

# SIEMENS



## M-Bus Central Unit OZW10

## Operating Manual



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# 1 About the Operating Manual

## 1.1 Contents

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The present Operating Manual contains all information essential for optimum use of the M-bus central unit.

First, a brief description of the M-bus system and individual components is given.

Then, you will be introduced step by step to the operation of the M-bus central unit, which has 7 buttons and an LCD. The display is read with the help of operating cards. On the operating cards, one operating line is assigned to each reading and each setting that can be made.

The next chapter leads you through the use of the operating cards. For each operating line, a description is given of what the display means and of how values are to be set.

Operating cards 1 to 3 contain readings only while the settings are made with operating card 4 – if not yet made at the time of commissioning.

The Operating Manual also contains notes on commissioning, the replacement of faulty units, communication with a PC, the billing file and a summary of potential errors. These sections of the manual are intended for use by service staff who perform this kind of work.

## 1.2 Notes on the software version of the M-bus central unit

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The present Operating Manual describes the use and the functions of the M-bus central unit of version 4.0 or higher. Version 1.0 was introduced for the remote readout of SONOBYR® WSD... heat meters and consumption meters featuring a pulse output.

With version 2.0 or higher, the majority of the standards-compliant M-bus devices can be acquired. The M-bus central

unit supports extended addressing, new data and data formats.

The number of devices was increased from 250 to a maximum of 750 (depending on the types of devices).

Version 3.0 also allows controllers to be operated from a remote location. A new transparent data channel enables the connected devices to be directly accessed from the PC. This affords fast trend functions and access from the PC to all device data that can be reached via M-bus. In the event of fault, the M-bus central unit of version 3.0 or higher automatically delivers alarm status messages to a PC.

All M-bus central units using software version 3.0 should be equipped with matching operating cards. If, after an update, the operating cards of a previous version are used, the M-bus central unit can nonetheless be operated with the help of this Operating Manual.

**Versions 4.0 and higher** now support the displayed values of tariff 1 and tariff 2 on the last set day. For Siemeca™ AMR devices, the radio-based network and the radio cell can be displayed, in addition to the M-bus address. During the search run, the current Baud rate, the M-bus address and the customer number are displayed. In the billing file, tariff 1 and tariff 2 on the last set day, as well as the radio-based network and the radio cell will also be saved. For SONOHEAT® heat meters, new error codes are supported.

### 1.3 Compatibility list

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Using the compatibility list, it is possible to see which applications and devices are supported by which system components and versions.

### 1.3.1 Applications

Type of product	OZW10				ACS7...		ACS10	ACS110	ACS111	ACS900	ACS910	
	Version	1.0	From 2.0	From 3.0	From 4.0	From 1.10	From 3.0	2.14	From 1.10	From 1.10	From 3.0	From 1.20
Operating cards												
• Access to OZW10 process image	•	•	•	•	•	•	•	•	•			
• Direct access to device data			•	•	•	•	•	•	•			
Parameterization												
• OZW10 setting values	•	•	•	•	•	•	•	•	•			
• Direct access to device data			•	•	•	•	•	•	•			
File transfer	•	•	•	•	•	•	•	•	•			
Trend / Registration												
• Access to OZW10 process image	•	•	•	•	(•)	•	•	•	•			
• Direct access to device data			•	•	(•)	•	•	•	•			
Commissioning report			•	•	(•)	•	•	•	•			
Plant diagrams			•	•	•	•			•			
Alarming												
• Display	•	•	•	•								
• Alarm relay	•	•	•	•								
• PC			•	•	•	•				•		
Batchjob	(•)	(•)	•	•	(•)	•						•

• = possible

(•) = possible with restrictions

### 1.3.2 M-bus devices

Type of product	OZW10				ACS7...		ACS10	ACS110	ACS111	ACS900	ACS910
	1.0	From 2.0	From 3.0	From 4.0	From 1.10	From 3.0	2.14	From 1.10	From 1.10	From 3.0	From 1.20
SONOHEAT <sup>®</sup> 2WR4/5		(•)	(•)	•	(•)	•	(•)	(•)	(•)	(•)	(•)
SONOGR <sup>®</sup> WSD...	•	•	•	•	•	•	•	•	•	•	•
SONOGR <sup>®</sup> energy		(•)	•	•	•	•	(•)	•	•	•	•
MEGATRON <sup>®</sup> 2		(•)	•	•	•	•	(•)	•	•	•	•
AEW21.2		•	•	•	•	•	•	•	•	•	•
MEMOTRON <sup>®</sup> WHE21		•	•	•	•	•	•	•	•	•	•
Relay PadPulsM1	•	•	•	•	•	•	•	•	•	•	•
SIGMAGR <sup>®</sup> RVD2...			•	•	•	•		•	•	•	•
SIGMAGR <sup>®</sup> RVP97			•	•	•	•		From 1.20	From 1.20	From 3.10	From 1.30
Siemeca <sup>™</sup> AMR devices		(•)	(•)	•	(•)	•	(•)	(•)	(•)	(•)	(•)
Non-Siemens product		(•)	(•)	(•)	(•)	(•)	(•)	(•)	(•)	(•)	(•)

• = possible

(•) = possible with restrictions

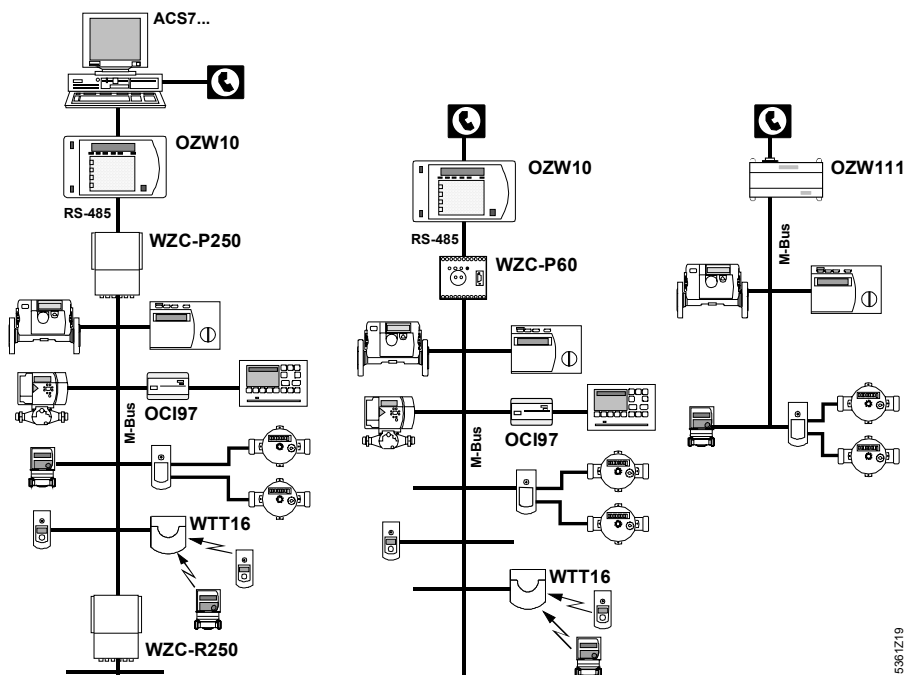


## 2 General information about the M-bus system

### 2.1 System overview

The OZW10 or OZW111 is the central device on the bus. It communicates with the connected consumption meters and controllers via M-bus.

When using the OZW10 M-bus central unit (version V4.0 or higher), consumption meters of the Siemeca™ AMR system can also be integrated via WTX16 or WTT16 network nodes. The M-bus central unit can be connected to a PC which has the ACS7... plant operating software installed, either directly or via modem.



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## **2.2 M-bus central unit OZW10**

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This M-bus central unit is used for the remote readout, remote operation and supervision of an M-bus plant with consumption meters and controllers having an M-bus connection facility conforming to EN 1434-3, and of consumption meters of the Siemeca™ AMR system.

For that purpose, a WZC-P... signal converter is required.

## **2.3 M-bus central unit OZW111**

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This M-bus central unit is used for the remote readout, remote operation and supervision of an M-bus plant with a maximum of 5 consumption meters and controllers having an M-bus connection facility conforming to EN 1434-3.

## **2.4 ACS7... plant operating software**

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PC software for the remote operation, supervision and commissioning of heating, ventilation and district heating plants and for the remote readout of consumption data.

Windows version.

## **2.5 Signal converter WZC-P250**

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Signal converter designed for the conversion of RS-485 signals to M-bus signals. A maximum of 250 M-bus devices can be connected.

## **2.6 Signal converter WZC-P60**

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Signal converter designed for the conversion of RS-485 signals to M-bus signals. A maximum of 60 M-bus devices can be connected.

## **2.7 Repeater WCZ-R250**

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Amplifying device for the extension of bus lines in M-bus plants. A maximum of 250 M-bus devices can be connected.

## **2.8 SONOHEAT<sup>®</sup> 2WR4 and 2WR5**

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Ultrasonic heat meters.  
Data exchange via M-bus module.

## **2.9 MEGATRON<sup>®</sup>2 WFM... / N... / Q... / R...**

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Electronic impeller type heat and cooling energy meters  
featuring an integrated M-bus interface.

## **2.10 SONOGRYR<sup>®</sup> energy WSF... / G... / J...**

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Ultrasonic heat meters.  
Exchange of data via M-bus module WZF-MB or combi  
module WZF-MP.

## **2.11 SONOGRYR<sup>®</sup> WSD...**

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Ultrasonic heat meters.  
Exchange of data via M-bus module WZD-MB.

## **2.12 Pulse adapter AEW21.2**

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The pulse adapter acquires and handles the pulses from 1 or  
2 consumption meters.  
With integrated M-bus interface.

## **2.13 SIGMAGR<sup>®</sup> RVD2... district heating controllers**

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Heating controllers for plants with district heat connection.  
With integrated M-bus interface.

## **2.14 SIGMAGR<sup>®</sup> RVP97 district heating controllers**

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Heating controllers for plants with district heat connection.  
Exchange of data via M-bus interface OCI97.

## **2.15 Siemeca™ AMR devices**

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The consumption meters of the Siemeca™ AMR system can be integrated via WTX16 or WTT16 network nodes.

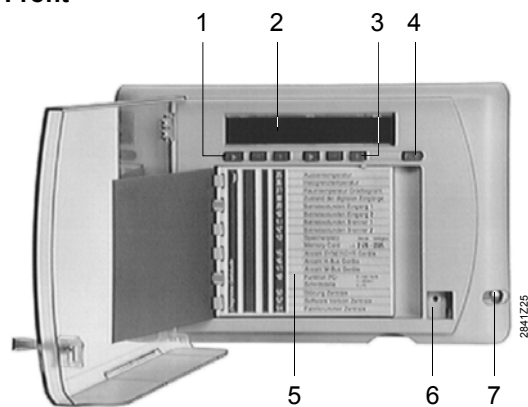
## **2.16 Devices of other manufacture**

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On request.

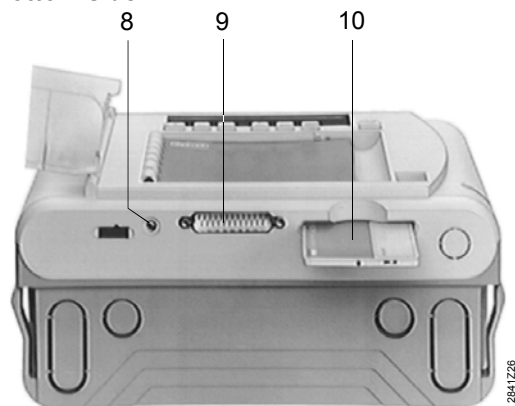
### 3 Operating the M-bus central unit

#### Front



- 1 Buttons on the left
- 2 Display
- 3 Buttons on the right
- 4 Storage button
- 5 Operating cards
- 6 Lock
- 7 Hole for sealable fixing screw







#### Bottom side



- 8 Jack for modem's power supply
- 9 RS-232 port
- 10 Memory card

### 3.1 Buttons and display

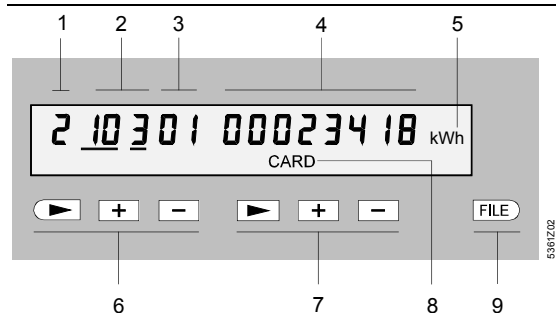
The display is divided into 2 sections:

- The left side of the display represents the "Address". It defines the allocation of the displayed variable (function, measured value, purpose, etc.).  
The 3 buttons on the left, ,  and , are assigned to that part of the display
- The right side of the display shows the numerical value of the variable. The 3 buttons on the right, ,  and , are assigned to that part of the display

All variables are displayed as numerical values. Every number shown on the display can be interpreted with the help of the operating cards located under the display.

The makeup of the operating cards is matched to the display. Each setting and each reading is assigned one operating line on the operating cards. The operating lines are structured according to the fields of application. For switching from the standard display (time of day) to the operating lines, one of the buttons on the left must be pressed.

### 3.2 Display



- 1 Operating card (field of application)
- 2 Device number
- 3 Input or read function (operating line number)
- 4 Numerical value of the selected input and read function
- 5 Unit of the numerical value
- 6 Buttons on the left
- 7 Buttons on the right
- 8 Additional information
- 9 FILE button

### 3.3 Left side of the display

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The left side of the display comprises three 1-, 2- and 3-digit numbers. They define the **input or display function** whose numerical value can be read on the right side of the display.



- The first number defines the field of application. The number is identical with that on the operating cards:
  - 1: Billing – Device number
  - 2: Diagnosis – Device number
  - 3: Diagnosis – M-bus central unit
  - 4: Startup / service
- The second number (if present) is the number of the device. Every device has its own address in the form of a 3-digit number. By selecting the appropriate number, you can call each device from the M-bus central unit and retrieve its data. The numbering is made in the same order data are acquired. If all devices have primary addresses, the parameters of the M-bus central unit can be set with the PC to ensure the numbering of the devices corresponds to that of the primary addresses
- The third number always stands for an input or read function. For the meaning of the numbers, please refer to the operating cards which have the numbers listed.  
Chapter 4 “Description of the operating lines“ contains detailed information about each operating line. You will find certain operating lines on more than one page since they are used with several fields of application

You can select and adjust the 3 blocks of numbers with the buttons on the left, located below the left side of the display. The buttons provide the following functions:












Selecting the number:

When pressing this button, a pointer jumps from one number to the next. The pointer is a bar that underlines the number. The underlined number or the relevant function is addressed and can then be adjusted. You can read the numerical value on the right side of the display.

-  Incrementing the number:  
When pressing this button, you increase the underlined numerical value.
-  Decrementing the number:  
When pressing this button, you decrease the underlined numerical value.




A function is selected as follows:

For example, in the field of application “Diagnosis – Device number“ (operating card 2), the flow temperature of device 46 shall be read:

1. Press button  until the pointer is located below the first number.
2. Press button  or  until the first number reads 2.
3. Press button  until the pointer is located below the second number.
4. Press button  or  until the second number reads 46.
5. Press button  until the pointer is located below the third number.
6. Press button  or  until the third number reads 73.

You have thus selected the required function.

It should be noted however that the values displayed represent the last reading.

Now, if you wish to view the flow temperature of all devices, press button  to return with the pointer to the device number and readjust it with button  or . The respective numerical values will be shown.

### 3.4 Right side of the display


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
The right side of the display can comprise up to 8 digits. It shows **the numerical value of the input or read function** that you have selected with the left side of the display.


In the case of setting functions, you set the required value with the buttons on the right. All shaded operating lines on the operating cards contain reading data which are not adjustable. The buttons on the right are then inactive.



Meaning of the buttons:


 Selecting a digit:  
When pressing this button, the pointer will move. The digit or part of the value underlined by the pointer can be readjusted.

 Incrementing the value:  
When pressing this button, you increase the value of the underlined digit.

 Decrementing the value:  
When pressing this button, you decrease the value of the underlined digit.

A value is entered as follows:






For example, plant number 5234 shall be entered on operating card 4:

1. Select operating card "4 – Startup / service" on the left side of the display and call variable "01 Plant number".
2. Press button  on the right until the pointer is located below the first digit that you want to change.

*Note:*

The display comprises 8 digits. The zeros before the number to be entered must be taken into account.

Hence: 00005234!


3. Press button  or  until the first digit reads 5.
4. Press button  until the pointer is located below the second digit that you want to change.
5. Press button  or  until the second digit reads 2, etc.

You have thus entered the number you require. It will be stored when the data field is left. This means that there is no other button to confirm the entry.

In the case of physical variables, such as temperature, electrical energy, etc., the respective unit is indicated to the right of the numerical value (°C, kWh, etc.).

### 3.5 FILE button

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When pressing the  button, all consumption data required for billing will be stored on the memory card.



During data transmission, the display shows **DATA**. The memory card may be removed from the M-bus central unit only after **DATA** has disappeared from the display.

In chapter 8 “Billing file” of this Operating Manual, you will find an example of a billing file with explanations.

### 3.6 Deleting inputs or resetting to the standard value

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Inputs can be deleted or reset to their initial values by proceeding as follows:



1. Call the respective line.
2. Press **simultaneously** buttons  and  on the right. After 2 seconds, dashes appear on the display. Keep the buttons depressed. After another 2 seconds, the setting value will be deleted or overwritten with the standard value.



If the 2 buttons are released while the display shows the dashes, the deletion will be aborted.


### 3.7 Changeover of display

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Some of the displays have additional display levels. To reach other display levels, proceed as follows:

1. Select the relevant operating line.
2. Press simultaneously buttons  and  on the right side.

The value of the second level now appears. Depending on the operating line, a change is made to the first display level after 5 seconds, or after pressing again buttons  and  on the right.

3. A change to other display levels is made by pressing button  on the right.

### 3.8 Triggering actions

---

To trigger actions, such as updating data of devices, proceed as follows,:

1. Select the required operating line.
2. Press simultaneously buttons  and  on the right.  
After 2 seconds, the value changes from 0 to 1, indicating that the action is now performed.

### 3.9 Display during operation

---

In normal operation, the display shows the weekday (1 = Monday) and the time of day (standard display).

When retrieving variables, it is always the value last read that appears on the display. The time of the last reading is given on lines 33 and 34. If the current values of the devices shall be displayed, they must be updated via operating line 98 of this operating card.

After 20 minutes, the display will automatically return to the standard reading.

Depending on the operating state, the following additional information will also appear:

- DATA = data are loaded to a communication partner (PC, memory card, etc.)
- CARD = memory card is inserted and has been accepted
- ERROR = error in the system
- BAT = exhausted battery of the memory card or of the M-bus central unit (operating line 50 delivers a precise fault diagnosis a detailed description of which is given later)

### 3.10 Data security and data protection

---

To give consideration to security and protection, the data of the individual devices and those of the M-bus central unit are protected in the following manner:

- The transparent cover protects the operating section of the M-bus central unit against tampering. It can only be opened with the appropriate key

- Certain data can be locked to prevent them from being displayed.  
This is accomplished through intervention in the M-bus central unit, an operation that can only be performed by authorized service staff
- The fixing screw, which secures the operating section of the M-bus central unit to the base, is lead-sealed

## 4 Description of the operating lines

---

There are basically 2 kinds of functions:

- Setting functions: You can alter the numerical value of the variable shown
- Read function: Here, you can read actual values, statuses, etc. The operating cards show these fields **highlighted**

### 4.1 Operating card 1 – Billing

---

Operating card 1 contains data that are required for billing. This operating card only contains read functions. Hence, values cannot be altered here.

All operating lines of operating card 1 relate to data of the various devices. For this reason, always select the number of the respective device first.

The values displayed represent **the last reading**. If the device number flashes,

- the last reading is not yet completed, or
- communication with the device is faulty (error code 34: refer to chapter 9 "List of errors")

In that case, the values displayed are those of the last successful reading. The reading can be made (or may have been made) automatically (periodically) or manually (also refer to operating line 98 of this operating card).

---

#### 01 Customer number

---

Here, you can read the customer-specific number of the device. The factory-set number is usually identical with the production number. With certain types of devices, the number can be directly set.

---

#### 02 Cumulated energy / Meter 1

---

Here, the cumulated amount of energy or the heating cost units are displayed.

When pressing buttons  and  on the right, the display

21/64

will switch to the meter reading of the additional pulse input “Meter 1“.

The readings that can be displayed reach from 0.001 to 1 kWh.

---

**03** Cumulated volume / Meter 2

---

Here, the cumulated volume is displayed.

When pressing buttons  and  on the right, the display will switch to the meter reading of the additional pulse input “Meter 2“.

The readings that can be displayed reach from 0.001 l to 1 m<sup>3</sup>.

---

**04** Operating hours

---

The number of operating hours of the device are displayed.  
The unit used is hours (h).

---

**07** Energy last set day / Meter 1 last set day

---

Here, the cumulated energy or the heating cost units on the last set day are displayed.

When pressing buttons  and  on the right, the display will switch to the meter reading of an additional pulse input “Meter 1“ on the last set day.

The readings that can be displayed reach from 0.001 to 1 kWh.

---

**08** Volume last set day / Meter 2 last set day

---

Here, the cumulated volume on the last set day is displayed.

When pressing buttons  and  on the right, the display will switch to the meter reading of an additional pulse input “Meter 2“ on the last set day.

The readings that can be displayed reach from 0.001 l to 1 m<sup>3</sup>.

---

**10** Date last set day

---

Here, you find the date of the last set day. The date of the set day can only be changed on the meter itself.

---

**11** Energy / Meter 1 – last but one set day

---

Here, the cumulated energy or the heat cost units of the last but one set day are displayed.

When pressing buttons  and  on the right, the display will switch to the meter reading on the last but one set day of an additional pulse input "Meter 1".

The readings that can be displayed reach from 0.001 to 1 kWh.

---

**12** Volume / Meter 2 – last but one set day

---

Here, the cumulated volume on the last but one set day is displayed.

When pressing buttons  and  on the right, the display will switch to the meter reading on the last but one set day of an additional pulse input "Meter 2".

The readings that can be displayed reach from 0.001 l to 1 m<sup>3</sup>.

---

**14** Date last but one set day

---

Here, you find the date of the last but one set day. The date of the set day can only be changed on the meter itself.

---

**15** Date previous month

---

Here, you find the date of the last monthly storage.

---

**21** Meter reading previous month

---

The operating line shows you the meter reading at the end of the previous month.

When pressing buttons  and  on the right, the display will show the meter reading 13 months ago.

The readings that can be displayed reach from 0.001 l to 1 m<sup>3</sup> and from 0.001 to 1 kWh.

---

**22** Meter reading 2 months ago

---

This operating line shows you the meter reading 2 months ago.

When pressing buttons  and  on the right, the display will show the meter reading 14 months ago.

The readings that can be displayed reach from 0.001 l to 1 m<sup>3</sup> and from 0.001 to 1 kWh.

---

**23** Meter reading 3 months ago

---

This operating line shows you the meter reading 3 months ago.

When pressing buttons  and  on the right, the display will show the meter reading 15 months ago.

The readings that can be displayed reach from 0.001 l to 1 m<sup>3</sup> and from 0.001 to 1 kWh.

---

**24** Meter reading 4 months ago

---

This operating line shows you the meter reading 4 months ago.

When pressing buttons  and  on the right, the display will show the meter reading 16 months ago.

The readings that can be displayed reach from 0.001 l to 1 m<sup>3</sup> and from 0.001 to 1 kWh.

---

**25** Meter reading 5 months ago

---

This operating line shows you the meter reading 5 months ago.

When pressing buttons  and  on the right, the display will show the meter reading 17 months ago.

The readings that can be displayed reach from 0.001 l to 1 m<sup>3</sup> and from 0.001 to 1 kWh.



---

**26** Meter reading 6 months ago

---

This operating line shows you the meter reading 6 months ago.

When pressing buttons  and  on the right, the display will show the meter reading 18 months ago.

The readings that can be displayed reach from 0.001 l to 1 m<sup>3</sup> and from 0.001 to 1 kWh.

---

**27** Meter reading 7 months ago

---

This operating line shows you the meter reading 7 months ago.

When pressing buttons  and  on the right, the display will show the meter reading 19 months ago.

The readings that can be displayed reach from 0.001 l to 1 m<sup>3</sup> and from 0.001 to 1 kWh.

---

**28** Meter reading 8 months ago

---

This operating line shows you the meter reading 8 months ago.

When pressing buttons  and  on the right, the display will show the meter reading 20 months ago.

The readings that can be displayed reach from 0.001 l to 1 m<sup>3</sup> and from 0.001 to 1 kWh.

---

**29** Meter reading 9 months ago

---

This operating line shows you the meter reading 9 months ago.

When pressing buttons  and  on the right, the display will show the meter reading 21 months ago.

The readings that can be displayed reach from 0.001 l to 1 m<sup>3</sup> and from 0.001 to 1 kWh.

---

**30** Meter reading 10 months ago

---

This operating line shows you the meter reading 10 months ago.

When pressing buttons  $\boxed{-}$  and  $\boxed{+}$  on the right, the display will show the meter reading 22 months ago.

The readings that can be displayed reach from 0.001 l to 1 m<sup>3</sup> and from 0.001 to 1 kWh.

---

### 31 Meter reading 11 months ago

---

This operating line shows you the meter reading 11 months ago.

When pressing buttons  $\boxed{-}$  and  $\boxed{+}$  on the right, the display will show the meter reading 23 months ago.

The readings that can be displayed reach from 0.001 l to 1 m<sup>3</sup> and from 0.001 to 1 kWh.

---

### 32 Meter reading 12 months ago

---

This operating line shows you the meter reading 12 months ago.

When pressing buttons  $\boxed{-}$  and  $\boxed{+}$  on the right, the display will show the meter reading 24 months ago.

The readings that can be displayed reach from 0.001 l to 1 m<sup>3</sup> and from 0.001 to 1 kWh.

---

### 33 Reading date

---

Here, you find the date on which the device was last read by the M-bus central unit (date of M-bus central unit).

---

### 34 Reading time

---

Here, you find the time of day at which the device was last read by the M-bus central unit (time of day of M-bus central unit).

---

### 50 Fault

---

On this operating line, an error code (00...99) is displayed for every device. Devices with no error have error code 00. For the meaning of the error code, refer to chapter 9 "List of errors". All devices are checked for faults when periodically interrogating them according to setting value "Reading inter-

val" (refer to operating card 4). For controllers, it is also possible to define a shorter reading interval according to setting value "Alarm interval".

If the device does not respond to a data interrogation, the M-bus central unit will generate error code 34 (communication breakdown). Only the most severe error of each device can be displayed.

---

**51** Duration of fault

---

The duration of fault is given in hours and indicates the period of time during which the fault was present at the device.

---

**69** Maximum

---

Here, the maximum of all mean values of power or flow rate during a measurement interval of the last billing period is displayed. The readings that can be displayed reach from 0.001 to 1 kW and from 0.001 l/h to 1 m<sup>3</sup>/h.

---

**70** Date of maximum

---

Here, the date on which the maximum occurred is displayed.

---

**87** Medium

---

Here, you can see the type of medium measured:

- 0 = other medium
- 1 = oil
- 2 = electricity
- 3 = gas
- 4 = heat
- 5 = steam
- 6 = hot water
- 7 = water
- 8 = heat cost allocator
- 9 = compressed air
- 10 = refrigeration
- 11 = refrigeration

- 12 = heat
- 13 = heat / refrigeration
- 20 = bus / system
- 21 = cold water
- 22 = pressure
- 23 = A/D converter
- 32 = controller

---

**93** Tariff 1

---

Here, the meter reading displayed is the reading generated according to the "Tariff 1" function.

Press buttons  and  on the right to show tariff 1 on the last set day. After 5 seconds, tariff 1 appears again.

The readings that can be displayed reach from 0.001 to 1 kWh and from 0.001 l to 1 m<sup>3</sup>.

---

**94** Tariff 2

---

Here, the meter reading displayed is the reading generated according to the "Tariff 2" function.

Press buttons  and  on the right to show tariff 2 on the last set day. After 5 seconds, tariff 2 appears again.

The readings that can be displayed reach from 0.001 to 1 kWh and from 0.001 l to 1 m<sup>3</sup>.

---

**98**   Updating M-bus device

---

When pressing simultaneously buttons  and  on the right for 2 seconds, the data of the selected device are retrieved. After 2 seconds, the number on the right side of the display changes briefly from 0 to 1, indicating that the device is being interrogated. Then, the buttons can be released. The device number on the display flashes until the current data of the device are available in the M-bus central unit. After readout, this function of the relevant device will be locked for one minute in order to prevent too frequent readings.

## 4.2 Operating card 2 – Diagnosis

---

All operating lines of operating card 2 relate to data of the devices. For this reason, you always have to select the number of the respective device first.

The data displayed are those **of the last reading**. Updating the data can be triggered on operating line 98, individually for each device.

Operating card 2 only contains read functions. Numerical values cannot be changed here.

---

### 01 Customer number

---

Here, you read the customer number of the device (also refer to operating card 1). The factory-set customer number is usually identical with the production number. With certain types of devices, it can be set directly.

---

### 33 Reading date

---

Here, you find the date on which the device (also refer to operating card 1) was last read by the M-bus central unit (date of the M-bus central unit).

---

### 34 Reading time

---

Here, you find the time at which the device (also refer to operating card 1) was last read by the M-bus central unit (time of day of the M-bus central unit).

---

### 50 Fault

---

On this operating line, an error code (00...99) is displayed for every device. Devices with no error have error code 00. For meaning of the error code, refer to chapter 9 "List of errors". All devices are checked for faults when interrogating them periodically according to setting value "Reading interval" (refer to operating card 4). For controllers, it is also possible to define a shorter reading interval according to setting value "Alarm interval".

If the device does not respond to data interrogation, the M-bus central unit will generate error code 34 (communication breakdown). Only the most severe error of each device can be displayed.

---

**51** Duration of fault

---

The duration of fault is given in hours and indicates the period of time during which the fault was present at the device.

---

**52** Software version

---

This operating lines displays the software version of the device.

---

**54** Production number

---

Certain devices are assigned a factory-set consecutive number, which enables the devices to be clearly identified. The production number cannot be set.

---

**67** Power

---

Here, the current power is indicated.

The readings that can be displayed reach from 0.001 to 1 kWh.

---

**68** Mean value

---

Here, the mean value of power or flow rate over the previous measurement interval is displayed.

The readings that can be displayed reach from 0.001 to 1 kW and from 0.001 l/h to 1 m<sup>3</sup>/h.

---

**73** Flow temperature

---

Here, the flow temperature is displayed. The resolution is fixed at 0.1 °C.

---

**74** Return temperature

---

Here, the return temperature is displayed. The resolution is fixed at 0.1 °C.

**75** Flow rate

Here, the current flow rate is displayed.

The readings that can be displayed reach from 0.001 l/h to 1 m<sup>3</sup>/h.

**82** Manufacturer's code

Here, the manufacturer of the device is indicated. The manufacturer's codes are defined in EN 1434-3 / IEC 870-5 and can be ascertained with the help of a conversion table.

<i>Display</i>	<i>Manufacturer</i>
1090	<b>ABB</b>
1460	<b>Aquametro</b>
4307	<b>Danfoss</b>
5544	<b>EMH</b> (e.g. EIZ electricity meters)
7910	<b>GWF</b>
8996	<b>Hydrometer</b>
11 309	<b>Kamstrap</b> (e.g. IWK EWZ810)
12 516	<b>Landis &amp; Gyr Deutschland</b> (e.g. SONOGR <sup>®</sup> WSD)
12 538	<b>Landis &amp; Gyr Zug</b> (e.g. RVP97)
12 901	<b>Landis &amp; Staefa Elektronik</b> (e.g. MEGATRON <sup>®</sup> 2)
12 912	<b>Landis &amp; Staefa Produktion</b> (e.g. SONOGR <sup>®</sup> energy)
12 922	<b>Landis &amp; Staefa Zug</b> (e.g. RVD2...)
12 967	<b>Landis + Gyr</b> (e.g. 2WR5)
16 420	<b>Padmess</b> (e.g. PadPulsM1)
18 604	<b>Relay</b> (e.g. PadPulsM1)
18 789	<b>Raab Karcher</b> (Ista)
19 749	<b>Siemens</b> (e.g. 2WR4, 2WR5)
19 842	<b>Schlumberger</b> (e.g. Allmess P40, CF-Echo)
19 875	<b>SaMeCo</b> (e.g. WHE21, AEW21.2)
19 950	<b>Sontex</b>
19 992	<b>Spanner Pollux</b>
20 113	<b>SVM</b> (e.g. ABB F3)
20 584	<b>Techem</b>

**92** M-bus address

Here, the M-bus primary address is displayed. **000** means that no primary address has been assigned to the particular device.

Display 253 means that the device has no primary address (e.g. Siemeca™ AMR meters).

Press buttons  and  on the right to show for Siemeca™ AMR devices the radio network (M-bus address of the associated WTX16 or WTT16 on the M-bus) and the radio cell (WTX16 or WTT16 network node which receives the meter). After 5 seconds, the M-bus address appears again.

**98**   Updating M-bus device

When pressing simultaneously buttons  and  on the right for 2 seconds, the data of the selected device are retrieved. After 2 seconds, the number on the right side of the display changes briefly from 0 to 1, indicating that the device is being interrogated. Then, the buttons can be released. The device number on the display flashes until the current data of the device are available in the M-bus central unit. After readout, this function of the relevant device will be locked for one minute in order to prevent too frequent readings.

### 4.3 Operating card 3 – Diagnosis M-bus central unit

Operating card 3 contains data that relate to the M-bus central unit and the bus system. You cannot select a device number on this operating card.

Operating card 3 contains read functions only. You cannot alter any numerical values here.

**01** Plant number

Here, the plant number can be displayed.



---

**04** Operating hours

---

This operating line shows the hours run of the M-bus central unit. Acquired are the number of operating hours during which the operating voltage of AC 24 V for the M-bus central unit was present.

---

**05** Date

---

Here, the current date of the M-bus central unit appears.

---

**06** Weekday / time of day

---

Here, the following appears:

- The weekday: 1 = Monday through 7 = Sunday
- The current time of the M-bus central unit

---

**18** Clock synchronization

---

Here, it is possible to check the kind of synchronization active for the clock of the M-bus central unit:

0 = clock runs with the clock quartz

1 = clock is synchronized with mains frequency

---

**43** Storage capacity memory card

---

You can store the consumption data on a memory card by pressing a button. When the card is inserted in the M-bus central unit, the following memory card data are delivered here:

- The first 4 digits give the maximum storage capacity in KB
- Digits 5...8 indicate the free storage capacity in KB

For example: **128-0085** means that of the total storage capacity of 128 KB, there are 85 KB left.

If ---- - ---- appears on the display, no memory card is inserted in the M-bus central unit.

If the memory card is write-protected, the following display appears, for example: **128 - ----** . This means that there is no storage capacity left so that the memory card can accept no more data.

**47** Number of M-bus devices

Here, you can read the total number of devices connected to the M-bus central unit. Connected means that the M-bus central unit was able to find and acquire the relevant device while the search run was made.

During the search run, this number flashes. This means that the search for devices still continues.

The flashing number represents the number of devices that the M-bus central unit has already included in the plant list.

Press buttons  and  on the right to display the current Baud rate, the M-bus address and the number of meters in the (b aaa.zzz) format during a search run.

b: 0 = 300 Baud  
 3 = 2400 Baud  
 5 = 9600 Baud  
 aaa: 0 = no primary address assigned  
 1...250 = primary address  
 253 = secondary address only  
 zzz: 0...750 = number of meters found

If, now, button  on the right is pressed, the current customer number will be displayed during the search run in the (kkkkkkkk) format.

**48** Function of PC port

Here, you can identify the type of device connected to the RS-232 port:

0 = no device  
 1 = modem  
 2 = PC local no alarms  
 3 = PC local with alarms

For direct communication with the ACS10 readout software, setting 2 must be selected; for all other software packages (e.g. ACS7...) setting 3 is required.

**50** Fault

On this operating line, an error code (00...99) is displayed in the event a fault occurs on the M-bus central unit.

If there is no fault, the error code displayed is 00. For the meaning of the error codes, refer to chapter 9 “List of errors”. If several errors occur at the same time, only the most severe will be displayed. When that error is corrected, the second most severe will appear, etc. When there is no more error, 00 reappears.

---

#### **52** Software version

---

This operating line displays the software version of the M-bus central unit.

---

#### **54** Production number

---

The M-bus central unit is assigned a factory-set consecutive number, which enables the unit to be clearly identified. This number can be displayed here.

---

#### **96** Alarm interval

---

The alarm interval defines the interrogation interval for status information from controllers:

- 0 The controllers are interrogated in accordance with the reading interval
- 1...254 The controllers are interrogated every 1...254 minutes, if the selected alarm interval is shorter than the reading interval

---

#### **97** Reading interval

---

Here, it is possible to see the kind of reading and reading interval that have been selected.

- 0 = manually; the reading must be triggered manually
- 1 = once per hour; the reading is made every full hour
- 2 = once per day; the reading is made from 06.00 hrs
- 3 = once per week; the reading is made every Monday from 06.00 hrs
- 4 = once per month; the reading is made on the first day of month from 06.00 hrs

The reading interval depends on the type of application and the type of meter.

*Note:*

If battery-powered devices are connected to the M-bus, the reading interval must be appropriately selected. In normal circumstances, the reading interval must then be limited to one reading per day. Refer to the relevant product specifications.

## 4.4 Operating card 4 – Startup / service

Operating card 4 contains data that relate to the M-bus central unit and the bus system. You cannot select a device number on this card.

Operating card 4 contains setting functions only. The data altered here relate to the system. Changes to the data on operating card 4 should only be made by authorized staff.

### 01 Plant number

Default input:	Your first setting:	Your second setting:	Your third setting:
<b>00000000</b>			

Here, the plant number can be displayed and changed.

### 05 Date

Here, you enter the current date using the following format:

- 2 digits for the day of month (01...31)
- 2 digits for the month (01...12)
- 4 digits for the year (1999...2069)

The date must be entered in that order.

### 06 Weekday / time of day

Here, you enter the current weekday and the correct time of day using the following format:

- 1 digit for the weekday (1 = Monday through 7 = Sunday)
- 2 digits for the hour (00...23)
- 2 digits for the minutes (00...59)

Weekday and time of day must be entered in that order.

---

**17** Summertime

---

Default input:	Your first setting:	Your second setting:	Your third setting:
<b>1</b>			

Here, you select the “Automatic summer- / wintertime changeover“ function. The valid changeover dates can be viewed on operating lines 19 and 20.

Meaning of the numbers:

- 0 = manual (or no) summer- / wintertime changeover
- 1 = automatic summer- / wintertime changeover

---

**18** Clock synchronization

---

Default input:	Your first setting:	Your second setting:	Your third setting:
<b>1</b>			

Here, the kind of clock synchronization for the M-bus central unit can be selected:

- 0 = clock runs with the clock quartz
- 1 = clock is synchronized with 50 Hz mains frequency
- 2 = clock is synchronized with 60 Hz mains frequency

The M-bus central unit is supplied with the clock synchronized at 50 Hz mains frequency (in the event of a power failure, the quartz will be used).

This setting is recommended for Western Europe. In the case of unstable low voltage networks, quartz synchronization is recommended.

When setting 0 is selected, an additional number will appear on the right side of the display. By changing this number, it is possible to correct annual inaccuracies of the clock should these occur (caused, for instance, by ambient temperature variations at the place of installation).

Annual inaccuracies of the clock can be corrected within the range of +30...-30 minutes.

*Example of a correction:*

If, per year, the clock is 5 minutes too fast, the number to be entered is -5.

**19** Beginning of summertime

Default input:	Your first setting:	Your second setting:	Your third setting:
<b>25 – 03</b>			

Here, you set the earliest possible date (day and month) on which the change from winter- to summertime can occur. Changeover takes place on the first Sunday (at 03.00 hrs) following that date.

At present, changeover takes place on the last Sunday in March, requiring setting 25 – 03.

**20** Beginning of wintertime

Default input:	Your first setting:	Your second setting:	Your third setting:
<b>25 – 10</b>			

Here, you set the earliest possible date (day and month) on which the change from summer- to wintertime can occur. Changeover takes place on the first Sunday (at 02.00 hrs) following that date.

At present, changeover takes place on the last Sunday in October, requiring setting 25 – 10.

**47** Number of M-bus devices / scan

Delete data

Here, the number of devices connected must be entered. When setting this number, the M-bus central unit starts a search run by scanning all possible M-bus addresses. When a device responds, the M-bus central unit includes it in its device list where it will be listed as an active device. Only then can a device be addressed.

Before a search run is started, the M-bus central unit waits about 5 seconds. Then, a search for devices is made following a special procedure. The duration of the search run is determined by the following factors:

- Kinds of M-bus addressing (primary, secondary)
- Number and level of M-bus Baud rates in the system
- Distribution of the M-bus addresses in the system
- Behavior of the devices (response times, access procedures, amounts of data)

If a device with different Baud rates or kinds of M-bus addressing is identified, entry in the device list will be made only once. The M-bus central unit always keeps the device at the highest Baud rate and, if possible, with the primary address.

*Tips for shortening the search run:*

- The kinds of addressing and the Baud rates in the system can be limited on operating line 95 (M-bus parameters)
- In the case of primary addressing, assign the primary addresses from address 1 with no gaps in between

On operating card 3, it is possible to view how many devices the M-bus central unit has already included in its device list. The number on operating line 47 of operating card 3 flashes until the search run is completed. This flashing number indicates the number of devices that have already been acquired by the M-bus central unit.

If the number of devices you have set here does not agree with the number of devices the M-bus central unit has included in its plant list, an error message will be delivered (error code 92).

*Note:*

The M-bus central unit stops the search run when the number of devices set correspond to the number of devices acquired.

If the number of devices you set here is too small, the M-bus central unit terminates the search run prematurely. This means that the remaining devices will not be acquired and cannot therefore be interrogated.

If, right from the start, the number of devices set agrees with the number of devices acquired, the search run will not be started.

On completion of the search run, the data of all devices will immediately be available, independent of the selected reading interval.

#### *Deleting the stored data*

Caution: using the function described here, you will clear the device list and all device data stored in the M-bus central unit! But the data on the memory card will not be deleted.

When you press simultaneously buttons  and  on the right side, the display will show dashes (---) after about 2 seconds and, after another 2 seconds, **000** will appear. The device list will be deleted.

#### **48** Select PC port

Default input:	Your first setting:	Your second setting:	Your third setting:
<b>3</b>			

Here, you set the parameters of the M-bus central unit's RS-232 port:

- 1 = modem
- 2 = PC local no alarms
- 3 = PC local with alarms

To make possible communication via modem, the necessary settings for the M-bus central unit must first be made with the PC. For details, refer to chapter 7 "Communication via PC".

For direct communication with the ACS10 readout software, setting 2 must be selected; for all other software packages (e.g. ACS7...), setting 3 can be selected.

#### **95** M-bus parameters

Default input:	Your first setting:	Your second setting:	Your third setting:
<b>009 3</b>			

This operating line serves for selecting the Baud rates and the kinds of addressing used by the M-bus system.



**Baud rates:**

		<i>Baud rates</i>						<i>Setting value</i>
		300	600*	1200*	2400	4800*	9600	
<i>Valency</i>		1	2	4	8	16	32	<i>Sum</i>
<i>Combinations</i>	300	•						1
	2400				•			8
	300, 2400	•			•			9
	9600						•	32
	300, 9600	•					•	33
	2400, 9600				•		•	40
	300, 2400, 9600	•			•		•	41

\* Not recommended

**Kinds of addressing:**

<i>Combination</i>	<i>Setting value</i>
Primary	1
Secondary	2
Primary and secondary	3

**96 Alarm interval**

Default input:	Your first setting:	Your second setting:	Your third setting:
<b>0</b>			

The alarm interval defines the interrogation interval for status information from controllers:

- 0 The controllers are interrogated in accordance with the reading interval
- 1...254 The controllers are interrogated every 1...254 minutes, if the selected alarm interval is shorter than the reading interval

**97** Reading interval

Default input:	Your first setting:	Your second setting:	Your third setting:
<b>0</b>			

Here, the type of readout and the reading interval can be selected. The numbers have the following meaning:

- 0 = manually; the reading must be triggered manually
- 1 = once per hour; the reading is made every full hour
- 2 = once per day; the reading is made from 06.00 hrs
- 3 = once per week; the reading is made every Monday from 06.00 hrs
- 4 = once per month; the reading is made on the first day of month from 06.00 hrs

The reading interval depends on the type of application and the type of meter.

*Note:*

If battery-powered devices are connected to the M-bus, the reading interval must be appropriately selected. In normal circumstances, the reading interval must then be limited to one reading per day. Refer to the relevant product specifications.

**98**   Updating all M-bus devices

When pressing simultaneously buttons  and  on the right for 2 seconds, the data of all devices are retrieved. After 2 seconds, the number on the right side of the display briefly changes from 0 to 1, indicating that the devices are now being interrogated. The device numbers of the individual devices flash until a correct readout has been made.

## 5 Commissioning

---

The following commissioning instructions give the order of the individual work processes and can also be used as a checklist.

The system must always be commissioned by authorized staff.

For more detailed information, refer to the Basic Documentation CE1P5361en.

### 5.1 Electrical installation

---

First, install the power supply and make the electrical connections.

- Mains fuses
- Mains connection for AC 24 V transformer for M-bus central unit OZW10 and signal converter WZC-P60
- Mains connection for DC 42 V power pack of signal converter WZC-P250
- Mains connection for DC 42 V power pack of repeater WZC-R250
- Mains connection for modem's power pack
- Check the power supply
- RS-485 bus line between OZW10 and signal converter WZC-P...
- M-bus cables
- Connecting cables of signal sources and status inputs

### 5.2 Checking the wiring

---

The wiring must be checked prior to connecting the devices.

- M-bus cables:
  - Check to see if there are any short-circuits or open-circuits
  - In the case of larger plants, it is recommended to check the loop resistances of all branches
- RS-485 connection

## 5.3 Mounting

---

Install all devices. The M-bus devices should be connected later

- M-bus central unit OZW10
- Signal converter WZC-P...
- Repeater WZC-R250
- M-bus devices
- Protective circuits
- Modem

## 5.4 Connecting the system components

---

Make the connections and switch on power.

- Connect RS-485 to OZW10 and WZC-P...
- Connect M-bus to WZC-P... and WZC-R250
- Connect M-bus to the protective equipment
- Connect RS-232 to the OZW10 and modem or null modem to the PC
- Make connections between OZW10 and alarm devices or signal sources
- Switch on AC 24 V for OZW10 and WZC-P60
- Switch on DC 42 V for WZC-P250 and WZC-R250

## 5.5 Commissioning the system components

---

Make the following checks:

- LED on signal converter and repeater:
  - Power: ON
  - Slave: OFF
  - Max.: OFF
  - Short: OFF
- Display on the M-bus central unit:
  - 1<sup>st</sup> display: SELFtEST
  - 2<sup>nd</sup> display: weekday and time of day
- LED on the modem

- M-bus voltage
- RS-485 connection
- Connections to alarm devices and signal sources

## **5.6 Commissioning and connecting the M-bus devices**

---

- Set the parameters of the devices according to the relevant instructions (operating instructions, data sheets, etc.)
- Connect M-bus and check the bus voltage

## **5.7 Commissioning the M-bus central unit**

---

Prerequisite: M-bus central unit is switched on. The display shows the weekday and the time of day. The M-bus central unit is commissioned with the help of operating card 4 (Startup / service). Certain values (e.g. modem parameters) can only be set with the help of the ACS7... operating software.

### **5.7.1 Presettings**

---

If required, the following pre-settings must be made:

- 01 = plant number
- 05 = date
- 06 = weekday / time of day
- 17 = summertime
- 18 = clock synchronization
- 19 = beginning of summertime
- 20 = beginning of wintertime
- 95 = M-bus parameters
- 96 = alarm interval
- 97 = reading interval

Changed settings can be entered in the respective fields in section 4.4 "Operating card 4 – Startup / service".

### **5.7.2 Presettings with the ACS7... plant operating software**

---

For a direct connection, setting 3 (= PC local with alarms) is to be selected on operating line 48 (Select PC port). For communication with a PC, the ACS7... plant operating software is required.

In the case of a connection via modem, setting 1 is required (modem).

### **5.7.3 Generating the device list**

---

The device list is created on operating line 47 (Number of M-bus devices / scan) by entering the number of M-bus devices. The progress of the automatic device search run can be checked on the same operating line of operating card 3. On completion of the search run, the result will be checked and, if necessary, the search run restarted or the number of M-bus devices corrected.

### **5.7.4 Completing commissioning**

---

When commissioning is completed, the devices will be sealed and the plant documentation complemented by generating a billing file.

## 6 Replacing defective devices

---

Defective devices must be replaced by authorized service staff.

### 6.1 Checking

---

In the event of fault, first check wiring and power supply. If, after these checks, the device cannot be put back into operation, it must be replaced.

*Note:*

Prior to replacing a device, a billing file must be generated.

### 6.2 Defects of the M-bus central unit

---

1. Open the housing.
2. Pull both terminal blocks from their bases and away from the housing. The wires need not be removed.
3. Remove housing from the control panel.
4. Install new M-bus central unit according to the Mounting Instructions.
5. Set the parameters of the new M-bus central unit according to the instructions given in the Operating Manual. If the replaced M-bus central unit was correctly commissioned, the currently valid settings can be found in the respective fields of the Operating Manual.

*Note:*

The devices connected to the M-bus system store all their data locally so that all device data will be available again after a new readout.

### 6.3 Defective devices on the M-bus

---

The replacement of faulty devices is not automatically detected by the M-bus central unit. By changing the number of M-bus devices (operating card 4, operating line 47), the new device will be found. The data of the former device remain

47/64

stored internally and can be retrieved with the PC at a later time. The data of the former device can no longer be displayed locally.

If a device is removed from the system, the number of devices (operating card 4, operating line 47) will be reduced. The data of the former device will be retained.

If the data of the former device are no longer required, the device list must be deleted (operating card 4, operating line 47, "Delete data") and the new number of devices must be entered.



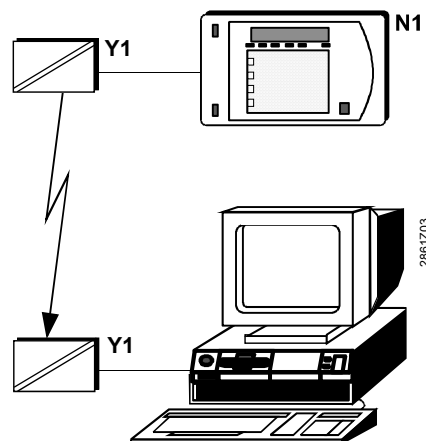
## 7 Communication via PC

For data readout from the M-bus central unit OZW10, there is an RS-232 port available. This port can be used for direct connection of a PC (using a null modem) or via telephone modem.

For communication with a PC, the ACS7... plant operating software is required.

### 7.1 Telephone connection

In the case of connections via the telephone network, a Hayes-compatible modem is required on each side.



Communication via modem

N1 OZW10 M-bus central unit  
Y1 Modem

The initialization sequences preset for the modem on the M-bus central unit are suited for most types of modems.

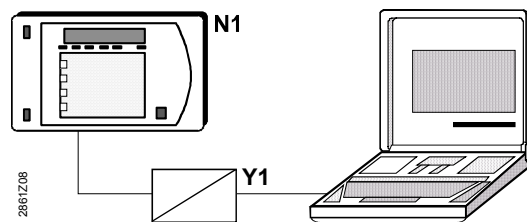
If that is not the case, the sequences can be adjusted with the help of the ACS7... plant operating software and the modem's Manual.

Between M-bus central unit and mode, the connecting cable supplied with the modem must be used.

## 7.2 Direct connection

For the direct connection to a PC, a commercially available standard null modem is required. The following table shows all connections of the standard null modem and of the link cable. Also shown are the lines of the RS-232 port that are required.

Null modem		Link cable	
25-pin	25-pin	25-pin	9-pin
Female	Male	Female	Male
①	①	②	②
②	③	③	③
③	②	④	①
④	④	⑤	④
⑤	⑤	⑥	④
⑥	⑥	⑦	⑤
⑧	⑧	⑧	⑦
⑳	⑳	⑳	⑥/⑧
⑦	⑦	㉒	⑨



Direct connection to a PC  
 N1 M-bus central unit OZW10  
 Y1 Standard null modem

## 8 Billing file

### 8.1 Generating a billing file

---

When pressing the **FILE** button, a billing file for the plant will be generated. The billing file will automatically be stored on the memory card under **OZW\_nnn.BIL** (nnn = consecutive number starting with 001; BIL = billing).

Alternatively, a billing file can be retrieved directly from the storage of the M-bus central unit using the PC. The name assigned to it is **OZW\_SS1.BIL**.

The data of the M-bus central unit and those of the connected M-bus meters will be stored in the billing file. The makeup of the billing file is similar to that of the billing file of the SYNERGYR central unit OZW30.

### 8.2 Description

---

The billing file consists of 2 parts:

- Part 1: General data set that contains plant and central unit data
- Part 2: Billing data sets of the M-bus devices

The billing file is an ASCII file. The individual values are separated by tabs. The file can be handled with standard editors. It is recommended to use Microsoft Excel.

The memory card can be read directly with the ACS7... plant operating software via the M-bus central unit.

For the headings of the data set columns, abbreviations are used. A suffix in the form of a 3-digit number represents the reference to the respective operating line of the M-bus central unit.

*Example:*

KFabNr354 means that the production number of the M-bus central unit is given on operating card 3, operating line 54.

With the help of a macro (Microsoft Excel), the billing file can be rearranged as required (e.g. clear text for column headings). In that case, the original version of the file must be saved first.

File	KKundenZ01	KFAIN134	KSWnd352	ZDat005	ZW006	ZLrd006	CESS04	SFAhr350	ZDatEvent	ZLrdEvent	CMBusDec347	Type
OZW_001.BIL	0	374	4.0	02.11.1995		4	1255:34	27		x x x	x x x	3
Device	SMBusDev	ZDair133	ZUhrR134	KDevAhr292	KKunden101	KFAIN1254	KCCoCode292	KSWndD252	KMest157	ZDat	ZUhr	CBS104
1	1	02.11.1995	09:35:00	1	1000000	127	58416	2	4	31.12.1999	23:59:00	0
2	1	02.11.1995	09:35:00	0	2000000	32767	58416	3	4	31.12.1999	23:59:00	546
3	1	02.11.1995	09:35:00	01-01.003	3000000	8388607	58416	3	4	31.12.1999	23:59:00	999999
SFAhr250	ZDairEvent	ZFEhr251	CEhrK102	CEhrK102	CEhrK102	CEhrK102	Cy0KVal103	Cy0K103	CEhrSLVal107	CEhrSLDim107	Cy0SLVal108	Cy0SLDim108
0	x x x	x x x	0	127	KWh	127	1.27	m3	127	KWh	127	KWh
42	02.11.1995	10:05:00	546	32767	KWh	32767	32767	1	32767	KWh	32767	KWh
0	x x x	x x x	0	8388607	KWh	8388607	83886.07	ml	8388607	KWh	8388607	KWh
ZDair110	CEhrSVVal111	Cy0SVDim112	Cy0SVVal112	ZDairSV114	Cy0SVDim112	ZDairSV114	CP0MMaxVal193	CP0MMaxDim169	ZDairMMax170	CyXTarVal193	CyXTarDim193	CyXTarVal194
31.12.1999	127	KWh	127	31.12.1999	127	KWh	1.27	KWh	31.12.1999	127	KWh	0
31.12.1999	32767	KWh	32767	31.12.1999	32767	KWh	32767	1	31.12.1999	32767	KWh	0
31.12.1999	8388607	KWh	8388607	31.12.1999	8388607	KWh	83886.07	W	31.12.1999	8388607	KWh	0
CyXTarZDim194	CyXTarSLVal193	CyXTarSLDim193	CyXTarSLVal194	CyXTarZSLDim194	CyXTarZSLDim194	CyXTarZSLDim194						
KWh	127	KWh	0	KWh	0	KWh						
KWh	32767	KWh	0	KWh	0	KWh						
KWh	8388607	KWh	0	KWh	0	KWh						

5381101

Example of a billing file

### 8.3 Abbreviations

<i>Long name</i>	<i>Name in the file</i>	<i>Presentation</i>
File name	File	OZW_XXX.BIL (XXX=001..999)
Plant number	KKundeNr301	Max. 8 digits
Production number	KFabNr354	Max. 8 digits
Software version	KSWInd352	Version, revision, max. 2 digits
Date	ZDat305	DD.MM.JJ
Weekday	ZWt306	1..7 (Monday through Sunday)
Time of day	ZUhr306	hh.mm.ss
Operating hours	CBS304	h, max. 6 digits
Fault	SFehler350	2 digits
Date fault event	ZdatEvent	DD.MM.YY
Time of day fault event	ZuhrEvent	hh.mm.ss (ss=00)
Number of M-bus devices	CMBusDev347	Max. 3 digits
Device type	Type	'OZW10'
Device number	Device	Max. 3 digits (0..750)
Device state	SMBusDev	0 Device not present 1 Device ok 2 Data are updated 3 Number of readouts exceeded 4 Communication error 5 Device removed
Reading date	ZDatR133	DD.MM.YY
Reading time	ZUhrR134	hh.mm.ss (ss=00)
M-bus address	KDevAdr292	M-bus: max. 3 digits (0..250) Siemeca™ AMR: nn-ss.aaa
Customer number	KKundeNr101	Max. 8 digits
Production number	KFabNr254	Max. 8 digits
Manufacturer's code	KCoCode282	Max. 5 digits
Software version	KSWIndD252	Max. 3 digits (0..255)
Medium	KMed187	Max. 2 digits (0..99)
Date device	ZdatD	DD.MM.YY
Time of day device	ZuhrD	hh.mm.ss (ss=00)
Operating hours	CBS104	h, max. 6 digits
Fault	SFehler250	Max. 2 digits
Date fault event	ZdatEvent	DD.MM.YY
Time of day fault event	ZuhrEvent	hh.mm.ss (ss=00)
Duration of fault	ZFDauer251	h, max. 6 digits
Cumulated energy / Meter 1	CEnKVal102	max. 8 digits
Cumulated energy / Meter 1, unit	CEnKDim102	Decimals and symbol if available
Cumulated energy / Meter 2	CVolkVal103	Max. 8 digits

Cumulated energy / Meter 2, unit	CVolKDim103	Decimals and symbol if available
Energy last set day / Meter 1 last set day	CEnStLVal107	Max. 8 digits
Energy last set day / Meter 1 last set day, unit	CEnStLDim107	Decimals and symbol if available
Volume last set day / Meter 2 last set day	CVolStLVal108	Max. 8 digits
Volume last set day / Meter 2 last set day, unit	CVolStLDim108	Decimals and symbol if available
Date last set day	ZDatStL110	DD.MM.YY
Energy / Meter 1 – last but one set day	CEnStVIVal111	Max. 8 digits
Energy / Meter 1 – last but one set day, unit	CEnStVIDim111	Decimals and symbol if available
Volume / Meter 2 – last but one set day	CVolStVIVal112	Max. 8 digits
Volume / Meter 2 – last but one set day, unit	CVolStVIDim112	Decimals and symbol if available
Date last but one set day	ZDatStVI114	DD.MM.YY
Maximum	CPQMwMax-Val169	Max. 8 digits
Maximum	CPQMwMaxDim169	Decimals and symbol if available
Date of maximum	ZDatMwMax170	DD.MM.YY
Tariff 1	CVxTar1Val193	Max. 8 digits
Tariff 1, unit	CVxTar1Dim193	Decimals and symbol if available
Tariff 2	CVxTar2Val194	Max. 8 digits
Tariff 2, unit	CVxTar2Dim194	Decimals and symbol if available
Tariff 1 last set day	CVxTar1StLVal193	Max. 8 digits
Tariff 1 last set day, unit	CVxTar1StLDim193	Decimals and symbol if available
Tariff 2 last set day	CVxTar2StLVal194	Max. 8 digits
Tariff 2 last set day, unit	CVxTar2StLDim194	Decimals and symbol if available

Special identification of values:

- x x x value invalid (value not generated)
- value invalid (function inactive)
- ~~~ value invalid (value from remote device not received)
- ### value not available

## 9 List of errors

Any errors or malfunctions must be rectified by authorized staff.

<i>Error code</i>	<i>Type of error</i>
00	No error
01	Tv < Tr or T outside value range
02	Undervoltage
03	Hardware error
04	Error flow acquisition, sensor error
05	Air in the measuring path
06	Flow temperature sensor short-circuit or open-circuit
07	Error operating conditions
08	Return temperature sensor short-circuit or open-circuit
09	Device-specific error
10	Communication error subsystem
12	Data overflow in RAM
13	Data overflow in EEPROM
22	Battery or memory card exhausted
23	Battery of M-bus central unit exhausted
34	Communication breakdown M-bus
35	Error memory card
36	Format error memory card
37	Memory card is write-protected
38	Memory card is full
40	Severe error
41	Severe error, Tv < Tr or T outside value range
42	Severe error, undervoltage
43	Severe error, hardware error
45	Severe error, air in the measuring path
46	Severe error, flow temperature sensor short-circuit or open-circuit
47	Severe error, sensor error, electronics error
48	Severe error, return temperature sensor short-circuit or open-circuit

49	Severe error, device-specific error
50	Severe error, communication breakdown subsystem
61	Fatal plant error
62	External alarm
63	Plant error
64	Connection interrupted
65	Communication error
66	Permanent control deviation
67	Fault sub-system
71	Alarm input 1
72	Alarm input 2
73	Alarm input 3
74	Alarm input 4
92	Wrong number of devices set
93	Number of readings exceeded
97	Device list full
98	Data storage overflow



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