

LXI Event Log Extended Function

Revision 1.0

8 November 2016

[LXI Event Log Extended Function 1](#_Toc448062420)

[*Reference Documents* 3](#_Toc448062421)

[*Revision history* 5](#_Toc448062422)

[1 Overview 6](#_Toc448062423)

[1.1 Introduction 6](#_Toc448062424)

[1.2 Purpose and Scope of this Document 6](#_Toc448062425)

[1.2.4 Purpose 6](#_Toc448062426)

[1.2.5 Scope 6](#_Toc448062427)

[1.3 Definition of Terms 6](#_Toc448062428)

[1.4 Additional LXI Conformance Requirements 8](#_Toc448062429)

[1.4.4 Extended Functions 8](#_Toc448062430)

[6 LXI Programmatic Interface (Drivers) 9](#_Toc448062431)

[6.7 RULE – LXI Event Log 9](#_Toc448062432)

[6.7.1 RULE – LXI Event Log Semantics 9](#_Toc448062433)

[6.7.2 RULE – Format of the LXI Event Log 9](#_Toc448062434)

**Reference Documents**

**Notice of Rights** All rights reserved. This document is the property of the LXI Consortium.  It may be reproduced, unaltered, in whole or in part, provided the LXI copyright notice is retained on every document page.

**Notice of Liability** The information contained in this document is subject to change without notice. “Preliminary” releases are for specification development and proof-of-concept testing and may not reflect the final “Released” specification.

The LXI Consortium, Inc. makes no warranty of any kind with regard to this material, including but not limited to, the implied warranties of merchantability and fitness for a particular purpose. The LXI Consortium, Inc. shall not be liable for errors or omissions contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

**LXI Standards** Documents are developed within the LXI Consortium and LXI Technical Working Groups sponsored by the LXI Consortium Board of Directors. The LXI Consortium develops its standards through a consensus development process modeled after the American National Standards Institute, which brings together volunteers representing varied viewpoints and interests to achieve the final product. Volunteers are not necessarily members of the Consortium and serve without compensation. While the LXI Consortium administers the process and establishes rules to promote fairness in the consensus development process, the LXI Consortium does not exhaustively evaluate, test, or verify the accuracy of any of the information contained in its standards.

Use of an LXI Consortium Standard is wholly voluntary. The LXI Consortium and its members disclaim liability for any personal injury, property or other damage, of any nature whatsoever, whether special, indirect, consequential, or compensatory, directly or indirectly resulting from the publication, use of, or reliance upon this, or any other LXI Consortium Standard document.

The LXI Consortium does not warrant or represent the accuracy or content of the material contained herein, and expressly disclaims any express or implied warranty, including any implied warranty of merchantability or fitness for a specific purpose, or that the use of the material contained herein is free from patent infringement. LXI Consortium Standards documents are supplied “as is”. The existence of an LXI Consortium Standard does not imply that there are no other ways to produce, test, measure, purchase, market, or provide other goods and services related to the scope of the LXI Consortium Standard. Furthermore, the viewpoint expressed at the time a standard is approved and issued is subject to change brought about through developments in the state of the art and comments received from users of the standard. Every LXI Consortium Standard is subjected to review at least every five years for revision or reaffirmation. When a document is more than five years old and has not been reaffirmed, it is reasonable to conclude that its contents, although still of some value, do not wholly reflect the present state of the art. Users are cautioned to check to determine that they have the latest edition of any LXI Consortium Standard.

In publishing and making this document available, the LXI Consortium is not suggesting or rendering professional or other services for, or on behalf of, any person or entity. Nor is the LXI Consortium undertaking to perform any duty owed by any other person or entity to another. Any person utilizing this, and any other LXI Consortium Standards document, should rely upon the advice of a competent professional in determining the exercise of reasonable care in any given circumstances.

This specification is the property of the LXI Consortium, a Delaware 501c3 corporation, for the use of its members.

**Interpretations** Occasionally questions may arise regarding the meaning of portions of standards as they relate to specific applications. When the need for interpretations is brought to the attention of LXI Consortium, the Consortium will initiate action to prepare appropriate responses. Since LXI Consortium Standards represent a consensus of concerned interests, it is important to ensure that any interpretation has also received the concurrence of a balance of interests. For this reason, LXI Consortium and the members of its working groups are not able to provide an instant response to interpretation requests except in those cases where the matter has previously received formal consideration. Requests for interpretations of this standard must be sent to [interpretations@lxistandard.org](mailto:interpretations@lxistandard.org) using the form “*Request for Interpretation of an LXI Standard Document*”. This document plus a list of interpretations to this standard are found on the LXI Consortium’s Web site: [http://www.lxistandard.org](http://www.lxistandard.org/)

**Trademarks** Product and company names listed are trademarks or trade names of their respective companies. No investigation has been made of common‑law trademark rights in any work.

LXI is a registered trademark of the LXI Consortium

**Patents**: Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. A holder of such patent rights has filed a copy of the document “*Patent Statement and Licensing Declaration”* with the Consortium. By publication of this standard, no position is taken with respect to the existence or validity of any patent rights in connection therewith. Other patent rights may exist for which the LXI Consortium has not received a declaration in the form of the document “*Patent Statement and Licensing Declaration*”. TheLXI Consortium shall not be held responsible for identifying any or all such patent rights, for conducting inquiries into the legal validity or scope of patent rights, or determining whether any licensing terms or conditions are reasonable or non-discriminatory. Users of this standard are expressly advised that determination of the validity of any patent rights, and the risk of infringement of such rights, is entirely their own responsibility.

**Conformance** The LXI Consortium draws attention to the document “*LXI Consortium Policy for Certifying Conformance to LXI Consortium Standards*. This document specifies the procedures that must be followed to claim conformance with this standard.

**Legal Issues** Attention is drawn to the document “*LXI Consortium Trademark and Patent Policies*”. This document specifies the requirements that must be met in order to use registered trademarks of the LXI Consortium.

**Revision history**

|  |  |
| --- | --- |
| ***Revision*** | ***Description*** |
| 1.0 Version | Initial Release November 8, 2016 |

# Overview

## Introduction

The LXI Event Log utility contains records of LAN events that have occurred, permitting observation of an instrument – or of an entire system – in action. The event log helps you understand what is happening in your instrument or system.

## Purpose and Scope of this Document

### Purpose

Each LXI Extended Function has its own document with unique section numbering that, if merged with the LXI Specification Core document, would produce a contiguous representation of the entire LXI Specification.

This document supplies the requirements for LXI conformance to the LXI Event Log Extended Function.

### Scope

This document defines a common set of RULES and RECOMMENDATIONS for constructing a conformant LXI Device with one or more Extended Functions. Whenever possible these specifications use existing industry standards.

The original LXI Device Specification included both requirements for all LXI Devices and a number of Extended Functions in a single document. Common information remains in the LXI Device Specification and specific information related to the Extended Function moves to separate documents.

## Definition of Terms

This document contains both normative and informative material. Unless otherwise stated the material in this document shall be considered normative.

NORMATIVE: Normative material shall be considered in determining whether an LXI Device is conformant to this standard. Any section or subsection designated as a RULE or PERMISSION is normative.

INFORMATIVE: Informative material is explanatory and is not considered in determining the conformance of an LXI Device. Any section or subsection designated as RECOMMENDATION, SUGGESTION, or OBSERVATION is informative. Unless otherwise noted examples are informative.

RULE: Rules SHALL be followed to ensure compatibility for LAN-based devices. A rule is characterized by the use of the words SHALL and SHALL NOT. These words are not used for any other purpose other than stating rules.

RECOMMENDATION: Recommendations consist of advice to implementers that will affect the usability of the final device. Discussions of particular hardware to enhance throughput would fall under a recommendation. These should be followed to avoid problems and to obtain optimum performance.

PERMISSION: Permissions are included to clarify the areas of the specification that are not specifically prohibited. Permissions reassure the reader that a certain approach is acceptable and will cause no problems. The word MAY is reserved for indicating permissions.

OBSERVATION: Observations spell out implications of rules and bring attention to things that might otherwise be overlooked. They also give the rationale behind certain rules, so that the reader understands why the rule must be followed. Any text that appears without heading should be considered as description of the specification.

## Additional LXI Conformance Requirements

### Extended Functions

#### General Description

The LXI Standard consists of the LXI Device Specification, required for all LXI Devices. In addition, it includes all optional Extended Functions.

LXI Extended Functions

Extended Functions come in the form of external documents. Each Extended Function document will have sections numbered as though they were part of the LXI Device Specification, but the documents are separate to simplify maintenance of the standard and to add new Extended Functions without altering the LXI Device Specification. The [***Guide to LXI Documentation***](http://www.lxistandard.org/Specifications/Specifications.aspx) identifies the Extended Function documents.

#### Conformance Requirements

The rules in this document define the conformance requirements for this Extended Function. In addition to the requirements for all LXI Devices found in the ***LXI Device Specification***, an Extended Function may require conformance to another Extended Function. All these requirements are detailed in the following Rule.

##### RULE – LXI Event Log Conformance Requirements

The rules in this document define the conformance requirements for this Extended Function. In addition to the requirements for all LXI Devices found in the LXI Device Specification, there may be cases where an Extended Function requires conformance to another Extended Function. All requirements follow below:

**LXI Device Specification Document:**

* All LXI Devices shall conform to the rules found in Section 1.4 and all subsections
* Section 3.7 including all subsections
* A Function element with the FunctionName attributes of “LXI Event Log” and version “1.0” in the LXIExtendedFunction element of the LXI identification document as descibed by section 10.2.5

**LXI Clock Synchronization Document:**

* If using non-zero time-stamped events, then include all rules.

**LXI Event Log (this document):**

* Include all rules

# LXI Programmatic Interface (Drivers)

Refer to Section 6 of the LXI Device Specification for specific information on the programmatic interface required for all LXI Devices and for LXI Devices supporting Extended Function capabilities related to Time Stamping, Event Message, etc.

## RULE – LXI Event Log

Access to the LXI Event Log (see Section 3.7 of the LXI Device Specification document), shall be provided by the API as an array of strings. The following capabilities shall be provided by the API:

* A Boolean property to enable or disable logging
* A method without parameters that clears the log
* A method that returns one or more log entries as a single string, with the instrument or driver deciding how many entries to return.

### RULE – LXI Event Log Semantics

The LXI Event Log shall behave as a FIFO buffer, with new entries appended to the end of the buffer and the oldest entries removed from the beginning of the buffer when the buffer is read by a client.

The size of the LXI Event Log buffer is device dependent.

If the LXI Event Log overflows, the device shall include an entry in the log indicating that one or more entries were missed.

Devices may optionally require that logging be disabled before reading back the log.

Devices shall support both an overwriting and non-overwriting mode of operation when the LXI Event Log is full. When a new entry is added into a full log in overwriting mode, the oldest entry in the log is first discarded, thereby making room for the new entry, allowing the new entry to be appended. When a new entry is added into a full log in non-overwriting mode, the new entry is discarded, leaving the log untouched. Vendors shall expose some method (e.g., option strings, web interface, front panel, etc.) to provide the control for this feature, although no particular API is required. A future version of this specification may include such an API requirement.

Once a log entry is read, it shall be removed from the device’s log.

### RULE – Format of the LXI Event Log

The LXI Event Log shall return a string for each entry in the LXI Event Log. A future version of this specification may include a format for the event entry.