

Subject 1740

March 28, 2018

SUMMARY OF TOPICS

The following topics were discussed at the meeting of the Standards Technical Panel for Robots and Robotic Equipment:

- 1. Discussion of the scope of UL 1740 and other UL Standards for the robotic industry***
- 2. Future changes to the 4th edition of 1740***
- 3. Alignment of UL 1740 with ISO standards***

A meeting of the Standards Technical Panel of UL for Robots and Robotic Equipment was held on March 28, 2018 at Underwriters Laboratories Inc. Northbrook, IL. The purpose of the meeting was to discuss the topics listed above.

The purpose of the STP meeting report is to briefly summarize discussions held during the meeting, and to document any resulting outcomes, including planned future action.

CALL TO ORDER, ANNOUNCEMENTS, INTRODUCTION OF MEMBERS, GUESTS, AND OBSERVERS

The STP Chair, Diana Pappas Jordan, called the meeting to order and welcomed the STP 969 members to the meeting. After asking if anyone had any additional topics for discussion, there was a request to review UL's ANSI approved Standards development process and an overview of CSDS. This was covered under the discussion of Agenda Item 2.

ANNOUNCEMENTS AND REPORTS FROM THE STP PROJECT MANAGER

The STP Chair informed the STP meeting attendees of UL's anti-trust rules and UL's patent policy. The anti-trust rules are available at <http://ulstandards.ul.com/develop-standards/stps/ul-antitrust-rules/>. The patent policy is consistent with ANSI's patent policy. UL's patent policy is available at <http://ulstandards.ul.com/develop-standards/stps/ul-patent-policy/>.

The current balance of the STP was discussed at the meeting and is shown in the following table:

Interest Category	Number of Members	Interest Category	Number of Members
Producers	6 (33%)	Government	0 (0%)
Testing & Standards Organizations	4 (22%)	Consumer	0 (0%)
Supply Chain	4 (22%)	General Interest	2 (11%)
AHJs	0 (0%)	Commercial/Industrial User	2 (11%)

UL's goal is to have no interest category comprise more than one-third of the STP membership. Participants are not required in every category. As such, UL is currently looking for participants in all interest categories except Producer. Interested parties are welcome to apply to any STP at any time. Members present at the meeting were encouraged to reach out to the STP Project Manager if they have any names of individuals that might be interested in serving on the STP. The STP Chair also indicated that UL's process is open and anyone can participate and take an active role in the UL Standards development process even if they are not a STP member. If you have potential candidates or have further questions, please contact the STP Project Manager, Megan Monsen, as Megan.Monsen@ul.com.

Potential candidates who may be interested in applying for STP 1740 membership, can apply online by using the following link: <https://csds.ul.com/STPInfo/ApplicationHomePage.aspx>

FUTURE MEETING SCHEDULE

UL informed the meeting attendees that future meeting of STP 1740 would be scheduled on an as-needed basis. It was noted that the 4th edition of UL 1740 was recently published and suggested that a STP meeting be held in March or April 2019 to provide the industry some time to use the new edition. Since a new 3100 STP will be formed later this year and since there are common stakeholders between the two STPs, the STP Chair suggested that a STP meeting could be held for STP 1740 on one day and a meeting for STP 3100 could be held on the following day. An STP member suggested that the three day meeting for the RIA ANSI-Accredited Group: ANSI R15.08, Subcommittee on Industrial Mobile Robot Safety also be held in conjunction with the STP meetings. UL offered to host the R15.08 Subcommittee meetings at the UL Northbrook, IL office. UL will send a poll to STP members to gather input about future meeting dates. UL will also send out a call for standards proposals for UL 1740 and UL 3100 which could then be discussed at the STP meetings in 2019. UL will make a determination of the STP meetings based upon the results of the poll. STP members will be informed of any future meetings that are scheduled.

1. Discussion of the scope of UL 1740 and other UL Standards for the robotic industry

DISCUSSION

Discussion item submitted by: Joe Bablo, UL LLC

Joe Bablo presented this topic and provided an overview of the scope and products covered under UL 1740 and discussed the scopes of other UL related documents. The STP Chair also indicated that UL is accredited in the United States (ANSI) and Canada (SCC) to develop standards. Scopes in UL standards should not overlap and there should not be multiple standards that cover the same product. There was some discussion by the meeting attendees regarding different types of products and which standard would be applicable.

On January 26, 2018 the 4th edition of UL 1740, The Standard for Robots and Robotic Equipment, was published. During the ballot, several comments were received regarding the scope of UL 1740. Based upon some of these comments, the scope was revised during the ballot. The scope was also revised to prevent overlap with other UL Standards and documents. UL 1740 currently covers stationary industrial

robots only. Personal care robots are not covered by UL 1740. AGVs may have robotic features that may be addressed by UL 1740 requirements, but the overall AGV itself is not a robot. For example, industrial trucks or material handling devices that are automatically guided are not considered robots as covered by UL 1740. In addition, portable robots are not included in the current scope of UL 1740 based on STP member comments. Individual pieces of an industrial robot are not considered portable once installed.

UL 3100, the Outline for Automated Guided Vehicles (AGV) was recently published on March 20, 2018. UL 3100 contains requirements for AGVs and covers both load bearing and non-load bearing AGVs. Mr. Bablo indicated there is a heavy reliance on functional safety and risk analysis in this document. The group also discussed the scope of UL 3100. It was noted that the scope of UL 3100 currently covers indoor use only, but could be expanded in the future to also cover outdoor products. UL 3100 is not a consensus document and is currently not under the purview of a STP. The next phase is to form a STP and to pursue UL 3100 as a consensus UL standard. The Chair said that UL is seeking potential candidates for STP 3100. If you have recommendations for potential 3100 STP members, please send them to Megan Monsen at Megan.Monsen@ul.com.

UL 2272, the Standard for Electrical Systems for Personal E-Mobility Devices, covers electric powered scooters, such as hoverboards.

The scopes of UL 1740, UL 3100, and UL 2272 are provided below for reference:

UL 1740 Scope

1 Scope

1.1 These requirements cover robots and robotic equipment rated 600 V or less and intended for installation in accordance with the National Electrical Code, NFPA 70. Equipment evaluated to these requirements is intended to meet the requirements of Robots and Robotic Devices - Safety Requirements for Industrial Robots - Part 1, ISO 10281-1, and can be installed in accordance with ISO 10218-1, Robots and Robotic Devices - Safety Requirements for Industrial Robots - Part 1 and ISO 10218-2, Robots and Robotic Devices - Safety Requirements for Industrial Robots - Part 2: Robot Systems and Integration.

1.2 These requirements cover robotic equipment and systems intended for indoor and outdoor use in applications such as parts assembly, parts transfer, automated material handling, inspection, loading, die-casting, deburring, welding, paint spraying, automated storage/retrieval systems, and the like.

1.3 Robots and robotic equipment that contain unique features or functions associated with the application or end-product equipment, and not specifically addressed in this standard or referenced standards, shall also be evaluated to the applicable requirements of standards for the application or end-product equipment.

1.4 In addition to the requirements in this standard, robots and robotic systems shall also comply with the applicable sections of the Electrical Standard for Industrial Machinery, NFPA 79.

1.5 Robots and robotic systems intended for use in hazardous locations, as defined by the National Electrical Code, NFPA 70, shall also comply with the applicable safety requirements based on the specific end-use application, including those contained in the following standards:

**UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM**

Documents
Document Sharing Hub