

Minutes
Control Protocols Working Group
Saturday, 21 January 2017
D/FW Marriott Solana
Westlake, TX

Presiding co-chairpersons:

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

Recording secretaries: Karl G. Ruling and Erin Grabe; ESTA

Members in attendance:

Christian Allabauer; O; G
Daniel W. Antonuk; Electronic Theatre Controls, Inc.; P; MP
Scott M. Blair; Full Throttle Films/ VER; P; DR
Javid D. Butler; Integrated Theatre, Inc.; O; CP
Milton Davis; Doug Fleenor Design, Inc.; P; MP
Rich Dionne; Dept. of Theatre; Purdue University; O; DE
Tucker Downs; O; U
Bill Ellis; Candela Controls, Inc.; P; DE
Andrew Frazer; Stellascapes.com; P; MP
Robert Goddard; Goddard Design Co.; P; MP
Mitch Hefter; Mitch Hefter; USITT; P; U
Jon Hole; Zero 88; Eaton; P; MP
Wayne David Howell; Artistic Licence Engineering Ltd.; Artistic Licence Holdings; O; DE
Tyrone Mellon_Jr.; Lex Products; Lex TM3; P; CP
Sam Kearney; Electronic Theatre Controls, Inc.; A; MP
Paul Kleissler; City Theatrical, Inc.; P; MP
Edwin S. Kramer; I.A.T.S.E. Local 1; P; U
Ulrich Kunkel; E3 Engineering & Education for Entertainment GmbH; P; U
Jason Kyle; JPK Systems Ltd.; O; MP
Roger Lattin; I.A.T.S.E. Local 728; P; U
Kevin Loewen; Pathway Connectivity; Acuity Brands Inc.; P; MP
Jim Love; Tait Towers; Tait Towers Manufacturing LLC; P; MP
Daniel Murfin; Royal National Theatre; P; U
Simon Newton; Open Lighting Project; P; G
Jason Potterf; Cisco; P; MP
Larry Schoeneman; DesignLab Chicago, Inc.; P; DR
Ken Vannice; Ken Vannice LLC; I; G
Peter Willis; Howard Eaton Lighting Ltd.; P; CP
Jeong Sik Yoo; Korea Testing Laboratory; Korea Testing Laboratory / Theatre Safety Center; O; DE

Visitors: None.

1 Opening remarks

Michael Lay called the meeting to order at 9:04 a.m. by welcoming everyone to bucolic Texas. He took a few moments to instruct the group on WebEx etiquette, including not drumming on the table, being aware

of the placement of microphones, and speaking up. He concluded opening remarks by letting everyone know that Maya Nigrosh, CPWG co-chair, would help to guide the people online through the meeting.

2 Attendance

2.1 Introductions of those physically present and circulation of attendance sheet

A mint-green sign-in sheet went counter-clockwise while self-introductions took place clockwise.

2.2 Introductions of those present via WebEx

Maya Nigrosh called the names of the folks on WebEx, who, in turn, introduced themselves.

2.3 Determination of a quorum

By a count of voters present online and on WebEx, a supermajority was announced present by Michael Lay.

2.4 Recognition of alternate voting members

Maya Nigrosh was recognized as an Alternate voter not voting due to the Principal voter (Dan Antonuk) being present.

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

There were no voters in jeopardy of a change to Observer status due to lack of attendance.

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

As of 6 January 2017, the following new applications or requests for status change were received:

Christian Allabauer; O; G
Sam Kearney; ETC; A; MP
Sean Sill; O; CP

Eddie Kramer moved to accept the applications. The motion was seconded and approved by a show of hands in the room and on WebEx.

3.4 Removed: Not renewing for 2017

Michael Lay noted that the following members were removed.

Darry Ross; TMB; P; MP
Dane Styczynski; Univ. of Wisconsin; A; DE

3.5 Consensus body

The full consensus body of this 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
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
Sam Kearney	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
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
Michael Karlsson	LumenRadio AB	P	MP

Name	Representing	Voting status	Interest category
Marcus Bengtsson	LumenRadio AB	A	MP
Simon Newton	Open Lighting Project	P	G
Michael Lay	Philips Lighting	P	MP
Daniel Murfin	Royal National Theatre	P	U
Kimberly Corbett Oates	Schuler Shook	P	DE
Andrew Frazer	Stellascapes.com	P	MP
Jim Love	Tait Towers Manufacturing LLC	P	MP
Julian Hoare	Tait Towers Manufacturing LLC	A	MP
Dan Lisowski	University of Wisconsin - Madison	P	DE
Mitch Hefter	USITT	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	2
General interest		G	2
Mass-market producer		MP	11
User		U	6
Total votes possible:			26

4 Approval of the minutes from the previous meeting

See *CPmin10-2016.pdf*

Eddie Kramer moved to approve the minutes of the last meeting as written. The motion was seconded and approved by a show of hands online and in the room.

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.

Nothing was revealed.

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.

Nothing was revealed.

7 Approval of agenda

Michael Lay added an item regarding marketing. Scott Blair moved to approve the agenda as modified. The motion was seconded and approved by a show of hands in the room and online.

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 elsewhere for reports or action.*

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 17 February 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 13 March 2018)

ANSI E1.17 – 2015 Entertainment Technology - Architecture for Control Networks (ACN) (Revision, reaffirmation, or withdrawal by 21 May 2020)

* ANSI E1.20 - 2010, Remote Device Management over USITT DMX512. (Revision, reaffirmation or withdrawal by 4 January 2016 – PINS filed for revision)

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 8 April 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 9 June 2019)

ANSI E1.30-1 – 2010 (R2016), EPI 23, Device Identification Subdevice. (Revision, reaffirmation or withdrawal by 17 February 2021)

ANSI E1.30-3 – 2009 (R2014), EPI 25, Time Reference in ACN Systems Using SNTP and NTP. (Revision, reaffirmation, or withdrawal by 9 June 2019)

ANSI E1.30-4 – 2010, EPI 26, Device Description Language (DDL) Extensions for DMX512 and E1.31 Devices. (Revision, reaffirmation, or withdrawal by 25 September 2020)

ANSI E1.30-10 – 2009 (R2014), EPI 32, Identification of Draft Device Description Language Modules. (Revision, reaffirmation, or withdrawal by 9 June 2019)

* ANSI E1.31 - 2016, Lightweight streaming protocol for transport of DMX512 using ACN (Revision, reaffirmation, or withdrawal by 11 October 2021)

* ANSI E1.37-1 - 2012, Additional Message Sets for ANSI E1.20, Remote Device Management. (Revision, reaffirmation, or withdrawal by 13 January 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 25 September 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

Daniel Murfin was added to the task group reflector.

Simon Newton said that 51 of 90 comments were already resolved and that the task group is meeting today.

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

From the draft October minutes:

There was some discussion on whether or not there was a problem in waiting to publish this so long after its last public review. Karl Ruling advised that it would need to be offered for another public review before it is submitted for final ANSI approval. The consensus was to offer it for public review with BSR E1.33.

Simon Newton reported no news or action at this time.

8.4 ANSI E1.31 – 2016, Entertainment Technology—Lightweight streaming protocol for transport of DMX512 using ACN (revise, reaffirm, or withdrawal by 11 October 2021)

sACN task group wishlist

The following is a wishlist from the sACN over IPv6 task group:

1. Add IPv6 support.
2. Increase the number of available universes. This could include:
 - possibly a grouping mechanism
 - a publish/subscribe scheme
 - some encouragement to developers of this standard on how to display these to the user
3. Add optional "security."
 - this may end up being accomplished simply by using IPv6 authentication
4. Allow this protocol to work over TCP.
5. Add slot priority.
6. Add universe discovery for IPv6.
7. Add an Options flag to indicate that "this is a redundant packet."

sACN errors

On 3 January 2017, an email was sent to TSP staff and some members of the CPWG, see *sACN_errors.pdf*, citing some possible errors with the published document. The email is being distributed to you, the consensus body, for consideration. Some task group members have reviewed the information, and can preliminarily say that some changes are warranted.

Maya Nigrosh addressed the group with regard to this standard and the new project request. The will of the task group is to reopen E1.31 to encompass IPv6 and fix the errors. The scope will be limited to IPv6 and addressing errors. A draft with IPv6 changes would likely be available by March. As far as the other wish-list items, the task group is going to see if it is feasible to include all of the items in a future revision of this standard or as a different project.

Kevin Loewen moved to open E1.31 for revision to incorporate IPv6 support and correct errors, with no other changes. The motion was seconded and approved by a show of hands.

Maya Nigrosh noted that items 2, 5, & 6 are of interest for incorporation into a future revision. There was discussion over IPv4 and IPv6 compatibility.

Maya Nigrosh and Jason Potterf will be the co-chairs of the task group. Sam Kearney and Dan Murfin were appointed to the task group by the CPWG co-chairpersons.

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

Daniel Murfin was added to the task group reflector. The comment summary for the fifth public review of this draft standard was distributed to the CPWG on 14 April 2016. Any updates on resolutions?

Dan Antonuk said that the straight-forward comments will be resolved by the end of this meeting cycle. Following that, the diffuse comments will be dealt with. The group will do a full re-read and hopefully have a document for task group review by March.

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

Peter Willis said that there is a task group meeting this afternoon. The draft is coming along, and the intent is to have a document for consideration in July.

Michael Lay reminded the assembly that, with two weeks notice, a working group meeting can be scheduled via WebEx for in between the March and July meetings in order to move documents along.

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

Simon Newton reported that the task group made it through all the comments. Draft resolutions and a revised draft are next. The consensus of the group is to make E1.37-5 a higher priority than E1.37-6.

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

Discussed at item 8.7.

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

This is in public review until 13 February 2017.

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

No news or action at this time.

8.11 BSR E1.59 - 201x, Automation Vector Transmission Protocol

Maya Nigrosh said that the task group met last night. The recommendation is to create a very short document that can be distributed to folks with interest, expressing the scope, to see if what the group is planning to do addresses their needs. The goal of the protocol is simply reporting, not control or configuration.

8.12 ANSI E1.37-1 – 2012 , Additional Message Sets for ANSI E1.20, Remote Device Management.

Michael Lay noted that this project is due for action this year. Scott Blair said that there has been no feedback received that implies revision, so he moved to reaffirm the standard. The motion was seconded by discussion. A letter ballot will be issued to the working group, concurrent with a public review.

8.13 IPv6 task group report

Documents in order of priority for IPv6 consideration:

- E1-31 - 2016 -Entertainment Technology –Lightweight streaming protocol for transport of DMX512 using ACN
- E1.17 - 2015 -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

Jason Potterf said that E1.31 is going to be taken care of first, and that the other items will wait.

8.14 European Plugfest

From the draft October minutes:

Peter Willis reported that the European Plugfest will run 26-28 April 2017 with the same format and location as the 2016 event. See <http://www.plasa.org/rdm/> for more information

Peter Willis said that the dates are set as noted, and people can begin signing up when the registration page is live. The forthcoming draft agenda will likely include an introduction to RDM on the first day.

8.15 Texas Plugfest

The January Plugfest is on now!

Scott Blair said there is good turnout and there are a number of new attendees. Scott also reported on the round-table discussions, which are today and tomorrow on RDM Queued/Status Messages and IGMP, PIM, Multicast Infrastructure, respectively.

8.16 AUS Plugfest

From the draft October minutes:

Peter Willis asked for notice of the next AUS Plugfest to be sent to the working group to spread the word.

Andrew Frazer reported via WebEx that there has been no movement on this event. Peter Willis said that May would be an ideal month for him to attend.

8.17 Task group leader coordination

Maya Nigrosh reminded the group that Scott Blair is the official scheduling liaison between the CPWG task groups and Frances Thompson. Anyone needing a physical task group meeting at an upcoming event should contact Scott.

BSR E1.30 No single leader; Generic group

BSR E1.31 Jason Potterf 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

BSR E1.59 Dan Lisowski and Maya Nigrosh

E1.37-x Video Walls Scott Blair

IPv6 Task Group Jason Potterf

Plugfest Task Group Michael Lay

Task Group Liaison, Scott Blair

9 New business

10 Other business & announcements

10.1 Marketing

Karl Ruling wants the group to think up some good quotes today for use in marketing and ads. One to two sentences is sufficient.

10.2 TSP funding

Karl Ruling reported on the people and companies who have made long-term pledges to support the TSP. The fundraising has been going well, but more is needed.

10.3 Above & Beyond Awards

Michael Lay noted that no awards had been given to this working group, but the Above and Beyond Award nomination form, as well as a list of past recipients, is available at <http://estalink.us/aboveandbeyond>. He urged the group to nominate their peers.

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

Bill Ellis reported that six pages of comments came out of the meeting yesterday. It will be incorporated into the PowerPoint and the packaging for the kit will be dealt with. A one page synopsis will be done describing the purpose of the kit, what's included, how it will get back and forth, etc. That document can be posted online and referenced in tweets and a campaign to get this kit out on the road.

10.5 USITT sessions

Michael Lay pointed out that program proposals for USITT 2018 need to be submitted soon.

Mitch Hefter advised the group to submit proposals to him by 7 March for consideration by the Engineering Commission.

10.5 Architectural Market Outreach Study Group

Michael Lay appointed Bob Goddard, Mitch Hefter, Bill Ellis, and Javid Butler to a study group. The study group was instructed to get together and bring back ideas on tapping the architectural market for involvement in developing and implementing ESTA standards.

11 Future meetings

Michael Lay noted that the full meeting schedule can be found at <http://www.esta.org/ESTA/meetings.php>.

11.1 USITT 2017

Michael Lay said that the CPWG March 2017 meeting is scheduled for 2:00 – 5:00 p.m. on Thursday, 9 March 2017 at the Marriott St. Louis Grand in St. Louis, Missouri. The three-hour slot was agreed upon to allow RWG members to attend an awards ceremony and reception for Rocky Paulson. Maya Nigrosh said that the RWG members involved with the E1.59 project should show up to the task group meetings in return.

11.2 July meetings

Michael Lay said that the July 2017 meeting is scheduled for 9:00 a.m. - 1:00 p.m. on Monday, 24 July 2017 at the D/FW Marriott Solana in Westlake, Texas.

12 Adjournment

Mitch Hefter moved to adjourn. The motion was seconded. Hearing no objections, Michael Lay declared the meeting adjourned at 10:39 a.m. CST.

Name	Company	Representing	Voting status	Int cat
Christian Allabauer	Christian Allabauer	Christian Allabauer	O	G
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
Brent Boulnois	Candela Controls, Inc.	Candela Controls, Inc.	A	DE
Javid D. Butler	Integrated Theatre, Inc.	Integrated Theatre, Inc.	O	CP
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
Rich Dionne	Dept. of Theatre	Purdue University	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

Name	Company	Representing	Voting status	Int cat
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
Julian Hoare	Tait Towers	Tait Towers Manufacturing LLC	A	MP
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
Sam Kearney	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	A	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
Dan Lisowski	Dept. Of Theatre and Drama	University of Wisconsin - Madison	P	DE
Kevin Loewen	Pathway Connectivity	Acuity Brands Inc.	P	MP
Jim Love	Tait Towers	Tait Towers Manufacturing LLC	P	MP
John Mehlretter	Lehigh Electric Products Co.	Lehigh Electric Products Co.	O	MP
Daniel Murfin	Royal National Theatre	Royal National Theatre	P	U

Name	Company	Representing	Voting status	Int cat
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
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
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
Sean Sill	Sean Sill	Sean Sill	O	CP
Ralph Stillinger	Strand Lighting	Philips Lighting	O	MP
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	Triple C Lighting & Controls	Triple C Lighting & Controls	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

Name	Company	Representing	Voting status	Int cat
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
Jeong Sik Yoo	Korea Testing Laboratory	Korea Testing Laboratory / Theatre Safety Center	O	DE

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 or rental company, G = General interest, MP = Mass-market producer, U = User