

Minutes
Control Protocols Working Group
Thursday, 14 July 2016
Roosevelt Hotel
45 E 45th St, New York, NY 10017
Vanderbilt Suite, 2nd FL

Presiding co-chairperson:

Michael Lay; Philips Color Kinetics; Philips Lighting; P; MP
Maya Nigrosh; Electronic Theatre Controls, Inc.; A; MP

Recording secretaries:

Erin Grabe and Karl Ruling; ESTA

Members in attendance:

Daniel W. Antonuk; Electronic Theatre Controls, Inc.; P; MP
Scott M. Blair; Full Throttle Films/ VER; P; DR
Edward R. Condit; OSRAM Lighting Solutions; OSRAM Licht AG; O; G
Tucker Downs; O; U
Bill Ellis; Candela Controls, Inc.; P; DE
Robert Goddard; Goddard Design Co.; P; MP
Mitch Hefter; USITT; P; U
Maurits van der Hoorn; Pathway Connectivity; Acuity Brands Inc.; A; MP
John Huntington; City Tech, Ent Tech Department; I.A.T.S.E. Local 1; A; U
Michael Karlsson; LumenRadio AB; P; MP
Edwin S. Kramer; I.A.T.S.E. Local 1; P; U
Roger Lattin; I.A.T.S.E. Local 728; P; U
Dan Lisowski; Dept. Of Theatre and Drama; University of Wisconsin - Madison; P; DE
Kevin Loewen; Pathway Connectivity; Acuity Brands Inc.; P; MP
Tyrone Mellon, Jr.; Lex Products; Lex TM3; P; CP
Daniel Murfin; Royal National Theatre; P; U
Simon Newton; Open Lighting Project; P; G
Kimberly Corbett Oates; Schuler Shook; P; DE
Ken Vannice; Ken Vannice LLC; I; G
Peter Willis; Howard Eaton Lighting Ltd.; P; CP

1 Opening remarks

Michael Lay called the meeting to order at 9:10 a.m. Eastern Time. He offered thanks to those present in the room and on WebEx for taking time out of their busy schedules to attend. He asked everyone to silence their cell phones, and then offered the group a few tips on conferencing etiquette.

2 Attendance

2.1 Introductions of those physically present and circulation of attendance sheet

2.2 Introductions of those present via WebEx

Maya Nigrosh read down the list of attendees on WebEx and they introduced themselves.

2.3 Determination of a quorum

Michael Lay announced a supermajority present by a count of voters hands and WebEx replies.

2.4 Recognition of alternate voting members

John Huntington and Maya Nigrosh are non-voting alternates today and were recognized as such.

2.5 Consensus body

The full consensus body of this working group at the time of this meeting, including those not present, was:

Name	Representing	Voting status	Interest category
Kevin Loewen	Acuity Brands Inc.	P	MP
Robert Bell	Acuity Brands Inc.	A	MP
Gary Douglas	Acuity Brands Inc.	A	MP
Maurits van der Hoorn	Acuity Brands Inc.	A	MP
Adam De Witt	Adept Anomaly	I	U
Jonathan Kemble (moved to Observer at the end of the meeting)	Barco	P	MP
Bill Ellis	Candela Controls, Inc.	P	DE
Brent Boulnois	Candela Controls, Inc.	A	DE
Jim Ohrberg	Candela Controls, Inc.	A	DE
Jason Potterf	Cisco	P	MP
Paul Kleissler	City Theatrical, Inc.	P	MP
Larry Schoeneman	DesignLab Chicago, Inc.	P	DR
Milton Davis	Doug Fleenor Design, Inc.	P	MP
Ian Campbell	Doug Fleenor Design, Inc.	A	MP
Ulrich Kunkel	E3 Engineering & Education for Entertainment GmbH	P	U
Jon Hole	Eaton	P	MP
Daniel W. Antonuk	Electronic Theatre Controls, Inc.	P	MP
Steve Terry	Electronic Theatre Controls, Inc.	A	MP
Maya Nigrosh	Electronic Theatre Controls, Inc.	A	MP
Edward A. (Ted) Paget	Electronic Theatre Controls, Inc.	A	MP
Scott M. Blair	Full Throttle Films/ VER	P	DR
Jeremy Hochman	Full Throttle Films/ VER	A	DR
Claude Ostyn	Full Throttle Films/ VER	A	DR
Robert Goddard	Goddard Design Co.	P	MP

Name	Representing	Voting status	Interest category
Peter Willis	Howard Eaton Lighting Ltd.	P	CP
Edwin S. Kramer	I.A.T.S.E. Local 1	P	U
John Huntington	I.A.T.S.E. Local 1	A	U
Roger Lattin	I.A.T.S.E. Local 728	P	U
Alan M. Rowe	I.A.T.S.E. Local 728	A	U
Ken Vannice	Ken Vannice LLC	I	G
Tyrone Mellon, Jr.	Lex TM3	P	CP
Joshua Liposky	Lex TM3	A	CP
Michael Karlsson	LumenRadio AB	P	MP
Marcus Bengtsson	LumenRadio AB	A	MP
Simon Newton	Open Lighting Project	P	G
Michael Lay	Philips Lighting	P	MP
Charles Reese (moved to Observer at the end of the meeting)	Production Resource Group	P	DR
Daniel Murfin	Royal National Theatre	P	U
Kimberly Corbett Oates	Schuler Shook	P	DE
Andrew Frazer	Stellascapes.com	P	MP
Darryl Ross	TMB	P	MP
Dan Lisowski	University of Wisconsin - Madison	P	DE
Dane Styczynski	University of Wisconsin - Madison	A	DE
Mitch Hefter	USITT	P	U
Paul Beasley (moved to Observer at the end of the meeting)	Walt Disney Company	P	U
Voting Status Key: P = Principal voter, A = Alternate voter, I = Individual voter			
Votes by Interest Category:			
Custom-market producer		CP	2
Designer		DE	3
Dealer or rental company		DR	3
General interest		G	2
Mass-market producer		MP	12
User		U	7
Total votes possible:			29

3 Membership

3.1 Requirements for membership, new

The following statement was read aloud to the assembly by Michael Lay:

Membership is open to all who are affected by the work of the group. People and companies that would be in any interest category other than a manufacturer interest category are, at this time, particularly encouraged to apply for membership. There is an annual \$100 participation fee for all members. Voting members are required to attend meetings and to vote on letter ballots. Voting members and their alternates may not miss three consecutive meetings without a loss of voting status.

3.2 Changes to observer status due to lack of attendance

The following voters have missed the last two meetings and are in jeopardy of a change to Observer status if this meeting is also missed:

Jonathan Kemble; Barco; P; MP
Charles Reese; Production Resource Group; P; DR
Paul Beasley; Walt Disney Company; P; U

Michael Lay announced that these voters would be moved to observers if they did not show up by the end of this meeting. These voters did not show up by the end of the meeting and were moved to observers.

3.3 Processing of new membership requests and changes in membership status:

As of 27 June 2016, no new applications or requests for status change were received.

4 Approval of the minutes from the previous meeting

See *CPmin03-2016.pdf*

Eddie Kramer moved to approve the draft minutes. The motion was seconded. Dan Antonuk pointed out that he was at the March 2016 meeting. Michael Lay called the motion, which carried unanimously by raised hands and WebEx votes. There was no opposition and no abstentions.

5 Reading of the call for patents

The following statement was read aloud to the assembly by Michael Lay:

ESTA intends not to publish any standard that contains protected intellectual property, unless that information can be licensed by anyone for a reasonable fee. ESTA uses a process of open patent and copyright disclosures to implement its intent. ESTA does not conduct patent or copyright searches and does not warrant that its standards contain no protected intellectual property.

In keeping with the open disclosures policy, I ask if anyone present wishes to notify this working group of the existence of a patent, patent application, copyright, or other intellectual property that might protect material in a standard being developed by this working group. You need not be the holder of the patent or copyright to notify this working group of its existence.

Mitch Hefter announced that Philips had received two patents with regard to DMX512, patent numbers 9378086 and 9378087. Patent 9378086 is entitled "Methods and apparatus for improved DMX512 communication." Patent 9378087 is entitled "Methods for improved DMX512 communication while maintaining backwards compatibility." These patents address techniques for dealing with error correction, and were developed in part to deal with applications where twisted pair media is not available. Mitch Hefter reported that Philips will license the patents to anyone for a reasonable fee. Karl Ruling noted that the letters would also need to state that Philips will license the patents on a non-discriminatory basis.

6 Reading of the anti-trust statement

The following statement was read aloud to the assembly by Michael Lay:

ESTA and its members take seriously their obligation to comply with all applicable antitrust laws. Therefore, during this meeting and during all ESTA events, all discussions will be limited to those subjects that are permitted by the antitrust laws. All members should refrain from any discussion or mention of competitively sensitive subjects such as the current or future prices charged for any member product or services, current or future marketing plans or strategies, and current or future costs, including employee salaries. There also must be no agreement on the suppliers or customers that members will do business with or the markets in which members will conduct business.

Violations of the antitrust laws can have serious consequences. If you have any questions or concerns about anything that is discussed at a ESTA meeting, please bring your concern to ESTA management. An easy to read pamphlet describing the antitrust laws is available from the ESTA staff.

Karl Ruling and Erin Grabe held up copies of the pamphlets for all to see. Nothing was reported.

7 Approval of agenda

Roger Lattin said he would like to have a discussion after the meeting adjourns to solicit advice about transporting IP protocols over power lines.

Scott Blair moved to approve the agenda. The motion was seconded and unanimously approved.

8 Old business

8.1 Standards, Guides & Recommended Practice Maintenance

This is a placeholder in the agenda, so we don't forget to maintain them. Documents prefaced with an asterisk () are on the agenda for discussion.*

ANSI E1.3 – 2001 (R2016), Entertainment Technology - Lighting Control Systems - 0 to 10V Analog Control Specification & Application Guide For ANSI E1.3 – 2004 Lighting Control Systems 0 to 10V Analog Control Specifications. (Revision, reaffirmation or withdrawal by 2021)

ANSI E1.11 – 2008 (R2013), Entertainment Technology - USITT DMX512-A, Asynchronous Serial Digital Data Transmission Standard for Controlling Lighting Equipment and Accessories. (Revision, reaffirmation, or withdrawal by 2018)

ANSI E1.17 – 2015 Entertainment Technology - Architecture for Control Networks (ACN) (Revision, reaffirmation, or withdrawal by 2020)

* ANSI E1.20 - 2010, Remote Device Management over USITT DMX512. (Revision, reaffirmation or withdrawal by 2016)

* ANSI E1.27-1 – 2006 (R2016), Entertainment Technology - Standard for Portable Control Cables for Use with USITT DMX512/1990 and E1.11 (DMX512-A) Products. (Revision, reaffirmation or withdrawal by 2021)

ANSI E1.27-2 – 2009 (R2014), Entertainment Technology - Recommended Practice for Permanently Installed Control Cables for Use with ANSI E1.11 (DMX512-A) and USITT DMX512/1990 Products. (Revision, reaffirmation, or withdrawal by 2019)

ANSI E1.30-1 – 2010 (R2016), EPI 23, Device Identification Subdevice. (Revision, reaffirmation or withdrawal by 2021)

ANSI E1.30-3 – 2009 (R2014), EPI 25, Time Reference in ACN Systems Using SNTP and NTP. (Revision, reaffirmation, or withdrawal by 2019)

ANSI E1.30-4 – 2010, EPI 26, Device Description Language (DDL) Extensions for DMX512 and E1.31 Devices. (Revision, reaffirmation, or withdrawal by 2020)

ANSI E1.30-10 – 2009 (R2014), EPI 32, Identification of Draft Device Description Language Modules. (Revision, reaffirmation, or withdrawal by 2019)

* ANSI E1.31, Lightweight streaming protocol for transport of DMX512 using ACN (Revision, reaffirmation, or withdrawal by 2014)

ANSI E1.37-1 - 2012, Additional Message Sets for ANSI E1.20, Remote Device Management. (Revision, reaffirmation, or withdrawal by 2017)

ANSI E1.37-2 - 2015, Additional Message Sets for ANSI E1.20 (RDM) – Part 2, IPv4 & DNS Configuration Messages. (Revision, reaffirmation, or withdrawal by 2020)

Application Guide for ANSI E1.3 - 2001, Lighting Control Systems 0 to 10V Analog Control Specification

Recommended Practice for Ethernet Cabling Systems in Entertainment Lighting Applications

Supplement to the Recommended Practice for Ethernet Cabling in Entertainment Lighting Applications

Withdrawn standards

E1.45 - 2013 (W2015), Unidirectional Transport of IEEE 802 data frames over ANSI E1.11 (DMX512A)

* E1.30-7 - 2009 (W2016), EPI 29, Allocation of Internet Protocol Version 4 Addresses to ACN Hosts

8.2 ANSI E1.20 - 2010, Remote Device Management over USITT DMX512

Simon Newton reported that the task group had met and that they made a lot of progress, but are not yet done. Peter Willis asked for a recirculation of the spread-sheet of requested changes within the task group.

8.3 ANSI E1.27-1 – 2006 (R2016), Entertainment Technology - Standard for Portable Control Cables for Use with USITT DMX512/1990 and E1.11 (DMX512-A) Products

There was no news or action at this time, and this item will be removed from the agenda for the next meeting.

8.4 E1.30-7 – 2009 (W2016), EPI 29, Allocation of Internet Protocol Version 4 Addresses to ACN Hosts

There was no news or action at this time, and this item will be removed from the agenda for the next meeting.

8.5 BSR E1.30-11, EPI 33, Transport of root PDUs over TCP

Michael Lay asked if we're still holding this project for E1.33. Simon Newton said yes.

8.6 BSR E1.31 with Universe Synchronization and Universe Discovery

See E1-31_ThrdRvwCmmntSmmry.pdf, distributed on 14 April Comments were received and need to be resolved.

Scott Blair moved to approve the draft resolutions. The motion was seconded. Scott Blair thanked Maya Nigrosh and the task group for their hard work, and acknowledged that he is happy with the outcome. Bob Goddard said the group did a monumental job getting the documents out without the need for another review, and asked about cleaning up the formatting before publication. The motion carried by a supermajority of yes votes. There was one abstention.

Scott Blair then moved to approve the document as an American National Standard. Bob Goddard seconded the motion and a letter ballot will be issued to the CPWG consensus body.

Maya Nigrosh spoke to the task group's intention of opening the document for revision immediately after publication, to include IPv6 and some related changes that might allow for the expansion of number of universes.

Roger Lattin moved to submit a PINS for revision, if and when the current document is approved as an American National Standard. The motion was seconded. There was some discussion of scope creep, and the TG agreed to put together a scope doc to share with the working group for comment. The motion carried unanimously via hands raised and WebEx votes.

8.7 BSR E1.33, Transport of ANSI E1.20 (RDM) in an E1.31 environment

See E1-33_5thRevwCommntSummry.pdf, distributed on 14 April.

Scott Blair said that about 200 comments were received in the last public review. Not counting duplicate comments or comments that require very little scrutiny, about 130 of the comments need detailed attention.

Dan Antonuk said that ETC had implemented the current draft of BSR E1.33 and had run some tests. He noted that the draft standard is in good shape and is working. He noted that several different programmers had implemented various gateways, brokers, controllers, and devices, and they were able to get it to work, but the programmers did have to speak with one another, so there are places where the standard could be made more clear.

It was noted that there will be weekly conference calls to work through the comments.

8.8 BSR E1.37-4, Firmware updates via ANSI E1.20, RDM

Peter Willis reported that there was not much manufacturer support for this document at the European Plugfest. There was further discussion about whether wireless links could be incorporated in this document at all, as E1.20 is fundamentally a wired protocol, although people put proprietary black boxes in the middle of the RDM link.

Peter Willis said that this should be a task group discussion with the intention of having something for the working group to consider at LDI. There was further discussion on the possibility of going to a one-to-one approach via wireless and a one-to-many approach for wired. Simon Newton said this would not be difficult.

The group took a 10 minute break, returning at 10:41 a.m.

8.9 BSR E1.37-5, General Purpose Messages for ANSI E1.20 RDM

Simon Newton said that the document was split, and work will continue.

8.10 BSR E1.37-6 - 20xx, Additional Message Sets for ANSI E1.20 (RDM) - Parameter Description Messages

No news or action at this time.

8.11 BSR E1.37-7 - 20xx, Additional Message Sets for ANSI E1.20 (RDM) - Gateway and Splitter Configuration

The task group will be working on E1.37-7, reported Scott Blair.

8.12 E1.37-x, Additional Message Sets for ANSI E1.20, LED walls and video displays

Scott Blair said that his company has developed some messages, which will be useful for informing this project.

8.13 Automation Vector Transmission Protocol

Dan Lisowski said that everyone should have received the project request form that was distributed. The name was changed from position to vector, because it includes transmission of acceleration and velocity data. He asked if there were any questions or discussion. Hearing none, Dan Lisowski made a motion to recommend that the Technical Standards Council approve the project request. The motion was seconded. There was some discussion on the contributors from the automation/video industry. The motion carried with two abstentions.

Daniel Murfin added that this standard is needed, because he continues to do custom implementations. John Huntington added that getting a large player on board at the outset would seem to be the key to success for this project.

Michael Lay recommended that task group members be solicited from the Rigging Working Group at this meeting cycle, and requested that Dan Lisowski provide project status updates to the Rigging Working Group at all of their meetings

8.14 IPv6 task group report

Documents in order of priority for IPv6 consideration:

- E1-31-2009 -Entertainment Technology –Lightweight streaming protocol for transport of DMX512 using ACN
- E1.17 -Entertainment Technology -Architecture for Control Networks (ACN)
Elements of E1.17 depended on by E1.31 must be addressed as a high priority
- E1.37-2-2015 Entertainment Technology –Additional Message Sets for ANSI E1.20 (RDM) –Part 2, IPv4 & DNS Configuration Messages

8.15 European Plugfest

The EU Plugfest was held on 20-22 April 2016 at the same location as previous events, near Gatwick airport.

Peter Willis said that the European Plugfest happened, and happily broke even. He reported that roughly 30 participants were present each day, including a number of new faces. He noted that three fixture manufacturers that claim support for RDM used the Plugfest to their advantage, to expose and correct products in non-compliance.

Peter Willis noted that breakout sessions at this event worked well.

8.16 Texas Plugfest

Michael Lay noted that the January Plugfest dates were confirmed for 20-23 January 2016 at the D/FW Marriott Solana in Westlake, TX. He noted the event landing page at estalink.us/plugfest and briefly discussed the pamphlet that was put together.

Roger Lattin asked if there was interest in getting donuts sponsored by Local 728 for the Plugfest. There indeed was interest.

Peter Willis pointed out that making a variety of fixtures available beyond the participating companies is very helpful.

8.17 AUS Plugfest

From the draft March minutes:

Andrew Frazer shared with the group that an informal meeting in May is being planned in Melbourne. He noted that the event is not necessarily a true Plugfest, but that it has potential to become one. It was asked that he share any information with the group when it is available.

As Andrew Frazer was not present, this agenda item was passed over.

8.18 Task group leader coordination

Michael Lay announced that there were no changes to this list.

*BSR E1.30 No single leader; Generic group
BSR E1.31 Maya Nigrosh
BSR E1.37-4 Peter Willis
BSR E1.20 Simon Newton
BSR E1.33 Dan Antonuk and Scott Blair
BSR E1.30-11, EPI 33 Simon Newton
BSR E1.37-2 Simon Newton
BSR E1.37-5 Simon Newton
BSR E1.37-6 Simon Newton
BSR E1.37-7 Scott Blair
E1.37-x Video Walls Scott Blair
IPv6 Task Group Jason Potterf
Plugfest Task Group Michael Lay
Automation Vector Transmission Protocol Dan Lisowski and Maya Nigrosh*

9 New business

9.1 Other new business

Scott Blair said that the reflector lists are wrong. There was talk of how to correct them. It was decided that the easiest way was for Scott Blair and other task group leaders to advise the ESTA staff of the current members for each group.

10 Other business & announcements

10.1 Above & Beyond Awards

Michael Lay reminded the group that the Above and Beyond Award nomination form, as well as a list of past recipients, is available at <http://estalink.us/aboveandbeyond>.

10.2 ESTA DMX512/RDM Educational Kit - “Train the Trainer” Session

Michael Lay said that the kit is still available, still in Orlando. Scott Blair asked about working with IATSE and USITT to get the kit to Locals and universities.

After some discussion concerning the under-utilized kit, Michael Lay asked Bill Ellis to organize a “Train the Trainer” session for the January ESTA conference for CPWG members, so that we have a pool of trainers available.

Bob Goddard recommended that some equipment which will fail is important to have on hand.

Erin Grabe said that Bill Ellis needs to start putting requests out to interested parties in order to coordinate the correct sized space with Frances Thompson.

10.3 TSP sessions at LDI 2016

Michael Lay announced that there are four TSP sessions at LDI this year, none CPWG related. Information available at <http://esta.org/events/ldi2016.html>.

10.4 USITT sessions

Dan Lisowski said that members should put together session proposals for USITT 2018, which are submitted for consideration at USITT 2017. Session proposals may be submitted to Dan Lisowski directly, or may be brought to the January meetings.

Tucker Downs reported that he is doing a session about being an artist in a technological field. Presenters for the session include Maya Nigrosh.

Appropriate to the agenda item, Mitch Hefter noted that DMX512 turns 30 next month and suggested that we should have cake. Michael Lay suggested that Mitch consider writing a short article noting this anniversary in Protocol.

11 Future meetings

11.1 LDI meetings

Michael Lay noted that the next set of meetings will take place the week of October 17th, in conjunction with LDI in Las Vegas, but that the meetings would NOT be at the Westgate Las Vegas Resort and Casino. Details on the meeting location will be provided as soon as they are available.

11.2 January meetings

Michael Lay announced that the January meeting dates have been confirmed for 19-22 January 2017, at the D/FW Marriott Solana in Westlake, TX, and that the ESTA Control Protocols Plugfest will run from 20-23 January.

12 Adjournment

Scott Blair moved to adjourn. The motion was seconded. Hearing no objections, Michael Lay announced that there will be a meeting of the Plugfest marketing task group at 12:15 p.m., approximately 15 minutes after the end of the meeting. Michael Lay declared the meeting adjourned at 11:56 a.m.

Name	Company	Representing	Voting status	Int cat
Daniel W. Antonuk	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	P	MP
Matthew Ardine	IATSE Local 728	IATSE Local 728	O	U
Robert Barbagallo	Solotech Inc.	Solotech Inc.	O	U
Paul Beasley	Walt Disney Imagineering	Walt Disney Company	O	U
Robert Bell	Acuity Brands Lighting	Acuity Brands Inc.	A	MP
Marcus Bengtsson	LumenRadio AB	LumenRadio AB	A	MP
Scott M. Blair	Full Throttle Films/ VER	Full Throttle Films/ VER	P	DR
Lee J. Bloch	Bloch Design Group, Inc.	Bloch Design Group, Inc.	O	G
Ron Bonner	PLASA Technical Resources Office	PLASA EU	O	G
Brent Boulnois	Candela Controls, Inc.	Candela Controls, Inc.	A	DE
Justyn Butler	JBOTS	JBOTS	O	CP
Ian Campbell	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	A	MP
Jean-Francois Canuel	Spectrum Manufacturing Inc.	A.C. Lighting Ltd.	O	CP
Steve Carlson	High Speed Design, Inc.	High Speed Design, Inc.	O	MP
Jon Chuchla	Audio Visual Systems, Inc.	Audio Visual Systems, Inc.	O	G
Edward R. Condit	OSRAM Lighting Solutions	OSRAM Licht AG	O	G
Milton Davis	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	P	MP
Jeremy Day	Lumenpulse Lighting Inc.	Lumenpulse Lighting Inc.	O	MP
Larry Dew	W.A. Benjamin Electric Co.	W.A. Benjamin Electric Co.	O	DE
Gary Douglas	Pathway Connectivity	Acuity Brands Inc.	A	MP
Tucker Downs	Tucker Downs	Tucker Downs	O	U
Hamish Dumbreck	JESE Ltd.	James Embedded Systems Engineering	O	MP
James Eade	ABTT	ABTT	O	G
Bill Ellis	Candela Controls, Inc.	Candela Controls, Inc.	P	DE
Paul K. Ericson	Sparling	Stantec	O	DE
Trevor Forrest	Helvar Lighting Control	Helvar Lighting Control	O	MP
Andrew Frazer	Stellascapes.com	Stellascapes.com	P	MP
Philip Gartner	AusChristmasLighting	AusChristmasLighting	O	U
Robert Goddard	Goddard Design Co.	Goddard Design Co.	P	MP
Jerry Gorrell	Theatre Safety Programs	Theatre Safety Programs	O	G
Erin Grabe	ESTA	ESTA	exf	G
Sean Harding	Port Lighting Systems	Port Lighting Systems	O	G
Mitch Hefter	Mitch Hefter	USITT	P	U
Bill Hewlett	ImageCue LLC	ImageCue LLC	O	MP

Name	Company	Representing	Voting status	Int cat
Jeremy Hochman	Full Throttle Films/ VER	Full Throttle Films/ VER	A	DR
Jon Hole	Zero 88	Eaton	P	MP
Jim Holladay	Luxence	Luxence	O	G
Maurits van der Hoorn	Pathway Connectivity	Acuity Brands Inc.	A	MP
Wayne David Howell	Artistic Licence Engineering Ltd.	Artistic Licence Holdings	O	DE
John Huntington	City Tech, Ent Tech Department	I.A.T.S.E. Local 1	A	U
Eric Johnson	Eric Johnson	Eric Johnson	O	G
Rob Johnston	Interactive Technologies, Inc.	Interactive Technologies, Inc.	O	MP
Tyrone Mellon_Jr.	Lex Products	Lex TM3	P	CP
Michael Karlsson	LumenRadio AB	LumenRadio AB	P	MP
Jonathan Kemble	High End Systems	Barco	O	MP
Paul Kleissler	City Theatrical, Inc.	City Theatrical, Inc.	P	MP
Edwin S. Kramer	I.A.T.S.E. Local 1	I.A.T.S.E. Local 1	P	U
Ulrich Kunkel	E3 Engineering & Education for Entertainment GmbH	E3 Engineering & Education for Entertainment GmbH	P	U
Jason Kyle	JPK Systems Ltd.	JPK Systems Ltd.	O	MP
Roger Lattin	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	P	U
Michael Lay	Philips Color Kinetics	Philips Lighting	P	MP
Hans Leiter	ETC GmbH	Electronic Theatre Controls, Inc.	O	MP
Jon Lenard	Applied Electronics	Applied Electronics	O	MP
Sang-Kyu Lim	ETRI	Electronics and Telecommunications Research Institute	O	G
Joshua Liposky	Lex Products	Lex TM3	A	CP
Dan Lisowski	Dept. Of Theatre and Drama	University of Wisconsin - Madison	P	DE
Kevin Loewen	Pathway Connectivity	Acuity Brands Inc.	P	MP
John Mehlretter	Lehigh Electric Products Co.	Lehigh Electric Products Co.	O	MP
Jeff T. Miller	Worldwide Standards and Auditing	Walt Disney Company	O	U
Daniel Murfin	Royal National Theatre	Royal National Theatre	P	U
John Musarra	John Musarra	John Musarra	O	U
Simon Newton	Open Lighting Project	Open Lighting Project	P	G
Maya Nigrosh	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	A	MP
Kimberly Corbett Oates	Schuler Shook	Schuler Shook	P	DE
Jim Ohrberg	Candela Controls, Inc.	Candela Controls, Inc.	A	DE
Danilo Oliveira	Chauvet Lighting	Chauvet Lighting	O	MP
Claude Ostyn	Full Throttle Films/ VER	Full Throttle Films/ VER	A	DR
Edward A. (Ted) Paget	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	A	MP

Name	Company	Representing	Voting status	Int cat
Jason Potterf	Cisco	Cisco	P	MP
Gary Pritchard	LSC Lighting Systems (Aust) PTY Ltd	LSC Lighting Systems PTY Ltd	O	MP
Charles Reese	Production Resource Group	Production Resource Group	O	DR
Darryl Ross	TMB	TMB	P	MP
Alan M. Rowe	IATSE Local 728	I.A.T.S.E. Local 728	A	U
Karl G. Ruling	ESTA	ESTA	exf	G
Yngve Sandboe	Sand Network Systems, Inc.	Sand Network Systems, Inc.	O	MP
Nicolai Gubi Schmidt	Gobo & Highlight A/S	Gobo & Highlight A/S	O	DR
Larry Schoeneman	DesignLab Chicago, Inc.	DesignLab Chicago, Inc.	P	DR
Ford Sellers	Chauvet Lighting	Chauvet Lighting	O	MP
Ralph Stillinger	Strand Lighting	Philips Lighting	O	MP
Dane Styczynski	Dept. Of Theatre and Drama	University of Wisconsin - Madison	A	DE
Steve Terry	Electronic Theatre Controls	Electronic Theatre Controls, Inc.	A	MP
Christopher Tilton	Westlake Reed Leskosky	Westlake Reed Leskosky	O	DE
Robert Timmerman	Philips Color Kinetics	Philips Lighting	O	MP
James Tomlinson	Team Tomlinson	Team Tomlinson	O	G
Tracy Underhill	4U Consulting	4U Consulting	O	G
Steve Unwin	Pulsar Ltd.	Pulsar Ltd.	O	MP
Ken Vannice	Ken Vannice LLC	Ken Vannice LLC	I	G
Carlo Venturati	Clay Paky S.P.A.	Clay Paky S.P.A.	O	MP
Will Wagner	Carallon Ltd.	Carallon Ltd.	O	MP
Oliver Waits	Avolites Ltd.	Avolites Ltd.	O	MP
Colin Waters	TMB	TMB	O	DR
Ralph Weber	ENDL Texas	ENDL Texas	O	G
Peter Willis	Howard Eaton Lighting Ltd.	Howard Eaton Lighting Ltd.	P	CP
Loren Wilton	Showman Systems	Showman Systems	O	CP
Adam De Witt	Adept Anomaly	Adept Anomaly	I	U
David Yellin	LightMinded Industries, Inc.	LightMinded Industries, Inc.	O	MP

Voting status key: P = Principal voter, A = Alternate voter, I = Individual voter, O = Observer member, exf = Ex Officio member (staff)

Interest Category Key: CP = Custom-market producer, DE = Designer, DR = Dealer/rental company, G = General interest, MP = Mass-market producer, U = User