

Resistance thermometers are used in the locations where precise temperature measurement is demanded in the industry. It is based on change of electrical resistance of conductor subject to the temperature. It is used the resistance detector that is wound from thin platinum or nickel wire insulated within enamel, glass or ceramic as conductor. Detector provides 100 ohm resistance output in 0 °C. Increasing or decreasing values of resistance subject to temperature are measured and then, temperature is detected. Copper, silver or nickel-chromium connection wires are added into two ends of resistance detector. It can be used from (-) 200 °C to (+) 850 °C. Analogue output information is taken through pt100 sensors in compliance with EN60751 and then, assessed in the automation system.

In order that resistance thermometers can measure accurately, it is recommended that it has dipping length as much as 6 and 15 times of dipping diameter.

Copper or Silver wire is used up to 500 °C and Nickel chromium is used after 550 °C between Pt 100 and connector. Copper conducting wire is used between device and pt100. It should have 2 wires up to 10 m. , 3 wires up to 150 m. and 4 wires after 150 m.



ETT TEMPERATURE SENSOR AND TRANSMITTER

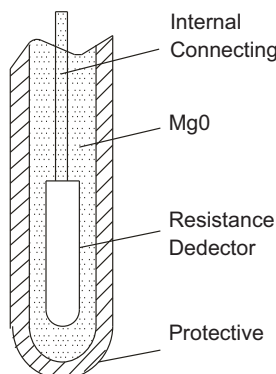
ETT 01 , ETT 02 , ETT 03 , ETT 04
ETT 05 , ETT 06 , ETT 06p
ETT 07 , ETT 08
ETT 09 , ETT 09p , ETT 10 , ETT 10p
ETT 11 , ETT 12 , ETT 13
ETT 11m , ETT 12m
ETT 21 , ETT 21p
ETT 22 , ETT 23 , ETT 31

Advantages:

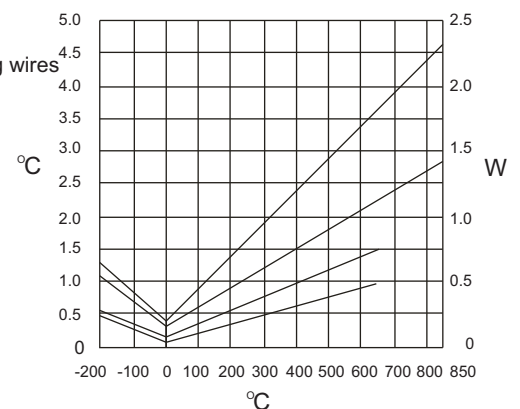
- * Models up to max. of 600 bar
- * Practical and economical
- * Digital display can be mounted

Areas of application :

Machines, tank, boilers, gas and liquid fluid, surface temp. measurement, ambient temperature measurement.



RTD TOLERANCE TABLE



TEMP. °C	TOLERANCE EN 60751			
	A CLASS		B CLASS	
	±°C	±OHM	±°C	±OHM
-200	0.55	0.24	1.3	0.56
-100	0.35	0.14	0.8	0.32
0	0.15	0.06	0.3	0.12
100	0.35	0.13	0.8	0.30
200	0.55	0.20	1.3	0.48
300	0.75	0.27	1.8	0.64
400	0.95	0.33	2.3	0.79
500	1.15	1.38	2.8	0.93
600	1.35	1.43	3.3	1.06
650	1.45	1.46	3.6	1.13
700			3.8	1.17
800			4.3	1.28
850			4.6	1.34

Technical Specifications :

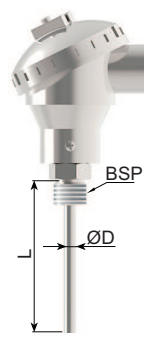
ETT 01

Type	In-Line
Range	(-) 50....(+) 650 °C
Ambient Temperature	(-) 20....(+) 60 °C
Mechanical Conn.	*
Electrical Conn.	Terminal
Sensor	1 x pt100 3 wire Class B (EN 60751)
Material	Stainless Steel
Stem Length (L)	On Request
Protection Class	IP 65
Pipe Diameter	6 / 9 / 11 / 14 mm



ETT 02

Type	In-Line
Range	(-) 50....(+) 650 °C
Ambient Temperature	(-) 20....(+) 60 °C
Mechanical Conn.	1/2" BSP (Std)
Electrical Conn.	Terminal
Sensor	1 x pt100 3 wire Class B (EN 60751)
Material	Stainless Steel
Stem Length (L)	On Request
Protection Class	IP 65
Pipe Diameter	6 / 9 / 11 / 14 mm



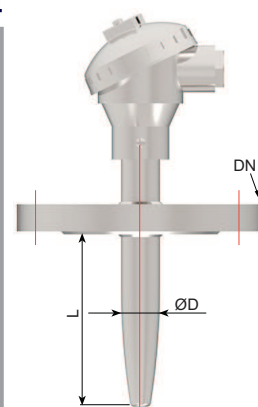
ETT 03

Type	In-Line
Range	(-) 50....(+) 650 °C
Ambient Temperature	(-) 20....(+) 60 °C
Mechanical Conn.	1/2" BSP (Std)
Electrical Conn.	Terminal
Sensor	1 x pt100 3 wire Class B (EN 60751)
Material	Stainless Steel
Stem Length (L)	On Request
Protection Class	IP 65
Pipe Diameter	6 / 9 / 11 / 14 mm



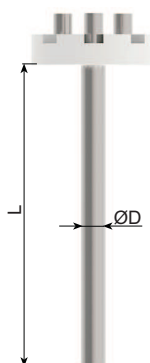
ETT 04

Type	In-Line
Range	(-) 50....(+) 650 °C
Ambient Temperature	(-) 20....(+) 60 °C
Mechanical Conn.	2" PN16 Flanged (Std)
Electrical Conn.	Terminal
Sensor	1 x pt100 3 wire Class B (EN 60751)
Material	Stainless Steel
Stem Length (L)	On Request
Protection Class	IP 65
Pipe Diameter	6 / 9 / 11 / 14 mm



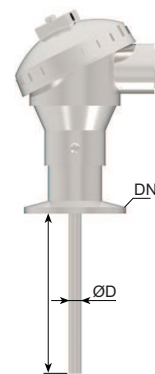
ETT 05

Type	Inset
Range	(-) 50....(+) 650 °C
Ambient Temperature	(-) 20....(+) 60 °C
Mechanical Conn.	1/2" BSP (Std)
Electrical Conn.	Terminal
Sensor	1 x pt100 3 wire Class B (EN 60751)
Material	Stainless Steel
Stem Length (L)	On Request
Protection Class	-
Pipe Diameter	6 mm



ETT 07

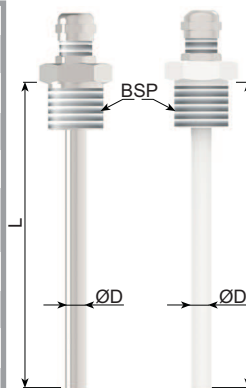
Type	In-Line
Range	(-) 50....(+) 800 °C
Ambient Temperature	(-) 20....(+) 60 °C
Mechanical Conn.	1" Clamp (Std)
Electrical Conn.	Terminal
Sensor	1 x pt100 3 wire Class B (EN 60751)
Material	Stainless Steel
Stem Length (L)	On Request
Protection Class	IP 65
Pipe Diameter	6 / 9 / 11 / 14 mm



Technical Specifications :

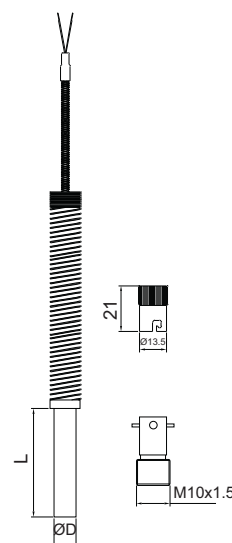
ETT 06 ETT 06p

Type	In-Line
Range	(-) 30....(+) 200 °C
Ambient Temperature	(-) 20....(+) 60 °C
Mechanical Conn.	1/2" BSP (Std)
Electrical Conn.	PG9 Metal
Sensor	1 x pt100 3 wire Class B (EN 60751)
Material	Stainless Steel Opt.PTFE
Stem Length (L)	On Request
Protection Class	IP 68
Pipe Diameter	6 / 9 mm



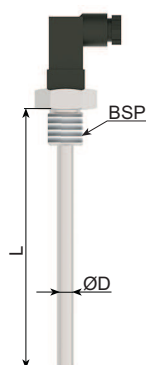
ETT 08

Type	In-Line
Range	(-) 30....(+) 200 °C
Ambient Temperature	(-) 20....(+) 60 °C
Mechanical Conn.	M10 x 1.5 mm
Electrical Conn.	Cable
Sensor	1 x pt100 3 wire Class B (EN 60751)
Material	Stainless Steel
Stem Length (L)	On Request
Protection Class	IP 68
Pipe Diameter	6 mm



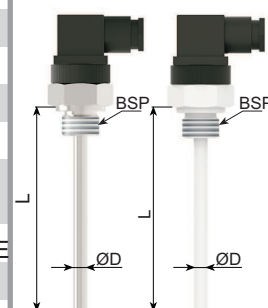
ETT 09 ETT 09p

Type	In-Line
Range	(-) 30....(+) 100 °C
Ambient Temperature	(-) 20....(+) 60 °C
Mechanical Conn.	1/2" BSP (Std)
Electrical Conn.	DIN 43650C
Sensor	1 x pt100 3 wire Class B (EN 60751)
Material	Stainless Steel Opt.PTFE
Stem Length (L)	On Request
Protection Class	IP 65
Pipe Diameter	6 mm



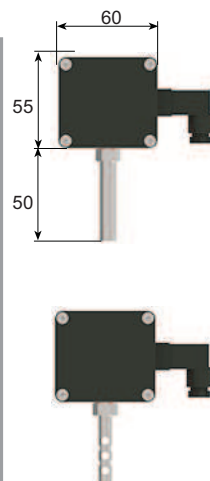
ETT 10 ETT 10p

Type	In-Line
Range	(-) 30....(+) 200 °C
Ambient Temperature	(-) 20....(+) 60 °C
Mechanical Conn.	1/2" BSP (Std)
Electrical Conn.	DIN 43650 (ISO 4400)
Sensor	1 x pt100 3 wire Class B (EN 60751)
Material	Stainless Steel Opt.PTFE
Stem Length (L)	On Request
Protection Class	IP 65
Pipe Diameter	6 / 9 mm



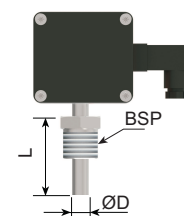
ETT 11 ETT12

Type	Wall
Range	(-) 40 °C...(+) 80 °C (0...80 °C Hole Type)
Ambient Temperature	(-) 20....(+) 60 °C
Electric Material	DIN 43650C
Sensor	1 x pt100 3 wire Class B (EN 60751)
Output	1 x pt100 or 4-20 mA 2 wire
Supply	10 - 30 VDC
Material	Stainless Steel
Stem Length (L)	50 mm (std)
Protection Class	IP 68
Pipe Diameter	6 mm



ETT13

Type	Wall
Range	(-) 40 °C...(+) 80 °C (0...80 °C Hole Type)
Ambient Temperature	(-) 20....(+) 60 °C
Electric Material	DIN 43650C
Sensor	1 x pt100 3 wire Class B (EN 60751)
Output	1 x pt100 or 4-20 mA 2 wire
Supply	10 - 30 VDC
Material	Stainless Steel
Stem Length (L)	50 mm (std)
Protection Class	IP 68
Pipe Diameter	6 mm



Technical Specifications :

ETT 11m

Type	Wall
Range	(-) 20 °C...(+) 80 °C (0...80 °C Hole Type)
Ambient Temperature	(-) 20....(+) 60 °C
Electric Material	With Cable
Sensor	1 x pt100 3 wire Class B (EN 60751)
Output	1 x pt100 or 4-20 mA 2 wire
Supply	10 - 30 VDC
Material	Stainless Steel
Stem Length	50 mm (std)
Protection Class	IP 68
Pipe Diameter (D)	6 mm



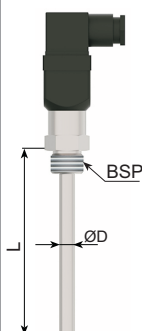
ETT 12m

Type	Wall
Range	(-) 20 °C...(+) 80 °C (0...80 °C Hole Type)
Ambient Temperature	(-) 20....(+) 60 °C
Electric Material	DIN 43650C
Sensor	1 x pt100 3 wire Class B (EN 60751)
Output	1 x pt100 or 4-20 mA 2 wire
Supply	10 - 30 VDC
Material	Stainless Steel
Stem Length	50 mm (std)
Protection Class	IP 65
Pipe Diameter (D)	6 mm



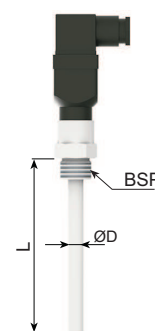
ETT 21

Type	In-Line
Range	(-) 50....(+) 200 °C
Ambient Temperature	(-) 20....(+) 60 °C
Mechanical Conn.	1/2" BSP (Std)
Electric Material	DIN 43650 (ISO 4400)
Sensor	1 x pt100 3 wire Class B (EN 60751)
Output	2 wire 4-20 mA std. 3 wire 4-20 mA, 0-20 mA 0-5 V, 1-5 V, 0-10 V
Supply	10 - 30 VDC
Material	Stainless Steel
Stem Length (L1)	On Request
Protection Class	IP 65
Pipe Diameter	8 mm



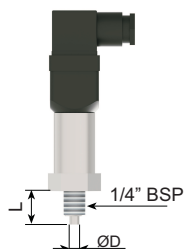
ETT 21p

Type	In-Line
Range	(-) 50....(+) 150 °C
Ambient Temperature	(-) 20....(+) 60 °C
Mechanical Conn.	1/2" BSP (Std)
Electric Material	DIN 43650 (ISO 4400)
Sensor	1 x pt100 3 wire Class B (EN 60751)
Output	2 wire 4-20 mA std. 3 wire 4-20 mA, 0-20 mA 0-5 V, 1-5 V, 0-10 V
Supply	10 - 30 VDC
Material	PTFE
Stem Length (L1)	On Request
Protection Class	IP 65
Pipe Diameter	8 mm



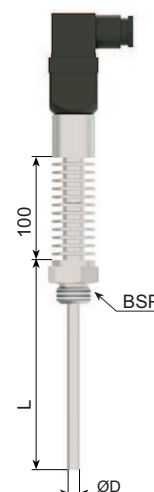
ETT 22 ETT 23

Type	In-Line
Range	(-) 50....(+) 200 °C
Ambient Temperature	(-) 20....(+) 60 °C
Mechanical Conn.	1/4" BSP (Std)
Electrical Material	DIN 43650 (ISO 4400)
Sensor	1 x pt100 3 wire Class B (EN 60751)
Output	2 wire 4-20 mA std. 3 wire 4-20 mA, 0-20 mA 0-5 V, 1-5 V, 0-10 V
Supply	10 - 30 VDC
Material	Stainless Steel
Stem Length (L)	15 mm ETT 23 20 mm / 25 ETT 22
Protection Class	IP 65
Pipe Diameter	8 mm



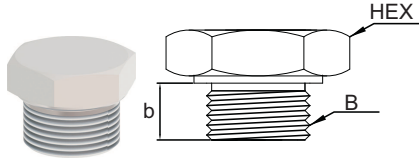
ETT 31

Type	In-Line - Prolonged
Range	(-) 50....(+) 650 °C
Ambient Temperature	(-) 20....(+) 60 °C
Mechanical Conn.	1/2" BSP (Std)
Electrical Material	DIN 43650A (ISO 4400)
Sensor	1 x pt100 3 wire Class B (EN 60751)
Output	2 wire 4-20 mA std. 3 wire 4-20 mA, 0-20 mA 0-5 V, 1-5 V, 0-10 V
Supply	10 - 30 VDC
Material	Stainless Steel
Stem Length (L)	On Request
Protection Class	IP 65
Pipe Diameter	8 mm



Mechanical Connection :

Thread

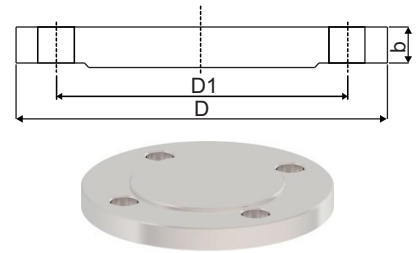


(ISO228-1)

Order Code	Dimension B	AA (mm)	Thread Length b (mm)
0001	1/8" BSP	17	12
0002	1/4" BSP	17	12
0003	3/8" BSP	24	20
0004	1/2" BSP	27	14
0005	3/4" BSP	32	14
0006	1" BSP	41	23
0008	1 1/4" BSP	51	23
0009	1 1/2" BSP	60	23
0012	2" BSP	70	23

Flanged

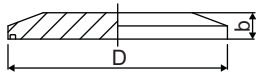
Order Code	(ISO1092-1) PN 16	D (mm)	D1 (mm)	b (mm)
0502	DN 25	165	85	16
0503	DN 32	140	100	16
0505	DN 50	165	125	18
0507	DN 80	200	160	20
0508	DN100	220	180	20



Order Code	(ISO1092-1) PN 40	D (mm)	D1 (mm)	b (mm)
0702	DN 25	115	85	18
0703	DN 32	140	100	20
0705	DN 50	165	125	20
0707	DN 80	200	160	20
0708	DN 100	235	190	24

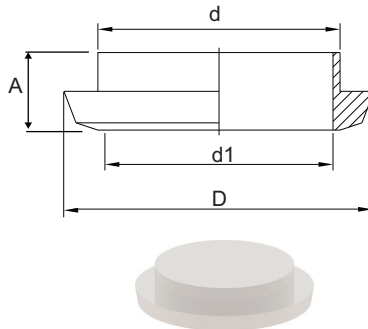
Order Code	(ANSI B16.5) 150 LBS	D (mm)	D1 (mm)	b (mm)
1005	DN 50	152,4	121	19
1006	DN 65	177,8	139,7	22,2
1007	DN 80	190,5	152,4	23,8
1008	DN 100	228,6	157,2	23,8

Clamp



Order Code	(ISO2852) Dimension	D (mm)	b (mm)
1501	DN 32	50,5	15
1502	DN 50	64	17
1503	DN 65	91	17

Dairy



Order Code	Dimension	Dimension	D (mm)	d1 (mm)	A (mm)
1600	DN 40	DN 40	56	48	13
1601	DN 50	DN 50	68	61	14
1602	DN1 00	DN 100	121	114	20

RTD CABLES

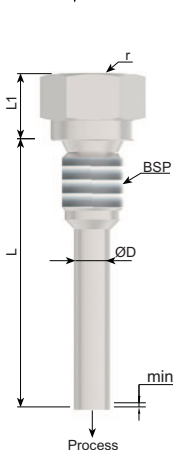
Different section copper wires are used between resistance thermometer and device. The section of wires is important. Generally, 0,2 OHM resistance, 2 x 1,5 mm section copper wires are preferred. Up to 10 m. 2 wires, up to 150 m. 3 wires, over 150 m. 4 wires cable should be used.

ETK - RTD - Silicon - With Silicon Isolation - 2 Damarlı - 1.5 mm Sectioned - numerous wires

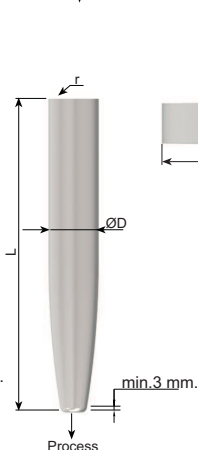
Thermowell ELX 51, 52, 53, 54

(Can be produced using requested dimensions and materials.) **Please see detailed instructions.**

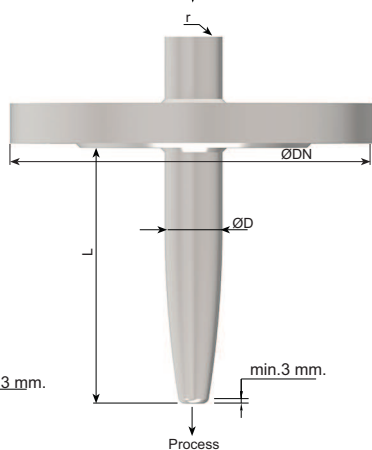
ELX 51
Thread Type
Sensor Input



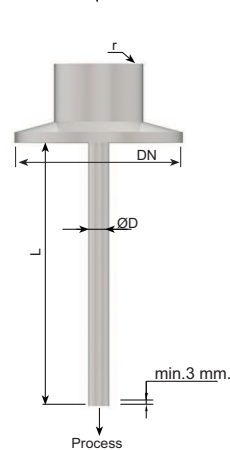
ELX 52
Basic Tip
Sensor Input



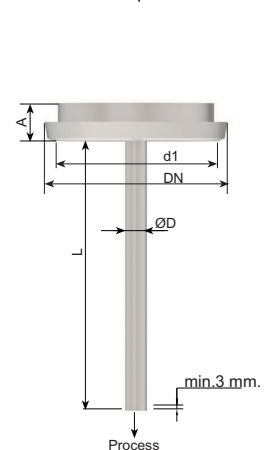
ELX 53
Flanged Type
Sensor Input



ELX 54
Sanitary Type
Sensor Input



ELX 55
Dairy Type
Sensor Input

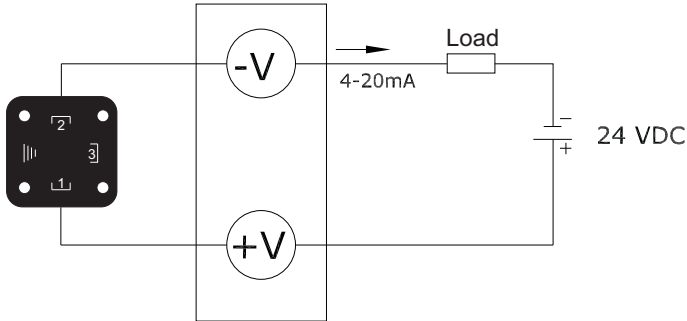


Electric Connection :

ETT 11, ETT 12 , ETT 13

ETT 21, ETT 21p, ETT 22, ETT 23

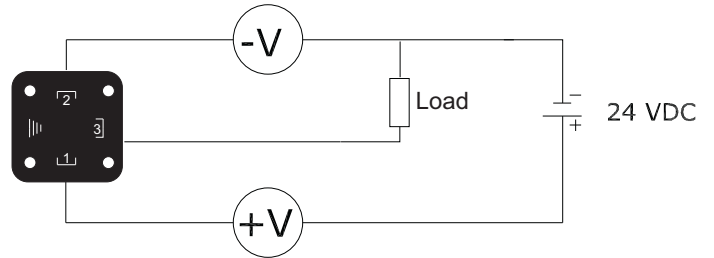
ETT 31 (2 wire)



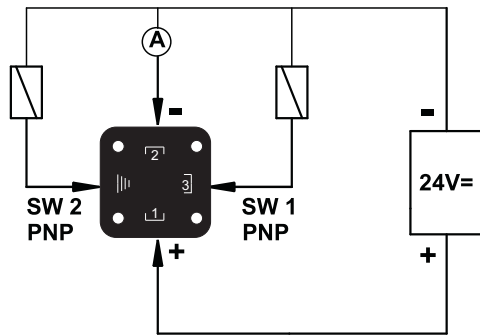
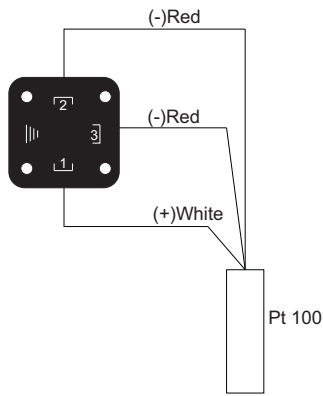
ETT 11, ETT 12 , ETT 13

ETT 21, ETT 21p, ETT 22, ETT 23

ETT 31 (3 wire)



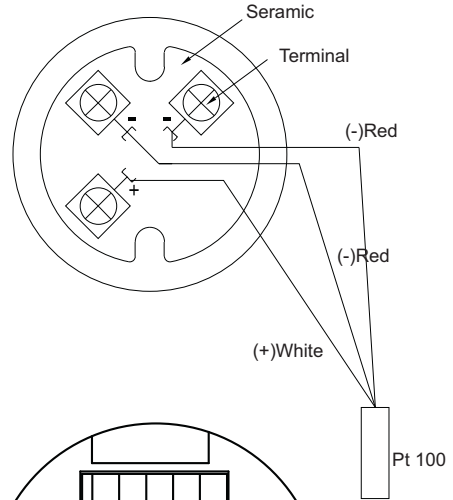
ETT 09, ETT 09p, ETT 10, ETT 10p



4-20 mA Two Wire + 2 PNP

EDS 01

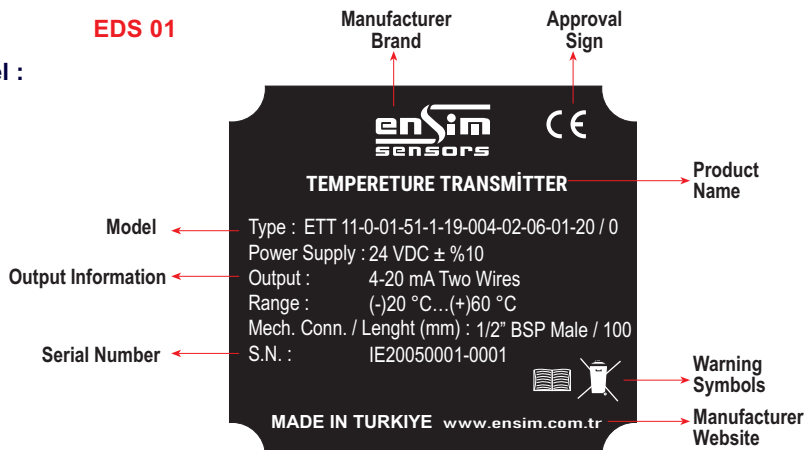
ETT 01, ETT 02, ETT03, ETT04, ETT05, ETT 07



4-20 mA Two Wire + 2 PNP NA

EDS 02

Product Label :



Order Form : **Please consider sample models when coding!..**

1 MODEL

ETT 01	ETT 06	ETT 09	ETT 11	ETT 21	ETT 22
ETT 02	ETT 06p	ETT 09p	ETT 11m	ETT 21p	ETT 23
ETT 03	ETT 07	ETT 10	ETT 12		ETT 31
ETT 04	ETT 08	ETT 10p	ETT 12m		
ETT 05			ETT 13		

(B Type For ETT01 , 02 and 03 ; Aluminum Casting, Painted, Housing is used.)

2 CERTIFICATE

None.....0	(EN10204-3-1) Material Certification.....1
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3 HOUSING

None.....0	Aluminium Housing , B10x 503
Plastic Housing , B10p 050	Aluminium Housing , B22x 750
Plastic Housing, B20p 100	Aluminium Housing, B96x 853
PC Grey, P52.....250	Aluminium Housing, B20x 600
PC Grey, P65.....252	Aluminium, Double Cover ..B010x.....503
	Alüminyum , B035x.....852
	Stainless Steel Housing , B101x.....800
	Special.....x

4 ELECTRICAL CONNECTION

Terminal (For Housing Models).....00	M12-2 Pin.....70
Polyamide Big Socket P01.....50	M12-5 Pin.....71
Polyamide Small Socket P02.....51	M12-8 Pin.....72
Polyamide Big Light Socket P03.....52	PVC Cable (Max. 60 °C).....80
Military Socket ML-2 , 2 Pin.....60	PVC Cable (Max. 105 °C).....81
Military Socket ML-5 , 5 Pin.....61	Silicon Cable (Max. 200 °C).....82
	PTFE Cable (Max. 230 °C).....83
	Special Cable.....x
	Special Socket.....x

5 NUMBER OF SENSOR

Single Sensor.....1	Double Sensor.....2
	Special.....x

6 OUTPUT

4-20 mA Two Wires.....19	Pt-100 (Sınıf A) 41
4-20 mA Three Wires.....20	Pt-100 (Sınıf B).....42
0-10 V Three Wires 21	Special.....x
0-20 V Three Wires.....22	

7 RANGE MEASUREMENT

0...(+)80°C.....001	(-)20°C...(+)60°C.....101
0...(+)100°C.....002	(-)20°C...(+)80°C.....102
0...(+)150°C.....003	(-)20°C...(+)100°C.....103
0...(+)200°C.....004	(-)20°C...(+)150°C.....104
	(-)20°C...(+)200°C.....105
	(-)50°C...(+)650°C.....301

8 CONNECTION MEASUREMENT

1/4" BSP.....	0002	DN 25 PN40 Flanged ISO 1092-1...	0702
1/2" BSP.....	0004	DN 32 PN40 Flanged ISO 1092-1...	0703
3/4" BSP.....	0005	DN 50 PN40 Flanged ISO 1092-1...	0705
1" BSP.....	0006	DN 80 PN40 Flanged ISO 1092-1...	0707
M10 x 1,5.....	0082	DN 100 PN40 Flanged ISO 1092-1...	0708
DN 25 PN16 Flanged ISO 1092-1.....	0502	DN 50 ANSI 150 Flanged	1005
DN 50 PN16 Flanged ISO 1092-1.....	0505	DN 80 ANSI 150 Flanged	1007
DN 32 Clamp ISO 2852.....	1501	DN 100 ANSI 150 Flanged	1008
DN 50 Clamp ISO 2852.....	1502	Special.....	x
DN 65 Clamp ISO 2852.....	1503		

9 CONNECTION MATERIAL

304 Stainless Steel.....	001	Delrin.....	063
316 Stainless Steel	002	PVDF.....	064
Brass.....	041	PBT.....	065
PVC.....	061	PTFE.....	066
Polypropylene.....	062	Special.....	x

10 PROTECTIVE SHEATING DIAMETER (PIPE SIZE)

6 mm.....	06	12 mm.....	12
8 mm.....	08	14 mm.....	14
9 mm.....	09	15 mm.....	15
11 mm.....	11	22 mm.....	22
		Special.....	x

11 EXTERNAL PROTECTIVE TUBE

None.....	000	321 Stainless Steel.....	005
304 Stainless Steel.....	001	PTFE.....	066
316 Stainless Steel.....	002	Special.....	x

12 STEM LENGHT (mm) L

15 mm.....	01	400 mm.....	40
25 mm.....	02	500 mm.....	50
50 mm.....	05	710 mm.....	71
100 mm.....	10	1000 mm.....	100
160 mm.....	16	1200 mm.....	120
200 mm.....	20	1500 mm.....	150
250 mm.....	25	Special.....	x
300 mm.....	30		

13 OPTIONAL

None.....	/ 0	Double Cell Digital Display.....	/ EDS 02
Cooling.....	/ 1	Thermowell.....	/ ELX ??
Local Digital Display	/ EDS 01	Special.....	x

SAMPLE

ETT 02-0-050-00-1-19-002-0004-001-08-000-05/0

ETT 02 4-20 mA , 0...(+)100°C, 304 Stainless Steel , 1/2" BSP , Ø 8 mm , L= 500 mm