

# Manual

Junction boxes

THU \*6.\*\* \*\* \*\*

PTB 98 ATEX 3115

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## Junction boxes

Type Series THU \*6.\*\* \*\* \*\*

Target group:

Experienced electricians as defined by ElexV and trained personnel.

Contents:

1. Safety instructions
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## 1. Safety instructions

Type THU \*6.\*\* \*\* \*\* junction boxes are not suitable for duty in Zone 0.

Never leave this Instruction Manual or other objects in the enclosure while the equipment is in operation.

Operate the junction boxes in undamaged and clean condition, only for their intended purpose, and only in conditions which the enclosure material is capable of withstanding.

Incorrectly assembled boxes may no longer meet the requirements of protection type IP 54 as defined by EN 60 529: 1991.

Do not make any modifications to the junction boxes that are not expressly mentioned in this Instruction Manual.

***Whenever work is done on the junction boxes, be sure to observe the national safety and accident prevention regulations and the safety instructions given in this Instruction Manual, which are stated in italics (like this paragraph)!***

## 2. Conformity with standards

The explosionproof junction boxes meet the requirements of EN 50 014:1997, EN 50 019:1994 and EN 50 020:1994. They were developed, manufactured and tested in accordance with state-of-the-art engineering practice and EN 29 001.

## 3. Technical data

### *Explosion protection*

EEx e II T6 or

EEx e [ia] IIC T6

EEx ia IIC T6

### *EC Conformity Certificate*

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### *Enclosure material*

Polyester

### *Rated voltage*

e.g. max. 750 V (see rating plate)

### *Max. conductor cross-section*

e.g. 240 mm<sup>2</sup> (see rating plate)

### *Enclosure protection*

IP 54

### *Admissible ambient temperature range*

–20°C to +40°C

Marking

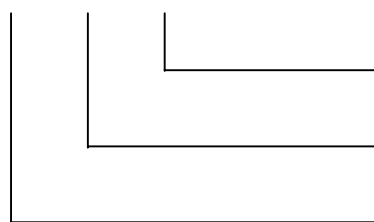


Type designation

Type code

Junction boxes

Typ THU \*6.\*\* \*\* \*\*



Enclosure size

0 – EEx e II T6 and EEx e [ia] IIC T6

1 – EEx ia IIC T6

Type series

## 4. Installation

***For installation/operation, always observe the provisions of ElexV and the Equipment Safety Law, the rules of generally accepted engineering practice (En 60079-14), and the instructions stated in this Manual.***

### Terminals

Taking the respective Data Sheet into account, use only terminals suitable for mounting on top-hat rails, G-profile rails, or PE busbars. Block terminals can also be used on the mounting plate. For circuits in "increased safety" protection, use only terminals with an EC Conformity Certificate issued by a recognized European testing laboratory in accordance with European standards EN 50 014:1997 and EN 50 019:1994. It is also permissible to use suitable terminals with a "B" or later generation Conformity Certificate issued by a recognized European testing laboratory, provided the manufacturer can document its quality assurance measures and provided that compliance with the relevant requirements of European standards EN 50 014:1997 and EN 50 019:1994 has been verified.

The terminals for circuits in "increased safety" protection must be installed in such a way that the leakage paths and clearances

called for by EN 50 019:1994 Table 1 as a function of the operating voltage are met.

The terminals used for the intrinsically safe circuits do not require certification. But the terminals used must be properly marked, e.g. with light-blue paint. The terminals must be arranged in such a way that at least 50 mm clearance exists between the bare connection parts and between blank parts of the connected conductors of the intrinsically safe and non-intrinsically safe circuits. This clearance is achieved with partition plates or by using suitable end clamps for installation. The clearance between the connection parts of the intrinsically safe circuits and earthed metallic parts must be at least 3 mm, unless the connection parts are used for earthing. Finally, suitable terminals or partition plates must be used to ensure a clearance of at least 6 mm between the connection parts of different intrinsically safe circuits.

In the case of mixed components (designation EEx e [ia] IIC T6), the terminals for the circuits in "increased safety" protection must be covered with guards of insulating material to prevent accidental contact. Only guards provided for this purpose by the terminal manufacturer are admissible. The guard must be provided with a permanent warning notice. These covers and warning notices may be omitted in the case of junction boxes whose rating plates state that the box should never be opened under voltage.

The number of terminal positions provided for the earth conductors must at least equal the number of circuits. The maximum admissible cross-section of the individual earthing conductor terminals as a function of the maximum admissible cross-section of the associated phase and neutral conductor terminals must comply with the following table.

| <i>Maximum admissible<br/>cross-section of the<br/>phase and neutral<br/>conductor terminal<br/>S [mm²]</i> | <i>Minimum admissible<br/>cross-section of the<br/>associated earthing<br/>conductor terminal<br/>Sp [mm²]</i> |
|-------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| <b>16</b>                                                                                                   | <b>S</b>                                                                                                       |
| <b>16 to 35</b>                                                                                             | <b>16</b>                                                                                                      |
| <b>over 35</b>                                                                                              | <b>0.5</b>                                                                                                     |

***For neat arrangement of the conductors and secure connection of the conductors to the terminal blocks, observe table 1.***

In the case of parallel terminal blocks, clearances at least 1.5 times greater than those listed in the above table must be maintained. For versions with a mounting plate, where the conductors cannot be brought in under the terminals, clearances at least 2 times greater than those listed in the above table must be maintained.

## **Cable and conductor entries**

Install cable and conductor entries only in predrilled holes in which blind plugs are inserted. Install the cable and conductor entries in such a way that accidental loosening is prevented and permanent sealing of the entry points is ensured. Intrinsically safe circuits must be brought in and out through separate entries, which should be clearly identified (e.g. with light-blue paint). Only cable and conductor entries of plastic may be used. Wherever cable and conductor entries are not needed, the holes must be closed off with blind plugs.

For junction boxes in "increased safety" protection and mixed components, use only cable and conductor entries with an EC Conformity Certificate issued by a recognized European testing laboratory in accordance with European standards EN 50 014:1997 and EN 50 019:1994. It is also permissible to use suitable terminals with a "B" or later generation Conformity Certificate issued by a recognized European testing laboratory, provided the manufacturer can document its quality assurance measures and provided that compliance with the relevant requirements of European standards EN 50 014:1997 and EN 50 019:1994 has been verified.

## **5. Maintenance**

***The provisions of ElexV §9, ElexV §13 and EN 60079-17 pertaining to servicing, maintenance and testing must be complied with. During servicing, it is particularly important to check those components upon which the type of protection depends.***

## Annex 1

### *Tables of terminals*

Maximum number of conductors as a function of cross-section and the admissible continuous current for the specified box size. Each conductor led into the box and each internal conductor counts, but jumpers and protective conductors do not.

When one selects the admissible continuous currents for the cross-sections, it is necessary to observe the maximum current loading of the terminals and of the cables and conductors connected to them. Conductors installed in the box in the following example must be suitable for a temperature of 70 °C to 80 °C. When the table values are applied, it is permissible to take the simultaneity or load factors according to IEC 439 into account.

Mixed equipment employing circuits of different cross-sections and currents may be used by utilizing the table values on a pro rata basis:

| Cross-sec<br>[mm <sup>2</sup> ] | Amps<br>[A] | No. of<br>conductors | Utilization<br>[%] |
|---------------------------------|-------------|----------------------|--------------------|
| 2.5                             | 16          | 15 (of 45)           | 33.4               |
| 4.0                             | 25          | 12 (of 28)           | 42.8               |
| 10.0                            | 35          | 3 (of 52)            | 5.8                |

Sum (  $\Sigma$  )

|      |
|------|
| 82.0 |
|------|

## Sizes

| Junction boxes  | Page | Dimensions |       |        |
|-----------------|------|------------|-------|--------|
|                 |      | Length     | Width | Height |
| Type            | N°   | [mm]       | [mm]  | [mm]   |
| THU *6.08.08.06 | 18   | 80         | 75    | 56,5   |
| THU *6.08.11.06 | 19   | 110        | 75    | 56,5   |
| THU *6.08.16.06 | 20   | 160        | 75    | 56,5   |
| THU *6.08.19.06 | 21   | 190        | 75    | 56,5   |
| THU *6.08.08.08 | 22   | 80         | 75    | 75,5   |
| THU *6.08.11.08 | 23   | 110        | 75    | 75,5   |
| THU *6.08.16.08 | 24   | 160        | 75    | 75,5   |
| THU *6.08.19.08 | 25   | 190        | 75    | 75,5   |
| THU *6.08.23.08 | 26   | 230        | 75    | 75,5   |
| THU *6.88.01.00 | 27   | 76         | 76    | 75     |
| THU *6.88.02.00 | 28   | 103        | 103   | 75     |
| THU *6.10.32.08 | 29   | 320        | 100   | 81     |
| THU *6.12.12.09 | 30   | 122        | 120   | 91     |
| THU *6.12.22.09 | 31   | 220        | 120   | 91     |
| THU *6.16.16.09 | 32   | 160        | 160   | 91     |
| THU *6.16.26.09 | 33   | 260        | 160   | 91     |
| THU *6.16.36.09 | 34   | 360        | 160   | 91     |
| THU *6.16.56.09 | 35   | 560        | 160   | 91     |
| THU *6.36.36.09 | 36   | 360        | 360   | 91     |
| THU *6.88.03.00 | 37   | 143        | 143   | 93     |
| THU *6.25.26.12 | 38   | 255        | 250   | 121    |
| THU *6.25.40.12 | 39   | 400        | 250   | 121    |
| THU *6.25.60.12 | 40   | 600        | 250   | 121    |
| THU *6.41.40.12 | 41   | 400        | 405   | 121    |
| THU *6.25.26.16 | 42   | 255        | 250   | 161    |
| THU *6.25.40.16 | 43   | 400        | 250   | 161    |

Table 1

| Conductor cross-section [mm <sup>2</sup> ] | Number of single- or multicore conductors brought in;<br>minimum distance of terminal blocks from enclosure wall for |              |                                           |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------|--------------|-------------------------------------------|
|                                            | 1 conductor                                                                                                          | 2 conductors | 3 or more conductors or<br>2 side-by-side |
| 1,5                                        | 20 mm                                                                                                                | 20 mm        | 20 mm                                     |
| 2,5                                        | 20 mm                                                                                                                | 20 mm        | 20 mm                                     |
| 4                                          | 20 mm                                                                                                                | 20 mm        | 25 mm                                     |
| 6                                          | 20 mm                                                                                                                | 25 mm        | 30 mm                                     |
| 10                                         | 25 mm                                                                                                                | 30 mm        | 40 mm                                     |
| 16                                         | 30 mm                                                                                                                | 40 mm        | 50 mm                                     |
| 25                                         | 40 mm                                                                                                                | 50 mm        | 60 mm                                     |
| 35                                         | 50 mm                                                                                                                | 60 mm        | 75 mm                                     |
| 50                                         | 60 mm                                                                                                                | 75 mm        | 100 mm                                    |
| 70                                         | 75 mm                                                                                                                | 100 mm       | 125 mm                                    |
| 95                                         | 100 mm                                                                                                               | 125 mm       | 140 mm                                    |
| 120                                        | 125 mm                                                                                                               | 140 mm       | 150 mm                                    |
| 150                                        | 140 mm                                                                                                               | 150 mm       | 160 mm                                    |
| 185                                        | 150 mm                                                                                                               | 160 mm       | 170 mm                                    |
| 240                                        | 160 mm                                                                                                               | 170 mm       | 180 mm                                    |