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Application Guide for Electric Fire Pump Controllers

National Electrical Manufacturers Association

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Foreword

This Application Guide was prepared by a technical committee of the National Electrical Manufacturers Association (NEMA) Industrial Control and Systems Section. It was approved in accordance with the bylaws of NEMA.

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

This Application 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 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 continued consultation among manufacturers, users, and national engineering societies. It is not intended to instruct the user on use of fire pump control equipment except to provide recommendations and some application guidance.

This Application Guide is necessarily confined to providing recommendations for a successful installation. When equipment conforming with these recommendations is properly selected, installed in accordance with the *National Electrical Code*® (NFPA 70) and the Standard for the Installation of Stationary Pumps for Fire Protection (NFPA 20), 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 might 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 Application Guide should be submitted to:

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GENERAL

1.1 SCOPE

This Application Guide is intended to provide general guidelines for the proper application of fire pump controllers. The emphasis of these guidelines is to stress those considerations specific to fire pump installations. The latest editions and revisions of the applicable NEMA standards and the standards of other standards developing organizations should also be consulted.

1.2 REFERENCED PUBLICATIONS

IEEE 242	*IEEE Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems*
NEMA 250	*Enclosures for Electrical Equipment (1000 Volts Maximum)*
NEMA ICS 3	*Industrial Control and Systems: Medium Voltage Controllers Rated 2001 to 7200 Volts AC*
NEMA ICS 3.1	*Industrial Control and Systems. Handling, Storage and Installation Guide for AC General Purpose Contactors and Class E Controllers, 50 & 60 Hz*
NEMA ICS 15	*Instructions for the Handling, Installation, Operation and Maintenance of Electric Fire Pump Controllers Rated Not More Than 600V*
NFPA 20	*Standard for the Installation of Stationary Pumps for Fire Protection*[1]
NFPA 25	*Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*
NFPA 70	*National Electrical Code®*[2]

1.3 SPECIAL CONSIDERATIONS FOR FIRE PUMP CONTROLLERS

Installation requirements of fire pump controllers, by virtue of their special considerations, are covered in Article 695 of *the National Electrical Code®* (*NEC*)(NFPA 70); the performance, maintenance, and acceptance testing of the fire pump system and the internal wiring of system components are covered in NFPA 20. Periodic testing of the complete fire protection system is addressed in NFPA 25. These requirements are, in many significant ways, uniquely different from those pertaining to industrial, commercial, and residential installations in order to increase system reliability. As an overview, some of these differences:

a) **Service Disconnects**
   Special rules pertaining to the service disconnects in order to minimize inadvertent disconnection (NFPA 70, 695.3(A)(1), which refers to 230.82(5), 230.2, and 230.72(B)). Only one upstream disconnect and associated over current protective device is permitted (NFPA 70 695.4(B)(1)).

b) **Conductor Protection**
   1. Special overcurrent and physical protection requirements for the power supply conductors exist to minimize potential interruption during a fire (NFPA 70, 695.3(A), 695.4(B)(1), and 695.5(C)(2)).

[1] Particular attention should be given to chapters 9 and 10.
[2] Particular attention should be given to Article 695.