

PRODUCT GUIDE

2009

MEASUREMENTS



CONVERSION

CONTROL



STEERING

RECORDING



VISUALIZATION

TRANSMISSION



DATA LOGGING

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December 2008



DIGITAL METERS – N15 and N15Z series

- Destined to measure:
 - d.c. current and d.c. voltage, temperature, resistance, voltage from a shunt, another physical quantities converted into a standard signal (N15),
 - a.c. current and a.c. voltage, frequency (N15Z),
 - the True RMS signal – measurement with the constant component or only with the variable component (N15Z),
- IP65 protection class of the housing,
- 14 or 20 mm high LED display, in red, or green colour,
- Possibility of programming meter parameters by means of the PD15 programmer
- Supply: 230 V 50/60 Hz, 115 V 50/60 Hz, 24 V 50/60 Hz or 24 V d.c.
- Ideal for assembling in panels with limited penetration depth
- Overall dimensions: 96 × 48 × 64 mm



NEW

DIGITAL METERS – N20 and N20Z types

- Destined to measure:
 - d.c. current and d.c. voltage, temperature, voltage from shunt, other physical quantities converted into a standard signal (N20),
 - a.c. current and a.c. voltage, frequency (True RMS signal measurement), measurement with a constant component or only a variable component (N20Z),
- Configurable averaging time of measurements,
- Two alarms with output of OC type,
- Additional independent 24 V 30 mA supplying output (N20),
- Three-colour LED display, digits of 14 mm height (red, green and orange),
- Supply: 85...254 V 50/60 Hz, 20...40V 50/60 Hz or d.c.
- Housing protection class from the frontal side: IP65,
- Ideal for mounting in panels with a small penetration depth,
- Overall dimensions: 96 × 48 × 64 mm.

LPConfig

3 - colour display



PROGRAMMABLE DIGITAL METERS – N11, N12 and N12B series

- Destined to measure:
 - d.c. current and d.c. voltage,
 - true RMS a.c. current or a.c. voltage,
 - temperature, resistance,
 - r.p.m., number of pulses, working hours, period, frequency, rotational speed,
 - parameters in single-phase power networks: active, reactive and apparent power, $\cos \varphi$, $\tan \varphi$, φ angle, active, reactive and apparent energy, frequency,
 - display the value transmitted through RS-485 (N12B),
 - storage and display values of the chosen register from the device connected to the bus (N12B),
- 14 or 20 mm high LED display, in red or green colour,
- Outputs: relay, analog and digital RS-485 – MODBUS protocol (N12),
- Supply: 85...253 V a.c./d.c. or 20...40 V a.c./d.c.,
- Ideal for assembling in panels with limited penetration depth,
- Programmable measuring and auxiliary functions,
- Overall dimensions: 96 × 48 × 84 mm (N11), 96 × 48 × 93 mm (N12).



DIGITAL METERS MOUNTED ON DIN RAILS – N17Z type

- Destined for measurement of a.c. voltage, a.c. current and frequency,
- Measurement of True RMS signals (measurement with a constant component or only with a variable component),
- Display field of 4 or 3 digits in red or green color,
- Supply: 230 V 50/60 Hz, 115 V 50/60 Hz, 24 V 50/60 Hz or 24 V d.c.,
- Designed for mounting on a 35 mm DIN rail,
- Overall dimensions: 52.5 × 90 × 64.5 mm



PROGRAMMABLE DIGITAL METERS WITH MULTICOLOUR BARGRAPHS – NA series

- Destined to measure:
 - level, flow, pressure, humidity, and other non-electric quantities converted into a standard signal,
 - temperature, resistance,
 - d.c. current or d.c. voltage,
- One (NA3, NA5, NA21) or two (NA6, NA2) measuring channels
- Ideal for assembling in synoptic panels, control desks and computer-based systems in order to inspect important process parameters,
- High accuracy class, programmable measuring sub-ranges,
- Recording of the measuring signal,
- Diode bargraphs: 7-colour, 3-colour (NA3, NA5, NA6) and 1-colour or fluorescent display (NA2),
- Possible programming of the bargraph colour (NA3, NA5, NA6),
- Outputs: relay, analog, OC and digital RS-485 – MODBUS protocol,
- Supply: 95...253 V a.c./d.c. or 20...40 V a.c./d.c.,
- Programmable measuring and auxiliary functions,
- Overall dimensions:

NA3	96 × 24 × 115 mm,
NA2	36 × 144 × 130 mm
NA5, NA6	48 × 144 × 92 mm.

7 - colour display



METERS AND TRANSDUCERS OF 3-PHASE NETWORK PARAMETERS

METER OF NETWORK PARAMETERS AND HARMONICS - N10 and N10A types



- Destined to measure:
 - parameters of 3-phase power networks: voltage, current, active, reactive and apparent power, $\cos \varphi$ power factor, $\text{tg } \varphi$, frequency, active, reactive and apparent energy,
 - **harmonics up to the 25-th,**
 - **THD factors,**
- Monitoring of mean power, i.e. "power guard" (averaging time: 15, 30, or 60 min),
- Programmable measuring and auxiliary functions,
- Measurement of maximal and minimal values,
- Input and pulse output,
- Outputs: analog (1 or 3), relay (1 or 3), digital RS-485 - MODBUS protocol,
- Supply: 85...253 V a.c./d.c.,
- Overall dimensions: 144 × 144 × 77 mm.

METER OF NETWORK PARAMETERS - N13 type



- Destined to measure:
 - parameters of 3-phase power networks: voltage, current, active, reactive and apparent power, $\cos \varphi$ power factor, $\text{tg } \varphi$, frequency,
 - **harmonics up to the 25 th,**
 - **active, reactive and apparent energy**
 - THD factors.
- Monitoring of mean power, i.e. "power guard" (averaging time: 15, 30, or 60 min),
- Programmable measuring and auxiliary functions,
- **Outputs: analog (1), relay (1), digital RS-485 - MODBUS protocol,**
- Supply: 85...253 V a.c./d.c.,
- Overall dimensions: 96 × 96 × 70 mm.

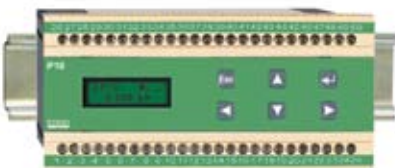


METER OF NETWORK PARAMETERS - N14 type



- Destined to measure: parameters of 3-phase power networks: voltage, current, active, reactive and apparent power, $\cos \varphi$, frequency,
- Measurement of reactive and active energy,
- Outputs: digital RS-485 - MODBUS protocol, relay, pulse,
- Supply: 85...253 V a.c./d.c.
- Overall dimensions: 96 × 96 × 70 mm.

TRANSDUCER OF NETWORK PARAMETERS AND HARMONICS - P10 and P10A types



- Destined to process:
 - parameters of 3-phase power networks: voltage, current, active, reactive and apparent power, $\cos \varphi$ power factor, $\text{tg } \varphi$, frequency and measure active, reactive and apparent energy,
 - **harmonics measurement up to the 25-th,**
 - **THD factors,**
- Monitoring of mean power, i.e. "power guard" (averaging time: 15, 30, or 60 min),
- Outputs: analog (4), relay (4), digital RS-485 - MODBUS protocol,
- 3 inputs to control energy counter tariffs,
- Programmable measuring and auxiliary functions,
- Measurement of maximal and minimal values with a time marker,
- Assembling on a 35 mm rail,
- Supply: 85...253 V a.c./d.c.,
- Overall dimensions: 152 × 73 × 118 mm

CLAMP-ON METER OF NETWORK PARAMETERS – NC8 type



- Destined to measure:
 - a.c. current and a.c. voltage,
 - d.c. current and d.c. voltage,
 - resistance,
 - active, reactive and apparent power,
 - THD factor,
 - current and voltage harmonics up to the 25 th,
 - peak factor.
- Display of MIN, MAX, MIN-MAX values,
- Automatic supply switching off.

ELECTRONIC WATT-HOUR METERS

1-PHASE AND 3-PHASE WATT-HOUR METERS

WITH DIGITAL COMMUNICATION - LS1.1 AND EM03 types

- Destined for the measurement of energy in 1-phase and 3-phase power networks with the simultaneous display of measured quantities and the digital transmission
- Fastness against strong external magnetic fields,
- Antireverse measurement,
- Antitheft design,
- Outputs – optionally adapted to the user's needs:
 - RS-232 or RS-485 with MODBUS protocol – radio SRD (1E) or OC,
- Integrated clock to switch tariffs,
- Auxiliary functions to facilitate the watt-hour meter work in monitoring networks.



MEASURING TRANSDUCERS

MEASURING TRANSDUCERS - P11, P13 and P20 series

- Destined for the continuous conversion into an analog standard signal:
 - a.c. current and a.c. voltage (P20Z),
 - d.c. current and d.c. voltage (P11H, P20),
 - temperature and resistance (P11T, P20),
 - power in 1-phase and 3-phase networks (P11P, P13P),
- Galvanic separation,
- Possibility of programming ranges and the sensor type by means of the PD14 programmer and free LPConfig software (P20)
- Supply: 85...253 V a.c./d.c. or 20...50 V a.c./d.c.,
- Overall dimensions: 22.5 × 120 × 100 mm and 45 × 120 × 100 mm.

LPConfig



PROGRAMMABLE MEASURING TRANSDUCERS WITH RS-485 - P12 series

- Destined for the continuous conversion into a digital and analog standard signal:
 - a.c. current and a.c. voltage,
 - d.c. current and d.c. voltage,
 - temperature, resistance,
 - power, energy, power factor, angle, network frequency,
 - r.p.m., impulses, frequency, period, rotational speed, working hours,
- Outputs: relay (2), analog and digital RS-485 - MODBUS protocol,
- Recording of the measured signal in programmed time segments, event recording,
- LCD display, 2 × 8 digits,
- Galvanic separation,
- Supply: 85...253 V a.c./d.c. or 20...50 V a.c./d.c.,
- Programmable inputs, measuring outputs and alarms
 - by means of the keyboard, through the PD14 (USB) programmer or the RS-485 interface,
- Overall dimensions: 45 × 120 × 100 mm.



NEW

PROGRAMMABLE TRANSDUCER OF POWER NETWORK PARAMETERS – P43 type

- Destined for the conversion of 3-phase, 3 or 4-wire power network parameters, in balanced or unbalanced systems,
- 2 analog outputs,
- 2 relay outputs (signaling measured quantity overflows),
- Pulse output (control of 3-phase active energy consumption),
- RS-485 and USB interfaces with Modbus protocol,
- Built-in memory for the 15 minutes' power profile,
- Storage of maximal and minimal values,
- Galvanic isolation,
- Programmable current and voltage transformer ratios,
- Transducer programming realized by means of a free delivered LPConfig software,
- Overall dimensions: 90 x 120 x 100 mm.

LPConfig



P17 TRANSDUCER AND P17G SEPARATOR – SUPPLIED FROM A CURRENT LOOP

- Destined for the signal conversion from temperature sensors (Pt100, J, K) or standard voltage signals (0...60 mV, 0...10 V) into the current signal 4...20 mA (P17),
- Destined for the electric isolation of the current signal without an additional supply voltage (P17G),
- Input: 0/4...20 mA (P17G),
- Output: 0/4...20 mA (P17G),
- Overall dimensions: 6.2 x 100 x 77.5 mm.



MEASURING TRANSDUCERS AND SEPARATORS



PROGRAMMABLE TEMPERATURE AND HUMIDITY TRANSDUCERS – P18 TEMPERATURE OR HUMIDITY TRANSDUCER SUPPLIED FROM A CURRENT LOOP - P18L

- Destined for the continuous measurement and conversion of humidity and environment temperature into:
 - RS-485 interface with MODBUS protocol or analog current or voltage signal (P18),
 - standard analog signal 4...20 mA (P18L),
- Calculation of selected physical quantities (dew-point temperature and absolute humidity) (P18),
- Storage of the maximal and minimal value of measured and calculated value (P18),
- Programming of the measurement averaging time (P18),
- State change of the OC output type on the base of set alarm values (P18).



SEPARATOR - P11G type

- Destined to realize the galvanic separation in d.c. current and d.c. voltage analog standard signal circuits,
- Input: 0...1/5/10 V; $\pm 0...1/5/10$ V; $\pm 0...5/20$ mA, 4...20 mA,
- Output: 0...1/5/10 V; 0...5/20 mA; 4...20 mA, $\pm 0...1/5/10$ V; $\pm 0...5/10$ mA,
- Supply: 85...253 V a.c./d.c. or 20...40 V a.c./d.c.,
- Overall dimensions: 22.5 × 120 × 100 mm.

CONTROLLERS FOR INDUSTRIAL PROCESSES



CONTROLLER WITH ANALOG SETTING – RE55 type

- Destined for temperature control,
- Input: thermocouples: J, K, S, - Resistance thermometer: PT100
- Analog set point setting, display of measured value,
- Control algorithms: on/off with hysteresis, PID,
- Manual setting of PID parameters or by means of the autotuning function,
- Control output: relay or voltage 0/5 V,
- alarm output: relay,
- supply: 85...253 V a.c./d.c.,
- Overall dimensions: 96 × 96 × 65 mm.



MICROPROCESSOR DIGITAL CONTROLLER – RE22 type

- Destined for temperature control,
- Input: universal (thermocouples, RTDs or standard signals),
- Output: relay, binary 0/6 V,
- Control algorithm: on/off, PID,
- Manual setting of PID parameters or by means of the autotuning function,
- Limitation of set point change setting,
- Supply: 230 V a.c., 110 V a.c., 24 V a.c.,
- Overall dimensions: 48 × 48 × 93 mm.



DIGITAL CONTROLLER WITH A SIMPLE PROGRAMMER – RE23 type

- Destined for control of temperature or other physical quantities,
- Universal input: thermocouples, RTDs or standard signals,
- Control according the program:
 - maximally 9 segments with or without repetitions,
 - segment time: 0...999 min.
 - program start from the currently measured value or from the set point, after finishing the program, control continuation of the last set point or output switching off,
- Relay or binary 0/6 V control output for SSR control,
- Reverse control (heating) or direct (cooling),
- Supply: 230 V a.c., 110 V a.c., 24 V a.c.,
- Dimensions: 48 × 48 × 93 mm.

CONTROLLERS FOR INDUSTRIAL PROCESSES

DIGITAL CONTROLLERS – RE26 and RE18 types

- Destined to control temperature or other physical quantities,
- Universal input - thermocouples, resistance thermometers, standard signals,
- Output: relay (2) (RE18), relay (2) or transistor OC type (RE 26),
- Control algorithms: On/Off with hysteresis, PID (RE18), PID + FUZZY LOGIC (RE26) ,
- Manual setting of PID parameters or by means of the autotuning function (RE18),
- Kinds of control: On/Off (RE 26), On/Off, three-stage, step-by-step control (RE18),
- Soft-start function,
- Supply: 90...253 V a.c./d.c. or 20...40 V a.c./d.c. ,
- Overall dimensions: 48 × 48 × 93 mm (RE26), 48 × 96 × 93 mm (RE18).



DIGITAL CONTROLLER WITH TWO OUTPUTS – RE20 type

- Destined for control of temperature or other physical quantities,
- Universal input: thermocouples, RTDs or standard signals,
- Logic input,
- Outputs: 2 outputs: relay, continuous or binary voltage,
- Control algorithms : on-off with hysteresis, PID,
- Manual settings of PID parameters or by means of the autotuning function,
- Retransmission of the measured value or the set point value,
- RS-485 digital output, MODBUS protocol,
- Supply: 85...253 V a.c./ d.c. or , 20...40 V a.c./d.c.
- Dimensions: 48 × 48 × 93 mm.



DIGITAL CONTROLLER – RE15 type

- Destined to control temperature or other physical quantities in two measuring inputs,
- Input: universal - thermocouples, resistance thermometers, standard signals,
- Logic input and auxiliary analog input
- 4 outputs: relay, transistor OC type, continuous or voltage binary,
- Control algorithms: On/Off with hysteresis, PID, PID + FUZZY LOGIC
- Manual setting of PID parameters or by means of the autotuning function,
- Retransmission of measured signals or the set point,
- Kinds of control: On/Off, two-stage, three-stage, step by step control,
- 15 programs of the set point with 15 segments in each,
- RS-485 digital output, MODBUS protocol,
- Supply: 90...253 V a.c./d.c. or 20...40 V a.c./d.c.
- Overall dimensions: 48 × 96 × 93 mm.



DUAL-LOOP DIGITAL CONTROLLER – RE19 type

- Destined to control temperature and other physical quantities in 2 measuring channels,
- They are offered in three versions:
 - RE19P – for standard (fixed set point) control and for programming control in which the set point changes in time acc. to the chosen program – 15 programs with 15 segments in each program,
 - RE19V – for stepper motor control – 2 algorithms of step by step control, at choice, with or without feedback,
- 3 measuring inputs: 2 universal and a linear,
- Arithmetical operations on input signals: addition, subtraction, multiplication,
- 2 logic inputs,
- 4 outputs: relay, logic 0/15V, OC, linear current and voltage,
- Output functions: control, alarm, signaling, retransmission,
- 2 LED displays, LCD character display (2x16),
- 10 indexes informing about output states and working mode,
- Kinds of set points:
 - fixed, programmed: 15 programs with 15 segments in each program (in RE19P), with 15 segments in each program (in RE19P),
 - external from the auxiliary output,
- Kinds of control: On/Off, three-stage, step by step,
- Autotuning,
- RS-485 interface with MODBUS protocol,
- Overall dimensions: 96 × 96 × 74 mm.



CONTROLLERS FOR INDUSTRIAL PROCESSES



DIGITAL CONTROLLER – RE60 type

- Destined for temperature control,
- Input: J, K, S thermocouples, Pt100 RTD,
- Output: 2 relays and binary,
- Control algorithm: on/off,
- Manual set-up of PID parameters,
- Display: LCD, 2 × 8 digits,
- Supply: 230 V a.c., 110 V a.c., 24 V a.c.,
- Overall dimensions: 52.5 × 90 × 64.5 mm.



SYSTEM FOR INJECTION MOULDS WITH HEATED CHANNELS – SR11 type

- The SR11 system is destined for the temperature control in injection moulds with heated channels and for other systems in plastics processing,
- The Fuzzy Logic algorithm ensures a high accuracy of the temperature control and optimal energy consumption,
- The soft start function and leakage current supervision ensure the working life extension of heaters and the work safety of the system user,
- 1...8 control zones (the system is composed of BR11 controllers and a set of connecting cables),
- During the machine operation break, a decreased temperature is maintained, what enables a fast start of the system,
- Detection and damage signalling:
 - exceeding of the admissible value of the heater leakage current,
 - damage of the load circuit,
 - short-circuiting, break or inverse polarization in the circuit of the sensor,
- Output current: 0...15A
- RS-485 digital output with MODBUS protocol and a software for monitoring and archiving the process.

RECORDERS

NEW FUNCTIONS



European medal for KD7
granted in 2008

RECORDER WITH TOUCH SCREEN AND DATA STORAGE IN A COMPACT FLASH CARD - KD7 type

- Destined for recording and measuring electric and non-electric quantities,
- LCD TFT 5.7 colour screen, 320 × 240 pixels, with touch panel,
- Recording and data archiving on Compact Flash card, from 16 MB up to 4 GB
- 3, 6, 9 or 12 analog measuring channels galvanically isolated,
- IP 65 protection class of the frontal panel side,
- 24 measuring channels for data transmitted through communication interfaces,
- 16 or 32 alarms and 8 or 16 digital inputs,
- 4 or 8 analog outputs,
- Visualization of measurements in analog, digital, bargraph or trend forms,
- Digital signature for archive data,
- Mathematical functions, counters and totalizers,
- 7MB internal buffer,
- USB and RS 485 or RS 232 serial interfaces
- ETHERNET communication, WWW server,
- Intuitive graphical user interface based on Windows CE,
- Supply: 90...253 V a.c. or 18 V d.c.
- Overall dimensions: 144 × 144 × 255mm,
- Software for: downloading and managing of the archived data, reporting, preparing configuration.

RECORDER WITH TOUCH SCREEN AND DATA STORAGE IN A COMPACT FLASH CARD – KD8 type

- Destined for recording and measurement of electric and non-electric quantities,
- LCD TFT 5.7", 320 x 240 pixel colour screen, with a touch panel,
- Recording and data archiving on a CompactFlash card, from 16 MB up to 4 GB,
- IP 65 protection class of the frontal housing side,
- 3 or 6 analog measuring channels galvanically isolated,
- 6 or 12 alarms,
- 4 or 8 digital inputs,
- Visualization of measurements in analog, digital, bargraph and diagram forms,
- RS-485 interface (Modbus Slave),
- Intuitive service based on the Windows CE graphical interface,
- Supply: 90...253 V a.c. or 18...30 V d.c.,
- Overall dimensions: 144 x 144 x 255 mm.
- Software for: downloading and managing of the archived data, reporting, preparing configuration.



PROGRAMMABLE DOT RECORDER - KE8 type

- Destined for recording and measuring of electric and non-electric quantities,
- Dot recording, 1...6 measuring channels,
- Housing protection class IP65,
- Programming of recording and measurement parameters,
- Accuracy class: 0.5,
- Recording on a roll or Z-fold paper tape of 100 mm width,
- Multicolour printout of diagrams and descriptions on the paper tape,
- Universal paper tape transport rewinder,
- Printout of reports and analog scales,
- Relay outputs,
- RS-485 or RS-232C digital output, MODBUS protocol,
- LUMEL-LEONARDO software to archive data,
- Possibility of data processing in the MS WINDOWS system,
- Supply: 90...253 V a.c.
- Overall dimensions: 144 × 144 × 260 mm.



PROGRAMMABLE PEN RECORDER - KR7 type

- Destined for recording and measuring of electric and non-electric quantities,
- Continuous recording, one measuring channel,
- Housing protection class IP65,
- Programming of recording and measurement parameters,
- Accuracy class: 0.5,
- Built-in printer enabling the printout of date, time, measured signal value, parameter settings,
- Recording on a roll or Z-fold paper tape of 100 mm width,
- Universal paper tape transport rewinder,
- Relay outputs, digital inputs, event markers, retransmission signal,
- RS-485 digital output, MODBUS protocol,
- SETUP configuration software and LUMEL-LEONARDO software to archive data,
- Supply: 90...253 V a.c. or 18...30 V d.c.,
- Overall dimensions: 144 × 144 × 202 mm.

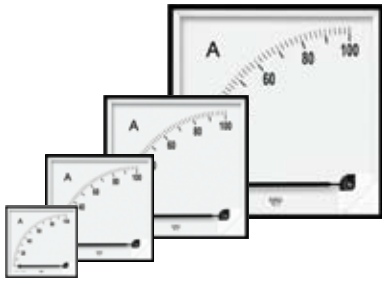


ANALOG PEN RECORDER - KR5A type

- Destined for recording and measuring of electric and non-electric quantities,
- Continuous recording, 1...3 measuring channels,
- 1...4 event markers,
- Housing protection class IP65,
- Accuracy class: 0.5,
- Recording on a roll or Z-fold paper tape of 100 mm width, universal paper transport rewinder,
- Relay outputs, event markers, retransmission signal,
- Supply: 230 V a.c.,
- Overall dimensions: 144 × 144 × 284 mm.

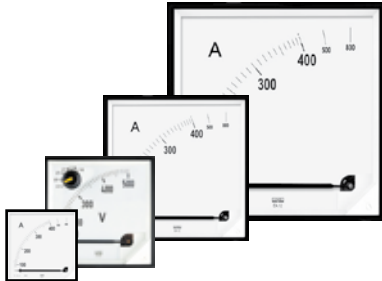


ANALOG PANEL METERS



MOVING-COIL METERS – MA series

- Destined to measure d.c. current and d.c. voltage,
- Direct ranges: from 40 μ A to 25 A and from 60 mV to 1000 V,
- Accuracy class: 1.5
- Exchangeable scales,
- Co-operation with shunts,
- **IP65 protection class (for MA16, MA17, MA17P, MA19, MA19P types)**
- For mounting in panels or cubicles,
- Possible an extra adjusted pointer and to highlight the scale,
- Frame dimensions: 48 × 48, 72 × 72, 96 × 96, 144 × 144, 72 × 24, 96 × 24 mm.



MOVING-IRON METERS – EA series

- Destined to measure a.c. current and a.c. voltage,
- Direct ranges: from 100 mA to 100 A and from 6 V to 1000 V,
- High temperature resistant version,
- Accuracy class: 1.5
- Co-operation with current or voltage transformers,
- **IP65 protection class (for EA16, EA17, EA19 types)**
- For mounting in panels or cubicles,
- Exchangeable scales,
- Voltmeters with a changeover switch (EP27 and EP29),
- Possible an extra adjusted pointer and to highlight the scale,
- Frame dimensions: 48 × 48, 72 × 72, 96 × 96, 144 × 144 mm.



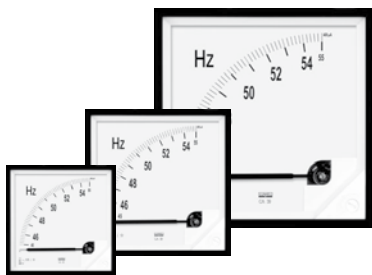
METERS FOR RAIL MOUNTING – EB16 and MB16 types

- With a moving-coil movement,
- With a moving-iron movement,
- Ranges and accuracy class in compliance with the characteristic of EA and MA meter series,
- For mounting on a 35 mm rail,
- Frame dimensions: 53 × 90 mm.



MAXIMUM DEMAND BIMETALLIC AMMETERS – BA and BE series

- Destined to measure the RMS a.c. current value, averaged in a 8 or 15 minutes' period,
- Indication of maximal value by means of an additional pointer,
- Direct ranges: from 0...1.2 A or from 0 to 6 A,
- High temperature resistant version,
- Execution with a bimetallic system or with a bimetallic and a moving-iron system,
- Co-operation with measuring current transformers,
- Frame dimensions: 72 × 72 (BA), 96 × 96 mm (BE).



METERS WITH BUILT-IN TRANSDUCERS – PA, CA and FA series

- Destined for the measurement of:
 - power in 1-phase and 3-phase networks (PA series),
 - frequency (CA series),
 - power factor in 1-phase and 3-phase networks (FA),
- **IP65 protection class (for PA39, CA37, CA39, FA39 types)**
- Frame dimensions:
 - PA series: 96 × 96 mm,
 - FA series: 72 × 72 mm, 96 × 96 mm
 - CA series: 72 × 72 mm, 96 × 96 mm, 144 × 144 mm.

SHUNTS



EXCHANGEABLE SHUNTS

- Rated currents from 1 A to 15 kA,
- Rated voltage drop from 50 to 150 mV,
- Accuracy class: 0.5
- Possible assembling on a rail.

SINGLE-PHASE POWER CONTROLLERS – RP7 and RP1 types

- Destined for a smooth power control in single-phase networks,
- Output current from 5 to 125 A,
- Maximal supply voltage: 440 V,
- Analog or pulse control.



THREE-PHASE POWER CONTROLLER – RP3 type

- Destined for three-phase actuators in control systems and automatic temperature control of electrothermal devices,
- Can be applied in electric circuits with resistance and resistance-inductance loads,
- Kinds of control: on-off, pulse and phase,
- Input currents: 40 ...450 A,
- Maximal supply voltage: 440 V
- Many additional functions:
 - limitation of the load current,
 - release time-lag of soft-start type,
 - control of the input circuit amplification,
 - stoppage of the triggering by an external signal,
 - checking and signalling of the current in the circuit,
 - checking of the radiator temperature,
 - signalling of the fuse damage,
 - signalling of overload,
 - relay outputs.



SYNCHRONIZING UNITS

SYNCHRONIZING UNIT – KS3 type

- Destined to automatic synchronizing of 3-phase generators during their coupling in parallel to the power network or other generators working at the rated 50 or 60 Hz frequency,
- Measurement results are presented on:
 - 3 bargraphs, separately for synchroscope, differential voltmeter and differential frequency meter (KS31 type),
 - 3 LED displays, separately for synchroscope, differential voltmeter and differential frequency meter (KS32 type),
- Input signals: U = 100, 110, 240, 400V,
- Output: relay, digital RS485 with MODBUS protocol.
- Overall dimensions: 144 × 144 × 77mm



7-SEGMENT NUMERICAL DISPLAYS FOR INDOOR APPLICATION (IP40)

LPConfig 3-colour display



LPConfig



NUMERICAL DISPLAYS – DL types

- Destined to display the measured value or set value through the RS-485 interface,
- kind of executions:
 - DL1** – 1 or 2 rows, digit height: 100 mm,
 - DL11** – 1 row + unit name, digit height: 100 mm,
 - DL12** – 2 rows + unit name, digit height: 100 mm,
 - DL13** – 3 rows + unit name, digit height 100 mm, digit colours: red, yellow, green,
 - DL21** – 1 row (3 digits) + unit name,
- **Three-colour display facilitating the observation of measured value changes**
- Co-operation with external devices (as MASTER or SLAVE) with Modbus protocol,
- 2 communication RS-485 interfaces working with the Modbus RTU protocol,
- Possibility to collect data from max. 10 slave devices.

DIGITAL CLOCKS – DLZ type

- Destined to display the current time, date, temperature and humidity,
- Digit height: 100 mm, 57 mm,
- Display colours: yellow, red,
- Input: RS-485 interface with Modbus RTU protocol for readout or recording the current time,
- Programmed brightness,
- Time synchronization through the external GPS module,
- Display configuration realized by means of the free delivered LPConf. software.

DIODE NUMERICAL DISPLAYS FOR OUTDOOR APPLICATIONS (IP65)



NUMERICAL DISPLAYS – DN types

- kinds of executions:
 - DN1** – 2 or 5 digits of 100 mm high,
 - DN2** – 2 or 5 digits of 200 mm high,
 - DN3** – 2 or 5 digits of 300 mm high,
- Possible co-operation with external devices (as network MASTER) with Modbus protocol,
- Display colours: red, yellow or green (on request, possible application of several colours),
- Input: digital – RS-485 with ASCII or RTU Modbus protocol,
- Automatic control of brightness.

LPConfig



DIGITAL CLOCKS – DZ types

- Destined for the alternate visualization of time and date,
- Kinds of executions:
 - DZ2** – digit height: 200 mm,
 - DZ3** – digit height: 300 mm,
- Programmable switching time of time and date,
- Display colours: red, yellow, green,
- Can co-operate through DCF receivers with atomic time standards,
- RS-485 interface with Modbus RTU protocol enabling the clock setup when the DCF signal is too weak for the synchronization with the time standard,
- Programmed digit brightness.

ALPHANUMERICAL AND GRAPHICAL DISPLAYS FOR INDOOR AND OUTDOOR APPLICATIONS



DISPLAY FOR OUTDOOR APPLICATIONS (IP65) – DAZ1 type

- Destined to display textual and graphical information,
- Display programming through the RS-485 interface with Modbus RTU protocol,
- Digit height: 80, 160 or 320 mm, programmed by the user,
- Diode colour: yellow,
- Possible connection of additional devices through RS-485 and display measured values by these devices,
- Possible display of textual or graphical information in specific days and hours,
- Possible creation of large dimensions screens composed of several displays.

ALPHANUMERICAL AND GRAPHICAL DISPLAYS FOR INDOOR AND OUTDOOR APPLICATIONS

DISPLAYS FOR INDOOR APPLICATIONS (IP40) – DA types

- Destined to display any textual or graphical information,
- Kinds of executions:
 - DA1 01** – 2 rows, max. 20 characters of 60 mm high,
 - DA1 02** – 3 rows, max. 24 characters of 60 mm high,
 - DA1 03** – graphics: 16 x 120 points,
 - DA1 04** – graphics : 32 x 144 points,
- Display colours : red, yellow, green (on request, possible application of several colours),
- Input: digital RS-485 with Modbus RTU protocol,
- Control of brightness,
- Real time clock.



For all displays types, data transmission to/and from displays can be carried out by means of:

- Ethernet (see PD8),
- Radio (see SM7 and MR03),
- USB (see PD10 and PD12).

INTEGRATION ELEMENTS OF MEASURING NETWORKS

MODULES OF ANALOG INPUTS – SM1 and SM2 types

- Destined for the conversion of standard signals, resistance or temperature into digital data accessible through RS-485 or RS-232 port by means of the MODBUS protocol,
- 2 or 4 measuring inputs galvanically isolated,
- Possible realization of mathematical operations,
- Storage of maximal and minimal values for each channel,
- Programming of the measurement averaged time,
- RS-232 and RS-485 interfaces, MODBUS protocol.



MODULE OF LOGIC INPUTS AND PULSE COUNTER – SM3 type

- Destined to read out logic states of binary inputs and enables their accesses to computer systems working on the base of RS-485 interfaces
- 2 binary inputs or counter inputs galvanically isolated,
- Logic levels: 0 logic: 0...2.4 V or 1 logic: 3.4...24 V,
- RS232 and RS-485 interfaces, MODBUS protocol.



MODULE OF LOGIC OUTPUTS - SM4 type

- Destined for the control of simple actuators through assignment of logic states, received from the master device through RS-485 interface,
- 8 outputs of OC type or 4 relay outputs,
- Configurable safe states for outputs,
- RS-232 and RS-485 interfaces, MODBUS protocol.



MODULE OF LOGIC INPUTS – SM5 type

- Destined to read out logic states of binary inputs and enables their accesses to industrial computer systems,
- 8 logic inputs galvanically isolated,
- RS232 and RS-485 interfaces, MODBUS protocol.



INTEGRATION ELEMENTS OF MEASURING NETWORKS



NEW

PROGRAMMABLE SOFT PLC – SMC type

- Destined for the integration of various control and measuring apparatus in a coherent system,
- Destined for steering, control, process calculation, monitoring, signaling etc.,
- Programming in ST language, according to IEC61131-3 standard (CPDev package),
- Communication with devices through RS-485 with Modbus protocol,
- Application in processes using:
 - logic-sequential control,
 - real time system (RTC),
 - multi-channel continuous control,



NEW

OPERATOR PANELS – MTO57 AND MTO58 types

- touch screen 5.7" TFT,
- 2 x RS-485/RS-232,
- ETHERNET (MTO58),
- Communication with over 1000 types of PLC controllers,
- Protection degree: IP65,
- Rich library of graphical elements,
- Realization of mathematical functions on process variables,
- 1 MB of internal RAM memory, 1 MB of ROM memory, 128 kB of data (battery support),
- Configuration by a free delivered Panel Master program.



RADIO TRANSMISSION MODULE – SM7 type

- Destined for data transmission by radio in the non-licensed 433 MHz or 868 MHz band with controlled output power from -20 to 10 dBm,
- Finds application, e.g. in power engineering and automatics – for monitoring data from the technological process and in many other applications requiring data transmission,
- The operation range is ca 300m (distance depends on the terrain shape and the applied antenna),
- Baud rate range of data transmission in the radio channel: 4800...76800 bit/sec,
- The module is offered with a stub antenna equipped with a connector of SMA type, angle adapter of SMA/SMA type and a concentric conductor (1.5 m long) destined to situate the antenna in any place,
- Rate range of the serial port transmission,
- Output power: 10 mW.



HIGH POWER RADIO TRANSMISSION MODULE – MR03 type

- Destined for changing the information transmission medium from RS-232 or RS-485 into a wireless medium in the radio channel,
- The operation range is ca. 1.5 km (distance depends on the terrain shape and the applied antenna),
- Baud rate: 4800 ...115200 b/s,
- Operation in the non-licensed 869.4 – 869.65 MHz band,
- Receiver sensitivity: > - 103 dBm
- 5 independent radio channels,
- Two working modes: point - to - point or point - to - many points,
- Power output: 500 mW,
- Power supply: 12...30 V a.c., 8...30 V d.c.



GSM/GPRS TRANSMISSION MODULE – SM8 type

- Destined for GSM/GPRS radio communication with devices equipped with RS-232 serial interface,
- Find application in power engineering and automation – to monitor data from the technological process, and in many other applications requiring wireless transmission of data,
- Transmission of data in one of the three available GSM bands (900/1800/1900 MHz) is carried out in GPRS package technique,
- GSM/GPRS package transmission realized in the shape of TCP/IP package.
- Baud rate: 115200 b/s.



POWER PACK MODULE – SM9 type

- Adapted for mounting on a rail
- Input voltage: 105...250 V a.c.
- Output voltage: 24 V d.c./1 A

INTEGRATION ELEMENTS OF MEASURING NETWORKS

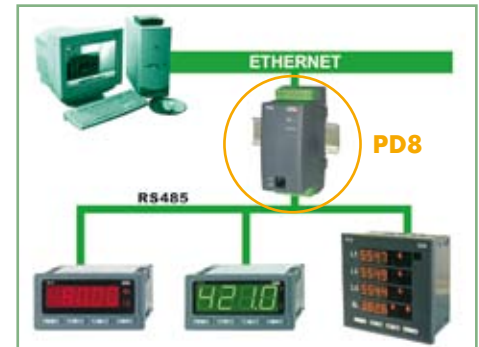
CONVERTER OF RS-232/RS-485 INTERFACES – PD51 type

- Destined to:
 - change the RS-232 interface into RS-485 interface,
 - increase the RS-485 bus range and the number of devices in the network with the RS-485 bus,
- Enables the automatic control of the data flow direction,
- Two versions:
 - for mounting on a rail, industrial applications,
 - portable, for laboratory-to-test applications,



CONVERTER OF RS-485/ETHERNET INTERFACES – PD8 type

- Allows to:
 - connect devices with the RS-485 interface to the extensive computer network, internet,
 - read out data from them through the ETHERNET interface with the help of the TCP/IP protocol,
- Utilizes the dedicated controller of the serial port COM,
- RS-485 interface, MODBUS protocol,
- ETHERNET interface, TCP/IP protocol.



USB/RS-485 INTERFACE CONVERTER – PD10 type

USB/RS-232 INTERFACE CONVERTER – PD12 type

- Destined for the conversion of USB into RS-485 interface (PD10) and USB into RS-232 interface (PD12),
- 2 interfaces – galvanically isolated:
 - RS-485 interface (PD10),
 - RS-232 interface (PD12),
- Baud rate: up to 115,2 kbps (PD10), up to 921,6 kbps (PD12)
- Supplied from the USB bus,
- Destined for industrial and laboratory applications,
- Overall dimensions: 65 × 43 × 24mm (PD12), 42,8 × 50,8 mm (PD10).



DATA CONCENTRATOR – PD22 type

- Applied as an intermediate element in the data exchange between the object part and the master system,
- Speeds up the exchange between devices and the master system,
- Enables the increase of the number of devices connected to the system,
- Utilizes different kinds of links: RS485, RS232, USB,
- Collects data in the archive form.

NEW



PROGRAMMER WITH USB LINK - PD14 type

- Destined for programming P11, P12 transducer series and N20, N20Z digital meters
- The applied program in PD14 enables in transducers:
 - modification of transducer work parameters,
 - write and readout of process parameters,
 - clearing minimal and maximal values,
 - protection of the access to transducer parameters by a password.
- PD14 programmer enables to program in digital panel meters:
 - display colour change and precision of the result (decimal point),
 - selection of the output type, the averaging time
 - thresholds of displayed exceedings,
 - individual input characteristic, highlight of units.
 - action of two alarm outputs in six working modes,
- The PD14 programmer is adapted to be used in Windows 95/98/2000/NT/XP/Vista environments.



LPCON CONFIGURATION SOFTWARE (free delivered)

- LPCON software enables:
 - choice of devices for configuration,
 - readout and storage of parameters from all or selected devices,
 - readout and storage of all parameters in the file,
 - configuration of any devices with MODBUS protocol,
 - LPCON software works in the Windows XP system,
 - LPCON software is updated along with the development of LUMEL's offer.
- LPCON configuration software is destined to program settings in:
 - N20, N20Z, N14 digital meters,
 - P18, P20, P43 transducers,
 - SM1, SM2, SM3, SM4, SM5 modules,
 - RE15, RE20 process controllers,
 - DLZ, DL21, DZ2, DZ3 large size display panels.

56 YEARS OF TRADITION AND CREATIVITY

The present 2009' catalogue provides a survey of products to inform our distributors and final users about our continuous efforts to offer the best in the field of electrical measuring, control and recording instruments.

Since 1953, we are specialising in electrical measuring instruments in order to provide at competitive prices the most efficient and up-to-date solutions of new products destined for the automation sector as well as productivity improvement.

Continuously, **Lumel S.A.** products become more and more adapted to cover expectations of our customers.

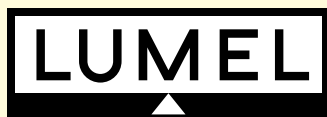
Our new families of recorders, bargraph indicators, programmable transducers, analog and digital meters, created by highly qualified engineers of our R&D offices and laboratories, meet customers' requirements.

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