



Remote Operation

Remote Engine Control - Single Engine

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LOFA Industries, Inc. Telemetry Device Warning/Safety Policy Statement

Safety is a priority at LOFA Industries, Inc. As such, LOFA Industries, Inc. will endeavor to design, and distribute telemetry-capable devices to facilitate remote reporting and remote operation of engine driven machinery products that are safe and well labeled, yet inherently utilitarian/applicable so as to meet the functional and safety requirements of our broad base of OEMs, Distributors, and Customers.

Further, LOFA Industries, Inc. recognizes that our telemetry enabling devices are applied/installed to many different engines and many different equipment types. LOFA also recognizes that the safety requirements of each OEM, Distributor, and Customers are unique. Thus, LOFA Industries, Inc. will make every effort to facilitate OEM, distributor, and Customer requests with respect to safety requirements while maintaining LOFA Corporate standards for labeling and warnings.

However, since LOFA Industries, Inc. telemetry products are integrated into other equipment, it must be clearly stated that LOFA Industries, Inc. cannot monitor, police, or audit each application from a safety perspective. Thus, the ultimate and responsibility for the safe application of any telemetry control system, including LOFA Industries, Inc. telemetry products is solely that of the OEM, installer, and/or owner of the specific machine on which LOFA Industries, Inc. telemetry products are installed.

! WARNING Telemetry Device Warning:

Telemetry devices may be applied such that remote and out-of-sight engine/machine start-up could be facilitated without knowledge of the localized condition(s), human interaction/presence, or human proximity at the engine/machine site. As such, suitable safety systems will be required to ensure it is safe to initiate a remote start/stop. As such:

- The engine and/or machine may start **without warning or notice at the engine/machine site.**
- It is **SOLELY** the responsibility of the owner/ installer/ operator to provide physical barriers, warning labels, visible warnings, and audible warnings to notify of an impending start-up.
- **ALWAYS** use lockout/ tag out procedures prior to performing ANY service on any engine/machine and disconnect the engine machine from the telemetry system.

LOFA Telemetry Safety Support/ Options: LOFA Industries, Inc., makes the following provisions available to all OEMs, Distributors, and Customers:

- Inclusion of information and warnings specific to telemetry safety with each shipment. Additional information may be available at the LOFA Industries, Inc. web site: www.LOFA.net
- Application assistance with respect to sizing and facilitation of wiring strobes and other visual warnings prior to an auto-start event.
- Custom configurations of telemetry device(s) functionality with respect to timing, pre-start alarms, etc. that will aid OEMs, distributors, and Customers in fulfilling individual safety policies and mandates.
- Supply of LOFA Industries, Inc. Auto-Start warning labels.

IMPORTANT NOTICE: This document DOES NOT REPLACE any specific product document or documentation


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1 Remote Control

1.1 Control By Transducer Target Setpoint

To control the engine by changing the target setpoint the panel must be in “Maintain In” or “Maintain Out” mode. Use the L_BDT CAN message described in this document to change the “Transducer Target Setpoint”. The change will take place immediately with no need to power cycle. You can also change the other transducer settings such as “Servo Gain”, “Servo Delay”, and “Transducer Deadband” to change the response and behavior. You are also able to change the “Run Speed” which will change the maximum RPM that the engine will run at while trying to maintain the target setpoint.

1.2 Direct Throttle Control

To control the throttle directly leave the panel in a “Maintain In” or “Maintain Out” mode. Set the “Transducer Target Setpoint” to the percent that will always cause the panel to run at the “Run Speed”. For example, in “Maintain In” mode set the transducer target setpoint to 100.0%. This will cause the panel to start using its normal ramp profile and go to the “Run Speed” and stay there until a stop event occurs. When the panel is at the “Run Speed” you can send the L_BDT message to change the “Run Speed”. Use the “Transducer Alarms” (Programed as Shutdown Events) to prevent any damage from occurring.

1.3 Limitations

Entering the display menu after a remote settings change has been made will cause the settings to be revert to the original values present at panel startup.

2 Proprietary PGN

PGN 55040

LOFA Binary Data Transfer

L_BDT

PGN 55040 is used to change configuration settings on the CPIO board. Unexpected results may occur if the message is sent to incompatible devices.

Transmission Repetition Rate: On Request

Data Length: 8

Extended Data Page: 0

Data Page: 0

PDU Format: 215

PDU Specific: DA

Default Priority: 6

Parameter Group Number: 55040 (0xD700)

Start Position	Length	Parameter Name	SPN
1	1 byte	Device Command	520192 (1)
2	1 byte	Address	520193 (2)
3	1 byte	Challenge	520194
4	1 byte	Address segment	520195
5-8	4 bytes	Data	520196

The initiating device sends an L_BDT command and required responses from the receiving device are L_BDT messages

3 Proprietary SPNs

SPN 520192 LOFA BDT Device Command

Identifies the purpose or content of the BDT message (see Table 2). Read commands request data from a given device dependent address. Write commands request changing the contents of the given device dependent address. Verify commands ask to verify the contents of the given device dependent address. Reply is the response to a Read, Write and Verify commands at the given device dependent address.

Value	Command
1	Read 1 byte
2	Read 2 bytes
11	Write 1 byte
12	Write 2 bytes
21	Verify 1 byte
22	Verify 2 bytes
31	Reply 1 byte
32	Reply 2 bytes

Table 1. Commands

Note: The command must match the number of bytes used by the settings. Failing to do so will result in undesirable setting changes.

Data Length: 1 byte

Resolution: n/a

Data Range: 0 to 250

Type: Control

Supporting information:

PGN reference: 55040 (0xD700)

SPN 520193 LOFA BDT Address

Identifies the address for the desired read, write, or verify command.

Address	Length	Scale	Setting
0x36	2 bytes	1 bit/RPM	Idle Speed
0x38	2 bytes	1 bit/RPM	Intermediate Speed
0x3A	2 bytes	1 bit/RPM	Run Speed
0x48	1 bytes	n/a	Servo Gain
0x49	1 bytes	1 bit/10ms	Servo Delay
0x4A	1 bytes	1 bit/0.1%	Transducer Dead Band
0x4C	2 bytes	1 bit/0.1%	Transducer Setpoint High
0x4E	2 bytes	1 bit/0.1%	Transducer Setpoint Low
0x50	2 bytes	1 bit/0.1%	Transducer Target Setpoint
0x52	2 bytes	1 bit/0.1%	Transducer High Fault Level
0x54	2 bytes	1 bit/0.1%	Transducer Low Fault Level

Table 2. Setting Address

Note 1: All of the settings listed above are dynamic and will change immediately after the command is sent.

Note 2: The CPIO handles the transducer only in percents (0.0 - 100.0%) for the full scale of the transducer. Changing the transducer range will have no effect on the behavior of the CPIO, only the units used on the display.

Data Length: 1 byte

Resolution: n/a

Data Range: 0 to 250

Type: Address

Supporting information:

PGN reference: 55040 (0xD700)

SPN 520194 LOFA BDT Device Challenge

This is reserved for future use.

Send 0x00 for this byte.

Data Length: 1 byte
Resolution: n/a
Data Range: 0 to 250
Type: Control

Supporting information:

PGN reference: 55040 (0xD700)

SPN 520195 LOFA BDT Device Address Segment

This is reserved for future use.

Send 0x00 for this byte.

Data Length: 1 byte
Resolution: n/a
Data Range: 0 to 250
Type: Address

Supporting information:

PGN reference: 55040 (0xD700)

SPN 520196 LOFA BDT Data

This SPN contains the value to be written to the address when a write command is sent. This SPN contains the value of the address when a reply or verified is sent from the panel.

The high byte goes into Byte 5 of the CAN message. The table belows shows how the data goes into the CAN message.

CAN Byte Number	2 Bytes of Data
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3. Proprietary SPNs

Byte 5	High Byte
Byte 6	Low Byte
Byte 7	0xFF
Byte 8	0xFF

CAN Byte Number	1 Bytes of Data
Byte 5	High Byte
Byte 6	0xFF
Byte 7	0xFF
Byte 8	0xFF

Note: When a byte is not used it should be filled with 0xFF.

Data Length: 4 bytes

Resolution: n/a

Data Range: 0 to 0xFFFFFFFF

Type: Address

Supporting information:

PGN reference: 55040 (0xD700)

4 Example Write

This example will show you how to transmit the L_BDT message to change the Transducer Target Setpoint in the CPIO board to 75.2%.

CPIO CAN Address: 128
 Device Transmitting L_BDT: 5
 Resulting CAN-ID: 0x18D78005

CAN Byte Number	Data
Byte 1	0x0C
Byte 2	0x50
Byte 3	0X00
Byte 4	0x00
Byte 5	0x02
Byte 6	0xF0
Byte 7	0xFF
Byte 8	0xFF

The panel will then reply with CAN-ID 0x18D70580 and the following data.

CAN Byte Number	Data
Byte 1	0x16
Byte 2	0x50
Byte 3	0X00
Byte 4	0x00
Byte 5	0x02
Byte 6	0xF0
Byte 7	0xFF
Byte 8	0xFF