Contents

1. Area of application and components

What you can do with Synco™ living

Heating
Heating control for up to 12 rooms. Suited for radiator and underfloor heating systems. Precontrol of up to 2 autonomous room groups including flow and return temperature limitation.

Heat generation
Control of heating boiler depending on the heat requests from the rooms and from DHW.

DHW
Control of DHW heating for the entire apartment or house.

Smoke alarm
Per room 1 smoke detector.

Ventilation
Control of ventilation plant with up to 3 stages. Release of exhaust hood.

Air conditioner
Control of an air conditioner or cooling appliance.

Monitoring windows and doors
Up to 6 windows and 2 doors per apartment or house can be monitored.

Remote control
Convenient operation of lights, blinds and scenes *.

Remote access
Synco living can be accessed via PC or smart phone.

Lights and blinds
Control of lights and blinds including central commands (all off, scenes, etc.).

Time program
Dedicated time program can be assigned to each room and each switching group **.

RF adapter plug
Electrical equipment is automatically switched on and off (e.g. coffee machine on and off at certain times, or lamps dimmed).

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* A scene includes various components (e.g. lights and blinds) and can be released by an event (e.g. "Absence") or the time program

** A switching group includes a number of components (min. 1) which are jointly released by a time program. A switching group is capable of enabling the following functions:
- Switching or dimming lights
- Switching electrical appliances (e.g. the coffee machine)
- Raising or lowering blinds
- Calling up scenes

1 Synco living central apartment unit
From the central apartment unit, you can conveniently control all functions of up to 12 rooms and check them on the display.

2 Synco living room unit
Acquires the room temperature and allows you to make interventions in the relevant room.

3 Synco living room temperature sensor
Acquires the room temperature.

4 Synco living radiator control actuator
Acquires the room temperature and controls it by adjusting the heating valve.

5 Synco living heating circuit controller
Controls the room temperature by adjusting the heat distributor's valve.

6 Synco living multicontroller
Precontrols up to 2 independent hydraulic room groups or controls ventilation plant with up to 3 stages.

7 Synco living RF adapter plug, switching / dimming
Remote control of electrical equipment connected to power outlets and dimming lamps.

8 Synco living meteo sensor
Acquires the outside temperature and the atmospheric pressure.

9 DELTA reflex smoke detector
Detects smoke produced by fire and sets off an alarm.

10 GAMMA wave wireless integration of lights and blinds
All types of GAMMA wave products can be integrated, enabling you to conveniently switch lights and blinds centrally, locally or as a scene.

11 GAMMA wave door / window switch
Monitors the state of a window or door.

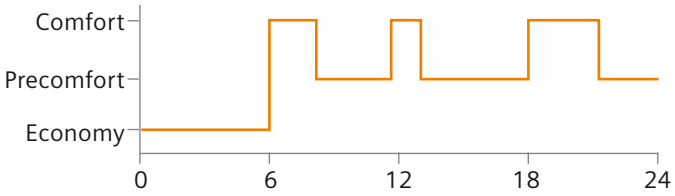
12 ZENNiO module for controlling an air conditioner
Receives release signals for heating and / or cooling a room via KNX TP1.

2. Application examples for heating

The following pages describe the most popular Synco living applications. Thanks to the system's versatility, a host of additional applications are available. If you require more information, please do not hesitate to contact us! We will be pleased to help you find the best solution for your customer.

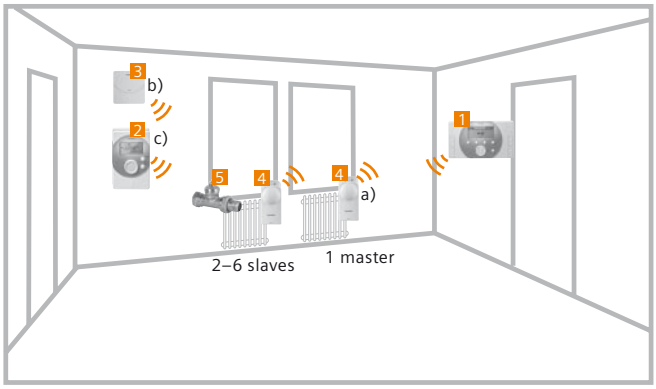
2.1 General

The QAX910 central apartment unit is capable of controlling up to 12 rooms. An individual time program with 3 operating modes (Comfort, Precomfort and Economy) is available for each room. In addition, there is a special day program and a yearly calendar for holiday periods.



Note: Radiator control actuators and heating circuit controllers (e.g. for underfloor heating systems) cannot be used in the same room.

2.2 Radiators



Room temperature acquisition
3 choices are available:

a) Each SSA955 radiator control actuator 4 has a built-in temperature sensor. That sensor should only be used when the mounting location is ideal (good air circulation*), in adjoining rooms or in the case of emergency operation (communication breakdown)
b) Room temperature sensor QAA910 3
Temperature acquisition only
c) Room unit QAW910 2
For temperature acquisition and selection of setpoint, operating mode and extension of Comfort mode

1 central apartment unit QAX910 1
2 radiator control actuators SSA955 4
2 radiator valves VDN115 5

Each radiator is equipped with an SSA955 radiator control actuator. Up to 6 radiators per room can be controlled. The first actuator in the room connected to the central apartment unit is the master which defines the valve positions for all actuators used in the room (slaves). Communication between the actuators and the central apartment unit takes place via KNX RF. Each radiator control actuator has a built-in room temperature sensor which becomes active in the event of a communication breakdown, for instance. Thanks to standard connection (M30 x 1.5 mm) and self-adaptation, commissioning the SSA955 is very straightforward. A number of adapters for the different types of commercially available radiator valves are available, if required.
The SSA955 radiator control actuator is battery-powered.

Note: The QAX910 central apartment unit has no built-in temperature sensor.

* To enable the built-in sensor to acquire the room temperature as accurately as possible, the SSA955 should not be mounted behind curtains, window sills, etc.

Radiator control actuator 4 with matching adapters 5

Description	Product No.		Adapter	Product No.
Radiator control actuator	SSA955		Comap	AV52
			Danfoss RA-N (RA2000)	AV53
			Danfoss RAVL	AV54
			Danfoss RAVL	AV55
			Giacomini	AV56
			Herz	AV57
			Oventrop old (M30x1.0)	AV58
			Vaillant	AV59
			TA	AV60
			Markaryd	AV61
			Adapter for tamper-proof fitting	AL41

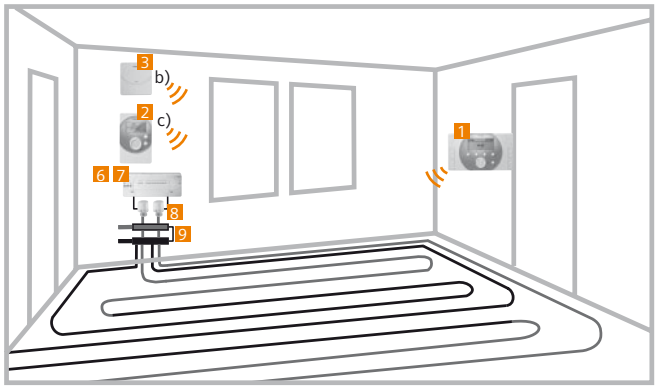
Radiator valves 5

Description	Product No.	DN	k_v-value m³/h	
Straight valves	VDN110	10	0.09...0.63	
	VDN210	10	0.09...0.63	
	VDN115	15	0.10...0.89	
	VDN215	15	0.10...0.89	
	VDN120	20	0.31...1.41	
	VDN220	20	0.31...1.41	
Angle valves	VEN110	10	0.09...0.63	
	VEN210	10	0.09...0.63	
	VEN115	15	0.10...0.89	
	VEN215	15	0.10...0.89	
	VEN120	20	0.31...1.41	
	VEN220	20	0.31...1.41	
Special angle valves	VUN210	10	0.14...0.60	
	VUN215	15	0.13...0.77	

Description	Product No.	DN	V l/h	
Straight valves	VPD110A-45 / 90 / 145	10	45 / 90 / 145	
	VPD115A-45 / 90 / 145	15	45 / 90 / 145	
	VPD110B-60 / 120 / 200	10	60 / 120 / 200	
	VPD115B-60 / 120 / 200	15	60 / 120 / 200	
Angle valves	VPE110A-45 / 90 / 145	10	45 / 90 / 145	
	VPE115A-45 / 90 / 145	15	45 / 90 / 145	
	VPE110B-60 / 120 / 200	10	60 / 120 / 200	
	VPE115B-60 / 120 / 200	15	60 / 120 / 200	

The radiator valves listed above only represent a small part of our comprehensive range. For more information, please contact your Siemens partner.

2.3 Underfloor heating – individual room control



Room temperature acquisition
2 choices are available:
b) Room temperature sensor QAA910 3
Temperature acquisition only
c) Room unit QAW910 2
For temperature acquisition and selection of setpoint, operating mode and extension of Comfort mode

1 central apartment unit QAX910 1
1 heating circuit controller RRV912 6 or RRV918 7
2 electrothermal actuators STA21 / STP21 8
2 valve adapters 9 (optional) – check mounting choices on the heating circuit distributor valves in due time

Each heating circuit is controlled by an electrothermal STA21 / STP21 actuator. A total of 6 heating circuits per room can be controlled in parallel. The electrical connection from the electrothermal actuator to the heating circuit controller is hard-wired (power supply AC 230 V via heating circuit controller). Communication between heating circuit controller and central apartment unit takes place via KNX RF.

Note: The QAX910 central apartment unit has no built-in temperature sensor.

In the case of the RRV912, a maximum of 4 STA21 / STP21 actuators can be connected to the controller's outputs (2 per output). With the RRV918, a maximum of 10 STA21 / STP21 actuators can be connected (max. 2 per output).

Electrothermal actuators 8 with valve adapter 9

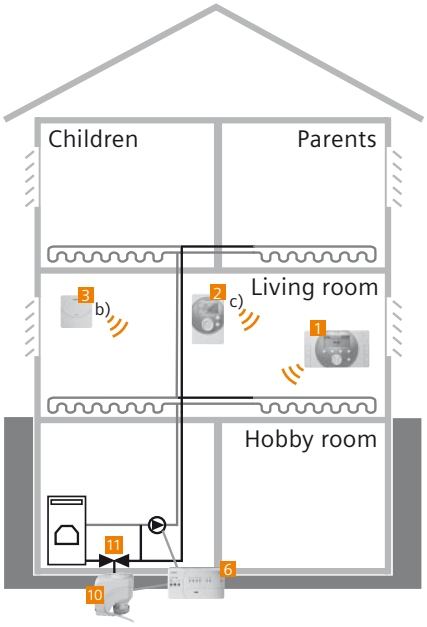
Description	Product No.		Adapter	Product No.
NC contact (standard)	STA21		Beulco old (M30x1.0)	AV51
NO contact STP21	S TP21			

The electrothermal actuators are suited for use with distributors having M30 x 1.5 connections and a closing dimension of at least 11.2 mm.

The actuators listed above only represent a small part of our comprehensive range. For more information, please contact your Siemens partner.

2.4 Zone regulation

2.4.1 Precontrol – 1 zone



Room temperature acquisition

For temperature acquisition, a reference room must be selected. 2 choices are available:

b) Room temperature sensor QAA910 3
   Temperature acquisition only

c) Room unit QAW910 2
   For temperature acquisition and selection of setpoint, operating mode and extension of Comfort mode

1 central apartment unit QAX910 1
1 heating circuit controller RRV912 6 (no RRV918)
1 electromotoric actuator 10
1 zone valve 11

The flow temperature is controlled via an electromotoric actuator (3-position). The electrical connection from the actuator to the heating circuit controller is hard-wired (power supply AC 230 V via heating circuit controller). Communication between heating circuit controller and central apartment unit takes place via KNX RF.

Note: The QAX910 central apartment unit has no built-in temperature sensor.

Electromotoric actuators 10 and zone valves 11

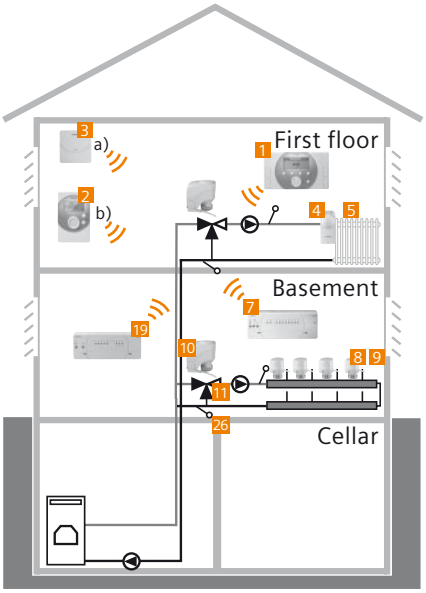
Description	Prod. No.	
Electro-motoric actuators (3-position)	SSB31 lifting power 200 N	
	SSC31 lifting power 300 N	

Description	Prod. No.	DN	k_v-value m³/h	
2-port valves	VVP45.15-2.5	15	2.5	
	VVP45.20-4	20	4	
	VVP45.25-6.3	25	6.3	
2-port valves	VVP45.25-10	25	10	
	VVP45.32-16	32	16	
	VVP45.40-25	40	25	

The actuators listed above only represent a small part of our comprehensive range. For more information, please contact your Siemens partner.

2.4.2 Precontrol – 2 zones

Room heating is subdivided into 2 different room groups (e.g. underfloor heating and radiators) which can be controlled independently.
The separate flow temperatures are controlled by the multicontroller depending on the heat demand signal. Minimum and maximum limitation of the flow temperature setpoint is ensured and the return temperature can be maintained at a high or low level.



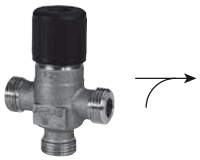
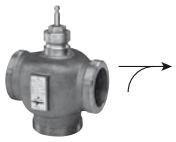
Room temperature acquisition
Per room, 2 choices are available:
b) Room temperature sensor QAA910 3
   Temperature acquisition only
c) Room unit QAW910 2
   For temperature acquisition and selection of setpoint, operating mode and extension of Comfort mode

1 central apartment unit QAX910 1
1 multicontroller RRV934 19
1 radiator control actuator SSA955 4
1 radiator valve 5
1 heating circuit controller RRV918 7
4 electrothermal actuators STA21 / STP21 8
4 valve adapters 9 (optional) – check mounting choices on the heating circuit distributors in due time
2 electromotoric actuators 10
2 zone valves 11
4 strap-on temperature sensors 26

The flow temperature is controlled via an electromotoric (3-position) or electrohydraulic (DC 0...10 V) actuator. The electrical connection from the actuator to the heating circuit controller is hard-wired. Communication between heating circuit controller and central apartment unit takes place via KNX RF.

Electromotoric actuators [10] with zone valves [11]

Description	Prod. No.	
Electro-motoric actuators (3-positi-on)	SSC31 lifting power 300 N	
	SQS35.00 lifting power 400 N	
	SQX32.00 lifting power 700 N	

Description	Prod. No.	DN	k_v-value m³/h	
3-port valves	VXP45.25-10	25	10	
	VXP45.32-16	32	16	
	VXP45.40-25	40	25	
3-port valves	VXG44.15-0.25	15	0.25	
	VXG44.15-0.4		0.4	
	VXG44.15-0.63		0.63	
	VXG44.15-1		1	
	VXG44.15-1.6		1.6	
	VXG44.15-2.5		2.5	
	VXG44.15-4		4	
3-port valves	VXG41.15	15	4	
	VXG41.20	20	6.3	
	VXG41.25	25	10	
	VXG41.32	32	6	
	VXG41.40	40	25	
	VXG41.50	50	40	

Strap-on temperature sensors [26]

Description	Prod. No.	
Strap-on temperature sensors	QAD22	
	QAD26.220	

2.5 Room temperature – averaging

It is possible to use several temperature sensors in one and the same room for averaging. This compensates for disturbing effects, such as strong solar radiation or heat emitted by electrical appliances.

Per room, the following combinations of sensors are possible:

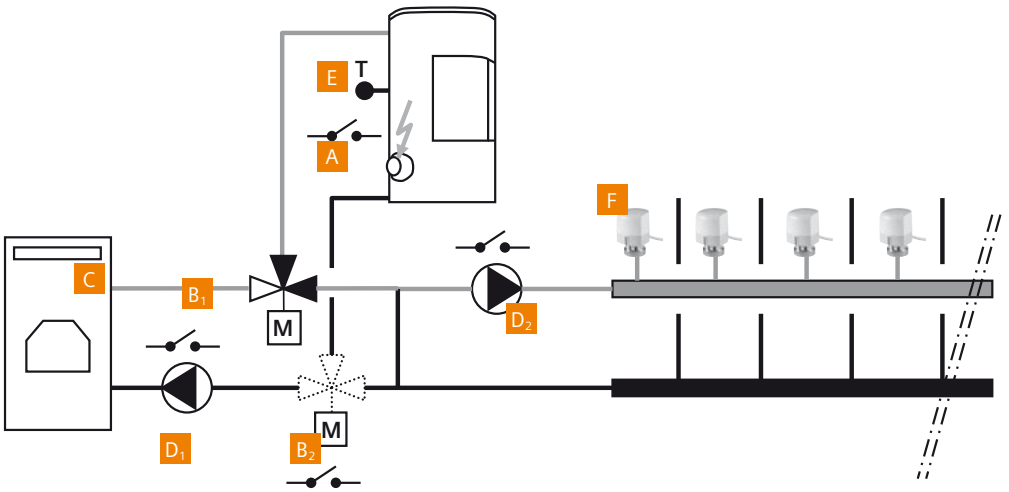
	Number of variants		
	1	2	3
		1	1
	1	1	1
	1		1

If 1 QAW910 room unit and 1 or 2 QAA910 room temperature sensors are used in the same room, the room unit's impact on averaging control can be adjusted (0...100%).

Variant 1: Authority of 50% each (fixed)
Variant 2: According to the adjusted authority of the room unit in percent
Variant 3: First, the average value of both room temperature sensors is ascertained. Then, the average actual value of the room temperature according to the adjusted authority of room unit and room temperature sensors is calculated

2.6 Heat generation and DHW

2.6.1 2 zones



Choice of applications. For more information, please contact your Siemens partner.

			A	B	C		D_1	D_2	E	Synco 900			F
					Boiler release	Modulating	DHW	Heating circuit		QAX910	RRV912	RRV918	Available zones*
			On/off output	On/off output	On/off output	0...10 V	On/off output	On/off output	Sensor				
		Number of universal relay outputs	■	■	■		■	■		1	2	1	
		Number of universal inputs							■	1	1	1	
		Number of universal output signals DC 0...10 V				■					1		
		Single-family house											
DHW heating	Electrically	Heating boiler (on/off) Heating circuit pump	■		■			■	■	1	1		2
		Heating boiler (on/off) Heating circuit pump	■		■			■	■	1	1	1	2 + 8
		Modulating heating boiler Heating circuit pump	■			■		■	■	1	1		2
		Modulating heating boiler Heating circuit pump	■			■		■	■	1	1	1	2 + 8
	Via diverting valve	Heating boiler (on/off) Heating circuit pump		■	■		■	■	■	1	2		2 + 8
		Heating boiler (on/off) Heating circuit pump		■	■		■	■	■	1	1	1	2 + 8
		Modulating heating boiler Heating circuit pump		■		■	■	■	■	1	1		2
		Modulating heating boiler Heating circuit pump		■		■	■	■	■	1	1	1	2 + 8
		Multi-family house											
DHW heating	Electrically	Heating circuit pump	■					■	■	1	1		2
		Heating circuit pump	■					■	■	1		1	8
	Via diverting valve	Heating circuit pump		■				■	■	1	1		2
		Heating boiler (on/off)		■				■	■	1		1	8

* If more zones are required, additional heating circuit controllers can be used

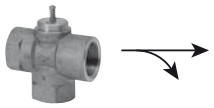
DHW temperature sensors E

Description	Prod. No.	
Cable temperature sensors	QAP22	
	QAP21.3/800	
	QAP21.3	
Immersion temperature sensors	QAE2120.010	
	QAE2120.015	
	QAE2121.010	

Description	Prod. No.	
Protection pockets Brass, nickel-plated	ALT-SB100	
	ALT-SB150	
	ALT-SB200	
	ALT-SB280	
	ALT-SB450	
Protection pockets Stainless steel (V4A)	ALT-SS100	
	ALT-SS150	
	ALT-SS280	
	ALT-SS450	
Protection pockets Brass, nickel-plated	ALT-SB100	
	ALT-SB150	
Protection pockets Stainless steel	ALT-SS100	
	ALT-SS150	
Protection pockets Stainless steel with sealing flange	ALT-SSF100	
	ALT-SSF150	

Actuators with diverting valve B

Description	Prod.No.	
Electromotoric actuators (2-position)	SFA21 lifting power 135 N	
	SFP21 lifting power 105 N	

Description	Prod. No.	DN	k_v-value m³/h	
3-port valves (internally threaded)	VXI46.15	15	2	
	VXI46.20	20	3.5	
	VXI46.25	25	5	
3-port valves (externally threaded)	VXP47.15-2.5	15	2.5	
	VXP47.20-4.0	20	4	

Note:
At the expense of ΔΔPs and running time, the following alternatives can be used:
STA21 in place of SFA21
STP21 in place of SFP21

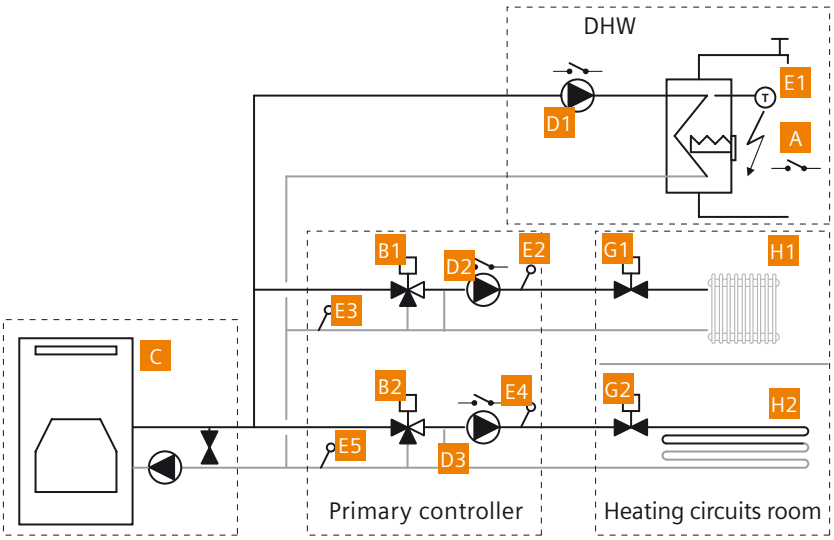
Alternatively, electromotoric actuators with 3-position signal can be used.

Electromotoric actuators

Description	Prod. No.	
Electromotoric actuators (3-position)	SSB31 lifting power 200 N	
	SSC31 lifting power 300 N	

Description	Prod. No.	DN	k_v-value m³/h	
3-port valves	VXP45.15-2.5	15	2.5	
	VXP45.20-4	20	4	
	VXP45.25-6.3	25	6.3	
3-port valves	VXP45.25-10	25	10	
	VXP45.32-16	32	16	
	VXP45.40-25	40	25	

2.6.2 3 zones



H1/H2 room temperature acquisition
2 choices are available:
b) H1/H2 room temperature acquisition
c) Room unit QAW910
For temperature acquisition and selection of setpoint, operating mode and extension of Comfort mode

G1 Radiator control actuator with matching radiator valves (refer to section 2.2)

G2 Electrothermal actuators (refer to section 2.3)

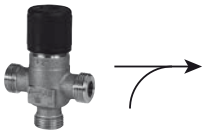
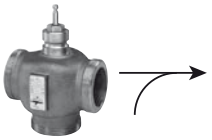
		A	B1	B2	B1/2	C		D1	D2	D3	E1	E2	E3	E4	E5	Synco living	
			M			Boiler release	Modulating	DHW	Radiator	UFH						QAX910	RRV934
		On/off output	0...10 V		3 pt	On/off output	0...10 V	On/off output			Sensors					Number of inputs / outputs per device	
	Number of universal relay outputs	■				■		■	■	■						1	4*
	Number of 3-position outputs				■												1*
	Number of universal outputs DC 0...10 V		■	■			■										2
	Number of universal inputs										■	■	■	■	■	1	4
																	Number of devices
Zone: Radiators	Heating boiler (on/off) DHW	■	■			■		■	■		■	■	■			1	1
Zone: Radiators	Modulating heating boiler DHW	■	■				■	■	■		■	■	■			1	1
Zone: Underfloor heating	Heating boiler (on/off) DHW	■		■		■		■		■	■			■	■	1	1
Zone: Underfloor heating	Modulating heating boiler DHW	■		■			■	■		■	■			■	■	1	1
Zone: Radiators Zone: Underfloor heating	Heating boiler (on/off)		■	■		■			■	■		■	■	■	■	1	1
Zone: Radiators Zone: Underfloor heating	Modulating heating boiler		■	■			■		■	■		■	■	■	■	1	1
Zone: Radiators Zone: Underfloor heating	Heating boiler (on/off) DHW	■	■	■		■		■	■	■	■	■	■	■	■	1	1
Zone: Radiators Zone: Underfloor heating	Modulating heating boiler DHW	■	■		■		■	■	■	■	■	■	■	■	■	1	1

The 2 room groups can be precontrolled by RRV934 via:
– 2 DC 0...10 V actuators, or
– 1 DC 0...10 V and one 3-position actuator

* If a 3-position actuator is used, the number of universal relay outputs of the respective RRV934 multicontroller is reduced from 4 to 3

Electromotoric actuators B with zone valves

Description	Prod. No.	
Electro-motoric actuators (3-positi-on)	SSC31 lifting power 300 N	
	SQS35.00 lifting power 400 N	
	SQX32.00 lifting power 700 N	

Description	Prod. No.	DN	k_v-value m³/h	
3-port valves	VXP45.25-10	25	10	
	VXP45.32-16	32	16	
	VXP45.40-25	40	25	
3-port valves	VXG44.15-0.25	15	0.25	
	VXG44.15-0.4		0.4	
	VXG44.15-0.63		0.63	
	VXG44.15-1		1	
	VXG44.15-1.6		1.6	
	VXG44.15-2.5		2.5	
	VXG44.15-4		4	
3-port valves	VXG41.15	15	4	
	VXG41.20	20	6.3	
	VXG41.25	25	10	
	VXG41.32	32	6	
	VXG41.40	40	25	
	VXG41.50	50	40	

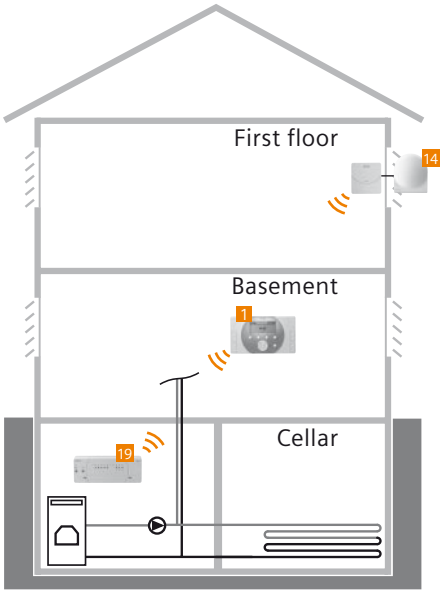
Temperature sensors E

Description	Prod. No.	
Cable temperatu-re sensors	QAP22	
	QAP21.3/800	
	QAP21.3	
Immmersi-on tempera-ture sensors	QAE2120.010	
	QAE2120.015	
	QAE2121.010	
Strap-on temperatu-re sensors	QAD22	
	QAD26.220	

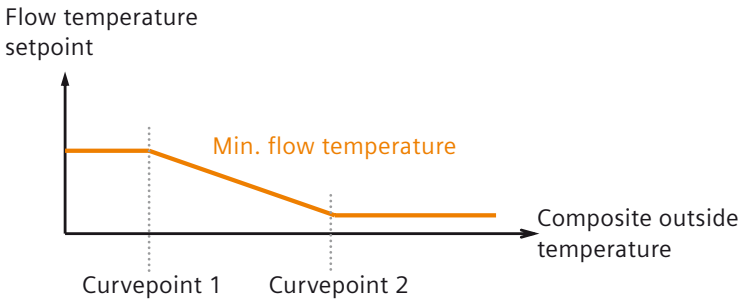
Description	Prod. No.	
Protection pockets Brass, nickel-plated	ALT-SB100	
	ALT-SB150	
	ALT-SB200	
	ALT-SB280	
	ALT-SB450	
Protection pockets Stainless steel (V4A)	ALT-SS100	
	ALT-SS150	
	ALT-SS280	
	ALT-SS450	
Protection pockets Brass, nickel-plated	ALT-SB100	
	ALT-SB150	
Protection pockets Stainless steel	ALT-SS100	
	ALT-SS150	
Protection pockets Stainless steel with sealing flange	ALT-SSF100	
	ALT-SSF150	

2.7 Outside temperature-compensated minimum flow temperature setpoint

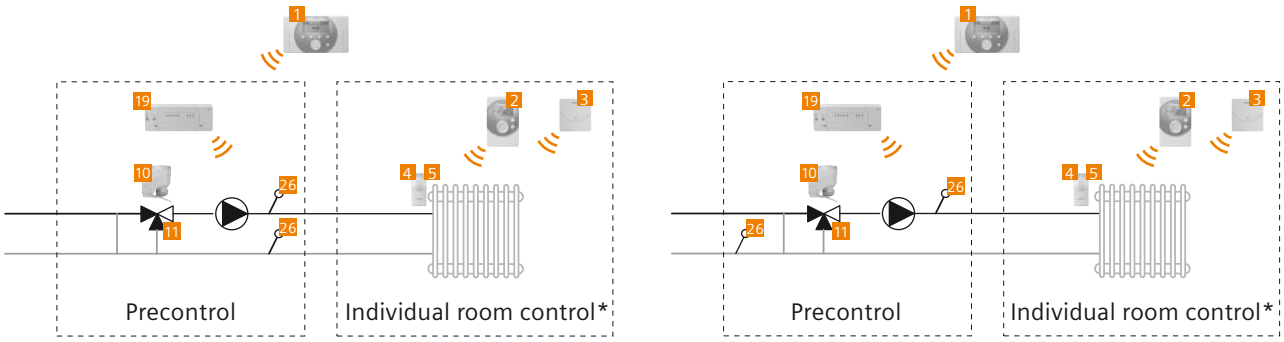
The minimum flow temperature setpoint is increased as a function of the composite outside temperature. Using this function, a minimum flow temperature can be ensured for non-controlled rooms.



1 central apartment unit QAX910 1
1 multicontroller RRV934 19
1 meteo sensor QAC910 14



2.8 Flow and return temperature control



* Refer to sections 2.2 and 2.3

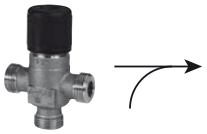
Room temperature acquisition
Per room, 2 choices are available:
b) Room temperature sensor QAA910 3
   Temperature acquisition only
c) Room unit QAW910 2
   For temperature acquisition and selection of setpoint, operating mode and extension of Comfort mode

1 central apartment unit QAX910 1
1 multicontroller RRV934 19
1 radiator control actuator SSA955 4
1 radiator valve 5
1 electromotoric actuator 10
1 zone valve 11
2 strap-on temperature sensors 26

The flow temperature is controlled via an electromotoric actuator (3-position). The electrical connection from the actuator to the multicontroller is hard-wired. Communication between multicontroller and central apartment unit takes place via KNX RF.

Electromotoric actuators [10] with zone valves [11]

Description	Prod. No.	
Electro-motoric actuators (3-positi-on)	SSC31 lifting power 300 N	
	SQS35.00 lifting power 400 N	
	SQX32.00 lifting power 700 N	

Description	Prod. No.	DN	k_v-value m^3/h	
3-port valves	VXP45.25-10	25	10	
	VXP45.32-16	32	16	
	VXP45.40-25	40	25	
3-port valves	VXG44.15-0.25	15	0.25	
	VXG44.15-0.4		0.4	
	VXG44.15-0.63		0.63	
	VXG44.15-1		1	
	VXG44.15-1.6		1.6	
	VXG44.15-2.5		2.5	
	VXG44.15-4		4	
3-port valves	VXG41.15	15	4	
	VXG41.20	20	6.3	
	VXG41.25	25	10	
	VXG41.32	32	6	
	VXG41.40	40	25	
	VXG41.50	50	40	

Strap-on temperature sensors [26]

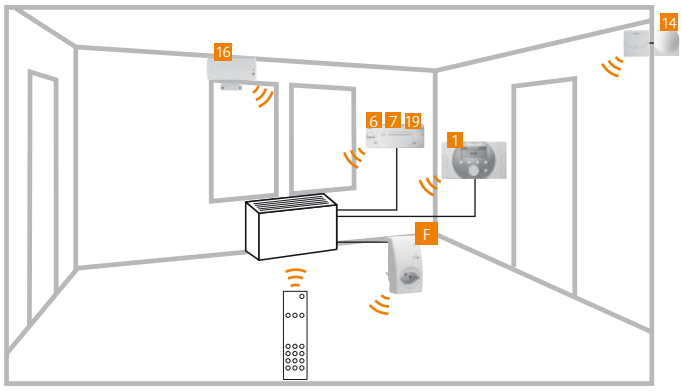
Description	Prod. No.	
Strap-on temperature sensors	QAD22	
	QAD26.220	

3. Application examples for cooling

When controlling a cooling appliance or an air conditioner, a distinction is made between:
– Cooling release output via potential-free contact
– Cooling release via RDF room temperature controller
– S-mode object (KNX TP1)

3.1 Integration via cooling release contact

Per room, 1 release contact for activating an air conditioner can be assigned.
The remote control facility of the air conditioner can be used. The air conditioner ensures autonomous control of the room temperature.



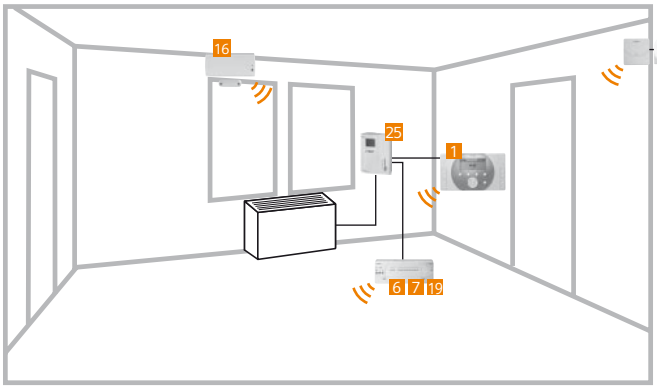
The following room applications are thus made possible:
– Heating / cooling via air conditioner
– Heating via SSA955 / RRV912 / RRV918 and cooling via air conditioner
– Cooling only via air conditioner

Cooling release can take place via:
1 central apartment unit QAX910 1
1 heating circuit controller RRV912 6/ heating circuit controller RRV918 7
1 multicontroller RRV934 19
1 RF adapter plug KRF960 F

Release of the cooling release contact is dependent on:
– The room time switch (operating modes)
– Manual selection of operating mode
– The window airing function (optional) AP260 16
– The room and apartment timer
– Absence and holiday program
– The composite outside temperature (optional) QAC910 14
– The heat request from the radiators or the underfloor heating system
– An additional air conditioner in the same room

3.2 Integration via RDF room temperature controller

Per room, a relay contact for cooling release can be used which, via the D1 input of most RDF room temperature controllers, overrides the air conditioner. The RDF ensures autonomous control of the room temperature.



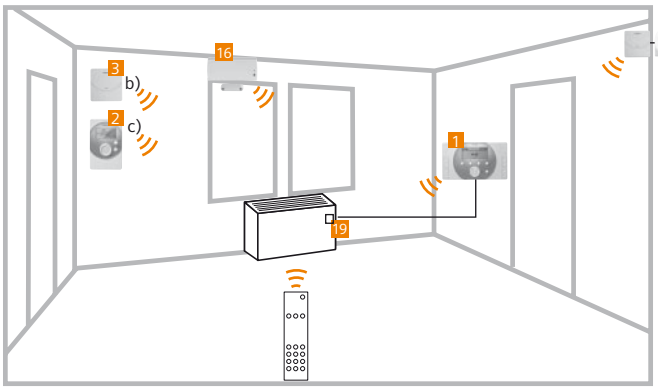
The following room applications are thus made possible:
- Heating / cooling via RDF
- Heating via SSA955 / RRV912 / RRV918 and cooling via RDF
- Cooling only via RDF

Cooling release via RDF room temperature controller 25 takes place via:
1 central apartment unit QAX910 1
1 heating circuit controller RRV912 6 / heating circuit controller RRV918 7

Release is dependent on:
- The room time switch (operating modes)
- Manual selection of the operating mode
- The window airing function (optional) AP260 16
- The room and apartment timer
- Absence and the holiday program
- The composite outside temperature (optional) QAC910 14
- The heat request from the radiators or the underfloor heating system

3.3 Integration of air conditioners

Using the IRSC interface from ZENNiO (KNX TP1), operating mode, setpoint and release of the air conditioner (e.g. split unit) per room can be controlled via the central apartment unit.
The remote control facility of the air conditioner can be used. The air conditioner ensures autonomous control of the room temperature.



The following room applications are thus made possible:
- Heating / cooling with air conditioner
- Heating via SSA955 / RRV912 / RRV918 and cooling via IRSC interface
- Cooling only via IRSC interface

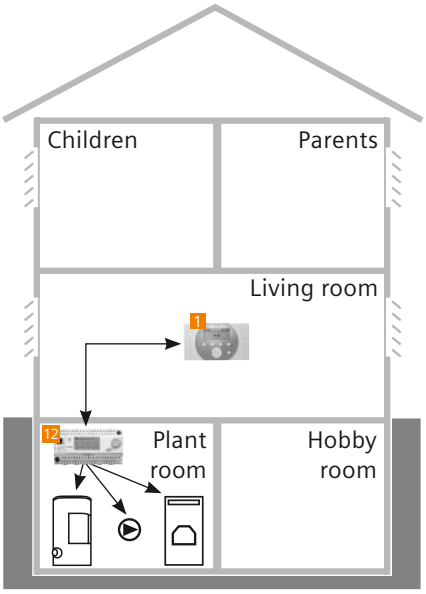
Room temperature acquisition
Per room, 2 choices are available:
b) Room temperature sensor QAA910 3
Temperature acquisition only
c) Room unit QAW910 2
For temperature acquisition and selection of setpoint, operating mode and extension of Comfort mode

1 central apartment unit QAX910 1
1 IRSC interface from ZENNiO 19

Release of the air conditioner is dependent on:
- The room time switch (operating modes)
- Manual selection of the operating mode
- The window airing function (optional) AP260 16
- The room and apartment timer
- Absence and the holiday program
- The composite outside temperature (optional) QAC910 14
- The room temperature (optional) 2 3
- The plant operating mode (heating / cooling / automatic)
- The heat request from the radiators or the underfloor heating system

4. Integration of other plants and systems

4.1 Synco 700 – primary heating controller



The primary heating controller is integrated via:
– KNX TP1 (bus solution)
– Relay “on/off” (QAX910 or RRV91x, refer to section 2.6)
– DC 0...10 V signal (RRV912, refer to section 2.6)

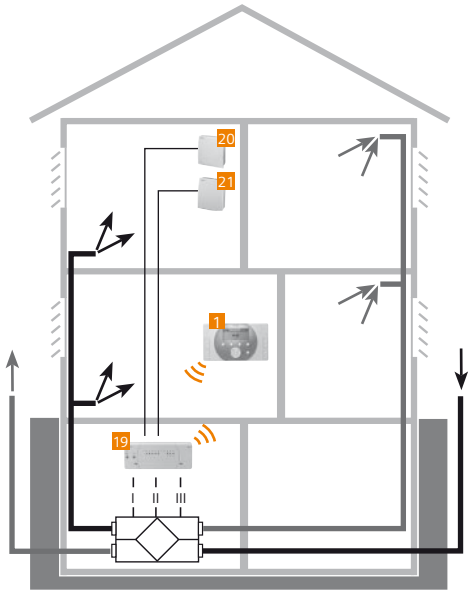
1 central apartment unit QAX910 1
1 Synco 700 12

For applications, please contact your Siemens partner.

4.2 Apartment ventilation appliances

Most commercially available apartment ventilation appliances are supplied with control ready integrated. Synco living is capable of controlling ventilation appliances with up to 3 stages.

4.2.1 Control



Control of ventilation plant can take place via:
- The QAX910 central apartment unit
- 2 ventilation contacts
- The QFA2000 humidity sensor
- The QPA63.1 indoor air quality sensor

1 central apartment unit QAX910 1
1 multicontroller RRV934 19

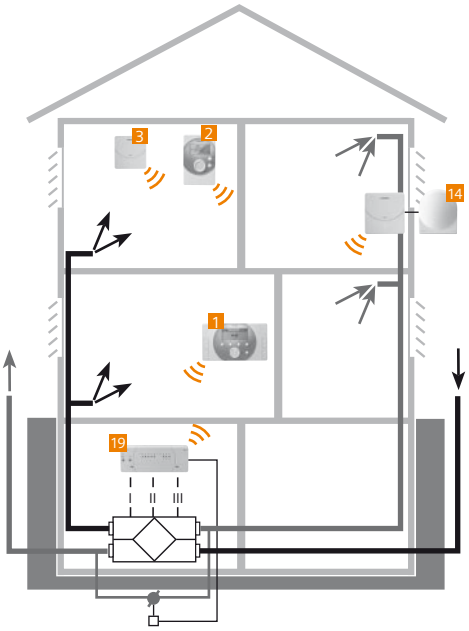
Using the multicontroller, a ventilation plant with up to 3 stages can be controlled.
Stage selection is influenced by:
- Manual entries
- The room time switch
- Absence and the holiday program
- Ventilation contact 1–2
- The humidity sensor 20
- The indoor air quality sensor 21
- The window airing function AP260
- Smoke alarm

The indoor air quality and the humidity sensor must be installed in a reference room. If the sensors were fitted in the extract air duct and the ventilation appliance was switched off, there would be no airflow so that control would be impaired. Per apartment or house, maximum 1 sensor can be installed.

Following can act on the 2 ventilation contacts (OR operation):
- Door / window switch wave AP260 16
- Universal input of RRV91x heating circuit controller
- Universal input of RRV934 multicontroller 19
- S-mode object

4.2.2 Night cooling

When using the “Night cooling” function, cool night air is introduced in the summer to lower the room temperature. During that time, a damper (bypass) in the ventilation appliance prevents warm extract air in the heat exchanger from heating up the cool outside air passing through the appliance.

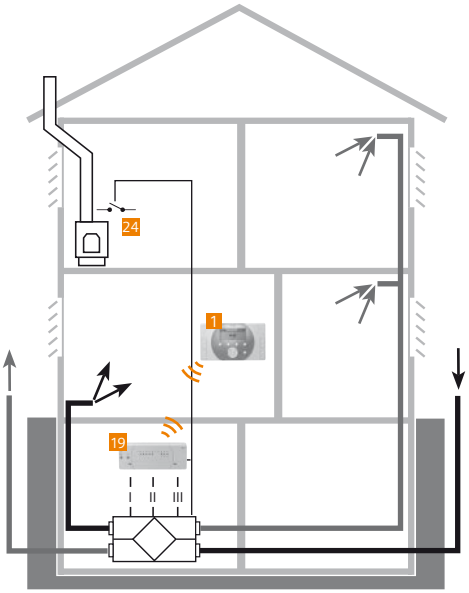


Room temperature acquisition
Per room, 2 choices are available:
b) Room temperature sensor QAA910 3
   Temperature acquisition only
c) Room unit QAW910 2
   For temperature acquisition and selection of setpoint, operating mode and extension of Comfort mode

1 central apartment unit QAX910 1
1 meteo sensor QAC910 14
1 multicontroller RRV934 19

4.2.3 Chimney function

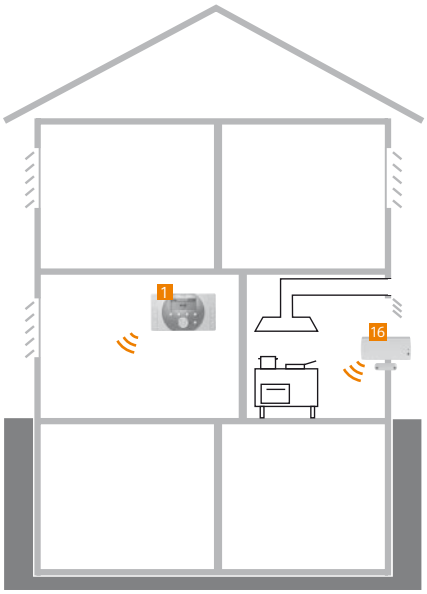
If a living room has a ventilation system and an open fireplace is in use, it must be made certain that underpressure cannot occur in the space, which would allow harmful gases from the fireplace to enter.
To prevent underpressure in the space, a switch can be fitted to the chimney, enabling the user to switch the ventilation plant off. The central apartment unit indicates when the chimney function is active.



1 central apartment unit QAX910 1
1 multicontroller RRV934 19
1 on/off switch 24

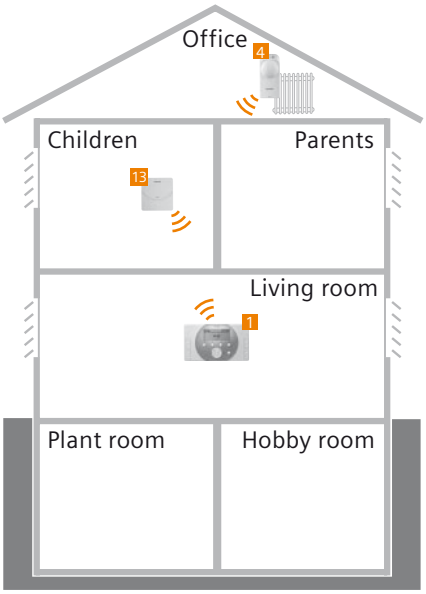
4.3 Integration of exhaust hood

The central apartment unit releases the exhaust hood only when a window near the kitchen range is open, thus preventing underpressure in the apartment.



1 central apartment unit QAX910 1
1 window switch AP260 16

5. RF repeater



1 central apartment unit QAX910 1
1 radiator control actuator SSA955 4
1 RF repeater ERF910 13

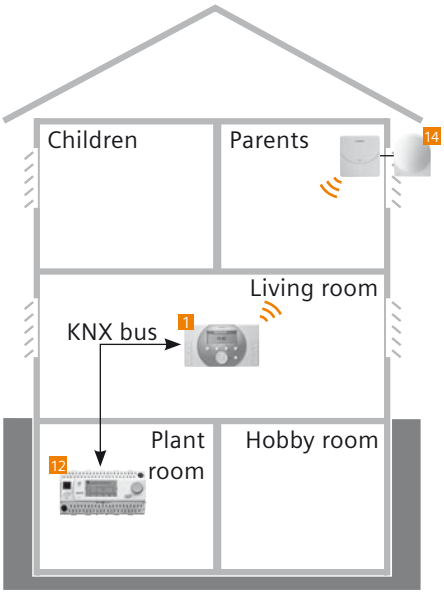
If there is a great distance between a radiator control actuator and the central apartment unit, for instance, an RF repeater can be used to ensure trouble-free wireless communication. The RF repeater can be installed in a hidden place and is maintenance-free.

Since the RF repeater is equipped with a powerpack, it can also be straightforwardly fitted at a later stage.

Typical ranges:
– Without RF repeater: Approx. 30 m or 2 concrete ceilings or floors
– With RF repeater: Double distances

The RF repeater **only** repeats radio telegrams from selected devices (incl. GAMMA wave).

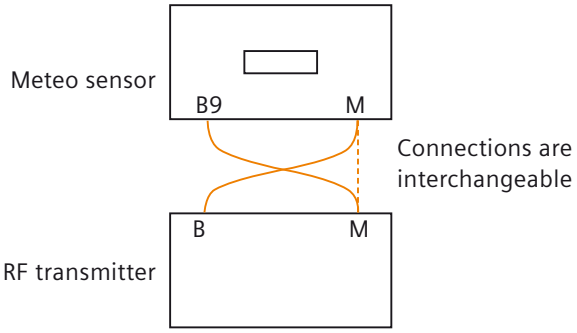
6. Meteo sensor



1 central apartment unit QAX910 1
1 Synco 700 12
1 meteo sensor QAC910 14

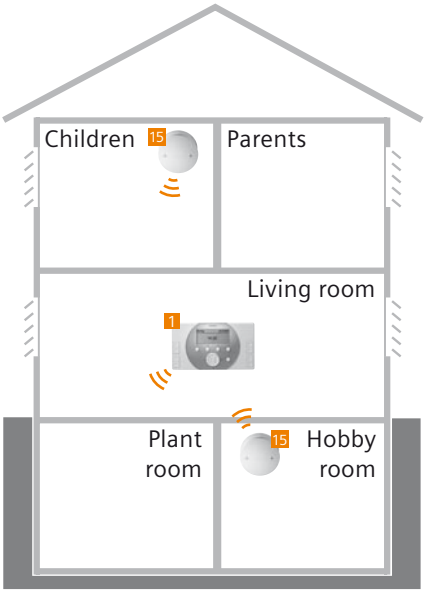
The meteo sensor acquires the outside temperature and the atmospheric pressure. The data can be displayed by the QAX910 central apartment unit, either as actual values or in the form of graphs (covering the last 24 hours). The data can also be forwarded via KNX TP1 to a primary controller or other central apartment units.

The cable for connecting the meteo sensor to the RF transmitter is not enclosed with the QAC910.



7. Security applications

7.1 Smoke detector

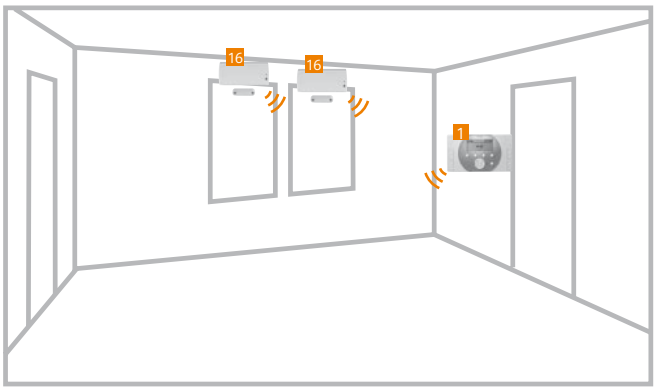


1 central apartment unit QAX910 1
2 smoke detectors 5TC1 290 15
2 RF modules 5WG3 255-8AB01 (for integration into the smoke detector)

Every room where smoke from fire shall be detected, must be equipped with a smoke detector. A central apartment unit is capable of monitoring a maximum of 12 smoke detectors (1 per room).

If a smoke detector detects smoke (acoustic signal), an alarm is sent to the QAX910 central apartment unit via KNX RF. The QAX910 then activates the built-in buzzer and energizes an alarm relay. At the same time, various scenarios can be enabled (e.g. ventilation plant off, all lights on, etc.).

7.2 Window switch



1 central apartment unit QAX910 1
2 door / window switches AP260 16

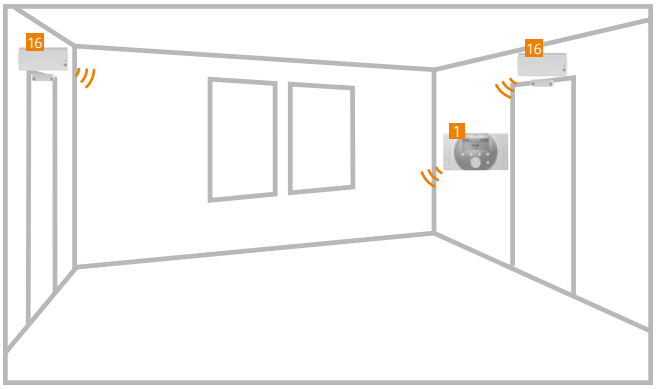
Per room, a maximum of 6 windows can be monitored by RF window switches. Another RF window switch (Reed contact) can be hard-wired (max. distance 10 m) to the RF window switch. If, after activating monitoring and on completion of the monitoring delay time, a window released for monitoring is opened, an alarm is set off.

As soon as a window is opened, the heating valve closes when the set period of time has elapsed, thus preventing heating energy from being wasted.

When leaving the apartment / house, the system displays a list with all open windows, asking the user to close them. Otherwise, an alarm is set off.

2 monitoring patterns are available:
– All monitored
– Partly monitored

7.3 Door switch



1 central apartment unit QAX910 1
2 door / window switches AP260 16

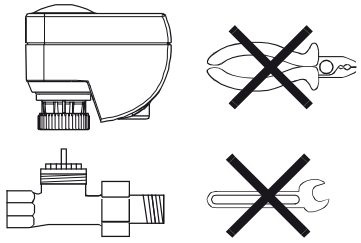
Per apartment / house, a maximum of 2 doors can be monitored by RF door contacts.
If, after activating monitoring and on completion of the monitoring delay time, a door released for monitoring is opened, an alarm is set off.

8. Mounting

The products are designed for wall mounting and supplied complete with batteries and fixing screws (if required).

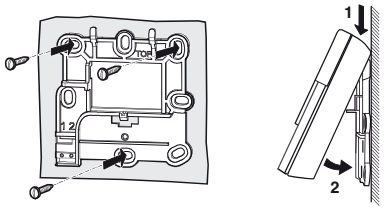
8.1 Heating and ventilation

Direct mounting:
Battery-powered 3 x AA



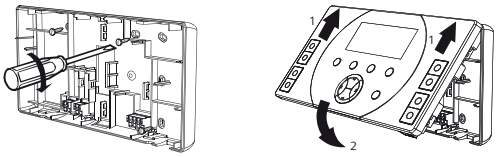
SSA955 radiator control actuator

Wall mounting:
Battery-powered 2 x AA



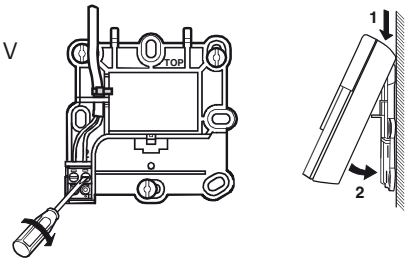
QAW910 room unit
QAA910 room temperature sensor
QAC910 meteo sensor

Wall mounting:
Mains connection AC 230 V



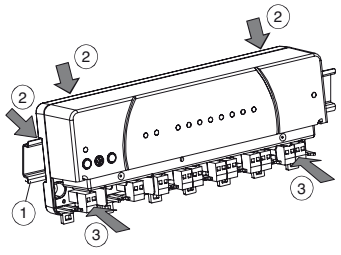
QAX910 central apartment unit

Wall mounting:
Mains connection AC 230 V
with adapter



ERF910 RF repeater

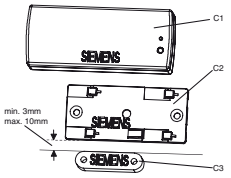
DIN rail mounting:
Mains connection AC 230 V



RRV912 heating circuit controller
RRV918 heating circuit controller
RRV934 multicontroller

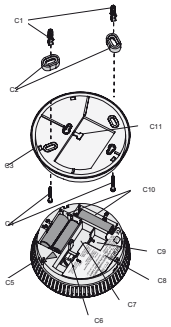
8.2 Safety and security

For mounting on doors or windows
Battery-powered 1 x ½ AA



AP260 door / window switch

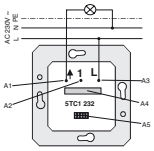
For mounting on the ceiling
Battery-powered 3 x AA



5TC1 290 smoke detector, battery

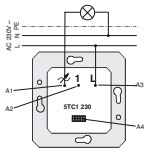
8.3 Lights and blinds

Switch insert
Flush-type insert
2-wire connection



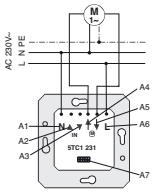
5TC1 233 switch insert sys 15 – 500 VA
5TC1 232 switch insert sys 25 – 250 VA

Dimmer insert
Flush-type insert
2-wire connection



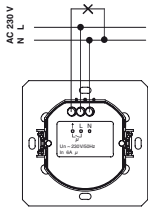
5TC1 230 universal dimmer insert sys

Blind insert
Flush-type insert
2-wire connection



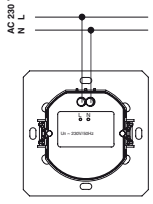
5TC1 231 blind control insert sys

Wall transmitter actuator
Flush-type insert
3-wire connection



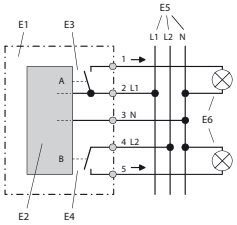
5WG3 560-2AB01 wall transmitter actuator

Wall transmitter wave
Flush-type insert
2-wire connection



5WG3 110-2AB11 wall transmitter wave

Switch actuator
Surface-mounted insert
3-wire connection



5WG3 561-4AB01 switch actuator wave

9. Switching groups

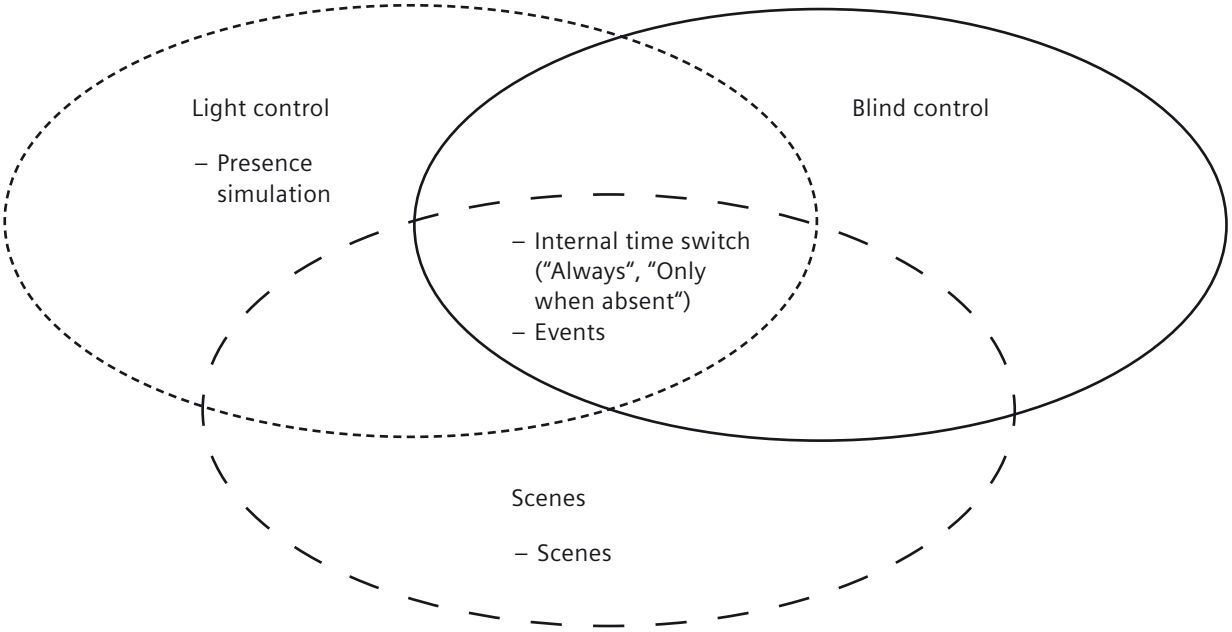
The central apartment unit is capable of controlling a maximum of 8 switching groups. The first 4 switching groups can be activated directly via the universal buttons on the central apartment unit.

Lights and blinds can be controlled or scenes can be enabled via the central apartment unit, from a remote location or via external push buttons. In addition to manual settings, scenes can be enabled via the central apartment unit, from a remote location or via push button.

Central apartment unit

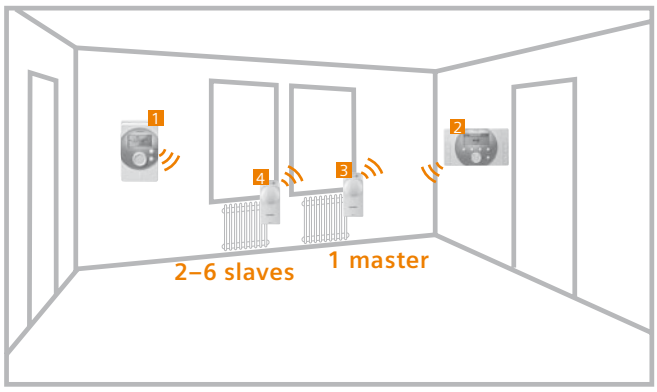
Remote control

Push button



10. Communication

The peripheral devices communicate with the central apartment unit via KNX RF.



– The room unit / temperature sensor 1 acquires the room temperature and sends the signal to the central apartment unit 2

– The central apartment unit 2 forwards the current operating mode setpoint together with the current room temperature to the radiator control actuator (master) 3 which calculates the new valve position for all radiator control actuators located in the same room

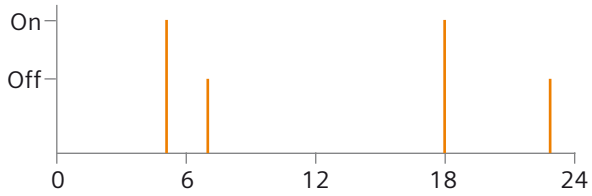
– After the new valve position has been calculated, the master radiator control actuator 3 sends the new value back to the central apartment unit 2

– The central apartment unit 2 then forwards the new valve position to all radiator control actuators (slaves) 4. This process ensures that all radiators in the room emit heat

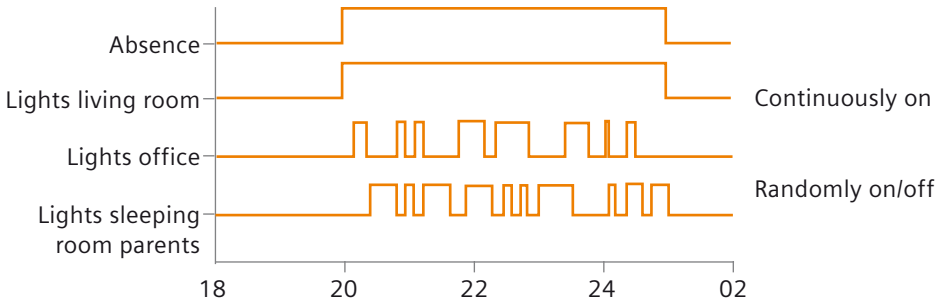
11. Application examples for light control

The following sections give a detailed description of some typical applications for living rooms.
Thanks to the high level of versatility offered by Synco living, a host of other applications are possible.

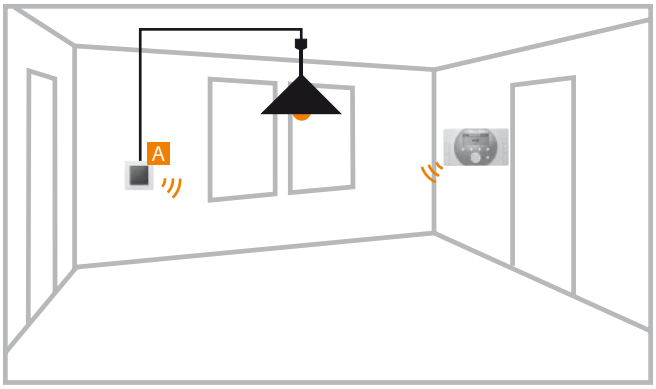
Light control via time program
On the central apartment unit, a time program can be assigned to each switching group according to which the lights are switched on and off.



Presence simulation
As soon as the "Absence" function is enabled, the random generator sends alternating switching on/off commands to the actuators at intervals of 3 to 30 minutes (lights only!). When setting the function to "Continuously on", the respective switching group remains constantly on.



11.1 Switching and dimming



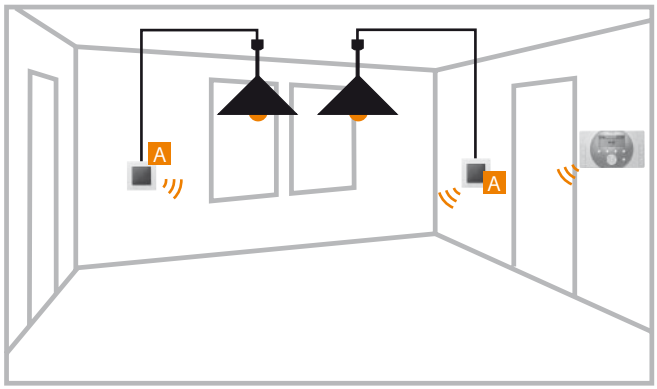
There is a direct connection between light switch A and light source (AC 230 V).
The light can be switched from the central apartment unit via a switching group, an event, or manually via the function buttons.
The buttons communicate with the central apartment unit via KNX RF.

Components used:

A	Light (incandescent bulps) "switching" 1 switch insert sys (25 – 250 VA) 5TC1 232 or 1 switch insert sys (15 – 500 VA) 5TC1 233	Light (inductive) "switching" 1 wall transmitter actuator UP 560 5WG3 560-2AB01	Light "dimming" 1 universal dimmer insert sys 5TC1 230
	Push button* 1 push button wave UP 210 5WG3 210-2HB21	Push button* 1 instabus push button UP 221 1-fold 5WG1 221-2AB21	Push button* 1 push button wave UP 210 5WG3 210-2HB21
	Frame* 1 DELTA miro, real glass, 1-fold 5TG1 201		

* Wide choice of different versions available. For more information, please contact your Siemens partner

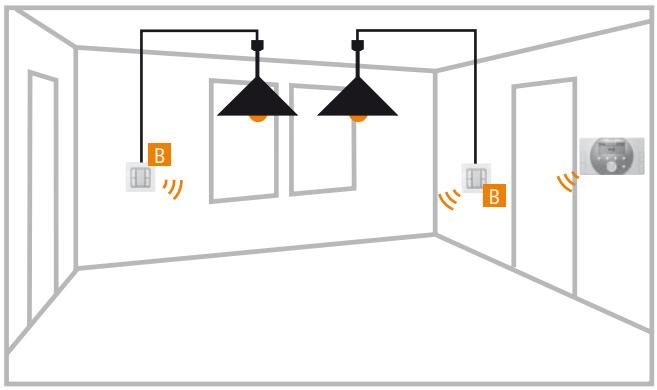
11.2 Options for switching light sources



When 1 of the 2 push buttons A is pressed, both lamps are switched on.

A

Light (incandescent bulps) ”switching”	Light (inductive) ”switching”	Light ”dimming”
2 switch inserts sys (25 – 250 VA) 5TC1 232	2 wall transmitter actuators UP 560 5WG3 560-2AB01	2 universal dimmer inserts sys 5TC1 230
or 2 switch inserts sys (15 – 500 VA) 5TC1 233		
Push buttons* 2 push buttons wave UP 210 5WG3 210-2HB21	Push buttons* 2 instabus push buttons UP 221 1-fold 5WG1 221-2AB21	Push buttons* 2 push buttons wave UP 210 5WG3 210-2HB21
Frames* 2 DELTA miro, real glass, 1-fold 5TG1 201		



Each push button B can be used to individually switch the connected and the second lamp.

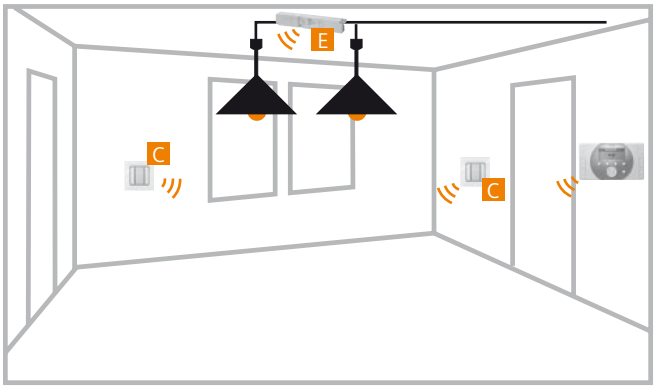
B

Light ”switching” or ”dimming”
2 wall transmitter actuators UP 560
5WG3 560-2AB01

Push buttons*
2 instabus push buttons UP 222, 2-fold
5WG1 222-2AB21

Frames*
2 DELTA miro, real glass, 1-fold
5TG1 201

* Wide choice of different versions available. For more information, please contact your Siemens partner



2 lamps can be individually switched via push button C .

C Wall transmitter

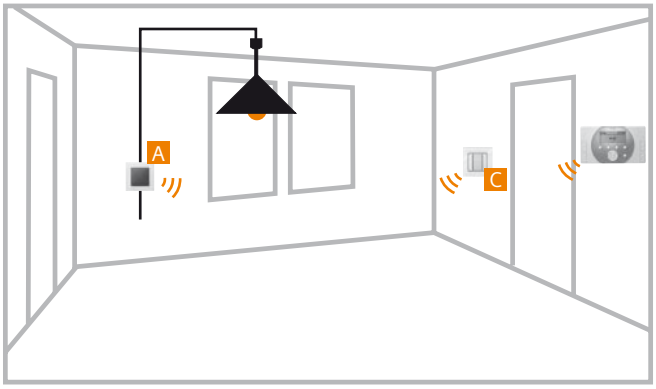
2 wall transmitters battery
5WG3 110-2AB01

2 wall transmitters AC 230 V
5WG3 110-2AB11

Push buttons*
2 instabus push buttons UP 221, 5WG1 221-2AB21

Frame*
2x DELTA miro, 1-fach, 5TG1 201

E Light (incandescent bulps and inductive) "switching"
1 switch actuator wave GE561/01, 5WG3 561-4AB01



The lamp can be switched with push button A or C .

A Light (incandescent bulps) "switching"
1 switch insert sys (25 – 250 VA)
5TC1 232

or
1 switch insert sys (15 – 500 VA), 5TC1 233

Push button*
1 push button wave UP 210
5WG3 210-2HB21

Light (inductive) "switching"
1 wall transmitter actuator UP 560
5WG3 560-2AB01

Push button*
1 instabus push button UP 221
1-fold, 5WG1 221-2AB21

Light "dimming"
1 universal dimmer insert sys
5TC1 230

Push button*
1 push button wave UP 210
5WG3 210-2HB21

C Wall transmitters
1 wall transmitter battery, 5WG3 110-2AB01

1 wall transmitter AC 230 V, 5WG3 110-2AB11

Push button*
1 instabus push button UP 221, 5WG1 221-2AB21

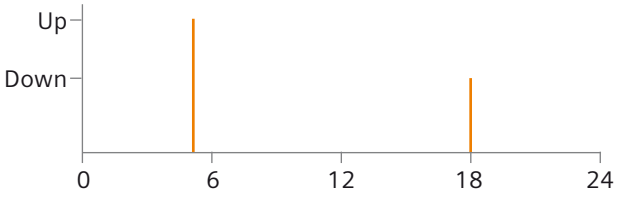
Frames*
2 DELTA miro, real glass, 1-fold, 5TG1 201

* Wide choice of different versions available. For more information, please contact your Siemens partner

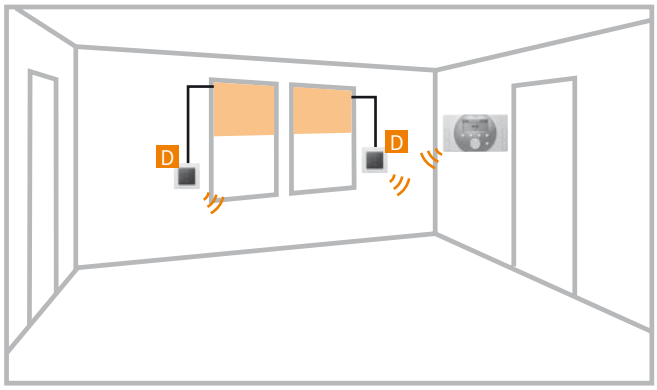
12. Application examples for blind control

The following sections give a detailed description of some typical applications for living rooms.
Thanks to the high level of versatility offered by Synco living, a host of other applications are possible.

Blind control via time program
On the central apartment unit, a time program can be assigned to each switching group according to which the blinds are raised or lowered.



12.1 Raising and lowering blinds



There is a direct electrical connection between push button D and blind actuator. The blinds can be operated from the central apartment unit via a switching group, an event, or manually via the function buttons. The push button communicates with the central apartment unit via KNX RF.

Components used:

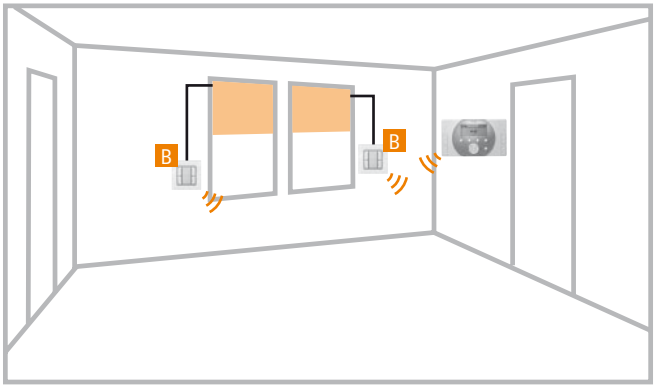
D Blind control
2 blind control inserts sys
5TC1 231

Push buttons*
2 push buttons wave UP 211
5WG3 211-2HB21

Frames*
2 DELTA miro, real glass, 1-fold
5TG1 201

* Wide choice of different versions available. For more information, please contact your Siemens partner

12.2 Options for operating blinds

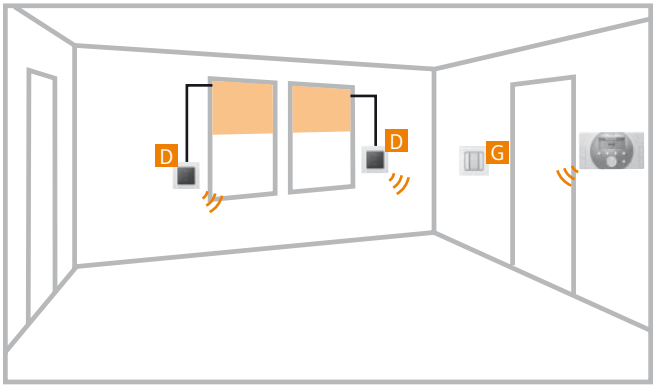


Each push button B can be used to individually operate both blinds.

B Wall transmitter actuators
2 wall transmitter actuators 230 V UP 560
5WG3 560-2AB01

Push buttons*
2 instabus push buttons UP 222, 2-fold
5WG1 222-2AB21

Frames*
2 DELTA miro, real glass, 1-fold
5TG1 201



The blinds can be operated directly by the respective window D or manually G via push button.

D Blind control
2 blind control inserts sys
5TC1 231

Push buttons*
2 push buttons wave UP 211
5WG3 211-2HB21

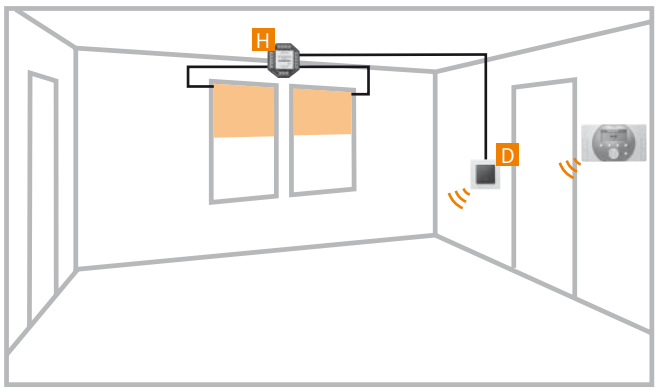
G Wall transmitters
1 wall transmitter battery,
5WG3 110-2AB01

1 wall transmitter AC 230 V
5WG3 110-2AB11

Push button*
1 instabus push button UP 221, 2-fold
5WG1 222-2AB21

Frames*
3 DELTA miro, real glass, 1-fold
5TG1 201

* Wide choice of different versions available. For more information, please contact your Siemens partner



2 blinds can be operated simultaneously via push button D from one location.

Components used:

H Blind control
1 isolating relay, compact
5TC1 271

D Blind control
1 blind control insert sys
5TC1 231

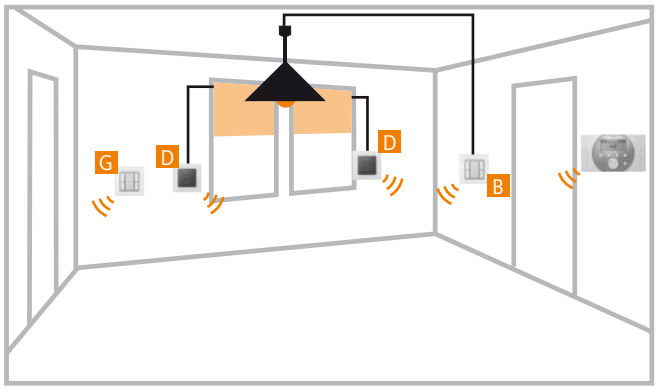
Push button*
1 push button wave UP 211
5WG3 211-2HB21

Frame*
1 DELTA miro, real glass, 1-fold
5TG1 201

* Wide choice of different versions available. For more information, please contact your Siemens partner

13. Combinations and ancillary units

13.1 Combinations of lights and blinds



Brief description:

Push button B: Light and both blinds can be operated

Push button D: Blinds can be operated at each window

Push button G: Light and both blinds can be operated

B Wall transmitter actuator
1 wall transmitter actuator AC 230 V UP 560
5WG3 560-2AB01

Push button*
1 instabus push button UP 222, 2-fold
5WG1 222-2AB21

D Blind control
2 blind control inserts sys
5TC1 231

Push buttons*
2 push buttons wave UP 211
5WG3 211-2HB21

G Wall transmitters
1 wall transmitter battery
5WG3 110-2AB01

1 wall transmitter AC 230 V
5WG3 110-2AB11

Push button*
1 instabus push button UP 222, 2-fold
5WG1 222-2AB21

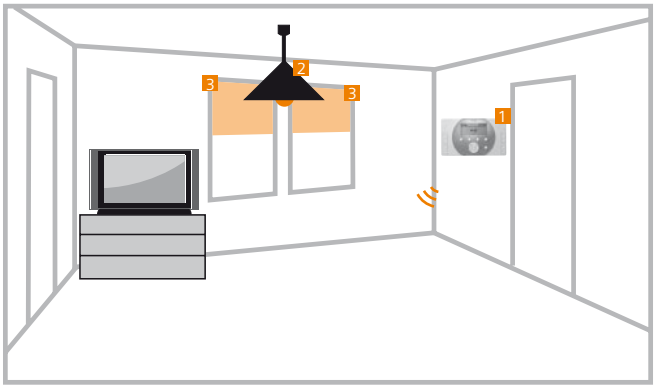
Frames*
4 DELTA miro, real glass, 1-fold
5TG1 201

* Wide choice of different versions available. For more information, please contact your Siemens partner

13.2 Scenes / events

With Synco living, individual lamps and blinds can be operated and scenes called up.

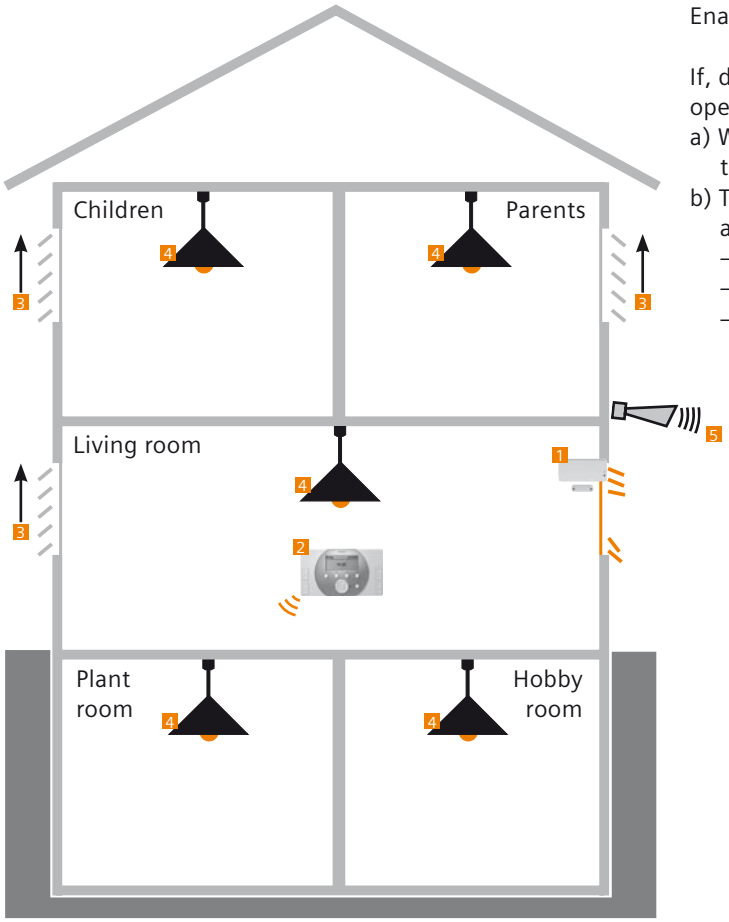
13.2.1 Scene “Movie evening”



A scene can be directly called up by pressing a button on the central apartment unit (pairs of universal buttons) 1 .

Result:
- The light is switched on and then dimmed to a level of 40% 2
- The blinds are lowered 3

13.2.2 Scene “Intrusion”

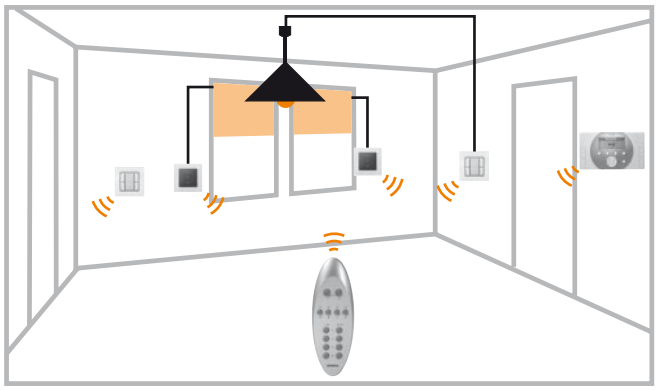


Enabling a scene if an event occurs*:

If, during absence, a monitored window is opened:
a) Window switch AP260 1 sends a telegram to the central apartment unit 2
b) The central apartment unit identifies the alarm:
- All blinds in the house are raised 3
- All lights in the house are switched on 4
- An acoustic signal is given 5

* In addition to manual enabling, the function of a switching group can be automatically activated by one or several events: E.g. all lights on if smoke is detected, or all blinds lowered when absence is selected on the central apartment unit

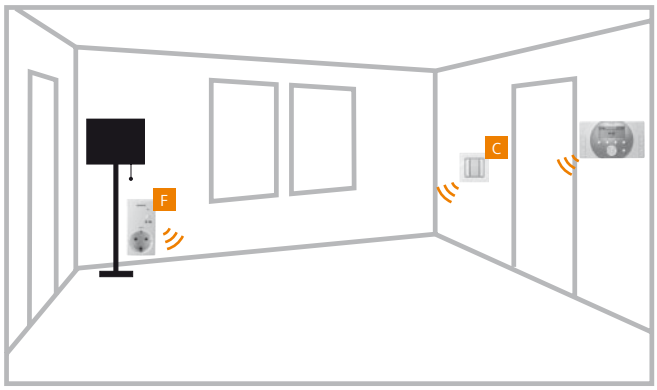
13.3 Remote control



Using remote control, lights and blinds can be conveniently operated from the couch, for instance.

Handheld transmitter
1 handheld transmitter wave S425
5WG3 425-7AB21

13.4 RF adapter plug



Using the RF adapter plug, different electrical consumers can be switched on and off. Data transmission between central apartment unit or switch and RF adapter plug takes place via KNX RF.

C Wall transmitters
1 wall transmitter battery
5WG3 110-2AB01

1 wall transmitter AC 230 V
5WG3 110-2AB11

Push button
1 instabus push button UP 221
5WG1 221-2AB21

Frame*
1 DELTA miro, real glass, 1-fold
5TG1 201

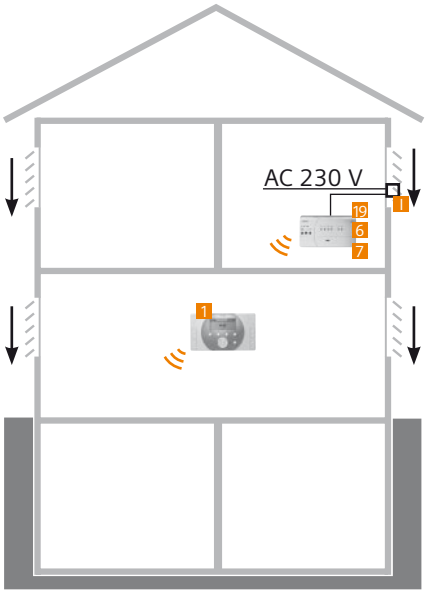
F RF adapter plug “switching“
1 KRF960

RF adapter plug “dimming“
1 KRF961

* Wide choice of different versions available. For more information, please contact your Siemens partner

13.5 Brightness sensor

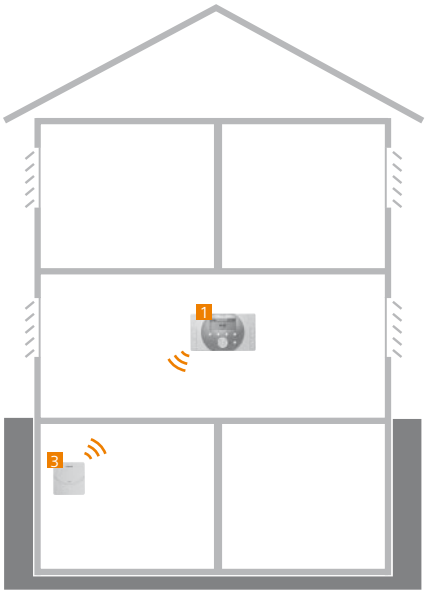
When it gets dark (brightness drops below the set level) and absence is activated, the blinds are automatically lowered.



1 central apartment unit QAX910 1
1 universal input via RRV912 6/RRV918 7/RRV934 19
1 brightness sensor with potential-free output I

13.6 Temperature display

The room temperature of an unheated space (e.g. wine cellar) can be displayed.



1 central apartment unit QAX910 1
1 room temperature sensor QAA910 3

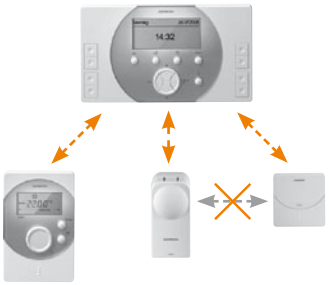
14. Communication via KNX

Synco living is a modular Home Automation System featuring central operation and automatic control of all parameters required for comfortable living. It adjusts temperatures, air and light conditions and ensures security in every room to meet individual comfort needs while giving consideration to cost savings and environmental compatibility. The system can be dynamically adapted to changing living conditions. Exchange of information takes place by wire and via radio links.
To satisfy all needs in a house or an apartment, an open Home Automation System is required. Thanks to the international KNX standard, Synco living offers an array of choices. The system can be easily extended at any time.

KNX is an open bus standard, representing a further development of the European installation bus (EIB), Batibus (HVAC) and EMS (household appliances) – a highly integrative communication protocol for this type of application and an ideal platform for the flexible structure of Synco living. Thanks to this standardization, smooth integration of further comfort, security and energy saving features is ensured – today and in the future.

The QAX910 central apartment unit – the heart of every plant – communicates with the peripheral devices not only via KNX RF, but also via KNX wire (KNX TP1).

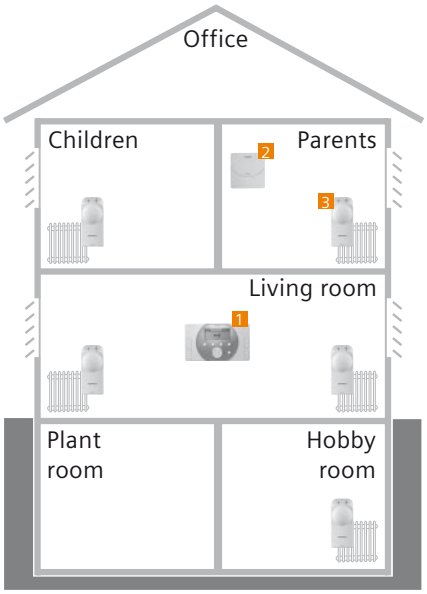
The entire communication is handled by the central apartment unit (no communication between peripheral devices).



The radio frequency used is 868.3 MHz. Since the majority of the devices are battery-powered (battery life about 3 years), KNX RF attaches great importance to energy-saving radio transmission. For this reason, a device communicates only 1% of the time (for 36 s during 1 hour) with the central apartment unit (duty cycle <1%), so there is no radio transmission during the remaining time.

RF operation of the entire plant:

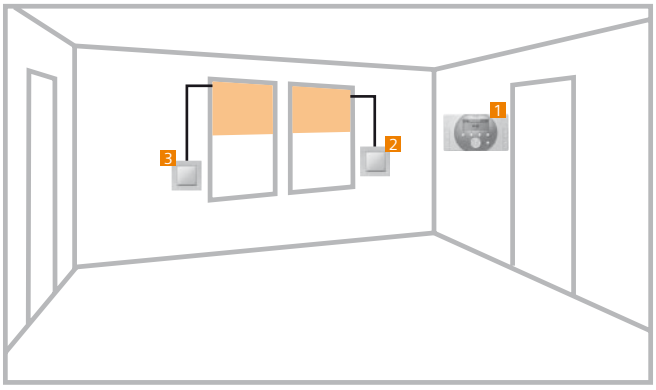
With KNX RF, the individual devices are interconnected simply by pressing a button (push button mode). This is very fast, with no need for using a tool.



Commissioning the heating system

- Define the name of the room in commissioning mode and select the type of heating 1
- Switch to RF connection mode and select the room
- Press the binding button on device 2 , device 3, ... in the respective room
- Check on the display of the central apartment unit 1 whether all devices are connected, then confirm

Repeat above steps for all rooms.



Commissioning the switching group (e.g. for blinds)

- Define the name of the switching group and the function in commissioning mode 1
- Switch to RF connection mode and select the switching group
- Press the button on device 2
- Press the button on device 3
- Confirm on the central apartment unit

On the central apartment unit, a maximum of 8 switching groups can be enabled.

In terms of the type of communication, a distinction is made between:

Unidirectional devices:
These devices send their radio telegrams periodically (sending only, no reception). Such devices are, for example, the:

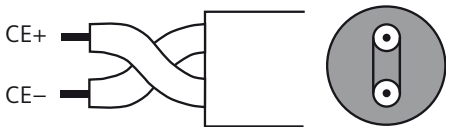
- QAC910 meteo sensor
- 5TC1 290 smoke detector

Bidirectional devices:
These devices send and receive radio telegrams. They send the telegrams when data are changed, when interventions are made, and periodically. Such devices are, for example, the:

- QAW910 room unit
- SSA955 radiator control actuator

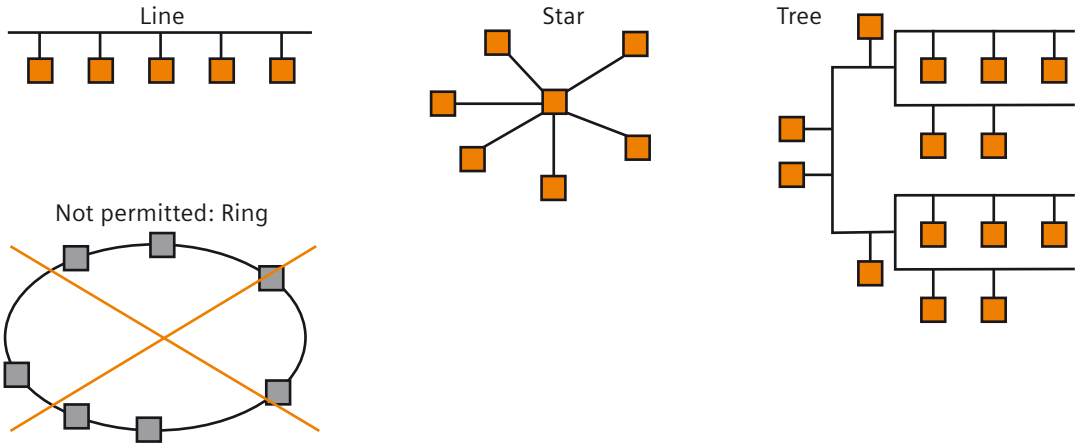
In contrast to devices that communicate via KNX RF, transmission or reception times are not assigned to devices interconnected via wire bus.

2 twisted conductors CE+ (red) and CE– (black).



For the KNX bus used in connection with Synco devices, unshielded bus cables are permitted. However, shielded bus cables are recommended if considerable radio interference is expected.

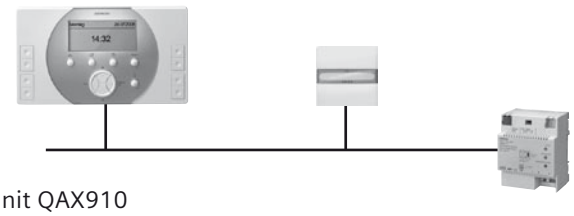
Line, star, tree (can be mixed as required). Ring not permitted, no bus terminating resistor.



Central apartment unit:
The QAX910 central apartment unit features simplified bus power supply (12.5 mA) which may only be used for powering an OZW771 or OCI700.

Central bus power supply:
Bus power supply (e.g. 5WG1 125-1AB01) is required if, for example, an additional bus user (without own power supply) is needed.

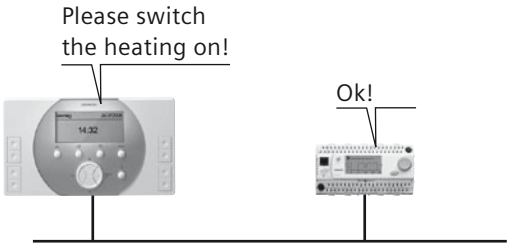
For more information, please contact your Siemens partner.



1 central apartment unit QAX910
1 KNX bus coupler UP110, 5WG1 110-2AB03, incl. frame and push button
1 KNX power supply N125/01, 5WG1 125-1AB01

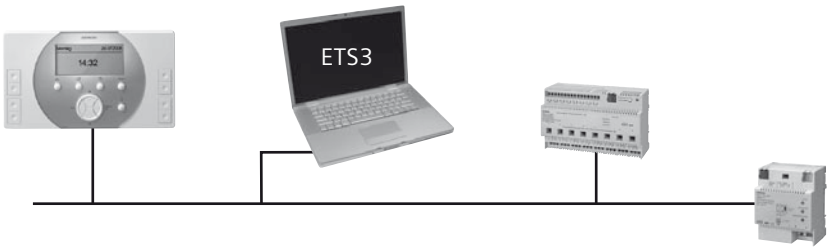
With KNX TP1, we distinguish between the following types of configuration:

LTE mode
Here, the applications are defined. The connected devices "know" the data to be exchanged. All Synco devices support this mode, so that commissioning and configuration do not necessitate the ETS software tool.



1 central apartment unit QAX910
1 Synco 700

S-mode
When integrating KNX actuators via wire (KNX TP1), the individual datapoints between the devices to be linked are commissioned with the help of the ETS software tool.
In most cases, systems are commissioned by so-called system integrators. An alternative would be to acquire KNX knowledge in special KNX training courses.



1 central apartment unit QAX910
1 KNX universal dimmer N527, 5WG1 527-1AB02
1 KNX power supply N125/01, 5WG1 125-1AB01

Datapoints	Input / output
System time, date, time of day	Input and output
Most severe fault / most important alarm	Output
Fault inputs 1–8	Input
Status output / status relay	Output
Door / window state apartment	Output
Door states 1 and 2	Input or output
Monitoring (inactive, partly monitored, all monitored)	Input and output
Outside temperature	Input and output
Atmospheric pressure (above sea level and adjusted)	Output
Twilight switch	Input
Switching group 1–8 (switching, dimming, blinds, scene)	Output
Light status indication 1–4	Input
DHW forced charging (DHW push)	Input (trigger)
Preselected DHW operating mode	Input and output
DHW operating mode state	Output
DHW storage tank temperature setpoint	Input and output
DHW storage tank temperature actual value	Output
Absence switching contact	Input
Absence state	Output
Apartment operating mode heating: Preselection	Input and output
Apartment operating mode heating: State	Output
Enabling Comfort mode	Input
Summer operation: Preselection	Input
Summer operation: State	State
Heating / cooling changeover	Input
Heat demand absolute	Output
Exhaust hood release	Output
Ventilation: Step selection	Input and output
Ventilation: Fan stage state	Output
Ventilation contacts 1 and 2	Input
Indoor air quality	Input or output
Humidity	Input or output
Chimney mode	Input or output
Temperature display sensors 1–3	Input or output

Datapoints	Input / output
Per room 1–12:	
Actual value of room temperature	Output
Preselected room operating mode	Input and output
State of room operating mode	Output
Comfort heating setpoint	Input and output
Precomfort heating setpoint	Input and output
Economy heating setpoint	Input and output
Valve position (%)	Output
Window state	Input
Smoke alarm	Input
Cooling: Release	Output
Air conditioner: On/off	Output
Air conditioner: Operating mode	Output
Air conditioner: Room temperature setpoint	Output
Comfort cooling setpoint	Input and output
Precomfort cooling setpoint	Input and output
Economy cooling setpoint	Input and output

15. System limits

Limitation of system (KNX TP1 bus)
126 QAX910 central apartment units

Limitations per central apartment unit
12 rooms
2 door switches AP260
4 light actuators with status indication (only with KNX TP1)
3 RF repeaters ERF910
1 meteo sensor QAC910
64 RF components (incl. QAX910)[1)]
2 room groups
3 room temperature sensors QAA910 (in addition to the room sensor; temperature display)

[1)] In addition to the above devices, dimming and blind actuators without status display as well as RF adapter plugs can be used in unlimited numbers

Limitations per room
1 room unit QAW910
2 room temperature sensors QAA910
1 heating circuit controller RRV91x with max. 6 channels [2)]
6 radiator control actuators SSA955
6 window switches AP260
1 smoke detector 5TC1 290 (smoke detector RF module 5WG3 255-8AB01)

[2)] Radiator control actuators and heating circuit controllers cannot be used in the same room

16. Visualization

A Synco living system can be matched to customer needs in a number of ways. It can also be visualized and operated from a remote location. In tabular or graphic form – stationary or portable – all requirements can be satisfied. This chapter presents a number of choices.

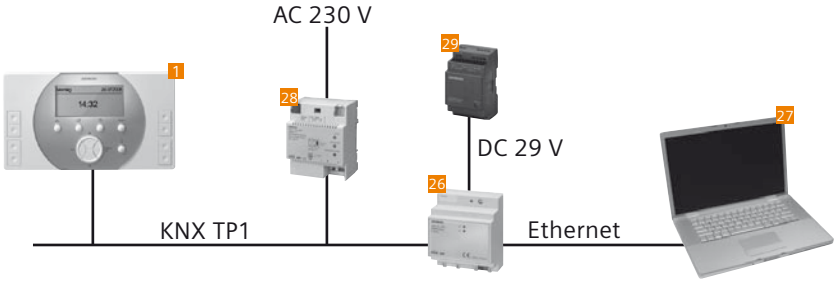
A distinction is made between 2 types of operation:
– Visualization and operation inside the house (e.g. via touchpanel)
– Access from a remote location (e.g. via laptop or some other portable equipment)

For commissioning the KNX products listed, ETS 3 Professional software is required. It is available from the KNX Association cvba (www.knx.org).

16.1 Visualization and operation inside the house

16.1.1 Visualization and operation via KNX/IP Viewer

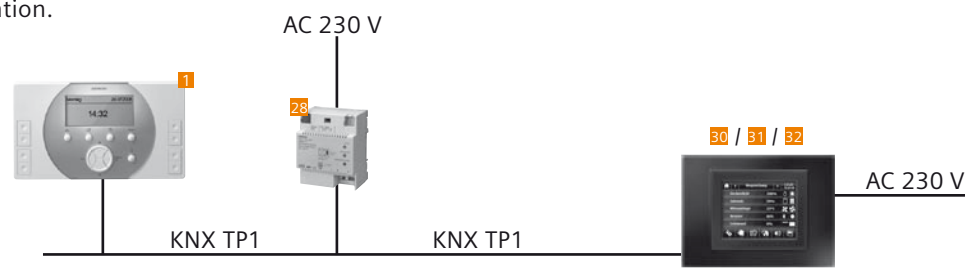
The KNX/IP Viewer offers affordably priced and easy-to-operate browser-based visualization. This facilitates decentralized operation and monitoring of up to 40 functions on a maximum of 5 user-configurable pages via the home network. Using a browser, the user interface can be displayed on any PC or laptop – no matter what screen size.



1 Synco living central apartment unit QAX910 1
1 KNX/IP Viewer N151, 5WG1 151-1AB01 26
1 PC, laptop 27
1 KNX power supply N125/21, 5WG1 125-1AB21 28
1 power supply LOGO! Power 24 / 1.3 A, 6EP1 331-1SH02 29

16.1.2 Visualization and operation via KNX touchpanel

Thanks to direct KNX TP1 bus connection between the central apartment unit and the fully graphic KNX color touchpanel, a maximum of 10 freely configurable display pages with up to 110 functions are available for display and operation.

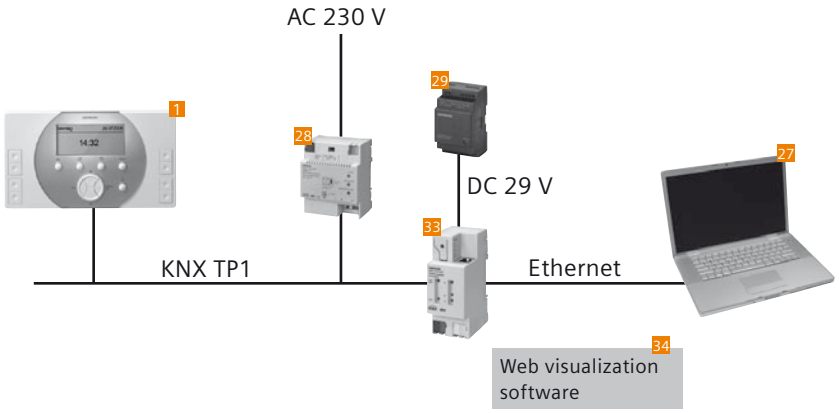


1 Synco living central apartment unit QAX910 1
1 KNX power supply N125/21, 5WG1 125-1AB21 28
1 KNX touchpanel UP 588/12, 5WG1 588-2AB12 30
1 design frame for KNX touchpanel 5WG1 588-8AB03 31
1 flush-type / cavity wall box for KNX touchpanel 5WG1 588-8AB11 32

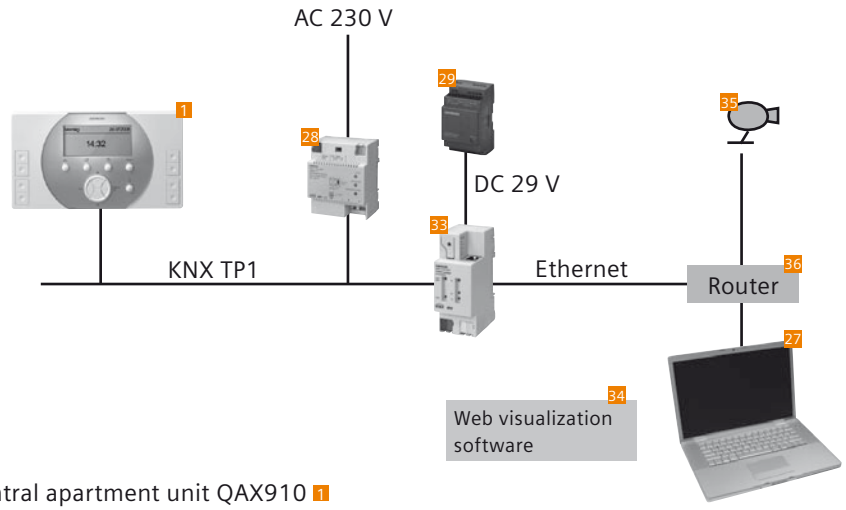
16.1.3 Visualization and operation of different communicating devices via touchpanel

If you interconnect your communicating Home Automation devices and would like to operate and monitor them by means of a touchpanel or laptop, web visualization offers you all kinds of choices. In addition to an unlimited number of datapoints, this convenient solution enables you to take advantage of all graphical choices. A gateway (e.g. KNX/IP) is used for establishing the link to the home network. These gateways transmit the data from the peripheral devices to the web server, and vice versa, thus enabling the devices to communicate with each other.

Only with Synco living:



Synco living and other devices, such as webcam (Ethernet):

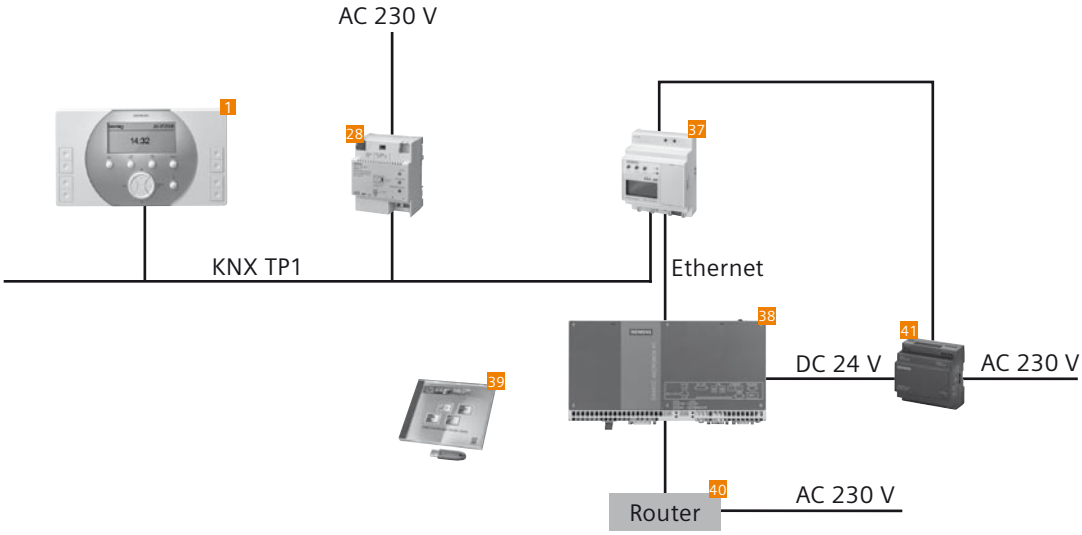


1 Synco living central apartment unit QAX910 1
1 PC, laptop 27
1 KNX power supply N125/21, 5WG1 125-1AB21 28
1 power supply LOGO! Power 24 / 1.3 A, 6EP1 331-1SH02 29
1 IP interface N148, 5WG1 148-1AB21 33
1 web visualization software 34
1 webcam (Ethernet) 35
1 router 36

16.2 Remote access

16.2.1 Visualization and operation via browser and touchpanel

You have a modern Ethernet-based home network and would like to operate and monitor your Home Automation System via touchpanel or laptop, not only from within your home, but also from remote locations. In that case, web visualization ComBridge Studio Suite in connection with the microbox web server and a WLAN-compatible ADSL router offers you all kinds of choices. When making use of this convenient solution, the number of datapoints and graphic choices are unlimited.



1 Synco living central apartment unit QAX910 1
1 power supply N125, 5WG1 125-1AB21 28
1 KNX/IP controller N350E, 5WG1 350-1EB01 37
1 microbox F427B, 6ES7 647-7AE20-0AB0 38
1 web visualization ComBridge Studio Suite 63101-32-5x 39
1 WLAN-compatible ADSL router 40
1 power supply LOGO! Power 24 / 4 A, 6EP1 332-1SH51 41