

**Control Protocols Working Group
Minutes**

3 June 2022

09:00 – 13:00 PDT (UTC - 70)
Wyndham Anaheim and WebEx

Chairpersons:

Milton Davis; Doug Fleenor Design, Inc; P; MP (presiding)
Michel Lay; Candela Controls, Inc.; A; DR

Recording secretaries:

Karl Ruling & Richard Nix (ESTA)

Attendees:

Bill Ellis; Candela Controls, Inc.; P; DR
Daniel Murfin; Tait Towers Manufacturing LLC; A; MP
Dennis Armijo; Insight Lighting; A; MP
Hans Lau; I.A.T.S.E. Local 728; P; U
Jason Potterf; Cisco; P; MP
Jeremy Powell; Vectorworks, Inc; P; CP
Jim Love; Tait Towers Manufacturing LLC; P; MP
John David (Javid) Butler; HDR Consulting LLC; P; DE
John Huntington; I.A.T.S.E. Local 1; A; U
Jonathan Kemble; Jonathan Kemble ; O; G
Liang Zhiguang; Guangzhou Haoyang Electronic Co., Ltd.; P; CP
Marcus Bengtsson; disguise; P; MP
Mark Primrose; CHAUVET & Sons Inc.; P; MP
Michael Karlsson; LumenRadio AB; P; MP
Mitch Hefter; USITT; P; U
Rene Berhorst; MA Lighting; P; MP
Robert Bell; Acuity Brands Inc.; A; MP
Robert Goddard; Goddard Design Co.; P; MP
Sam Kearney; Tait Towers Manufacturing LLC; A; MP
Scott M. Blair; Megapixel; P; CP
Shawn Silverman; Lighting Infusion LLC; P; DE
Stijn Geysen; Luminex Lighting Control Equipment; P; MP
Thierry Dupont; Robert Juliat; P; MP
Tucker Downs; ROE Visual USA; O; MP
Vangelis Manolis; AtlaBase Ltd.; O; CP

1 Opening remarks

Milton Davis called the meeting to order at 9:02 AM, welcoming everyone to the meeting, thanking them for taking time to attend, and reminding the online participants to keep their microphones muted 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 webcam, for everyone to see.

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

Everyone introduced themselves.

3.3 Determination of a quorum

(Thirty-eight voting members as of 3 May 2022. Thirteen needed for a quorum. After actions, the count is 37, a quorum is still 13, a supermajority is 19)

Richard Nix said there is a quorum present, but there is not a supermajority present.

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 member has missed the last two meetings and will be moved to observer status if this meeting is also missed:

Marcus Bengtsson; disguise; MP

He was present. No change in status.

3.4.2 New applications and changes

As of 11 May 2022 the following applications had been received:

Tucker Downs; ROE Visual USA; Observer; MP

Jessica Sanders; Villain Lighting LLC; Principal; User (not present, so approved as an Observer).

Dennis Armijo; Insight Lighting; P; MP (Applied as Alternate, but Insight only has Observer members so was approved as Principal)

Dan Murfin; Tait Towers Manufacturing LLC; A; MP (Applied as Alternate, but changed to Principal, Jim Love changed to Alternate)

Sam Kearney; Tait Towers Manufacturing LLC; A; MP
 Thierry DuPont; Robert Juliat; P; MP

Scott Blair moved to approve the applications as submitted for those present at today's meeting, and approving the applications for those not present as Observers. The motion was seconded and carried without objection or abstention.

3.5 Draft consensus body

The draft consensus body as of today's meeting, after all meeting actions, is:

Name	Representing	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
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
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
Dennis Armijo	Insight Lighting	A	MP
John Valus Jr.	Lex TM3	P	CP
Shawn Silverman	Lighting Infusion LLC	P	DE
Al DeMayo	LiteGear, Inc.	P	MP
Michael Karlsson	LumenRadio AB	P	MP

Name	Representing	Status	Int cat
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
Thierry Dupont	Robert Juliat	P	MP
Bill McIntyre	Show Distribution Group, Inc.	P	CP
Jon Hole	Signify	P	MP
Maya Nigrosh	Sonos	P	MP
Jim Love	Tait Towers Manufacturing LLC	A	MP
Julian Hoare	Tait Towers Manufacturing LLC	A	MP
Sam Kearney	Tait Towers Manufacturing LLC	A	MP
Daniel Murfin	Tait Towers Manufacturing LLC	P	MP
Mitch Hefter	USITT	P	U
Jeremy Powell	Vectorworks, Inc	P	CP
Larry Dew	W.A. Benjamin Electric Co.	P	DE
Paul Beasley	Walt Disney Company	P	U
Eric Bloom	Westview Productions	P	DR
Total possible votes:			37
Subtotals by interest category:	Custom market producer (CP):		7
	Mass market producer (MP):		18
	Designer (DE):		4
	Dealer or rental company (DR):		3
	User (U):		5
	General Interest (G):		0

Voting Status key: P = Principal voter, A = Alternate voter, I = Individual voter

4 Approval of the minutes from the last meeting

See CPmin03-2022_DRAFT.pdf

Mitch Hefter moved to approve the minutes. The motion was seconded and carried without objection or abstention.

5 Approval of agenda

Scott Blair asked to add an agenda item for discussing SMPTE Rapid Industry Solutions work – Item 7.1 - then moved to approve the agenda as amended. The motion was seconded and carried without objection or abstentions.

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.

Progress report.

Michael Lay read an email progress report sent by Wayne Howell: “*We have finished public comment resolution. We are now finalising edits to the document for a final proofing round and hope to have everything done for the next CPWG.*”

6.3 ANSI E1.37-1 – 2012 (R2017), Additional Message Sets for ANSI E1.20, Remote Device Management.

In public review for reaffirmation through May 23 with concurrent working group letter ballot. Public review comments will be circulated to the voting body. As of 3 May 2022, there are none.

Karl Ruling reported that the ballot had been extended because public review comments have been received, and one “no” vote had been received on a letter ballot. The ballot was extended and reissued. The ballot was reissued again, during the meeting.

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

Progress report, Paul Beasley or Larry Dew.

No report.

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

Scott Blair/Simon Newton.

See Summary_E1-37-5_5thPublicReviewComments.pdf

Progress report.

Scott Blair reported that Maya had taken over the heavy lifting with Shawn Silverman to address the JSON-related comments. Their goal is to have it ready for public review along with E1.20 (September).

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

Scott Blair/Dan Murfin.

Progress report.

No report.

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

Javid Butler/Wayne Howell. Reflector:

It's in public review through May 23. Comments have been received; a summary will be offered to the working group shortly after the public review closes.

Javid Butler reported, comments have been received, the task group has a meeting scheduled for tomorrow at the Wyndham. Bob Goddard said Javid has done a fabulous job on the document. He said he is worried there

are so few comments, that he wondered how many people had actually read the document with intent to comment. Javid said that resolving some of the comments will result in changes to E1.11, but he wants to wait until after the task group meets before describing the full extent of those potential changes.

6.8 BSR E1.63 Network Advertisement of Entertainment Protocols

*Jason Potterf/Kevin Loewen.
Progress report.*

Jason Potterf reported, No progress but he hopes to have more time for it now that his time commitments for NEC have receded.

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

*Dan Murfin/Sam Kearney: progress report.
Progress report.*

Dan Murfin reported, they are still making good progress, and thinks they might have a document to the working group for consideration early next year.

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

*Jason Potterf/Maya Nigrosh: progress report.
Progress report.*

Jason Potterf reported that the project is now more active, waiting on individual task group assignments to be completed. Marcus Bengtson from disguise asked to be appointed, Milton Davis made it so. He will be added to the reflector.

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

*Kevin Loewen/Paul Beasley: progress report. Reflector:
Progress report.*

Neither Kevin Loewen nor Paul Beasley were present. Robert Bell reported that Kevin had been very busy with getting a new factory opened, and was presently on a flight to the NAMM show.

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

*Scott Blair/Sam Kearney. Reflector:
Errata Progress report.*

Scott Blair said he had nothing new to report. Sam Kearney said he also had nothing to report. He thought the project was in a holding pattern until the RDM project is completed. Michael Lay said this has been lingering on the agenda for a while and we need to decide whether or not to remove it from the agenda. The working group consensus was to remove it from the agenda, since we are approaching the date for reaffirmation or revision – any errors can be addressed in a revision project.

6.13 BSR E1.59 - 2021, Object Transform Protocol

*Dan Murfin and Maya Nigrosh. Reflector:
Progress report.*

Dan Murfin reported, they're also almost finished with this project, but they want to look at what the SMPTE groups are producing, to make sure that "we aren't doing anything stupid."

6.14 Task group leader coordination

*Scott Blair is the official scheduling liaison for meetings between the CPWG task groups and meeting schedulers. Laura Hoepker (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 E1.37-4: Paul Beasley and Larry Dew
BSR E1.37-5: Scott Blair

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 Society of Motion Picture and Television Engineers (SMPTE) *Rapid Industry Solutions*

Scott Blair reported SMPTE has started a *Rapid Industry Solutions* effort to deal with the massive amounts of metadata used in virtual production (he posted a link to a one-page PDF, SMPTE_Virtual_Production-3000.pdf, which ESTA staff downloaded).

Scott Blair reported there is overlap in some areas, and interest in collaborating towards development of rapid-deployment solutions that would not necessarily need to go through a full standards development process. Specific areas include camera tracking settings and camera lens metadata – wherein they are developing JSON data packages. They are interested in BSR E1.58 (OTP), to see if that protocol might be useful to carry the metadata they have already developed. Mitch Hefter noted that USITT's former Executive Director, David Grindle, has just become SMPTE's Executive Director.

Michael Lay said he would ask the TSC to appoint Scott Blair and Marcus Begntson as the liaisons to SMPTE for this effort. He also said we should add this to the agenda as a regular report.

8 Other business and announcements

8.1 National Electrical Code (NEC) update

Jason Potterf, Mitch Hefter and Bill Ellis

Mitch Hefter reported that the NFPA Annual Conference is next week. There are no Certifying Amendment Motions that directly affect the interests of this group. Bill Ellis was accepted as ESTA's Alternate to Jason Potterf on Panel 18.

Jason Potterf also reported about Panel 13 issues with Class 2 wiring for Emergency lighting systems. Cabling was moved into a separate article. There is a new Class 4 Article for wiring systems that would provide the same physical protection freedom as Class 2 wiring, but no power limit because the source has to be able to sense ground faults and shut down the circuit – much in the same way a GFCI works. He said this could offer some new and interesting remote power cable system opportunities for our industry, and encouraged everyone to check it out.

Mitch Hefter reminded everyone that all of the definitions in the NEC are now in Article 100; you have to jump back and forth from the chapter you're reading.

8.2 Illuminating Engineering Society (IES) update

Bill Ellis and Mitch Hefter

Mitch Hefter reported that the IES Controls Committee has resolved Committee comments on new BSR/IES LP 16 Lighting Practice – *Documenting Control Intent Narratives and Sequence of Operation*. Public Review concluded with comments – all resolved, but still waiting on response back from the commentor.

He also said that IES has reduced staff by ~1/3 due to fiscal issues.

8.3 Institute of Electrical and Electronics Engineers (IEEE) update

Jason Potterf

Jason Potterf reported that things are at a turning point for single-pair cabling.

There is work on developing a standard for cut-through switching. Previously, it had been more of an ad hoc project, but now it's in the development process. He explained that cut-through switching works by taking partial reads on IP Packets, immediately forwarding the packet as soon as it can determine the destination, and without consuming the entire packet. It provides more latency than a hub, but much less latency than a switch.

8.4 National Electrical Manufacturer Association (NEMA) update

Paul Beasley and Mitch Hefter

Mitch Hefter said that we had previously expressed interest in the C137.6 data tagging vocabulary, and they are still looking for liaisons to help with that project. He will try to find someone at Signify to help.

8.5 Plugfests

8.5.1 Europe

Thierry Dupont reported the European Plugfest had to be canceled again due to Covid, but they expect to be back next year.

8.5.2 USA – September 16 to 18 at the D/FW Marriott Solana in Westlake, Texas.

Milton Davis reported, it will occur in Dallas during the September meeting cycle.

8.6 Above & Beyond Awards

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

Milton Davis directed everyone to the site, and encouraged them to consider nominating those who they felt deserved recognition for their efforts.

9 Schedule for future meetings

The full meeting schedule may be found at <http://www.esta.org/ESTA/meetings.php>.

TSP meetings will be held in Westlake, TX, at the Marriott Dallas/Fort Worth Westlake (what we used to call the Marriott Solana). The CPWG will meet from 09:00 to 13:00 CDT on 17 September, 2022.

10 Adjournment

The agenda being completed, there being no further business brought forth, Milton Davis declared the meeting adjourned at 10:24 AM

Control Protocols Working Group members and contact information as of 03 June 2022

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
Dennis Armijo	Insight Lighting	A	MP
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
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
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.	P	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	ROE Visual USA	O	MP
Hamish Dumbreck	James Embedded Systems Engineering	O	MP

Control Protocols Working Group members and contact information as of 03 June 2022

Name	Representing	Status	Int cat
Thierry Dupont	Robert Juliat	P	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
Harrison Freni	Infinitus Lux, LLC	O	U
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	Robert Haycock	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	Tait Towers Manufacturing LLC	A	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

Control Protocols Working Group members and contact information as of 03 June 2022

Name	Representing	Status	Int cat
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	A	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	Tait Towers Manufacturing LLC	P	MP
John Musarra	John Musarra	O	U
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
Jessica Sanders	Villain Lighting LLC	O	U
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

Control Protocols Working Group members and contact information as of 03 June 2022

Name	Representing	Status	Int cat
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