

Electrical Heat Traced Tubing

TET Series

Introduction

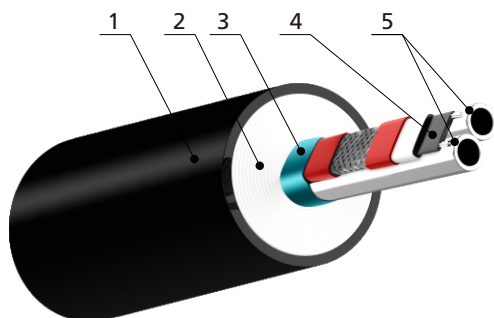
TET Series Electrical Heat Traced Tubing is a prefabricated bundled system that integrates an electric heating cable with one or more process tubes. It maintains the desired media temperature during transport using electric power, making it ideal for applications such as temperature maintenance and viscosity control.



Features

- ⦿ Materials: 316/316L SS or copper process tube with PVC or TPU outer jacket
- ⦿ Process Tube O.D.: 6~12 mm, 1/4" ~1/2"
- ⦿ Available in low, medium, or high temperature heating cable types, capable of maintaining temperature up to 446 °F (230 °C)
- ⦿ One or two process tubes available as standard
- ⦿ Raychem® heating cables and electrical accessories

Standard Materials of Construction



Item	Component	Material
1	Outer Jacket	PVC or TPU
2	Thermal Insulation	Fibre Glass
3	Wrap	Aluminum Foil
4	Heating Cable	-
5	Process Tube	316/316L SS or Copper

Material Specification

Process Tube

The process tube is used for the transport of process media and for withstanding the pressure of that media. For lengths over 6 meters, coiled tubing is used by default; for lengths of 6 meters or less, straight tubing is used by default. 6D series tube fittings are used to connect process tubes.

UNS	Grade	Standard ASTM	FITOK Designator	Composition %					Mechanical Properties			
				C	Cr	Ni	Mo	Cu	Yield Strength MPa	Tensile Strength MPa	Elongation %	Hardness HRB
S31600/ S31603	316/ 316L SS	A269	SS	≤0.035 ^①	16-18	10-14	2.0-3.0	-	≥205	≥515	≥35	≤80
C12200	-	B75	CU	-	-	-	-	99.9	≥62	≥205	-	-

Note: ① The carbon content of tubing with outside diameter < 1/2" or wall thickness < 0.049" is allowed be ≤ 0.04%.
Other materials are available upon request. Contact FITOK for details.

Outer Jacket

The outer jacket provides effective corrosion resistance and mechanical protection. PVC is an economical choice that still offers reliable protection. TPU is suitable for applications requiring lower temperature flexibility and higher mechanical strength.

Outer Jacket Material	PVC	TPU
Min. Tensile Strength	16.5 MPa	24.9 MPa
Max. Elongation	250%	660%
Shore Hardness	85 HA	85 HA
Working Temperature Range	-40 °F ~ 194 °F (-40 °C ~ 90 °C)	-58 °F ~ 194 °F (-50 °C ~ 90 °C)

Heating Cable

Both self-regulating and power-limiting heating cables reduce their power output as temperature rises. However, due to differences in configuration, power-limiting heating cables are more suitable for high-temperature applications. In the table below, low and medium temperature heating cable types are self-regulating, while high temperature heating cable type is power-limiting.

Maximum continuous exposure temperature refers to the recommended maximum temperature as the power is on/off during freeze protection or viscosity control applications.

Maximum intermittent exposure temperature refers to the acceptable temporary peak temperature, such as during steam cleaning of process tubes.

Heating Cable Type	Heating Cable Code	Voltage V (ac)	Power W/ft (W/m)	Max. Continuous Exposure Temp.		Max. Intermittent Exposure Temp.		Max. Length, m	Temp. Rating	Approvals
				Power-on °F (°C)	Power-off °F (°C)	Power-on °F (°C)	Power-off °F (°C)			
Low Temp.	L	120/240	3 (10)	149 (65)	149 (65)	185 ^① (85)		305	T6	IECEX: Ex 60079-30-1 eb IIC T6 Gb Ex 60079-30-1 eb mb IIC T6 Gb Ex 60079-30-1 tb IIIC T80°C Db Ex 60079-30-1 mb tb IIIC T80°C Db FM: Class I, Zone 1, Group IIC Class I, Division 2, Groups A, B, C, D Class II, Division 2, Groups F, G Class III, Division 1 EAC: 1Ex e IIC T6 Gb X 1Ex e mb IIC T6 Gb X Ex tb IIIC T80°C Db X Ex tb mb IIIC T80°C Db X
			5 (16)							
			8 (26)							
			10 (32)							
Medium Temp.	M	120/240	10 (32)	230 (110)	230 (110)	230 (110)		305	T4	IECEX: Ex 60079-30-1 eb IIC T4 Gb Ex 60079-30-1 eb mb IIC T4 Gb Ex 60079-30-1 tb IIIC T130°C Db Ex 60079-30-1 mb tb IIIC T130°C Db FM: Class I, Zone 1, AEx e II 120°C (T4) Class I, Division 2, Groups A, B, C and D T4A Class II, Division 2, Groups E, F and G T4A Class III, Division 1 Type 4X EAC: 1Ex e IIC T4 Gb X 1Ex e mb IIC T4 Gb X Ex tb IIIC T130°C Db X Ex tb mb IIIC T130°C Db X
			15 (49)							
			20 (65)							

Heating Cable Type	Heating Cable Code	Voltage V (ac)	Power W/ft (W/m)	Max. Continuous Exposure Temp.		Max. Intermittent Exposure Temp.		Max. Length, m	Temp. Rating	Approvals
				Power-on °F (°C)	Power-off °F (°C)	Power-on °F (°C)	Power-off °F (°C)			
High Temp.	H	240	5 (16)	446 (230)	500 (260)	500 (260)		230	T2-T6	IECEX: Ex e IIC T* Gb Ex td A21 IP66 T***°C Ex e mb IIC T* Gb Ex td mbD A21 IP66 T***°C FM: Class I, Division 2, Group B, C and D T* Class II, Division 2, Groups E, F and G T* Class III, Division 1 Type 4X EAC: 1Ex e IIC T* Gb X 1Ex e mb IIC T* Gb X Ex tb IIIC T* Db X Ex tb mb IIIC T* Db X
			10 (32)	410 (210)						
			15 (49)	356 (180)						
			20 (65)	302 (150)						
		400	5 (16)	446 (230)						
			10 (32)	419 (215)						
			15 (49)	383 (195)						
			20 (65)	302 (150)						

Maximum circuit length based on type "C" circuit breakers according to IEC 60898

The circuit breaker is an electrical protection device designed to protect a circuit from damage caused by overcurrent or short circuit. The following table lists maximum circuit lengths for different breaker sizes.

Example: In a circuit with a rated voltage of 240 V and a breaker size of 15 A, the maximum safe length for a low-temperature heating cable with a rated output of 5 W/ft (16 W/m) at a startup temperature of 50°F (10°C) is 460 ft (140 m).

Heating Cable Type	Nominal Power Output W/ft (W/m)	Startup Temp. °F (°C)	Circuit Breaker Voltage V				Circuit Breaker Voltage V			
			120				240			
			Circuit Breaker Size A				Circuit Breaker Size A			
			15	20	30	40	15	20	30	40
			Maximum Circuit Length ft (m)				Maximum Circuit Length ft (m)			
Low Temp.	3 (10)	50 (10)	330 (101)	330 (101)	330 (101)	330 (101)	660 (201)	660 (201)	660 (201)	660 (201)
		0 (-18)	200 (61)	265 (81)	330 (101)	330 (101)	395 (120)	530 (162)	660 (201)	660 (201)
		-20 (-29)	175 (53)	235 (72)	330 (101)	330 (101)	350 (107)	465 (142)	660 (201)	660 (201)
		-40 (-40)	155 (47)	205 (62)	310 (94)	330 (101)	310 (94)	410 (125)	620 (189)	660 (201)
	5 (16)	50 (10)	230 (70)	270 (82)	270 (82)	270 (82)	460 (140)	540 (165)	540 (165)	540 (165)
		0 (-18)	140 (43)	190 (58)	270 (82)	270 (82)	285 (87)	380 (116)	540 (165)	540 (165)
		-20 (-29)	125 (38)	165 (50)	250 (76)	270 (82)	250 (76)	330 (101)	500 (152)	540 (165)
		-40 (-40)	110 (34)	145 (44)	220 (67)	270 (82)	220 (67)	295 (90)	440 (134)	540 (165)
	8 (26)	50 (10)	150 (46)	200 (61)	210 (64)	210 (64)	300 (91)	400 (122)	420 (128)	420 (128)
		0 (-18)	100 (30)	130 (40)	200 (61)	210 (64)	200 (61)	265 (81)	400 (122)	420 (128)
		-20 (-29)	85 (26)	115 (35)	175 (53)	210 (64)	175 (53)	235 (72)	350 (107)	420 (128)
		-40 (-40)	80 (24)	105 (32)	155 (47)	210 (64)	155 (47)	210 (64)	315 (96)	420 (128)
	10 (32)	50 (10)	120 (37)	160 (49)	180 (55)	180 (55)	240 (73)	315 (96)	360 (110)	360 (110)
		0 (-18)	80 (24)	110 (34)	160 (49)	180 (55)	160 (49)	215 (66)	325 (99)	360 (110)
		-20 (-29)	70 (21)	95 (29)	140 (43)	180 (55)	145 (44)	190 (58)	285 (87)	360 (110)
		-40 (-40)	65 (20)	85 (26)	125 (38)	170 (52)	125 (38)	170 (52)	255 (78)	340 (104)
Medium Temp.	10 (32)	50 (10)	100 (30)	130 (40)	195 (59)	195 (59)	200 (61)	265 (81)	390 (119)	390 (119)
		0 (-18)	80 (24)	105 (32)	160 (49)	195 (59)	160 (49)	210 (64)	320 (98)	390 (119)
		-20 (-29)	70 (21)	95 (29)	145 (44)	195 (59)	145 (44)	195 (59)	295 (90)	390 (119)
		-40 (-40)	65 (20)	90 (27)	135 (41)	180 (55)	135 (41)	180 (55)	275 (84)	365 (111)
	15 (49)	50 (10)	75 (23)	100 (30)	150 (46)	200 (61)	160 (49)	210 (64)	320 (98)	340 (104)
		0 (-18)	60 (18)	80 (24)	120 (37)	160 (49)	125 (38)	170 (52)	255 (78)	340 (104)
		-20 (-29)	55 (17)	70 (21)	110 (34)	145 (44)	115 (35)	155 (47)	235 (72)	315 (96)
		-40 (-40)	50 (15)	65 (20)	100 (30)	135 (41)	110 (34)	145 (44)	220 (67)	290 (88)
	20 (65)	50 (10)	60 (18)	80 (24)	120 (37)	160 (49)	120 (37)	160 (49)	240 (73)	320 (98)
		0 (-18)	45 (14)	60 (18)	95 (29)	125 (38)	95 (29)	125 (38)	190 (58)	255 (78)
		-20 (-29)	40 (12)	55 (17)	85 (26)	115 (35)	85 (26)	115 (35)	175 (53)	235 (72)
		-40 (-40)	40 (12)	55 (17)	80 (24)	110 (34)	80 (24)	110 (34)	165 (50)	220 (67)

Heating Cable Type	Nominal Power Output W/ft (W/m)	Startup Temp. °F (°C)	Circuit Breaker Voltage V				Circuit Breaker Voltage V			
			240				400			
			Circuit Breaker Size A				Circuit Breaker Size A			
			16	25	32	40	16	25	32	40
			Maximum Circuit Length ft (m)				Maximum Circuit Length ft (m)			
High Temp.	5 (16)	50 (10)	705 (215)	725 (220)	725 (220)	725 (220)	1200 (365)	1480 (450)	1480 (450)	1480 (450)
		0 (-18)	640 (195)	725 (220)	725 (220)	725 (220)	1100 (335)	1480 (450)	1480 (450)	1480 (450)
	10 (32)	50 (10)	361 (110)	510 (155)	510 (155)	510 (155)	610 (185)	950 (290)	1050 (320)	1050 (320)
		0 (-18)	328 (100)	510 (155)	510 (155)	510 (155)	560 (170)	870 (265)	1050 (320)	1050 (320)
	15 (49)	50 (10)	246 (75)	380 (115)	430 (130)	430 (130)	410 (125)	640 (195)	820 (250)	855 (260)
		0 (-18)	230 (70)	345 (105)	430 (130)	430 (130)	375 (115)	610 (185)	770 (235)	855 (260)
	20 (65)	50 (10)	180 (55)	280 (85)	360 (110)	360 (110)	310 (95)	490 (150)	625 (190)	740 (225)
		0 (-18)	164 (50)	260 (80)	330 (100)	360 (110)	295 (90)	460 (140)	590 (180)	740 (225)

Notes:

1. The table above is for theoretical estimation only. Actual system design must be based on specific application conditions.
2. For circuit safety, a properly rated breaker must be used along with a ground fault circuit interrupter (GFCI) rated at 30 mA or higher. In applications with high leakage current risk, a GFCI with an appropriate protective current rating must be used.

Dimensions and Bend Radii

The process tubes are used for the transport of process media and for withstanding its pressure.
The finished tubes refer to electric traced tubing as delivered.

Fractional

Process Tube		Finished Tube			
Material	O.D. in. O.D. Tolerance ± 0.004 in.	O.D. in., O.D. Tolerance ± 0.157 in.			Min. Bend Radius in.
		Low Temp. Tracing	Medium Temp. Tracing	High Temp. Tracing	
316/316L SS or C12200	1/4	1.98	1.78	2.18	11.81
	3/8	2.11	1.91	2.30	
	1/2	2.23	2.04	2.43	

Metric

Process Tube		Finished Tube			
Material	O.D. mm O.D. Tolerance ± 0.004 mm	O.D. mm, O.D. Tolerance ± 4.0 mm			Min. Bend Radius mm
		Low Temp. Tracing	Medium Temp. Tracing	High Temp. Tracing	
316/316L SS or C12200	6	50	45	55	300
	8	52	47	57	
	10	54	49	59	
	12	56	51	61	

Working Pressure

For the working pressure of the process tube, refer to the TMP series tubing.

When use with FITOK 6D series tube fittings, it provides a safety factor of 4:1 for the connection between the fitting and tubing.

FLITOK



Accessories

FITOK offers a full range of power connection components, including junction boxes and end seals. These components must be used to ensure proper system function and compliance with electrical requirements.

Single Circuit Power Supply Junction Box

The single-circuit power supply junction box connects a heating cable to a power source. The kit is selectable based on local installation practices and working conditions. All versions are also available in a lighted version to show operating status.



Model	JBS-100-A, JBS-100-L-A	JBS-100-E, JBS-100-L-E	JBS-100-EP, JBS-100-L-EP
Description	This kit is for use in North America and has one through-hole for use with 3/4" conduit.	This kit is for use in Europe and Asia, and provides two M25 threaded entries, one stopping plug, and one plastic power cable gland.	This kit is for use in Europe and Asia, and provides two M25 threaded entries, an earthing plate, and an external earthing stud. It is designed for use with armoured cables.
Kit Contents	1 junction box with terminals	1 junction box with terminals	1 junction box with terminals, earthing plate, and stud
	1 indicator light module (for -L model only)		
	1 stand		
	1 core sealer		
	1 yellow/green earthing sleeve		
	1 cable tie		
	1 polywater sachet		
	-	1 M25 stopping plug	1 M25 stopping plug
	-	1 M25 gland for power cable 8~17 mm in diameter	-
Specifications			
Applicable Heating Cable	Low temp., medium temp., high temp.		
Ingress Protection	NEMA 4X	IP66	IP66
Entries	1 × 3/4"	2 × M25	2 × M25
Ambient Temp. Range	JBS-100-A: -67 °F to 133 °F (-55 °C to 56 °C) JBS-100-L-A: -40 °F to 104 °F (-40 °C to 40 °C)	JBS-100-E: -67 °F to 133 °F (-55 °C to 56 °C) JBS-100-L-E: -40 °F to 104 °F (-40 °C to 40 °C)	JBS-100-EP: -67 °F to 133 °F (-55 °C to 56 °C) JBS-100-L-EP: -40 °F to 104 °F (-40 °C to 40 °C)
	For ambient temperature > 104 °F (40 °C), additional conditions are required for safe use. High temperature power cables and metallic glands must be used.		
Min. Installation Temp.	-67 °F (-55 °C)		
Max. Pipe Temp.	Refer to heating cable specification		
Terminals	Spring clamp (Ex e) 2 line, 1 earth	Spring clamp (Ex e) 1 phase, 1 neutral, 1 earth	Spring clamp (Ex e) 1 phase, 1 neutral, 1 earth
Max. Conductor Size	8 AWG stranded	10 mm² stranded,10 mm² solid	10 mm² stranded,10 mm² solid
Max. Operating Voltage	480 Vac. JBS-100-L-A, JBS-100-L-E, JBS-100-L-EP for 254 Vac only. For voltages > 254 Vac, additional conditions are required for safe use.		
Max. Continuous Operating Current	50 A	40 A	40 A
	When 302 °F (150 °C) < pipe temperature < 500 °F (260 °C), reduce the maximum operating current to ≤ 20A.		
Materials of Construction			
Enclosure, Lid, and Stand	Electrostatic charge-resistant glass-filled engineered polymer, black		
Lid Screws	Stainless steel		
Lid Gasket	Silicone rubber		
Earth Continuity Plate	-	-	Steel, zinc plated, and blue chromated
LED Indicator Light Optional (For -L model only)			
Color	Red	Green	Green
Voltage Rating	100 to 277 Vac	100 to 254 Vac	100 to 254 Vac
Power Consumption	<1 W		

Multi-Circuit Power Supply Three-Way Junction Box

The multi-circuit power supply three-way junction box is designed to connect power to up to three heating cables. The kit is selectable based on local installation practices and working conditions. All versions are also available in a lighted version to show operating status.



Model	JBM-100-A, JBM-100-L-A	JBM-100-E, JBM-100-L-E	JBM-100-EP, JBM-100-L-EP
Description	This kit is for use in North America and has two 3/4" through holes for use with 3/4" conduit. One stopping plug is supplied in the kit.	This kit is for use in Europe and Asia, and provides two M25 threaded entries, one stopping plug, and one plastic power cable gland.	This kit is for use in Europe and Asia, and provides two M25 threaded entries, an earthing plate, and an external earthing stud. It is designed for use with armoured cables.
Kit Contents	1 junction box with terminals	1 junction box with terminals	1 junction box with terminals, earth continuity plate, and stud
	1 light module (for -L model only)		
	1 stand		
	1 polywater sachet		
	3 core sealers		
	3 yellow/green earthing sleeve		
	1 3/4" stopping plug	1 M25 stopping plug	2 M25 stopping plug
	1 spanner		
	1 strain relief assembly		
	2 grommet plugs		
	-	1 M25 gland for power cable 8-17 mm in diameter (Temperature range: -67°F to 158°F (-55°C to 70°C))	-
Specifications			
Applicable Heating Cable	Low temp., medium temp., high temp		
Ingress Protection	IP66		
Entries	1 × 3/4"	2 × M25	2 × M25
Ambient Temp. Range	JBM-100-A: -67 °F to 133 °F (-55 °C to 56 °C) JBM-100-L-A: -58 °F to 104 °F (-40 °C to 40 °C)	JBM-100-E: -67 °F to 133 °F (-55 °C to 56 °C) JBM-100-L-E: -40 °F to 104 °F (-40 °C to 40 °C)	JBM-100-EP: -67 °F to 133 °F (-55 °C to 56 °C) JBM-100-L-EP: -40 °F to 104 °F (-40 °C to 40 °C)
	For ambient temperature > 104 °F (40 °C), additional conditions are required for safe use. High temperature power cables and metallic glands must be used.		
Min. Installation Temp.	-67 °F (-55 °C)		
Max. Pipe Temp.	Refer to heating cable specification		
Terminals	Spring clamp (Ex e) 4 line, 2 earth	Spring clamp (Ex e) 2 phase, 2 neutral, 2 earth	Spring clamp (Ex e) 2 phase, 2 neutral, 2 earth
Max. Conductor Size	8 AWG stranded	10 mm² stranded,10 mm² solid	10 mm² stranded,10 mm² solid
Max. Operating Voltage	480 Vac. JBM-100-L-A, JBM-100-L-E, JBM-100-L-EP for 254 Vac only. For voltages > 254 Vac, additional conditions are required for safe use.		
Max. Continuous Operating Current	53 A		
	When 302 °F (150 °C) < pipe temperature < 500 °F (260 °C), reduce the maximum operating current to ≤ 20A.		
Materials of Construction			
Enclosure, Lid, and Stand	Electrostatic charge-resistant glass-filled engineered polymer, black		
Lid Screws	Stainless steel		
Lid Gasket	Silicone rubber		
Earth Continuity Plate	-	-	Steel, zinc plated, and blue chromated
LED Indicator Light Optional (For -L model only)			
Color	Red	Green	Green
Voltage Rating	100 to 277 Vac	100 to 254 Vac	100 to 254 Vac
Power Consumption	<1 W		

End Seal and Lighted End Seal

The end seal is designed to seal the end of the heating cable.

Lighted versions are available to provide easy visual confirmation that the heating cable is functioning properly.



Model	E-100-E	E-100-L-E
Kit Contents	1 end seal	1 end seal with indicator light
	1 cable tie	
	1 polywater sachet	
	-	2 insulated parallel crimps
		1 core sealer
Specifications		
Applicable Heating Cable	Low temp., medium temp., high temp.	
Max. Pipe Temp.	Refer to heating cable specification, maximum is 500 °F (260 °C)	
Max. Operating Voltage	277V (480V for high temperature electric heating cables only.)	277 V
	For voltages > 277 V, additional conditions are required for safe use.	
Ambient Temp. Range	-67 °F to 133 °F (-55 °C to 56 °C)	-40 °F to 104 °F (-40 °C to 40° C)
Min. Installation Temp.	-67 °F (-55 °C)	-40 °F (-40 °C)
Overall Height	171 mm approx.	197 mm approx.
Outer Diameter	46 mm approx. Usable with up to 100 mm thermal insulation	66 mm approx.
Ingress Protection	IP66, Type 4X	
Impact Resistance	EN 60079-30-1, ≥7 joules	
UV Stability	No degradation after 1000 hours	
Solvent Resistance	Excellent	
Strain Relief	> 250 N	
LED Indicator Light		
Color	-	Green
Voltage Rating Range		110 to 277 Vac, 50/60 Hz
Power Consumption		<2 W
Electromagnetic Immunity/Emissions		Complies with IEC 61000-6 IEC 61000-4
Installation Tools		
Tools Required	Cable knife, wire cutters, screwdriver	Cable knife, wire cutters, screwdriver, crimp tool, long nose pliers

Heat-Shrink End Seal



Model	E-20	E-40
Max. Expose Temp. °F (°C)	230 (110)	500 (260)
Dielectric Strength (MV/m)	2.2	>40
Volume Resistivity (MΩ·m)	10 ⁷	10 ¹²
Final Length in. (mm)	4.72 (120)	4.72 (120)
Min. Ambient Temp. °F (°C)	-76 (-60)	-76 (-60)
Installation Details		
Hot Air Gun (W)	>1460	>3000
Min. Installation Temp. °F (°C)	-4 (-20)	-4 (-20)

Splice or Tee Connection Kit

This kit is used to make splice or tee connections for the heating cable.



Model	T-100
Description	Above-insulation splice / tee kit
Kit Contents	1 splice/tee enclosure and lid
	1 stand assembly
	3 core sealers
	3 yellow/green earthing sleeves
	3 compression crimps
	3 crimping insulating tubes
	1 spanner
	1 strain relief assembly
	2 grommet plugs
Applicable Heating Cable	Low temp., medium temp., high temp.
Ingress Protection	NEMA Type 4X IP66
Min. Installation Temp.	-67 °F (-55 °C)
Max. Pipe Temp.	Refer to heating cable specification
Ambient Temp. Range	-67 °F to 133 °F (-55 °C to 56 °C)
Max. Operating Voltage	277 Vac for FM, CSA, 480 Vac for PTB
Max. Continuous Operating Current	50 A heating cable circuit for FM, CSA, 40 A heating cable circuit for PTB
Materials of Construction	
Enclosure, Lid, and Stand	Electrostatic charge-resistant glass-filled engineered polymer, black
Lid Screws	Stainless steel
Lid Gasket	Silicone rubber

Cold Applied Power Connection Kit

This kit is used to terminate the heating cable to a junction box.



Model	C25-100
Kit Contents	1 gland
	2 grommets
	1 locknut
	1 core sealer
	1 yellow/green tube
Specifications	
Type	Cold Applied
Thread Size	M25 × 1.5
Min. Ambient Temp.	-67 °F (-55 °C)
Max. Exposure Temp.	230 °F (110 °C)

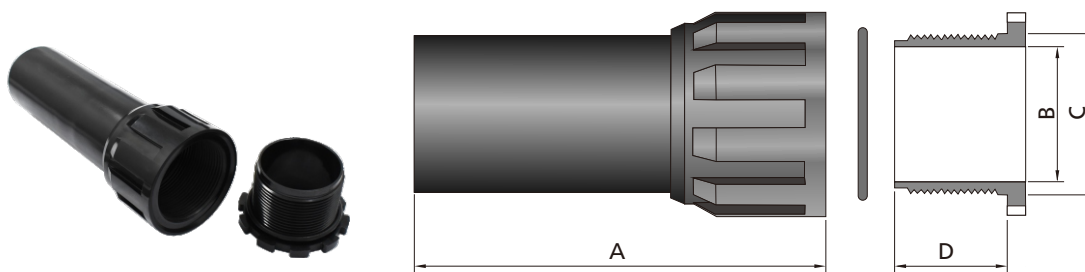
Electronic Thermostat



Model 1 (without earthing plate)	ETS-05-L2-E	ETS-05-H2-E
Model 2 (with earthing plate)	ETS-05-L2-EP	ETS-05-H2-EP
Application	Surface sensing	
Temperature Setpoint Range	32 °F to 390 °F (0 to 199 °C)	32 °F to 930 °F (0 to 499 °C)
Temperature Measurement Range	-67 °F to 500 °F (-55 °C to 260 °C)	-67 °F to 1085 °F (-55 °C to 585 °C)
Max. Sensor Lead Resistance	20 Ohm	
Ingress Protection	IP66	
Switching Accuracy	± 1.8 °F (1 °C) at 41 °F (5 °C)	± 1.8 °F (1 °C) at 41 °F (5 °C), ± 3.6 °F (2 °C) at 930 °F (499 °C)
Switching Differential (Hysteresis)	≈ 5 °F (3 °C)	
Output Relay	Single Pole change over type (SPST)	
Switching Capacity	32A resistive load	
Ambient Temperature Range	-40 °F to 140 °F (-40 °C to 60 °C)	
Supply Voltage	230V +10%/-15% 50/60 Hz	
Internal Power Consumption	3 VA	
Terminal Size	Max. 6 mm ²	
Cable Entries	2 × M25	
	1 × M25 gland for power cable in	
	2 × M25 rain plug for heating cable out	
Sensor Type	M16 gland with a three wire PT100 flexible sensor, 2 meters long	M16 gland with a three wire PT100 stainless steel sensor, 2 meters long
LED Status Indications		
Green	ETS-05 powered on, heating cable off	
Yellow	ETS-05 powered on, heating cable on	
Red	Sensor failure - controller in fail safe mode	

Heat-Shrink Entry Seals

The heat-shrink entry seals provide waterproofing and mechanical protection where the electric-traced tubing passes through a wall or panel.

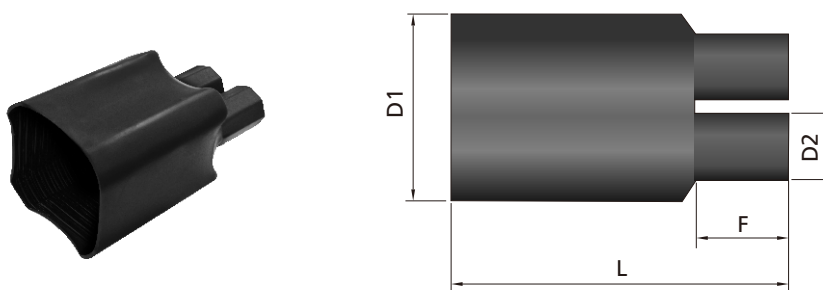


Model	Dimensions, mm				Tightening Tool (Hook Spanner)
	A	B ^①	C	D	
BET-60MM	250	35-60	73	40	78-85
BET-70MM	260	42-70	86	35	85-105

Note: ① The heat-shrink entry seals' heat-shrinking dimensional range.

Heat-Shrink Boots

The heat-shrink boots provide a waterproof end seal for the electric-traced tubing. Use a 2-way boot for one process tube, and a 3-way boot for two process tubes.



Model		State	Dimensions, mm			
			L	F	D1 ^①	D2 ^②
2-Way Boots	HSB-2-6023	Before heat-shrinking	95	21	60	25
		After heat-shrinking	105	25	23	8
	HSB-2-9060	Before heat-shrinking	165	45	90	30
		After heat-shrinking	170	48	60	8
3-Way Boots	HSB-3-6025	Before heat-shrinking	170	40	60	26
		After heat-shrinking	175	45	25	8
	HSB-3-7028	Before heat-shrinking	175	45	70	32
		After heat-shrinking	180	45	28	10

Note: ①② Minimum inside diameter after heat-shrinking.

Working Condition Questionnaire

Customer Name			End User		
Project Name			Project Location		
Process Tube Parameters	Number of Process Tubes	☐ 1 ☐ 2			
	☐ Process Tube #1	O.D.	☐ in. ☐ mm		
		Wall Thk.	☐ in. ☐ mm		
		Material	☐ 316/316L SS ☐ C12200		
		Process Tube Type	☐ Seamless ☐ Welded		
	☐ Process Tube #2	O.D.	☐ in. ☐ mm		
		Wall Thk.	☐ in. ☐ mm		
		Material	☐ 316/316L SS ☐ C12200		
		Process Tube Type	☐ Seamless ☐ Welded		
	Medium Parameters	Medium Name			
Initial Medium Temp.		☐ °F ☐ °C			
Target Maintenance Temp.		☐ °F ☐ °C			
Flow Rate		_____ kg/h			
Medium Pressure		☐ psig ☐ bar			
Site Conditions	Installation Environment	☐ Indoor ☐ Outdoor			
	Min. Ambient Temp.	☐ °F ☐ °C			
	Max. Ambient Temp.	☐ °F ☐ °C			
	Avg. Ambient Temp.	☐ °F ☐ °C			
	Wind Speed	_____ km/h			
Heat Tracing Type	☐ Electric-traced	Voltage	_____ Vac		
		Hazardous Area			
		Explosion-Proof Rating			
		Steam Purging	☐ Yes ☐ No		
		Max. Purge Temp.	☐ °F ☐ °C		
	☐ Steam-traced	Steam Pressure	☐ psig ☐ bar		
		Temp.	☐ °F ☐ °C		
		Max. Purge Temp.	☐ °F ☐ °C		
		Traced Tubing Material			
		Traced Tubing O.D.	☐ in. ☐ mm		
		Traced Tubing Wall Thk.	☐ in. ☐ mm		
Traced Tubing Parameters	Outer Jacket Material	☐ PVC ☐ TPU			
	Outer Jacket Color	☐ Black ☐ White			
	Total Length	☐ ft ☐ m			
	Supply Form	☐ Fixed Length ☐ Random Length			
	Single Coil Length (Fixed Length)	☐ ft ☐ m			

Accessories	☐ Single Circuit Power Supply Junction Box _____ pc(s). ☐ Multi-Circuit Power Supply Three-Way Junction Box _____ pc(s). ☐ End Seal _____ pc(s). ☐ Splice or Tee Connection Kit _____ pc(s). ☐ Thermostat _____ pc(s). ☐ Cold Applied Power Connection Kit _____ pc(s). ☐ Heat-Shrink Entry Seal _____ pc(s). ☐ Heat-Shrink Boot _____ pc(s). ☐ Heat-Shrink End Seal _____ pc(s).
Other Information	