



PRODUCT CATALOGUE

Instrumentation Cables

Energising Industries, Empowering Growth

BS EN 50288-7

BS 5308 Part 1 & Part 2

Pairs & triads, 0.5 to 2.5 mm² copper · 300/500 V

Overall and individual + overall screened · Armoured & unarmoured

PVC, PE and XLPE insulation · FR / FRLS / ZHFR sheaths

Tamra Wires and Cables Private Limited

(Formerly: Tamra Dhatu Udyog Private Limited)

BIS Certified · ISO 9001 · ISO 14001 · ISO 45001 · NABL Accredited Laboratory



ABOUT US

Energising Industries, Empowering Growth

Tamra — the Sanskrit word for copper — has manufactured copper products since 2006. Today Tamra Wires and Cables Private Limited (Formerly: Tamra Dhatu Udyog Private Limited) makes conductors, power, control, instrumentation and special cables at its integrated plant in Bhiwadi, Rajasthan.

Instrumentation cables carry the measurements on which a plant depends. A signal is only as good as the cable that carries it — which is why we draw our own fine copper wire, control every insulation line with spark testing, and verify capacitance, inductance and screen continuity in our own laboratory.

Our instrumentation cables follow BS EN 50288-7 and BS 5308, the specifications most frequently called for in power, oil & gas, steel, cement, water and process-industry projects.

We value the confidence our customers place in us, and we work to deserve it with every drum: honest data, consistent quality and responsive service.

VISION

Energising Industries, Empowering Growth To energise industries and infrastructure by delivering innovative, high-quality electrical solutions built on advanced design and sustainable technology

MISSION

- To produce global quality conductors, cables, and allied electrical products
- Innovate continuously to meet evolving energy and infrastructure needs
- Create enduring value for customers, employees, and shareholders in a sustainable manner


2006

Established

~30,000 m²

Plant at Bhiwadi

Niehoff

German fine-wire drawing & bunching

250+

People

NABL

Accredited in-house laboratory

BIS • ISO

9001 • 14001 • 45001



Bunching machines



Insulation extrusion

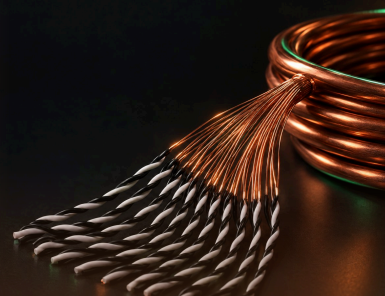


Laying-up (drum twister)

INTEGRATED MANUFACTURING

From our own copper to your signal

Conductors, insulation, twisting, screening and sheathing at our integrated plant in Bhiwadi, Rajasthan.



QUALITY ASSURANCE

Tested for signal performance, not just safety

Every length is routine tested before dispatch. Type tests and special tests are carried out in our NABL-accredited laboratory or at independent laboratories on request.

STD

BS EN 50288-7 · BS 5308

Manufactured and tested to the specification

LAB

NABL Accredited

In-house testing laboratory
ISO/IEC 17025 : 2017

ISO

ISO 9001 · 14001 · 45001

Quality · environment · health & safety
Certified by TÜV India

Tests on instrumentation cables

Test	Type	Reference
Conductor resistance & continuity	R	EN 50289-1-2
Spark test on insulation	R	EN 62230
Voltage test core-core & core-screen	R	EN 50289-1-3
Screen continuity	R	—
Insulation resistance	R · T	EN 50289-1-4
Mutual capacitance & capacitance unbalance	S · T	EN 50289-1-5
Inductance & L/R ratio	S · T	EN 50289-1-12
Material, dimensional & flame tests	T	EN 60811 · IEC 60332-1-2

R = routine, A = acceptance, S = sample, T = type test. Test reports and calibration records are available on request. Customer and third-party inspection at our works is welcome.

Checked on every drum

- Conductor resistance and continuity of every core
- On-line spark testing of insulation
- Voltage test core-core and core-screen
- Screen and drain-wire continuity
- Insulation resistance; capacitance and L/R on samples

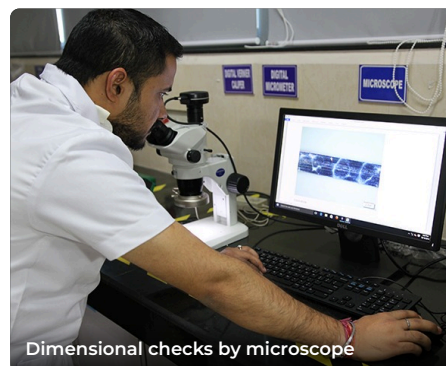
Acceptance tests are carried out in the presence of the customer or a third-party inspector on request.



Testing laboratory



Mechanical testing



Dimensional checks by microscope

PRODUCT RANGE

Instrumentation cables at a glance

Family	Standard	Conductor	Insulation	Elements	Screen	Armour	Voltage
Instrumentation	BS EN 50288-7	Cu Class 2 0.5 – 2.5 mm ²	PVC / PE / XLPE	1 – 24 pairs 1 – 24 triads	OS · IS + OS	Unarmoured GS wire	300/500 V
Instrumentation	BS 5308 Part 1	Cu 0.5 · 1.0 · 1.5 mm ²	PE	1 – 20 pairs 1 – 10 triads	OS · IS + OS	Type 1 unarmoured	300/500 V
	BS 5308 Part 2	Cu 0.5 · 0.75 · 1.5 mm ²	PVC			Type 2 GS wire	

OS = overall screen (collective). IS + OS = individually screened pairs/triads with an overall screen. Larger element counts, quads, Class 5 flexible or tinned conductors, braided screens or braid armour, and FR / FRLS / LSZH / UV-resistant sheaths are available on request.

Construction abbreviations

Cu	Plain annealed copper conductor (TCu = tinned)
PVC / PE / XLPE	Insulation material
OS	Overall screen — Al/PET tape + drain wire
IS	Individual screen on each pair / triad
SWA	Galvanised steel wire armour (W)

EXAMPLES

Cu/PE/IS/OS/PVC/SWA/PVC 10P × 1.0 mm² — BS EN 50288-7 instrumentation cable.

Core & element identification

Pairs	● ○ Black & white, numbered
Triads	● ○ ● Black, white & red, numbered
Others	BS 5308 or customer colour codes on request

MADE TO SPECIFICATION

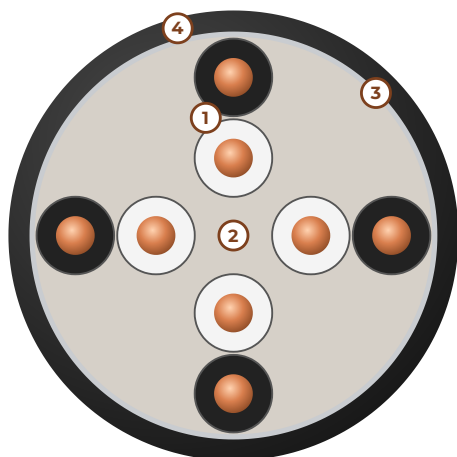
Not in the table? We build to order.

Larger element counts, quads, Class 5 flexible or tinned conductors, braided screens or braid armour, and FR / FRLS / LSZH / UV-resistant sheaths are available on request.

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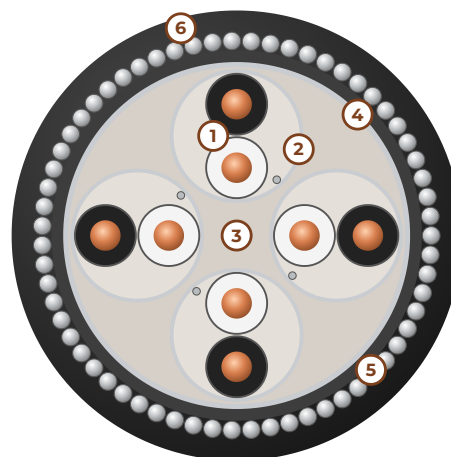
CONSTRUCTION

Screening that keeps signals clean



OVERALL SCREENED (OS)

- 1 Copper conductor with PVC / PE / XLPE insulation; cores twisted into pairs
- 2 Overall drain wire, tinned copper 0.5 mm²
- 3 Overall screen: Al/PET tape, 100 % coverage
- 4 Outer sheath: PVC (FR / FRLS / LSZH on request)



INDIVIDUAL + OVERALL SCREENED, ARMoured (IS + OS)

- 1 Copper conductor, insulated and twisted into pairs
- 2 Individual screen: Al/PET tape + tinned Cu drain wire on each pair
- 3 Overall drain wire, tinned copper 0.5 mm²
- 4 Overall screen: Al/PET tape, 100 % coverage
- 5 Bedding (PVC) and galvanised steel wire armour
- 6 Outer sheath: PVC

Conductor	Plain annealed copper to IEC 60228 / IS 8130. Class 2 stranded as standard; Class 1 solid, Class 5 flexible and tinned copper on request.
Twisting	Cores twisted into pairs or triads with varying lay lengths to minimise cross-talk between adjacent elements.
Overall screen (OS)	Aluminium/polyester tape applied metal side in contact with a tinned copper drain wire. Protects all elements from external electrical noise (EMI / RFI).
Individual screen (IS)	Each pair / triad wrapped in its own Al/PET tape with a drain wire. Prevents cross-talk between circuits — recommended where low-level analogue signals run together with other circuits.
Armour	Galvanised steel round wire for mechanical protection and direct burial. Steel strip, steel-wire braid or tinned-copper braid on request.
Sheaths	PVC inner sheath (bedding) and outer sheath, black or blue (intrinsically-safe circuits). FR, FRLS, LSZH, UV-resistant, oil-resistant and anti-termite compounds on request; rip cord on request.

CHOOSING THE SCREEN

Which screen do you need?

Overall screen (OS) protects all elements from external noise (EMI / RFI). **Individual + overall (IS + OS)** suits low-level analogue signals — thermocouple, RTD, 4–20 mA.

- Al/PET tape, 100 % coverage
- Tinned copper drain wire



SELECTION

Choosing insulation and screening

Property	PVC	PE (polyethylene)	XLPE
Max. conductor temperature	70 °C	70 °C	90 °C
Relative permittivity (approx.)	4 – 8	2.3	2.4
Mutual capacitance	Higher	Low — best for long analogue runs	Low
Insulation resistance	Good	Very high	Very high
Flame retardance	Inherent (FR grades available)	Depends on sheath	Depends on sheath
Typical use	General control & signalling, building automation	Process instrumentation, 4–20 mA loops, long distances	Oil & gas, power plants, high ambient temperatures

Which screen do I need?

Overall screen (OS)	Digital and analogue signals of a single system, protection against external noise
Individual + overall (IS + OS)	Low-level analogue signals (thermocouple, RTD, 4–20 mA) from different circuits in one cable; best cross-talk performance
Armoured	Direct burial, cable trenches, areas exposed to mechanical damage

Good practice

- ⊕ Earth screens at one end only (normally the control-room end) to avoid ground loops.
- ⊕ Segregate instrumentation cables from power cables on separate trays, or keep at least 300 mm spacing.
- ⊕ Do not connect instrumentation cables to low-impedance mains supplies.
- ⊕ Use blue sheath to identify intrinsically safe (Ex i) circuits.

Sheath options

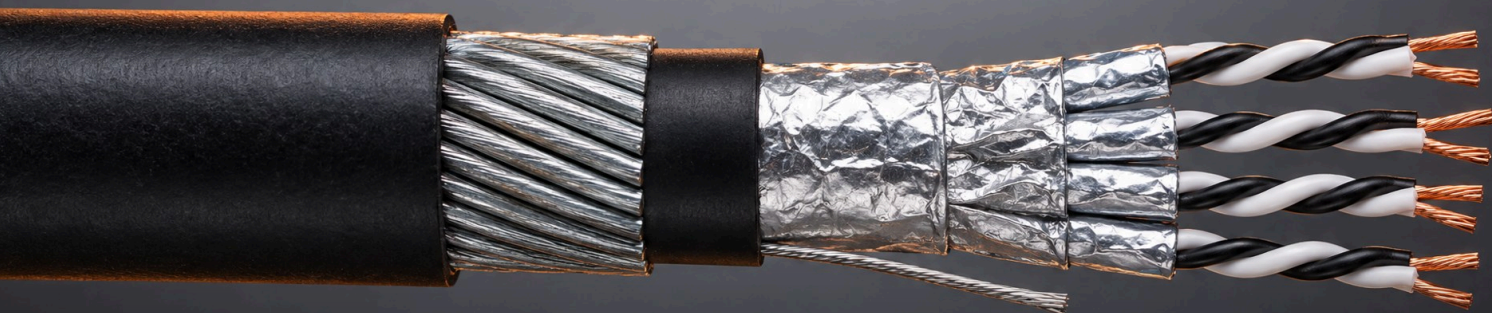
Option	Key property
PVC ST-1 / ST-2	Standard, flame retardant to IEC 60332-1
FR	Flame retardant, bunched-cable test IEC 60332-3 / IS 10810-62
FRLS	Low smoke, low acid gas (HCl ≤ 20 %), OI ≥ 29 %
LSZH / HFFR	Halogen free, low smoke (IEC 60754, IEC 61034)
UV / oil / termite resistant	For outdoor, process and buried installations



LONG ANALOGUE RUNS

Low capacitance where it matters

PE insulation gives low mutual capacitance — the preferred choice for long analogue signal runs.



SECTION

BS EN 50288-7 · BS 5308 Part 1 & Part 2

Instrumentation Cables

Designed for analogue and digital signal transmission in process control and instrumentation systems. Twisted pairs or triads with overall or individual + overall screens give dependable noise immunity, in PVC, PE or XLPE insulation for every application.

- Rated voltage 300/500 V
- 0.5, 0.75, 1.0, 1.5 and 2.5 mm² Class 2 copper
- 1 to 24 pairs or triads
- OS or IS + OS, unarmoured or GS wire armoured
- PVC, PE or XLPE insulation
- BS 5308 Part 1 (PE) and Part 2 (PVC), Type 1 and Type 2

BS EN 50288-7 · 300/500 V

Electrical Characteristics

Parameter (at 20 °C)	0.5 mm ²	0.75 mm ²	1.0 mm ²	1.5 mm ²	2.5 mm ²	Unit
Max. conductor resistance, Class 2	36.0	24.5	18.1	12.1	7.41	Ω/km
Max. L/R ratio	25	25	25	40	60	μH/Ω
Max. mutual capacitance — PVC insulation	250					pF/m
Max. mutual capacitance — PE / XLPE insulation	150					pF/m
Min. insulation resistance — PVC	100					MΩ·km
Min. insulation resistance — PE / XLPE	5000					MΩ·km
Max. inductance	1					mH/km
Test voltage, core-core & core-screen	2000 V a.c., 1 minute (500 V cables)					V

General data

Rated voltage	300/500 V (300 V on request)
Operating temperature	PVC & PE: -15 °C to +70 °C · XLPE: -30 °C to +90 °C
Installation temperature	Not below 0 °C (-5 °C for PE / XLPE)
Bending radius	Unarmoured 8 × OD · Armoured 10 × OD
Flame retardance	IEC 60332-1 (single cable); IEC 60332-3 Cat. C with FR / FRLS sheath

Drain wire & screen

Overall screen	Al/PET tape, 100 % coverage, min. 25 % overlap
Individual screen	Al/PET tape on each pair / triad
Drain wires	Tinned copper, 0.5 mm ² (7/0.30)
Screen earthing	Drain wires terminated at one end only



Values are guaranteed maximum / minimum limits for Tamra BS EN 50288-7 cables. PE-insulated cables to BS 5308 / PAS 5308 Part 1 have lower capacitance limits (see BS 5308 page) because of their specified construction. Values specified in the purchaser's data sheet will be met on request.

INTRINSICALLY SAFE CIRCUITS?

Blue outer sheath available

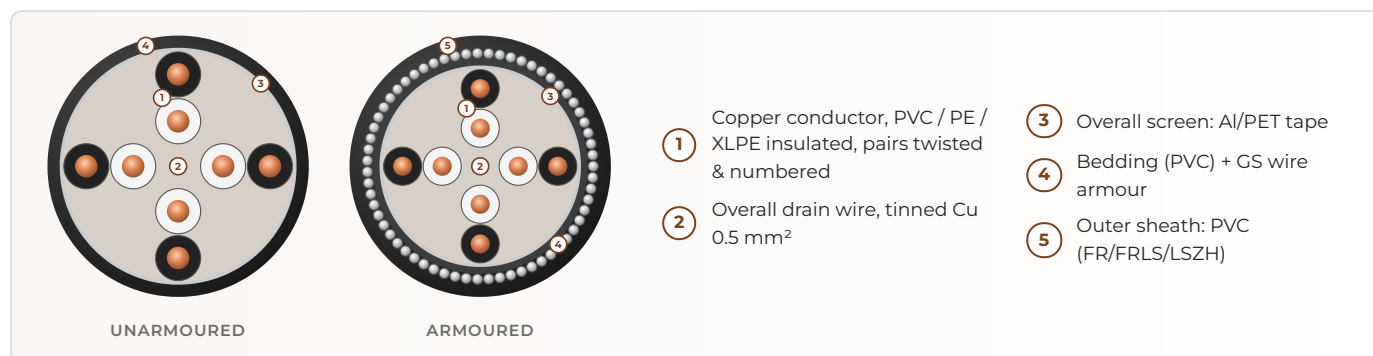
Outer sheath in black as standard, or blue for intrinsically-safe circuits. FR, FRLS, LSZH, UV-resistant, oil-resistant and anti-termite compounds on request.

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BS EN 50288-7 · 300/500 V · CU / PVC, PE OR XLPE / OS / PVC · ARMoured: ... / PVC / SWA / PVC

Pairs · Overall Screened


0.5 mm² Class 2 (7/0.30) · insulation 0.50 mm nominal

No. of pairs	Unarmoured			Armoured (SWA)			
	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km	Armour wire mm	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km
1	6.5	50	45	0.90	11.0	240	235
2	7.5	70	65	0.90	12.5	290	285
3	9.5	105	95	0.90	15.0	380	370
4	10.5	125	115	1.25	16.5	500	490
5	11.5	150	140	1.25	17.5	555	545
6	12.5	175	160	1.25	18.5	625	610
8	14.0	220	200	1.25	20.0	715	695
10	16.0	265	240	1.60	23.0	960	935
12	16.5	300	270	1.60	23.5	1,000	970
16	18.0	385	345	1.60	25.5	1,180	1,140
20	20.5	475	425	1.60	27.5	1,340	1,290
24	22.5	555	500	1.60	30.0	1,520	1,460

0.75 mm² Class 2 (7/0.37) · insulation 0.50 mm nominal

No. of pairs	Unarmoured			Armoured (SWA)			
	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km	Armour wire mm	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km
1	7.0	60	55	0.90	11.5	255	250
2	8.0	90	85	0.90	13.0	320	315
3	10.5	125	115	1.25	16.0	500	490
4	11.5	155	145	1.25	17.5	560	550
5	12.5	185	170	1.25	18.5	635	620
6	13.5	215	195	1.25	20.0	700	685
8	15.0	275	250	1.25	21.5	810	790
10	17.5	340	310	1.60	24.0	1,070	1,040
12	18.0	390	355	1.60	25.0	1,160	1,130
16	20.0	490	445	1.60	27.0	1,360	1,310
20	22.0	605	550	1.60	29.5	1,560	1,510
24	24.5	720	655	1.60	32.5	1,790	1,720

PAIR IDENTIFICATION

Black & white, numbered

Every pair is identified by colour and number.



BS EN 50288-7 · 300/500 V · CU / PVC, PE OR XLPE / OS / PVC · ARMoured: ... / PVC / SWA / PVC

Pairs · Overall Screened

1 mm² Class 2 (7/0.43) · insulation 0.55 mm nominal

No. of pairs	Unarmoured			Armoured (SWA)			
	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km	Armour wire mm	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km
1	7.5	65	65	0.90	12.5	295	290
2	8.5	105	100	0.90	13.5	350	345
3	11.5	155	145	1.25	17.5	560	550
4	12.5	190	175	1.25	18.5	640	630
5	13.5	225	210	1.25	20.0	725	710
6	15.0	270	250	1.25	21.0	795	770
8	17.0	340	310	1.60	24.0	1,060	1,030
10	19.0	420	385	1.60	26.5	1,240	1,200
12	20.0	480	440	1.60	27.0	1,350	1,310
16	22.0	620	565	1.60	29.5	1,560	1,510
20	25.0	765	695	1.60	32.5	1,830	1,760
24	27.5	915	835	2.00	36.0	2,320	2,230

1.5 mm² Class 2 (7/0.53) · insulation 0.60 mm nominal

No. of pairs	Unarmoured			Armoured (SWA)			
	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km	Armour wire mm	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km
1	8.5	90	85	0.90	13.5	325	320
2	9.5	135	125	0.90	15.0	410	400
3	13.0	200	190	1.25	19.0	665	650
4	14.5	255	240	1.25	20.5	765	745
5	15.5	305	285	1.60	22.5	980	960
6	17.0	365	335	1.60	24.0	1,090	1,070
8	19.0	460	425	1.60	26.5	1,300	1,260
10	22.0	570	525	1.60	29.5	1,510	1,470
12	22.5	660	605	1.60	30.0	1,620	1,570
16	25.5	855	780	1.60	33.0	1,940	1,870
20	28.5	1,050	965	2.00	37.0	2,550	2,460
24	31.5	1,260	1,150	2.00	40.5	2,890	2,780

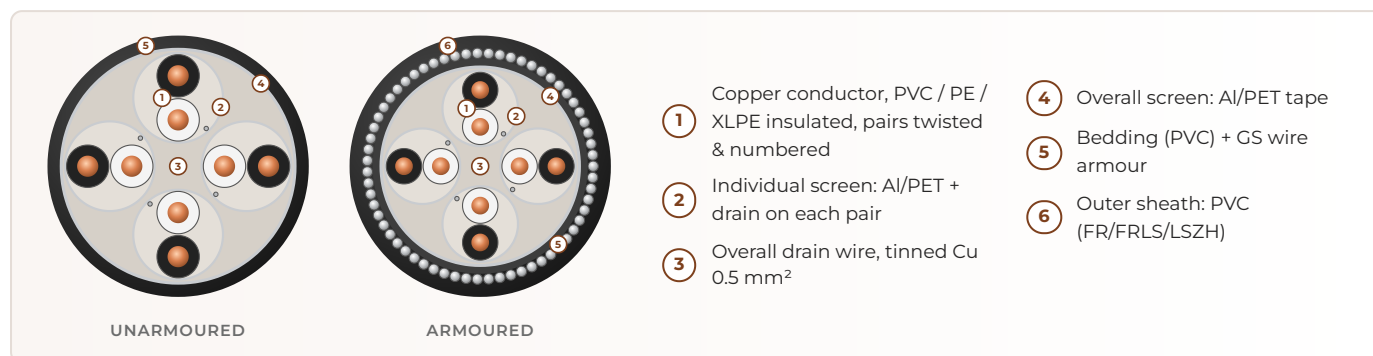
2.5 mm² Class 2 (7/0.67) · insulation 0.70 mm nominal

No. of pairs	Unarmoured			Armoured (SWA)			
	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km	Armour wire mm	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km
1	9.5	120	115	0.90	15.0	395	390
2	11.5	200	185	1.25	17.5	605	590
3	15.5	300	280	1.60	22.5	970	955
4	17.0	380	355	1.60	24.0	1,110	1,080
5	18.5	460	425	1.60	26.0	1,270	1,240
6	20.5	545	505	1.60	28.0	1,430	1,390
8	23.5	710	655	1.60	31.0	1,710	1,660
10	26.5	880	810	2.00	35.0	2,240	2,180
12	27.5	1,020	940	2.00	36.0	2,420	2,340
16	31.0	1,320	1,210	2.00	39.5	2,920	2,810
20	34.5	1,630	1,500	2.00	44.0	3,440	3,310
24	39.0	1,970	1,810	2.50	49.0	4,380	4,220

- Dimensions are identical for PVC, PE and XLPE insulation; weights are shown for PVC and for PE/XLPE insulated versions. Values are approximate.
- Electrical characteristics: see the BS EN 50288-7 electrical data page.

BS EN 50288-7 · 300/500 V · CU / PVC, PE OR XLPE / IS / OS / PVC · ARMoured: ... / PVC / SWA / PVC

Pairs · Individual & Overall Screened



0.5 mm² Class 2 (7/0.30) · insulation 0.50 mm nominal

No. of pairs	Unarmoured			Armoured (SWA)			
	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km	Armour wire mm	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km
1	6.5	60	55	0.90	11.5	255	250
2	10.0	105	100	0.90	15.5	395	390
3	11.0	130	125	1.25	16.5	520	510
4	12.0	165	155	1.25	18.0	585	575
5	13.0	195	180	1.25	19.0	660	645
6	14.0	230	215	1.25	20.5	740	725
8	16.0	290	270	1.60	23.0	985	965
10	18.0	355	335	1.60	25.5	1,150	1,120
12	18.5	405	380	1.60	26.0	1,220	1,190
16	21.0	525	485	1.60	28.0	1,410	1,370
20	23.5	645	595	1.60	31.0	1,650	1,600
24	26.0	760	700	2.00	34.5	2,100	2,050

0.75 mm² Class 2 (7/0.37) · insulation 0.50 mm nominal

No. of pairs	Unarmoured			Armoured (SWA)			
	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km	Armour wire mm	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km
1	7.0	65	65	0.90	12.5	285	285
2	11.0	125	120	1.25	17.0	520	515
3	12.0	160	150	1.25	17.5	575	570
4	13.0	195	185	1.25	19.0	660	645
5	14.0	235	225	1.25	20.0	735	720
6	15.5	275	260	1.25	21.5	810	795
8	17.5	355	330	1.60	24.0	1,080	1,060
10	19.5	425	400	1.60	27.0	1,280	1,250
12	20.5	500	465	1.60	27.5	1,360	1,330
16	22.5	630	590	1.60	30.0	1,600	1,550
20	25.5	780	725	1.60	33.0	1,870	1,810
24	28.5	930	865	2.00	37.0	2,380	2,310

TRIAD IDENTIFICATION

Black, white & red, numbered

Every triad is identified by colour and number.



BS EN 50288-7 · 300/500 V · CU / PVC, PE OR XLPE / IS / OS / PVC · ARMoured: ... / PVC / SWA / PVC

Pairs · Individual & Overall Screened

1 mm² Class 2 (7/0.43) · insulation 0.55 mm nominal

No. of pairs	Unarmoured			Armoured (SWA)			
	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km	Armour wire mm	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km
1	7.5	75	75	0.90	13.0	310	305
2	12.0	145	140	1.25	18.0	575	570
3	13.0	185	175	1.25	19.0	650	640
4	14.0	235	220	1.25	20.5	740	730
5	15.5	280	265	1.60	22.5	955	940
6	17.0	325	305	1.60	24.0	1,050	1,020
8	19.0	420	395	1.60	26.5	1,240	1,210
10	22.0	520	485	1.60	29.0	1,450	1,410
12	22.5	600	555	1.60	30.0	1,560	1,520
16	25.0	775	720	1.60	32.5	1,860	1,800
20	28.0	955	885	2.00	37.0	2,400	2,330
24	31.5	1,140	1,060	2.00	40.0	2,770	2,690

1.5 mm² Class 2 (7/0.53) · insulation 0.60 mm nominal

No. of pairs	Unarmoured			Armoured (SWA)			
	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km	Armour wire mm	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km
1	8.5	95	95	0.90	13.5	345	340
2	13.5	180	170	1.25	20.0	670	660
3	14.5	240	225	1.25	20.5	750	735
4	16.0	300	280	1.60	23.0	995	975
5	17.5	365	345	1.60	24.5	1,110	1,090
6	19.0	425	400	1.60	26.5	1,240	1,220
8	21.5	550	515	1.60	29.0	1,470	1,440
10	25.0	680	635	1.60	32.5	1,750	1,700
12	25.5	785	730	1.60	33.0	1,880	1,820
16	28.5	1,020	945	2.00	37.5	2,510	2,440
20	32.0	1,260	1,170	2.00	41.0	2,920	2,830
24	36.0	1,520	1,410	2.50	46.0	3,770	3,660

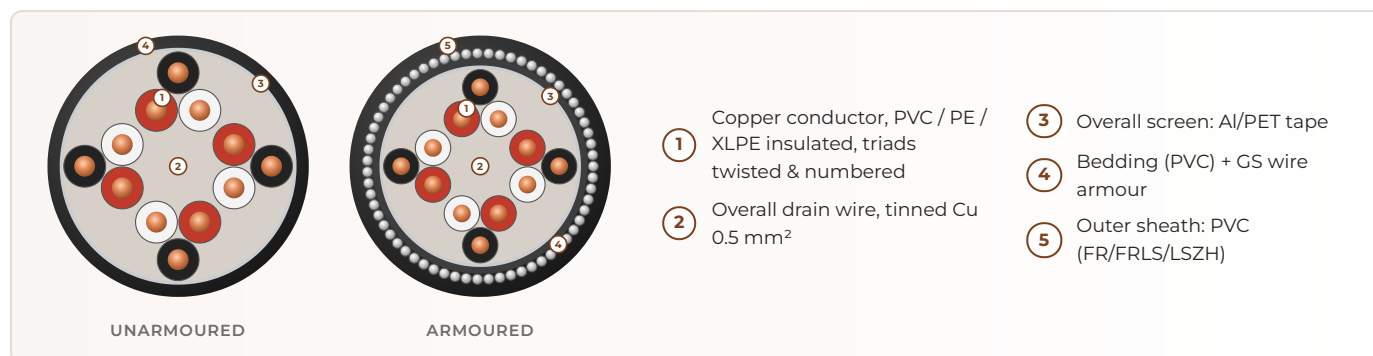
2.5 mm² Class 2 (7/0.67) · insulation 0.70 mm nominal

No. of pairs	Unarmoured			Armoured (SWA)			
	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km	Armour wire mm	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km
1	10.0	130	125	0.90	15.0	415	410
2	16.0	255	240	1.60	23.0	950	935
3	17.5	340	325	1.60	24.0	1,070	1,050
4	19.0	430	400	1.60	26.0	1,240	1,220
5	21.0	525	495	1.60	28.0	1,410	1,380
6	23.0	615	575	1.60	30.5	1,600	1,560
8	26.0	800	745	2.00	34.5	2,140	2,090
10	30.0	1,000	935	2.00	38.5	2,520	2,450
12	31.0	1,160	1,080	2.00	39.5	2,760	2,680
16	34.5	1,500	1,400	2.00	43.5	3,290	3,190
20	39.0	1,880	1,750	2.50	49.0	4,290	4,160
24	43.5	2,240	2,080	2.50	54.0	4,950	4,800

- Dimensions are identical for PVC, PE and XLPE insulation; weights are shown for PVC and for PE/XLPE insulated versions. Values are approximate.
- Electrical characteristics: see the BS EN 50288-7 electrical data page.

BS EN 50288-7 · 300/500 V · CU / PVC, PE OR XLPE / OS / PVC · ARMoured: ... / PVC / SWA / PVC

Triads · Overall Screened


0.5 mm² Class 2 (7/0.30) · insulation 0.50 mm nominal

No. of triads	Unarmoured			Armoured (SWA)			
	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km	Armour wire mm	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km
1	7.0	60	55	0.90	11.5	255	250
2	10.0	105	100	0.90	15.0	390	380
3	10.5	135	120	1.25	16.5	520	510
4	11.5	170	155	1.25	17.5	585	570
5	12.5	200	180	1.25	19.0	660	645
6	14.0	230	210	1.25	20.0	730	710
8	15.5	295	265	1.60	22.5	970	945
10	18.0	365	330	1.60	25.0	1,130	1,090
12	18.5	420	375	1.60	25.5	1,210	1,170
16	20.5	540	480	1.60	27.5	1,400	1,350
20	22.5	655	580	1.60	30.0	1,620	1,550
24	25.5	785	695	1.60	33.0	1,870	1,780

0.75 mm² Class 2 (7/0.37) · insulation 0.50 mm nominal

No. of triads	Unarmoured			Armoured (SWA)			
	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km	Armour wire mm	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km
1	7.0	70	65	0.90	12.5	290	285
2	11.0	125	120	1.25	16.5	515	505
3	11.5	170	155	1.25	17.5	585	575
4	12.5	210	190	1.25	18.5	660	645
5	13.5	250	225	1.25	20.0	750	730
6	15.0	295	270	1.25	21.0	830	805
8	17.0	380	350	1.60	24.0	1,110	1,080
10	19.5	465	420	1.60	26.5	1,300	1,260
12	20.0	545	495	1.60	27.5	1,400	1,350
16	22.5	690	625	1.60	29.5	1,650	1,590
20	25.0	855	770	1.60	32.5	1,920	1,840
24	28.0	1,020	920	2.00	36.5	2,450	2,350

SCREENING DETAIL

Tinned copper drain wire

Applied in contact with the metal side of the Al/PET screen tape.



BS EN 50288-7 · 300/500 V · CU / PVC, PE OR XLPE / OS / PVC · ARMoured: ... / PVC / SWA / PVC

Triads · Overall Screened

1 mm² Class 2 (7/0.43) · insulation 0.55 mm nominal

No. of triads	Unarmoured			Armoured (SWA)			
	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km	Armour wire mm	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km
1	8.0	85	80	0.90	13.0	320	315
2	12.0	160	150	1.25	18.0	590	580
3	12.5	205	190	1.25	19.0	670	655
4	14.0	265	240	1.25	20.0	760	735
5	15.5	315	290	1.25	21.5	850	825
6	16.5	365	335	1.60	23.5	1,080	1,050
8	19.0	475	435	1.60	26.0	1,290	1,250
10	21.5	590	535	1.60	29.0	1,500	1,440
12	22.5	680	615	1.60	29.5	1,640	1,580
16	25.0	880	800	1.60	32.5	1,950	1,860
20	28.0	1,090	985	2.00	36.5	2,530	2,430
24	31.0	1,300	1,180	2.00	40.0	2,900	2,780

1.5 mm² Class 2 (7/0.53) · insulation 0.60 mm nominal

No. of triads	Unarmoured			Armoured (SWA)			
	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km	Armour wire mm	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km
1	9.0	110	105	0.90	14.0	360	350
2	13.5	205	190	1.25	19.5	695	680
3	14.5	280	260	1.25	20.5	785	765
4	16.0	350	320	1.60	23.0	1,040	1,020
5	17.5	430	395	1.60	24.5	1,170	1,140
6	19.0	500	460	1.60	26.5	1,320	1,280
8	21.5	650	595	1.60	29.0	1,560	1,500
10	24.5	805	740	1.60	32.5	1,870	1,800
12	25.5	935	855	1.60	33.0	2,030	1,950
16	28.5	1,220	1,110	2.00	37.5	2,710	2,600
20	32.0	1,510	1,370	2.00	41.0	3,170	3,030
24	36.0	1,820	1,660	2.00	45.0	3,670	3,510

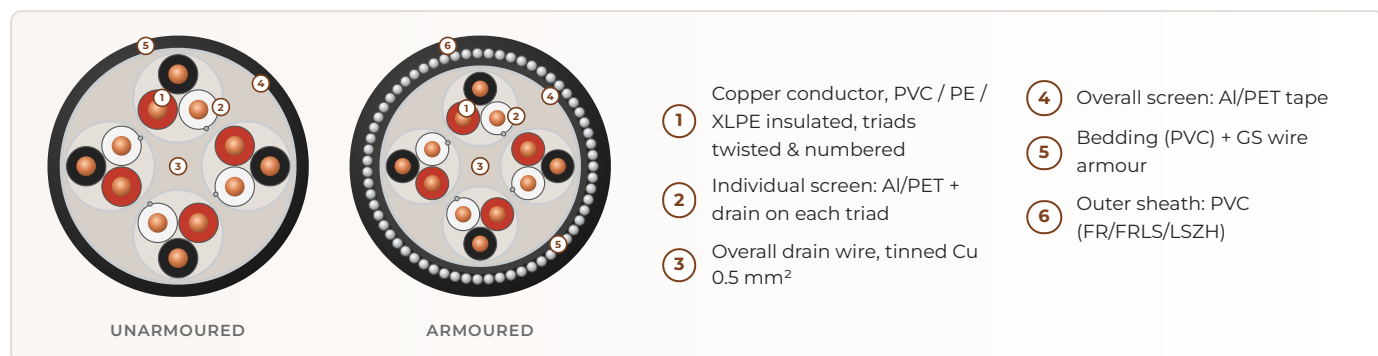
2.5 mm² Class 2 (7/0.67) · insulation 0.70 mm nominal

No. of triads	Unarmoured			Armoured (SWA)			
	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km	Armour wire mm	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km
1	10.5	155	145	1.25	16.0	530	520
2	16.0	300	285	1.60	23.0	1,000	980
3	17.5	415	385	1.60	24.0	1,150	1,120
4	19.0	525	485	1.60	26.0	1,340	1,300
5	21.0	650	600	1.60	28.5	1,530	1,480
6	23.0	760	700	1.60	30.5	1,740	1,690
8	26.5	1,010	925	2.00	34.5	2,340	2,260
10	30.0	1,250	1,150	2.00	38.5	2,790	2,690
12	31.0	1,450	1,330	2.00	40.0	3,050	2,930
16	35.0	1,890	1,740	2.00	44.0	3,700	3,550
20	39.5	2,360	2,170	2.50	49.5	4,840	4,640
24	44.0	2,820	2,590	2.50	54.5	5,580	5,350

- Dimensions are identical for PVC, PE and XLPE insulation; weights are shown for PVC and for PE/XLPE insulated versions. Values are approximate.
- Electrical characteristics: see the BS EN 50288-7 electrical data page.

BS EN 50288-7 · 300/500 V · CU / PVC, PE OR XLPE / IS / OS / PVC · ARMoured: ... / PVC / SWA / PVC

Triads · Individual & Overall Screened



0.5 mm² Class 2 (7/0.30) · insulation 0.50 mm nominal

No. of triads	Unarmoured			Armoured (SWA)			
	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km	Armour wire mm	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km
1	7.0	70	65	0.90	12.0	275	270
2	11.5	130	125	1.25	17.5	535	530
3	12.0	165	155	1.25	18.0	595	585
4	13.0	205	190	1.25	19.0	680	665
5	14.5	250	235	1.25	20.5	760	740
6	15.5	290	270	1.60	22.5	970	945
8	18.0	375	345	1.60	25.0	1,150	1,120
10	20.5	465	425	1.60	27.5	1,330	1,290
12	21.0	530	490	1.60	28.0	1,420	1,370
16	23.5	685	625	1.60	31.0	1,690	1,630
20	26.5	845	770	2.00	34.5	2,180	2,110
24	29.0	995	905	2.00	38.0	2,520	2,430

0.75 mm² Class 2 (7/0.37) · insulation 0.50 mm nominal

No. of triads	Unarmoured			Armoured (SWA)			
	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km	Armour wire mm	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km
1	7.5	80	75	0.90	12.5	305	300
2	12.0	155	145	1.25	18.0	585	575
3	13.0	200	185	1.25	19.0	665	650
4	14.5	255	235	1.25	20.5	760	745
5	15.5	305	280	1.60	22.5	980	960
6	17.0	360	335	1.60	24.0	1,090	1,060
8	19.5	455	420	1.60	26.5	1,290	1,260
10	22.0	565	525	1.60	29.5	1,510	1,460
12	22.5	650	600	1.60	30.0	1,620	1,570
16	25.5	840	775	1.60	33.0	1,930	1,860
20	28.5	1,040	955	2.00	37.5	2,530	2,450
24	32.0	1,240	1,140	2.00	40.5	2,880	2,780

COLOUR CODES

Customer colour codes on request

BS 5308 or your own identification scheme.



BS EN 50288-7 · 300/500 V · CU / PVC, PE OR XLPE / IS / OS / PVC · ARMoured: ... / PVC / SWA / PVC

Triads · Individual & Overall Screened

1 mm² Class 2 (7/0.43) · insulation 0.55 mm nominal

No. of triads	Unarmoured			Armoured (SWA)			
	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km	Armour wire mm	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km
1	8.5	95	90	0.90	13.5	335	330
2	13.5	180	170	1.25	19.5	670	660
3	14.5	245	230	1.25	20.5	750	735
4	15.5	305	285	1.60	22.5	980	960
5	17.5	375	345	1.60	24.0	1,100	1,080
6	19.0	435	405	1.60	26.0	1,250	1,220
8	21.5	560	520	1.60	28.5	1,470	1,430
10	24.5	695	645	1.60	32.0	1,740	1,690
12	25.0	805	740	1.60	33.0	1,890	1,830
16	28.0	1,040	960	2.00	37.0	2,490	2,410
20	31.5	1,290	1,180	2.00	40.5	2,920	2,820
24	35.5	1,550	1,430	2.00	44.5	3,380	3,250

1.5 mm² Class 2 (7/0.53) · insulation 0.60 mm nominal

No. of triads	Unarmoured			Armoured (SWA)			
	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km	Armour wire mm	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km
1	9.0	120	115	0.90	14.0	375	370
2	15.0	235	225	1.25	21.0	770	760
3	16.0	315	295	1.60	23.0	1,010	990
4	18.0	400	375	1.60	25.0	1,170	1,150
5	19.5	485	450	1.60	27.0	1,330	1,300
6	21.5	575	535	1.60	28.5	1,480	1,440
8	24.5	745	690	1.60	32.0	1,790	1,740
10	28.0	925	860	2.00	36.0	2,350	2,280
12	29.0	1,070	990	2.00	37.5	2,570	2,490
16	32.5	1,410	1,300	2.00	41.0	3,050	2,950
20	36.5	1,740	1,600	2.50	46.5	3,990	3,860
24	40.5	2,070	1,910	2.50	51.0	4,630	4,470

2.5 mm² Class 2 (7/0.67) · insulation 0.70 mm nominal

No. of triads	Unarmoured			Armoured (SWA)			
	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km	Armour wire mm	Approx. OD mm	Wt PVC kg/km	Wt PE/XLPE kg/km
1	10.5	165	155	1.25	16.5	555	545
2	18.0	340	320	1.60	25.0	1,110	1,090
3	19.0	455	425	1.60	26.5	1,270	1,240
4	21.5	585	545	1.60	28.5	1,490	1,450
5	23.5	720	670	1.60	31.0	1,730	1,680
6	25.5	845	785	2.00	34.5	2,190	2,130
8	29.5	1,110	1,040	2.00	38.0	2,630	2,550
10	33.5	1,380	1,280	2.00	42.5	3,090	2,990
12	35.0	1,610	1,490	2.00	44.0	3,420	3,300
16	39.0	2,110	1,950	2.50	49.5	4,520	4,370
20	44.0	2,610	2,410	2.50	54.5	5,370	5,170
24	49.0	3,140	2,900	2.50	60.0	6,200	5,960

- Dimensions are identical for PVC, PE and XLPE insulation; weights are shown for PVC and for PE/XLPE insulated versions. Values are approximate.
- Electrical characteristics: see the BS EN 50288-7 electrical data page.

BS 5308 PART 1 & PART 2 · 300/500 V

Electrical Characteristics

Part 1 · PE insulated

Parameter (at 20 °C)	0.5 mm ²	1.0 mm ²	1.5 mm ²	Unit
Max. conductor resistance	39.0	18.1	12.1	Ω/km
Max. mutual capacitance — collective screen, 5 pairs and above	75	75	85	pF/m
Max. mutual capacitance — 1 pair, 2 pairs, 1 triad & individually screened	115	115	120	pF/m
Max. L/R ratio	25	25	40	μH/Ω
Min. insulation resistance	5000			MΩ·km

Part 2 · PVC insulated

Parameter (at 20 °C)	0.5 mm ²	0.75 mm ²	1.5 mm ²	Unit
Max. conductor resistance	39.0	26.0	12.1	Ω/km
Max. mutual capacitance	250			pF/m
Max. L/R ratio	25	25	40	μH/Ω
Min. insulation resistance	25			MΩ·km

General data

Rated voltage	300/500 V
Test voltage	2000 V a.c. core–core and core–screen
Operating temperature	–15 °C to +70 °C
Bending radius	Type 1: 8 × OD · Type 2: 10 × OD

About BS 5308

BS 5308 Parts 1 and 2 have been withdrawn by BSI. The constructions continue in BSI PAS 5308-1 and PAS 5308-2, and BS EN 50288-7 is the European equivalent. BS 5308 is still widely specified in project data sheets; Tamra manufactures to either specification. Where a tender calls for BS 5308, our cables meet its construction and electrical requirements; where it calls for BS EN 50288-7, please refer to that section.

BS 5308

Part 1 or Part 2?

Part 1 — PE insulation. **Part 2** — PVC insulation. **Type 1** unarmoured, **Type 2** galvanised steel wire armoured. Rated 300/500 V.

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BS 5308 PART 1 · PE INSULATED · 300/500 V

Collective Screen

0.5 mm² 16/0.20 · PE insulation 0.5 mm nominal

Elements	Type 1 · Unarmoured		Type 2 · Armoured (SWA)		
	Approx. OD mm	Approx. wt kg/km	Armour wire mm	Approx. OD mm	Approx. wt kg/km
1 pair	6.5	50	0.90	11.5	235
2 pairs (quad)	7.5	65	0.90	12.5	285
5 pairs	11.5	140	1.25	17.5	560
10 pairs	16.0	245	1.60	23.0	940
15 pairs	18.5	340	1.60	25.5	1,130
20 pairs	21.0	430	1.60	28.0	1,320
1 triad	7.0	55	0.90	11.5	255
2 triads	10.0	100	0.90	15.5	390
5 triads	13.0	185	1.25	19.0	650
10 triads	18.0	335	1.60	25.5	1,130

1 mm² 7/0.43 · PE insulation 0.5 mm nominal

Elements	Type 1 · Unarmoured		Type 2 · Armoured (SWA)		
	Approx. OD mm	Approx. wt kg/km	Armour wire mm	Approx. OD mm	Approx. wt kg/km
1 pair	7.0	60	0.90	12.5	280
2 pairs (quad)	8.5	95	0.90	13.5	335
5 pairs	13.0	200	1.25	19.5	680
10 pairs	18.5	375	1.60	25.5	1,170
15 pairs	21.5	525	1.60	28.5	1,430
20 pairs	24.0	675	1.60	31.5	1,700
1 triad	7.5	75	0.90	13.0	305
2 triads	11.5	145	1.25	17.5	560
5 triads	15.0	280	1.25	21.0	800
10 triads	21.0	520	1.60	28.0	1,400

1.5 mm² 7/0.53 · PE insulation 0.6 mm nominal

Elements	Type 1 · Unarmoured		Type 2 · Armoured (SWA)		
	Approx. OD mm	Approx. wt kg/km	Armour wire mm	Approx. OD mm	Approx. wt kg/km
1 pair	8.5	85	0.90	13.5	320
2 pairs (quad)	9.5	125	0.90	15.0	400
5 pairs	15.5	285	1.60	22.5	960
10 pairs	22.0	525	1.60	29.5	1,470
15 pairs	25.5	745	1.60	33.0	1,830
20 pairs	28.5	965	2.00	37.0	2,460
1 triad	9.0	105	0.90	14.0	350
2 triads	13.5	190	1.25	19.5	680
5 triads	17.5	395	1.60	24.5	1,140
10 triads	24.5	740	1.60	32.5	1,800

- Type 1: unarmoured, for indoor use and installation in trays and ducts. Type 2: galvanised steel wire armoured, for outdoor and direct burial.
- Dimensions and weights are approximate. 0.5 and 0.75 mm²: Class 5 flexible; 1.0 and 1.5 mm²: Class 2 stranded (1.0 mm² Class 1 solid, 1/1.13, on request).

INSPECTION

Witness testing welcome



BS 5308 PART 1 · PE INSULATED · 300/500 V

Individual & Collective Screens

0.5 mm² 16/0.20 · PE insulation 0.5 mm nominal

Elements	Type 1 · Unarmoured		Type 2 · Armoured (SWA)		
	Approx. OD mm	Approx. wt kg/km	Armour wire mm	Approx. OD mm	Approx. wt kg/km
1 pair	7.0	55	0.90	11.5	250
2 pairs	10.5	100	1.25	16.0	475
5 pairs	13.0	185	1.25	19.5	660
10 pairs	18.5	335	1.60	25.5	1,130
15 pairs	21.5	470	1.60	28.5	1,370
20 pairs	24.0	605	1.60	31.0	1,610
1 triad	7.0	65	0.90	12.5	285
2 triads	11.5	125	1.25	17.5	540
5 triads	14.5	235	1.25	21.0	755
10 triads	20.5	435	1.60	28.0	1,320

1 mm² 7/0.43 · PE insulation 0.5 mm nominal

Elements	Type 1 · Unarmoured		Type 2 · Armoured (SWA)		
	Approx. OD mm	Approx. wt kg/km	Armour wire mm	Approx. OD mm	Approx. wt kg/km
1 pair	7.5	70	0.90	12.5	300
2 pairs	11.5	135	1.25	17.5	550
5 pairs	15.0	255	1.25	21.0	780
10 pairs	21.0	475	1.60	28.0	1,360
15 pairs	24.5	665	1.60	32.0	1,710
20 pairs	27.0	860	2.00	35.5	2,260
1 triad	8.0	90	0.90	13.0	320
2 triads	13.0	165	1.25	19.0	630
5 triads	16.5	330	1.60	23.5	1,050
10 triads	23.5	625	1.60	31.0	1,630

1.5 mm² 7/0.53 · PE insulation 0.6 mm nominal

Elements	Type 1 · Unarmoured		Type 2 · Armoured (SWA)		
	Approx. OD mm	Approx. wt kg/km	Armour wire mm	Approx. OD mm	Approx. wt kg/km
1 pair	8.5	95	0.90	13.5	340
2 pairs	13.5	170	1.25	20.0	660
5 pairs	17.5	345	1.60	24.5	1,090
10 pairs	25.0	635	1.60	32.5	1,700
15 pairs	28.5	900	2.00	37.5	2,400
20 pairs	32.0	1,170	2.00	41.0	2,830
1 triad	9.0	115	0.90	14.0	370
2 triads	15.0	225	1.25	21.0	760
5 triads	19.5	450	1.60	27.0	1,300
10 triads	28.0	860	2.00	36.0	2,280

- Type 1: unarmoured, for indoor use and installation in trays and ducts. Type 2: galvanised steel wire armoured, for outdoor and direct burial.
- Dimensions and weights are approximate. 0.5 and 0.75 mm²: Class 5 flexible; 1.0 and 1.5 mm²: Class 2 stranded (1.0 mm² Class 1 solid, 1/1.13, on request).

SHEATH OPTIONS

FR · FRLS · LSZH on request


BS 5308 PART 2 · PVC INSULATED · 300/500 V

Collective Screen

0.5 mm² 16/0.20 · PVC insulation 0.6 mm nominal

Elements	Type 1 · Unarmoured		Type 2 · Armoured (SWA)		
	Approx. OD mm	Approx. wt kg/km	Armour wire mm	Approx. OD mm	Approx. wt kg/km
1 pair	7.0	55	0.90	11.5	250
2 pairs (quad)	8.0	80	0.90	13.0	315
5 pairs	12.5	170	1.25	18.5	620
10 pairs	17.5	305	1.60	24.5	1,050
15 pairs	20.5	425	1.60	27.5	1,290
20 pairs	22.5	535	1.60	30.0	1,500
1 triad	7.5	65	0.90	12.5	285
2 triads	11.0	120	1.25	17.0	515
5 triads	14.0	230	1.25	20.0	725
10 triads	19.5	410	1.60	27.0	1,260

0.75 mm² 24/0.20 · PVC insulation 0.6 mm nominal

Elements	Type 1 · Unarmoured		Type 2 · Armoured (SWA)		
	Approx. OD mm	Approx. wt kg/km	Armour wire mm	Approx. OD mm	Approx. wt kg/km
1 pair	7.5	65	0.90	12.5	285
2 pairs (quad)	8.5	95	0.90	13.5	340
5 pairs	13.5	205	1.25	20.0	705
10 pairs	19.0	375	1.60	26.0	1,190
15 pairs	22.0	530	1.60	29.5	1,470
20 pairs	24.5	680	1.60	32.0	1,740
1 triad	8.0	80	0.90	13.0	310
2 triads	12.0	145	1.25	18.0	565
5 triads	15.0	280	1.25	21.5	815
10 triads	21.5	525	1.60	28.5	1,430

1.5 mm² 7/0.53 · PVC insulation 0.6 mm nominal

Elements	Type 1 · Unarmoured		Type 2 · Armoured (SWA)		
	Approx. OD mm	Approx. wt kg/km	Armour wire mm	Approx. OD mm	Approx. wt kg/km
1 pair	8.5	90	0.90	13.5	325
2 pairs (quad)	9.5	135	0.90	15.0	410
5 pairs	15.5	305	1.60	22.5	980
10 pairs	22.0	570	1.60	29.5	1,510
15 pairs	25.5	815	1.60	33.0	1,900
20 pairs	28.5	1,050	2.00	37.0	2,550
1 triad	9.0	110	0.90	14.0	360
2 triads	13.5	205	1.25	19.5	695
5 triads	17.5	430	1.60	24.5	1,170
10 triads	24.5	805	1.60	32.5	1,870

- Type 1: unarmoured, for indoor use and installation in trays and ducts. Type 2: galvanised steel wire armoured, for outdoor and direct burial.
- Dimensions and weights are approximate. 0.5 and 0.75 mm²: Class 5 flexible; 1.0 and 1.5 mm²: Class 2 stranded (1.0 mm² Class 1 solid, 1/1.13, on request).

ENQUIRIES

Send your cable schedule



BS 5308 PART 2 · PVC INSULATED · 300/500 V

Individual & Collective Screens

0.5 mm² 16/0.20 · PVC insulation 0.6 mm nominal

Elements	Type 1 · Unarmoured		Type 2 · Armoured (SWA)		
	Approx. OD mm	Approx. wt kg/km	Armour wire mm	Approx. OD mm	Approx. wt kg/km
1 pair	7.0	65	0.90	12.5	285
2 pairs	11.0	120	1.25	17.0	525
5 pairs	14.5	220	1.25	20.5	730
10 pairs	20.0	395	1.60	27.5	1,260
15 pairs	23.0	555	1.60	30.5	1,540
20 pairs	25.5	715	2.00	34.5	2,060
1 triad	7.5	75	0.90	13.0	300
2 triads	12.5	145	1.25	18.0	575
5 triads	16.0	280	1.60	23.0	970
10 triads	22.5	515	1.60	29.5	1,470

0.75 mm² 24/0.20 · PVC insulation 0.6 mm nominal

Elements	Type 1 · Unarmoured		Type 2 · Armoured (SWA)		
	Approx. OD mm	Approx. wt kg/km	Armour wire mm	Approx. OD mm	Approx. wt kg/km
1 pair	7.5	70	0.90	13.0	300
2 pairs	12.0	135	1.25	18.0	565
5 pairs	15.5	260	1.25	21.5	795
10 pairs	21.5	475	1.60	29.0	1,380
15 pairs	25.0	670	1.60	32.5	1,740
20 pairs	28.0	865	2.00	36.5	2,310
1 triad	8.0	90	0.90	13.0	330
2 triads	13.0	170	1.25	19.5	645
5 triads	17.0	340	1.60	24.0	1,070
10 triads	24.5	630	1.60	32.0	1,680

1.5 mm² 7/0.53 · PVC insulation 0.6 mm nominal

Elements	Type 1 · Unarmoured		Type 2 · Armoured (SWA)		
	Approx. OD mm	Approx. wt kg/km	Armour wire mm	Approx. OD mm	Approx. wt kg/km
1 pair	8.5	95	0.90	13.5	345
2 pairs	13.5	180	1.25	20.0	670
5 pairs	17.5	365	1.60	24.5	1,110
10 pairs	25.0	680	1.60	32.5	1,750
15 pairs	28.5	970	2.00	37.5	2,460
20 pairs	32.0	1,260	2.00	41.0	2,920
1 triad	9.0	120	0.90	14.0	375
2 triads	15.0	235	1.25	21.0	770
5 triads	19.5	485	1.60	27.0	1,330
10 triads	28.0	925	2.00	36.0	2,350

- Type 1: unarmoured, for indoor use and installation in trays and ducts. Type 2: galvanised steel wire armoured, for outdoor and direct burial.
- Dimensions and weights are approximate. 0.5 and 0.75 mm²: Class 5 flexible; 1.0 and 1.5 mm²: Class 2 stranded (1.0 mm² Class 1 solid, 1/1.13, on request).

INSTALLATION

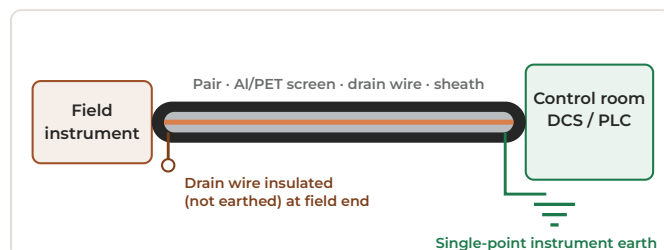
Rip cord on request

ENGINEERING DATA

Keeping the signal clean in the field

Cable construction is only half the story. How the screen is earthed, how far the cable runs and where it is routed decide whether a measurement arrives clean. The guidance below helps engineers get it right at the design stage.

Screen earthing



- Earth each screen at one point only, normally the control-room end, to prevent earth loops.
- Insulate and tape back drain wires at the field end and in junction boxes; carry each screen through terminals without breaks.
- Individual screens (IS) keep pairs from interfering with each other; the overall screen (OS) protects the bundle from external noise.

Routing & segregation

From 3.3 – 11 kV power trays	914 mm
From 415 V power trays	610 mm
From control cable trays	305 mm
Tray stack	Instrumentation cables in the bottom tier; higher voltages above
Crossings	Cross power cables at right angles, never run in parallel in the same tray

Typical minimum distances used in Indian power and process plant specifications, based on IEEE 422 practice. The project specification always takes precedence.



How far can a 4 – 20 mA loop run?

Cable length is limited by the voltage left for the cable after the transmitter and receiver take their share.

$$L_{\text{max}} (\text{m}) = R_{\text{cable, allowed}} \div (2 \times R_{\text{conductor per m}})$$

Example loop: 24 V supply · transmitter needs 12 V · 250 Ω receiver · 20 mA

Voltage for the cable = 24 – 12 – (0.020 × 250) = 7 V → $R_{\text{cable, allowed}} = 7 \div 0.020 = 350 \Omega$ (loop, both conductors)

Size mm ²	Conductor Ω/km at 20 °C	Max. length m at 20 °C	Max. length m at 70 °C
0.5	36.0	4,800	4,000
0.75	24.5	7,100	5,900
1.0	18.1	9,600	8,000
1.5	12.1	14,400	12,000

Conductor resistance from the BS EN 50288-7 data on page 15. 70 °C values allow for the rise in resistance (0.00393 /°C). Lengths are rounded down to the nearest 100 m. Recalculate for your loop voltage, transmitter lift-off voltage and receiver burden.

Capacitance, HART & long runs

- PE and XLPE insulation limit mutual capacitance to 150 pF/m, against 250 pF/m for PVC: better for long runs and fast signals.
- HART signals ride on the 4 – 20 mA loop; their theoretical limit is about 3,000 m and falls as cable capacitance rises, so choose PE or XLPE pairs for long HART runs.
- For intrinsically safe circuits, a light-blue outer sheath is available for easy identification.

Share your loop data or instrument schedule with sales@tamracables.com — our engineers will confirm the right size and screening. More at www.tamracables.com.

INSTALLATION, PACKING & ORDERING

From our drum to your control room

Installation guidance

Bending radius	8 × OD unarmoured · 10 × OD armoured
Laying temperature	Not below 0 °C (PVC) without pre-warming the drum
Pulling	Pull by cable stocking; do not exceed 50 N/mm ² of total conductor area
Segregation	Keep instrumentation cables away from power cables; cross at right angles
Screens	Insulate drain wires at the field end; earth at one point only
Cable ends	Keep sealed with end caps until termination

Packing & marking

- Wooden drums to IS 10418, standard length 500 m or 1000 m (± 5 %); other lengths on request.
- Both ends sealed; drum marked with cable description, length, gross/net weight, drum number and year.
- Outer sheath printed with manufacturer's name, cable description, standard, year and sequential length marking.

TAMRA · INSTRUMENTATION CABLE · 10P × 1.0 mm² ·
PE/IS/OS/PVC/SWA/PVC · 300/500 V · BS EN 50288-7 · 2026
· 0250 m



Enquiry checklist

Standard	BS EN 50288-7 / BS 5308 Part 1 / Part 2
Conductor	Size · Class 1 / 2 / 5 · plain / tinned
Elements	Pairs / triads and quantity
Insulation	PVC / PE / XLPE
Screening	Unscreened / OS / IS + OS · tape or braid
Armour	Unarmoured / GS wire / strip / braid
Sheath	PVC / FR / FRLS / LSZH · colour (black / blue)
Quantity	Total length and drum lengths

Send your instrument cable schedule, enquiry or data sheet to sales@tamracables.com — our engineers will reply with a compliant offer, GTP and drawings. More at www.tamracables.com.

TALK TO US

Your control room, our engineering

Write to us or visit our website — our engineers respond with a compliant offer, GTP and drawings.

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