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Instructions for the Handling, Installation, Operation, and Maintenance of Medium Voltage Electric Fire Pump Controllers Rated Not More Than 7200V

National Electrical Manufacturers Association

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TABLE OF CONTENTS

FIGURES

Tables

FOREWORD

This publication was prepared by a technical committee of the NEMA Industrial Control and Systems Section. It was approved in accordance with the bylaws of NEMA.

This installation guide provides practical information concerning the general technical considerations in the installation of electric medium voltage fire pump controllers. It is intended to be used by specifiers, purchasers, installers, and owners of medium voltage fire pump controllers.

This installation guide represents the result of many years of research, investigation, and experience by the members of the NEMA Industrial Control and Systems Subcommittee on Fire Pump Control. It was written as a service in response to the many questions from the user public, specifiers, and inspection authorities regarding medium voltage fire pump controller installations. The intent is to pursue excellence in design, manufacture, and service of products made by NEMA member companies. It has been developed through continuing consultation among manufacturers, users, and national engineering societies. It is not intended to instruct the user of fire pump control equipment except insofar as to provide recommendations and some installation guidance.

This installation guide is necessarily confined to providing recommendations for a successful installation. When equipment conforming with these recommendations is properly selected and is installed in accordance with NFPA 70 *National Electrical Code*® and NFPA 20 *Standard for the Installation of Stationary Pumps for Fire Protection* and properly maintained, the hazards to persons and property will be reduced. However, since any piece of industrial control equipment can be installed, operated, and maintained in such a manner that hazardous conditions may result, following the recommendation of this guide does not by itself assure a safe installation.

NEMA publications are subject to periodic review. They are revised frequently to reflect user input and to meet changing conditions and technical progress. Users should secure the latest editions.

Proposed revisions to this installation guide should be submitted to:

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Section 1
GENERAL

1.1 SCOPE

These guidelines are provided to facilitate movement, handling, installation, and maintenance of medium voltage fire pump controllers at the job site and to help avoid personal injury and equipment damage during these processes. Information includes the following:

a. Handling
b. Storage
c. Installation of conduits, cables, and wires
d. Pre-energization and energization
e. Care and maintenance
f. Required field marking

1.2 PRECAUTIONS

There is a hazard of electric shock or burns to personnel resulting in injury or death whenever they are working on or near electrical equipment. Turn off power supplying this equipment before working inside the controller and lockout or tag out or both, disconnecting means in accordance with *NFPA 70E Standard for Electrical Safety in the Workplace*[*]. Where it is not feasible to de-energize the system, take the following precautions:

a. Persons working near exposed parts that are or may be energized should be instructed in and should follow the safety practices (including appropriate PPE apparel, equipment, and tools) in accordance with *NFPA 70E Standard for Electrical Safety in the Workplace*.
b. Persons working on exposed parts that are or may be energized should in addition to "a," be qualified persons who have been trained to work on energized circuits. Working on energized medium voltage equipment with the door open should be prohibited under any circumstances for safety reasons.
c. Field marking in compliance with *NEC*® 110.16 *Arc-Flash Hazard Warning* is required.
d. Medium voltage fire pump controllers may have two sources of power supply as well as alarm and auxiliary circuits energized from remote power supplies. When de-energizing the controller for servicing these power sources must be considered.

1.3 QUALIFIED PERSONNEL

The proper operation of medium voltage medium voltage fire pump controllers is dependent upon handling, installation, operation, and maintenance by qualified personnel. Failure to follow certain fundamental installation and maintenance requirements could lead to personal injury or death, the failure or loss of the medium voltage fire pump controller, or any combination thereof and damage to other property. OSHA 29 CFR Part 1910.399 defines a qualified person as "One familiar with the construction and operation of the equipment and the hazards involved." NFPA 70E Article 100 defines a qualified person as "one who has skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training on the hazards involved."

References to the *National Electrical Code*® are shown as (*NEC*®) and refer to NFPA 70.

Reference to manufacturer, unless otherwise specified, means the medium voltage fire pump controller manufacturer.

[*] Available from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.