

Pag./Page 1 di/of 61

HOW TO USE FRERLOGGER

2.	PC features			5							
3.	File Sytem .			6							
4.	Graphic des	scription		7							
5.	ToolBar			10							
Co	nnection Te	est		10							
	TCP/IP			10							
	0×03 Read	Holding Registers		10							
	0×10 Write	Multiple Registers:		11							
	Serial Port .			12							
	0×03 Read		12								
	0x10 Write		12								
	Send Mail										
Co	Configurations										
	Serial Ports		15								
	Languages .	15									
	Times Conf		16								
	Mail config	uration		17							
	Invoice Cor		18								
	Password C		18								
	Backup con		19								
	Path Configuration:										
Inf	formation			21							
	Output Pan	el:		21							
2	31/10/18	Updated to release 3.0.0	G. Muscarella	A. Miori							
4	28/01/19	Updated to release 3.0.6	G. Muscarella	A. Miori							
3	14/01/19	Updated to release 3.0.5	G. Muscarella	A. Miori							
Rev	Data / Date	Descrizione / Description	Preparata / Prepared	Approvata / Approved							



Ipm0241_4

Pag./Page 2 di/of 61

License:		Documents:									
Project: 23 About: 24 6. PROJECT: 25 Project Configuration 25 Mathematical functions 26 How to edit cells in the same column 28 Format Type 29 7. MEASURES: 30 Real Time Graph 32 8. RECORDING 34 9. RECORDS MANAGEMENT 38 EXPORT 40 GRAPH 40 PROFILE 42 INVOICE 43 10. Optional Modules 44 Alarm Management 44 Real Time Graph 45 Graph 45 Load Profile 45 Invoicing 45 How to change/correct invoice values 54 Meaning of the columns: 56 Additional information 56 Additional information 56 Additional information 56 Preparata / Prepara		License:			21						
About:		How to req	uest the license		21						
6. PROJECT: 25 Project Configuration 25 Mathematical functions 26 How to edit cells in the same column 28 Format Type 29 7. MEASURES: 30 Real Time Graph 32 8. RECORDING 34 9. RECORDS MANAGEMENT 38 EXPORT 40 GRAPH 40 PROFILE 42 INVOICE 43 10. Optional Modules 44 Alarm Management 44 Real Time Graph 45 Graph 45 Load Profile 45 Invoicing 45 How to change/correct invoice values 54 Meaning of the columns: 56 Additional information 56 Additional information 56 2 33/10/18 Updated to release 3.0.0 G. Muscarella A. Miori Rev Data / Descrizione / Description Preparata / Prepared Approvata / Approved		Project:			23						
Project Configuration 25 Mathematical functions 26 How to edit cells in the same column 28 Format Type 29 7. MEASURES: 30 Real Time Graph 32 8. RECORDING 34 9. RECORDS MANAGEMENT 38 EXPORT 40 GRAPH 40 PROFILE 42 INVOICE 43 10. Optional Modules 44 Alarm Management 44 Real Time Graph 45 Graph 45 Load Profile 45 Invoicing 45 How to change/correct invoice values 54 Meaning of the columns: 56 Additional information 56 Additional information 56 2 31/10/18 Updated to release 3.0.5 G. Muscarella A. Miori 3 14/01/19 Updated to release 3.0.5 G. Muscarella A. Miori Rev Data / Descriptione / Description Preparata / Prepared		About:			24						
Mathematical functions 26 How to edit cells in the same column 28 Format Type 29 7. MEASURES: 30 Real Time Graph 32 8. RECORDING 34 9. RECORDS MANAGEMENT 38 EXPORT 40 GRAPH 40 PROFILE 42 INVOICE 43 10. Optional Modules 44 Alarm Management 44 Real Time Graph 45 Graph 45 Load Profile 45 Invoicing 45 How to change/correct invoice values 54 Meaning of the columns: 56 Additional information 56 2 31/10/18 Updated to release 3.0.6 G. Muscarella A. Miori 4 28/01/19 Updated to release 3.0.5 G. Muscarella A. Miori Rev Data / Descriptione / Description Preparata / Prepared Approvata / Approved	6.	PROJECT:			25						
How to edit cells in the same column 28	Pro	oject Config	guration		25						
Format Type	Ma	athematica	l functions		26						
7. MEASURES: 30 Real Time Graph 32 8. RECORDING 34 9. RECORDS MANAGEMENT 38 EXPORT 40 GRAPH 40 PROFILE 42 INVOICE 43 10. Optional Modules 44 Alarm Management 44 Real Time Graph 45 Graph 45 Load Profile 45 Invoicing 45 How to change/correct invoice values 54 Meaning of the columns: 56 Additional information 56 2 31/10/18 Updated to release 3.0.5 G. Muscarella A. Miori 3 14/01/19 Updated to release 3.0.5 G. Muscarella A. Miori Rev Data / Descrizione / Description Preparata / Prepared Approvata / Approved	Но	w to edit c	ells in the same column		28						
Real Time Graph 32 8. RECORDING 34 9. RECORDS MANAGEMENT 38 EXPORT 40 GRAPH 40 PROFILE 42 INVOICE 43 10. Optional Modules 44 Alarm Management 44 Real Time Graph 45 Graph 45 Load Profile 45 Invoicing 45 How to change/correct invoice values 54 Meaning of the columns: 56 Additional information 56 Additional information 56 2 31/10/18 Updated to release 3.0.0 G. Muscarella A. Miori 4 128/01/19 Updated to release 3.0.5 G. Muscarella A. Miori 3 14/01/19 Updated to release 3.0.5 G. Muscarella A. Miori Rev Data / Descrizione / Descrizione Preparata / Prepared Approvata / Approved	Fo	rmat Type.			29						
8. RECORDING 34 9. RECORDS MANAGEMENT 38 EXPORT 40 GRAPH 40 PROFILE 42 INVOICE 43 10. Optional Modules 44 Alarm Management 44 Real Time Graph 45 Graph 45 Load Profile 45 Invoicing 45 How to change/correct invoice values 54 Meaning of the columns: 56 Additional information 56 Additional information 56 2 31/10/18 Updated to release 3.0.0 G. Muscarella A. Miori 4 28/01/19 Updated to release 3.0.6 G. Muscarella A. Miori 3 14/01/19 Updated to release 3.0.5 G. Muscarella A. Miori Rev Data / Descrizione / Descrizione Preparata / Prepared Approvata / Appr	7.	MEASURES	:		30						
9. RECORDS MANAGEMENT 38 EXPORT 40 GRAPH 40 PROFILE 42 INVOICE 43 10. Optional Modules 44 Alarm Management 44 Real Time Graph 45 Graph 45 Load Profile 45 Invoicing 45 How to change/correct invoice values 54 Meaning of the columns: 56 Additional information 56 2 31/10/18 Updated to release 3.0.0 G. Muscarella A. Miori 4 28/01/19 Updated to release 3.0.5 G. Muscarella A. Miori 3 14/01/19 Updated to release 3.0.5 G. Muscarella A. Miori Rev Data / Descrizione / Description Preparata / Prepared Approvata / Approvata		Real Time (Graph		32						
EXPORT	8.	RECORDING	G		34						
GRAPH 40 PROFILE 42 INVOICE 43 10. Optional Modules 44 Alarm Management 44 Real Time Graph 45 Graph 45 Load Profile 45 Invoicing 45 How to change/correct invoice values 54 Meaning of the columns: 56 Additional information 56 2 31/10/18 Updated to release 3.0.0 G. Muscarella A. Miori 4 28/01/19 Updated to release 3.0.6 G. Muscarella A. Miori 3 14/01/19 Updated to release 3.0.5 G. Muscarella A. Miori Rev Data / Description Preparata / Prepared Approvata / Approved	9.	RECORDS N	//ANAGEMENT		38						
PROFILE 42 INVOICE 43 10. Optional Modules 44 Alarm Management 44 Real Time Graph 45 Graph 45 Load Profile 45 Invoicing 45 How to change/correct invoice values 54 Meaning of the columns: 56 Additional information 56 2 31/10/18 Updated to release 3.0.0 G. Muscarella A. Miori 4 28/01/19 Updated to release 3.0.6 G. Muscarella A. Miori 3 14/01/19 Updated to release 3.0.5 G. Muscarella A. Miori Rev Data / Descrizione / Description Preparata / Prepared Approvata / Approved	EX	PORT			40						
INVOICE	GR	GRAPH									
10. Optional Modules 44 Alarm Management 44 Real Time Graph 45 Graph 45 Load Profile 45 Invoicing 45 How to change/correct invoice values 54 Meaning of the columns: 56 Additional information 56 2 31/10/18 Updated to release 3.0.0 G. Muscarella A. Miori 4 28/01/19 Updated to release 3.0.6 G. Muscarella A. Miori 3 14/01/19 Updated to release 3.0.5 G. Muscarella A. Miori Rev Data / Descrizione / Description Preparata / Prepared Approvata / Approved	PR	PROFILE									
Alarm Management 44 Real Time Graph 45 Graph 45 Load Profile 45 Invoicing 45 How to change/correct invoice values 54 Meaning of the columns: 56 Additional information 56 2 31/10/18 Updated to release 3.0.0 G. Muscarella A. Miori 4 28/01/19 Updated to release 3.0.5 G. Muscarella A. Miori 3 14/01/19 Updated to release 3.0.5 G. Muscarella A. Miori Rev Data / Descrizione / Description Preparata / Prepared Approvata / Approved	IN'	INVOICE									
Real Time Graph 45 Graph 45 Load Profile 45 Invoicing 45 How to change/correct invoice values 54 Meaning of the columns: 56 Additional information 56 2 31/10/18 Updated to release 3.0.0 G. Muscarella A. Miori 4 28/01/19 Updated to release 3.0.6 G. Muscarella A. Miori 3 14/01/19 Updated to release 3.0.5 G. Muscarella A. Miori Rev Data / Descrizione / Description Preparata / Prepared Approvata / Approved	10.	Optional	Modules		44						
Graph 45 Load Profile 45 Invoicing 45 How to change/correct invoice values 54 Meaning of the columns: 56 Additional information 56 2 31/10/18 Updated to release 3.0.0 G. Muscarella A. Miori 4 28/01/19 Updated to release 3.0.6 G. Muscarella A. Miori 3 14/01/19 Updated to release 3.0.5 G. Muscarella A. Miori Rev Data / Description Preparata / Prepared Approvata / Approved	Ala	arm Manag	ement		44						
Load Profile	Re	al Time Gra	aph		45						
Invoicing	Graph										
How to change/correct invoice values	Lo	45									
Meaning of the columns: 56 Additional information 56 2 31/10/18 Updated to release 3.0.0 G. Muscarella A. Miori 4 28/01/19 Updated to release 3.0.6 G. Muscarella A. Miori 3 14/01/19 Updated to release 3.0.5 G. Muscarella A. Miori Rev Data / Descrizione / Description Preparata / Prepared Approvata / Approved	Invoicing										
Additional information		How to change/correct invoice values									
2 31/10/18 Updated to release 3.0.0 G. Muscarella A. Miori 4 28/01/19 Updated to release 3.0.6 G. Muscarella A. Miori 3 14/01/19 Updated to release 3.0.5 G. Muscarella A. Miori Rev Data / Descrizione / Description Preparata / Prepared Approved		Meaning of	f the columns:		56						
4 28/01/19 Updated to release 3.0.6 G. Muscarella A. Miori 3 14/01/19 Updated to release 3.0.5 G. Muscarella A. Miori Rev Data / Descrizione / Description Preparata / Prepared Approved		Additional	information		56						
3 14/01/19 Updated to release 3.0.5 G. Muscarella A. Miori Rev Data / Descrizione / Description Preparata / Prepared Approvata / Approved	2	31/10/18	Updated to release 3.0.0	G. Muscarella	A. Miori						
Rev Data / Description Preparata / Prepared Approvata / Approvata / Approved	4	28/01/19	Updated to release 3.0.6	G. Muscarella	A. Miori						
Descrizione / Description	3	14/01/19	Updated to release 3.0.5	G. Muscarella	A. Miori						
	Rev	-	Descrizione / Description	Preparata / Prepared	Approvata / Approved						



Ipm0241_4

Pag./Page 3 di/of 61

	How to modify/correct the values of the stored invoices	. 57
11.	Other	. 59
S	Qlite Expert personal	. 59
F	rer Ethernet Discoverer	. 60
H	low to associate the sqlite files to FRERLOGGER	. 60
H	low to launch the FRERLOGGER in Debug mode	. 60

2	31/10/18	Updated to release 3.0.0	G. Muscarella	A. Miori
4	28/01/19	Updated to release 3.0.6	G. Muscarella	A. Miori
3	14/01/19	Updated to release 3.0.5	G. Muscarella	A. Miori
Rev	Data / Date	Descrizione / Description	Preparata / Prepared	Approvata / Approved



Pag./Page 4 di/of 61

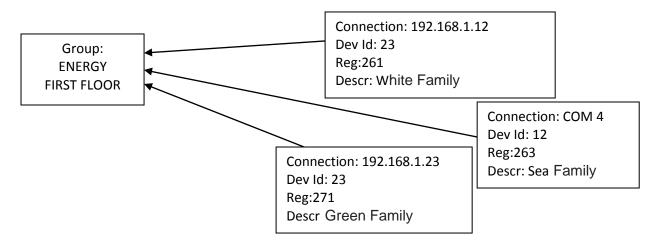
1. Introduction

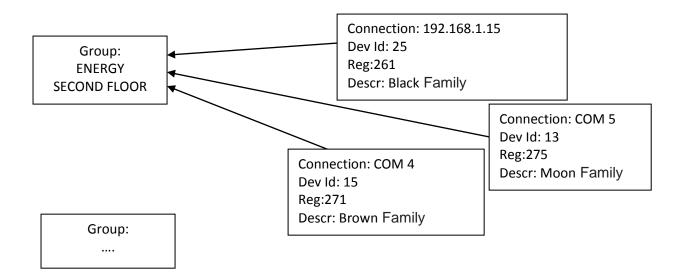
FRERLOGGER is a PC tool (compatible with XP, Vista, 7, 8 and 10) in order to monitor and log the measurements through the ModBus protocol.

Each measure use a row of the Tab "PROJECT", the measure is uniquely determined by the following coordinates:

- Connection Type: TCP/IP or USB
- Device ModBus Address
- Register

For each physical measure you can associate a **logical group**, in this way is possible to create a set of logical groups that contains a set of physical measurements of different physical device:





When the project has been completed, switching to **MEASURES** tab allow to see the measures value in real time and the graph of one or more measure, the **RECORDING** tab allows to choose which measures to be recorded, for how long, when to start and stop the recording and split it into different table. Lastly



lpm0241 4

Pag./Page 5 di/of 61

RECORDS MANGEMENT tab allows to manage the recordings in order to extract data in sql or csv format, show graph and load Profile, at the last within the **INVOICE** tab is possible to check the last invoice.

If during a recording, the PC turns off due to sudden lack of power supply, when restarting the PC FRERLOGGER is able to resume and continue the recording.

After installing FRERLOGGER, we recommend to install the directory SQLiteExpertPersSetup. Please refer to SQLiteExpertPersSetup.txt under FRERLOGGER/Tools to have further information. This tool is also useful to to check and go through tables generated by FRERLOGGER in a saved project.

Always under FRERLOGGER/Tools there is FrerEthernet Discoverer_14.exe tool, that allows you to configure Frer's.

Please check your Windows OS is able to open chm files to utilize Help.chm function.

If, when starting, FRERLOGGER can't find the license file or the Usb key with the license, the user will be notified that he can use the tool for 2 hours, after the FRERLOGGER will be closed. License can be asked via mail sending a request to frersale@frer.it.

Each license is related to one PC only, instead requiring the USB key, you can install the FRERLOGGER in multiple PCs, but only the PC with the USB drive inserted will be licensed.

2. PC features

Operative System: Windows XP, Vista, 7, 8 e 10 @ 64 bit, It is also strongly recommended to install the tool under the directory c:\ and not under c:\program files.

With windows 10 you may need to launch FRERLOGGER as an administrator, also for the functionality of automatic restart in case of shutdown is recommended:

- Remove the PC access password, in this way the PC will shut down immediately after a shutdown.
- Set to Never Notify under the User Account Control (AUC), this way FRERLOGGER will always start
 avoiding the annoying request for untrusted sw.

Processor: from i5 multicore at least 3.00 GHz

Minum Ram: 4GB

HDD: Seagate SSHD technology with 500G, 1T or 2T capacities is recommend

To avoid overheating we racommend the size of 2,5"

HW Interface: 10/100/1000 network board and USB sockets.

Screen resolution: at least 1440x900

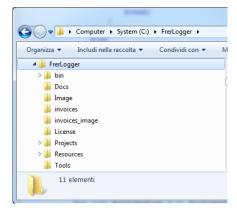


Pag./Page 6 di/of 61

lpm0241 4

3. File Sytem

Once the tool is installed, the following directories will be created:



The **bin/release** directory contains the executable file and all the dll.

The **Docs** directory contains the various manuals

The **Image** directory contains images used by FRERLOGGER.

The **Invoices** directory contains pdf files due to billing (deprecated).

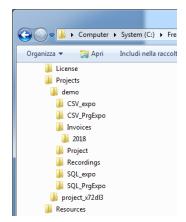
The **Invoices_image** directory contains the image in order to use within the invoice.

The **License** directory contains the files about the license.

The **Resources** directory contains files about the language translation.

The **Tools** directory contains the reference to dowload sqliteexpert tool and other helpful tools.

The **Projects** directory contains the user's projects files.



Each project within has the following directories:

The **CSV_expo** directory contains the csv files created during export in the RECORD MANAGEMENT tab.

The **CSV_PrgExpo** directory contains tables exported as a csv file during registration.

The **Invoices** directory contains the invoices issued divided into year and month

The **Project** directory contains the sqlite file with tables related to the project.

The **Recordings** directory contains the sqlite files related to the recordings.

The **SQL_expo** directory contains the sqlite files created during export in the RECORDER MANAGEMENT tab.

The **SQL_PrgExpo** directory contains tables exported as a sqlite file during logging

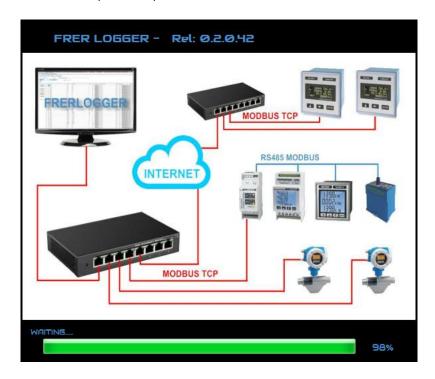


lpm0241_4

Pag./Page 7 di/of 61

4. Graphic description

Once you launch it, the tool will open the splash window:

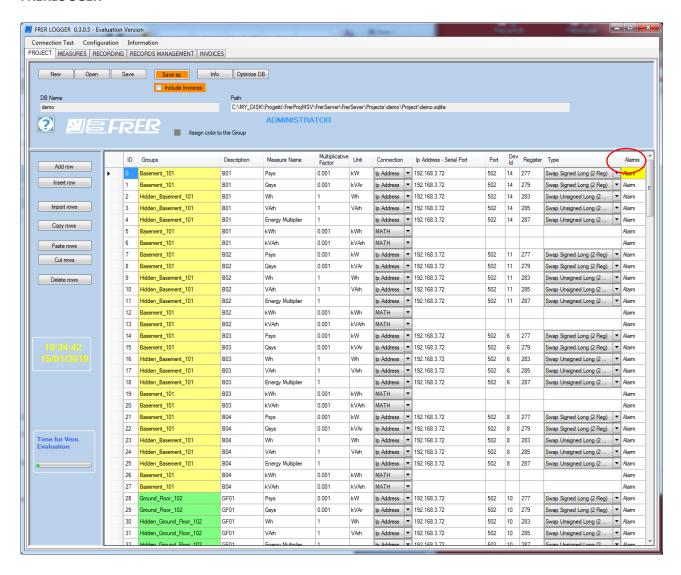


At the end of the software modules loading, two windows will open:INFORMATION PANEL and FRERLOGGER.



Pag./Page 8 di/of 61

FRERLOGGER



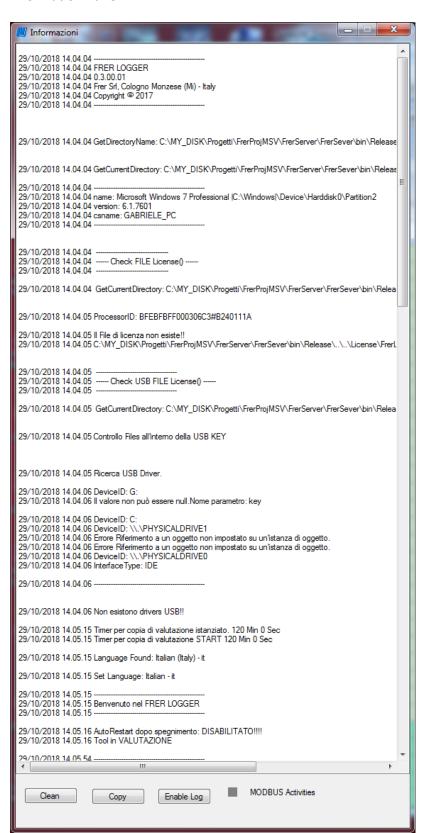
If the user has purchased the alarm management, a column named **Alarms** will appear at the right of the **Type** one.

If the tool hasn't the licence, a panel with the Time for the Evalutation will appair below on the left.



Pag./Page 9 di/of 61

Information Panel



This panel is very useful very useful as it shows everything that happens during the operation of the tool. It is possible to enable a log file to keep track of any anomalies.



lpm0241_4

Pag./Page 10 di/of 61

FRERLOGGER is divided into 4 sub Panel: **PROJECT**, **MEASURES**, **RECORDING**, **RECORDS MANAGEMENT and INVOICE**, the panels will be described later.

5. ToolBar

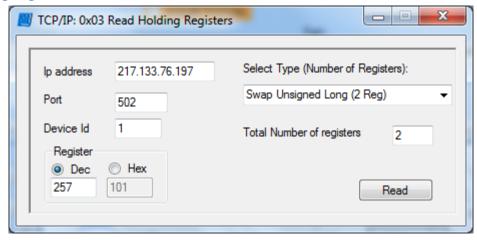
In the Top toolbar of FRERLOGGER contains the following applications:

Connection Test

Selecting **Connection Test** from the top toolbar of FRERLOGGER opens following mask and parameters to be set: *TCP/IP*, *Serial port* and *Send Mail*

TCP/IP

0×03 Read Holding Registers



With this window it is possible to read the measurements from a device using the 0×03 Read Holding Registers function.

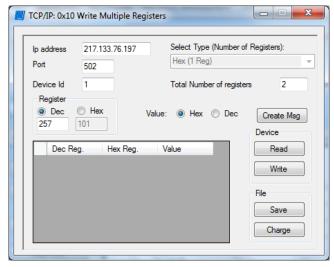
You have to configure the **IP** address of the device, the socket **Port** (usually it is 502), the **Device ID**, the **Register** address (in hexadecimal or decimal) where to start reading, the **Total Number of Registers** to read and the **Type of Registers for Measurement**.

Example: with a request for a **Total Number of Registers** equal to 6 and the type selected as **Swap Unsigned Long (2Reg)**, 3 data will be read, visible on the **Information** panel.



Pag./Page 11 di/of 61

0×10 Write Multiple Registers:

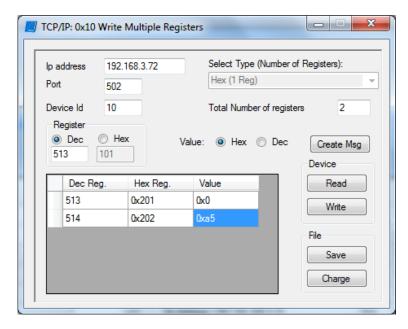


With this window it is possible to write registers on a device using the 0×10 Write Multiple Registers function.

You have to configure the **IP Address** of the device, the socket **Port** (usually it is 502), the **Device ID**, the registry address (in hexadecimal or decimal) where to start reading, the **total number of registers** to read and the **Type of Registers for Measurement**.

Example: with a request for a **Total Number of Registers** equal to 6 and the type selected as **Swap Unsigned Long (2Reg)**, there will be 3 data, visible on the **Information** panel.

With the button Create Msg will create the grid containing registers and values to send to the device



Once the user has changed the value, press the **Write** button to check the result and press the **Read** button.

The information contained in the grid registers and values can be saved to a file for future use.



lpm0241_4

Pag./Page 12 di/of 61

Serial Port

0×03 Read Holding Registers

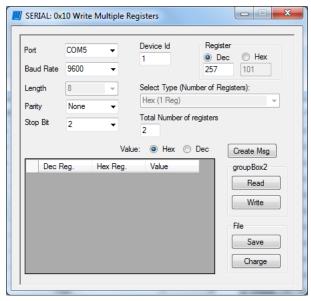


Create a message ModBus serial port connected to the PC (if exist):

You have to configure the serial port,

The same considerations apply in the case ModBus TCP / IP

0x10 Write Multiple Registers



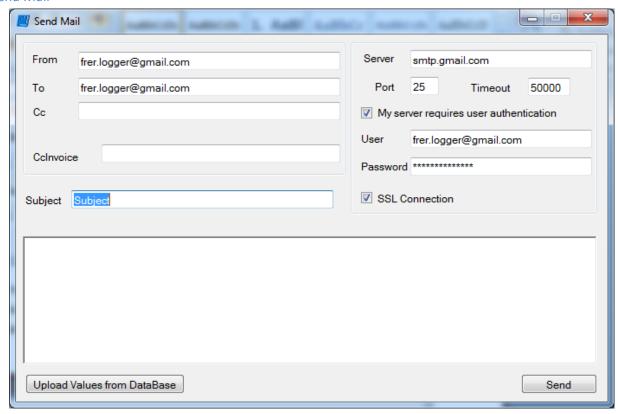
Create a message ModBus serial port connected to the PC (if exist):

You have to configure the serial port with Baud Rate, the length is always 8, parity and stop bit. Using the same considerations applied in the case ModBus TCP / IP.



Pag./*Page* 13 di/of 61

Send Mail



This Panel sends a e-mail

You must configure the following fields:

- Sender (From) and Recipient (To and Cc)
- Server Name of the mail output
- Number of the port (25 as default) and 30 seconds Timeout
- If the server requires authentication, you need to fill in with **User** and **Password**.

The button *Upload Values from Database* fill the fields with the information stored in the project, if the Configurations- window> Mail Setup has already been used.

The fields saved from this window will be recorded in the project in order to use the "Send mail" function during recording.

The **CcInvoice** field indicates a unique recipient for sending invoices, this concept will be explained in the chapter dedicated to billing.

The port 25 of the smtp.gmail.com server does not accept the SSL connection type.

To get a more secure connection, with the encrypted passwords, it is recommended to use port 465, taking into consideration to open the firewall for this port.

I.E is possible to use the following mail server:

Server: smtp.gmail.com

Port: 25

Timeout: 50000



lpm0241_4

Pag./*Page* 14 di/*of* 61

My server requires user authentication: Checked

User: free.logger@gmail.com
Password: FRERLOGGER2730
SSL Connection: Checked



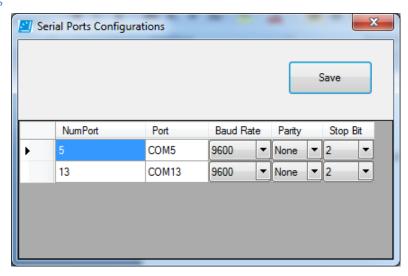
lpm0241_4

Pag./*Page* 15 di/of 61

Configurations

Selecting Configurations from the top toolbar of FRERLOGGER we have: Serial Ports, Languages, Time Configuration, Mail Config, Invoice Config and Password Config.

Serial Ports



This panel shows the configuration of the serial ports used in the project in order to send the ModBus transmission.

Rows are added/removed automatically when the connection type of a measure is COM.

It's important to observe that you can configure the serial ports that are **NOT** on the PC used to realize the project, but the one of the PC where it will-be running.

The serial port configuration must be consistent with the network 485 side devices: if the COM4 port is configured as 9600 8-N-2 all devices connected to the 485 must be configured as 9600 8-N-2.

These Configuration will be saved in the project.

Languages



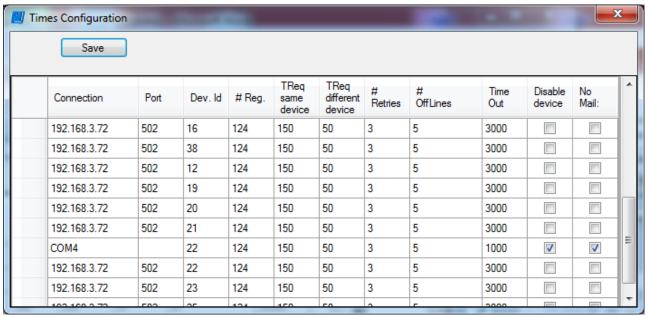
Select your language, the information will be saved in the project



lpm0241 4

Pag./Page 16 di/of 61

Times Configuration



In this window you can configure the times of the ModBus protocol for each physical interface.

In above example we have:

- 1 serial ports (COM4)
- different gateways

The cells Connection, Port and Dev. Id are only in read Mode, the configurable settings are the following:

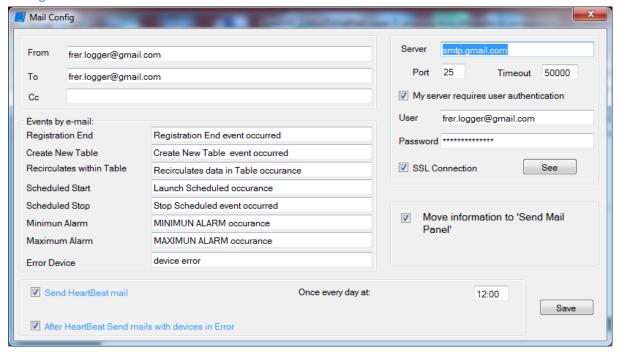
- #Reg: Maximum number of registers which can respond to a device
- Treq same device: Delay of Query between next two requests belonging to the same device
- Treq different device: Delay of Query between next two requests belonging to the different device
- #Reties: Number of attempts before increasing a Fault counter
- #OffLines: When the Fault counter is equal to the number of OffLines a mail is sent (if enabled) that informs the customer about the device not running.
- *TimeOut* of the modbus protocol: TCP/IP connection default is 3000 mSec, USB connection default is 1000 mSec.
- *Disable device:* If a device can not be reached a priori even if it has been included in the project, it can be avoided that it will be interrogated.
- No Mail: To avoid sending the email when a device reaches the number of OffLines.

These configurations will be saved within the project.



Pag./*Page* 17 di/of 61

Mail configuration



In this panel, all the information to send the email when the recording conditions require it, are stored:

- From: sender email address
- To, Cc: recipient email adresses
- Server: The name of the outgoing mail server of the Sender
- Port: Number of the Port and Timeout
- User and Password for authentication (with the See bottom, remove the hidden)
- SSL connection

Additionally you can customize various events:

- End Registration
- Create New Table
- Recirculates in Table
- · Programmable Recording start
- · Programmable Recording stop
- Minimum alarm
- Maximum Alarm
- Error Device: If a device has reached the OffLines number, if this field is blank the mail will not be sent.

With sentences that will be written in the email body.

It is possible to send the daily HeartBeat email to make sure that the FRERLOGGER is running correctly, and you can also decide to send the list of devices in error.

These configurations will be saved in the project.

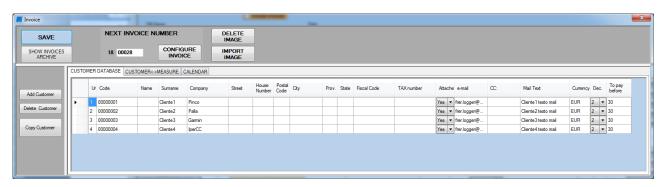




Pag./Page 18 di/of 61

Invoice Config

If you have purchased invoice management under **Configuration** you will find **Invoice Configuration**.



In this panel all invoice management is instantiated.

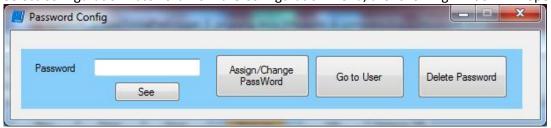
Customer Database, Customer-Measure connection and Calendar.

For details, see the section provided.

These configurations will be saved in the project.

Password Config

The user who creates the project can protect it by introducing a password Select Configuration Password from the Configuration menu, the following window will open:

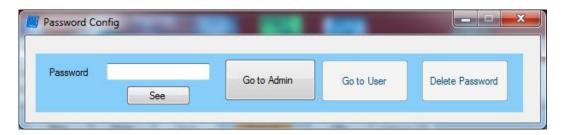


By default, FRERLOGGER is set up with the **Administrator** user who can:

- build the project
- start or stop the recording
- see the measurements
- export the registration
- close FRERLOGGER

To set the password: Type the password and press the *Assign/Change* button. The password will be saved in the project.

To switch to the **USER**: Re-enter the password and press the *Go to User* button.







Pag./Page 19 di/of 61

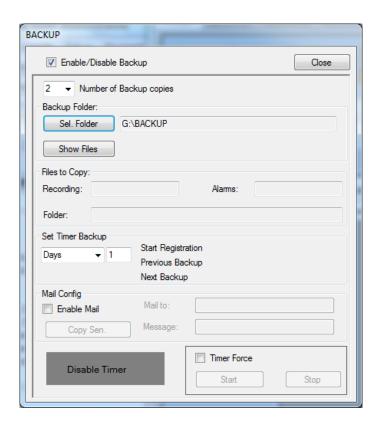
The **USER** can only view the measurements and the project.

To go back to **ADMINISTRATOR**, rewrite the password and press *Go to Admin*.

To delete the password from the project: write the password and press Delete Password

These configurations will be saved in the project.

Backup configuration:



During data logging it may be necessary to back up the data for added security.

Enable / Disable backup: enable or disable the backup during recording.

Number of Backup copies: Used to set the backup copies to keep (ex: if the backup is made every day and is set as backup copy number 2, two copies of the backup will be saved in the backup folder, that of the day before and today, when the next backup is made, the system will automatically delete the oldest date by tending the most recent one so as to always have two copies of the backup).

Select. Folder: This button allows you to choose the folder where the system will go to save the backup data, it can be a current computer folder or a cloud always mapped on the computer.

Show files: Allows you to view files in the folder selected by the user to perform the backup.

Set backup timer: Allows you to choose how often to backup

Configure mail: Allows you to set up a mail with the message to be sent each time the backup is saved. If the **Copy Sender** function is selected, the mail set in the **Mail Configuration** will be selected.

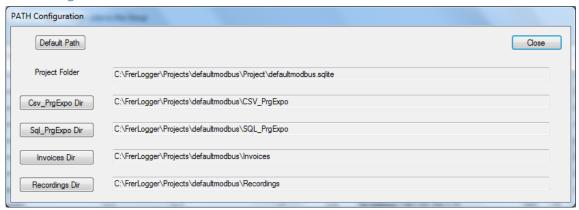
These data will be saved within the project.



Ipm0241_4

Pag./Page 20 di/of 61

Path Configuration:



From this panel you can change directories:

- Automatic export for CSV and SQL files during registration
- of the invoices
- of the registration

By clicking on **Default Path**, the default folders will be restored.

These data will be saved within the project.



Ipm0241_4

Pag./Page 21 di/of 61

Information

Selecting **Information** from the top toolbar of FRERLOGGER we have: **Output Panel, Languages, Documents, License, Project, About**

Output Panel:

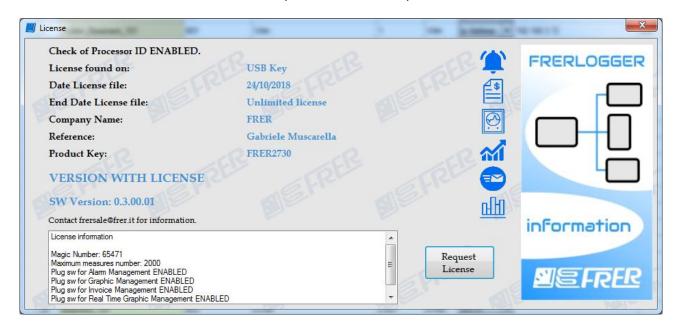
Shows the Information Panel.

Documents:

Opens the docs folder that contains various manuals.

License:

Shows information about the License and the purchased software patches.



How to request the license

Previously stated without the license, you can use the FRERLOGGER with all the plug software enabled and make measurements/recordings up to 2 hours. After this time the software will close automatically.

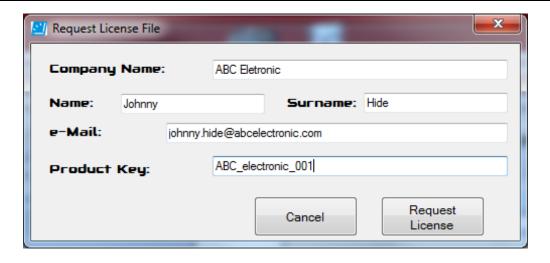
To apply for a license:

- Send the request to FRER Srl email: : frersale@frer.it indicating what software patches to be included.
- Frer will send the **Product Key**
- Once you get Product Key, click on *Request License* button will open the following panel:



lpm0241_4

Pag./Page 22 di/of 61



Fill the windows in all its parts and click "Request License". Two files under the License folder will be generated:

- FrerProdKey.lic contains the encrypted product key
- Request.doc: send this to <u>frersale@frer.it</u>, the FrerLicense.lic will be sent, copy it under the <u>license</u> folder

Close and restart the FRERLOGGER.

Open the license panel under Information.

All the information about the purchased license will be highlighted.

You may request not the file but the USB key containing the license, in this way the FRERLOGGER could be installed on multiple PCs, but only the PC where the USB key is inserted will be fired.

Warning: when the product is fired, a security check is active for the license. If the user were to remove the USB flash drive or the license to File terminated, the FRERLOGGER will be closed.

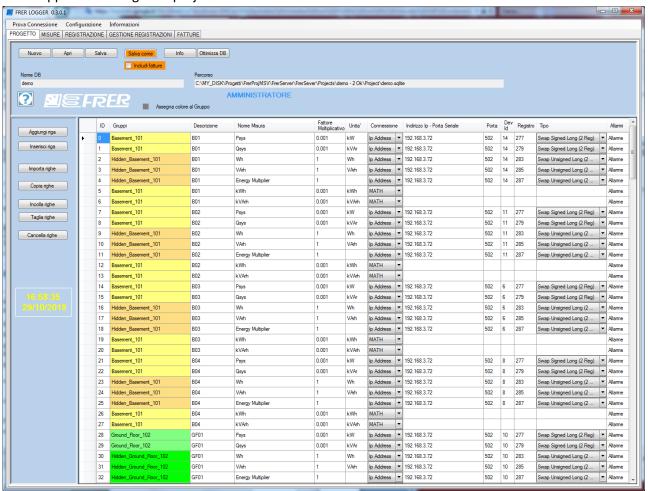




Pag./Page 23 di/of 61

Project:

Let's suppose to configure a project as follows:

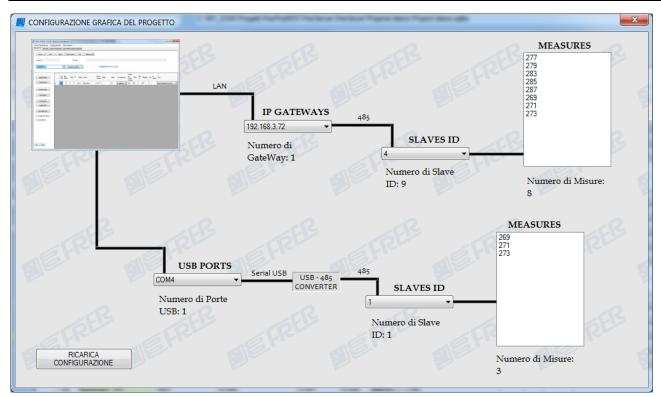


Clicking **Project** under **Information** from top toolBar, will open a window that show graphically the configuration of the project



lpm0241_4

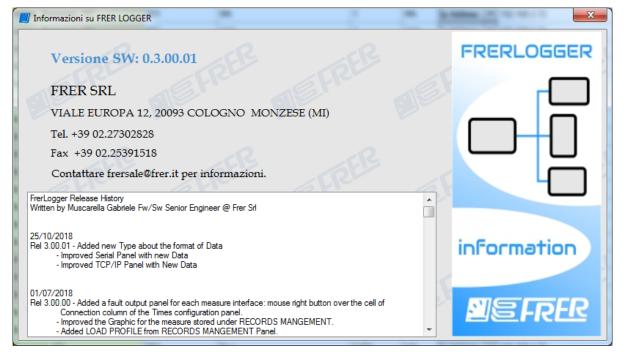
Pag./Page 24 di/of 61



Here are shown how many and which registers are connected to the various devices and how they are connected to TCP/IP or USB ports.

About:

It shows the information about FRERLOGGER



It is also indicated the Release History. Clicking on FRER SRL, will open direct link to FRER company webpage.



Pag./Page 25 di/of 61

6. PROJECT:

The panel **PROJECT** allows to configure the database of the project.



Click *New* button to create a new project. A default project will be loaded.

Click *Open* button to open an existing project previously saved. **Information** panel will show all the information about tables contained in the database.

Click Save button to save the latest changes made on the

current project file. Save operation could take short or long time, depending on the number of rows of the project. You can check the Progress Bar placed at the bottom left of the panel.

Save As button saves the current project in another file, clicking Include Invoices before Save As, all invoice information will be saved to the new project.

Info button allow to display all the information (in the Information panel) of DB used: tables and content.

Optimize DB button will delete from the database all the memory blank spaces that table deletion operation creates. This may take some time.

You can color the various logical groups to have a better perception of the group itself, select the lines to be colored and press the square.

Project Configuration

	•													
	ID	Groups	Description	Measure Name	Multiplicative Factor	Unit	Connection	lp Address - Serial Port	Port	Dev Id	Register	Туре	Alarms	^
•	0	Basement_101	B01	Psys	0.001	kW	Ip Address ▼	192.168.3.72	502	14	277	Swap Signed Long (2 Reg) ▼	Alam	
	1	Basement_101	B01	Qsys	0.001	kVAr	Ip Address ▼	192.168.3.72	502	14	279	Swap Signed Long (2 Reg) ▼	Alam	=
	2	Hidden_Basement_101	B01	Wh	1	Wh	Ip Address ▼	192.168.3.72	502	14	283	Swap Unsigned Long (2 ▼	Alam	
	3	Hidden_Basement_101	B01	VArh	1	VArh	Ip Address ▼	192.168.3.72	502	14	285	Swap Unsigned Long (2 ▼	Alam	
	4	Hidden Basement 101	B01	Energy Multiplier	1		Ip Address ▼	192.168.3.72	502	14	287	Swap Unsigned Long (2 ▼	Alam	

A project consists of a set of measures, the measure is a Table row composed by:

- ID: Progressive number
- Groups: Device Logic Name
- Descr: measure description
- Measurement Name: Logical name of Measure

This name will be used during the registration so it is absolutely necessary that in the project there are no duplicate names, otherwise it will fail registration.

- F. Molt: multiplicative factor, the measure read from the instrument multiplied by this factor will be the one that will be displayed/recorded
- Unit: Unit of measure
- Connection: choose the connection type: IP, serial ports or mathematical functions
- IP Address- Serial Port: In case of IP connection will be same as Gateway *IP address*, in case of COM connection will be Serial Port number
- Port; in case of IP Connection will be Modbus communication Socket. As default 502 is set
- Dev Id: Physical device Modbus address
- Registry: Modbus register nr.
- Type: measurement representation
- Alarms: set the minimum and/or maximum alarm

Ipm0241 4



HOW TO USE FRERLOGGER

Pag./Page 26 di/of 61

To make rows insertion in the project easier, following buttons has been provided on the left of the panel:

Add row: insert a default row at the end of the project.

Insert row: insert a default row before the selected line.

Import lines: Through dialog window you can select another project in order to import rows.

Copy rows: You can select any number of rows and copy them.

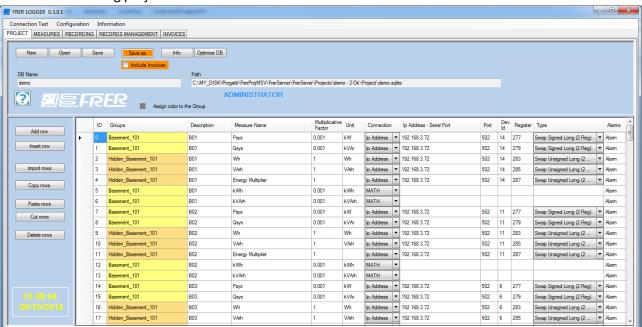
Paste rows: Paste the lines previously copied from selected row.

Cut rows: You can select any number of lines and delete them simultaneously. Then you can paste these lines where you need with Paste function.

Del rows: You can select any number of lines and delete them simultaneously.

Mathematical functions

Create the following project:



To configure the math function, press on the Connection combo box and choose MATH, the following window will open:



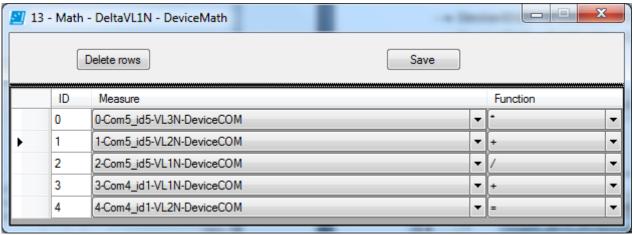
Select the measures to be used, in this case we have the mathematical function ID 5 is the product between the measure ID 2 (Energy) x the measure ID 4 (Energy Multiplier) expressed in Wh: ID2xID4. You can add other lines, changing the "=" sign from the Box combo of the last line



lpm0241 4

Pag./*Page* 27 di/*of* 61

Looking at following example:



In this case the final measure is:

ID0 * ID1 + ID2 / ID3 + ID4

FRERLOGGER will execute the final measure performing the calculation from left to right, It DOES NOT APPLY COMMON ALGEBRAIC RULES, then:

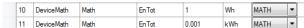
calculated measure = ID0 * ID1

calculated measure = calculated measure + ID2

calculated measure = calculated measure / ID3

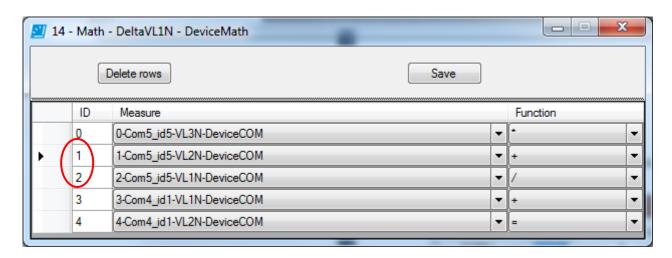
calculated measure = calculated measure + ID4

At the end the multiplying factor will be applied to calculated measure



In Mathematical function ID10 the multiplying factor is 1. This means energy is shown in Wh.

In Mathematical function ID11 the multiplying factor is 0.001. This means energy is shown in kWh.



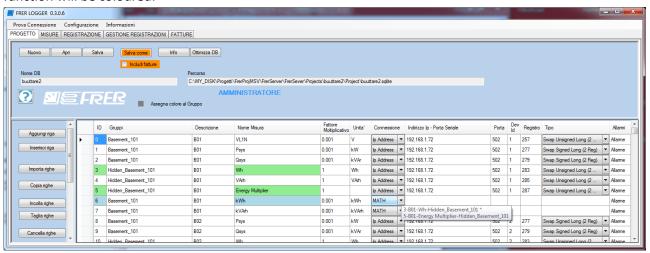
To delete the lines: select the lines even if not consecutive (hold Ctrl and click right mouse button on first cell, then press **Delete rows**).





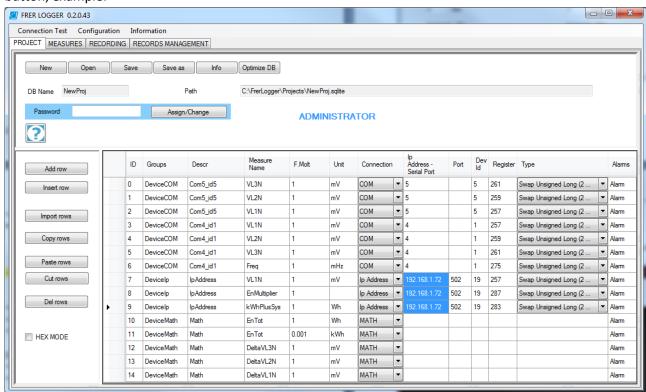
Pag./Page 28 di/of 61

Once the mathematical function is configured, moving the mouse on the MATH cell, the cells used in the function will be coloured.



How to edit cells in the same column

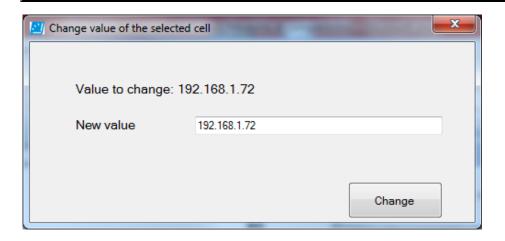
You can rename the CELLS located on the SAME COLUMN, just select the cell and press the right mouse button, example:



If you need to change ip address: Select the cells, click the right mouse button on a cell and the following window will appear:

lpm0241 4

Pag./Page 29 di/of 61



Change the value from 192.168.1.72 to 192.168.1.51 and click on "Change".

IP address change will be effective on every cell previously selected

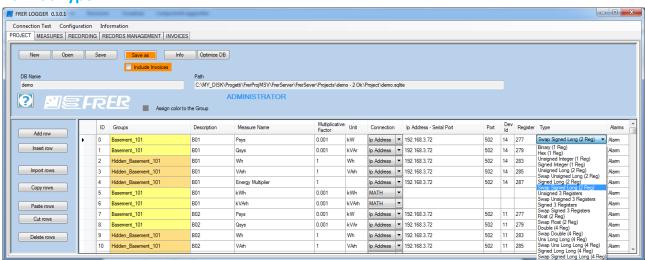
The Progress Bar is instantiated to indicate the time remaining to carry out the operation.

Depending on the type of replacement required and the presence of mathematical measures, the action may take some time.

This quick method is also applicable to the Time Configuration window to easily change the number of registers, Time Request, Retries, OffLines and TimeOut.

In the same way to color the cells of the Groups: select the lines, click on the square next to Assign color to the Group and press OK

Format Type



Measures can be displayed in following types:

Binary: measure will consist of **one** register, displayed as BINARY format.

Hex: measure will consist of **one** register, displayed as HEX format.

Unsigned Integer: measure will consist of **one** register, displayed WITHOUT sign.

Signed Integer: measure will consist of **one** register, displayed WITH sign.





Pag./Page 30 di/of 61

Unsigned Long: measure will consist of **two** registers, displayed WITHOUT sign as Little-Endian format.

Swap Unsigned Long: measure will consist of two registers, displayed WITHOUT sign as Big-Endian format.

Signed Long: measure will consist of two registers, displayed WITH sign as Little-Endian format.

Swap Signed Long: measure will consist of two registers, displayed WITH sign as Big-Endian format.

Unsigned 3 registers: measure will consist of **three** registers, displayed WITHOUT sign as Little-Endian format.

Swap Unsigned 3 registers: measure will consist of **three** registers, displayed WITHOUT sign as Big-Endian format.

Signed 3 registers: measure will consist of three registers, displayed WITH sign as Little-Endian format.

Swap Signed 3 registers: measure will consist of three registers, displayed WITH sign as Big-Endian format.

Float: measure will consist of **two** registers, displayed as Little-Endian format.

Swap Float: : measure will consist of **two** registers, displayed as Big-Endian format.

Double: measure will consist of **four** registers, displayed as Little-Endian format.

Swap Double: measure will consist of four registers, displayed as Big-Endian format.

Uns Long Long: measure will consist of four registers, displayed WITHOUT sign as Little-Endian format.

Swap Uns Long Long: measure will consist of four registers, displayed WITHOUT sign as Big-Endian format.

Signed Long Long: measure will consist of four registers, displayed WITH sign as Little-Endian format.

Swap Signed Long Long: measure will consist of four registers, displayed WITH sign as Big-Endian format.

7. MEASURES:

Once the project is saved, you can switch to the panel MEASURES, pressing the Tab **MEASURES**. Window becomes:



FRERLOGGER will create the queries to query all devices, the operation is shown in the control panel, after this all the threads will be instantiated.

At this point, the query starts with ALL thedevices described in the project and the information stored in a memory buffer.

So to avoid communication errors it is important that the devices described in the project are really reachable or disable the device through the *Times Configuration* panel.

The Control combo box under **Groups** will be populate with the name of logical devices of the project. The label **Meas. Num.** indicates how many measures (rows) have been allocated under the logical device.

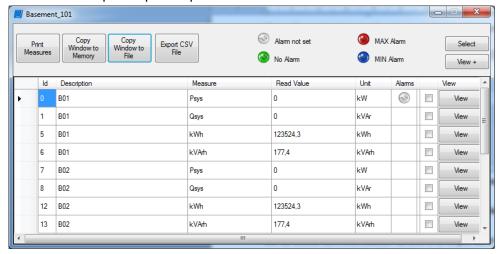


lpm0241_4

Pag./*Page* 31 di/*of* 61

Once opened the group to be displayed (*Open* button), the FRERLOGGER starts a display thread where the measurements are copied from the previous memory buffer and formatted according to the selected data type, in this case the time required to display the measurements is about 1 sec

You can open more logical devices at the **Same Time**. It is enough choose another device from the combo box under Groups and press Open.



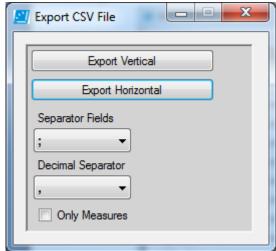
Selecting ONLY GROUP displays all logical groups EXCEPT the one indicated as HIDDEN.

With the **Print Measures** button creates a file containing the measures.

With the *Copy Windows* to *Memory* button is the same of Ctrl+Stamp command. Window will remain in memory in the clipboard.

With the *Copy Window to File* button creates a graphic file containing window image previously saved.

With the *Export CVS File* button, the following window will be open:



You can export the measurements horizontally or vertically to a csv file, and select the separators field and separators decimal.

By selecting Only Measure, the CSV file will not contain the measure headings

If the Alarm key module has been purchased, the alarm led icons mean:





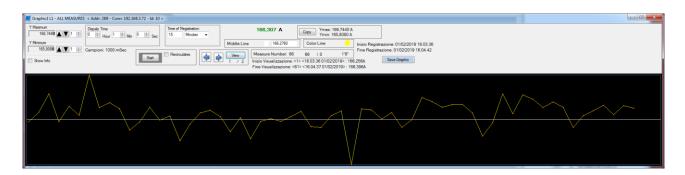
Pag./Page 32 di/of 61

- Green Led: correct measurements
- Red Led: measure above the maximum alarm threshold, maximum alarm reached
- Blue Led: measure under the minum alarm threshold, minum alarm reached

Real Time Graph

Only one graph

The *View* button (optional) located on each row opens a graphic panel where it is possible to follow the measurement trend in Real Time.



In this panel it is possible to memorize **a** graphic trace of the selected measure for a settable time, at the end of which it will be possible to review the graph and the individual values in the points of cusp. If the measurement is alarmed, the graph will change color to follow the trend of the value.

Recording time: indicates the total acquisition time of the measurement, if the Recirculation flag is enabled the recording will continue even when it reaches its Max limit, overwriting the old samples.

The **Display Time** indicates the total time on the axis of the abscissa. If in a graph with 2 minutes of recording time, the display time is set to 30 seconds, this means that during the acquisition, the abscissa will have a duration of 30 sec. After the acquisition with the **Show** button, you will see the chart divided into 4 parts by 30 seconds each.

During acquisition, the minimum and maximum measurement is calculated, with the **Copy** button, the tool will use these new parameters to optimize the ordinate axis.

Once the acquisition is over, you can see the graph, using the **Show** button and the left / right arrows to see the next measurements, you can change the time axis by acting on the **Display Time**.

To increase / decrease the resolution on the ordinate axis, act on Y Maximum and Y Minimum.

By clicking on the red square in the measure, you can see the following information:

- #Id Measurement Sample
- Numerical value
- Time and Date

It is possible to change the color of the graph through the colored square placed next to the **Start** button, but if the measurement is alarmed, it will change color depending on the alarm status: red above threshold, blue below threshold otherwise the selected color remains.

The Graph can be saved using the **Save Graph** button, and then reloaded from MEASUREMENT panel.

More graphs contemporaly

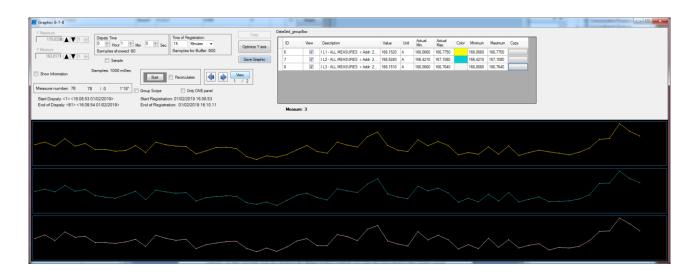
To display multiple measures at the same time:

Select the measures from the window and click the **Show +** (optional) button will open a new graphic panel where you can follow the progress of the measurements.





Pag./Page 33 di/of 61



The same considerations apply to the single-measure graph as regards the **Recording Time** and the Display **Time**, also for the latter it is possible to associate the length of the abscissa axis not only on the basis of time but also on the number of samples .

Once the acquisition is finished, you can decide to observe the measurements on different panels or use the same panel, using the Flag **Only ONE panel**.

In the first case, the axis of the ordinates can be optimized by clicking on the button under the **Copy** column, in the second case by clicking the **Copy** button (which can only be executed in the single panel case). Once the acquisition has been completed, it is possible to see the graph, using the **Show** button and the right / left arrows to see the successive measurements. You can change the time / sample axis by adjusting the **Display Time**.

By clicking on the red square in the measure, you can see the following information:

- Id measure sample : Numerical value
- Time and Date

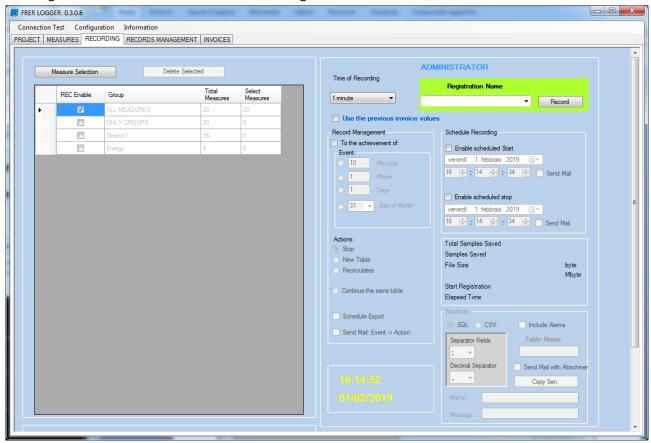
It is possible to change the color of the graph through the **Color** cell, but if the measurement is alarmed, it will change color according to the status of the alarm: red above threshold, blue below threshold otherwise the selected color remains.



Pag./Page 34 di/of 61

8. RECORDING

Pressing the Tab **RECORDING** lead to the following window:



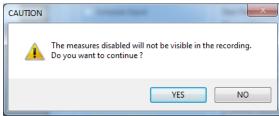
If you have not previously gone through the MEASURES, the tools will create the queries for querying the devices and launchs the threads for the acquisition of the information.

Queries are generated in the **MEASURES** or **RECORDING** and will only be regenerated in the following cases:

- Change project information
- Another project opens

Normally ALL measures except HIDDEN groups are selected by default for recording, however, the user through the *Measurement Selection* button can select which measure of which group to do (or not to do) when recording.

Pressing *Measurement Selection*, will open following window: All the measures which will not be registered, can not be exported and saved in another format.

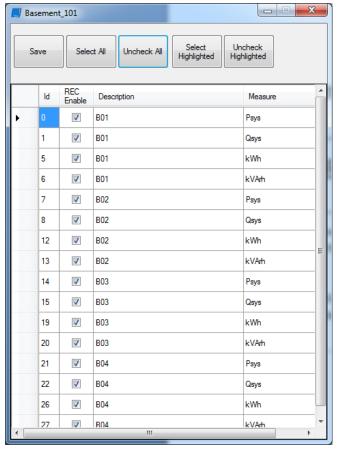




lpm0241_4

Pag./*Page* 35 di/*of* 61

Select a group under the **Description** cell with the left mouse button, will open the following window:



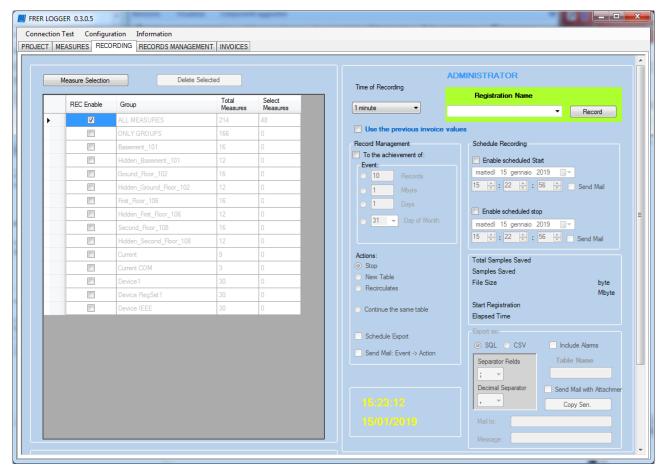
Enable the flag *REC Enable* to select/ deselect the Measure and then click *Save*.

Or you can select/deselect all measures using **Select All** or **Deselect All** Or select the lines and press **Select Highlight** or **Deselect Highlighted**.

Continue the procedure until you have selected all the measures to be recorded contained in the groups, even different from each other.



Pag./Page 36 di/of 61



We are now ready to start recording:

We can decide the **Time of Recording** from the combo box.

The FRERLOGGER will stop automatically if the flag *To the achievement of:* is enabled.

The **Events** are the following:

- the achievement of #N Records
- · when the file exceeds N Mbyte
- when N Days are passed.
- The achievement of Day of Months.

Once the event has been reached, the actions that can be taken are as follows:

- **Stop**: stop recording
- New Table: data will be recorded in a new table
- Recirculation: the data will be rewritten in the same table overwriting the oldest one
- Continue the same table: Recording will continue on a regular basis (see below)

Each of these **events** can be monitored through an email alert (assuming it has been properly configured: **Send Mail: Event -> Action**).



lpm0241_4

Pag./Page 37 di/of 61

Another allowed action is the programmed export of the table (enabling **Scheduled Export**) as a SQL or CSV file, moreover the exported table could be attached to a mail (enabling **Send Mail** with Attachment, the email must be configured, see **Mail Configuration** panel)

The table generated as a scheduled export will be placed below:

Projects / <Project Name> / CSV_PrgExpo or **Projects / <Project Name> / SQLV_PrgExpo**, but the path can be changed from the **Path Configuration** panel.

We can also enable:

- · programmed delayed start
- · programmed record interruption

Resulting in sending e-mails (provided that you have configured it, see **Configure Mail** panel).

The output of the recording is a file of type sqlite under Projects / <Project Name> / Recordings (but the path can be changed from the Path Configuration panel)

We give a name to the recording and press Record, we must wait for the creation of the SQL file headers that depends on the number of recorded measures.

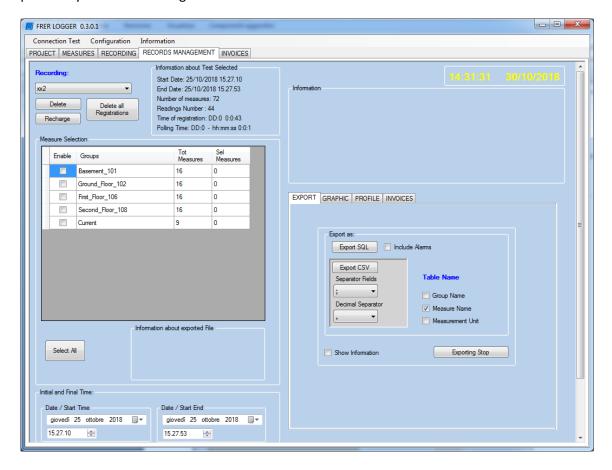
During the recording the number of the **Total Saved Samples**, the number of **Samples Saved** in this recording session, the **Size of the File** containing the table, the **Start Recording** and the **Elapsed Time** are constantly highlighted.



Pag./Page 38 di/of 61

9. RECORDS MANAGEMENT

Going to the **REGISTRATION MANAGEMENT** Tab, we can manage the registrations both those made previously and that in being.



Under Registrations will be placed all the recordings made and the one currently in progress.

The recording in progress or the last one will be opened by default and the information will be shown in the **Selected Recording Information** panel. If after selecting the file this panel remains empty, it means that the number of recordings is not sufficient to show the information.

At this point will be possible:

- Delete the record, using the **Delete** button:
 Only if the selected recording is the one in progress.
- Delete all registration (only if registration is not in progress)
- Export the record, by EXPORT Tab:
 - as SQL file, using the button Export SQL
 - as CSV file, using the button Export CSV





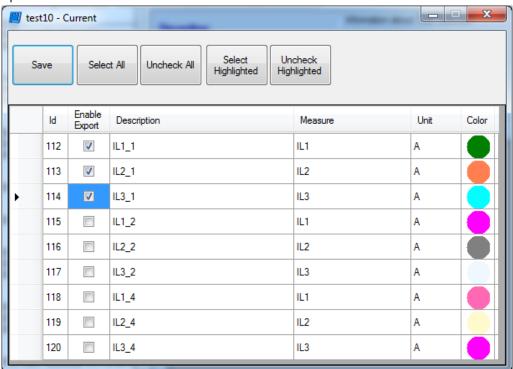
Pag./*Page* 39 di/of 61

- Draw the graph by **GRAPHIC** tab
- Draw the load Profile by **PROFILE** tab

With the **Reload** button, the Start and End date / time fields will be updated, useful while you are recording.

To **Export** or **Show** the graph we have to select the measures/measure from the selected record. Click with the right mouse button on the group (example Current) the following window will open:

We click with the right button of the mouse on the group (example Current) the following window will open:



We select the measures concerned and click on **Save**, we do the same with other groups and other measures

We note that the measures selected in the **Measurements selection** panel have changed.

In addition to which measures to export, we can also decide the start and end time of the exported file, by acting on the Date/Time start and End panels.





Pag./Page 40 di/of 61

At this point we are ready for the following operations:

EXPORT



Click on **Export CSV** or **Export SQL** to create the file. In the case of the CSV export it will be possible to decide the separator between the various fields and the separator for the decimals.

You can also export the alarms (by enabling the appropriate flag), in this case the size of the table will be double, because each column will be flanked by its alarm column.

So in the case of export as SQL, remember that to be compliant with the SQL standard, the maximum number of columns allowed is 2000, or 1000 measures with 1000

alarms, the FRERLOGGER can get up to the storage of 5000 measures (request to be made during the purchase of the license) but if you want to export the alarms ALSO, the exported SQL file will have at most 2500 measurements and 2500 alarms.

GRAPH

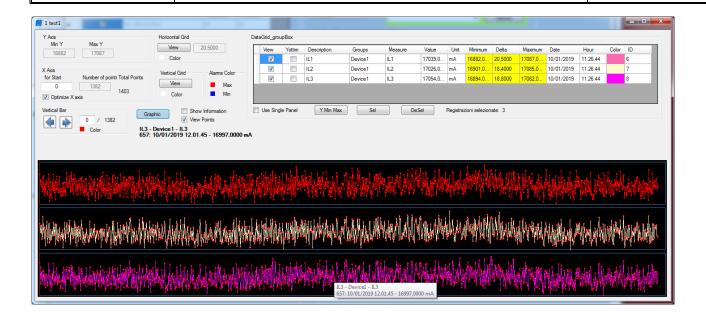


Clicking on Extract Points will extract all the points and show the following panel.





Pag./Page 41 di/of 61



In this panel the graphs relative to the exported measurements will be shown. They can be displayed in a single panel if the orders are comparable to each other or with different panels (selecting **Use Single Panel**).

If you have selected **Include Alarms**, the color of the graph changes if the measurement is alarmed: red above the threshold, blue below the threshold otherwise the selected color remains, the color of the graph can be selected from the cell below the **Color** label.

This extraction of points will be saved in the combo box next to the **Show Graph button**.

You can extract several measurements at a time, once the graph window is closed, you can recall the extraction by selecting it from the combo box and clicking on the **Show Graph button**.

By clicking on the **Delete list button**, all the extractions stored in the combo box will be deleted. Returning to the chart window. With **Horizontal Grid** and **Vertical Grid**: you can view the vertical grid and the horizontal grid.

Show points: By enabling this option and pressing on the graphic button, the red dots will appear in the graph showing where the measurement has changed, the various information is displayed under the **Graph button**.

Show information: Enabling this option it will be possible to display information about the chart on the **Information Panel**.

Column Yottim: this function is used to optimize the order of the single panel, this function is removed when only one panel is used.

Y Axis: This function can be used only when the Use Single Panel function is used,

through the **Y Min Max** button: the lower minimum and the highest maximum of all selected graphs will be selected and copied to the **Y Axis** panel.

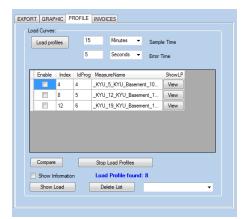
The **x Axis** Panel contains the starting point and the total number of points to display, with the function **Optimize Axis X** all the points that can be displayed inside the window will be displayed in the graph.





Pag./Page 42 di/of 61

PROFILE



Given that we have selected an increasing monotonic measurement (energy example), we set the sample time: that is, the time interval to be observed. For example, we have a 2 hour energy record, by setting the sample time to 15 minutes we will get 8 load profiles.

Click on **Load Profiles**, FRERLOGGER will display as many rows as the selected measures, we can then decide which profiles to display, with the **Show** button you will see the profile of that particular line, or you can select multiple profiles using the **Enable**

flag and then display them together using the **Compare** button.

Each profile represents the consumption of the magnitude under observation at that particular time.

Each profile represents the consumption of the measure under observation at that particular time. This Profile will be saved in the combo box next to the **Delete List** button.

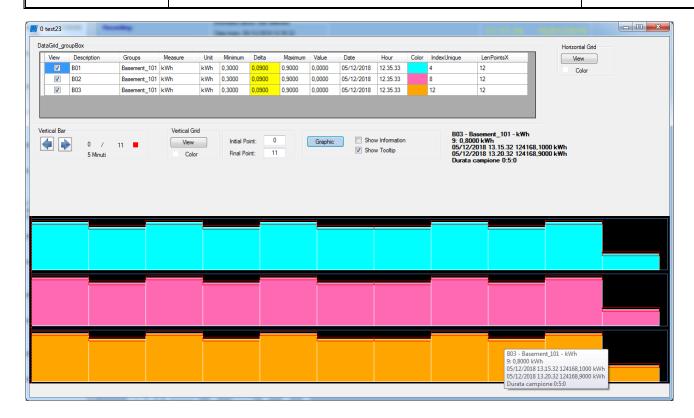
You can extract more profile, once the graph window is closed it will be possible to recall the profile by selecting it from the combo box and clicking on the **Show Lead** button.

By clicking on the **Delete List** button, you will delete all the Profiles stored in the combo box.

Once the **Show** or **Compare** button is pressed, the following panel will be displayed. With the **Graph** button the Load Curves will be displayed.



Pag./Page 43 di/of 61



Vertical Grid and Horizontal Grid: It is possible to display on the graph the two respective grids with the selectable color.

Show Tooltip: Creates points on the graph where the chart information can be read.

Start point and End point: With this function it is possible to set the number of histograms to be displayed on the graph.

Show information: Enabling this option it will be possible to display information about the chart on the information panel.

The vertical bar allows you to move to see all the histograms when it is not possible. You can change the color of the displayed graph using the **Color** column.

INVOICE



The rows of measures invoiced previously will be shown.

You can then recalculate the invoices from the registration, the invoice in pdf format will be saved under the **Invoices** folder.

Inside the pdf document the word **Recovered from the archive** will be highlighted to indicate an invoice recalculated a rear.

Select the measurement using the **Enable** Flag and press the **Billing** button.



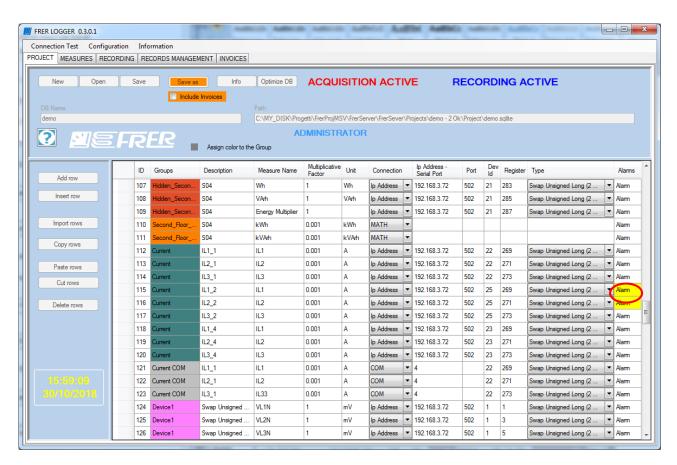
Pag./*Page* 44 di/*of* 61

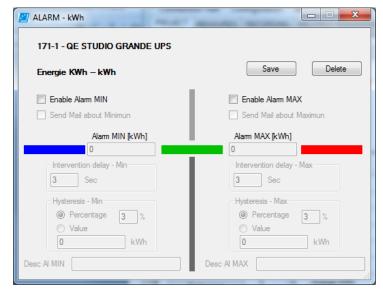
10. Optional Modules

Alarm Management

If you purchased the license key with **Alarm Management** or even in trial version, you can enable the Maximum or Minimum alarm for each measurement.

Supposing we have the following project:





Clicking with the right mouse button on the **Alarm** cell related to the measurement will open the alarm management window related to the measurement itself.

This is the alarm configuration window related to the measurement, the **maximum** and / or **minimum** alarm and the Intervention **Delay** and **Hysteresis** values can be enabled. Also you can enable the transmission of the email when the alarm has been reached, the mail will be sent even when the alarm will return.



lpm0241 4

Pag./Page 45 di/of 61

It is also possible to add the description for the Minimo and Massimo alarm, these will be used in the body of the email.

Once an alarm is enabled, the relative cell will be highlighted in yellow.

After saving and enabling an alarm, relevant cell will become yellow.

These configurations will be saved in the project.

Real Time Graph

If you have also purchased the sw module for the real-time graphs or in the case of evaluation version, you can draw the graph for the measures shown, see **View** and **View+** under the **MEASURES** tab.

Graph

If you have also purchased the sw module for the graphs or in the case of evaluation version, you can draw the graph for the measures stored, see **GRAPH** under the **RECORDS MANAGEMENT** tab.

Load Profile

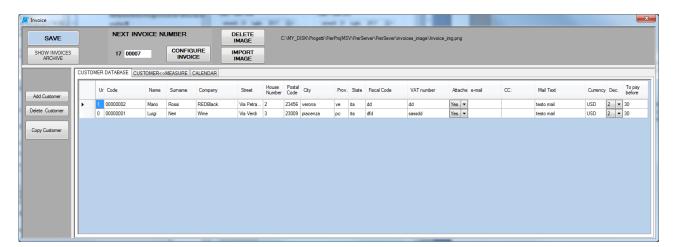
If you have also purchased the sw module for the graphs or in the case of evaluation version, you can draw the Profile for the measures stored, see **PROFILE** under the **RECORDS MANAGEMENT** tab.

Invoicing

Invoicing software module allows to assign daily fix costs and based on consumption costs for each project measurement. At the end of a determined time period, an invoice in PFD format (not editable) will be issued. Invoice can be sent automatically via e-mail to a, previously set, email address. Let's look at this SW Plug in detail.

Select **Invoice Config under Configuration** from the toolbar.

The following window will open



By pressing **IMPORT IMAGE** button, it is possible to select an image to be placed as invoicing Company Logo in the head of invoice. By pressing **DELETE IMAGE**, you will erase the image previously utilized from the database.



lpm0241 4

Pag./Page 46 di/of 61

The number of the invoice is progressive, but if you want is possible to set this number by the **NEXT INVOICE NUMBER** panel.

By pressing **SAVE** button, all the information about the invoice configuration will be saved within the database.

By pressing **SHOW INVOICES ARCHIVE** command, the following window will be open:



From this window you can reprint the PDF file for an old invoice already issued.

Select the row through the *Emission* column and press the **INVOICE CREATE** button, the file with the name followed by ARCHIVE will be created.

Close the Revenue Invoice from the Database window.

We go back to the **Invoicing** window, it consists of three TABS:

• **CUSTOMER DATABASE**: Every line represents a customer to which supply or service will be invoiced. A unique code, assigned by the system, defines every customer. It contains customer data, email address, email body, invoicing currency to be used, number of days within which the invoice must be due and possibility to attach invoice in the emai.

With the **Add Customer** button, the system will add a new customer by providing only the customer **Code**.

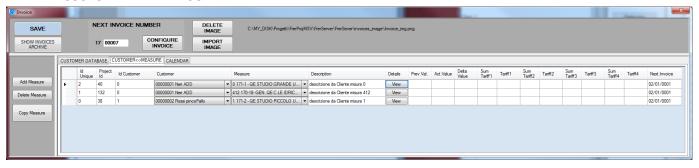
With the **Delete Customer** button, the system will erase a line previously selected.

With the **Copy Customer** button, the system will copy a previously selected line, however changing the customer **Code**



Pag./Page 47 di/of 61

CUSTOMER <-> MEASUREMENT



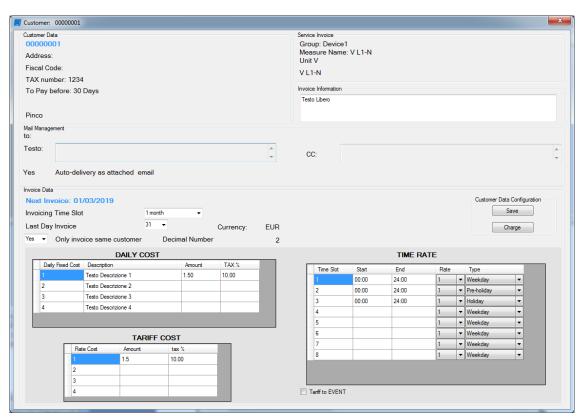
This TAB represents the link between customer and relevant measurement to be invoiced. It is possible to assign different measurements to a customer, but a measurement can not be assigned to different customers. Once customer and relevant measurement are selected, it is possible to add a description that will appear on the invoice.

With the **Add Measure** button, the system will add a new Customer<->Measure association. With the **Clear Measure** button, the system will erase a previously selected line. With the **Measure Copy** button, the system will copy a previously selected line.

Once the customer has been selected and the measure to be associated, add the description, this information will be shown in the invoice.

Press the **View** button to set up the invoice configuration

Below panel will appear:





lpm0241 4

Pag./Page 48 di/of 61

All the information relating to the customer and the invoiced service and the currency used are displayed.

Following parameters must be set:

Invoicing Time Slot: period of time in which invoice is calculated.

Last Day Invoice: Indicates the day of the month when the invoice will be issued

If more than one service are invoiced to a customer, it is possible to issue a single document only if invoicing period and invoice date are the same and command **Yes** has been previously selected in the combo box

For **DAILY COST**, **TARIFF COST** and **TIME RATE** see below.

The **Invoice Information** group allow to write specific communication for the customer that will be attached to the invoice itself.

Let's see in details invoicing process.

There are 3 TIME PERIODS called **Type**: **Weekday**, **Pre-holiday** and **Holiday** selectable from **Type** combo box under **TIME RATE**.

For each **Type** 24 hours covering must be guaranteed. Subsequent time intervals can be created within selected 24 our period with a minimum time of 15min, utilizing 4 **Rates**. Below example shows how a **Weekday type** has been divided into 4 time intervals to which a different tariff is assigned. **Pre-holiday type** has been divided into 3 time intervals which same tariff 1 has been assigned to. **Holiday type** has not been divided into further time intervals and tariff 4 is always assigned to it.

The **DAILY COST** table shows 4 fixed daily amounts of the supply, the description of the fixed cost will be used in the email if the amount is not empty. The daily fixed cost is therefore given by the sum of the four possible non-empty fixed costs.

The **TARIFF COST** table shows the 4 amounts of the rates including VAT.

The **Time Rate** table, indicates the amount payable on consumption of the invoice quantity, this cost uses the 4 tariffs and the different types: Weekday, Pre-holiday and Holiday.

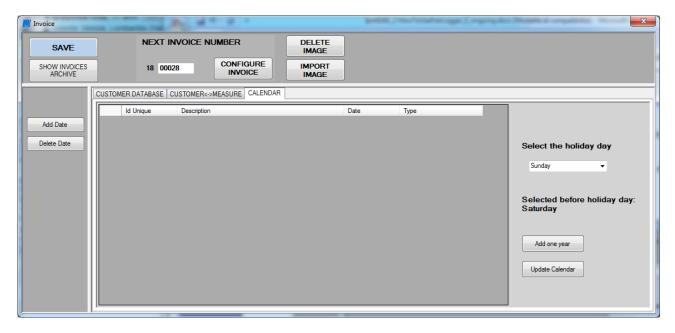
It is possible to use the **Tariff to EVENT** table, where the tariff change is not related to time but to event, always a modbus quantity that takes on a tabulated value.





Pag./Page 49 di/of 61

CALENDAR



On the right side of this window allows to set weekday be considered as a Holiday. Tool will automatically calculate the Pre-holiday period.

On the left side is also possible to **Add** also a specific religious, national or any type of Holiday or Pre-Holiday and so when assigning type to be set, tool will take into account if the selected date belongs to the date totatility which has been set into this window

With the **Add Data** button, the system will add a new row.

With the **Delete Data** button, the system will erase a line previously selected.

With the **Add One Year** button, the system will automatically generate 365 lines that the user will have to manage.

With the **Update Calendar** button, , the system updates the stored calendar with the current year.

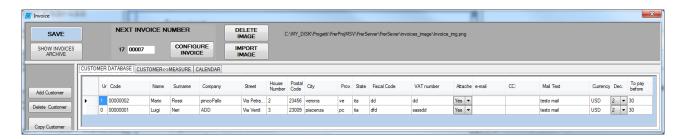
Invoicing begins when the registration is started and links have been created between Customer and Measure to be invoiced and above all we must remember to include the Measure within the registration

Let's see below setting parameters example:

Customer Database



Pag./Page 50 di/of 61



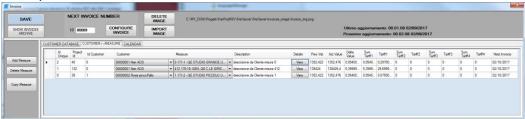
Customer-measurement pairing

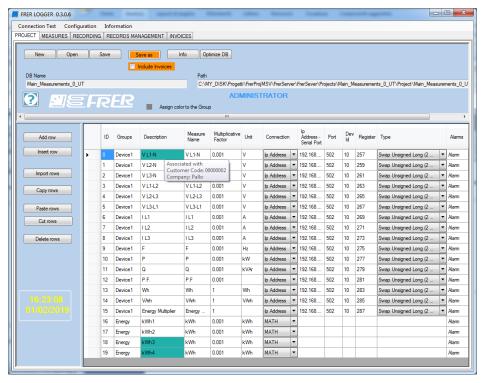


Start measurement recording

In **RECORDING** tab, no matter what storage time is, every 15sec invoicing measurements will be updated.

In **CUSTOMER<->MEASURE** tab date/time of next update is highlighted and for each tarrif the quantity totality to be invoiced, cost and next invoice emission date.





Once the **Invoice** panel is closed and/or the **SAVE** button is pressed, in the project panel the cells under the **Description** column will be colored, used in invoice and associated with customers.



lpm0241 4

Pag./Page 51 di/of 61

Issued Invoice example:



Invoice n: 1700024 year 2017

Invoice date: 02/09/2017 Customer Code: 00000002

Invoice Time Slot: 10/08/2017 - 01/09/2017

To Pay before: 30 Days INVOICE DATE

CUSTOMER:

Mr Mario Rossi -- Mail Fiscal Code: dd VAT number: dd pincoPallo Via Petrarca 2 23456 verona ve ita

SALES SERVICE: Client Description: measure 1

171-2 - QE STUDIO PICCOLO UPS

Invoiced total days: 22

DLY FIX COSTS	DAILY PRICE	TAXABLE	VAT Rate	VAT	TOTAL
Daily Fixed Cost T1	0,50 USD/day	11 USD	10,00 %	1,10 USD	12,10 USD
Testo Descrizione 2	1,6 USD/day	35,2 USD	2,1 %	0,74 USD	35,94 USD
Testo Descrizione 3	2,3 USD/day	50,6 USD	1,7 %	0,86 USD	51,46 USD
Testo Descrizione 4	3 USD/day	66 USD	2,7 %	1,78 USD	67,78 USD

TOTAL 162,80 USD	4,48 USD	167,28 USD
------------------	----------	------------

TARIFF	AMOUNT	PRICE	TAXABLE	VAT Rate	VAT	TOTAL
Rate 1	0,08900 kWh	12.50 USD/kWh	1,11 USD	4.00 %	0,04 USD	1,16 USD
TOTAL			1,11 USD		0,04 USD	1,16 USD

TOTAL SERVICE: Client Description: measure 1

TAXABLE: VAT: TOTAL: 163,91 USD (162,80 USD + 1,11 USD) 4,53 USD (4,48 USD + 0,04 USD) 168,44 USD

info fattura

TOTAL TAXABLE INVOICE:	163,91 USD
TOTAL VAT INVOICE:	4,53 USD
TOTAL DUE INVOICE:	168,44 USD

Invoice n: 1700024 year 2017 Fage 1

When recording is stopped, system will ask if issue of balance invoices is needed. In case of positive answer, tool will issue invoices that based on last consumption



Ipm0241 4

Pag./Page 52 di/of 61

Let's see a case in which: a customer has been assigned 2 measurements to be invoiced. These measurements can be inserted in same invoice, same invoice date and YES has been selected in Single invoice same customer combo box



Invoice n: 1700025 year 2017 (Balance)

Invoice date: 02/09/2017 Customer Code: 00000001

Invoice Time Slot: 02/09/2017 - 01/09/2017

To Pay before: 30 Days INVOICE DATE

CUSTOMER:

Mr Luigi Neri --Mail Fiscal Code: dfd VAT number: sassdd

ADD Via Verdi 3

23009 piacenza pc ita

SALES SERVICE: Client Description: measure 0

171-1 - QE STUDIO GRANDE UPS

Invoiced total days: 0

DLY FIX COSTS	DAILY PRICE	TAXABLE	VAT Rate	VAT	TOTAL
Daily Fixed Cost T1 Daily Fixed Cost T2 Daily Fixed Cost T3 Daily Fixed Cost T4	1,5 USD/day 0,5 USD/day	0 USD 0 USD 0 USD 0 USD	2,00 % 1,00 % 1 % 0,50 %	0,00 USD 0,00 USD 0,00 USD 0,00 USD	0,00 USD 0,00 USD 0,00 USD 0,00 USD

0,00 USD TOTAL 0,00 USD 0,00 USD

TARIFF	AMOUNT	PRICE	TAXABLE	VAT Rate	VAT	TOTAL
Rate 1	0,05700 kWh	5,50 USD/kWh	0,31 USD	10.00 %	0,03 USD	0,34 USD
Rate 2	0,00000 kWh	3.0 USD/kWh	0,00 USD	4.0 %	0,00 USD	0,00 USD
Rate 3	0,00000 kWh	2.3 USD/kWh	0,00 USD	2.0 %	0,00 USD	0,00 USD
Rate 4	0,00000 kWh	3.0 USD/kWh	0,00 USD	0 %	0,00 USD	0,00 USD
TOTAL			0,31 USD		0,03 USD	0,34 USD

TOTAL SERVICE: Client Description: measure 0 TAXABLE:

0,31 USD (0,00 USD + 0,31 USD) 0,03 USD (0,00 USD + 0,03 USD) VAT: TOTAL:

0,34 USD

info fattura

SALES SERVICE: Client Description: measure 412

170-18- GEN. QE C.LE IDRICA

Invoiced total days: 0

DLY FIX COSTS	DAILY PRICE	TAXABLE	VAT Rate	VAT	TOTAL
Daily Fixed Cost T1 Daily Fixed Cost T2 Daily Fixed Cost T3 Daily Fixed Cost T4	1,5 USD/day 0,5 USD/day	0 USD 0 USD 0 USD 0 USD	2,00 % 1,00 % 2,34 % 0,7 %	0,00 USD 0,00 USD 0,00 USD 0,00 USD	0,00 USD 0,00 USD 0,00 USD 0,00 USD
TOTAL		0,00 USD		0,00 USD	0,00 USD



Ipm0241_4

Pag./*Page* 53 di/*of* 61

0,00000 kWh	3.0 USD/kWh	0,00 USD	0 %	0,00 USD	0,00 USD
0,00000 kWh	2.3 USD/kWh	0,00 USD	2.0 %	0,00 USD	0,00 USD
0,00000 kWh	3.0 USD/kWh	0,00 USD	4.0 %	0,00 USD	0,00 USD
11,60000 kWh	5,50 USD/kWh	63,80 USD	10.00 %	6,38 USD	70,18 USD
AMOUNT	PRICE	TAXABLE	VAT Rate	VAT	TOTAL
	11,60000 kWh 0,00000 kWh	11,60000 kWh 5,50 USD/kWh 0,00000 kWh 3.0 USD/kWh	11,60000 kWh 5,50 USD/kWh 63,80 USD 0,00000 kWh 3.0 USD/kWh 0,00 USD	11,60000 kWh 5,50 USD/kWh 63,80 USD 10.00 % 0,00000 kWh 3.0 USD/kWh 0,00 USD 4.0 %	11,60000 kWh 5,50 USD/kWh 63,80 USD 10.00 % 6,38 USD 0,00000 kWh 3.0 USD/kWh 0,00 USD 4.0 % 0,00 USD

TOTAL SERVICE: Client Description: measure 412

63,80 USD (0,00 USD + 63,80 USD) 6,38 USD (0,00 USD + 6,38 USD) 70,18 USD

TAXABLE: VAT: TOTAL:

info fattura

TOTAL TAXABLE INVOICE: TOTAL VAT INVOICE: TOTAL DUE INVOICE:

64,11 USD 6,41 USD 70,52 USD

lpm0241_4



HOW TO USE FRERLOGGER

Pag./Page 54 di/of 61

Pdf file name format follows below method:

CCCCCCC_YYPPPPP_DDMM.pdf

Explanation:

CCCCCCC: Customer code

YY: Year last 2 digit

PPPPP: progressive number

DD: day **MM**: month

The file will be placed under the directory: <Project name> / Invoices / <Year> / <Month> /CCCCCCC_YYPPPPP_DDMM.pdf, example: demo / Invoices / 2018 / September / 00000001_1800019_0609.pdf

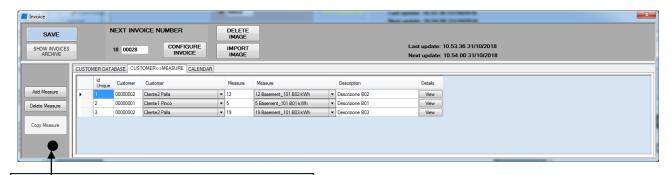
How to change/correct invoice values

If FRER LOGGER is recording:

Select the INVOICES tab from the main panel:



Select **Invoice Config** from the drop-down menu under Configuration, and select the **CUSTOMER**<->MEASURE tab.



Ctrl + q + double click with the left mouse button

Simultaneously press **Ctrl + q + double click with the left mouse button** under the **Copy Measure** button on the left of the panel, the following columns will appear:

Create Invoice, Initial Value, Previous Value, Current Value, Delta Value, Sum Band 1, Amount 1, Sum Band 2, Amount 2, Sum Band 3, Amount 3, Sum Band 4, Amount 4, Next Invoice, Invoice Date.

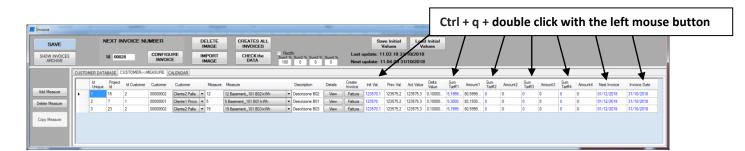


Pag./Page 55 di/of 61



The following buttons will also appear: **CREATE ALL INVOICES**, **CHECK the DATA**, **Save Initial Values**, **Load Initial Values**, Checkbox **Rectify** with four editable values.

By placing the mouse on the header of the columns: Initial Value, Sum Band 1, Sum Band 2, Sum Band 3, Sum Band 4, Next Invoice, Invoice Datell and simultaneously pressing **Ctrl + q + double click with the left mouse button** the text of the cells will become blue.



In this condition is possible to manually change the value of the cells. Once the value of the cell has been changed, press Enter on the keyboard after repositioning the mouse on the modified cell and click the right mouse button so that the new value is digested by the tool (this is very important). You can follow all the steps on the Information panel.

All changes can also be observed from the INVOICES tab from the main panel.

It is possible to save / load the initial values, for do this use the button.

With the **CHECK the DATA** button, the tool checks that the Actual Value, the Initial Value and the various Sums of Tariff are congruent with each other, the output panel will show all the information. In case of incongruity it will be possible to fix the problem by enabling **Rectify**, distributing the error on the four bands through a weight expressed as a percentage and clicking again **CHECK the DATA**.

Once all the checks have been completed, press Save to save all changes (this is very important).

To set all the columns back as not writable, place the mouse on the header of the modified columns and press Ctrl + q + double click with the left mouse button again, the text of the cells will turn black.

To hide the columns, position the mouse under the **Copy Measure** button and simultaneously press Ctrl + q + double click with the left mouse button.

Finally close the Invoice panel and reopen it from the main panel.

lpm0241 4



HOW TO USE FRERLOGGER

Pag./*Page* 56 di/*of* 61

Meaning of the columns:

Initial Value: Indicates the initial value of the measurement of the current invoice, represents the value of the start of registration or the start of a new invoice.

Previous Value: Indicates the value of the previous reading, maximum 30 minutes back, indicated as Last Update.

Current Value: Indicates the current maximum read value 15 minutes back.

Delta Value: Indicates the difference between Previous Value and Current Value

Sum Tariff1 + Sum Tariff2 + Sum Tariff 3 + Sum Tariff 4 = Current Value - Initial Value.

Amount1 = Sum Tariff 1 * Amount Cost Tariff 1

Amount2 = Sum Tariff 2 * Amount Cost Tariff 2

Amount3 = Sum Tariff 3 * Amount Cost Tariff 3

Amount4 = Sum Tariff 4 * Amount Cost Tariff 4

Next Invoice: Indicates the date of issue of the next invoice Invoice Date: Indicates the part date of the current invoicing

Additional information

Select Invoice Config under Configuration from the main panel.

If the FRER LOGGER is recording:

- It is not possible to delete a customer from the **CUSTOMER DATABASE**, if this customer is connected to a MEASURE (inside the **CUSTOMER <->MEASURE** tab)
- It is not possible to change the Measurement or the Customer in a line within the the CUSTOMER
 >MEASURE tab.

The following steps must be performed:

- 1. Delete the link Customer<->Measure: select the row and press **Delete Measure**
- 2. Confirm deletion from the MessageBox
- 3. Confirm if you want the balance invoice from the Message Box
- 4. FRERLOGGER will delete the association
- 5. Create a new link CUSTOMER<->MEASURE
- 6. Press **SAVE** to enhance the change
- It is possible to create a new **Customer** within **CUSTOMER DATABASE**, press **SAVE** to enhance the change.
- It is possible to create a new link **CUSTOMER<->MEASURE** within the **CUSTOMER<->MEASURE** tab Follow the following steps:
 - 1. Press Add Measure
 - 2. Select the **Customer** from the Customer combo box
 - 3. Select the **Measure** from the Measure combo box
 - 4. Press the **View** button under the Details column and fill the panel with the parameters, and then close the window
 - 5. To increase the value of the new link, press the **SAVE** button. Parameters: Initial Value, Previous Value, Current Value, Next Invoice and Invoice Date will be initialized to the **Next Update**.
- It is possible to delete a link **CUSTOMER<->MEASURE**:
 - 1. Select the **CUSTOMER<->MEASURE** panel
 - 2. Select the line/lines to be deleted

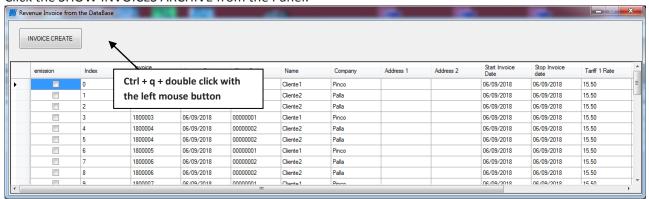


Pag./Page 57 di/of 61

- 3. Press Delete Measure
- 4. Confirm deletion from the MessageBox
- 5. Confirm if you want the balance invoice from the Message Box
- FRERLOGGER will delete the association(s)
- 7. Press the **SAVE** button to enhance the change

How to modify/correct the values of the stored invoices

Open the **Invoice** panel from **Configuration-> Invoice Config** Click the SHOW INVOICES ARCHIVE from the Panel.

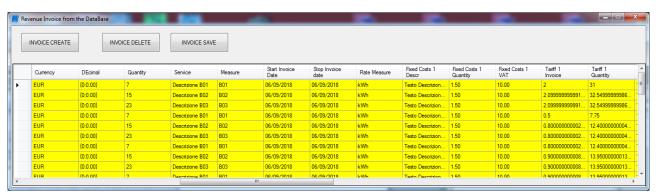


Normally, the invoices issued can not be modified due to security issues with the customer, but it may happen that there is a need to re-issue the invoice with some modified field.

So let's position the mouse next to the **CREATE INVOICES** button and simultaneously press Ctrl + q + double click with the left mouse button

The panel will show all the columns used to generate the invoice file.

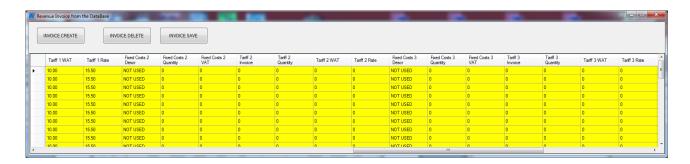


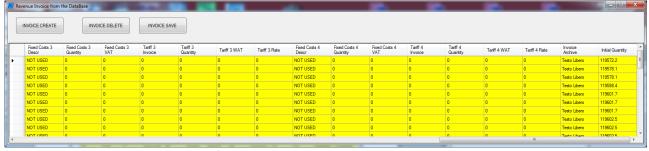




lpm0241_4

Pag./*Page* 58 di/*of* 61





All the yellow columns can be modified by the user, the tool will not check the changed values.

By selecting the square under the **Emission** column, you can:

- Reissue the invoice with the **INVOICE CREATE** button
- Delete the invoice from the database with INVOICE DELETE
- Save the modified invoice in the database with INVOICE SAVE

Pressing **Ctrl + q + double click with the left mouse** button again next to the **CREATE INVOICE** button to back to the protected mode.



Pag./Page 59 di/of 61

11.Other

SQlite Expert personal

We close everything through the X of the FRERLOGGER panel, all previously opened windows will be closed.

Open File Manager and move under the Tools folder, Open the file SQLiteExpertPersSetup.txt. Here are indicated all information to downlod the **sqliteexpert** from internet. This tool help the check and verify the project spawned by FRERLOGGER.

You should download and install sqliteexpert.

Once installed **sqliteexpert** on your computer, open File Manager and move under the Projects/< Project Name>/Project/<ProjectName>.sqlite, the various SQL files generated by FRERLOGGER can be opened using SQLiteExpert Personal.

Double click on <ProjectName>.sqlite, and the tool SQlite Expert personal will be open.

e <u>D</u> atabase <u>T</u> able <u>V</u> iew <u>S</u> QI	8 I Transaction Tool	s Heln				
			e @ [0 (<u> </u>
abase: one_completo Table: m	10	$\overline{}$		\\one_completo.s	qlite SQLite L	ibrary: [internal] version 3.8.1
one_completo	🚱 Database 💈	SQL 🛅 Data 🔣	Design 📋 DDL			
AlarmConf Conf	H 44 4 1	+ +	v x ~ * *	2 Refresh	1	
MailConf		ا کا کا تا اگ				
MathFuncConf	RecNo ID	Date	Hour0_D	1_i19_VL1N_mV	_1_D1_i19_VL2N_mV	_2_D1_m_SL1L2_mV
ModBusConf	₹		Clic	here to define a filt	er	
Project	> 1	0 04/01/2016	13.38.51	238015	238875	476890
prova1	2	1 04/01/2016	13.38.53	237980	238940	476920
prova1_AL	3	2 04/01/2016	13.38.54	238011	238773	476784
RecStatus	4	3 04/01/2016	13.38.55	237843	238784	476627
- SerialPortConf	5	4 04/01/2016	13.38.56	237928	238843	476771
Users Users	6	5 04/01/2016	13.38.57	238052	238896	476948
	7	6 04/01/2016	13.38.59	238147	238946	477093
	8	7 04/01/2016	13.39.00	238101	238806	476907
	9	8 04/01/2016	13.39.01	238047	238927	476974
	10	9 04/01/2016	13.39.02	238091	238800	476891
	11	10 04/01/2016	13.39.04	238028	238927	476955
	12	11 04/01/2016	13.39.05	238038	238799	476837
	13	12 04/01/2016	13.39.06	237981	238883	476864
	14	13 04/01/2016	13.39.07	237456	238234	475690
	15	14 04/01/2016	13.39.09	238042	238821	476863
	16	15 04/01/2016	13.39.10	238041	238860	476901
	17	16 04/01/2016	13.39.11	238059	238866	476925
	18	17 04/01/2016	13.39.12	237972	238844	476816
	19	18 04/01/2016	13.39.14	238703	239404	478107
	20	19 04/01/2016	13.39.15	238256	239076	477332
	21	20 04/01/2016	13.39.16	238086	238790	476876
	22	21 04/01/2016	13.39.17	238135	238978	477113
	23	22 04/01/2016	13.39.19	238781	239539	478320
	24	23 04/01/2016	13.39.20	238019	238876	476895
	25	24 04/01/2016	13.39.21	238152	238927	477079
	26	25 04/01/2016	13.39.22	237873	238639	476512
	27	26 04/01/2016	13.39.23	238572	239488	478060
	28	27 04/01/2016	13.39.25	238290	239093	477383
	29	28 04/01/2016	13.39.26	237489	238254	475743
	30	29 04/01/2016	13.39.27	238226	239046	477272
	<filter empty="" is=""></filter>					Customize
	<					>

All these tables are related to the project, doesn't modify them.



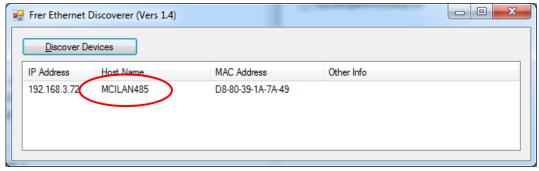


Pag./Page 60 di/of 61

Move to the folder Recordings, here are stored all the files related to the recordings <File_name> .sqlite and the related alarms <File Name> AL.sqlite.

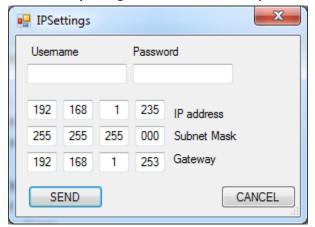
Frer Ethernet Discoverer

If you are using the FRER MCLAN485 to connect devices to the 485 network. You have to make sure that the subnet of the MCLAN is equal to the subnet used by the PC, where the FRERLOGGER is running. Run the Frer Ethernet Discoverer_ 14.exe tool under Tools



All MCLANs in the network will be displayed.

Launch the ipconfig command from a dos panel and locate the subnet of the PC.



Change the subnet of the MCLANs; By clicking on the MCLAN line, the following window will be open: Change the **IP address**, write Username and Password (default: **admin** and **password**) and click **SEND**.

At this point always from the dos panel, try the **ping** command to reach all MCLANs.

When all MCLANs are reachable from a PC, open FRERLOGGER and try to test the individual devices connected via 485, using the panelTCP / IP read Holding Registers.

How to associate the sqlite files to FRERLOGGER

This procedure explains how to associate the sqlite file to FRERLOGGER, in this way with the double-clik on the sqlite file will be launched FRERLOGGER and not **sqliteexpert**.

By pressing the right mouse button on the project file: FRERLOGGER/Projects/< Project Name>/Project/<ProjectName>.sqlite , select "Open with ...", select "Default Program", click Browse and select FRERLOGGER/bin/release/FRERLOGGER.exe.

Check the "Always use the selected program to open..." if you want to associate ALWAYS sqlite file with the FRERLOGGER.

How to launch the FRERLOGGER in Debug mode

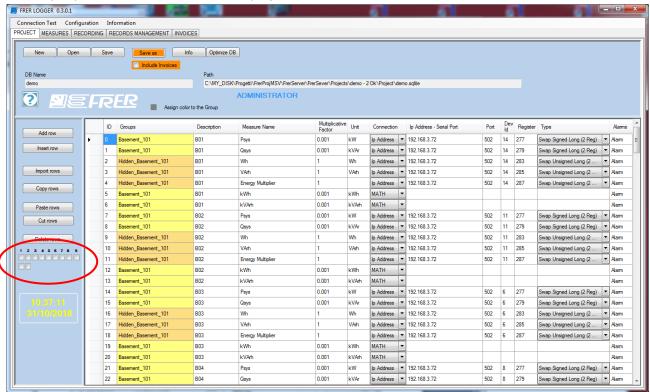
Launching the batch file under **FRERLOGGER/bin/release/demo.batch**, FRERLOGGER will be launched in debug mode.





Pag./Page 61 di/of 61

In this way FRERLOGGER present some checkboxes that once marked bring additional information within the output panel about the status of the project.



Moving with the mouse on the checkboxes from # 1 to # 11 will appear information on their use:

- 1. Show information about Device
- 2. Show information about Mathematical measurements
- 3. Show information about Loading the project
- 4. Show information about About the acquisition time
- 5. Show information about Tables
- 6. Show information about during the changing of the project measures
- 7. Show information about measures of the individual devices in real time
- 8. Show the value sent to device
- 9. Update billing measures every Minute
- 10. Show information during Queries creation
- 11. Show information about the invoice date

To make the checkboxes appear you can use the combination **Ctrl + q + double click on the left mouse** button under the **Delete rows** button, the same way to make them disappear.

To observe other columns of the project use the combination **Ctrl + b + double click of the left mouse** button under the **Delete rows** button, the same way to make them disappear