

ecoUnit210...216: Room operating unit for EY-modulo 2 ecos

How energy efficiency is improved

Individual setting of occupancy and absence, as well as room setpoint correction, control of the lighting and the window blinds in order to optimise energy use in the room.

Areas of application

Operating unit to control and ensure maximum indoor comfort. Temperature measurement and control for rooms with various types of equipment thanks to the EY-modulo 2 ecos communicative intelligent unitary controller.

Features

- Part of the SAUTER EY-modulo 2 system family
- Room operating unit with a wide range of different functions, designs and colours
- Device insert with transparent front, fits into frame with 55 x 55 mm cut-out
- The frames must be ordered as accessories
- Indoor climate can be adapted individually
- Operating mode is set for room occupancy and control of a three-speed fan



Technical description

- Power supply from ecos 2
- 3-wire connection

Products

Type	Description
EY-RU210F001	ecos 2 operating unit, NTC sensor
EY-RU211F001	ecos2 operating unit, NTC, setpoint adjuster (dXs)
EY-RU214F001	ecos2 operating unit, NTC, dXs, 2 buttons
EY-RU216F001	ecos 2 operating unit, NTC, dXs, 4 buttons

Technical data

Electrical supply

Power supply	from ecos 2
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Installation

Weight (kg)	0.1
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Version

Sensor	
Measuring range	0...40 °C
Resolution	0.1 K
Time constant (in calm air)	10 min
Functionality	
Setpoint correction	adjustable
Room occupancy LED	3 modes, LED display
Fan speed LED	4 modes, LED display
Connection	
Cable	3-wire
Length	up to 100 m

Standards, guidelines and directives

Type of protection	IP 30 (EN 60529)
Protection class	III (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE Conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2 ¹⁾
	EN 61000-6-3
	EN 61000-6-4

Permitted ambient conditions

Operating temperature	0...45 °C
Humidity	up to 85 % rh
	no condensation

Additional information

Fitting instructions	P100002467
Material declaration	MD 94.175
Dimension drawing	M10487 , M11381
Wiring diagram	A10529

¹⁾ If it is mandatory to comply with the industrial standard (EN 61000-6-2), the connecting cables must not exceed 30 m in length.

Accessories

Type	Description
	Installation
0940240101	Frame, single, including fixing plate (for recessed junction box, 10 pcs.)
0940240201	Frame, double, including fixing plate (for recessed junction box, 10 pcs.)
0940240301	Base, single (for wall mounting, 10 pcs.)
0940240401	Base, double (for wall mounting, 10 pcs.)
0940240501	Cable plate, single (for surface cable feed, 10 pcs.)
0940240601	Cable plate, double (for surface cable feed, 10 pcs.)
0940240701	Fixing plate, single (for non-Sauter frame, 10 pcs.)
0940240801	Fixing plate, double (10 pcs.)
0949241301	Cover, transparent (10 pcs.)

Front view



EY-RU210



EY-RU211



EY-RU214



EY-RU216

Engineering notes

Installation

ecoUnit210...216 room operating units are suitable for various types of mounting.

Single mounting (1 device):

Type of mounting	Recessed junction box	Accessories	Designation / scope of delivery
Recessed mounting	Suitable types, e.g.: D: Manufacturer: Kaiser CH: Manufacturer: AGRO F: Manufacturer: Legrand	094 0240101	Frame, single, including fixing plate. (packaging unit of 10 pcs.)
Wall mounting	If necessary	094 0240301	Base, single (packaging unit of 10 pcs.)
Wall mounting with surface-mounted connecting cable	None	094 0240501	Cable plate, single (packaging unit of 10 pcs.)
Recessed mounting with non-Sauter frame	Suitable types, e.g.: D: Manufacturer: Kaiser	094 0240701	Fixing plate, single (packaging unit of 10 pcs.)

Double mounting (2 devices below each other):

Type of mounting	Recessed junction box	Accessories	Designation / scope of delivery
Recessed mounting	Suitable types, e.g.: D: Manufacturer: Kaiser CH: Manufacturer: AGRO F: Manufacturer: Legrand	094 0240201	Frame, double, including fixing plate (packaging unit of 10 pcs.)
Wall mounting	If necessary	094 0240401	Base, double (packaging unit of 10 pcs.)
Wall mounting with surface-mounted connecting cable	None	094 0240601	Cable plate, double (packaging unit of 10 pcs.)
Recessed mounting with non-Sauter frame	Suitable types, e.g.: D: Manufacturer: Kaiser	094 0240701	Fixing plate, single (packaging unit of 10 pcs.)

Use of different frames

As the device insert is separate from the frame, there are many different possibilities for the type of mounting and choice of frames. This flexibility is implemented by the choice of the relevant accessories.

094 0240101 Frame, single, incl. fixing plate
The fixing plate is screwed onto a recessed junction box. The device insert is placed on the frame and connected to the fixing plate by pressing it in.

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094 0240201 Frame, double, incl. fixing plate
 Same as single frame. However, this enables two devices to be mounted below or next to each other.

094 0240301 Base, single
 The base can be screwed directly onto the wall. In this case, the cable feed also comes out of the wall, from behind. The device insert is fitted onto the base by pressing it in.

094 0240401 Base, double
 Same as single frame. However, this enables two devices to be mounted below or next to each other.

094 0240501 Cable plate, single
 094 0240601 Cable plate, double
 If the cable feed to the base is installed on the surface, this accessory is fitted under the base. The cable plate can be broken open at various points to feed the cable in.

094 0240701 Fixing plate, single
 094 0240801 Fixing plate, double
 For use with non-Sauter frames. If non-Sauter frames (e.g. from light switch manufacturers) are used, perfect mechanical functioning must be ensured.
 The fixing plate is screwed onto a recessed junction box. The device insert is placed on the frame and connected to the fixing plate by pressing it in.

**Addresses (MFA) for the ecoUnit 210...216
 (with EY-SU306 switching unit)**

The type of room operating unit defines the number and types of possible operating functions.
 All possible addresses (MFAs) for the room operating unit are shown below.

	Button		Button
EY-RU216	1		6
	2		5
	3		4

EY-SU306	7		12
	8		11
	9		10

	Button	Function	Address (MFA)
EY-RU216	1	Occupancy mode	56
	2	Not available	-
	3	Freely assignable	0/fc1 (bit24)
	4	Freely assignable	0/fc2 (bit25)
	5	Not available	-
	6	Fan speed	57
	-	Temperature sensor	09
	-	Setpoint adjuster	10
	-	Occupancy LED	40
	-	Fan LED	41
EY-SU306	7...12	Freely assignable	08
	8	Freely assignable	58
	11	Freely assignable	59

Switching unit EY-SU306 extends room operating unit EY-RU216 by adding 6 key functions. It must be connected directly to the EY-RU216. The connection is made with a two-wire connecting cable (included in scope of delivery for EY-SU306).

Position LED

EY-RU216 makes it possible to switch light strips. Depending on the project, it may be necessary to find the light switches easily even if the room is in darkness.
 On the EY-RU216, if terminal 4 is wired to terminal 1, the position LED on the operating unit is constantly lit.

Actual value, temperature Xi (MFA 9)

The sensor is an NTC element with 10 kΩ at 25 °C, and it must be linearised in the ecos.
 Important: linearisation of this measurement address depends on the type.

EY-RU210 Linear correction	EY-RU211...216 Linear correction
a = 0.14	a = 0.14
b = 3	b = 0

EY-SU306 switching unit (with EY-RU216 only)

Key presses are transmitted to the EY-RC 216 via analogue signals (MFA08).

Range for MFA 08 (Linear correction a=77, b=35)	Key pressed (EY-SU306)
90...109	Key 7
75...89	Key 8
110...125	Key 9
40...54	Key 10
20...39	Key 11
55...74	Key 12

The ecos user programme evaluates which of the 6 keys has been pressed.

The two middle keys (8, 11) of the switching unit are also connected to MFA 58 (Bit 31) and 59 (Bit 31). These two MFAs are processed more quickly.

If two keys are pressed simultaneously, the middle key has priority, e.g. if key 7 and key 8 are pressed together, only key 8 will function.

Setpoint correction dXs (MFA 10)

Due to the different ecos types and their different operating programme versions, different linear correction factors (a, b) are required for individual setpoint correction ranges.

ecos201, 202, 205, 206 (index ≥ H) ecos200, 208, 209	ecos201, 202, 205, 206 (index ≤ G)	
	a	b
Range	a	b
± 1.0 K	0.22	-0.07
± 1.5 K	0.325	-0.1
± 2.0 K	0.435	-0.135
± 2.5 K	0.545	-0.17
± 3.0 K	0.655	-0.2
± 3.5 K	0.765	-0.24
± 4.0 K	0.87	-0.28
± 4.5 K	0.983	-0.31
± 5.0 K	1.09	-0.35
	a	b
	0.00348	-0.55
	0.005	-0.7
	0.00662	-0.952
	0.008333	-1.22
	0.0010043	-1.487
	0.011753	-1.754
	0.013463	-2.001
	0.015173	-2.248
	0.016883	-2.495

Note: The setpoint correction is automatically zeroed on exiting comfort mode (occupancy = 0). It is usually necessary to enter a linear correction.

Display functions, occupancy and fan LED

Fan speed LED (MFA41)

The next table shows the commands for MFA 41 in order to control the LED display for the fan speeds. A CASE-Engine template is available to control speeds A-3-2-1-0 (circulation control).

FAN speed (LED display)	Command at digital output MFA 41
Auto	No command present
0	Commands 1 + 2 + 3 + 4 simultaneously
1	Command 1
2	Command 2
3	Command 3
All LEDs out	Commands 1 + 2 + 3

ecoUnit 21 also has an active LED display for fan speed 0. If the 'circulation control' stored in the ecos operating programme is used, speed 0 is not controlled and A-3-2-1 are then applicable.

Occupancy modes LED (MFA40)

The next table shows the commands for MFA 40 in order to control the LED display for the occupancy modes.

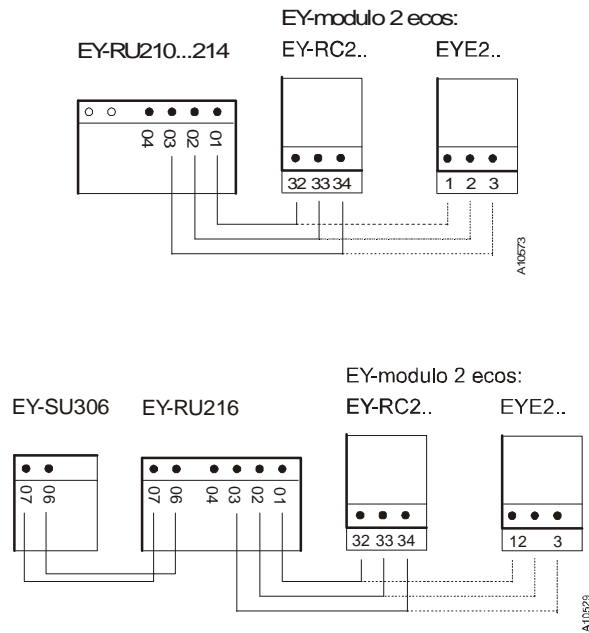
Occupancy modes (LED display)	Command at digital output MFA 40
Absent (building empty)	No command present
Comfort (person in building)	Command 1
Reduced (moon)	Command 2
All LEDs out	Command 1 + command 2

Exchanging room operating units of type EYB250...256 for ecoUnit210...246

The following changes are required in the ecos user programme in case of an exchange:

MFA	Inscription	Activity
09	NTC sensor	Adapt linear correction a, b
10	Setpoint correction	Adapt linear correction a, b
41	Fan speed display	If an active display is wanted for speed 0 (LED), the programme must be adapted accordingly.

Wiring diagram



The noise immunity of transmission between the operating unit and the ecos is increased if twisted wires are used.

Dimension drawing

