

Minutes
Control Protocols Working Group
Saturday, 23 July 2011
DFW Marriott Solana

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

Recording secretary: Karl G. Ruling; PLASA

Members attending:

Charles Alicea; Philips - Professional Luminaires (Royal Philips Electronics); O; MP
Scott M. Blair; LiteSpeed Design; P; G
Ron Bonner; PLASA Technical Resources Office (PLASA EU); P; G
Jean-Francois Canuel; Spectrum Manufacturing Inc. (A.C. Lighting Ltd.); P; CP
Daniel Darrington; Wireless Solutions Sweden AB; P; MP
Milton Davis; Doug Fleenor Design, Inc.; A; MP
Hamish Dumbreck; JESE Ltd. (James Embedded Systems Engineering); O; MP
Bill Ellis; Candela Controls, Inc.; O; U
Ed Garstkiewicz; Harting Inc., North America (Harting KGAA); P; G
Robert Goddard; Goddard Design Co.; P; MP
Mitch Hefter; Philips Controls (Royal Philips Electronics) representing USITT; P; U
Eric Johnson; High End Systems (Barco); P; MP
Tyrone Mellon_Jr.; Lex Products Corp.; P; CP
Tae Gyu Kang; Electronics and Telecommunications Research Institute; O; MP
Michael Karlsson; LumenRadio AB; P; MP
Insu Kim; Electronics and Telecommunications Research Institute; O; MP
Peter Kirkup; Zero 88 (Cooper Controls Ltd.); P; MP
Paul Kleissler; City Theatrical, Inc.; P; MP
Edwin S. Kramer; I.A.T.S.E. Local 1; P; U
Roger Lattin; I.A.T.S.E. Local 728; P; U
Maarten Lepelaars; eldoLED; O; MP
Sang-Kyu Lim; Electronics and Telecommunications Research Institute; O; MP
Kevin Loewen; Pathway Connectivity Inc.; P; MP
Simon Newton; I; G
Maya Nigrosh; Electronic Theatre Controls, Inc.; A; MP
Larry Schoeneman; DesignLab Chicago, Inc.; O; DR
Sean Sill; Doug Fleenor Design, Inc.; A; MP
Ken Vannice; Leviton Manufacturing Co., Inc.; P; MP
Peter Willis; Howard Eaton Lighting Ltd.; P; CP

1 Opening remarks

Kimberly Corbett called the meeting to order at 14:07 and welcomed all to Westlake.

2 Attendance

2.1 Introductions of those present and circulation of attendance sheet

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

2.2 Determination of a quorum

Voting members were asked to raise a hand. The up-raised hands were counted, and Corbett announced that enough voters were present to pass a vote requiring a supermajority.

2.3 Recognition of alternate voting members

3 Membership

3.1 Requirements for membership

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

Membership is open to all who are affected by the work of the group. People and companies that would be in any interest category other than a manufacturer interest category are at this time particularly encouraged to apply for membership. Voting members are required to attend meetings and to vote on letter ballots. Voting members and their alternates may not miss three consecutive meetings without a loss of voting status.

3.2 Changes to observer status due to lack of attendance

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

Jean-Francois Canuel; A.C. Lighting Ltd.; CP

Alan Martello, Robert Bell, and Gary Douglas; Horizon Control Inc.; MP

Canuel was present, so his voting status was maintained. The Horizon Control representatives were not present. They became observers.

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

The following applications had been received:

Charles Alicea; Philips - Professional Luminaires (Royal Philips Electronics); O; MP

Daniel (Ben) Darrington; Wireless Solution; P; MP

Eric Johnson; High End Systems (Barco); P; MP

Maarten Lepelaars; eldoLED; O; MP

Ralph Stillinger; Strand Lighting (Royal Philips Electronics); O; MP

Sang-Kyu Lim; ETRI (Electronics and Telecommunications Research Institute); O; MP

Scott M. Blair; LiteSpeed Design; P; G

Sean Sill; Doug Fleenor Design, Inc.; A; MP

Tae Gyu Kang; ETRI (Electronics and Telecommunications Research Institute); O; MP

Timothy Baarsch; Artistic Licence Engineering Ltd. (Alderamin Group); O; DE

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

3.4 Consensus body

The full consensus body, including those not present, was:

Name	Representing	Voting status	Int. cat.
Jean-Francois Canuel	A.C. Lighting Ltd.	P	CP
Eric Johnson	Barco	P	MP
Paul Kleissler	City Theatrical, Inc.	P	MP
Larry Dunn	City Theatrical, Inc.	A	MP
Peter Kirkup	Cooper Controls Ltd.	P	MP
Edward A. (Ted) Paget	Daktronics Inc.	P	G
Ulrich Kunkel	DIN, NVBF Committee	P	U
Doug Fleenor	Doug Fleenor Design, Inc.	P	MP
Milton Davis	Doug Fleenor Design, Inc.	A	MP
Sean Sill	Doug Fleenor Design, Inc.	A	MP
Daniel W. Antonuk	Electronic Theatre Controls, Inc.	P	MP
Steve Terry	Electronic Theatre Controls, Inc.	A	MP

Name	Representing	Voting status	Int. cat.
Maya Nigrosh	Electronic Theatre Controls, Inc.	A	MP
Robert Goddard	Goddard Design Co.	P	MP
Ed Garstkiewicz	Harting KGAA	P	G
Howard Forryan	Harting KGAA	A	G
Peter Willis	Howard Eaton Lighting Ltd.	P	CP
Edwin S. Kramer	I.A.T.S.E. Local 1	P	U
John Huntington	I.A.T.S.E. Local 1	A	U
Roger Lattin	I.A.T.S.E. Local 728	P	U
Dennis Grow	I.A.T.S.E. Local 728	A	U
Alan M. Rowe	I.A.T.S.E. Local 728	A	U
Ken Vannice	Leviton Manufacturing Co., Inc.	P	MP
Tyrone Mellon_Jr.	Lex Products Corp.	P	CP
Scott M. Blair	LiteSpeed Design	P	G
Michael Karlsson	LumenRadio AB	P	MP
Marcus Bengtsson	LumenRadio AB	A	MP
Hans Lau	LumenRadio AB	A	MP
Kevin Loewen	Pathway Connectivity Inc.	P	MP
Dave Higgins	Pathway Connectivity Inc.	A	MP
Robert Armstrong	Pathway Connectivity Inc.	A	MP
Ron Bonner	PLASA EU	P	G
Charles Reese	Production Resource Group	P	DR
Michael Lay	Royal Philips Electronics	P	MP
Kimberly Corbett	Schuler Shook	P	DE
Simon Newton	Simon Newton	I	G
Mitch Hefter	USITT	P	U
Daniel Darrington	Wireless Solutions Sweden AB	P	MP
	Total	25	
	Subtotals by interest category	3	CP
		11	MP
		1	DR
		4	U
		5	G
		1	DE

4 Approval of the minutes from the March 2011 meeting

See CPmin03-2011.pdf

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

5 Reading of the call for patents

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

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

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

Karl Ruling briefly explained the ANSI patent policy and our adoption of it by reference.

No protected property was reported.

6 Reading of the anti-trust statement

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

"The PLASA Board of Directors, the Technical Standards 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 chairs immediately. Anyone who feels that actions in restraint of trade have been taken and not properly annulled is requested to notify the TSC chair or PLASA chair immediately.

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

No restraint of trade issues were reported.

7 Approval of agenda

Kimberly Corbett suggested we add Ulrich Kunkel's comments about the German stage lighting power connector to "Other business," along with a report on the IESNA control protocols publication. She also suggested that the show data file project in the Rigging Working Group should be discussed under "Other business." Scott Blair moved that the modified agenda be accepted. The motion was seconded and then approved with a show of hands.

8 Old business

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

Kimberly Corbett asked if there is any news, or action needed on the following:

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

No news; no action.

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

No news; no action.

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

No news; no action.

ANSI E1.27-2 – 2009, Entertainment Technology - Recommended Practice for Permanently Installed Control Cables for Use with ANSI E1.11 (DMX512-A) and USITT DMX512/1990 Products. Revision, reaffirmation, or withdrawal in 2014.

No news; no action.

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

No news; no action.

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

No news; no action.

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

No news; no action.

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

No news; no action.

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

No news; no action.

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

No news; no action.

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

Discussion about comment resolution and next steps. 2nd Public review closed 8 February 2011. Vote for comment resolution yielded one “No” and one “Yes with comments.” See CP_ResolsBallotReslts_2011-1008r1.pdf, Willis_CPWG_July2011_Motions.pdf, and E1-37-1DimMssgs_Rev5.pdf.

Peter Willis moved #1. The motion was seconded and then discussed. It was approved by a supermajority with a show of hands vote.

Peter moved #2. The motion was seconded and then discussed. It was approved by a supermajority with a show of hands vote.

Peter moved #3. The motion was seconded and then discussed. It was approved by a supermajority with a show of hands vote.

Peter moved #4 then changed it to: "*See section 3.9 for PIN Code range restrictions.*" The motion was seconded and then discussed. It was approved by a supermajority with a show of hands vote.

Peter moved #5. The motion was seconded and then discussed. It was approved by a supermajority with a show of hands vote.

Peter Willis moved that BSR E1.37-1 be accepted as an American National Standard. The motion was seconded. The question will be decided by letter ballot.

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

Progress report from the Task Group. At the March 2011 session, Ulrich Kunkel reported he had a draft with three possible ways to address universe synchronization.

Kunkel's emailed report on this project was read aloud:

Some work has been done on this subject, too early and less substantial to distribute as a draft for the CPWG. I was expecting to do some work on the document during the Solana meeting which will now not happen because of the lack of my attendance and the cancellation of the Mo ACN task group meetings. I still believe that there is a strong need for the subject of EPI 34 itself and I strongly recommend to fix a meeting schedule for the related task group during the LDI meetings.

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

Progress report from the Task Group. Current draft distributed to working group for consideration of possible first public review. See E1-33_Draft_June2011_CPWGsubmittal.pdf.

Scott Blair reported. He moved that the draft BSR E1.33 standard be offered for public review. The motion was seconded. There was discussion. The motion was approved by a supermajority with a show of hands.

8.5 ANSI E1.3 – 2001 (R2006), Entertainment Technology - Lighting Control Systems - 0 to 10V Analog Control Specification & Application Guide For ANSI E1.3 – 2004 Lighting Control Systems 0 to 10V Analog Control Specifications

Karl Ruling reported that it was approved by ANSI for reaffirmation 29 June.

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

Karl Ruling reported that it was approved by ANSI for reaffirmation 29 June.

8.7 CPWG marketing efforts

8.7.1 Protocol Articles

Previously, Bob Goddard, Dan Antonuk, and Simon Newton each volunteered an article for an issue in 2011. Any updates?

No updates, but Ruling noted that Goddard and Newton both had contributed excellent articles to Protocol.

8.7.2 July Plugfest

Scott Blair reported that the Plugfest was well attended. The space filled up "yesterday" and they needed to call for more tables. The Grand MA now has RDM, said Scott.

He suggested that they would like to have the Plugfest again in January 2012, but perhaps not July in New York. Shipping in and out of New York is difficult, and the hotel space more expensive. However, he said, "We'll see about it."

8.7.3 PLASA Connectivity Pavilion

Peter Willis said he'd asked for exhibition space in Earls Court 2. He's working with Peter Kirkup to make some 10-minute presentations.

8.7.4 LDI Connectivity Pavilion

Bill Ellis reported that the Connectivity Pavilion will be a slightly larger space than before and will be part of the entire PLASA Pavilion. It's a 20 x 20-foot corner in a 50 x 50-foot space.

8.7.5 LDI CPWG Session

Richard Cadena issued a plea for panelists for LDI.

8.7.6 PLASA/CPWG “Template” PowerPoint Project

Michael Lay said that the third draft went out to task group and should be back and ready to be used soon.

9 New business

9.1 LED Illumination identification control protocol proposal

Insu Kim, Senior Member of Engineering Staff, Electronics and Telecommunications Research Institute

See [An_LED_illumination_identification_control_protocol_for_Entertainment_industry.pdf](#).

Insu Kim made a PowerPoint presentation on VLC. This led to a discussion of the possible uses of VLC. It could be used to carry various lighting control protocols from a visible light transmitter to a visible light receiver. It was pointed out that if we work on putting non-lighting control data on our networks, we open up ways to move all sorts of other control data or information around in an entertainment venue.

Mitch Hefter and Eric Johnson agreed to look into what was being done to adopt VLC in non-entertainment applications.

9.2 Other new business, if any

None.

10 Other business and announcements

10.1 Mitch Hefter announced that the IES has published their document summarizing lighting control protocols. Also, a lighting energy management committee has started.

10.2 Kimberly Corbett reported on the RWG automation data show file project. This working group may be drawn on for help in it.

10.3 Karl Ruling read aloud Kunkel's report on the German stage lighting power connector he showed at the last meeting:

There has been some rumors about section 10.3 of this document (the draft CPWG minutes) as the document itself was distributed around Germany by some of the observers (nobody who attended the meeting at all). The clause says that “There will be a DIN standard issued for the connector next year, a standard for a “German stage connector,” which would be abbreviated as DBS in German.” Indeed the DIN is working on a replacement for DIN 56905 – “Entertainment technology, stage lighting Twopole special male plug with protective contact, 63 A, ~ 250 V, 50/60 Hz”, which is going to be withdrawn as soon as a new document is on the way. The subsequent standard DIN 15901 “Entertainment technology, stage lighting Twopole connecting systems for lighting application” will no longer be focused on a single connector but will judge the suitability of different connectors of which the DBS is going to be the top rated one.

11 Schedule for future meetings

Michael Lay announced that the next working group meeting is scheduled for Thursday, October 27 from 9:00 to 13:00 at the Hilton Orlando, in Orlando, FL.

12 Adjournment

Scott Blair moved that the meeting adjourn. The motion was seconded and then approved with a show of hands. Kimberly Corbett declared the meeting adjourned at 16:54.

Working Group Membership and Contact Information as of 30 September 2011

Name	Company	Representing	Voting status	Int. cat.
Charles Alicea	Philips- Professional Luminaires	Royal Philips Electronics	O	MP
Simon Alpert	Lighttech Event Technologies	Lighttech Event Technologies	O	CP
Klaus Amling	Licht-Technik	Licht-Technik	O	MP
Daniel W. Antonuk	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	P	MP
Shahid Anwar	Avolites Ltd.	Avolites Ltd.	O	MP
Robert Armstrong	Pathway Connectivity Inc.	Pathway Connectivity Inc.	A	MP
Avraham Mendall Mor "Avi"	Lightswitch	Lightswitch	O	U
Daniel Ayers	Norcostco (Sales-Midwest)	Norcostco	O	DR
Timothy Baarsch	Artistic Licence Engineering Ltd.	Alderamin Group	O	DE
Tim Bachman	A.C.T Lighting, Inc.	A.C.T Lighting, Inc.	O	DR
Robert Barbagallo	Solotech Inc.	Solotech Inc.	O	U
Robert Bell	Horizon Control Inc.	Horizon Control Inc.	O	MP
Marcus Bengtsson	LumenRadio AB	LumenRadio AB	A	MP
William Benner	Pangolin Laser Systems	Pangolin Laser Systems	O	MP
Adam Bennette	Electronic Theatre Controls Ltd.	Electronic Theatre Controls, Inc.	O	MP
David Bertenshaw	David Bertenshaw	David Bertenshaw	O	G
Stephen Bickford	T. Kondos Associates	T. Kondos Associates	O	U
Torrey Bievenour	Vision Quest Lighting	Vision Quest Lighting	O	G
Scott M. Blair	LiteSpeed Design	LiteSpeed Design	P	G
Lee J. Bloch	Bloch Design Group, Inc.	Bloch Design Group, Inc.	O	G
David A. Boller	Organic Machines LLC	Organic Machines LLC	O	CP
Ron Bonner	PLASA Technical Resources Office	PLASA EU	P	G
André Broucke	André Broucke	André Broucke	O	G
Larry Busch	ADB Lighting Technologies	ADB Lighting Technologies	O	MP
John (Javid) D. Butler	Integrated Theatre, Inc.	Integrated Theatre, Inc.	O	CP
Jean-Francois Canuel	Spectrum Manufacturing Inc.	A.C. Lighting Ltd.	P	CP

Steve Carlson	High Speed Design, Inc.	High Speed Design, Inc.	O	MP
Nyasha Chigwamba	Dept. of Computer Science	Rhodes University	O	U
Soo-Myong Chung	Bloch Design Group, Inc.	Bloch Design Group, Inc.	O	G
Paul J. Clark	HxDx	HxDx	O	CP
Edward R. Condit	Edward R. Condit	Edward R. Condit	O	G
Kimberly Corbett	Schuler Shook	Schuler Shook	P	DE
Eric Cornwell	West Side Systems	West Side Systems	O	U
Stuart Cotts	Oregon Shakespeare Festival	Oregon Shakespeare Festival	O	U
Klas Dalbjorn	Labgruppen AB	TC Group	O	MP
Daniel Darrington	Wireless Solutions Sweden AB	Wireless Solutions Sweden AB	P	MP
Milton Davis	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	A	MP
Gilray Densham	CAST Software	CAST Group Inc	O	MP
Gary Douglas	Horizon Control Inc.	Horizon Control Inc.	O	MP
Gary Dove	Dove Systems	Dove Systems	O	MP
Hamish Dumbreck	JESE Ltd.	James Embedded Systems Engineering	O	MP
Larry Dunn	City Theatrical, Inc.	City Theatrical, Inc.	A	MP
Jerry Durand	Durand Interstellar, Inc.	Durand Interstellar, Inc.	O	CP
James Eade	PLASA	PLASA	O	G
Andrew Eales	Wellington Institute of Technology	Rhodes University	O	U
Joost van Eenbergen	ELC Lighting	ELC Lighting	O	MP
Bill Ellis	Candela Controls, Inc.	Candela Controls, Inc.	O	U
Paul K. Ericson	Syska Hennessy Group Lighting Design	Syska Hennessy Group Lighting Design	O	U
Jon R. Farley	Sixteenth Avenue Systems	Sixteenth Avenue Systems	O	CP
Martin Farnik	Robe Show Lighting s.r.o.	Robe Show Lighting s.r.o.	O	MP
Doug Fleenor	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	P	MP
Trevor Forrest	Helvar Lighting Control	Helvar Lighting Control	O	MP
Howard Forryan	Harting Ltd.	Harting KGAA	A	G
Douglas Franz	QVC Network	QVC Network	O	U
Steve Friedlander	Auerbach Pollock Friedlander	Auerbach Pollock Friedlander	O	U

Phillip M. Gallo	TMB	TMB	O	DR
Ed Garstkiewicz	Harting Inc., North America	Harting KGAA	P	G
Robert Goddard	Goddard Design Co.	Goddard Design Co.	P	MP
Jerry Gorrell	Theatre Safety Programs	Theatre Safety Programs	O	G
Tom Grimes	High End Systems, Inc.	Barco	O	MP
Dennis Grow	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	A	U
Josh Gubler	Josh Gubler	Josh Gubler	O	CP
Rob Halliday	Rob Halliday	Rob Halliday	O	U
Sean Harding	High Output, Inc.	High Output, Inc.	O	G
Mitch Hefter	Philips Controls (Royal Philips Electronics)	USITT	P	U
Bill Hewlett	Hewlett Electronics	Hewlett Electronics	O	CP
Dave Higgins	Pathway Connectivity Inc.	Pathway Connectivity Inc.	A	MP
Simon Hobday	Artistic Licence Engineering Ltd.	Alderamin Group	O	DE
Helge Hoffmann	JB Lighting	JB Lighting	O	MP
Jim Holladay	Luxence	Luxence	O	G
Wayne David Howell	Artistic Licence Engineering Ltd.	Alderamin Group	O	DE
John Huntington	City Tech, Ent Tech Department	I.A.T.S.E. Local 1	A	U
Osedum P. Igumbor	Dept. of Computer Science	Rhodes University	O	U
John Sondericker_III	Wybron, Inc.	Wybron, Inc.	O	MP
Sierk Janszen	Kiss Box	Ground Zero	O	U
Eric Johnson	High End Systems	Barco	P	MP
Rob Johnston	Interactive Technologies, Inc.	Interactive Technologies, Inc.	O	MP
Ed Jones	Edwin Jones Co., Inc.	Edwin Jones Co., Inc.	O	CP
Tyrone Mellon_Jr.	Lex Products Corp.	Lex Products Corp.	P	CP
Jussi Kallioinen	Eastway Sound & Lighting	Eastway Sound & Lighting	O	U
Tae Gyu Kang	ETRI	Electronics and Telecommunications Research Institute	O	MP
Ujjal Kar	Standard Robotics & Lighting	Standard Robotics & Lighting	O	G
Michael Karlsson	LumenRadio AB	LumenRadio AB	P	MP

Kirk D. Keen	Hollywood Lighting Services, Inc.	Hollywood Lighting, Inc.	O	DR
Insu Kim	ETRI	Electronics and Telecommunications Research Institute	O	MP
Peter Kirkup	Zero 88	Cooper Controls Ltd.	P	MP
Hiroshi Kita	Marumo Electric Co., Ltd.	Marumo Electric Co., Ltd.	O	MP
Phil Klapwyk	IATSE Local 891	IATSE Local 891	O	U
Paul Kleissler	City Theatrical, Inc.	City Theatrical, Inc.	P	MP
Mark T. Kraft	Lehigh Electric Products Co.	Lehigh Electric Products Co.	O	MP
Edwin S. Kramer	I.A.T.S.E. Local 1	I.A.T.S.E. Local 1	P	U
Ulrich Kunkel	E3 Engineering & Education for Entertainment GmbH	DIN, NVBF Committee	P	U
Roger Lattin	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	P	U
Hans Lau	LumenRadio AB	LumenRadio AB	A	MP
Michael Lay	Philips Color Kinetics	Royal Philips Electronics	P	MP
Rick Leinen	Leviton Manufacturing Co., Inc.	Leviton Manufacturing Co., Inc.	O	MP
Hans Leiter	ETC GmbH	Electronic Theatre Controls, Inc.	O	MP
Jon Lenard	Applied Electronics	Applied Electronics	O	MP
Maarten Lepelaars	eldoLED	eldoLED	O	MP
Sang-Kyu Lim	ETRI	Electronics and Telecommunications Research Institute	O	MP
Kevin Loewen	Pathway Connectivity Inc.	Pathway Connectivity Inc.	P	MP
Mark Manthei	Shure Inc.	Shure Inc.	O	G
Paul F. Mardon	Pulsar Ltd.	Pulsar Ltd.	O	MP
Alan Martello	Horizon Control Inc.	Horizon Control Inc.	O	MP
Mick Martin	ShowCAD Control Systems	ShowCAD Control Systems	O	MP
Paul Martin	State Automation Pty. Ltd.	State Automation Pty. Ltd.	O	MP
Paul Kenneth McEwan	Zero 88	Cooper Controls Ltd.	O	MP
John Mehlretter	Lehigh Electric Products Co.	Lehigh Electric Products Co.	O	MP
Tobin Neis	Barbizon Companies	Barbizon Companies	O	DR
Simon Newton	Simon Newton	Simon Newton	I	G

Maya Nigrosh	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	A	MP
Philip Nye	Engineering Arts	Engineering Arts	O	G
Lars F. Paape	Scientific Algorithms and Embedded Systems	Scientific Algorithms and Embedded Systems	O	U
Edward A. (Ted) Paget	Daktronics Automated Rigging Solutions	Daktronics Inc.	P	G
Fabiano Pina	Clay Paky S.P.A.	Clay Paky S.P.A.	O	MP
Gary Pritchard	LSC Lighting Systems (Aust) PTY Ltd	LSC Lighting Systems PTY Ltd	O	MP
Eric Proces	Eric Proces	Eric Proces	O	U
Torben Kaas Rasmussen	Martin Professional A/S	Martin Professional A/S	O	G
Charles Reese	Production Resource Group	Production Resource Group	P	DR
Charlie Richmond	Richmond Sound Design Ltd.	Richmond Sound Design Ltd.	O	CP
Bernardo Benito Rico	Ben-Ri Electronica S.A.	Ben-Ri Electronica S.A.	O	MP
Steve Roberts	Carr & Angier	Carr & Angier	O	G
Erwin Rol	Erwin Rol Software Engineering	Erwin Rol	O	G
Dietmar Rottinghaus	Connex GmbH	Connex GmbH	O	G
Alan M. Rowe	IATSE Local 728	I.A.T.S.E. Local 728	A	U
Richard Salzedo	Avolites Ltd.	Avolites Ltd.	O	MP
Yngve Sandboe	Sand Network Systems, Inc.	Sand Network Systems, Inc.	O	MP
Chuck Seifried	Phoenix Civic Plaza	City of Phoenix	O	U
John Sellers	AIM Northwest	AIM Northwest	O	G
Andrew Sherar	Lightmoves PLC	Lightmoves PLC	O	MP
Yehuda Shukram	Compulite Systems	Compulite Systems	O	MP
Sean Sill	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	A	MP
Storm K. Staley	Stormwerx	Stormwerx	O	U
Ralph Stillinger	Strand Lighting	Royal Philips Electronics	O	MP
Bart Swinnen	Luminex LCE	Luminex LCE	O	MP
Arnold Tang	Arnold Tang Productions	Arnold Tang Productions	O	U
Steve Terry	Electronic Theatre Controls	Electronic Theatre Controls, Inc.	A	MP
Geoffrey O. Thompson	Nortel Networks, Inc.	IEEE 802.3/Nortel Networks	O	G
David Timmins	Jands Electronics	Jands Electronics	O	MP

J. B. Toby	Avolites Ltd.	Avolites Ltd.	O	MP
Bob Toms	Catalyst Microsystems LLC	Catalyst Microsystems LLC	O	G
Robert Tooker	Robert Tooker	Robert Tooker	O	U
Tad Trylski	Tad Trylski	Tad Trylski	O	U
Stephen J. Tyrrell	Quantum Logic	Quantum Logic	O	MP
Tracy Underhill	4U Consulting	4U Consulting	O	G
Steve Unwin	Pulsar Ltd.	Pulsar Ltd.	O	MP
Ken Vannice	Leviton Manufacturing Co., Inc.	Leviton Manufacturing Co., Inc.	P	MP
Dominic Vincenty	TPS	Television Production Service	O	DR
Will Wagner	Carallon Ltd.	Carallon Ltd.	O	MP
John Warwick	Philips/Color Kinetics	Royal Philips Electronics	O	MP
Colin Waters	TMB	TMB	O	DR
Ralph Weber	ENDL Texas	ENDL Texas	O	G
Lars Wernlund	Lewlight	Lewlight	O	MP
Michael (Mike) Whetstone	Integrated Theatre, Inc.	Integrated Theatre, Inc.	O	CP
Peter Willis	Howard Eaton Lighting Ltd.	Howard Eaton Lighting Ltd.	P	CP
Loren Wilton	Showman Systems	Showman Systems	O	CP
Barbara Wohlsen	Barbara Wohlsen	Barbara Wohlsen	O	U
Jiantong Wu	Beijing Special Engineering Design & Research Institute	Beijing Special Engineering Design & Research Institute	O	G
Kehang Wu	Shure Inc.	Shure Inc.	O	G
David Yellin	LightMinded Industries, Inc.	LightMinded Industries, Inc.	O	MP
Larry Zoll	Zoll Design & Consulting, LLC	Zoll Design & Consulting, LLC	O	U

Key to codes:

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

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