
AIM-8

User's Manual

1.0

Document history

Date	Version	Author	Remarks
23/10/2015	1.0	Sara Prior	User's Manual including new features such as Analog inputs.

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1 Introduction

This Manual will show you how to configure the AIM-8 datalogger by using the AIM-8 configurator software.

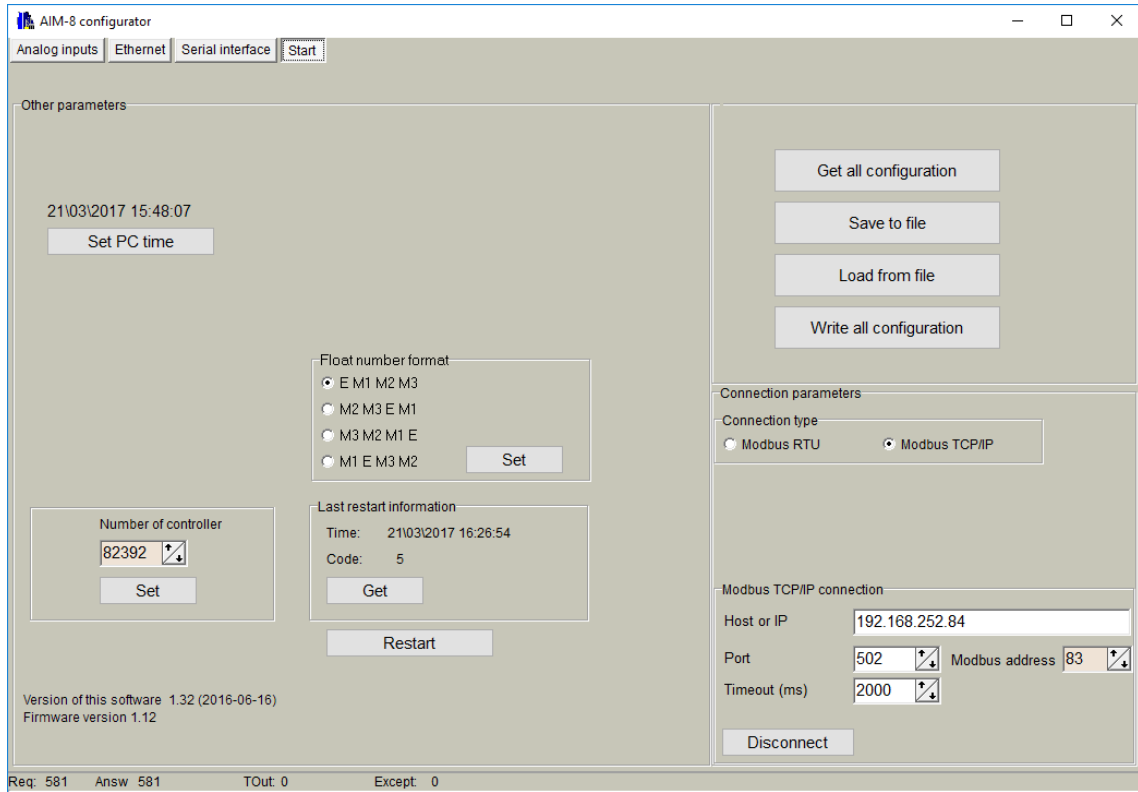


Figure 1. AIM-8 Configurator

2 Setting up connection to the device

To configure the datalogger, user must connect its PC to the device by using any of the following interfaces:

1. USB port
2. ETHERNET interface

2.1 USB connection

Steps to be followed:

- Connect an USB cable class B to the correspondent port
- Open AIM-8 Configuration Tool
- Set up "**Connection Parameters**" frame
 - o Select "ModBus RTU" option under "Connection type"
 - o Select COM port number assigned by your PC to the USB port
 - o Click on "**Get all configuration**" to establish connection with datalogger.

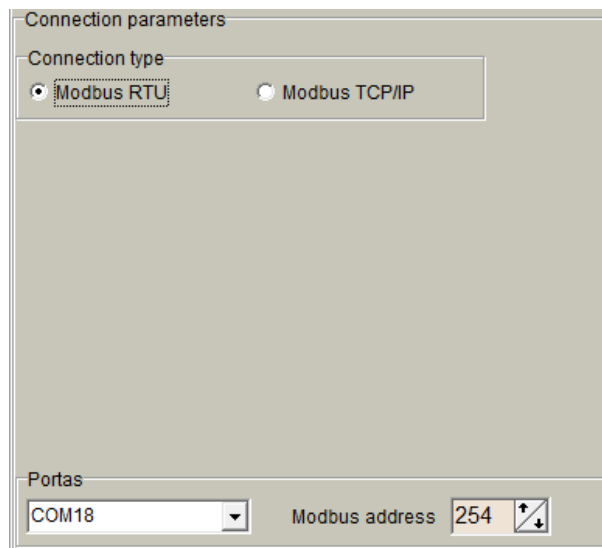


Figure 2. USB connection set up

2.2 ETHERNET Connection

Steps to be followed:

- Connect a RJ45 Ethernet cable to the correspondent port.
- Open AIM-8 Configuration Tool
- Set up "**Connection Parameters**" frame
 - o Select "ModBus TCP/IP" option under "Connection type"
 - o Add datalogger IP address and TCP port in "Host or IP" and "Port" text boxes, respectively
 - o Click on "**Connect**" to establish connection with datalogger.

Connection parameters

Connection type

Modbus RTU Modbus TCP/IP

Modbus TCP/IP connection

Host or IP 192.168.252.84

Port 502 Modbus address 83

Timeout (ms) 2000

Connect

Figure 3. Ethernet connection set up

3 “Start” tab

3.1 AIM-8 Basic Information

Once user has established communication with AIM-8, basic information such as "Serial number", "Last restart", "Firmware version", "Software version", etc. is shown in the left frame

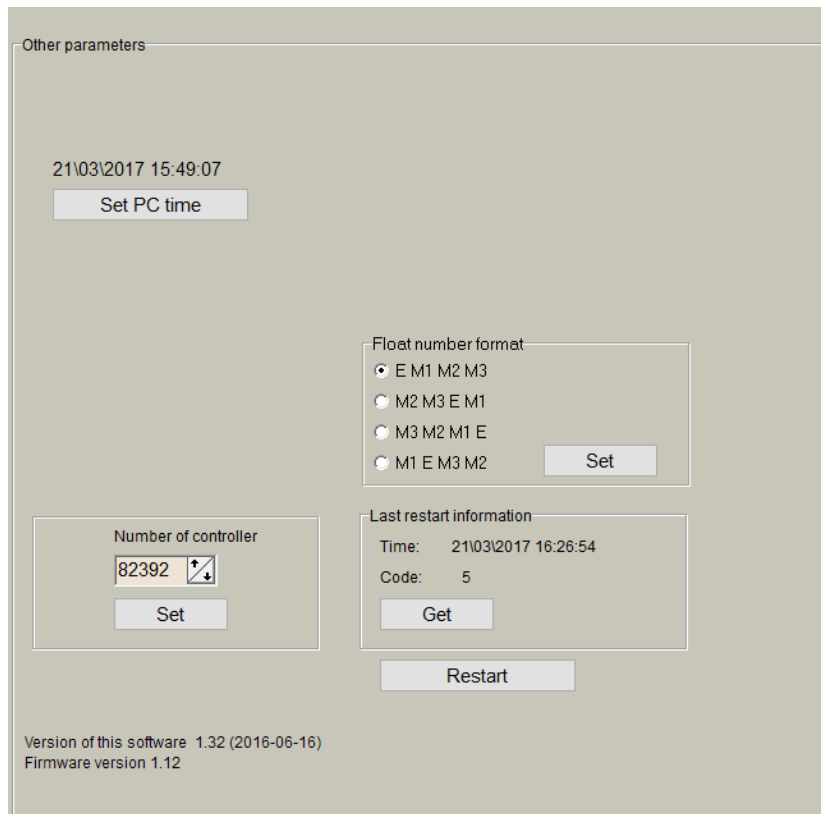


Figure 4. “Start” tab. AIM-8 basic information

3.2 Configuration files

This feature enables user to save and load configuration files so that programming several dataloggers with the same configuration becomes an easy process. Steps to be followed are:

1. Set up all the configuration parameters making use of AIM-8 Configuration Tool.
2. Then, under “Start” tab, click on "**Save to file**". A dialog will be shown requesting user to select folder destination.
3. Once the file has been stored, connect a new datalogger to the PC and then click on "**Load from file**" and select the file previously stored.
4. Then, click on "**Write all configuration**" button to load such configuration into the new datalogger.
5. A restart will be needed so that datalogger can start using the loaded configuration.
6. Repeat from step 3 with all the dataloggers that need the same configuration.

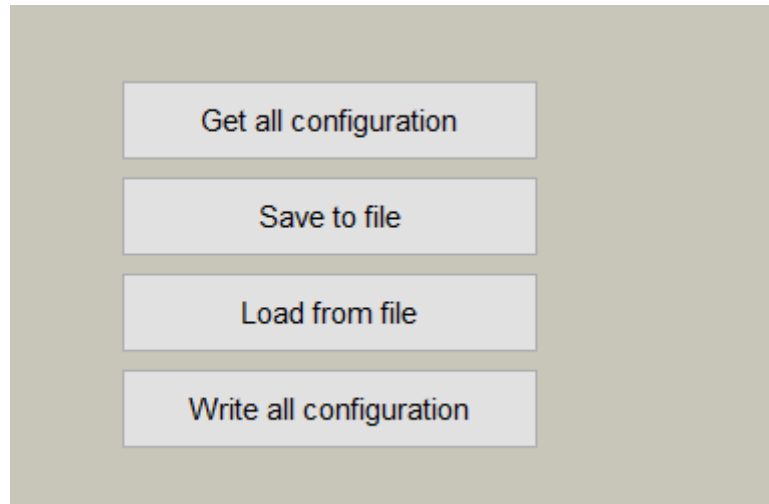


Figure 5. "Start" tab. Configuration files management

3.3 Status indicators

Several status indicators are shown in the AIM-8 configuration tool to inform user about current performance of Modbus communication:

1. Req: number of Modbus requests performed.
2. Answ: Number of Modbus answers received.
3. Tout: number of Modbus requests not answered (time outs raised).
4. Except: number of Modbus errors.

Req: 27	Answ 27	TOut 0	Except 0
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Figure 6. "Start" tab. Status indicators

4 “Analog Inputs” tab

The AIM-8 has up to 8 analog inputs: Voltage (0-5VDC / 0-10 VDC), Current (0-5mA /0-20mA / 4-20mA) and PT100 types. To setup them, user must go to *Analog inputs>Configuration*:

- Range: Select the sensor output range
- "MIN. value" / "MAX value": Defines the sensor operation range
- "Current value" is the current value read by the sensor and converted according the configured operation range.

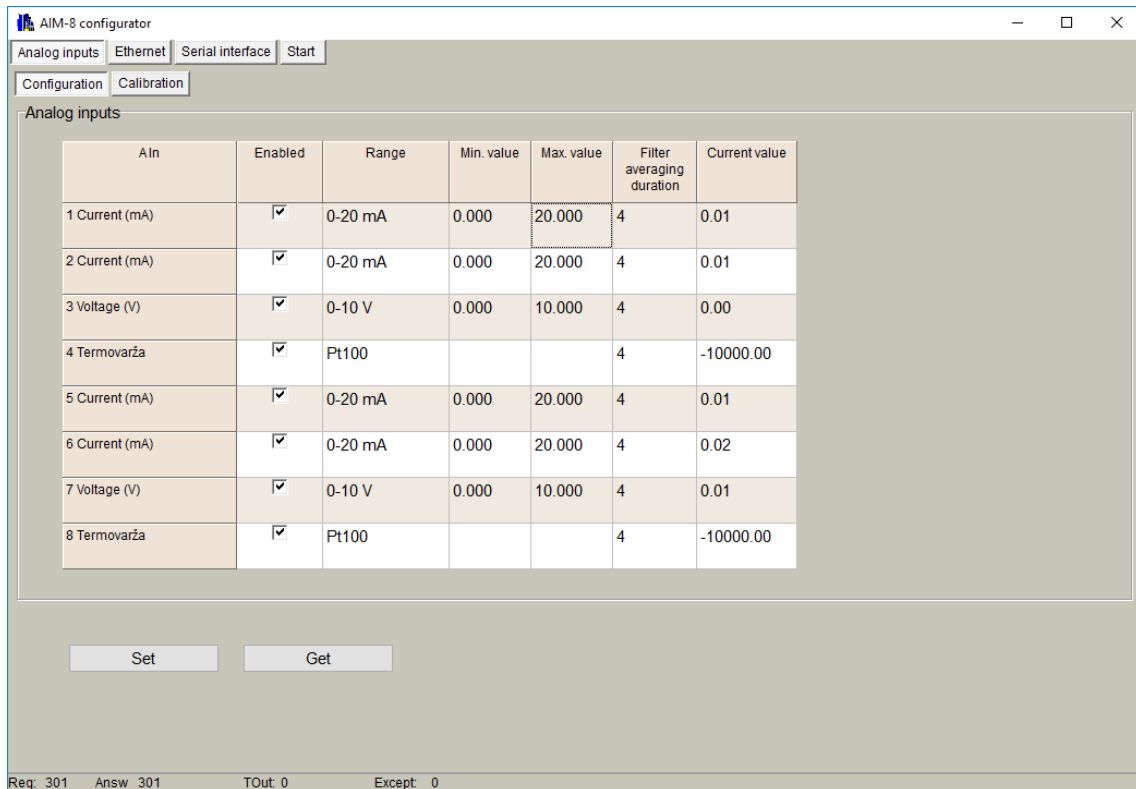


Figure 7. Analog inputs configuration

Apart from checking the correct Analog inputs performance by using the "current values" column of the AIM-8 Config. tool, it is possible to read directly the corresponding Modbus registers by using a Modbus function "3":

Modbus register	Register name	Format	Type
0-7	Analog input ADC value	Int16[8]	Read-only
8-23	Measured value	Float[8]	Read-only

Figure 8. Analog inputs AIM-8's Register list.

"Measured value" registers are real time registers. Values are updated each second.

5 “Ethernet” tab

Ethernet interface parameters can be configured within this tab:

- "MAC number": Media Access Control address
- "IP address"
- "Gateway IP"
- "Mask"

NOTE: After configuration is completed, click on "**Set**" button to save changes.

The screenshot shows the 'AIM-8 configurator' window with the 'Ethernet' tab selected. The interface includes the following elements:

- MAC number:** A text input field containing '00004C0141D8' and a 'Set unique MAC' button.
- IP address:** Four dropdown menus with values 192, 168, 252, and 84.
- Gateways IP:** Four dropdown menus with values 192, 168, 252, and 1.
- Mask:** Four dropdown menus with values 255, 255, 255, and 0.
- Ping data:** A sub-section containing:
 - 'Enabled' checkbox (unchecked).
 - 'Send to address' dropdown menus with values 255, 255, 255, 255.
 - 'Time interval(sec.)' dropdown menu with value 60.
- Time before restart if no packets received:** A dropdown menu with value 600.
- Buttons:** 'Set' and 'Get' buttons.
- Status bar:** Shows 'Req: 1014 Answ: 1014 TOut: 0 Except: 0'.

Figure 9. “Ethernet” configuration tab

6 “Serial Interface” tab

AIM-8 has one single UART that can be configured by using the AIM-8 Config tool.

NOTE: All devices connected to the UART in AIM-8 must have the same communication parameters.

- "Bode": Transmission rate (bauds per second).
- "Parity": Communication Parity.
- "Data bits": Number of data bits within the communication packet.
- "Stop bits": Number of stop bits within the communication packet.
- "Modbus address": Modbus ID that will be used to connect to AIM-8 from a Modbus RTU master.

NOTE: After configuration is completed, click on "Set" button to save changes.

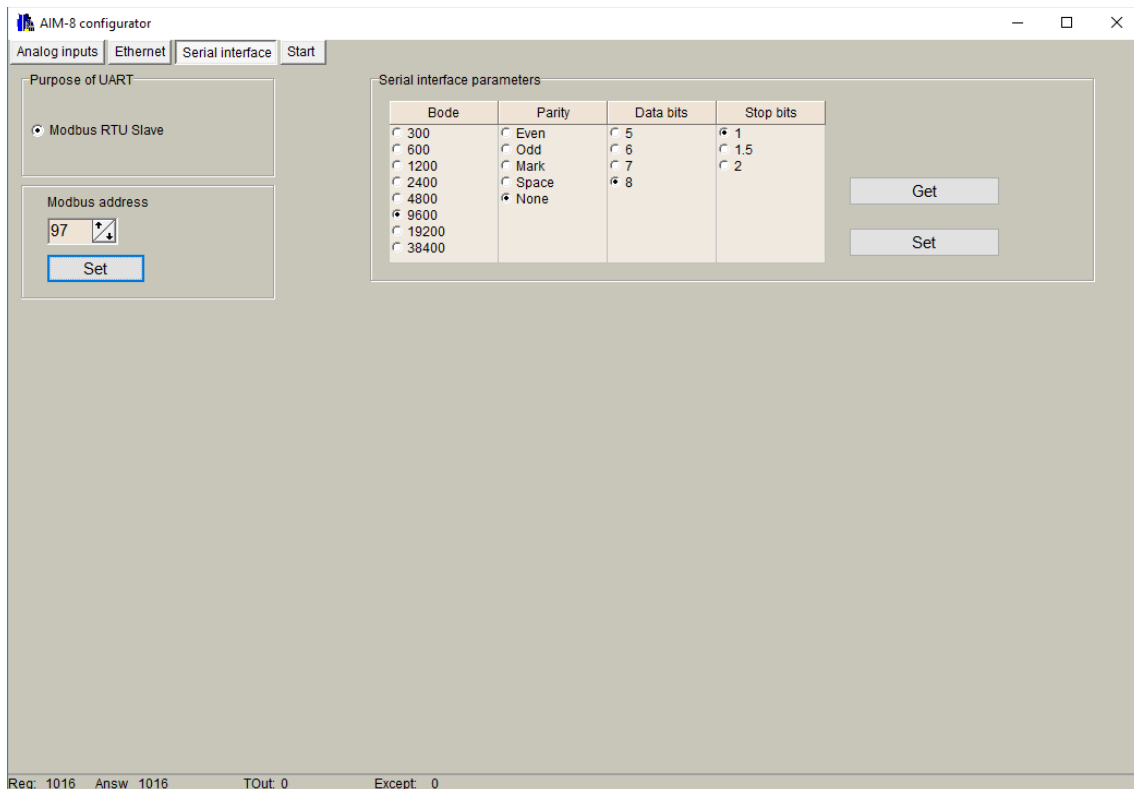


Figure 10. “Serial Interface” Configuration Menu

7 Abbreviations and explanations

- **Xn** – is a number of socket. This information are provided for manufacturer's purpose and used in data schemas and connection diagrams.
- **IP address** - An **Internet Protocol (IP) address** is a numerical label that is assigned to devices participating in a network that uses the Internet Protocol for communication between its nodes.
- **TCP/IP** – Transmission Control Protocol is for communication between computers, used as a standard for transmitting data over networks and as the basis for standard Internet protocols.
- **MAC address** –**Media Access Control** address is a unique identifier assigned to most network adapters.
- **UART** – An **Universal Asynchronous Receiver/Transmitter** is a type of “asynchronous receiver/transmitter, a part of computer hardware that translates data between parallel an serial forms. UART are commonly used in conjunction with communication standards such as EIA RS-232, RS-422 or RS-485. Record (UARTx) on top of enclosure also are used as serial interface number.
- **GND** – ground wire contact
- **RS485** - standard defining the electrical characteristics of drivers and receivers for use in balanced digital multipoint systems. The standard is published by the ANSI Telecommunications Industry Association/Electronic Industries Alliance (TIA/EIA). Digital communications networks implementing the EIA-485 standard can be used effectively over long distances and in electrically noisy environments. Multiple receivers may be connected to such a network in a linear, multi-drop configuration. RS485 interfaces are prepared for connection of ppheripheral devices (example energy meters, dataloggers, machines and etc.).
- **A+** – contact for positive wire of RS485 socket
- **B-** –contact for negative wire of RS485 socket
- **USB – Universal Serial Bus** is an industry standard, that defines the cables, connectors and protocols used for connection, communication and power supply between computer and electronic devices. USB type B socket is prepared for connection to PC(Personal Computer). USB type A socket is prepared for connection to ppheripheral devices (example memory stick's and etc.).
- **Socket** – is an endpoint of a bidirectional inter-process communication flow across an Internet Protocol-based computer network, such as the Internet.
- **Status** – device status indicating LED
- **Uoutput** – status of power for external device indicating LED
- **TX/RX** – data transfer/receive indicating LED
- **Central computer** – server or a computer, where data can be sent.

8 Safety instructions

To install and setup device, special technical knowledges are needed. Call to seller or certified professionals to connect and setup device!

Before connecting to power supply, be sure that:

1. Datalogger is not damaged (no cracks, melted, broken or exposed areas)
2. Datalogger is used with right and correct thickness cables.
3. Datalogger and antenna are installed indoor.
4. The datalogger is intended for supply from a Limited Power Source (LPS) with current rating of overcurrent protective device not greater than 2A
5. The highest transients on the DC secondary circuite of LPS, derived from AC main supply, shall be less then 71V peak.
6. The associated equipments (AE): PC and PSU (LPS) shall comply with the requirements of Standard EN 60950-1.
7. Datalogger is dry;

8. Ambient temperature and humidity is in normal range;
9. Other types of devices (counters, etc.) are connected correctly by using manufacturer's regulations.
10. The end of stranded conductor shall not be consolidated by soft soldering and must to be terminated
11. Device, PC and other peripheral devices are strictly connected through one double pole breaker (current break less than 5A and space between breaker contacts more than 3mm.) Pole breaker has to be in building's wiring and in reachable place with markings

Don't use:

1. Device under open water (in rain and if water are splashing on datalogger or connected devices;
2. Device if enclosure, connected cables, or other connected devices are damaged;
3. External Back-Up battery for powering of datalogger.



Use device by manufacturer's regulations otherwise you can damage datalogger or other devices. In that case **manufacturer's warranty could not be obtained.**



If you suspect that device doesn't operate correctly or has visible violations, please contact manufacturer or your distributor to check or run maintenance.



Manufacturer does not affect and is not responsible for GSM/GPRS/Internet operators' provided network service pricing and costs.

9 Manufacturer's warranty

All ADVANTICSYS products are warranted to be free of defects in material or workmanship under normal use and service for a period of one year from the date of shipment. This warranty does not include damage resulting from accident or misuse. The warranty is also void if the product is modified.

This warranty is in lieu of all other warranties expressed or implied including the implied warranties of merchantability of fitness for a particular purpose, whether arising by law, custom or conduct, and the rights and remedies provided under this warranty are exclusive and in lieu of any other rights or remedies. In no event shall ADVANTIC SISTEMAS Y SERVICIOS S.L. be liable for consequential damages.

If you believe that your product is defective while still under warranty, contact ADVANTICSYS by e-mail at info@advanticsys.com, or by phone at +34 914221023. Once the support desk confirms that the product is defective, we will issue you an RMA number and will replace your defective product.

ADVANTICSYS' warranty covers the repairs (manpower and materials) of each manufacturing defect that may obstruct the right operation of the Product. The replacement of any component or damaged equipment does not mean an extension of the guarantee period. If the Product is found upon examination by ADVANTICSYS to be defective, ADVANTICSYS shall bear shipping costs incurred in returning the Product to Customer as well as all costs involved in ADVANTICSYS' examination of the Product. If the Product is found upon examination by ADVANTICSYS to not be defective, Customer shall bear shipping costs incurred in returning the Product to Customer.

10 Technical Data

10.1 Communication interfaces

Interfaces	Technical data
RS485	up to 1.2 km, max 32 transceivers, speed up to 38,4 Kbits/s
Ethernet	RJ45. Twisted pair Ethernet 10/100 Mb, up to 100m
USB	Type B, version 2.0
Analog INPUTS	Current 0/4-20mA, 0-5 mA ; Voltage 0-5V, 0-10V; Thermoresistor PT100 or PT1000; error $\pm 0,15\%$

10.2 Protection


Insulation voltage between power supply and second circuits	1000 V
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10.3 Indication

Indication type	LED's
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Indicated parameters	<ul style="list-style-type: none"> • UART/Ethernet Transfer/Receive
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10.4 Power supply

Power supply	12-30VDC 
Power consumption	Up to 10 VA

10.5 Construction

Mounting	DIN rail
Dimensions	116x101x33 mm
Enclosure protection	IP20

10.6 Working conditions

Working temperature	From - 25 °C to + 60°C
Storage temperature	From - 40 °C to + 60°C
Relative humidity	From 5 % to 95 % non-condensing

10.7 Safety parameters

Regulatory approvals	EN 55022:2000+A1+AC:2002+A2:2003 EN 61000-4-4:2005 EN 55024:2000+A1:2003+A2:2003 EN 61000-4-5:2002+A1:2003 EN 61000-4-2+A1+A2:2002 EN 61000-4-6:2002+A1:2003 EN 61000-4-3+A1:2004
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10.8 Other parameters

Archive storage memory	2 MB
Configuration settings storage without power supply	More than 5 years
Real time clock	Yes
Firmware loading	Yes. Through RS232/USB and Ethernet, GSM/GPRS.

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