

Instrumentation Signal Cable for Intrinsically Safe Circuit

◆ Standard

Instrumentation Signal Cable for Intrinsically Safe Circuit Cable is manufactured according to Q/320412HLC001、TICW 6-2009, BS5308-86.

◆ Application

This product is suitable for chemical and petrochemical industry in the explosive environment, the automatic control system to monitor and protect the loop line and other intrinsically safe circuit, with the distribution parameters of small, anti-interference and crosstalk between lines and so on.

◆ Product Properties

- (1) Rated voltage: 300/500V.
- (2) The Max. long-term permissible operating temperature of conductor:
 - PE insulated cable: 70°C; 90°C for XLPE insulated cable;
 - 70°C、90°C、105°C for PVC insulated cable; 70°C、90°C for low smoke halogen free flame retardant Polyolefin insulated cable.
- (3) The Min. permissible laying temperature is:
 - 20°C for PE sheathed cable; 0°C for PVC or low smoke halogen free flame retardant Polyolefin sheathed cable.
- (4) It should be pre-heated if is below the Min. permissible laying temperature.
- (5) The permissible bending radius:
 - a. No less than 12 times of the overall diameter of the cable for the armored or wrapped screened cable;
 - b. No less than 6 times of the overall diameter of the cable for the others.

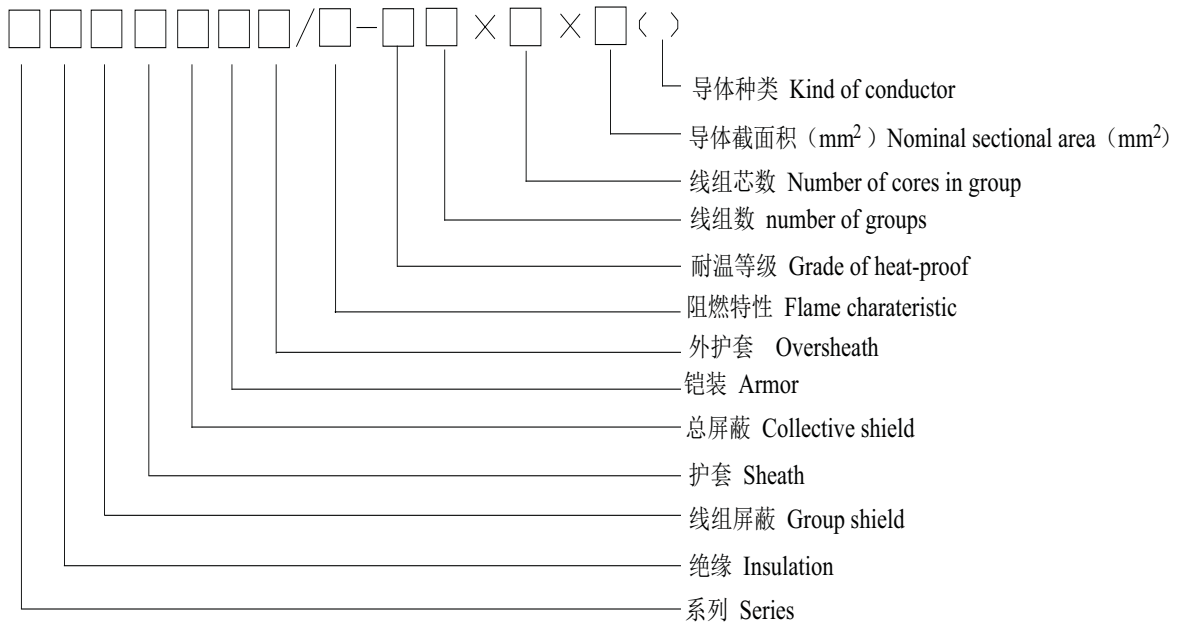
◆ Product code and explanation

Table 1

Item	Code	Explanation
Series	ia	Instrumentation signal cable for intrinsically safe circuit
Insulation	Y	PE
	V	PVC
	YJ	XLPE
	E	Low smoke halogen free flame retardant Polyolefin
Individual screened	P	Copper braid
	P ₂	Copper tape
	P ₃	Aluminum/plastic laminate-tape wrapped screened
Overall screened	P	Copper braid
	P ₂	Copper tape
	P ₃	Aluminum/plastic laminate-tape wrapped screened
Sheath	V	PVC
	E	Low smoke halogen free flame retardant Polyolefin
Armor	(Omitted)	No armor
	2	Steel tape armored
	3	Steel wire armored
	31	Steel wire braid armored
	32	Steel wire armored
Over sheath	Y	PE
	V	PVC
	E	Low smoke halogen free flame retardant Polyolefin
Flame characteristics	(Omitted)	No requirement
	ZRA	Bunching flame retardant
	ZRB	Low smoking low halogen bunching flame retardant
	WDZ	Low smoking halogen free bunching flame retardant
Grade of heat-proof	(Omitted)	70°C for PE, 70°C PVC or LSOH insulated cable; 90°C for XLPE insulated cable
	90	The Max. long-term permissible operating temperature of conductor is 90°C
	105	The Max. long-term permissible operating temperature of conductor is 105°C
Specification	Number of groups × number of cores per group ×	Therein to: 1) Number of groups: 1,2,3,4,5,6,7,8,9,10,12,14,16,18,19,20,24;

	Nominal sectional area of conductor(mm ²)	2) Number of cores per group: 2 or 3; 3) Nominal sectional area of conductor(mm ²):0.5、0.75、1.0、1.5、2.5; 4) If necessary, may select other size according to the requirement of customer.
Conductor Type	A	Class 1 (Solid conductor)
	B	Class 2 (Stranded conductor)
	R	Class 5 Flexible structure conductor

2. Type Explanation



3. Indication example

The indication of instrumentation signal cable for intrinsically safe circuit consists of type, number of groups, number of cores per group and nominal sectional area of conductor. For examples:

(1) PE insulated, aluminum/plastic laminate-tape wrapped individual and overall screened, PVC sheathed instrumentation signal cable for intrinsically safe circuit, 12 pairs, 1.5mm² (stranded conductor), is indicated as: ia-KYP₃VP₃ (B) 12×2×1.5

(2) Low smoking low halogen flame retardant, PVC insulated, aluminum/plastic laminate-tape wrapped individual screened and overall screened, PVC sheathed instrumentation signal cable for intrinsically safe circuit, 7 triples, 1.0mm² (solid conductor), is indicated as: ZRB-ia-KVP₃VP₃ 7×3×1.0

◆ Technical Data

1. DC resistance of conductor and insulation resistance are shown in the following table.

Table 2

Nominal sectional area mm ²	DC resistance of conductor at 20°C ≤Ω/km						Insulation resistance at 20°C ≥MΩ·km	
	Un-tinned			Tinned			PE or XLPE insulated	PVC or LSOH insulated
	Class 1	Class 2	Class 5	Class 1	Class 2	Class 5		
0.5	36.0	36.0	39.0	36.7	36.7	40.1	5000	15
0.75	24.5	24.5	26.0	24.8	24.8	26.7	5000	15
1.0	18.1	18.1	19.5	18.2	18.2	20.0	5000	13
1.5	12.1	12.1	13.3	12.2	12.2	13.7	5000	10
2.5	7.41	7.41	7.98	7.56	7.56	8.21	5000	9

2. Technical Parameter

(1) The operating capacitance between screened pair (1kHz) is:

No more than 90pF/m for PE or XLPE insulated cable;

No more than 150pF/m for PVC insulated cable.

(2) The inductance between groups is no more than 0.6μH/m.

(3) The capacitance unbalance between groups: no more than 250pF, when the cable is 250m in length, the test frequency is 1kHz.

(4) The cable has the properties resisting the interference derived from outside magnetic field, electromagnetic field and static electric field.

When the test frequency is 50~60Hz and the magnetic strength is 400A/m, the voltage of the cable interfered from magnetic coupling is no more than 1mV.

When the test frequency is 27~200MHz, the screened efficiency of resisting the electromagnetic interference of the cable is no less than 60dB.

When the test static electric field is 10000V/cm, the voltage of the cable interfered from capacity coupling is no more than 3V.

(5) Flame characteristics:

The bunching flame retardant cable (ZRA) can pass the test according to IEC60332-3: Test method on electrical wires or cables under fire conditions Part3: The on bunched wires and cables.

The Low smoke low halogen flame retardant cable (ZRB) not only can pass test according to IEC60332-3, but also can pass test according to IEC61034: Test method on electrical wires or cables under fire conditions Part1: Measurement on smoke density of wire or cable. The insulation and sheath material of the cable should be tested as per IEC60754-1: the HCL content of the separated out gas in the firing test is no more than 100mg/g.

The low smoke halogen free bunching flame retardant cable (WDZ) not only can pass test according to IEC60332-3, but also can pass test according to IEC61034: The insulation and sheath material of the cable should be tested as per IEC60754, Which PH value is not less than 4.3 and conductivity should be less than 10μs/mm.

◆ Type and Name, Structure and Diameter

1. Type and Name (Table 3)

Table 3

Type	Name
ia-KYP ₃ V	PE insulated aluminum/plastic laminate-tape wrapped individual screened PVC sheathed instrumentation signal cable for intrinsically safe circuit
ia-KVP ₃ V	PVC insulated aluminum/plastic laminate-tape wrapped individual screened PVC sheathed instrumentation signal cable for intrinsically safe circuit
ia-KYJP ₃ V	XLPE insulated aluminum/plastic laminate-tape wrapped individual screened PVC sheathed instrumentation signal cable for intrinsically safe circuit
ia-KYP ₃ VP ₃	PE insulated aluminum/plastic laminate-tape wrapped individual screened and overall screened PVC sheathed instrumentation signal cable for intrinsically safe circuit
ia-KVP ₃ VP ₃	PVC insulated aluminum/plastic laminate-tape wrapped individual screened and overall screened PVC sheathed instrumentation signal cable for intrinsically safe circuit
ia-KYJP ₃ VP ₃	XLPE insulated aluminum/plastic laminate-tape wrapped individual screened and overall screened PVC sheathed instrumentation signal cable for intrinsically safe circuit
ia-KYP ₃ V ₂₂	PE insulated aluminum/plastic laminate-tape wrapped individual screened steel tape armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
ia-KYP ₃ V ₃₂	PE insulated aluminum/plastic laminate-tape wrapped individual screened steel wire armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
ia-KVP ₃ V ₂₂	PVC insulated aluminum/plastic laminate-tape wrapped individual screened steel tape armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
ia-KVP ₃ V ₃₂	PVC insulated aluminum/plastic laminate-tape wrapped individual screened steel wire armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
ia-KYJP ₃ V ₂₂	XLPE insulated aluminum/plastic laminate-tape wrapped individual screened steel tape armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
ia-KYJP ₃ V ₃₂	XLPE insulated aluminum/plastic laminate-tape wrapped individual screened steel wire armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
ia-KYP ₃ VP ₃₋₂₂	PE insulated aluminum/plastic laminate-tape wrapped individual screened and overall screened steel tape armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
ia-KYP ₃ VP ₃₋₃₂	PE insulated aluminum/plastic laminate-tape wrapped individual screened and overall screened steel wire armored PVC sheathed instrumentation signal cable for intrinsically safe circuit

ia-KVP ₃ VP ₃₋₂₂	PVC insulated aluminum/plastic laminate-tape wrapped individual screened and overall screened steel tape armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
ia-KVP ₃ VP ₃₋₃₂	PVC insulated aluminum/plastic laminate-tape wrapped individual screened and overall screened steel wire armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
ia-KYJP ₃ VP ₃₋₂₂	XLPE insulated aluminum/plastic laminate-tape wrapped individual screened and overall screened steel tape armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
ia-KYJP ₃ VP ₃₋₃₂	XLPE insulated aluminum/plastic laminate-tape wrapped individual screened and overall screened steel wire armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRA-ia-KYP ₃ V	Flame retardant PE insulated aluminum/plastic laminate-tape wrapped individual screened PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRA-ia-KVP ₃ V	Flame retardant PVC insulated aluminum/plastic laminate-tape wrapped individual screened PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRA-ia-KYJP ₃ V	Flame retardant XLPE insulated aluminum/plastic laminate-tape wrapped individual screened PVC sheathed instrumentation signal cable for intrinsically safe circuit,
ZRA-ia-KYP ₃ VP ₃	Flame retardant PE insulated aluminum/plastic laminate-tape wrapped individual screened and overall screened PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRA-ia-KVP ₃ VP ₃	Flame retardant PVC insulated aluminum/plastic laminate-tape wrapped individual screened and overall screened PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRA-ia-KYJP ₃ VP ₃	Flame retardant XLPE insulated aluminum/plastic laminate-tape wrapped individual screened and overall screened PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRA-ia-KYP ₃ V ₂₂	Flame retardant PE insulated aluminum/plastic laminate-tape wrapped individual screened steel tape armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRA-ia-KYP ₃ V ₃₂	Flame retardant PE insulated aluminum/plastic laminate-tape wrapped individual screened steel wire armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRA-ia-KVP ₃ V ₂₂	Flame retardant PVC insulated aluminum/plastic laminate-tape wrapped individual screened steel tape armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRA-ia-KVP ₃ V ₃₂	Flame retardant PVC insulated aluminum/plastic laminate-tape wrapped individual screened steel wire armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRA-ia-KYJP ₃ V ₂₂	Flame retardant XLPE insulated aluminum/plastic laminate-tape wrapped individual screened steel tape armored PVC sheathed instrumentation signal cable for intrinsically safe circuit,
ZRA-ia-KYJP ₃ V ₃₂	Flame retardant XLPE insulated aluminum/plastic laminate-tape wrapped individual screened steel wire armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRA-ia-KYP ₃ VP ₃₋₂₂	Flame retardant PE insulated aluminum/plastic laminate-tape wrapped individual screened and overall screened steel tape armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRA-ia-KYP ₃ VP ₃₋₃₂	Flame retardant PE insulated aluminum/plastic laminate-tape wrapped individual screened and overall screened steel wire armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRA-ia-KVP ₃ VP ₃₋₂₂	Flame retardant PVC insulated aluminum/plastic laminate-tape wrapped individual screened and collective screened steel tape armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRA-ia-KVP ₃ VP ₃₋₃₂	Flame retardant PVC insulated aluminum/plastic laminate-tape wrapped individual screened and overall screened, steel wire armored, PVC sheathed instrumentation signal cable for intrinsically safe circuit,
ZRA-ia-KYJP ₃ VP ₃₋₂₂	Flame retardant XLPE insulated aluminum/plastic laminate-tape wrapped individual screened and overall screened steel tape armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRA-ia-KYJP ₃ VP ₃₋₃₂	Flame retardant XLPE insulated aluminum/plastic laminate-tape wrapped individual screened and overall screened steel wire armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRB-ia-KYP ₃ V	Low smoke low halogen flame retardant PE insulated aluminum/plastic laminate-tape wrapped individual screened PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRB-ia-KVP ₃ V	Low smoke low halogen flame retardant PVC insulated aluminum/plastic laminate-tape wrapped individual screened PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRB-ia-KYJP ₃ V	Low smoke low halogen flame retardant XLPE insulated aluminum/plastic laminate-tape wrapped individual screened PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRB-ia-KYP ₃ VP ₃	Low smoke low halogen flame retardant PE insulated aluminum/plastic laminate-tape wrapped individual screened and overall screened PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRB-ia-KVP ₃ VP ₃	Low smoke low halogen flame retardant PVC insulated aluminum/plastic laminate-tape

	wrapped individual screened and overall screened PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRB-ia-KYJP ₃ VP ₃	Low smoke low halogen flame retardant XLPE insulated aluminum/plastic laminate-tape wrapped individual screened and overall screened PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRB-ia-KYP ₃ V ₂₂	Low smoke low halogen flame retardant PE insulated aluminum/plastic laminate-tape wrapped individual screened steel tape armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRB-ia-KYP ₃ V ₃₂	Low smoke low halogen flame retardant PE insulated aluminum/plastic laminate-tape wrapped individual screened steel wire armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRB-ia-KVP ₃ V ₂₂	Low smoke low halogen flame retardant PVC insulated aluminum/plastic laminate-tape wrapped individual screened steel tape armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRB-ia-KVP ₃ V ₃₂	PVC insulated, aluminum/plastic laminate-tape wrapped individual screened, steel wire armored, PVC sheathed instrumentation signal cable for intrinsically safe circuit, Low smoke low halogen flame retardant
ZRB-ia-KYJP ₃ V ₂₂	Low smoke low halogen flame retardant XLPE insulated aluminum/plastic laminate-tape wrapped individual screened steel tape armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRB-ia-KYJP ₃ V ₃₂	Low smoke low halogen flame retardant XLPE insulated aluminum/plastic laminate-tape wrapped individual screened steel wire armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRB-ia-KYP ₃ VP ₃₋₂₂	Low smoke low halogen flame retardant PE insulated aluminum/plastic laminate-tape wrapped individual screened and overall screened steel tape armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRB-ia-KYP ₃ VP ₃₋₃₂	Low smoke low halogen flame retardant PE insulated aluminum/plastic laminate-tape wrapped individual screened and overall screened steel wire armored, PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRB-ia-KVP ₃ VP ₃₋₂₂	Low smoke low halogen flame retardant PVC insulated aluminum/plastic laminate-tape wrapped individual screened and overall screened steel tape armored, PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRB-ia-KVP ₃ VP ₃₋₃₂	Low smoke low halogen flame retardant PVC insulated aluminum/plastic laminate-tape wrapped individual screened and overall screened steel wire armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRB-ia-KYJP ₃ VP ₃₋₂₂	Low smoke low halogen flame retardant XLPE insulated aluminum/plastic laminate-tape wrapped individual screened and overall screened steel tape armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
ZRB-ia-KYJP ₃ VP ₃₋₃₂	Low smoke low halogen flame retardant XLPE insulated aluminum/plastic laminate-tape wrapped individual screened and overall screened steel wire armored PVC sheathed instrumentation signal cable for intrinsically safe circuit
WDZ-ia-KEP ₃ E	Low smoke halogen free flame retardant polyolefin insulated aluminum/plastic laminate-tape wrapped individual screened polyolefin sheathed instrumentation signal cable for intrinsically safe circuit
WDZ-ia-KEP ₃ E ₂₂	Low smoke halogen free flame retardant polyolefin insulated aluminum/plastic laminate-tape wrapped individual screened steel tape armored polyolefin sheathed instrumentation signal cable for intrinsically safe circuit
WDZ-ia-KEP ₃ E ₃₂	Low smoke halogen free flame retardant polyolefin insulated aluminum/plastic laminate-tape wrapped individual screened steel wire armored polyolefin sheathed instrumentation signal cable for intrinsically safe circuit
WDZ-ia-KEP ₃ EP ₃	Low smoke halogen free flame retardant polyolefin insulated aluminum/plastic laminate-tape wrapped individual screened and collective screened polyolefin sheathed instrumentation signal cable for intrinsically safe circuit
WDZ-ia-KEP ₃ EP ₃₋₂₂	Low smoke halogen free flame retardant polyolefin insulated aluminum/plastic laminate-tape wrapped individual screened and overall screened steel tape armored polyolefin sheathed instrumentation signal cable for intrinsically safe circuit,
WDZ-ia-KEP ₃ EP ₃₋₃₂	Low smoke halogen free flame retardant polyolefin insulated aluminum/plastic laminate-tape wrapped individual screened and overall screened steel wire armored polyolefin sheathed instrumentation signal cable for intrinsically safe circuit

Note: According to the models listed above description, you can choose to meet the needs of various combinations, can also be done according to the requirements of the customer corresponding type cables.

2. Structure and Dimension (Table 4~6)

The dimension of the cables is shown in the following table.

Table 4

Specification mm ²	Construction of conductor No./Dia. mm	Calculated overall diameter				Construction of conductor No./Dia. mm	Calculated overall diameter				Construction of conductor No./Dia. mm	Calculated overall diameter			
		Individual screened mm	Individual overall screened mm	Individual screened and armor mm	Individual and overall screened & armor mm		Individual screened mm	Individual overall screened mm	Individual screened and armor mm	Individual and overall screened & armor mm		Individual screened mm	Individual overall screened mm	Individual screened and armor mm	Individual and overall screened & armor mm
1×2×0.5		8.0	—	11.5	—		8.5	—	12.0	—		9.0	—	12.5	—
2×2×0.5		11.5	12.5	15.5	16.5		12.0	13.5	15.5	17.0		13.0	14.0	16.5	18.0
3×2×0.5		12.5	13.5	16.0	17.0		13.0	14.0	16.5	17.5		13.5	15.0	17.0	18.5
4×2×0.5		13.5	14.5	17.0	18.0		14.0	15.0	17.5	18.5		15.0	16.0	18.5	19.5
5×2×0.5		15.0	16.0	18.5	19.5		15.5	17.0	19.0	20.0		16.0	17.5	19.5	21.5
6×2×0.5		16.0	17.0	19.5	21.0		17.0	17.5	20.0	21.5		17.5	18.5	21.0	22.5
7×2×0.5		16.0	17.0	19.5	21.0		17.0	17.5	20.0	21.5		17.5	18.5	21.0	22.5
8×2×0.5	1/0.8	17.0	18.5	21.0	22.0	7/0.30	18.0	19.0	21.5	22.5	16/0.20	18.5	20.0	22.0	24.0
9×2×0.5		18.5	20.5	22.0	23.0		19.5	20.5	22.5	24.0		20.0	21.0	23.5	25.0
10×2×0.5		19.5	21.0	23.0	24.5		20.5	21.5	23.5	25.0		21.0	22.5	24.5	26.0
12×2×0.5		20.0	22.0	24.0	25.5		21.0	22.5	24.5	26.0		22.0	23.5	25.5	27.5
14×2×0.5		22.0	23.0	25.5	26.5		22.5	24.0	26.0	27.5		23.5	25.0	27.0	28.5
16×2×0.5		23.0	24.5	26.5	28.0		24.0	25.5	27.5	29.0		25.0	26.5	28.5	30.0
19×2×0.5		25.0	26.0	28.5	29.5		26.0	27.5	29.5	31.0		26.5	28.5	30.5	33.5
24×2×0.5		27.5	29.0	31.0	34.0		29.0	30.0	33.5	35.0		29.5	31.5	34.5	36.5
1×2×0.75		8.5	—	12.0	—		9.0	—	12.5	—		9.5	—	13.0	—
2×2×0.75		12.5	13.5	16.0	17.0		13.0	14.5	16.5	17.5		13.5	15.0	17.0	18.5
3×2×0.75		13.0	14.5	16.5	18.0		13.5	15.0	17.0	18.5		14.5	15.5	18.0	19.0
4×2×0.75		14.5	15.5	18.0	19.0		15.0	16.0	18.5	19.5		16.0	17.0	19.5	20.5
5×2×0.75		16.0	17.0	19.5	20.5		16.5	17.5	20.0	21.0		17.0	18.5	21.0	22.5
6×2×0.75		17.0	18.5	21.0	22.0		18.0	19.0	21.5	22.5		19.0	20.0	22.5	24.0
7×2×0.75		17.0	18.5	21.0	22.0		18.0	19.0	21.5	22.5		19.0	20.0	22.5	24.0
8×2×0.75	1/0.97	18.5	19.5	22.0	23.0	7/0.37	19.0	20.5	22.5	24.0	24/0.20	20.0	21.0	23.5	25.0
9×2×0.75		19.5	21.5	23.5	25.0		20.5	22.0	24.0	25.5		21.5	22.5	25.0	26.5
10×2×0.75		21.0	22.5	24.5	26.0		21.5	23.0	25.0	26.5		22.5	24.5	26.0	28.0
12×2×0.75		22.0	23.5	25.5	27.0		22.5	24.0	26.0	27.5		24.0	25.5	27.5	29.0
14×2×0.75		23.0	25.0	27.0	28.5		24.0	25.5	28.0	29.0		25.5	27.0	29.0	30.5
16×2×0.75		25.0	26.0	28.5	29.5		25.5	27.0	29.5	31.0		26.5	28.5	30.0	33.5
19×2×0.75		26.5	28.0	30.5	31.5		27.5	29.0	31.5	34.0		29.0	30.5	34.0	35.5
24×2×0.75		29.5	31.5	34.5	36.0		30.5	32.0	36.0	37.0		32.0	33.5	37.0	39.0

Table 5

Specification mm ²	Construction of conductor No./Dia. mm	Calculated overall diameter				Construction of conductor No./Dia. mm	Calculated overall diameter				Calculated overall diameter								
		Individual screened mm	Individual and overall screened mm	Individual screened and armor mm	Individual and overall screened & armor mm		Individual screened mm	Individual and overall screened mm	Individual screened and armor mm	Individual and overall screened & armor mm	Individual screened mm	Individual and overall screened mm	Individual screened and armor mm	Individual and overall screened & armor mm					
1×2×1.0		9.0	—	12.5	—		10.0	—	13.5	—	10.5	—	13.5	—					
2×2×1.0		13.5	15.0	17.0	18.5		14.5	15.5	18.0	19.0	15.0	16.5	18.5	20.0					
3×2×1.0		14.5	5.5	18.0	19.0		15.5	16.5	19.0	20.0	16.0	17.0	19.5	21.0					
4×2×1.0		16.0	17.0	19.5	20.5		17.0	18.0	20.0	21.5	17.5	19.0	21.0	22.5					
5×2×1.0		17.5	18.5	21.0	22.0		18.5	19.5	22.0	23.0	19.0	20.5	23.0	24.5					
6×2×1.0		19.0	20.5	22.5	24.0		20.0	21.5	23.5	25.0	21.0	22.0	24.5	26.0					
7×2×1.0		19.0	20.5	22.5	24.0		20.0	21.5	23.5	25.0	21.0	22.0	24.5	26.0					
8×2×1.0	1/1.13	20.0	21.5	24.0	25.0	7/0.43	21.5	23.0	25.0	26.5	22.5	24.0	26.0	27.5	32/0.20	24.0	25.5	27.5	29.0
9×2×1.0		22.0	23.0	25.5	26.5		23.0	24.5	26.5	28.0	24.0	25.5	27.5	29.0		25.5	27.0	29.0	30.5
10×2×1.0		23.0	24.5	26.5	28.0		24.5	26.0	28.0	29.5	25.5	27.0	29.0	31.0		26.5	28.0	30.5	31.5
12×2×1.0		24.0	25.5	27.5	29.0		25.5	27.0	29.0	31.0	27.5	29.0	31.0	34.0		28.5	30.0	33.5	35.0
14×2×1.0		26.0	27.5	29.5	31.0		27.5	29.0	31.0	34.0	29.0	30.5	33.5	37.0		30.5	32.0	35.5	39.0
16×2×1.0		27.5	29.0	31.0	34.0		29.0	30.5	34.0	35.5	31.0	32.5	36.5	41.5		32.5	34.0	37.5	43.0
19×2×1.0		29.5	31.0	34.5	36.0		31.0	32.5	36.5	38.0	33.0	34.5	38.0	44.5		34.0	35.5	40.0	46.0
24×2×1.0		33.0	34.5	38.0	39.0		34.5	36.0	40.0	41.5	36.0	37.5	41.0	43.0		36.0	37.5	41.0	44.0
1×2×1.5		10.0	—	13.0	—		10.5	—	14.0	—	11.0	—	14.5	—		11.0	—	14.5	—
2×2×1.5		14.5	16.0	18.5	19.5		15.5	17.0	19.0	20.0	16.0	17.5	20.0	21.0		16.0	17.5	20.0	21.0
3×2×1.5		15.0	16.5	19.0	20.0		16.5	18.0	20.0	21.0	17.0	18.5	21.0	22.0		17.0	18.5	21.0	22.0
4×2×1.5		16.5	18.0	21.0	22.0		18.0	19.5	21.5	22.5	19.0	20.0	22.5	24.0		19.0	20.0	22.5	24.0
5×2×1.5		19.0	20.5	22.5	24.0		20.0	21.5	23.5	25.0	21.0	22.0	24.5	26.0		21.0	22.0	24.5	26.0
6×2×1.5		21.0	22.0	24.5	25.5		20.5	22.0	25.5	26.5	22.5	24.0	26.0	27.5		22.5	24.0	26.0	27.5
7×2×1.5		21.0	22.0	24.5	25.5		20.5	22.0	25.5	26.5	22.5	24.0	26.0	27.5		22.5	24.0	26.0	27.5
8×2×1.5	1/1.38	22.0	23.5	25.5	27.0	7/0.52	23.0	24.5	27.0	28.5	24.0	25.5	27.5	29.0	30/0.25	24.0	25.5	27.5	29.0
9×2×1.5		24.0	25.5	27.5	29.0		25.0	26.5	28.5	30.5	26.0	27.5	29.5	31.0		26.0	27.5	29.5	31.0
10×2×1.5		25.0	26.5	28.5	30.5		26.5	28.0	30.5	31.5	27.5	29.0	31.5	34.5		27.5	29.0	31.0	34.0
12×2×1.5		26.5	28.0	30.0	31.5		27.5	29.0	31.5	34.5	28.5	30.5	33.5	35.5		28.5	30.5	33.5	35.5
14×2×1.5		28.5	29.5	32.0	34.5		29.5	31.0	35.0	36.0	29.5	31.0	33.5	37.5		31.0	32.5	35.5	37.5
16×2×1.5		30.0	31.5	35.0	36.5		31.5	33.0	37.0	38.0	31.5	33.0	37.0	39.5		32.5	34.0	37.5	39.5
19×2×1.5		32.5	34.0	37.5	39.0		34.0	35.5	39.5	41.0	34.0	35.5	39.5	42.0		35.0	37.0	40.0	42.0
24×2×1.5		36.0	37.5	41.0	42.5		38.0	39.5	43.5	44.5	38.0	39.5	43.5	46.0		39.0	41.0	44.0	46.0

Table 6

Specification mm ²	Construction of conductor No./Dia. mm	Calculated overall diameter				Construction of conductor No./Dia. mm	Calculated overall diameter				Calculated overall diameter				
		Individual screened mm	Individual and overall screened mm	Individual screened and armor mm	Individual and overall screened & armor mm		Individual screened mm	Individual and overall screened mm	Individual screened and armor mm	Individual and overall screened & armor mm	Individual screened mm	Individual and overall screened mm	Individual and overall screened & armor mm		
1×3×0.5		8.5	—	12.0	—		8.5	—	12.5	—		9.5	—	12.5	—
3×3×0.5		13.5	14.5	17.0	18.0		14.0	15.0	17.5	19.0		14.5	16.0	18.5	20.0
4×3×0.5	1/0.8	15.0	16.0	18.0	19.5	7/0.30	15.5	16.0	19.0	20.0		16.0	17.0	19.5	21.5
5×3×0.5		16.0	17.5	20.0	21.0		17.0	17.5	20.0	21.5		17.5	19.0	21.0	23.0
6×3×0.5		18.5	19.5	22.0	23.0		19.0	20.5	22.5	24.0		19.5	21.0	23.0	25.0
7×3×0.5		18.5	19.5	22.0	23.0		19.0	20.5	22.5	24.0		19.5	21.0	23.0	25.0
1×3×0.75		9.0	—	12.5	—		9.5	—	13.0	—		10.0	—	13.0	—
3×3×0.75		14.5	15.5	18.0	19.0		15.5	16.5	18.5	19.5		15.5	17.0	19.0	21.0
4×3×0.75	1/0.97	16.0	17.0	19.5	20.5	7/0.37	17.0	18.0	20.0	21.0		17.0	18.5	21.0	22.5
5×3×0.75		17.5	18.5	21.0	22.0		18.5	19.5	21.0	22.5		19.0	20.0	22.5	24.5
6×3×0.75		19.5	21.5	23.5	25.0		21.0	22.5	24.0	25.5		21.0	22.5	25.0	26.5
7×3×0.75		19.5	21.5	23.5	25.0		21.0	22.5	24.0	25.5		21.0	22.5	25.0	26.5
1×3×1.0		9.5	—	13.5	—		10.5	—	14.0	—		10.5	—	14.5	—
3×3×1.0		15.5	17.0	19.5	20.5		17.0	18.5	20.0	21.5		17.5	18.5	21.0	22.5
4×3×1.0	1/1.13	17.0	18.5	21.0	22.0	7/0.43	18.5	20.0	22.0	23.0		19.0	20.0	22.5	24.5
5×3×1.0		19.0	21.0	22.5	24.5		21.0	22.5	24.0	25.5		21.0	22.5	24.5	26.5
6×3×1.0		21.5	23.0	25.5	26.5		23.5	25.0	26.5	28.0		24.0	25.5	27.5	29.0
7×3×1.0		21.5	23.0	25.5	26.5		23.5	25.0	26.5	28.0		24.0	25.5	27.5	29.0
1×3×1.5		10.5	—	14.0	—		11.5	—	14.5	—		11.5	—	15.0	—
3×3×1.5		17.0	18.0	21.0	22.0		18.5	20.0	21.0	22.5		18.5	20.0	22.5	24.0
4×3×1.5	1/1.38	19.0	20.0	22.5	24.0	7/0.52	20.5	22.0	23.5	25.0		20.5	22.0	24.0	26.0
5×3×1.5		21.0	22.5	24.5	26.0		22.5	24.0	26.0	27.5		22.5	24.5	26.5	28.0
6×3×1.5		23.5	25.0	27.5	28.5		25.5	27.0	28.5	30.5		25.5	27.5	29.0	31.0
7×3×1.5		23.5	25.0	27.5	28.5		25.5	27.0	28.5	30.5		25.5	27.5	29.0	31.0