

ESTM/ESTM-L

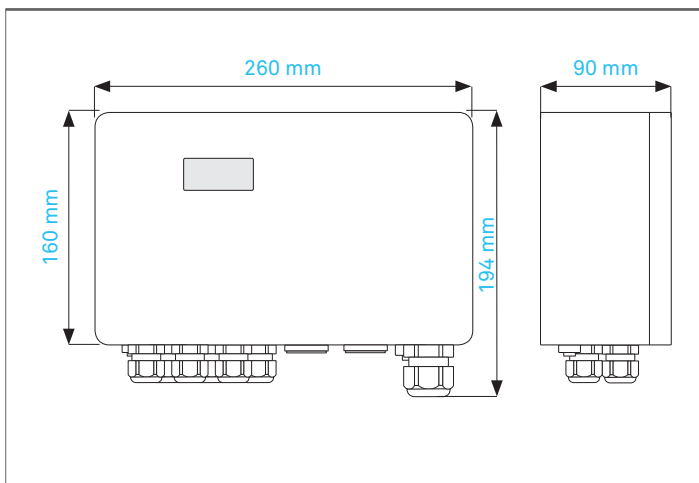
Electronic Supervision and Controller device with optional SIL 2 Limiter



- Switching capacity up to 30 A
- Predictive maintenance
- T_a -55 °C to +55 °C

This new local control and monitoring solution from BARTEC is equipped with a Bluetooth interface for configuration and monitoring. It can be connected to a DCS via Modbus. An in-built SIL 2 limiter can be optionally added. Thanks to its rugged design the ESTM/ESTM-L unit can be used anywhere in the world in the broad temperature range from -55 °C to +55 °C.

Dimensions (mm)



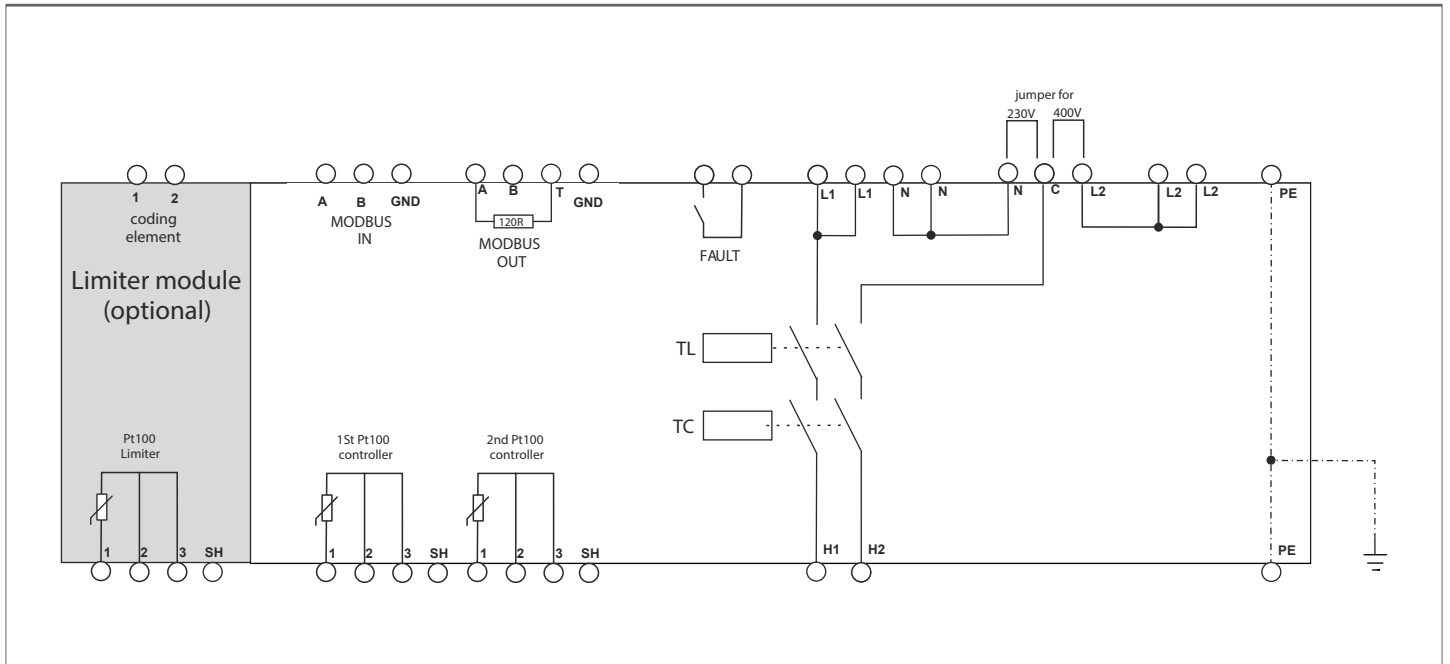
Explosion protection

Marking ATEX	Ⓜ II 2G Ex eb mb [ib] [60079-30-1] IIC T6... T5 Gb Ⓜ II 2D Ex tb [ib] [60079-30-1] IIIC T80 °C Db
Certification	DEKRA 18 ATEX 0020 X
Marking IECEx	Ex eb mb [ib] [60079-30-1] IIC T6... T5 Gb Ex tb [ib] [60079-30-1] IIIC T80 °C Db
Certification	IECEx DEK 18.0015 X
Marking UKCA	Ⓜ II 2G Ex eb mb [ib] [60079-30-1] IIC T6... T5 Gb Ⓜ II 2D Ex tb [ib] [60079-30-1] IIIC T80 °C Db
Certification	CML 21UKEX3985X
Functional safety	SIL2

Technical data

Controller characteristics	Two-point (ON/OFF)
Sensor input	Pt100 three wire, intrinsically safe
Supply voltage	230 V ±10 %, 50 to 60 Hz, 15 VA
Protection class	IP 65 according to ATEX/IECEx
Measuring range	-70 °C to +500 °C in 1 K increments
Limiter temperature range	Setup by electronic coding elements standard setup T3 (others on request)
Operating temperature range T_a	-55 °C to +55 °C
Storage temperature	-60 °C to +60 °C
Units	°C /°F
Load capacity	230 V/400 V up to 30 A
Alarm contact switching capacity	230 V, 2 A
Dimensions (L x W x D)	Enclosure 260 mm x 160 mm x 90 mm
Weight	4.8 kg
Display	7-segment display, 3 digits
Display range	-70 °C to +500 °C (-94 °F to +932 °F)
4-LED status display	Ready for operation, Communication (BUS/Bluetooth), Heating (ON/OFF status), Fault (limiter alarm/fault indicator)
Setpoint steps controller	1 K
Interface	Bluetooth: Class 1 Modbus: RTU
Application range	Zone 1/21, Zone 2/22, industrial range

Circuit diagram



Structure

All electronic components are housed in a glassfiber-reinforced polyester enclosure and sealed with a compound. Cables are connected via spring terminals. Pt100 temperature sensors are operated intrinsically safe. The operational parameters can be monitored via LEDs and a 7-segment display located on the front lid, or by using a mobile device like a tablet or smartphone, supporting Bluetooth, with a pre-installed software. Self-limiting heating tapes can be connected directly. Constant wattage cables are connected via cold leads.

ESTM function

Up to 2 Pt100 3-wire temperature sensors can be connected to the controller. Measured values are appearing on the 7-segment display. The device status can be monitored via four LEDs on a front panel. The unit is designed as an on/off controller. Apart from the Bluetooth interface data to DCS can be transferred via MODBUS interface. A remote shutdown function (steam cleaning function) has been implemented to facilitate pipeline maintenance.

ESTM-L limiter option

Optionally, the controller can be supplied with a pre installed SIL2 limiter. The limiter is developed for specific trace heating applications and certified to EN 60079-30-1 and IEC/IEE 60079-30-1.

Current measurement / Automatic Heater Check

Important parameters for preventive maintenance are leakage and load currents measurement. This information can be used to determine the condition of the trace heating system. If the heater is not in use for a longer period of time, the ESTM/ESTM-L can be activated at adjustable cycles. The measured current can be used to evaluate operational reliability.

Terminals

Spring-type terminals

Connection	Clamping range
Voltage supply	min. 0.8 mm ² to 16 mm ²
RS485, 2 x 3 fault contact Pt100, 3 x 3, 3 x 1 PE	min. 0.2 mm ² to 1.5 mm ²
Heating circuit/load	min. 0.8 mm ² to 16 mm ²
PE	min. 0.8 mm ² to 16 mm ²
Local earth	6 mm ²

Entries

1 x M25 gland Ø 12 - 17 mm; power IN
2 x M20 one rain plug (1st heater entry) one stopping plug (2nd heater entry)
3 x M16 digital communication IN/OUT and alarm (all with stopping plugs)
3 x M16 Temperature sensor(s)
TC + TL: two glands Ø 5 - 8 mm one stopping plug
TC: one gland Ø 5 - 8 mm 2 stopping plugs

Trace heating circuit or resistive heater, connected with power cable

Ambient temperature (°C)	U _{load} (V AC)	I _{max. load} (A)	T-Class	Maximum surface temperature "T"
-55 °C to +45 °C	230/400	27	T6	+80 °C
		30/25	T5	
-55 °C to +55 °C		22	T5	

Constant watt trace heating circuit, connected with cold lead

Cold lead (mm ²)	Ambient temperature (°C)	U _{load} (V AC)	I _{max. load} (A)	T-Class	Maximum surface temperature "T"
2.5	-55 °C to +45 °C	230/400	22	T6	+80 °C
			25		
6			30/25	T5	
2.5	-55 °C to +55 °C		25		

Self limiting trace heating circuit, connected directly in the enclosure of ESTM

	Ambient temperature (°C)	U _{load} (V AC)	Max. load	T-Class	Maximum surface temperature "T"
PSB	-55 °C to +55 °C	230			The T-classes and requirements of the separately certified BARTEC trace heating systems shall be observed in accordance with the system design details and installation instructions. The maximum trace heating circuit length and the max circuit breaker (max. load) shall be observed.
MSB					
HSB					

Supplementary products

Description	Order no.
Three wire Pt100 to 200 °C	03-9040-0006
Three wire Pt100 to 400 °C	03-9040-0016

Ordering information

Description	Order no.
ESTM	17-88C1-F22H 1R10
ESTM-L*	17-88C1-V22H 1R10

* T3 Coding elements included in the scope of delivery

Coding element for ESTM-L

Type	Description	SP +/-2K
17-88CZ-0001	T1 coding element for ESTM-L	+437°C
17-88CZ-0002	T2 coding element for ESTM-L	+287°C
17-88CZ-0003	T3 coding element for ESTM-L	+193°C
17-88CZ-0004	T4 coding element for ESTM-L	+127°C
17-88CZ-0005	T5 coding element for ESTM-L	+92°C
17-88CZ-0006	T6 coding element for ESTM-L	+77°C

Further coding elements available upon request.

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