



Alloy 825 sheathed, mineral insulated, fire-rated wiring cable

Pyrotex® fire-rated mineral insulated (MI) wiring cables facilitate the controlled shutdown of critical processes and systems in the event of a hydrocarbon flash fire in both nonhazardous and hazardous locations.

Using the electrical test procedure described in UL2196, System 2000™ MI cable maintains electrical circuit integrity for 30 minutes during exposure to the UL 1709 fire test. The UL 1709 test, referenced in API 2218, replicates an intense hydrocarbon fire, reaching 2000°F (1093°C) in 5 minutes when subjected to a heat flux of 65,000 BTU/ft² hr (200 kW/m²) in an enclosed furnace.

System 2000 wiring cable is constructed with an Alloy 825 sheath and nickel-clad copper conductors that allow continuous exposure temperatures to 1238°F (670°C) and withstand rapid-rise temperature excursions to 2000°F (1093°C). In addition,

the sheath provides durability in areas where corrosives may be present, and the nickel-clad copper conductors permit higher current ratings compared with nickel conductors.

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.

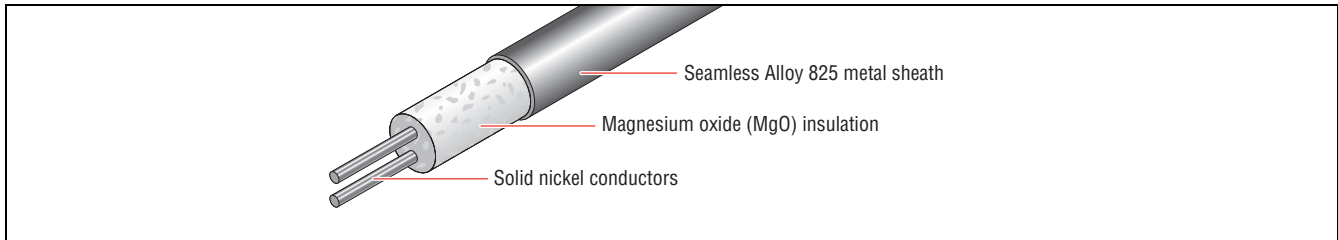
System 2000 MI cable may be used for power, control, and communication wiring in the following environments:

- Petrochemical – to protect critical systems in the event of a hydrocarbon flash fire
- Petrochemical and mining – in hazardous areas to provide a gas path block
- Manufacturing – in areas of extreme heat, around furnaces, etc.
- Tunnels and confined spaces – MI cables do not burn; no smoke generated

- Nuclear and 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 2000 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.

Pyrotex System 2000 meets the requirements of national electrical codes. For additional information on factory-assembled Duoterm units or bulk cable and field installed terminations, contact your Tyco Thermal Controls representative or call Tyco Thermal Controls at (800) 545-6258.

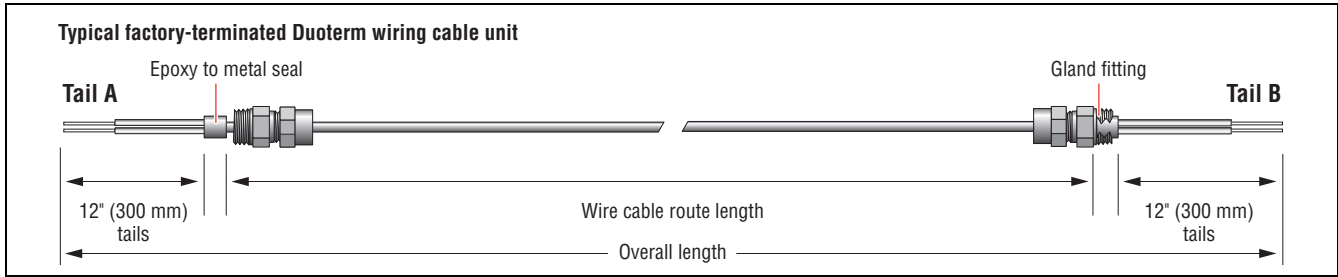


Cable Construction

Sheath	Seamless Alloy 825
Insulation	Magnesium oxide (MgO)
Conductor type	Nickel-clad copper
Insulation voltage rating	600 V
Conductor size	16 AWG – 2 AWG (Physical conductor size is larger due to nickel cladding; see the table titled “600 V Wiring Cable Specifications,” on page 2)
Number of conductors	1, 2, 3, 4, or 7 standard (Contact Tyco Thermal Controls for custom configurations.)

Cable Temperature Rating

Continuous exposure temperature	1238°F (670°C)
Maximum exposure temperature	2000°F (1093°C)

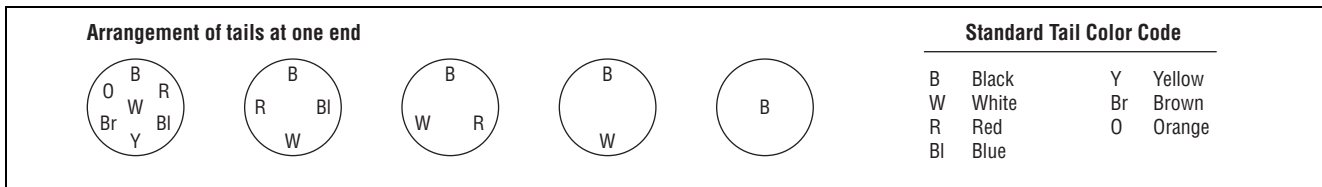


Termination Construction

Gland fitting	Stainless steel
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 ²	16 AWG - 1 AWG

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.

² For field installed terminations, tail size is the same size as the physical conductor size (see the table titled “600 V Wiring Cable Specifications,” on page 2).



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 ³ [ft/(m)]	Nominal weight [lb/1000 ft/ (kg/km)]	NPT gland size (in)	Physical conductor size (AWG)
Single conductor							
14	30	20	253-14/1NC825	1967/ (600)	111/ (165)	1/2	13
12	35	25	286-12/1NC825	1547/ (472)	146/ (217)	1/2	11
10	50	40	319-10/1NC825	1253/ (382)	189/ (281)	1/2	9
8	70	65	355-8/1NC825	1018/ (310)	241/ (359)	1/2	7
6	95	95	387-6/1NC825	868/ (265)	306/ (455)	1/2	5
4 ⁴	125	125	434-4/1NC825	700/ (213)	409/ (609)	3/4	3
3 ⁵	145	145	480-3/1NC825	573/ (175)	505/ (751)	3/4	2
2 ⁵	170	170	527-2/1NC825	477/ (145)	615/ (915)	3/4	1
Two conductor							
14	20	15	418-14/2NC825	718/ (219)	297/ (442)	3/4	13
12	25	20	465-12/2NC825	582/ (177)	376/ (559)	3/4	11
10	35	30	527-10/2NC825	455/ (139)	493/ (733)	3/4	9
8	50	45	590-8/2NC825	364/ (111)	631/ (939)	1	7
Three conductor							
16	—	—	418-16/3NC825	717/ (219)	296/ (440)	3/4	15
14	20	15	465-14/3NC825	581/ (177)	374/ (556)	3/4	13
12	25	20	496-12/3NC825	514/ (157)	441/ (656)	3/4	11
10	35	30	543-10/3NC825	431/ (131)	543/ (808)	3/4	9
8	50	45	637-8/3NC825	316/ (96)	768/ (1145)	1	7

600 V Wiring Cable Specifications (Continued)

Conductor size (AWG)	Allowable ampacity 75°C, NEC (amps)	Allowable ampacity 75°C, CEC (amps)	Cable reference number	Nominal coil length ³ [ft/(m)]	Nominal weight [lb/1000 ft/ (kg/km)]	NPT gland size (in)	Physical conductor size (AWG)
Four conductor							
14	20 ⁶	15 ⁶	496-14/4NC825	512/ (156)	432/ (643)	3/4	13
12	25 ⁶	20 ⁶	527-12/4NC825	457/ (139)	505/ (751)	3/4	11
10	35 ⁶	30 ⁶	590-10/4NC825	367/ (112)	651/ (969)	1	9
8	50 ⁶	45 ⁶	684-8/4NC825	274/ (84)	901/(1341)	1	7
Seven conductor							
14	20 ⁶	15 ⁶	590-14/7NC825	364/ (111)	629/ (936)	1	13
12	25 ⁶	20 ⁶	637-12/7NC825	315/ (96)	760/(1131)	1	11

³ For longer lengths, please contact Tyco Thermal Controls.

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

⁵ For factory assembled Duoterm units, tail is solid wire with PVC sleeving and is same size as Physical conductor size.

⁶ 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 first 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 637-12/7NC825 is 0.637" 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



American Bureau of Shipping Type Approved

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.



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Additional Performance Information for MI Cable

Passes IEC 60331 flame test – modified to 1100°C (2000°F) for 3 hours (normally 750°C or 830°C) with mechanical shock every 5 minutes.

Passes customer specified rapid rise open flame test for 45 minutes at 1100°C (2000°F).

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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