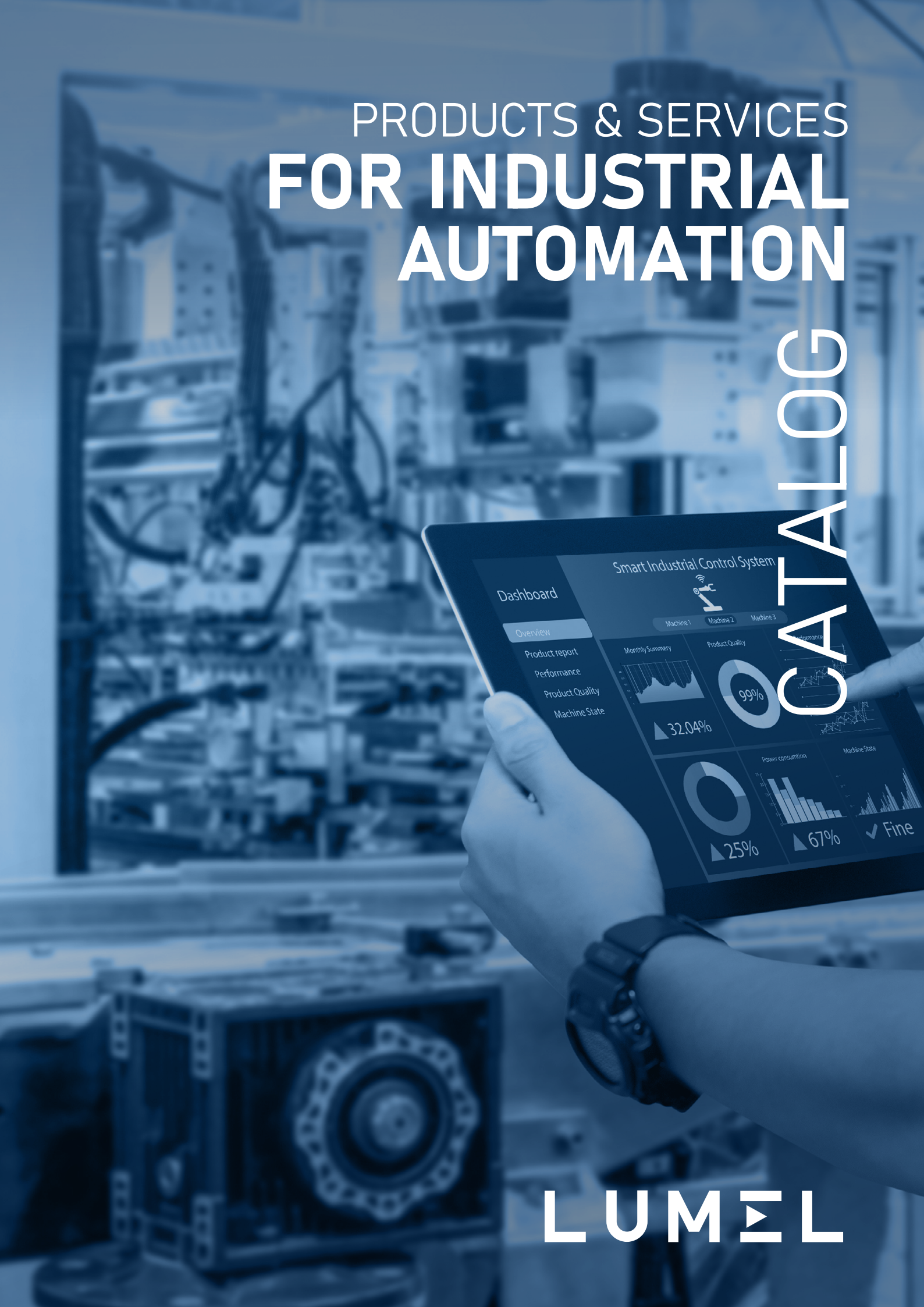
PRODUCTS & SERVICES

FOR INDUSTRIAL AUTOMATION

CATALOG



LUMEL

LUMEL

YOUR TRUSTED PARTNER IN INDUSTRIAL AUTOMATION

Since **1953**, LUMEL has been a globally recognized manufacturer of **high-quality industrial automation devices**.
Our expertise, innovation, and commitment to excellence have established us as a **leader in measurement, control, and monitoring solutions** for various industries.

In **2024**, LUMEL was honored with prestigious awards:

- **Forbes Diamonds,**
- **Business Gazelle,**
- **Most Innovative Company in the Lubusz Voivodeship**, Poland.

A PROUD MEMBER OF THE RISHABH CAPITAL GROUP

LUMEL is a member of the **Rishabh Capital Group**, which includes:

- **Rishabh Instruments Pvt. Ltd**. | India
- **LUMEL S.A.** | Poland
- **LUMEL ALUCAST Sp. z o.o.** | Poland
- **Shanghai VA Instrument Co. Ltd.** | China
- **Sifam Tinsley US** | USA
- **Sifam Tinsley UK** | United Kingdom
- **Microsys, spol. s r.o** | Czech Republic

RISHABH
GROUP OF COMPANIES

RISHABH LUMEL LUMEL ALUCAST
sifam tinsley PRECISION INSTRUMENTATION V&A INSTRUMENT MICROSYS computers automation

INNOVATIVE SOLUTIONS FOR INDUSTRIAL APPLICATIONS

LUMEL offers a comprehensive range of **low-voltage** and **medium-voltage** products:

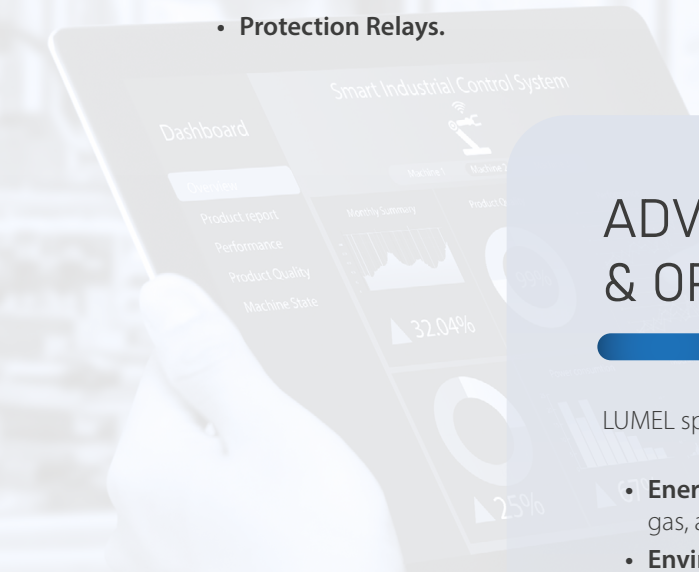
Low Voltage Solutions:

- **Network Parameter Meters & Analyzers,**
- **Electrical & Non-Electrical Quantity Transducers,**
- **Digital Meters,**
- **Recorders & Data Loggers,**
- **Controllers,**
- **Analog Meters,**
- **Current Transformers,**
- **Shunts.**

Our products support a variety of **data communication protocols** (MODBUS, ETHERNET, PROFINET, BACNET, MQTT), ensuring **seamless integration** with industrial automation systems.

Medium Voltage Solutions:

- **Protection Relays.**



ADVANCED MONITORING & OPTIMIZATION SYSTEMS

LUMEL specializes in **comprehensive monitoring** solutions for:

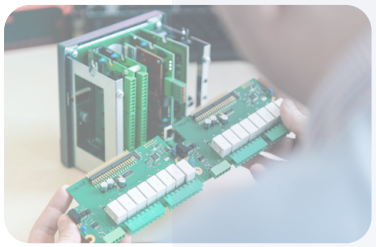
- **Energy & Utility Management – Optimizing** electricity, water, gas, and compressed air consumption.
- **Environmental Monitoring – Measuring** temperature, humidity, light intensity, CO_2, and volatile gases.
- **Solar Energy Management** – **Enhancing efficiency** in renewable energy applications.

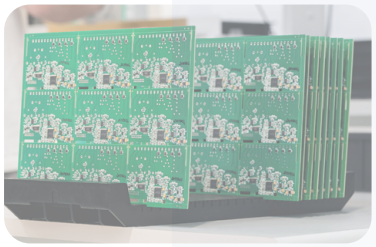
COMPREHENSIVE SERVICES OEM, EMS, ODM & MORE

Beyond our extensive product portfolio, **LUMEL offers a full range of services** under one roof, including:

- **OEM Services – Custom product development** in electronics, mechanics, hardware, and software.
- **EMS Services – High-quality electronic manufacturing** solutions.
- **ODM Services – Tailor-made product design and production**.
- **Photovoltaic Design & Implementation – Comprehensive solutions** for solar energy projects.
- **Laboratory Services – Accredited testing and certification** for electronics and automation components.

With **decades of experience**, cutting-edge technology, and a strong commitment to **innovation**, **LUMEL** remains a **trusted global partner** in industrial automation.





COMMITMENT TO QUALITY AND COMPLIANCE

At Lumel S.A., we are dedicated to meeting and exceeding customer expectations by continuously improving our quality management system.

This commitment extends across all levels of our operations - from understanding customer needs and optimizing production processes to ensuring customer satisfaction through rigorous research and feedback

To guarantee the highest standards of quality, we:

- Maintain strict supervision over our production processes,
- Focus on the continuous improvement of key parameters,
- Source materials exclusively from suppliers who meet the highest global standards.

We operate in full compliance with internationally recognized standards:

- **ISO 9001:2015**
  Quality Management System,
- **ISO 14001:2015**
  Environmental Management System,
- **IATF 16949:2016**
  Automotive Quality Management.

Additionally, we fully adhere to the **RoHS II (2011/65/EU)** and **RoHS III (2015/863/EU)** Directives, ensuring the restriction of hazardous substances in our products.

Our products comply with all **electromagnetic compatibility (EMC) and safety regulations**, guaranteeing reliability and performance.

Excellence, sustainability, and compliance –
these are the pillars of our production philosophy.

DISCOVER
THE ELECTRONIC WORLD OF LUMEL

CONTENTS

CONTENTS

PRODUCT CONFIGURATOR

EASILY AND CONVENIENTLY CONFIGURE PRODUCTS FROM OUR RANGE WITH OUR INTUITIVE CONFIGURATOR.

Scan the code or enter it in the search bar:
https://www.lumel.com.pl/en/configurator

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PRODUCT CONFIGURATOR

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OPTIMIZE ENERGY COSTS & ENHANCE PRODUCTION EFFICIENCY

If you're looking for ways to **reduce energy costs** while **improving production efficiency**, we've got the right solutions for you!

Our systems will help you:

Continuously monitor and optimize power usage:

- Prevent **penalties** for exceeding ordered power levels.
- Adjust **ordered power** based on actual demand, avoiding unnecessary costs.
- **Flatten peak loads** by optimizing the operation of energy-intensive devices.

Enhance energy monitoring & cost analysis:

- Track **energy consumption at the machine/line level** to estimate production costs more accurately.
- Analyze **utility costs** for producing specific materials.
- Identify the **most energy-intensive equipment** in your plant.
- Monitor machine **load distribution across shifts**.

Ensure power quality & reliability:

- Detect **voltage dips and electrical disturbances** to prevent unexpected downtimes.
- Allocate energy costs **by department, hall, or production unit**.
- Automatically **alert maintenance teams** in case of failures.
- Manage energy consumption during **emergency conditions**, such as power reduction requests due to grid overload.

Expand Your Monitoring Capabilities

In addition to energy optimization, our systems can be extended to:

- **Monitor switchgear temperature** for enhanced plant safety.
- **Detect compressed air leaks**, a common hidden energy cost.
- Track other utilities like **water, gas, and heat.**
- Measure **environmental parameters** (temperature, humidity, CO_2, VOCs, light levels) for improved workplace conditions.
- Monitor **production output** to boost productivity.

Let us help you take control of your energy management - efficient, cost-effective, and tailored to your needs!

OPTIMIZATION OF ENERGY COSTS

METERS AND ANALYZERS OF POWER NETWORK PARAMETERS

		N43	NR30	ND30	ND31LITE	ND31	ND31PLUS
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	- / -	✔ **63** (NR30IoT) ✔ **51** (NR30PNET, NR30BAC) / -	✔ **63** (ND30IoT) ✔ **51** (ND30PNET, ND30BAC) / -	✔ **63** / -	✔ **63** / -	✔ **63** / -
	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	-	-	-	-	-	-
	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/ 100 V 230/ 400 V or 110/190 V 400/690 V	1 A / 5 A 57.7/ 100 V 230/ 400 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	-	2 x Pt100	
Outputs		3 x relay 1 x pulse	2 x relay	1 x 0/4...20 mA (option) 2 x relay	2 x relay	1 x 0/4...20 mA 2 x relay	
Interface		RS-485 Modbus Slave	RS-485 Modbus Slave **Ethernet** 10/100 Base-T NR30PNET: **Profinet** NR30IoT: **MQTT** NR30BAC: **BACnet IP**	RS-485 Modbus Slave **Ethernet** 10/100 Base-T ND30PNET: **Profinet** ND30IoT: **MQTT** ND30BAC: **BACnet IP**	RS-485 Modbus Slave	RS-485 Modbus Slave **Ethernet** 10/100 Base-T Modbus TCP **MQTT** **BACnet IP** www,FTP, SNTP	RS-485 Modbus Slave **Ethernet Daisy Chain 2x RJ45** **Ethernet** 10/100 Base-T Modbus TCP **MQTT** **BACnet IP** www,FTP, SNTP
Display		LCD 4 x 3 digits + 1 x 7 digits	LCD 20 characters x 4 rows	3.5" colour TFT LCD 320x240 pixel			3.5" colour TFT LCD 640x480 pixel
Supply voltage		85...253 V a.c./90...300 V d.c. or 20...40 V a.c./20...60 V d.c.			85...253 V a.c. /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.	
Protection IP		IP50		IP65			
Ext.dimensions		105 x 110 x 60 mm		96 x 96 x 77 mm			
Programming		free eCon software (using miniUSB) or using buttons		free eCon software - using RS-485 or Ethernet (ND31, ND31PLUS) or using buttons			
Additional functions		• connection with S4AO module (module of 4 analog outputs)		• display fully configurable by user (10 screens, 8 parameters in each), • additonal 2 screens with harmonic presentations & 1 screen with analog indication, • galvanic isolation between input,output, supply and interface			
				ND30IoT, ND30PNET: • temperature measure-ment: 2 x input Pt100	-	• temperature measurement: 2 x input Pt100	
		-	NR30IoT: • data archiving up to 32 parameters • supervisory relay	ND30IoT: • data archiving in the internal memory 8 GB • 2 x supervisory relay	-	• data archiving in the internal memory 8 GB • 2 x supervisory relay	

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

METERS AND ANALYZERS OF POWER NETWORK PARAMETERS

		N100	ND45	ND45PLUS
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	✔ 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/✔	✔ 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	1 A /5 A 57.7/100 V or 230/400 V
		pulse 0/12...36 V	2 x Pt100/Pt1000/5k Ω	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 **Ethernet** 10/100 Base-T Modbus TCP, www, FTP - option	RS-485 Modbus Slave, USB Device & Host **Ethernet** 10/100 Base-T Modbus TCP, www, FTP, NTP	
Display		LED 4 x 4½ 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...253 V a.c. /90...300 V d.c.	85...253 V a.c. /90...300 V d.c. or 24 V d.c.
Protection IP		IP40	IP54	
Ext.dimensions		144 x 144 x 77 mm	144 x 144 x 104 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 screens • 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 (only ND45PLUS) • dips and swells stored in registers • flicker	

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

OPTIMIZATION OF ENERGY COSTS

METERS AND ANALYZERS OF POWER NETWORK PARAMETERS






		N14	ND10	ND20LITE	ND20	ND20CT	ND25
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
	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 or 5 A 57.7/100 V or 230/400 V or 400/690 V	1 A or 5 A 57.7/100 V or 230/400 V or 290/500 V	1 A /5 A 57.7/100 V 69.3/120 V 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	**0.1 A and 0.25 A** 57.7/100 V or 230/400 V	1 A/ 5 A 57.5...346.42 V/ 100...600 V
Outputs		1 x relay 1 x pulse	2 x relays 1 x pulse	1 x relay 1 x pulse	1 x 0/4...20 mA 1 x relay 1 x pulse	1 x 0/4...20 mA (option) 1 x relay 1 x pulse	2 x relay (option)
Interface		RS-485 Modbus Slave	RS-485 Modbus Slave	RS-485 Modbus Slave	RS-485 Modbus Slave	RS-485 Modbus Slave	RS-485 Modbus Slave (option) or **Ethernet** Modbus TCP (option) or **BACnet IP** (option)
Display		LED 3 x 3 digits (14 mm)	3.5" LCD 3 x 4 digits (16 mm)	3.5" LCD 3 x 4 (11 mm) + 1 x 5 digits (9 mm)	3.5" LCD 3 x 4 (11 mm) + 1 x 5 digits (9 mm)	3.5" LCD 3 x 4 (11 mm) + 1 x 5 digits (9 mm)	3.5" LCD 4 x 4 digits + 1 x 9 digits
Supply voltage		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 measuring circuit	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...550 V a.c./d.c.
Protection IP		IP40	IP65	IP65	IP65	IP65	IP54
Ext.dimensions		96 x 96x 70.5 mm	96 x 96 x 77 mm	96 x 96 x 77 mm	96 x 96 x 77 mm	96 x 96 x 77 mm	96 x 96 x 70 mm
Programming		free eCon software (using RS-485) or using buttons	free eCon software (using RS-485) or using buttons	free eCon software (using RS-485) or using buttons	free eCon software (using RS-485) or using buttons	free eCon software (using RS-485) or using buttons	free eCon software
Additional functions		• galvanic isolation of current inputs	• galvanic isolation of current inputs	-	• memory of 9000 samples for mean power	• easy installation of meter and current transformer • **only to cooparation with dedicated current transformers L3XX and LJXX (see page 45)**	• up to 28 programmable screens • data archiving in the internal memory 8 MB
				• galvanic isolation of current inputs	• galvanic isolation of current inputs	• galvanic isolation of current inputs	

APLICATION

ND31
NR30IoT
MQTT (IIoT)
publish
MQTT broker
subscribe
subscribe
PROMOTIC

NR30PNET
PROFINET (PLC/PC)
PLC
PROMOTIC

ND31
NR30BAC
BACnet (BMS)
Energy Supply & Load Management
Energy Information Management
PROMOTIC

ND31
NR30
ETHERNET MODBUS TCP/IP
Web Server
Modbus TCP/IP
Modbus RTU
CSV
PROMOTIC

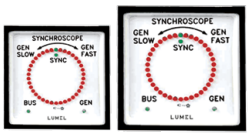
3 YEAR WARRANTY | EPLAN

ENERGY METER FOR DIN RAIL MOUNTING

	NMID30-1	NMID30-2	NR12	NR10PLUS	NR32	NR33
Input	1 A/ 5 A 3 x 230 / 400 V	10 (100)A 3 x 230/ 400 V	5(45)A 230 V	5 (100)A 230 V	1A / 5A 57.5...346.42 V/ 100...600 V	100 A 100...289 V / 173...500 V
					1/2 x binary - option	2 x binary
Output	• relay output • pulse output (OC type), 3200 imp/ kWh		• 1 x pulse	• 2 x pulse	• 2 x relay output (option) • 1/2 x pulse output (option)	• 2 x pulse
Interface	RS-485 Modbus RTU		RS-485 Modbus Slave			
Supply voltage	85...275 V a.c. 120...380 V d.c.	selfpowered	selfpowered	selfpowered	100...550 V a.c./d.c.	selfpowered
Display	3 x 4 digits		7 digits		3 x 4 digits	
Protection rating	IP51		IP51		IP54	
External dimensions	72 x 94.5 mm acc. to DIN 43880	76 x 100 mm acc. to DIN 43880	17.5 x 90 mm	35 x 90 mm	72 x 90 mm	
Additional functions	• 16 measured paramters • password protection • programmable averaging time of the Demand type		• two tariffs • password protection • programming using RS-485 or buttons		• two tariffs • up to 10 user-configurable screens • active energy measurement in 0.2s class	

SYNCHRONIZATION METERS

PF CONTROLLERS



	NS5	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 **Ethernet** 10/100 Base-T Modbus TCP, www - option	-	RS-485 Modbus - 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 mm (SA12)	96 x 96 x 51 mm (without extension modules) 96 x 96 x 75 mm (with extension modules) 144 x 144 x 56 mm
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

MV PROTECTION RELAY

	extCZIP ®-PRO	extCZIP ®-2R PRO	extCZIP ®-PV PRO
Description	Digital protection relay for MV switchgears with additional inputs and outputs and communication ports	Automatic transfer switch (ATS) for MV switchgears	Integrated MV/LV protection and control relay for EPV switchgears and other renewable energy sources
External dimensions : - flush-mounted version - wall-mounted version	283 x 190 x 153.5 mm 283 x 190 x 235 mm		
Weight	6 kg		
Protection rating	IP50		
Ambient temperature	-10...+55°C		
Storage temperature	-20°C ... +70°C		
Display	LCD TFT 7", 800x480, with colour touch panel		
Programmable diods	14 programmable LEDs		
Programmable logis	Yes (50 logics line)		
Binary inputs	28 or 56		
Binary outputs	20 or 40		
Error log	Yes		
Event log	Yes		
Communications ports	USB, 2 x RS-485, Ethernet 10/100, BASE-TX, fibre optic (option), CAN-BUS/RS-485(option)		USB, 2 x RS-485, Ethernet 10/100 BASE-TX, fibre optic (option)
Protocolls	DNP 3.0, IEC 60870-5-103 and 104, IEC 61850, Modbus ASCII/RTU, PPM2 protocol on CAN-BUS/RS-485 port		DNP 3.0, IEC 60870-5-103 and IEC 60870-5-104, IEC 61850, Modbus ASCII/RTU
POWER			
Rated supply voltage	24 V DC, 110 - 230 V AC/DC		
Power consumption	< 20 W		
PHASE CURRENT INPUT CIRCUITS			
Rated current I_n	5 A or 1 A	-	5 A or 1 A
Measurement range	0...200 A	-	0...200 A
Measurement error in measurement range	0.05 A ...0.35 A < 10% 0.35 A ... 50 A < 1.5 % 50 A...200 A <10%	-	0.05 A ...0.35 A < 10% 0.35 A ... 50 A < 1.5 % 50 A...200 A <10%
Rated frequency f_n	50 Hz	-	50 Hz
Power consumption at $I=I_n$	< 0.5 VA	-	< 0.5 VA
PHASE VOLTAGE INPUT CIRCUITS			
Rated voltage U_n	100 V		
Measurement range	0...130 V		
Measurement error in measurement range	< 1.5%		
Rated frequency f_n	50 Hz		
Power consumption at $U= U_n$	< 0.4 VA		
ZERO SEQUENCE CURRENT INPUT CIRCUITS			
Rated current I_{0n}	0.5 A	-	0.5 A
Measurement range	0...5 A	-	0...5 A
Measurement error	3 A...0.02 A < 10% 0.02 A ... 3.5 A < 1.5% 3.5 A... 5 A <10%	-	3 A...0.02 A < 10% 0.02 A ... 3.5 A < 1.5% 3.5 A... 5 A <10%
Rated frequency f_n	50 Hz	-	50 Hz
Power consumption at $I= I_{0n}$	< 0.1 VA	-	< 0.1 VA

	extCZIP ®-PRO	extCZIP ®-2R PRO	extCZIP ®-PV PRO
ENERGIZING INPUTS (ZERO SEQUENCE VOLTAGE INPUT CIRCUITS)			
Rated voltage U_{0n}	100 V		
Measurement range	0...130 V		
Measurement error in measurement range	< 1.5%		
Rated frequency f_n	50 Hz		
Power consumption at U= U_{0n}	< 0.4 VA		
BINARY INPUTS			
Rated input volatge	24 V 220 V		
Input voltage range	17...32 V 88....253 V		
Current consumption	< 0.25 mA < 3 mA		
BINARY OUPUTS			
Rated voltage	220 V		
Continous current-carrying capacity	5 A		
Inductive circuit opening • 220 V DC, L/R = 40 ms • 220 V AC, cos f = 0.4	0.1 A 2 A		
POWER OUTPUT RELAY			
Rated voltage	220 V	-	220 V
Continous current-carrying capacity	8 A	-	8 A
Inductive circuit opening: 220 V DC, L/R = 40 ms	1.2 A/300 cycles	-	1.2 A/300 cycles
Time - switching of impulse	min 0.1 s	-	min 0.1 s
Time - switching on impulse	0.2 ...1 s	-	0.2 ...1 s
Software	CZIP-Set	-	CZIP-Set
Intended use	Preconfigured settings and configurations including protections, measurements, control, recording and communication for all types of MV switchgear bay in the same housing: L feeder bay E feeder bay with local power station (including wind farm) Z incoming bay T MV side of the 110 kV/MV transformer C capacitor bay K grounding transformer in compensated network P grounding transformer in network with neutral earthing resistor X grounding transformer in network with choke/ resistor parallel system U voltage measurement bay S bus coupler bay H 110 kV side of the 110 kV MV transformer	2R automatic transfer switch (ATS) without recovery cycles 2R1T automatic transfer switch (ATS) without recovery cycles with one power transformer 2R mini automatic transfer switch (ATS) recovery cycles and two incoming lines 2R3H automatic transfer switch (ATS) with recovery cycles and three incoming lines	PV service line MV/LV protection for PV farms (including applications specified for extCZIP-PRO)
Unique protections and functionality	Under-impedance protection against phase-to-phase short-circuits. Sensitive, adaptive protection for high resistance earth fault (up to 8 kΩ). Selective earth fault protection for grounding transformer bays.	-	Under-impedance protection against phase-to-phase short-circuits.

► extCZIP®-PRO

► extCZIP®-2R-PRO

► extCZIP®-PV-PRO

PROCESS VISUALIZATION SOFTWARE

PROMOTIC SOFTWARE

Promotic is a modern SCADA program for building both small and very large automation systems. It enables the visualization, analysis and archiving of industrial processes.

Program basic features:

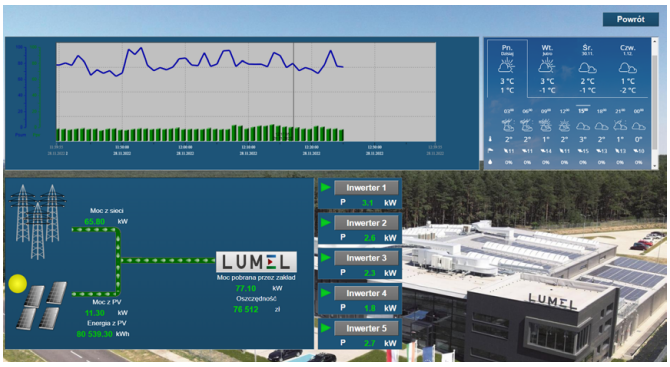
- an extensive library of communication protocols allows to communicate with the devices of the best-known automation manufacturers,
- support of the most popular databases - (dBase, MS SQL Server, MySQL, Oracle and others),
- web server with full functionality for PCs and mobile devices,
- extensive library of static and dynamic graphic components,
- possibility to design large systems,
- sending alarm e-mails and text messages,
- creating logic and additional functionalities in JavaScript,
- open program with and expansion possibilities.

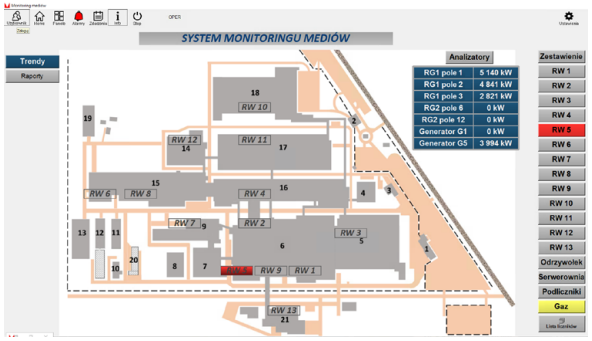
Examples of application areas:

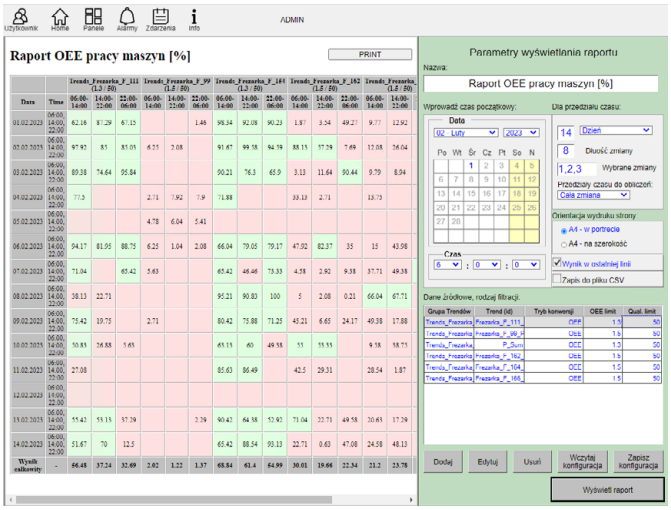
- measurement and regulation of energy consumption and other utilities (electricity, heat, gas, water ...),
- processes related to food processing (breweries, dairies, sugar factories, mills,
- ecology (emission monitoring, wastewater treatment plants, dust removal, ...),
- telemetry and control systems (water treatment plants, gas plants, mines, heat distribution networks,
- heat management (heat exchange stations, boiler rooms, ...)
- other applications matching customer needs.

Unlimited license is with free upgrades for 10 years!

PROMOTIC

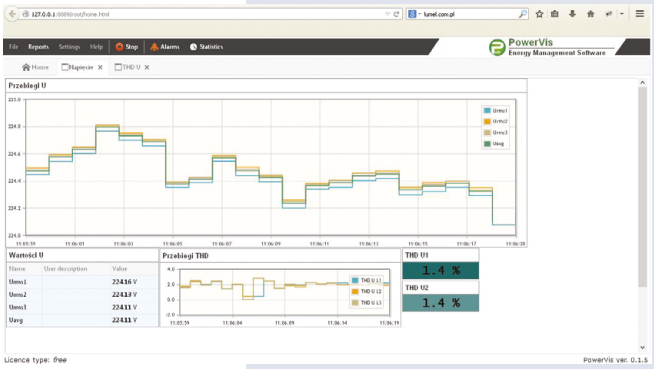


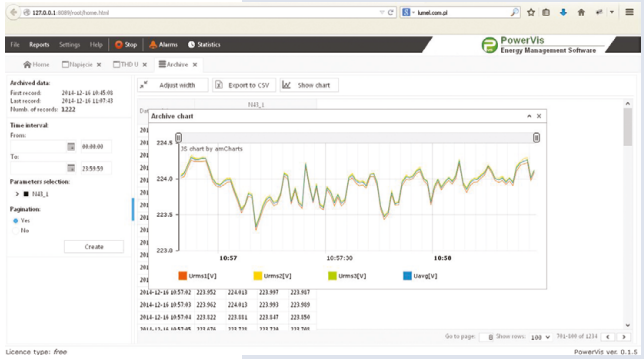


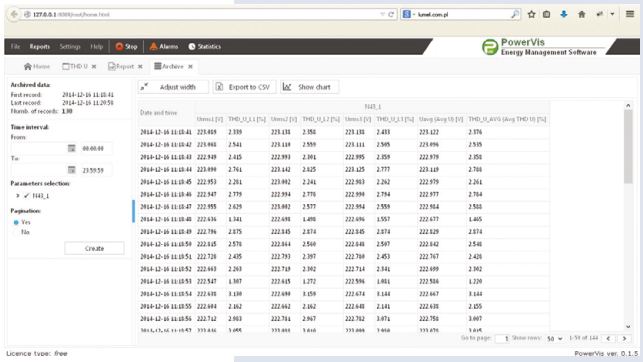


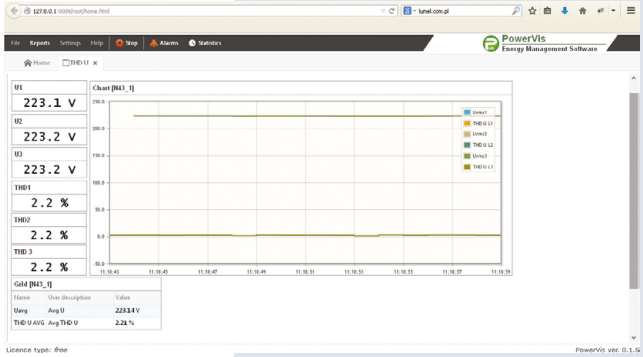
POWERVIS SOFTWARE (OP40)

Works with Lumel power network meters and meters
from other companies equipped with the Modbus TCP / IP protocol









- 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 PV BUSINESS
PHOTOVOLTAIC SYSTEMS

In these times of depleting fossil fuels and energy crunch, it's hard not to look at more sustainable and responsible sources of energy. Lumel being a electronic automation company does it all to make sure our customers save energy and the environment is taken care of.

We strongly believe in what we create therefore our industries are equipped with 1.5 MWp of LUMEL PV installations, this is our way of contributing towards a more safe and sustainable future for our next generation. We would like to encourage others to do the same, we offer small residential installation packages to humongous Industrial installations.

TO YOUR PART. JOIN THE MOVEMENT.
ORDER YOUR INSTALLATION TODAY.

GO GREEN WITH LUMEL.

Our Offer includes:

- Solutions from 5kW to 5 MW,
- Comprehensive „turnkey" solutions (design, installation, configuration of devices, training, preparation of documents for the Distribution Network Operator,
- Design and delivery of system components to the construction site (without assembly),
- Sale of inverters and photovoltaic panels.

PVSA

Photovoltaic string inverter

10 YEARS WARRANTY

- Designed for use in photovoltaic installations connected to the grid (On-grid).
- Available in power classes from 10 to 50kW.
- 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.

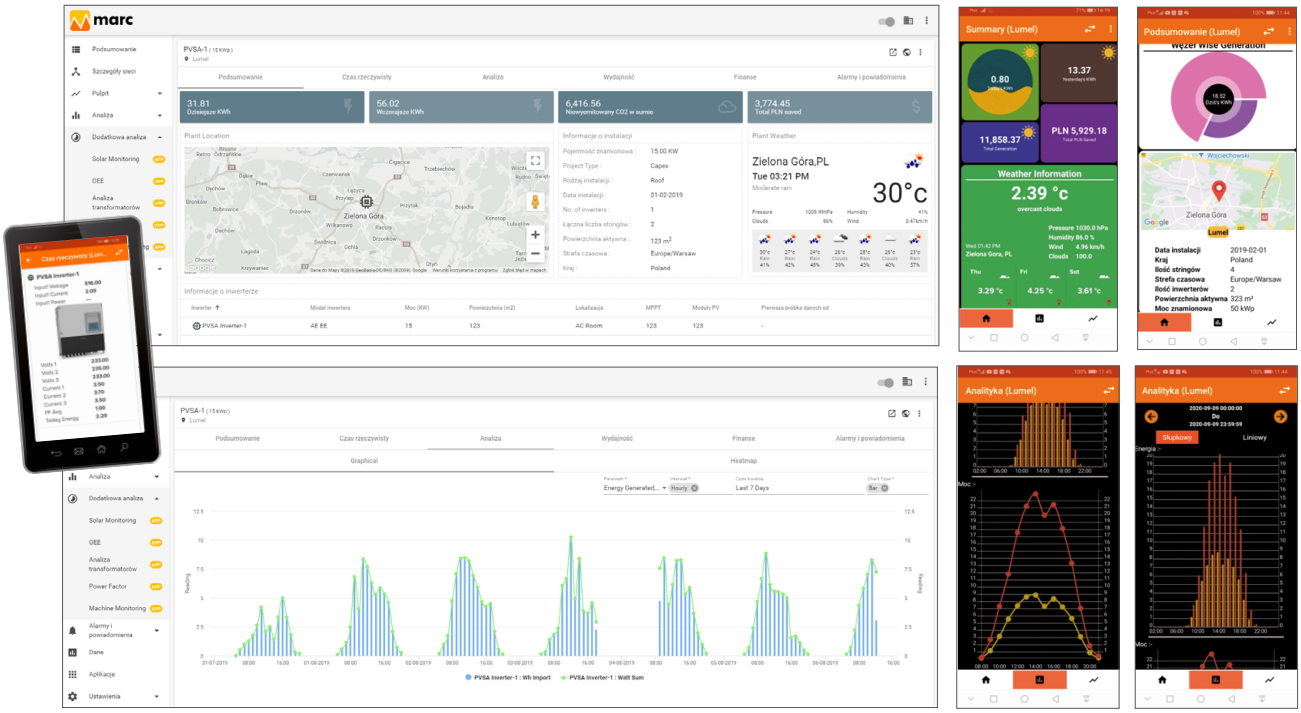
ON-GRID

10kW 15kW 20kW

25kW 34kW 50kW

RS-485 Ethernet* GSM*

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



VISUALIZATION OF THE INVERTER OPERATION IN MARC CLOUD

PHOTOVOLTAIC STRING INVERTERS

NEO

Photovoltaic string inverter

10 YEARS WARRANTY

- LUMEL presents the new range of PV inverters. The NEO range of inverters conforms to the most advanced international standards and **meets the requirements of the industrial and civil solar plant installations**.

- **The higer energy yields, long term reliability, plant monitoring and high level professional service** are the cornerstones of our range of inverters.

Available Inverter Power Ratings:
3 kW 4 kW 5 kW 6 kW 8 kW 10 kW 12 kW 15 kW 20 kW

Key Electrical Parameters

- **Maximum DC input voltage**: up to **1100V**, ensuring broad compatibility with modern photovoltaic modules.
- **DC-side generator oversizing capability**: up to **150%**, allowing greater system design flexibility and maximizing energy yield.
- **MPPT voltage range per tracke**r: **175V to 950V**, optimizing performance for various PV string configurations.
- **High conversion efficiency: European efficiency up to 98%**, minimizing losses and maximizing solar system output.

Advanced Electrical Protection Features

- **Intelligent fault detection** in PV circuits, enhancing safety and enabling faster diagnostics.
- **Built-in DC fuses** on both poles of the PV strings for short-circuit protection.
- **Integrated DC load-break switch**, ensuring safe disconnection of the inverter from the power source.
- **Automatic recording of operational parameters and system events**, supporting maintenance and diagnostics.
- **Comprehensive protection** against **current overloads, overheating, reverse DC polarity, AC/DC overvoltage**, ensuring stable and secure operation under all conditions.

Compact Design & Ergonomic Dimensions

- **Housing dimensions:** 496 mm x 542 mm x 242 mm – a compact design that simplifies installation in both residential and commercial applications.
- **Lightweight construction** for easy transport and installation:
  Models up to 6 kW: 20 kg
  Models from 8 kW to 12 kW: 26 kg
  Models from 15 kW to 20 kW: 30 kg

Advanced Communication Interfaces

- **RS-485** – reliable and stable data transmission for monitoring systems.
- **WiFi** – wireless access for real-time inverter performance monitoring.
- **Ethernet** – fast and stable wired connection, ideal for commercial applications.
- **USB port** – quick and convenient storage of operational data and system performance reports.

ON-GRID

3kW 4kW 5kW 6kW 8kW
10kW 12kW 15kW 20kW
RS-485 Ethernet WiFi USB port

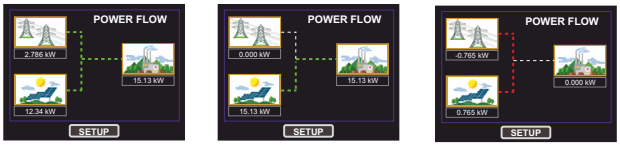
150% DC OVERLADING	1100V SYSTEM VOLATGE	UP TO 98.5% HIGHER YIELD	IP66 INDOOR & OUTDOOR INSTALLATION
≤50°C FULL POWER WITHOUT DERATING	INTUITIVE NEW USER INTERFACE	TYPE II SURGE PROTECION DEVICES	INTEGRATED DATALOGGER FOR FAULT ANALYSIS

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.

*ext*CZIP®- PV PRO

Integrated protection and control relay for photovoltaic power plants switchgears and other renewable energy sources

- extCZIP®-PV PRO relay is designed for switchgear at the connection points of **renewable energy sources**, in particular photovoltaic power plants to MV and LV distribution networks, as well as for the micro-installations.
- It performs voltage and current measurements on both the MV and LV sides.
- It enables measurement using low-power measurement transformers (CR/CRR).
- It ensures compatibility with a three-winding transformer, implementing two measurement paths on the LV side.
- It **meets all the requirements** for power system protection in photovoltaic power plants.
- It **includes underimpedance protection** against phase-to-phase faults, which enables the short-circuit detection regardless of the short-circuit current values, making the protection reach independent of the fault type.
- **CZIP®-Set utility software** to support all CZIP® system devices, including extCZIP®-PV PRO.

DIGITAL METERS

	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	3 x 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 PD24 programmer)		-	free eCon software (using PD24 programmer - N20, N20Z or through RS-485 - N20PLUS, N20HPLUS and N20ZPLUS using PD20)					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**		

DIGITAL METERS




	N30U	N30H	N30o	N30P
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
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)			
Interface	RS-485 Modbus Slave - option			
Display	3-colour programmable LED 5 digits (14 mm)			
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.	
Protection rating	IP65			
External dimensions	96 x 48 x 93 mm			
Programming	free eCon software (using RS-485) or using 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).

NEW





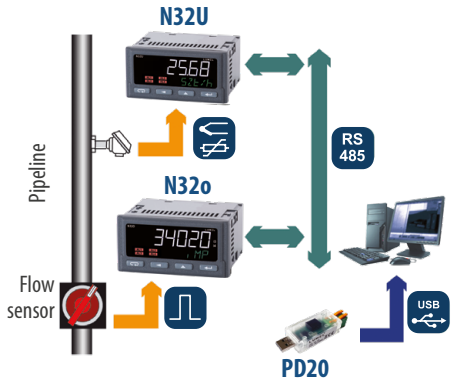

	N31U	N32U	N32o	N32H	N32P	N27P
Input	programmable Pt100/1000 J, K, N, E, R, S ± 20 mA, 4...20 mA ± 10 V ± 60, 150, 300 mV 400, 4000 Ω	programmable Pt100/500/1000 J, K, N, E, R, S ± 20 mA, 4...20 mA ± 10 V ± 60, 150, 300 mV 400, 4000 Ω	programmable 2 x pulse input (pulses, frequency, rotational speed, period, operating time counter, encoder)	programmable current from the shunt ± 75...1500 mV d.c. voltage ± 50... 600 V d.c. measurement of d.c. circuit parameters	programmable 1/5 A a.c. 100/230/400 V a.c. 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	1 x relay output (NO) 1 x supplying output 24 V d.c.	1 x NO contact 3 x relays with changeover contact - option 1 x analog 0/4...20 mA or 0...10 V - option 1 x OC output (only in N32P, N32H) 1 x supplying output 24 V d.c. 30 mA (only in N32U, N32o)				2 relays (2 NO) or 1 x relay (NO) + 1 x output 0/4...20 mA
Interface	RS-485 Modbus Slave					
Display	high contrast LCD with backlight and programmable measuring unit row 1: 6-digit; digits height 12.85 mm row 2: 5-digit; digits height 7.5 mm					OLED 0.96" yellow
Supply voltage	40...253 V a.c., 20...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.				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	• second row of the display - displaying the unit, time or other measured value • conversion of any measured value into an analog signal • memory of min. and max. for measured values • advanced functions of averaging measured quantities • 32-point individual characteristic (not applicable to N32H and N32P)					• Password protection • Programmable current and voltage transformer ratio
	wide supply voltage range	-	-	-	-	

DIGITAL METERS

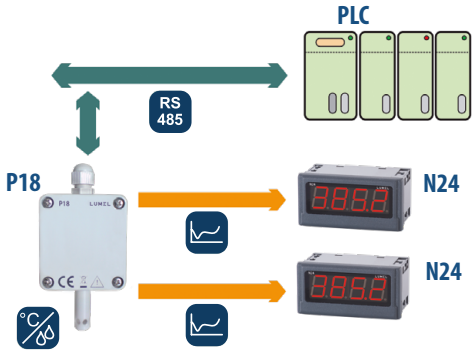
	NA5PLUS	NA6PLUS
Input	programmable Pt100/500/1000, J, K, N, E, R, S, T ± 40 mA d.c., ± 5 A d.c., ± 75 mV d.c., ± 300 mV d.c., ±10 V d.c., ±0...600 V d.c., 0...5 kΩ	
Output	4 x relay or 8 x OC (option); 1 x analog (option)	
Interface	RS-485 Modbus Slave	
Bargraph	3- or 7-colour programmable vertical	2 x 3- or 2 x 7-colour programmable vertical
Display	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	IP50	
External dimensions	48 x 144 x 100 mm	
Programming	free eCon software (using RS-485) or using buttons	
Additional functions	• 21-point rescaling (NA5PLUS and NA6PLUS) parameters • arithmetical functions x^2, $\sqrt{x}$, (+, -, *, / - only in NA6PLUS) • logging of the measured signal in programmed time intervals (800 samples)	• memory of minimal and maximal values for all measured • password protection • conversion of any measured value into a current or voltage analog signal

APLICATION

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

TRANSDUCERS, SEPARATORS

BASIC TRANSDUCERS










	P10	P10Z	P20	P20Z	T22CT	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/ 200/250/ 300/400/ 500/600/ 750 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		0...20 mA or 4...20 mA	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				IP20	IP65	IP40			IP50
External dimensions	22.5 x 65.5 x 106.5 mm		22.5 x 120 x 100 mm		70x92x44 mm (up to 300 A) or 90x115x58 mm (150 - 750 A)	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 PD24 programmer)	-	hole diameter: 28 mm or 31 mm	hole diameter: 28 mm busbar: 30 x 10 mm	free eCon software (using PD24 programmer)		-	-

SEPARATORS


ADVANCED TRANSDUCERS


basic version


version with SD/ SDHC card


version with Ethernet & internal memory

	P20G	P17G	P30U	P300	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 ± 150 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...20 mA	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 PD24 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 P300)		• memory of min. and max. values	

TRANSDUCERS, SEPARATORS

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
Additional functions	• memory for selected measured value – 9 000 samples • memory of minimal and maximal values • programmable current and voltage transformer ratios	• alarms indicated on the display • internal memory 534336 samples • programmable current and voltage transformer ratios • WWW server, FTP, Modbus TCP/IP Slave (optionally) • data logging in internal memory or on SD card (optionally)	• memory for average power – 9 000 samples • memory of minimal and maximal values • programmable current and voltage transformer ratios • pulse output

P18 AND P19 TEMPERATURE AND HUMIDITY TRANSDUCERS



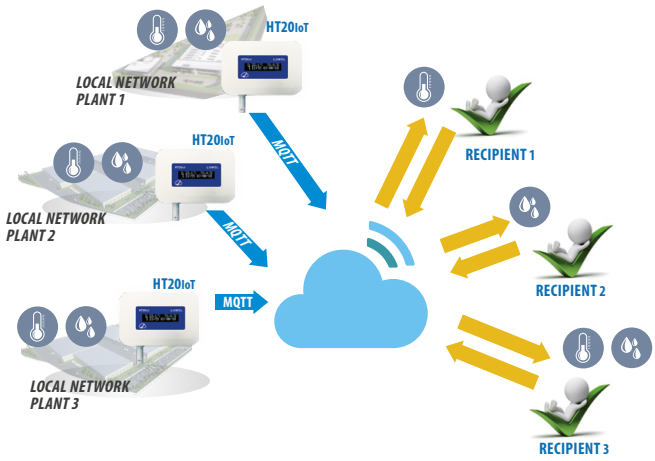

	P18L	P18	P18D	P18S
Measurement range	-30 ... -20 ... 60 ... 85°C or 0...100% RH	-30 ... -20 ... 60 ... 85°C, 0...100% RH		
Output	passive 4...20 mA	2 x 4...20 mA or 0...10 V (option)		-
Interface	-	RS-485 Modbus		
Galvanic isolation	-	supply/ RS-485 (for version without analog outputs)		supply/ RS-485
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
Protection rating	IP65			
External dimensions	38 x 58 x 118 mm			(sensor case) 86 x 12.5 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	-

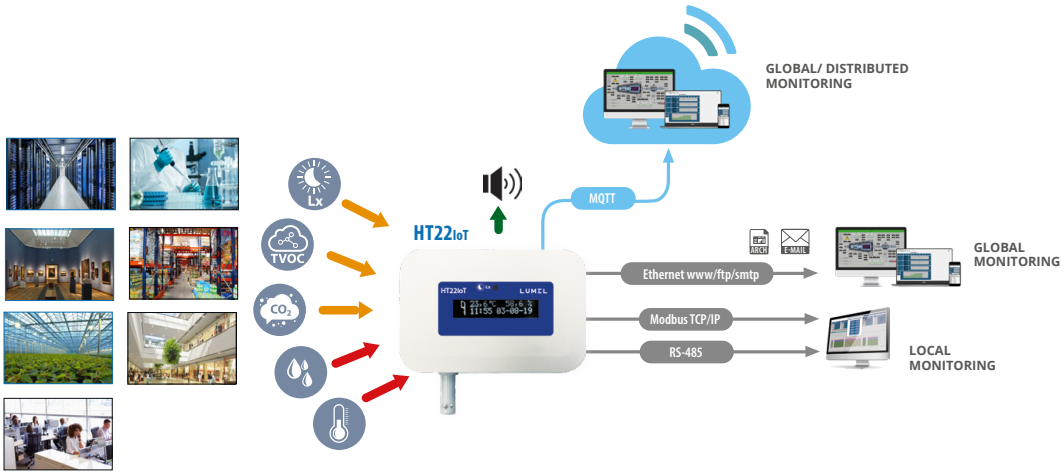
MONITORS & DATA LOGGERS FOR MEASUREMENTS OF ENVIRONMENTAL PARAMETERS

HUMIDITY & TEMPERATURE MONITOR

ENVIRONMENTAL PARAMETERS DATA LOGGER

	HT20	HT20IoT	HT22IoT
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 organic compounds - TVOC, CO_2 concentration)
Input	built-in temperature and humidity sensor		built-in temperature and humidity sensor, illuminance, TVOC, CO_2 concentration sensor
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)		
	HT20IoT: **MQTT**		**MQTT**
Memory	internal - 8GB		
Display	LCD, 2 x 16 characters		
Supply voltage	6 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 • acoustic signaling of alarm events





APLICATION

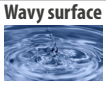
ULTRASONIC LEVEL METER & SENSOR

ULTRASONIC LEVEL METER

ULTRASONIC LEVEL SENSOR

	ULT20	ULS10
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 whichthe ultrasonic wave is reflected. Typical damping for a given environment (reflective medium) is summarized in the table next.	10 m or 15 m
Measurement resolution	0.001 m	0.001 m
Output	1x analog 0/4...20 mA 1 x relay (2 NO outputs) 1 x pulse	1 x analog 4...20 mA
Interface	RS-485 Modbus Slave USB Device, v.2.0.	RS-485 Modbus Slave
Supply voltage	12...24...40 V d.c.	24 V d.c./ 300 mA
Protection rating	IP65	IP66 or IP68
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	-

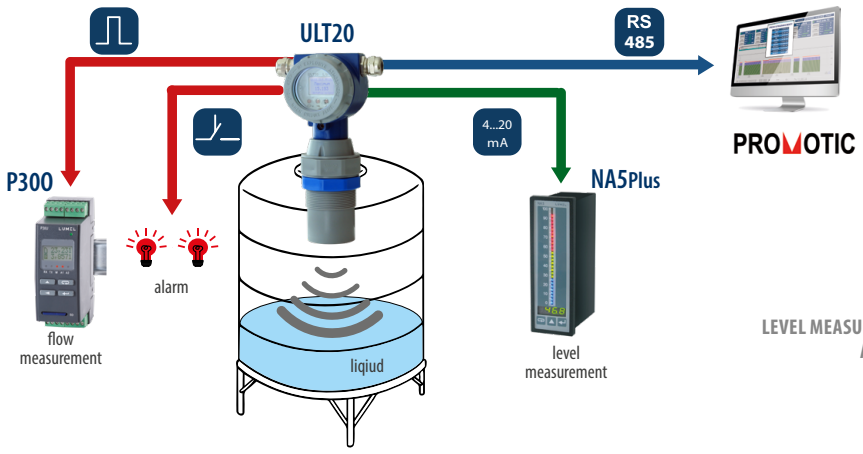
Typical damping for a given environment (reflective medium)

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

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

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

APLICATION



LEVEL MEASUREMENT WITH VISUALISATION AND RECORDING.

INDUSTRIAL PROCESS CONTROLLERS

NEW








	RE11	RE12S	RE22	RE71	RE81	RE72	RE82	RE92
Number of channels	1	1	1	1	1	1	1	2
Input	progammable Pt100, J, T, K, S, R	progammable Pt100 J, K, T, R, S, C, E, B, N, L, U, W, Platinel II, -5..56mV, 0..10V, 0..20mA	progammable Pt100/1000 J, T, K, S, R, B, E, N, L or 0/4...20 mA, 0...5/10 V	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	1 x relay/ logic 0/12 V 1 x relay	3 x relay 1 x SSR relay 1 x analog 0/4...20mA	relay or logic 0/5 V	relays or logic 0/6 V	2 x relays or 1 x relay + 1 x logic 0/6 V	2 or 3 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 RTU	-	-		RS-485 Modbus		**2 x RS-485 (Modbus Slave & Master)**, **Ethernet** - option
Alarm	1	max. 3	-	-	1	max. 2	max. 3	max. 6
Control	on/ off or PID with self-tuning, heating or cooling							
	-	step-by-step	-	-	step-by-step			
	-	programmed	-	-	-	programmed		
Display	white and green LED 4+4 digits (15.3 mm / 8 mm)		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	85...270 V a.c./d.c.		230 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	IP50	IP65	IP65					
External dimensions	52 x 52 x 76 mm		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 91 mm
Programming	-	using buttons or RS-485	usign buttons	usign buttons or free eCon software (using PD24 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 • 6 alarm types • profile control (8 programs with 16 segments in each)	• 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)

TEMPERATURE CONTROLLERS & LIMITERS

INDUSTRIAL PROCESS CONTROLLERS

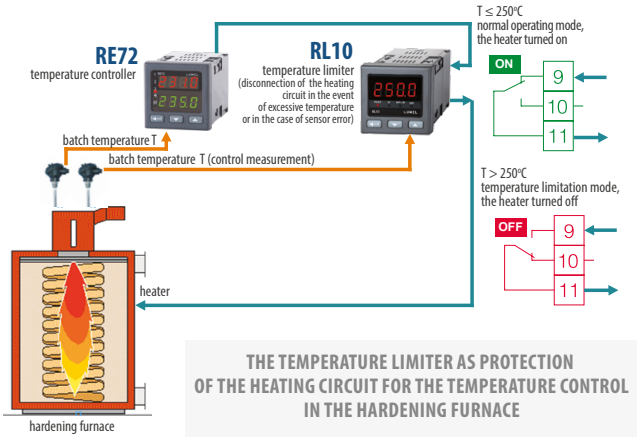
TEMPERATURE LIMITER



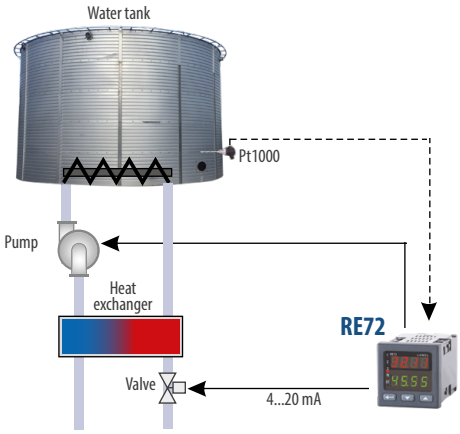


	RE55	RE60	RE62	RE01	RL10
Number of channels	1	1	1	1	1
Input	fixed Pt100 J, K, S		programmable Pt100 J, K ± 20 mA, ± 10 V, ± 60 mV	fixed Pt100, Pt1000 NTC	programmable Pt100/1000 J, T, K, S, R, B, N
Additional input	-		-	logic	-
Output	2 x relay or 1 x logic 0/5 V + 1 x relay	1 x relay or 1 x logic 0/5 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 PD24 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)

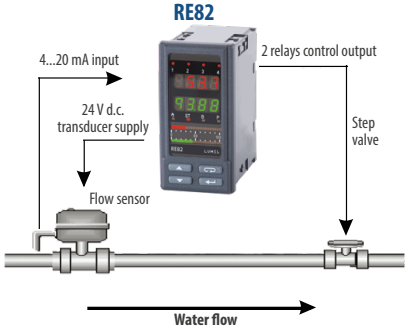
APLICATIONS



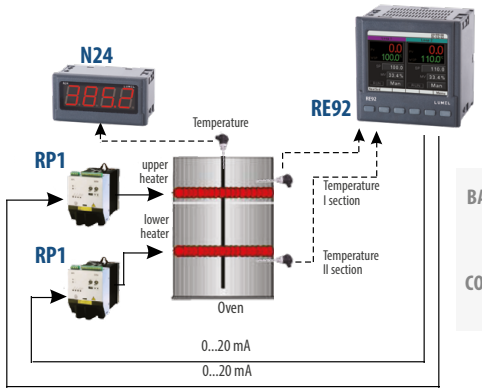
THE TEMPERATURE LIMITER AS PROTECTION OF THE HEATING CIRCUIT FOR THE TEMPERATURE CONTROL IN THE HARDENING FURNACE



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

CONTROLLER FOR INJECTION MOULDS

SYSTEM FOR INJECTION MOULDS WITH HEATED CHANNELS

	SR11
Number of channels	1...8
Input	fixed Fe-CuNi (J) logic 24 V d.c.
Output	1 output per control zone (15 A)
Control	Fuzzy Logic, PID with self-tuning
Interface	RS-485 with Modbus protocol (option)
Display	LED 14 mm 2 x 3 digits
Supply voltage	230 V a.c. (for system with 1 control zone) 3 x 230/ 400 V a.c. (for system with 2...8 control zones)
Protection rating	IP30
External dimensions	77.5 x 200 x 355 mm (1 control zone) 215 x 197 x 355 mm (2 or 3 control zones) 365 x 197 x 355 mm (4, 5 or 6 control zones) 465 x 197 x 355 mm (7 or 8 control zones)
Additional functions	• Fuzzy Logic algorithm 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.

POWER CONTROLLERS

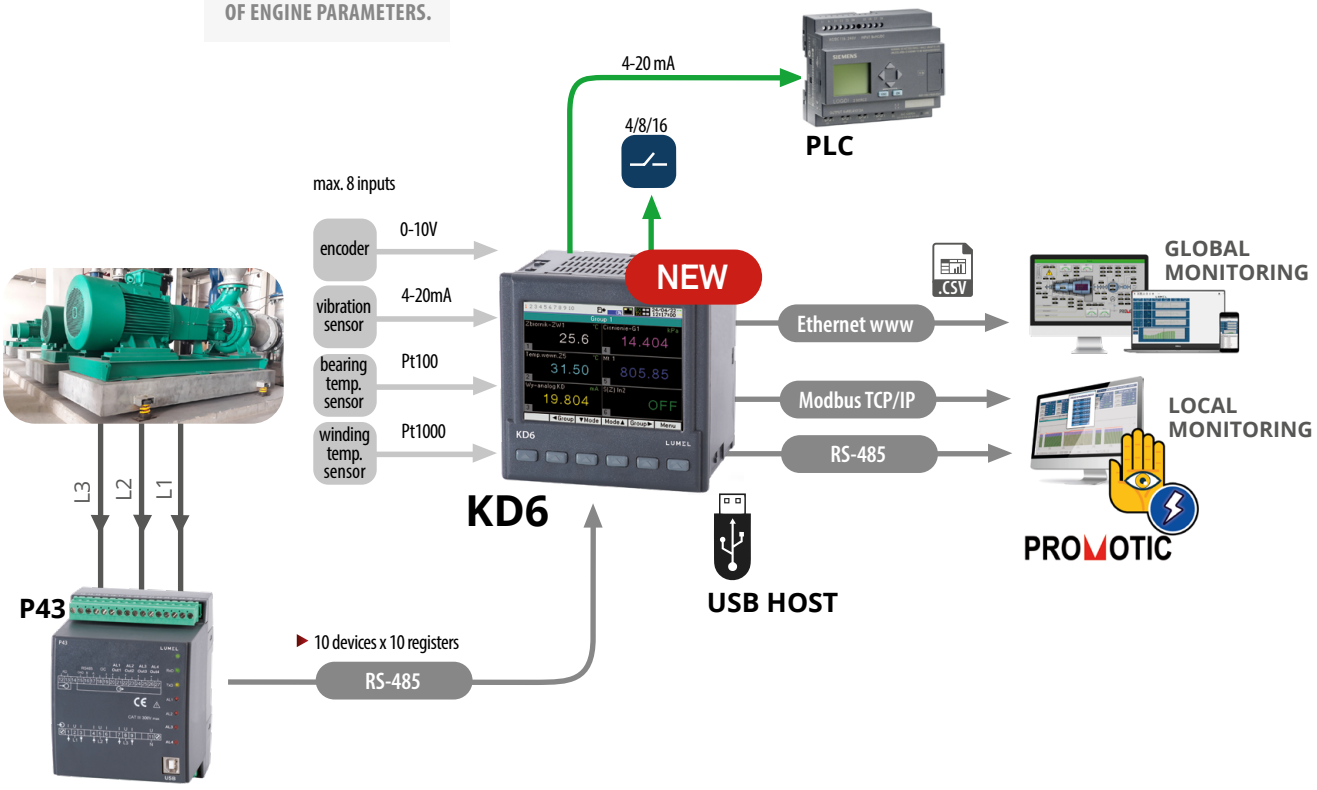



	RP7	RP1	RPL1	RP3
Version	1-phase			3-phase
Control	phase	phase, pulse, on/off		
Input signal	0..5/10V, 0/4..20mA potentiometer			
Output	-	2 x relays		
Output current	5-15 A	25-125 A		3 x 40-450 A
Load supply voltage	230 V	230 V, 400 V a.c.	230, 400, 500 V a.c.	400 V a.c.
Load configuration	2-wire	2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

	SM61IoT	KD6	KD7	KD8	KD10
Number of channels	up to 2500	up to 60 logical channels (max. 8 universal analog channels)	up to 24 channels (max. 12 analog channels and/or max. 24 digital channels)	up to 6	up to 52 logical channels (max. 18 analog channels + 2 temperature channels and max. 32 digital channels)
Input	Port II: Modbus RTU Master, (100 groups 25 registers each) 2 x logic (option)	programmable (0, 4 or 8 inputs) Pt100/500/1000, J, K, N, E, R, S, T, B, ± 40 mA ± 300 mV 0...4000 Ω ± 10 V	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	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	programmable (6, 12 or 18 inputs) Pt100/1000, J, K, N, E, R, S, ± 20mA, 4...20mA, ± 10V, ± 60, 150, 300 mV, 0...400, 4000 Ω
		logic input 0/5...24 V d.c. (2, 6 or 10 pcs.)	logic input 0/5...24 V d.c. (8 or 16 pcs.)	logic 0/5...24 V d.c. (4 or 8 pcs.)	dedicated: 2x Pt100/1000/5k Ω 4 or 6 binary (option)
		Modbus RTU Master (10 x 10 registers)	Modbus RTU Master (24 registers)	-	
Output	Port I: Modbus RTU/TCP Slave, 2 x relays (option)	relays (2, 6, 8, 10 or 14) analog 0/4...20 mA (0, 4 or 8) 1 x supplying output 24 V d.c. 30 mA	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)	optional: relays (4 or 8) analog 0/4...20 mA (3 or 6)
Interface	2 x RS-485 (Modbus Slave i Master) 1 x RS-232 (Modbus Slave) USB Device 1.1. Ethernet 10/100 Base-T Modbus TCP/IP MQTT	2 x RS-485 (Modbus Slave & Master) 1 x USB Host 2.0 1 x Ethernet (Modbus TCP/IP, WWW, FTP, NTP, 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.	1x RS-485 Modbus Slave 1x RS-485 Modbus Master (option) USB Device & Host Ethernet 10/100 Base-T Modbus TCP (Master, Slave)
Memory	8 GB	internal 8 GB	internal – up to 6 MB external – CF card up to 4 GB		internal - 20 MB external – karta SD do 32 GB
Display	-	colour LCD 3.5" TFT type, 320 x 240 pixels	LCD 5.7"TFT type 320 x 240 pixels with touch panel		LCD 5.6" TFT type 640 x 480 pixels with touch panel
Supply voltage	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.	85...253 V a.c., 90...300 V d.c. or 20...60 V d.c.	90...253 V a.c., 90...300 V d.c. or 18...30 V d.c.		85...253 V a.c. / 90...300 V d.c
Protecting rating	IP40/IP20	IP65			IP54
External dimensions	45 x 120 x 100 mm	96 x 96 x 77 mm	144 x 144 x 171 mm	144 x 144 x 171 mm	144 x 144 x 104 mm
Additional functions	• HTTP (WEB server -visualization in format of synoptic maps), • DHCP • FTP Server, • RTC	• many forms of data presentation: linear, bargraph, chart, • digital and analog indicators, • WWW and FTP Server (KD6, KD7)			• WWW, FTP server • visualisation of measurements in the form of: digital, analogue meters, graphs, bargraphs • PC software • user access levels
		• advanced mathematical operations on measured values	• Windows® CE operating system • PC software: KD SETUP, KD CHECK, KD CONNECT, KD ARCHIVE • user access levels • menu available in 8 language versions		

APLICATION

MONITORING
OF ENGINE PARAMETERS.



I/O MODULES, COMMUNICATION MODULES

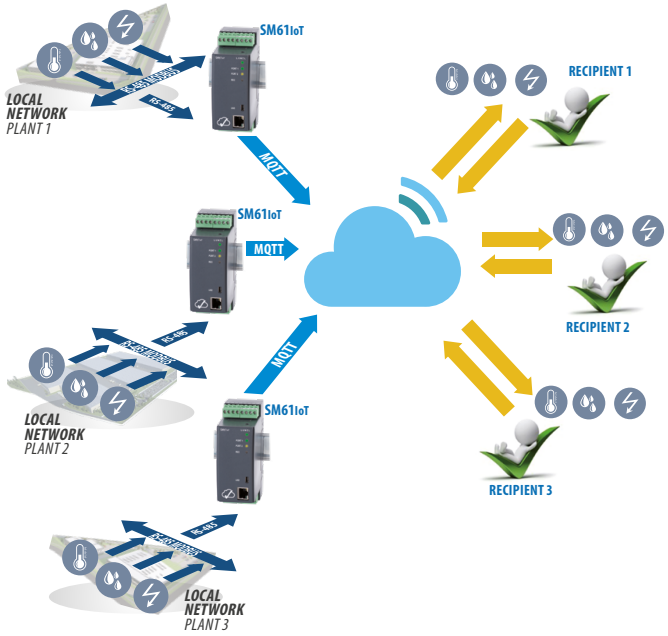
INPUT/OUTPUT MODULES

	SM1	SM2	SM3	SM5	SM4	S4AI	S4AO
Number of channels	2	4	2	8	4 or 8	4	4
Inputs/outputs	fixed inputs: Pt100(-200...850°C) , 0...400 Ω or 0/4...20 mA or 0...10 V		programmable inputs: logic on/off or pulse counter up to 1 kHz 0...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

	SM61IoT
Number of channels	up 2500 digital channels
Input	Port II: Modbus RTU Master (100 groups 25 registers each), 2 x logic
Output	Port I: Modbus RTU/TCP Slave, 2 x relay
Interface	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
Memory	8 GB
Supply voltage	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.
Protection rating	IP40
External dimensions	45 x 120 x 100 mm
Additional functions	• HTTP (web server - visualization in format of synoptic maps), • DHCP, • FTP server, • RTC

APLICATION



COMMUNICATION

PROTOCOL/ INTERFACE CONVERTERS

PROTOCOL/ INTERFACE CONVERTERS

	PD51	PD9	PD9W	PD20
Interface 1	RS-232	RS-485, RS-232		RS-485
Interface 2	RS-485	Ethernet RJ45	Wi-Fi, Ethernet	USB
Baud rate	1200, 2400, 4800, 9600,19200, 38400, 57600, 115200 [bit/s]	600 ÷ 460800 bit/s	300 ÷ 230400 bit/s	up to 115.2 kbps
Supply voltage	7...35V d.c.or 20...24...40V a.c./d.c.or 85...230...253V a.c./d.c.	5 ÷ 36V d.c.		5V d.c., supplied from USB port
Protection rating frontal	IP40	IP30		IP40
External dimensions	22.5 x 120 x 100 mm	45 x 120x 100 mm	86 x 82.5 x 25mm	76 x 25 x 20 mm
Additional functions	• converter/ repeater • galvanic isollation	• galvanic isolation • Digi RealPort®, TCP/IP, HTTP, ICMP, DHCP, ARP • Modbus TCP	• Wi-Fi 2.4GHz 802.11 b/g/n • programming through www • TCP/IP, HTTP, ICMP, DHCP, ARP • Modbus TCP, RTU	• galvanic isolation • compa-tible with industrial communica-tion protocols

CONTROL

TIME & PROTECTION RELAYS

MULTIFUNCTIONAL TIME RELAY

PROTECTION RELAY

	LTR10	LP10-V
Type	multifunctional - 10 time functions	voltage protection relay
Number and type of contact	2 xCO - changeover	1 x CO, 2 x CO (option)
Number of time ranges	10 time ranges	N/A
Resistive load	5A / 250 V AC	
Supply voltage	12...240 V AC/DC	= monitoried voltage
External dimensions	91 x 17.5 x 65.4 mm	90 x 18 x 66.5 mm

CONTROL

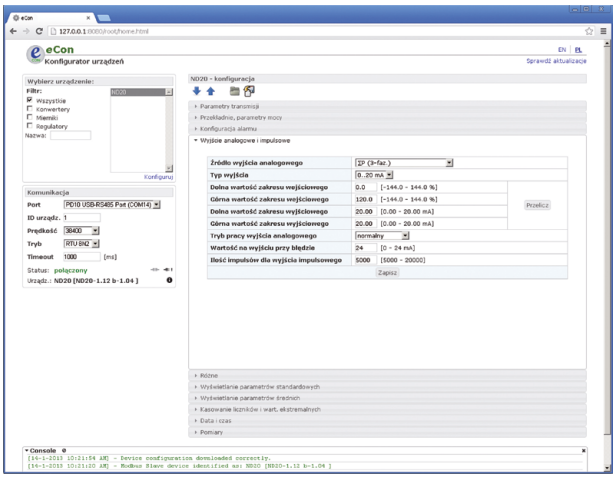
POWER SUPPLIES

	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

SOFTWARE TOOL

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 PD24 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.



NEW

PD20 – a portable converter designed for converting a signal using a USB bus to an RS-485 interface

NEW

PD24 – converter is designed for data transmission between a computer and a device with an RS-232 interface operating at TTL voltage levels. Additionally, it serves as a programmer for LUMEL products, enabling parameter configuration via the free eCon software.

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				

* 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 43)

MOVING-IRON METERS




	MA16(P)	MA17(P)	MA19(P)	MA12(P)
Type of scale	90°			
External dimensions	48 x 48 mm	72 x 72 mm	96 x 96 mm	144 x 144 mm
Interchangeable scale	-	✔	✔	✔
Measuring ranges (direct): - current: - voltage:	 1...750 mA (40...1000 Hz) 100...600 V (40...10 000 Hz)	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			
Protection rating	IP52	IP52 (on request IP65)		IP52
Climate version	normal	normal, tropical or similar to marine		
Class	1			

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	IP40	
Climate version	normal	
Class	1.5	

POWER METER

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

ANALOG PANEL METERS
SCALE 90°

MOVING-COIL METERS





	MB16	MA16	MA17	MA19	MA12
Type of scale	90°				
External dimensions	45 x 85 mm	48 x 48 mm	72 x 72 mm	96 x 96 mm	144 x 144 mm
Interchangeable scale	-	✔	✔	✔	-
Measuring ranges: - current: · direct measurement · indirect measurement (through the shunt*) - voltage: · direct measurement	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				

* see our shunts (page 46)

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 41)

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			

ANALOG PANEL METERS
SCALE 240°

MOVING-COIL METERS




	MA16L	MA17L	MA19L	MA12L
Type of scale	240°			
External dimensions	48 x 48 mm	72 x 72 mm	96 x 96 mm	144 x 144 mm
Interchangeable scale	✔	✔	✔	✔
Measuring ranges: - current: - 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			

MOVING-IRON METERS



	MA17L(P)	MA19L(P)	MA12L(P)
Type of scale	240°		
External dimensions	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		

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			

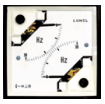
ANALOG MEASUREMENT

ANALOG PANEL METERS
SCALE 240°

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

ANALOG MEASUREMENT

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	0.5		1

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	


LCTM 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


LCTR series

LCTB CURRENT TRANSFORMERS FOR A BUSBAR 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 45 LCTB 62

LCTB CURRENT TRANSFORMERS FOR A BUSBAR 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 74 LCTB 86

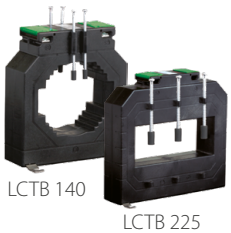
LCTB CURRENT TRANSFORMERS FOR A BUSBAR CONDUCTOR

	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 104 LCTB 86

LCTB CURRENT TRANSFORMERS FOR A BUSBAR 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			


LCTB 140 LCTB 225

CURRENT TRANSFORMERS

LCTB CURRENT TRANSFORMERS FOR A BUSBAR CONDUCTOR

LCTB 100 LCTB 140

	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	100 x 30 2 x 80 x 25 2 x 70 x 30	38 x 128	70 x 130
Accuracy class	0.2S; 0.2; 0.5S; 0.5; 1; 3		0.2; 0.5; 1; 3	

LCTS SPLIT CORE CURRENT TRANSFORMERS

LCTS series — compact version

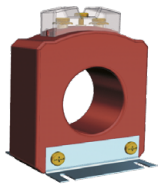
	LCTS 50/18SC	LCTS 50/32SC	LCTS 93/30SC (40)	LCTS 125/50SC (40)	LCTS 155/80SC (40)	LCTS 195/80SC (64)
Primary current [A]	150...250	250...500	100...400	250...1000	250...3000	500...5000
Hole dimensions (depth x width) [mm]	∅18.5	∅32.5	23 x 33	85 x 54	85 x 125	82 x 162
Accuracy class	1		0.5; 1			

LCTP 3-PHASE CURRENT TRANSFORMERS

LCTP series

	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	

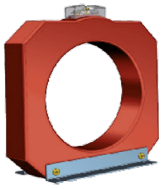
LRC - RESIN CAST CURRENT TRANSFORMERS



LRC series

	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	0.5, 1			

LRC - RESIN CAST CURRENT TRANSFORMERS



LRC series

	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	0.5, 1			

LU01 - SUMMATION CURRENT TRANSFORMERS

LU01 series

	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	

LW - ROUND CURRENT TRANSFORMERS

LW05

	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				

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		


LE03

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			


LE06



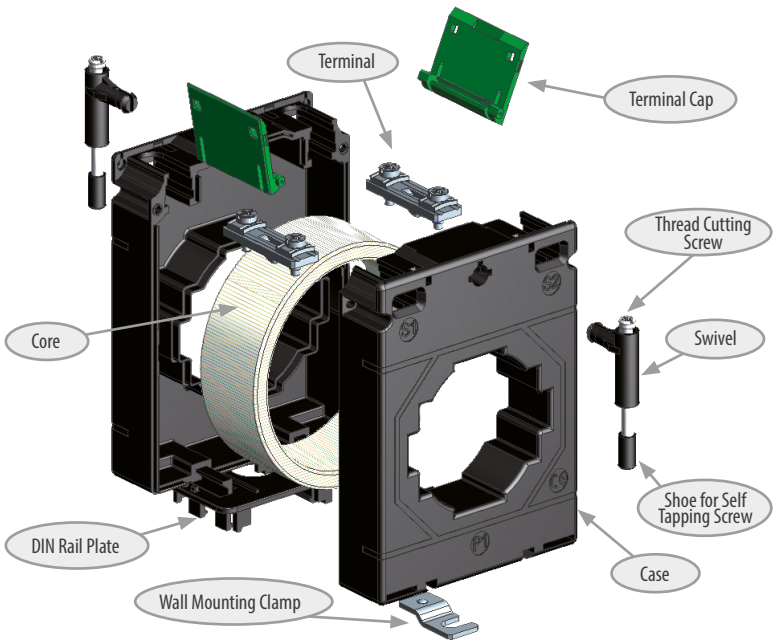
CURRENT TRANSFORMERS DEDICATED TO ND20CT

	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 or RJ12 connector

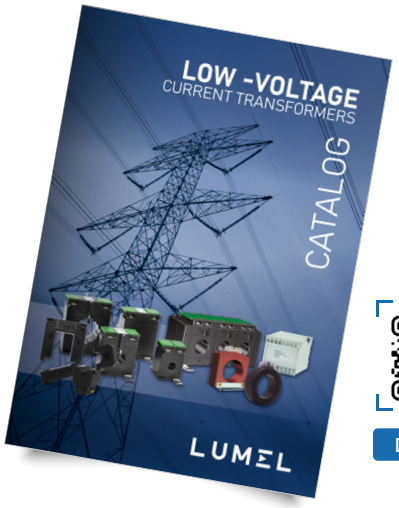
* - more detailed informations in data sheet

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

ACCESSORIES:

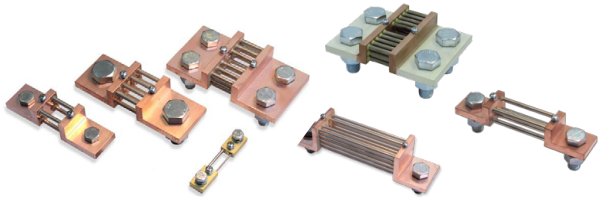


MORE INFORMATION IN OUR CATALOG:



DOWNLOAD

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 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

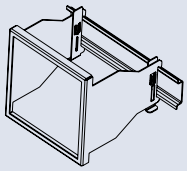
- Custom-made executions are available on request (voltage drop, current).

ADAPTER FOR DIN RAIL TS35

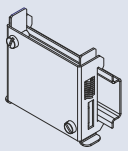
- Designed for mounting of panel instruments on the DIN rail TS35.

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

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	

PORTABLE MULTIMETERS & CLAMP METERS

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

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.

PORTABLE MULTIMETERS & CLAMP METERS

5 IN 1

VA19
5 in 1 Digital multimeter

- Measurements of AC / DC voltage, AC / DC current, resistance, frequency, load, capacitance and continuity, diode test.
- Sound Level function.
- Illumination measurement function (the meter uses a stable, long-life silicon diode).
- Temperature measurement.
- Humidity measurement.
- Automatic and manual measuring range function.
- Automatic switch-off function.
- Hold function.
- Relative measurement function.
- Backlight.
- Measurement in CAT II 600V installations.

MS8221A
Pocket size digital multimeter

- AC / DC current measurement max 10A.
- DC 1000VDC voltage measurement.
- 750VAC AC voltage measurement.
- Resistance measurement.
- Continuity test.
- Hold function.

M266C
Clamp meter

- 3½ digit LCD, with automatic polarity indication
- Dual-slope integration A-D converter system.
- CAT II 600V installation category.
- Jaw opening 50mm.
- AC 20/200/600 / 1000A current measurement.
- AC 200 / 600V voltage measurement.
- DC voltage measurement 0.2 / 2/ 20/ 200 / 600V.
- Resistance measurement.
- Temperature measurement max. 750ºC.

VA503
Pen R/C meter for SMD

- measurement of resistance 400..40M Ohm
- capacity measurement 4nF..100µF
- diode test
- measurement of relative values

VA8010
Temperature /humidity and dew point meter

- 4-digit LCD display;
- °C, °F, % RH (relative humidity); td (dew point temperature);
- Resolution: 0.1°C; 0.1 °F; 0.1% RH;
- Range:
  - -10 ~ +50 °C, +14~ +122°F;
  - 0 ~ +100% relative humidity;
- Accuracy: ± 1.0 °C; ± 1.8 °F; ± 3% RH (5 ~ 95% RH);
- Sampling rate: 1/s;
- Automatic power off: about 20 minutes;
- Protective case;
- Large, easy to read LCD display.

VA8051
Luxmeter with sensor rotation

- 6 digits LCD Display
- Parameters: Lux (lm/m²), foot candle (lm/ft²)
- Resolution: 1 Lux (0…30000 Lux); 0.1 ftc(0…2788.0 ftc);
- Range: 0…30000 Lux, 0…2788.0 ftc
- Accuracy: ±(4% +50 digits) to reference
- Sample rate: 2 time /sec
- Auto power off: about 20 minutesu

VA8090
Infrared temperature and thermocouple meter

- 4 digits LCD Display;
- Resolution:
  - 0.1 °C / 0.1 °F
  - 1 °C/1 °F (thermocouple above 1000 °C)
- Range:
  - infrared: -50 ~ 300 °C (-58°F ~ 572 °F)
  - thermocouple: -200 ~ 1300 °C (-328 °F ~ 2372 °F)
- Accuracy:
  - infrared:
    - -50 ~ -20 °C / ± 5 °C / 9 °F
    - -20 ~ 300 °C / ± (1.5% odczyt +2 °C/ 4 °F)
  - thermocouple: -200 ~ -100 °C / ± (0.2% odczytu + 1 °C / 2 °F)
    - -100~1300°C/ ±(0.1% reading+0.7°C/1.4°F)
- Emissivity: 0.95
- Field of view: 2:1
- Laser power: Less than 1 mW
- Response time: 0.5 second
- Auto power off: 25 seconds (infrared) or 20 minutes (thermo-couple)
- Low battery indicat

VA8060
Dual ways thermocouple meter

- 4 digits LCD Display
- Resolution:
  - 0.1 °C /0.1 °F (below 1000 °C)
  - 1 °C /1 °F (above 1000 °C)
- Range:
  - K - type: -200 °C ~ 1300 °C (-328 °F ~ 2372 °F)
  - J - type: -200 °C ~ 1200 °C (-328 °F ~ 2192 °F)
- Accuracy:
  - (-200 ~ -100 °C) ± (0.2% reading + 1 °C)
  - (-100 ~ 1300 °C) ± (0.1% reading + 0.7 °C)
  - (-328 ~ -148 °F) ± (0.2% reading +2)
  - (-148 ~2372 °F) ± (0.1% reading +1.4)
- Sample rate: 1 time /sec
- Auto power off: about 20 minutes
- Low battery indicator

NEW

VA90B
Digital multimeter

- **Base accuracy 0.2%**
- IP67
- AC/DC Voltage measurement 0..1000 V,
- AC/DC Current measurement uA/mA/10 A,
- Resistance measurement 0 … 60 MΩ,
- Capacitance measurement 0…60 mF,
- Frequency measurement , TTL
- Diode test
- Temperature measurement -200…1000°C,
- Auto Scan (SMART), REL, Duty
- Automatic measuring range selection
- HOLD function

NEW

VA28B
Digital multimeter

- CAT III 600V
- TRMS
- AC/DC Voltage measurement 400mV…400 V,
- AC/DC Current measurement 40mA … 10 A,
- Resistance measurement 400mΩ … 40 MΩ,
- Capacitance measurement 4 nF…4 mF,
- Frequency measurement
- Temperature measurement -200…1200°C,
- Auto Scan function (SMART)
- HOLD function
- Continuity test and Diode test
- Dimensions: 130 x 62 x 27 mm.

NEW

VA333
Clamp meter

- The diameter of measured cable 32 mm
- AC/DC Current measurement 400A,
- AC/DC Voltage up to 600V AC/DC,
- Resistance measurement 400mΩ … 40 MΩ
- Capacitance measurement 50 nF… 100µF
- Frequency measurement 5..100kHz
- Continuity test and Diode test
- Hold,REL functions

NEW

VA333
Small size clamp-on meter

- The diameter of measured cable 32 mm
- AC/DC Current measurement 400A
- AC/DC Voltage up to 600V AC/DC
- Resistance measurement 400mΩ … 40 MΩ
- Capacitance measurement 50 nF… 100µF
- Frequency measurement 5..100kHz
- Continuity test and Diode test
- Hold, REL functions

NEW

VA310
Digital Clamp Meter

- Jaw size: 40 mm
- DC Voltage: 1000 VDC ±
- AC Voltage: 750 VAC±
- AC Current: 20/200A/1000 A ±
- Resistance: 200Ω/ 2KΩ
- Temperature (VA310C) : -40~750°C
- Diode test
- Continuity Buzzer
- Max.Display: 1999
- Data Hold
- Dimensions: 225 x 86 x 32 mm

NEW

VA312
Digital Clamp Meter

- Class II: 1000mV
- Class III: 600 mV
- Max. jaw opening: 40 mm
- Max. Display: 5999
- Backlighted display: 44x23 mm
- Voltage DC: 6V/60V/600V/1000V DC
- Voltage AC: 6V/60V/600V/700V AC
- Current AC: 600A/1000A AC
- Resistance: 600/6k/60k/600k/6M/60MΩ
- Capacitance: 600nF/6µF/60µF/600µF/1000µF
- Low voltage measuring onput up to 600mV
- Auto and auto/manual range
- Diode test
- Data Hold
- Max./min. value measurement
- Continuity test
- Dimensions: 225 x 86 x 32 mm

NEW

VA700
Volt/mA Calibrator

- Characteristic Documentation Certificates
- Maximum voltage: 30V (between any jack and earth ground or between any two jacks)
- Storage temperature: -40°C to 60°C
- Operating temperature: -10°C to 55°C
- Operating altitude: Up to 3000 meters
- Temperature coefficient: ±0.005% of range per °C (for temperatures -10°C to 18°C and 28°C to 55°C)
- Relative humidity:
  - 95% up to 30°C
  - 75% up to 40°C
  - 45% up to 50°C
  - 35% up to 55°C
- Shock: Random 2g, 5Hz to 500Hz
- Safety: 1 meter drop test
- Power requirements: 6 x AAA batteries
- Size: 204mm (L) x 99mm (W) x 46mm (H)
- Weight: 460g (including battery)

NEW

VA701
Voltage/Current/TC

- Maximum voltage: 30V (between any jack and earth ground or between any two jacks)
- Storage temperature: -40°C to 60°C
- Operating temperature: -10°C to 50°C
- Operating altitude: Up to 2000 meters
- Temperature coefficient: ±0.01% of range per °C (for temperatures -10°C to 18°C and 28°C to 55°C)
- Relative humidity:
  - 95% up to 30°C
  - 75% up to 40°C
  - 45% up to 50°C
  - 35% up to 55°C
- Power requirements: 6 x AAA batteries
- Size: 204mm (L) x 99mm (W) x 46mm (H)
- Weight: 460g (including battery)

NEW

VA702
Voltage/Current/TC

- Maximum voltage: 30V (between any jack and earth ground or between any two jacks)
- Storage temperature: -40°C to 60°C
- Operating temperature: -10°C to 50°C
- Operating altitude: Up to 2000 meters
- Temperature coefficient: ±0.01% of range per °C (for temperatures -10°C to 18°C and 28°C to 55°C)
- Relative humidity:
  - 95% up to 30°C
  - 75% up to 40°C
  - 45% up to 50°C
  - 35% up to 55°C
- Power requirements: 6 x AAA batteries
- Size: 204mm (L) x 99mm (W) x 46mm (H)
- Weight: 460g (including battery)

NEW

VA710
Thermocouple Calibrator

- Maximum voltage: 30V (between any jack and earth ground or between any two jacks)
- Storage temperature: -40°C to 60°C
- Operating temperature: -10°C to 50°C
- Operating altitude: Up to 2000 meters
- Temperature coefficient: ±0.01% of range per °C (for temperatures -10°C to 18°C and 28°C to 55°C)
- Relative humidity:
  - 95% up to 30°C
  - 75% up to 40°C
  - 45% up to 50°C
  - 35% up to 55°C
- Power requirements: 6 x AAA batteries
- Size: 204mm (L) x 99mm (W) x 46mm (H)
- Weight: 460g (including battery)

DETECTION GAMMA AND/OR NEUTRON RADIATION

SMP RADIATION PORTAL MONITORS

Radiation Portal Monitor (SMP) of Lumel S.A. are designed to detect radiation from gamma and/or neutron emitters contained in objects, containers, or vehicles, or carried by a pedestrian.

SMP monitors may be equipped with one or several detection blocks and an operator panel with a touch screen and a printer.

Stationary Radiation Monitor Systems manufactured by Lumel S.A. are designed for three different areas:

- scrapyards, metalworks,
- incinerators, landfills,
- control points at border crossing points in airports, seaports, road border crossing, railway border crossing.

GAMMA- NEUTRON RADIATION PORTAL MONITORS

GAMMA RADIATION PORTAL MONITORS

FEATURES:

- automatic radiometric control without interference on the traffic,
- high sensitivity,
- generation of raports and alarm signals,
- speed control,
- interactive control panel with a 8.3" touch screen,
- bi-directional communication which provides:
  - remote control of the smp,
  - remote change of selected parameter settings,
- operation in the dedicated Remote Management System SMP-Studio,
- video recording (supervised by the SMP-Studio),
- reliability,
- user-friendly.

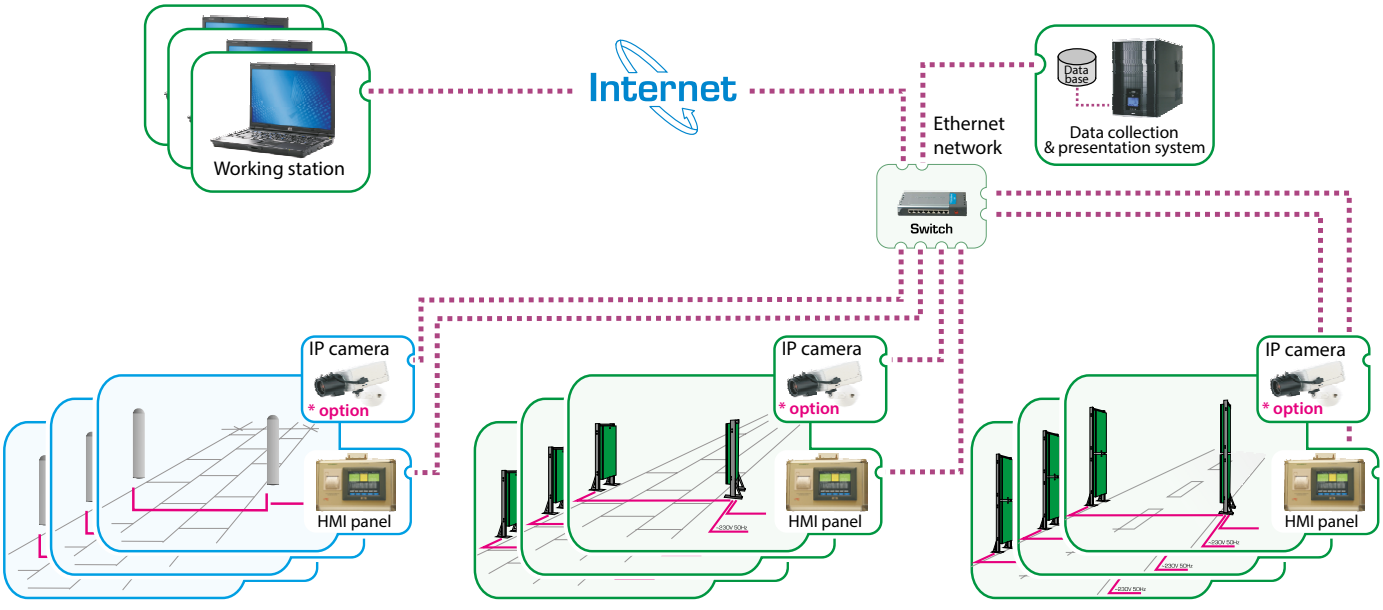
SMP RADIATION PORTAL MONITORS

	GAMMA RADIATION PORTAL MONITORS		GAMMA- NEUTRON RADIATION PORTAL MONITORS					
	SMP-4/100	SMP-2/50	SMP-M11	SMP-M22	SMP-11	SMP-22		SMP-44
Aplication	• scrap metal recycling facilities • steel mils	• landfills • incineration plants	Control points at border crossing points in airports, seaports, road border crossing, railway border crossing.					
Control zone [width/height]	6 m / 4 m permissible (4,5 m/ 4 m optimal)		1.5 m / 2 m	3 m / 2 m	1.5 m / 2 m	3 m / 2 m	6 m / 2 m	6 m / 4 m
Speed	8 km / h permissible (5 km / h optimal)		5 km/h			5 km / h	8 km / h	8 km/h
Controlled object	trucks, containers, rail vehicles	trucks, containers	pedestrians with hand luggage (indor use)		pedestrians, luggage, conveyor belt, trolleys, –outdoor use	vehicles, luggage, pedestrians – outdoor use		trucks, buses, rail vehicles

SMP STUDIO | REMOTE SUPERVISION SYSTEM

Remote Supervision System SMP Studio performs the function of visualization, collection and distribution of operation data detected by Radiation Portal Monitors installed on one or many locations.

- Remote visualization of the status of SMP RPM's.
- Recording alarm and emergency data
- Recording changes in SMP device settings.
- The image preview of supervisory zone from video cameras.
- Saving image of supervisory zone from the course of alarm recorded by video cameras.
- Compilation and printing information about operation mode and registered events.
- Automatic backup of computer database.
- Automatic synchronization of the clock of SMP devices.
- Supervision of up to 32 supervisory zones.
- Communication with supervised SMP by LAN or WAN networks.



OEM | ODM | EMS SERVICES

For more than 70 years, LUMEL is well-known in the international market for the production of highest quality of electronic measuring devices. Precision has been the instilled in the roots of LUMEL, our proficient employees and cutting edge technologies permit us to offer:

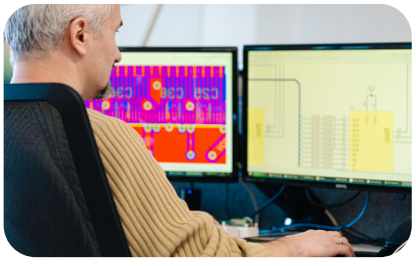
- **Contract Electronics Manufacturing Services (EMS)** – including prototypes, as well as small, medium, and large production series.
- **Comprehensive project execution (OEM, ODM)** – from concept to finished product, including:
  - design and manufacturing of enclosures,
  - research and development (R&D),
  - procurement of components for production,
  - SMT and THT assembly,
  - device programming and calibration.

Knowing that your electronic products will be produced by a competent manufacturer, you can be free from responsibilities of manufacturing and can lay your focus on other sectors of your business such as marketing and sales while the goods are being prepared.

RESEARCH & DEVELOPMENT **LABORATORY** SERVICES

Lumel laboratory is where your products go through a detailed series of tests like:

- Environmental,
- EMC,
- Vibration,
- Functional test.



SURFACE MOUNT TECHNOLOGY (SMT)
SERVICES

- One-sided and double-sided assembling of SMD elements in the technology of reflow soldering, in accordance with European Directive for RoHS.
- Assembly of thread elements by flow soldering.
- Assembly can be carried out on the base of own or committed elements.

4 high-performance assembly lines

The first assembly line is composed of:

- CO_2 Laser Marker ASYS INSIGNUM 4000,
- Screen Printer JUKI G-TITAN,
- SPI in-line Viscom S3088,
- Two pick-and-place machines JUKI (RS-1RTS; RS-1RTSC2),
- 10-zone Reflow Soldering Oven ERSA Hotflow Three 20,
- AOI in-line Viscom S3088,
- The entire system is interconnected with ASYS handling equipment.
- The production line operates with **full traceability**, leveraging a licensed solution from the Canadian company Cogiscan.

The second assembly line is composed of:

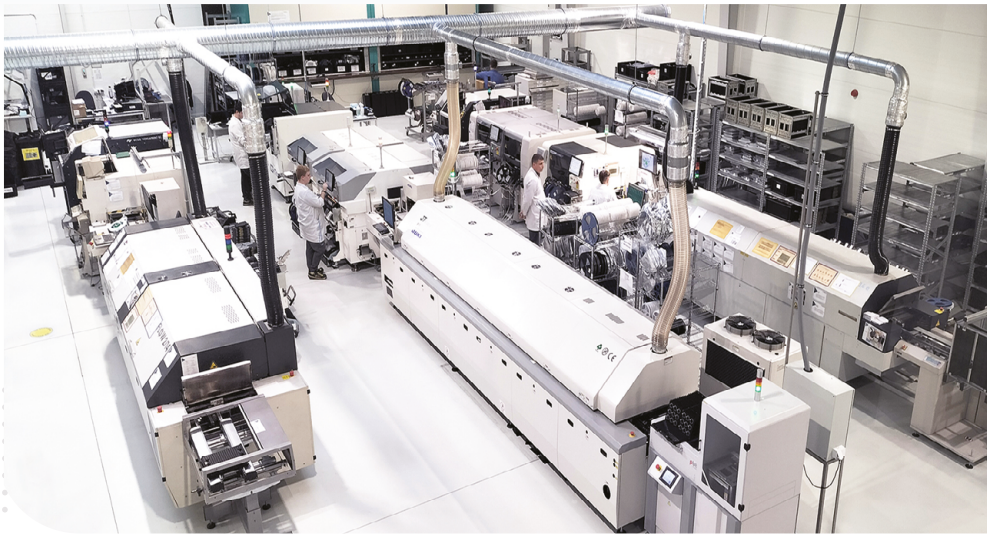
- Silk screen printer JUKI G-TITAN,
- Two automatic machines JUKI (RS-1RTS; RS-1RTSC2),
- 10-zones reflow oven JUKI RS1000N with the possibility of connecting nitrogen,
- The whole line is completed by handling system, loader, two conveyors, and is manufactured by JUKI.

The third assembly line is composed of:

- Silk screen printer ERSA,
- 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.

The fourth assembly line is composed of:

- Silk screen printer JUKI ERSA,
- Placement machine JUKI KE-2060,
- Reflow oven ERSA HOTFLOW 2/14,
- The whole line is completed by handling system, loader, conveyors and unloader of the circuit boards manufactured by JOT.



Additionally our machine park is equipped with:

- ESEGI Automatic Material Reception Station,
- X-Ray Component Counter,
- Tester AOI - PowerSpecter GTAz 350CE Dolphin - 2 pieces,
- Optical control stands.

The entire assembly process is carried out under the strict supervision of a team of technologists and is in accordance with the European directive IPC-A-610H.

OUR SMT LINES CAN PLACE OVER 295,000 ELECTRONIC COMPONENTS PER HOUR.

PCB size **max. 410 x 360 mm / min. 50 x 30 mm / Optimum: 200 x 300 mm /**
The number of layers: **36**
Component sizes ranging from **0201 metric to 74 x 74 mm / 50 x 150 mm**

Laminate thickness: Maximum: 5.0mm Minimum: 0.5mm	**Materials:** FR4, CEM, Aluminium, flexibel	**Copper plating:** HAL RoHS, HAL Pb, OSP, chemical or galvanic gold plating, silver plating
Copper thickness Material [µm]: 12 /18 / 35 / 70 /105	**Final thickness after metallization [µm]:** 30 / 35 / 60 / 95 / 130	**Available soldermask colors:** green (standard), red, black, white, blue, other colors on customer's request
Minimum path width: Value [mm]: 0.1 / Recommended [mm]: 0.2	**The minimum hole diameter:** **Value [mm]: 0.1 / Recommended [mm]: 0.3**	**The minimum distance copper – copper** Value [mm]: 0.1 / Recommended [mm]: 0.2
	Additionally: carbon paste, UL peelable mask, marking	

THROUGH HOLE TECHNOLOGY (THT)
SERVICES

In addition, we also provide services in the field of:

- Programming.
- Coating finished products with varnishes or protective compounds.
- Performing functional tests.
- Final assembly of the product.
- Calibration of the devices.

As part of the offered THT assembly service, we implement the following steps:

- Preparation of elements, automatic processing - cutting and bending.
- Placement of elements - manual assembly and soldering.
- Assembly of elements on a solder wave.
- Cable processing.

Machine park:

- All stations are equipped with ESD protection measures in accordance with EN 61340 5-1 and 5-2.
- Solder wave - Nova Star 12D.
- Washing and drying station - Pbt Super Swash.
- Soldering Robot REECO RE-2100.

ADDITIONAL SERVICES

DESIGNING:

When customers come to us with ideas, we offer them our team of designers and programmers who prepare model, prototypes and perform necessary tests required which confirm that the product fulfills all the CE standards.

ADDITIONAL TESTS:

Our products are tailor made keeping our customers demand in consideration, therefore we also offer different sample size and medium of test for a minimum cost in case the customers want customized test samples to comply to the needs of their products.

PROTECTING COATS:

With high quality products, programmable selective coating on any part of the PCB with a protective varnish or resin is performed, according to the customers demand.

LABELING:

After your product is mounted, we can place your logo and the details your require.

PACKAGE DESIGNING:

Every PCB and electronic device manufactured in our facility is precisely protected and we pack them in accordance to the customers guidelines. We make sure that the packaging is done to the best of our abilities so that the product is safe and sound.

SERVICING:

Servicing of any parts (assembly and disassembly) is offered as an extra service by our team.

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SERVICES

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LABORATORY of LUMEL S.A. **CALIBRATION & ATTESTATION OF CONFORMITY**

If you want to have a GUARANTEE, that your instruments work properly - USE OUR LABORATORY!

We provide services related to calibration of analog 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!

CONTACT:

LUMEL S.A.
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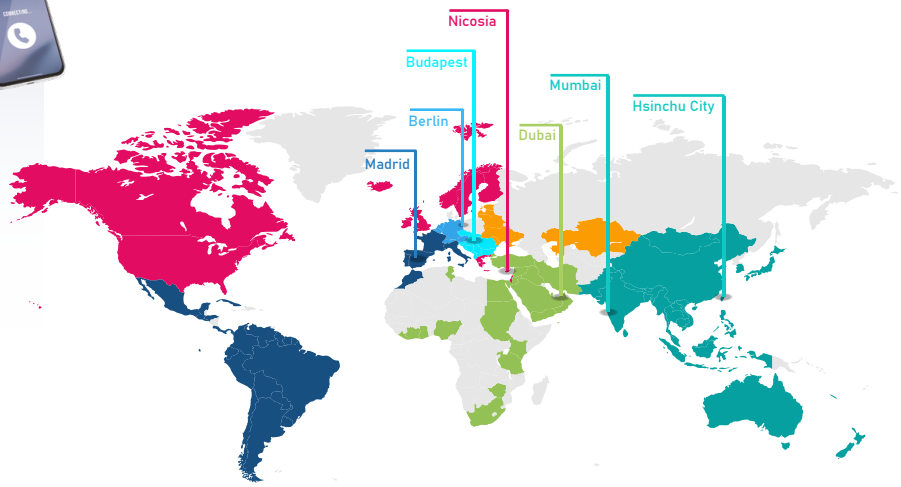

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