DEIF

-power in control

CE

DESIGNER'S REFERENCE HANDBOOK

LAN Server for Energy and Power meters AEM and APM with Modbus interface

- Technical reference

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1. About this document

This chapter includes general user information about this handbook concerning the general purpose, the intended users and the overall contents and structure.

General purpose

This document describes the usage of the LAN Server used along with a DEIF energy meter or power meter.

Intended users

The document is mainly intended for the person responsible for the unit parameter setup and installation. In most cases, this would be a panel builder designer. Naturally, other users might also find useful information here.

Contents/overall structure

The document is divided into chapters and in order to make the structure of the document simple and easy to use, each chapter will begin from the top of a new page. The following will outline the contents of each of the chapters.

About this document

This first chapter includes general information about this Designer's Reference handbook as a document. It deals with the general purpose and the intended users of the document. Furthermore, it outlines the overall contents and structure of the document.

Warnings and legal information

The second chapter includes information about general legal issues and safety precautions relevant in the handling of DEIF products. Furthermore, this chapter will introduce the note and warning symbols, which will be used throughout the handbook.

First part

The first part of this document describes the front panel, Modbus TCP/IP, DynDNS, DHCP FTP and SNMP functionality.

Second part

The second part of this document describes the web browser of the LAN Server.

2. Warnings and legal information

This chapter includes important information about general legal issues relevant in the handling of DEIF products. Furthermore, some overall safety precautions will be introduced and recommended. Finally, the highlighted notes and warnings, which will be used throughout this handbook, are presented.

Legal information and responsibility

DEIF takes no responsibility for installation. If there is any doubt about how to install or operate the product, the company responsible for the installation or the operation must be contacted.

The units are not to be opened by unauthorised personnel. If opened anyway, the warranty will be lost.

Electrostatic discharge awareness

Sufficient care must be taken to protect the terminals against static discharges during the installation. Once the unit is installed and connected, these precautions are no longer necessary.

Safety issues

Installing the unit implies work with dangerous currents and voltages. Therefore, the installation should only be carried out by authorised personnel who understand the risks involved in working with live electrical equipment.

Be aware of the hazardous live currents and voltages. Do not touch any AC measurement or supply inputs as this could lead to injury or death.

Definitions

Throughout this document, a number of notes and warnings will be presented. To ensure that these are noticed, they will be highlighted in order to separate them from the general text.

Notes

The notes provide general information which will be helpful for the reader to bear in mind.

Warnings

The warnings indicate a potentially dangerous situation which could result in death, personal injury or damaged equipment, if certain guidelines are not followed.

3. Front panel description

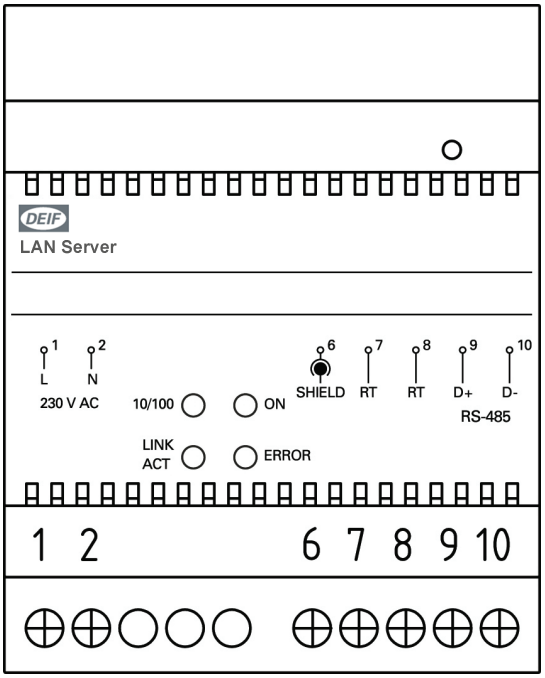
LED functionality

LINK ACT (Yellow LED):	Blinking means link activity
10/100 (Green LED):	This LED is turned on (steady state) if LAN is communicating at 100 Mbit/s, turned off if LAN is communicating at 10 Mbit/s
ON (Green LED):	Power supply is turned on
ERROR(Red LED):	This is turned on if an error occurs in LAN coupler. It is also turned on during boot phase.

Reset push-button functionality
The reset push-button is only active when the ERROR LED is on, during a power up of the LAN Server.

To restore communication settings to default:
Hold the reset push-button pressed for 3 seconds when the ERROR LED is on.

To restore administrator and user name passwords to default:
Hold the reset push-button pressed up to 10 seconds when the ERROR LED is on. When the ERROR LED is turned off, the network parameters are reset to default values.



4. Modbus/TCP

The purpose of the Modbus/TCP is to provide a direct interface between the TCP/IP network and the Modbus database that holds the data from the meters connected to the LAN Server by Modbus interfaces. In this task, the LAN Server only has a gateway role, the Modbus requests received on the TCP/IP are simply forwarded to the serial line, and the relative answers are sent back on the TCP/IP. No check is made on the correctness of the requests and/or the answers, except as described below.

Modbus over serial line

The LAN Server provides an interface to the meters via a RS485 serial bus implementing the Modbus protocol with the following features:

- Protocol Modbus
- Transmission Mode RTU & ASCII
- Speed 1200/2400/4800/9600/19200/38400 baud
- Data format 8 data bits, even/odd/no parity, 1/2 stop bit(s)
- Maximum slaves 32 (limited by EIA RS-485 standard)

The LAN coupler continuously polls all the slaves configured and fills the internal database. The data is made available in the HTTP interface and (if required) stored in a local SD-card solid state memory support.

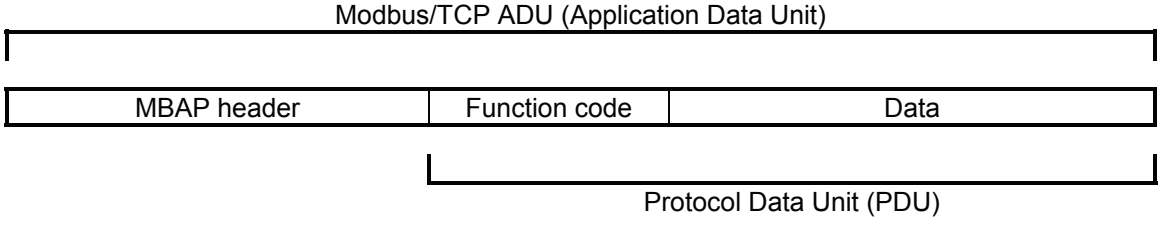
Connection management

According to the Modbus/TCP specification, the LAN Server reserves the 502 TCP port to Modbus communication. Additionally, another TCP port can be configured in the "Settings" page of the internal website to give the possibility to the user to parameterise the Modbus port number (the 502 TCP port remains still available). The connection can be either closed after every transaction or kept open between transactions. The latter option is preferred, in accordance with the Modbus/TCP specification.

Data processing

The Modbus/TCP task in the LAN Server waits to receive from the TCP a Modbus/TCP Application Data Unit (ADU), checks and manages the data in the MBAP header (Modbus Application Protocol header), extracts the PDU and, if the function code matches with those implemented, executes the function. If the function is performed with success, the Modbus/TCP task arranges the response data, adds a correct MBAP header and replies on the TCP protocol. If the function fails, an error message conform to the Modbus protocol is sent on the TCP protocol.

Modbus/TCP packet



Modbus mode

The only supported mode of the Modbus/TCP is RTU. Modbus ASCII is not supported.

Slave addressing

As required by the Modbus/TCP specification, the address of the slave is defined by the unit identifier field in the MBAP header.

ASCII protocol management

As previously described (see §3), the serial line protocol can be configured either ASCII or RTU. In both cases, the Modbus/TCP PDU must be RTU. The on-the-fly translation RTU/ASCII and vice versa, if needed, is automatically performed by the serial Modbus task.

Message checks

Although, as previously described, the processing does not apply to the content of the PDU, some minimal checks are required for the correct message exchange. They are:

- Check on the maximum length of the data field (limited to 255 bytes), to avoid the overflow of the communication buffer
- Check of the content of the protocol identifier field in the MBAP header (0 for Modbus)
- Check of the consistency of the length field in the MBAP header with the length of the received data
- Check of the error check field (and the correct framing if ASCII mode) on the response, to ensure the correctness of the message

If any of the above checks fail, as in case of timeout, the current exchange is aborted and no response is returned to the client.

Access to the slaves

Interleaving with internal polling

The exchange of Modbus/TCP messages on the serial bus is shared with those produced by the normal polling task that continuously queries the configured slaves. An incoming request from the Modbus/TCP must wait for completion of the exchange in progress before being executed. After the completion of a Modbus/TCP exchange, any other request received immediately must await the execution of an internal poll message to be served. This behavior leads to a slowdown in communications compared to the theoretical limit; the only way to avoid this is to operate in a pure "gateway" mode removing all devices in the "Configuration" page of the internal website, although this choice prevents access to the slaves data by the internal site and the data storage.

Functions and slaves management

Since the Modbus/TCP policy is to forward messages to the serial line without interaction, there are no limits on the Modbus functions that can be used, and the client must be careful to use a function that the slave can understand. Likely, there are no limits on the slaves that can be addressed.

Implemented functions

The interface only supports two types of commands, one for reading the register values, one for writing the configuration registers.

Read holding registers (function code 03)

This function code is used to read the contents of a contiguous block of holding registers (1 to 125 registers) in a remote device. The request frame specifies the starting register address and the number of registers.

Write single register (function code 06)

This function code is used to write a single holding register in a remote device. The request specifies the address of the register to be written. The normal response is an echo of the request, returned after the register contents have been written.

Write multiple registers (function code 10_h)

This function code is used to write a block of continuous registers (1 to 125 registers) in a remote device. The requested written values are specified in the request data field. Data is packed as two bytes per register. The normal response returns the function code, starting address, and quantity of registers written.

Message checks

As requested by the Modbus protocol, there are three kinds of possible responses:

- If no error occurs in a properly received Modbus/TCP ADU, the data field of the response to the client contains the data requested.
- If an error is found in the MBAP header or the data length doesn't match the length field in the MBAP header, no response is sent.
- If an error is found in the PDU, a Modbus exception response is sent. The possible exception codes are the following:
    - 01 – Illegal function. The function code in the request is different from those managed (03, 06, 10_h).
    - 02 – Illegal data address. The request refers to an address not allowed.
    - 03 – Illegal data value. The request tries to write a value not allowed.

5. Modbus registers

The LAN Gateway collects the data received by the infrared port and fills an internal database that can be remotely read by the Modbus/TCP protocol.

Because of the limited size of a Modbus frame, not all the internal registers can be sent on a single reading request. This means that a complete snapshot can only be acquired performing more (three) read holding registers calls with different starting address.

Example:

poll nr. 1	**start 4099**	**nr. of registers 100**
poll nr. 2	**start 4197**	**nr. of registers 100**
poll nr. 3	**start 4297**	**nr. of registers 10**

Internal registers

This is the complete list of the internal registers.

Register Address	Designation	Three phase	Single phase	
4099	Device type	x	x	
4100	Firmware version	x	x	
4101	Range overflow alarm	x	x	
4102	Running tariff	x	x	
4104	PID (Product Identification) bytes 1 and 2	x	x	General reading registers
4105	PID – bytes 3 and 4	x	x	
4106	PID – bytes 5 and 6	x	x	
4107	PID – bytes 7 and 8	x	x	
4108	PID – bytes 9 and 10	x	x	
4109	PID – bytes 11 and 12	x	x	
4110	PID – bytes 13 and 14	x	x	
4111…4116	Not used	x	x	Writing registers
4117	Value format	x	x	
4118	Reset energy counters command	x	x	
4119…4122	Active Energy 1st phase T1, imp (kWh)	x	x	
4123…4126	Active Energy 2nd phase T1, imp (kWh)	x		
4127…4130	Active Energy 3rd phase T1, imp (kWh)	x		
4131…4134	Active Energy Σ T1, imp (kWh)	x		
4135…4138	Active Energy 1st phase T2, imp (kWh)	x	x	
4139…4142	Active Energy 2nd phase T2, imp (kWh)	x		
4143…4146	Active Energy 3rd phase T2, imp (kWh)	x		
4147…4150	Active Energy Σ T2, imp (kWh)	x		
4151…4152	Active Power 1st phase (kW)	x	x	
4153…4154	Active Power 2nd phase (kW)	x		
4155…4156	Active Power 3rd phase (kW)	x		
4157…4160	Active Power Σ (kW)	x		
4161…4164	Active Energy 1st phase T1, exp. (kWh)	x	x	
4165…4168	Active Energy 2nd phase T1, exp. (kWh)	x		
4169…4172	Active Energy 3rd phase T1, exp. (kWh)	x		
4173…4176	Active Energy Σ T1, exp. (kWh)	x		Reading quantities registers
4177…4180	Active Energy 1st phase T2, exp. (kWh)	x	x	
4181…4184	Active Energy 2nd phase T2, exp. (kWh)	x		
4185…4188	Active Energy 3rd phase T2, exp. (kWh)	x		
4189…4192	Active Energy Σ T2, exp. (kWh)	x		
4193…4196	Reactive Energy 1st phase T1, imp (kVArh)	x	x	
4197…4200	Reactive Energy 2nd phase T1, imp (kVArh)	x		
4201…4204	Reactive Energy 3rd phase T1, imp (kVArh)	x		
4205…4208	Reactive Energy Σ T1, imp (kVArh)	x		
4209…4212	Reactive Energy 1st phase T2, imp (kVArh)	x	x	
4213…4216	Reactive Energy 2nd phase T2, imp (kVArh)	x		
4217…4220	Reactive Energy 3rd phase T2, imp (kVArh)	x		
4221…4224	Reactive Energy Σ T2, imp (kVArh)	x		
4225…4228	Reactive Energy 1st phase T1, exp (kVArh)	x	x	
4229…4232	Reactive Energy 2nd phase T1, exp (kVArh)	x		
4233…4236	Reactive Energy 3rd phase T1, exp (kVArh)	x		
4237…4240	Reactive Energy Σ T1, exp (kVArh)	x		
4241…4244	Reactive Energy 1st phase T2, exp. (kVArh)	x	x	

4245…4248	Reactive Energy 2nd phase T2, exp. (kVArh)	x	
4249…4252	Reactive Energy 3rd phase T2, exp. (kVArh)	x	
4253…4256	Reactive Energy Σ T2, exp. (kVArh)	x	
4257…4258	Reactive Power 1st phase (kVAr)	x	x
4259…4260	Reactive Power 2nd phase (kVAr)	x	
4261…4262	Reactive Power 3rd phase (kVAr)	x	
4263…4266	Reactive Power Σ (kVAr)	x	
4267…4268	Voltage L1-N (V)	x	x
4269…4270	Voltage L2-N (V)	x	
4271…4272	Voltage L3-N (V)	x	
4273…4274	Voltage L1-L2 (V)	x	
4275…4276	Voltage L2-L3 (V)	x	
4277…4278	Voltage L3-L1 (V)	x	
4279…4280	Phase1 current (A)	x	x
4281…4282	Phase2 current (A)	x	
4283…4284	Phase3 current (A)	x	
4285…4286	Apparent Power phase1 (kVA)	x	x
4287…4288	Apparent Power phase2 (kVA)	x	
4289…4290	Apparent Power phase3 (kVA)	x	
4291…4294	Apparent Power Σ (kVA)	x	
4295…4296	Power Factor cos phi phase1	x	x
4297…4298	Power Factor cos phi phase2	x	
4299…4300	Power Factor cos phi phase3	x	
4301…4302	Power Factor cos phi Σ	x	
4303…4304	Frequency (Hz)	x	x

Interface and counter types

Depending on the type of counter connected to the LAN Server, you have a different set of registers at your disposal.
In the table above, you can see four columns where all the possible combinations are listed:

AEM 380/305 Three-phase counter; energy and power quantities on all phases.

APM 380/305 Three-phase counter, energy and power quantities on all phases.

AEM 180 Single-phase counter; energy and power quantities on a single phase.

Anyway, all the registers can always be read but if you try to access a register not supported in the combination counter-interface shown above, you will get a value of 0.
Example: if you try to read the register 4231 (Active Energy Σ T1, imp (kWh)) when you have a single-phase counter, you will always get a value of 0.

General reading registers

This family of registers store general information about the interface.
All the registers are always available regardless of the counter you have.

Register	Designation	Description
4099	Device type	Code that identify the combination interface-counter 0 No communication with the counter on the IR port 2 Three-phase Basic 4 Single-phase Basic
4100	Firmware version	Version of the interface firmware
4101	Range overflow alarm	The register is set by the counter if it has the detected a value over the voltage or the current nominal threshold. The lowest order byte of the register is bit-coded as follows: N.U.|N.U|OFV3|OFI3|OFV2|OFI2|OFV1|OFI1 Where: OFV Voltage overflow (on phase 1, 2 and 3) OFI Current overflow (on phase 1, 2 and 3) N.U. Not Used
4102…4103	Running tariff	0 Tariff 1 is currently in use 1 Tariff 2 is currently in use
4104…4110	PID	Part number identification string (a maximum of 14 bytes)

Writing registers

This set of registers is for the interface configuration. One register (4118) is dedicated to request the reset of the counters internal energy registers.
All the registers are always available regardless of the counter you have.

Any change to the registers 4117 and 4118 is immediately effective.

Register	Designation	Description	
4117	Value format	0	Quantities coded as floating point 32 bit (low byte first)
		1	Quantities coded as integers (see par. 9.4.1)
4118	Reset energy counters command	1	Reset active energy registers
		2	Reset reactive energy registers
		3	Reset all the registers

Variables format
Depending on the value of the register 4117, the values can be read in two different formats:

- As single precision floating-point, conform to IEEE 754 standard (reg. 4117 = 0). In this case, a value fills two contiguous registers (lower address = MSB); for values with size = 4 registers, the value occupies the first and second register, the third and fourth are read as zero.
- As one or two 32 bit integer (reg. 4117 = 1). For values with size = 2 registers, the value of the integer stored in two contiguous registers (lower address = MSB) must be divided by a factor of 10000 to rebuild the original value. For values with size = 4 registers, the value of the integer stored in the first two registers must be multiplied by a factor of 10^9 (1000000000); then it must be added to the value of the integer stored in the following two registers; finally, the result must be divided by 10000.

The register 4118, is a "pass-through" register because the final target of the command is the counter connected to the interface. If you change the register value, a command will be given to the counter in order to call a reset of the counter internal registers.
All the other writing registers modify the interface behaviour.

Reading quantities

These registers hold the electrical quantities controlled by the counter connected to the interface. As stated in internal registers, the available quantities depend on the counter you have. Three-phase counter or single-phase counter.

Register address	Designation	Three phase	Single phase	Size
4119…4122	Active Energy 1st phase T1, imp. (kWh)	x	x	4
4123…4126	Active Energy 2nd phase T1, imp. (kWh)	x		4
4127…4130	Active Energy 3rd phase T1, imp. (kWh)	x		4
4131…4134	Active Energy Σ T1, imp. (kWh)	x		4
4135…4138	Active Energy 1st phase T2, imp. (kWh)	x	x	4
4139…4142	Active Energy 2nd phase T2, imp. (kWh)	x		4
4143…4146	Active Energy 3rd phase T2, imp. (kWh)	x		4
4147…4150	Active Energy Σ T2, imp. (kWh)	x		4
4151…4152	Active Power 1st phase (kW)	x	x	2
4153…4154	Active Power 2nd phase (kW)	x		2
4155…4156	Active Power 3rd phase (kW)	x		2
4157…4160	Active Power Σ (kW)	x		4
4161…4164	Active Energy 1st phase T1, exp. (kWh)	x	x	4
4165…4168	Active Energy 2nd phase T1, exp. (kWh)	x		4
4169…4172	Active Energy 3rd phase T1, exp. (kWh)	x		4
4173…4176	Active Energy Σ T1, exp. (kWh)	x		4
4177…4180	Active Energy 1st phase T2, exp. (kWh)	x	x	4
4181…4184	Active Energy 2nd phase T2, exp. (kWh)	x		4
4185…4188	Active Energy 3rd phase T2, exp. (kWh)	x		4
4189…4192	Active Energy Σ T2, exp. (kWh)	x		4
4193…4196	Reactive Energy 1st phase T1, imp. (kVArh)	x	x	4
4197…4200	Reactive Energy 2nd phase T1, imp. (kVArh)	x		4
4201…4204	Reactive Energy 3rd phase T1, imp. (kVArh)	x		4
4205…4208	Reactive Energy Σ T1, imp. (kVArh)	x		4
4209…4212	Reactive Energy 1st phase T2, imp. (kVArh)	x	x	4
4213…4216	Reactive Energy 2nd phase T2, imp. (kVArh)	x		4
4217…4220	Reactive Energy 3rd phase T2, imp. (kVArh)	x		4
4221…4224	Reactive Energy Σ T2, imp. (kVArh)	x		4
4225…4228	Reactive Energy 1st phase T1, exp. (kVArh)	x	x	4
4229…4232	Reactive Energy 2nd phase T1, exp. (kVArh)	x		4
4233…4236	Reactive Energy 3rd phase T1, exp. (kVArh)	x		4
4237…4240	Reactive Energy Σ T1, exp. (kVArh)	x		4
4241…4244	Reactive Energy 1st phase T2, exp. (kVArh)	x	x	4
4245…4248	Reactive Energy 2nd phase T2, exp. (kVArh)	x		4
4249…4252	Reactive Energy 3rd phase T2, exp. (kVArh)	x		4
4253…4256	Reactive Energy Σ T2, exp. (kVArh)	x		4
4257…4258	Reactive Power 1st phase (kVAr)	x	x	2
4259…4260	Reactive Power 2nd phase (kVAr)	x		2
4261…4262	Reactive Power 3rd phase (kVAr)	x		2
4263…4266	Reactive Power Σ (kVAr)	x		4
4267…4268	Voltage L1-N (V)	x	x	2
4269…4270	Voltage L2-N (V)	x		2

4271…4272	Voltage L3-N (V)	x		2
4273…4274	Voltage L1-L2 (V)	x		2
4275…4276	Voltage L2-L3 (V)	x		2
4277…4278	Voltage L3-L1 (V)	x		2
4279…4280	Phase1 current (A)	x	x	2
4281…4282	Phase2 current (A)	x		2
4283…4284	Phase3 current (A)	x		2
4285…4286	Apparent Power phase1 (kVA)	x	x	2
4287…4288	Apparent Power phase2 (kVA)	x		2
4289…4290	Apparent Power phase3 (kVA)	x		2
4291…4294	Apparent Power Σ (kVA)	x		4
4295…4296	Power Factor cos phi phase1	x	x	2
4297…4298	Power Factor cos phi phase2	x		2
4299…4300	Power Factor cos phi phase3	x		2
4301…4302	Power Factor cos phi Σ	x		2
4303…4304	Frequency (Hz)	x	x	2

T1/T2 stands for Tariff 1 and tariff 2.
The symbol Σ indicates a total amount (for example: the Reactive Power Σ (kVAr) value is the total reactive power on the three phases. It is of course significant only if you have a three-phase counter connected to the interface).

Imp./exp. (imported/exported) indicates whether the energy is generated (exported) or consumed (imported).

Note that because a Modbus register is 2 bytes long, all the quantities are split on more registers (4 bytes: 2 registers; 8 bytes: 4 registers).

Notice: With this configuration (register 4117=0), all the quantities are coded as 32 bit floating point values. For each register, the first byte contains the low order bits and the second contains the high order bits. If you want to switch to an integer representation, you have to change the value of the configuration register 4117 to 1 (see writing registers).

Quantities coded as integer values

While the notation using floating point 32 bit values is unambiguous, when you switch to the integer notation, something must be explained in order to allow the correct interpretation of original value.

Quantities 4 bytes long

The integer value stored in these registers (2), must be divided by a factor of 10000 to rebuild the original value.

Example:
Active power 1st phase
Integer value: 122447
Original value: 122447/10000=12.2447 (kW)

Quantities 8 bytes long

The rebuilding of the original value is slightly more complicated.
The value stored in the first 4 bytes must be multiplied by a factor of 10^9 (1000000000).
Then it must be added to the value stored in the following 4 bytes.
Finally, the result must be divided by 10000.
Example: Active power total
Integer value (most significant 4 bytes): 12344
Integer value (less significant 4 bytes): 765532
Original value: (12344*1000000000+765532)/10000=1234400076.5532 (kW)

6. DHCP

In order to allow greater flexibility in network management, the DHCP (Dynamic Host Configuration Protocol) is added to the TCP/IP suite. DHCP allows the LAN Server to be configured automatically, eliminating the need for intervention by a network administrator.
When a DHCP-enabled LAN Server connects to a network, it (as DHCP client) sends a broadcast query requesting necessary information from a DHCP server. The DHCP server manages a pool of IP addresses and information about client configuration parameters. On receiving a valid request, the server assigns the LAN Server an IP address, a lease (length of time the allocation is valid), and other IP configuration parameters.

Parameters

The choice whether to use DHCP or fixed IP address is made in the "Settings" page of the internal website, where the item "IP Configuration" has two options: "Fixed IP" and "Use DHCP", selecting "DHCP" fields "IP Address", "Subnet Mask" and "Gateway" are grayed out.

7. Dynamic DNS

Dynamic DNS is a service which allows users to have a subdomain that point to a node with regularly changing IP addresses, such as those served by many consumer-level internet service providers. The use of Dynamic DNS allows the LAN Server to be accessible to other nodes on the internet while not owning a static address, such as using DHCP. An update client built into the LAN Server keeps the hostname up to date with its current IP address.

Dynamic DNS providers

There are several institutions that provide a dynamic DNS service, but with different and incompatible update algorithms. The LAN Server allows choosing between three providers, which provide dynamic DNS services both free and paid:

- dyndns.org
- zoneedit.com
- no-ip.com

Update

To manage the upgrade of its DNS record, the LAN Server must monitor its IP address and, if there are changes, send an update request to the provider. This task is automatic and completely transparent to the user.

Parameters

In the "Settings" page of the internal website, the box "services" has the item "Dynamic DNS". Clicking the button "Set" opens a page related to the Dynamic DNS. This page provides some items needed by the DynDNS service:

- Activation of the service, to enable/disable the agent
- If the service is active, current status of the agent and IP address currently accessible on the internet
- Provider of the service, selectable from the options above (see §6.1)
- Hostname (the name associated with the LAN Server, which must be set in your browser to access it)
- Username (required by the update algorithm to authenticate the LAN Server)
- Password (required by the update algorithm to authenticate the LAN Server)

8. FTP server

The internal FTP server gives the possibility to access the logged data and also the real-time values in stored .csv files.

Logic and filenames are as follows (Modbus ID 1 is used as example):

Logged data file.

- slv001dec.csv – German speaking comments, comma separator
- slv001ded.csv – German speaking comments, dot separator
- slv001itc.csv – Italian speaking comments, comma separator
- slv001itd.csv – Italian speaking comments, dot separator
- slv001ukc.csv – English speaking comments, comma separator
- slv001ukd.csv – English speaking comments, dot separator

Real-time data file.

- rtm001dec.csv – German speaking comments, comma separator
- rtm001ded.csv – German speaking comments, dot separator
- rtm001itc.csv – Italian speaking comments, comma separator
- rtm001itd.csv – Italian speaking comments, dot separator
- rtm001ukc.csv – English speaking comments, comma separator
- rtm001ukd.csv – English speaking comments, dot separator

Note: Loads a real-time snapshot of the measures like the "export instantaneous values" command in the readings page of the web server.

User name and password to access the FTP server are the same as the ones for logging into the web server, both admin and user logins can be used for access.

9. SNMP agent

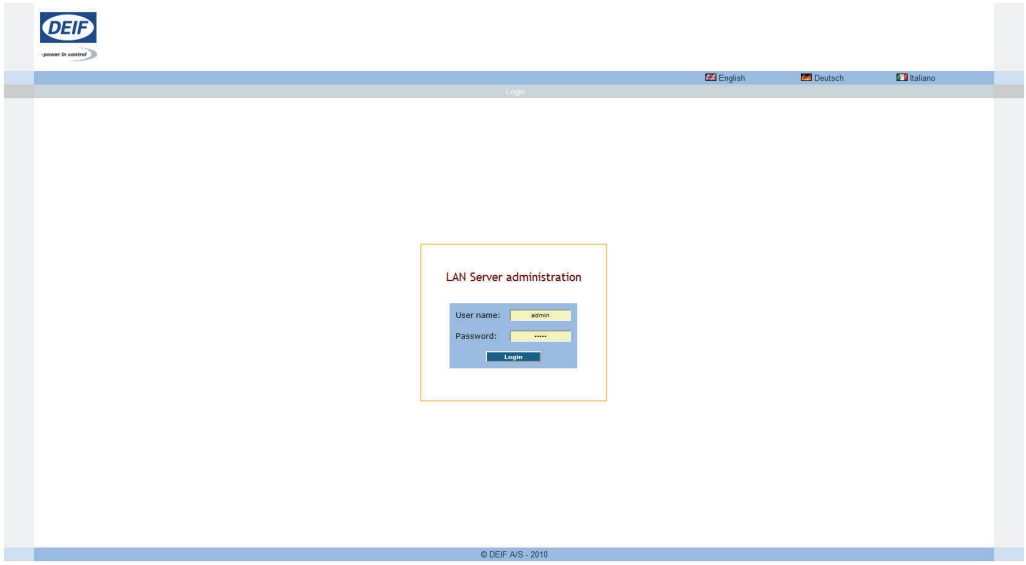
The LAN Server has an internal SNMP protocol for device diagnostics. Support for Get and GetNext (and obviously GetResponse) messages. The Set message is allowed, but only for writes with the default values (no change).

- Support for the following MIBs as specified by RFC1213:
  - System
  - Interfaces
  - Address Translation
  - IP
  - ICMP
  - TCP
  - UDP
  - SNMP

10. Webbrowser

Login page

After entering the correct IP address (default: 192.168.1.253), the following page should appear:



At the first connection, use the following combination:

User Name: **admin**
Password: **admin**

both lowercase.

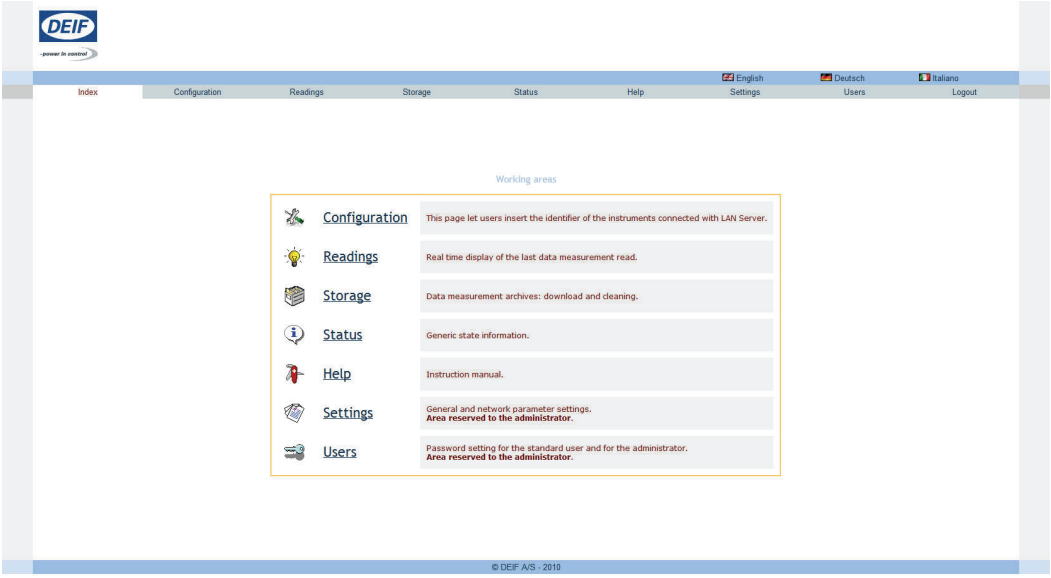
As we shall see in the next pages, it is possible to modify the user name and the password (2 available combinations, one for the administrator and one for the user is available, with different access privileges).

Once user name and password are entered, click **Login**, and you will enter into the index page.

In this document, we will describe the pages in English language. German and Italian languages are available, with the same meaning and functions. To switch to German or Italian, it is enough to push the corresponding national flag on the upper right side of the window which is possible in all views.

Index page

The page available after login:

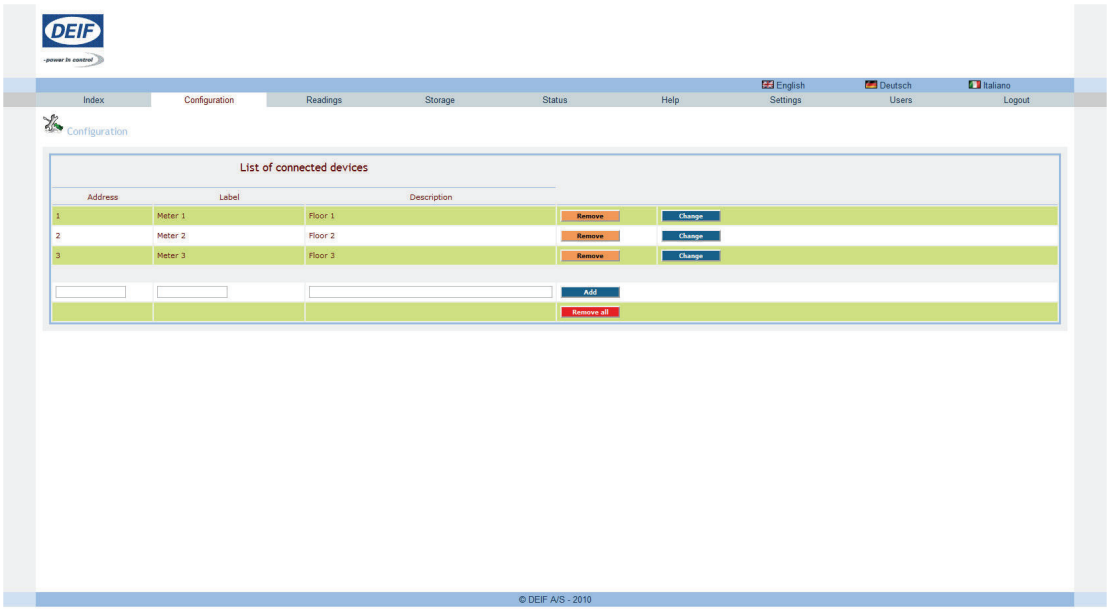


This page shows all the possible choices with a short description.

The page appearance is the same for a login as "administrator" or as "user", but for a "user" login, the settings and users options are disabled, so selecting these options has no effect.

Configuration

The configuration page:



This page is for setting up the connected Modbus devices.

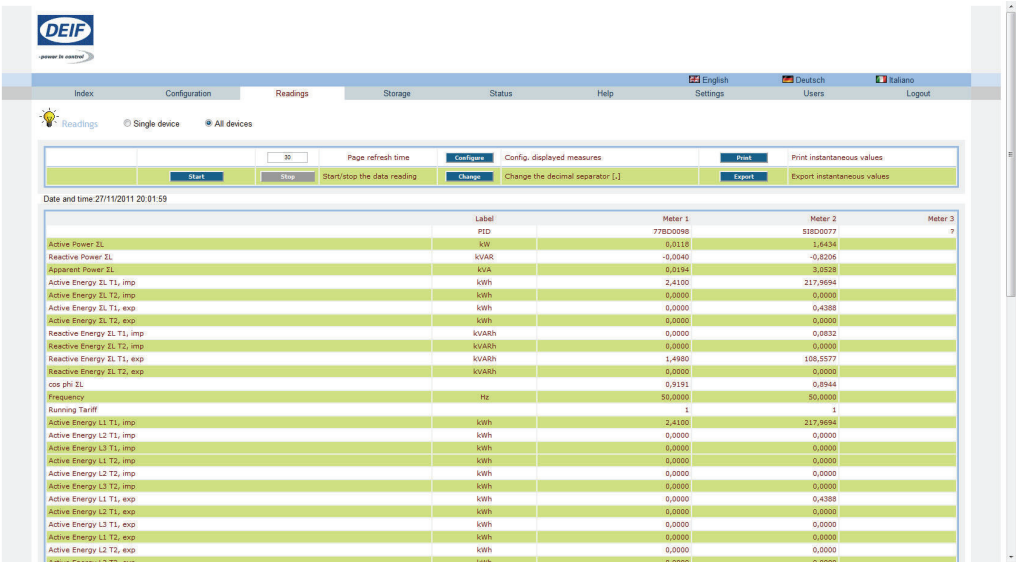
First step is to enter the Modbus ID for the connected device (e.g. default: 1), enter a label name and a description if needed. Then click **Add** to add the device.

If you want to change the data for a device, then click **Change**.

If the device is no longer connected, the **Remove** button can be used. The **Remove all**, will remove all added devices.

Readings

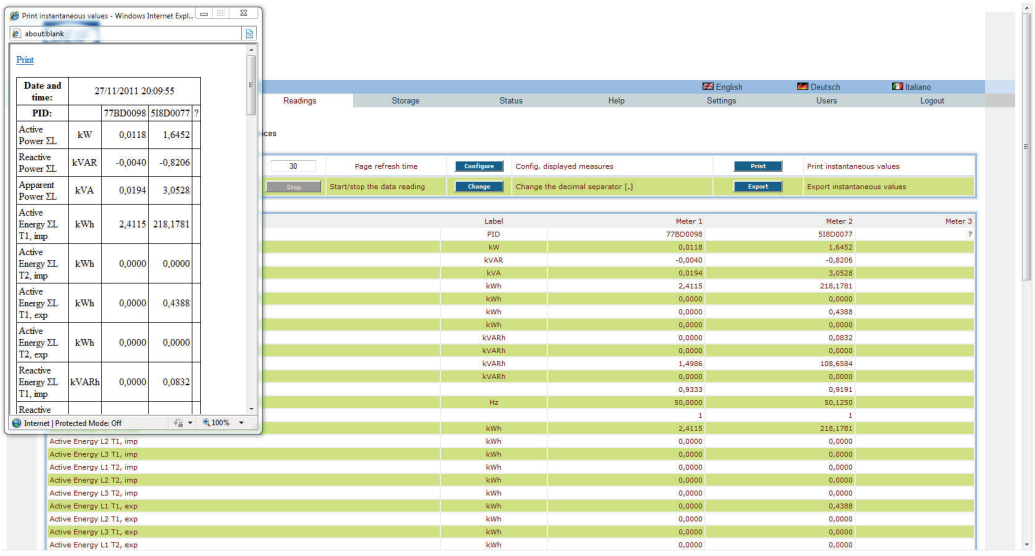
In the readings page, a complete list of the instrument data values are shown.



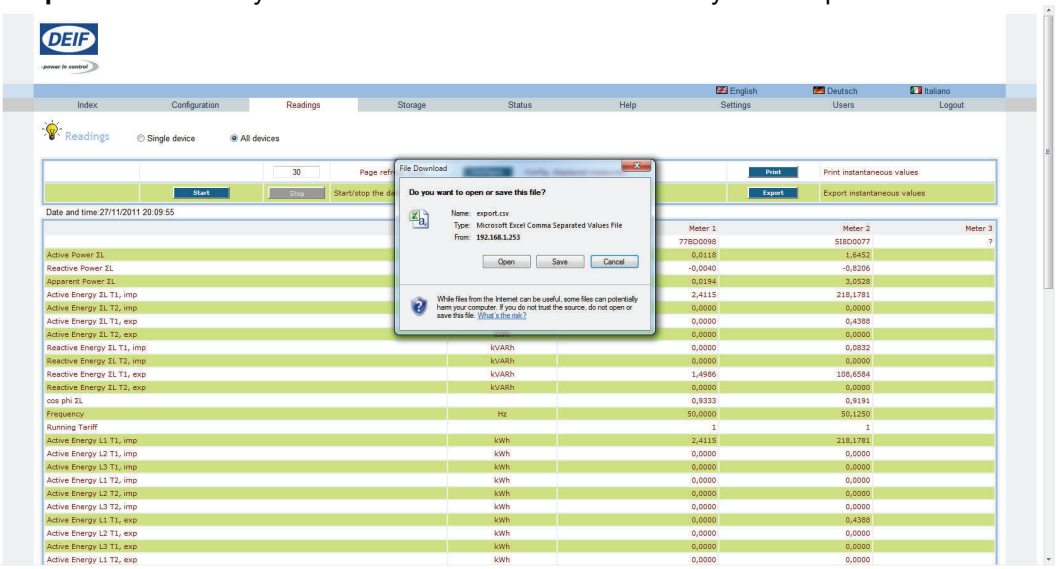
Through the **Start** button, data begin to flow in real time (with a refresh time of ~5 seconds). The **Stop** button stops the real time refresh, freezing the actual display.

It is possible to toggle the decimal separator, dot (.) or comma (,), by clicking the **Change** button.

The **Print** function opens a window with a printer-compatible version of the page. By pushing the "**print**" link, you can send it to the default printer.



The **Export** function lets you send instant data to a .csv file that you can open or save.



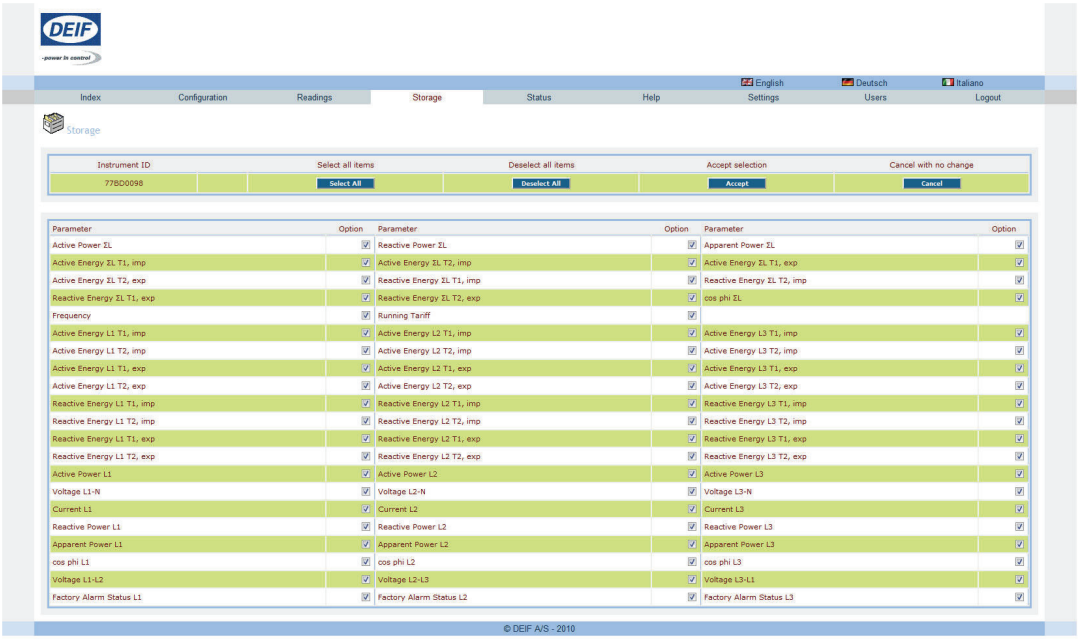
Storage

In the storage page, is possible to manage the data storage in a non-volatile internal memory.

You can enable the storage of data read from the instrument selecting the enable storage checkbox to begin the process. The sampling rate can be changed selecting the proper rate and clicking the **Apply** button.

Download is for exporting stored data to a .csv file.
Clear deletes all the stored data.

The **Change** button opens a page to choose which kind of data you want to store:

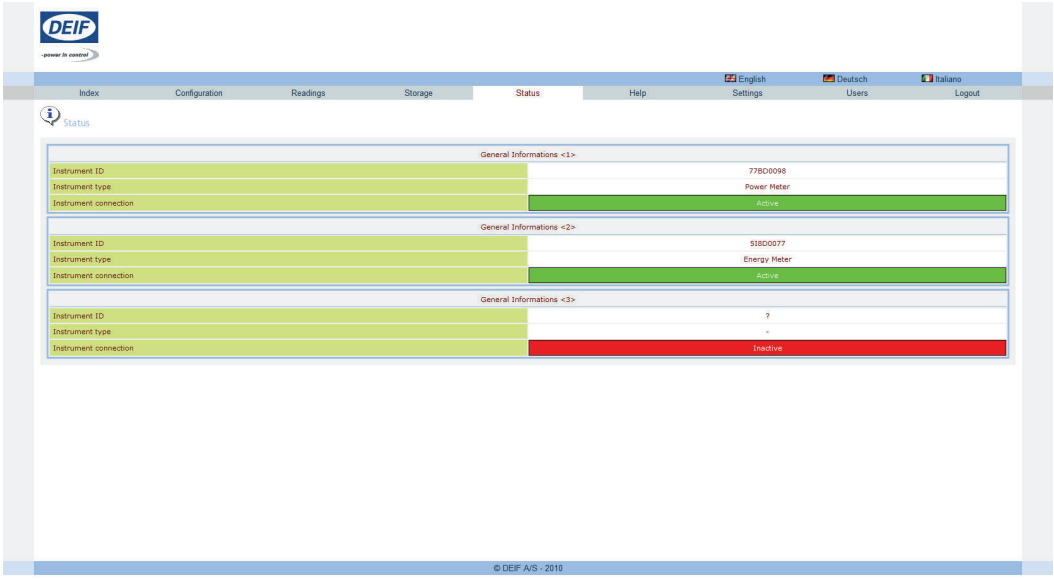


In this page for every item in the readings page, a checkbox allows to include or not this parameter in the stored data.

The **Select All** button marks all the checkboxes as selected, the **Deselect All** button marks all the checkboxes as not selected. **Accept** makes the settings effective, **Cancel** returns to the storage page without changes.

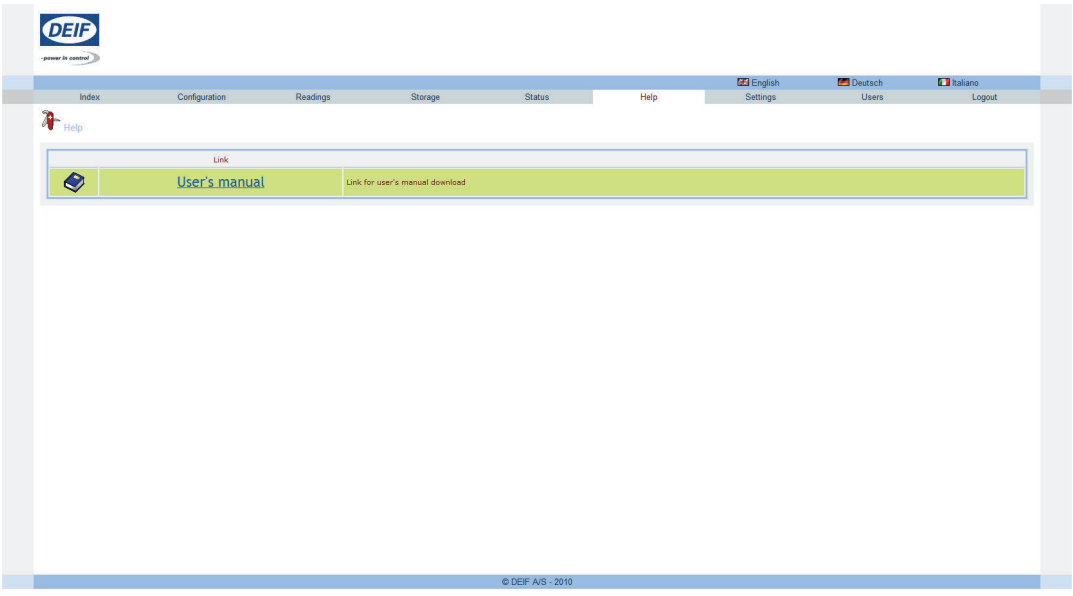
Status

This page shows some general information about the connected instrument, the status of the connection is displayed in real time.



Help

This page contains a link to www.DEIF.com where the user manual is available for download in the product page.

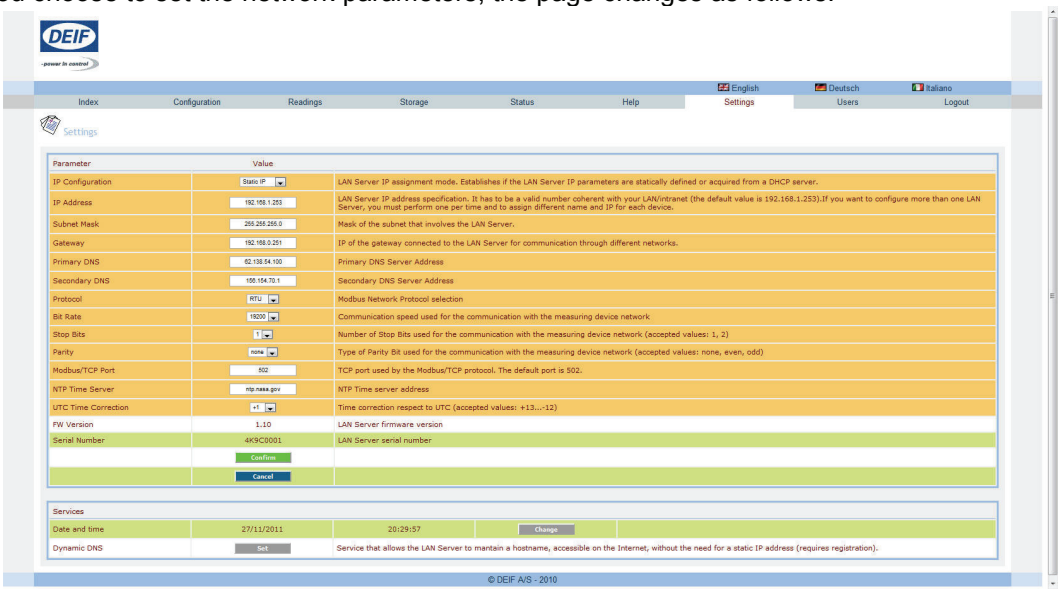


Settings

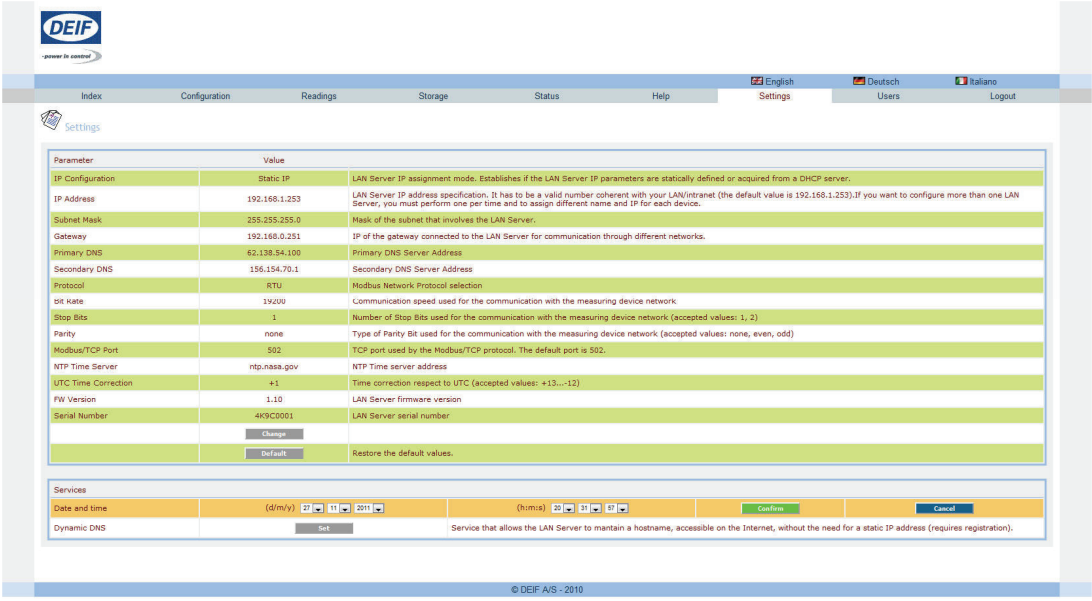
This page is available just for the administrator.
Settings can be modified in order to adapt to the network in use.

Click the **Change** button in the upper box to set the network parameters. Push the **Default** button to reset all the parameters to factory values. Push the **Change** button in the lower box to set the internal date and time (needed only if a NTP server cannot be reached). **Set** will open a new page for setting the Dynamic DNS server.

If you choose to set the network parameters, the page changes as follows:

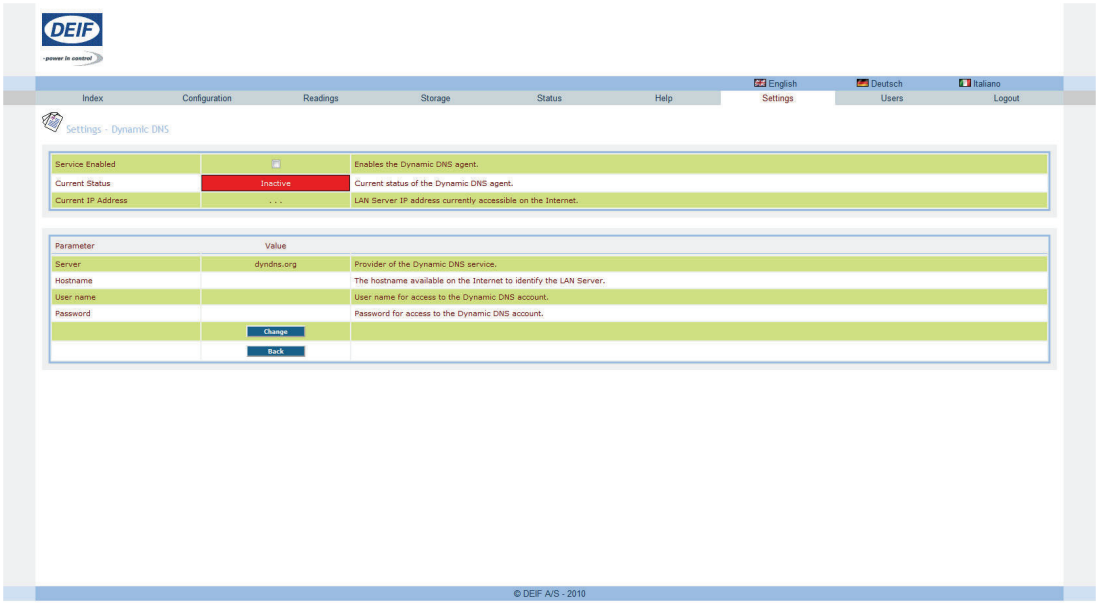


If you choose to set date and time, the page changes as follows:



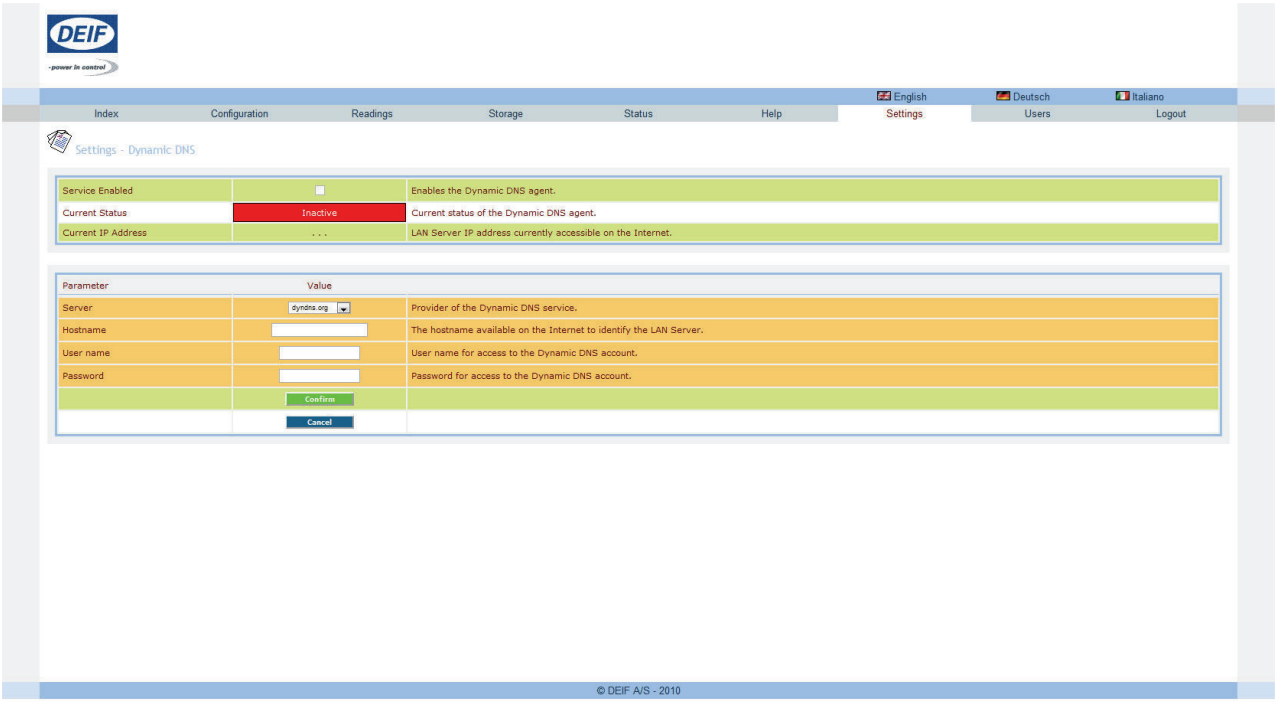
In both pages, when finished, click **Confirm** to make the settings effective, click **Cancel** to return to the settings page without changes

If you choose **Set,** the page changes to the Dynamic DNS page as follows:



Click **Change** to change the Dynamic DNS settings, click **Back** to return to the settings page.

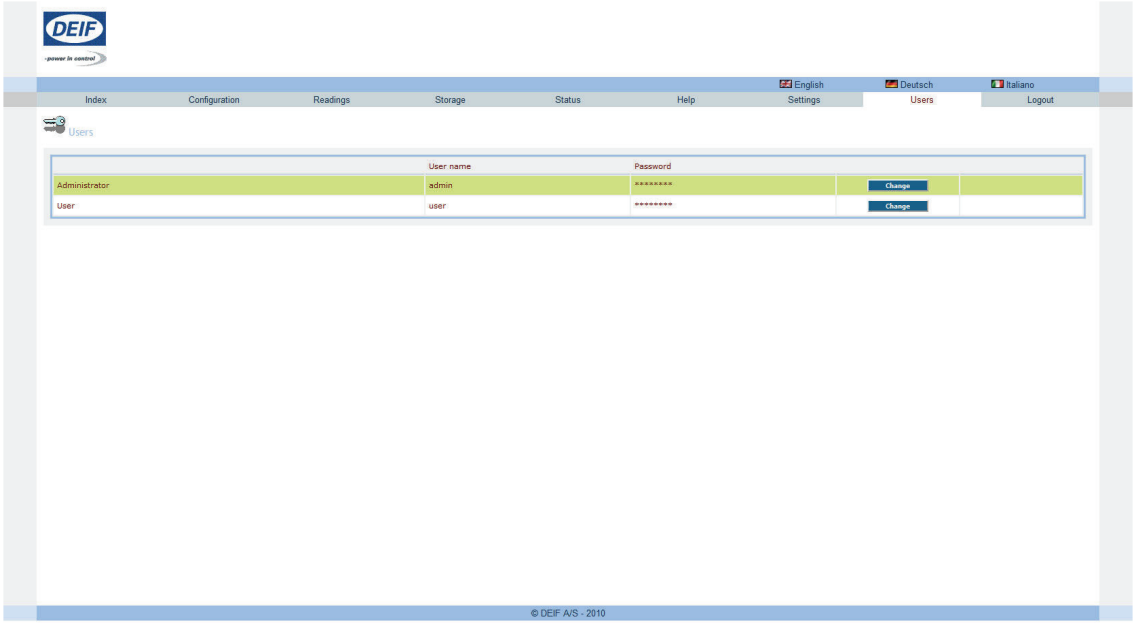
If you choose to set the Dynamic DNS, the page changes as follows:



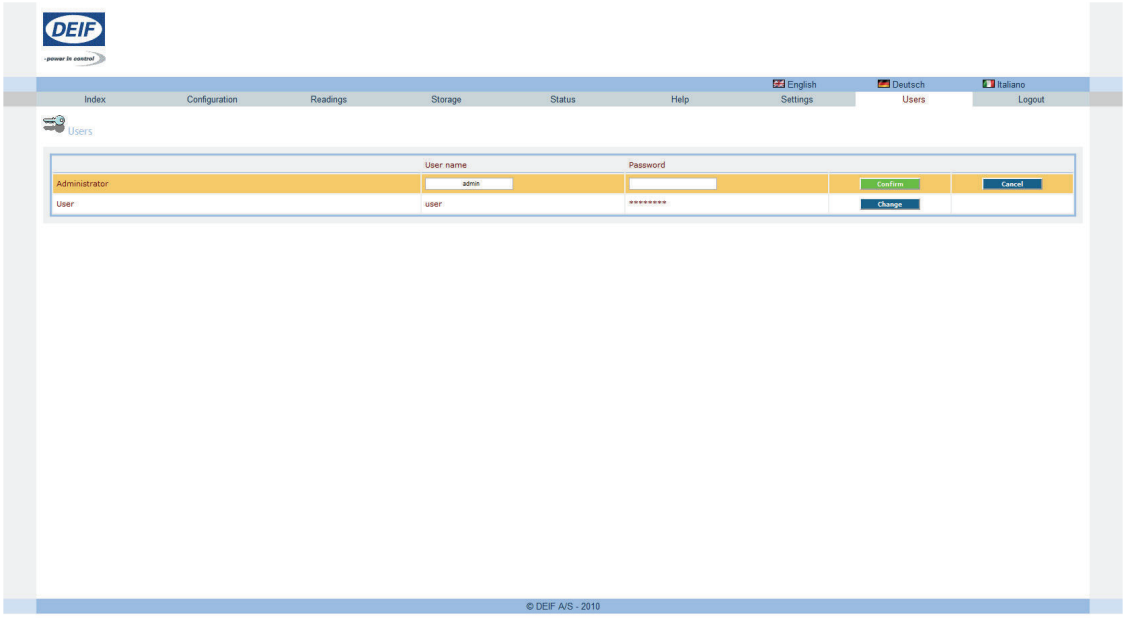
When finished, click **Confirm** to make the settings effective, click **Cancel** to return to the Dynamic DNS page without changes.

Users

This page is available just for the administrator. From this page, it is possible to change name and password for user and administrator.



Click the **Change** button near the item you want to modify. The page changes as follows (e.g.: for administrator):



Click **Confirm** to make the settings effective, click **Cancel** to return to the users page without changes.

DEIF A/S reserves the right to change any of the above.