EN

Installation and User Guide

DEVIreg™ Multi

7 channel DIN-rail programmable controller

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1 Introduction

DEVIreg™ Multi is 7 channel electronic programmable controller to be installed on DIN-rail and supposed to be used for controlling electrical heating and cooling systems. Every channel can be individually set up with three control modes –temperature sensor, time proportional power regulation without sensor and manually on/off with time period.

Universal analog channels' inputs can be selected via software between 8 types of temperature sensors including NTC 15 kOhm at 25 °C. Controller has graphic LCD display, Modbus RS-485 opto-insulated serial interface and 110/230 V AC power supply.

DEVIreg™ Multi has 8 control relays – 2 sets of max. 10 A and 6 sets of max. 6 A; and among them 4 sets NO and 4 sets NC/NO contacts. Relay control functions can be set up for heating or cooling systems. Additionally, relay contacts are not connected to a voltage source inside the controller, and can be used for control systems with any voltage up to 250 V AC.

In addition to 3 control modes, **DEVIreg™ Multi** has some special functions which can be programmed for every channel: relay status – opened or closed for '**Heating On**' mode, channel activation or deactivation, sensor failure alarm, min. and max. temperature alarms, cable failure monitoring, relay test, channel on/off, relay cycles' calculator, etc.

Hardware of **DEVIreg™ Multi** is based on the Danfoss controller type MCX08M2, art. no. 080G0307, but is customized with special software.

The product complies with the EN/IEC Standard "Automatic electrical controls for household and similar use":

- EN/IEC 60730-1 (general)
- EN/IEC 60730-2-9 (thermostat)

More information on this product can also be found at: **devi.com**

*NB: All relevant abbreviations and words in bold are terms used in **DEVIreg™ Multi** screen texts with exact the same spelling.*

2 Safety Instructions

Make sure the mains supply to the controller is turned off before installation.

Please also note the following:

- The installation of the controller must be done by an authorized and qualified installer according to local regulations.
- The controller must be connected to a power supply via an all-pole disconnection switch.
- Always connect the controller to continuous power supply.
- Do not expose the controller to moisture, water, dust and excessive heat.

IMPORTANT: When the controller is used for controlling a floor heating element/cable in connection with a wooden floor or similar material, always use a floor sensor and never set the maximum floor temperature to more than 35°C.

Note: Product is designed for Over Voltage Category II. When used in fixed installation, installation must be equipped with transient protection.

3 Mounting Instructions

Please observe the following placement guidelines:

Install the thermostat in an electric cabinet with DIN rail attachment or a separate DIN attachment according to local regulation on IP classes.

Do not place the thermostat in a way that it will be exposed to direct sunlight.

Follow the steps below to mount the thermostat:

1. Click the thermostat on the DIN rail attachment.
2. Connect the thermostat according to the connection diagram and chosen system mode(-s)
3. The screen of the heating cable must be connected to the earth conductor of the power supply cable by using a separate connector.
4. Turn on the power supply.

Note: Always install the floor sensor in a conduit in the floor construction or similar. The bending radius of the conduit must be min. 50 mm.

4 User Manual

4.1 Control modes overview

The **DEVIreg™ Multi** is 7 channels controller and every channel can be individually set up with one from three control modes:

1. Single sensor control with temperature sensor - '1 Sensor' mode or '**1S**'.
2. Time proportional power regulation – 'Power Regulation' mode or '**PR**'.
3. Manually On/Off control with time period – '**MOn**'/'**MOf**' mode.

1S mode or Single sensor control

1S mode is control with temperature sensor and adjustable hysteresis. **1S** control typically can be used for Pipe heating, Ground Ice & Snow melting, Cold rooms' protection, Comfort Floor heating, Total heating and other applications with temperature control.
This control mode is similar to well-known DEVIreg™ 316 thermostat.

Universal analog channel's inputs (AI) can be selected via software between 8 types of temperature sensors including NTC 15 kOhm at 25°C.

This mode can be set up with special function to control Alarm min. and max. temperatures. Additionally, it can be set up with so called **Cable OK?** function which uses channel digital input (DI) with connected Current Monitoring Relay (CMR) to control availability of electricity passing through a heating cable or similar.

PR mode or Power Regulation control

PR mode is time proportional power regulation with a simple duty cycle generator. Time for status '**Heating On**' during the chosen mode cycle can be set up by installer. **PR** control typically can be used where one wants to dissipate a subjective amount of power.

This mode is also not connected to a temperature sensor and is therefore very suitable for installation where it is impossible to install temperature sensor.
This control mode is similar to well-known DEVIreg™ 527 controller.

This mode can be set up with so called **Cable OK?** function which uses channel digital input (DI) with connected Current Monitoring Relay (CMR) to control power consumption or similar.

Manually On/Of mode

Manually On/Of mode (on the screen – **MOn** or **MOf**) is control with setting time period during which relay status '**Heating On**' or '**Heating Of**' will operate.

*NB: This mode can be used only on the base of **1S** or **PR** modes and upon its completion controller returns to the same mode from which it started.*

4.2 Terms and abbreviations

NB: Terms and abbreviations in the bold are special DEVIreg™ Multi words used for screen texts, menu lines, etc.

Special terms and abbreviations

Term in English	Explanation
#1, #2, …, #7	Channel number from 1 to 7.
1S	**Single Sensor** or '**1 Sensor**' control mode. The mode with temperature sensor and adjustable hysteresis.
PR	**Power Regulation** control mode. The time proportional power regulation with a simple duty cycle generator with time set when heating is turned on during the chosen period/cycle time.
MOn **MOf**	**Manually On/Of** control mode. The mode with relay setting either for state '**Heating On**' or '**Heating Of**' and time setting during which this mode will be performed.
Heating On **Heating Of**	The state when control algorithm decides to start heating or to stop heating.
On **Of**	Special abbreviation used for state '**Heating On**' or '**Heating Of**'. It's a logical state not corresponding to relay status with closed or opened contacts. When control algorithm activates heating, it appears on the screen as **On**. For this case relay contacts can be either with an opened circuit state or with a closed-circuit condition which are determined by the setting **Relay status RO/RC** – Relay Opened (**RO**) or Relay Closed (**RC**). *NB: These abbreviations – **On** or **Of** – should be used with 1st capital and 2nd small letters, and contain 2 letters only.*
RO **RC**	Relay status **RO/RC** for state **Heating On** – Relay Opened (**RO**) or Relay Closed (**RC**). For the heating mode on, the corresponding state of the relay contacts can be selected – open or closed. This relay status allows to implement both heating and cooling control, as well as electric and water heating systems.

Term in English	Explanation
ON **OFF**	Used for setting Channels or Device with status **ON** or **OFF**. When Channel or Device is set up with **OFF** – it means that the appropriate control algorithm(-s) is stopped. It is similar to power supply off, but device/channels are still powered, and display shows some data and settings. When the Channel is **OFF** – symbol hash – '**#**" appears in the Channel's line on the Main Screen. When the Device is **OFF** – one or two symbols hash – '**#**' or '**##**', appear on the top-left position of a Main Screen. *NB: The abbreviations **ON** and **OFF** should to be used with capital letters only. It emphasizes the difference in relation to abbreviations **On** and **Of** used for Heating status.*
#	The symbol "Hash sign" indicates when **Channel** is **OFF** or **Device** is **OFF**. This status can be set up via **Main Menu**.
##	These 2 hash symbols appear when **Device** is **OFF**. This status can be set up by 'mechanical' switch on input **DI8** when contacts are closed.
En **Dis**	**En** means Enabled and **Dis** – Disabled, are used to allow of forbid some special functions or statuses.
Active	Possible status for every **Channel**. When **Active = Yes** – Channel's algorithm works according to the settings and data is displayed on the screen(-s). When it's not Active or **Active = No** – Channel does not work at all and "empty" line appears on the **Main Screen**.
Yes **No**	Status of some settings. For example, Channel can be **Active** or not **Active** – it means **Yes** or **No** respectively for settings **Activate #1-7**.
CableOK?	Special abbreviation used for function checking the proper functioning of the heating cable by condition on digital inputs **DI1-DI7**. For this purpose, additional device can be recommended – Current Monitoring Relay (CMR) or so on. For **OK** and not **OK** are used terms **Yes** and **No** respectively.
!	This symbol appears in Alarm conditions with some Channel(-s).
!!!	These 3 symbols appear in Alarm conditions with Device by any reason.
Main Screen	The **Main Screen** displays the main data of controller and the status of all **Channels** at the same time. This screen is constantly visible on the display during everyday work.
AI1-AI8	Analog inputs, used for connection of temperature sensors.
DI1-DI8	Digital inputs, voltage free contacts. **DI1-DI7** are used for connection of special devices for function **Cable OK?**, DI8 is used for connection of 'mechanical' switcher for **Device ON/OFF** function.
DO1-DO8	Digital outputs connected to relay contacts. **DO1-DO7** are used for loads, **DO8** – for Alarm.

Common terms and abbreviations

Term	Explanation
Sensor	In this content, always a temperature sensor – NTC, PT1000, etc..
NTC	NTC temperature sensor. NTC stands for "Negative Temperature Coefficient". NTC sensor is resistor with a negative temperature coefficient, which means that the resistance decreases with increasing temperature.
PT1000	Temperature sensor. PT refers to that the sensor is made from Platinum (Pt). 1000 refers to that at 0°C sensor has a resistance of 1000 Ohms (Ω). Sensor has Positive Temperature Coefficient (PTC).
RTC	Real Time Clock
BMS	A building management system (BMS), is a computer-based control system installed in buildings that controls and monitors the building's mechanical and electrical equipment such as ventilation, lighting, power systems, fire systems, and security systems.
RS-485	RS-485 or RS485, also known as TIA-485(-A) or EIA-485, is a standard defining the electrical characteristics of drivers and receivers for use in serial communications systems.
RCD	Residual-current device
CMR	Current Monitoring Relay
NO	Normally Open relay. Has an initial opened circuit state when no current is applied to its coil so basically the internal switch disconnects the power to the load in the inactive state.
NC	Normally Close relay. Has an initial closed-circuit state when no current is applied to its internal coil therefore the internal switch connects the power to the load. When voltage is applied to the coil of the NC relay the internal switch goes to the open position and disconnects the power from the load.
MCX	Danfoss Programmable Controller. **DEVIreg™ Multi** is based on MCX08M2 controller

4.3 General use

The **DEVIreg™ Multi** is operated via 4 buttons out of 6. Display with an alpha numeric style with information in various languages.

Buttons

The functions of the 4 operated buttons are:

Up, Down		Next menu entry / next line / next setting parameter / shows additional screens
Escape		Escape to upper level of menu / show **Alarm** screen
Enter		Confirm / select / go to the **Main menu**

Besides the normal function of the buttons, some special combinations are important to the user:

- For quick changing of any values, e.g. temperature – hold button **Up** or **Down**.
- Return to **Main Screen** – press several times **Escape** or do not press any button during some minutes.

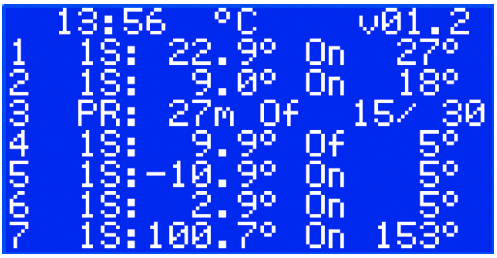
Display

The **DEVIreg™ Multi** can simultaneously control up to 7 different systems with 3 different control modes. These 7 systems are referred as **Channel #1**, **Channel #2**, … and **Channel #7**.

The **DEVIreg™ Multi** provides the user with an opportunity to view the current status of the all systems / channals. This status can be shown in different ways.

Main Screen view (default)

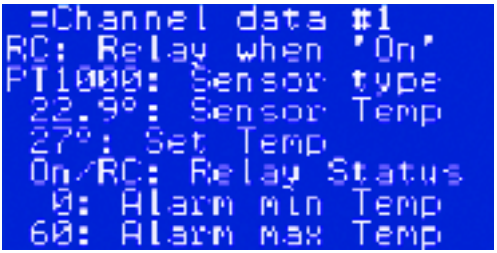
The **Main Screen** is the main window appearing when the controller is powered. This screen displays the main data of controller and the status of all **Channels** at the same time. The main controller's data is visible on the 1st display line and the **Channel #1 – #7** data are visible on the lines from 2 to 8.



This view gives the user an example of all Channels on one screen.

Main sub-screens view

These screens give to user quick and more detailed information about settings and status of each **Channel**.

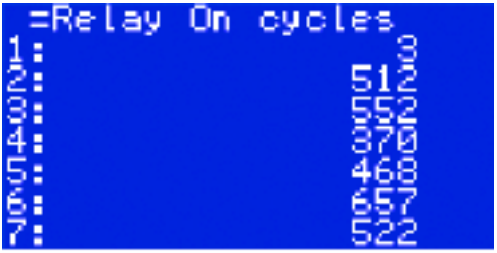


Just press button **Down** on the **Main Screen** of controller and **Channel data #1** will appear, press **Down** again – and you'll see **Channel data #2**, and so on.

To exit from Main sub-screens view and return to the **Main Screen** – press **Escape** 2 times.

Relay On cycles view

By pressing button **Up** in the **Main Screen** of controller, it gives information about how many times relays were switched to status **Heating On**. This screen is named **Relay On cycles.**

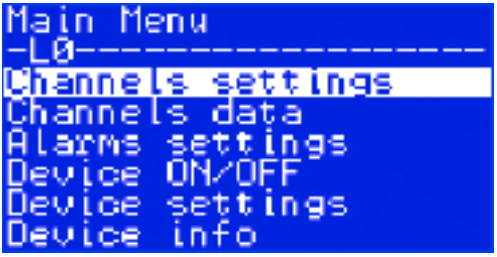


Alarms view

By pressing **Escape** button from **Main Screen** – screen(-s) with **Alarm** appears. If more than **1 Alarm** is happened – use navigation by going **Up/Down**. Pressing **Escape** button again leads from **Alarm** to **Main Screen**.

Menu system

By pressing **Enter** from the **Main Screen**– screen with **Main Menu** appears.

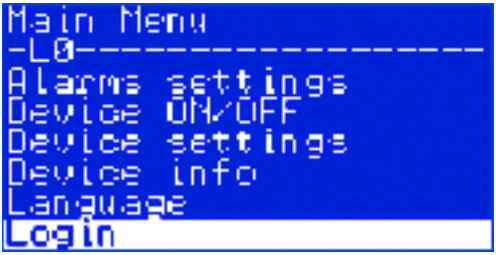


The menu system is navigated from **Main Screen** by the following sequence:

EN: Enter – Down/Up – Enter – Down/ Up – Enter – ... .

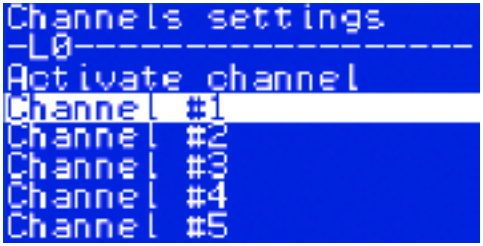
Pressing **Escape** button mostly leads to a transition to upper level.

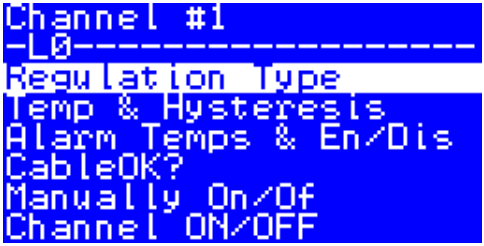
By scrolling the **Down** button you'll get to the bottom part of **Main Menu**.



Menu windows above display the root directory of the menu tree or so-called **Main Menu**.

Activating any line by **Enter** button leads to a transition to a lower level of menu, opening a list of settings, parameters, special functions or so on. For example:

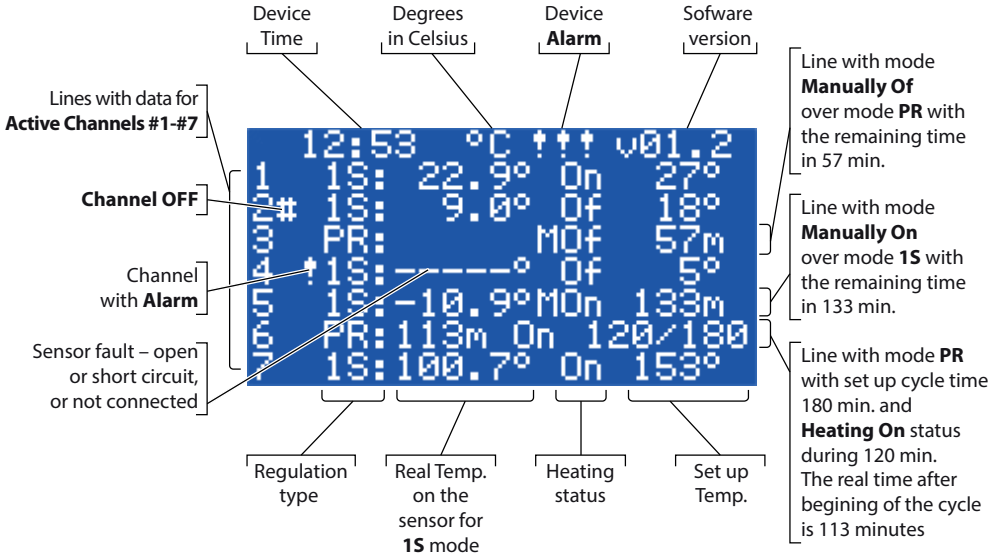




Main Screen view – explanation

The screen below is visible close to the maximum different information which can be presented on display.

The following **Main Screen** texts, abbreviations, icons have a special meaning:



4.4 Control modes, special functions, special statuses and settings

Each of 7 **Channels** has possibility to be individually set up with one of three control modes – **1S** (1 Sensor), **PR** (Power Regulation) and **MOn**/**MOf** (**Manually On/Of**).

The controller configurations for these 3 modes are the following:

1. Single sensor control with temperature sensor or **1S**: one temperature sensor input, one relay output;
2. Power regulation control or time proportional power regulation or **PR**: no sensor input, one relay output;
3. Heating control **Manually On** and **Manually Off** with setting time period or **MOn** and **MOf**: no sensor input, one relay output;

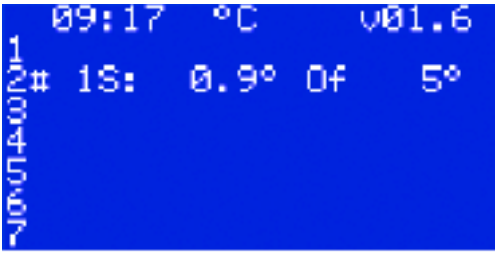
Together with any control mode could be set up or enabled/disabled some special functions and statuses: "**Relay status RO/RC**", "**CableOK?**", "**Relay test 5/30**", "**Channel ON/OFF**" and "**Device ON/OFF**". Special functions and statuses are specified in chapters below.

Additionally, any **Channel** can be set up with status 'not **Active**' or **Active = No**. It means **Channel** does not work at all and "empty" line appears on the **Main Screen**.

4.4.1 Active and Not Active Channel status

Not **Active** status can be used for applications there is no need to use full channel set of 7. And view/line for the **Channel** which is not used is simply deleted from the screen.

By the way, standard factory setting for **DEVIreg™ Multi** supposes 1 active **Channel #2**. The **Main Screen** with the only one Active **Channel #2** is as on the picture below:



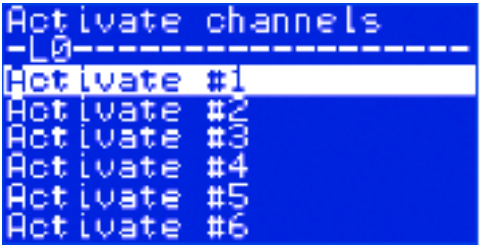
Activation or deactivation can be done by the following menu sequence:

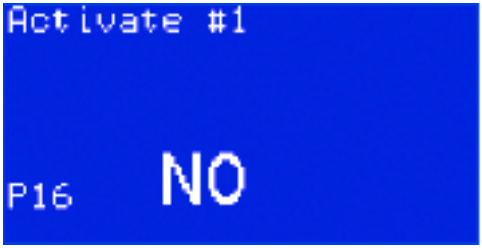
EN: Main Screen – Enter to Main Menu – Channels settings – Activate channels – Activate #X[1] **– { Enter – Up/Down (YES/NO) – Enter }**[2]

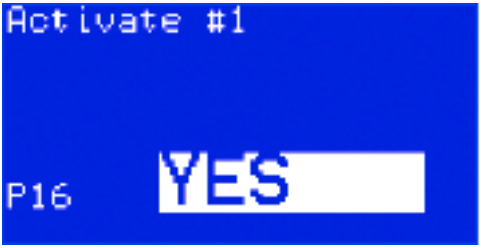
[1] – here and further **#X** means any Channel number in diapason from **#1** to **#7**.

[2] – here and further brackets indicate more detailed sequence.

Example of the base screens for the sequence above:







4.4.2 Relay status RO/RC – special setting for status 'Heating On'

Heating On is a logical status for systems with temperature sensor. It means that real sensor temperature is below set up level and controller should provide a special signal to the system – either close or open relay contacts.

Heating On is a logical status that corresponds to heating system type. And some heating systems, for example electrical, mostly need relay that closes contacts when the heating is on. But another heating systems, for example water based, sometimes need relay that opens contacts when the heating is on. For this purpose, **DEVIreg™ Multi** has possibility to set up relay status for heating – 'open' or 'close'.

Additionally, this relay status allows to implement both heating and cooling control, because cooling is system having opposite algorithm to heating system.

The special setting for logical status **Heating On** is named **Relay status RO/RC** – Relay Opened (**RO**) or Relay Closed (**RC**) each Channel Relay can be separately set up to status.

Factory setting – **RC** for relays or relays contacts which are normally opened (**NO)**.

NB: This setting mostly works only when controller is powered!

Setting **Relay status RO/RC** can be done by the following menu sequence:
EN: Main Screen – Enter to Main Menu – Channels settings – Channel #X – Relay status RO/RC – { Enter – Up/Down (RO/RC) – Enter }

4.4.3 1S or Single Sensor mode and Sensor Type set up

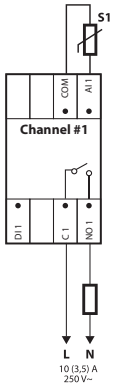
4.4.3.1 1S mode

Single sensor control (**1S**) is mode with one temperature sensor.
And can be individually set up for any Channel.

The mode logic algorithm is the following: if sensor temperature is below set up value then heating is turned on, and if sensor temperature is above set up value then heating is turned off.

Setting **1S** mode can be done by the following menu sequence:
EN: Main Menu – Channels settings – Channel #X – Regulation Type – { Enter – Up/Down (1S/PR) – Enter }

Common **Channel** diagram for **1S** mode is shown on the picture below:



Some control parameters can be set up: mandatory – control temperature, optionally – hysteresis and control alarm temperature diapason.

Temperature. **1S** mode has temp. setting with max. diapason from -50°C degree to 200°C. Default: 5°C.
NB: Each type of sensor has its own temperature range, which may differ from the maximum given above.

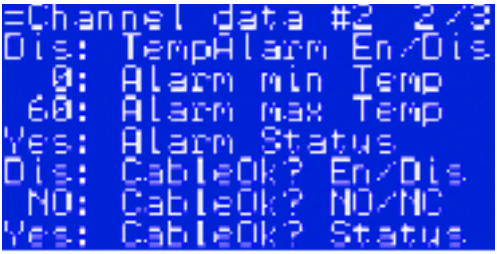
Hysteresis.**1S** mode has hysteresis setting with diapason from 0,2 degree to 9 degree. Default: 0,4°C.
NB: Hysteresis is used as the plus or minus value to the set temperature. For example, if set temp. = 5°C and hysteresis = 0,4°C, then heating will turn off at the temperature of 5 + 0,4 = 5,4°C and accordingly turn on at the temperature of 5 – 0,4 = 4,6°C.

Setting Temperature and Hysteresis can be done by the following menu sequence:
EN: Main Screen – Enter to Main Menu – Channels settings – Channel #X – Temp & Hysteresis – #X Set temperature – { Down – #X Set +-Hysteresis }

Temperatures Alarm. **1S** mode has **Temp Alarm** settings with 3 parameters – alarm Enabled or Disabled, alarm minimal temperature and alarm maximum temperature.
Alarm temperatures have unchangeable hysteresis 0,2°C.
Default – **Temp Alarm** is Disabled, **Alarm min Temp** = 0°C, **Alarm max Temp** = 60°C.

NB: It is the full responsibility of the installer/user to set correct alarm values that correspond to the sensor type and for the specific application to avoid overheating of the cable, building materials and so on.

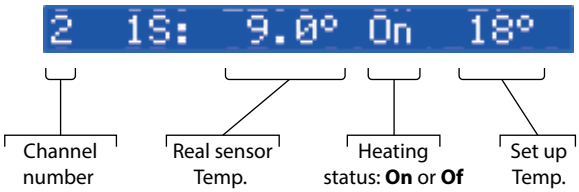
Example of data for **Temp Alarm** settings and temperature **Alarm Status** is presented on the screen below (lines 2-4):



Data on the picture above means the following: **Temp Alarm** is disabled for **Channel #2** (**Dis**) and Software does not control alarm temperature, alarm range set up with values from 0 °C to 60 °C, actual temperature of the sensor out of the range – **Alarm Status** = **Yes**.

Setting Alarm Temperatures and Alarm Enabling can be done by the following menu sequence:
EN: Main Screen – Enter to Main Menu – Channels settings – Channel #X – Alarm Temps & En/Dis – (#X Alarm Temp En/Dis – Down – #X Alarm min Temp – Down – #X Alarm max Temp }

Line of the **Main screen** with **1S** mode data for one **Channel** is shown on the picture below:



4.4.3.2 Sensor Type set up

1S control mode can be set up with different 8 types of temperature sensors.

Sensor unit can be selected via software connected to Channel's analog inputs AI1-AI7 between: **NTC15k** (15 kOhm @ 25 °C), **NTC10k** (10 kOhm @ 25 °C), **NTC5k** (5 kOhm @ 25 °C), **NTC2k** (2 kOhm @ 25 °C), **NTC100** (100 kOhm @ 25 °C), **NTC16k** (16,7 kOhm @ 100 °C), **PT1000** (1000 Ohm @ 0 °C), **Ni100** (100 Ohm @ 0 °C).

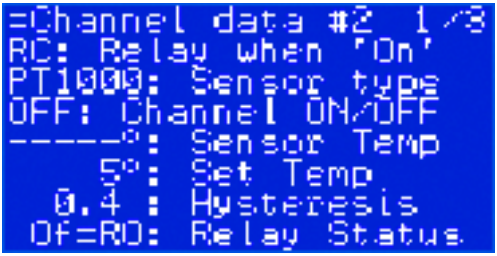
Setting of **Sensor type** can be done by the following menu sequence:
EN: Main Screen – Enter to Main Menu – Channels settings – Channel #X – Sensor type – {Enter – Up/Down (PT1000/ NTC10k/ NTC100/ Ni100/ NTC2K/ NTC16k/ NTC5k/ NTC15k) }

*NB: Setting is possible/visible for **Active Channels** only.*

Chosen **Sensor type** can be found in the **Channel Data** screens with the following menu sequence:
EN: Main Screen – Down.

Screen example:

Another possibility to see **Sensor Type** is to use the following sequence:
EN: Main Screen – Enter to Main Menu – Channels data – Channel #X



4.4.4 PR or Power Regulation mode

Power regulation is time proportional power regulation mode with a simple duty cycle generator with time set up during which heating is turned on within the period.

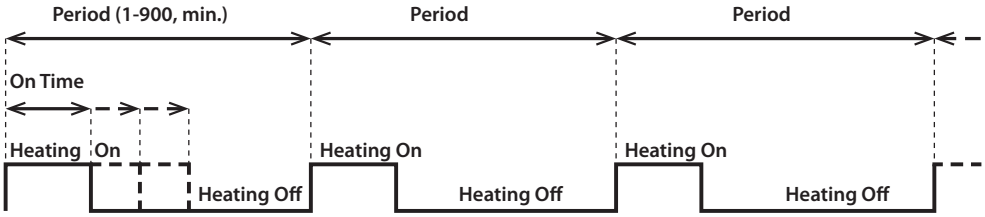
This mode can be individually set up for any **Channel**.

The **PR** logic algorithm is the following: if time counter is below set up cycle time when heating should be on (**On time**) then heating is turned on, and if time counter is above set up time then heating is turned off just up to the end of mode period.

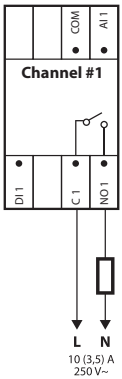
Setting **PR** mode can be done by the following menu sequence:

EN: Main Screen – Enter to Main Menu – Channels settings – Channel #X – Regulation Type – { Enter – Up/Down (1S/PR) – Enter }

PR mode logic diagram is shown on the picture below:



Common **Channel** scheme for **PR** mode is shown on the picture below:



Two control parameters can be set up: **Heating On** time and period of **PR** mode.

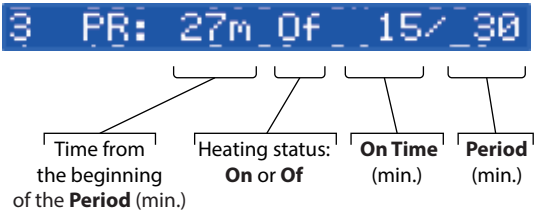
Period. Control mode time cycle. Can be set up from 1 to 900 minutes. Default – 30 min.

On time. Time from the beginning of the **Period** during which heating is turned on. Default – 15 min.

NB: It is the full responsibility of the installer/user to set correct time values corresponding to the specific application to avoid overheating of the cable, building materials and so on.

Parameters setting for **PR** mode can be done by the following menu sequence:
EN: Main Screen – Enter to Main Menu – Channels settings – Channel #X – On Time & Period – { Enter – #X Set On Time – Down – #X Set PR Period }

Line of the **Main screen** with **PR** mode data for one **Channel** is shown on the picture below:



4.4.5 MOn and MOf – Manually heating On and Manually heating Of mode

Manually On/Of mode (on the screen – **MOn** or **MOf**) is control with setting time period during which heating will be turned on or turned off. This mode can be started only on the base of **1S** or **PR** mode and after **Manually On/Of** mode is finished, controller returns to the same initial mode – **1S** or **PR**.

This mode can be individually set up for any **Channel**.

Three control parameters can be set up: time period, heating state – **On** or **Of**, and **Start** or **Stop** mode state.

Time Period. Setting Period of time for **MOn** or **MOf** mode. Default – 1 min.

Heating status. Setting state **Heating On** or **Heating Of**. Default – **Of**.

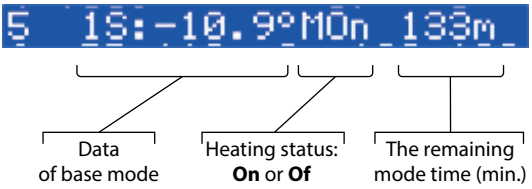
Start or Stop. Starting or Stopping control mode. After finishing of **MOn** or **MOf** mode controller goes to **Stop** state automatically and disappears from the screen automatically too. Default – **Stop**.

NB: It is the full responsibility of the installer/user to use this mode and to set up correct states that correspond to the specific application to avoid overheating of the cable, building materials and so on.

Setting **MOn** or **MOf** mode and mode parameters can be done by the following menu sequence:

EN: Main Screen – Enter to Main Menu – Channels settings – Channel #X – Manually On/Of – { Enter – #X Manually On/Of Time – Down – Status On or Of – Down – Manually On/Of Start or Stop }

Main screen with **MOn** mode data for one **Channel** is shown on the picture below (here **MOn** started over **1S** mode):



4.4.6 CableOK? – special channel function

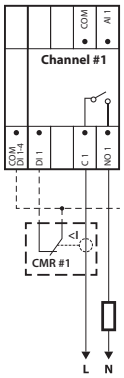
CableOK? special function function can be used for checking the proper functioning of the heating cable or other electrical equipment using a current flow control. In other words, the current in the heater is controlled when the heating is turned on. **Channel Alarm** appears as the result of state 'not OK' for this function (indication – symbol '**!**' in **Channel** line on the **Main Screen**).

For **CableOK?** function should be used additional device – for example Current Monitoring Relay (CMR) or similar. CMR should be connected to the digital inputs **DI1-DI7** corresponding to **Channel** number. The main logic of CMR is the following – if current is not going through device then 2 contacts/outputs are closed, and if current is going through device then 2 contacts/outputs are opened. This logic may also be in the opposite contacts' state.

*NB: This function works the only when **Channel** has state '**Heating On**'! In other words – if heating is turned off ('**Heating Of**') cable or another heater does not consume any current and accordingly there's nothing to control.*

This mode can be individually set up for any **Channel**. By default – function is Disabled for all **Channels**.

Common **Channel** diagram with connected CMR is shown on the picture below:



For the state **CableOK?** = OK is used term **Yes**, and for the state **CableOK?** = not OK is used term **No** respectively.

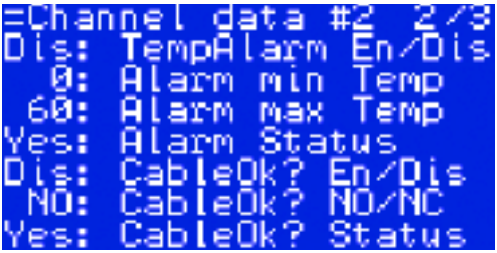
For **CableOK?** function can be set up two control parameters: Enable or Disable, and digital input (**DI**) state for OK status – Normally Opened (**NO**) or Normally Closed (**NC**) on the COM DI input.

Enabled or Disabled. Function can be Enabled (**En**) or Disabled (**Dis**) for any **Channel**. By default – Disabled.

CableOK? NO/NC. Setting for state of digital input (**DI**) when **CableOK?** function is OK. It means if chosen **NO** for CableOK? = OK then digital input is not connected to the controller input **COM DI** or there is an open circuit between **DI** and **COM DI**. And vice versa, if chosen **NC** for **CableOK?** = OK then digital input connected to controller input **COM DI** or there is a short circuit between **DI** and **COM DI**.
Default – **NO** or Normally Opened (this setting and proper CMR is shown on the picture above).

Settings **CableOK?** function can be done by the following menu sequence:
EN: Main Screen – Enter to Main Menu – Channels settings – Channel #X – CableOK?– { Enter – #X CableOK? En/Dis – Down – #X CableOK? = NO/NC }

Data for **CableOK?** function is presented on **=Channel data #X** screen, for example as on the screen below in 3 bottom lines:



Relevant data on the picture above means the following:

- **CableOK?** function is disabled for **Channel #2** – '**Dis**' on the screen, and software does not control state of the input **DI2**;
- input **DI2** has setting '**NO**' (Normally Open) or, in other words, when current flows through the cable/heater the input **DI2** should not be closed on input **COM DI;**
- actual status for **CableOK?** function is OK or displayed '**Yes**' in the last line.

4.4.7 Channel ON/OFF – special function

Each **Active Channel** can be set up with status **OFF** or **ON**. **OFF** means that there is no need to carry out **Channel** control algorithm due to, for example, a malfunction of the cable or sensor, heating system installation and so on. In other words, **Channel** does not perform algorithm and does not perform any **Alarms**. At the same time the **Channel** saves all settings and for **1S** mode active **Channels** show real sensors' temperature and for **PR** mode – shows real mode time. Additionally, it is possible to do/change any settings.

Settings **Channel ON/OFF** function can be done by the following menu sequence:

EN: Main Screen – Enter to Main Menu – Channels settings – Channel #X – Channel ON/OFF – {Enter – #X Channel ON/OFF }

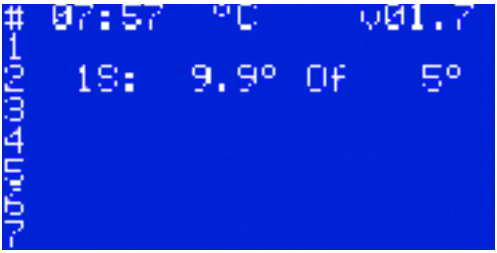
When **Channel** is **OFF** hash sign/symbol – '**#**' – is presented on the 2nd position of **Main Screen** line, for example:

4.4.8 Device ON/OFF – special function and switch

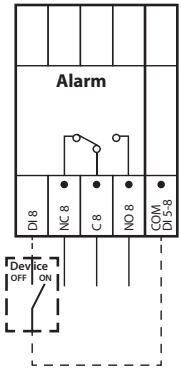
DEVIreg™ Multi controller can be set up by Menu with status **OFF**. This means that there is no need to carry out any regulation for all 7 **Channels**. At the same time all **Channels** save all settings and for **1S** mode active **Channels** show real sensor temperature and for **PR** mode – show real time. Additionally, it is possible to do/change any settings.

Settings **Device ON/OFF** function can be done by the following menu sequence:
EN: Main Screen – Enter to Main Menu – Device ON/OFF – {Enter – Turn device ON – Down – Turn device OFF/ON }

When **Device** is **OFF** by special function a hash sign/symbol – '**#**' – is visible in the left corner of Main Screen, for example like on the screen below:

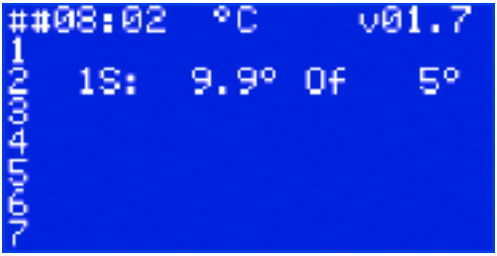


Additionally, **DEVIreg™ Multi** controller can be set up with status **OFF** by 'mechanical' switch connected to **DI8**:



*NB: When no switch is used – it means **Device** is always **ON**.*

When **Device** is **OFF** by 'mechanical' switch two hash sign/symbols – '**##**' – are visible in the left corner of **Main Screen**, for example:



4.4.9 Relay Test 5/30– special function

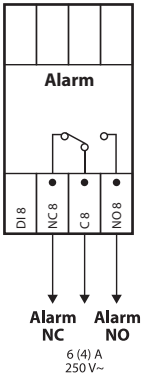
Each **Active Channel** Relay can be tested by this function. When function is started, the corresponding **Channel** relay switches **On** and **Of** every 5 sec. within 30 seconds.

Start of special test function **Relay Test 5/30** can be done by the following menu sequence:
EN: Main Screen – Enter to Main Menu – Channels settings – Channel #X – Relay Test 5/30 sec – {Enter – STOP/START }

NB: When this function is started nothing new appears on the screen(-s). Only the switching sound of the corresponding relay is heard.

4.4.10 Alarms, alarm data and alarm relay

DEVIreg™ Multi controller has **Alarm** relay with both types of contacts – **NO** and **NC**. For **Alarm** used controller contacts which have number 8 – **NC8**, **C8** and **NO8**. Connection diagram is shown on the picture below:



Information about any **Alarm** happening to any **Channel** appears in the **Channel** line with exclamation symbol – '**!**'. For example, like on the picture below, when **Alarm** information has appeared due to the temperature sensor failure:

*NB: Any **Alarm** type – e.g. sensor failure or **CableOK?**= No, has the same exclamation symbol on the screen.*

Additionally, any **Alarm** happening in the controller appears on the **Main Screen** like device **Alarm** with three exclamation symbols – '**!!!**' – on the 1st line of the **Main Screen**. Example is shown on the picture below:

*NB: if **Channel** or **Device** is turned **OFF** any corresponded **Alarm** does not appear on the screen.*

Detailed information about all **Alarms** can be found on special **Alarm** screens by pressing **Escape** button on the **Main Screen**.

Example of **Alarm** detailed information is shown on the picture below:

If more than one **Alarm** occurs, it is possible to flip the screens by **Up** and **Down** buttons.

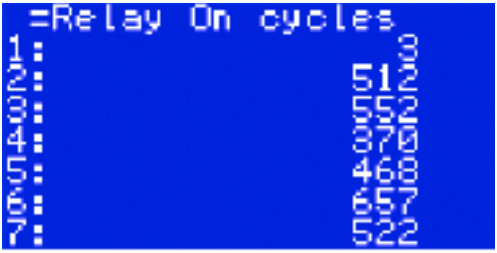
4.4.11 Relay Counters view and reset

DEVIreg™ Multi controller is collecting information about number of times the **Channel** relay is turned on.

Relay counters information can be found in two ways.

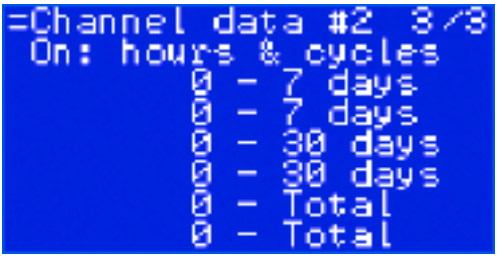
The simplest way to see '**Relay On cycles**' in total can be done by sequence:
EN: Main Screen – **Up**.

For example, the screen view can be as below:



The second way to see list of service information can be done by the following menu sequence:
EN: Main Screen – Enter to Main Menu – Channels data – Channels data #X – { Down – Down }.

For example:



4.4.12 Language setting

Language settings can be done by the following menu sequence:
EN: Main Screen – Enter to Main Menu – Language – { Enter – English/Polish/ Russian/Ukrainian/… }

NB: Different software versions can be with different set of languages.

4.4.13 Date and Time settings

DEVIreg™ Multi controller has RTC (Real Time Clock) for fixing time of data logging information, for example **Alarms**.

Date and Time settings can be done by the following menu sequence:
EN: Main Screen – Enter to Main Menu – Device settings – Date & Time setup – { Enter – Right/Left – Enter – YYYY – MM – DD – WD – hh – mm – ss }

NB: Battery back-up time is min. 48 hours.

4.4.14 BMS settings

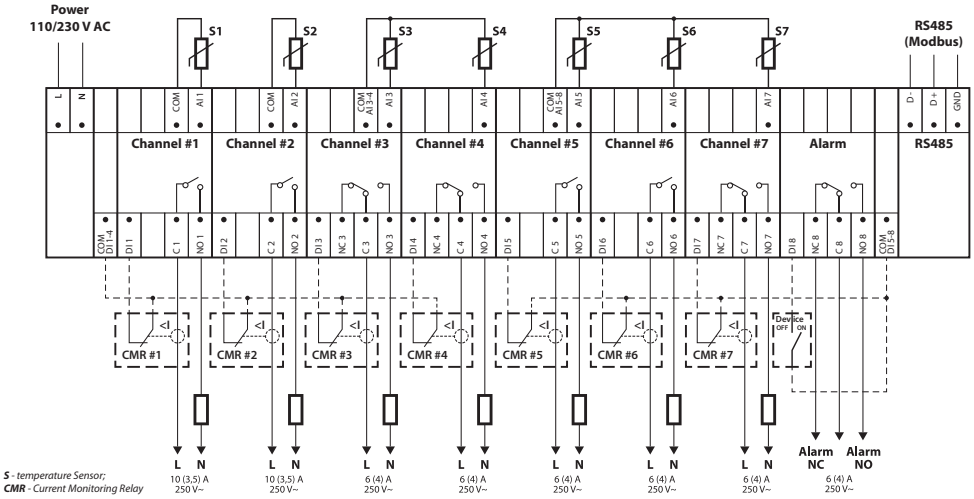
DEVIreg™ Multi controller has Modbus RS-485 opto-insulated serial interface.

Modbus RS-485 settings can be done by the following menu sequence:
EN: Main Screen – Enter to Main Menu – Device settings – BMS settings – { Enter – Serial address – Down – Serial baud rate – Down – Serial settings }

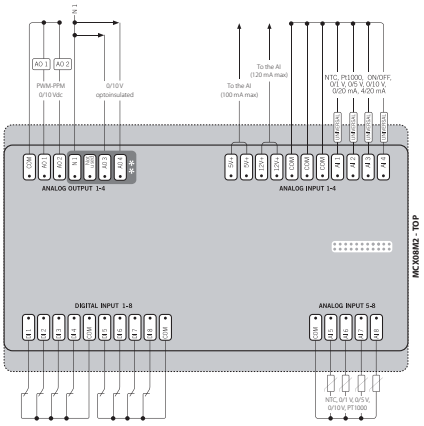
More detailed information is contained in the Appendix A.

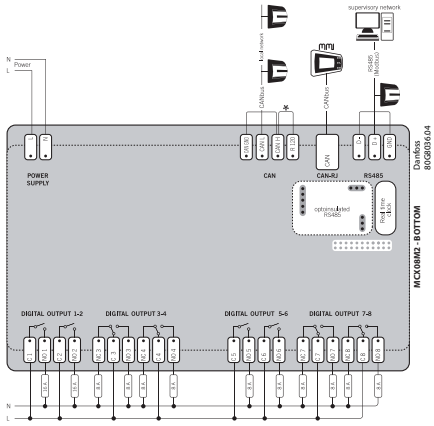
5 Connection diagram

Connection scheme DEVIreg™ Multi



General MCX08M2 controller connection diagram



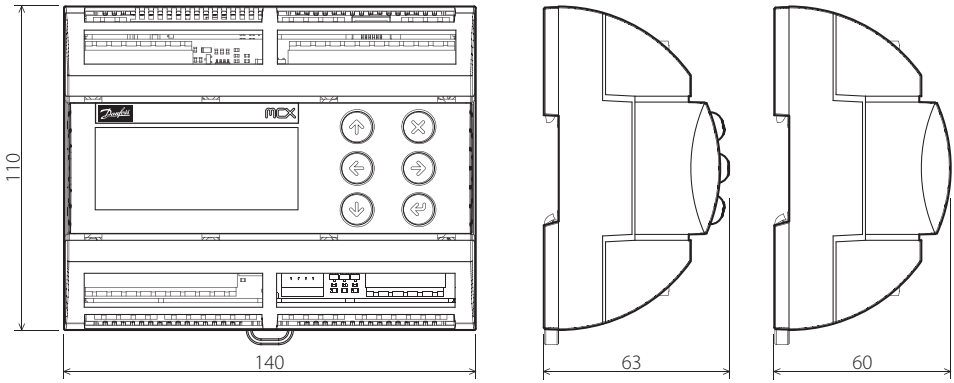


6 Technical Specifications

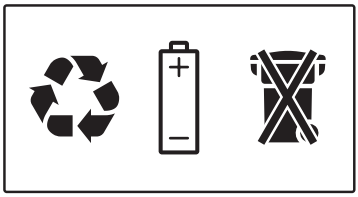
6.1 Technical data

Type	Value
Nominal voltage	110/230 V AC, 50–60 Hz
Power consumption, max.	20 V A
Relay resistive (inductive, cos(phi) = 0,6) load: Total current load limit C1-NO1, C2-NO2 C5-NO5, C6-NO6 C3-NO3-NC3, C4-NO4-NC4 C7-NO7-NC7, C8-NO8-NC8	 32 A 10 (3,5) A (100 000 cycles) 6 (4) A (100 000 cycles) 6 (4) A (100 000 cycles) 6 (4) A (100 000 cycles)
Sensor inputs	Analog inputs AI1-AI8
Sensing unit	Temperature sensors separately selectable via software at analog inputs AI1-AI7 between: NTC15k (15 kOhm @ 25 °C) NTC10k (10 kOhm @ 25 °C) NTC5k (5 kOhm @ 25 °C) NTC2k (2 kOhm @ 25 °C) NTC100 (100 kOhm @ 25 °C) NTC16k (16,7 kOhm @ 100 °C) PT1000 (1000 Ohm @ 0 °C) Ni100 (100 Ohm @ 0 °C)
Sensor failure monitoring	Disconnected or short-circuited sensor
Digital inputs	DI1-DI8, voltage free contacts, on/off inputs
Connection specification	Grouped screws plug-in connectors, pitch 5 mm
Cable specification for connectors terminals	0,2-2,5 mm^2
Battery back-up time, min.	48 hours
Ball pressure test	125 °C according to IEC 60730-1
Pollution degree	2 (domestic use)
Controller type	1 C
Operating temperatures and conditions	CE: -20T60 / UL: 0T55, 90% RH non-condensing
Storage temperature and conditions	-30T85, 90% RH non-condensing
IP class	IP40 only on the front cover
Protection class	Class II - ⧈
Immunity against voltage surges	Designed for Over Voltage Category II
Dimensions (H/W/D), DIN dimension :	110(122) x 138 x 70 mm, 8 DIN modules
Mounting method	DIN-rail, complying with EN 60715
Weight, net	511 g
Menu languages:	v01.7: EN, PL, RU, UA
Base controller	Danfoss MCX08M2, item no. 080G0307
Software class	A

6.2 Dimensions



7 Disposal Instruction



Appendix A. BMS and RS-485 interface

The controller has a built-in Modbus data transmission system and can be connected to the BMS central unit.

A1. Communication settings

Default communication settings:

- Serial address: 1.
- Serial baud rate (Transmission speed): 19200.
- Serial setting: 8N1.

A2. RS-485 specifications

MCX hardware network specifications (wiring, topology, etc.) can be found in Danfoss document: **User manual. Meet any HVAC requirement with the reliability of MCX network.** This document provides general indications for the setup of RS-485 networks.

A3. Modbus parameters and variables

Modbus parameters and variables for **DEVIreg™ Multi** controller.

LABEL	DESCRIPTION	MIN	MAX.	VALUE/TYPE	UNIT	RW	ADU
	PARAMETERS & STATUS VARIABLES						
Q10	Activate channels > Activate #1						
P16	Activate #1	0	1	0 – NO	Enum 2	RW	3001
W10	Activate channels > Activate #2						
O16	Activate #2	0	1	1 – YES	Enum 2	RW	3002
R10	Activate channels > Activate #3						
I16	Activate #3	0	1	0 – NO	Enum 2	RW	3003
G10	Activate channels > Activate #4						
U16	Activate #4	0	1	0 – NO	Enum 2	RW	3004
H10	Activate channels > Activate #5						
Y16	Activate #5	0	1	0 – NO	Enum 2	RW	3005
Z10	Activate channels > Activate #6						
T16	Activate #6	0	1	0 – NO	Enum 2	RW	3006
X10	Activate channels > Activate #7						
V16	Activate #7	0	1	0 – NO	Enum 2	RW	3007

Q1	Channel #1 > Regulation Type						
P1	#1 Regulation Type: 1S – Single Sensor, PR – Power Regulation	0	1	1 – 1S	Enum 1	RW	3008
Q2	Channel #1 > Temp & Hysteresis						
P2	#1 Set Temperature	-50	200	5	°C	RW	3009
P3	#1 Set +-Hysteresis	0.2	6	0.4	°C	RW	3010
Q3	Channel #1 > On Time & Period						
P4	#1 Set On Time	1	0	15	min.	RW	3011
P5	#1 Set PR Period (max. 900 minutes)	0	900	30	min.	RW	3012
Q4	Channel #1 > Alarm Temps & En/Dis						
P6	#1 Alarm Temp En/Dis	0	1	0 – Dis	Enum 5	RW	3013
P7	#1 Alarm min. Temp	-50	0	0	°C	RW	3014
P8	#1 Alarm max. Temp	0	200	60	°C	RW	3015
Q5	Channel #1 > CableOK?						
P9	#1 CableOK? En/Dis - Enable or Disable the function of current monitoring in the load	0	1	0 – Dis	Enum 5	RW	3016
P10	#1 CableOK? = NO/NC. Set up DI1 status Normally Opened (NO) or Normally Closed (NC) when cable is OK	0	1	1 – NO	Enum 8	RW	3017
Q75	Power calculator > Channel Power #1						
P11	#1 Channel Power (max. 32000)	0	32000	0	W	RW	3018
Q8	Channel #1 > Manually On/Of						
P12	#1 Manually On/Of Time – Set up period of time for MOn or MOf status (max. 900 minutes)	1	900	1	min.	RW	3019
P13	#1 Status On or Of for mode Heating Manually	0	1	0 – Of	Enum 11	RW	3020
P14	#1 Manually On/Of Start or Stop control mode. Caution: this mode may cause overheating and damage!	0	1	0 – STOP	Enum 6	RW	3021
Q9	Channel #1 > Channel ON/OFF						
P15	#1 Channel ON/OFF If OFF – symbol # in the line, algorithm is stopped, but real Temp. is being shown	0	1	0 – OFF	Enum 7	RW	3022
Q11	Channel #1 > Sensor type						
P17	#1 Sensor type	0	7	1 – PT1000	Enum 9	RW	3023
Q12	Channel #1 > Relay Status RO/RC						
P18	#1 Relay status - Set up Relay Opened (RO) or Relay Closed (RC) for status 'Heating On'	0	1	0 – RC	Enum 10	RW	3024
Q13	Channel #1 > Relay Test 5/30 sec.						
P19	#1 Relay Test 5/30 - Every 5 sec. switching for 30 sec.	0	1	0 – STOP	Enum 6	RW	3025
W1	Channel #2 > Regulation Type						
O1	#2 Regulation Type: 1S – Single Sensor, PR – Power Regulation	0	1	1 – 1S	Enum 1	RW	3026
W2	Channel #2 > Temp & Hysteresis						
O2	#2 Set Temperature	-50	200	5	°C	RW	3027
O3	#2 Set +-Hysteresis	0.2	6	0.4	°C	RW	3028
W3	Channel #2 > On Time & Period						

O4	#2 Set On Time	1	0	15	min.	RW	3029
O5	#2 Set PR Period (max. 900 minutes)	0	900	30	min.	RW	3030
W4	Channel #2 > Alarm Temps & En/Dis						
O6	#2 Alarm Temp En/Dis	0	1	0 – Dis	Enum 5	RW	3031
O7	#2 Alarm min. Temp	-50	0	0	°C	RW	3032
O8	#2 Alarm max. Temp	0	200	60	°C	RW	3033
W5	Channel #2 > CableOK?						
O9	#2 CableOK? En/Dis - Enable or Disable the function of current monitoring in the load	0	1	0 – Dis	Enum 5	RW	3034
O10	#2 CableOK? = NO/NC. Set up DI2 status Normally Opened (NO) or Normally Closed (NC) when cable is OK	0	1	1 – NO	Enum 8	RW	3035
W75	Power calculator > Channel Power #2						
O11	#2 Channel Power (max. 32000)	0	32000	0	W	RW	3036
W8	Channel #2 > Manually On/Of						
O12	#2 Manually On/Of Time – Set up period of time for MOn or MOf status (max. 900 minutes)	1	900	1	min.	RW	3037
O13	#2 Status On or Of for mode Heating Manually	0	1	0 – Of	Enum 11	RW	3038
O14	#2 Manually On/Of Start or Stop control mode. Caution: this mode may cause overheating and damage!	0	1	0 – STOP	Enum 6	RW	3039
W9	Channel #2 > Channel ON/OFF						
O15	#2 Channel ON/OFF If OFF – symbol # in the line, algorithm is stopped, but real Temp. is being shown	0	1	0 – OFF	Enum 7	RW	3040
W11	Channel #2 > Sensor type						
O17	#2 Sensor type	0	7	1 – PT1000	Enum 9	RW	3041
W12	Channel #2 > Relay Status RO/RC						
O18	#2 Relay status - Set up Relay Opened (RO) or Relay Closed (RC) for status 'Heating On'	0	1	0 – RC	Enum 10	RW	3042
W13	Channel #2 > Relay Test 5/30 sec.						
O19	#2 Relay Test 5/30 - Every 5 sec. switching for 30 sec.	0	1	0 – STOP	Enum 6	RW	3043
R1	Channel #3 > Regulation Type						
I1	#3 Regulation Type: 1S – Single Sensor, PR – Power Regulation	0	1	1 – 1S	Enum 1	RW	3044
R2	Channel #3 > Temp & Hysteresis						
I2	#3 Set Temperature	-50	200	5	°C	RW	3045
I3	#3 Set +-Hysteresis	0.2	6	0.4	°C	RW	3046
R3	Channel #3 > On Time & Period						
I4	#3 Set On Time	1	0	15	min.	RW	3047
I5	#3 Set PR Period (max. 900 minutes)	0	900	30	min.	RW	3048
R4	Channel #3 > Alarm Temps & En/Dis						
I6	#3 Alarm Temp En/Dis	0	1	0 – Dis	Enum 5	RW	3049
I7	#3 Alarm min. Temp	-50	0	0		RW	3050
I8	#3 Alarm max. Temp	0	200	60		RW	3051

R5	Channel #3 > CableOK?						
I9	#3 CableOK? En/Dis - Enable or Disable the function of current monitoring in the load	0	1	0 – Dis	Enum 5	RW	3052
I10	#3 CableOK? = NO/NC. Set up DI3 status Normally Opened (NO) or Normally Closed (NC) when cable is OK	0	1	1 – NO	Enum 8	RW	3053
R75	Power calculator > Channel Power #3						
I11	#3 Channel Power (max. 32000)	0	32000	0	W	RW	3054
R8	Channel #3 > Manually On/Of						
I12	#3 Manually On/Of Time – Set up period of time for MOn or MOf status (max. 900 minutes)	1	900	1	min.	RW	3055
I13	#3 Status On or Of for mode Heating Manually	0	1	0 – Of	Enum 11	RW	3056
I14	#3 Manually On/Of Start or Stop control mode. Caution: this mode may cause overheating and damage!	0	1	0 – STOP	Enum 6	RW	3057
R9	Channel #3 > Channel ON/OFF						
I15	#3 Channel ON/OFF If OFF – symbol # in the line, algorithm is stopped, but real Temp. is being shown	0	1	0 – OFF	Enum 7	RW	3058
R11	Channel #3 > Sensor type						
I17	#3 Sensor type	0	7	1 – PT1000	Enum 9	RW	3059
R12	Channel #3 > Relay Status RO/RC						
I18	#3 Relay status - Set up Relay Opened (RO) or Relay Closed (RC) for status 'Heating On'	0	1	0 – RC	Enum 10	RW	3060
R13	Channel #3 > Relay Test 5/30 sec.						
I19	#3 Relay Test 5/30 - Every 5 sec. switching for 30 sec.	0	1	0 – STOP	Enum 6	RW	3061
G1	Channel #4 > Regulation Type						
U1	#4 Regulation Type: 1S – Single Sensor, PR – Power Regulation	0	1	1 – 1S	Enum 1	RW	3062
G2	Channel #4 > Temp & Hysteresis						
U2	#4 Set Temperature	-50	200	5	°C	RW	3063
U3	#4 Set +-Hysteresis	0.2	6	0.4	°C	RW	3064
G3	Channel #4 > On Time & Period						
U4	#4 Set On Time	1	0	15	min.	RW	3065
U5	#4 Set PR Period (max. 900 minutes)	0	900	30	min.	RW	3066
G4	Channel #4 > Alarm Temps & En/Dis						
U6	#4 Alarm Temp En/Dis	0	1	0 – Dis	Enum 5	RW	3067
U7	#4 Alarm min. Temp	-50	0	0	°C	RW	3068
U8	#4 Alarm max. Temp	0	200	60	°C	RW	3069
G5	Channel #4 > CableOK?						
U9	#4 CableOK? En/Dis - Enable or Disable the function of current monitoring in the load	0	1	0 – Dis	Enum 5	RW	3070
U10	#4 CableOK? = NO/NC. Set up DI4 status Normally Opened (NO) or Normally Closed (NC) when cable is OK	0	1	1 – NO	Enum 8	RW	3071
G75	Power calculator > Channel Power #4						

U11	#4 Channel Power (max. 32000)	0	32000	0	W	RW	3072
G8	Channel #4 > Manually On/Of						
U12	#4 Manually On/Of Time – Set up period of time for MOn or MOf status (max. 900 minutes)	1	900	1	min.	RW	3073
U13	#4 Status On or Of for mode Heating Manually	0	1	0 – Of	Enum 11	RW	3074
U14	#4 Manually On/Of Start or Stop control mode. Caution: this mode may cause overheating and damage!	0	1	0 – STOP	Enum 6	RW	3075
G9	Channel #4 > Channel ON/OFF						
U15	#4 Channel ON/OFF If OFF – symbol # in the line, algorithm is stopped, but real Temp. is being shown	0	1	0 – OFF	Enum 7	RW	3076
G11	Channel #4 > Sensor type						
U17	#4 Sensor type	0	7	1 – PT1000	Enum 9	RW	3077
G12	Channel #4 > Relay Status RO/RC						
U18	#4 Relay status - Set up Relay Opened (RO) or Relay Closed (RC) for status 'Heating On'	0	1	0 – RC	Enum 10	RW	3078
G13	Channel #4 > Relay Test 5/30 sec.						
U19	#4 Relay Test 5/30 - Every 5 sec. switching for 30 sec.	0	1	0 – STOP	Enum 6	RW	3079
H1	Channel #5 > Regulation Type						
Y1	#5 Regulation Type: 1S – Single Sensor, PR – Power Regulation	0	1	1 – 1S	Enum 1	RW	3080
H2	Channel #5 > Temp & Hysteresis						
Y2	#5 Set Temperature	-50	200	5	°C	RW	3081
Y3	#5 Set +-Hysteresis	0.2	6	0.4	°C	RW	3082
H3	Channel #5 > On Time & Period						
Y4	#5 Set On Time	1	0	15	min.	RW	3083
Y5	#5 Set PR Period (max. 900 minutes)	0	900	30	min.	RW	3084
H4	Channel #5 > Alarm Temps & En/Dis						
Y6	#5 Alarm Temp En/Dis	0	1	0 – Dis	Enum 5	RW	3085
Y7	#5 Alarm min. Temp	-50	0	0	°C	RW	3086
Y8	#5 Alarm max. Temp	0	200	60	°C	RW	3087
H5	Channel #5 > CableOK?						
Y9	#5 CableOK? En/Dis - Enable or Disable the function of current monitoring in the load	0	1	0 – Dis	Enum 5	RW	3088
Y10	#5 CableOK? = NO/NC. Set up DI5 status Normally Opened (NO) or Normally Closed (NC) when cable is OK	0	1	1 – NO	Enum 8	RW	3089
H75	Power calculator > Channel Power #5						
Y11	#5 Channel Power (max. 32000)	0	32000	0	W	RW	3090
H8	Channel #5 > Manually On/Of						
Y12	#5 Manually On/Of Time – Set up period of time for MOn or MOf status (max. 900 minutes)	1	900	1	min.	RW	3091
Y13	#5 Status On or Of for mode Heating Manually	0	1	0 – Of	Enum 11	RW	3092

Y14	#5 Manually On/Of Start or Stop control mode. Caution: this mode may cause overheating and damage!	0	1	0 – STOP	Enum 6	RW	3093
H9	Channel #5 > Channel ON/OFF						
Y15	#5 Channel ON/OFF If OFF – symbol # in the line, algorithm is stopped, but real Temp. is being shown	0	1	0 – OFF	Enum 7	RW	3094
H11	Channel #5 > Sensor type						
Y17	#5 Sensor type	0	7	1 – PT1000	Enum 9	RW	3095
H12	Channel #5 > Relay Status RO/RC						
Y18	#5 Relay status - Set up Relay Opened (RO) or Relay Closed (RC) for status 'Heating On'	0	1	0 – RC	Enum 10	RW	3096
H13	Channel #5 > Relay Test 5/30 sec.						
Y19	#5 Relay Test 5/30 - Every 5 sec. switching for 30 sec.	0	1	0 – STOP	Enum 6	RW	3097
Z1	Channel #6 > Regulation Type						
T1	#6 Regulation Type: 1S – Single Sensor, PR – Power Regulation	0	1	1 – 1S	Enum 1	RW	3098
Z2	Channel #6 > Temp & Hysteresis						
T2	#6 Set Temperature	-50	200	5	°C	RW	3099
T3	#6 Set +-Hysteresis	0.2	6	0.4	°C	RW	3100
Z3	Channel #6 > On Time & Period						
T4	#6 Set On Time	1	0	15	min.	RW	3101
T5	#6 Set PR Period (max. 900 minutes)	0	900	30	min.	RW	3102
Z4	Channel #6 > Alarm Temps & En/Dis						
T6	#6 Alarm Temp En/Dis	0	1	0 – Dis	Enum 5	RW	3103
T7	#6 Alarm min. Temp	-50	0	0	°C	RW	3104
T8	#6 Alarm max. Temp	0	200	60	°C	RW	3105
Z5	Channel #6 > CableOK?						
T9	#6 CableOK? En/Dis - Enable or Disable the function of current monitoring in the load	0	1	0 – Dis	Enum 5	RW	3106
T10	#6 CableOK? = NO/NC. Set up DI6 status Normally Opened (NO) or Normally Closed (NC) when cable is OK	0	1	1 – NO	Enum 8	RW	3107
Z75	Power calculator > Channel Power #6						
T11	#6 Channel Power (max. 32000)	0	32000	0	W	RW	3108
Z8	Channel #6 > Manually On/Of						
T12	#6 Manually On/Of Time – Set up period of time for MOn or MOf status (max. 900 minutes)	1	900	1	min.	RW	3109
T13	#6 Status On or Of for mode Heating Manually	0	1	0 – Of	Enum 11	RW	3110
T14	#6 Manually On/Of Start or Stop control mode. Caution: this mode may cause overheating and damage!	0	1	0 – STOP	Enum 6	RW	3111
Z9	Channel #6 > Channel ON/OFF						
T15	#6 Channel ON/OFF If OFF – symbol # in the line, algorithm is stopped, but real Temp. is being shown	0	1	0 – OFF	Enum 7	RW	3112

Z11	Channel #6 > Sensor type						
T17	#6 Sensor type	0	7	1 – PT1000	Enum 9	RW	3113
Z12	Channel #6 > Relay Status RO/RC						
T18	#6 Relay status - Set up Relay Opened (RO) or Relay Closed (RC) for status 'Heating On'	0	1	0 – RC	Enum 10	RW	3114
Z13	Channel #6 > Relay Test 5/30 sec.						
T19	#6 Relay Test 5/30 - Every 5 sec. switching for 30 sec.	0	1	0 – STOP	Enum 6	RW	3115
X1	Channel #7 > Regulation Type						
V1	#7 Regulation Type: 1S – Single Sensor, PR – Power Regulation	0	1	1 – 1S	Enum 1	RW	3116
X2	Channel #7 > Temp & Hysteresis						
V2	#7 Set Temperature	-50	200	5	°C	RW	3117
V3	#7 Set +-Hysteresis	0.2	6	0.4	°C	RW	3118
X3	Channel #7 > On Time & Period						
V4	#7 Set On Time	1	0	15	min.	RW	3119
V5	#7 Set PR Period (max. 900 minutes)	0	900	30	min.	RW	3120
X4	Channel #7 > Alarm Temps & En/Dis						
V6	#7 Alarm Temp En/Dis	0	1	0 – Dis	Enum 5	RW	3121
V7	#7 Alarm min. Temp	-50	0	0	°C	RW	3122
V8	#7 Alarm max. Temp	0	200	60	°C	RW	3123
X5	Channel #7 > CableOK?						
V9	#7 CableOK? En/Dis - Enable or Disable the function of current monitoring in the load	0	1	0 – Dis	Enum 5	RW	3124
V10	#7 CableOK? = NO/NC. Set up DI7 status Normally Opened (NO) or Normally Closed (NC) when cable is OK	0	1	1 – NO	Enum 8	RW	3125
X75	Power calculator > Channel Power #7						
V11	#7 Channel Power (max. 32000)	0	32000	0	W	RW	3126
X8	Channel #7 > Manually On/Of						
V12	#7 Manually On/Of Time – Set up period of time for MOn or MOf status (max. 900 minutes)	1	900	1	min.	RW	3127
V13	#7 Status On or Of for mode Heating Manually	0	1	0 – Of	Enum 11	RW	3128
V14	#7 Manually On/Of Start or Stop control mode. Caution: this mode may cause overheating and damage!	0	1	0 – STOP	Enum 6	RW	3129
X9	Channel #7 > Channel ON/OFF						
V15	#7 Channel ON/OFF If OFF symbol # on the main screen, algorithm is stopped, but real Temp. is shown	0	1	0 – OFF	Enum 7	RW	3130
X11	Channel #7 > Sensor type						
V17	#7 Sensor type	0	7	1 – PT1000	Enum 9	RW	3131
X12	Channel #7 > Relay Status RO/RC						
V18	#7 Relay status - Set up Relay Opened (RO) or Relay Closed (RC) for status 'Heating On'	0	1	0 – RC	Enum 10	RW	3132
X13	Channel #7 > Relay Test 5/30 sec.						
V19	#7 Relay Test 5/30 - Every 5 sec. switching for 30 sec.	0	1	0 – STOP	Enum 6	RW	3133

ALC	Alarms settings > Alarm configuration						
BUZ	Buzzer active time	0	15	1	min.	RW	3137
AdL	Alarm relay activation delay	0	999	2	s	RW	3138
AOF	Alarm relay active if unit in OFF	0	1	0 – NO	Enum 2	RW	3139
StU	Device settings > Device setup						
y01	ON/OFF	0	1	1 - YES	Enum 2	RW	3143
y02	Sensor filter	0	3	3		RW	3144
y99	FirstTimeStart	0	1	1		RW	3145
FSe	Device settings > Factory Reset						
y07	Restore default parameters	0	1	0 - NO	Enum 2	RW	3146
	ALARMS						
LABEL	**DESCRIPTION**	**MIN.**	**MAX.**	**RESET**	**IN OFF**		
A01	Device is logically tuned off by either switcher on DI8 (##) or menu Device ON/OFF (#)	0	1	AUTO	ACTIVE	Read	1901 .08
E01	Alarm Sensor #1	0	1	AUTO	ACTIVE	Read	1901 .09
E02	Alarm Sensor #2	0	1	AUTO	ACTIVE	Read	1901 .10
E03	Alarm Sensor #3	0	1	AUTO	ACTIVE	Read	1901 .11
E04	Alarm Sensor #4	0	1	AUTO	ACTIVE	Read	1901 .12
E05	Alarm Sensor #5	0	1	AUTO	ACTIVE	Read	1901 .13
E06	Alarm Sensor #6	0	1	AUTO	ACTIVE	Read	1901 .14
E07	Alarm Sensor #7	0	1	AUTO	ACTIVE	Read	1901 .15
E09	Alarm CableOK? #1	0	1	AUTO	ACTIVE	Read	1901 .00
E10	Alarm CableOK? #2	0	1	AUTO	ACTIVE	Read	1901 .01
E11	Alarm CableOK? #3	0	1	AUTO	ACTIVE	Read	1901 .02
E12	Alarm CableOK? #4	0	1	AUTO	ACTIVE	Read	1901 .03
E13	Alarm CableOK? #5	0	1	AUTO	ACTIVE	Read	1901 .04
E14	Alarm CableOK? #6	0	1	AUTO	ACTIVE	Read	1901 .05
E15	Alarm CableOK? #7	0	1	AUTO	ACTIVE	Read	1901 .06
E17	Alarm max. Temp #1	0	1	AUTO	ACTIVE	Read	1901 .07
E18	Alarm max. Temp #2	0	1	AUTO	ACTIVE	Read	1902 .08
E19	Alarm max. Temp #3	0	1	AUTO	ACTIVE	Read	1902 .09
E20	Alarm max. Temp #4	0	1	AUTO	ACTIVE	Read	1902 .10
E21	Alarm max. Temp #5	0	1	AUTO	ACTIVE	Read	1902 .11
E22	Alarm max. Temp #6	0	1	AUTO	ACTIVE	Read	1902 .12
E23	Alarm max. Temp #7	0	1	AUTO	ACTIVE	Read	1902 .13
E24	Alarm min. Temp #1	0	1	AUTO	ACTIVE	Read	1902 .14
E25	Alarm min. Temp #2	0	1	AUTO	ACTIVE	Read	1902 .15
E26	Alarm min. Temp #3	0	1	AUTO	ACTIVE	Read	1902 .00
E27	Alarm min. Temp #4	0	1	AUTO	ACTIVE	Read	1902 .01
E28	Alarm min. Temp #5	0	1	AUTO	ACTIVE	Read	1902 .02
E29	Alarm min. Temp #6	0	1	AUTO	ACTIVE	Read	1902 .03
E30	Alarm min. Temp #7	0	1	AUTO	ACTIVE	Read	1902 .04
E31	Memory is full	0	1	AUTO	ACTIVE	Read	1902 .05

	I/O CONFIGURATION						
AI	**ANALOG INPUTS**						
1	Temperature1	-50.0	200.0	PT1000		Read	18502
2	Temperature2	-50.0	200.0	PT1000		Read	18503
3	Temperature3	-50.0	200.0	PT1000		Read	18504
4	Temperature4	-50.0	200.0	PT1000		Read	18505
5	Temperature5	-50.0	200.0	PT1000		Read	18506
6	Temperature6	-50.0	200.0	PT1000		Read	18507
7	Temperature7	-50.0	200.0	PT1000		Read	18508
8							
DI	**DIGITAL INPUTS**						
1	Cable1	0	1	N.O.		Read	17504
2	Cable2	0	1	N.O.		Read	17505
3	Cable3	0	1	N.O.		Read	17506
4	Cable4	0	1	N.O.		Read	17507
5	Cable5	0	1	N.O.		Read	17508
6	Cable6	0	1	N.O.		Read	17509
7	Cable7	0	1	N.O.		Read	17510
8	On/Off	0	1	N.C.		Read	17502
DO	**DIGITAL OUTPUTS**						
1	Heat1	0	1	N.O.		Read	18003
2	Heat2	0	1	N.O.		Read	18004
3	Heat3	0	1	N.O.		Read	18005
4	Heat4	0	1	N.O.		Read	18006
5	Heat5	0	1	N.O.		Read	18007
6	Heat6	0	1	N.O.		Read	18008
7	Heat7	0	1	N.O.		Read	18009
8	Alarm	0	1	N.O.		Read	18002

Warranty

A 2-year product warranty is valid for:

- thermostats: DEVIreg™ Multi.

Should you, against all expectations, experience a problem with your DEVI product, you will find that Danfoss offers DEVIwarranty valid from the **date of purchase** on the following conditions: During the warranty period Danfoss shall offer a new comparable product or repair the product if the product is found to be faulty by reason of defective design, materials or workmanship. The repair or replacement.

The decision to either repair or replace will be solely at the discretion of Danfoss. Danfoss shall not be liable for any consequential or incidental damages including, but not limited to, damages to property or extra utility expenses. No extension of the warranty period following repairs undertaken is granted.

The warranty shall be valid only if the WARRANTY CERTIFICATE is completed correctly and in accordance with the instructions, the fault is submitted to the installer or the seller without undue delay and proof of purchase is provided. Please note that the WARRANTY CERTIFICATE must be filled in, stamped and signed by the authorized installer performing the installation (Installation date must be indicated). After the installation is performed, store and keep the WARRANTY CERTIFICATE and purchase documents (invoice, receipt or similar) during the whole warranty period.

DEVIwarranty shall not cover any damage caused by incorrect conditions of use, incorrect installation or if installation has been carried out by non-authorized electricians. All work will be invoiced in full if Danfoss is required to inspect or repair faults that have arisen as a result of any of the above. The DEVIwarranty shall not extend to products which have not been paid in full. Danfoss will, at all times, provide a rapid and effective response to all complaints and inquiries from our customers.

The warranty explicitly excludes all claims exceeding the above conditions.

For full warranty text visit **www.devi.com.devi.danfoss.com/en/warranty/**

WARRANTY CERTIFICATE

The DEVIwarranty is granted to:

Address _____ **Stamp**

Purchase date _____

Serial number of the product _____

Product _____ **Art. No.** _____

***Connected output [W]** _____

Installation Date & Signature _____ **Connection Date & Signature** _____

**Not mandatory*

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