



Patent Claims

1. Structure for mounting and installation of electrical installation devices, in particular switches, sockets, light signals, dimmers, communication devices as well as devices of building system technology, consisting of a square or rectangular device reception box of varying depth or a corresponding wall opening from a cable channel or similar and at least one or two installation devices and a device support frame, that can be mounted on the device reception box or wall opening, **characterised by the fact**, that the device support frame (1) is modelled at least in a single or double design, whereby for receiving devices the device support frame (1) has openings (2), each of which is provided with protrusions (3), in which the installation devices (11) can be inserted vertically and/or horizontally in varying utilisation positions or that the device support frame (1) for the reception of installation devices (11) with supporting frames (8) has wide supporting surfaces (15).
2. Structure in accordance with Claim 1, **characterised by the fact**, that the desired utilisation position of an installation device (11) is established by rotation within the opening (2).
3. Structure in accordance with Claim 1 and 2, **characterised by the fact**, that the devices are fastened by catches (4), which are arranged in the openings (2) in the area of the protrusions (3) of the device support frame (1).
4. Structure in accordance with Claim 1 and 3, **characterised by the fact**, that the supporting frames (8) are punched by a blanking tool from the standard production series to the size of the openings (2) within the device support frame (1) and its protrusions (3).
5. Structure in accordance with Claim 1 to 4, **characterised by the fact**, that the device support frame (1) as a preform consists of thermoplastic and that the catches (4) are part of the form made of the same material.
6. Structure in accordance with Claim 1, **characterised by the fact**, that an installation device (11) with extensions (14) can be mounted for the use in device reception boxes (6) of little depth by cutting off the catches (4).

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Structure for mounting and installation of electrical installation devices

This invention concerns a structure in accordance with the characterising clause of Claim 1.

The known electrical installation devices are predominantly installed into round concealed installation boxes. For export purposes it should be possible to install these devices in angular device reception boxes of different depth or in wall openings of cable channels or similar. The exporter obviously is very interested to prepare his serial devices without great changes for these requirements. Therefore the purpose of this invention is to design a structure that solves this problem. In accordance with the task this is solved by the characterising features of Claims 1 to 6.

Using an execution example the invention is explained and described in greater detail in Figures 1 to 15. The illustrations show the following:

- Fig. 1 : From top to bottom a top view onto a device support frame as well as the relevant bottom view and the square device reception box required for this;
- Fig. 2 : The same arrangement for two devices;
- Fig. 3 : A top view onto a square device support frame, however, here only for one device, next to it a bottom view and below it the relevant square device reception box;
- Fig. 4 : A top view onto a supporting frame in accordance with the invention with wide supporting surfaces; below with inserted installation devices;
- Fig. 5 : A top view onto the device support frame in accordance with the invention with fastening shackles;
- Fig. 6 : A top view onto a wall opening of a cable channel;
- Fig. 7 : A top view onto a serial device of the known design with large supporting frame, below a top view onto

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the design form of a supporting frame cut in accordance with the invention;

- Fig. 8 : The assembly of the structure, consisting of the device reception box and the device support frame in accordance with Fig. 1, here with an installation device and the pertaining covering frame with operating part;
- Fig. 9 : The assembly of the structure in accordance with Fig. 2, however with two different installation devices with operation parts and covering frame;
- Fig. 10 : A top view in accordance with the structure as per Fig. 3, however, with an installation device with operating part and the pertaining covering frame;
- Fig. 11 : Above a top view onto the wall opening of a cable channel with installed installation devices in the form of shock-proof sockets and below in partial section the structure in order to show its mounting;
- Fig. 12 : A side view of an installation switch in accordance with the state of technology, below the same switch shortened by the downward pointing protrusions as well as with a smaller supporting ring, below that the design in accordance with the invention installed in a device reception box;
- Fig. 13 : As example a square device support frame, below with an installation device for its reception in accordance with the positions in Fig. 14 and 15.

As shown in Fig. 1, the top illustration shows a device support frame 1 in a top view, which has an opening 2 for the reception of an installation device 11. 3 marks the protrusions, into which the supporting frame 8 of an installation device 11 is already inserted, which is reduced in accordance with the invention. The installation device is fixed in the opening 2 using the catches 4. Using screws 13, which are threaded through the openings 5 of the device support frame 1, the installation device is inserted in the device reception box 6 and there fastened in the threaded mountings 7 using the screws 13.

Fig. 2 shows the structure for the installation of two devices.

For Fig. 3 a square device support frame 1 has been selected, which in contrast to the design in Fig. 2 is only planned for one installation device,



because the available device reception box allows the installation of only one device.

Fig. 4 shows a supporting frame 1, which in contrast to the designs in Fig. 1 to 3 is provided with wide supporting surfaces, so that installation devices, that have a relatively wide support frame 8, can be installed without problems, as it is shown in the bottom half of Fig. 4.

Fig. 5 shows the device support frame 1 in accordance with the invention including fastening shackles 16 at all four corners. Using these fastening shackles 16, the device support frame 1 is mounted in a wall opening 17 of a cable channel 18 (Fig. 6) using screws 9. Fig. 11 shows this type of mounting in greater detail. During the fastening of the screws 19 the fastening shackles 16 are moved from their base position in accordance with Fig. 5 top and bottom into their fastening position in accordance with Fig. 11. During this the fastening shackles 16 move into position below the recessed protrusions 20 (Fig. 6) in the wall opening 17.

Fig. 7 on top shows a serial installation device as state of technology, in which in particular the large supporting frame 8 is to be mentioned. In accordance with this invention, it is to be possible to insert a standard installation device 11 in the device support frame 1 (Fig. 1 to 3 and 5) in accordance with the invention. The bottom diagram in illustration 7 already shows the device in the reduced supporting frame 8, which is required for this.

Fig. 8 shows the assembled structure in accordance with the invention. The illustration on top shows the relevant covering frame 9 and an operation device 10. The lower illustration shows the assembly of the structure. The installation device is marked as 11.

Fig. 9 shows how two different installation devices 11 including their operating devices 10 and 12 are installed in a device reception box 6, whereby the operating part 10 is designed as large surface and the operating part 12 as rotating knob.

Fig. 10, as a variation on Fig. 2, shows a device reception box with only one installation device. The lower section view of the assembly shows the type of mounting of the installation device with screws 13.

Fig. 12 on top shows the state of technology for an installation switch in side view. Below the same device is shown in accordance with the invention, in which there are no protrusions 14 and in which the supporting frame 8 has been reduced to the desired installation dimensions. The bottom illustration shows the assembly of the structure in accordance with the invention.



Fig. 13 to 15 show in an example how an installation device 11 is inserted in an opening 2 of a square device support frame 1 (Fig. 14). Afterwards the device is moved into the desired position in accordance with Fig. 15 by turning it in the direction of the arrow. During this process the supporting frame 8 depresses the catches 4 until the device reaches the position. Afterwards the catches 4 return to their starting positions, at the same time fixing the installation device 11 (Fig. 15).

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List of Reference Numbers

1	-	Device support frame
2	-	Opening
3	-	Protrusions
4	-	Catches
5	-	Opening of 1
6	-	Device reception box
7	-	Threaded mountings
8	-	Supporting frame
9	-	Covering frame
10	-	Operating part
11	-	Installation device
12	-	Rotating knob
13	-	Screws
14	-	Extension
15	-	Wide support surfaces
16	-	Fastening shackles
17	-	Wall opening
18	-	Cable channel
19	-	Screws
20	-	Overhang of 17

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