



OpenLCB Standard	
OpenLCB-CAN Message Network	
10/08/10	Draft

1 Introduction (Informative)

OpenLCB is based on a global exchange of individual messages. This specification describes how messages and/or parts of messages are transported across CAN segments as CAN frames.

2 References and Context (Normative)

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

- The OpenLCB Frame Transfer Specification, which specifies ...
- The OpenLCB Node Identifier Specification, 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.

10 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.

Common Section?

15 Are some conventions included by reference, e.g. that all of OpenLCB is big-endian unless otherwise specified?

3 OpenLCB message format

20 (rationalize with the frame doc, that describes the 1st bit)

OpenLCB common messages are carried in frames with a 1 in the Frame Type field. They contain message type information and/or address information in the 15-bit variable field, and zero to eight CAN data bytes.

For OpenLCB messages, the variable field is used in three forms:

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- Unaddressed messages – messages that don't have a destination address put the low 12 bits of the MTI in the variable field

- Addressed messages – messages that have a specific destination address put it in the variable field, and carry the MTI in the payload. This allows filtering.
- Stream addressed messages – as a special case to improve efficiency of transfer, the streaming protocol uses 12 bits of the variable field to identify a particular stream transfer. This is not the same as a destination NodeID alias, but performs a similar function to allow filtering while also allowing multiple streams from a source.

The variable field is allocated:

Variable Field Bits 0-2 Header Bits 2-4 OpenLCB Format 0x0700,0000	Variable Field Bits 3-14 Header Bits 5-16 OpenLCB Variable Header Content 0x00FF,F000
0 0 0	MTI & additional information for “simple node” unaddressed messages
0 0 1	MTI & additional information for unaddressed messages other than “simple node” forms
0 1 0	(Reserved, must not be sent or accepted)
0 1 1	(Reserved for long-form MTIs in data area, must not be sent or accepted)
1 0 0	Destination Alias for datagram message non-last fragment
1 0 1	Destination Alias for datagram message last fragment
1 1 0	Destination Alias for non-datagram addressed messages
1 1 1	Destination Alias for Stream Data Send messages

Putting the destination alias in the header allows filtering on it with common CAN hardware. Putting the Stream ID in the header also allows filtering, and preserves the full 8-byte CAN payload for stream data.

The specific MTI values are being allocated in a separate worksheet (PDF version). In general, the MTI selection is done on the top 8 bits of the variable field. This is mapped to the low MTI byte in a standard format message.

Some MTIs have additional status bits defined as part of the 2nd field. For example, there are two status bits associated with “Consumer Identified” which must be kept in the header since there is no room in the CAN data field. To simplify translation between formats, these are the low bits of the first byte after the MTI in a standard-form message.

- 45 Note that messages with Destinations IDs may occur in two forms: with an alias in the header and the MTI in the message; and with a full address in the data field and the MTI in the header.

Below this is just a collection of pieces from other docs right now.

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