

Minutes

Control Protocols Working Group

Monday, January 24, 2011
Dallas/Ft Worth Marriott Solana
5 Village Circle
Westlake, TX 76262 USA

Chairpersons:

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

Recording secretary:

Karl G. Ruling; PLASA

Members attending:

Scott M. Blair; High End Systems Inc. (Barco); P; MP
Paul Kleissler; City Theatrical, Inc.; P; MP
Peter Kirkup; Zero 88 (Cooper Controls Ltd.); P; MP
Edward A. (Ted) Paget; Daktronics Automated Rigging Solutions (Daktronics Inc.); P; G
Daniel W. Antonuk; Electronic Theatre Controls, Inc.; P; MP
Maya Nigrosh; Electronic Theatre Controls, Inc.; A; MP
Insu Kim; ETRI; O; G
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; I.A.T.S.E. Local 728; P; U
Hamish Dumbreck; JESE Ltd. (James Embedded Systems Engineering); O; MP
Ken Vannice; Leviton Manufacturing Co., Inc.; P; MP
Tyrone Mellon_Jr.; Lex Products Corp.; P; CP
Michael Karlsson; LumenRadio AB; P; MP
Hans Lau; LumenRadio AB; A; MP
Kevin Loewen; Pathway Connectivity Inc.; P; MP
Ron Bonner; PLASA Technical Resources Office (PLASA); P; G
Charles Reese; Production Resource Group; P; DR
Simon Newton; I; G
Mitch Hefter; Philips Controls (Royal Philips Electronics); USITT; P; U
Ben Darrington; Wireless Solutions Sweden AB; O; MP

Visitors:

Matthius Himrichs; Martin Professional
Louis Bradfield; Bally's Las Vegas
Jo van Geite; Martin Professional
Michael Lichter; ETC

1 Opening remarks

Kimberly Corbett called to the meeting to order at 09:02. She welcomed everyone and commented on the weather in Texas, which, despite being frosty, was probably warmer than the weather most meeting attendees had left. She asked people to turn off their phones or to silence them.

2 Attendance

2.1 Introductions of those present and circulation of attendance sheet

A yellow sign-in sheet was circulated while those present introduced themselves.

2.2 Determination of a quorum

Corbett asked for a show of hands of voters. She counted them and then announced that a quorum was present.

2.3 Recognition of alternate voting members

No alternates were present without their principal, so there were none to recognize.

3 Membership

3.1 Requirements for membership

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

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:

Philip Nye; Engineering Arts; not present.

John Huntington and Eddie Kramer; IATSE Local 1; present.

Kimberly Corbett announced that Philip Nye was now an observer member.

3.3 Processing of new membership requests and reaffirmation of members with new companies

The following applications were on hand:

Insu Kim; ETRI; Observer; General interest

Howard Forryan; HARTING Ltd. (Harting KGAA); Alternate to Ed Garstkiewicz; G

Robert Tooker; himself; Observer; User

Maya Nigrosh; ETC; Alternate to Dan Antonuk; MP

The list of applicants was read to the assembly by Michael Lay.

Eddie Kramer moved that the applications be accepted. The motion was seconded and then approved with a show of hands.

3.4 Consensus body

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

Name	Representation	Voting status	Int. cat.
Jean-Francois Canuel	A.C. Lighting Ltd.	P	CP
Scott M. Blair	Barco	P	MP
Tom Grimes	Barco	A	MP
Paul Kleissler	City Theatrical, Inc.	P	MP
Larry Dunn	City Theatrical, Inc.	A	MP
Peter Kirkup	Cooper Controls Ltd.	P	MP
Edward A. (Ted) Paget	Daktronics Inc.	P	G
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

Name	Representation	Voting status	Int. cat.
Steve Terry	Electronic Theatre Controls, Inc.	A	MP
Maya Nigrosh	Electronic Theatre Controls, Inc.	A	MP
Robert Goddard	Goddard Design Co.	P	MP
Ed Garstkiewicz	Harting KGAA	P	G
Howard Forryan	Harting KGAA	A	G
Alan Martello	Horizon Control Inc.	P	MP
Robert Bell	Horizon Control Inc.	A	MP
Gary Douglas	Horizon Control Inc.	A	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
Dennis Grow	I.A.T.S.E. Local 728	A	U
Alan M. Rowe	I.A.T.S.E. Local 728	A	U
Ken Vannice	Leviton Manufacturing Co., Inc.	P	MP
Tyrone Mellon_Jr.	Lex Products Corp.	P	CP
Michael Karlsson	LumenRadio AB	P	MP
Marcus Bengtsson	LumenRadio AB	A	MP
Hans Lau	LumenRadio AB	A	MP
Stuart Cotts	Oregon Shakespeare Festival	P	U
Kevin Loewen	Pathway Connectivity Inc.	P	MP
Dave Higgins	Pathway Connectivity Inc.	A	MP
Robert Armstrong	Pathway Connectivity Inc.	A	MP
Ron Bonner	PLASA	P	G
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
	Total votes	25	
	Votes by interest categories	3	CP
		11	MP
		1	DR
		5	U
		4	G
		1	DE

4 Approval of the minutes from the October 2010 meeting

See CPmin10-2010.pdf

Mitch Hefter moved that the draft minutes be accepted as written. The motion was seconded and then approved with a show of hands. All voted in favor, except for three abstentions.

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 reported.

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 chair 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 president 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."

A copy of the easy-to-read pamphlet was held up to show that copies were available at the meeting.

No restraint of trade issues were brought to the attention of the assembly.

7 Approval of agenda

Corbett asked if there were any items to be added to the agenda, or any other changes to be made. Michael Lay asked for a discussion of the new P&P under "Other business" and that all the ACN EPI matters be handled together. Simon Newton asked to be able to give a report on his RDM work under "Other business."

Ted Paget moved that the modified agenda be approved. 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.

The following items were briefly mentioned or discussed. There were no motions offered regarding them.

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.

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 E1.30-3 – 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.

8.2 BSR E1.20-20xx, Remote Device Management (revision of ANSI E1.20 - 2006)

Karl Ruling reported that ANSI's BSR had approved it on January 4. He said he was hopeful that he would be able to publish it in a few weeks.

Scott Blair asked that the document be sent to him to check the links.

The consensus was that the errata should be posted for free.

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

Second public review is open 7 December 2010 through 8 February 2011.

Ruling reported that no comments had been received as of the meeting time.

8.4 BSR E1.17, Architecture for Control Networks revision project

Ruling reported that ANSI's BSR approved it on January 6. He said he was hopeful that he would be able to publish it in a few weeks. The rest of the suite that was not revised is to stay the same.

8.5 BSR E1.30, Application level equipment interoperability for control of commonly encountered entertainment technology devices using E1.17

8.5.1 BSR E1.30-1, EPI 23 Device Identification Subdevice

Karl Ruling reported that ANSI's BSR approved it on January 6. He also is hopeful about getting this published for free download soon.

8.5.2 The other ACN-related EPIs as a group

Dan Antonuk said that the CPWG should cancel all the other EPI projects, except for the BSR E1.30-12, EPI 34, *E1.31 Universe Synchronization*. ETC might continue with them as company projects to be put in the public domain when they have them done. There was discussion.

Dan Antonuk moved that the work on the following projects, parts of E1.30, be terminated, and that the response to any outstanding public review comments be, "Thank you for your comment. The working group has decided to discontinue work on this EPI, and there will be no further resolution to the public review comments."

The EPI projects to be terminated and taken from the agenda are:

BSR E1.30-2, EPI 24, *Internet Protocol Properties Subdevice*

BSR E1.30-8, EPI 30, *Time Code Properties*

BSR E1.30-9, EPI 31, *MIDI System Exclusive Properties*

BSR E1.30-11, EPI 33, *MetaData Device Identification Subdevice*

The motion was seconded. The motion was approved on a roll call vote.

Name	Representing (This is the sort field.)	Voting status	Int. cat.	Vote
Jean-Francois Canuel	A.C. Lighting Ltd.	P	CP	
Scott M. Blair	Barco	P	MP	Yes
Tom Grimes	Barco	A	MP	
Paul Kleissler	City Theatrical, Inc.	P	MP	Yes
Larry Dunn	City Theatrical, Inc.	A	MP	
Peter Kirkup	Cooper Controls Ltd.	P	MP	Yes
Edward A. (Ted) Paget	Daktronics Inc.	P	G	Yes
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	Yes
Steve Terry	Electronic Theatre Controls, Inc.	A	MP	
Maya Nigrosh	Electronic Theatre Controls, Inc.	A	MP	
Philip Nye	Engineering Arts	P	G	
Robert Goddard	Goddard Design Co.	P	MP	Yes
Ed Garstkiewicz	Harting KGAA	P	G	Yes
Howard Forryan	Harting KGAA	A	G	
Alan Martello	Horizon Control Inc.	P	MP	
Robert Bell	Horizon Control Inc.	A	MP	
Gary Douglas	Horizon Control Inc.	A	MP	
Peter Willis	Howard Eaton Lighting Ltd.	P	CP	Yes
Edwin S. Kramer	I.A.T.S.E. Local 1	P	U	Yes
John Huntington	I.A.T.S.E. Local 1	A	U	
Roger Lattin	I.A.T.S.E. Local 728	P	U	Yes
Dennis Grow	I.A.T.S.E. Local 728	A	U	
Alan M. Rowe	I.A.T.S.E. Local 728	A	U	
Ken Vannice	Leviton Manufacturing Co., Inc.	P	MP	Yes
Tyrone Mellon_Jr.	Lex Products Corp.	P	CP	Yes
Michael Karlsson	LumenRadio AB	P	MP	Yes
Marcus Bengtsson	LumenRadio AB	A	MP	
Hans Lau	LumenRadio AB	A	MP	
Stuart Cotts	Oregon Shakespeare Festival	P	U	
Kevin Loewen	Pathway Connectivity Inc.	P	MP	Yes
Dave Higgins	Pathway Connectivity Inc.	A	MP	
Robert Armstrong	Pathway Connectivity Inc.	A	MP	

Name	Representing (This is the sort field.)	Voting status	Int. cat.	Vote
Ron Bonner	PLASA	P	G	Yes
Charles Reese	Production Resource Group	P	DR	Yes
Michael Lay	Royal Philips Electronics	P	MP	Yes
Kimberly Corbett	Schuler Shook	P	DE	Yes
Simon Newton	Simon Newton	I	G	Yes
Mitch Hefter	USITT	P	U	Yes

Int. cat.	Yes	Yes with comments	No with reasons	Abstain with reasons	Absent/no vote	Totals
CP	2	0	0	0	1	3
MP	9	0	0	0	2	11
DR	1	0	0	0	0	1
U	3	0	0	0	2	5
G	4	0	0	0	0	4
DE	1	0	0	0	0	1
Totals	20	0	0	0	5	25

Kimberly Corbett offered a thank you to all those who worked on the development of ACN and its various sub-documents.

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

Progress report from the Task Group. At the Mar 2010 session, the Task Group reported no progress on this document. At the Jul 2010 meeting, the task group reported no forward progress on this document. This project is on hold while other EPI's are being worked on.

Ulrich Kunkel is working on it. He was not present, but Dan Antonuk reported that there has been work on this. The task group working on it includes Alan Martello, Philip Nye, Kevin Lowen, Dan Antonuk, Stuart Cotts, and Ulrich Kunkel. Scott Blair said he has staff that might be interested in contributing to the project. In particular, Eric Johnson would be interested in offering comments.

8.6 BSR E1.33, Extensions to E1.31 for Transport of ANSI E1.20 (RDM)

Task Group was optimistic in Nov 2009 that we would have a draft document for the Jul 2010 meeting, however a first public review vote would not probably occur until the Oct 2010 session. At the July 2010 meeting the task group reported excellent forward progress and that they were re-calibrated towards having a first draft for the Jan 2011 CPWG meeting. At the Oct 2010 meeting, the task group reported that they were still on track to have a first draft for the Jan 2011 CPWG meeting.

Scott Blair reported that the task group had made some progress. He predicted that a draft document suitable for consideration for public review would be ready for the July meeting.

8.7 ANSI E1.3 – 2001 (R2006), 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

At the Oct 2010 meeting, the CPWG voted to hold a letter ballot to offer the existing standard for reaffirmation. Letter ballot for public review for reaffirmation closed 2 Dec 2010, with 26 votes in favor. There was one "yes with comments" vote but agreement from the commenter to not re-circulate the ballot.

Karl Ruling reported that it is in public review from 30 December 2010 through 1 March 2011. Kimberly Corbett thanked the working group for all voting on the letter ballot.

Ruling reported that the document had received no comments yet.

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

At the Oct 2010 meeting, the CPWG voted to hold a letter ballot to offer the existing standard for reaffirmation. Letter ballot for public review for reaffirmation yielded 24 “yes” and 1 “yes with comments” vote. Commenter agreed to move forward with public review rather than re-circulate the ballot.

Karl Ruling reported that it is in public review from 30 December 2010 through 1 March 2011. Ruling reported that the document had received no comments yet.

9 CPWG marketing efforts

9.1 Protocol Articles

At the July 2010 meeting, Bob Goddard noted that he was close to proposing a Protocol Article. Dan Antonuk will also write an article for an issue in 2011.

There was a discussion of the niche in the publications market that *Protocol* occupies. Michael Lay urged those with article ideas to follow through.

9.2 January Plugfest Report

Blair reported that the Plugfest ran Friday through Sunday. It was another success. He said that they had more space, and they needed it because they had several full-sized control consoles. In all, there were 49 different models of product from about 16 manufacturers.

Blair said he is working on an RDM Protocol site that will have a product database listing the unique device IDs of all devices so that this can be used to identify personality files.

Peter Willis argued that this RDM site should be part of the PLASA website. He said that he felt that the trade association should provide the website support and server space as part of its mission. No motion was offered.

9.3 LDI Connectivity Pavilion --and PLASA too!

At the October 2010 meeting, Bill Ellis offered to organize the Pavilion at this year's LDI in Orlando.

There was a discussion of how to move forward with Connectivity Pavilions at both LDI and PLASA. Willis said he would work with Bill Ellis, with Willis to focus on PLASA and Ellis to focus on LDI.

Hamish Dumbreck asked about a stand at Prolight +Sound in Frankfurt. Bonner and Ruling said that might be possible for 2012, but not 2011. The 2011 show is too soon.

There was a brief discussion of other shows, including the Arch show in London, Showtech in Berlin, and Infocomm and Lightfair in the USA. The consensus was that the working group will continue to consider these shows, but will not make plans to have a booth at them in 2011.

10 New business

None.

11 Other business and announcements

11.1 P&P update

Karl Ruling gave a quick update on the P&P revision. The main affect on the working group is that it will reduce the number of required letter ballots and shorten their length, and also simplify reaffirming a standard.

11.2 IEEE Update

Kimberly Corbett directed working group members to read the IEEE Update from Steve Carlson, IEEE_Update_Jan_2011.pdf.

11.3 IES Lighting Controls Document

Mitch Hefter reported that the final document was voted on in November with the final tweaks. It's now working through the IESNA bureaucracy.

11.4 CPWG Standards Status Wiki

Kimberly Corbett reported that the wiki maintained by John Huntington is up and working. People can visit it at <http://tsp.plasa.org/tspwiki/doku.php?id=cpwg:start>.

Kimberly Corbett offered a public "Thank you" to John Huntington for getting the wiki up and running.

11.5 Automation technology protocol?

James Simpson of the Royal Opera House in London had contacted Karl Ruling about their desire for a protocol to standardize communication between visualization software and scenery automation. See ROHemail.pdf

Karl Ruling said that the email was all he had. He's had no further correspondence.

Roger Lattin spoke of the need to be able to import lighting control data into CGI engines.

Scott Blair said he would not like to see lighting control integrated with scenery automation. It raises the risks for the lighting department.

Bob Goddard said that if it goes forward he would want to be involved, but he said he has grave concerns. He was worried about viruses and worms that might be introduced into a lighting system, where they would simply be very inconvenient and expensive, might travel to a networked scenery automation system, causing problems there that might result in injury or property damage.

Michael Lichter explained why ETC doesn't use ACN for controlling its hoists. He explained the need for the integration of the machinery with the control at a very fundamental level. However, he does think that ACN could be used to send status information to visualization software.

There was no action.

11.6 RDM automated responder testing tool

Simon Newton offered a report on an open source automated responder testing tool he had developed.

12 Schedule for future meetings

Kimberly Corbett reported that the next working group meeting is scheduled for Thursday, 10 March from 09:00 to 13:00 at The Westin Charlotte. The consensus was that we shall cancel the E1.30 and E1.37 task group meetings. In fact, there will be no CPWG task group meetings at USITT. We'll do a poll to see if we can raise a CPWG working group meeting quorum.

13 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 11:33.

Working Group Members as of 15 February 2011

Name	Company	Representing (This is the sort field.)	Voting status	Int. cat.
Tracy Underhill	4U Consulting	4U Consulting	O	G
Jean-Francois Canuel	Spectrum Manufacturing Inc.	A.C. Lighting Ltd.	P	CP
Tim Bachman	A.C.T Lighting, Inc.	A.C.T Lighting, Inc.	O	DR
Larry Busch	ADB Lighting Technologies	ADB Lighting Technologies	O	MP
John Sellers	AIM Northwest	AIM Northwest	O	G
André Broucke	André Broucke	André Broucke	O	G
Jon Lenard	Applied Electronics	Applied Electronics	O	MP
Arnold Tang	Arnold Tang Productions	Arnold Tang Productions	O	U
Wayne David Howell	Artistic Licence (UK) Ltd.	Artistic Licence (UK) Ltd.	O	CP
Simon Hobday	Artistic Licence (UK) Ltd.	Artistic Licence (UK) Ltd.	O	CP
Steve Friedlander	Auerbach Pollock Friedlander	Auerbach Pollock Friedlander	O	U
J. B. Toby	Avolites Ltd.	Avolites Ltd.	O	MP
Shahid Anwar	Avolites Ltd.	Avolites Ltd.	O	MP
Richard Salzedo	Avolites Ltd.	Avolites Ltd.	O	MP
Barbara Wohlsen	Barbara Wohlsen	Barbara Wohlsen	O	U
Tobin Neis	Barbizon Companies	Barbizon Companies	O	DR
Scott M. Blair	High End Systems Inc.	Barco	P	MP
Tom Grimes	High End Systems, Inc.	Barco	A	MP
Jiantong Wu	Beijing Special Engineering Design & Research Institute	Beijing Special Engineering Design & Research Institute	O	G
Bernardo Benito Rico	Ben-Ri Electronica S.A.	Ben-Ri Electronica S.A.	O	MP
Lee J. Bloch	Bloch Design Group, Inc.	Bloch Design Group, Inc.	O	G
Soo-Myong Chung	Bloch Design Group, Inc.	Bloch Design Group, Inc.	O	G
Bill Ellis	Candela Controls, Inc.	Candela Controls, Inc.	O	U
Will Wagner	Carallon Ltd.	Carallon Ltd.	O	MP

Name	Company	Representing (This is the sort field.)	Voting status	Int. cat.
Steve Roberts	Carr & Angier	Carr & Angier	O	G
Bob Toms	Catalyst Microsystems LLC	Catalyst Microsystems LLC	O	G
Chuck Seifried	Phoenix Civic Plaza	City of Phoenix	O	U
Paul Kleissler	City Theatrical, Inc.	City Theatrical, Inc.	P	MP
Larry Dunn	City Theatrical, Inc.	City Theatrical, Inc.	A	MP
Fabiano Pina	Clay Paky S.P.A.	Clay Paky S.P.A.	O	MP
Yehuda Shukram	Compulite Systems	Compulite Systems	O	MP
Dietmar Rottinghaus	Connex GmbH	Connex GmbH	O	G
Peter Kirkup	Zero 88	Cooper Controls Ltd.	P	MP
Paul Kenneth McEwan	Zero 88	Cooper Controls Ltd.	O	MP
Edward A. (Ted) Paget	Daktronics Automated Rigging Solutions	Daktronics Inc.	P	G
David Bertenshaw	David Bertenshaw	David Bertenshaw	O	G
Larry Schoeneman	DesignLab Chicago, Inc.	DesignLab Chicago, Inc.	O	DR
Ulrich Kunkel	E3 Engineering & Education for Entertainment GmbH	DIN, NVBF Committee	P	U
Doug Fleenor	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	P	MP
Milton Davis	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	A	MP
Gary Dove	Dove Systems	Dove Systems	O	MP
Jerry Durand	Durand Interstellar, Inc.	Durand Interstellar, Inc.	O	CP
Jussi Kallioinen	Eastway Sound & Lighting	Eastway Sound & Lighting	O	U
Edward R. Condit	Edward R. Condit	Edward R. Condit	O	G
Ed Jones	Edwin Jones Co., Inc.	Edwin Jones Co., Inc.	O	CP
Joost van Eenbergen	ELC Lighting	ELC Lighting	O	MP
Daniel W. Antonuk	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	P	MP
Adam Bennette	Electronic Theatre Controls Ltd.	Electronic Theatre Controls, Inc.	O	MP
Hans Leiter	ETC GmbH	Electronic Theatre Controls, Inc.	O	MP

Name	Company	Representing (This is the sort field.)	Voting status	Int. cat.
Steve Terry	Electronic Theatre Controls	Electronic Theatre Controls, Inc.	A	MP
Maya Nigrosh	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	A	MP
Ralph Weber	ENDL Texas	ENDL Texas	O	G
Philip Nye	Engineering Arts	Engineering Arts	O	G
Eric Johnson	Eric Johnson	Eric Johnson	O	MP
Eric Proces	Eric Proces	Eric Proces	O	U
Erwin Rol	Erwin Rol Software Engineering	Erwin Rol	O	G
Insu Kim	ETRI	ETRI	O	G
Robert Goddard	Goddard Design Co.	Goddard Design Co.	P	MP
Sierk Janszen	Kiss Box	Ground Zero	O	U
Ed Garstkiewicz	Harting Inc., North America	Harting KGAA	P	G
Howard Forryan	Harting Ltd.	Harting KGAA	A	G
Trevor Forrest	Helvar Lighting Control	Helvar Lighting Control	O	MP
Bill Hewlett	Hewlett Electronics	Hewlett Electronics	O	CP
Steve Carlson	High Speed Design, Inc.	High Speed Design, Inc.	O	MP
Kirk D. Keen	Hollywood Lighting Services, Inc.	Hollywood Lighting, Inc.	O	DR
Alan Martello	Horizon Control Inc.	Horizon Control Inc.	P	MP
Robert Bell	Horizon Control Inc.	Horizon Control Inc.	A	MP
Gary Douglas	Horizon Control Inc.	Horizon Control Inc.	A	MP
Peter Willis	Howard Eaton Lighting Ltd.	Howard Eaton Lighting Ltd.	P	CP
Paul J. Clark	HxDx	HxDx	O	CP
Edwin S. Kramer	I.A.T.S.E. Local 1	I.A.T.S.E. Local 1	P	U
John Huntington	City Tech, Ent Tech Department	I.A.T.S.E. Local 1	A	U
Roger Lattin	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	P	U
Dennis Grow	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	A	U
Alan M. Rowe	IATSE Local 728	I.A.T.S.E. Local 728	A	U

Name	Company	Representing (This is the sort field.)	Voting status	Int. cat.
Phil Klapwyk	IATSE Local 891	IATSE Local 891	O	U
Geoffrey O. Thompson	Nortel Networks, Inc.	IEEE 802.3/Nortel Networks	O	G
John (Javid) D. Butler	Integrated Theatre, Inc.	Integrated Theatre, Inc.	O	CP
Michael (Mike) Whetstone	Integrated Theatre, Inc.	Integrated Theatre, Inc.	O	CP
Rob Johnston	Interactive Technologies, Inc.	Interactive Technologies, Inc.	O	MP
Hamish Dumbreck	JESE Ltd.	James Embedded Systems Engineering	O	MP
David Timmins	Jands Electronics	Jands Electronics	O	MP
Helge Hoffmann	JB Lighting	JB Lighting	O	MP
Josh Gubler	Josh Gubler	Josh Gubler	O	CP
John Mehlretter	Lehigh Electric Products Co.	Lehigh Electric Products Co.	O	MP
Mark T. Kraft	Lehigh Electric Products Co.	Lehigh Electric Products Co.	O	MP
Ken Vannice	Leviton Manufacturing Co., Inc.	Leviton Manufacturing Co., Inc.	P	MP
Rick Leinen	Leviton Manufacturing Co., Inc.	Leviton Manufacturing Co., Inc.	O	MP
Lars Wernlund	Lewlight	Lewlight	O	MP
Tyrone Mellon_Jr.	Lex Products Corp.	Lex Products Corp.	P	CP
Klaus Amling	Licht-Technik	Licht-Technik	O	MP
David Yellin	LightMinded Industries, Inc.	LightMinded Industries, Inc.	O	MP
Andrew Sherar	Lightmoves PLC	Lightmoves PLC	O	MP
Avraham Mendall Mor "Avi"	Lightswitch	Lightswitch	O	U
Simon Alpert	Lighttech Event Technologies	Lighttech Event Technologies	O	CP
Gary Pritchard	LSC Lighting Systems (Aust) PTY Ltd	LSC Lighting Systems PTY Ltd	O	MP
Michael Karlsson	LumenRadio AB	LumenRadio AB	P	MP
Marcus Bengtsson	LumenRadio AB	LumenRadio AB	A	MP
Hans Lau	LumenRadio AB	LumenRadio AB	A	MP
Bart Swinnen	Luminex LCE	Luminex LCE	O	MP
Jim Holladay	Luxence	Luxence	O	G

Name	Company	Representing (This is the sort field.)	Voting status	Int. cat.
Torben Kaas Rasmussen	Martin Professional A/S	Martin Professional A/S	O	G
Hiroshi Kita	Marumo Electric Co., Ltd.	Marumo Electric Co., Ltd.	O	MP
Stuart Cotts	Oregon Shakespeare Festival	Oregon Shakespeare Festival	P	U
David A. Boller	Organic Machines LLC	Organic Machines LLC	O	CP
William Benner	Pangolin Laser Systems	Pangolin Laser Systems	O	MP
Kevin Loewen	Pathway Connectivity Inc.	Pathway Connectivity Inc.	P	MP
Dave Higgins	Pathway Connectivity Inc.	Pathway Connectivity Inc.	A	MP
Robert Armstrong	Pathway Connectivity Inc.	Pathway Connectivity Inc.	A	MP
Ron Bonner	PLASA Technical Resources Office	PLASA	P	G
James Eade	PLASA	PLASA	O	G
Charles Reese	Production Resource Group	Production Resource Group	P	DR
Paul F. Mardon	Pulsar Ltd.	Pulsar Ltd.	O	MP
Steve Unwin	Pulsar Ltd.	Pulsar Ltd.	O	MP
Stephen J. Tyrrell	Quantum Logic	Quantum Logic	O	MP
Douglas Franz	QVC Network	QVC Network	O	U
Andrew Eales	Wellington Institute of Technology	Rhodes University	O	U
Osedum P. Igumbor	Dept. of Computer Science	Rhodes University	O	U
Nyasha Chigwamba	Dept. of Computer Science	Rhodes University	O	U
Charlie Richmond	Richmond Sound Design Ltd.	Richmond Sound Design Ltd.	O	CP
Rob Halliday	Rob Halliday	Rob Halliday	O	U
Martin Farnik	Robe Show Lighting s.r.o.	Robe Show Lighting s.r.o.	O	MP
Robert Tooker	Robert Tooker	Robert Tooker	O	U
Michael Lay	Philips Color Kinetics	Royal Philips Electronics	P	MP
John Warwick	Philips/Color Kinetics	Royal Philips Electronics	O	MP
Yngve Sandboe	Sand Network Systems, Inc.	Sand Network Systems, Inc.	O	MP
Kimberly Corbett	Schuler Shook	Schuler Shook	P	DE

Name	Company	Representing (This is the sort field.)	Voting status	Int. cat.
Lars F. Paape	Scientific Algorithms and Embedded Systems	Scientific Algorithms and Embedded Systems	O	U
Mick Martin	ShowCAD Control Systems	ShowCAD Control Systems	O	MP
Loren Wilton	Showman Systems	Showman Systems	O	CP
Mark Manthei	Shure Inc.	Shure Inc.	O	G
Kehang Wu	Shure Inc.	Shure Inc.	O	G
Simon Newton	Simon Newton	Simon Newton	I	G
Jon R. Farley	Sixteenth Avenue Systems	Sixteenth Avenue Systems	O	CP
Robert Barbagallo	Solotech Inc.	Solotech Inc.	O	U
Ujjal Kar	Standard Robotics & Lighting	Standard Robotics & Lighting	O	G
Storm K. Staley	Stormwerx	Stormwerx	O	U
Paul K. Ericson	Syska Hennessy Group Lighting Design	Syska Hennessy Group Lighting Design	O	U
Stephen Bickford	T. Kondos Associates	T. Kondos Associates	O	U
Tad Trylski	Tad Trylski	Tad Trylski	O	U
Klas Dalbjorn	Labgruppen AB	TC Group	O	MP
Dominic Vincenty	TPS	Television Production Service	O	DR
Jerry Gorrell	Theatre Safety Programs	Theatre Safety Programs	O	G
Colin Waters	TMB	TMB	O	DR
Phillip M. Gallo	TMB	TMB	O	DR
Sean Harding	Trinity Repertory Company	Trinity Repertory Company	O	U
Mitch Hefter	Philips Controls (Royal Philips Electronics)	USITT	P	U
Torrey Bievenour	Vision Quest Lighting	Vision Quest Lighting	O	G
Eric Cornwell	West Side Systems	West Side Systems	O	U
Ben Darrington	Wireless Solutions Sweden AB	Wireless Solutions Sweden AB	O	MP
John Sondericker_III	Wybron, Inc.	Wybron, Inc.	O	MP
Larry Zoll	Zoll Design & Consulting, LLC	Zoll Design & Consulting, LLC	O	U

Key to codes:

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

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