

# ZR SOFTWARE COMMUNICATION SOFTWARE VIA COUNTERS

## 01. ABOUT THIS DOCUMENT

### 1. ABOUT THIS DOCUMENT

This document, tells about the utilization of ZR software which enables reading values of electronic electrical counters communicating in standards of IEC62056-21, IEC870-5-102, DLMS / COSEM manually and automatically, saving, analyzing numerical and graphically, sending informative mails to related people, sharing the result values with ZR Cloud which is a cloud software. Z Telemetry may apply changes that are not mentioned in this document to the software without prior notice. Without the written permission Z Telemetry company, this document cannot be republished or used partially or wholly.

## 02. OPERATING ZR SOFTWARE

### 2. OPERATING ZR SOFTWARE

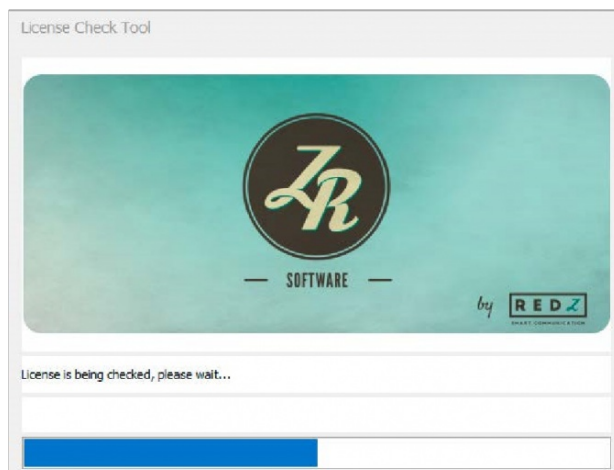
Please, setup the program by double clicking on Setup package just like any other Windows application and obtain a valid license.

**Supported Systems:** Win10, Win8.1, Win8, Win7 SP (Both 64 Bit and 32 Bit systems are supported)

**Supported languages:** Turkish, English, Spanish and Polish, any other language on demand.



Once the program is installed, you may start the program by double clicking on ZR icon shown in picture below.



As soon as the program starts, the license information will be checked as in picture below. Then the program will be started. Please wait the main screen of ZR software to open.

Your license type might be one of the following;

- Time limited demo license
- Use count limited demo license
- Counter number limited license
- Unlicensed
- Unlimited License

There may be one or more modules can be found mentioned below according to your license type as well;

- Serial Communication Module
- Ethernet Communication Module
- GSM Communication Module
- Automatic Reading Module
- Formulas Module
- Custom Reports Module
- Server and Client Module
- Mail Sending Module
- ZR Cloud Connection Option

The features that are independent from license

- Settings Module
- Counter Register Module
- Load Profile Reading Module
- Counter Values Module
- Tariffs Module

## 03. MODULES IN THE SYSTEM

### 3. MODULES IN THE SYSTEM

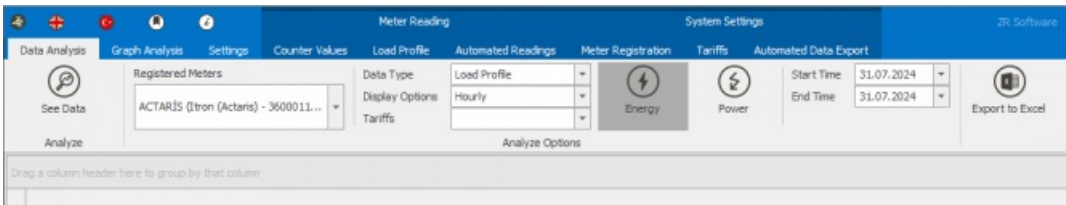
ZR software, has been developed in a modular structure that consists of ribbon pages and advantages of this structure are as follows:

- Enabling the system constantly expandable by various modules
- Upgrading the software properties by extra licensing of various modules on request
- Utilization of the system with the relevant modules and thanks to it avoiding extra costs due to extra modules
- Realization of licensing easily according to the utilized modules

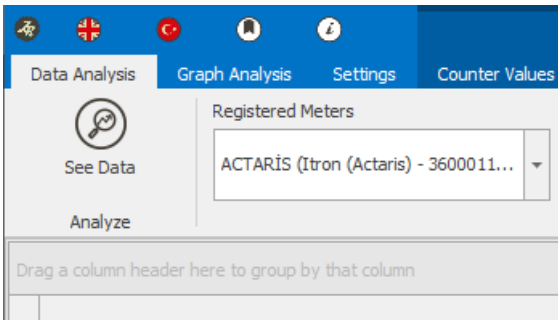
Every module has its own special functionality. You may own one or more than one modules according to your license restrictions.

#### 3.1 SETTINGS MODULE

The basic module of ZR software is Settings module. It is independent from your license type and it is available in the software with all license types. The properties of menu options are described in picture below.



- Program language can be changed by program options
- When you click here you can pass to **Load Profile Module**
- When you click here you can pass to **Meter Registration Module**



- It is possible to change relevant settings of your license by **Licence Configuration Utility**
- By **About** button, It is possible to reach to Software version information and Z Telemetry communication information

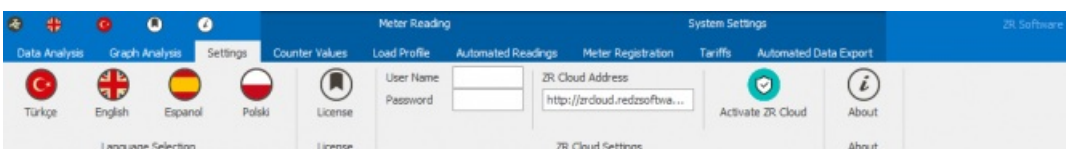
### 3.1.1 LANGUAGE SELECTION GROUP

After the determination of the preferred language please change the language by pressing to the relevant button. Software language will change immediately for all software and modules. Available languages are as follows;

- Turkish
- English (English)
- Espanol (Spanish)
- Polskie (Polish)



**NOTE:** Please contact to our company for the integration of other languages to the software.



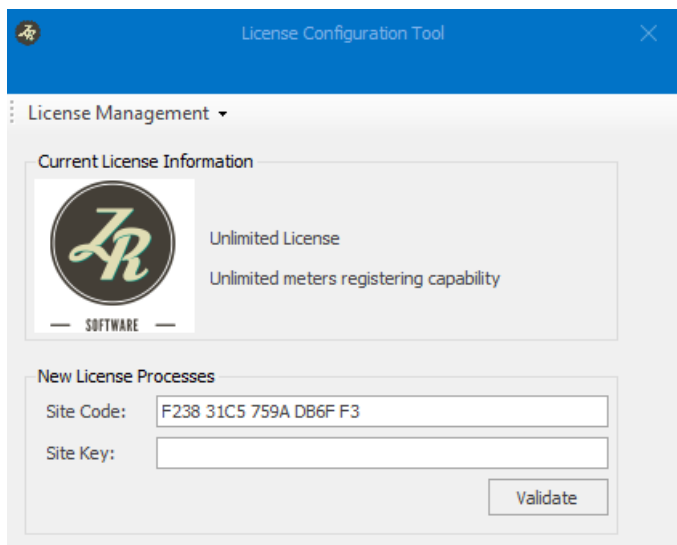
- With language types options you can change the language of the software
- You can change relevant settings of your license by **Licence Configuration Utility**
- Using **About** button, you can reach to Software version information and Z Telemetry communication information

### 3.1.2 LICENSE GROUP

Please, press **License** button in order to open License Configuration Tool. Screen in picture below will

appear.

Please contact our company to buy a valid license by the "Site Code" information that appears on this screen and press "Confirm" button by entering the "Site Key" information sent to you. Your program will be registered then.

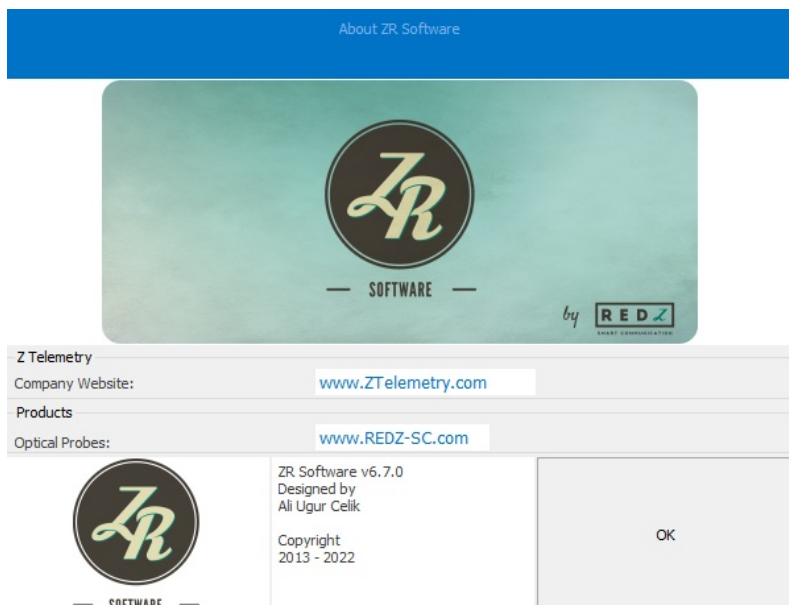


The "License Configuration Tool" window displays the following information:

- License Management** (dropdown menu)
- Current License Information**:
  - Logo: ZR Software
  - License Type: Unlimited License
  - Feature: Unlimited meters registering capability
- New License Processes**:
  - Site Code: F238 31C5 759A DB6F F3
  - Site Key: (empty field)
  - Validate button

### 3.1.3 ABOUT GROUP

Please click on "About" button in order to get the software version information and Z Telemetry company contact information. You may click on the link shown in picture below to access to the related website.

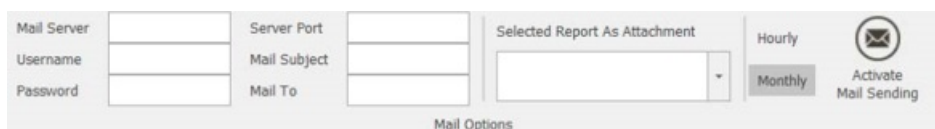


The "About ZR Software" window displays the following information:

- Header: About ZR Software
- Logo: ZR Software
- Logo: REDZ
- Company Website: [www.ZTelemetry.com](http://www.ZTelemetry.com)
- Products
- Optical Probes: [www.REDZ-SC.com](http://www.REDZ-SC.com)
- ZR Software v6.7.0  
Designed by Ali Ugur Celik  
Copyright 2013 - 2022
- OK button

### 3.1.4 MAIL GROUP

It is possible to send special reports to relevant mail addresses. You should specify the **Mail Server**, **User Name**, **Password**, **Server Port**, **Mail Subject** and **Mail Address** which you can see in picture below. Then you should also specify the period of reporting. Finally when you click Activate Mail Sending button the counter data read will be sent to the related person. For Monthly selection, every month at 12:07, the monthly report is sent. For Hourly selection, values for that day are reported at each 10 minutes. Both selections can be active at the same time.



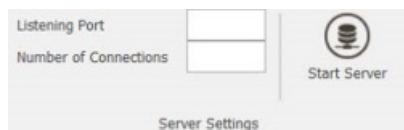
The "Mail Options" window displays the following fields and buttons:

- Mail Server: (empty field)
- Username: (empty field)
- Password: (empty field)
- Server Port: (empty field)
- Mail Subject: (empty field)
- Mail To: (empty field)
- Selected Report As Attachment: (dropdown menu)
- Hourly: (radio button)
- Monthly: (radio button)
- Activate Mail Sending: (button)

### 3.1.5 SERVER SETTINGS GROUP

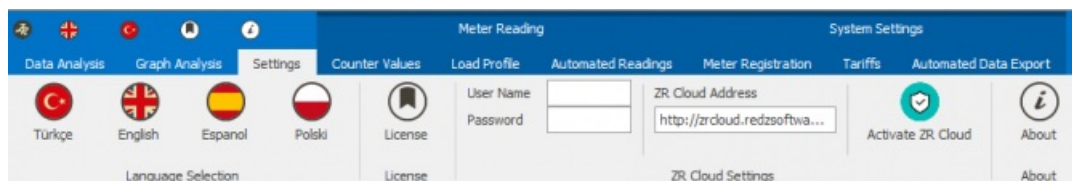
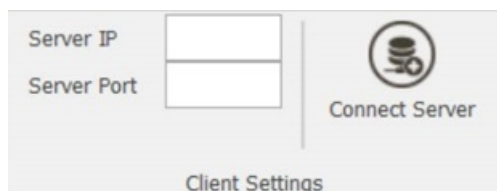
This software is designed to run as Server or Client. Depending on the type of license, the software can only be Server or Client. The server software is no different from standard ZR Software. In case of client software, the reading functions are restricted and the data can only be extracted and analyzed from the server ZR Software. It has been developed for the use of a location which has more than one type of ZR Software.

In the server software, the **Server Listening Port** specified in picture below must be specified. The number of **ZR Client** which the server will connect, must be specified and then you should click the **Server Start**. The corresponding port must be accessible via the network (the relevant firewall settings must be made if necessary). After the correct operation the button will remain pressed.



### 3.1.6 CLIENT SETTINGS GROUP

The software has been developed to operate as both Server and Client. In client ZR Software, the reading functions are restricted and the data can only be extracted and analyzed from the server ZR Software. It has been developed for the use of more than one type of ZR Software at the same location. For the client software in picture below, the Server IP of the ZR software running as the Server should be specified in, the Server Port must be entered, and you should click to the Connect Server key. The corresponding port must be accessible via the network (the relevant firewall settings must be established if necessary). After the correct operation, the button will be pressed and the registered meters will be listed. The client software only works with Data analysis options. All other settings are checked from the server software. Example menu options are shown in picture below



## 3.2 METER REGISTRATION MODULE

In order to read faster and easier more than one EMH, Elster, Itron (previously known as Actaris) Landis&Gyr, Iskra, Pozyton, Socomec, Köhler, Makel, counter that supports IEC870-5-102 protocol or other (mentioned as NONE) counter registry is made by entering counter information and communication type. Registry process is also has to be executed for load profile reading process. Saved counters are displayed in all communication types. Necessary procedures in order to execute counter registry are described in picture below.

### 3.2.1 COMMUNICATION TYPE GROUP

At Communication Type group communication type that will be registered is selected. According to the selected communication type SERIAL, ETH and GSM setting can be changed. The relevant settings, must be entered as it is described in SERIAL, ETH and GPRS Communication Modules. In picture below, one of the exemplary preference is shown.

Location Name	Meter Type	Serial Number	Conn. Type	Physical Address	IP	Port	Final Speed	Initial Baud Rate	Multiplier
ACTARIS	Itron (Actaris)	36000112	SERIALOPTIC	17	0	COM92	0	0	300

- In **Counter Information** group the location name of the counter, serial number, counter type and counter factor are displayed and organized
- At **Settings** section, there are specific settings for the chosen communication type. Within this framework, settings are applied as it is told in the relevant module's setting
- All of the defined counters in the system can be seen at Registered Counters list
- At Operations section adding new counter to system, editing information for existing counter and deleting selected counter at the registered counters list from the system can be executed
- At Communication Type group, communication type that will be registered is selected
- You can enter the name of the meter you want to search for and click **Find** to have the corresponding meter filtered from the list below. If you click **Clear**, the counter that you wrote, will be deleted from the corresponding tab
- The complete list of saved counters, is displayed on the bottom of screen
- When you doubleclick to the meter you want to select, the relevant information will be automatically selected at the options
- **Information Bar** sums up existing settings

### 3.2.2 METER INFORMATION GROUP

**Location Name:** Denotation that states the location of the counter

**Serial number:** Serial number of the counter. If it is shorter than 8 digits, it is recommended to be completed by adding «0» (zeros) at the beginning.

Location Name	ACTARIS	Meter
Meter Type	Itron (Actaris)	Multiplier
Serial Number	36000112	1

Meter Info

## Counter Type:

- EMH LZQJ-XC, LZQJ, LZKM ... series
- Elster A1500 and A1350
- ITRON (Actaris) SL7000 and ACE6000 series
- Landis & Gyr ZMD and ZMB series
- Köhler Ael.tf series
- Makel all series
- All of the counters that support IEC870-5-102 protocol

Or if it any other of than these can be selected as None. None option can be used if the counter is none of the types mentioned above. If selected None, communication is realized through IEC62056-21 Mode C protocol.

**Counter Factor:** This option is only used at the multiplication of counter profile values with an external factor during the registry. It is not essential for serial communication module. This value cannot be left blank and if there is no factor it must be entered as 1. When the selected counter changes in the list of registered counters the information of recently selected counter is filled automatically at the fields shown in picture below. When the location name, serial number, counter type and factor values are desired to be changed, after selecting the relevant counter from the registered counters then the modifications can be applied by updating at these fields under the Operations group. There will be no changes at the system for the new entries or alterations on existing counter information unless saving to the system by the utilization of buttons at the Operations group. These fields must not be left blank in the course of registering and saving the counter.




**NOTE:** All of the index values that operates at the standard of IEC62056-21 can be read by using ZR software. Yet load profile reading module operates for (if you have in your license) EMH, Elster, Landis & Gyr, ITRON (Actaris), counters that support IEC870-5-102 protocol, Köhler and Makel counters. Within this scope selection of counter type is essential for Load Profile Module.

### 3.2.3 SETTINGS GROUP

#### Settings Group – SERIAL

Setting group can change according to the selected communication type. When serial communication type is selected it is shown in picture below.

Connection COM Port	COM92	 See COM Ports	Serial Interface Type
Initial Baud Rate	300		<input checked="" type="radio"/> Optical
Physical Address	17		<input type="radio"/> Electrical

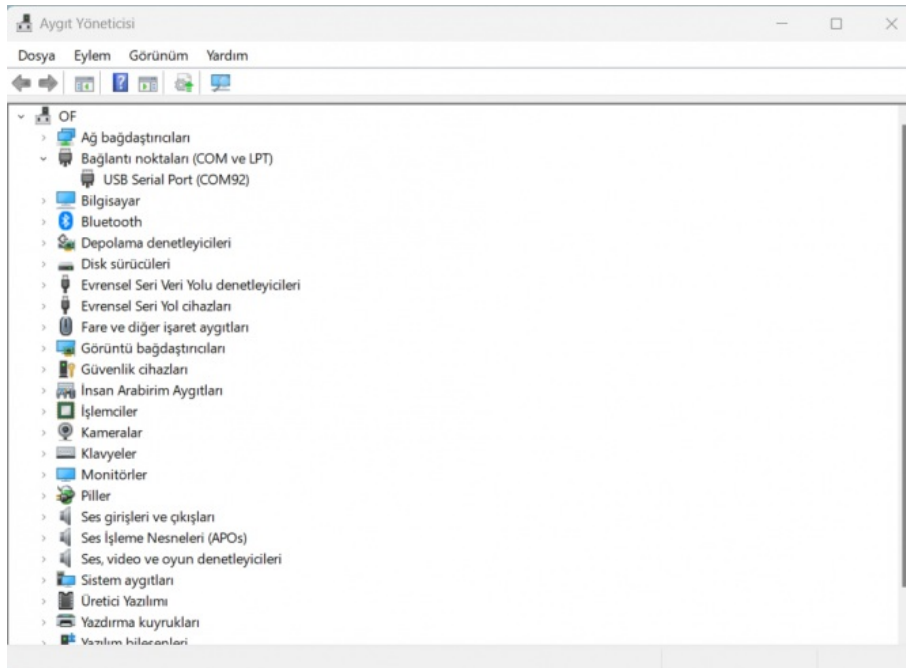
Serial Settings

In order to communicate with counter, there are some simple settings must be made in the software.

1. Correct COM port must be chosen. To choose the correct COM port please display installed COM ports in your system by clicking on **See COM Ports** communication devices such as optical



port installed in the system). Once the Device Manager opened you may display the installed COM ports, under the Ports (COM and LPT) as it is shown in picture below. After making sure that your device is connected to COM port, please close the Device Manager and choose the relevant COM port under **Connection Com Port**.



2. Choose the initial speed of the communication that will be executed with the counter through **Initial Baud Speed**. This value is attached to configuration of the counter generally;  
\*300 bauds for optical port  
\*Between 4800 and 19200 bauds for RS232 and RS485 ports
3. Optionally enter the physical address to **Physical Address field**. This field;  
\*Is **optional** at communications executed via Optical port and RS232 port  
\*Is **obligatory** at communications executed via RS485 port if there is more than one counters at RS485 bus
4. Through Serial Interface Type, the type of the physical connection that will be connected to the counter is selected. It varies according to the counter protocol.

## Settings Group - ETH and GPRS

Setting group changes according to the chosen communication type. When TCP/IP communication type is selected it is shown in picture below.,

IP	188.59.158.246	Final Speed
Port	5001	<input type="radio"/> Fixed <input checked="" type="radio"/> Auto
Physical Address	7941	300

ETH Settings

In order to execute communication with counter, there are some simple settings must be made in the software.

1. It is required to enter valid and reachable **IP** information of the device you use for communication.
2. It is required to enter **Port** information of the device you use for communication.



**NOTE:** Please make sure that the connection to the communication device and remote port is executed correctly. If you have any hesitations about checking the



connection with the remote port is executed correctly, please ask help from your network administrator.

\*IP value for RS / ETH, RS / Fiber Optical serial device servers is the IP value that you set into the device. Please make sure that you can reach to these IP's within your own local network. IP value for GPRS modems, is the IP information that the GSM operator assigned to the line.

\*Port value, is the listening Port value you set into the device.

3. Optionally enter the physical address to **Physical Address** field. This field;

\*Is **optional** at communications executed via Optical port and RS232 port.

\*Is **obligatory** at communications executed via RS485 port if there is more than one counters at RS485 bus.

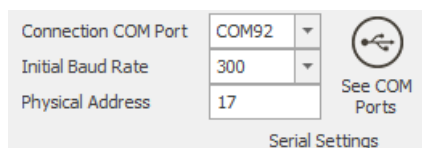
4. From the **Final Speed** section, select the final speed whose information will be sent to the counter via confirmation message.

\*If your communication device has been set to a different speed than your final speed of counter, please tick the Fixed option and set the speed that you use in your communication device to the software. This option is utilized when the counter doesn't support fixed communication speed.

\*If your counter supports fixed communication speed and your communication device has the same speed as counter does, please tick Auto option.

## Settings Group - GSM

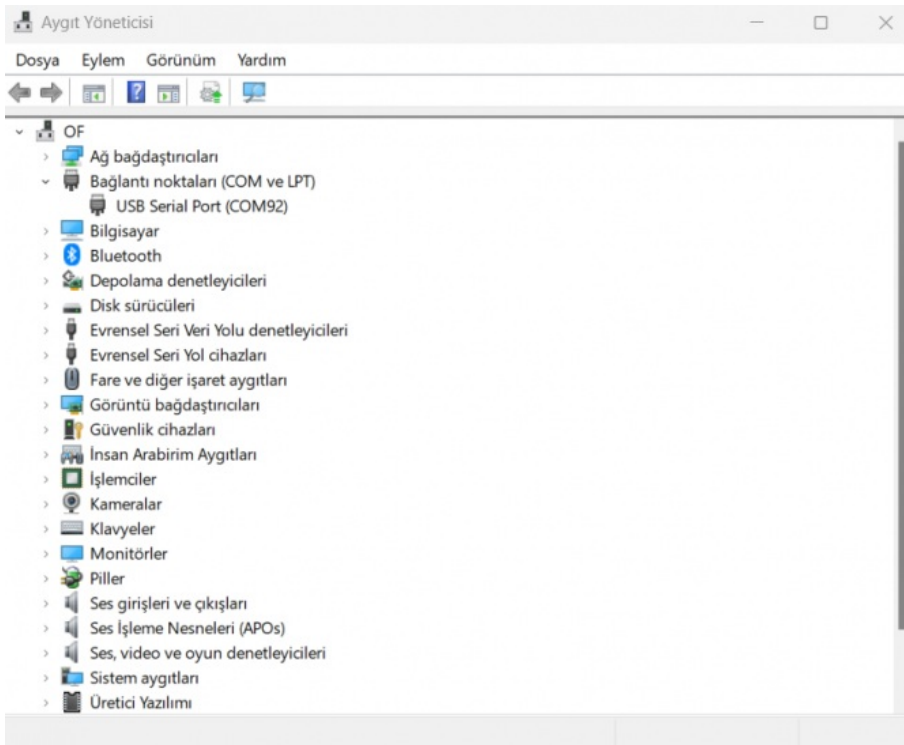
The settings group changes with the selection of communication type. You can see the case of GSM communication type selected, from the in picture below.



The screenshot shows a 'Serial Settings' dialog box. It contains three input fields: 'Connection COM Port' with a dropdown menu showing 'COM92', 'Initial Baud Rate' with a dropdown menu showing '300', and 'Physical Address' with a text box containing '17'. To the right of these fields is a circular icon with a USB symbol and the text 'See COM Ports'. Below the input fields is the label 'Serial Settings'.

In order to communicate with counter, few simple adjustments have to be made in the software.

1. The correct COM port must be selected. This COM port refers to the port which modem is connected. To select the correct COM port, please click on View COM ports to see the installed COM ports (communication devices such as optical probe) in your system. When you open Device Manager, you can see the installed COM ports under the heading of Connection points (COM and LPT) as in picture below.

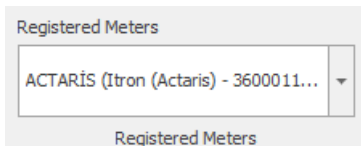


Once you are sure of the COM port of your installed device, please close **Device Manager** and select the relevant COM port under **Connect COM Port**.

2. Enter GSM modem phone number which has CSD feature, to be used on the other side to connect the Phone Number.
3. Optionally enter the Startup Command to the modem. It can be entered as any required command from the AT command set.

### 3.2.4 REGISTERED COUNTERS GROUP

It is sufficient to press Read button after selecting the desired meter listed under Registered Counters in order to make easy readings in the system. Yet in order to save read counter to the system and to read quickly without entering the parameters of this counter in the future again, user need to add it to Registered Counters as it is shown in picture below. In this group registered counters to the system are displayed. Within this list all the counters which use different communication infrastructures are displayed together. When a new counter is selected from the list, the relevant communication infrastructure type will be selected and the relevant parameters will be filled automatically.



The location name, counter type, serial number of the counter and the registered id number of the counter in the registered counters list is displayed in the following format. The important thing for the user here is the location of the counter, type of counter and its serial number.

#### Location name (Counter Type – Serial Number) (Counter Id)

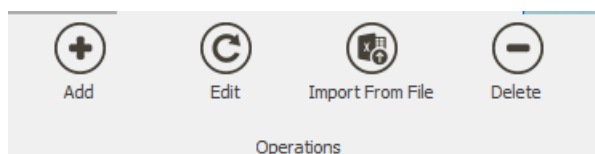
A new counter can be added, the information of the available registered counter can be edited or another available registered counter can be deleted from the registered counter list by using the Operations menu group. For details please apply to Operations Group descriptions.

Enter text to search... Find Clear										
Drag a column header here to group by that column										
Location Name	Meter Type	Serial Number	Comm. Type	Physical Address	IP	Port	Final Speed	Final Speed	Initial Baud Rate	Multiplier
ACTARIS	Itron (Actaris)	36000112	SERIALOPTIC	17	0	COM92	0	0	0	300

At the bottom of the window, all the registered counters are listed. An example is shown in picture below. It is possible to select meter briefly at the top by double clicking the corresponding number. It is also possible to quickly search by entering the information (counter serial number, location name, etc.) of any recording into the corresponding box.

### 3.2.5 OPERATIONS GROUP

In Operations Group, **Add**, **Edit** and **Delete** processes are available. ZR software enables saving and recalling the counter information in the system. This way previously identified counters are listed in the **Registered Counters** group every time ZR is opened. Index reading or load profile reading processes can be executed by choosing these counters. In the processes group a new counter can be added by using **Add** button. In the Settings and Counter Information group entered counter information is saved to the system. In the same way, when it is wanted to change counter information, counter information can be updated by using the latest information that has been entered to Settings and Counter Information group by clicking on **Edit** button. In order to delete a registered counter from the system it is needed to click on **Delete** button. These buttons are shown in picture below. In order to prevent executing on the counter by mistake, the confirmation of the user is obtained before the process has been completed "Are you sure to save a new counter?", "Are you sure to change the selected counter?" or "Are you sure to delete the selected counter?" questions are asked by the system.



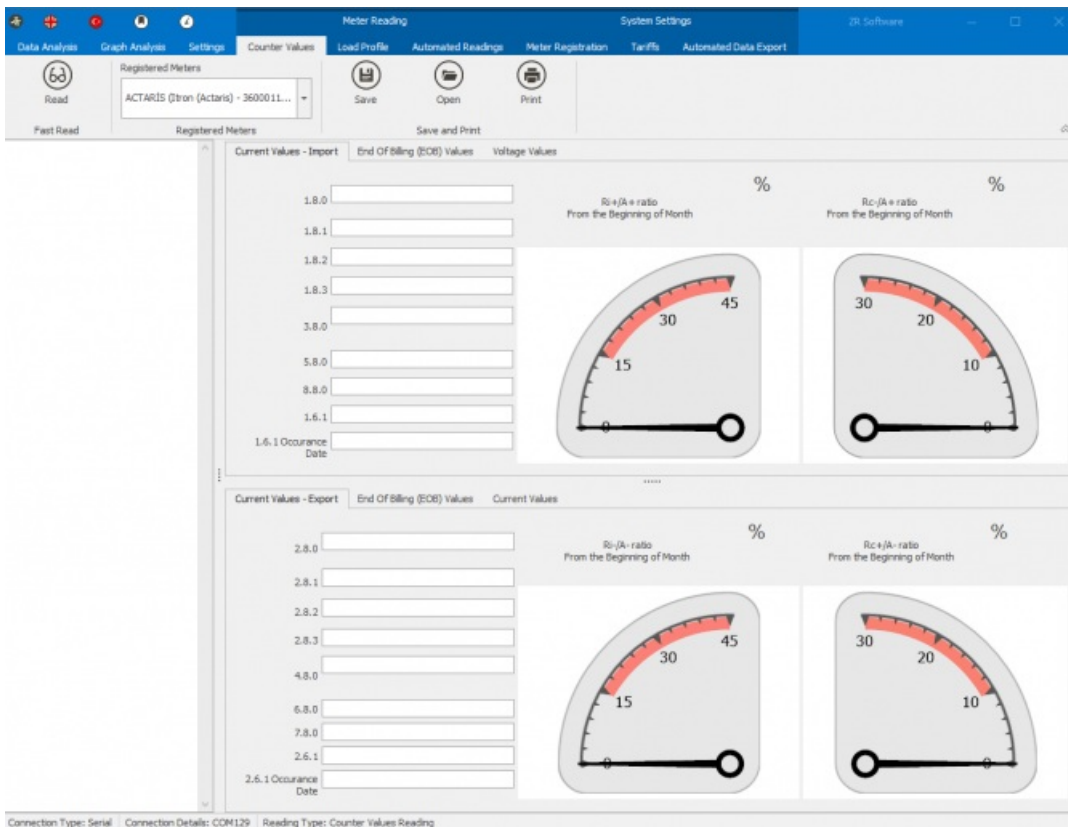
Before adding new counter and editing counter processes a check is executed by the system whether the necessary data is entered or not. For instance, If Location Name wasn't entered, user is warned by "Please enter Counter Location!". The required fields in the new counter entry and edit counter for serial communication are as follows: **Communication Information, Location Name, Serial Number, Counter Type and Counter Multiplier.**

## 3.3 COUNTER VALUES READING MODULE

You can communicate with all counters which use IEC62056-21 (previously known IEC1107) Mode-C and IEC870-5-102 standards without brand or type restriction. Also you can read index values with DLMS/COSEM protocol with Landis & Gyr and Itron (former name Actaris) brand counters if you have the relevant license. For Socomec counters, you can communicate with Modbus protocol. The billing values for the read counters are stored in the database as a single row. This value is usually the first day of the month recorded by the meter which is recorded at 00:00. This value will be recorded if it is performed manually with the button on the counter. The date and time of all values are read from the counter. User can communicate with the following communication methods over Serial, TCP/IP and GSM;. Menu preferences are described in picture below.

- Optical probe
- RS232 port
- RS485 port
- RS / Fiber Optical Serial Device Server
- RS / ETH Serial Device Server

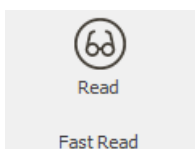
- VCOM created with a network device like GPRS Modem (Virtual COM Port)
- GPRS / EDGE / 3G / 4G modem



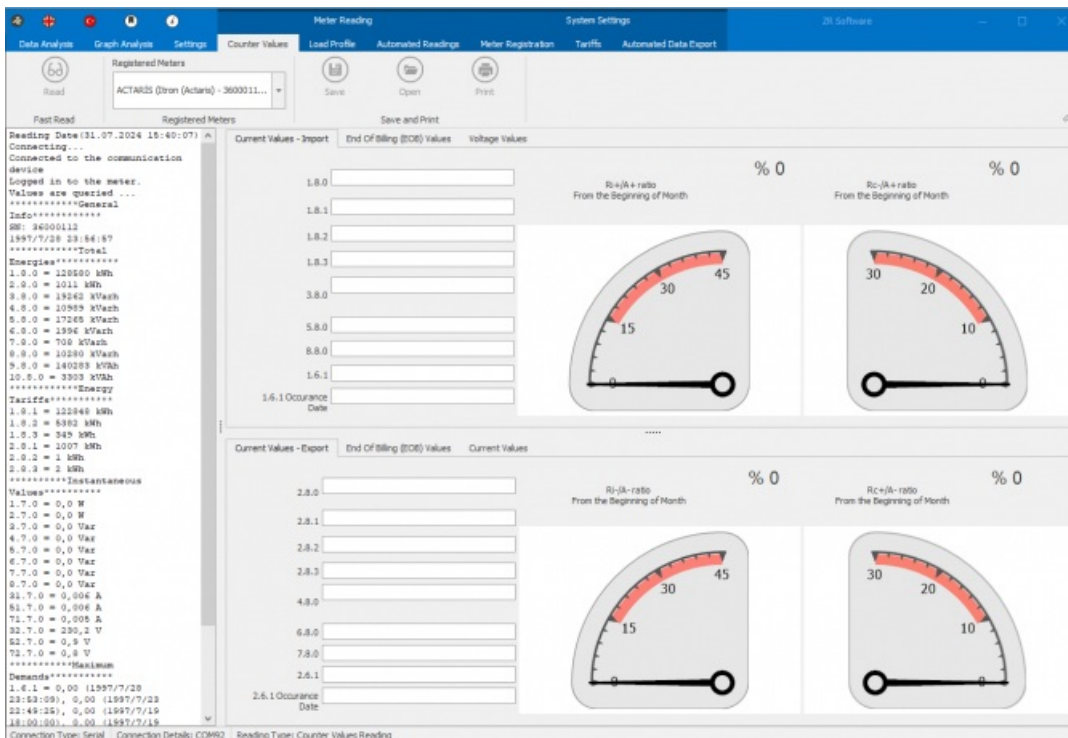
- Counter reading process is started by **Read** button
- In **Registered Counters** list all the identified counters to the system can be displayed
- In **Communication Status**, you can monitor communication status instantly
- **Information Bar** sums up the current settings of the module
- With **Save**, **Open** and **Print** buttons, processes of saving on read data, reopening and printing can be executed
- In **Data Analyze** section, the read data is presented apprehensible and graphically

### 3.3.1 FAST READ GROUP

Fast Read group enables the execution of communication with the counters. Menu preferences are presented in picture below.

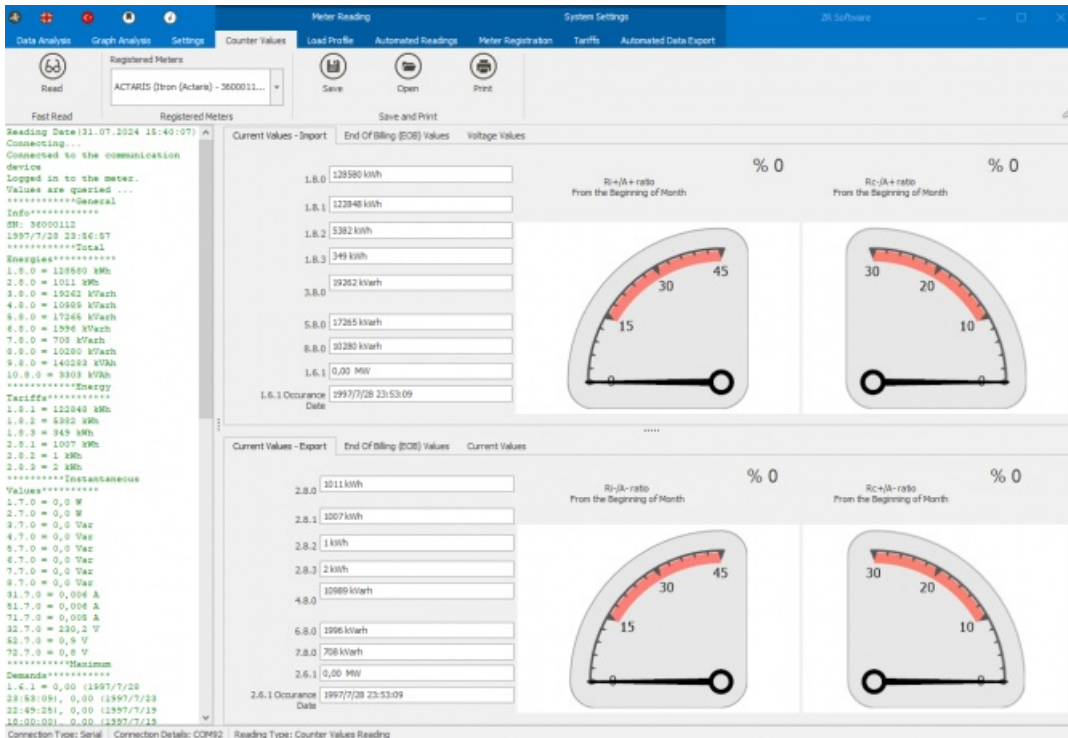


Please click on **Read** Button to start reading after executing the settings. The program, will start the counter communication with the mentioned settings and will display instant reading status in **Communication Status** section. Sample reading is presented in picture below.



In case of an error during reading, detailed information will be presented in the instant communication section concerning the error. In this situation, try reading the counter once again by changing reading options within the scope of details listed in instant communication status.

In the event of reading the counter successfully, the Device has been read successfully and BCC correct statements will take place in the instant communication status section and this section will turn into **green**. In case of an error during reading, again the error will be notified in the same section and this section will turn into **red**. The screenshot sample after the correct reading is represented in picture below.



In the event of a successful reading, data will be displayed in **Data Analyze** section in a more legible and graphical formatting after being analyzed. In **Current Values** section, in addition to existing billing values and voltage ratings reactive/active energy ratios that has been composed from the latest billing period will be displayed in import and export directions as shown in picture below.



Current Values - Import

End Of Billing (EOB) Values

Voltage Values

1.8.0

128580 kWh

1.8.1

122848 kWh

1.8.2

5382 kWh

1.8.3

349 kWh

3.8.0

19262 kVarh

5.8.0

17265 kVarh

8.8.0

10280 kVarh

1.6.1

0,00 MW

1.6.1 Occurance Date

1997/7/28 23:53:09

RI+JA+ratio

From the Beginning of Month

% 0

30

45

15

Rc-JA+ratio

From the Beginning of Month

% 0

30

20

10

Current Values - Export

End Of Billing (EOB) Values

Current Values

In **End of Billing Values** section the latest and the previous Billing values are displayed in import and export directions and by this means the latest and the previous billing periods values are available as it is shown in picture below.

Current Values - Import

End Of Billing (EOB) Values

Voltage Values

Billing Period Counter Values

	1.8.0	1.8.1	1.8.2	1.8.3	5.8.0	8.8.0
Current Billing Period	128580 kWh	122848 kWh	5382 kWh	349 kWh	17265 kVarh	10280 kVarh
Previous Billing Period	128580 kWh	122848 kWh	5382 kWh	349 kWh	17265 kVarh	10280 kVarh
Current Billing Period 1.6.1 Value	0,00 (1997/7)	Current Billing Period Date	4(1997/7/16)	Previous Billing Period 1.6.1 Value	0,00 (1997/6)	Previous Billing Period Date
						3(1997/6/28)

Billing Period Net (Difference) Values

	1.8.0	1.8.1	1.8.2	1.8.3	5.8.0	8.8.0
Current Billing Period	0	0	0	0	0	0
Previous Billing Period	0	0	0	0	0	0

Current Values - Export

End Of Billing (EOB) Values

Current Values

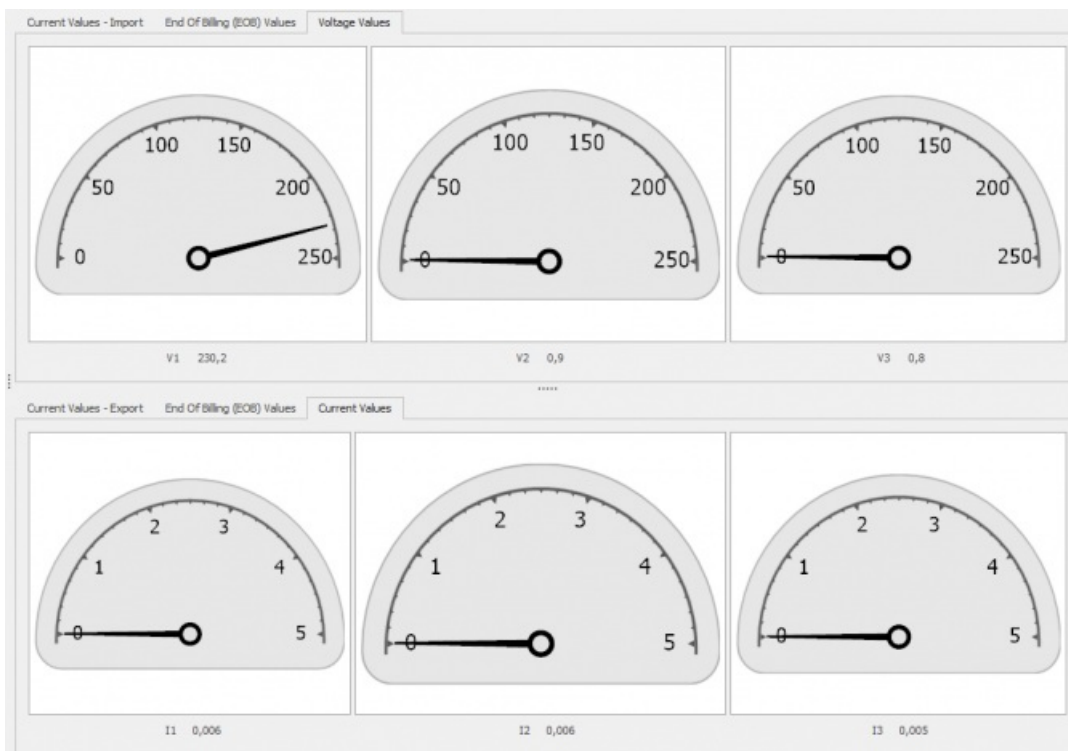
Billing Period Counter Values

	2.8.0	2.8.1	2.8.2	2.8.3	6.8.0	7.8.0
Current Billing Period	1011 kWh	1007 kWh	1 kWh	2 kWh	1996 kVarh	708 kVarh
Previous Billing Period	1011 kWh	1007 kWh	1 kWh	2 kWh	1996 kVarh	708 kVarh
Current Billing Period 2.6.1 Value	0,00 (1997/7)	Current Billing Period Date	4(1997/7/16)	Previous Billing Period 2.6.1 Value	0,00 (1997/6)	Previous Billing Period Date
						3(1997/6/28)

Billing Period Net (Difference) Values

	2.8.0	2.8.1	2.8.2	2.8.3	6.8.0	7.8.0
Current Billing Period	0	0	0	0	0	0
Previous Billing Period	0	0	0	0	0	0

In **Voltage and Current Values** section values are displayed for all phases as it is shown in picture below. These values can be displayed in all counters that which supports communication.

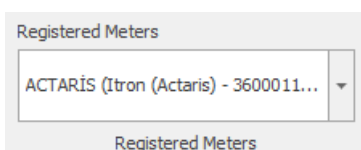


You can also check those important settings from **Information Bar** and change them according to your needs. A sample of information Bar is shown in picture below.

Connection Type: Serial Connection Details: COM92 Reading Type: Counter Values Reading

### 3.3.2 REGISTER COUNTERS GROUP

It is sufficient to press Read button after selecting the desired meter listed under Registered Counters in order to make easy readings in the system. Yet in order to save read counter to the system and to read quickly without entering the parameters of this counter in the future again, user need to add it to Registered Counters as it is shown in below picture. In this group registered counters to the system are displayed. Within this list all the counters which use different communication infrastructures are displayed together. When a new counter is selected from the list, the relevant communication infrastructure type will be selected and the relevant parameters will be filled automatically.



The location name, counter type, serial number of the counter and the registered id number of the counter in the registered counters list is displayed in the following format. The important thing for the user here is the location of the counter, type of counter and its serial number.

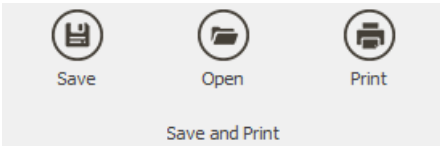
**Location name (Counter Type – Serial Number) (Counter Id)**

A new counter can be added, the information of the available registered counter can be edited or another available registered counter can be deleted from the registered counter list by using the Operations menu group. For details please apply to Operations Group descriptions.

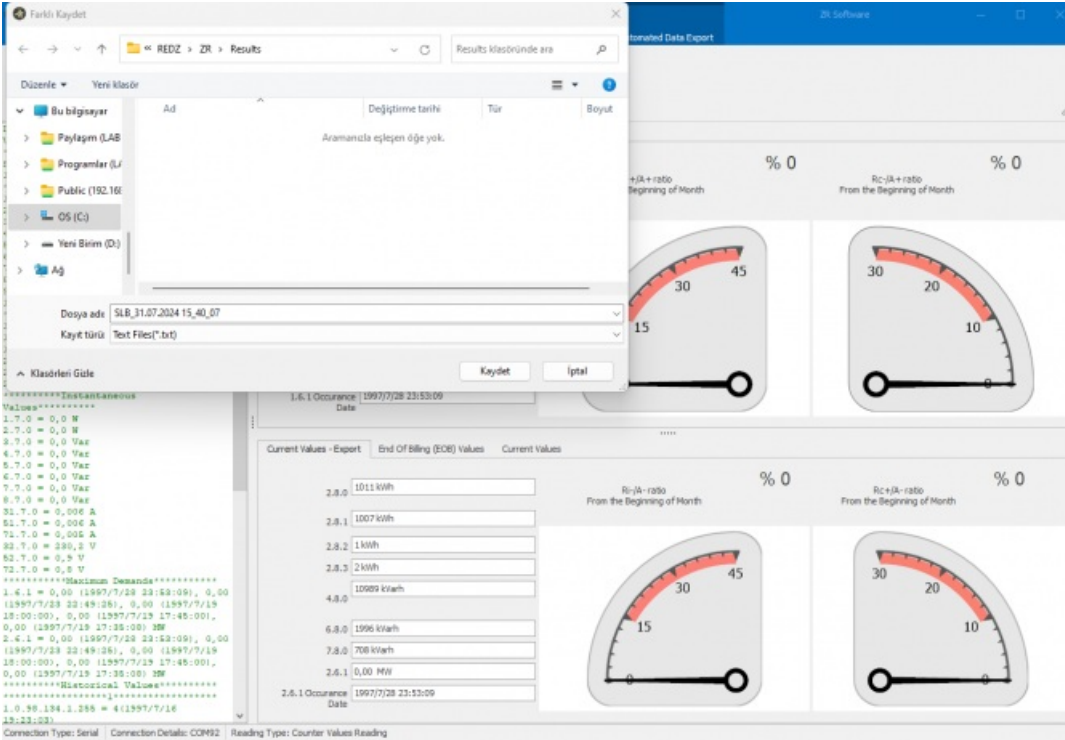
### 3.3.3 SAVE AND PRINT GROUP

Through the buttons of Save and Print group, it is possible to save the read data, to reopen the saved data and to print it. By this means archival storage and utilization of the read data in different time frames are possible. Menu options are presented in picture below.





Once the counter is read correctly **Save** button must be clicked on so as to save the read data. Saving dialogue window will be opened as shown in picture below.

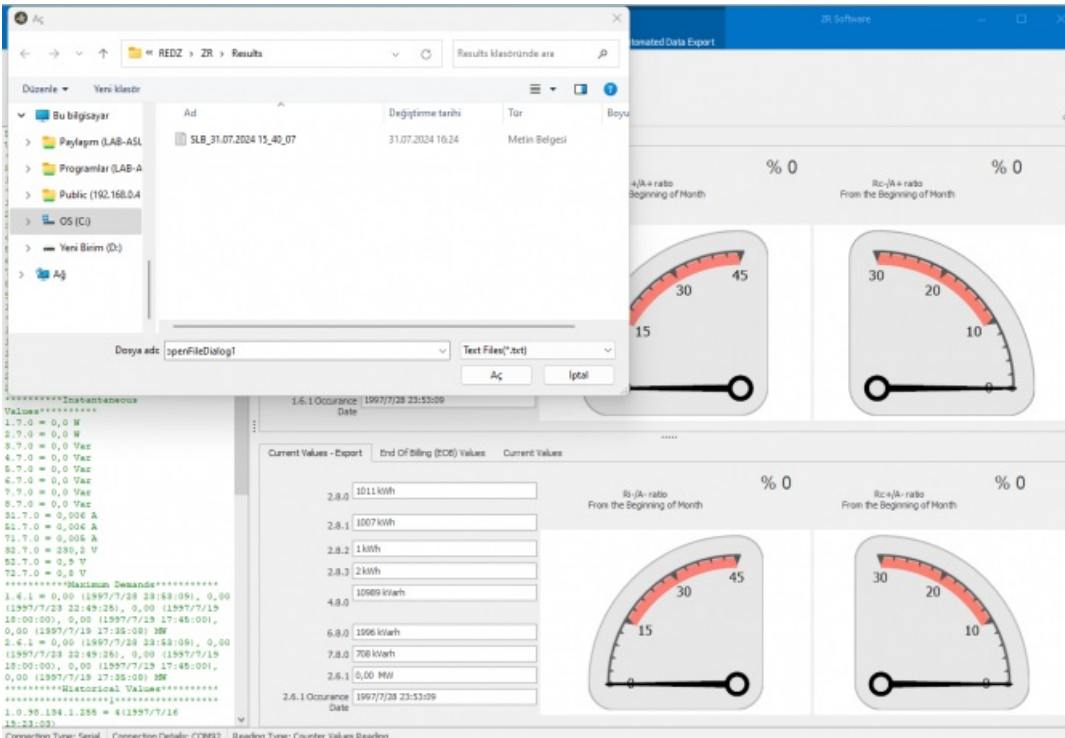


**Default path of the saved file:** The folder that the program installed \Results

**Default name of the saved file:** in the format of (if available) IEC code - reading date - reading time.

Once the name of the file is determined **Save** button must be clicked on so as to execute saving process.

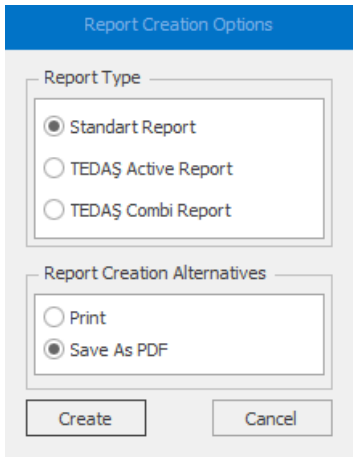
If the previously saved file is needed to be viewed by reopening it **Open** button must be clicked. Open file dialogue window will be opened as shown in picture below.





**NOTE:** It is possible to save any data shown at instant communication status including the errors occur during communication. Therefore, Data Analyze section will not be updated once a new file is opened.

**Print** button must be clicked on so as to create reports from previously read or recently read data. **Report Creation Options** shown in picture below will be displayed.



Initially please choose the report type, then click on **Create** button after choosing report creation alternative. Available versions are as follows;

#### Report Types:

- Standard Report
- Tedaş Active Report
- Tedaş Combi Report

#### Report Creation Versions:

- Printing
- Saving as PDF



**NOTE:** Please contact our company for your special reporting needs.

Screen shots related to available reporting are presented below as an example.

**Standard Report:** Is a report that index values are displayed as a result of reading. Standard report sample can be seen in picture below.

## ELECTRONIC ELECTRICITY METER READOUT VALUES

Meter ID: Reading Date: 31.07.2024 15:40:07 Printing Date: 31.07.2024 16:41:36

---

SN: 36000112  
1997/7/28 23:56:57  
\*\*\*\*\*Total Energies\*\*\*\*\*  
1.8.0 = 128580 kWh  
2.8.0 = 1011 kWh  
3.8.0 = 19262 kVarh  
4.8.0 = 10989 kVarh  
5.8.0 = 17265 kVarh  
6.8.0 = 1996 kVarh  
7.8.0 = 708 kVarh  
8.8.0 = 10280 kVarh  
9.8.0 = 140283 kVAh  
10.8.0 = 3303 kVAh  
\*\*\*\*\*Energy Tariffs\*\*\*\*\*  
1.8.1 = 122848 kWh  
1.8.2 = 5382 kWh

**Tedaş Active Report:** Is a report of the counters which execute Active Energy measurement in details. Tedaş Active Report sample can be seen in picture below.

## ELECTRONIC ELECTRICITY METER REGISTRY VALUES

LUN67269824 Reading Date/Time: 31.07.2024 17:05:34 Printing Date/Time: 7/31/2024 5:05:55 PM

GENERAL VALUES		LAST ENERGY VALUES	
Meter ID	: LUN5<1>LUN567269824	<b>Active Energy Counter Values</b>	
Meter Serial Number	(0.0.0) : 67269824	T (1.8.0)	: 000004.449*kWh
Meter Time(hh:mm:ss)	(0.9.1) : 17:08:30	T1 (1.8.1)	: 000000.199*kWh
Meter Date(yy:mm:dd)	(0.9.2) : 24-07-31	T2 (1.8.2)	: 000001.331*kWh
Day of Week	(0.9.5) : 3 Wednesday	T3 (1.8.3)	: 000002.919*kWh
Demand Period	(0.8.0) : 15*min	T4 (1.8.4)	: 000000.000*kWh
Manufacturing Date	(96.1.3) : 14-06-21	<b>Max. Active Demand, Date, Time</b>	
Tariff Structure Config Time	(96.2.2) : 14-06-21,16:19		
Calibration Time	(96.2.5) : 14-06-21	P (1.6.0)	: 000.000*kW
Battery Status	(96.6.1) : 1(Good)		: 00-00-00,00:00
Main Cover Opening Time, Num.	(96.7.0) : 00-00-00,00:00		
Terminal Cover Opening Time, Num.	(96.7.1) : 24-07-01,00:00,00		

### TIME SWITCHINGS AND TARIFF STRUCTURE

**Tedaş Combi Report:** Is a report of the counters which execute Active and Reactive Energy measurement in details. Tedaş Combi Report sample can be seen in picture below.

## ELECTRONIC ELECTRICITY METER REGISTRY VALUES

LUN67269824 Reading Date/Time: 31.07.2024 17:05:34 Printing Date/Time: 7/31/2024 5:09:44 PM

GENERAL VALUES		LAST ENERGY VALUES	
Meter ID	LUN5<1>LUN567269824	<b>Active Energy Counter Values</b>	
Meter Serial Number	67269824	T (1.8.0)	: 000004.449*kWh
Meter Time(hh:mm:ss)	17:08:30	T1 (1.8.1)	: 000000.199*kWh
Meter Date(yy:mm:dd)	24-07-31	T2 (1.8.2)	: 000001.331*kWh
Day of Week	3 Wednesday	T3 (1.8.3)	: 000002.919*kWh
Demand Period	15*min	T4 (1.8.4)	: 000000.000*kWh
Manufacturing Date	14-06-21	<b>Reactive Energy Counter Values</b>	
Tariff Structure Config Time	14-06-21,16:19	Ri (5.8.0)	: 000007.524*kVarh
Calibration Time	14-06-21	Rc (8.8.0)	: 000000.038*kVarh
Battery Status	1(Good)	<b>Max. Active Demand, Date, Time</b>	
Main Cover Opening Time, Num.	00-00-00,00:00	P (1.6.0)	: 000.000*kW
Terminal Cover Opening Time, Num.	24-07-01,00:00,00		: 00-00-00,00:00

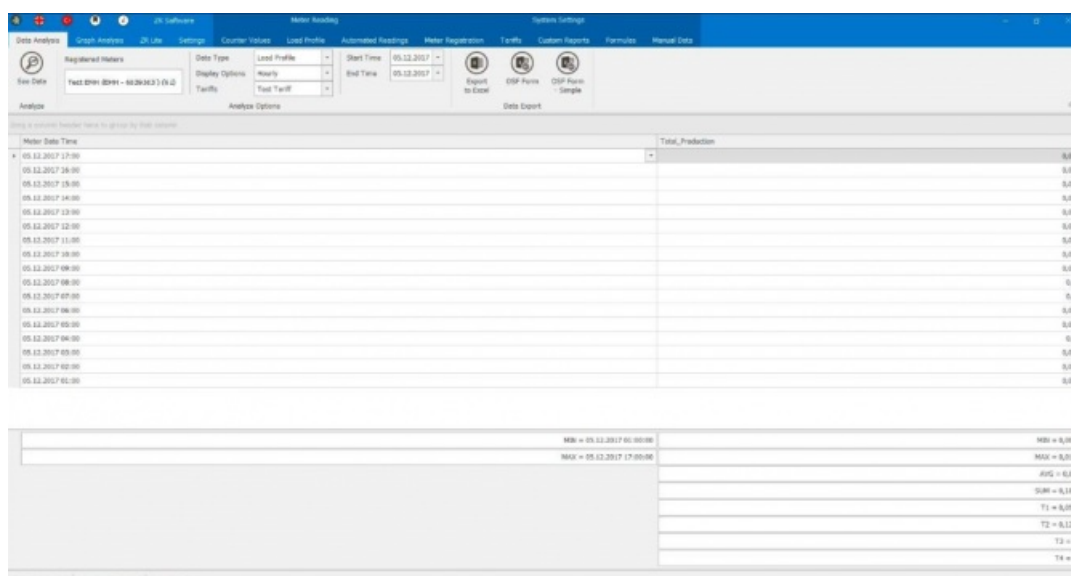
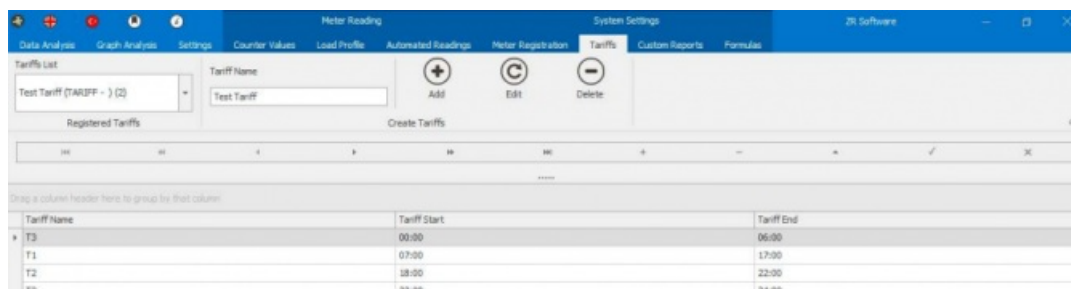
### TIME SWITCHINGS AND TARIFF STRUCTURE

## 3.4 TARIFFS

For the tariffs you want to save under the Targets module; You create the tariff by entering the tariff name, tariff start time and tariff end time information and clicking the Add button. You can then analyze the data from Data Analysis Module by selecting this tariff you created. In picture below shows the example of the tariff.

The tariff-based report example in data analysis is shown in Figure 40. The values in the specified range are also reported according to the tariff structure created. The hours are grouped according to

the tariff name.



- According to the time intervals on the selected tariff, registered meters, formulas or custom reports, the reports are created. Using the tariff periods the grouping process is performed.

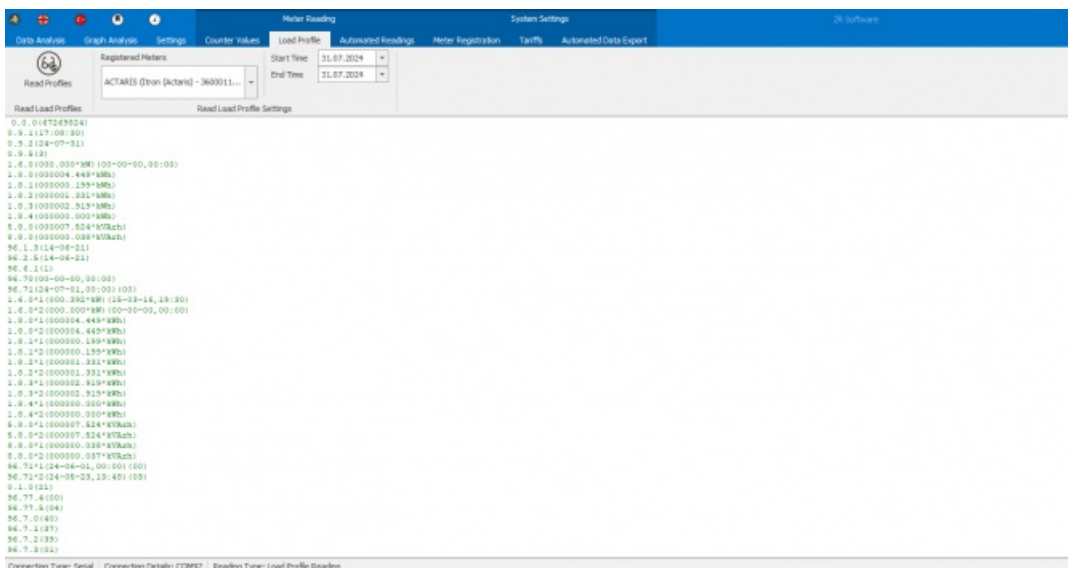
### 3.5 LOAD PROFILE READING MODULE

By ZR software, EMH, Elster, Itron (former name Actaris), Landis&Gyr, Iskra, Pozyton, allcounters that communicates in IEC870-5-102 standards, Köhler and Makel counters load profile values can be read by the utilization of communication infrastructures of the Serial Communication, ETH and GPRS communication modules. The read load profile values are saved within the system. They are reported in different ways based on user selections.



**NOTE:** Please contact our company for the integration of different brand of counters to the system as well.

Please use Load Profile Module to read load profiles of meters. The features of the menu options are described in picture below.



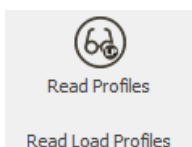
- The counters load profile reading is initiated with **Read Profiles** button
- In **Registered Counters** list all the registered counters in the system can be displayed. The counter whose load profile will be read is chosen here
- Reading frame is determined by selecting **Start / End Date**
- In **Communication Status**, you can monitor communication status instantly
- **Information Bar** sums up the current settings of the module

### 3.5.1 READ LOAD PROFILES GROUP

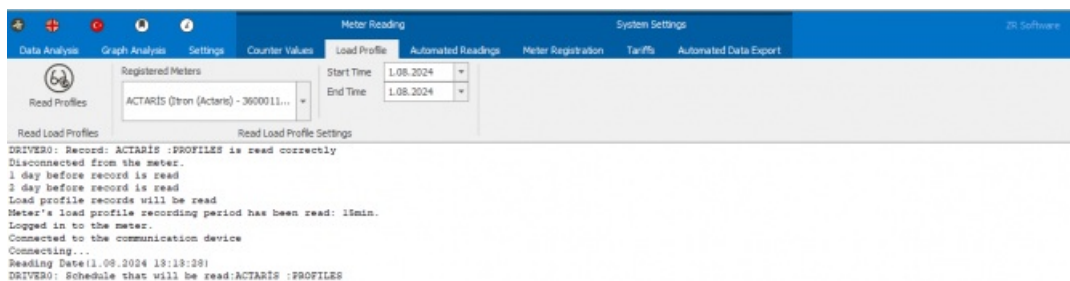
Read Load Profiles Group lets user to read load profile from counters. Reading process is started by clicking on Read Profiles button. Menu options are presented in picture below.



**NOTE:** It is only possible to read Load Profile values of the registered counters of EMH, Elster, Itron (former name Actaris), Landis&Gyr, Iskra, Pozyton, Köhler, Makel and IEC870-5-102 standard counters. Please contact our company for the integration of different brand counters to the system as well.





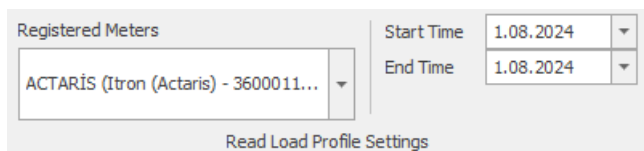


During the load profile reading instant reading status will be displayed in **Communication Status** section shown in picture below. In case of an error during reading, detailed information about the error will be presented in the instant communication section.

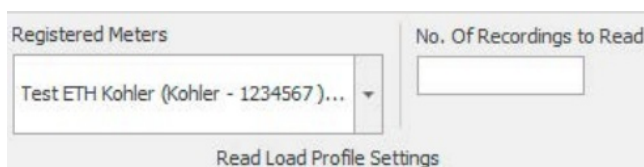
In the event of reading the counter successfully, **"Registered meter is read correctly"** statement will take place in the instant communication section. In the event of an error during reading, the error will be notified in the same section and **"Registered meter couldn't be read despite the retries mentioned"** statement will take place.

### 3.5.2 LOAD PROFILE READING SETTINGS GROUP

All the registered counters to the system are displayed in Registered Counters list. Within this list all the counters which use different communication infrastructures are always displayed together. Reading interval is determined by choosing the start and end dates. Start date must be 12 months before from end date at most. This process is valid for counters of EMH, Elster, Itron (former name Actaris), Landis&Gyr, Iskra, Pozyton, IEC870-5-102 standards and Makel. Load reading profile settings are seen in picture below.



**Köhler** brand counter doesn't permit reading within the date range. Therefore reading must be executed by entering the number of registers to read. In picute below reading settings for **Köhler** brand counter can be seen.



In **Köhler** brand counters, how many registers from past (each register corresponds to 30 minutes of data, in order to read one day register at least 48 registers must be read), in **EMH, Elster,Itron (former name Actaris), Landis&Gyr, Iskra, Pozyton, counters communicate with standards of IEC870-5-102 and Makel** counters how many days from past will be read must be determined.

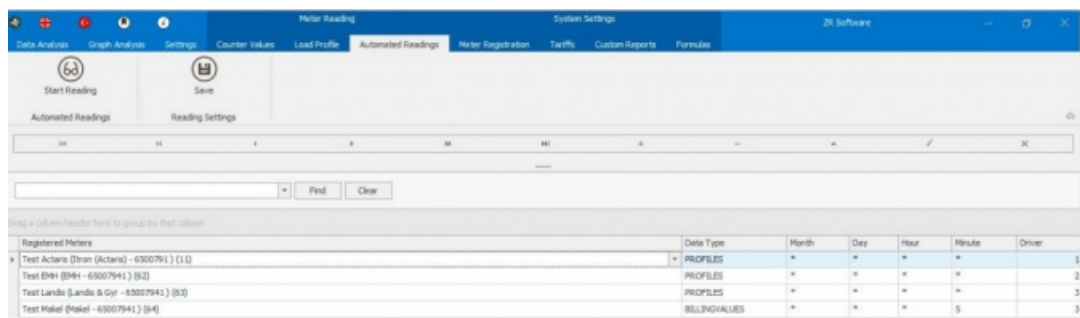
## 3.6 AUTO READ MODULE

**Auto Read Load Profile List** is the section where user creates a circular load profile reading list in the system by selecting necessary reading period information for the counters registered in system. For automatic meter reading, enter the registered counters', Data Type and reading period(month, day, hour, minute) like in picture below. Then select the Driver to read. This can be done for multiple counters at the same time. Any of the counters registered in the system can be selected in the Registered Meters section. There should be sure that the counter values can be read on this meter. In the Data Type section, choose whether to read Load profile or billing values. Load profile reading will be done when load profiles are selected. Reading the billing values will be performed when the billing value is selected. This value is usually 00:00 at the beginning of the month (if the billing is not done via the counter manually).

The month, day, hour and minute selection specifies the period. For instance:

Month	Day	Hour	Minute	Explanation
*	*	*	*	Read in every 2 minutes(30 times per hour)
*	*	*	5	Read in every 5 minutes(12 times per hour)
*	*	13	5	Read every day at 13:05(1 time per day)
*	1	1	30	Read 1.Day of each month(1 time per month)

In the Driver section, the driver to read meter is selected. There are 5 different drivers in the system. Counters connected to the same communication channel (for instance connected to the same serial cable or connected to the same mode) must be read via the same driver. You can use the Operations section shown in picture below for adding and deleting lines / counters.



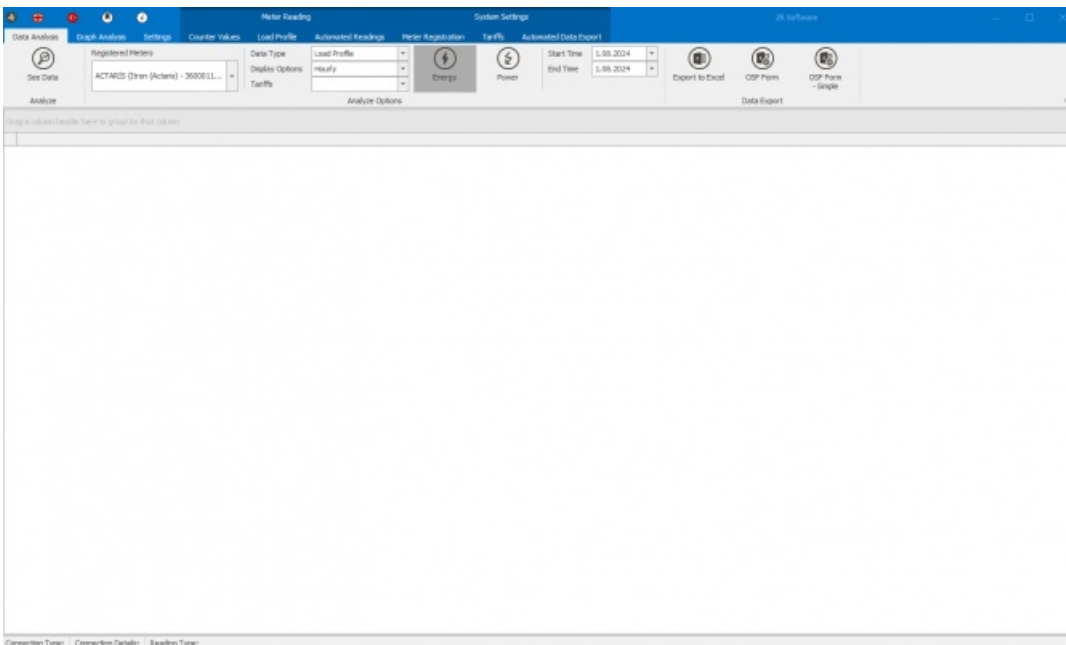
- In the **Operations** part you can add new counters and also delete remaining ones

After you press **Save button**, the addition, subtraction, editing operations to the reading list are activated. To start automatic reading, press the **Start button**. The same key can be used to terminate reading. System remembers your last preference, and the program is designed to continue from where you left off even when you restart it. Also the number of unsuccessful attempts after reading is automatically adjusted according to the reading period.

### 3.7 DATA ANALYSIS MODULE

Load profile values read through Load Profile Reading module, are saved in the system database with meter's own period. Load profile values can be displayed through Data analyze module, values can be exported to Excel or OSF form can be created for the values. The values that will be displayed can be chosen from registered counters, created formulas or created custom reports. This menu options are presented in picture below.

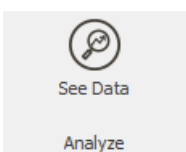




- **Analyze Data button** makes a detailed list of the data of the read counters
- In **Registered Counters** list all the registered counters in the system can be displayed. The counter whose load profile will be read is chosen here
- **Display options** helps analyzing data of the counters whose load profile is read in detail
- You can provide your preference with these buttons to display the data analysis results as **Energy** or **Power** unit. The preference should be selected according to the value type of the meter
- Reading frame is determined by selecting **Start / End Date**
- **Data Export** converts load profile results to Excel and OSF format
- In the **Analyze Values** section load profile values are displayed hourly or in detail according to the selection
- **Information Bar** sums up the current settings of the module

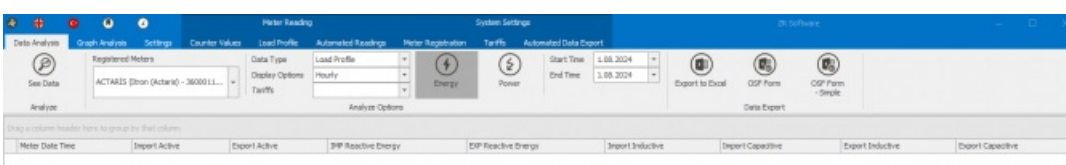
### 3.7.1 ANALYZE GROUP

Analyze group, provides the process of analyzing load profile data that is read from counters and listing in detail. Analyzing process is initiated by clicking on **See Data** after the counter is selected. Menu options are presented in picture below.



### 3.7.2 ANALYZE OPTIONS GROUP

In **Registered Counters** list all counters registered to the system are displayed. Within this list all the counters which use different communication infrastructures are displayed together. Also the previously defined formulas and custom reports are listed in this place.



In the **Data Type** section, choose the data to be analyzed whether as Load Profile or Billing Value. Billing values usually start at the beginning of the month, you should make sure that there is also a record value in the date selection. In the Start/End Dates and display options (Detailed, 15 Minutes, 30

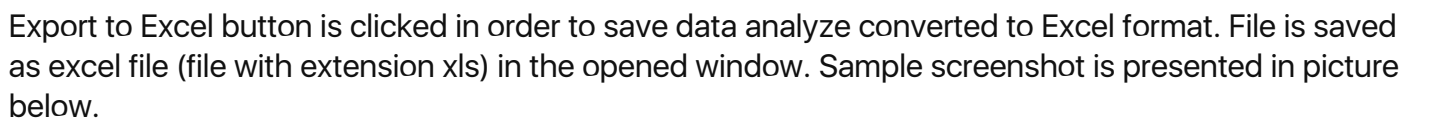
If the analyze results are desired to be displayed in details, the counter that will be analyzed is chosen and after selecting Detailed option from the Display Options See Data button is clicked. The data will be displayed in details as it is shown in picture below. The time range and detail of this data may vary according to the counter type.

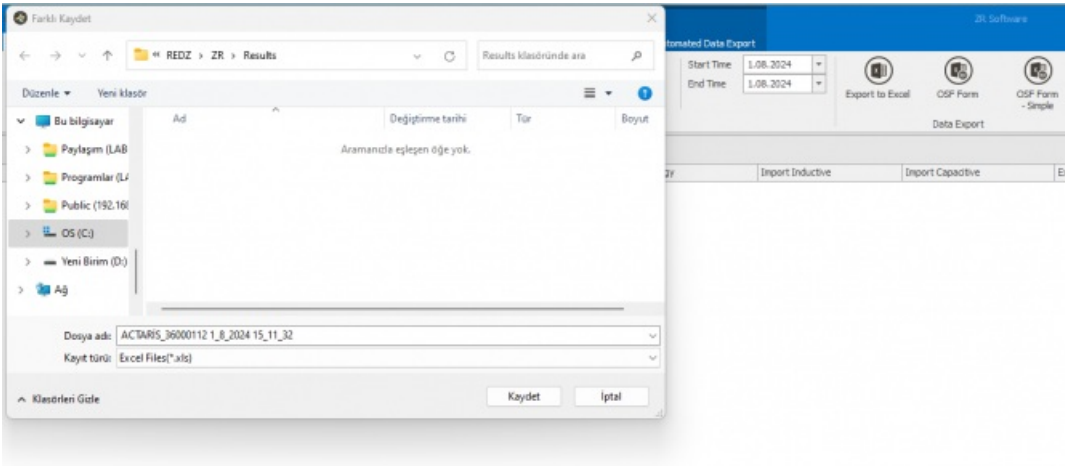
Drag a column header here to group by that column						
Meter Date Time	Import Active	Import Inductive	Export Capacitive	Export Active	Export Inductive	Import Capacitive
5.12.2017 13:45	0	0	0	0,008	0,007	0
5.12.2017 13:00	0	0	0	0,012	0,011	0
5.12.2017 12:00	0	0	0	0,011	0,009	0
5.12.2017 11:00	0	0	0	0,013	0,009	0
5.12.2017 10:00	0	0	0	0,013	0,01	0
5.12.2017 09:00	0	0	0	0,012	0,01	0
5.12.2017 08:00	0	0	0	0,01	0,012	0
5.12.2017 07:00	0	0	0	0,01	0,01	0
5.12.2017 06:00	0	0	0	0,008	0,012	0
5.12.2017 05:00	0	0	0	0,009	0,012	0
5.12.2017 04:00	0	0	0	0,01	0,012	0
5.12.2017 03:00	0	0	0	0,009	0,012	0
5.12.2017 02:00	0	0	0	0,009	0,012	0
5.12.2017 01:00	0	0	0	0,009	0,011	0

<div> <div>MIN = 5.12.2017 01:00:00</div> <div>MAX = 5.12.2017 13:45:00</div> </div>	MIN = 0	MIN = 0	MIN = 0	MIN = 0,008	MIN = 0,007	MIN = 0
	MAX = 0	MAX = 0	MAX = 0	MAX = 0,013	MAX = 0,012	MAX = 0
	AVG = 0,00	AVG = 0,00	AVG = 0,00	AVG = 0,01	AVG = 0,01	AVG = 0,00
	SUM = 0	SUM = 0	SUM = 0	SUM = 0,143	SUM = 0,149	SUM = 0
	T3 = 0	T3 = 0	T3 = 0	T3 = 0,054	T3 = 0,071	T3 = 0
	T1 = 0	T1 = 0	T1 = 0	T1 = 0,079	T1 = 0,068	T1 = 0
	T2 = 0	T2 = 0	T2 = 0	T2 = 0	T2 = 0	T2 = 0

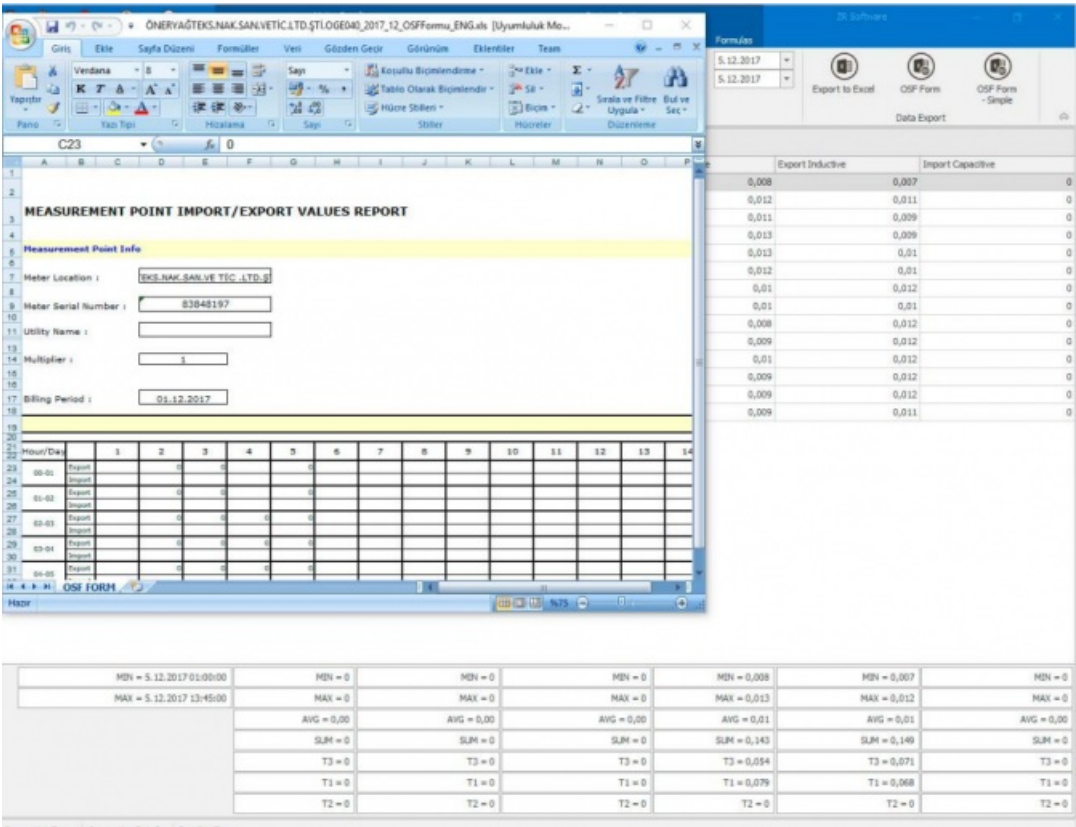
Load profile analyze result can be saved in MS Excel file format or OSF Form format. Menu options are presented in picture below.





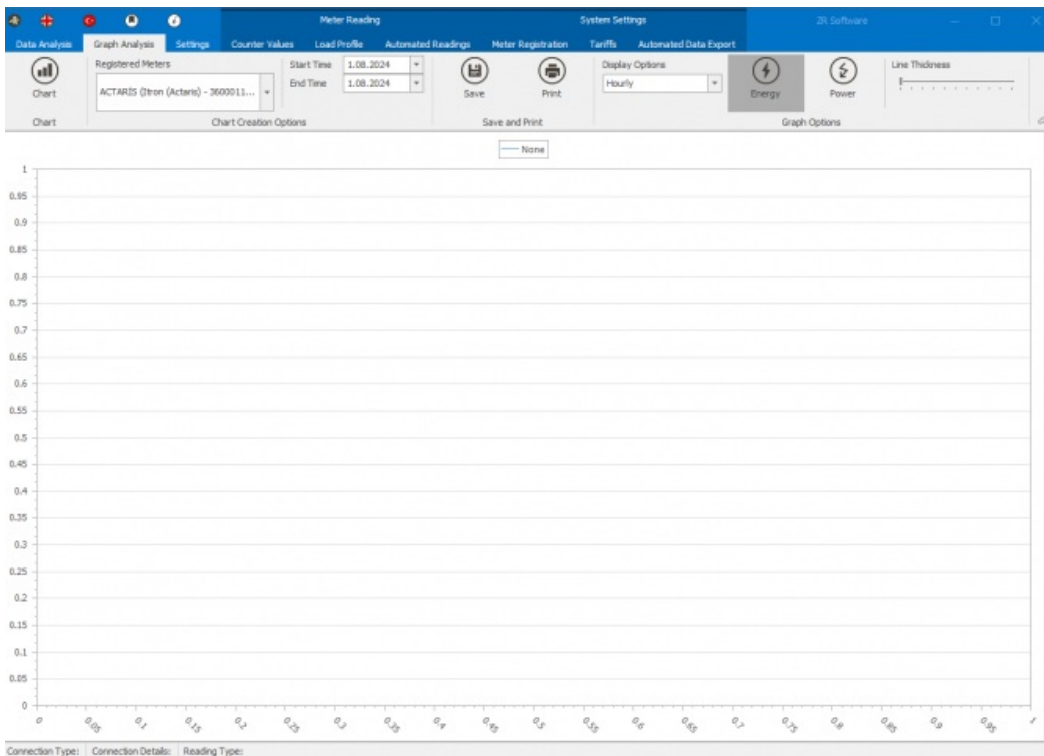
To convert load profile analyze results to OSF form it is enough to click on the OSF form button **after choosing the relevant month**. Sample screenshot is presented in picture below.

**NOTE:** The beginning and the end date of selection is must be in the month that the reported needed to be created. OSF report of the entire month will be exported.



### 3.8 GRAPH ANALYSIS MODULE

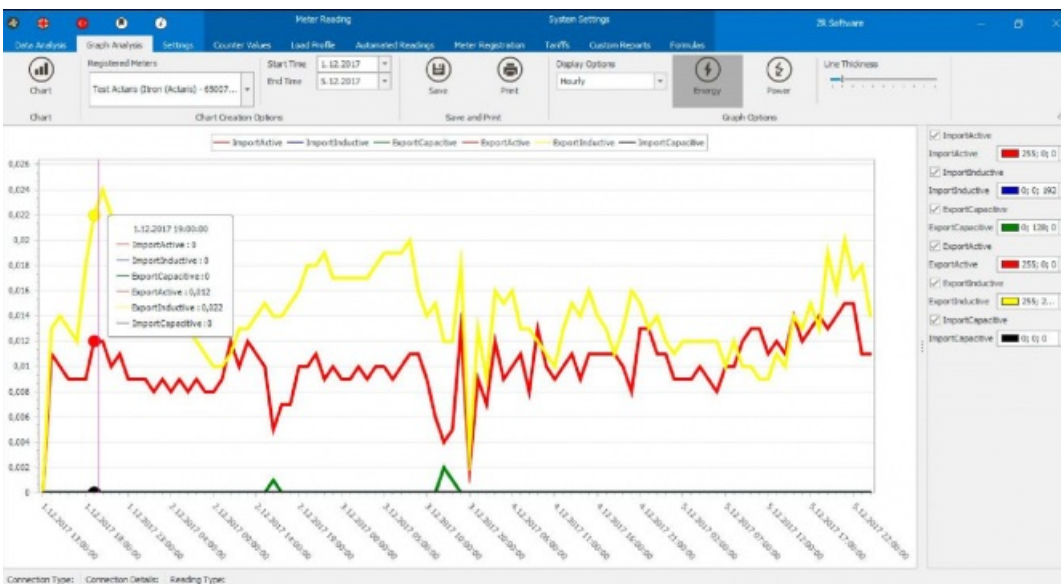
This module is used for creating graphics from registered counters whose load profile is read, from the created formulas or created Custom reports. The necessary procedures to create a graphic is explained in picture below.



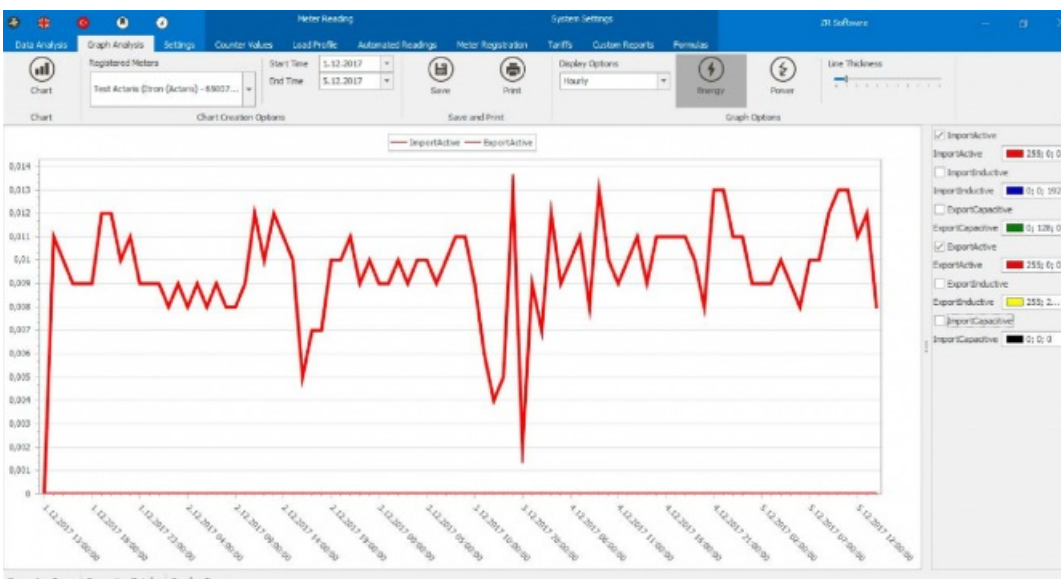
- By **Chart Button** graphics are created according to the preferences
- In **Registered Counters** list all the registered counters in the system can be displayed. The counter subject to graphic is chosen here counter whose load profile will be read is chosen here
- By **Start and End Dates** the beginning and ending dates of the data which forms the base of the graphic is selected
- By **Save and Print** options graphic created can be saved or can be printed
- By **Display Options**, it is selected whether the graphic is created from hourly values, Daily values or the detailed values in the counter period
- Graphic line thickness is set at the **Line thickness Field**. This preference is used in all future graphics by saving into database
- Created Graphic is displayed in **Graphic Field**

### 3.8.1 CHART CREATION GROUP

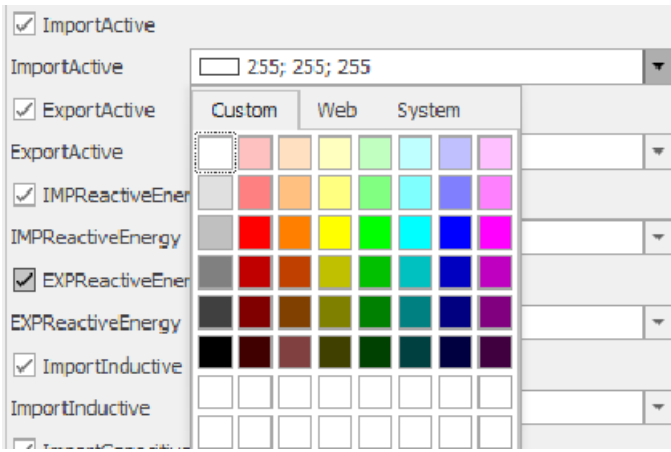
After selecting the counter, created formula or created custom report from the registered counters list, time frame that the values will be analyzed must be selected. After this process graphic type must be chosen from **15 minutes, 30 minutes, hourly, daily or Detailed** from **Display Options**. Detailed data is shown at counter period (generally 15 minute intervals are available at the counters). Hourly data is consisted of summing up those values hourly. Daily data is consisted of summing up those values daily as well. After those settings, Chart button can be clicked. Sample Graphic is shown in picture below.



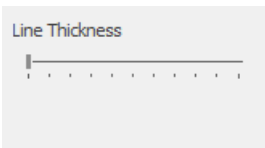
- You can see the graphical explanations from here
- You can view the data in 15 minute, 30 minute, hourly and daily periods
- Before the graphical analysis, please select **Energy** or **Power** to show the graphical result for the read values
- The values are shown in the graph and the colors of the resulting lines can be set. These selections are saved in the database and used in the other graphics
- You can perform value analysis by navigating on the graph with cursor



It is possible to remove or add again one or a few of the displayed values off the display with the help of the menu which is located at the right side of the screen. Ticking the boxes that are next to the counter parameters is sufficient to do so. It is shown in picture below.



In addition to this it is possible to change the color of the graphic lines with the help of the menu. As color options different colors can be assigned for each counter parameter such as Custom, Web and System. It is shown in picture below.



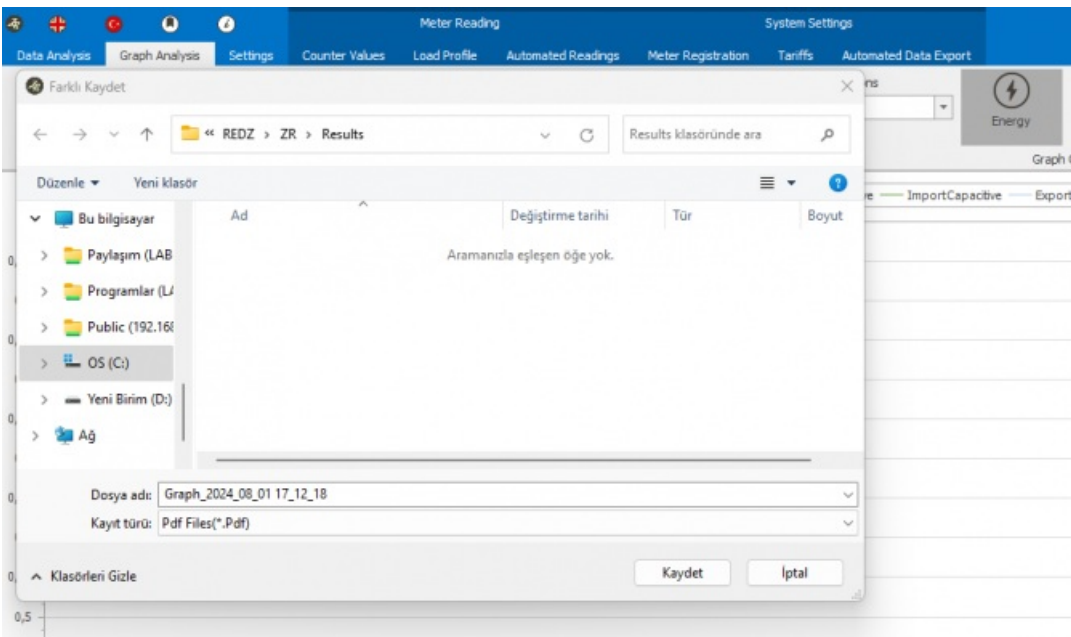
The thickness of the graphic lines created can be adjusted by Line Thickness section in the Graphic Preferences menu. It is shown in picture below.

### 3.8.2 SAVE AND PRINT GROUP

Graphic analyze results can be saved as PDF format and can be printed same way. Menu options are shown in picture below.

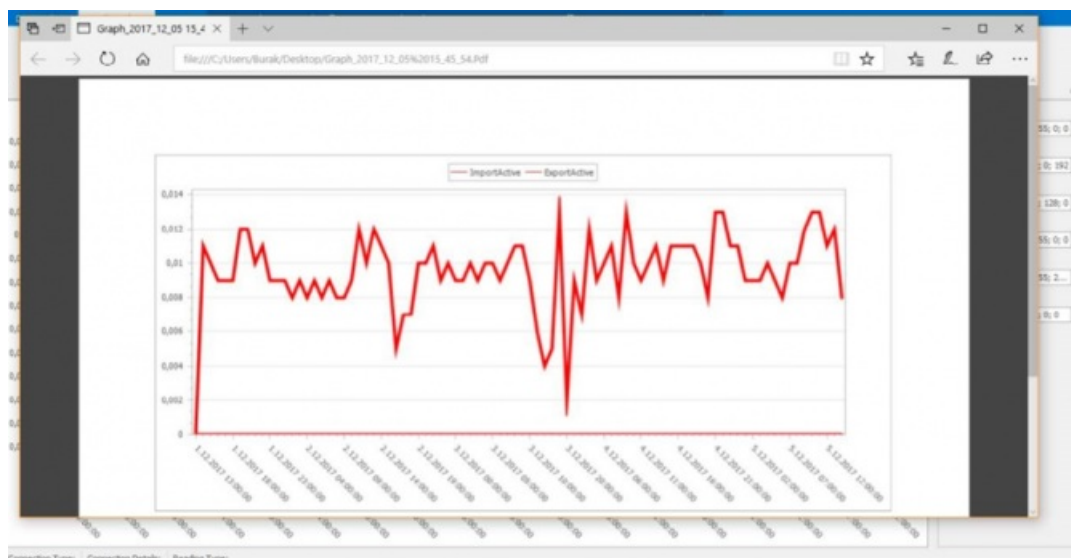


In order to save Graphic analyze result by converting into PDF format Savebutton should be clicked. File is saved in the opened window as pdf file (pdf extension file). Sample screenshot is shown in picture below.

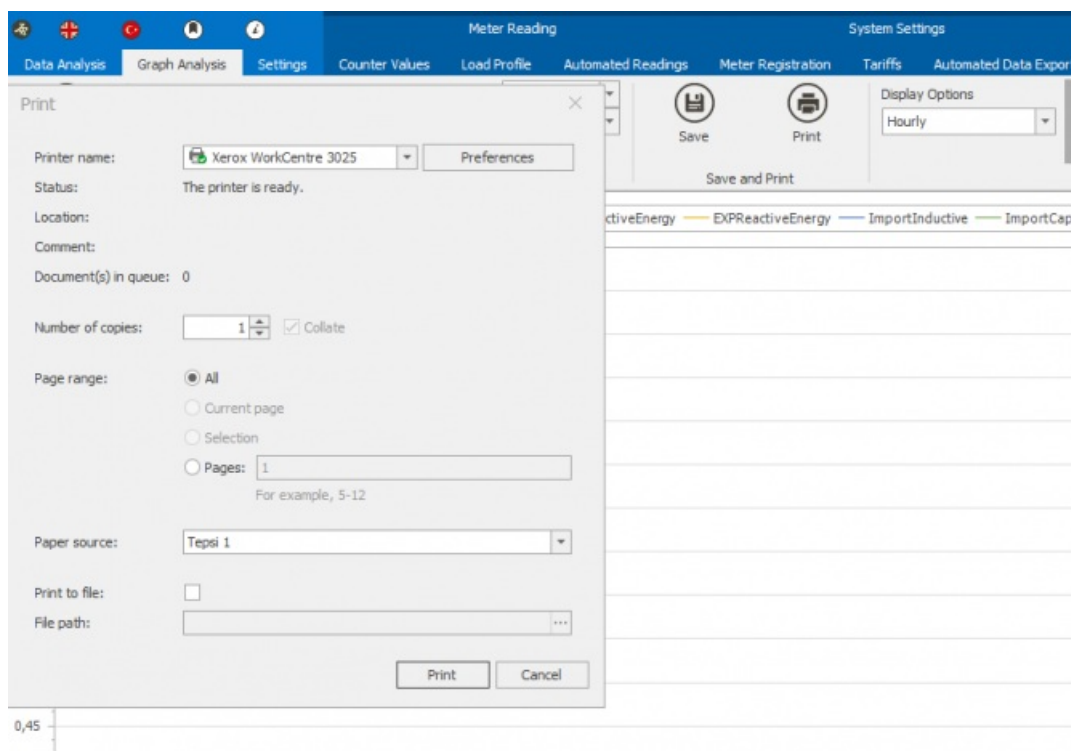




Graphic sample created in PDF format is presented in picture below.



In order to save previously created or recently created graphic as a report, Print button should be clicked on. It is shown in picture below.



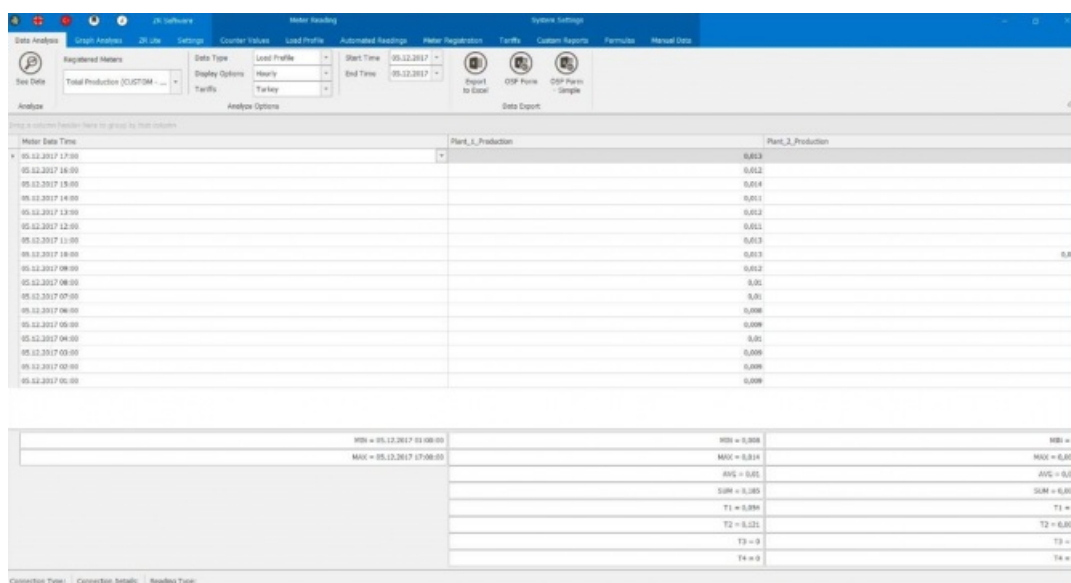
### 3.9 CUSTOM REPORTS MODULE

Custom Reports Module lets user to create custom reports based on registered counters whose load profile is read or the formulas created. Thus user can analyze any data at the measuring point in a report that is created after delivery of ZR Software by user. Different measuring points can be analyzed at the same report alongside and also virtual data created at the formula section can be attached to the same report. Necessary procedures to create a special report, is explained in picture below.

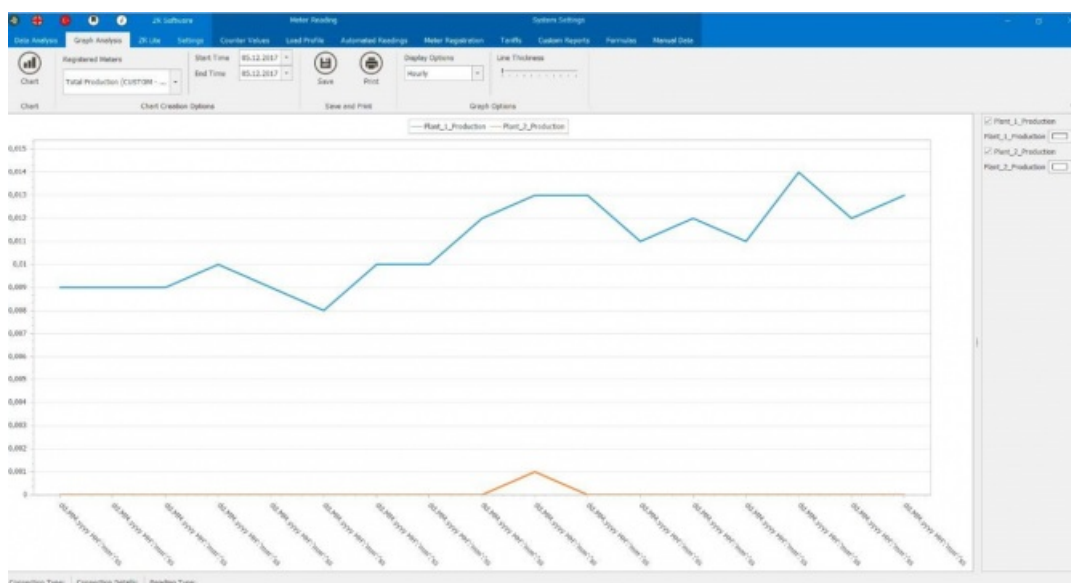




Both data analyze and graphic analyze of the created Custom Report can be executed. As it is shown in picture below it is possible to analyze the Custom Report in between selected dates from the Data Analyze Module. All the display options of the Data Analyze and Exporting to Excel is available for Custom Report, too.



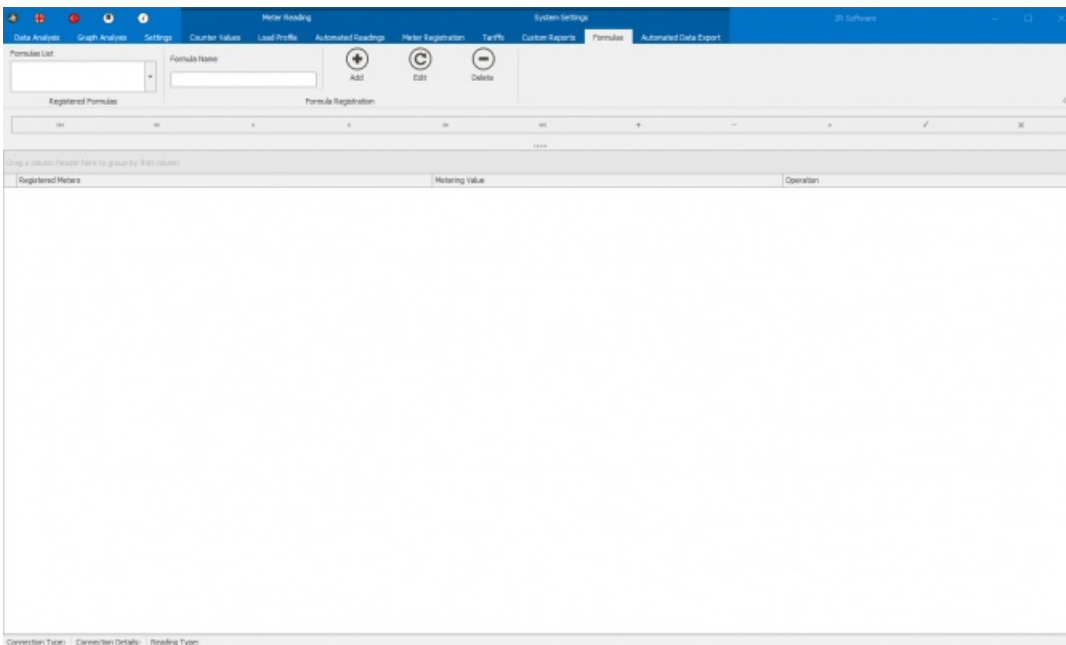
In a similar way as it is shown in picture below it is possible to analyze the Custom Report in between selected dates from the Graphic Analyze Module. Each measuring point specified at the graphic is represented by a different color.



All the display options at the graphic analyze are also available for Custom Reports such as Line Thickness, colors of the series in graphic, Saving and Printing processes.

### 3.10 FORMULAS MODULE

It is used to create special formulas from the registered counters whose load profile is read. A special formula is created by values read from the counters (Export Active, Import Active, Export Inductive, Import Inductive, Export Capacitive, Import Capacitive) and it is made possible to analyze them as user needed. It is explained in detail in picture below.

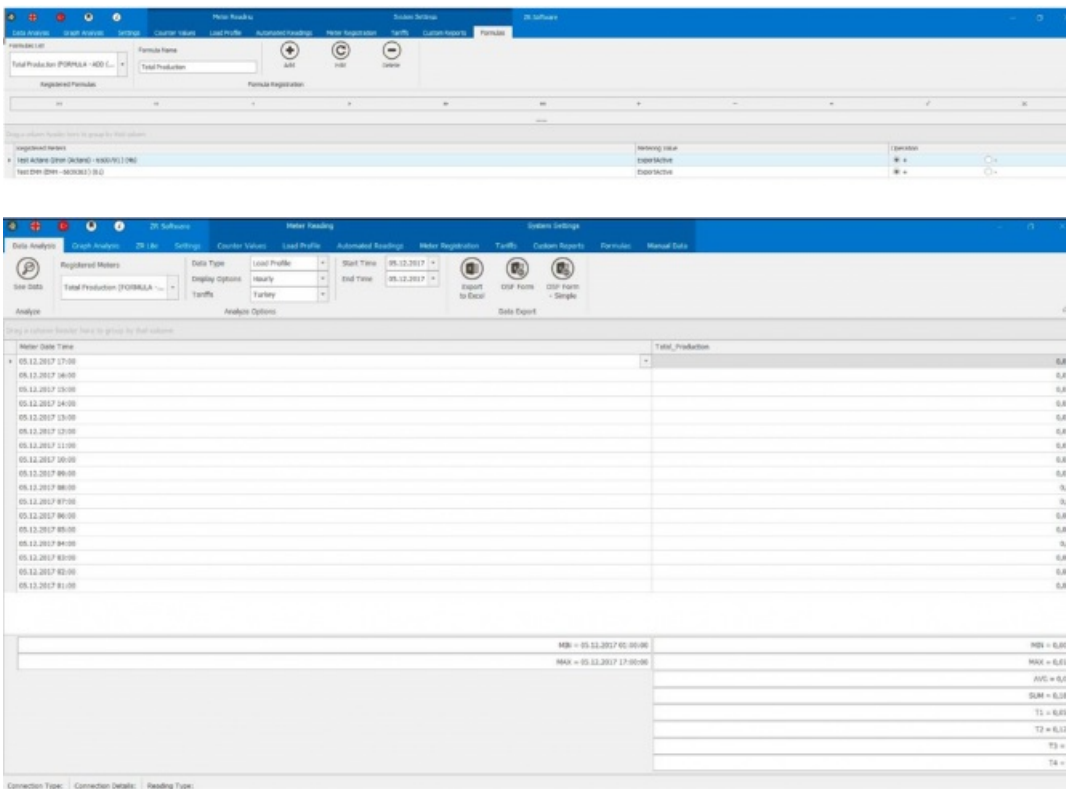


- In **Registered Counters and Formulas** list all the registered counters and created Formulas in the system can be displayed
- At **Formula Registration** section adding new formula to system, editing information for existing formula and deleting selected formula from the system can be executed
- At **Operations** section adding new counter to formula and deleting counter processes can be executed
- **Formula content** is the section where user picks the counter, Measurement value and transaction for the special formula created

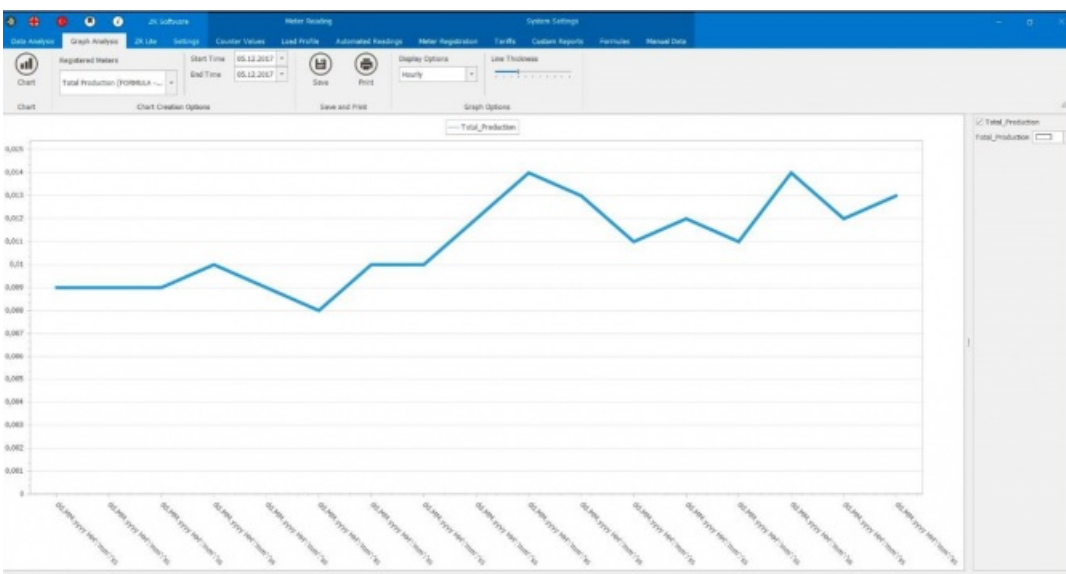
### 3.10.1 CUSTOM REPORT CREATION GROUP

In order to create a new formula, the name of the formula must be entered as it is shown in Figure 71. After setting the name of Formula a new row can be added from the operations menu by clicking on "+" button and by clicking on "-" button existing row can be deleted. It is shown in picture below.

At the new added row one of the registered counters is selected, Counter Measurement Value relevant to the registered counter is picked and after then within the formula "+" (sum up) or "-" (subtract) transaction is chosen according to the user formula need. This process is repeated for each row added. A sample formula is shown in picture below. A new formula will be added by clicking on Add button. Changes realizes at the existing formula can be saved by Edit button. Delete button is used for deleting existing formula. Both data analyze and graphic analyze of the created Formula can be executed. As it is shown in picture below it is possible to analyze the Formula in between selected dates from the Data Analyze Module. All the display options of the Data Analyze and Exporting to Excel is available for Formulas, too.



In a similar way as it is shown in picture below it is possible to analyze the Formula in between selected dates from the Graphic Analyze Module.



All the display options at the graphic analyze are also available for Formulas such as Line Thickness, colors of the series in graphic, Saving and Printing processes.