

Minutes Control Protocols Working Group

Thursday, 19 November 2009
Rosen Plaza Hotel
9700 International Drive
Orlando, Florida

Chairmen:

Tracy Underhill; Electronics Diversified LLC; P; MP
Michael Lay; Philips Strand Lighting (Royal Philips Electronics); P; MP

Recording secretary:

Karl G. Ruling; ESTA

Members attending:

Jean-Francois Canuel; Spectrum Manufacturing Inc. (A.C. Lighting Ltd.); P; CP
Scott M. Blair; High End Systems Inc. (Barco); P; MP
Larry Dunn; City Theatrical, Inc.; A; MP
Paul McMaster; Zero 88 (Cooper Controls Ltd.); P; MP
Edward A. (Ted) Paget; Vortek Rigging Division (Daktronics Inc.); P; G
Ulrich Kunkel; E3 Engineering & Education for Entertainment GmbH, representing DIN, NVBF Committee;
P; U
Milton Davis; Doug Fleenor Design, Inc.; A; MP
Daniel W. Antonuk; Electronic Theatre Controls, Inc.; P; MP
Philip Nye; Engineering Arts; P; G
Robert Goddard; Goddard Design Co.; P; MP
Alan Martello; Horizon Control Inc.; P; MP
Robert Bell; Horizon Control Inc.; A; MP
Peter Willis; Howard Eaton Lighting Ltd.; P; CP
John Huntington; City Tech, Ent Tech Department, representing I.A.T.S.E. Local 1; A; U
Ken Vannice; Leviton Manufacturing Co., Inc.; P; MP (arrived late)
Tyrone Mellon Jr.; Lex Products Corp.; P; CP
David Yellin; LightMinded Industries, Inc.; P; MP
Marcus Bengtsson; LumenRadio AB; A; MP
Stuart Cotts; Oregon Shakespeare Festival; P; U
Kevin Loewen; Pathway Connectivity Inc.; P; MP
Ron Bonner; PLASA; P; G
Robert Tooker; Production Resource Group; A; DR
Hans Lau; Sand Network Systems, Inc.; P; MP
Mitch Heffer; Entertainment Technology (Royal Philips Electronics), representing USITT; P; U

Visitors:

Maarten Engels; Visual Productions

1 Opening remarks

Tracy Underhill called the meeting to order at 9:06.

2 Attendance

2.1 Introductions of those present and circulation of attendance sheet

An orange sign-in sheet was circulated while those present introduced themselves.

2.2 Determination of a quorum

Underhill asked for a show of hands of voters. He then announced that a quorum was present.

2.3 Recognition of alternate voting members

The few alternate voting members were recognized. Members were reminded of the rule of only one vote per company or organization.

3 Membership

3.1 Requirements for membership

The following statement was read aloud to the assembly by Tracy Underhill:

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

The following voting members had missed the previous two meetings and will be moved to observer status if this meeting also is missed:

- Robert Goddard; Goddard Design Co.
- Phillip M. Gallo; TMB

Goddard was present but Gallo was not, so Tracy Underhill announced that Phillip Gallo is now an observer.

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

Tracy Underhill read the list of pending applicants:

- Larry Busch; ADB Lighting Technologies; observer; mass-market producer
- Marcus Bengtsson; LumenRadio AB; alternate; mass-market producer
- Larry Dunn; City Theatrical, Inc.; change of status from observer to alternate; mass-market producer.
- Ed Garstkiewicz; Harting; alternate; general interest

Ted Paget moved that their applications be approved. The motion was seconded and then accepted with a show of hands.

3.4 Consensus body

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

Name	Company	Representing (Sort field)	Voting status	Int. cat.
Jean-Francois Canuel	Spectrum Manufacturing Inc.	A.C. Lighting Ltd.	P	CP
Scott M. Blair	High End Systems Inc.	Barco	P	MP
Tom Grimes	High End Systems, Inc.	Barco	A	MP
Paul Kleissler	City Theatrical, Inc.	City Theatrical, Inc.	P	MP
Larry Dunn	City Theatrical, Inc.	City Theatrical, Inc.	A	MP
Paul McMaster	Zero 88	Cooper Controls Ltd.	P	MP
Edward A. (Ted) Paget	Vortek Rigging Division	Daktronics Inc.	P	G
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
Daniel W. Antonuk	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	P	MP
Steve Terry	Electronic Theatre Controls	Electronic Theatre Controls, Inc.	A	MP

Name	Company	Representing (Sort field)	Voting status	Int. cat.
Tracy Underhill	Electronics Diversified LLC	Electronics Diversified LLC	P	MP
Philip Nye	Engineering Arts	Engineering Arts	P	G
Robert Goddard	Goddard Design Co.	Goddard Design Co.	P	MP
Jody Williquette	Harting Inc., North America	Harting KGAA	P	G
Ed Garstkiewicz	Harting Inc., North America	Harting KGAA	A	G
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
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
Ken Vannice	Leviton Manufacturing	Leviton Manufacturing Co., Inc.	P	MP
Tyrone Mellon Jr.	Lex Products Corp.	Lex Products Corp.	P	CP
David Yellin	LightMinded Industries, Inc.	LightMinded Industries, Inc.	P	MP
Michael Karlsson	LumenRadio AB	LumenRadio AB	P	MP
Marcus Bengtsson	LumenRadio AB	LumenRadio AB	A	MP
Stuart Cotts	Oregon Shakespeare Festival	Oregon Shakespeare Festival	P	U
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	PLASA	P	G
Charles Reese	Production Resource Group	Production Resource Group	P	DR
Robert Tooker	Production Resource Group	Production Resource Group	A	DR
Michael Lay	Philips Strand Lighting	Royal Philips Electronics	P	MP
Hans Lau	Sand Network Systems, Inc.	Sand Network Systems, Inc.	P	MP
Yngve Sandboe	Sand Network Systems, Inc.	Sand Network Systems, Inc.	A	MP
Kimberly Corbett	Schuler Shook	Schuler Shook	P	G
Mitch Hefter	Entertainment Technology (Royal Philips Electronics)	USITT	P	U
		Total votes possible	28	
		Total votes possible by interest categories	3	CP
			14	MP
			1	DR
			5	U
			5	G

4 Approval of the minutes from the July 2009 meeting

Scott Blair moved that the draft minutes of the July 2009 meeting be approved as written. The motion was seconded and then accepted with a show of hands.

5 Reading of the call for patents

Tracy Underhill read the following statement aloud to the assembly:

"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 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

Tracy Underhill read the following statement aloud to the assembly:

"The ESTA Board of Directors, the Technical Standards Committee, 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 ESTA president immediately.

"ESTA 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 issues were reported.

7 Approval of agenda

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

8 Old business

8.1 ANSI E1.3 – 2001 (R2006), Entertainment Technology - Lighting Control Systems - 0 to 10V Analog Control Specification

No news or action.

8.2 ANSI E1.11 – 2008, Entertainment Technology - USITT DMX512-A, Asynchronous Serial Digital Data Transmission Standard for Controlling Lighting Equipment and Accessories

Peter Willis asked about a splitter that blocked some START Code messages. Would this be compliant? Bob Goddard said that the standard allows the blockage as long as it is declared. Mitch Hefter concurred and cited the relevant clause.

There was no other discussion or action in regard to E1.11.

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

No news or action.

8.4 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

No news or action.

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

8.5.1 Second review comments

One person commented. See E1-20RevwSummary.pdf

8.5.2 Second review comment resolutions

The comment could be resolved by accepting it and correcting the use of the SI symbol for seconds. See BSR_E1-20_2009-1017r1.pdf. Is that appropriate, or are other actions needed?

Kevin Loewen moved that the comment be accepted. The motion was seconded and then approved with a roll call vote, with 25 out of a possible 28 voting Yes. Three voters were not present. (Ken Vannice arrived after this vote.)

Name	Company	Representing (This is the sort field.)	Voting status	Int. cat.	Yes	Yes with comments	No with reasons	Abstain
Jean-Francois Canuel	Spectrum Manufacturing Inc.	A.C. Lighting Ltd.	P	CP	Y			
Scott M. Blair	High End Systems Inc.	Barco	P	MP	Y			
Tom Grimes	High End Systems, Inc.	Barco	A	MP				
Paul Kleissler	City Theatrical, Inc.	City Theatrical, Inc.	P	MP				
Larry Dunn	City Theatrical, Inc.	City Theatrical, Inc.	A	MP	Y			
Paul McMaster	Zero 88	Cooper Controls Ltd.	P	MP	Y			
Edward A. (Ted) Paget	Vortek Rigging Division	Daktronics Inc.	P	G	Y			
Ulrich Kunkel	E3 Engineering & Education for Entertainment GmbH	DIN, NVBF Committee	P	U	Y			
Doug Fleenor	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	P	MP				
Milton Davis	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	A	MP	Y			
Daniel W. Antonuk	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	P	MP	Y			
Steve Terry	Electronic Theatre Controls	Electronic Theatre Controls, Inc.	A	MP				
Tracy Underhill	Electronics Diversified LLC	Electronics Diversified LLC	P	MP	Y			
Philip Nye	Engineering Arts	Engineering Arts	P	G	Y			
Robert Goddard	Goddard Design Co.	Goddard Design Co.	P	MP	Y			
Jody Williquette	Harting Inc., North America	Harting KGAA	P	G				
Ed Garstkiewicz	Harting Inc., North America	Harting KGAA	A	G	Y			
Alan Martello	Horizon Control Inc.	Horizon Control Inc.	P	MP	Y			
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	Y			
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	Y			
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				
Ken Vannice	Leviton Manufacturing	Leviton Manufacturing Co., Inc.	P	MP				
Tyrone Mellon Jr.	Lex Products Corp.	Lex Products Corp.	P	CP	Y			
David Yellin	LightMinded Industries, Inc.	LightMinded Industries, Inc.	P	MP	Y			
Marcus Bengtsson	LumenRadio AB	LumenRadio AB	A	MP	Y			
Michael Karlsson	LumenRadio AB	LumenRadio AB	P	MP				

Name	Company	Representing (This is the sort field.)	Voting status	Int. cat.	Yes	Yes with comments	No with reasons	Abstain
Stuart Cotts	Oregon Shakespeare Festival	Oregon Shakespeare Festival	P	U	Y			
Kevin Loewen	Pathway Connectivity Inc.	Pathway Connectivity Inc.	P	MP	Y			
Dave Higgins	Pathway Connectivity Inc.	Pathway Connectivity Inc.	A	MP				
Robert Armstrong	Pathway Connectivity Inc.	Pathway Connectivity Inc.	A	MP				
Ron Bonner	PLASA	PLASA	P	G	Y			
Charles Reese	Production Resource Group	Production Resource Group	P	DR				
Robert Tooker	Production Resource Group	Production Resource Group	A	DR	Y			
Michael Lay	Philips Strand Lighting	Royal Philips Electronics	P	MP	Y			
Hans Lau	Sand Network Systems, Inc.	Sand Network Systems, Inc.	P	MP	Y			
Yngve Sandboe	Sand Network Systems, Inc.	Sand Network Systems, Inc.	A	MP				
Kimberly Corbett	Schuler Shook	Schuler Shook	P	G				
Mitch Hefter	Entertainment Technology (Royal Philips Electronics)	USITT	P	U	Y			
		Total	Possible 28		25	0	0	0
		By interest category	3	CP	3	0	0	0
			14	MP	13	0	0	0
			1	DR	1	0	0	0
			5	U	4	0	0	0
			5	G	4	0	0	0

Scott Blair moved that we start the process of approving the revised BSR E1.20 (file name BSR_E1-20_2009-1017r1.pdf) as an American National Standard. The motion was seconded. The motion was approved by a show of hands. (The draft document now will go to the TSC editorial committee for editing, and then back to the working group for a letter ballot approval vote.)

There was a discussion of making the BSR E1.20 errata available on the web for free. The consensus was that we should do this.

8.6 BSR E1.37, Additional Message Sets for ANSI E1.20, Remote Device Management

Scott Blair reported that the task group is working primarily on dimmer messages, and that what they are doing is built on the work from Zero 88. He said he is expecting a good meeting on Monday (November 23), and is optimistic on having a document for the January CPWG meeting.

There was a discussion of it being multi-part document. Would it be free? We'll decide later.

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

Dan Antonuk said that a set of errata documents has been submitted. (ACN-revision.zip) He moved that we offer them for public review. The motion was seconded. The question will be decided by letter ballot.

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

Dan Antonuk said that more EPIs are coming. E1.30-11 is on the horizon. Soon.

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

Progress toward resolution of previous review comments and toward another review or acceptance. See UnfnshdBsnss.pdf.

Dan Antonuk said that the task group is working on it and should have it by the January meeting

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

It received one comment in the first public review, which ran from 11 July through 25 August 2008. The comment needs to be resolved. See SmmryFrstRvwE1-30-2.pdf

Dan Antonuk said that there is more work to do on this and that they are dealing with multi-homing issues. A document should be ready for the March meeting.

8.8.3 ANSI E1.30-3 – 2009, EPI 25, Time Reference in ACN Systems Using SNTP and NTP

No news or action.

8.8.4 BSR E1.30-4, EPI 26, (DDL) Extensions for DMX512 and E1.31 Devices

Progress toward resolution of previous review comments and toward another review or acceptance. See UnfnshdBsnss.pdf.

Dan Antonuk said that the task group might accept or reject the one comment as the resolution—it wouldn't make a substantive change anyway. The task group will bring a draft resolution document to the CPWG.

8.8.5 BSR E1.30-5, EPI 27 Operation of SDT on Wireless Networks

It received one comment in the first public review, which ran from 11 July through 25 August 2008. The comment needs to be resolved. See SmmryFrstRvwE1-30-5.pdf

Dan Antonuk said this EPI may be unneeded because of changes to SDT. It's to deal with bursty message traffic problems.

8.8.6 BSR E1.30-6, EPI 28 Independent Device Location Properties

It received one comment in the first public review, which ran from 11 July through 25 August 2008. The comment needs to be resolved. See SmmryFrstRvwE1-30-6.pdf

Antonuk said the problem this EPI is meant to address might be solved with other changes.

8.8.7 ANSI E1.30-7 – 2009, EPI 29, Allocation of Internet Protocol Version 4 Addresses to ACN Hosts

No news or action.

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

It received one comment in the first public review, which ran from 11 July through 25 August 2008. The comment needs to be resolved. See SmmryFrstRvwE1-30-8.pdf

Philip Nye said this deals with MIDI time code properties and will be updated by January.

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

It received one comment in the first public review, which ran from 11 July through 25 August 2008. The comment needs to be resolved. See SmmryFrstRvwE1-30-9.pdf

Philip Nye said this will be updated by January.

8.8.10 ANSI E1.30-10 – 2009, EPI 32, Identification of Draft Device Description Language Modules

No news or action.

8.8.11 Other BSR E1.30-x documents

Report on progress with other parts.

E1.30-11 was discussed under 8.8.

8.9 ANSI E1.31 – 2009, Entertainment Technology – Lightweight streaming protocol for transport of DMX512 using ACN

Dan Antonuk reported on its uptake in the market, which has been very good. It does an excellent job of partitioning network traffic.

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

Scott Blair said that the task group hadn't accomplished as much as hoped. It is most likely that there will be something to consider for public review by the July meeting. March is unlikely.

8.11 Control desk task light connector standard

See UnfnshdBsnss.pdf.

Paul McMaster said that Littlite, the major manufacturer of these task lights, has essentially published a standard. He does not see the need to make a formal standard at this time.

8.12 Ethernet recommended practice

See UnfnshdBsnss.pdf.

Dan Antonuk moved that we no longer sell the Ethernet recommended practice document. The motion was seconded by discussion. The motion was accepted by a supermajority on a show of hands, with all voting in favor, except for one abstention. (Twenty-five "Yes," one "Abstain." Vannice was now present.)

8.13 Ad hoc committee on CPWG marketing efforts

Mitch Hefter reported that the task group wrote a press release and sent roughly 170 directed emails to the consulting community, and that some good responses came in response to the individual emails.

Mike Lay said the TSC was thrilled that the CPWG did this.

Mike Lay suggested that the working group might develop some recommended boiler plate for writing our standards into specifications. He suggested that the working group think about it, and that we revisit this idea in January.

Lay praised Scott Blair's article in *Protocol* about the last Plug Fest.

8.14 Working group co-chair election results

Ruling reported that Michael Lay was chosen by a majority of the CPWG voters on a vote that did not require an instant runoff.

9 New business

9.1 January Plug Fest

Scott Blair led the discussion. A press release needs to be issued soon, and it needs to include E1.31 products. We also need to push the Plug Fest as being for engineers and technicians, not customers, specifiers, or end-users.

9.2 Other new business

None.

10 Other business

None.

10.1 TSP procedural changes and notices

10.1.1 New P&P

A new P&P has been submitted to ANSI. See p&p-r8-1.pdf. There was a brief discussion of the changes and the problems that they are intended to address.

10.1.2 No RTFs or PDFs

See NoRTF.pdf. Ruling reiterated that Microsoft Word and OpenOffice.org Writer file formats are the preferred formats. He won't process RTF, WPD, or PDF documents.

10.2 LDI events

10.2.1 LDI Connectivity Pavilion (Booth #1349)

Peter Willis gave an update on the pavilion's progress. It was a bit empty yesterday, but more products are expected to arrive today. He said that the logistics with large products is a problem.

10.2.2 LDI Session Update: E1.31, An Industry Standard For DMX512 Over Ethernet

Friday, November 20, 11:00 to - 12:30

Tracy Underhill, said, "We'll make it work." Peter Willis asked for a plug for the Connectivity Pavilion at the session.

10.2.3 LDI Session Update: Working Together with ACN and RDM Protocols

Saturday, November 21, 14:00 to 15:30

Dan Antonuk said they will talk about how the two protocols work together and the strengths of each. Architecting for scalability is one of the themes.

Peter Willis asked for a plug for the Connectivity Pavilion at this session, too.

10.3 Open ACN

Update from Philip Nye: a lot of work is being done on it, particularly with implementing it in controllers.

Peter Willis spoke against ever having an Open RDM project. The required timing is too tight. No products, even his own, have worked on a first pass. It is very hardware dependent, so drop-in generic code is unlikely to work.

Dan Antonuk agreed that ACN is relatively immune from hardware level issues.

10.4 Other other business

Mike Lay thanked the members of the group for all their work over the year. They've done a great job, and he is looking forward to a good 2010.

11 Schedule for future meetings

Saturday, 23 January 2010, 14:00 to 18:00, at the Dallas/Ft. Worth Marriott Solana in Westlake, Texas. See <http://www.esta.org/tsp/meetings/index.php> for the full schedule and a link to reserve a hotel room.

There was a brief discussion of the event and meeting timing at the USITT Convention.

12 Adjournment

Scott Blair moved that the meeting adjourn. The motion was seconded and then approved with a unanimous show of hands. Lay declared the meeting adjourned at 10:35.

Working Group Membership and Contact Information as of 20 December 2009

Name	Company	Representing (Sort field)	Voting status	Int. cat.
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
Steve Roberts	Carr & Angier	Carr & Angier	O	G

Name	Company	Representing (Sort field)	Voting status	Int. cat.
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
Paul McMaster	Zero 88	Cooper Controls Ltd.	P	MP
Paul Kenneth McEwan	Zero 88	Cooper Controls Ltd.	O	MP
Edward A. (Ted) Paget	Vortek Rigging Division	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
Steve Terry	Electronic Theatre Controls	Electronic Theatre Controls, Inc.	A	MP

Name	Company	Representing (Sort field)	Voting status	Int. cat.
Tracy Underhill	Electronics Diversified LLC	Electronics Diversified LLC	P	MP
Ralph Weber	ENDL Texas	ENDL Texas	O	G
Philip Nye	Engineering Arts	Engineering Arts	P	G
Eric Johnson	Eric Johnson	Eric Johnson	O	MP
Eric Proce	Eric Proce	Eric Proce	O	U
Erwin Rol	Erwin Rol Software Engineering	Erwin Rol	O	G
Robert Goddard	Goddard Design Co.	Goddard Design Co.	P	MP
Sierk Janszen	Kiss Box	Ground Zero	O	U
Jody Williquette	Harting Inc., North America	Harting KGAA	P	G
Ed Garstkiewicz	Harting Inc., North America	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
Geoffrey O. Thompson	Nortel Networks, Inc.	IEEE 802.3/Nortel Networks	O	G

Name	Company	Representing (Sort field)	Voting status	Int. cat.
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
David Timmins	Jands Electronics	Jands Electronics	O	MP
Helge Hoffmann	JB Lighting	JB Lighting	O	MP
Christopher Purpura	Jones & Phillips Associates, Inc.	Jones & Phillips Associates, Inc.	O	G
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	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.	P	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
Bart Swinnen	Luminex LCE	Luminex LCE	O	MP
Jim Holladay	Luxence	Luxence	O	G
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

Name	Company	Representing (Sort field)	Voting status	Int. cat.
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	PLASA	P	G
James Eade	PLASA	PLASA	O	G
Charles Reese	Production Resource Group	Production Resource Group	P	DR
Robert Tooker	Production Resource Group	Production Resource Group	A	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
Charlie Richmond	Richmond Sound Design Ltd.	Richmond Sound Design Ltd.	O	CP
Martin Farnik	Robe Show Lighting s.r.o.	Robe Show Lighting s.r.o.	O	MP
Michael Lay	Philips Strand Lighting	Royal Philips Electronics	P	MP
Mike Blackwell	Philips/Color Kinetics	Royal Philips Electronics	O	MP
John Warwick	Philips/Color Kinetics	Royal Philips Electronics	O	MP
Hans Lau	Sand Network Systems, Inc.	Sand Network Systems, Inc.	P	MP
Yngve Sandboe	Sand Network Systems, Inc.	Sand Network Systems, Inc.	A	MP
Kimberly Corbett	Schuler Shook	Schuler Shook	P	G
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

Name	Company	Representing (Sort field)	Voting status	Int. cat.
Mark Manthei	Shure Inc.	Shure Inc.	O	G
Kehang Wu	Shure Inc.	Shure Inc.	O	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
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	U
Phillip M. Gallo	TMB	TMB	O	DR
Sean Harding	Trinity Repertory Company	Trinity Repertory Company	O	U
Mitch Hefter	Entertainment Technology (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
John Sondericker III	Wybron, Inc.	Wybron, Inc.	O	MP

Key to codes:

P	principal voting member	MP	mass-market producer interest category
A	alternate voting member	CP	custom-market producer interest category
I	individual voting member	DR	dealer or rental company interest category
O	observer, non-voting	U	user interest category
		G	general-interest interest category