

Minutes Control Protocols Working Group

Thursday, 20 November 2003
Sheraton World Resort
Orlando, FL

Chairmen: Steve Carlson; High Speed Design, Inc.; P; MP
Steve Terry; Electronic Theatre Controls, Inc.; A; MP

Recording secretary: Karl G. Ruling; ESTA

Members attending: Arnold Tang; Arnold Tang Productions; P; U
Wayne David Howell; Artistic Licence (UK) Ltd.; P; CP
Simon Hobday; Artistic Licence (UK) Ltd.; A; CP (joined at this meeting)
Bill Ellis; Candela Controls, Inc.; O; U
George Kindler; Pelton Marsh Kinsella (Carter & Burgess, Inc.); P; G
Dietmar Rottinghaus; Connex GmbH; O; G (joined at this meeting)
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
Tracy Underhill; Electronics Diversified Inc.; P; MP
Alfred Langguth; Embedded Controls by Design, LLC; P; MP
Philip Nye; Engineering Arts; P; G
Robert Goddard; Goddard Design Co.; P; MP
Tom Grimes; High End Systems, Inc.; P; MP
Alan Martello; Horizon Control Inc.; P; MP (joined at this meeting)
Robert Bell; Horizon Control Inc.; A; MP (joined at this meeting)
Peter Willis; Howard Eaton Lighting Ltd.; P; CP
Roger Lattin; I.A.T.S.E. Local 728; P; U
Rick Leinen; Colortran (Leviton Manufacturing Co., Inc.); P; MP
Tim Bachman; Leviton/Colortran (Leviton Manufacturing Co., Inc.); A; MP
Scott M. Blair; LiteSpeed Design; P; G (new company affiliation at this meeting)
John (Javid) D. Butler; Mainstage Theatrical Supply - South (Mainstage Theatrical Supply); P; DR
Ole BystruP; Martin Professional A/S; P; MP
Edward R. Condit; On Location Lighting Systems; O; DR (joined at this meeting)
Kevin Loewen; Pathway Connectivity Inc.; A; MP
James Eade; PLASA; P; G
Paul F. Mardon; Pulsar Ltd.; O; MP
Steve Unwin; Pulsar Ltd.; O; MP
Hans Lau; Sand Network Systems; P; MP
Jon R. Farley; Sixteenth Avenue Systems; O; CP
Michael Gonzales; Spectrum Lighting Inc.; P; DR
Richard Lawrence; Strand Lighting Ltd.; P; MP
Michael Lay; Strand Lighting (Strand Lighting Ltd.); A; MP
Brian Dowd; TMB; P; U
Mitch Hefter; Entertainment Technology (Genlyte Thomas Group), representing USITT; P; U (arrived late)
Torrey Bievenour; Vision Quest Lighting; O; G
Charles Reese; VLPS; P; MP
Eckart Steffens; SOUNDLIGHT , representing VPLT; O; G

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

Regrets for Tobin Neis's absence had been sent to the Technical Standards Manager by one of Tobin Neis's colleagues. A death in Neis's family had made it impossible for Neis to attend.

There were no visitors.

1 Opening remarks

Steve Carlson called the meeting to order at 09:02. He welcomed all to the meeting and asked the people lingering by the coffee stand to take a seat.

2 Attendance and membership

2.1 Introductions of those present and taking attendance

The two chairmen, Steve Carlson and Steve Terry, introduced themselves. Karl Ruling, the Technical Standards Manager and recording secretary, introduced himself, and then asked those present to sign-in on the trillium attendance sheet. Steve Carlson then asked the members of the assembly to introduce themselves, which they did, proceeding in a counter-clockwise direction around the open u-shaped table.

2.2 Determination of quorum

(The working group had at this point 29 voting members, 10 was needed for a quorum, and 15 to pass a supermajority vote.)

Steve Carlson announced that we have a quorum present.

2.3 Recognition of alternate voting members

Steve Terry asked if there were any alternates present who would be voting instead of their organization's principal. Kevin Loewen of Pathway Connectivity identified himself, as did Milton Davis of Doug Fleenor Design. Steve Terry reminded alternates whose principals were present that they may not vote. Observers are non-voting members, and only one vote may be cast per voting entity.

2.4 Requirements for membership

Carlson reminded those assembled that working group membership is open to all who are affected by the work of the group. 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.

2.5 Processing of new membership requests

Steve Terry read the applications:

Dietmar Rottinghaus of Connex GmbH applied as an observer in the general interest category

Alan Martello of Horizon Controls applied as a principal in the MP category

Robert Bell applied as an alternate for Horizon Controls in the MP category (Bell had been an observer for Shock Lighting)

Scott Blair, formerly with Hubbell Entertainment, applied as a principal representing his own company, LiteSpeed Design, in the general interest category

Stuart Cotts of the Oregon Shakespeare Festival applied as an observer in the user category

Bart Swinnen of Luminex LCE applied as an observer in the MP category

Petri Laine of Obelux Oy applied as an observer in the CP category

Edward R. Condit of On Location Lighting Systems applied as an observer in the DR category

Simon Hobday of Artistic Licence applied as an alternate in the CP category

Roger Lattin moved that the applications be accepted. The motion was seconded. The motion was approved with a unanimous show of hands.

After these additions, the consensus body during the meeting, including the four not present, was:

Name	Company	Representing	Voting status	MP	CP	G	U	DR
Arnold Tang	Arnold Tang Productions	Arnold Tang Productions	P				1	
Wayne David Howell	Artistic Licence (UK) Ltd.	Artistic Licence (UK) Ltd.	P	1				
Simon Hobday	Artistic Licence (UK) Ltd.	Artistic Licence (UK) Ltd.	A					
Tobin Neis	Barbizon Companies	Barbizon Companies	P					1
George Kindler	Pelton Marsh Kinsella	Carter & Burgess, Inc.	P			1		
Doug Fleenor	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	P	1				
Milton Davis	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	A					
Ken Wagner	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	A					
Daniel W. Antonuk	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	P	1				
Steve Terry	Electronic Theatre Controls	Electronic Theatre Controls, Inc.	A					
Tracy Underhill	Electronics Diversified Inc. (Colorado)	Electronics Diversified Inc.	P	1				
James Johnson	Electronics Diversified Inc.	Electronics Diversified Inc.	A					
Alfred Langguth	Embedded Controls by Design, LLC	Embedded Controls by Design, LLC	P	1				
Philip Nye	Engineering Arts	Engineering Arts	P			1		
Robert Goddard	Goddard Design Co.	Goddard Design Co.	P	1				
Tom Grimes	High End Systems Inc.	High End Systems Inc.	P	1				
William Wagner	Flying Pig Systems	High End Systems, Inc.	A					
Steve Carlson	High Speed Design, Inc.	High Speed Design, Inc.	P	1				
Alan Martello	Horizon Controls	Horizon Controls	P	1				
Robert Bell	Horizon Controls	Horizon Controls	A					
Peter Willis	Howard Eaton Lighting Ltd.	Howard Eaton Lighting Ltd.	P		1			
Richard Thornton Brown	Zero 88 Ltd.	i Light Group PLC	P	1				
Edwin S. Kramer	I.A.T.S.E. Local 1	I.A.T.S.E. Local 1	P				1	
John Huntington	I.A.T.S.E. Local 1	I.A.T.S.E. Local 1	A					
Roger Lattin	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	P				1	
Dennis Grow	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	A					
Alan M. Rowe	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	A					
Rick Leinen	Colortran	Leviton Manufacturing Co., Inc.	P	1				
Ken Vannice	Colortran	Leviton Manufacturing Co., Inc.	A					
Tim Bachman	Leviton/Colortran	Leviton Manufacturing Co., Inc.	A					
Scott M. Blair	LiteSpeed Design	LiteSpeed Design	P			1		
John (Javid) D. Butler	Mainstage Theatrical Supply - South	Mainstage Theatrical Supply	P					1
Ole Bystrup	Martin Professional A/S	Martin Professional A/S	P	1				
Gary Douglas	Pathway Connectivity Inc.	Pathway Connectivity Inc.	P	1				
Dave Higgins	Pathway Connectivity Inc.	Pathway Connectivity Inc.	A					
Kevin Loewen	Pathway Connectivity Inc.	Pathway Connectivity Inc.	A					
James Eade	PLASA	PLASA	P			1		
Tony Douglas-Beveridge	PLASA	PLASA	A					
Hans Lau	Sand Network Systems	Sand Network Systems	P	1				
Michael A. (Sandy) Twose	Sand Network Systems	Sand Network Systems	A					
Yngve Sandboe	Sand Network Systems	Sand Network Systems	A					
Michael Gonzales	Spectrum Lighting Inc.	Spectrum Lighting Inc.	P					1
Richard Lawrence	Strand Lighting Ltd.	Strand Lighting Ltd.	P	1				
Michael Lay	Strand Lighting	Strand Lighting Ltd.	A					
Brian Dowd	TMB (NJ)	TMB	P				1	
Mitch Hefter	Entertainment Technology (Gentyle Thomas Group)	USITT	P				1	
Charles Reese	VLPS	VLPS	P	1				
Mark Jensen	Wybron, Inc.	Wybron, Inc.	P	1				
			30 total	17 MP	1 CP	4 G	5 U	3 DR

3 Approval of the minutes from the previous meeting

Tracy Underhill moved that the minutes be accepted as written. The motion was seconded. The motion was approved with a unanimous show of hands

4 Reading of the call for patents

Steve Carlson read the following statement aloud:

"ESTA intends to publish no standard that contains protected intellectual property, unless that property can be licensed by anyone for a reasonable fee. ESTA uses a process of open patent disclosure to implement this intent. ESTA does not conduct patent searches and does not warrant that its standards contain no protected intellectual property.

"In keeping with the open disclosure policy, I ask if anyone present wishes to notify the working group of the existence of a patent or copyright that might protect material in a standard being developed by the working group. You need not be the holder of the patent or copyright in order to notify the working group of its existence."

Steve Terry noted that during the TSC meeting Mike Wood had revealed some recently issued patents issued to Richard Belliveau that may have bearing on RDM. Tom Grimes reported the patent numbers:

6,570,348	issued 27 May 2003
6,545,586	issued 8 April 2003
6,459,217	issued 1 October 2002
6,331,756	issued 18 December 2001

Terry said that Mike Wood will work to secure an assurance letter from Belliveau stating that the patents may be licensed for anyone for a reasonable fee in order to implement the E1.20 (RDM) standard.

5 The reading of the anti-trust statement

Steve Carlson read aloud the following statement:

"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 \$100,000 and imprisoned for up to three years. An easy to read pamphlet describing restraint of trade issues is available from the Technical Standards Manager."

Karl Ruling held up some of the pamphlets to demonstrate their availability. No anti-trust or restraint of trade issues were brought to the attention of the group.

6 Approval of agenda

Steve Terry suggested that a discussion of the interconnectivity pavilion should be handled under New Business and that the E1.11 report would be heard whenever Mitch Hefter arrives.

Dan Antonuk moved that the amended agenda be accepted. The motion was seconded. The motion was approved by a unanimous show of hands.

7 Old business

7.1 E1.11

7.1.1 Status of public review comment resolutions

Mitch Hefter reported that the task group will meet later today and Monday to resolve the comments. He described the nature of the comments and how he feels the task group can address them.

There was a long, heated discussion of the merits Philip Nye's comments stating that signal functions must not be defined by XLR connector pin number designations, and a discussion of the ramifications of accepting his comments and modifying the document or of not accepting his comments.

Terry asked for a show of support for Philip's suggestion that signals be identified by a descriptive title other than the XLR connector pin number on which they appear. By show of hands: 20 in favor and 6 against. (There were 26 voters present.) Ruling pointed out that this was a clear supermajority, not only of the assembled group, but of the whole voting body.

7.1.2 Cabling

There was a discussion of how to number standards that are separate but that are part of a family or related documents.

George Kindler moved that a "- (number)" form be used to designate all standards that are members of a family of related standards. The motion was seconded. The motion was approved with a unanimous show of hands

Karl Ruling asked if the draft document (CP/2003-1028) was the first draft of a standard, or whether it was to be considered the end product of a study project. The consensus of the working group was that this project had already been voted by a supermajority of the working to be a standards-drafting project, so this was the first draft of an American National Standard. (See 7.1.2 in the approved minutes of the Saturday, 26 July 2003 meeting. That was a unanimous vote, except for one abstention, in a meeting with more than 50% of the voting body present.) Ruling said he would file the appropriate project announcement papers with ANSI as soon as possible.

Tracy Underhill moved that this document, revised with the proper alphanumeric project designation E1.27-1, be sent to public review. The motion was seconded. Ruling noted that for a first public review vote the motion must be decided by letter ballot.

7.2 E1.20 Remote Device Management with DMX512

Karl Ruling reported that the public review was on-going, and that very few comments had been received, and that they were all from Scott Blair.

7.3 E1.17

Karl Ruling reported that the public review was on-going, and that one comment had been received.

7.4 IEEE report

Steve Carlson gave a report of IEEE projects of interest to CPWG members. Highlights are noted below.

802.3ak (10GBASE- CX4) is in final sponsor ballot. This is a standard for 10gbps short-haul (< 15m) communications over copper wire. The goal is approval on 8 December 2003.

P802.3ah "Ethernet in the First Mile" version D2.2 is in working group ballot. Information is available at <http://grouper.ieee.org/groups/802/3/efm/index.html>. A successful demonstration of it has been done with a relatively short haul (750m, >10MBPS) and long haul (2700m, >2MBPS) with copper as the physical medium. It works.

A new project is P802.3an 10GBASE-T, which is to transport 10G over up to 100m of UTP. CAT 6E is the likely medium. Sponsors include Intel, Sun, Solarflare, and Plato Labs. The chairman of the project is Brad Booth of Intel. Information is available at <http://grouper.ieee.org/groups/802/3/10GBT/index.html>.

Calls for interest has been put out for the following:

- 1) A project to carry 10GB per second over MMF. A study group for this has been approved.
- 2) Ethernet Backplanes. A study group for this has been approved, too.
- 3) A project to carry 2.5GB per second over copper. A study group for this has not been approved, and there has been considerable debate about the project.

The entire 802.3 CSMA/CD standard is up for revision in 2004. That would include all the amendments, including 802.3ae, 802.3af, 802.3aj, 802.3am, and probably 802.3ah. Geoff Thompson wants to completely restructure the document.

One of the issues they have been wrestling with is a suitable definition for "low-voltage distribution system." For power utility people, "low-voltage" is anything under 1000 volts, but that is not what is

meant when one is talking about low-voltage power for network devices. Perhaps some of the CPWG members can help by suggesting a good definition.

Other news: ISO/IEC 11801 and TR- 42 are working on a cabling standard for industrial and building automation. The alphanumeric title for the task group is IEC/ISO/JTC1\SC25\WG3 IPTG (Industrial Premises Task Group). The document's first draft is 2H04. It is being developed with coordination with several other groups, including:

- ISO/IEC, CLC, TIA cabling groups
- IEC cable and connector groups
- IEC Process Control System group
- ODVA (Open DeviceNet Vendors' Association)
- IAONA (Industrial Automation Open Network Alliance)
- ProfiBus International (incl. "Ethernet IP")

The Technical Advisory Group contact for Europe is Alan Flatman (a_flatman@compuserve.com). The TAG contact for North America is: Dave Hess (Dave.Hess@Berktek.com).

For your information, the 802.3 Working Group officers are:

- Chair: Bob Grow, bob.grow@intel.com
- Vice-chair: David Law, David_Law@3com.com
- Secretary: Steve Carlson, scarlson@esta.org

The next 802.3 meeting is scheduled to be in Vancouver, BC, 10-14 January 2004
Information is available at <http://grouper.ieee.org/groups/802/3/index.html>

8 New business

- 8.1** Carlson suggested that we need to review the *Recommended Practice For Ethernet Cabling* and its supplement. It is not state of the art anymore; it describes antiquated techniques. Steve Terry pointed out that standard structured wiring practices are now fully compatible with what we need.

Javid Butler offered to look at the Ethernet cabling RP. Carlson offered to help.

8.2 Interconnectivity Pavilion

There was a discussion of preparations for the ESTA Interconnectivity Pavilion.

Dan Antonuk said that the E1.17 ACN group will have a Martin luminaire, an ETC dimmer pack, a Pathport node, some control consoles, and Sandnet boxes running ACN. In addition, a CD player will be shown being discovered by ACN.

Scott Blair said that the E1.20 RDM group will have the UT reference platform, an Artistic License splitter, a Wybron Dogbone, and EDI scrimmer stick, HELL LED arrays, a HES Studio 250, and a Hubbell HX.

Kevin Loewen agreed to go to meeting room 107 to test his Pathway ACN device discovering RDM devices.

There was a discussion of the final arrangements of the signage and who would tend the booth during the three days of the show.

Steve Carlson thanked the ACN and RDM groups for their tremendous effort. He noted that this showing at ETS-LDI and Beyond will be very good for publicizing the work of the CPWG and all its members.

9 Other business

Carlson mentioned that all the consumer electronics companies have set up networking research groups in the Bay Area working on interconnectivity in consumer electronics to deal with audio and video, as well. The consensus is that Ethernet will be the medium and not 1394. Synchronous

Ethernet is the apparent way forward. If anyone was interested in becoming involved, ask Steve Carlson for the contact information.

10 Schedule for future meetings

Karl Ruling read the schedule for the future meetings. The January meeting will be held on Saturday, 17 January 2004, at the Dallas/Ft. Worth Airport Marriott South in Ft. Worth, Texas. The following meeting will be Thursday, 18 March 2004, at the Westin Long Beach hotel in Long Beach, CA.

11 Changes to observer status due to lack of attendance

None.

12 Adjournment

Scott Bair moved that the meeting adjourn. The motion was seconded. The motion was approved by acclamation. Steve Carlson declared the meeting adjourned at 11:35.

Working Group Membership and Contact Information as of 2003-12-5

Name	Company	Representing (This is the sort field.)	Voting status	Int. cat.
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	P	U
Wayne David Howell	Artistic Licence (UK) Ltd.	Artistic Licence (UK) Ltd.	P	CP
Simon Hobday	Artistic Licence (UK) Ltd.	Artistic Licence (UK) Ltd.	A	CP
Steve Friedlander	Auerbach Pollock Friedlander	Auerbach Pollock Friedlander	O	U
Raymond Wynn	AVL Systems Pty Ltd.	AVL Systems Pty Ltd.	O	MP
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	P	DR
Bernardo Benito Rico	Ben-Ri Electronica S.A.	Ben-Ri Electronica S.A.	O	MP
Lee J. Bloch	Blue Sky Design, Ltd.	Blue Sky Design, Ltd.	O	G
Soo-Myong Chung	Blue Sky Design, Ltd.	Blue Sky Design, Ltd.	O	G
Bradley Klinkradt	Bradley Klinkradt	Bradley Klinkradt	O	G
Ted Fregon	Bytecraft Pty. Ltd.	Bytecraft Pty. Ltd.	O	MP
Bill Ellis	Candela Controls, Inc.	Candela Controls, Inc.	O	U
George Kindler	Pelton Marsh Kinsella	Carter & Burgess, Inc.	P	G
Rick Szijarto	Cast Software	Cast Group of Companies, Inc.	O	CP
Marty Lazarus	Chicago Spotlight, Inc.	Chicago Spotlight, Inc.	O	G
Fabiano Pina	Clay Paky S.P.A.	Clay Paky S.P.A.	O	MP
Woody Smith	Coemar USA Inc.	Coemar USA Inc.	O	MP
Ohad Ashery	Compulite Systems	Compulite Systems	O	MP
Simeon Aladjem	Compulite Systems	Compulite Systems	O	MP
Yehuda Shukram	Compulite Systems	Compulite Systems	O	MP
Dietmar Rottinghaus	Connex GmbH	Connex GmbH	O	G
Jason Friedman	Creative Realities, Inc.	Creative Realities, Inc.	O	G
David Bertenshaw	David Bertenshaw	David Bertenshaw	O	G
Bob Toms	Design Advantage LLC	Design Advantage LLC	O	G
Doug Fleenor	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	P	MP
Milton Davis	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	A	MP
Ken Wagner	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	A	MP
Gary Dove	Dove Systems	Dove Systems	O	MP
Jussi Kallioinen	Eastway Sound & Lighting	Eastway Sound & Lighting	O	U
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
Adam Bennette	Electronic Theatre Controls Ltd.	Electronic Theatre Controls, Inc.	O	MP
Hans Leiter	Transtechnik Lichtsysteme GmbH & Co. KG	Electronic Theatre Controls, Inc.	O	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
Anders Ekvall	Transtechnik Lichtsysteme GmbH	Electronic Theatre Controls, Inc.	O	MP
Tracy Underhill	Electronics Diversified Inc. (Colorado)	Electronics Diversified Inc.	P	MP
James Johnson	Electronics Diversified Inc.	Electronics Diversified Inc.	A	MP
Alfred Langguth	Embedded Controls by Design, LLC	Embedded Controls by Design, LLC	P	MP
Philip Nye	Engineering Arts	Engineering Arts	P	G

Robert Goddard	Goddard Design Co.	Goddard Design Co.	P	MP
Sierk Janszen	Ground Zero	Ground Zero	O	U
Liao Wei Min	GuangZhou HeDong Electronic Co., Ltd.	GuangZhou HeDong Electronic Co., Ltd.	O	G
Alan P. Symonds	Harvard College	Harvard University	O	U
Trevor Forrest	Helvar Lighting Control	Helvar Lighting Control	O	MP
Bill Hewlett	Hewlett Electronics	Hewlett Electronics	O	CP
Tom Grimes	High End Systems, Inc.	High End Systems, Inc.	P	MP
William Wagner	Flying Pig Systems	High End Systems Inc.	A	MP
Steve Carlson	High Speed Design, Inc.	High Speed Design, Inc.	P	MP
Alan Martello	Horizon Control Inc.	Horizon Control Inc.	P	MP
Robert Bell	Horizon Control Inc.	Horizon Control Inc.	A	MP
Peter Willis	Howard Eaton Lighting Ltd.	Howard Eaton Lighting Ltd.	P	CP
John Huntington	I.A.T.S.E. Local 1	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
Dennis Grow	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	A	U
Alan M. Rowe	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	A	U
Richard Thornton Brown	Zero 88 Ltd.	i Light Group PLC	P	MP
Gian Carlo C. Bartolotti	Ibeam SP / Banco de Eventos	Ibeam SP / Banco de Eventos	O	U
Geoffrey O. Thompson	Nortel Networks, Inc.	IEEE 802.3/Nortel Networks	O	G
Rob Johnston	Interactive Technologies, Inc.	Interactive Technologies, Inc.	O	MP
Larry Schoeneman	Interesting Products, Inc.	Interesting Products, Inc.	O	G
David Timmins	Jands Electronics	Jands Electronics	O	MP
Helge Hoffmann	JB Lighting	JB Lighting	O	MP
Edward Paget	Jones & Phillips Associates, Inc.	Jones & Phillips Associates, Inc.	O	G
Christopher Purpura	Jones & Phillips Associates, Inc.	Jones & Phillips Associates, Inc.	O	G
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.	P	MP
Ken Vannice	Colortran	Leviton Manufacturing Co., Inc.	A	MP
Tim Bachman	Leviton/Colortran	Leviton Manufacturing Co., Inc.	A	MP
Klaus Amling	Licht-Technik	Licht-Technik	O	P
Andrew Sherar	Lightmoves PLC	Lightmoves PLC	O	MP
Simon Alpert	Lighttech Event Technologies	Lighttech Event Technologies	O	CP
Scott M. Blair	LiteSpeed Design	LiteSpeed Design	P	G
Gary Pritchard	LSC Lighting Systems PTY Ltd	LSC Lighting Systems PTY Ltd	O	MP
Bart Swinnen	Luminex LCE	Luminex LCE	O	MP
J. P. Steiner	Lutron Electronics	Lutron Electronics	O	MP
Jim Holladay	Luxence	Luxence	O	G
John (Javid) D. Butler	Mainstage Theatrical Supply - South	Mainstage Theatrical Supply	P	DR
Ole Bystrup	Martin Professional A/S	Martin Professional A/S	P	MP
Hiroshi Kita	Marumo Electric Co., Ltd.	Marumo Electric Co., Ltd.	O	MP
Petri Laine	Obelux Oy	Obelux Oy	O	CP
Edward R. Condit	On Location Lighting Systems	On Location Lighting Systems	O	DR
Stuart Cotts	Oregon Shakespeare Festival	Oregon Shakespeare Festival	O	U
David A. Boller	Organic Machines LLC	Organic Machines LLC	O	CP
William Benner	Pangolin Laser Systems	Pangolin Laser Systems	O	MP
Dave Higgins	Pathway Connectivity Inc.	Pathway Connectivity Inc.	A	MP
Gary Douglas	Pathway Connectivity Inc.	Pathway Connectivity Inc.	P	MP
Kevin Loewen	Pathway Connectivity Inc.	Pathway Connectivity Inc.	A	MP
Tony Douglas-Beveridge	PLASA	PLASA	A	G
James Eade	PLASA	PLASA	P	G

Mac Perkins	PNTA Inc.	PNTA Inc.	O	G
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
Hans Lau	Sand Network Systems	Sand Network Systems	P	MP
Michael A. (Sandy) Twose	Sand Network Systems	Sand Network Systems	A	MP
Yngve Sandboe	Sand Network Systems	Sand Network Systems	A	MP
Kenneth Mockler	Sceno Plus	Sceno Plus	O	U
Mick Martin	ShowCAD Control Systems	ShowCAD Control Systems	O	MP
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.	P	DR
Ujjal Kar	Standard Robotics & Lighting	Standard Robotics & Lighting	O	G
John Mitchell	Sterling Technical Services	Sterling Technical Services	O	U
Richard Lawrence	Strand Lighting Ltd.	Strand Lighting Ltd.	P	MP
Michael Lay	Strand Lighting	Strand Lighting Ltd.	A	MP
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
Jerry Gorrell	Theatre Safety Programs	Theatre Safety Programs	O	G
Colin Waters	TMB	TMB	O	U
Brian Dowd	TMB	TMB	P	U
Matt Stroud	University of Texas at Austin	University of Texas at Austin	O	G
Jason Potterf	University of Texas at Austin	University of Texas at Austin	O	G
Mitch Hefter	Entertainment Technology (Genlyte Thomas Group)	USITT	P	U
Torrey Bievenour	Vision Quest Lighting	Vision Quest Lighting	O	G
Charles Reese	VLPS	VLPS	P	MP
Eckart Steffens	SOUNDLIGHT	VPLT	O	G
Eric Cornwell	West Side Systems	West Side Systems	O	U
John Sondericker III	Wybron, Inc.	Wybron, Inc.	O	MP
Mark Jensen	Wybron, Inc.	Wybron, Inc.	P	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