

**INDUSTRIAL
PUMP**

Digital Temperature Controller



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WARNING

Read and understand this manual before operating the controller. Failure to understand instructions and safety precautions could result in an accident causing injury or be fatal.

Introduction

The Digital Temperature Controller is a durable, compact and very easy to use temperature controller for precise temperature adjustment.

The digital temperature controller is in a compact design and easy to mount to the desired element.

The temperature controller can be used to control temperature on a large variety of products, e.g. Industrial Heating Blankets, Drum Heaters and IBC Container Heaters.

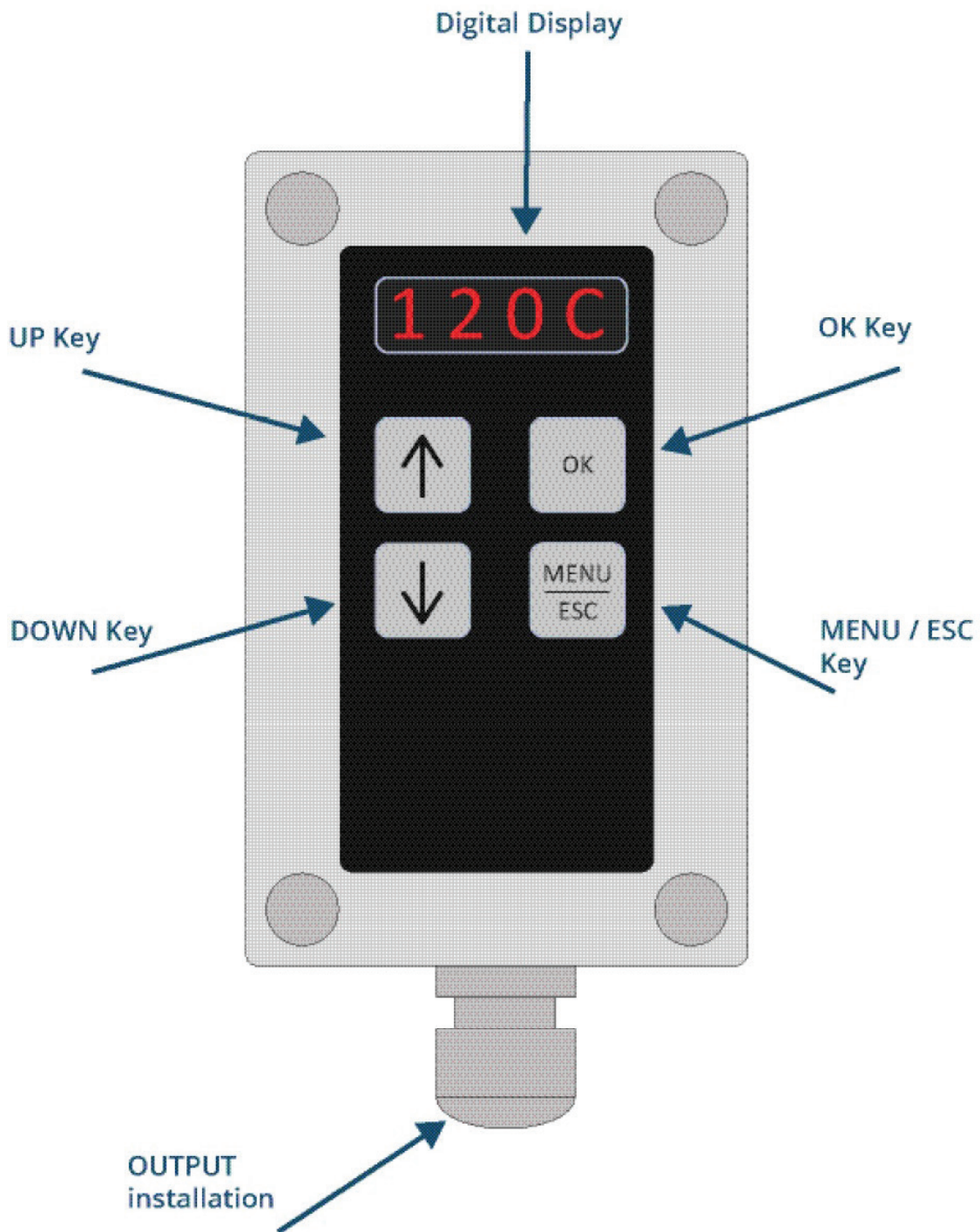
Important Safety Instructions

- Always inspect the controller before use.
- Never handle the installed heater while in operation. Always disconnect the power before handling.
- Never immerse the heater or controller into liquids.
- Do not try to repair damaged or faulty controllers.
- Disconnect the heater when not in use.



Failure to operating under the above instructions may result in injuries and can be fatal.

Overview



Parameter	Specification	Additional Information
Display	4 digit 7-segments	See more information below
UP/Down Key	Changes data setting	See more information below
OK Key	Selects data setting	See more information below
MENU/ESC Key	Selects menu or escapes	See more information below
Input temperature 1,2	Temperature input signal	Thermostat device
Output to heating element		AC Power control

Specifications

Control cycle and updating data

Item	Min.	Typ.	Max.	Unit
Display refresh rate	30	–	60	Hz
Display blink	–	2	–	Hz
Scan Key	–	10	–	ms
Key hold, Key timeout	–	5	–	s
Read temperatures	–	1	–	s
Load on/off	–	10	–	ms
Hysteresis	–	3	–	°C

Display

Temperature

The temperature supports both °C and °F mode. The displays are shown as the following.



Timer

The timer is displayed as a format hh:mm that means hour unit separate with colon and then minute unit.



Heating element is on

While the heating element is on the last dot in the display must be on. A normal data which depends on operating mode, might be temperature value or timer value still be displayed as shown below.



Current temperature

While the current temperature is showed the dot under the degree symbol will show.






Please note!

When externally measuring surface temperature while using a heating blanket or drum heater, can result in a large temperature spread compared to the temperature shown on the digital display.

This is due to heating wires inside the blanket or drum heater. The heated wires are located throughout the blanket and when a temperature sensor is placed close to the wire, the temperature shown will be significantly higher than on the display. This is normal and not an error.

Keys

Description




Key	Description
	Selects the operation menu (see “User menu” below for details).
	Enters the current menu or confirms the current setting
	Change current data that show on screen [menu/setpoint/timer/...]

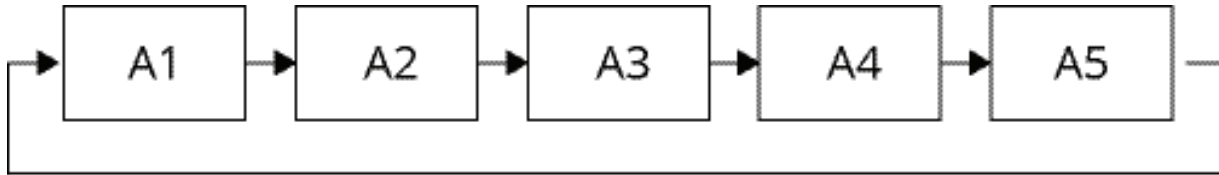
User menu


Menu	Description
A1	Set temperature setpoint 1
A2	Set temperature setpoint 2 (Only for 2 temperatures sensor mode otherwise always 0)
A3	Set timer Disable by setting 00:00
A4	Set delta temperature Disable by setting 0.0
A5	Set Unit °C (Celcius) or °F (Fahrenheit)

Operation



Common Operation

Press  and select a menu by pressing  





Press  to enter the menu.



Press arrow buttons to changes the current data for each menu. The display shows in a flashing mode.

Press  to confirm the current data or press  to cancel.

Sensor Operation



Press  and move to the A1 menu and press 

Press arrow buttons up or down to set temperature for setpoint 1 (sensor 1).



Press  to confirm the current data or press  to cancel.

Timer Operation

Set a timer timeout to the heating process and the controller will automatically power off when the timer finishes countdown.
Setting timer to 00:00 equals disabled.



Press  and move to the A3 menu and press 

Press arrow buttons up or down to set the timer (HH:MM).



Press  to confirm the current data or press  to cancel.

Delta Operation (Ramp-up rate per minute)



The delta temperature is used to help temperature rise at a certain speed per minute. Ramp-up only works with sensor 1.
Setting the timer back to 0.0 is disabled

Press  and move to the A4 menu and press 



Press arrow buttons up or down to set delta temperature.

Press  to confirm the current data or press  to cancel.

Celsius/Fahrenheit Display Switch

Press  and move to the A5 menu and press 

Press arrow buttons up or down to change the Celsius or Fahrenheit display.

Press  to confirm the current data or press  to cancel.



Troubleshooting

A close-up photograph of a red LED display showing the text "Er 00" in a bright red, segmented font. The display is set against a dark, textured background.

Error code	Description
00	Relay broken
01	Over temperature
11	Temperature sensor 1 is open (no connections)
12	Temperature sensor 1 is short-circuited to GND
14	Temperature sensor 1 is short-circuited to VCC
21	Temperature sensor 2 is short-circuited to (no connections)
22	Temperature sensor 2 is short-circuited to GND
24	Temperature sensor 2 is short-circuited to VCC

EU-Declaration of Conformity



<p>EU-Declaration of Conformity</p>	
<p>Kuhlmann Electro Heat A/S Egebæksvej 2 - DK-5000 Odense C Denmark</p>	
<p>Hereby declares that Kuhlman Electro-Heat A/S heating jackets is produced in accordance with the declarations in ECR Directives (2014/35/EU):</p> <p>Low Voltage Directive 2014/35/EU, Electromagnetic Compatibility (EMC) Directive 2014/30/EU, CE Marking 2014/35/EU.</p> <p>According to standards: EN 61000-6-2 : 2005 EN 61000-6-4 A1:2011</p>	
<p>Product commercial name: Heating Blanket and Heating Jacket.</p> <p>Kuhlmann Electro-Heat A/S heating blankets are produced for heating up elements for curing process or maintaining a consistent temperature.</p> <p>Kuhlmann Electro-Heat A/S heating blankets are produced in various sizes and effects, and all heating blankets are thermostatically controlled at either 0-90°C, 60-80°C or 0-200°C.</p> <p>The insulation system and construction of the heaters meet the requirements of all the relevant EEC Directives including the Low Voltage Directive (LVD) and the Electromagnetic Compatibility Directive (EMC). To meet these requirements the heaters are produced to meet or exceed the requirements of all the relevant national and international standards.</p>	
<p>Furthermore, the product is subjected to the following standards and circulars: Labour inspection declaration BEK no. 612 from 25. June 2008. Declaration on design of technical devices.</p>	
<p>Place/Date: Odense – 11.07.2016</p> <div style="text-align: center;">  <p>Lars Kuhlmann-Jensen Managing director</p> </div>	