



Copper sheathed, mineral insulated, fire-rated wiring cable

Pyrotenax® fire-rated mineral insulated (MI) wiring cables provide protection of critical processes and systems in non-hydrocarbon environments in both nonhazardous and hazardous locations. In addition, System 1850™ wiring cables are also used as an alternative to traditional conduit and wire methods when a gas path block is required.

System 1850 wiring cable is constructed with a copper sheath and solid copper conductors which allows continuous exposure temperatures to 482°F (250°C) and temperature excursions to 1850°F (1010°C). An optional high density polyethylene (HDPE) jacket provides additional protection where corrosives may be present.

Bare copper MI cable is made of inorganic materials and provides zero smoke generation, zero fuel contribution, and zero flame

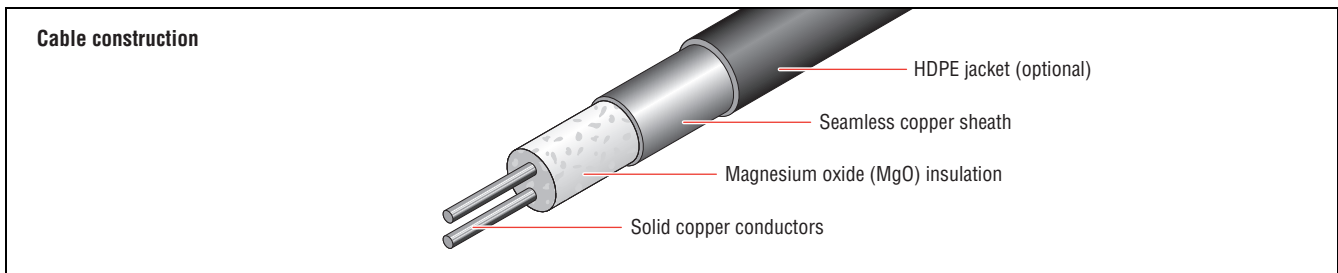
spread. Highly compacted MgO insulation prevents the flow and transmission of explosive gases through the wiring cables.

System 1850 MI cable may be used for power, control, and communication wiring in the following environments:

- Petrochemical and mining – in hazardous areas to provide a gas path block
- Manufacturing – to provide a gas path block for fuel pumps, paint shops, etc.; in areas of extreme heat in the vicinity of furnaces, etc.
- Tunnels and confined spaces – MI cables do not burn; no smoke generated
- Nuclear & fossil fuel power generation plants – for wiring to equipment where heat or radiation may be of concern
- Pulp and paper – where corrosives are present

System 1850 wiring cable is typically supplied as a factory assembled Duoterm™ unit complete with terminations at each end, allowing for immediate installation in the field. In hazardous areas, the simplified installation of MI cable means that conduit systems and explosion proof seals are not required; simply connect the cable directly to the equipment or junction box.

Pyrotenax System 1850 wiring cable has a two hour fire rating per UL 2196 measured against the ASTM E-119 time temperature curve, and meets the requirements of national electrical codes. For more information on factory assembled Duoterm units, or for additional information on bulk cable and field installed terminations, contact your Tyco Thermal Controls representative or call Tyco Thermal Controls at (800) 545-6258.



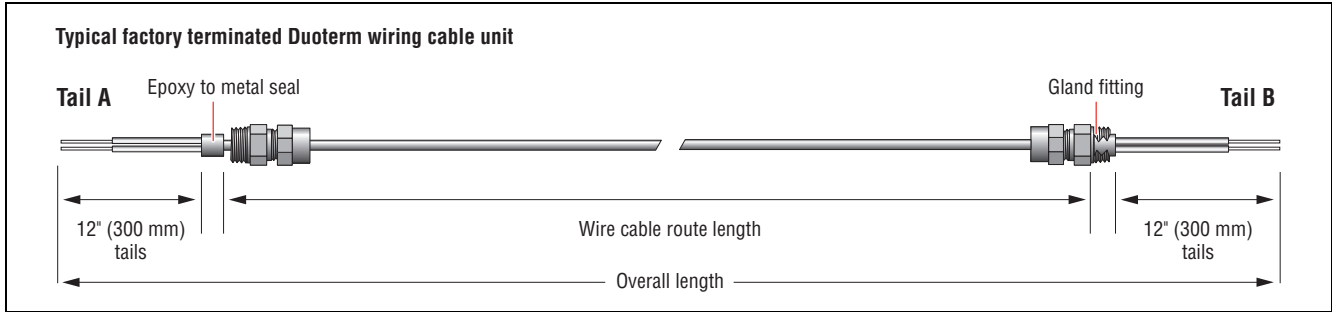
Cable Construction

Sheath	Seamless copper (HDPE jacket optional)
Insulation	Magnesium oxide (MgO)
Conductor type	Copper
Insulation voltage rating	600 V
Conductor size	16 AWG – 1 AWG
Number of conductors	1, 2, 3, 4, or 7 standard (Contact Tyco Thermal Controls for custom configurations)

Cable Temperature Rating

	Copper sheath	HDPE jacket
Continuous exposure temperature	482°F (250°C)	194°F (90°C)
Maximum exposure temperature	1850°F (1010°C)	1850°F (1010°C)*

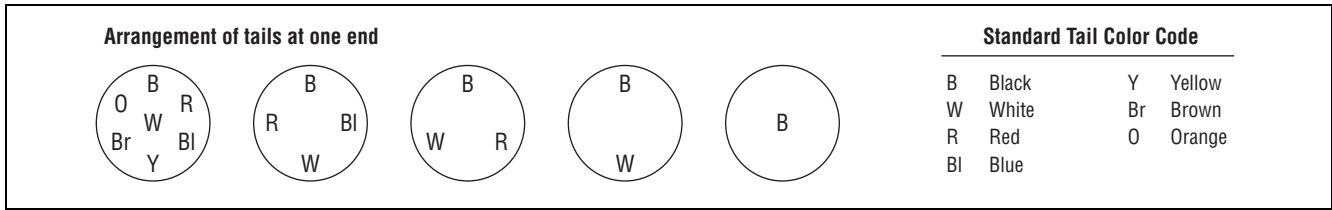
* HDPE jacket is sacrificed under fire conditions.



Termination Construction

Gland fitting	Brass	
Potting material	Epoxy resin	
Tails		
Standard tail length	12 in (300 mm) (Please specify if longer tail lengths are necessary)	
Maximum exposure temperature ¹	Nonhazardous	Hazardous
MFA insulated stranded wire	248°F (120°C); 392°F (200°C) optional	248°F (120°C); 302°F (150°C) optional
PVC sleeving	220°F (105°C)	220°F (105°C)
Size	16 AWG – 1AWG	

¹ For factory assembled Duoterm units, MFA insulated stranded wire tails are standard unless otherwise noted in table below. For field installed terminations, solid wire tails with PVC sleeving is standard.



600 V Wiring Cable Specifications

Conductor size (AWG)	Allowable ampacity 75°C, NEC (amps)	Allowable ampacity 75°C, CEC (amps)	Cable reference number	Nominal coil length ² (ft / (m))	Nominal weight (lb/1000 ft / (kg/km))	NPT gland size (in)
Single conductor						
16	–	–	1/16-215	3086 / (941)	84 / (125)	1/2
14	30	20	1/14-230	2708 / (826)	98 / (146)	1/2
12	35	25	1/12-246	2384 / (727)	117 / (174)	1/2
10	50	40	1/10-277	1742 / (531)	154 / (229)	1/2
8	70	65	1/8-298	1519 / (463)	179 / (266)	1/2
6	95	95	1/6-340	1178 / (359)	236 / (351)	1/2
4 ³	125	125	1/4-402	818 / (249)	332 / (494)	1/2
3 ⁴	145	145	1/3-449	665 / (203)	409 / (609)	3/4
2 ⁴	170	170	1/2-449	665 / (203)	444 / (661)	3/4
1 ⁴	195	195	1/1-496	546 / (166)	492 / (732)	3/4

600 V Wiring Cable Specifications

Conductor size (AWG)	Allowable ampacity 75°C, NEC (amps)	Allowable ampacity 75°C, CEC (amps)	Cable reference number	Nominal coil length ² (ft / (m))	Nominal weight (lb/1000 ft / (kg/km))	NPT gland size (in)
Two conductor						
16	–	–	2/16-340	1095 / (334)	189 / (281)	1/2
14	20	15	2/14-371	956 / (291)	236 / (351)	1/2
12	25	20	2/12-402	788 / (240)	275 / (409)	1/2
10	35	30	2/10-449	635 / (194)	353 / (525)	3/4
8	50	45	2/8-512	475 / (145)	473 / (704)	3/4
6	65	65	2/6-590	360 / (110)	663 / (986)	3/4
4 ³	85	85	2/4-684	407 / (124)	877 / (1305)	1
3 ⁴	100	100	2/3-768	323 / (98)	1067 / (1587)	1-1/4
2 ⁴	115	115	2/2-865	255 / (78)	1353 / (2013)	1-1/4
1 ⁴	130	130	2/1-975	201 / (61)	1717 / (2555)	1-1/4
Three conductor						
16	–	–	3/16-355	1008 / (307)	210 / (312)	1/2
14	20	15	3/14-387	851 / (259)	257 / (382)	1/2
12	25	20	3/12-480	554 / (169)	395 / (588)	3/4
10	35	30	3/10-480	559 / (170)	419 / (623)	3/4
8	50	45	3/8-590	370 / (113)	637 / (948)	3/4
6	65	65	3/6-621	329 / (100)	738 / (1098)	3/4
4 ³	85	85	3/4-746	228 / (70)	1079 / (1606)	1-1/4
3 ⁴	100	100	3/3-834	182 / (55)	1339 / (1993)	1-1/4
Four conductor						
16	–	–	4/16-387	895 / (273)	254 / (378)	1/2
14	20 ⁵	15 ⁵	4/14-465	589 / (180)	366 / (545)	3/4
12	25 ⁵	20 ⁵	4/12-465	575 / (175)	376 / (559)	3/4
10	35 ⁵	30 ⁵	4/10-590	357 / (109)	606 / (902)	3/4
8	50 ⁵	45 ⁵	4/8-590	363 / (111)	658 / (979)	3/4
6	65 ⁵	65 ⁵	4/6-730	237 / (72)	1008 / (1500)	1-1/4
Seven conductor						
16	–	–	7/16-449	613 / (187)	338 / (503)	3/4
14	20 ⁵	15 ⁵	7/14-496	505 / (154)	428 / (637)	3/4
12	25 ⁵	20 ⁵	7/12-543	424 / (129)	528 / (786)	3/4
10	35 ⁵	30 ⁵	7/10-621	327 / (100)	716 / (1065)	1
8	50 ⁵	45 ⁵	7/8-710	252 / (77)	982 / (1461)	1-1/4

² For longer lengths, please contact Tyco Thermal Controls.

³ For factory assembled Duoterm units, tail is stranded wire with PVC sleeving.

⁴ For factory assembled Duoterm units, tail is solid wire with PVC sleeving.

⁵ Based on 3 conductors supplying current to the load; other conductor(s) used as neutral or for control signal. Derating factors apply if 4 or more conductors are used as current-carrying conductors.

Note: To obtain cable diameter: use last three digits in the cable reference number and move decimal point three places to the left; result is cable diameter in inches. Example: cable reference 4/12-465 is 0.465" diameter.

Approvals

Bulk Cable



Ordinary Locations

Hazardous Locations

Class I, Div. 1 and 2, Groups A, B, C, D
Class II, Div. 1 and 2, Groups E, F, G
Class III, Div. 1 and 2



Ordinary Locations

Hazardous Locations

Class I, Div. 1 and 2, Groups A, B, C, D
Class II, Div. 1 and 2, Groups E, F, G
Class III, Div. 1 and 2

Factory Assembled Duoterm Units and Field Installed Termination Kits



Ordinary Locations

Hazardous Locations

Class I, Div. 1 and 2, Groups A, B, C, D
Class II, Div. 1 and 2, Groups E, F, G
Class III, Div. 1 and 2

Note: Approvals shown for Factory Assembled Duoterm Units and Field Installed Termination Kits applies to cables terminated with manufacturer supplied epoxy seal. Contact Tyco Thermal Controls for approvals on other available termination kits.

Additional Performance Information for MI Cable

- Passes IEC 60331 flame test – modified to 1100°C (2000°F) for 4 hours (normally 750°C or 830°C) with mechanical shock every 30 seconds.

Note: Caution should be exercised when comparing open flame tests with enclosed furnace tests as the heat flux conditions are very different.

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