
CASE STUDY

Installation of Mineral Insulated Cable in a Fire Pump Controller



Awaiting Replacement!

MAY 10

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Installing Mineral Insulated Cable

Issues to address when installing Mineral Insulated (MI) Cable for input power to your fire pump controller.

Request for Advice: A customer is wiring his controller. In the past, a rectangular hole was cut to mount a brass plate, which allows entry hubs for MI Cables to enter. Is this still acceptable?

Our Response: The quick answer is “No, this is not recommended or allowed.”

Consideration:

A number of issues require consideration. There are two that are basic; a multi-conductor cable in one run, or for larger current applications, single conductor cables, one for each phase, plus a ground.

Three (3) Single-conductor:

At first glance, one would simply assume you could punch three holes in the top of the cabinet, affix the outer connector, and terminate the conductors to the incoming line disconnect of the fire pump controller.

If you're old enough to remember him, Carnac The Magnificent would exclaim: ***“Oh no, mineral breath.”***

Three power conductors entering a metal enclosure will generate heat between them. Frequently an electrician will use a saw to cut a slot in the metal enclosure between each of the entry holes which will minimize the heating effect. MI Cable manufacturers offer a brass plate which has pre-cut ports to accommodate the fittings, which solve the problem in a nice way. The electrician simply needs to cut a rectangular hole to accommodate the brass plate.

Problem Solved?

Sorry, but no.

It's not that simple.

Issues to be examined:

- There is no easy method of properly sealing the brass plate from water entry, while maintaining proper grounding
- The conductors within the MI cable are solid. Solid conductors are not allowed to land on the controller incoming line disconnect. This issue holds true for multi-conductor feeds or larger single conductor method
- Transitioning solid conductor to stranded wire within the fire pump controller could be construed by some AHJs as to using the controller as a “junction box” which is contrary to NFPA20

POSSIBLE SOLUTION

Rule to Remember: 2-hour fire rated cable MUST enter the pump room by at least 12 inches

Recommendation:

- Run the mineral insulated cable at least 12 inches into the room, into a junction box
- Use a transition kit to convert to standard building stranded wire
- Run the stranded wire to the fire pump controller as standard