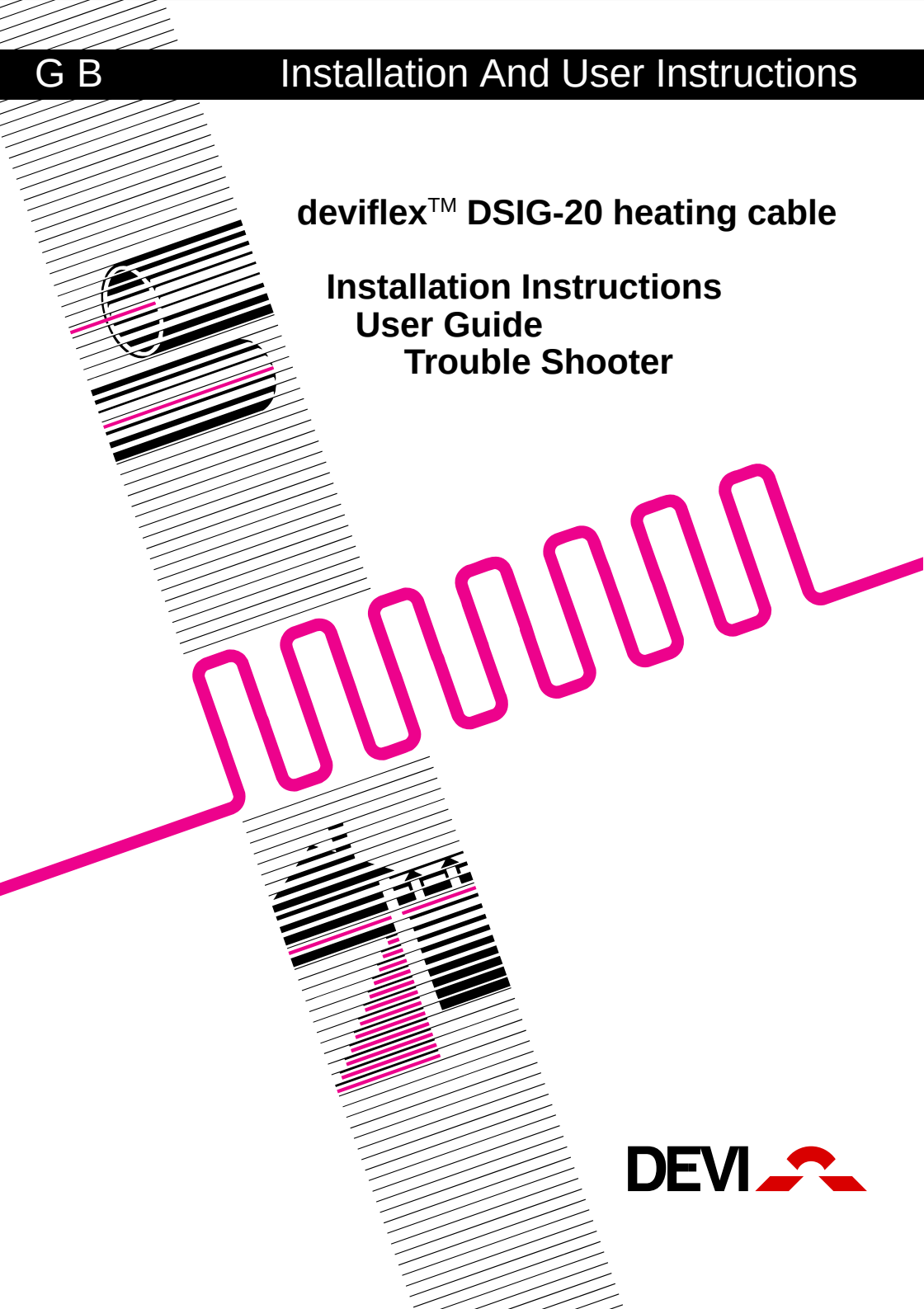
G B Installation And User Instructions

deviflex™ DSIG-20 heating cable

Installation Instructions
User Guide
Trouble Shooter



DEVI

IMPORTANT

- The electronic thermostat/timer has a switching limit of 16 amps, therefore cables with a total load over 3kW will require a contactor, and this should be supplied and fitted by your electrical contractor.
- Before laying the heating cable the floor sensor MUST be installed. The sensor is fitted into a flexible tube which should be laid about half a metre from the edge of the room into the floor space between a heating cable loop.
- Before laying check the continuity of the cable, it should match the Ohm rating on the heating cable label with a tolerance of -5 to +10%.
- The heating cable must NOT be cut or subjected to strain around the area of the coupling, only the two black cables can be cut to suit.
- When installing more than one heating cable, all 'cold tails' (black wires) must be taken back to the connection point/controller, DO NOT wire one heating cable to another.
- After installation of the heating cables, the continuity should be checked again.
- After laying a minimum 50mm sand and cement screed, the heating cables must be checked once again for continuity and connected by a qualified electrician.
- The black cables consists of two wires, the central core is the LIVE or NEUTRAL, the outer wire is the earth screen and should be connected to EARTH.

Installation on new concrete floors should not be carried out for approximately 30 days to ensure thorough drying out.

IMPORTANT

- **The heating cable must NOT be cut or subjected to strain around the area of the coupling, only the two black cables can be cut to suit.**
- **The cable must be connected by a qualified electrician.**

Cable specifications

Cable	**deviflex**® DSIG-20
Type	Single conductor (with screen)
Voltage	230 V AC
Effect	20 W/m
Diameter	Ø = 5.5 mm
Cold tail	2 x 3 m, 1.5 mm² (+ screen)
Conductor insulation	PEX
Sheath insulation	PVC 90ºC
Max. temperature	65ºC

Connections

Live	- Black
Neutral	- Black
Earth	- Screen

Installation

1. When installing the heating cables the following should be observed:

Clean and remove all loose particles. Remove any sharp protrusions and fill in any holes with 1:3 mixture of sand/ cement. If laying onto the foiled backed insulation make sure the area is dust free to enable a good fix.

It is recommended to draw up a plan showing where the heating cable is to be installed, indicating the position of the floor sensor and connection box.

2. After deciding which direction the heating cables are to be laid, the fixing band should be laid across the room in the opposite direction.

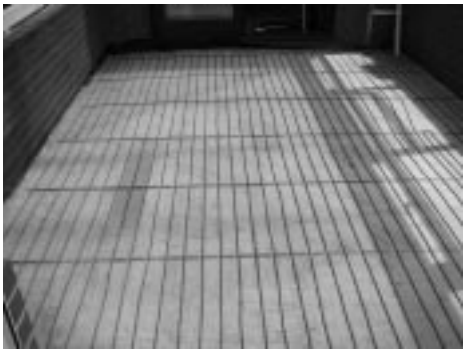
The fixing band should be evenly spread across the floor (leaving a 100mm border all the way around the room) and fixed to the insulation or the concrete floor using fixing nails or double-sided tape as applicable (this is to be supplied by others).

The fixing band should be laid at intervals of 0.75m across the floor.

3. Before laying the heating cables, they should be tested to check the resistance matches the factory resistance printed on the cable label.

The cable is then laid across the floor using the fixing band with a typical cable spacing of 75mm - 87.5mm. The fixing band is punched at 25mm centres, therefore a spacing of 87.5mm is obtained by using the configuration of one loop at 75mm spacing and one loop at 100mm spacing.

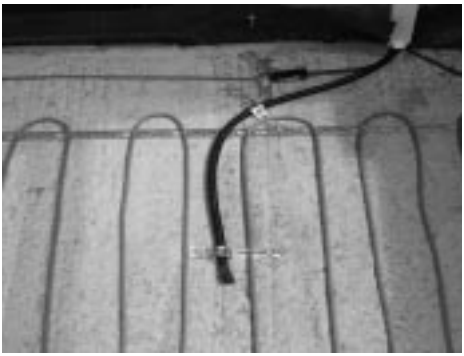
4. The heating cable is then laid up and down the room as shown.



The minimum cable spacing is 50mm and the maximum is 150mm.

An even heating cable spacing is essential for the system to perform to its best.

The red heating cable must NOT be cut, but the black cold tails can be shortened as required.



5. A piece of flexible tubing is laid in the floor to house the floor sensor, this should be laid 50-60cm across the floor between a heating cable loop.

The heating cable cold tails are then both taken back to the connection point. The heating cables should then be tested again before screeding.

Once laid the heating cables are covered with a minimum of 50mm sand and cement screed. The heating cables should then be tested again after screeding.

Once tested and dry, the heating can be turned on gradually over a period of 2 to 3 days for total comfort heating.

- **The heating cables (RED CABLE) must NOT touch or cross each other.**
- **The heating cables (RED CABLE) must NOT be CUT.**
- **All the red heating cable must be under the floor screed.**

Recommended Floor Structures

Installing the heating cables with the insulation below the slab

With this construction the insulation is laid beneath the floor slab.

The fixing strip is then attatched to the concrete slab using nails (supplied by others), the cables can then be placed at the calculated spacing.

Installing the heating cables with the insulation above the slab

With this construction, there are two methods of installing the heating cables. In both cases thermal insulation is laid over the concrete slab and around the perimeter to the depth of the screed.

The sheet insulation is covered by a 50mm square 12 swg steel wire mesh to which the devifast fixing strip is attached by plastic cable ties (or similar) and the cables are then fixed at the calculated spacing.

An alternative method is to use aluminium foil backed insulation, i.e. Celotex double ‘R’* (in accordance with building regulations).

In this case it is not necessary to use the steel mesh as the fixing strip can be attached to the vapour membrane by using double sided adhesive tape and the cables can then be placed at the calculated spacing.

In both cases after checking the continuity and insulation resistance, the final screed can be laid at a minimum 50mm.

Both of the above methods thermally isolate the cable from the insulation preventing any unwanted temperature rise through contact or chemical reaction with polystyrene products.

*This type of insulation should be laid according to the manufacturers instructions.

System Control With A devireg™ 550

- The **deviheat** system is controlled by a **devireg** 550 combined thermostat/ timer, this uses a floor sensor to monitor the floor temperature.

- Leading from the floor level to the controller should ONLY be the two black wires of the heating cable and the white sensor cable.

- The controller is a flush mounted unit and requires a 47mm deep box.

Electrical Connections

The heating cable must be connected by a qualified electrician.

It is recommended that the **heating cable** is connected to the mains via a 30mA residual current device.

After the floor screed is complete:

- Check the continuity of the cable, it should match the Ohm rating on the **heating cable** label with a tolerance of -5 to +10%.

- Check the insulation resistance between the conductor and the earth screen, this should read infinity.

Wiring The Controller

The sensor cable, heating cable and electricity supply can now be connected. Five simple steps to connecting your controller:

1. The mains voltage is connected to the terminals marked (Mains L & N).

L = Live
N = Neutral

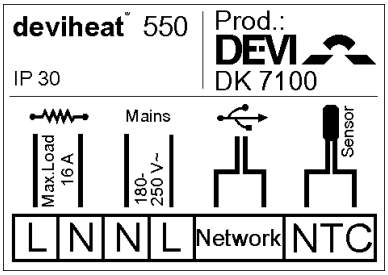
2. The **heating cable** is connected via terminals L and N where :

Black Cable Central Core = Neutral
Black Cable Central Core = Live

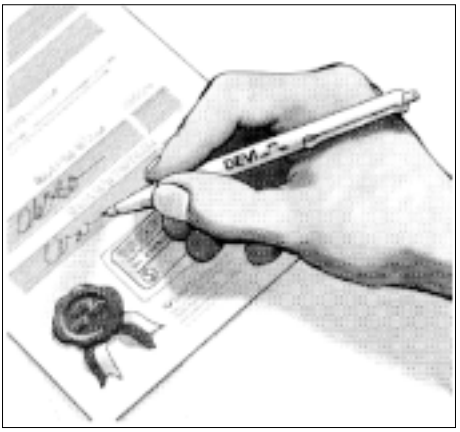
3. The screening around the black wires of the **heating cable** should be connected to the earth terminal within the electrical box, in accordance with the electricity regulations.

4. The sensor must be connected to the terminals marked NTC. This cable can be cut as required and connected either way round.

5. The 'Network' terminal is not used.



The Warranty Certificate should now be filled in.



The **deviheat** system should not be turned on until the screed has completely dried, then turn on gradually over a 2-3 day period.

No close fitting objects should be laid onto or fixed to the warm floor area, for example thick mats or bean bags

Please note that the electronic thermostat/timer has a switching limit of 16 amps, therefore cables with a total load over 3kW will require a contactor. This should be supplied and fitted by your electrical contractor.

CONTACT DEVI FOR ADVICE IF REQUIRED

Setting up your devireg™ 550 programmable thermostat with your deviheat system

If the thermostat is displaying 'CODE', initially you will ONLY be presented with step 1 and step 4, set these as described below.

Once you have either completed steps 1 and 4, or the controller is displaying something other than 'CODE', you must press and hold the button until the word 'CODE' is displayed and follow the steps below:

Step 1-Setup code

Rotate button to select code 0044 and then press button once.

Step 2-Operating mode

Rotate button to select 'ALO' and then press button.

Step 3-Temperature readout

Rotate button to select °C and then press button.

Step 4-Sensor selection

Rotate button to select 'rFS' to activate the floor sensor, then press button (not rFs or rs).

Step 5-Maximum floor temperature selection

At 'nt' rotate button to select either of the following temperature selection maximum floor temperatures, then press button.

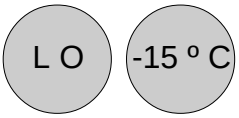
Tiles on timber based floors	27-31°C
Tiles on concrete based floors	40°C
Timber covered floors (parquet etc.)	27°C

Step 6-Offs

Ignore this setting and press the button to continue

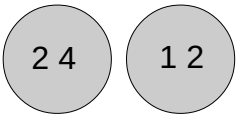
Step 7-Off periods

'LO' should be displayed, you should rotate dial to select -15°C, then press button.



Step 8-Clock display

Rotate button to select clock display as either 24 hours or 12 hours AM/PM.



Press button once.

(If the controller is now displaying 'CODE', disconnect the power to the controller and then reconnect)

Now you can set the time and day on the controller.

Step 9-Setting of clock

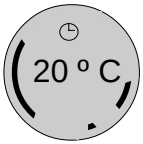
Press and hold button until is displayed in bottom left corner. The display now shows the time and day (number 1 represents Monday, number 7 is Sunday). Rotate the dial to show the correct time and day of the week and then press the button to save the correct time setting.

*If any steps are skipped, hold button until word 'CODE' is displayed to reset controller and start again at step 1.

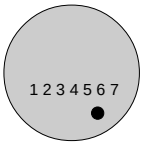
Finally you can now set how you wish the controller to operate.

You can operate the controller in either **Manual** or **Timer Mode**, by pressing the button you can toggle between these two modes.

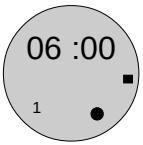
Manual Mode In this mode the temperature set on the display is maintained 24 hours a day, i.e. no timing facility and therefore no '◷' displayed. Whilst in manual mode, if you rotate the dial to 5.0 then turn the dial further anti-clockwise, the thermostat will switch off and display 'OFF'.

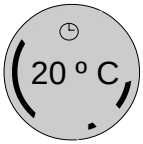


Timer Mode On the timer program, the controller switches on and off as programmed. With this mode you tell the controller **at what time of day you want a warm floor** and then using its intelligence,the controller learns how long your floor takes to warm up.



Step 10	Enter timer mode	Press and hold button until ● is displayed in bottom right corner.
Step 11	Select first day	Rotate button to display the first day you wish to program and then press button.
Step 12	First start time	Rotate button to indicate the start of the first time period when you want a warm floor (i.e. 06:00) and then press the button.
Step 13	First end time	Rotate button to highlight duration of first warm floor period, then press button to indicate the end of first time period (i.e. 07:30).
Step 14	Continue	Rotate button to indicate next warm floor start time, press the button, rotate to the end of the period and press button again. Continue this through the whole week.
Step 15	Save program	To save programs, press and hold the button to return to the normal display. By pressing the button once you can now toggle between manual and timer modes.
Step 16	Set floor level	The button now controls the air temperature of your **deviheat** system. The controller can be adjusted to the required air temperature on a range of 5-35ºC. The displayed air temperature is what the controller will provide at the times programmed.





System Trouble Shooter

The following is here for your guidance should you experience any problems with the heating system.

No.	Test	Expected Outcome	Action
1	Check for a 230V supply to the thermostat on terminals 1 and 2.	230V	If no voltage present, connect supply.
2	Rotate thermostat dial to position 10 and test for a 230V output on terminals 3 and 4. You may have to wait 1-2 minutes for the thermostat to switch.	230V	Firstly, check resistance of floor sensor first (step 3). If floor sensor is normal, the thermostat is faulty - contact your supplier.
3	Turn off power to thermostat and test resistance of floor sensor.	10-20k Ohms, depending on temperature of floor.	If sensor is faulty, call your supplier for replacement.
4	Turn off power to thermostat and test resistance of the **devimat**®.	35-550 Ohms, depending on cable size (see cable label).	If mat is faulty, the mat has been damaged, contact your supplier.
5	Turn off power to the thermostat and ensure there is no continuity between the conductors and the earth screen.	No continuity.	If there is continuity between the conductor and screen, the mat has been damaged, contact your supplier.

devireg™ 550 Controller Trouble Shooter

If the outer ring on the **devireg** 550 controller is flashing you have a fault, note the small number at the bottom of the display and follow the procedures below:

Fault	Possible Cause	Action
devireg 550 controller indicating error No. 2.	Unit configured as a master, but can detect another master unit	Only one unit may be configured as a master-see programming instructions.
devireg 550 controller indicating error No. 3.	Unit configured as a slave but, cannot detect another master unit	Only one unit may be configured as a master-see programming instructions.
devireg 550 controller indicating error No. 4.	The thermostat is over heating	Let the thermostat cool down and ensure the thermostat has been wired as stated in instructions.
devireg 550 controller indicating error No. 5.	Sensor fault-floor sensor short-circuit	Ensure the floor sensor resistance is between 10k-24k Ohms.
devireg 550 controller indicating error No. 6.	Sensor fault-floor sensor open-circuit	Ensure the thermostat has been wired as stated in instructions and that the floor sensor has a resistance reading of 10k-24k Ohms.
devireg 550 controller indicating error No. 7.	Clock not adjusted	Set the clock.
devireg 550 controller not working at all.	No power Wiring incorrect or faulty unit	Check the thermostat wiring-see **devimat**® Fault Finding Guide.

IF AT ANY POINT THE CONTROLLER IS FUNCTIONING INCORRECTLY PLEASE TURN OFF THE POWER AND RESET THE CONTROLLER.

SHOULD YOUR QUALIFIED ELECTRICIAN EXPERIENCE ANY DIFFICULTY PLEASE DO NOT HESITATE TO CONTACT YOUR SUPPLIER

The DEVI Warranty:

You have purchased a **deviheat** system, which we are certain will increase your home comfort and economy.

deviheat provides complete heating solutions with **deviflex** heating cables or **devimat** heating mats, **devireg** thermostats and **devifast** fitting bands.

If, however, contrary to all expectations, a problem should occur with your heating system, we at **DEVI,** with manufacturing units in Denmark, are, as European Union suppliers, subject to general product liability rules, as stated in Directive 85/374/CEE, and all relevant national laws which implies that:

DEVI provides a warranty for **deviflex** heating cables and **devimat** heating mats for a 10 year period and all other **DEVI** products for a 2 year period against defects in material and production.

The guarantee is granted on the conditions that the WARRANTY CERTIFICATE on the overleaf is filled out properly in accordance to instructions and that the defect is inspected by, or presented to, **DEVI** or authorised **DEVI** distributor.

Please note, that the wording of the WARRANTY CERTIFICATE must be provided in english or local language with the ISO code for your country in the upper left corner of the front page of the installation instruction in order to release the warranty.
The obligation of **DEVI** will be to repair or supply a new unit, free of charge to the customer, whitout secondary charges linked to repairing the unit. In case of defective **devireg** thermostats, **DEVI** reserves the right to repair the unit free of charge and without unreasonable delay to the customer.

The DEVI warranty only covers connections made by authorised electricians and installations performed in accordance with the installation instruction, and does not cover faults caused by incorrect designs supplied by others, misuse, damage caused by others, or incorrect installation or any subsequent damage, that may occur. If **DEVI** is required to inspect or repair any defects caused by any of the above, then all work will be fully chargeable. **The DEVI warranty** is void, if payment of the equipment is in default.

At all times, we at **DEVI** will respond honestly, efficiently and promtly to all queries and resonable requests from our customers.

The above mentioned warranty concerns product liability whereas matters in relation to legislation on sale of goods shall be referred to national law.

DEVI

Warranty Certificate

The DEVI Warranty is granted to:

Name: Phone:

Address: Postal code:

Please Note

In order to obtain the **DEVI Warranty,** the following must be carefully filled in. See other conditions overleaf.

Heating Cable Installer: Installation date:

Electrical Installer: Installation date:

Stock code: Cable length: Wattage:

Application:

Concrete floor	☐	Tiles	☐	Parquet	☐
Wooden floor	☐	Vinyl	☐	Carpet	☐

Suppliers Details:

DEVI Electroheat Ltd.

Brickfield Business Park
Woolpit, Bury St. Edmunds
Suffolk IP30 9QS
Phone 01359 24 24 00
Fax 01359 24 25 25