SYNERGYR®

Central Unit OZW30

Collects billing data from the apartments. Generates an image of each apartment's heat consumption and makes it available for readout. Acts on room temperature control in the apartments. Has an impact on heat generation depending on the apartments' demand for heat. Acquires operating state signals, actual values and faults. Passes alarms to an operator station.

Use

The OZW30 central unit is a component of the SYNERGYR® control and billing system. The following system functions are only possible when using the central unit:

- Central readout and storage of the most important consumption data from the individual apartments
- Fault indication and logging
- Straightforward readout with the help of the memory card
- Acting on heat generation

For the field of use of the SYNERGYR® system, refer to Data Sheets N2800 to N2803 (System Overview).

Functions

- Collection of consumption data (proportion of thermal energy, DHW, electricity, gas, etc.) acquired in the individual apartments
- Generation of a consumption data image
- Delivery of consumption data for external evaluation, via an interface or on a memory card
- Preselection of minimum and maximum limits of the room temperature setpoints for all apartments
- Preselection of a 24-hour program for normal and setback temperatures in all apartments
- Acting on heat generation depending on the actual heat demand from the apartments
- Acquisition and storage of signals with the possibility of querying from a higher level
- Interrogation of consumption data of all apartments via the buttons and the display
- Remote interrogation of consumption data via PC
- Passing alarms to an operator station
- Providing support in connection with fault diagnostics by offering the ability to query all important parameters and data of the apartments and the heating group
- Powering plant via the building bus and a conduit box

Type summary

Description	*Type reference*
Central unit	**OZW30**
Memory card 128 KB	**ALC30.128**
Memory card 512 KB	**ALC30.512**
Operating set (German)	**ARG30.DE**
Operating set (English)	**ARG30.GB**
Operating set (French)	**ARG30.FR**
Operating set (Dutch)	**ARG30.NL**
Operating set (Italian)	**ARG30.IT**
Operating set (Swedish)	**ARG30.SV**
Operating set (Danish)	**ARG30.DA**

The operating set is comprised of operating cards and operating manual.

Ordering

When ordering, please give:

- Type reference OZW30 for the central unit
- Type reference of the required operating set
- If required, type reference ALC30… for the memory card

For central unit upgrades, the current software version can be ordered separately:

Description	*Part number*
Program storage OZW30 (≥16 pairs)	**4 340 1047 0**

Equipment combinations

The units of the SYNERGYR® system allow exchange of data via the building bus.
Using version 3 or higher, the central unit can communicate with the following types of ALBATROS heating controllers via LPB:

- RVL469 of version 3 or higher, RVL47 / RVL470 of version 1.5 or higher, RVL471 of version 1.1 or higher, RVL472 of version 1.0 or higher
- RVL479, RVL480, RVL481, RVL482 (all of version 1.0 or higher)
- RVA43.222 of version 2.1 or higher, RVA43.223 / RVA46.531 of version 2.5 or higher, RVA47.320 / RVA63.242 of version 1.1 or higher, RVA63.280 / RVA66.540 of version 1.0 or higher, RVA65.642 of version 1.2 or higher, RVA65.643 of version 2.3 or higher
- RVD2… of version 1.1 or higher
- RVP3… of version 1.1 or higher
- RVP540 of version 1.2 or higher, RVP550 of version 2.3 or higher

The LPB is connected directly to the building bus.

Using the H-bus, the central unit can communicate with the following types of heating controllers:

- RVL55 and RVL50 of version 4.0 or higher
- RVP75.230/237900 and RVP45.500/900 and RVP40.3, RVP97 of series D or higher, version 4.0

Communication with a PC can be established via the RS-232 port in which case the PC requires the ACS30 readout software.

Technical design

Setting the parameters

Parameter setting on the central unit can be accomplished in 2 ways:
Via the buttons directly on the central unit; integrated in the central unit is a set of menu cards which describe all parameters that can be set
Via the RS-232 port with the help of a PC
If there is modem communication, the parameters must always be set via PC.

Interrogation of collected data

The central unit offers 2 choices of querying consumption data:

- Directly: Each apartment can be called up via the buttons and the required data can be queried; the data will appear on the display of the central unit
- Remotely: If the central unit communicates with a PC, the latter can be used to query all apartments and their data

In addition, it is possible to call up data such as actual values, etc. (refer to "Diagnostics").

Evaluation of collected data

The central unit collects the consumption data acquired and stored in each apartment at regular intervals: Thermal energy, DHW, electricity, gas, etc.
For each apartment, the central unit generates an image in which the data are entered.
The image is ready configured and continually updated.
The image accepts the following values:

- Current values
- Set day values
- Monthly values

In addition, the central unit calculates the number of heating degree days.

It is capable of acquiring the pulses from a maximum of 192 meters and from 6 "general meters", resulting in the following choices:

	Configuration 1	*Configuration 2*	*Configuration 3*	*Configuration 4*
Max. number of apartments	32	48	96	32
Number of WRI80 or WRV… per apartment	1	1	1	0
Number of AEW2.1 per apartment	2	1	0	2
Number of AEW2.1 for preacquisition (with addresses)	3 (121…123)	3 (121…123)	3 (121…123)	3 (121…123)
Address plug for WRI80 or WRV… and AEW2.1	1…32	1…48	1…96	1…32

Delivery of collected data

For evaluation, the data must be loaded to a PC. This can be accomplished as follows:

- The data are transferred to a memory card, which is inserted in a slot on the central unit; the memory card is then sent to the billing agency which, with the help of a reading device, loads the data to a PC
- The data are made available at the RS-232 interface; from there, they can be passed on to the external billing agency, either directly or via modem, to be loaded to a PC. The central unit has a jack for powering the modem

Acting on room temperature control

Room temperature control of the apartments can be influenced via the central unit, in which case all apartments will be affected. It is not possible to address individual apartments. What can be acted upon is the 24-hour program for setback and heating up and setpoint limitations.

24-hour program

The central unit offers the function of a 24-hour time switch which is used to enter 1 setback period per 24-hour period. During the setback period, all room units in the apartments are switched to the reduced setpoint and, during the comfort periods, to the normal setpoint.

Setpoint limitations

The setting ranges of the room temperature setpoints in the apartments equipped with the QAW20 room unit can be limited.
The following settings can be made on the central unit:

- Maximum limit of the room temperature setpoint; it is used to avoid overheating of apartments; maximum limitation is always active
- Minimum limit of the room temperature setpoint; it ensures protection against freezing and prevents undesired heat transfer from other normally heated apartments; 2 limit values can be set:
  - 1 for the comfort periods
  - 1 for the setback periods

All setpoint limitations can be adjusted in the range 3…30 °C.

Acting on heat generation

Based on the building's heat demand acquired by the central unit via the apartments, a compensating variable is generated which acts on the flow temperature setpoint of the heating group. This compensating action may be either continuous or switching and is possible with both Siemens controllers and controllers of other manufacture.

Continuous load compensation

Continuous load compensation is only possible with controllers communicating with the central unit via LPB or H-bus (refer to "Equipment combinations").
Each apartment may be assigned to a heating group that uses separate flow temperature control. Connections with up to 6 heating groups are possible.Based on the heat demand of the individual apartments, the central unit calculates a "common setpoint" for each heating zone, which influences the flow temperature of the heating group. Heat generation is then controlled via the flow temperatures of the various zones.

Switching load compensation

With switching load compensation, the heating group controller is switched from normal temperature to setback temperature, and vice versa. The change to setback operation takes place:

- When the apartments do not call for heat, e.g. due to solar radiation, or
- When all apartments are in setback mode

The command for changeover can be delivered via:

- The LPB or H-bus from the bus-capable heating controllers (refer to "Equipment combinations")
- The load compensation relay of the central unit for controllers with no H-bus or LPB connection facility but with a time switch contact (e.g. RVL46)
  When there is demand for heat, the relay of the central unit opens its contact, for temperature setback it closes its contact

Messages and alarms

Status inputs

The central unit has 4 status inputs. They are used to receive and handle signals from plant sections. The signals are delivered by potential-free contacts connected to the status inputs. The contacts are opened and closed by the plant sections.

- 2 status inputs can be configured either as counting or alarm inputs (connection terminals P1 and P2; can be reconfigured by Siemens service staff)
- 2 status inputs are ready configured as alarm inputs (connection terminals P3 and P4)

Counting inputs are used for acquiring operating times such as burner running times. Counted is the time during which the contact delivering the signal is closed.
Alarm inputs acquire and register signals from any plant sections. An alarm is triggered when the contact closes.

Handling of alarms

The alarms have the following origin:

- Various signals, received at the status inputs
- Unit faults (hardware or software), received via the building bus
- Operating voltage faults, received via the building bus
- Faults in communication, received via the building bus
- Measuring errors, received via the building bus
- Interventions from outside, received via the building bus
- Heating plant malfunctions, received via the LPB or H-bus

If required, alarm handling can be reconfigured by Siemens service staff.
With all alarms, it is possible to configure if and with what priority they are to be delivered. There are 3 priorities.
For the configuration of alarm handling, the central unit offers the following choices:

- Energizing an alarm relay; the contact is closed when there is an alarm
- Indication on the central unit
- Passing on to an operator station
- Registration on the memory card

Each alarm must be acknowledged on the central unit.

Diagnostics

For diagnostics, service and alarms, the central unit monitors the entire plant. Faults can be configured as alarms (see above).
The diagnostics function provides the following information:

- Control and heat meter interface WRI80: Flow rate of the connected heat meter, flow and return temperatures, operating mode
- Control and heating cost allocation valve WRV…: Flow rate, pressure differential, flow and return temperatures, operating mode
- Room units QAW…: Actual value and room temperature setpoint
- Communication: Number of building bus users, LPB, H-bus, RS-232 interface currently active or not

The central unit consists of a base, with the power supply section and the connection terminals, and hinged operating section.

Base

The base is made of plastic and can be mounted in 2 ways:
- On a wall; the base has fixing holes
- In a panel cutout; to facilitate fixing, each corner has a catch

For cable entry, the base has a total of 12 knockout holes.
The printed circuit board carries 2 bases which accommodate the connection terminal blocks, all relays and some of the electronic components. Wiring is simplified by removing the terminal blocks from their bases.

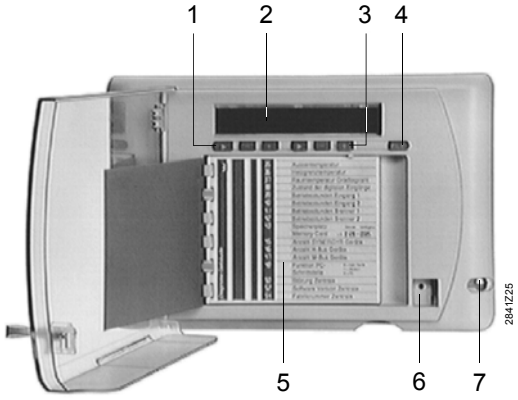
Operating section

The hinged operating section also serves as a cover. Its front carries the display, the buttons and the operating cards. All operating elements are located beneath a hinged transparent cover. It can be locked with a key while the operating section is secured to the base by means of a lead-sealable screw.
The operating cards are joined together and can simply be inserted.
The RS-232 port, the jack for powering the modem and the slot for the memory card are located on the underside of the operating section.
The connection between the printed circuit board in the housing and that of the operating section is established with a ribbon cable.
The electronic circuits of the operating section feature a clock which, via the building bus, also serves as a reference clock for all other units installed in the plant.

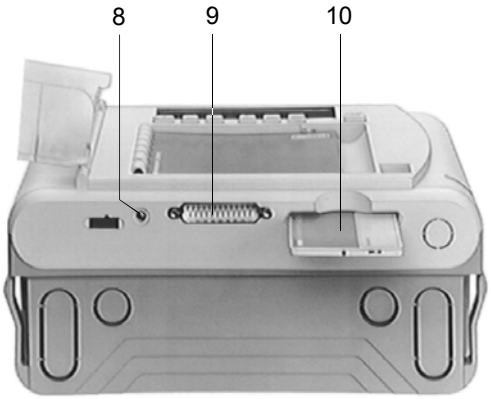
Operation

Display and buttons

The display comprises:
- The address and designation of the information; the numbers are selected with 3 buttons; this part of the display is subdivided as follows:
  - Application, that is, consumption, control, diagnostics, and commissioning
  - Numbers of the apartments and of the unit
  - Number of the parameter, actual value or function; the designations assigned to the numbers are shown on the operating cards



1 Buttons on the left
2 Display
3 Buttons on the right
4 Button for storing the consumption values on the memory card
5 Operating cards
6 Lock
7 Hole for the sealable fixing screw



8 Jack for modem power supply
9 RS-232 interface
10 Memory card ALC30…

- The information; it is assigned to the selected address and the designation; parameters are changed via 3 buttons
- The unit (kWh, l/h, °C, etc.)
- 4 text symbols:
  - **DATA**: Loading data
  - **CARD**: Memory card inserted and accepted
  - **ERROR**: Fault status message
  - **BAT**: Battery exhausted (reserve and memory card)

Another button is used to store consumption data on the memory card.
During operation, the display shows the time of day or – if present – alarms.

Data protection

Tampering on the central unit (changing parameters, etc.) is prevented by a lead-sealed fixing screw. The transparent cover of the operating section can only be opened with a key. Also, interrogation of apartment-specific data such as room temperatures, etc., can be prevented by setting a shorting plug.

Operating cards

A set of operating cards is integrated in the front of the unit. They serve for setting the parameters on the central unit, as a setting aid, and for data interrogation. They tell which functions, parameters, indications, etc., are assigned to which numbers.
The makeup of the operating cards is matched to the display. Each operating card comprises:

- 1 application (consumption, control, diagnostics, and commissioning) and the assigned number in the display
- The parameters, actual values and inputs relating to the application and the numbers assigned to these variables in the display

Also, the set of operating cards contains brief instructions for operating the buttons and interpreting the display.

Engineering notes

The local regulations for heat metering and electrical installations must be observed.
The operating voltage of AC 24 V is supplied by an isolating transformer which powers the whole SYNERGYR® system and which must be installed near the central unit.
When sizing the transformer, the power consumption of all units must be taken into consideration.
The secondary side of the transformer must not be earthed.

Mounting notes

When choosing the mounting location, the environmental conditions must be observed.
The central unit is suitable for mounting

- On a flat surface such as a wall, inside a control panel, etc.
- In a front panel cutout

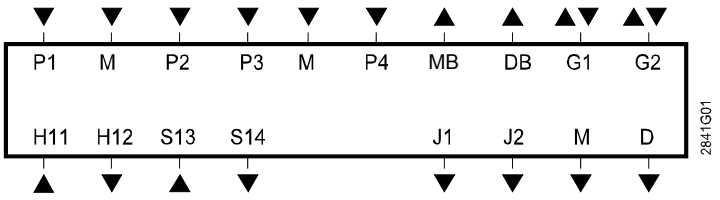
Commissioning notes

The parameters of the central unit will be set by Siemens staff.
Communication parameters can only be entered with a PC.
When setting the parameters is completed, the central unit must be lead-sealed.
The central unit is supplied with a detailed Operating manual.

Technical data

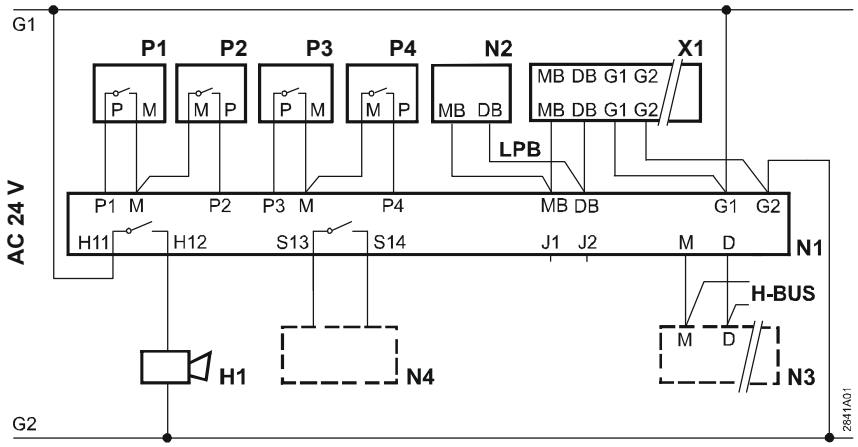
General unit data	Operating voltage	SELV / PELV AC 24 V ±20 %
	Rated voltage	AC 24 V
	Frequency	50 Hz
	Power consumption	10 VA
	Permissible ambient temperature	
	Transport and storage	–25…+65 °C
	Operation	0…50 °C
	Weight (incl. battery)	1.1 kg
Building bus	Baud rate	4,800 Baud
	Open-circuit voltage	15.5 V ±10 %
	Voltage under load	13.8 V at 150 mA
	Short-circuit current	300 mA ±10 %
Modem supply	Continuous load	max. 120 mA
	Voltage under load	min. 8.5 V
Safety data	Degree of protection (with cover closed)	IP40 to EN 60529
	Safety class	III to EN 60730
Standards	Electromagnetic compatibility	
	Immunity (for use in domestic environment)	EN 61000-6-1
	Emissions (for use in domestic environment)	EN 61000-6-3
	CE conformity to	
	EMC directive	2004/108/EC

Connection terminals



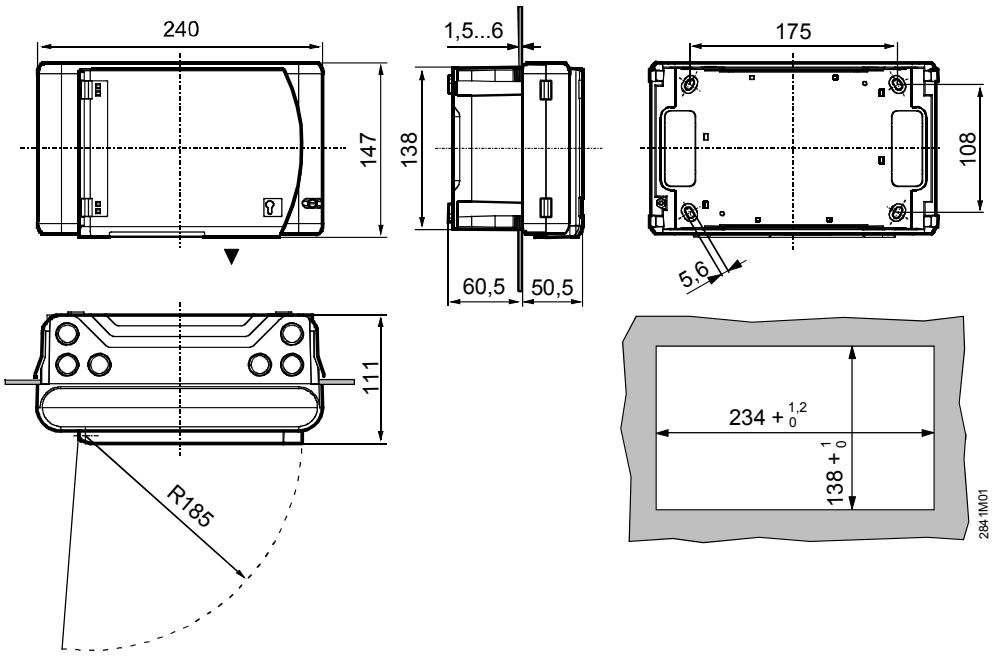
G1, G2	Operating voltage AC 24 V
DB	Data building bus
MB	Ground building bus
H11, H12	Alarm relay
S13, S14	Switching contacts for load compensation
J1, J2	RS-485 interface (with no function)
M	Ground for H-bus
D	Data H-bus
P1, P2	Inputs for acquiring the hours run or for receiving fault status messages from external devices (with potential-free contact)
P3, P4	Inputs for receiving fault status messages from external devices (with potential-free contact)

Connection diagram



H1	Alarm device (AC 24 V)
N1	Central unit OZW30
N2	ALBATROS™ heating group controller (e.g. RVL470)
N3	H-bus capable heating group controller (e.g. RVL55), as an alternative to controller N2
N4	Any type of controller with a time switch contact (e.g. controller of other manufacture), as an alternative to controller N2
P1, P2	Devices with a potential-free contact for hours run or fault status messages
P3, P4	Devices with a potential-free contact for fault status messages
X1	Conduit box ALW30 or ALW84

Dimensions



▼ Minimum clearance 90 mm for memory card

Dimensions in mm