




Raychem[®]

PYROTENAX

**COMMERCIAL FIRE-RATED
WIRING SYSTEMS**

THERMAL BUILDING SOLUTIONS

 @pentairTBS

WWW.PENTAIRTHERMAL.COM



BUILDING & INFRASTRUCTURE SOLUTIONS

We provide quality solutions for winter safety, comfort and performance to building and infrastructure design, construction, operation and maintenance professionals. From pipe freeze protection to maintaining fluid temperatures and melting snow, detecting leaks, heating floors, maintaining critical circuits with fire-rated and specialty cables, you can rely on Pentair Thermal Building Solutions' & services for greater safety, comfort and performance.

THE HEART OF OUR SOLUTIONS

For over 75 years, Pyrotenax brand mineral insulated products have satisfied the unique requirements of the wiring and heating industries.

Pentair Thermal Building Solutions offers a unique product—Pyrotenax brand Mineral Insulated (MI) wiring cable—for the safe operation of critical emergency circuits. These circuits are essential for the safe evacuation of buildings and to continue firefighters' efforts during an emergency. Typical fire-rated applications include wiring for fire pumps, emergency generators, firefighters' elevators and smoke extraction fans.

Other applications include the retrofitting of electrical power feeders in commercial buildings due to increased power consumption and the elimination of the effects of electromagnetic interference (caused by high current feeders) on electronic equipment.

PYROTENAX

FIRE-RATED SYSTEMS

High-rise buildings, hospitals, airports, and tunnels are locations where fires can be costly and deadly if the emergency systems in place do not operate properly. Pentair fire-rated cables will operate for at least 2 hours under fire conditions to allow for the continued operation of life safety equipment and the safe evacuation of the facility.

SPECIALTY WIRING SYSTEMS

Mineral Insulated cable technology for special applications include hollow conductor cable systems for high current particle accelerator applications, patented systems for eliminating electromagnetic interference, and systems for introducing utility services into a building using MI cable instead of concrete encasement of the service conductors. Historic and commercial building retrofits are typical applications where the space for electrical wiring is limited. Pentair non-fire-rated cables and service entrance systems are small in profile and unobtrusive, providing the perfect solution for these applications.

Pentair Thermal Building Solutions' wiring systems can be found in commercial applications worldwide:

Rockefeller Center, USA • Riyadh University Hospital, Saudi Arabia
• U.S. Capitol Building, USA • Stuttgart International Airport, Germany
• NYC Museum of Natural History, USA • Heathrow International Airport, UK
• Harvard University, USA • NYU Medical Center, USA • Montreal Metro, CA
• Brussels Metro, Belgium • Pentagon Building, USA • Wing Lung Bank, Hong Kong
• Yankee Stadium, USA • Buckingham Palace, UK • The White House, USA
• Vienna Metro, Austria • Texas Medical Center, USA • Dublin Airport, Ireland
• Los Angeles City Hall, USA • Channel Tunnel, UK



Tunnels



Airports

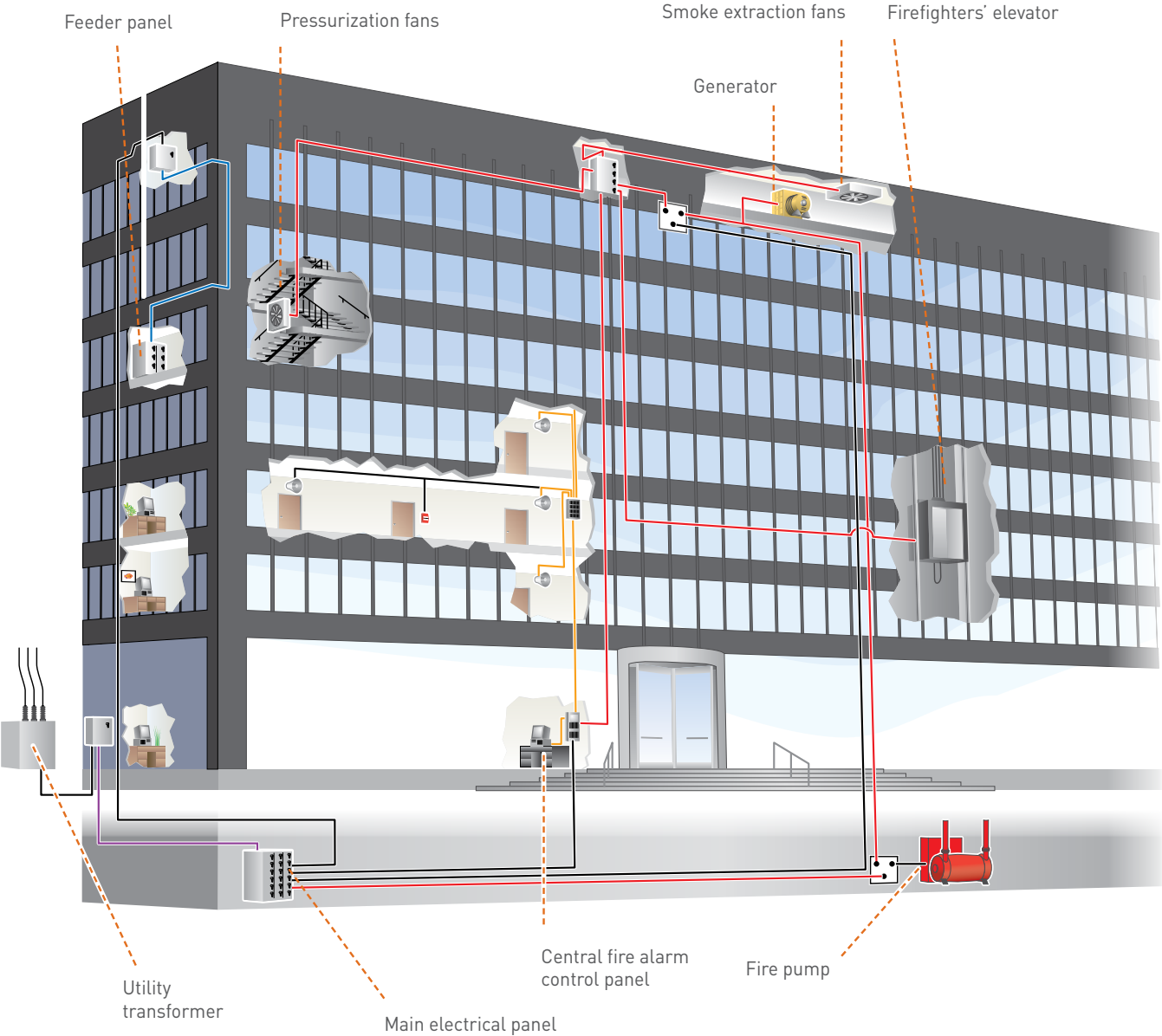


Hospitals



High-rise buildings

APPLICATIONS



TYPICAL WIRING SYSTEMS IN A HIGH-RISE BUILDING



FIRE-RATED CABLE SYSTEM

Power Cables ■■■■

Fire Alarm Cables ■■■■

For all critical life safety circuits fed by the emergency supply including: the fire pump, fire alarm system, smoke extraction fans, pressurization fans, and power for the firefighters' elevator.

SPACE SAVING CABLE SYSTEM ■■■■

For the retrofitting of power feeders in locations where space is limited and difficult installation conditions exist.

SERVICE ENTRANCE CABLE SYSTEM ■■■■

For the retrofit of service entrance feeders when additional power is needed and where encasement of conventional conductors in concrete is not feasible.

NORMAL POWER CABLES ■■■■

Standard power feeders throughout the building.

WIRING SYSTEMS



FIRE-RATED CABLE SYSTEM

PYROTENAX SYSTEM 1850

A UL Classified/ ULC Listed 2-hour fire-rated, mineral insulated, copper-sheathed power cable for protection of critical life safety circuits.



SPACE SAVING CABLE SYSTEM

PYROTENAX SYSTEM 1850

Pyrotenax System 1850 mineral insulated, copper-sheathed wiring cable is an ideal alternative for retrofitting feeders in buildings and for ease of installation in tight spaces and difficult runs.



Space saving MI cable vs conduit & wire



SERVICE ENTRANCE SYSTEM

PYROTENAX SYSTEM 1850-SE

A UL Classified 2-hour fire-rated, mineral insulated, copper-sheathed service entrance cable system that allows service entrance conductors to be routed inside the building.

This system is designed as an alternative to concrete encasement for service conductors. Where conditions make concrete encasement difficult or impractical, Authorities Having Jurisdiction (AHJs) have accepted this system as an alternative to concrete encasement.



WIRING TECHNOLOGY



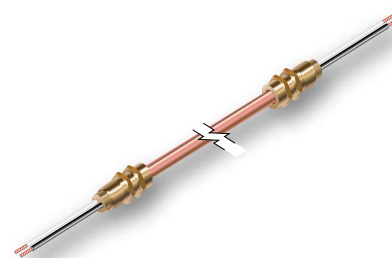
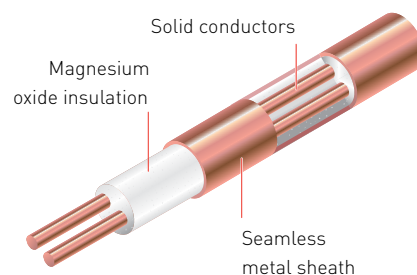
MINERAL INSULATED TECHNOLOGY

Using only inorganic materials, copper and magnesium oxide (MgO), Pyrotenax Mineral Insulated (MI) wiring cable offers a unique combination of dependability, versatility, and performance. Highly compacted magnesium oxide insulation provides exceptional temperature and electrical performance. Manufactured using a process unique to the Pyrotenax brand, this product has set the standard for fire-rated electrical cables worldwide.

Pyrotenax mineral insulated cable is listed in the NEC/CEC as "Type MI" and is available in 1, 2, 3, 4 and 7 conductor configurations in a range of sizes between 18 AWG and 500 kcmil.

Pyrotenax mineral insulated wiring cable offers unique fire survival properties as well as small size and enhanced ampacity capability.

Designed to specified length tolerances, Pyrotenax MI factory terminated cables are ideal for a wide variety of wiring applications including hazardous locations and areas where the space for electrical wiring is limited.



THE BENCHMARK OF SAFETY AND RELIABILITY

The traditional method of fire protection of electrical cables in emergency circuits (encasement of non-fire-rated cables in 2 inches of concrete) was accepted as suitable for 1-hour protection, but is hardly adequate for today's 2-hour requirement. Encasement of cables in concrete is not a listed method, and in fact Fig 19.2.7 (reproduced below) in the 2008 NFPA Fire Protection Handbook clearly shows that it is not suitable. Codes will eventually change to reflect this reality, but it will take time—meanwhile, designers be aware!



4 inches of concrete minimum for 2-hour fire resistance of a concrete slab

Dotted line: regular aggregates

Solid line: lightweight aggregates



FM Approvals GP-1
2-Hour Fire Resistant Cable

Fire-rated electrical cables are UL Classified/ULC Listed as 2-hour fire-rated if they successfully pass the ANSI/UL 2196 and ULC-S139 fire test standards, which require that circuit integrity be maintained throughout a fire test that reaches 1850°F over a two hour period, followed by the full force of a firefighter's hose-stream.

In 2012, Underwriters Laboratories conducted research testing on polymer-insulated fire-rated cables and found serious problems with the cable designs, so much so that based on that research they made a decision to de-certify all fire-rated cables. MI cable, being a different technology and not subject to the issues with polymer cables was quickly re-instated by UL and ULC with a new System identifier ("System 1850") in UL/ULC categories FHIT/FHITC.

You can trust Pyrotenax fire-rated cable, the original, and the best solution for protection of life safety circuits. The totally inorganic construction of unjacketed System 1850 MI cable allows for an environmentally clean electrical cable that does not burn, produce smoke, or contribute fuel when exposed to fire conditions.



FEATURES

BENEFITS

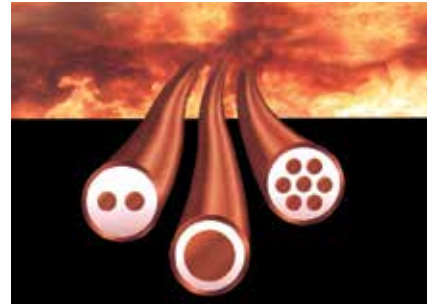
	SYSTEM 1850	SYSTEM 1850-SE
2-hour fire rated	•	•
No conduit required	•	•
Zero smoke, zero flame spread	•	•
Vertical strength in fire	•	•
Space savings	•	•
Free air ampacity	•	•
One pull system	•	
30-year extended warranty	•	•
Wet location	•	•
Fire-rated spliced available	•	N/A

N/A = Not Applicable

REASONS TO CHOOSE PENTAIR THERMAL BUILDING SOLUTIONS WIRING SYSTEMS

FIRE RATED

It is critical that circuits involving life safety and firefighting efforts remain operable during an emergency. These circuits provide power for emergency equipment, fire pumps, pressurization fans and fire alarm systems. Pyrotenax fire-rated cables are designed to operate for at least 2 hours under fire conditions to allow for the continued operation of life safety equipment and the safe evacuation of the facility.



SINGLE CONDUCTOR ADVANTAGES

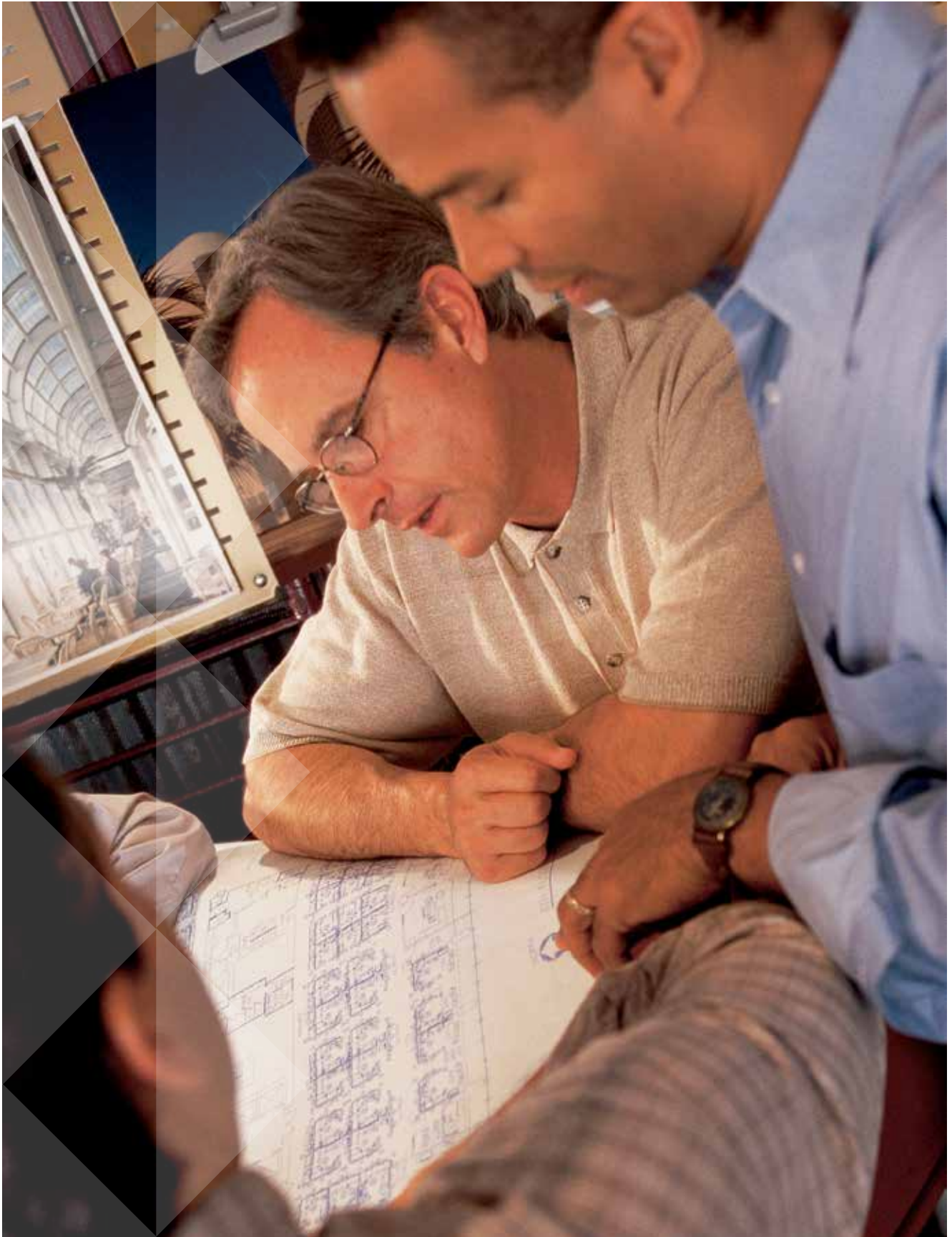
Single conductor Pyrotenax MI cables require no conduit, allowing for as much as 80% space savings over conduit and wire. In addition, the NEC and CEC allow bundled single-conductor MI cable to be operated at higher ampacities, resulting in significant savings in materials and installation costs, especially in short runs.



FREE AIR RATING

The inorganic construction of Pyrotenax MI wiring cables means that there is virtually no aging of the cable. This allows Pyrotenax MI wiring cables to operate at higher ampacities than conventional wiring, resulting in significant cost savings in materials and installation (especially in shorter runs).





SERVICES AND SUPPORT



FIELD AND TECHNICAL SUPPORT

With years of experience, Pentair field service engineers are highly qualified to offer field support, advice, and training at all stages of a project. Backed by expert factory engineering support, the service is available worldwide.

EXPERTISE IN LIFE SAFETY CIRCUITS

Pentair has been at the forefront in the development of life safety wiring systems for many years. Our engineering expertise is frequently called upon to consult on critical applications, create technical product standards and to revise national and local codes. Our specialists can help you with your specification needs as well.

UNIQUE SOLUTIONS

The construction of Pyrotenax MI wiring cable lends itself to a variety of applications that would be difficult or impossible to solve otherwise. Examples include using the MI cable sheath and a compensator to eliminate magnetic fields around the MI cables, as well as using hollow conductors to allow circulation of coolant to limit temperature rise at high current densities in particle accelerator applications.

ISO Certification

Pentair maintains an ISO 9001:2008 registered Quality Management System and 14001:2004 Environmental Management Systems at its MI cable manufacturing facility. The Quality Management System covers all manufacturing and business processes and the Environmental Management Systems ensures sound environmental performance.

Six Sigma

Understanding and satisfying the needs of our customers is important to Pentair. We have a customer-focused, data-driven Six Sigma program to continuously improve the quality and delivery of our products, services, and business processes.

On Time Delivery

Pentair consistently meets customer demands for product delivery. We strive to ship product from stock on the day the order is placed and for 100% on time delivery of all custom manufactured products.



WEB SERVICES AND SOFTWARE

VISIT WWW.PENTAIRTHERMAL.COM

Pentair is a world leader in heat-tracing, fire-rated and specialty wiring and sensing solutions for the oil & gas, power, food & beverage, chemical, water and other process industries, as well as for the commercial and residential construction markets. Visit our web site to download, print, browse product information, or submit a question.

ON-LINE TECHNICAL SUPPORT

On our interactive frequently asked questions and answers (FAQ) page, you'll find questions broken down by markets and product lines. If your question does not appear, simply submit a new question. A Pentair technical expert will answer your question and post it to the web site.



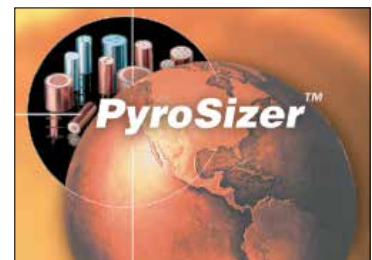
ON-LINE DESIGN TOOL

The online **Voltage Drop Calculator** allows you to estimate the voltage drop for Pyrotenax MI cable, and to determine the appropriate size of cable to use.



DOWNLOAD CABLE SIZING SOFTWARE

PyroSizer software aids in the design of critical circuits that utilize Pyrotenax MI copper cable. Enter basic project conditions on the "Project Default Parameters" screen and then simply apply these parameters to the entire project to minimize keying, and speed up design.





BEFORE YOU BUY, WEIGH THE FACTS:

Greater selection

Offering the most complete product line of proven heating technologies to better satisfy your unique needs.

More innovation

As a world leader in heating cable technologies, design optimization, construction, and control and monitoring systems, we invented many of today's industry standards.

More manufacturing experience

Quality-driven manufacturing processes, combined with years of manufacturing self-regulating and mineral-insulated cables gives you products proven to be the most reliable.

FOR PROVEN FIRE-RATED SOLUTIONS, LOOK TO THE LEADER.

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