



***BALTRON***  
SCREENED CABLES



# INSTRUMENTATION CABLES

Instrumentation Cables are specially designed to transmit signals without any external interference. They are used in Data Acquisition Systems, connection to Instruments, Computer Networking, PA Systems, Digital / Analog Control/Measuring & Communication Systems.

<b>Construction</b>	: Cores, pairs, triads or quads
<b>Voltage Grade</b>	: Up to 1100V
<b>Conductor</b>	: Electrolytic grade copper Bare / Tinned Solid / Stranded / Flexible Conductors
<b>Range</b>	: 0.5 / 0.75 / 1.0 / 1.5 / 2.5 Sq mm up to 48 Pair
<b>Primary Insulation</b>	: General purpose PVC / Heat Resistance PVC / LDPE / XLPE / PTFE / Fibre Glass / FEP / Silicone Rubber
<b>Screening</b>	: Individual and / or Overall with following options - - Aluminium Mylar / Copper Tape with Tinned Copper Drainwire or - Braided with Bare or Tinned or Nickel Plated or Silver Plated Copper
<b>Inner Sheath</b>	: PVC / HRPVC / FRPVC / FRLS PVC / ZHFR / LSF
<b>Armouring</b>	: GI round Wire / Flat strip or Wire Braiding
<b>Outer Sheath</b>	: PVC / HRPVC / FRPVC / FRLS PVC / ZHFR / LSF
<b>Rip Cord</b>	: For easy removal of sheath
<b>Standards</b>	: BS-5308 Part - 1 & 2, BS-7655, IEC - 189 (1 & 2), VDE-0815 & 0816 and BS EN 50288

**Additional Features** : Communication pairs, Bi-colour extrusion.

## TECHNICAL DATA

Conductor Resistance 20°C Ohms / Km	Conductor Size mm <sup>2</sup>	0.5	0.75	1.0	1.5	2.5
	Maximum Resistance	39.0	26.0	19.5	13.3	7.98
Capacitance nf/Km	Between Conductors	Less than 250 nf / km				
	Between Conductors & Screen	Less than 400 nf / km				
Inductance mH / Km		Less than 1.0				
L/R Ratio µh/Ohm	Conductor Size mm <sup>2</sup>	0.5	0.75	1.0	1.5	2.5
	LR	<25	<25	<25	<40	<40
Insulation Resistance at 20°C M ohm-Km	PVC	More than 100				
	PVC	More than 5000				
Electrostatic noise rejection ratio		More than 76.0 db				

# INDIVIDUAL AND OVERALL SHIELDED

INSTRUMENTATION CABLE PER BS 5308 PART 1 TYPE 1

**Application** : For cable tray installation in intrinsically safe environment.  
For transmission of analog or digital signals designed for process control.

**Standard** : BS 5308 Part 1

## CONSTRUCTION

**Conductor** : Stranded annealed bare copper complying with BS 5308 Part 1

**Insulation** : Polyethylene complying with BS 6234 Type 03 with a radial thickness pairs of 0.6 mm

**Pairs** : Two cores are twisted into pairs in nominal lays of 50 to 60 mm

**Colour Code** : Black / white with successive numbers, or per colour code confirming to BS 5308 Part 1

**Individual** : Each pair is individually shielded

**Shielding** : with a polyester / aluminium (AL/PET) foil, aluminium side facing inwards; 125% coverage

**Pair drain Wire** : 0.5 mm tinned copper

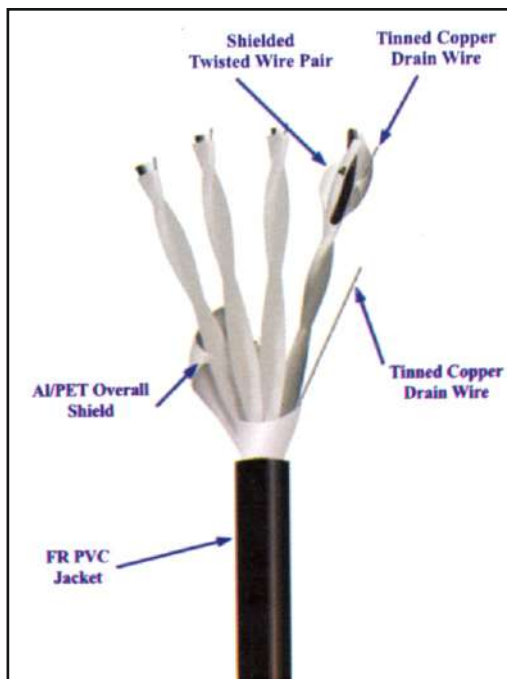
**Cabling** : The pairs are cabled into a cable core

**Overall** : Shielded with a polyester / aluminum

**Shielding** : (AL/PET) foil, aluminum side facing inwards. 100% coverage.

**Pair drain Wire** : 0.5 mm tinned copper

**Outer Jacket** : Black FR PVC complying with BS 6746 Type 6



## ELECTRICAL PROPERTIES

- **Max DC Resistance @ 20°C**  
0.5 mm<sup>2</sup> - 39.7 Ohm / km  
0.75 mm<sup>2</sup> - 26.5 Ohm / km  
1.0 mm<sup>2</sup> - 18.5 Ohm / km  
1.5 mm<sup>2</sup> - 12.3 Ohm / km
- **Mutual capacitance**  
@25°C C/1kHz
- **Dielectric Strength :**  
Insulation - 2000 Vdc / 1 min.  
Between conductors  
sheath - 5000 Vdc / 1 min
- **Marking**

# THERMOCOUPLE EXTENSION / COMPENSATING CABLE

- Construction** : Single or Multiple Pairs
- Voltage Grade** : Up to 1100 V
- Cable Code** : Kx, Kx(A), Tx, Jx, Ex, Sx / Rx, Bx, Nx, Ux, Wx
- Range** : 16 AWG / 18 AWG / 20 AWG up to 48 Pairs
- Primary Insulation** : General purpose PVC / Heat Resistance PVC / LDPE / XLPE / PTFE / Fibre Glass / FEP / Silicone Rubber
- Screening** : Individual and / or Overall with following options -
- Aluminium Mylar / Copper Tape with Tinned Copper Drain wire or
  - Braided with Bare or Tinned or Nickel Plated or Silver Plated Copper
- Inner Sheath** : PVC / HRPVC / FRPVC / FRLS PVC / ZHFR / LSF / PTFE / Fibre Glass
- Rip Cord** : For easy removal of sheath
- Standards** : ANSI:MC-96, 1 IS -8784, DIN, BS & IEC 584-3

Note : Other conductor sizes and insulation materials on request.

## TECHNICAL DATA

CABLE CODE		Kx	Kx(A)	Tx	Jx	Ex	Sx/Rx
CABLE TYPE		EXT.	COMP	EXT.	EXT.	EXT.	COMP
CONDUCTOR	+ve leg	Chromel	Copper	Copper	Iron		Copper
	-ve leg	Alumel	Constantan	Constantan	Constantan	Constantan	Copper Alloy
Suitable for Thermocouple Type		<b>Kx</b>	<b>Kx(A)</b>	<b>Tx</b>	<b>Jx</b>	<b>Ex</b>	<b>Sx/Rx</b>
Conductor Combination		Chromel Alumel	Chromel Alumel	Chromel Constantan	Iron Constantan	Chromel Constantan	Platinum 10/13% Rhodium Platinum
Temperature range °C of measuring junction		0 to +1100	☆	-185 to +300	+20 to +700	0 to +800	0 to +1500/ 0 to +1600
Applicable Standard for Output of Thermocouple conductors		BS4937 Part 4 ANSI/MC 96.1 type K DIN 43710 NFC 42-321 JISC 1602	☆	BS4937 Part 5 ANSI/MC 96.1 type T NFC 42-321 JISC 1602	BS4937 Part 3 ANSI/MC 96.1 type J NFC 42-321 JISC 1602	BS4937 Part 6 ANSI/MC 96.1 type E NFC 42-321 JISC 1602	BS4937 Part 6 ANSI/MC 96.1 type S, R, NF C 42-321 JISC 1602
COLOUR CODING							
Approximate generated 100°C EMF change per °C		42		46	46	68	8/8
mV/C at 500°C		43		-	56	81	9/10
<p>Notes : ☆Used for interconnecting Type 'K' thermocouple and instrumentation as an alternative type 'k' material. Only used where the interconnection temperature is in the range 0°C to +80°C</p> <p>We can also offer NX , UX and WX Cable      ⓧx(A) - also known as Vx</p>							



## Product Range

### Instrumentation & Control Range

**BALTRON**

- 300 V, 500 V
- Instrumentation 1 Pair to 36 Pair
- Control Cable 2 Cores to 48 Cores
- Conductor Cross Sections 0.5 - 2.5 mm<sup>2</sup>
- Copper, Plain annealed and tinned, solid (class 1) and standard (class 2)
- Insulation PVC and XLPE
- Individual Screen and overall screen
- Armour SWA
- Outer-/Inner Sheath PVC, FRLS PVC, LSZH

### LV Control Range

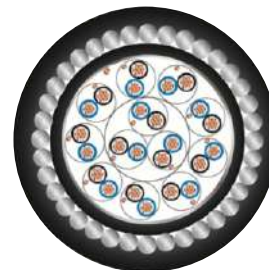
**BALTRON**

- Uo/U 0.6/1 kV
- Conductor Cross sections upto 2.5 mm<sup>2</sup>
- Copper, Plain annealed and tinned, Circular solid - and
- Circular standard
- Insulation PVC and XLPE
- Armour SWA
- Outer-/Inner Sheath  
PVC, FRLS PVC, LSZH

### Fire Resistant / Fire Survival Cables

**BALTRON**

- Transmission of analogue / Digital Signals in Instrument & Control systems ; where people are potentially endangered in case of fire and where, for a defined period of time, the continuity of control is of vital necessity.
- Circuit integrity : BS 6387 Cat. CWZ / IEC 60331 - 21
- Smoke Density : IEC 61034-2 (L.T.> 60 %)
- Limiting Oxygen Index (LOI): ASTM D 2863 (min. 30%)
- Amount of halogen acid gas: IEC 60754-1 (0%)
- Test on bunched cables: IEC 60332-3-24 (Cat. C)
- Insulation: XLPE on Mica Taped conductor or Silicon rubber



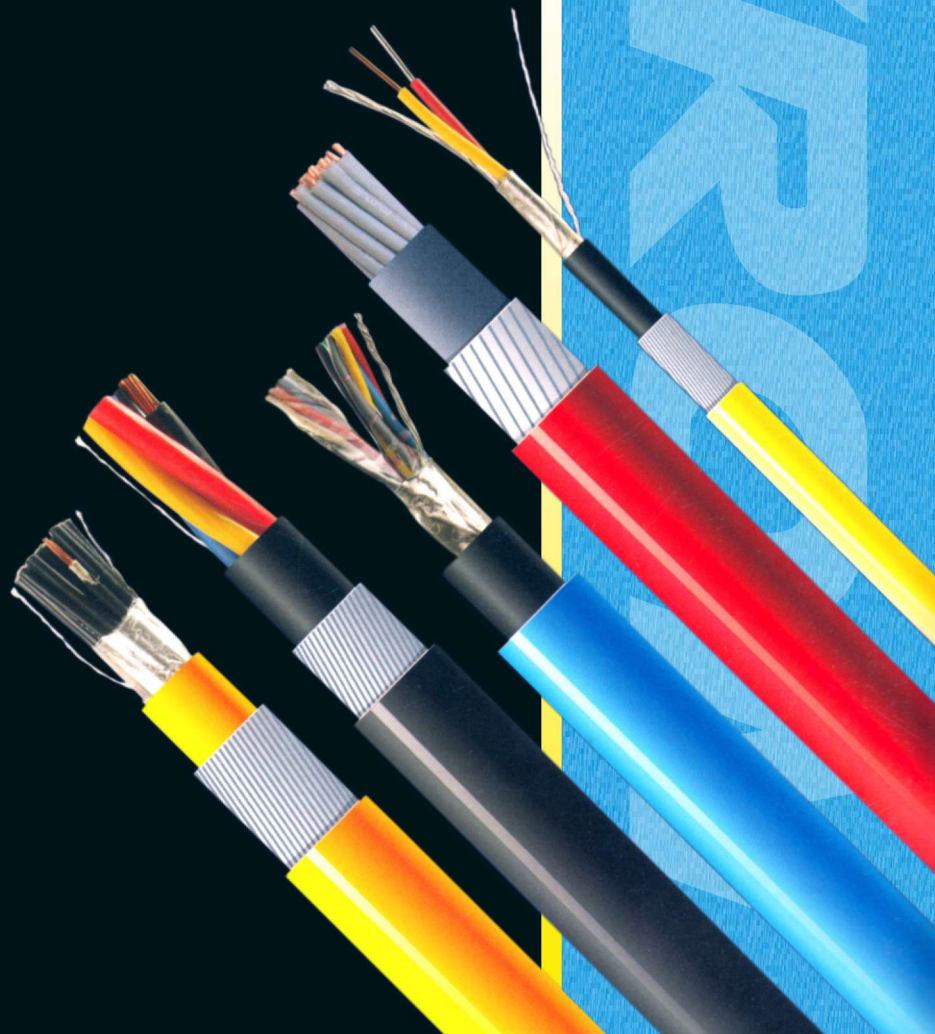


# **BALTRON**

## SCREENED CABLES

“BALTRON” a wide variety of cables suitable for process instrumentation. In the projects related to power generation & distribution, chemical & fertilizer industries and various other types of engineering industries, the process instrumentation plays a vital role in measurement, supervision and control of the process. Introduction of microprocessor based / computerised instrumentation has demanded stringent quality requirements along with special electrical parameters for instrumentation cables. Very low level electrical signals pass between measuring end and display units/controllers which are situated far off. These low level signals are prone to external noise pickups and heavy silenuation during transmission.

All this means that the cables to be used for instrumentation should be designed and manufactured very carefully, “BALTRON with its meticulous efforts in maintaining quality, stringent in process control during manufacture and the knowledge of cable designing, is proud to say that it is capable of supplying instrumentation cables meeting any Indian/International standard or a specific requirement desired by project authority.



BALTRON