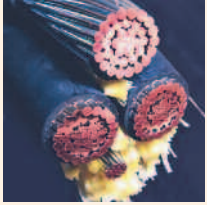


4

Control and Instrumentation Cables

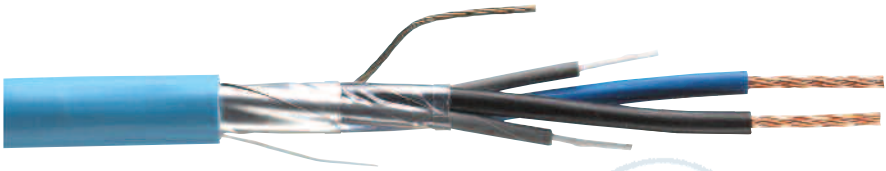
TRAFFIC CONTROL SYSTEM CABLES (4:54)

These cables are used in the monitoring of traffic movement and implementing selective use of traffic lights to improve traffic flow. The system uses loop detector cables for traffic monitoring with multipair/core cables used for signal control and signal power.

Multipair PE Insulated Instrumentation Cable

BS5308 Part 1 Type 1

Collective Screen, Unarmoured 300/500 V



Application

These cables are designed to connect electrical instrument circuits and provide communication services in and around process plants (e.g. petrochemical industry etc.). Not suitable for direct buried applications (see cables types 2 and 3).

Specifications

- In accordance with BS5308 Part 1
- **Conductors:** Solid (Class 1), stranded (Class 2) or flexible (Class 5) copper conductors to BS EN 60228
- **Insulation:** Polythene insulation Type 03 to BS6234
- **Pair Identification:** See colour code chart 1 on page 4:22
- 100mm maximum pair lay length (minimum 10 twists per metre)
- **Binder Tape:** p.e.t.p. tape 50% overlap
- **Collective Screen:** tinned copper drain wire(s) under and in contact with aluminium/p.e.t.p. laminated tape applied metallic side down
- **Outer Sheath:** PVC outer sheath Type TM.1 to BS EN 50363-4-1. In addition, outer sheath displays following characteristics:
  Minimum oxygen index: 30%
  Maximum HCL Emission @ 800°C: 15%
- Flame retardant to BS EN 60332-3-24 & IEC60332-3-24 Category C (NMV1.5)
- **Voltage Rating:** 300/500 V
- **Temperature Rating:** 65°C maximum conductor operating temperature

Multipair PE Insulated Instrumentation Cable
BS5308 Part 1 Type 1

Collective Screen, Unarmoured 300/500 V

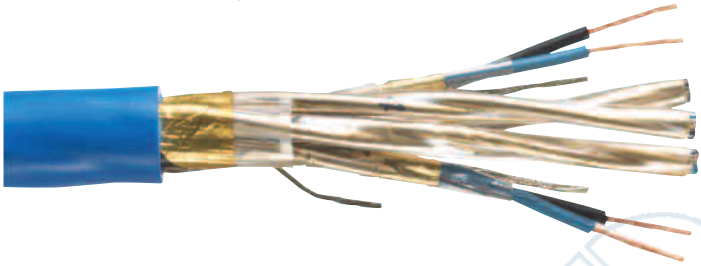
Anixter Number	Number of Pairs/Triple	Nominal Cond Area	Nominal Cond Stranding	Insulation Thickness	Nominal O/D	Approx Cable Weight	Min Bending Radius (fixed bend)
		mm²	#/mm	mm	mm	kg/km	mm
A7-M21-0001LF	1PR	0.50	16/0.20	0.60	7.00	60	60
A7-M21-0002LF	2PR(Quad)	0.50	16/0.20	0.60	7.90	80	70
A7-M21-0005LF	5PR	0.50	16/0.20	0.60	13.10	200	110
A7-M21-0010LF	10PR	0.50	16/0.20	0.60	17.20	340	140
A7-M21-0020LF	20PR	0.50	16/0.20	0.60	22.30	570	180
A7-M21-0001TLF	1TR	0.50	16/0.20	0.60	7.30	68	60
A7-M31-0001LF	1PR	0.75	24/0.20	0.60	7.40	75	60
A7-M31-0002LF	2PR(Quad)	0.75	24/0.20	0.60	8.40	100	70
A7-M31-0005LF	5PR	0.75	24/0.20	0.60	13.80	250	120
A7-M31-0010LF	10PR	0.75	24/0.20	0.60	18.90	450	150
A7-M31-0020LF	20PR	0.75	24/0.20	0.60	24.60	920	200
A7-M31-0001TLF	1TR	0.75	24/0.20	0.60	7.80	80	70
A7-L11-0001LF	1PR	1.00	1/1.13	0.60	7.40	85	60
A7-L11-0002LF	2PR(Quad)	1.00	1/1.13	0.60	8.40	115	70
A7-L11-0005LF	5PR	1.00	1/1.13	0.60	14.20	290	120
A7-L11-0010LF	10PR	1.00	1/1.13	0.60	18.40	500	150
A7-L11-0020LF	20PR	1.00	1/1.13	0.60	24.40	950	200
A7-L11-0001TLF	1TR	1.00	1/1.13	0.60	7.70	105	70
A7-L31-0001LF	1PR	1.50	7/0.53	0.60	8.30	100	70
A7-L31-0002LF	2PR(Quad)	1.50	7/0.53	0.60	9.70	150	80
A7-L31-0005LF	5PR	1.50	7/0.53	0.60	16.40	360	140
A7-L31-0010LF	10PR	1.50	7/0.53	0.60	21.60	670	180
A7-L31-0020LF	20PR	1.50	7/0.53	0.60	28.50	1230	230
A7-L31-0001TLF	1TR	1.50	7/0.53	0.60	8.70	120	80

N.B. The above part numbers apply to cables with blue outer sheaths. For black outer add -02, for green outer add -04.
15, 30 and 50 pair cables of the above type are also covered in BS5308 Part 1 and details are available upon request.
0.5mm² cables are also available with solid conductors (1/0.8mm). Details available upon request.
For low smoke zero halogen alternative see page 4:10.
For further technical information refer to page 4:22.

Multipair PE Insulated Instrumentation Cable

BS5308 Part 1 Type 1

Individual and Collective Screen, Unarmoured 300/500 V



Application

These cables are designed to connect electrical instrument circuits and provide communication services in and around process plants (e.g. petrochemical industry etc.). Not suitable for direct buried applications (see cables types 2 and 3).

Specifications

- In accordance with BS5308 Part 1
- **Conductors:** Solid (Class 1), stranded (Class 2) or flexible (Class 5) copper conductors to BS EN 60228
- **Insulation:** Polythene insulation Type 03 to BS6234
- **Pair Identification:** Pairs will be numbered, each pair containing 1 black and 1 blue core
- 100mm maximum pair lay length (minimum 10 twists per metre)
- **Individual Screen:** tinned copper drain wire under and in contact with aluminium/p.e.t.p. laminated tape applied metallic side down
- **Screen Isolation Tape:** numbered p.e.t.p. tape applied over each individually screened pair
- **Binder Tape:** p.e.t.p. tape 50% overlap
- **Collective Screen:** tinned copper drain wire(s) under and in contact with aluminium/p.e.t.p. laminated tape applied metallic side down
- **Outer Sheath:** PVC outer sheath Type TM.1 to BS EN 50363-4-1. In addition, outer sheath displays following characteristics:
  Minimum oxygen index: 30%
  Maximum HCL Emission @ 800°C: 15%
- Flame retardant to BS EN 60332-3-24 & IEC60332-3-24 Category C (NMV1.5)
- **Voltage Rating:** 300/500 V
- **Temperature Rating:** 65°C maximum conductor operating temperature

Multipair PE Insulated Instrumentation Cable
BS5308 Part 1 Type 1

Individual and Collective Screen, Unarmoured 300/500 V

Anixter Number	Number of Pairs/Triple	Nominal Cond Area	Nominal Cond Stranding	Insulation Thickness	Nominal O/D	Approx Cable Weight	Min Bending Radius (fixed bend)
		mm^2	#/mm	mm	mm	kg/km	mm
A7-P51-0002LF	2PR	0.50	16/0.20	0.60	10.70	160	100
A7-P51-0005LF	5PR	0.50	16/0.20	0.60	13.60	250	130
A7-P51-0010LF	10PR	0.50	16/0.20	0.60	19.00	480	170
A7-P51-0020LF	20PR	0.50	16/0.20	0.60	24.60	780	220
A7-W71-0002LF	2PR	0.75	24/0.20	0.60	11.40	190	110
A7-W71-0005LF	5PR	0.75	24/0.20	0.60	14.50	270	140
A7-W71-0010LF	10PR	0.75	24/0.20	0.60	20.40	550	190
A7-W71-0020LF	20PR	0.75	24/0.20	0.60	26.80	960	240
A7-N41-0002LF	2PR	1.00	1/1.13	0.60	11.30	200	110
A7-N41-0005LF	5PR	1.00	1/1.13	0.60	14.50	290	130
A7-N41-0010LF	10PR	1.00	1/1.13	0.60	20.40	580	190
A7-N41-0020LF	20PR	1.00	1/1.13	0.60	26.70	1010	240
A7-V61-0002LF	2PR	1.50	7/0.53	0.60	13.10	250	120
A7-V61-0005LF	5PR	1.50	7/0.53	0.60	16.80	400	160
A7-V61-0010LF	10PR	1.50	7/0.53	0.60	23.90	800	220
A7-V61-0020LF	20PR	1.50	7/0.53	0.60	27.60	1400	280

N.B. The above part numbers apply to cables with blue outer sheaths. For black outer add -02, for green outer add -04.
15, 30 and 50 pair cables of the above type are also covered in BS5308 Part 1 and details are available upon request.
0.5mm^2 cables are also available with solid conductors (1/0.8mm). Details available upon request.
For low smoke zero halogen alternative see page 4:12.
For further technical information refer to page 4:22.

Multipair PE Insulated Instrumentation Cable

BS5308 Part 1 Type 2

Collective Screen, Armoured 300/500 V

Application

These cables are designed to connect electrical instrument circuits and provide communication services in and around process plants (e.g. petrochemical industry etc.). Suitable for direct buried applications.

Specifications

- In accordance with BS5308 Part 1
- **Conductors:** Solid (Class 1), stranded (Class 2) or flexible (Class 5) copper conductors to BS EN 60228
- **Insulation:** Polythene insulation Type 03 to BS6234
- **Pair Identification:** See colour code chart 1 page 4:22
- 100mm maximum pair lay length (minimum 10 twists per metre)
- **Binder Tape:** p.e.t.p. tape 50% overlap
- **Collective Screen:** tinned copper drain wire(s) under and in contact with aluminium/p.e.t.p. laminated tape applied metallic side down
- Polythene bedding Type 2C or 03 to BS6234
- Mild galvanised steel wires to BS EN 10257-1
- **Outer Sheath:** PVC outer sheath Type TM.1 to BS EN 50363-4-1. In addition, outer sheath displays following characteristics:
  Minimum oxygen index: 30%
  Maximum HCL Emission @ 800°C: 15%
- Flame retardant to BS EN 60332-3-24 & IEC60332-3-24 Category C (NMV1.5)
- **Voltage Rating:** 300/500 V
- **Temperature Rating:** 65°C maximum conductor operating temperature

Multipair PE Insulated Instrumentation Cable

BS5308 Part 1 Type 2

Collective Screen, Armoured 300/500 V

Anixter Number	Number of Pairs/ Triple	Nominal Cond Area	Nominal Cond Stranding	Insulation Thickness	Nominal Diameter Under Armour	Armour Wire Diameter	Nominal O/D	Approx Cable Weight	Min Bending Radius (fixed bend)
		mm^2	#/mm	mm	mm	mm	mm	kg/km	mm
A7-M22-0001LF	1PR	0.5	16/0.20	0.60	7.00	0.90	11.40	250	100
A7-M22-0002LF	2PR(QD)	0.5	16/0.20	0.60	7.90	0.90	12.30	300	100
A7-M22-0005LF	5PR	0.5	16/0.20	0.60	13.10	0.90	17.90	560	150
A7-M22-0010LF	10PR	0.5	16/0.20	0.60	17.20	1.25	22.90	970	190
A7-M22-0020LF	20PR	0.5	16/0.20	0.60	22.30	1.60	29.10	1640	240
A7-M22-0001TLF	1TR	0.5	16/0.20	0.60	7.30	0.90	11.70	270	100
A7-M32-0001LF	1PR	0.75	24/0.20	0.60	7.40	0.90	11.80	280	100
A7-M32-0002LF	2PR(QD)	0.75	24/0.20	0.60	8.40	0.90	13.00	330	110
A7-M32-0005LF	5PR	0.75	24/0.20	0.60	13.80	1.25	19.30	750	160
A7-M32-0010LF	10PR	0.75	24/0.20	0.60	18.90	1.60	25.50	1260	210
A7-M32-0020LF	20PR	0.75	24/0.20	0.60	24.60	1.60	31.60	1890	260
A7-M32-0001TLF	1TR	0.75	24/0.20	0.60	7.80	0.90	12.20	300	100
A7-L12-0001LF	1PR	1.0	1/1.13	0.60	7.40	0.90	11.80	290	100
A7-L12-0002LF	2PR(QD)	1.0	1/1.13	0.60	8.40	0.90	13.00	345	110
A7-L12-0005LF	5PR	1.0	1/1.13	0.60	14.20	1.25	19.70	790	160
A7-L12-0010LF	10PR	1.0	1/1.13	0.60	18.40	1.25	24.30	1310	200
A7-L12-0020LF	20PR	1.0	1/1.13	0.60	24.40	1.60	31.20	2040	250
A7-L12-0001TLF	1TR	1.0	1/1.13	0.60	7.70	0.90	12.30	310	100
A7-L32-0001LF	1PR	1.5	7/0.53	0.60	8.30	0.90	12.90	330	110
A7-L32-0002LF	2PR(QD)	1.5	7/0.53	0.60	9.70	0.90	14.30	420	120
A7-L32-0005LF	5PR	1.5	7/0.53	0.60	16.40	1.25	22.10	940	180
A7-L32-0010LF	10PR	1.5	7/0.53	0.60	21.60	1.60	28.40	1500	230
A7-L32-0020LF	20PR	1.5	7/0.53	0.60	28.50	1.60	35.70	2400	290
A7-L32-0001TLF	1TR	1.5	7/0.53	0.60	8.70	0.90	13.30	350	110

(QD) = Quad

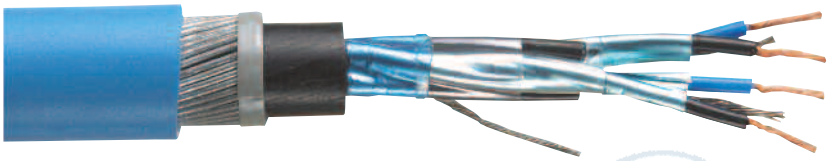
N.B. The above part numbers apply to cables with blue outer sheaths. For black outer add -02, for green outer add -04.
15, 30 and 50 pair cables of the above type are also covered in BS5308 Part 1 and details are available upon request.
0.5mm^2 cables are also available with solid conductors (1/0.8mm). Details available upon request.

For low smoke zero halogen alternative see page 4:14.
For further technical information refer to page 4:22.

Multipair PE Insulated Instrumentation Cable

BS5308 Part 1 Type 2

Individual and Collective Screen, Armoured 300/500 V



Application

These cables are designed to connect electrical instrument circuits and provide communication services in and around process plants (e.g. petrochemical industry etc.). Suitable for direct buried applications.

Specifications

- In accordance with BS5308 Part 1
- **Conductors:** Solid (Class 1), stranded (Class 2) or flexible (Class 5) copper conductors to BS EN 60228
- **Insulation:** Polythene insulation Type 03 to BS6234
- **Pair Identification:** Pairs will be numbered, each pair containing 1 black and 1 blue core
- 100mm maximum pair lay length (minimum 10 twists per metre)
- **Individual Screen:** tinned copper drain wire under and in contact with aluminium/p.e.t.p. laminated tape applied metallic side down
- **Screen Isolation Tape:** numbered p.e.t.p. tape applied over each individually screened pair
- **Binder Tape:** p.e.t.p. tape 50% overlap
- **Collective Screen:** tinned copper drain wire(s) under and in contact with aluminium/p.e.t.p. laminated tape applied metallic side down
- Polythene bedding Type 2C or 03 to BS6234
- Mild galvanised steel wires to BS EN 10257-1
- **Outer Sheath:** PVC outer sheath Type TM.1 to BS EN 50363-4-1. In addition, outer sheath displays following characteristics:
  Minimum oxygen index: 30%
  Maximum HCL Emission @ 800°C: 15%
- Flame retardant to BS EN 60332-3-24 & IEC60332-3-24 Category C (NMV1.5)
- **Voltage Rating:** 300/500 V
- **Temperature Rating:** 65°C maximum conductor operating temperature

Multipair PE Insulated Instrumentation Cable
BS5308 Part 1 Type 2

Individual and Collective Screen, Armoured 300/500 V

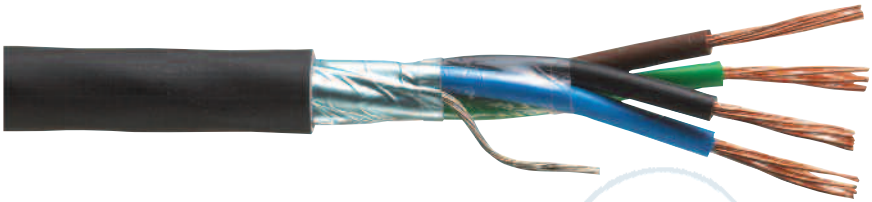
Anixter Number	Number of Pairs/ Triple	Nom Cond Area	Nominal Cond Stranding	Insulation Thickness	Nominal Diameter Under Armour	Armour Wire Diameter	Nominal O/D	Approx Cable Weight	Min Bending Radius (fixed bend)
		mm^2	#/mm	mm	mm	mm	mm	kg/km	mm
A7-P52-0002LF	2PR	0.5	16/0.20	0.60	10.70	0.90	15.30	460	140
A7-P52-0005LF	5PR	0.5	16/0.20	0.60	13.60	1.25	19.10	760	170
A7-P52-0010LF	10PR	0.5	16/0.20	0.60	19.00	1.60	25.60	1300	230
A7-P52-0020LF	20PR	0.5	16/0.20	0.60	24.60	1.60	31.60	1870	280
A7-W72-0002LF	2PR	0.75	24/0.20	0.60	11.40	0.90	16.00	500	150
A7-W72-0005LF	5PR	0.75	24/0.20	0.60	14.60	1.25	20.00	920	180
A7-W72-0010LF	10PR	0.75	24/0.20	0.60	20.40	1.60	27.00	1610	240
A7-W72-0020LF	20PR	0.75	24/0.20	0.60	26.80	2.00	33.80	2420	310
A7-N42-0002LF	2PR	1.0	1/1.13	0.60	11.30	0.90	15.90	515	150
A7-N42-0005LF	5PR	1.0	1/1.13	0.60	14.50	1.25	20.00	950	180
A7-N42-0010LF	10PR	1.0	1/1.13	0.60	20.40	1.60	27.00	1670	240
A7-N42-0020LF	20PR	1.0	1/1.13	0.60	26.70	2.00	33.70	2540	310
A7-V62-0002LF	2PR	1.5	7/0.53	0.60	13.10	1.25	18.60	730	170
A7-V62-0005LF	5PR	1.5	7/0.53	0.60	16.80	1.60	22.50	1180	210
A7-V62-0010LF	10PR	1.5	7/0.53	0.60	23.90	1.60	30.70	1820	270
A7-V62-0020LF	20PR	1.5	7/0.53	0.60	31.10	2.00	39.30	3030	350

N.B. The above part numbers apply to cables with blue outer sheaths. For black outer add -02, for green outer add -04.
15, 30 and 50 pair cables of the above type are also covered in BS5308 Part 1 and details are available upon request.
0.5mm^2 cables are also available with solid conductors (1/0.8mm). Details available upon request.
For low smoke zero halogen alternative see page 4:16.
For further technical information refer to page 4:22.

Multipair PE Insulated LSF Instrumentation Cable

BS5308 Part 1 Type 1 - LSF

Collective Screen, Unarmoured 300/500 V Low Smoke Zero Halogen



Application

These cables are designed to connect electrical instrument circuits and provide communication services in and around process plants (e.g. petrochemical industry etc.). Especially for use in areas where fire would create dense smoke and toxic fumes causing a major threat to life and equipment. Not suitable for direct buried applications (see cable type 2).

Specifications

- Generally in accordance with BS5308 Part 1
- **Conductors:** Stranded (Class 2) or flexible (Class 5) copper conductors to BS EN 60228
- **Insulation:** Polythene insulation Type 03 to BS6234
- **Pair Identification:** See colour code chart 1 on page 4:22
- 100mm maximum pair lay length (minimum 10 twists per metre)
- **Binder Tape:** p.e.t.p. tape 50% overlap
- **Collective Screen:** tinned copper drain wire(s) under and in contact with aluminium/p.e.t.p. laminated tape applied metallic side down
- **Outer Sheath:** Black LSF outer sheath to BS6724
- Flame retardant to BS EN 60332-3-24 & IEC60332-3-24 Category C (NMV1.5)
- **Voltage Rating:** 300/500 V
- **Temperature Rating:** 65°C maximum conductor operating temperature

Multipair PE Insulated LSF Instrumentation Cable

BS5308 Part 1 Type 1 - LSF

Collective Screen, Unarmoured 300/500 V Low Smoke Zero Halogen

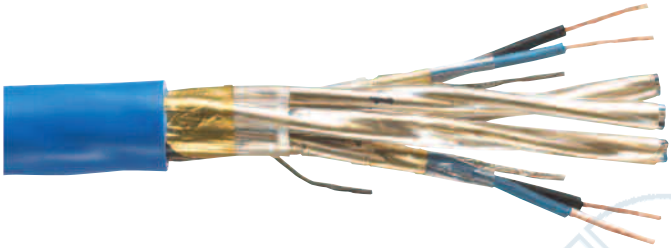
Anixter Number	Number of Pairs/Triple	Nominal Cond Area	Nominal Cond Stranding	Insulation Thickness	Nominal O/D	Approx Cable Weight	Min Bending Radius (fixed bend)
		mm^2	#/mm	mm	mm	kg/km	mm
A7W1-P001L-02	1PR	0.50	16/0.20	0.60	7.00	60	60
A7W1-P002L-02	2PR(Quad)	0.50	16/0.20	0.60	7.90	80	70
A7W1-P005L-02	5PR	0.50	16/0.20	0.60	13.10	200	110
A7W1-P010L-02	10PR	0.50	16/0.20	0.60	17.20	340	140
A7W1-P020L-02	20PR	0.50	16/0.20	0.60	22.30	570	180
A7W1-P030L-02	30PR	0.50	16/0.20	0.60	26.90	790	220
A7W1-P050L-02	50PR	0.50	16/0.20	0.60	33.90	1270	280
A7DF1-P001L-02	1PR	0.75	24/0.20	0.60	7.40	75	60
A7DF1-P002L-02	2PR(Quad)	0.75	24/0.20	0.60	8.40	100	70
A7DF1-P005L-02	5PR	0.75	24/0.20	0.60	13.80	250	120
A7DF1-P010L-02	10PR	0.75	24/0.20	0.60	18.90	450	150
A7DF1-P020L-02	20PR	0.75	24/0.20	0.60	24.60	920	200
A7DF1-P030L-02	30PR	0.75	24/0.20	0.60	28.90	1200	240
A7DF1-P050L-02	50PR	0.75	24/0.20	0.60	36.90	1920	300
A7BT1-P001L-02	1PR	1.50	7/0.53	0.60	8.30	100	70
A7BT1-P002L-02	2PR(Quad)	1.50	7/0.53	0.60	9.70	150	80
A7BT1-P005L-02	5PR	1.50	7/0.53	0.60	16.40	360	140
A7BT1-P010L-02	10PR	1.50	7/0.53	0.60	21.60	670	180
A7BT1-P020L-02	20PR	1.50	7/0.53	0.60	28.50	1230	230
A7BT1-P030L-02	30PR	1.50	7/0.53	0.60	34.30	1730	280
A7BT1-P050L-02	50PR	1.50	7/0.53	0.60	43.60	2700	350

For further technical information refer to page 4:22.

Multipair PE Insulated LSF Instrumentation Cable

BS5308 Part 1 Type 1 - LSF

Individual and Collective Screen, Unarmoured 300/500 V Low Smoke Zero Halogen



Application

These cables are designed to connect electrical instrument circuits and provide communication services in and around process plants (e.g. petrochemical industry etc.). Especially for use in areas where fire would create dense smoke and toxic fumes causing a major threat to life and equipment. Not suitable for direct buried applications (see cable type 2).

Specifications

- Generally in accordance with BS5308 Part 1
- **Conductors:** Stranded (Class 2) or flexible (Class 5) copper conductors to BS EN 60228
- **Insulation:** Polythene insulation Type 03 to BS6234
- **Pair Identification:** Pairs will be numbered, each pair containing 1 black and 1 blue core
- 100mm maximum pair lay length (minimum 10 twists per metre)
- **Individual Screen:** tinned copper drain wire under and in contact with aluminium/p.e.t.p. laminated tape applied metallic side down
- **Screen Isolation Tape:** numbered p.e.t.p. tape applied over each individually screened pair
- **Binder Tape:** p.e.t.p. tape 50% overlap
- **Collective Screen:** tinned copper drain wire(s) under and in contact with aluminium/p.e.t.p. laminated tape applied metallic side down
- **Outer Sheath:** Black or Blue LSF outer sheath to BS6724
- Flame retardant to BS EN 60332-3-24 & IEC60332-3-24 Category C (NMV1.5)
- **Voltage Rating:** 300/500 V
- **Temperature Rating:** 65°C maximum conductor operating temperature

Multipair PE Insulated LSF Instrumentation Cable

BS5308 Part 1 Type 1 - LSF

Individual and Collective Screen, Unarmoured 300/500 V Low Smoke Zero Halogen

Anixter Number	Number of Pairs/Triple	Nominal Cond Area	Nominal Cond Stranding	Insulation Thickness	Nominal O/D	Approx Cable Weight	Min Bending Radius (fixed bend)
		mm^2	#/mm	mm	mm	kg/km	mm
A7Z1-P002L	2PR	0.50	16/0.20	0.60	10.70	160	100
A7Z1-P005L	5PR	0.50	16/0.20	0.60	13.60	250	130
A7Z1-P010L	10PR	0.50	16/0.20	0.60	19.00	480	170
A7Z1-P020L	20PR	0.50	16/0.20	0.60	24.60	780	220
A7Z1-P030L	30PR	0.50	16/0.20	0.60	29.20	1100	260
A7Z1-P050L	50PR	0.50	16/0.20	0.60	37.10	1590	340
A7DG1-P002L	2PR	0.75	24/0.20	0.60	11.40	190	110
A7DG1-P005L	5PR	0.75	24/0.20	0.60	14.50	270	140
A7DG1-P010L	10PR	0.75	24/0.20	0.60	20.40	550	190
A7DG1-P020L	20PR	0.75	24/0.20	0.60	26.80	960	240
A7DG1-P030L	30PR	0.75	24/0.20	0.60	31.50	1320	290
A7DG1-P050L	50PR	0.75	24/0.20	0.60	40.30	2120	360
A7CS1-P002L	2PR	1.50	7/0.53	0.60	13.10	250	120
A7CS1-P005L	5PR	1.50	7/0.53	0.60	16.80	400	160
A7CS1-P010L	10PR	1.50	7/0.53	0.60	23.90	800	220
A7CS1-P020L	20PR	1.50	7/0.53	0.60	31.10	1400	280
A7CS1-P030L	30PR	1.50	7/0.53	0.60	36.80	2040	330
A7CS1-P050L	50PR	1.50	7/0.53	0.60	47.20	3250	420

N.B. The above part numbers apply to cables with blue outer sheaths. For black outer add -02.
E.g. A7Z1-P002L-02

For further technical information refer to page 4:22.

Multipair PE Insulated LSF Instrumentation Cable

BS5308 Part 1 Type 2 - LSF

Collective Screen, Armoured 300/500 V Low Smoke Zero Halogen

Application

These cables are designed to connect electrical instrument circuits and provide communication services in and around process plants (e.g. petrochemical industry etc.). Especially for use in areas where fire would create dense smoke and toxic fumes causing a major threat to life and equipment. Suitable for direct buried applications.

Specifications

- Generally in accordance with BS5308 Part 1
- **Conductors:** Stranded (Class 2) or flexible (Class 5) copper conductors to BS EN 60228
- **Insulation:** Polythene insulation Type 03 to BS6234
- **Pair Identification:** See colour code chart 1 page 4:22
- 100mm maximum pair lay length (minimum 10 twists per metre)
- **Binder Tape:** p.e.t.p. tape 50% overlap
- **Collective Screen:** tinned copper drain wire(s) under and in contact with aluminium/p.e.t.p. laminated tape applied metallic side down
- LSF inner sheath to BS6724
- Mild galvanised steel wires to BS EN 10257-1
- **Outer Sheath:** Black or Blue LSF outer sheath to BS6724
- Flame retardant to BS EN 60332-3-24 & IEC60332-3-24 Category C (NMV1.5)
- **Voltage Rating:** 300/500 V
- **Temperature Rating:** 65°C maximum conductor operating temperature

Multipair PE Insulated LSF Instrumentation Cable

BS5308 Part 1 Type 2 - LSF

Collective Screen, Armoured 300/500 V Low Smoke Zero Halogen

Anixter Number	Number of Pairs/ Triple	Nominal Cond Area	Nominal Cond Stranding	Insulation Thickness	Nominal Diameter Under Armour	Armour Wire Diameter	Nominal O/D	Approx Cable Weight	Min Bending Radius (fixed bend)
		mm^2	#/mm	mm	mm	mm	mm	kg/km	mm
A7W2-P001L	1PR	0.5	16/0.20	0.60	7.00	0.90	11.40	265	100
A7W2-P002L	2PR(QD)	0.5	16/0.20	0.60	7.90	0.90	12.30	315	100
A7W2-P005L	5PR	0.5	16/0.20	0.60	12.90	0.90	17.70	620	150
A7W2-P010L	10PR	0.5	16/0.20	0.60	17.40	1.25	23.10	1075	190
A7W2-P020L	20PR	0.5	16/0.20	0.60	22.50	1.60	29.30	1820	240
A7W2-P030L	30PR	0.5	16/0.20	0.60	26.70	1.60	33.70	2345	330
A7W2-P050L	50PR	0.5	16/0.20	0.60	33.90	2.00	42.10	3680	420
A7DF2-P001L	1PR	0.75	24/0.20	0.60	7.40	0.90	11.80	310	100
A7DF2-P002L	2PR(QD)	0.75	24/0.20	0.60	8.40	0.90	13.00	370	110
A7DF2-P005L	5PR	0.75	24/0.20	0.60	13.80	1.25	19.30	830	160
A7DF2-P010L	10PR	0.75	24/0.20	0.60	18.90	1.60	25.50	1400	210
A7DF2-P020L	20PR	0.75	24/0.20	0.60	24.60	1.60	31.60	2095	260
A7DF2-P030L	30PR	0.75	24/0.20	0.60	28.90	2.00	36.10	2680	360
A7DF2-P050L	50PR	0.75	24/0.20	0.60	36.90	2.00	45.30	4220	440
A7BT2-P001L	1PR	1.5	7/0.53	0.60	8.30	0.90	12.90	370	110
A7BT2-P002L	2PR(QD)	1.5	7/0.53	0.60	9.70	0.90	14.30	470	120
A7BT2-P005L	5PR	1.5	7/0.53	0.60	16.40	1.25	22.10	1060	180
A7BT2-P010L	10PR	1.5	7/0.53	0.60	21.60	1.60	28.40	1180	230
A7BT2-P020L	20PR	1.5	7/0.53	0.60	28.50	1.60	35.70	2650	290
A7BT2-P030L	30PR	1.5	7/0.53	0.60	34.30	2.00	42.50	3450	410
A7BT2-P050L	50PR	1.5	7/0.53	0.60	43.60	2.50	53.40	5500	510

(QD) = Quad

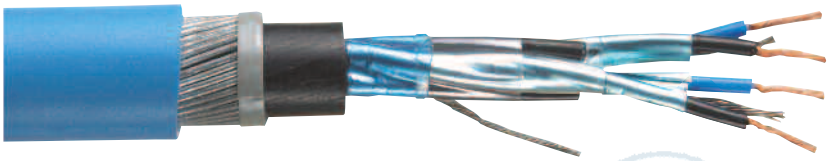
N.B. The above part numbers apply to cables with blue outer sheaths. For black outer add -02.
E.g. A7W2-P001L-02.

For further technical information refer to page 4:22.

Multipair PE Insulated LSF Instrumentation Cable

BS5308 Part 1 Type 2 - LSF

Individual and Collective Screen, Armoured 300/500 V Low Smoke Zero Halogen



Application

These cables are designed to connect electrical instrument circuits and provide communication services in and around process plants (e.g. petrochemical industry etc.). Especially for use in areas where fire would create dense smoke and toxic fumes causing a major threat to life and equipment. Suitable for direct buried applications.

Specifications

- Generally in accordance with BS5308 Part 1
- **Conductors:** Stranded (Class 2) or flexible (Class 5) copper conductors to BS EN 60228
- **Insulation:** Polythene insulation Type 03 to BS6234
- **Pair Identification:** Pairs will be numbered, each pair containing 1 black and 1 blue core
- 100mm maximum pair lay length (minimum 10 twists per metre)
- **Individual Screen:** tinned copper drain wire under and in contact with aluminium/p.e.t.p. laminated tape applied metallic side down
- **Screen Isolation Tape:** numbered p.e.t.p. tape applied over each individually screened pair
- **Binder Tape:** p.e.t.p. tape 50% overlap
- **Collective Screen:** tinned copper drain wire(s) under and in contact with aluminium/p.e.t.p. laminated tape applied metallic side down
- LSF inner sheath to BS6724
- Mild galvanised steel wires to BS EN 10257-1
- **Outer Sheath:** Black or Blue LSF outer sheath to BS6724
- Flame retardant to BS EN 60332-3-24 & IEC60332-3-24 Category C (NMV1.5)
- **Voltage Rating:** 300/500 V
- **Temperature Rating:** 65°C maximum conductor operating temperature

Multipair PE Insulated LSF Instrumentation Cable

BS5308 Part 1 Type 2 - LSF

Individual and Collective Screen, Armoured 300/500 V Low Smoke Zero Halogen

Anixter Number	Number of Pairs/ Triple	Nominal Cond Area	Nominal Cond Stranding	Insulation Thickness	Nominal Diameter Under Armour	Armour Wire Diameter	Nominal O/D	Approx Cable Weight	Min Bending Radius (fixed bend)
		mm^2	#/mm	mm	mm	mm	mm	kg/km	mm
A7Z2-P002L	2PR	0.5	16/0.20	0.60	10.70	0.90	15.30	480	140
A7Z2-P005L	5PR	0.5	16/0.20	0.60	13.60	1.25	19.10	790	170
A7Z2-P010L	10PR	0.5	16/0.20	0.60	19.00	1.60	25.60	1350	230
A7Z2-P020L	20PR	0.5	16/0.20	0.60	24.60	1.60	31.60	1950	280
A7Z2-P030L	30PR	0.5	16/0.20	0.60	29.20	2.00	36.40	2720	330
A7Z2-P050L	50PR	0.5	16/0.20	0.60	37.10	2.50	45.50	4700	420
A7DG2-P002L	2PR	0.75	24/0.20	0.60	11.40	0.90	16.00	530	150
A7DG2-P005L	5PR	0.75	24/0.20	0.60	14.50	1.25	20.00	830	180
A7DG2-P010L	10PR	0.75	24/0.20	0.60	20.40	1.60	27.00	1500	240
A7DG2-P020L	20PR	0.75	24/0.20	0.60	26.80	2.00	33.80	2470	310
A7DG2-P030L	30PR	0.75	24/0.20	0.60	31.50	2.00	39.70	3130	360
A7DG2-P050L	50PR	0.75	24/0.20	0.60	40.30	2.50	49.90	4920	440
A7CS2-P002L	2PR	1.5	7/0.53	0.60	13.10	1.25	18.60	760	170
A7CS2-P005L	5PR	1.5	7/0.53	0.60	16.80	1.60	22.50	1190	210
A7CS2-P010L	10PR	1.5	7/0.53	0.60	23.90	1.60	30.70	1910	270
A7CS2-P020L	20PR	1.5	7/0.53	0.60	31.10	2.00	39.30	3140	350
A7CS2-P030L	30PR	1.5	7/0.53	0.60	36.80	2.50	45.20	4590	410
A7CS2-P050L	50PR	1.5	7/0.53	0.60	47.20	2.50	57.20	6190	510

N.B. The above part numbers apply to cables with blue outer sheaths. For black outer add -02.
E.g. A7Z2-P002L-02.

For further technical information refer to page 4:22.

Multicore PE Insulated LSF Instrumentation Cable

BS5308 Part 1 Type 1

Collective Screen, Unarmoured 300/500 V Low Smoke Zero Halogen

Application

These cables are designed to connect electrical instrument circuits and provide communication services in and around process plants (e.g. petrochemical industry etc.). Especially for use in areas where fire would create dense smoke and toxic fumes causing a major threat to life and equipment. Not suitable for direct buried applications (see cable type 2).

Specifications

- Generally in accordance with BS5308 Part 1
- **Conductors:** Stranded (Class 2) or flexible (Class 5) copper conductors to BS EN 60228
- **Insulation:** Polythene insulation Type 03 to BS6234
- **Core Identification:**
  Up to forty cores - cores will be numbered in black ink on yellow cores
  Up to eighty cores - First forty cores will be numbered 1-40 in black ink on yellow cores. Remaining will be numbered 1-40 in yellow ink on black cores
- **Binder Tape:** p.e.t.p. tape 50% overlap
- **Collective Screen:** tinned copper drain wire(s) under and in contact with aluminium/p.e.t.p. laminated tape applied metallic side down
- **Outer Sheath:** Black LSF outer sheath to BS6724
- Flame retardant to BS EN 60332-3-24 & IEC60332-3-24 Category C (NMV1.5)
- **Voltage Rating:** 300/500 V
- **Temperature Rating:** 65°C maximum conductor operating temperature

Multicore PE Insulated LSF Instrumentation Cable

BS5308 Part 1 Type 1

Collective Screen, Unarmoured 300/500 V Low Smoke Zero Halogen

Anixter Number	Number of Cores	Nominal Cond Area	Nominal Cond Stranding	Insulation Thickness	Nominal O/D	Approx Cable Weight	Min Bending Radius (fixed bend)
		mm^2	#/mm	mm	mm	kg/km	mm
A7BQ1-							
0002L-02	2	0.50	16/0.2	0.60	7.00	60	60
0003L-02	3	0.50	16/0.2	0.60	7.30	65	60
0004L-02	4	0.50	16/0.2	0.60	7.90	80	70
0006L-02	6	0.50	16/0.2	0.60	9.10	115	80
0010L-02	10	0.50	16/0.2	0.60	11.40	180	100
0020L-02	20	0.50	16/0.2	0.60	14.50	320	120
0040L-02	40	0.50	16/0.2	0.60	19.20	580	170
0080L-02	80	0.50	16/0.2	0.60	26.10	950	220
A7BS1-							
0002L-02	2	1.50	7/0.53	0.60	8.30	100	70
0003L-02	3	1.50	7/0.53	0.60	8.70	130	80
0004L-02	4	1.50	7/0.53	0.60	9.70	150	80
0006L-02	6	1.50	7/0.53	0.60	11.30	190	100
0010L-02	10	1.50	7/0.53	0.60	14.30	310	120
0020L-02	20	1.50	7/0.53	0.60	18.40	530	150
0040L-02	40	1.50	7/0.53	0.60	24.40	965	200
0080L-02	80	1.50	7/0.53	0.60	33.60	1825	270

For further technical information refer to page 4:22.

Multicore PE Insulated LSF Instrumentation Cable

BS5308 Part 1 Type 2

Collective Screen, Armoured 300/500 V Low Smoke Zero Halogen

Application

These cables are designed to connect electrical instrument circuits and provide communication services in and around process plants (e.g. petrochemical industry etc.). Especially for use in areas where fire would create dense smoke and toxic fumes causing a major threat to life and equipment. Suitable for direct buried applications.

Specifications

- Generally in accordance with BS5308 Part 1
- **Conductors:** Stranded (Class 2) or flexible (Class 5) copper conductors to BS EN 60228
- **Insulation:** Polythene insulation Type 03 to BS6234
- **Core Identification:**
  Up to forty cores - cores will be numbered in black ink on yellow cores
  Up to eighty cores - First forty cores will be numbered 1-40 in black ink on yellow cores. Remaining will be numbered 1-40 in yellow ink on black cores
- **Binder Tape:** p.e.t.p. tape 50% overlap
- **Collective Screen:** tinned copper drain wire(s) under and in contact with aluminium/p.e.t.p. laminated tape applied metallic side down
- LSF inner sheath to BS6724
- Mild galvanised steel wires to BS EN 10257-1
- **Outer Sheath:** Black LSF outer sheath to BS6724
- Flame retardant to BS EN 60332-3-24 & IEC60332-3-24 Category C (NMV1.5)
- **Voltage Rating:** 300/500 V
- **Temperature Rating:** 65°C maximum conductor operating temperature

Multicore PE Insulated LSF Instrumentation Cable

BS5308 Part 1 Type 2

Collective Screen, Armoured 300/500 V Low Smoke Zero Halogen

Anixter Number	Number of Cores	Nominal Cond Area	Nominal Cond Stranding	Insulation Thickness	Nominal Diameter Under Armour	Armour Wire Diameter	Nominal O/D	Approx Cable Weight	Min Bending Radius (fixed bend)
		mm^2	#/mm	mm	mm	mm	mm	kg/km	mm
A7BQ2-									
0002L-02	2	0.50	16/0.2	0.60	7.00	0.90	11.40	265	100
0003L-02	3	0.50	16/0.2	0.60	7.30	0.90	11.70	295	100
0004L-02	4	0.50	16/0.2	0.60	7.90	0.90	12.30	325	100
0006L-02	6	0.50	16/0.2	0.60	9.10	0.90	13.70	380	120
0010L-02	10	0.50	16/0.2	0.60	11.40	0.90	16.90	525	140
0020L-02	20	0.50	16/0.2	0.60	14.50	1.25	20.00	880	170
0040L-02	40	0.50	16/0.2	0.60	19.20	1.60	25.80	1450	220
0080L-02	80	0.50	16/0.2	0.60	26.10	1.60	33.90	2070	270
A7BS2-									
0002L-02	2	1.50	7/0.53	0.60	8.30	0.90	12.9	370	100
0003L-02	3	1.50	7/0.53	0.60	8.90	0.90	13.30	385	110
0004L-02	4	1.50	7/0.53	0.60	9.70	0.90	14.30	470	120
0006L-02	6	1.50	7/0.53	0.60	11.70	0.90	16.80	520	140
0010L-02	10	1.50	7/0.53	0.60	14.70	1.25	19.80	710	170
0020L-02	20	1.50	7/0.53	0.60	18.70	1.60	25.00	1210	210
0040L-02	40	1.50	7/0.53	0.60	24.60	1.60	31.20	2040	260
0080L-02	80	1.50	7/0.53	0.60	33.60	2.00	41.80	3120	340

For further technical information refer to page 4:22.

Technical Information for BS5308 Part 1

IDENTIFICATION OF PAIRS

Two-pair un-screened and collectively screened cables shall be laid up in quad formation and colour coded in clockwise order of rotation: black, blue, green, brown. All other un-screened or collectively screened cables up to 50 pair shall be colour coded as given in colour code chart 1 below:

COLOUR CODE CHART 1

Pair Number	a-Wire	b-Wire	Pair Number	a-Wire	b-Wire
1	Black	Blue	26	White	Yellow
2	Black	Green	27	Red	Yellow
3	Blue	Green	28	Orange	Yellow
4	Black	Brown	29	Black	Grey
5	Blue	Brown	30	Blue	Grey
6	Green	Brown	31	Green	Grey
7	Black	White	32	Brown	Grey
8	Blue	White	33	White	Grey
9	Green	White	34	Red	Grey
10	Brown	White	35	Orange	Grey
11	Black	Red	36	Yellow	Grey
12	Blue	Red	37	Black	Violet
13	Green	Red	38	Blue	Violet
14	Brown	Red	39	Green	Violet
15	White	Red	40	Brown	Violet
16	Black	Orange	41	White	Violet
17	Blue	Orange	42	Red	Violet
18	Green	Orange	43	Orange	Violet
19	Brown	Orange	44	Yellow	Violet
20	White	Orange	45	Grey	Violet
21	Red	Orange	46	Black	Turquoise
22	Black	Yellow	47	Blue	Turquoise
23	Blue	Yellow	48	Green	Turquoise
24	Green	Yellow	49	Brown	Turquoise
25	Brown	Yellow	50	White	Turquoise

Single triple cables will be identified black, blue, green.

N.B. The cables are suitable for operation at voltage up to and including 300 Vrms core-earth and 500 Vrms core-core, but are not intended for direct connection to a low impedance source, e.g. public mains electricity supply.

Technical Information for BS5308 Part 1

ELECTRICAL CHARACTERISTICS

MAXIMUM MUTUAL CAPACITANCE VALUES

	Conductor Size				
	0.5mm² pF/m	0.75mm² pF/m	1.0mm² pF/m	1.5mm² pF/m	2.5mm² pF/m
Cables without Screens	75	75	75	85	85
Cables with Collective Screen only (except 1-pair, 2-pair and 1 triple)	75	75	75	85	85
One-Pair, One Triple and Two-Pair Collectively Screened and all cables with individually Screened Pairs	115	115	115	120	120

MAXIMUM D.C. CONDUCTOR RESISTANCE @ 20°C

Conductor Size	Conductor Stranding	Resistance @ 20°C Maximum
mm²	#/mm	Ω/km
0.5	1/0.8	36.8
0.5	16/0.2	39.7
0.75	24/0.2	26.5
1.0	1/1.13	18.4
1.5	7/0.53	12.3
2.5	7/0.67	7.56

pF/m = pico Farads per metre
Ω/km = ohms per km
μH/Ω = micro Henrys per ohm

MAXIMUM L/R RATIO

Conductor Size	Conductor L/R Ratio (for adjacent cores)
mm²	
0.5	25μH/Ω
0.75	25μH/Ω
1.0	25μH/Ω
1.5	40μH/Ω
2.5	65μH/Ω

INFORMATION ON HANDLING AND USAGE AT LOW TEMPERATURES

Attention is drawn to the fact that as the temperature decreases PVC compounds become increasingly stiff and brittle, with the result that if the cable is bent quickly into a small radius, or is struck sharply at temperatures in the region of 0°C or lower, there is a risk of shattering the PVC components. To avoid the risk of damage during handling, therefore, it is desirable that the cables specified in this standard should be installed only when both the cable and the ambient temperatures are above 0°C and have been so for the previous 24 hrs, or where special precautions have been taken to maintain the cable above this temperature. However, after installation, they will operate satisfactorily at temperatures between -40°C and +65°C providing that at temperatures below 0°C they are not subject to movement or impact. The manufacturer should be consulted for precise instructions if the cable is to be stored and/or used outside these temperature limits.

Multipair PVC Insulated Instrumentation Cable

BS5308 Part 2 Type 1

Collective Screen, Unarmoured 300/500 V

Application

These cables are designed to connect electrical instrument circuits and provide communication services in and around process plants (e.g. petrochemical industry etc). Not suitable for direct buried applications (see cable type 2).

Specifications

- In accordance with BS5308 Part 2
- **Conductors:** Stranded (Class 2) or flexible (Class 5) copper conductors to BS EN 60228
- **Insulation:** PVC insulation Type TI.1 to BS EN 50363-3
- **Pair Identification:** See colour code chart 2 on page 4:32
- 100mm maximum pair lay length (minimum 10 twists per metre)
- **Binder Tape:** p.e.t.p. tape 50% overlap
- **Collective Screen:** tinned copper drain wire(s) under and in contact with aluminium/p.e.t.p. laminated tape applied metallic side down
- **Outer Sheath:** PVC outer sheath Type TM.1 or 6 to BS EN 50363-4-1. In addition, outer sheath displays following characteristics:
  Minimum oxygen index: 30%
  Maximum HCL Emission @ 800°C: 15%
- Flame retardant to BS EN 60332-3-24 & IEC60332-3-24 Category C (NMV1.5)
- **Voltage Rating:** 300/500 V
- **Temperature Rating:** 65°C maximum conductor operating temperature

Multipair PVC Insulated Instrumentation Cable

BS5308 Part 2 Type 1

Collective Screen, Unarmoured 300/500 V

Anixter Number	Number of Pairs/Triple	Nominal Cond Area	Nominal Cond Stranding	Insulation Thickness	Nominal O/D	Approx Cable Weight	Min Bending Radius (fixed bend)
		mm^2	#/mm	mm	mm	kg/km	mm
A7-S31-0001LF	1PR	0.50	16/0.2	0.60	7.00	60	60
A7-S31-0002LF	2PR(Quad)	0.50	16/0.2	0.60	7.90	80	70
A7-S31-0005LF	5PR	0.50	16/0.2	0.60	12.90	200	110
A7-S31-0010LF	10PR	0.50	16/0.2	0.60	17.40	340	140
A7-S31-0020LF	20PR	0.50	16/0.2	0.60	22.50	570	180
A7-S31-0001TLF	1TR	0.50	16/0.2	0.60	7.30	72	60
A7-S41-0001LF	1PR	0.75	24/0.2	0.60	7.40	75	60
A7-S41-0002LF	2PR(Quad)	0.75	24/0.2	0.60	8.40	100	70
A7-S41-0005LF	5PR	0.75	24/0.2	0.60	13.80	250	120
A7-S41-0010LF	10PR	0.75	24/0.2	0.60	18.90	450	150
A7-S41-0020LF	20PR	0.75	24/0.2	0.60	24.60	800	200
A7-S41-0001TLF	1TR	0.75	24/0.2	0.60	7.80	90	70
A7-S21-0001LF	1PR	1.50	7/0.53	0.60	8.30	100	70
A7-S21-0002LF	2PR(Quad)	1.50	7/0.53	0.60	9.70	150	80
A7-S21-0005LF	5PR	1.50	7/0.53	0.60	16.10	360	140
A7-S21-0010LF	10PR	1.50	7/0.53	0.60	22.10	670	180
A7-S21-0020LF	20PR	1.50	7/0.53	0.60	28.70	1230	230
A7-S21-0001TLF	1TR	1.50	7/0.53	0.60	8.70	135	80

N.B. The above part numbers apply to cables with blue outer sheaths. For black outer add -02, for green outer add -04.
15, 30 and 50 pair cables of the above type are also covered in BS5308 Part 2 and details are available upon request.
Cables having individual pair screens as well as collective screens are also available, Details upon request.
For further technical information refer to page 4:32.

Multipair PVC Insulated Instrumentation Cable

BS5308 Part 2 Type 2

Collective Screen, Armoured 300/500 V

Application

These cables are designed to connect electrical instrument circuits and provide communication services in and around process plants (e.g. petrochemical industry etc). Suitable for direct buried applications.

Specifications

- In accordance with BS5308 Part 2
- **Conductors:** Stranded (Class 2) or flexible (Class 5) copper conductors to BS EN 60228
- **Insulation:** PVC insulation Type TI.1 to BS EN 50363-3
- **Pair Identification:** See colour code chart 2 page 4:32
- 100mm maximum pair lay length (minimum 10 twists per metre)
- **Binder Tape:** p.e.t.p. tape 50% overlap
- **Collective Screen:** tinned copper drain wire(s) under and in contact with aluminium/p.e.t.p. laminated tape applied metallic side down
- PVC bedding Type TM.1 to BS EN 50363-4-1
- Mild galvanised steel wires to BS EN 10257-1
- **Outer Sheath:** PVC outer sheath Type TM.1 to BS EN 50363-4-1
  In addition, outer sheath displays following characteristics:
  Minimum oxygen index: 30%
  Maximum HCL Emission @ 800°C: 15%
- Flame retardant to BS EN 60332-3-24 & IEC60332-3-24 Category C (NMV1.5)
- **Voltage Rating:** 300/500 V
- **Temperature Rating:** 65°C maximum conductor operating temperature

Multipair PVC Insulated Instrumentation Cable
BS5308 Part 2 Type 2

Collective Screen, Armoured 300/500 V

Anixter Number	Number of Pairs/ Triple	Nominal Cond Area	Nominal Cond Stranding	Insulation Thickness	Nominal Diameter Under Armour	Armour Wire Diameter	Nominal O/D	Approx Cable Weight	Min Bending Radius (fixed bend)
		mm^2	#/mm	mm	mm	mm	mm	kg/km	mm
A7-S32-0001LF	1PR	0.50	16/0.2	0.60	7.00	0.90	11.40	255	100
A7-S32-0002LF	2PR(QD)	0.50	16/0.2	0.60	7.90	0.90	12.30	305	100
A7-S32-0005LF	5PR	0.50	16/0.2	0.60	12.90	0.90	17.70	610	150
A7-S32-0010LF	10PR	0.50	16/0.2	0.60	17.40	1.25	23.10	1060	190
A7-S32-0020LF	20PR	0.50	16/0.2	0.60	22.50	1.60	29.30	1800	240
A7-S32-0001TLF	1TR	0.50	16/0.2	0.60	7.30	0.90	11.70	280	100
A7-S42-0001LF	1PR	0.75	24/0.2	0.60	7.40	0.90	11.80	305	100
A7-S42-0002LF	2PR(QD)	0.75	24/0.2	0.60	8.40	0.90	13.00	360	110
A7-S42-0005LF	5PR	0.75	24/0.2	0.60	13.80	1.25	19.30	820	160
A7-S42-0010LF	10PR	0.75	24/0.2	0.60	18.90	1.60	25.50	1380	210
A7-S42-0020LF	20PR	0.75	24/0.2	0.60	24.60	1.60	31.60	2080	260
A7-S42-0001TLF	1TR	0.75	24/0.2	0.60	7.80	0.90	12.20	330	100
A7-S22-0001LF	1PR	1.50	7/0.53	0.60	8.30	0.90	12.90	360	110
A7-S22-0002LF	2PR(QD)	1.50	7/0.53	0.60	9.70	0.90	14.30	460	120
A7-S22-0005LF	5PR	1.50	7/0.53	0.60	16.10	1.25	21.80	1040	180
A7-S22-0010LF	10PR	1.50	7/0.53	0.60	22.10	1.60	28.90	1610	230
A7-S22-0020LF	20PR	1.50	7/0.53	0.60	28.70	1.60	35.90	2630	290
A7-S22-0001TLF	1TR	1.50	7/0.53	0.60	8.70	0.90	13.30	380	110

(QD) = Quad

N.B. The above part numbers apply to cables with blue outer sheaths. For black outer add -02, for green outer add -04. 15, 30 and 50 pair cables of the above type are also covered in BS5308 Part 2 and details are available upon request.

For further technical information refer to page 4:32.

Multipair PVC Insulated Instrumentation Cable

BS5308 Part 2 Type 2

Individual and Collective Screen, Armoured 300/500 V

Application

These cables are designed to connect electrical instrument circuits and provide communication services in and around process plants (e.g. petrochemical industry etc.). Suitable for direct buried applications.

Specifications

- In accordance with BS5308 Part 2
- **Conductors:** Stranded (Class 2) or flexible (Class 5) copper conductors to BS EN 60228
- **Insulation:** PVC insulation Type TI.1 to BS EN 50363-3
- **Pair Identification:** Pairs will be numbered, each pair containing 1 white and 1 blue core
- 100mm maximum pair lay length (minimum 10 twists per metre)
- **Individual Screen:** tinned copper drain wire under and in contact with aluminium/p.e.t.p. laminated tape applied metallic side down
- **Screen Isolation Tape:** numbered p.e.t.p. tape applied over each individually screened pair
- **Binder Tape:** p.e.t.p. tape 50% overlap
- **Collective Screen:** tinned copper drain wire(s) under and in contact with aluminium/p.e.t.p. laminated tape applied metallic side down
- PVC bedding Type TM.1 to BS EN 50363-4-1
- Mild galvanised steel wires to BS EN 10257-1
- **Outer Sheath:** Black or Blue PVC outer sheath Type TM.1 to BS EN 50363-4-1. In addition, outer sheath displays following characteristics:
  Minimum oxygen index: 30%
  Maximum HCL Emission @ 800°C: 15%
- Flame retardant to BS EN 60332-3-24 & IEC60332-3-24 Category C (NMV1.5)
- **Voltage Rating:** 300/500 V
- **Temperature Rating:** 65°C maximum conductor operating temperature

Multipair PVC Insulated Instrumentation Cable
BS5308 Part 2 Type 2

Individual and Collective Screen, Armoured 300/500 V

Anixter Number	Number of Pairs/ Triple	Nominal Cond Area	Nominal Cond Stranding	Insulation Thickness	Nominal Diameter Under Armour	Armour Wire Diameter	Nominal O/D	Approx Cable Weight	Min Bending Radius (fixed bend)
		mm^2	#/mm	mm	mm	mm	mm	kg/km	mm
A7DB2-P002LF-02	2PR	0.5	16/0.20	0.60	10.70	0.90	15.30	505	140
A7DB2-P005LF-02	5PR	0.5	16/0.20	0.60	13.60	1.25	19.10	830	170
A7DB2-P010LF-02	10PR	0.5	16/0.20	0.60	19.00	1.60	25.60	1420	230
A7DB2-P020LF-02	20PR	0.5	16/0.20	0.60	24.60	1.60	31.60	2040	280
A7DD2-P002LF-02	2PR	0.75	24/0.20	0.60	11.40	0.90	16.00	545	150
A7DD2-P005LF-02	5PR	0.75	24/0.20	0.60	14.50	1.25	20.00	1005	180
A7DD2-P010LF-02	10PR	0.75	24/0.20	0.60	20.40	1.60	27.00	1760	240
A7DD2-P020LF-02	20PR	0.75	24/0.20	0.60	26.80	1.60	33.80	2640	310
A7DA2-P002LF-02	2PR	1.5	7/0.53	0.60	13.10	1.25	18.60	800	170
A7DA2-P005LF-02	5PR	1.5	7/0.53	0.60	16.80	1.25	22.50	1290	210
A7DA2-P010LF-02	10PR	1.5	7/0.53	0.60	23.90	1.60	30.70	1990	270
A7DA2-P020LF-02	20PR	1.5	7/0.53	0.60	31.10	2.00	39.30	3310	350

N.B. The above part numbers apply to cables with black outer sheaths. For blue outer remove -02.
E.g. A7DB2-P002LF-02.

For further technical information refer to page 4:32.

Multipair/Triple XLPE Insulated LSF Instrumentation Cable - Fire Resistant

BS5308 Part 1 Type 2 - LSF and Fire Resistant

Collective Screen, Armoured 300/500 V Low Smoke Zero Halogen

Application

These cables are designed to connect electrical instrument circuits and provide communication services in and around process plants (e.g. petrochemical industry, etc). For use when fire resistance and circuit integrity is essential and where life may be endangered by smoke and noxious fumes, and where sensitive equipment may be damaged by acid forming gases.

Specifications

- Generally in accordance with BS5308, but with the addition of fire properties relevant to IEC60331. Also meets relevant Cooper Energy Services specifications
- **Conductors:** Stranded (Class 2) copper conductors to BS EN 60228
- **Insulation:** Mica Glass Tape, XLPE Type GP8 to BS7655
- **Pairs/Triples Identification:** See colour code chart 2 on page 4:32. These cables are colour coded in accordance with BS5308 Part 2
- 100mm maximum pair lay length (minimum 10 twists per metre)
- **Binder Tape:** p.e.t.p. tape 50% overlap
- **Collective Screen:** tinned copper drain wire(s) under and in contact with aluminium/p.e.t.p. tape applied metallic side down
- Black LSF inner sheath Type LTS1 to BS7655
- Mild galvanised steel wires to BS EN 10257-1
- **Outer Sheath:** Black or blue LSF outer sheath Type LTS1 to BS7655
- Flame retardant to BS EN 60332-3-22 & IEC60332-3-22 Category A (NMV7)
- Fire resistant to IEC60331 (750°C for 3 hours)
- **Voltage Rating:** 300/500 V
- **Temperature Rating:** 90°C maximum conductor operating temperature

Multipair/Triple XLPE Insulated LSF Instrumentation Cable - Fire Resistant

BS5308 Part 1 Type 2 - LSF and Fire Resistant

Collective Screen, Armoured 300/500 V Low Smoke Zero Halogen

Anixter Number	Number of Pairs/ Triple	Nominal Cond Area	Nominal Cond Stranding	Insulation Thickness	Nominal Diameter Under Armour	Armour Wire Diameter	Nominal O/D	Approx Cable Weight	Minimum Bending Radius (fixed bend)
		mm^2	#/mm	mm	mm	mm	mm	kg/km	mm
A12AG1-0001L-02	1PR	1.5	7/0.53	0.60	8.70	0.90	13.30	334	160
A12AG1-0001L-06	1PR	1.5	7/0.53	0.60	8.70	0.90	13.30	334	160
A12AG1-0002L-02	2PR(QD)	1.5	7/0.53	0.60	10.10	0.90	14.70	418	177
A12AG1-0002L-06	2PR(QD)	1.5	7/0.53	0.60	10.10	0.90	14.70	418	177
A12AG1-0005L-02	5PR	1.5	7/0.53	0.60	17.70	1.60	20.90	1127	291
A12AG1-0005L-06	5PR	1.5	7/0.53	0.60	17.70	1.60	20.90	1127	291
A12AG1-0010L-02	10PR	1.5	7/0.53	0.60	24.00	1.60	31.00	1694	372
A12AG1-0010L-06	10PR	1.5	7/0.53	0.60	24.00	1.60	31.00	1694	372
A12AG1-0001TL-02	1TR	1.5	7/0.53	0.60	9.20	0.90	13.80	373	166
A12AG1-0001TL-06	1TR	1.5	7/0.53	0.60	9.20	0.90	13.80	373	166
A12AG2-0001L-02	1PR	2.5	7/0.67	0.70	10.00	0.90	14.60	398	175
A12AG2-0001L-06	1PR	2.5	7/0.67	0.70	10.00	0.90	14.60	398	175
A12AG2-0002L-02	2PR(QD)	2.5	7/0.67	0.70	11.80	0.90	16.60	533	199
A12AG2-0002L-06	2PR(QD)	2.5	7/0.67	0.70	11.80	0.90	16.60	533	199
A12AG2-0005L-02	5PR	2.5	7/0.67	0.70	20.90	1.60	27.70	1427	333
A12AG2-0005L-06	5PR	2.5	7/0.67	0.70	20.90	1.60	27.70	1427	333

(QD) = Quad

N.B: -02 denotes Black outer sheath colour
-06 denotes Blue outer sheath colour

Also available in individually and collectively screened versions. Details upon request.

For further technical information for BS5308 Part 1 electrical characteristics refer to page 4:22.
For BS5308 Part 2 colour coding refer to page 4:32.

Technical Information for BS5308 Part 2

IDENTIFICATION OF PAIRS

Two-pair un-screened and collectively screened cables shall be laid up in quad formation and colour coded in clockwise order of rotation: blue, green, orange, brown.

All other un-screened or collectively screened cables up to 50 pair shall be colour coded as given in colour code chart 2 below:

COLOUR CODE CHART 2

Pair Number	a-Wire	b-Wire	Pair Number	a-Wire	b-Wire
1	White	Blue	26	RED-Blue	Blue
2	White	Orange	27	RED-Blue	Orange
3	White	Green	28	RED-Blue	Green
4	White	Brown	29	RED-Blue	Brown
5	White	Grey	30	RED-Blue	Grey
6	Red	Blue	31	BLUE-Black	Blue
7	Red	Orange	32	BLUE-Black	Orange
8	Red	Green	33	BLUE-Black	Green
9	Red	Brown	34	BLUE-Black	Brown
10	Red	Grey	35	BLUE-Black	Grey
11	Black	Blue	36	YELLOW-Blue	Blue
12	Black	Orange	37	YELLOW-Blue	Orange
13	Black	Green	38	YELLOW-Blue	Green
14	Black	Brown	39	YELLOW-Blue	Brown
15	Black	Grey	40	YELLOW-Blue	Grey
16	Yellow	Blue	41	WHITE-Orange	Blue
17	Yellow	Orange	42	WHITE-Orange	Orange
18	Yellow	Green	43	WHITE-Orange	Green
19	Yellow	Brown	44	WHITE-Orange	Brown
20	Yellow	Grey	45	WHITE-Orange	Grey
21	WHITE-Blue	Blue	46	ORANGE-Red	Blue
22	WHITE-Blue	Orange	47	ORANGE-Red	Orange
23	WHITE-Blue	Green	48	ORANGE-Red	Green
24	WHITE-Blue	Brown	49	ORANGE-Red	Brown
25	WHITE-Blue	Grey	50	ORANGE-Red	Grey

Single triple cables will be identified white, blue, orange.

Technical Information for BS5308 Part 2

ELECTRICAL CHARACTERISTICS

Maximum mutual capacitance values:
Maximum mutual capacitance of the pairs or adjacent cores - 250pF/m
Maximum capacitance between any core and screen - 450pF/m

MAXIMUM D.C. CONDUCTOR RESISTANCE @ 20°C

Conductor Size	Conductor Stranding	Resistance @ 20°C Maximum	
mm^2	#/mm	Ω/km	
		Multicore	Multipair
0.5	16/0.2	39.0	39.7
0.75	24/0.2	26.0	26.5
1.5	7/0.53	12.1	12.3

MAXIMUM L/R RATIO

Conductor Size	Conductor L/R Ratio (for adjacent cores)
mm^2	
0.5	25μH/Ω
0.75	25μH/Ω
1.5	40μH/Ω

pF/m = pico Farads per metre
Ω/km = ohms per km
μH/Ω = micro Henrys per ohm

INFORMATION ON HANDLING AND USAGE AT LOW TEMPERATURES

Attention is drawn to the fact that as the temperature decreases PVC compounds become increasingly stiff and brittle, with the result that if the cable is bent quickly into a small radius, or is struck sharply at temperatures in the region of 0°C or lower, there is a risk of shattering the PVC components. To avoid the risk of damage during handling, therefore, it is desirable that the cables specified in this standard should be installed only when both the cable and the ambient temperatures are above 0°C and have been so for the previous 24 hrs, or where special precautions have been taken to maintain the cable above this temperature. However, after installation, they will operate satisfactorily at temperatures between -40°C and +65°C providing that at temperatures below 0°C they are not subject to movement or impact. The manufacturer should be consulted for precise instructions if the cable is to be stored and/or used outside these temperature limits.

Multipair PVC Insulated Instrumentation Cable

CES20 Part 4 Type 143

Application

These cables are designed to connect electrical instrument circuits and provide communication services in and around processing plants (specifically steel industry). Suitable for direct buried applications.

Specifications

- In accordance with British Steel specification CES20 Part 4 Type 143
- **Conductors:** Flexible Class 5 tinned copper conductors to BS EN 60228
- **Insulation:** PVC insulation Type 2 to BS7655
- **Pair Identification:** See colour code chart 5 on page 4:36
- 100mm maximum pair lay length (minimum 10 twists per metre)
- **Binder Tape:** p.e.t.p. tape suitable overlap
- PVC tape
- **Collective Screen:** Solid 1/0.8mm tinned copper drain wire under and in contact with aluminium/p.e.t.p. laminated tape applied metallic side down
- p.e.t.p. tape suitable overlap
- PVC bedding to BS7655
- Mild galvanised steel wires to BS EN 10257-1
- **Outer Sheath:** Orange PVC sheath Type TM.1 to BS EN 50363-4-1
- Flame retardant to BS EN 60332-1-2
- **Voltage Rating:** 300/500 V
- **Temperature Rating:** 70°C maximum conductor operating temperature

Multipair PVC Insulated Instrumentation Cable

CES20 Part 4 Type 143

Anixter Number	Number of Pairs/ Triple	Nominal Cond Area	Nominal Cond Stranding	Insulation Thickness	Nominal Diameter Under Armour	Armour Wire Diameter	Nominal O/D	Approx Cable Weight	Min Bending Radius (fixed bend)
		mm^2	#/mm	mm	mm	mm	mm	kg/km	mm
A7CT-2402	2PR(QD)	0.75	24/0.2	0.60	10.40	0.90	15.20	485	130
A7CT-2405	5PR	0.75	24/0.2	0.60	13.20	1.25	18.90	720	160
A7CT-2410	10PR	0.75	24/0.2	0.60	17.70	1.60	24.60	1230	200
A7CT-2420	20PR	0.75	24/0.2	0.60	22.90	1.60	31.30	1805	260
A7CT-2430	30PR	0.75	24/0.2	0.60	28.50	2.00	37.00	2575	300
A7CT-2450	50PR	0.75	24/0.2	0.60	36.10	2.50	47.00	4250	380

(QD) = Quad

For further technical information refer to page 4:36.

Technical Information for CES20 Part 4 Type 143

IDENTIFICATION OF PAIRS

Two-pair cables shall be laid up in quad formation in clockwise order of rotation: blue, orange, green, brown.
All other cables up to 50 pair shall be colour coded as given in colour code chart 5 below:

COLOUR CODE CHART 5

Pair Number	a-Wire	b-Wire	Pair Number	a-Wire	b-Wire
1	Black	Blue	26	White	Yellow
2	Black	Orange	27	White	Violet
3	Black	Green	28	Blue	Red
4	Black	Brown	29	Blue	Yellow
5	Black	Grey	30	Blue	Violet
6	Blue	White	31	Green	Red
7	Blue	Orange	32	Green	Yellow
8	Blue	Green	33	Green	Violet
9	Blue	Brown	34	Red	Grey
10	Blue	Grey	35	Red	Orange
11	Orange	White	36	Red	Yellow
12	Orange	Green	37	Red	Brown
13	Orange	Brown	38	Red	Violet
14	Orange	Grey	39	Grey	Yellow
15	Green	White	40	Grey	Violet
16	Green	Brown	41	Orange	Yellow
17	Green	Grey	42	Orange	Violet
18	Brown	White	43	Yellow	Brown
19	Brown	Grey	44	Yellow	Violet
20	Grey	White	45	Brown	Violet
21	Black	White	46	Turquoise	Black
22	Black	Red	47	Turquoise	Blue
23	Black	Yellow	48	Turquoise	Red
24	Black	Violet	49	Turquoise	Orange
25	White	Red	50	Turquoise	Yellow

Technical Information for CES20 Part 4 Type 143

N.B: The cables are suitable for operation at voltages up to and including 300 Vrms core-earth and 500 Vrms core-core, but are not intended for direct connection to low impedance source e.g. public mains electricity supply.

ELECTRICAL CHARACTERISTICS

Maximum d.c. conductor resistance @ 20°C - 27.2Ω/km
Maximum mutual capacitance of the pairs or adjacent cores - 250pF/m
Maximum capacitance between any core and screen - 450pF/m
Maximum L/R ratio - 25μH/Ω

pF/m = pico Farads per metre
Ω/km = ohms per km
μH/Ω = micro Henrys per ohm

ESI* 09-6 Issue 5

Multipair PVC Insulated and Sheathed - Armoured

Application

These light current control cables are intended primarily for use with control, indication and alarm equipment for switchgear and similar power apparatus in power stations and substations. Suitable for use on circuits where the nominal voltage does not exceed 150 V d.c. or 110 V a.c. Suitable for direct buried applications. May be provided with optional collective screen.

Specifications

- In accordance with ESI 09-6 Issue 5
- **Conductors:** Solid (Class 1) tinned copper conductors to BS EN 60228
- **Insulation:** PVC insulation Type 2 to BS7655
- **Pair Identification:** See colour code chart 3 on page 4:40
- **Binder Tape:** p.e.t.p. tape of suitable overlap
- **OPTIONAL Collective Screen:** tinned copper drain wire under and in contact with aluminium/p.e.t.p. laminated tape applied metallic side down
- **Inner Sheath:** PVC inner sheath Type TM.1 or 6 to BS EN 50363-4-1
- Mild galvanised steel wires to BS EN 10257-1
- **Outer Sheath:** Black PVC outer sheath Type TM.1 or 6 to BS EN 50363-4-1. In addition, the PVC outer sheath displays following characteristics:
  Minimum oxygen index: 30%
  Maximum HCL Emission @ 800°C: 15%
- Flame retardant to BS EN 60332-3-24 & IEC60332-3-24 Category C (NMV1.5)
- **Voltage Rating:** 150 V d.c./110 V a.c.
- **Temperature Rating:** 70°C maximum conductor operating temperature

ESI* 09-6 Issue 5

Multipair PVC Insulated and Sheathed - Armoured

Anixter Number	Number of Pairs/ Triple	Nominal Cond Area	Nominal Cond Stranding	Insulation Thickness	Nominal Diameter Under Armour	Armour Wire Diameter	Nominal O/D	Approx Cable Weight	Minimum Bending Radius (fixed bend)
		mm^2	#/mm	mm	mm	mm	mm	kg/km	mm
UN-SCREENED CABLES									
A11EE-P002F	2PR(QD)	0.64	1/0.9	0.30	5.70	0.90	10.10	200	70
A11EE-P005F	5PR	0.64	1/0.9	0.30	9.40	0.90	14.10	370	90
A11EE-P010F	10PR	0.64	1/0.9	0.30	13.00	1.25	18.60	610	120
A11EE-P020F	20PR	0.64	1/0.9	0.30	16.80	1.25	22.70	930	140
A11EE-P030F	30PR	0.64	1/0.9	0.30	19.90	1.60	26.70	1390	170
A11EE-P050F	50PR	0.64	1/0.9	0.30	25.40	1.60	32.60	1940	200
A11EE-P100F	100PR	0.64	1/0.9	0.30	35.50	2.00	44.10	3700	270
SCREENED CABLES									
A11FF-P002F	2PR(QD)	0.64	1/0.9	0.30	6.20	0.90	10.60	220	90
A11FF-P005F	5PR	0.64	1/0.9	0.30	9.90	0.90	14.60	380	120
A11FF-P010F	10PR	0.64	1/0.9	0.30	13.50	1.25	19.10	630	160
A11FF-P020F	20PR	0.64	1/0.9	0.30	17.30	1.25	23.20	955	190
A11FF-P030F	30PR	0.64	1/0.9	0.30	20.40	1.60	27.20	1415	220
A11FF-P050F	50PR	0.64	1/0.9	0.30	25.90	1.60	33.10	2000	270
A11FF-P100F	100PR	0.64	1/0.9	0.30	36.00	2.00	44.60	3750	360

(QD) = Quad

15, 25, 40 and 75 pair cables of the above type are also covered in ESI 09-6 Issue 5.
Details are available upon request.
For further technical information refer to page 4:40.

* ESI standards are now covered under ENATS (Energy Network Association Technical Specification).
Standard number remains same, i.e. ENATS 09-6.

Technical Information for ESI* 09-6 Issue 5

PAIR IDENTIFICATION

Pairs will be identified as follows:

2-pair (quad) cables - Blue, Orange, Green, Brown (in order of rotation)
5-pair cables - Pairs 1 to 5 inclusive
10-pair cables - Pairs 1 to 10 inclusive
15-pair cables - Pairs 1 to 15 inclusive
20-pair cables - Pairs 1 to 20 inclusive
25-pair cables - Pairs 1 to 25 inclusive
30-pair cables - Pairs 1 to 30 inclusive
40-pair cables - Pairs 1 to 40 inclusive
50-pair cables - Pairs 1 to 50 inclusive
*75-pair cables - Pairs 1 to 50 plus 1 to 25 inclusive
*100-pair cables - Pairs 1 to 50 plus 1 to 50 inclusive
*Alternative colour schemes are acceptable for the 75 and 100-pair.

COLOUR CODE CHART 3

Pair Number	Wire	Pair Number	Wire	Pair Number	Wire
1	Black/Blue	18	Brown/White	35	Red/Orange
2	Black/Orange	19	Brown/Grey	36	Red/Yellow
3	Black/Green	20	Grey/White	37	Red/Brown
4	Black/Brown	21	Black/White	38	Red/Violet
5	Black/Grey	22	Black/Red	39	Grey/Yellow
6	Blue/White	23	Black/Yellow	40	Grey/Violet
7	Blue/Orange	24	Black/Violet	41	Orange/Yellow
8	Blue/Green	25	White/Red	42	Orange/Violet
9	Blue/Brown	26	White/Yellow	43	Yellow/Brown
10	Blue/Grey	27	White/Violet	44	Yellow/Violet
11	Orange/White	28	Blue/Red	45	Brown/Violet
12	Orange/Green	29	Blue/Yellow	46	Turquoise/Black
13	Orange/Brown	30	Blue/Violet	47	Turquoise/Blue
14	Orange/Grey	31	Green/Red	48	Turquoise/Red
15	Green/White	32	Green/Yellow	49	Turquoise/Orange
16	Green/Brown	33	Green/Violet	50	Turquoise/Yellow
17	Green/Grey	34	Red/Grey		

Technical Information for ESI* 09-6 Issue 5

ELECTRICAL CHARACTERISTICS

Conductor Resistance
Maximum d.c. conductor resistance @ 20ºC (LOOP) 59.34 ohms/km.

Insulation Resistance
Minimum insulation resistance 80 Mohms/km.

* ESI standards are now covered under ENATS (Energy Network Association Technical Specification).
Standard number remains same, i.e. ENATS 09-6.

ENATS* 09-6 Issue 5

Multipair PVC Insulated and Sheathed - Armoured, Un-screened

Application

These light current control cables are primarily for use with control, indication and alarm equipment for switchgear and similar power apparatus in power stations and substations. Suitable for use on circuits where the nominal voltage does not exceed 150 V d.c. or 110 V a.c.

Specification

- Generally in accordance with ESI 09-6 Issue 5
- **Conductors:** Solid (Class 1) plain copper conductors to BS EN 60228
- **Insulation:** PVC insulation Type 2 to BS7655
- **Pair Identification:** See colour code chart 4 on page 4:50
- **Binder Tape:** p.e.t.p. tape of suitable overlap
- **Inner Sheath:** PVC inner sheath Type TM.1 or 6 to BS EN 50363-4-1
- Mild galvanised steel wires to BS EN 10257-1
- **Outer Sheath:** Black PVC outer sheath Type TM.1 or 6 to BS EN 50363-4-1. In addition, the PVC outer sheath displays following characteristics:
  Minimum oxygen index: 30%
  Maximum HCL Emission @ 800°C: 15%
- Flame retardant to BS EN 60332-3-24 & IEC60332-3-24 Category C (NMV1.5)
- **Voltage Rating:** 150 V d.c./110 V a.c.
- **Temperature Rating:** 70°C maximum conductor operating temperature

* ESI standards are now covered under ENATS (Energy Network Association Technical Specification). Standard number remains same, i.e. ENATS 09-6.

ENATS* 09-6 Issue 5

Multipair PVC Insulated and Sheathed - Armoured, Un-screened

Anixter Number	Number of Pairs	Nominal Cond Area	Nominal Cond Stranding	Insulation Thickness	Nominal Diameter Under Armour	Armour Wire Diameter	Nominal O/D	Approx Cable Weight	Minimum Bending Radius (fixed bend)
		mm^2	#/mm	mm	mm	mm	mm	kg/km	mm
A11A0-P002F	2PR(QD)	0.50 to 0.28	1/0.6	0.30	3.80	0.90	7.80	135	50
A11A0-P005F	5PR	0.50 to 0.28	1/0.6	0.30	6.30	0.90	10.20	225	70
A11A0-P010F	10PR	0.50 to 0.28	1/0.6	0.30	7.90	0.90	12.30	315	80
A11A0-P020F	20PR	0.50 to 0.28	1/0.6	0.30	10.10	1.25	14.90	455	90
A11A0-P040F	40PR	0.50 to 0.28	1/0.6	0.30	17.30	1.25	23.20	890	140
A11A0-P060F	60PR	0.50 to 0.28	1/0.6	0.30	20.70	1.60	27.50	1240	170
A11A0-P100F	100PR	0.50 to 0.28	1/0.6	0.30	27.10	1.60	34.10	2050	210
A11A0-P200F	200PR	0.50 to 0.28	1/0.6	0.30	46.00	2.00	56.00	5660	340

(QD) = Quad

For further technical information refer to page 4:50.

Non-armoured versions also available.

Details upon request.

ENATS* 09-6 Issue 7

Multipair PVC Insulated and Sheathed - Collective Screen, Armoured

Application

These light current control cables are intended primarily for use with control, indication and alarm equipment for switchgear and similar power apparatus in power stations and substations. Suitable for use on circuits where the nominal voltage does not exceed 150 V d.c. or 110 V a.c. All armoured cables (generation) must be provided with a collective screen.

Specification

- In accordance with ENATS 09-6 Issue 7 Table E.3C (These cables were formerly covered by GDCD200)
- **Conductors:** Solid (Class 1) plain copper conductors to BS EN 60228
- **Insulation:** PVC insulation Type 2 to BS7655
- **Pair Identification:** See colour code chart 4 on page 4:50
- **Binder Tape:** p.e.t.p. tape of suitable overlap
- **Collective Screen:** 2-pair cables - tinned copper drain wire under and in contact with aluminium tape. 5-pair cables and above - tinned copper drain wire under and in contact with laminate backed aluminium tape (metallic side down), the backing ensuring adhesion to the PVC inner sheath
- **Inner Sheath:** PVC inner sheath Type TM.1 or 6 to BS EN 50363-4-1
- Mild galvanised steel wires to BS EN 10257-1 (Cables up to 10PR only)
- **Outer Sheath:** Grey PVC outer sheath Type TM.1 or 6 to BS EN 50363-4-1. In addition, the PVC outer sheath displays following characteristics:
  Minimum oxygen index: 30%
  Maximum HCL Emission @ 800°C: 15%
- Flame retardant to BS EN 60332-3-24 & IEC60332-3-24 Category C (NMV1.5)
- **Voltage Rating:** 150 V d.c./110 V a.c.
- **Temperature Rating:** 70°C maximum conductor operating temperature

N.B. Cables of 20-pair and above have DSTA (Double Steel Tape Armour).

ENATS* 09-6 Issue 7

Multipair PVC Insulated and Sheathed - Collective Screen, Armoured

Anixter Number	Number of Pairs	Nominal Cond Area	Nominal Cond Stranding	Insulation Thickness	Nominal Diameter Under Armour	Armour Wire Diameter/ Tape Thickness	Nominal O/D	Approx Cable Weight	Minimum Bending Radius (fixed bend)
		mm^2	#/mm	mm	mm	mm	mm	kg/km	mm
A11CY-P002F-09	2PR(QD)	0.50	1/0.8	0.30	6.50	0.90	12.10	300	100
A11CY-P005F-09	5PR	0.50	1/0.8	0.30	9.50	0.90	15.30	450	130
A11CY-P010F-09	10PR	0.50	1/0.8	0.30	11.70	1.25	18.60	730	150
A11CY-P020F-09	20PR	0.50	1/0.8	0.30	15.00	0.50*	21.80	930	180
A11CY-P040F-09	40PR	0.50	1/0.8	0.30	24.10	0.50*	31.70	1570	260
A11CY-P060F-09	60PR	0.50	1/0.8	0.30	27.90	0.50*	36.10	2120	290
A11CY-P100F-09	100PR	0.50	1/0.8	0.30	34.00	0.50*	42.20	2850	340
A11CY-P200F-09	200PR	0.50	1/0.8	0.30	47.60	0.50*	57.20	4860	460

(QD) = Quad

* Refers to thickness of steel tape on DSTA cables. For SWA version of DSTA armoured cables please use suffix -SWA e.g. A11CY-P020F-SWA.

For further technical information refer to page 4:50.

* ESI standards are now covered under ENATS (Energy Network Association Technical Specification). Standard number remains same, i.e. ENATS 09-6.

ENATS* 09-6 Issue 7

Multipair LSZH Insulated and Sheathed - Armoured, Un-screened

Application

These light current control cables are primarily for use with control, indication and alarm equipment for switchgear and similar power apparatus in power stations and substations. Suitable for use on circuits where the nominal voltage does not exceed 150 V d.c. or 110 V a.c.

Specification

- Generally in accordance with ENATS 09-6 Issue 7 Table E.3B
- **Conductors:** Solid (Class 1) plain copper conductors to BS EN 60228
- **Insulation:** Polythene insulation Type 03 to BS6234
- **Pair Identification:** See colour code chart 4 on page 4:50
- **Binder Tape:** p.e.t.p. tape of suitable overlap
- **Inner Sheath:** LSF inner sheath Type LTS1 or LTS3 to BS7655
- Mild galvanised steel wires to BS EN 10257-1
- **Outer Sheath:** Black LSF outer sheath Type LTS1 or LTS3 to BS7655. In addition, the LSF outer sheath displays following characteristics:
  Minimum oxygen index: 30%
  Maximum HCL Emission @ 800°C: 0.5%
- Flame retardant to BS EN 60332-3-24 & IEC60332-3-24 Category C (NMV1.5)
- **Voltage Rating:** 150 V d.c./110 V a.c.
- **Temperature Rating:** 70°C maximum conductor operating temperature

* ESI standards are now covered under ENATS (Energy Network Association Technical Specification). Standard number remains same, i.e. ENATS 09-6.

ENATS* 09-6 Issue 7

Multipair LSZH Insulated and Sheathed - Armoured, Un-screened

Anixter Number	Number of Pairs	Nominal Cond Area	Nominal Cond Stranding	Insulation Thickness	Nominal Diameter Under Armour	Armour Wire Diameter	Nominal O/D	Approx Cable Weight	Minimum Bending Radius (fixed bend)
		mm^2	#/mm	mm	mm	mm	mm	kg/km	mm
A11BP-P002LSF	2PR(QD)	0.50	1/0.8	0.30	5.10	0.90	9.50	197	60
A11BP-P005LSF	5PR	0.50	1/0.8	0.30	8.50	0.90	13.10	279	80
A11BP-P010LSF	10PR	0.50	1/0.8	0.30	10.90	1.25	16.40	526	100
A11BP-P020LSF	20PR	0.50	1/0.8	0.30	14.40	1.25	20.10	740	130
A11BP-P030LSF	30PR	0.50	1/0.8	0.30	18.60	1.60	25.20	880	160
A11BP-P040LSF	40PR	0.50	1/0.8	0.30	22.90	1.60	29.70	1345	180
A11BP-P050LSF	50PR	0.50	1/0.8	0.30	23.80	1.60	31.80	1700	200
A11BP-P060LSF	60PR	0.50	1/0.8	0.30	25.90	1.60	33.10	1810	200

(QD) = Quad

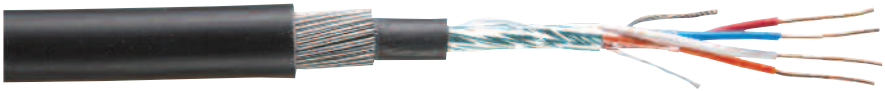
For further technical information refer to page 4:50.

Non-armoured versions also available.

Details upon request.

ENATS* 09-6 Issue 7

Multipair LSZH Insulated and Sheathed - Collective Screen, Armoured



Application

These light current control cables are intended primarily for use with control, indication and alarm equipment for switchgear and similar power apparatus in power stations and substations. Suitable for use on circuits where the nominal voltage does not exceed 150 V d.c. or 110 V a.c.

Specification

- Generally in accordance with ENATS 09-6 Issue 7 Table E.3B but with the addition of a collective screen
- **Conductors:** Solid (Class 1) plain copper conductors to BS EN 60228
- **Insulation:** Polythene insulation Type 03 to BS6234
- **Pair Identification:** See colour code chart 4 on page 4:50
- **Binder Tape:** p.e.t.p. tape of suitable overlap
- **Collective Screen:** tinned copper drain wire under and in contact with aluminium/p.e.t.p. laminated tape applied metallic side down
- **Inner Sheath:** LSF inner sheath Type LTS1 or LTS3 to BS7655
- Mild galvanised steel wires to BS EN10257-1
- **Outer Sheath:** Black LSF outer sheath Type LTS1 or LTS3 to BS7655. In addition, the LSF outer sheath displays following characteristics:
  Minimum oxygen index: 30%
  Maximum HCL Emission @ 800°C: 0.5%
- Flame retardant to BS EN 60332-3-24 & IEC60332-3-24 Category C (NMV1.5)
- **Voltage Rating:** 150 V d.c./110 V a.c.
- **Temperature Rating:** 70°C maximum conductor operating temperature

ENATS* 09-6 Issue 7

Multipair LSZH Insulated and Sheathed - Collective Screen, Armoured

Anixter Number	Number of Pairs	Nominal Cond Area	Nominal Cond Stranding	Insulation Thickness	Nominal Diameter Under Armour	Armour Wire Diameter	Nominal O/D	Approx Cable Weight	Minimum Bending Radius (fixed bend)
		mm^2	#/mm	mm	mm	mm	mm	kg/km	mm
A11BQ-P002LSF	2PR(QD)	0.50	1/0.8	0.30	5.60	0.90	10.00	220	80
A11BQ-P005LSF	5PR	0.50	1/0.8	0.30	9.00	0.90	13.60	310	110
A11BQ-P010LSF	10PR	0.50	1/0.8	0.30	11.40	1.25	16.90	550	140
A11BQ-P020LSF	20PR	0.50	1/0.8	0.30	14.90	1.25	20.60	780	170
A11BQ-P030LSF	30PR	0.50	1/0.8	0.30	19.10	1.60	25.70	1115	210
A11BQ-P040LSF	40PR	0.50	1/0.8	0.30	23.40	1.60	30.20	1345	250
A11BQ-P050LSF	50PR	0.50	1/0.8	0.30	24.30	1.60	32.30	1780	260
A11BQ-P060LSF	60PR	0.50	1/0.8	0.30	26.90	1.60	34.10	2010	280

(QD) = Quad

For further technical information refer to page 4:50.

Non-armoured versions also available.

Details upon request.

Technical Information for ESI 09-6 Issue 5

PAIR IDENTIFICATION

Pairs will be identified as given in colour code chart 4 below:

COLOUR CODE CHART 4

Pair Number	Colour	
	Wire a	Wire b
1	White	Blue
2	White	Orange
3	White	Green
4	White	Brown
5	White	Grey
6	Red	Blue
7	Red	Orange
8	Red	Green
9	Red	Brown
10	Red	Grey
11	Black	Blue
12	Black	Orange
13	Black	Green
14	Black	Brown
15	Black	Grey
16	Yellow	Blue
17	Yellow	Orange
18	Yellow	Green
19	Yellow	Brown
20	Yellow	Grey

2-pair cables are laid up in quad formation in order of rotation: white, red, blue, orange.
Cables having 40-pairs and above are laid up in 20-pair units, each individual 20-pair unit having pair identification as per colour code chart 4. Each unit shall be identified by a numbered tape applied directly on to the unit binder tapes or by a separate longitudinal tape applied under a clear unit binder tape. The numbers shall run from 1 upwards in units of 1.

Technical Information for ENATS* 09-6 Issue 7

ELECTRICAL CHARACTERISTICS

Conductor Resistance
Maximum d.c. conductor resistance @ 20°C (LOOP) 136 ohms/km.

Insulation Resistance
Minimum insulation resistance @ 20°C 50 Mohms/km.

Mutual Capacitance
Maximum mutual capacitance 125nF/km (@ 1kHz) PVC insulation.

Capacitance Unbalance
Maximum capacitance unbalance:
2-pair 800pF for 500m of cable @ 1kHz.
above 2-pair 400pF for 500m of cable @ 1kHz.

Mutual Inductance
Maximum mutual inductance 1000μH for 500m of cable @1kHz.

* ESI standards are now covered under ENATS (Energy Network Association Technical Specification).
Standard number remains same, i.e. ENATS 09-6.

Thermocouple Cables

The following information gives details on thermocouple wire tolerances and identification taken from BS4937 Part 30.

BS4937: International thermocouple reference tables.
Part 30: Extension and compensation cables. Tolerances and identification systems.

Tolerance Values

The table shows the specified tolerance for extension and compensating cables when used at temperatures within the ranges indicated as "Cable temperature range". The table also includes, in parentheses, the approximate equivalent tolerances in degrees Celsius. Because thermocouple e.m.f. temperature relationships are non-linear the tolerance in degrees Celsius depends on the temperature of the measuring junction of the thermocouple. The figures shown in the table are those appropriate to the measuring junction temperatures in the final column. In most cases the error expressed in degrees Celsius will be larger at lower thermocouple junction temperatures.

Type	Tolerance Class 1	Tolerance Class 2	Cable Temperature Range	Measuring Junction Temperature
JX	± 85μv (± 1.5°C)	± 140μv (± 2.5°C)	-25°C to +200°C	500°C
TX	± 30μv (± 1.5°C)	± 60μv (± 1.0°C)	-25°C to +200°C	300°C
EX	± 120μv (± 1.5°C)	± 200μv (± 2.5°C)	-25°C to +200°C	500°C
KX	± 60μv (± 1.5°C)	± 100μv (± 2.5°C)	-25°C to +200°C	900°C
NX	± 60μv (± 1.5°C)	± 100μv (± 2.5°C)	-25°C to +200°C	900°C
KCA	-	± 100μv (± 2.5°C)	0°C to +150°C	900°C
KCB	-	± 100μv (± 2.5°C)	0°C to +100°C	900°C
NC	-	± 30μv (± 2.5°C)	0°C to +150°C	900°C
RCA	-	± 60μv (± 5.0°C)	0°C to +100°C	1000°C
RCB	-	± 30μv (± 2.5°C)	0°C to +200°C	1000°C
SCA	-	± 60μv (± 5.0°C)	0°C to +100°C	1000°C
SCB	-	-	0°C to +200°C	1000°C

Notes
1: Cable temperature range may be restricted to figures lower than those shown in the table because of temperature limitations imposed by the insulant.
2: A cable comprising two copper conductors may be used with Type B thermocouples. The expected maximum additional deviation within the cable temperature range 0°C to +100°C is 40 mV. The equivalent in temperature is 3.5°C when the measuring junction of the thermocouple is at 1400°C.

Thermocouple Cables

Identification System for Extension and Compensating Cables

Outer Sheath: The outer sheath shall be coloured as given in the table except for intrinsically safe circuits where the outer sheath colour shall be BLUE for all thermocouple types.
Negative Conductor: The insulation of the negative conductor shall be WHITE for all thermocouple types.
Positive Conductor: The insulation of the positive conductor shall be as given in the following table:

Thermocouple Type	Colour of Positive Conductor and Sheath Insulation
T	Brown
E	Violet
J	Black
K	Green
R	Orange
S	Orange
B	Grey
N	Pink

Anixter stock a small selection of armoured thermocouple cables in the following sizes and pair counts, with BS EN 60584-3 colour coding:

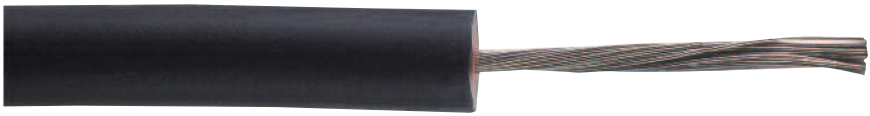
Anixter Number	Number of Pairs	Thermocouple Type	Sheath Colour	Screen Type	Diameter Under Amour	Nominal O/D	Approx Weight	Minimum Bending Radius (fixed bend)
					mm	mm	kg/km	mm
A12AG9-0001L-06	1	KC*	Blue	C	6.60	10.40	167	90
A12AG9-0002L-06	2	KC*	Blue	IC	11.40	15.60	336	130
A12AG9-0005L-06	5	KC*	Blue	IC	15.00	19.40	576	160
A12AG9-0010L-06	10	KC*	Blue	IC	21.10	25.70	891	210

*Formerly known as type Vx (compensating for type K thermocouples)
C = Collective Screen
IC = Individual and Collective Screen

Cable Construction: Copper(+) Copper-Nickel(-) conductors, XLPE insulation, screened, XLEVA, GSWB, XLEVA.

Single-Core Loop Detector Cables

EPR or EPR/PCP 85°C 450/750 V



Application

Used in vehicle monitoring equipment for detection of traffic movements via creation of inductive loop to frequency signal flowing in cable and metallic parts of vehicle. These cables are designed for installation in a slot cut into the carriageway.

Specifications

- Generally in accordance with DoT specification TR2029
- **Conductors:** Flexible (Class 5) tinned copper conductors to BS EN 60228
- **Insulation:** Black EPR insulation Type GP1 to BS7655
- **Sheath (sheathed versions only):** Black heavy duty PCP Type RS2 to BS7655
- Flame retardant to BS EN 60332-1-2
- **Temperature Rating:** 85°C maximum conductor operating temperature
- **Voltage Rating:** 450/750 V

Single-Core Loop Detector Cables

EPR or EPR/PCP 85°C 450/750 V

Anixter Number	Number of Cores	Nominal Cond Area	Nominal Cond Stranding	Insulation Thickness	Sheath Thickness*	Minimum O/D	Nominal O/D	Approx Cable Weight	Minimum Bending Radius (fixed bend)
		mm^2	#/mm	mm	mm	mm	mm	kg/km	mm
EPR Insulated Only									
A4-C30-0115-EPR-02	1	1.5	30/0.25	1.10	-	3.80	4.00	30	15
A4-C50-0125-EPR-02	1	2.5	50/0.25	2.10	-	6.05	6.35	48	20
EPR Insulated/PCP Sheath									
TR2029-1.5MM	1	1.5	30/0.25	0.80	1.4	6.80	7.20	65	30

*Applicable to sheathed versions only.

- Technical Information: Maximum d.c. conductor resistance at 20°C
  1.5mm^2 ohms/km 13.7
  2.5mm^2 ohms/km 8.21

Single and Multipair Unarmoured Feeder Cables

PE Insulated, PE Sheathed, 70°C, 600/1000 V

Application

To be used as feeder cable for inductive loop detectors. Suitable for installation in ducted network. For direct buried applications, see armoured feeder cables.

Specifications

- Generally in accordance with DOT specification TR2031
- **Conductors:** Solid Class 1 copper conductors to BS EN 60228
- **Insulation:** Polythene insulation Type 03 to BS6234
- **Core Identification:** 1-pair - red, black
  2-pair - laid up in quad formation in order of rotation: red, yellow, blue, black
- **Outer Sheath:** Orange polythene Type 03 to BS6234, embossed "TRAFFIC SIGNAL"
- **Temperature Rating:** 70°C maximum conductor operating temperature
- **Voltage Rating:** 600/1000 V

N.B: Polythene sheathed cables are not considered flame retardant and are not recommended for indoor use.

Anixter Number	Number of Pairs	Nominal Cond Area	Nominal Cond Stranding	Insulation Thickness	Maximum O/D	Approx Cable Weight	Minimum Radius (fixed bend)
		mm^2	#/mm	mm	mm	kg/km	mm
A7-E15-P001-08	1	1.5	1/1.38	0.60	7.90	67	64
A7-E15-P002-08	2(Quad)	1.5	1/1.38	0.60	9.00	118	73
A7-E25-P001-08	1	2.5	1/1.78	0.70	9.30	99	75
A7-E25-P002-08	2(Quad)	2.5	1/1.78	0.70	10.70	166	87

Technical Information

Electrical Characteristics

	Units	Cond. Size 1.5mm²	Cond. Size 2.5mm²
Maximum d.c. conductor resistance @ 20°C Capacitance	Ohms/km pF/m	12.1 <75	7.41 39 (1P) 52 (2P)
Loop inductance	μH/km	630 (1P) 770 (2P)	630 (1P) 770 (2P)
Current rating in air (30°C)	A	24*	33*

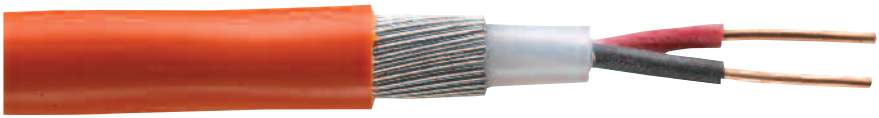
*These ratings are based on only two cores loaded simultaneously. In two-pair cables where all four cores could be loaded simultaneously, the above values should be multiplied by 0.78.

For ambient temperatures other than 30°C, the following rating factors should be applied:

Ambient air temp °C	10	15	20	25	30	35	40	45
Rating factor	1.22	1.17	1.12	1.06	1.0	0.94	0.87	0.79

Single and Multipair Armoured Feeder Cables

PE Insulated, PE Bedded, SWA, PE Sheathed, 70°C, 600/1000 V



Application

To be used as feeder cable for inductive loop detectors. Suitable for direct buried installations.

Specifications

- Generally in accordance with DoT specification TR2031
- **Conductors:** Solid Class 1 copper conductors to BS EN 60228
- **Insulation:** Polythene insulation Type 03 to BS6234
- **Core Identification:** 1-pair - red/black
  2-pair - laid up in quad formation in order of rotation: red, yellow, blue, black
- **Inner Sheath:** Natural polythene Type 03 to BS6234
- Mild galvanised steel wires to BS EN 10257-1
- **Outer Sheath:** Orange polythene Type 03 to BS6234. Embossed "TRAFFIC SIGNALS"
- **Voltage Rating:** 600/1000 V

N.B: Polythene sheathed cables are not considered flame retardant and are not recommended for indoor use.

Anixter Number	Number of Pairs	Nominal Cond Area	Nominal Cond Stranding	Insulation Thickness	Nominal Diameter Under Armour	Armour Wire Size	Nominal O/D	Approx Cable Weight	Minimum Bending Radius (fixed bend)
		mm^2	#/mm	mm	mm	mm	mm	kg/km	mm
A7-D15-P001-08	1PR	1.5	1/1.38	0.60	7.30	0.90	11.90	265	100
A7-D15-P002-08	2PR(QD)	1.5	1/1.38	0.60	8.50	0.90	13.10	335	110
A7-D25-P001-08	1PR	2.5	1/1.78	0.70	8.10	0.90	12.70	336	110
A7-D25-P002-08	2PR(QD)	2.5	1/1.78	0.70	9.50	0.90	14.10	375	120

(QD) = Quad

Technical Information

Electrical Characteristics

	Units	Cond Size 1.5mm²	Cond Size 2.5mm²
Maximum d.c. conductor resistance @ 20°C Capacitance	Ohms/km pF/m	12.1 <75	7.41 64 (1P) 53.5 (2P)
Loop inductance	μH/km	630 (1P) 770 (2P)	630 (1P) 770 (2P)
Current rating in ground (15°C, 1.2°C m/W)	A	32*	41*

*These ratings are based on only two cores being loaded simultaneously. In two-pair cables where all four cores could be loaded simultaneously, the above values should be multiplied by 0.78.

For ground temperatures other than 15°C the following rating factors should be applied:

Ground temp °C	10	15	20	25	30	35	40
Rating factor	1.04	1.0	0.95	0.90	0.85	0.80	0.74

Traffic Signal Cables

Armoured Multicore Junction High Voltage Cable

PVC/PVC/SWA/PVC 600/1000 V, 70°C

Application

These cables are used to control the display sequence of the traffic signals (e.g. red, red and amber, green etc) and are also known as Junction High Voltage Cables. Cores are individually colour coded.

Specifications

- Generally in accordance with BS6346
- **Conductors:** Solid (Class 1) plain copper conductors to BS EN 60228
- **Insulation:** PVC Type TI.1 to BS EN 50363-3
- **Core Identification:** See colour code chart on page 4:65
- **Inner Sheath:** Black PVC inner sheath Type TM.1 to BS EN 50363-4-1
- Mild galvanised steel wires to BS EN 10257-1
- **Outer Sheath:** Orange PVC outer sheath type TM.1 to BS EN 50363-4-1 embossed "TRAFFIC SIGNALS"
- Flame retardant to BS EN 60332-1-2
- **Voltage Rating:** 600/1000 V
- **Temperature Rating:** 70°C maximum conductor operating temperature

Anixter Number	Number of Cores	Nominal Cond Area	Nominal Cond Stranding	Insulation Thickness	Nominal Diameter Under Armour	Armour Wire Size	Nominal O/D	Approx Cable Weight	Minimum Bending Radius (fixed bend)
		mm^2	#/mm	mm	mm	mm	mm	kg/km	mm
A7-D10-C004-08	4	1.0	1/1.13	0.60	7.50	0.90	12.10	308	80
A7-D10-C008-08	8	1.0	1/1.13	0.60	9.70	0.90	14.30	425	90
A7-D10-C012-08	12	1.0	1/1.13	0.60	11.60	1.25	17.10	546	110
A7-D10-C016-08	16	1.0	1/1.13	0.60	12.90	1.25	18.40	754	120
A7-D10-C020-08	20	1.0	1/1.13	0.60	14.50	1.25	20.20	881	130
A7-D15-C004-08	4	1.5	1/1.38	0.60	8.10	0.90	12.70	340	80
A7-D15-C008-08	8	1.5	1/1.38	0.60	10.50	0.90	15.10	492	100
A7-D15-C012-08	12	1.5	1/1.38	0.60	12.70	1.25	18.20	742	110
A7-D15-C016-08	16	1.5	1/1.38	0.60	14.10	1.25	19.80	894	120
A7-D15-C020-08	20	1.5	1/1.38	0.60	15.80	1.25	21.50	1117	130

Colour code charts for multicore Junction High Voltage Cable

Core Number	Core Colour
1	Brown*
2	Yellow
3	Green/blue
4	Red
5	White
6	Blue
7	Black
8	Orange
9	Red/white
10	Grey
11	Red/blue
12	Purple
13	Brown/red
14	Yellow/red
15	Grey/red
16	Black/red
17	Purple/red
18	Orange/red
19	Green/red
20	Blue/white

*N.B: Core number 1 on 4 core cable is blue.

Electrical Characteristics

	Units	Cond Size 1.0mm^2	Cond Size 1.5mm^2
Maximum d.c. conductor resistance @ 20°C	Ohms/km	18.1	12.1
Minimum insulation resistance @ 20°C	Mohms/km	11	10
Sustained Current Ratings:			
Buried direct in ground	A	26	32
In single-way duct	A	21	26
In air	A	19	24

Current ratings are based on the following standard conditions:
Standard depth of laying 0.5m.
Thermal resistivity of soil 1.2°C m/W.
Standard ground temperature 15°C.
Ambient air temperature 25°C.
Maximum conductor temperature 70°C.

Traffic Signal Cables

Ratings assume that only two cores are loaded simultaneously. Where more than two cores are loaded simultaneously, the following factors should be applied to the current ratings shown:

Number of cores loaded	2	3	4	5	6	7	10	12	14	19
Rating factor	1.0	0.87	0.78	0.72	0.67	0.63	0.56	0.53	0.51	0.45

Rating factor need not apply if the number of cores carrying appreciable current does not exceed the square root of n, where n = total number of cores in cable.

If cables are to be used in ambient air or ground temperatures other than those specified, the following rating factors should be applied:

Cables Laid in Air

Ambient air temp °C	25	30	35	40	45	50	55
Rating factor	1.0	0.94	0.88	0.82	0.75	0.67	0.58

Cables Laid Direct in Ground

Ground temp °C	10	15	20	25	30	35	40	45	50
Rating factor	1.04	1.0	0.95	0.90	0.85	0.80	0.74	0.67	0.60

Cables Laid in Ducts

Ground temp °C	10	15	20	25	30	35	40	45	50
Rating factor	1.04	1.0	0.95	0.90	0.85	0.80	0.74	0.67	0.60