

Minutes
Control Protocols Working Group
via WebEx
Wednesday 29 September 2021

Presiding chairperson: Michael Lay; Candela Controls

Recording secretaries: Richard Nix & Karl Ruling; ESTA

Members attending:

Paul Beasley; Walt Disney Company; P; U
Robert Bell; Acuity Brands Inc.; A; MP
Marcus Bengtsson; disguise; P; MP
Rene Berhorst; MA Lighting; P; MP
Eric Bloom; Westview Productions; P; DR
John David (Javid) Butler; HDR Consulting LLC; P; DE
Milton Davis; Doug Fleenor Design, Inc.; P; MP
Al DeMayo; LiteGear, Inc.; P; MP
Matt Didon; ON LX Limited; P; CP
Gary Douglas; Phospec Industries, Inc.; P; MP
Tucker Downs; Tucker Downs; O; G
Bill Ellis; Candela Controls, Inc.; P; DR
Stijn Geysen; Luminex Lighting Control Equipment; P; MP
Robert Goddard; Goddard Design Co.; P; MP
Mitch Hefter; USITT; P; U
Jon Hole; Signify; P; MP
Wayne David Howell; Artistic Licence Holdings; P; DE
John Huntington; I.A.T.S.E. Local 1; A; U
Sam Kearney; Electronic Theatre Controls, Inc.; P; MP
Jonathan Kemble; Jonathan Kemble ; O; G
Paul Kleissler; City Theatrical, Inc.; P; MP
Hans Lau; I.A.T.S.E. Local 728; P; U
Michael Lay; Candela Controls, Inc; A; DR
Michael Lichten; Electronic Theatre Controls, Inc.; A; MP
Kevin Loewen; Acuity Brands Inc.; P; MP
Jim Love; Tait Towers Manufacturing LLC; P; MP
Vangelis Manolis; AtlaBase Ltd.; O; CP
Bill McIntyre; Show Distribution Group, Inc.; P; CP
Daniel Murfin; Royal National Theatre; P; U
Maya Nigrosh; Sonos; P; MP
Jason Potterf; Cisco; P; MP
Jeremy Powell; Vectorworks, Inc; P; CP
Mark Primrose; CHAUVET & Sons Inc.; P; MP
Shawn Silverman; Lighting Infusion LLC; P; DE
Richard Thompson; Electronic Theatre Controls, Inc; O; MP
John Valus Jr.; Lex TM3; P; CP

1 Opening remarks

Michael Lay called the meeting to order at 11:03, welcoming everyone to the meeting, thanking them for their time, and reminding them to mute microphones when not speaking. He also said that Milton Davis will proctor the WebEx chat. He offered Scott Blair's regrets for not attending, and warned task group co-leaders they should be prepared to report in Blair's absence.

2 Anti-trust and patent statements

2.1 Reading of the anti-trust statement

Michael Lay read the following statement aloud to the assembly:

ESTA and its members take seriously their obligation to comply with all applicable antitrust laws. Therefore, during this meeting and during all ESTA events, all discussions will be limited to those subjects that are permitted by the antitrust laws. All members should refrain from any discussion or mention of competitively sensitive subjects such as the current or future prices charged for any member product or services, current or future marketing plans or strategies, and current or future costs, including employee salaries. There also must be no agreement on the suppliers or customers that members will or will not do business with or the markets in which members will conduct business.

Violations of the antitrust laws can have serious consequences. If you have any questions or concerns about anything that is discussed at an ESTA meeting, please bring your concern to ESTA management. An easy to read pamphlet describing the antitrust laws is available from the ESTA staff.

Karl Ruling displayed a copy of the easy-to-read pamphlet to his video camera. No anti-trust concerns were raised.

2.2 Reading of the call for patents

Michael Lay 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, patent application, copyright, or other protected 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 IP was reported.

3 Attendance and Membership

3.1 Requirements for membership

Michael Lay read the following statement aloud to the assembly:

Membership is open to all parties who are affected by the work of the group; membership in ESTA is not a requirement, but there is a \$100/person/year participation fee to help fund the costs of running the Technical Standards Program. Voting members are required to attend meetings and vote on letter ballots. Any principal member and alternate that both miss three consecutive meetings or that miss three consecutive letter ballots will have their membership status changed to observer. This action will be taken at the beginning of the first meeting after such inaction and will be recorded in the minutes of that meeting.

Michael Lay asked task group leaders to make sure regular task group participants are CPWG members.

3.2 Introduction of attendees

Milton Davis read the list of attendees from the Webex screen and people introduced themselves.

3.3 Determination of a quorum

Milton Davis noted that we have over 50% of the voting body present. This is more than needed for a quorum or to pass a vote needing a supermajority.

3.4 Processing of new membership and status change requests

3.4.1 Changes to observer status due to lack of attendance

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

Rene Berhorst; MA Lighting; MP; P
 Bill McIntyre; Show Distribution Group, Inc.; CP; P

Both were present, so there was no change in status.

3.4.2 New applications

As of 10 September 2021 the following application had been received:

Sam Smallman; Artificers; CP; applying as observer

Dan Murfin moved to accept Smallman's application. The motion was seconded and carried without objection or abstention.

Al DeMayo of Litegear asked to be moved to principal voting status. Hans Lau moved that his request be honored.

It was noted that Kino Flo Inc. has been purchased by Chauvet & Sons Inc., so ultimately the Kino Flo delegates represent the interests of Chauvet.

3.5 Consensus body

Delegate	Representing	Voting status	Int. cat.
Kevin Loewen	Acuity Brands Inc.	P	MP
Robert Bell	Acuity Brands Inc.	A	MP
Maurits van der Hoorn	Acuity Brands Inc.	A	MP
Wayne David Howell	Artistic Licence Holdings	P	DE
Bill Ellis	Candela Controls, Inc.	P	DR
Brent Boulnois	Candela Controls, Inc.	A	DR
Jim Ohrberg	Candela Controls, Inc.	A	DR
Michael Lay	Candela Controls, Inc	A	DR
Ali Alnajjar	Carallon Ltd.	P	MP
Mark Primrose	Chauvet & Sons Inc.	P	MP
Jim Bogdanowicz	Chauvet & Sons Inc.	A	MP
Jason Potterf	Cisco	P	MP
Paul Kleissler	City Theatrical, Inc.	P	MP
Marcus Bengtsson	disguise	P	MP
Milton Davis	Doug Fleenor Design, Inc.	P	MP
Ian Campbell	Doug Fleenor Design, Inc.	A	MP
Ulrich Kunkel	E3 Engineering & Education for Entertainment GmbH	P	U
Sam Kearney	Electronic Theatre Controls, Inc.	P	MP
Steve Terry	Electronic Theatre Controls, Inc.	A	MP
Michael Lichter	Electronic Theatre Controls, Inc.	A	MP
Robert Goddard	Goddard Design Co.	P	MP
John David (Javid) Butler	HDR Consulting LLC	P	DE
Peter Willis	Howard Eaton Lighting Ltd.	P	CP

Delegate	Representing	Voting status	Int. cat.
Edwin S. Kramer	I.A.T.S.E. Local 1	P	U
John Huntington	I.A.T.S.E. Local 1	A	U
Hans Lau	I.A.T.S.E. Local 728	P	U
Alan M. Rowe	I.A.T.S.E. Local 728	A	U
Matthew Ardine	I.A.T.S.E. Local 728	A	U
David Kane	I.A.T.S.E. Local 728	A	U
John Valus Jr.	Lex TM3	P	CP
Al DeMayo	LiteGear, Inc.	P	MP
Shawn Silverman	Lighting Infusion LLC	P	DE
Michael Karlsson	LumenRadio AB	P	MP
Stijn Geysen	Luminex Lighting Control Equipment	P	MP
Rene Berhorst	MA Lighting	P	MP
Leroy "Tripp" Oliver, III	Mainstage Theatrical Supply, Inc.	P	DR
Scott M. Blair	Megapixel	P	CP
Matt Didon	ON LX Limited	P	CP
Simon Newton	Open Lighting Project	P	G
Gary Douglas	Phospec Industries, Inc.	P	MP
Daniel Murfin	Royal National Theatre	P	U
Bill McIntyre	Show Distribution Group, Inc.	P	CP
Jon Hole	Signify	P	MP
Maya Nigrosh	Sonos	P	MP
Jim Love	Tait Towers Manufacturing LLC	P	MP
Julian Hoare	Tait Towers Manufacturing LLC	A	MP
Mitch Hefter	USITT	P	U
Jeremy Powell	Vectorworks, Inc	P	CP
Paul Beasley	Walt Disney Company	P	U
Eric Bloom	Westview Productions	P	DR

Total votes possible	36	
Interest categories subtotals	6	CP
	3	DE
	3	DR
	1	G
	17	MP
	6	U

Voting Status key: P = Principal voter, A = Alternate voter, I = Individual voter
Interest Category key: MP = Mass-market producer, CP = Custom-market producer,
DR= Dealer or rental company, U = User, G = General interest, DE = Designer

4 Approval of the minutes from the last meeting

See *CPmin07-2021_DRAFT.pdf*

Javid Butler moved to accept the minutes as written. The motion was seconded. The motion was approved without objection or abstention.

5 Approval of agenda

Javid Butler moved to accept the draft agenda as written. The motion was seconded. The motion was approved without objection or abstention.

6 Old Business

6.1 Standards, Guides & Recommended Practice Maintenance

This is a placeholder in the agenda, so we don't forget to maintain them. Documents prefaced with an asterisk () are on the agenda elsewhere for reports or action.*

ANSI E1.3 – 2001 (R2021), 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. (Revision, reaffirmation or withdrawal by 20 May 2026)

ANSI E1.11 – 2008 (R2018), Entertainment Technology - USITT DMX512-A, Asynchronous Serial Digital Data Transmission Standard for Controlling Lighting Equipment and Accessories. (Revision, reaffirmation, or withdrawal by 31 May 2023)

ANSI E1.17 – 2015 (R2020) Entertainment Technology - Architecture for Control Networks (ACN) (Revision, reaffirmation, or withdrawal by 23 March 2025)

*BSR E1.20 - 20xx, Remote Device Management over USITT DMX512. (In public review cycle)

ANSI E1.27-1 – 2006 (R20121), Entertainment Technology - Standard for Portable Control Cables for Use with USITT DMX512/1990 and E1.11 (DMX512-A) Products. (Revision, reaffirmation or withdrawal by 20 May 2026)

ANSI E1.27-2 – 2009 (R2019), 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 by 21 July 2024)

ANSI E1.30-1 – 2010 (R2016), EPI 23, Device Identification Subdevice. (Revision, reaffirmation or withdrawal by 20 May 2026)

ANSI E1.30-3 – 2009 (R2019), EPI 25, Time Reference in ACN Systems Using SNTP and NTP. (Revision, reaffirmation or withdrawal by 21 July 2024)

ANSI E1.30-4 – 2010 (R2021), EPI 26, Device Description Language (DDL) Extensions for DMX512 and E1.31 Devices. (Revision, reaffirmation, or withdrawal by 27 May 2026)

ANSI E1.30-10 – 2009 (R2019), EPI 32, Identification of Draft Device Description Language Modules. (Revision, reaffirmation or withdrawal by 21 July 2024)

ANSI E1.30-11 - 2019, EPI 33, Transport of root PDUs over TCP (Published on 25 June 2019. Revision, reaffirmation or withdrawal by 22 March 2024)

ANSI E1.31 - 2018, Lightweight streaming protocol for transport of DMX512 using ACN (Revision, reaffirmation, or withdrawal by 31 August 2023)

*ANSI E1.33 – 2019, Transport of ANSI E1.20 (RDM) in an E1.31 environment (Revision, reaffirmation or

withdrawal by 28 May 2024)

ANSI E1.37-1 – 2012 (R2017), Additional Message Sets for ANSI E1.20, Remote Device Management. (Revision, reaffirmation, or withdrawal by 18 May 2022)

ANSI E1.37-2 – 2015 (R2021), Additional Message Sets for ANSI E1.20 (RDM) – Part 2, IPv4 & DNS Configuration Messages. (Revision, reaffirmation, or withdrawal by 24 June 2026)

*BSR E1.37-4 – 201x, Remote Device Management over DMX512 Networks – File Transfer Control with Firmware Upload capabilities.(currently in public review cycle)

*BSR E1.37-5 – 20xx, General Purpose Messages for ANSI E1.20 RDM (currently in public review cycle)

ANSI E1.37-7 - 2019, Additional Message Sets for ANSI E1.20 (RDM) - Gateway and Splitter Configuration (Published on 05 July 2019. Revision, reaffirmation or withdrawal by 04 May 2024)

*BSR E1.59, Object Transform Protocol (Published 28 January 2021. Now in revision.)

Application Guide for ANSI E1.3 - 2001, Lighting Control Systems 0 to 10V Analog Control Specification

Recommended Practice for Ethernet Cabling Systems in Entertainment Lighting Applications

Supplement to the Recommended Practice for Ethernet Cabling in Entertainment Lighting Applications

Withdrawn standards

E1.45 - 2013 (W2015), Unidirectional Transport of IEEE 802 data frames over ANSI E1.11 (DMX512A)

E1.30-7 - 2009 (W2016), EPI 29, Allocation of Internet Protocol Version 4 Addresses to ACN Hosts

6.2 BSR E1.20 – 201x, Remote Device Management over USITT DMX512

Wayne Howell/Scott Blair. Reflectors: e1.20@esta.org, rdmtg_standards@esta.org

Wayne Howell reported on regular fortnightly meetings, which is a schedule that is working. They are about 30% of the way through the comment resolutions.

6.3 BSR E1.37-4, Remote Device Management over DMX512 Networks – File Transfer Control with Firmware Upload capabilities

Reflector: e137@esta.org, a general E1.37-x reflector.

The last public review ended 9 April 2018. Peter Willis is the task group leader.

Peter Willis was not present. There was no comment resolution progress report. Michael put out another call for a task group leader to take over the project.

E1.37-4 was discussed further as part of item 6.11.

6.4 BSR E1.37-5, General Purpose Messages for ANSI E1.20 RDM

Scott Blair/Simon Newton. Reflector: e137@esta.org, a general E1.37-x reflector.

See [Summary_E1-37-5_5thPublicReviewComments.pdf](#)

Maya Nigrosh reported they are making progress. The thorny comments are about the parameter meta-data language.

It was reported that Sam Smallman (new observer member) is working on implementing the last draft version. Maya Nigrosh will reach out to him to work on this.

6.5 BSR E1.37-8, Additional Message Sets for ANSI E1.20 (RDM) – IPv6 & Improved IPv4 Configuration Messages.

Scott Blair/Dan Murfin. e137-8@esta.org

Dan Murfin reported that they are making progress, but not much since their last meeting in July. He said he would contact Scott after this meeting for a status report.

6.6 BSR E1.68 Recommended Practice to address DMX512 compliance and interoperability

Javid Butler/Wayne Howell. Reflector: ProtocolsCompliance@esta.org.

Javid Butler reported that they are working on edits. He thanked Rosemary Heath of Goddard Design for editing the document. He sees some cleanup being needed, but it should be ready for presentation to the working group at the January meeting.

6.7 BSR E1.63 Network Advertisement of Entertainment Protocols

Jason Potterf/Kevin Loewen. Reflector: NAEP@esta.org

Jason Potterf reported no progress. He blamed the NFPA in particular for taking all his available time for the last two months.

6.8 BSR E1.73, Next Generation Entertainment Control Model: Uniform Device Representation (UDR)

Dan Murfin/Sam Kearney: progress report. Reflector: NextGenLibrary@esta.org

Dan Murfin reported that they have identified the problems to solve, and identified most of the “scalar items” that need to be transported. He said they will need a “fixture library” to support the protocol. He described the project as “a mountain of work.” He asked for volunteers to help.

6.9 & 6.10 Next Gen Study Group (Overall) and Next Gen Transport study group

Jason Potterf/Maya Nigrosh: progress report. Reflectors: nextgencontrolprotocol@esta.org and NextGenTransport@esta.org

Jason Potterf reported on the overall goals of the Next Gen project, including transporting color data and breaking away from limited “universes” of control, so things can simply be plugged together and the system would work out how to talk to it all.

6.11 Protocol Security study group—new project proposal

Kevin Loewen/Paul Beasley: progress report. Reflector: CPWG_Secure@esta.org

See [TSP_ProjectRequest_SecureStreamingAuthentication.pdf](#).

Kevin Loewen moved that we accept the project request. The motion was seconded. Loewen said that the project is to secure uni-directional streaming protocols (e.g. sACN) by providing a secure wrapper. Support for bi-directional protocols would come later.

Gary Douglas said he thought this effort should be all-encompassing, applicable to E1.33, RDM, and firmware, stating that he thought security was a “giant, gaping hole” in our industry. He said that E1.33, E1.37 and RDM were all inter-related. Kevin Loewen said he did not see any way to accomplish such an all-encompassing project. Sam Kearney said he fundamentally disagreed with a supposition that all three were so intertwined, since for example they are working on different layers. Karl Ruling suggested that tying this new project to E1.37-4, which is not making any progress, likely would delay both.

There was discussion about the importance of secure firmware and whether hardware security should be part of this particular streaming protocol security project.

The project as described, without expansion to encompass all security issues, was approved. Gary Douglas voted against the motion. Bob Goddard abstained. The rest voted in favor. The motion now moves to the TSC.

E1.37-4 discussion:

Mark Primrose noted that the E1.37-4 project is moribund. We're talking like it's an on-going project, but it is going nowhere.

In discussion it was pointed out that the one-to-many upgrade method in the draft is very complicated. One-to-one is much simpler.

There was discussion of how to move forward with the standard: continue in the direction it is going, simplify it, or abandon it because the industry has worked out its own proprietary ways of doing firmware upgrades. The

consensus was that a standardized way to do firmware upgrades that is not manufacturer-specific is needed.

Michael Lay directed the E1.20 task group to consider ways of moving forward with the file transfer protocol that is the goal of E1.37-4.

6.12 GitHub study group

Jason Potterf. Reflector: CPWG_github_study@esta.org.

Potterf reported that this is sidelined for now. GitHub won't work with ESTA's standards development procedures,

6.13 IEEE report on single-pair Ethernet

Jason Potterf to report on IEEE 802.3cg progress.

There are two study groups:

- Improve point-to-point
- Multi-drop power and data is turning out to be not very user friendly. More likely to be a system of multiple point-to-point connections, daisy-chained.

6.14 ANSI E1.33 – 2019, Transport of ANSI E1.20 (RDM) in an E1.31 environment

Scott Blair/Sam Kearney. Reflector: e133@esta.org

Sam Kearney reported on the errata sheet progress. Most of the errors are typographical, but one proposed change to LLRP discovery would make it more efficient.

6.15 BSR E1.59 - 2021, Object Transform Protocol

Dan Murfin and Maya Nigrosh. Reflector: e159@esta.org

Dan Murfin reported on progress with Marcus Bengtsson being very helpful in gathering camera manufacturer data to make sure it can carry the data needed. He anticipates a completed revised draft by January.

6.16 Task group leader coordination

Scott Blair is the official scheduling liaison for meetings between the CPWG task groups and meeting schedulers. Frances Thompson handles face-to-face meetings when we meet at an ESTA event. Richard Nix handles meetings scheduled using ESTA's WebEx account—**only** ESTA's WebEx account. Task groups are free to use their own WebEx accounts, Zoom, Teams, Meet, or something else. Frances Thompson is retiring at the end of 2021. Laura Hoepker is taking over Thompson's role.

BSR E1.20: Scott Blair and Wayne Howell

E1.37-x: Video Walls Scott Blair

BSR E1.37-2: Simon Newton (No work being done, said Scott.)

BSR E1.37-4: Peter Willis

BSR E1.37-5: Scott Blair and Simon Newton

BSR E1.37-6: Simon Newton (pretty much abandoned, said Scott.)

BSR E1.37-8 Scott Blair and Dan Murfin

BSR E1.59: Dan Murfin and Maya Nigrosh

E1.61 NAEP: Jason Potterf and Kevin Loewen

E1.68: Javid Butler and Wayne Howell

E1.73: Dan Murfin and Sam Kearney

Next Gen Study Group: Jason Potterf and Maya Nigrosh

Plugfest Marketing Task Group: Michael Lay

NAMM Education Task Group: Milton Davis

Next Gen Transport study group: Maya Nigrosh and Jason Potterf

Protocol Security study group: Kevin Loewen and Paul Beasley

GitHub study group: Jason Potterf

7 New business

7.1 NAMM 2022 seminars

NAMM 2022 will be June 3-5 in Anaheim. Milton Davis thanked those who already volunteered to do educational

seminars. He asked for other volunteers; there are schedule holes to be filled.

7.2 Other new business

None.

8 Other business and announcements

8.1 National Electrical Code (NEC) update

Jason Potterf and Mitch Hefter.

Mitch Hefter noted the rewrite of Article 530, but moving definitions to a definitions article in the front caused the lost of some of the needed definitions.

Jason Potterf reported on some of the problems with class 2 control wiring, trying to keep out requirements that it all (Ethernet patch cords included) be in conduit.

8.2 Illuminating Engineering Society update

Bill Ellis and Mitch Hefter.

Mitch Hefter said the IES has lots of projects. He's working on the controls narrative project, with a meeting on that topic later this week.

8.3 Plugfests

8.3.1 Europe

Wayne Howell reported that planning is underway for a plugfest early next year. It probably will be in Lille, France. A lot of the trade show calendar has changed, so they are working on finding a suitable set of dates that doesn't conflict with a major show.

8.3.2 USA

Michael Lay reported that they had been planning for a plugfest at our meetings in Texas in the summer, but now we will be meeting in California in June, not in Texas. He will reach out to the plugfest group to see what can be done.

8.4 Above & Beyond Awards

Information on the Above & Beyond Awards is available at http://tsp.esta.org/tsp/news/award_recipients.html.

9 Schedule for future meetings

The meeting schedule shall be posted at <http://www.esta.org/ESTA/meetings.php>. The winter meetings are not scheduled, but they will be around the week of January 17 and will be via WebEx.

The Winter NAMM show, at which we were supposed to meet face-to-face, has been rescheduled to June 3-5, 2022 and is being combined with the Summer NAMM Show. It will be in Anaheim.

Mitch Hefter reported the USITT Conference in March will be a hybrid of face-to-face and virtual events.

10 Adjournment

Michael Lay asked if there was any further business to discuss. None was offered.

Michael Lay gave a heart-felt thank you to everyone for their work during the past year. He noted their willingness to work together to come to consensus.

Michael Lay declared the meeting adjourned at 12:30.

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Control Protocols Working Group members and contact information as of 6 October 2021

Delegate	Representing	Voting status	Int. cat.
Cameron Affleck	Cameron Affleck	O	U
Christian Allabauer	Christian Allabauer	O	G
Ali Alnajjar	Carallon Ltd.	P	MP
Matthew Ardine	I.A.T.S.E. Local 728	A	U
Benjamin Eagen Arrigo	Benjamin Eagen Arrigo	O	U
Tim Bachman	Altman Lighting	O	MP
Nick Ballhorn-Wagner	Electronic Theatre Controls, Inc.	O	MP
Robert Barbagallo	Solotech Inc.	O	U
Tom Barthel-Steer	Electronic Theatre Controls, Inc	O	MP
Paul Beasley	Walt Disney Company	P	U
Robert Bell	Acuity Brands Inc.	A	MP
Marcus Bengtsson	disguise	P	MP
Justin Bennett	University of the Incarnate Word	O	U
Rene Berhorst	MA Lighting	P	MP
Andrew Berry	X-Laser	O	MP
Scott M. Blair	Megapixel	P	CP
Eric Bloom	Westview Productions	P	DR
Jim Bogdanowicz	CHAUVET & Sons Inc.	A	MP
Pete Borchetta	Altman Lighting	O	MP
Brent Boulnois	Candela Controls, Inc.	A	DR
Justyn Butler	JBOTS	O	CP
John David (Javid) Butler	HDR Consulting LLC	P	DE
Ian Campbell	Doug Fleenor Design, Inc.	A	MP

Control Protocols Working Group members and contact information as of 6 October 2021

Delegate	Representing	Voting status	Int. cat.
Jean-Francois Canuel	A.C. Lighting Ltd.	O	CP
Steve Carlson	High Speed Design, Inc.	O	MP
Yongzhi Chen	Guangzhou Haoyang Electronic Co., Ltd.	O	CP
Anthony Chiappone	Chauvet Lighting	O	MP
Martin Chisnall	Martin Chisnall	O	U
Jon Chuchla	Audio Visual Systems, Inc.	O	G
Gareth Conner	Creative Conners, Inc.	O	MP
Fraser Connolly	Obsidian Controls	O	DE
Chris Conti	PRG	O	DR
Milton Davis	Doug Fleenor Design, Inc.	P	MP
Jeremy Day	Lumenpulse Group	O	MP
Al DeMayo	LiteGear, Inc.	P	MP
Steve Denim	Electronic Theatre Controls, Inc.	O	MP
Larry Dew	W.A. Benjamin Electric Co.	O	DE
Matthew Dews	Electronic Theatre Controls, Inc	O	MP
Matt Didon	ON LX Limited	P	CP
Rich Dionne	Purdue University	O	DE
Gary Douglas	Phospec Industries, Inc.	P	MP
Tucker Downs	Tucker Downs	O	G
Hamish Dumbreck	James Embedded Systems Engineering	O	MP
James Eade	ABTT	O	G
Bill Ellis	Candela Controls, Inc.	P	DR
Paul K. Ericson	Stantec	O	DE

Control Protocols Working Group members and contact information as of 6 October 2021

Delegate	Representing	Voting status	Int. cat.
Trevor Forrest	Helvar Lighting Control	O	MP
Mike Garl	Mike Garl Consulting LLC	exf	
Stijn Geysen	Luminex Lighting Control Equipment	P	MP
Robert Goddard	Goddard Design Co.	P	MP
Nicolas Goerg	Rosco Laboratories	O	CP
Sean Goossen	LiteGear, Inc.	O	MP
Jerry Gorrell	Theatre Safety Programs	O	G
Erin Grabe	ESTA	exf	G
Matt Halberstadt	Electronic Theatre Controls, Inc	O	MP
Sean Harding	Port Lighting Systems	O	G
Nick Harper	Nick Harper	O	G
Robert Haycock	UC Berkeley	O	U
Mitch Hefter	USITT	P	U
Julian Hoare	Tait Towers Manufacturing LLC	A	MP
Jon Hole	Signify	P	MP
Maurits van der Hoorn	Acuity Brands Inc.	A	MP
Wayne David Howell	Artistic Licence Holdings	P	DE
John Huntington	I.A.T.S.E. Local 1	A	U
Leroy "Tripp" Oliver, III	Mainstage Theatrical Supply, Inc.	P	DR
Quinten James	QtoCue Lighting Design	O	U
Eric Johnson	Eric Johnson	O	G
Rob Johnston	Interactive Technologies, Inc.	O	MP
David Kane	I.A.T.S.E. Local 728	A	U

Control Protocols Working Group members and contact information as of 6 October 2021

Delegate	Representing	Voting status	Int. cat.
Michael Karlsson	LumenRadio AB	P	MP
Sam Kearney	Electronic Theatre Controls, Inc.	P	MP
Jonathan Kemble	Jonathan Kemble	O	G
Chris Kennedy	Chauvet Lighting	O	MP
Bill Kirby	Crescit Software, Inc.	O	G
Paul Kleissler	City Theatrical, Inc.	P	MP
Lucas Korytkowski	Insight Lighting	O	MP
Edwin S. Kramer	I.A.T.S.E. Local 1	P	U
Christian Krueger	Blizzard Lighting LLC	O	MP
Ulrich Kunkel	E3 Engineering & Education for Entertainment GmbH	P	U
Jason Kyle	JPK Systems Ltd.	O	MP
Hans Lau	I.A.T.S.E. Local 728	P	U
Michael Lay	Candela Controls, Inc	A	DR
Hans Leiter	Electronic Theatre Controls, Inc.	O	MP
Jon Lenard	Applied Electronics	O	MP
Michael Lichter	Electronic Theatre Controls, Inc.	A	MP
Kevin Loewen	Acuity Brands Inc.	P	MP
Jim Love	Tait Towers Manufacturing LLC	P	MP
Rob Love	Insight Lighting	O	MP
Vangelis Manolis	AtlaBase Ltd.	O	CP
Kevin Matz	Company 235, LLC	O	U
David McCulloch	David McCulloch	O	U
Bill McIntyre	Show Distribution Group, Inc.	P	CP

Control Protocols Working Group members and contact information as of 6 October 2021

Delegate	Representing	Voting status	Int. cat.
John Mehlretter	Lehigh Electric Products Co.	O	MP
Daniel Murfin	Royal National Theatre	P	U
John Musarra	John Musarra	O	U
Simon Newton	Open Lighting Project	P	G
Maya Nigrosh	Sonos	P	MP
Richard J. Nix	ESTA	exf	G
Jim Ohrberg	Candela Controls, Inc.	A	DR
Jaxon Patterson	Insight Lighting	O	MP
Soren Sterdorff Peglau	Brother, Brother and Sons	O	MP
Jason Potterf	Cisco	P	MP
Jeremy Powell	Vectorworks, Inc	P	CP
Mark Primrose	CHAUVET & Sons Inc.	P	MP
Gary Pritchard	LSC Control Systems Pty Ltd	O	MP
Charles Reese	Production Resource Group	O	DR
Alan M. Rowe	I.A.T.S.E. Local 728	A	U
Karl G. Ruling	ESTA	exf	G
Yngve Sandboe	Sand Network Systems, Inc.	O	MP
Nicolai Gubi Schmidt	Nicolai Gubi Schmidt	O	U
Ford Sellers	Chauvet Lighting	O	MP
Shawn Silverman	Lighting Infusion LLC	P	DE
Sam Smallman	Artificers	O	CP
Bart Swinnen	Luminex Lighting Control Equipment	O	MP
Steve Terry	Electronic Theatre Controls, Inc.	A	MP

Control Protocols Working Group members and contact information as of 6 October 2021

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Richard Thompson	Electronic Theatre Controls, Inc	O	MP
Christopher B. Tilton	About the Stage, LLC	O	DE
Robert Timmerman	Signify	O	MP
Tracy Underhill	Triple C Lighting & Controls	O	G
John Valus Jr.	Lex TM3	P	CP
Carlo Venturati	Clay Paky S.P.A.	O	MP
Will Wagner	Carallon Ltd.	O	MP
Colin Waters	TMB	O	DR
Ralph Weber	ENDL Texas	O	G
Peter Willis	Howard Eaton Lighting Ltd.	P	CP
Loren Wilton	Showman Systems	O	CP
David Yellin	Sumolight GmbH	O	MP
Jeong Sik Yoo	Ghost LX	O	DE

Voting Status key: P = Principal voter, A = Alternate voter, I = Individual voter; O = Observer (non-voter); exf = ex officio, non-voting

Interest Category key: MP = Mass-market producer, CP = Custom-market producer, DR= Dealer or rental company, U = User, G = General interest, DE = Designer