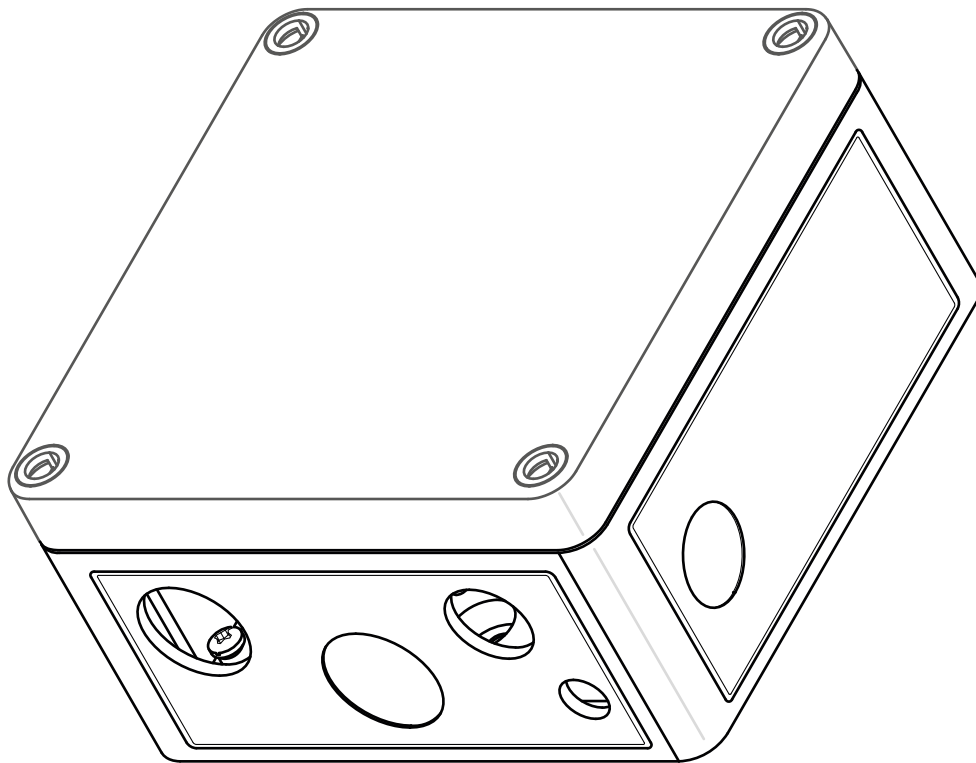


OPERATION- MANUAL



ELTC-14

Temperature controller up to 400°C
with connection possibility for 2 trace heaters

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For proper and safe use of the ELTC-14 temperature controller, please follow these instructions.

Please keep these instructions for future reference (e.g. in the system documentation).

RESERVATION

Subject to technical changes. Changes, errors and misprints do not constitute grounds for claims for damages.

For safety components and systems, the assembly instructions as well as the relevant and currently valid standards and regulations must be observed.

eltherm GmbH Ernst-Heinkel-Str. 6-10 57299 Burbach T.: +49 2736 4413-0 F.: +49 2736 4413-50 info@eltherm.com	Document: 8643050620000 BU-094		Operation manual ELTC-14 temperature controller up to 400°C with connection possibility for 2 trace heaters	
	Author:	Peter Schmidt	Date:	01.06.2018
	Revision: 9	Julian Engel	Date:	13.06.2023

INTRODUCTION

The electronic temperature controller of the ELTC type series is a controller with digital display for wall mounting. The temperature measured with a Pt100 temperature sensor is processed and displayed by a microcontroller. After an actual value/ setpoint comparison, the output relays are then switched according to the configuration. Cable glands and terminals are built in for electrical connection. The device is supplied in a splash-proof plastic housing with a transparent housing cover including accessories. The temperature controller is also suitable for connection of temperature sensors type ELTF-PTEx in hazardous areas.

Display conventions

Particularly important points in these instructions are indicated by the following symbols:



DANGER

indicates an extremely dangerous situation.
If it is not avoided, there is a danger to life or at least a high risk of serious injury.



ATTENTION

indicates a potentially dangerous situation.
If not avoided, there is a risk of damage or malfunction.



WARNING

indicates a potentially dangerous situation.
If it is not avoided, there is a risk of injury or at least a high risk of damage.



NOTE

important information and instructions for safe, effective and environmentally sound use.

RECEIPT OF GOODS

Upon receipt of the goods, check the controllers and accessories and compare the information on the type plate with the information on the delivery bill to ensure that the correct material has been delivered.

SCOPE OF DELIVERY

The scope of delivery of the article includes:

Qty.	Item
1 Pcs.	Temperature controller
1 Pcs.	Operation manual DE & EN
2 Pcs.	M25x1,5 cable gland
2 Pcs.	M25 O-ring
2 Pcs.	M25 2x6mm Multi-seal insert
1 Pcs.	M25 locknut
2 Pcs.	M20x1,5 cable gland
2 Pcs.	M20 O-ring
1 Pcs.	M20 locknut
1 Pcs.	M12x1,5 cable gland
1 Pcs.	M12 O-ring
1 Pcs.	Terminal cover
2 Pcs.	Redetachable rivets

STORAGE



NOTE

Storage should be in a dry place at an ambient temperature of -30°C to 60°C.

DISPOSAL



NOTE

The WEEE logo (shown above) indicates that this product should not be disposed of with other waste. For more information on disposal and and recovery of waste electrical and electronic equipment For more information on the disposal and recovery of waste electrical and electronic equipment (WEEE) and collection points, please contact your local waste management company or the manufacturer from whom you purchased the product.

FUNCTIONAL DESCRIPTION & TECHNICAL DATA

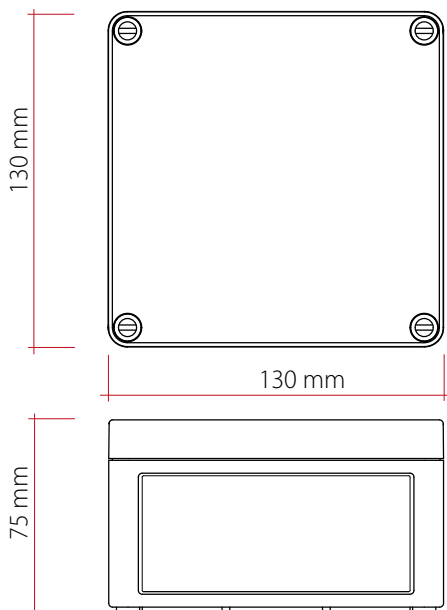
FUNCTIONAL DESCRIPTION

If the actual value (P01) falls below the setpoint (P10 minus hysteresis P11), relay K1 switches the heating on. The integrated alarm relay enables error messages via a changeover contact in case of over / under temperature, sensor interruption or sensor short circuit. In the event of sensor errors, relay K1 switches the heating line off or on, depending on the configuration of the controller.

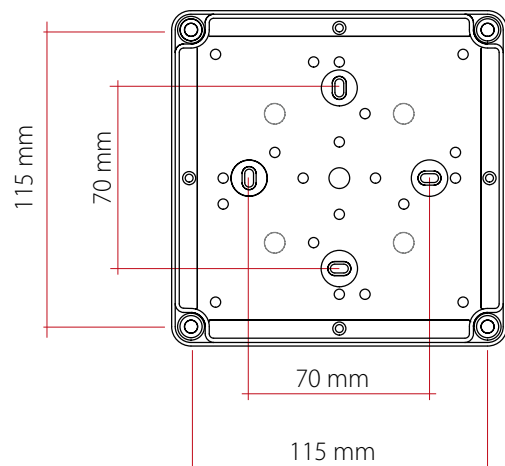
TECHNICAL DATA

Nominal voltage	90...260 VAC, 50/60 Hz
Power consumption	max. 5 W
Relays K1	20A res./ max 250 VAC (hybridrelay)
Relay K2 (alarm)	8A res. / max. 250 VAC (changeover contact)
Operating temperature	-25 to +55°C
Storage temperature	-30 to +60°C
Setting range	0 to +390°C, configurable
Display range	-50 to +400°C
Accuracy	± 1K, ± 2 Digits (-50 to 400°C)
Display	LED, red, 11 mm
Sensor connection	Pt100 2-wire & Pt100 3-wire
Connection terminals	Sensor: 0.2...1.5mm ² copper wire, stripping length 9...10mm Others: 0.1...2.5mm ² copper solid, stripping length 5...6mm
Housing material	Polycarbonate, gray, clear lid
Housing dimension	130 x 130 x75 mm (WxHxD)
Protection class	IP 65
Type of mounting	Wall mounting
Weight	approx. 0,6 kg

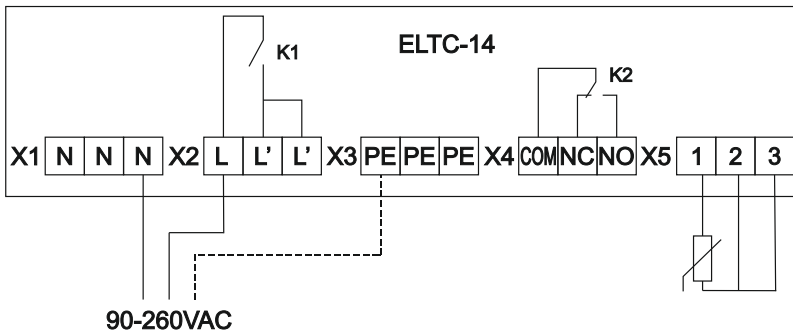
Dimensions



Drilling pattern



CONNECTION PLAN



Terminal	Connection
X1.1	
X1.2	Common connection neutral (N)
X1.3	
X2.1	Mains supply input (L)
X2.2	Heater connection A
X2.3	Heater connection B
X3.1	
X3.2	Common connection protective earth (PE)
X3.3	
X4.1	Alarm relay COM
X4.2	Alarm relay NC
X4.3	Alarm relay NO
X5.1	Connection Pt100 (white)
X5.2	Connection Pt100 (red)
X5.3	Connection Pt100 3-wire compensation (not necessary with 2-wire)

SPECIAL NOTES

Installation and safety information

ATTENTION

- Electrical connection / commissioning must be carried out by a qualified electrician.
- The relevant local safety regulations must be observed. Observe the connection values according to the type plate and these instructions.
- When selecting the installation site, observe the IP protection class and permissible operating temperature. Locations protected from direct precipitation and sunlight are advantageous.
- Operation only with closed cover, tightened screw connections / blind plugs and installed seals. Avoid damage, tensile stress, kinking and torsion of the connected lines.
- The sensor lines must be shielded when extended, the shielding must be grounded on one side near the controller. The cable must not be laid parallel to lines carrying mains voltage. The total line resistance must not exceed 10 ohms.
- Make sure that the connection terminals have the correct size and dimensioning to accommodate the conductors.

ATTENTION

- Persons involved in installations and testing of electrical trace heating systems should be appropriately qualified to perform the required actions
- Electrical heat-tracing systems should be installed under the direction of a qualified electrician who has completed supplemental training on electrical heat-tracing systems
- Critical work, such as making connections or terminations, should be performed only by qualified personnel

DANGER

A residual current circuit breaker is required for each circuit.

DANGER

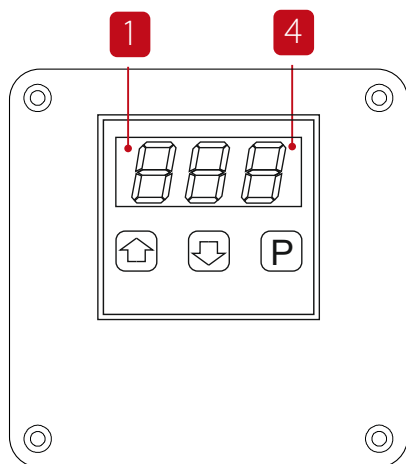
Before starting work on heating or connection lines or terminals, make sure that the corresponding circuit is switched off and secured against unintentional reconnection

NOTE

After switching on the controller, the display shows the current actual value.

OPERATION

OPERATING PANEL



After switching on, the type number ("C14") and software version of the device appear and after approx. three seconds the measured actual value. If the "P" key is pressed briefly, the "Set" display appears and then the setpoint value is displayed with an automatic return after 5 seconds. If the "P" key is pressed for approx. 3 seconds, the parameter list "P10" is displayed. If the "P" key is held down for a further 3 seconds, "dC" for degrees Celsius or "dF" for degrees Fahrenheit is displayed.

Selecting and changing parameters

To reach the parameter list, "P" must be pressed for approx. 3 seconds until "P10" appears in the display.

Press „P" for 3 seconds

Parameter no. appears

Press „↑/↓"

Select parameters

Press „P"

Parameter value appears

Press „↑/↓"

Change parameters

Press „P"

New value saved, back to parameter no.

Press „↑/↓" till „P01" or T > 1 minute

Exit input mode

LEDs in Display

"1" = Control relay ON

"4" = Alarm relay activated (=switched OFF)

A flashing of the LEDs indicates a function delay.

Keys

"↑" = Increase values

"↓" = Decrease values

"P" = Programming key

Protection against unauthorized operation

The control setpoints can basically be set without restriction, provided they are not limited by "P13/P14". All other parameters are protected by a code.

If a code is required, the display shows "C00". Use the arrow keys "↑/↓" to set the required code number "C42" and confirm with "P".

After approx. 1 minute without pressing any key, the code is requested again.

Autoscrolling

If you hold down the arrow keys "↑/↓", the values continue to scroll automatically.

Error messages

In the event of an error, the display shows an error code. Sensor errors are displayed with a delay of approx. 10 seconds.

Error codes

- E01 = Sensor short circuit or temperature < -60°C
- E02 = Sensor interruption or temperature > 410°C
- E03 = 3rd wire is missing or $R \geq 10\Omega$
- E07 = Error relay K1 open
- E08 = Error relay K1 short circuit
- E09 = Internal error

- C00 = Protected parameters, code entry required

With errors E07 to E09, further operation of the device is prevented.

PARAMETERS AND THEIR MEANING

In [...] the factory settings are indicated.

Parameter	Meaning and range
P01	display only
Actual value	
P10	range P13...P14, [5°C]
Control setpoint	
P11	range 2...10K, [2K]
Switching hysteresis	
P12	0..30.0 min., [0.0 min], resolution 0,1 min.
Minimum standstill time (relay K1)	
P13	range P14...+390°C, [+390°C]
Maximum adjustable setpoint	
P14	range -50°C...P13, [0°C]
Smallest adjustable setpoint	
P20	0 = Pt100, 3-wire, °C (resolution 1K) [1] = Pt100, 2-wire, °C (resolution 1K)
Sensor type	2 = Pt100, 3-wire, °F (resolution 2°F) 3 = Pt100, 2-wire, °F (resolution 2°F)
P21	-30...+10K, [0]
Sensor correction	
P30	P31...400°C, [400°C]
Overtemperature alarm	
P31	-60...P30, [-60°C]
Undertemperature alarm	
P32	0...99 min., [0.0 min.] resolution 0,1 min.
Alarm delay in opera- tion	
P33	0...500 min., [0 Min.]
Alarm delay after switch-on	
P34	0 = relay K2 (active) energizes on sensor error Load relay K1 drops in case of sensor error [1] = relay K2 (passive) drops in case of sensor error Load relay K1 drops in case of sensor error 2 = K2 works as enable relay Load relay K1 drops in case of sensor error 3 = Relay K2 (active) energizes in case of sensor error Load relay K1 energizes in case of sensor error 4 = Relay K2 (passive) drops in case of sensor error Load relay K1 energizes in case of sensor error 5 = K2 works as enable relay Load relay K1 energizes in case of sensor error
Alarm relay mode (Relay K1 and K2)	



ATTENTION

P34=3, P34=4 and P34=5 is only permissible for frost protection applications and use of self-regulating trace heaters.

Mode Enable relay

In this operating mode (P34=2), relay K2 switches independently of P32 and P33 as soon as the actual value is within P30 and P31.

Mode Alarm relay

(P34 = 0 or 1) : If the actual temperature is below P31 when the device is started, P33 is used once as the alarm delay to give more time to the system. In normal operation, P32 is used as alarm delay.

Notes on commissioning



ATTENTION

The settings of the controller must be checked during commissioning.



NOTE

The temperature control device and the temperature sensor(s) should be calibrated against the factory setting during commissioning if necessary.

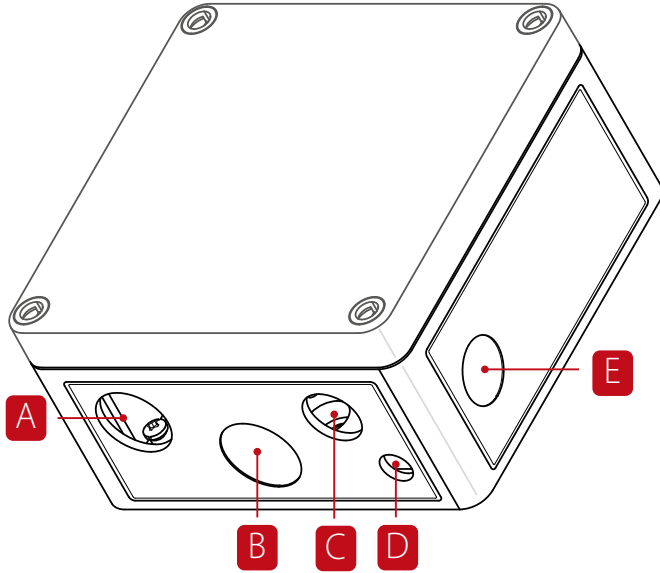
Declaration of Conformity



We declare that the described product fully complies with Directives 2014/35/EU, 2014/30/EU and 2011/65/EU. If you need a detailed declaration of conformity, please contact us.

HOUSING CONSTRUCTION

Holes / Stamping



Pos.	Size
A	M25
B	M25 (pre-stamped, e.g. connection two ELSR)
C	M20
D	M12
E	M20 (pre-stamped, e.g. connection cable to the alarm contact)

Cable gland compatibilities

Pos.	with cable gland / with separate connection set	Clamping range	suitable for e.g.
A	M20 and O-ring	6 - 12 mm	Supply line
B	M25, O-ring and locknut	6 - 13 mm	Connection cable for second heating circuit: ELW-x one-sided connection, EL-CLIC P, terminal box
B	M25, O-ring and locknut	2 x 6 mm	Connection cable for second heating circuit: ELK-x connection on both sides
B	M25, from connection set ELVB-SR	*	ELSR-x
B	M25, from connection set ELVB-ELP	*	ELP-x
C	M20 and O-ring	6 - 13 mm	ELW-x one-sided connection, EL-CLIC P, terminal box
C	M20, from connection set ELVB-SR	*	ELSR-x
C	M20, from connection set ELVB-ELP	*	ELP-x
D	M12 and O-ring	3-6,5mm	Temperature sensor
E	M20, O-ring and locknut	6 - 12 mm	Connection cable alarm contact

*dependent on the respective separate connection set



eltherm GmbH

Headquarters

Ernst-Heinkel-Straße 6-10
57299 Burbach. Germany

T.: +49 2736 4413-0

F.: +49 2736 4413-50

info@eltherm.com

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<https://eltherm.com/downloads>



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