SIEMENS

6314

HOTEL SOLUTION™

Room controller HRC3.2

Room controller for temperature, energy and access control, and for management of the hotel room

- **For 2-pipe or 4-pipe fan-coil systems**
- **For radiators and cooling via 2-pipe fan-coil system**
- **Auxiliary heating for bathroom**
- **Centrally programmable room temperature setpoint with individual setpoint adjustment from the guest's room**
- **Control of room lighting based on room occupancy**
- **Energy management for individual room control system based on room occupancy**
- **Room access control via magnetic card, chip card, or transponder card**
- **Access control for access to general areas such as car park and main doors**
- **Registration and transfer of messages and alarms to the database server**
- **Downloadable standard applications**
- **Customized application software available as an option**

Use

The HRC3.2 room controller integrates temperature control, energy management, access control and the management of a hotel room, at room level.

For operation, use is made of room operator units, access card readers and access card holders with a switch to turn on the lights, for example, and a connection to the bus.

Functions

The functions are determined by the downloadable application software.
The room controllers are delivered with the standard application (the basic features are described in this data sheet).

In special cases, the standard application may be overwritten with a definitive customized application software. A commissioning and service tool is available for this purpose.

Temperature control

The following options can be implemented with fan-coil units:

- 4-pipe heating/cooling with 3-position or PWM output
- 2-pipe heating/cooling with 3-position or PWM output with changeover
- 2-pipe system with internal electric heating, 2-position or PWM output and cooling with 3-position or PWM output
- 4-pipe heating via external radiator and cooling with 3-position or PWM output
- Auxiliary heating in bathroom, additional radiator or underfloor heating with 2-position, 3-position or PWM output

Room temperature setpoints:

- Centrally programmable room comfort temperature setpoint
- Individual setpoint adjustment of room comfort temperature setpoint in guest's room
- *PreComfort* setpoints when guest is absent
- *Economy* setpoints for free rooms (i.e. from which guests have checked out)
- Remote room temperature setpoint adjustment in rooms unoccupied for long periods

Energy-saving features:

- Energy management for individual room control system and lighting based on room occupancy:
  - Room occupied, guest in room
  - Room occupied, guest absent
  - Room vacant, not checked in
  - Room out of use, e.g. during low season
- Summer/winter strategy (i.e. avoid heating in summer and avoid cooling in winter)
- Fan disabled if window is opened

Energy management

Electricity:

- Master switch function: to switch electrical consumers on and off
- Switch-on control of courtesy light function upon entry to room
- Electrical consumers enabled and disabled by pre-programmed, guest or hotel-staff dependent function
- Water supply shut off in the absence of guests and hotel staff (only possible with magnetic valve installed)

	• Control of blinds or curtain
Access control	• Receipt of access code from the connected magnetic, chip or transponder card reader • Control of access to guest rooms, suites and general access areas • Receipt of access codes for guests, hotel staff and emergency access cards from the central management station at the reception • Management of all access codes • Activation of door opening mechanism when access is granted
Management level	• SOS alarm or bathroom alarm • "Do not disturb" and "Room service call" or "Make up room" • "Guest present" indicator for hotel staff only • Bell disabled in conjunction with "Do not disturb" • Alarm message if door is opened in unoccupied room (door intrusion) • Alarm message if window is opened in unoccupied room (window intrusion) • Registration and transfer of messages and alarms to the database server • Optionally, other functions can be programmed and linked to inputs and outputs
Building automation and control	• Room controller parameter setting • Remote adjustment of room comfort setpoint • Alarm monitoring and message display • Room status monitoring • Automatic registration of temperature data • Trend graph for past three days • Configurable outputs (guest-dependent or staff-dependent) • Interface to front-office system (FOS) via the hotel room management station HSW3.1
Communication	• Online communication over building bus • KNX bus connection (in LTE mode)* • RS485 room bus for communication with room operator units, card readers and card holders
Note	* KNX communications take place in the LTE mode. The S-mode-communication is available, but requires a customer-specific.

Ordering

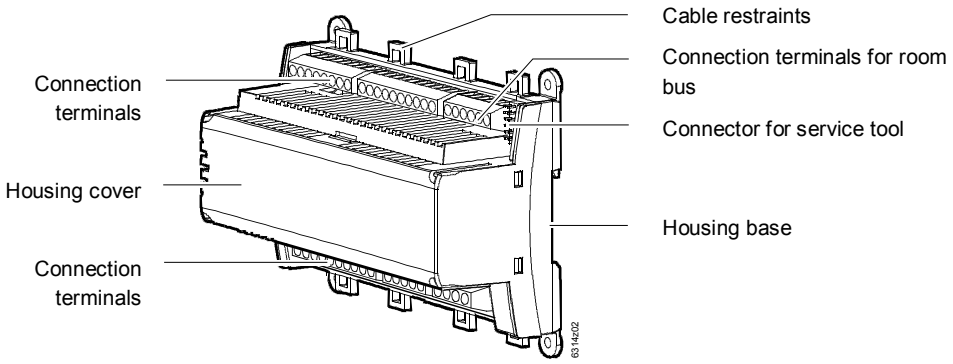
When ordering, please specify the quantity, product name and type code:

Example:	**20**	**Room controllers**	**HRC3.2**

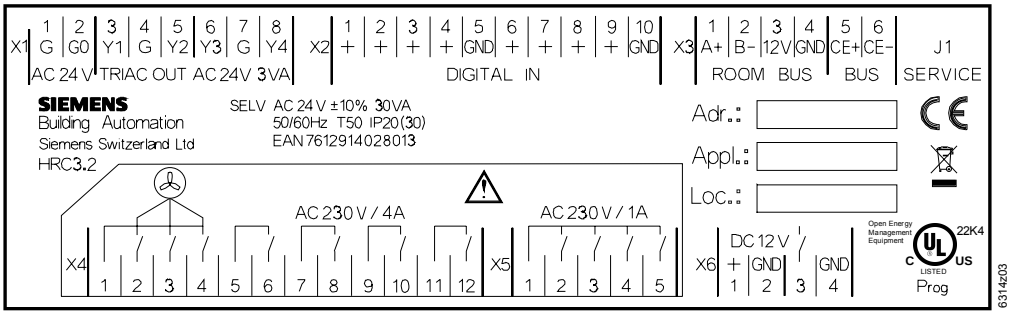
Compatibility

Please refer to the assortment overview N6301.

The HRC3.2 controller consists of a housing base, a housing cover and a printed circuit board with connection terminals.
The controller also has a tool socket, a service LED and a service pin.



Device label



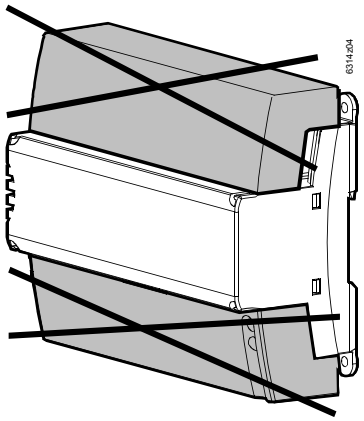
Note

Use of the labeling fields for handwritten entries:

Adr	KNX address
Appl.	Currently loaded application
Loc	Room number

Terminal covers

Caution



Owing to the intrinsic heat generated by the controller, terminal covers must not be used, as this can cause overheating.

For the same reason, adequate air circulation must be provided in the location where the controller is installed.

Protection from physical contact

To prevent accidental physical contact with relay connections carrying voltages in excess of the SELV voltage range (U_{eff} > 42), the device must be fitted in a housing (preferably a control panel). This enclosure must be accessible only by use of a key or tool.

Alternatively, a commercially available contact guard can be used.

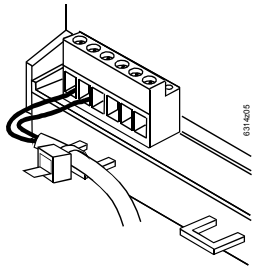
Connection terminals

A plug-in terminal is provided for the commissioning and service tool.
All other terminals are fixed.

To avoid incorrect wiring, terminals which can be connected to AC 230 V (supply and relay outputs) are physically segregated from the other terminals. They are arranged so that, under normal circumstances, all incoming and outgoing cables can be connected without crossing.

Caution

Cable restraints **must** be used for the wires to terminal blocks X4 and X5 (AC 230 V).
The conductors must be secured with cable ties (see diagram, right).



Service LED

The red / green service LED displays the operating status for the room controller. The viewer see the color orange when the red and green LEDs are on at the same time. The service LED states are as follows:

LED display	Operating state
Red blinking: Blinking frequency 0.1 second on, 1 second off, Green off	Operating system running; no measuring and control task is loaded
Red blinking: Blinking frequency 0.1 second on, 0.1 second off Green on	Operating system running; measuring and control task loaded and in STOP
Red off Green blinking	Operating system running; measuring and control task loaded and in RUN • The blinking frequency is the same as the cycle time for the measuring and control task
Red on Green blinking	Operating system running; measuring and control task loaded and in RUN • Addressing mode is on: The blinking frequency is the same as the cycle time for the measuring and control tasks • Address mode is off: Error
Red off Green off	• No power • Error

Response in the event of a fault

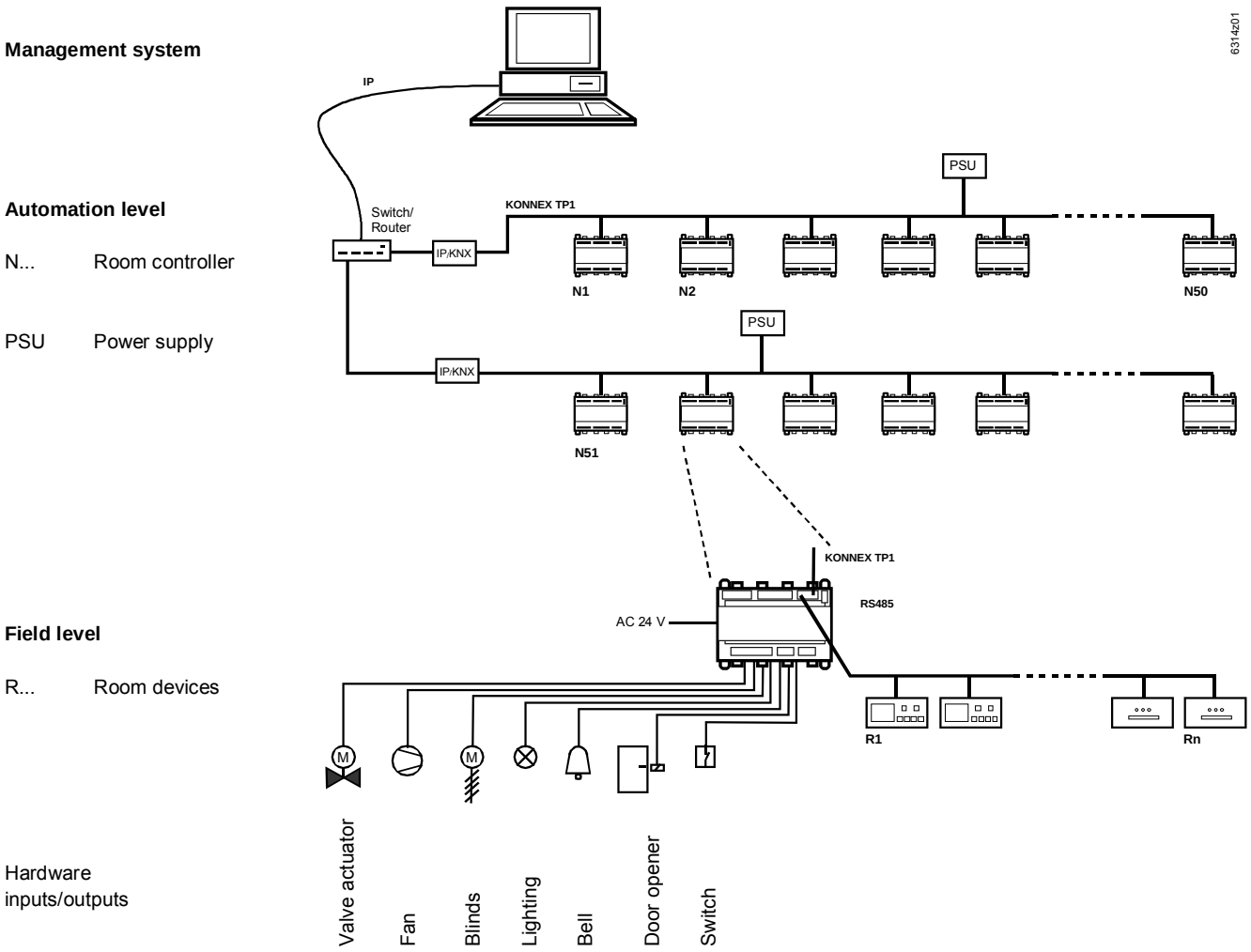
- If the management system or communication link fails, this will not affect local operation
- External fuses are required for the relay contacts
- The controller comes with a self-resetting thermal fuse to prevent overload damage.

Disposal

The devices are considered electronics devices for disposal in terms of European Directive 2012/19/EU and may not be disposed of as domestic garbage.

- Dispose of the devices through channels provided for this purpose.
- Comply with all local and currently applicable laws and regulations.

Topology



Engineering notes

- A single transformer with an output voltage of AC 24 V+/– 10% (SELV extra low voltage) is required for the room controller power supply.
  The transformer rating must be sufficient for
  - the room controller and associated 12 V electrical consumers (all room bus devices, DC door opener, DC signaling lamps, max. 30 VA)
  - all electrical loads connected to the 24 V Triac outputs
- A line coupler from the KNX range is required after every 120 room controllers. In practice, however, a line coupler needs to be connected after approximately 50 rooms, because the maximum cable length is 1000 m, and the cable length between rooms is typically 20 m.
- The room controller must be installed in a control panel or covered enclosure, which can only be opened with a key or tool. Adequate air circulation must be ensured.
- The relevant technical, and health and safety regulations must be observed, including local electricity company regulations applicable to connection of devices to the electricity network.
- The management level PCs must be protected with a UPS (uninterruptible power supply).
- A mechanical safety lock must be provided to allow the doors to be opened from the outside in extreme emergencies.

AC 230 V supply cables

The sizing and fuse protection of the power supply cables depends on the total load and on local regulations. The cables must be secured with cable restraints.

Volt-free relay outputs AC 230 V

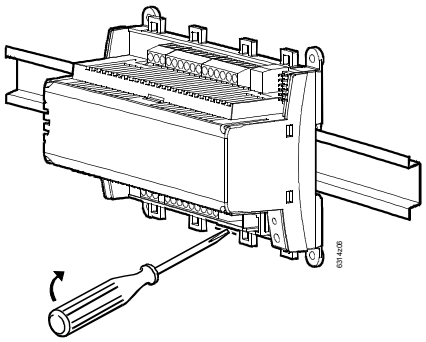
- The volt-free relay outputs allow switching of loads up to AC 250 V, 4 A. The cable dimensions depend on the connected load and the local installation regulations. The circuits must be externally fused (≤ 10 A), as there are no internal fuses.
- The cables must be secured with cable restraints.
- The relay group on connector X4 may EITHER be connected to mains voltage 230 V OR to SELV 24 V. The same restriction is also valid for connector X5.
  Mixed operation is not allowed. However, it is possible to connect mains voltage to X4 and SELV voltage to X5 and vice versa.

STOP **Caution**

- **The fans must <u>not</u> be connected in parallel (use cut-off relays).**

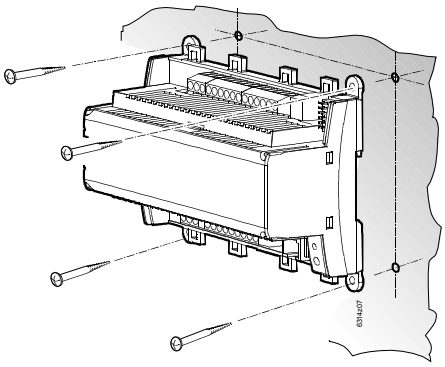
Mounting instructions

The room controller can be mounted in any orientation, as follows:



Rail mounting

The housing base is designed for snap-mounting on DIN rails, type EN50022-35 x 7.5, (can be released with a screwdriver).



Surface mounting

There are four drill holes for screw mounting (see “Dimensions” for drilling diagram). The housing base is fitted with raised supports.
Screws: Max. diameter 3.5 mm

- The HRC3.2 room controller is installed in the corridor with other installed devices, behind the plasterboard.
- There must be a means of dissipating the heat generated during operation. Adequate air circulation must be ensured.
- Subject to certain conditions, the HRC3.2 room controller can be installed in suspended ceilings. Potential noise problems caused by the switching of relays should be resolved in a sample room.
- As installation is the same for all types of room (e.g. single rooms or suites), it is recommended that a sample room should be set up for each room type, in cooperation with the electrical installer.
- Ensure the room controller is accessible for commissioning and service work.
- The card holder is intended for fixed installation in a dry, enclosed space.
- Commissioning must be carried out by trained personnel only

STOP **Caution**

- **Local safety and installation regulations must be observed!**
  Observe the technical data for the relay outputs.

KNX building bus (Terminal block X3)

Wiring

- KNX standard cable with 2 twisted pairs for connection of the KNX gateway to all room controllers (includes 2 spare wires)
- KNX standards must be observed
- No bus termination resistances are required.

RS485 room bus (Terminal block X3)

As a maximum, the following room devices can be connected to the room controller via the room bus (as long as the total current does not exceed 300 mA):

- 4 room operator units
- 4 card readers
- 4 card holders

Wiring

Cables: 2 twisted pairs, max. 0.5mm^2, screened.
Recommendation: There is normally no need to earth the cable screen.
If the bus cable is routed parallel to mains cables over long distances, we recommend that the bus cable should be connected, at a point near the room controller, to the protective earth conductor.

Caution

Adequate EMC precautions must be taken when installing the equipment. The room bus and building bus conductors must not be routed in the same conduit as high voltage conductors.

Commissioning

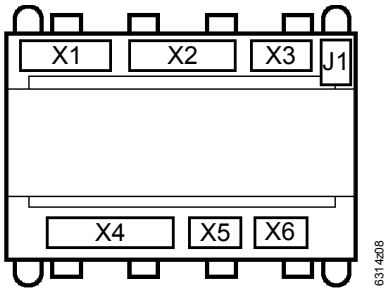
- Before commissioning, the room controller address (KNX address) must be set, either from a laptop computer or from an operator unit (external operator/monitoring unit) connected to service socket J1.
- The controller must be connected to the supply voltage for this purpose.
- In the case of customer-specific applications, the customized application software must be downloaded either from a laptop connected to service socket J1 or via the building bus.
- The application can be downloaded to individual room controllers while the bus is in normal operation.
- The room controllers are already loaded with the standard application on delivery. It is then only necessary to adjust the parameters with the commissioning software.

Power supply (external transformer)	Operating voltage	AC 24 V ±10% (SELV), 50 / 60 Hz or AC 24 V class 2 (US)
	Power consumption of controller plus connected 24 V loads	Max. 1.25 A 30 VA
	External supply line protection	Fuse slow max. 10 A or Circuit breaker max. 13 A Characteristic B, C, D according to EN 60898 or Power source with current limitation of max. 10 A
Ports/interfaces	X1 ... X6	Screw terminals
Inputs	8 digital inputs	DC 12 V / 5 mA (no electrical isolation)
Wiring	Screened twisted pair signal conductors	Connect conductor screen to a shield bus before the room controller
Relay output	7 relay outputs 230 V volt-free	Max. AC 250 V, max. AC 4 A
	Output	Potential free
	Min. switching capacity	AC/DC 12 V, 100 mA
	Max. switching capacity	AC 230 V, 6(2) A; DC 24 V, 6 A
	External supply line protection	See section power supply
	4 Triac outputs 24 V	Max. AC 24 V, max. 0.5 A per output
Caution	***Total of all Triac outputs***	***Max. 12 VA for all outputs***
	4 relay outputs 230 V	Max. AC 230 V / 1 A, min. DC 12 V / 0.5 W
	Output	Potential free
	Min. switching capacity	AC/DC 12 V, 100 mA
	Max. switching capacity	AC 230 V, 6(2) A; DC 24 V, 6 A
	External supply line protection	See section power supply
	1 DC[1)] output for door opener (door solenoid), non-floating	DC 12 V / 300 mA [1)] short-circuit proof
	RS485 room bus [1)] non-floating	DC 12V +10% - 15%, max. 300mA [1)] short-circuit proof
	DC +12 V for LED indicators[1)] non-floating	DC 12V +10% - 15%, max. 300mA [1)] short-circuit proof
Caution	***[1)] Total of all DC 12 V currents***	***DC 12 V, max. 0. 5 A***
Mounting	DIN rail	EN 50022, 37 x 7.5 mm
Ambient conditions	Operating temperature:	0...50ºC
	Transport:	–30...70ºC
	Humidity class:	F to DIN 40040
	Air pressure during operation:	Min. 700 hPa (3000m above sea level)
	Air pressure during transportation:	Min. 700 hPa (10, 000m above sea level)

Standards, directives and approvals	Product standard EN 60730-1 Electromagnetic compatibility (Applications) Housing protection standard Protection class EU conformity (CE) UL certification (US)	Automatic electrical controls for household and similar use For use in residential, commerce, light-industrial and industrial environments IP 20 II CA2T6314xx *) UL 916, http://ul.com/database
	*) The documents can be downloaded from http://siemens.com/bt/download.	
Dimensions	See also dimension diagrams	150 x 110 x 62 mm
Dimensions	Width in DIN modular spacing units	8.5
Weight	excluding packaging	0.59 kg
Color	Body	Cover: Light gray RAL 7035 Base: Silver gray RAL 7001

Connections

Interface layout

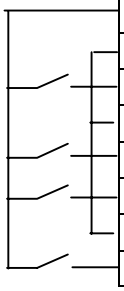


Interfaces:

X1:	AC 24V +/–10% supply voltage / Triac outputs
X2:	Digital inputs DC 12V
X3:	Building bus and room bus (RS485)
X4:	7 relay outputs max. AC 230 V
X5:	4 relay outputs max. AC 230 V
X6:	12V supply voltage for LED indicators and door opener
J1:	Service socket (RS232): 10-pin → Use special service cable!

The following functions are valid for the standard application

Terminal block X1
AC 24 V supply
Triac outputs



Pin	I/O	Function	
1	G	AC 24 V supply	
2	G0	AC 24 V supply	
3	T 1	Heating valve open	Max. 0.5 A, 12 VA [1]
4		G0	
5	T 2	Heating valve closed	Max. 0.5 A, 12 VA [1]
6	T 3	Cooling valve open	Max. 0.5 A, 12 VA [1]
7		G0	
8	T 4	Cooling valve closed	Max. 0.5 A, 12 VA [1]

Caution

[1] ***Total of all Triac outputs: Max. 12 VA for all outputs***
e.g.: 4 outputs, each 3 VA (see information marked on device)

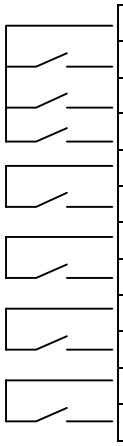
Terminal block X2
Digital inputs
DC 12 V

1	DI 1	"Service call" or "Make up room" button
2	DI 2	"Do not disturb" button
3	DI 3	"SOS / Call for Assistance" button
4	DI 4	RH4 "Courtesy light" button
5	GND	
6	DI 5	RH7 "Master light" button
7	DI 6	“Guest in room” switch Guest in room = contact closed
8	DI 7	Window monitoring contact Window closed = Contact closed
9	DI 8	Door monitoring contact: Door closed = Contact closed
10	GND	

Terminal block X3
for KNX building bus
and RS485 room bus

Pin	I/O	Function
1	A+ RS485	Room bus RS485
2	B– RS485	Room bus RS485
3	DC +12 V	300 mA, internal electronic fuse [2]
4	GND	
5	CE+	Building bus (galvanically separated from controller)
6	CE–	Building bus (galvanically separated from controller)

Terminal block X4
Relay contacts
Max. AC 230 V / 4A

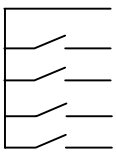


1		Fan supply voltage
2	RH 1	Fan speed 1
3	RH 2	Fan speed 2
4	RH 3	Fan speed 3
5		Supply voltage, lighting scenario
6	RH4	"Courtesy light" lighting scenario
7		Supply voltage, lighting scenario
8	RH5	"Light 1" lighting scenario
9		Supply voltage, lighting scenario
10	RH6	"Light2" lighting scenario
11		Supply voltage, lighting scenario
12	RH7	Master light switch

Caution

Fans connected to the relay outputs must not be operated in parallel.
For parallel operation use cut-off relays or slave room controllers.

Terminal block X5
Relay outputs
AC 230V / 1A



1		Supply voltage
2	RL 1	"Service call" or "Make up room"
3	RL 2	"Do not disturb"
4	RL 3	"SOS / Call for Assistance" button
5	RL 4	Door bell

Terminal block X6
Supply voltage for indicator lamps and door opener

1	DC +12 V indicator lamps	300 mA, internal electronic fuse [2)]
2	GND	
3	DC +12 V door opener	300 mA, internal electronic fuse [2)]
4	GND	

Caution

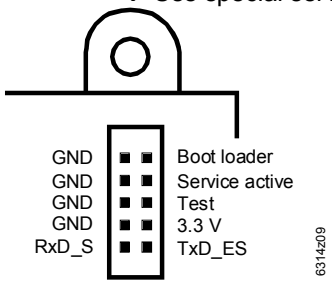
[2)] ***Total of all DC 12 V currents: DC 12 V, max. 0.5 A***

Service interface J1:
10-pin

A	TxD_ES
B	RxD_S
C	3.3V
D	GND
E	Test
F	GND
G	Service active
H	GND
I	Boot loader
J	GND

Service connector

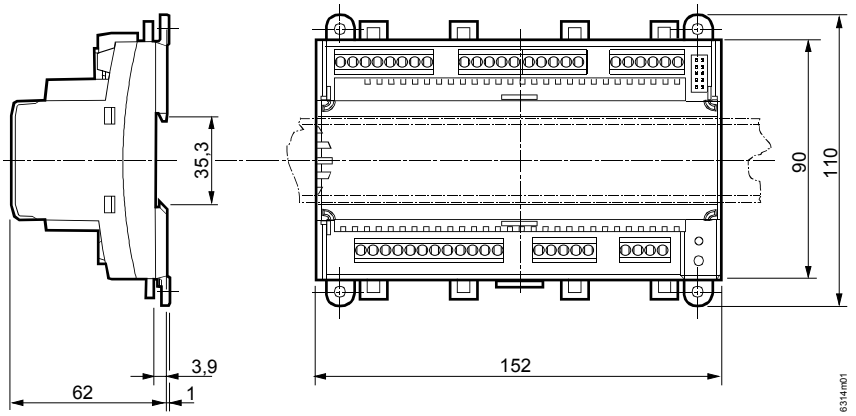
→ Use special service cable!



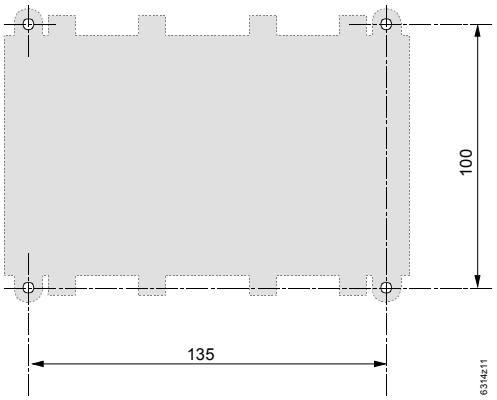
Dimensions

Dimensions in mm

Without terminal covers



Drilling template



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