



## AJ-2Y(L)2YDB2Y S(H45)

### Applications

The cables are designed for transmission of low frequent signals up to 90 KHz through symmetric circuits in railway networks, and are suitable for laying directly into the ground or in ducts.

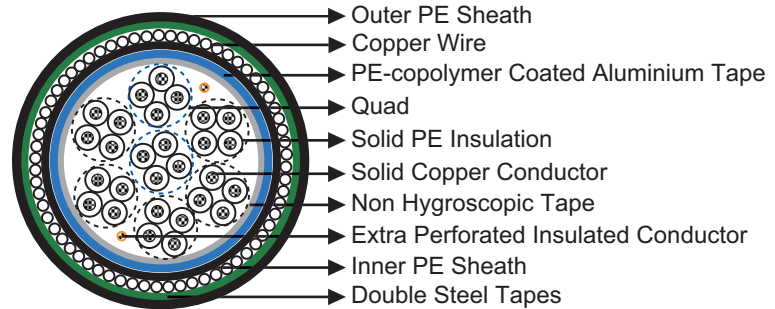


### Standards

- Dlk 1.013.109y
- Dlk 1.013.110y

### Construction

- Conductors: Solid Annealed copper, 0.9 or 1.4 mm nominal diameter.
- Insulation: Solid polyethylene.
- Cabling Element: Four insulated conductors are twisted together to form a quad.
- Stranding: Quads are helically stranded in concentric layers. Cables from 7 quads on, have two extra conductors of 0.5mm with perforated insulation (surveillance conductors).



- Core Wrapping: Plastic tape(s) with overlapping.
- Moisture Barrier: One laminated sheath made of aluminium tape (0.15mm) coated with PE-Copolymer on at least one side is applied with longitudinally overlap.
- Inner Sheath: Low density polyethylene.
- Electrostatic Shield: One layer of helically applied copper wires (0.9, 1.2, 1.4 or 1.8mm).
- Electromagnetic Shield: Two helically applied steel tapes (0.5 or 0.8mm thick, depending on required reduction factor).
- Outer Sheath: Low density polyethylene.

### Type Codes

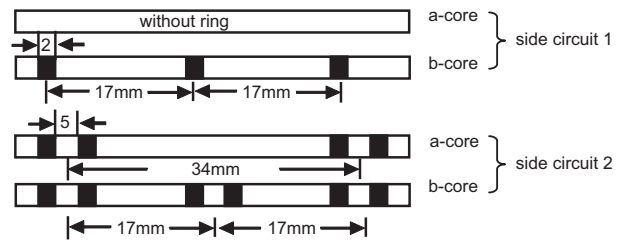
AJ-	outdoor cable with protection against inductive influences
2Y	solid PE conductor insulation
(L)2Y	inner laminated PE sheath
D	copper wire concentric screen
B	steel tape armor
2Y	outer PE sheath

S signal cable  
LG layer stranding  
H(n) operating capacity

### Ring marking of Quad

The single core is identified by black ring markings:

Side Circuit 1	a-wire	without marking
	b-wire	1 mark distance 17mm
Side Circuit 2	a-wire	2 marks distance 34mm
	b-wire	2 marks distance 17mm



### Electrical Characteristics at 20°C

Nominal Conductor Diameter	mm	0.9	1.4
Maximum Conductor Resistance	Ω/km	56.6	23.4
Minimum Insulation Resistance @500 V DC (1min)	MΩ.km	10000	10000
Maximum Conductor Capacitance @800Hz (AC)	nF/km	45	45
Maximum Capacitance Unbalance @800Hz			
$K_1$ (100% / 50% all values)	pF/km	650/150	650/150
$K_{9-12}$ neighboured quads	pF/km	500/150	500/150
$K_{9-12}$ over-neighboured quads	pF/km	150	150
$ea_{1/2}$	pF/km	1300	1300
Minimum Far-end Crosstalk Attenuation @90KHz			
100% / 80% all values	dB/km	58/62	33/45
Maximum Attenuation @90KHz	dB/km	3.3	2.6
Dielectric Strength, conductor to conductor (DC voltage 1min)	V	3535	3535
Surveillance Conductors			
Loop resistance, maximum	Ω/km	190	190
Insulation resistance			
- dry cable core, minimum	MΩ.km	1000	1000
- wet cable core, maximum	KΩ.km	30	30
Optional: Nominal Reduction Factor @ 100 V/km, 16 2/3 Hz			
rk 401 series		0.15	0.15
rk 501 series		0.35	0.35
rk 601 series		0.55	0.55
Operating Voltage AC/DC	V	420/600	420/600
Test Voltage 50 Hz 1 min			
Core to Core	$V_{eff}$	2500	2500
Core to Screen	$V_{eff}$	2500	2500

### Mechanical and Thermal Properties

- Minimum Bending Radius: 10×OD
- Temperature Range: -40°C to +60°C (during operation); -10°C +60°C (during installation)

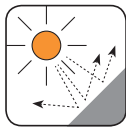


## Dimensions and Weight

Cable Code	Number of Quads	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
0.9mm Conductor, 1.8mm Insulated Wire rk 601 Series					
RS109y-2Y(L)2YDB2Y-3Q0.9-S(H45)-R6	3	1.3	1.2	21.0	650
RS109y-2Y(L)2YDB2Y-5Q0.9-S(H45)-R6	5	1.3	1.2	23.0	800
RS109y-2Y(L)2YDB2Y-10Q0.9-S(H45)-R6	10	1.3	1.2	28.0	1130
RS109y-2Y(L)2YDB2Y-20Q0.9-S(H45)-R6	20	1.3	1.2	35.0	1670
RS109y-2Y(L)2YDB2Y-30Q0.9-S(H45)-R6	30	1.3	1.2	40.0	2180
RS109y-2Y(L)2YDB2Y-40Q0.9-S(H45)-R6	40	1.3	1.2	45.0	2650
0.9mm Conductor, 1.8mm Insulated Wire rk 401 Series					
RS109y-2Y(L)2YDB2Y-10Q0.9-S(H45)-R4	10	1.3	1.2	31.0	1880
RS109y-2Y(L)2YDB2Y-20Q0.9-S(H45)-R4	20	1.3	1.2	38.0	2640
RS109y-2Y(L)2YDB2Y-30Q0.9-S(H45)-R4	30	1.3	1.2	43.0	3310
RS109y-2Y(L)2YDB2Y-40Q0.9-S(H45)-R4	40	1.3	1.2	48.0	3880
1.4mm Conductor, 2.6mm Insulated Wire rk 501 Series					
RS109y-2Y(L)2YDB2Y-3Q1.4-S(H45)-R5	3	1.3	1.2	25.0	1060
RS109y-2Y(L)2YDB2Y-5Q1.4-S(H45)-R5	5	1.3	1.2	29.0	1360
RS109y-2Y(L)2YDB2Y-10Q1.4-S(H45)-R5	10	1.3	1.2	37.0	2040
RS109y-2Y(L)2YDB2Y-20Q1.4-S(H45)-R5	20	1.3	1.2	47.0	3180
RS109y-2Y(L)2YDB2Y-30Q1.4-S(H45)-R5	30	1.3	1.2	54.0	4220
RS109y-2Y(L)2YDB2Y-40Q1.4-S(H45)-R5	40	1.3	1.2	61.0	5180
1.4mm Conductor, 2.6mm Insulated Wire rk 401 Series					
RS109y-2Y(L)2YDB2Y-3Q1.4-S(H45)-R4	3	1.3	1.2	28.0	1650
RS109y-2Y(L)2YDB2Y-5Q1.4-S(H45)-R4	5	1.3	1.2	31.0	1950
RS109y-2Y(L)2YDB2Y-10Q1.4-S(H45)-R4	10	1.3	1.2	39.0	2880
RS109y-2Y(L)2YDB2Y-20Q1.4-S(H45)-R4	20	1.3	1.2	49.0	4180
RS109y-2Y(L)2YDB2Y-30Q1.4-S(H45)-R4	30	1.3	1.2	56.0	5330
RS109y-2Y(L)2YDB2Y-40Q1.4-S(H45)-R4	40	1.3	1.2	63.0	6430



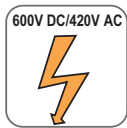
Anti Induction



UV Resistant



Water Resistant



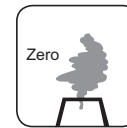
Rated Voltage



Laid In Ducts



Buried in Ciround



Zero Halogen  
IEC 60754-1/NF C20-454  
EN 50267-2-1



## A-2Y(L)2YB2Y S(H45)

### Applications

The cables are designed for transmission of low frequent signals up to 90 KHz through symmetric circuits in railway networks, and are suitable for laying directly into the ground or in ducts.

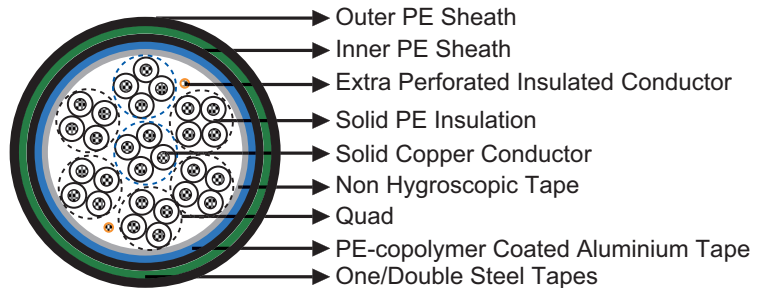


### Standards

- Dlk 1.013.109y
- Dlk 1.013.110y

### Construction

- Conductor: Solid annealed copper, 0.9 or 1.4 mm nominal diameter.
- Insulation: Solid polyethylene.
- Cabling Element: Four insulated conductors are twisted together to form a quad.



- Stranding: Quads are helically stranded in concentric layers. Cables from 7 quads on, have two extra conductors of 0.5mm with perforated insulation (surveillance conductors).
- Core Wrapping: Plastic tape(s) with overlapping.
- Moisture Barrier: One laminated sheath made of aluminium tape (0.15mm) coated with PE-Copolymer on at least one side is applied with longitudinally overlap.
- Inner Sheath: Low density polyethylene.
- Electromagnetic Shield: One helically applied steel tape (0.2-0.3mm) or two helically applied steel tapes (0.1mm).
- Outer Sheath: Low density polyethylene.

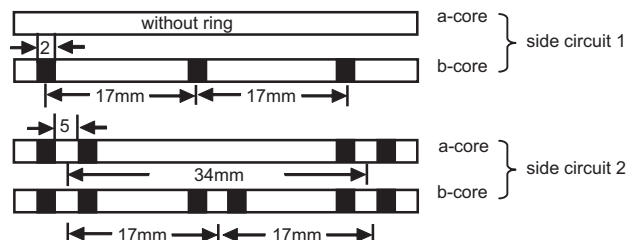
### Type Codes

A-	outdoor cable	2Y	solid PE conductor insulation
(L)2Y	PE inner laminated sheath	B	steel tape armor
2Y	PE outer sheath	S	signal cable
LG	layer stranding	H(n)	operating capacity

### Ring marking of Quad

The single core is identified by black ring markings:

Side Circuit 1	a-wire	without marking
	b-wire	1 mark distance 17mm
Side Circuit 2	a-wire	2 marks distance 34mm
	b-wire	2 marks distance 17mm



## Electrical Characteristics at 20°C

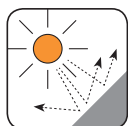
Nominal Conductor Diameter	mm	0.9	1.4
Maximum Conductor Resistance	Ω/km	56.6	23.4
Minimum Insulation Resistance @500 V DC (1min)	MΩ.km	10000	10000
Maximum Conductor Capacitance @800Hz (AC)	nF/km	45	45
Maximum Capacitance unbalance @800Hz			
$K_1$ (100% / 50% all values)	pF/km	650/150	650/150
$K_{9-12}$ neighboured quads	pF/km	500/150	500/150
$K_{9-12}$ over-neighboured quads	pF/km	150	150
$ea_{1/2}$	pF/km	1300	1300
Minimum Far-end Crosstalk Attenuation @90KHz			
100% / 80% all values	dB/km	58/62	33/45
Maximum Attenuation @90KHz	dB/km	3.3	2.6
Dielectric Strength, conductor to conductor (DC voltage 1min)	V	3535	3535
Surveillance Conductors			
Loop resistance, maximum	Ω/km	190	190
Insulation resistance			
- dry cable core, minimum	MΩ.km	1000	1000
- wet cable core, maximum	KΩ.km	30	30
Operating Voltage AC/DC	V	420/600	420/600
Test Voltage @50 Hz 1 min			
Core to Core	$V_{eff}$	2500	2500
Core to Screen	$V_{eff}$	2500	2500

## Mechanical and Thermal Properties

- Minimum Bending Radius: 10×OD
- Temperature Range: -40°C to +60°C (during operation); -10°C +60°C (during installation)

## Dimensions and Weight

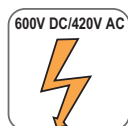
Cable Code	Number of Quads	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
0.9mm Conductor, 1.8mm Insulated Wire					
RS109y-2Y(L)2YB2Y-1Q0.9-S(H45)	1	1.3	1.2	12.0	170
RS109y-2Y(L)2YB2Y-3Q0.9-S(H45)	3	1.3	1.2	17.0	310
RS109y-2Y(L)2YB2Y-5Q0.9-S(H45)	5	1.3	1.2	19.0	410
RS109y-2Y(L)2YB2Y-7Q0.9-S(H45)	7	1.3	1.2	21.0	500
RS109y-2Y(L)2YB2Y-10Q0.9-S(H45)	10	1.3	1.2	24.0	640
RS109y-2Y(L)2YB2Y-14Q0.9-S(H45)	14	1.3	1.2	27.0	800
1.4mm Conductor, 2.8mm Insulated Wire					
RS109y-2Y(L)2YB2Y-1Q1.4-S(H45)	1	1.3	1.2	14.0	240
RS109y-2Y(L)2YB2Y-3Q1.4-S(H45)	3	1.3	1.2	21.0	490
RS109y-2Y(L)2YB2Y-5Q1.4-S(H45)	5	1.3	1.2	24.0	710
RS109y-2Y(L)2YB2Y-7Q1.4-S(H45)	7	1.3	1.2	26.0	880
RS109y-2Y(L)2YB2Y-10Q1.4-S(H45)	10	1.3	1.2	33.0	1190
RS109y-2Y(L)2YB2Y-14Q1.4-S(H45)	14	1.3	1.2	36.5	1550



UV Resistant



Water Resistant



Rated Voltage



Laid In Ducts



Buried in Ground



Zero Halogen

IEC 60754-1/NF C20-454  
EN 50267-2-1

## A-2Y(L)2Yv S(H45)

### Applications

The cables are designed for transmission of low frequent signals up to 90 KHz through symmetric circuits in railway networks, and are suitable for laying directly into the ground or in ducts.



### Standards

- Dlk 1.013.109y
- Dlk 1.013.110y

### Construction

- Conductors: Solid annealed copper, 0.9 or 1.4 mm nominal diameter.

- Insulation: Solid polyethylene.

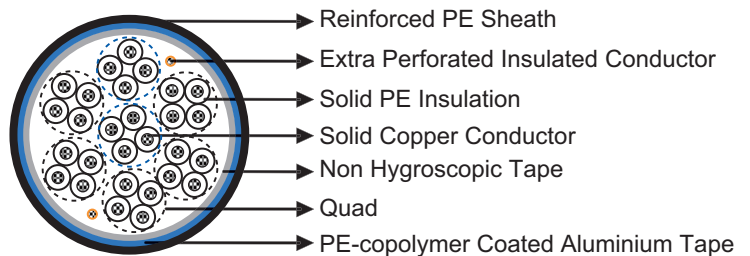
- Cabling Element: Four insulated conductors are twisted together to form a quad.

- Stranding: Quads are helically stranded in concentric layers. Cables from 7 quads on, have two extra conductors of 0.5mm with perforated insulation (surveillance conductors).

- Core Wrapping: Plastic tape(s) with overlapping.

- Moisture Barrier: One laminated sheath made of aluminium tape (0.15mm) coated with PE-Copolymer on at least one side is applied with longitudinally overlap.

- Outer Sheath: Polyethylene, with reinforced radial thickness.



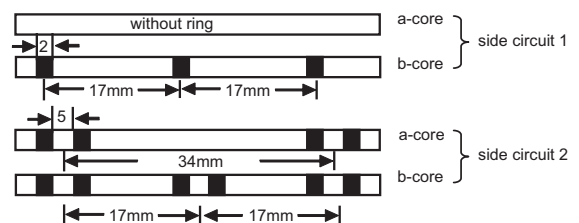
### Type Codes

A-	outdoor cable	2Y	solid PE conductor insulation
(L)2Yv	laminated sheath with increased wall thickness	S	signal cable
LG	layer stranding	H(n)	operating capacity

### Ring marking of Quad

The single core is identified by black ring markings:

Side Circuit 1	a-wire	without marking
	b-wire	1 mark distance 17mm
Side Circuit 2	a-wire	2 marks distance 34mm
	b-wire	2 marks distance 17mm





## Electrical Characteristics at 20°C

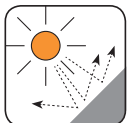
Nominal Conductor Diameter	mm	0.9	1.4
Maximum Conductor Resistance	Ω/km	56.6	23.4
Minimum Insulation Resistance @500 V DC (1min)	MΩ.km	10000	10000
Maximum Conductor Capacitance @800Hz (AC)	nF/km	45	45
Maximum Capacitance Unbalance @800Hz			
K <sub>1</sub> (100% / 50% all values)	pF/km	650/150	650/150
K <sub>9-12</sub> neighboured quads	pF/km	500/150	500/150
K <sub>9-12</sub> over-neighboured quads	pF/km	150	150
ea <sub>1/2</sub>	pF/km	1300	1300
Minimum Far-end Crosstalk Attenuation @90KHz			
100% / 80% all values	dB/km	58/62	33/45
Maximum Attenuation @90KHz	dB/km	3.3	2.6
Dielectric Strength, conductor to conductor (DC voltage 1min)	V	3535	3535
Surveillance Conductors			
Loop resistance, maximum	Ω/km	190	190
Insulation resistance			
- dry cable core, minimum	MΩ.km	1000	1000
- wet cable core, maximum	KΩ.km	30	30
Operating Voltage AC/DC	V	420/600	420/600
Test Voltage @50 Hz 1 min			
Core to Core	V <sub>eff</sub>	2500	2500
Core to Screen	V <sub>eff</sub>	2500	2500

## Mechanical and Thermal Properties

- Minimum Bending Radius: 7.5×OD
- Temperature Range: -40°C to +60°C (during operation); -10°C +60°C (during installation)

## Dimensions and Weight

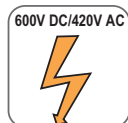
Cable Code	Number of Quads	Nominal Sheath Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
0.9mm Conductor, 1.8mm Insulated Wire				
RS109y-2Y(L)2Yv-1Q0.9-S(H45)	1	2.0	10.0	95
RS109y-2Y(L)2Yv-3Q0.9-S(H45)	3	2.0	15.0	200
RS109y-2Y(L)2Yv-5Q0.9-S(H45)	5	2.0	17.0	280
RS109y-2Y(L)2Yv-7Q0.9-S(H45)	7	2.0	19.0	360
RS109y-2Y(L)2Yv-10Q0.9-S(H45)	10	2.0	22.0	480
RS109y-2Y(L)2Yv-14Q0.9-S(H45)	14	2.0	25.0	620
RS109y-2Y(L)2Yv-20Q0.9-S(H45)	20	2.0	28.0	830
RS109y-2Y(L)2Yv-30Q0.9-S(H45)	30	2.2	34.0	1200
RS109y-2Y(L)2Yv-40Q0.9-S(H45)	40	2.2	38.0	1550
1.4mm Conductor, 2.8mm Insulated Wire				
RS109y-2Y(L)2Yv-1Q1.4-S(H45)	1	2.0	12.0	150
RS109y-2Y(L)2Yv-3Q1.4-S(H45)	3	2.0	19.0	350
RS109y-2Y(L)2Yv-5Q1.4-S(H45)	5	2.0	22.0	530
RS109y-2Y(L)2Yv-7Q1.4-S(H45)	7	2.0	24.0	690
RS109y-2Y(L)2Yv-10Q1.4-S(H45)	10	2.0	29.0	950
RS109y-2Y(L)2Yv-14Q1.4-S(H45)	14	2.2	33.0	1280
RS109y-2Y(L)2Yv-20Q1.4-S(H45)	20	2.2	39.0	1750
RS109y-2Y(L)2Yv-30Q1.4-S(H45)	30	2.2	46.0	2550
RS109y-2Y(L)2Yv-40Q1.4-S(H45)	40	2.2	53.0	3320



UV Resistant



Water Resistant



Rated Voltage



Laid In Ducts



Buried in Ciround



Zero Halogen  
IEC 60754-1/NF C20-454  
EN 50267-2-1



## ZPAU & ZPAU-SH Main Signalling Cables (AC Electrified Lines)

### Applications

The cables are designed for connection between traffic control centers and equipment shelters along the trackside. The cables are specially designed to give good induction protection (R.F= 0.26 at inductive voltage 100V/km) and are suitable for installation in intercity railways electrified at 25KV ac.



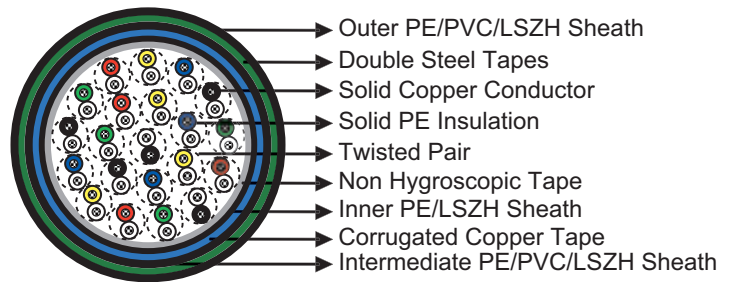
### Standards

- SNCF CT 445 / SNCT ST 698G
- NF F 55-698

### Construction

• Conductors: Solid annealed copper, 1.0/1.5 mm<sup>2</sup> nominal cross section area.

- Insulation: Solid polyethylene.
- Cabling Element: Each two conductors are twisted together to form a pair.
- Stranding: Pairs are helically stranded in layers to form the cable core.
- Core Wrapping: Plastic tape(s) with overlapping.
- Inner Sheath: PE sheath. LSZH FR option can be offered upon request to NF C 32 070.2.2 (C1).
- Electrostatic Shield: One corrugated copper tape.
- Intermediate Sheath: PE/PVC sheath. LSZH FR option can be offered upon request to NF C 32 070.2.2 (C1).
- Electromagnetic Shield: Two helically applied steel tapes of 0.5mm.
- Outer Sheath: PE/PVC Sheath. LSZH FR option can be offered upon request to NF C 32 070.2.2 (C1).
- Remarks: ZPAU: PE/PVC Sheath; ZPAU-SH: LSZH Sheath.



### Electrical Characteristics at 20°C

Nominal Conductor Diameter	mm	1.13	1.38
Nominal Cross Section Area	mm <sup>2</sup>	1.0	1.5
Maximum Conductor Resistance (DC)	Ω/km	18.1	12.31
Minimum Insulation Resistance @500 V DC (3mins)	MΩ.km	5000	5000
Maximum Mutual Capacitance @1000Hz (AC)	nF/km	55	55
Maximum Capacitance Unbalance (pair to pair) @800Hz			
100% cases	pF/500 m	400	400
90% cases	pF/500 m	200	200
Attenuation @45KHz	dB/km	2.5	2.5
Characteristic Impedance @45KHz	Ω	120	120
Dielectric Strength, conductor to conductor (DC voltage 3secs)	V	4500	4500
Operating Voltage (AC/DC)	V	450/750	450/750
Peak Value (AC)	V	900	900



## ➤ Mechanical and Thermal Properties

- Minimum Bending Radius: 8×OD (static); 16×OD (dynamic)
- Temperature Range: -40°C to +70°C (during operation); -20°C to +50°C (during installation)

## ➤ Reduction Factor

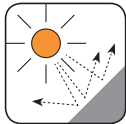
Inductive Voltage (V/km) Em	28	32	37	42	47	50	70	80	100	120	170	225
Reduction Factor @50Hz Rk	0.75	0.70	0.60	0.50	0.40	0.35	0.30	0.28	0.26	0.25	0.24	0.25

## ➤ Dimensions and Weight

Cable Code	No. of Pairs	Nominal Sheath Thickness mm			Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Intern.	Outer		
1.13mm Conductor, 2.3mm Insulated Wire						
RS/ZPAU-2Y2Y(K)2YB2Y-1P1S	1	1.0	0.8	1.6	16.2	490
RS/ZPAU-2Y2Y(K)2YB2Y-2P1S	2	1.0	0.8	1.6	17.0	550
RS/ZPAU-2Y2Y(K)2YB2Y-3P1S	3	1.0	0.8	1.6	22.2	820
RS/ZPAU-2Y2Y(K)2YB2Y-4P1S	4	1.0	0.8	1.6	23.8	890
RS/ZPAU-2Y2Y(K)2YB2Y-7P1S	7	1.0	0.8	1.7	26.7	1080
RS/ZPAU-2Y2Y(K)2YB2Y-14P1S	14	1.2	0.8	1.8	32.3	1560
RS/ZPAU-2Y2Y(K)2YB2Y-21P1S	21	1.2	1.1	2.0	37.2	1990
RS/ZPAU-2Y2Y(K)2YB2Y-28P1S	28	1.2	1.1	2.2	41.4	2380
RS/ZPAU-2Y2Y(K)2YB2Y-56P1S	56	1.3	1.3	2.5	52.9	3700
1.38mm Conductor, 2.55mm Insulated Wire						
RS/ZPAU-2Y2Y(K)2YB2Y-14P1.5S	14	1.2	0.8	1.8	35.0	2050
RS/ZPAU-2Y2Y(K)2YB2Y-21P1.5S	21	1.2	1.1	2.0	39.5	2525



Anti Induction



UV Resistant



Mineral Oil Resistant



Rated voltage

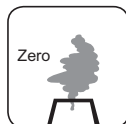


Buried in Ciround



Laid In Ducts

PE Sheath



Zero Halogen  
IEC 60754-1/NF C20-454  
EN 50267-2-1

PVC Sheath



Flame Retardant  
NF C32-070-2.1(C2)  
IEC 60332-1/EN 50265-2-1

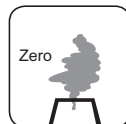
LSZH Sheath



Flame Retardant  
NF C32-070-2.1(C2)  
IEC 60332-1/EN 50265-2-1



Fire Retardant  
NF C32-070-2.2(C1)  
IEC 60332-3/EN50266



Zero Halogen  
IEC 60754-1/NF C20-454  
EN 50267-2-1



Low Smoke Emission  
IEC 61034/NFC20-902  
EN 50268/NF C32-073



Low Corrosivity  
EN 50267-2-2/NF C32-074  
IEC 60754-2/NF C20-453



Low Toxicity



## ZPFU & ZPFU-SH Main & Local Signalling Cables (DC Electrified Lines)

### Applications

The cables are designed for the main signalling circuits of 1500V DC electrified lines.

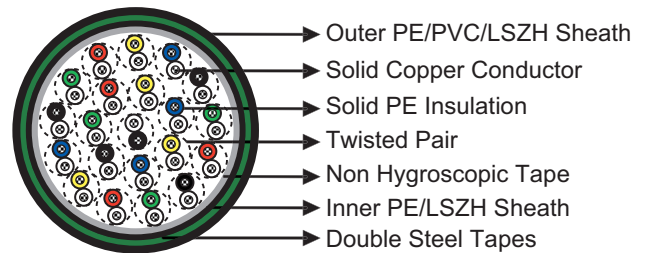
### Standards

- SNCF CT 445
- NF F 55-698

### Construction

- Conductors: Solid annealed copper, 1.0mm<sup>2</sup> nominal cross section area.

- Insulation: Solid polyethylene.
- Cabling Element: Two conductors are twisted to form a pair.
- Stranding: Pairs are helically stranded to form the cable core.
- Core Wrapping: Plastic tape(s) with overlapping.
- Inner Sheath: PE. LSZH FR option can be offered upon request to NF C 32 070.2.2 (C1).
- Mechanical Protection: Two helically applied steel tapes (0.15, 0.2/0.5mm, depending on pair count).
- Outer Sheath: PE/PVC. LSZH FR option can be offered upon request to NF C 32 070.2.2 (C1).
- Remark: ZPFU: PE/PVC Sheath; ZPFU-SH: LSZH Sheath.



### Electrical Characteristics at 20°C

Nominal Conductor Diameter	mm	1.13
Nominal Cross Section Area	mm <sup>2</sup>	1
Maximum Conductor Resistance (DC)	Ω/km	18.1
Minimum Insulation Resistance @500 V DC (3mins)	MΩ.km	5000
Maximum Mutual Capacitance (AC) @1000Hz	nF/km	55
Maximum Capacitance Unbalance @1000Hz	pF/500 m	400
Attenuation @45KHz	dB/km	2.5
Characteristic Impedance @45KHz	Ω	120
Dielectric Strength, conductor to conductor (DC voltage 3mins)	V	4500
Operating Voltage AC/DC	V	450/750

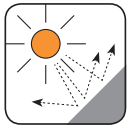
### Mechanical and Thermal Properties

- Minimum Bending Radius: 8×OD (static); 16×OD (dynamic)
- Temperature Range: -40°C to +70°C (during operation); -20°C to +50°C (during installation)



## Dimensions and Weight

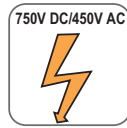
Cable Code	No. of Pairs	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km	Armour Thickness mm
		Inner	Outer			
1.13mm Conductor, 2.3 Insulated Wire						
RS/ZPFU-2Y2YB2Y-1P1S	1	1.0	1.5	11.7	207	0.15
RS/ZPFU-2Y2YB2Y-2P1S	2	1.0	1.5	12.9	257	0.2
RS/ZPFU-2Y2YB2Y-4P1S	4	1.0	1.6	16.8	509	0.2
RS/ZPFU-2Y2YB2Y-7P1S	7	1.0	1.7	19.0	653	0.5
RS/ZPFU-2Y2YB2Y-14P1S	14	1.2	1.8	24.1	1011	0.5
RS/ZPFU-2Y2YB2Y-21P1S	21	1.2	2.0	27.8	1304	0.5
RS/ZPFU-2Y2YB2Y-28P1S	28	1.2	2.2	31.0	1594	0.5
RS/ZPFU-2Y2YB2Y-56P1S	56	1.3	2.5	40.5	2630	0.5



UV Resistant



Mineral Oil Resistant



Rated voltage

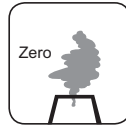


Buried in Ground



Laid In Ducts

PE Sheath



Zero Halogen  
IEC 60754-1/NF C20-454  
EN 50267-2-1

PVC Sheath



Flame Retardant  
NF C32-070-2.1(C2)  
IEC 60332-1/EN 50265-2-1

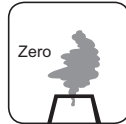
LSZH Sheath



Flame Retardant  
NF C32-070-2.1(C2)  
IEC 60332-1/EN 50265-2-1



Fire Retardant  
NF C32-070-2.2(C1)  
IEC 60332-3/EN50266



Zero Halogen  
IEC 60754-1/NF C20-454  
EN 50267-2-1



Low Smoke Emission  
IEC 61034/NFC20-902  
EN 50268/NF C32-073



Low Corrosivity  
EN 50267-2-2/NF C32-074  
IEC 60754-2/NF C20-453



Low Toxicity



## ZPGU Local Signalling Cables (DC Electrified Lines)

### Applications

The cables are designed for internal connection inside cabling of equipment shelters along the trackside. The shielded cables are suitable for local circuits.

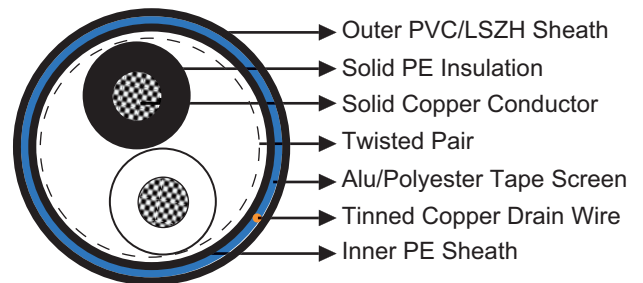


### Standards

- SNCF CT 445
- NF F 55-698

### Construction

- Conductors: Class 1 solid copper, 1.0 mm<sup>2</sup> nominal cross section area.
- Insulation: Solid polyethylene.
- Cabling Element: Each two conductors are twisted together to form a pair.
- Inner Sheath: PE.
- Screen: Aluminium/Polyethylene tape screen.
- Drain Wire: Tinned copper drain wire.
- Outer Sheath: PVC/LSZH.



### Electrical Characteristics at 20°C

Nominal Conductor Diameter	mm	1.13
Nominal Cross Section Area	mm <sup>2</sup>	1.0
Maximum Conductor Resistance (DC)	Ω/km	18.1
Maximum Mutual Capacitance @1000Hz (AC)	nF/km	55
Operating Voltage	V	750

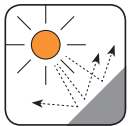
### Mechanical and Thermal Properties

- Minimum Bending Radius: 8×OD (static); 16×OD (dynamic)
- Temperature Range: -40°C to +70°C (during operation); -20°C to +50°C (during installation)



## ➤ Dimensions and Weight

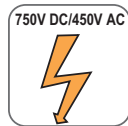
Cable Code	No. of Pairs	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
1.13mm Conductor, 2.3 Insulated Wire					
RS/ZPGU-2Y2Y(L)Y-1P1S	1	1.0	1.5	9.8	95
RS/ZPGU-2Y2Y(L)Y-2P1S	2	1.0	1.5	10.6	130
RS/ZPGU-2Y2Y(L)Y-3P1S	3	1.0	1.5	13.2	179
RS/ZPGU-2Y2Y(L)Y-7P1S	7	1.0	1.7	18.3	301
RS/ZPGU-2Y2Y(L)Y-14P1S	14	1.2	1.8	21.3	532



UV Resistant



Mineral Oil Resistant



Rated voltage



Buried in Ciround



Laid In Ducts

PVC Sheath



Flame Retardant  
NF C32-070-2.1(C2)  
IEC 60332-1/EN 50265-2-1

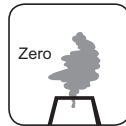
LSZH Sheath



Flame Retardant  
NF C32-070-2.1(C2)  
IEC 60332-1/EN 50265-2-1



Fire Retardant  
NF C32-070-2.2(C1)  
IEC 60332-3/EN50266



Zero Halogen  
IEC 60754-1/NF C20-454  
EN 50267-2-1



Low Smoke Emission  
IEC 61034/NFC20-902  
EN 50268/NF C32-073



Low Corrosivity  
EN 50267-2-2/NF C32-074  
IEC 60754-2/NF C20-453



Low Toxicity



## ZCO3 & ZCO3-SH Main Signalling Cables (AC Electrified High Speed Lines)

### Applications

The cables are designed for connection between traffic control centers and equipment shelters along the trackside. The cables are specially designed to give good induction protection (R.F=0.21 at inductive voltage 100V/km) and are suitable for installation in high speed railway lines electrified at 25KV ac.

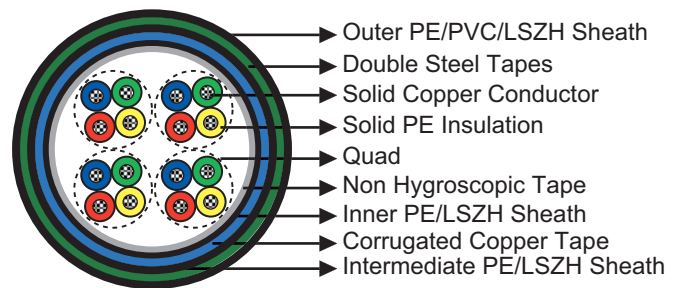


### Standards

- SNCF CT 445
- NF F 55-698

### Construction

- Conductors: Solid annealed copper, 1.0 mm<sup>2</sup> nominal cross section area.
- Insulation: Solid polyethylene.
- Cabling Element: Four conductors are twisted to form a quad.
- Stranding: Quads are helically stranded to get the cable core.
- Core Wrapping: Plastic tape(s) with overlapping.
- Inner Sheath: Low density polyethylene. LSZH FR option can be offered upon request to NF C 32 070.2.2 (C1).
- Electrostatic Shield: Corrugated copper tape.
- Intermediate Sheath: Low density polyethylene. LSZH FR option can be offered upon request to NF C 32 070.2.2 (C1).
- Electromagnetic Shield: Two helically applied steel tapes (0.5mm).
- Outer Sheath: PE/PVC compound. LSZH FR option can be offered upon request to NF C 32 070.2.2 (C1).
- Remarks: ZCO3: PE/PVC Sheath; ZCO3-SH: LSZH Sheath.



### Electrical Characteristics at 20°C

Nominal Conductor Diameter	mm	1.13
Nominal Cross Section Area	mm <sup>2</sup>	1.0
Maximum Conductor Resistance (DC)	Ω/km	18.1
Minimum Insulation Resistance @500 V DC (3mins)	MΩ.km	5000
Maximum Mutual Capacitance (AC) @1000Hz	nF/km	40
Maximum Capacitance Unbalance @800Hz	pF/500m	400
Dielectric Strength, conductor to conductor (DC voltage 3mins)	V	4500
Operating Voltage AC/DC	V	450/750



## Reduction Factor

Inductive voltage(V/km)	50	70	100	370	400	470
Reduction factor @50Hz	0.42	0.30	0.21	0.16	0.18	0.31

## Mechanical and Thermal Properties

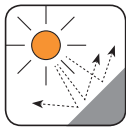
- Minimum Bending Radius: 8×OD (static); 16×OD (dynamic)
- Temperature Range: -40°C to +70°C (during operation); -20°C to +50°C (during installation)

## Dimensions and Weight

Cable Code	No. of Quads	Nominal Sheath Thickness mm			Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Interm.	Outer		
1.13mm Conductor, 2.33 Insulated Wire						
RS/ZCO3-2Y2Y(K)2YB2Y-2Q1S	2	0.8	1.0	1.6	27.0	1295
RS/ZCO3-2Y2Y(K)2YB2Y-4Q1S	4	0.8	1.0	1.6	29.5	1490



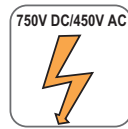
Anti Induction



UV Resistant



Mineral Oil Resistant



Rated voltage

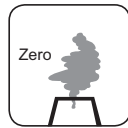


Buried in Ciround



Laid In Ducts

PE Sheath



Zero Halogen  
IEC 60754-1/NF C20-454  
EN 50267-2-1

PVC Sheath



Flame Retardant  
NF C32-070-2.1(C2)  
IEC 60332-1/EN 50265-2-1

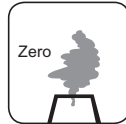
LSZH Sheath



Flame Retardant  
NF C32-070-2.1(C2)  
IEC 60332-1/EN 50265-2-1



Fire Retardant  
NF C32-070-2.2(C1)  
IEC 60332-3/EN50266



Zero Halogen  
IEC 60754-1/NF C20-454  
EN 50267-2-1



Low Smoke Emission  
IEC 61034/NFC20-902  
EN 50268/NF C32-073



Low Corrosivity  
EN 50267-2-2/NF C32-074  
IEC 60754-2/NF C20-453



Low Toxicity



## K23 LSZH Subway Signalling Cables for Metro/Local Trains/Tramlines

### Applications

The cables are designed for remote control and teletransmission in underground railway networks. The cables can be laid in channel, cable tray, or on hook supports, along suburban railway lines electrified at maximum 1500V DC.



### Standards

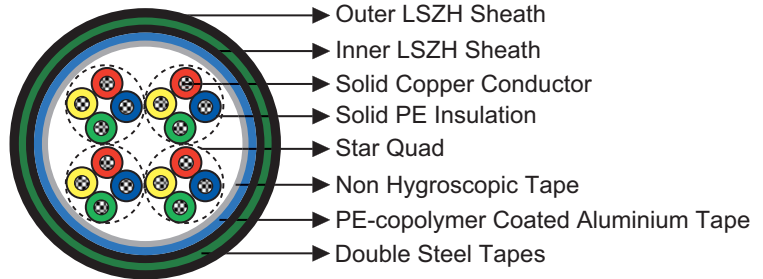
- NF F 55-623

### Construction

- Conductors: Copper wire, 0.6, 0.8, 1.0 or 1.2 mm nominal diameter.

- Insulation: Solid polyethylene.

- Cabling Element: Four conductors are twisted to form a star quad. For 1 & 4 pair cables, conductors shall be twisted in pairs.



- Stranding: Quads are stranded in helically laid concentric layers or units to form the cable core.
- Core Wrapping: Plastic tape(s) with overlapping.
- Moisture Barrier: One laminated sheath made of aluminium tape coated with PE-Copolymer on at least one side is applied with longitudinally overlap.
- Inner Sheath: LSZH fire retardant compound.
- Armour: Two helically applied steel tapes.
- Outer Sheath: LSZH fire retardant compound.

### Electrical Characteristics at 20°C

Nominal Conductor Diameter	mm	0.6	0.8	1.0	1.2
Maximum Average DC Conductor Resistance	Ω/km	64.0	36.0	23.0	16.0
Minimum Insulation Resistance @500 V DC (3min)	MΩ.km	5000	5000	5000	5000
Maximum Mutual Capacitance @1000Hz (AC)	nF/km	57.5	57.5	57.5	57.5
Maximum Capacitance Unbalance @800Hz					
K <sub>1</sub> (side to side)	pF/500m	435	435	435	435
K <sub>9-12</sub> (quad to quad)	pF/500m	220	220	220	220
Operating Voltages	V	200	400	500	750
Maximum Permissible Current	A	0.35	0.63	1.0	1.4
Dielectric Strength (DC voltage 1min)					
Conductor to Conductor	V	1500	2000	3000	3000
Conductor to Screen	V	1500	1500	1500	1500

### Mechanical and Thermal Properties

Minimum Bending Radius: 8×OD (static); 16×OD (dynamic)

Temperature Range: -40°C to +60°C (during operation); -20°C to +50°C (during installation)



## Dimensions and Weight

Cable Code	Number of Pairs	Spare pairs	Minimum Sheath Thickness mm		Maximum Overall Diameter mm	Nominal Weight kg/km
			Inner	Outer		
0.6mm Conductor, 0.96mm Insulated Wire (6/10)						
RS/K23-2Y(L)HBH-2P0.6	2	-	1.0	1.0	10.5	130
RS/K23-2Y(L)HBH-4P0.6	4	-	1.0	1.0	14.0	171
RS/K23-2Y(L)HBH-8P0.6	8	-	1.0	1.0	16.5	215
RS/K23-2Y(L)HBH-14P0.6	14	-	1.0	1.2	17.5	290
RS/K23-2Y(L)HBH-20P0.6	20	-	1.0	1.2	18.5	350
RS/K23-2Y(L)HBH-28P0.6	28	-	1.0	1.4	21.0	441
RS/K23-2Y(L)HBH-38P0.6	38	-	1.0	1.4	21.5	533
RS/K23-2Y(L)HBH-56P0.6	56	-	1.0	1.4	23.0	700
RS/K23-2Y(L)HBH-84P0.6	84	-	1.0	1.6	28.0	970
RS/K23-2Y(L)HBH-112P0.6	112	-	1.0	1.6	30.5	1190
RS/K23-2Y(L)HBH-168P0.6	168	2	1.0	1.8	38.0	1847
RS/K23-2Y(L)HBH-224P0.6	224	2	1.0	2.0	44.0	2675
RS/K23-2Y(L)HBH-280P0.6	280	2	1.0	2.0	51.0	3185
RS/K23-2Y(L)HBH-336P0.6	336	4	1.0	2.0	57.0	3680
RS/K23-2Y(L)HBH-392P0.6	392	4	1.0	2.0	58.5	4168
RS/K23-2Y(L)HBH-448P0.6	448	4	1.0	2.2	67.0	4647
RS/K23-2Y(L)HBH-784P0.6	784	4	1.0	2.2	90.5	7406
RS/K23-2Y(L)HBH-896P0.6	896	6	1.0	2.2	102.5	8315
0.8mm Conductor, 1.27 mm Insulated Wire (8/10)						
RS/K23-2Y(L)HBH-2P0.8	2	-	1.0	1.0	11.5	155
RS/K23-2Y(L)HBH-4P0.8	4	-	1.0	1.0	15.5	216
RS/K23-2Y(L)HBH-8P0.8	8	-	1.0	1.2	17.5	298
RS/K23-2Y(L)HBH-14P0.8	14	-	1.0	1.4	20.5	412
RS/K23-2Y(L)HBH-20P0.8	20	-	1.0	1.4	23.0	512
RS/K23-2Y(L)HBH-28P0.8	28	-	1.0	1.4	24.5	637
RS/K23-2Y(L)HBH-38P0.8	38	-	1.0	1.6	26.5	805
RS/K23-2Y(L)HBH-56P0.8	56	-	1.0	1.6	32.0	1096
RS/K23-2Y(L)HBH-84P0.8	84	-	1.0	1.8	39.0	1504
RS/K23-2Y(L)HBH-112P0.8	112	-	1.0	1.8	40.5	1880
1.0mm Conductor, 1.8mm Insulated Wire (10/10)						
RS/K23-2Y(L)HBH-2P1	2	-	1.0	1.0	12.0	195
RS/K23-2Y(L)HBH-4P1	4	-	1.0	1.2	17.5	298
RS/K23-2Y(L)HBH-8P1	8	-	1.0	1.4	20.5	431
RS/K23-2Y(L)HBH-14P1	14	-	1.0	1.4	23.5	587
RS/K23-2Y(L)HBH-20P1	20	-	1.0	1.6	25.0	762
RS/K23-2Y(L)HBH-28P1	28	-	1.0	1.6	29.0	981
RS/K23-2Y(L)HBH-38P1	38	-	1.0	1.6	31.5	1243
RS/K23-2Y(L)HBH-56P1	56	-	1.0	1.8	38.5	1683
RS/K23-2Y(L)HBH-84P1	84	-	1.0	2.0	46.5	2340
RS/K23-2Y(L)HBH-112P1	112	-	1.0	2.0	51.5	2944
1.2mm Conductor, 2.0mm Insulated Wire (12/10)						
RS/K23-2Y(L)HBH-1P1.2	1	-	1.0	1.2	14.0	188
RS/K23-2Y(L)HBH-2P1.2	2	-	1.0	1.2	14.5	230
RS/K23-2Y(L)HBH-4P1.2	4	-	1.0	1.4	20.0	357
RS/K23-2Y(L)HBH-8P1.2	8	-	1.0	1.4	24.0	509
RS/K23-2Y(L)HBH-14P1.2	14	-	1.0	1.4	25.0	710
RS/K23-2Y(L)HBH-20P1.2	20	-	1.0	1.6	29.0	950
RS/K23-2Y(L)HBH-28P1.2	28	-	1.0	1.6	31.5	1213



Impact Resistant



Mineral Oil Resistant



Acid & Alkaline Resistant



Laid In conduit



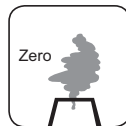
Flame Retardant

NF C32-070-2.1(C2)  
IEC 60332-1/EN 50265-2-1



Fire Retardant

NF C32-070-2.2(C1)  
IEC 60332-3/EN 50266



Zero Halogen

IEC 60754-1/NF C20-454  
EN 50267-2-1



Low Smoke Emission

IEC 61034/NFC20-902  
EN 50268/NF C32-073



Low Corrosivity

EN 50267-2-2/NF C32-074  
IEC 60754-2/NF C20-453



Low Toxicity



## K24 LSZH Subway Signalling Cables

### Applications

The cables are designed for remote control and teletransmission in underground railway networks. The cables can be laid in channel, cable tray, or on hook supports, along suburban railway lines electrified at maximum 1500V DC



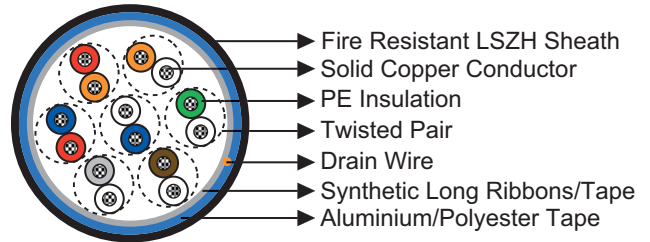
### Standards

- AFNOR NF F 55-624

### Construction

• Conductors: Solid copper conductor, 0.5/0.6/0.9 mm nominal diameter.

- Insulation: Polyethylene insulation.
- Cabling Element: Each two conductors are twisted together to form a pair.
- Stranding: For cables less than 15 pairs, pairs are helically stranded in concentric layers to form the cable core. For cables from 21 to 112 pairs, pairs are stranded in concentric layers or bundles to form the cables core.
- Core Wrapping: One or more synthetic long ribbons or tapes are arranged on the cable core.
- Screen: Aluminium/Polyester tape.
- Drain Wire: A tinned copper drain wire, 0.5mm nominal diameter.
- Sheath: Fire retardant LSZH.



### Optional

Armoured Cables: For armoured cable, one or more tape(s) is (are) helically applied with overlap on the screen to form a bedding, and double steel tapes armour with a halogen-free fire retardant outer sheath are applied on the bedding.

### Electrical Characteristics at 20°C

Nominal Conductor Diameter	mm	0.5	0.6	0.9
Minimum Insulation Resistance	MΩ.km	5000	5000	5000
Maximum Operating Voltage	V	200	200	400
Maximum Permissible Current	A	0.25	0.35	0.80

### Mechanical and Thermal Properties

- Minimum Bending Radius: 7.5×OD (unarmoured); 10×OD (armoured)
- Temperature Range: -40°C to +60°C (during operation); -20°C to +50°C (during installation)



## Dimensions and Weight

### Unarmoured K24 Cables A-2Y(L)H n x 2 x 0.5/0.6/0.9

Cable Code	Number of Pairs (n)	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
0.5mm Conductor, 0.9mm Insulated Wire					
RS/K24-2Y(L)H-2P0.5	2	1.0	1.0	6.0	55
RS/K24-2Y(L)H-3P0.5	3	1.0	1.0	6.5	65
RS/K24-2Y(L)H-5P0.5	5	1.0	1.0	7.0	80
RS/K24-2Y(L)H-7P0.5	7	1.0	1.0	8.0	95
RS/K24-2Y(L)H-10P0.5	10	1.0	1.0	9.0	120
RS/K24-2Y(L)H-15P0.5	15	1.2	1.2	10.5	150
RS/K24-2Y(L)H-21P0.5	21	1.2	1.2	12.5	185
0.6mm Conductor, 0.96mm Insulated Wire					
RS/K24-2Y(L)H-2P0.6	2	1.0	1.0	6.5	65
RS/K24-2Y(L)H-3P0.6	3	1.0	1.0	7.0	70
RS/K24-2Y(L)H-5P0.6	5	1.0	1.0	8.0	90
RS/K24-2Y(L)H-7P0.6	7	1.0	1.0	8.5	110
RS/K24-2Y(L)H-10P0.6	10	1.2	1.2	10.0	140
RS/K24-2Y(L)H-15P0.6	15	1.2	1.2	11.5	175
RS/K24-2Y(L)H-21P0.6	21	1.2	1.2	13.5	225
0.9mm Conductor, 1.5mm Insulated Wire					
RS/K24-2Y(L)H-2P0.9	2	1.0	1.0	8.5	95
RS/K24-2Y(L)H-3P0.9	3	1.0	1.0	9.0	110
RS/K24-2Y(L)H-5P0.9	5	1.0	1.0	10.5	150
RS/K24-2Y(L)H-7P0.9	7	1.2	1.2	12.0	185
RS/K24-2Y(L)H-10P0.9	10	1.2	1.2	13.5	245
RS/K24-2Y(L)H-15P0.9	15	1.4	1.4	15.0	340
RS/K24-2Y(L)H-21P0.9	21	1.4	1.4	19.0	435

### Armoured K24 Cables A-2Y(L)HBH n x 2 x 0.5/0.6/0.9

Cable Code	Number of Pairs (n)	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
0.5mm Conductor, 0.9mm Insulated Wire					
RS/K24-2Y(L)HBH-2P0.5	2	1.0	1.0	10.0	195
RS/K24-2Y(L)HBH-3P0.5	3	1.0	1.0	10.5	205
RS/K24-2Y(L)HBH-5P0.5	5	1.0	1.0	11.0	230
RS/K24-2Y(L)HBH-7P0.5	7	1.0	1.0	12.0	255
RS/K24-2Y(L)HBH-10P0.5	10	1.0	1.0	13.0	295
RS/K24-2Y(L)HBH-15P0.5	15	1.0	1.2	14.5	345
RS/K24-2Y(L)HBH-21P0.5	21	1.0	1.2	16.5	400
0.6mm Conductor, 0.96mm Insulated Wire					
RS/K24-2Y(L)HBH-2P0.6	2	1.0	1.0	10.5	200
RS/K24-2Y(L)HBH-3P0.6	3	1.0	1.0	11.0	210
RS/K24-2Y(L)HBH-5P0.6	5	1.0	1.0	12.0	245
RS/K24-2Y(L)HBH-7P0.6	7	1.0	1.0	12.5	285
RS/K24-2Y(L)HBH-10P0.6	10	1.0	1.2	14.0	330
RS/K24-2Y(L)HBH-15P0.6	15	1.0	1.2	15.5	385
RS/K24-2Y(L)HBH-21P0.6	21	1.0	1.2	18.0	450
0.9mm Conductor, 1.5mm Insulated Wire					
RS/K24-2Y(L)HBH-2P0.9	2	1.0	1.0	12.5	260
RS/K24-2Y(L)HBH-3P0.9	3	1.0	1.0	13.5	285
RS/K24-2Y(L)HBH-5P0.9	5	1.0	1.0	14.5	345
RS/K24-2Y(L)HBH-7P0.9	7	1.0	1.2	16.0	395
RS/K24-2Y(L)HBH-10P0.9	10	1.0	1.2	18.0	485
RS/K24-2Y(L)HBH-15P0.9	15	1.0	1.4	19.5	610
RS/K24-2Y(L)HBH-21P0.9	21	1.0	1.4	24.0	735



Impact Resistant



Mineral Oil Resistant



Acid & Alkaline Resistant



Laid In conduit



Flame Retardant

NF C32-070-2.1(C2)  
IEC 60332-1/EN 50265-2-1



Fire Retardant

NF C32-070-2.2(C1)  
IEC 60332-3/EN 50266



Zero Halogen

IEC 60754-1/NF C20-454  
EN 50267-2-1



Low Smoke Emission

IEC 61034/NFC20-902  
EN 50268/NF C32-073



Low Corrosivity

EN 50267-2-2/NF C32-074  
IEC 60754-2/NF C20-453



Low Toxicity

## K13 PVC Subway Signalling Cables for Metro/Local Trains/Tramlines

### Applications

The cables are designed for remote control and teletransmission in underground railway networks. The cables can be laid in channel, cable tray, or on hook supports, along suburban railway lines electrified at maximum 1500V DC

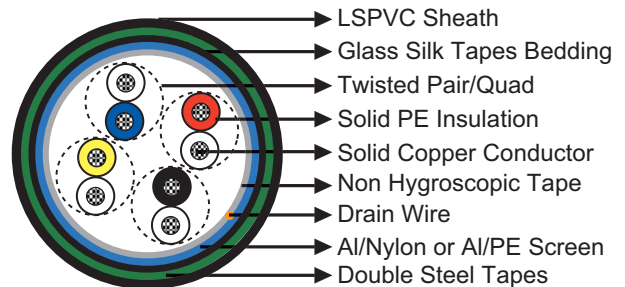


### Standards

- AFNOR NF F 55-633

### Construction

- Conductors: Solid copper conductor, 0.6/0.8/1.0/1.2 mm nominal diameter.
- Insulation: Polyethylene insulation.
- Cabling Element: Pair/Quad.
- Stranding: 4-pair cables are composed of pairs, while other cables are composed of star quads.
- Spare Pairs: Spare pairs may be provided according to capacity of cables.
- Core Wrapping: One or more non-hygroscopic polyester tapes are helically or longitudinally laid with an overlap.
- Screen: Aluminium/Nylon tape bonded with a special PVC sealing sheath or Aluminium/PE tape bonded with a halogen-free fire-retardant sheath.
- Drain Wire: A tinned copper drain wire, 0.5mm nominal diameter.
- Bedding: Several glass silk tapes are helically laid with an overlap to form bedding.
- Armour: Two helically applied steel tapes.
- Outer Sheath: LSPVC.



### Electrical Characteristics at 20°C

	mm	0.6	0.8	1.0	1.2
Nominal Conductor Diameter	mm	0.6	0.8	1.0	1.2
Nominal Mutual Capacity	nF/km	57.5	57.5	57.5	57.5
Minimum Insulation Resistance	MΩ.km	5000	5000	5000	5000
Maximum Operating Voltage	V	200	400	500	750
Maximum Permissible Current	A	0.35	0.63	1.0	1.4

### Mechanical and Thermal Properties

- Minimum Bending Radius: 8×OD (static); 16×OD (dynamic)
- Temperature Range: -40°C to +60°C (during operation); -20°C to +50°C (during installation)



## Core Identification

4-pair cable:

Pair1: black/colourless  
Pair3: yellow/colourless

Pair2: blue/ colourless  
Pair4: red/ colourless

Other cable:

Side circuit 1 of a quad

a-wire: sequence of black/blue/yellow/red/green/blue/yellow, etc.  
b-wire: colourless

Side circuit 2 of a quad

a-wire: grey  
b-wire: white

Unit binder: sequence of white/blue/yellow/brown/black/red/green/violet

## Dimensions and Weight

Cable Code	Number of Pairs	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
0.6mm Conductor, 0.96mm Insulated Wire					
RS/K13-2Y(L)2YBY-4P0.6	4	1.0	1.0	12.5	220
RS/K13-2Y(L)2YBY-8P0.6	8(4Q)	1.0	1.0	13.5	260
RS/K13-2Y(L)2YBY-14P0.6	14(7Q)	1.0	1.2	15.5	350
RS/K13-2Y(L)2YBY-28P0.6	28(14Q)	1.0	1.4	17.5	480
RS/K13-2Y(L)2YBY-56P0.6	56(4 x 7Q)	1.0	1.4	22.0	750
0.8mm Conductor, 1.27mm Insulated Wire					
RS/K13-2Y(L)2YBY-4P0.8	4	1.0	1.0	14.0	280
RS/K13-2Y(L)2YBY-8P0.8	8(4Q)	1.0	1.2	15.0	340
RS/K13-2Y(L)2YBY-14P0.8	14(7Q)	1.0	1.4	18.0	470
RS/K13-2Y(L)2YBY-28P0.8	28(14Q)	1.0	1.4	21.0	700
RS/K13-2Y(L)2YBY-56P0.8	56(4 x 7Q)	1.0	1.6	28.5	1200
1.0mm Conductor, 1.8mm Insulated Wire					
RS/K13-2Y(L)2YBY-4P1	4	1.0	1.2	15.5	340
RS/K13-2Y(L)2YBY-8P1	8(4Q)	1.0	1.4	17.5	460
RS/K13-2Y(L)2YBY-14P1	14(7Q)	1.0	1.4	20.5	630
RS/K13-2Y(L)2YBY-28P1	28(14Q)	1.0	1.6	25.0	990
RS/K13-2Y(L)2YBY-56P1	56(4 x 7Q)	1.0	1.8	34.0	1700
1.2mm Conductor, 2.0mm Insulated Wire					
RS/K13-2Y(L)2YBY-2P1.2	2(1Q)	1.0	1.2	12.5	240
RS/K13-2Y(L)2YBY-4P1.2	4	1.0	1.4	17.0	420
RS/K13-2Y(L)2YBY-8P1.2	8(4Q)	1.0	1.4	18.5	530
RS/K13-2Y(L)2YBY-14P1.2	14(7Q)	1.0	1.4	21.5	740
RS/K13-2Y(L)2YBY-28P1.2	28(14Q)	1.0	1.6	27.5	1250



Impact Resistant



Mineral Oil Resistant



Acid & Alkaline Resistant



Laid In conduit



Flame Retardant  
NF C32-070-2.1(C2)  
IEC 60332-1/EN 50265-2-1



Low Smoke Emission  
IEC 61034/NFC20-902  
EN 50268/NF C32-073



## Digicode 30KHz Indoor Signalling Cables

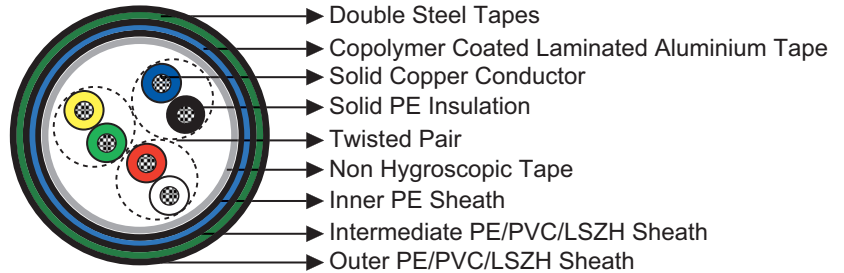
### Applications

The cables are designed for transmission of track circuit digicode signals up to 30 kHz in electrified lines.



### Standards

- EN 50266-2-4 & IEC 60332-3(Fire performance)
- EN 50268-2(Smoke density)
- EN 50267-2-1(Halogen content)
- EN 50267-2-2(Gases acidity)
- EN 50265-2-1, IEC 60332-1, NF C 32070 Cat C2 compliant (for PVC sheathed cables)



### Construction

- Conductors: Solid Annealed copper, 1.4 mm nominal diameter (0.6 mm for the auxiliary pair).
- Insulation: Polyethylene.
- Cabling Element: Two insulated conductors are twisted together to form a pair.
- Stranding: Pairs are helically stranded to get the cable core.
- Core Wrapping: Plastic tape(s) with overlapping.
- Inner Sheath: Low density polyethylene.
- Moisture Barrier: Copolymer coated laminated aluminium tape.
- Intermediate Sheath: LSZH fire retardant compound. PE or PVC option can be offered upon request.
- Mechanical Protection: Two helically applied steel tapes.
- Outer Sheath: LSZH fire retardant compound. PE or PVC option can be offered upon request.

### Electrical Characteristics at 20°C

Nominal Conductor Diameter	mm	1.4
Maximum DC Conductor Resistance	Ω/km	12.1
Maximum Resistance Unbalance	%	3
Minimum Insulation Resistance @500 V DC (1min)	MΩ.km	5000
Dielectric Strength (DC voltage 1 min)		
Conductor to Conductor	V	1000
Conductor to Screen	V	3000
Minimum Spark Test On Outer Sheath (AC voltage)	V	5000
Maximum Mutual Capacitance (Data pairs)	nF/km	45
Nominal Mutual Capacitance (Auxiliary pair)	nF/km	50
Maximum Capacitance Unbalance		



Pair to Pair	nF/500m	400
Pair to Ground	nF/500m	1500
Maximum Characteristic Pair Attenuation		
@2.1KHz	dB/km	0.64
@4.1KHz	dB/km	0.76
@9.5KHz	dB/km	1.05
@20.7KHz	dB/km	1.28
Minimum Near End Crosstalk Attenuation (NEXT)		
@4.1KHz	dB/km	54
@20.7KHz	dB/km	42
Minimum Far End Crosstalk Attenuation (FEXT)		
@4.1KHz	dB/km	59
@20.7KHz	dB/km	48
Minimum Unbalance Attenuation	dB	40
Maximum Rated Voltage, between pair conductors	V rms	220
Maximum Rated Current	A rms	1

## ➤ Mechanical and Thermal Properties

- Minimum Bending Radius: 8×OD (static); 16×OD (dynamic)
- Temperature Range: -40°C to +60°C (during operation); -20°C to +50°C (during installation)

## ➤ Dimensions and Weight

Cable Code	Number of Pairs	Nominal Sheath Thickness mm			Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Interm.	Outer		
RS/DIG-2Y2Y(L)HBH-1P1.4	1*	0.7	1.3	1.5	17.9	428
RS/DIG-2Y2Y(L)HBH-2P1.4	2*	0.7	1.3	1.5	19.2	497
RS/DIG-2Y2Y(L)HBH-3P1.4	3	0.7	1.3	1.5	20.2	562

\*Plus one auxiliary pair with 0.6mm conductors.



Mineral Oil Resistant



Acid & Alkaline Resistant



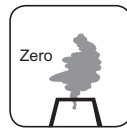
Laid In conduit



Flame Retardant  
NF C32-070-2.1(C2)  
IEC 60332-1/EN 50265-2-1



Fire Retardant  
NF C32-070-2.2(C1)  
IEC 60332-3/EN50266



Zero Halogen  
IEC 60754-1/NF C20-454  
EN 50267-2-1



Low Smoke Emission  
IEC 61034/NFC20-902  
EN 50268/NF C32-073



Low Corrosivity  
EN 50267-2-2/NF C32-074  
IEC 60754-2/NF C20-453



Low Toxicity



## Inductive Loop Cable

### Application

The cables are designed for installation between railway running rails and they provide communications between trains and trackside equipments.

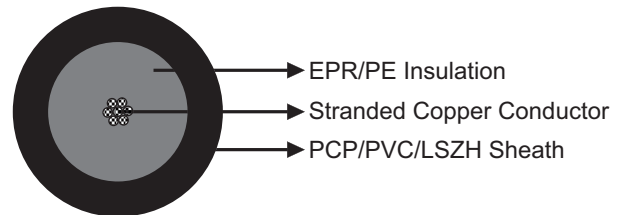


### Standards

- TR2029

### Construction

- Conductors: Stranded copper conductor.
- Insulation: EPR/PE.
- Sheath: PCP/PVC/LSZH.

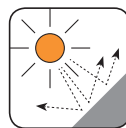


### Electrical Characteristics at 20°C

Nominal Conductor Cross Section	mm <sup>2</sup>	1.5	2.5
Maximum Conductor Resistance	Ω/km	13.7	7.41
Minimum Insulation Resistance	MΩ.km	5000	5000
Capacitance to Earth @1KHz	pF/km	0.1	0.1

### Mechanical and Thermal Properties

- Minimum Bending Radius: 6×OD (static);  
15×OD (dynamic)
- Temperature Range: -20°C to +85°C



UV Resistant



Mineral Oil Resistant



Rated voltage



Buried in Ground



Laid In Ducts

### Dimensions and Weight

Cable Code	No. of cores & Nominal Conductor Cross Sectional Area No. × mm <sup>2</sup>	No. & Nominal Diameter of Strands No./mm	Nominal Insulation Thickness mm	Nominal Sheath Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
RS2029-3G5G-1G1.5	1×1.5	30/0.25	0.8	1.4	6.6	70
RS2029-2YY-1G2.5	1×2.5	7/0.67	3.5	2.0	13	183
RS2029-2YH-1G2.5	1×2.5	7/0.67	0.7	4.5	13	219

LSZH Sheath



Flame Retardant  
NF C32-070-2.1(C2)  
IEC 60332-1/EN 50265-2-1



Fire Retardant  
NF C32-070-2.2(C1)  
IEC 60332-3/EN50266



Zero Halogen  
IEC 60754-1/NF C20-454  
EN 50267-2-1



Low Smoke Emission  
IEC 61034/NFC20-902  
EN 50268/NF C32-073



Low Corrosivity  
EN 50267-2-2/NF C32-074  
IEC 60754-2/NF C20-453



Low Toxicity



## EAPSP n×4×0.9/1.3/1.4

### Applications

The cables are used as railway cables and can be installed directly into the ground or in ducts.



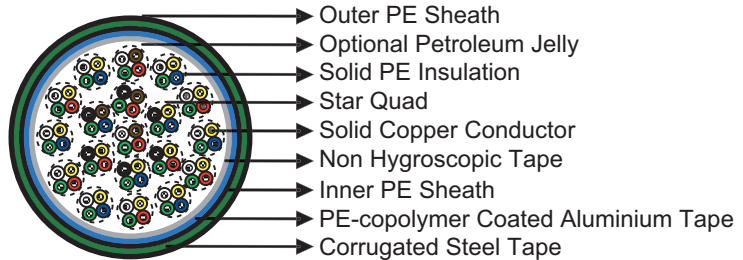
### Standards

- RENFE E.T. 03.365.051.6

### Construction

- Conductors: Soft annealed solid copper, 0.9/1.3/1.4 mm nominal diameter.

- Insulation: PE insulation.
- Cabling Element: Four insulated conductors are twisted together to form a quad.



- Stranding: Star quads are helically stranded in concentric layers.
- Core Wrapping: Plastic tape(s) with overlapping.
- Moisture Barrier: One laminated sheath made of aluminium tape (0.2mm thick) coated with copolymer on at least one side is applied with longitudinally overlap.
- Inner Sheath: PE sheath.
- Armour: One corrugated steel tape is longitudinally applied with overlap.
- Outer Sheath: PE sheath.

### Optional

Jelly Filled Cables: The cable core interstices are filled with petroleum jelly to avoid longitudinal water penetration within the cable. The water resistant filling compound is applied to the air space between non-hygroscopic tape and shield, shield and sheath within the cable core.

### Electrical Characteristics at 20°C

Nominal Conductor Diameter	mm	0.9	1.3	1.4
Maximum Conductor Resistance	Ω/km	28.5	13.7	11.7
Minimum Insulation Resistance @500 V DC	MΩ.km	25000	25000	25000
Resistance Unbalance	%	1	1	1
Mutual Capacitance @800Hz	nF/km	41	45	45
Capacitance Unbalance @800Hz				
K <sub>1</sub> mean value/individual value	pF/460m	35/250	35/250	35/250
K <sub>9-12</sub> mean value/individual value	pF/460m	35/250	35/250	35/250
ea <sub>1/2</sub> mean value/individual value	pF/460m	320/1200	320/1200	320/1200



Attenuation @1KHz	dB/km	0.7	0.5	0.46
Test Voltage @50Hz 1min				
Core to Core	V <sub>eff</sub>	2100	2100	2100
Core to Screen	V <sub>eff</sub>	2500	2500	2500
Core to Armouring	V <sub>eff</sub>	2000	2000	2000

## ➤ Mechanical and Thermal Properties

- Minimum Bending Radius: 10×OD
- Temperature Range: -30°C to +70°C (during operation); -10°C to +50°C (during installation)

## ➤ Dimensions and Weight

### EAPSP n × 4 × 0.9/1.3/1.4 Cables

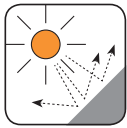
Cable Code	Number of Quads (n)	Nominal Sheath Thickness mm		Maximum Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
0.9mm Conductor, 1.8mm Insulated Wire					
RS/EAPSP-2Y(L)2YB2Y-1Q0.9	1	1.3	1.4	15.5	240
RS/EAPSP-2Y(L)2YB2Y-3Q0.9	3	1.3	1.4	19.5	380
RS/EAPSP-2Y(L)2YB2Y-5Q0.9	5	1.3	1.4	22.0	490
RS/EAPSP-2Y(L)2YB2Y-7Q0.9	7	1.3	1.4	24.0	580
RS/EAPSP-2Y(L)2YB2Y-10Q0.9	10	1.3	1.4	27.5	750
RS/EAPSP-2Y(L)2YB2Y-14Q0.9	14	1.4	1.6	30.0	920
1.3mm Conductor, 2.5mm Insulated Wire					
RS/EAPSP-2Y(L)2YB2Y-1Q1.3	1	1.3	1.4	16.0	270
RS/EAPSP-2Y(L)2YB2Y-3Q1.3	3	1.3	1.4	20.5	470
RS/EAPSP-2Y(L)2YB2Y-5Q1.3	5	1.4	1.6	26.5	680
RS/EAPSP-2Y(L)2YB2Y-7Q1.3	7	1.4	1.6	27.0	840
RS/EAPSP-2Y(L)2YB2Y-10Q1.3	10	1.4	1.6	30.5	1100
RS/EAPSP-2Y(L)2YB2Y-14Q1.3	14	1.5	1.6	34.0	1400
1.4mm Conductor, 2.6mm Insulated Wire					
RS/EAPSP-2Y(L)2YB2Y-1Q1.4	1	1.3	1.4	18.0	330
RS/EAPSP-2Y(L)2YB2Y-3Q1.4	3	1.3	1.4	23.0	560
RS/EAPSP-2Y(L)2YB2Y-5Q1.4	5	1.4	1.6	26.5	770
RS/EAPSP-2Y(L)2YB2Y-7Q1.4	7	1.4	1.6	29.0	950
RS/EAPSP-2Y(L)2YB2Y-10Q1.4	10	1.4	1.6	34.0	1280
RS/EAPSP-2Y(L)2YB2Y-14Q1.4	14	1.5	1.6	38.0	1650
RS/EAPSP-2Y(L)2YB2Y-19Q1.4	19	1.6	1.8	43.0	2120

### EAPSP-R n × 4 × 0.9/1.3 Jelly Filled Cables

Cable Code	Number of Quads (n)	Nominal Sheath Thickness mm		Maximum Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
0.9mm Conductor, 1.8mm Insulated Wire					
RS/EAPSP-R-2Y(F)(L)2YB2Y-1Q0.9	1	1.3	1.4	16.5	270
RS/EAPSP-R-2Y(F)(L)2YB2Y-3Q0.9	3	1.3	1.4	22.0	470
RS/EAPSP-R-2Y(F)(L)2YB2Y-5Q0.9	5	1.3	1.4	25.0	630
RS/EAPSP-R-2Y(F)(L)2YB2Y-7Q0.9	7	1.3	1.4	26.7	730
RS/EAPSP-R-2Y(F)(L)2YB2Y-10Q0.9	10	1.3	1.4	31.5	980
RS/EAPSP-R-2Y(F)(L)2YB2Y-12Q0.9	12	1.4	1.6	32.8	1090
RS/EAPSP-R-2Y(F)(L)2YB2Y-14Q0.9	14	1.4	1.6	34.6	1230
RS/EAPSP-R-2Y(F)(L)2YB2Y-19Q0.9	19	1.5	1.6	39.0	1560
RS/EAPSP-R-2Y(F)(L)2YB2Y-25Q0.9	25	1.5	1.6	43.2	1940



Cable Code	Number of Quads (n)	Nominal Sheath Thickness mm		Maximum Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
1.3mm Conductor, 2.5mm Insulated Wire					
RS/EAPSP-R-2Y(F)(L)2YB2Y-1Q1.3	1	1.3	1.4	18.0	360
RS/EAPSP-R-2Y(F)(L)2YB2Y-3Q1.3	3	1.3	1.4	23.0	570
RS/EAPSP-R-2Y(F)(L)2YB2Y-5Q1.3	5	1.4	1.6	29.5	830
RS/EAPSP-R-2Y(F)(L)2YB2Y-7Q1.3	7	1.4	1.6	29.7	980
RS/EAPSP-R-2Y(F)(L)2YB2Y-10Q1.3	10	1.4	1.6	34.5	1330
RS/EAPSP-R-2Y(F)(L)2YB2Y-12Q1.3	12	1.5	1.8	38.0	1580
RS/EAPSP-R-2Y(F)(L)2YB2Y-14Q1.3	14	1.5	1.8	38.6	1710
RS/EAPSP-R-2Y(F)(L)2YB2Y-19Q1.3	19	1.6	2.0	45.5	2260
RS/EAPSP-R-2Y(F)(L)2YB2Y-25Q1.3	25	1.6	2.0	50.5	2840



UV Resistant



Water Resistant



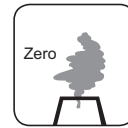
Rated Voltage



Buried in Ciround



Laid In Ducts



Zero Halogen  
IEC 60754-1/NF C20-454  
EN 50267-2-1



## CCPSSP-FR0.3 n×2×0.9/1.4

### Applications

The cables are used as railway cables and can be installed directly into the ground or in ducts.

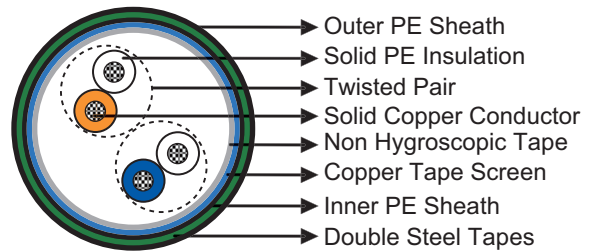


### Standards

- RENFE E.T. 03.365.051.6

### Construction

- Conductors: Soft annealed solid copper, 1.4 mm nominal diameter.
- Insulation: PE insulation.
- Cabling Element: Two insulated conductors are twisted together to form a pair.
- Stranding: Pairs are helically stranded in concentric layers.
- Core Wrapping: Two or more layers of plastic tape(s) with overlapping.
- Screen: Copper tapes with overlap (protection against interference).
- Inner Sheath: PE sheath.
- Armour: Two layers steel tape (0.8mm thick).
- Outer Sheath: PE sheath.



### Electrical Characteristics at 20°C

Nominal Conductor Diameter	mm	0.9	1.4
Maximum Conductor Resistance	Ω/km	28.5	11.7
Minimum Insulation Resistance @500 V DC	MΩ.km	15000	15000
Mutual Capacitance @1KHz	nF/km	58	58
Capacitance Unbalance @1KHz			
Pair to Pair	pF/km	260	260
Pair to Earth	pF/km	2625	2625
Test Voltage @50Hz 1min			
Core to Core	V <sub>eff</sub>	2100	2100
Core to Screen	V <sub>eff</sub>	2500	2500
Reduction Factor @100V/km 50Hz		0.3	0.3

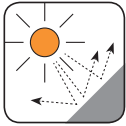
### Mechanical and Thermal Properties

- Minimum Bending Radius: 10×OD
- Temperature Range: -40°C to +60°C (during operation); -10°C to +60°C (during installation)



## ↳ Dimensions and Weight

Cable Code	Number of Pairs	Nominal Sheath Thickness mm		Maximum Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
0.9mm Conductor, 1.8mm Insulated Wire					
RS/CCPSSP-FR0.3-2Y(K)2YB2Y-6P0.9	6	1.5	1.6	19.2	720
RS/CCPSSP-FR0.3-2Y(K)2YB2Y-10P0.9	10	1.5	1.6	24.0	1011
RS/CCPSSP-FR0.3-2Y(K)2YB2Y-12P0.9	12	1.5	1.6	24.5	1067
1.4mm Conductor, 2.7mm Insulated Wire					
RS/CCPSSP-FR0.3-2Y(K)2YB2Y-2P1.4	2	1.5	1.6	22.5	904
RS/CCPSSP-FR0.3-2Y(K)2YB2Y-6P1.4	6	1.6	1.8	25.5	1155
RS/CCPSSP-FR0.3-2Y(K)2YB2Y-7P1.4	7	1.6	1.8	26.9	1258
RS/CCPSSP-FR0.3-2Y(K)2YB2Y-10P1.4	10	1.7	1.8	30.9	1542
RS/CCPSSP-FR0.3-2Y(K)2YB2Y-11P1.4	11	1.7	1.8	30.9	1576
RS/CCPSSP-FR0.3-2Y(K)2YB2Y-14P1.4	14	1.7	1.8	37.1	1827
RS/CCPSSP-FR0.3-2Y(K)2YB2Y-20P1.4	20	1.8	2.0	37.9	2214



UV Resistant



Water Resistant



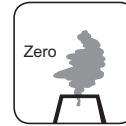
Rated Voltage



Buried in Ground



Laid In Ducts



Zero Halogen  
IEC 60754-1/NF C20-454  
EN 50267-2-1



Anti Induction



## CCPSSP-FR0.1 n×4×0.9/1.4

### Applications

The cables are used as railway cables and can be installed directly into the ground or in ducts.



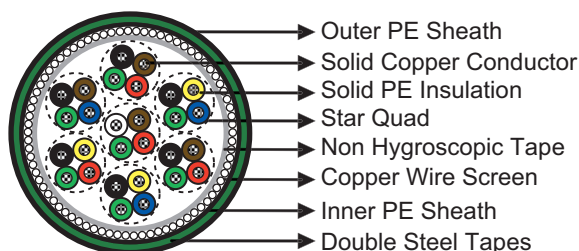
### Standards

- RENFE E.T. 03.365.051.6

### Construction

- Conductors: Soft annealed solid copper, 0.9/1.4 mm nominal diameter.

- Insulation: PE insulation.
- Cabling Element: Four insulated conductors are twisted together to form a quad.



- Stranding: Quads are helically stranded in concentric layers.
- Core Wrapping: Two or more layers of plastic tape(s) with overlapping.
- Screen: 0.9/1.2/1.4/1.8mm copper wires wrapping with one plastic tape (protection against interference).
- Inner Sheath: PE sheath.
- Armour: Two layers of steel tape (0.8mm thick).
- Outer Sheath: PE sheath.

### Electrical Characteristics at 20°C

Nominal Conductor Diameter	mm	0.9	1.4
Maximum Conductor Resistance	Ω/km	28.5	11.7
Minimum Insulation Resistance @500 V DC	MΩ.km	35000	35000
Mutual Capacitance @800Hz	nF/km	41	45
Capacitance Unbalance @800Hz			
K <sub>1</sub> maximum individual value	pF/460m	250	250
K <sub>9-12</sub> maximum individual value	pF/460m	250	250
ea <sub>1/2</sub> maximum individual value	pF/460m	1200	1200
Attenuation			
@1KHz	dB/km	0.7	0.46
@10KHz	dB/km	1.6	0.85
@30KHz	dB/km	2.1	1.3
Test Voltage @50Hz 1min			
Core to Core	V <sub>eff</sub>	2100	2100
Core to Screen	V <sub>eff</sub>	2500	2500
Core to Armouring	V <sub>eff</sub>	2000	2000
Reduction Factor @100V/km 50Hz		0.1	0.1

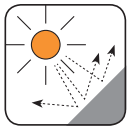


## ➤ Mechanical and Thermal Properties

- Minimum Bending Radius: 10×OD
- Temperature Range: -40°C to +60°C (during operation); -10°C to +60°C (during installation)

## ➤ Dimensions and Weight

Cable Code	Number of Quads	Nominal Sheath Thickness mm		Maximum Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
0.9mm Conductor, 1.8mm Insulated Wire					
RS/CCPSSP-FR0.1-2YD2YB2Y-1Q0.9	1	1.5	1.6	21.2	1140
RS/CCPSSP-FR0.1-2YD2YB2Y-3Q0.9	3	1.5	1.6	24.5	1370
RS/CCPSSP-FR0.1-2YD2YB2Y-5Q0.9	5	1.5	1.6	27.0	1610
RS/CCPSSP-FR0.1-2YD2YB2Y-7Q0.9	7	1.5	1.6	28.4	1750
RS/CCPSSP-FR0.1-2YD2YB2Y-10Q0.9	10	1.5	1.6	32.1	2060
RS/CCPSSP-FR0.1-2YD2YB2Y-12Q0.9	12	1.5	1.6	32.1	2130
RS/CCPSSP-FR0.1-2YD2YB2Y-14Q0.9	14	1.6	1.8	35.3	2380
RS/CCPSSP-FR0.1-2YD2YB2Y-19Q0.9	19	1.7	1.8	38.6	2760
RS/CCPSSP-FR0.1-2YD2YB2Y-25Q0.9	25	1.7	1.8	42.0	3150
1.4mm Conductor, 2.7mm Insulated Wire					
RS/CCPSSP-FR0.1-2YD2YB2Y-1Q1.4	1	1.5	1.6	22.7	1280
RS/CCPSSP-FR0.1-2YD2YB2Y-3Q1.4	3	1.5	1.6	28.0	1690
RS/CCPSSP-FR0.1-2YD2YB2Y-5Q1.4	5	1.6	1.8	32.0	2070
RS/CCPSSP-FR0.1-2YD2YB2Y-7Q1.4	7	1.6	1.8	33.9	2320
RS/CCPSSP-FR0.1-2YD2YB2Y-10Q1.4	10	1.6	1.8	39.2	2860
RS/CCPSSP-FR0.1-2YD2YB2Y-12Q1.4	12	1.7	1.8	39.2	2980
RS/CCPSSP-FR0.1-2YD2YB2Y-14Q1.4	14	1.7	1.8	42.6	3340
RS/CCPSSP-FR0.1-2YD2YB2Y-19Q1.4	19	1.8	2.0	48.5	4160



UV Resistant



Water Resistant



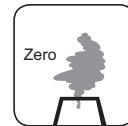
Rated Voltage



Buried in Ciround



Laid In Ducts



Zero Halogen  
IEC 60754-1/NF C20-454  
EN 50267-2-1



Anti Induction



## CCPSSP-R-FR0.1

### Applications

The cables are used as railway cables and can be installed directly into the ground or in ducts.

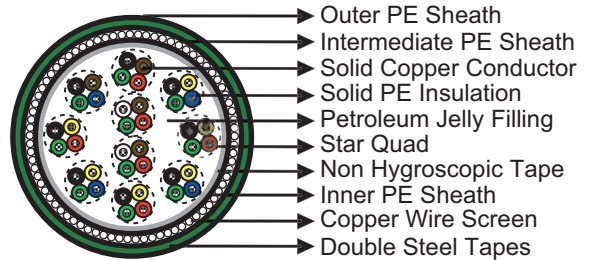


### Standards

- RENFE E.T. 03.365.051.6

### Construction

- Conductors: Soft annealed solid copper, 0.9 mm nominal diameter.
- Insulation: PE insulation.
- Cabling Element: Four insulated conductors are twisted together to form a quad.



- Stranding: Quads are helically stranded in concentric layers.
- Filling: Petroleum jelly filling.
- Core Wrapping: At least one layer of water swellable material with overlapping.
- Inner Sheath: PE sheath.
- Screen: 1.4/1.8mm copper wires wrapping with one plastic tape (protection against interference).
- Intermediate Sheath: PE sheath.
- Armour: Two layers of steel tape (0.8mm thick).
- Outer Sheath: PE sheath.

### Electrical Characteristics at 20°C

Nominal Conductor Diameter	mm	0.9
Maximum Conductor Resistance	Ω/km	28.5
Minimum Insulation Resistance @500 V DC	MΩ.km	25000
Mutual Capacitance @800Hz	nF/km	41
Capacitance Unbalance @800Hz		
K <sub>1</sub> maximum individual value	pF/460m	250
K <sub>9-12</sub> maximum individual value	pF/460m	250
ea <sub>1/2</sub> maximum individual value	pF/460m	1200
Attenuation		
@1KHz	dB/km	0.7
@10KHz	dB/km	1.6
@30KHz	dB/km	2.1
Test Voltage @50Hz 1min		
Core to Core	V <sub>eff</sub>	2100
Core to Screen	V <sub>eff</sub>	2500
Core to Armouring	V <sub>eff</sub>	2000
Reduction Factor @100V/km 50Hz		0.1

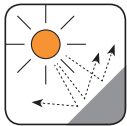


## ➤ Mechanical and Thermal Properties

- Minimum Bending Radius: 10×OD
- Temperature Range: -30°C to +70°C (during operation); -5°C to +50°C (during installation)

## ➤ Dimensions and Weight

Cable Code	Number of Quads	Nominal Sheath Thickness mm			Maximum Overall Diameter mm	Nominal Weight kg/km
		Inner	Inter.	Outer		
0.9mm Conductor, 1.8mm Insulated Wire						
RS/CCPSSP-R-FR0.1-2Y(F)2YD2YB2Y-1Q0.9	1	1.5	1.5	1.6	23.7	1300
RS/CCPSSP-R-FR0.1-2Y(F)2YD2YB2Y-3Q0.9	3	1.5	1.5	1.6	27.7	1648
RS/CCPSSP-R-FR0.1-2Y(F)2YD2YB2Y-5Q0.9	5	1.5	1.5	1.6	31.5	1984
RS/CCPSSP-R-FR0.1-2Y(F)2YD2YB2Y-25Q0.9	25	1.7	1.7	1.8	51.3	4166



UV Resistant



Water Resistant



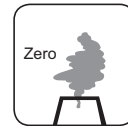
Rated Voltage



Buried in Ciround



Laid In Ducts



Zero Halogen  
IEC 60754-1/NF C20-454  
EN 50267-2-1



Anti Induction



## CCTSST-FR0.1 n×4×0.9/1.4

### Applications

The cables are used as railway cables and can be installed directly into the ground or in ducts.



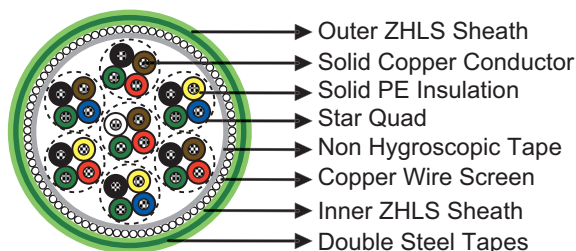
### Standards

- RENFE E.T. 03.365.051.6

### Construction

- Conductors: Soft annealed solid copper, 0.9/1.4 mm nominal diameter.

- Insulation: PE insulation.
- Cabling Element: Four insulated conductors are twisted together to form a quad.



- Stranding: Quads are helically stranded in concentric layers.
- Core Wrapping: Two or more layers of plastic tape(s) with overlapping.
- Screen: 0.9/1.2/1.4/1.8mm copper wires wrapping with one plastic tape (protection against interference).
- Inner Sheath: LSZH sheath, coloured green.
- Armour: Two layers of steel tape (0.8mm thick).
- Outer Sheath: LSZH sheath, coloured green.

### Electrical Characteristics at 20°C

Nominal Conductor Diameter	mm	0.9	1.4
Maximum Conductor Resistance	Ω/km	28.5	11.7
Minimum Insulation Resistance @500 V DC	MΩ.km	35000	35000
Mutual Capacitance @800Hz	nF/km	41	45
Capacitance Unbalance @800Hz			
K <sub>1</sub> maximum individual value	pF/460m	250	250
K <sub>9-12</sub> maximum individual value	pF/460m	250	250
ea <sub>1/2</sub> maximum individual value	pF/460m	1200	1200
Attenuation			
@1KHz	dB/km	0.7	0.46
@10KHz	dB/km	1.6	0.85
@30KHz	dB/km	2.1	1.3
Test Voltage @50Hz 1min			
Core to Core	V <sub>eff</sub>	2100	2100
Core to Screen	V <sub>eff</sub>	2500	2500
Core to Armouring	V <sub>eff</sub>	2000	2000
Reduction Factor @100V/km 50Hz		0.1	0.1



## ➤ Mechanical and Thermal Properties

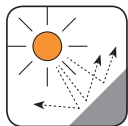
- Minimum Bending Radius: 10×OD
- Temperature Range: -40°C to +60°C (during operation); -10°C to +60°C (during installation)

## ➤ Dimensions and Weight

Cable Code	Number of Quads	Nominal Sheath Thickness mm		Maximum Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
0.9mm Conductor, 1.8mm Insulated Wire					
RS/CCTSST-FR0.1-2YDHBH-1Q0.9	1	1.5	1.6	20.6	1170
RS/CCTSST-FR0.1-2YDHBH-3Q0.9	3	1.5	1.6	24.7	1480
RS/CCTSST-FR0.1-2YDHBH-5Q0.9	5	1.5	1.6	27.3	1740
RS/CCTSST-FR0.1-2YDHBH-7Q0.9	7	1.5	1.6	29.6	1950
RS/CCTSST-FR0.1-2YDHBH-10Q0.9	10	1.5	1.6	33.5	2320
RS/CCTSST-FR0.1-2YDHBH-25Q0.9	25	1.7	1.8	44.2	3590
1.4mm Conductor, 2.7mm Insulated Wire					
RS/CCTSST-FR0.1-2YDHBH-10Q1.4	10	1.6	1.8	39.2	3140



Anti Induction



UV Resistant



Water Resistant



Rated Voltage



Buried in Ground



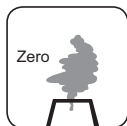
Laid In Ducts



Flame Retardant  
NF C32-070-2.1(C2)  
IEC 60332-1/EN 50265-2-1



Fire Retardant  
NF C32-070-2.2(C1)  
IEC 60332-3/EN50266



Zero Halogen  
IEC 60754-1/NF C20-454  
EN 50267-2-1



Low Smoke Emission  
IEC 61034/NFC20-902  
EN 50268/NF C32-073



Low Corrosivity  
EN 50267-2-2/NF C32-074  
IEC 60754-2/NF C20-453



Low Toxicity



## CCTSST-FR0.3 n×4×1.4

### Applications

The cables are used as railway cables and can be installed directly into the ground or in ducts.

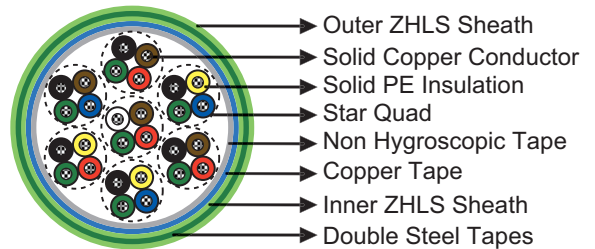


### Standards

- RENFE E.T. 03.365.051.6

### Construction

- Conductors: Soft annealed solid copper, 1.4 mm nominal diameter.
- Insulation: PE insulation.
- Cabling Element: Four insulated conductors are twisted together to form a quad.
- Stranding: Quads are helically stranded in concentric layers.
- Core Wrapping: Two or more layers of plastic tape(s) with overlapping.
- Screen: Copper tapes with overlap (protection against interference).
- Inner Sheath: LSZH sheath, coloured green.
- Armour: Two layers steel tape (0.8mm thick).
- Outer Sheath: LSZH sheath, coloured green.



### Electrical Characteristics at 20°C

Nominal Conductor Diameter	mm	1.4
Maximum Conductor Resistance	Ω/km	11.7
Minimum Insulation Resistance @500 V DC	MΩ.km	35000
Mutual Capacitance @800Hz	nF/km	45
Capacitance Unbalance @800Hz		
K <sub>1</sub> maximum individual value	pF/460m	250
K <sub>9-12</sub> maximum individual value	pF/460m	250
ea <sub>1/2</sub> maximum individual value	pF/460m	1200
Test Voltage @50Hz 1min		
Core to Core	V <sub>eff</sub>	2100
Core to Screen	V <sub>eff</sub>	2500
Reduction Factor @100V/km 50Hz		0.3

### Mechanical and Thermal Properties

- Minimum Bending Radius: 10×OD
- Temperature Range: -40°C to +60°C (during operation); -10°C to +60°C (during installation)

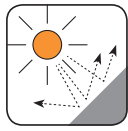


## ↳ Dimensions and Weight

Cable Code	Number of Quads	Nominal Sheath Thickness mm		Maximum Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
1.4mm Conductor, 2.6mm Insulated Wire					
RS/CCTSST-FR0.3-2Y(K)HBH-1Q1.4	1	1.5	1.6	19.0	880
RS/CCTSST-FR0.3-2Y(K)HBH-3Q1.4	3	1.5	1.6	27.1	1440
RS/CCTSST-FR0.3-2Y(K)HBH-5Q1.4	5	1.5	1.6	31.0	1826
RS/CCTSST-FR0.3-2Y(K)HBH-7Q1.4	7	1.5	1.6	33.1	2090
RS/CCTSST-FR0.3-2Y(K)HBH-10Q1.4	10	1.7	1.8	38.4	2640
RS/CCTSST-FR0.3-2Y(K)HBH-14Q1.4	14	1.7	1.8	42.2	3168
RS/CCTSST-FR0.3-2Y(K)HBH-19Q1.4	19	1.8	2.0	47.2	3861



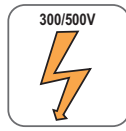
Anti Induction



UV Resistant



Water Resistant



Rated Voltage



Buried in Ground



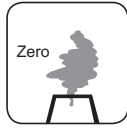
Laid In Ducts



Flame Retardant  
NF C32-070-2.1(C2)  
IEC 60332-1/EN 50265-2-1



Fire Retardant  
NF C32-070-2.2(C1)  
IEC 60332-3/EN50266



Zero Halogen  
IEC 60754-1/NF C20-454  
EN 50267-2-1



Low Smoke Emission  
IEC 61034/NFC20-902  
EN 50268/NF C32-073



Low Corrosivity  
EN 50267-2-2/NF C32-074  
IEC 60754-2/NF C20-453



Low Toxicity



## SXCAV & SXCAG Signalling Cables

### Applications

The cables are designed for connection between switching centers and equipment shelters along the trackside. The cables are used as main signalling cables specially designed to give good induction protection (R.F=0.24 at inductive voltage 170 V/km) and are suitable for installation in intercity railways electrified at 25KV ac.

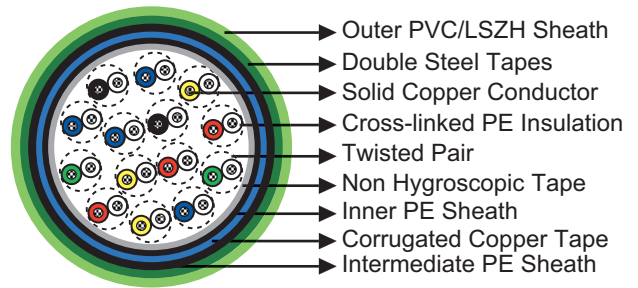


### Standards

- SXCAV SXCAG Specification
- Fire performance: EN 50266-2-4 C

### Construction

- Conductors: Class 1 solid bare copper conductor.
- Insulation: Coloured cross-linked PE insulation.
- Cabling Element: Each two conductors are twisted together to form a pair.
- Stranding: Pairs are helically stranded in layers to form the cable core.
- Core Wrapping: Plastic tape(s) with overlapping.
- Inner Sheath: PE sheath.
- Electrostatic Shield: One corrugated copper tape.
- Intermediate Sheath: PE sheath.
- Electromagnetic Shield: Two helically applied steel tapes.
- Outer Sheath: Black unleaded PVC (SXCAV) or green halogen free (SXCAG) sheath.



### Electrical Characteristics at 20°C

Nominal Conductor Diameter	mm	1.38
Nominal Cross Section Area	mm <sup>2</sup>	1.5
Maximum Conductor Resistance (DC)	Ω/km	12.3
Minimum Insulation Resistance @500 V DC (3mins)	MΩ.km	10000
Maximum Mutual Capacitance @1000Hz (AC)	nF/km	60
Maximum Reduction Factor @170V/km 50Hz		0.24
Operating Voltage	V	1000

### Mechanical and Thermal Properties

- Minimum Bending Radius: 10×OD
- Temperature Range: -25°C to +90°C (during operation); -10°C to +90°C (during installation)



## ↳ Dimensions and Weight

### SXCAV Cables

Cable Code	Number of Pairs	Nominal Sheath Thickness mm			Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Inter.	Outer		
1.38mm Conductor, 2.38mm Insulated Wire						
RS/SXCAV-2Y2Y(K)2YBY-1P1.5S	1	1.0	0.8	1.6	16.9	513
RS/SXCAV-2Y2Y(K)2YBY-4P1.5S	4	1.0	0.8	1.6	23.1	826
RS/SXCAV-2Y2Y(K)2YBY-7P1.5S	7	1.0	0.8	1.7	26.1	1060
RS/SXCAV-2Y2Y(K)2YBY-14P1.5S	14	1.2	0.8	1.8	32.3	1571
RS/SXCAV-2Y2Y(K)2YBY-24P1.5S	24	1.2	1.1	2.0	38.3	2199
RS/SXCAV-2Y2Y(K)2YBY-30P1.5S	30	1.2	1.1	2.2	42.8	2555

### SXCAG Cables

Cable Code	Number of Pairs	Nominal Sheath Thickness mm			Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Inter.	Outer		
1.38mm Conductor, 2.38mm Insulated Wire						
RS/SXCAG-2Y2Y(K)2YBH-1P1.5S	1	1.0	0.8	1.6	16.9	515
RS/SXCAG-2Y2Y(K)2YBH-4P1.5S	4	1.0	0.8	1.6	23.1	855
RS/SXCAG-2Y2Y(K)2YBH-7P1.5S	7	1.0	0.8	1.7	26.1	1095
RS/SXCAG-2Y2Y(K)2YBH-14P1.5S	14	1.2	0.8	1.8	32.3	1616
RS/SXCAG-2Y2Y(K)2YBH-24P1.5S	24	1.2	1.1	2.0	38.3	2260
RS/SXCAG-2Y2Y(K)2YBH-30P1.5S	30	1.2	1.1	2.2	42.8	2625



Anti Induction



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PVC Sheath



Flame Retardant  
NF C32-070-2.1(C2)  
IEC 60332-1/EN 50265-2-1

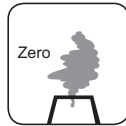
LSZH Sheath



Flame Retardant  
NF C32-070-2.1(C2)  
IEC 60332-1/EN 50265-2-1



Fire Retardant  
NF C32-070-2.2(C1)  
IEC 60332-3/EN50266



Zero Halogen  
IEC 60754-1/NF C20-454  
EN 50267-2-1



Low Smoke Emission  
IEC 61034/NFC20-902  
EN 50268/NF C32-073



Low Corrosivity  
EN 50267-2-2/NF C32-074  
IEC 60754-2/NF C20-453



Low Toxicity



## SW-CLT Switching Centre Cables

### Applications

The cables are used as block cables for railway. The cables are suitable for connection between local switching centre and the trackside and signalling equipments.

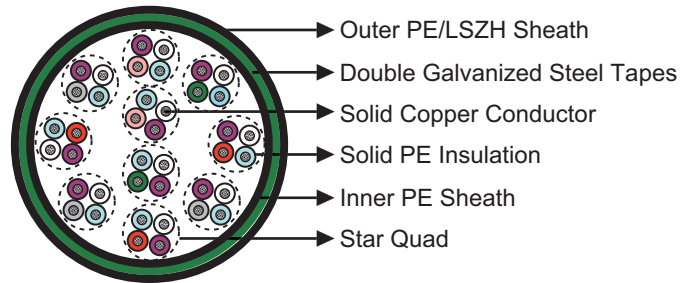


### Standards

- CFF: I-EB-SK 3001.82.1000

### Construction

- Conductors: Class 1 solid copper, 1.0/1.5/2.2mm nominal diameter.
- Insulation: Solid polyethylene.
- Cabling Element: Four conductors are twisted together to form a quad.
- Inner Sheath: PE sheath.
- Armour: Double galvanized steel tapes of 0.15mm.
- Outer Sheath: PE/LSZH sheath.



### Optional

Unarmoured Cable: The cables offered without galvanized steel tapes (SW).

Traction Armoured Cable: The cables offered with galvanized steel flat wire armour with or without protection sheath (SW-F/FT).

Halogenfree Sheathed Cable: The cables offered with LSZH sheath according to IEC 60332-3C (SW-CLN/FN).

### Electrical Characteristics at 20°C

Nominal Conductor Diameter	mm	1.0	1.5	2.2
Maximum Conductor Resistance (DC)	Ω/km	47.0	20.9	10.0
Minimum Insulation Resistance @500 V DC (3mins)	MΩ.km	10000	10000	10000
Maximum Mutual Capacitance @800Hz	nF/km	42	52	60
Maximum Capacitance Unbalance				
In quad	pF/km	400	400	400
Between quads	pF/km	400	400	400
Real-ground	pF/km	650	650	650
Operating Voltage AC/DC	V	500/800		



## ➤ Mechanical and Thermal Properties

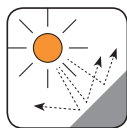
- Minimum Bending Radius: 10×OD
- Temperature Range: -30°C to +60°C (during operation); -10°C +60°C (during installation)

## ➤ Dimensions and Weight

Cable Code	No. of Quads	Nominal Sheath Thickness mm		Nominal Overall Diameter mm	Nominal Weight kg/km
		Inner	Outer		
1.0mm Conductor, 1.8mm Insulated Wire					
RS/SW-CLT-2Y2YB2Y-1Q1	1	1.0	1.5	12.7	161
RS/SW-CLT-2Y2YB2Y-2Q1	2	1.0	1.5	17.5	335
RS/SW-CLT-2Y2YB2Y-3Q1	3	1.0	1.7	18.3	390
RS/SW-CLT-2Y2YB2Y-4Q1	4	1.0	1.7	20.4	455
RS/SW-CLT-2Y2YB2Y-5Q1	5	1.0	1.7	21.7	543
RS/SW-CLT-2Y2YB2Y-7Q1	7	1.2	1.8	23.3	640
RS/SW-CLT-2Y2YB2Y-10Q1	10	1.2	2.0	28.4	896
RS/SW-CLT-2Y2YB2Y-15Q1	15	1.2	2.2	33.0	1260
RS/SW-CLT-2Y2YB2Y-20Q1	20	1.2	2.3	37.1	1590
RS/SW-CLT-2Y2YB2Y-25Q1	25	1.2	2.4	41.7	1960
RS/SW-CLT-2Y2YB2Y-30Q1	30	1.3	2.5	43.2	2130
1.5mm Conductor, 2.8mm Insulated Wire					
RS/SW-CLT-2Y2YB2Y-1Q1.5	1	1.0	1.5	15.1	240
RS/SW-CLT-2Y2YB2Y-2Q1.5	2	1.0	1.5	23.6	491
RS/SW-CLT-2Y2YB2Y-3Q1.5	3	1.0	1.7	24.4	585
RS/SW-CLT-2Y2YB2Y-4Q1.5	4	1.0	1.7	27.5	684
RS/SW-CLT-2Y2YB2Y-5Q1.5	5	1.0	1.7	30.5	793
RS/SW-CLT-2Y2YB2Y-7Q1.5	7	1.2	1.8	32.9	1030
RS/SW-CLT-2Y2YB2Y-10Q1.5	10	1.2	2.0	42.5	1460
RS/SW-CLT-2Y2YB2Y-15Q1.5	15	1.2	2.2	49.2	2060
RS/SW-CLT-2Y2YB2Y-20Q1.5	20	1.2	2.3	57.0	2600
RS/SW-CLT-2Y2YB2Y-25Q1.5	25	1.2	2.4	62.8	3300
RS/SW-CLT-2Y2YB2Y-30Q1.5	30	1.3	2.5	64.4	3660
2.2mm Conductor, 3.8mm Insulated Wire					
RS/SW-CLT-2Y2YB2Y-1Q2.2	1	1.0	1.5	13.1	346
RS/SW-CLT-2Y2YB2Y-2Q2.2	2	1.0	1.5	20.4	573
RS/SW-CLT-2Y2YB2Y-3Q2.2	3	1.0	1.7	21.4	934
RS/SW-CLT-2Y2YB2Y-4Q2.2	4	1.0	1.7	23.1	1329
RS/SW-CLT-2Y2YB2Y-5Q2.2	5	1.0	1.7	25.5	1380
RS/SW-CLT-2Y2YB2Y-7Q2.2	7	1.2	1.8	27.4	1730
RS/SW-CLT-2Y2YB2Y-10Q2.2	10	1.2	2.0	33.7	2560
RS/SW-CLT-2Y2YB2Y-15Q2.2	15	1.2	2.2	39.2	3630
RS/SW-CLT-2Y2YB2Y-20Q2.2	20	1.2	2.3	43.4	4780
RS/SW-CLT-2Y2YB2Y-25Q2.2	25	1.2	2.4	50.1	5850
RS/SW-CLT-2Y2YB2Y-30Q2.2	30	1.3	2.5	51.8	6580



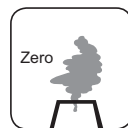
Anti Induction



UV Resistant



Water Resistant



Zero Halogen  
IEC 60754-1/NF C20-454  
EN 50267-2-1



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## Twin Datalink Cable

### Application

The cables are used as interconnecting cables for Solid State Interlocking (SSI) systems.

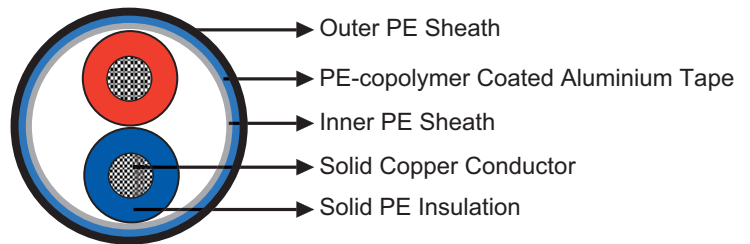


### Standards

- BR 1932

### Construction

- Conductors: Class 1 solid plain copper conductor, 1.27mm nominal diameter.
- Insulation: Solid polyethylene.
- Inner Sheath: Low density polyethylene.
- Moisture Barrier: PE Copolymer coated aluminium tape.
- Sheath: Low density polyethylene.
- Core Identification: Blue & Red.



### Electrical Characteristics at 20°C

Nominal Conductor Diameter	mm	1.27
Nominal Conductor Cross Section	mm <sup>2</sup>	2.5
Maximum Conductor Resistance	Ω/km	7.41

### Mechanical and Thermal Properties

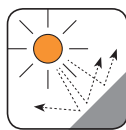
- Minimum Bending Radius: 6×OD
- Temperature Range: -25°C to +85°C (during operation); -10°C to +85°C (during installation)

### Dimensions and Weight

Cable Code	No. of pairs	Nominal Sheath Thickness mm	Overall Diameter Min/Max mm	Nominal Weight kg/km
1.27mm Conductor, 2.59mm Insulation Wire				
RS1932-2Y2Y(L)2Y-1P1.27	1	2.5	12.47/12.8	136



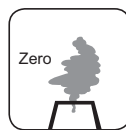
Anti Induction



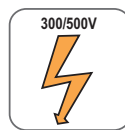
UV Resistant



Water Resistant



Zero Halogen  
IEC 60754-1/NF C20-454  
EN 50267-2-1



Rated Voltage



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