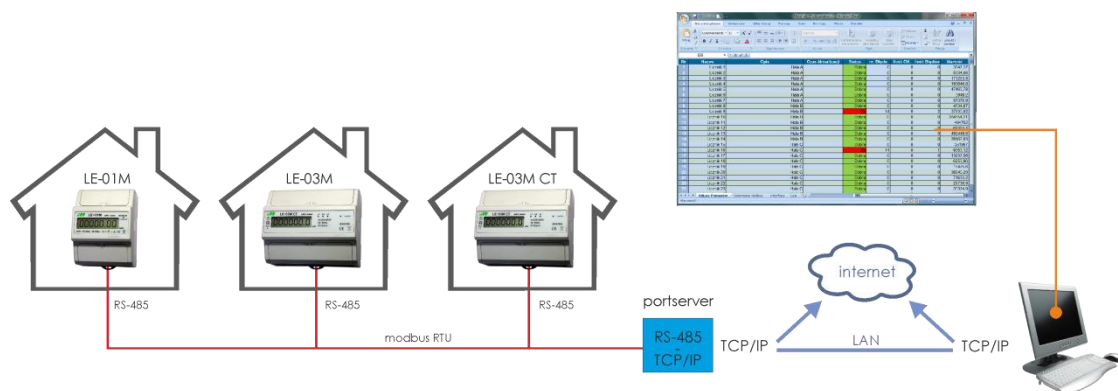




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## Remote reading program of electricity consumption indicators

# METERNET



## INSTRUCTIONS FOR USE

for software version FF1.3.3a4

130625

## PURPOSE

METERNET software allows remote reading of indicators up to 1000 meters of energy from communication port RS-485 and Modbus RTU protocol implemented offered by F&F. The current version supports the following types:

- \* LE01-M - single-phase, direct measurement 100A
- \* LE-03M - three-phase, direct measurement 3x100A
- \* LE03-M CT - three-phase, half-direct measurement with current transmission 5÷6000/5A

To work is required package MS Office 2003, MS Office 2007, MS Office 2010.

## FUNCTION

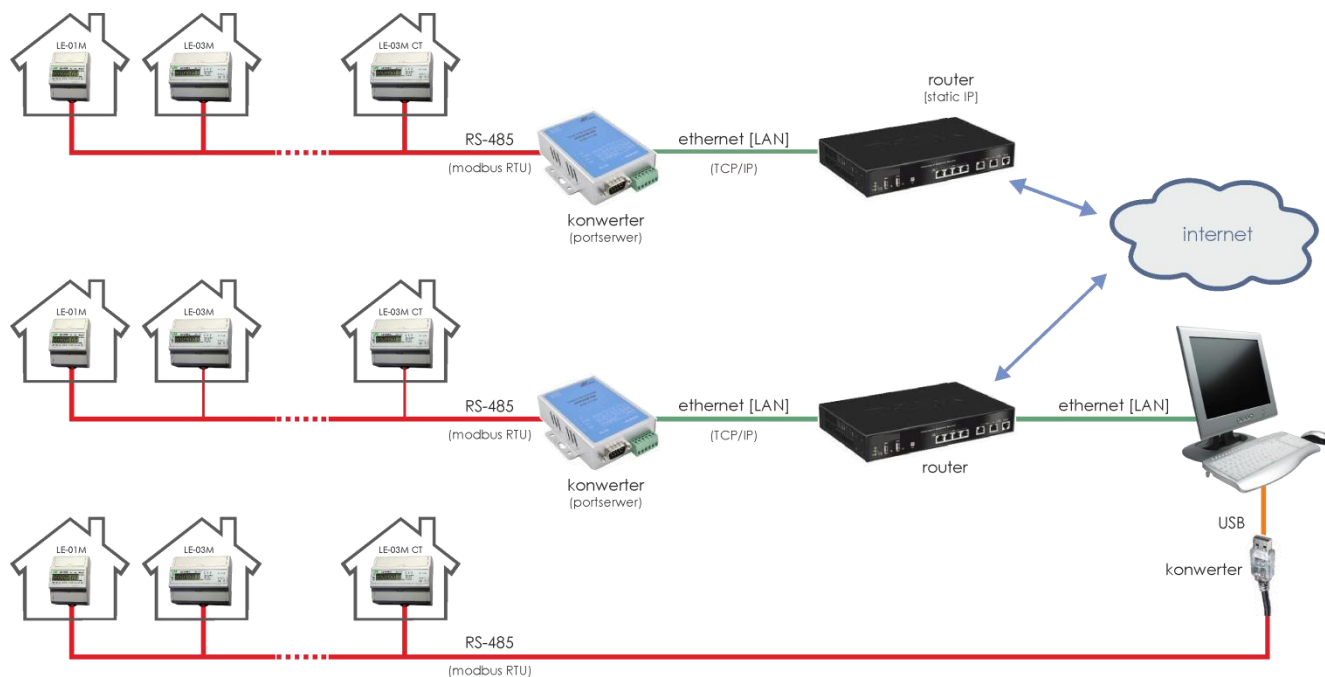
The application is an integral part of Excel. Was written on the basis of technology VBA. The read data are presented in Table of program. Data can be any shape as functions of spreadsheet software. Program as part of their workbook consists of five sheets.

- 1) Sheet Measurements - table with a list of active meters and their current indications of energy.
- 2) Set the Modbus - select types of meters, their name and a description and setting the type of connection
- 3) Interfaces - setting the communication parameters (IP address, COM, name)
- 4) Logs - registration and description of communication errors
- 5) CSV - Configure logging to CSV file (spreadsheet activated, if licensed)

and panel setting program options and parameter meters

Meters communicates via RS-485 network in accordance with the standard Modbus RTU protocol. The exchange of data between meters and the application is done via a standard RS485 converter <-> USB port or server on the LAN (Ethernet). In the case of a LAN to the router with a static IP address, you can read data via the Internet.

RS network is made using twisted-pair cable (shielded) signal cable type "twisted pair" (UTP, FTP).



## WORK MODE AND LICENSES

The program is available in demo mode, which displays only the last two digits of the result of the energy meter reading. The rest of the functionality of the program remains unchanged. To get the full functionality of the program must purchase a license (electronic dongle USB) and a license for each meter are part of the system.

The demo version of the program allows for addressing meters and setting values of transmission for half-indirect measurement meter CT.

Licenses:

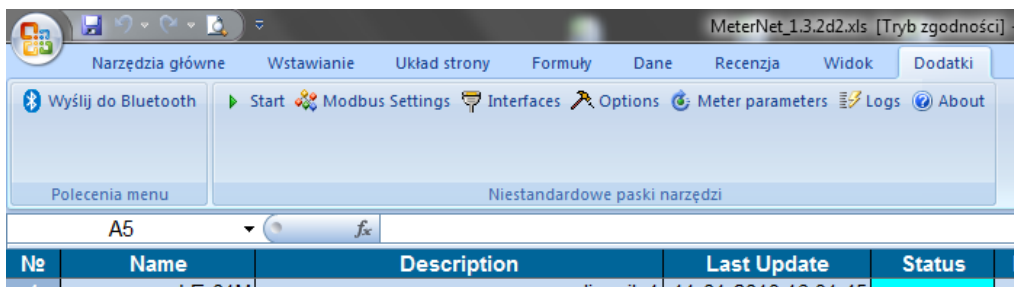
LIC02 - functionality includes four sheets of the program: a list of active meters with readings, settings of Modbus, parameterisation communication in network and recording of communication.

LIC03 - a one-time license fee for each meter running on the program

LIC04 - auto login function (record) reading results to a designated file in CSV format. When you purchase license, an electronic dongle with an activation code the table for a specific license number of counters will be sent to user.

## START PROGRAM

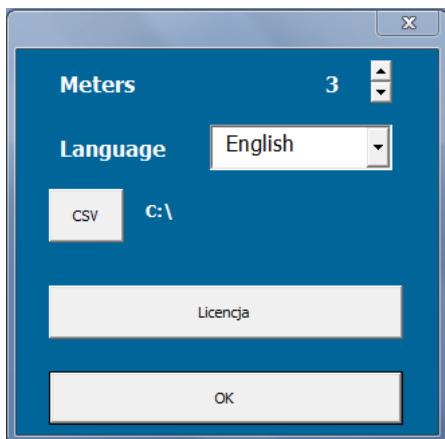
MeterNet.xls file and the file MeterNet.dll copy to shared folder. Insert the USB port dongle. Run Xls file. During startup, Windows may report an alert about the risks from the macro. Enable macros support content. Open the tab on the tool bar add-ons. You will see the function buttons to operate the program.



## THE PROGRAM FUNCTIONS AND SYSTEM CONFIGURATION

### Options and License

In the bookmark *Additional* press button *Options*



Meter: Number of active lines of meters. Option for demo version.

By buttons ^v set number. Licensed version is automatically limited to the number of licenses purchased.

Language: Selecting the language - polish / english / russian

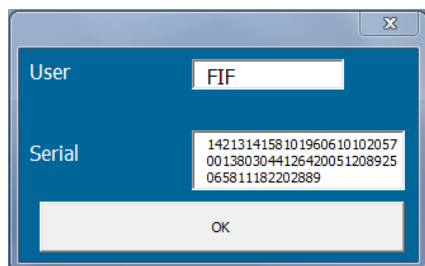
OK: Approval of settings

License: Opening the registration panel

User: Enter the name of the licensor

Activation code: enter the code specified by the licensor

OK: confirms the entries

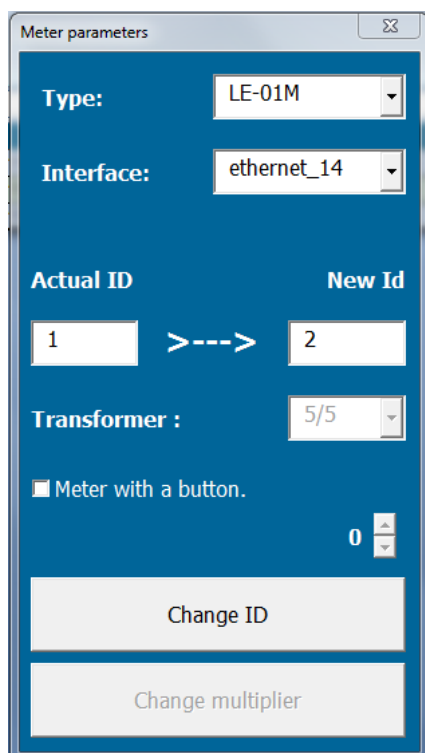


A small dialog box with a blue header and a white body. It contains two input fields: 'User' with the text 'FIF' and 'Serial' with a long alphanumeric string. Below the fields is an 'OK' button.

## Parameterisation panel of meters

In Bookmark *Additional* press button *Meter parameters*.

The panel allows you to set a Modbus address of single meter and set the meters transmission for meters with transformer LE-03M CT.



A dialog box titled 'Meter parameters' with a blue header and a white body. It contains several fields and buttons:
 

- Type:** A dropdown menu with 'LE-01M' selected.
- Interface:** A dropdown menu with 'ethernet\_14' selected.
- Actual ID:** A text box with '1'.
- New Id:** A text box with '2'.
- Transformer :** A dropdown menu with '5/5' selected.
- ☐ **Meter with a button.**
- Change ID** button.
- Change multiplier** button.

### Setting the address

Type: Select the type of supported meter.

Interface: Select the type of connection to the meter (see all names created in the spreadsheet interface connections).

Actual ID: Enter actual modbus adress of supported meter

New ID: Enter a new modbus adress of supported meter.

Press button *Change ID*.

### Setup of transmission

Type: Select the type of supported meter.

Interface: Select the type of connection to the meter (see all names created in the spreadsheet interface connections).

Actual ID: Enter actual modbus adress of supported meter.

Transmission: Select value of meter transmission.

Press button *Change transmission*.

When you press buttons the *Change ID* or *Change transmission* appear on the screen messages: Start - press and confirm the start of change,

Success - successful change;

Failure - the changes have failed

ATTENTION! At the time of the change must necessarily be the SET button in the meter.

## Sheet Interfaces

Enter the spreadsheet interface or from the bookmark *Additional* press button interfaces.

Nr	Nazwa	Typ	Adres	Nr Portu	Timeout[s]
1	localhost	TCP Socket	95.175.2.17	888	1
2	RS	Serial		9	0,5
3					
4					

Name - enter the name of an adjustable connection.

Type – select connection type:

\* Serial – connection by converter RS-485/USB (F&F WE1800BT or analogous);

\* TCP Socket – remote or local connection by the so-called. portserwer, the converter RS-485/TCP-IP (F&F ATC-2000 or analogous).

Address - the IP network address of the Portserver to connect a TCP socket. For Serial connections box keep blank. The IP address can be specified as 4 decimal numbers from 0 ÷ 255 separated by periods or as a host name.

No Port - the communication port number:

\* For Serial - indicate the number of COM port, assigned automatically or manually to usb converter. The program supports ports range from 1 to 9

\* For a TCP socket – give the number of the network, which will operate PortServer

TimeOut - enter the maximum time to wait for a response from the meter. After receiving a response from the meter program polls the next meter. It should be noted that this time should be adequate to the type of connection. For Serial connections recommended set 0.3 sec. For a TCP connection Serial locally around 1.0 seconds, a remotely min. 2.0 sec. Try to select the time starting from the experimental example 2 seconds.

## Modbus Setup Sheet

Enter the Modbus Settings sheet or from the bookmark *Additional* press button *ModBus settings*.

			Cycle time [min]	1		
Nz	Name	Description	Type	Address	Connection type	CT Ratio
1	LE-01M	licznik 1	LE-01M	1	internet_router	1
2	LE-03M	licznik 2	LE-03M	2	internet_router	1
3	LE-03M CT	licznik 3	LE-03M CT	3	usb	1

Cycle Time - (a single cell in the upper part of the paper.) Time in full minutes for the one full course of reading. In the case of continuous operation of the sheet is the cycle time of the automatic meter reading.

If all meters will be read in less than a cycle time of the system will wait for the next course until the expiry of the time remaining.

If this time is too short to poll all meters program will ignore it and perform the full process that is read all over meters, and only after that will go to the next reading.

If you read all the meters in less than the specified cycle time, the rest of the time focused on re-reading of meters, which could not be read correctly.

Name - enter the name of the meter.

Description - enter any description of the meter.

Type - set the type of the meter.

Address - enter the communication Modbus address of the meter according to the settings in the meter. It is not permitted within the same type of call included two meters with the same address. This situation will make addresses conflicts and errors in the correct reading of the meters.

Connection Type - set the type of connection for which the program will be combined with the meter. Here you will see all the names of the types that are defined in the Interface bookmark.

Transmission - Optional. Factor, which is multiplied by the value read from the meter.

The projected results of the meter readings were in accordance with their instructions, enter a value of 1

This also applies to transmission meter LE-03M CT, the transmission values is set in the Panel of the meter parameters.

## Sheet Measurements / run read-out

Enter the sheet measurements.

Nz	Name	Description	Last Update	Status	Error No	OK. Count	Error Count	Value
1	LE-01M	licznik 1		Right	0	0	0	3827,3
2	LE-03M	licznik 2		Right	0	0	0	1287365,9
3	LE-03M CT	licznik 3		Bad	14	0	0	

Name – name of meter entered in a spreadsheet Modbus settings.

Description - a description of the meter entered in the spreadsheet Modbus settings.

Update time - time of the last meter reading.

Status - shows the quality of the data. The background color indicates the degree of news reading. Green - the correct reading during the last cycle. Red - no reading at least two cycles.

No Error - error number, if that was the attempt during at the last connect to the meter. A value 0 means no errors.

Explanation of the error codes can be found in the spreadsheet Logs.

Number OK - the number of correct readings from the last run.

Number of errors - number of readings from the last unsuccessful run.

Value - the last read value of energy consumption [kWh].

## Function the program

In bookmark of program press button *Start*

Current data received from the meters will be displayed in the cell value. In the course of the program can not modify any parameters, so the sheets interfaces, Modbus settings and options and meter parameters buttons are hidden. At any time, meter reading can be paused or stopped.

## Sheet Logs

Enter the log sheet or in the *Additional* bookmark, press button *Logs*.

Error Date	Error Time	Meter Name	Error code
2013-01-18	1:37:37 PM	LE-03M CT - 0	
2013-01-18	1:37:36 PM	LE-03M - 0	
2013-01-18	1:37:36 PM	LE-01M - 0	
2013-01-18	1:37:36 PM	LE-03M CT - 0	
2013-01-18	1:37:36 PM	LE-03M - 0	
2013-01-18	1:37:36 PM	LE-01M - 0	
2013-01-18	1:37:36 PM	LE-03M CT - 0	
2013-01-18	1:37:35 PM	LE-03M - 0	
2013-01-18	1:37:35 PM	LE-01M - 0	

In spreadsheet Logs entered parameters are kept the errors that occurred.

Date - date of the error.

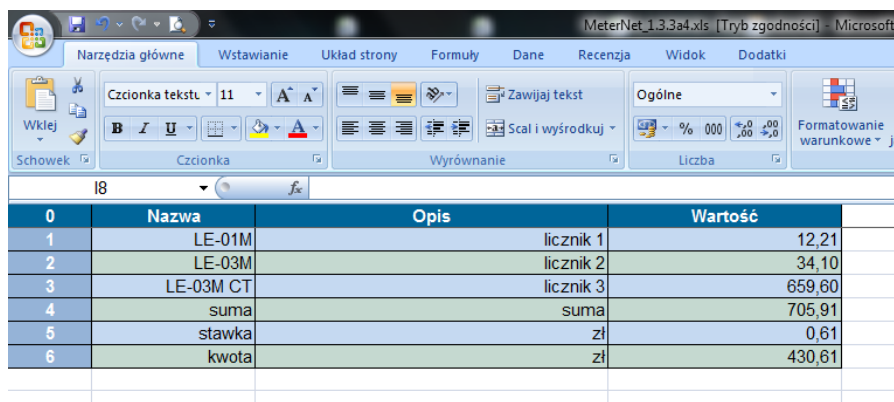
Error Time - the time the error occurred.

Counter Name - The name and ModBus address of the meter.

Error message - number and full description of the error.

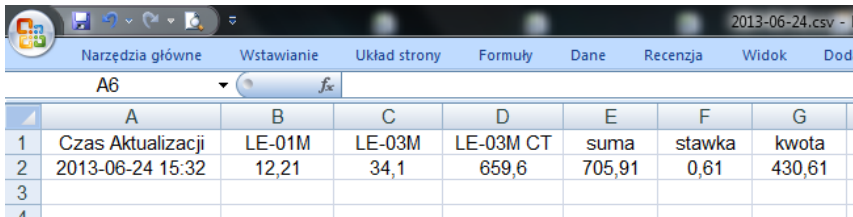
## CSV SPREADSHEET

Configuration sheet of CSV file is visible only if licensed. The sheet can be formed in accordance with the principles of Excel. Number of active lines is dependent on the number of meters included in the system (number of licenses). This is the number two times higher (eg system of 63 meters has 126 active lines of CSV spreadsheet).



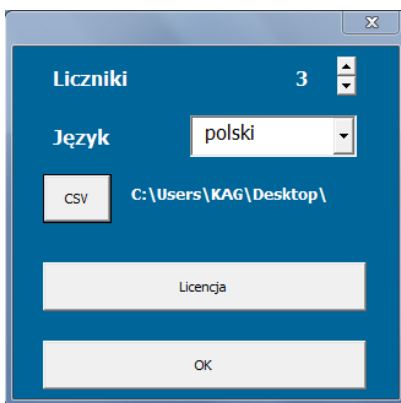
0	Nazwa	Opis	Wartość
1	LE-01M	licznik 1	12,21
2	LE-03M	licznik 2	34,10
3	LE-03M CT	licznik 3	659,60
4	suma	suma	705,91
5	stawka	zł	0,61
6	kwota	zł	430,61

According to the created template the results will be automatically saved to a CSV file in the designated location. Writing is always at the end of the scan cycle, ie the cycle time (time in minutes for the complete one full course of reading). The following records are held to a single file on a given day. Files are automatically named according to the actual date of their creation, such as 2013-06-24.csv.



	A	B	C	D	E	F	G
1	Czas Aktualizacji	LE-01M	LE-03M	LE-03M CT	suma	stawka	kwota
2	2013-06-24 15:32	12,21	34,1	659,6	705,91	0,61	430,61
3							
4							

Designation the location to save the file.  
In the Extras tab, click the Options button.



Hover your mouse pointer on the CSV and click. This opens the window, and then select the destination to store the CSV file. The path will appear in the Options window

## SYSTEM ELEMENTS



Electronic USB dongle



Converter RS485->USB



Converter RS485->TCP/IP