

## 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.



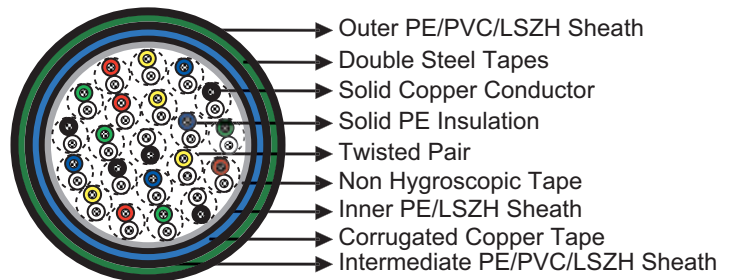
### Standards

- 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

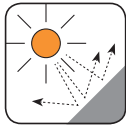
Inductive Voltage (V/km) Em	28	32	37	42	47	50	70	80	100	120	170	225
Reduction Factor @50Hz Rk	0.75	0.70	0.60	0.50	0.40	0.35	0.30	0.28	0.26	0.25	0.24	0.25

## ➤ 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



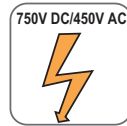
Anti Induction



UV Resistant



Mineral Oil Resistant



Rated voltage

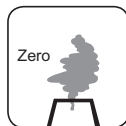


Buried in Ciround



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

