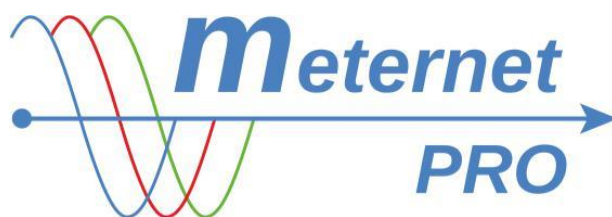




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The registration, remote reading and control system



INSTRUCTIONS FOR USE

for software version 20141218

151002

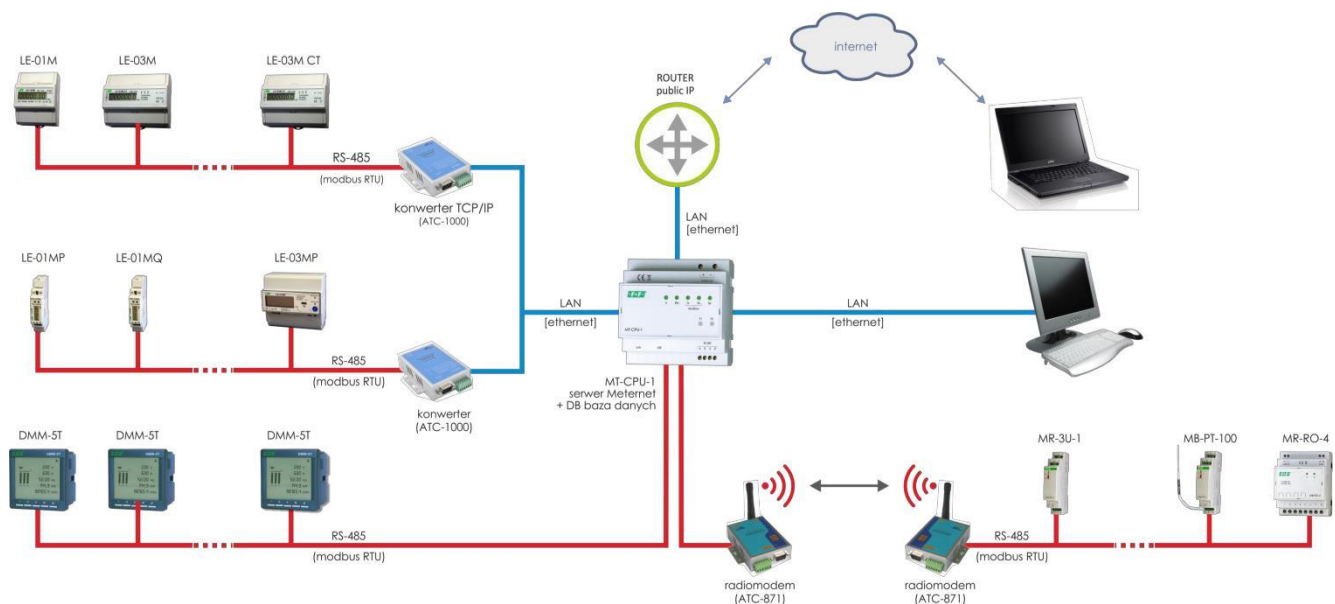
PURPOSE

The MeternetPRO application allows remote reading of states and indications of counters, multimeters, measuring transducers, expansion modules of input/output and other measuring devices communicating through Modbus RTU protocol. The exchange of data between devices and the application is executed through RS-485 or local area network (LAN). The application, along with the database is installed on a special MT-CPU-1 server, which operates in a local network. Software user interface is a web application (web site). Access to the application is executed through any web browser. In a LAN with a public IP address, you can configure the application and read the data over the Internet.

OPERATION

System application, along with the MT-CPU-1 server, is a central unit of the system. It fulfills the role of Master on the Modbus network. System devices communicate via RS-485 network in accordance with the Modbus RTU standard communication protocol. The exchange of data between meters and application is carried out via RS-485 port built into the MT-CPU-1 server, standard RS-485<->USB converter or port server on a LAN (Ethernet). For the LAN with router with public IP address it is possible to access the data over the Internet. RS network uses a two-wire (shielded) signal cable of "twisted pair" (UTP, FTP) type.

The read data are archived in an external memory (HDD, Flash, web hosting) connected to the server. Data can be freely developed in accordance with the software features.



FEATURES

- * no software installation required on a user's equipment
- * status - a system efficiency preview panel
- * dashboard - a window for indicators and control panels
- * widgets - graphical indicators assigned to the recorded values (dial, bar graphs, trends)
- * setup - simple system setting without any programming skills, setting name of the devices, system setting
- * easy integration with external devices such as water meters, gas meters etc.
- * reports - view current and archived registered values (table of results, charts), report filters, time ranges
- * data export- direct save to a . csv file, transfer over LAN, data import from .csv file to a user's computer
- * system settings - registering time (min. 1 sec), Modbus and TCP communication parameters
- * „math” software module - algebraic transformations of registered values
- * „energy” software module - subscriber billing of energy consumption

OPERATING MODE AND LICENSES

To get the full functionality of the application you must purchase a basic license for the program, selected software modules and licenses (token) for each device included in the system. The number of tokens for the given device is shown in a current list of the assortment and price available on the web site. Each device added to the system takes the appropriate number of tokens. As part of the purchased number of tokens you can freely assemble various devices in the system, for example with license for 8 tokens we can assemble 4× LE-03M meters or only one LE-03MP meter.

The program in demo mode has all paid software modules unlocked and an unlimited number of tokens.

Reading results are limited to the last two digits.

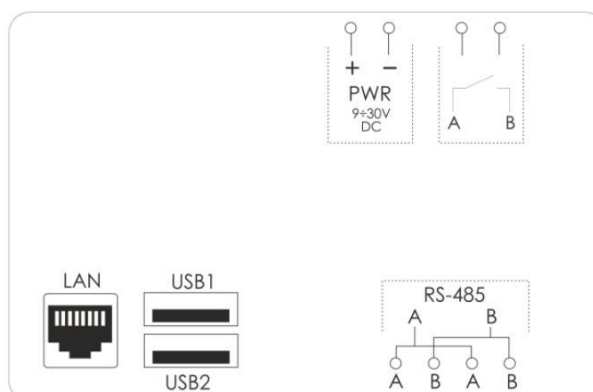
Licenses:

LIC-MT-D	device license - token
LIC-MT-B	application license - basic version
LIC-MT-P	extension license - „dashboard“ module
LIC-MT-R	extension license - „reports“ module
LIC-MT-M	extension license - „math“ module
LIC-MT-OC	extension license - „CSV output“ module
LIC-MT-E	extension license - „energy“ module
LIC-MT-I	extension license - outside implementation

After buying the license code to activate the full version will be sent to the user.

MT-CPU-1 HARDWARE SERVER

System controlling computer - checks devices, archives data, manages the communication and distribution of data.



Technical data:

supply voltage	9÷30V DC
system memory	8GB
RTC clock	YES
battery type	2032 (lithium)
operating temperature	-25÷50°C
terminal	1,5 mm ² screw terminals
dimensions	6 modules (105mm)
mounting	on TH-35 rail

Operating states indication (5×LED):

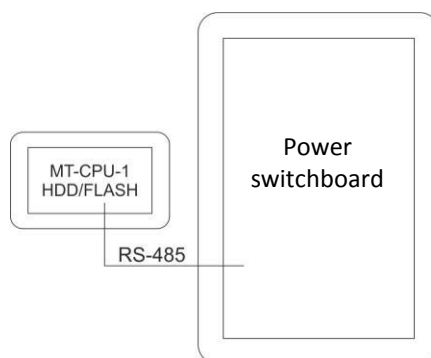
U	green	supply voltage
Eth	blue	Ethernet communication
Tx	yellow	Modbus communication – data output
Rx	yellow	Modbus communication – data input
Err	red	error indication

Connection description:

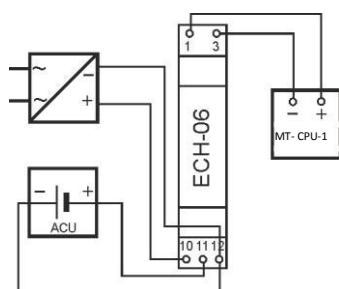
LAN	RJ45 connector	LAN network input
USB	USB 2.0 port	converters or eternal memory connection
RS-485	modbus communication port	double A-B clamps
PWR	power supply	+/- power supply terminals
A-B	closing contact	inactive in this version of software

Installation:

Please note! Recommended installation in a separate control box. Avoid mounting in switchboards with a high load carrying devices and devices generating strong electromagnetic fields.



Please note! We recommend the use of reserve power for the server. A system reboot may take 5÷7 minutes. During this time no data from the system will be registered. Also in the event of a sudden power outage there is a risk of damage to register data on external memory. Use the UPS or power reserve system based on the ECH-06 module.



Reserve system:

ECH-06	power supply reserve module
AKU-12V	gel battery 12V 1,3Ah
ZI-24	stabilized power supply 24V 30W

The module performs the continuous supervision of the state of battery charge and recharges it automatically when the main power supply voltage is present. In case of power failure of the main or decrease in its value below the battery voltage, the receiver is supplied from the battery.

Please note! Do not connect any devices to the USB ports while the server power supply is on. This may result in system crash or automatic server reboot. Connect only with power off.

EXTERNAL MEMORY

The external memory is used for storing archived registration data. It can be an external hard drive USB 3.0/2.0 HDD, flash memory (memory stick). They are connected to the USB ports of the MT-CPU-1 server.



HDD/SSD USB



Flash (flash drive)

The F&F offer includes memory modules recommended for the system.

Please note! Use shielded USB communication cables.

Please note! Do not connect any devices to the USB ports while the server power is on. This may result in system crash and may cause the server to reboot. Connect only when the power is turned off.

SYSTEM COMPONENTS

* LE-01M	single-phase 100 A direct energy meter
* LE-03M	three-phase 100 A indirect energy meter
* LE-03M CT	three-phase 5÷6000A indirect energy meter
* LE-01MP	single-phase 100 A direct energy meter, measurement U, I, F, AE, T
* LE-01MQ	single-phase 100 A direct energy meter, measurement U, I, F, AE, RE, P, Q, T
* LE-03MP	three-phase 60 A direct energy meter, measurement U, I, F, AE, RE, P, Q, cos, T, Prepaid
* DMM-5T	multimeter, four-quadrant indirect 5÷9000 A measurement, measurement U, I, F, AE, RE, P, Q, cos
* MB-1U-1	voltage measuring transducer AC/DC single-phase
* MB-3U-1	voltage measuring transducer AC/DC three-phase
* MB-1I-1	current strength measuring transducer AC/DC single-phase
* MB-3I-1	current strength measuring transducer AC/DC three-phase
* MB-PT-100	temperature measuring transducer, sensor PT-100, range -100÷400°C
* MB-DS-2	temperature measuring transducer, sensor DS ×2, range -50÷130°C
* MB-LI-4	four-channel pulse counter
* MB-LG-4	four-channel operating time counter
* MR-DIO-1	digital input/output expansion module ×6
* MR-DI-4	digital input expansion module ×4
* MR-RO-1	relay output expansion module 16 A ×1
* MR-RO-4	relay output expansion module 16 A ×4
* MR-AI-1	analog input expansion module 4÷20 mA/0÷10 V ×4
* MR-AO-1	analog input expansion module 0÷10 V ×4

You can read records from devices outside of the F&F offer. This is so called outside implementation (LIC-MT-I), which means adding to the system library the designated device with a list of registers to read in accordance with the requirements of the user.

GETTING STARTED

1. Connect the server MT-CPU-1 to power supply.
2. Connect the server using patch cord RJ-45 type cable to LAN or directly to the PC.
3. Set a local PC connection in the server subnet.

Factory settings MT-CPU-1:

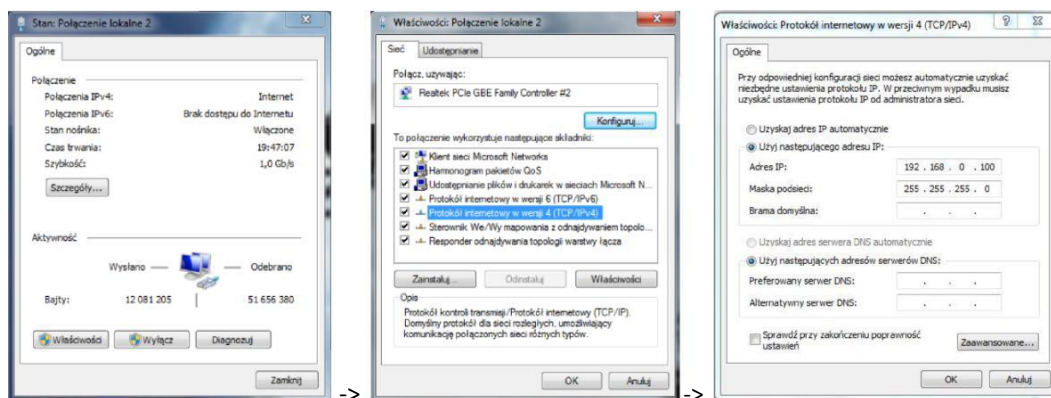
IP address: 192.168.0.98
Subnet mask: 255.255.255.0
Port: 80

4.

PC settings:

IP address: 192.168.0.xxx (select the appropriate end of the IP address for a PC in range of 2-97/99-254)
Subnet mask: 255.255.255.0





5. Open a web browser and enter the server address <http://192.168.0.98> Accept by pressing ENTER.
6. This opens the login panel.



Enter the default user name and password.
Username: admin Password: admin

7. In the browser window the program interface will open. Go to the Settings tab and make the appropriate changes in network parameters settings.

PROGRAM INTERFACE

DEVICE LICENSE (token) LIC-MT-D

Token - the license for each device included in the system. The number of tokens for the given device is shown in a current list of the assortment and price available on the web site. Each device added to the system takes the appropriate number of tokens. As part of the purchased number of tokens you can freely assemble various devices in the system, for example with license for 8 tokens we can assemble 4× LE-03M meters or only one LE-03MP meter.

BASIC VERSION LIC-MT-B

LOGIN

Open web browser. Google Chrome recommended.

Local access: enter the IP address of the MT-CPU-1 server, for example 192.168.0.98. Global access: enter the public domain or IP address of the router. The system operates on communication port number 80.

This opens the login panel. Enter your username and password.

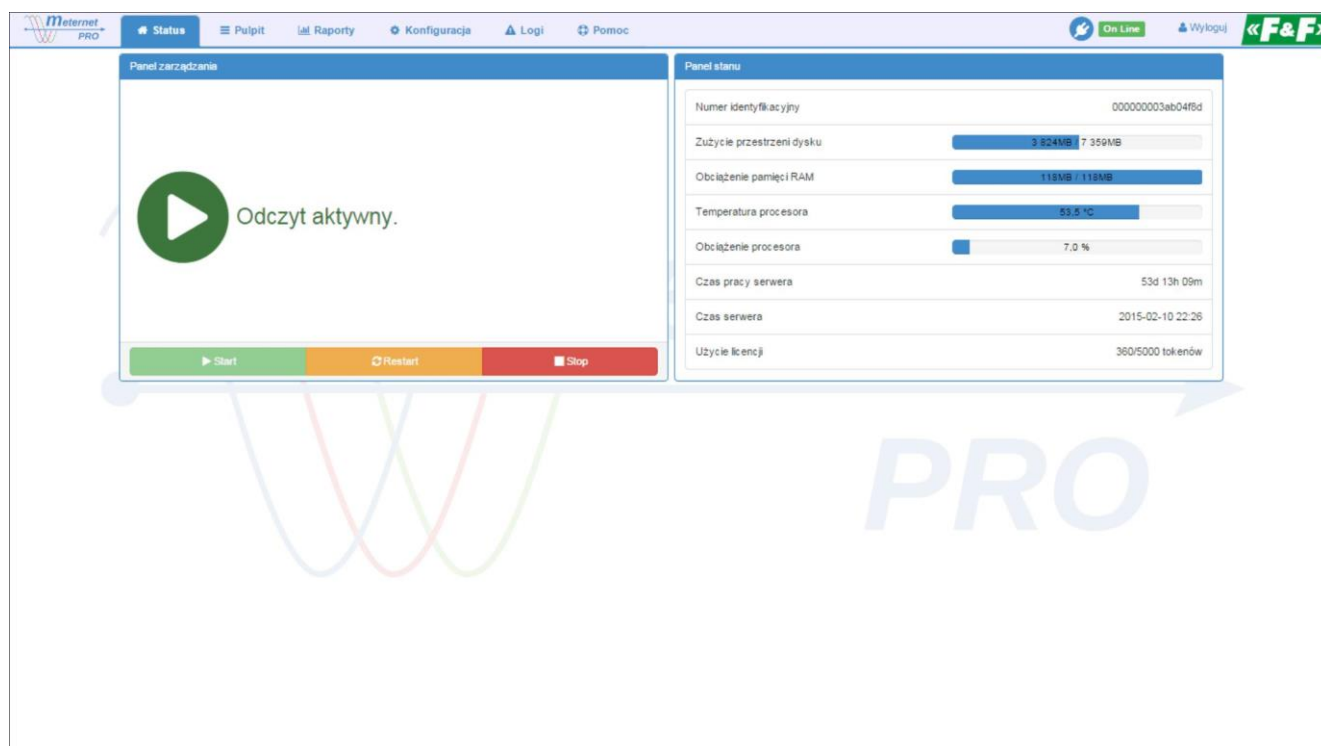


Default settings User/Password:

- admin / admin - administrator panel with the functions of system configuration
- user / user - user panel with preview functions (no Settings tab)

STATUS AND TOOLBAR

On the toolbar you can find the menu bookmarks and the indicator of server connection and logout button.
Status Bookmark:



Control panel:

Indicates the current operating mode of the system - reading active or inactive.

Start - start reading and recording.

Restart - stop and automatically start monitoring and recording.

Stop - stop reading and recording.

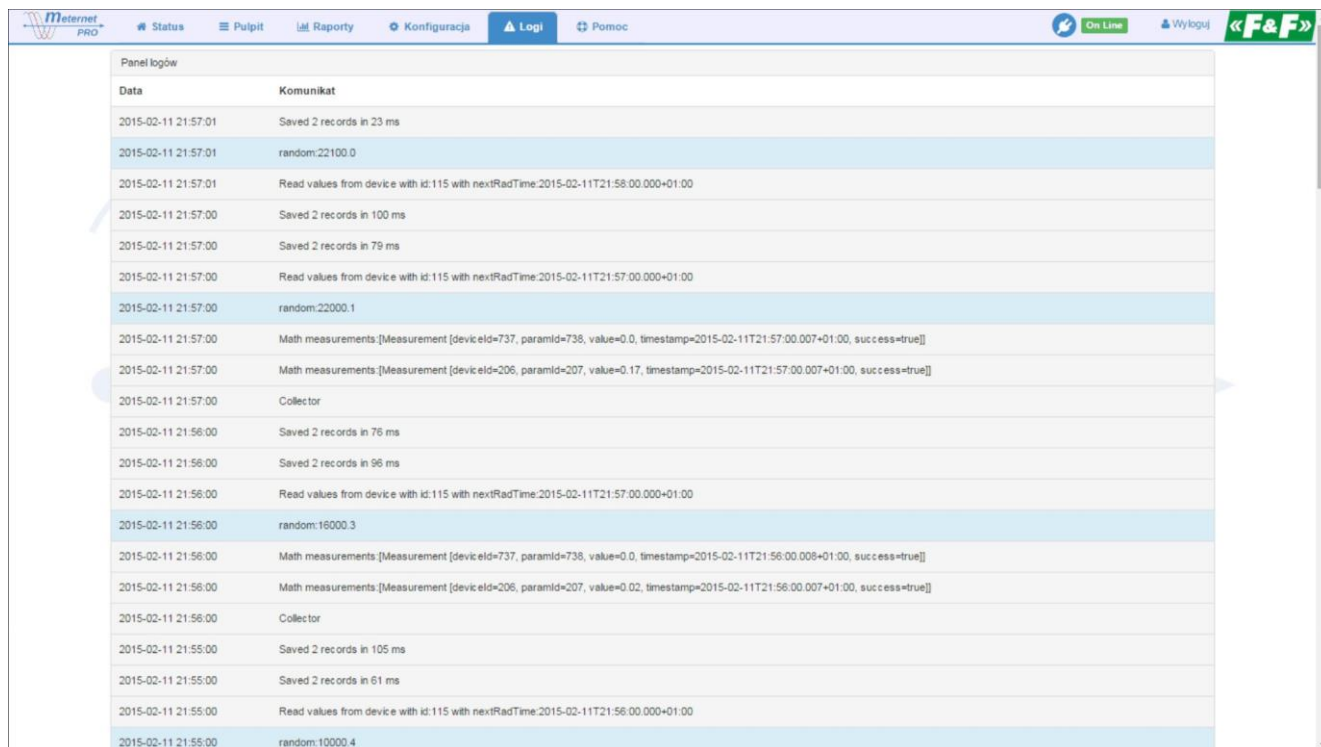
Status panel:

It shows the server data and current parameters of its work.

LOGS

It applies to the system. Provides current information on the reading and recording processes.

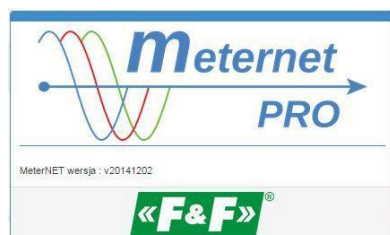
This is useful for diagnosing communications and records.



Data	Komunikat
2015-02-11 21:57:01	Saved 2 records in 23 ms
2015-02-11 21:57:01	random:22100.0
2015-02-11 21:57:01	Read values from device with id:115 with nextRadTime:2015-02-11T21:58:00.000+01:00
2015-02-11 21:57:00	Saved 2 records in 100 ms
2015-02-11 21:57:00	Saved 2 records in 79 ms
2015-02-11 21:57:00	Read values from device with id:115 with nextRadTime:2015-02-11T21:57:00.000+01:00
2015-02-11 21:57:00	random:22000.1
2015-02-11 21:57:00	Math measurements [Measurement [deviceId=737, paramId=738, value=0.0, timestamp=2015-02-11T21:57:00.007+01:00, success=true]]
2015-02-11 21:57:00	Math measurements [Measurement [deviceId=206, paramId=207, value=0.17, timestamp=2015-02-11T21:57:00.007+01:00, success=true]]
2015-02-11 21:57:00	Collector
2015-02-11 21:56:00	Saved 2 records in 76 ms
2015-02-11 21:56:00	Saved 2 records in 96 ms
2015-02-11 21:56:00	Read values from device with id:115 with nextRadTime:2015-02-11T21:57:00.000+01:00
2015-02-11 21:56:00	random:16000.3
2015-02-11 21:56:00	Math measurements [Measurement [deviceId=737, paramId=738, value=0.0, timestamp=2015-02-11T21:56:00.008+01:00, success=true]]
2015-02-11 21:56:00	Math measurements [Measurement [deviceId=206, paramId=207, value=0.02, timestamp=2015-02-11T21:56:00.007+01:00, success=true]]
2015-02-11 21:56:00	Collector
2015-02-11 21:55:00	Saved 2 records in 105 ms
2015-02-11 21:55:00	Saved 2 records in 61 ms
2015-02-11 21:55:00	Read values from device with id:115 with nextRadTime:2015-02-11T21:56:00.000+01:00
2015-02-11 21:55:00	random:10000.4

HELP

About: Information about the software version of the system.



CONFIGURATION

System configuration tab.

Settings

Settings of the network communication parameters and system time synchronization with the time of PC system administrator.

Wejścia danych
Moduł matematyki
Wyjścia danych
Ustawienia
Użytkownicy
Licencja

Stoień wykorzystanie licencji
360/5000

Ustawienia sieciowe

Adres: 192.168.0.98
Maska: 255.255.255.0
Brama: 192.168.0.1
Zapisz

Ustawienia czasu i daty

Lokalny czas PC: 25 sty 2015 17:23:40
Czas serwera: 25 sty 2015 17:23:40
Synchronizuj

Licenses

The license code box, the licensee's data.

Wejścia danych
Moduł matematyki
Wyjścia danych
Ustawienia
Użytkownicy
Licencja

Stoień wykorzystanie licencji
360/5000

Zamówienie rozszerzenia licencji

Kod aktywacyjny: AetM80lypgA=ZPg1Km1JFWKleZvd1nhYf4z0ZRQuGyAnIDFQZ:W4Rxy4KZ:WangFn5KWPqIcoZANatze7chBsUaJNt

Zamówienie rozszerzenia licencji

Dane licencjodawcy

Nazwa firmy: Nazwa firmy
Miejsce: Miejsce
Ulica: Ulica
Kod pocztowy: Kod pocztowy
NIP: NIP
Adres e-mail: Adres e-mail
Telefon kontaktowy: Telefon kontaktowy

Zamówienie

Kredyty posiadane:
Kredyty zamawiane: Kredyty zamawiane
Suma Kredytów: Suma Kredytów

Wydrukuj jako PDF Wyslij mailem

Users

Access list and assigning rights to users.

Wejścia danych
Moduł matematyki
Wyjścia danych
Ustawienia
Użytkownicy
Licencja

Stoień wykorzystanie licencji
360/5000

Użytkownicy

	Nazwa	Hasło	E-mail	Administrator	Operator	Użytkownik		
1	admin	Zmień hasło		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
2	user	Zmień hasło		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

- 9 -

Data inputs

Remote reading network configuration. The tree diagram is a reflection of the physical remote reading network segmented (interfaces) via the communication ports: LAN converters, USB converters and RS-485 port of the MT-CPU-1 server.

The screenshot shows the 'Węzła danych' (Data nodes) tree on the left, which includes a hierarchy of nodes like 'ATC-1000', 'Machine', 'lokalny serial', 'LE-03MP', 'MOC2', 'MOC3', 'MOC4', 'MOC5', 'Napiecie1', 'Napiecie2', 'Napiecie3', 'Napiecie4', 'Prad1', 'Prad2', 'Prad3', and 'Prad4'. The right window is titled 'ATC-1000' and shows the 'Interfejs komunikacji' (Communication interface) settings. The 'Nazwa' (Name) is 'ATC-1000', 'Opis' (Description) is empty, 'Typ' (Type) is 'TCP/IP', 'Domyślna częstota odczytu' (Default reading frequency) is '60' s, and 'Czas na odczyt' (Reading time) is '500' ms. Below this is a table 'Odczytywane urządzenia' (Read devices) with one entry: 'Machine' with 'Opis 1' as 'n', 'Typ' as 'DMM-ST', 'Adres MODBUS' as '3', and 'Częstota odczytu' as '60'.

Adding interfaces.

It is done using the „+” sign in the main branch of the input scheme.

USB interface

The screenshot shows the 'Węzła danych' (Data nodes) tree on the left, which includes a hierarchy of nodes like 'Interface Machine', 'lokalny serial', and 'USB1'. The right window is titled 'USB1 - interfaceMSER' and shows the 'Interfejs komunikacji' (Communication interface) settings. The 'Nazwa' (Name) is 'USB1', 'Opis' (Description) is 'Opis', 'Typ' (Type) is 'Port szeregowy' (Serial port), 'Port' is '1', 'Prędkość transmisji (Baudrate)' (Transmission speed) is '9600', 'Długość słowa (Databits)' (Word length) is '8', 'Parzystość (Parity)' (Parity) is 'Brak parzystości' (No parity), 'Ilość bitów stopu (Stopbits)' (Number of stop bits) is '2', 'Domyślna częstota odczytu' (Default reading frequency) is '60' s, and 'Czas na odczyt' (Reading time) is '500' ms. Below this is a table 'Odczytywane urządzenia' (Read devices) with one entry: 'Machine' with 'Opis 1' as 'n', 'Typ' as 'DMM-ST', 'Adres MODBUS' as '3', and 'Częstota odczytu' as '60'.

Communication interface: enter name and description in the Type field, select the type of interface and adjust settings of the Modbus communication parameters for this segment (converter).

Read the device: future list of measuring devices that will be in this segment.

TCP interface

Communication interface: enter name and description in the Type field, select the type of interface and adjust settings of the Modbus communication parameters for this segment (converter). Time to read is the maximum waiting time for a response from the device. After receiving a response from the device the application queries the next device.

Read the device: for a list of measuring devices that are in this segment.

Adding Device.

It is done using the „+” sign in a branch of the given interface. In order to do that, expand the branch of the given interface. The devices library will open.

Select appropriate device.

Węzła danych

- Węzła danych
 - Interface Machine
 - lokalny serial
 - LAN
 - new Device

Moduł matematyki

Wyjścia danych

Ustawienia

Użytkownicy

Licencja

Stopień wykorzystanie licencji
37690000
Zostały wprowadzone zmiany w konfiguracji

Zapisz zmiany Anuluj

new Device - FIF_LE01MP

Licznik

Nazwa: new Device

Opis 1: Opis 1

Opis 2: Opis 2

Opis 3: Opis 3

Adres MODBUS: 1

Częstotliwość odczytu: 60 s

Typ urządzenia: FIF_LE01MP

Parametry

	Nazwa	Typ / Jednostka	Offset	Mnożnik
1	Voltage	Napięcie / V	0	1
2	Current	Prąd / A	0	1
3	Frequency	Częstotliwość / Hz	0	1
4	Energy	Energia / Wh	0	1

Device (for example meter): enter descriptions for the device and its individual modbus address in this segment. Optionally, you can change for the given device only the default readout frequency set for the entire segment (interface). Parameters: a list of all parameters, which are read from the given device. With the parameters Offset and Multiplier user can algebraically transform read parameter and save it as a result of the operation. Transformation algorithm is a linear function $y = ax + b$, where: a - multiplier; b - offset; x - the read value; y - saved result.

Example. Offset parameter allows you to shift a result value to „+” or „-”. If the meter already has a result counted, for example 123 kWh, then by setting the offset to -123 for registration we reset the meter indication. The counting begins from 0. The multiplier parameter allows to proportionally increasing or reducing the read result. If the 3-phase system is symmetrically loaded and we make measurements of energy consumption on only one phase, then by setting the multiplier to 3 we get in the record a value of power consumption for the entire system.

Data outputs

The selection and database configuration (write) module.

Derby Writer – primary, system database. Physically, it is a memory connected to the server.

Data outputs: descriptions and selection of database type.

Devices: list of devices plugged into communication interfaces, the measurement results of which are recorded into this database. Measuring parameters of the device, which are automatically read can be omitted from the record. They will then be visible only in the current data table.

Wjęcia danych

Moduł matematyki

Wjęcia danych

Wjęcia danych

Derby writer

Ustawienia

Użytkownicy

Licencja

Stopień wykorzystanie licencji

360/5000

Zostały wprowadzone zmiany w konfiguracji

Zapisz zmiany

Anuluj

Derby writer - DERBY

Wjęcia danych

Nazwa: Derby writer

Opis: Wewnętrzna baza Derby

Typ: Wewnętrzna baza danych

Urządzenia

Interfejs : Interface Machine

	Nazwa urządzenia	Nazwa parametru	Włączone logowanie
1	Machine		

Interfejs : lokalny serial

	Nazwa urządzenia	Nazwa parametru	Włączone logowanie
1	Termopary1		
2	Termopary2		
3	Termopary3		

REPORTS

Table of current data

The table shows the results of recent readings.

Moc Pozorna, Prąd, ... (Total: 12)						
	Nazwa licznika	Nazwa parametru	Jakość	Czas odczytu	Ilość błędnych odczytów	Ilość poprawnych odczytów
1	Licznik3.1	Energy	0	2015-02-12 11:09:18	0	125
2	Licznik3.2	Energy	0	2015-02-12 11:09:18	0	125
3	Licznik3.3	Energy	0	2015-02-12 11:09:18	0	125
4	Licznik3.4	Energy	0	2015-02-12 11:09:18	0	125
5	Licznik3.5	Energy	0	2015-02-12 11:09:18	0	125
6	Licznik3.6	Voltage	10	2015-02-12 11:09:18	36	89
7	Licznik3.6	Current	10	2015-02-12 11:09:18	36	89
8	Licznik3.6	Frequency	10	2015-02-12 11:09:18	36	89
9	Licznik3.6	Energy	10	2015-02-12 11:09:18	36	89
10	Licznik3.7	VoltageL1	0	2015-02-12 11:09:18	0	125
11	Licznik3.7	VoltageL2	0	2015-02-12 11:09:18	0	125
12	Licznik3.7	VoltageL3	0	2015-02-12 11:09:18	0	125
13	Licznik3.7	CurrentL1	0	2015-02-12 11:09:18	0	125
14	Licznik3.7	CurrentL2	0	2015-02-12 11:09:18	0	125
15	Licznik3.7	CurrentL3	0	2015-02-12 11:09:18	0	125
16	Licznik3.7	PowerL1	0	2015-02-12 11:09:18	0	125
17	Licznik3.7	PowerL2	0	2015-02-12 11:09:18	0	125
18	Licznik3.7	PowerL3	0	2015-02-12 11:09:18	0	124
19	Licznik3.7	PowerTot	0	2015-02-12 11:09:18	0	124
20	Licznik3.7	EnergyA	0	2015-02-12 11:09:18	0	124
21	Licznik3.7	EnergyP	0	2015-02-12 11:09:18	0	124
22	Licznik3.8	VoltageL1	7	2015-02-12 11:09:18	7	117
23	Licznik3.8	VoltageL2	7	2015-02-12 11:09:18	7	117
24	Licznik3.8	VoltageL3	7	2015-02-12 11:09:18	7	117
25	Licznik3.8	CurrentL1	7	2015-02-12 11:09:18	7	117

The table contains 100 items on one page. User can switch following pages.

- 13 -

The following table fields:

- name of the meters
- parameter
- quality – indicator of the recent, consecutive erroneous readings. Readings with number of errors 1 - 9 are marked with yellow color. Readings that have reached level 10 are marked with red. Green means updates of the result.
- reading time
- number of false readings – the sum of all false readings from the change of the configuration and start of the registration
- number of correct readings - the sum of all correct readings from the change of configuration and start of the registration
- reading value along with its unit

Filtering

Search bar allows you to filter the table by the name of the device. By entering the subsequent letters of the device name the filter automatically narrows the group of the device in the table.

The parameters filter allows you to select a group of devices with the same parameters to preview.

Moc Pozorna, Prąd, ... (Total: 12) ▾

☒ Select All
 ☐ Select None

Search...

Moc Pozorna	✓
Prąd	✓
Współczynnik niezrównoważenia prądu	✓
Energia	✓
Częstotliwość	✓
brak	✓
Moc	✓
Współczynnik moc	✓
Energia Birena	✓
Moc Bierna	✓
Napięcie	✓
Współczynnik niezrównoważenia napięcia	✓

Table of historical data

The table shows the results for a given point of time determined by the user.

<div> <div> <div>Meternet PRO</div> <div>Status</div> <div>Pulpit</div> <div>Raporty</div> <div>Konfiguracja</div> <div>Logi</div> <div>Pomoc</div> </div> <div> <div>On Line</div> <div>Wyloguj</div> <div>«F&F»</div> </div> </div>				
<div> <div>licznik.3.7</div> <div>Q</div> <div>Moc Pozorna, Prąd, ... (Total: 12) ▾</div> <div>2015-02-10 12:00</div> <div>± 1min</div> <div>Odbierz</div> </div>				
	Nazwa licznika	Nazwa parametru	Czas odczytu	Wartość
1	Licznik.3.7	VoltageL1	2015-02-10 12:01	229 V
2	Licznik.3.7	VoltageL2	2015-02-10 12:01	231 V
3	Licznik.3.7	VoltageL3	2015-02-10 12:01	235 V
4	Licznik.3.7	CurrentL1	2015-02-10 12:01	82,3 A
5	Licznik.3.7	CurrentL2	2015-02-10 12:01	79,2 A
6	Licznik.3.7	CurrentL3	2015-02-10 12:01	74,8 A
7	Licznik.3.7	PowerL1	2015-02-10 12:01	18846,7 W
8	Licznik.3.7	PowerL2	2015-02-10 12:01	18295,2 W
9	Licznik.3.7	PowerL3	2015-02-10 12:01	17578,0 W
10	Licznik.3.7	PowerTot	2015-02-10 12:01	54719,9 W
11	Licznik.3.7	EnergyA	2015-02-10 12:01	489273200 Wh
12	Licznik.3.7	EnergyR	2015-02-10 12:01	836300 Wh

Filtering

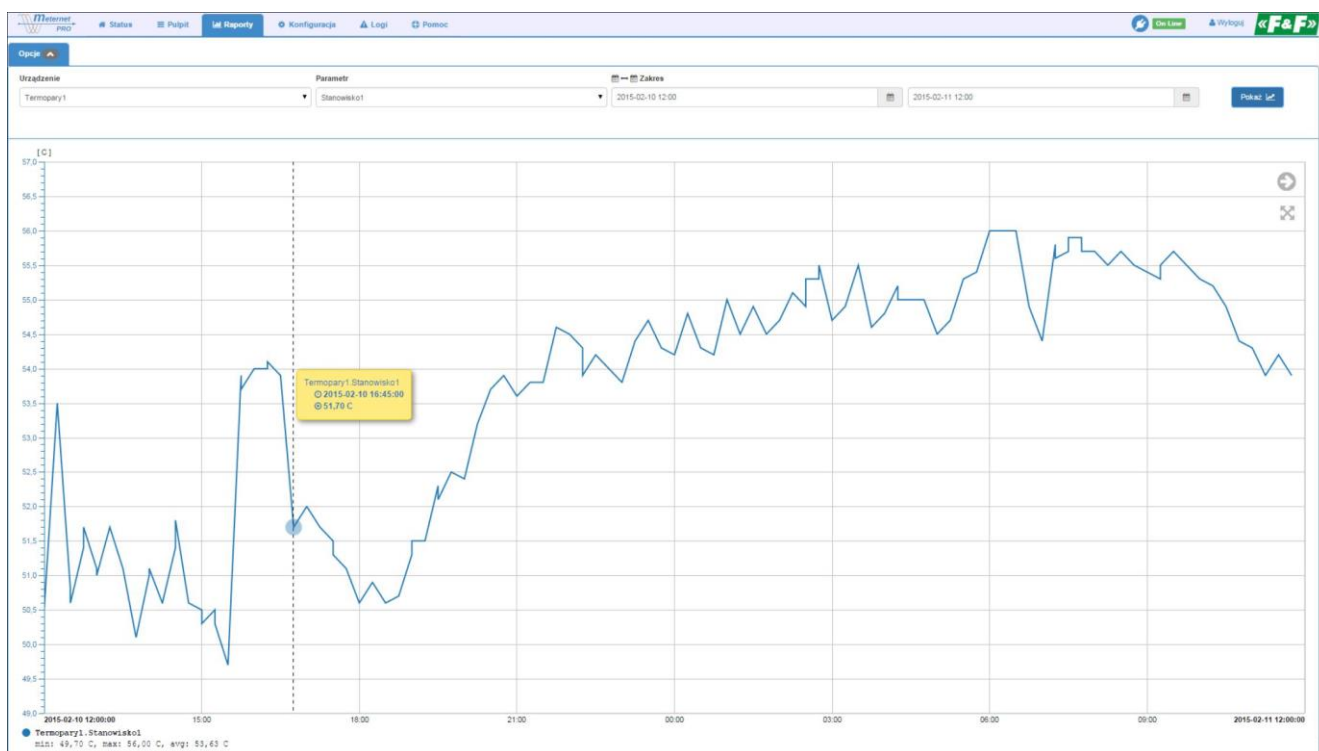
Search bar allows you to filter the table by the name of the device. By entering the subsequent letters of the device name the filter automatically narrows the group of the device in the table.

The parameters filter allows you to select a group of devices with the same parameters to preview.

Setting the time tolerance allows you to find and show the readout results closest to the designated date. Take into account the frequency of reading when choosing.

Graph

Allows you to select one parameter of the given device and present it as a trend within the designated timespan.

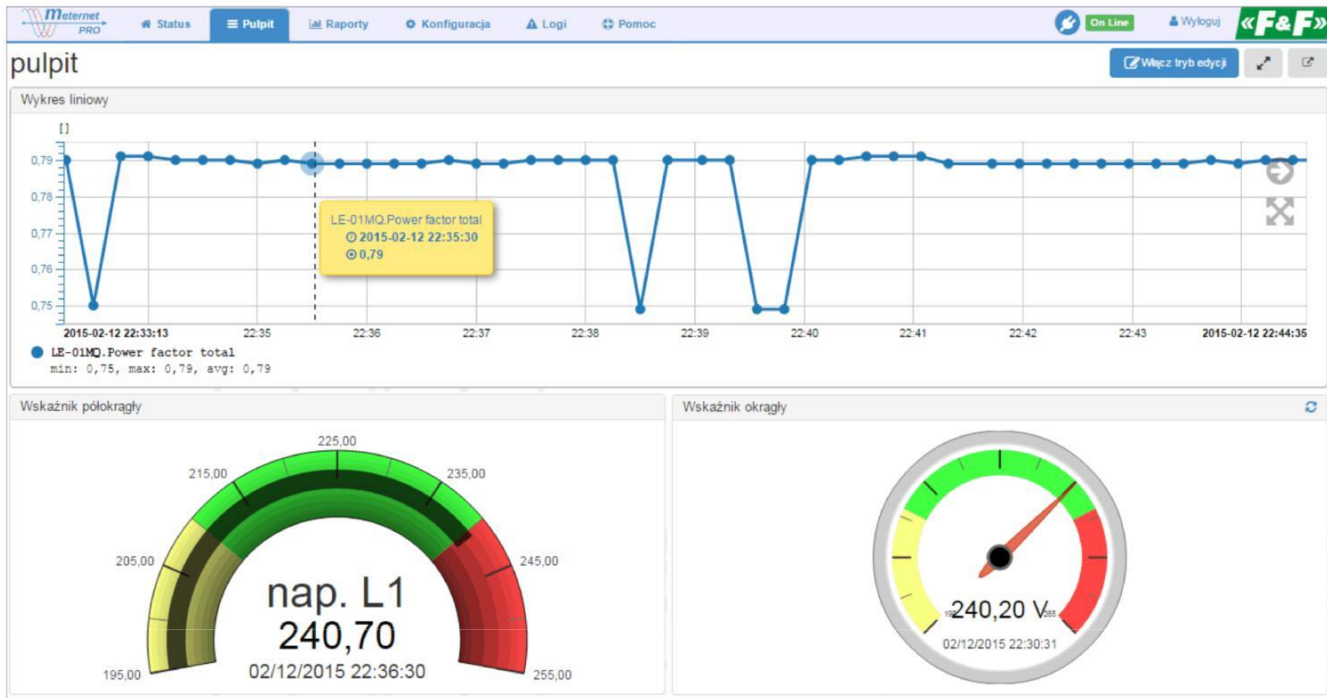


DASHBOARD

The panel of graphical indicators of the currently selected parameters.

The current version of the application features three indicators: circular (pointer), semi-circular and linear graph.

In basic version of the software user can set together only three indicators on one dashboard. Version with „dashboard” license allows you to set together unlimited number of dashboards and indicators.

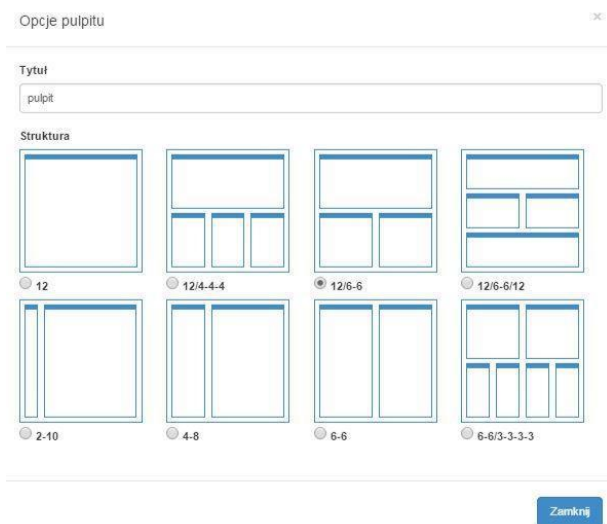


The full screen button (left) and dashboard transfer to a separate window (right).

Adding and configuring indicators

Click the Enable edition mode button. New buttons and indicators (widgets) usage bar will appear.

Modify – dashboard structure selection. You can put many indicators in each window. They are automatically scaled. User can move each indicator to any window. Indicator can be set alone or form a group of indicators in a given window.



Add widget - indicator selection.



Select the indicators and accept by pressing Close.

Indicator in edit mode:



(from left)

- refresh values
- move the indicator to another window. Grab with cursor and move to the other window (drag&drop).
- Indicator edition panel
- remove indicator

Circular indicator

Wskaźnik okrągły

Tytuł

Wskaźnik okrągły

Źródło danych

Urządzenie	Parametr	Nazwa
LE-01MQ	Voltage	nap.L1

Precyzja: 0 Jednostka: V

Główny znacznik: 7 Pomocniczy znacznik: 2

Próbek do uśrednienia: 1 Pochodna: Wyłączone

Minimalne wskazanie: 190 Maksymalne wskazanie: 260

Od	Do	Kolor
190	210	#f8ff82
210	245	#42ff42
245	260	#ff4545

Zamknij

Title:

Enter the name of the indicator.

Data source (expand the dashboard with the + sign):

Device – select the device from the list

Parameter – select the device parameter from the list

Name - enter the name shown directly on the indicator

Precision – number of zeros after the decimal point

Unit – enter the unit of the parameter, for example V-volts.

Main marker – enter the number of main markers on the scale. There is always one less range designated by the indicators.

Secondary marker – enter the number of the division of the range designated by the main markers.

Samples for averaging – enter the number of the recent results calculated to the average of the indication. Parameter 1 displays the actual result of the last readout.

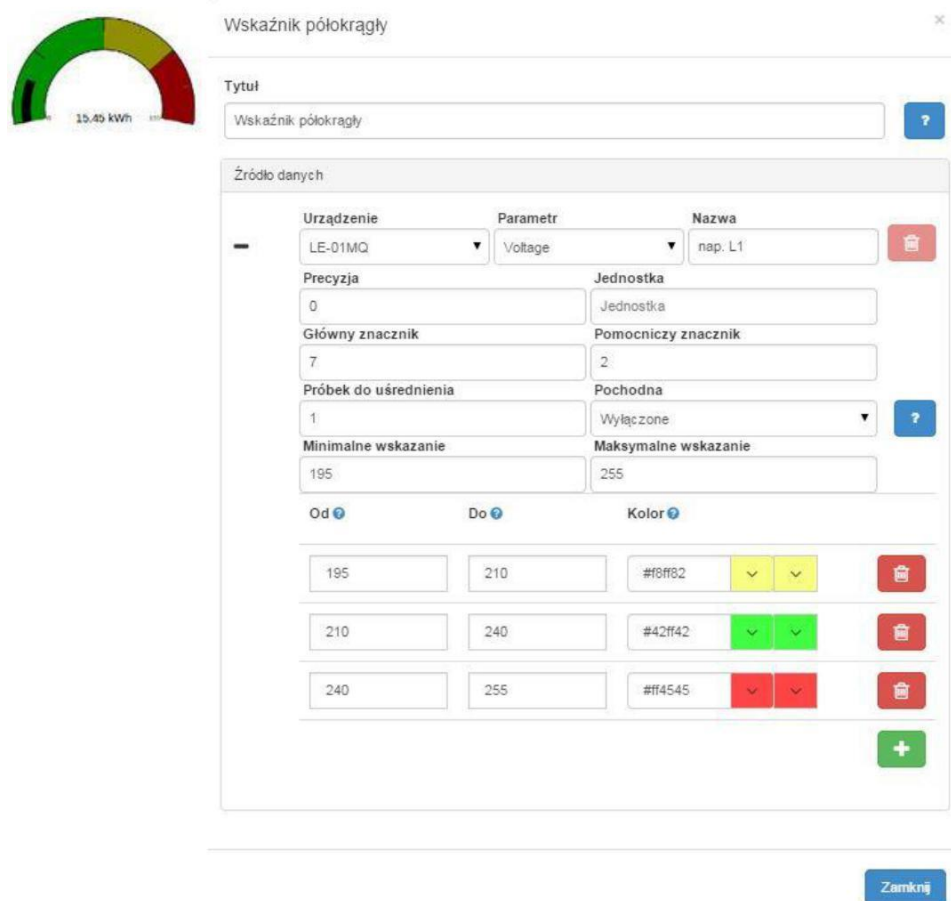
The derivative – the ability to mathematically transform the result using the derivative function. It allows to show a parameter, for example power consumption, as a graph of drawn power or load. Please note! The result is not the actual value, but only the approximate calculated as an average value for the period of registration.

Minimum indication - value of the beginning of the scale

Maximum indication – value of the end of the scale

From / To / Color – determine the ranges of value for selected colors. Set the intervals in relations to the adopted scale min. / max. Sign „+” adds another range.

Semi-circular indicator



Wskaźnik półokrągły

Tytuł
Wskaźnik półokrągły

Źródło danych

Urządzenie	Parametr	Nazwa
LE-01MQ	Voltage	nap. L1

Precyzja: 0 Jednostka: Jednostka

Główny znacznik: 7 Pomocniczy znacznik: 2

Próbkę do uśrednienia: 1 Pochodna: Wyłączone

Minimalne wskazanie: 195 Maksymalne wskazanie: 255

Od: 195 Do: 210 Kolor: #f8ff82

210 240 #42ff42

240 255 #ff4545

Zamknij

Title:

Enter the name of the indicator.

Data source (expand the dashboard with the „+” sign):

Device - select the device from the list

Parameter - select the device parameter from the list

Name - enter the name shown directly on the indicator

Precision - number of zeros after the decimal point

Unit – enter the unit of the parameter, for example V - volts.

Main marker – enter the number of main markers on the scale. There is always one less range designated by the indicators.

Secondary marker – enter the number of the division of the range designated by the main markers.

Samples for averaging – enter the number of the recent results calculated to the average of the indication. Parameter 1 displays the actual result of the last readout.

The derivative – the ability to mathematically transform the result using the derivative function. It allows to show a parameter, for example power consumption, as a graph of drawn power or load. Please note! The result is not the actual value, but only the approximate calculated as an average value for the period of registration.

Minimum indication - value of the beginning of the scale

Maximum indication – value of the end of the scale

From / To / Color – determine the ranges of value for selected colors. Set the intervals in relations to the adopted scale min. / max. Sign „+” adds another range.

Linear graph

Wykres liniowy

Tytuł
Wykres liniowy

Źródło danych

urządzenie: LE-01MQ parametr: Power factor total nazwa: LE-01MQ.Power factor total

kolor linii: #1f77b4 styl: 3 px kolor znacznika: #1f77b4 styl: 5 px podziałka: osobna

rzęd: - precyzja: 2 zakres: auto

kolor wartości: #1f77b4 kolor osi: #1f77b4 siatkaa: główna kolor siatki 1: #c0c0c0 kolor siatki 2: #d3d3d3

Formatowanie osi czasu

Długość bufora: 2 godz. Domyślna długość bufora: 1 godz. Jednostka czasu: Godzina

Kolor siatki 1: #BBBBBB Kolor siatki 2: #999999 Tryb siatki: gęsta

Nie pokazuj daty (tylko czas): Wyłączone Włącz możliwość przybliżania: Włączone Auto scroll: Włączone

Dodaj serię +

Zamknij

Title:

Enter the name of the indicator.

Data source (expand the dashboard with the „+” sign):

Device – select the device from the list

Parameter – select the device parameter from the list

Name - enter the name shown directly on the indicator

Line color / style – select a color of the progress line and thickness in pixels

Marker color / style – select a color of the measurement point and diameter in pixels

Row – select prefix of the unit of the displayed value

Precision – number of zeros after the decimal point

Range – auto: the system automatically calculates the range of the value axis based on the minimum and maximum registered values of the parameter; manual: set the range - minimum and maximum value (windows on the right)

Value color – select the color of the numbers on the value axis

Axis color – select the color of the value axis and markers

Grid – grid density: no (-), only significant points (main), all points (dense)

Grid color 1 – color of the main grid

Grid color 2 - color of the dense grid

Timeline formatting:

Buffer length – the number of units of the visible range of time progress

Default buffer length - the number inserted automatically when creating subsequent indicators

Unit of time - select the time unit for the buffer: minute, hour, day

SOFTWARE EXPANSION MODULES

„Energy” module LIC-MT-E

Module of the subscription billing of the power consumption (or other recorded incremental value, for example: water, heat, etc.). It allows you to calculate the increases in the value in the designated billing periods (intervals). Cycles: monthly, weekly, daily, hourly. The module allows you to create multiple individual and parallel reports.

Biura PARTER												
Licznik	Opis 1	Opis 2	Opis 3	12:00 01.02.2015 - 12:00 01.01.2015			12:00 01.02.2015 - 12:00 01.12.2014			12:00 01.12.2014 - 12:00 01.11.2014		
				data	wartość	przyrost	data	wartość	przyrost	data	wartość	przyrost
Licznik 1	Pabianice	ul. Konstantynowska 79/81	Biuro 1.1	01.02.2015 12:01:07	2164.0	425.8	01.01.2015 12:00:43	1738.2	358.6	01.12.2014 12:00:13	1379.6	354.9
Licznik 2	Pabianice	ul. Konstantynowska 79/81	Biuro 1.2	01.02.2015 12:01:07	1802.9	204.8	01.01.2015 12:00:43	1598.1	363.1	01.12.2014 12:00:13	1235.0	337.7
Licznik 3	Pabianice	ul. Konstantynowska 79/81	Biuro 1.3	01.02.2015 12:01:07	4023.6	648.7	01.01.2015 12:00:43	3374.9	479.7	01.12.2014 12:00:13	1895.2	528.1
Licznik 4	Pabianice	ul. Konstantynowska 79/81	Biuro 1.4	01.02.2015 12:01:07	2887.3	529.1	01.01.2015 12:00:43	2458.2	508.5	01.12.2014 12:00:13	1949.7	416.7

Descriptive cell Meter - the name given to a row when creating report.

Descriptive cells Description 1-3 - match the names and descriptions made in the Configuration tab.

Settlement cells - with time spans (cycles), designed for up to 6 on one page. Press Next/Previous to switch to the more or less recent ranges. Settlement cells are divided into three columns:

- date – the exact date and time of the value readout
- value – the total value of the meter in the time of reading
- increase – increment value in a given period of time

Download CSV – button for exporting a comprehensive report to a CSV file (opened in Excel)

Add report – create new report

Edit – edit a selected report.

PLEASE NOTE!

Edit makes permanent and irreversible changes in the structure of data and they are not available later. It is recommended to export to a CSV file before editing.

Creating/editing report

Ustawienia raportu zużycia energii

Tytuł

Nowy raport

Ustawienia okresów rozliczeniowych

Okres

Dzień

Godzina

Kolumny

Miesięczny

1

12:00

6

Źródło danych

urządzenie	parametr	nazwa	rzęd	precyzja
LE-01MQ	Energy [Wh]	LE-01MQ.Energy	k	1
LE-01MQ	Energy [Wh]	LE-01MQ.Energy	k	1

Dodaj serię +

Zapisz

Anuluj

Title - name of the report as seen in the report menu

Settlement period setting:

Period – monthly – to a designated day of each month; weekly – to a designated day of each week; daily – every day until the designated hour

Hour – period-closing time of readout

Columns – number of columns of settlement periods visible on one page

Data source:

Device – select the meter to read. In one report we can compare one device more than once, for example in the LE-01MQ meter we can read and settle the active and passive power

Parameter – select the parameter to read

Magnitude - prefix of measurement unit multiple: p - pico ($\times 10^{-12}$); u - micro ($\times 10^{-6}$); m - milli ($\times 1/1000$); k - kilo ($\times 1000$); M - mega ($\times 10^6$); G- giga ($\times 10^9$).

Precision - the number of decimal places.

Registration

Registration of the data to a report is done on a designated day of the month/week and the designated hour. The settlement report is an independent report (database) from the primary data registration set in Setup. For proper operation of the report and safety of the settlement the second primary registration should be run simultaneously. If the reading cannot be performed or if it is incorrect at the designated time that closes the settlement period, the system reads the data that is closest to the primary registration for a given meter and enters it to a closing report for a given period.

Example: for a monthly report set the primary registration to a once a day read cycle [setting in the Configuration tab -> Data output -> Interface -> Default reading frequency -> 86400 seconds (or 24 hours.)].

„Math” module LIC-MT-M

The module allows you to make the algebraic transformations (calculations) of the registered values. The result is recorded as a virtual device and is subject to all program rules just like any result of the actual equipment.

Adding a Device.

It is done with + sign in the branch.

Meter:

Name – the name of the virtual device/result.

Description 1, 2, 3 – additional descriptions.

Type / Unit – choose from available labelling and units.

Offset / Multiplier - allow to perform algebraic transformation of the result and save it as a result of the calculation.

Transformation algorithm is a linear function $y=ax+b$, where a - multiplier; b - offset; x - the initial value, which is the result of the equation; y -registered result.

Example. Offset parameter allows you to shift the value of the result to + or -. If the given meter already has the value counted, for example. 123 kWh, then setting the offset to -123 for registration resets it. The counting begins from 0.

Multiplier parameter allows to proportionally increasing or decreasing the reading the result. If the 3-phase system is symmetrically loaded and we make measurements of power consumption on only one phase, then by setting the multiplier to 3 we get the value of consumption for the entire system.

The derivative - mathematical transformation of the result using the derivative function. It allows you to present, for example, the power consumption parameter as a graph of the input power or load. Please note! The result is not the actual value, but only the approximate calculated as an average value for the period of registration.

Samples for averaging - enter the number of recent results calculated for average of the derivative. Parameter 1 shows the actual result of the last reading.

The equation:

Action – selection of the action operator (add, subtract, multiply, divide).

Multiplier – floating-point value with a sign (+/-) by which we multiply the value of selected parameter.

Meter / Parameter – selection of the device and its parameter.

Expression – preview of the equation for a given line.

The result of the given line is automatically the initial value of the next line. The number of lines is unrestricted. The end result of the equation is transformed as a whole in accordance with the parameters Offset, Multiplier and Meter.

Example:

Równanie

	Działanie	Mnożnik	Licznik	Parametr	Wyrażenie	
1	Dodaj	1	Licznik	VoltageL1	+ (1 * Licznik.VoltageL1)	
2	Pomnóż	1	Licznik	CurrentL1	* (1 * Licznik.CurrentL1)	

To calculate the input power:

Line 1: +(1x230 V)

Line 2: x(1x5 A)

(1x230)x(1x5)=1150

Please note!

Attach the registration of the created virtual parameter in the Data outputs.

„Dashboard” module

Description coming soon

LIC-MT-P

„Reports” module

Description coming soon

LIC-MT-R