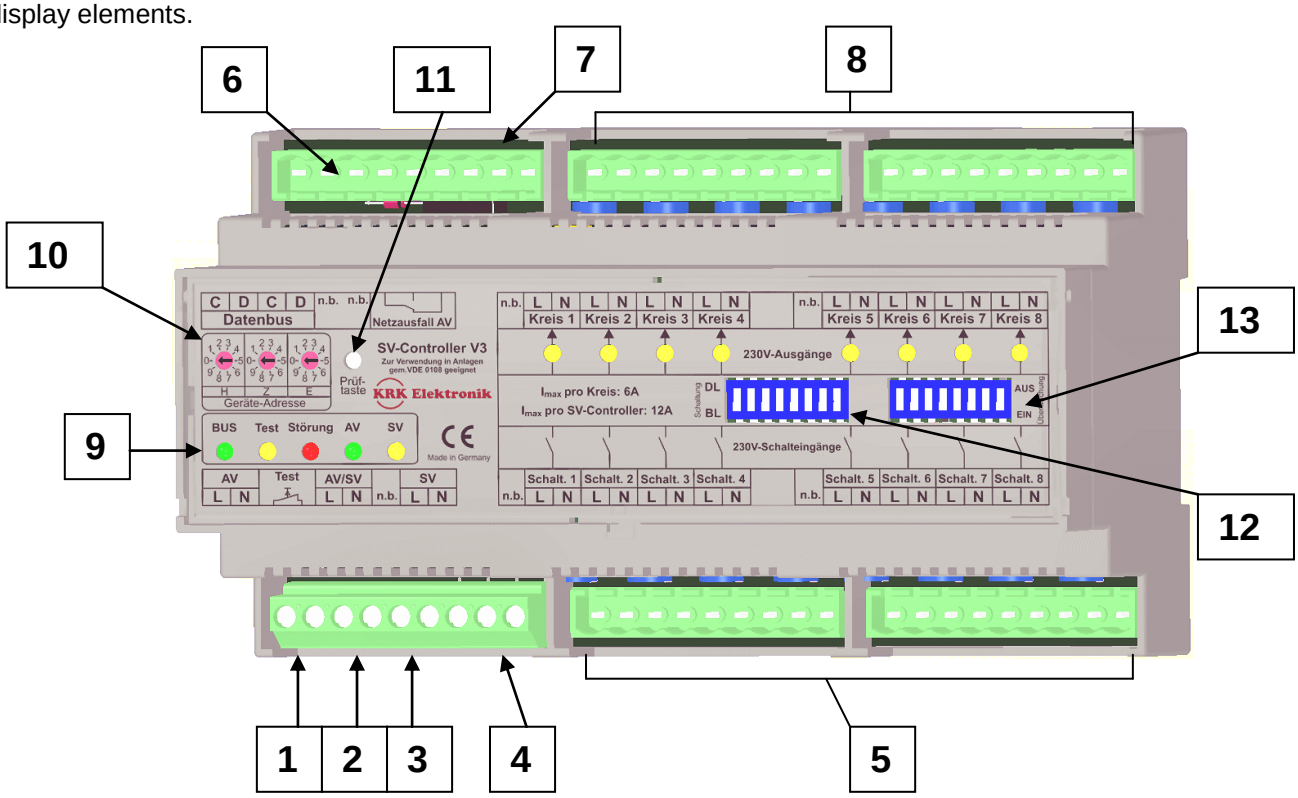
Product data sheet

Power controller PCON3

Description:

The controller is a complete 8-channel monitoring and switching unit for general supply (AV) and the safety supply (SV) networks. It is structured as DIN rail module and is suitable for smaller monitoring phases such as floor cubes or commercial room sections.

The controller is housed in a plastic housing ready for connection. A transparent flap lid protects the control and display elements.



Explanation about connecting, control and display elements:

1	Mains input of general supply (AV), 230 V AC, max. 12 A
2	Button (contact) for switching test of system or jumper.
3	AV/SV output (230 V AC)
4	Mains input of safety supply (SV), 230 V AC, max. 12 A
5	Light switch inputs of channels 1-8, 230 V AC, low-power activation (20 mA)
6	EmLOC bus connection + bus terminal for continuation
7	Potential-free signal contact for switch signalling AV/SV (max. 125 V, max. 1 A)
8	Outputs of channels 1-8, max. 6 A per channel (total current of controller < 12 A)
9	Status display unit
10	Address selector switch, address 1-999
11	Test button for on-site testing
12	Programming switch BL/DL for each of the 8 channels
13	Selection switch for current monitoring of 8 channels

Integrated switching point:

A switching point with a maximum current load of 12 A is integrated for switching the network inputs AV/SV. This is also the rated power of connecting terminals. In case of a switching signal due to testing or mains failure, it is ensured by means of a timer that only the supply voltage is switched off before the others can be switched on. The downtime between both the switching processes is approximately 0.3 seconds. This way, a spark contact between both the supply voltages is avoided. The safety point is implemented using two double contact relays. The input circuits are not secured in the device. Hence, external fuses must always be provided. A potential-free relay contact (7) signals the operating state of the device for external monitoring devices. In AV mode, the contact is in idle mode (drawing) and it is connected in SV mode.

Output circuits:

There are eight output circuits (channels). Every channel is made up of a charge relay with flow-operated current measurement. Every channel can be charged with maximum 6 A, where the total charge of the device must not exceed 12 A. The inrush current must not exceed 50 A (for maximum 20 mS) because otherwise contact welding can take place. These channels can be programmed as DL or BL line using the programming switches (12). Current monitoring can be “stopped” for every channel, for example in case of non-allocation or under-load (<70 mA). The output circuits are not internally secured. Hence, external fuses must always be used for cable and short-circuit protection.

Light switch inputs:

Every channel can be manually switched using a separate input (5). The switching is done load-free, i.e. the switch does not supply supply-load but supplies an electrically separately switching command using a photocoupler. The switching load itself carries the supply voltage (AV/SV).

Voltage output AV/SV (3):

This output terminal provides voltage in both operating modes. As this is the output of the switching point, the power connected there can have maximum drain (12 A).

Test button (2):

A button (contact) connected there activates the phase monitor in AV circuit and switches to SV circuit. This way, the switching unit is also tested. Only the output channels are switched and current flow is tested (AV mode) in test mode using the central unit or test button (11).

EmLOC bus connection:

The bus connection is implemented twice in order to facilitate an uncomplicated further wiring. Here, an EmLOC central unit is connected as a rule, which carries out the test tasks for several EmLOC devices and processes corresponding messages. For this, the controller must have a defined device address, which is set using the rotary switch (10). Addresses from 1 to 999 are possible.

Status display unit (9):

The status is displayed here. The bus LED indicates when there is communication between the controller and a central unit. During a check or a test, the test LED signals the state. If an error occurs during a check, it is signalled by the fault LED. AV/SV LEDs indicate current operating mode.

Commissioning and function:

By means of **input fuses**, both the power supplies are directly connected to inputs 1 and 4. Using connection 2, an external test button can be connected, with the help of which the complete switching function can be tested (DIN). If there is no connection, a bridge must be inserted here. Two LEDs AV or SV (9) help in displaying the supply status. Switching takes place automatically by means of integrated mains voltage sensor, which is temporally locked with four high power relays.
If the AV network fails, all eight outputs (8) are automatically activated, irrespective of the operating mode they are programmed in. The operating mode is programmed (BL/DL) using coding switch 12.

The switch inputs (5) help connect to associated light switch. Light emitting diodes indicate the switching state of the individual circuits. The individual circuits are current-monitored and can be controlled via the central unit. The system is automatically tested using an EmLOC central unit on the data bus and the integrated switching module. In test mode, all the circuits are switched on and after the test is concluded, they are shifted back to target state. For this, the device has an independent address between 1 and 999. The integrated test button (11) helps in testing the circuits without switching the supply line.

Switching AV/SV is signalled using a potential-free changeover contact (7). External detection lines can be connected here. The maximum contact load is 1 A at 150 V AC / 125 V DC.

An AV/SV output (3) is available for system devices, which carries current regardless of the type of power supply.

Current measurement:

Current measurement of individual channels is implemented using hall generators, which determines the current intensity across the electric field of the conductor. A method that reduces thermal losses but is sensitive to electric fields. Before the actual measurement of the current during test mode, the channels are calibrated by the processor unit. For this, all the channel relays and the main supply is deactivated for a short while. The measured values are then saved with all the field distortions. Then the main supply is activated with no power and then the channel relays. Only now are the current values measured. In case of faults during current measurement, strong fluctuations can be detected under certain circumstances, which become noticeable especially in the lower current range. Hence, the controller should not be installed near fuses or other electromagnetic components. Safe current measurement below 0.07 A is not possible. In such a case, the channel at the section switch should be deactivated for current measurement.

Technical data:

Input voltage AV/SV:	230 V, 50-60 Hz, single phase
Connected wattage:	Nominal current 12 A, max. 3000 VA, inrush current max. 50 A (20 mS)
Individual circuit capacity:	Nominal current 6 A, max. 1500 VA, inrush current max. 50 A (20 mS)
Signal contact AV/SV:	nominal current 1 A/150VAC/125VDC, inrush current max. 1 A, max. 60 VA
Switching time:	approximately 0.3 seconds
Operating modes of individual circuits:	all operating modes possible (DL, BL, BL with LS)
Maximum temperature rise:	30 Kelvin
Maximum ambient temperature:	40°C
Current detection :	from 0.07 A to 6 A per channel
Dimensions:	L = 158 mm, B = 90 mm, H = 77 mm
	Suitable for main and sub-distributors assembly.

Order number:

Name	Description	Order number
PCON3	Power controller for AV/SV systems	109-3010-1000

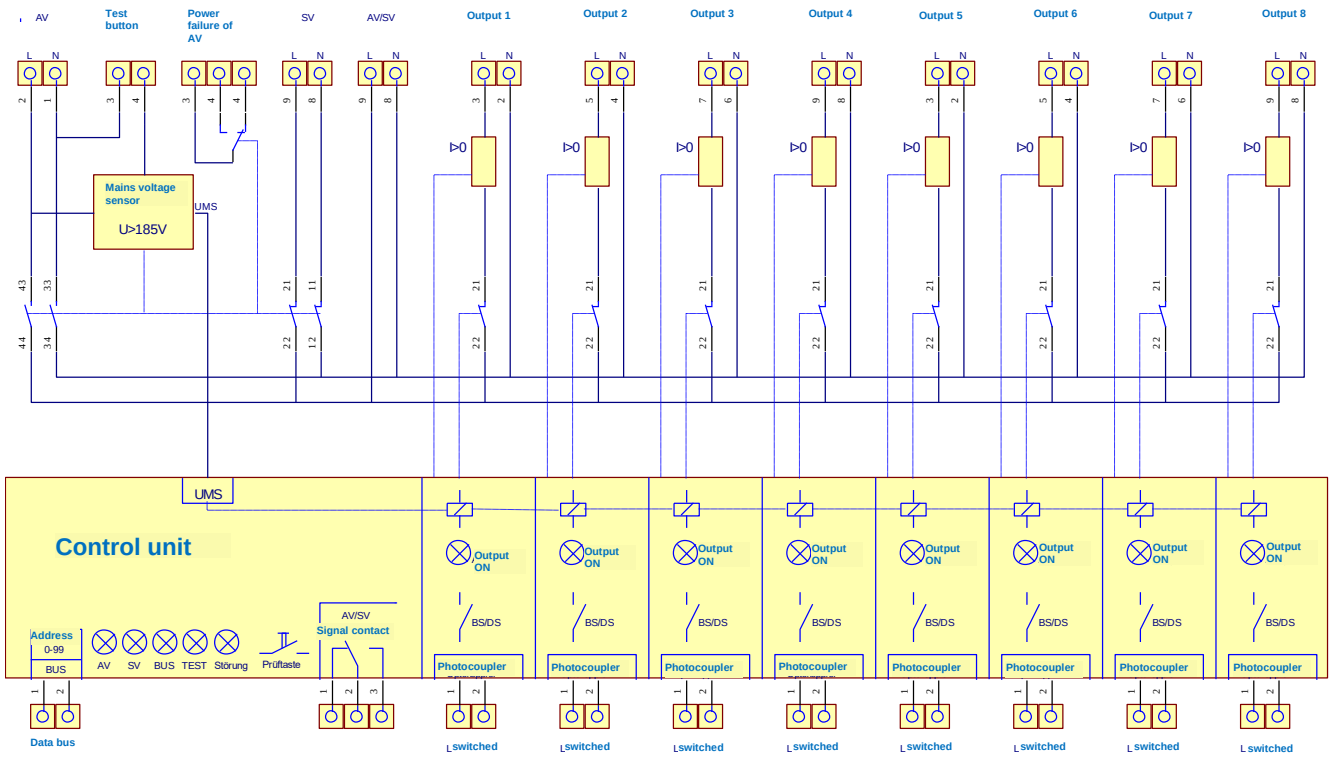
Installation aund operating instructions:

On the whole, the system installation complies with the following block diagram. The assignment of terminals “test button” is important. A break contact must be used here. Using this button, the failure of general supply is simulated. If no button is required, the terminals must be bridged.
The inputs and outputs must be connected with the help of the block diagram and front panel print and the AV/SV supply must be connected. If only one supply voltage is available, the AV terminals must be connected with the SV terminals. Emergency switching can take place using an external mains voltage sensor in association with the test button input. The contact “AV mains failure” helps to signal the failure within an external reporting system.

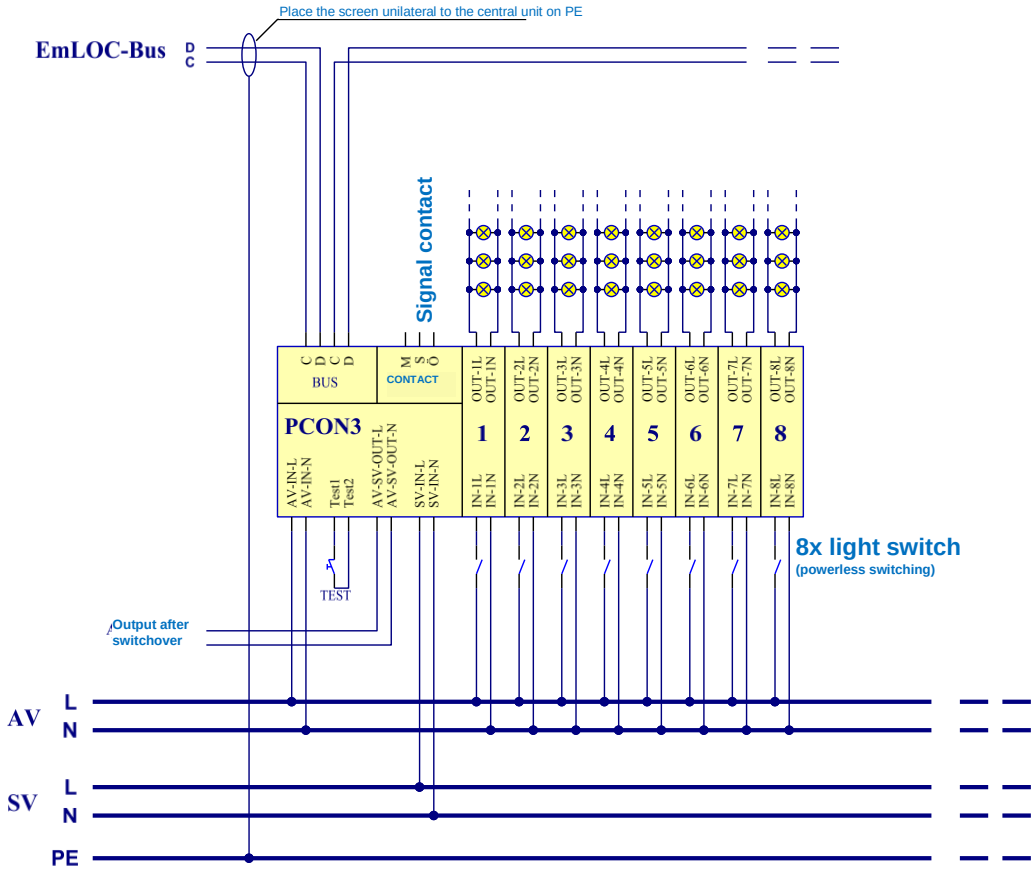
For setting the operation mode of the connected lights, the controller has an eight-position DIP switch on the front panel. Here, the user can set the operating mode “steady light” or “ready light” from left to right analogous to the channels 1-8. This manual setting “steady light” is then permanently set and must not be changed via the central unit.

As the controller is fully automatic, attendance is only required for testing and checking purposes. The operating option on the device is actually limited to manual checking. For this, the test button (near the address switches) must be pressed. All the channels are then activated and the current flow monitoring is active. If an error is detected in the test phase, it is displayed with the help of the LED “fault”. For exiting from manual test mode, the test button must be pressed again. The output channels then switch back to the state in which they were before the test. The test mode is signalled using the LED “test”. The same principle is repeated by the connected central unit during a test. Switching on and off only takes place automatically via the central unit. Data transfer is indicated using the LED “BUS”. Please refer to the operating manual “Centre” for effectiveness of the control system and the operation via the central unit.

Block diagram



Circuit diagram:


Place the screen unilateral to the central unit on PE
EmLOC-Bus
D
C
Signal contact
C
D
C
D
BUS
M
S
Ö
CONTACT
PCON3
AV-IN-L
AV-IN-N
Test1
Test2
AV-SV-OUT-L
AV-SV-OUT-N
SV-IN-L
SV-IN-N
OUT-1L
OUT-1N
OUT-2L
OUT-2N
OUT-3L
OUT-3N
OUT-4L
OUT-4N
OUT-5L
OUT-5N
OUT-6L
OUT-6N
OUT-7L
OUT-7N
OUT-8L
OUT-8N
1
2
3
4
5
6
7
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IN-1L
IN-1N
IN-2L
IN-2N
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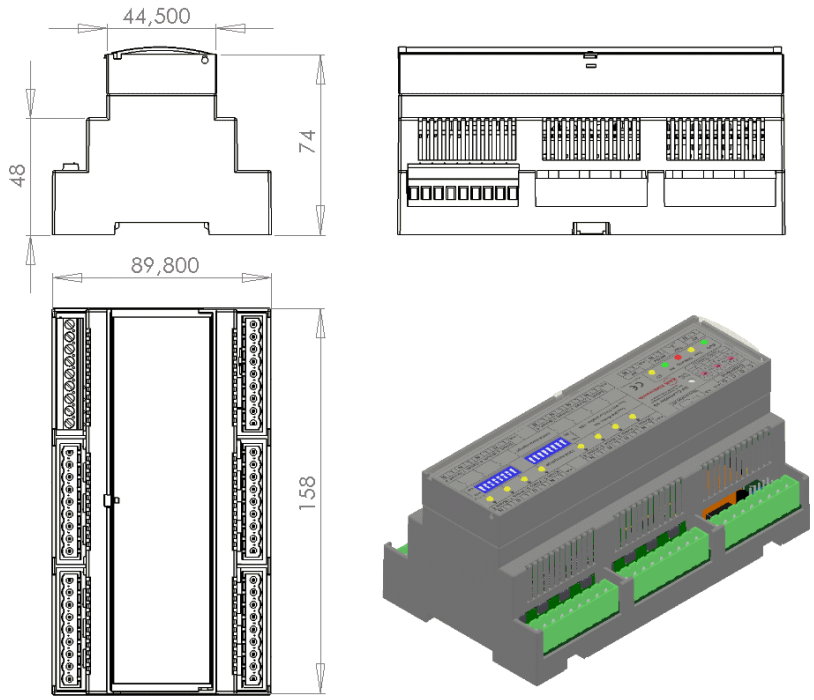
IN-3N
IN-4L
IN-4N
IN-5L
IN-5N
IN-6L
IN-6N
IN-7L
IN-7N
IN-8L
IN-8N
8x light switch
(powerless switching)
TEST
Output after switchover
AV
L
N
SV
L
N
PE

Dimensions:


44,500
48
74
89,800
158