SPECIAL CABLES PVT. LTD.

INSTRUMENTATION & SIGNAL CABLES

Application: These cables find wide application in measurement, control and supervision in process instruments and equipments, various communication and data acquisition systems, computer systems, digital control & measurement systems etc. and are designed to transmit signal without interference.

Types and Sizes: Typically in pair/ traid formation (upto 50 Pairs, Triads) from 0.50 sq.mm to 2.50 sq.mm with screening for voltage grade upto 1.1 KV

Conductor: Copper – Solid, Stranded (Circular) or Flexible – Bare or Tinned

Insulation: PVC- GP/HR/FR/FRLS, PE, XLPE, Zero Halogen or EPR Rubber

Screening: Individual & Overall or Overall screening - Polyester Tape, Aluminium Mylar Tape, with Copper Drain Wire, Copper Tape or Tinned Copper Braiding

Inner Sheath: PVC - GP/HR/FR/FRLS, PE, Zero Halogen or Rubber – FR/HOFR

Armour: Galvanized Steel Round Wire / Flat Strip / Tape or GI / Tinned Copper Braiding

Outer Sheath: PVC - GP/HR/FR/FRLS, PE, Zero Halogen or Rubber- FR/HOFR/TRS.

Specification: Generally confirming to IS:1554 (Pt-1), BS: 5308 (Pt-1 & 2), IEC: 189 (Pt 1 & 2), IEC: 60227, VDE: 0815 & 0816, BS EN: 50288.

Key Features:

1. Cables can be customised to meet customer requirements as per various national & international standards.
2. Provides protection from induced voltage.
3. Allows to transmit signal at very low voltages to control processes and critical equipments.

Technical Data

500 Volts Grade, PVC insulated, individual pair screened & overall screened, armoured / unarmoured Instrumentation cables conforming to EN:50288-7								
Individual pair screened & overall screened								
0.5 Sq.mm								
No. of pair	2		4		8	12		
Cable Type	Unarmd.	Armd.	Unarmd.	Armd.	Unarmd.	Armd.	Unarmd.	Armd.
Conductor Diameter (mm)	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Insulation thickness (min.) (mm)	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
Thickness of sheath / bedding (Nom.)(mm)	-	1.0	-	1.0	-	1.2	-	1.3
Size of armour wire (Nom.) (mm)	-	0.9	-	0.9	-	0.9	-	1.25
Thickness of outer sheath (Nom.) (mm)	1.0	1.4	1.0	1.4	1.2	1.6	1.3	1.6
Overall diameter (For reference only) (mm)	9.0	14.0	10.5	15.5	14.5	19.5	17.0	22.5
1.0 Sq.mm								
No. of pair	2		4		8		12	
Cable Type	Unarmd.	Armd.	Unarmd.	Armd.	Unarmd.	Armd.	Unarmd.	Armd.
Conductor Diameter (mm)	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
Insulation thickness (min.) (mm)	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
Thickness of sheath / bedding (Nom.)(mm)	-	1.0	-	1.1	-	1.3	-	1.4
Size of armour wire (Nom.) (mm)	-	0.9	-	0.9	-	1.25	-	1.25
Thickness of outer sheath (Nom.) (mm)	1.0	1.4	1.1	1.5	1.3	1.6	1.4	1.7
Overall diameter (For reference only) (mm)	10.5	15.0	12.0	17.0	16.5	22.0	19.5	25.5
1.5 Sq.mm								
No. of pair	2		4		8		12	
Cable Type	Unarmd.	Armd.	Unarmd.	Armd.	Unarmd.	Armd.	Unarmd.	Armd.
Conductor Diameter (mm)	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Insulation thickness (min.) (mm)	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
Thickness of sheath / bedding (Nom.)(mm)	-	1.1	-	1.1	-	1.3	-	1.5
Size of armour wire (Nom.) (mm)	-	0.9	-	0.9	-	1.25	-	1.25
Thickness of outer sheath (Nom.) (mm)	1.1	1.5	1.1	1.5	1.3	1.7	1.5	1.8
Overall diameter (For reference only) (mm)	11.5	16.0	13.5	18.5	18.5	24.0	22.0	28.0

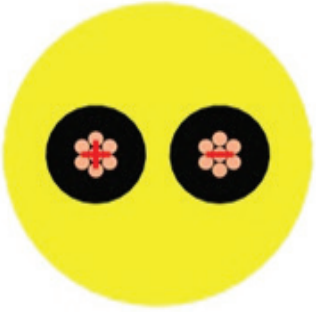
500 Volts Grade, PVC insulated, overall screened, armoured / unarmoured Instrumentation cables conforming to EN:50288-7								
Overall screened								
0.5 Sq.mm								
2		4		8		12		
Unarmd.	Armd.	Unarmd.	Armd.	Unarmd.	Armd.	Unarmd.	Armd.	
0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	
0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	
-	0.9	-	1.0	-	1.1	-	1.2	
-	0.9	-	0.9	-	0.9	-	0.9	
0.9	1.4	1.0	1.4	1.1	1.5	1.2	1.6	
8.0	12.5	9.0	14.0	12.0	17.0	14.5	19.0	
1.0 Sq.mm								
2		4		8		12		
Unarmd.	Armd.	Unarmd.	Armd.	Unarmd.	Armd.	Unarmd.	Armd.	
1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	
0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	
-	1.0	-	1.0	-	1.2	-	1.3	
-	0.9	-	0.9	-	0.9	-	1.25	
1.0	1.4	1.0	1.4	1.2	1.5	1.3	1.6	
9.0	13.5	10.5	15.0	14.0	19.0	16.5	22.5	
1.5 Sq.mm								
2		4		8		12		
Unarmd.	Armd.	Unarmd.	Armd.	Unarmd.	Armd.	Unarmd.	Armd.	
1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	
0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	
-	1.0	-	1.1	-	1.2	-	1.3	
-	0.9	-	0.9	-	1.25	-	1.25	
1.0	1.4	1.1	1.5	1.2	1.6	1.3	1.7	
10.0	14.5	11.5	16.5	16.0	21.5	18.5	24.5	

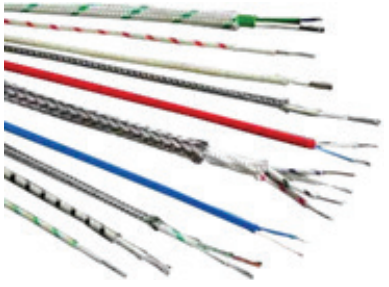
GENERAL ELECTRICAL CHARACTERSTICS				
Particular	**Units**	**0.5 SQ.MM.**	**1.0 SQ.MM.**	**1.5 SQ.MM.**
Maximum D.C. Resistance of Bare copper conductor at 20°C	Ω/km	39.70	18.10	12.10
Maximum D.C. Resistance of Tinned copper conductor at 20°C	Ω/km	40.50	18.20	12.20
Min. Insulation resistance (PVC Insulated cables)	MΩ/km	10	10	10
Maximum mutual capacitance (PVC insulated cables)	nF/km	250	250	250
L/R ratio maximum	μH/ohm	25	25	40

Note:

- Technical Data provided is for Solid (Class 1) conductor and PVC-GP (General purpose). Details given are for reference only and may be revised without notice.
- Other details can be provided on request.

THERMOCOUPLE EXTENSION / COMPENSATING CABLES





Application: Designed for interconnection between Thermocouple probes and Reference units and used for process temperature measurement and connected to pyrometers for indication and control.

Types and Sizes: KX, JX, TX, EX, SX/RX typically 16, 18 & 20 AWG

Conductor: Chromal Alumel/Iron/Copper Nickel Alloy / Copper Constantan Alloy -Solid / Stranded

Insulation: PVC- HR/FR/FRLS, PE, XLPE, Zero Halogen or EPR Rubber

Screening: Individual & Overall or Overall screening - Polyester Tape, Aluminium Mylar Tape, Copper Tape, Copper Braiding

Inner Sheath: PVC - HR/FR/FRLS, PE, Zero Halogen or Rubber – FR/HOFR/TRS

Armouring: Galvanized Steel Round Wire, Flat Strip, Braiding

Outer Sheath: PVC - HR/FR/FRLS, PE, Zero Halogen or Rubber – FR/HOFR/TRS

Specification: ANSI: MC 96.1, IS: 8784, BS: 4937, IEC: 584, DIN, JIS and designed to meet customer requirements.

GENERAL DETAILS								
TYPE	CONDUCTOR COMBINATION		ANSIMC 96.1		IS 8784		IEC 60584-3	
			COLOUR CODE		COLOUR CODE		COLOUR CODE	
	+VE	-VE	+VE	-VE	+VE	-VE	+VE	-VE
Kx	Nickel-Chromium (Chromel)	Nickel-Aluminium (Alumel)	Yellow	Red	Red	Green	Green	White
Ex	Nickel-Chromium (Chromel)	Copper-Nickel (Constantan)	Purple	Red	Red	Violet	Violet	White
Tx	Copper	Copper-Nickel (Constantan)	Blue	Red	Red	Black	Brown	White
Jx	Iron	Copper-Nickel (Constantan)	White	Red	Red	Blue	Black	White
Rx / Sx	Copper	Copper-Nickel (Constantan)	Black	Red	Red	White	Orange	White

MAXIMUM D.C LOOP RESISTANCE FOR THERMOCOUPLE CONDUCTORS AT 200C Ω/KM					
CONDUCTOR SIZE	Kx	Ex	Tx	Jx	Rx / Sx
16 AWG (1.29mm)	746	905	385	475	110
18 AWG (1.02mm)	1210	1470	623	770	175
20 AWG (0.81mm)	1910	2311	980	1212	280

Key Features:

1. Cables can be customised to meet customer requirements as per various national & international standards
2. These cables are similar to instrumentation cables except for the material used in conductor and these conductors have similar ‘emf’ properties as the thermocouple used for sensing temperature

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