dimensions	40 x 62 mm	45 x 74 mm
Accuracy class	0.2; 0.5; 1	



LCTR series

LCTR current transformers for a round conductor				
	LCTR 45/14(40)	LCTR 50/14 (30)	LCTR 50/14 (50)	LCTR 62/R
Primary current[A]	30..300	40...300	30...300	50...600
Hole diameter	Ø14	Ø14	Ø14	Ø22
Accuracy class	0.5; 1			0.2; 0.5; 0.5; 1



LCTB 45

LCTB 62

LCTB current transformers for a bar conductor					
	LCTB 45/21 (40)	LCTB 50/21 (30)	LCTB 50/21 (50)	LCTB 62/20 (40)	LCTB 74/20 (45)
Primary current [A]	50...400	50...400	50...400	50...400	30...400
Hole diameter	Ø20	Ø21	Ø21	-	Ø20
Busbar (mm)	20 x 10	20x10	20x10	20 x 12 2 x 15 x 6	20 x 10
Accuracy class	0.5; 1			0.25; 0.2; 0.55; 0.5; 1	0.5; 1



LCTB 74

LCTB 86

LCTB current transformers for a bar conductor					
	LCTB 50/30 (50)	LCTB 62/30 (40)	LCTB 62/30 (50)	LCTB 74/30 (45)	LCTB 62/40 (40)
Primary current [A]	75...600	50...800	40...800	30...800	100...800
Hole diameter	Ø26	Ø30	Ø28	Ø26	Ø31
Busbar (mm)	30x10; 20x15; 20x20; 2x20x10	30x10 2x25x10	30x10 2x25x10	30x15 2x20x10	40x10 2x30x10
Accuracy class	0.5; 1			0.25; 0.2; 0.55; 0.5; 1	



LCTB 104

LCTB 86

LCTB current transformers for a bar conductor					
	LCTB 74/40 (45)	LCTB 74/50 (45)	LCTB 86/50 (45)	LCTB 86/60 (45)	LCTB 104/60 (45)
Primary current [A]	40...1000	100...1000	100...1250	100...1600	100...1600
Hole diameter	Ø35	Ø41	Ø46	Ø51	Ø54
Busbar (mm)	40x12 2x30x15	50x12 2x40x10	50x12 2x40x15	60x12 2x50x15	60x12 2x40x20 80x12 2x60x15 2x50x25
Accuracy class			0.25; 0.2; 0.55; 0.5; 1		

CURRENT TRANSFORMERS

	LCTB current transformers for a bar conductor			
	LCTB 140/80 (45)	LCTB 140/100H (45)	LCTB 225/125 (50)	LCTB 225/167 (50)
Primary current [A]	200...2000	200...4000	600...6000	1000...7500
Hole diameter	Ø72	Ø86	-	-
Busbar (mm)	80x30 2x60x25 2x70x30	100x30 2x80x25 2x70x30	124x93	166x65
Accuracy class		0.2S; 0.2; 0.5S; 0.5; 1		

	LCTB current transformers for a bar conductor			
	LCTB 100/100V (45)	LCTB 140/100V (45)	LCTB 100/130V (45)	LCTB 140/130V (45)
Primary current [A]	400...2500	200...3000	400...3200	400...5000
Hole diameter	-	-	-	-
Busbar (mm)	41 x 103	100x30 2x80x25 2x70x30	38 x 128	70 x 130
Accuracy class	0.2S; 0.2; 0.5S; 0.5; 1	0.2; 0.5; 1	0.2; 0.5; 1	0.2; 0.5; 1

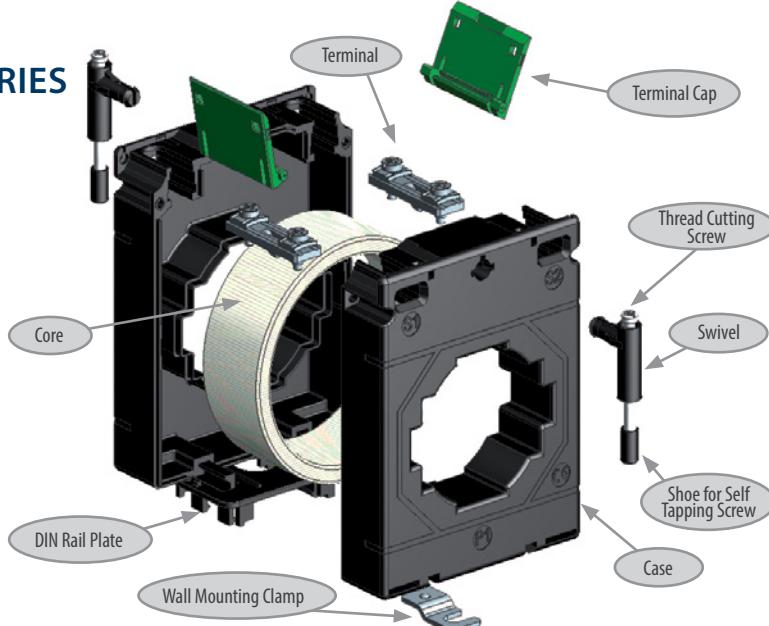
	LCTS split core current transformers			
	LCTS 93/30SC (40)	LCTS 125/50SC (40)	LCTS 155/80SC (40)	LCTS 195/80SC (64)
Primary current [A]	100...400	250...1000	250...3000	500...5000
Hole dimensions (depth x width) [mm]	23 x 33	85 x 54	85 x 125	82 x 162
Accuracy class		0.5; 1		

	LCTP 3-phase current transformers				
	LCTP 75/15(60)	LCTP 105/21(40)	LCTP 140/31(40)	LCTP 185/27(45)	LCTP 185/37(45)
Primary current [A]	100...160	100...250	250...630	100...500	300...800
Hole diameter [mm]	-	-	-	Ø27	Ø37
Busbar (mm)	14 x 24	20 x 24	31 x 36	-	-
Accuracy class	0.5; 1			1	

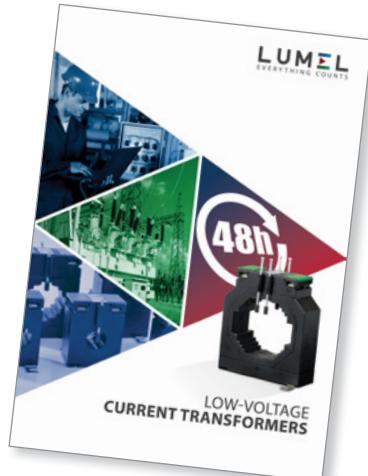


We offer: On customers request we offer transformer calibration certificates.

ACCESSORIES



MORE INFORMATION IN OUR CATALOG:



SHUNTS / CLASS 0.2, 0.5



	B2	B3	B4	B5	B6
Voltage drop	60 mV	150 mV	50 mV	75 mV	100 mV
Rated current		1 A...15 kA (1; 1.5; 2.5; 4; 6 and their decimal multiples)			
Accuracy class		0.2 for ranges 1 A...2.5 kA	0.5 for ranges 3 kA...15 kA		



- all shunts from 1...25 A are fixed on insulating basis with the possibility to be mounted on a DIN rail
- shunts of other ranges are fixed directly on the DC rail or cable
- dimensions acc. DIN 43703
- shunts 40...150 A - insulating base as a option for B2, B4, B5 types
- on request additional chemical coating are available: lacquering, silver or nickel plating



plate
shunts

BP4

Voltage drop	50 mV
Rated current	5 A...500 A
Accuracy class	0.5

- Custom-made executions are available on request (voltage drop, current).

PORTABLE MULTIMETERS & METERS



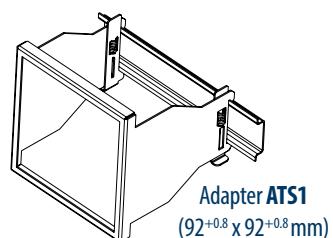
MORE INFORMATION
IN OUR CATALOG:



ADAPTER FOR DIN RAIL TS35

- Designed for mounting of panel instruments on the DIN rail TS35.

	Adapter ATS				
	ATS1	ATS2	ATS3	ATS4	ATS5
Hole dimensions (width x height) [mm]	92 ^{+0.8} x 92 ^{+0.8}	92 ^{+0.8} x 45 ^{+0.6}	68 ^{+0.7} x 68 ^{+0.7}	45 ^{+0.6} x 92 ^{+0.8}	45 ^{+0.6} x 45 ^{+0.6}
Panel instruments dimensions (width x height) [mm]	96 x 96	96 x 48	72 x 72	48 x 96	48 x 48



DISPLAYS



Demand power	10.0 MW
Consumed power	5.0 MW
Ratio power	500 %

DL21



DL

Outdoor or indoor displays

DN1, DN2, DN3

Display	numerical
Digit height	100/200/300 mm
Number of rows	1 or 2
Characters per row	3,4 or 5
Display colour	red, yellow or green
Displayed values	value measured by external device, transmitted through RS-485 interface
Interface (Master)	RS-485 for value download
Protection rating	IP54 (IP65 option)
Additional functions	<ul style="list-style-type: none"> good visibility in range up to 120 m brightness sensor installed (display brightness changes depending on outside conditions)

Indoor displays

DL11, DL12, DL13

DL21

DNL

Display	numerical		
Digit height	100 mm		230 mm (DNL2), 305 mm (DNL3)
Number of rows	1, 2 or 3	1	1 or 2
Characters per row	3	3	4
Display colour	red, yellow or green	red/orange/green (programmable)	red, yellow
Displayed values	value measured by external device, transmitted through RS-485 interface		value measured by external device, transmitted through RS-485 interface
Interface (Master)		Modbus RTU RS-485 for value transmission	
Interface (Slave)	RS-485 for configuration		RS-485 for configuration
Programming	using dedicated software	using LPCon software	
Additional functions	<ul style="list-style-type: none"> unit field can be printed in each row 15 V d.c. supply for P18 transducer 	<ul style="list-style-type: none"> 3-colour, display colour changes on value change. Ranges of colour changes can be programmed 	<ul style="list-style-type: none"> visibility up to 120 m brightness sensor (digital brightness changes depending on outside conditions) analog input 4...20 mA

APPLICATION EXAMPLES



VISUALIZATION

ORDERING CODES

OUTDOOR DISPLAY

TABLE 96. DN1, DN2, DN3 ORDERING CODE:

DN -	X	X	X	X	X	XX	XX	X	XX	X
Digit height:										
100 mm	1									
200 mm		2								
300 mm			3							
Kind of display:										
Code acc to the table 97 (version 8 concerns DN3)										
X										
on order*										
9										
Digit colour of the first display field:										
red			R							
yellow			Y							
green			G							
blue** (concerns version 1...4 and 6 acc. to the tab.98)										
B										
Digit colour of the second display field:										
lack of second field			0							
red			R							
yellow			Y							
green			G							
Way of fixing:										
on the wall			1							
suspended			2							
on order*			9							
Unit of the first display field:										
code number of the unit acc. to the table 98			XX							
on order*			99							
Unit of the second display field:										
code number of the unit acc. to the table 98			XX							
on order*			99							
Quantity displayed and measuring device:										
acc. to the table 99			X							
on order*			9							
Version:										
standard			00							
custom-made*			XX							
Acceptance tests:										
without extra quality requirements			8							
with an extra quality inspection certificate			7							
acc. to customer's request*			X							

TABLE 97.

Code	Kind of display	Number of digits	Display overall dimensions [mm]			Assembly dimensions [mm]		
			DN1	DN2	DN3	DN1	DN2	DN3
1		2 digits	a = 415 b = 77 h = 160	a = 560 b = 77 h = 264	a = 820 b = 100 h = 264	c = 220 d = 50 L = 250	c = 320 d = 75 L = 350	c = 450 d = 80 L = 450
2		3 digits	a = 415 b = 77 h = 160	a = 560 b = 77 h = 264	a = 820 b = 100 h = 370	c = 220 d = 50 L = 250	c = 320 d = 75 L = 350	c = 450 d = 80 L = 450
3		4 digits	a = 593 b = 77 h = 160	a = 810 b = 77 h = 264	a = 1200 b = 100 h = 370	c = 320 d = 50 L = 420	c = 430 d = 75 L = 480	c = 850 d = 80 L = 710
4		5 digits	a = 593 b = 77 h = 160	a = 810 b = 77 h = 264	a = 1200 b = 100 h = 370	c = 320 d = 50 L = 420	c = 430 d = 75 L = 480	c = 850 d = 80 L = 710
5		2x 2 digits	a = 593 b = 77 h = 160	a = 810 b = 77 h = 264	a = 1200 b = 100 h = 370	c = 320 d = 50 L = 420	c = 430 d = 75 L = 480	c = 850 d = 80 L = 710
6		clock	a = 415 b = 77 h = 160	a = 810 b = 77 h = 264	a = 1200 b = 100 h = 370	c = 320 d = 50 L = 420	c = 430 d = 75 L = 480	c = 850 d = 80 L = 710
7		2x 3 digits 2 rows	a = 415 b = 77 h = 270	a = 560 b = 77 h = 478	a = 820 b = 100 h = 680	c = 320 d = 50 L = 250	c = 320 d = 75 L = 350	c = 450 d = 80 L = 450
8*		clock + temperature				A = 1200 B = 100 H = 370		C = 850 D = 80 L = 450

* concerns DN3

* after agreeing with the manufacturer

** concerns DN1

TABLE 98. CODES OF HIGHLIGHTED UNIT:

Code	Unit	Code	Unit	Code	Unit
00	without unit	22	°F	44	m³/h
01	mV	23	K	45	obr
02	V	24	%H₂O	46	obr/min
03	kV	25	mbar	47	rad
04	mA	26	Bar	48	szt.
05	A	27	mmH₂O	49	szt/h
06	kJ	28	mmHg	50	0,
07	kW	29	Pa	51	CO
08	MW	30	hPa	52	CO₂
09	var	31	kPa	53	I
10	kvar	32	MPa	54	l/min
11	Mvar	33	pH	55	l/h
12	kWh	34	s	56	mg
13	Ω	35	min	57	kg
14	kΩ	36	h	58	Mg
15	μS	37	mm	59	k/h
16	mS	38	cm	60	Mg/h
17	Hz	39	m	61	N
18	kHz	40	m³	62	kN
19	MHz	41	m/s	63	mg/l
20	%	42	m/h		
21	°C	43	km/h		

TABLE 99. CODE OF BACKLIGHTED UNIT AND MEASURING DEVICES

Displayed quantities	Code
Without measuring quantity	0
Temperature measurement	1
* Measuring range	
Humidity measurement	2
* Measuring range	
Temperature and humidity measurement	3
* Measuring range	
Pressure measurement	4
* Measuring range	
Measurement of the real time	5
* Measuring range	
Measurement of pulses, revolutions, working time	6
* Measuring range	
Measurement of power network parameters	7
* Measuring range	
measurement of current and voltage standard signals	8
* Measuring range	

ORDERING CODES

INDOOR DISPLAYS

TABLE 100. DL11 ORDERING CODE:		
DL11 -	X	XX X
Colour of display field:		
red	R	
yellow	Y	
green	G	
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 101. DL12 ORDERING CODE:				
DL12 -	X	X	XX	X
Colour of first display field:				
red	R			
yellow	Y			
green	G			
Colour of second display field:				
red	R			
yellow	Y			
green	G			
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 102. DL13 ORDERING CODE:					
DL12 -	X	X	X	XX	X
Colour of first display field:					
red	R				
yellow	Y				
green	G				
Colour of second display field:					
red	R				
yellow	Y				
green	G				
Colour of third display field:					
red	R				
yellow	Y				
green	G				
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 103. DL21 ORDERING CODE:		
DL21 -	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 104. DNL ORDERING CODE:								
DNL -	X	X	XX	X	XX	XX	X	X
Digit height:								
230 mm (9")	2							
305 mm (12")	3							
Colour of digits in first row:								
red	R							
yellow	Y							
Unit of the first row:								
lack	00							
acc. to the table 105	XX							
Colour of digits in the second row:								
lack of row	0							
red	R							
yellow	Y							
Unit of the second row:								
lack	00							
acc. to the table 105	XX							
Version:								
standard	00							
first row with input 4...20 mA and output +15 V	01							
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 requirements*	X							

TABLE 105. CODES OF HIGHLIGHTED UNIT:	
Code	Unit
00	lack
01	%
02	°C
03	szt.
04	imp.
05	kg
06	m/s
07	szt./h
08	m³
09	obr
XX	on order

* after agreeing with the manufacturer

We offer:

- one-sided and double-sided assembling of SMD elements in the technology of reflow soldering, in accordance with European Directive for RoHS,
- assembly of THT elements by wave soldering,
- complementary assembly of THT elements and mechanical parts,
- mixed assembly,
- optical inspection of assembled PCB.

Assembly can be carried out on the base of own or committed elements.

electronic manufacturing services

Taking advantage of the acquired experience in design and testing of our apparatus we also offer:

- designing of PCB;
- completion of elements to assembly, ensuring PCB and stencils for soldering paste or glue in compliance with the provided documentation
- testing of assembled systems acc. to the customer's instructions,
- testing in the climatic chamber;
- testing of vibration resistance.

Our machine park

Our machine park consists of 2 complete assembly lines.

- silk screen printer ERSA (equipped in stencils cleaning system, inspection of bridging, clogging of the openings, inspection of smearing and paste level on the stencil. Additionally it is equipped in complete record of statistical data of the processes)
- two automatic machines JUKI (flexible KE-3020VA and high-speed chip shooter: FX-3RA).
- 7- zones reflow soldering oven ERSA HOTFLOW 3/14E.
- The whole line is completed by handling system, loader, conveyors and unloader of the circuit boards manufactured by ASYS - Germany.

The second assembly line is composed of:

- silks creen printer JUKI K1760,
- placement machine JUKI KE-2060,
- reflow oven ERSA HOTFLOW 2/14,
- magazine loader and line unloader – JOT,
- conveyors and in-line workstation – JOT.

Additionally our machine park is equipped with:

- two soldering aggregates of KIERSTEN company,
- optical control stands,
- stand for thread assembly with Weller soldering stations,
- tester Flying Probe Takaya.

All stands and devices are equipped with the protection against static electricity in compliance with EN 61340 5-1 and 5-2 standards.



PRODUCTION OF PLASTIC PARTS

In the scope of plastic parts production, we offer complex services, from the design of moulds and tools, through the production, machining and assembling, to the delivery of ready products.

We can execute any large-series of parts using entrusted tools or ordered with us. We specialize in the production of plastics moulded pieces for electronics, automotive industries and also for household equipment.

In the scope of production and machining of plastic parts we offer:

- designing and manufacturing of moulds,
- execution of parts in all shapes,
- ultrasonic welding,
- gluing,
- silk-screen printing,
- varnish processing,
- anti-electrostatic protection.

We are currently using following plastics: ABS, PA, PC, PE, PMMA, POM, PPE, PPS, PVC, SAN, SB, TPU, in 30 grades and colours.

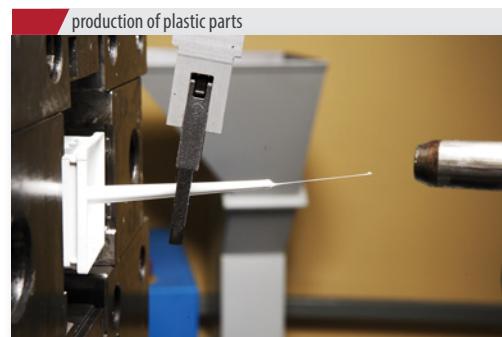
Machine park:

- injection moulding press Arburg 470C
- injection weight: 210 g,
- closing force: 1500 kN,
- overall mould dimensions: up to 470 x 470 mm
- injection moulding press Arburg 420C
- injection weight: 166 g,
- closing force: 800 kN,
- overall mould dimensions: up to 420 x 420 mm
- injection moulding press Arburg 170U
- injection weight: 21 g,
- closing force: 150 kN,
- overall mould dimensions: up to 170 x 170 mm
- driers, feeding devices, slow-speed mills - from MOTAN company.

All injection moulding presses are equipped with a robot collecting gating systems.



production of
plastic parts



MECHANICAL TREATMENT

We operate on machining market for decades consistently offering the highest quality service at affordable prices.

Our strong point is full range of services, from the design of molds and tools, through manufacturing, machining and assembly, to the final product. For different industries within those services we've made millions precise details. We can do all the projects in large quantities using the tools assigned or ordered from us.

CNC Machining

Service/Operation	Material	Operation parameters	Machine park
• taiping • drilling	aluminum alloys	Axis travel X/Y/Z: 450/320/305	Brother CNC Speedio R450X1 tapping centers
• milling	-	Axis travel X/Y/Z: 800/530/510	Mori Seiki CNC Dura Vertical 5080, Dura Vertical 5060 milling centers
• turning	aluminium alloys, non-ferrous metals, stainless steel, cutting steel	max. turning diameter of ø 77 mm rod max. turning diameter of ø 380 mm holder max. 504 mm turning length	CNC - DMG - Twin 42 CNC - DMG - Twin 65 CNC - Mazak - QTNx250IIM CNC Hardinge

Production of Sheet Metal Parts

Service/Operation	Material/ Operation parameters	Machine park
• punching	max. size of the sheet material: 2000 x 1000 mm max. thickness: steel - up to 2 mm	Amada PEGA-244 - automatic punching press, force 20 T
• bending	stainless steel - up to 2 mm aluminium –up to 3 mm	Safan - press brake bending, bending line length 200 cm
• cutting	copper - up to 3 mm brass –up to 3 mm	Turret Press Bihler RM35 (cutting, bending) - maximum width of 35 mm
• precision cutting	-	Press Faintool

additionally: screen printing

mechanical
treatment



OFFER OF HIGH PRESSURE DIE-CASTING AND CNC MACHINING

LUMEL ALUCAST We are also one of the European leading manufacturers of high pressure aluminium die-castings.

Our offer includes:

- technical consulting,
- design of moulds and appropriate tools,
- execution of moulds and tools,
- high pressure die casting,
- CNC machining,
- precise surface treatment,
- varnishing and powdering process, assembly.

high pressure
die-castings

We fulfill all requirements of 2002/95/EC Directive about limiting Hazardous Substances in our products.

You can find more technical details in our web site in our catalog DEDICATED SOLUTIONS and in our web www.odlewy.lumel.com.pl





We are one of leading European manufacturers of electrical devices for automation and high pressure aluminium castings. We have been on the market since 1953. We have achieved our high position on the market due to continuous development policy, competence of our employees and modern equipment for research, design and production.

LUMEL is focused on 4 main activity fields:

- production of automatic devices for measurement, conversion, control and recording, transmission and visualization of various industrial processes;
- production and machining of high pressure castings and manufacturing of moulds and tools;
- design and manufacturing of control and measuring systems,
- SMT assembly, precision engineering and production of plastics parts.

We provide comprehensive solutions for various branches of industry: power industry, chemical industry, metallurgy, food industry, light industry, automotive industry, white industry and mining.

We have been working according to: ISO 9001:2008, ISO 14001:2004 and ISO/TS 16949.

may 2017

LUMEL S.A.
ul. Sulechowska 1, 65-022 Zielona Góra, POLAND
tel.: +48 68 45 75 100, fax +48 68 45 75 508
www.lumel.com.pl

Please contact our distributor:

Export department:
tel.: (+48 68) 45 75 139, 45 75 233, 45 75 321, 45 75 386
fax.: (+48 68) 32 54 091
e-mail: export@lumel.com.pl