ADCON

Telemetry Gateway
A850 / A850-2020

User Manual

SMART WIRELESS SOLUTIONS

Contents

Chapter 1. Introduction

This User Manual describes the A850 Telemetry Gateway and how to use it in an ADCON telemetry network.

It is used as the interface between the ADCON telemetry system and one or more hosts running the addVANTAGE pro data acquisition software.

Combined with a radio modem (e.g. A440), the A850 Telemetry Gateway constitutes the base station of a wireless ADCON telemetry network.

For information about the installation and use of telemetry devices in the ADCON network, refer to the respective device's user manual.

Product Features

The A850 Telemetry Gateway offers the following features:

- Simple operation from any browser via a web app
- Fully integrable in Ethernet networks
- Supports USB devices
- Supports multiple modems (GPRS modems, wireless modems)
- Integrated protocol converter for encrypted network communication
- Configuration tool for user and data management
- RTU routing with multiple data poll priorities and parallel polling and network statistics
- Dial-up networking and dynamic IP addresses
- Diagnostic functions (monitoring and debugging)

What Is the ADCON System?

The ADCON system consists of the following components:

- Remote station as transmitter:
One or more remote telemetry units (RTUs) – e.g. A723, A75x UHF, A75xGPRS/UMTS, A76x GPRS/UMTS/LTE

- Base station as receiver and for data communication:
Telemetry Gateway

- Method of communication used to access the telemetry devices:
GPRS modem or wireless (radio) modem (e.g. A440 with cable connection or RA440 with internet connection)

- Data acquisition and control software:
addVANTAGE Pro

Figure 1. The ADCON Telemetry System

System Components

The *remote station* consists of a transmitter (remote telemetry unit, RTU), its sensors and accessory parts (e.g. antennas, cables, masts).
The measured values are saved in the memory of the Remote Telemetry Unit.

The *base station* consists of a Telemetry Gateway (or *receiver)*, a computer (and/or server) and a wireless modem.

The data is transmitted from the RTUs via a *communication device* to the Telemetry Gateway for analysis and further use.

The *addVANTAGE* software receives and saves the data from one or more Telemetry Gateways and provides this data for calculations and visualization in the addVANTAGE Pro software.

Target Group

This User Manual is intended for the following target groups:

- System administrators who configure the Telemetry Gateway

- Administrators who operate the RTU network and assign user rights

- Users who use the telemetry system, poll RTUs and sensors and configure settings for which they have permission

This User Manual describes the functions available to users as well as configurations that are intended only for (system) administrators.

Warranty

The warranty and liability are governed by the contractually stipulated conditions. If not otherwise specified, the following applies:

ADCON will not honor warranty and liability claims for defects or damage caused by the following:

- Modifications to the device or alterations to the software or firmware
- Use of non-OEM spare parts
- Removal of the nameplate
- Failure to comply with safety instructions
- Failure to comply with maintenance instructions
- Improper use of the device

Conformity

The Telemetry Gateway is built according to the state of the art and conforms to the EC Low Voltage Directive (2014/35/EU) – see the Declaration of Conformity.

Customer Service

Please contact your ADCON retailer or our Customer Service representatives if you have questions or comments regarding your device: *support@ott.com*

About this User Manual

This User Manual is an essential part of the product. Keep it in a safe place throughout the product's service life.

Terminology and Abbreviations

The terminology and abbreviations below are used in this manual.

Terminology

Root nodes (nodes)	All the objects in your system (e.g. areas, RTUs, tags, extensions, and windows/panels) are called *nodes*. Start here to explore your network.
RTU group (area)	An RTU group is an area in which the RTU can be organized according to the user's own definition. The RTU group can be assigned rights for different users and modems.
RTU (station)	An *RTU* is placed in an area. An area can have as many RTUs as required. The number is limited by the license type and remote server or Telemetry Gateway from which you download data.
Ports	The Telemetry Gateway features various communication ports depending on the version.
Sensors	Values generated by the Telemetry Gateway – internal tags (e.g. battery voltage, CPU load, etc.).
	Values generated by the stations – external tags (e.g. temperature, leaf wetness, etc.).

Abbreviations

RTU	Remote Telemetry Unit, remote station or simply "station"
UPS	Uninterrupted Power Supply
RAM	Random Access Memory
CF	Interface standard for digital storage media in the form of compact flash cards
DUN	Dial-Up Network (e.g. telephone network or radio)
LAN	Local Area Network (Ethernet network)
FW	Firmware - program in electronic devices that facilitates interaction between hardware and application software)
UTC	Coordinated Universal Time as the basis for calculating local times worldwide
GUI	Graphical User Interface
DNS	Domain Name System
JNLP	Java Network Launching Protocol used to start and manage Java programs
CPU	Central Processing Unit
PPP	Point-to-Point Protocol
FOTA	Firmware Over The Air for updating software wirelessly (via internet)
ISP	Internet Service Provider

Typographic Conventions

The following conventions apply in this manual.

Italics	Indicates that the text is variable and must be substituted for something specific, as indicated in the explanation. Italics can also be used to emphasize words as words or letters as letters, and for cross references to other documents.
Bold	Indicates special emphasis of the text.
`Fixed font`	Indicates characters you must type or system messages, as well as default values and file names.
Help ▶ About	Indicates a menu selection. For example, select the **Help** menu, then the **About** option. Also indicates items on the graphical user interface.
Note	Indicates useful information. Notes appear **after** the information they apply to.
CAUTION	Indicates that you might get unexpected results if you don't follow the instructions. Cautions appear **before** the information they apply to.
WARNING	Indicates danger to yourself or damage to the device if you don't follow the instructions. Warnings appear **before** the information they apply to.

General Safety Information

Carefully read through the User Manual before using the Telemetry Gateway Follow the instructions as well as the safety and warning notices for smooth operation of the device.

Do not change any settings or make any modifications that are not described in this User Manual. Improper handling can result in physical injuries or damage, damage to the device or loss of data. Take note of all warning and safety notices.

Intended Use

In the ADCON telemetry network, the A850 Telemetry Gateway acts as an interface between the RTUs and computers on which addVANTAGE or a similar data acquisition software is running for data analysis.

The product is designed to suit the scope of application described in this User Manual. Applying the product outside the described scope of application will result in the termination of the warranty obligation.

Chapter 2. Product Description

The Telemetry Gateway is used as a network controller. It manages and transmits data between different networks:

- Pure networks consisting of GPRS mobile stations (no wireless modems are required for this; only a stable, fast internet connection with a fixed IP address is required instead)
- Pure networks consisting of UHF stations (with A440 or RA440 wireless modems)
- Mixed networks consisting of UHF, GSM, GPRS and UMTS stations

Using the Telemetry Gateway, it is also possible to configure remote station settings, such as measurement frequencies and changing threshold values for alerts, activating power saving modes or adding IP addresses in the case of GPRS.

An A440 can be connected directly via the cable interface. Up to 10 RA440 modems can be connected via the internet and GPRS/UTMS. This makes it possible to receive data from a large number of RTUs in various ways: directly via radio (wirelessly), directly via an internet connection and indirectly via internet over UHF stations.

The Telemetry Gateway stores the incoming data in its memory. It can monitor a large number of RTUs and store their data for a certain amount of time without having to download the data to a computer.

The Telemetry Gateway is operated through a web app, which can be started from any browser. Using this application, it is possible to add and configure new stations, store metadata and run diagnostic programs for fault detection.

Several versions of the A850 Telemetry Gateway are available, which can manage networks of 5 to up to 1,000 wireless stations.

The period of time a gateway can store data depends on the number of RTUs in the network and the customized settings. The oldest data is overwritten.

Product Features

The Telemetry Gateway is designed for high availability and ensures continuous 24/7 operation.

A850 Telemetry Gateway

- Processor: 32 Bit ARM, running the Linux operating system
- 32 MB RAM
- 1 GB data storage for a max. of 200 standard RTUs
- Internal battery for uninterrupted power supply (depending on load (UHF) up to 24 h)

A850-2020 Telemetry Gateway

- Processor: AM335x 1 GHz ARM® Cortex-A8
- 512 MB DDR3 RAM
- 4 GB 8 Bit eMMC
- 1 GB standard, up to 32 GB Micro SD as hard drive

Nameplate

The Telemetry Gateway includes a nameplate with the following information:

• Serial number

Package Contents

Before you begin installing the Telemetry Gateway, make sure that you have received all of the components listed below:

• Telemetry Gateway

• Network cable (twisted pair standard Ethernet cable)

• CE Declaration of Conformity

Note   *If a component is missing or damaged, contact your ADCON dealer or our Customer Service representatives – see "Customer Service"on page 9.*

Supported Devices

The Telemetry Gateway can be used with all current wireless RTUs, UHF RTUs and cellular wireless RTUs (2G, 3G, NBIot) as well as the A440 wireless modem.

• Series 3/A73x, A723, A724 RTUs

• Series 4/A753, A723_s4, A724_s4 RTUs

• Series 5/A75x RTUs

• Series 6/A76x RTUs

Note   *ADCON does not guarantee use with devices and versions that are not supported.*

Device Overview

Front Panel

The front panel of the Telemetry Gateway features three status LEDs that are displayed during a CPU reset and during the boot process.

Figure 2. Front panel of the Telemetry Gateway
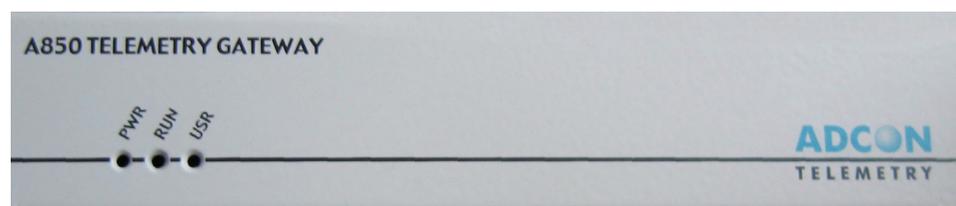
1	PWR	Power supply
2	RUN	Booting (restart)
3	USR	Kernel

Status LED

When the Telemetry Gateway is turned on, the status LEDs display the system status.

	PWR	RUN	USR
Illuminated	Power on	Booting	Kernel
Flashing slowly	Battery level > 75%		
Flashing	Battery level > 25 %	Error	
Flashing quickly	Weak battery	No configuration	RTU activity
Not illuminated	Power off		Sysinit

All three LEDs light up while the Telemetry Gateway is being reset or when the Linux operating system is restarting.

PWR and *RUN* light up when the device is being initialized. The CF card is checked, the configuration is loaded and various services are started.

USR flashes during an RTU task.

RUN flashes slowly when the clock has not been set.

RUN flashes quickly if the configuration could not be loaded or the CF card is defective.

PWR flashes quickly when the battery is weak (< 25%).

Back Panel

The back panel of the Telemetry Gateway features various interfaces.

Figure 3. Back panel of A850 Telemetry Gateway

Figure 4. Back panel of A850-2020 Telemetry Gateway

LAN	Connection for the Ethernet network
USB	USB port (e.g. for hard drive, USB stick with a data partition and up to 4 GB of storage space)
CONSOLE	Console port for connecting to a computer
RESET	Hard reset for re-initializing the device. Note: Use only in exceptional cases when communication via the console is not possible or when recommended by Customer Service.
MODEM	Wireless (radio) port (up to 10 RA440 modems)
RADIO MODEM	Cable port (an A440)
Power supply socket	AC power supply (3-pin plug for 90 to 230 VDC)

Interfaces

- **LAN**
  8-pin RJ-45 jack, 10/100 MBit Ethernet
- **USB**
  USB 2.0
- **CONSOLE**
  9-pin D-SUB connector, RS-232 (EIA-232)
- **MODEM**
  9-pin D-SUB connector, RS-485 (EIA-485)
- **RADIO MODEM**
  R12 circular connector (4-pin)

Ports

Ports for external sensors (e.g. temperature, humidity) can be configured on the Telemetry Gateway.

The internal values (e.g. battery voltage, CPU load) are generated by the Telemetry Gateway.

- INTERNAL
- IOA
- SDI A
- IOB
- SDI B
- IOD
- SDI D

Different ports can be assigned depending on the sensor type:

- Analog sensors – available at ports IOA, IOB, IOC and IOD
- Pulse counters – available at ports IOA, IOB, IOC and IOD
- Digital sensors – available at ports IOA, IOB, IOC and IOD

Sensor Driver

The sensor driver converts the saved data from the RTU into actual values – see *"Updating the Default Sensor Types"on page 34*.

Technical Data

The following technical data applies to the Telemetry Gateway:

	A850-2020	**A850**
Dimensions (W x D x H)	265 x 210 x 65 mm	
Weight	2,160 g	1,862 g
Protection class	IP-50	
Operating temperature range	-10°C to +55°C	
Case	Steel, coated	
Connectors	1x USB 1x 100 MBit Ethernet 1x RS-232 1X RS-485 (to A440)	2x USB 1x 100 MBit Ethernet 2x RS-232 1x RS-485 (to A440)
Power supply	100 to 240 V~, max. 15 W	90 to 240 V~, max. 15 W
	Integrated 8.4 V NiMH battery with 4,500 mAh for uninterrupted power supply (UPS)	
Operating system	Debian Linux OS 4.19 kernel	Embedded Linux OS 2.4 kernel
Configurator	Web-enabled Java application with GUI	
Data viewer	Graph and table	
Processor	AM335x 1 GHz ARM® Cortex-A8	Cirrus Logic 32-bit ARM

RAM	512 MB DDR3	32 MB
Flash	4 GB eMMC	
Data storage	16 GB Micro SD card (up to 768 TBW – terabytes written)	1 GB CF card (1 million read/write cycles)
Data polling from Telemetry Gateway	Through an XML-based addUPI protocol	
RTU poll interval	Adjustable from 1× per minute to 1× per week	
Battery life during power failure	Up to 24 h, depending on number of RTUs and poll intervals	
Number of RTUs supported	5 / 100 / 250 / 500 / 1,000 (of which up to 200 can be UHF direct)	
Number of external wireless modems supported	An A440 directly via the connection on the rear panel Up to ten A440 modems via internet (RA440)	
Diagnostic functions	RF signal strength; transmission error rate, transmission delay, internal battery charge level, power failure	

License Types

You can use more or fewer components in the network depending on the license type (e.g. number of RTUs, sensors or modems).

The basic license includes the following components:

- 5 RTUs
- 2 GPRS modem ports
- 2 A440 modems

The basic license can be upgraded to include the following components:

- Up to 10 GPRS modem ports
- Up to 10 A440 modems
- Up to 1,000 RTUs

For more information, contact your ADCON dealer or our *Customer Service representatives – see .*

Chapter 3. System Setup

This chapter describes how to install the Telemetry Gateway. The Telemetry Gateway is intended for indoor use only.

Before proceeding with the installation, take your time to plan your network. The following installation options are available depending on how the gateway will be used:

- If you will be running the Telemetry Gateway as a mobile wireless station (GSM), a stable, fast internet connection with a static and public IP address is sufficient. Dynamic IP addresses are not supported. Make sure that the mobile service provider offers adequate on-site coverage.

- If the Telemetry Gateway is going to be operated with one or more ADCON wireless modems, the base unit consists of the A850 Telemetry Gateway or a connected A440 and/or up to 10 RA440 modems.

Installation Safety Information

Read the following safety information carefully before installation. Ignoring this information can result in damage to the Telemetry Gateway.

- The Telemetry Gateway may only be installed by qualified electricians and authorized personnel.

- Protect the Telemetry Gateway from excessive heat and humidity.

- All connecting lines must be laid in a manner that prevents tripping and they must not be kinked or subjected to mechanical stress.

- The mast on which the wireless modem is mounted must be properly grounded.

Installation Site

Note the following network requirements when choosing an installation site:

- From a wireless technology perspective, the height of the receiving antenna is crucial for long-range data transmission. The higher the modem is mounted, the greater its transmission range.

- For good transmission quality, the distance between the Telemetry Gateway and the modem is critical. Install the components of the base station as close as possible to each other.

- Make sure that the base station is placed as centrally as possible in the area of the connected RTUs.

- The server room must be air conditioned.

- If you plan to operate the Telemetry Gateway as a server, include an option to establish a remote connection (Remote Desktop Protocol, TeamViewer etc.).

Installation

The following describes how to install the Telemetry Gateway for wireless use when used as a base station. If you are installing a cellular (GSM wireless communication) Telemetry Gateway, contact our *Customer Service representatives – see "Customer Service" on page 9*.

Installing the A440 Wireless Modem

Note   *The wireless modem is preconfigured and does not require any further configuration.*

The wireless modem is intended for outdoor use.

- Attach the wireless modem to a nearby mast.
- Mount the wireless modem with mast on the roof of the building in which the base station is running.

The communication range is directly proportional to the installation height of the receiving antenna.

Antenna height	Range
6 m (18 ft)	5 km (3 mi)
10 m (31 ft)	8 km (5 mi)
20 m (62 ft)	16 km (10 mi)
30 m (92 ft)	24 km (15 mi)

Carry out the following steps to install the wireless modem:

**Figure 5. Wireless modem installation**
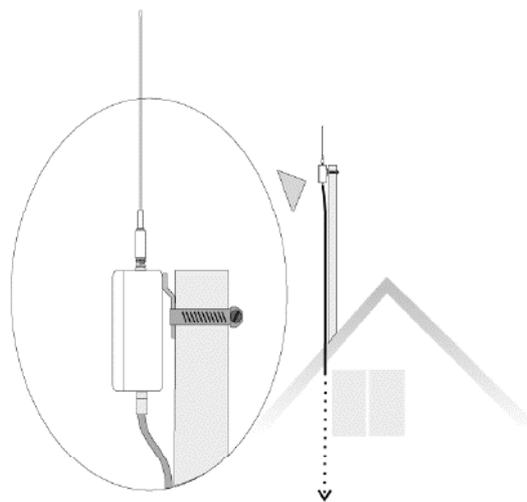
1. Attach the wireless modem with the mounting clamp to the aluminum mast (included in package).
2. Secure the antenna to the wireless modem.
3. Plug the cable into the corresponding interface on the modem.
4. Secure the mast in its place or on the building roof.
5. Run the modem cable to the Telemetry Gateway indoors.

Note   *The supplied modem cable is 30 m long. A 75 m connecting cable between the A440 and A850 is available as an alternative option. Contact your ADCON dealer.*

Telemetry Gateway Installation

1. Install the Telemetry Gateway on a stable, level surface.
2. Connect the modem cable to the *RADIO MODEM* port on the rear panel of the Telemetry Gateway.

Figure 6. Telemetry Gateway installation
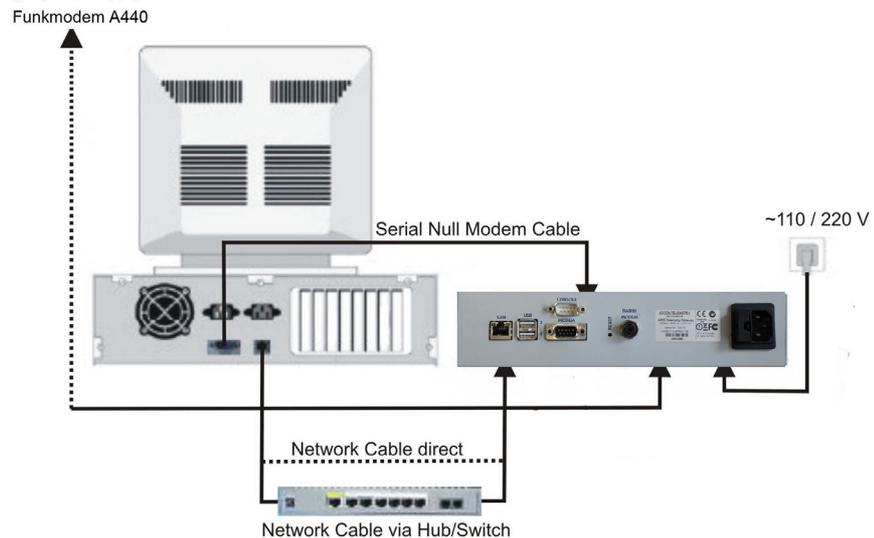
Connecting the Telemetry Gateway with the Computer

To establish communication between the Telemetry Gateway and the computer, set up the connections as shown in *Figure 6*:

- If you are using a switch to link multiple computers to a LAN network, use a twisted pair Ethernet cable to connect the Telemetry Gateway to the switch. Connect the cable to the *LAN* port on the rear panel of the Telemetry Gateway (included in the package).

- The Telemetry Gateway can also be operated directly with a standalone computer. The null modem cable is included in the package.
  The console port is used for debugging and for changing the default configuration of the Telemetry Gateway.

Connecting to the Power Supply

Connect the power cable to the AC power supply on the rear panel of the Telemetry Gateway and to an electrical outlet.

Once the device is connected to power, all 3 LEDs on the front panel of the Telemetry Gateway will light up. *PWR* and *RUN* are illuminated while the device is initializing. As soon as the default configuration is loaded, only *PWR* remains lit (after approx. 2 minutes).

Note   *Before operating the Telemetry Gateway for the first time, charge the internal battery for at least 6 hours. To do this, disconnect the connection to the A440.*

Telemetry Gateway Initialization

During initialization the Telemetry Gateway is set to operating mode and is used for the following:

- Initial installation
- Reconfiguration (after changes and debugging are completed)

Initialization is started via the web interface. Alternatively, a console interface with a command line interface is available. A terminal program such as TeraTerm or similar is required for communication.

Note   *When the Telemetry Gateway is used in battery mode, the charge level must be more than 75% (PWR flashes slowly).*

Launching the Configurator

The web interface facilitates communication with the Telemetry Gateway via any web browser. With the configurator you can view and adjust basic settings for the Telemetry Gateway, obtain additional information and support, and access the Telemetry Gateway GUI.

Prerequisites

- Java: version 8 or higher, 64-bit version recommended

- Stable internet or network connection

- Web browser: Mozilla Firefox recommended

- A850: FW 3.7.1 or higher

- Optional: 7-Zip

Logging onto the Telemetry Gateway

1. Launch your browser and enter the server URL.
   The default address of the ADCON Telemetry Gateway is: `192.168.1.1`
   The web interface welcome page opens.

Figure 7. Configurator welcome page

2. Check the date and time on the top right of the welcome page.

Note   *For dates to be valid, it is important that the Telemetry Gateway is synchronized with the time server – see* "Troubleshooting" on page 54.

3. Click on **Device Status** and check if the latest firmware is installed.

Note   *Create a backup before making changes with the configurator. You can restore the data in case errors are made during configuration.*

4. Click on **Launch Configurator** to access the Telemetry Gateway graphical user interface.

5. You will be prompted to open or save the JNLP file. By default the file is saved under "Downloads". Double-click on the file there to run it.

Note   *If the web application does not start, check whether Java is installed on your computer and enabled in your browser. Contact your system administrator.*

6. When launching the application for the first time, a Java Virtual Machine security warning will appear. Select the checkbox if you do not want to see this warning again. Run the application.

Figure 8. Running the JAVA application
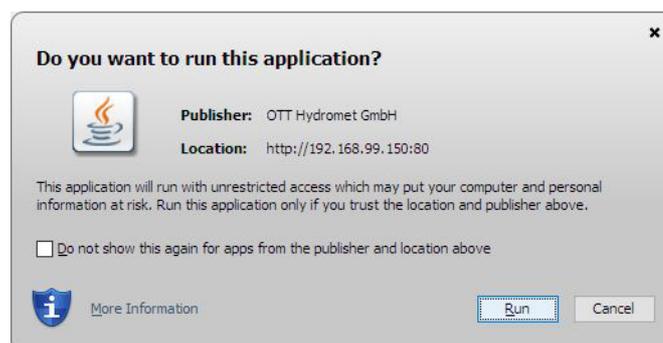
7. Enter the user name and password to log in. When installing for the first time, the user is configured as `root` with the password `root`. You can create appropriate login profiles for users of the Telemetry Gateway and addUPI communication "Users" on page 46.

Figure 9. Logging onto the Telemetry Gateway

Note   *Settings can only be configured in the locked state – see "Locking the Configuration" on page 33.*

For security reasons, use an HTTPS connection when communicating over the internet. The HTTPS connection can be enabled – see "Operating System" on page 50. During the initial installation, only the HTTP port is enabled.

Chapter 4. Graphical User Interface

This chapter describes the layout and controls on the graphical user interface of the Telemetry Gateway. All interactions between the user and the A850 Telemetry Gateway (e.g. configuration, monitoring, diagnostics) take place using a JAVA-based graphical user interface (GUI).

GUI Elements

After logging onto the Telemetry Gateway, the **configurator** is started. From here you can navigate to detailed views of the nodes or to the other tab windows and perform functions.

The type, version and local IP address of the Telemetry Gateway are shown in the header row. The IP address may differ from the address entered in the browser if the Telemetry Gateway has been placed behind an internet gateway (not an ADCON component).

The footer row displays the user with which you have logged in.

Mouseover is available for various elements (e.g. tool bars, entries in data panels and detailed views). If you move the mouse over the hotspot, the message is displayed.

A red frame indicates that either entries are mandatory or that an error is present.

When configuration settings are pending confirmation, the shortcut on the tool bar changes to green. If you don't want to save changes, close the program without saving (discard changes).

The breadcrumb navigation shows you where you are in the web application.

Figure 10. GUI Main Screen
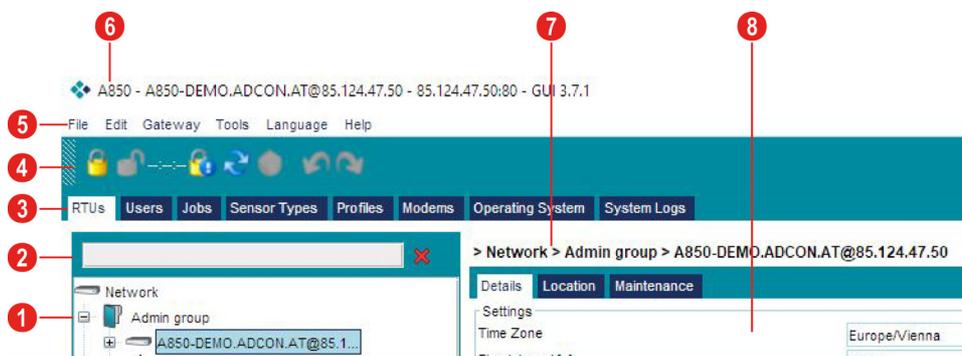
1	*Explorer*	Manage nodes (areas, RTUs, tags)
2	*Search box*	Search Explorer
3	*Tab bar*	Configure settings
4	*Tool bar*	Perform actions (quick access)
5	*Function bar*	Call up functions
6	*Device name*	Name of the Telemetry Gateway
7	*Breadcrumb*	View of path for orientation
8	*Data panel*	The panel adapts to the nodes in Explorer – e.g. content of the area or data of the sensors at the selected I/O

Note   *Different functions are available depending on the permissions – see "Users" on page 46.*

Note   *Settings can only be configured in the locked state – see "Locking the Configuration" on page 33.*

CAUTION   *In the case of settings that are critical to security, if an editing step cannot be reversed and/or there is a risk of data loss, you will be prompted to confirm this configuration. Make sure that you really want to perform the individual operation.*

Menu Bar

The menu bar offers various options to change basic Telemetry Gateway settings.

Figure 11. GUI menu bar

A850 - A850 Telemetry Gateway - 192.168.99.150:80 - GUI 3.7.1
File   Edit   Gateway   Tools   Language   Help

File	Closes the user interface
	Note: If you made changes but did not save them, you will be asked if you really want to close the program.
Edit	For editing commands
Gateway	*Reload configuration*: Updates information or discards changes
	Save configuration: Save settings
	Lock/Cancel configuration: Enables/disables locking of settings
	View/Edit license: Retrieves and updates current license type
Tools	For editing sensor types
Language	For setting the language (DE and EN possible)
Help	Not supported

Tool Bar

The tool bar offers various options for performing helpful actions via shortcuts. The shortcuts include mouseover functionality.

Figure 12. GUI tool bar

Lock configuration	Enables locking of settings
Cancel configuration	Disables locking of settings
Remaining time for configuration	Time remaining to configure settings
Show lock status	*Shows the current editing lock status*
Reload configuration	Updates the status on the computer or discards changes
Save configuration	Saves settings
Undo/redo actions	Reverses actions (as long as the changes have not been saved)
Redo	Restores actions (as long as the changes have not been saved)

Tab Bar

The tab bar offers various options for configuring necessary network settings.

Figure 13. GUI tab bar

| RTUs | Users | Networking | Jobs | Sensor Types | Profiles | Modems | Operating System | Firewall | System Logs |

RTUs	For editing details about the ADCON telemetry network and base station (time zone, status information)
Users	For setting up user rights and groups (Root, Administrator, User)
Networking	For configuring network settings (interface parameters, DNS parameters)
Jobs	For configuring time server/system messaging settings (setting up e-mail)
Sensor Types	For editing sensor drivers
Profiles	For editing RTU profiles (connectivity, power saving modes, backup)
Modems	For managing communication with connected modems (wireless (radio)/GPRS)
Operating System	For defining the A850 Telemetry Gateway database parameters (flush intervals, power modes, notifications, event information)
Firewall	For setting up a firewall (white list)
System Logs	For filtering and displaying logs (fault detection)

Explorer with Search Box

Arranged in a hierarchical structure on the left-hand side of the main window are nodes that you can configure. The nodes are areas, RTUs (stations) or tags (sensors or actors).

Nodes may appear as a group or individually. Grouping can be expanded or collapsed by clicking on the plus (**+**) or minus (**-**) sign.

There are internal tags, which are determined by the Telemetry Gateway, and external tags, which are provided by the stations.

You can search in the Explorer search box for the desired nodes. The function performs a full text search across all levels. The search therefore shows hits

even if the nodes are collapsed. Nodes that don't match are hidden. To return to the entire range of nodes, delete the text in the search box or click on the red X.

Figure 14. GUI Explorer
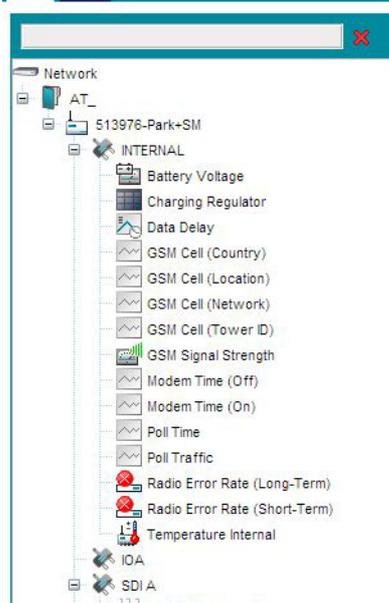
Root nodes (nodes)	All the objects in your system (e.g. areas, RTUs, tags, extensions and panels) are called nodes. Start here to explore your network.
RTU group (area)	The RTU group defines an area where you have assigned certain settings. It can be a field, a city, a section in a plant, or a country. No sublevels can be added. Only a level with up to 50 areas can be added.
RTU (station)	An RTU is placed in an area. An area can have as many RTUs as required. The number is limited by the license type and remote server or Telemetry Gateway from which you download data. All the RTUs in a certain area share the common setting indicating that they belong to that area.
Ports	Depending on the RTU type, the RTU has various I/O ports for sensor management.
Sensors	Journals generated by the A850 Telemetry Gateway to check connections and detect faults (e.g. data delay, poll time) - internal tags.
	Values generated by the stations (e.g. battery status, temperature, etc.) - external tags.

Data Panel

On the right-hand side of the main window you can find data related to the selected nodes. Different tabs are available depending on the node. The data can be displayed and edited as a list, table or image.

Figure 15. GUI data panel
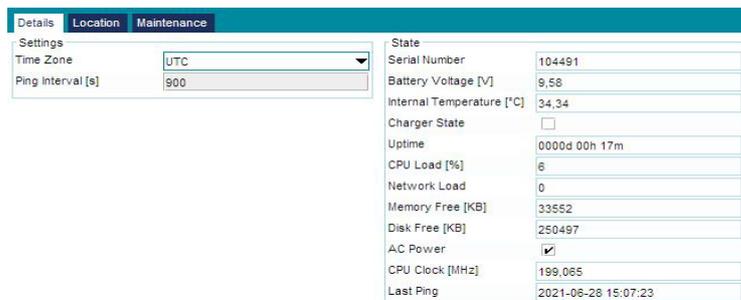
Popup Context Menu

For a detailed view of a node in Explorer, right-click with the mouse on the desired object.

You will be able to view different actions depending on the node type and permissions set for your user ID.

Figure 16, for example, shows the context menu for an RTU for someone with user permissions.

Figure 16. Right-clicking on an RTU in Explorer, context menu
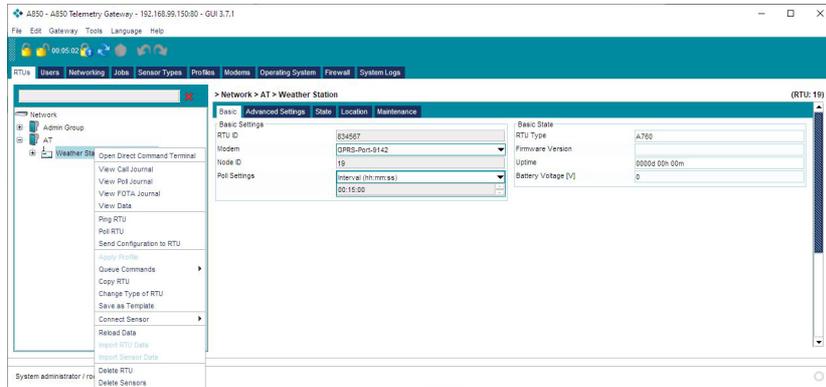
A detailed view opens where you can perform actions such as entering data for a newly added node or changing the attributes of an existing object.

Figure 17, for example, shows the detailed view of an external tag when **View Data** is selected.

Figure 17. Context menu, detailed view

Using the Popup Context Menu

Various actions are available in the context menu depending on the node (area, RTU, tag).

Context Menu for RTU Groups

The RTU group context menu lets you select and perform all actions related to the RTU areas.

Right-click with your mouse on an area in Explorer to open the associated context menu.

Figure 18. Context menu, RTU group
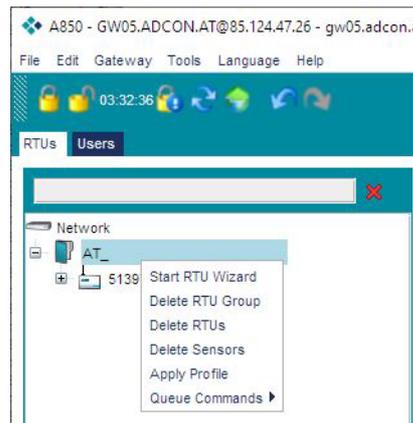
Start RTU Wizard

Creates a new RTU area.

Delete RTU Group

Deletes an RTU group.

Note   *If the area (RTU group) is deleted, the subordinate RTUs are deleted as well.*

Delete RTUs

Deletes an RTU.

Delete Sensors

Deletes all subordinate sensors.

Apply Profile

If a selected profile is applied to an RTU, for example, connectivity and power management settings can be added to a profile.

Queue Commands

Applies commands such as:

• Define commands to be transferred

• Read back any responses

• Delete results

• Delete requested commands

Context Menu for RTUs

The RTU context menu lets you select and perform all actions related to the RTUs.

Right-click with your mouse on an RTU in Explorer to open the associated context menu.

Figure 19. Context menu, RTU
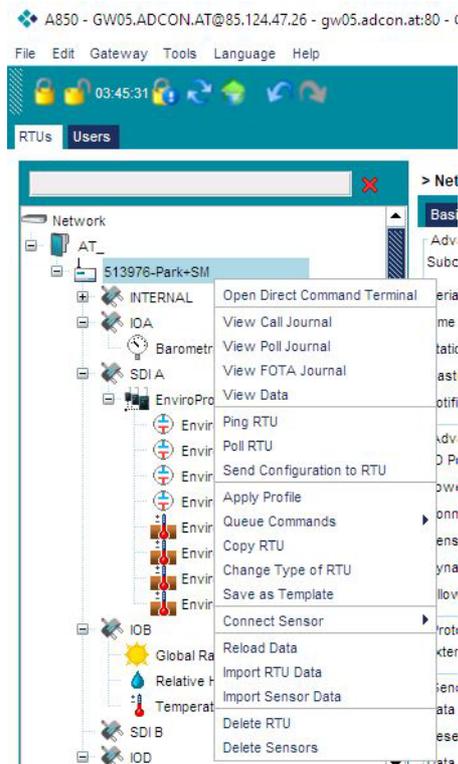
Open Direct Command Terminal

Transmits directly entered commands to an RTU or modem and receives the device's response. The direct commands are carried out over the command line interface. The available options depend on the user permissions.

View Call Journal

Displays a list of incoming GPRS connections. The number of entries per RTU depends on the number of RTUs and the online time of the A850 Telemetry Gateway. After rebooting, all logs are cleared with the exception of FOTA journals if "Log FOTA Messages persistent" was selected.

View Poll Journal

Displays a list with values for cyclic data acquisition and analysis of an RTU.

View FOTA Journal

Displays a list of software updates to be carried out for an RTU via GPRS/UMTS/ LTE, but not via UHF or wireless RTUs. It is possible to configure it so that all stored FOTA entries persist (persistent FOTA journal).

View Data

Opens a list with all sensor values assigned to the RTU (as a table and image). The start time and number of displayed values can be set. By default up to 100 entries started
24 hours beforehand are displayed.

Ping RTU

The ping shows the current status of the RTU and the connection. If a ping cannot be made successfully, a related error message is displayed in a dialog box.

Poll RTU

Manually starts a data polling for an RTU.

Send Configuration to RTU

Sends the entire RTU configuration to the RTU, for example when the RTU is replaced in the field.

If the configuration changes, the relevant configuration changes are transferred automatically from the Telemetry Gateway to the RTU.

Apply Profile

Applies a selected profile to an RTU.

Queue Commands

Applies predefined commands, such as read back status, send commands, etc.

Copy RTU

Copies an RTU. If several RTUs of the same type are used, a fully pre-configured RTU can serve as a template.

Change Type of RTU

Changes the RTU type. With this action, an existing RTU is converted to a different RTU type without having to re-enter all configuration settings. The prerequisite is that the information is compatible. The security question has to be confirmed before changes can be made. It is only possible to migrate to a newer or compatible new RTU type.

Save as Template

Saves the settings of an RTU as an XML template so that this RTU can be used as a template. This only works on the same A850 configuration.

Connect Sensor

Assigns an RTU sensor to the I/O ports. The selected sensors are assigned to the respective ports in the main window Explorer and are displayed.

Reload Data

Deletes the data on the Telemetry Gateway and loads the current data of an RTU.

Import RTU Data

Note   *For this action the RTU must be configured as inactive.*

Imports the data of an RTU as a file. The data that was previously read out from an RTU is manually imported, for example, when the RTU is no longer transmitting.

Import Sensor Data

Imports the sensor data as RTU data.

Delete RTU

Deletes an RTU and all connected sensors and data.
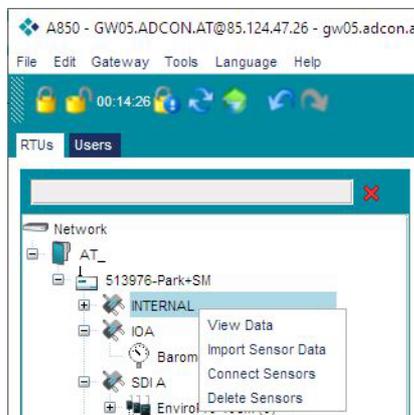
Delete Sensors

Deletes the connected sensors and data.

Context Menu for Ports

The port context menu lets you select and perform all actions related to I/O ports.

Right-click with your mouse on a port in Explorer to open the associated context menu.

Figure 20. Context menu, port

View Data

Opens a list with all sensor values assigned to the port (as a table and image). The start time and number of displayed values can be set.

Import Sensor Data

Imports the data of a sensor as a file.

Connect Sensors

Assigns sensors to the port. Opens the dialog box for connecting sensors to the corresponding I/O port. The detailed view shows all available individual and combination sensors as well as an overview of connected sensors.

Delete Sensors

Deletes the subordinate sensors.

Context Menu for Sensors

The sensors context menu lets you select and perform all actions related to sensors.

Right-click with your mouse on a sensor in Explorer to open the associated context menu.

Figure 21. Context menu, sensor
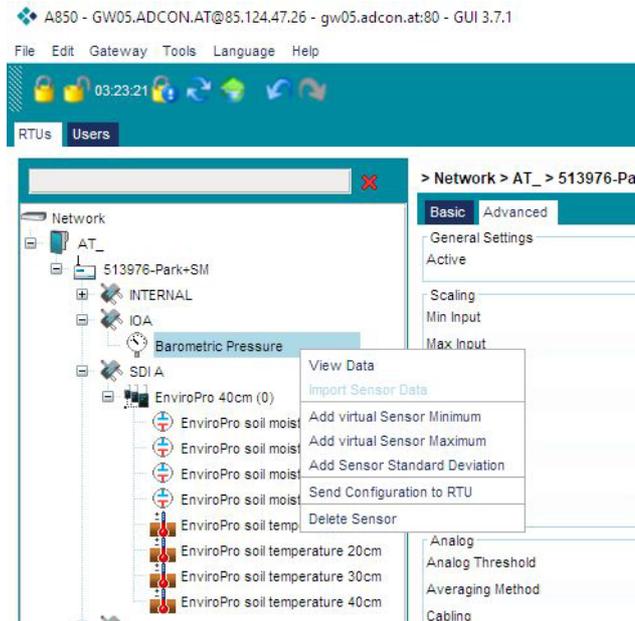
View Data

Opens a list with all sensor values assigned to the sensor (as a table and image). The start time and number of displayed values can be set.

Import Sensor Data

Imports the data of a sensor as a file.

Add Virtual Sensor Minimum

Saves the minimum value of the individual samples in addition to the average value and transfers it.

Add Virtual Sensor Maximum

Saves the maximum value of the individual samples in addition to the average value and transfers it.

Add Sensor Standard Deviation

Transmits the standard deviation in addition to the average value (typical application for wind turbine wind measurements).

Send Configuration to RTU

Retransmits an existing configuration to an RTU, for example, if a manual change was made directly to the RTU (for debugging purposes, etc.).

Delete Sensor

Deletes a sensor.

GUI Actions

You can customize the graphical user interface of some of the nodes (e.g. RTU groups, sensors).

Figure 22. GUI actions

The following actions are possible:

- Sort entries by clicking on the header row
- Export or print data by right-clicking on the header row
- Set up a table (show/deselect columns) by right-clicking on the header row
- Arrange columns (by moving columns with the mouse button pressed)
- Show information about items by mousing over them.

Chapter 5. Using the Gateway

This chapter explains the necessary steps to be able to use the gateway and set up the ADCON telemetry network.

Only system administrators (root) are allowed to configure the corresponding settings. All other users (admin and root) can view the configured settings, but cannot make changes – with the exception of RTU settings (see *"Users" on page 46*).

CAUTION   System administrators must have the relevant IT technician qualifications and must be authorized to make the changes. Improper handling can result in the loss of data.

Getting Started

After installing the gateway and launching the configurator, you can start configuring the network.

Locking the Configuration

Note   *Configurations can only be made in the locked state. This prevents other users from making conflicting changes while the gateway is being configured.*

Several options are available for locking the configurator:

- Click on the **Lock configuration** tool bar shortcut.
- Click on **Gateway** on the menu bar and select **Lock configuration**.

A popup window opens where you can enter the lock duration. You will receive a notification before this time expires. Provide your data so that other users can contact you. Confirm with **OK**. If you log in with your user profile, this data needs to be stored in order for it to be displayed.

Figure 23. Locking the configuration

If you need more time to adjust the settings or are finished editing, you can either extend or cancel the lock.

Saving the Configuration

To save the configuration, click on the **Save configuration** tool bar shortcut.

Note   *When configurations are pending confirmation, the shortcut changes to green.*

Discarding Changes and Refreshing

If you do not want to save the changes, click on the **Undo action** tool bar shortcut or close the program without saving.

Click on the **Reload configuration** tool bar shortcut (blue circle) to **refresh**. Click on **File** on the menu bar and select **Exit**.

Note   *If you made changes but did not save them, you will be asked if you really want to close the program. Make sure that you really want to perform the individual operation, or cancel.*

Updating the Default Sensor Types

A sensor type includes a class of sensors that can be connected to an RTU to provide measurement data.

At least two sensor types used together are described as combination sensors. For example, *Wind Speed 270 & Dir* covers the wind speed and direction in a sensor.

ADCON provides a range of sensors by default. To use these default sensors, do the following:

**Figure 24. Updating the default sensor types**

1. Lock the configurator for editing.
2. Click on "Tools" on the menu bar and select "Update Default Sensor Types".
3. Confirm with "OK". The sensor types for the connected device are added in Explorer.
4. Save the configuration or cancel the action.

Changing the Password

For security reasons, change the password that was preconfigured at the factory. When entering a password, make sure to use a combination of upper and lower case letters, numbers and special characters and that it is at least 6 characters long. A password with 8 characters is recommended.

Figure 25. Changing the password
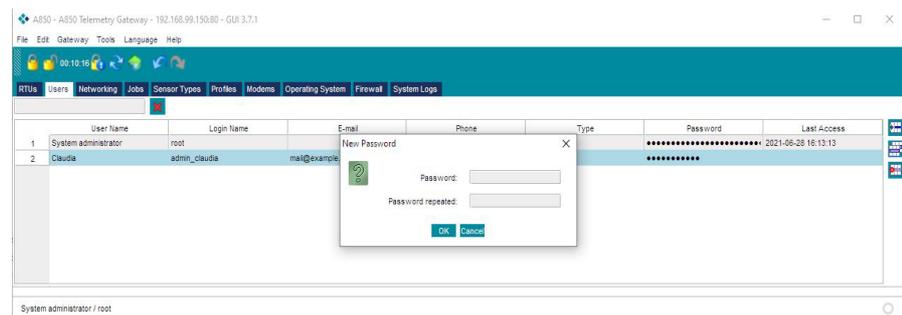
1. Lock the configurator for editing.
2. Click on the **Users** tab on the tab bar.
3. Click on *Password* and enter the new password twice.
4. Confirm with **OK**.
5. Save the configuration or cancel the action.

Changing the Time Zone

UTC is set by default. For dates to be valid, it is important that the gateway is synchronized with the time server.

Figure 26. Changing the time zone
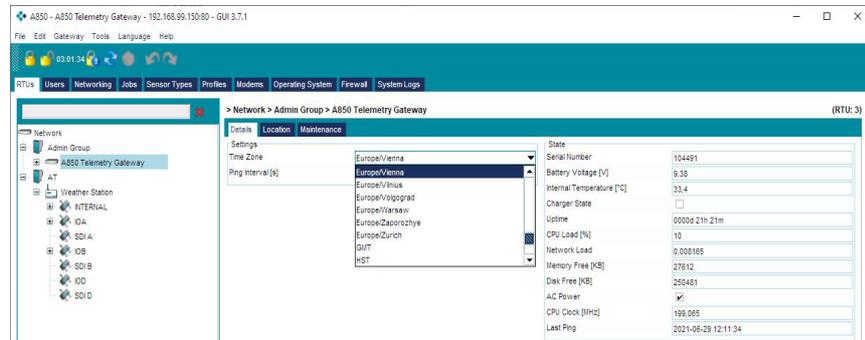
1. Lock the configurator for editing.
2. Click on the **RTUs** tab on the tab bar.
3. Navigate in Explorer to the A850 Telemetry Gateway device.
4. In the data panel select the **Details** tab.
5. Click on *Time Zone* and in the dropdown menu select the time zone.

Note   *The time zone is saved as the date information and can be adjusted at any time. The dates in the configuration are always displayed in the time zone of the computer. The time zone is taken into account in the addVANTAGE PRO visualization.*

6. Confirm with **OK**.

7. Save the configuration or cancel the action.

Changing the Location

The gateway is delivered with the coordinates 0.0; 0.0 by default. Enter the location of the gateway.

Figure 27. Changing the location
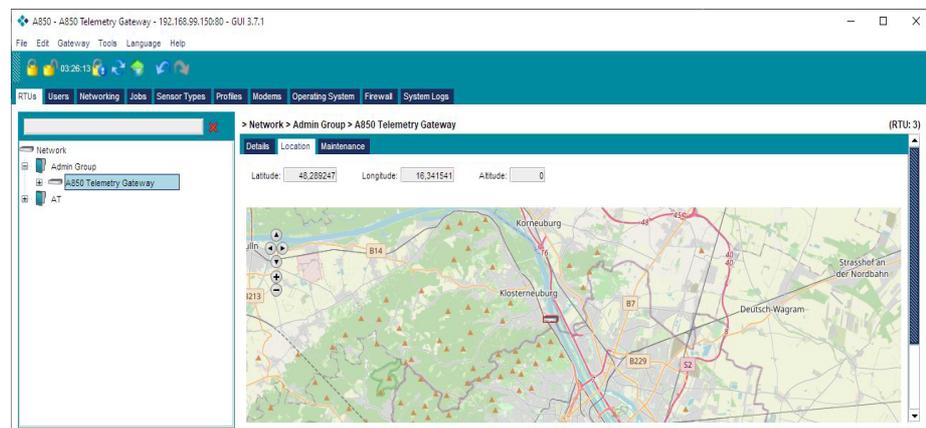
1. Lock the configurator for editing.
2. Click on the **RTUs** tab on the tab bar.
3. Navigate in Explorer to the A850 Telemetry Gateway device.
4. In the data window select the **Location** tab.
5. Enter the location of the gateway:
    a. Enter the latitude, longitude and altitude
   b. Select the location on the map

Note   *Use a GPS app or enter the approximate coordinates and then hold down the mouse button to move the device or the map to the desired spot. To determine the exact location you can also zoom [CTRL + scroll].*

6. Save the configuration or cancel the action.

Adding Internal Sensors to the Gateway

The values of the internal sensors are displayed in the **RTUs main window** in the data panel under Status. Connect the sensors to the gateway.

Figure 28. Adding internal sensors
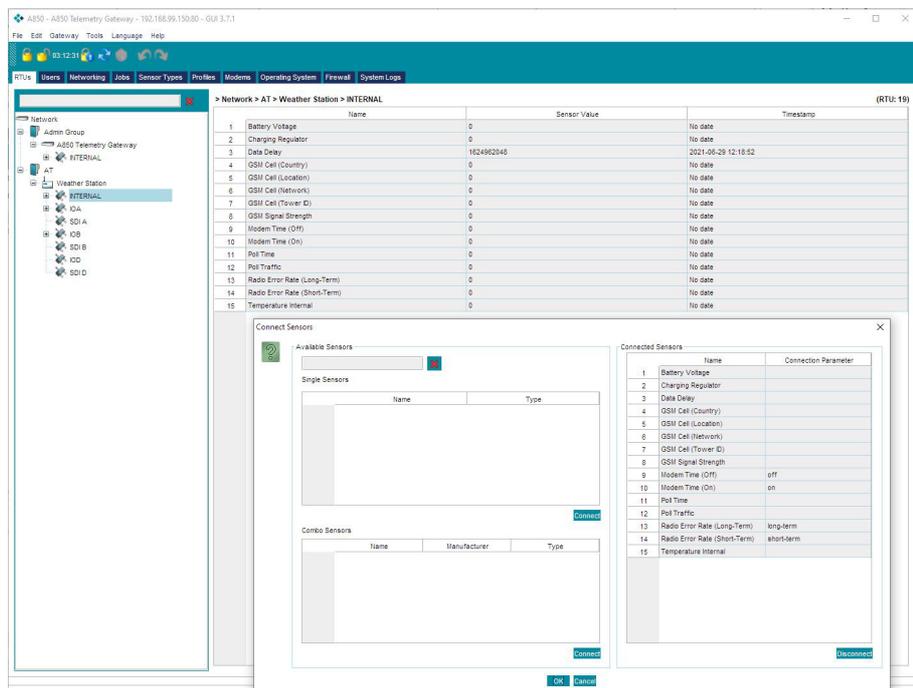
1. Lock the configurator for editing.
2. Navigate in Explorer to the internal sensor called INTERNAL.
3. Right-click with the mouse to open the context menu.
4. In the context menu click on **Connect Sensors**.
   A popup window opens with the available sensors.
5. Select the desired individual and combination sensors.

Note   *You can sort the sensors alphabetically by clicking on **Name**. Use the SHIFT key to select multiple sensors and the CTRL key to deselect sensors.*

6. Confirm your selection with **Connect**. The sensors appear under "Connected Sensors".
7. Confirm with **OK**. The new sensor is added to Explorer.
8. Save the configuration or cancel the action.

Setting up Modems

Before you can add RTUs or RTU groups, you need to set up one or more modems. The modem uses the gateway with stations. For the configuration, see *"Modems" on page 49*.
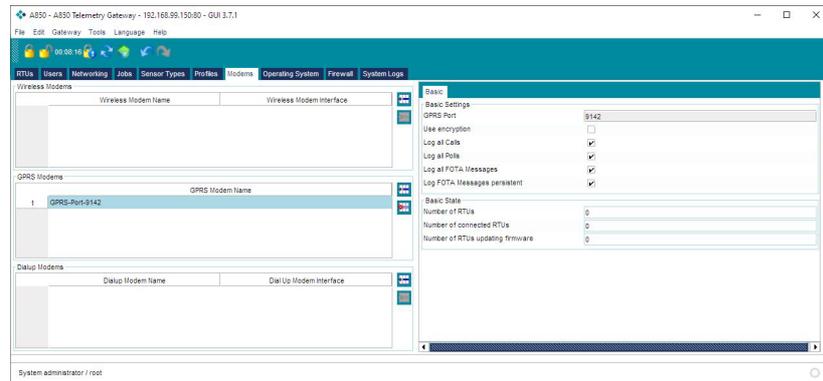
You can use a variety of modems with the Telemetry Gateway:

- Wireless modems
  (RA440 with internet connection and/or A440 with cable connection)
- GPRS modems
  (software program)

Adding GPRS Modems

Note *An internet connection is required in order to set up GPRS modems.*
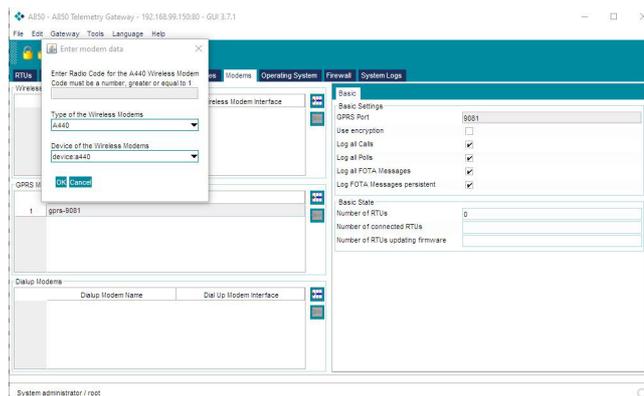
Figure 29. Adding GPRS Modems

1. Lock the configurator for editing.
2. Click on the **Modems** tab on the tab bar. A popup window opens with the available types of modems.
3. On the right side next to the desired modem type, click on **Create a new entry**. A new line is added.
4. Click in the gray line and type in a name for the GPRS modem. For example, `GPRS-Port-9142`
5. In the data panel at right configure the required settings for the modem. Enter the port number under "GPRS Port". For example, `9142`

Note *If all FOTA entries should be stored long term, select "Log FOTA Messages persistent".*

6. Check if the modem can be accessed by establishing a Telnet connection on the GPRS modem port. The gateway responds with a query for authentication. Alternatively, you can use a browser. This authentication process can take up to 1 minute.
7. Save the configuration or cancel the action.

Adding Wireless Modems

Figure 30. Adding wireless modems

1. Lock the configurator for editing.
2. Click on the **Modems** tab on the tab bar. A popup window opens with the available types of modems.
3. On the right side next to the desired modem type, click on **Create a new entry**. A popup window opens where modem data can be entered.
4. Enter the code for the wireless modem. You can find it on the wireless modem nameplate.
5. Select the modem type.
6. Enter the connection for the wireless modem. For an A440 with a cable connection, select `device:A440`. If it is an RA440, first configure the GPRS part of the RA440 and then select the GPRS name.

7. Save the configuration or cancel the action.
8. To query the RTU types via this A440, enable the modem in the area/RTU group tab **Allowed modems**.
9. Save the configuration or cancel the action.

Adding an RTU Group

Note   *System administrators (root) and administrators (admin) can assign access rights for RTU groups. Contact your (system) administrator.*

Use the RTU network configuration to set up the RTUs that are assigned in an area. RTUs can be grouped as desired in order to achieve the required structure for the RTU telemetry network.

Figure 31. Adding an RTU Group
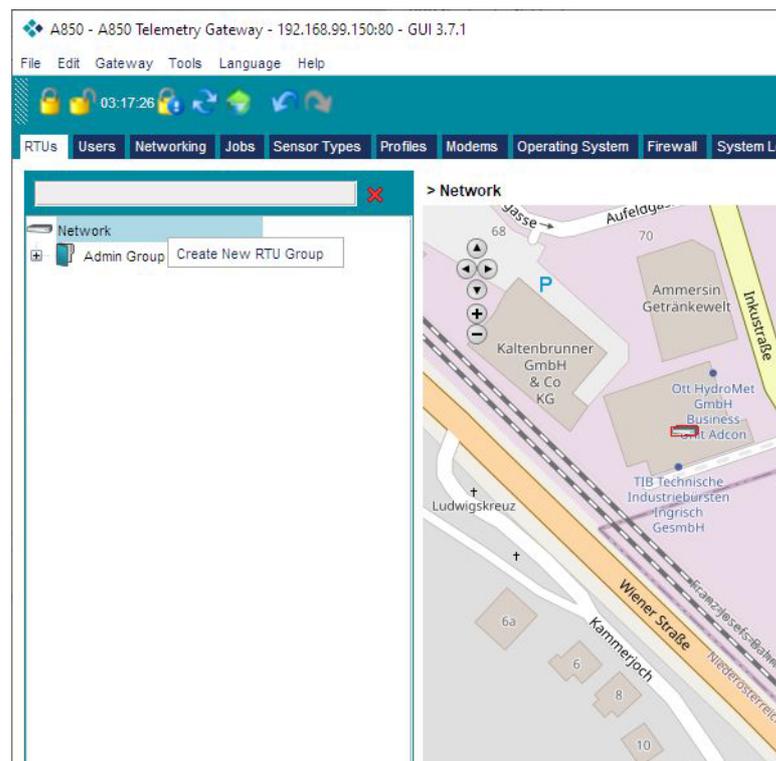
1. Lock the configurator for editing.
2. Navigate in Explorer to the network.
3. Right-click with the mouse to open the context menu.
4. In the context menu click on **Create New RTU Group**.
    The new RTU group is added to Explorer.
5. Enter a name for the new RTU group.
6. Save the configuration or cancel the action.

Activating a Modem for the RTU

Activate the modem so that you can assign it to an RTU group.

Figure 32. Activating a modem
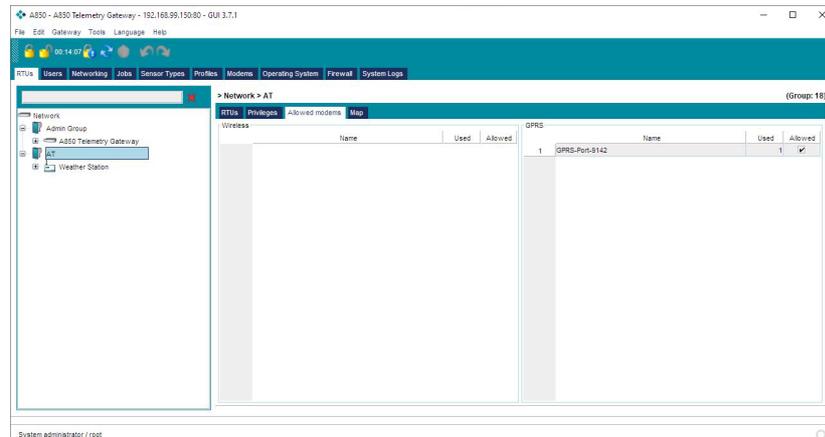
1. Lock the configurator for editing.
2. Click on the **RTUs** tab on the tab bar.
3. Navigate in Explorer to the desired RTU group.
4. In the data window select the **Allowed Modems** tab.
5. Select the modems that should be available in this RTU group.

Launching the RTU Wizard

The RTU Wizard guides you through the process of installing a new RTU.

Note   *You can also configure or change all settings (except for RTU type) later in the graphical user interface.*

Figure 33. Creating a New RTU
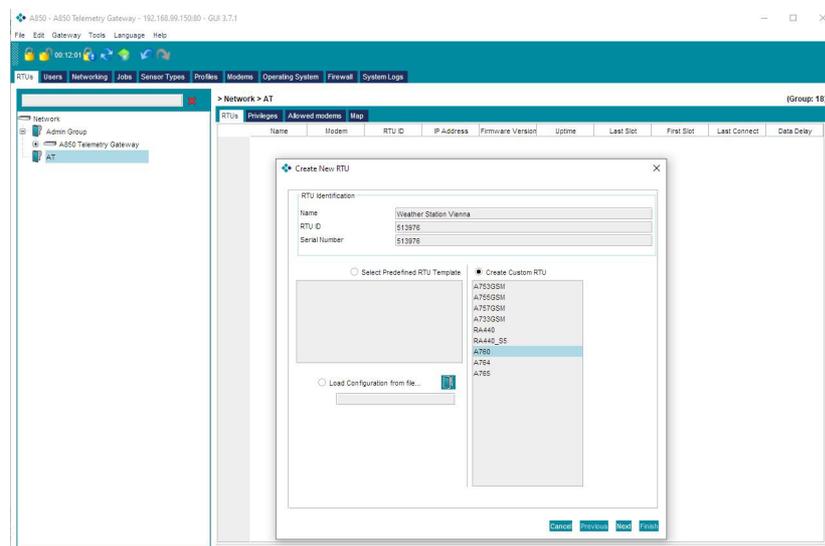
1. Lock the configurator for editing.
2. Navigate in Explorer to the desired RTU group.
3. Right-click with the mouse to open the context menu.
4. In the context menu click on **Start RTU Wizard**. A popup window opens where you can create the new RTU.

Note   *Entering the name and RTU ID is mandatory (red border).*

5. Enter a name for the new RTU group.
6. Enter the RTU ID (see "Basic" tab).
7. Enter the serial number to make management of RTUs easier (see "Advanced Settings").

8. Select the RTU type (see "Basic" tab).

9. Click "Next". A popup window opens where you can enter the coordinates for the RTU.

Figure 34. Entering the coordinates for the RTU
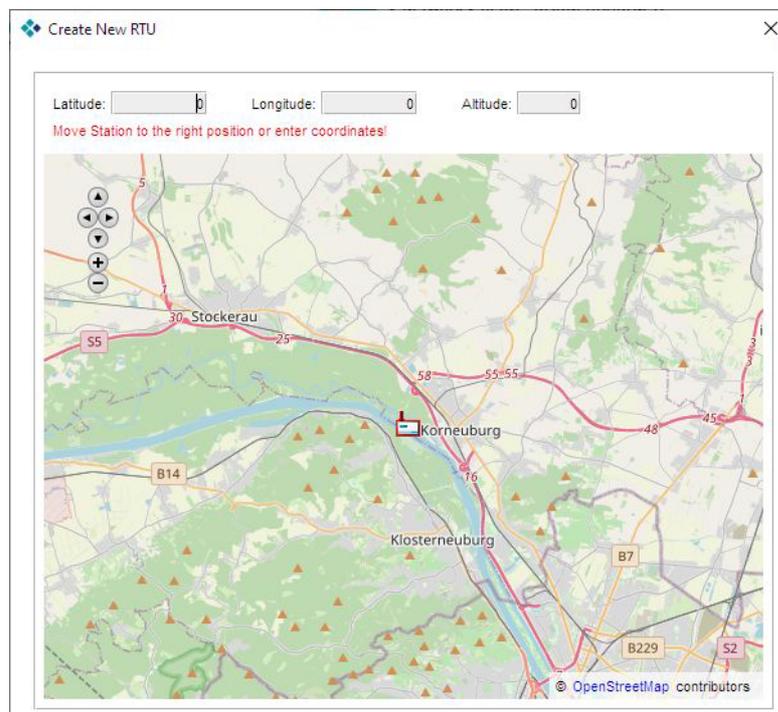
10. Specify the location of your RTU:

   a. Enter the latitude, longitude and altitude

   b. Select the location on the map

Note   *Use a GPS app or enter the approximate coordinates and then hold down the mouse button to move the device or the map to the desired spot. To determine the exact location you can also zoom [CTRL + scroll].*

11. Click **Next**. A popup window opens where you can configure the coordinates for the RTU.

Note   *Different dialog boxes open depending on the type (UHF or GPRS). A GPRS RTU is displayed below.*

Figure 35. Configuring settings for the RTU
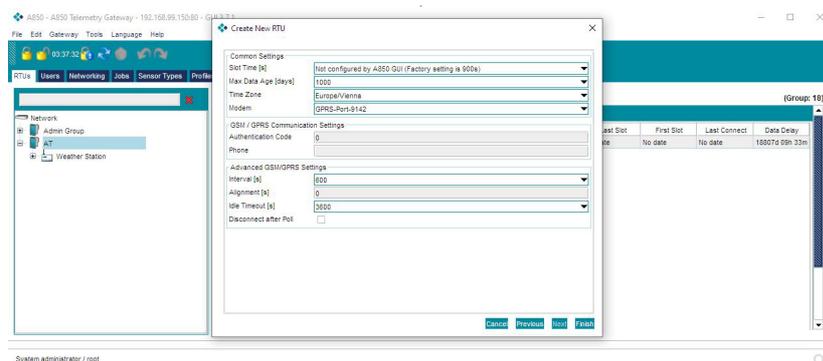
Note   *The authentication code serves as the password for the RTU. If you leave the value set to 0, the authentication code set on the RTU is ignored (not recommended; use only for troubleshooting, for example if you forget the password or the password was not set).*

12. Click **Finish**. The new RTU is added to Explorer.

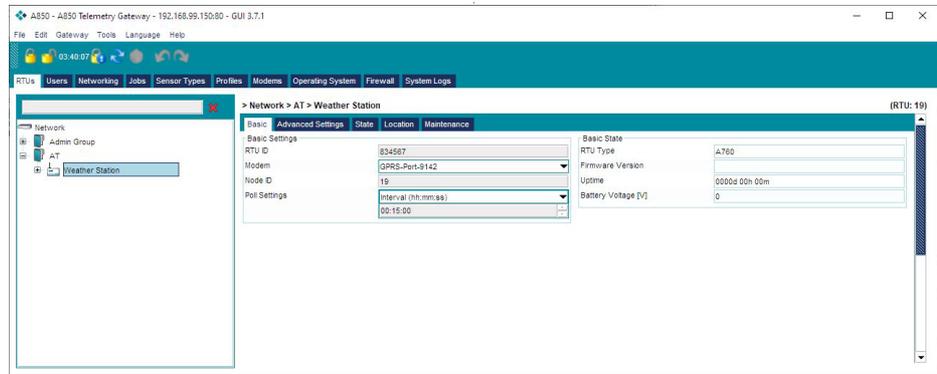13. Save the configuration or delete the RTU in the context menu.

Managing RTU Settings

Tabs are available for managing and editing the station.

Lock the configurator for editing by clicking on the **Lock Configuration** tool bar shortcut.
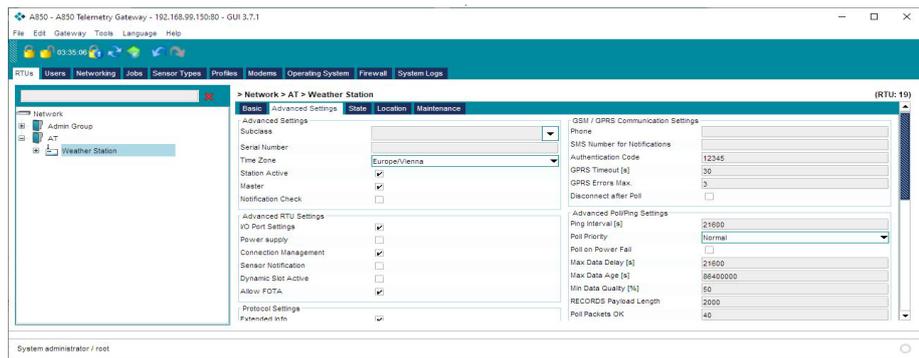
Basic Settings

Figure 36. RTU settings, basic

Basic settings can be configured on this tab. The tab also includes the RTU ID information.
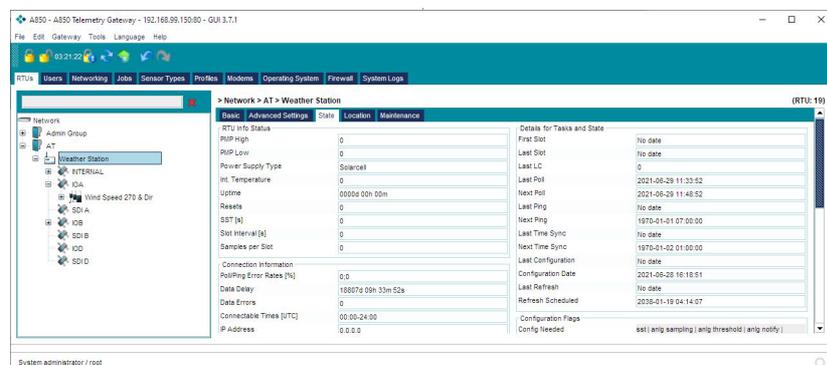
Advanced Settings

Figure 37. RTU settings, advanced settings

Note   *To configure specific advanced settings (e.g. I/O port settings, GPRS settings), ADCON offers training on the system. For additional information, contact our Customer Service representatives - see "Customer Service" on page 9.*
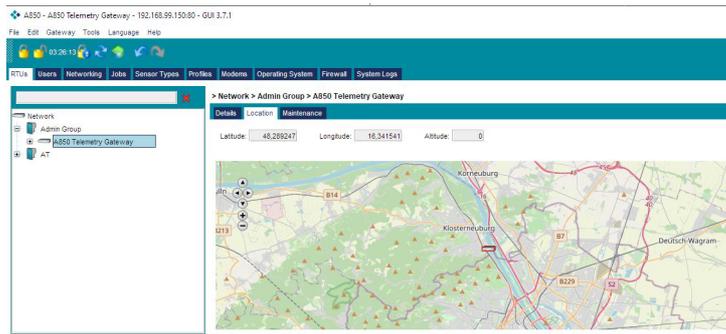
Querying the Status

Figure 38. RTU settings, status

Here you will find system-related information about the RTU.
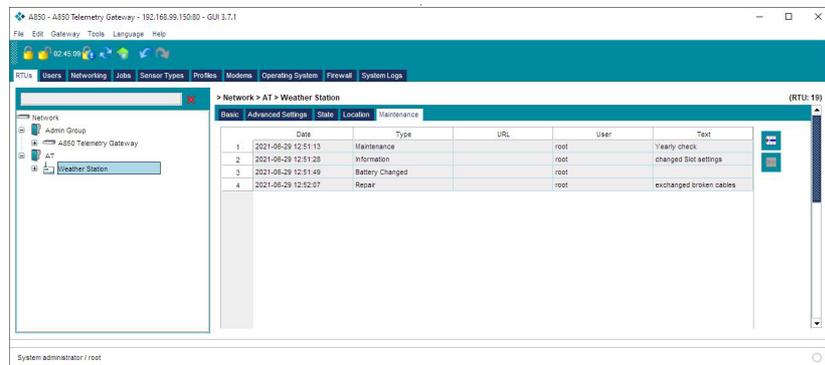
Location Settings

Figure 39. RTU settings, location

On this tab you can configure settings for the location of the RTU. You can adjust the position via GPS or by positioning it on the map.
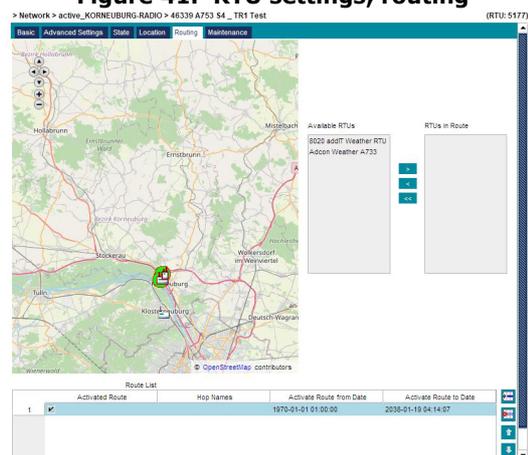
Maintenance

Figure 40. RTU settings, maintenance

On this tab you can create log entries to define service tasks for the RTU. For example, `Battery replaced`, `station cleaned`

Figure 41. RTU settings, routing

On this tab you can set up routes for the UHF RTUs.

Note   *To configure specific advanced settings (e.g. routing), ADCON offers training on the system. For additional information, contact our Customer Service representatives - see*

Connecting Internal Sensors to the RTU

The values of the internal RTU sensors are provided in the data panel of the **RTUs main window**. Each connected sensor is also displayed separately in Explorer and can be edited on the tab. Connect the sensors to the RTU.

Figure 42. Connect Sensors
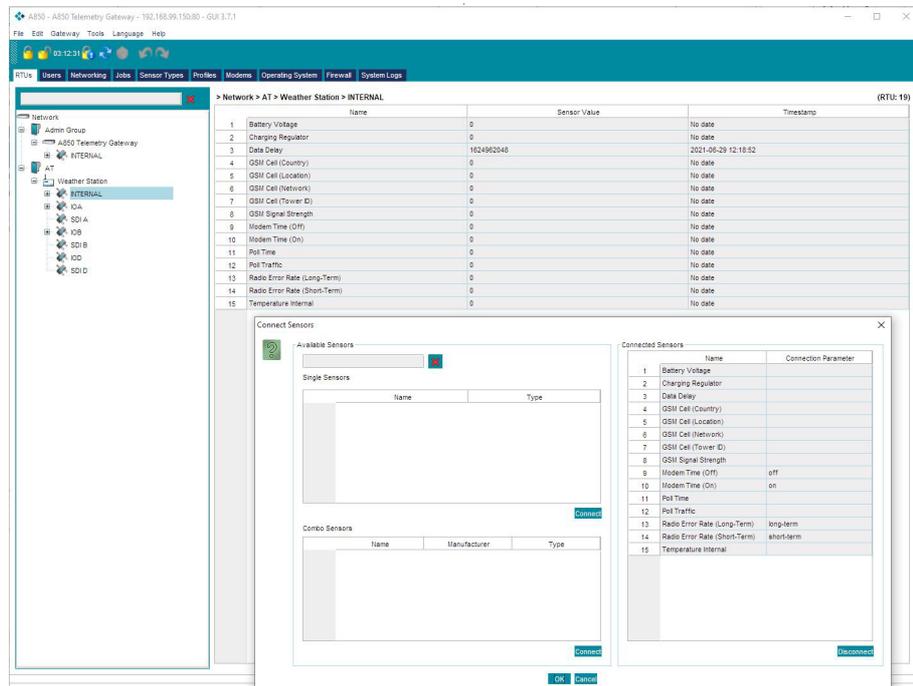
1. Lock the configurator for editing.

2. Navigate in Explorer to the internal sensor called *INTERNAL*.

3. Right-click with the mouse to open the context menu.
4. In the context menu click on **Connect Sensors**.
5. A popup window opens with the available sensors.
6. Select the desired individual and combination sensors.

You can sort the sensors alphabetically by clicking on "Name". Use the SHIFT key to select multiple sensors and the CTRL key to deselect sensors.

Confirm your selection with **Connect**. The sensors appear under "Connected Sensors".

Confirm with **OK**. The new sensor is added to Explorer.

Connecting External Sensors to the I/O Ports

The values of the external RTU sensors are provided in the data panel of the **RTUs main window**. Each connected sensor is also displayed separately in Explorer and can be edited on the tab. Connect the sensors to the I/O ports of the RTU.

Figure 43.   Connect Sensors
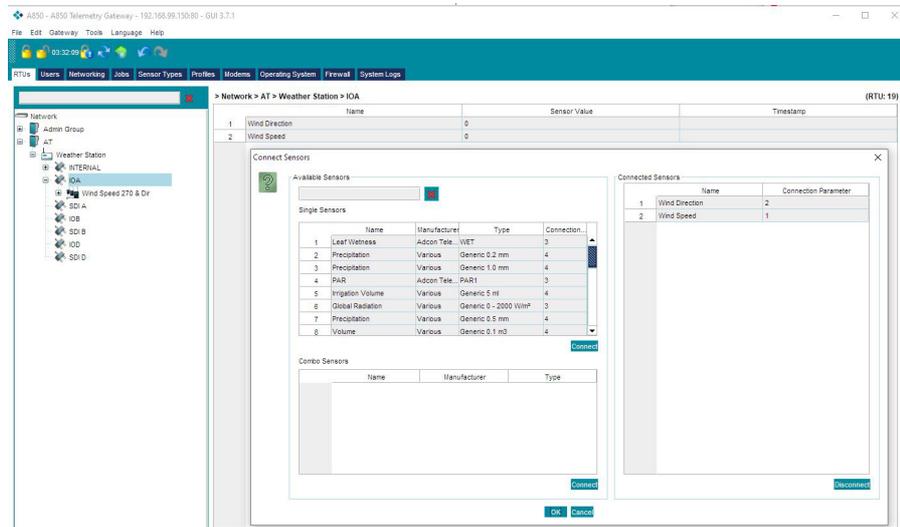
1. Lock the configurator for editing.

2. Navigate in Explorer to the desired sensor connection.

3. Right-click with the mouse to open the context menu.

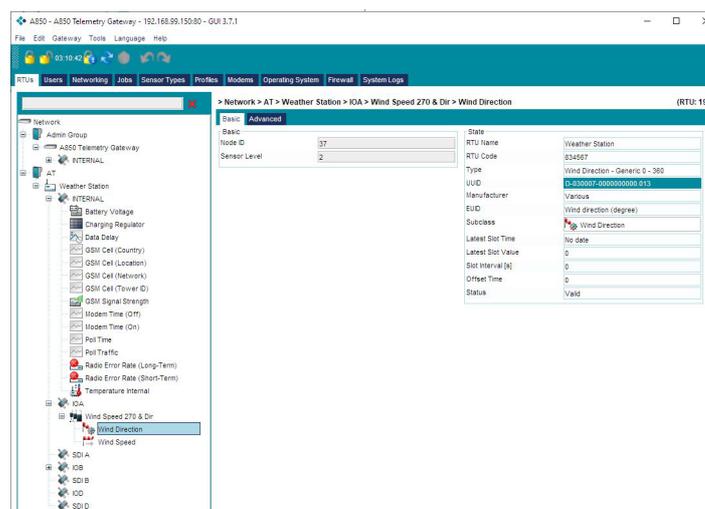4. In the context menu click on **Connect Sensors**.

Managing Sensor Settings

Tabs are available for managing and editing the sensors.

Lock the configurator for editing by clicking on the **Lock Configuration** tool bar shortcut.
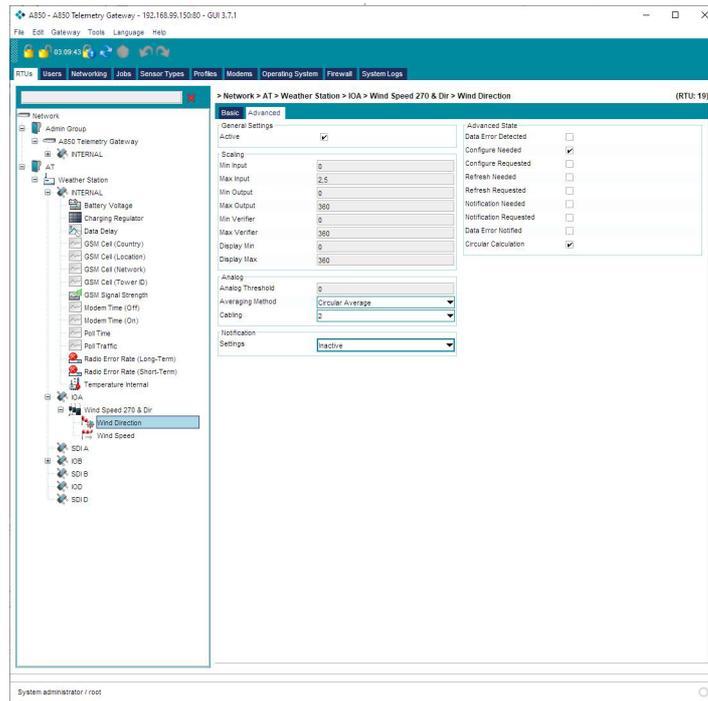
Basic Settings

Figure 44.   Sensor settings, basic

Status information is provided on this tab.

Advanced Settings

Figure 45. Sensor settings, advanced settings

Note   *To configure specific advanced settings (e.g. calibration), ADCON offers training on the system. For additional information, contact our Customer Service representatives – see* "Customer Service" on page 9*.*

Chapter 6. Configuration

This chapter on configuration covers all network settings required for optimized use of the gateway.

Only system administrators (root) are allowed to configure the corresponding settings. All other users (admin and root) can view the configured settings, but cannot make changes – with the exception of RTU settings (also see *"Users" on page 46*).

CAUTION System administrators must have the relevant IT technician qualifications and must be authorized to make the changes. Improper handling can cause damage to the device.

Note *Create a backup before making changes with the configurator. You can restore the data in the event that errors are made in the configuration settings.*

Configurator

The following explains the key settings options in the configurator using the available tabs.

Note *Depending on the selected device, different tabs are available for advanced settings.*

RTUs Main Menu

The **RTUs main menu** provides an overview of the network. From here you can navigate to detailed views of the nodes or to the other tab windows and perform functions.

Figure 46. RTUs main menu
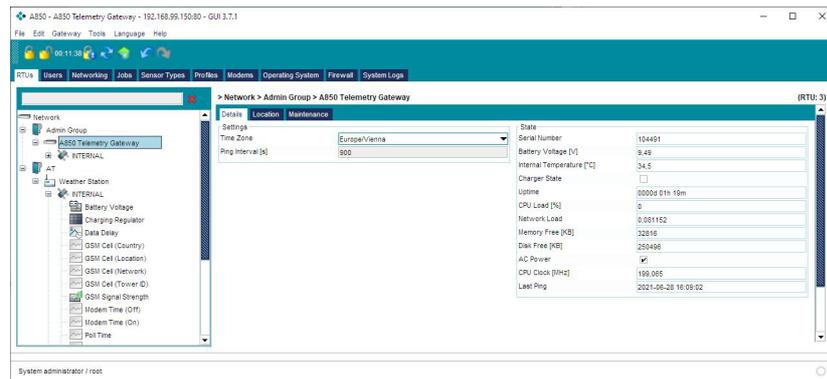
Users

Users are managed on the **Users** tab. You can add new users, delete users and set up user roles (admin or user).

Figure 47. Users

User roles

- *Root* - can change all system settings
- *Administrator* - can add users and change RTU settings. This user has read only rights for system settings
- *User* - can change RTU settings

Networking (root)

You can set the gateway network parameters on the **Networking** tab – see *"Customizing Network Settings" on page 51*.

Figure 48. Networking

The following settings options are available:

- *Basic Settings* - information about the mode and name of the A850 Telemetry Gateway in your network
- *LAN Settings* - enter the addresses and settings for a LAN network
- *Console Settings* - specify the IP addresses for access to your console via the network
- *DNS Settings*
    - Primary DNS Server - available primary server
    - Secondary DNS Server - available alternative server

Jobs (root)

Actions that have been run and scheduled are listed on the **Jobs** tab.

The following job information is available:

- Name - type of job
- Last Result - status of establishing contact
- Last Run - time when the last contact took place
- Last Run - time the next contact should take place

Note   *When you click on a row, additional settings related to the job appear.*

Figure 49. Jobs
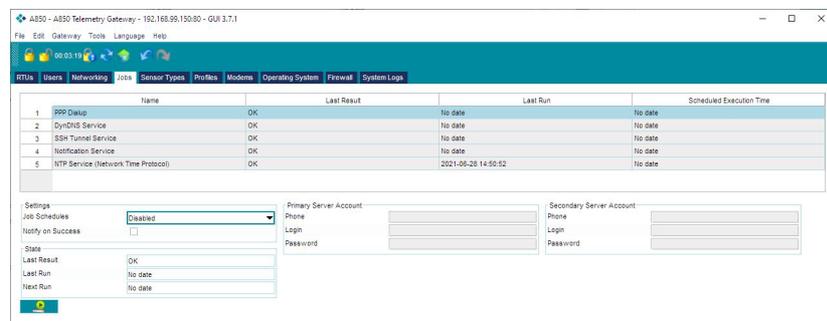
PPP Dialup (Point-to-Point Protocol)

Manages the PPP internet connection. PPP dialup refers to a network connection to the internet or to a PPP server which is established using a dialup modem.

DynDNS Service (Dynamic Domain Name System)

Manages the host name in the DNS so that the gateway can be accessed on the internet. This is important if your internet provider only provides dynamic IP addresses, i.e. IP addresses that can change every time the system accesses the internet.

Note   *Note that for GPRS connections a static public IP address is required.*

Dynamic DNS allows you to assign a fixed host name to a dynamic IP address and to access this address via the host name.

SSH Tunnel Service (Secure Shell Tunnel)

Manages the secure shell tunnel to connect end devices via the internet with secure communication.

SSH tunneling makes it possible to connect other hosts on the internet to the A850 Telemetry Gateway using an SSH server as a proxy even if the A850 Telemetry Gateway does not have an official IP address or cannot be accessed directly from the internet.

Notification Service

Manages notifications. The notifications are placed in a queue and sent to the notification server. Different notifications are generated:

•   Notification from a sensor of an RTU that changes its value (digital connections) or reaches a configured threshold (analog connections).

•   Notification from an RTU (depending on the data delay).

•   Notification from the gateway (depending on the enabled events such as data delay, restart, configuration changes).

Note   *To send notifications as text messages (SMS), an external GSM modem must be connected.*
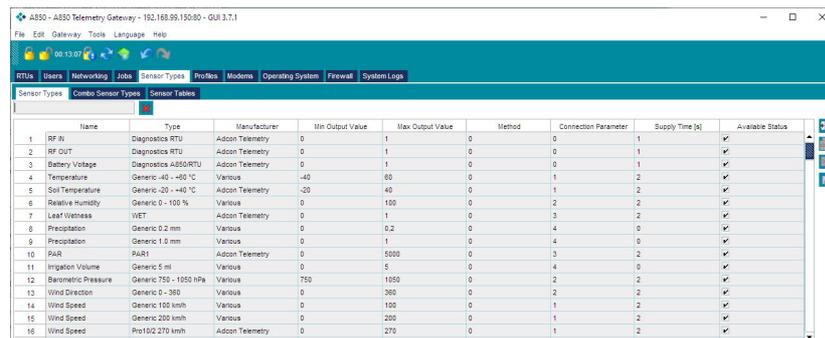
NTP Service (Network Time Protocol)

Manages the protocol for synchronizing the time between computers and devices.

Sensor Types

The **Sensor Types** tab provides additional information about the sensors on the network.

Figure 50. Sensor Types
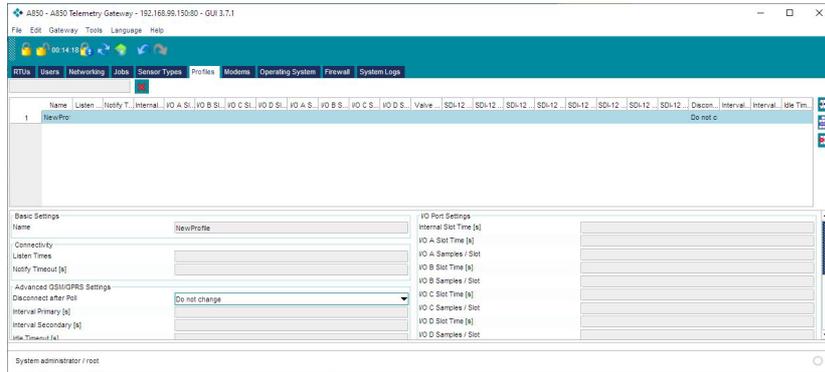

The following tabs are available:

•   Sensor Types - list of sensors with details;

•   Combo Sensor Types - list of combination sensors with name, type and manufacturer;

•   Sensor Tables - list of sensors with conversion table.

You can add new sensors, delete sensors and copy or export entries.

Profiles

RTU profiles can be added and edited on the **Profiles** tab.

Figure 51. Profiles

You can add, copy or delete entries.

Note   *When you click on a row, additional settings related to the profile appear.*

Modems

Different modem types can be added and managed on the **Modems** tab. To set up a modem on your ADCON wireless network, see *"Setting up Modems" on page 36*.

Figure 52. Modems
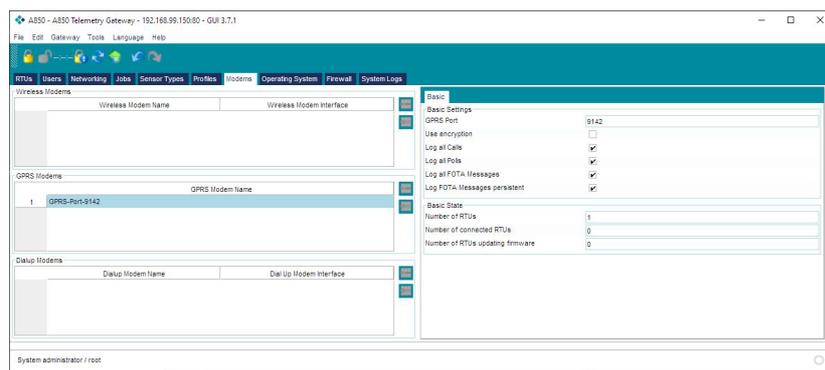
Wireless Modems

Most RTU types communicate with the gateway via a wireless connection. To do this, a wireless modem, for example an A440 with cable or an RA440 via the internet, must be connected to the gateway.

Note   *The firmware version of the A440 wireless modem must be at least 3.0.*

GPRS Modems

In the case of GPRS modems, no hardware is installed. The connection is via software. The ports used must be accessible via the internet. For GPRS connectivity, ADCON recommends using ports above 4000.

Operating System

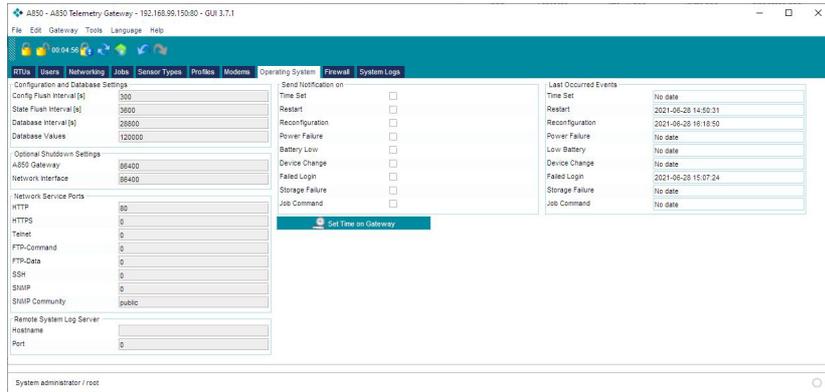The **Operating System** tab is where you can change operating system settings.

Figure 53. Operating System

The following settings options are available:

• Configuration and Database Settings

• Optional Shutdown Settings

• Network Service Ports

• Remote System Log Server

• Send Notification on

• Last Occurred Events

Firewall

On the **Firewall** tab you can change settings for the firewall or management of IP connection rules.

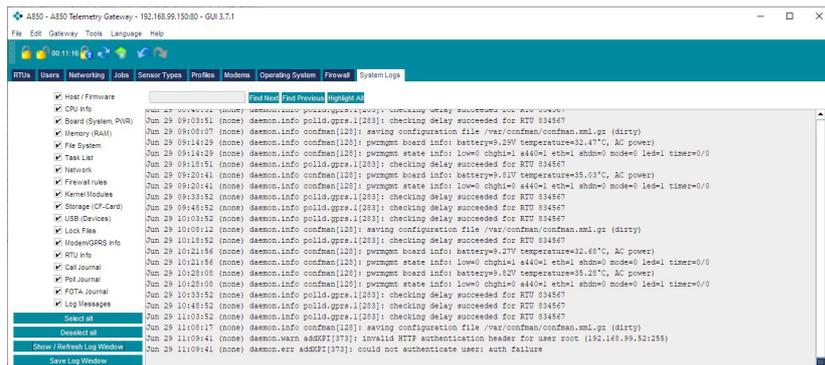**Figure 54. Firewall**

This is a firewall that manages IP connection rules, i.e. which clients are allowed and which aren't. If all access attempts should be allowed, leave the value set to *0.0.0.0/0*. If the list is empty, all access attempts are blocked.

System Logs

The **System Logs** tab includes logs as well as communication and debugging information.

Figure 55. System logs

Create a log file for your system. You can filter, display and save one, multiple or all system logs.

Note   *Depending on the log level set, general information is provided (standard) or detailed information (debug) is displayed. You can set the log level via the welcome page of the Telemetry Gateway. The default value is "Standard".*

Customizing Network Settings

Customize the network addresses in the following areas (see *"Networking (root)" on page 47*):

- LAN settings
- Console settings
- DNS settings

Note   *Logging on as "root" is necessary in order to customize these settings. Logging on as "admin" is necessary in order to check these settings.*

Figure 56. Customizing network settings

1. Lock the configurator for editing.
2. Click on the **Networking** tab on the tab bar.
3. Configure the desired settings.
4. Confirm with **OK**.

Save the configuration or cancel the action.

Log Monitor

There are three options available for displaying the system log files. For each modem you can either log all actions or only the failed actions.

Call Journal

Shows the connection information such as the start and end date and any error codes for GPRS/UMTS/LTE RTUs.

Poll Journal

Shows data transfer information such as start and end time, quantity of data and information on transmissions between the A850 Telemetry Gateway and each RTU.

FOTA Journal

Shows information about the firmware upgrades handled by FOTA.

Chapter 7. Service

This chapter covers procedures for maintenance and disposal of the Telemetry Gateway to ensure that the device is functioning properly.

Firmware Upgrade

Upgrade the firmware to maintain the performance of your device. This especially applies to the following:

- New features
- New RTU types
- New sensor types
- Current security settings
- Current debugging settings

To update the device software, 5 firmware files (format: .img) are required:

- Bootloader
- Kernel
- Firmware
- GUI

The following upgrade options are available:

- Web interface (online and offline)
- Computer (terminal) and USB

Note   *Plan approx. 10 minutes for the upgrade. The upgrade will require restarting of the Telemetry Gateway. Save the desired configuration settings before performing the firmware upgrade.*

Starting the Upgrade Process

1. Launch your browser and enter the server URL.
   The default address of the ADCON Telemetry Gateway is: `192.168.1.1`
   The web interface home page opens.

Figure 57. Configurator welcome page
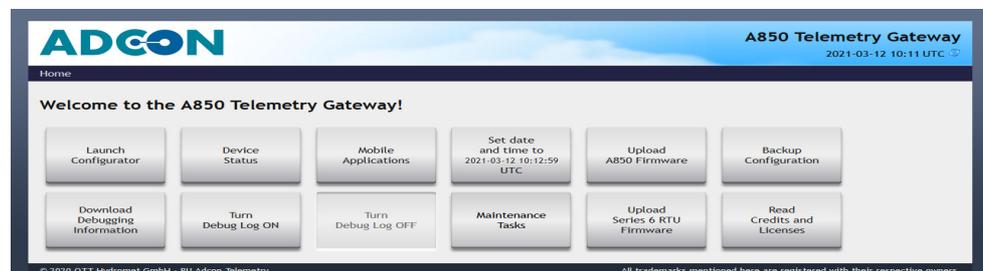
2. Click on **Download Debugging Information** to save the diagnostic functions locally. Enter the user name and password.

Note   *Create a backup before making changes with the configurator. You can restore the data in the event that errors are made in the configuration settings.*

3. Click on **Backup Configuration** to save your settings locally.

Upgrade via the Web Interface

If you are not connected to the internet, perform the upgrade offline.

1. Click on **Upload A850 Firmware** to install the latest device software on your Telemetry Gateway.
2. Click on **Search** and select the locally saved firmware files one after another.
3. Click on "Upload A850 Firmware" to install the latest device software on your Telemetry Gateway.
4. Make sure you have selected the right files so that you don't accidentally downgrade the device.
5. **Reboot** the system.

Upgrade via the Computer and USB

A USB port is available if you want to upgrade using the computer.

Note   *Delete outdated image files before restarting.*

1. Copy all firmware files to a USB stick.
2. Plug the USB stick into the Telemetry Gateway USB port.
3. Connect the computer to the Telemetry Gateway via Telnet (Putty) or serial console (TeraTerm).
4. Log in as the system administrator (root).
5. In the main menu select **U** to upgrade the Telemetry Gateway.
6. In the "Upgrade Menu" submenu select **U** to upload a firmware image.
7. In the "Upgrade Upload Menu" select **U** to access the USB storage.
8. Select **0** to select all files.
9. Make sure you have selected the right files so that you don't accidentally downgrade the device.
10. Press **ESC** twice to return to the main menu.
11. In the main menu select **R** to restart the Telemetry Gateway.
12. Confirm with **Yes**.
13. While rebooting, the firmware is updated and the configuration is adapted to the new features.

Troubleshooting

If problems occur that cannot be resolved using the following instructions, contact your ADCON dealer *or our Customer Service representatives – see "Customer Service" on page 9*.

Tabelle 1. Troubleshooting

Problem	Source	Solution
Telemetry gateway not online after 10 minutes	No power Upgrade failed	Check status LED
Welcome page is showing incorrect information	Browser error	Clear cache (F5)
Date and time not set correctly	NTP client not configured correctly	Check job configuration settings – see *"Jobs (root)" on page 47* Check NTP server Set the date and time on the welcome page manually
Configurator not starting	JAVA cache error	Delete the temporary internet files in the JAVA settings
Wizard does not display a selection of RTU types	No modem configured or enabled for the RTU area	Configure or enable modem
No data polling by RTUs after restarting	Data polling cannot be started	Set date/time via web interface or configure NTP
Time not set despite enabled NTP	NTP configured incorrectly or missing DNS (Domain Name Server)	Use universal NTP server from pool.ntp.org or universal DNS from Google 8.8.8.8 or 8.4.4.4
No entries or only a few entries in Poll/Call Journal	Only error logs enabled	For modems, enable the setting **Log All Poll/Call**
Menu options are grayed out or cannot be selected	Configuration not locked for configuration or rights are missing	Lock configuration and adjust user roles, or log in with the appropriate user profile
Manual data import cannot be selected	Station is set as "ACTIVE"	Deselect the **Station active** checkbox and save the change
No SSH connection possible	SSH inactive	Configure SSH port on the **Operating System** tab
Data storage lasts a max. of 7 days	Incorrect configuration for storage intervals	Adjust settings for "Database Flush Interval, Database Values" on the **Operating System** tab.

Maintenance

The ADCON Telemetry Gateway is largely maintenance free. Replace the battery after 5 or 6 years.