



LANGE 

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Fieldbus Interfaces Modbus and Profibus

Operations Manual

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Section 1 General information

The information in this manual has been carefully checked and is believed to be accurate. However, the manufacturer assumes no responsibility for any inaccuracies that may be contained in this manual. In no event will the manufacturer be liable for direct, indirect, special, incidental or consequential damages resulting from any defect or omission in this manual, even if advised of the possibility of such damages. In the interest of continued product development, the manufacturer reserves the right to make improvements in this manual and the products it describes at any time, without notice or obligation.

Revised editions are found on the manufacturer's website.

1.1 Safety information

Please read this entire manual before unpacking, setting up or operating this equipment. Pay attention to all danger, warning and caution statements. Failure to do so could result in serious injury to the operator or damage to the equipment.

Make sure that the protection provided by this equipment is not impaired, do not use or install this equipment in any manner other than that specified in this manual.

1.1.1 Use of hazard information



DANGER

Indicates a potentially or imminently hazardous situation which, if not avoided, will result in death or serious injury.

Important Note: Indicates a situation which, if not avoided, may cause damage to the instrument. Information that requires special emphasis.

1.1.2 Precautionary labels

Read all labels and tags attached to the instrument. Personal injury or damage to the instrument could occur if not observed.

	Electrical equipment marked with this symbol may not be disposed of in European public disposal systems after 12 August of 2005. In conformity with European local and national regulations (EU Directive 2002/96/EC), European electrical equipment users must now return old or end-of life equipment to the Producer for disposal at no charge to the user. Note: For return for recycling, please contact the equipment producer or supplier for instructions on how to return end-of-life equipment, producer-supplied electrical accessories, and all auxiliary items for proper disposal.
	This is the safety alert symbol. Obey all safety messages that follow this symbol to avoid potential injury. If on the instrument, refer to the instruction manual for operation or safety information.
	This symbol indicates that a risk of electrical shock and/or electrocution exists.
	This symbol indicates the presence of devices sensitive to Electro-static Discharge (ESD) and indicates that care must be taken to prevent damage to the equipment.

1.2 Network concept

The traditional method of transferring measured values from process measuring instruments to automation modules is the current-loop method. In this process, an analog current directly related to the value measured is supplied by the process measuring instrument. The current is fed to the control system or the PLC. The transmission of measured values is based on an analog principle, but the data in the measuring instrument and in the automation module is processed in digital form. Thus, it is also desirable to digitize the data transmission.

This digital form of data transmission is supported by a network concept or a Fieldbus concept. The Fieldbus concept offers a few advantages:

- In addition to the measured value, data such as status information and parameters can also be transmitted.
- The Fieldbus allows data to be transmitted in both directions. The parameters in a measuring instrument can now be set and the instrument can be controlled from a control center.
- Digitization increases transmission reliability.
- Only one Fieldbus cable with a maximum of 4 cores is necessary to connect all process measuring instruments.
- Process measuring instruments that are installed later can be incorporated in the Fieldbus with minimal effort.

1.3 Fieldbus implementation

The interface from the measuring instruments to the Fieldbus is formed using RS232 or RS485. RS485 can be operated as a two-wire or as a four-wire BUS.

To provide an instrument with RS485 support, a network card or a Fieldbus card is installed in the measuring instrument. This card converts the digital signals from the measuring instrument to RS485 levels.

A stub cable is used to connect the measuring instrument to a BUS node in the Fieldbus cable. The measuring instrument can be easily connected to the Fieldbus and disconnected again using the Sub-D socket on the BUS node.

When the Profibus DP is used, the Fieldbus cable is looped directly through the measuring instrument to be connected.

1.3.1 Available Fieldbus protocols

1.3.1.1 Modbus

The Modbus RTU protocol is integrated into the measuring instrument. The Fieldbus card that lets the measuring instrument be connected to a Fieldbus using the Modbus protocol is a level converter. It has no additional intelligence.

1.3.1.2 Profibus

The majority of control systems and PLCs use Profibus for the Fieldbus protocol. The Modbus protocol implemented in the instrument software is translated to the Profibus protocol using a built-in certified Profibus DP/V1 network card in the measuring instrument. The Profibus network card is not a level converter, but also acts as a translator

between the two Fieldbus protocols. With this type of network card, the measuring instrument can be connected directly to the Profibus DP.

The SC100 and SC1000 is a PNO/PTO certified Profibus DP/V1 device which allows access from master class1 (PLC SCADA) and master class 2 systems, e.g. engineering stations, for asset management purposes. There are three versions of the Profibus card. [Figure 1](#) shows where to find the information about the Profibus card version.



Figure 1 Profibus card label

The new DP/V1 version (build since April 2007) is downward compatible to the DP/V0 and can work as V0 slave without changing or modifying the PLC configuration.

The new DP/V1 GSD file is not downward compatible. The card requires software version V4.0 (DP/V1).

Section 2 Installation

2.1 Electrical installation

2.1.1 Wiring safety information

When making any wiring connections to the instrument, the following warnings and notes must be adhered to, as well as any warnings and notes found throughout the individual installation sections. For more safety information refer to [Safety information on page 5](#).



DANGER

Always disconnect power to the instrument when any making electrical connections.

2.1.2 Electrostatic Discharge (ESD) considerations

Important Note: *To minimize hazards and ESD risks, maintenance procedures not requiring power to the analyzer should be performed with power removed.*

Delicate internal electronic components can be damaged by static electricity, resulting in degraded instrument performance or eventual failure.

The manufacturer recommends taking the following steps to prevent ESD damage to your instrument:

- Before touching any instrument electronic components (such as printed circuit cards and the components on them) discharge static electricity from your body. This can be accomplished by touching an earth-grounded metal surface such as the chassis of an instrument, or a metal conduit or pipe.
- To reduce static build-up, avoid excessive movement. Transport static-sensitive components in anti-static containers or packaging.
 - To discharge static electricity from your body and keep it discharged, wear a wrist strap connected by a wire to earth ground.

Handle all static-sensitive components in a static-safe area. If possible, use anti-static floor pads and work bench pads.

2.1.3 Physical cable routing

The network communication cable must be kept away from cables with electrical noise. Examples include motor cables and neon light power supplies. This helps prevent the coupling of high frequency noise between cables. A distance of 200 mm between the cables is usually sufficient. However, use the largest possible distance. This is especially important where the cables operate in parallel for long distances. If the network cable has to cross another cable that transmits heavy noise, the cables must cross each other at a 90° angle.

2.1.4 Cable shield connection

The shield of the Profibus cable must be connected to protective earth ground at both ends. The shield must be connected to ground in all stations that are connected to the Profibus network. A low ground impedance connection to the shield is also important at high frequencies. This connection can be made by connecting the surface of the shield to ground, for example by means of conductive cable gland.

The shield of the modbus cable must be connected to protective earth ground. It is preferable to have only one connection point for the entire bus. This connection point is generally chosen on the master or its tag.

2.1.5 Earth Connection

It is important that all stations connected to the Profibus network are connected to the same earth potential.

2.2 Network card installation

2.2.1 Modbus

Figure 2 shows an over view of the Modbus system connections. All instruments that are connected must have a Modbus network card.

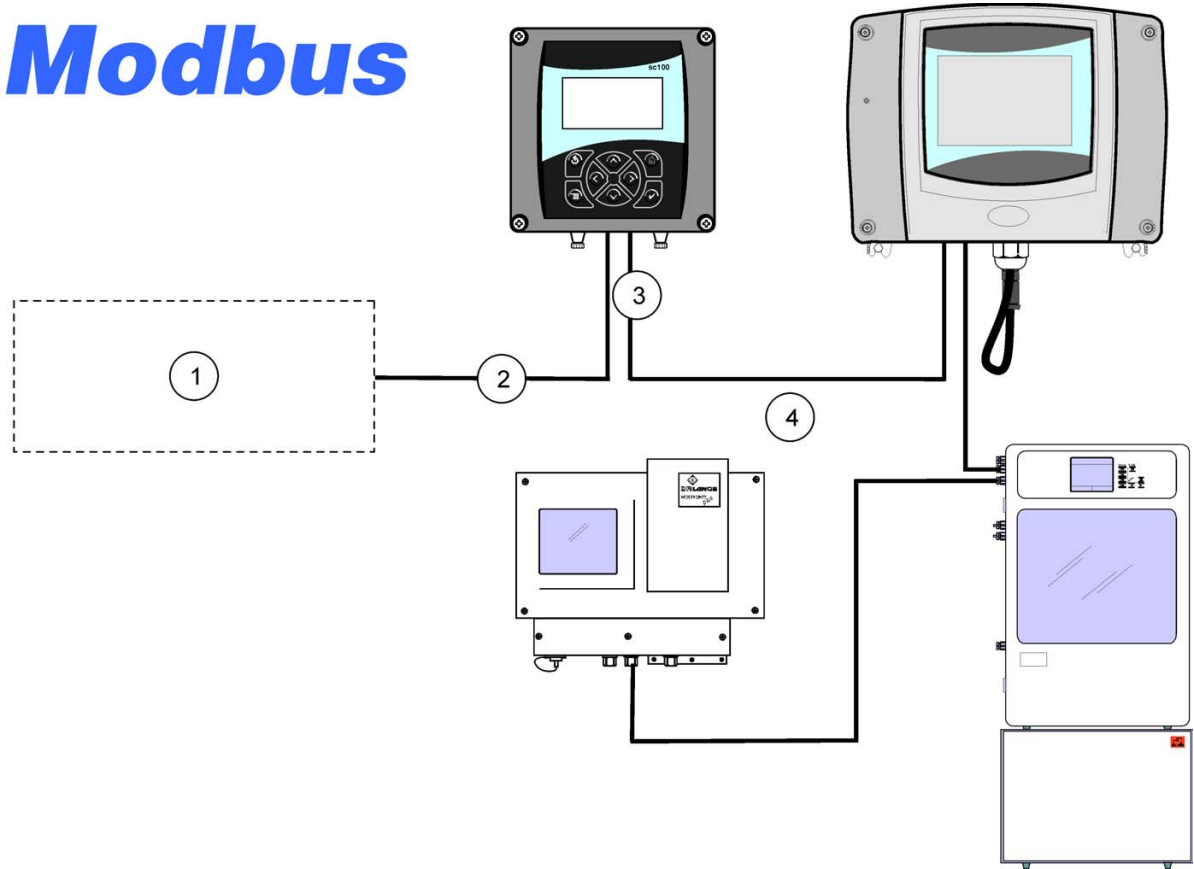


Figure 2 Modbus connection example

1	Modbus master (PLC)	3	Stub cable
2	Modbus cable	4	BUS node

2.2.2 Modbus card for Multiunit/Optiquant and analyzer

2.2.2.1 Setting the Modbus network card for Multiunit and analyzer

The jumpers supplied need to be fitted to the network card only in the last instrument on the Modbus cable. The jumpers will provide the Modbus with the necessary BUS termination at the ends of the cable. For the correct jumper configuration, refer to [Figure 3](#) and [Figure 4](#).

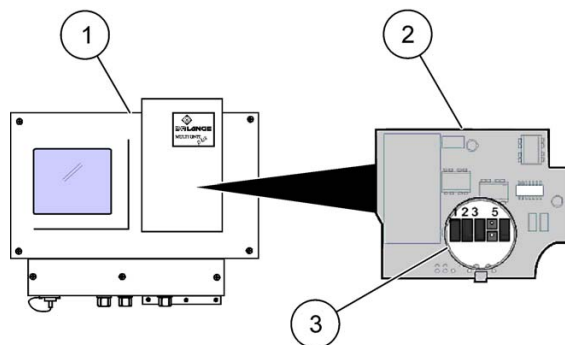


Figure 3 Full duplex mode (4-wire)

1 Last instrument connected	3 Jumpers for full duplex mode (1, 2, 3, and 5)
2 Modbus network card	

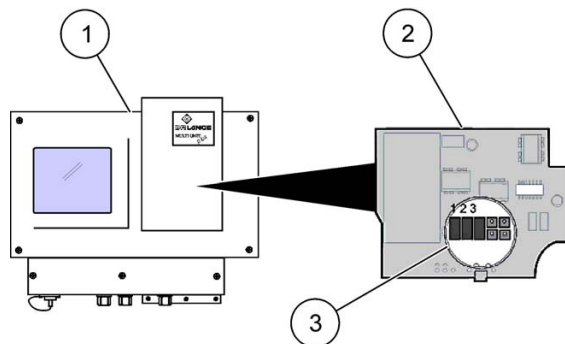


Figure 4 Half duplex mode (2-wire)

1 Last instrument connected	3 Jumpers for half duplex mode (1, 2, and 3)
2 Modbus network card	

2.2.2.2 Connecting the stub cable

Figure 5 and Table 1 show the stub cable wiring connections for a full-duplex mode (4-wire) connection.

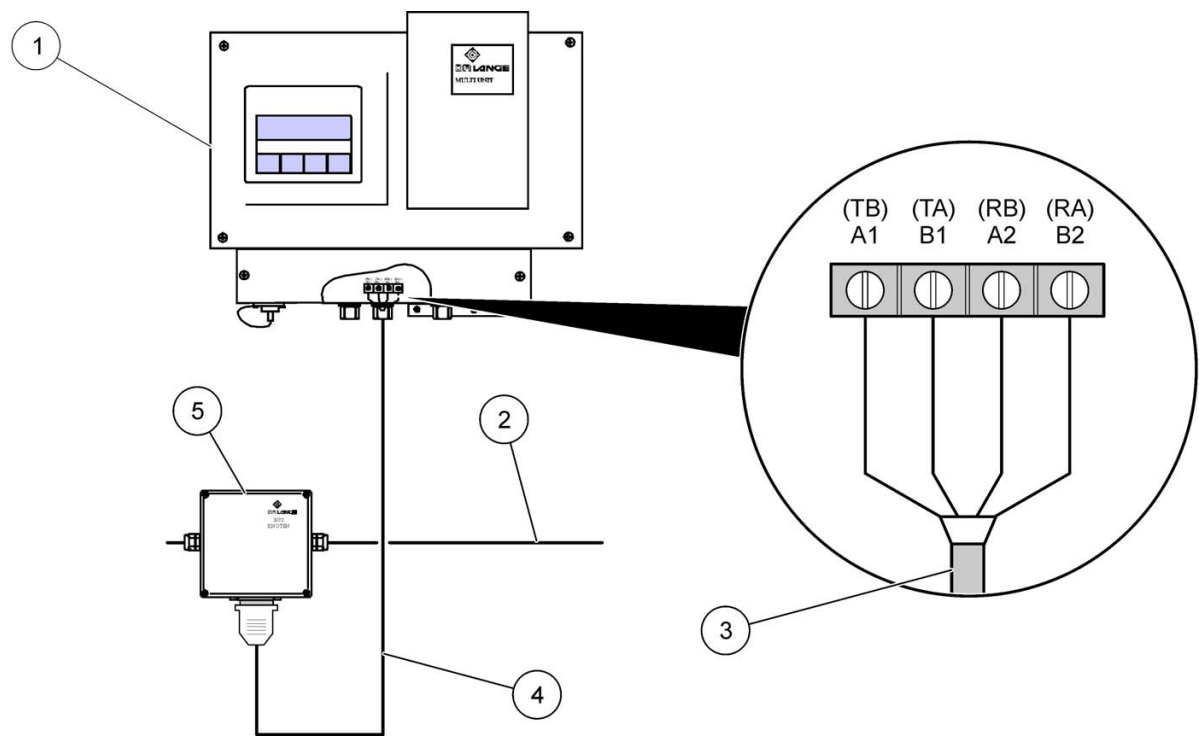


Figure 5 Full duplex mode (4-wire)

1	Multiunit	4	Stub cable
2	Modbus cable	5	BUS node
3	Shield		

Table 1 Wiring table for full duplex stub cable

Terminal	Cable	SUB-D-15P
A1(TB)	brown	9
B1(TA)	white	2
A2(RB)	yellow	11
B2(RA)	green	4
	shield	1

Figure 6 and Table 2 show the wiring for a half-duplex mode (2-wire) connection.

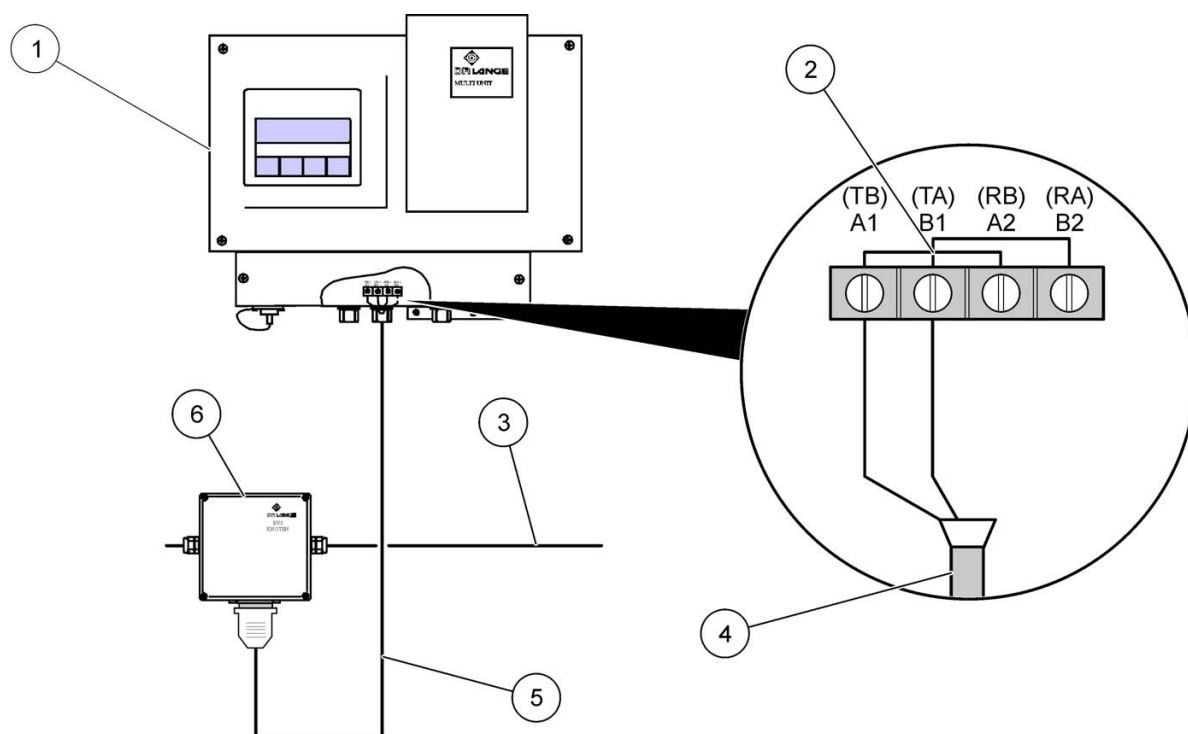


Figure 6 Half duplex mode (2-wire)

1	Multunit	4	Shield
2	Wire jumpers	5	Stub cable
3	Modbus cable	6	BUS node

Table 2 Wiring table for half duplex stub cable

Terminal	Cable	SUB-D-15P
A1(TB)	brown	9
B1(TA)	white	2
—	shield	1

2.2.3 Modbus card for sc controller

All instruments that are connected must have a Modbus card (Figure 7).

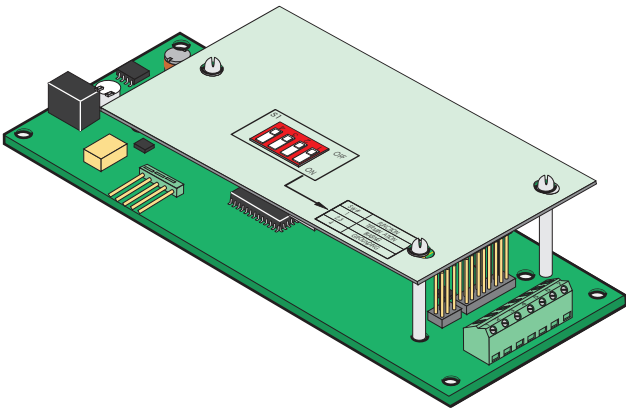


Figure 7 sc Modbus card

Figure 8 shows the position of the jumpers on the Modbus card for 2 and 4-wire connections.

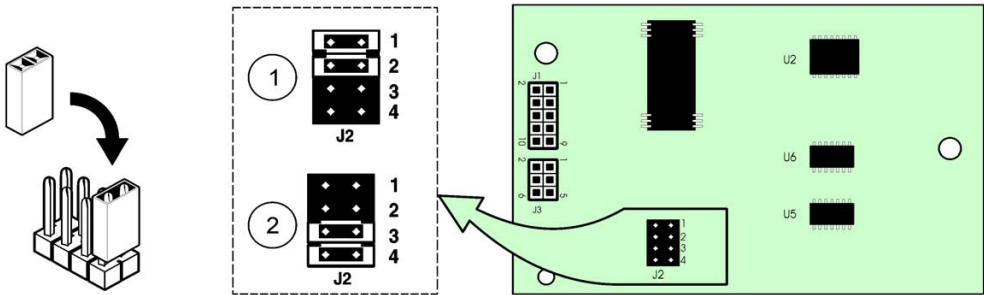


Figure 8 Jumpers on the sc Modbus card

Jumper position		Configuration
1	Jumper on pin 1 and pin 2	2-wire/network
2	Jumper on pin 3 and pin 4	4-wire/network

Activate the terminating resistors only in the last instrument on the Modbus cable. For this purpose, close the switches 1–4 ([Figure 9](#)).

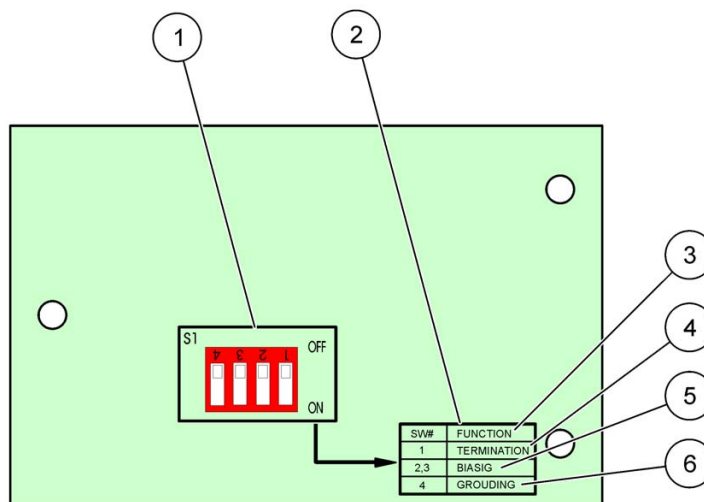


Figure 9 BUS termination switches

1	S1 - DIP switch	4	SW 1 - Termination
2	Switch assignment table	5	SW 2, 3 - Bias voltage
3	Switch function	6	SW 4 - Ground (connects circuit common to earth ground)

2.2.3.1 sc100 Modbus

Network connections for terminal block J1 of the sc100 Modbus are given in [Table 3](#).

Table 3 Network connections in terminal block J1

Terminal Number	Modbus RS485 2-wire	Modbus RS484 4-wire	Modbus RS232
1	D+	RD+	Rx
2	D–	RD–	No connection
3	No connection	TD+	Tx
4	No connection	TD–	No connection
5	Common	Common	Common
6	No connection	No connection	No connection
7	Shield	Shield	Shield

The position of the network card in the sc100 controller is shown in [Figure 10](#).

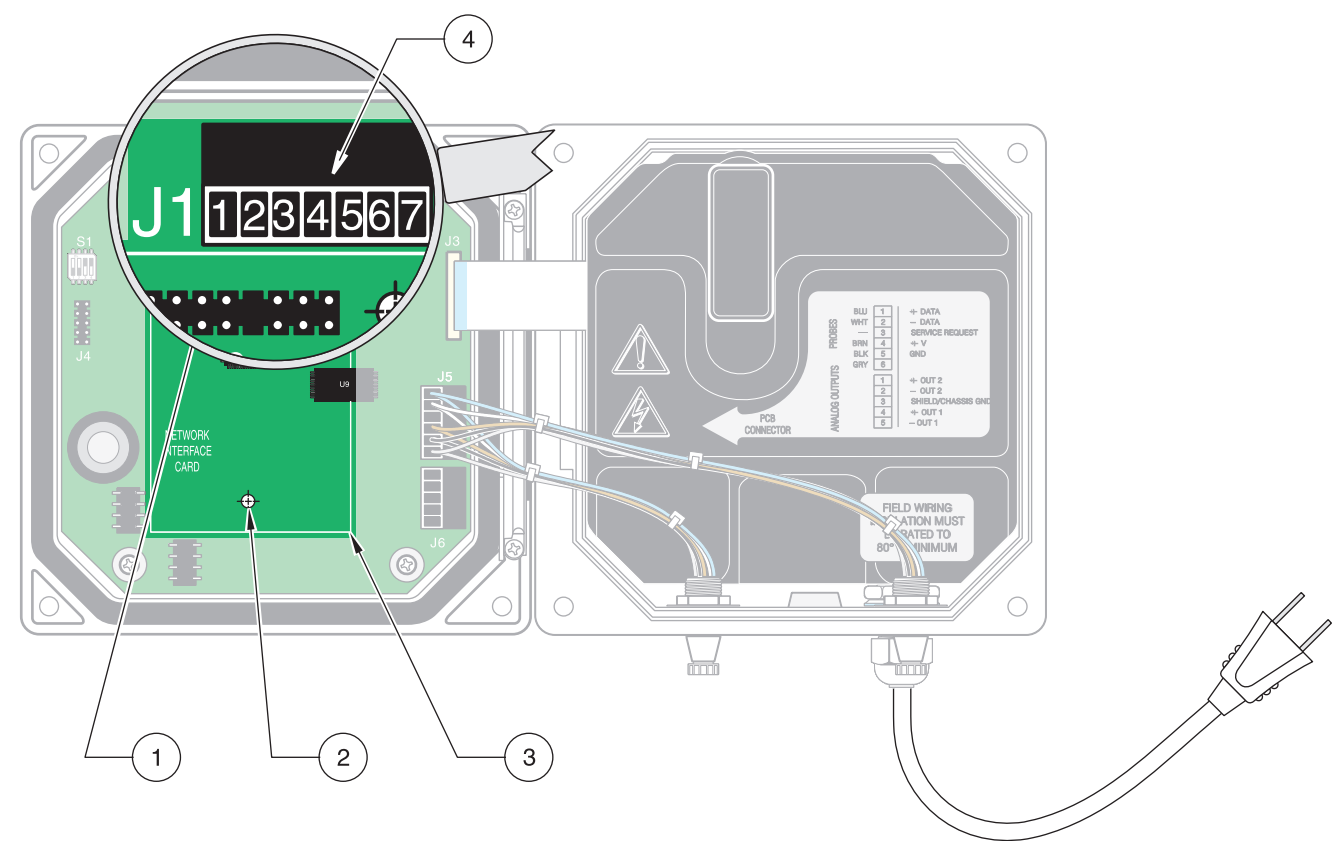


Figure 10 Position of the network card in the sc100 controller

1. J2 - network card connection	3. Space for the network card
2. Fastening hole (3)	4. J1 connection block

2.2.3.2 sc1000 Modbus

[Table 4](#) shows the connections for RS485 and RS232 protocols on the Modbus network card in the sc1000.

Table 4 Network card connections

PIN	Modbus RS485 4-wire	Modbus RS485 2-wire	Modbus RS232
1	No connection	No connection	No connection
2	No connection	No connection	Common
3	TD-	D-	No connection
4	TD+	D+	TXD
5	RD-	No connection	No connection
6	RD+	No connection	RXD
7	Shield	Shield	No connection

2.3 Profibus

Figure 11 gives an overview of the Profibus system connections. All instruments that are connected must have a Profibus network card.

2.3.1 Connection example

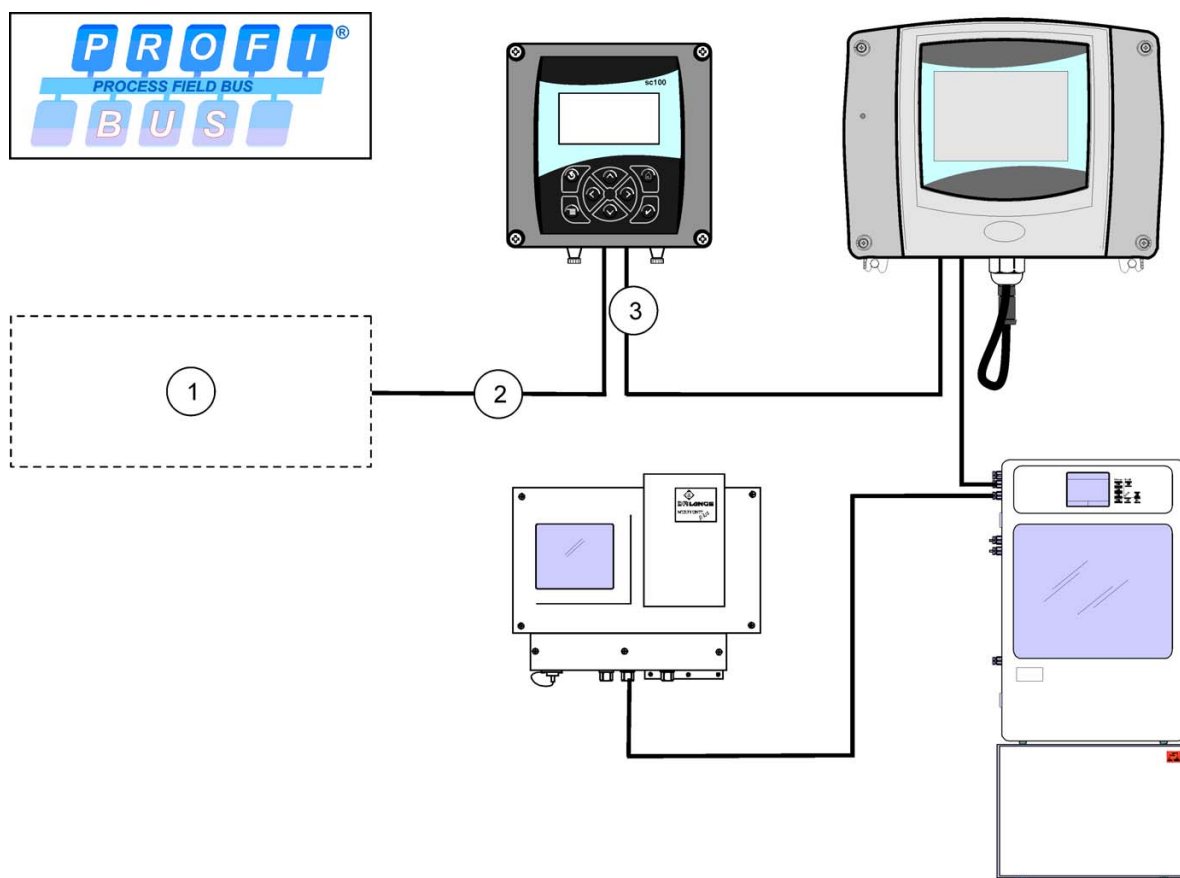


Figure 11 Profibus connection example

1	Profibus master	3	Stub cable
2	Profibus cable		

2.3.2 Profibus card for Multiunit/Optiquant and analyzer

2.3.2.1 Setting Profibus network card for Multiunit and Analyzer

Each instrument connected must have a network card. The positions of the jumpers depend on whether or not the instrument is connected to the end of the Profibus cable (Figure 12).

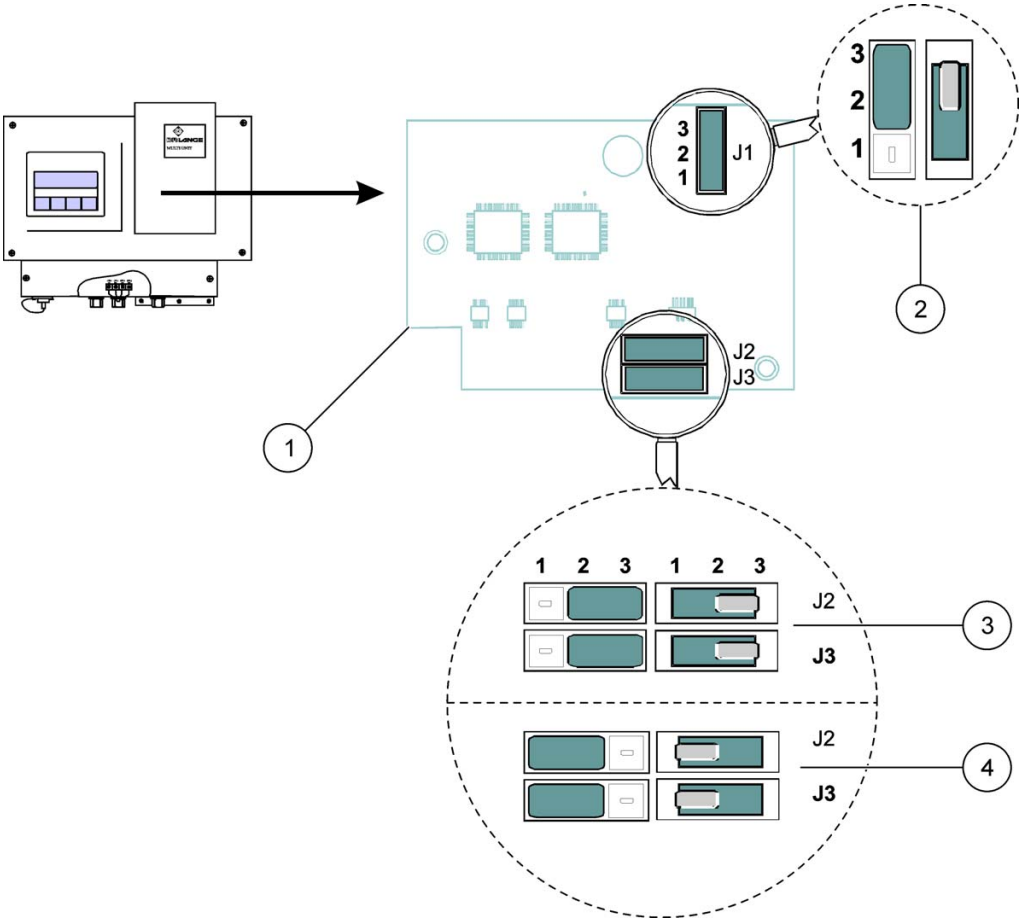


Figure 12 Setting the Profibus network card

1	Network card	3	Position of jumpers or switches J2 - J3 for first to penultimate instrument on the Profibus cable
2	Jumpers or switch J1--must always be in top position 2-3	4	Position of jumpers or switches J2 - J3 for the last instrument on the Profibus cable

2.3.2.2 Connecting the Profibus cable

The terminals A1, B1, A2 and B2 are on the connection circuit board in each instrument. These terminals allow the data input and data output cables to be connected. For the last instrument connected to the Profibus cable, only the data input cable needs to be connected. Refer to [Figure 13](#).

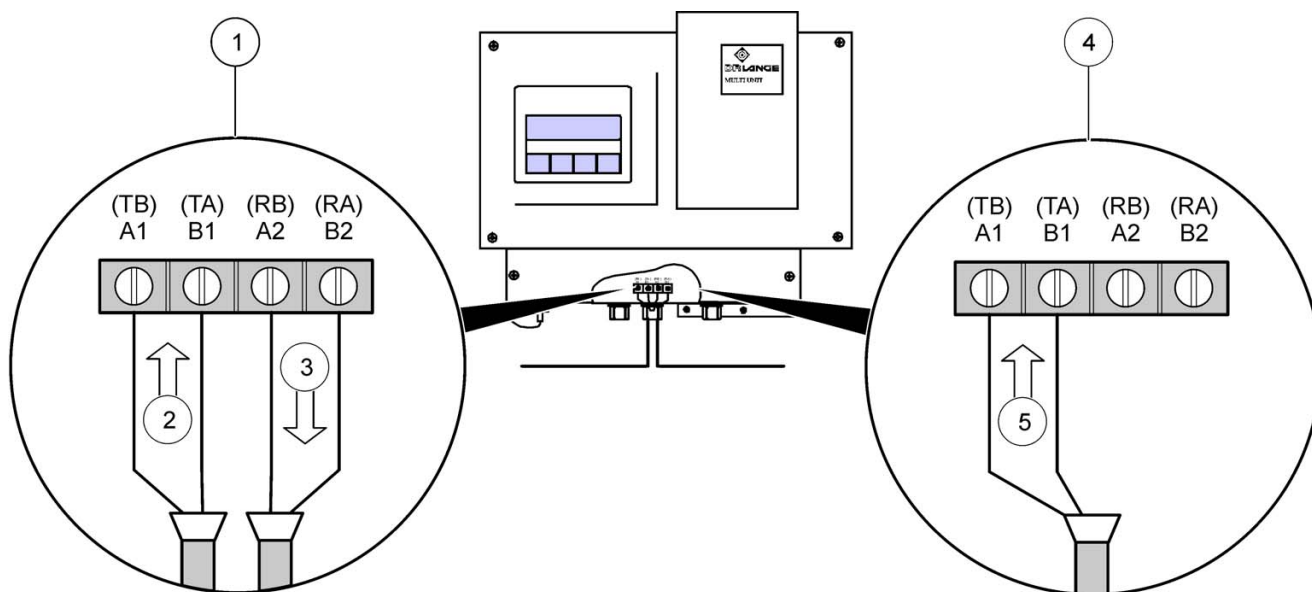


Figure 13 Profibus cable connection

1	Connections for the first to the penultimate instrument on the Profibus cable	4	Connections for the last instrument on the Profibus cable
2	Data input	5	Data input
3	Data output		

2.3.3 Profibus card for sc controller

The Profibus card has a terminating resistor switch. The position of the switch is determined by the position of the instrument on the BUS. Refer to [Figure 14](#).

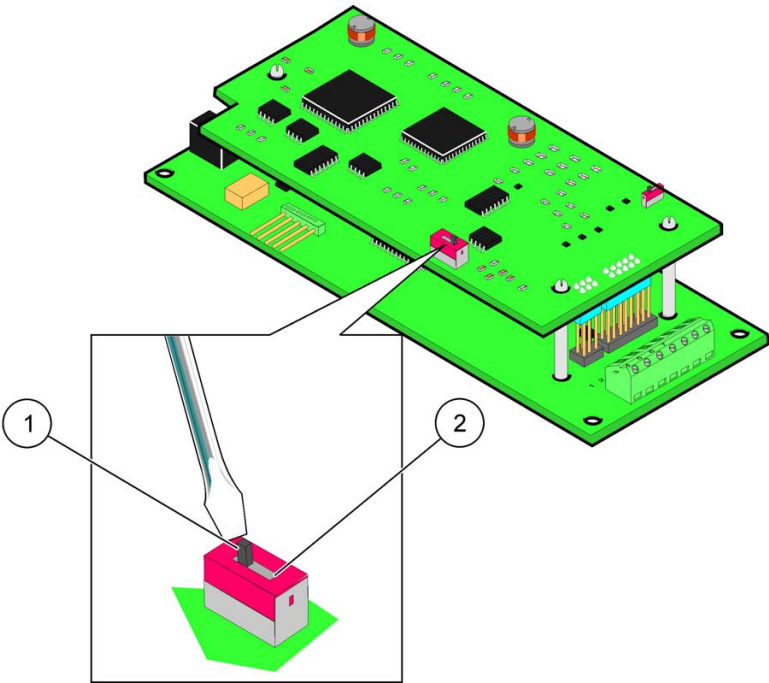


Figure 14 sc Profibus card

1	Terminating resistor set, last instrument on the BUS	2	Terminating resistor not set, more instruments follow.
---	--	---	--

2.3.3.1 sc1000 Profibus

Table 5 Network connections in terminal block J1

Pin	Profibus
1	Repeater
2	No connection
3	B1 input
4	A1 input
5	B2 output
6	A2 output
7	Shield

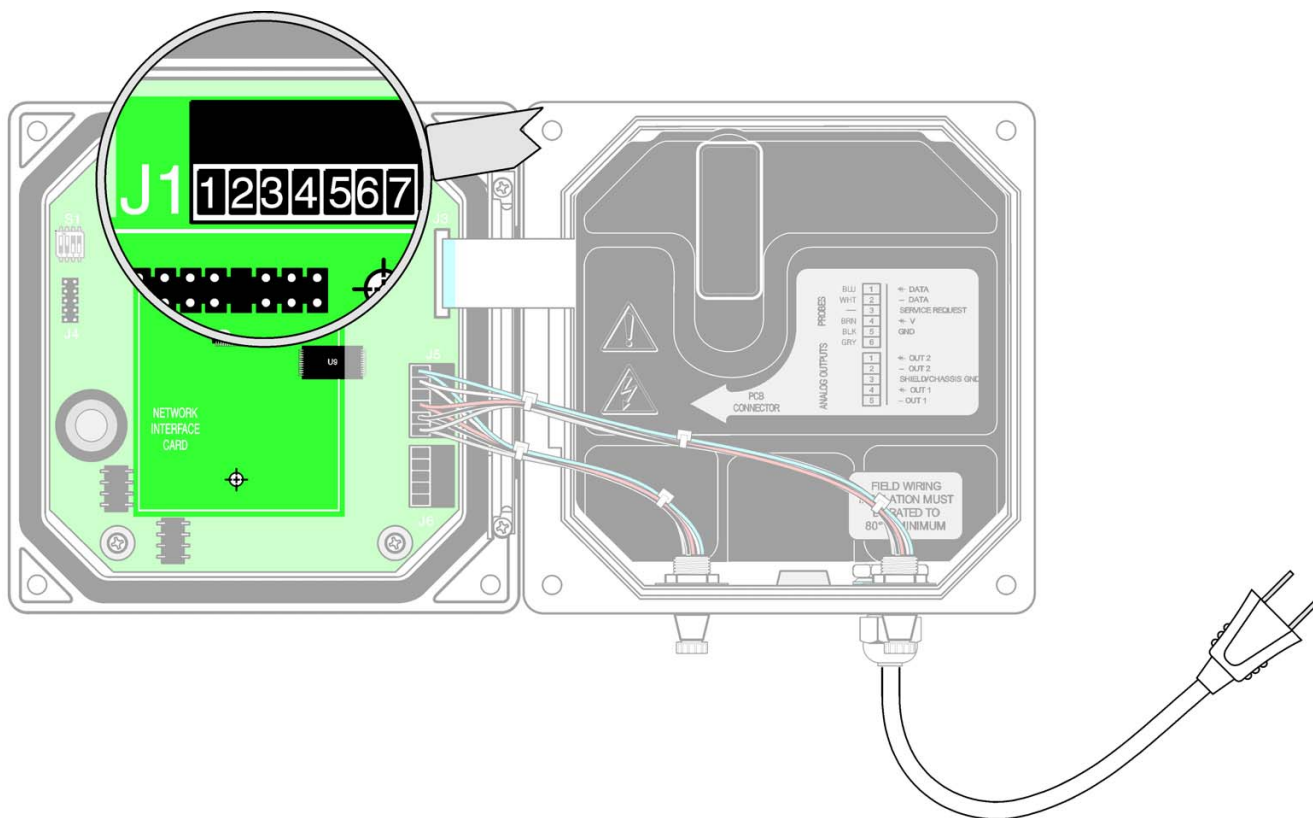


Figure 15 Network card and J1 terminal block inside sc100

2.3.3.2 sc100 Profibus

Table 6 shows the network connections for the Profibus protocol in terminal block J1. Figure 15 shows the position of the network card and the J1 terminal block inside the sc100.

Table 6 Network card connections

Connection	Designation / Significance
1	A2 output
2	B2 output
3	A1 input
4	B1 input
5	No connection
6	No connection
7	Shield

Section 3 Operation

3.1 Profibus operation

3.1.1 Operation of the Profibus network card firmware (version 2.0, applicable from April 2003)

The network card automatically polls the instrument for data and gives the data to the Profibus. If the instrument is operated with probes, the probe data are also made available to the Profibus.

To automatically read data, 48 bytes are reserved in the Profibus message from the network card to the Profibus master.

On instruments with two probes, these 48 bytes are broken down into three 16-byte blocks. The first 16 bytes are reserved for the instrument. The second 16 bytes are reserved for the first probe. The third 16 bytes are reserved for the second probe. If only one probe is connected, the third block is not present. Only the first block is necessary to read the instrument.

Instruments without probes (e.g. "compact" or "inter 2") require only the first block. If only the measured value from the instrument is required, memory can be saved by reserving just the first 4 bytes of a block. The first 4 bytes contain the measured value.

If the Profibus master requires data that is not in the automatically transmitted registers, the data can be requested manually via the network card. [Table 7](#), [Table 8](#), and [Table 9](#) show the byte significance in Profibus messages.

Table 7 Profibus message, Multi-Unit

Byte number in the Profibus message	Significance of these bytes
Input	—
1 to 16	16 bytes from the instrument (1st block)
17 to 32	16 bytes from 1st probe (2nd block)
33 to 48	16 bytes from 2nd probe (3rd block)

Table 8 Profibus message, sc100 up to firmware version V2.0

Byte number in the Profibus message	Significance of these bytes
Input	—
1 to 16	16 bytes from 1st probe = 1st Modbus address
17 to 32	16 bytes from 2nd probe = 2nd Modbus address
33 to 48	16 bytes from the instrument = last Modbus address

The order of the data blocks is defined by the Modbus addresses, lowest address to highest address.

By default the first probe has the address 1 and occupies the first data block. The second probe is given Modbus address 2. By default the sc100 has Modbus address 3.

The setting for the Modbus addresses can be checked and changed through the menu. Go to SYSTEM SETUP, NETWORK SETUP, Modbus ADDRESS.

Table 9 Profibus message, sc100 from V3.0

Register number	Data	Data type
1	Classified error	Integer (2 bytes)
2	Classified status 1	Integer (2 bytes)
3-4	Measurement 1	Float (4 bytes)
5-6	Measurement 2	Float (4 bytes)
7-8	Measurement 3	Float (4 bytes)

GSD file

The GSD files provide the modules necessary for connecting the network card as a Profibus slave to a corresponding master.

A 16-byte input is required per block. As a result, for each block 4 modules of "2 words from the slave" must be reserved in the Profibus master.

In cases where the instruments have a single probe, the measured value is found at the first module, or in the case of a sc100 V3.0, the second module. To save address space in the Profibus master, it is possible to install only one or two modules instead of four in the Profibus master address space. In this way the 4 bytes for the transmission of the measured value from the instrument to the Profibus master are obtained. Refer to [Table 10](#).

Table 10 The 4 bytes for measured value transmission

Module	Explanation
2 words from the slave	2 words (4 bytes), as input. Corresponds to 2 Modbus registers.
2 words to the slave	Not used

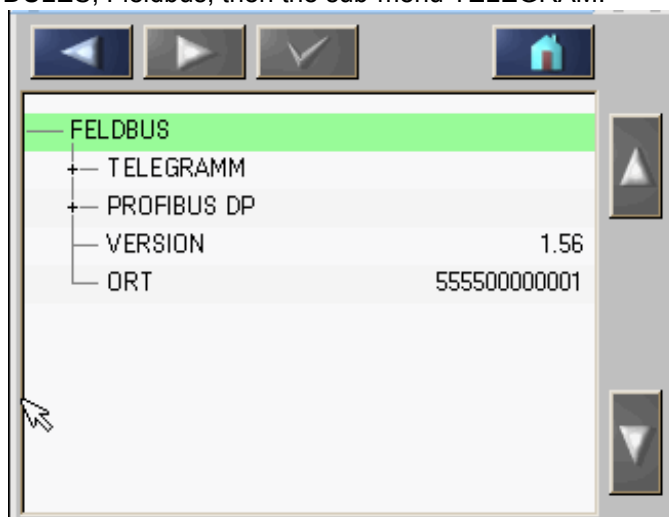
The layout of the individual registers is given in the instrument profiles. Refer to [Appendix A on page 47](#). For all sc probes, refer to the corresponding section in the probe manual.

Since sc100 V3.0 all sc probes use the same data design and data order. Probes can be exchanged to different types without changes to the master system configuration. The controller must be rebooted after modules are added or removed.

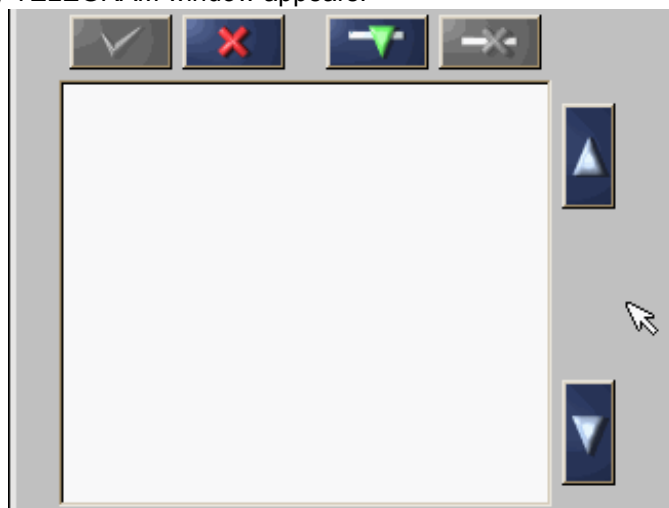
Note: The floating point format is available as IEEE swapped or normal data order. NORMAL data order should be selected for most PLC systems. To set the data order, select SYSTEM SETUP, NETWORK SETUP, DATA ORDER.

3.1.2 sc1000 Fieldbus message and PLC configuration

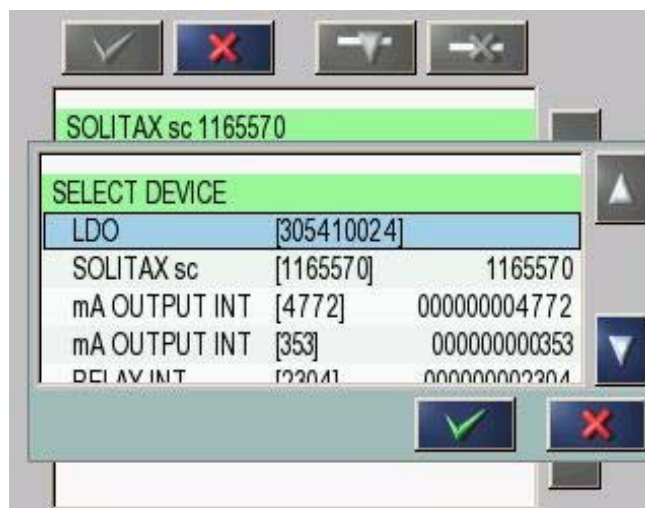
1. To configure the Profibus message, from the main menu, select SYSTEM SETUP, NETWORK MODULES, Fieldbus, then the sub-menu TELEGRAM.



2. A new, empty TELEGRAM window appears.

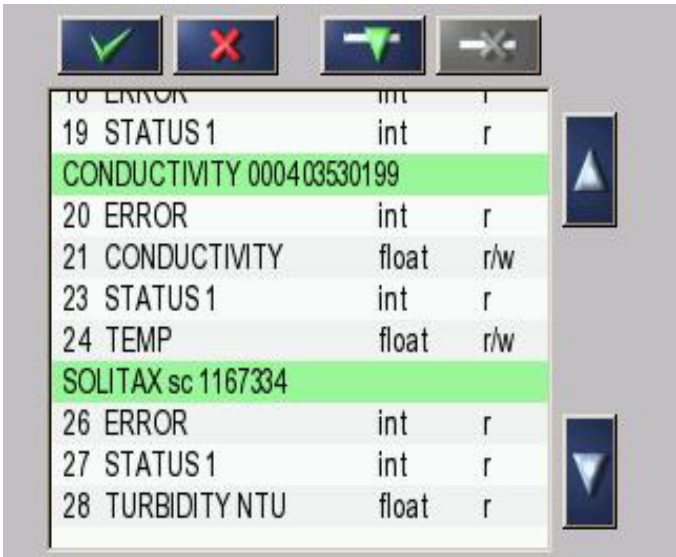


3. Using the **ADD** button a list of available devices can be opened.

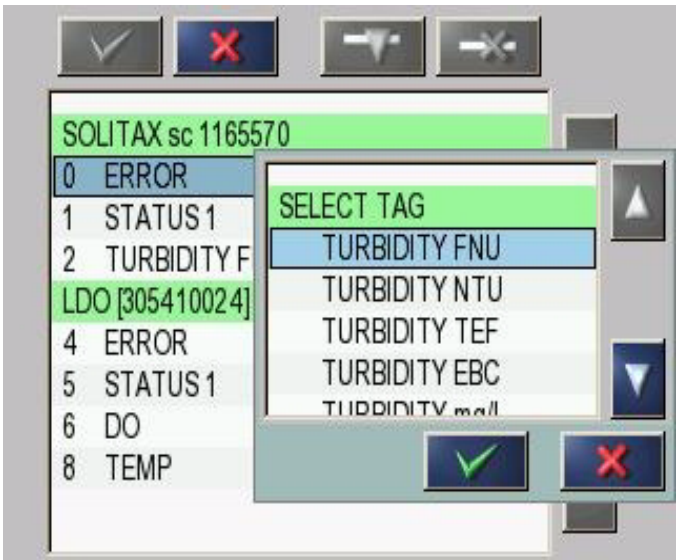


4. Using the **UP** and **DOWN** arrows, select a device and insert it in the message using the **OK** button.

The following is an example of a message (English):



5. Additional devices can be added to the Profibus message using the **ADD** button. Device tags can be added by opening a list of available tags. This is done by marking a register (e.g. STATUS 1) and clicking the **ADD** button. A selected tag is added to the Profibus message by using the **OK** button..



An example of a completed Profibus message is shown in [Figure 16](#).

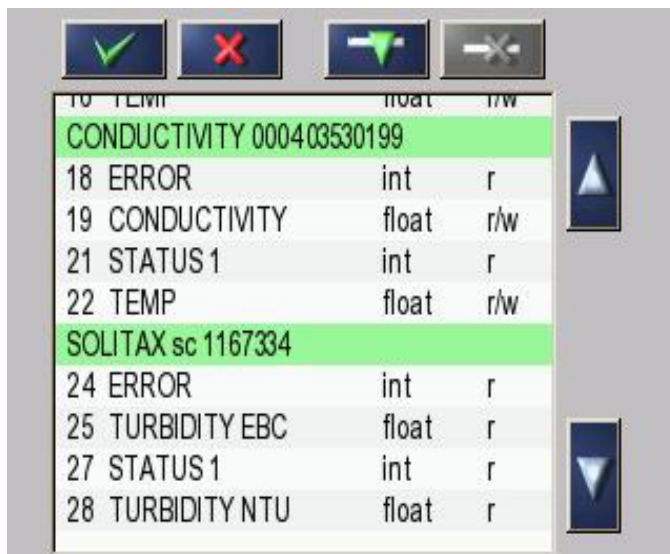


Figure 16 Example of a complete Profibus message with tag order changed

It is possible to mark a register tag and change its position within a Profibus message using the **UP** and **DOWN** arrows.

3.1.3 Error and status registers

Table 11 and Table 12 show the individual bits for the error and status registers added by default.

Table 11 Error register

Bit	Error	Explanation
0	Measurement Calibration Error	An error has occurred during the last calibration
1	Electronic Adjustment Error	An error has occurred during the last electronic calibration.
2	Cleaning Error	The last cleaning cycle failed.
3	Measuring Module Error	A failure has been detected in the Measuring Module.
4	System Re-initialization Error	Some settings have been detected inconsistent and set to factory defaults.
5	Hardware Error	Any hardware error in general has been detected.
6	Internal Communication Error	A communication failure within the device has been detected.
7	Humidity Error	Excessive humidity has been detected in this device.
8	Temperatur Error	Temperature within the device exceeds specified limit.
9		
10	Sample Warning	Some action is required with the sample system.
11	Questionable Calibration Warning	The last calibration was of questionable accuracy.
12	Questionable Measurement Warning.	One or more of the measurements of the device are of questionable accuracy (Quality bad or out of range).
13	Safety Warning	A condition has been detected which may result in a safety hazard.
14	Reagent Warning	Some action is required with the reagent system.
15	Maintenance Required Warning	Maintenance is required on this device.

Table 12 Status register, status 1

Bit	Status1	Explanation
0	Calibration in progress	The device has been placed in a calibration mode. The measurements may not be valid.
1	Cleaning in progress	The device has been placed in a cleaning mode. The measurements may not be valid.
2	Service / Maintenance menu	The device has been placed in a service or maintenance mode in which the measurements may not be valid.
3	Common error	Device recognized an error, see Error Register for Error Class.
4	Measurement 0 Quality Bad	Precision of measurement is out of specified limits.
5	Measurement 0 Low Limit	Measurement is below specified range.
6	Measurement 0 High Limit	Measurement is above specified range.
7	Measurement 1 Quality Bad	Precision of measurement is out of specified limits.
8	Measurement 1 Low Limit	Measurement is below specified range.
9	Measurement 1 High Limit	Measurement is above specified range.
10	Measurement 2 Quality Bad	Precision of measurement is out of specified limits.
11	Measurement 2 Low Limit	Measurement is below specified range.
12	Measurement 2 High Limit	Measurement is above specified range.
13	Measurement 3 Quality Bad	Precision of measurement is out of specified limits.
14	Measurement 3 Low Limit	Measurement is below specified range.
15	Measurement 3 High Limit	Measurement is above specified range.

3.1.4 PLC configuration for an example message, SIMATIC S7

Simatic hardware configuration:

Choose "2Words from Slave" from the imported LANG0671.GSD file, assign a peripheral address range to this module. Refer to [Figure 17](#).

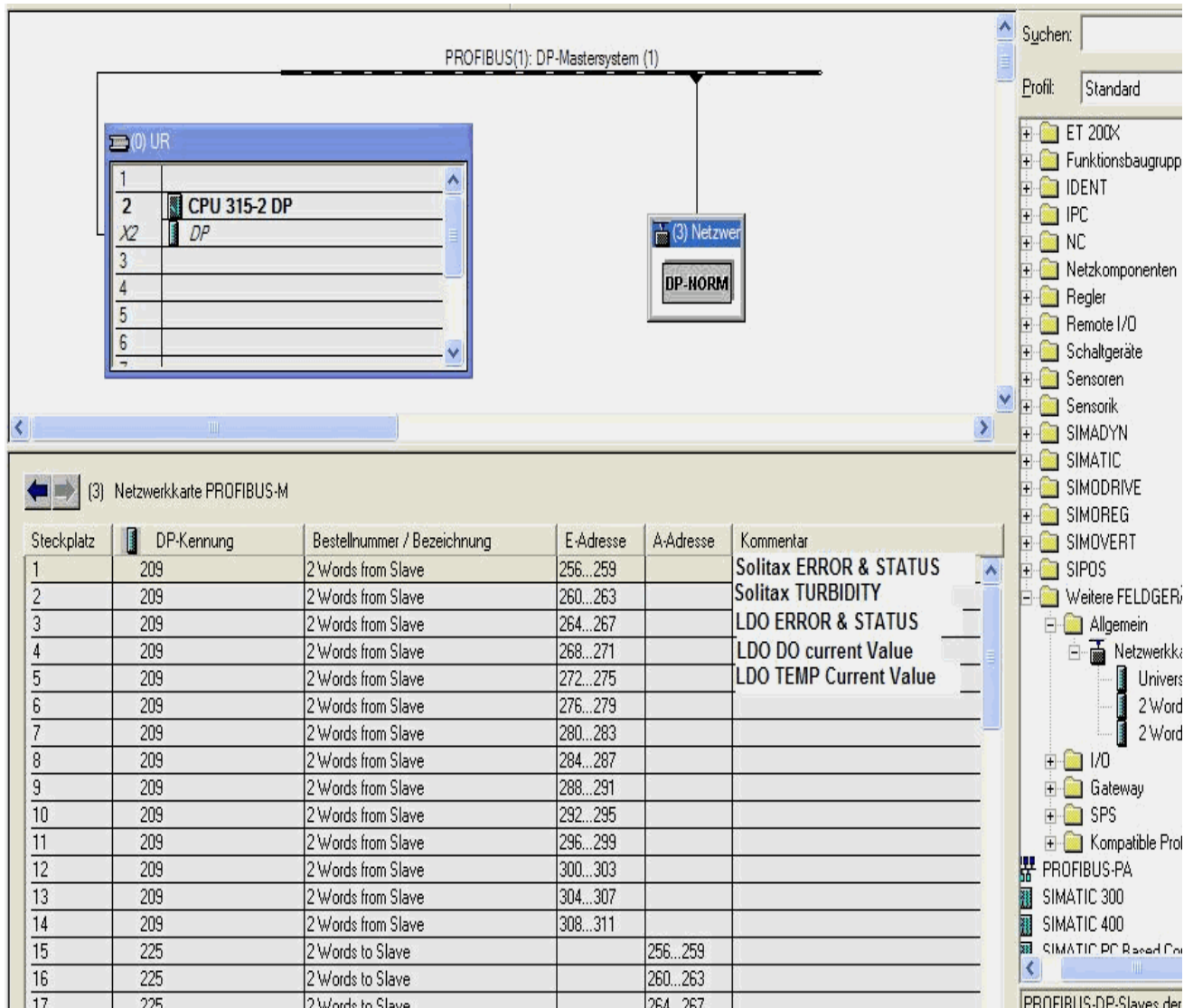


Figure 17 Example of message configuration

The first module occupies 4 bytes from start address PEW 256 and is used to transmit the error and status words.

The second module starts at address PEW 260 and contains the measured value as a 32-bit floating point number.

The maximum number of modules is limited to 14.

3.1.4.1 Layout of the floating point numbers

The following lines of code show the mechanism for forming the 32-bit IEEE floating point numbers (Figure 18).

The ERROR and STATUS words from address 256 do not need to be further converted on loading as PEW.

Note: PEW/PED is the SIMATIC or German code mnemonic. Use PIW/PID for IEC or English.

The measured value starts from peripheral address 260 and occupies 4 bytes, i.e. 2 words.

In the first step, the second word is loaded (L PEW 262)

In the second step, this word is shifted by 16 bits to the left (SLD 16)

In the third step, the first word is loaded (L PEW 260)

And then both words are combined in the accumulator (+D)

The result is now available in the accumulator as a 32-bit floating point number and is loaded into the target tag using the transfer command.

Note: NORMAL data order allows direct access to any float value through use of the L PED command.

		VKE	STA	STANDARD
//***** Solitax sc *****				
// Load Item 0 ERROR (16 Bit Word)				
L	PEW 256	0	0	+0.000e+000
// Load Item 1 STATUS 1 (16 Bit Word)				
L	PEW 258	0	0	+0.000e+000
// Load Item 2 TURBIDITY (32 Bit IEE Float/2Words)				
// Load the second of both Words				
L	PEW 262	0	0	+2.368e-041
// Shift it 16 Bit to the left				
SLD	16	0	0	+3.250e+001
// Load the first of both Words				
L	PEW 260	0	0	+1.846e-041
// Now add both Words in a 32 Bit, the IEE Float is				
+D				
		0	0	+3.255e+001
// Transfer the Result to its Destination				
T	MD 18	0	0	+3.255e+001
//***** LDO *****				
// Load Item 4 ERROR1 (16 Bit Word)				
L	PEW 264	0	0	+0.000e+000
// Load Item 5 STATUS 1 (16 Bit Word)				
L	PEW 266	0	0	+0.000e+000
// Load Item 6 DO, and build the Float				
L	PEW 270	0	0	+2.332e-041
SLD	16	0	0	+8.250e+000
L	PEW 268	0	0	+2.279e-041
+D				
		0	0	+8.266e+000
T	MD 64	0	0	+8.266e+000
// Load Item 8 TEMP, and build the Float				
L	PEW 274	0	0	+2.357e-041
SLD	16	0	0	+2.250e+001
L	PEW 272	0	0	+7.679e-043
+D				
		0	0	+2.250e+001
T	MD 14	0	0	+2.250e+001

Figure 18 Code for floating point numbers

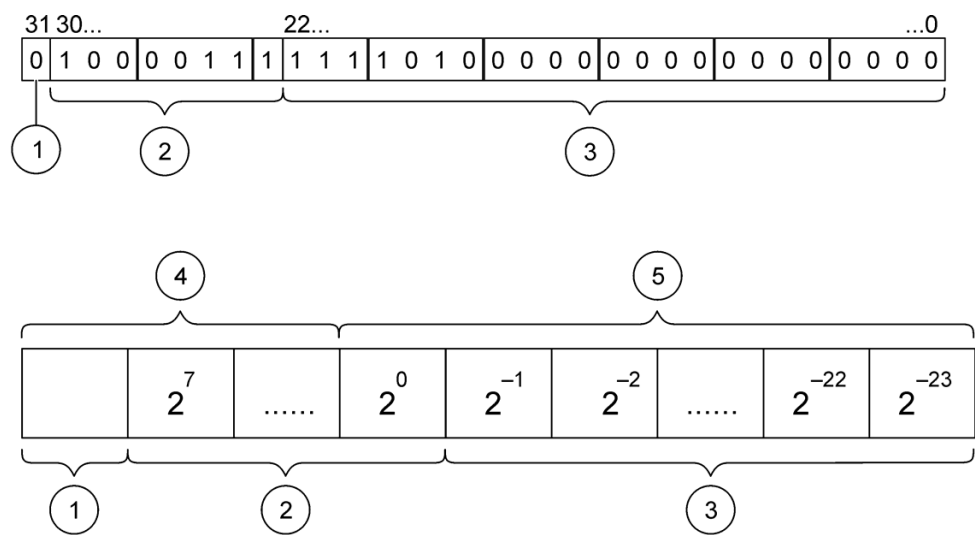


Figure 19 IEEE floating point definition

1	Sign of mantissa (1 bit)	4	Byne n
2	Exponent (8 bits)	5	Bytes n+1, n+2, n+3
3	Mantissa (23 bits)		

Order in the Profibus message

- Multiunit, SC1000, SC100 (swapped data order)
- SC100 (normal data order)

Table 13 and Table 14 show examples of swapped and normal data orders.

Table 13 Data order swapped

Byte	Value
T1	0x91
T2	0xB9
T3	0x3F
T4	0x67

Table 14 Data order normal

Byte	Value
T1	0x3F
T2	0x67
T3	0x91
T4	0xB9

Hex Value 0x 3F 67 91 B9 = 0,9046 IEEE Float Value (Big Endian). Refer to [Table 15](#).

Table 15

Byte	Value
T3	0x3F
T4	0x67
T1	0x91
T2	0xB9

Hex Value 0x B9 91 67 3F = 0,9046 IEEE Float Value (Little Endian). Refer to [Table 16](#).

Table 16

Byte	Value
T2	0xB9
T1	0x91
T4	0x67
T3	0x3F

Hex Value 0x 3F 67 91 B9 = 0,9046 IEEE Float Value (Big Endian). Refer to [Table 17](#).

Table 17

Byte	Value
T1	0x3F
T2	0x67
T3	0x91
T4	0xB9

4.1 Definition of OPC

OPC stands for **O**LE for **P**rocess **C**ontrol (OLE = **O**bject **L**inking and **E**mbedding). OPC is a standardised Windows software interface for automation engineering. Using this interface, data are exchanged between two or more Windows applications on a PC (or different PCs on a network). Applications that exchange data in this manner are always in a client - server relationship. In other words, an application (the server) makes its data available. The second application (the client) reads the data via OPC and processes it.

Normally, both applications are on the same PC. If the OPC client is coupled to the OPC server over a network, that is the two programs are on different PCs, the term DOPC (**D**istributed **O**LE for **P**rocess **C**ontrol) is used.

The OPC server makes data available in a standardised manner. This helps eliminate the typical difficulties that result from the installation of new software that communicates with other applications. Due to the standardisation of the OPC interface, it is possible to connect any OPC server to any OPC client with minimal effort.

Examples of OPC clients are control systems such as Wonderware, ICONICS or standard software such as MS Excel.

Normally, the OPC server is automatically started when an OPC client is started.

4.2 Physical device connection to the OPC server

Important Note:

Before the OPC server can search for instruments, the instruments must be physically connected to the Modbus and have a unique Modbus address. This Modbus address is set in the instrument menus. An address is allowed to be assigned only once. Otherwise the OPC server can no longer address a specific instrument without ambiguity.

Figure 20 shows an overview of the entire system and its connections.

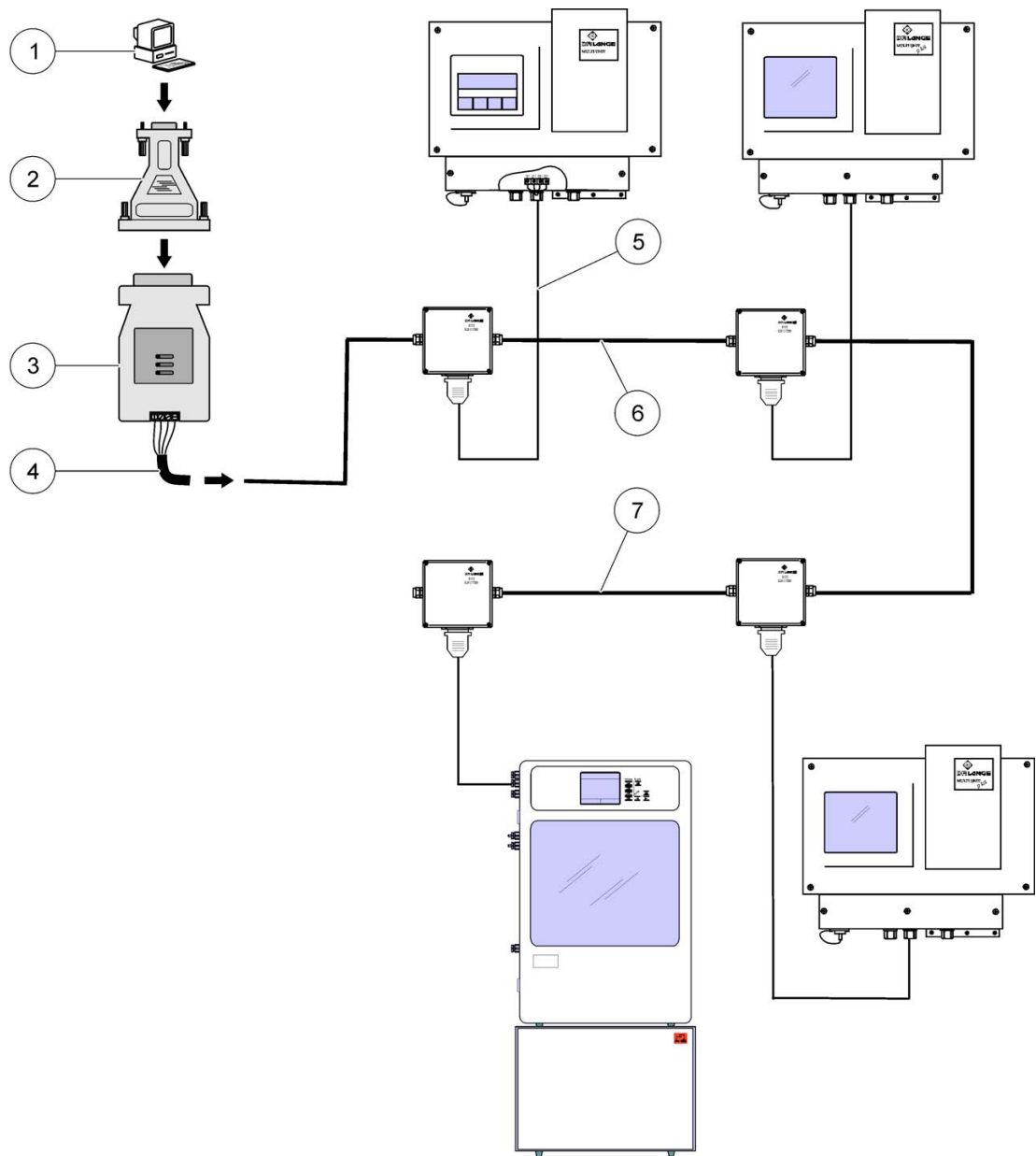


Figure 20 Example of instrument connection

1. PC with OPC server software	5. Stub cable
2. Sub-D adapter 9/25 (PC or PCMCIA cards may also be used)	6. BUS node
3. RS232 / 485 converter (PC or PCMCIA cards may also be used)	7. Modbus cable
4. Modbus cable	

4.2.1 Wiring

The BUS cable is implemented using a 4-wire RS485 to which the PC and therefore the OPC server are connected. Additional hardware in the form of an RS232/RS485 converter is necessary for the OPC server to contact the outside world over a PC COM port (RS232). Table 18 shows how the converter is wired on the RS485 side to the Modbus.

Table 18 Wiring of RS485 to Modbus

Cable	Converter RS485 pin identifiers	Modbus
Wire identifiers		
Transmit +	T+	A1(TB)
Transmit -	T-	B1(TA)
Recieve +	R+	A2(RB)
Recieve -	R-	B2(RA)

4.3 Installation of the OPC server software

Important Note:
The OPC server can be installed only on PCs that run on the Windows 2000 operating system.
To install the OPC server, run the Setup.exe file from the installation CD and follow the instructions on the shield.

4.4 Binding instruments to the OPC server

4.4.1 Automatically binding instruments using the OPC wizard

There are two ways of binding instruments to the OPC server.
After the OPC server is started, the OPC Wizard is started on the main menu using the Discover option or the Wizard icon. Figure 21 shows the location of these items on the menu.

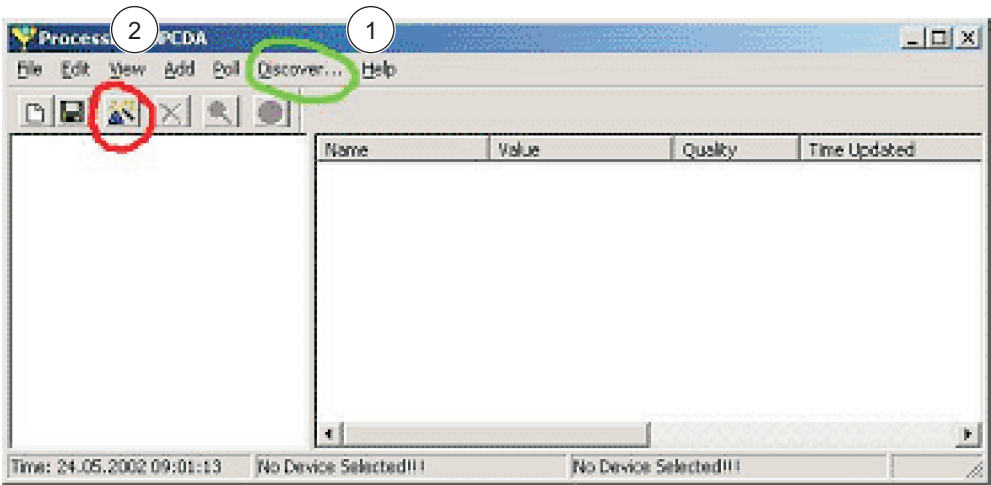


Figure 21 OPC server

1. Discover menu option	2. Wizard icon
-------------------------	----------------

The AutoDiscover Wizard can be used to define the COM port or IP address to be used for the transmission of the Modbus data. [Figure 22 Establishing a connection](#) shows both COM ports chosen as an example. The OPC server tries to establish a connection to Modbus users connected over COM1 and over COM2.

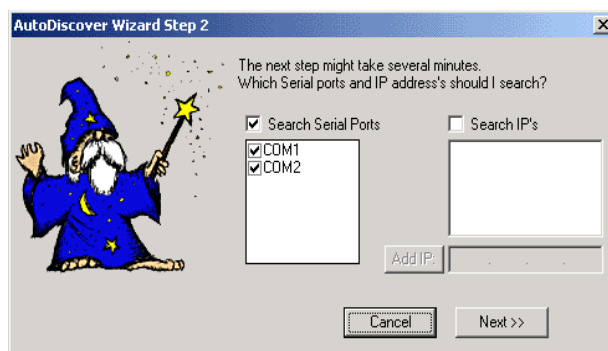


Figure 22 Establishing a connection

[Figure 23](#) shows the search status while the Wizard is checking all Modbus addresses one after the other for connected users. In this figure an AMTAX compact has been found on COM port 1 and Modbus address 1. A PHOSPHAX inter 2 has been found on COM port 1 and Modbus address 3. A TOCTAX has been found on COM port 1 and Modbus address 4.

The Wizard starts its search at Modbus address 1 and then polls all addresses in order, one after the other. Therefore, it is a good idea to assign the lowest possible addresses to all connected Modbus users.

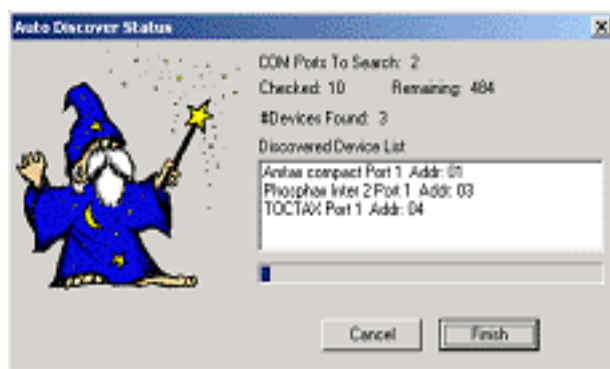


Figure 23 Search status

Once all users connected are seen in the list, the search can be terminated early by using the **Finish** button.

The OPC Wizard is the easiest way to bind instruments to the OPC server. However, this method can take a long time if the Modbus addresses of the connected users have high numerical values.

4.4.2 Binding instruments manually

In this case the user defines the Modbus address at which the OPC server is to search for users. An instrument is selected by choosing a Modbus address on the OPC server main menu using the **Add device** command ([Figure 24](#)).

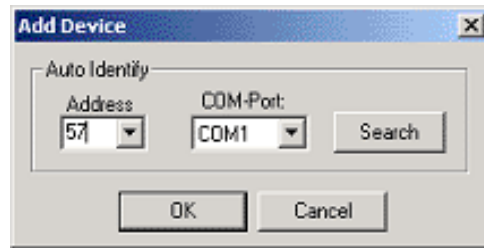


Figure 24 Add device

4.4.3 Manually binding connected Modbus users

The **Search** button in the dialog box can be used to start the search and the identification of an instrument at the selected Modbus address. If an instrument is found, a corresponding window is opened. This is shown in [Figure 25 Device properties](#). Accept this window by clicking **OK**.

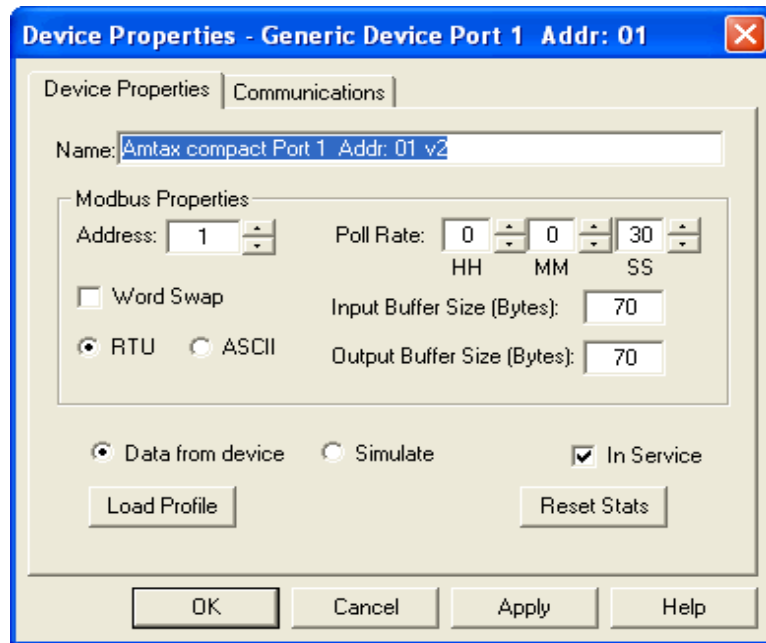


Figure 25 Device properties

In this case all tags for the Modbus registers in the instrument are read from the profile file and displayed in the main window. It is not necessary to also load the profile file using the **Load Profile** button.

4.4.4 Manually binding Modbus users that are not connected

Important Note: Make sure that the COM port is correct.

Click the **OK** button in the dialog box ([Figure 24 Add device](#)). A window appears where the different settings can be made, as in [Figure 26](#).

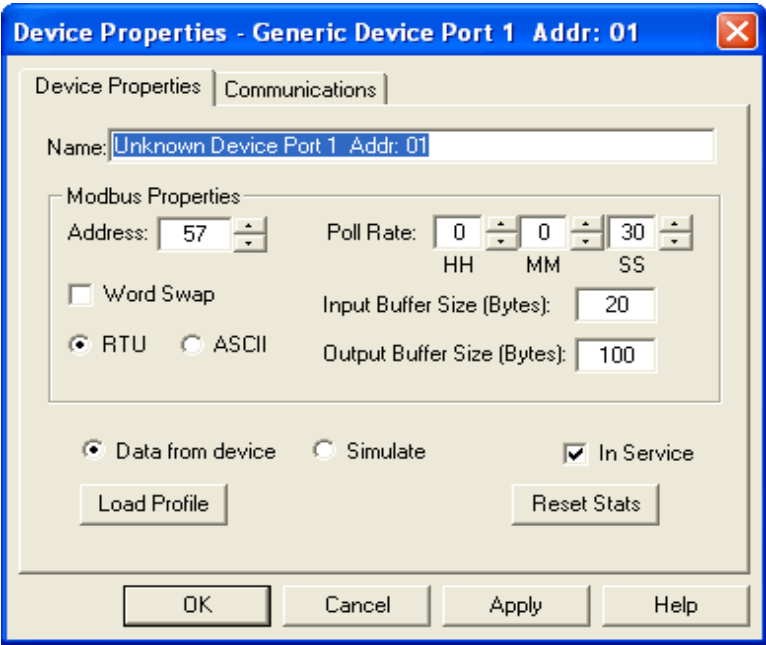


Figure 26 Settings in device properties tab

Using the **Load Profile** button, all instrument profiles contained in the profile file are listed (Figure 27 [Selecting a profile](#)). Select the profile for the instrument (if available).

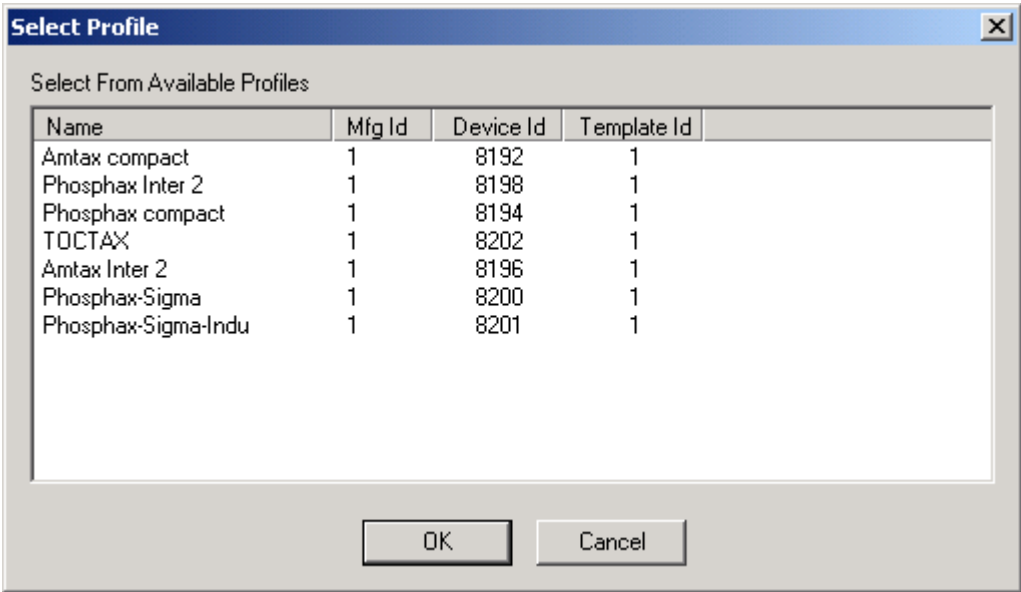


Figure 27 Selecting a profile

The profile selected contains all tags for the related instrument as well as the related data types and Modbus register assignments.

Click the **OK** button to confirm the settings.

The tags for the Modbus registers are prepared using the **Add - Tag** command if an instrument profile has not been loaded. The name and description of the new tag are assigned in the dialog box (Figure 28 OPC data type). The OPC data type must also be set.

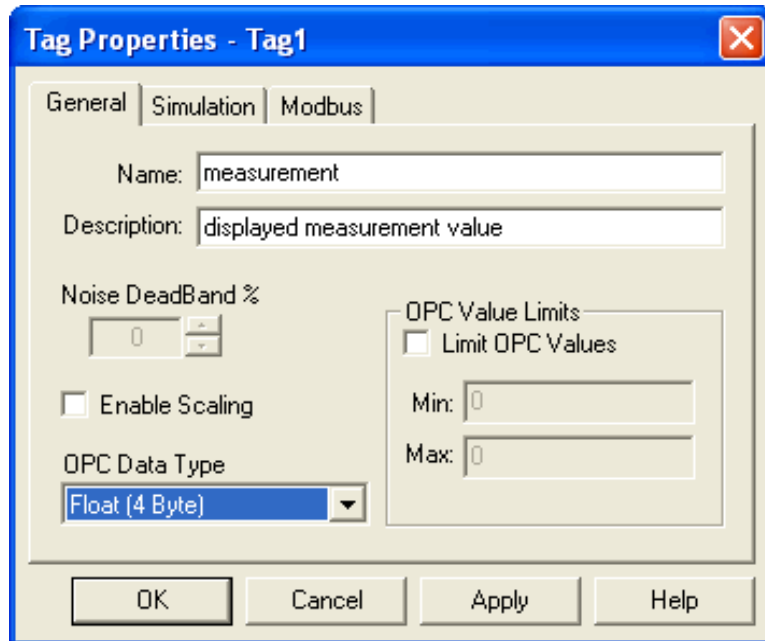


Figure 28 OPC data type

It is also necessary to define a Modbus register (Reference), the number of registers (Reference Count) and the Modbus data type for the tag. This is shown in Figure 29. Note that every Modbus register comprises 2 bytes. The tag can be written if Write Enabled is selected, provided the corresponding Modbus registers in the instrument actually permit overwriting.

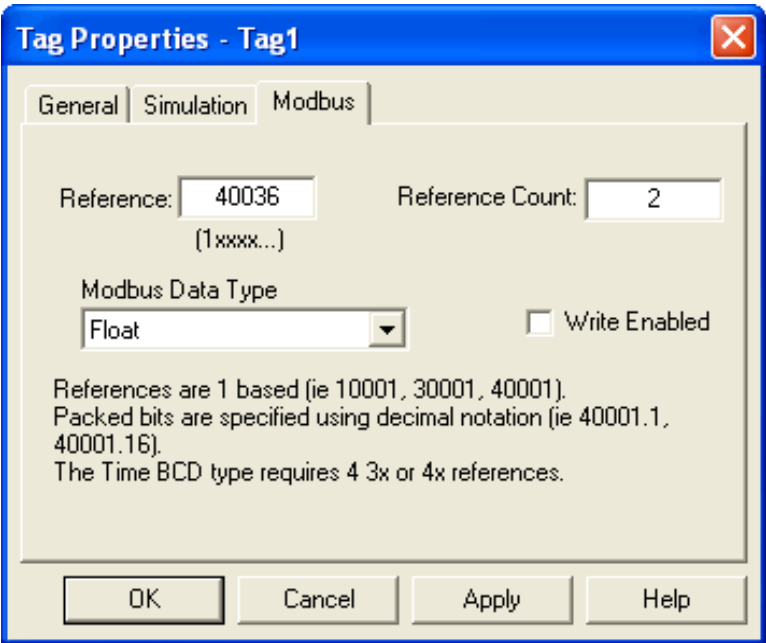


Figure 29 The Modbus tab

To structure the tags, they can be added to groups created previously through the **Add - Group** command. See [Figure 30](#).

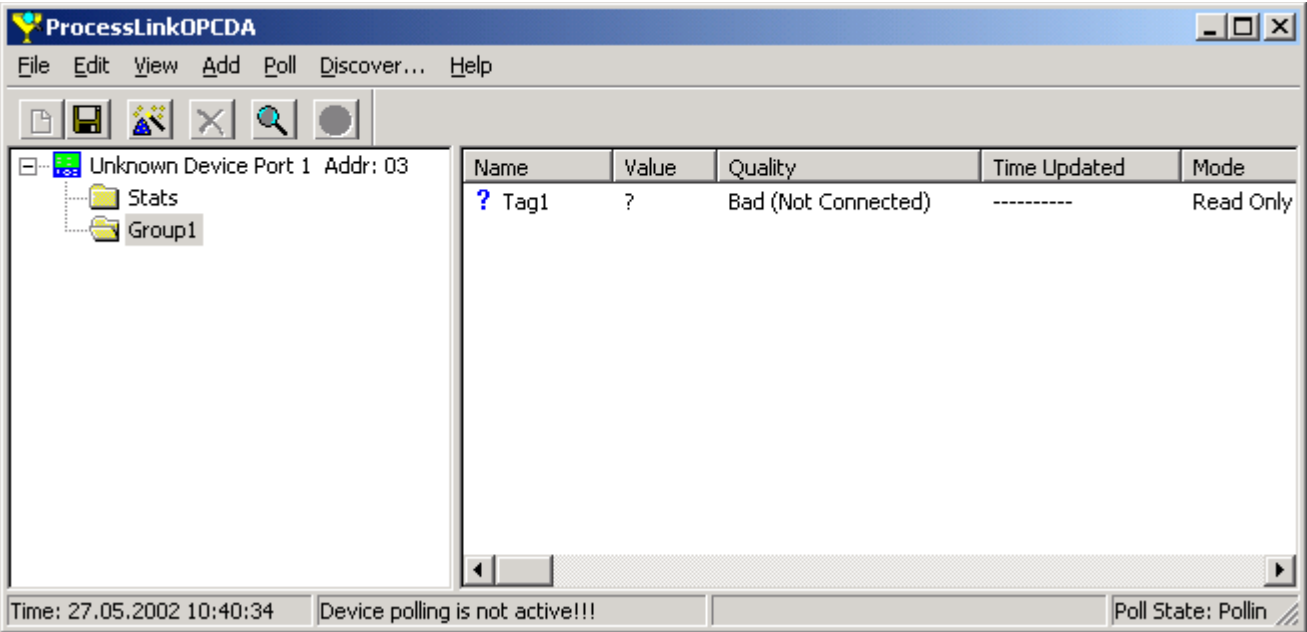


Figure 30 Structuring tags

Settings that are manually made are generally of little use. The information required for this procedure can only be found in the file that contains the instrument profile. Therefore it is better to load the instrument profile immediately and to delete any tags that are not required from the OPC server. This process is described in [section 4.7](#).

To read data on a specific instrument, the instrument or one of its lower level groups must be marked using the mouse. Then the button marked with a circle must be clicked. Refer to [Figure 31](#). As an alternative to the button, the menu command **Poll - Start Polling** can be used.

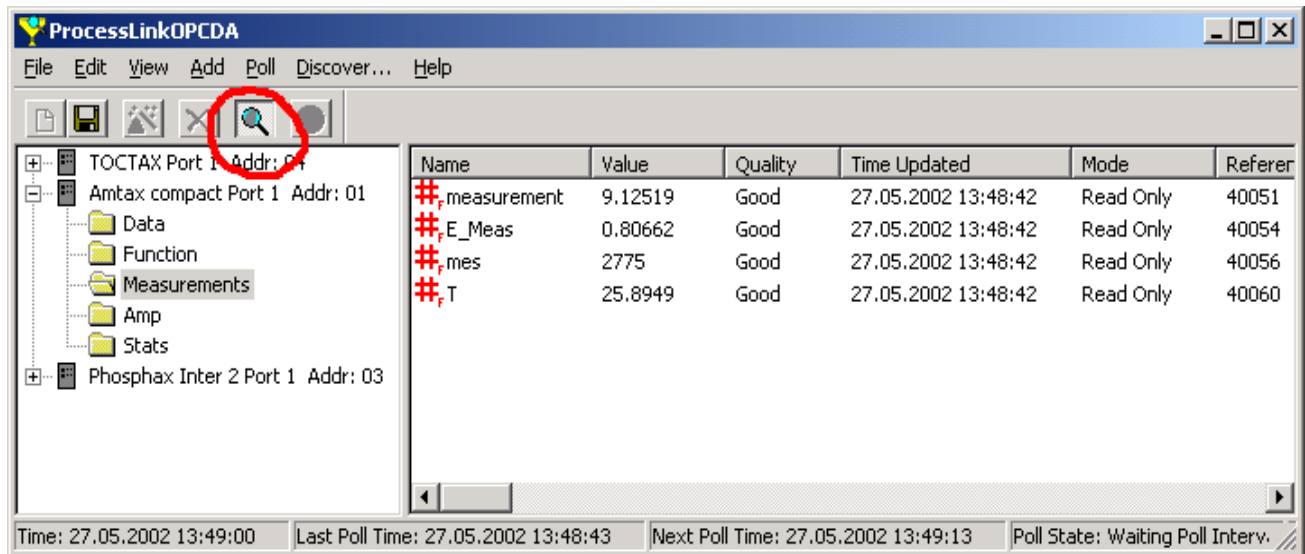


Figure 31 Start polling

4.5 Reading the tags for an instrument

Normally the data are not viewed directly on the Modbus server, but passed to an OPC client via the OPC. The display of data read directly on the OPC server is only for testing the OPC server.

4.6 Writing to an instruments tags

A prerequisite for writing to tags is the read/write status of the tag ([Figure 32](#)).

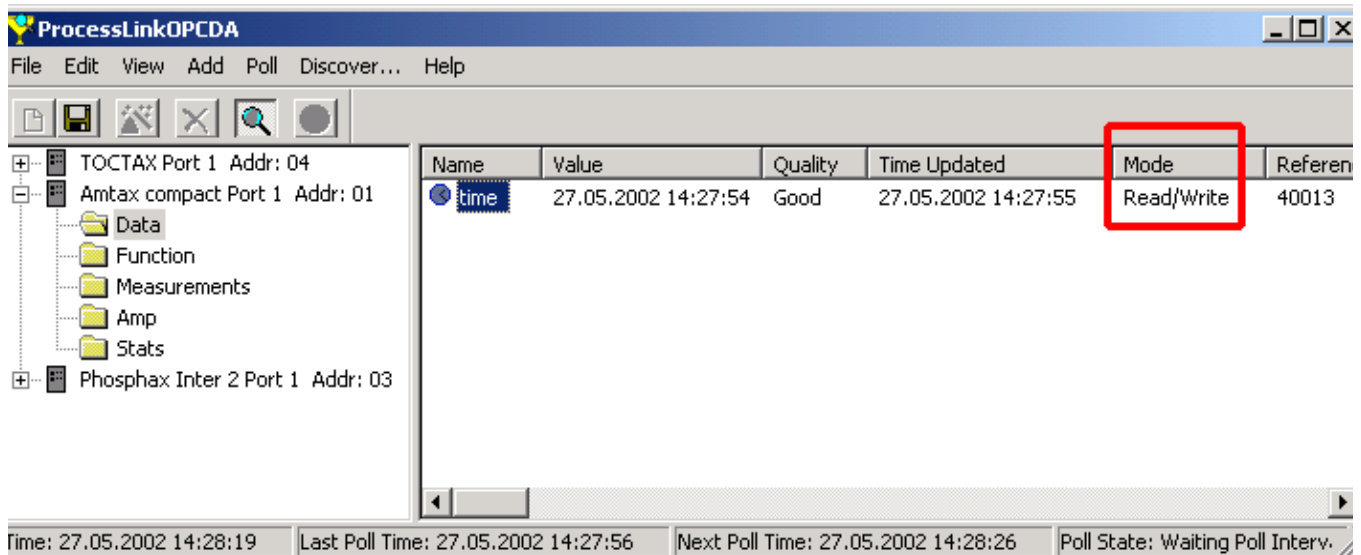


Figure 32 Tag status

To write, the corresponding tag is selected with the right mouse button. The dialog box that appears is completed with the required value and confirmed by clicking the **APPLY** button (Figure 33).

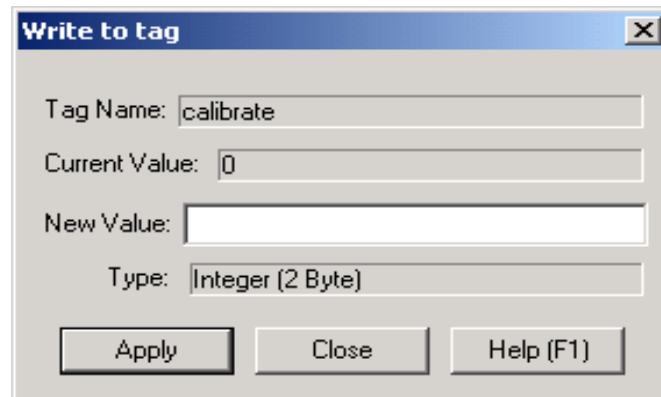


Figure 33 Write to tag dialog box

4.7 Deleting Modbus users

If instruments are to be removed from the OPC server, the related instrument is marked using the mouse and then deleted using the Del key on the PC keyboard. The same procedure also applies to deleting individual groups and tags.

Note that instruments, their groups or tags can only be deleted if the related instrument is not currently supplying any data to the Modbus server. In other words, an OPC client or the OPC server must not be reading data from the instrument at the time of the deletion.

4.8 Program options

Use **File-Options** to make a range of general settings (Figure 34). It is possible to activate an event logger and to save the events that occur in a specific file or on a specific path. It is also possible to define the name and path for the profile file here.

Important Note:

The "Message TimeOut" parameter defines the response time in milliseconds that the OPC server allows a Modbus user to reply to a request. If there is a SONATA among the Modbus users, this time must be set to at least 3000 ms, as the Sonata needs a relatively long time to reply.

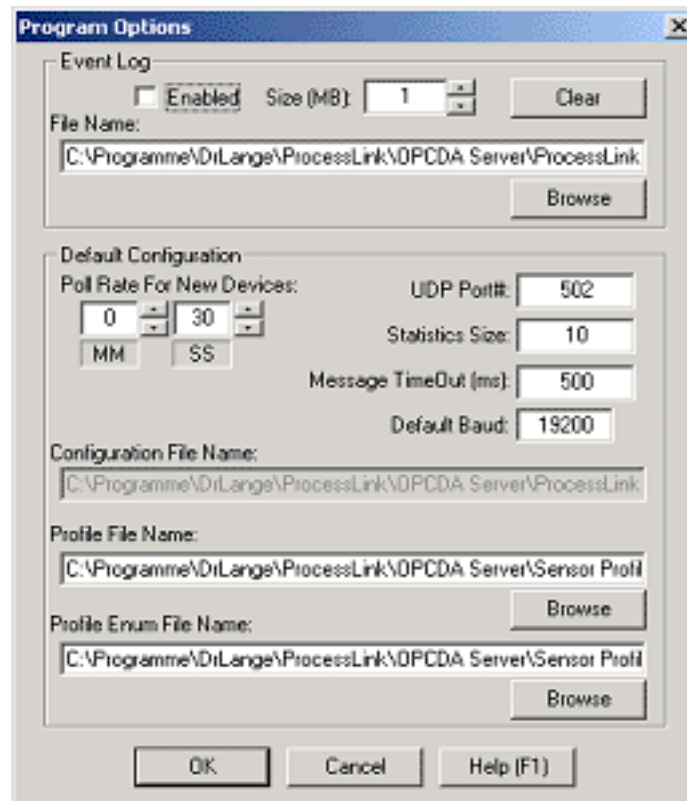


Figure 34 Program options window

Appendix A Instrument profiles

Note: The instrument profiles for the sc sensors are given in the related sensor operating instructions.

The profiles for the instruments that can be addressed over the Modbus are listed in [Table 19](#).

Table 19 Explanation of the tables

Column	Designation	Explanation
1	Tag Name	Tag identifier.
2	Register #	Register that contains the tag. Each register comprises 2 bytes.
3	Data Type	Data type for the tag
		Here there are the following Float: 32-bit or 64-bit in the IEEE standard. Order: low word/high word. Integer: 16-bit or 32-bit integer with sign Unsigned integer: 16-bit or 32-bit integer without sign Time: Four 16-bit registers that contain the date and time. The values are coded in BCD format as follows:
		YYYY: First register with year
		MMDD: Second register with month/day
		HHMM: Third register with hours/minutes
		00SS: Fourth register with seconds
		String: This type uses several registers to represent a string. Each register contains 2 characters. If the string is shorter than the full length of the registers used, the string must be terminated with zero.
4	Length	Length of the tag in the register
5	R/W	Access allowed (R/W = read and write; R = read only)
6	Description	Short description of the tag

A.1 MULTI UNIT / OPTIQUANT profile

Table 20 MULTI UNIT / OPTIQUANT profile

Tag Name	Register #	Data Type	Length	R/W	Description
time	40001	Time	4	R/W	System real time clock
status	40005	Unsigned Integer	1	R	status : bit 15 = common error
error	40006	Unsigned Integer	1	R	error code : 1: no tuning 2: test settings 3: security window not closed 4: humidity 5: internal buserror 6: no reaction (busdevice) 7: no reaction (busdevice direct) 8: timeout (busdevice) 9: timeout process 10: positioning error 11: SEDITAX/SIGMATAX error occurred 12: SEDITAX/SIGMATAX no sync 13: SEDITAX/SIGMATAX offline 14: no sample 15: fault signal 16: fault offset 17: temperature sensor 18: gain 19: calibration
busname	40007	String	6	R/W	device BUS name (max. 10 char. + 0)
-1	-1	String	1	R	reserved Port for probes

A.2 SOLITAX profile

Table 21 SOLITAX profile

Tag Name	Register #	Data Type	Length	R/W	Description
measurement	40001	Float	2	R	displayed measurement value
unit	40003	Unsigned Integer	1	R/W	unit : mg/l = 0 g/l = 1 ppm = 2 FNU = 6 NTU = 7 TE/F = 8 EBC = 9 % = 10
parameter	40004	Unsigned Integer	1	R/W	parameter : Turbidity = 0 Suspended Solids = 1
status	40005	Unsigned Integer	1	R	status : bit 15 = common error bit 3 = max.measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
error	40006	Unsigned Integer	1	R	error code : 1: no tuning 2: test settings 3: probe not established 4: establishing probe manually 5: probe connection 6: probe faulty 7: wrong probe 8: humidity 9: probesettings 10: wiperstatus 11: wiper jammed 12: wiper blocked 13: time out 14: wiper unknown position 15: new wiper profile 16: signal to small 17: EE-Prom faulty
correction	40007	Float	2	R/W	correction
offset	40009	Float	2	R/W	offset
integration	40011	Float	2	R/W	integration
cleaning_interval	40013	Unsigned Integer	1	R/W	cleaning interval : 0 = auto 1 = 15 min 2 = 30 min 3 = 1 h 4 = 4 h 5 = 12 h 6 = 1 d 7 = 3 d 8 = 7 d 9 = 1 min 10 = 5 min

Table 21 SOLITAX profile, continued

Tag Name	Register #	Data Type	Length	R/W	Description
wiper_status	40014	Unsigned Integer	1	R/W	Read : wiper status : 1 = wiping 0 = stop Write : wiper activation 1 = activate wiper
time	40015	Time	4	R/W	System real time clock
sample_location	40019	String	5	R/W	sample location (8 chars + 0)
serial_number	40024	Unsigned Integer	2	R	production number
wiper_profile	40026	Integer	2	R	wiper profile
profile_reset_value	40028	Integer	2	R	profile reset value
motor_cycles	40030	Integer	2	R	motor cycles
sealing_counter	40032	Integer	2	R	sealing counter
service_counter	40034	Integer	2	R	service counter
operating_hours	40036	Integer	2	R	operating hours
measurement	40038	Float	2	R	measurement value
meas_single_value	40040	Float	2	R	measurement single value
channel_1	40042	Float	2	R	channel 1
channel_2	40044	Float	2	R	channel 2
calc_channel_1	40046	Float	2	R	calculated channel 1
calc_channel_2	40048	Float	2	R	calculated channel 2
LED_intensity	40050	Float	2	R	LED intensity
humidity	40052	Float	2	R	humidity
cal_gain	40054	Unsigned Integer	1	R	gain
cal_time	40055	Time	4	R	calibration time and date
cal_chan_1	40059	Float	2	R	calibration channel 1
cal_chan_2	40061	Float	2	R	calibration channel 2
cal_gain_chan_1	40063	Float	2	R	gain channel 1
cal_gain_chan_2	40065	Float	2	R	gain channel 2
cal_LED_intensity	40067	Float	2	R	calibration LED intensity

A.3 NITRATAX profile

Table 22 NITRATAX profile

Tag Name	Register #	Data Type	Length	R/W	Description
measurement	40001	Float	2	R	displayed measurement value
unit	40003	Unsigned Integer	1	R/W	unit : mg/l = 0 g/l = 1
parameter	40004	Unsigned Integer	1	R/W	parameter : NO3 = 2 NOx = 3
status	40005	Unsigned Integer	1	R	status : bit 15 = common error bit 3 = max.measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
error	40006	Unsigned Integer	1	R	error code : 1:no tuning 2: test settings 3: probe not established 4: establishing probe manually 5: probe connection 6: probe faulty 7: wrong probe 8: humidity 9: probesettings 10: wiperstatus 11: wiper jammed 12: wiper blocked 13: time out 14: wiper unknown position 15: new wiper profile 16: signal to small 17: EE-Prom faulty
correction	40007	Float	2	R/W	correction
offset	40009	Float	2	R/W	offset
integration	40011	Unsigned Integer	1	R/W	integration
cleaning_interval	40012	Unsigned Integer	1	R/W	Clean.interval: 0=1/M 1=1/P 2=1min 3=2min 4=5min 5=10min 6=20 min 7=30min 8=1h 9=2h 10=3h 11=4h 12=6h 13=12h 14=10:00

Table 22 NITRATAX profile, continued

Tag Name	Register #	Data Type	Length	R/W	Description
wiper_status	40013	Unsigned Integer	1	R/W	Read : wiper status : 1 = wiping 0 = stop Write : wiper activation : 1 = activate wiper
time	40014	Time	4	R/W	System real time clock
sample_location	40018	String	5	R/W	sample location (max. 8 char. + 0)
serial_number	40023	Unsigned Integer	2	R	production number
path_width	40025	Float	2	R	path width
wiper_profile	40027	Integer	2	R	wiper profile
profile_reset_value	40029	Integer	2	R	profile reset value
motor_cycles	40031	Integer	2	R	motor cycles
flash_counter	40033	Integer	2	R	flash counter
sealing_counter	40035	Integer	2	R	sealing counter
service_counter	40037	Integer	2	R	service counter
operating_hours	40039	Integer	2	R	operating hours
measurement	40041	Float	2	R	measurement value
meas_single_value	40043	Float	2	R	measurement single value
dext	40045	Float	2	R	delta extinction
EM	40047	Float	2	R	m - extinction
ER	40049	Float	2	R	r - extinction
M	40051	Float	2	R	m
R	40053	Float	2	R	r
intensity_mes	40055	Float	2	R	m - intensity
intensity_ref	40057	Float	2	R	r - intensity
humidity_main	40059	Float	2	R	humidity - main
humidity_head	40061	Float	2	R	humidity - head
ext_dark	40063	Float	2	R	dark extinction
calibration_time	40065	Time	4	R	calibration time and date
max_measurement	40069	Float	2	R	max. measurement value
cal_L1	40071	Float	2	R	cal. point 1
cal_L2	40073	Float	2	R	cal. point 2
cal_L3	40075	Float	2	R	cal. point 3
cal_mes	40077	Float	2	R	m - calibration
cal_ref	40079	Float	2	R	r - calibration
cal_intensity_mes	40081	Float	2	R	intensity m - calibration
cal_intensity_ref	40083	Float	2	R	intensity r - calibration
cal_ext	40085	Float	2	R	extinction - calibration

A.4 UVAS profile

Table 23 UVAS profile

Tag Name	Register #	Data Type	Length	R/W	Description
Measurement	40001	Float	2	R	Displayed measurement value
Unit	40003	Unsigned Integer	1	R/W	unit : mg/l = 0 g/l = 1 mExt = 3 1/m = 5
Parameter	40004	Unsigned Integer	1	R/W	Parameter : SAK254 = 4 SAC254 = 5 EXT = 6 BSBuv = 7 CSBuv = 8 TOCuv = 9 DOCuv = 10 BODuv = 11 CODuv = 12
Status	40005	Unsigned Integer	1	R	Status : bit 15 = common error bit 3 = max.measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
Error	40006	Unsigned Integer	1	R	error code : 1: no tuning 2: test settings 3: probe not established 4: establishing probe manually 5: probe connection 6: probe faulty 7: wrong probe 8: humidity 9: probesettings 10: wiperstatus 11: wiper jammed 12: wiper blocked 13: time out 14: wiper unknown position 15: new wiper profile 16: signal to small 17: EE-Prom faulty
Correction	40007	Float	2	R/W	correction
Offset	40009	Float	2	R/W	offset
Integration	40011	Unsigned Integer	1	R/W	integration

Table 23 UVAS profile, continued

Tag Name	Register #	Data Type	Length	R/W	Description
Cleaning_interval	40012	Unsigned Integer	1	R/W	cleaning interval : 0 = 1/M 1 = 1/P 2 = 1 min 3 = 2 min 4 = 5 min 5 = 10 min 6 = 20 min 7 = 30 min 8 = 1 h 9 = 2 h 10 = 3 h 11 = 4 h 12 = 6 h 13 = 12 h 14 = 10:00
wiper_status	40013	Unsigned Integer	1	R/W	Read : wiper status : 1 = wiping 0 = stop Write : wiper activation : 1 = activate wiper
Time	40014	Time	4	R/W	System real time clock
Sample_location	40018	String	5	R/W	sample location (max. 8 char. + 0)
serial_number	40023	Unsigned Integer	2	R	production number
path_width	40025	Float	2	R	path width
lambda_mes	40027	Unsigned Integer	1	R	m - wavelength
lambda_ref	40028	Unsigned Integer	1	R	r - wavelength
biopar_min	40029	Float	2	R/W	min. biol. param.
biopar_max	40031	Float	2	R/W	max. biol. param.
SAC_min	40033	Float	2	R/W	min. SAC
SAC_max	40035	Float	2	R/W	max. SAC
wiper_profile	40037	Integer	2	R	wiper profile
Profile_reset_value	40039	Integer	2	R	profile reset value
motor_cycles	40041	Integer	2	R	motor cycles
flash_counter	40043	Integer	2	R	flash counter
Sealing_counter	40045	Integer	2	R	sealing counter
Service_counter	40047	Integer	2	R	service counter
Operating_hours	40049	Integer	2	R	operating hours
Measurement	40051	Float	2	R	measurement value
meas_single_value	40053	Float	2	R	measurement single value
Dext	40055	Float	2	R	delta extinction
ExMes	40057	Float	2	R	m - extinction
ExRef	40059	Float	2	R	r - extinction
Mes	40061	Float	2	R	m
Ref	40063	Float	2	R	r
Imes	40065	Float	2	R	m - intensity
Iref	40067	Float	2	R	r - intensity
humidity_main	40069	Float	2	R	humidity - main
humidity_head	40071	Float	2	R	humidity - head

Table 23 UVAS profile, continued

Tag Name	Register #	Data Type	Length	R/W	Description
ext_dark	40073	Float	2	R	dark extinction
calibration_time	40075	Time	4	R	calibration time and date
calibration_gain	40079	Float	2	R	gain -calibration
max_measurement	40081	Float	2	R	max. measurement value
cal_mes	40083	Float	2	R	m - calibration
cal_ref	40085	Float	2	R	r - calibration
cal_intensity_mes	40087	Float	2	R	intensity m - calibration
cal_intensity_ref	40089	Float	2	R	intensity r - calibration
cal_ext	40091	Float	2	R	extinction - calibration

A.5 ULTRATURB *plus* profileTable 24 ULTRATURB *plus* profile

Tag Name	Register #	Data Type	Length	R/W	Description
Measurement	40001	Float	2	R	displayed measurement value
Unit	40003	Unsigned Integer	1	R/W	unit : mg/l = 0 FNU = 6 NTU = 7 TE/F = 8 EBC = 9
parameter	40004	Unsigned Integer	1	R/W	Parameter : Turbidity = 0
status	40005	Unsigned Integer	1	R	status : bit 15 = common error bit 3 = max.measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
error	40006	Unsigned Integer	1	R	error code : 1: no tuning 2: test settings 3: probe not established 4: establishing probe manually 5: probe connection 6: probe faulty 7: wrong probe 8: humidity 9: probesettings 10: wiperstatus 11: wiper jammed 12: wiper blocked 13: time out 14: wiper unknown position 15: new wiper profile 16: signal to small 17: EE-Prom faulty
correction	40007	Float	2	R/W	Correction
offset	40009	Float	2	R/W	Offset
integration	40011	Unsigned Integer	1	R/W	Integration
cleaning_interval	40012	Unsigned Integer	1	R/W	cleaning interval : 0 = 10 min 1 = 20 min 2 = 30 min 3 = 2 h 4 = 4 h 5 = 6 h 6 = 12 h 7 = 10:00
wiper_status	40013	Unsigned Integer	1	R/W	Read : wiper status : 1 = wiping 0 = stop Write : wiper activation : 1 = activate wiper
time	40014	Time	4	R/W	System real time clock
sample_location	40018	String	5	R/W	sample location (max. 8 char. + 0)
serial_number	40023	Unsigned Integer	2	R	production number

Table 24 *ULTRATURB plus* profile, continued

Tag Name	Register #	Data Type	Length	R/W	Decription
wiper_profile	40025	Integer	2	R	wiper profile
profile_reset_value	40027	Integer	2	R	profile reset value
measurement	40029	Float	2	R	measurement value
meas_single_value	40031	Float	2	R	measurement single value
mes	40033	Float	2	R	mes
ref	40035	Float	2	R	ref
humidity	40037	Float	2	R	humidity

A.6 AMTAX compact (1-channel) profile, up to software version 2.5

Table 25 AMTAX compact (1-channel) profile, up to software version 2.5

Tag Name	Register #	Data Type	Length	R/W	Description
Measurement	40001	Float	2	R	displayed measurement value
Unit	40003	Unsigned Integer	1	R	unit : mg/l = 0
Parameter	40004	Unsigned Integer	1	R	parameter : NH4-N = 19
Status	40005	Unsigned Integer	1	R	status: bit 15 = common error bit 3 = max. measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
Error	40006	Unsigned Integer	1	R	error code : 1: no tuning 2: test settings 3: security window not closed 4: humidity 5: internal buserror 6: no reaction (busdevice) 7: no reaction (busdevice direct) 8: timeout (busdevice) 9: timeout process 10: positioning error 11: SEDITAX/SIGMATAX error occurred 12: SEDITAX/SIGMATAX no sync 13: SEDITAX/SIGMATAX offline 14: no sample 15: fault signal 16: fault offset 17: temperature sensor 18: gain 19: calibration
calib_standard	40007	Float	2	R	standard
Correction	40009	Float	2	R/W	correction
Integration	40011	Unsigned Integer	1	R/W	integration: 1 = OFF 2 = 2 measurements ... 20 = 20 measurements
meas_interval	40012	Unsigned Integer	1	R	Intervall : only valid with no SEDITAX : 0 = 5 min 1 = 10 min
Time	40013	Time	4	R/W	System real time clock
Sample_location	40017	String	5	R/W	sample location (max. 9 char. + 0)
Busname	40022	String	7	R/W	device BUS name (max. 12 char. + 0)
Cleaning_interval	40029	Unsigned Integer	1	R/W	cleaning interval : 0 = cleaning off 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 = 5d 144 = 6d 168 = 7d
Cleaning_start	40030	Unsigned Integer	1	R/W	cleaning hour : 0 = 00:00 ... 23 = 23:00

Table 25 AMTAX compact (1-channel) profile, up to software version 2.5, continued

Tag Name	Register #	Data Type	Length	R/W	Description
Cleaning_last	40031	Time	4	R	last cleaning
Calibration_interval	40035	Unsigned Integer	1	R/W	calibration intervall : 0 = calibration off 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 = 5d 144 = 6d 168 = 7d
Calibration_start	40036	Unsigned Integer	1	R/W	calibration hour : 0 = 00:00 ... 23 = 23:00
Calibration_last	40037	Time	4	R	last calibration
Measure	40041	Unsigned Integer	1	R/W	start measurement
Clean	40042	Unsigned Integer	1	R/W	start cleaning
Calibrate	40043	Unsigned Integer	1	R/W	start calibration
set_service	40044	Unsigned Integer	1	R/W	go to service menu
cal_mes	40045	Float	2	R	mes-standard calibration
cal_mes_N	40047	Float	2	R	mes-null calibration
cal_factor	40049	Float	2	R	calibration factor
Measurement	40051	Float	2	R	diplayed measurement value
Process	40053	Unsigned Integer	1	R	0 = no process 1 = measuring 2 = base 3 = calibration 4 = cleaning 5 = priming 6 = measuring ortho phosphate 7 = flushing
E_Meas	40054	Float	2	R	extiction to diplayed measurment value
Mes	40056	Float	2	R	Mes
mes_N	40058	Float	2	R	mes-nul
T	40060	Float	2	R	Tempertur

A.7 AMTAX compact (1-channel) profile, from software version 2.5

Table 26 AMTAX compact (1-channel) profile, from software version 2.5

Tag Name	Register #	Data Type	Length	R/W	Description
measurement	40001	Float	2	R	displayed measurement value
unit	40003	Unsigned Integer	1	R	unit : mg/l = 0
parameter	40004	Unsigned Integer	1	R	parameter : NH4-N = 19
status	40005	Unsigned Integer	1	R	status: bit 15 = common error bit 3 = max.measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
error	40006	Unsigned Integer	1	R	error code : 1: no tuning 2: test settings 4: humidity 5: internal buserror 6: no reaction (busdevice) 7: no reaction (busdevice direct) 8: timeout (busdevice) 9: timeout process 11: SEDITAX/SIGMATAX error ocurred 12: SEDITAX/SIGMATAX no sync 13: SEDITAX/SIGMATAX offline 14: no sample 15: fault signal 16: fault offset 17: temperature sensor 18: gain 19: calibration
calib_standard	40007	Float	2	R	standard
correction	40009	Float	2	R/W	correction
integration	40011	Unsigned Integer	1	R/W	integration: 1 = OFF 2 = 2 measurements ... 20 = 20 measurements
meas_interval	40012	Unsigned Integer	1	R/W	Intervall : only valid with no SEDITAX : 0=13 min 1=15 min 2=20min 3=30min 4=60min 5=120min 6=240min 7=remote
time	40013	Time	4	R/W	System real time clock
sample_location	40017	String	5	R/W	sample location (max. 9 char. + 0)
busname	40022	String	7	R/W	device BUS name (max. 12 char. + 0)

Table 26 AMTAX compact (1-channel) profile, from software version 2.5, continued

Tag Name	Register #	Data Type	Length	R/W	Description
cleaning_interval	40029	Unsigned Integer	1	R/W	cleaning interval : 0 = cleaning off 6: 12: 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 = 5d 144 = 6d 168 = 7d
cleaning_start	40030	Unsigned Integer	1	R/W	cleaning hour : 0 = 00:00 ... 23 = 23:00
cleaning_last	40031	Time	4	R	last cleaning
calibration_interval	40035	Unsigned Integer	1	R/W	calibration interval : 0 = calibration off 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 = 5d 144 = 6d 168 = 7d
calibration_start	40036	Unsigned Integer	1	R/W	calibration hour : 0 = 00:00 ... 23 = 23:00
calibration_last	40037	Time	4	R	last calibration
measure	40041	Unsigned Integer	1	R/W	start measurement
clean	40042	Unsigned Integer	1	R/W	start cleaning
calibrate	40043	Unsigned Integer	1	R/W	start calibration
set_service	40044	Unsigned Integer	1	R/W	go to service menu
cal_mes	40045	Float	2	R	mes-standard calibration
cal_mes_N	40047	Float	2	R	mes-null calibration
cal_factor	40049	Float	2	R	calibration factor
measurement	40051	Float	2	R	displayed measurement value
process	40053	Unsigned Integer	1	R	0 = no process 1 = measuring 2 = base 3 = calibration 4 = cleaning 5 = priming 7 = flushing
E_Meas	40054	Float	2	R	extinction to displayed measurement value
mes	40056	Float	2	R	mes
mes_N	40058	Float	2	R	mes-nul
T	40060	Float	2	R	temperature

A.8 AMTAX compact (2-channel) profile, up to software version 2.5

Table 27 AMTAX compact (2-channel) profile, up to software version 2.5

Tag Name	Register #	Data Type	Length	R/W	Description
measurement_1	40001	Float	2	R	diplayed measurement value 1
measurement_2	40003	Float	2	R	diplayed measurement value 2
unit	40005	Unsigned Integer	1	R	unit : mg/l = 0
parameter	40006	Unsigned Integer	1	R	parameter : NH4-N = 19
status_1	40007	Unsigned Integer	1	R	status 1 : bit 15 = common error bit 3 = max.measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
status_2	40008	Unsigned Integer	1	R	status 2 : bit 15 = common error bit 3 = max.measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
error_1	40009	Unsigned Integer	1	R	error code 1 : 1: no tuning 2: test settings 3: security window not closed 4: humidity 5: internal buserror 6: no reaction (busdevice) 7: no reaction (busdevice direct) 8: timeout (busdevice) 9: timeout process 10: positioning error 11: SEDITAX/SIGMATAX error occured 12: SEDITAX/SIGMATAX no sync 13: SEDITAX/SIGMATAX offline 14: no sample 15: fault signal 16: fault offset 17: temperature sensor 18: gain 19: calibration

Table 27 AMTAX compact (2-channel) profile, up to software version 2.5, continued

Tag Name	Register #	Data Type	Length	R/W	Decription
error_2	40010	Unsigned Integer	1	R	error code 2 : 1: no tuning 2: test settings 3: security window not closed 4: humidity 5: internal buserror 6: no reaction (busdevice) 7: no reaction (busdevice direct) 8: timeout (busdevice) 9: timeout process 10: positioning error 11: SEDITAX/SIGMATAX error occurred 12: SEDITAX/SIGMATAX no sync 13: SEDITAX/SIGMATAX offline 14: no sample 15: fault signal 16: fault offset 17: temperature sensor 18: gain 19: calibration
calib_standard	40011	Float	2	R	standard
correction_1	40013	Float	2	R/W	correction 1
correction_2	40015	Float	2	R/W	correction 2
integration_1	40017	Unsigned Integer	1	R/W	integration 1 : 1 = OFF 2 = 2 measurements ... 20 = 20 measurements
integration_2	40018	Unsigned Integer	1	R/W	integration 2 : 1 = OFF 2 = 2 measurements ... 20 = 20 measurements
ratio_chan_1/2	40019	Unsigned Integer	1	R/W	Ratio : measurments channel 1 / channel 2 : 01 ... 99
meas_interval	40020	Unsigned Integer	1	R	Intervall : only valid with no SEDITAX : 0 = 5 min 1 = 10 min
time	40021	Time	4	R/W	System real time clock
sample_location_1	40025	String	5	R/W	sample location channel 1 (max. 9 char. + 0)
sample_location_2	40030	String	5	R/W	sample location channel 2 (max. 9 char. + 0)
busname	40035	String	7	R/W	device BUS name (max. 12 char. + 0)
cleaning_interval	40042	Unsigned Integer	1	R/W	cleaning interval : 0 = cleaning off 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 = 5d 144 = 6d 168 = 7d
cleaning_start	40043	Unsigned Integer	1	R/W	cleaning hour : 0 = 00:00 ... 23 = 23:00
cleaning_last	40044	Time	4	R	last cleaning

Table 27 AMTAX compact (2-channel) profile, up to software version 2.5, continued

Tag Name	Register #	Data Type	Length	R/W	Decription
calibration_interval	40048	Unsigned Integer	1	R/W	Kalibration intervall : 0 = kalibration off 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 = 5d 144 = 6d 168 = 7d
calibration_start	40049	Unsigned Integer	1	R/W	kalibration hour : 0 = 00:00 ... 23 = 23:00
calibration_last	40050	Time	4	R	last calibration
measure	40054	Unsigned Integer	1	R/W	start measurement
clean	40055	Unsigned Integer	1	R/W	start cleaning
calibrate	40056	Unsigned Integer	1	R/W	start calibration
set_service	40057	Unsigned Integer	1	R/W	go to service menu
cal_mes	40058	Float	2	R	mes-standard calibration
cal_mes_N	40060	Float	2	R	mes-null calibration
cal_faktor	40062	Float	2	R	calibration factor
measurement_1	40064	Float	2	R	diplayed measurement value 1
measurement_2	40066	Float	2	R	diplayed measurement value 2
channel	40068	Unsigned Integer	1	R	1 = channel 1 2 = channel 2
process	40069	Unsigned Integer	1	R	0 = no process 1 = measuring 2 = base 3 = calibration 4 = cleaning 5 = priming 6 = measuring ortho phosphate 7 = flushing
E_Meas	40070	Float	2	R	extiction to diplayed measurment value
mes	40072	Float	2	R	channel mes
mes_N	40074	Float	2	R	channel mes-nul
T	40076	Float	2	R	temperature

A.9 AMTAX compact (2-channel) profile, from software version 2.5

Table 28 AMTAX compact (2-channel) profile, from software version 2.5

Tag Name	Register #	Data Type	Length	R/W	Description
measurement_1	40001	Float	2	R	displayed measurement value 1
measurement_2	40003	Float	2	R	displayed measurement value 2
unit	40005	Unsigned Integer	1	R	unit : mg/l = 0
parameter	40006	Unsigned Integer	1	R	parameter : NH4-N = 19
status_1	40007	Unsigned Integer	1	R	status 1 : bit 15 = common error bit 3 = max.measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
status_2	40008	Unsigned Integer	1	R	status 2 : bit 15 = common error bit 3 = max.measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
error_1	40009	Unsigned Integer	1	R	error code1 : 1: no tuning 2: test settings 4: humidity 5: internal buserror 6: no reaction (busdevice) 7: no reaction (busdevice direct) 8: timeout (busdevice) 9: timeout process 11: SEDITAX/SIGMATAX error occurred 12: SEDITAX/SIGMATAX no sync 13: SEDITAX/SIGMATAX offline 14: no sample 15: fault signal 16: fault offset 17: temperature sensor 18: gain 19: calibration
error_2	40010	Unsigned Integer	1	R	error code2 : 1: no tuning 2: test settings 4: humidity 5: internal buserror 6: no reaction (busdevice) 7: no reaction (busdevice direct) 8: timeout (busdevice) 9: timeout process 11: SEDITAX/SIGMATAX error occurred 12: SEDITAX/SIGMATAX no sync 13: SEDITAX/SIGMATAX offline 14: no sample 15: fault signal 16: fault offset 17: temperature sensor 18: gain 19: calibration
calib_standard	40011	Float	2	R	standard
correction_1	40013	Float	2	R/W	correction 1

Table 28 AMTAX compact (2-channel) profile, from software version 2.5, continued

Tag Name	Register #	Data Type	Length	R/W	Description
correction_2	40015	Float	2	R/W	correction 2
integration_1	40017	Unsigned Integer	1	R/W	integration 1 : 1 = OFF 2 = 2 measurements ... 20 = 20 measurements
integration_2	40018	Unsigned Integer	1	R/W	integration 2 : 1 = OFF 2 = 2 measurements ... 20 = 20 measurements
ratio_chan_1/2	40019	Unsigned Integer	1	R/W	Ratio : measurments channel 1 / channel 2 : 01 ... 99
meas_interval	40020	Unsigned Integer	1	R/W	Intervall : only valid with no SEDITAX : 0=13 min 1=15 min 2=20min 3=30min 4=60min 5=120min 6=240min 7=remote
time	40021	Time	4	R/W	System real time clock
sample_location_1	40025	String	5	R/W	sample location channel 1 (max. 9 char. + 0)
sample_location_2	40030	String	5	R/W	sample location channel 2 (max. 9 char. + 0)
busname	40035	String	7	R/W	device BUS name (max. 12 char. + 0)
cleaning_interval	40042	Unsigned Integer	1	R/W	cleaning interval : 0 = cleaning off 6: 12: 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 = 5d 144 = 6d 168 = 7d
cleaning_start	40043	Unsigned Integer	1	R/W	cleaning hour : 0 = 00:00 ... 23 = 23:00
cleaning_last	40044	Time	4	R	last cleaning
calibration_interval	40048	Unsigned Integer	1	R/W	Kalibration intervall : 0 = kalibration off 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 = 5d 144 = 6d 168 = 7d
calibration_start	40049	Unsigned Integer	1	R/W	kalibration hour : 0 = 00:00 ... 23 = 23:00
calibration_last	40050	Time	4	R	last calibration
measure	40054	Unsigned Integer	1	R/W	start measurement

Table 28 AMTAX compact (2-channel) profile, from software version 2.5, continued

Tag Name	Register #	Data Type	Length	R/W	Description
clean	40055	Unsigned Integer	1	R/W	start cleaning
calibrate	40056	Unsigned Integer	1	R/W	start calibration
set_service	40057	Unsigned Integer	1	R/W	go to service menu
cal_mes	40058	Float	2	R	mes-standard calibration
cal_mes_N	40060	Float	2	R	mes-null calibration
cal_faktor	40062	Float	2	R	calibration factor
measurement_1	40064	Float	2	R	diplayed measurement value 1
measurement_2	40066	Float	2	R	diplayed measurement value 2
channel	40068	Unsigned Integer	1	R	1 = channel 1 2 = channel 2
process	40069	Unsigned Integer	1	R	0 = no process 1 = measuring 2 = base 3 = calibration 4 = cleaning 5 = priming 7 = flushing
E_Meas	40070	Float	2	R	extinction to diplayed measurment value
mes	40072	Float	2	R	channel mes
mes_N	40074	Float	2	R	channel mes-nul
T	40076	Float	2	R	temperature

A.10 PHOSPHAX compact (1-channel) profile

Table 29 PHOSPHAX compact (1-channel) profile

Tag Name	Register #	Data Type	Length	R/W	Description
measurement	40001	Float	2	R	displayed measurement value
unit	40003	Unsigned Integer	1	R	unit : mg/l = 0
parameter	40004	Unsigned Integer	1	R	parameter : PO4-P = 15
status	40005	Unsigned Integer	1	R	status: bit 15 = common error bit 3 = max.measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
error	40006	Unsigned Integer	1	R	error code : 1: no tuning 2: test settings 3: security window not closed 4: humidity 5: internal buserror 6: no reaction (busdevice) 7: no reaction (busdevice direct) 8: timeout (busdevice) 9: timeout process 10: positioning error 11: SEDITAX/SIGMATAX error occurred 12: SEDITAX/SIGMATAX no sync 13: SEDITAX/SIGMATAX offline 14: no sample 15: fault signal 16: fault offset 17: temperature sensor 18: gain 19: calibration
correction	40007	Float	2	R/W	correction
integration	40009	Unsigned Integer	1	R/W	integration: 1 = OFF 2 = 2 measurements ... 20 = 20 measurements
meas_interval	40010	Unsigned Integer	1	R	Interval : only valid with no SEDITAX : 0 = 5 min 1 = 10 min
time	40011	Time	4	R/W	System real time clock
sample_location	40015	String	5	R/W	Sample location (max. 9 char. + 0)
busname	40020	String	7	R/W	device BUS name (max. 12 char. + 0)
cleaning_interval	40027	Unsigned Integer	1	R/W	cleaning interval : 0 = cleaning off 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 = 5d 144 = 6d 168 = 7d
cleaning_start	40028	Unsigned Integer	1	R/W	cleaning hour : 0 = 00:00 ... 23 = 23:00
cleaning_last	40029	Time	4	R	last cleaning

Table 29 PHOSPHAX compact (1-channel) profile, continued

Tag Name	Register #	Data Type	Length	R/W	Description
measure	40033	Unsigned Integer	1	R/W	start measurement
clean	40034	Unsigned Integer	1	R/W	start cleaning
set_service	40035	Unsigned Integer	1	R/W	go to service menu
measurement	40036	Float	2	R	diplayed measurement value
process	40038	Unsigned Integer	1	R	0 = no process 1 = measuring 2 = base 3 = calibration 4 = cleaning 5 = priming 6 = measuring ortho phosphate 7 = flushing
E_Meas	40039	Float	2	R	extiction to diplayed measurment value
mes	40041	Float	2	R	mes
mes_N	40043	Float	2	R	mes-nul

A.11 PHOSPHAX compact (2-channel) profile

Table 30 PHOSPHAX compact (2-channel) profile

Tag Name	Register #	Data Type	Length	R/W	Description
measurement_1	40001	Float	2	R	displayed measurement value 1
measurement_2	40003	Float	2	R	displayed measurement value 2
unit	40005	Unsigned Integer	1	R	unit : mg/l = 0
parameter	40006	Unsigned Integer	1	R	parameter : PO4-P = 15
status_1	40007	Unsigned Integer	1	R	status 1 : bit 15 = common error bit 3 = max.measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
status_2	40008	Unsigned Integer	1	R	status 2 : bit 15 = common error bit 3 = max.measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
error_1	40009	Unsigned Integer	1	R	error code 1 : 1: no tuning 2: test settings 3: security window not closed 4: humidity 5: internal buserror 6: no reaction (busdevice) 7: no reaction (busdevice direct) 8: timeout (busdevice) 9: timeout process 10: positioning error 11: SEDITAX/SIGMATAX error occured 12: SEDI-TAX/SIGMATAX no sync 13: SEDITAX/SIGMATAX offline 14: no sample 15: fault signal 16: fault offset 17: temperature sensor 18: gain 19: calibr.

Table 30 PHOSPHAX compact (2-channel) profile, continued

Tag Name	Register #	Data Type	Length	R/W	Description
error_2	40010	Unsigned Integer	1	R	error code 2 : 1: no tuning 2: test settings 3: security window not closed 4: humidity 5: internal buserror 6: no reaction (busdevice) 7: no reaction (busdevice direct) 8: timeout (busdevice) 9: timeout process 10: positioning error 11: SEDITAX/SIGMATAX error occurred 12: SEDI-TAX/SIGMATAX no sync 13: SEDITAX/SIGMATAX offline 14: no sample 15: fault signal 16: fault offset 17: temperature sensor 18: gain 19: calibr.
correction_1	40011	Float	2	R/W	correction 1
correction_2	40013	Float	2	R/W	correction 2
integration_1	40015	Unsigned Integer	1	R/W	Integration 1 : 1 = OFF 2 = 2 measurements ... 20 = 20 measurements
integration_2	40016	Unsigned Integer	1	R/W	Integration 2 : 1 = OFF 2 = 2 measurements ... 20 = 20 measurements
ratio_chan_1/2	40017	Unsigned Integer	1	R/W	Ratio : measurments channel 1 / channel 2 : 01 ... 99
meas_interval	40018	Unsigned Integer	1	R	Intervall : only valid with no SEDITAX : 0 = 5 min 1 = 10 min
time	40019	Time	4	R/W	System real time clock
sample_location_1	40023	String	5	R/W	sample location channel 1 (max. 9 char. + 0)
sample_location_2	40028	String	5	R/W	sample location channel 2 (max. 9 char. + 0)
busname	40033	String	7	R/W	device BUS name (max. 12 char. + 0)
cleaning_interval	40040	Unsigned Integer	1	R/W	cleaning interval : 0 = cleaning off 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 = 5d 144 = 6d 168 = 7d
cleaning_start	40041	Unsigned Integer	1	R/W	Cleaning hour : 0 = 00:00 ... 23 = 23:00
cleaning_last	40042	Time	4	R	last cleaning
measure	40046	Unsigned Integer	1	R/W	start measurement
clean	40047	Unsigned Integer	1	R/W	start cleaning

Table 30 PHOSPHAX compact (2-channel) profile, continued

Tag Name	Register #	Data Type	Length	R/W	Description
set_service	40048	Unsigned Integer	1	R/W	go to service menu
measurement_1	40049	Float	2	R	diplayed measurement value 1
measurement_2	40051	Float	2	R	diplayed measurement value 2
channel	40053	Unsigned Integer	1	R	1 = channel 1 : 2 = channel 2
	40054	Unsigned	1	R	0 = no process 1 = measuring 2 = base 3 = calibration 4 = cleaning 5 = priming 6 = measuring ortho phosphate 7 = flushing
	40055		2	R	
E_Meas	40057	Integer	2	R	
mes	40059	Float	2	R	extiction to diplayed measurment value
mes_N		Float			channel mes
		Float			channel mes-n

A.12 AMTAX *inter 2* (1-channel) profile, up to software version 2.6

Table 31 AMTAX *inter 2* (1-channel) profile, up to software version 2.6

Tag Name	Register #	Data Type	Length	R/W	Description
measurement	40001	Float	2	R	displayed measurement value
unit	40003	Unsigned Integer	1	R	unit : mg/l = 0
parameter	40004	Unsigned Integer	1	R	parameter : NH ₄ -N = 19
status	40005	Unsigned Integer	1	R	status: bit 15 = common error bit 3 = max. measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detected
error	40006	Unsigned Integer	1	R	error code : 1: no tuning 2: test settings 3: security window not closed 4: humidity 5: internal buserror 6: no reaction (busdevice) 7: no reaction (busdevice direct) 8: timeout (busdevice) 9: timeout process 10: positioning error 11: SEDITAX/SIGMATAX error occurred 12: SEDITAX/SIGMATAX no sync 13: SEDITAX/SIGMATAX offline 14: no sample 15: fault signal 16: fault offset 17: temperature sensor 18: gain 19: calibration
calib_standard	40007	Float	2	R	Standard
correction	40009	Float	2	R/W	Correction
integration	40011	Unsigned Integer	1	R/W	integration: 1 = OFF 2 = 2 measurements ... 20 = 20 measurements
meas_interval	40012	Unsigned Integer	1	R	Intervall : only valid with no SEDITAX : 0 = 5 min 1 = 10 min
time	40013	Time	4	R/W	System real time clock
sample_location	40017	String	5	R/W	sample location (max. 9 char. + 0)
busname	40022	String	7	R/W	device BUS name (max. 12 char. + 0)
cleaning_interval	40029	Unsigned Integer	1	R/W	cleaning interval : 0 = cleaning off 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 = 5d 144 = 6d 168 = 7d
cleaning_start	40030	Unsigned Integer	1	R/W	Cleaning hour : 0 = 00:00 ... 23 = 23:00

Table 31 AMTAX inter 2 (1-channel) profile, up to software version 2.6, continued

Tag Name	Register #	Data Type	Length	R/W	Description
cleaning_last	40031	Time	4	R	last cleaning
calibration_interval	40035	Unsigned Integer	1	R/W	calibration interval : 0 = calibration off : 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 = 5d 144 = 6d 168 = 7d
calibration_start	40036	Unsigned Integer	1	R/W	Calibration hour : 0 = 00:00 ... 23 = 23:00
calibration_last	40037	Time	4	R	last calibration
measure	40041	Unsigned Integer	1	R/W	start measurement
clean	40042	Unsigned Integer	1	R/W	Start cleaning
calibrate	40043	Unsigned Integer	1	R/W	start calibration
set_service	40044	Unsigned Integer	1	R/W	go to service menu
mes	40045	Float	2	R	mes-standard calibration
ref	40047	Float	2	R	ref-standard calibration
mes_N	40049	Float	2	R	mes-null calibration
ref_N	40051	Float	2	R	ref-null calibration
cal_factor	40053	Float	2	R	calibration factor
measurement	40055	Float	2	R	diplayed measurement value
process	40057	Unsigned Integer	1	R	0 = no process 1 = measuring 2 = base 3 = calibration 4 = cleaning 5 = priming 6 = measuring ortho phosphate 7 = flushing
E_Meas	40058	Float	2	R	extinction to diplayed measurment value
mes	40060	Float	2	R	Mes
ref	40062	Float	2	R	Ref
T	40064	Float	2	R	Temperature

A.13 AMTAX *inter 2* (1-channel) profile, from software version 2.6

Table 32 AMTAX *inter 2* (1-channel) profile, from software version 2.6

Tag Name	Register #	Data Type	Length	R/W	Description
measurement	40001	Float	2	R	displayed measurement value
unit	40003	Unsigned Integer	1	R	unit : mg/l = 0
parameter	40004	Unsigned Integer	1	R	parameter : NH4-N = 19
status	40005	Unsigned Integer	1	R	status: bit 15 = common error bit 3 = max.measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
error	40006	Unsigned Integer	1	R	error code : 1: no tuning 2: test settings 3: security window not closed 4: humidity 5: internal buserror 6: no reaction (busdevice) 7: no reaction (busdevice direct) 8: timeout (busdevice) 9: timeout process 10: positioning error 11: SEDITAX/SIGMATAX error occurred 12: SEDITAX/SIGMATAX no sync 13: SEDITAX/SIGMATAX offline 14: no sample 15: fault signal 16: fault offset 17: temperature sensor 18: gain 19: calibration
calib_standard	40007	Float	2	R	Standard
correction	40009	Float	2	R/W	Correction
integration	40011	Unsigned Integer	1	R/W	integration: 1 = OFF 2 = 2 measurements ... 20 = 20 measurements
meas_interval	40012	Unsigned Integer	1	R	Intervall : only valid with no SEDITAX : 0 = 5 min 1 = 10 min
time	40013	Time	4	R/W	System real time clock
sample_location	40017	String	5	R/W	sample location (max. 9 char. + 0)
busname	40022	String	7	R/W	device BUS name (max. 12 char. + 0)
cleaning_interval	40029	Unsigned Integer	1	R/W	cleaning interval : 0 = cleaning off 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 = 5d 144 = 6d 168 = 7d
cleaning_start	40030	Unsigned Integer	1	R/W	Cleaning hour : 0 = 00:00 ... 23 = 23:00

Instrument profiles

Table 32 AMTAX inter 2 (1-channel) profile, from software version 2.6 , continued

Tag Name	Register #	Data Type	Length	R/W	Description
cleaning_last	40031	Time	4	R	last cleaning
calibration_interval	40035	Unsigned Integer	1	R/W	calibration intervall : 0 = calibration off 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 = 5d 144 = 6d 168 = 7d
calibration_start	40036	Unsigned Integer	1	R/W	Calibration hour : 0 = 00:00 ... 23 = 23:00
calibration_last	40037	Time	4	R	last calibration
measure	40041	Unsigned Integer	1	R/W	start measurement
clean	40042	Unsigned Integer	1	R/W	start cleaning
calibrate	40043	Unsigned Integer	1	R/W	start calibration
set_service	40044	Unsigned Integer	1	R/W	go to service menu
mes	40045	Float	2	R	mes-standard calibration
ref	40047	Float	2	R	ref-standard calibration
mes_N	40049	Float	2	R	mes-null calibration
ref_N	40051	Float	2	R	ref-null calibration
cal_factor	40053	Float	2	R	calibration factor
measurement	40055	Float	2	R	diplayed measurement value
process	40057	Unsigned Integer	1	R	0 = no process 1 = measuring 2 = base 3 = calibration 4 = cleaning 5 = priming 6 = measuring ortho phosphate 7 = flushing
E_Meas	40058	Float	2	R	extinction to diplayed measurment value
mes	40060	Float	2	R	Mes
ref	40062	Float	2	R	Ref
T	40064	Float	2	R	Temperature

A.14 AMTAX *inter 2* (2 channel) profile, up to software version 2.6

Table 33 AMTAX *inter 2* (2 channel) profile, up to software version 2.6

Tag Name	Register #	Data Type	Length	R/W	Description
measurement_1	40001	Float	2	R	displayed measurement value 1
measurement_2	40003	Float	2	R	displayed measurement value 2
unit	40005	Unsigned Integer	1	R	unit : mg/l = 0
parameter	40006	Unsigned Integer	1	R	parameter : NH4-N = 19
status_1	40007	Unsigned Integer	1	R	status 1 : bit 15 = common error bit 3 = max.measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
status_2	40008	Unsigned Integer	1	R	status 2 : bit 15 = common error bit 3 = max.measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
error	40009	Unsigned Integer	1	R	error code : 1: no tuning 2: test settings 3: security window not closed 4: humidity 5: internal buserror 6: no reaction (busdevice) 7: no reaction (busdevice direct) 8: timeout (busdevice) 9: timeout process 10: positioning error 11: SEDITAX/SIGMATAX error occurred 12: SEDITAX/SIGMATAX no sync 13: SEDITAX/SIGMATAX offline 14: no sample 15: fault signal 16: fault offset 17: temperature sensor 18: gain 19: calibration
calib_standard	40010	Float	2	R	standard
correction_1	40012	Float	2	R/W	correction 1
correction_2	40014	Float	2	R/W	correction 2
integration_1	40016	Unsigned Integer	1	R/W	Integration 1 : 1 = OFF 2 = 2 measurements ... 20 = 20 measurements
integration_2	40017	Unsigned Integer	1	R/W	Integration 2 : 1 = OFF 2 = 2 measurements ... 20 = 20 measurements
ratio_chan_1/2	40018	Unsigned Integer	1	R/W	Ratio : measurments channel 1 / channel 2 : 01 ... 99
meas_interval	40019	Unsigned Integer	1	R	Intervall : only valid with no SEDITAX : 0 = 5 min 1 = 10 min

Instrument profiles

Table 33 AMTAX inter 2 (2 channel) profile, up to software version 2.6, continued

Tag Name	Register #	Data Type	Length	R/W	Description
time	40020	Time	4	R/W	System real time clock
sample_location_1	40024	String	5	R/W	sample location channel 1 (max. 9 char. + 0)
sample_location_2	40029	String	5	R/W	sample location channel 2 (max. 9 char. + 0)
busname	40034	String	7	R/W	device BUS name (max. 12 char. + 0)
cleaning_interval	40041	Unsigned Integer	1	R/W	cleaning interval : 0 = cleaning off : 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 = 5d 144 = 6d 168 = 7d
cleaning_start	40042	Unsigned Integer	1	R/W	Cleaning hour : 0 = 00:00 ... 23 = 23:00
cleaning_last	40043	Time	4	R	last cleaning
calibration_interval	40047	Unsigned Integer	1	R/W	Kalibration intervall : 0 = kalibration off : 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 = 5d 144 = 6d 168 = 7d
calibration_start	40048	Unsigned Integer	1	R/W	Kalibration hour : 0 = 00:00 ... 23 = 23:00
calibration_last	40049	Time	4	R	last calibration
measure	40053	Unsigned Integer	1	R/W	start measurement
clean	40054	Unsigned Integer	1	R/W	start cleaning
calibrate	40055	Unsigned Integer	1	R/W	start calibration
set_service	40056	Unsigned Integer	1	R/W	go to service menu
cal_mes	40057	Float	2	R	mes-standard calibration
cal_ref	40059	Float	2	R	ref-standard calibration
cal_mes_N	40061	Float	2	R	mes-null calibration
cal_ref_N	40063	Float	2	R	ref-null calibration
cal_faktor	40065	Float	2	R	calibration factor
measurement_1	40067	Float	2	R	displayed measurement value 1
measurement_2	40069	Float	2	R	displayed measurement value 2
channel	40071	Unsigned Integer	1	R	1 = channel 1 : 2 = channel 2
process	40072	Unsigned Integer	1	R	0 = no process : 1 = measuring 2 = base 3 = calibration 4 = cleaning 5 = priming 6 = measuring ortho phosphate 7 = flushing
E_Meas	40073	Float	2	R	extinction to displayed measurement value
mes	40075	Float	2	R	channel mes
ref	40077	Float	2	R	channel ref
T	40079	Float	2	R	Temperature

A.15 AMTAX *inter 2* (2-channel) profile, from software version 2.6

Table 34 AMTAX *inter 2* (2-channel) profile, from software version 2.6

Tag Name	Register #	Data Type	Length	R/W	Description
measurement_1	40001	Float	2	R	displayed measurement value 1
measurement_2	40003	Float	2	R	displayed measurement value 2
unit	40005	Unsigned Integer	1	R	unit : mg/l = 0
parameter	40006	Unsigned Integer	1	R	parameter : NH4-N = 19
status_1	40007	Unsigned Integer	1	R	status 1 : bit 15 = common error bit 3 = max.measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
status_2	40008	Unsigned Integer	1	R	status 2 : bit 15 = common error bit 3 = max.measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
error	40009	Unsigned Integer	1	R	error code : 1: no tuning 2: test settings 3: security window not closed 4: humidity 5: internal buserror 6: no reaction (busdevice) 7: no reaction (busdevice direct) 8: timeout (busdevice) 9: timeout process 10: positioning error 11: SEDITAX/SIGMATAX error occurred 12: SEDITAX/SIGMATAX no sync 13: SEDITAX/SIGMATAX offline 14: no sample 15: fault signal 16: fault offset 17: temperature sensor 18: gain 19: calibration
calib_standard	40010	Float	2	R	standard
correction_1	40012	Float	2	R/W	correction 1
correction_2	40014	Float	2	R/W	correction 2
integration_1	40016	Unsigned Integer	1	R/W	Integration 1 : 1 = OFF 2 = 2 measurements ... 20 = 20 measurements
integration_2	40017	Unsigned Integer	1	R/W	Integration 2 : 1 = OFF 2 = 2 measurements ... 20 = 20 measurements
ratio_chan_1/2	40018	Unsigned Integer	1	R/W	Ratio : measurments channel 1 / channel 2 : 01 ... 99
meas_interval	40019	Unsigned Integer	1	R	Intervall : only valid with no SEDITAX : 0 = 5 min 1 = 10 min

Instrument profiles

Table 34 AMTAX inter 2 (2-channel) profile, from software version 2.6 , continued

Tag Name	Register #	Data Type	Length	R/W	Description
time	40020	Time	4	R/W	System real time clock
sample_location_1	40024	String	5	R/W	sample location channel 1 (max. 9 char. + 0)
sample_location_2	40029	String	5	R/W	sample location channel 2 (max. 9 char. + 0)
busname	40034	String	7	R/W	device BUS name (max. 12 char. + 0)
cleaning_interval	40041	Unsigned Integer	1	R/W	cleaning interval : 0 = cleaning off 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 = 5d 144 = 6d 168 = 7d
cleaning_start	40042	Unsigned Integer	1	R/W	Cleaning hour : 0 = 00:00 ... 23 = 23:00
cleaning_last	40043	Time	4	R	last cleaning
calibration_interval	40047	Unsigned Integer	1	R/W	Kalibration intervall : 0 = kalibration off 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 = 5d 144 = 6d 168 = 7d
calibration_start	40048	Unsigned Integer	1	R/W	Kalibration hour : 0 = 00:00 ... 23 = 23:00
calibration_last	40049	Time	4	R	last calibration
measure	40053	Unsigned Integer	1	R/W	start measurement
clean	40054	Unsigned Integer	1	R/W	start cleaning
calibrate	40055	Unsigned Integer	1	R/W	start calibration
set_service	40056	Unsigned Integer	1	R/W	go to service menu
cal_mes	40057	Float	2	R	mes-standard calibration
cal_ref	40059	Float	2	R	ref-standard calibration
cal_mes_N	40061	Float	2	R	mes-null calibration
cal_ref_N	40063	Float	2	R	ref-null calibration
cal_faktor	40065	Float	2	R	calibration factor
measurement_1	40067	Float	2	R	diplayed measurement value 1
measurement_2	40069	Float	2	R	diplayed measurement value 2
channel	40071	Unsigned Integer	1	R	1 = channel 1 2 = channel 2
process	40072	Unsigned Integer	1	R	0 = no process 1 = measuring 2 = base 3 = calibration : 4 = cleaning 5 = priming 6 = measuring ortho phosphate 7 = flushing

Table 34 AMTAX inter 2 (2-channel) profile, from software version 2.6 , continued

Tag Name	Register #	Data Type	Length	R/W	Description
E_Meas	40073	Float	2	R	extinction to displayed measurement value
mes	40075	Float	2	R	channel mes
ref	40077	Float	2	R	channel ref
T	40079	Float	2	R	Tempertur

A.16 PHOSPHAX inter 2 (1-channel) profile, up to software version 2.6

Table 35 PHOSPHAX inter 2 (1-channel) profile, up to software version 2.6

Tag Name	Register #	Data Type	Length	R/W	Description
measurement	40001	Float	2	R	displayed measurement value
Unit	40003	Unsigned Integer	1	R	unit : mg/l = 0
Parameter	40004	Unsigned Integer	1	R	parameter : PO4-P = 15
Status	40005	Unsigned Integer	1	R	status: bit 15 = common error bit 3 = max.measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
Error	40006	Unsigned Integer	1	R	error code : 1: no tuning 2: test settings 3: security window not closed 4: humidity 5: internal buserror 6: no reaction (busdevice) 7: no reaction (busdevice direct) 8: timeout (busdevice) 9: timeout process 10: positioning error 11: SEDITAX/SIGMATAX error occurred 12: SEDITAX/SIGMATAX no sync 13: SEDITAX/SIGMATAX offline 14: no sample 15: fault signal 16: fault offset 17: temperature sensor 18: gain 19: calibration
Correction	40007	Float	2	R/W	Correction
Integration	40009	Unsigned Integer	1	R/W	integration: 1 = OFF 2 = 2 measurements ... 20 = 20 measurements
Meas_interval	40010	Unsigned Integer	1	R	Intervall : only valid with no SEDITAX : 0 = 5 min 1 = 10 min
Time	40011	Time	4	R/W	System real time clock
Sample_location	40015	String	5	R/W	sample location (max. 9 char. + 0)
Busname	40020	String	7	R/W	device BUS name (max. 12 char. + 0)
Cleaning_interval	40027	Unsigned Integer	1	R/W	cleaning interval : 0 = cleaning off 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 = 5d 144 = 6d 168 = 7d
Cleaning_start	40028	Unsigned Integer	1	R/W	cleaning hour : 0 = 00:00 ... 23 = 23:00
Cleaning_last	40029	Time	4	R	last cleaning
Measure	40033	Unsigned Integer	1	R/W	start measurement

Table 35 PHOSPHAX inter 2 (1-channel) profile, up to software version 2.6, continued

Tag Name	Register #	Data Type	Length	R/W	Description
Clean	40034	Unsigned Integer	1	R/W	start cleaning
Set_service	40035	Unsigned Integer	1	R/W	go to service menu
Measurement	40036	Float	2	R	diplayed measurement value
Process	40038	Unsigned Integer	1	R	0 = no process 1 = measuring 2 = base 3 = calibration 4 = cleaning 5 = priming 6 = measuring ortho phosphate 7 = flushing
E_Meas	40039	Float	2	R	extinction to diplayed measurment value
Mes	40041	Float	2	R	Mes
Ref	40043	Float	2	R	Ref

A.17 PHOSPHAX *inter 2* (1-channel) profile, from software version 2.6**Table 36 PHOSPHAX *inter 2* (1-channel) profile, from software version 2.6**

Tag Name	Register #	Data Type	Length	R/W	Description
measurement	40001	Float	2	R	displayed measurement value
Unit	40003	Unsigned Integer	1	R	unit : mg/l = 0
Parameter	40004	Unsigned Integer	1	R	parameter : PO4-P = 15
Status	40005	Unsigned Integer	1	R	status: bit 15 = common error bit 3 = max.measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
Error	40006	Unsigned Integer	1	R	error code : 1: no tuning 2: test settings 3: security window not closed 4: humidity 5: internal buserror 6: no reaction (busdevice) 7: no reaction (busdevice direct) 8: timeout (busdevice) 9: timeout process 10: positioning error 11: SEDITAX/SIGMATAX error occurred 12: SEDITAX/SIGMATAX no sync 13: SEDITAX/SIGMATAX offline 14: no sample 15: fault signal 16: fault offset 17: temperature sensor 18: gain 19: calibration
Correction	40007	Float	2	R/W	Correction
Integration	40009	Unsigned Integer	1	R/W	integration: 1 = OFF 2 = 2 measurements ... : 20 = 20 measurements
Meas_interval	40010	Unsigned Integer	1	R	Intervall : only valid with no SEDITAX : 0 = 5 min 1 = 10 min
Time	40011	Time	4	R/W	System real time clock
Sample_location	40015	String	5	R/W	sample location (max. 9 char. + 0)
Busname	40020	String	7	R/W	device BUS name (max. 12 char. + 0)
Cleaning_interval	40027	Unsigned Integer	1	R/W	cleaning interval : 0 = cleaning off 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 = 5d 144 = 6d 168 = 7d
Cleaning_start	40028	Unsigned Integer	1	R/W	cleaning hour : 0 = 00:00 ... 23 = 23:00
Cleaning_last	40029	Time	4	R	last cleaning

Table 36 PHOSPHAX inter 2 (1-channel) profile, from software version 2.6 , continued

Tag Name	Register #	Data Type	Length	R/W	Description
Measure	40033	Unsigned Integer	1	R/W	start measurement
Clean	40034	Unsigned Integer	1	R/W	start cleaning
Set_service	40035	Unsigned Integer	1	R/W	go to service menu
Measurement	40036	Float	2	R	diplayed measurement value
Process	40038	Unsigned Integer	1	R	0 = no process 1 = measuring 2 = base 3 = calibration 4 = cleaning 5 = priming 6 = measuring ortho phosphate 7 = flushing
E_Meas	40039	Float	2	R	extiction to diplayed measurment value
Mes	40041	Float	2	R	Mes
Ref	40043	Float	2	R	Ref

A.18 PHOSPHAX *inter 2* (2-channel) profile, up to software version 2.6**Table 37 PHOSPHAX *inter 2* (2-channel) profile, up to software version 2.6**

Tag Name	Register #	Data Type	Length	R/W	Description
measurement_1	40001	Float	2	R	diplayed measurement value 1
measurement_2	40003	Float	2	R	diplayed measurement value 2
unit	40005	Unsigned Integer	1	R	unit : mg/l = 0
parameter	40006	Unsigned Integer	1	R	parameter : PO4-P = 15
status_1	40007	Unsigned Integer	1	R	status 1 : bit 15 = common error bit 3 = max.measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
status_2	40008	Unsigned Integer	1	R	status 2 : bit 15 = common error bit 3 = max.measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
error	40009	Unsigned Integer	1	R	error code : 1: no tuning 2: test settings 3: security window not closed 4: humidity 5: internal buserror 6: no reaction (busdevice) 7: no reaction (busdevice direct) 8: timeout (busdevice) 9: timeout process 10: positioning error 11: SEDITAX/SIGMATAX error occurred 12: SEDITAX/SIGMATAX no sync 13: SEDITAX/SIGMATAX offline 14: no sample 15: fault signal 16: fault offset 17: temperature sensor 18: gain 19: calibration
correction_1	40010	Float	2	R/W	correction 1
correction_2	40012	Float	2	R/W	correction 2
integration_1	40014	Unsigned Integer	1	R/W	Integration 1 : 1 = OFF 2 = 2 measurements ... 20 = 20 measurements
integration_2	40015	Unsigned Integer	1	R/W	Integration 2 : 1 = OFF 2 = 2 measurements ... 20 = 20 measurements
ratio_chan_1/2	40016	Unsigned Integer	1	R/W	Ratio : measurments channel 1 / channel 2 : 01 ... 99
meas_interval	40017	Unsigned Integer	1	R	Intervall : only valid with no SEDITAX : 0 = 5 min 1 = 10 min
time	40018	Time	4	R/W	System real time clock

Table 37 PHOSPHAX inter 2 (2-channel) profile, up to software version 2.6, continued

Tag Name	Register #	Data Type	Length	R/W	Description
sample_location_1	40022	String	5	R/W	sample location channel 1 (max. 9 char. + 0)
sample_location_2	40027	String	5	R/W	sample location channel 2 (max. 9 char. + 0)
busname	40032	String	7	R/W	device BUS name (max. 12 char. + 0)
cleaning_interval	40039	Unsigned Integer	1	R/W	cleaning interval : 0 = cleaning off : 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 = 5d 144 = 6d 168 = 7d
cleaning_start	40040	Unsigned Integer	1	R/W	Cleaning hour : 0 = 00:00 ... 23 = 23:00
cleaning_last	40041	Time	4	R	last cleaning
measure	40045	Unsigned Integer	1	R/W	start measurement
clean	40046	Unsigned Integer	1	R/W	start cleaning
set_service	40047	Unsigned Integer	1	R/W	go to service menu
measurement_1	40048	Float	2	R	displayed measurement value 1
measurement_2	40050	Float	2	R	displayed measurement value 2
channel	40052	Unsigned Integer	1	R	1 = channel 1 : 2 = channel 2
process	40053	Unsigned Integer	1	R	0 = no process 1 = measuring 2 = base 3 = calibration 4 = cleaning 5 = priming 6 = measuring ortho phosphate 7 = flushing
E_Meas	40054	Float	2	R	extinction to displayed measurement value
mes	40056	Float	2	R	channel mes
ref	40058	Float	2	R	channel ref

A.19 PHOSPHAX *inter 2* (2-channel) profile, from software version 2.6

Table 38 PHOSPHAX *inter 2* (2-channel) profile, from software version 2.6

Tag Name	Register #	Data Type	Length	R/W	Description
measurement_1	40001	Float	2	R	displayed measurement value 1
measurement_2	40003	Float	2	R	displayed measurement value 2
unit	40005	Unsigned Integer	1	R	unit : mg/l = 0
parameter	40006	Unsigned Integer	1	R	parameter : PO4-P = 15
status_1	40007	Unsigned Integer	1	R	status 1 : bit 15 = common error bit 3 = max.measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
status_2	40008	Unsigned Integer	1	R	status 2 : bit 15 = common error bit 3 = max.measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
error	40009	Unsigned Integer	1	R	error code : 1: no tuning 2: test settings 3: security window not closed 4: humidity 5: internal buserror 6: no reaction (busdevice) 7: no reaction (busdevice direct) 8: timeout (busdevice) 9: timeout process 10: positioning error 11: SEDITAX/SIGMATAX error occured 12: SEDITAX/SIGMATAX no sync 13: SEDITAX/SIGMATAX offline 14: no sample 15: fault signal 16: fault offset 17: temperature sensor 18: gain 19: calibration
correction_1	40010	Float	2	R/W	correction 1
correction_2	40012	Float	2	R/W	correction 2
integration_1	40014	Unsigned Integer	1	R/W	Integration 1 : 1 = OFF : 2 = 2 measurements ... 20 = 20 measurements
integration_2	40015	Unsigned Integer	1	R/W	Integration 2 : 1 = OFF 2 = 2 measurements ... 20 = 20 measurements
ratio_chan_1/2	40016	Unsigned Integer	1	R/W	Ratio : measurments channel 1 / channel 2 : 01 ... 99
meas_interval	40017	Unsigned Integer	1	R	Intervall : only valid with no SEDITAX : 0 = 5 min 1 = 10 min
time	40018	Time	4	R/W	System real time clock

Table 38 PHOSPHAX inter 2 (2-channel) profile, from software version 2.6 , continued

Tag Name	Register #	Data Type	Length	R/W	Description
sample_location_1	40022	String	5	R/W	sample location channel 1 (max. 9 char. + 0)
sample_location_2	40027	String	5	R/W	sample location channel 2 (max. 9 char. + 0)
busname	40032	String	7	R/W	device BUS name (max. 12 char. + 0)
cleaning_interval	40039	Unsigned Integer	1	R/W	cleaning interval : 0 = cleaning off 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 = 5d 144 = 6d 168 = 7d
cleaning_start	40040	Unsigned Integer	1	R/W	Cleaning hour : 0 = 00:00 ... 23 = 23:00
cleaning_last	40041	Time	4	R	last cleaning
measure	40045	Unsigned Integer	1	R/W	start measurement
clean	40046	Unsigned Integer	1	R/W	start cleaning
set_service	40047	Unsigned Integer	1	R/W	go to service menu
measurement_1	40048	Float	2	R	diplayed measurement value 1
measurement_2	40050	Float	2	R	diplayed measurement value 2
channel	40052	Unsigned Integer	1	R	1 = channel 1 2 = channel 2
process	40053	Unsigned Integer	1	R	0 = no process 1 = measuring 2 = base 3 = calibration 4 = cleaning 5 = priming 6 = measuring ortho phosphate 7 = flushing
E_Meas	40054	Float	2	R	extinction to diplayed measurment value
mes	40056	Float	2	R	channel mes
ref	40058	Float	2	R	channel ref

A.20 PHOSPHAX sigma profile, up to software version 4.5

Table 39 PHOSPHAX sigma profile, up to software version 4.5

Tag Name	Register #	Data Type	Length	R/W	Description
measurement_GP	40001	Float	2	R	displayed measurement value GP
measurement_OR	40003	Float	2	R	displayed measurement value OR
unit	40005	Unsigned Integer	1	R	unit : mg/l = 0
parameter_GP	40006	Unsigned Integer	1	R	parameter : P = 13
parameter_OR	40007	Unsigned Integer	1	R	parameter : PO4-P =15
status	40008	Unsigned Integer	1	R	status: bit 15 = common error bit 3 = max.measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
error	40009	Unsigned Integer	1	R	error code : 1: no tuning 2: test settings 3: security window not closed 4: humidity 5: internal buserror 6: no reaction (busdevice) 7: no reaction (busdevice direct) 8: timeout (busdevice) 9: timeout process 10: positioning error 11: SEDITAX/SIGMATAX error occurred 12: SEDITAX/SIGMATAX no sync 13: SEDITAX/SIGMATAX offline 14: no sample 15: fault signal 16: fault offset 17: temperature sensor 18: gain 19: calibration
calib_standard	40010	Float	2	R	Standard
correction_GP	40012	Float	2	R/W	correction for measurement value GP
correction_OR	40014	Float	2	R/W	correction for measurement value OR
ratio_chan_1/2	40016	Unsigned Integer	1	R/W	Ratio : measurments channel 1 / channel 2 : 01 ... 99
time	40017	Time	4	R/W	System real time clock
busname	40021	String	7	R/W	device BUS name (max. 12 char. + 0)
cleaning_interval	40028	Unsigned Integer	1	R/W	cleaning interval : 0 = cleaning off 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 = 5d 144 = 6d 168 = 7d
cleaning_start	40029	Unsigned Integer	1	R/W	Cleaning hour : 0 = 00:00 ... 23 = 23:00
cleaning_last	40030	Time	4	R	last cleaning

Table 39 PHOSPHAX sigma profile, up to software version 4.5, continued

Tag Name	Register #	Data Type	Length	R/W	Description
calibration_interval	40034	Unsigned Integer	1	R/W	Kalibration intervall : 0 = kalibration off 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 = 5d 144 = 6d 168 = 7d
calibration_start	40035	Unsigned Integer	1	R/W	kalibration hour : 0 = 00:00 ... 23 = 23:00
calibration_last	40036	Time	4	R	last calibration
measure	40040	Unsigned Integer	1	R/W	start measurement
calibrate	40041	Unsigned Integer	1	R/W	start calibration
clean	40042	Unsigned Integer	1	R/W	start cleaning
set_service	40043	Unsigned Integer	1	R/W	go to service menu
cal_mes	40044	Float	2	R	mes-standard calibration
cal_ref	40046	Float	2	R	ref-standard calibration
cal_mes_N	40048	Float	2	R	mes-null calibration
cal_ref_N	40050	Float	2	R	ref-null calibration
cal_factor	40052	Float	2	R	calibration factor
measurement_GP	40054	Float	2	R	diplayed measurement value GP
measurement_OR	40056	Float	2	R	diplayed measurement value OR
process	40058	Unsigned Integer	1	R	0 = no process 1 = measuring 2 = base 3 = calibration 4 = cleaning 5 = priming 6 = measuring ortho phosphate 7 = flushing
E_Meas	40059	Float	2	R	extinction to diplayed measurment value
mes	40061	Float	2	R	Mes
ref	40063	Float	2	R	Ref
T	40065	Float	2	R	Temperatur

A.21 PHOSPHAX *sigma* profile, from software version 4.5

Table 40 PHOSPHAX *sigma* profile, from software version 4.5

Tag Name	Register #	Data Type	Length	R/W	Description
measurement_GP	40001	Float	2	R	diplayed measurement value GP
measurement_OR	40003	Float	2	R	diplayed measurement value OR
unit	40005	Unsigned Integer	1	R	unit : mg/l = 0
parameter_GP	40006	Unsigned Integer	1	R	parameter : P = 13
parameter_OR	40007	Unsigned Integer	1	R	parameter : PO4-P =15
status	40008	Unsigned Integer	1	R	status: bit 15 = common error bit 3 = max.measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
error	40009	Unsigned Integer	1	R	error code : 1: no tuning 2: test settings 3: security window not closed 4: humidity 5: internal buserror 6: no reaction (busdevice) 7: no reaction (busdevice direct) 8: timeout (busdevice) 9: timeout process 10: positioning error 11: SEDITAX/SIGMATAX error occurred 12: SEDITAX/SIGMATAX no sync 13: SEDITAX/SIGMATAX offline 14: no sample 15: fault signal 16: fault offset 17: temperature sensor 18: gain 19: calibration
calib_standard	40010	Float	2	R	Standard
correction_GP	40012	Float	2	R/W	correction for measurement value GP
correction_OR	40014	Float	2	R/W	correction for measurement value OR
ratio_chan_1/2	40016	Unsigned Integer	1	R/W	Ratio : measurments channel 1 / channel 2 : 01 ... 99
time	40017	Time	4	R/W	System real time clock
busname	40021	String	7	R/W	device BUS name (max. 12 char. + 0)
cleaning_interval	40028	Unsigned Integer	1	R/W	cleaning interval : 0 = cleaning off 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 = 5d 144 = 6d 168 = 7d
cleaning_start	40029	Unsigned Integer	1	R/W	Cleaning hour : 0 = 00:00 ... 23 = 23:00
cleaning_last	40030	Time	4	R	last cleaning

Table 40 PHOSPHAX sigma profile, from software version 4.5 , continued

Tag Name	Register #	Data Type	Length	R/W	Description
calibration_interval	40034	Unsigned Integer	1	R/W	Kalibration intervall : 0 = kalibration off 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 = 5d 144 = 6d 168 = 7d
calibration_start	40035	Unsigned Integer	1	R/W	kalibration hour : 0 = 00:00 ... 23 = 23:00
calibration_last	40036	Time	4	R	last calibration
measure	40040	Unsigned Integer	1	R/W	start measurement
calibrate	40041	Unsigned Integer	1	R/W	start calibration
clean	40042	Unsigned Integer	1	R/W	start cleaning
set_service	40043	Unsigned Integer	1	R/W	go to service menu
cal_mes	40044	Float	2	R	mes-standard calibration
cal_ref	40046	Float	2	R	ref-standard calibration
cal_mes_N	40048	Float	2	R	mes-null calibration
cal_ref_N	40050	Float	2	R	ref-null calibration
cal_factor	40052	Float	2	R	calibration factor
measurement_GP	40054	Float	2	R	diplayed measurement value GP
measurement_OR	40056	Float	2	R	diplayed measurement value OR
process	40058	Unsigned Integer	1	R	0 = no process 1 = measuring 2 = base 3 = calibration 4 = cleaning 5 = priming 6 = measuring ortho phosphate 7 = flushing
E_Meas	40059	Float	2	R	extinction to diplayed measurment value
mes	40061	Float	2	R	Mes
ref	40063	Float	2	R	Ref
T	40065	Float	2	R	Tempertur

A.22 PHOSPHAX *sigma* (industrial version) profile, up to software version 4.5

Table 41 PHOSPHAX *sigma* (industrial version) profile, up to software version 4.5

Tag Name	Register #	Data Type	Length	R/W	Description
measurement_GP	40001	Float	2	R	diplayed measurement value GP
measurement_OR	40003	Float	2	R	diplayed measurement value OR
measurement_PROD	40005	Float	2	R	diplayed measurement value PRODUCT
unit	40007	Unsigned Integer	1	R	unit : mg/l = 0
parameter	40008	Unsigned Integer	1	R	parameter : P = 13 PO4 = 14 PO4-P =15 P2O5 = 16
status	40009	Unsigned Integer	1	R	status: bit 15 = common error bit 3 = max.measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
error	40010	Unsigned Integer	1	R	error code : 1: no tuning 2: test settings 3: security window not closed 4: humidity 5: internal buserror 6: no reaction (busdevice) 7: no reaction (busdevice direct) 8: timeout (busdevice) 9: timeout process 10: positioning error 11: SEDITAX/SIGMATAX error occured 12: SEDITAX/SIGMATAX no sync 13: SEDITAX/SIGMATAX offline 14: no sample 15: fault signal 16: fault offset 17: temperature sensor 18: gain 19: calibration
calib_standard	40011	Float	2	R	Standard
correction_GP	40013	Float	2	R/W	correction for measurement value GP
correction_OR	40015	Float	2	R/W	correction for measurement value OR
correction_PROD	40017	Float	2	R/W	correction for measurement value PRODUCT
ratio_chan_1/2	40019	Unsig/Integer	1	R/W	Ratio : measurments channel 1 / channel 2 : 01 ... 99
time	40020	Time	4	R/W	System real time clock
busname	40024	String	7	R/W	device BUS name (max. 12 char. + 0)

Table 41 PHOSPHAX sigma (industrial version) profile, up to software version 4.5, continued

Tag Name	Register #	Data Type	Length	R/W	Description
cleaning_interval	40031	Unsigned Integer	1	R/W	cleaning interval: 0=cleaning off 24=1d 48=2d 72=3d 96=4d 120: 5d 144:6d 168=7d
cleaning_start	40032	Unsigned Integer	1	R/W	cleaning hour : 0 = 00:00 ... 23 = 23:00
cleaning_last	40033	Time	4	R	last cleaning
calibration_interval	40037	Unsigned Integer	1	R/W	Kalibration intervall : 0 = kalibration off 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 = 5d 144 = 6d : 168 = 7d
calibration_start	40038	Unsig/Integer	1	R/W	kalibration hour : 0 = 00:00 ... 23 = 23:00
calibration_last	40039	Time	4	R	last calibration
measure	40043	Unsigned Integer	1	R/W	start measurement
calibrate	40044	Unsig/Integer	1	R/W	start calibration
clean	40045	Unsigned Integer	1	R/W	start cleaning
set_service	40046	Unsigned Integer	1	R/W	go to service menu
cal_mes	40047	Float	2	R	mes-standard calibration
cal_ref	40049	Float	2	R	ref-standard calibration
cal_mes_N	40051	Float	2	R	mes-null calibration
cal_ref_N	40053	Float	2	R	ref-null calibration
cal_factor	40055	Float	2	R	calibration factor
measurement_GP	40057	Float	2	R	diplayed measurement value GP
measurement_OR	40059	Float	2	R	diplayed measurement value OR
measurement_PROD	40061	Float	2	R	diplayed measurement value PRODUCT
process	40063	Unsigned Integer	1	R	0=no process 1=measuring 2=base 3=calibration 4 = cleaning 5=priming 6=measuring ortho phosphate 7= lushing
E_Meas	40064	Float	2	R	extinction to diplayed measurment value
mes	40066	Float	2	R	Mes
ref	40068	Float	2	R	Ref
T	40070	Float	2	R	Temperatur

A.23 PHOSPHAX *sigma* (industrial version) profile, from software version 4.5

Table 42 PHOSPHAX *sigma* (industrial version) profile, from software version 4.5

Tag Name	Register #	Data Type	Length	R/W	Description
measurement_GP	40001	Float	2	R	displayed measurement value GP
measurement_OR	40003	Float	2	R	displayed measurement value OR
measurement_PROD	40005	Float	2	R	displayed measurement value PRODUCT
unit	40007	Unsigned Integer	1	R	unit : mg/l = 0
parameter	40008	Unsigned Integer	1	R	parameter : P = 13 PO4 = 14 PO4-P = 15 P2O5 = 16
status	40009	Unsigned Integer	1	R	status: bit 15 = common error bit 3 = max.measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
error	40010	Unsigned Integer	1	R	error code : 1: no tuning 2: test settings 3: security window not closed 4: humidity 5: internal buserror 6: no reaction (busdevice) 7: no reaction (busdevice direct) 8: timeout (busdevice) 9: timeout process 10: positioning error 11: SEDITAX/SIGMATAX error occurred 12: SEDITAX/SIGMATAX no sync 13: SEDITAX/SIGMATAX offline 14: no sample 15: fault signal 16: fault offset 17: temperature sensor 18: gain 19: calibration
calib_standard	40011	Float	2	R	Standard
correction_GP	40013	Float	2	R/W	correction for measurement value GP
correction_OR	40015	Float	2	R/W	correction for measurement value OR
correction_PROD	40017	Float	2	R/W	correction for measurement value PRODUCT
ratio_chan_1/2	40019	Unsig/Integer	1	R/W	Ratio : measurments channel 1 / channel 2 : 01 ... 99
time	40020	Time	4	R/W	System real time clock
busname	40024	String	7	R/W	device BUS name (max. 12 char. + 0)

Table 42 PHOSPHAX sigma (industrial version) profile, from software version 4.5 , continued

Tag Name	Register #	Data Type	Length	R/W	Description
cleaning_interval	40031	Unsigned Integer	1	R/W	cleaning interval: 0 = cleaning off 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 = 5d 144 = 6d 168 = 7d
cleaning_start	40032	Unsigned Integer	1	R/W	cleaning hour : 0 = 00:00 ... 23 = 23:00
cleaning_last	40033	Time	4	R	last cleaning
calibration_interval	40037	Unsigned Integer	1	R/W	Kalibration intervall : 0 = kalibration off 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 = 5d 144 = 6d 168 = 7d
calibration_start	40038	Unsig/Integer	1	R/W	kalibration hour : 0 = 00:00 ... 23 = 23:00
calibration_last	40039	Time	4	R	last calibration
measure	40043	Unsigned Integer	1	R/W	start measurement
calibrate	40044	Unsig/Integer	1	R/W	start calibration
clean	40045	Unsigned Integer	1	R/W	start cleaning
set_service	40046	Unsigned Integer	1	R/W	go to service menu
cal_mes	40047	Float	2	R	mes-standard calibration
cal_ref	40049	Float	2	R	ref-standard calibration
cal_mes_N	40051	Float	2	R	mes-null calibration
cal_ref_N	40053	Float	2	R	ref-null calibration
cal_factor	40055	Float	2	R	calibration factor
measurement_GP	40057	Float	2	R	diplayed measurement value GP
measurement_OR	40059	Float	2	R	diplayed measurement value OR
measurement_PROD	40061	Float	2	R	diplayed measurement value PRODUCT
process	40063	Unsigned Integer	1	R	0 = no process 1 = measuring 2 = base 3 = calibration 4 = cleaning 5 = priming 6 = measuring ortho phosphate 7 = lushing
E_Meas	40064	Float	2	R	extiction to diplayed measurment value
mes	40066	Float	2	R	Mes
ref	40068	Float	2	R	Ref
T	40070	Float	2	R	Tempertur

A.24 TOCTAX profile

Table 43 TOCTAX profile

Tag Name	Register #	Data Type	Length	R/W	Description
measurement	40001	Float	2	R	displayed measurement value
unit	40003	Unsigned Integer	1	R	unit : mg/l = 0
parameter	40004	Unsigned Integer	1	R	parameter : TOC = 21
status	40005	Unsigned Integer	1	R	status: bit 15 = common error bit 3 = max.measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
error	40006	Unsigned Integer	1	R	error code : 1: no tuning 2: test settings 3: security window not closed 4: humidity 5: internal buserror 6: no reaction (busdevice) 7: no reaction (busdevice direct) 8: timeout (busdevice) 9: timeout process 10: positioning error 11: SEDITAX/SIGMATAX error occurred 12: SEDITAX/SIGMATAX no sync 13: SEDITAX/SIGMATAX offline 14: no sample 15: fault signal 16: fault offset 17: temperature sensor 18: gain 19: calibration
calib_standard	40007	Float	2	R	standard – TOC
correction	40009	Float	2	R/W	Correction
time	40011	Time	4	R/W	System real time clock
busname	40015	String	7	R/W	device BUS name (max. 12 char. + 0)
cleaning_interval	40022	Unsigned Integer	1	R/W	cleaning interval : 0 = cleaning off 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 : 5d 144 : 6d 168 = 7d
cleaning_start	40023	Unsigned Integer	1	R/W	cleaning hour : 0 = 00:00 ... 23 = 23:00
cleaning_last	40024	Time	4	R	last cleaning

Table 43 TOCTAX profile, continued

Tag Name	Register #	Data Type	Length	R/W	Description
calibration_interval	40028	Unsigned Integer	1	R/W	Kalibration intervall : 0 = kalibration off 24 = 1d 48 = 2d 72 = 3d 96 = 4d 120 : 5d 144 : 6d 168 = 7d
calibration_start	40029	Unsigned Integer	1	R/W	Kalibration hour : 0 = 00:00 ... 23 = 23:00
calibration_last	40030	Time	4	R	last calibration
measure	40034	Unsigned Integer	1	R/W	start measurement
clean	40035	Unsigned Integer	1	R/W	start cleaning
calibrate	40036	Unsigned Integer	1	R/W	start calibration
set_service	40037	Unsigned Integer	1	R/W	go to service menu
cal_factor_1	40038	Float	2	R	calibration factor 1
cal_factor_2	40040	Float	2	R	calibration factor 2
cal_factor_3	40042	Float	2	R	calibration factor 3
measurement	40044	Float	2	R	displayed measurement value
process	40046	Unsigned Integer	1	R	0 = no process 1 = measuring 2 = base 3 = calibration 4 = cleaning 5 = priming 6 = measuring ortho phosphate 7 = flushing
E_Meas	40047	Float	2	R	extinction to displayed measurement value
mes	40049	Float	2	R	Mes
T	40051	Float	2	R	Temperature

A.25 SONATAX profile, from software version 3.8

Important Note: On the SONATAX, the timeout in the MODBUS master for the reply time must be set to at least 3 seconds.

Table 44 SONATAX profile, from software version 3.8

Tag Name	Register #	Data Type	Length	R/W	Description
Measurement	40001	Float	2	R	displayed measurement value
Unit	40003	Unsigned Integer	1	R/W	unit : m = 13 ft = 43
parameter	40004	Unsigned Integer	1	R/W	parameter : sludge level = 23 : sludge height = 24
status	40005	Unsigned Integer	1	R	status : bit 15 = common error bit 3 = max.measurement bit 2 = min. measurement bit 1 = measurement valid bit 0 = probe detectet
error	40006	Unsigned Integer	1	R	error code : bit 0 = EEPROM-Fehler bit 1 = Kal.Daten-Fehler bit 2 = G.Daten-Fehler bit 3 = W.-Profil erneuern bit 4 = Fehlmessung bit 5 = Wischer blockiert bit 6 = Wischer timeout bit 7 = Wischer fehlt bit 8 = Wischer aktiv
correction	40007	Float	2	R/W	correction
integration	40009	Unsigned Integer	1	R/W	integration
cleaning_interval	40010	Unsigned Integer	1	R/W	cleaning interval : 0 = 5min 1 = 10min 2 = 15min 3 = 30min 4 = 1h 5 = 2h 6 = 4h 7 = 6h 8 = 8h 9 = 12h
wiper_status	40011	Unsigned Integer	1	R/W	Read : wiper status : 1 = wiping 0 stop Write : wiper activation : 1 = activate wiper
time	40012	Time	4	R/W	System real time clock
busname	40016	String	6	R/W	device BUS name (max. 10 char. + 0)
wiper_profile	40022	Unsigned Integer	2	R	wiper profile
probe_depth	40024	Float	2	R/W	probe depth Lange: 0.01m-tank depth Hach: 0.00915m-tank depth

Table 44 SONATAX profile, from software version 3.8 , continued

Tag Name	Register #	Data Type	Length	R/W	Description
motor_cycles	40026	Unsigned Integer	2	R	motor cycles
tank_depth	40028	Float	2	R/W	tank depth Lange: 1-12m Hach: 0.915-12.19m
Service_on	40030	Time	4	R	date of the next service

A.26 SONATAX profile, from software version 3.9

Table 45 SONATAX profile, from software version 3.9

Name	Register	Type	Length	R/W	Describton
Error classes	40001	Unsigned Integer	1	R	Error classes: bit 2 = Cleaning Error bit 3 = Measuring module Error bit 4 = Settings Error bit 5 = Hardware Error bit 15 = Maintenance Warning
status	40002	Unsigned Integer	1	R/W	Status: bit 1 (R/W) = Cleaning start / in progress bit 2 (R/W) = Enter Service/Maintenance menu bit 3 = Common Error bit 4 = Measurement 0 valid
measurement	40003	Float	2	R	diplayed measurement value
unit	40005	Unsigned Integer	1	R/W	unit : m = 13 : ft = 43
parameter	40006	Unsigned Integer	1	R/W	parameter : sludge level = 23 : sludge height = 24
error	40007	Unsigned Integer	1	R	error code: bit 0 = EEPROM-Fehler bit 1 = Kal.Daten-Fehler bit 4 = Fehlmessung bit 5 = Wischer blockiert bit 6 = Wischer timeout warning code: bit 2 = G.Daten-Fehler bit 3 = W.-Profil erneuern bit 7 = Wischer fehlt
correction	40008	Float	2	R/W	correction: 0.9 - 1.1
integration	40010	Unsigned Integer	1	R/W	integration: n = 1 - 60 (delaytime: n * 10 seconds)
cleaning_interval	40011	Unsigned Integer	1	R/W	cleaning interval : 0 = 5min 1 = 10min 2 = 15min 3 = 30min 4 = 1h 5 = 2h 6 = 4h 7 = 6h 8 = 8h 9 = 12h
wiper_status	40012	Unsigned Integer	1	R/W	Read: 1=wiper active 0=stop / Write: 1=activate wiper
time	40013	Time	4	R/W	System real time clock
busname	40017	String	6	R/W	device BUS name (max. 10 char. + 0)
wiper_profile	40023	Unsigned Integer	2	R	wiper profile
profile_reset_value	40025	Unsigned Integer	2	R	reset value for the wiper profile
motor_cycles	40027	Unsigned Integer	2	R	motor cycles
measurement	40029	Float	2	R	diplayed measurement value

A.27 VOLITAX profile

A.27.1 VOLITAX controller profile

Table 46 VOLITAX controller profile

Tag Name	Register #	Data Type	Length	R/W	Description
time	40001	Time	4	R/W	System real time clock
status	40005	Unsigned Integer	1	R	status : bit 15 = common error
error	40006	Unsigned Integer	1	R	error code : 1: no tuning 2: test settings 4: humidity 5: internal buserror 6: no reaction (busdevice) 7: no reaction (busdevice direct) 8: timeout (busdevice) 9: timeout process 10: positioning error 14: no sample 15: fault signal 16: fault offset 18: gain 19: calibration
busname	40007	String	6	R/W	device BUS name (max. 10 char. + 0)
-1	-1	String	1	R	reserved Port for probes

A.27.1.1 VOLITAX sensor profile

Table 47 VOLITAX sensor profile

Tag Name	Register #	Data Type	Length	R/W	Description				
measurement	40001	Float	2	R	displayed measurement value SV30				
measurement	40003	Float	2	R	displayed measurement value SV current				
measurement	40005	Float	2	R	Displayed measurement value SVI				
measurement	40007	Unsigned Integer	1	R	SV time (minutes)				
status	40008	Unsigned Integer	1	R	Status: bit0=internal status bit bit1= see table below! bit2=error bit3=Measurement SV30; valid=1, invalid=0 bit4, 5= see table below! bit6=internal status bit bit7= see table below!				
					bit 1	bit 4	bit 5	bit 7	Probe state
					0	0	0	0	Initialization after power up
					0	1	0	0	Initialzartion valve
					0	0	1	0	New measurement cycle
					0	1	1	0	Empty probe
					0	0	0	1	Valve opens
					0	1	0	1	Fill probe
					0	0	1	1	Valve closes
					0	1	1	1	Measuring
					1	0	0	0	Service: valve opens
					1	1	0	0	Service: valve is open
					1	0	1	0	Service: valve position unknown
					1	1	1	0	Cleaning probe: valve opens
					1	0	0	1	Cleaning probe: cleaning
					1	1	0	1	Cleaning probe: valve closes
error	40009	Integer	2	R	Error code: bit0=moisture bit1=invalid valve angle bit2=valve angel deviation > 20° bit3=valve position unknown bit4=valve blocks bit5,6=valve error; bit7=compressor blocks bit8,9,10,11=internal error bit12=invalid service data bit13=invalid probe data bit14=valve service bit 15=compressor service bit16=small inspection bit17=large inspection bit18=compressor does not start;				
correction	40011	Float	2	R	Correction				
time	40013	Time	4	R/W	System real time clock				

Table 47 VOLITAX sensor profile, continued

Tag Name	Register #	Data Type	Length	R/W	Description
sample_location	40017	String	5	R/W	Sample location (8 chars + 0)
serial_number	40022	Unsigned Integer	2	R	Production number
large_inspection	40024	Unsigned Integer	2	R	Large inspection (days)
small_inspection	40026	Unsigned Integer	2	R	Small inspection (days)
operating_hours_compressor	40028	Unsigned Integer	2	R	Operating hours of compressor
operating_hours_valve	40030	Unsigned Integer	2	R	Operating hours of valve
operating_hours	40032	Unsigned Integer	2	R	Operating hours of probe

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