

# INSTRUCTIONS

## Type FLP30, FLK30, FLE30



Floor Warming and Heating Systems

67090 12/10 (MBC)

### English

The thermostat is an electronic on/off thermostat for temperature control by means of an NTC sensor located either externally or internally within the thermostat. The thermostat has a built-in ground fault circuit interrupter (GFCI, Class A). The thermostat and GFCI are dual models suitable for 120-240 V (incl. 208 V) 50/60 Hz power supplies. The thermostat is for flush mounts in a wall socket.

#### Product programme

##### Thermostats with built-in GFCI

FLP30-120/240GA (UDG-4999)	Programmable thermostat with 2 sensors: floor sensor and built-in room sensor
FLK30-120/240GA (UTN-4991)	Non-programmable thermostat incl. floor sensor

##### Power module with built-in GFCI

FLE30-120/240GA (USG-4000)	Power module without sensor
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#### Mounting of floor sensor (fig. 3, last page)

Floor sensor is supplied from SELV (Safety Extra low Voltage) Circuit, allowing the sensor to be placed as close to the floor surface as desired without having to take special account to the risk of shock at the damage to the sensor cable. It is not intended that the temperature sensor wire shall enter through the wall socket mounting box. The sensor cable shall be separated from LINE and LOAD cables. Can be separated in conduite, inside or outside the wall. (see fig. 7)

Recommended to be placed in a non conductive installation pipe, which is embedded in the floor. (fig. 3). The pipe must be sealed at the end and placed as high as possible in the concrete layer. Alternatively, the floor sensor is mounted directly in the floor construction. The sensor cable shall be placed in a separate pipe or be separated from power cables. The floor sensor must be centered in between the heating cable.

Sensor cable can be extended up to 300 ft (100 m.) by means of a separate two-core cable. Two remaining cores of a multi-core cable which, for example, supplies current to the floor heating wires, must not be used. The two-core cable must be placed in a separate pipe or be separated from power cables.

Other approved floor sensors can be used if they comply with the technical specifications (see fig. 5).

#### Mounting of thermostat with built-in sensor (UDG-4999) (fig. 4)

The room sensor is used for comfort temperature regulation in rooms. The thermostat should be mounted on the wall approx. 5.4 ft (1.6 m) above the floor in such a way as to allow free air circulation around it. Draughts and direct sunlight or other heat sources must be avoided.

#### Mounting of thermostat

Installation  
TO AVOID ELECTRIC SHOCK, DISCONNECT THE HEATING SYSTEM POWER SUPPLY AT THE MAIN PANEL BEFORE INSTALLING THE THERMOSTAT.

KEEP THERMOSTAT AIR VENTS CLEAN AND FREE FROM OBSTRUCTION.

This thermostat is an electrical product and must be installed in compliance with the National and/or Local Electrical Code. Installation must be performed by qualified personnel where required by law. The thermostat is equipped with a ground fault circuit interrupter (GFCI, Class A) which requires that the line and load cables are isolated from one another for correct operation. The thermostat is designed for resistive load. The resistive load must not exceed 15 A (1800 W at 120 Vac / 3120 W at 208 Vac / 3600 W at 240 Vac).

During a ground fault, the two lines will be cut off.

#### Line cable

Delivers power from the service panel (breaker panel or fuse box) to the thermostat. This cable must only be connected to the thermostat's line terminals, marked L1 and L2.

#### Load cable

Delivers power from the thermostat to the heating cable. This cable must only be connected to the thermostat's load terminals, marked load 15 A.

1. Use a screwdriver to release the catch (fig. 1), and remove the front cover.
2. Connect cables according to the diagram (fig. 2).
3. Mount the thermostat in the wall socket.
4. Carefully replace the front cover by first positioning its upper edge and then clicking it into place.

#### Temperature sensor

The floor sensor must be connected to terminals marked "sensor", terminals C and D. (fig. 6).

#### Power module, type USG

Can only be used with UCG and UDG. If loads of more than 15 A are required, expansion is possible using power modules. Power modules can be connected to the live cable and load cable, see relevant sections. Maximum distance between thermostat and power modules is 80 ft (25 m.) Use field wiring cable, recommended min. 20 AWG. Connect A to C and B to D (fig. 6).

#### Operation

##### Types UCG and UDG (with built-in clock):

The first time the thermostat is connected, time and day must be set. The thermostat will automatically start up in the menu for setting time and day.

##### Type UTN (without built-in clock):

The actual temperature setting is shown and the thermostat is ready for use.

#### Checking the GFCI

It is important that the GFCI is checked for correct installation and function.

To check the GFCI:

Testing can only be performed while the

thermostat is calling for heat.

Adjust the setpoint until the heating symbol (SSS) appears. Use the "Up" button to increase the heating demand and then press the "OK" button. Wait 10 seconds to allow the thermostat to adjust to the new setpoint. Then press the "TEST" button.

The test is successful if the red light in the "TEST" button lights up and "GROUND FAULT" is shown on the display. If this does not occur, check the installation.

Press the "Standby/Reset" button to reset the GFCI.

The red light should go out and the display returns to normal appearance.

Press the "Down" button to return to the original temperature setting.

If the test fails, check the heating cable and thermostat.

The GFCI should be tested monthly.

If during normal operation the GFCI trips without the "TEST" button being pressed, there could be a ground fault! To check whether it is a ground fault or nuisance tripping, press "Standby/Reset". If this causes the red light to go off and stay off, it was nuisance tripping and the system is operating correctly. If this does not occur, there is a ground fault! Check the heating cable, sensor cable and thermostat. Replace the defective part.

#### Programming

See user manual.

#### Fault location

If the sensor is disconnected or short-circuited, the heating system is switched off. The sensor can be checked against the resistance table (fig. 5).

#### Error codes

- E0: Internal error. The thermostat must be replaced.
- E1: Built-in sensor short-circuited or disconnected. The thermostat must be replaced (n/a for UTN-4991).
- E2: External sensor short-circuited or disconnected.

#### UL Listed for the US and Canada

According to the following standards:

Thermostat:	UL 873
	CSA C22.2 No. 24.
UL file number:	E157297
GFCI:	UL 943 4th ed.
	CSA C22.2 No. 144.1-06

#### Classification

The product is a class II device (enhanced insulation) and must be connected to the following leads:

Phase L1 (L) 120-240 V  $\pm 10\%$ , 50/60 Hz  
Neutral L2 (N)  
Max. load 15 A (resistive load)

The terminals are suitable for field wiring cables of 12 to 22 AWG.

#### Technical data

Supply	.....120-240 Vac 50/60 Hz
Load	.....max. 15 A (resistive load)
Power	.....1.800 W at 120 Vac
	.....3.120 W at 208 Vac
	.....3.600 W at 240 Vac
GFCI	.....Class A (5 mA trip level)
Temperature range	+5 to +40°C, +41 to +104°F
Amb. temp. range	...0 to +25°C, +32 to +77°F