OPTIMISE

YOUR BUSINESS WITH US

PRODUCTS & SERVICES

CUT ENERGY COSTS

CONTROL PROCESSES

CUT PURCHASING COSTS
OEM | ODM | EMS

LUMEL

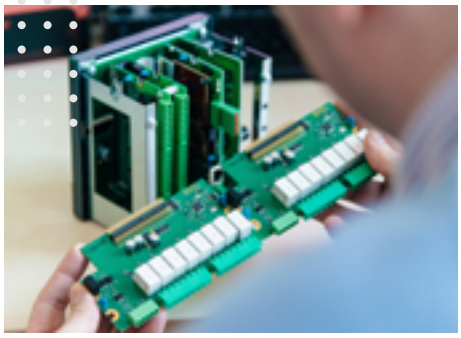
LUMEL 4.0 - PLANT OF NEW TECHNOLOGIES

Our new plant built in 2020 powered by a 125 kW Lumel photovoltaic system.

Lumel S.A. - Plant area - 3639 m^2.

Lumel Arena (sports and recreation facility for employees and their families) - Area - 1007 m^2.

EXPERIENCE THE ELECTRONIC WORLD OF LUMEL



R&D

RESEARCH LABORATORY

SMT ASSEMBLY

QUALITY INSPECTION

THT ASSEMBLY

WAREHOUSE

CUSTOMER SERVICE

GUARANTEE OF THE HIGHEST QUALITY OF PRODUCTION AND SERVICES

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

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

We work in accordance with:
- Certificate **ISO 9001:2015,**
- Certificate **ISO 14001:2015.**

We fulfill all requirements of 2002/95/EC Directive **RoHS II 2011/65/UE and RoHS III 2015/863/UE** about limiting Hazardous Substances in our products.

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

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

CONTENTS

OPTIMIZATION OF ENERGY COSTS

Please get in touch with us, if you are looking for the ways to reduce the energy costs and improve the efficiency of the production processes at the same time!

Our solutions will help you:

- maintain a continuous monitoring of an ordered power level
  - avoid the penalty fees for exceeding this power
  - adjust a level of the ordered power to the actual demand (too low ordered power = penalties for exceeding it, too high ordered power = high fixed costs)
  - flatten the peak power by delaying the switching on of the most energy-consuming devices
- monitor an energy at the level of the lines / machines in order to
  - provide more accurate estimation of the production costs,
  - analyze the cost of media necessary to produce a given material
- locate the most energy-consuming loads in your plant based on their real energy consumption
- check the load of the machines on individual shifts
- monitor the voltage dips and the sources of electrical interferances that may cause unexpected downtimes
- account the energy costs internally by the halls, departments, etc.
- alert the maintenance staff in case of a failure
- manage energy in case of emergency conditions, e.g. request to lower the power due to network overload.

Besides the benefits mentioned above, it is possible to expand our systems with other useful functions, for example:

- monitoring of temperature in the switching stations to support plant safety
- monitoring of compressed air which allows detecting sources of the leaks that cause considerable costs - the compressors are often the most energy-consuming loads
- monitoring of other media: water, gas, heat
- monitoring of environmental parameters - temperature, humidity, CO_2, TVOC or light intensity in the halls
- monitoring the produced number of items / production details to improve productivity

METERS AND ANALYZERS OF POWER NETWORK PARAMETERS

OPTIMIZATION OF ENERGY COSTS

		N43	NR30	ND30	N100	ND45
Measured parameters (detailed information in user's manuals)	U_{LN} / U_{LL}	✔/✔				
	average U_{LN} / U_{LL}	✔/✔			@/✔	✔/✔
	I_L / average I_L / I_N	✔/✔/ @	✔/✔/✔			
	P / Q / S	✔/✔/✔				
	E_P / E_Q / E_S	✔/✔/✔				
	4-quadrant measurement	@	✔			
	PF / tgφ / cosφ / φ	✔/✔/ - / -				✔/✔/ - /✔
	f / THD U / THD I	✔/✔/✔				
	Harmonics/ interharmonics	- / -	✔ **63** (NR30, NR30IoT) ✔ **51** (NR30PNET, NR30BAC) / -	✔ **63** (ND30, ND30IoT) ✔ **51** (ND30PNET, ND30BAC) / -	✔ 51 / -	✔ 51 / ✔ 51
	P (15/30/60 min.)	✔/✔/✔				
	Q (15/30/60 min.)	-				✔/✔/✔
	S (15/30/60 min.)	✔/✔/✔				
	I (15/30/60 min.)	✔/✔/✔				
	Time / Date / Temp.	✔/@/ -	✔/✔/ -	✔/✔/✔	✔/✔/ -	✔/✔/✔
	Dips / Swells/ Overvoltages	-				✔/✔/✔
	Tarrifs / Voltage asymmetry	-				✔ 4 / ✔
	Memory of min. and max. values	✔				-
Inputs		1 A/ 5 A 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 or 230/400 V or 400/690 V	1 A /5 A 57.7/100 V or 230/400 V or 69.3/ 120 V
				2 x Pt100 - option 2 x binary - option	pulse 0/12...36 V	2 x Pt100/Pt1000/5k Ω 4 or 6 x logic - option
Outputs		3 x relay 1 x pulse	2 x relay	1 x 0/4...20 mA (option) 2 x relay	1 x pulse, 1 x 0/4...20 mA + 3 x relay or 3 x -20...0...20 mA + 1 x relay	optionally: 3 or 6 x 0/4...20 mA; 4 or 8 x relay
Interface		RS-485 Modbus Slave	RS-485 Modbus Slave options: NR30: **Ethernet** NR30PNET: **Profinet** NR30IoT: **MQTT** NR30BAC: **BACnet IP**	RS-485 Modbus Slave options: ND30: **Ethernet** ND30PNET: **Profinet** ND30IoT: **MQTT** ND30BAC: **BACnet IP**	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		LCD 4 x 3 digits + 1 x 7 digits	LCD 20 characters x 4 rows	3.5" colour TFT LCD 320x240 pixel	LED 4 x 4 ½ digit, backlight unit, 2-colour display (red, green) (14 mm)	5.6" LCD TFT colour touch screen 640 x 480 pixel
Supply voltage		85...253 V a.c./ 90...300 V d.c. 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.	85...253 V a.c. / 90...300 V d.c.	85 V..253 V a.c. / 90 V..300 V d.c.
Protection IP		IP50		IP65	IP40	IP54
Ext.dimensions		105 x 110 x 60 mm		96 x 96 x 77 mm	144 x 144 x 77 mm	144 x 144 x 104 mm
Programming		free eCon software (using miniUSB) or using buttons		free eCon software (using RS-485 or Ethernet) or using buttons		dedicated software or using touch screen
Additional functions		• connection with S4AO module (module of 4 analog outputs)		• selection of displayed quantities on each of the 12 programmable pages • galvanic isolation between input,output, supply and interface	• selection of displayed quantities on each of the 20 programmable pages • galvanic isolation of current and voltage inputs • data archiving in the internal memory 8 GB • **available special version with input frequency up to 500 Hz**	• **measurement class A/S** • measurement and logging of energy quality acc. to EN 50160, EN 61000-4-30, EN 6100-4-7 • oscilloscope • galvanic isolation of measuring current and voltage inputs • data archiving on SD card
				ND30, ND30IoT, ND30PNET: • temperature measurement - 2 x input Pt100		• programmable counter inputs • dips and swells stored in registers • flicker
		-	NR30, NR30IoT: • data archiving up to 32 parameters • supervisory relay	ND30, ND30IoT: • data archiving in the internal memory 8 GB • supervisory relay		

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

METERS AND ANALYZERS OF POWER NETWORK PARAMETERS

OPTIMIZATION OF ENERGY COSTS





		ND20LITE	ND20CT	ND20	ND22	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 /5 A 57.7/100 V 69.3/120 V 230/400 V	**0.1 A and 0.25 A** 57.7/100 V or 230/400 V	1 A /5 A 57.7/100 V or 230/400 V or 290/500 V or 63.5/110 V or 69.3/ 120 V	1 A/ 5 A 63.5/ 110 V or 127/ 220 V or 133/ 230 V or 220/ 380 V or 230/ 400 V or 239.6/ 415 V or 254/ 440 V	1 A/ 5 A 57.5...346.42 V/ 100...600 V
Outputs		1 x relay 1 x pulse	1 x 0/4...20 mA (option) 1 x relay 1 x pulse	1 x 0/4...20 mA 1 x relay 1 x pulse	1/2 x relay (option) 2 x 4...20 mA (option) or 2 x 0...10 mA (option)	2 x relay (option)
Interface		RS-485 Modbus Slave			RS-485 Modbus Slave (option) **Ethernet** Modbus TCP (option)	RS-485 Modbus Slave (option) or **Ethernet** Modbus TCP (option) or **BACnet IP** (option)
Display		3.5" LCD 3 x 4 (11 mm) + 1 x 5 digits (9 mm)			3.5" colour touch screen 320x240 pixel	3.5" LCD 4 x 4 digits + 1 x 9 digits
Supply voltage		85...253 V a.c./ 90...300 V d.c.	85...253 V a.c./ 90...300 V d.c. or 20...40 V a.c./ 20...60 V d.c.		100...250 V a.c./d.c. or 12...48 V d.c.	100...550 V a.c./d.c.
Protection IP		IP65			IP54	
Ext.dimensions		96 x 96 x 77 mm			96 x 96 x 80 mm	96 x 96 x 70 mm
Programming		free eCon software (using RS-485) or using buttons			-	
Additional functions		-	• easy installation of meter and current transformer • **only to cooparation with dedicated current transformers L3XX and LJXX (see page 34)**	• memory of 9000 samples for mean power	• phase reversal indication	• up to 28 programmable pages • data archiving in the internal memory 8 MB
		• galvanic isolation of current inputs				

METERS AND ANALYZERS OF POWER NETWORK PARAMETERS

OPTIMIZATION OF ENERGY COSTS

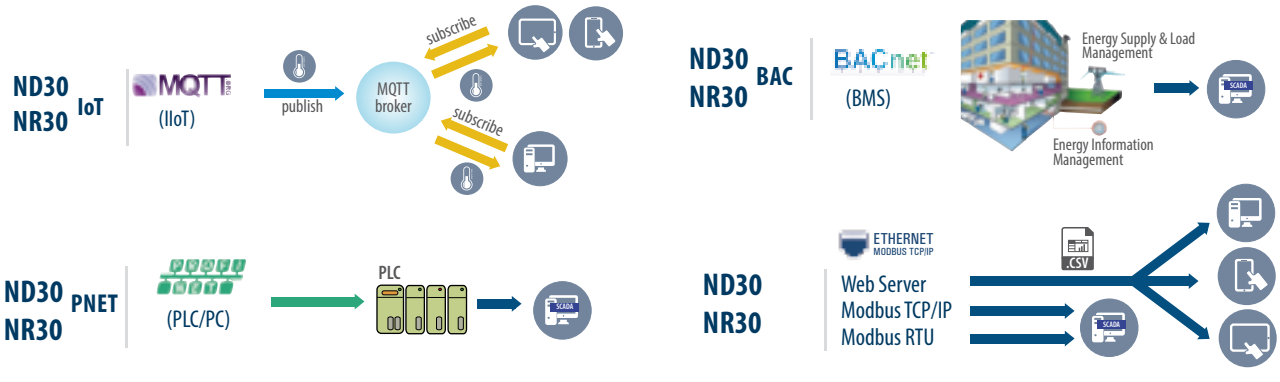




		ND03	ND04	ND08	N14	ND10
Measured parameters (detailed information in user's manuals)	U_{LN} / U_{LL}	✔/✔				
	average U_{LN} / U_{LL}	✔/✔				
	I_L / average I_L / I_N	✔/✔/ -	✔/✔/ -	✔/✔/@	✔/✔/ -	✔/✔/✔
	P / Q / S	-	-	✔/✔/✔		
	E_P / E_Q / E_S	-	-	✔/✔/✔	✔/✔/ -	
	4-quadrant measurement	-	-	✔	✔	
	PF / tgφ / cosφ / φ	-	-	✔/✔/ - / -		✔/✔/ @ / @
	f / THD U / THD I	✔/ - / -	✔/ - / -	✔/✔/✔	✔/ - / -	✔/✔/✔
	Harmonics	-	-	-	-	
	P (15/30/60 min.)	-	-	✔/✔/ -	✔/ - / -	✔/✔/✔
	S (15/30/60 min.)	-	-	✔/✔/ -	-	
	I (15/30/60 min.)	-	-	✔/✔/ -	-	
	Time / Date / Temp.	-	-	-	-	✔/✔/ -
	Memory of min. and max. values	-	-	@	✔	
Inputs		1 A/ 5 A 57.7...290 V / 100... 500 V		1 A or 5 A 63.5 / 110 V or 133 / 230 V or 239.6 / 415 V or 254 / 440 V or 220 / 380 V	1 A or 5 A 57.7/100 V or 230/400 V or 400/690 V	1 A or 5 A 57.7/100 V or 230/400 V or 290/500 V
Outputs		1 x relay - option			1 x relay 1 x pulse	2 x relays 1 x pulse
Interface		-	-	RS-485 Modbus Slave - option	RS-485 Modbus Slave	RS-485 Modbus Slave
Display		LED 3 x 3 digits	LED 3 x 4 digits	LCD 3 x 4 digits	LED 3 x 3 digits (14 mm)	3.5" LCD 3 x 4 digits (16 mm)
Supply voltage		40...300 V a.c./d.c.	40...300 V a.c./d.c. or 12...48 V d.c. or from measuring circuit	60...300 V a.c./d.c.	85..253 V a.c./d.c.	50...64 V a.c. or 195...253 V a.c. or 246...300 V a.c. from measuring circuit
Protection IP		IP50		IP54	IP40	IP65
Ext.dimensions		96 x 96 x 66 mm		96 x 96 x 61 mm	96 x 96x 70.5 mm	96 x 96 x 77 mm
Programming		-	-	-	free eCon software (using RS-485) or using buttons	
Additional functions		-	-	-	• galvanic isolation of current inputs	

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

APPLICATION EXAMPLE



ENERGY METERS WITH MID CERTIFICATE
OPTIMIZATION OF ENERGY COSTS

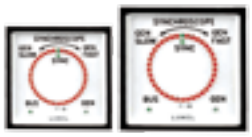
ENERGY METER FOR DIN RAIL MOUNTING

	NMID30-1	NMID30-2	NR10
Input	1 A/ 5 A 3 x 230 / 400 V	10 (100A) 3 x 230/ 400 V	10A (100 A) 230 V measurement of single-phase network parameters
Output	• relay output • pulse output (OC type), 3200 imp/ kWh		2 x pulse output
Interface	RS-485 Modbus RTU		RS-485 Modbus Slave
Supply voltage	85...275 V a.c. 120...380 V d.c.		176...276 V a.c.
Display	3 x 4 digits		LCD with backlight
Protection rating	IP51		
External dimensions	72 x 94.5 mm acc. to DIN 43880	76 x 100 mm acc. to DIN 43880	99 x 36 x 63 mm
Additional functions	• 16 measured paramters • password protection • programmable averaging time of the Demand type		• password protection • programming via RS-485 or buttons

SYNCHRONIZATION METERS & PF CONTROLLERS
OPTIMIZATION OF ENERGY COSTS

SYNCHRONIZATION METERS

PF CONTROLLERS



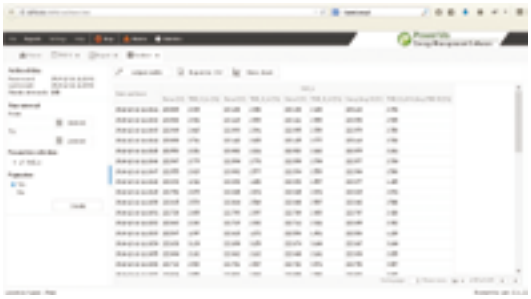
	NS5	SA12/SA19	NF20
Input	50...150 V 150...400 V	57.8...500 V	programmable 1 A/ 5 A 30...550 V
Output	2 x relays	-	4/6/8 or 6/8/12 switching outputs, 1 alarm relay
Interface	RS-485 Modbus **Ethernet** 10/100 Base-T Modbus TCP, www - option	-	RS-485 Modbus - option
Display	3.5" colour TFT LCD, 320x240 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 (SA12)	96 x 96 x 51 (without extension modules) 96 x 96 x 75 (with extension modules) 144 x 144 x 56
Programming	free eCon software, (using RS-485 or Ethernet) or using buttons	-	-
Additional functions	• memory of min. and max. values • many forms of data presentation bargraph, digital • additional control inputs	• one or two ranges of input voltage	• RTC - option

PowerVis SOFTWARE (OP40)

PROCESS VISUALIZATION SOFTWARE

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

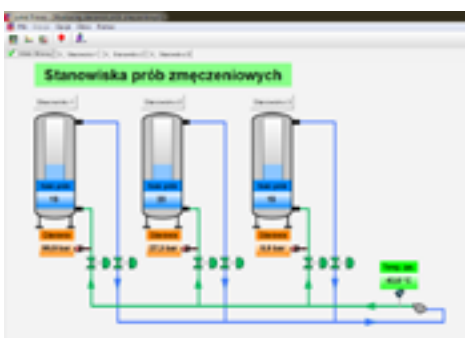


LUMEL-PROCCESS SOFTWARE (OP38)

PROCESS VISUALIZATION SOFTWARE

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

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



3 YEAR WARRANTY

PRODUCT CODE CONFIGURATOR at www.lumel.com.pl

EPLAN

PROMOTIC SOFTWARE
PROCESS VISUALIZATION SOFTWARE

PROMOTIC

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.

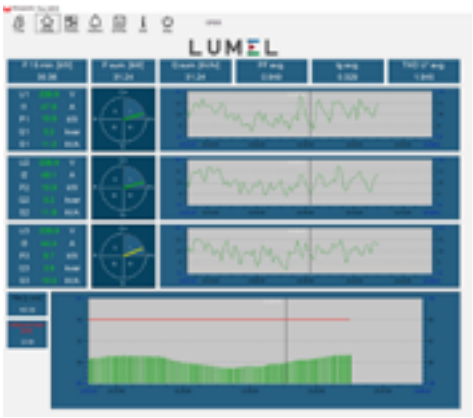
Program basic features:

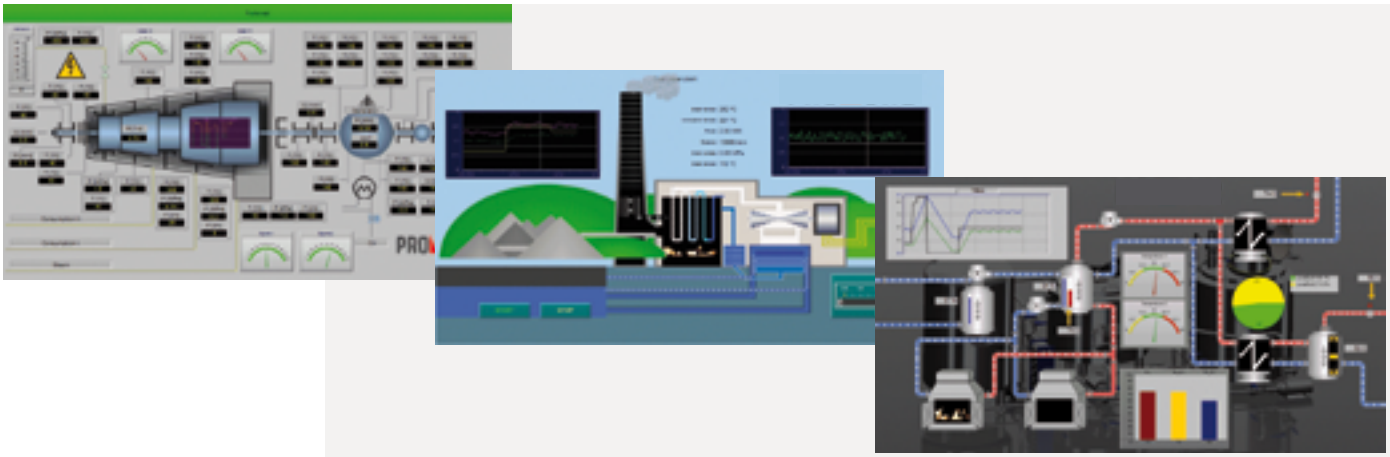
- an extensive library of communication protocols allows to communicate with the devices of the best-known automation manufacturers,
- support of the most popular databases - (dBase, MS SQL Server, MySQL, Oracle and others),
- web server with full functionality for PCs and mobile devices,
- extensive 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.

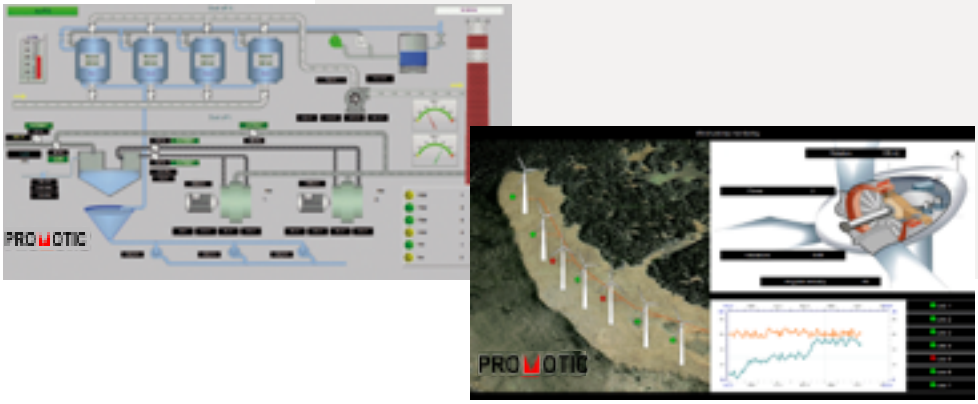
Examples of application areas:

- 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!







3 YEAR WARRANTY

PRODUCT CODE CONFIGURATOR at www.lumel.com.pl

EPLAN

PVSA

Photovoltaic string inverter

- Designed for use in photovoltaic installations connected to the grid (On-grid).
- Available in power classes from 10 to 34kW.
- 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.

10 YEAR WARRANTY

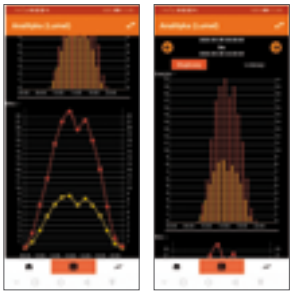
ON-GRID

10kW 15kW 20kW 25kW 34kW

RS-485 Ethernet* GSM*

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

▸ VISUALIZATION OF THE INVERTER OPERATION IN MARC CLOUD



3 YEAR WARRANTY

PRODUCT CODE CONFIGURATOR at www.lumel.com.pl

ePLAN

REVERSE POWER CONTROLLER FOR PVSA INVERTERS

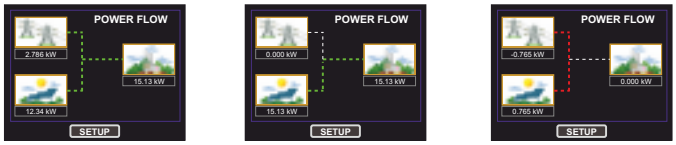
PHOTOVOLTAIC INSTALLATIONS

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.

3 YEAR WARRANTY

PRODUCT CODE CONFIGURATOR at www.lumel.com.pl

EPLAN

TERMINALS FOR PHOTOVOLTAIC POWER PLANTS

PHOTOVOLTAIC INSTALLATIONS

CZIP-PV PRO/ ext CZIP-PV PRO

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

- **Unique Features:**
  - Under impedance protection against phase to phase short-circuits
- **CZIP®-Set Software**
- **Housing** - industrial, compact aluminum
- **Direct mounting on the mounting plate**
- **Applications:** PV service lines
- **Compliant with the following standards:** EN 50549-1, EN 50549-2









	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 PD14 programmer)		-	free eCon software (using PD14 programmer - N20, N20Z or through RS-485 - N20PLUS, N20HPLUS and N20ZPLUS using PD10)					free eCon software (using miniUSB)	-	-
Additional functions	• rescaling									selection of displayed quantities (kW, V, A, Hz)	external live line indicator LLI3
	-			• **interface RS-485 Modbus Slave - only for N20PLUS, N20HPLUS and N20ZPLUS**					• **vertical display**		

DIGITAL METERS
MEASUREMENTS OF ELECTRICAL AND NON-ELECTRICAL QUANTITIES

	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).

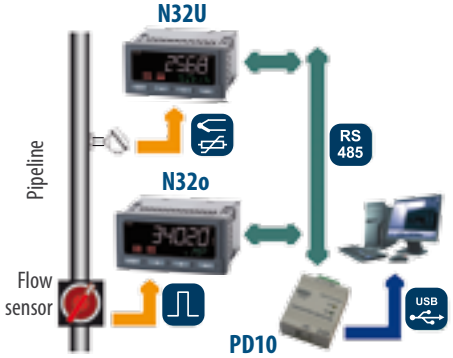

	N32U	N32o	N32H	N32P	N27P	NR10
Input	programmable Pt100/500/1000 J, K, N, E, R, S ± 20 mA, 4...20 mA ± 10 V ± 60, 150, 300 mV 400, 4000 Ω	programmable 2 x pulse input (pulses, frequency, rotational speed, period, operating time counter, encoder)	programmable current from the shunt ± 75...1500 mV d.c. 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	10A (100 A) 230 V measurment of 1-phase power network parameters
Output	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	2 x pulse
Interface	RS-485 Modbus Slave				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	LCD with backlight
Supply voltage	85...253 V a.c., 90...300 V d.c. lub 20...40 V a.c., 20...60 V d.c.				85..253 V a.c. 90...300 V d.c.	176...276 V a.c.
Protection rating	IP65				IP50 (1/5 A) or IP00 (32/63 A)	IP51
External dimensions	96 x 48 x 93 mm				110 x 53 x 60 mm	99 x 36 x 63 mm
Programming	free eCon software (using RS-485) or using buttons				free eCon software (using miniUSB, RS-485 or buttons)	using RS-485 or using 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	• Password protection



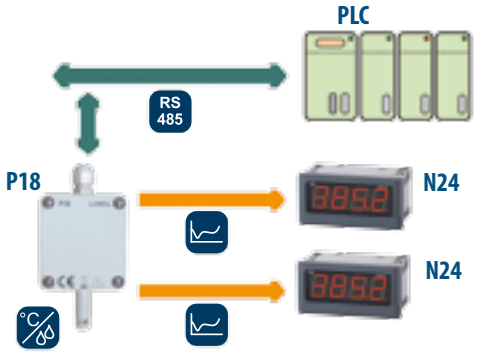
	NA3	NA5PLUS	NA6PLUS
Input	programmable Pt100/500/1000, J, K, N, E, R, S, T 0...5/20 mA d.c., 0...2/5 A d.c., 0...60 mV d.c., 0...10/600 V d.c., 0...3/10/600 V d.c. 0...4 kΩ	programmable Pt100/500/1000, J, K, N, E, R, S, T ± 40 mA d.c., ± 5 A d.c., ± 75 mV d.c., ± 300 mV d.c., ±10 V d.c., ±0...600 V d.c., 0...5 kΩ	
Output	1 x relay or 2 x OC (option); 1 x analog (option)	4 x relay or 8 x OC (option); 1 x analog (option)	
Interface	RS-485 Modbus Slave		
Bargraph	3- or 7-colour programmable horizontal	3- or 7-colour programmable vertical	2 x 3- or 2 x 7-colour programmable vertical
Display	LED 4 digits (7 mm) or 4 digits (14 mm)	LED 4 digits (7 mm)	2 x LED 4 digits (7 mm)
Supply voltage	95...253 V a.c./d.c. or 20....40 V a.c./ 20....60 V d.c.		
Protection rating	IP40	IP50	
External dimensions	96 x 24 x 125 mm	48 x 144 x 100 mm	
Programming	free eCon software (using RS-485) or using buttons		
Additional functions	• 21-point rescaling (NA5PLUS and NA6PLUS) • arithmetical functions x^2, √x, (+, -, *, / - only in NA6PLUS) • logging of the measured signal in programmed time intervals (800 samples)	• memory of minimal and maximal values for all measured parameters • password protection • conversion of any measured value into a current or voltage analog signal	

APPLICATION EXAMPLE

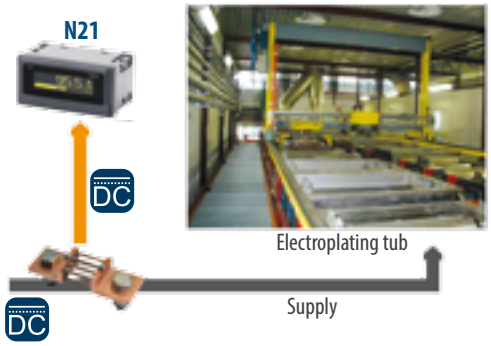
Temperature and flow measurement in a pipeline



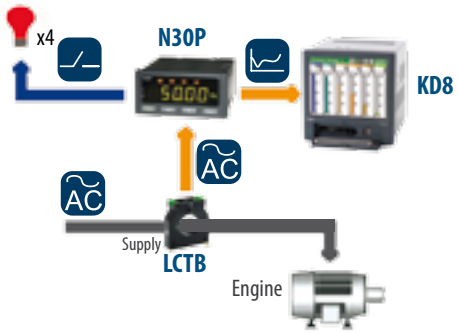
Air temperature and humidity measurement



Current measurement in an electroplating plant



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



TRANSDUCERS, SEPARATORS
MEASUREMENTS OF ELECTRICAL AND NON-ELECTRICAL QUANTITIES

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 PD14 programmer)	-	hole diameter: 28 mm or 31 mm	hole diameter: 28 mm busbar: 30 x 10 mm	free eCon software (using PD14 programmer)		-	-

SEPARATORS


ADVANCED TRANSDUCERS


basic version

version with SD/ SDHC card

version with Ethernet & internal memory

	P20G	P17G	P30U	P30O	P30H	P30P
Input	programmable 0/4...20 mA ±20 mA 0...5/10 V ±5V, ±10 V	0/4...20 mA	programmable Pt100/250/500/1000, Cu100, Ni100, Ni1000 J, K, N, E, R, S, T, B 0...4/20, ±20 mA -5...20, ±75, ±200 mV, ±10 V, ±24 V 400, 2000, 5500 Ω , RS-485 Master or Slave	2 programmable inputs: pulse counter, frequency, rotational speed, period, operating time counter, pulse differantial counter on inputs or encoder	d.c. network parameters programmable current using shunt ± 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...20mA	1 x analog 0/4...20 mA or 0...10 V 1 x relay NO 1 x additional NO relay optionally exchangable with 24 V, 30 mA supplying output		1 x analog 0/4...20 mA or 0...10 V 1 x relay NO optionally exchangable with additional analog output 0/4...20 mA or 0...10 V 1 x additonal NO relay optionally exchangable with 24 V, 30 mA supplying output	
Interface	-	-	RS-485 Modbus (Slave or Master) - standard | **Ethernet** 10/100 Base-T - option			
			-	-	**CANopen** protocol - option	-
Display	-	-	LCD 2x8 characters with LED backlight			
Supply voltage	85...253 V a.c./d.c. or 20...85 V d.c., 20...65 V a.c.	supplied from input current loop	85...253 V a.c./d.c. or 20...40 V a.c./20...60 V d.c.		85...253 V a.c. , 85...300 V d.c. or 20...40 V a.c., 20...60 V d.c.	
Protection rating	IP40	IP50	IP40			
External dimensions	22.5 x 120 x 100 mm	6.2 x 77.5 x 100 mm	45 x 120 x 100 mm			
Programming	-	-	using buttons or free eCon software using RS-485 Modbus, **Ethernet (option)**			
Additional functions	free eCon software (using PD14 programmer)	-	• alarms indicated on the display • internal memory 534336 samples • WWW server, FTP, Modbus TCP/IP Slave (optionally) • data logging in internal memory or on SD card (optionally)			
			• rescaling (up to 21 points) • memory of min. and max. values (with time stamp) • mathematic functions independent for both inputs • filtration of periodic signals (only P300)		• memory of min. and max. values	

3 YEAR WARRANTY

PRODUCT CODE CONFIGURATOR at www.lumel.com.pl

EPLAN

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	-

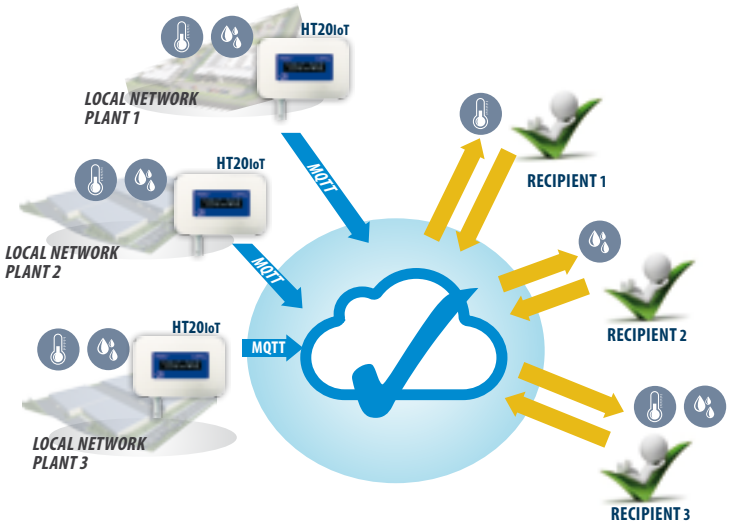
MEASUREMENTS OF ENVIRONMENTAL PARAMETERS

HUMIDITY & TEMPERATURE MONITOR

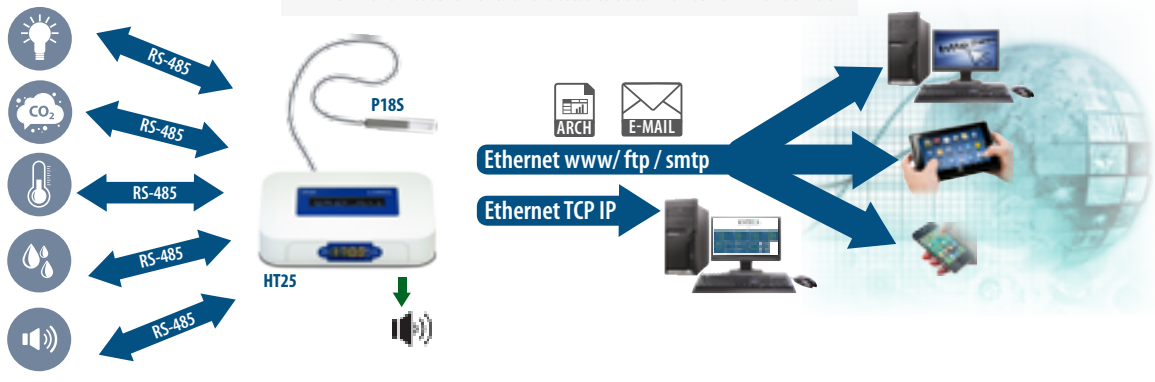
ENVIRONMENTAL PARAMETERS DATA LOGGER

	HT20	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

APPLICATION EXAMPLE



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



... max. 10

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 or15 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	-

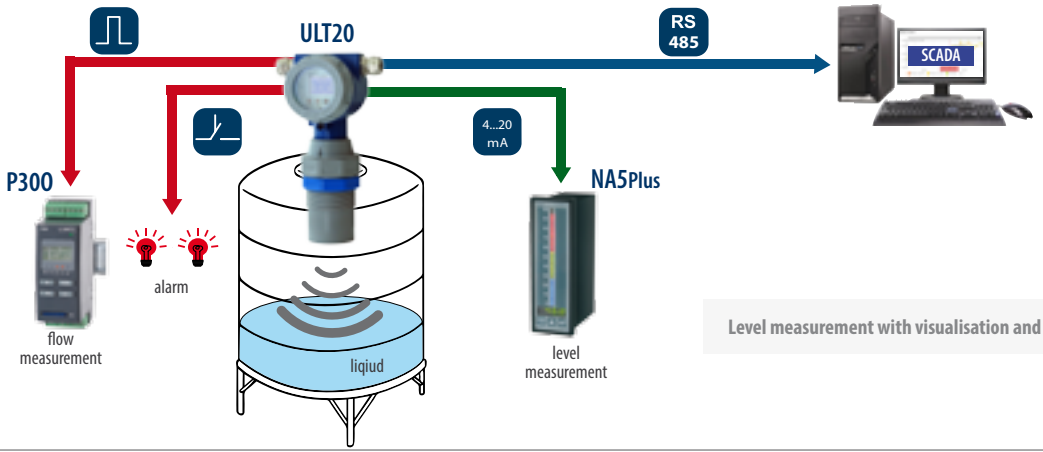
Typical damping for a given environment (reflective medium)

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

APPLICATION EXAMPLE



Level measurement with visualisation and recording.

TEMPERATURE CONTROLLERS
TEMPERATURE & PROCESS CONTROL

INDUSTRIAL PROCESS CONTROLLERS






	RE11	RE22	RE71	RE81	RE72	RE82	RE92
Number of channels	1	1	1	1	1	1	2
Input	progammable Pt100, J, T, K, S, R	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	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 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 24 V 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		**2 x RS-485 (Modbus Slave & Master), Ethernet** - option
Alarm	1	-	-	1	max. 2	max. 3	max. 6
Control	on/ off or PID with self-tuning, heating or cooling						
	-	-	-	step-by-step			
	-	-	-	-	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					
External dimensions	52 x 52 x 76 mm	48 x 48 x 93 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	-	usign buttons	usign buttons or free eCon software (using PD14 programmer)		using buttons or free eCon software using RS-485		using buttons or free eCon software using RS-485 or Ethernet
Additional functions	-	• soft start	-		• soft start • 6 types of alarms • profile control (15 programs with 15 segments in each)		• alarm LATCH function • **parameter logging on SD card** • **FTP and WEB server - option** • profile control (20 programs with 15 segments in each)

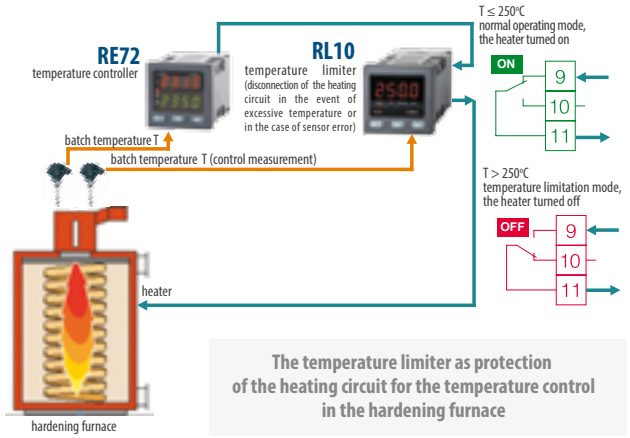
INDUSTRIAL PROCESS CONTROLLERS | **TEMPERATURE LIMITER**



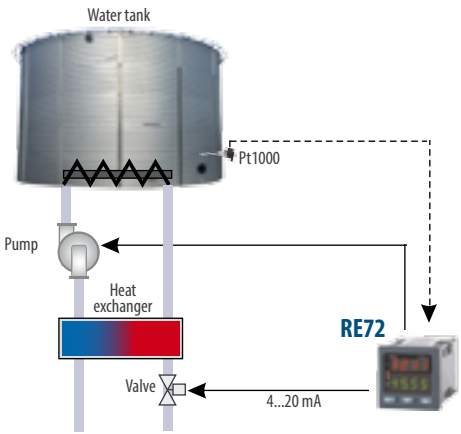


	RE55	RE60	RE62	RE01	RL10
Number of channels	1	1	1	1	1
Input	fixed Pt100 J, K, S		programmable Pt100 J, K ± 20 mA, ± 10 V, ± 60 mV	fixed Pt100, Pt1000 NTC	programmable Pt100/1000 J, T, K, S, R, B, N
Additional input	-		-	logic	-
Output	2 x relay or 1 x logic 0/5 V + 1 x relay	1 x relay or 1 x logic 0/5 V 1 or 2 x relay - option	max 3 x relay or 2 x relay and 1 x analog supply 24 V d.c. - option	2 x relay (1 x NOC 10 A/230 V, 1 x NO 5 A/230 V)	relay
Interface	-	-	RS-485 (option)	-	RS-485
Alarm	1	max 2 - option	max 3	max 2	-
Control	on/off, PID, heating or cooling				on/off
Display	green LED 4 digits (10 mm)	LCD (2 x 8 characters)	OLED 128 x 64 pixel, amber color	red LED 4 digits (14 mm)	red LED 4 digits (9.2 mm)
Supply voltage	85... 253 V d.c./a.c.	24 or 110 or 230 V a.c. or 18...72 V d.c.	22...60 V a.c. / 20...60 V d.c. (terminals 11-12) or 60...253 V a.c. / 60...300 V d.c. (terminals 10-11)	230 V a.c.	230 V a.c.
Protection rating	IP40		IP30	IP65	
External dimensions	96 x 96 x 65 mm	45 x 100 x 120 mm	53 x 110 x 60.5 mm	76 x 34 x 80 mm	48 x 48 x 93 mm
Programming	using buttons		using buttons or free eCon software using RS-485	using buttons or free eCon software (using PD14 programmer)	using buttons or free eCon software using RS-485
Remarks	-			**defrost function with programmable automatic or manual mode**	meets the requirements of **EN 60519-2** for class 2 (Safety in electroheat installations)

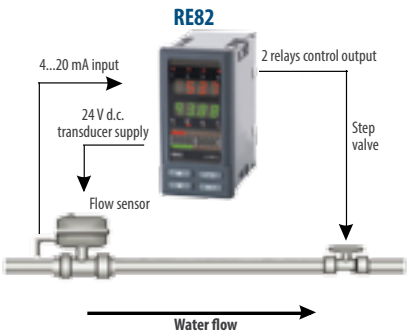
APPLICATION EXAMPLE



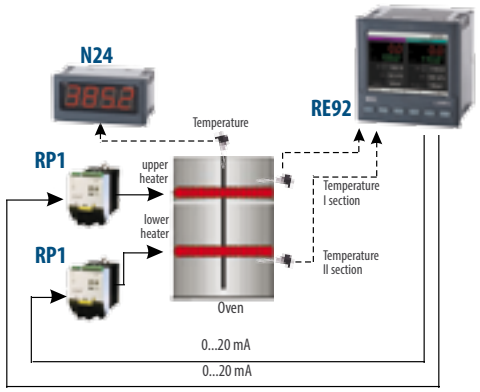
The temperature limiter as protection of the heating circuit for the temperature control in the hardening furnace



Temperature measurement and control in a water tank



Water flow measurement and 3-stage valve control



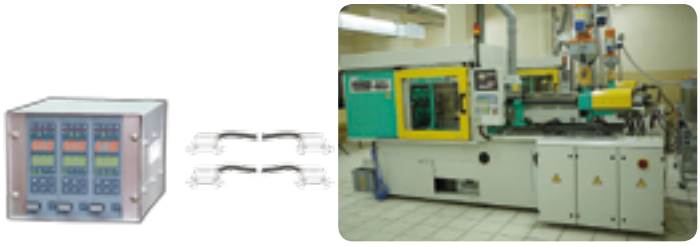
Batch temperature measurement with a smooth heater power control in a hardening furnace

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.

APPLICATION EXAMPLE

Temperature control in an injection mould

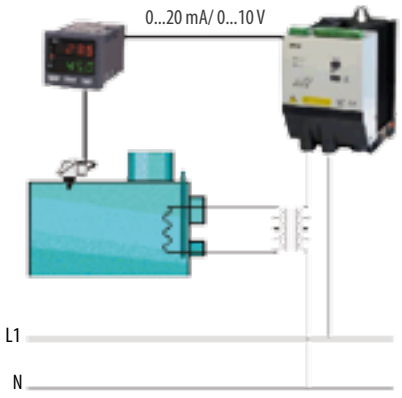




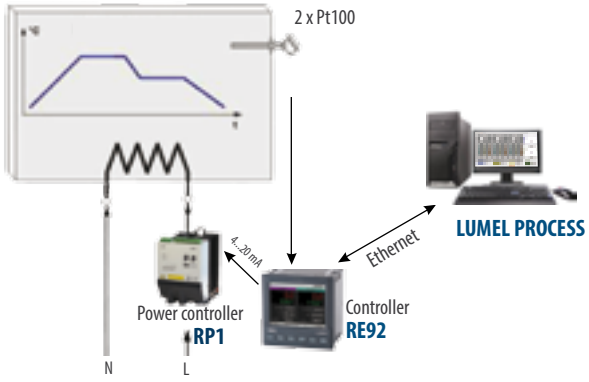

	RP7	RP1	RPL1	RP3
Version	1-phase			3-phase
Control	phase	phase, pulse, on/off		
Input signal	0..5/10V, 0/4..20mA potentiometer			
Output	-	2 x relays		
Output current	5-15 A	25-125 A		3 x 40-450 A
Load supply voltage	230 V	230 V, 400 V a.c.	230, 400, 500 V a.c.	400 V a.c.
Load configuration	2-wire	2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

APPLICATION EXAMPLE

Continuous temperature control in furnace



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



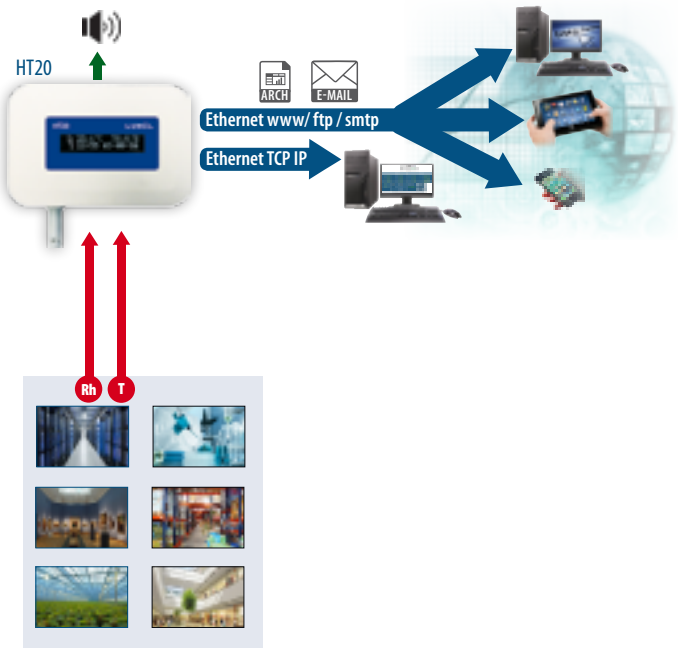
RECORDERS
RECORDING



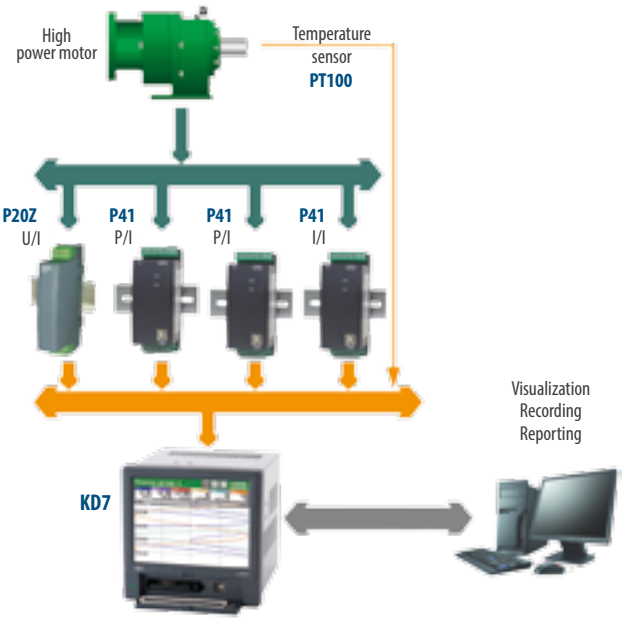
	SM61IoT	KD6	KD7	KD8
Number of channels	up to 2500	up to 60 logical channels (max. 8 universal analog channels)	up to 24 channels (max. 12 analog channels and/or max. 24 digital channels)	up to 6
Input	Port II: Modbus RTU Master, (100 groups 25 registers each) 2 x logic (option)	programmable (0, 4 or 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
		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.)
		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)
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.
Memory	8 GB	internal 8 GB	internal – up to 6 MB external – CF card up to 4 GB	
Display	-	colour LCD 3,5" TFT type, 320 x 240 pixels	LCD 5,7"TFT type 320 x 240 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.	
Protecting rating	IP40/IP20	IP65		
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
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)		
		• 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	

APPLICATION EXAMPLE

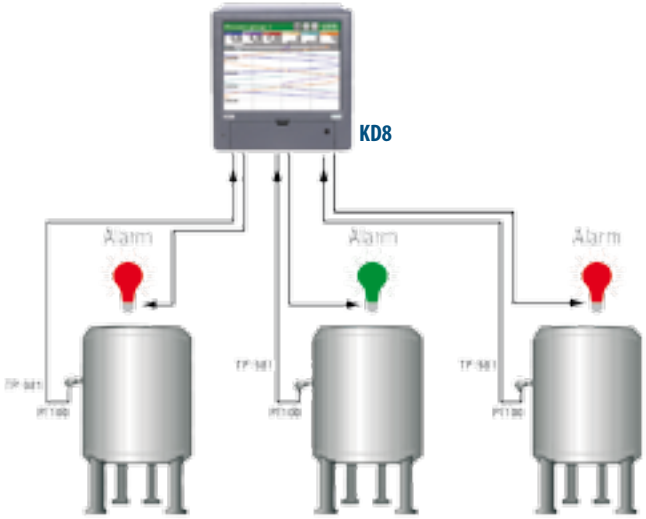
Access to the device from anywhere in the world thanks to the built-in web server.

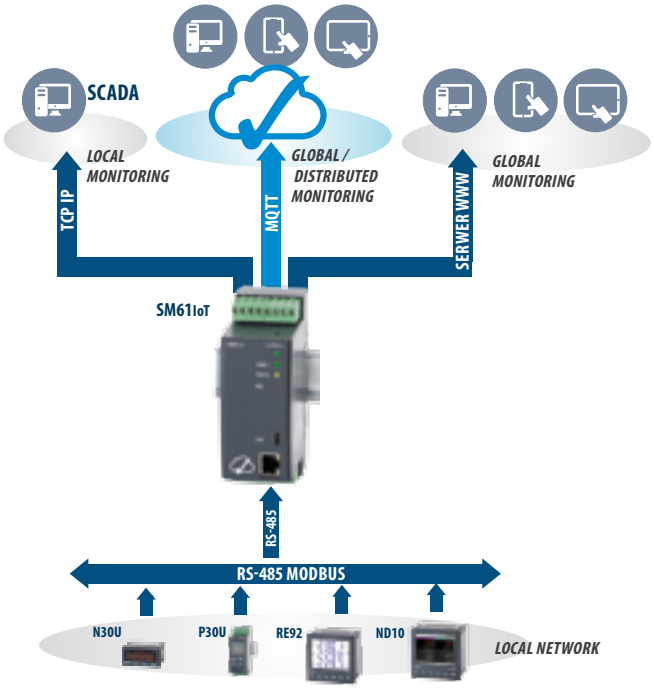


Measurement and visualization of motor working parameters (temperature and motor load)



Temperature measurement, logging and alarming





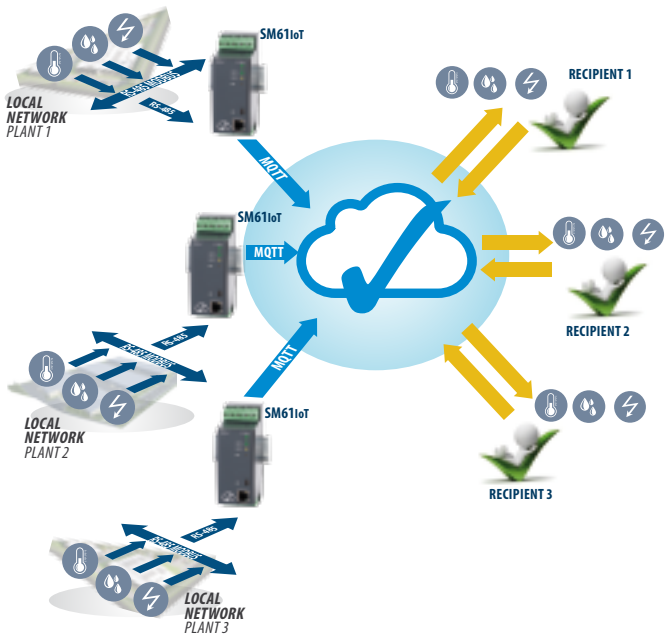
INPUT/OUTPUT MODULES

	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

APPLICATION EXAMPLE



INTERFACE/PROTOCOL CONVERTERS

	PD51	PD9	PD9W	PD10
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	to 1 Mb/s
Supply voltage	7...35 V d.c. or 20...24...40 V a.c./d.c. or 85...230...253 V a.c./d.c.	5 ÷ 36 V 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	52 x 44 x 24 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

MULTIFUNCTIONAL TIME RELAY

	LTR10
Type	multifunctional - 10 time functions
Number and type of contact	2 CO - changeover
Number of time ranges	10 time ranges
Resistive load	5A / 250 V AC
Supply voltage	12...240 V AC/DC
External dimensions	91 x 17.5 x 65.4 mm

POWER SUPPLIES
CONTROL

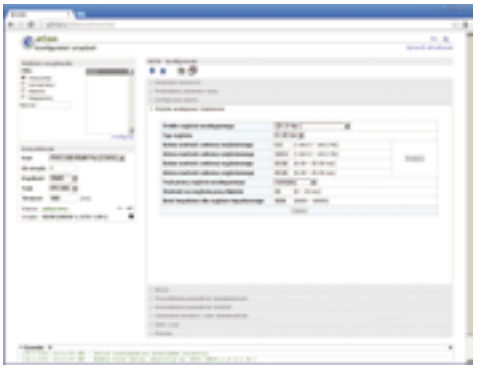
	ZS20-1P	ZS20-1K	ZS20-1L	ZS20-1A	ZS20-1B	ZS20-1C
Rating	24V / 0.63 A	24 V/ 1.5 A	24V/ 1.75 A	24V / 2.5A	24V / 5A	24V / 7.5A
Power	15 W	36W	45W	60W	95 ... 120 W	120 ... 180 W
Input voltage range AC	85 ... 264 VAC					
Input voltage range DC	120 ... 370 VDC				125 ... 350 VDC	
Protection rating	IP20			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

eCON - FREE SOFTWARE FOR CONFIGURATION OF LUMEL PRODUCTS

SOFTWARE TOOL

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

eCon



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

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

LUMEL SCANNER

SOFTWARE TOOL

How many times have you searched for the IP address of a device that is connected to the network you manage?. If Lumel devices work in it and you have access to a local WiFi network, the problem will be solved by the free Lumel Scanner application.

Just open it on your smartphone and the devices working in a given network will be automatically tracked. Thanks to the application you will get an overview of measured parameters and access to the device's website. Additionally, to facilitate localization, you can define the name of each device according to your needs.

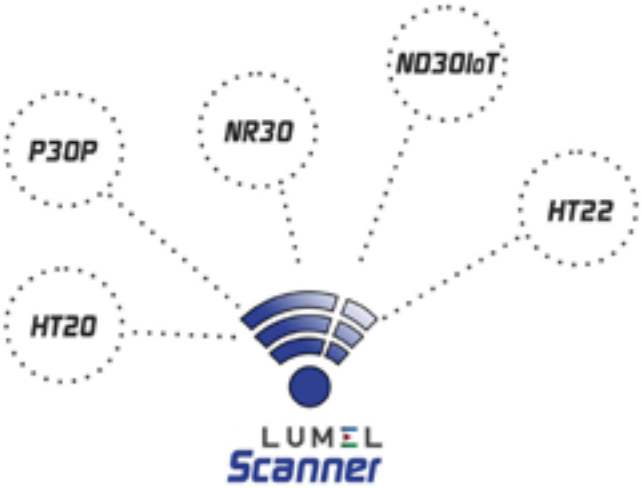
The application also allows you to connect devices from outside the local network, as long as you know their IP address.

The application works in Android – from version 5.1.

It supports the following devices:

- temperatury and humidity data logger - HT20, HT20IoT,
- environmental parameters data logger - HT22IoT,
- data logger - HT25,
- power network meters - ND30, ND30IoT, NR30, NR30IoT,
- transducers - P30H, P30O, P30U, P30P

The application works in Android – from version 5.1. It can be dowloaded from Google Play.



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	100 mA ... 25 A		100 mA ... 100 A		
· through a transformer*	xA x/5 A; xA/1 A		xA x/5 A; xA x/1A		
(on request, with twice or six-times overload)					
- voltage: · direct	6 V ... 600 V		6 V ... 1000 V		
· through a transformer	xV/100 V; xV/110 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 35)

MOVING-IRON METERS



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

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:	500 V	
- through a transformer:	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°

ANALOG MEASUREMENT

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 38)

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 35)

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	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...55 Hz; 45...65 Hz; 48...52 Hz; 55...65 Hz; 360...440 Hz; 380...420 Hz			
Frequency	45...50...60...65 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			

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:	100 μA...60 A			
- voltage:	60 mV...600 V			
Proof voltage	2 kV	3 kV		
Protection rating	IP52 (IP65 on request)			IP52
Climate version	normal			
Rated operational conditions: - ambient temperature - relative air humidity	5...23...55°C 25...85%			
Class	1			

MOVING-IRON METERS




	MA16L(P)	MA17L(P)	MA19L(P)	MA12L(P)
Type of scale	240°			
External dimensions	48 x 48 mm	72 x 72 mm	96 x 96 mm	144 x 144 mm
Interchangeable scale	-	-	-	-
Measuring ranges - current:	100 mA, 1 A 5 A, 10 A			
- voltage:	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	0.5_{Cap}....1...$0.5_{IND.}$ 0.8_{Cap}....1...$0.3_{IND.}$ 0.8_{Cap}....1...$0.8_{IND.}$		45.....50.....55Hz 45.....55.....65Hz 55.....60.....65Hz	
Frequency	49...51 Hz (1-phase) 45...65 Hz (3-phase)		360...400...440Hz 380...400...420Hz	
Proof voltage	2 kV			
Protection rating	IP52 (IP65 on request)	IP52	IP52 (IP65 on request)	IP52
Climate version	normal			
Class	0.5			

ANALOG PANEL METERS / SCALE 240°
ANALOG MEASUREMENT

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

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

	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 4...60 A; xA x/5A; xA/1A	45.....50.....55 Hz 45.....55.....65 Hz 55.....60.....65 Hz 360...400...440 Hz 380...400...420 Hz		1000 µA...30 A 60 mV...600 V 40 mV...1000 V
Proof voltage	3 kV	2 kV		3 kV
Parameters of measured signal	45...65 Hz	-		-
Protection rating	IP52 (on request IP65)	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 BAR CONDUCTOR

	LCTB 45/21 (40)	LCTB 50/21 (30)	LCTB 50/21 (50)	LCTB 62/20 (40)	LCTB 74/20 (45)	LCTB 50/30 (30)
Primary current [A]	50...400	50...400	50...400	50...400	30...400	75...600
Hole diameter	∅20	∅21	∅21	-	∅20	∅26
Busbar (mm)	20 x 10	20x10	20x10	20 x 12 2 x 15 x 6	20 x 10	30x10; 20x15 20x20 2x20x10
Accuracy class	0.5; 1; 3			0.2S; 0.2; 0.5S; 0.5; 1; 3		0.5; 1; 3

LCTB 45 LCTB 62

LCTB CURRENT TRANSFORMERS FOR A BAR CONDUCTOR

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

LCTB 74 LCTB 86

LCTB CURRENT TRANSFORMERS FOR A BAR CONDUCTOR

	LCTB 74/40 (45)	LCTB 74/50 (45)	LCTB 86/50 (45)	LCTB 86/60 (45)	LCTB 104/60 (45)	LCTB 104/80 (45)
Primary current [A]	40...1000	100...1000	100...1250	100...1600	100...1600	200...2000
Hole diameter	∅35	∅41	∅46	∅51	∅54	∅65
Busbar (mm)	40x12 2x30x15	50x12 2x40x10	50x12 2x40x15	60x12 2x50x15	60x12 2x50x15 2x40x20	80x12 2x60x15 2x50x25
Accuracy class	0.2S; 0.2; 0.5S;0.5; 1; 3					

LCTB 104 LCTB 86

LCTB CURRENT TRANSFORMERS FOR A BAR CONDUCTOR

	LCTB 140/80 (45)	LCTB 140/100H (45)	LCTB 225/125 (50)	LCTB 225/167 (50)
Primary current [A]	200...2000	200...4000	600...6000	1000...7500
Hole diameter	∅72	∅86	-	-
Busbar (mm)	80x30 2x60x25	100x30 2x80x25 2x70x30	124x93	166x65
Accuracy class	0.2S; 0.2; 0.5S; 0.5; 1; 3			

LCTB 140 LCTB 225

CURRENT TRANSFORMERS
ANALOG MEASUREMENT

LCTB CURRENT TRANSFORMERS FOR A BAR 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	100x30 2x80x25 2x70x30	38 x 128	70 x 130
Accuracy class	0.2S; 0.2; 0.5S; 0.5; 1; 3		0.2; 0.5; 1; 3	

LCTS SPLIT CORE CURRENT TRANSFORMERS


LCTS series — compact version

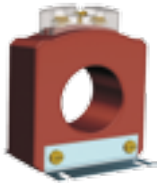
	LCTS 50/18SC	LCTS 50/32SC	LCTS 93/30SC (40)	LCTS 125/50SC (40)	LCTS 155/80SC (40)	LCTS 195/80SC (64)
Primary current [A]	150...250	250...500	100...400	250...1000	250...3000	500...5000
Hole dimensions (depth x width) [mm]	∅18.5	∅32.5	23 x 33	85 x 54	85 x 125	82 x 162
Accuracy class	1		0.5; 1			

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	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	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



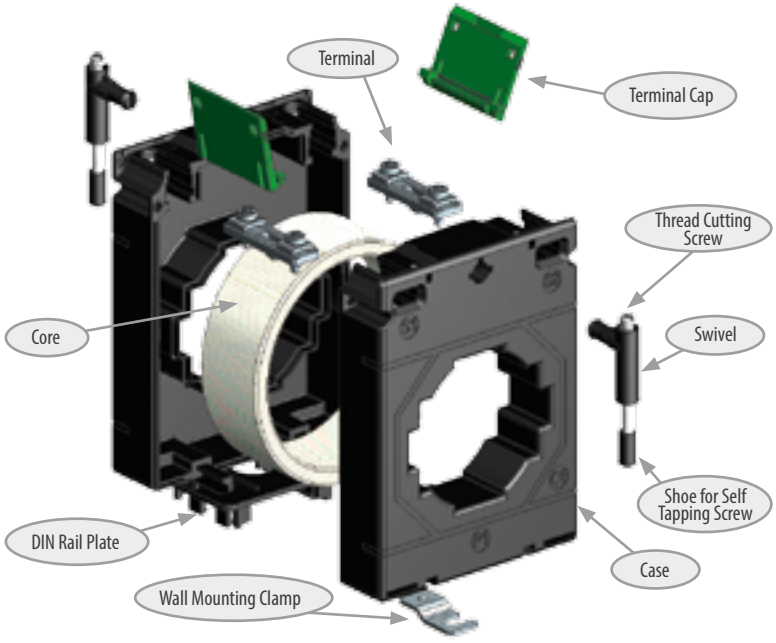
CURRENT TRANSFORMERS DEDICATED TO ND20CT

	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

* - more detailed informations in data sheet

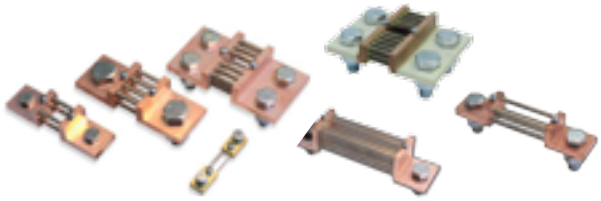
We offer: On customers request we offer transformer calibration certificates.

ACCESSORIES:



MORE INFORMATION IN OUR CATALOG:

SHUNTS / CLASS 0.2, 0.5
ANALOG MEASUREMENT



	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

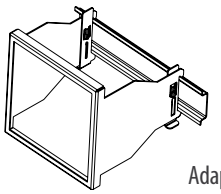
- Custom-made executions are available on request (voltage drop, current).

ADAPTER FOR DIN RAIL TS35

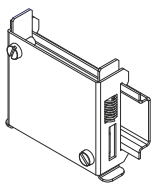
- Designed for mounting of panel instruments on the DIN rail TS35.

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

SOON AVAILABLE IN FULL A CLASS

NP45

Portable power quality analyzer

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

NP40

Portable power quality analyzer

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

3 YEAR WARRANTY

PRODUCT CODE CONFIGURATOR at www.lumel.com.pl

EPLAN

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.

Bluetooth

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

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. 750°C.

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/m^2), foot candle (lm/ft^2)
- 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

PROTECTION RELAY

NUMERICAL PROTECTION, AUTOMATION, MEASUREMENTS, CONTROL, RECORDING AND COMMUNICATION

	CZIP-PR0	extCZIP-PR0	CZIP-2R PR0/ ext CZIP-2R PR0	CZIP-PV PR0/ ext CZIP-PV PR0
Description	Numerical protection relays for utilities and industry MV switchgears	Numerical protection relay for MV switchgears with additional inputs and outputs and communication ports	Automatic bus transfer relay for MV switchgears	Integrated protection and control relay for EPV switchgears and other renewable energy sources
External dimensions :				
- rear side mounted version	306 x 172 x 154 mm	283 x 190 x 153.5 mm	306 x 172 x 154 mm/283 x 190 x 153.5 mm	
- front side mounted version	306 x 176 x 200 mm	312 x 213 x 235 mm	306 x 176 x 200 mm/312 x 213 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 touch panel			
Programmable diods	14 two-colour programmable LEDs			
Programmable logis	Yes (40 logics line)			
Binary inputs	28	28 or 56	28/28, 56	28/28, 56
Relay outputs	20	20 or 40	20/20, 40	20/20, 40
Error log	Yes			
Event log	Yes			
Communications ports	USB, 2 x RS-485, Ethernet 10/100 BASE-TX, fibre optic (option)	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)	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	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 104, IEC 61850, Modbus, ASCII/RTU	DNP 3.0, IEC 60870-5-103 and IEC 60870-5-104, IEC 61850, Modbus ASCII/RTU
POWER				
Rated supply voltage	220 V d.c. 0..220..300 V	230 V a.c. 85..230..265 V	24 V d.c. 19..24..65 V	
Power consumption	< 20 W			
PHASE CURRENT INPUT CIRCUITS				
Rated current I_n	5 A or 1 A			
Measurement range	0...192 A			
Measurement range	0 A >	0.35 A - 50 A	<192 A < 10%	< 1.5% < 10%
Rated frequency f_n	50 Hz			
Power consumption at I=I_n	< 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			
Measurement range	0-5 A			
Measurement error	0.02 - 3.5 A		< 1.5%	
Rated frequency f_n	50 Hz			
Power consumption at I= I_{0n}	< 0.4 VA			

PROTECTION RELAY

NUMERICAL PROTECTION, AUTOMATION, MEASUREMENTS, CONTROL, RECORDING AND COMMUNICATION

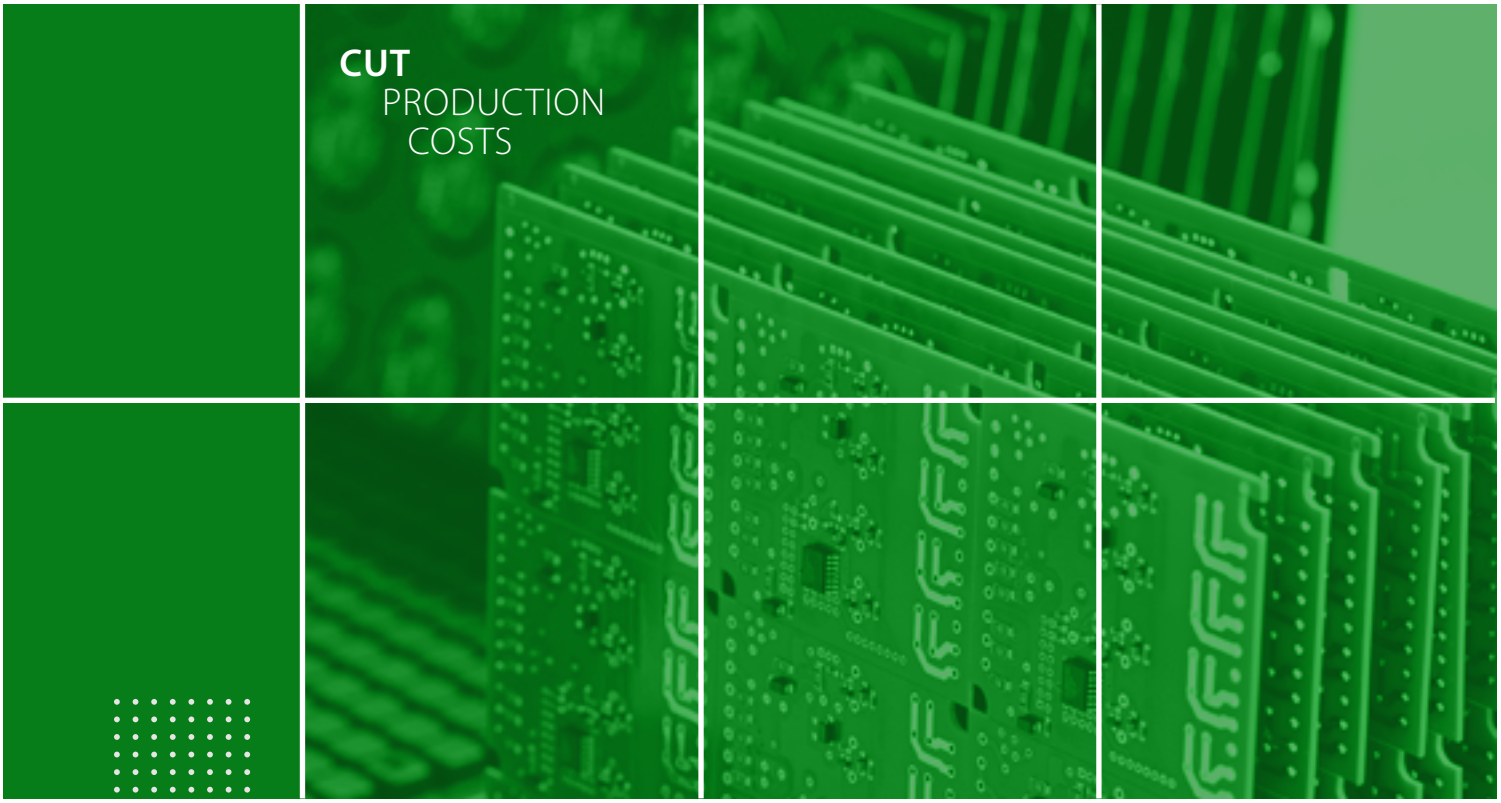
	CZIP-PR0	extCZIP-PR0	CZIP-2R PR0/ ext CZIP-2R PR0	CZIP-PV PR0/ ext CZIP-PV PR0
ENERGIZING INPUTS (ZERO SEQUENCE VOLTAGE INPUT CIRCUITS)				
Rated voltage U_{0n}	100 V			
Measurement range	0...130 V			
Measurement error in measurement range	< 1.5%			
Rated frequency f_n	50 Hz			
Power consumption at U= 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		
SIGNAL OUPUTS				
Rated voltage	220 V	24 V		
Continous current-carrying capacity	5 A			
Inductive circuit opening				
• 220 V DC, L/R = 40 ms	0.1 A			
• 220 V AC, cos f = 0.4	2 A			
POWER OUTPUT RELAY				
Rated voltage	220 V	24 V		
Continous current-carrying capacity	8 A			
Inductive circuit opening: 220 V DC, L/R = 40 ms	1,2 A/300 cycles			
Time - switching of impulse	min 0.1 s			
Time - switching on impulse	min 0.1 s			
Software	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 bus transfer without recovery cycles 2R1T automatic bus transfer without recovery cycles with one power transformer 2R mini automatic bus transfer with recovery cycles and two incoming lines 2R3H automatic bus transfer with recovery cycles and three incoming lines	PV service line
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**

- **CZIP-PRO**

- **extCZIP-PV-PRO**

OEM | ODM | EMS SERVICES



For close to 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:

- **EMS -** Every year forward, we receive numerous orders for assembly of electronic subassemblies, determining us to invest in up-to-date and high-duty lines for SMT assembling of electronic elements, making us capable of producing prototypes, small , medium and large sized PCBs.
- **OEM / ODM -** Conceptualizing – Designing – Development – Production, in the scope of housing, electronics, mechanics, software. All Under one roof. We offer sub-contracting services and industrial co-operation.

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.

The first 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 consists of handling system, loader, conveyors and unloader

The second assembly line is composed of:

- Silks creen printer JUKI K1760,
- Placement machine JUKI KE-2060,
- Reflow oven ERSA HOTFLOW 2/14,
- Magazine loader and line unloader – JOT,
- Conveyors and in-line workstation – JOT.

Additionally our machine park is equipped with:

- Tester AOI - PowerSpecter GTAz 350CE Dolphin
- Optical control stands,
- Flying Probe Takaya tester.

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-610G.

OUR SMT LINES CAN MOUNT UP TO 105,000 ELECTRONIC COMPONENTS PER HOUR.

PCB size **max. 410x360mm / min. 50x30mm / Optimum: 200x300mm /**

The number of layers: **36**

Components up to size **1005 – 74 mm x 74 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

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.

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.

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.

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.

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

Our services for you

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

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

Electrical quantities

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.

Temperature

We guarantee competitive prices and delivery dates!

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

Temperature and relative air humidity

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NOTES

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LUMEL has been known, since 1954, all over the world, as a manufacturer of top quality industrial automation devices. In 2020, international reports listed Lumel as one of the world's leaders in the production of electrical quantity transducers, network parameter analyzers and analog meters.

Lumel offers consists of product categories, such as:
for low voltage:

- Network parameter meters and analyzers,
- Electrical and non-electrical quantity transducers,
- Digital meters,
- Recorders and data loggers,
- Controllers,
- Analog meters,
- Current transformers,
- Shunts.

Depending on the needs of the customer, the automation products and systems our offer relay on various data communication protocols (MODBUS, ETHERNET, PROFINET, BACNET or MQTT).

for medium voltage :

- Protection relays.

Apart from the products, Lumel specializes in complex systems used for:

- monitoring and optimizing the cost of electricity and other utilities (water, gas, compressed air)
- monitoring environmental parameters: temperature, humidity, light intensity, CO2, volatile gases
- solar energy.

In addition to its manufacturing activity, Lumel offers also:

- OEM services in the scope of housing designing, elecctronics, mechanics, hardware and software. All under one roof.
- EMS services.
- ODM services.

We are a member of an international capital group which consists of the following companies: LUMEL S.A., LUMEL ALUCAST Sp. z o.o., Rishabh Instruments Pvt. Ltd., Sifam Tinsley US, Sifam Tinsley UK.

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