



## Power Cables



### Applications

Tyco Electronics offers a range of flexible Raychem power cables that are insulated and jacketed using materials that provide improved performance over other materials, such as CSP/EPR, silicone, or PCP/Butyl. Four different types of cable are available:

**Type TR** is a general purpose, single-wall, 125°C construction normally specified for use inside cabinets in protected areas.

**Type ZHI** is a halogen-free 105°C cable with good oil resistance. It is particularly suitable for use in offshore, ship, and mass transit applications where low-fire-hazard performance is required. Refer to Raychem specification WCD 2015.

**Type FTR** is a dual-wall, 125°C, diesel-oil-resistant cable originally developed for tank engine compartment applications. It meets the German BWB VG 952 18 specification. Refer to Raychem specification WCD 2002.

**Type AFR** is a 105°C, single-extrusion, abrasion-resistant, flame- and fuel-resistant, radiation-crosslinked polyolefin.

Each offers particular advantages for specific applications and each is also available in multiconductor constructions and screened and jacketed versions. Cables offer size and weight savings, good resistance to abrasion and cut-through, and the ability to operate in difficult environments.

### Features and benefits

- Choice of jacket materials.
- -55°C to 125°C.
- Size and weight savings.
- Excellent flexibility.
- Resistance to solvents and chemicals.

#### Available in:

Americas



Europe



Asia Pacific



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Series	Agency	Military	Raychem
TR		Def. Stan. 61-12 Part 31 (jacket material)	WCD 2003, WCD 51/160
ZHI			WCD 2015
FTR		BWB VG 952 18 Types G, H, and K	WCD 2002
AFR			WCD 2011, WCD 51/160

\*See specifications listed for details of performance.

**Conductors (tinned soft copper)**

Conductor size mm <sup>2</sup>	Stranding IEC Class 5		IEC Class 6		Max. resistance at 20°C in Ω/km (Ω/1000 ft) Class 5/6
	no. x mm	Nom. dia. (mm/in)	no. x mm	Nom. dia. (mm/in)	
1.5	30 x 0.25	1.49 (.05)	85 x 0.15	1.53 (.06)	13.20 (4.02)
2.5	50 x 0.25	1.90 (.07)	140 x 0.15	2.40 (.09)	7.82 (2.38)
4.0	56 x 0.30	2.49 (.10)	228 x 0.15	2.90 (.11)	4.85 (1.48)
6.0	84 x 0.30	3.00 (.12)	189 x 0.20	3.60 (.14)	3.23 (0.98)
10.0	80 x 0.40	4.60 (.18)	324 x 0.20	4.55 (.18)	1.88 (0.57)
16.0	126 x 0.40	5.70 (.22)	513 x 0.20	5.50 (.22)	1.19 (0.36)
25.0	196 x 0.40	7.10 (.28)	783 x 0.20	7.30 (.29)	0.78 (0.24)
35.0	276 x 0.40	8.50 (.33)	1107 x 0.20	8.55 (.34)	0.55 (0.17)
50.0	396 x 0.40	10.30 (.41)	702 x 0.30	10.15 (.40)	0.39 (0.12)
70.0	360 x 0.50	12.40 (.49)	999 x 0.30	12.00 (.47)	0.27 (0.08)
95.0	475 x 0.50	14.50 (.57)	1332 x 0.30	14.05 (.55)	0.20 (0.06)
120.0	608 x 0.50	16.00 (.63)	1702 x 0.30	16.30 (.64)	0.15 (0.05)
150.0	777 x 0.50	18.00 (.71)	2109 x 0.30	17.40 (.68)	0.13 (0.04)
185.0	925 x 0.50	20.00 (.79)	2590 x 0.30	20.00 (.79)	0.10 (0.030)
240.0	1221 x 0.50	23.00 (.91)			0.08 (0.024)
300.0	1554 x 0.50	26.00 (1.0)			0.06 (0.018)
400.0	2035 x 0.50	30.00 (1.2)			0.05 (0.015)

## Note:

Types TR and FTR use IEC Class 6 conductors.

Types ZHI and AFR use IEC Class 5 conductors.

# Power Cables (cont'd.)

## Materials performance summary

Material	Tensile strength N/mm <sup>2</sup> typical	Abrasion resistance	Cut through	Temperature rating °C 10000 h	Preferred color
TR	20	Excellent	Good	125	Black
ZHI	9	Good	Very Good	105	Black
FTR	18	Good	Good	125	Black
AFR	18	Excellent	Very Good	105	Grey

Note: Where a higher operating temperature is required, Raychem SPEC 55 provides outstanding performance up to 200°C continuous operating temperature. For these or other special applications, please contact Tyco Electronics.

**Table 1. Nominal diameters and maximum weights**

Cable type						
TR 16				FTR 16		
Conductor size (mm <sup>2</sup> )	Part no.	Nom. OD in mm (in)	Max. weight in kg/km (lb/1000 ft)	Part no.	Nom. OD in mm (in)	Max. weight in kg/km (lb/1000 ft)
1.5						
2.5	TR 16 -2.5	3.9 (.15)	34.0 (22.8)			
4.0	-4	4.5 (.17)	51.0 (34.2)	FTR 16 -4	5.6 (.22)	69.0 (46.2)
6.0	-6	5.2 (.20)	73.0 (48.9)	-6	6.3 (.25)	94.0 (63.0)
10.0	-10	6.2 (.24)	117.0 (78.4)	-10	7.5 (.29)	147.0 (98.5)
16.0	-16	7.4 (.29)	182.0 (121.9)	-16	8.8 (.35)	220.0 (147.4)
25.0	-25	9.3 (.37)	274.0 (183.6)	-25	10.7 (.42)	323.0 (216.4)
35.0	-35	10.6 (.42)	383.0 (256.6)	-35	12.1 (.48)	444.0 (297.5)
50.0	-50	12.5 (.49)	542.0 (363.1)	-50	14.0 (.55)	619.0 (414.7)
70.0	-70	14.6 (.57)	765.0 (512.6)	-70	16.2 (.64)	861.0 (576.9)
95.0	-95	17.0 (.67)	1020.0 (683.4)	-95	18.8 (.74)	1148.0 (769.2)
120.0				-120	21.3 (.84)	1484.0 (994.3)
150.0						
185.0						
240.0						
300.0						
400.0						

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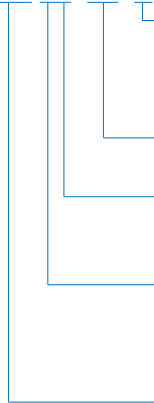
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Visit our website at [www.tycoelectronics.com](http://www.tycoelectronics.com)**Table 2. Nominal diameters and maximum weights**

Cable type						
ZHI 15		AFR 35				
Conductor size (mm <sup>2</sup> )	Part no. in	Nom. OD mm (in)	Max. weight in kg/km (lb/1000 ft)	Part no.	Nom. OD in mm (in)	Max. weight in kg/km (lb/1000 ft)
1.5	ZHI 15 -1.5	4.09 (.16)	33.5 (22.4)	AFR 35 -1.5	2.8 (.11)	31.0 (20.8)
2.5	-2.5	4.69 (.18)	48.8 (32.7)	-2.5	3.9 (.15)	42.0 (28.1)
4.0	-4	5.49 (.22)	72.1 (48.3)	-4	4.8 (.19)	61.0 (40.9)
6.0	-6	6.16 (.24)	99.8 (66.9)	-6	6.2 (.24)	92.0 (61.6)
10.0	-10	8.20 (.32)	159.0 (106.5)	-10	7.0 (.28)	143.0 (95.8)
16.0	-16	9.30 (.37)	223.0 (149.4)	-16	8.1 (.32)	211.0 (141.1)
25.0	-25	10.90 (.43)	331.0 (221.8)	-25	10.3 (.41)	333.0 (223.1)
35.0	-35	12.30 (.48)	448.0 (300.2)	-35	11.7 (.46)	452.0 (302.8)
50.0	-50	14.70 (.58)	631.0 (422.8)	-50	13.7 (.54)	634.0 (424.8)
70.0	-70	16.80 (.66)	852.0 (570.8)	-70	16.0 (.63)	885.0 (593.0)
95.0	-95	19.10 (.75)	1108.0 (742.4)	-95	18.5 (.73)	1165.0 (780.6)
120.0	-120	21.00 (.83)	1438.0 (963.5)	-120	20.4 (.80)	1480.0 (991.6)
150.0	-150	23.00 (.91)	1748.0 (1171.2)	-150	22.6 (.89)	1825.0 (1222.8)
185.0	-185	25.60 (1.01)	2088.0 (1399.0)	-185	24.8 (.98)	2215.0 (1484.1)
240.0	-240	28.60 (1.13)	2705.0 (1812.4)	-240	27.8 (1.1)	2875.0 (1926.3)
300.0	-300	32.00 (1.26)	3363.0 (2253.2)	-300	32.0 (1.2)	3645.0 (2442.2)
400.0	-400	36.40 (1.43)	4396.0 (2945.3)	-400	36.0 (1.4)	4730.0 (3169.1)

**Part numbering system**

XXX XX - XX - X

**Standard colors**

0 = Black 8 = Gray

**Conductor cross section**(1.5 to 400 mm<sup>2</sup>)**Conductor type**

5 = IEC Class 5 - Flexible 6 = IEC Class 6 - Very flexible

**Voltage rating**1 = 600/1000 V  
3 = 1900/3300 V**Insulating type**TR  
FTR  
ZHI  
AF