

Minutes
Control Protocols Working Group

Saturday, 24 January 2009
Dallas/Ft. Worth Marriott Solana
Westlake, TX

Presiding chairmen:

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

Recording secretary: Karl G. Ruling; ESTA

Members attending:

Scott M. Blair; High End Systems Inc. (Barco); P; MP
Paul Kleissler; City Theatrical, Inc.; P; MP
Ulrich Kunkel; E3 Engineering & Education for Entertainment GmbH, representing 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
Eric Johnson; O; MP
Robert Goddard; Goddard Design Co.; P; MP
Peter Willis; Howard Eaton Lighting Ltd.; P; CP
Edwin S. Kramer; I.A.T.S.E. Local 1; P; U
Roger Lattin; I.A.T.S.E. Local 728; P; U
Tyrone Mellon Jr.; Lex Products Corp.; P; CP
Kevin Loewen; Pathway Connectivity Inc.; P; MP
Dave Higgins; Pathway Connectivity Inc.; A; MP
Ron Bonner; PLASA; P; G
Charles Reese; Production Resource Group; P; DR
Kimberly Corbett; Schuler Shook; P; G
Phillip M. Gallo; TMB; P; DR
Mitch Heffer; Entertainment Technology (Royal Philips Electronics), representing USITT; P; U

Visitor: Louis Bradfield; Bally's Las Vegas

1 Opening remarks

Tracy Underhill called the meeting to order at 14:05.

2 Attendance

2.1 Introductions of those present and circulation of attendance sheet

Those present introduced themselves while a hot orange sign-in sheet was circulated.

2.2 Determination of a quorum

Tracy Underhill asked for a show of hands of voters. He noted that enough people were present to pass a supermajority vote (14 or more for a voting body at this point of 27).

2.3 Recognition of alternate voting members

Milton Davis was recognized as voting for Doug Fleenor Design.

3 Membership

3.1 Requirements for membership

Tracy Underhill 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 Processing of new membership requests and reaffirmation of members with new companies

The following people had applied for membership:

Paul Kleissler; City Theatrical, Inc: Principal; Mass-market Producer
 Kirk D. Keen; Hollywood Lighting Services, Inc.; Observer; Dealer or Rental company
 Phillip Gallo; TMB Inc.; Principal; Dealer or Rental Company

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

3.3 Consensus body

The full consensus body at the start of the meeting was:

Name	Company	Representing (This is the sort field.)	Voting status	Int. cat.
Jean-Francois Canuel	Spectrum Manufacturing Inc.	A.C. Lighting Ltd.	P	CP
Arnold Tang	Arnold Tang Productions	Arnold Tang Productions	P	U
Simon Hobday	Artistic Licence (UK) Ltd.	Artistic Licence (UK) Ltd.	P	CP
Tom Grimes	High End Systems, Inc.	Barco	A	MP
Scott M. Blair	High End Systems Inc.	Barco	P	MP
Paul Kleissler	City Theatrical, Inc.	City Theatrical, Inc.	P	MP
Edward A. (Ted) Paget	Vortek Rigging Division	Daktronics Inc.	P	G
Ulrich Kunkel	E3 Engineering & Education for Entertainment	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
Steve Terry	Electronic Theatre Controls	Electronic Theatre Controls, Inc.	A	MP
Daniel W. Antonuk	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	P	MP
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
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
John Huntington	City Tech, Ent Tech Department	I.A.T.S.E. Local 1	A	U
Edwin S. Kramer	I.A.T.S.E. Local 1	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

Name	Company	Representing (This is the sort field.)	Voting status	Int. cat.
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
John (Javid) D. Butler	Integrated Theatre, Inc.	Integrated Theatre, Inc.	P	CP
Michael (Mike) Whetstone	Integrated Theatre, Inc.	Integrated Theatre, Inc.	A	CP
Rick Leinen	Colortran	Leviton Manufacturing Co., Inc.	P	MP
Ken Vannice	Colortran	Leviton Manufacturing Co., Inc.	A	MP
Tyrone Mellon Jr.	Lex Products Corp.	Lex Products Corp.	P	CP
Stuart Cotts	Oregon Shakespeare Festival	Oregon Shakespeare Festival	P	U
Dave Higgins	Pathway Connectivity Inc.	Pathway Connectivity Inc.	A	MP
Kevin Loewen	Pathway Connectivity Inc.	Pathway Connectivity Inc.	P	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	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
Mark Manthei	Shure Inc.	Shure Inc.	P	G
Kehang Wu	Shure Inc.	Shure Inc.	A	G
Mitch Hefter	Entertainment Technology (Royal Philips Electronics)	USITT	P	U
		Total	29	
		Totals by interest categories	5	CP
			11	MP
			2	DR
			6	U
			5	G

4 Approval of the minutes from the previous meeting

(See CPmin10-2008.pdf.) Eddie Kramer moved that the draft minutes be approved as written. The motion was seconded and then approved 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 patents or copyrights were reported.

6 The 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."

The Technical Standards Manager held up one of the easy-to-read pamphlets, showing that it was available.

No restraint of trade issues were reported.

7 Approval of agenda

Eddie Kramer moved that the 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)

No news or action needed.

8.2 BSR E1.11 - 20xx (revision of ANSI E1.11 - 2004)

Mitch Hefter reported that it was now published as an American National Standard.

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

8.3.1 Report on public review

Three public review responses were received. (See E1-20RevwCmmnts.pdf.)

Scott Blair said that the task group has worked on the resolutions and started editing the document. He plans a task group review of the resolutions by March and a document for the CPWG to consider by the July meeting.

8.3.2 RDM Plugfest

The RDM Plugfest is in room 645 with twenty different products, reported Scott Blair. The technicians with the products have found some bugs, and then made changes to fix them. Milton Davis reported that, for the most part, the equipment did just all plug together and work.

8.4 E1.17 Architecture for Control Networks

(It's published, but there are errors. A project to correct the errors has been announced to ANSI. Some revisions have been compiled, but as yet we have no definitive set to consider for a public review, or do we?)

Dan Antonuk said the task group is substantially delayed and therefore is withdrawing his motion of March 2008 to offer the errata for public review. The task group has some more work to do to resolve the errors.

Dan Antonuk reported that the OpenACN source code has been developed further. Wybron used it in a gateway product that was shown at LDI. The code is getting very solid. OpenACN.org is the site where it is. There isn't a forum, but Dan Antonuk is willing to be a contact for people with questions or comments.

Antonuk said that he'd heard a rumor that two sound manufacturers are putting ACN in their sound boards. Free Scale is in the process of importing OpenACN into their products.

8.5 E1.27-X, cabling

8.5.1 ANSI E1.27-1-2006 (portable DMX512/E1.11 cabling)

No news or action needed.

8.5.2 BSR E1.27-2 (permanent DMX512/E1.11 cabling)

Karl Ruling reported that there was one public review response: Yes. (See E1-27-2RevwCommntSmmry.pdf.)

Kevin Loewen moved that BSR E1.27-2, Entertainment Technology - Recommended Practice for Permanently Installed Control Cables for Use with ANSI E1.11 (DMX512-A) and USITT DMX512/1990 Products (document number CP/2006-1011r5), be accepted as an American National Standard. The motion was seconded. The question will be decided by letter ballot.

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

8.6.1 Discussion of BSR E1.30-3 recirculation and close of vote

The last recirculated letter ballots were collected and added to the vote total. Karl Ruling announced that the motion to accept BSR E1.30-3 (CP/2008-1006r1) as an American National Standard had been accepted, with 23 out of a possible 27 voting Yes, and one voting Abstain. The comment offered on the initial ballot had been withdrawn. Three ballots were not returned.

No ballots were received from Arnold Tang of Arnold Tang Productions; from Simon Hobday of Artistic Licence; and from Rick Leinen and Ken Vannice of Leviton Manufacturing.

Dan Antonuk moved that the non-substantive editorial corrections that were listed in Kimberly Corbett's email and Alan Martello's original letter ballot comments be accepted. The motion was seconded.

There was discussion of how to resolve the sentence fragment in clause 5.3, page 8. It was decided that the resolution would be: "In cases where multiple servers are required, full NTP can also ensure good synchronization of those multiple servers, ~~either to~~" The motion was approved by a supermajority of the working group with a show of hands.

8.6.2 BSR E1.30-4

8.6.2.1 Discussion of BSR E1.30-4 recirculation and close of vote

The last recirculated letter ballots were collected and added to the vote total. Karl Ruling announced that the motion to accept BSR E1.30-4 (document CP/2008-1007r2) as an American National Standard had failed, with only nine voting "Yes," eleven voting "No," three voting "Abstain," and four ballots not returned.

No ballots were received from Arnold Tang of Arnold Tang Productions; from Simon Hobday of Artistic Licence (UK) Ltd.; from Robert Goddard of Goddard Design Co.; and from Rick Leinen and Ken Vannice of Leviton Manufacturing.

Dan Antonuk moved that the correct EPI 26 (document number CP/2008-1007r4) be offered for public review. The motion was seconded, and then approved with a roll call ballot, with 18 voting Yes, and no dissension.

Name	Company	Representing	Voting status	Int. Cat.	Ye s	Yes with comments	No with reasons	Abstain
Jean-Francois Canuel	Spectrum Manufacturing Inc.	A.C. Lighting Ltd.	P	CP				
Arnold Tang	Arnold Tang Productions	Arnold Tang Productions	P	U				
Simon Hobday	Artistic Licence (UK) Ltd.	Artistic Licence (UK) Ltd.	P	CP				
Tom Grimes	High End Systems, Inc.	Barco	A	MP				
Scott M. Blair	High End Systems Inc.	Barco	P	MP	X			
Paul Kleissler	City Theatrical, Inc.	City Theatrical, Inc.	P	MP	X			
Edward A. (Ted) Paget	Vortek Rigging Division	Daktronics Inc.	P	G				
Ulrich Kunkel	E3 Engineering & Education for Entertainment	DIN, NVBF Committee	P	U	X			
Doug Fleenor	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	P	MP				
Milton Davis	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	A	MP	X			
Steve Terry	Electronic Theatre Controls	Electronic Theatre Controls, Inc.	A	MP				
Daniel W. Antonuk	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	P	MP	X			
Tracy Underhill	Electronics Diversified LLC	Electronics Diversified LLC	P	MP	X			
Philip Nye	Engineering Arts	Engineering Arts	P	G				
Robert Goddard	Goddard Design Co.	Goddard Design Co.	P	MP	X			
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	X			
John Huntington	City Tech, Ent Tech Department	I.A.T.S.E. Local 1	A	U				
Edwin S. Kramer	I.A.T.S.E. Local 1	I.A.T.S.E. Local 1	P	U	X			
Roger Lattin	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	P	U	X			
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				
John (Javid) D. Butler	Integrated Theatre, Inc.	Integrated Theatre, Inc.	P	CP				
Michael (Mike) Whetstone	Integrated Theatre, Inc.	Integrated Theatre, Inc.	A	CP				
Rick Leinen	Colortran	Leviton Manufacturing Co., Inc.	P	MP				
Ken Vannice	Colortran	Leviton Manufacturing Co., Inc.	A	MP				
Tyrone Mellon Jr.	Lex Products Corp.	Lex Products Corp.	P	CP	X			
Stuart Cotts	Oregon Shakespeare Festival	Oregon Shakespeare Festival	P	U				
Dave Higgins	Pathway Connectivity Inc.	Pathway Connectivity Inc.	A	MP				
Kevin Loewen	Pathway Connectivity Inc.	Pathway Connectivity Inc.	P	MP	X			
Robert Armstrong	Pathway Connectivity Inc.	Pathway Connectivity Inc.	A	MP				
Ron Bonner	PLASA	PLASA	P	G	X			
Charles Reese	Production Resource Group	Production Resource Group	P	DR	X			
Robert Tooker	Production Resource Group	Production Resource Group	A	DR				
Michael Lay	Strand Lighting	Royal Philips Electronics	P	MP	X			
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	X			
Mark Manthei	Shure Inc.	Shure Inc.	P	G				
Kehang Wu	Shure Inc.	Shure Inc.	A	G				
Mitch Hefter	Entertainment Technology (Royal Philips Electronics)	USITT	P	U	X			
Philip M. Gallo	TMB Inc.	TMB Inc.	P	DR	X			

	Votes possible	Yes	Yes with comments	No with reasons	Abstain	Not present
Total	29	18	0	0	0	11
CP	5	2	0	0	0	3
MP	11	8	0	0	0	3
DR	2	2	0	0	0	0
U	6	4	0	0	0	2
G	5	2	0	0	0	3

8.6.3 Discussion of BSR E1.30-7 recirculation and close of vote

The last recirculated letter ballots were collected and added to the vote total. Karl Ruling announced that the motion to accept BSR E1.30-7 (CP/2008-1010r2) as an American National Standard had been accepted by a supermajority. Out of a voting body of 27, 22 voted "Yes," two voted "Abstain," and three ballots were not returned.

No ballots were received from Arnold Tang of Arnold Tang Productions; Simon Hobday of Artistic Licence (UK) Ltd.; and Rick Leinen or Ken Vannice of Leviton Manufacturing.

Dan Antonuk moved that Kimberly Corbett's and Alan Martello's non-substantive, editorial corrections be accepted. The motion was seconded and then approved by a supermajority of the working group with a show of hands.

8.6.4 Report of next steps with BSR E1.30-10

(Please see E1-30-10WG_Bllt_Total.pdf.) Karl Ruling reported that the motion to accept BSR E1.30-10 (CP/2008-1013r1) as an American National Standard was accepted by a supermajority, with 21 "Yes" votes cast in a voting body of 27. There were no comments, and no objections or abstentions. Six ballots were not returned.

Arnold Tang of Arnold Tang Productions; Simon Hobday of Artistic Licence (UK) Ltd.; Scott M. Blair and Tom Grimes of Barco; Philip Nye of Engineering Arts; Roger Lattin, Dennis Grow, and Alan M. Rowe of IATSE Local 728; and Rick Leinen and Ken Vannice of Leviton Manufacturing Co. did not return ballots.

8.6.5 Report on the other six parts of the BSR E1.30 suite

Dan Antonuk reported that the task group is working on the other six. The task group plans to bring them back to the floor in small groups, one or two, rather than in a mass.

8.7 BSR E1.31, Lightweight streaming protocol for transport of DMX512 using ACN

(See E1-31WG_Bllt_Total.pdf.) Ruling reported that the motion to approve the resolutions to the second review comments on BSR E1.31 and to accept the revised draft standard (CP/2006-1020r3) as an American National Standard had been accepted by a supermajority, with 21 voting Yes out in a voting body of 27. There were no comments, no "No" votes, and no abstentions. Six ballots were not returned.

No ballots were received from Arnold Tang of Arnold Tang Productions; Simon Hobday of Artistic Licence (UK) Ltd.; Scott M. Blair and Tom Grimes of Barco; Philip Nye of Engineering Arts; Roger Lattin, Dennis Grow, and Alan M. Rowe of IATSE Local 728; and from Rick Leinen and Ken Vannice of Leviton Manufacturing Co.

Three voting members had missed all five letter ballots, plus the recirculations of three of them, which is far more than the three missed ballots that normally trigger a loss of voting status, despite having been reminded of the voting requirement sent with the letter ballot reminders. Arnold Tang of Arnold Tang Productions; Simon Hobday of Artistic Licence (UK) Ltd.; and Rick Leinen or Ken Vannice of Leviton Manufacturing will be moved to observer status.

8.8 BSR E1.33-200x, Extensions to E1.31 for Transport of ANSI E1.20 (RDM)

Scott Blair gave a progress report. He said that the biggest problem is, How do we handle discovery over Ethernet? The protocol needs to be simple for lightweight devices but scalable for large networks. A lightweight version of SLP should work. For the next meeting Kevin will wrap up the text for that section.

The plan is to solidify discovery and to have the rest cleaned up for the task group at the next meeting. The summer meeting should be for wordsmithing, and then a public review vote at LDI.

8.10 BSR E1.37-200x—Additional Message Sets for ANSI E1.20, Remote Device Management

Scott Blair reported that staff at Zero 88 have written a starting document in the style of ANSI E1.20. This will be very helpful.

9 New business

None.

10 Other business

10.1 Martin Professional's RDM variant

Peter Willis reported that Martin had the default implementation of RDM on pins 4&5--which is not compliant--with 2&3 as an option. However, they responded very quickly when he called this non-compliance to their attention and changed the default to 2&3. Willis noted that Martin had implemented a "get out of jail" command in that if RDM is on 4&5, a command on 2&3 can get it switched back to 2&3.

10.2 LDI Plugfest

Peter Willis issued a call for interest in plugfest at LDI.

10.3 ACN or RDM?

Ulrich Kunkle said that some end-users, systems specifiers, et cetera in Germany don't understand when they should implement ACN or RDM. He suggested that we need to write a user's guide that says when to use what.

There was discussion. The consensus was that writing a user's guide comparing and contrasting ACN and RDM was not a project that the CPWG wanted to undertake at this point, but an article in *Protocol* might be useful. Dan Antonuk is already scheduled to write an article about mixed ACN/RDM lighting control networks for a forthcoming article. He agreed to work with Karl Ruling, with Ruling providing a sidebar.

Ruling suggested that Ulrich Kunkle translate the article and sidebar for publication in VPLT's German-language *VPLT Magazin*.

11 Schedule for future meetings

Tracy Underhill announced that the next meeting is scheduled for Thursday, 19 March 2009, from 09:00 to 13:00, at the Hilton Cincinnati Netherland Plaza in Cincinnati, OH.

12 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:

Kimberly Corbett; Schuler Shook
Mark Manthei and Kehang Wu; Shure Inc.

Kimberly Corbett was present. Tracy Underhill announced that Mark Manthei and Kehang Wu are moved to observer status because of their lack of attendance.

Arnold Tang of Arnold Tang Productions; Simon Hobday of Artistic Licence (UK) Ltd.; and Rick Leinen or Ken Vannice of Leviton Manufacturing were moved to observer status due to failure to return letter ballots.

13 Adjournment

Bob Goddard moved that the meeting adjourn. The motion was seconded. Tracy Underhill declared the meeting adjourned at 17:00.

Working Group Membership and Contact Information as of 10 February 2009

Name	Company	Representing (This is the 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
Andre Broucke	ADB - TTV Technologies	ADB-TTV Group	O	MP
John Sellers	AIM Northwest	AIM Northwest	O	G
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
Bob Toms	Catalyst Microsystems LLC	Catalyst Microsystems LLC	O	G
Marty Lazarus	Chicago Spotlight, Inc.	Chicago Spotlight, Inc.	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.	O	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
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

Name	Company	Representing (This is the sort field.)	Voting status	Int. cat.
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
Bill Fehrmann	Electrol Engineering, Inc.	Electrol Engineering, Inc.	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
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
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

Name	Company	Representing (This is the sort field.)	Voting status	Int. cat.
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
John (Javid) D. Butler	Integrated Theatre, Inc.	Integrated Theatre, Inc.	P	CP
Michael (Mike) Whetstone	Integrated Theatre, Inc.	Integrated Theatre, Inc.	A	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
Rick Leinen	Colortran	Leviton Manufacturing Co., Inc.	O	MP
Ken Vannice	Colortran	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
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
Bart Swinnen	Luminex LCE	Luminex LCE	O	MP
Jim Holladay	Luxence	Luxence	O	G
Daniel Weiermann	Mainstage Theatrical Supply - Milwaukee	Mainstage Theatrical Supply	O	DR
Torben Kaas Rasmussen	Martin Professional A/S	Martin Professional A/S	O	G
Flemming Jensen	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	PLASA	P	G
James Eade	PLASA	PLASA	O	G
Charles Reese	Production Resource Group	Production Resource Group	P	DR

Name	Company	Representing (This is the sort field.)	Voting status	Int. cat.
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
Sean Harding	Rhode Island College	Rhode Island College	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	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
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
Michael Gonzales	Spectrum Lighting Inc.	Spectrum Lighting Inc.	O	DR
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
Phillip M. Gallo	TMB	TMB	P	DR
Colin Waters	TMB	TMB	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

Name	Company	Representing (This is the sort field.)	Voting status	Int. cat.
Paul Kenneth McEwan	Zero 88 Lighting Limited	Zero 88 Lighting Ltd.	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