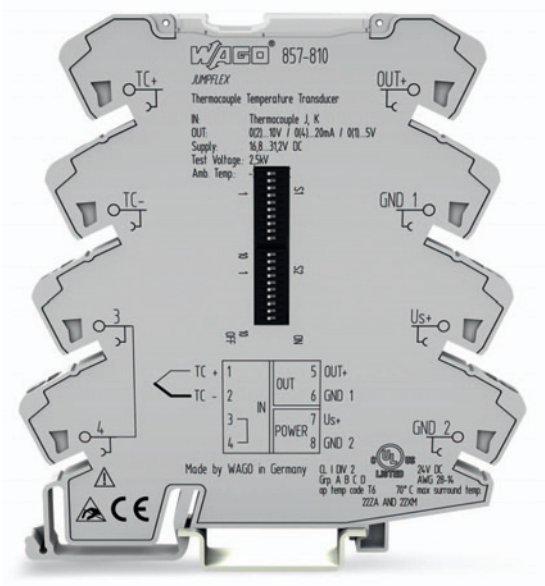
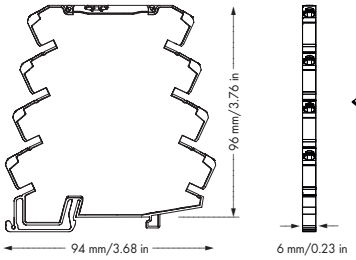
JUMPFLEX® Transducers

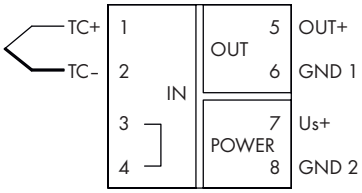
Temperature transducer for thermocouples of types J and K



Configuration via:

DIP Switches





Short description:
The 857-810 Thermocouple Temperature Transducer is suitable for the connection of type J and K thermocouples. On the output side, the thermocouple temperature transducer converts the temperature signal into an analog standard signal.

Characteristics:
- For thermocouples of type J and K
- Cold junction compensation (on/off)
- Calibrated scale switching
- Sensor's wire break
- Measuring range underflow/overflow
- Clipping capability allows analog standard signal limitation to upper range values
- Safe 3-way isolation with 2.5kV test voltage to EN 61140

Description	Item No.	Pack. Unit
***JUMPFLEX*® transducers, for DIN 35 rail**	**857-810**	1
Temperature transducer for thermocouples of types J and K		

Technical Data

Configuration:	
Configuration	DIP switch
Input:	
Input signal	Thermocouples
Sensor types	Thermocouples of types J and K
Temperature range	Type J: -150 °C ... +1200 °C
	Type K: -150 °C ... +1350 °C
Output:	
Output signal	0 ... 20 mA, 4 ... 20 mA,
	0 ... 10 V, 2 ... 10 V,
	0... 5 V, 1 ... 5 V,
	0 ... 10 mA, 2 ... 10 mA
Load impedance	≤ 600 Ω (Out = mA)
	≥ 2 kΩ (Out = V)
Cold junction compensation	on / off (default: on)
Cold junction error	3 K (typ. 2 K)
Step response	60 ms without cold junction compensation/
	120 ms with cold junction compensation
General specifications:	
Voltage supply V_N	24 V DC
Supply voltage range	16.8 V ... 31.2 V
Current consumption at 24 V DC	≤ 40 mA
Min. measuring span	100 K (configurable)
Transmission error	≤ 0.1 % at max. measuring span (Typ J, K)
Transmission error of set	
measuring span	(150 K / set measuring span [K]) %
Temperature coefficient	≤ 0.04 % /K

Technical Data

Environmental requirements:	
Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C
Safety and protection:	
Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min
Connection and type of mounting:	
Wire connection	CAGE CLAMP® S
Cross sections	solid:
	0.08 mm² ... 2.5 mm² / AWG 24 ... 14
	fine-stranded:
	0.34 mm² ... 2.5 mm² / AWG 22 ... 14
Strip lengths	9 ... 10 mm / 0.37 in
Dimensions and weight:	
Dimensions (mm) W x H x L	6 x 96 x 94
	Height from upper-edge of DIN 35 rail
Weight	44.7 g
Standards and approvals:	
Conformity marking	CE
cULus UL 508	
cULus ANSI/ISA 12.12.01	Class I, Div. 2, Grp. ABCD, T4
Shipbuilding	GL
Accessories	see pages 268 ... 271

DIP Switch Adjustability

● = ON

857-810

DIP Switch S1

Cold junction compensation		Sensor type			Output signal							Measuring range underflow	Measuring range overflow	Wire break
1		2	3		Code OUT	4	5	6		7	8			
	on			J	E				0 ... 20 mA			Lower limit of output range - 5 % *	Upper limit of output range + 2,5 % *	Upper limit of output range + 5 % *
●	off	●		K	F	●			4 ... 20 mA					
					G		●		0 ... 10 mA	●		Lower limit of output range	Upper limit of output range + 2,5 %	Upper limit of output range + 5 %
					H	●	●		2 ... 10 mA					
					J			●	0 ... 10 V		●	Lower limit of output range	Upper limit of output range	Upper limit of output range + 5 %
					K	●		●	2 ... 10 V					
					L		●	●	0 ... 5 V	●	●	Lower limit of output range	Upper limit of output range	Lower limit of output range
					M	●	●	●	1 ... 5 V					

DIP 9 and 10 n.c.

* acc. to NAMUR NE 43

DIP Switch S2

Start temperature						End temperature																									
1	2	3	4	°C	°F	5	6	7	8	9	10	°C	°F	5	6	7	8	9	10	°C	°F	5	6	7	8	9	10	°C	°F	5	6	7	8	9	10	°C	°F
																		●		225	437						●	625	1157					●	●	1025	1877
●				-200	-328	●						0	32	●				●		250	482	●					●	650	1202	●				●	●	1050	1922
	●			-175	-283		●					10	50		●			●		275	527		●				●	675	1247		●			●	●	1075	1967
●	●			-150	-283	●	●					20	68	●	●			●		300	572	●	●				●	700	1292	●	●			●	●	1100	2012
		●		-125	-193			●				30	86			●		●		325	617			●			●	725	1337			●		●	●	1125	2057
●		●		-100	-148	●		●				40	104	●		●		●		350	662	●		●			●	750	1382	●		●		●	●	1150	2102
	●	●		-90	-130		●	●				50	122		●	●		●		375	707		●	●			●	775	1427		●	●		●	●	1175	2147
●	●	●		-80	-112	●	●	●				60	140	●	●	●		●		400	752	●	●	●			●	800	1472	●	●	●		●	●	1200	2192
			●	-70	-94				●			70	158				●	●		425	797				●		●	825	1517				●	●	●	1225	2237
●			●	-60	-76	●			●			80	176	●			●	●		450	842	●			●		●	850	1562	●			●	●	●	1250	2282
	●		●	-50	-58		●		●			90	194		●		●	●		475	887		●		●		●	875	1607		●		●	●	●	1275	2327
●	●		●	-40	-40	●	●		●			100	212	●	●		●	●		500	932	●	●		●		●	900	1652	●	●		●	●	●	1300	2372
		●	●	-30	-22			●	●			125	257			●	●	●		525	977			●	●		●	925	1697			●	●	●	●	1325	2417
●		●	●	-20	-4	●		●	●			150	302	●		●	●	●		550	1022	●		●	●		●	950	1742	●		●	●	●	●	1350	2462
	●	●	●	-10	14		●	●	●			175	347		●	●	●	●		575	1067		●	●	●		●	975	1787		●	●	●	●	●	1375	2507
●	●	●	●	0	32	●	●	●	●			200	392	●	●	●	●	●		600	1112	●	●	●	●		●	1000	1832	●	●	●	●	●	●	1400	2552

The minimum distance from the start temperature to the end temperature may not fall short of 100K degrees on the Celsius (C) scale or 212K degrees on the Fahrenheit (F) scale.

Default Settings

All DIP switches are in „OFF" position for delivery.	
Cold junction compensation	on
Thermocouple	Type J
Start temperature	0 °C
End temperature	1000 °C
Output signal	0 ... 20 mA
Measuring range underflow	0 mA
Measuring range overflow	20.5 mA
Wire break	21 mA