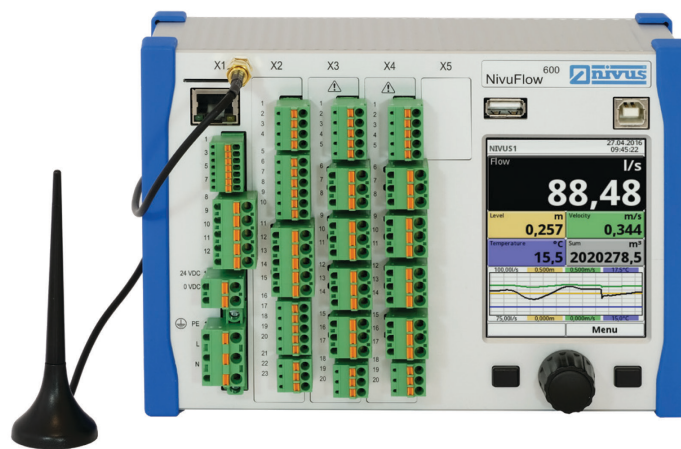


# Instruction Manual

## NIVUS Data Transmission of Devices

NivuFlow 550, 600, 650, 7550, Energy Saver and NivuParQ 850

Supplement to the respective Instruction Manual



Starting with Firmware-Version: 3.1.x

Revised Manual

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measure analyse optimise



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### **Important**

*This instruction manual - even in parts - may exclusively be copied or translated in any other way with the express written consent of NIVUS GmbH.*

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### **Translation**

If the device is sold to a country in the European Economic Area (EEA) this instruction manual must be translated into the language of the country in which the device is to be used.

Should the translated text be unclear, the original instruction manual (German) must be consulted or a member company of the NIVUS group must be contacted for clarification.

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## Revision History

Rev.	Modifications	Responsible Editor	Date
01	New creation on the basis of the German-language instruction manual	MoG	25.06.2021
00	Revision was skipped	MoG	

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## General

### 1 About this Manual

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**Important**

*READ CAREFULLY BEFORE USE.*

*KEEP IN A SAFE PLACE FOR LATER REFERENCE.*

---

This manual is a supplementary instruction manual for the NivuFlow 550, 600, 650, 7550, Energy Saver and NivuParQ 850 series transmitters and is intended for use in accordance with their intended purpose. These instructions are an important part of the respective instruction manual of the transmitter used and replace the chapter “Communication” contained therein completely or at least in part.

**Both instructions must be used as a unit.**

The instruction manual is oriented exclusively to qualified expert personnel.

Read this instruction manual carefully and completely prior to installation or connection since it contains relevant information on this product. Observe the notes and particularly follow the warning notes and safety instructions.

If you should have problems to understand information contained within this instruction manual either contact a member company of the NIVUS group or one of the distributors for further support. The member companies of the NIVUS group cannot be held responsible for damage to persons or material due to incorrectly understood information in this instruction.




#### 1.1 Applicable Documentation

For the installation and operation of the complete system extra instruction manuals or technical descriptions are required apart from this manual.

- Instruction Manuals for the respective Transmitters:
  - NivuFlow 550
  - NivuFlow 600
  - NivuFlow 650
  - NivuFlow 7550
  - NivuFlow Energy Saver
  - NivuParQ 850
- Technical descriptions / installation instructions / instruction manuals of the associated sensors and other devices (according to the operating instructions of the respective transmitter)

These manuals are provided with the respective (auxiliary) units or sensors and/or are available as download on the NIVUS homepage.

## 1.2 Signs and Definitions used

Representation	Meaning	Remarks
	(Action) Step	Execute action steps. Should action steps be numbered observe the specified order of the steps.
	Cross-Reference	Refers to further or more detailed information
>Text<	Parameter or menu	Indicates a parameter or a menu that is to be selected or is described
	Refers to a documentation	Refers to an accompanying documentation

**Tab. 1 Structural elements within the manual**

## 1.3 Abbreviations used

Abbreviation	Long Text
AO	Analogue Output
AI	Analogue Input
DO	Digital Output
DI	Digital Input
HART	Hart Interface
RS232	Bus-Interface RS232
RS485	Bus-Interface RS485
PLC	Programmable Logic Controller

**Tab. 2 List of Abbreviations**



## Safety Instructions

### 2 Basic Safety Rules

---

**DANGER**



#### **Validity of this Manual**

*These instructions are only valid in conjunction with the instruction manual applicable to your device. All safety instructions and restrictions listed therein must be **necessarily** observed and complied with.*

*The basic operating/working instructions are listed and explained in the valid instruction manual.*

*The user of these instructions must have the valid instruction manual available and be familiar with their contents accordingly.*

---

### 3 Warranty

The device was functionally tested prior to shipping. When used for the intended purpose (see Chap. "5 Intended Use") and in compliance with the instruction manual, the applicable (see Chap. "1.1 Applicable Documentation") and the safety information and instructions contained therein, no functional restrictions are to be expected and flawless operation should be possible.



Please also refer to the following chapter "4 Disclaimer".

---



#### **Limitation of Warranty**

*In case of disregarding the safety notes and instructions in this document, the companies of the NIVUS-Group reserve the right to limit the warranty.*

---

### 4 Disclaimer

#### **The companies of the NIVUS-Group assume no liability**

- for consequential damages resulting from a **change** in this document. The companies of the NIVUS-Group reserve the right to change the contents of the document including this disclaimer without prior notice.
- for personal injury or damage to property resulting from **failure to comply** with the **applicable regulations**. For connection, commissioning and operation of the devices/sensors, all information and higher-level legal regulations of the country (in Germany e.g. the VDE regulations), such as valid Ex regulations as well as the safety and accident prevention regulations applicable to the respective individual case shall be observed.
- for personal injury or damage to property resulting from **improper handling**. For safety and warranty reasons, all work on the equipment that goes beyond the installation and connection measures may only be carried out by NIVUS personnel or by persons or companies authorised by NIVUS.
- for personal injury or damage to property resulting from the operation of the equipment in a **technically faulty** condition.
- for personal injury or damage to property resulting from **improper use**.
- for personal injury or damage to property resulting from failure to observe the **safety instructions** in this instruction manual.
- for missing or incorrect readings due to **improper installation** and for any consequential damage resulting therefrom.

## 5 Intended Use



### Note

*The device is intended exclusively for the purpose mentioned below. Any other use beyond this, any conversion or modification of the instrument without written agreement with the companies of the NIVUS-Group is considered improper use.  
The companies of the NIVUS-Group are not liable for any damage resulting from this.  
The operator alone bears the risk.*

---

The NivuFlow/NivuParQ transmitters incl. associated sensors are intended for different purposes.

Please refer to the valid NIVUS instruction manual of the transmitter used.

The transmitters are designed and produced according to the current state of the art and the recognised safety rules at the time of publication of this document.

Nevertheless, risks of personal injury or damage to property cannot be completely ruled out.

The permissible maximum limit values in Chapter “Specifications” in the instruction manuals must be observed. All cases of use deviating from these limit values, which have not been approved by NIVUS GmbH in writing, are excluded from the liability of the NIVUS-Group.

## 6 Duties of the Operator



### Important Note

*In the EEA (European Economic Area), the national transposition of the Framework Directive (89/391/EEC) as well as the associated individual directives and, in particular, the Directive (2009/104/EC) concerning the minimum safety and health requirements for the use of work equipment by workers at work, as amended, must be observed and complied with.  
In Germany, the Ordinance on Industrial Safety and Health must be complied with.*

---

Obtain the local operating licence and observe the associated conditions. In addition, you must comply with environmental protection requirements and local legal requirements for the following:

- Safety of personnel (accident prevention regulations)
- Safety of work equipment (protective equipment and maintenance)
- Product Disposal (Waste Management Act)
- Materials Disposal (Waste Management Act)
- Cleaning (Cleaning Agents and Disposal)

### Connections

As the operator, before activating the device, make sure that the local regulations (e.g. for the electrical connection) have been observed during installation and commissioning.

### Keep the Instruction Manual for future Reference

Keep the instruction manual in a safe place and ensure that it is always available and can be consulted by the user of the product.

### Hand over the Instruction Manual

When selling the instrument, this instruction manual must be handed over with it. The manual is part of the standard delivery.

## 7 Requirements for the Personnel

Installation, commissioning and maintenance may only be carried out by personnel who fulfil the following conditions:

- Qualified personnel with appropriate training
- Authorisation by plant operator



### **Qualified Personnel**

*in the sense of these instructions or the warnings on the product itself are persons who are familiar with the installation, assembly, commissioning and operation of the product and who have the qualifications appropriate to their job, such as*

- I. training and instruction or authorisation to switch circuits and devices/systems on and off, to earth and to label them in accordance with the standards of safety technology.*
  - II. Training or instruction in accordance with safety technology standards in maintenance and use of appropriate safety equipment.*
  - III. First Aid Training*
-

## Description

### 8 Introduction

The NivuFlow/NivuParQ transmitters have been equipped with an integrated 2G/3G/4G modem since firmware version 3.0.x. This modem adds a wireless interface to the data transmission options.

This manual explains the extended communication and data transmission options of the NivuFlow/NivuParQ transmitters and describes the associated parameters.

### 9 Installation and Connection Installation of the Device Communication

#### 9.1 General Information

The transmitters of the NivuFlow/NivuParQ series have numerous communication and data transmission options.

These options are used for direct communication with devices connected on site or for remote data transmission to the NIVUS WebPortal and optionally other interfaces.

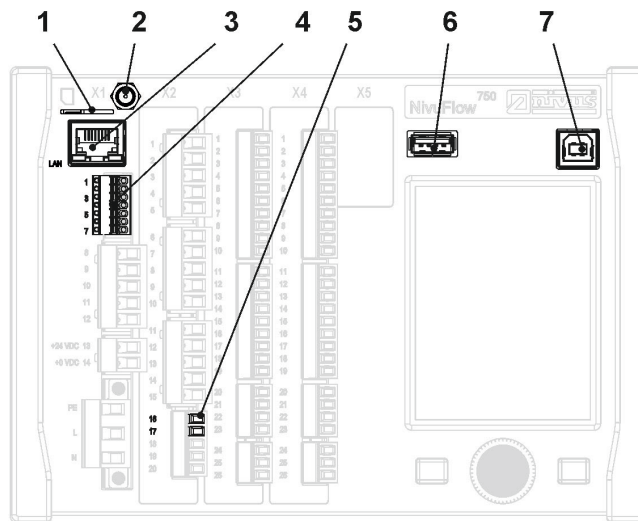
These currently available communication options are part of the >Communication< menu and are described below.

The interfaces for data transmission are subdivided into

- Wired Interfaces:
  - AI
  - AO
  - DI
  - DO
  - HART
  - Ethernet
  - RS232/RS485
- Wireless Interfaces:
  - 2G/3G/4G mobile communications modem via integrated SIM card or optional customer SIM card

## 9.2 Locating the external interfaces on the transmitter

The transmitter has the following designated interfaces on the front of the device.



- 1 Slot for SIM card (customer-based data transmission via internal 2G/3G/4G modem)
- 2 Antenna socket (for internal 2G/3G/4G modem)
- 3 Network Interface (LAN)
- 4 BUS Interface (RS485/RS232)
- 5 Hart Interface
- 6 USB-A Interface (data transfer, parameter backup, device update)
- 7 USB-B Interface (service mode)

**Fig. 9-1 Available interfaces on the front**

## 9.3 Interfaces

### 9.3.1 AI, AO, DI, DO and HART

The devices can be connected directly to various peripherals via analogue and digital inputs and outputs.

In addition, the analogue inputs AI offer the possibility of addressing certain peripheral devices simultaneously in analogue and digital form via the HART protocol.

Details on the connection to the analogue and digital inputs are described in the respective valid instruction manual in chapter "Terminal Wiring Diagrams".

The parameterisation of the analogue and digital inputs is also described in the respective instruction manual.



Observe the valid instruction manual of the transmitters used.

The chapter names in the instruction manuals, however, may differ slightly.

### 9.3.2 Ethernet

The NivuFlow/NivuParQ transmitters can be connected to a computer network via the local Ethernet interface.

This enables various applications or communication options, such as the HTTP(S) web server integrated in the device or access for file transfer via FTP(S).

The NivuFlow/NivuParQ transmitters can be integrated into an IPv4 network via the common variants of a fixed or an automatically obtained IP address. During parameterisation, a

distinction is made as to whether the Ethernet port or the integrated mobile communications modem is to be used for bidirectional data exchange.

Parallel routing for simultaneous communication via Ethernet and remote data transmission can be parameterised in the routing table.

### 9.3.3 RS232/RS485

The NivuFlow/NivuParQ transmitters also have a serial bus interface (Fig. 9-1 Pos. 4) for data transmission in accordance with the RS232 or RS485 data transmission protocols. These interfaces are used to connect the data serially to another data communication device.

As standard, the unit allows the use of the industry standard Modbus RTU to transmit various parameter and analysis values to a central control unit.

### 9.3.4 2G/3G/4G Mobile Communications Modem

NivuFlow/NivuParQ transmitters equipped ex works with firmware version 3.0.x have the option of wireless communication by using an integrated 2G/3G/4G mobile communications modem. This 2G/3G/4G mobile communications modem can be used worldwide via an activated SIM card.

All modem-equipped NivuFlow/NivuParQ transmitters come with a suitable antenna ex works, which must be installed accordingly on site.

Which SIM card is used for which use case depends on the booked service and the user's consent.

### 9.3.5 NIVUS SIM Chip / SIM Card

The SIM card can be either the permanently installed and already integrated NIVUS SIM chip or a customer-provided SIM card to be installed (see Chap. "9.3.6 Customer SIM Card"). It must be noted that the modem can use this SIM chip / SIM card both, but only alternately, not simultaneously.

The integrated NIVUS SIM chip is not active in the factory setting and must be activated for use by the optionally available device licence and its activation (see Chapter "Add-on Function Licences" in the respective instruction manual).

### 9.3.6 Customer SIM Card

Optionally, a customer SIM card can be used for the NivuFlow/NivuParQ transmitter. The functionality, however, is reduced.

In principle, any data SIM card can be inserted in the NivuFlow/NivuParQ transmitter and the data transfer can also be carried out via this. For reasons of data security, however, VPN SIM cards should be used so that the transmitter is not "freely" accessible on the Internet but is secured.

### 9.3.7 Antennas

The NivuFlow/NivuParQ transmitters are equipped/delivered with one of the two antennas, depending on the order:

- Adhesive antenna when installed in a field enclosure
- (Magnetic base) rod antenna for installation in a control cabinet

The (magnetic base) rod antenna can be moved to a better reception position (in case of poor reception) when using a suitable extension cable.

## 9.4 Communication Options / Applications

The available communication options via the interfaces are:

- Local analogue and digital data transmission
- Local data transmission via Modbus slave (Modbus RTU)
- Remote operation of the transmitter via the integrated web server
- Remote access to data available in the transmitter via FTP
- Remote data transmission via MQTT to the NIVUS WebPortal

It should be noted that not every one of these communication options is possible via every interface.

Details on this in the following chapter.

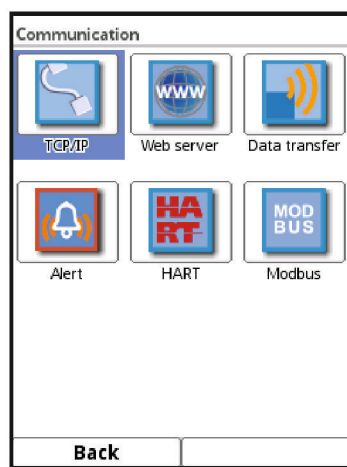


Fig. 9-2 Parameter Menu Communication

### 9.4.1 Local analogue and digital data transmission (via AI, AO, DI and DO)

With its analogue and digital inputs and outputs, the NivuFlow/NivuParQ transmitter has numerous options for providing or using measurement values directly on site.

An example of a typical use of the analogue input is to use a measurement value (usually the level) of an upstream system to determine the flow.

Numerous measurement values can be output or looped through via the analogue output, e.g. to output them like a control value to a downstream control system.

Furthermore, it is possible to switch through data received digitally via Modbus to a digital or analogue output and thus control downstream systems or machines via an upstream Modbus master system.

The digital inputs and outputs are essentially used for certain switching tasks, as well as for counting tasks or measurement durations via the digital input.

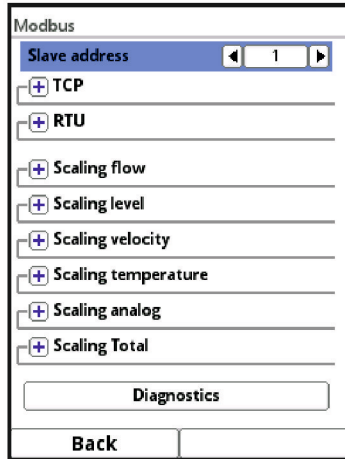
In addition, signals can be applied to the digital outputs DO via limit contacts and threshold values.

### 9.4.2 Local Bus Data Transmission (via Modbus RTU or TCP)

The NivuFlow/NivuParQ transmitter has the industrial bus communication option Modbus and enables both Modbus RTU and Modbus TCP operating modes, i.e. it uses either the serial interface or the Ethernet interface.

The unit is configured as a slave at the factory and receives and responds to commands and requests from a central unit (e.g. PC, central control, PLC ...).

➡ Details about this see Chap. "10.6 Modbus".



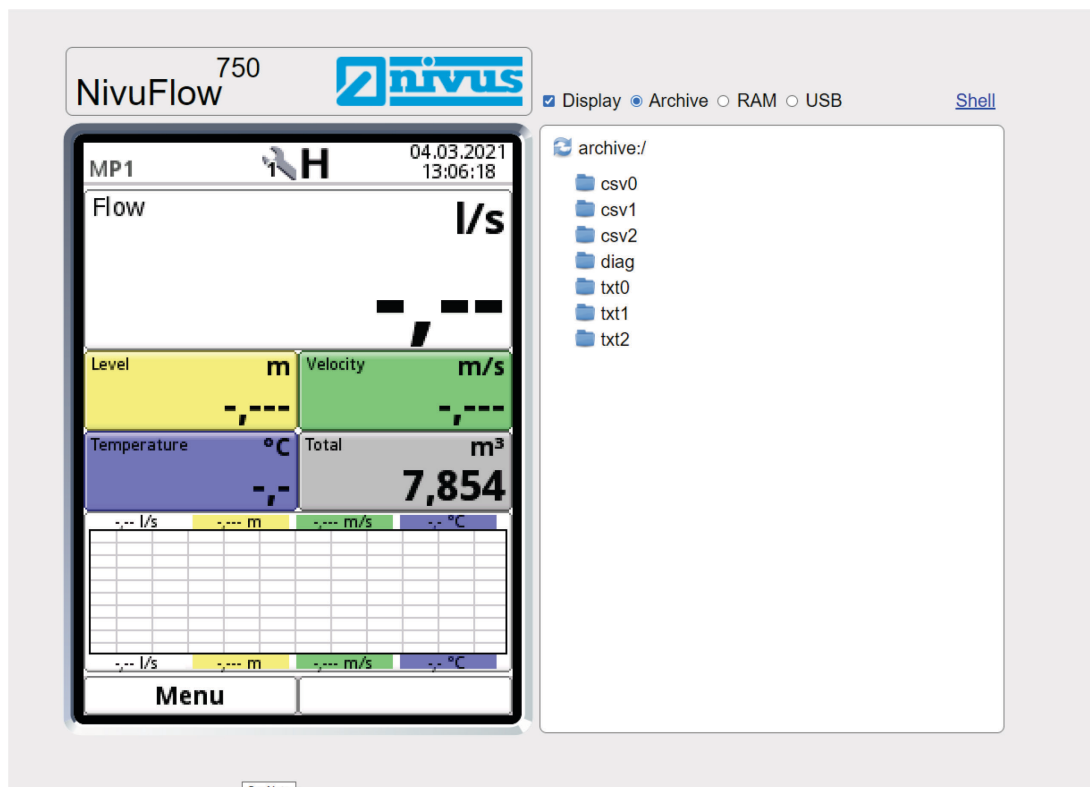
**Fig. 9-3 Local Bus Data Transmission (via Modbus)**

### 9.4.3 Device Remote Control via integrated HTTP(S) Web Server (via TCP/IP)

Based on the integrated Ethernet interface, direct access to the NivuFlow/NivuParQ transmitter is also possible with access to the local LAN network.

For this purpose, the device has an integrated HTTP(S) web server, which can optionally also use an individual server certificate to authenticate the server.

Via this password-protected HTTP(S) web server, the NivuFlow/NivuParQ transmitter is available via the assigned or fixed IP address within the network and can be operated via PC as if the user were standing directly in front of the device.



**Fig. 9-4 Remote Control via HTTP(S) Web Server**



#### 9.4.4 File-Based Data Transmission via integrated FTP Web Server (via TCP/IP)

Alternatively, the NivuFlow/NivuParQ transmitter allows direct access to the archive, RAM and USB storage locations and to store files there or download files from there.

Each of these sections is individually password-protected and an individual server certificate can be stored for authentication of the server.

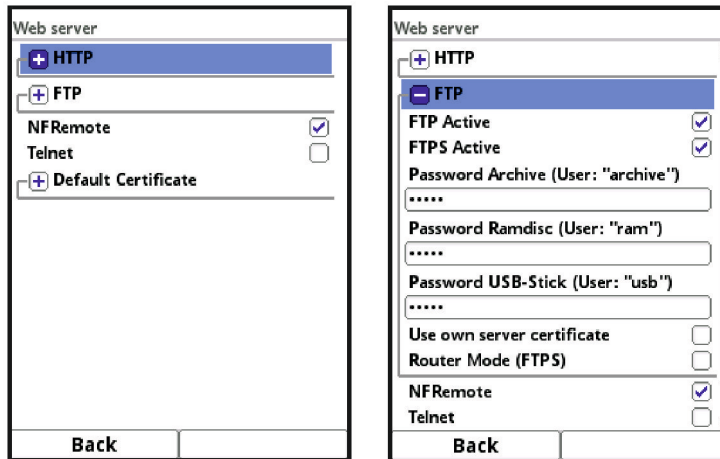


Fig. 9-5 Data Transmission via integrated FTP(S) Web Server

#### 9.4.5 Automated Data Transmission via MQTT to the NIVUS WebPortal

The NivuFlow/NivuParQ transmitter has the option of automated cyclical data transmission via the MQTT network protocol.

The NIVUS WebPortal is pre-configured and available to the user with a chargeable booking. It offers a wide range of options for data display, measurement place visualisation, reporting and analyses.

Alternatively, the user has the option of specifying an individual MQTT server and using it via the SIM card defined in advance.

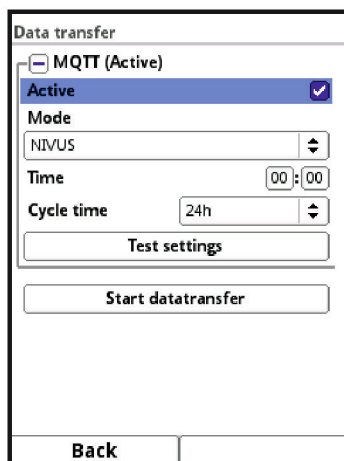


Fig. 9-6 Data Transmission via Network Protocol MQTT

## 10 Parameter Menu Communication



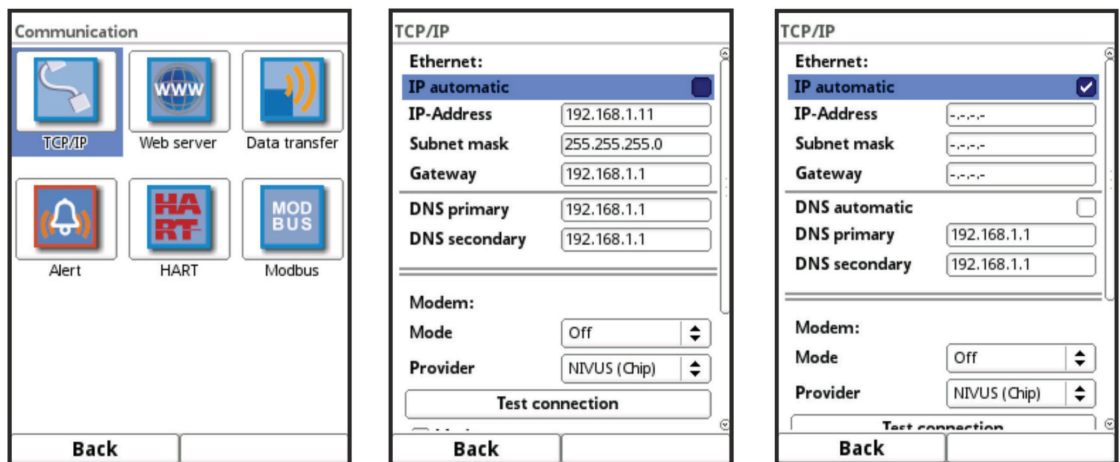
### **Important Note on the Contents of this Chapter**

*This chapter replaces (at least partially) the chapter of the same name in the respective valid instruction manual for the NivuFlow/NivuParQ transmitter.*

In this menu you can establish communication with other devices.

In addition, you can integrate the unit into a network here. Details are only partially described here.

If you do not have the necessary IT knowledge, leave this activity to either an IT specialist or the NIVUS commissioning personnel.



**Fig. 10-1 Communication / TCP/IP**

### 10.1 TCP/IP

Settings for data transport in a decentralised network. Settings for the IP address and the domain are adjusted here or just displayed.

#### >IP automatic<:

If activated (checkbox), the IP address is automatically obtained from the network via DHCP; the addresses are only displayed and cannot be changed by entering them; if the function is activated, the DNS can be automatically selected in the same way.

#### >IP Address<:

Address within local network

#### >Subnet Mask<:

Description of the local network

#### >Gateway<:

Router address (only if available)

#### >DNS<:

Addresses of the name servers for address resolution; split into primary and secondary; except if >DNS automatic< is activated, then only primary.

The figure consists of three side-by-side screenshots of a web-based configuration interface for a modem. Each screenshot shows the 'TCP/IP' configuration page with the following fields:

- TCP/IP:** primary (192.168.1.1), DNS secondary (192.168.1.1)
- Modem:**
  - Mode: Off (dropdown)
  - Provider: Off (dropdown)
  - Test con: (button)
  - Modem state: (+) (button)
- Routing:**
  - Default Gateway: Modem (dropdown)
  - Routing Table: (button)
- Buttons:** Back (button)

The second screenshot shows the 'Provider' dropdown menu open, listing: NIVUS (Chip), T-Mobile Deutschland, Vodafone, O2, NIVUS (WL), and User defined. The third screenshot shows the 'Ping' section expanded with 'Active' checked, and the 'Address' field containing 'nivuswebportal.com' and 'Cycle' set to '5 min'.

Fig. 10-2 TCP/IP with Modem

**>Mode<:**

Modem activation;

Select from "Off" (modem disabled), "On" (modem enabled and available) and "Online" (modem currently in use).

**>Provider<:**

The service via which the data connection takes place is selected here. Only one SIM card can be used at a time; there is no dual SIM function.

Currently available: NIVUS (Chip), T-Mobile Deutschland, Vodafone, O2, NIVUS (WL), User defined.

If "User defined" is selected, the access data of a non-preconfigured provider is entered. If necessary, this information must be requested there.

**>Ping<**

Activate self-test of the modem (only with modem selection "Online").

**>Test Connection<:**

The modem checks existing connection options.

**>Modem State<:**

The information on the current status of the modem is displayed here.

**>SIM Card<:**

Display of information on the customer's SIM card (not with selection NIVUS (Chip)).

**>Default Gateway<:**

Choice of preferred path of data communication: Ethernet interface or 2G/3G/4G modem.

**>Routing Table<:**

The routing table indicates which path the transmitter uses to route the data packets to connected networks. This table has a static character and is defined during parameterisation. The function is necessary, for example, if Internet access is only available in the connected networks.

## 10.2 Web Server

The settings required for remote operation of the NivuFlow/ NivuParQ transmitter are made here. The web server makes all (operating) functions available via the Internet as an alternative to on-site operation.

The access data to the web server are defined here. The operation is then carried out remotely via a web browser using HTTP or via a data transfer programme directly via the FTP server.

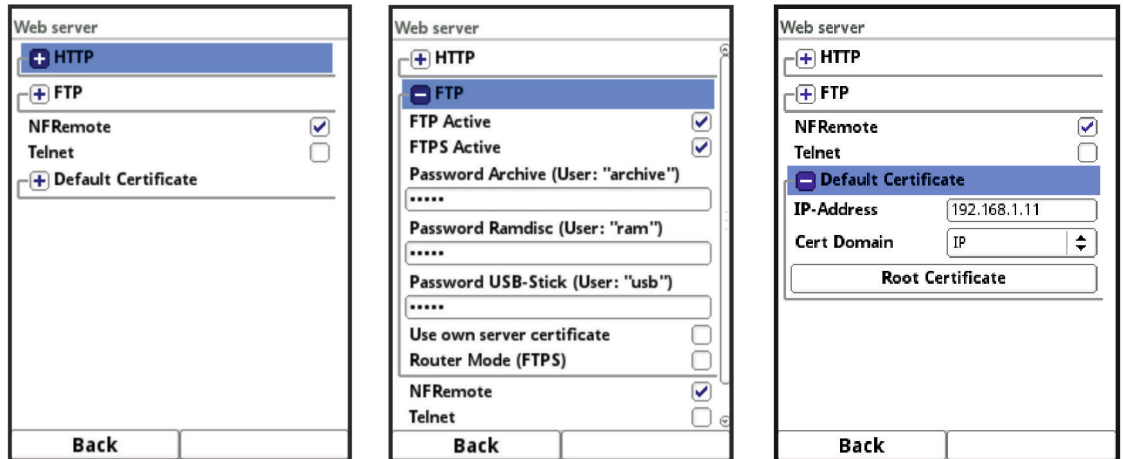


Fig. 10-3 Web Server

### HTTP:

- **>HTTP Active<**:  
Activation of unencrypted access via port 80.
- **>HTTPS Active<**:  
Activation of encrypted access via port 443.
- **>Username<** and **>Password<**:  
Must be set to enable access.
- **>Use own Server Certificate<**:  
Check box and select file.

### FTP:

- **>FTP Active<**:  
Activation of unencrypted access via port 21.
- **>FTPS Active<**:  
Activation of encrypted access via port 21.
- **>Password xxx<**:  
Access to the various "drives" via the user name; only parameterisation of the passwords required;  
Default setting: nivus
- **>Use own Server Certificate<**:  
Check box and select file.
- **>Router Mode (FTPS)<**:  
Check and enter external IP address or corresponding ports (Port Start / Port Num); special FTP mode for TLS via router.  
Condition: the parameters set in the transmitter and in the router match.

**NF Remote:**

- **>NF Remote<:**  
Allow remote access by NIVUS.

**Telnet:**

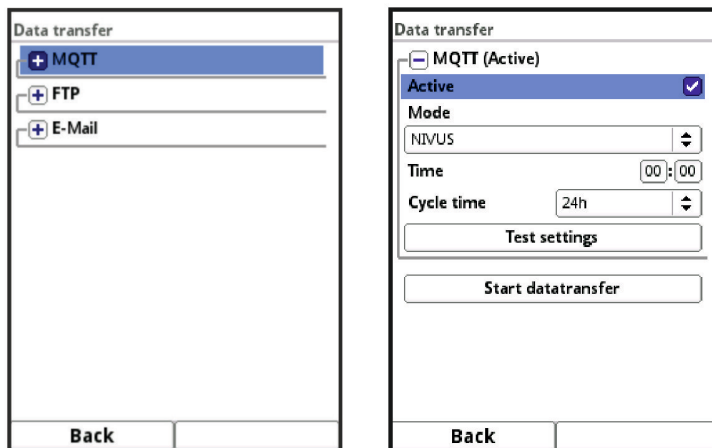
- **>Telnet<:**  
Allow remote access via Telnet.

**Standard Certificate:**

- **>Standard Certificate<:**  
Enter/change the certificate used; enter/select IP address and domain type (IP / name) or load >Root Certificate< from USB stick;  
the device has its own certificate, but can load a third-party certificate via the USB port if required.

### 10.3 Data Transmission

The automated cyclical data transmission to the NIVUS WebPortal is defined here. This can be done via the network protocol MQTT, via FTP server or via e-mail.



**Fig. 10-4 Data Transmission via Network Protocol MQTT**

**MQTT**

The NIVUS WebPortal is pre-configured and available to the user with a chargeable booking. It offers a wide range of options for data display, measurement place visualisation, reporting and analyses.

As an option, the MQTT network protocol is available. This protocol is used to send all data that accumulates in the data memory to a MQTT server.

- **>Activ<:**  
Check the box to activate.
- **>Mode<:**
  - **>NIVUS Auto.< :**  
The system automatically selects whether the data is sent via Ethernet or via the 2G/3G/4G modem.
  - **>NIVUS Ethernet<:**  
Transmits data via Ethernet.
  - **>NIVUS Modem<:**  
Transmits data using the 2G/3G/4G modem.
  - **>User Defined<:**  
**>Modem<:**  
The MQTT server is reached exclusively via the 2G/3G/4G modem.

**>Broker<:**

The Internet address of the server is entered either as a host name or IP address.

**>Port<:**

Associated port

**>Encryption<:**

Activation of secure (SSL/TLS) communication between client and server and use of the port.

**>User Name< and >Password<:**

Authentication of the NivuFlow/NivuParQ transmitter.

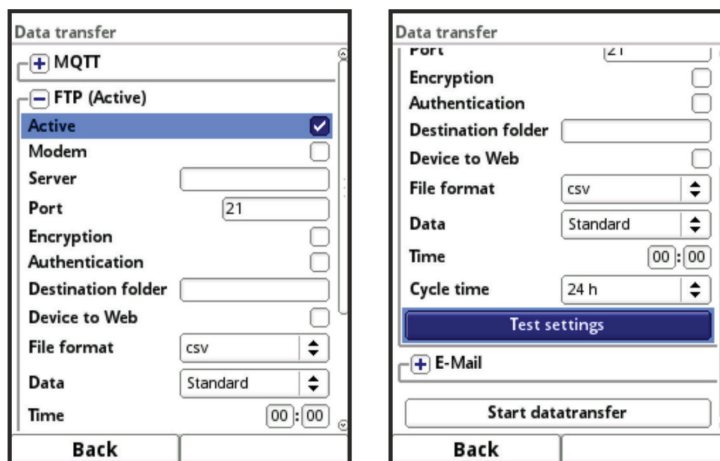
- **>Data<:**  
Determination of the data depth to be transmitted (see also Chap. "USB Stick" in the respective instruction manual).
  - **>Standard<:**  
Basic data
  - **>Extended<:**  
Extended data package (available only via additional licences; see Chap. "Additional Function Licences" in the respective instruction manual)
  - **>Expert<:**  
Maximum data package (available only via additional licences; see Chap. "Additional Function Licences" in the respective instruction manual)
- **>Time<:**  
Time of first transmission; individual entry via rotary pushbutton.
- **>Cycle Time<:**  
Time until next data transmission; Options: 2 min, 5 min, 10 min, 15 min, 30 min, 1 h, 2 h, 3 h, 4 h, 6 h, 8 h, 12 h and 24 h.
- **>Test Settings<:**  
Establish a test connection to the server with the specified values.
- **>Start Data Transfer<:**  
Manual data transmission since the last transmitted time stamp.

**FTP:**

Transmission to a customer FTP server or to the D2W data portal.

Available as additional function licence (see Chap. "Additional Function Licences" and "Function Unlocking" in the respective instruction manual).

Option is available only when MQTT is inactive.



**Fig. 10-5 Data Transmission via FTP**

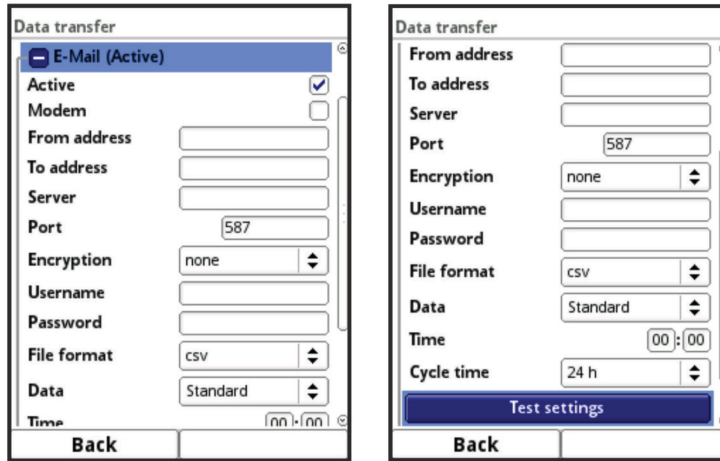
- **>Activ<:**  
Check the box to activate.
- **>Modem<:**  
Check box to activate (online) the internal modem before the actual transmission.
- **>Server<:**  
Specify server name or IP address.
- **>Port<:**  
Associated port
- **>Encryption<:**  
Activation of secure (SSL/TLS) communication between client and server and use of the port.
- **>Authentication<:**  
Activate with user and password-protected FTP access and specify in user and password.
- **>Destination Folder<:**  
Enter the destination folder where the files are to be stored.
- **>Device to Web<:**  
Activate when transmitting to the D2W; the Device-to-Web compatible format is applied.
- **>File Format<:**  
There are csv and txt available.
- **>Data<:**  
Determination of the data depth to be transmitted (see also Chap. "USB Stick" in the respective instruction manual).
  - **>Standard<:**  
Basic data
  - **>Extended<:**  
Extended data package (available only via additional licences; see Chap. "Additional Function Licences" in the respective instruction manual).
  - **>Expert<:**  
Maximum data package (available only via additional licences; see Chap. "Additional Function Licences" in the respective instruction manual).
- **>Time<:**  
Time of first transmission; individual entry via rotary pushbutton.
- **>Cycle Time<:**  
Time until next data transmission; Options: 2 min, 5 min, 10 min, 15 min, 30 min, 1 h, 2 h, 3 h, 4 h, 6 h, 8 h, 12 h and 24 h.
- **>Test Settings<:**  
Establish a test connection to the server with the specified values.
- **>Start Data Transfer<:**  
Manual data transmission since the last transmitted time stamp.

**E-Mail:**

Transmission to an e-mail address.

Available as additional function licence (see Chap. “Additional Function Licences” and “Function Unlocking” in the respective instruction manual).

Option is available only when MQTT is inactive.



**Fig. 10-6 Data Transmission via E-Mail**

- **>Activ<:**  
Check the box to activate.
- **>Modem<:**  
Check box to activate (online) the internal modem before the actual transmission.
- **>From Address<:**  
E-Mail sender address (needs to be accepted by the SMTP server).
- **>To Address<:**  
E-Mail destination address.
- **>Server<:**  
Specify server name or IP address.
- **>Port<:**  
Associated port
- **>Encryption<:**  
An encryption via STARTTLS or SSL can be selected optionally.
- **>User Name<:**  
Enter the user name of the e-mail box.
- **>Password<:**  
Enter the password of the e-mail box.
- **>File Format<:**  
There are csv and txt available.
- **>Data<:**  
Determination of the data depth to be transmitted (see also Chap. “USB Stick” in the respective instruction manual).
  - **>Standard<:**  
Basic data
  - **>Extended<:**  
Extended data package (available only via additional licences; see Chap. “Additional Function Licences” in the respective instruction manual).



- **>Expert<**:  
Maximum data package (available only via additional licences; see Chap. “Additional Function Licences” in the respective instruction manual).
- **>Time<**:  
Time of first transmission; individual entry via rotary pushbutton.
- **>Cycle Time<**:  
Time until next data transmission; Options: 2 min, 5 min, 10 min, 15 min, 30 min, 1 h, 2 h, 3 h, 4 h, 6 h, 8 h, 12 h and 24 h.
- **>Test Settings<**:  
Establish a test connection to the server with the specified values.
- **>Start Data Transfer<**:  
Manual data transmission since the last transmitted time stamp.

## 10.4 Alert

The >Alert< menu is divided into various sub-items (depending on the transmitter used). These sub-items can be:

- >Flow<
- >Concentration<
- > < 63  $\mu\text{m}$ <
- >Level<
- >Velocity<
- >Water Temperature<
- >Air Temperature<
- >Analogue Input X<
- >Digital Input X<

All sub-items are only visible if the analogue and digital inputs have previously been assigned a type under >Application< and thus activated.

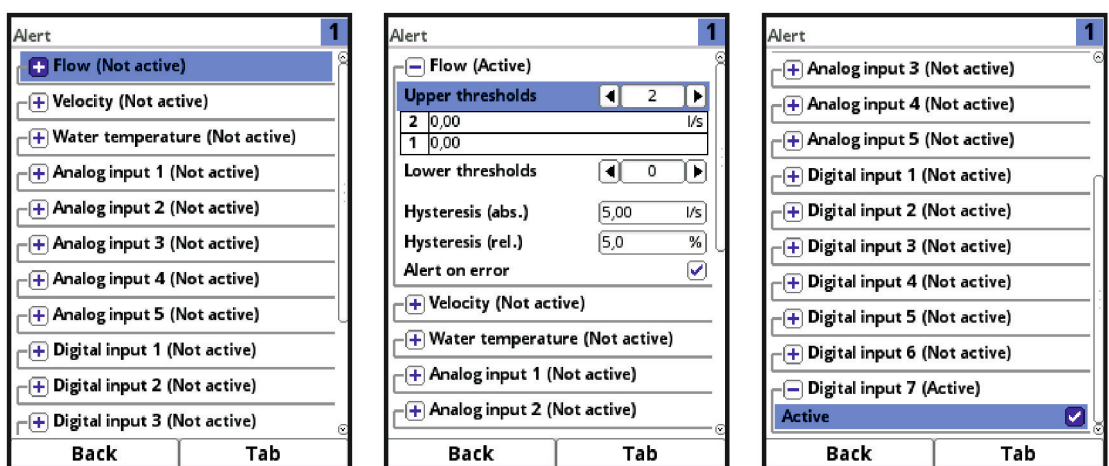


Fig. 10-7 Alert

For all sub-items (except >Digital input<), up to five different threshold values can be entered via the rotary pushbutton for **>Upper Thresholds Entries<** and for **>Lower Thresholds Entries<**. When these are reached, an alarm e-mail (only in connection with the NIVUS WebPortal) is to be issued.

The threshold values are defined by selecting the fields and entering numerical values. The transmitter sorts the entered threshold values in descending order. This is done independently of the input sequence.

For **>Hysteresis (abs.)<** and **>Hysteresis (rel.)<** values can be specified by selecting and entering. The transmitter evaluates the two values and sends an e-mail (only in connection with the NIVUS WebPortal) at the highest downwards limit (lowest possible value). This e-mail contains the information that the alert has been cancelled.

In addition, the checkbox **>Alert on error<** can be set. Then an alarm e-mail (only in connection with the NIVUS WebPortal) is sent in the event of an active pending error. Such errors are e.g. cable faults, interruptions, short circuits etc.



**Alarm E-Mail for defective Flow Velocity Sensor**

*NIVUS recommend checking this box to receive an alarm e-mail if a flow velocity sensor is defective. A defect in the flow velocity sensor will cause the flow measurement to fail.*

In the sub-item **>Digital Input<** a check mark can be set to activate an alarm e-mail (only in connection with the NIVUS WebPortal) when a digital “high” occurs at the digital input.

**Default setting:** box unchecked.

**10.5 HART (function can be added via licence)**

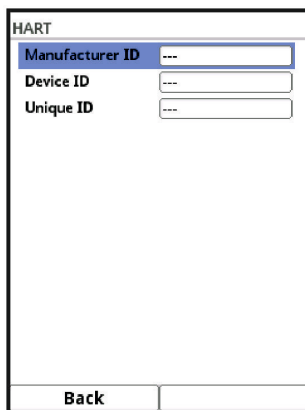
The functionality of the communication via HART must be purchased via the additional function licence and this function licence must then be activated.

If the transmitter is ordered with a licence (ex works), it will be activated by NIVUS before delivery.



See also Chap. “Additional Function Licences” and “Function Unlocking” in the respective transmitter instruction manuals.

When communicating via HART (via AO1), the identification data of the connected device must be entered.



HART	
Manufacturer ID	---
Device ID	---
Unique ID	---
Back	

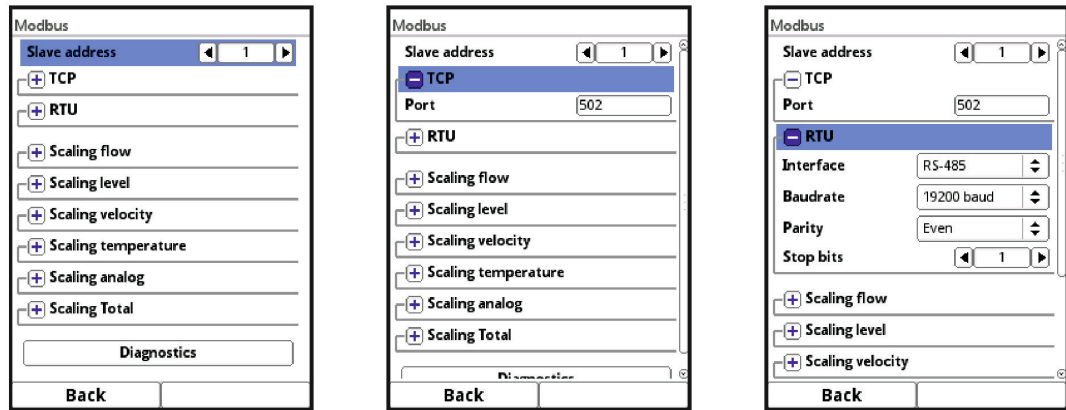
**Fig. 10-8 HART**

## 10.6 Modbus

The transmitter can be integrated into other systems via Modbus.

If required, the Modbus protocol can be sent to you on request. For this purpose, please contact the technical office staff at the head office of NIVUS GmbH in Eppingen.

Alternatively, the document is available for download in the download centre on our homepage.



**Fig. 10-9 Modbus**

The following functions are available here:

- Slave address (1 to 247)
- TCP (port used)
- RTU
  - Interface (RS232 or RS485)
  - Baud rate (1200, 2400, 4800, 9600, 19200, 38400, 57600 or 115200 Baud)
  - Parity (None, Odd or Even)
  - Stop bits (1 or 2)

Furthermore, the following scalings can be set (depending on the transmitter used):

- Scaling Flow
- Scaling Level
- Scaling Velocity
- Scaling Temperature
- Scaling Sound Velocity
- Scaling Area
- Scaling Analogue
- Scaling Total
- Scaling Concentration

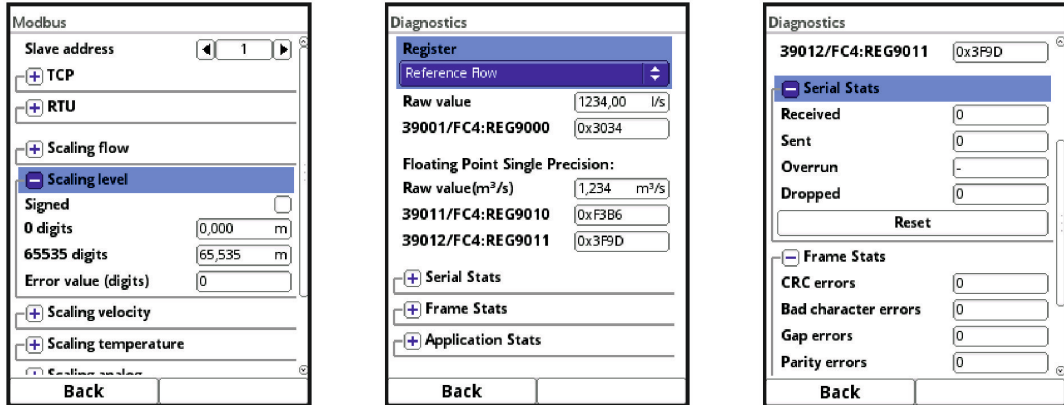
By entering the values for 0 / 65.535 digits (or -32.768 / 32.768 if Signed is ticked), the resolution of the measuring range is set.

A value must be entered for "Error Value" (factory setting: "0") in order to communicate an error message when an error occurs.



**Expert knowledge required**

*These settings require extensive expert knowledge and require the use of NIVUS commissioning personnel or an authorised specialist company.*



**Fig. 10-10 Programming Scaling / Diagnostics / Serial Stats**

Under **>Diagnostics<** the individual registers (flow reference, total reference, flow, level, velocity, concentration, water temperature and air temperature) can be viewed in more detail.

The **raw value** and the assignment of the Modbus registers are displayed at the same time.

Fixed values can be entered to adjust the scaling/transmission network sequence between the transmitter and the connected Scada/PLC.

The statistics (Serial Stats, Frame Stats and Application Stats) are arranged in layers. After viewing, a reset is possible in each case.

**Serial Stats** concern the serial interfaces (not when accessed via Modbus TCP) and inform about the number of bytes received, sent and discarded/lost.

**Frame Stats** are about the communication frame and inform about error sources such as the sequence of bytes, checksums, parity, valid packets and other errors.

The **Application Stats** concern the application level and inform about functional errors such as unsuccessful transmissions, unsupported function codes, unoccupied data addresses and other errors.