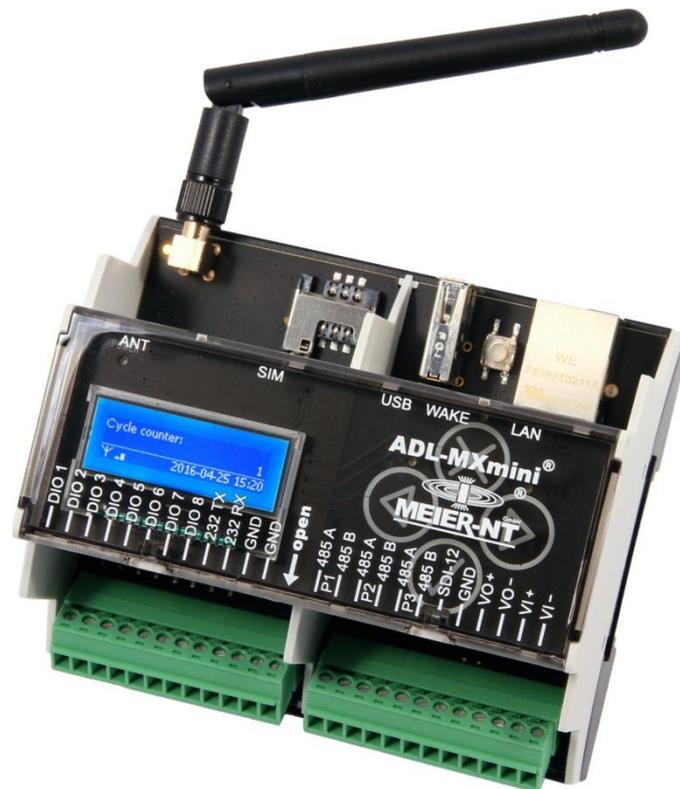


Manual

ADL-MXmini[®] and ADL-MXSpro[®]

Multifunctional Data Logging System



1

ADL-MXmini[®] GSM

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ADL-MXmini®

Manual ADL-MXmini® - Version: v2.4

Date: 27.08.2020

Created by: S.Melzer

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1. General Information

Measured data from external measurement devices can be captured and saved via three RS485 interfaces. Furthermore the data logger offers digital inputs and an Ethernet port for configuration via the integrated web server, as well as a USB port for backup of data, memory expansion and connection of sensors or expansions. A GLCD display and four capacitive keys serve for an easy configuration and the display of current measured data. The data logger is delivered with a GSM/GPRS module.

The following manual shows how to connect the appliance and will guide you through the proper use of the device.

2. Safety Information

- If the following points are disregarded, the warranty might become invalid!
- The safety notes have to be read carefully before the activation of the appliance.
- Proper transport, storage, assemblage and installation, as well as careful handling and maintenance are necessary for the appliance to function impeccably and safely.
- Use qualified personnel for the handling of electrical plants. Only qualified and trained personnel should handle this device. The personnel are qualified if sufficiently accustomed to assembly, installation and running of the product, as well as warnings and safety information included in the manual on hand. Furthermore, the personnel should be trained or authorized to turn off/on, to ground and to label electric circuits according to safety technology. An appropriate safety equipment and training in first aid are also necessary qualifications.
- Only use supplies and spare parts approved by the manufacturer.
- Safety instructions and regulations of the fitting state or country are to be taken care of.
- The environmental conditions mentioned in the product documentation must be satisfied.
- The activation is prohibited unless the overall system serves the national regulations and safety rules of the application.
- The activation is prohibited unless the national electromagnetic compatibility-regulations are met.

- Compliance with the limits required by national regulations is the responsibility of the manufacturers.
European countries: EU-Directive 2004/108/EG (EMC -Directive).
- Technical data, connection and installation requirements can be found in the product documentation and must be followed strictly.



Attention!

„Attention“ signals an issue, whose disregard could result in property damage.



Notice!

„Notice“ signals an issue, whose regard will result in improvements of the operating procedure.

3. Product Contents

- ADL-MXmini®
- Magnetic-base antenna with 2,5 m cable (only with option that includes a GSM- module)

3.1 Optional Accessory

- Crossover Ethernet cable
- DIN rail bus connector for backplane bus
- GSM data-card for transmission of measured data

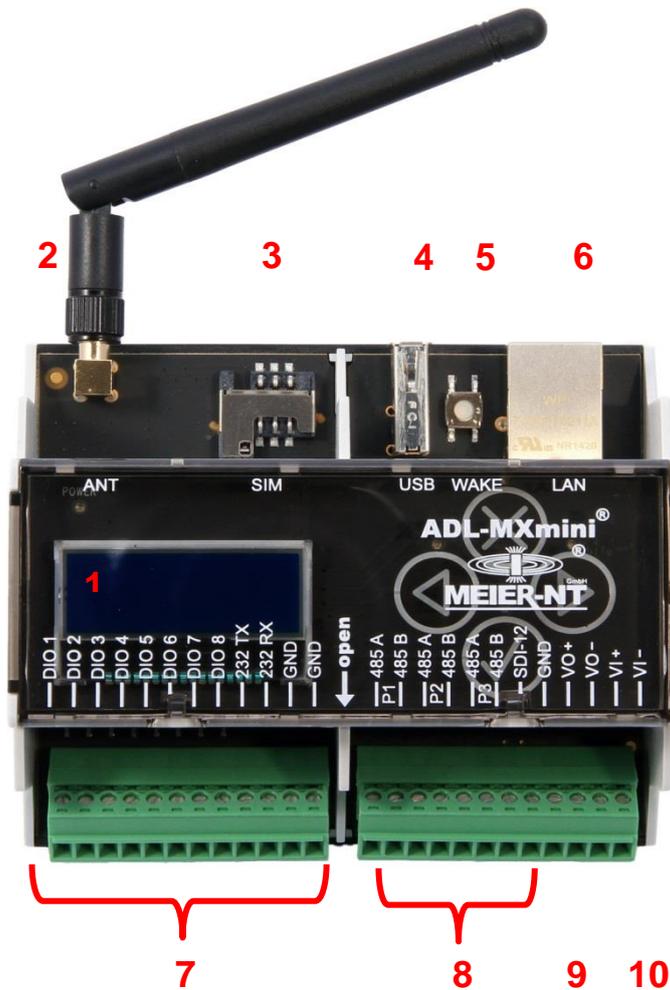
4. System Requirements

The ADL-MXmini® is compatible with almost every customary web-enabled computer. The following system requirements have to be met.

Hardware: Ethernet port

Software: Web browser capable of displaying Flash-graphics.
Depending on the browser, an update might be necessary.

5. Product Description



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- 1** – Display (GLCD)
- 2** – Aerial Input (only option GSM or Wi-Fi)
- 3** – SIM Card Holder (only option GSM)
- 4** – USB Port (preparation)
- 5** – Reset Button (factory setting, *Attention, all data gets cleared!*)
- 6** – Ethernet Port
- 7** – Digital Inputs
- 8** – RS485 Ports
- 9** – Power Supply for external Sensors/Modules
- 10** – Power Supply

6. Installation and Connection

The ADL-MXmini® is designed for use in interiors and electric cabinets.
For exterior installation an installation cabinet with protection type IP65 is recommended.
The ADL-MXmini® is designed for installation on a DIN rail (DIN 35).



Attention!

Similar to all other electrical devices, the ADL-MXmini® must be protected from humidity and from condensate formation. Air circulation serves better for that purpose than a complete sealing and waterproofing of the cabinet.



Attention!

Plugging in or removing of cable and SIM card is only allowed when the device is turned off.

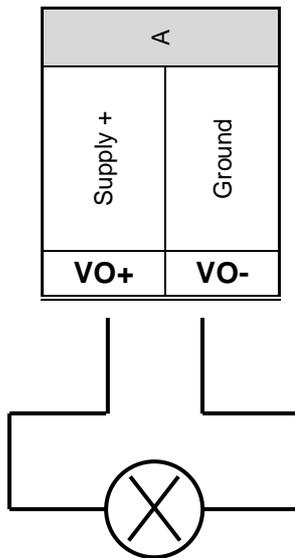
6.1 Connecting the ADL-MXmini®

The following steps must be taken in order to connect the ADL-MXmini® with other devices:

- Connect sensor / transducer and ADL-MXmini® via cable.
The termination at the end of the respective bus system has to be activated or the bus has to be terminated with the respective terminating resistance (120 Ohm).
- If applicable connect further sensors, emitter, signal devices or large display.
- If applicable insert SIM card and connect GSM antenna.
- Use the wall plug transformer to connect the ADL-MXmini® to power supply.
- Connection to a PC gets established via Ethernet cable (crossover cable) or via integration into a network.

After being connected to power supply the boot screen will be shown on the ADL-MXmini® and after further 20 seconds the device is ready for use.

6.1.1 Connecting the Power Supply for external Sensors



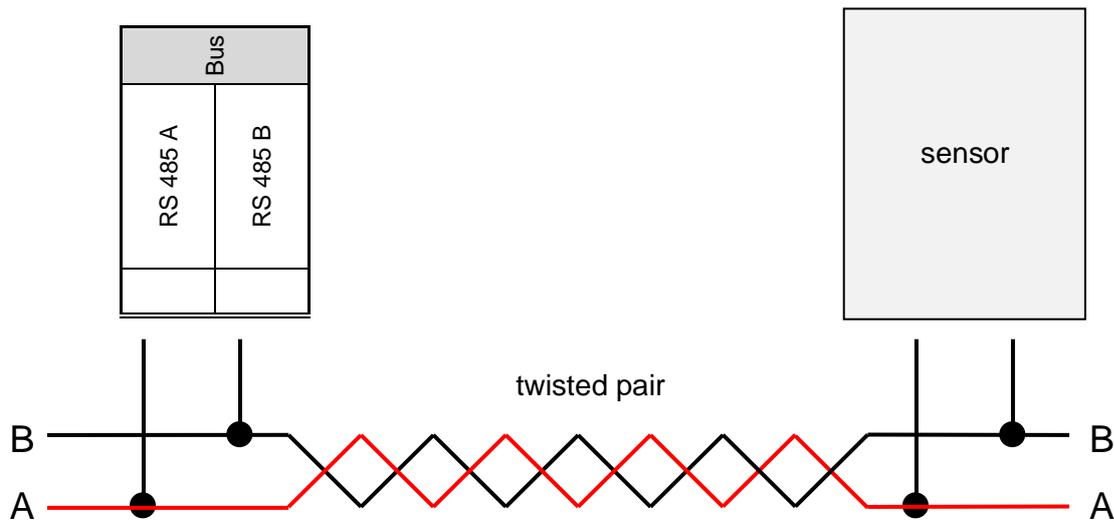
Notice!

Power supply for external sensors can be provided via power supply of the ADL-MXmini®.
The power supply for the ADL-MXmini® must be adjusted to the appropriate level. The maximum load for the output is 500mA.

6.1.2 Connecting to Sensors and other Devices/Transducer

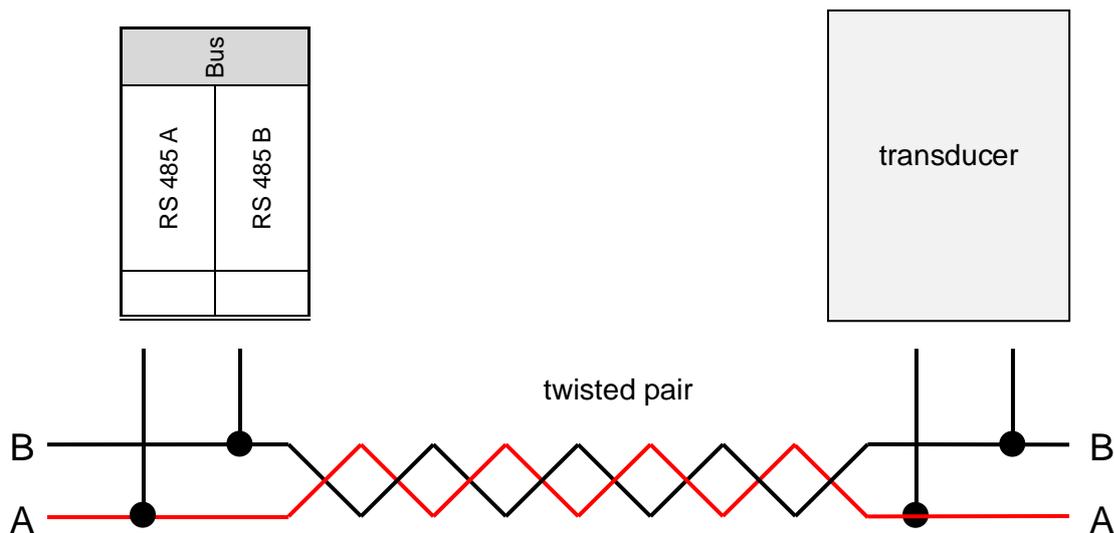
The connection of sensors with the ADL-MXmini® (RS485 P1 / RS485 P2 / RS485 P3 /SDI12 / RS232(V.24) or Ethernet) depends on the sensor type. It might be necessary to adapt the interface parameters and the address.

RS485 / P1



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RS485 / P2



6.1.3 Power Connection

Use an appropriate voltage source 10 - 36 VDC for power supply.
the power input of the ADL-MXmini® amounts up to 3 Watts depending on type.



Attention!

Connect to power only after installation of hardware and all other mains.

6.1.4 Connecting to your PC

There are three options to connect the ADL-MXmini® to the PC:

Direct linking by use of a crossover cable:

A crossover cable (available as accessory) must be inserted into the Ethernet port at the ADL-MXmini® and at the PC. For this type of connection, the ADL-MXmini® and the PC must share the same IP subnet. The ADL-MXmini® is delivered factory-set to DHCP. In case the ADL-MXmini® cannot obtain an IP address automatically, it chooses a random address in the 169.254.x.x range (APIPA addressing). This address can be read from the display and entered in the browser to communicate with the ADL-MXmini®.

In networks with static IP addressing the address can also be set statically:

IP address	192.168.1.100
subnet mask	255.255.255.0

Example for network settings of the PC:

IP address	192.168.1.110
subnet mask	255.255.255.0

Alternatively, you can use the “emergency IP”. Windows PCs without a network connection usually fall back to the range 169.254.xxx.xxx, so that the data logger can be accessed directly without setup a static IP on the PC.

Emergency IP:

IP address	169.254.1.100
Subnet mask	255.255.0.0

This emergency address is always active, regardless of which IP settings have been made.

Integration into a local network via LAN:

In case your network includes a DHCP server, the ADL-MXmini® will automatically obtain an IP address. If your network does not include a DHCP server, the address must be determined statically. (See „ Direct Linking by use of a crossover cable “).



Notice!

Concerning the network parameters, please contact your administrator in order to get an IP address for the ADL-MXmini®.

Modem connections:

For this type of connection, the PC must be equipped with a modem, which must be installed and ready for operation prior to use. (see manual of the modem).

Furthermore, a so-called dial-up connection (PPP connection) must be established.

7. Operating

The ADL-MXmini® offers two options for operating.

1. GLCD and capacitive directional pad
2. Web interface

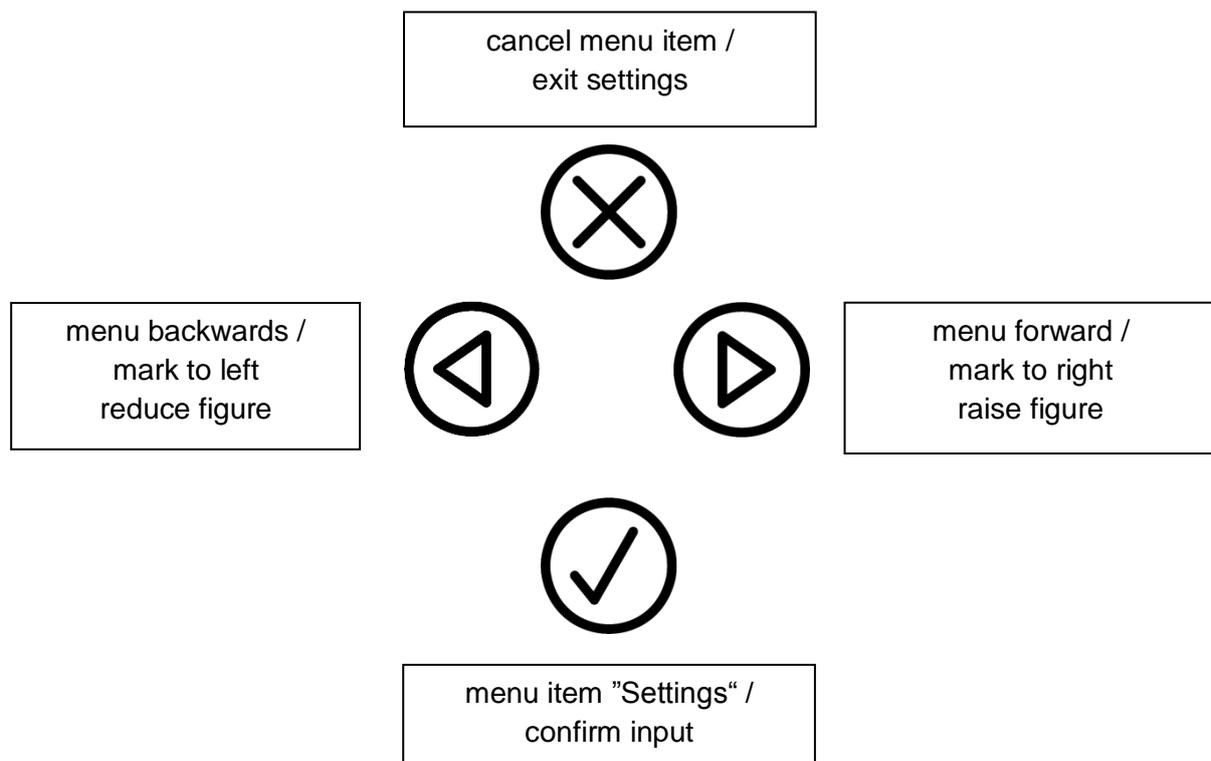
The range of functions may differ in those options, but basic functions are available in both options.

7.1 GLCD

The GLCD of the ADL-MXmini® offers the essential elements for operating the device. Those controls are split up into two elements.

7.1.1 Operating the Directional Pad

The directional pad allows to directly operate and configure the ADL-MXmini®. The push of a key is accompanied by a flashing LED. The directional pad has the following functions:



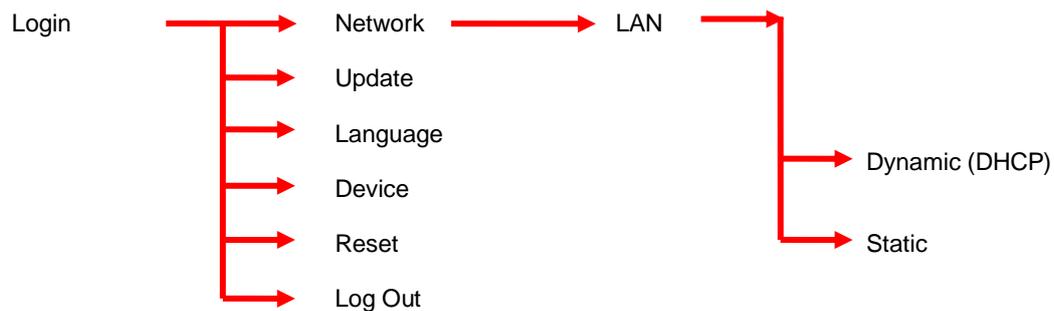
7.1.2 Menu Structure

The measured data on display changes every four seconds or can be changed with the help of the keys.



To get to the menu item “Settings”, the  key has to be pressed. The arrow keys can be used to navigate through menu items.

To select a certain menu item, the  key must be pressed.



To confirm changes the  key must be pressed. In order to exit a menu item without taking over any new settings the  key must be pressed.

Menu item Login

Login for device configuration. The standard password is: „000000“.



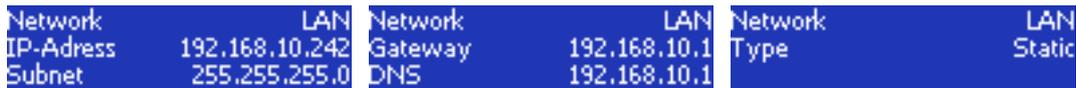
Menu item Network

Setting of network connectivity LAN / WLAN.

The settings SSID and password for WLAN connection must be set via web interface.



Submenu LAN

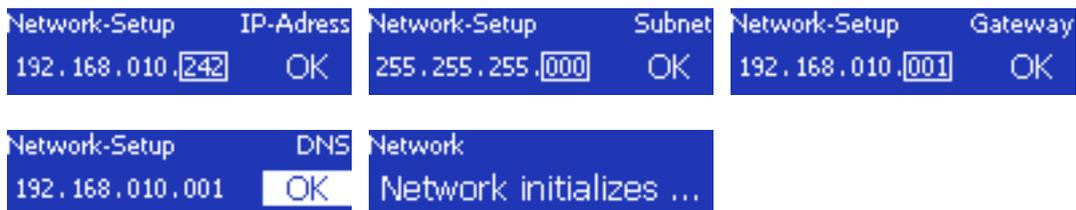


Submenu Change DHCP to static IP Address



Press the  key in the first submenu to get to network setup.

Submenu Enter static IP Address



In order to change a value, the appropriate menu item must be selected with the help of the arrow keys and then confirmed with the  key. The value can then be changed with the arrow keys and again the  key serves as confirmation. By pressing the “OK” button you can proceed to the next step.

Menu item Update

Perform a Firmware update.



Menu item Language

Change the language of the ADL-MXmini®.



Menu item Device

Shows the version number, the serial number and available memory of the ADL-MXmini®.



Menu item Factory reset

Reset all settings of the ADL-MXmini®.



Menu item Log Out

Log out and lock the menu "Settings".



7.2 Web Interface

In order to have access to the web interface of the ADL-MXmini® and PC and have to be connected via crossover cable, network or modem. The current IP address of the ADL-MXmini® can be checked under the menu item "Network" on the GLCD. In delivery condition the ADL-MXmini® is set on DHCP and obtains the address from the server automatically. In case of a modem connection the following IP must be entered in the address bar to have access to the web interface of the ADL-MXmini®: **1.1.1.1**

This IP is no subject to change.

7.2.1 Menu Structure without previous Login

The single pages of the web interface can be found via the menu on the left side of the screen. This menu has the following structure:

System

- System information
- Systemlog

Analysis

- Online Values
- Data plot
- File export

7.2.1.1 Start Screen

On the start screen basic information about the ADL-MXmini® is on display, among them are the location, serial number, firmware version and available memory.



The screenshot shows the ADL-MXmini web interface. The top header includes the logo and a 'Log in' button. The main content area is divided into three sections: 'System', 'System information', and 'Help'. The 'System information' section displays the following data:

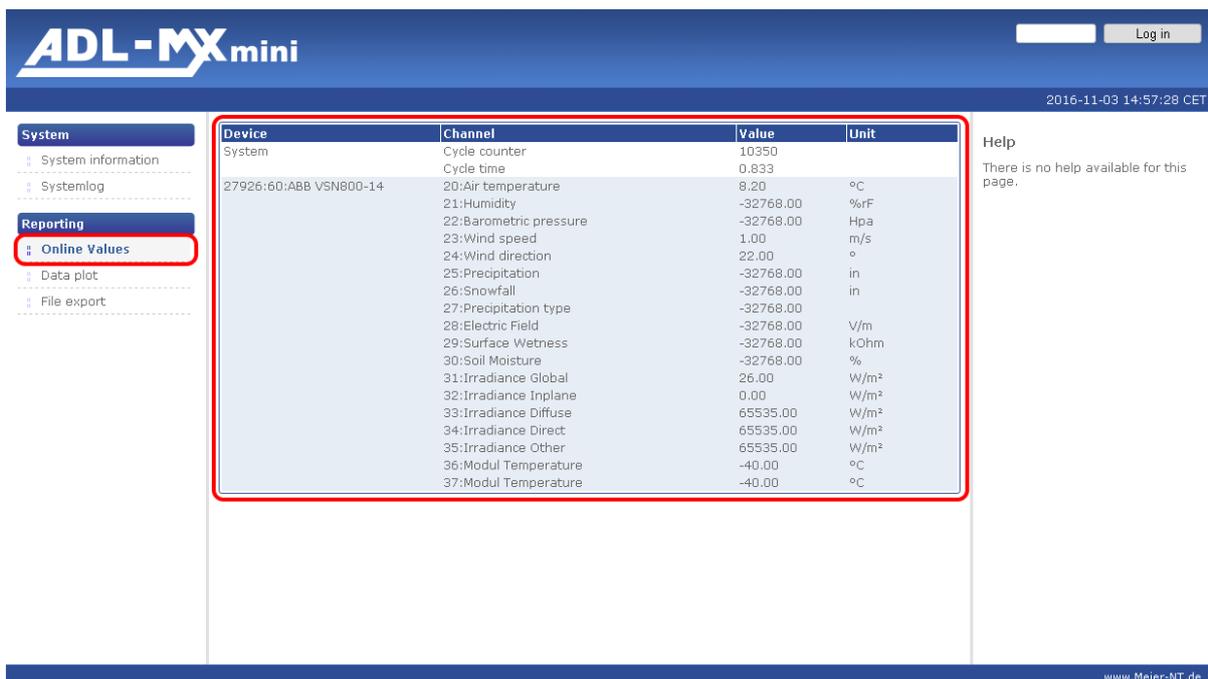
Location name:	2dad5caabae10b63437ee077da7f0014
Device type:	ADL-MXmini GSM
Serial:	081000019
Build number:	1.0.3
Available memory:	803 MB
free memory:	761 MB

The 'Help' section contains the text: "There is no help available for this page." The bottom right corner of the page shows the URL www.Meier-NT.de.

7.2.1.2 Analysis

Online Values

On this page the measured data of the connected devices is on display. In case no data is displayed check your device configuration.



The screenshot shows the ADL-MXmini web interface with the 'Online Values' section selected in the left sidebar. The main content area displays a table of measured data for a device with ID 27926:60:ABB VSN800-14. The table is outlined with a red border:

Device	Channel	Value	Unit
System	Cycle counter	10350	
	Cycle time	0.833	
27926:60:ABB VSN800-14	20:Air temperature	8.20	°C
	21:Humidity	-32768.00	%rF
	22:Barometric pressure	-32768.00	hpa
	23:Wind speed	1.00	m/s
	24:Wind direction	22.00	°
	25:Precipitation	-32768.00	in
	26:Snowfall	-32768.00	in
	27:Precipitation type	-32768.00	
	28:Electric Field	-32768.00	V/m
	29:Surface Wetness	-32768.00	kOhm
	30:Soil Moisture	-32768.00	%
	31:Irradiance Global	26.00	W/m²
	32:Irradiance Inplane	0.00	W/m²
	33:Irradiance Diffuse	65535.00	W/m²
	34:Irradiance Direct	65535.00	W/m²
	35:Irradiance Other	65535.00	W/m²
	36:Modul Temperature	-40.00	°C
	37:Modul Temperature	-40.00	°C

The 'Help' section contains the text: "There is no help available for this page." The bottom right corner of the page shows the URL www.Meier-NT.de.

Data Plot

The analysis of the recorded data can be found here. For the required results choose the desired units and the corresponding sensor via the list box, and enter time and date. Those settings can be made for two axes.



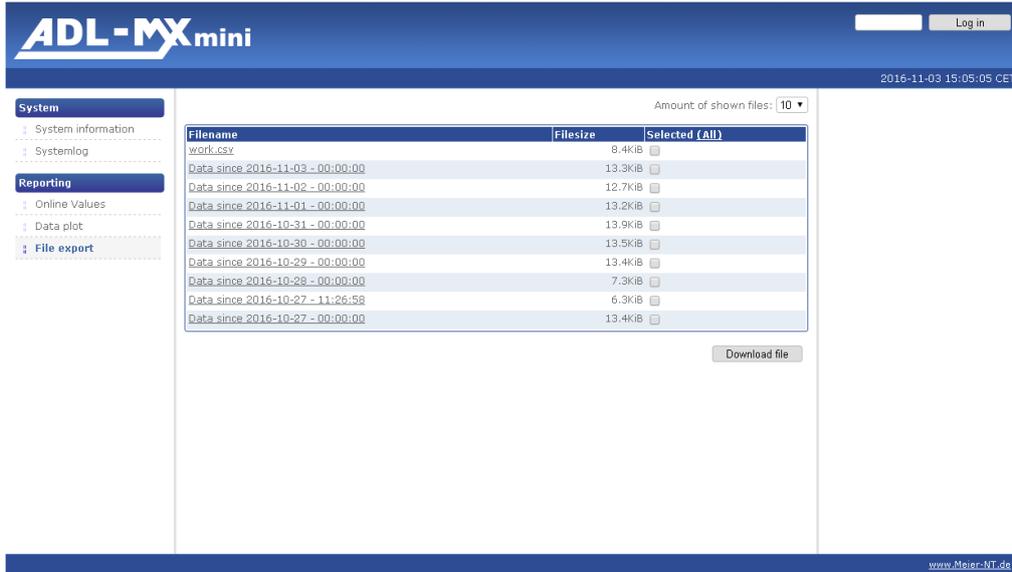
After entering all the required information press „Save“ and the diagram will be displayed. The axes of the diagram are autoscaled.



File Export

This page offers the chance to download all recorded data from the data logger in order to analyze them externally. The downloaded file is a csv-file.

The desired data files can be tagged with a tick. With the button „Download file“ the selected data files can be downloaded as a zip file.



ADL-MXmini Log in

2016-11-03 15:05:05 CET

Amount of shown files: 10

Filename	Filesize	Selected (All)
work.csv	8.4KiB	<input type="checkbox"/>
Data since 2016-11-03 - 00:00:00	13.3KiB	<input type="checkbox"/>
Data since 2016-11-02 - 00:00:00	12.7KiB	<input type="checkbox"/>
Data since 2016-11-01 - 00:00:00	13.2KiB	<input type="checkbox"/>
Data since 2016-10-31 - 00:00:00	13.9KiB	<input type="checkbox"/>
Data since 2016-10-30 - 00:00:00	13.5KiB	<input type="checkbox"/>
Data since 2016-10-29 - 00:00:00	13.4KiB	<input type="checkbox"/>
Data since 2016-10-28 - 00:00:00	7.3KiB	<input type="checkbox"/>
Data since 2016-10-27 - 11:26:58	6.3KiB	<input type="checkbox"/>
Data since 2016-10-27 - 00:00:00	13.4KiB	<input type="checkbox"/>

Download file

www.Meier-NT.de

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7.2.1.3 Login

In order to make changes to the configuration or the sensors of the ADL-MXmini®, a password must be entered first. The standard password is: **000000**. This password can be changed in “System Settings”.



ADL-MXmini Log in

2016-11-03 15:42:05 CET

System

- System information
- Systemlog

Reporting

- Online Values
- Data plot
- File export

System information

Location name: 2dad5caabae10b63437ee077da7f0014
 Device type: ADL-MXmini GSM
 Serial: 081000001
 Build number: 1.0.3
 Available memory: 803 MB
 free memory: 743 MB

Help

There is no help available for this page.

www.Meier-NT.de

7.2.2 Menu Structure after Login

System

- System Information
- Station Description
- System Settings
- Network Setting
- Modem
- Data Transmission
- Notification
- Update Management
- Systemlog

Devices

- Device Search
- Device Configuration

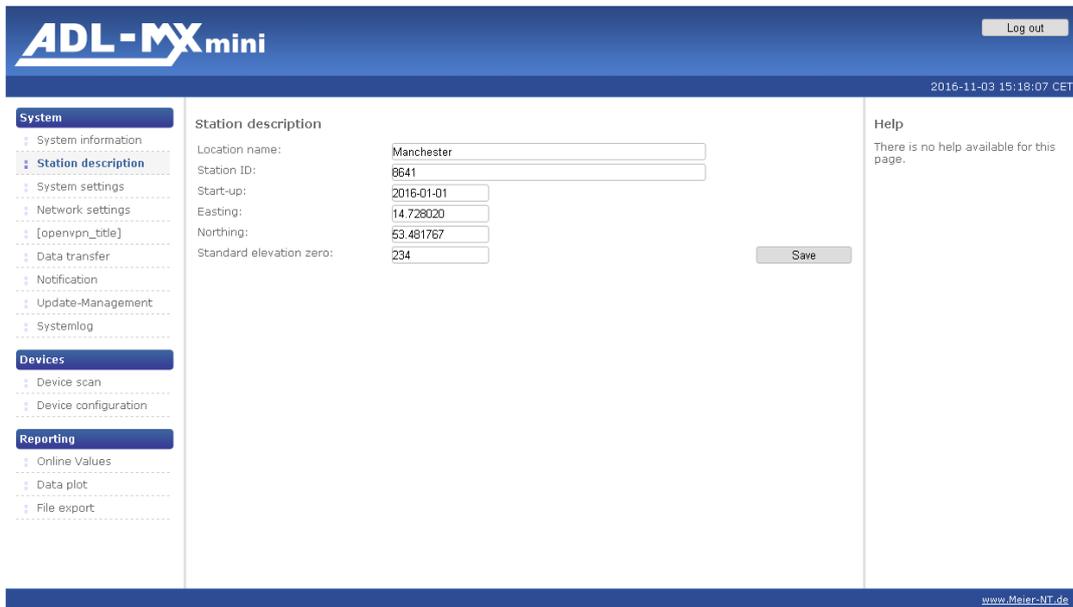
Analysis

- Online Values
- Data plot
- File export

7.2.2.1 System

Station Description

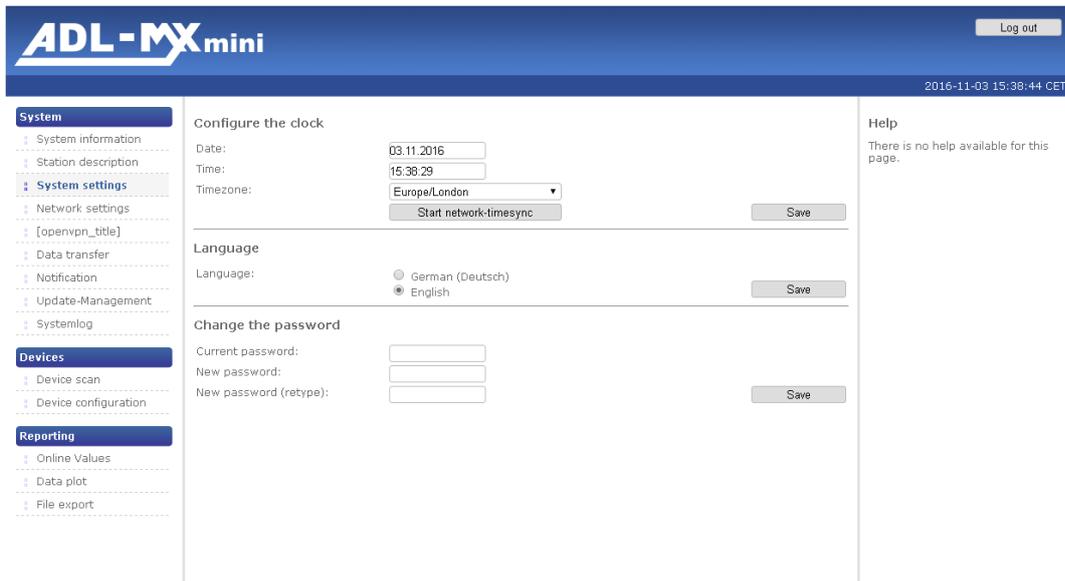
In the station description information about the station can be entered and displayed. the coordinate values follow the Gauss-Krüger-format. A necessary translation can for example be done on the following webpage: <http://geo.hlipp.de/latlong.php>.



The screenshot shows the web interface for the ADL-MX mini device. The top navigation bar includes the logo 'ADL-MX mini' and a 'Log out' button. The main content area is divided into three columns. The left column contains a sidebar menu with categories: System (with sub-items: System information, Station description, System settings, Network settings, [openvpn_title], Data transfer, Notification, Update-Management, Systemlog), Devices (with sub-items: Device scan, Device configuration), and Reporting (with sub-items: Online Values, Data plot, File export). The 'Station description' sub-item is selected. The middle column is titled 'Station description' and contains a form with the following fields: Location name (Manchester), Station ID (8641), Start-up (2016-01-01), Easting (14.728020), Northing (53.481767), and Standard elevation zero (234). A 'Save' button is located at the bottom right of the form. The right column contains a 'Help' section with the text: 'There is no help available for this page.' The footer of the page displays the URL 'www.meier-nt.de'.

System Settings

Date, time, language and password for the data logger can be changed here. To change the password the old password must be entered once and the new password must be entered twice. The password must contain six digits, and is valid for the web interface and the device itself. To save the password click the necessary button.



ADL-MXmini Log out

2016-11-03 15:38:44 CET

System

- System information
- Station description
- System settings**
- Network settings
- [openvpn_title]
- Data transfer
- Notification
- Update-Management
- Systemlog

Devices

- Device scan
- Device configuration

Reporting

- Online Values
- Data plot
- File export

Configure the clock

Date:

Time:

Timezone: Save

Language

Language: German (Deutsch) English Save

Change the password

Current password:

New password:

New password (retype): Save

Help

There is no help available for this page.

www.Meier-NT.de

Network Settings

Network parameters can be displayed or changed here. In case the data logger should be integrated into a network, the necessary settings have to be discussed with the administrator.



ADL-MXmini Log out

2016-11-03 15:39:26 CET

System

- System information
- Station description
- System settings
- Network settings**
- [openvpn_title]
- Data transfer
- Notification
- Update-Management
- Systemlog

Devices

- Device scan
- Device configuration

Reporting

- Online Values
- Data plot
- File export

Current settings

IP address: 172.17.17.2

Subnetmask: 255.255.255.0

Gateway: 172.17.17.1

DNS-Server: 10.203.128.1

Network settings

Type: Dynamic address (DHCP) Static Configuration:

IP address:

Subnetmask:

Gateway:

Broadcast:

DNS-Server: Save

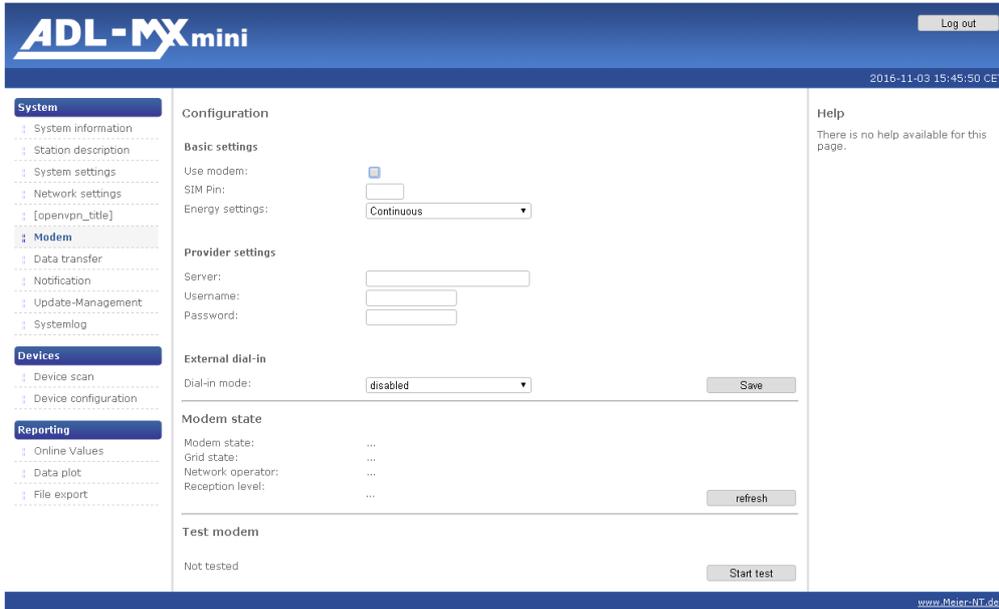
Help

There is no help available for this page.

www.Meier-NT.de

Modem

The integrated GSM modem can be configured on this page. The required data to connect the data logger to the internet can be entered here. In case the SIM card is plugged into the data logger, the SIM's PIN can also be entered here. The signal strength for the GSM modem is on display, and in addition to that the modem function can be tested as well. Furthermore, you can also change the username and the password for the dial-up connection. Access number and access data of the desired provider must be entered. The corresponding access data can be found on the following table or can be received from your provider.



The screenshot shows the ADL-MXmini web interface. The main content area is titled 'Configuration' and contains several sections:

- Basic settings:** Includes a checkbox for 'Use modem', a text input for 'SIM Pin', and a dropdown menu for 'Energy settings' currently set to 'Continuous'.
- Provider settings:** Includes text input fields for 'Server', 'Username', and 'Password'.
- External dial-in:** Includes a dropdown menu for 'Dial-in mode' set to 'disabled' and a 'Save' button.
- Modem state:** A table showing status for 'Modem state', 'Grid state', 'Network operator', and 'Reception level', with a 'refresh' button below.
- Test modem:** A section with 'Not tested' and a 'Start test' button.

 A left sidebar contains navigation menus for 'System', 'Modem', 'Devices', and 'Reporting'. A top right corner has a 'Log out' button and a timestamp '2016-11-03 15:45:50 CET'. A 'Help' section on the right states 'There is no help available for this page.' The footer of the interface shows 'www.Meier-NT.de'.

Provider	Server	Username	Password	DNS
T-Mobile	internet.t-mobile	tm	tm	193.254.160.1
T-Mobile CZ	internet.t-mobile.cz	gprs	7651	
Vodafone	web.vodafone.de	(no username)	(no password)	139.7.30.125
D1	internet.t-d1.de	linux	t-d1	
EPlus	internet.eplus.de	eplus	gprs	
Meier-NT M2M	m2m-net.sa.t-mobile	m2m	sim	

SIM Pin

Please enter the pin code of your SIM card. If the pin code is disabled enter „0000“.

Energy settings

When the ADL-MXmini is configured for energy saving one can select the option „Continuous“ or „Timeframe“ to enable the dial-in to the datalogger via the internal modem. Select „Timeframe“ to enable the modem only for a time range. If you select this option there will be some additional input fields to set up to 4 time ranges. During this time the modem is active and an dial-in is possible to configure the datalogger or read out some data.

Provider settings for RAS connection

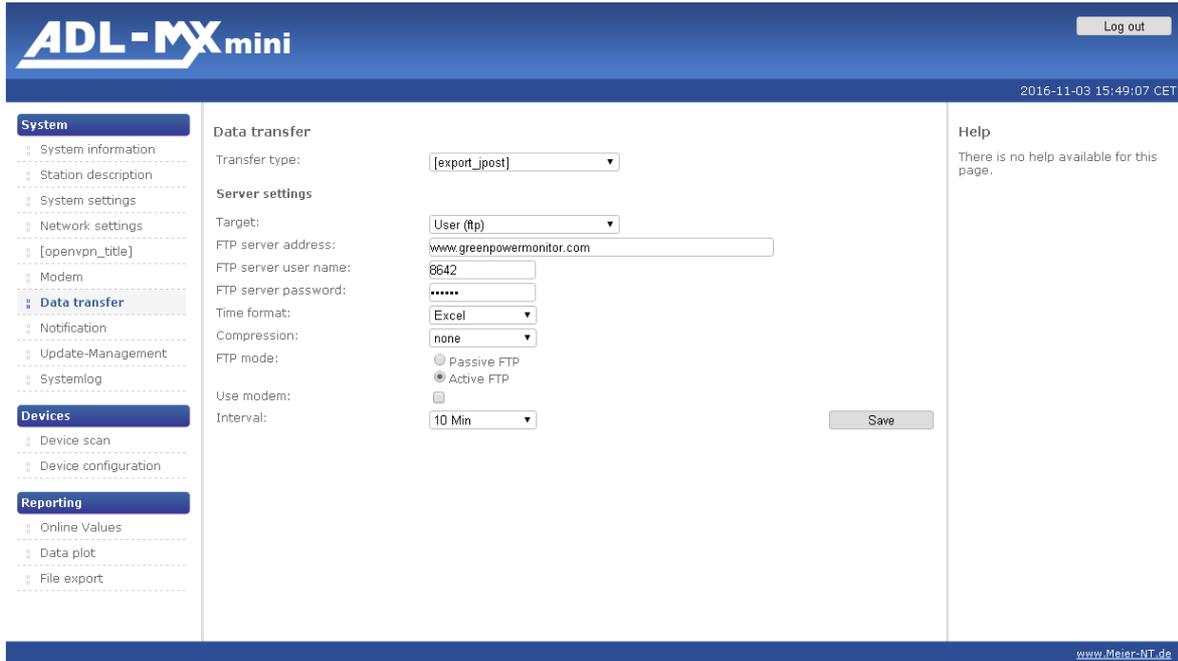
For dial-in via RAS connection to the ADL-MXmini you must setup username and password. By default the following settings are used:

Username: username
Password: password

You must use these settings while creating an RAS connection.

Data Transfer

The configuration of the data logger regarding data transmission to an FTP server or the web portal of Meier-NT can be done on this page. If “User (ftp)” is selected as target, the data of your own FTP server have to be entered here. If the data shall be sent via the integrated GSM Modem, “Use modem” must be ticked. Enter the transmission interval and save the input with the help of the appropriate button.



The screenshot shows the ADL-MXmini web interface. The top navigation bar includes the logo, a 'Log out' button, and the date/time '2016-11-03 15:49:07 CET'. The left sidebar contains menu items for System, Devices, and Reporting. The main content area is titled 'Data transfer' and contains the following configuration fields:

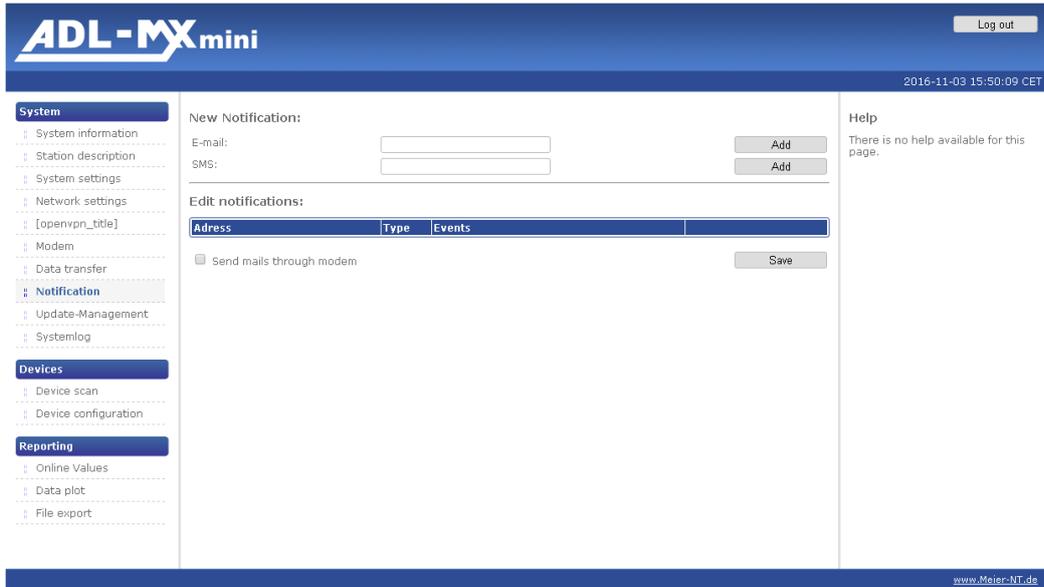
- Transfer type: [export_post]
- Server settings:
 - Target: [User (ftp)]
 - FTP server address: [www.greenpowermonitor.com]
 - FTP server user name: [8642]
 - FTP server password: [*****]
 - Time format: [Excel]
 - Compression: [none]
 - FTP mode: Passive FTP, Active FTP
- Use modem:
- Interval: [10 Min]

A 'Save' button is located at the bottom right of the configuration area. A 'Help' section on the right states: 'There is no help available for this page.' The footer of the page contains the URL 'www.Meier-NT.de'.

Notifications

On this page the notification functions of the data logger can be configured. First enter and then select the email address or telephone number of the receiver.

This feature is still in development and will be able for use in a later firmware version.



The screenshot shows the 'ADL-MXmini' web interface. The top navigation bar includes a 'Log out' button and the date '2016-11-03 15:50:09 CET'. A left sidebar lists menu items under 'System', 'Devices', and 'Reporting'. The 'Notification' section is active, showing 'New Notification' and 'Edit notifications' options. The 'New Notification' section has input fields for 'E-mail:' and 'SMS:', each with an 'Add' button. The 'Edit notifications' section features a table with columns 'Address', 'Type', and 'Events', and a 'Save' button. A 'Help' section on the right states 'There is no help available for this page.' The footer contains the URL 'www.Meier-NT.de'.

Update Management

On this page the data logger can be updated. It offers four options to update your device:

1. Automatic update of webserver via network
2. Automatic update of webserver via modem (suitable connection required!)
3. Automatic update of webserver via modem delayed (suitable connection required!)
4. Manual update

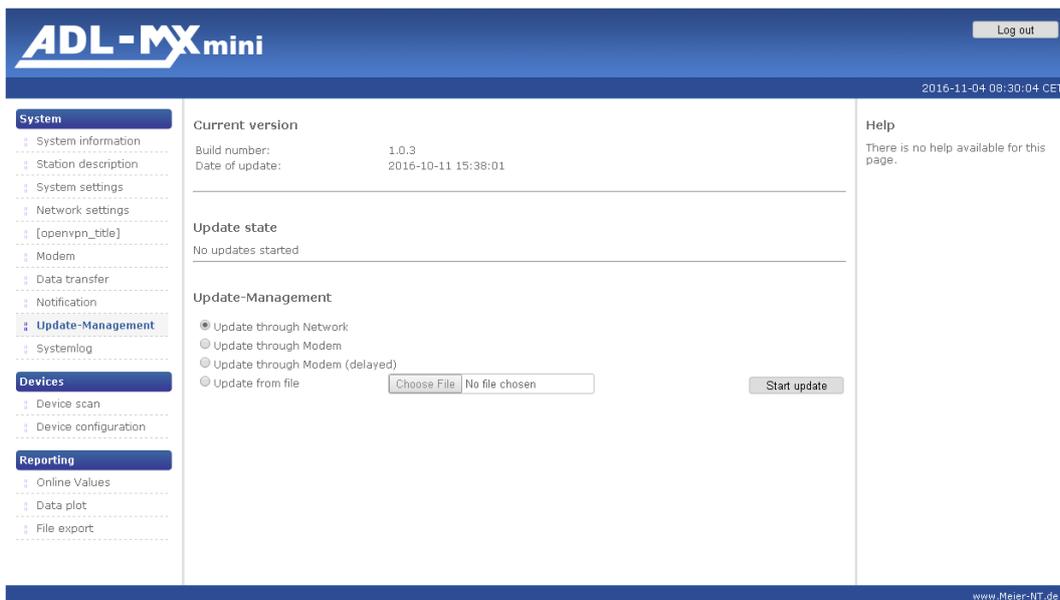
Ad 1.) In case the ADL-MXmini® has access to the Internet via an Ethernet interface, an update can be downloaded and installed automatically. This process is started by a click on the respective button.

Ad 2.) In case the ADL-MXmini® has a modem, the data logger can download an update via the modem connection and install it automatically. This process is started by a click on the respective button.

Ad 3.) In case the ADL-MXmini® has a modem, the data logger can download an update via the modem connection and install it automatically. This process is started by a click on the respective button.

The specialty here is, that an existing PPP connection is closed and after a short period a new connection is set up and the update is downloaded and installed. This might be useful if you are directly connected to the device via GSM for servicing purposes.

Ad 4.) In case the ADL-MXmini® is not directly connected to the Internet, an update can be brought in manually. At first an update has to be either downloaded from the Meier-NT Homepage or requested via mail at info@meier-nt.de. After a connection to the ADL-MXmini® has been established, the file can be copied and transferred to the data logger. The installation is then started by a click on the respective button.



The screenshot shows the ADL-MXmini web interface. The top navigation bar includes the logo, a 'Log out' button, and the date '2016-11-04 08:30:04 CET'. The left sidebar contains a menu with categories: System, Devices, and Reporting. The main content area is titled 'Update-Management' and displays the following information:

- Current version:** Build number: 1.0.3, Date of update: 2016-10-11 15:38:01
- Update state:** No updates started
- Update-Management options:**
 - Update through Network
 - Update through Modem
 - Update through Modem (delayed)
 - Update from file

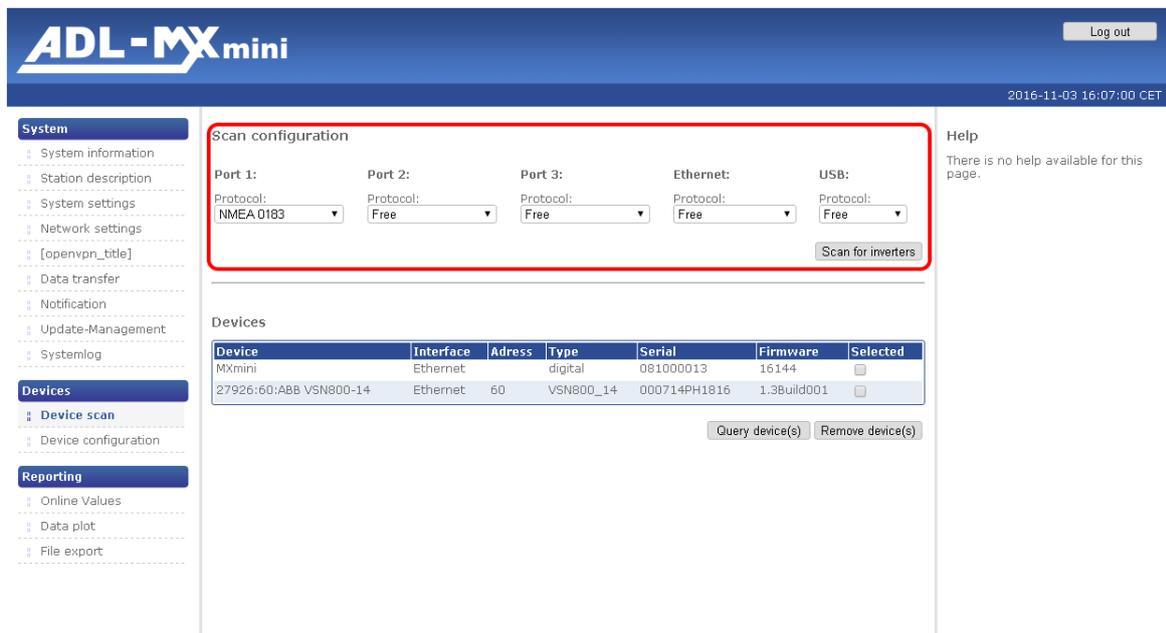
Below the 'Update from file' option, there is a 'Choose File' button and a 'No file chosen' message. A 'Start update' button is located to the right of the radio buttons. A 'Help' section on the right side of the page states: 'There is no help available for this page.'

7.2.2.2 Devices

Device Search

Configuration Device Search

Bevor the search can be started, you have to select which device is connected to which interface. The search for connected devices can be started with the button “Scan for inverters“. During the process a bar indicates the progress, and a list with already found devices is on display.



ADL-MXmini Log out

2016-11-03 16:07:00 CET

System

- System information
- Station description
- System settings
- Network settings
- [openvpn_title]
- Data transfer
- Notification
- Update-Management
- Systemlog

Devices

- Device scan
- Device configuration

Reporting

- Online Values
- Data plot
- File export

Scan configuration

Port 1: Protocol: NMEA 0183 Port 2: Protocol: Free Port 3: Protocol: Free Ethernet: Protocol: Free USB: Protocol: Free

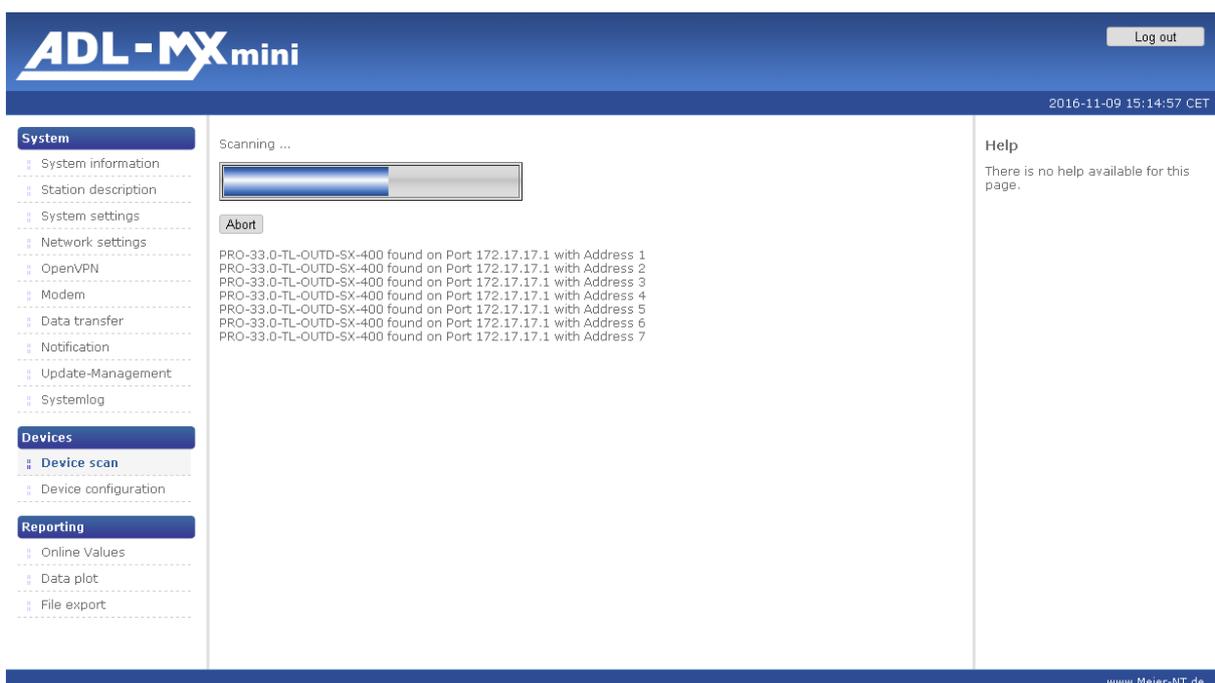
Devices

Device	Interface	Address	Type	Serial	Firmware	Selected
MXmini	Ethernet		digital	091000013	15144	<input type="checkbox"/>
27926:60:ABB VSN800-14	Ethernet	60	VSN800_14	000714PH1816	1.3Build001	<input type="checkbox"/>

Help

There is no help available for this page.

www.Meier-NT.de



ADL-MXmini Log out

2016-11-09 15:14:57 CET

System

- System information
- Station description
- System settings
- Network settings
- OpenVPN
- Modem
- Data transfer
- Notification
- Update-Management
- Systemlog

Devices

- Device scan
- Device configuration

Reporting

- Online Values
- Data plot
- File export

Scanning ...

PRO-33.0-TL-OUTD-SX-400 found on Port 172.17.17.1 with Address 1
 PRO-33.0-TL-OUTD-SX-400 found on Port 172.17.17.1 with Address 2
 PRO-33.0-TL-OUTD-SX-400 found on Port 172.17.17.1 with Address 3
 PRO-33.0-TL-OUTD-SX-400 found on Port 172.17.17.1 with Address 4
 PRO-33.0-TL-OUTD-SX-400 found on Port 172.17.17.1 with Address 5
 PRO-33.0-TL-OUTD-SX-400 found on Port 172.17.17.1 with Address 6
 PRO-33.0-TL-OUTD-SX-400 found on Port 172.17.17.1 with Address 7

Help

There is no help available for this page.

www.Meier-NT.de

After completion you have to configurate found devices in the menu item “Device configuration”.

Devices

Already included devices can be checked or removed in this menu item. For a check the requested devices have to be ticked, and then you have to press the button “Query Device(s)”. If the device can be scanned properly, the line will turn green.

Devices

Device	Interface	Adress	Type	Serial	Firmware	Selected
MXmini	Ethernet		digital	081000001	16144	<input type="checkbox"/>
27928:1:ABBPRO (172.17.17.1)	Ethernet	1	ABBPRO	7624730915	3102526338	<input type="checkbox"/>

If the device cannot be scanned properly, the line will turn red.

27928:8:ABBPRO (172.17.17.1)	Ethernet	8	ABBPRO	7624720915	3102526338	<input type="checkbox"/>
27927:14:ABB VSN800-14	Ethernet	60	VSN800_14	000639PH0916	1.3Build001	<input type="checkbox"/>

Query device(s) Remove device(s)

In case a device shall be removed from the data logger, the respective device has to be ticked and the button “Remove device(s)” has to be pressed. Afterwards the selected device will be removed from the configuration of the ADL-MXmini®.

Devices

Device	Interface	Adress	Type	Serial	Firmware	Selected
MXmini	Ethernet		digital	081000013	16144	<input type="checkbox"/>
27926:60:ABB VSN800-14	Ethernet	60	VSN800_14	000714PH1816	1.3Build001	<input checked="" type="checkbox"/>

Query device(s) Remove device(s)

7.3 Device Configuration

In “Device configuration” you can enter and change the desired rate for measuring and saving data from the connected inverters, and whether arithmetic formulas should be applied in order to further process and evaluate measured data. Furthermore, the power saving mode, which results in a significant reduction of the electric power consumption, can be activated in this menu item.

Energy settings:

Energy saving:

Buffer settings:

Buffer name	Measure interval	Save interval
BUF1 60/300	60 Seconds	300 Seconds
BUF2 600/600	600 Seconds	600 Seconds

7.3.1 Energy Settings

If the power saving mode is turned on, the data logger will switch to standby mode after every completed measuring cycle. As soon as a new measuring task is supposed to take place, the data logger switches back to internal operating mode, connects to all inverters, evaluates data and sets outputs if necessary. All operating elements and the display are still turned off. In order to manually wake the device press the “WAKE” button or the  key. Currently a combined use of data transmission via network (Ethernet) and power saving mode is not possible.

7.3.2 Memory Settings

In this menu item, existing buffers can be named and intervals for measuring and storage rate can be set. The specification is made in seconds. Please mind the necessary time for connecting to devices and the internal processing time of the data logger when entering the intervals. Those two factors are subject to change and depend on the devices connected. You can check the required time for a full measuring and evaluation in “Online Values” for the device “System” and the channel “Cycle Time”. The time entered for a measuring interval should be at least twice as high as that number.

7.3.3 ADL-MXmini Settings

In this menu you can setup digital in- and outputs as well as the internal supply voltage measurement of the ADL-MXmini. The connections DIO1 – DIO8 are useable as in- and outputs. Therefore you must enable and setup this function at the appropriate connection. For recording of the supply voltage one must setup the right buffer and enable recording.

7.3.4 Device Settings

All connected devices can be found here. Every device has its own device name. This name allows an easy assignment for the display of online values and can be freely assigned.

Every device contains at least one group of inputs or outputs. Every group has to be assigned to one previously configured buffers via the dropdown list “Buffer” or it will be ignored.

Every group consists of at least one channel that can be assigned to a name and a unit. The name is used when displaying online values and during file export, therefore every name should be distinct

If “record” is ticked, the values will be saved by the data logger and can be used for later analysis or data transmission.

Device:	27926:60:ABB VSN800-14		Type:	VSN800_14	
Input	Name	Unit	Buffer:	BUF1 60/300	
1	20:Air temperature	°C	<input checked="" type="checkbox"/> record	+	
2	21:Humidity	%rF	<input type="checkbox"/> record	+	
3	22:Barometric pressure	Hpa	<input type="checkbox"/> record	+	
4	23:Wind speed	m/s	<input checked="" type="checkbox"/> record	+	
5	24:Wind direction	°	<input checked="" type="checkbox"/> record	+	

On the right side the enhancement button „+“ can be found, which allows to do further settings. With every press of that button the menu can be folded out or back in.

In the expanded view the number of decimal digits and the aggregation type can be set.

The aggregation type “Type” defines the processing of measured data from interval into saved value. The following types are available:

- Average: The arithmetic mean of all measured values
- Min: The smallest value will be saved
- Max: The largest value will be saved
- Sum: The sum of all values will be saved (e.g. for counting inputs)
- Last: The last valid measurement (not NaN) will be saved

Additionally the measured value can be translated with the help of a formula. Further information can be found in the chapter “Formulas and Arithmetical Variables”.

Device:	27926:60:ABB VSN800-14		Type:	VSN800_14	
Input	Name	Unit	Buffer:	BUF1 60/300	
1	20:Air temperature	°C	<input checked="" type="checkbox"/> record	-	
Formula			Type: Average	decimals: 2	
new variable					
2	21:Humidity	%rF	<input type="checkbox"/> record	+	
3	22:Barometric pressure	Hpa	<input type="checkbox"/> record	+	
4	23:Wind speed	m/s	<input checked="" type="checkbox"/> record	+	

7.3.5 Formulas and Arithmetical Variables

A formula can be defined for every channel of a group and device, which either directly translates the recorded value or sets a switching condition for an output. The same scheme can be used in order to express a formula in arithmetical variables.

Arithmetical Variables are used for calculating and linking of values.

Hint: The internal data processing of the ADL- MXmini® starts by querying the devices. Afterwards all arithmetical variables are being calculated. In the end all outputs are being processed.

For creating a new arithmetical variable press the button „New Variable“.

Arithmetic variables:

Variable	Name	Unit	Buffer
There are no arithmetic variables defined.			
			<input type="button" value="new variable"/>

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The page will be reloaded and an empty variable will be created.

Variable	Name	Unit	Buffer
1	<input type="text" value="new variable 1"/>	<input type="text"/>	<input type="checkbox"/> record <input type="text" value="no buffer selected"/> x <input type="text" value="-"/>
Formula <input type="text"/>		Type: <input type="text" value="Average"/>	decimals: <input type="text" value="2"/>
			<input type="button" value="new variable"/>
			<input type="button" value="new variable"/>

As example the outside temperature of a sensor is translated from °C into °F.

A distinct name is given to the new variable.

Arithmetic variables:

Variable	Name	Unit	Buffer
1	<input type="text" value="new variable 1"/>	<input type="text"/>	<input type="checkbox"/> record <input type="text" value="no buffer selected"/> x <input type="text" value="+"/>
			<input type="button" value="new variable"/>

The variable has to get assigned to a buffer.

Arithmetic variables:

Variable	Name	Unit	Buffer
1	<input type="text" value="new variable 1"/>	<input type="text"/>	<input type="checkbox"/> record <input type="text" value="no buffer selected"/> x <input type="text" value="+"/>
			<input type="button" value="new variable"/>

In this example the value of a sensor is used as the output value for the calculation. The variable has to be expanded with the “+” button and with the button “new variable” a new calculating variable can be created.

Arithmetic variables:

Variable	Name	Unit	Buffer
1	Air temperature °F		<input type="checkbox"/> record BUF2 600/600 x -
Formula		Type: Average decimals: 2	
		new variable	
new variable			

Hint: Calculating variables start with a “v” followed by a sequential number. “v0” is used for naming the own or the previous value. For sensors for example this is their own measured value.

A new and empty field “v1” can now be found under the arithmetical variables. After selecting the field, it gets tagged and bordered blue.

Arithmetic variables:

Variable	Name	Unit	Buffer
1	Air temperature °F		<input type="checkbox"/> record BUF2 600/600 x -
Formula		Type: Average decimals: 2	
v1			delete new variable
new variable			

Afterwards the value of the sensor that should be used for the calculation must be selected. The channel name will be copied into the field v1.

Device:	Type:		
27926:60:ABB VSN800-14	VSN800_14		
Input	Name	Unit	Buffer:
1	20:Air temperature	°C	<input checked="" type="checkbox"/> record
2	21:Humidity	%rF	<input type="checkbox"/> record

Arithmetic variables:

Variable	Name	Unit	Buffer
1	Air temperature °F		<input type="checkbox"/> record BUF2 600/600 x -
Formula		Type: Average decimals: 2	
v1	20:Air temperature		delete new variable
new variable			

After that step “v1” is available for further calculations.

The translation of degree Celsius into degree Fahrenheit follows the following formula:

$$^{\circ}\text{F} = ^{\circ}\text{C} * 1.8 + 32$$

The input value for °C is the sensor value, which is available in “v1”. The complete formula to be entered therefore reads as:

$$\text{v1} * 1.8 + 32$$

Arithmetic variables:

Variable	Name	Unit	Buffer
1	Air temperature °F		<input type="checkbox"/> record BUF2 600/600
Formula	v1*1.8+32		Type: Average decimals: 2
v1	20:Air temperature		delete
			new variable

Attention!!!

Mind the notes from chapter “7.3.4.1 Basic Advices for entering Formulas”.

7.3.5.1 Basic Advices for entering Formulas:

- Use a dot “.” and not a comma as decimal separator.
- v0 references the own value
- v1 to vx reference assigned values of other channels or variables
- Use simple brackets “()” for grouping
- Formulas can be nested in any desired way
- Digital outputs are only turned on by the value “1”, all other values leave them turned off
- The variable name “v” has to be spelled with a lowercase letter.

7.3.5.2 Functions and Constants for Use in Formulas:

Formula	Description	Example
a=b, !=, <, <=, >, >=	equals, unequals, less than, less or equal, greater than, greater or equal	(v0=1)
+, -, *, /	addition, subtraction, multiplication, division	v0+1000
%	Division with remainder	v0%1000
sin(a), cos(a), tan(a)	Trigonometrical functions	sin(v0)
ln(a), lb(a), ld(a)	logarithms natural, binary, decadic	ln(2)
abs(a)	Absolut value (figure)	abs(-2.54)
a^b, pow(a;b)	exponent	v0^2
sqrt(a)	Square root	sqrt(v0)
e, pi	Constants Eulerian number, Pi	v0*2*pi
cal2p(a;b;c;d;e;f)	2-position scaling. arguments: a: Scalable values (v0) b: Position 1 origin (e.g. Sensor 0V) c: Position 2 origin (e.g. Sensor 1V) d: Position 1 result (e.g. Sensor -27°C) e: Position 2 result (e.g. Sensor 70°C) f: ERR (Error value. If f equals a then the result is NaN)	cal2p(v0;0;1;-27;70;9999)
supply(a;b)	Sensor power (only for outputs). a: required time before measuring to activate output (in seconds). b: negation (0=output turns on for measuring, 1= output turns off for measuring)	supply(5;0)

regsum(name) regsumn(name)	Sums up all variables whose name contains "name". As name also a regular expression could be used. regsum: when one value is NaN, the sum is NaN regsumn: sums up all values which are not NaN	regsum(temperature) regsumn(voltage)
time(a)	Returns time and date values depending on a: d=day, m=month, y=year (YYYY) H=hour, M=minute, S=seconds D=daily seconds (seconds since 00:00 Uhr) s=unixtime (seconds since 01.01.1970 00:00) u=day of week (1..7) 1=Monday w=day of week (0..6) 0=Sunday	time(H)
eisman(a;...k)	Powermanagement for Photovoltaik – calculates an value from 4 digital inputs or counters a, b, c, d: digital inputs or counters e, f, g, h: value for each input (e.g. 0, 30, 60, 100) i: initialization value on reboot j: failure value on unknown input combination (nan=stay on last value) k: input type (0=digital input, 1=pulse counter)	eisman(v1;v2;v3;v4 ;0;30;60;100 ;100;nan;1)

8. Technical Data

8.1 General

Interfaces

- 3x RS485 ports (300 – 115200 Baud)
- 1x SDI-12
- 1x RS232 V.24 (RXD/TXD/GND)
- 8x digital in-/outputs
(status- or 32bit counter input, switching output)
- 1x Ethernet port (10/100MBit)
- 1x USB-Host (High-Speed USB 2.0)
- GSM module integrated (Quad-Band, optional LTE)
- Expansions: CAN-bus module,
analog input module

Protocols

- Modbus TCP (ABB PVS800)
- Modbus RTU (ABB PRO 33.0, Huawei, Thies, Keller, Kipp&Zonen, ...)
- PowerOne Aurora
- ASCII
- tensioLINK
- DKRF (Driesen+Kern)
- NMEA-0183
- and many more

Technical Data

Display: GLC display 128 x 32 Pixel

Memory: integrated memory on SD card (standard 1GB)

Data acquisition interval: 1 second - 24 hours

Operation voltage: 10 - 36VDC

Power consumption:

- energy-saving mode: 0,10W (12V, 8,3mA typ.)
- sampling time of 5 min: 0,11W (12V, 9,3mA typ.)
- sampling time of 1 min: 0,16W (12V, 13,3mA typ.)
- sampling time of 10 s: 0,76W (12V, 64mA typ.)
- maximum: 1,80W (12V, 150mA typ.)

Digital in-/outputs:

- inputs: max. 30VDC, 1[High]:>4VDC, 0[Low]: <1.6VDC,
max. sampling frequency 2kHz
- outputs: max. 30VDC, max. 100mA, open-drain (high side, +VCC)

Operating temperature range: -20 bis +70°C

Moisture range: 0 bis 70 % relative humidity (non-condensing)

Case: synthetic material, assembly on DIN EN-rail

Ingress protection: IP 20 on DIN 40 050-9/5.93

Weight: 250g (without antenna)

Size (L/W/H): 107 x 90 x 60 mm

9. Contact

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D- 08297 Zwönitz

Commercial register HRB 25917
District court Chemnitz

Telephone + 49 37754 304 0
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info@meier-nt.de

<http://www.meier-nt.de>

<http://www.solardatenlogger.de>

Annex

Connection Diagram Clima Sensor US - ADL-MXmini

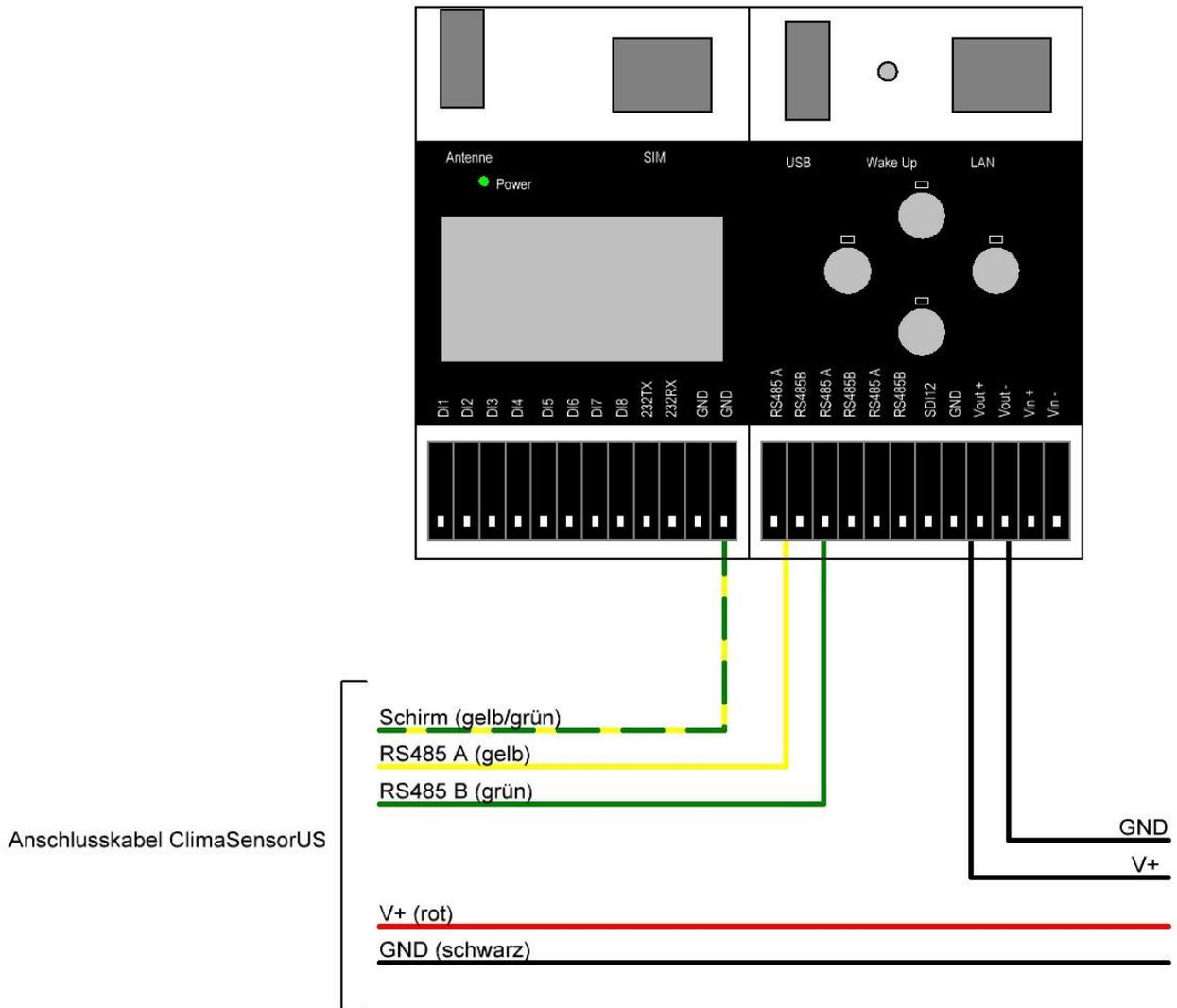
Sensor cable:

16-pole sensor cable with connection box

Power supply Clima Sensor US:

The ADL-MXmini® can provide power supply for the sensor only on a limited basis (The maximum load for the output (Vout) is 500mA) therefore heating cannot be activated. In case the sensor`s heating is required, the power supply has to be gained from an independent source.

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In addition to the factory settings, the following settings must be adapted:

In case multiple sensors should be operated by one bus only the last bus node needs an activated termination resistor.

Function	Setting	Parameter	Value
baud rate	serial bit rate to 115200Bd	BR	01152
bus termination resistor	bus termination resistor on	BT	00001
protocol	protocol Modbus RTU	CI	00001
duplex mode	RS485 port to half-duplex	DM	00000
device ID	device ID = 1	ID	00001
station altitude	station altitude is checked against GPS altitude	SH	09998
independent message output	deactivated	TT	00000

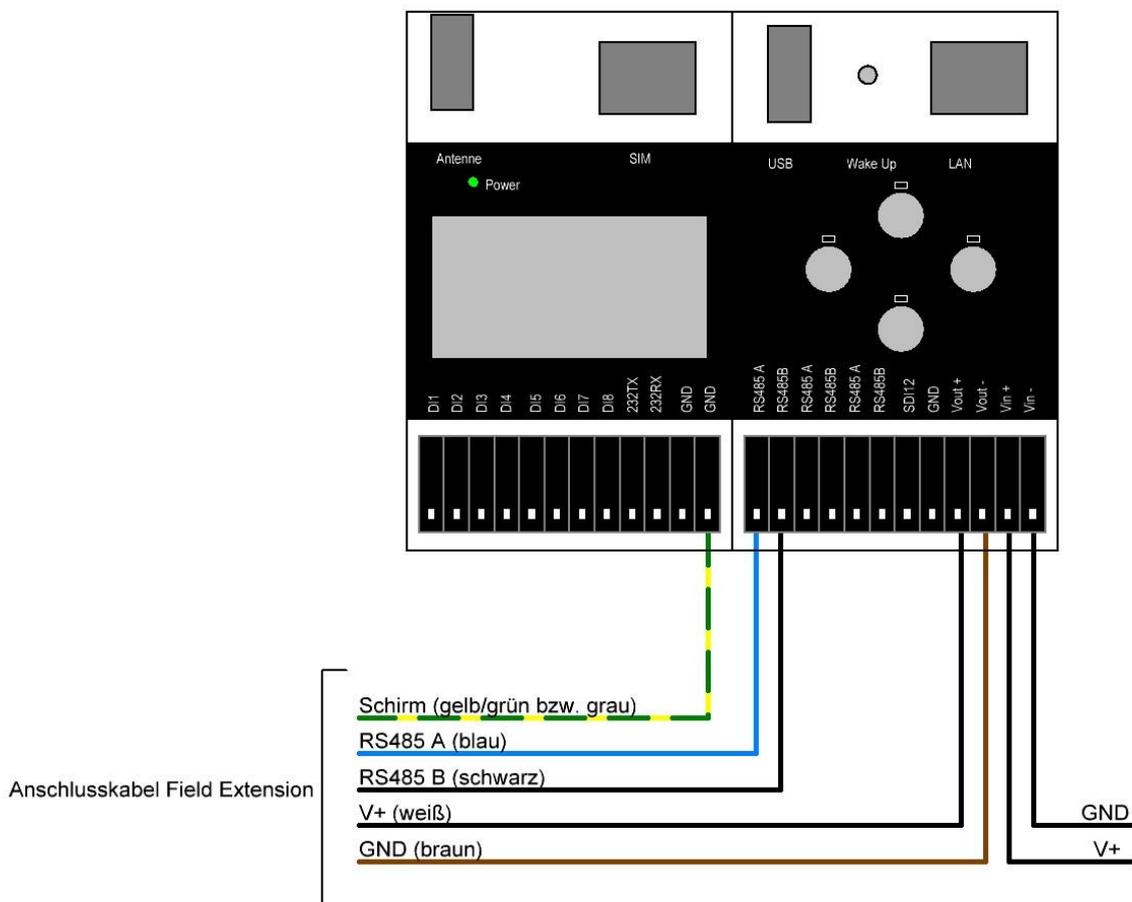
Connection Diagram Field Extension - ADL-MXmini

Sensor cable:

sensor/actuator cable, 5-pole, free conductor end on straight M12 socket, A-coded.

Power supply Field Extension:

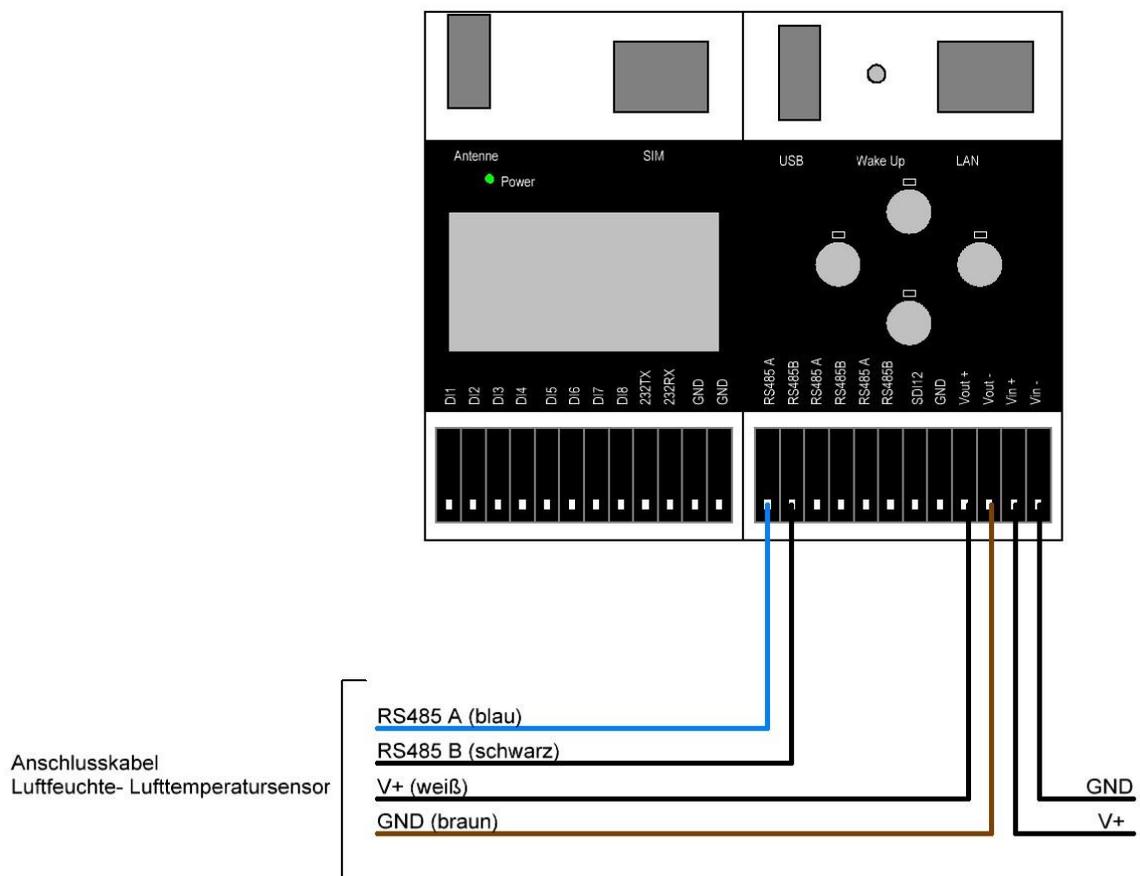
The power supply for the Field Extension can be provided via the ADL-MXmini. The power consumption of the Field Extension and the sensors connected to it should be checked in advance. The maximum load for the output (Vout) is 500mA.



Connection Diagram Humidity and Air Temperature Sensor - ADL-MXmini

Sensor cable:
sensor/actuator cable, 4-pole, free conductor end.

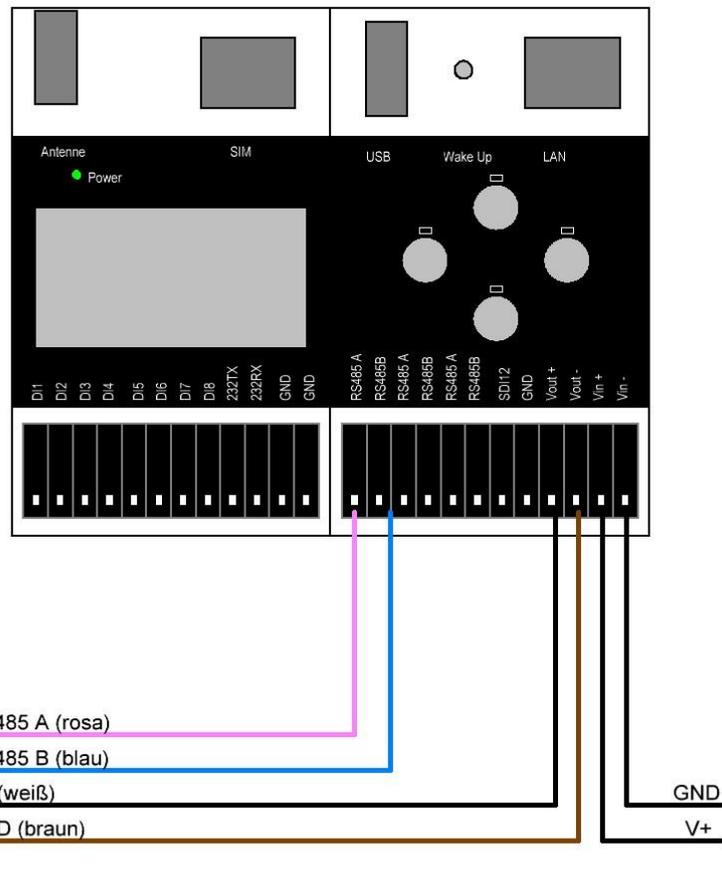
Power supply humidity and air temperature sensor:
The power supply for the humidity and air temperature sensor can be provided via the ADL-MXmini. The maximum load for the output (Vout) is 500mA.



Connection Diagram Tensiometer T8 - ADL-MXmini

Sensor cable:
sensor/actuator cable, M 12, 8-pole, free conductor end.

Power supply Tensiometer T8:
The power supply for the Tensiometer T8 can be provided via the ADL-MXmini. The maximum load for the output (Vout) is 500mA.

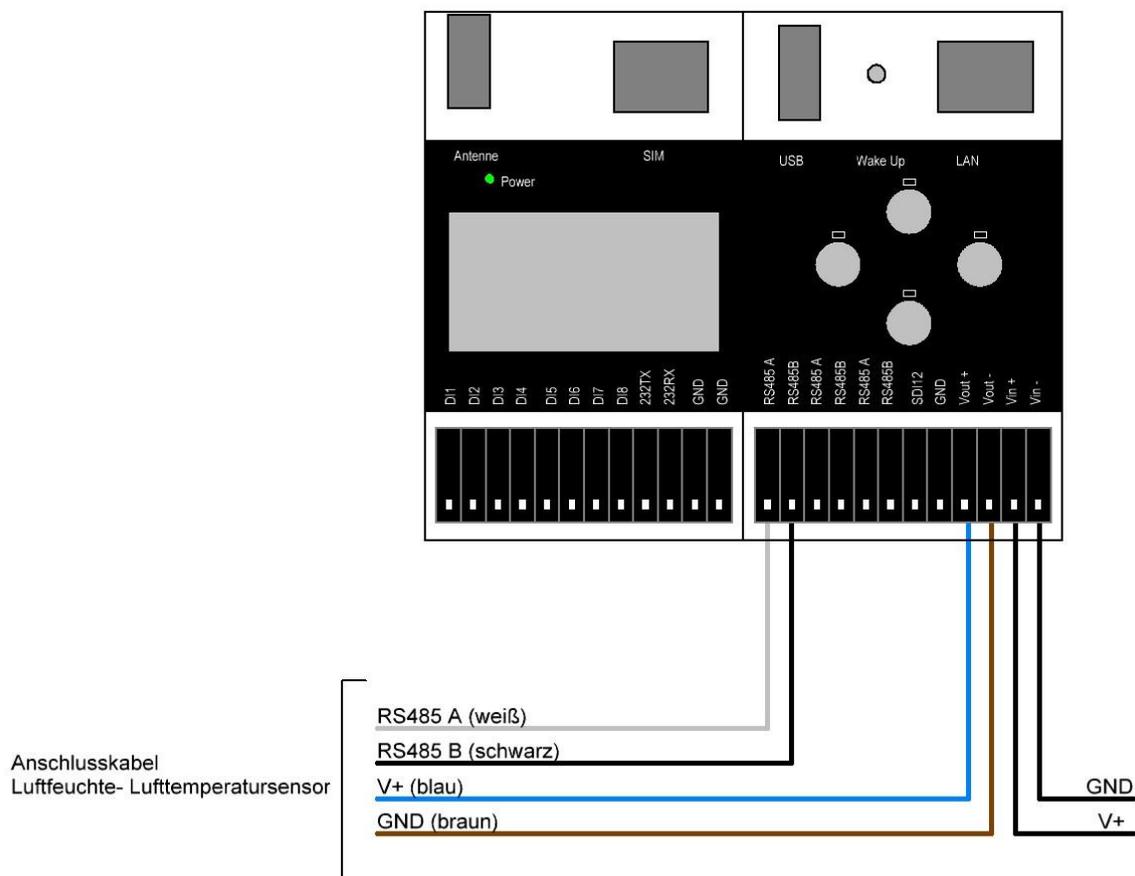


Anschlusskabel
Tensiometer T8

Connection Diagram Humidity and Air Temperature Sensor DKrF400 - ADL-MXmini

Sensor cable:
sensor/actuator cable, 4-pole, free conductor end.

Power supply humidity and air temperature sensor DKrF400:
The power supply for the humidity and air temperature sensor DKrF400 can be provided via the ADL-MXmini. The maximum load for the output (Vout) is 500mA.

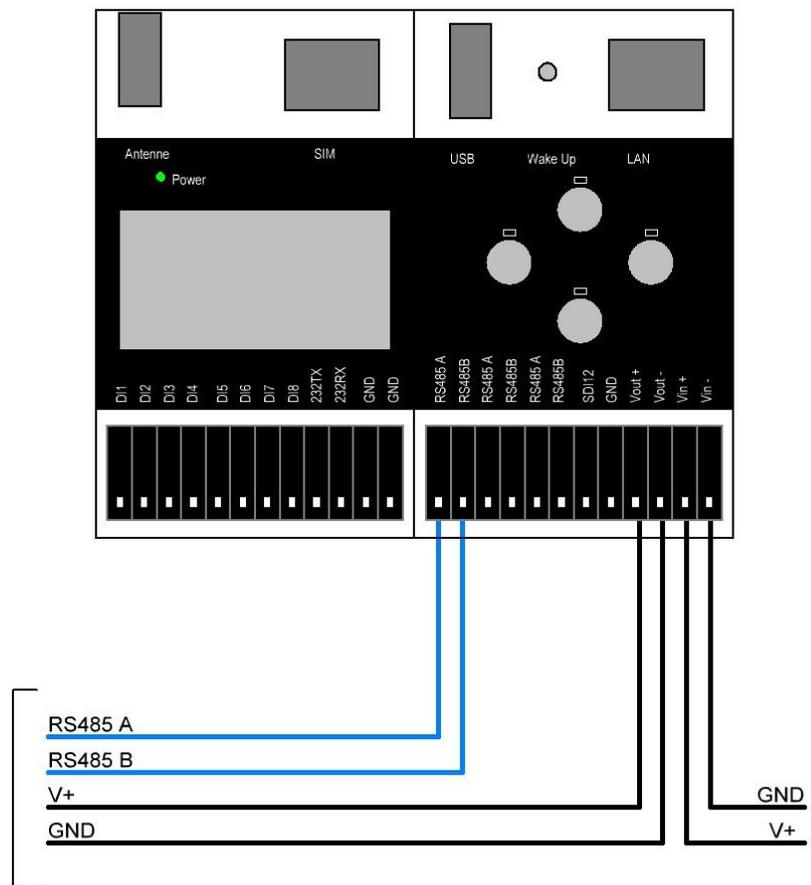


Connection Diagram M-70xx measuring module - ADL-MXmini

Sensor cable:

Power supply M-70xx module:

The power supply for the M-70xx module can be provided via the ADL-MXmini. The maximum load for the output (Vout) is 500mA.

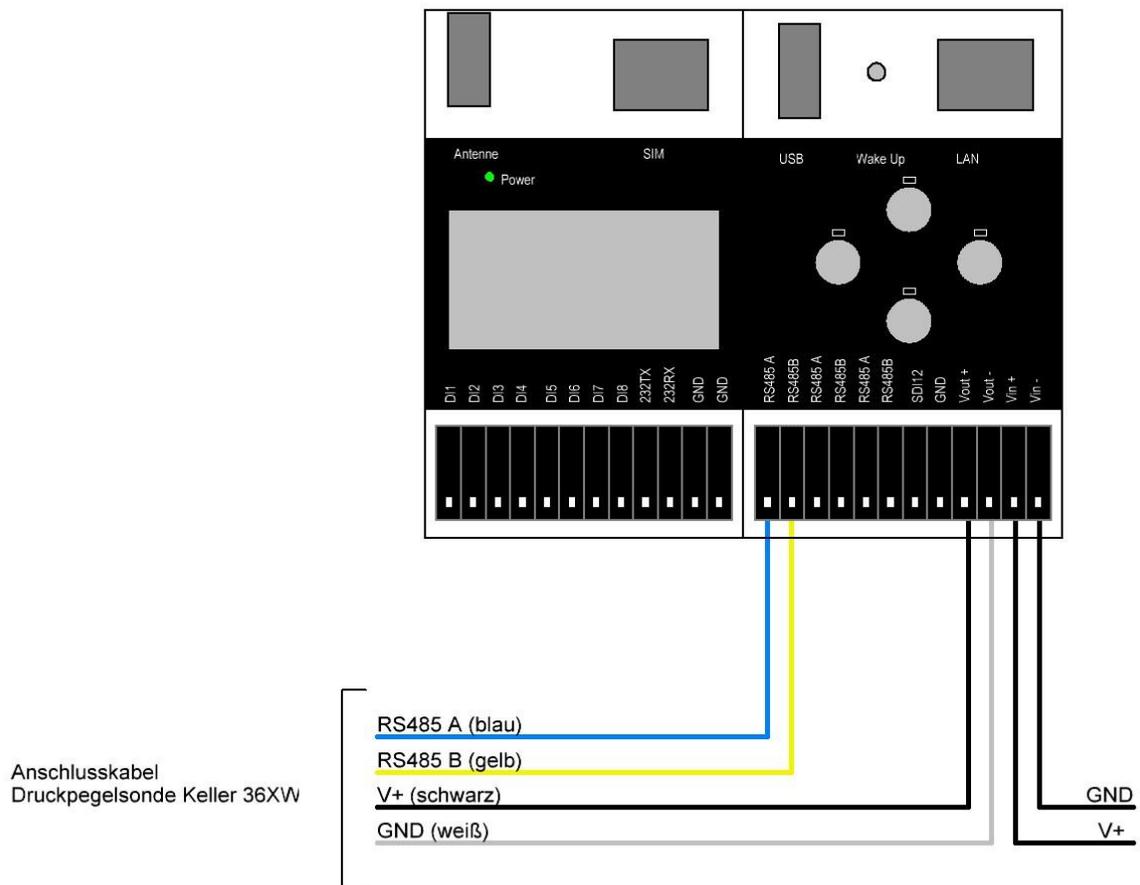


Connection Diagram Pressure Level Sensor Keller 36XW - ADL-MXmini

Sensor cable:

Power supply pressure-level sensor Keller 36XW:

The power supply for the Keller 36XW can be provided via the ADL-MXmini. The maximum load for the output (Vout) is 500mA.

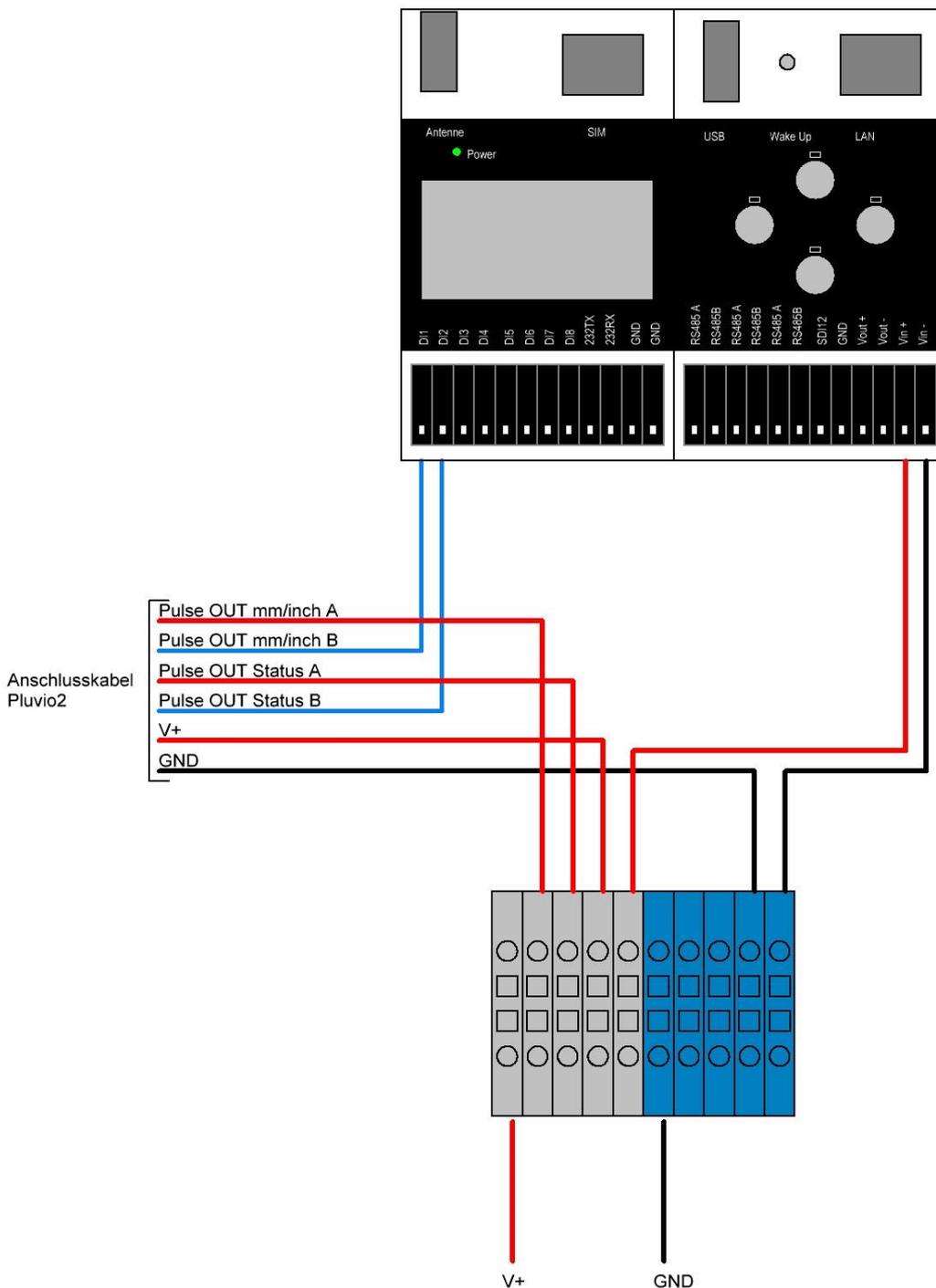


Connection Diagram Precipitation Sensor Pluvio 2 - ADL-MXmini

Sensor cable:

Power supply Pluvio2:

The power supply for the Pluvio 2 **cannot** be provided via the ADL-MXmini. The maximum load for the output (Vout) is 500mA.

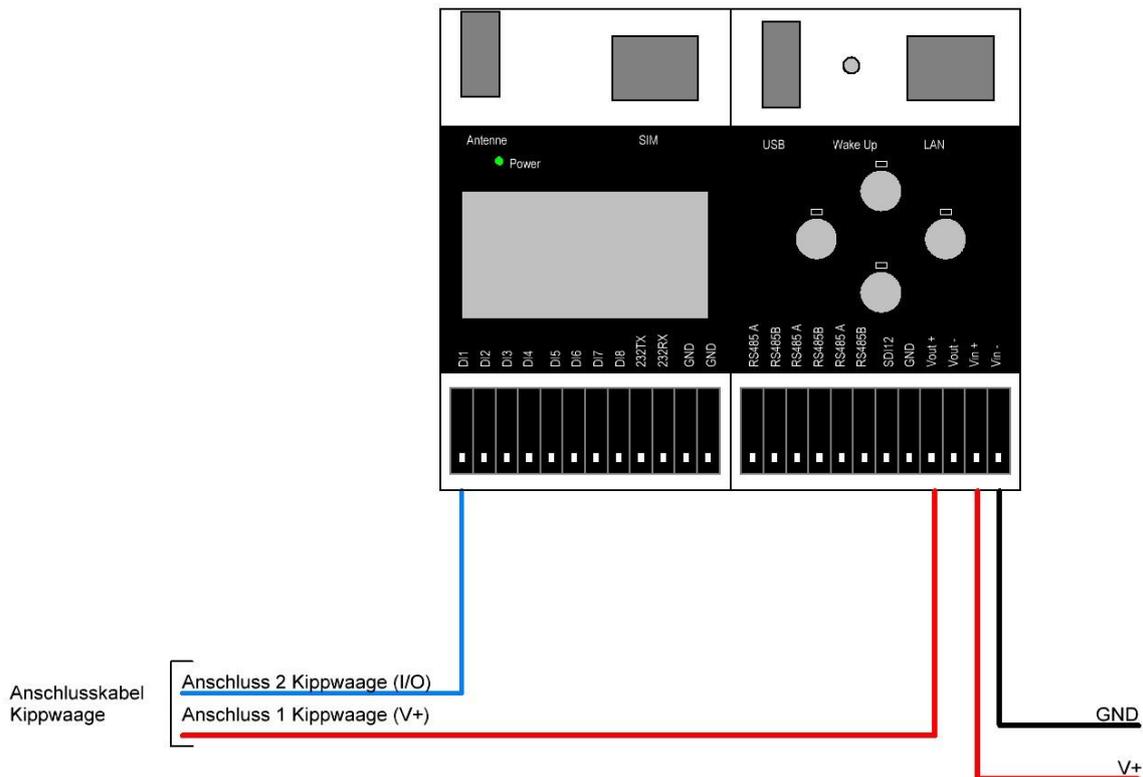


Connection Diagram Precipitation Sensor Kippwaage - ADL-MXmini

Sensor cable:

Power supply precipitation sensor:

The power supply for the precipitation sensor can be provided via the ADL-MXmini. The maximum load for the output (Vout) is 500mA.

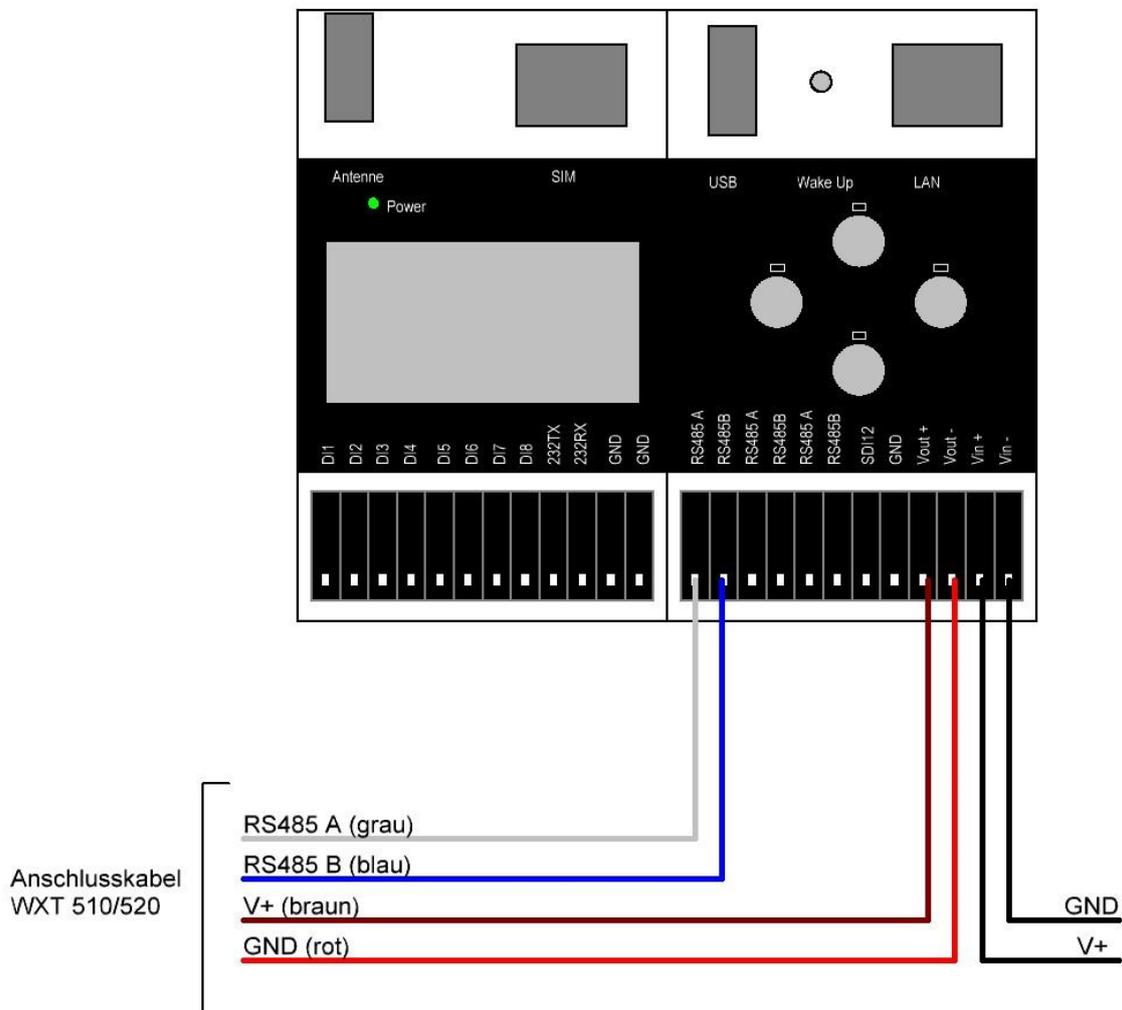


Connection Diagram WXT510/520 - ADL-MXmini

Sensor cable:
sensor cable, 8-pole, with M 12 socket.

Power supply WXT510/520:

The ADL-MXmini® can provide power supply for the sensor only on a limited basis (The maximum load for the output (Vout) is 500mA) therefore heating cannot be activated. In case the sensor`s heating is required, the power supply has to be gained from an independent source.



Device Settings

Device

Model:	WXT510	Serial number:	B2250002
Version:	1.09	PTU sn:	B2010019
Calibration date:	6.6.2006	Order code:	AAC1BA11A
Info:	<input type="text" value="MNT"/>	Address:	<input type="text" value="2"/>

Enhancements

<input type="checkbox"/> Enable heating	Supervision interval (1 s ... 60 min)	<input type="text" value="15 s"/>
<input type="checkbox"/> Error messaging		
<input type="checkbox"/> Composite message auto transmission	Auto composite interval (1 s ... 60 min)	<input type="text" value="1 s"/>
		

<p>Communication protocol</p> <p><input type="radio"/> SDI-12 v1.3</p> <p><input type="checkbox"/> Continuous measurements</p> <p><input checked="" type="radio"/> NMEA v3.0</p> <p><input checked="" type="checkbox"/> Query only</p> <p><input type="checkbox"/> Use XDR for wind message</p> <p><input type="radio"/> ASCII auto</p> <p><input type="checkbox"/> Polling only</p> <p><input type="checkbox"/> Response with CRC</p>	<p>User port settings</p> <p>Port type: <input type="text" value="RS-485"/></p> <p>Bits per second: <input type="text" value="4800"/></p> <p>Data bits: <input type="text" value="8"/></p> <p>Parity: <input type="text" value="None"/></p> <p>Stop bits: <input type="text" value="1"/></p> <p>RS-485 line delay (ms): <input type="text" value="25"/></p>
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