

## WTB (Wired Train Bus) Cables

FRL-WTB-02YCH-2G0.75/FRL-WTB-02YCH-1P0.75S/FRL-WTB-02YCH-2P0.75S



A. Conductor B. Insulation C. Screen D. Sheath

### Application

The cables are designed for permanent installation inside of rolling stock to connect fixed parts. A typical application is a communication system in a locomotive. The system uses a wire backed bus system to the TCN standard for control and instrumentation and for diagnostics. This bus system consists of the rail bus WTB (Wired Train Bus) and the road bus MVB (Multifunction Vehicle Bus) which are connected via redundant gateways.

### Construction

#### Conductors

Stranded tinned copper conductor according to IEC 60228 class 5

#### Insulation

Foam PE or foam skin PE

#### Core Wrapping

Plastic tape(s)

#### EMC Screen

Tinned copper braid

#### Outer Sheath

Cross-linked oil resistant LSZH compound

### Electrical & Mechanical Properties

Nominal Voltage	300 V
Max. Temperature	90 °C
Min. Temperature	-40 °C
Bending Radius	12 x Overall Diameter

### Chemical & Environmental Properties

EN 60684-2	No fluorine
EN 50305; EN 60811-2-1	Resistance to mineral oil & fuel oil, acid & alkali
EN 50305	Resistance to ozone

### Fire Performance for Rolling Stock Application

EN 50306-2	Hazard levels HL1, HL2/HL3, HL4
DIN 5510-2	Protection level 1/2/3/4
BS 6853	Interior use 1a, 1b, II; Exterior use 1a, 1b, II
NF F 16-101	F0

## Fire Performance in General

EN 50265-2-1; IEC 60332-1-2; NF C 32-070 2.1 (C2)  
 EN 50266-2-4 + EN 50305; IEC 60332-3-24;  
 NF C 32-070 2.2 (C1); VDE 0472 Teil 804  
 EN 50268-2; IEC 61034-2; NF C 32-073 ;  
 NF C 20-902; NF F 16 101; VDE 0472 Teil 816  
 EN 50267-2-1; IEC 60754-1; NF C 32-074;  
 NF C 20-454; VDE 0472 Teil 815  
 EN 50267-2-2/3; IEC 60754-2; NF C 32-074;  
 NF C 20-453; VDE 0472 Teil 813  
 EN 50305; NF X 70-100; NF F 63 808; TM1-04; BS6853  
 NF F 63 808; BS6853; NF F 16 101

Vertical flame propagation for a single insulated wire or cable  
 Vertical flame spread of vertically mounted bunched wires or cables

Low Smoke Emission

Halogen Free

Low Corrosivity (Acidity & Conductivity)

Low Toxicity  
 Smoke Index

### FRL-WTB-02YCH-2G0.75

Nominal Cross-Sectional Area	Number & Nominal Diameter of Strands	Nominal Sheath Thickness	Nominal Overall Diameter	Nominal Weight	Max. Conductor Resistance	Impedance	Max. Transfer Impedance	Max. Attenuation			
					20 °C			@1-10MHz	f<=30MHz	@1MHz	@1.5MHz
mm <sup>2</sup>	No/mm	mm	mm	kg/km	Ω/km	Ω	mΩ/m	dB/km	dB/km	dB/km	dB/km
0.75	19/0.22	1.4	8.3	97	26.7	120+/-12	30	10	13	14	18

### FRL-WTB-02YCH-1P0.75S

Nominal Cross-Sectional Area	Number & Nominal Diameter of Strands	Nominal Sheath Thickness	Nominal Overall Diameter	Nominal Weight	Max. Conductor Resistance	Impedance	Max. Transfer Impedance	Max. Attenuation			
					20 °C			@1-10MHz	f<=30MHz	@1MHz	@1.5MHz
mm <sup>2</sup>	No/mm	mm	mm	kg/km	Ω/km	Ω	mΩ/m	dB/km	dB/km	dB/km	dB/km
0.75	19/0.22	1.4	9.0	110	26.7	120+/-12	30	10	13	14	18

### FRL-WTB-02YCH-2P0.75S

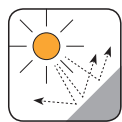
Nominal Cross-Sectional Area	Number & Nominal Diameter of Strands	Nominal Sheath Thickness	Nominal Overall Diameter	Nominal Weight	Max. Conductor Resistance	Impedance	Max. Transfer Impedance	Max. Attenuation			
					20 °C			@1-10MHz	f<=30MHz	@1MHz	@1.5MHz
mm <sup>2</sup>	No/mm	mm	mm	kg/km	Ω/km	Ω	mΩ/m	dB/km	dB/km	dB/km	dB/km
0.75	19/0.22	1.4	11.4	150	26.7	120+/-12	30	10	13	14	18



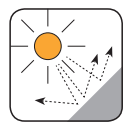
Corona Resistant



Highly Flexible



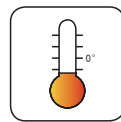
UV Resistant



Ozone Resistant



Abrasion Retardant



Cold Resistant



Resistance To Soldering Heat



Acid & Alkaline Resistant



IRM 903 Fuel Oil Resistant



IRM 902 Mineral Oil Resistant



Fire Retardant  
 NF C32-070-2.2(C1)  
 IEC60332-3-24/EN50266-2-4



Flame Retardant  
 NF C32-070-2.1(C2)  
 IEC60332-1-2/EN50265-2-1



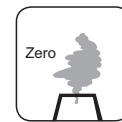
Low Toxicity  
 EN 50305; NF X70-100/NF  
 F63 808/TM1-04/BS 6853



Low Corrosivity  
 IEC60754-2/EN50267-2-2/3  
 NF C32-074/NF C20-453



Low Smoke Emission  
 IEC 61034-2 / EN 50268-2  
 NF C32-073/NF C 20-902



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