OpenLCB Standard	
OpenLCB-CAN Datagram Transport	
Jan 19, 2013	Preliminary

1 Introduction (Informative)

This specification describes the protocol for transporting OpenLCB datagrams via CAN segments.

2 Intended Use (Informative)

3 References and Context (Normative)

This specification is in the context of the following OpenLCB-CAN Specifications:

The OpenLCB Frame Transport Standard, which specifies …

The OpenLCB Message Network Standard, which specifies …

The OpenLCB Node Identifier Standard, which specifies …

"CAN" refers to the electrical and protocol specifications as defined in ISO 11898-1:2003 and ISO 11898-2:2003 and their successors.

External certification of parts shall be accepted for conformance to these standards. Conformance with a later version of a standard shall be accepted as conformance with the referenced versions.

4 Message Formats (Normative)

4.1 Datagram Content

Name	Dest ID	Event ID	Common MTI	CAN format	Data Content
Datagram Content	Y	N	0x1C48	N/A	0-72 bytes

4.1.1 CAN-Datagram Content Single Frame

Name	Dest ID	Event ID	Common MTI	CAN format	Data Content
Datagram Content Single Frame	N	Y	N/A	0x1Add,dsss	0-8 bytes

4.1.2 CAN-Datagram Content First Frame

Name	Dest ID	Event ID	Common MTI	CAN format	Data Content
Datagram Content First Frame	Y	N	N/A	0x1Bdd,dsss	0-8 bytes

4.1.3 CAN-Datagram Content Middle Frame

Name	Dest ID	Event ID	Common MTI	CAN format	Data Content
Datagram Content Middle Frame	Y	N	N/A	0x1Cdd,dsss	0-8 bytes

4.1.4 CAN Datagram Content Last Frame

Name	Dest ID	Event ID	Common MTI	CAN format	Data Content
Datagram Content Last Frame	Y	N	N/A	0x1Ddd,dsss	0-8 bytes

4.2 Datagram Received OK

Name	Dest ID	Event ID	Common MTI	CAN format	Data Content
Datagram Received OK	Y	N	0x0A28	0x19A4,8sss fddd	

4.3 Datagram Rejected

Name	Dest ID	Event ID	Common MTI	CAN format	Data Content
Datagram Rejected	Y	N	0x0A48	0x19A4,8sss fddd	Error Code

Nodes must accept and process Datagram Rejected messages that do not contain a full data code. Missing error code bits are to be interpreted as zero.

4.3.1 Error Codes

Permanent errors

Temporary error

DATAGRAM_REJECTED 0x0000

DATAGRAM_REJECTED_PERMANENT_ERROR 0x1000

DATAGRAM_REJECTED_INFORMATION_LOGGED 0x1010

DATAGRAM_REJECTED_SOURCE_NOT_PERMITTED 0x1020

DATAGRAM_REJECTED_DATAGRAMS_NOT_ACCEPTED 0x1040

DATAGRAM_REJECTED_BUFFER_FULL 0x2000

DATAGRAM_REJECTED_OUT_OF_ORDER 0x6000

DATAGRAM_REJECTED_NO_RESEND_MASK 0x1000

DATAGRAM_REJECTED_RESEND_MASK 0x2000

DATAGRAM_REJECTED_TRANSPORT_ERROR_MASK 0x4000

5 States (Normative)

The common OpenLCB datagram protocol has no formal states.

A node implementing the OpenLCB-CAN protocol must maintain a Datagram-started state for each datagram that it is receiving as a sequence of frames. If the node receives multiple overlapping datagrams, the states must be independent.

6 Interactions (Normative)

6.1 Normal Transmission

Normal transmission consists of the transmitting node sending a Datagram Content message to the receiving node, followed by the receiving node sending a Datagram Received OK message to the transmitting node. The receiving node shall send either a Datagram Received OK or Datagram Rejected message.

6.1.1 CAN Protocol

6.2 Rejected Transmission

After the transmitting node sends a Datagram Content message to the receiving node, the receiving node may send a Datagram Rejected message to the transmitting node. The receiving node shall send either a Datagram Received OK or Datagram Rejected message.

6.2.1 CAN Protocol

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