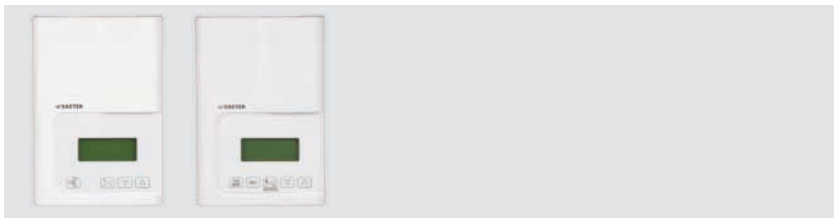


EY-RU482F001 Room Operating Unit with Display for Fan Coil applications
 EY-RU483F001 Room Operating Unit with Display for VAV applications

en Guidelines for the
 electrician



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1 Product Description

This document describes the hardware installation procedures for the SAUTER EY-modulo4 room operation units with display for Variable Air Volume applications (VAV) and Balancing Tool and for Fan Coil applications (FC).

The SAUTER EY-RU483F001 communicating sensor and balancing tool for VAV is specifically designed to work with the EY-RC415 and EY-RC416 controller product lines. This device provides precision local temperature sensing and it allows occupants to adjust the local setpoint and view the occupancy status, local space temperature, outside air temperature and operation mode.

Maintenance personnel have access to a password-protected advanced mode that allows them to perform air balancing on a connected EY-RC415 or EY-RC416, send service pin messages for commissioning and toggle temperature units between °C and °F.

The SAUTER EY-RU483F001 can be permanently installed on a wall or used as a hand-held air balancing tool that can be connected through a standard wall-mounted room sensor. Using the SAUTER EY-RU483F001 as a hand-held unit, technicians can directly perform VAV balancing right near the point of control.

The SAUTER EY-RU482F001 communicating sensor is specifically designed to work with the EY-RC402 and EY-RC403 controller product line. This device provides precision local temperature sensing and it allows occupants to adjust the local setpoint and fan speed and view the local space temperature.

The modern, sleek profile enclosure is suitable for classrooms, hotels, executive areas, office spaces & other commercial areas. Mounting hardware with a separate sub-base is provided with the device for installation on dry wall or on an electrical junction box.

This document describes the hardware installation procedures for the following devices: SAUTER EY-RU482F001 and SAUTER EY-RU483F001.



Unless otherwise indicated, the term VAV will be used in this document to represent all models of the EY-RC415 or EY-RC416 controller product lines. Likewise, the term EY-modulo4 Room Operating Unit will be used to represent the SAUTER room units type EY-RU482F001 and SAUTER EY-RU483F001.

2 General Installation Requirements

For proper installation and subsequent operation of the EY-modulo4 Room Operating Unit, pay special attention to the following recommendations:

- Upon unpacking the product, inspect the contents of the carton for shipping damages. Do not install damaged devices.
- Allow for proper clearance of device enclosure and wiring terminals for easy access, hardware configuration and maintenance.
- The device is designed to operate under the following environmental conditions:
 - Ambient temperature from 5°C to 40°C
 - Relative humidity from 0% to 95%, non-condensing.
- Ensure proper ventilation of device and avoid areas where corroding, deteriorating or explosive vapors, fumes or gases may be present. The device must be oriented with the ventilation slots towards the top to permit proper heat dissipation.



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

3 General Wiring Recommendations

WARNING Danger of electrocution

- ▶ Turn off power before any kind of servicing.

- All wiring must comply with electrical wiring diagrams as well as national and local electrical codes.
- To connect the wiring to the device, use the terminal connectors which are located inside the device's enclosure. Use a small flat screwdriver to tighten the terminal connector screws once the wires have been inserted.
- The board connectors accept wires or flat cables ranging from 22 to 14AWG (0.644-1.630mm diameter) per pole.

4 Mounting Instructions

The EY-modulo4 Room Operating Unit has been specially designed for easy installation. However, certain conditions apply when choosing a suitable location for the device:

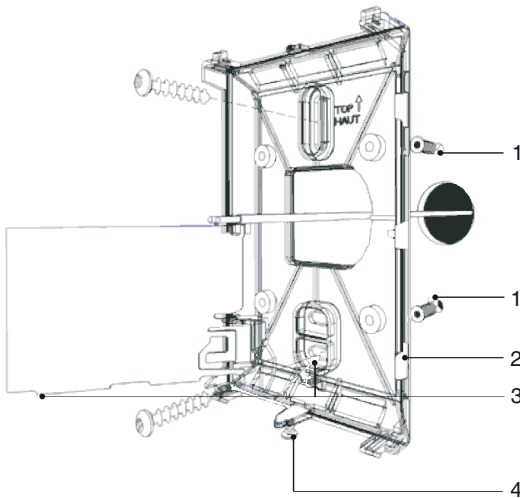
- The device should not be installed on an exterior wall.
- The device should not be installed near a heat source
- The device should not be installed near an air discharge grill.

- 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.

NOTICE The EY-RU481 has not been designed for outdoor use.

4.1 Installation procedure

1. Remove the security screw from the device (Figure 1).
2. Open the device by pressing in the two (2) tabs on the bottom of the device and pulling the bottom side of the front plate outwards.
3. Flip the printed circuit board over to access the mounting hole.
4. Pull all cables 6" out of the wall, and insert them through the central hole of the back plate.
5. Align the back plate with the wall and mark the location of the two mounting holes on the wall. Make sure to orient the proper side of the back plate facing upwards.
6. Remove the back plate and drill holes in the wall if necessary.
7. Install anchors in the wall if necessary.
8. Make sure that the mounting surface is flat and clean.
9. Screw the back plate onto the wall. Do not over tighten.
10. Strip each wire 6 mm and insert each one according to the wiring diagrams shown in this document.
11. Gently push excess wiring back into the wall.
12. Flip the printed circuit board back into place.
13. Reattach the front plate and make sure it clips tightly into place.
14. Install security screw.



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Fig. 1 Mounting the controller

- 1 Wall Anchors
- 2 Pull on Plastic tab to release the printes circuit board
- 3 Flip printed circuit board to access mounting hole
- 4 Security Srew

5 Device Wiring

The EY-modulo4 Room Operating Unit can be wired in three (3) different ways depending on its desired use:

- Directly to a controller for use as a wall-mounted sensor.
- Indirectly to a VAV through another sensor for VAV balancing.
- Directly to a controller for use as a wall-mounted sensor and to provide access to the LON[®] network.

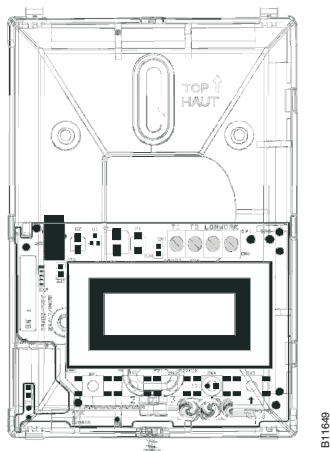


Fig. 2 Smart Sensor with front plate removed

5.1 Wiring EY-modulo4 Room Operating Unit to a Controller

The EY-modulo4 Room Operating Unit uses a serial communication protocol and is designed to connect to the serial inputs labelled SMRT+ and SMRT- on the VAV- or FC-controller. To wire a wall-mounted EY-modulo4 Room Operating Unit to a controller, do the following:

1. Remove the front plate of the EY-modulo4 Room Operating Unit. There are 4 connection terminals and a 1/8" communications jack within the device.

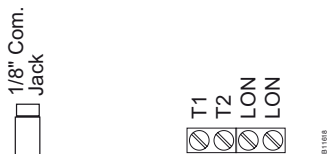


Fig. 3 Smart-Sensor terminal description

2. Connect the T1 and T2 output terminals of the Smart-Sensor to SMRT+ and SMRT- input terminals on the controller.

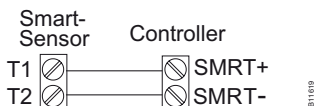


Fig. 4 Wiring Smart-Sensor to a controller



The maximum wiring length for this type of connection is 15m. It is recommended that all terminals be wired with 20-18AWG unshielded, twisted pair wire. It is not possible to simultaneously connect to both the LON and SMRT inputs.

5.2 Wiring EY-modulo4 Room Operating Unit to a VAV for VAV Balancing

The EY-modulo4 Room Operating Unit EY-RU483F001 can be used as a hand-held device to perform VAV balancing. The communications terminals (1 and 2) within the EY-RU483F001 (or any other sensor with a communications jack) must be connected to the SMRT+ and SMRT- inputs of the VAV before the communications jack can be used (Figure 5). Typically, these connections should have been made when the VAV and EY-RU483F001 were first installed in the building.

To wire an EY-RU483F001 to a VAV via an EY-RU481 (or any other sensor with a communications jack) do the following:

1. Remove the front plate of the EY-RU483F001.
2. Connect the two (2) wires that terminate with the 1/8" audio cable to the T1 and T2 output terminals of the EC-Smart-Sensor-VAV.
3. Remove the front plate of the EY-RU481 and insert the 1/8" audio cable into the communications jack. Verify that the communication terminals (1 and 2) within the EY-RU481 are wired to the SMRT+ and SMRT-terminals of the VAV controller. The other terminals within the EY-RU481 should already be connected as described in the EY-RU481 Hardware Installation Guide.

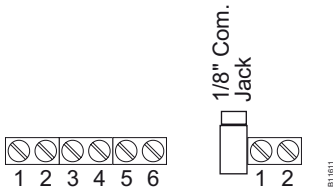


Fig. 5 Terminal description



Depending on the sensor model, there may be a different number of wire terminals. Refer to the individual sensor's hardware installation guide for further details.

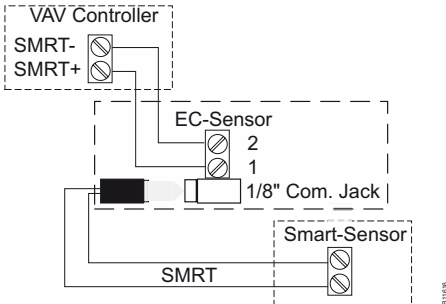


Fig. 6 Wiring EY-RU483F001 to a VAV via an EY-RU481



When a wireless VAV controller is being used, the wireless receiver will be temporarily disabled when an EY-RU483F001 is attached to the controller until it is unplugged. It is not possible to simultaneously use the wireless option with the EY-RU483F001.

5.3 Wiring EY-modulo4 Room Operating Unit to a LON Network for Technician Use

The LON terminals within the EY-modulo4 Room Operating Unit can be optionally wired to the LON terminals of a controller. If inserting multiple wires in the terminals, ensure to properly twist wires together prior to inserting them in the terminal connectors.

A laptop can then access the LON network by plugging into the EY-modulo4 Room Operating Units communications jack with a 1/8" audio cable.

To wire a computer to the LON network via a EY-modulo4 Room Operating Unit do the following:

1. Remove the front plate of the EY-modulo4 Room Operating Unit.
2. Connect the LON output terminals of the EY-modulo4 Room Operating Unit to the LON1 and LON2 input terminals on the controller.
3. Connect the two (2) wires that terminate with the 1/8" audio cable to the output terminals of the PCLTA card on the computer. Other methods of connecting to the computer are possible.
4. Insert the 1/8" audio cable into the communications jack of the EY-modulo4 Room Operating Unit.

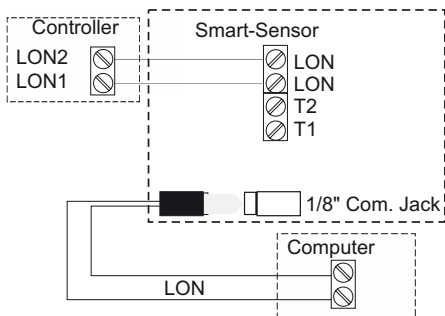



Fig. 7 Wiring Smart-Sensor to a LON network for technician use

The recommended cable type for LON communications is 22AWG (0.65mm), twisted pair, unshielded. The LON communication wire is polarity insensitive and can be laid out in a bus, star, loop or free topology. For loop topology, polarity is important, special care must be taken when connecting the LON network to avoid short circuit.

For more information and detailed explanations on network topology and wire length restrictions, please refer to the Junction Box and Wiring Guideline for Twisted Pair LonWorks® Networks, published by Echelon® Corporation.

 If the distance between the EY-modulo4 Room Operating Unit and the controller (stub length) is less than 3m a bus topology should be used. If the stub length is greater than 3m a free topology in a daisy chain must be used.

The communications jack for both the EY-modulo4 Room Operating Units support mono and stereo audio cables.

6 Maintenance

WARNING Danger of electrocution

- ▶ Turn off power before any kind of servicing.

Each controller requires minimal maintenance, but it is important to take note of the following:

- If it is necessary to clean the outside of the front plate and/or the inside of the back plate, use a dry cloth.
- Verify the tension of all wires and cables whenever the controller is serviced.

7 Disposal

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

8 Troubleshooting guide

Device communicates well over a short network, but does not communicate on large network

Network length	Check that the total wire length does not exceed the specifications of the Junction Box and Wiring Guideline for Twisted Pair LonWorks Networks.
Wire type	Check that the wire type agrees with the specification of the Junction Box and Wiring Guideline for Twisted Pair LonWorks Networks.
Network wiring problem	Double check that the wire connections are correct.
Absent or incorrect network termination	Check the termination(s). Incorrect or broken termination(s) will make the communication integrity dependent upon a device's position on the network.
Extra capacitance	Make sure that no extra capacitance is being connected to the network other than the standard FTT circuit and that there is a maximum stub length of 3m in bus topology.
Number of devices on network segment exceeded	The number of devices on a channel should never exceed 64. Use a router or a repeater in accordance to the Junction Box and Wiring Guideline for Twisted Pair LonWorks Networks.
Network traffic	Query node statistic to check errors. Use a LON protocol analyzer to check network traffic.

Hardware input is not reading the correct value

Input wiring problem	Check that the wiring is correct according to this manual and according to the peripheral device's manufacturer.
Open circuit or short circuit	Using a voltmeter, check the voltage on the input terminal. Short circuit (0V) and open circuit (5V).
Configuration problem	Refer to the device's user guide for more information.

Hardware output is not operating correctly

Output wiring problem	Check that the wiring is correct according to this manual and according to the peripheral device's manufacturer.
Configuration problem	Refer to the device's user guide for more information.

9 Hardware Installation Guide

While all efforts have been made to verify the accuracy of information in this manual, SAUTER is not responsible for damages or claims arising from the use of this manual. Persons using this manual are assumed to be trained HVAC specialist / installers and are responsible for using the correct wiring procedures and maintaining safe working conditions with fail-safe environments.

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