SIEMENS

2802

SYNERGYR®

Control and Billing System

For new plants – system overview

SYNERGYR® is a combined system for controlling the room temperature in residential buildings and non-air-conditioned office blocks and for heat cost billing by acquiring the individual heat consumption. Other meters, such as hot and cold water meters or gas meters, can be connected.

Use

The overview given in this Data Sheet covers the system for use in new plants. For replacement of the WRV81, WRV83 and WRV84 control and heat cost allocation valves in existing SYNERGYR® plants, refer to Data Sheet N2803.

Types of buildings

With regard to the type of building, SYNERGYR® is designed primarily for new apartment blocks where individual heat cost billing is either planned or a mandatory requirement.
SYNERGYR® can also be used in existing buildings provided the heating system installed is suited for use with SYNERGYR®.
Further, SYNERGYR® can be installed in non-air-conditioned office blocks.

Types of heating systems

In terms of heating systems, SYNERGYR® is for use with plants having central heat generation and horizontal piping for each apartment. The heat source used must be a boiler or an indirect district heat connection with heat exchanger. Water quality must satisfy the requirements of the VDI 2035 directive.

The heating zone supplying heat to the apartments can be
- a mixing circuit equipped with a 3- or 4-port mixing valve
- an injection circuit equipped with a 3- or 2-port valve

Apartment

Control and coordination of system data within the apartment are accomplished by the WRI80 electronic control and heat meter interface.

Eco application, zone control

With the **Eco** application, SYNERGYR® provides room temperature control and must have a suitable reference room in each apartment. In the other rooms, the room temperature is controlled by thermostatic radiator valves.
Room temperature control of the reference room always takes place via the zone valve.

Comfort application, individual room control

With the **Comfort** application, SYNERGYR® provides room temperature control during occupancy times via the room valve; the zone valve remains open (individual control of the other rooms, depending on demand).
During nonoccupancy times, central night setback is ensured via the zone valve.

Standard application, heat metering

With the **Standard** application, SYNERGYR® facilitates heat metering without room temperature control.

Type summary

	Type of device	*Type reference*	*Data Sheet*
SYNERGYR®-components	Central unit	**OZW30**	N2841
	Readout software	**ACS30**	N2843
	Memory card	**ALC30…**	N2841
	Control and heat meter interface	**WRI80**	N2827
	Analog room unit	**QAW10**	N2811
	Digital room unit	**QAW20…**	N2812
	Control module	**AEK84**	N2833
	Pulse adapter	**AEW2.1**	N2831
	Temperature measuring unit	**QAB30**	N2851
	Service unit	**AZW30**	N2847
Heat meters	Siemeca™ M-bus heat meters		
	Nominal flow rate 600 l/h	**WFM21.B111**	N5333
	Nominal flow rate 1,500 l/h	**WFM21.D111**	N5333
	Nominal flow rate 2,500 l/h	**WFM21.E131**	N5333
	Other types of M-bus heat meters on request		
Valves and actuators	Zone valves	**VVP45…**	N4845
	Zone valves	**VVP47…**	N4847
	Actuators	**SSP81**	N4864
	Actuators	**SSB81**	N4891
	Room thermostats (max. 6 A)	**RAA…**	N3000
	Room thermostats (max. 16 A)	**RAA0…**	N3007
	Actuator for radiator valves (AC 230 V)	**STA21**	N4877
	Actuator for radiator valves (AC 24 V)	**STA71**	N4877
	Actuator for terminal unit valves (AC 230 V)	**STP21**	N4878
	Actuator for terminal unit valves (AC 24 V)	**STP71**	N4878
Mounting and installation accessories	Conduit box	**ALW84**	N2824

Ordering

When ordering, please give type references of the components required.
Fittings for the heat meters and the valve (ALG…), M-bus cable for the heat meter (WFZ.MBUSSET), address plug set (PTG1…) and operating set (ARG30…) must be ordered as separate items.
When ordering Siemens heat meters, the required set day must be stated.

Equipment combinations

SYNERGYR® components are designed for exclusive use with the SYNERGYR® system.
In connection with the WRI80 interface, the following products can be used (also refer to “Application example“):

- Zone control with VVP47 and SSP81 or with VVP45 and SSB81
- Individual room control with AEK84 and ST…21 / ST…71
- M-bus heat meters
- Room units QAW10 / QAW20…
- Consumption meters with pulse output
- Contact for DHW heating
- Apartment pump via AEK84

The SYNERGYR® system can also be used in conjunction with heating controllers type RVL4…, RVA…, RVP3…, or RVD2…

System components

Central unit OZW30

Central control unit for data acquisition and data storage from the apartments and for controlling and monitoring SYNERGYR® plants.
The OZW30 collects the consumption data acquired and stored in the apartment (heat consumption and other data). A maximum of 96 apartments and 6 general meters with pulse output can be connected.
The central unit acquires messages of operating states, actual values, interventions and faults.
12-month storage and 2 freely selectable set days.
Readout of consumption data with memory card or via interface.
Menu-driven operation with operating cards and LCD.

Only with Eco and Comfort applications: With impact on room temperature control of the apartments; load influence acting directly on the heating controller.

Readout software ACS30

Windows software for remote readout of data and remote operation of SYNERGYR® central units.

Control and heat meter interface WRI80

Electronic control and heat meter interface. Acquires the room temperature via the room temperature sensor connected to the room unit bus and controls the room temperature through a valve, reads heat energy consumption from the connected Siemeca™ M-bus heat meter, acquires pulses from third-party devices, stores data and communicates with other SYNERGYR® devices via the building bus.
The WRI80 facilitates maximum and minimum limitation of the volumetric flow, provides frost protection for the apartment and performs the pump and valve kick at regular intervals.
Provides control of an apartment pump, if required, and keeps the zone valve fully open for the period of time there is external demand for DHW.

Room unit QAW10	Analog room unit for room temperature control. Room temperature measurement, digital setpoint readjustment on the unit, energy saving button for setpoint changeover.
Room unit QAW20	Digital room unit for remote room temperature control. Room temperature measurement, 7-day heating program, adjustable temperature setpoints, direct setpoint readjustment, energy saving button for setpoint changeover, holiday programming, connection of QAW44 remote sensor or teleswitch
Control module AEK84	Electronic control unit for the control of an electromotoric actuator or an apartment pump by means of the low-voltage control signal delivered by the WRI80.
Pulse adapter AEW2.1	Acquires and stores the pulses delivered by commercially available pulse counters, monitors the connection to them, and delivers the cumulated consumption values, error messages, etc., via the building bus.
Temperature measuring unit QAB30	Facilitates connection of a QAC22 outside sensor to the building bus.
Service unit AZW30	Service unit for parameterizing SYNERGYR® components in the apartments, for collecting billing data from plants without central unit, and as a tool for diagnostic tasks.
Siemeca™ M-bus heat meter	Electronic metering device. Acquires the flow rate and the temperature differential, calculates the amount of heat energy consumed and transmits the data to the WRI80 via M-bus. Must be mounted in the return.
Valves VVP… and actuators SSP… / SSB…	Zone valves with electromotoric actuators. They control the volumetric flow based on the signals received from the WRI80.
Room thermostats RAA… and actuators ST…21 / STP…71	2-position controllers for controlling the temperature in individual rooms with the help of radiator valves and thermal actuators.
Building bus	Specifically matched to the requirements of the SYNERGYR® system. Interconnects the components of the SYNERGYR® system and features a 4-wire connection (data bus and power supply). The data bus conforms to the UTE/CEF46621…46623 standard.
Room unit bus	2-wire connection (point-to-point interface) for connecting the room unit to the WRI80. Maximum extension is 125 m with a copper cable of 1.0 mm^2.
M-Bus	2-wire connection for connecting Siemeca™ M-bus heat meters to the WRI80. Maximum extension is 100 m with a copper cable of 0.6 mm diameter.

Engineering notes

Selection of the components required for the control and heat meter interface (M-bus heat meter, zone valve and actuator) is made with the help of the following table.

Design flow rate of apartment in l/h:

0 – 400	300 – 600	500 – 1000	700 – 1500	1000 – 2500

Siemeca™ heat meter	WFM21.B111		WFM21.D111	WFM21.E131
Mounting kit	½“ WFZ.E110-IT or ¾“ WFZ.E110G3-IT			¾“ WFZ.E130-IT or 1“ WFZ.E130G1-IT
Connecting cable	WFZ.MBUSSET			

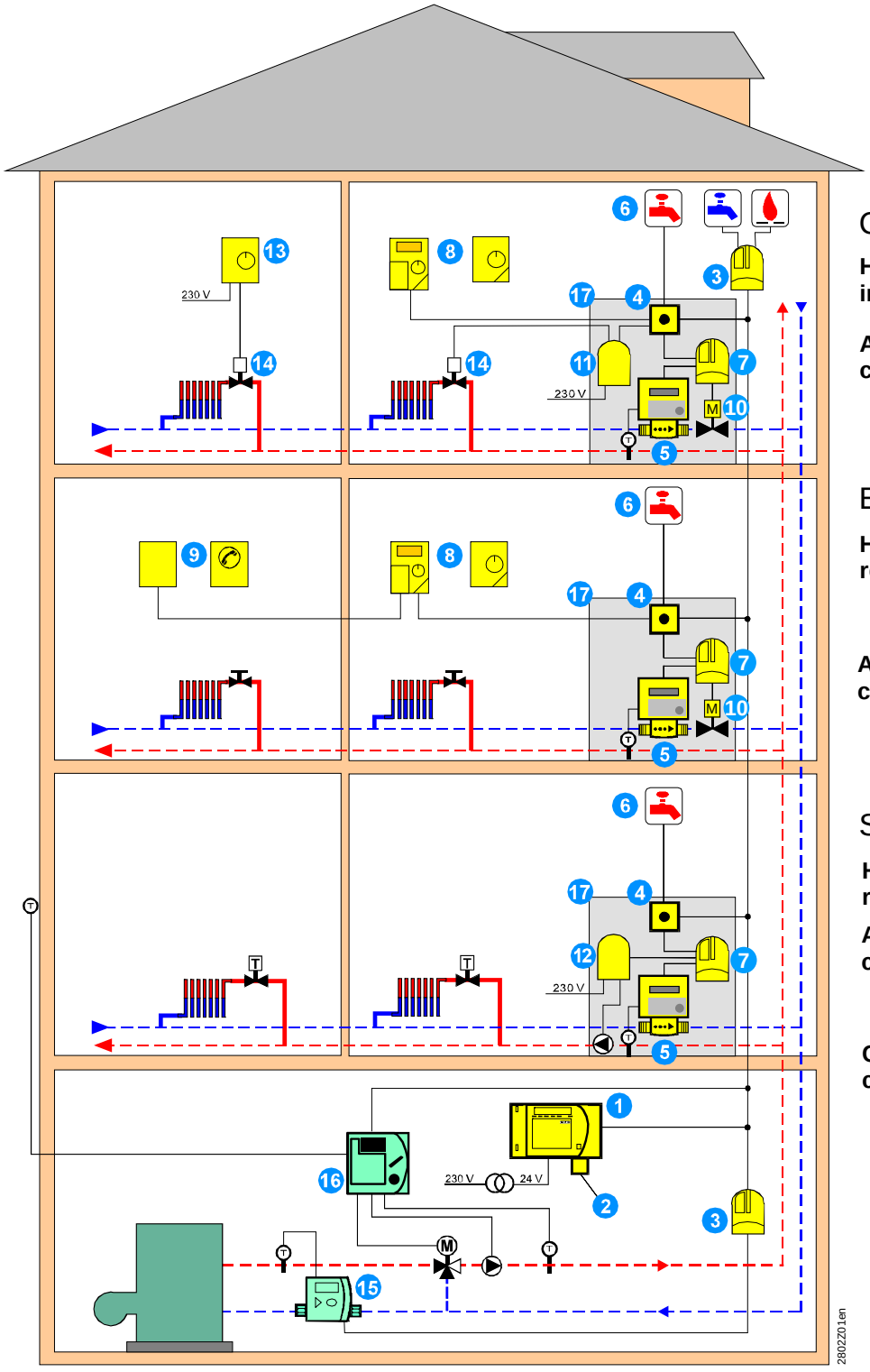
Zone valve	VVP47.10-0.63	VVP47.10-1	VVP47.10-1.6	VVP47.15-2.5	VVP47.20-4
				VVP45.15-2.5	VVP45.20-4
Mounting kit	ALG13			ALG14	ALG15

3-position actuator	SSP81 for VVP47… / SSB81 for VVP45…

Control and heat meter interface	WRI80

Other combinations are available on request.

Application examples



Comfort

Heat metering with individual room control

Acquisition of consumption data
Heat energy, DHW, cold water and gas

Eco

Heat metering with reference room control
With remote sensor for weighted averaging

Acquisition of consumption data
Heat energy, DHW, cold water and gas

Standard

Heat metering without room control function

Acquisition of consumption data
Heat energy, DHW, cold water and gas

Central readout of all consumption data
Preselection of minimum and maximum room temperature setpoints
Acquisition of operating states, actual values and faults
With impact on heat generation based on heat demand from the apartments

1. Central unit OZW30
2. Memory card ALC30…
3. Pulse adapter AEW2.1
4. Conduit box ALW84
5. Heat meter WFM21…
6. Consumption meter
7. Control and heat meter interface WRI80
8. Room unit QAW10 or QAW20…
9. Remote sensor QAW44 or teleswitch
10. Valve VVP47 with actuator SSP81
11. Control module AEK84 for radiator valve
12. Control module AEK84 for apartment pump
13. Room thermostat RAA… / RAA0…
14. Electrothermal actuator ST…21 / ST…71
15. Group heat meter with pulse output
16. Heating controller
17. Cabinet / cable riser