

## PE Insulated Air Core/Jelly Filled Star Quad Railway Signalling Cables to VDE 0816/DIN 57816

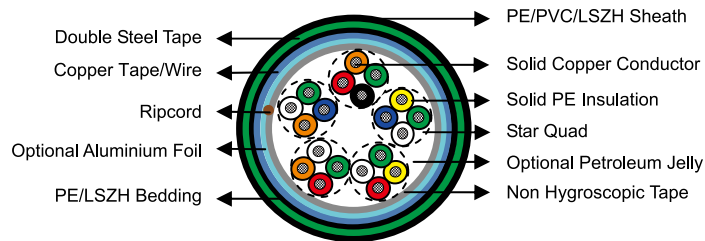
### APPLICATION

The cables are designed to give good protection to the core against inductive interference. The cables are used for outdoor signalling equipment.



### STANDARDS

- VDE 0816/DIN 57816



### CONSTRUCTION

- **Conductors:** Solid annealed bare copper 0.9/1.4mm as per ASTM B-3/IEC 60228 Class 1.
- **Insulation:** Solid polyethylene as per ASTM D 1248/IEC 60708.
- **Cabling Element:** Four insulated conductors are twisted together to form a quad.
- **Cable Core Assembly:** The cores are cabled together in concentric layers to form the cable core. Units are identified by colour coded binders.
- **Core Wrapping:** One or more non-hygroscopic polyester tapes are helically or longitudinally laid with an overlap.
- **Electrostatic Screen:** Copper tape or copper wire braid with wire diameter of 0.12mm.
- **Bedding:** PE or LSZH.
- **Electrostatic Armour:** Two steel tapes of 0.5mm or 0.8mm are helically applied with gap. The outer tape will cover the gap left by the inner one.
- **Sheath:** PE/PVC or LSZH.
- **Ripcord:** Nylon ripcord may be placed parallel to the cores to facilitate sheath removal.

### ELECTRICAL PROPERTIES

Nominal Conductor Diameter	mm	0.9	1.4
Conductor Size	mm <sup>2</sup>	0.636	1.539
Maximum Conductor Resistance @20°C	Ω/km	28	12.1
Minimum Insulation Resistance @500V DC	MΩ-km	35000	5000
Maximum Resistance Unbalance	%	2.5	2.5
Maximum Mutual Capacitance @0.8KHz	nF/km	45	50
Maximum Capacitance Unbalance @1KHz pair-to-pair	pF/500m	250	250
Maximum Capacitance Unbalance @1KHz pair-to-ground	pF/500m	1200	1200
Maximum Average Attenuation @1KHz	dB/km	0.7	0.46



# Caledonian

## SPECIAL TELEPHONE CABLES

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Maximum Average Attenuation @10KHz	dB/km	1.6	0.85
Maximum Average Attenuation @30KHz	dB/km	2.1	1.3
Dielectric Strength Conductor to Conductor 3secs	V DC	3000	3000
Conductor to Screen 3secs	V DC	3500	3500
Nominal Insulation Thickness	mm	0.45	0.65
Nominal Insulated Conductor Diameter	mm	1.8	2.7

### Reduction Factor

Type group	Frequency Hz	Cable reduction factor(planning values)at field strength		
		70V/km	100V/km	350V/km
1,5	16 <sup>2</sup> / <sub>3</sub>	0.70	0.60	0.92
2,3,6,7		0.55	0.45	0.80
4,8		0.30	0.25	0.70
1,5	50	0.45	0.38	0.52
2,6		0.21	0.17	0.29
3,7		0.42	0.37	0.30
4,8		0.17	0.14	0.12

Reference length is 300m. Conversion factor for different lengths L (at least 200m): L/300

## TYPE CODES

- AJ- -Outdoor cable with protection against inductive influences
- 2Y - Solid PE
- Y - PVC
- H - LSZH
- (St) - Static shield of plastic-backed aluminum Tape for indoor cables
- D - Shield of copper wire whipping.
- S - Railway signaling cable
- Lg - Stranded in layers
- (...Cu) - Total cross section of copper shield in mm sq
- (fK) - Longitudinally applied copper tape, supplement to (St)
- 2B... - two layers of steel tape, thickness of steel tape in mm

## MECHANICAL AND THERMAL PROPERTIES

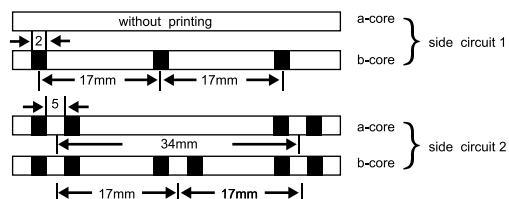
Temperature range during operation (fixed state): -30°C– +70°C

Temperature range during installation (mobile state): -20°C – +50°C

Minimum bending radius: 15 x Overall Diameter

## COLOUR CODE

Coloured rings on the insulation  
The tracer quad in each layer has a red helix.



## DIMENSIONS AND WEIGHT

VDE CODE:

Copper tape screen & steel tape thickness of 0.5/0.8mm

AJ-2Y(St)YbY...x4x0.9/1.4 S Lg (fK) (2B 0.5) AJ-2Y(St)YbY...x4x0.9/1.4 S Lg (fK) (2B 0.8)

Copper wire screen (wire diameter of 1.2mm) & steel tape thickness of 0.8mm

AJ-2YDYbY...x4x0.9/1.4 S Lg (...Cu/2B 0.5) AJ-2YDYbY...x4x0.9/1.4 S Lg (...Cu/2B 0.8)

Cable Code	Number of Quads	Nominal Bedding/ Sheath Thickness mm	Nominal Overall Diameter mm	Nominal Weight kg/km
Type 1: 0.9mm Conductor, 1.8mm Insulated Wire, Copper Tape Screened, RF 0.6 Steel tape thickness 0.5mm				
TP816AJ-2Y(St)YbY-S Lg (fK)(2B0.5)-3Q09	3	1.7/1.8	22.0	810
TP816AJ-2Y(St)YbY-S Lg (fK)(2B0.5)-5Q09	5	1.7/1.8	25.5	1035
TP816AJ-2Y(St)YbY-S Lg (fK)(2B0.5)-7Q09	7	1.7/1.8	26.5	1150
TP816AJ-2Y(St)YbY-S Lg (fK)(2B0.5)-10Q09	10	1.8/2.0	32.5	1550
TP816AJ-2Y(St)YbY-S Lg (fK)(2B0.5)-14Q09	14	1.8/2.0	35.5	1870
Type 2: 0.9mm Conductor, 1.8mm Insulated Wire, Copper Wire Screened, RF 0.45 Steel tape thickness 0.5mm				
TP816AJ-2YDYbY-S Lg (23/2B0.5)-7Q09	7	1.7/1.8	28.5	1410
TP816AJ-2YDYbY-S Lg (25/2B0.5)-10Q09	10	1.8/2.0	33.0	1745
TP816AJ-2YDYbY-S Lg (25/2B0.5)-14Q09	14	1.8/2.0	36.6	2060
Type 3: 0.9mm Conductor, 1.8mm Insulated Wire, Copper Tape Screened, RF 0.45 Steel tape thickness 0.8mm				
TP816AJ-2Y(St)YbY-S Lg (fK) (2B0.8)-20Q09	20	1.8/2.0	40.0	2610
TP816AJ-2Y(St)YbY-S Lg (fK) (2B0.8)-30Q09	30	2.0/2.2	46.5	3425
TP816AJ-2Y(St)YbY-S Lg (fK) (2B0.8)-40Q09	40	2.0/2.2	50.5	4015
Type 4: 0.9mm Conductor, 1.8mm Insulated Wire, Copper Wire Screened, RF 0.25 Steel tape thickness 0.8mm				
TP816AJ-2YDYbY-S Lg (29/2B0.8)-20Q09	20	1.8/2.0	40.5	2840
TP816AJ-2YDYbY-S Lg (33/2B0.8)-30Q09	30	2.0/2.2	47.5	3655
TP816AJ-2YDYbY-S Lg (33/2B0.8)-40Q09	40	2.0/2.2	51.5	4230
Type 5: 1.4mm Conductor, 2.7mm Insulated Wire, Copper Tape Screened, RF 0.6 Steel tape thickness 0.5mm				
TP816AJ-2Y(St)YbY-S Lg (fK) (2B0.5)-3Q14	3	1.7/1.8	26.5	1140
TP816AJ-2Y(St)YbY-S Lg (fK) (2B0.5)-5Q14	5	1.7/1.8	29.5	1430
TP816AJ-2Y(St)YbY-S Lg (fK) (2B0.5)-7Q14	7	1.8/2.0	33.5	1790
TP816AJ-2Y(St)YbY-S Lg (fK) (2B0.5)-10Q14	10	1.8/2.0	39.0	2330
TP816AJ-2Y(St)YbY-S Lg (fK) (2B0.5)-14Q14	14	1.8/2.0	42.5	2805
Type 6: 1.4mm Conductor, 2.7mm Insulated Wire, Copper Wire Screened, RF 0.45 Steel tape thickness 0.5mm				
TP816AJ-2YDYbY-S Lg (25/2B0.5)-25Q14	25	1.8/2.0	35.0	2050
Type 7: 1.4mm Conductor, 2.7mm Insulated Wire, Copper Tape Screened, RF 0.45 Steel tape thickness 0.8mm				
TP816AJ-2Y(St)YbY-S Lg (fK) (2B0.8)-20Q14	20	2.0/2.2	49.0	4085
TP816AJ-2Y(St)YbY-S Lg (fK) (2B0.8)-30Q14	30	2.4/2.6	58.5	5585
TP816AJ-2Y(St)YbY-S Lg (fK) (2B0.8)-40Q14	40	2.4/2.6	64.0	6720
Type 8: 1.4mm Conductor, 2.7mm Insulated Wire, Copper Wire Screened, RF 0.25 Steel tape thickness 0.8mm				
TP816AJ-2YDYbY-S Lg (29/2B0.5)-10Q14	10	1.8/2.0	41.0	2950
TP816AJ-2YDYbY-S Lg (33/2B0.5)-14Q14	14	2.0/2.2	46.0	3615
TP816AJ-2YDYbY-S Lg (33/2B0.5)-20Q14	20	2.0/2.2	50.0	4310
TP816AJ-2YDYbY-S Lg (38/2B0.5)-30Q14	30	2.4/2.6	59.5	5850
TP816AJ-2YDYbY-S Lg (43/2B0.5)-40Q14	40	2.4/2.6	65.0	7005