Capacitive switch EM82

Technical specifications

Table 1. Technical characteristics of device **EM82**

Parameter	Value
Supply voltage	230 VAC, 50 Hz
Power consumption	Max. 0.5 W, 230 VAC, 50 Hz
Load max. power	2 x 500 W, 230 VAC
Operating temperature	-25 to +55 °C
Functions	Switch, Push button, Relay (controlled switch), Timer
Programmable indication	RGB LED
Number of buttons	2
Push button operation type	Capacitive
Number of ports	6 - 3x N, 1x Protected L1, 1x Controlled input (S)
Controlled input option	Yes (Connection of the main voltage signal 230 VAC to terminal S)
Other	"Zero Crossing" switching for switch when the voltage passes through 0 V.

Switch installation

The **EM82** switch is **NOT AUTOMATIC** for installation in concealed boxes with a depth of at least a DSK (DSK housing). The switch is **to intended for indoor use, protected from moisture.**

Figure 1. Appearance and dimensions of EM82 switch

Type of loads

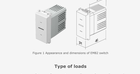

Figure 2 Maximum connection power or current for different types of loads

IMPORTANT

When connecting all types of loaders, a low (substantial or holder) must also be connected to the device. The neutral current of the flow must be low from or equal to the current allowed by the manufacturer of the switch.

Wiring scheme

- EM82 in a switch delivering STANDALONE or CASCADING
- EM82 in a SWITCH or a TIMER mode
- EM82 in a switch delivering STANDALONE or CASCADING
- EM82 in a SWITCH mode
- EM82 in a switch delivering an EMR4 module
- EM82 in a a RGB BUTTON mode
- EM82 in a switch delivering RELAY
- EM82 in a a RELAY mode

Operation and connection of switch

Figure 3. Scheme of connection of the switch. Terminal 1 - **N**, Terminal 2 - **L**, Terminal 3 - button **2**, **1**

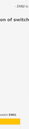

Figure 4 Top view of the switch. Terminal 1 - **N**, Terminal 2 - **L**, Terminals shown

Table 2 List of connections on the switch **EM82**

Connection	Name
N	Neutral conductor
L	Power conductor
1	Output connection of power
S	Input control signal (230 VAC, 50 Hz)

Operation description

The capacitive switch on the front consists of two capacitive buttons **2** and **1** and an LED indicator **3**. With the buttons **1** and **2**, we select, i.e. we set the status, while the LED indicator informs the user about the current settings, or the status of the **EM82** switch.
Depending on the mode, the buttons have different operation.

1. Switch (on | off)

When you press button **2** or **1** the switch turns on (status **ON**) and the indicator **3** lights up with the colour set for the **ON** status. When you press button **2** or **1** the switch turns off (status **OFF**) and the indicator **3** lights up with the colour set for the **OFF** status.

Figure 5 Turning ON and OFF on the **EM82** switch

2. Push button

When any of the buttons is pressed, the output turns **ON** and remains **ON** as long as the button is pressed down.

3. Relay

The switch is fully controlled via the input signal **S** and is switched on as long as a signal is present at the terminal **S**, otherwise it is switched off.

4. Timer (On and OFF after elapsed time)

When the switch is in timer mode, it starts counting down the time after a short press on button **2** or **1**. After the time has elapsed, the switch switches off. The timer can be switched off at any time by pressing button **2** or **1**.
The same operation is allowed in the case of control over the input signal **S**.

TIMER RESET

If we want the timer to start counting from the beginning again while it is in the **ON** state, we must first switch it off by pressing button **2** or **1**. The timer will start counting the time from the beginning.
If we want to switch off the output before the time without switching it off. This done by briefly pressing button **2** or **1**. In this case, ON indicator **3** first flashes with the colour set for **OFF** and then illuminates with the colour set for **ON**.

Figure 6 Example of timer reset which is set to 60 s, by briefly pressing both buttons **2** and **1**

Description of the operation of the EM82 switch with control signal S

IMPORTANT

The user controls the **mains voltage signal (230 VAC)** to the connection terminal **S**. The connection terminal **S** is used to control the operation of the above mentioned operating modes. As function blocks (timer, relay, etc.) are also controlled via the terminal **S**, the control signal **S** has the highest priority.

Control signal **S** has two operating modes. Here it operates in an switch mode and is described under section **a)**.
Mode 2 only operates in the special **TIMER** operating mode and is described under section **b)**.

a) Operation of the control signal S - MODE 1

1. Selected mode: Switch (Push Button) Timer

When one of the operating modes (Switch, Push Button or Timer) is selected, the external signal has a push button function. This means that the state of the **EM82** switch changes when a signal appears on the terminal **S**.
Example: An external push button is connected to the terminal S, the EM82 switch is in the SWITCH operating mode and in the OFF state. When the user presses a button on the external push button, the state of the EM82 switch changes from OFF to ON. When the user presses a button on the external push button for the second time, the state changes and, since the switch is in the SWITCH operating mode, the state changes and, since, When the button on the external button is pressed again, the state of the EM82 switch changes from ON to OFF.
Operation of the **EM82** switch for various modes (Switch, Push Button and Timer in the selected mode of the control signal **S**. **MODE 1**) is presented in figures 6, 7, 8.

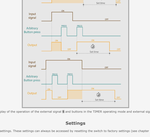

Figure 7 Display of the operation of the external signal S and buttons in the SWITCH operating mode and external signal in MODE 1

Figure 8 Display of the operation of the external signal S and buttons in the TIMER operating mode and external signal in MODE 1

Figure 9 Display of the operation of the external signal S and buttons in the PUSH BUTTON operating mode and external signal in MODE 1

2. Selected mode: Relay

When the operating mode Relay is selected, the external signal has an On function. This means that the state of the **EM82** switch changes to **ON** when the signal at terminal **S**. When the signal at terminal **S** is no longer present, the state of the **EM82** switch changes to **OFF**.
Example: An external push button is connected to the terminal S, the EM82 is in Relay and OFF state. When the user presses a button on the external push button, the state of the EM82 switch changes from OFF to ON. When the user releases the button, the EM82 switch changes back to OFF.

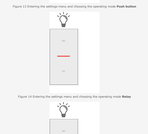

Figure 10 Display of the operation of the external signal S and buttons in the RELAY operating mode and external signal in MODE 1

b) b) Operation of the control signal S - MODE 2

1. Selected mode: Switch (Push Button) Relay

When one of the modes (Switch, Push Button or Relay) is selected, the external signal has a push button function, the same as in **MODE 1**.

2. Selected mode: Timer

If **TIMER** mode is selected and the external signal **S** is in **MODE 2**, the external signal **S** acts as the timer with a delayed start function. When the external signal appears at the terminal **S**, the switch turns on. However, the timer does not start the countdown yet. At the moment that the signal is no longer present at the terminal **S**, the timer starts to countdown the set time and switches off the output after the set time.
If the **EM82** switch is turned on by the external signal **S**, it can only be turned off by pressing either button **2** or **1**.
Example: EM82 external switch timer for a light is connected to the terminal S, the EM82 switch is in the TIMER (10 min) operating mode and the control signal S is in MODE 2. The EM82 switch is in the OFF state. When the user presses the button on the external switch, the EM82 switch changes from OFF to ON. However, the countdown does not start yet. When the user releases the button and turns off the light on the EM82 switch, the actual value decreases the signal present at the terminal S and initiates the countdown of the EM82 switch. The switchboard clock turns off the light after 10 minutes.

Figure 11 Display of the operation of the external signal S and buttons in the TIMER operating mode and external signal in MODE 2

Settings

The table below shows the factory operating settings. These settings can always be accessed by resetting the switch to factory settings (see chapter **Resetting to factory settings**).

Table 3 Factory initial settings

Parameter	Value
Program	Switch
Operating mode of control signal S	MODE 1
LED indicator - state ON	Green
LED indicator - state OFF	Red
LED indicator - brightness level	100%

1. Operating mode settings

To enter the setting menu, where you can choose between the operating modes, press and hold both buttons **1** and **2** at the same time until the LED indicator **3** starts flashing white. When LED indicator **3** starts flashing white, you can select the following options: Switch, Push button, Relay, Timer. Select the desired operating mode (**Switch**, **Push button**, **Relay**, **Timer**) and hold the button for 5 seconds to save the selected option.

Table 4 Possible modes operating modes

Program	No. indicator pulses	Indicator colour	Operation description
S	1	Green	**Switch (On | Off)**
P	2	Blue	**Push button (ON only button pressed)**
R	3	Purple	**Relay (controlled by the signal on the S port)**
T 5	4	Blue	**Timer / 5 s**
T 10	5	Blue	**Timer / 10 s**
T 30	6	Blue	**Timer / 30 s**
T 1	7	Blue	**Timer / 1 min**
T 5	8	Blue	**Timer / 5 min**
T 10	9	Blue	**Timer / 10 min**
T 30	10	Blue	**Timer / 30 min**
T 60	11	Blue	**Timer / 60 min**
T 120	12	Blue	**Timer / 120 min**
T 1h	13	Blue	**Timer / 1 h**
T 5h	14	Blue	**Timer / 5 h**
T 10h	15	Blue	**Timer / 10 h**
T 30h	16	Blue	**Timer / 30 h**

In the settings menu, you can move forward by briefly pressing button **2** or backward by briefly pressing button **1**. If a button is held down longer than 5 seconds, the device exits the settings menu and saves the last selected option. Once you have selected a mode, press and hold both buttons **1** and **2** at the same time until the LED indicator **3** stops flashing and remains illuminated in the selected colour.
When the switch is plugged in for the power supply, the LED indicator 3 flashes to indicate the status of the program.

Display of entry into the settings menu and selection of individual operating modes

Figure 12 Entering the settings menu and choosing the operating mode **Switch**

Figure 13 Entering the settings menu and choosing the operating mode **Push button**

Figure 14 Entering the settings menu and choosing the operating mode **Relay**

Figure 15 Entering the settings menu and choosing the operating mode **Timer**

2. Colour settings of the LED indicator for each status

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The colour and dimming settings of the LED indicator for an individual status are selected as follows:
Press button **2** to increase the colour tone or button **1** to reduce the colour tone. When you do this, a LED strip **3** starts flashing with the currently selected status colour (if the colour is "None", then the LED indicator will flash white). Use **2** or **1** to scroll through the list of available colours.
If you want to decrease or increase the brightness of the LED indicator, do it by long pressing the **2** or **1** button. Button **2** increases the brightness power, button **1** decreases the brightness power.
Once the desired colour and brightness have been set, exit the menu with a long press (1 to 5 sec) both buttons **1** and **2** until the LED indicator **3** flashes with the selected colour (if "None" is selected, then the LED indicator will flash white).
The same procedure applies to setting the colour of the **ON** status indicators, except that to enter the settings, the switch must first be turned on and then button **2** or **1** must be pressed.

Display of LED indicator colour settings for each state ON and OFF

Figure 16 Setting colour of LED indicator for **ON** state

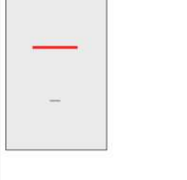

Figure 17 Setting colour of LED indicator for **OFF** state

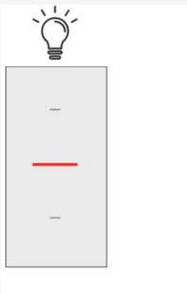

Figure 18 Setting colour brightness power of LED indicator

3. Operating mode settings of the external control signal S

You can set the operating mode of the external signal **S** on the **EM82** switch. lahko nastavimo način delovanja zunanjega krmilnega signala S. The description of the operation can be found in the chapter "Description of the operation of the switch with control signal **S**".

You can select **MODE 1** by selecting the preferred switch function (Switch, Push Button, Relay or Timer) and then press and hold buttons **1** and **3** 3 at the same time for 5 seconds to exit the settings menu. **MODE 1** is the default operating mode.

If you wish to set **MODE 2** choose the **TIMER** operating mode and then press and hold buttons **1** and **3** at the same time for 5 seconds to exit the settings menu; make sure that external signal is always present at the control signal **S** while holding buttons **1** and **3**.

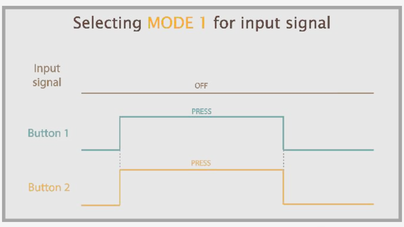

Figure 19 Setting the operating mode of the input signal **S** for **MODE 1**

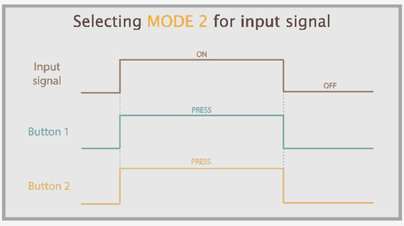

Figure 20 Setting the operating mode of the input signal **S** for **MODE 2**

4. Storing the settings

The **EM82** switch stores certain settings and parameters (Table 5) in memory, where they remain preserved even in the event of a power failure. The switch remembers the operating mode settings, the colour of the indicator in both statuses and the degree of dimming of the indicator each time the selected setting is changed. In addition, the switch in **TIMER** mode also remembers every 5 minutes how much time has elapsed since switching on and in what status the switch is (**ON** or **OFF**). In the event of a power failure, the switch returns to the pre-loss state after power is restored.

Table 5 List of settings to be stored in the permanent memory of the EM82 switch

Setting name	Operating mode	When
Switch status (ON | OFF)	TIMER	Every 5 min
Elapsed time	TIMER	Every 5 min
Switch program (switch, push button, relay, timer)	All	When the program changes
Indicator colour - state ON	All	When changing the colour
Indicator colour - state OFF	All	When changing the colour
Indicator brightness level	All	When changing brightness level
Operating mode of the input control signal S	All	When the program changes
Locking the device	All	When device is locked/unlocked

Example: *The switch is in **TIMER** mode and selected program No. 11 (timer duration 45 min). The user presses the power button **1** or **3** and after 17 minutes the switch loses power. After the power is restored, the switch returns to the **ON** state, where it will remain for further 30 minutes, after which it will turn off.*

5. Locking the EM82 switch

The **EM82** allows the user to lock the device, preventing easy changing of the operating mode. We do this by pressing both buttons **1** and **3** at the same time and holding them until the LED indicator **2** starts flashing **FAST** in **green** colour. This happens after about 15 seconds. In the meantime, the LED indicator **2** will start flashing white twice, but this does not mean that the switch has locked, so keep going until the indicator starts flashing **FAST** in **green** colour.
After that, it is impossible to enter the settings menu for the mode of operation as well as for setting the colour of the LED indicator.
We unlock the device in the same way as we lock it.

Displaying the EM82 switch lock process

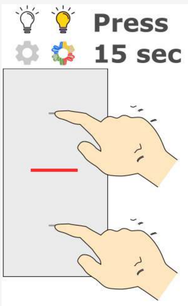

Figure 21 Displaying the **EM82** switch lock process

6. Reset to factory settings

The **EM82** switch also allows you to reset to factory settings (**Table 3**). To do this, press both buttons **1** and **3** at the same time and hold your finger until the LED indicator **2** flashes **FAST** in **purple** colour. This happens after about 25 seconds. In the meantime, the LED indicator **2** will start flashing white twice and after a while also fast with the green colour, but this does not mean that the **EM82** switch has been reset, so keep holding until it switches colour to **purple**.

Displaying the process of resetting the switch to factory settings

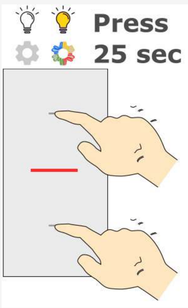

Figure 22 Displaying the process of resetting the switch to factory settings