SIEMENS 3876



RXL

## Room controller

**RXL39.1** 

Communicating room controller for fan-coil applications FC-13

The RXL39.1/FC-13 room controller is used for temperature control in individual rooms.

- For 2-pipe or 4-pipe fan-coil systems, with or without change-over
- ECM fan control
- PI control
- Proprietary bus communication
- Integration into the Desigo building automation and control system via PX KNX
- 0 ... 10 V control of valve actuators, fan, and electric heating coil
- Volt-free relay contacts for release of the fan and the electric heating coil
- Commissioning with "HandyTool" or Synco ACS
- AC 230 V operating voltage
- Screw terminals

The RXL39.1 room controller is optimized for control of fan-coil systems in individual rooms.

The function of each controller is determined by the application software.

The controllers are delivered with a fixed set of applications. The relevant application is selected and activated during commissioning using one of the following tools:

- "HandyTool" (the QAX34.3 room unit includes a tool function which allows you to set the parameters of the connected RXL controller)
- Synco ACS

#### **Functions**

The room controller functions are determined by the selected application, its parameters, and by the input/output configuration.

For details, refer to the FNC description of functions, document CM110785.

When RXL controllers are integrated into a building automation and control system, or into a Synco system, additional functions become available such as time scheduling, central control of setpoints, etc.

## **Applications**

The following applications are available for the RXL39.1 room controller:

Application group (type)	Fan-coil applications
FC-13	ECM fan application

Note

Only one application at a time can be activated with the tool ("HandyTool" or Synco ACS).

#### **Ordering**

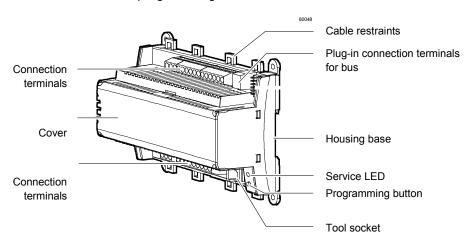
Product number	Stock number	Designation	
<b>RXL39.1/FC-13</b> S55373-C122		Room controller	
RXZ30.1		Terminal covers (to be ordered separately)	

#### **Equipment combinations**

The RXL39.1 room controller is compatible with field devices from Siemens Building Technologies.

For details, refer to the Desigo RX hardware overview, CA2N3804.

The RXL39.1 controller consists of a housing base, a housing cover and the printed circuit board with connection terminals. The controller also has a tool socket, a service LED and a programming button.



#### **Service LED**

The service LED shows the operational status of the room controller as follows:

Green, flashing	Normal operation.	
Red, ON	Programming mode for address assignment (ACS).	
	Fault	
Orange / green,	Startup phase.	
flashing	No application selected.	
	Loading.	
	<ul> <li>Download from ACS.</li> </ul>	
	<ul> <li>Room unit QAX34.3 in HandyTool mode.</li> </ul>	
OFF	No supply voltage	
	Fault	
Other patterns	After switching on the operating voltage, the service LED	
	flashes in different patterns for 3 to 5 seconds.	
	If other patterns appear during normal operation, this indicates	
	an error.	

#### **Programming button**

The programming button is used to identify the controller in the commissioning phase.

Pressing this button causes the red service LED to light up and remain on until identification of the controller is complete.

Once the programming button has been pressed, the tool overwrites the hardware address in the room controller.

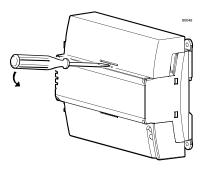


If there are no terminal covers fitted, the programming button may be operated only by a qualified electrician.

The adjacent terminal may be a live mains voltage conductor.

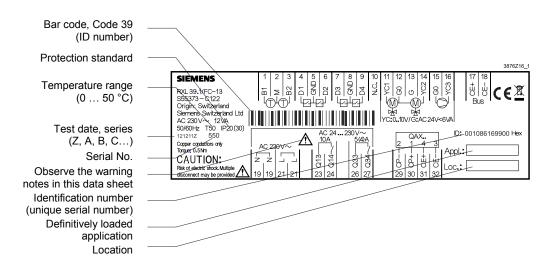
#### **Terminal cover**

Terminal covers (RXZ30.1) are available as an option, to protect the connection terminals from physical contact and dirt. The service LED remains visible when the terminal covers are in place, and the programming button can be operated with a pointed implement. The cable is connected to the room controller by breaking out the perforated cable entry guide.



Removing the terminal cover

#### Label



Note Options for use of the labeling fields "Appl." and "Loc.":

Handwritten identification of the location and the activated application group.

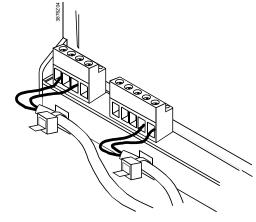
#### **Connection terminals**

The connection terminals for the **bus** are detachable plug-in screw-terminals. All **other terminals** are fixed. To avoid incorrect wiring, terminals which can be connected to AC 230 V (relay outputs) are physically separated from the other terminals.



Note!

The cable restraints on the housing base *must* be used for the connections to terminals 19 ... 27 (AC 230 V). The conductors must be secured with cable ties (see diagram).



#### Communication

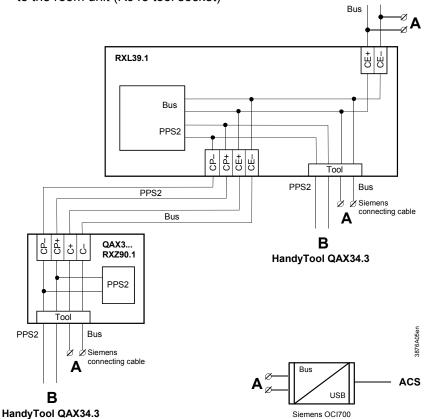
The RXL39.1 controller communicates with other devices via the following interfaces:

- PPS2 interface (proprietary) for the exchange of data with the room units
- Bus (terminals CE+ and CE-) for communication with:
  - PX/KNX interface (to Desigo Insight)
  - Interface OCI700 (to Synco)
  - Other RXL controllers

#### Connecting the tool

To facilitate commissioning, the tool Synco ACS can be connected at three different points (marked (**A**) in the diagram) in the plant:

- to the bus cable at any point
- to the RXL39.1 controller (RJ45 tool socket)
- to the room unit (RJ45 tool socket)



Notes

The tool socket is a proprietary socket.
 A Siemens connecting cable must be used (e.g. PXA-C1).
 When connected to Ethernet, the device on the other end may be damaged!



- The ACS tool, even if connected to a tool socket, requires an interface (OCI700).
- The "HandyTool" is connected to the tool socket of the room controller or to the tool socket of the room unit (QAX..., RXZ90.1) (**B**).
- If you use OCI700 as an interface, it is connected to the service plug of the controller or of the room unit.

As long as the OCI700 is connected to the service plug, it must be supplied by the computer via the USB interface. Otherwise the LCD display of the room unit will turn dark and the controller will switch to addressing mode.

#### **Disposal**



The device is classified as waste electronic equipment in terms of the European Directive 2002/96/EC (WEEE) and should not be disposed of as unsorted municipal waste.

The relevant national legal rules are to be adhered to.

Regarding disposal, use the systems setup for collecting electronic waste.

Observe all local and applicable laws.

## **Engineering**

#### Bus

Topology	Tree, line, or star
	NO closed loops
Cable length	Max. 1000 m (sum of all cables of a line
-	(for details refer to document CM110381)
Cable type	E.g. YCYM 2 x 2 x 0.8 mm
Number of RXL Controllers per	Max. 45
Network	
Bus supply	Up to 45 RXL-controllers:
	5WG1 125-1AB12
Bus terminator	Not required

## AC 230 V supply cables

- The RXL39.1 room controller operates with a mains supply voltage of AC 230 V.
- The sizing and fuse protection of the power supply cables depend on the total load and on local regulations.
- Connection terminals for the supply voltage are duplicated, so that the supply cables can be looped on the controller. The cables must be secured with cable restraints.
- Different phases may be connected to the terminals 21 (L), 23 (Q13) and 26 (Q33).
- All AC 230 V conductors must be secured with cable ties.

## Volt-free relay outputs AC 230 V

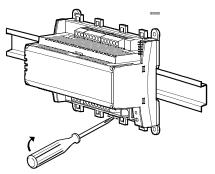
- The volt-free releasing relay output for the fan allows the switching of a load up to AC 250 V, 5(4) A.
- The volt-free releasing relay output for the heating coil switches a resistive load up to 1.8 kW, max. 10 A.
- The circuits must be externally fused (≤ 10 A) as there are no internal fuses.
- The cables connected to the room controller must be secured with cable ties.

#### DC 0...10 V outputs

- Valve actuators
- The DC 0 ... 10 V control outputs YC1, YC2 deliver max 1.5 mA.
- The AC 24 V supply output G (next to YC2) delivers max. 6 VA.
- Fan control
- The DC 0 ... 10 V control output YC3 delivers max 1.5 mA.

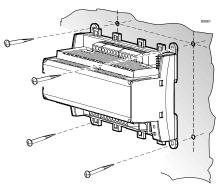
## AC 24 V supply for field devices (G)

 The controlled devices (valve and damper actuators) receive their power directly from the room controller. This means that a separate AC 24 V supply is only necessary for the field devices require more than a total of 6 VA. The room controllers can be mounted in any orientation, and fixed as follows:



#### Rail mounting

The housing base is designed for snapmounting on DIN rails, type EN50022-35x7.5 (can be released with a screwdriver)



#### Surface mounting

There are four drill holes for screwmounting (see "Dimensions" for drilling template). The housing base is fitted with raised supports.

When mounting note the following:

- The controller should not be freely accessible after mounting. It must be mounted
  in a cabinet or behind a cover that can only be opened / removed with a key or a
  tool.
- Ensure adequate air circulation to dissipate heat generated during operation.
- Easy access is required for service personnel
- · Local installation regulations must be observed.

Mounting instructions and a drilling template are printed on the controller packaging.

#### Commissioning

The RXL39.1 room controller is commissioned with one of the following tools:

- Synco ACS via the OCI700 interface
- "HandyTool" via PPS2

#### Labeling

The definitive application and the controller's location are handwritten in the labeling fields "Appl." and "Loc" in the commissioning stage.

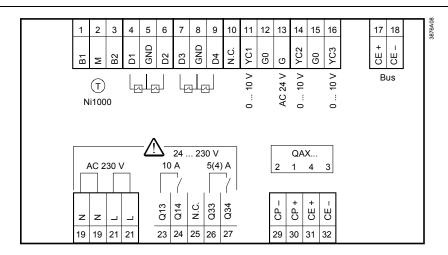
#### **Function test**

A special test mode (HandyTool) is available for operation of the outputs and interrogation of the inputs.

## **Technical data**

<u> </u>	Operating voltage	AC 230 V +/-10 %
	Rated voltage	AC 230 V
	Frequency	50/60 Hz
	Power consumption with connected field devices	Max. 12 VA
	Internal fuse	Thermal, non-resetting
Operating data	Control algorithm	PI
Inputs (SELV)		
Signal inputs D1 D4	Quantity	4
(for volt-free contacts)	Contact voltage	DC 16 V
(101 Volt-lifee contacts)	Contact current	DC 5 mA
	Contact transfer resistance	Max. 100 Ω
	Contact insulation resistance	Min. 50 kΩ
	Switch time:	min. 20ms "ON", min. 20ms "OFF"
Measured value input B1	Compatible temperature sensors	LG-Ni 1000
	Quantity	2
	Measuring range	0 50 °C
	Sensor current	0.5 mA
	Resolution	0.1 K
	Measuring error at 25 °C sensor temp. (without cable)	max. 0.5 K
Outputs (SELV)	0 "	
DC 0 10 V YC1, YC2, YC3	Quantity	3
	Resolution	3 mV
	Accuracy	100 mV
	Output current	Max. 1.5 mA
Supply output G (SELV)  A Relay outputs	Voltage / Max. load	AC 24 V / Max. 6 VA
Q34 (fan release)	Quantity	1 (N/O contact)
	Relay type	Monostable
	Contact rating with AC voltage	
	Switching voltage	Max. AC 250 V, min. AC 19 V
	Nominal current, resistive/inductive	Max. AC 5(4) A ( $\cos \varphi = 0.6$ )
	Making current 200 ms half-time	Max. 20 A
	Switching current at AC 19 V	Min. AC 10 mA
	Contact rating with DC voltage	
	Switching voltage	Max. DC 250 V, min. DC 5 V
	Switching current at DC 5 V	Min. DC 100 mA
	Switching capacity	Max. 20 W
	Inductive load L/R	Max. 7 ms
044 (	External fuse (essential!)	Max. 10 A
Q14 (heater release)	Quantity	1 (N/O contact) Monostable
	Relay type Contact rating with AC voltage	Worldstable
	Max. admissible load (resistive only)	Max. 1.8 kW
	External fuse (essential)	Max. 10 A
	External ruse (essential)	IVIAX. 10 A
Ports/interfaces		
Interface to room unit	Number of room units connectable	1
	Interface type for room unit	PPS2
	for ACS	Bus
	PPS2 baud rate	4.8 kbit/s
	Baud rate on the bus	9.6 kbit/s
Bus	Interface type	Electrically isolated
	Bus current	5 mA
	Baud rate bus	9.6 kbit/s
	Bus topology	Refer to Engineering, page 6

Cable connections	Connection terminals for signals and power supply	Solid or stranded conductors
		0.25 2.5 mm <sup>2</sup>
		or 2 x 1.5 mm <sup>2</sup>
	Bus connection terminals	Solid or stranded conductors 2 x max. 1.0 mm <sup>2</sup>
	(plug-in screw terminals)	e.g. YCYM 2x2x0.8
	Single cable lengths	For field devices, see also the RXB / RXL installation guide, CA110381
	Signal inputs D1 D4	Max. 100 m with diameters ≥ 0.6 mm
	Measured value input B1, B2	Max. 100 m
	0 10 V outputs YC1, YC2 (valve actuators)	Max. 100 m where A $\geq$ 1.5 mm <sup>2</sup>
	0 10 V outputs YC3 (fan)	Max. 100 m where A $\geq$ 1.5 mm <sup>2</sup>
	Relay outputs Q14, Q34	Depends on load and local regulations
	Interface to room unit	Max. 115 m where A= 0.75 mm <sup>2</sup>
	Cable time	(including connecting cable for tool)
	Cable type Bus	4-core, twisted pair, unscreened  Max. 1000 m (see Engineering, page 6)
	Tool connecting cable	Max. 3 m
	Tool dofficeting dubic	Wax. 6 III
Housing	Protection standard to EN 60529	IP30 with terminal cover fitted and
protection standard		wall mounted without DIN rail
		IP20 for all other mounting arrangements
Protection class	Suitable for use in systems with protection class I o	
Ambient conditions	Normal operation	Class 3K5 to IEC 60721-3-3
	Temperature	0 50 °C < 85 % r.h.
	Humidity Transport	Class 2K3 to IEC 60721-3-2
	Temperature	- 25 65 °C
	Humidity	< 95 % r.h.
Standards and directives	- Product standards	EN 60730
	<b>C€</b> marking	
	- EMC	2004/108/EC
	Immunity (industrial & residential)	EN 60730-1
	Emission (residential)	EN 60730-1
	, ,	2006/95/EC
	- Low Voltage Directive	EN 60730-1
	Electrical safety	
	- RoHS	2011/65/EU
	Techn. RoHS proof	EN 50581
	C-Tick conformity (EMC)	AS/NZS 61000-6-3
eu.bac	Meets the requirements for eu.bac certification	
	See product list at: http://www.eubaccert.org/licence	<del></del>
Cert	Type License Application	Control accuracy [K]
	RXL39.5 213298 Fan-Coil 2 pipes Fan-Coil 2 pipes 2 wi	heating / coooling 0.1 / 0.1 res heating / coooling 0.2 / 0.1
	Fan-Coil 4 pipes	heating / coooling 0.2 / 0.1
Environmental compatibility	The product environmental declaration CM1E3876	ISO 14001 (Environment)
	contains data on RoHS compliance, materials	ISO 9001 (Quality)
	composition, packaging, environmental benefit,	
	disposal	
Dimensions	Con disposacion diagrams	
Dimensions Weight	See dimension diagrams excluding packaging	0.560 kg
rreignt .	including packaging	0.600 kg
	morading paokaging	0.000 Ng



#### Measured value input

B1 Measured value input for LG-Ni 1000 sensors

2 Μ Measured value input ground

B2 3 Measured value input for LG-Ni 1000 sensors

#### Signal inputs

Signal input D1 4 GND 5 Signal ground Signal input D2 6 D3 7 Signal input GND 8 Signal ground D4 Signal input

N.C. 10 Do not use this terminal as an auxiliary terminal!

#### 0 ... 10 V outputs

YC1 11 0 ... 10 V Heating control signal

G0 Signal ground 12

G 13 AC 24 V max. 6 VA

YC2 14 0 ... 10 V Cooling control signal (heating / cooling in case of changeover)

G0 15 Signal ground

YC3 16 0 ... 10 V Fan control signal

#### Bus (plug-in connection)

CE+ 17 Bus CE- 18 Bus

### **Power supply**

Ν 19 Neutral conductor

Phase conductor AC 230 V +/- 10 % 21

#### Relay outputs

Q13 23 Feed for Q14

Q14 24 Normally-open contact, max. AC 250 V, 1.8 kW, max. 10 A (Electric heating)

Q33 26 Feed for Q34

Q34 Normally-open contact, max. AC 250 V, 5(4) A (controlled fan) 27

#### Room unit

PPS2 ground CP- 29 PPS2 data CP+ 30 CE+ 31 Bus

CE-32 Bus



- Observe the technical data for the relay outputs: max. AC 250 V, 5 (4) A
- External fuse (essential!): max. 10 A
- Local installation regulations must be observed.

#### **Tool socket**

#### Proprietary RJ45-type tool socket



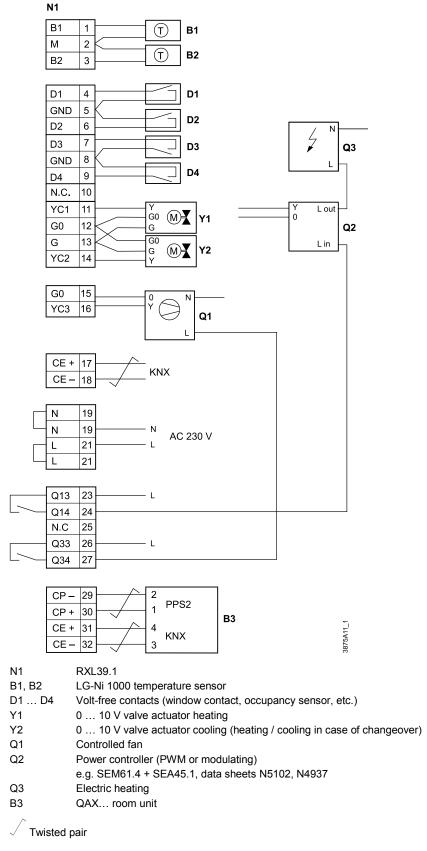
Bus (CE+) 2 Bus (CE-) 5 +12VDC 6

3 Not used Not used

PPS2 (CP+) / TxD 7 8 PPS2 (CP-)

10 / 12

Connection of field devices, room unit, bus and power supply



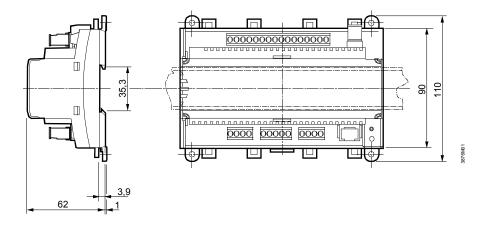


For Q2 (1.8 kW max. resistive load), use additional external fuses of max. 10 A to protect the PCB tracks.

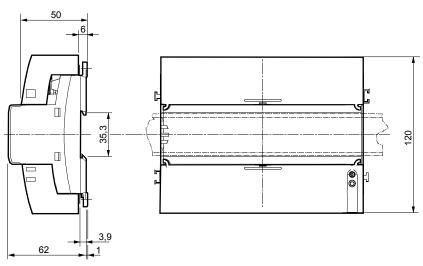
Note For information on the compatibility of field devices with the RXL39.1 room controller, refer to the RX hardware overview, CA2N3804.

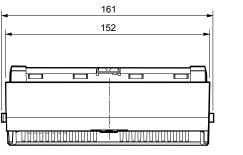
## Dimensions in mm

# Without terminal covers



## With terminal covers





## **Drilling diagram**

