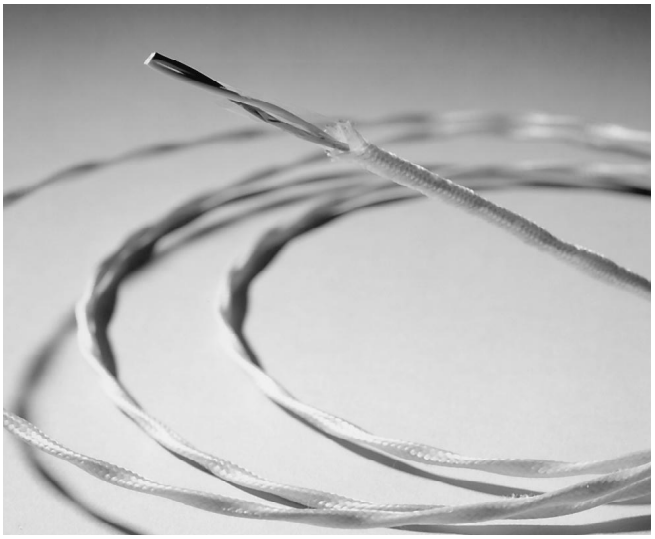
Thermocouple
Extension cable



Applications
Raychem manufactures a broad range of thermocouple extension cables in four thermoelement combinations. Each provides accurate transmission of electromotive force (EMF) from a thermocouple element lead wire of the same conductor material to a thermometer, also known as a pyrometer.

All four types of thermocouple extension cables use 19-strand conductors and are available in twisted pair, jacketed twisted pair, and shielded and jacketed twisted pair configurations. A range of cables is available from 16 AWG to 24 AWG.

Wires and cables are insulated and jacketed with radiation-crosslinked ETFE, which has a continuous operating temperature of –65°C to 200°C. This material, which is fully specified in Raychem Spec 55, has excellent physical properties and is highly resistant to a wide range of chemicals.

Features/Benefits
- 19-strand conductor for flexibility.
- Operating temperature range of –65°C to 200°C.

Properties

Extension cable type	Thermoelement combination	Initial calibration tolerances for thermocouple extension wires		EMF (mv)* (min.–max.)
		Temperature range	Limit of range	
EX	Chromel-Constantan	0°C to 200°C	±1.7°C	6.18–6.45
JX	Iron-Constantan	0°C to 200°C	±2.2°C	5.15–5.39
KX	Chromel-Alumel	0°C to 200°C	±2.2°C	4.00–4.19
TX	Copper-Constantan	0°C to 100°C	±1.0°C	4.24–4.32

Note: The above is in accordance with ANSI-MC-96.1-1982.
*EMF is measured in millivolts (mv) at 100°C with reference junction at 0°C.

Product Dimensions** (nominal)

AWG size	Twisted pair		Twisted, jacketed pair		Twisted, shielded, 38 AWG braid strand, jacketed pair	
	Outside diameter in mm *(in)*	Weight in kg/km *(lb/1000 ft)*	Outside diameter in mm *(in)*	Weight in kg/km *(lb/1000 ft)*	Outside diameter in mm *(in)*	Weight in kg/km *(lb/1000 ft)*
24	2.29 *(.090)*	7.3 *(4.9)*	2.67 *(.106)*	9.9 *(6.7)*	3.12 *(.123)*	16.5 *(11.1)*
22	2.60 *(.102)*	9.9 *(6.7)*	2.99 *(.118)*	13.0 *(8.8)*	3.43 *(.135)*	21.4 *(14.4)*
20	2.99 *(.118)*	14.4 *(9.7)*	3.40 *(.134)*	18.0 *(12.1)*	3.83 *(.151)*	27.8 *(18.7)*
18	3.56 *(.140)*	20.9 *(14.1)*	3.96 *(.156)*	25.1 *(16.9)*	4.34 *(.173)*	37.5 *(25.2)*
16	3.96 *(.156)*	26.3 *(17.7)*	4.37 *(.172)*	30.9 *(20.8)*	4.80 *(.189)*	44.9 *(30.2)*

**Dimensions for 19-strand-conductor thermocouple. Extension Types EX, JX, KX, and TX.

Thermocouple extension cables are available with the wires color-coded in accordance with four standards: MIL-STD-687, ANSI-MC-96.1, British Standard Code BS 1843, and Japanese JISC-C-1602.

Special cables
Thermocouple extension cables are also available in solid-conductor and seven-strand-conductor configurations. They come in a variety of thermoelement combinations, gauges, insulations, and multiple-pair designs, and they are available for outer space applications. Contact Raychem for details.

Extension cable

				Color code	
Type EX	**Chromel +**	**Constantan -**	**Jacket (if present)**	**Wire**	**Jacket**
MIL-STD-687	White	Yellow	White	9/4	9
ANSI-MC-96.1	Violet	Red	Violet	7/2	7
British Std.-BS 1843	Brown	Blue	Brown	1/6	1
JISC-C-1602	Violet	Red	Violet	7/2	7

Type JX	**Iron +**	**Constantan -**	**Jacket**	**Wire**	**Jacket**
MIL-STD-687	Black	Yellow	White	0/4	9
ANSI-MC-96.1	White	Red	Black	9/2	0
British Std.-BS 1843	Yellow	Blue	Black	4/6	0
JISC-C-1602	Red	White	Yellow	2/9	4

Type KX	**Chromel +**	**Alumel -**	**Jacket**	**Wire**	**Jacket**
MIL-STD-687	White	Green	White	9/5	9
ANSI-MC-96.1	Yellow	Red	Yellow	4/2	4
British Std.-BS 1843	Brown	Blue	Red	1/6	2
JISC-C-1602	Red	White	Blue	2/9	6

Type TX	**Copper +**	**Constantan -**	**Jacket**	**Wire**	**Jacket**
MIL-STD-687	Red	Yellow	White	2/4	9
ANSI-MC-96.1	Blue	Red	Blue	6/2	6
British Std.-BS 1843	White	Blue	Blue	9/6	6
JISC-C-1602	Red	White	Brown	2/9	1

Part Number Selection Table

The thermocouple cable options outlined in the table above can be ordered from the table below.

Raychem will assign a new part number on request for cables falling outside the range shown in the table.

Type	**Twisted pair**	**Twisted, jacketed pair**	**Shield plating***	**Twisted, shielded, jacketed pair**
EX	CTC-0077	CTC-0079	T	CTC-0074
			N	55A6169
			S	—
JX	55A8131	CTC-0080	T	CTC-0044
			N	—
			S	—
KX	55A8002	CTC-0012	T	CTC-0018
			N	CTC-0015
			S	CTC-0057
TX	CTC-0078	CTC-0081	T	CTC-0073
			N	—
			S	—

*T = Tin-coated copper.
N = Nickel-coated copper.
S = Silver-coated copper.

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