



Temperature Control and Monitoring

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Content **Controller** Limiter

Type	Modutronic ELT-GP1	Modutronic ELT-GP2	Modutronic ELT-GP3	Ex-Box REG/DIS	Ex-Box REG/LED	Ex-Box LIM/DIS	Ex-Box LIM/LED	EL-CT	ELTC -14
Measuring range	0...+100 °C  0...+200 °C  0...+400 °C  0...+800 °C 	0...+100 °C  0...+200 °C  0...+400 °C  0...+800 °C 	0...+400 °C  0...+800 °C 	-40...+300 °C	-40...+300 °C	-40...+300 °C	-40...+300 °C	–	-50...+400 °C
Enclosure (wxhxd) mm	175 x 125 x 75	45 x 118 x 137	213 x 185 x 117	140 x 140 x 150	140 x 140 x 150	140 x 140 x 150	140 x 140 x 150	140 x 120 x 120	130 x 130 x 75
Standard rail installation									
Wall mounting									
Supply voltage									90 - 260 VAC / 50/60 Hz
16–30 V DC / 12–24 V AC									
230 V AC									
Measurement								Capillary tube	
Pt100									
Thermocouple Type J									
Thermocouple Type K									
Alarm indication									
Analogue output									
Digital display									
Power consumption (VA)	5 VA	5 VA	5 VA						max. 4 mA < 5 W
IP protection class front	IP 66	IP 20	IP 65	IP 65	IP 65	IP 65	IP 65	IP 66	IP 65
Switching capacity	16 A	12 A	16 A	16 A	16 A	16 A	16 A	16 A	max. 20 A with hybridrelay (Relay 1)
For hazardous areas									

ELTC/H-14	ELTC -15	ELTC 05	ELTC21	ELTC22	ELTC 41	ELTC 42	ELTh/1-3	ELTC-W	*1 ISD-1	*1 ISD-2	*2 ELHC	*3 ELHKV
-50...+400 °C with socket	-50...+999 °C (rampmode function)	–	-50...+400 °C	-50...+400 °C	-60...+410 °C	-60...+410 °C	0-250 °C	-10...+40 °C	-30...+80 °C	-30...+80 °C	–	–
130 x 130 x 75	130 x 130 x 75	130 x 130 x 75	51.5 x 87.5 x 58.0	51.5 x 87.5 x 58.0	70 x 60 x 30	70 x 60 x 30	122 x 120 x 90 220 x 120 x 90 260 x 160 x 90	153 x 59 x 93	105 x 86 x 57	105 x 86 x 57	Standard: 45 x 75 x 120 Wall: 130 x 130 x 75	295 x 458 x 129 ELHKV-E1-1
												
												
90 - 260 VAC / 50/60 Hz	90 - 260 VAC / 50/60 Hz					24 V DC 22-28 V AC						
				24 VDC		24 VDC		24 VDC				
					90 - 260 VAC / 50/60 Hz		230/400 V AC	100-253 V				230/400 V AC
							Capillary tube	NTC	NTC	NTC		
												
												
max. 4 mA < 5 W	max. 4 mA < 5 W	5 VA			< 5 W	< 5 W		6,5 VA	20 VA	20 VA max		
IP 65	IP 65	IP 65	IP 30	IP 30	IP 20	IP 20	IP 65	IP 20	IP 20	IP 20	IP 50	IP 54
max. 20 A with hybridrelay (Relay 1)	max. 20 A with hybridrelay (Relay 1)	16 A	16 A	16 A	12 A	12 A	16 A	16 A	6 A	8 A	2 A	

Legend:  Standard  Option
 Alternatives  Configuration

*1: Ice- and Snow Detectors *3: Control Cabinets
*2: Heating Circuit Distributors

Ex-Box Temperature Controller with Display

Ex-Box REG/DIS: complying with latest Ex-protection directives 2014/34/EU this electronic temperature controller has been designed and developed especially for its use in hazardous areas. Programming and operation is done via the integrated operating panel with display.

Advantages:

- Rugged enclosure IP 65
- Operation and programming in hazardous areas
- Increased safety through fail alarm
- Integrated heating circuit monitoring
- Display

Applications:

- Hazardous areas
- Power plants
- Chemical & petrochemical industries
- Oil & gas industries
- Pharmaceutical industry
- Plastics industry
- Wastewater treatment plants



Technical Information		Type Ex-Box REG/DIS
Data		Cable Entries
■ Certificate	IBExU 04 ATEX 1165 X	■ 1 x M25 for voltage supply (9-13 mm; with add-ons for 11-15 mm) 1 x exchangeable panel seal 7-10.5 mm 1 x M25 for heating line (2-fold 6 mm) 1 x M20 for sensor (tension range 3-4 mm) 1 x vent screw M20
■ Classification	II 2G Ex emb [ib] IIC T4 Gb II 2D Ex tb IIIC T100 °C Db -32 °C ≤ Ta ≤ 60 °C	
■ Dimensions	140 x 140 x 150 mm (w x h x d) (without wall-mounting bracket, excluding glands)	
■ Enclosure	Aluminium	
■ IP rating	IP 65	
■ Ambient temperature	-32 up to 60 °C	
■ Switching capacity	16 A	
■ Display	2 x 4 35-segment LED	
■ Operating voltage	230 V +/- 10 %	
■ Nominal current	Max. 100 mA	
■ Load current, max.	16 A (ohm resistive load)	
■ Load output	230 V / 16 A, 2-pole	
■ Alarm output	Optically separated 100 mA	
■ Interface	Intrinsically safe for Ex-Connect (bus connection)	
■ Measurement input	Pt100 2/3 wire, intrinsically safe	
■ Measurement range	-40 °C up to +300 °C	
■ Control characteristics	Dual mode controller	
■ Weight	Approx. 3.5 kg	

Designation	Art. No.
Ex-Box REG/DIS	0X60020

Type Ex-Box REG/DIS



Ex-Box Temperature Controller with LED-Display

Ex-Box REG/LED: complying with latest Ex-protection directives 94/9/CE (ATEX 95) this electronic temperature controller has been designed and developed especially for its use in hazardous areas. Programming and operation is done via external Ex-Control manual control.

Advantages:

- Rugged enclosure IP 65
- Increased safety, tamperproof, no unauthorised adjustments
- Increased safety through fail alarm
- Integrated heating circuit monitoring

Applications:

- Hazardous areas
- Power plants
- Chemical & petrochemical industries
- Oil & gas industries
- Pharmaceutical industry
- Plastics industry
- Wastewater treatment plants



Technical Information

Data

■ Certificate	IBExU 04 ATEX 1165 X
■ Classification	II 2G Ex emb [ib] IIC T4 Gb II 2D Ex tb IIIC T100°C Db -32 °C ≤ Ta ≤ 60 °C
■ Dimensions	140 x 140 x 150 mm (w x h x d) without wall-mounting bracket, excluding glands
■ Enclosure	Aluminium
■ IP rating	IP 65
■ Ambient temperature	-32 up to 60 °C
■ Switching capacity	16 A
■ Display	2 x 4 35-segment LED
■ Operating voltage	230 V +/- 10 %
■ Nominal current	Max. 100 mA
■ Load current, max.	16 A (ohm resistive load)
■ Load output	230 V / 16 A, 2-pole
■ Alarm output	Optically separated 100 mA
■ Interface	Intrinsically safe for Ex-Connect
■ Measurement input	Pt100 2/3 wire, intrinsically safe
■ Measurement range	-40 °C up to +300 °C
■ Control characteristics	Dual mode controller
■ Load disconnection	2-phase
■ Weight	Approx. 3.5 kg

Cable Entries

- 1 x M25 for voltage supply (9-13 mm; with add-ons for 11-15 mm)
- 1 x exchangeable panel seal 7-10.5 mm
- 1 x M25 for heating line (2-fold 6 mm)
- 1 x M20 for sensor (tension range 3-4 mm)
- 1 x vent screw M20

Features

- Interface for manual control panel Ex-Control
- LED green: OK, no heating
- LED orange: OK, heating on
- LED red blinking: alarm or fault, but still ready for operation
- LED red permanent: severe fault, load disconnection

Type Ex-Box REG/LED



Designation	Art. No.
Ex-Box REG/LED	0X60021

Ex-Box Limiter with Display

The Ex-Box LIM/DIS is a limiter for switching off heating circuits in case of excess temperature or current overload. Furthermore, output signal values for maximum and minimum temperatures are programmable. Programming and operation is done via the integrated operating panel with display.

Advantages:

- Rugged enclosure IP 65
- Operation and programming in hazardous areas
- Increased safety through fail alarm
- Integrated heating circuit monitoring
- Display

Applications:

- Hazardous areas
- Power plants
- Chemical & petrochemical industries
- Oil & gas industries
- Pharmaceutical industry
- Plastics industry
- Wastewater treatment plants



Technical Information

Data	
■ Certificate	IBExU 04 ATEX 1165 X
■ Classification	II 2G Ex emb [ib] IIC T4 Gb II 2D Ex tb IIC T100 °C Db -32 °C ≤ Ta ≤ 60 °C
■ Dimensions	140 x 140 x 150 mm (w x h x d) (without wall-mounting bracket, excluding glands)
■ Enclosure	Aluminium
■ IP rating	IP 65
■ Ambient temperature	-32 up to 60 °C
■ Switching capacity	16 A
■ Operating voltage	230 V +/- 10 %
■ Nominal current	Max. 100 mA
■ Load current, max.	16 A (ohm resistive load)
■ Load output	230 V / 16 A, 2-pole
■ Alarm output	Optically separated 100 mA
■ Interface	Intrinsically safe for Ex-Connect (bus connection)
■ Measurement input	Pt100 2/3 wire, intrinsically safe
■ Measurement range	-40 °C up to +300 °C
■ Control range	+50 °C up to +300 °C
■ Load disconnection	2-phase
■ Weight	Approx. 3.5 kg

Cable Entries

- 1 x M25 for voltage supply (9-13 mm; with add-ons for 11-15 mm)
- 1 x exchangeable panel sea 7-10.5 mm
- 1 x M25 for heating line (2-fold 6 mm)
- 1 x M20 for sensor (tension range 3-4 mm)
- 1 x vent screw M20

Type Ex-Box LIM/DIS

Designation	Art. No.
Ex-Box LIM/DIS	0X60024



Ex-Box Limiter with LED-Display

The Ex-Box LIM/LED is a limiter for switching off connected heating circuits in case of excess temperature or current overload. Furthermore, signal values for maximum and minimum temperatures are programmable. Programming and operation is done via external panel Ex-Control for manual control.

Advantages:

- Rugged enclosure IP 65
- Increased safety against unauthorised changes of rated value
- Increased safety through fail alarm
- Integrated heating circuit monitoring

Applications:

- Hazardous areas
- Power plants
- Chemical & petrochemical industries
- Oil & gas industries
- Pharmaceutical industry
- Plastics industry
- Wastewater treatment plants



Technical Information

Data	
■ Certificate	IBExU 04 ATEX 1165 X
■ Classification	II 2G Ex emb [ib] IIC T4 Gb II 2D Ex tb IIC T100°C Db -32 °C ≤ Ta ≤ 60 °C
■ Dimensions	140 x 140 x 150 mm (w x h x d) without wall-mounting bracket, excluding glands
■ Enclosure	Aluminium
■ IP rating	IP 65
■ Ambient temperature	-32 up to 60 °C
■ Switching capacity	16 A
■ Display	2 x 4 35-segment LED
■ Operating voltage	230 V +/- 10 %
■ Nominal current	Max. 100 mA
■ Load current, max.	16 A (ohm resistive load)
■ Load output	230 V / 16 A, 2-pole
■ Alarm output	Optically separated 100 mA
■ Interface	Intrinsically safe for Ex-Control
■ Measurement input	Pt100 2/3 wire, intrinsically safe
■ Measurement range	-40 °C up to +300 °C
■ Control range	+50 °C up to +300 °C
■ Load disconnection	2-phase
■ Weight	Approx. 3.5 kg

Type Ex-Box LIM/LED

Cable Entries	
■	1 x M25 for voltage supply (9-13 mm; with add-ons for 11-15 mm)
■	1 x gland 7-10.5 mm
■	1 x M25 for heating line (2-fold 6 mm)
■	1 x M20 for sensor (tension range 3-4 mm)
■	1 x vent screw M20

Features	
■	Interface for manual control panel Ex-Control
■	Programmable parameter are identical to Ex-Control
■	LED green: normal operation state
■	LED red, blinking: alarm
■	LED red, permanent: fault

If a fault (excess temperature, overcurrent and internal fault) is indicated, it will not automatically reset. Reset of the fault is done via the Ex-Control.

Type Ex-Box LIM/LED



Designation	Art. No.
Ex-Box LIM/LED	0X60023

Ex-Control

Hand-held Controller Pad

Intrinsically safe hand held controller pad for use with the Ex-Box REG/LED and LIM/LED. The Ex-Control pad provides additional safety in a potentially explosive atmosphere. Adjustment of settings by unauthorized persons is not possible since the controller can be removed.

Advantages:

- Intrinsically safe controller pad
- Without an independent power supply
- Programming and operation in hazardous areas

Applications:

- Hazardous areas
- Power plants
- Chemical & petrochemical industries
- Oil & gas industries
- Pharmaceutical industry
- Plastics industry
- Wastewater treatment plants



Type Ex-Control



Technical Information

Data

■ Certificate	IBExU 04 ATEX 1165 X
■ Dimensions (enclosure)	135 x 80 x 35 mm (w x h x d)
■ Classification	II 2G Ex ib IIC T4 Gb II 2D Ex tb IIIC T100°C Db -32°C ≤ Ta ≤ 60°C
■ IP rating	IP 65
■ Cable entrance	1.5 m connecting cable with 5-pole plug
■ Display	2 x 4 35-segment LED illuminated
■ Interface	Intrinsically safe for Ex-Box LED/LIM
■ Weight	0.5 kg

Type Ex-Control

Programmable Parameters

- Upper set point of adjustable temperature range
- Temperature set point
- Alarm, excess temperature
- Alarm, low temperature
- Load disconnection – excess temperature
- Bus address 1 – 32
- Adjusting point Pt100
- Temperature unit °C and °F

Fault indication

- Sensor short
- Sensor cut
- Excess temperature Pt100
- Low temperature Pt100
- Internal excess temperature
- External bus fault
- Internal bus fault
- Internal hardware fault
- Supply voltage fault

Designation	Art. No.
Ex-Control	0X60026

Ex-Capillary Thermostat

The capillary thermostat EL-CT is approved for use in hazardous areas Zones 1 and 2 for gas and Zones 21 and 22 for dust as a surface thermostat on pipes and vessels. There are different temperature ranges possible. The material of the capillary tube is stainless steel and the rugged enclosure is made of aluminium.

Advantages:

- Robust
- Versatile use

Applications:

- Industrial applications
- Use in hazardous areas
- Heat tracing on pipes, valves and vessels
- Oil & gas industry



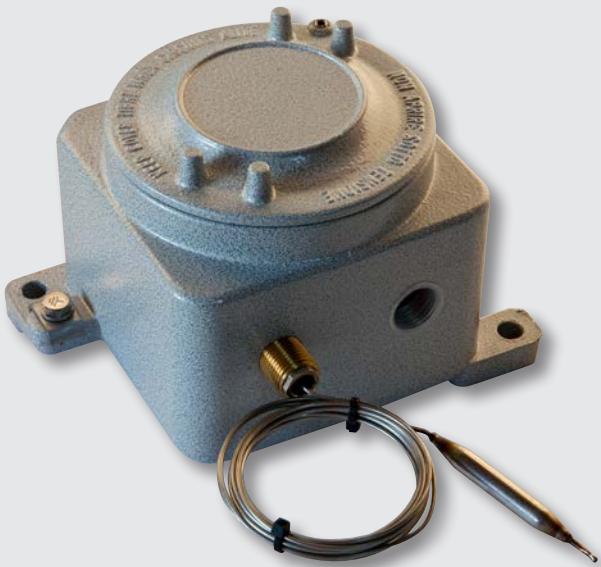
Technical Information

Type EL-CT

Data

■ Ex-Classification	II 2G Ex db IIC T6 Gb II 2D Ex tb IIIC T80°C Db Ta -32°C...+50°C [CT] Ta -50°C...+50°C [CT(2)] (Important: Classification is subject to modification depending on the cable entrances used by the customer!)
■ Certificate	IBExU 03ATEX1130X IECEx IBE 14.0069
■ IP rating	IP 66
■ Ambient temperature	-32 up to +50 °C [CT], -50 °C up to + 50 °C [CT(2)]
■ Switching capacity	16 A at 230 V [CT] / 10 A at 400 V [CT(2) only]
■ Switching differential	1 pol. [CT], 1 pol., changeover contact [CT(2)]
■ Switching contact	1 pole
■ Capillary tube	Stainless steel
■ Length of capillary tube	2 m
■ Enclosure	Lacquer-coated aluminium, dimensions (l x h x d), approx. 120 x 120 x 110 mm
■ Bending radius capillary tube	5 mm
■ Cable entrance	1 x gland M20, clamping range 10-14 mm 1 x thread M 20 x 1.5
■ Salt-water proof	Yes

Type EL-CT



Designation	Temperature range	Admissible sensor temperature, max.	Art. No.
EL-CT(2) 30	-10 °C up to +30 °C	60 °C	0X63032
EL-CT(2) 65	+5 °C up to +65 °C	100 °C	0X63065
EL-CT(2) 180	0 °C up to +180 °C	220 °C	0X63180
EL-CT(2) 320	+50 °C up to +320 °C	330 °C	0X63320
EL-CT 30	-50 °C up to +30 °C	50 °C	0X63030
EL-CT 50	0 °C up to +50 °C	105 °C	0X63050
EL-CT 200	0 °C up to +200 °C	230 °C	0X63200
EL-CT 500	+20 °C up to +500 °C	575 °C	0X63500

Pt100 Temperature Sensors and Thermocouples

We present an overview of our Pt100 temperature sensors and thermocouples here, appropriate for a very wide and diverse range of applications. Our products have a long service life, even in demanding fields of application. ELTF-PTEx temperature sensors are suitable for use in hazardous (Ex) areas.

Advantages:

- Can be used for a wide range of applications
- Coordinated with our trace heating product line
- Easy assembly

Applications:

- Industrial applications
- Building services
- Frost protection
- Process temperatures to 1000 °C
- Hazardous (Ex) area

Pt100 temperature sensor, thermocouples



Technical Information

Pt100 Temperature Sensors

Type	Designation	Art. No.
ELTF-PT.1	Pt100 2-wire, measuring sleeve 5 x 50 mm, mat. 1.4571, connection cable PVC, length = 5 m, class B, Tmax 80 °C, IP 65	0650001
ELTF-PT.3	Pt100 2-wire, measuring sleeve 5 x 50 mm, mat. 1.4571, connection cable fluoropolymer, length = 3 m, class B, Tmax 250 °C, IP 65	0650003
ELTF-PT.31	Pt100 3-wire, measuring sleeve 5 x 50 mm, mat. 1.4571, connection cable fluoropolymer, length = 3 m, class B, Tmax 250 °C, IP 65	0650002
ELTF-PT.33	Pt100 2-wire, measuring sleeve 6 x 6 x 46 mm, mat. 1.4301, connection cable fluoropolymer, length = 5 m, class 1/3 B, Tmax 250 °C, IP 65	0650000
ELTF-PT.5	Pt100, 4-wire, measuring sleeve 4 x 50 mm, mat. 1.4571, connection cable fluoropolymer length = 5 m, class 1/3 B, Tmax 250 °C, IP 65	0650022
ELTF-PT.61	Pt100, 2-wire, measuring sleeve 3 x 200 mm, mat. 1.4571, connection cable fluoropolymer, length = 5 m, class B, Tmax 500 °C, IP 65	0650040
ELTF-PTEx.2 	Pt100 4-wire, measuring sleeve 8 x 12 x 46 mm, mat. 1.4301, connection cable fluoropolymer, length = 3 m, class B, Tmax 235 °C, IP 65	0X70002*
ELTF-PTEx.4 	Pt100 2 x 3-wire, measuring sleeve 8 x 12 x 46 mm, mat. 1.4301, connection cable fluoropolymer, length = 3 m, class B, Tmax 235 °C, IP 65	0X70030*

Thermocouples

Type	Designation	Art. No.
ELTF-Te.4	Thermocouple type K, measuring sleeve 3 x 250 mm, mat. 2.4816, connection cable fluoropolymer/silicone, length = 5 m, DIN IEC 584 1-2, Tmax. 1150 °C, IP 65	0670001
ELTF-Te.41	Thermocouple type K, measuring sleeve 1.5 x 400 mm, mat. 2.4816, connection cable fluoropolymer/silicone, length = 5 m, DIN IEC 584 1-2, Tmax. 1150 °C, IP 65	0670019

This is only a selection. Additional temperature sensors and thermocouples are available on request.

* see also section „Hazardous (Ex) area“.

Electronic Frost Protection Thermostat

The electronic temperature controller ELTC 05-Frostcontrol is designed for use as an ambient thermostat and surface thermostat with remote sensor. Cable glands and terminals are provided for power input. The unit is supplied in a weather proof plastic enclosure for wall mounting, with a grey cover.

The controller should be protected from direct sunlight when used outdoors. In case of use as ambient temperature controller, the sensor cable is shortened to allow fastening of the sensor sleeve within the M12 gland. The sleeve should project by approximately 15 mm.

Advantages:

- Weather proof
- Fixed switching set point

Applications:

- Heat tracing for frost protection
- Can be used as ambient and surface thermostat
- Suitable for resistance heating lines and self-regulating heating cables



Type ELTC 05-Frostcontrol



Technical Information

Data

■ Supply voltage	230 V, +/- 10 %, 50 Hz, optional voltages upon request
■ Switching capacity	16 A
■ Hysteresis	Approx. 1 Kelvin
■ Measurement input	Pt100 DIN 2-wire, with 5 m PVC connecting cable (temp. max. 90 °C)
■ Switching point ELTC/05	+3 °C (set point)
■ Ambient temperature	-30 up to +60 °C
■ Control characteristics	Dual mode controller
■ Output	1 relay contact
■ LED	Heating ON (yellow)
■ Enclosure	Polycarbonate
■ Dimensions	130 x 130 x 75mm
■ IP rating	IP 65
■ Weight	520 g

Type ELTC 05-Frostcontrol

Electronic Temperature Controller

- Type ELTC 05 Frostcontrol, switching point +3 °C (set point)

Function

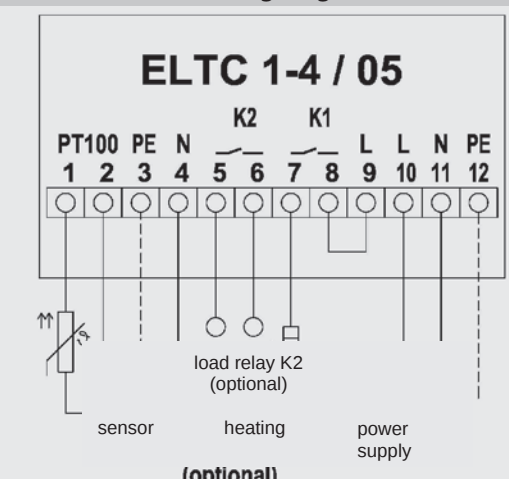
If the sensed temperature is lower than the adjusted set point, the relay contact closes and the heating switches on.

Special designs available – just ask us!

Type	Designation	Art. No.
ELTC 05	Incl. Pt100, with 1 Relay, 230 V, 2xM25, 1xM12	0610002
ELTC 05	Incl. Pt100, with 1 Relay, 110 V, 2xM25, 1xM12	0610003
ELTC 05	Incl. Pt100, with 2 Relay, 230 V, 2xM25, 1xM12	0610005
ELTC 05	Without Pt100, with 1 Relay, 230 V, 2xM25, 1xM12	0610092

Note: Versions for higher temperatures are available upon request.

Wiring diagram



Electronic Temperature Controller

The ELTC-14 is an electronic temperature controller with digital display for wall mounting. The temperature is measured by a Pt100 sensor, processed by the microcontroller and displayed. After having evaluated the actual and preset values, the appropriate output relays are switched, depending on the configuration.

Cable glands and terminals are provided for the power connection. The unit is supplied in a weather proof plastic enclosure, with a transparent cover.

Advantages:

- LED display operable down to -25 °C
- Programmable 0 °C up to +390 °C
- For switching 20 A resistive load with hybridrelay
- Signaling contact (configurable to operate either as alarm or release contact, potential-free)
- Suitable for Pt100 with 2 or 3 wires
- For connection of up to 2 heating cables
- Operating voltage:
90 - 260 VAC / 50/60 Hz

Applications:

- Industrial applications
- Mechanical, electrical and plumbing (MEP)



Type ELTC-14



Technical Information

Type ELTC-14

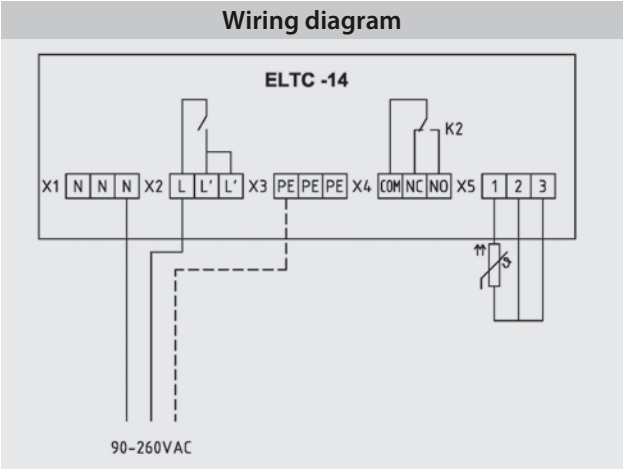
Data	
■ Operating voltage	90-260 VAC 50/60 Hz
■ Power consumption	Max. 4 mA, < 5 W
■ Switching capacity relay 1	20 A with hybridrelay
■ Switching capacity relay 2	8 A, changover contact (alarm)
■ Operating temperature	-25 up to +55 °C
■ Storage temperature	-30 up to +60 °C
■ Display range	-50 up to +400 °C
■ Adjustable range	0 up to +390 °C, optional configuration
■ Sensor connection	Pt100 2-wire, 3-wire, optional configuration
■ Display	LED, red
■ IP rating	IP 65
■ Dimensions (w x h x d)	130 x 130 x 75 mm polycarbonate enclosure

Sensors and display: It is possible to use two types of sensors, either Pt100/2-wire or Pt100/3-wire. Optional display of °C or °F values. In case of use of a Pt100/2-wire unit the actual temperature value can be corrected. Range +/- 10K or +/-18F, respectively. In case of use of a Pt100/3-wire unit the temperature is automatically corrected. Also suitable for use with ELTF-PTEx 1 and 2 sensor.

Relay configuration: relay 1: regulator, relay 2: alarm / temperature reached

Temperature alarm: If the actual value deviates from the preset limit values, an alarm is given and transmitted via alarm relay K2.

Type	Designation	Art. No.
ELTC-14	Standard: Set with cable glands, reducer and blind cover	0620000



Electronic Temperature Controller

The ELTC/H-14 is an electronic temperature controller with digital display for wall mounting. The temperature is measured by a Pt100 sensor, processed by the microcontroller and displayed. After having evaluated the actual and preset values, the appropriate output relays are switched, depending on the configuration.

The controller is equipped with a socket. The unit is supplied in a weather proof plastic enclosure, with a transparent cover.

Advantages:

- LED display operable down to -25 °C
- Programmable 0 °C up to +390 °C
- For switching 20 A resistive load with hybridrelay
- Signaling contact (configurable to operate either as alarm or release contact, potential-free)
- Suitable for Pt100 with 2 or 3 wires
- Operating voltage: 90 - 260 VAC / 50/60 Hz

Applications:

- Industrial applications
- Heating mats, heated hoses



Type ELTC/H-14



Technical Information

Data

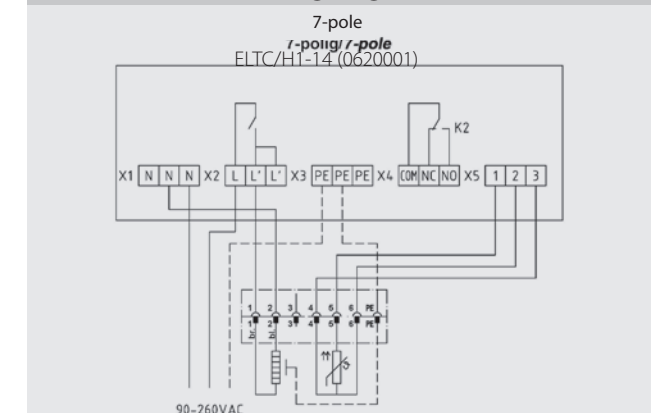
■ Operating voltage	90-260 VAC 50/60 Hz
■ Power consumption	Max. 4 mA, < 5 W
■ Switching capacity relay 1	20 A with hybridrelay*
■ Switching capacity relay 2	8 A, changover contact (alarm)
■ Operating temperature	-25 up to +55 °C
■ Storage temperature	-30 up to +60 °C
■ Display range	-50 up to +400 °C
■ Adjustable range	0 up to +390 °C, optional configuration
■ Sensor connection	Pt100 2-wire, 3-wire, optional configuration
■ Display	LED, red
■ IP rating	IP 65
■ Dimensions (w x h x d)	130 x 130 x 75 mm polycarbonate enclosure

* depends on respective socket

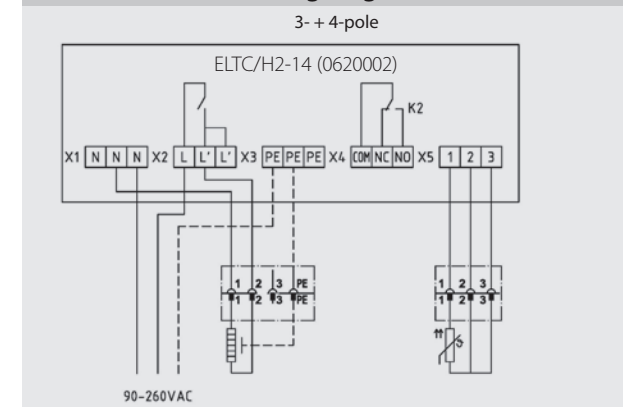
Type ELTC/H-14

Type	Designation	Art. No.
ELTC/H1-14	Socket, 7-pole (10 A), supply cable with Schuko plug	0620001
ELTC/H2-14	Socket, 3+4 pole (16 A), supply cable with Schuko plug	0620002
ELTC/H3-14	Socket, 5-pole (20 A), supply cable without plug	0620003

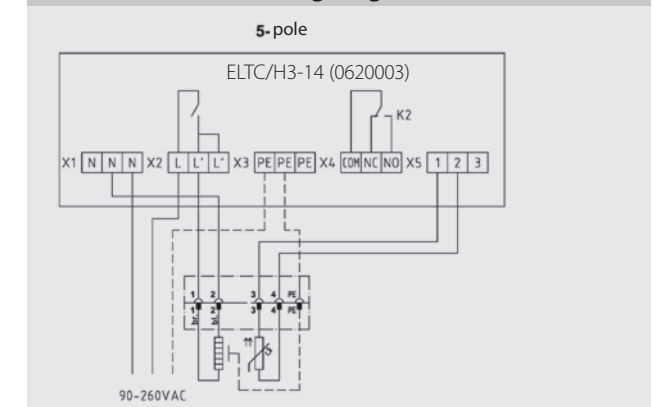
Wiring diagram



Wiring diagram



Wiring diagram



Sensors and display: It is possible to use two types of sensors, either Pt100/2-wire or Pt100/3-wire. Optional display of °C or °F values. In case of use of a Pt100/2-wire unit the actual temperature value can be corrected. Range +/- 10K or +/- 18F, respectively. In case of use of a Pt100/3-wire unit the temperature is automatically corrected. Also suitable for use with ELTF-PTEx 1 and 2 sensor.

Relay configuration: relay 1: regulator, relay 2: alarm / temperature reached

Temperature alarm: If the actual value deviates from the preset limit values, an alarm is given and transmitted via alarm relay K2.

Electronic Temperature Controller

The ELTC-15 is an electronic temperature controller with digital display and rampmode functionality. It supports a 2- or 3-wire Pt100 input or thermocouple type K. After having evaluated the actual and preset values, the appropriate output relays are switched, depending on the configuration.

Cable glands and terminals are provided for the power connection. The unit is supplied in a weather proof plastic enclosure, with a transparent cover.

Advantages:

- LED display operable down to -25 °C
- Programmable 0 °C up to +999 °C
- For switching 20 A resistive load with hybridrelay
- Signaling contact (configurable to operate either as alarm or release contact, potential-free)
- Suitable for Pt100 with 2 or 3 wires and Thermocouples type K
- For connection of up to 2 heating cables (only self-regulating)
- Operating voltage: 90 - 260 VAC / 50/60 Hz
- Rampmode functionality

Applications:

- Industrial applications
- Applications at high temperatures



Type ELTC-15



Technical Information

Data

■ Operating voltage	90-260 VAC 50/60 Hz
■ Power consumption	Max. 4 mA, < 5 W
■ Switching capacity relay 1	20 A with hybridrelay
■ Switching capacity relay 2	8 A, changover contact (alarm)
■ Operating temperature	-25 up to +55 °C
■ Storage temperature	-30 up to +60 °C
■ Display range	-50 up to +999 °C
■ Adjustable range	0 up to +950 °C, optional configuration
■ Sensor connection	Pt100 2-wire, 3-wire, thermocouple type K
■ Display	LED, red
■ IP rating	IP 65
■ Dimensions (w x h x d)	130 x 130 x 75 mm polycarbonate enclosure

Type ELTC-15

Type	Designation	Art. No.
ELTC-15	Standard: set with cable glands, reducer and blind cover	0621500

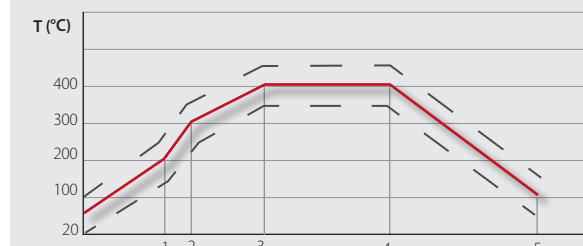
Sensors and display: It is possible to use three types of sensors, either Pt100/2-wire, Pt100/3-wire or thermocouples type K. Optional display of °C or °F values. In case of use of a Pt100/2-wire unit the actual temperature value can be corrected. Range +/- 10K or +/- 18F, respectively. In case of use of a Pt100/3-wire unit the temperature is automatically corrected. Also suitable for use with ELTF-PTEX 1 and 2 sensor.

Relay configuration: relay 1: regulator, relay 2: alarm / temperature reached

Temperature alarm: If the actual value deviates from the preset limit values, an alarm is given and transmitted via alarm relay K2.

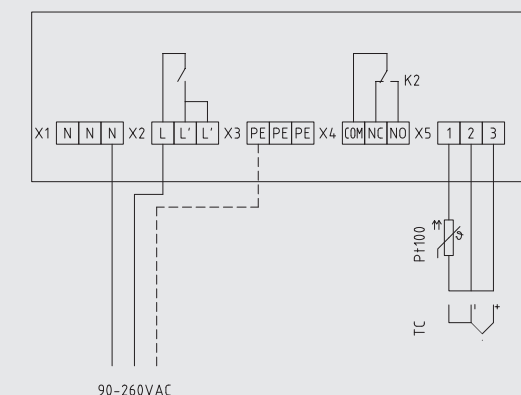
Rampmode functionality:

Specific heating-up and defined cooling with counter heating to avoid rapid cooling of the heated components.



Wiring diagram

ELTC-15



Electronic Temperature Controller

The plug-in ELTC/L-15, specially developed for laboratory applications, is a controller with digital display in a stable desk-top housing. After having evaluated the actual and preset values, the appropriate output relays are switched, depending on the configuration.

On the back, there is a mains lead for direct connection to a socket, a built-in socket for connection of ready-made heating tapes and one built-in socket each for connection of either a Pt100 or a thermocouple type K.

Advantages:

- Direct connection to the socket
- Direct connection of heating tapes, heating jackets or heated hoses
- LED display operable down to -25 °C
- Programmable 0 °C up to +999 °C
- For switching 10 A resistive load with hybridrelay
- Operating voltage: 90 - 260 VAC / 50/60 Hz
- Rampmode functionality

Applications:

- Constant use in laboratories and technology centres
- Applications in the high-temperature field



Type ELTC/L-15



Technical Information

Data

■ Operating voltage	230 V AC +/- 10%
■ Power consumption	Max. 5 W
■ Switching capacity relay 1	10 A contact (heating)
■ Operating temperature	-25 up to +55 °C
■ Storage temperature	-30 up to +60 °C
■ Display range	-50 up to +999 °C
■ Adjustable range	0 up to +950 °C, optional configuration
■ Sensor connection	Pt100 2-wire, 3-wire, thermocouple type K
■ Display	LED, red
■ IP rating	IP 20
■ Dimensions (w x h x d)	125 x 70 x 180 mm

Type ELTC/L-15

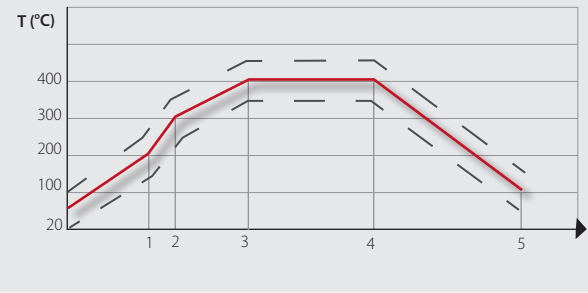
Type	Designation	Art. No.
ELTC-15	Temperature controller up to 999°C, desktop device with rampmode functionality	0621501

Sensors and display: It is possible to use three types of sensors, either Pt100/2-wire, Pt100/3-wire or thermocouples type K. Optional display of °C or °F values. In case of use of a Pt100/2-wire unit the actual temperature value can be corrected. Range +/- 10K or +/-18F, respectively. In case of use of a Pt100/3-wire unit the temperature is automatically corrected. Also suitable for use with ELTF-PTEx 1 and 2 sensor.

Relay configuration: relay 1: regulator

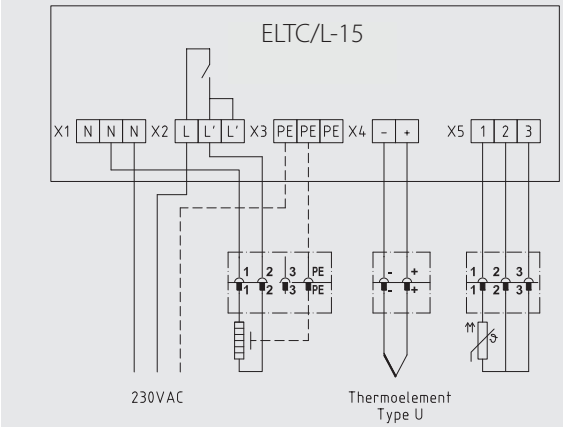
Rampmode functionality:

Specific heating-up and defined cooling with counter heating to avoid rapid cooling of the heated components.



Wiring diagram

3- + 4-pole



Electronic Temperature Controller

The ELTC-21 is an electronic temperature controller with digital display for top-hat rail mounting. The temperature is measured by a Pt100 sensor, processed by the microcontroller and displayed. After having evaluated the actual and preset values, the appropriate output relays are switched, depending on the configuration.

Advantages:

- LED display operable down to -25 °C
- Programmable -50 °C up to +400 °C
- For switching 16 A resistive load
- Alarm contact
- Pt100 with 2 or 3 wires

Applications:

- Industrial applications
- Mechanical, electrical and plumbing (MEP)

Technical Information **Type ELTC-21**

Data	
■ Operating voltage	230 V
■ Power consumption	Max. 4 mA, < 5 W
■ Switching capacity, relay 1	16 A close contact (heating)
■ Switching capacity, relay 2	8 A, changeover contact (alarm)
■ Operating temperature	-25 up to +55 °C
■ Storage temperature	-25 up to +60 °C
■ Temperature range	0 up to +400 °C, optional configuration
■ Sensor connection	Pt100 2-wires, 3-wires, optional configuration
■ Display	LED, red
■ IP rating	IP 20
■ Mounting	Top-hat rail
■ Dimensions [wxhxd in mm]	51.5 x 87.5 x 58.0

Sensors and display: It is possible to use two types of sensors, either Pt100/2-wire or Pt100/3-wire. Optional display of °C or °F values. In case of use of a Pt100/2-wire unit the actual temperature value can be corrected. Range +/- 10K or +/-18F, respectively. In case of use of a Pt100/3-wire unit the temperature is automatically corrected. Also suitable for use with ELTF-PTEx 1 and 2 sensor.

Relay configuration: relay 1: regulator, relay 2: alarm

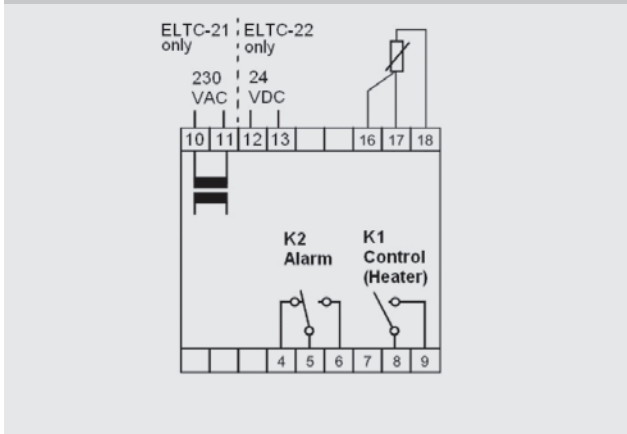
Temperature alarm: If the actual value deviates from the preset limit values, an alarm is given and transmitted via alarm relay K2.



Type ELTC-21



Wiring diagram



Type	Art. No.
ELTC-21	0610093

Electronic

Temperature Controller for 24 VDC

The ELTC-22 is an electronic temperature controller with digital display for standard rail mounting. The temperature is measured by a Pt100 sensor, processed by the microcontroller and displayed. After having evaluated the actual and preset values, the appropriate output relays are switched, depending on the configuration.

Advantages:

- LED display operable down to -25 °C
- Programmable -50 °C up to +400 °C
- For switching 16 A ohm load
- Alarm contact
- Pt100 with 2 or 3 wires

Applications:

- Industrial applications
- Mechanical, electrical and plumbing (MEP)

Technical Information

Type ELTC-22

Data	
■ Operating voltage	24 VDC
■ Power consumption	Max. 4 mA, < 5 W
■ Switching capacity, relay 1	16 A close contact (heating)
■ Switching capacity, relay 2	8 A, changeover contact (alarm)
■ Operating temperature	-25 up to +55 °C
■ Storage temperature	-25 up to +60 °C
■ Temperature range	0 up to +400 °C, optional configuration
■ Sensor connection	Pt100 2-wires, 3-wires, optional configuration
■ Display	LED, red
■ IP rating	IP 20
■ Mounting	Top-hat rail
■ Dimensions [wxhxd in mm]:	51.5 x 87.5 x 58.0

Sensors and display: It is possible to use two types of sensors, either Pt100/2-wire or Pt100/3-wire. Optional display of °C or °F values. In case of use of a Pt100/2-wire unit the actual temperature value can be corrected. Range +/- 10K or +/-18F, respectively. In case of use of a Pt100/3-wire unit the temperature is automatically corrected. Also suitable for use with ELTF-PTE_x 1 and 2 sensor.

Relay configuration: relay 1: regulator, relay 2: alarm

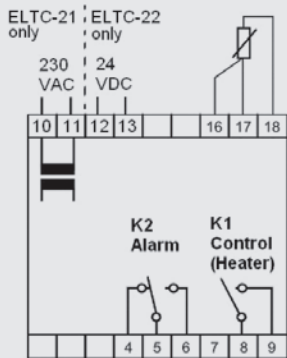
Temperature alarm: If the actual value deviates from the preset limit values, an alarm is given and transmitted via alarm relay K2.



Type ELTC-22



Wiring diagram



Type	Art. No.
ELTC-22	0610094

Micro-processor Operated Temperature Controller

The micro-processor operated ELTC-41 is specially designed for temperature control. The unit works with two temperature-sensors Pt100 or two thermocouples type K input with two individual programmable output re-lays. Current and voltage input and RS485 interface with ModBus protocol available. Frontpanel mounting.

Advantages:

- LED-Display up to -25 °C
- Programmable -50 up to +400 °C
- For switching 16 A resistive load
- Alarm contact
- Pt100 with 2 or 3 wires, thermocouple type K, optional configuration

Applications:

- Industrial Applications
- Mechanical, electrical and plumbing (MEP)
- Heat tracing on pipes, valves and vessels
- Tankcontainer



Type ELTC-41



Technical Information

Type ELTC-41

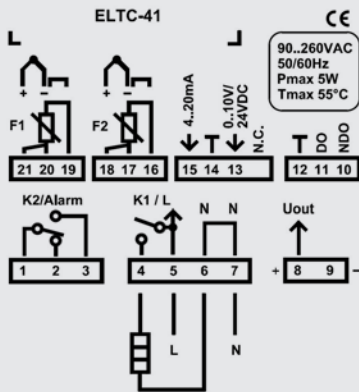
Data	
■ Operating voltage	100..240 V AC, 50/60 Hz, +/-10 %
■ Power consumption	<= 5 W
■ Analog input	1 x power input (4...20 mA), 1 x voltage input (0...10 V)
■ Interface	1 x RS 485 (Mod-bus protocol)
■ Switching capacity, relay 1	16 A close contact (heating)
■ Switching capacity, relay 2	8 A, changeover contact (alarm)
■ Sensor connection	2 x Pt100 2 or 3-wire or 2 x thermocouple type K, optional configuration
■ Temperature range	Pt100 input -60...400 °C, thermocouple -50...999 °C
■ Control range	Pt100 input -50...390 °C, thermocouple -50...950 °C
■ Control mode	2-level controller
■ Hysteresis	+/- 0,5 K, +/- 0,5 % with Pt100, +/- 2 K, +/- 0,5 % with thermocouple Ttype K
■ Operating temperature	-25 up to +55 °C
■ Storage temperature	-25 up to +60 °C
■ Temperature indicator	3 digits
■ Display	LED, red
■ IP rating	IP 54 front
■ Mounting	Frontpanel mounting 70 x 30 cm, installation depth 78 mm, fixing through brackets
■ Front dimensions	75 x 35 mm

Sensors and display: It is possible to use different types of sensors, either Pt100/2-wire, Pt100/3-wire or thermocouples type K. Optional display of °C or °F values. In case of use of a Pt100/2-wire unit the actual temperature value can be corrected. Range +/- 10 K or +/-18 °F, respectively. In case of use of a Pt100/3-wire unit the temperature is automatically corrected. Also suitable for use with ELTF-PTEEx 1 and 2 sensor.

Relay configuration: relay 1: regulator, relay 2: alarm

Temperature alarm: If the actual value deviates from the preset limit values, an alarm is given and transmitted via alarm relay K2.

Wiring diagram



Type	Art. No.
ELTC-41	0620041

Purchased parts package

- 1 controller
- 1 sealing
- 2 mounting-latches
- 2 mating plugs 5mm-spacing, coded
- 5 mating plugs 3,5mm-spacing, coded

Micro-processor Operated Temperature Controller

The micro-processor operated ELTC-42 is specially designed for temperature control, e.g. for tank containers. The unit works with the input of two temperature-sensors Pt100 or two thermocouples type K with two individual programmable output relays. Current and voltage input and RS485 interface with ModBus protocol available. Frontpanel mounting.

Advantages:

- LED-Display up to -25 °C
- Programmable -50 up to +400 °C
- For switching 16 A resistive load
- Alarm contact
- Pt100 with 2 or 3 wires, thermocouple type K, optional configuration

Applications:

- Industrial Applications
- Mechanical, electrical and plumbing (MEP)
- Heat tracing on pipes, valves and vessels
- Tankcontainer



Type ELTC-42



Technical Information

Type ELTC-42

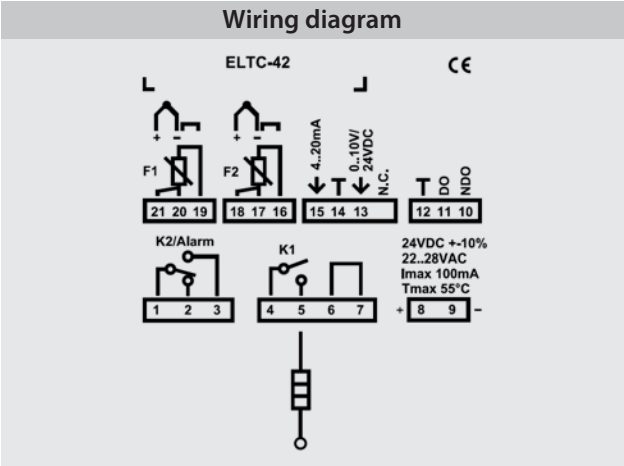
Data	
■ Operating voltage	24 VDC or 22-28 V AC
■ Power consumption	<= 2,4 W
■ Analog input	1 x power input (4...20 mA), 1 x voltage input (0...10 V)
■ Interface	1 x RS 485 (Mod-bus protocol)
■ Switching capacity, relay 1	16 A close contact (heating)
■ Switching capacity, relay 2	8 A, changeover contact (alarm)
■ Sensor connection	2 x Pt100 2 or 3-wire or 2 x thermocouple type K, optional configuration
■ Temperature range	Pt100 input -60...400 °C, thermocouple -50...999 °C
■ Control range	Pt100 input -50...390 °C, thermocouple -50...950 °C
■ Control mode	2-level controller
■ Hysteresis	+/- 0,5 K, +/- 0,5 % with Pt100, +/- 2 K, +/- 0,5 % with thermocouple Ttype K
■ Operating temperature	-25 up to +55 °C
■ Storage temperature	-25 up to +60 °C
■ Temperature indicator	3 digits
■ Display	LED, red
■ IP rating	IP 54 front
■ Mounting	Frontpanel mounting 70 x 30 cm, installation depth 78 mm, fixing through brackets
■ Front dimensions	75 x 35 mm

Sensors and display: It is possible to use different types of sensors, either Pt100/2-wire, Pt100/3-wire or thermocouples type K. Optional display of °C or °F values. In case of use of a Pt100/2-wire unit the actual temperature value can be corrected. Range +/- 10 K or +/-18 °F, respectively. In case of use of a Pt100/3-wire unit the temperature is automatically corrected. Also suitable for use with ELTF-PTEEx 1 and 2 sensor.

Relay configuration: relay 1: regulator, relay 2: alarm

Temperature alarm: If the actual value deviates from the preset limit values, an alarm is given and transmitted via alarm relay K2.

Wiring diagram



Type	Art. No.
ELTC-42	0620042

Purchased parts package

- 1 controller
- 1 sealing
- 2 mounting-latches
- 2 mating plugs 5mm-spacing, coded
- 5 mating plugs 3,5mm-spacing, coded

Water Comfort System

Electronic Power Regulator

This power regulator with timer, for the energy-saving usage of the ELRS-W heating tape, enables reliable Legionella protection. High user friendliness and selectable preset parameters ensure quick and easy installation.

Using the Water Comfort System with the eltherm ELRS-W heating tape and accessories a potable water piping system can be operated without a circulation system. Associated pump, valves and fitting are therefore not necessary any more.. The heating tape is used for temperature maintenance. With electrical heat tracing warm water is provided all the way to the water outlet. This saves water because the warm water is readily available when opening the faucet. This system requires less room because the heating tape is placed directly on the warm water pipe. So it is less expensive to install and requires no maintenance. With electrical heat tracing you can save up to 65 % of your energy costs compared to a circulation system.*

The wide range of operating voltage inputs and the additional possibility to operate at 24 VDC make the ELTC-W outstanding. A further advantage is given by the additional heating circuit for frost protection.

* Exemplary system: 1/2" piping, heated length 10m, 15 mm thermal insulation, power consumption of pump 75 W, temperature maintenance 45°C, ambient temperature 15°C.



Type ELTC-W



Technical Information

Data

■ Operating voltage range Input A	100 .. 253 VAC, 50 Hz
■ Operating voltage range Input B	24 VDC, +/- 5 %
■ Power consumption, max.	<= 6,5 VA @ 253 VAC
■ Power consumption, stand-by	<= 3,5 VA @ 230 VAC

Heating tape

■ Nominal current	20 A
■ Current in softstart	Max. 50 A

Temperature

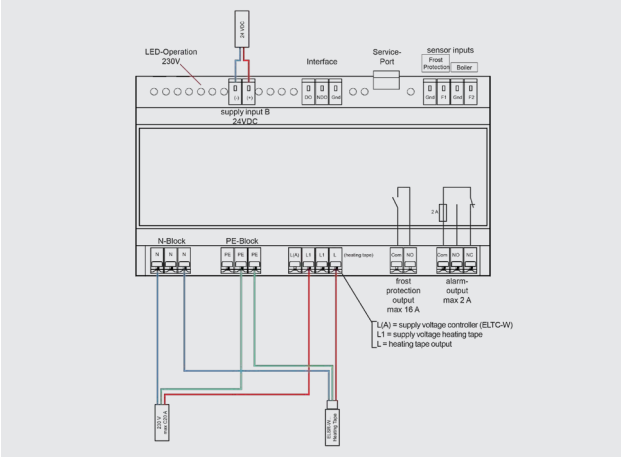
■ Temperature inputs	2 x NTC sensor
■ Measuring range	- 20 .. 60 °C
■ Interface	RS485

Type ELTC-W

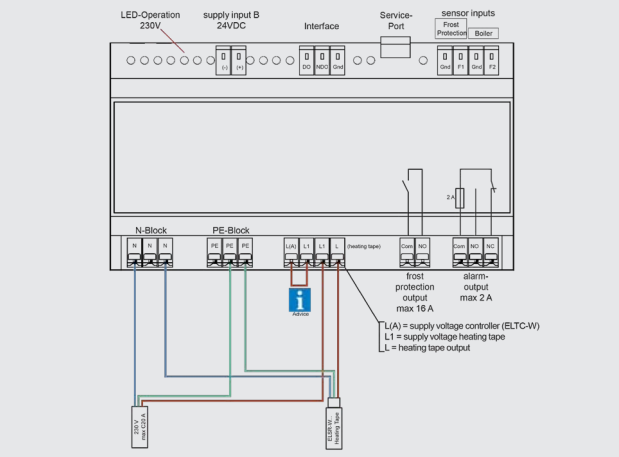
Frost Protection Output

■ Nominal current	16 A
■ Operating temperature range	- 10 .. 40 °C
■ Storage temperature range	- 20 .. 65 °C
■ Admissible humidity	Max. 80 % (non-condensing)
■ IP rating	IP 20
■ Enclosure (l x w x h)	153 x 93 x 59 mm
■ Assembly type	35 mm, standard rail

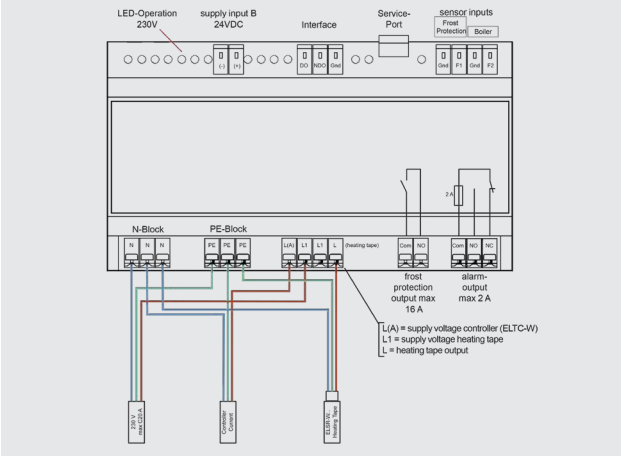
Wiring diagram:
Separate 24 VDC supply



Wiring diagram: Heater and temperature controller
connected on same feeding circuit



Wiring diagram: Separate feeders for controller device
and heating circuit



Type	Designation	Art. No.
ELTC-W	Water-Comfort-System	0630000

Electronic Ice and Snow Detector

For roof and gutter heating

The ice and snow detector protects guttering and roof surfaces against winter damage caused by heavy snow loads and ice formation. Formation of ice is not possible because water can drain off.

The use of an ISD-1 controller is recommended for economic reasons. An energy-saving method of operation is possible as a result of detecting both moisture and temperature, the heating is only switched if the ambient temperature is slightly above the frost limit and moist air is present. The micro-processor controlled ISD-1 features an illuminated LCD-display to set and view its values for temperature, moisture and expired heating period.

Advantages:

- Energy-saving
- Safe and economic use
- Simple operation

Applications:

- Frost protection for guttering and downpipes
- Prevention of frost damages on structural elements and buildings as well as snow loads on roofs



Type ISD-1



Technical Information

Data

■ Power supply	230 V AC 50/60 Hz
■ Power consumption	3 VA (max.)
■ Ambient temperature	-10 up to +50 °C
■ Storage temperature	-40 °up to +80 °C
■ Output 1	Closer relay,, 250 VAC/30 VDC, 8A cos φ =1
■ Output 2	Closer relay,, 250 VAC/30 VDC, 8A cos φ =1
■ Output probe heating	Electronic closer 250 VAC/30VDC, 8A cos φ =1
■ Digital display	Illuminated, 2-lines, 16-digits
■ Probe	4 probe entries (parallel)
■ Temperature setting range	0 up to 9 °C
■ Accuracy	+/- 1K
■ Humidity setting range	OFF, 0...9
■ Adjustable post-heating time OFF	10...240 minutes
■ Language setting	German, English
■ Connections	Conductor cross section 0.5...2.5 mm²
■ Type of protection	II
■ IP rating	IP20
■ Assembly (ISD 1)	35 mm, standard rail size ratio 6TE
■ Dimensions	105 x 86 x 57 mm
■ Weight	Approx. 400 g

Typ ISD 1.1

■ Assembly (ISD 1.1)	Wall-mounted
■ IP rating	IP 65
■ Output 1	Relay NO, 250 VAC, 25A cos φ =1
■ Probe	2 probe entries (parallel)
■ Dimensions	120 x 120 x 90 mm
■ Weight	Approx. 600 g

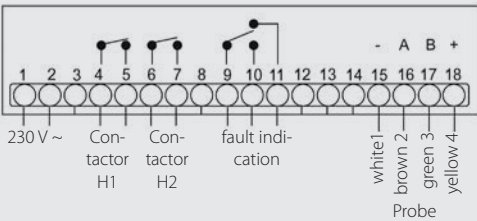
Type ISD-1 / ISD-1.1

Probe

to measure temperature and humidity	
■ Connecting cable	4 x 0.34 mm², L: 5,0 m
■ Power supply	6 - 12 VDC (max.)
■ Power consumption	0.2 VA (max.)
■ Ambient temperature	-40 up to +85 °C
■ Storage temperature	-40 up to +85 °C
■ Accuracy	+/- 1K
■ Weight	Approx. 20 g
■ Dimensions	Ø 12 mm, L: 70 mm
■ Type of protection	II
■ IP rating	IP 68
■ Assembly	Installation inside gutters

Type	Designation	Art. No.
ISD-1	Ice and snow detector for roof and guttering heaters, standard rail installation	0620623
ISD 1.1	Ice and snow detector for roof and guttering heaters, wall-mounted	0620624
ISD-STH	Probe for temperature and humidity measurement	TBC0001

Wiring diagram



Electronic micro-processor controller, with illuminated LCD text display to set and view its values for temperature, moisture and expired heating period. Potential-free relay outputs 6A, 230 V AC/DC for heating (close) and controller fault for power failure and sensor break (open). For installation in control panel with 35 mm standard rail, normal cut-out 45x108 mm.

Electronic Ice and Snow Detector

For open space heaters

The ice and snow detector for open space heaters is used to keep parking garage entrances and exits, stairs and other open space applications free of ice. The combination of a temperature probe and a moisture probe makes sure that heating only starts when it is required. So a waste of energy by unnecessary heating can be avoided.

The micro-processor controlled ISD-2 features an illuminated LCD-display to set and view its values for temperature, moisture and expired heating period.

Advantages:

- Energy-saving
- Simple operation
- Safe and economic use
- Short response time

Applications:

- Open spaces (footpaths, driveways, exits, etc.)
- Parking garage entrances and exits
- Garages
- Stairs
- Bridges
- Loading ramps
- Helicopter landing sites



Type ISD-2



Technical Information

Type ISD-2

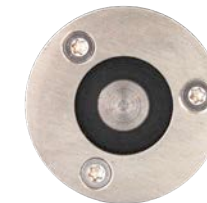
Data

■ Power supply	230 V AC 50/60 Hz
■ Power consumption	3 VA (max.)
■ Ambient temperature	-10 up to +50 °C
■ Storage temperature	-40 up to +80 °C
■ Output 1	Closer relay,, 250 VAC/30 VDC, 8A cos φ =1
■ Output 2	Closer relay,, 250 VAC/30 VDC, 8A cos φ =1
■ Output probe heating	Relay (changeover) 250 VAC/30 VDC, 8A cos φ =1
■ Digital display	Illuminated, 2-lines, 16-digits
■ Probe	Probe combination
■ Temperature setting range	0 up to 9 °C
■ Accuracy	+/- 1K
■ Humidity setting range	OFF, 1...8
■ Language setting	German, English
■ Adjustable post-heating time OFF	10...240 minutes
■ Connections	Conductor cross section 0.5...2.5 mm²
■ Type of protection	II
■ IP rating	IP 20
■ Assembly (ISD 1)	35 mm, standard rail size ratio 6TE
■ Dimensions	105 x 86 x 57 mm
■ Weight	Approx. 400 g

Probe combination

to measure temperature and humidity

■ Connecting cable	4x0.34 mm², L: 20 m
■ Ambient temperature	-40 up to +60 °C
■ Storage temperature	-40 up to +85 °C
■ Accuracy	+/- 1K
■ Weight	Ca. 250 g
■ Dimensions	d=60 mm, h=28 mm
■ Type of protection	III
■ IP rating	IP 68
■ Assembly	Open space installation
■ Bus system	max. 4 sensors on RS485



Probe combination

Type	Designation	Art. No.
ISD-2	Ice and snow detector for for open space heaters, standard rail installation	0620625
ISD-DEC	Probe combination	TBA000202

Electronic micro-processor controller, with illuminated LCD text display to set and view its values for temperature, moisture and expired heating period.

Potential-free relay outputs 6A, 230 V AC/DC for heating (close) and controller fault for power failure and sensor break (open).

For installation in control panel with 35 mm standard rail, normal cut-out 45x108 mm.

Heating Circuit Monitoring Device

Heating circuit monitoring device ELHC/ is used to monitor self-regulating heating cables. Due to the capacitive load of the terminal equipment there is a phase displacement between the heating current and the supply voltage which is measured by the monitoring unit. The operating status is indicated by a potential-free change-over contact. In addition, the failure of the heating circuit voltage and supply voltage is detected. In case of a disconnection of the heating cable the phase displacement disappears, releasing a fault message via the potential-free change-over contact. Simultaneously, the fault is indicated by a red LED (if the operating voltage is available).

ELHC/ 4 is used to monitor resistance heating lines. It monitors the resistance of a single and double phase heating circuit, respectively, with regard to disconnection in the switched-on mode. Moreover, a failure of the heating circuit and control voltages is detected. A potential-free change-over contact indicates the operating status.

Advantages:

- Economic
- Direct connection to heating cable

Applications:

- Industrial applications
- Mechanical, electrical and plumbing (MEP)



Type ELHC/2, ELHC/4



Technical Information

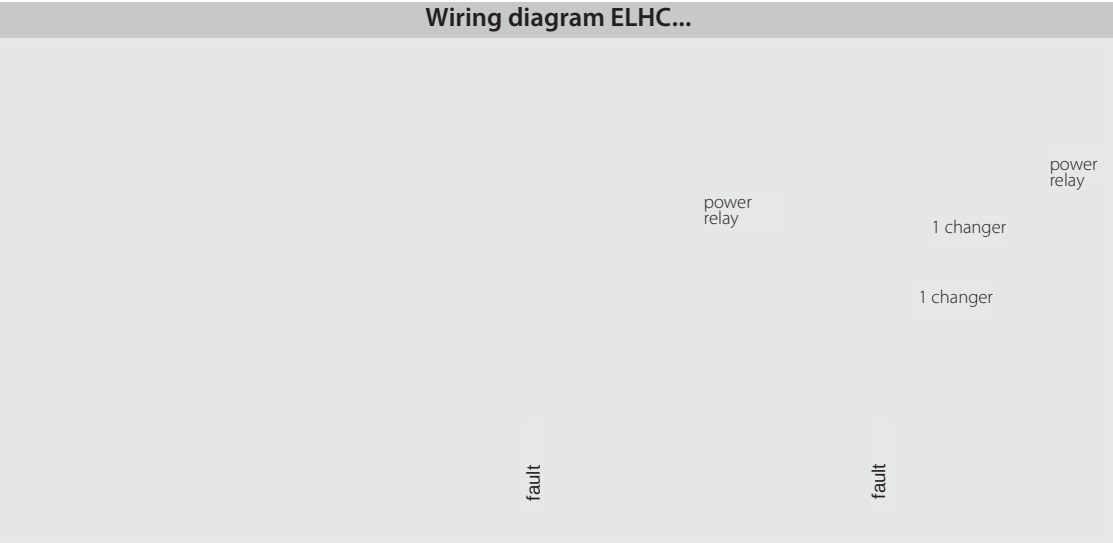
Data Type ELHC/2		Data Type ELHC/4	
■ Operating voltage	230 V/50 Hz	■ Operating voltage	230 V/50 Hz
■ Heating current	Min. 0,15 A, max. 16 A	■ Heating circuit voltage	170-500 V AC
■ Output	1 change-over contact	■ Heating current	Min. 0,15 A, max. 16 A with shunt max. 25 A
■ Contact switching capacity	250 VAC/2 A	■ Output	1 change-over contact
■ Enclosure	For standard rail installation (ELHC 2.1); wall housing made of plastic material, 130 x 130 x 75 mm (ELHC 2.2)	■ Contact switching capacity	250 VAC/6 A
■ Dimensions	45 x 75 x 120 mm (w x h x d)	■ Enclosure	For standard rail installation
■ IP rating	IP 50	■ Dimensions	45 x 75 x 120 mm (w x h x d)
■ Weight	250 g	■ IP rating	IP 30
■ Ambient temp., admissible	0 up to +50 °C	■ Weight	500 g
		■ Ambient temp., admissible	-20 up to +60 °C

Type	Designation	Art. No.
ELHC/2.1	Heating circuit monitoring relay	0641001
ELHC/2.2	Terminal unit	0641002
ELHC/4	Heating circuit monitoring relay	0641013

The heating circuit monitor ELHC/2 for monitoring self-regulating heating cables features a monitoring relay ELHC/2.1 and the terminal unit ELHC/2.2. Since the unit is linked to the supply voltage of the heating cable, the heating cable can only be monitored during operation. The heating being switched off, the contact is in the 'fault' status.

The heating circuit monitor ELHC/4 is used to monitor resistance heating cables.

Wiring diagram ELHC...



Control Cabinets

Custom Designs

Based on our long-term experience, combined with developed standard components and modules, eltherm designs, assembles and delivers complete bespoke control cabinets for every range of electrical heat tracing. Existing customer systems are always considered to avoid such issues as holding additional spare parts, as well as special customer requirements for accuracy, safety and usability.

Advantages:

- Tailored to customised requirements
- User-friendly
- From simple applications to complex switchboard plants

Applications:

- Antenna heating systems
- General industrial applications
- Mechanical, electrical and plumbing (MEP)

Custom solutions: eltherm control cabinets

eltherm designs, manufactures and delivers customised and user-friendly control cabinets, from simple applications to complex switchboard plant for heat tracing projects. Examples included:

- Heat tracing systems for rail heating
- Heating of a white sugar silo
- BPA-Plant heating
- Antenna heating

Also available: control cabinets with pressure-capsulated enclosure for **Ex- areas**.



Control cabinets



Heating Circuit Distributors for ELSR Heating Cables

Control cabinets ELHKV are designed for the supply and control of heat tracing systems with self-regulating heating cables. For each single heating circuit breakers, leakage protection switches, contactors, control lamps, main switches, fault indicating relays for central control stations are fully installed and wired.

The standard designs ELHKV-ST... allows a switching of three heating groups via an external thermostat. In case of ELHKV-E1 each heating circuit is separately supplied and switched via an external thermostat.

Advantages:

- Integrated fuse

Applications:

- Industrial applications
- Mechanical, electrical and plumbing (MEP)

Technical details		Type ELHKV
Data		
■ Wall enclosure	IP rating IP 54 / IP 65	
■ Power supply	400/230 VAC 3-phase current with neutral and earth	

Type	Designation	Dimensions (w x h x d)	Art. No.
ELHKV-E1-1	complete control cabinet for 1 heating circuit	295 x 458 x 129	0640001
ELHKV-E1-2	complete control cabinet for 2 heating circuits	295 x 583 x 129	0640002
ELHKV-ST-3	complete control cabinet for a single group of 3	295 x 458 x 129	0640003
ELHKV-ST-6	complete control cabinet for two groups of 3	295 x 583 x 129	0640006
ELHKV-ST-9	complete control cabinet for three groups of 3	295 x 708 x 129	0640009
ELHKV-ST-12	complete control cabinet for four groups of 3	590 x 583 x 129	0640012

* also available in sheet steel cabinets

Type ELHKV





Ordering Key

Ordering key for Temperature Controller Modutronic			
Order n°	Customer	Serial n°	Software status

for wall mounting:

- ELT-GP1.1 (1xM20; 2xM16; 1xM25; 1xM12)
- ELT-GP1.2 (3xM20; 1xM16; 1xM12)

Type ELT-GP1-1 is mainly intended for heating cables with cold tails on both sides.

Operating range:

1

0–100°C

2

0–200°C

3

0–400°C

4

0–800°C

Heating exit:

1

with 1 load relay

2

with 2 load relay

Signal output options:

0

without signal relay

1

with relay K3 „general fault“

2

with relay K4 „excess temperature“

3

with relay K3 and K4

Sensor type:

1

sensor Pt100 2/4-wire

2

sensor Pt100 3-wire

3

thermocouple Type J

4

thermocouple Type K

Controller operation:

1

2-limit

2

2-limit-PID

3

PID with PWM ¹⁾

4

PID with continuity exit²⁾

5

limiter

Option 1 digital indication:

0

without Indication

1

with ELT-ONA

Option 2 analogue output:

0

without analogue output

1

with ELT-OAA 0...20 mA / 0...10 V

2

with ELT-OAA 4...20 mA / 2...10 V

Value setting:

0

internal potentiometer

1

external value setting 0..10V

2

bus interface (ELT-ANZ)

1) Connection of a SSR to the terminals 15 + 16
2) In combination with option ELT-OAA

Modutronic Modular System

Accurate temperature control is vital for complex production plants and processes. To meet the high demands of industry, we developed the **Modutronic** product range which guarantees the constant process temperatures required in many production processes.

Modutronic is a modular system designed for electronic temperature control. It has been deployed successfully in many areas of industry and is suitable for use up to 800 °C. Applications range from frost protection for impulse, measuring and analysis lines as well as to temperature maintenance in tanks and vessels. This is essential for many transport and production processes.

As partner of the industry we have committed ourselves to the specific problems of heating and temperature control. From the initial design and manufacturing to delivery and installation –eltherm is your partner. Our solutions are economic and efficient. Our program delivers high quality controllers, fast commissioning, rugged enclosure material and an optimized cost-performance ratio.

Modutronic provides one or two load relays and two signal relays for the alarm- and limit-value indication. The temperature set point can be changed by a potentiometer (external analogue signal) or an integrated serial interface (electronic display and control unit ELT-ANZ). Coloured LED's indicate the operating status. Add on capabilities are possible at any time if required. Thus Modutronic can be adapted to suit all measurement and control demands.

Modutronic is so flexible that, thanks to the modular design, versatile variants of application-specific equipment can be created easily & economically. The high-precision control input with integrated PID control algorithm together with eltherm's heat-tracing systems guarantee exact temperature maintenance. The serial interface allows customer-specific configuration of the controller.

The Modutronic modular system includes the electronic display and control unit ELT-ANZ as well as the series controllers ELT-GP1-3. Available for wall mounting (ELT-GP1+3) and standard rail installation (ELT-GP2).

Electronic Display and Control Unit

The electronic display and control unit ELT-ANZ of the Modutronic product range is used for the remote control, monitoring and operation of all the individual GP-type devices in a control system.

Advantages:

- Individual use thanks to modular design
- Easy to operate up to 24 connected controllers
- Can be connected to serial interface via superposed control station

Applications:

- Refineries
- Chemical & petrochemical industries
- Food processing industry
- Pharmaceutical industry
- Plastics industry
- Wastewater treatment plants

Technical Information

Type ELT-ANZ

Data	
■ Display	Illuminated LC-display, 2 x 16 characters
■ Operating	Menu navigation with menu keys
■ Bus length, max	100 m
■ Number of controllers, max.	24
■ Switching capacity	2 A/230 V, change-over contact for general fault
■ Cross section for connection	Max. 2.5 mm² (mains); max. 1.5 mm² (signals) plug-in connectors
■ Power consumption	Max. 5 VA
■ Operating voltage	230 V 50/60 Hz +/-10%
■ IP rating	IP 20, front panel IP 54
■ Dimensions (w x h x d)	96 x 96 x 119 mm
■ Scope of supply	Pin connector, bus interface, RS 232-interface, potential-free signal relay for general fault
■ Ambient temperature	0 up to 40 °C



Type ELT-ANZ



Type	Designation	Display Language	Art. No.
ELT-ANZ	For ELT-GP controller	German	0611010
ELT-ANZ	For ELT-GP controller	English	0611042

Electronic Temperature Controller

The modular Modutronic system performs up to temperatures of 800 °C. Applications range from frost protection for impulse, measuring and analysis lines to temperature maintenance in tanks and vessels. This is essential for transport and production processes.

Advantages:

- Individual use thanks to modular design
- Accurate temperature maintenance
- Customized configuration possible

Applications:

- Refineries
- Chemical & petrochemical industries
- Food processing industry
- Pharmaceutical industry
- Plastics industry
- Wastewater treatment plants



Type ELT-GP1



Technical Information

Data	
■ Nominal voltage	230 V, 50 Hz
■ Power consumption	Max. 5 VA
■ Controller temp. range	0 up to 100 °C 0 up to 200 °C 0 up to 400 °C 0 up to 800 °C
■ Switching capacity	16 A
■ Accuracy with Pt100	+/- (0.5°K+0.5 % v. M.)
■ With Thermocouple Type K	+/- (1.0°K+1.0 % v. M.)
■ With Thermocouple Type J	+/- (1.5°K+1.5 % v. M.)
■ Resolution (internal)	0.1 °C (Pt100) 0.4 °C (Thermocouple)
■ Measurement current (Pt100)	Approx. 0.75 mA
■ Enclosure	Polycarbonate enclosure with transparent cover and cable gland
■ IP rating	IP 65
■ Ambient conditions	0 up to 40 °C max. 90 % rel. humidity (non-condensing)
■ Dimensions	180 x 130 x 75 mm (w x h x d)

Type ELT-GP1

Optional Extensions	
for ELT-GP1, -GP2 and -GP3	
■ ELT-OAA	Analogue output for ELT-GP-1/2/3 0–20 mA / 0–10 V 4–20 mA / 2–10 V
■ ELT-OMR-1	Signal relay for ELT-GP-1,2 and 3
■ ELT-OLR 1	Second load relay (230 V/max. 16A) for ELT-GP1+3

Type	Designation	Art. No.
ELT-GP1.1	LED-Display, 230 V, temperature controller for ELK... (connection on both sides), wall-mounted 1 x M20, 2 x M16, 1 x M25, 1 x M12	0611011
ELT-GP1.1	115 V, temperature controller for ELK... (connection on both sides), wall-mounted 1 x M20, 2 x M16, 1 x M25, 1 x M12	0611014
ELT-GP1.2	LED-Display, 230 V, temperature controller for ELSR... (connection on one side), wall-mounted 3 x M20, 1 x M16, 1 x M12	0611017
ELT-GP1.2	230 V, temperature controller for ELSR... (connection on one side), wall-mounted 3 x M20, 1 x M16, 1 x M12	0611020
ELT-GP1-H16	LED-Display, 230 V, with 7-pole flange socket for heating hoses and jackets, wall-mounted 3 x M20, 1 x M16, 1 x M12	0611023

Type	Designation	Art. No.
ELT-OAA	4–20 mA / 2–10 V	0611009
ELT-OAA	0–20 mA / 0–10 V	0611001
ELT-OMR-1	2 x signal relay K3 and K4	0611004
ELT-OLR 1	Second load relay	0611002

Special designs available – just ask us!

Electronic Temperature Controller and Limiter Unit

The modular Modutronic system performs up to temperatures of 800 °C. Applications range from frost protection for impulse, measuring and analysis lines as well as to temperature maintenance in tanks and vessels. This is essential for transport and production processes.

Advantages:

- Individual use thanks to modular design
- Accurate temperature maintenance
- Customized configuration possible

Applications:

- Refineries
- Chemical & petrochemical industries
- Food processing industry
- Pharmaceutical industry
- Plastics industry
- Wastewater treatment plants



Type ELT-GP3



Technical Information

Data

■ Nominal voltage	230 V, 50 Hz
■ Power consumption	Max. 5 VA
■ Controller temp. range	0 up to 400 °C
■ Switching capacity	16 A
■ Accuracy with Pt100	+/- (0.5°K+0.5 % v. M.)
■ With Thermocouple Type K	+/- (1.0°K+1.0 % v. M.)
■ With Thermocouple Type J	+/- (1.5°K+1.5 % v. M.)
■ Resolution (internal)	0.1 °C (Pt100) 0.4 °C (Thermocouple)
■ Measurement current (Pt100)	Approx. 0.75 mA
■ Enclosure	Polycarbonate enclosure with transparent cover and cable gland
■ IP rating	IP 65
■ Ambient conditions	0 up to 40 °C
■ Dimensions	213 x 185 x 118 mm (w x h x d)
■ Connections	30 cage pull-terminal screws, 2.5 mm² each
■ Cable entrance	2 x M20; 3 x M16; 2 x M12; loose items

Type ELT-GP3

Optional Extensions

for ELT-GP1, -GP2 and -GP3

■ ELT-OAA	Analogue output for ELT-GP-1/2/3 0–20 mA / 0–10 V 4–20 mA / 2–10 V
■ ELT-OMR-1	Signal relay for ELT-GP-1,2 and 3
■ ELT-OLR 1	Second load relay (230 V/max. 16A) for ELT-GP1+3

Type	Designation	Art. No.
ELT-GP3	LED-Display, 230 V, controller/limiter combination Modutronic wall-mounted	0611041

Type	Designation	Art. No.
ELT-OAA	4–20 mA / 2–10 V	0611009
ELT-OAA	0–20 mA / 0–10 V	0611001
ELT-OMR-1	2 x signal relay K3 and K4	0611004
ELT-OLR 1	Second Load relay	0611002

Special designs available – just ask us!



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