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SCAN FOR YOUR FREE TRIAL
Founded in 1926, the National Electrical Manufacturers Association (NEMA) is the national trade association representing nearly 325 electrical equipment and medical imaging manufacturers that make safe, reliable, and efficient products and systems. These industries produce $130 billion in shipments and $38 billion in exports of electrical equipment and medical imaging technologies per year. Our combined industries account for 370,000 American jobs in more than 6,100 facilities covering every state.

NEMA members manufacture safe, reliable, and efficient products and systems serving seven major markets:

- Building Infrastructure
- Building Systems
- Industrial Products & Systems
- Lighting Systems
- Medical Imaging
- Transportation Systems
- Utility Products & Systems

Propelled by innovators across all sectors of the electrical and medical imaging industries, NEMA member companies make the electrification of all aspects of our industrial, commercial, and residential infrastructure possible. And across more than 100 years, our industries have delivered constantly improving products as measured by their efficiency in use and environmental stewardship in production.

Value for NEMA Members

Market Development Through Standards

NEMA is an ANSI-accredited standards development organization comprised of business leaders, electrical experts, engineers, scientists, and technicians. We provide value for our members by developing standards to advance safety and sustainability, expand market opportunities, and create a level playing field.

From batteries, enclosures, and switchgear to lighting, motors, and medical imaging, NEMA publishes more than 1,000 electrical standards and technical papers that cover millions of member products. These standards play a key part in the design, production, and distribution of products destined for national and international commerce.

Advocacy at all Levels of Government

NEMA is the voice of the electroindustry that commands the attention of policymakers and regulators. We represent the collective interests of America’s electrical and medical imaging manufacturers at every level of government, including local building codes, infrastructure funding, national energy laws, and international trade.

NEMA works for its members by engaging in policy advocacy to grow markets and reduce regulatory barriers.
Actionable Business Intelligence
NEMA develops tailored, industry-specific market and statistical programs that benefit participating companies.

Our suite of Analytics and Business Intelligence Services includes exclusive industry market data, benchmarking studies, economic analysis and forecasting, custom survey research, and data gathering and packaging.

Events and Webinars
As a national trade association, NEMA convenes a neutral forum for members to discuss industry-wide concerns and objectives under a legal umbrella by trained NEMA Staff. Throughout the year, NEMA holds forums, events, and webinars allowing manufacturers within each market sector to discuss dynamic industry-wide issues and determine value-added opportunities for NEMA.

The NEMA Annual Meeting is the premier industry event for U.S. electroindustry executives and select industry suppliers to network, learn about the trends important to electrical and medical imaging manufacturers, and honor the best and brightest in the industry.

Advanced Imaging Technologies
The Medical Imaging & Technology Alliance (MITA), a division of NEMA, is the leading organization and collective voice of medical imaging equipment, radiopharmaceutical manufacturers, innovators, and product developers. MITA represents companies whose sales make up more than 90 percent of the global market for advanced imaging technologies. The alliance’s mission is to reduce regulatory barriers, establish standards, and advocate for the medical imaging industry.

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NEMA standards are often approved as American National Standards under the procedures of the American National Standards Institute (ANSI), usually under the Canvass Method.
Top 10 Selling Standards by Volume

- **ANSI Z535** Safety Alerting Standards, a series of American National Standards for safety signs, symbols, and colors
- **ANSI/NEMA MW 1000** Magnet Wire
- **NEMA 250** Enclosures for Electrical Equipment
- **NEMA MG 1** Motors & Generators
- **NEMA PB 1.1** General Instructions for Proper Installation, Operation, and Maintenance of Panelboards Rated 600 V or Less
- **ANSI/IEC 60529** American National Standard for Degrees of Protection Provided by Enclosures (IP Code) (Identical National Adoption)
- **ANSI C84.1** American National Standard for Electric Power Systems and Equipment—Voltage Ratings (60 Hz)
- **ANSI/NEMA WC 27500** American National Standard for Aerospace and Industrial Electrical Cable
- **NEMA BU 1.1** General Instructions for Handling, Installation, Operation and Maintenance of Busway Rated 600 V or Less
- **ANSI/NEMA HP 3** Electrical and Electronic Polytetrafluoroethylene (PTFE) Insulated High-Temperature Hook-Up Wire, Types ET (250 V), E (600 V) and EE (1,000 V)

New Releases

- **Lifecycle Best Practices Framework for Medical Imaging Devices**
  **NEMA/MITA CSP 2**
  **ANSI C137.7**
- **NEMA Position Paper: Use of Supplier’s Declaration of Conformity (SDoC) in the U.S. Workplace**
  **NEMA IRSC 100**
- **Stainless Steel Conduit and Tubing**
  **NEMA SSC 1**
- **Germicidal Irradiation and the Energy Codes**
  **NEMA LSD EB 84**
- **American National Standard for Electricity Meters for the Measurement of DC Energy**
  **ANSI C12.32**
- **Metal Cable Bus Systems**
  **NEMA CB 15000**
- **Extruded Insulated Magnet Wire**
  **NEMA XW 1000**
- **High Ambient Temperature Test Procedure for Wiring Devices**
  **NEMA WD 50000**
- **American National Standard for Lighting Systems—Energy Reporting Requirements for Lighting Devices**
  **ANSI C137.5**
- **Lithium-Ion Battery Fires Guidance Document**
  **NEMA BS 30000**
- **American National Standard for Lighting Systems—Data Tagging Vocabulary (Semantic Model Elements) for Interoperability**
  **ANSI C137.6**
- **A NEMA Motor and Generator (IS-MG) Section Document Guide for Validating an Alternative Efficiency Determination Method (AEDM)**
  **NEMA MG G2**
- **In-Building Two-Way Emergency Responder Communications Enhancement Systems (ERCES) White Paper**
  **NEMA ERCES 1**
- **BIM Data Requirements for Electrical Products in Support of Design, Construction, Operation, and Maintenance**
  **NEMA BIM 100**
- **American National Standard for Lighting Equipment—LED Drivers Robustness**
  **ANSI C82.15**
- **Composite Insulators Guy Insulator Type (Uncoated or Painted Type)**
  **NEMA C29.14b**
- **Purchasing Specification Guidance for Circuit Breaker Control Cabinets**
  **NEMA US G 111**
2022 ELECTRICAL STANDARDS & PRODUCTS GUIDE

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**AFCIs**

**Circuit Breakers (CB)**
Addresses CB AFCIs. AFCIs are available as circuit breakers and as receptacles (Outlet Branch Receptacle [OBR]). CB AFCIs are tested and Listed to UL 1699 requirements. Both types can be installed per the 2014 *National Electrical Code*®. A stand alone paper is available for each AFCI type. This paper addresses CB AFCIs. The OBC AFCI is described in a similar document available at www.nema.org/Standards/Pages/Outlet-Branch-Receptacle.aspx. Cross-referencing the two papers provides the user/specifier/installer with all the important facts to decide which type best suits the intended installation.

**No charge**

**Outlet Branch Receptacle (OBC)**
Addresses OBC AFCIs. AFCIs are available as circuit breakers (CBs) and as receptacles. OBC AFCIs are tested and Listed to UL 1699A requirements. Both types can be installed per the 2014 *National Electrical Code*®. A stand alone paper is available for each AFCI type. The CB AFCI is described in a similar document available at www.nema.org/Standards/Pages/Circuit-Breakers.aspx. Cross-referencing the two papers provides the user/specifier/installer with all the important facts to decide which type best suits the intended installation.

**No charge**

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**Arc Welding**

**ANSI C78.5-2017**
American National Standard for Electric Lamps—Specifications for Performance of Self-ballasted Compact Fluorescent Lamps
This standard specifies the performance requirements together with the test methods and conditions required to show compliance of self-ballasted compact fluorescent lamps up to 60 W which are intended for domestic and similar general lighting purposes.

$68

**ANSI C82.5-2016**
American National Standard for Reference Ballasts—High-Intensity-Discharge and Low-Pressure Sodium Lamps
Describes the essential features and operating characteristics of reference ballasts for high-intensity discharge and low-pressure sodium lamps to operate on 60-Hz sinusoidal ballast systems.

$168

**ANSI/NEMA/IEC 60974-1-2019**
This part of IEC 60974 is applicable to power sources for arc welding and allied processes designed for industrial and professional use, and supplied by a voltage not exceeding 1000 V, battery supplied or driven by mechanical means.

$223

**ANSI/NEMA/IEC 60974-2-2021**
American National Standard for Arc-Welding Equipment—Part 2: Liquid Cooling Systems
Specifies safety and construction requirements for industrial and professional liquid cooling systems used in arc welding and allied processes to cool torches. (national adoption of IEC 60974-2, edition 4 with modifications and revision of ANSI/NEMA/IEC 60974-2-2008).

$97

**ANSI/NEMA/IEC 60974-3-2021**
Specifies safety requirements for industrial and professional arc striking and arc stabilizing devices used in arc welding and allied processes. (national adoption of IEC 60974-3, edition 4 with modifications and revision of ANSI/NEMA/IEC 60974-3-2008).

$97

**ANSI/NEMA/IEC 60974-5-2021**
American National Standard for Arc-Welding Equipment—Part 5: Wire Feeders
Specifies safety and performance requirements for industrial and professional equipment used in arc welding and allied processes to feed filler wire. (national adoption of with modifications and revision of ANSI/NEMA/IEC 60974-5-2008).

$97
ANSI/NEMA/IEC 60974-6 2019
Arc Welding Equipment—Part 6: Limited Duty Equipment
This part of IEC 60974 specifies safety and performance requirements applicable to limited duty arc welding and cutting power sources and auxiliaries designed for use by laymen. Electrically powered equipment is intended to be connected to the single phase public low-voltage supply system. Engine driven power sources cannot exceed output power of 7.5 kVA.
$166
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ANSI/NEMA/IEC 60974-7-2021
American National Standard for Arc-Welding Equipment—Part 7: Torches
Specifies safety and construction requirements for torches used for arc welding and allied processes. This document is applicable to manual, mechanically guided, air-cooled, liquid-cooled, motorized, spool-on and fume extraction torches. (national adoption of IEC 60974-7, edition 4 with modifications and revision of ANSI/NEMA/IEC 60974-7-2009).
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ANSI/NEMA/IEC 60974-8-2009 (R2020)
American National Standard for Arc-Welding Equipment—Part 8: Gas Consoles for Welding and Plasma Cutting Systems
Specifies requirements for safety and performance for gas consoles intended to be used with combustible gases or oxygen. An adoption, with U.S. differences, of the first edition of IEC 60974-8 (2004).
$105
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ANSI/NEMA/IEC 60974-11-2009 (R2020)
American National Standard for Arc-Welding Equipment—Part 11: Electrode Holders
$84
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ANSI/NEMA/IEC 60974-12-2009 (R2020)
American National Standard for Arc-Welding Equipment—Part 12: Coupling Devices for Welding Cables
Enumerates safety and performance requirements of coupling devices for cables used in welding (except underwater welding) and allied processes. The coupling devices covered are designed for connection and disconnection without the use of tools. An adoption, with U.S. differences, of the second edition of IEC 60974-12 (2005).
$84
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Electric Arc-Welding Power Sources
 Defines performance characteristics, ratings and test procedures for ac and dc arc-welding apparatus and associated equipment, as well as recommended installation and test procedures for high-frequency stabilized arc-welding machines.
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Semi-Automatic Wire-Feed Systems for Arc Welding
Defines construction standards, performance characteristics and test procedures for wire-feed systems used in most types of arc-welding processes.
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NEMA EW 4-2009
Graphic Symbols for Arc-Welding and Cutting Apparatus
Establishes graphic symbols for arc-welding and cutting apparatus that identify controls, indicators, connection points, junctions and processes. Usage examples are also provided. Online access to artwork from Table 1 is forthcoming.
$200
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NEMA EW 6-2006
Guidelines for Precautionary Labeling for Arc-Welding and Cutting Products
Provides guidelines for manufacturers and suppliers in the arc-welding and cutting industry to assist them in preparation of precautionary labels for their products. Guidelines cover content, format and placement of text-only, text-and-symbol, symbol-only and multi-language labels.
$117
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NEMA EW 9-2012
Arc Welding Power Sources—Energy Consumption Testing and Labeling
Provides the necessary guidance for manufacturers and importers of arc welding power source equipment to uniform energy consumption reporting requirements of the Mexican Law for Sustainable Energy Use, published in the Official Gazette of Federation, on November 28, 2008, article 23.
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Batteries

**ANSI C18.1M, Part 1-2015**
American National Standard for Portable Primary Cells and Batteries with Aqueous Electrolyte—General and Specifications
Applies to portable primary cells and batteries with aqueous electrolyte and a zinc anode.
$162  
Buy Now

**ANSI C18.1M, Part 2-2019**
American National Standard for Portable Primary Cells and Batteries with Aqueous Electrolyte—Safety Standard
Specifies performance requirements for portable primary batteries with aqueous electrolyte and zinc anode (non-lithium) to ensure their safe operation under normal use and reasonably foreseeable misuse.
$126  
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**ANSI C18.2M, Part 1-2019**
American National Standard for Portable Rechargeable Cells and Batteries—General and Specifications
Applies to portable rechargeable or secondary cells and batteries based on the following electrotechnical systems: nickel cadmium, nickel metal hydride and lithium ion.
$137  
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**ANSI C18.2M, Part 2-2021**
American National Standard for Portable Rechargeable Cells and Batteries—Safety Standard
Specifies performance requirements for standardized portable lithium ion, nickel cadmium and nickel metal hydride rechargeable cells and batteries to ensure their safe operation under normal use and reasonably foreseeable misuse.
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**ANSI C18.3M, Part 1-2019**
American National Standard for Portable Lithium Primary Cells and Batteries—General and Specifications
Applies to portable lithium primary cells and batteries, including the following electrochemical systems: lithium carbon monofluoride, lithium manganese dioxide and lithium iron disulfide.
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**ANSI C18.3M, Part 2-2021**
American National Standard for Portable Lithium Primary Cells and Batteries—Safety Standard
Specifies tests and requirements for primary cells and batteries, including lithium carbon monofluoride, lithium manganese dioxide and lithium iron disulfide, to ensure their safe operation under normal use and reasonably foreseeable misuse.
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**ANSI C18.4M-2017**
American National Standard for Portable Cells and Batteries—Environmental
Sets forth some general considerations that should be taken into account when developing battery standards that balance the need to achieve the intended product performance while reducing adverse environmental effects, and outlines ways in which provisions in battery standards might affect the environment during the stages of its life cycle.
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**ANSI C18.5M, Part 1-2020**
American National Standard for Portable Lithium Rechargeable Cells and Batteries—General and Specifications
Applies to portable rechargeable, or secondary, lithium cells and batteries, covering secondary lithium cells and batteries with a range of chemistries. Defines a minimum required level of performance and a standardized methodology.
$100  
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Busways & Accessories

**NEMA BU 1.1-2005 (Spanish)**
Instrucciones Generales para el Manejo, Instalacion, Operacion y Mantenimiento de Electroductos Hasta 600 V Nominales o Menos
Esta norma se aplica a productos para la distribución de energía eléctrica hasta 600 V o menores, compuestos de electroductos cerrados en secciones prefabricadas con una capacidad nominal de 100 A o más y estructuras y accesorios asociados, clasificados en la forma siguiente a) electroducto alimentador (interior o exterior), b) electroducto conectador (solamente interior), y c) accesorios necesarios para completar el sistema de electroducto. Esta norma no aplica a los electroductos metálicos cerrados como se describe en la Norma C37.23 de la ANSI/IEEE.
$122  
Electronic Copy: $0
NEMA BU 1.1-2010
General Instructions for Handling, Installation, Operation and Maintenance of Busway Rated 600 V or Less
Covers products for distribution of electric power at 600 V or less, consisting of enclosed sectionalized prefabricated busbars rated at 100 A or more and associated structures and fittings, classified as follows feeder busways (indoor or outdoor), plug-in busways (indoor only) and accessories required to complete the busway system.
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NEMA BU 1.2-2002 (R2008, R2013)
Application Information for Busway Rated 600 V or Less
Covers products for distribution of electric power at 600 V or less, consisting of enclosed sectionalized prefabricated busbars rated at 100 A or more.
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NEMA CB 15000-2020
Metal Cable Bus Systems
Provides technical requirements concerning the construction, testing, and performance of metal cable bus systems.
$44

NEMA CB 1-2000 (R2012)
Brushes for Electrical Machines
Provides definitions, dimensions and tolerances, test procedures for physical properties, and test procedures for shunt connections for brushes used in the electrical manufacturing industry. Included are carbon, carbon graphite, graphite, electrographite, metal graphite, metal impregnated and resin-bonded brushes.
$261

NEMA CG 1-2013
Manufactured Graphite/Carbon Electrodes
This edition of NEMA CG 1 harmonized dimensions with two IEC documents (IEC/TR 62157 – Cylindrical Machined Carbon Electrodes—Nominal Dimensions and IEC 60239—Graphite electrodes for electric arc furnaces—Dimensions and designation). Therefore electrode dimensions are not contained in this document and instead reference directly to these IEC document.
$96

NEMA CG 2-2004
Powdered Graphite
Covers terminology and test methods for those physical and chemical properties relevant to the material characterization of powdered graphite, generally less than 75 microns, used in the electrical industry.
$101

Communications & Signaling

NEMA BS 30000-2021
Lithium-Ion Battery Fires Guidance Document
Provides information on the issues related to the use of lithium-ion batteries, how fires start in batteries and on how they may be detected, controlled, suppressed and extinguished.
$56 | Electronic Copy: $0

NEMA ERCES 1-2021
In-Building Two-Way Emergency Responder Communications Enhancement Systems (ERCES) White Paper
Provides educational awareness to installation contractors, engineers, and end-users, Authorities Having Jurisdiction (AHJs), and Federal Communication Commission (FCC) License Holders about ensuring indoor wireless communications for Emergency Responders.
No charge

ANSI/NEMA SB 40-2015
Communications Systems for Life Safety in Schools
Covers the application, installation, location, performance and maintenance of school communications systems and their components associated with the life safety of students, faculty, administrative staff and all other occupants affiliated with educational facilities.
$40 | Electronic Copy: $0

NEMA GD 3-2019
Evaluating Earthquake Damaged Electrical Equipment Guide
Provides information on how to evaluate electrical equipment that has been exposed to earthquakes. This guide is designed for suppliers, installers, inspectors, and users of electrical products. *Also available in Spanish.
No Charge

NEMA GD 3-2019 (Spanish)
Guía de evaluación de equipos eléctricos dañados por terremotos
Proporciona información sobre cómo evaluar equipos eléctricos que han estado expuestos a terremotos. Esta guía está diseñada para proveedores, instaladores, inspectores y usuarios de productos eléctricos.
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NEMA SB 1-2014
Quality Informational Guide for Automatic Fire Detection and Alarm Systems
Provides guidance to Authorities Having Jurisdiction (AHJ) for establishing programs to ensure highly reliable fire detection and alarm systems in his or her community. This document contains a recommended model ordinance to assist AHJ through improving the reliability of existing systems, including dealing with false, or nuisance, alarms.
$40 | Electronic Copy: $0
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NEMA SB 2-2016
Training Manual on Fire Alarm Systems
Covers terminology, basic theory of operation, installation details, system start-up techniques and general maintenance of fire alarms, and is intended to be used as source material for the fire service, fire marshals and all fire alarm sales, design and installation organizations. It is ideal as a reference guide and can be used in a classroom setting for learning about fire alarm systems.
$40 | Electronic Copy: $0
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NEMA SB 7-2018
Applications Guide for Carbon Monoxide Alarms and Detectors
Covers carbon monoxide (CO) detection devices, including single- and multiple-station CO alarms and system-connected CO detectors and sensors connected to a control unit.
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NEMA SB 10-2016
Audio Standard for Nurse Call Systems
Contains requirements and test procedures for evaluating audio quality of installed nurse call systems.
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NEMA SB 11-2017
Guide for Proper Use of System Smoke Detectors
Provides information about applications of smoke detectors used in conjunction with fire alarm systems. Outlines operating characteristics of detectors and environmental factors that aid or prevent their operation.
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NEMA SB 11-2017 Spanish
Guía para el uso adecuado de los detectores de humo del sistema
El objetivo de esta guía es proporcionar información sobre la aplicación correcta de los detectores de humo utilizados junto con los sistemas de alarma contra incendios. En esta se exponen los principios básicos que deben tenerse en cuenta en la aplicación de los dispositivos de alerta temprana de incendios y detección de humos.
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NEMA SB 13-2020
Guide for Proper Use of Smoke Detectors in Duct Applications
Provides information concerning the proper use of smoke detectors in duct applications.
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NEMA SB 20-2015
Guide to Understanding Smoke Control Systems
This guide is intended to offer a general understanding of smoke control systems to individuals who have a need or desire for solid basic information but do not need the in-depth knowledge necessary to design smoke control systems.
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Guide for Application of Flame Detection
Provides information concerning the proper use of flame-detection systems. It covers the major technologies used for flame detection, application, selection, installation, and testing.
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NEMA SB 50-2021
Emergency Communications Audio Intelligibility Applications Guide
Assists specifiers and Authorities Having Jurisdiction with the concepts and terminology used to enhance intelligibility for emergency voice paging systems.
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NEMA SB 50-2021 SPANISH
Guía de aplicaciones de inteligibilidad de audio para comunicaciones de emergencia
Ayuda a los especificadores y a las Autoridades con Jurisdicción con los conceptos y la terminología utilizados para mejorar la inteligibilidad de los sistemas de localización por voz de emergencia.
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NEMA SBP 1-2010
Looking Ahead to UL 2560
Discusses the upcoming UL standard for minimum performance of emergency call systems in senior living communities, including likely requirements.
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Multi-Criteria Detectors (MCD)
Provides an introduction to the next evolution in life saving early warning smoke and fire detection.
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NEMA SBP 3-2017  
The Changing Communications within Fire Alarm System Reporting  
Explains options for fire alarm system communications.  
No charge

NEMA SBP 4-2015  
Low Frequency Audible Signals  
Addresses the need for and the development of the low-frequency audible signal used in fire alarms, carbon monoxide (CO) alarms, and fire or CO alarm systems.  
No charge

NEMA SBP 5-2015  
Considerations in Planning Code Call Implementation in Health Care Facilities  
Assists facility developers and owners in designing a code call system and associated call handling processes, with the purposes of optimizing response time and complying with regulatory requirements.  
$46  
Electronic Copy: $0

NEMA SBP 6-2008  
UL 1069 Standard for Hospital Signaling and Nurse Call Equipment White Paper  
These requirements cover the individual units employed to form a hospital nurse call system (NCS) intended to provide audible and visual communication between patients and hospital personnel. They also cover miscellaneous signaling equipment employed in hospitals.  
No charge

Conduit  
Annular Space Protection of Openings Created by Penetrations of Tubular Steel Conduit, A Review of UL Special Service Investigation, File NC 546, Project 90NK11650  
Summarizes the results of a study of various annular space protection materials installed in a concrete block wall, concrete floor assemblies, gypsum wallboard/wood joist/plywood deck floor-ceiling assemblies and two varieties of gypsum wallboard/steel stud wall assemblies.  
No charge

Conduit-in-Casing Construction  
Lists the types of casings, conduit and spacers that are used, provides details about how the conduit-in-casing process works, and explains the process of laying power/communication cables under a surface obstruction.  
No charge

ANSI/NEMA FB 1-2014  
Fittings, Cast Metal Boxes and Conduit Bodies for Conduit, Electrical Metallic Tubing (EMT) and Cable  
Covers fittings that are a part of electrical raceway and cable systems designed for use as intended by the requirements of NFPA 70. Specifically covers fittings for use with non-flexible tubular raceways—rigid and intermediate metal conduit and EMT—and with flexible raceways and cable. Adopted by the U.S. Department of Defense.  
$135

NEMA EN P1-2021  
NEMA 250 Enclosure Types  
Provides general information on the definitions of NEMA Enclosure Types, is a guide for comparing specific applications of enclosures, and provides a comparison between NEMA Enclosure Type Numbers and ANSI/IEC Enclosure Classification Designations. The document is intended to be used by architects, engineers, installers, inspectors and other interested parties.  
No Charge

NEMA FB 2.10-2021  
Selection and Installation Guidelines for Fittings for Use with Non-Flexible Electrical Metal Conduit or Tubing (Rigid Metal Conduit, Intermediate Metal Conduit and Electrical Metallic Tubing)  
Offers practical information on correct product selection and industry-recommended practices for installation of fittings for non-flexible conduit and electrical metallic tubing in accordance with the NEC®.  
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NEMA FB 2.20-2021  
Selection and Installation Guidelines for Fittings for Use with Flexible Electrical Conduit and Cable  
Offers practical information on correct product selection and industry-recommended practices for installation of fittings for flexible conduit or cable in accordance with the NEC®.  
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NEMA FB 2.40-2019
Installation Guidelines for Expansion
and Expansion/Deflection Fittings
Provides recommended installation
practices for fittings used to
compensate for expansion and
contraction in electrical raceways
due to shear and lateral forces. When
properly selected and installed, these
fittings prevent harmful stresses in the
raceway system and to supporting
structures by safely permitting three-
dimensional (linear, angular, and
parallel) movement of the raceway.
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NEMA 5RN 2189-2003
User Guide to Product Specifications
for Metal Electrical Conduit and
Tubing
Provides information on the proper
identification of U.S. standards
applicable to metal electrical conduit
and tubing.
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NEMA RN 1-2018
Polyvinyl Chloride (PVC) Externally
Coated Galvanized Rigid Steel
Conduit and Intermediate
Metal Conduit
Covers continuous PVC exterior
coatings and corrosion-resistant
interior coatings, as well as galvanized
steel conduit, galvanized steel IMC,
threaded couplings and elbows to
which they may be applied.
$70

NEMA RN 2-1997
(R2001, R2009, R2018)
Packaging of Master Bundles for
Electrical Rigid Metal Conduit (ERMC)—
Steel, Electrical Intermediate Metal
Conduit (EIMC)—Steel and Electrical
Metallic Tubing (EMT)—Steel
Covers recommendations for the
size and banding of master bundles
of electrical rigid metal conduit
(ERMC)—steel, electrical intermediate
metal conduit (EIMC)—steel and
electrical metallic tubing (EMT)—steel,
in 10-foot (3.05 m) lengths and the
size and banding of master bundles
of ERMC—steel and EMT—steel, in
20-foot (6.10 m) lengths.

NEMA SCMC 1-2020
Steel Conduit Materials and Coatings
Provides information on the internal
and external coatings of steel conduit
and metallic tubing designed for
corrosion protection. It highlights
zinc and conversion coatings bearing
hexavalent or trivalent chromium to
protect against rust.
No Charge

NEMA SSC 1-2021
Stainless Steel Conduit & Tubing
Describes the benefits of using
stainless steel conduit and tubing
products. Also contains information
on associated codes, standards, and
installation information.
No Charge

NEMA TC 2-2020
Electrical Polyvinyl Chloride (PVC)
Tubing and Conduit
Covers electrical PVC conduit of
types EPC-40 designed for normal-
duty applications above ground and
concrete encased applications or
direct burial, and EPC-80 designed
for heavy-duty (areas of physical
damage) applications above ground
and concrete encased applications or
direct burial.
$105

NEMA TC 3-2021
Polyvinyl Chloride (PVC) Fittings
for Use with Rigid PVC Conduit
and Tubing
Covers PVC fittings intended to be
joined in the field by means of a
solvent cement system to PVC rigid
conduit tubing and other fittings,
based on the outside diameters given
in NEMA TC 2-2013.
$105

NEMA TC 6 & 8-2020
Polyvinyl Chloride (PVC) Plastic
Utilities Duct for Underground
Installations
Defines general requirements,
performance requirements, test
methods and marking for the
following types of PVC plastic utilities
duct intended for underground
installation for communications and
electrical wire and cable: EB-20 and
EB-35, designed for burial encased in
concrete; DB-60; and DB-100 and DB-
120, designed for direct burial without
encasement in concrete.
$103
STANDARDS & OTHER PUBLICATIONS: Conduit

NEMA TC 7-2021
Smooth Wall Coilable Electrical Polyethylene Conduit
Establishes requirements for several wall types of high-density polyethylene (HDPE) conduit for use in providing a protective raceway for electrical cables or communication cables buried underground or concrete encased for applications such as power distribution, site lighting, signal and control and Supervisory Control and Data Acquisition (SCADA).

$92

NEMA TC 9-2020
Fittings for Polyvinyl Chloride (PVC) Plastic Utilities Duct for Underground Installation
Defines general requirements, including materials, trade sizes, dimensions and workmanship for the following types of fittings for PVC plastic utilities duct used for underground installation of communications and electrical wire and cable: EB, designed for encased burial in concrete when installed in trenches underground, and DB, designed for direct burial in trenches underground without a requirement for encasement in concrete.

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NEMA TC 13-2014 (R2019)
Electrical Nonmetallic Tubing (ENT)
Covers ENT materials, dimensions and physical properties.

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NEMA TC 14-2015 Series
Reinforced Thermosetting Resin Conduit and Fittings Series

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NEMA TC 19-2017
Nonmetallic Riser U-Type Guards
Lists dimensions, sets forth properties, outlines performance requirements and test methods, and assists in selecting and obtaining the proper PVC and PE nonmetallic riser U-type guards intended to protect riser cables on utility poles.

$119

NEMA TCB 2-2017
Guidelines for the Selection and Installation of Underground Nonmetallic Raceways
Covers recommendations for shipping, handling, storage, installation and joining of underground single-bore nonmetallic duct for power, lighting, signaling and communications applications.

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NEMA TCB 3-2021
Covers recommendations for shipping, handling, storage, installation and joining of underground CCD for power, lighting, signaling and communications applications.

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NEMA TCB 4-2021
Guidelines for the Selection and Installation of Smooth-Wall Coilable High-Density Polyethylene (HDPE) Conduit
Provides recommendations for the selection, handling and installation of underground High Density Polyethylene (HDPE) conduit or raceway for power, lighting, signaling, and communications applications.

$103

NEMA VE 1-2017
Metal Cable Tray Systems
Specifies requirements for metal cable trays and associated fittings designed for use in accordance with the rules of the CEC, Part I, and the NEC®.

$116

NEMA VE 2-2018
Cable Tray Installation Guidelines
Addresses shipping, handling, storing and installing cable tray systems. Information on maintenance and system modification is also provided.

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Connectors

ANSI C119.0-2015
Testing Methods and Equipment Common to the ANSI C119 Family of Standards
Covers methods and equipment for performing connector qualification tests common to the ANSI C119 family of standards. A complimentary copy will be given with purchase of any ANSI C119 standard.

No charge

ANSI C119.1-2016
American National Standard for Electric Connectors—Sealed Insulated Underground Connector Systems Rated 600 V
Covers sealed insulated underground connector systems rated at 600 V for utility applications and establishes electrical, mechanical and sealing requirements.

$148

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ANSI C119.4-2016
American National Standard for Electric Connectors—Connectors for Use Between Aluminum-to-Aluminum and Aluminum-to-Copper Conductors Designed for Normal Operation at or Below 93°C and Copper-to-Copper
Covers connectors used to make electrical connections between aluminum-to-aluminum, aluminum-to-copper and copper-to-copper conductors on distribution and transmission lines. Establishes electrical and mechanical test requirements for electrical connectors.
$172

ANSI C119.5-2018
American National Standard for Electric Connectors—Insulation-Piercing Connector Systems, Rated 600 V or Less (Low Voltage Aerial Bundled Cables and Insulated and Non-Insulated Line Wires)
Establishes the electrical, mechanical and environmental test requirements for electrical insulation-piercing connectors. Covers insulation-piercing connectors used for making electrical connections between insulated, insulated-to-bare and bare-to-bare conductors rated 600 V or less and 90°C (low voltage aerial bundled cables and bare and insulated line wires) on overhead distribution lines for electric utilities.
$111

ANSI/NEMA CC 1-2018
Electric Power Connectors for Substations
Covers uninsulated connectors and bus supports that are made of metal and intended for use with conductors or bus made of copper or aluminum alloy and found in substations. Connectors that are supplied in equipment are covered by the equipment standards and are excluded from this standard.
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NEMA CTTC P1-2020
Cable Ties and Fixing Devices for Electrical Installations—Type Classification Guide
Provides guidance for those who are evaluating and or comparing the essential parameters of cable ties.
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Distribution Equipment

Use of Temporary Covers on Panelboards
Explains use of temporary covers on panelboards.
No charge
STANDARDS & OTHER PUBLICATIONS: Distribution Equipment

ANSI C37.54-2002 (R2010, R2020)
American National Standard for Indoor AC High Voltage Circuit Breakers Applied as Removable Elements in Metal-Enclosed Switchgear—Conformance Test Procedures
Specifies tests to demonstrate that the circuit breaker being tested conforms with the ratings assigned to it in accordance with ANSI/IEEE C37.04. $135 | Electronic Copy: $0

ANSI C37.55-2020
American National Standard for Switchgear—Medium Voltage Metal-Clad Assemblies—Conformance Test Procedures
Applies to all medium voltage metal-clad switchgear assemblies designed, tested and manufactured in accordance with IEEE C37.20.2. Covers selected tests to demonstrate conformance with Section 6 of IEEE C37.20.2. $126 | Electronic Copy: $0

ANSI C37.57-2003 (R2010)
American National Standard for Switchgear—Indoor AC Medium Voltage Switches for Use in Metal-Enclosed Switchgear—Conformance Test Procedures
Applies to conformance test procedures for ac medium voltage switches rated above 1,000 V as designed, tested and manufactured in accordance with ANSI/IEEE C37.20.4. $97 | Electronic Copy: $0

ANSI C37.85-2020
American National Standard for AC High Voltage Power Vacuum Interrupters—Safety Requirements for X-Radiation Limits
Specifies the maximum permissible x-radiation emission from ac high voltage power vacuum interrupters that are intended to be operated at voltages above 1,000 V and up to 38,000 V when tested in accordance with procedures described in this standard. $96 | Electronic Copy: $0

ANSI/NEMA AB 3-2013
Molded-Case Circuit Breakers and Their Application
Covers molded-case circuit breakers and switches, assembled as integral units in supporting housings of insulating material, having voltage ratings up to and including 1,000 V AC and 1,200 V DC and interrupt ratings of 5,000 A or more. $139 | Electronic Copy: $0

ANSI/NEMA KS 2-2013
Distribution Equipment Switch Application Guide, A User’s Reference
Contains instructions for the proper installation, operation and maintenance of distribution equipment switches rated 600 V or less. $92 | Electronic Copy: $0

ANSI/NEMA PB 1.1-2013
General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 600 V or Less
Covers single panelboards or groups of panel units suitable for assembly in the form of single panelboards, including buses, with or without switches or automatic overload protective devices (fuses or circuit breakers), or both. Specifically excluded are live-front panelboards, panelboards employing cast enclosures for special service conditions, and panelboards designed primarily for residential and light commercial service equipment. $70 | Electronic Copy: $0

ANSI/NEMA PB 2.1-2013
General Instructions for Proper Handling, Installation, Operation and Maintenance of Deadfront Distribution Switchboards Rated 600 Volts or Less
Covers floor-mounted deadfront switchboards that consist of an enclosure, molded-case and low voltage power circuit breakers, fusible or non-fusible switches, instruments and metering, monitoring or control equipment, with associated interconnections and supporting structures. $56 | Electronic Copy: $0

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NEMA AB 4-2017
Guidelines for Inspection and Preventive Maintenance of Molded-Case Circuit Breakers Used in Commercial and Industrial Applications
Sets forth, for use by qualified personnel, a number of basic procedures that may be used for the inspection and preventive maintenance of molded-case circuit breakers used in industrial and commercial applications rated up to and including 1,000 V 50/60 Hz AC or AC/DC.
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NEMA AB 5-2011
Establishing Levels of Selective Coordination for Low Voltage Circuit Breakers
Examines selective coordination at high levels of short circuit fault current in the instantaneous region of the circuit breaker time-current curve by use of selective coordination tools.
$124

NEMA ABP 1-2016
Selective Coordination of Low-Voltage Circuit Breakers
Provides guidance to engineers regarding the National Electrical Code® requirements for selective coordination. This paper specifically addresses how to comply with these requirements for low-voltage circuit breakers.
No charge

NEMA ABP 2-2011
Recommendations on AFCI / Home Electrical Product Compatibility
Offers guidelines to designers of home electrical products for increasing compatibility with arc-fault circuit interrupters (AFCIs). Identifies conditions to help minimize the risk of undesired AFCI operation.
No charge

NEMA ABP 3-2013
Molded Case Circuit Breaker Systems Testing with Conductors
Protects rated conductors and insulated wire. The standard tests (as defined in UL 489) include overload and thermal tests, endurance followed by low level short circuit interrupting tests, and standard low level short circuit interrupting tests.
No charge

NEMA ABP 4-2013
Taking the Guesswork Out of Selecting and Maintaining Molded Case Circuit Breakers
Provides information to assist with answering various questions related to the application and maintenance of circuit breakers.
No charge

NEMA ABP 5-2015
Series Ratings
Shows why it is important to understand how the short circuit interrupting ratings are assigned to a combination of two or more overcurrent protective devices which are connected in series, and in which the rating of the downstream device(s) in the combination is less than the series rating.
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NEMA ABP 6-2015
What is the Purpose of a Molded Case Circuit Breaker?
Discusses how molded case circuit breakers provide protection for conductors, and under what conditions they provide this protection.
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NEMA ABP 7-2015
Engineering Series Ratings: Is It Practical?
No charge

NEMA ABP 9-2015
Hazardous Working on Energized Electrical Equipment
Alerts electrical contractors, electricians, facility owners and managers, and other interested parties to some of the hazards of working on hot equipment and emphasizes the importance of turning off the power before working on electrical circuits.
No charge

NEMA ABP 10-2015
Arc Flash Analysis—Utility System Parameters Critical for Accurate PPE
Useful for industries using circuit protection in alternative energy, commercial, industrial, mining, and military applications, since it may be necessary to perform an arc-flash study to support an electrical safety program in the workplace.
No charge

NEMA ABP 11-2016
Compatibility between Smoke Alarms and Arc-Fault Circuit Interrupters
Explains that arc-fault circuit interrupters (AFCI) provide increased fire protection for the electrical installation. There is no evidence that the circuit supplying smoke alarms should be exempt from these increased protection requirements. Power supply reliability for smoke alarms is not impacted by the installation of an AFCI.
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STANDARDS & OTHER PUBLICATIONS: Distribution Equipment

NEMA KS 1-2013
Heavy Duty Enclosed and Dead-Front Switches (600 Volts Maximum)
Covers manually operated enclosed and miscellaneous distribution equipment switches that are rated not more than 600 V and 6,000 A with or without a horsepower rating; with or without plug or cartridge fuses; with current-carrying parts and mechanisms enclosed in metallic/nonmetallic cases, or enclosed when mounted in enclosed switchboard or panelboard.
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NEMA KS 3-2010
Guidelines for Inspection and Preventive Maintenance of Switches Used in Commercial and Industrial Applications
Provides basic procedures for the inspection and preventive maintenance of switches used in commercial and industrial applications rated up to and including 600 V 50/60 Hz AC or AC/DC.
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NEMA PB 1.1-2002 (en Espanol)
Instrucciones Generales para la Instalacion, Operacion y el Mantenimiento Correcto de Tableros de Alumbrado y Control Hasta 600 V Nominales o Menos
Esta norma es una guía de información práctica con instrucciones para la instalación, operación y mantenimiento correcto de tableros de alumbrado y control hasta 600 V nominales o menos.
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NEMA PB 2-2011
Deadfront Distribution Switchboards
Covers floor-mounted deadfront switchboards rated 6,000 A or less, 600 V or less that consist of an enclosure, molded-case circuit breakers, low voltage power circuit breakers, fusible or non-fusible switches, instruments, metering equipment, and monitoring or control equipment with associated interconnections and supporting structures.
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NEMA PB 1.1-2002 (en Espanol)
Instrucciones Generales para el Manejo, Instalacion, Operacion y Mantenimiento Correcto de Tableros de Distribucion de Frente Muerto Hasta 600 V Nominales o Menos
Esta norma de información práctica con instrucciones para el manejo, instalación, operación y mantenimiento correcto de tableros de distribución de frente muerto hasta 600 V nominales o menos.
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NEMA PB 2.1-2002 (en Espanol)
Instrucciones Generales para la Instalacion, Operacion y el Mantenimiento Correcto de Tableros de Alumbrado y Control Hasta 600 V Nominales o Menos
Esta norma es una guía de información práctica con instrucciones para la instalación, operación y mantenimiento correcto de tableros de alumbrado y control hasta 600 V nominales o menos.
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NEMA PB 2.2-2014
Application Guide for Ground-Fault Protective Devices for Equipment
Contains instructions for the safe and proper application of GFP devices. GFP devices include current-sensing devices, relaying equipment or combinations of current-sensing devices and relaying equipment or other equivalent protective equipment that will operate to cause a disconnecting means to open all ungrounded conductors at predetermined values of ground-fault current and time.
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NEMA RR P1-2019
Provides a high-level guidebook/roadmap for utilities to harden their grids for improved resilience.
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NEMA SG 10-2019
Guide to OSHA and NFPA 70E Safety Requirements When Servicing and Maintaining Medium-Voltage Switchgear, Circuit Breakers, and Medium-Voltage Controllers Rated above 1000 V
Enhances electrical safety awareness to mitigate electrical hazards for Members of the workforce assigned to servicing and maintaining switchgear, owners and users of the equipment, and the public. The goal of this guide is to ensure the adoption of OSHA and NFPA 70E safety-related practices for electrical work and requirements of electrical safety.
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NEMA SG 11-2019
Guide for Handling and Maintenance of AC Outdoor High Voltage Circuit Breakers
Provides information on receiving, storing, handling, installing, inspecting and maintaining AC outdoor high voltage circuit breakers.
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www.nema.org
NEMA SPD 1.1-2019
Describes a uniform specification methodology for SPDs, containing at least one non-linear component, that are connected to or within a 50/60 Hz power distribution equipment that is rated up to 1000 V AC.
$74

NEMA VT P1-2018
The Value of Volt-VAR Technologies
Covers the benefits of Volt-VAR optimization and control, technologies, integration of distributed energy resources, and industry regulations and standards.
No charge

Electric Vehicle Supply Equipment/System

NEMA EVSE 1.2-2015
EV Charging Network Interoperability Standard Part 2: A Contactless RFID Credential for Authentication (U_r Interface)
Describes a protocol for authenticating electric vehicle (EV) charging service requests using contactless proximity radio frequency identification (RFID)-type credentials. Authentication provides assurance to the EV charging network that the EV driver is the correct authorized party incurring a financial or other obligation for the services to be rendered. The protocol also gives EV drivers confidence that transactions have not been authenticated using forged or fraudulent credentials.
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NEMA GFCI P1-2019
GFCI Replacement Recommendation
Covers products intended primarily to protect human beings from harmful effects of electric shock by sensing ground fault(s) and/or leakage current(s) on grounded and/or ungrounded systems rated 1000 volts AC or DC and below.
No charge

Grounding Rods

NEMA GR 1-2017
Grounding Rod Electrodes and Grounding Rod Electrode Couplings
Applies to grounding rod electrodes and grounding rod electrode couplings that function in accordance with the NEC® and/or the National Electrical Safety Code.
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NEMA EVSE 1.2-2015
EV Charging Network Interoperability Standard Part 2: A Contactless RFID Credential for Authentication (U_r Interface)
Describes a protocol for authenticating electric vehicle (EV) charging service requests using contactless proximity radio frequency identification (RFID)-type credentials. Authentication provides assurance to the EV charging network that the EV driver is the correct authorized party incurring a financial or other obligation for the services to be rendered. The protocol also gives EV drivers confidence that transactions have not been authenticated using forged or fraudulent credentials.

Positions paper on UL 1741 & IEEE 1547, Particularly Addressing Regeneration
Explains when to use UL 1741 or IEEE 1547 in conjunction with the certification of an adjustable speed drive when the ASD has regeneration capability.
No charge

ANSI/NEMA ICS 8-2019
Application Guide for Industrial Control and Systems Crane and Hoist Controllers
Provides information useful to architects, electrical engineers, electrical contractors, maintenance engineers, and those responsible for installation of this equipment.
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STANDARDS & OTHER PUBLICATIONS: Industrial Automation Controls

NEMA BC 1-2020
Blockchain Technical Guidance for the Electroindustry
This is a technical guidance document meant to help NEMA Member companies get a better understanding of blockchain, explore existing blockchain use cases, and provide guidelines and strategies for moving forward with blockchain.

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NEMA IA 2.2-2005
Programmable Controllers (PLC), Part 2: Equipment Requirements and Test
Specifies requirements and related tests for PLC and their associated peripherals, such as programming and debugging tools and human-machine interfaces, which have as their intended use the control and command of machines and industrial processes.

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NEMA IA 2.3-2005
Programmable Controllers (PLC), Part 3: Programming Languages
Specifies syntax and semantics of programming languages for PLC as defined in Part 1 of IEC 61131.

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NEMA IA 2.5-2005
Programmable Controllers (PLC), Part 5: Communications
Specifies communication aspects of a PLC. This standards publication is a NEMA Adoptive Standard based on Part 5 of IEC 61131.

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NEMA IA 2.7-2005
Programmable Controllers (PLC), Part 7: Fuzzy Control Programming
 Defines a language for the programming of fuzzy control applications used by PLC. This standards publication is a NEMA Adoptive Standard based on Part 7 of IEC 61131.

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NEMA IA 2.8-2005
Programmable Controllers (PLC), Part 8: Guidelines for the Application and Implementation of Programming Languages
Specifies communication aspects of a PLC. This standards publication is a NEMA Adoptive Standard based on Part 5 of IEC 61131. Applies to the programming of PLC systems using the programming languages defined in IA 2.3.

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NEMA ICS 1-2000
Controllers, Contactors and Overload Relays Rated 600 V

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NEMA ICS 2-2002, Part 9
AC Vacuum-Break Magnetic Controllers Rated 1,500 V AC
Applies to magnetically operated, full-voltage, vacuum-break, non-combination controllers rated 1,500 V for both motor and non-motor loads.

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NEMA ICS 1.3-1986
Preventive Maintenance of Industrial Control and Systems Equipment
Covers fundamental principles, safety precautions and common guidelines for preventive maintenance of most industrial control and systems equipment. Intended to supplement more specific maintenance instructions that may be provided for particular product lines, specific products and other NEMA standards and manufacturer publications.

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Preventive Maintenance of Industrial Control and Systems Equipment
Covers fundamental principles, safety precautions and common guidelines for preventive maintenance of most industrial control and systems equipment. Intended to supplement more specific maintenance instructions that may be provided for particular product lines, specific products and other NEMA standards and manufacturer publications.

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NEMA ICS 2-2000 (R2005, R2020)
Controllers, Contactors and Overload Relays Rated 600 V

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Preventive Maintenance of Industrial Control and Systems Equipment
Covers fundamental principles, safety precautions and common guidelines for preventive maintenance of most industrial control and systems equipment. Intended to supplement more specific maintenance instructions that may be provided for particular product lines, specific products and other NEMA standards and manufacturer publications.

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NEMA ICS 2.4-2020
NEMA and IEC Devices for Motor Service—A Guide for Understanding the Differences
Identifies features, conventions, characteristics and attributes of magnetic contactors and thermal overload relays. Control products compared or contrasted in this guide are those with equivalent electrical ratings; such ratings are expressed via nameplates, catalogues or technical literature.
$105 | Electronic Copy: $0

NEMA ICS 3.1-2019
Guide for the Application, Handling, Storage, Installation and Maintenance of Medium Voltage AC Contactors, Controllers and Control Centers
Contains practical information for architects, electrical engineers, contractors and maintenance personnel on the handling, storage and installation of AC general-purpose medium voltage contactors and Class E controllers.
$203 | Electronic Copy: $0

NEMA ICS 4-2015
Application Guideline for Terminal Blocks
Applies to one-piece, or modular, or two-piece terminal blocks with screw-type, screwless-type, or insulation-displacement clamping units intended for industrial use and fixed to a support or to a printed circuit board (PCB) to provide electrical and mechanical connection for the following round, solid, or stranded conductors.
$91 | Electronic Copy: $0

NEMA ICS 5-2017
Control Circuit and Pilot Devices
Provides general requirements, classifications, installation, maintenance, testing and application information for control circuit and pilot devices. Covers the requirements for control relays, limit switches, proximity switches, pushbuttons, selector switches, indicating and pushbutton stations.
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Industrial Control and Systems Enclosures
Covers enclosure requirements of all industrial control devices functioning on commercial voltages of up to 750 V DC or up to 7,200 V AC. Includes information concerning ratings, construction, testing, performance and manufacture.
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NEMA ICS 7-2020
Adjustable Speed Drives
Provides practical information concerning ratings, construction, test, performance and manufacture of industrial control equipment—adjustable speed drives. Parts 4, 5, 6 and 7 are vacant. Parts 4 and 6 of ICS 7-2000 have been replaced by ICS 61800-2-2005. Part 5 has been replaced by ICS 61800-1-2002. Part 7 of ICS 7-2000 has been replaced by ICS 61800-4.
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NEMA ICS 7.1-2014
Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable Speed Drive Systems
Applies to all industrial equipment electrical components and wiring that are part of the electrical drive system, commencing at the point of connection of input power to these components. Applies to open or enclosed electrical equipment for use on circuits that operate from an AC supply voltage of 600 V or less.
$117 | Electronic Copy: $0

NEMA ICS 10 Part 1-2020
Industrial Control and Systems Part 1: Electromechanical AC Transfer Switch Equipment
Applies to electromechanical automatic and non-automatic transfer switches and bypass isolation switches rated 600 V ac or less, 60 Hz, for use on single-phase and polyphase ac circuits.
$102 | Electronic Copy: $0

NEMA ICS 10 Part 2-2020
Industrial Control and Systems Part 2: Static AC Transfer Equipment
Applies to static automatic and static non-automatic transfer equipment without cross-connection of sources during transfer or retransfer, with or without bypass isolation switches rated 600 V ac or less, not exceeding 6,000 A, for use on single-phase and polyphase ac circuits.
$102 | Electronic Copy: $0

NEMA ICS 10-2010 (R2019), Part 3
Identifies important safety considerations for residential use of transfer switches.
$63 | Electronic Copy: $0
NEMA ICS 10-2020, Part 4
Guide to Application of Low-voltage Automatic Transfer Switch Equipment
Developed to provide guidance on National Electrical Code® and Underwriters Laboratories marking requirements for transfer switch equipment.
$59 | Electronic Copy: $0

NEMA ICS 12.1-1997
Industrial Control and Systems Profiles of Networked Industrial Devices—Part 1 General Rules
Provides general rules and definitions for the development of profiles for networked industrial devices. The profile terms, structure, format and data interchange standardized in this publication serve to aid in the common description and understanding of these devices.
$145 | Electronic Copy: $0

NEMA ICS 14-2015
Application Guide for Electric Fire Pump Controllers
Provides technical information related to the installation of electric fire pump controllers. Intended for use by specifiers, purchasers, installers and owners of fire pump controllers.
$105 | Electronic Copy: $0

NEMA ICS 15-2011 (R2017)
Instructions for the Handling, Installation, Operation and Maintenance of Electric Fire Pump Controllers Rated Not More Than 600 V
Facilitates movement, handling, installation, and maintenance of electric fire pump controllers at the job site. This helps avoid personal injury and equipment damage during these processes.
$103 | Electronic Copy: $0

NEMA ICS 15.1-2021
Instructions for the Handling, Installation, Operation, and Maintenance of Medium Voltage Electric Fire Pump Controllers Rated Not More Than 7200V
Provides 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: handling, storage installation of conduit, cables, and wires, pre-energization and energization, care and maintenance, and required field marking.
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NEMA ICS 16-2001
Motion/Position Control Motors, Controls and Feedback Devices
Covers rotational electric servo and stepper motors and their power requirements, feedback devices and controls intended for use in a motion/position control system that provides precise positioning, speed control, torque control or any combination thereof.
$365 | Electronic Copy: $0

Diagrams, Device Designations and Symbols
Provides guidelines for representation of devices on diagrams and drawings in a standardized manner.
$135 | Electronic Copy: $0

NEMA ICS 20-2009 (R2015)
Informational Guide to Electrical Industrial Topics
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(Formerly NEMA IA 2.4-2005)
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Applies to general purpose adjustable speed AC drive systems that include power conversion, control equipment and an AC motor or motors. Excluded are traction and electrical vehicle drives. Applies to systems connected to line voltages up to 1 kV AC, 50 or 60 Hz, and load side frequency up to 600 Hz.
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STANDARDS & OTHER PUBLICATIONS

NEMA ICS 61800-4-2004
Adjustable Speed Electrical Power Drive Systems, Part 4: General Requirements—Rating Specifications for AC Power Drive Systems Above 1,000 V AC and Not Exceeding 35 kV
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NEMA ICS 61800-6 TR-2015
Adjustable Speed Electrical Power Drive Systems, Part 6: Guide for Determination of Types of Load Duty and Corresponding Current Ratings
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Describes the importance of communications networks for electric grid operations. It provides an overview of utility communication networks, types of technologies and requirements, communications standards and protocols, and recommendations for utilities to consider as they build out these networks.
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Insulating Products

ANSI/NEMA C29.1-2018
American National Standard for Electrical Power Insulators—Test Methods
Comprises a manual of test methods to be followed in making tests to determine the characteristics of electrical power insulators.
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Covers various types of insulators, including distribution suspension-type insulators made of wet-process porcelain or toughened glass, and transmission suspension-type insulators made of wet-process porcelain or toughened glass. Also covers spool-type, strain type, low and medium voltage pin type, high voltage pin type, high-voltage line-post type, apparatus cap and pin type, indoor apparatus type, and composite insulators. Prices range from $66 to $111, with electronic copies available for $0.
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<td>Covers composite-suspension insulators made of a fiberglass-reinforced resin rod core, polymer material weathersheds and metal end fittings intended for use on overhead transmission lines for electric power systems, 70 kV and above. Mechanical and electrical performance levels specified herein are required for new insulators.</td>
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<td>Covers composite distribution deadend insulators made of a fiberglass-reinforced resin matrix core, polymer material weathersheds and metal end fittings intended for use on overhead lines for electric power systems.</td>
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<td>Establishes the dimensions, performance, and test procedures for guy strain insulators.</td>
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<td>ANSI/NEMA C29.14b-2021</td>
<td>Composite Insulators Guy Insulator Type (Uncoated or Painted Type)</td>
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<td>Covers composite guy (strain) type insulators made of a fiberglass-reinforced resin matrix core rod and metal end fittings intended for use on overhead distribution lines for electric power systems to insulate or isolate guy wires for corrosion protection, increased insulation levels, or clearance for maintenance and normal operation.</td>
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<td>Describes the qualification test procedures for composite line post insulators that are made of a fiberglass-reinforced resin matrix core, elastomeric weathersheds and metal end fittings.</td>
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<td>Covers composite distribution line post insulators made of a fiberglass-reinforced resin matrix core, elastomeric material weathersheds and metal end fittings designed for use on overhead lines for electric power systems, 69 kV and below.</td>
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<td>Covers distribution and transmission class composite station post insulators that are made of a fiberglass-reinforced resin rod core, polymer material weathersheds, and metal end fittings. The insulators are intended for use in outdoor substation applications.</td>
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<td>Covers manufacturing, measurement and testing of manufactured electrical mica.</td>
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<td>Covers the procedures, conditions and methods for sampling and testing properties of untreated mica paper used as electrical insulation or as a component in a composite used for electrical insulating purposes.</td>
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<td>Calendered Aramid Papers Used for Electrical Insulation</td>
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<td>Applies to qualification and testing of calendered aramid papers in thicknesses up to 30 mils (0.76 mm) for use as electrical insulation. Blends of aramid and mica are covered in FI 1. For U.S. Government procurement purposes, this standard replaces Military Standard MIL-I-24204A.</td>
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<td>Covers HPDL sheets that consist of paper, fabrics or other core materials that have been laminated at pressures of more than 5.0 MPa using thermosetting condensation resins as binders.</td>
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<td>Covers the methods of measurement of radio influence voltage in the frequency range of 0.015 to 30 megahertz that may be associated with high-voltage power apparatus used on transmission and distribution systems at line voltages of 0.6 kilovolts and above.</td>
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NEMA ERCS P1-2018
NEMA's Electric Resistance Heating Technical Committee Primer on Codes and Standards
Provides an overview of the codes and standards landscape and identifies certain codes and standards (particularly energy efficiency codes and standards) that are key for the electric resistance heating industry.
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NEMA HV 2-2019
Suspension and Post Type Insulators for Electric Power Overhead Lines General Use Information
Provides guidelines for the proper application of ceramic (porcelain and toughened glass) suspension insulators.
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NEMA HV 3-2019
Suggested Purchase Specification Guidelines for High Voltage Insulators
Describes best practices on the part of purchasers and suppliers of high voltage insulators toward assuring a consistent and reliable supply of best quality high voltage insulators. It is the intent of these guidelines to provide assistance to those responsible for specifying and purchasing high voltage insulators to identify those best quality insulators most suitable for their specific application and service conditions which can be consistently and reliably supplied.
No Charge

NEMA LI 1-1998 (R2011)
Industrial Laminated Thermosetting Products
Includes information concerning the manufacture, testing and performance of laminated thermosetting products in the form of sheets, rods and tubes.
$421

Relative Temperature Indices of Industrial Thermosetting Laminates
Determines the relative thermal indices temperature ratings of industrial laminate sheets, rods and tubes (rolled and molded).
$105

NEMA RE 2-1999
Electrical Insulating Varnish
Presents all standards for electrical insulating varnishes. Intended to assist those responsible for the design and repair of existing electrical equipment.
$265 | Electronic Copy: $0

NEMA TF 1-1993 (R2000, R2005)
Coated Electrical Sleeving
Covers requirements for and testing of flexible coated sleeving used for electrical insulation.
$76

Impact of Mercury Legislation on the Lighting Industry
Discusses current legislative proposals to regulate mercury-containing lamps and spent-lamp management, focusing on recycling.
No charge

Pin-Based Compact Fluorescent Lamps
Provides background and information on why there are various pin bases for compact fluorescent lamps and what the industry is doing to simplify and standardize base configurations to make specification and lamp replacement easier. NEMA created a generic designation system for CFLs for use by lamp, ballast and luminaire manufacturers in response to user and specifier needs.
No charge

Recommendations for the Care and Maintenance of High-Intensity Metal Halide and Mercury Lighting in Schools
Covers ultraviolet radiation.
No charge

The Labeling of Mercury-Containing Lamps
Discusses goals of product labeling for these lamps and makes recommendations.
No charge

Domestic Procurement Policy and Manufacturing Efficiency for Lighting Products
Assists policy makers and government officials at the federal, state and local levels in evaluating important considerations related to the goal of procuring energy efficient lighting systems to improve operational efficiencies while supporting domestic manufacturing and U.S. jobs in procurement policies.
No charge

ANSI C78.20-2003 (R2007, R2015)
Sets forth the physical and electrical characteristics of the group of incandescent lamps that have A, G, PS, and similar bulb shapes with E26 medium screw bases, including the reduced-wattage versions.
$205
ANSI C78.21-2011 (R2016)
American National Standard for Electric Lamps—PAR and R Shapes
Covers lamps with clear, frosted and lens end bulbs, clear and prescription lenses, and with various reflector coatings. Lamps described in this standard may contain incandescent filament or a tungsten halogen inner bulb.
$257

ANSI C78.22-1995 (R2018)
American National Standard for Incandescent Lamps—A, G, PS and Similar Shapes with E39 Mogul Screw Bases
Sets forth the physical and electrical characteristics of the group of incandescent lamps that have A, G, PS and similar bulb shapes with E39 mogul screw bases.
$95

ANSI C78.23-1995 (R2018)
American National Standard for Incandescent Lamps—Miscellaneous Types
Sets forth the physical and electrical characteristics of the group of incandescent lamps with C, S, T or similar bulb shapes that are not covered in C78.20 and C78.22.
$95

ANSI C78.24-2001
American National Standard for 2 in. (51 mm) Integral-Reflector Lamps with Front Covers and GU5.3 or GX5.3 Bases
Sets forth the physical and electrical characteristics of the group of incandescent lamps that have 2 in. (51 mm) integral-reflector lamps with front cover.
$103

ANSI C78.30-1997 (S2018)
American National Standard for Electric Lamps—Procedure for Use in Preparation of Lamp Space Drawings
Describes the procedure for construction of lamp space drawings.
$76

ANSI C78.40-2016
American National Standard for Electric Lamps—Specifications for Mercury Lamps
Sets forth the physical and electrical requirements for single-ended metal halide lamps operated on 60 Hz ballasts to ensure interchangeability and safety.
$351

ANSI C78.41-2016
American National Standard for Electric Lamps—Guidelines for Low-Pressure Sodium (LPS) Lamps
Describes the physical and electrical requirements of the principal types of single-ended LPS lamps. The electrical data provides the specific basis for ballast requirements for these lamps.
$149

ANSI C78.42-2009 (R2016)
American National Standard for Electric Lamps—High-Pressure Sodium (HPS) Lamps
Sets forth the physical and electrical requirements for HPS lamps to ensure performance and interchangeability. Also provides the basis for the electrical requirements for ballasts and ignitors, as well as the lamp-related requirements for luminaires.
$643

ANSI C78.43-2017
American National Standard for Electric Lamps—Single-Ended Metal Halide Lamps
Sets forth the physical and electrical requirements for single-ended metal halide lamps operated on 60 Hz ballasts to ensure interchangeability and safety.
$608

ANSI C78.44-2016
American National Standard for Electric Lamps—Double-Ended Metal Halide Lamps
Sets forth the physical and electrical requirements for double-ended metal halide lamps operated on 60 Hz ballasts to ensure interchangeability and safety.
$260

ANSI C78.45-2016
American National Standard for Electric Lamps—Self-Ballasted Mercury Lamps
Sets forth the physical and electrical requirements for self-ballasted mercury lamps operated on 60 Hz supply lines to ensure interchangeability and safety. Also provides the lamp-related requirements for luminaires. Luminous flux and lamp color are not part of this standard.
$180
STANDARDS & OTHER PUBLICATIONS: Lighting

ANSI C78.50-2016
American National Standard for Electric Lamps—Assigned LED Lamp Codes
Provides physical and electrical characteristics of the group of integrally ballasted Solid State Lighting (SSL) lamps that have standardized characteristics. Lamps with clear, frosted, opaque, and lens end windows and with various reflector and/or emitting coatings are covered. Lamps covered in this standard contain LED based light sources.
$128
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ANSI C78.51-2016
American National Standard for Electric Lamps—LED (Light Emitting Diode) Lamps—Method of Designation
Describes a system for the designation of integrally ballasted Solid State Lighting (SSL) lamps that have standardized characteristics. Lamps with clear, frosted, opaque, or prescription lenses and with various reflector and/or emitting coatings are covered. Lamps covered in this standard contain LED-based light sources.
$147
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ANSI C78.52-2017
American National Standard for Electric Lamps—LED (Light Emitting Diode) Direct Replacement Lamps—Method of Designation
Describes a system for the designation of LED lamps that are direct replacements for existing ANSI standardized non-LED lamps. Lamps covered in this standard contain LED-based light sources.
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ANSI C78.53-2019
American National Standard for Electric Lamps—Performance Specifications for Direct Replacement LED (Light Emitting Diode) Lamps
Describes the electrical, mechanical, and photometric characteristics of LED lamps that are direct replacements for existing ANSI standardized non-LED lamps. Lamps covered in this standard contain LED-based light sources.
$87
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ANSI C78.54-2019
American National Standard for Electric Lamps—Specification Sheet for Tubular Fluorescent Replacement and Retrofit LED Lamps
Purpose is to standardize the Tubular LED (TLED) Lamp specification sheet, or data reporting format, as the means of communication of critical lamp characteristics. Covers all types of fluorescent replacement and retrofit TLED systems.
$116
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ANSI C78.55-2020
American National Standard for Electric Lamps—LED Lamp Specification Sheets for HID Replacement and Retrofit Applications
Standardizes LED Lamp specification sheets for HID replacement and retrofit applications, as the means of communication of critical lamp characteristics: Intended use ballasts (if applicable), reference circuit (if applicable), identify input voltage requirements (for use with mains voltage), light distribution, other characteristics—may include physical dimensions and/or temperature ratings for operation.
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ANSI C78.79-2014 (R2020)
American National Standard for Electric Lamps—Nomenclature for Envelope Shapes Intended for Use with Electric Lamps
Describes a system of nomenclature that provides designations for envelope shapes used for all electric lamps. The purpose is to include solid state light sources that are functional applications of traditional lamps.
$183
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ANSI C78.81-2016
American National Standard for Electric Lamps—Double-Capped Fluorescent Lamps—Dimensional and Electrical Characteristics
Sets forth the physical and electrical characteristics of the principal types of fluorescent lamps intended for application on conventional line frequency circuits, and electronic high-frequency (HF) circuits. Some data sheets may specify more than one circuit application.
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ANSI C78.180-2003 (R2016)
American National Standard for Electric Lamps—Specifications for Fluorescent Lamp Starters
Covers performance of glow switch starters used with preheat-type fluorescent and similar discharge lamps. It does not include starters that are an integral part of a lamp or manually operated switches that may be used for lamp starting.
$128
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ANSI C78.260-2002
American National Standard for Tubular Tungsten Halogen (TH) Lamps—Physical Characteristics
Covers the dimensional limits and other physical characteristics required to ensure the commonality, interchangeability and proper application of tubular TH lamps.
$145
Buy Now
ANSI C78.261-1977 (R2007)
American National Standard for Specification for Tubular Incandescent Infrared Lamps
Provides specifications for tubular incandescent infrared lamps.
$27

ANSI C78.357-2010
American National Standard for Incandescent Lamps—Tungsten Halogen Lamps (Non-Vehicle)
Specifies performance requirements for various single-ended, double-ended, integral reflector, and PAR tungsten halogen lamps, with rated voltages up to 277 V, and used for projection, photographic, (floodlight), special purpose, general lighting service (GLS), and stage-studio lighting applications.
$228

ANSI C78.370-1997 (R2018)
American National Standard for Method of Designation for Electric Lamps—Photographic, Stage and Studio
Describes a system for the designation of photographic, stage and studio lamps.
$74

ANSI C78.370.390-2002
$16

ANSI C78.374-2015 (R2021)
American National Standard for Electric Lamps—Light-Emitting Diode Package Specification Sheet for General Illumination Applications
Specifies the standardized white light-emitting diode (LED) package specification sheet, or data reporting format, as the means of communication between LED package producers and users in general illumination applications. The minimum defined contents and format of the specification sheet are provided.
$101

ANSI C78.375A-2014 (R2020)
American National Standard for Electric Lamps—Fluorescent Lamps—Guide for Electrical Measures
Describes the procedures to be followed and the precautions to be observed in obtaining uniform and reproducible measurements of the electrical characteristics of fluorescent lamps under standard conditions when operated on alternating current (ac) circuits. These methods are applicable both to lamps having hot cathodes—switch-start (preheat-start), rapid-start (continuously heated cathodes), or instant-start—and to lamps of the cold-cathode variety.
$106

ANSI C78.376-2014 (R2021)
American National Standard for Electric Lamps—Specifications for the Chromaticity of Fluorescent Lamps
Covers the objectives and tolerances for the chromaticity of fluorescent lamps at their normal 100 hour rating point. The colors included are 2700K, 3000K/warm white, 3500K/white, 4000K/4100K/cool white, 5000K, and 6500K/daylight.
$92

ANSI C78.377-2017
American National Standard for Electric Lamps—Specifications for the Chromaticity of Solid State Lighting (SSL) Products
Specifies the range of chromaticities recommended for general lighting with SSL products and ensures that the white light chromaticities of the products can be communicated to consumers. Applies to LED-based SSL products with control electronics and heat sinks incorporated.
$130

ANSI C78.380-2016
American National Standard for Electric Lamps—High-Intensity Discharge (HID)—Method of Designation
Describes a system for the designation of high-intensity discharge lamps, including compact, enclosed-arc discharge light sources such as mercury, metal halide, high-pressure sodium, and similar types of lamps. For convenience, low-pressure sodium lamps, although technically not high-intensity discharge lamps, are included with the group.
$102

ANSI C78.381-1961 (R2011, S2016)
American National Standard for Electric Lamps—Method for the Designation of Glow Lamps
Describes a designation system for glow lamps.
$68
ANSI C78.385-1961 (S2016)
American National Standard for Electric Lamps—Methods of Measurement of Glow Lamps
Outlines the procedures to be followed and the precautions to be observed in testing glow lamps.
$68

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ANSI C78.389-2004 (S2018)
American National Standard for Electric Lamps—High-Intensity Discharge (HID)—Methods of Measuring Characteristics
Describes the procedures to be followed and the precautions to be observed in measuring the electrical characteristics of HID lamps as outlined in the ANSI specifications for mercury, high-pressure sodium and metal halide lamps, as referenced in Clause 2, Normative References.
$464

Buy Now

ANSI C78.390-2006 (S2020)
American National Standard for Electric Lamps—Miniature and Sealed-Beam Incandescent Lamps—Method of Designation
Describes a voluntary system for the method of designation of miniature and sealed-beam lamps. The method is intended to provide lamp manufacturers a means to request a designation.
$188

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ANSI C78.391-2004 (R2009, R2016)
American National Standard for Electric Lamps—Characteristics of Subminiature Lamps of T1 and T1-3/4 Shapes
This standard sets forth the physical and electrical characteristics of those groups of subminiature incandescent lamps with T1 and T1-3/4 bulb shapes. Lamps with various base or termination configurations are included.
$101

Buy Now

ANSI C78.682-1997 (R2016)
American National Standard for Electric Lamps—Standard Method of Measuring the Pinch Temperature of Quartz Tungsten-Halogen Lamps
Specifies details of the type of thermocouple to be used to measure the pinch temperature of quartz-tungsten-halogen lamps, the methods of preparation of the lamp and thermocouple, and the measurement to be made.
$128

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ANSI C78.901-2016
American National Standard for Electric Lamps—Single-Based Fluorescent Lamps—Dimensional and Electrical Characteristics
Sets forth the physical and electrical characteristics required to ensure interchangeability and to assist in the proper application of single-based fluorescent lamps.
$638

Buy Now

ANSI C78.1195-2016
American National Standard for Electric Lamps—Double-Capped Fluorescent Lamps—Safety Specifications
Adopted by ANSI ASC C78 as a nationally acknowledged international standard, this revision of IEC 61195, ed2.2 (2014-09) includes deviations for clauses 2 and 3.
$65

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ANSI C78.1199-2016
American National Standard for Electric Lamps—Single-Capped Fluorescent Lamps—Safety Specifications
$65

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ANSI C78.1381-1998
American National Standard for Electric Lamps—70 W, M85 Double-Ended Metal Halide Lamps
Includes metal halide lamp designations assigned in accordance with C78.380.
$63

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ANSI C78.1401-2004 (R2009, R2016)
American National Standard for Electric Lamps—Dimensions for Projection Lamps—Double-Contact, Medium Ring (Special B), Base-up Type
This standard establishes the dimensions essential to the interchangeability of lamps of the double-contact, medium ring (Special B), base-up type. It is not intended to prescribe either operating characteristics or details of design, such as the shape of the ventilation ports or the method of attachment of the prefocus ring to the base.
$68

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ANSI C78.1402-2004 (S2018)
American National Standard for Electric Lamps—Four-Pin, Prefocus, Base-Down Type
Establishes the dimensions essential to the interchangeability of four-pin, prefocus projection lamps for base-down operation of T10 and T12 bulb sizes.
$54

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### ANSI C78.1403-1997
- Defines the dimensional limits and other physical characteristics required to ensure interchangeability and to assist in the proper application of a specific category of lamps. This category is TH lamps with G6.35, GX6.35 and GY6.35 two-pin bases and 27.0 to 40 mm nominal light center length.
- **Price:** $88

### ANSI C78.1406-2004(S2020)
American National Standard for Electric Lamps—P28 Single-Contact Medium Prefocus-Based Projection Lamps for Base-Down Operation—Dimensions
- Establishes the dimensions essential to interchangeability of single-contact medium prefocus-based projection lamps of T10 and T12 bulb sizes.
- **Price:** $54

### ANSI C78.1407-2004 (S2020)
American National Standard for Electric Lamps—Condenser-Reflector, Four-Pin Prefocus-Base Projection Lamps—Dimensions
- Specifies the dimensions essential to the interchangeability of condenser-reflector lamps having four-pin prefocus bases, T12 or T14 bulbs, and used in 8mm motion-picture projectors.
- **Price:** $60

### ANSI C78.1408-2004 (S2020)
American National Standard for Electric Lamps—CBA Projection Lamp
- Provides information on the description, ratings, restrictions, physical characteristics, dimensions, life, illumination, seal temperature and operating temperature of a lamp that has been Lamp Code Designated as a CBA projection lamp.
- **Price:** $60

### ANSI C78.1413-2001
American National Standard for Dimensions and Centering Systems for Projection Lamps—51 mm (2 in.) Integral Reflector, Rim Reference Lamps with GX5.3, GY5.3 and GU5.3 Bases
- Specifies detailed dimensions for 51 mm (2 in.) integral reflector rim reference projection lamps with GX5.3, GY5.3, or GU5.3 bases to ensure interchangeability within the appropriate holding systems. The lamps provide references for mounting at their reflector rims.
- **Price:** $111

### ANSI C78.1417-1997
American National Standard for 1.65 in. (42 mm) Integral Reflector, Rim Reference Tungsten-Halogen Lamps with GX5.3 Bases
- This standard consolidates the lamps commonly used for slide projectors into a single standard. The lamps contained in this standard are not to be considered as interchangeable, although physically they will all fit the common GX5.3 sockets. The photometry of each lamp is dependent upon the system for which it was designed and on the system in which it is used. A sample system and representative photometric values are found in the Annex.
- **Price:** $68

### ANSI C78.1420-2001
American National Standard for Microfilm Projection Lamps—2 in. (51 mm) Dichroic Coated Integral Reflector, Rim Reference Tungsten Halogen Lamps with GX5.3 Bases
- Consolidates the lamps commonly used for microfilm projectors into a single performance standard.
- **Price:** $129

### ANSI C78.1421-2002
American National Standard for Dimensions and Centering Systems for Projection Lamps—35 mm Integral Reflector, Rim Reference Lamps with GZ4 Bases
- Specifies lamp dimensions of 35 mm (1.38 in.) diameter integral reflector rim reference projection lamps with GZ4 bases so that interchangeability with the appropriate holding systems will be ensured.
- **Price:** $84
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<td>ANSI C78.1431-1997 (R2016)</td>
<td>American National Standard for Electric Lamps—Slide Projector Lamps, Condensing, Dichroic, Two-inch (51 mm), Integral Reflector, Rim Reference Tungsten-Halogen Lamps with GY 5.3 Bases</td>
<td>Consolidates the lamps commonly used for slide projectors into a single standard. The lamps contained in this standard are not to be considered as interchangeable—they will all fit the common socket used for these lamps.</td>
<td>$76</td>
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<td>ANSI C78.1432-1997 (S2018)</td>
<td>American National Standard for Tungsten Halogen (TH) Lamps with GZ9.5 Two-Pin, Prefocus Bases and 36.5 mm Nominal Light Center Length</td>
<td>Defines the dimensional limits and other physical characteristics required to ensure commonality and interchangeability and to assist in the proper application of TH lamps.</td>
<td>$59</td>
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<tr>
<td>ANSI C78.1433-2001 (S2018)</td>
<td>American National Standard for 2 in. (51 mm) Dichroic Coated Integral Reflector, Rim Reference Tungsten Halogen (TH) Large-Screen Projection Lamps with GX5.3 Bases</td>
<td>Consolidates standards for low voltage 2 in. (51 mm) dichroic coated integral reflector, rim reference TH lamp types with GX5.3 bases designed for large-screen projection systems and used in 8 mm and 16 mm projection, slide projector, photo enlarger and printing applications.</td>
<td>$105</td>
</tr>
<tr>
<td>ANSI C78.1434-2001 (S2018)</td>
<td>American National Standard for Condensing Dichroic Coated Integral Reflector Side-Pin Tungsten Halogen (TH) Projection Lamps with GX7.9 Bases</td>
<td>Consolidates previous standards for certain low voltage condensing dichroic coated integral reflector side-pin TH projection lamps with GX7.9 bases designed for large-screen projection systems and used in 8 mm and 16 mm projector applications.</td>
<td>$145</td>
</tr>
<tr>
<td>ANSI C78.1435-2002 (S2018)</td>
<td>American National Standard for Projection Lamps—Tungsten Halogen Lamps with G5.3 Bases</td>
<td>Consolidates projection lamps with G5.3 bases into a single standard.</td>
<td>$70</td>
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<tr>
<td>ANSI C78.1435-1983 (R2002)</td>
<td>American National Standard for Projection Lamps, Incandescent—Method for Life Testing</td>
<td>Defines the dimensional limits and other physical characteristics required to ensure commonality and interchangeability and to assist in the proper application of projection lamps.</td>
<td>$49</td>
</tr>
<tr>
<td>ANSI C78.1450-1983 (R2002)</td>
<td>American National Standard for Projection Lamps, Incandescent—Use of Protective Shields with Tungsten Halogen (TH) Lamps—Cautionary Notice</td>
<td>Applies to the use of protective shields with all TH lamps that do not have an integral device that protects against shattering and ultraviolet emissions.</td>
<td>$9</td>
</tr>
<tr>
<td>ANSI C78.1452-2004 (S2020)</td>
<td>American National Standard for Electric Lamps—Projection Lamps—Vocabulary</td>
<td>Provides definitions for a wide range of terms used in the design, manufacturing and application of photographic lamps. Serves as a common reference for all lamp standards in the C78.1400 series, thus reducing the number of terms that need to be defined in individual standards.</td>
<td>$203</td>
</tr>
<tr>
<td>ANSI C78.1460-2004 (S2020)</td>
<td>American National Standard for Electric Lamps—Single-Ended Tungsten-Halogen Lamps GZ9.5 Base, T6 Bulb, 36.5mm LCL, 76.2mm MOL with Proximity Reflector</td>
<td>This standard defines the dimensional, physical, and other characteristics to assist in the proper application of tungsten-halogen lamps with GZ9.5 bases, T6 (T19) bulbs at 36.5 mm LCL and 76.2 mm maximum overall length with internal proximity reflectors. Lamps of various wattage and voltage designs are included.</td>
<td>$68</td>
</tr>
<tr>
<td>ANSI C78.1500-2001</td>
<td>American National Standard for Tungsten Halogen (TH) Lamps with a Light Center Length (LCL) of 89 mm (3½ in.)</td>
<td>Defines the dimensional limits and other physical characteristics required to ensure interchangeability and assist in the proper application of TH lamps with P28 bases and 89 mm nominal LCL.</td>
<td>$100</td>
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</tbody>
</table>

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ANSI C78.1501-2016  
American National Standard for Electric Lamps—Tungsten-Halogen Lamps with G22 Bases and 63.5 mm LCL  
Defines the dimensional limits and other physical characteristics required to ensure interchangeability and assist in the proper application of TH lamps with G22 bases and 63.5 mm nominal LCL.  
$122

ANSI C78.1503-2001  
American National Standard for Tungsten Halogen (TH) Lamps with G9.5 Bases and 60.5 mm Light Center Length (LCL)  
Defines the dimensional limits and other physical characteristics required to ensure interchangeability and assist in the proper application of TH lamps with G9.5 bases and 60.5 mm nominal LCL.  
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ANSI C78.1504-2001  
American National Standard for Tungsten Halogen (TH) Lamps with P28 Bases and 55.5 mm Light Center Length (LCL)  
Defines the dimensional limits and other physical characteristics required to ensure interchangeability and assist in the proper application of TH lamps with P28 bases and 55.5 mm nominal LCL.  
$60

ANSI C78.1505-2001  
American National Standard for Tungsten Halogen (TH) Lamps with G38 Bases and 127 mm Light Center Length (LCL)  
Defines the dimensional limits and other physical characteristics required to ensure interchangeability and assist in the proper application of TH lamps with G38 bases and 127 mm nominal LCL.  
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ANSI C78.1506-2002 (S2016)  
Describes the standard method of measurement of lamp cap temperature rise which is used when testing incandescent or discharge lamps for compliance with the limits. Temperature-rise limits for particular lamp types are listed in IEC 60432.  
$128

ANSI C78.60360-2002 (S2016)  
Describes the standard method of measurement of lamp cap temperature rise which is used when testing incandescent or discharge lamps for compliance with the limits. Temperature-rise limits for particular lamp types are listed in IEC 60432.  
$128

ANSI C78.60432:1-2007  
Covers tungsten filament lamps for domestic and similar general lighting purposes.  
$36

ANSI C78.60432.2-2007 (S2018)  
Covers TH lamps for domestic and similar general lighting purposes.  
$36

ANSI C78.60432.3-2007 (S2018)  
Covers TH lamps (non-vehicle).  
$36

ANSI C78.62035-2016  
American National Standard for Electric Lamps—Discharge Lamps (Excluding Fluorescent Lamps)—Safety Specifications  
This standard sets forth safety specifications for discharge lamps (excluding fluorescent lamps) with deviations to IEC 62035 (2014-04) Ed. 2.0.  
$65

ANSI C78.62612-2018  
American National Standard for Electric Lamps—Self-Ballasted LED Lamps—Performance Specifications  
Specifies the performance requirements, together with the test methods and conditions, required to show compliance of LED lamps with integral means for stable operation, intended for domestic and similar general lighting purposes.  
$62
ANSI C78.LL 3-2003 (S2020)
American National Standard for Electric Lamps—Procedures for High Intensity Discharge Lamp Sample Preparation and the Toxicity Characteristic Leaching Procedure
Procedures for preparation of high-intensity discharge (HID) lamps for the Toxicity Characteristic Leaching Procedure (TCLP) are presented. These procedures are intended to supplement the TCLP by supplying specific instructions for size reduction and for other critical procedures specific to the testing of HID lamps. $68
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ANSI C78.LL4-2003 (S2018)
American National Standard for Procedures for Incandescent Lamp Sample Preparation and the Toxicity Characteristic Leaching Procedure (TCLP)
Supplements the TCLP by supplying specific instructions for size reduction and other critical procedures specific to the testing of incandescent lamps. $44
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ANSI C78.LL 1256-2003 (S2020)
American National Standard for Electric Lamps—Procedures for Fluorescent Lamp Sample Preparation and the Toxicity Characteristic Leaching Procedure
Procedures for preparation of fluorescent lamps for Toxicity Characteristic Leaching Procedure (TCLP) are presented. These guidelines are intended to supplement the TCLP by supplying specific instructions for size reduction of lamps including integral electronic compact, pin-based compact, linear and U-shaped fluorescent lamps. $141
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ANSI C81.61-2019
American National Standard for Electrical Lamp Bases—Specifications for Bases (Caps) for Electric Lamps
Sets forth the specifications for bases (caps) used on electric lamps. This revision includes specifications for the G6.6 base. $660
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ANSI C81.62-2019
American National Standard for Electric Lampholders
Sets forth the specifications for lampholders for electric lamps. This revision includes specifications for the G6.6 lampholder. $485
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ANSI C81.63-2019
American National Standard for Gauges for Electric Lamp Bases and Lampholders
Standard sets forth the specifications for gauges for bases (caps) and lampholders for electric lamps. $579
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ANSI C81.64-2005 (R2014, S2020)
American National Standard—Guidelines and General Information for Electrical Lamp Bases, Lampholders and Gauges
Gives guidance and information to designers and testing personnel on the use of ANSI_IEC C81.61, ANSI_IEC C81.62 and ANSI_IEC C81.63 and their supplements. $155
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ANSI C82.1-2004 (R2008, R2015, S2020)
American National Standard for Lamp Ballasts—Line Frequency Fluorescent Lamp Ballasts
Covers ballasts which have rated open circuit voltages of 2000 V or less and are intended to operate lamps at a frequency of 50 Hz or 60 Hz. $126
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ANSI C82.2-2002 (R2007, R2016, S2021)
American National Standard for Lamp Ballasts—Method of Measurement of Fluorescent Lamp Ballasts
Outlines the procedures and the precautions to be observed in measuring and testing line frequency fluorescent lamp ballasts as specified in C82.1 with either hot- or cold-cathode fluorescent lamps. $188
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ANSI C82.3-2016
American National Standard for Reference Ballasts for Fluorescent Lamps
Describes the essential design features and operating characteristics of reference ballasts for fluorescent lamps. $91
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ANSI C82.4-2017
American National Standard for Lamp Ballasts—Ballasts for High-Intensity Discharge and Low-Pressure Sodium (LPS) Lamps (Multiple-Supply Type)
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ANSI C82.6-2015 (R2020)
American National Standard for Lamp Ballasts—Ballasts for High-Intensity Discharge (HID) Lamps—Methods of Measurement
Describes the procedures to be followed and the precautions to be taken in measuring performance of low-frequency ballasts (electromagnetic and electronic ballasts that operate at less than 400 Hz) for high-intensity discharge (HID) lamps. $379
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ANSI C82.9-2016
American National Standard for Lamp Ballasts—High-Intensity Discharge (HID) and Low-Pressure Sodium (LPS) Lamps—Definitions
Provides definitions relative to specific terms contained in HID and LPS lamps and ballast standards. Covers the dimensional limits and other physical characteristics required to ensure the commonality, interchangeability and proper application of these lamps.
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ANSI C82.11-2017
American National Standard for Lamp Ballasts—High Frequency Fluorescent Lamp Ballasts
Covers high frequency ballasts that have rated open-circuit voltages of 2,000 V or less and are intended to operate at a supply frequency of 50 or 60 Hz.
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ANSI C82.13-2020
American National Standard for Lamp Ballasts—Definitions—for Fluorescent Lamps and Ballasts
Provides definitions of terms used in ANSI C78 and C82 series standards for fluorescent lamps and ballasts. Individual standards may also include additional definitions specific to that standard.
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ANSI C82.14-2016
American National Standard for Lamp Ballasts—Low-Frequency Square Wave Electronic Ballasts—for Metal Halide Lamps
Provides specifications for and operating characteristics of low-frequency square wave electronic ballasts for metal halide lamps. Covers lamp operating-current frequencies from greater than 60 Hz up to 400 Hz (some exclusionary frequency ranges may apply).
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ANSI C82.15-2021
American National Standard for Lighting Equipment—LED Drivers Robustness
Applies to hardware and microcontroller (microprocessor)-based LED drivers. This American National Standard describes testing methods used to evaluate LED drivers’ robustness or their ability to withstand the specific stresses described within.
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ANSI C82.16-2020
American National Standard for Light-Emitting Diode Drivers—Methods of Measurement
Describes the procedures to be followed and the precautions to be taken in measuring performance of LED drivers. The scope includes, but is not limited to, LED drivers with these characteristics: General lighting, exterior lighting, and roadway lighting applications Input supply voltage up to 600 VDC or 600 VAC (50 or 60 Hz) Output open-circuit voltage of 600 V or less Constant-current or constant-voltage DC output Fixed, variable (dimmable), pulse width modulation, or programmable (tunable) output power External (standalone) or internal (enclosed in luminaire).
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ANSI C82.17-2017
American National Standard for Lamp Ballasts—High Frequency (HF) Electronic Ballasts for Metal Halide Lamps
Provides specifications for, and operating characteristics of, high-frequency electronic ballasts for metal halide lamps.
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ANSI C82.18-2020
American National Standard for Lighting Equipment—Electromagnetic Compatibility (EMC) General Requirements and Criteria
Defines the electromagnetic compatibility “EMC” (immunity and Interference) performance levels, testing methods, and performance criteria for lighting products in a frequency range from 0 to 400 GHz. Applies to lighting products intended to be directly connected to the mains (up to 600V), DC (up to 250VDC), battery operated or to a non-public, low voltage power distribution system.
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ANSI C82.19-2020
American National Standard for Lighting Equipment—Electrostatic Discharges
Adopts IEC 61000-4-11 Edition 2.1 2017-05 as a nationally acknowledged international standard with deviations. It specifies testing and measurement techniques–voltage dips, short interruptions, and voltage variations immunity tests for lighting equipment.
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ANSI C82.10-2017
American National Standard for Lighting Equipment—Harmonic Emission Limits—Related Power Quality Requirements for Lighting Equipment
Specifies harmonic limits and methods of measurement for lighting equipment.
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ANSI C82.11-2020
American National Standard for Lighting Equipment—Electromagnetic Compatibility (EMC) General Requirements and Criteria
Defines the electromagnetic compatibility “EMC” (immunity and Interference) performance levels, testing methods, and performance criteria for lighting products in a frequency range from 0 to 400 GHz. Applies to lighting products intended to be directly connected to the mains (up to 600V), DC (up to 250VDC), battery operated or to a non-public, low voltage power distribution system.
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### ANSI C82.77-3-2020
Adopts IEC 61000-4-3, ed3.2 (2010-04), as a Nationally Acknowledged international standard with deviations. It specifies EMC testing and measurement techniques—radiated, radio-frequency electromagnetic field immunity tests for lighting equipment.
**Price:** $56

### ANSI C82.77-4-2020
American National Standard for Lighting Equipment—Power Line Frequency Magnetic Field Immunity Test
Adopts IEC 61000-4-8 Edition 2 2009-09 as a Nationally Acknowledged international standard with deviations. It specifies power line frequency magnetic field immunity limits and test requirements for lighting equipment.
**Price:** $56

### ANSI C82.77-5-2017
American National Standard for Lighting Equipment—Voltage Surge Requirements
Specifies voltage surge limits and testing requirements for lighting equipment.
**Price:** $84

### ANSI C82.77-7-2020
Adopts IEC 61000-4-11 Edition 2.1 2017-05 as a Nationally Acknowledged international standard with deviations. It specifies testing and measurement techniques—voltage dips, short interruptions, and voltage variations immunity tests for lighting equipment.
**Price:** $56

### ANSI C82.77-8-2020
American National Standard for Lighting Equipment—Fast Transients
Adopts IEC 61000-4-4:2012 as a Nationally Acknowledged international standard with deviations. It specifies fast transient limits and testing requirements for lighting equipment.
**Price:** $56

### ANSI C82.77-9-2020
American National Standard for Lighting Equipment—Injected Currents
An adoption of IEC 61000-4-6 Edition 4 2013-10 as a Nationally Acknowledged International standard with regional deviations.
**Price:** $56

### ANSI C82.77-10-2020
American National Standard for Lighting Equipment—Harmonic Emission Limits—Related Power Quality Requirements
Specifications harmonic limits, their methods of measurement, and power factor (PF) for lighting equipment. This standard covers all types of lighting equipment that is used for general illumination typically found in residential, commercial, and industrial applications.
**Price:** $110

### ANSI C136.1-2012 (R2018)
Provides a guide for the proper selection of filament lamps for use in roadway and area lighting equipment covered by the following standards ANSI C136.4, ANSI C136.5, ANSI C136.6 and ANSI C136.11.
**Price:** $53

### ANSI C136.2-2018
American National Standard for Roadway and Area Lighting Equipment—Dielectric Withstand and Electrical Transient Immunity Requirements
This standard covers luminaires and control devices classified for up to 600 V operation and intended for use in roadway and area lighting applications. It contains minimum performance requirements and test procedures for evaluating luminaire and control devices under test (DUTs) for dielectric withstand and electrical transient immunity.
**Price:** $53

### ANSI C136.3-2020
American National Standard for Roadway and Area Lighting Equipment—Luminaire Attachments
Covers attachment features of luminaires used in roadway and area lighting equipment. The features covered apply to luminaires that are side-, post top- or pendant-mounted.
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<td>ANSI C136.4-2019</td>
<td>American National Standard for Roadway and Area Lighting Equipment—Series Sockets and Series-Socket Receptacles</td>
<td>Covers series sockets having medium-impact strength and intended for service at high temperatures, series sockets having high-impact strength and intended for service at limited temperatures, and series-socket receptacles in the 5,000 V classification.</td>
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<td>ANSI C136.5-2003 (R2013)</td>
<td>American National Standard for Roadway and Area Lighting Equipment—Film Cutouts</td>
<td>Covers operating and dimensional features of single-shot film cutouts used with series roadway lighting equipment and circuits that function by dielectric breakdown and subsequent partial fusing of components to establish a shunting electrical circuit to bypass non-operative series roadway lighting equipment.</td>
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<td>ANSI C136.6-2004 (R2012, R2018)</td>
<td>American National Standard for Roadway and Area Lighting Equipment—Metal Heads and Reflector Assemblies—Mechanical and Optical Interchangeability</td>
<td>Covers dimensional features of luminaires with metal heads that permit mechanical and optical interchangeability of head and reflector assemblies.</td>
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<td>ANSI C136.9-2003 (R2012, R2018)</td>
<td>American National Standard for Roadway and Area Lighting Equipment—Socket Support Assemblies for Metal Heads—Mechanical Interchangeability</td>
<td>Covers the following equipment for use in metal heads that are in accordance with the latest revision of C136.6 high-intensity discharge lamp ballast and socket assemblies, and mogul and medium multiple incandescent lamp socket and support assemblies.</td>
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</tr>
<tr>
<td>ANSI C136.10-2017</td>
<td>American National Standard for Roadway and Area Lighting Equipment—Locking-Type Photocontrol Devices and Mating Receptacles—Physical and Electrical Interchangeability and Testing</td>
<td>Covers the following roadway and area lighting equipment, which may be physically and electrically interchanged to operate within established values locking-type photocontrol; locking-type mating receptacle; and shorting and non-shorting caps.</td>
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<td>ANSI C136.11-2011 (R2016, S2021)</td>
<td>American National Standard for Roadway and Area Lighting Equipment—Multiple Sockets</td>
<td>Discusses medium and mogul screw base sockets used in multiple fixture circuits or in luminaires designed and intended for parallel wired circuits. Provides interchangeability of lamps, minimum safety standards for operating personnel, and minimum performance criteria in lighting roadways and areas open to the public.</td>
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<tr>
<td>ANSI C136.13-2020</td>
<td>American National Standard for Roadway and Area Lighting Equipment—Metal Brackets for Wood Poles</td>
<td>Covers metal pipe, tubing and structural brackets for wood poles designed to support luminaires of generally spherical, ellipsoidal or rectangular shapes used in roadway and area lighting.</td>
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</tr>
<tr>
<td>ANSI C136.15-2020</td>
<td>American National Standard for Roadway and Area Lighting Equipment—Luminaire Field Identification</td>
<td>The intent of this standard is to provide a simple, uniform method for identifying the type and wattage rating of a luminaire used for roadway and area lighting.</td>
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ANSI C136.16-2019
American National Standard for Roadway and Area Lighting Equipment—Enclosed Post-Top-Mounted Luminaires
Covers dimensional, maintenance, and light distribution features that permit the interchange of enclosed, post top–mounted high-intensity discharge (HID), solid state light (SSL) source (also referred to as LED (Light Emitting Diode), compact fluorescent, and induction luminaires whose center of mass is approximately over the mounting tenon.
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American National Standard for Roadway and Area Lighting Equipment—Enclosed Side-Mounted Luminaires for Horizontal-Burning High-Intensity Discharge Lamps—Mechanical Interchangeability of Refractors
Covers the dimensional features and the materials of refractors as shown in this standard and as described in C136.14.
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ANSI C136.18-2018
American National Standard for Roadway and Area Lighting Equipment—High-Mast Side-Mounted Luminaires for Horizontal- or Vertical-Burning High-Intensity Discharge Lamps
Covers physical, operational, maintenance and light-distribution features that permit use of high-mast luminaires in roadway applications when specified.
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ANSI C136.19-2017
American National Standard for Roadway and Area Lighting Equipment—High-Pressure Sodium (HPS) and Retrofit HPS Lamps for Mercury Ballasts—Guide for Selection
Covers the selection of HPS lamps recommended for use in roadway and area lighting equipment.
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ANSI C136.20-2012 (R2021)
American National Standard for Roadway and Area Lighting Equipment—Fiber-Reinforced Composite (FRC) Lighting Poles
Applies to FRC lighting poles used for roadway and area lighting. Includes nomenclature, dimensional data, performance criteria and some interchangeability features for standard poles as well as those that must meet breakaway requirements for poles as described in AASHTO LTS Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals.
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ANSI C136.21-2014
American National Standard for Roadway and Area Lighting Equipment—Vertical Tenons Used with Post Top–Mounted Luminaires
Covers the attachment features of vertical tenons on pole tops or brackets used in roadway and area lighting that permit the interchangeability of post top–mounted luminaires.
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ANSI C136.22-2019
American National Standard for Roadway and Area Lighting Equipment—Internal Labeling of Luminaires
Covers internal luminaire identification labels for all styles of luminaires used for roadway lighting.
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ANSI C136.23-2021
American National Standard for Roadway and Area Lighting Equipment—Enclosed Architectural Luminaires
Covers physical, operating, maintenance and light-distribution features that permit use of architectural luminaires in roadway applications.
$68
Buy Now

ANSI C136.24-2020
American National Standard for Roadway and Area Lighting Equipment—Non-Locking (Button)–Type Photocontrols
Covers the electrical and mechanical interchangeability of non-locking–type photocontrols for mounting within a roadway or off-roadway luminaire.
$74
Buy Now

ANSI C136.25-2019
American National Standard for Roadway and Area Lighting Equipment—Ingress Protection (Resistance to Dust, Solid Objects and Moisture) for Luminaire Enclosures
Addresses the protection of luminaires from ingress based on the anticipated environment.
$84
Buy Now

ANSI C136.26-2010 (R2015, S2020)
Offers step-by-step guidance for use in troubleshooting HID lighting fixtures by technicians in the field.
$49
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<td>ANSI C136.27-2021</td>
<td>American National Standard for Roadway and Area Lighting Equipment—Tunnel Lighting and Underpass Luminaires</td>
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<td>ANSI C136.31-2018</td>
<td>American National Standard for Roadway and Area Lighting Equipment—Luminaire Vibration</td>
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<td>ANSI C136.32-2020</td>
<td>American National Standard for Roadway and Area Lighting Equipment—Enclosed Setback Luminaires and Directional Floodlights for High-Intensity Discharge (HID) Lamps</td>
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<tr>
<td>ANSI C136.35-2020</td>
<td>American National Standard for Roadway and Area Lighting Equipment—Locking-Type Power Taps (LTPT)</td>
<td>$63</td>
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ANSI C136.41-2013
American National Standard for Roadway and Area Lighting Equipment—Dimming Control Between an External Locking Type Photocontrol and Ballast or Driver
Describes methods of light level control between an external locking type photocontrol (or similar device) and a dimmable ballast or driver for street and area lighting equipment. Mechanical, electrical, and marking requirements are established for dimming, locking type photocontrols and mating receptacles.
$80

ANSI C136.42-2019
American National Standard For Roadway and Area Lighting Equipment—Solid State Lighting Retrofit Kits
Defines the mechanical and electrical requirements for transforming an installed HID roadway and area luminaire to a solid state roadway and area luminaire. This standard is limited to non-screwbase retrofit kits only.
$45

ANSI C136.45-2011 (R2016, S2021)
American National Standard for Roadway and Area Lighting Equipment—Aluminum Lighting Poles
Provides specification information for aluminum lighting poles as used in roadway and area lighting applications.
$84

ANSI C136.46-2020
American National Standard For Roadway and Area Lighting Equipment—Concrete Lighting Poles
Applies to concrete lighting poles used in roadway and area lighting equipment and includes nomenclature, performance criteria, marking and record keeping requirements and certain minimal material needs. It does not cover concrete poles manufactured with any modified concrete mix incorporating the use of polymers or other modifiers.
$76

ANSI C136.47-2010 (R2015, S2021)
American National Standard for Roadway and Area Lighting Equipment—Steel Roadway and Area Lighting Poles
Provides construction and performance guidance for steel poles used in roadway and area lighting applications.
$84

ANSI C136.48-2018
American National Standard For Roadway and Area Lighting Equipment—Wireless Networked Lighting Controllers
Defines the minimum requirements for wireless networked lighting controllers (NLC) intended for use with roadway and area lighting systems.
$72

ANSI C136.49-2016
American National Standard for Roadway and Area Lighting Equipment—Plasma Lighting
Defines the electrical and mechanical requirements of plasma type light sources for use in roadway and area lighting luminaires.
$66

ANSI C136.50-2021
Describes methods and requirements for the measurement of energy consumption and the reporting of the consumption for a Network Lighting Controller (NLC) device in an outdoor lighting application.
$78

ANSI C136.52-2021
American National Standard for Roadway and Area Lighting Equipment—Metering Performance Requirements for LED Drivers with Integral Energy Measurement
Establishes acceptable metering performance criteria for LED drivers with built in (integral to the driver) energy consumption measurement functionality for use in outdoor luminaire applications. It describes two metering device performance levels for roadway and area lighting applications: 2% Accuracy Class and 5% Accuracy Class.
$74

ANSI C136.53-2017
American National Standard for Roadway and Area Lighting Equipment—Enclosed Pendant Mounted luminaires
Covers dimensional, maintenance, and light distribution features that permit the interchange of enclosed pendant-mounted luminaires whose center mass is directly below the mounting bracket.
$48
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<tr>
<td>ANSI C136.58-2019</td>
<td>American National Standard for Roadway and Area Lighting Equipment—Luminaire Four-Pin Extension Module and Receptacle—Physical and Electrical Interchangeability and Testing</td>
<td>Provides mechanical and electrical specifications for interfacing street and area lighting with controls and sensor accessories.</td>
<td>$59</td>
<td></td>
</tr>
<tr>
<td>ANSI C137.0-2017</td>
<td>American National Standard For Lighting Systems—Lighting Systems Terms and Definitions</td>
<td>Definitions listed in this document apply or are directly related to lighting systems and are used in multiple lighting system standards.</td>
<td>$32</td>
<td></td>
</tr>
<tr>
<td>ANSI C137.1-2019</td>
<td>American National Standard for Lighting Systems— 0-10V Dimming Interface for LED Drivers, Fluorescent Ballasts, and Controls</td>
<td>Specifies the 0-10 volt control interface method and performance requirements for dimmable LED drivers, fluorescent ballasts, and dimming control units where output power is adjustable between minimum/off and maximum via a control input signal.</td>
<td>$105</td>
<td></td>
</tr>
<tr>
<td>ANSI C137.2-2019</td>
<td>American National Standard—Cybersecurity Requirements for Lighting Systems—Parking Lots</td>
<td>Provides cybersecurity requirements for lighting systems used in parking lots with public access.</td>
<td>$174</td>
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<tr>
<td>ANSI C137.3-2017</td>
<td>American National Standard for Lighting Systems—Minimum Requirements for installation of Energy Efficient Power over Ethernet (PoE) Lighting Systems</td>
<td>Specifies the minimum requirements for installation of Power over Ethernet (PoE) lighting systems to ensure minimal energy losses.</td>
<td>$59</td>
<td></td>
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<tr>
<td>ANSI C137.4-2019</td>
<td>American National Standard for Lighting Systems— Digital Interface with Auxiliary Power</td>
<td>Specifies the minimum requirements for devices such as drivers, controls, sensors, and communication devices supporting a digital interface between devices.</td>
<td>$92</td>
<td></td>
</tr>
<tr>
<td>ANSI C137.5-2021</td>
<td>American National Standard for Lighting Systems—Energy Reporting Requirements for Lighting Devices</td>
<td>Specifies the minimum performance requirements for lighting devices that report energy data. These requirements include the specific energy data types to be reported, the nominal and statistical accuracy performance for all reported data types, and references to other standards that define the information model for all data types.</td>
<td>$90</td>
<td></td>
</tr>
<tr>
<td>ANSI C137.6-2021</td>
<td>American National Standard for Lighting Systems—Data Tagging Vocabulary (Semantic Model Elements)for Interoperability</td>
<td>Contains a Controlled Vocabulary of terms for Lighting Systems. These terms enable the development of semantic model elements, e.g., tags that facilitate the exchange of data and metadata used in control and analytics. The terms contained in this standard are intended to be used by available semantic models such as, but not limited to, the future ASHRAE 223P Standard, Project Haystack, and Brick.</td>
<td>$90</td>
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<tr>
<td>ANSI C137.7-2020</td>
<td>American National Standard for Lighting Systems—Networked Open Parking Lot Lighting Systems</td>
<td>Sets forth a minimum set of functionalities required in networked open parking lot lighting systems. This standard does not apply to covered parking garages.</td>
<td>$90</td>
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<tr>
<td>NEMA 77-2017</td>
<td>Temporal Light Artifacts: Test Methods and Guidance for Acceptance Criteria</td>
<td>Recommends a method of quantifying the visibility of temporal light artifacts (TLA), and recommends initial, broad application-dependent limits on TLA.</td>
<td>$338</td>
<td></td>
</tr>
<tr>
<td>NEMA 100-2021</td>
<td>Wire Insulation Colors for Lighting Systems</td>
<td>Specifies a visual reference for the violet, pink, and red colors of the wire insulation supplied with luminaires, controls, ballasts, drivers, and other devices that are part of a lighting system.</td>
<td>No charge</td>
<td></td>
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</tbody>
</table>
### NEMA BIM 100-2021
**BIM Data Requirements for Electrical Products in Support of Design, Construction, Operation, and Maintenance**

Provides a list of properties and data types for electrical products to enhance BIM models with interoperable data for design, construction, operation and maintenance of electrical systems in buildings. This standard covers: Light Fixtures Electrical Devices (Receptacles, Switches) Electrical Appliances (Refrigerators, Ranges, etc.) Electrical Equipment (Circuits, Panels and Transformers) This standard is not intended to cover geometry for creating 3-D BIM models, but rather define electrical product data requirements with optional levels of compliance to support electrical system design, construction, operation, and maintenance.

*Packaged with this standard is an accompanying white paper, BIM Content for Electrical Products: Current Status and Industry Needs, and a text file of code, NEMA Standard Shared Parameters, that users can import into Revit, a CAD software system. Download the full package here: BIM 100-2021 Whitepaper and Standard.

**No charge**

### NEMA DCP 1-2018
**Direct Current in Buildings**

Summarizes the results from a survey on DC in buildings and provides background on the primary drivers for DC systems. It also highlights potential benefits of using DC in buildings and opportunity areas in next five to ten years.

**No charge**

### NEMA FL SET
**Fluorescent Set**

The fluorescent lamps and ballasts package classifies as either double-ended or single-ended lamps. Glow starters are also covered by this product. Set includes ANSI C78.5, ANSI C78.30, ANSI C78.81, ANSI C78.180, ANSI C78.375, ANSI C78.376, ANSI C79.1, ANSI C81.61, ANSI C81.62, ANSI C81.63, ANSI C82.1, ANSI C82.11, ANSI C82.12, ANSI C82.13, ANSI C82.2, ANSI C82.3, ANSI C82.77.

**$2,379**

### NEMA HID SET
**HID Set**

High intensity discharge lamps and ballasts standards set contains low/high pressure lamps and metal-halide lamps. Set includes ANSI C78.30, ANSI C78.40, ANSI C78.41, ANSI C78.42, ANSI C78.43, ANSI C78.44, ANSI C78.45, ANSI C78.379, ANSI C78.380, ANSI C78.389, ANSI C79.1, ANSI C81.61, ANSI C81.62, ANSI C81.63, ANSI C82.4, ANSI C82.6, ANSI C82.77, ANSI C82.9.

**$2,842**

### NEMA SSL SET
**SSL Set**

Solid state lighting standards include semiconductor light sources—light emitting diodes (LEDs), laser diodes, organic LEDs, and any other semiconductor light sources; controlgear; light emitting diode (LED) drive circuits; and microwave power supplies for electrodeless lamps. The set includes: ANSI C78.30, ANSI C78.377, ANSI C78.79, ANSI C81.61, ANSI C81.62, ANSI C81.63, ANSI C82.77, NEMA SSL 1, NEMA SSL 3, NEMA SSL 4, NEMA SSL 6, and NEMA SSL 7A.

**$1,917**

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NEMA LC 1-2007 (R2013, 2018)
Test Procedure for Compatibility of Hearing Aids and Ultrasonic Lighting Control Devices
Sets forth test procedures for use with a small acoustic chamber to evaluate potential interactions between hearing aids and ultrasonic lighting control devices (occupancy sensors). Test procedures are designed to simulate and test occupancy sensors at three typical, specific frequencies (25 kHz, 32.7 kHz and 40 kHz) and one type of hearing aid.
$70 | Electronic Copy: $0

NEMA LE 4-2012 (R2018)
Recessed Luminaires, Ceiling Compatibility
Contains definitions, dimensions and tolerances for recessed luminaires designed to use fluorescent high-intensity discharge and incandescent light sources.
$102

NEMA LE 5A-1999
Procedure for Determining Luminaire Efficacy Ratings for Commercial, Non-Residential Downlight Luminaires
Provides a standardized test method for determining the luminaire efficacy rating of incandescent, compact fluorescent and low-wattage high-intensity discharge downlight luminaires. When rating a fixture in accordance with EPAct 1992, use this standard. For other purposes, see NEMA LE 6, a newer standard for luminaire efficacy that supersedes the LE 5 series.
$95 | Electronic Copy: $0

NEMA LE 5B-1998
Procedure for Determining Luminaire Efficacy Ratings for High-Intensity Discharge (HID) Industrial Luminaires
Provides standardized tests to evaluate the energy efficiency of HID industrial luminaires. Provides a procedure for determining the luminaire efficacy ratings under laboratory test conditions, including visual tasks involved, luminaire placement, such performance characteristics as color and glare, lighting maintenance, on/off level control and a ballast’s ability to regulate lamp wattage. When rating a fixture in accordance with EPAct 1992, use this standard. For other purposes, see NEMA LE 6, a newer standard for luminaire efficacy that supersedes the LE 5 series.
$60 | Electronic Copy: $0

NEMA LE 6-2014
Procedure for Determining Target Efficacy Ratings for Commercial, Industrial, and Residential Luminaires
Provides a procedure for the determination of TER for luminaires under laboratory test conditions and describes categories or types of product used in common indoor and outdoor lighting applications. This standard does not apply to luminaires for specialized applications, including but not limited to products intended to be aimed, accent luminaires, rough or hazardous use luminaires or emergency lighting.
$92 | Electronic Copy: $0

NEMA LE 7-2015
Recessed Luminaires Intended for Contact with Expanding Polyurethane Foam Insulation
Defines a subset of insulation contact (Type IC) luminaires that are appropriate for use with polyurethane spray foam. This standard also provides requirements and recommendations for Type IC recessed luminaires intended for installation in contact with low-density and medium-density polyurethane foam thermal insulation.
$66 | Electronic Copy: $0

NEMA LL 8-2010
Limits on Mercury Content in Self-Ballasted Compact Fluorescent Lamps
Covers limited integral, self-ballasted compact fluorescent lamps of all base types. Applies to integral, self-ballasted compact fluorescent lamps manufactured or imported after September 2010.
$51 | Electronic Copy: $0

Own a complete set of all NEMA Standards.
$41,008
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<td>NEMA LL 9-2011</td>
<td>Dimming of T8 Fluorescent Lighting Systems</td>
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<td>NEMA LL 10-2020</td>
<td>Replacing HID Lamps with LED Lamps: Light Output Equivalency Claims</td>
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<td>NEMA LS 20000-2021</td>
<td>Physical Interface of Luminaire-Integrated Control Devices</td>
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<td>NEMA LS 20001-2021</td>
<td>White Paper on Unified Glare Rating (UGR)</td>
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<td>NEMA LS 20004-2017 (R2021)</td>
<td>Understanding the New Fluorescent Ballast Rule EPCA 10 CFR 430</td>
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<td>Light Source Color Rendition</td>
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<td>NEMA LSD 1-2003 (R2016, S2020)</td>
<td>Tungsten Halogen (TH) Lamps (Bulbs): Ultraviolet, Rupture and High Temperature Risks</td>
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<td>NEMA LSD 2-2012 (R2016, S2020)</td>
<td>Wiring Requirements for T8 Lamps with Instant-Start Ballasts</td>
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<td>NEMA LSD 7-1999 (R2012, R2016, S2020)</td>
<td>Ultraviolet Radiation (UV) from Fluorescent Lamps</td>
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<tr>
<td>NEMA LSD 9-2000 (R2011, R2017)</td>
<td>Compatibility of Add-on Tube Guards with T8 Fluorescent Lamps Operating on High-Frequency Electronic Ballasts</td>
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<tr>
<td>NEMA LSD 8-2020</td>
<td>Power Quality Implications of Self-ballasted Lamps in Residences</td>
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NEMA LSD 14-2012 (R2019)
Guidelines on the Application of Dimming to High-Intensity Discharge Lamps
Imparts general information and considerations in the design and application of such systems. Contact the manufacturers of the lamps, ballasts, and dimming systems for specific recommendations.
No charge

NEMA LSD 18-2018
Selection of Electronic Ballasts for Fluorescent Lamps in Frequently Switched Applications
Provides guidance in the selection of ballast type as a function of lamp switching rate to achieve the desired energy savings while maintaining acceptable lamp life.
No charge

NEMA LSD 21-2019
End-of-life Operation of Small Diameter (5/8 in. Diameter or Less) Pin-Based Fluorescent Lamps
Addresses variations in electrical and thermal parameters of small-diameter fluorescent lamps.
No charge

NEMA LSD 22-2001 (R2020)
Demand Reduction and Energy Savings Using Occupancy Sensors
Provides unique and valuable data about occupancy sensor demand reduction and energy savings potential.
No charge

NEMA LSD 23-2016 (R2020)
Recommended Practice—Lamp Seasoning for Fluorescent Dimming Systems
This paper provides a recommended practice to season lamps for Fluorescent Dimming Systems.
No charge

NEMA LSD 24-2019
Marking of Luminaire Codes on Metal Halide Lamps
Provides information on marking metal halide lamps with the manufacturer’s commercial designation, including lamp wattage, ANSI code, lamp type, electrical code, and luminaire code.
No charge

NEMA LSD 27-2012
Best Practices for Operating Fluorescent Lighting Systems
Summarizes information and recommendations found in more detailed NEMA papers on individual topics, as well as additional information and recommendations. The information benefits customers seeking to ensure proper operation of fluorescent systems to maximize system reliability and operational economy.
No charge

NEMA LSD 28-2014 (R2019)
Minimizing the Potential of Base Arcing Between Certain Wattage HID Lamps and Lampholders
Provides information regarding Use of Appropriate HID Lamp Holders to Minimize Potential Base Arcing with Certain HID Lamp Wattages.
No charge

NEMA LSD 29-2019
Incompatibility of T8 Ballasts (RS, PS, Dimming) and Shunted Bi-Pin Lampholders
Provides information on incorrect applications of bi-pin lampholders (tombstones) used with rapid-start (RS), programmed start (PS) and dimming ballasts. These incorrect applications have occurred in both new luminaires and field lamp and ballast retrofits.
No charge

NEMA LSD 34-2012 (R2020)
Recommended Practices for T8 Rapid-Start Fluorescent Lamp Dimming (17 W, 25 W, 32 W and 40 W Lamps)
Addresses the selection, integration, installation, application and maintenance of the dimming system components that together constitute a T8 fluorescent lamp-dimming system.
No charge

NEMA LSD 40-2019
Failure Modes for Self-Ballasted Compact Fluorescent Lamps (SBCFLs)—A NEMA Update
Explains in simplified terms why SBCFLs have different failure modes from normal incandescent lamps.
No charge

NEMA LSD 41-2020
UN2911 Labeling and Transportation of Lamps Containing Radioactive Substances
Provides information about shipping and labeling of lamps that contain radioactive substances. The vast majority of light bulbs, also called lamps by the lighting industry, do not contain any radioactive materials. Certain types contain very small amounts of radioactive isotopes which help to improve lamp ignition, lamp life and lumen maintenance.
No charge

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NEMA LSD 46-2019
Photo-Luminescent Exit Signage—Factual Review
Describes concerns regarding the marketing and application recommendations common to photo-luminescent exit signage in the U.S. and Canada. Intended to educate potential users as to the considerations regarding installing and relying upon this type of emergency equipment.
No charge

NEMA LSD 49-2010
Solid State Lighting for Incandescent Replacement—Best Practices for Dimming
Provides recommendations for the dimming and design of screw-based incandescent replacement solid state lighting products.
No charge

NEMA LSD 55-2017
Outdoor Lighting and Human/Animal Factors An Industry Opinion
Outlines industry concerns and opinions regarding the subject of light at night and outdoor electric lighting as related to humans, animals, energy conservation and the environment.
No charge

NEMA LSD 57-2018
Polyurethane Foam Application: Lighting Equipment
Provides information regarding practical aspects of applying spray foam insulation that may come into contact with luminaires in various building applications.
No charge

NEMA LSD 58-2021
Air Infiltration Ratings for Recessed Luminaires
Addresses the standard test procedure, installation requirements, and labeling applicable to luminaires to demonstrate limited airflow.
No charge

NEMA LSD 60-2012
The Effects of Dimming on Color and Efficacy of LED Lamps
Describes and demonstrates the effects of dimming on color and efficacy of LED-based lamps.
No charge

NEMA LSD 61-2012 (R2020)
Fluorescent Dimming Standards Development Report
Summarizes TFDS work and presents final results in a report for more detailed cited publications.
No charge

NEMA LSD 62-2020
Systems Approach for Lighting
Maximizes energy savings by shifting the regulatory focus from appliance standards to lighting systems standards as incorporated into building energy code.
No charge

NEMA LSD 63-2020
Measurement Methods and Performance Variation for Verification Testing of General Purpose Lamps and Systems
Establishes variations that can be expected when independent verification testing. Generally this is based on small samples of lamps or ballasts performed to estimate product performance characteristics and for comparison to manufacturer’s ratings.
No charge

NEMA LSD 64-2019
Lighting Controls Terminology
Defines terminology related to controls for lighting systems for non-residential and residential applications.
No charge

NEMA LSD 65-2019
NEMA Guide to Emergency Lighting
Provides information on emergency lighting systems, related codes, and regulations. This is not a “how to” manual for emergency lighting and exit signs. It is designed to provide a basic understanding of emergency lighting unit and exit sign equipment and how it functions.
No charge

NEMA LSD 67-2013 (R2018)
Low Mercury Controllable Fluorescent Systems
Discusses technical tradeoffs associated with reduced mercury dosing in fluorescent lighting systems and their environmental impacts.
NEMA Members are committed to providing fluorescent lighting systems that allow lamps to be controlled to save energy, while reducing the mercury content in the lamps to the extent that it is technically possible without sacrificing functionality.
No charge

NEMA LSD 71-2020
Best Practices for Metal Halide Lighting Systems Relative to Lamp Rupture Risks
The objective of this paper is to provide updated educational information for the selection, operation, and maintenance of metal halide lighting systems, with specific emphasis on those items pertinent to the risks associated with lamp rupture.
No charge
NEMA LSD 73-2015 (R2021)  
Energy Savings with Fluorescent and LED Dimming  
Includes dimmable fluorescent ballast and Light Emitting Diode (LED) drivers that are controlled by 0-10 V (1-10 V) control input. This paper explains the relationship between the control input voltage and overall energy consumed by these ballasts and drivers.  
No charge

NEMA LSD 74-2016  
Considerations of Field LED Driver Replacement  
Discusses issues related to the field replacement of drivers in LED lighting fixtures, and how several aspects must be considered to ensure that the replacement driver will function the same as the original driver.  
No charge

NEMA LSD 76-2017  
White Paper on the Usage of LED Lamps in Emergency Lighting Systems Having Remote Capacity  
Contains a series of frequently asked questions to assist customers in understanding remote capacity and the usage of LED lamps in emergency lighting systems.  
No charge

NEMA LSD 79-2018  
Predicted Energy Savings from Lighting Systems  
Includes a framework used to gauge the effectiveness of different lighting control methods. This paper is indifferent to the manufacturer of a controls system and provides a modular approach to measuring the “potential” savings realized from various lighting systems.  
No charge

NEMA LSD 80-2018  
Installation Guidelines for Outdoor Luminaires—Grounding Considerations  
Addresses application of the National Electrical Safety Code® (NESC) as it pertains to the grounding of outdoor luminaires and recommends installation guidelines.  
No charge

NEMA LSD 81-2019  
Controlled Emergency Lighting, a Technical Clarification Bulletin  
Assists in the specification of devices used with emergency lighting that is controlled (dimming, switching, etc.) to satisfy the requirements of the applicable codes.  
No charge

NEMA LSD E11-2001  
Fluorescent Lamps and the Environment  
Answers questions regarding lamp technology and the presence of mercury therein, environmental concerns and industry and regulatory efforts. Fluorescent lamps and high-intensity discharge lamps contain small quantities of mercury. Concerns over mercury releases to the air and water are driving stricter disposal regulations.  
No charge

NEMA LSD T 83-2020  
Covers the NEMA response to the International Energy Agency 4E report to correct inaccuracies of NEMA 77-2017 portrayed in the report.  
No charge

NEMA SSL 1-2016  
Electronic Drivers for LED Devices, Arrays or Systems  
Provides specifications for and operating characteristics of non-integral electronic drivers (power supplies) for LED devices, arrays or systems intended for general lighting applications.  
$80

NEMA SSL 4-2012  
Retrofit Lamps—Minimum Performance Requirements  
Applies to integral Light Emitting Diode (LED) lamps, which is defined as a lamp with LEDs, LED driver, and base meeting appropriate American National Standards (ANSs). It is designed to connect to the branch circuit.  
$69

NEMA SSL 6-2010  
Solid State Lighting for Incandescent Replacement—Dimming  
Provides guidance for those seeking to design and build or work with solid state lighting products intended for retrofit into systems that previously used incandescent screw base lamps. Addresses dimming of these products and the interaction between the dimmer (control) and the bulb (lamp).  
$80
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For over 65 years, Electri-Flex has provided top-quality conduit solutions. We offer nearly 50 types of Liquatite® conduit to withstand extreme environments, confined areas, electronic interference and other challenges. Customers recognize our conduit for its superior crush strength, achieved by building in more convolutions per foot. Our expertise also extends to R&D, quality control, shipping and customer service. Electri-Flex has been a family-owned business for three generations.

Contact us today, and discover excellence around every bend.
NEMA SSL 7A-2015 (R2021)
Phase-Cut Dimming for Solid State Lighting—Basic Compatibility
Provides compatibility requirements when a forward phase-cut dimmer is combined with one or more dimmable light-emitting diode (LED) light engines (LLEs).
$72
Buy Now

NEMA TLAs-2015
Temporal Light Artifacts (Flicker and Stroboscopic Effects)
Addresses temporal light artifacts (TLAs). Flicker and stroboscopic effects are undesired changes in visual perception induced by a light stimulus whose luminance or spectral distribution fluctuates with time, for an observer in a certain environment.
No charge
Buy Now

Measuring & Metering

ANSI C12/IEC 62056-5-3 ED3
American National Standard for Electricity Metering Data Exchange – The DLMS/COSEM Suite Part 5-3: DLMS/COSEM Application Layer
ANSI C12 Standards Committee makes an identical national adoption of IEC 62056-5-3 Ed. 3 Electricity Metering Data Exchange – The DLMS/COSEM Suite Part 5-3: DLMS/COSEM Application Layer. This part of IEC 62056 specifies the DLMS/COSEM application layer in terms of structure, services and protocols for DLMS/COSEM clients and servers, and defines rules to specify the DLMS/COSEM communication profiles. It defines services for establishing and releasing application associations, and data communication services for accessing the methods and attributes of COSEM interface objects, defined in IEC 62056-6-2 using either logical name (LN) or short name (SN) referencing.
$476
Buy Now

ANSI C12/IEC 62056-6-1 ED3
American National Standard for Electricity Metering Data Exchange – The DLMS/COSEM Suite Part 6-1: Object Identification System (OBIS)
ANSI C12 Standards Committee makes an identical national adoption of IEC 62056-6-1 Ed. 3 Electricity Metering Data Exchange – The DLMS/COSEM Suite Part 6-1: Object Identification System (OBIS). This part of IEC 62056 specifies the overall structure of the Object Identification System (OBIS) and the mapping of all commonly used data items in metering equipment to their identification codes. OBIS provides a unique identifier for all data within the metering equipment, including not only measurement values, but also abstract values used for configuration or obtaining information about the behaviour of the metering equipment.
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ANSI C12/IEC 62056-6-2 ED3
American National Standard for Electricity Metering Data Exchange – The DLMS/COSEM Suite Part 6-2: COSEM Interface Classes
ANSI C12 Standards Committee makes an identical national adoption of IEC 62056-6-2 Ed. 3 Electricity Metering Data Exchange – The DLMS/COSEM Suite Part 6-2: COSEM Interface Classes. This part of IEC 62056 specifies a model of a meter as it is seen through its communication interface(s). Generic building blocks are defined using object-oriented methods, in the form of interface classes to model meters from simple up to very complex functionality. Annexes A to F (informative) provide additional information related to some interface classes.
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ANSI C12/IEC 62056-8-20 ED1.0
American National Standard for Electricity Metering Data Exchange – The DLMS/COSEM Suite Part 8-20: Mesh Communication Profile for Neighbourhood Networks
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ANSI C12-IEC 62056-9-7 ED1.0
American National Standard for Electricity Metering Data Exchange – THE DLMS/COSEM SUITE-Communication Profile for TCP-UDP/IP Networks
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ANSI C12.1-2014
American National Standard for Electric Meters—Code for Electricity Metering
This Code establishes acceptable performance criteria for new types of AC watthour meters, demand meters, demand registers, pulse devices, and auxiliary devices. It describes acceptable in-service performance levels for meters and devices used in revenue metering. It also includes information on related subjects, such as recommended measurement standards, installation requirements, test methods, and test schedules. This Code for Electricity Metering is designed as a reference for those concerned with the art of electricity metering, such as utilities, manufacturers, and regulatory bodies.
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ANSI C12.4-1984 (R2002, R2011)
American National Standard for Registers—Mechanical Demand
Covers the voltage and frequency rating, full-scale values, scale classes, demand intervals, multiplying constants, timing mechanism and other general features of mechanical demand registers required for use on watthour meters.
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ANSI C12.5-1978 (R2002, R2012)
American National Standard for Thermal Demand Meters
Establishes the physical aspects and acceptable performance criteria for 0.2 and 0.5 accuracy class electricity meters meeting Blondel’s Theorem.
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American National Standard for Phase-Shifting Devices Used in Metering, Marking and Arrangement of Terminals
Applies to phase-shifting devices designed to provide the proper lagged voltages required for kVAR and kVA measurement.
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ANSI C12.7-2014
American National Standard for Requirements for Watthour Meter Sockets
Covers the general requirements and pertinent dimensions applicable to watthour meter sockets rated up to and including 600 V and up to and including 320 A continuous duty per socket opening.
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American National Standard for Test Blocks and Cabinets for Installation of Self-Contained A-Base Watthour Meters
Covers the dimensions and functions of test blocks and cabinets used in self-contained A-base watthour meters.
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ANSI C12.9-2014 (R2021)
American National Standard for Test Switches and Plugs for Transformer-Rated Meters
Encompasses the dimensions and functions of meter test switches used with transformer-rated watthour meters in conjunction with instrument transformers and test plugs used in conjunction with the test switch.
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ANSI C12.10-2011 (R2021)
American National Standard for Physical Aspects of Watthour Meters—Safety Standard
Covers the physical aspects of both detachable and bottom-connected watthour meters and associated registers including ratings, internal wiring arrangements, pertinent dimensions, markings and other general specifications.
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ANSI C12.11-2006 (R2014, R2019)
American National Standard for Instrument Transformers for Revenue Metering 10 kV BIL through 350 kV BIL (0.6 kV NSV through 69 kV NSV)
Covers the general requirements, metering accuracy, thermal ratings and dimensions applicable to current and inductively coupled voltage transformers for revenue metering.
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ANSI C12.18-2006 (R2016)
American National Standard for Protocol Specification for ANSI Type 2 Optical Port
Details the criteria required for communications between a C12.18 device and a C12.18 client via an optical port. The C12.18 client may be a handheld reader, a portable computer, a master station system or another electronic communications device.
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ANSI C12.19-2012
American National Standard for Utility Industry End Device Data Tables
Defines a Table structure for utility application data to be passed between an End Device and any other device. It neither defines device design criteria nor specifies the language or protocol used to transport that data. The Tables defined in this standard represent a data structure that shall be used to transport the data, not necessarily the data storage format used inside the End Device.
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ANSI C12.20-2015
American National Standard for Electricity Meters—0.2 and 0.5 Accuracy Classes
Establishes the physical aspects and acceptable performance criteria for 0.2 and 0.5 accuracy class electricity meters meeting Blondel’s Theorem.
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ANSI C12.21-2006 (R2016)
American National Standard for Protocol Specification for Telephone Modem Communication
Details the criteria required for communications between a C12.21 device and a C12.21 client via a modem connected to the switched telephone network. The C12.21 client could be a laptop or portable computer, a master station system or another electronic communications device.
$164

ANSI C12.22-2012 (R2020)
American National Standard for Protocol Specification for Interfacing to Data Communication Networks
Describes the process of transporting C12.19 table data over a variety of networks, with the intention of advancing interoperability among communications modules and meters. Uses AES encryption to enable strong, secure smart grid communications, including confidentiality and data integrity, and is also fully extensible to support additional security mechanisms the industry may require in the future.
$277

ANSI C12.32-2021
American National Standard for Electricity Meters for the Measurement of DC Energy
Establishes acceptable performance criteria for revenue grade direct current (DC) watthour meters and demand meters. Accuracy class designations, current, voltage, environmental tests, and electromagnetic compatibility (EMC) tests are covered.
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ANSI/NEMA C93.1-1999
American National Standard for Requirements for Power-Line Carrier Coupling Capacitors and Coupling Capacitor Voltage Transformers (CCVTs)
Applies to capacitors for coupling power-line carriers and for reducing rate of rise of breaker transient recovery voltage, and to CCVTs for connection to a high voltage power circuit, between line and ground, to supply a low voltage for measurement, control and protective functions.
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ANSI/NEMA SG-IPRM 1-2016
Smart Grid Interoperability Process Reference Manual
Defines requirements and recommendations for general test policies, test suite specifications, test profiles, interoperability testing and certification authority technical programs, governance, laboratory qualifications, and (process) improvements. It also describes an implementation approach.
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ANSI/NEMA SM 31000-1-2021
Electrical Submeter—General Requirements
The requirements of the SM 31000-1 standard (formerly ESM1-1) cover general metrological requirements (accuracy) and associated testing for electrical energy submeters. These meters provide details of energy use for energy monitoring. This is the first part of a larger document related to electrical submeters.
$78

ANSI/NEMA SM 31000-2-2021
Electrical Submeter—Active Energy Accuracy
Covers metrological requirements and associated testing for AC meters and meter systems rated not more than 1000 V that measure active energy used in electrical energy submetering applications. This is the second part of a larger document related to electrical submeters (NEMA SM 31000 series). This standard was previously designated as NEMA ESM1-2.
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**NEMA ASHRAE P90.1-2019**
A NEMA White Paper: ASHRAE 90.1-2016 Building Submetering Requirements
Clarifies the new ASHRAE 90.1-2016 standard requirements related to energy monitoring devices. Intended to help professional engineers and design/build contractors to economically design an electrical application that meets the standard’s requirements.

**NEMA C12.24 TR-2011**
NEMA Technical Report Definitions for Calculations of VA, VAh, VAR, and VARh for Poly-Phase Electricity Meters
Establishes names and mathematical definitions for the volt-ampere (VA), volt-ampere hours (Vah), volt-ampere reactive (VAR) and volt-ampere reactive hours (VARh), formulae used by polyphase electricity meters. The mathematical definitions assume static waveforms.

**NEMA C12.30 TR-2013**
Test Requirements for Metering Devices Equipped with Service Switches
Identifies test requirements for meters containing a service switch. Most of the tests included in this report are tailored to fit service switch type meters and originate from the ANSI C12.1-2008 standard. The intent is to use this technical report in conjunction with C12.1-2008. Other tests that are specific to the service switch have been added for completeness.

**NEMA ESM 3-2021**
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3) Documents cost recovery mechanisms and business cases related to these investments

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Contains NEMA comments regarding the Twente University Electronic Meter Tests report.

**ANSI/NEMA C50.41-2012 (R2021)**
American National Standard for Polyphase Induction Motors for Power Generation Stations
Applies to polyphase induction motors intended for use in power-generating stations, including the following: frame size larger than 440 series, squirrel cage type, single speed or multispeed, horizontal or vertical construction and form wound.

**NEMA EMS P1-2019**
Evaluating Meter Socket Lifespan
Helps utility workers be aware of environmental factors that can contribute to a reduction in anticipated lifespan for meter sockets.

**NEMA SM SET**
Smart Meter Package
Provides requirements and guidance on electricity metering, watthour meter sockets, device data tables, meter interfacing to data communication networks and type 2 optical ports. Also establishes performance criteria for thermal demand meters, mechanical demand registers and phase-shifting devices used in metering. Test methods for transformer-rated meters and self-contained “A” base watthour meters are included in this package, as is a watthour safety standard. The package contains all parts of ANSI C12, as well as NEMA SG-AMI 1.

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STANDARDS & OTHER PUBLICATIONS: Motors & Generators

ANSI/NEMA MG 1-2016
Motors and Generators
Assists users in the proper selection and application of motors and generators. Contains practical information concerning performance, safety, testing, and construction and manufacture of AC and DC motors and generators.
MG 1 now includes 2021 updates to Parts 0, 1, 7, 12, 30, and 31.
Also recommended is Part 34, which is a separately published Part to be included in the next edition of ANSI/NEMA MG 1. Part 34 is available under “Complimentary Documents.”
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The Potential Impacts of Rebound Effects on Energy Efficiency Measures Forecasted for Power Drive Systems and High Efficiency Electric Motors
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NEMA MG G2-2021
A NEMA Motor and Generator (IS-MG) Section Document Guide for Validating an Alternative Efficiency Determination Method (AEDM)
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High Voltage and Medium Voltage Motors
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NEMA ICS 7.2-2015
Application Guide for AC Adjustable Speed Drive Systems
Assists users in proper selection and application of AC adjustable speed drive systems. It covers AC electrical drive systems rated 600 V or less, consisting of three-phase induction motors, voltage-source pulse-width modulated adjustable frequency controls, and associated components. It also addresses common issues that should be considered in the selection of drive system components and the installation and application of the drive system.
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NEMA MG 1-2011 Condensed Information Guide for General Purpose Industrial AC Small and Medium Squirrel-Cage Induction Motor Standards
Provides a condensation of NEMA Motors and Generators, MG 1-2011. Some sections are reprinted in their entirety while others have been combined or abbreviated.
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NEMA MG 2-2014
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Motors & Generators Set
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Environmentally Conscious Design for Electrical and Electronic Products
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Presents information on the U.S. Department of Energy’s interpretation of the 1992 Energy Policy Act of 1992 (EPAct) and DOE’s position on the scope of products covered and non-covered (exempt) by the legislation. Motor users and OEMs can refer to the information to determine whether the motors they purchase will be covered by EPAct and therefore must meet the standard energy-efficiency levels. No charge

NEMA CPSP 4-2021
Harmonized Cybersecurity Standards and Conformity Assessment
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NEMA EESCTG 1-2019
NEMA Seismic Guideline 1—General Requirements for Seismic Qualification of Electrical Equipment for Commercial Building Codes
Establishes general guidelines for seismic qualification of acceleration-sensitive NEMA electrical equipment rigidly attached to the building structure or foundation. Equipment not rigidly attached to the building structure or attached with flexible mounts to the building structure is outside the scope of this guide. $74

NEMA ERH-2014
Market Benefits of Electric Resistance Heat
Provides an overview of recent developments in the world of electric resistance heating. It includes a high-level exploration of the different types of electric heating options; a review of common attributes, including its comfort, efficiency, and flexibility of use; and a case study of electric heat used in “green” homes. No charge
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L’un des principaux objectifs du présent Livre blanc de la National Electrical Manufacturers Association (NEMA) est de donner un aperçu des récents développements dans le monde du chauffage par résistance électrique (CRÉ). Nous commencerons par explorer de façon approfondie différents types de chauffage électrique. Nous passerons ensuite en revue les attributs du CRÉ, y compris son confort, son efficacité et sa flexibilité d’utilisation. Pour terminer, nous parlerons d’une étude de cas portant sur le chauffage électrique utilisé dans les maisons « vertes ».

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analysis of solutions to overcome
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La micro-red evoluciona en un bloque
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and supports widely used by the
consumer. Facilitates the pulling of
wires to provide a means of mounting
and protecting wiring devices and
to provide a connection for rigid
conduit, electrical metallic tubing,
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nonmetallic sheathed cable, flexible
metallic conduit and knob-and-tube
wiring systems.
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Covers general-purpose nonmetallic
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and supports widely used by the
consumer. Facilitates the pulling of
wires to provide a means of mounting
and protecting wiring devices and to
provide a connection for nonmetallic
sheathed cable, nonmetallic tubing
(loom), rigid nonmetallic conduit, and
electrical nonmetallic tubing or other
approved raceways.
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Protection of Receptacle Outlets in
Wet Locations According to the
National Electrical Code® (NEC)
Describes protection of receptacle
outlets in wet locations. It has been
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specialty metal, nonmetallic and
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Requirements for Air-Sealed Boxes for
Electrical and Communication
Applications
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Equipment—Voltage Ratings (60 Hz)
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American National Standard for Criteria for Safety Symbols
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ANSI Z535.4-2011 (R2017)
American National Standard for Product Safety Signs and Labels
Delivers specifications for design, application, use, and placement of safety signs and labels on a wide variety of products. A new type of product safety sign, the “safety instruction sign,” was added to join the existing types of signs, hazard alerting signs, and safety notice signs, which were also more clearly defined and named in this edition. The definitions for “accident,” “harm,” and “incident” were refined to more clearly delineate a separation between physical injury and other safety-related issues (e.g., property damage). It was revised to correspond with ANSI Z535.2, ANSI Z535.5, ANSI Z535.6.
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ANSI Z535.5-2011 (R2017)
American National Standard for Safety Tags and Barricade Tapes (for Temporary Hazards)
Discusses tag and tapes, which are used only until the identified hazard is eliminated or the hazardous operation is completed. The Z535.5-2011 edition was revised to link with ANSI Z535.2, ANSI Z545.4, and ANSI Z535.6. The Safety Instructions Tag was added in addition to the existing types of signs, hazard alerting tags, and barricade tapes, as well as safety notice tags and barricade tapes, which were more clearly defined and named in this edition. Industries (typically manufacturing and construction) that employ lockout/tagout procedures or have a need to mark an area affected by a temporary hazard will find this standard beneficial.
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ANSI Z535.6-2011 (R2017)
American National Standard for Product Safety Information in Product Manuals, Instructions and Other Collateral Materials
Sets forth requirements for the design and location of product safety messages in collateral materials for a variety of products.
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NEMA Technical Position on Reconditioned Equipment
Provides the NEMA perspective on how to best recondition electrical equipment, how to determine whether a component or assembly is suitable for reconditioning, and the importance of taking necessary precautions when reconditioning equipment.
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NEMA BMS P1-2019
A marketing brochure on the rationale, characteristics and action plan for the NEMA Building Management Systems section.
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NEMA BMS P2-2020
Specifying Building Management Systems and Data-Integrated Building Systems
This document helps avoid integration issues for building management system (BMS) and with other data-integrated building systems, assuring the end-user gets the building performance and user experience they expect.
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NEMA GD 1-2019
Evaluating Water-Damaged Electrical Equipment
Provides advice on the safe handling of electrical equipment that has been exposed to water. Outlines items that will require complete replacement or that can be reconditioned by a trained professional. Equipment covered includes electrical distribution equipment, motor circuits, power equipment, transformers, wire, cable and flexible cords, wiring devices, GFCIs and surge protectors, lighting fixtures and ballasts, motors and electronic products.
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NEMA GD 2-2021
Evaluating Fire- and Heat-Damaged Electrical Equipment
Provides information on how to evaluate electrical equipment that has been exposed to heat and fire residue through fire, firefighting activities, or close proximity to a fire. It is designed for use by suppliers, installers, inspectors, and users of electrical products.* Also available in Spanish. www.nemawiringdevices.org.
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NEMA GDSP 2-2021 (en Español) 
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NEMA GD 4-2020
COVID-19 Cleaning and Disinfecting Guidance for Electrical Equipment
As we continue to learn more about the SARS-CoV-2 (COVID-19) virus, Members of the National Electrical Manufacturers Association (NEMA) are receiving questions regarding the cleaning and disinfecting of electrical equipment. This guidance document reflects the responses of electrical manufacturers to some common questions related to cleaning and disinfecting electrical equipment. *Also available in Spanish.
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Supply Chain Security

NEMA CPSP 1-2021
Supply Chain Best Practices
Identifies a recommended set of supply chain best practices and guidelines that electrical equipment and medical imaging manufacturers can implement during product development to minimize the possibility that bugs, malware, viruses, or other exploits can be used to negatively impact product operation. As opposed to being an all-inclusive document, it is a representation of identified best practices that vendors can implement as they develop, manufacture, and deliver products as part of the supply chain.
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NEMA CPSP 2-2018
Cyber Hygiene Best Practices
Identifies a set of industry best practices and guidelines for electrical equipment and medical imaging manufacturers to help raise their level of cybersecurity sophistication in their manufacturing facilities and engineering processes.
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NEMA CPSP 3-2019
Cyber Hygiene Best Practices
Identifies industry best practices and guidelines that electrical equipment and medical imaging manufacturers may consider when providing cybersecurity information to their customers.
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NEMA IOTP 1-2018
Cyber Hygiene Best Practices Part 2
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Wireless Communications Technology for Fire and Life Safety Systems
Provides a brief overview of wireless technology currently available and how it impacts the life safety industry today.
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Transformers

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Details the labeling used on pad-mounted switchgear and transformers sited in public areas adjacent to residential properties, shopping centers and schools. May be used for equipment sited in utility or industrial properties that are not normally accessible to the general public. Contains Mr. Ouch labels.
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NEMA TR 1-2013 (R2019)
Transformers, Regulators and Reactors
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**Octet Encoding Rules (OER) Base Protocol**

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**Global Object (GO) Definitions**

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**Object Definitions for Dynamic Message Signs (DMS)**

Defines requirements, data elements and conformance requirements applicable to all NTCIP DMS. Data elements are defined using the Simple Network Management Protocol (SNMP) object-type format as defined in RFC1212 and would typically be exchanged using one of the NTCIP-recognized application layers (e.g., SNMP). Formerly TS 3.6. NTCIP 1203 v03 now includes Test Procedures (Annex C). This is a revision of NTCIP 12032011.

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**Environmental Sensor Station (ESS) Interface Protocol**

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**NTCIP 1206:2005**
Object Definitions for Data Collection and Monitoring (DCM) Devices
Defines data elements used for the configuration control and status monitoring of transportation data collection devices. The scope of this document is limited to the functionality related to DCMs used within a transportation environment.

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**NTCIP 1207 v02**
Object Definitions for Ramp Meter Control (RMC) Units
Defines communication protocol for ramp metering control (RMC) units. Communicating together, RMC units detect both traffic on the main roadway and queued traffic preparing to enter the main roadway, optimizing traffic flow for both. RMC units include a field controller, its suite of sensors, and its warning signs and signals, as well as main roadway and queue detection stations.

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**NTCIP 1208:2005**
Object Definitions for Closed-Circuit Television (CCTV) Switching
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**NTCIP 1209 v02**
Object Definitions for Transportation Sensor Systems (TSS)
Defines data elements used to monitor and control TSS devices for detecting and communicating certain traffic parameters. Describes a zone, virtual zone and sensor, and how zones can be grouped.

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**NTCIP 1210 v01**
Field Management Stations (FMS)—Part 1: Object Definitions for Signal System Masters (SSM)
Defines communication requirements among some elements of a traffic management system, specifically the green, yellow, and red indications at a local intersection; a signal system master (also called a “field master,” managing traffic indications at about two to ten nearby, local intersections); and a Traffic Management Center, responsible for traffic management in a wider geographic area.

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**NTCIP 1211 v02**
Object Definitions for Signal Control and Prioritization (SCP)
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NTCIP 1211 v02 includes User Needs, Functional Requirements, and a Protocol Requirements List (PRL).

NTCIP 1211 v02 also addresses “absolute time” as a request parameter.

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**NTCIP 1213 v02**
Object Definitions for Electrical and Lighting Management Systems (ELMS)
Provides object definitions for communication between a Traffic Management Center (TMC) and ELMS devices (a roadside luminaire and its sensors, for example), to control or monitor various functions, including dimming; light-activated, scheduled or manual operation; or power meter measurement.

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**NTCIP 2101:2001**
Point to Multi-Point Protocol Using RS-232 Subnetwork Profile
Applies to transportation-related devices that operate in a typical primary/secondary configuration where one device is the designated primary while one or more other devices are connected to one channel acting as secondaries. As a subnetwork profile, specifies a set of protocols and standards applicable to the data link and physical layers of the Open Systems Interconnection (OSI) Basic Reference Model.

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**NTCIP 2102:2003**
Point to Multi-Point Protocol Using FSK Modem Subnetwork Profile
Applies to transportation-related devices that operate in a typical primary/secondary configuration where one device is the designated primary while one or more other devices are connected to one channel acting as secondaries.

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NTCIP 2103 v02
Point-to-Point Protocol over RS-232 Subnetwork Profile
Applies to transportation-related devices that operate in a point-to-point configuration where exactly two devices (peers) are connected by a logical physical layer communications link. As a subnetwork profile, specifies a set of protocols and standards applicable to the data link and physical layers of the Open Systems Interconnection (OSI) Basic Reference Model.
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NTCIP 2104:2003
Ethernet Subnetwork Profile
Applies to transportation devices and management systems. Specifies a set of protocols and standards applicable to the data link and physical layers of the Open Systems Interconnection (OSI) Reference Model. Specifies a combination of ISO/IEC Standards that collectively provides for connectionless and connection-oriented data link services on a common, shared media.
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NTCIP 2201:2003
Transportation Transport Profile
Applies to transportation devices and management systems, and specifies a set of procedures applicable to the transport and network layers of the Open Systems Interconnection (OSI) Reference Model. Provides a linking mechanism between the application and subnetwork profiles in non-networked environments.
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NTCIP 2202:2001
Internet (TCP/IP and UDP/IP) Transport Profile
Applies to transportation-related devices that operate in a typical primary/secondary configuration where one device is the designated primary while one or more other devices are connected to one channel acting as secondaries. As a subnetwork profile, specifies a set of protocols and standards applicable to the data link and physical layers of the Open Systems Interconnection (OSI) Basic Reference Model.
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Simple Transportation Management Framework (STMF) Application Profile (AP) (AP-STMF)
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NTCIP 2303:2001
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NTCIP 2304:2002
Application Profile for DATEX-ASN (AP-DATEX)
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NTCIP 2306 v01
Application Profile for XML Message Encoding and Transport in ITS Center-to-Center Communications
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NTCIP 8004 v02
Structure and Identification of Management Information (SMI)
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Defines processes to verify the correctness of a MIB in NTCIP data dictionary standards, and to prepare a stand-alone version of the MIB. Covers policies and procedures for MIB development and maintenance. Defines requirements for use by NTCIP data stewards in checking MIBs, coordinating all NTCIP device data dictionaries and working with other entities using NTCIP MIBs.

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*Testing and Conformity Assessment Documentation within NTCIP Standards Publications*
Defines requirements to be used by NTCIP working groups in producing test documentation as part of the NTCIP standards process.

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#### NTCIP 9001 v04
*The NTCIP Guide*
Assists NTCIP implementers in understanding relationships among various standards publications within the NTCIP family, as well as how and when to use selected NTCIP standards publications.

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#### NTCIP 9014 v01.20
*National Transportation Communications for ITS Protocol Infrastructure Standards Security Assessment (ISSA)*
Analyzes National Transportation Communications for ITS (Intelligent Transportation Systems) Protocol (NTCIP) standards affected by updating the communication protocol from SNMPv1 to SNMPv3, identifies SNMPv3 references to be included into NTCIP standards, and provides guidance and work plan for updating the NTCIP standards to incorporate SNMPv3.

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Covers specific requirements for FEP insulated solid and stranded wire designed for the internal wiring of high-reliability electrical and electronic equipment.

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*Electrical and Electronic Silicone and Silicone-Braided Insulated Hook-Up Wire Types S (600 V), ZHS (600 V), SS (1,000 V), ZHSS (1,000 V) and SSB Braided (1,000 V)*
Covers requirements for silicone rubber-insulated stranded wire used in the internal wiring of high-reliability electrical and electronic equipment. The standard permits continuous conductor temperature ratings of -55°C to +150°C (tin-copper) or +200°C (silver-copper) with either tin-coated or silver-coated conductors. Replaces MIL-W-16878 silicone rubber-insulated wire slash sheets (/7, /8, /29 through /32).

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ANSI/NEMA HP 8-2021
Electrical and Electronic Cross-Linked, Modified Low-Smoke Polyolefin (XLPO) Insulated Hook-Up Wire, Types LS (rated 105°C; 600 V), ZHDM (rated 90°C; 600 V), ZHDD (rated 90°C; 600 V), ZH (rated 125°C; 600 V), and ZHX (rated 125°C; 1,000 V)
Covers specific requirements for crosslinked, modified, polyolefin insulated solid and stranded wire, designed to the internal wiring of high-reliability electrical and electronic equipment.
$95
Buy Now

ANSI/NEMA HP 9-2014 (R2021)
Electrical and Electronic Ethylene-Propylene Diene Elastomer (EPDM) Insulated Hook-Up Wire, Types EP (Rated 125°C; 600 V) and EPD (Rated 125°C; 5000 V)
Covers specific requirements for Ethylene-Propylene Diene Elastomer insulated solid and stranded wire, designed to the internal wiring of high-reliability electrical and electronic equipment.
$106
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ANSI/NEMA MW 1000-2015
Supplement
Supplement to ANSI/NEMA MW 1000 Reference Requirements for Round Film-insulated Magnet Wire
Provides users of MW 1000 with a convenient and concise reference to common performance requirements for film-insulated magnet wire constructions according to conductor material and insulation build. In the case of any discrepancies between this supplement and MW 1000, the requirements in MW 1000 prevail.
$60
Buy Now

ANSI/NEMA MW 1000-2020
Magnet Wire
Contains specifications for round, rectangular, and square film-insulated and/or fibrous-covered copper and aluminum magnet wire for use in electrical apparatus. Included are the definitions, type designations, dimensions, constructions, performance, and test methods for magnet wire generally used in the winding of coils for electrical apparatus. Visit www.MW1000.com for additional information about ANSI/NEMA MW 1000 and a summary of amendments to the standard.
$350
Buy Now

ANSI/NEMA WC 51/
ICEA P-54-440-2009 (R2014), R2019
Ampacities of Cables Installed in Cable Trays
This standards publication covers the ampacity ratings for 600-15,000 volt solid dielectric cables installed in cable trays. Ampacity ratings are tabulated for single conductor cables, triplexed assemblies of single conductor cables, and three-conductor cables incorporating an overall jacket. Ampacities have been tabulated for the cable constructions and the operating conditions normally encountered for tray applications. Correction factors to adjust the tabulated values to better reflect specific conditions are provided. These include adjustments to account for ambient and operating temperatures, cable construction, tray covers, and diversification of the cable loading.
$154
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ANSI/NEMA WC 53/
ICEA T-27-581-2020
Standard Test Methods for Extruded Dielectric Power, Control, Instrumentation, and Portable Cables for Test
Applies to the testing of extruded dielectric insulated power, control, instrumentation and portable cables.
$188

ANSI/NEMA WC 54/
ICEA T-26-465-2013
Guide for Frequency of Sampling Extruded Dielectric Power, Control, Instrumentation and Portable Cables for Test
Provides a combination of plans for frequencies at which cable samples may be obtained for tests to determine conformance to appropriate requirements of ICEA standards publications.
$88

ANSI/NEMA WC 55021-2021
Standard for Military Internal Electrical Cable
Covers specific requirements for finished cables. The cables are intended for internal wiring of electrical equipment for use in the hook-up of various electronic assemblies. The component wires are covered by other reference standards. Cables constructed with PVC insulated wires or jackets are not to be used for aerospace applications.
$91

ANSI/NEMA WC 57/
ICEA S-73-532-2014
Standard for Control, Thermocouple Extension, and Instrumentation Cables
Applies to materials, construction and testing of multiconductor control, thermocouple extension and instrumentation cables rated up to and including 125°C.
$207
Buy Now
ANSI/NEMA WC 58/
ICEA S-75-381-2017
Portable and Power Feeder Cables for Use in Mines and Similar Applications
Applies to materials, construction and testing of insulated cables used for the distribution of electrical energy in surface and underground mines and similar applications. Included are portable cables for use in mining machines, dredges, shovels and the like, and mine power cables for use as connections between units of mine distribution systems.
$260
Buy Now

ANSI/NEMA WC 61-1992
(R2005, R2015, R2020)
American National Standard for Transfer Impedance Testing
This standard is intended to provide a reliable surface transfer impedance test method for coaxial cables and shielded multiconductor cables over the frequency range from DC to 100 MHz.
$84
Buy Now

ANSI/NEMA WC 63.2-1996 (R2003)
Performance Standard for Coaxial Premise Data Communications Cables
Defines minimum electrical performance characteristics, material and mechanical specifications of premise wiring cables for data applications. Includes definitions and applicable test methods.
$59
Buy Now

ANSI/NEMA WC 66/
ICEA S-116-732-2019
Standard for Category 6 and 6A, 100 Ohm, Individually Unshielded Twisted Pairs, Indoor Cables (With or Without An Overall Shield) For Use In LAN Communication Wiring Systems
Defines minimum electrical performance and allowable conductor sizes, stranding and shielding for premise wiring cables for voice and data applications for 100 ohm shielded and unshielded twisted pair cables.
$111
Buy Now

ANSI/NEMA WC 67-2015 (R2021)
American National Standard for Uninsulated Conductors—Used in Electrical and Electronic Applications
Covers single-end (solid) and stranded, coated and uncoated copper, coated copper alloy, coated copper-clad steel, aluminum and thermocouple extension uninsulated conductors used primarily in insulated wires for aerospace, electrical, electronic and other high-performance applications.
$117
Buy Now

ANSI/NEMA WC 70/
ICEA S-95-658-2021
Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy
Applies to materials, construction and testing of 2000 volts and below thermoplastic and thermoset insulated wires and cables used for the transmission and distribution of electrical energy for normal conditions of installation and service, either indoors, outdoors, aerial, underground or submarine.
$218
Buy Now

ANSI/NEMA WC 71/
ICEA S-96-659-2014
Standard for Non-Shielded Cables Rated 2,001-5,000 V for Use in the Distribution of Electric Energy
Applies to materials, construction and testing of 2001 through 5000 V nonshielded power cables having insulations of thermoplastic polyethylene, cross-linked polyethylene or cross-inked rubber.
$205
Buy Now

ANSI/NEMA WC 74/
ICEA S-93-639-2017
5-46 kV Shielded Power Cable for Use in the Transmission and Distribution of Electric Energy
Applies to materials, constructions and testing of 5,000 V to 46,000 V shielded crosslinked polyethylene, and ethylene propylene rubber insulated wires and cables used for the transmission and distribution of electrical energy for normal conditions of installation and service, either indoors, outdoors, aerial, underground or submarine.
$294
Buy Now

ANSI/NEMA WC 75-2015
Standard for Controlled Impedance in Internal Electrical Cable
Developed to cover specific requirements for finished cables with controlled impedance twisted pairs. It enables a user to specify various numbers of pairs (1 – 61) with a required impedance requirement, and tailor the materials to meet a specific end application.
$91
Buy Now
<table>
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<tr>
<th>Standard Number</th>
<th>Title</th>
<th>Description</th>
<th>Price</th>
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<tr>
<td>ANSI/NEMA WC 76-2018</td>
<td>Standard for Controlled Impedance Shielded Twisted Pairs in Internal Electrical Cable</td>
<td>Covers specific requirements for finished cables with controlled impedance shielded twisted pair(s). This standard enables users to specify various numbers of shielded pairs (1–61) with a required impedance requirement, and tailor the materials to meet a specific end application. $91</td>
<td></td>
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<tr>
<td>ANSI/NEMA WC 27500-2020</td>
<td>American National Standard for Aerospace and Industrial Electrical Cable</td>
<td>Contains requirements for finished aerospace and industrial electrical cables. The component wires are covered by other referenced standards. These cables are intended for signal and low-voltage power applications with defined environment or temperature conditions found in commercial aircraft, military aircraft, and high performance vehicles. $158</td>
<td></td>
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<tr>
<td>ANSI/NEMA WC 55021-2013</td>
<td>Standard for Military Internal Electrical Cable</td>
<td>Covers specific requirements for finished cables. The cables are intended for internal wiring of electrical equipment for use in the hook-up of various electronic assemblies. The component wires are covered by other reference standards. Cables constructed with PVC insulated wires or jackets are not to be used for aerospace applications. $87</td>
<td></td>
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<tr>
<td>NEMA BWCP 1-2017</td>
<td>The Evolution of Aluminum Conductors Used for Building Wire and Cable</td>
<td>Describes the history of the discovery, application and acceptance of the AA-8000 series of aluminum conductors for building wire and cable applications. This series of alloys was discovered to have excellent characteristics with respect to strength, ductility, and thermal stability. No charge</td>
<td></td>
</tr>
<tr>
<td>NEMA HP 7-2021 (R2021)</td>
<td>Electrical and Electronic PVC, PVC/Nylon, and PE/Nylon 105°C Hook-Up Wire, Types B, C, D, BN, CN, and DN (600, 1000, and 3000 V), and Types J and JN 75°C (600V)</td>
<td>Covers specific requirements for PVC, PVC/polyamide, PE, and PE/polyamide insulated stranded wire designed to the internal wiring of high reliability electrical and electronic equipment. $98</td>
<td></td>
</tr>
<tr>
<td>NEMA HP 100-1991 (R1999, R2005, R2010) Series (HP 100-100.4)</td>
<td>High-Temperature Instrumentation and Control Cables</td>
<td>Covers requirements and test procedures for a series of multiple-conductor, high-temperature instrumentation and control cables for use in ducts, conduit and trays. Contains general requirements and test procedures. Addresses high-temperature instrumentation and control cables insulated and jacketed with FEP fluorocarbons, with ETFE fluoropolymers, crosslinked (thermoset) polyolefin (XLPO), and with ECTFE fluoropolymers. $235</td>
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</tr>
<tr>
<td>NEMA MW 750-2020</td>
<td>Dynamic Coefficient of Friction of Film-Insulated Magnet Wire</td>
<td>Provides a method and equipment used for determining the coefficient of friction of film-insulated round magnet wire for sizes 14–44 AWG. $82</td>
<td></td>
</tr>
<tr>
<td>NEMA MW 765-2003 (R2008, R2013, R2018)</td>
<td>Reclaiming of Magnet Wire Packaging</td>
<td>Specifies the required physical and visual characteristics of reclaimed plastic spools/reels and other components used for packaging of magnet wire. $105</td>
<td></td>
</tr>
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www.nema.org
## NEMA MW 780-2005 (R2011, 2016)
Returnable Packaging for 24x6 Magnet Wire Reels
Applies to products intended exclusively for the packaging/storage of magnet wire products. Provides guidelines for the minimum information required for the design and production of a returnable pallet generally made of a synthetic material, intended to accommodate primarily 24 x 6 reels.

$70 | Electronic Copy: $0

## NEMA MW 785-2021
Simulated Insertion Force Test for Film-Insulated Round Magnet Wire
Describes a method and equipment used to determine the simulated insertion force of film-insulated round magnet wire for wire sizes 14–28 AWG.

$70

## NEMA MW 820-2016 (R2021)
Conductor Softness Testing Methods
Presents wire testing methodologies used by magnet wire manufacturers and users to characterize the “softness of the conductor” in order to predict how well the magnet wire will wind and be formed into its final desired shape and position.

$72

## NEMA RV 1-2021
Application and Installation Guidelines for Armored Cable and Metal-Clad Cable
Offers practical information on correct usage and industry-recommended practices for the installation of Type AC and Type MC cables in accordance with the NEC®.

$124 | Electronic Copy: $0

## NEMA RV 2-2021
Application and Installation Guidelines for Nonmetallic-Sheathed (NM-B) Cable and Underground Feeder and Branch Circuit (UF-B) Cable
Offers practical information on correct usage and industry-recommended practices for the installation of Types NM-B and UF-B circuit cable in accordance with the NEC®.

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## NEMA RV 3-2021
Application and Installation Guidelines for Flexible and Liquidtight Flexible Metal and Nonmetallic Conduit
Offers practical information on correct usage and industry-recommended practices for the installation of Flexible Metal Conduit (type FMC), Liquidtight Flexible Metal Conduit (type LFMC) and Liquidtight Flexible Nonmetallic Conduit (type LFNC) in accordance with the NEC®.

$135 | Electronic Copy: $0

## NEMA RV 4-2016
Application Guidelines for Service-Entrance Cable
Offers practical information on correct usage and industry-recommended practices for the installation of service-entrance cable (Type SE) in accordance with the NEC®.

$84 | Electronic Copy: $0

## NEMA UV P2-2018
Application Environments Exposure to Ultraviolet Light
This is a new NEMA application guide on exposure to ultraviolet light.

No charge

## NEMA VE 1-2017
Metal Cable Tray Systems
Specifies requirements for metal cable trays and associated fittings designed for use in accordance with the rules of the CEC, Part I, and the National Electrical Code®.

$116

## NEMA VE 1 2017-ESPAÑOL
Sistemas de charolas metálicas
Esta norma especifica los requisitos para charolas metálicas y accesorios asociados diseñados para utilizarse de acuerdo con las regulaciones del Canadian Electrical Code (código CE), Parte I y el National Electrical Code® (NEC).

$107

## NEMA WC SET
Cable Standards Set
Contains all nine ANSI/NEMA/ICEA wire and cable standards, which are listed on this page.

$1,275

## NEMA WC 52-2005
High-Temperature and Electronic Insulated Wire, Impulse Dielectric Testing
Applies to the dielectric testing of insulation of unshielded single-conductor wires. This procedure is not intended for use with multiconductor cable.

$70

## NEMA WC 56-1986 (R2018)
3.0 kHz Insulation Continuity Proof Testing of Wire and Cable
Covers a general procedure for continuous voltage proof testing of hook-up wire. Intended to apply primarily to the final inspection of wire for the purpose of finding and eliminating defects prior to shipment or use.

$60
Repeated Spark/Impulse Dielectric Testing
Discusses the validity of repeat continuity proof testing of insulated wire.
$60
Buy Now

NEMA WC 63.1-2005
Performance Standard for Twisted Pair Premise Voice and Data Communications Cables
Defines minimum electrical performance and allowable conductor sizes, stranding and shielding for premise wiring cables for voice and data applications.
$128
Buy Now

NEMA WC 65-1995 (R2003)
A Reasoned Approach to Solving Solderability Problems with Tin-Coated and Nickel-Coated Stranded Conductors in High-Performance Wire and Cable Applications
Contains a review of solderability problems with tin-coated and nickel-coated stranded conductors, as well as existing solderability standards. Discusses the root causes of these problems. Provides recommendations that may supply solutions for specific applications.
$70
Buy Now

Continuity of Coating Testing for Electrical Conductors
Reviews problems that have occurred when polysulfide testing has been improperly imposed on tin-, silver-, and nickel-coated copper and copper-alloy stranded conductors or on tin-, silver-, or nickel-coated copper and copper-alloy single or stranded conductors after insulating.
$63
Buy Now

NEMA WC 73-2000 (R2018)
Wire Selection Guidelines for Wires Rated at 200° to 450°C
Contains guidelines for calculating amperages and selecting wires for temperatures from 200° to 450°C and for voltage ratings up to and including 1,000 V RMS. Ampacity charts, temperature correction factors and derating factors are provided along with extensive examples of calculations.
$76
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NEMA XW 1000-2021
Extruded Insulated Magnet Wire
Presents all existing NEMA standards for round, rectangular, and square extruded insulated copper and aluminum magnet wire for use in electrical apparatus. Included are the definitions, type designations, dimensions, constructions, performance, and test methods for extruded insulated magnet wire used in the winding of coils for electrical apparatus.
$92
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NEMA EDM P1-2019
Emergency Disconnect Marking Guide
Contains recommendations on marking parameters and their placement on products to provide consistent industry communication regarding the emergency disconnect to fire service or other emergency response personnel.
No charge

NEMA HB 70000-2021
Automatic Receptacle Control—Manufacturer Best Practice Checklist Technical Bulletin
Guides manufacturers of automatic receptacle control wiring devices and systems (commonly called plug load control) to achieve successful installation, good end user experience and maximized energy efficiency with the technology deployment. It shares applicable code requirements and sample tools for manufacturers to support their controlled receptacle products.
No charge

NEMA WD-AG 1-2017
Application Guide for Isolated Ground Wiring Devices
Covers wiring devices and accessories intended to help protect sensitive equipment from malfunction due to noise on the equipment grounding path and covers safety installation requirements for compliance with the National Electrical Code® (NEC), applications for isolated ground circuits, and troubleshooting and maintenance of such installations.
No charge
### NEMA WD-AG 1-2019 CAN
**Application Guide for Isolated Ground Wiring Devices**
Covers wiring devices and accessories intended to help protect sensitive equipment from malfunction due to noise on the equipment grounding path. This edition covers Canadian Electrical Code requirements.
No charge

### ANSI/NEMA WD 6-2016
**Wiring Devices—Dimensional Specifications**
Covers the plugs, receptacles, and wall plates used in most electrical installations in residential, commercial, and industrial buildings. Two new configurations were added to offer increased safety for IT and datacenter applications and one configuration was modified. Included in the online version is a new navigation tool that allows one to go from the Table of Contents to the selection chart for each of the three main wiring devices configuration categories.
$260 | Electronic Copy: $0

### NEMA 410-2020
**Performance Testing for Lighting Controls and Switching Devices with Electronic Drivers and Discharge Ballasts**
Provides guidance for the design and testing of lighting controls and switching devices to be used with electronic drivers, discharge ballasts and self-ballasted lamps to assist in establishing and verifying compatibility between products.
$126 | Electronic Copy: $0

**General Color Requirements for Wiring Devices**
This standards publication contains color references for AC switches, plugs and cord connectors, receptacles, and other related wiring devices.
$51 | Electronic Copy: $0

### NEMA WD 7-2011 (R2016, R2021)
**Occupancy Motion Sensors Standard**
Covers the definition and measurement of field of view and coverage characteristics relevant to the use and application of vacancy and occupancy sensors using individual or any combination of passive infrared, ultrasonic, or microwave technology.
$59 | Electronic Copy: $0

### NEMA WD 8-2018
**Guidelines for Electrical Wiring Device Replacement**
Contains a checklist intended for evaluating the safety of wiring devices and associated electrical equipment installed in residences, by building maintenance, and management personnel.
$50 | Electronic Copy: $0

### NEMA WD 9-2013 (R2018)
**Dimmers, Photoelectric Controls, Presence Sensors, and Multi-outlet Bars Energy Consumption Testing and Labeling**
Covers the energy consumption testing and related labeling for dimmers, photoelectric controls, presence/motion sensors, and multi-outlet bars.
$29 | Electronic Copy: $0

### NEMA WD 50000-2020
**High Ambient Temperature Test Procedure for Wiring Devices**
Defines a process to evaluate wiring devices at high-ambient temperatures for use in high-temperature environments. This standard describes the test procedures related to the highest-ambient temperature rating of a product.
$44 | Electronic Copy: $0

### NEMA WD ARCP 1-2016
**Automatic Receptacle Control to Meet ASHRAE 90.1-2010 and California (CA) Title 24**
Explains the controlled receptacle requirement now appearing within non-residential energy codes, as well as a summary of typical application settings.
No charge

### Complete Set of Standards
**NEMA COMPLETE SET**
NEMA Complete Set of Standards Includes all NEMA standards.
$41,008

### Medical
**ANSI/NEMA HN 1-2019**
**Manufacturer Disclosure Statement for Medical Device Security**
Consists of the MDS2 form and instructions for completing it. Assists professionals responsible for security-risk assessment in the management of medical device security issues. The information on the MDS2 form is not intended, and may be inappropriate, for other purposes.
No charge
ANSI/NEMA SC 1-2020
American National Standard for Supplier Credentialing in Healthcare
For healthcare providers and their suppliers to identify the credentials of supplier representatives that visit healthcare facilities.
$97
Buy Now

NEMA EL P1-2018
NEMA Position Paper on Electronic Labeling
Communicates the NEMA position on the concept of electronic labeling as well as the benefits and challenges associated with the use of electronic labeling.
No charge
Buy Now

NEMA LC P1-2019
Medical Imaging Device Lifecycles
Explores the differences between hardware and software lifecycles for medical imaging devices, the implications of those lifecycles on the cybersecurity of the devices, and best practices for manufacturers and healthcare delivery organizations in planning for and communicating different phases of a device’s lifecycle.
No charge
Buy Now

NEMA/MITA CSP 2-2021
Lifecycle Best Practices Framework for Medical Imaging Devices
Outlines industry best practices to support the secure, safe use of medical imaging devices throughout their lifecycle.
No charge
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MITA/NEMA CTSDC-2015
Is Your CT Smart Dose Compliant?
Clarifies with CT users and hospital administrative staff how to determine whether their CT equipment conforms to the Smart Dose Standard and outlines important considerations for assessing system modifications marketed to obtain Smart Dose Standard conformance.
No charge
Buy Now

NEMA MS 1-2008 (R2014, R2020)
Determination of Signal-to-Noise Ratio (SNR) in Diagnostic Magnetic Resonance Imaging
Defines methods for measuring the signal-to-noise ratio of magnetic resonance images obtained under a specific set of conditions, and using single-channel volume receiver coils. This document does not address the use of special purpose coils (see MS 6) or coils that employ multiple receiver channels for operation (see MS 9).
$82 | Electronic Copy: $0
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NEMA MS 2-2008 (R2014, R2020)
Determination of Two-Dimensional Geometric Distortion in Diagnostic Magnetic Resonance Images
Describes a method for determining the maximum percent difference between measured distances in an image and actual corresponding phantom dimensions. The procedure described evaluates geometric distortion in three orthogonal planes passing through the center of the specification volume.
$84 | Electronic Copy: $0
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NEMA MS 3-2008 (R2014, R2020)
Determination of Image Uniformity in Diagnostic Magnetic Resonance Images
Defines a method for measuring image-uniformity performance of diagnostic magnetic resonance imaging systems using single channel volume coils and performing proton imaging. This document does not address the use of surface coils, chemical shift imaging, or spectroscopy.
$88 | Electronic Copy: $0
Buy Now

NEMA MS 4-2010
Acoustic Noise Measurement Procedure for Diagnostic Magnetic Resonance Imaging (MRI) Devices
Provides methods for determining the acoustic noise level of an MRI system.
$92 | Electronic Copy: $0
Buy Now

NEMA MS 5-2018
Determination of Slice Thickness in Diagnostic Magnetic Resonance Imaging
Describes a method for determining the slice thickness of proton images. Does not address spectroscopy, chemical shift imaging and warped slices.
$96 | Electronic Copy: $0
Buy Now

NEMA MS 6-2008 (R2014, R2020)
Determination of Signal-to-Noise Ratio and Image Uniformity for Single-Channel, Non-Volume Coils in Diagnostic Magnetic Resonance Imaging
Defines test methods for measuring the signal-to-noise ratio and image uniformity of MR images produced using special purpose single-channel non-volume coils or a single channel of an array coil.
$63 | Electronic Copy: $0
Buy Now
<table>
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<td>NEMA MS 8-2016</td>
<td>Characterization of the Specific Absorption Rate (SAR) for Magnetic Resonance Imaging Systems</td>
<td>Describes calorimetric and pulse energy methods of whole-body SAR measurements. Specifies tests for volume RF transmit coils that produce relatively homogeneous RF fields.</td>
<td>$111</td>
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<tr>
<td>NEMA MS 9-2008 (R2014, R2020)</td>
<td>Characterization of Phased Array Coils for Diagnostic Magnetic Resonance Images</td>
<td>Defines test methods for measuring the signal-to-noise ratio and image uniformity of MR images produced using receive-only phased array coils. Other coil configurations have been addressed in MS 1, MS 3, and MS 6.</td>
<td>$97</td>
</tr>
<tr>
<td>NEMA MS 10-2010</td>
<td>Determination of Local Specific Absorption Rate (SAR) in Diagnostic Magnetic Resonance Imaging (MRI)</td>
<td>Defines methods for determining the local SAR of diagnostic MRI radio frequency coils under a specific set of conditions.</td>
<td>$92</td>
</tr>
<tr>
<td>NEMA MS 12-2016</td>
<td>Quantification and Mapping of Geometric Distortion for Special Applications</td>
<td>Defines test methods for measuring the absolute spatial variation of geometric accuracy within magnetic resonance images. This standard presents the absolute geometric accuracy as a map, graph or table throughout the imaging region rather than as simple figures of merit, such as average or worst-case error.</td>
<td>$92</td>
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<tr>
<td>NEMA MS 14-2019</td>
<td>Characterization of Radiofrequency (RF) Coil Heating in Magnetic Resonance Imaging Systems</td>
<td>Examines the measurement of the radiofrequency coil surface temperature increase, which is induced by the radiofrequency fields in magnetic resonance imaging. Testing methods are provided for detachable RF receive coils, detachable transmit/receive coils, detachable transmit coils, and integrated body coils.</td>
<td></td>
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<tr>
<td>NEMA NU 1-2018</td>
<td>Performance Measurements of Gamma Cameras</td>
<td>Provides a uniform criterion for the measurement and reporting of gamma camera performance parameters for single and multiple crystal cameras and tomographic devices that image a section or reconstruction image volume, or both.</td>
<td>$172</td>
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<tr>
<td>NEMA NU 2-2018</td>
<td>Performance Measurements of Positron Emission Tomographs (PETs)</td>
<td>Provides a uniform and consistent method for measuring and reporting performance parameters of PETs. Included are time of flight and non–time of flight coincidence systems, discrete and continuous detector designs, single and multiple slice devices and multiplanar and volume reconstruction models.</td>
<td>$147</td>
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<tr>
<td>NEMA NU 3-2004</td>
<td>Performance Measurements and Quality Control Guidelines for Non-Imaging Intraoperative Gamma Probes</td>
<td>Establishes definitions and describes quantitative measurements of performance characteristics and quality control tests for non-imaging intraoperative gamma probes.</td>
<td>$124</td>
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<tr>
<td>NEMA NU 4-2008</td>
<td>Performance Measurements of Small Animal Positron Emission Tomographs (PETs)</td>
<td>Proposes a standardized methodology for evaluating the performance of PETs designed for animal imaging. Establishes a baseline of system performance in typical imaging conditions independent of camera design and applies to a wide range of camera models and geometries. Represents a subset of measurements that characterize the performance of PETs for specific imaging tasks typically encountered in small laboratory animal imaging facilities. This subset is deemed to be common across all tomographs existing at the time of publication.</td>
<td>$102</td>
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<tr>
<td>NEMA RT 1-2014</td>
<td>Gating Interface</td>
<td>Provides a detailed description of the gating interface between Radiation Therapy Treatment Delivery Devices (TDD), commonly called linear accelerators or other particle therapy accelerators and Patient Position Monitoring Systems (PPMS).</td>
<td>$47</td>
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Test Standard for the Determination of the Visible Entrance Field Size of an X-Ray Image Intensifier (XRII) System
Defines the test standard method for the determination of the visible entrance field size of an XRII system. Includes direct-viewing, video, photofluorographic film recording, and cine film recording and projection systems.
$68

Test Standard for the Determination of the System Contrast Ratio (SCR) and the System Veiling Glare Index (SVGI) of an X-Ray Image Intensifier (XRII) System
Determines the SCR and the SVGI at the center of the image produced by an XRII system under a given set of test conditions. The measurement procedures described pertain to images formed by photofluorographic film, cine film, video and direct-viewing systems.
$74

NEMA XR 22-2006 (R2020)
Quality Control Manual Template for Manufacturers of Hardcopy Output Devices Labeled for Final Interpretation in Full-Field Digital Mammography (FFDM)
Defines the minimum set of quality control tests to be applied to a manufacturer's product labeled for final interpretation of images acquired using an FFDM image-acquisition system.
$102 | Electronic Copy: $0

NEMA XR 23-2006 (R2020)
Quality Control Manual Template for Manufacturers of Hardcopy Output Devices Labeled for Final Interpretation in Full-Field Digital Mammography (FFDM)
Features templates that provide a consistent presentation format and a minimum set of quality control tests that should be included as part of the quality assurance plan of a hardcopy output device (e.g., printer) labeled for final interpretation in an FFDM system.
$102 | Electronic Copy: $0

NEMA XR 25-2019
Computed Tomography Dose Check
Specifies an equipment feature for CT scanners to produce dose-related notification and alert messages to inform operators prior to scanning if the estimated dose would exceed the preset levels.
$80 | Electronic Copy: $0

NEMA XR 26-2020
Access Controls for Computed Tomography—Identification, Interlocks, and Logs
Applies to the particular functioning of a CT system (as covered by the scope of IEC 60601-2-44) as it relates to who has access/permission to use the system for clinical or other uses. Includes being able to assign specific permissions to selected uses that are above those needed for daily routine scanning, such as the authorization to save protocols and adds provisions to secure the user interface based on a manual lock. Contains the functionality for use in a facility's quality assurance program such as capturing operator and patient information as well as information related to saved changes in protocols.
$84 | Electronic Copy: $0

NEMA XR 27-2013 (R2018)
X-ray Equipment for Interventional Procedures User Quality Control Mode
Applies to x-ray equipment intended to perform interventional procedures and defines a set of minimum set of requirements designed to more easily facilitate quality control at the facility level.
$176 | Electronic Copy: $0

NEMA XR 28-2018
Supplemental Requirements for User Information and System Function Related to Dose in CT
Identifies uniform and standardized manufacturer's information provided to users of a CT scanner. This information includes perfusion scanning, use of Automatic Exposure Control, organization of dose-related information, a requirement for listing the reference protocols shipped on a CT system.
$176

NEMA XR 29-2013
Standard Attributes on CT Equipment Related to Dose Optimization and Management
Identifies four key features of CT scanners which contribute to or help perform optimization and or management of doses of ionizing radiation while still enabling the system to deliver the diagnostic image quality needed by the physician.
$76 | Electronic Copy: $0

NEMA XR 31-2016
Standard Attributes on X-ray Equipment for Interventional Procedures
Offers healthcare providers a reference to identify key features which contribute to enhanced patient care and to help manage patient radiation dose delivery, while still enabling the system to provide sufficient image quality needed by the physician.
No charge

www.nema.org
NEMA/MITA 1-2015
Good Refurbishment Practices for Medical Imaging Equipment
Lays out the basic requirements for a refurbishment process for medical electrical equipment which will not change the equipment’s original intended use, safety profile, or performance.
No charge

NEMA/MITA 2-2019
Requirements for Servicing of Medical Imaging Equipment
Describes and defines the minimum quality management system requirements for servicing of medical imaging equipment to ensure return to a safe and effective condition for its intended use.
No charge

NEMA/MITA CSP 1-2016
Cybersecurity for Medical Imaging
Addresses how cyber threats pose a significant risk to patient safety, clinical and business continuity in the practice of medical imaging, and why a combination of people, processes, and technologies is required to mitigate these risks. Originally published November 4, 2015.
No charge

NEMA/MITA DD P1-2019
Understanding the Limited Usefulness of Detector Dose Measurements in Modern Medical X-ray Imaging Equipment
Discusses the origins of detector dose, its historic relevance, and the impact of the transition from film to digital imaging and how it is useful for the detector dose metric.
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NEMA/MITA DICOM
Digital Imaging and Communications in Medicine (DICOM)
DICOM (Digital Imaging and Communications in Medicine) enables the transfer of medical images in a multi-vendor environment and facilitates the development and expansion of picture archiving and communication systems. DICOM standards are available for download at no charge at ftp://medical.nema.org/medical/dicom.
No charge

NEMA/MITA RMD P1-2019
Considerations for Remanufacturing of Medical Imaging Devices
Outlines key considerations for servicers and remanufacturers of medical imaging equipment. This white paper highlights which device modifications are most likely to trigger remanufacturing as well as key informative resources to aid in informed decision making about these activities.
No charge

NEMA/MITA RSSTCD 1-2019
This white paper is part of an ongoing initiative in collaboration with the FDA and professional societies. It represents how to comply with the FDA guidance “Medical X-Ray Imaging Devices Conformance with IEC Standards,” published in May 2019.
No charge

NEMA/MITA RSSTCD 2-2020
21 CFR Subchapter J to IEC Comparison Table for Medical X-Ray Imaging Devices Mammography
Provides a standardized method of comparing 21 CFR Subchapter J standards with the comparable IEC standards for manufactures who are attempting to use the IEC standard instead of the 21 CFR standard. Includes a table that provides the relevant IEC requirement or testing procedure, so that state inspectors and medical physicists can test independently to confirm that the product conforms to the IEC standard.
No charge

NEMA/MITA UMD P1-2020
Remanufacturing of Ultrasound Medical Devices
Outlines key considerations for servicers and remanufacturers of ultrasound imaging equipment. This white paper highlights which ultrasound device modifications are most likely to trigger remanufacturing, as well as key informative resources that aid in informed decision making about these activities.
No charge

NEMA/MITA XE P1-2018
Modification of Image Displays of Interventional X-ray Equipment: Issues to be Considered
Gives stakeholders (including regulators, facility administrators, radiologists, medical doctors, and medical physicists) information on some of the issues and associated risks with the use of non-validated third-party image displays.
No charge
NEMA/MITA XR 30-2016
Quality Control Tools for Digital Projection Radiography
Defines a set of minimum equipment requirements that facilitate the quality control of digital projection radiography by healthcare providers.
No charge

NEMA/MITA WP 1-2017
Computed Tomography Image Quality (CTIQ): Low-Contrast Detectability (LCD) Assessment When Using Dose Reduction Technology
Gives stakeholders such as regulators, radiologists, medical doctors, CT technologists, and medical physicists an overview of the current techniques and tools (phantoms) that MITA has utilized to assess low contrast detectability (LCD) as a function of radiation dose.
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## AFCI

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<tr>
<td>ABB Inc.</td>
<td><a href="http://www.abb.com">www.abb.com</a></td>
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<tr>
<td>Eaton</td>
<td><a href="http://www.eaton.com/electricalusa">www.eaton.com/electricalusa</a></td>
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<tr>
<td>Hubbell Incorporated</td>
<td><a href="http://www.hubbell.com">www.hubbell.com</a></td>
</tr>
<tr>
<td>Legrand, North America</td>
<td><a href="http://www.legrand.us">www.legrand.us</a></td>
</tr>
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<td>Leviton Manufacturing Company, Inc.</td>
<td><a href="http://www.leviton.com">www.leviton.com</a></td>
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<td>Schneider Electric</td>
<td><a href="http://www.schneider-electric.us">www.schneider-electric.us</a></td>
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<tr>
<td>Siemens Industry, Inc.</td>
<td><a href="http://www.usa.siemens.com/industry">www.usa.siemens.com/industry</a></td>
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## Cable Ties

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<td>ABB Installation Products, Inc.</td>
<td>electrification.us.abb.com</td>
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<tr>
<td>Advanced Cable Ties, Inc.</td>
<td><a href="http://www.actfs.com">www.actfs.com</a></td>
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<tr>
<td>Avery Dennison Fasteners</td>
<td><a href="http://www.fasteneraverydennison.com">www.fasteneraverydennison.com</a></td>
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<td>HellermannTyton Group</td>
<td><a href="http://www.hellermann.tyton.com">www.hellermann.tyton.com</a></td>
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<td>Panduit Corporation</td>
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<td>Southwire Company</td>
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## Capacitor

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<td>Hitachi Energy USA Inc.</td>
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## Carbon/Manufactured Graphite

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<td>GraffTech International Holdings, Inc.</td>
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<td>Graphite Metallizing Corporation</td>
<td><a href="http://www.graphalloy.com">www.graphalloy.com</a></td>
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<td>Mersen Electrical Power</td>
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<td>Atkore Allied Tube &amp; Conduit</td>
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<td>Atkore Cope</td>
<td><a href="http://www.tjcope.us">www.tjcope.us</a></td>
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<td><a href="http://www.techlinemfg.com">www.techlinemfg.com</a></td>
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<td>Unitray Systems Inc.</td>
<td><a href="http://www.unitray.ca">www.unitray.ca</a></td>
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<td>Wiremold Cable Management Products by Legrand</td>
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## Conduits

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<td><a href="http://www.anacondasealtite.com">www.anacondasealtite.com</a></td>
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<td>Arlington Industries, Inc.</td>
<td><a href="http://www.aifittings.com">www.aifittings.com</a></td>
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<td>Bridgeport Fittings, Inc.</td>
<td><a href="http://www.bptfittings.com">www.bptfittings.com</a></td>
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<td><a href="http://www.egseg.com">www.egseg.com</a></td>
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<td>Hubbell Wiring Device-Kellems</td>
<td><a href="http://www.hubbell-wiring.com">www.hubbell-wiring.com</a></td>
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<td>IPEX USA, LLC</td>
<td><a href="http://www.ipdexamerica.com">www.ipdexamerica.com</a></td>
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<td>Killark A Hubbell Company</td>
<td><a href="http://www.hubbell-killark.com">www.hubbell-killark.com</a></td>
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<td>Products &amp; Manufacturers: Electric Vehicle Supply Equipment/System</td>
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<td>Honeywell International</td>
<td><a href="http://www.honeywellprocess.com">www.honeywellprocess.com</a></td>
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<td>Mitsubishi Electric Power Products, Inc.</td>
<td><a href="http://www.meppi.com">www.meppi.com</a></td>
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<td><a href="http://www.schneider-electric.us">www.schneider-electric.us</a></td>
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PRODUCTS & MANUFACTURERS: Electric Vehicle Supply Equipment/System

Nidec Motor Corporation
www.nidec-motor.com

Phoenix Contact
www.phoenixcontact.com

Schneider Electric
www.schneider-electric.us

Siemens Industry, Inc.
www.usa.siemens.com/industry

Southwire Company
www.southwire.com

TE Connectivity
www.te.com

Enclosures

ABB Inc.
www.abb.com

ABB Installation Products, Inc.
electrification.us.abb.com

Allied Moulded Products, Inc.
www.alliedmoulded.com

Arlington Industries, Inc.
www.aifittings.com

Atkore Inc.
atkore.com

Boltswitch – Socomec Group
www.boltswitch.com

Connector Manufacturing Company A
Hubbell Company
www.cmclugs.com

Eaton
www.eaton.com/electricalusa

Emerson Automation Solutions

Hubbell Incorporated
www.hubbell.com

IPEX USA, LLC
www.ipexda.com/usa

Killark a Hubbell Company
www.killark-hubbell.com

Legrand, North America
www.legrand.us

Milbank Manufacturing Company
www.milbankworks.com

nVent Hoffman
www.nvent.com

Rittal Corporation
www.rittal.us

Robroy Industries, Inc.
www.rodney.com

Schneider Electric
www.schneider-electric.us

Siemens Industry, Inc.
www.usa.siemens.com/industry

Space Age Electronics, Inc.
www.1sae.com

Wiegmann A Hubbell Company
www.hubbell-wiegmann.com

Fire, Life Safety, Security, and Emergency Communications

Audible and Visible Appliances (Non-Fire or Nurse Call Systems)

Bosch Security Systems
www.boschsecurity.us

Eaton Cooper Safety
www.cooperwheelock.com

Fire-Lite Alarms by Honeywell International, Inc.
www.firelite.com

Gamewell-FCI by Honeywell
www.gamewell-fci.com

Gentex Corporation
www.gentex.com

HSI Fire & Safety Group LLC
www.homesafeguards.com

Johnson Controls
www.johnsoncontrols.com

Potter Electric Signal Company, LLC
www.pottersignal.com

Siemens Industry, Inc.
www.usa.siemens.com/industry

Space Age Electronics, Inc.
www.1sae.com

Automatic Detectors (system, single and multiple station)

Apollo America, Inc.
www.apollo-fire.com

Bosch Security Systems
www.boschsecurity.us

Figaro USA, Inc.
www.figarosensor.com

Fire-Lite Alarms by Honeywell International, Inc.
www.firelite.com

Gamewell-FCI by Honeywell
www.gamewell-fci.com

Gentex Corporation
www.gentex.com

HSI Fire & Safety Group LLC
www.homesafeguards.com

Johnson Controls
www.johnsoncontrols.com

SDi
www.sdifire.com

Siemens Industry, Inc.
www.usa.siemens.com/industry

Xtralis Inc. (now part of Honeywell)
www.xtralis.com

Fire Protective Signaling Systems,
Devices, and Accessories

Bosch Security Systems
www.boschsecurity.us

Eaton
www.eaton.com

Fire-Lite Alarms by Honeywell International, Inc.
www.firelite.com

Gamewell-FCI by Honeywell
www.gamewell-fci.com

Johnson Controls
www.johnsoncontrols.com

Potter Electric Signal Company, LLC
www.pottersignal.com

SDi
www.sdifire.com

Siemens Industry, Inc.
www.usa.siemens.com/industry

Xtralis Inc. (now part of Honeywell)
www.xtralis.com

Google Nest
www.nest.com

Space Age Electronics, Inc.
www.1sae.com

Milbank Manufacturing Company
www.milbankworks.com

nVent Hoffman
www.nvent.com

Rittal Corporation
www.rittal.us

Robroy Industries, Inc.
www.rodney.com

Schneider Electric
www.schneider-electric.us

Siemens Industry, Inc.
www.usa.siemens.com/industry

Space Age Electronics, Inc.
www.1sae.com

Wiegmann A Hubbell Company
www.hubbell-wiegmann.com

Enclosures

ABB Inc.
www.abb.com

ABB Installation Products, Inc.
electrification.us.abb.com

Allied Moulded Products, Inc.
www.alliedmoulded.com

Arlington Industries, Inc.
www.aifittings.com

Atkore Inc.
atkore.com

Boltswitch – Socomec Group
www.boltswitch.com

Connector Manufacturing Company A
Hubbell Company
www.cmclugs.com

Eaton
www.eaton.com/electricalusa

Emerson Automation Solutions

Hubbell Incorporated
www.hubbell.com

IPEX USA, LLC
www.ipexda.com/usa

Killark a Hubbell Company
www.killark-hubbell.com

Legrand, North America
www.legrand.us

Milbank Manufacturing Company
www.milbankworks.com

nVent Hoffman
www.nvent.com

Rittal Corporation
www.rittal.us

Robroy Industries, Inc.
www.rodney.com

Schneider Electric
www.schneider-electric.us

Siemens Industry, Inc.
www.usa.siemens.com/industry

Space Age Electronics, Inc.
www.1sae.com

Wiegmann A Hubbell Company
www.hubbell-wiegmann.com
Notification Devices
Bosch Security Systems
www.boschsecurity.us
Eaton
www.eaton.com
Fire-Lite Alarms by Honeywell International, Inc.
www.firelite.com
Gamewell-FCI by Honeywell
www.gamewell-fci.com
Gentex Corporation
www.gentex.com
Johnson Controls
www.johnsoncontrols.com
Potter Electric Signal Company, LLC
www.pottersignal.com
Siemens Industry, Inc.
www.usa.siemens.com/industry
Valcom
www.valcom.com

Fuses
Eaton’s Bussmann Division
www.cooperbussmann.com
Littelfuse, Inc.
www.littelfuse.com
Mersen Electrical Power
ep-us.mersen.com
Phoenix Contact
www.phoenixcontact.com/usa_home

Grounding Products
ABB Installation Products, Inc.
electrification.us.abb.com
Burrndy, LLC
www.burndy.com
Connector Manufacturing Company A Hubbell Company
www.cmclugs.com
Galvan Industries, Inc.
www.galvanelectrical.com
Hubbell Power Systems
www.hubbellpowersystems.com
ILSCO
www.ilasco.com
Panduit Corporation
www.panduit.com
nVent ERICO
www.erico.com
TE Connectivity
www.te.com

Health Care Communications and Emergency Call Systems
Ascom Wireless Solutions
www.ascom.us
Austco Marketing & Services USA Ltd
www.austco.com
Cornell Communications, Inc.
www.cornell.com
Crest Healthcare Supply
www.cresthealthcare.com
Curbell Medical Products, Inc.
www.curbellmedical.com
Engineered Electronics, Inc.
eeiusa.com
Hillrom
www.hill-rom.com
Inovonics
www.inovonics.com
Jeron Electronic Systems, Inc.
www.jeron.com
Philips
www.usa.philips.com/healthcare
Rauland, a division of AMETEK, Inc.
www.rauland.com
RF Technologies, Inc.
www.rft.com
Sentrics
sentrics.net
Tektone Sound & Signal Manufacturing, Inc.
www.tektone.com
West-Com Nurse Call System, Inc.
www.westcomncs.com

Industrial Automation Control Products & Systems
Control/Monitor Switches
ABB Inc.
www.abb.com
Carlo Gavazzi Automation Components
www.gavazzionline.com
Eaton
www.eaton.com/electricalusa
PRODUCTS & MANUFACTURERS: Industrial Automation Control Products & Systems

Electro Switch Corporation
www.electroswitch.com

Hubbell Incorporated
www.hubbell.com

Reliance Controls Corporation
www.reliancecontrols.com

Rockwell Automation, Inc.
www.rockwellautomation.com

Schneider Electric
www.schneider-electric.us

WEG Electric Corp.
www.weg.net/us

Weidmuller Inc.
www.weidmuller.com

Motion Control
ABB Inc.
www.abb.com

Delta Electronics, Inc.
www.delta-americas.com

Mitsubishi Electric Automation, Inc.
www.meau.com

Rockwell Automation, Inc.
www.rockwellautomation.com

Schneider Electric
www.schneider-electric.us

SEW-Eurodrive, Inc.
www.sew-eurodrive.com

Siemens Industry, Inc.
www.usa.siemens.com/industry

Power Electronics
ABB Inc.
www.abb.com

APC by Schneider Electric
www.apc.com

Construction Innovations, LLC
www.constructioninnovations.com

Delta Electronics, Inc.
www.delta-americas.com

Emerson Automation Solutions

Mitsubishi Electric Power Products, Inc.
www.meppi.com

Power Distribution Inc (PDI) part of Eaton
www.pdicorp.com

Schneider Electric
www.schneider-electric.us

Toshiba International Corporation
www.toshiba.com/ind

VERTIV
www.vertivco.com/en-us

System Elements
ABB Inc.
www.abb.com

Carlo Gavazzi Automation Components
www.gavazzionline.com

Eaton
www.eaton.com/electricalusa

Hubbell Industrial Controls, Inc.
www.hubbell-icd.com

Mitsubishi Electric Automation, Inc.
www.meau.com

Rockwell Automation, Inc.
www.rockwellautomation.com

Schneider Electric
www.schneider-electric.us

Insulating Materials
3M
www.3m.com

ABB Inc.
www.abb.com

Accurate Plastics, Inc.
www.acculam.com

DuPont
www.dupont.com

ELANTAS PDG, Inc.
www.elantas.com/pdg

Iten Industries
www.itenindustries.com

Raychem, a product group of TE Connectivity
raychem.te.com

Röchling Glastic Composites
www.glastic.com

Sumitomo Electric Interconnect Products, Inc.
www.seipusa.com

The Gund Company, Inc.
www.thegundcompany.com

Lighting

Area Lighting
ABB Installation Products, Inc.
electrification.us.abb.com

Acuity Brands, Inc.
www.acuitybrandslighting.com

Emerson Automation Solutions
www.egseg.com

Architectural Area Lighting
www.aal.net

Atlas Lighting Products, Inc.
www.atlaslightingproducts.com

Cooper Lighting Solutions
www.cooperlighting.com

Holophane an Acuity Brands Company
holophane.acuitybrands.com

Hubbell Lighting Inc.
www.hubbellighting.com

Juno Lighting Group an Acuity Brands Company
www.junolightinggroup.com

KIM Lighting
www.kimlighting.com

Lithonia Lighting, an Acuity Brands Company
www.lithonia.com

Premise Inc.
www.premiseco.com

Prescolite
www.prescolite.com

Progress Lighting
progresslighting.com
RAB Lighting  
www.rabweb.com

Satco Products, Inc.  
www.satco.com

Signify  
www.signify.com

**Ballast and Driver**

Acuity Brands, Inc.  
www.acuitybrandslighting.com

Fanlight Corp, Inc.  
www.mynaturaled.com

GE Current, a Daintree company  
www.gecurrent.com

GE Lighting, a Savant company  
www.gelighting.com

Halco Lighting Technologies  
www.halcolighting.com

Holophane Company an Acuity Brands Company  
www.holophane.com

Hubbell Lighting, Inc.  
www.hubbelllighting.com

IFT Lighting  
www.iftlighting.com

Lutron Electronics Company, Inc.  
www.lutron.com

Signify  
www.signify.com

TCP International Holdings Ltd.  
www.tcpi.com

**Floodlighting**

ABB Installation Products, Inc.  
electrification.us.abb.com

Acuity Brands, Inc.  
www.acuitybrandslighting.com

Architectural Area Lighting  
www.aal.net

Atlas Lighting Products, Inc.  
www.atlaslightingproducts.com

Cree Lighting  
www.creelighting.com

Emerson Automation Solutions  
www.egseg.com

GE Lighting, a Savant company  
www.gelighting.com

Holophane an Acuity Brands Company  
holophane.acuitybrands.com

Hubbell Lighting, Inc.  
www.hubbelllighting.com

Intense Lighting A Leviton Company  
www.intenselighting.com

Juno Lighting Group an Acuity Brands Company  
www.junolightinggroup.com

KIM Lighting  
www.kimlighting.com

Lithonia Lighting, an Acuity Brands Company  
www.lithonia.com

Prescolite  
www.prescolite.com

RAB Lighting  
www.rabweb.com

Satco Products, Inc.  
www.satco.com

Signify  
www.signify.com

**Emergency Lighting**

ABB Installation Products, Inc.  
electrification.us.abb.com

Acuity Brands, Inc.  
www.acuitybrandslighting.com

Atlas Lighting Products, Inc.  
www.atlaslightingproducts.com

Cree Lighting  
www.creelighting.com

Emerson Automation Solutions  
www.egseg.com

GE Lighting, a Savant company  
www.gelighting.com

Holophane an Acuity Brands Company  
holophane.acuitybrands.com

Hubbell Lighting, Inc.  
www.hubbelllighting.com

Intense Lighting A Leviton Company  
www.intenselighting.com

Juno Lighting Group an Acuity Brands Company  
www.junolightinggroup.com

KIM Lighting  
www.kimlighting.com

Lithonia Lighting, an Acuity Brands Company  
www.lithonia.com

Prescolite  
www.prescolite.com

RAB Lighting  
www.rabweb.com

Satco Products, Inc.  
www.satco.com

Signify  
www.signify.com

**Indoor Lighting**

ABB Installation Products, Inc.  
electrification.us.abb.com

Acuity Brands, Inc.  
www.acuitybrandslighting.com

Architectural Area Lighting  
www.aal.net

Atlas Lighting Products, Inc.  
www.atlaslightingproducts.com

Columbia Lighting  
www.columbia-ltg.com

Cree Lighting  
www.creelighting.com

Emerson Automation Solutions  
www.egseg.com

GE Lighting, a Savant company  
www.gelighting.com

Holophane an Acuity Brands Company  
holophane.acuitybrands.com

Hubbell Lighting, Inc.  
www.hubbelllighting.com

Intense Lighting A Leviton Company  
www.intenselighting.com

Juno Lighting Group an Acuity Brands Company  
www.junolightinggroup.com

KIM Lighting  
www.kimlighting.com

Lithonia Lighting, an Acuity Brands Company  
www.lithonia.com

Prescolite  
www.prescolite.com

RAB Lighting  
www.rabweb.com

Satco Products, Inc.  
www.satco.com

Signify  
www.signify.com

TCP International Holdings Ltd.  
www.tcpi.com
<table>
<thead>
<tr>
<th>Products &amp; Manufacturers: Lighting</th>
</tr>
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<tr>
<td>KIM Lighting</td>
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<tr>
<td><a href="http://www.kimlighting.com">www.kimlighting.com</a></td>
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<td>LEDVANCE LLC</td>
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<td>Lithonia Lighting, an Acuity Brands Company</td>
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<td>MaxLite</td>
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<td>Prescolite</td>
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<td>Progress Lighting</td>
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<td>progresslighting.com</td>
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<td>RAB Lighting</td>
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<td><a href="http://www.rabweb.com">www.rabweb.com</a></td>
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<td>Satco Products, Inc.</td>
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<td>Hubbell Incorporated Wiring</td>
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<td>Leviton Manufacturing Company, Inc.</td>
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<td>Pass &amp; Seymour by Legrand</td>
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<td><a href="http://www.passandseymour.com">www.passandseymour.com</a></td>
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<td>TE Connectivity</td>
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<td><a href="http://www.te.com">www.te.com</a></td>
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<td>Light Source</td>
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<td>Cree Lighting</td>
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<td>EiKO Global, LLC</td>
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<td>EYE Lighting International of North America, Inc.</td>
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<td>WattStopper</td>
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<td>Lighting Controls</td>
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<td>GE Current, a Daintree company</td>
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<td>TCP International Holdings Ltd.</td>
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<td>Westinghouse Lighting</td>
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<td><a href="http://www.westinghouselighting.com">www.westinghouselighting.com</a></td>
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<td>Lighting Control Devices</td>
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<td>Enerlites Inc.</td>
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<td>Leviton Manufacturing Company, Inc.</td>
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<td>Schneider Electric</td>
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<td><a href="http://www.schneider-electric.us">www.schneider-electric.us</a></td>
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<td>Sensor Switch, an Acuity Brands Company</td>
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<td>Signify</td>
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<td>Outdoor Lighting</td>
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<td>ABB Installation Products, Inc.</td>
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<td>electrification.us.abb.com</td>
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<td>Acuity Brands, Inc.</td>
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<td><a href="http://www.acuitybrandslighting.com">www.acuitybrandslighting.com</a></td>
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<td><strong>PRODUCTS &amp; MANUFACTURERS:</strong> Low Voltage Distribution Equipment</td>
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<td>Mersen USA Newburyport-MA, LLC ep-us.mersen.com</td>
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<td>Reliance Controls Corporation <a href="http://www.reliancecontrols.com">www.reliancecontrols.com</a></td>
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<td>Schneider Electric <a href="http://www.schneider-electric.us">www.schneider-electric.us</a></td>
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<td>Starline Holdings, LLC, a company of Legrand, North America <a href="http://www.starlinepower.com">www.starlinepower.com</a></td>
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PRODUCTS & MANUFACTURERS: Outlet & Switch Boxes

ABB Motors and Mechanical Inc.
new.abb.com/motors-generators

Adventech, LLC
adventechinc.com

Bison Gear & Engineering Corporation
ww.bisongear.com

Bluffton Motor Works WEG Group
ww.blufftonmotorworks.com

Brook Crompton Americas
www.brookcromptonna.com

Cummins, Inc.
www.cummins.com

GE Industrial Motors, a Wolong Company
www.gemotorswolong.com

Infini
tum Electric
www.infiniteme
electric.com

Leeson Electric, a Regal brand
www.leeson.com

Marathon Electric
www.marathonelectric.com

Nidec Motor Corporation
www.nidec-motor.com

NORD Gear Corporation
www.nord.com

Regal Rexnord Corporation
www.regal-beloi
t.com

SEW-Eurodrive, Inc.
www.seweurodrive.com

Siemens Industry, Inc.
usa.siemens.com/industry

Sterling Electric, Inc.
www.sterlingelectric.com

Tatung Electric Company of America
tatungelectric.com

Techtop Industries, Inc.
www.techtopind.com

TECO-Westinghouse Motor Company
www.tecowestinghouse.com

Toshiba International Corporation
www.toshiba.com/ind

Turntide Technologies
turntide.com

WEG Electric Corp.
www.weg.net/us

Worldwide Electric Corporation
www.worldwideelectric.net

Outlet & Switch Boxes

Metallic Boxes and Covers
ABB Installation Products, Inc.
electrification.us.abb.com

Eaton’s Crouse-Hinds Business
www.crouse-hinds.com

Emerson Automation Solutions
www.egseg.com

Hubbell Incorporated
www.hubbell.com

IPEX USA, LLC
www.ipexna.com/usa

Raco by Hubbell, Inc.
www.hubbell.com/raco/en

Sigma Electric Manufacturing Corporation
www.sigmaelectric.com

TayMac by Hubbell, Inc.
www.taymac.com

Wiremold Cable Management Products by Legrand
www.wiremold.com

Nonmetallic Boxes and Covers
ABB Installation Products, Inc.
electrification.us.abb.com

Allied Moulded Products, Inc.
www.alliedmoulded.com

Arlington Industries, Inc.
www.aifittings.com
PRODUCTS & MANUFACTURERS: Outlet & Switch Boxes

Eaton
eaton.com

Emerson Automation Solutions
www.egseg.com

HOTWIRE LLC
tryhotwire.com

Hubbell Incorporated
www.hubbell.com

Hubbell Wiring Device-Kellems
www.hubbell-wiring.com

IPEX USA, LLC
www.ipexna.com/usa

Pass & Seymour by Legrand
www.passandseymour.com

TayMac by Hubbell, Inc.
www.taymac.com

Wiremold Cable Management Products by Legrand
www.wiremold.com

Southwire Company
www.southwire.com

Pin & Sleeve

ABB Installation Products, Inc.
electrification.us.abb.com

Bryant Electric, a division of Hubbell, Inc.
www.bryant-electric.com

Crest Healthcare Supply
www.cresthealthcare.com

Eaton
www.eaton.com

Emerson Automation Solutions
www.egseg.com

Hubbell Wiring Device-Kellems
www.hubbell-wiring.com

Interpower Corporation
www.interpower.com

Killark, a division of Hubbell, Inc.
www.hubbell-killark.com

Leviton Manufacturing Company, Inc.
www.leviton.com

MELTRIC Corporation
www.meltric.com

Pass & Seymour by Legrand
www.passandseymour.com

Power Equipment

Electrical Connector

3M
www.3M.com/electrical

ABB Installation Products, Inc.
electrification.us.abb.com

ASK Products, Inc.
www.ask-power.com

BURNDY, LLC
www.burndy.com

Connector Manufacturing Company A Hubbell Company
www.cmclugs.com

Eaton
www.eaton.com

Galvan Industries, Inc.
www.galvanelectrical.com

Hubbell Power Systems
www.hubbellpowersystems.com

ILSCO
www.ilSCO.com

NSi Industries, LLC
www.nsiindustries.com

nVent ERICO
www.erico.com

Panduit Corporation
www.panduit.com

Polaris Electrical Connectors
polarisconnectors.com

South Atlantic, LLC
www.southatlanticllc.com

TE Connectivity
www.te.com

Electrical Measuring Equipment

Aclara Meters
www.aclara.com

Brooks Utility Products
www.brooksutility.com

Durham Company
www.durhamcompany.com

Eaton
www.eaton.com

Honeywell Smart Energy
www.elsterelectricity.com

Hubbell Power Systems
www.hubbell.com/hubbellpowersystems

Itron, Inc.
www.itron.com

Landis+Gyr
www.landisgyr.com

Milbank Manufacturing Company
www.milbankworks.com

Radian Research, Inc.
www.radianresearch.com

Phoenix Contact
www.phoenixcontact.com

Schneider Electric
www.schneider-electric.com

Sensus, A Xylem Brand
sensus.com

Siemens Industry, Inc.
www.usa.siemens.com/industry

High Voltage Insulator

Hendrix Molded Products
www.maronutility.com/MoldedProducts.aspx

Hubbell Power Systems
www.hubbellpowersystems.com

K-Line Insulators, Inc.
www.k-line.net

Lapp Insulators, LLC
www.lappinsulator.com

Newell-PSN, LLC
www.newellporcelain.com

NGK-Locke Polymer Insulators, Inc.
www.ngk-polymer.com

Preformed Line Products
www.preformed.com
Raychem, a product group of TE Connectivity
raychem.te.com

Sediver USA, Inc.
www.sediver.com

PPC USA, Inc.
www.ppcinsulators.com

Victor Insulators, Inc.
www.victorinsulators.com

Surge Arrester
ABB Inc.
www.abb.com

Eaton
www.eaton.com

Hitachi ABB Power Grids
www.hitachi-abb-powergrids.com

Hubbell Power Systems
www.hubbellpowersystems.com

Siemens Industry, Inc.
www.usa.siemens.com/Industry

TE Connectivity
www.te.com

Polymer Guards
ABB Installation Products, Inc.
electrification.us.abb.com

Hubbell Incorporated
www.hubbell.com

IPEX USA, LLC
www.ipexamerica.com

Thermoplastic Raceway
(PVC, Polyethylene, Polyolefin)
ABB Installation Products, Inc.
electrification.us.abb.com

Atkore AFC Cable Systems
www.afcweb.com

Hubbell Incorporated
www.hubbell.com

IPEX USA, LLC
www.ipexamerica.com

Panduit Corporation
www.panduit.com

Southern Pipe, Inc.
www.southern-pipe.com

Underground Devices, Inc.
www.udevices.com

Wiremold Cable Management Products by Legrand
www.wiremold.com

Residential & Commercial Controls

APCOM, Inc.
www.apcom-inc.com

Braeburn Systems, LLC
www.braeburnonline.com

Johnson Controls
www.tycosimplexgrinnell.com

Google Nest
www.nest.com

Resideo Technologies, Inc.
www.resideo.com

Therm-O-Disc, a brand of Emerson
www.thermodisc.com

Polymer Raceway Products
ABB Installation Products, Inc.
electrification.us.abb.com

Atkore AFC Cable Systems
www.afcweb.com

Atkore Allied Tube & Conduit
www.allieddeg.us

Anamet Electrical, Inc.
www.anametusa.com

Champion Fiberglass, Inc.
www.championfiberglass.com

Thermoset Raceway (Fiberglass)
Champion Fiberglass, Inc.
www.championfiberglass.com

Atkore FRE Composites
www.frecomposites.com

Resceptacles

ABB Inc.
www.abb.com

Bryant Electric
www.bryant-electric.com

Eaton
www.eaton.com

Enerlites Inc.
www.enerlites.com

Hubbell Wiring Device-Kellems
www.hubbell-wiring.com

Leviton Manufacturing Company, Inc.
www.leviton.com

Lutron Electronics Company, Inc.
www.lutron.com

Pass & Seymour by Legrand
www.passandseymour.com

Sky Technologies
www.safetyquicklight.com

Wiremold Cable Management Products by Legrand
www.wiremold.com

Electri-Flex Company
www.electriflex.com

Atkore FRE Composites
www.frecomposites.com

Hubbell Incorporated
www.hubbell.com

IPEX USA, LLC
www.ipexamerica.com

Panduit Corporation
www.panduit.com

Phoenix Contact
www.phoenixcontact.com/usa_home

Southern Pipe, Inc.
www.southern-pipe.com

Southwire Company
www.southwire.com

Wiremold Cable Management Products by Legrand
www.wiremold.com
Steel Conduit and Electrical Metallic Tubing

ABB Installation Products, Inc.
electrification.us.abb.com

Atkore Allied Tube & Conduit
www.alliededg.us

Nucor
nucortubular.com/product/electrical-conduit/

Robroy Industries, Inc.
www.robro.com

Western Tube Division of Zekelman
www.westerntube.com

Wheatland Tube Company
www.wheatland.com

Switchgear

ABB Inc.
www.abb.com

Eaton
www.eaton.com/electricalusa

Federal Pacific
www.federalpacific.com

G&W Electric, Inc.
www.gwelec.com

GE Grid Solutions
www.gegridsolutions.com

Hitachi Energy USA Inc.
www.hitachienergy.com

Hubbell Power Systems
www.hubbelpowersystems.com

Mersen Electrical Power
ep-us.mersen.com

Mitsubishi Electric Power Products, Inc.
www.meppi.com

S&G Electric Company
www.sandc.com

Schneider Electric
www.schneider-electric.us

Siemens Energy
www.siemens-energy.com

Siemens Industry, Inc.
www.usa.siemens.com/industry

Toshiba International Corporation
www.toshiba.com/ind

Z-Power & Distribution
zpoderanddistribution.com

Transformers

ABB Inc.
www.abb.com

Eaton
www.eaton.com/electricalusa

Emerson
www.emersonelectric.com

Federal Pacific
www.federalpacific.com

Grand Power Solutions, Inc.
grandpowersystems.com

Hammond Power Solutions, Inc.
www.hammondpowersolutions.com

Hitachi Energy USA Inc.
www.hitachienergy.com

Hubbell Acme
www.hubbell.com/acmelectric/en

MGM Transformer Company
www.mgm-transformer.com

Mitsubishi Electric Power Products, Inc.
www.meppi.com

Power Distribution Inc (PDI) part of Eaton
www.pdicorp.com

Prolec GE

Schneider Electric
www.schneider-electric.us

Siemens Industry, Inc.
new.siemens.com

VanTran Industries
www.vantran.com

Transportation Management Systems & Associated Control Devices

360 Network Solutions, LLC
www.360ns.net

Applied Information, Inc.
www.appinfoinc.com

Daktronics
www.daktronics.com/transportation

Eberle Design, Inc.
www.editraffic.com

Horizon Signal Technologies
www.horizonsignal.com

Intelight, a Q-Free Company
www.q-free.com

John Thomas, Inc.
www.crashcushions.com

Switches

Bryant Electric, a division of Hubbell, Inc.
www.bryant-electric.com

Eaton
www.eaton.com/electricalusa

Enerlites Inc.
www.enerlites.com

Wiegmann A Hubbell Company
www.hubbell-wiegmann.com

Hubbell Wiring Device-Kellems
www.hubbell-wiring.com

Leviton Manufacturing Company, Inc.
www.leviton.com

Lutron Electronics Company, Inc.
www.lutron.com

Pass & Seymour by Legrand
www.passandseymour.com

Rittal Corporation
www.rittal.us

WattStopper
www.wattstopper.com
Parsons
delcantechnologies.com

Qualcomm
www.qualcomm.com

Sunrise SESA Technologies, Inc.
www.sesamerica.com

Siemens Industry, Inc.
www.usa.siemens.com/industry

Skyline Products
www.skylineproducts.com

Temple, Inc.
temple-inc.com

Ver-Mac
www.ver-mac.com

Uninterruptible Power (UPS)

**Single-Phase UPS**
ABB Inc.
www.abb.com

APC by Schneider Electric
www.apc.com

Delta Products Corporation
www.delta-americas.com

Emerson Automation Solutions
www.egseg.com

Toshiba International Corporation
www.toshiba.com/ind

VERTIV Liebert
www.liebert.com

**Three-Phase UPS**
ABB Inc.
www.abb.com

APC by Schneider Electric
www.apc.com

Toshiba International Corporation
www.toshiba.com/ind

VERTIV Liebert
www.liebert.com

Wire & Cable

**Building Wire and Cable**
Atkore AFC Cable Systems
www.afcweb.com

Anamet Electrical, Inc.
www.anamet.com

Cerro Wire, LLC
www.cerrowire.com

Colonial Wire & Cable Co., Inc.
colonialwire.com

Copperweld Bi-Metallics, LLC
www.copperweld.com

Electri-Flex Company
www.electriflex.com

Encore Wire Corporation
www.encorewire.com

International Metal Hose Company
www.metalhose.com

Nexans
www.nexans.ca

Okonite Company, The
www.okonite.com

Service Wire Company
www.servicewire.com

Southwire Company
www.southwire.com

Viakable, S.A. de C.V.
www.viakable.com

**Flexible Cords**
Bryant Electric, a division of Hubbell, Inc.
www.bryant-electric.com

Hubbell Wiring Device-Kellems
www.hubbell-wiring.com

Interpower Corporation
www.interpower.com

Nexans
www.nexans.ca

SEA Wire and Cable, Inc.
www.sea-wire.com

Southwire Company
www.southwire.com

**Advanced Technology Wire and Cable**

Atkore AFC Cable Systems
www.afcweb.com

Champlain Cable Corporation
www.champcable.com

Marine Tech Wire and Cable, Inc.
www.marinetechwire.com

Marmo Aerospace & Defense, LLC
www.marmo-ad.com

Monroe Cable Company, Inc., The
www.monroecableusa.com

Nexans
www.nexans.ca

Okonite Company, The
www.okonite.com

Quirk Wire Company, Inc.
www.quirkwire.com

Radix Wire & Cable, LLC
www.radix-wire.com

RSCC Wire and Cable
www.r-scc.com

SEA Wire and Cable, Inc.
www.sea-wire.com

Southwire Company
www.southwire.com

TE Connectivity
www.te.com/usa-en/home.htm

Virginia Insulated Products, Inc.
www.vipwire.com

WireMasters, Inc.
www.wiremasters.net

W.L. Gore & Associates, Inc.
www.gore.com

**Magnet Wire**

CONDUMEX S.A. DE C.V.
www.condumex.com

Elektrisola, Inc.
www.elektrisola-usa.com

www.nema.org
PRODUCTS & MANUFACTURERS: Wire & Cable

Magnekon S.A. de C.V., a Viakable company
www.magnekon.com

MWS Wire Industries
www.mwswire.com

Rea Magnet Wire Company, Inc.
www.reawire.com

SEA Wire and Cable, Inc.
www.sea-wire.com

Essex Furukawa Magnet Wire LLC
www.superioressex.com

Virginia Insulated Products, Inc.
www.vipwire.com

Power and Control Cable
Atkore AFC Cable Systems
www.afcweb.com

CME Wire & Cable
www.cmewire.com

Marmon Utility LLC
www.marmonutility.com

Nexans
www.nexans.ca

Okonite Company, The
www.okonite.com

Phoenix Contact
www.phoenixcontact.com/usa_home

RS&CC Wire and Cable
www.r-scc.com

SEA Wire and Cable, Inc.
www.sea-wire.com

Service Wire Company
www.servicewire.com

Southwire Company
www.southwire.com

Tatung Electric Company of America
www.tatungelectric.com

Wiring Devices

Bryant Electric, a division of Hubbell, Inc.
www.bryant-electric.com

Eaton
www.eaton.com

Enerlites Inc.
www.enerlites.com

Hubbell Incorporated
www.hubbell.com

Hubbell Wiring Device-Kellems
www.hubbell-wiring.com

Interpower Corporation
www.interpower.com

Legrand, North America
www.legrand.us

Leviton Manufacturing Company, Inc.
www.leviton.com

Lutron Electronics Company, Inc.
www.lutron.com

Pass & Seymour by Legrand
www.passandseymour.com

Schneider Electric
www.schneider-electric.us

Sky Technologies
www.safetyquicklight.com

SnapPower
www.snappower.com

Southwire Company
www.southwire.com

TayMac by Hubbell, Inc.
www.taymac.com

TE Connectivity
www.te.com

Titan3 Technology LLC
www.titan3.com

WattStopper
www.wattstopper.com

Wiremold Cable Management Products
by Legrand
www.wiremold.com
## Industrial Suppliers

**Companies that supply raw, manufactured materials, components or products**

- **Apple Inc.**
  Cupertino CA
  www.apple.com

- **Arkema Inc.**
  King Prussia PA
  www.arkema.com

- **Ascend Performance Materials**
  Houston TX
  www.ascendmaterials.com

- **Budde Marketing Systems, Inc.**
  Homer Glen IL
  www.buddemarketing.com

- **Freeport-McMoRan**
  Phoenix, AZ
  www.fcx.com

- **INTEGRATED Engineering Software**
  Winnipeg MB
  www.integratedsoft.com

- **Jor-Mac Company**
  Lomira WI
  www.jor-mac.com

- **Meister International, LLC**
  Ross OH
  www.meisterintl.com

- **PPG Industrial Coatings**
  Pittsburgh PA
  corporate.ppg.com

- **Robertson Inc.**
  Burlington ON
  www.robertsonscrew.com

- **Synaptronics**
  Columbia MD
  www.synaptronics.com

## Wholesale Trade

**Companies that are authorized to distribute NEMA Member products**

- **Batteries Plus Bulbs**
  Hartland WI
  www.batteriesplus.com

- **Graybar Electric Company, Inc.**
  Saint Louis MO
  www.graybar.com

- **Medical Outfitters, Inc.**
  Miami FL
  medicaloutfitter.net

- **Sunshine Lighting**
  Brooklyn, NY
  www.sunlite.com

- **Sy Kessler Sales Inc.**
  Dallas TX
  www.sykessler.com

- **WESCO International, Inc.**
  Pittsburgh, PA
  www.wesco.com

## Associations

**Organizations that have an interest in NEMA-related issues**

- **American Public Power Association**
  Arlington VA
  www.publicpower.org

- **CABA**
  Ottawa ON
  www.caba.org

- **EASA**
  Saint Louis, MO
  easa.com

- **IMSA**
  Rockledge FL
  www.imsasafety.org

- **The Vinyl Institute**
  Alexandria VA
  www.vinylinfo.org
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