Q.RCU-D-xx Series

Q.RCU-D-TS

Q.RCU-D-TSO

Q.RCU-D-TSOF

Product Description

The Q.RCU-D-xx series are versatile communicating sensors which provide a user-friendly interface as well as precise temperature sensing.

Tailored for occupants, the Q.RCU-D-xx intuitive design features coloured LED indicators to provide user feedback, rotary knobs to adjust the setpoint offset and fan speed, and a push-button to apply occupancy override.

As a multi-function room device, the sensor can be expanded with a combination of up to 4 Q.RCU-D-L Light or Q.RCU-D-B Blind add-on push-button modules, for lighting and shade/sunblind control, making it an ideal all-in-one addition to the Room Control solution.

This document describes the hardware installation procedures for the Q.RCU-D-xx sensors. This line of communicating sensors consists of the following models:

- Q.RCU-D-TS
- Q.RCU-D-TSO
- Q.RCU-D-TSOF

This document also covers the installation of Q.RCU-D-L Light and Q.RCU-D-B Blind add-on modules.

General Installation Requirements

For proper installation and subsequent operation of the device, pay special attention to the following recommendations:

- It is recommended that the device(s) be kept at room temperature for at least 24 hours before installation to allow any condensation that may have accumulated due to low temperature during shipping/storage, to evaporate.
- Upon unpacking the product, inspect the contents of the carton for shipping damages. Do not install damaged devices.
- The device is designed to operate under environmental conditions that are specified in its datasheet.
- Ensure proper ventilation of device and avoid areas where corroding, deteriorating or explosive vapors, fumes or gases may be present..
- Do not drop the device or subject it to physical shock.
- If the device is used and/or installed in a manner not specified by SBC, the functionality and the protection provided by the device may be impaired.
- To ensure reading accuracy, handle sensor with care and avoid installing on a vibrating surface.

Make connections to the sensor last. Yanking the cable while it is attached to the sensor can damage the connector.

Any type of modification to any SBC product will void the product's warranty.

Take reasonable precautions to prevent electrostatic discharges to the device when installing, servicing or operating it. Discharge accumulated static electricity by touching one's hand to a securely grounded object before working with the device.

Device Dimensions

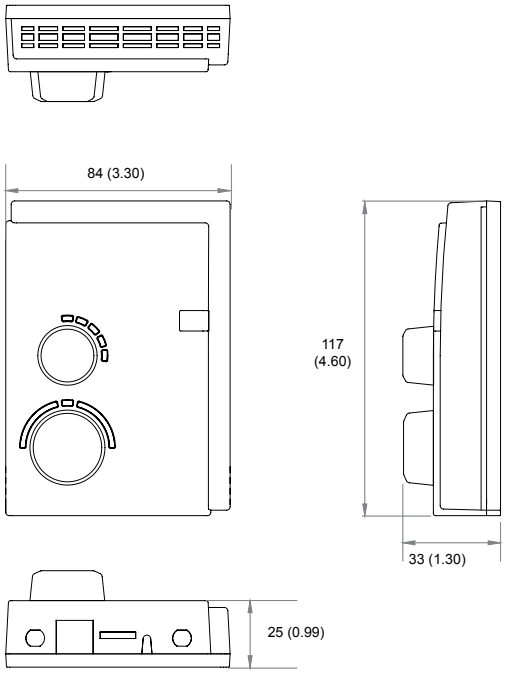


Figure 1: Q.RCU-D-xx - Front view and side view (available knobs depend on model)

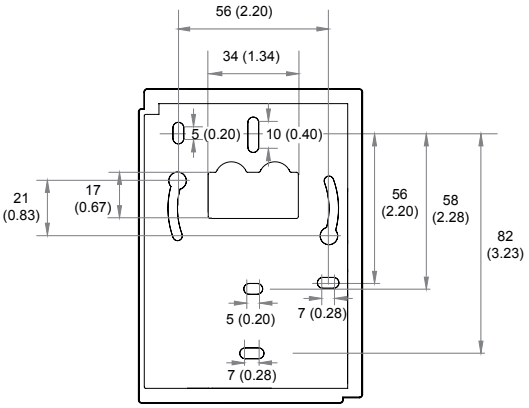


Figure 2: Q.RCU-D-xx - Back plate view

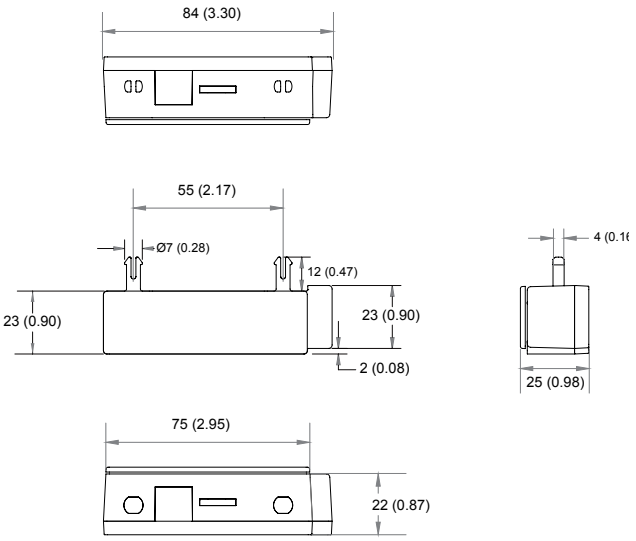


Figure 3: Q.RCU-D-L Light/Blind add-on modules - Front view and side view

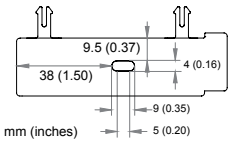
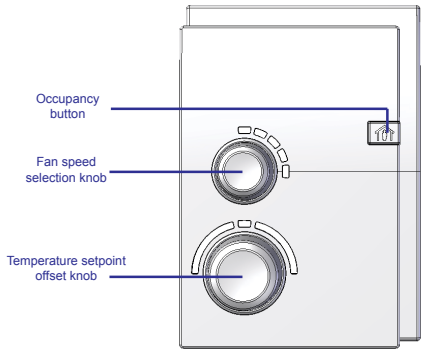


Figure 4: Q.RCU-D-L Light/Blind add-on modules - Back plate view

Device Components



Q.RCU-D-xx Sensor - Front elements

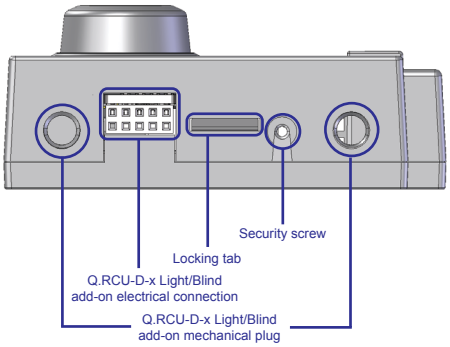


Figure 5: Q.RCU-D-xx Sensor - Bottom elements

Mounting Instructions

The Q.RCU-D-xx sensors have been specially designed for easy installation. However, certain conditions apply when choosing a suitable location for the device:

- The device should not be installed on an exterior wall.
- The device should not be installed near a heat source.
- The device should not be installed near an air discharge grill.
- The device should not be installed in a place where it can be affected by the sun.
- Install the device in an area that provides proper device ventilation. Nothing must restrain air circulation to the device.

The Q.RCU-D-xx sensor has not been designed for outdoor use.

Installation Procedure

1. Remove the security screw from the device.
2. Open the Q.RCU-D-xx sensor by pushing in the tab on the bottom of the device and pulling the bottom side of the front plate out.
3. Open The Q.RCU-D-L Light/Blind module by pulling the front plate off (if applicable).
4. Plug the Q.RCU-D-L Light/Blind add-on modules into the back plate (if applicable).
5. Make sure that the mounting surface is flat and clean.
6. Align the back plate with the wall and mark the location of the mounting holes on the wall (2 holes for the sensor and 1 hole per Q.RCU-D-L Light/Blind module are recommended). Make sure to orient the proper side of the back plate facing upwards.
7. Remove the back plate and drill holes in the wall if necessary.
8. Install anchors in the wall if necessary.
9. Unplug the Q.RCU-D-L Light/Blind add-on modules from the back plate (if applicable).
10. Pull all RJ-45 cables and digital wires (if applicable) 15 cm (6") out of the wall, and insert them through the central hole of the back plate.
11. Screw the back plate onto the wall. Do not over tighten.
12. Set the Subnet ID and the EOL termination with the dipswitch as explained in section **Setting the Q.RCU-D-xx Sensor Subnet ID**.
13. Connect the one or two RJ-45 cables into the sensor (reversable)
14. If using digital inputs, connect the digital wires to the digital input cable as specified in section **About an Q.RCU-D-xx Sensor equipped with a digital input cable**, and the digital input cable connector into the sensor as shown on **Figure 6: Connectors and Dipswitch Locations**.
15. Gently push excess wiring back into the wall.
16. Reattach the front plate and make sure it clips tightly into place.
17. Install the security screw.
18. Plug the Q.RCU-D-L Light/Blind add-on modules into the back plate (if applicable).
19. Screw the Q.RCU-D-L Light/Blind add-on module(s) onto the wall. Do not over tighten (if applicable).
20. Attach the Q.RCU-D-L Light/Blind add-on modules front plates (if applicable).

Dipswitch Location and Identification

Q.RCU-D-xx sensors have the following onsite configurable dipswitch.

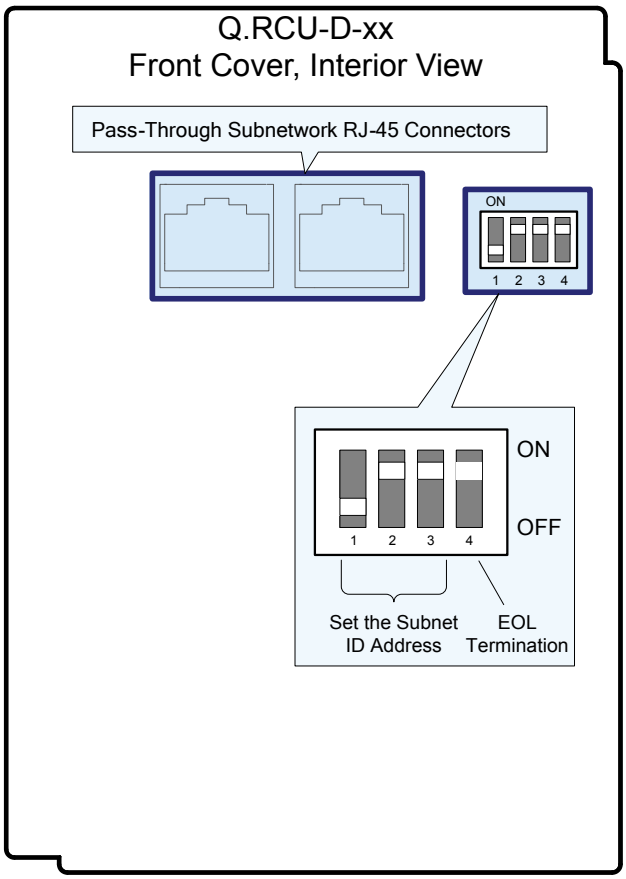


Figure 6: Dipswitch Locations

Supported Quantity

The Q.RCU-D-xx sensor connects to the controller's Subnet Port. Other devices may also be connected to this port in a daisy-chained fashion (see the controller's datasheet for compatibility information and supported quantities).

Each controller supports a maximum number of Q.RCU-D-xx sensors. The Subnet ID of all Q.RCU-D-xx sensors must be set to be within the shown addressing range.

Q.RCU-D-xx Serie sensors and Q.RCU-DC-xx Series sensors share the same Subnet ID range: the same adress **CANNOT** be assigned concurrrently to an Q.RCU-D-xx Series sensor **AND** to a Q.RCU-DC-xx sensor

Table 1 : Number of room devices supported by controller model, and allowed adressing range

Controller Model	Room devices	Max number of room devices[1]	Permitted Subnet ID Adressing range[2]
Q.RC-D1xxx Series	**Total number of room devices**	**4**	-
	Q.RCU-D-xx Q.RCU-DC-xx	4[3]	1 to 4
	Q.RCU-LCD	4[3]	1 to 4
	Q.RCS-MS-PL	4	1 to 4

1. Adding devices to the subnetwork decreases the system responsiveness. This may be the origin of a certain delay, which could be an issue for commands needing a fast response such as lighting and shades/sunblind commands.
2. The indicated adressing ranges are specific for each group of device.

   4 different Subnet ID codifications are used on the Q.RC Subnetwork :
   - 1 for Q.RCU-LCD sensors
   - 1 for Q.RCU-D-xx and Q.RCU-DC-xx sensors
   - 1 for Q.RCS-MS-PL multi-sensors
   - 1 for Q.RCE-xx Light/Blind expansion modules

   Consequently, a Q.RCU-LCD-x sensor and a Q.RCU-DC-xx sensor can have the same Subnet ID, but an Q.RCU-D sensor and a Q.RCU-D-xx sensor must have a different Subnet ID
3. A controller can support a maximum of two (2) Q.RCU-x models equipped with a CO_2 sensor. Any remaining connected Q.RCU-X Sensor models must be without a CO_2 sensor.

About the Subnetwork Bus

Controllers use the subnetwork bus to communicate with room devices (see the controller's datasheet for compatibility), including Q.RCU-D-xx sensors, using standard structural (Cat 5e) cabling by connecting them in a daisy-chained fashion to the controller's **Subnet Port**. See **Table 2 : Number of room devices supported by controller model, and allowed adressing range**.

The maximum length of the room device subnetwork bus is 120 m.

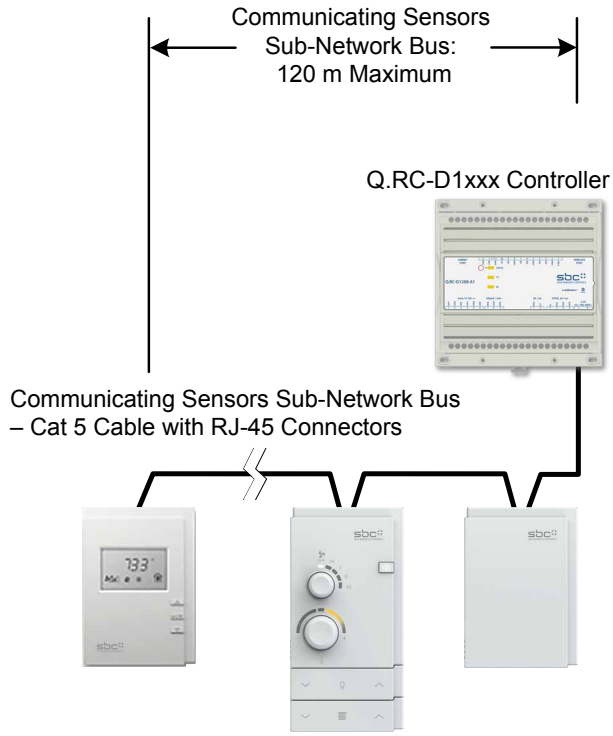


Figure 7: Subnetwork Bus Overview

For Q.RC-D1xxx Series controllers, the maximum length between two consecutive devices on the sub-network bus is 30 m.

Connection Cable

Connect SBC communicating sensors to the controller's **Subnet Port** with a standard Cat 5e Ethernet patch cable fitted with RJ-45 connectors.

If you make your own patch cable, use Cat 5e cable and crimp the RJ-45 connectors at both ends of the cable either as T568A or T568B.

Table 2 : T568A and T568B Terminations for an RJ-45 Connector

Pin	T568A (at both cable ends)		T568B (at both cable ends)	
	Pair	Color	Pair	Color
1	3	white/green stripe	2	white/orange stripe
2	3	green solid	2	orange solid
3	2	white/orange stripe	3	white/green stripe
4	1	blue solid	1	blue solid
5	1	white/blue stripe	1	white/blue stripe
6	2	orange solid	3	green solid
7	4	white/brown stripe	4	white/brown stripe
8	4	brown solid	4	brown solid

The final result of a crimped RJ-45 connector is shown graphically below.

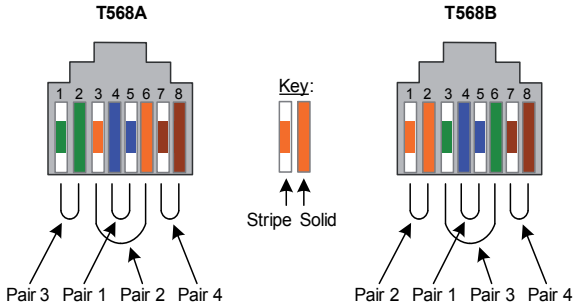


Figure 8: T568A and T568B Crimp Wire Sequence for an RJ-45 Connector

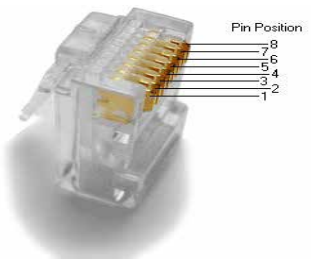


Figure 9: Pins on RJ-45 Jack Face

Patch cables fitted with connectors supplied by SBC are wired as T568B.

Subnetwork Bus Topology and EOL Terminations

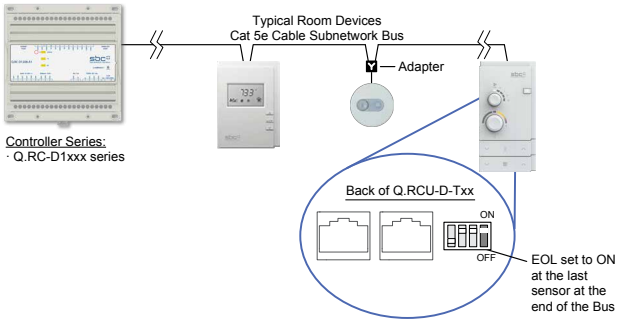
Only a daisy-chain topology is acceptable for the room device subnetwork bus. T-connections are not allowed.

Onla the EOL terminations of the last subnetwork bus device are set to **ON**.

All other subnetwork bus devices must have their EOL terminations set to **OFF**.

The controller must be the first device on the Cat 5e Cable Subnetwork bus as its internal EOL termination is permanently enabled.

See **Table 2 : Number of room devices supported by controller model, and allowed adressing range** for the number of room devices that a given controller model can support.



Setting the Q.RCU-D-xx Sensor Subnet ID

Each Q.RCU-D-xx communicating sensor connected to a controller's Subnet Port must be set to a unique subnet ID address. The address is set through the DIP switch located next to the Subnet Port connectors. See **Figure 3: Connectors and Dipswitch Locations**.

Switch Position				Q.RCU-D-xx Subnet ID Address
1	2	3	4 (EOL)	
OFF	OFF	OFF	ON or OFF See **Subnetwork Bus Topology and EOL Terminations**	1
ON	OFF	OFF		1
OFF	**ON**	OFF		2
ON	**ON**	OFF		3
OFF	OFF	**ON**		4
ON	OFF	**ON**		5
OFF	**ON**	**ON**		6

Q.RCU-D-xx sensors and Q.RCU-DC-xx sensors share the same adressing range.

Cleaning

Clean SBC communicating sensors by polishing with a soft dry cloth.

General Wiring Recommendations

Turn off power before any kind of servicing.

All wiring must comply with national and local electrical codes.

Disposal

The Waste Electrical and Electronic Equipment (WEEE) Directive sets out regulations for the recycling and disposal of products. The WEEE2002/96/EG Directive applies to standalone products, for example, products that can function entirely on their own and are not a part of another system or piece of equipment.

For this reason SBC products are exempt from the WEEE Directive. Nevertheless, SBC products are marked with the WEEE symbol  , indicating devices are not to be thrown away in municipal waste.

Products must be disposed of at the end of their useful life according to local regulations and the WEEE Directive.

Document History

Version	Changes	Published	Comments
ENG01	2015-10-20	2015-10-26	First edition

Trademarks

Saia PCD® is a registered trademark of Saia-Burgess Controls AG, short form SBC.

Technical changes are subject to the state of technology.

Postal address for returns from customers of the Swiss Sales office

Saia-Burgess Controls AG
Service Après-Vente
Bahnhofstrasse 18
3280 Murten, Switzerland

Saia-Burgess Controls AG
Bahnhofstrasse 18 | 3280 Murten, Switzerland
T +41 26 580 30 00 | F +41 26 580 34 99
www.saia-pcd.com

support@saia-pcd.com | www.sbc-support.com