

SYNERGYR®

## Control and Billing System

For service and replacement – system overview

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**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

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The overview given in this Data Sheet covers the use of the WRV81, WRV83 and WRV84 control and heat cost allocation valves in existing SYNERGYR® plant. For installation in new plant, refer to Data Sheet N2802.

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

Within the same plant, apartments can be operated with WRV... and WRI80.

**Eco** application  
zone control  
(replacement for  
WRV81)

With the **Eco** application of the WRI80, SYNERGYR<sup>®</sup> 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.  
The WRV81 is to be replaced by a WRI80, a Siemeca<sup>™</sup> M-bus heat meter and a motorized zone valve.

**Comfort** application  
individual room control  
(replacement for WRV84)

With the **Comfort** application of the WRI80, SYNERGYR<sup>®</sup> 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.  
The WRV84 is to be replaced by a WRI80, a Siemeca<sup>™</sup> M-bus heat meter and a motorized zone valve.

**Standard** application  
heat metering  
(replacement for WRV83)

With the **Standard** application of the WRI80, SYNERGYR<sup>®</sup> facilitates heat metering without room temperature control.  
The WRV83 is to be replaced by a WRI80 and a Siemeca<sup>™</sup> M-bus heat meter.

### Type summary

	Type of device	Type reference	Data Sheet
SYNERGYR <sup>®</sup> - Komponenten	Central unit	<b>OZW30</b>	N2841
	Readout software	<b>ACS30</b>	N2843
	Memory card	<b>ALC30...</b>	N2841
	Control and heat meter interface	<b>WRI80</b>	N2827
	Analog room unit	<b>QAW10</b>	N2811
	Digital room unit	<b>QAW20...</b>	N2812
	Control module	<b>AEK84</b>	N2833
	Pulse adapter	<b>AEW2.1</b>	N2831
	Temperature measuring unit	<b>QAB30</b>	N2851
	Service unit	<b>AZW30</b>	N2847
Heat meters, replacement for WRV81, WRV83 and WRV84	Siemeca <sup>™</sup> M-bus heat meters (for selection of types, refer to "Engineering notes")	<b>WFQ21... / WFM21...</b>	N5333
Valves and actuators	Zone valve	<b>VVP45...</b>	N4845
	Zone valve	<b>VVP47...</b>	N4847
	Actuator	<b>SSB81</b>	N4891
	Actuator	<b>SSP81</b>	N4864
	Room thermostat (max. 6 A)	<b>RAA...</b>	N3000
	Room thermostat (max. 16 A)	<b>RAA0...</b>	N3007
	Actuator (AC 24 V)	<b>STE71.1</b>	N4874
	Actuator (AC 230 V)	<b>STE21.1</b>	N4874
Mounting and installation accessories	Conduit box	<b>ALW84</b>	N2824

## Ordering

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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.

## Gerätekombinationen

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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 VVP45 and SSB81
- Individual room control with AEK84 and STE21.1 / STE71.1
- 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

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### Central unit OZW30

Central control unit for data acquisition and data storage from the apartments and for controlling and monitoring SYNERGYR® plant.

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

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 Siemens™ 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.

<b>Room unit QAW10</b>	Analog room unit for room temperature control. Room temperature measurement, digital setpoint readjustment on the unit, energy saving button for setpoint changeover.
<b>Room unit QAW20...</b>	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.
<b>Control module AEK84</b>	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.
<b>Pulse adapter AEW2.1</b>	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.
<b>Temperature measuring unit QAB30</b>	Facilitates connection of a QAC22 outside sensor to the building bus.
<b>Service unit AZW30</b>	Service unit for parameterizing SYNERGYR <sup>®</sup> components in the apartments, for collecting billing data from plant without central unit, and as a tool for diagnostic tasks.
<b>Siemeca<sup>™</sup> M-bus heat meter</b>	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.
<b>Valves and actuators VVP / SSP and SSB</b>	one valves with electromotoric actuators. They control the volumetric flow based on the signals received from the WRI80.
<b>Room thermostats RAA... and actuators STE...</b>	2-position controllers for controlling the temperature in individual rooms with the help of radiator valves and thermal actuators.
<b>Building bus</b>	Specifically matched to the requirements of the SYNERGYR <sup>®</sup> system. Interconnects the components of the SYNERGYR <sup>®</sup> system and features a 4-wire connection (data bus and power supply). The data bus conforms to the UTE/CEF46621...46623 standard.
<b>Room unit bus</b>	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 <sup>2</sup> .
<b>M-Bus</b>	2-wire connection for connecting Siemeca <sup>™</sup> 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 is made with the help of the following tables.

### Replacement for WRV81 / WRV84

Replacement of the WRV81 / WRV84 by a Siemeca™ M-bus heat meter, a motorized zone valve, a mounting kit and a control and heat meter interface.

Nominal flow rate WRV  
Design flow rate  
of apartment

200 l/h	400 l/h	750 l/h	1,500 l/h	
			up to 1,000 l/h	above 1,000 l/h

Siemeca™ heat meter  
Connecting cable

WFQ21.D081	WFM21.E131
WFZ.MBUSSET	

Zone valve  
Mounting kit

VVP47.10-0.63	VVP47.10-1.6	VVP47.20-4.0 / VVP45.20-4.0	VVP45.20-10
ALG10/20		---	spec.

Actuator

SSP81 for VVP47... / SSB81 for VVP45...
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Mounting kit

ALG80WRI (collector, fitting, seals, immersion pocket)
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Control and heat meter  
interface

WRI80
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*Note*

If, up to now, the adjusting screw has not been fully opened, the components for “up to 1,000 l/h” can also be used for design flow rates above 1,000 l/h. In that case, the adjusting screw must be appropriately opened.

### Replacement for WRV83

Replacement of the WRV83 by a Siemeca™ M-bus heat meter, a mounting kit and a control and heat meter interface.

Nominal flow rate WRV

200 l/h	400 l/h	750 l/h	1500 l/h
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Siemeca™ heat meter  
Connecting cable

WFM21.B111	WFM21.D111
WFZ.MBUSSET	

Mounting kit

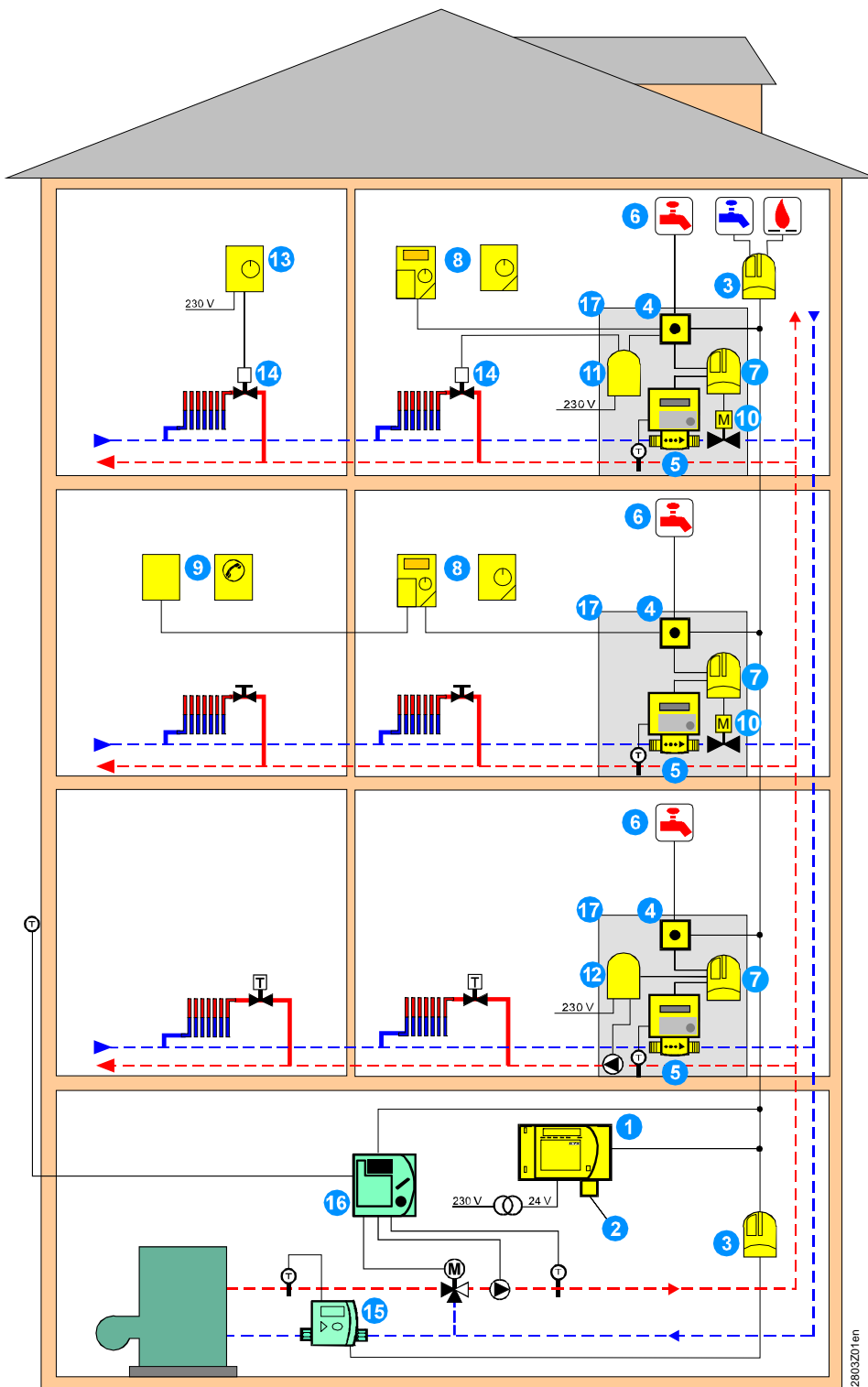
ALG83WRI (fitting, immersion pocket)
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Control and heat meter  
interface

WRI80
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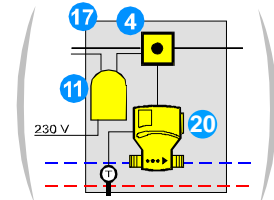
*Note*

If flow limitation is required, “Replacement for WRV81” must be selected since flow limitation takes place via the zone valve.



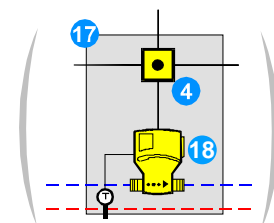
### WRI80 Comfort

Replacement for WRV84



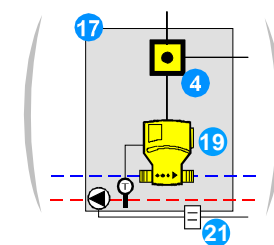
### WRI80 Eco

Replacement for WRV81



### WRI80 Standard

Replacement for WRV83



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| <ul style="list-style-type: none"> <li>1 Central unit OZW30</li> <li>2 Memory card ALC30...</li> <li>3 Pulse adapter AEW2.1</li> <li>4 Conduit box ALW84</li> <li>5 Heat meter WFM21...</li> <li>6 Consumption meter</li> <li>7 Control and heat meter interface WRI80</li> <li>8 Room unit QAW10 or QAW20</li> <li>9 Remote sensor QAW44 or teleswitch</li> </ul> | <ul style="list-style-type: none"> <li>10 Valve with actuator VVP47 / SSP81 or VVP45 / SSB81</li> <li>11 Control module AEK84 for radiator valve</li> <li>12 Control module AEK84 for apartment pump</li> <li>13 Room thermostat RAA... / RAA0...</li> <li>14 Electrothermal actuator STE21.1 / STE71.1</li> <li>15 Group heat meter with pulse output</li> <li>16 Heating controller</li> <li>17 Cabinet / cable riser</li> </ul> | <ul style="list-style-type: none"> <li>18 WRV81</li> <li>19 WRV83</li> <li>20 WRV84</li> <li>21 BatiBUS relay module</li> </ul> |
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