

Control Protocols Working Group

Minutes

Wednesday 19 January 2022

Chairpersons: Michael Lay and Milton Davis, with Davis presiding

Recording secretaries:

Karl Ruling and Richard Nix (ESTA)

Attendees:

Christian Allabauer; Christian Allabauer; O; G
Ali Alnajjar; Carallon Ltd.; P; MP
Benjamin Eagen Arrigo; Benjamin Eagen Arrigo; O; U
Paul Beasley; Walt Disney Company; P; U
Rene Berhorst; MA Lighting; P; MP
Scott M. Blair; Megapixel; P; CP
Eric Bloom; Westview Productions; P; DR
John David (Javid) Butler; HDR Consulting LLC; P; DE
Anthony Chiappone; Chauvet Lighting; O; MP
Milton Davis; Doug Fleenor Design, Inc.; P; MP
Al DeMayo; LiteGear, Inc.; P; MP
Larry Dew; W.A. Benjamin Electric Co.; O; DE
Matt Didon; ON LX Limited; P; CP
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
Matt Halberstadt; Electronic Theatre Controls, Inc; O; MP
Mitch Hefter; USITT; P; U
Jon Hole; Signify; P; MP
Wayne David Howell; Artistic Licence Holdings; P; DE
Leroy "Tripp" Oliver, III; Mainstage Theatrical Supply, Inc.; P; DR
John Valus Jr.; Lex TM3; P; CP
Sam Kearney; Electronic Theatre Controls, Inc.; P; MP
Jonathan Kemble; Jonathan Kemble ; O; G
Chris Kennedy; Chauvet Lighting; O; MP
Edwin S. Kramer; I.A.T.S.E. Local 1; P; U
Ulrich Kunkel; E3 Engineering & Education for Entertainment GmbH; P; U
Michael Lay; Candela Controls, Inc; A; DR
Michael Lichter; 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
Andrew Mulkey; Candela Controls, Inc.; A; DR
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
Jake Rhodes; Altman Lighting; A; MP
Sam Smallman; Artificers; O; CP
Richard Thompson; Electronic Theatre Controls, Inc; O; MP
Sebastian Wissmann; Inoage GmbH; O; MP
Liang Zhiguang; Guangzhou Haoyang Electronic Co., Ltd.; P; CP

1 Opening remarks

Milton Davis called the meeting to order at 11:03, welcoming everyone to the meeting. He reminded everyone to please mute their microphones when not speaking.

2 Anti-trust and patent statements

2.1 Reading of the anti-trust statement

Milton Davis 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 held up the pamphlet in front of his camera for all camera enabled attendees to see. No anti-trust concerns were raised.

2.2 Reading of the call for patents

Milton Davis 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.

Nothing was revealed.

3 Attendance and Membership

3.1 Requirements for membership

Milton Davis 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.

3.2 Introduction of attendees

Milton Davis called on each attendee to introduce themselves.

3.3 Determination of a quorum

Milton Davis noted that we have a quorum. He reminded alternates and principal voters that only one may vote: one vote per voting entity.

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:

Ulrich Kunkel; E3 Engineering & Education for Entertainment GmbH; User
Simon Newton; Open Lighting Project; G

Ulrich Kunkel was present, so his voting status was maintained.

Simon Newton was not present, so his status was changed to observer.

3.4.2 New applications

As of 15 December 2021 the following application had been received:

Pete Borchetta; Altman Lighting; P; MP (change of voting status from observer to principal)
Jake Rhodes; Altman Lighting; A; MP
Andrew Mulkey; Candela Controls, Inc.; A; DR
Liang Zhiguang; Guangzhou Haoyang Electronic Co., Ltd.; P; CP
Sebastian Wissmann; Inoage GmbH; O; MP

Scott Blair moved to approve the applications and status change requests. The motion was seconded and carried unanimously.

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
Pete Borchetta	Altman Lighting	P	MP
Jake Rhodes	Altman Lighting	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
Andrew Mulkey	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

Delegate	Representing	Voting status	Int. cat.
Steve Terry	Electronic Theatre Controls, Inc.	A	MP
Michael Lichter	Electronic Theatre Controls, Inc.	A	MP
Robert Goddard	Goddard Design Co.	P	MP
Liang Zhiguang	Guangzhou Haoyang Electronic Co., Ltd.	P	CP
John David (Javid) Butler	HDR Consulting LLC	P	DE
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
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
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	37	
Interest categories subtotals	7	CP
	3	DE
	3	DR
	0	G
	18	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 *CPmin09-2021_DRAFT.pdf*

Mitch Hefter moved to approve the minutes as written. The motion was seconded, and carried unanimously.

5 Approval of agenda

Javid Butler moved to approve the agenda. The motion was seconded, and carried unanimously.

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 comment resolution cycle from first public review in 2018)

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

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 that the task group has been meeting regularly, making good progress, and is expecting to have something to bring to the working group in time for consideration at the next meeting. He anticipates it will require another public review.

There was brief discussion about the time frame between this and the next meeting being very short.

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.

The project was assigned to the E1-20, RDM task group at the September 2021 meeting.

Wayne Howell reported that the RDM task group had reviewed the document, and concluded the following

general points:

- There is a need in the industry for a firmware upload standard.
- The one-to-many model is impeding progress. The project should be reformed to address one-to-one uploads initially, yet without precluding a one-to-many approach in a future revision.
- The last version that was one-to-one firmware upload will be studied to see how it might be reworked to be effective. It may be a useful model.

Paul Beasley and Larry Dew have offered to co-chair a new task group for the project. The RDM task group's meeting slots will also soon be available to help move the project forward.

Howell also said that he'd spoken to Peter Willis, who reluctantly agreed with the general assessment, acknowledging that he has limited bandwidth to take this much further.

Dan Murfin said this is important to him: he has to do firmware uploads frequently, and every device has a different method. A standard would be useful. Tucker Downs said that it is important to have something that works as opposed to a standard that doesn't exist. Jason Potterf agreed, this is an important effort, and that the one-to-many concept can always be reconsidered at a future date. Christian Allabauer also concurred that this is important to many people across the industry.

Javid Butler moved to rescope the E1.37-4 effort, as discussed, to cover one-to-one firmware uploads. The motion was seconded. There was further discussion about the importance of this, in general. The motion carried without objection or abstentions.

Michael Lay appointed Paul Beasley and Larry Dew as co-leaders of the new task group, He thanked everyone for their hard work in arriving at these conclusions. He reminded the new task group that their first order of business is to close out the public review comments from the last review. The response should be simple: "We're completely overhauling the draft standard."

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](#)

Scott Blair reported, with apologies for no progress. There are still some outstanding comments, and he asked for assistance resolving the JSON aspects of the review comments. Maya Nigrosh said she would help. Sam Smallman also offered to help.

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

Scott Blair reported no progress, but he now has more time available to work on this.

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

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

Javid Butler thanked Goddard Design staff for editorial help. He plans to have a document for the March meeting. The deadline 17 of February to meet the two-week rule would be tight, but Michael Lay reminded people that we could have an on-line meeting after USITT to move something forward but before our scheduled June meeting

6.7 BSR E1.63 Network Advertisement of Entertainment Protocols

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

Jason Potterf reported no progress.

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 they are making good progress. They have about 40 pages of draft already, with more outline topics yet to cover. A bare-bones draft might be available for an early working group informal review by

mid-summer.

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 they are making progress, and are now addressing protocol stacks.

6.11 BSR E1.77, Secure Authentication for ESTA Streaming Protocols

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

Kevin Loewen reported that they have made some progress, and have agreed on the authentication methods. He needs to finish the draft, which he thought might happen within a month or two.

6.12 GitHub study group

Jason Potterf. Reflector: CPWG_github_study@esta.org.

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

Jason Potterf reported, they have concluded that the current lump of issues outweigh the benefits, but they are using it for some internal task group efforts. He said they think it will still be useful, but it has taken a back seat to other more urgent projects.

6.13 IEEE report on single-pair Ethernet

Jason Potterf to report.

Jason Potterf reported their group recently concluded that full-duplex with PoE were going to be impossible to achieve due to signal integrity issues. However, there is new technology that looks promising. He recapped various cable and connector preferences. There is talk of simply running power on another pair of wires.

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

Scott Blair gave a report on the errata sheet progress. He had distributed some notes, but has not yet received feedback. He thinks they need to actively solicit for feedback on the errata. He also suggested that absence of feedback might indicate a lack of implementation. Sam Kearney agreed, and said they might just need to wait for the industry to catch up.

6.15 BSR E1.59 - 2021, Object Transform Protocol

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

Dan Murfin reported slow progress, but progress. They need a small amount of information regarding camera implementation, and have plans to meet with Marcus Bengtsson of disguise to make sure they have all the relevant data covered. There are more implementations of the existing E1.59, and they work well.

6.16 Task group leader coordination

*Scott Blair is the official scheduling liaison for meetings between the CPWG task groups and meeting schedulers. Laura Hoepker (laura.hoepker@esta.org) 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.*

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: Paul Beasley and Larry Dew

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

Milton Davis reported that NAMM's on-line Believe in Music opens tomorrow. John Huntington is presenting on 50 years of show technology and its maturation tomorrow.

Davis solicited for presentations at June's NAMM Show in Anaheim. Send suggestions to milton@dfd.com. Michael Lay said these presentations help bolster NAMM's financial support of our efforts.

7.2 Other new business

None.

8 Other business and announcements

8.1 National Electrical Code (NEC) update

Jason Potterf, Mitch Hefter and Bill Ellis

Mitch Hefter reported on the conclusion of balloting. Article 530 has been revised largely with input from Alan Rowe. Mitch Hefter reported he is now Steve Terry's alternate on Panel 18.

Potterf described the arguments against adding cybersecurity in building codes. He said it makes no sense to think things are made secure when a building is built, before anyone actually installs any of their IT equipment, or that somehow this cybersecurity is now fixed for years.

Potterf reported that there is a new Class 4 wiring classification, which allows unlimited voltage and current in cable trays if there is active monitoring at both ends.

8.2 Illuminating Engineering Society (IES) update

Bill Ellis and Mitch Hefter.

Ellis reported RP30 is being updated and will reference TM-30 documents rather than duplicating the text.

Hefter said that the controls narrative document should be ready for public review soon.

8.3 Plugfests

8.3.1 Europe

Wayne Howell reported the Plugfest will return to Lille France on 30-31 March, but the planning committee is meeting at the end of January to decide if it is still viable to continue forward with the event. France is starting to come out of lockdown now, so he anticipates no delays.

8.3.2 USA

Michael Lay reported. ESTA staff are still trying to find a location for the Fall meetings. Stay tuned.

8.4 Above & Beyond Awards

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

Awards were presented to Dan Murfin for his work on NextGen, and to Maya Nigrosh for her editorial efforts.

9 Schedule for future meetings

The meeting schedule shall be posted at <http://www.esta.org/ESTA/meetings.php>. Meetings will be scheduled

around the time of the USITT Conference in March. They may be face-to-face, but will have WebEx teleconferencing support in any case.

Michael Lay asked for a show of hands of those who plan to attend the USITT Conference in person. About eight. Jason Potterf suggested we should send out an email poll to see who is planning to attend.

Michael Lay offered praise to Frances Thompson who has retired. She was invaluable for organizing meetings and trade shows, and countless other things that made our meetings and events run smoothly. He had sent a thank you to her on behalf of the CPWG. She wrote back a thanks.

10 Adjournment

The agenda business completed, with no further business brought forth, Milton Davis adjourned the meeting at 12:35.

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Name	Representing	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
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	P	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
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

Control Protocols Working Group members and contact information as of 20 January 2022

Larry Dew	W.A. Benjamin Electric Co.	O	DE
Matthew Dews	Matthew Dews	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
Trevor Forrest	Helvar Lighting Control	O	MP
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
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
John Valus Jr.	Lex TM3	P	CP
David Kane	I.A.T.S.E. Local 728	A	U
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

Control Protocols Working Group members and contact information as of 20 January 2022

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
John Mehlretter	Lehigh Electric Products Co.	O	MP
Andrew Mulkey	Candela Controls, Inc.	A	DR
Daniel Murfin	Royal National Theatre	P	U
John Musarra	John Musarra	O	U
Simon Newton	Open Lighting Project	O	G
Maya Nigrosh	Sonos	P	MP
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
Jake Rhodes	Altman Lighting	A	MP
Alan M. Rowe	I.A.T.S.E. Local 728	A	U
Yngve Sandboe	Sand Network Systems, Inc.	O	MP

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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
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
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
Sebastian Wissmann	Inoage GmbH	O	MP
David Yellin	Sumolight GmbH	O	MP
Jeong Sik Yoo	Ghost LX	O	DE
Liang Zhiguang	Guangzhou Haoyang Electronic Co., Ltd.	P	CP

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