



# **LXI Event Log Extended Function**

Revision 1.0

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## ***Reference Documents***

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## *Revision history*

<i>Revision</i>	<i>Description</i>
1.0 Version	Initial Release November 8, 2016

# 1 Overview

## 1.1 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.

## 1.2 Purpose and Scope of this Document

### 1.2.4 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.

### 1.2.5 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.

## 1.3 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.

## 1.4 Additional LXI Conformance Requirements

### 1.4.4 Extended Functions

#### 1.4.4.1 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](#) identifies the Extended Function documents.

#### 1.4.4.2 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.

##### 1.4.4.2.7 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 described 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



## 6 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.

### 6.7 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.

#### 6.7.1 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.

#### 6.7.2 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.