

Minutes Control Protocols Working Group

Saturday 26 January 2013
Marriott Solana
Westlake, TX

Working group leaders: Kimberly Corbett; Schuler Shook; P; DE
Michael Lay; Philips Color Kinetics (Royal Philips Electronics); P; MP

Recording secretary: Karl G. Ruling; PLASA

Members attending:

Jean-Francois Canuel; Spectrum Manufacturing Inc. (A.C. Lighting Ltd.); P; CP
Philip Nye; Acuity Brands Lighting (Acuity Brands Inc.); A; MP
Simon Hobday; Artistic Licence Engineering Ltd. (Artistic Licence Holdings); P; DE
Bill Ellis; Candela Controls, Inc.; O; U
Paul Kleissler; City Theatrical, Inc.; P; MP
Edward A. (Ted) Paget; Daktronics Automated Rigging Solutions (Daktronics Inc.); P; G
Larry Schoeneman; DesignLab Chicago, Inc.; P; DR
Ulrich Kunkel; E3 Engineering & Education for Entertainment GmbH, representing DIN, NVBF Committee; P; U
Doug Fleenor; Doug Fleenor Design, Inc.; P; MP
Maya Nigrosh; Electronic Theatre Controls, Inc.; A; MP
Sang-Kyu Lim; Electronics and Telecommunications Research Institute; P; G
Insu Kim; Electronics and Telecommunications Research Institute; A; G
Eric Johnson; O; G
Scott M. Blair; Full Throttle Films/ VER; P; DR
Robert Goddard; Goddard Design Co.; P; MP
Ed Garstkiewicz; Harting Inc., North America (Harting KGAA); P; G
Peter Willis; Howard Eaton Lighting Ltd.; P; CP
Edwin S. Kramer; I.A.T.S.E. Local 1; P; U
Roger Lattin; I.A.T.S.E. Local 728; P; U
Hamish Dumbreck; JESE Ltd. (James Embedded Systems Engineering); P; MP
Ken Vannice; Leviton Manufacturing Co., Inc.; P; MP
Tyrone Mellon_Jr.; Lex Products Corp.; P; CP
Peter Kirkup; Lumen Radio AB; A; MP
Michael Karlsson; LumenRadio AB; P; MP
Charles Reese; Production Resource Group; P; DR
Simon Newton; Simon Newton; I; G
Mitch Hefter; USITT; P; U

Visitors:

Jason Potterf; Cisco Systems
Dave Higgins; Pathway Connectivity
Erin Grabe; PLASA

1 Opening remarks

Kimberly Corbett called the meeting to order at 9:02. She offered a welcome to the gentlemen and ladies in attendance. She noted the cool weather for Texas and asked people to turn off their cell phones.

2 Attendance

2.1 Introductions of those present and circulation of attendance sheet

Those present introduced themselves. A bright orange attendance sign-in sheet was circulated.

2.2 Determination of a quorum

Kimberly Corbett asked the voters present to raise a hand. She counted the up-raised hands and announced that enough voters were present to pass a motion requiring a super-majority vote.

2.3 Recognition of alternate voting members

Kimberly Corbett asked if there were any alternate voters present who would be voting instead of the principal.

3 Membership

3.1 Requirements for membership

Kimberly Corbett read the following statement aloud to the assembly:

"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. 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

Voting members who have missed the previous two meetings and will be moved to observer status if this meeting also is missed:

Ron Bonner; PLASA EU; General interest

Ron Bonner was not present. Kimberly Corbett announced that he was moved to observer status.

3.3 Processing of new membership requests

The following applications had been received:

Jeremy Day; Colorkinetics (Royal Philips Electronics); Observer; MP
Robert Timmerman; Colorkinetics (Royal Philips Electronics); Observer; MP
Gordan Rancic; PHOENIX SERVICE srl; Principal; MP (not present)
Dan T. Nguyen; LynTec; Observer; MP

Eddie Kramer moved that the applications be accepted, except that Gordan Rancic be accepted with observer voting status due to his absence. The motion was seconded and then approved with a show of hands.

3.4 Consensus body

The full consensus body during this meeting, including those not present, was:

Name	Representing	Voting status	Int. cat.
Jean-Francois Canuel	A.C. Lighting Ltd.	P	CP
Reza Khanmalek	A.C. Lighting Ltd.	A	CP
Kevin Loewen	Acuity Brands Inc.	P	MP
Robert Bell	Acuity Brands Inc.	A	MP
Gary Douglas	Acuity Brands Inc.	A	MP
Alan Martello	Acuity Brands Inc.	A	MP
Philip Nye	Acuity Brands Inc.	A	MP
Garrett Gallant	Acuity Brands Inc.	A	MP
Simon Hobday	Artistic Licence Holdings	P	DE
Wayne David Howell	Artistic Licence Holdings	A	DE
Paul Kleissler	City Theatrical, Inc.	P	MP
Larry Dunn	City Theatrical, Inc.	A	MP

Edward A. (Ted) Paget	Daktronics Inc.	P	G
Larry Schoeneman	DesignLab Chicago, Inc.	P	DR
Ulrich Kunkel	DIN, NVBF Committee	P	U
Doug Fleenor	Doug Fleenor Design, Inc.	P	MP
Milton Davis	Doug Fleenor Design, Inc.	A	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
Sang-Kyu Lim	Electronics and Telecommunications Research Institute	P	G
Insu Kim	Electronics and Telecommunications Research Institute	A	G
Scott M. Blair	Full Throttle Films/ VER	P	DR
Robert Goddard	Goddard Design Co.	P	MP
Ed Garstkiewicz	Harting KGAA	P	G
Howard Forryan	Harting KGAA	A	G
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
Dennis Grow	I.A.T.S.E. Local 728	A	U
Alan M. Rowe	I.A.T.S.E. Local 728	A	U
Hamish Dumbreck	James Embedded Systems Engineering	P	MP
Ken Vannice	Leviton Manufacturing Co., Inc.	P	MP
Tyrone Mellon_Jr.	Lex Products Corp.	P	CP
Joshua Liposky	Lex Products Corp.	A	CP
Peter Kirkup	Lumen Radio AB	A	MP
Michael Karlsson	LumenRadio AB	P	MP
Marcus Bengtsson	LumenRadio AB	A	MP
Hans Lau	LumenRadio AB	A	MP
Charles Reese	Production Resource Group	P	DR
Michael Lay	Royal Philips Electronics	P	MP
Kimberly Corbett	Schuler Shook	P	DE
Simon Newton	Simon Newton	I	G
Mitch Hefter	USITT	P	U
Christopher Tilton	Westlake Reed Leskosky	P	DE
	Total votes possible	26	

Votes by interest categories	3	CP
	9	MP
	3	DR
	4	U
	4	G
	3	DE

4 Approval of the minutes from the October meeting

See *CPmin10-2012.pdf*

Ted Paget moved that the minutes be accepted as written. The motion was seconded and then approved with a show of hands.

5 Reading of the call for patents

The following statement was read aloud to the assembly by Kimberly Corbett:

"PLASA intends not to publish any standard that contains protected intellectual property, unless that information can be licensed by anyone for a reasonable fee. PLASA uses a process of open patent and copyright disclosures to implement its intent. PLASA 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 or 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."

No protected intellectual property was revealed.

6 Reading of the anti-trust statement

The following statement was read aloud to the assembly by Kimberly Corbett:

"The PLASA Board of Directors, the Technical Standards Council, and the leadership of this working group will reject or nullify any actions that unlawfully restrain trade. Anyone who feels that such an action is being or has been taken is requested to bring that matter to the attention of the chairs immediately. Anyone who feels that actions in restraint of trade have been taken and not properly annulled is requested to notify the TSC chair or PLASA chair immediately.

"PLASA legal counsel has informed us that violations of the anti-trust laws can have serious consequences. Individuals engaged in certain unlawful conduct can be found criminally liable. An individual convicted of a criminal violation of the Sherman Act may be fined as much as \$1,000,000 and imprisoned for up to ten years. An easy to read pamphlet describing restraint of trade issues is available from the Technical Standards Manager."

No restraint of trade problems were reported.

7 Approval of agenda

Items were added to the draft agenda.

Ted Paget moved that the modified agenda be accepted. The motion was seconded and then approved with a show of hands.

8 Old business

8.1 Standards Maintenance

Any news or action needed on any of these standards? This is a placeholder in the agenda, so we don't forget to maintain them.

ANSI E1.3 – 2001 (R2011), 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 in 2016.

ANSI E1.11 – 2008, Entertainment Technology - USITT DMX512-A, Asynchronous Serial Digital Data Transmission Standard for Controlling Lighting Equipment and Accessories. Revision, reaffirmation, or withdrawal in 2013. (*See Item 8.2*)

ANSI E1.17 - 2010, Architecture for Control Networks. Revision, reaffirmation or withdrawal in 2016.

ANSI E1.20 - 2010, Remote Device Management over USITT DMX512. Revision, reaffirmation or withdrawal in 2016.

ANSI E1.27-1 – 2006 (R2011), Entertainment Technology - Standard for Portable Control Cables for Use with USITT DMX512/1990 and E1.11 (DMX512-A) Products. Revision, reaffirmation or withdrawal in 2016.

ANSI E1.27-2 – 2009, 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 in 2014.

ANSI E1.30-1 - 2010, EPI 23, Device Identification Subdevice. Revision, reaffirmation or withdrawal in 2016.

ANSI E1.30-3 – 2009, EPI 25, Time Reference in ACN Systems Using SNTP and NTP. Revision, reaffirmation, or withdrawal in 2014.

ANSI E1.30-4 – 2010, EPI 26, Device Description Language (DDL) Extensions for DMX512 and E1.31 Devices. Revision, reaffirmation, or withdrawal in 2015.

ANSI E1.30-7 – 2009, EPI 29, Allocation of Internet Protocol Version 4 Addresses to ACN Hosts. Revision, reaffirmation, or withdrawal in 2014.

ANSI E1.30-10 – 2009, EPI 32, Identification of Draft Device Description Language Modules. Revision, reaffirmation, or withdrawal in 2014.

ANSI E1.31 – 2009, Entertainment Technology – Lightweight streaming protocol for transport of DMX512 using ACN. Revision, reaffirmation or withdrawal in 2014.

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

8.2 ANSI E1.11- 2008 reaffirmation

The working group approved it. There were no public review comments. See SummaryCPWG_E1-11_Ballot2012-1024.pdf.

The reaffirmation was approved by the CPWG and is now on the TSC agenda, reported Karl Ruling. Ruling outlined the path ahead for final ANSI approval. Roger Lattin asked for an explanation of the on-line letter ballot voting system that was used. Karl Ruling explained.

8.3 BSR E1.30-12, EPI 34, E1.31 Universe Synchronization

Progress report from the Task Group headed by Ulrich Kunkel, assisted by Maya Nigrosh.

Ulrich Kunkel reported. He suggested that this feature should be part of ANSI E1.31 rather than an EPI in E1.30. There was discussion in which it became clear that the consensus was that it should be considered part of E1.31.

Bob Goddard moved that we start the process of revising E1.31 to incorporate DMX512 universe synchronization. The motion was seconded. There was discussion. The motion was accepted with a show of hands, with four abstentions and the rest voting in favor.

Karl Ruling will have a PINS form filed with ANSI announcing the start of the revision project.

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

Public review draft comment resolution progress. At the October meeting, Scott Blair said that he hopes to have draft resolutions done in time for the July 2013 meeting.

Draft resolutions and a revised draft standard had been sent to the working group on 10 January. Blair moved that we accept the comment resolutions. The motion was seconded, and then approved with a show of hands. There were three abstentions, and the rest of the votes were in favor. This was a supermajority

Scott Blair moved that the draft standard be offered for public review. The motion was seconded. There was a discussion of the timing of the public review in regard to an April 25 European Plugfest. The consensus was that the public review should be 60 days, and timed to close in the second week of May. The motion was approved with a show of hands, with one abstention. The rest voted in favor, which was a supermajority.

8.5 BSR E1.37-2, Additional Message Sets for ANSI E1.20 (RDM) – Part 2, IPv4 & DNS Configuration Messages

From the draft October minutes:

Simon Newton said he hopes to have a set of comment resolutions drafted for consideration by the work group at the January 2013 meeting.

Simon Newton said that he has been focused on the E1.33 project. He hopes to have some E1.37-2 material for the March meeting.

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

Progress report. Scott Blair et alia.

No progress, reported Scott. He hopes to have made progress by July, but he has been focusing on E1.33.

8.6 BSR E1.45, Visible Light Communication control protocol proposal

Public review report. The review ends EOD 15 January 2013. Karl Ruling.

Draft resolutions had been sent to the working group by Karl Ruling a few days before the meeting. Sang-Kyu Lim had written back that he was satisfied with the resolutions. Karl Ruling asked Insu Kim if he was satisfied with the draft resolutions. He said, "Yes." Sang-Kyu Lim and Insu Kim were the only commenters.

Ted Paget moved that we accept the draft comment resolutions. The motion was seconded and then approved with a show of hands. There was one abstention. The rest voted in favor, which was a supermajority.

Ted Paget moved to offer the revised standard for public review. The motion was seconded and approved with a supermajority show of hands.

Mitch Hefter moved that the revised draft E1.45 be accepted as an American National standard, with a letter ballot to be concurrent with the public review and any public review comments circulated within the working group. The motion was seconded. There was a discussion of the procedure. The question will be decided by letter ballot.

8.7 CPWG leadership

Maya Nigrosh and Michael Lay were the nominees.

Karl Ruling reported that Michael Lay had received the majority of votes from the CPWG's voting membership, so the TSC shall be informed that the working group's choice.

8.8 Texas PlugFest report

Scott Blair reported another success. He said that there is increasing interest in E1.31. LynTec has a representative at the PlugFest to work with controlling their motorized relays and breakers.

Roger Lattin said that the time-lapse video on the rdmprotocol.org website of the previous PlugFest was a great thing. Blair said that the current PlugFest is being recorded, too.

8.9 European Plugfest

Peter Willis announce that the next EU Plugfest would be 25, 26, 27 April at Gatwick Manor. The attendance fee not set yet, but probably will be in the range of 50 to 75 GB pounds. It will be in a similar format to the last Plugfest, with a focus on end-users for the first day, and developers on the other days.

9 New business

9.1 OpenDMX proposal

We have a proposal to take up adopting a proprietary protocol as an American National Standard. See OpenDMX Business Proposal.pdf, OpenDMX 2 Class 2 Protocol Specification.pdf, and RancicEmail2.pdf. The last file is the one that made the intention clear to your Technical Standards Manager, and that removed his fundamental objections to the project. It is now on your agenda.

There was a discussion of the proposal, but action was differed until the March meeting when it was expected that Gordan Rancic will be present.

Peter Willis suggested that Gordan Rancic should attend the European Plugfest at Gatwick. Mike Lay directed Scott Blair to suggest this to Gordan Rancic.

9.2 USITT Sessions – CPWG related

USITT's 2014 Annual Conference will be in Fort Worth, TX. If you have an idea for a session or are interested in putting one together, please contact Kimberly Corbett by 19 March 2013.

Kimberly Corbett put out a plea for sessions ideas for the 2014 conference.

Bill Ellis said that the booth at LDI needs to go in a different direction to be more effective. At the ad hoc marketing session last night, it was decided that PLASA will put together an educational packet for wide distribution. He is putting together a session about our protocols for "PLASA Focus: Orlando."

9.3 Revisiting EPI 19

Maya Nigrosh spoke of the need to revise EPI 19, part of ANSI E1.17. There was some disagreement as to whether the rest of E1.17 needed to be revised, but "ACN Discovery on IP Networks" needs modification. Since it is part of E1.17, revising it requires announcing a revision of ANSI E1.17 - 2010.

Philip Nye moved that E1.17 - 2010 be revised to allow changes to EPI 17. The motion was seconded by discussion. The motion was approved by a supermajority with a show of hands, with 15 voting yes, one voting No, and the rest abstentions.

Karl Ruling will have a PINS form filed with ANSI announcing the start of the revision project.

Maya Nigrosh, Philip Nye, Simon Newton, and Scott Blair were appointed by the working group leaders to serve on the revision task group.

10 Other business and announcements

10.1 Steve Carlson report

Mike Lay asked that Steve Carlson's informational report, which had been distributed to the working group by email, be included in the minutes.

From: Steven B. Carlson <scarlson@hspdesign.com>
Sent: Thursday, 17 January 2013 17:27
To: Karl Ruling; 'Lay, Michael'
Subject: Update on IEEE 802.3 Projects

Gents,

I wanted to update you and the project in IEEE 802.3. Most of them are not likely to be of interest to PLASA members, but we do have a few that might come in handy.

P802.3bj 100GbE Electrical Backplane & Copper Cable
100Gb/s operation over server backplanes and short copper cable interconnects

P802.3bk Extended EPON
Turns some knobs in the existing EPON standard up to "11" to take advantage of newer optical components

P802.3bm 40 Gb/s and 100 Gb/s Operation Over Fiber Optic Cables Task Force
Defines a four-lane electrical interface between IC and optical modules for operation up to 100Gb/s and the required optical modules for 40 and 100Gb/s operation. The electrical interface was defined jointly with P802.3bj.

P802.3bn EPON Protocol over Coax (EPoC) Task Force
Defines a copper PHY to carry EPON protocol over existing coaxial cable plants.

P802.3bp Reduced Twisted Pair Gigabit Ethernet Task Force
Adoption of Ethernet into new market areas in automotive, industrial controls and automation, transportation (aircraft, railway and heavy trucks) has generated a need for a 1 Gb/s solution that will operate over fewer than three twisted pair copper cables over a lower-performance channel as well as other applications, such as carbon footprint sensitive applications, that will benefit by a reduction in the number of wire pairs and magnetics. IEEE Std 802.3 does not currently support 1 Gb/s operation over fewer than four pairs of twisted copper cable.

1000BASE-T (802.3ad-1999) requires four pairs (four lanes, each lane operating full-duplex at 250Mb/s) to achieve full-duplex 1Gb/s operation. P802.3bp will operate in harsh environments (EMC, channel quality) to a reach of 15 meters. Operation over higher quality media (category cable, STP) will be characterized as to reach. The number of pairs has not been defined. 802.3an-2006, 10GBAST-T, provides for full-duplex operation at 10Gb/s over four lanes, with each lane running at 2.5Gb/s, so it is technically feasible to operate at 1Gb/s over a single pair in a high-quality environment.

A single pair provides the maximum reduction in wire and weight, but may not be able to meet the stringent EMC and channel requirements. The first part of the project is defining the channel and EMC environment, which will allow the TF to determine if a one or two pair solution is best.

Next Generation BASE-T SG

Data center throughput increases are driving the need for faster rack-to-rack and rack-to-switch copper interconnects. The NGBASE-T SG is looking at a 40Gb/s copper PHY to operate in the 30 meter or less range to optimize silicon costs.

Low latency scheduled traffic SG

This is a support project for the 802.1 Time Sensitive Networks group (formerly the Audio-Video Bridging group) who are developing protocols to allow low-latency high-priority traffic in control and automation systems to co-exist with regular Ethernet traffic on the same physical network.

I expect that the work in P802.3bp, and the NGBAST-T and low-latency traffic SG would have some interest for PLASA members.

Regards,
Steve

Steven B. Carlson
Acting Chair, IEEE P802.3bp Reduced Twisted Pair Gigabit Ethernet PHY Task Force
<http://www.ieee802.org/3/RTPGE/index.html>
Executive Secretary, IEEE 802.3 Working Group
<http://grouper.ieee.org/groups/802/3/index.html>
President
High Speed Design, Inc.
Portland, OR
scarlson@hspdesign.com

10.1 TSP Marketing meeting report

Mike Lay reported on the ad hoc committee meeting that had been held the previous evening. A marketing person has been hired by PLASA to work on membership and the TSP. There will be a coordinated marketing campaign.

Bill Ellis described the planned changes to the Connectivity Booth at LDI to make the presentations be more formal.

Kimberly Corbett spoke in favor of the marketing effort.

11 Next meeting

Kimberly Corbett announced that the next scheduled meeting will be on Thursday, 21 March 2013, from 09:00 to 13:00, at the Hyatt Regency Milwaukee.

12 Adjournment

Scott Blair moved that the meeting adjourn. The motion was seconded and then approved with a show of hands. Kimberly Corbett declared the meeting adjourned at 11:18.

Working Group Membership and Contact Information as of 20 February 2013

Name	Company	Representing	Voting Status	Interest Category
Charles Alicea	Philips- Professional Luminaires	Royal Philips Electronics	O	MP
Simon Alpert	Lighttech Event Technologies	Lighttech Event Technologies	O	CP
Klaus Amling	Licht-Technik	Licht-Technik	O	MP
Daniel W. Antonuk	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	P	MP
Shahid Anwar	Avolites Ltd.	Avolites Ltd.	O	MP
Matthew Ardine	IATSE Local 728	IATSE Local 728	O	U
Avraham Mendall Mor "Avi"	Lightswitch	Lightswitch	O	U
Timothy Baarsch	Artistic Licence Engineering Ltd.	Artistic Licence Holdings	O	DE
Robert Barbagallo	Solotech Inc.	Solotech Inc.	O	U
Robert Bell	Acuity Brands Lighting	Acuity Brands Inc.	A	MP
BenDarrington	Wireless Solutions Sweden AB	Wireless Solutions Sweden AB	O	MP
Marcus Bengtsson	LumenRadio AB	LumenRadio AB	A	MP
Adam Bennette	Electronic Theatre Controls Ltd.	Electronic Theatre Controls, Inc.	O	MP
David Bertenshaw	David Bertenshaw	David Bertenshaw	O	G
Stephen Bickford	T. Kondos Associates	T. Kondos Associates	O	U
Torrey Bievenour	Vision Quest Lighting	Vision Quest Lighting	O	G
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
David A. Boller	Organic Machines LLC	Organic Machines LLC	O	CP
Ron Bonner	PLASA Technical Resources Office	PLASA EU	O	G
André Broucke	André Broucke	André Broucke	O	G
John (Javid) D. Butler	Integrated Theatre, Inc.	Integrated Theatre, Inc.	O	CP
Jean-Francois Canuel	Spectrum Manufacturing Inc.	A.C. Lighting Ltd.	P	CP
Steve Carlson	High Speed Design, Inc.	High Speed Design, Inc.	O	MP
Nyasha Chigwamba	Dept. of Computer Science	Rhodes University	O	U
Soo-Myong Chung	Bloch Design Group, Inc.	Bloch Design Group, Inc.	O	G
Paul J. Clark	HxDx	HxDx	O	CP
Edward R. Condit	Edward R. Condit	Edward R. Condit	O	G
Kimberly Corbett	Schuler Shook	Schuler Shook	P	DE

Name	Company	Representing	Voting Status	Interest Category
Eric Cornwell	West Side Systems	West Side Systems	O	U
Stuart Cotts	Oregon Shakespeare Festival	Oregon Shakespeare Festival	O	U
Klas Dalbjorn	Labgruppen AB	TC Group	O	MP
Milton Davis	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	A	MP
Jeremy Day	Philips Color Kinetics	Royal Philips Electronics	O	MP
Gilray Densham	CAST Software	CAST Group Inc	O	MP
Gary Douglas	Acuity Brands Lighting	Acuity Brands Inc.	A	MP
Gary Dove	Dove Systems	Dove Systems	O	MP
Yongshun Duan	Macostar Physics Application Technology Development (Wuhan) Ltd.	Macostar International Ltd.	O	CP
Hamish Dumbreck	JESE Ltd.	James Embedded Systems Engineering	P	MP
Larry Dunn	City Theatrical, Inc.	City Theatrical, Inc.	A	MP
Jerry Durand	Durand Interstellar, Inc.	Durand Interstellar, Inc.	O	CP
James Eade	PLASA	PLASA EU	O	G
Andrew Eales	Wellington Institute of Technology	Rhodes University	O	U
Bill Ellis	Candela Controls, Inc.	Candela Controls, Inc.	O	U
Paul K. Ericson	Syska Hennessy Group Lighting Design	Syska Hennessy Group Lighting Design	O	U
Jon R. Farley	Sixteenth Avenue Systems	Sixteenth Avenue Systems	O	CP
Martin Farnik	Robe Show Lighting s.r.o.	Robe Show Lighting s.r.o.	O	MP
Doug Fleenor	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	P	MP
Trevor Forrest	Helvar Lighting Control	Helvar Lighting Control	O	MP
Howard Forryan	Harting Ltd.	Harting KGAA	A	G
Steve Friedlander	Auerbach Pollock Friedlander	Auerbach Pollock Friedlander	O	U
Garrett Gallant	Pathway Connectivity Inc.	Acuity Brands Inc.	A	MP
Phillip M. Gallo	TMB	TMB	O	DR
Ed Garstkiewicz	Harting Inc., North America	Harting KGAA	P	G
Robert Goddard	Goddard Design Co.	Goddard Design Co.	P	MP
Jerry Gorrell	Theatre Safety Programs	Theatre Safety Programs	O	G
Tom Grimes	High End Systems, Inc.	Barco	O	MP
Dennis Grow	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	A	U
Josh Gubler	Josh Gubler	Josh Gubler	O	CP

Name	Company	Representing	Voting Status	Interest Category
Rob Halliday	Rob Halliday	Rob Halliday	O	U
Sean Harding	High Output, Inc.	High Output, Inc.	O	G
Mitch Hefter	Mitch Hefter	USITT	P	U
Bill Hewlett	Hewlett Electronics	Hewlett Electronics	O	CP
Simon Hobday	Artistic Licence Engineering Ltd.	Artistic Licence Holdings	P	DE
Helge Hoffmann	JB Lighting	JB Lighting	O	MP
Jim Holladay	Luxence	Luxence	O	G
Wayne David Howell	Artistic Licence Engineering Ltd.	Artistic Licence Holdings	A	DE
John Huntington	City Tech, Ent Tech Department	I.A.T.S.E. Local 1	A	U
Osedum P. Igumbor	Dept. of Computer Science	Rhodes University	O	U
Sierk Janszen	Kiss Box	Ground Zero	O	U
Eric Johnson	Eric Johnson	Eric Johnson	O	G
Rob Johnston	Interactive Technologies, Inc.	Interactive Technologies, Inc.	O	MP
Ed Jones	Edwin Jones Co., Inc.	Edwin Jones Co., Inc.	O	CP
Tyrone Mellon_Jr.	Lex Products Corp.	Lex Products Corp.	P	CP
Jussi Kallioinen	Eastway Sound & Lighting	Eastway Sound & Lighting	O	U
Tae Gyu Kang	ETRI	Electronics and Telecommunications Research Institute	O	G
Michael Karlsson	LumenRadio AB	LumenRadio AB	P	MP
Reza Khanmalek	Spectrum Manufacturing Inc.	A.C. Lighting Ltd.	A	CP
Insu Kim	ETRI	Electronics and Telecommunications Research Institute	A	G
Peter Kirkup	Lumen Radio AB	Lumen Radio AB	A	MP
Hiroshi Kita	Marumo Electric Co., Ltd.	Marumo Electric Co., Ltd.	O	MP
Phil Klapwyk	IATSE Local 891	IATSE Local 891	O	U
Paul Kleissler	City Theatrical, Inc.	City Theatrical, Inc.	P	MP
Mark T. Kraft	Lehigh Electric Products Co.	Lehigh Electric Products Co.	O	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	DIN, NVBF Committee	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

Name	Company	Representing	Voting Status	Interest Category
Hans Lau	LumenRadio AB	LumenRadio AB	A	MP
Michael Lay	Philips Color Kinetics	Royal Philips Electronics	P	MP
Rick Leinen	Leviton Manufacturing Co., Inc.	Leviton Manufacturing Co., Inc.	O	MP
Hans Leiter	ETC GmbH	Electronic Theatre Controls, Inc.	O	MP
Jon Lenard	Applied Electronics	Applied Electronics	O	MP
Maarten Lepelaars	eldoLED	eldoLED	O	MP
Sang-Kyu Lim	ETRI	Electronics and Telecommunications Research Institute	P	G
Joshua Liposky	Lex Products Corp.	Lex Products Corp.	A	CP
Kevin Loewen	Pathway Connectivity Inc.	Acuity Brands Inc.	P	MP
Mark Manthei	Shure Inc.	Shure Inc.	O	G
Paul F. Mardon	Pulsar Ltd.	Pulsar Ltd.	O	MP
Alan Martello	Acuity Brands Lighting	Acuity Brands Inc.	A	MP
Mick Martin	ShowCAD Control Systems	ShowCAD Control Systems	O	MP
Paul Kenneth McEwan	Zero 88	Cooper Controls Ltd.	O	MP
John Mehlretter	Lehigh Electric Products Co.	Lehigh Electric Products Co.	O	MP
John Musarra	John Musarra	John Musarra	O	U
Tobin Neis	Barbizon Companies	Barbizon Companies	O	DR
Simon Newton	Simon Newton	Simon Newton	I	G
Dan T. Nguyen	LynTec	LynTec	O	MP
Maya Nigrosh	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	A	MP
Philip Nye	Acuity Brands Lighting	Acuity Brands Inc.	A	MP
Lars F. Paape	Scientific Algorithms and Embedded Systems	Scientific Algorithms and Embedded Systems	O	U
Edward A. (Ted) Paget	Daktronics Automated Rigging Solutions	Daktronics Inc.	P	G
Gary Pritchard	LSC Lighting Systems (Aust) PTY Ltd	LSC Lighting Systems PTY Ltd	O	MP
Gordan Rancic	Phoenix Service srl	Phoenix Service srl	O	MP
Torben Kaas Rasmussen	Martin Professional A/S	Martin Professional A/S	O	G
Charles Reese	Production Resource Group	Production Resource Group	P	DR
Charlie Richmond	Richmond Sound Design Ltd.	Richmond Sound Design Ltd.	O	CP
Bernardo Benito Rico	Ben-Ri Electronica S.A.	Ben-Ri Electronica S.A.	O	MP

Name	Company	Representing	Voting Status	Interest Category
Steve Roberts	Carr & Angier	Carr & Angier	O	G
Erwin Rol	Erwin Rol Software Engineering	Erwin Rol	O	G
Dietmar Rottinghaus	Connex GmbH	Connex GmbH	O	G
Alan M. Rowe	IATSE Local 728	I.A.T.S.E. Local 728	A	U
Richard Salzedo	Avolites Ltd.	Avolites Ltd.	O	MP
Yngve Sandboe	Sand Network Systems, Inc.	Sand Network Systems, Inc.	O	MP
Larry Schoeneman	DesignLab Chicago, Inc.	DesignLab Chicago, Inc.	P	DR
Martin Searancke	Dream Solutions Ltd.	Dream Solutions Ltd.	O	MP
Chuck Seifried	Phoenix Civic Plaza	City of Phoenix	O	U
John Sellers	AIM Northwest	AIM Northwest	O	G
Andrew Sherar	Lightmoves PLC	Lightmoves PLC	O	MP
Yehuda Shukram	Compulite Systems	Compulite Systems	O	MP
Storm K. Staley	Stormwerx	Stormwerx	O	U
Ralph Stillinger	Strand Lighting	Royal Philips Electronics	O	MP
Bart Swinnen	Luminex LCE	Luminex LCE	O	MP
Arnold Tang	Arnold Tang Productions	Arnold Tang Productions	O	U
Steve Terry	Electronic Theatre Controls	Electronic Theatre Controls, Inc.	A	MP
Geoffrey O. Thompson	Nortel Networks, Inc.	IEEE 802.3/Nortel Networks	O	G
Christopher Tilton	Westlake Reed Leskosky	Westlake Reed Leskosky	P	DE
Robert Timmerman	Philips Color Kinetics	Royal Philips Electronics	O	MP
David Timmins	Jands Electronics	Jands Electronics	O	MP
J. B. Toby	Avolites Ltd.	Avolites Ltd.	O	MP
Bob Toms	Catalyst Microsystems LLC	Catalyst Microsystems LLC	O	G
Robert Tooker	Robert Tooker	Robert Tooker	O	U
Tad Trylski	Tad Trylski	Tad Trylski	O	U
Stephen J. Tyrrell	Quantum Logic	Quantum Logic	O	MP
Tracy Underhill	4U Consulting	4U Consulting	O	G
Steve Unwin	Pulsar Ltd.	Pulsar Ltd.	O	MP
Samuli Valo	Picturall Ltd.	Picturall Ltd.	O	MP
Ken Vannice	Leviton Manufacturing Co., Inc.	Leviton Manufacturing Co., Inc.	P	MP
Carlo Venturati	Clay Paky S.P.A.	Clay Paky S.P.A.	O	MP

Name	Company	Representing	Voting Status	Interest Category
Will Wagner	Carallon Ltd.	Carallon Ltd.	O	MP
Oliver Waits	Avolites Ltd.	Avolites Ltd.	O	MP
John Warwick	Philips Color Kinetics	Royal Philips Electronics	O	MP
Colin Waters	TMB	TMB	O	DR
Ralph Weber	ENDL Texas	ENDL Texas	O	G
Lars Wernlund	Lewlight	Lewlight	O	MP
Michael (Mike) Whetstone	Integrated Theatre, Inc.	Integrated Theatre, Inc.	O	CP
Peter Willis	Howard Eaton Lighting Ltd.	Howard Eaton Lighting Ltd.	P	CP
Loren Wilton	Showman Systems	Showman Systems	O	CP
Barbara Wohlsen	Barbara Wohlsen	Barbara Wohlsen	O	U
C. S. Wong	Macostar International Ltd.	Macostar International Ltd.	O	CP
Jiantong Wu	Beijing Special Engineering Design & Research Institute	Beijing Special Engineering Design & Research Institute	O	G
Kehang Wu	Shure Inc.	Shure Inc.	O	G
David Yellin	LightMinded Industries, Inc.	LightMinded Industries, Inc.	O	MP
Larry Zoll	Zoll Design & Consulting, LLC	Zoll Design & Consulting, LLC	O	U

P principal voting member
 A alternate voting member
 I individual voting member
 O observer non-voting member

CP custom-market producer
 MP mass-market producer
 DE designer
 DR dealer/rental company
 U user
 G general interest