

Instrumentation Cables to ESI 09-6

Multipair Instrumentation Cables

ESI 09-6 Issue 5 - PVC Insulated & Sheathed

Application

These multipair light current cables are designed primarily with control, indication and alarm equipment for switchgear and similar power applications where the nominal operating voltages do not exceed 150 volts d.c. or 110 volts. a.c. The cables are also suitable for telemetry applications where large conductor sizes are required. An optional collective aluminium tape screen can be offered. In case if the installation environment is prone to flooding or prolonged period of dampness, PE insulation should be considered as an alternative to PVC.

Construction

Conductors: 1/0.9mm tinned annealed copper conductor to BS6360.

Insulation: PVC to BS 7655

Binder Tape: p.e.t.p binder tape.

Collective Screen (optional): Aluminium/Polyester tape, metallic side down, in contact with a longitudinal 1/0.5mm to 1/0.8mm tinned copper drain wire.

Bedding (armoured): PVC to BS 7655.

Armouring (armoured): Galvanised steel wire armour to BS EN10257-1

Outer Sheath: Flame retardant PVC to BS 7655

Technical Data

Maximum Conductor Temperature: +70°C

Minimum Ambient Temp: -20°C after installation and only when cable is in a fixed position.

Voltage Rating (U₀/U): 150V d. c. or 110V a.c.

Test Voltage: 2kV r. m. s. between conductors, 5kV r. m. s between all conductors and armour.

Maximum Conductor Resistance (loop): 59.34 W/km at 20 °C

Minimum Insulation Resistance: 80MW/km at 20°C

Maximum Mutual Capacitance: 150 nF/km at 1 KHz

Flame Retardancy: Complies with BS 4066 Part 1 (IEC 60332-1) or BS 4066 Part 3 (IEC 60332-3)

Minimum Bending Radius: 6 × overall diameter

Unarmoured Cables

Number of Pairs	Nominal Conductor Area (mm ²)	Nominal Conductor Stranding No./mm	Insulation Thickness (mm)	Nominal Overall Dia. (mm)	Approx. Weight (kg/km)
2(Quad)	0.64	1/0.9	0.30	5.70	45.00
5	0.64	1/0.9	0.30	9.40	115.00
10	0.64	1/0.9	0.30	13.00	205.00
20	0.64	1/0.9	0.30	16.80	380.00
30	0.64	1/0.9	0.30	19.90	570.00
50	0.64	1/0.9	0.30	25.40	920.00
2(Quad)	0.64	1/0.9	0.30	6.20	50.00
5	0.64	1/0.9	0.30	9.90	125.00
10	0.64	1/0.9	0.30	13.50	215.00
20	0.64	1/0.9	0.30	17.30	390.00
30	0.64	1/0.9	0.30	20.40	580.00
50	0.64	1/0.9	0.30	25.90	940.00



Armoured Cables

Number of Pairs/Triple	Nominal Conductor Area (mm ²)	Nominal Conductor Stranding No. /mm	Insulation Thickness (mm)	Nominal Dia. under Armour (mm)	Armour Wire Dia. (mm)	Nominal Overall Dia. (mm)	Approx. Weight (kg/km)
2(Quad)	0.64	1/0.9	0.30	5.70	0.90	10.10	200.00
5	0.64	1/0.9	0.30	9.40	0.90	14.10	370.00
10	0.64	1/0.9	0.30	13.00	1.25	18.60	610.00
20	0.64	1/0.9	0.30	16.80	1.25	22.70	930.00
30	0.64	1/0.9	0.30	19.90	1.60	26.70	1390.00
50	0.64	1/0.9	0.30	25.40	1.60	32.60	1940.00
2(Quad)	0.64	1/0.9	0.30	6.20	0.90	10.60	220.00
5	0.64	1/0.9	0.30	9.90	0.90	14.60	380.00
10	0.64	1/0.9	0.30	13.50	1.25	19.10	630.00
20	0.64	1/0.9	0.30	17.30	1.25	23.20	1055.00
30	0.64	1/0.9	0.30	20.40	1.60	27.20	1415.00
50	0.64	1/0.9	0.30	25.90	1.60	33.10	2000.00



Instrumentation Cables to ESI 09-6

COLOUR CODE CHART 3

For ESI 09-6 ISSUE 5 pairs are identified as follows:

Pair No.	A wire	B wire	Pair No.	A wire	B wire	Pair No.	A wire	B wire	Pair No.	A wire	B wire	Pair No.	A wire	B wire	Pair No.	A wire	B wire
1	Black	Blue	10	Blue	Grey	19	Brown	Grey	28	Blue	Red	37	Red	Brown	46	Turquoise	Black
2	Black	Orange	11	Orange	White	20	Grey	White	29	Blue	Yellow	38	Red	Violet	47	Turquoise	Blue
3	Black	Green	12	Orange	Green	21	Black	White	30	Blue	Violet	39	Grey	Yellow	48	Turquoise	Red
4	Black	Brown	13	Orange	Brown	22	Black	Red	31	Green	Red	40	Grey	Violet	49	Turquoise	Orange
5	Black	Grey	14	Orange	Grey	23	Black	Yellow	32	Green	Yellow	41	Orange	Yellow	50	Turquoise	Yellow
6	Blue	White	15	Green	White	24	Black	Violet	33	Green	Violet	42	Orange	Violet			
7	Blue	Orange	16	Green	Brown	25	White	Red	34	Red	Grey	43	Yellow	Brown			
8	Blue	Green	17	Green	Grey	26	White	Yellow	35	Red	Orange	44	Yellow	Violet			
9	Blue	Brown	18	Brown	White	27	White	Violet	36	Red	Yellow	45	Brown	Violet			

Ordering Code: Please refer to P3

Multipair Instrumentation Cables ISI 09-6 Issue 6 PVC Insulated & Sheathed

Construction

Conductors: 1/0.8mm tinned annealed copper conductor to BS 6360.

Insulation: PVC to BS 7655

Binder Tape: p.e.t.p binder tape.

Collective Screen (optional): Aluminium/Polyester tape, metallic side down, in contact with a longitudinal 1/0.5mm to 1/0.8mm tinned copper drain wire.

Bedding (armoured): PVC to BS 7655.

Armouring (armoured): Galvanised steel wire armour to BS EN10257-1

Outer Sheath: Flame retardant PVC to BS 7655

Technical Data

Maximum Conductor Temperature: +70°C

Minimum Ambient Temp: -20°C after installation and only when cable is in a fixed position.

Voltage Rating (U₀/U): 150V d. c. or 110V a.c.

Test Voltage: 2kV r. m. s. between conductors, 5kV r. m. s between all conductors and armour.

Maximum Conductor Resistance (loop): 73.6 W/km at 20 °C

Minimum Insulation Resistance: 80MW/km at 20°C

Maximum Mutual Capacitance: 150 nF/km at 1 KHz

Flame Retardancy: Complies with BS 4066 Part 1 (IEC 60332-1) or BS 4066 Part 3 (IEC 60332-3)

Minimum Bending Radius: 6 × overall diameter

Armoured Cables

Number of Pairs	Nominal Conductor Area (mm ²)	Nominal Conductor Stranding No. / mm	Insulation Thickness (mm)	Nominal Dia. under Armour (mm)	Armour Wire Dia. / Tape Thickness (mm)	Nominal Overall Dia. (mm)	Nominal Cable Weight (kg/km)
2(Quad)	0.50	1/0.8	0.30	6.50	0.90	12.10	300.00
5	0.50	1/0.8	0.30	9.50	0.90	15.30	450.00
10	0.50	1/0.8	0.30	11.70	1.25	18.60	730.00
20	0.50	1/0.8	0.30	15.00	0.50	21.80	930.00
40	0.50	1/0.8	0.30	24.10	0.50	31.70	1570.00

Ordering Code: Please refer to P3

COLOUR CODE CHART 4

For ESI 09-6 ISSUE 6 pairs are identified as follows:

Pair No.	A wire	B wire	Pair No.	A wire	B wire	Pair No.	A wire	B wire	Pair No.	A wire	B wire
1	White	Blue	6	Red	Blue	11	Black	Blue	16	Yellow	Blue
2	White	Orange	7	Red	Orange	12	Black	Orange	17	Yellow	Orange
3	White	Green	8	Red	Green	13	Black	Green	18	Yellow	Green
4	White	Brown	9	Red	Brown	14	Black	Brown	19	Yellow	Brown
5	White	Grey	10	Red	Grey	15	Black	Grey	20	Yellow	Grey

2 pair cables are manufactured in quad formation, in rotational order white, blue then orange. Cables having 40 pairs are produced in 20 pair unit, each unit with pair identification as above.

Each core is identified by a number (running from 1 upwards) applied directly to its binder tape or by a separate longitudinal tape applied under a clear binder tape.