

ecoUnit241...246: Комнатное рабочее устройство для комнатной станции автоматизации

Как повышается энергетическая эффективность

Индивидуальное регулирование времени присутствия и отсутствия, также корректировка комнатных уставок и регулирование освещения и затемнения для оптимизации комнатного потребления энергии.

Область применения

Рабочее устройство для регулирования и гарантии максимального комфорта в комнате. Измерение и регулировка температуры в комнатах с разными типами оборудования благодаря интеллектуальному унитарному контроллеру EY-modulo 2 ecos с коммуникативными возможностями.

Характеристики

- Часть серии систем SAUTER EY-modulo 2
- Комнатное рабочее устройство с различными вариантами функциональности, конструкции и цвета
- Отображает различные функциональные символы
- Устройство с прозрачной передней крышкой монтируется в рамку профиля 55 x 55 мм
- Рамки должны быть заказаны как аксессуары
- Внутренний климат может быть отрегулирован индивидуально
- Режим работы устанавливается с учетом присутствия людей в комнате и регулируется трехступенчатым вентилятором

Техническое описание

- Питание от ecos 2
- 3 (4) – жильное подключение, кабельный вход сзади, вставные клеммы для проводов от 0.12 до 0.5 мм² (диаметром от 0.4 до 0.8 мм)

Продукт

Тип	Описание
EY-RU241F001	ecos2 комнатная панель, LCD, NTC датчик, задатчик уставки dXs, без рамки, 2 кнопки
EY-RU244F001	ecos2 комнатная панель, LCD, NTC датчик, задатчик уставки dXs, 4 кнопки
EY-RU246F001	ecos2 комнатная панель, LCD, NTC датчик, задатчик уставки dXs, 6 кнопок

Технические данные

Электропитание		Установка	
Питание	от ecos 2	Установка	в одинарной или двойной рамке
Версия		Размеры Д x В x Ш (мм)	59.5 x 59.5 x 25
Датчик		Вес (кг)	0.1
Диапазон измерений	0...40 °C	Стандарты, нормативы и директивы	
Разрешение	0.1 K	Степень защиты	IP 30 (EN 60529)
Временная постоянная	12 мин	Класс защиты	III (EN 60730-1)
Функциональные		Окружающий класс	3K3 (IEC 60721)
Уставка дисплея (LCD)	0...10 V = 16...25.5 °C (через терминал 4)	CE соответствие	
Разрешение	0.1 K	Директива EMC 2004/108/EC	EN 61000-6-1 EN 61000-6-2 1) EN 61000-6-3 EN 61000-6-4
Коррекция уставки	настраиваемая	Дополнительная информация	
Присутствие (занятость комнаты)	3 режима, LCD дисплей	Инструкция по монтажу;	P100002722
Скорость вентилятора	5 функций, LCD дисплей	Декларация материалов	MD 94.170
Порт		Размерный чертеж	M10501
Кабель	3 (4) – жильный, витой	Монтажная схема	A10528
Длина	≤ 100 м		
Допустимые окружающие условия			
Рабочая температура	0...45 °C		
Температура хранения и транспортировки	-25...70 °C		
Влажность	10...85% rh без конденсации		

1) При обязательном требовании выполнения промышленного стандарта (EN 61000-6-2), максимальная длина кабелей подключения не должна превышать 30 м.



Аксессуары

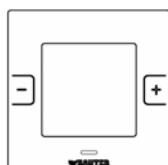
Тип	Описание
	Установка
0940240101	Рамка, одинарная, включая фиксирующую пластину (для заглубленной соединительной коробки, 10 х)
0940240201	Рамка, двойная, включая фиксирующую пластину (для заглубленной соединительной коробки, 10 х)
0940240301	Основа, одинарная (для монтажа на стену, 10 х)
0940240401	Основа, двойная (для монтажа на стену, 10 х)
0940240501	Кабельная пластина, одинарная (для монтажа кабеля на поверхности, 10 х)
0940240601	Кабельная пластина, двойная (для монтажа кабеля на поверхности, 10 х)
0940240701	Фиксирующая пластина, одинарная (для не-Sauter рамки, 10 х)
0940240801	Фиксирующая пластина, двойная (10 х)
0949241301	Прозрачная крышка (10 х)

Front view

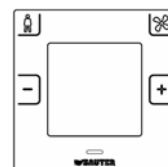
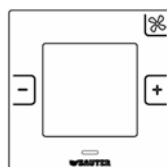
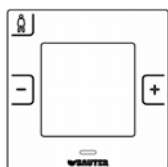
Various labelling inserts are included depending on the device. This enables the device to be adapted to room conditions.

Type Labelling inserts included

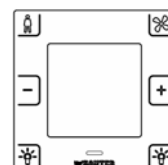
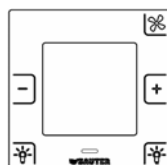
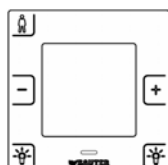
EY-RU241



EY-RU244



EY-RU246



Engineering notes

Fitting

ecoUnit241...246 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	0940240101	Frame, single, including fixing plate. (packing unit of 10 pcs.)
Wall mounting	If necessary	0940240301	Base, single (packing unit of 10 pcs.)
Wall mounting with surface-mounted connecting cable	None	0940240501	Cable plate, single (packing unit of 10 pcs.)
Recessed mounting with non-Sauter frame	Suitable types, e.g.: D: Manufacturer: Kaiser	0940240701	Fixing plate, single (packing unit of 10 pcs.)

EY-RU241...246 room operating units can be extended by 6 push-button functions with the help of the EY-SU306 switching unit. EYSU306 is fitted with a 2-wire connection to EY-RU241...246 and can be used only in conjunction with this device.

Double mounting (2 devices one below the other):

Type of mounting	Recessed junction box	Accessories	Designation / scope of delivery
Recessed mounting	Double box required Suitable types, e.g.: D: Manufacturer: Kaiser CH: Manufacturer: AGRO F: Manufacturer: Legrand	0940240201	Frame, double, including fixing plate (packing unit of 10 pcs.)
Wall mounting	If necessary	0940240401	Base, double (packing unit of 10 pcs.)
Wall mounting with surface-mounted connecting cable	None	0940240601	Cable plate, double (packing unit of 10 pcs.)
Recessed mounting with non-Sauter frame	Suitable types, e.g.: D: Manufacturer: Kaiser	0940240701	Fixing plate, single (packing unit of 10 pcs.) Note: 2 fixing plates, fitted one below the other

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.

0940240101 Frame, single, including 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.

0940240201 Frame, double, including fixing plate

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

0940240301 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.

0940240401 Base, double

Same as single base. However, this enables two devices to be mounted below or next to each other.

0940240501 Cable plate, single

0940240601 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.

0940240701 Fixing plate, single

0940240801 Fixing plate, double

An appropriate fixing plate must be used in conjunction with non-Sauter frames, e.g. frames made by manufacturers of light switches. 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.

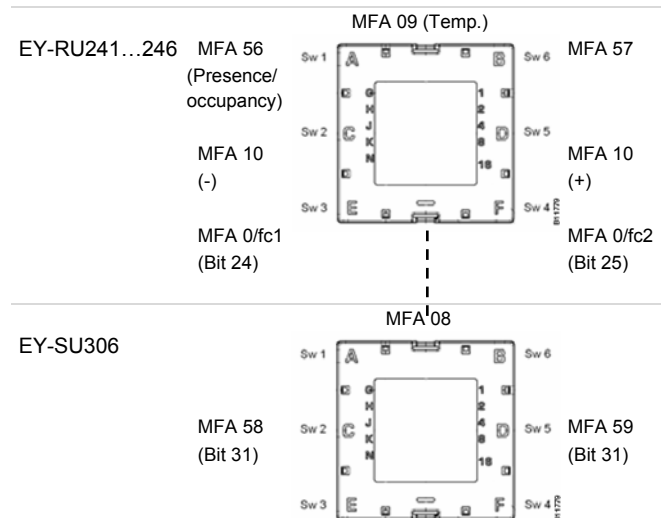
Note:

Several single fixing plates must be used for multiple non-Sauter frames.

Addresses (MFA) for ecoUnit241...246 (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.

The housing cover of the ecoUnit is located beneath the transparent cover or plastic insert. All the buttons are clearly labelled on this surface (A to F).



All button information from the ecoUnit306 is transmitted via MFA 08 to ecoUnit241...246.

The EY-SU306 switching unit adds 6 pushbutton functions to the ecoUnit241...246 room operating units. EY-SU306 must be connected directly to ecoUnit241...246. The connection is made with a two-wire connecting cable (included in scope of delivery for EYSU306).

EY-SU306 can also be fitted in a remote box. The wiring should use a 2-core twisted cable. The line can be up to 30 m in length.

Switching unit EY-SU306 (MFA 08, MFA 58, 59)

All push-button information from the switching unit is transmitted to ecoUnit241...246. The buttons can be evaluated by an ecos user programme.

All 6 buttons can be evaluated via MFA 08. Buttons 2 and 5 can also be read via MFA 58 (Bit 31) and MFA 59 (Bit 31); this evaluation is faster than via MFA 08.

Value range, MFA 08 (linear correction a=77, b=35)	Button-operated (EY-SU306)
90...109	Button 1
75...89	Button 2
110...125	Button 3
40...54	Button 4
20...39	Button 5
55...74	Button 6

If two buttons are operated at the same time, the middle buttons take precedence, i.e. if buttons 1 and 2 are operated, only button 2 is evaluated.

Position LED on the switching unit

The ecoUnit241...246 make it possible to activate skylights. Depending on the project, it may be required that the light switches must be easy to find even when the room is in darkness.

Depending on the settings for the function parameters, the position LEDs for the room operating unit and the switching unit are on or off.

To enable the position LED of switching unit EY-SU306 to light up, the terminals must be connected with the same number as on the room operating unit (room operating unit → switching unit).

Terminals	Position LED (EY-SU306)
6 → 7	LED off (hardware-coded, no influence by function parameter)
7 → 6	LED lights up if the room operating unit is parameterised accordingly

Presets/default values

Different functions can be defined during the engineering or commissioning phases.

- Analogue values (direct from sensor)
- Value corresponds to voltage at terminal 4 (0...10 V)

The digits on the LCD display (1, 2, 3, 4) are used to set the parameters and the offset for the temperature display.



The following presets (default values) are set ex works:

- Analogue value display in °C (direct from sensor)
- MFA 40, comm.2: window symbol appears
- MFA 41, comm.4: dew-point symbol appears
- Position LED of room operating unit and switching unit = active
- Fan display = active
- Presence display = active
- Display offset for temperature = 0

Function parameters, ecoUnit241...246

Digit	Value	Description	Range
4	0 (default)	Analogue value display (direct from sensor) Display in °C (measurement range 0...40 °C) Resolution 0.1 K	0...99.0
	1	Display in °F (formula: $T_f = T_c * 1.8 + 32$) Resolution 0.5 K	0...99.0
		Value 0...10 V (95 steps), from terminal 4 (with smoothing of display)	
	2	Display in °C; resolution 0.1 K	16.0...25.5
	3	Display in °C; resolution 0.5 K	-9.5...35.5
	4	Display in °F; resolution 0.5 K	5.0...99.0
5		rh (symbol with digits 1 & 2), no decimal point	5.0...99.0
6		% (no decimal point)	0...100

Digit	Value	Description	Range
3	7	ppm (no decimal point)	0...9999
	8	Lx (no decimal point)	0...9999
	9	No value display or physical units	
	0 (default)	MFA 40, comm. 2 Window symbol	
	1	Heating symbol	
	2	Cooling symbol	
2	3	Note symbol	
	4	Hide setpoint correction OFF	
	5	Reduced symbol (moon)	
	6	Dew-point symbol	
	0 (default)	MFA 41, comm. 4 Dew-point symbol	
	1	Heating symbol	
1	2	Cooling symbol	
	3	Note symbol	
	4	Hide setpoint correction OFF	
	5	Window symbol	
	0 (default)	Position LED for EY-RU and EY-SU; fan display; presence display	
	1	LED = on; fan = active; presence = active	
	2	LED = on; fan = active; presence = inactive	
	3	LED = on; fan = inactive; presence = active	
	4	LED = off; fan = active; presence = active	
	5	LED = off; fan = active; presence = inactive	
	6	LED = off; fan = inactive; presence = active	

Show function parameters

When the ecoUnit241...246 units are connected to the power supply ('power up'), there are 60 seconds available to call up parameterisation mode.

When button [D] is pressed for more than 5 seconds during this period, the device changes to parameterisation mode. The parameterisation is shown. All 4 digits flash (slowly).

If no button is pressed, the unit changes back to operating mode after 5 seconds.

Adapt function parameters (default values)

The housing cover of the ecoUnit is located beneath the transparent cover or plastic insert. The operating buttons are clearly labelled on this surface (A, B, C, D, E, F).

When the ecoUnit241...246 are connected to the power supply ('power up'), all the symbols are shown for 1 minute. It is possible to change to parameterisation mode during this first minute.

When button [D] is pressed during this period, the unit changes to parameterisation mode. Only digit 4 continues to flash. The transition to parameterisation mode is indicated by 'SEt' on the display.

- Digit 4 flashes. You can now 'scroll' through the digits from 0 to 9 using buttons [D] and [C].
- Press button [C] for a long time to confirm the setting you want.

Digit 4 is continuously lit. This completes the setting of the analogue value. Digit 3 is now flashing.

Note:

If you press button [C] again for more than about 2 seconds, the next digit is released for parameter adjustment (→ digit flashes).

- Digit 3 flashes. You can now 'scroll' through the digits from 0 to 6 using buttons [D] and [C].
- Press button [C] for a long time in order to confirm the setting.

Digit 3 is continuously lit. This completes the setting for MFA 40, comm. 2. Digit 2 is now flashing.

- Digit 2 is flashing. You can now 'scroll' through the digits from 0 to 5 using buttons [D] and [C].
- Press button [C] for a long time in order to confirm the setting.

Digit 2 is continuously lit. This completes the setting for MFA 41, comm. 4. Digit 1 is now flashing.

- Digit 1 is flashing. You can now 'scroll' through the digits from 0 to 5 using buttons [D] and [C].
- Press button [C] in order to confirm the setting.

All the symbols are now shown on the display.

The room operating unit reverts to operating mode after 5 seconds. The settings are stored permanently.

Before switching over into operating mode, you can use buttons [D] or [C] to return to parameterisation mode, or to go into the mode where the temperature offset can be set.

Temperature offset for the temperature display

When the ecoUnit241...246 units are connected to the power supply ('power up'), there are 60 seconds available to call up parameterisation mode.

When button [C] is pressed for more than 5 seconds during this period, the device changes to the parameterisation mode in order to set the temperature offset for the display.

Use buttons [C] or [D] to set an offset for the display of up to ± 9.9 degrees Celsius or degrees Fahrenheit. To exit this mode, press button [C] for about 2 seconds.

Note:

The temperature offset applies only to the value shown on the display, not to the temperature value that is sent to the room controller. The linear correction for MFA 09 must be adjusted as appropriate so that the temperature control for the room matches the room temperature value shown on the display.

Actual value, temperature Xi (MFA 09)

The sensor is an NTC element with a resistance of 10 k Ω at 25 °C, and must be linearised in the ecos.

EY-RU241...246 Linear correction A = 0.14 B = 1.2

Displayed room operating unit temperature: see: 'Temperature offset for the temperature display'

Values shown on the display

On the ecoUnit241...246, if terminal 4 is connected to a 0...10 V= signal, the display of the ecoUnit's own actual value is overwritten. In the 0...10 V range, a value is displayed corresponding to the setting of the function parameters (see: 'Function parameters for ecoUnit241...246').

Setpoint adjuster dXs (MFA10)

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.

For ecos types ecos201, 202, 205 and 206, and subject to the index $\leq$ G condition, the linear correction factors shown in table A are valid:

MFA 10 linear corrections (table A)		
Range	A	b
± 1.0 K	0.00348	-0.55
± 1.5 K	0.005	-0.7
± 2.0 K	0.00662	-0.952
± 2.5 K	0.008333	-1.22
± 3.0 K	0.010043	-1.487
± 3.5 K	0.011753	-1.754
± 4.0 K	0.013463	-2.001
± 4.5 K	0.015173	-2.248
± 5.0 K	0.016883	-2.495

For ecos types ecos200, 201, 202, 205, 206, 208 and 209, and subject to the index $\geq$ H condition, the linear correction factors shown in table B are valid:

MFA 10 linear corrections (table B)		
Range	a	b
± 1.0 K	0.2	-0.1
± 1.5 K	0.29	-0.16
± 2.0 K	0.38	-0.24
± 2.5 K	0.48	-0.29
± 3.0 K	0.57	-0.34
± 3.5 K	0.67	-0.4
± 4.0 K	0.775	-0.4
± 4.5 K	0.085	-0.505
± 5.0 K	0.96	-0.53

Note: It is usually necessary to enter a linear correction.

Fan speed (MFA 41)

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

Fan speed (LCD display)	Command at digital output (MFA 41)
Auto + 0	No command present
0	Comm.1 + Comm.2 + Comm.3
1	Command 1
2	Command 2
3	Command 3
Auto + 1	Comm.1 + Comm.2
Auto + 2	Comm.2 + Comm.3
Auto + 3	Comm.1 + Comm.3
Display OFF	if the function parameter is set accordingly

Presence (occupancy) mode (MFA 40)

The next table shows the commands for MFA 40 in order to control the LCD display for the presence (occupancy) modes.

Occupancy mode (LCD display)	Command at digital output (MFA 40)
Reduced operating mode	No command 1
Normal mode	Command 1
Night-time reduction	Command 2
	if the function parameter is set accordingly
Display OFF	if the function parameter is set accordingly

Display of various symbols

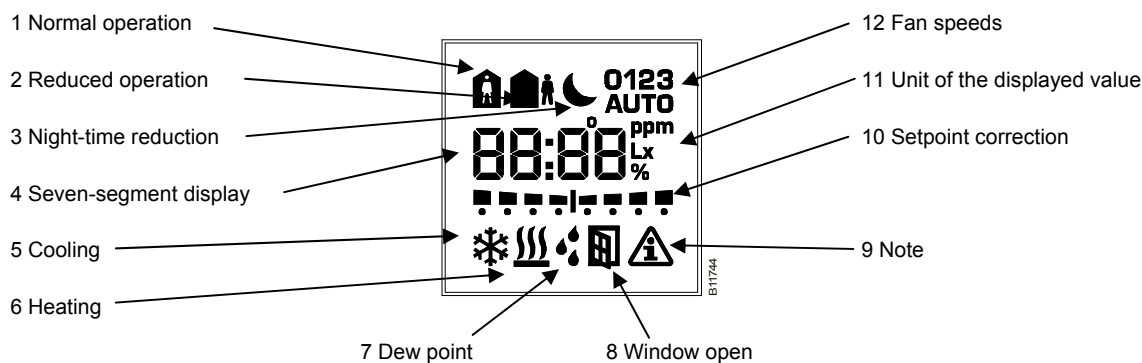
In addition to the digital display and the 'occupancy modes' and 'fan speed' symbols, it is possible to display two additional symbols via MFA 40 or MFA 41 respectively (see: 'Function parameters, ecoUnit241...246').

Replacing EYB250...256 room operating units

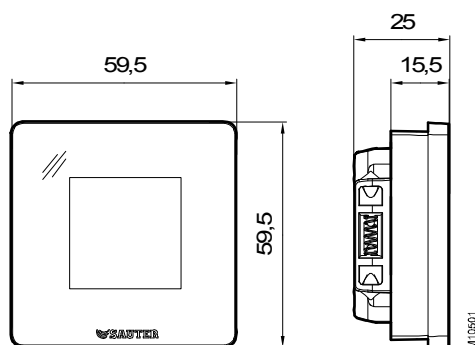
If the EYB250...256 units are replaced with ecoUnit241...246, the following changes in the ecos user program are required:

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

Display functions



Dimension drawing



Wiring diagram

