

Schlüter®-DITRA-HEAT-E

Undertile and stone heating with Schlüter®-DITRA technology

Installation Guide

Installation Helpline
01530 813 396



Pre-Installation

Before carrying out any installation ensure that all the pre-installation planning has been correctly completed.

For more information on pre-installation planning, scan the QR code or visit: www.schluter.co.uk/brochures-and-information-material.aspx

SCAN HERE! ↘



Installation

DITRA-HEAT/-DUO/-PS Membrane on Floors

If using the original version of the DITRA-HEAT/-DUO membrane, it should be bonded to a suitable clean, dry, even, rigid and load-bearing substrate using an appropriate C2 classification cementitious tile adhesive. A 6 x 6 mm notched trowel should be used to fully embed the anchoring fleece, laminated to the underside of the membrane, into the adhesive. Then immediately press the membrane into the adhesive using a float or roller. Work in a single direction and observe the curing times of all materials. For further guidance *product data sheet 6.4* should be referred to.

If the substrate is exterior grade plywood, it is common practice to bond the DITRA-HEAT/-DUO membrane using a resilient flooring adhesive, such as AF200. In such a situation the adhesive manufacturer should be consulted as to the appropriate trowel size. but in our experience a 2 mm x 6 mm V-notched trowel is usually suitable.

If using the DITRA-HEAT-PS/-DUO-PS Peel & Stick version of the membrane, it should be adhered to a suitable clean, dry, even, rigid and load-bearing substrate. The release film should be peeled away from the fleece on the underside and the mat placed onto the substrate. Minor repositioning is possible before pressure is applied. Once the membrane is correctly positioned a strong bond to the substrate is achieved by applying pressure using a float or roller. For further guidance *product data sheet 6.5* should be referred to.

If rolls of the DITRA-HEAT/-DUO/-PS membrane are used, it is advised to keep the material tightly stretched with light tension when placing it on the substrate. The Easycut gridlines of the membrane minimise the restoring force.

When installing sheets and or lengths of membrane next to each other, care should be taken to butt them together with the stud structures lined up. If in a wet environment, KERDI-KEBA and KERDI-COLL-L should be used to waterproof the joints, but only after the sensors and heating cable have been installed and tested.

To prevent damage or detachment from the substrate, it is recommended to use walking boards on top of the installed membrane to protect it from mechanical impact.

The sensors and heating cable can be installed immediately after the DITRA-HEAT/-DUO/-PS membrane is bonded to the substrate. Any waterproofing of joints should be completed after the sensors and heating cable have been installed and tested.

DITRA-HEAT/-DUO Membrane on Walls

It is recommended to use DITRA-HEAT-MA/-DUO-MA sheets (not rolls and not Peel & Stick) and to bond it to the wall using an appropriate C2 classification cementitious tile adhesive. A 6 x 6 mm notched trowel should be used to fully embed the anchoring fleece, laminated to the underside of the membrane, into the adhesive. Then immediately press the membrane into the adhesive using a float or roller. Work in a single direction and observe the curing times of all materials. For further guidance *product data sheet 6.4* should be referred to.

When installing sheets next to each other, care should be taken to butt them together with the stud structures lined up. If in a wet environment, KERDI-KEBA and KERDI-COLL-L should be used to waterproof the joints, but only after the sensors and heating cable have been installed and tested.

The heating cables can be installed after the DITRA-HEAT-MA/-DUO-MA sheets are securely bonded to the substrate. Any waterproofing of joints should be completed after the sensors and heating cable have been installed and tested.

Installation

DITRA-HEAT-HK Heating Cable Installation

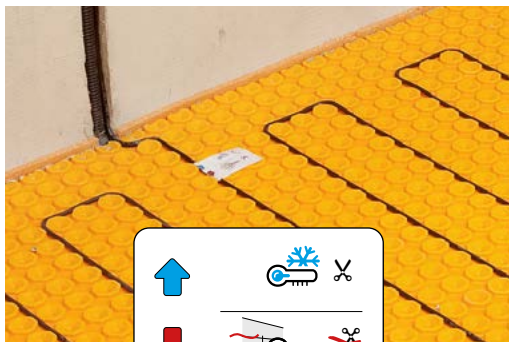
Before installing the heating cable, it is good practice to confirm it is the correct length for the application. Please see page 5 of the Pre-Installation Planning document. Also, it must be tested once removed from the box and continue to be tested during installation. The testing procedure that must be followed, and the documentation that must be completed in order to obtain a warranty for the installation is detailed on pages 9 – 15.

Schlüter®-DITRA-HEAT-CT

A cable & sensor testing device for the Schlüter-DITRA-HEAT system. For further guidance *product data sheet 6.4* should be referred to.



Locate the label on the heating cable that identifies the transition from the 4 m long cold leg to the heating part of the cable. Remembering that the cold leg must be connected to the thermostat, position this transition point within the membrane, no closer than 2 studs away from the edge of the membrane, pressing it into the grooves between the studs.



If required, the cold leg can be extended to a maximum length of 10m using two-core & earth cable. The core sizes vary depending on the length of the heating cable, please see the below table. The connection should be made within an accessible junction box.

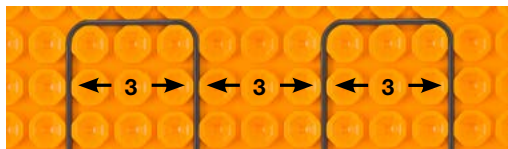
Cold wire cross-section

| Art. No. | | Ø mm |
|-------------|-----|----------------------|
| DH E HK 4 | 4 | 0.60 mm ² |
| DH E HK 6 | 6 | 0.60 mm ² |
| DH E HK 12 | 12 | 0.60 mm ² |
| DH E HK 17 | 17 | 0.60 mm ² |
| DH E HK 23 | 23 | 0.60 mm ² |
| DH E HK 29 | 29 | 0.60 mm ² |
| DH E HK 35 | 35 | 0.60 mm ² |
| DH E HK 41 | 41 | 0.60 mm ² |
| DH E HK 47 | 47 | 0.60 mm ² |
| DH E HK 53 | 53 | 0.75 mm ² |
| DH E HK 59 | 59 | 0.75 mm ² |
| DH E HK 71 | 71 | 0.75 mm ² |
| DH E HK 83 | 83 | 0.75 mm ² |
| DH E HK 95 | 95 | 0.75 mm ² |
| DH E HK 107 | 107 | 1.00 mm ² |
| DH E HK 136 | 136 | 1.00 mm ² |
| DH E HK 164 | 164 | 1.00 mm ² |
| DH E HK 192 | 192 | 1.00 mm ² |
| DH E HK 216 | 216 | 1.00 mm ² |
| DH E HK 244 | 244 | 1.00 mm ² |

Installation

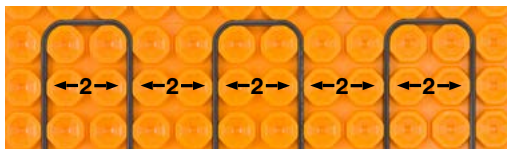
DITRA-HEAT-HK Heating Cable Installation (Cont.)

The heating part of the cable should be pressed into the grooves between the studs using a float. It is essential that it is installed no closer than 2 studs from any building element, eg. wall, column, bath, WC etc.



Floors & Walls

The heating cable must be spaced every 3 studs, overheating can occur if spaced closer.



Walls Only

If on walls the heating cable should be spaced either every 2 studs, or every 3 studs.

Heating cables must not cross and must not be installed underneath furniture eg. kitchen units, bath, shower, WC, basin pedestal, dog bed etc.

The end of the heating cable is larger than the cable itself and should be installed in an opening cut into the membrane.

Once the heating cable is in its final position, and no changes will be made, take a photograph showing the layout of the heating cable and the position of the label identifying the hot/cold transition.

At this stage, if the cold leg is longer than necessary it can be cut, provided it is left at least 1 m long from the hot/cold transition. Then carefully remove the label identifying the hot/cold transition. Ensure that the heating cable is not damaged when doing this.

In certain circumstances, two separate heating cables can be installed, both being connected to a single thermostat. However, if the overall load exceeds 16A, 3600 W Schlüter's Technical Department should be contacted for advice.

Important: The DITRA-HEAT-E heating system must not be turned on until at least 7 days after the tiles or stone has been installed and grouted.

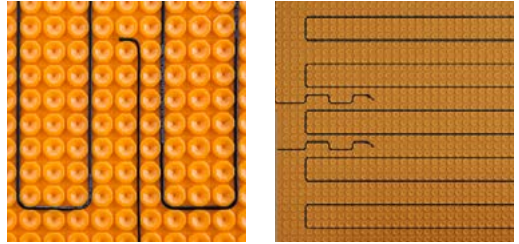


Installation

Sensor Installation

Both 3 m long sensors must be tested, as per the instructions detailed on page 11, before installation. Remembering that they must be connected to the thermostat they should be installed in the membrane, between two loops of heating cable. They should not be placed next to the cold leg of the heating cable or next to any other heat source such as heating pipes.

If required, the sensors can be extended to a maximum length of 30 m using two-core cable, each core being 0.75 mm².

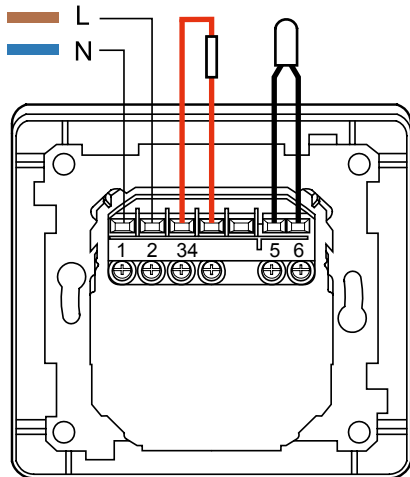


Connecting to the Thermostat

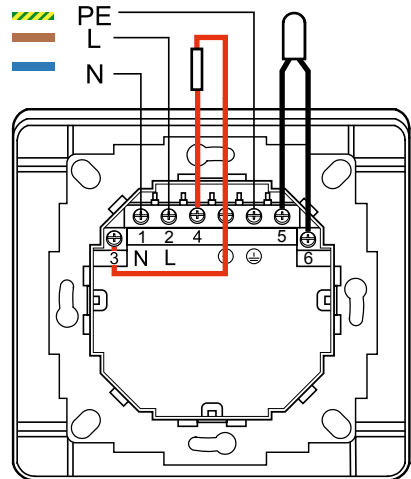
A qualified electrician must carry out the electrical connections in compliance with all applicable safety regulations and the latest edition of BS 7671: 'The IEE Wiring Regulations'.

Depending on the Schlüter thermostat being installed, the relevant wiring diagram from those shown below must be followed.

Schlüter®-DITRA-HEAT-E-R /-R-WIFI /-R3 /-R6



Schlüter®-DITRA-HEAT-E-R4



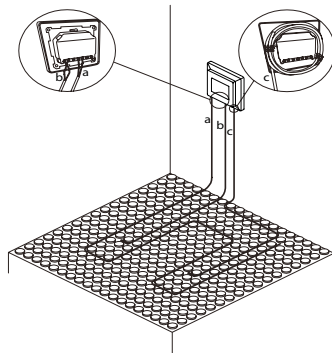
Installation

Connecting to the Thermostat (Cont.)

The heating cable comprises three internal wires, two of which are insulated. These insulated wires should be connected to the thermostat terminals 3 and 4, but it does not matter which way round as they are polarity neutral. The uninsulated wire should be connected to the earthing terminal on a steel back box or, using a terminal block, to the earth wire of the mains supply cable if a plastic back box.

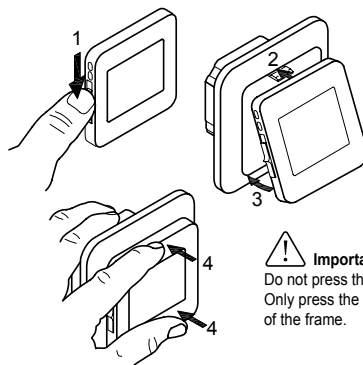
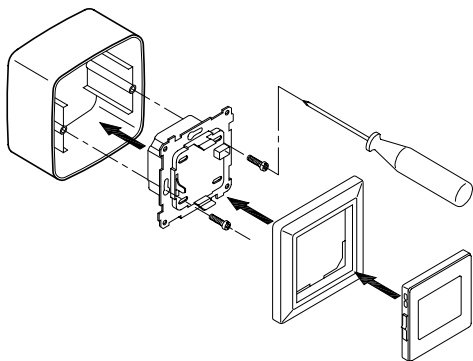
One of the sensors should be connected to terminals 5 & 6 of the thermostat. It does not matter which way around the two internal wires are connected as they are polarity neutral. The other sensor should be left unconnected and regarded as a 'spare'. It should only be connected in the event of the other sensor being damaged and/or failing.

Important: The DITRA-HEAT-E heating system must not be turned on until at least 7 days after the tiles have been installed and grouted.



Mounting the Thermostat

Having connected mains power, the heating cable and the sensor to the thermostat carefully mount the thermostat into the electrical back box. Then fit the frame and carefully press the cover onto the thermostat - starting with the upper part of the cover, then the lower part of the cover. Ensure that both the power slider on the left-hand side of the cover and the power switch pin in the thermostat are in the down position. Do not use heavy pressure to click the cover into place. Only use gentle, even pressure. Do not touch the screen/display. Do not open the thermostat by releasing the four fixing clips on the back. If it is necessary to remove the screen use the supplied orange 'key'.

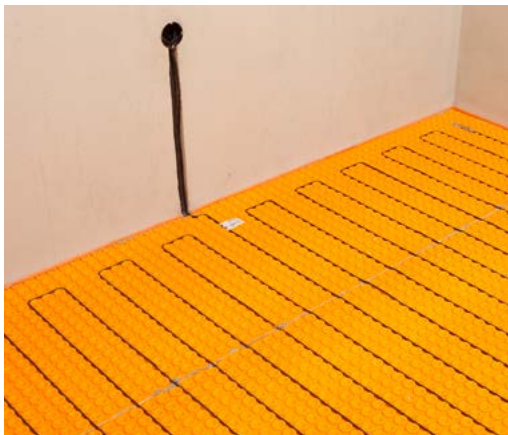


Installation

Tiling on top of the membrane, heating cables and sensors

Once the heating cable has been installed and met the requirements of all the tests detailed on pages 9 - 11, tiles can be installed using appropriate cementitious tile adhesive and the thin-bed method. Care should be taken to avoid damaging the heating cable and the sensors. It is recommended that a grout float is used to fill the studs and grooves, fully encapsulating the heating cable and sensors in tile adhesive, ensuring there are no air pockets. This should be completed in a single step and then immediately followed by using a notched trowel to comb out adhesive in which to bed the tiles. A minimum 5 mm of covering (adhesive and tile) is required above the heating cable. The covering of tile adhesive above the membrane must not exceed 10 mm. Please observe the instructions regarding perimeter joints and connection joints in *product data sheets 6.4* and *6.5*.

Important: The DITRA-HEAT-E heating system must not be turned on until at least 7 days after the tiles have been installed and grouted.



Using Floor Coverings other than Tile & Stone on top of the membrane, heating cables and sensors

Floor coverings such as timber, laminate, vinyl and LVT can be installed over DITRA-HEAT/-DUO/-PS provided a 5 - 10 mm layer of a suitable self-levelling compound covers the membrane, heating cable and sensors.

The self levelling compound should achieve the required depth in one application, have a compressive strength between 25 & 30N/mm² (C25 - C30 as per BS EN 13813), a flexural tensile strength between 5 & 9N/mm² (F5 - F9 as per BS EN 13813) and be approved by the manufacturer as suitable for use with electric underfloor heating.

Testing Schlüter®-DITRA-HEAT-E-HK Cables

Testing Procedure

Schlüter®-DITRA-HEAT-E-HK heating cables should be tested before installation. Warranty claims must be supported with a fully completed Test Log, together with a drawing and photograph of the cable layout prior to tiling. Supporting information must show the heating cable layout, the location of both floor sensors and the hot/cold cable transition. The heating cable must be tested once removed from the box, once installed within the DITRA-HEAT-E/-DUO/-PS membranes, and once tiling is completed. The heating cable should be monitored whilst the floor covering is being installed.

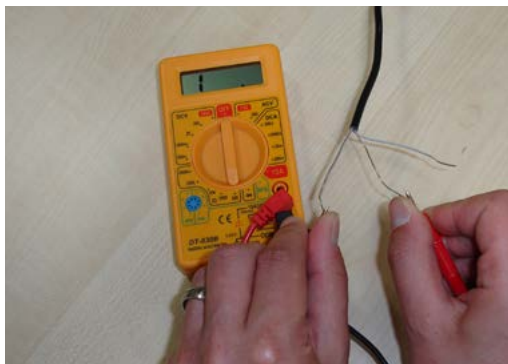
Conductor Resistance Test

Using a multimeter set to 200 ohm, test the resistance between the insulated live and neutral cables. Record the readings in the table on page 15 of this Installation Guide. The resistance reading should be within -5% / +10% of the figure detailed in the Resistance Test Table on page 11 of this Installation Guide. If the reading is outside this range, the cable may be damaged or the multimeter is on the wrong setting. The test can also be carried out with Schlüter®-DITRA-HEAT-E-CT test device.



Continuity Test Between Earth and Conductors

The insulated live cable should be tested to the uninsulated earth, cable using a multimeter set to 200 ohm. The reading on the multimeter should be 1. The insulated neutral cable should then be tested in the same way.



Please Note: If any of the readings are not within the correct tolerances the cable should be replaced. Please call the Technical Department for further details – tel: +44 (0)1530 813396

Testing Schlüter®-DITRA-HEAT-E-HK Cables

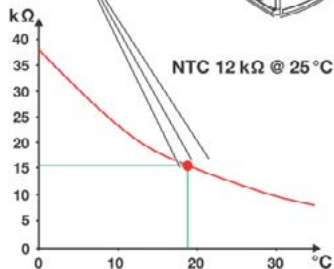
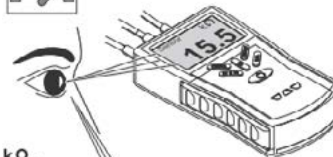
Insulation Resistance Test

This test needs to be carried out using a Megohmmeter. It will indicate any small holes in the insulating layer, which separates the conductors from the earth. The Megohmmeter should be set to 500 V DC and if there is no leakage, the insulation resistance between the power leads and earth must be equal to or greater than 1 M ohm (or Infinity). Tests should be carried out between the live and earth cables and between the neutral and earth cables. If the reading is less than 1 M ohm or 1000 k ohm, there is a short in the insulation layer.



Temperature Sensor Testing

Schlüter®-DITRA-HEAT-E-CT should be used to carry out the test on the temperature sensors. Connect one black clip to one of the sensor cables and the other black clip to the other sensor cable. The reading on the tester should be that shown on the chart supplied with the DHECT, taking into account the ambient temperature. Both sensors should be tested before installation. Please refer to Art – No. (DH E CT) for further instructions.



Resistance Test Table

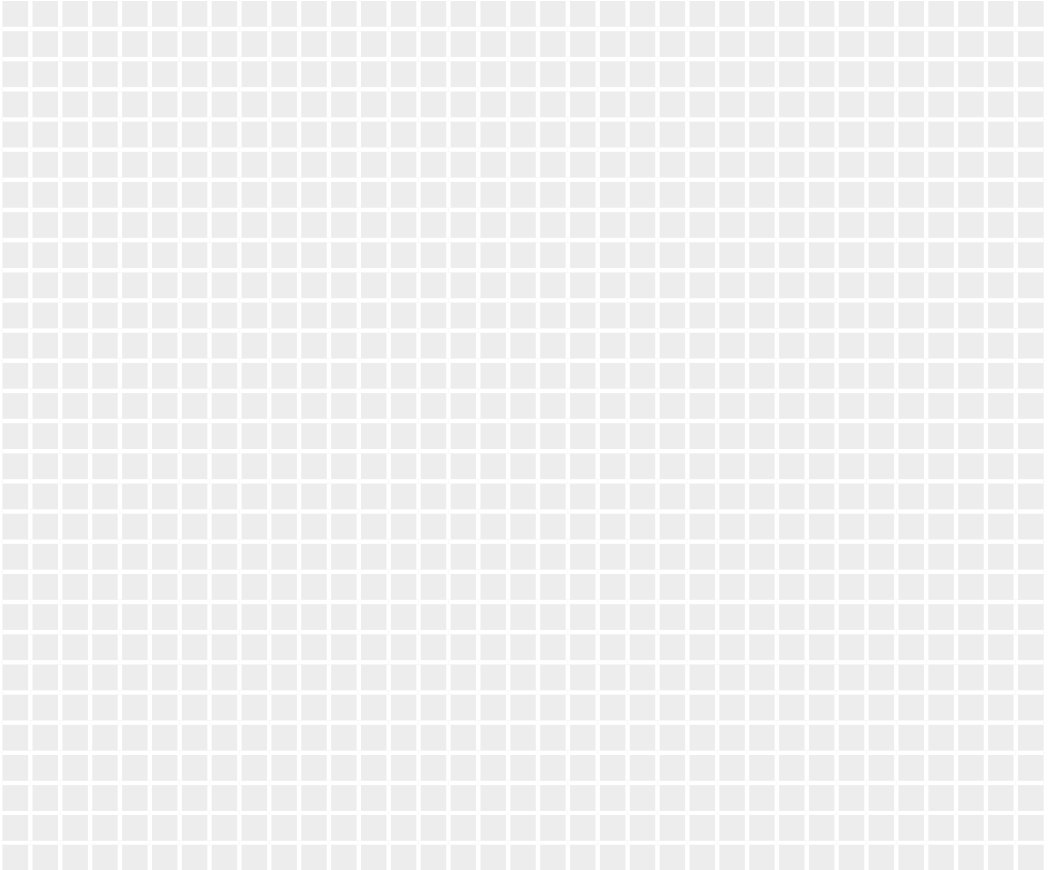
| L = m | Heated area in m ² 136 W/m ² | Heated area in m ² 200 W/m ² | Watt | Art.-No. | Amps | Resistance* (ohm) |
|--------|---|---|------|-------------|------------|----------------------|
| 4.00 | 0.40 | 0.25 | 50 | DH E HK 4 | 0.22 amps | 1058.00 |
| 6.76 | 0.60 | 0.43 | 85 | DH E HK 6 | 0.37 amps | 626.00 |
| 12.07 | 1.10 | 0.70 | 150 | DH E HK 12 | 0.65 amps | 352.67 |
| 17.66 | 1.60 | 1.00 | 225 | DH E HK 17 | 0.97 amps | 235.11 |
| 23.77 | 2.20 | 1.50 | 300 | DH E HK 23 | 1.30 amps | 176.33 |
| 29.87 | 2.70 | 1.80 | 375 | DH E HK 29 | 1.63 amps | 141.07 |
| 35.97 | 3.30 | 2.20 | 450 | DH E HK 35 | 1.95 amps | 117.56 |
| 41.56 | 3.80 | 2.60 | 525 | DH E HK 41 | 2.28 amps | 100.76 |
| 47.67 | 4.40 | 2.90 | 600 | DH E HK 47 | 2.60 amps | 88.17 |
| 53.77 | 5.00 | 3.30 | 675 | DH E HK 53 | 2.93 amps | 78.37 |
| 59.87 | 5.50 | 3.70 | 750 | DH E HK 59 | 3.26 amps | 70.53 |
| 71.57 | 6.60 | 4.40 | 900 | DH E HK 71 | 3.91 amps | 58.78 |
| 83.77 | 7.70 | 5.10 | 1050 | DH E HK 83 | 4.56 amps | 50.38 |
| 95.47 | 8.80 | 5.90 | 1200 | DH E HK 95 | 5.21 amps | 44.08 |
| 107.67 | 10.00 | 6.60 | 1350 | DH E HK 107 | 5.86 amps | 39.19 |
| 136.00 | 12.70 | 8.40 | 1700 | DH E HK 136 | 7.39 amps | 31.12 |
| 164.00 | 15.00 | 10.00 | 2050 | DH E HK 164 | 8.91 amps | 25.8 |
| 192.00 | 17.70 | 11.80 | 2400 | DH E HK 192 | 10.43 amps | 22.04 |
| 216.00 | 20.00 | 13.20 | 2700 | DH E HK 216 | 11.74 amps | 19.59 |
| 244.00 | 22.70 | 15.10 | 3050 | DH E HK 244 | 13.26 amps | 17.34 |

* Resistance tolerance = -5% / +10%

Installation Drawing

Please use the space below to illustrate the room layout showing all fixtures & fittings including heating cable and both sensor locations.

Note: It is important that the heating cable is not covered by pedestals, baths, showers, units & rugs etc.



Photo(s) of Installation

Please include below photo(s) of entire floor area, including sensors and the hot/cold transition label.



Certified Installer



Test Log

Project Name: _____

Project Address: _____

Project Postcode: _____ Date of Installation: _____

Qualified Electrician: _____ Systems Start Up Date*: _____

Thermostat

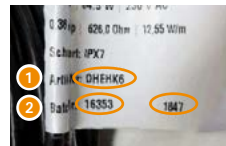
- DITRA-HEAT-E-R - Art.-No. DH E RT2 / BW
- DITRA-HEAT-E-R3 - Art.-No. DH E RT3 / BW
- DITRA-HEAT-E-R4 - Art.-No. DH E RT4 / BW
- DITRA-HEAT-E-R-WIFI - Art.-No. DH E RT5 / BW
- DITRA-HEAT-E-R-6 - Art.-No. DH E RT6 / BW

Cable Identification

Please log the *Product Code* and *Batch Numbers*.

- 1 Product Code:

- 2 Batch No:



Date of start up, incl. function test: _____

Entering a date confirms the proper function of the installed Schlüter®-DITRA-HEAT-E, including the thermostat.

Warranty claims must be supported with a fully completed Test Log, together with a drawing and photograph of the cable layout prior to tiling. Supporting information must show the heating cable layout, the location of both floor sensors and the hot/cold cable connection.

Important note!

The warranty does not cover consequential damage resulting from installations that do not comply with the installation instructions for Schlüter®-DITRA-HEAT-E or the operating and installation instructions of the floor thermostat. Please keep purchase records on file.

Disposal notice

This product may not be disposed of with household waste.

Technical specifications subject to change.



| Identification | | Factory Value | | Before Installation | After Cable Installation | After Tile Installation | | |
|---|------------------------------------|--------------------|---------------|---------------------|--------------------------|-------------------------|---------------|--------------------|
| Test 1: Conductor Resistance Test (Readings must fall within -5% / +10% of the resistance detailed in the Resistance Test Table on page 11 of this Installation Guide. | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Test 2: Continuity Test between Earth and Conductors | | | | | | | | |
| | Required value of 1 | Live/Earth | Neutral/Earth | Live/Earth | Neutral/Earth | Live/Earth | Neutral/Earth | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Test 3: Insulation Resistance Test | | | | | | | | |
| | Equal to or greater than 1 Megaohm | Live/Earth | Neutral/Earth | Live/Earth | Neutral/Earth | Live/Earth | Neutral/Earth | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Test 4: Temperature Sensor Test | | | | | | | | |
| | Temp (°C) | Resistance (Kohms) | Temp (°C) | Resistance (Kohms) | Temp (°C) | Resistance (Kohms) | Temp (°C) | Resistance (Kohms) |
| | 10 | 22.5 | | | | | | |
| | 15 | 17.5 | | | | | | |
| | 20 | 15.0 | | | | | | |
| | 25 | 12.5 | | | | | | |
| | 30 | 10.0 | | | | | | |

* The DITRA-HEAT-E heating system must not be turned on until at least 7 days after the tiles have been installed and grouted.



Information.

If you have any questions about the installation process or any of our products please contact Schlüter Technical Support on technical@schluter.co.uk or +44 (0) 1530 813396.

Subject to the Standard Terms and Conditions of Sale of Schlüter-Systems Ltd.

All information contained within this document is considered to be true and correct at the date of publication; changes to regulations, standards etc. after the date of publication may impact on the accuracy of the information.

For reasons of printing, colours shown in this installation guide may differ from actual product colours.

