



Technical Standards Program

ESTA Standards Watch

June 2018

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ANSI E1.11 – 2008 USITT DMX512-A Reaffirmed

On 31 May 2018, the American National Standards Institute issued notice of final action on the reaffirmation of ANSI E1.11 – 2008, Entertainment Technology—USITT DMX512-A, Asynchronous Serial Digital Data Transmission Standard for Controlling Lighting Equipment and Accessories. The standard has been updated as reaffirmed in 2018 and is available for download for free at tsp.esta.org/freestandards, courtesy of ProSight Specialty Insurance. All of ESTA's published standards are available for free on that web page.

E1.11 describes a method of digital data transmission for control of lighting equipment and accessories, including dimmers, color-changers, and related equipment. It intended to provide for interoperability at communication and mechanical levels with controllers and controlled equipment made by different manufacturers. It is an update and expansion of the protocol developed by the United States Institute for Theatre Technology, Inc. and published as "DMX512/1990, Digital Data Transmission Standards for Dimmers and Controllers."

ESTA Plugfest Announces RDMnet Prototypes!

The organizers of the ESTA Plugfest are pleased to announce that RDMnet prototypes constructed to the most current draft of the E1.33, Transport of ANSI E1.20 (RDM) in an E1.31 environment standard will be available for Plugfest participants.

Wayne Howell of Artistic License and Sam Kearney of Electronic Theatre Controls (ETC) are both providing RDMnet prototypes for attendee use and testing during the July Plugfest. Both Wayne and Sam noted that “this is an excellent opportunity for early adopters to test manufacturer interoperability ahead of the publication of the final RDMnet standard.”

The Artistic License prototype will provide a version of their new dataLynx II gateway which has per port selection of sACN, RDMnet, Art-Net and RDM over Art-Net.

The ETC RDMnet prototype will be in the form of:

- RDMnet Controller: GUI application for Microsoft Windows.
- RDMnet Broker: Console/daemon application for Microsoft Windows.
- RDMnet Device: Console/daemon application for Microsoft Windows, supporting a limited set of RDM parameters.
- RDMnet Gateway: Console/daemon application for Microsoft Windows which will use ETC USB/DMX hardware (Gadget II) to communicate with RDM fixtures.

The ESTA Control Protocols Plugfest, the event where manufacturers and developers test their lighting products for network interoperability, is scheduled to take place from July 20 to July 23 at the D/FW Marriott Solana in Westlake, Texas. Both ESTA and non-ESTA members are welcome to attend the 16th version of this event.

The scheduled hours are 9:00am-11:00pm Friday thru Monday. Members of the E1.11 (DMX512), E1.20 (RDM), E1.31 (sACN), and E1.33 (RDMnet) task groups who authored the standards will be available to answer questions and help explain our protocols.

An event information link, as well as a link for hotel reservations can be accessed at the URLs below. For additional information, please contact the event organizers at Plugfest@esta.org.

Event Information: <http://tsp.esta.org/tsp/news/plugfest.html>

Hotel Reservations: <http://tsp.esta.org/tsp/meetings/index.php>

China announces decreased import tariffs on lamps

On 4 June 2018, the Chinese State Council announced a tariff reduction on consumer goods, including a number of lamps and fixtures used in the entertainment industry. Tungsten Halogen lamps, low voltage incandescent bulbs, searchlight and spotlight sources are among the products impacted by the reduced import tariffs, which take effect on 01 July 2018. For more information, visit <http://www.cali-light.com/index.php/cali/index/caliart/id/21302.html#>.

IES Maintenance of DG-20-09, and Live Webinars

The Illuminating Engineering Society (IES) is beginning the revision or replacement of their publication DG-20-09 “Guide to Planning Theaters and Auditorium,” related to lighting and lighting controls provided as a part of a building. The document does not cover performance lighting design or other performance equipment.

People wishing to participate in the revision process do not have to be members of the IES, but they do have to have a login on the IES website. For more information or to get involved, contact the committee chair, Jody Good, at tffl@good-lighting.com for instructions.

The IES is also presenting three live webinars on topics that might be of interest to the lighting community. The first of these is coming up very quickly, this Thursday, 14 June 2018. Two others are scheduled for July and August. Descriptions of the sessions are below. For more information or to register, see the education section of [IES's website](#).

TM-30 in 2018 and Beyond: Guidance for Improving Color Quality, 14 June 12:00 PM EDT

This presentation will cover updates to TM-30 (TM-30-18), and how ongoing research is providing knowledge that allows for improved color quality. It will discuss where TM-30 stands within the North American and international lighting communities, and demonstrate new features that may be added over time (feedback welcome!). In general, the emphasis will be on translating science into practice, with a focus on specification and highlights of new products being designed using TM-30. Participants to this webinar are eligible for one IES Continuing Education Unit (CEU). This session is free for all to attend.

Lighting for Residential Environments (RP-11-18), 12 July 12:00 PM EDT

This session will cover issues that have gained predominance throughout our society on a continuous basis. Lighting design for residences requires an added expertise of understanding the psychological and physiological aspects of lighting, and how it pertains to personal preferences. Lighting quality is immeasurable in the sense of one's feeling of well-being in a space. The relationship and balance between technical knowledge and the skill to create pleasant, functional lighting environments is evident within this document. IES members can register for free after logging in. Nonmembers must pay \$20 to register. Participants to this webinar are eligible for one IES Continuing Education Unit (CEU).

Maintenance in the LED Era, 16 August 12:00 PM EDT

Rather than being maintenance free, LED requires a change in maintenance practices more akin to stewardship than reactive replacement. Based on RP-36 and other information, this joint IESNALMCO webinar will provide an overview of effective maintenance practices for indoor and outdoor LED lighting and control systems. IES members can register for free after logging in. Nonmembers must pay \$20 to register. Participants to this webinar are eligible for one IES Continuing Education Unit (CEU).

ANSI Public Review Announcements

The following documents have been announced for public review by ANSI. Please send your comments before the deadline to the person indicated and to ANSI's Board of Standards Review at psa@ansi.org.

Due 24 June 2018

BSR/AMCI A100.1-201x, The Standard of Good Practices for Association Management Companies (new standard)

The AMC Institute Standard establishes requirements that provide a measurement for practices that can be utilized by all sizes and types of Association Management Companies (AMCs) in order to enhance the performance of the AMC and their staff. Send comments to: <https://www.surveymonkey.com/r/DH286PV>

BSR/UL 1691-201x, Standard for Safety for Single Pole Locking-Type Separable Connectors (revision of ANSI/UL 1691-2018)

These requirements cover single-pole locking-type separable attachment plugs; cord connectors; panel inlets; and panel outlets, adapters, and accessories, rated up to a maximum of 800 amperes and up to 600 volts ac or dc and not intended for connection or disconnection under load conditions. Send comments to: Megan Monsen, megan.monsen@ul.com.

BSR/UL 1993-201x, Standard for Safety for Self-Ballasted Lamps and Lamp Adapters (revision of ANSI/UL 1993-2017)

This proposal for UL 1993 covers: (1) Addition of Risk of Electric Shock Re-Lamping test to Supplement SC. Send comments to Wilbert Fletcher at Wilbert.Fletcher@ul.com.

BSR/UL 1449-201x, Standard for Safety for Surge Protective Devices (revision of ANSI/UL 1449-2017)

Recirculation of the following topics: (1) Spacings on multi-layer PWBs; (2) Clarification of N-G testing and high-voltage probes; (3) Revision of 40.7.1 pertaining to In measurement; (4) Addition of new paragraph 1.19 to

include ambient temperature range for SPDs; and (7) UL 1449 clarifications and corrections. Send comments to: Mitchell Gold, mitchell.gold@ul.com.

BSR/UL 5500-201x, Standard for Safety for Remote Software Updates (revision of ANSI/UL 5500-201x)

This standard covers Remote software updates taking into account the manufacturer's recommended process. It is limited to software elements having an influence on safety and on compliance with the particular end product safety standard. Send comments to: Megan Monsen, megan.monsen@ul.com.

Due 01 July 2018

BSR/UL 1449-201x, Standard for Safety for Surge Protective Devices (revision of ANSI/UL 1449-2017)

(1) Allowance for lower power factors during intermediate current testing. Send comments to: Mitchell Gold at mitchell.gold@ul.com.

BSR/UL 1971-201x, Standard for Safety for Signaling Devices for the Hearing Impaired (revision of ANSI/UL 1971-2008 (R2013))

Proposal dated 6/1/2018 to revise the Signal Strength and Format test to address LED strobes. Send comments to Paul Lloret at Paul.E.Lloret@ul.com.

Due 09 July 2018

BSR/ASME SRB-1-201x, Design, Installation, Maintenance and Application of Ball Slewing Ring Bearings (new standard)

This standard applies to the design, manufacture, application, inspection requirements, installation, and maintenance of slewing ring bearings, also known as slewing rings. Such bearings are used in, but not limited to, equipment such as hydraulic shovels, excavators, manlifts and aerial platforms, cranes, wind power generators and other equipment where one part of the structure must rotate with respect to another.

Single copy price: Free

Obtain an electronic copy from: <http://cstools.asme.org/publicreview>

Order from: Mayra Santiago, ASME; ansibox@asme.org

Send comments to: Angel Guzman, guzman@asme.org

BSR/AVIXA A103.01-201x, Sound System Spectral Balance in Listener Areas (Originally filed PINS as Equalization Optimization) (new standard)

This Standard defines the parameters for characterizing spectral balance in audiovisual sound systems. The intent is to prevent unsatisfactory listener experiences due to unacceptable variations in frequency response across the audience seating area. This Standard defines a measurement and verification process to ensure that sound systems reproduce an acceptable spectral balance, also known as a uniform frequency response. This is accomplished by documenting the frequency response from the sound system across a specified bandwidth within a low- to high-frequency range within the listening area.

Single copy price: \$75.00 (USD) (non-members); Free (members)

Obtain an electronic copy from: <http://www.avixa.org/standards>

Order from and send comments to Michelle Truong at mtruong@avixa.org.

BSR/UL 62841-2-17-201x, Standard for Safety for Electric Motor-Operated Hand-Held Tools, Transportable Tools and Lawn and Garden Machinery - Safety - Part 2-16 Particular Requirements for Hand-Held Routers (identical national adoption of IEC 62841-2-17)

This proposal for UL 62841-2-17 covers: (1) Proposed adoption of the first edition of IEC 62841-2-17, Standard for Electric Motor-Operated Hand-Held Tools, Transportable Tools and Lawn and Garden Machinery - Safety – Part 2-17: Particular Requirements for Hand-Held Routers, as the first edition of UL 62841-2-17.

Single copy price: Free

Obtain an electronic copy from: <http://www.shopulstandards.com>

Send comments to: Beth Northcott, Elizabeth.Northcott@ul.com

Due 16 July 2018

BSR/ASSP A10.28-201X, Safety Requirements for Work Platforms Suspended from Cranes or Derricks (revision and redesignation of ANSI/ASSE A10.28-2011)

This standard applies to platforms suspended from the load lines of cranes or derricks in order to (1) perform work at elevations that cannot normally be reached by other types of scaffolds or aerial work platforms or (2) transport personnel to elevations where other means of access are unsafe or impractical because of design or worksite conditions.

Single copy price: \$80.00

Obtain an electronic copy from: TFisher@ASSE.org

Order from or send comments to Tim Fisher at TFisher@ASSE.org

BSR/ASTM E119-201x, Test Methods for Fire Tests of Building Construction and Materials (revision of ANSI/ASTM E119-2018)

For a description of the standard, see the announcements from 1 June at http://www.astm.org/ANSI_SA.

Single copy price: Free

Obtain an electronic copy from: cleonard@astm.org

Order from or send comments to Corice Leonard at accreditation@astm.org.

Due 24 July 2018

BSR/ASME AED-1-201x, Aerospace and Advanced Engineering Drawings (new standard)

This Standard is intended to provide documentation of unique requirements that are common across multiple industries, or within segments of industries. This document standardizes requirements for industries to benefit from commonality, decreased cost, and improved quality. Unique symbologies, terminologies, and concepts are provided to further enhance the understanding and abilities of all who use this document.

Single copy price: Free

Obtain an electronic copy from: <http://cstools.asme.org/publicreview>

Order from: Mayra Santiago, ASME; ansibox@asme.org

Send comments to: Lawrence Chan, chanl4@asme.org

Notices of Withdrawal 17 June 2018

In accordance with clause 4.7.1 Periodic Maintenance of American National Standards of the *ANSI Essential Requirements*, ANSI has announced that the following American National Standards have not been reaffirmed or revised within the five-year period following approval as an ANS.

BSR/UL 62841-3-13-201x, Standard for Safety for Electric Motor-Operated Hand-Held Tools, Transportable Tools and Lawn and Garden Machinery - Safety - Part 3-13: Particular Requirements for Transportable Drills (national adoption with modifications of IEC 62841-3-13)

Inquiries may be directed to Beth Northcott, Elizabeth. Northcott@ul.com.

BSI Public Review Announcement

BSI Standards has announced a draft document for public review that might be of interest to *Standards Watch* readers. BSI documents may be commented on at <https://standardsdevelopment.bsigroup.com/>.

Due 13 June 2018

CEN/TC 136 N 2746 Sports and recreational facilities - Ropes courses - Part 1: Construction and safety requirements

This European Standard applies to permanent and mobile ropes courses and their components. It specifies safety requirements for the design, construction, inspection and maintenance of ropes courses and their components, but does not apply to temporary ropes courses (see 3.3) and children's play grounds (see EN 1176 all parts). For the use of ropes courses EN 15567-2 applies.

CSA Public Review Announcement

The CSA Group has announced a draft document for public review that might be of interest to *Standards Watch* readers. To participate in CSA public reviews, please visit: <http://publicreview.csa.ca/>.

Due 25 June 2018

C22.2 NO. 1993 - Self-ballasted lamps and lamp adapters (Proposed Amendment)

This proposal adds the risk of shock - relamping test to Supplement SE for double-ended and U-bend direct replacement (Type A) LED lamps. This test uses the same shock hazard measurement meter circuit and MIU limit as the existing test in clause SA8.19, but includes an expanded test method to measure compliance during the two most likely risk scenarios: contact during lamp insertion into a live circuit, and contact during lamp removal from a live circuit.

DIN Announces New Project

The Deutsches Institut für Normung (DIN) has announced the start of a new project possibly of interest to Standards Watch readers. The official project start for DIN SPEC 56951, Entertainment Technology - Drives and Control Systems for safety-related Equipment date is 1 June 2018. This DIN SPEC specifies supplementary instructions and explanations with reference to DIN 56950-1 for safety-related equipment, examples of which include natural smoke outlet (venting), safety curtains within the proscenium, and safety curtains at side stages and back stage. This does not comprise mechanical smoke and heat haul-off equipment, equivalent power supply and safety lighting, fire alarm systems and fire extinguishing devices and hazard alert systems. For more information, contact Michael Bahr [through DIN's website](#).

New ANS Projects

ANSI has announced the following new projects that might materially affect *Standards Watch* readers—or at least be interesting to them. Contact the developer if you (a) want to be involved in the project, (b) object to the project and wish it to be abandoned, or (c) if you would like to point out that its scope is covered by an existing standard, thereby possibly making the project redundant or conflicting.

BSR ASA S12.8-201x, Methods for Determining the Insertion Loss of Outdoor Noise Barriers (revision of ANSI ASA S12.8-1998 (R2013))

Presents three methods for determining the insertion loss of outdoor noise barriers. The methods are “direct” BEFORE and AFTER measurements, “indirect” BEFORE measurements at an “equivalent” site, and “indirect” predictions of BEFORE sound levels. “Indirect BEFORE measurements” and “indirect BEFORE prediction” methods require direct measurements of AFTER sound levels. Measurements of acoustical descriptors use sound sources naturally present at a site, controlled natural sound sources, or controlled artificial sound sources. Within prescribed limits, the receiver location and atmospheric, ground, and terrain conditions may be chosen based on the objectives for determination of barrier insertion loss. Examples are provided for worksheets that may be used for data acquisition and analysis. For more information, contact Neil Stremmel at asastds@acousticalsociety.org.

BSR/ASSP A10.33-201X, Safety & Health Program Requirements for Multi-Employer Projects (revision and redesignation of ANSI/ASSE A10.33-2011 (R2016))

This standard sets forth the minimum elements and activities of a program that defines the duties and responsibilities of construction employers working on a construction project where multiple employers are engaged in the common undertaking to complete a construction project. For more information, contact Tim Fisher at TFisher@ASSE.org.

BSR/ASSP A10.34-200x, Protection of the Public on or adjacent to Construction Sites (revision and redesignation of ANSI/ASSE A10.34-2001 (R2012))

This standard provides the recommended elements and activities on construction projects to provide protection for the public. For more information, contact Tim Fisher at TFisher@ASSE.org.

BSR/CSA 1800-201x, Commercial Unmanned Aircraft System (UAS) Programs and Operator Competencies (new standard)

This standard shall cover the minimum requirements related to the establishment and implementation of Unmanned Aircraft System (UAS) programs for commercial and professional use. It shall cover the following details: the minimum training and competencies for operation and support; cover all relevant classes of UAVs; programs and operation in varied sectors (e.g., agriculture, oil and gas, emergency response, public safety, municipalities); programs and operation for varied tasks (e.g., inspection, monitoring, search and rescue); and

beyond visual line of sight (BVLOS). For more information, contact David Zimmerman at david.zimmerman@csagroup.org.

BSR/CTA 2017.1-2007 (R201x), Serial Communication Protocol for Portable Electronic Devices
(reaffirmation of ANSI/CTA 2017.1-2007 (R2013))

This document describes a serial communication protocol that enables command and control communication between portable electronic devices and accessories attached to those devices. This protocol builds upon functions provided by the MOST network developed by the MOST Cooperation. MOST is a registered trademark of the MOST Cooperation. For more information, contact David Zimmerman at david.zimmerman@csagroup.org.

BSR/ISA 62443-1-2-201x, Security for Industrial Automation and Control Systems, Part 1-2: Master Glossary of Terms and Abbreviations (new standard)

This standard defines the terms and abbreviations commonly used throughout the ISA 62443 series. Wherever possible, definitions have been taken from established available sources. In some cases, the definitions have been altered, usually slightly, to adapt them to the context of industrial automation and control systems. For more information, contact Eliana Brazda at ebrazda@isa.org.

BSR/ISA 62443-2-2-201x, Security for Industrial Automation and Control Systems, Part 2-2: Industrial Automation and Control System Protection Levels (new standard) This part of the ISA 62443 series specifies a framework and structure for the evaluation of the protection of an industrial automation and control system (IACS). It includes a procedure for combining the evaluation of organizational and technical security measures in numerical values called “protection levels.” The framework provides the structure for evaluating the defense-in-depth strategy of the IACS in operation, based on the technical and organizational requirements specified in other documents of the ISA 62443 series as well as references to other standards contained within them where applicable, such as ISO/IEC 27001. Protection levels can be applied to the whole IACS as well as to zones and conduits within an IACS. For more information, contact Eliana Brazda at ebrazda@isa.org.

BSR/ISEA 125-201x, Conformity Assessment of Safety and Personal Protective Equipment (revision of ANSI/ISEA 125-2014)

This standard establishes criteria for conformity assessment of safety and personal protective equipment which is sold with claims of compliance with product performance standards. Specific provisions are described for qualification performance testing data collection and maintenance, periodic verification, substantiation of processes to maintain manufacturing quality, and roles and responsibilities of suppliers, testing organizations, and certification organizations who participate in the process. For more information, contact Cristine Fargo at cfargo@safetysystem.org.

Draft IEC & ISO Documents

This section lists proposed documents that the International Electromechanical Commission (IEC) or the International Organization for Standardization (ISO) are considering for approval. *Standards Watch* readers interested in reviewing and commenting on the document should order a copy from their national representative and submit their comments through them. Comments from US citizens on IEC and ISO documents should be sent to Charles T. Zegers at czegers@ansi.org and Karen Hughes at isot@ansi.org respectively. Any prices, if shown, are for purchases through ANSI. The sort order is by due date then alphanumeric.

ISO/DIS 7010, Graphical symbols - Safety colours and safety signs - Registered safety signs – 18 June 2018, \$230.00

ISO/DIS 527-1, Plastics - Determination of tensile properties - Part 1: General principles – 3 August 2018, \$88.00

ISO/IEC 14496-12/DAMd1, Information technology - Coding of audiovisual objects - Part 12: ISO base media file format - Amendment 1: Compact Sample-To-Group, new capabilities for tracks, and other improvements – 4 August 2018, \$71.00

ISO/IEC DIS 23000-22, Information technology – Multimedia application format (MPEG-A) - Part 22: Multi-Image Application Format (MiAF) – 4 August 2018, \$93.00

ISO/IEC 23001-10/DAMd2, Information technology - MPEG systems technologies - Part 10: Carriage of timed metadata metrics of media in ISO base media file format - Amendment 2: Support for encoded regions of interest – 6 August 2018, \$29.00

121A/227/CD, IEC TR 63201 ED1: Low-voltage switchgear and controlgear - Guidance for the development of embedded software, 018/9/7/CIS/1/587/CD, Amendment 1 - CISPR 32: Electromagnetic compatibility of multimedia equipment - Emission requirements - Fragment 6, 10 August 2018

ISO/IEC 14496-10/DAMd1, Information technology - Coding of audiovisual objects - Part 10: Advanced Video Coding - Amendment 1: Level 5.2 and progressive high profile – 12 August 2018, \$107.00

34/530/CD, IEC 62386-202 ED2: Digital addressable lighting interface - Part 202: Particular requirements for control gear – Self-contained emergency lighting (device type 1), 17 August 2018

34/529/CD, IEC 61547 ED3: Equipment for general lighting purposes - EMC immunity requirements, 17 August 2018

Recently Published IEC & ISO Documents

Listed here are documents recently approved by the IEC and ISO. A list of resellers is available at <http://webstore.ansi.org/faq.aspx#resellers>.

ISO 5458:2018, Geometrical product specifications (GPS) - Geometrical tolerancing - Pattern and combined geometrical specification, \$185.00

ISO 1891-4:2018, Fasteners - Vocabulary - Part 4: Control, inspection, delivery, acceptance and quality, \$45.00

IEC 62680-1-3 Ed. 3.0 en:2018, Universal serial bus interfaces for data and power - Part 1-3: Common components - USB Type-C™ Cable and Connector Specification, \$410.00

IEC 62386-101 Amd.1 Ed. 2.0 b:2018, Amendment 1 – Digital addressable lighting interface - Part 101: General requirements - System components, \$47.00

IEC 62386-101 Ed. 2.1 b:2018, Digital addressable lighting interface - Part 101: General requirements - System components, \$528.00

IEC/TR 63130 Ed. 1.0 en:2018, Dimming and hot restrike of metal halide lamps, \$82.00

ASSE Becomes ASSP

Effective 01 June, 2018, please be advised that the American Society of Safety Engineers (ASSE), an ANSI member and Accredited Standards Developer (ASD), will be known formally as the American Society of Safety Professionals (ASSP). For any related questions, please contact: Mr. Timothy R. Fisher, CSP, CHMM, ARM, CAE, CPEA, STS, Director, Standards and Technical Services, American Society of Safety Professionals, via e-mail at TFisher@ASSE.org.

U.S. Federal Register Updates

The U.S. Federal Register Update contains summaries of entries in the U.S. Federal Register that may be of particular interest to the standards and conformity assessment community.

Energy Conservation Program: Test Procedure for Metal Halide Lamp Fixtures

Published 30 May 2018

The U.S. Department of Energy (DOE) is initiating a data collection process through this request for information to consider whether to amend DOE's test procedure for metal halide lamp fixtures (MHLFs). To inform interested parties and to facilitate this process, DOE has gathered data and identified several issues associated with the currently applicable test procedure on which DOE is interested in receiving comment. The issues outlined in this document mainly concern updates to industry standards and potential clarifications to the existing test procedure for MHLFs. DOE welcomes written comments from the public on any subject within the scope of this document, including topics not directly outlined in this RFI. DOE also welcomes comments on any additional topics that may inform DOE's decisions in a potential future test procedure rulemaking, such as methods to reduce regulatory burden while ensuring the procedure's accuracy. Written comments and information are requested and will be accepted on or before June 29, 2018.

Interested persons are encouraged to visit the Federal eRulemaking Portal at <http://www.regulations.gov>. Follow the instructions for submitting comments.

TSP Meeting Schedule

The next set of meetings is scheduled for the DFW Marriott Solana in Westlake, Texas. A "Reserve a Hotel Room" link is at <http://tsp.esta.org/tsp/meetings/index.php>.

Control Protocols Compliance Study Group	14:00 – 18:00	Sunday 22 July 2018
Control Protocols E1.20 / E1.37-5	19:00 – 23:00	Thursday 19 July 2018
	14:00 – 18:00	Friday 20 July 2018
Control Protocols E1.33 / E1.37-7	14:00 – 18:00	Saturday 21 July 2018
	10:00 – 18:00	Monday 23 July 2018
	10:00 – 17:00	Tuesday 24 July 2018
Control Protocols E1.37-4 Firmware Uploads	09:00 – 13:00	Sunday 22 July 2018
Control Protocols E1.59	09:00 – 13:00	Friday 20 July 2018
Control Protocols NAEP	19:00 – 23:00	Friday 20 July 2018
Control Protocols Plugfest	09:00 – 23:00	Friday 20 July 2018
	09:00 – 23:00	Saturday 21 July 2018
	09:00 – 23:00	Sunday 22 July 2018
	09:00 – 23:00	Monday 23 July 2018
Control Protocols Plugfest Roundtable	19:00 – 21:00	Sunday 22 July 2018
Control Protocols Working Group	09:00 – 13:00	Saturday 21 July 2018
Electrical Power Working Group	09:00 – 11:00	Friday 20 July 2018
Event Safety Communications TG	14:00 – 18:00	Thursday 19 July 2018
	09:00 – 13:00	Friday 20 July 2018
Event Safety Fire Safety TG	14:00 – 18:00	Friday 20 July 2018
Event Safety Working Group	14:00 – 18:00	Saturday 21 July 2018
Floors Working Group	19:00 – 22:00	Thursday 19 July 2018
Fog & Smoke Working Group	15:00 – 18:00	Thursday 19 July 2018
Rigging E1.6-3 TG	19:00 – 23:00	Thursday 19 July 2018
Rigging Working Group	14:00 – 18:00	Friday 20 July 2018

Stage Machinery Controls TG	15:00 – 18:00	Thursday 19 July 2018
Stage Machinery Working Group	19:00 – 23:00	Saturday 21 July 2018
Technical Standards Council	09:00 – 13:00	Sunday 22 July 2018

The Autumn meetings will be held 4-8 October 2018 at the Marriott Solana in Westlake, TX. The meeting schedule and a "Reserve a hotel room" link are available at <http://tsp.esta.org/tsp/meetings/index.php>.

ESTA Standards Watch

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Bruce Darden
Doug Fleenor Design
Earl Girls Inc. EGI Pro
Electronic Theatre Controls
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Tony Giovannetti
GLP German Light Products
Golden Sea Professional Equipment Limited
H & H Specialties
Harlequin Floors
High Output
Neil Huff
Hughston Engineering
IATSE Local 891
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Mike Garl Consulting
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Niscon
Oasis Stage Werks
Reed Rigging
Reliable Design Services
Robe
Rosco Laboratories
Rose Brand
Alan M. Rowe
David Saltiel
Sapsis Rigging
Stage Equipment & Lighting
Stage Rigging
Stagemaker
Stageworks
Syracuse Scenery and Stage Lighting, Co.
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Theatre Safety Programs
TMB
Tyler Truss Systems
Vertigo
Vincent Lighting Systems
Steve Walker & Associates
Walt Disney Parks and Resorts
Westview Productions
WNP Services, Inc.
XSF Xtreme Structures and Fabrication

Investors in Innovation, supporters of ESTA's Technical Standards Program

VISIONARY LEADERS (\$50,000 & up)

ETC

ProSight Specialty Insurance

VISIONARY (\$10,000 & up; >100 employees/members)

Chauvet Professional

Cisco System

Columbus McKinnon Entertainment Technology

Martin by Harman

Robe

Walt Disney Parks and Resorts

VISIONARY (\$5,000 & up; 20–100 employees/members)

Altman Lighting, Inc.

German Light Products

JR Clancy

McLaren Engineering Group

Rose Brand

Stage Rigging

TMB

Tyler Truss Systems, Inc.

VISIONARY (\$500 & up; <20 employees/members)

About the Stage

B-Hive Industries, Inc.

Scott Blair

Boston Illumination Group

Louis Bradfield

Candela Controls Inc.

Clark Reder Engineering

Tracey Cosgrove & Mark McKinney

Doug Fleenor Design

EGI Event Production Services

Entertainment Project Services

Neil Huff

Hughston Engineering Inc.

Interactive Technologies

Lankey & Limey Ltd.

Jules Lauve

Brian Lawlor

Limelight Productions, Inc.

John T. McGraw

Mike Garl Consulting

Mike Wood Consulting

Reed Rigging

Reliable Design Services

Alan Rowe

David Saltiel

Sapsis Rigging Inc.

Stageworks

Dana Taylor

Steve Terry

Theatre Projects

Theatre Safety Programs

Tobins Lake Sales Theatrical Supply

Vertigo

Steve A. Walker & Associates

Westview Productions

WNP Services

INVESTOR (\$3,000–\$9,999; >100 employees/members)

Barbizon Lighting Company

Golden Sea Professional Equipment Limited

IATSE Local 728

IATSE Local 891

Lex

NAMM

Rosco Laboratories

Texas Scenic Company

INVESTOR (\$1,500–\$4,999; 20–100 employees/members)

American Society of Theatre Consultants

Area Four Industries

BMI Supply

City Theatrical Inc.

InterAmerica Stage, Inc.

Lycian Stage Lighting

Morpheus Lights

Niscon Inc.

Syracuse Scenery and Stage Lighting

Tomcat

XSF Xtreme Structures and Fabrication

INVESTOR (\$200–\$499; <20 employees/members)

Benjamin Cohen

Bruce Darden

Indianapolis Stage Sales & Rentals, Inc.

Jason Kyle

Eric Loader

Moss LED

Robert Scales

Stephen Vanciel

Suga Koubou Co., Ltd.

SUPPORTER (<\$3,000; >100 employees/members)

Ian Foulds, IATSE Local 873
Harlequin Floors

PSAV
Thern Stage Equipment

SUPPORTER (<\$1,500; 20–100 employees/members)

Aerial Arts
Blizzard Lighting, LLC
Creative Stage Lighting
Geiger Engineers
H&H Specialties
High Output
InCord
iWeiss
Oasis Stage Werks

Serapid
Stage Equipment & Lighting
Stagemaker
Thermotex Industries, Inc.
Total Structures
Ultratec Special Effects
Vincent Lighting Systems
Zhuhai Shengchang Electronics Co.

SUPPORTER (<\$200; <20 employees/members)

AC Power Distribution, Inc.
Michael Cowger
Peter Donovan
Entertainment Project Services, LLC
Tony Giovannetti
Pat Grenfell
Mitch Heffer
Bill Hektner
Alan Hendrickson
Hoist Sales and Services
John Huntington
Beverly and Tom Inglesby
Intensity Advisors
JSAV
Eddie Kramer
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