Wolf Process Automation
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LUMEL
EVERYTHING COUNTS

3 YEAR WARRANTY

PRODUCTS & SERVICES CATALOG

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Measuring & Control Instruments
Automation Systems
Laboratory Calibration & Attestation
Electronic Manufacturing Services

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 9001:2015,**
- Certificate **ISO 14001:2015.**

We fulfill all requirements of 2002/95/EC Directive **RoHS II 2011/65/UE and RoHS III 2015/863/UE** 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.

We declare with full responsibility that all products manufactured by LUMEL S.A. fulfil all requirements of Regulation (WE) of the European Parliament and the European Council no 1907/2006 dated December 18, 2006 regarding registration, rating, permits and limitations regarding chemicals (**REACH**).

CONTENTS

METERS AND ANALYZERS OF POWER NETWORK PARAMETERS

SCAN THE CODE
Product Code CONFIGURATOR

		N43	NR30	NR30IoT	NR30PNET	NR30BAC	ND03	ND04	ND08	N14	ND10
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	-	63		51		-	-	-	-	
	P (15/30/60 min.)	✔/✔/✔	✔/✔/✔				-	-	✔/✔/-	✔/- / -	✔/✔/✔
	S (15/30/60 min.)	✔/✔/✔	✔/✔/✔				-	-	✔/✔/-	-	
	I (15/30/60 min.)	✔/✔/✔	✔/✔/✔				-	-	✔/✔/-	-	
	Time / Date / Temp.	✔/@/-	✔/✔/-				-	-	-	-	✔/✔/-
	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/ 5 A or 63 A 57.7/100 V and 100/ 170 V or 230/ 400 V and 400/ 690 V				1 A/ 5 A 57.7...290 V / 100... 500 V		1 A or 5 A 63.5 / 110 V or 133 / 230 V or 239.6 / 415 V or 254 / 440 V or 220 / 380 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
Outputs		3 x relay 1 x pulse	2 x relay				1 x relay - option			1 x relay 1 x pulse	2 x relays 1 x pulse
Interface		RS-485 Modbus Slave	**Ethernet** 10/100 Baste T; RS-485 Modbus Slave		**Ethernet** ICMP (Ping) / RS-485 Modbus Slave / **Profinet** ver. 2.2	RS-485 Modbus Slave **BACnet IP**	-	-	RS-485 Modbus Slave - option	RS-485 Modbus Slave	RS-485 Modbus Slave
			-	**MQTT**							
Display		LCD 4 x 3 digits + 1 x 7 digits	LCD 20 characters x 4 rows				LED 3 x 3 digits	LED 3 x 4 digits	LCD 3 x 4 digits	LED 3 x 3 digits (14 mm)	3.5" LCD 3 x 4 digits (16 mm)
Supply voltage		85...253 V a.c./ 90...300 V d.c. or 20...40 V a.c./ 20...60 V d.c.					40...300 V a.c./d.c.	40...300 V a.c./d.c. or 12...48 V d.c. or from measuring circuit	60...300 V a.c./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. from measu-ring circuit
Protection IP		IP50							IP54	IP40	IP65
Ext.dimensions		105 x 110 x 60 mm					96 x 96 x 66 mm		96 x 96 x 61 mm	96 x 96x 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	
Additional functions		• connection with S4AO module (module of 4 analog outputs)					-	-	-	-	
		-	• data archiving up to 32 parameters • supervisory relay		-	-				• galvanic isolation of current inputs	

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

METERS AND ANALYZERS OF POWER NETWORK PARAMETERS






		ND20LITE	ND20CT	ND20	ND22	ND25	ND30	ND30IoT	ND30PNET	ND30BAC
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	-	✔ 31	✔ 63		✔ 51	
	P (15/30/60 min.)	✔/✔/✔			✔/✔/ -		✔/✔/✔			
	S (15/30/60 min.)	-			✔/✔/ -		✔/✔/✔			
	I (15/30/60 min.)	-			✔/✔/ -		✔/✔/✔			
	Time / Date / Temp.	✔/-/ -		✔/✔/ -	✔/✔/ -		✔/✔/✔			
	Memory of min. and max. values	✔								
Inputs		1 A /5 A 57.7/100 V 69.3/120 V 230/400 V	**0.1 A and 0.25 A** 57.7/100 V or 230/400 V	1 A /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 63.5/ 110 V or 127/ 220 V or 133/ 230 V or 220/ 380 V or 230/ 400 V or 239.6/ 415 V or 254/ 440 V	1 A/ 5 A 57.5...346.42 V/ 100...600 V	1 A / 5 A 57.7/ 100 V 230/ 400 V or 110/190 V 400/690 V			
							2 x Pt100 - option 2 x binary - option			
Outputs		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 1 x relay 1 x pulse	1/2 x relay (option) 2 x 4...20 mA (option) or 2 x 0...10 mA (option)	2 x relay (option)	1 x 0/4...20 mA (option)			
							2 x relay			
Interface		RS-485 Modbus Slave			RS-485 Modbus Slave (option)	RS-485 Modbus Slave (option) or **Ethernet** Modbus TCP (option) or BACnet IP (option)	RS-485 Modbus Slave			
							Ethernet 10/100 Base-T Modbus TCP, www, FTP - (option for ND30)		**Ethernet** ICMP (Ping) / **Profinet** ver. 2.2	**BACnet IP**
							-	MQTT		
Display		3.5" LCD 3 x 4 (11 mm) + 1 x 5 digits (9 mm)			3.5" colour touch screen 320x240 pixel	3.5" LCD 4 x 4 digits + 1 x 9 digits	3.5" colour TFT LCD 320x240 pixel			
Supply voltage		85...253 V a.c./ 90...300 V d.c.	85...253 V a.c./ 90...300 V d.c. or 20...40 V a.c./ 20...60 V d.c.		100...250 V a.c./d.c. or 12...48 V d.c.	100...550 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 IP		IP65			IP54		IP65			
Ext.dimensions		96 x 96 x 77 mm			96 x 96 x 80 mm	96 x 96 x 70 mm	96 x 96 x 77 mm			
Programming		free eCon software (using RS-485 or Ethernet) or using buttons			-		free eCon software (using RS-485 or Ethernet) or using buttons			
Additional functions		-	• easy installation of meter and current transformer • **only to cooparation with dedicated current transformers L3XX and LJXX (see page 34)**	• memory 9000 samples for mean power	• phase reversal indication	• up to 28 programmable pages • data archiving in the internal memory 8 MB	• selection of displayed quantities on each of the 12 programmable pages • galvanic isolation between input,output, supply and interface			
							• temperature measurement - 2 x input Pt100			-
		• galvanic isolation of current inputs					• data archiving in the internal memory 8 GB • supervisory relay		-	

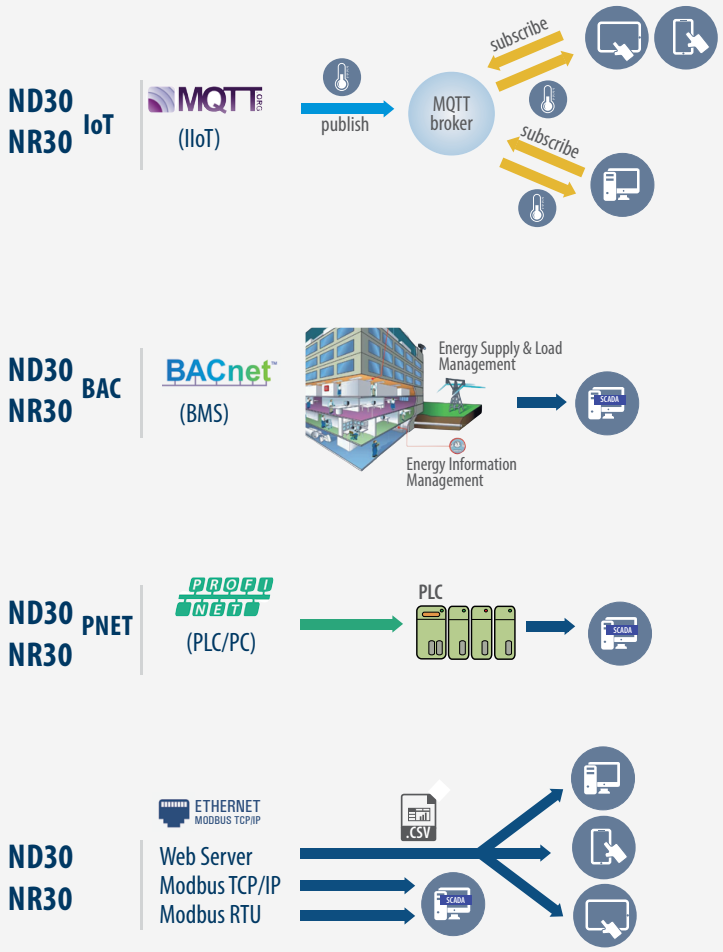
@ - parameter available only through digital interface RS-485 and/or Ethernet

METERS AND ANALYZERS OF POWER NETWORK PARAMETERS

SCAN THE CODE
Product Code CONFIGURATOR

		N100	ND45
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/ interharmonics	✔ 51/ -	✔ 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	-	✔/✔/✔
	Tarrifs / Voltage asymmetry	-	✔ 4 /✔
	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 /5 A 57.7/100 V or 230/400 V or 69.3/ 120 V
		pulse 0/12...36 V	2 x Pt100/Pt1000/5k Ω 4 or 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	optionally: 3 or 6 x 0/4...20 mA; 4 or 8 x relay
Interface		RS-485 Modbus Slave	RS-485 Modbus Slave, USB Device & Host
		Ethernet 10/100 Base-T Modbus TCP, www, FTP - option	Ethernet 10/100 Base-T Modbus TCP, www, FTP, NTP
Display		LED 4 x 4 ½ digit, backlight unit, 2-colour display (red, green) (14 mm)	5.6" LCD TFT colour touch screen 640 x 480 pixel
Supply voltage		85...253 V a.c. / 90...300 V d.c.	85 V..253 V a.c. / 90 V..300 V d.c.
Protection IP		IP40	IP65
Ext.dimensions		144 x 144 x 77 mm	144 x 144 x 104 mm
Programming		free eCon software (using RS-485 or Ethernet) or using buttons	dedicated software or using touch screen
Additional functions		• 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 • **available special version with input frequency up to 500 Hz**	• **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
			• programmable counter inputs • dips and swells stored in registers • flicker

APPLICATION EXAMPLE



ENERGY METERS

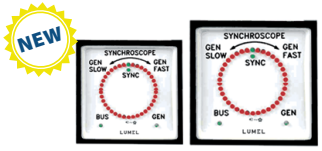
SCAN THE CODE
Product Code CONFIGURATOR

MID CERTIFIED

MID CERTIFIED

	Energy meter for DIN rail mounting	
	NMID30-1	**NMID30-2**
Input	1 A/ 5 A 3 x 230 / 400 V	10 (100A) 3 x 230/ 400 V
Output	• relay output • pulse output (OC type), 3200 imp/ kWh	
Interface	RS-485 Modbus RTU	
Supply voltage	85...275 V a.c. 120...380 V d.c.	
Display	3 x 4 digits	
Protection rating	IP51	
External dimensions	72 x 94.5 mm acc. to DIN 43880	76 x 100 mm acc. to DIN 43880
Additional functions	• 16 measured paramters • password protection • programmable averaging time of the Demand type	

SYNCHRONIZATION METERS & PF CONTROLLERS



	Synchronization Meters		PF Controllers
	KS5	**SA12/SA19**	**NF20**
Input	50...150 V 150...400 V	57.8...500 V	programmable 1 A/ 5 A 30...550 V
Output	2 x relays	-	4/6/8 or 6/8/12 switching outputs, 1 alarm relay
Interface	RS-485 Modbus	-	RS-485 Modbus - option
	Ethernet 10/100 Base-T Modbus TCP, www - option		
Display	3.5" colour TFT LCD 320x240 pixel	LED indicator	graphic display LCD, 2 x 16 characters
Supply voltage	85..253 V a.c. , 90..300 V d.c. or 20..40 V a.c. , 20..60 V d.c.	-	110...550 V a.c.
Protection rating	IP65	IP52	IP54
External dimensions	96 x 96 x 77 mm	96 x 96 x 111.5 mm (SA19), 144 x 144 x 111.5 (SA12)	96 x 96 x 51 (without extension modules) 96 x 96 x 75 (with extension modules) 144 x 144 x 56
Programming	free eCon software, (using RS-485 or Ethernet) or using buttons	-	-
Additional functions	• memory of min. and max. values • many forms of data presentation bargraph, digital • additional control inputs	• one or two ranges of input voltage	• RTC - option

GREEN LUMEL

PVSA

Photovoltaic string inverter

- Designed for use in photovoltaic installations connected to the grid (On-grid).
- Available in power classes from 10 to 50 kW.*
- Maximum efficiency up to 98.5%
- IP -65 structure suitable for both indoor & outdoor installation
- Full power without derating up to 50°C ambient temperature.
- Natural ventilation minimizes breakdown & maintenance.
- Robust design and latest-generation power components with SiC technology.
- Maximum power point tracking, up to 3 MPPT trackers.
- Wide MPPT voltage range 350 to 800V.
- Large graphical display provides a easy, user-friendly operator interface.
- „Transformerless" versions for enhanced efficiency.
- String fault detection & DC fuses on both poles of string.
- Integrated DC circuit breaker under load.
- Tool free & maintenance free terminals on both DC & AC side.
- Integrated datalogger for operation and fault data logging.
- USB port for quick & handy saving of production and operation data.
- Integrated protections against overcurrent, overtemperature, reverse dc polarity, AC & DC overvoltage.
- Wire Box to allow separate access for easy and quick installation.
- 2 RS-485 ports for communication interface
- Integerated inputs/outputs: 3 anlog inputs, 2 digital inputs, 2 digital outputs.
- Auxiliary 24 V out (500mA max) for connection of environmental sensors.

ON-GRID

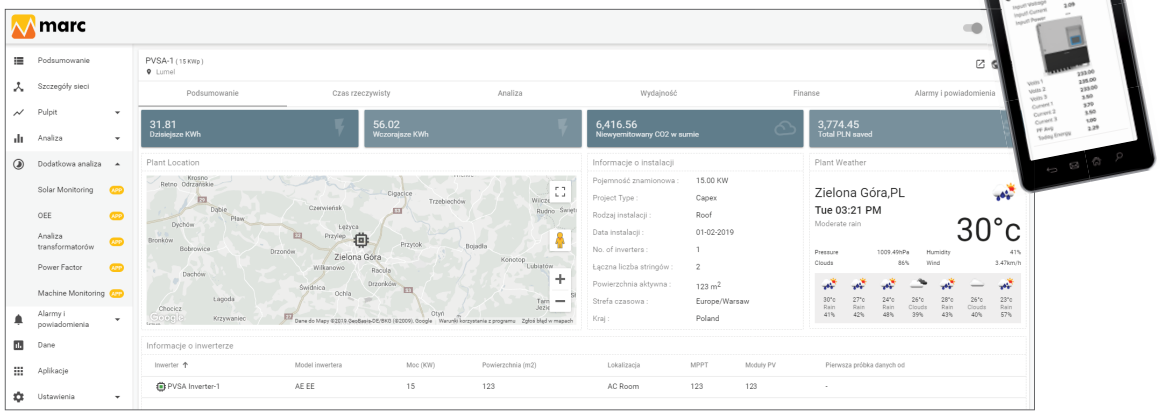
10kW 15kW 20kW 25kW 34kW 50kW *

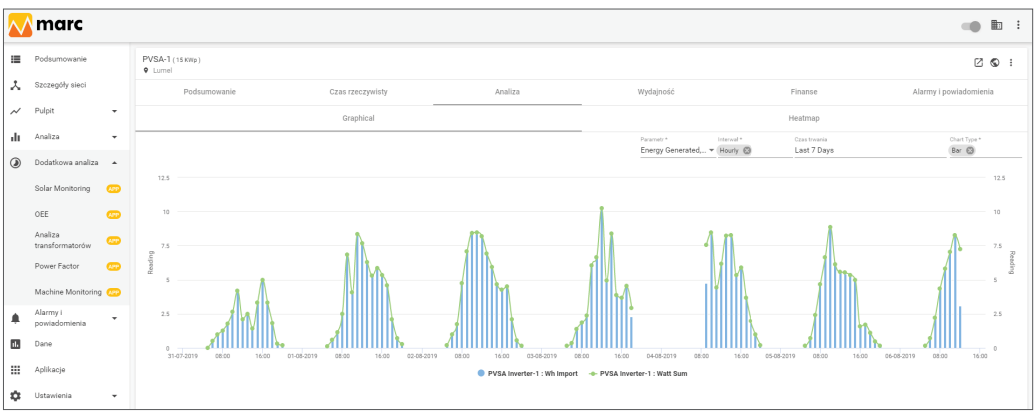
RS-485 Ethernet ** GSM **

* The range 50 kW is available in Q4 2020.

** **Remote monitoring** via the optional SM61IoT module or built-in GSM module.

APPLICATION EXAMPLES





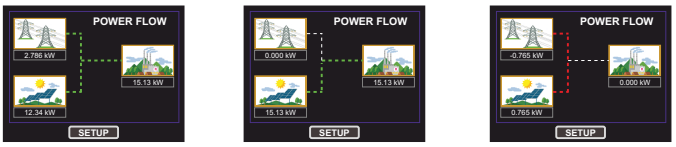
APPLICATION EXAMPLES

REVERSE POWER CONTROLLER FOR PVSA INVERTERS

SPC5

Reverse power controller for PVSA inverters

- **Reverse Power Control**
  Prevents the inverter power from being exported to the grid by controlling the Inverter power.
- **Compatibility**
  Compatibility with PVSA Inverters.
- **Multiple Inverters control**
  It can control up to 20 PVSA inverters
- **Dual Modbus Card**
  The addon card has dual RS485 ports: one for monitoring and controlling of inverters by SPC5 (device as Master) and the other for monitoring and configure SPC5 (device as Slave).
- **Touch screen graphics LCD**
  Touch sensible color graphics LCD display with resolution of 320x240.
- **Power Flow Representation**
  Pictorial representation of power flow between Solar Inverters, Grid and the Load.



- **Quick Access GUI**
  Individual Grid, Load and Solar icons on main screen for direct access to the desired parameters.
- **Potential Free Relay**
  A dedicated internal relay which can be configured for tripping based on reverse power flow or inverter communication breakage.
- **Grid Threshold setting**
  Onsite programmable grid threshold power which is the minimum power taken from the grid. This helps in smoothening the power characteristics.
- **Parameter Screen recall**
  In case of power failure, SPC5 memorizes the last displayed screen.

GREEN LUMEL

LUM-BSB20BA
LUM-BSB20BC

Single/Three Phase EV Charging Station with LCD and Bluetooth

- High compatibility- for EVs manufactured in Europe and US.
- Universal and easy to install- You are able to install the charger indoor or outdoor.
- Small size.
- Smart solution - it can automatically repair minor charging problems while charging
- LCD Display- it shows charging status via screen.
- Model:

LUM-BSB20BA-3.6kW	16A	1-phase	LUM-BSB20BC-3.6kW	16A	1-phase
LUM-BSB20BA-7.2kW	32A	1-phase	LUM-BSB20BC-7.2kW	32A	1-phase
LUM-BSB20BA-11kW	16A	3-phase	LUM-BSB20BC-11kW	16A	3-phase
LUM-BSB20BA-22kW	32A	3-phase	LUM-BSB20BC-22kW	32A	3-phase

- Charching standards:
  - SAE J1772 2009 (Type 1) North American standard
  - IEC 62196-2 EU European standard
  - high compatibility with T2 vehicle

LUM-BSB20BA

LUM-BSB20BC

Accessories: Cables LUM-BSCHC for charging station LUM-BSB20BA

- Standard – Type 2 – male to female plug.
- Rated current: 16A/32A
- Rated voltage: 230 ± 10%/ 380 V ± 10%
- Certicate: CE
- Lenght: 5 m
- Model:
  LUM-BS-CHC001 (16A 1-phase; 3.6kW)
  LUM-BS-CHC002 (16A 3-phase; 11 kW)
  LUM-BS-CHC003 (32A 1-phase; 7.2 kW)
  LUM-BS-CHC004 (32A 3-phase; 22 kW)

LUM-BSPCD020

Portable EV Charging Box Schuko Plug for Fast Charge Carstation

- Compatible with all electric vehicles
- IP class: IP66
- Operating temperature: -30°C ~+50°C
- Strong bearing capacity
- Intelligent chip to automatically repair common charging faults
- Operating Current: 10/16A
- Operating Voltage: 110V ~ 220V
- Insulation resistance > 1000 Ω
- Copper, silver-plated or nickel-plated plug.

SCAN THE CODE
Product Code CONFIGURATOR
ePLAN









	N24	N25	N19Z	N20	N20PLUS	N20HPLUS	N20Z	N20ZPLUS	N21	N27D	LLM3
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 1 A, 5 A a.c. 64 V, 110 V 240 V, 600 V a.c. 64/110 V, 133/ 230 V, 239.6/ 415 V a.c.	fixed Pt100, J, K 0/4...20 mA, ± 20 mA 0...60 mV, 0...75 mV (N20Plus), 0...10 V, ± 10 V		fixed ±100, ±400 V d.c.	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	3x 230...400 V a.c.
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)	red LED 4 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)	3 x dual red LEDs
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)		80...300 V a.c., 40...300 V a.c./d.c. 20...60 V a.c./d.c.	85...253 V or 20...40 V a.c./d.c. (for N20, N20Z, N20ZPLUS) 85...253 V or 20...40 V a.c./ 20...60 V d.c. (N20PLUS, N20HPLUS)					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.	230 V a.c.
Protection rating	IP65		IP50 or IP65-option	IP65						IP00	IP50
External dimensions	96 x 48 x 64 mm		96 x 96 x 41 mm or 96 x 48 x 73 mm	96 x 48 x 64 mm						110 x 53 x 60 mm	57 x 110 x 60 mm
Program-ming	free eCon software (using PD14 programmer)		-	free eCon software (using PD14 programmer - N20, N20Z or through RS-485 - N20PLUS, N20HPLUS and N20ZPLUS using PD10)					free eCon software (using miniUSB)	-	-
Additional functions	• rescaling									selection of displayed quantities (kW, V, A, Hz)	external live line indicator LLI3
	-			• **interface RS-485 Modbus Slave - only for N20PLUS, N20HPLUS and N20ZPLUS**					• **vertical display**		





	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 quantites. • 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).	

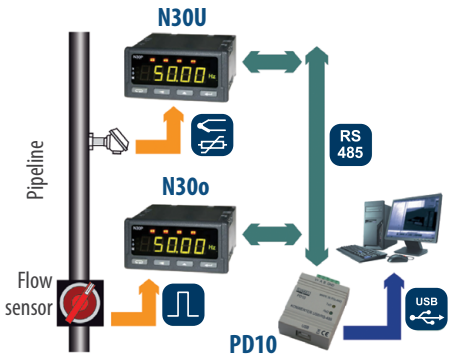
SCAN THE CODE
Product Code CONFIGURATOR



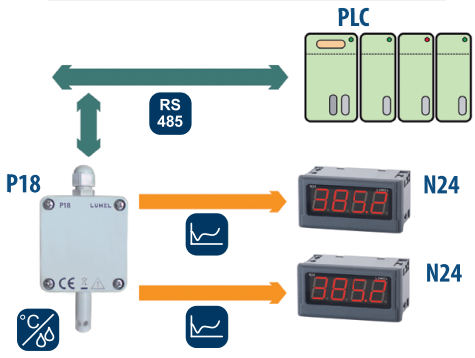
	NA3	NA5PLUS	NA6PLUS
Input	programmable Pt100/500/1000, J, K, N, E, R, S, T 0...5/20 mA d.c., 0...2/5 A d.c., 0...60 mV d.c., 0...10/600 V d.c., 0...3/10/600 V d.c. 0...4 kΩ	programmable Pt100/500/1000, J, K, N, E, R, S, T ± 40 mA d.c., ± 5 A d.c., ± 75 mV d.c., ± 300 mV d.c., ±10 V d.c., ±0...600 V d.c., 0...5 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		
Bargraph	3- or 7-colour programmable horizontal	3- or 7-colour programmable vertical	2 x 3- or 2 x 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. or 20....40 V a.c./ 20....60 V 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	• 21-point rescaling (NA5PLUS and NA6PLUS) • arithmetical functions x^2, √x, (+, -, *, / - only in NA6PLUS) • logging of the measured signal in programmed time intervals (800 samples)	• memory of minimal and maximal values for all measured parameters • password protection • conversion of any measured value into a current or voltage analog signal	

APPLICATION EXAMPLES

Temperature and flow measurement in a pipeline

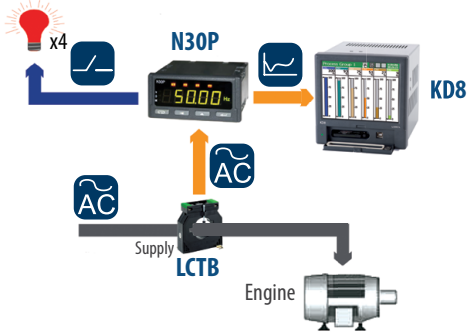


Air temperature and humidity measurement



Current measurement in an electroplating plant

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



Basic transducers

	P10	P10Z	P20	P20Z	T23CT	P21Z	P20H	P15	P17
Input	fixed 4...20 mA d.c. 0...1/5/20/ 100 mA d.c. 0...60/75/100/ 500 mV d.c. 0...1/5/10/150 V d.c.	fixed 1/5 A a.c. 0...100/250/300 V a.c.	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 50,100,150, 200,300 A a.c./d.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 0/4...20 mA 1...5 mA	fixed Pt100 J, K, N, E, 0...10 V 0...60 mV
Output	0/4...20 mA or 0/2...10 V	0/2...10 mA or 0/4...20 mA or 0...10 V or 0...5 V	0/4...20 mA or 0...10 V		4...20 mA	0/4...20 mA or 0...10 V or RS-485 Modbus Slave		2 x 0/4...20 mA	passive 0/4...20 mA
Supply voltage	24...60 V a.c./d.c. 60...300 V a.c./d.c.	24...60 V a.c./d.c. 40...300 V a.c./d.c.	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.	24 V d.c.	85..253 V a.c. / 90..300 V d.c. or 20..40 V a.c. / 20..60 V d.c.		20...40 V a.c. 20...60 V d.c. 60...300 V a.c./d.c.	supplied from output current loop
Protection rating	IP40				IP65	IP40			IP50
External dimensions	22.5 x 65.5 x 106.5 mm		22.5 x 120 x 100 mm		70 x 92 x 47 mm	22.5 x 120 x 100 mm		22.5 x 65.5 x 106.5 mm	6.2 x 77.5 x 100 mm
Additional functions	-	-	free eCon software (using PD14 programmer)	-	hole diameter: 28 mm busbar: 30 x 10 mm	free eCon software (using PD14 programmer)		-	-

Separators

Advanced transducers

	P20G	P17G	P30U	P30O	P30H	P30P
Input	programmable 0/4...20 mA ±20 mA 0...5/10 V ±5V, ±10 V	0/4...20 mA	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 differantial counter on inputs or encoder	d.c. network parameters programmable current using shunt ± 200 mV voltage 0...12/48/100/250 V voltage 0...600/1000V 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	programmable -20...20 mA -10...10 V	active output 0/4...20mA	1 x analog 0/4...20 mA or 0...10 V 1 x relay NO 1 x additional NO relay optionally exchangable with 24 V, 30 mA supplying output		1 x analog 0/4...20 mA or 0...10 V 1 x relay NO optionally exchangable with additional analog output 0/4...20 mA or 0...10 V 1 x additonal NO relay optionally exchangable with 24 V, 30 mA supplying output	
Interface	-	-	RS-485 Modbus (Slave or Master) - standard | **Ethernet** 10/100 Base-T - option			
			-	-	**CANopen** protocol - option	-
Display	-	-	LCD 2x8 characters with LED backlight			
Supply voltage	85...253 V a.c./d.c. or 20...85 V d.c., 20...65 V a.c.	supplied from input current loop	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	IP50	IP40			
External dimensions	22.5 x 120 x 100 mm	6.2 x 77.5 x 100 mm	45 x 120 x 100 mm			
Programming	-	-	using buttons or free eCon software using RS-485 Modbus, **Ethernet (option)**			
Additional functions	free eCon software (using PD14 programmer)	-	• 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)			
			• 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 P30O)		• memory of min. and max. values	

SCAN THE CODE
Product Code CONFIGURATOR



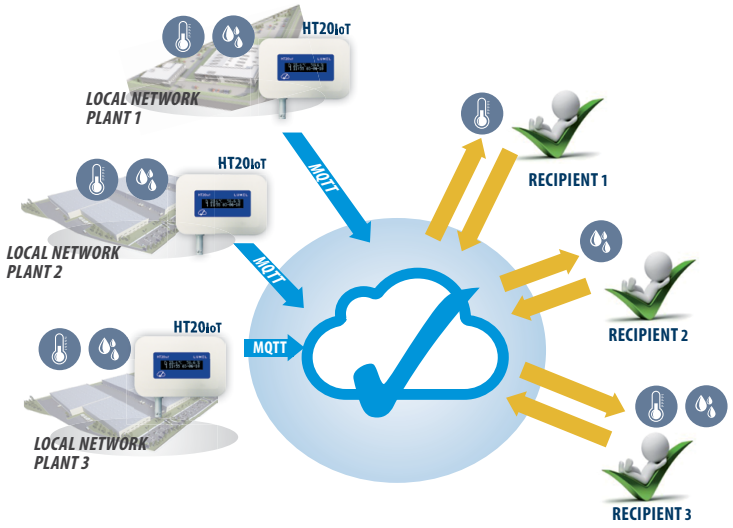
	Power transducers		
	P41	**P30P**	**P43**
Input	programmable 1/ 5 A , 100/ 400 V 1-phase power network parameters	fixed 1/5 A , 100 or 250 V 1-phase power network parameters	fixed 1 or 5 A, 100 or 400 V 3-phase power network parameters
Output	1 x analog programmable ±20 mA	1 x analog 0/4...20 mA or 0...10 V 1 x NO relay optionally exchangable with additional analog output 0/4...20 mA or 0...10 V 1 x additional NO relay optionally exchangable 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		90 x 120 x 100 mm
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

P18 and P19 temperature and humidity transducers

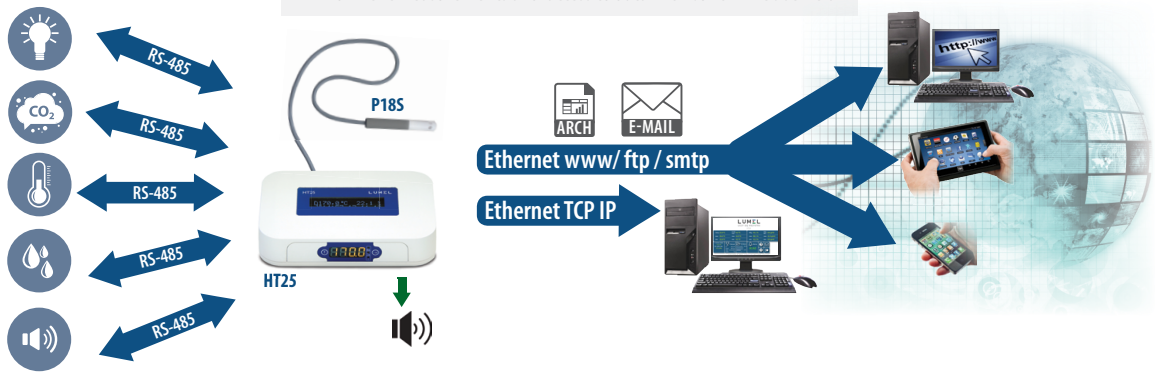
	P18L	P18	P18D	P18S	P19
Measurement range	-30 ... -20 ... 60 ... 85°C or 0...100% RH	-30 ... -20 ... 60 ... 85°C, 0...100% RH			-20 ... 60 °C, 0...100% RH
Output	passive 4...20 mA	2 x 4...20 mA or 0...10 V (option)		-	
Interface	-	RS-485 Modbus			
Galvanic isolation	-	supply/ RS-485 (for version without analog outputs)		supply/ RS-485	
Supply voltage	19...30 V d.c. (supplied by a current loop)	9 ... 24 V d.c./a.c		9 ... 28 V d.c./a.c	9 ... 24 V d.c./a.c
Protection rating	IP65				IP20
External dimensions	38 x 58 x 118 mm			(sensor case) 86 x 12.5 mm	120 x 80 x 25 mm
Additional functions	-	• calculation of other quantities (dew-point temp.; absolute humidity)		• memory of measured and calculated min. and max. values	
		• available version with sensor mounted on the wire 0.5 m		• wire to connect RS-485 and supply	-
		-	• data presentation on a LCD display • configuration of transmission parameters using the capacitive button	-	

	Humidity and temperature monitor		Environmental parameters data logger	Data logger
	HT20	HT20IoT	HT22IoT	HT25
Number of channels	up to 4 channels (temperature, humidity relative and absolute,dew point)		up to 12 channels (temperature, humidity relative and absolute,dew point, illuminance, total volatile organiccompounds - TVOC, CO_2 concentration)	up to 16 channels (4 channels reserved for data logging from P18S/P18/P18D)
Input	built-in temperature and humidity sensor		built-in temperature and humidity sensor, illuminance, TVOC, CO_2 concentration sensor	Modbus RTU Master
Output	Modbus TCP/IP , Modbus RTU (only for HT22IoT)			
Measurement range	-20...60 °C, 0...100% RH		-20...60 °C, 10...90% RH, 0...60000 lx, 0...60000 ppb, 400...60000 ppm	-
Interface	Ethernet (WWW, FTP, SMTP, DHCP); RS-485 Modbus RTU (only for HT22IoT)			1 x RS-485 (Modbus Slave or Master) Ethernet (WWW, FTP, SMTP, DHCP)
	-	MQTT		
Memory	internal - 8GB			
Display	LCD, 2 x 16 characters			LCD, 2 x 16 characters and LED, 4 characters
Supply voltage	6 V d.c. or PoE IEEE 802.3af - option			12 V d.c. or PoE IEEE 802.3af - option
Protecting rating	IP20			
External dimensions	150 x 100 x 30 mm			
Additional functions	• data presentation on a LCD display and on website • parameter configuration through a web browser • email messages in case of alarm occurs • acustic signaling of alarm events			
	-			• up to 90 monitored parameters (10 groups 9 register each) via web browser • up to 100 monitored parameters (10 group 10 register each) via Modbus TCP/IP • logging of 16 parameters (4 parameters reserved for P18S/P18/P18D)

APPLICATION EXAMPLES



Environment measurements and access to data with built-in web server.



SCAN THE CODE
Product Code CONFIGURATOR

	Ultrasonic level meter ULT20
Range of distance measurement	0.5...8 m (The measuring range is strongly dependent on the environment in which the measurements are made and the surface from which the ultrasonic wave is reflected. Typical damping for a given environment (reflective medium) is summarized in the table next.
Measurement resolution	0.001 m
Output	1x analog 0/4...20 mA 1 x relay (2 NO outputs) 1 x pulse
Interface	RS-485 Modbus Slave USB Device, v.2.0.
Supply voltage	12...24...40 V d.c.
Protection rating	IP65
Programming	free eCon software
Additional functions	• two 32-points individual characteristic (recalculate functions) • memory of min. and max. values (with time stamp) • internal data and setup memory

Typical damping for a given environment (reflective medium)

FLUID

	Typical attenuation [dB]
Calm surface 	0
Wavy surface 	from 5 up to 10
Strong turbulence (agitators, etc.) 	from 10 up to 20

DUST

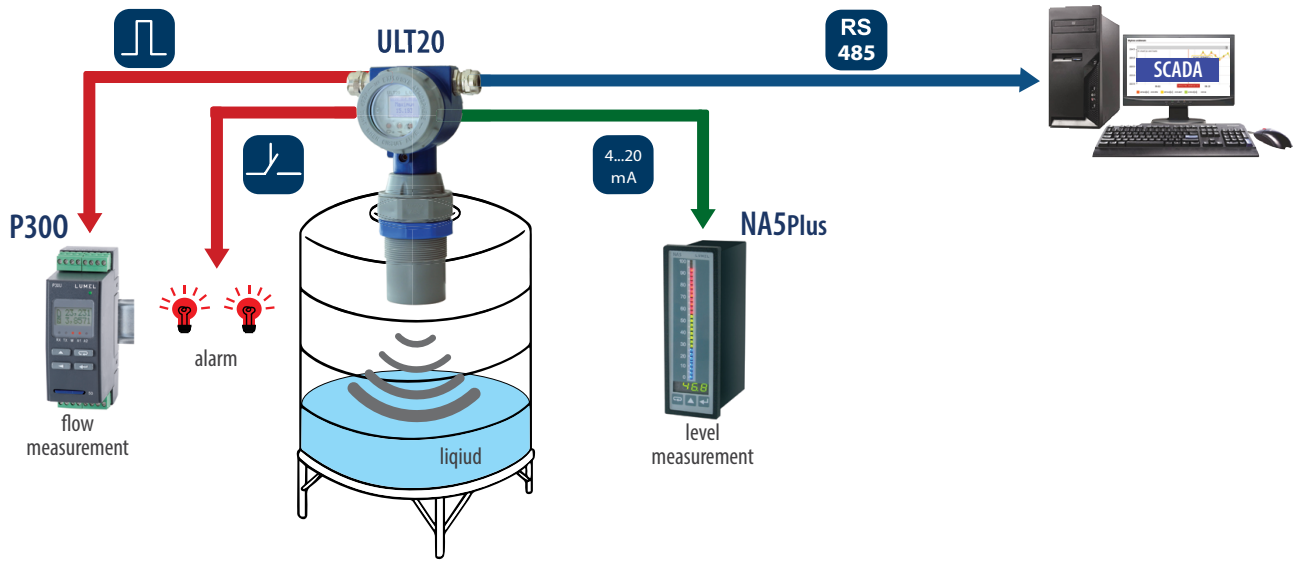
	Typical attenuation [dB]
Low dust 	about 5
Large dust 	from 5 up to 20

ANULAR

	Typical attenuation [dB]
Hard, porous 	40
Soft with strong damping (e.g. peat) 	from 40 up to 60

ULT20 APPLICATION EXAMPLE

Level measurement with visualisation and recording.



SCAN THE CODE
Product Code CONFIGURATOR

ePLAN







Industrial process controllers

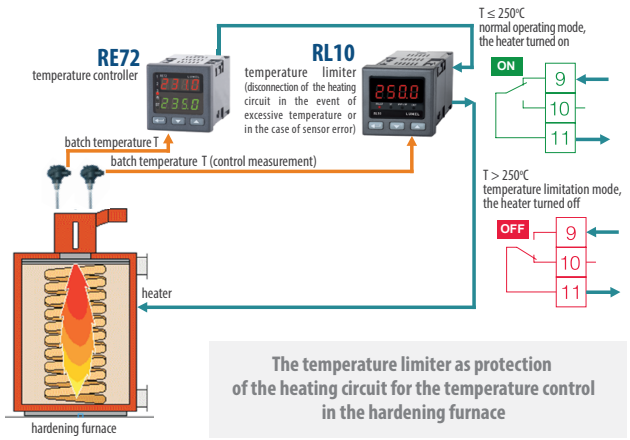
	RE22	RE70	RE71	RE81	RE72	RE82	RE92
Number of channels	1	1	1	1	1	1	2
Input	programmable Pt100/1000 J, T, K, S, R, B, E, N, L or 0/4...20 mA, 0...5/10 V	programmable Pt100/1000 J, T, K, S, R, B, N	fixed Pt100 J, K, S		programmable Pt100/1000 J, T, K, S, R, B, E, N, L 0/4...20 mA 0...5/10 V		programmable 2 x Pt100/500/1000, Ni100, Cu100 J, T, K, S, R, B, E, N, L 0/4...20 mA 0...5/10 V **2 x digital input (RS-485 Modbus Master)**
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) **3 x binary input interface**
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 24 V 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 24 V d.c. 30 mA - option
Interface	-	RS-485 Modbus (only for configu-ration)	-		RS-485 Modbus		**2 x RS-485 (Modbus Slave & Master)**, **Ethernet** - option
Alarm	-	-	-	1	max. 2	max. 3	max. 6
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
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.
Protection rating	IP65						
External dimensions	48 x 48 x 93 mm			48 x 96 x 93 mm	48 x 48 x 93 mm	48 x 96 x 93 mm	96 x 96 x 99 mm
Programming	using buttons	using buttons or free eCon software using RS-485	usign buttons or free eCon software (using PD14 programmer)		using buttons or free eCon software using RS-485		using buttons or free eCon software using RS-485 or Ethernet
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 and WEB server - option** • profile control (20 programs with 15 segments in each)



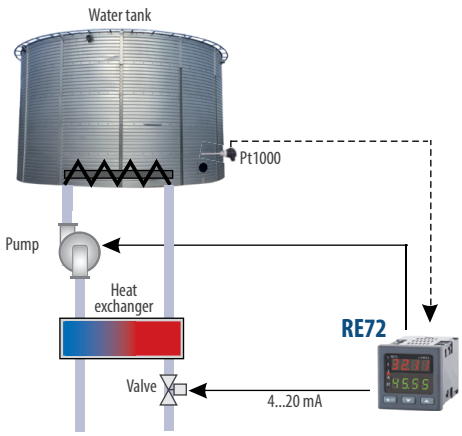


	Industrial process controllers				Temperature limiter
	RE55	**RE60**	**RE62**	**RE01**	**RL10**
Number of channels	1	1	1	1	1
Input	fixed Pt100 J, K, S		programmable Pt100 J, K ± 20 mA, ± 10 V, ± 60 mV	fixed Pt100, Pt1000 NTC	programmable Pt100/1000 J, T, K, S, R, B, N
Additional input	-		-	logic	-
Output	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. (terminals 11-12) or 60...253 V a.c. / 60...300 V d.c. (terminals 10-11)	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
Programming	using buttons		using buttons or free eCon software using RS-485	using buttons or free eCon software (using PD14 programmer)	using buttons or free eCon software using RS-485
Remarks	-			**defrost function with programmable automatic or manual mode**	meets the requirements of **EN 60519-2** for class 2 (Safety in electroheat installations)

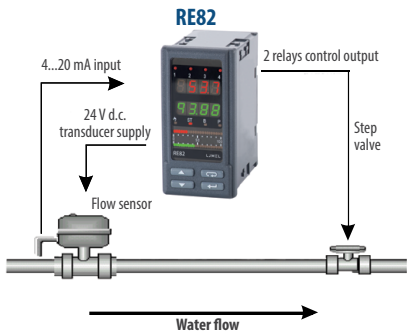
APPLICATION EXAMPLES



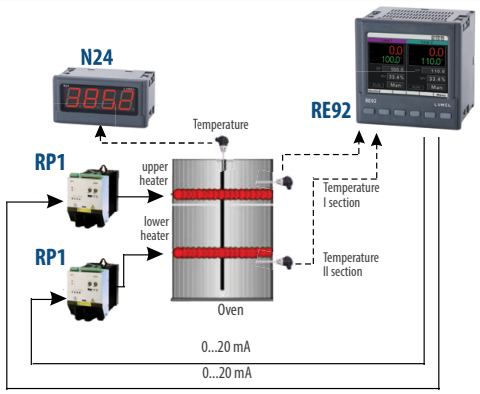
The temperature limiter as protection of the heating circuit for the temperature control in the hardening furnace



Temperature measurement and control in a water tank



Water flow measurement and 3-stage valve control



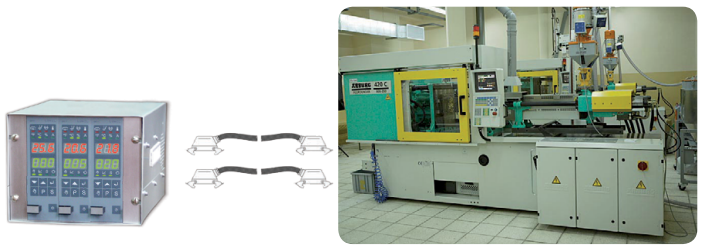
Batch temperature measurement with a smooth heater power control in a hardening furnace

SCAN THE CODE
Product Code CONFIGURATOR

	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	• 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: - too high heater leakage current, - damage of the load circuit, - short-circuit, break or inverse polarization in the sensor circuit.

SR11 APPLICATION EXAMPLE

Temperature control in an injection mould



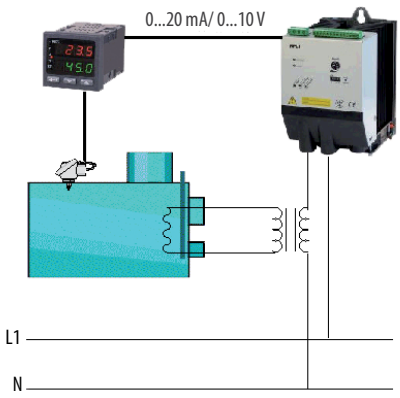
SCAN THE CODE
Product Code CONFIGURATOR



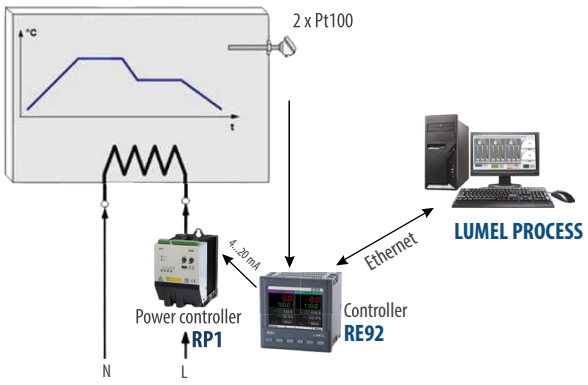

	RP7	RP1	RPL1	RP3
Version	1-phase			3-phase
Control	phase	phase, pulse, on/off		
Input signal	0..5/10V, 0/4..20mA potentiometer			
Output	-	2 x relays		
Output current	5-15 A	25-125 A		3 x 40-450 A
Load supply voltage	230 V	230 V, 400 V a.c.	230, 400, 500 V a.c.	400 V a.c.
Load configuration	2-wire	2 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)

APPLICATION EXAMPLES

Continuous temperature control in furnace



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

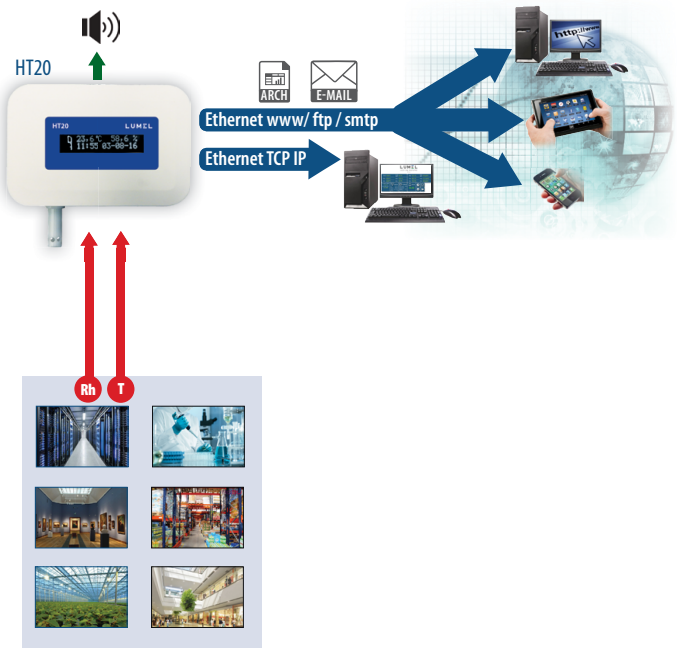




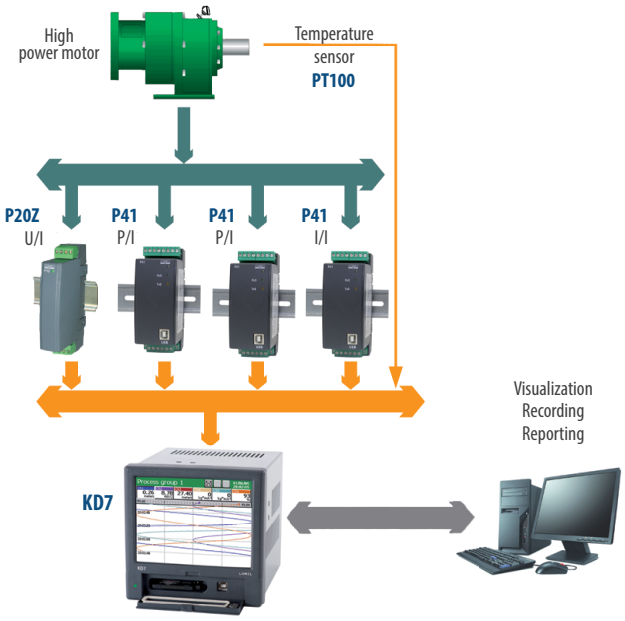

	HT20 HT20IoT	HT22IoT	HT25	KD7	KD8	SM61IoT
Number of channels	up to 4 channels (T [°C], RH [%], a [g/m³], Td [°C])	up to 12 channels (T [°C], RH [%], a [g/m³], Td [°C], Lx [lx], TVOC[ppb], CO_2[ppm])	up to 16 channels (4 channels reserved for data logging from P18S/P18/P18D)	up to 24 channels (max. 12 analog channels and/or max. 24 digital channels)	up to 6	up to 2500
Input	built-in temperature and humidity sensor	built-in temperature and humidity, light intensity, TVOC, CO^2 concentration sensor	Modbus RTU Master	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 0/5...24 V 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	Modbus TCP/IP Slave, Modbus RTU (only for HT22IoT)			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	-20...60 °C, 10...90% RH, 0...60000 lx, 0...60000 ppb, 400...60000 ppm	-	-	-	-
Interface	-	RS-485 Modbus RTU	1 x RS-485 (Modbus Slave or Master) **Ethernet** (WWW, FTP, SMTP, DHCP)	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 Modbus TCP/IP, **MQTT**
	Ethernet (WWW, FTP, SMTP, DHCP) **MQTT** (applies to HT20IoT, HT22IoT)					
Memory	internal - 8GB			internal – up to 6 MB external – CF card up to 4 GB		8 GB
Display	LCD, 2 x 16 characters		LCD, 2 x 16 characters LED, 4 characters	LCD 5,7" TFT type 320 x 240 pixels with touch panel		-
Supply voltage	6 V d.c. or PoE IEEE 802.3af - option		12 V d.c. or PoE IEEE 802.3af - option	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			144 x 144 x 171 mm	144 x 144 x 171 mm	45 x 120 x 100 mm
Additional functions	• data presentation on a LCD display and on website • email messages in case of alarm occurs • parameter configuration through a web browser • acustic signaling of alarm events			• 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		• HTTP (WEB server -visualization in format of synoptic maps), • DHCP • FTP Server, • RTC
	-		• up to 90 monitored parameters (10 groups 9 register each) via web browser • up to 100 monitored parameters (10 group 10 register each) via Modbus TCP/IP • logging of 16 parameters (4 parameters reserved for P18S/P18/P18D)			

APPLICATION EXAMPLES

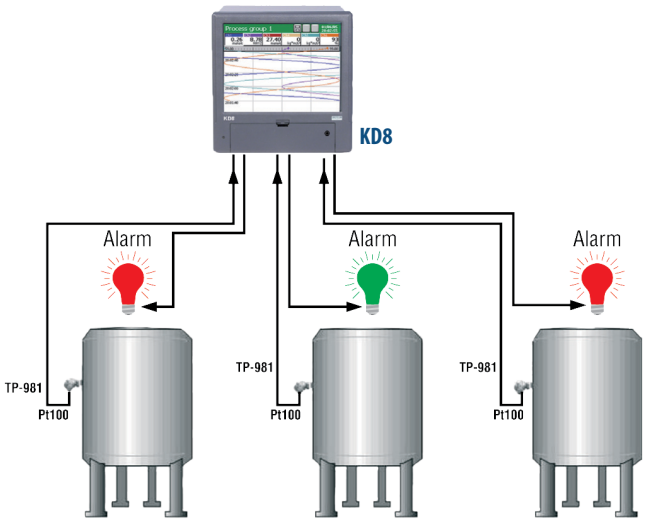
Access to the device from anywhere in the world thanks to the built-in web server.

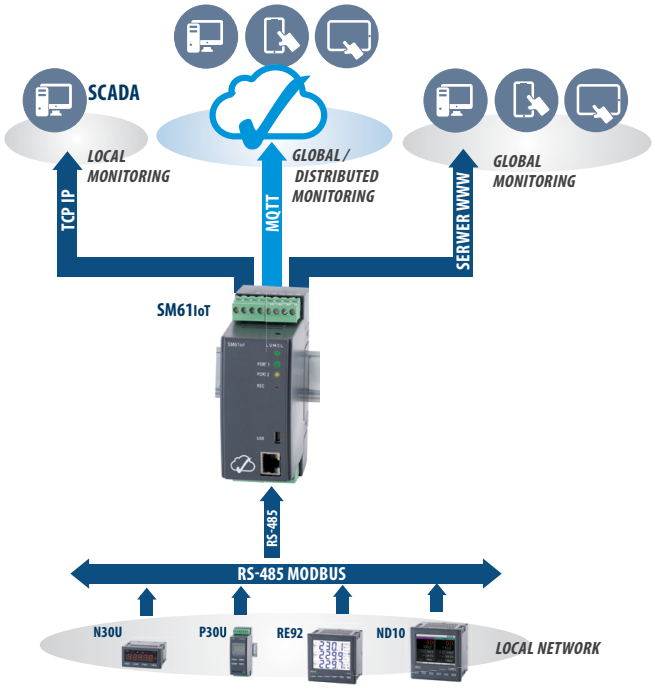


Measurement and visualization of motor working parameters (temperature and motor load)



Temperature measurement, logging and alarming





SCAN THE CODE
Product Code CONFIGURATOR

ePLAN







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^{0}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...4 294 967 295 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 loggers

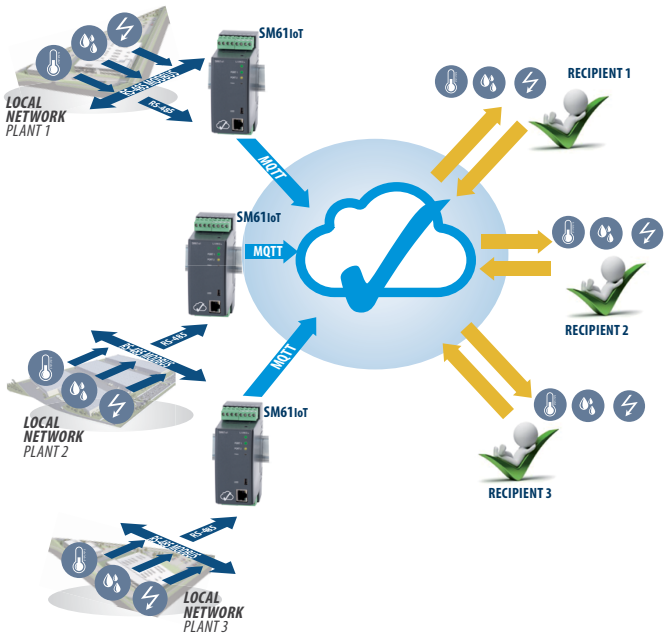
	PD22	SM61IoT	HT25
Number of channels	up to 1000 digital channels	up 2500 digital channels	up to 16 channels (4 channels reserved for data logging from P18S/P18/P18D)
Input	Port I: Modbus RTU Master (50 groups 20 register each)	Port II: Modbus RTU Master (100 groups 25 registers each), 2 x logic	Modbus RTU Master
Output	Port II: Modbus RTU Slave	Port I: Modbus RTU/TCP Slave, 2 x relay	Modbus TCP/IP
Interface	3 x RS-485 (Modbus Slave and Master) 1 x RS-232 (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 Modbus TCP/IP, **MQTT**	1 x RS-485 (Modbus Slave or Master) **Ethernet** (WWW, FTP, SMTP, DHCP)
Memory	512 kB, 390.000 samples, 44.000 events	8 GB	8 GB
Supply voltage	85...253 V a.c./d.c. or 20... 50 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. or 10...16 V a.c./ 10...20 V d.c.	12 V d.c. or PoE IEEE 802.3af - option
Protection rating	IP40		IP20
External dimensions	45 x 120 x 100 mm		150 x 100 x 30 mm
Additional functions	• RTC	• HTTP (web server - visualization in format of synoptic maps), • DHCP, • FTP server, • RTC	• data presentation on a LCD display and on website • email messages in case of alarm occurs • acustic signaling of alarm events • parameter configuration through a web browser • up to 90 monitored parameters (10 groups 9 register each) via web browser • up to 100 monitored parameters (10 group 10 register each) via Modbus TCP/IP • logging of 16 parameters (4 parameters reserved for P18S/P18/P18D)

SCAN THE CODE
Product Code CONFIGURATOR

Interface/protocol converters

	PD51	PD8	PD10
Interface 1	RS-232	RS-485, RS-232	RS-485
Interface 2	RS-485	Ethernet RJ45	USB
Interface 3	-	USB	-
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
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
Protection rating frontal	IP40		
Ambient temperature	0...23...55°C	-20...23....45°C	0...55°C
External dimensions	22.5 x 120 x 100 mm	45 x 120x 100 mm	52 x 44 x 24 mm
Additional functions	• converter/ repeater • galvanic isollation	• galvanic isolation • Digi RealPort®, TCP/IP, HTTP, ICMP, DHCP, ARP • Modbus TCP	• galvanic isolation

SM61IoT APPLICATION EXAMPLE



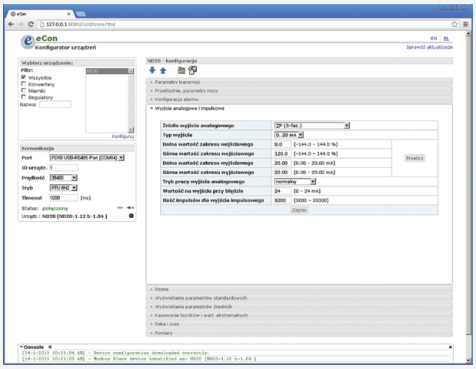
Power supplies

	ZS20-1P	ZS20-1K	ZS20-1L	ZS20-1A	ZS20-1B	ZS20-1C
Rating	24V / 0.63 A	24 V/ 1.5 A	24V/ 1.75 A	24V / 2.5A	24V / 5A	24V / 7.5A
Power	15 W	36W	45W	60W	95 ... 120 W	120 ... 180 W
Input voltage range AC	85 ... 264 VAC					
Input voltage range DC	120 ... 370 VDC				125 ... 350 VDC	
Protection rating	IP20					
External dimensions	18 x 90 x 62 mm	54 x 90 x 62 mm	54 x 90 x 62 mm	54 x 90 x 62 mm	55 x 110 x 105 mm	55 x 110 x 105 mm

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

eCon



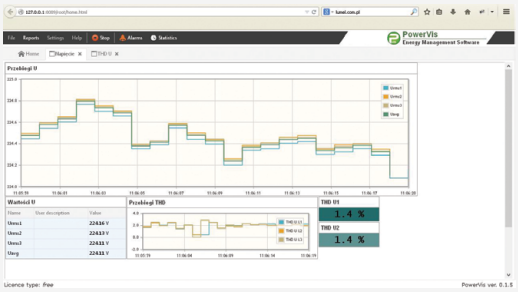
PD10 – RS-485 to USB converter that can be used to configure using eCon a device equipped with RS-485

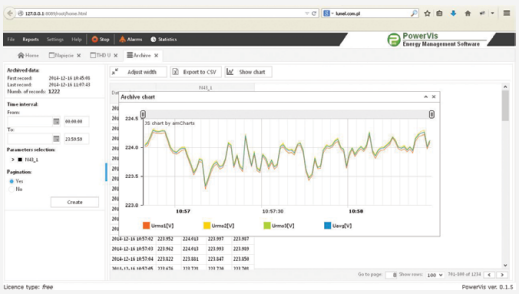
PD14 – programmer to configure non RS-485 devices using eCon

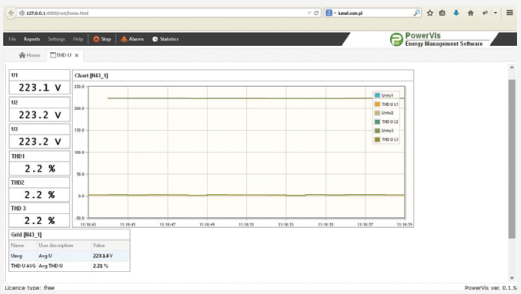
PROCESS VISUALIZATION SOFTWARE

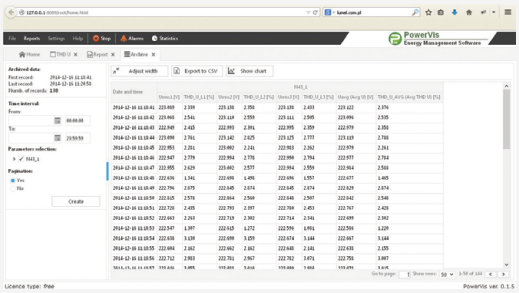
PowerVis Software (**OP40**)

- 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
- signalling of alarm events (directly on computer screen or remotely via e-mail)
- remote access to PowerVis software through a web browser







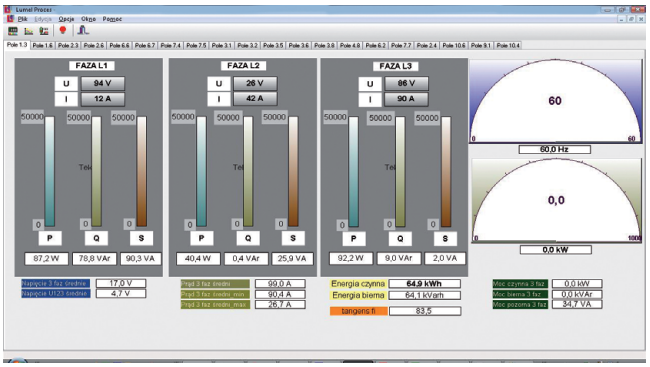


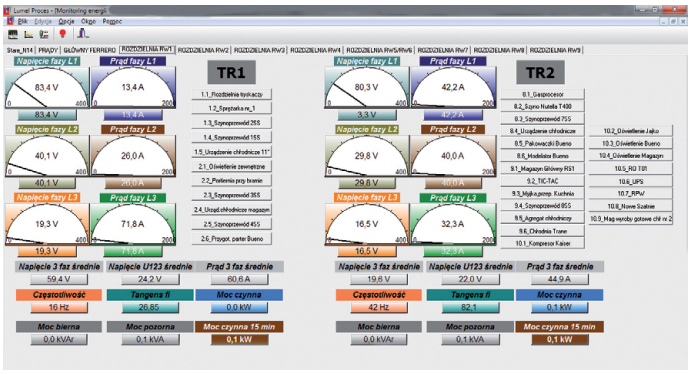
LUMEL-PROCESS Software (**OP38**)

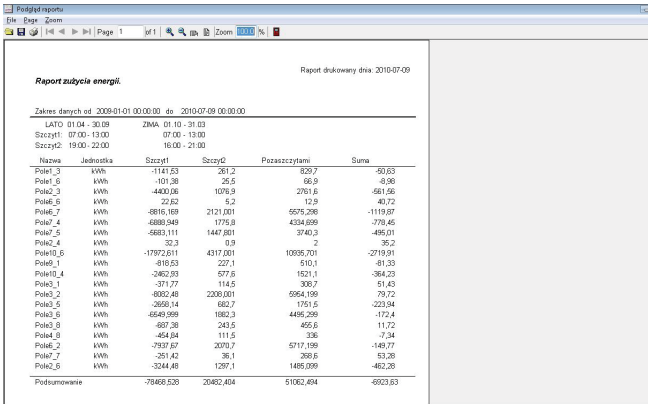
- modern integration and data presentation system,
- control and measurement applications for industrial installations, intelligent buildings, heat engineering, gas engineering, power engineering and laboratories,
- for systems built with the application of LUMEL's instruments, compatible with devices 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!**

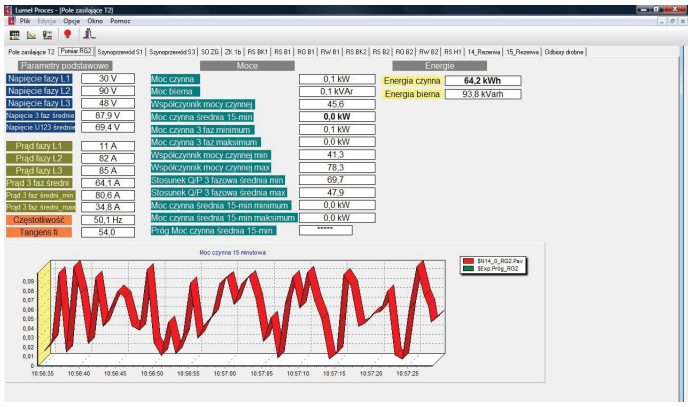
process visualization

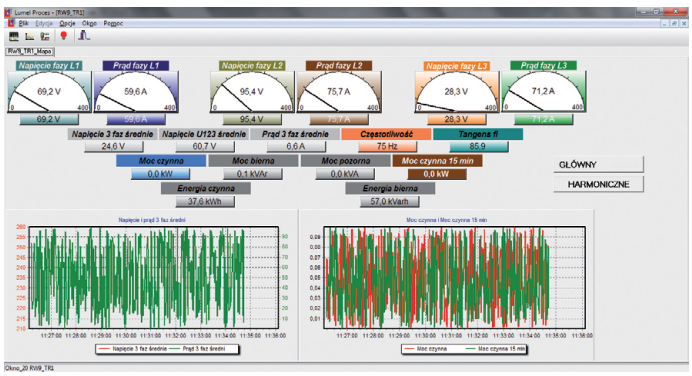
LUMEL-PROCESS software











MARC ENERGY Software

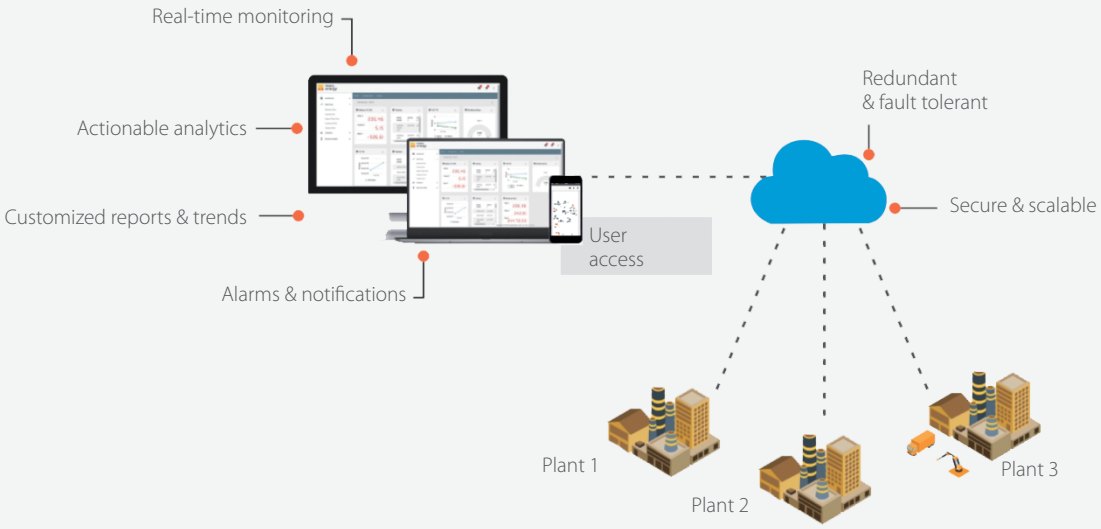
Marc.energy is a cloud-based next generation energy data analytics platform for demand side management of energy loads and process parameter monitoring.

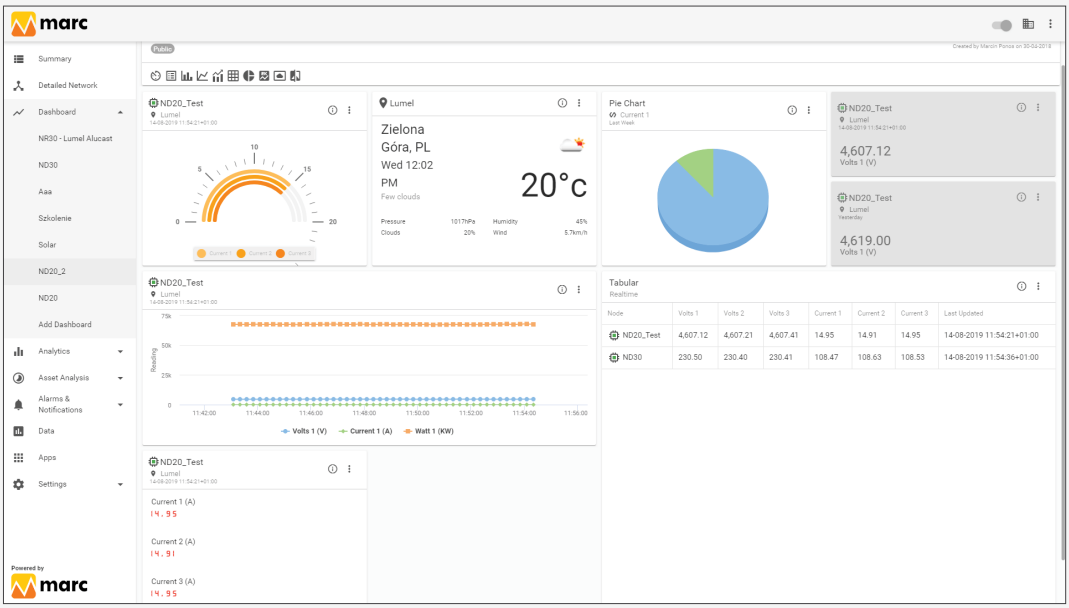
It is designed to handle quantitative and qualitative data to provide users with an in-depth analysis and insight into their load systems enabling them with possibilities for optimisation, energy OPEX savings, and building efficiency in their load networks.

The added value addition provided by the system is its problem diagnosis engine based on the trends and data mining of historical data in cloud of an asset preventing expensive downtimes and breakdown of machines, motors, transformers and other loads.

Benefits of Marc Energy:

- Reduction in energy OPEX costs.
  Directly increase profits by saving on energy expenses.
- Overall equipment efficiency.
  Achieve maximum efficiency of the equipment by tracking the power quality.
- Complete Power quality analysis.
  Eliminate failure of equipment to reduce the loss.
- Identification of downtime of assets.
  Know when the equipment was down and analyze it to improve it.





SCAN THE CODE
Product Code CONFIGURATOR





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* (on request, with twice or six-times overload) - voltage: · direct · through a transformer	100 mA ... 25 A xA x/5 A; xA/1 A 6 V ... 600 V xV/100 V; xV/110 V		100 mA ... 100 A xA x/5 A; xA x/1A 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 mesurement up to ranges: 1 A, 1/2 A, 5 A, 5/10A), for voltage measurement - all ranges ** see our current transformers (page 32)



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: - voltage:	400 µA...1 A (30...1000...10 000 Hz) 1 A...6 A (49...50...51 Hz) 60 mV...1.5 V (49..50...51 Hz) 2.5 V...600 V (30...1000...10 000 Hz)		400 µA...1 A (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





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	 100 µA....6 A (MB16); 100 µA...25 A (MA16) 1 A...15 kA 60 mV...600 V		 100 µA...25 A 1 A...15 kA 60 mV...1000 V		
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 - relative air humidity	 5...23...55°C 25...85%				
Class	1.5				

* see our shunts (page 35)




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: - bimetalic element: · direct measurement · indirect measurement (through a transformers*) - moving-iron element: · direct measurement · indirect (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 0...1/2 A or 0...5/10 A 0...2(x) A x/1 A or 0...2(x) A x/5A	
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 32)






Power factor and frequency meters

	FA39	FA32	CA36	CA37	CA39	CA32
Type of scale	90°					
External dimensions	96 x 96 mm	144 x 144 mm	48 x 48 mm	72 x 72 mm	96 x 96 mm	144 x 144 mm
Interchangeable scale	✔	✔	✔	✔	✔	✔
Measuring ranges **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		45...55 Hz; 45...65 Hz; 48...52 Hz; 55...65 Hz; 360...440 Hz; 380...420 Hz -			
Proof voltage	2 kV					
Protection rating	IP52 (IP65 on request)	IP52	IP52	IP52 (IP65 on request)		IP52
Climate version	normal, tropical or similar to marine					
Class	1.5		0.5			

SCAN THE CODE
Product Code CONFIGURATOR




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: - voltage:	100 µA...60 A 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 - relative air humidity	 5...23...55°C 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: - voltage:	 100 mA, 1 A 5 A, 10 A 40 V...600 V			
Proof voltage	2 kV			
Protection rating	IP52 (IP65 on request)			IP52
Climate version	normal			
Class	1.5			



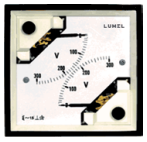

Power factor and frequency meters

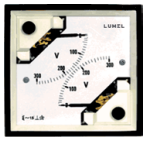
	FA39L	FA32L	CA39L	CA32L
Type of scale	240°			
External dimensions	96 x 96 mm	144 x 144 mm	96 x 96 mm	144 x 144 mm
Interchangeable scale	✔	✔	✔	✔
Measuring ranges **Frequency**	0.5_{Cap}....1...$0.5_{IND.}$ 0.8_{Cap}....1...$0.3_{IND.}$ 0.8_{Cap}....1...$0.8_{IND.}$ 49...51 Hz (1-phase) 45...65 Hz (3-phase)		45.....50.....55Hz 45.....55.....65Hz 55.....60.....65Hz 360...400...440Hz 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	

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





	Dual moving-iron meters	Dual frequency meters		Dual moving-coil meters
	EA19D	**CA39D**	**CA32D**	**MA19D**
Type of scale	90°			
External dimensions	96 x 96 mm	96 x 96 mm	144 x 144 mm	96 x 96 mm
Interchangeable scale	✔	✔		✔
Measuring ranges	150...600 V; xV/100V ; xV/110V	45.....50.....55 Hz 45.....55.....65 Hz 55.....60.....65 Hz 360...400...440 Hz 380...400...420 Hz		1000 µA...30 A 60 mV...600 V
	4...60 A; xA x/5A; xA/1A			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)	IP52 (on request IP65 - only for CA39D)		IP52 (on request IP65)
Climate version	normal			
Class	1.5	0.5		1.5

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	∅14	∅14	∅14	∅22
Accuracy class	0.5; 1; 3			0.2; 0.5S;0.5; 1; 3

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)	LCTB 50/30 (30)
Primary current [A]	50...400	50...400	50...400	50...400	30...400	75...600
Hole diameter	∅20	∅21	∅21	-	∅20	∅26
Busbar (mm)	20 x 10	20x10	20x10	20 x 12 2 x 15 x 6	20 x 10	30x10; 20x15 20x20 2x20x10
Accuracy class	0.5; 1; 3			0.2S; 0.2; 0.5S; 0.5; 1; 3		0.5; 1; 3

LCTB 74 LCTB 86

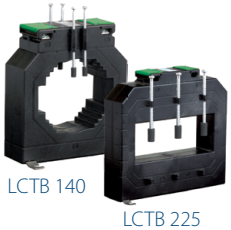
LCTB current transformers for a bar conductor

	LCTB 50/30 (50)	LCTB 62/30 (40)	LCTB 62/30 (50)	LCTB 74/30 (45)	LCTB 62/40 (40)	LCTB 86/40 (45)
Primary current [A]	75...600	50...800	40...800	30...800	100...800	50...1000
Hole diameter	∅26	∅30	∅28	∅26	∅31	∅36
Busbar (mm)	30x10; 20x15; 20x20; 2x20x10	30x10 2x25x10	30x10 2x25x10	30x15 2x20x10	40x10 2x30x10	40x10 2x30x15
Accuracy class	0.5; 1; 3	0.2S; 0.2; 0.5S; 0.5; 1; 3				

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)	LCTB 104/80 (45)
Primary current [A]	40...1000	100...1000	100...1250	100...1600	100...1600	200...2000
Hole diameter	∅35	∅41	∅46	∅51	∅54	∅65
Busbar (mm)	40x12 2x30x15	50x12 2x40x10	50x12 2x40x15	60x12 2x50x15	60x12 2x50x15 2x40x20	80x12 2x60x15 2x50x25
Accuracy class	0.2S; 0.2; 0.5S;0.5; 1; 3					



LCTB 140 LCTB 225

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	∅72	∅86	-	-
Busbar (mm)	80x30 2x60x25	100x30 2x80x25 2x70x30	124x93	166x65
Accuracy class	0.2S; 0.2; 0.5S; 0.5; 1; 3			

CURRENT TRANSFORMERS

SCAN THE CODE
Product Code CONFIGURATOR

ePLAN

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
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; 3		0.2; 0.5; 1; 3	


LCTB 100


LCTB 140

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			


LCTS series

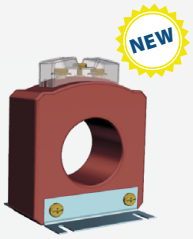
LCTP 3-phase current transformers

	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]	-	-	-	∅27	∅37
Busbar (mm)	14 x 24	20 x 24	31 x 36	-	-
Accuracy class	0.5; 1			1	


LCTP series

LRC - resin cast current transformers

	LRC1 80/30(50)	LRC2 90/50(40)	LRC3 110/72(40)	LRC4 135/85(40)
Primary current [A]	60 A...160	200 A...320	400 A...630	800 A...1250
Hole diameter [mm]	∅ 30	∅ 50	∅ 72	∅ 85
Accuracy class	1			



LRC series

LRC - resin cast current transformers

	LRC5 165/115(40)	LRC6 195/130(40)	LRC7 230/165(40)	LRC8 295/200(40)
Primary current [A]	1500 A...2000	2500 A...3200	3000 A...3200	4000 A....5000
Hole diameter [mm]	∅ 115	∅ 130	∅ 165	∅ 200
Accuracy class	1			

LRC series

LU01 - summation current transformers

	LU01 (75)	LU01 (150)
Inputs [A]	2 x 5A...4 x 5A	5 x 5A...8 x 5A
Secondary current	5 A	5 A
Dimensions [mm]	70 x 75	70 x 150
Accuracy class	0.5; 1	

LU01 series

LW - Round current transformers

	LW01	LW02	LW03	LW04	LW05	LW06
Primary current [A]	50...200	50...200	75...300	120...600	200...1000	600...3200
Hole diameter [mm]	∅30	∅30	∅43	∅58	∅72	∅113
Outer diameter [mm]	∅73	∅73	∅92	∅100	∅110	∅159
Accuracy class	0,5; 1	0.2; 0.5S; 0.5; 1				

LW05

LE03

	LE - Round current transformers			
	LE01 73/30 (50)	**LE03 92/43 (41)**	**LE04 95/50 (40)**	**LE05 100/58 (41)**
Primary current [A]	50...200	200...400	200...300	400..600
Hole diameter [mm]	∅30	∅43	∅50	∅58
Outer diameter [mm]	∅73	∅92	∅95	∅100
Accuracy class	1; 5	1		

LE06

	LE - Round current transformers			
	LE06 110/72 (41)	**LE07 135/85 (30)**	**LE08 159/113 (40)**	**LE09 165/130 (30)**
Primary current [A]	800...1000	800...1200	1200...2000	2400...3000
Hole diameter [mm]	∅72	∅85	∅113	∅130
Outer diameter [mm]	∅110	∅135	∅159	∅165
Accuracy class	1			

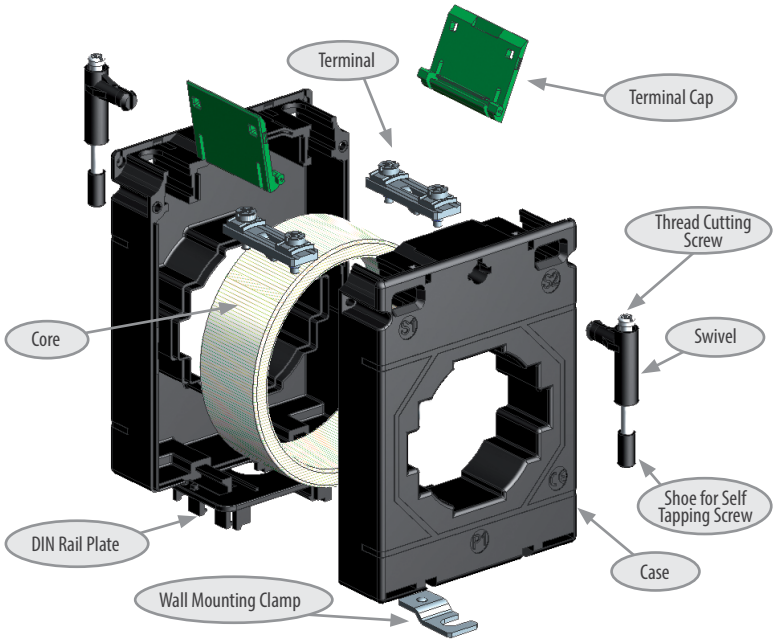


	Current transformers dedicated to ND20CT		
	LJ12	**LJ25, LJ35, LJ45**	**L306, L307, L308**
Version	1-phase	3-phase	
Range	50-250 A*	60-600 A*	63-250 A*
Class	1 or 0.5*		
Connection way to ND20CT	RJ12 connector		screw terminals

* - more detailed informations in data sheet

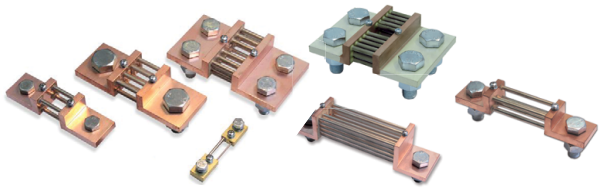
We offer: On customers request we offer transformer calibration certificates.

ACCESSORIES:



MORE INFORMATION IN OUR CATALOG:

SHUNTS / **CLASS 0.2, 0.5**



	B1	B2	B3	B4	B5	B6
Voltage drop	30 mV	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 or 0.5					

- shunts from 1...25 A are fixed on insulating basis with the possibility to be mounted on a DIN rail (except B1 type)
- 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: varnishing or silver

plate shunts

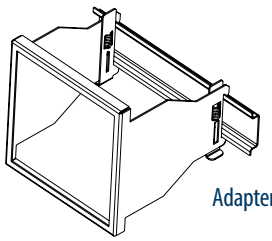
	BP4
Voltage drop	50 mV
Rated current	5 A...500 A
Accuracy class	0.5

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

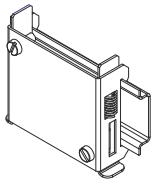
ADAPTER FOR DIN RAIL TS35

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

	Adapter ATS					
	ATS1	**ATS2**	**ATS3**	**ATS4**	**ATS5**	**ATS6**
Hole dimensions (widht x hight) [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 $45^{+0.6}$	dedicated for transducers P18, P18D, P18L
Panel instruments dimensions (widht x hight) [mm]	96 x 96	96 x 48	72 x 72	48 x 96	48 x 48	



Adapter **ATS1**



Adapter **ATS6**

ENLARGING FRAME

- Designed to reduce the mounting hole from 96 x 96 mm to 48 x 96 mm or 96 x 48 mm.
  Ordering code: CZ/20-810-01-00004

SCAN THE CODE
Product Code CONFIGURATOR

PKT1 / PKS1/ PKH1
changeover

PKT2 / PKS2/ PKH2
multi-step

PKT3 / PKS3/ PKH3
isolator

PKT4
selector

	PKT1, PKT2, PKT3, PKT4					PKS1, PKS2, PKS3				PKH1, PKH2, PKH3	
PARAMETERS	**UNIT**	**6 A**	**10 A**	**16 A**	**20 A**	**25 A**	**32 A**	**40 A**	**63 A**	**100 A**	**200A**
Rated operational voltage (Ue)	V	440	440	690	690	690	690	690	690	690	690
Rated Insulation voltage (Ui)	V	440	440	690	690	690	690	690	690	690	690
Rated uniterrupetd current (Ith)	A	8	12	20	25	32	40	50	80	125	225
Rated short time withstand current (Icw)	A	72	120	192*	240*	300	384	480	756	1200	2400
Rated Impulse withstand voltage (Uimp)	kV	4	4	4	4	6	6	6	6	6	6
Rated Fuse short circuit current	kA	3	3	5	5	10	10	10	10	15	15
Frontal frame dimensions	mm	48 x 48				64 x 64				88 x 88	

* Rated short time withstand current (0.5s- current)

PKR1 / PKR5
ON-OFF spring return switches

PKR2/PKR6
double throw with oFF

PKR3 / PKR7
spring return switches without oFF

TKR1 / TKR2
spring return cam switches 1xNO 1xNC / spring return cam switches 2xNO 2xNC

	PKR1, PKR2 PKR3, PKR5, PKR6, PKR7			TKR1, TKR2	
PARAMETERS	**UNIT**	**16 A**	**20 A**	**25 A**	**32 A**
Rated operational voltage (Ue)	V	690	690	690	690
Rated Insulation voltage (Ui)	V	690	690	690	690
Rated uniterrupetd current (Ith)	A	20	25	32	40
Rated short time withstand current (Icw)	A	192*	300	300	384
Rated Impulse withstand voltage (Uimp)	kV	4	6	6	6
Rated Fuse short circuit current	kA	5	10	10	10
Frontal frame dimensions	mm	48 x 48	64 x 64	65 x 65	

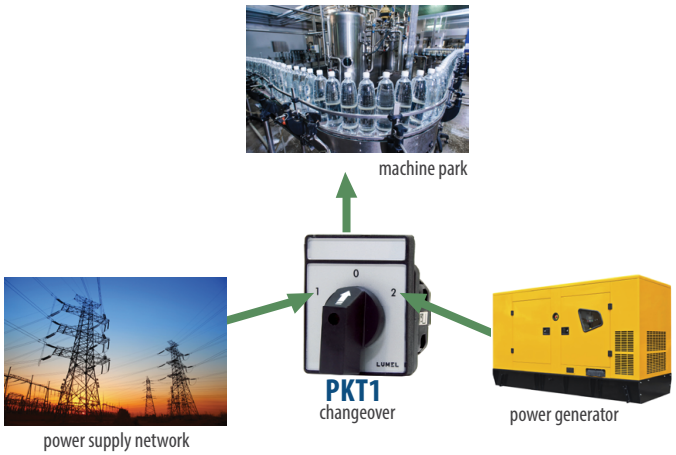
* Rated short time withstand current (0.5s- current)

RATED OPERATING CONDITIONS		
Frequency	50/60 Hz	
Operating temperature	-25°C...60°C	
Installation category	III	
Protection grade	IP50 from frontal side	IP20 from terminal side
Standards	IEC 60947-1, IEC 60947-3, IEC 60947-5	
SWITCH LIFE		
Mechanical Life	100 000 operations at 300 cycles/hr	
Electrical Life	10 000 operations at 100% rated duty at 120 cycles/hr	

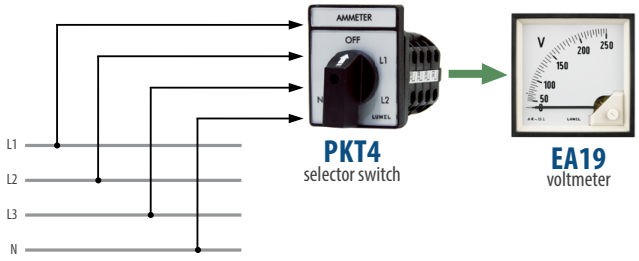
- all cam switches available in yellow-red version
(colour of background and knob can be selected in the ordering code and additional one can order separately the background-knob-combinination as accessories- see data sheet)

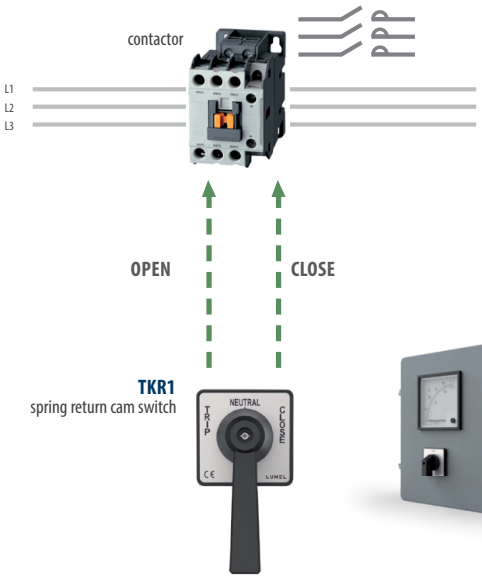
APPLICATION EXAMPLES

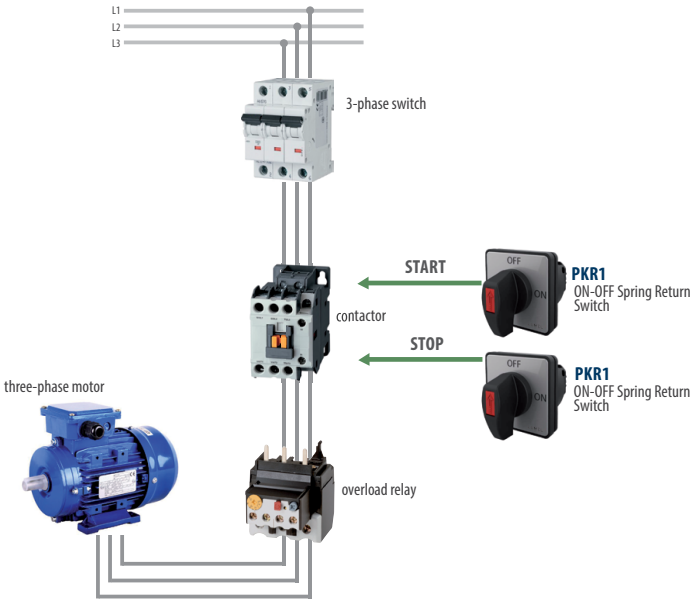
Switching on the (emergency) power supply.



Mesurement of phase-to-phase voltage using only one voltmeter.







SCAN THE CODE
Product Code CONFIGURATOR

NP45
Portable power quality analyzer

- 5.6" TFT color screen. 640 x 480 pixel,
- waveform real-time display (4 voltages/4 currents),
- half cycle RMS measurement (voltage and current),
- measurement of TRMS currents up tp 6000 A (with additional probes mode),
- measurement in 1-phase and 3-phase systems (3 - and 4-wire),
- measurement of voltage, current, harmonics, power, energy, inrush current, flicker and other,
- graphical presentation of data in a waveform and vector diagram,
- record of events: dips,swells, overvoltages,
- power quality according to EN-50160 standard or user-defined limit,
- registration of user-defined parameters in the 32GB internal memory (registration time from 2 h up to 1 year),
- Ethernet and WiFi interfaces for remote operation of the analyzer,
- USB Host to move archive data and screenshots to an external USB memory,
- safety standards: EN 61010-1. CAT III 1000V / CAT IV 600V

NP40
Portable power quality analyzer

- half cycle RMS measurement (voltage and current);
- measurement of TRMS currents up to 3000 A (with standard sensor);
- measurement in 1-phase and 3-phase systems (3 - and 4-wire);
- measurement of voltage, current, harmonics, power, energy, inrush current, flicker and other;
- graphical presentation of data in a waveform and vector diagram;
- record of events: dips, swells, over voltages;
- power quality according to EN-50160 standard or user-defined limit;
- internal memory for data logging needs (continuous registration from 2 hours to 7 days), the registration frequency from 1 second up to 60 minutes;
- built-in 8G memory card;
- Ethernet interface for remote operation of the analyzer;
- USB Host to move archive data and screenshots to an external USB memory;
- safety standards: EN 61010-1, CAT III 1000V / CAT IV 600V;
- 5,6" TFT color screen, 320 x 240 pixel;
- waveform real-time display (4 voltages/4 currents).

NP15
TRUE RMS digital multimeter with data logger & view function

- voltage measurement of AC, DC and AC / DC up to 1000V;
- current measurement of AC, DC and AC / DC up to 10A;
- low input impedance;
- measurement of TRMS effective;
- data logging & view function (up to 32000 readings);
- 100 kHz bandwidth for voltage measurement;
- resistance measurement;
- frequency and duty cycle measurement;
- temperature measurement with J, K, Pt100 & Pt1000 sensors;
- capacitance measurement;
- automatic / Manual measuring range selection;
- low-pass filter mode with a cutoff frequency of 1kHz;
- voltage noise measurement and suppression (dB);
- square wave signal generator;
- continuity test and diode test;
- function: Backlight, Relative / Zero, Auto Hold, Min / Max / Avg;
- acoustic signal indicating the overrange (Go / NoGo);
- information on dangerous voltage at the terminals;
- external power supply;
- fuse 16 A for all current measurement ranges to protect the device.

NP15B
TRUE RMS digital multimeter with data logger & view function

- voltage measurement of AC, DC and AC / DC up to 1000V;
- current measurement of AC, DC and AC / DC up to 10A;
- low input impedance;
- measurement of TRMS effective;
- data logging & view function (up to 32000 readings);
- 100 kHz bandwidth for voltage measurement;
- resistance measurement;
- frequency and duty cycle measurement;
- temperature measurement with J, K, Pt100 & Pt1000 sensors;
- capacitance measurement;
- automatic / Manual measuring range selection;
- low-pass filter mode with a cutoff frequency of 1kHz;
- voltage noise measurement and suppression (dB);
- square wave signal generator;
- continuity test and diode test;
- function: Backlight, Relative / Zero, Auto Hold, Min / Max / Avg;
- acoustic signal indicating the overrange (Go / NoGo);
- information on dangerous voltage at the terminals;
- external power supply;
- fuse 16 A for all current measurement ranges to protect the device.

NP10
Digital multimeter

- capacitance from 1pF...40.00 mF with zero correction;
- direct and alternating voltages from 100 µV ... 1000 V;
- direct and alternating currents from 10 µA ... 10.00 A;
- resistance from 100 mΩ... 60.00 MΩ;
- frequencies from 10.00 Hz ... 10 MHz;
- diode measurement and continuity testing;
- hold measurement- the value can be held and display simultaneously;
- relative measurement by pressing and holding PEAK and then pressing AUTO/MAN key;
- duty cycle (%) measurement;
- temperature measurement with 'K' type Thermocouple (NiCr – Ni) in the range from 0°C to 1300°C acc. to EN 60584;
- peak value measurement.

NP06
Digital multimeter

- direct and alternating voltages from 100µV ... 1000V,
- direct and alternating currents from 10µA ... 10.00A,
- resistance from 1Ω... 40.00MΩ with zero correction,
- resistance from 1pF... 200.00µA with zero correction,
- frequencies from 10.00 Hz ... 10MHz,
- diode measurement and continuity testing,
- duty cycle (%) measurement,
- hold measurement,
- relative measurement,
- non contact voltage detection.

NP08
Digital multimeter

- direct and alternating voltages from 100µV ... 1000V,
- direct and alternating currents from 10µA ... 10.00A,
- resistance from 1Ω... 40.00MΩ with zero correction,
- resistance from 1pF... 200.00µA with zero correction,
- frequencies from 10.00 Hz ... 10MHz,
- diode measurement and continuity testing,
- hold measurement
- relative measurement
- duty cycle (%) measurement,
- temperature measurement with 'K' type Thermocouple,
- backlit facility.

NC14
Power clamp-on meter

- AC & DC voltage measurement up to 1000 V;
- AC & DC current measurement in the range of 1000 A / 400 A;
- inrush/peak value measurement;
- active, reactive and apparent power measurement;
- power measurement in KM;
- energy consumption measurement in kWh;
- measurement up to 49th harmonics;
- phase angle measurement;
- THD measurement;
- DF measurement;
- crest factor /CF/ measurement;
- power factor /PF/ measurement;
- LPF mode.

NC12
Clamp-on meter

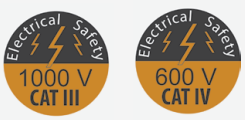
- current measurement up to 300 and 1000 A AC;
- measuring voltage up to 1000 V AC / DC;
- measuring temperature from -200°C to 800°C (Pt100 and Pt1000);
- the diameter of measured cable 50 mm (the meter up to 1000A);
- the diameter of measured cable 40 mm (the meter to 300A);
- illuminated digital display with analog indicator;
- a number of features:
  - HOLD - Stop function currently displayed measured value,
  - MIN, MAX - recording the minimum and maximum values measured;
- auto power off;
- an adjustment of the resistance or capacitance - for low measuring low resistance or capacitance, resistance wire or stray capacitance for a range of nF can be compensated by pressing the Shift;
- automatic and manual mode;
- available measuring function diodes and transistors;
- degree of protection IP20.

NC11
Clamp-on meter

- the diameter of measured cable 50 mm (the meter up to 1000A)
- the diameter of measured cable 40 mm (the meter to 400A)
- current measurement up to 400 and 1000 A AC
- measuring voltage up to 1000 V AC
- measuring temperature from 0 to 1300°C (K type termocouple)
- illuminated digital display with analog indicator,
- a number of features:
  - HOLD - Stop function currently displayed measured value,
  - Auto power off,
- for low ohm measurement, the lead resistance can be compensated by presssing the REL key,
- automatic and manual mode,
- available measuring function diodes and transistors,
- degree of protection IP20.
- an adjustment of the resistance - for low measuring low resistance or can be compensated by pressing the Shift button

NT10
Insulation meter

- insulation resistance measurement up to 3 GΩ;
- measurement of DC and AC voltage in the range of 30 mV...1000 V;
- measurement of DC and AC current in the range of 300 µA...300 mA;
- resistance measurement 30 Ω...30 MΩ;
- capacity measurement 30 nF...30 µF;
- frequency measurement 300 Hz...100 kHz;
- measuring the fill factor (%);
- HOLD Function;
- temperature measurement in the range of -200...800°C / Pt100/ Pt1000;
- analog scale.



SCAN THE CODE
Product Code CONFIGURATOR

NEW

NEW

Digital Multimeter

	HA-DMA512	HA-DMA612
Resolution	true digits 5½	true digits 6½
Sampling	800 samples/s	1000 samples/s
Measuring quantity	d.c. voltage and current, a.c. voltage and current, resistance, capacity, frequency, temperature	
Additional measuring functions	auto range, diode test, continuity, null, tigger, save/read, math	
Safety	IEC61010-1: 2010, CAT I 1000V/CAT II 600V, Pollution level: 2	
Interface	USB, RS-232	
Power supply	115 V/230 V (1±10%), 50 Hz/60 Hz, 15 VA	
Dimensions & weight	260 × 106 × 375 mm, 3.0 kg	
Additional functions	• VFD display with high-brightness • Reading rates up to 1000 readings per second. • True RMS measurement of AC voltage and current. • Built-in math operations. • Full measuring functions to meet user's test need.	

NEW

Programmable DC power supply

	HA-PSA3515
Output range	35 V / 15 A
Output power	500 W
Resolution	1 mV/ 1 mA
Accuracy	voltage: ≤± (0.05% + 10 mV) current: ≤± (0.2% + 50 mA) OVP: ≤± (0.5% + 0.5 V)
Interface	RS-232
Power supply	AC 115-230 V (1±10%)V, 50 (1±5%) Hz
Dimensions & weight	425 × 150 × 465 mm, 20 kg
Additional functions	• All digital controlled, output 1mV/1mA step. • High stability, low drift. • LED display the voltage/current and working status visually. • Intelligent temperature controlled fun with low noise. • Storage and recall function. • OVP (Over Voltage Protecion) function. • Keypad locked function to avoid the misoperation.

	Synthesized Signal Generator	
	HA-GFA005	
CHA		
Frequency range	sine: 1 µHz ... 500 MHz square: 1 µHz ... 80 MHz	
Sine output level	≤ 500 MHz	-127 dBm ... +13 dBm(-127 dBm ... -117 dBm typ.)
	≤ 1000 MHz	-110 dBm ... +13 dBm(-100 dBm ... -110 dBm typ.)
	≤ 1500 MHz	-105 Bm ... +10 dBm(-100 dBm ... -105 dBm typ.)
Modulation type	AM,FM, FSK, PSK	
CHB		
Frequency range	1 µHz ... 10 MHz	
Waveform type	Sine, Square, Ramp, Pulse, Sinc, Exp, Noise, DC	
Output amplitude	1 mVpp ... 10 Vpp(50 Ω), 2 mVpp ... 20 Vpp (High Z)	
GENERAL CHARACTERISTICS		
Interface	USB, RS-232	
Power supply	100 V a.c. ... 240 V, 50(1±10%)Hz, <40 VA	
Dimensions & weight	254 × 103 × 374 mm; 4.2 kg	
Additional functions	• Perfect combination of DDS and PLL techniques. • Frequency upper limits to 500 MHz. • Higher level of frequency accuracy, up to 1 ppm. • Communication interfaces: USB, RS-232. • 4 built-in fixed arbitrary waveforms: Exp, Sinc, Noise, DC. • Sweep and Burst function.	

Only **BENEFITS !**

For many years we have known that automation users appreciate a comprehensive offer.
Therefore, in addition to the supply of equipment, we offer design and implementation of automation systems, which:
- will be time and cost effective,
- will raise productivity,
- will improve work quality and safety.

Who ARE WE?

- A team of engineers (designers, constructors, developers, integrators)
- We have over 50 years of experience in project implementation in Poland and abroad.
- We have modern development laboratory facilities where we test our solutions.

How DO WE WORK?

We offer a comprehensive approach to the project, starting with a thorough analysis of the needs, providing custom made solutions for system implementation in facilities, throughout training and warranty and after-warranty service.

PROJECT ANALYSIS AND IDENTIFICATION OF THE CUSTOMER'S NEEDS → OFFER / SIGNING THE CONTRACT → ASSEMBLY IN THE FACILITY → PROJECT COMMISSIONING AND PERSONNEL TRAINING → SERVICE

WE CAN DO THIS FOR YOU:

- Design and implement a dedicated control system for industrial processes.
- Design and implement a control and transmission system in industrial environments.
- Create applications to visualize and control in SCADA programs.
- Design and manufacture power and control cabinets and laboratory work stations.

And everything:
- at competitive prices,
- based on certified and modern product and communication solutions,
- with guarantee of reliability and post-implementation service.

Energy Monitoring Systems - OUR SPECIALTY!

Because of the possibility of large savings and environmental protection, the systems which currently are the most popular ones are our systems for energy consumption monitoring and for the control of power supply network parameters. These systems can be easily extended with additional measuring points or other utilities. What is important, the license for the software to manage these utilities is indefinite and unlimited in terms of the number of parameters read out from the devices.

Facts and figures LIGHTING MONITORING IN LUMEL S.A.

- power bills are lower by 18%
- monitoring of costs in many departments at the same time
- effective sector management of lighting
- a thorough analysis of the most costly places

18% of savings

COMPLEXITY OUR RANGE OF DEVICES AND SOFTWARE

We have a comprehensive offer of hardware and software to implement monitoring and control systems:
- devices to measure object signals (sensors, current transformers, shunts, transducers)
- devices for measurement and control such as meters, analyzers, controllers
- devices to ensure adequate communication (converters, I/O modules, hubs)
- our own software of Scada type to visualize, archive and process control

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tel. +48 68 45 75 145
e-mail: automatyka@lumel.com.pl

CHECK YOUR INSTRUMENTS AT OUR ***LABORATORY***

/ Checking should be carried out regularly in all places where precise measurments significantly influence human life and health. /

Our services for you

If you want to have a **GUARANTEE,** that your instruments work properly - **USE OUR LABORATORY**!
We provide services related to calibration of analogue and digital devices, including:

- 3-phase power network meters,
- multi-channel controllers and recorders,
- ammeters, voltmeters, wattmeters,
- multimeters,
- shunts and current transformers,
- temperature meters and sensors (thermoresistive, semiconductor, thermocouples),
- humidity meters and transducers.

The laboratory also performs tests of devises in the scope of:

- electromagnetic compatibility,
  - electromagnetic noise immunity according to EN 61000-6-2,
  - emission of electromagnetic interference according to EN 61000-6-4,
  - safety (including safety according to EN 61010-1)
- ambient and environmental conditions,
- vibrations and impacts (among others transport conditions),
- measurement accuracy.

We guarantee competitive prices and delivery dates!

We are looking forward to doing business with you and working together!

CHECK YOUR INSTRUMENTS AT OUR ***LABORATORY***

Electrical quantities

Temperature

Temperature and relative air humidity

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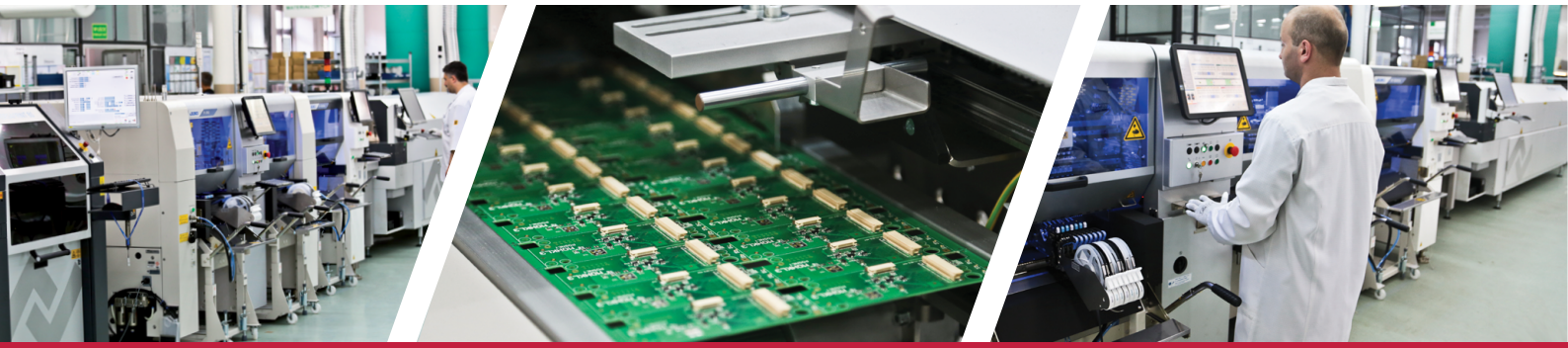
tel. +48 68 45 75 290
e-mail: **laboratorium@lumel.com.pl**

ELECTRONIC MANUFACTURING SERVICES

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.



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.

ELECTRONIC MANUFACTURING SERVICES

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

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LUMEL
EVERYTHING COUNTS

Since 1954 Lumel brand has been known as a producer of top quality measuring devices and high-pressure die-castings all over the world. Our high position in the market has been achieved thanks to continuous development policy, competence of our employees and modern technology in the areas of research, design and production. We deliver complex solutions for power and industrial automation sector as well as for automobile, chemical, steel or HVAC industries.

Our activitity is focused on the following business areas:

- Production of automation devices meant for measurement, control, registration, transmission and visualization of various industrial processes;
- Services of designing and manufacturing of automation systems;
- Electronic manufacturing services;
- Technical consulting services.

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 9001:2015 and ISO 14001:2015.

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