



LOCOMOTIVE DECODER QUESTIONNAIRE

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Introduction

The purpose of this questionnaire is to gather essential information about a DCC locomotive decoder as part of the conformance process. This questionnaire will be kept on file by the NMRA as part of the conformance test submission.

All applications for a decoder conformance seal must be accompanied by the following:

- A. A decoder for which conformance is to be tested.
- B. A complete set of user documentation.
- C. Any special instructions for connecting the decoder to the test jig as described in **NMRA DCC Decoder Test User Manual**.
- D. Certification that the attached test procedures have been successfully completed by the manufacture prior to submission for formal conformance testing.
- E. The manufacture must provide evidence that the decoder complies with the FCC Part 15 rules. Please attach a copy of the FCC report.
- F. A completed **LOCOMOTIVE DECODER QUESTIONNAIRE** for the decoder to be tested.

Basic Information

Please fill in the following information on the decoder manufacturer.

Company Name:Lenz GmbH _____
 Address1:8 Higate Road Chelmsford, MA 01824 _____
 Address2:Huttenbergstrasse 29 _____
 City: _____
 State/Province:Giessen-Allendorf _____
 Country:Germany _____
 Postal Code:35398 _____
 Voice Phone:978-250-1494 _____
 FAX Phone:978-250-1494 _____
 E-MAIL Address:support@lenz.com _____
 WEB Page:www.lenz.com _____
 Manufacturer ID Code:01100011 _____

Please fill in the name of the person to contact concerning conformance matters.

Last Name:Ames _____
 First Name:Deborah _____
 Middle Initial:P. _____

Please fill in the following information about the decoder submitted for testing.

Model Number:LE105XF _____
 Serial Number: _____
 Hardware Revision:LE105XF _____
 Firmware Revision:4.4 Version 2 _____
 Manufacturer Date:1999 _____
 Minimum Peak To Peak Operating Voltage:+7 volts _____
 Maximum Peak To Peak Operating Voltage:+27 volts _____
 Maximum Motor Current:1.0 Amp _____
 Special Considerations For Motor Output:None _____
 Number Of Function Outputs:4 _____
 Special Consideration For Function Outputs:A,B for headlight control; C,D for additional functions or ditchlights. See CVs supported for more information. _____

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Standards

This section gives any special information that relates to the DCC standards. A decoder must meet all aspects of these standards to receive the conformance seal.

S9.1

Are there any special considerations for part **A: Technique For Encoding Bits?**

conforms to all _____

Are there any special considerations for part **B: Command Control Signal Shape?**

conforms to all _____

Does the decoder meet the applicable United States Federal Communications Commission electro-magnetic interference requirements described in part **B: Command Control Signal Shape?** If so, please attach a copy of the relevant certification.

Yes, this decoder passed CE testing through self inspection, it is identical to the LE103XF except for the placement of the extra functions. _____

Are there any special considerations for part **C: Power Transmission and Voltage Limits For Transmitting Power Through the Rails?**

none _____

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S9.2

Are there any special considerations for packet sequences? For example, will the decoder reject an immediate change of direction without an intermediate stop packet?

none _____

Are there any special considerations for part **A: General Packet Format**?

none _____

Are there any special considerations for part **B: Baseline Packets**?

none _____

Are there any special considerations for part **C: Frequency Of Packet Transmission**?

none _____

Recommended Practices

This section gives any special information that relates to the DCC recommended practices. Implementation of the features described in the following recommended practices is optional. However, the decoder must implement these optional features in conformance with the recommended practice in order to receive the conformance seal.

RP9.1.1

Does the decoder support the color code described in part **B: Color Code of Wiring?**

Yes _____

If so, please list any additional wires, their color, and function.

Green for output C, Purple for output D _____

If not, please list all wires, their color, and function.

Does the decoder support the connector described in part **C: Interface Electromechanical Specifications.**

No _____

If so, which size of connector (Small, Medium, Large) does the decoder support?

Other - None Supported _____

If so, are there any special considerations for part **C: Interface Electromechanical Specifications.**

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RP9.2.1

This section deals with special information dealing with the optional extended packet formats. Please indicate if you support each format and, if so, any special considerations for the format.

Are there any special considerations for part **A: Address Partitions**?

When decoder address per the CVs is set to an invalid address decoder responds to address 3. Decoder supports both Basic and extended address as per the PR. _____

Does the decoder support 14 bit addresses as well as 7 bit addresses?

Yes _____

Does the decoder support part **B: Broadcast Command For Multi-function Digital Decoders**?
If so, are there any special considerations?

yes- The direction bit is ignored for speed commands _____

RP9.2.1 Commands Supported

The following table lists the possible RP9.2.1 extended packet commands. Please check the "Supported?" box for all RP9.2.1 commands supported by the decoder. Use the "Notes?" box for any special considerations associated with the command.

Table 1: RP9.2.1 Commands Supported

Command	Description	Supported?	Notes?
0000CCCD	Decoder Control	<input checked="" type="checkbox"/>	reset and factory test only
0001CCCC	Consist Control	<input checked="" type="checkbox"/>	
00111111	128 Speed Step Mode	<input checked="" type="checkbox"/>	
010DDDDD 011DDDDD	28 Speed Step Mode	<input checked="" type="checkbox"/>	
100DDDDD	Function Group 1	<input checked="" type="checkbox"/>	
1011DDDD	Function Group 2	<input checked="" type="checkbox"/>	
11110010	Short Form Acceleration	<input checked="" type="checkbox"/>	CV 50 bit 1 must be set to activate CV23, and CV24
11110011	Short Form Deceleration	<input checked="" type="checkbox"/>	CV 50 bit 1 must be set to activate CV23, and CV24
111001AA	Long Form Verify	<input type="checkbox"/>	
111011AA	Long Form Write	<input checked="" type="checkbox"/>	Note long form can not be used to set CV19
111010AA	Long Form Bit Manipulation	<input checked="" type="checkbox"/>	Note long form can not be used to set CV19

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RP9.2.2

This section deals with special information dealing with the optional configuration variables.

RP9.2.2 Configuration Variables Supported

The following table lists the possible RP9.2.2 configuration variables. Please check the “Supported?” box for all RP9.2.2 configuration variables supported by the decoder. Use the “Notes?” box for any special considerations associated with the configuration variable.

Table 3: RP9.2.2 Configuration Variables Supported

CV	Bit	Description	Supported?	Notes?
1	-	Primary Address	<input checked="" type="checkbox"/>	
2	-	Vstart	<input checked="" type="checkbox"/>	0-31
3	-	Acceleration Rate	<input checked="" type="checkbox"/>	0-31
4	-	Deceleration Rate	<input checked="" type="checkbox"/>	0-31
5	-	Vhigh	<input type="checkbox"/>	
6	-	Vmid	<input type="checkbox"/>	
7	-	Manuf. Version No.	<input checked="" type="checkbox"/>	44
8	-	Manuf. ID	<input checked="" type="checkbox"/>	99
9	-	Total PWM Period	<input type="checkbox"/>	
10	-	EMF Feedback Cutout	<input type="checkbox"/>	
11	-	Packet Time-Out Value	<input type="checkbox"/>	
12	-	Power Source Conversion	<input type="checkbox"/>	
13	-	Analog Mode Function Status	<input type="checkbox"/>	
17+18	-	Extended Address	<input checked="" type="checkbox"/>	
19	-	Consist Address	<input checked="" type="checkbox"/>	
21	-	Consist Addr. Active for F1-F8	<input type="checkbox"/>	
22	-	Consist Addr. Active for FL	<input type="checkbox"/>	
23	-	Acceleration Adjustment	<input checked="" type="checkbox"/>	CV 50 bit 1 must be set to activate CV23, and CV24
24	-	Deceleration Adjustment	<input checked="" type="checkbox"/>	CV 50 bit 1 must be set to activate CV23, and CV24
25	-	Cab Speed Step	<input type="checkbox"/>	
29	0	Locomotive Direction	<input checked="" type="checkbox"/>	Has no effect on F0 and F1 if rule 17 set
29	1	FL Location	<input checked="" type="checkbox"/>	
29	2	Power Source Conversion	<input checked="" type="checkbox"/>	

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CV	Bit	Description	Supported?	Notes?
29	3	Advanced Acknowledgment	<input type="checkbox"/>	
29	4	Speed Table	<input checked="" type="checkbox"/>	
29	5	Extended Addressing	<input checked="" type="checkbox"/>	
29	7	Accessory Decoder	<input type="checkbox"/>	
30	-	Error Information	<input type="checkbox"/>	
33-42	-	Function Output Locations	<input type="checkbox"/>	
65	-	Kick Start	<input type="checkbox"/>	
66	-	Forward Trim	<input type="checkbox"/>	
67-94	-	Speed Table	<input checked="" type="checkbox"/>	15 locations only
95	-	Reverse Trim	<input type="checkbox"/>	
105	-	User Identifier #1	<input checked="" type="checkbox"/>	
106	-	User Identifier #2	<input checked="" type="checkbox"/>	

Manufacturer Specific Configuration Variables Supported

The following table lists the possible manufacturer specific configuration variables. Please describe the configuration variable in the "Description" box. Use the "Notes?" box for any special considerations associated with the configuration variable.

Table 4: Manufacturer Specific Configuration Variables Supported

CV	Bit	Description	Notes?
50	1	CV23/24 active status	=1 CV23 and CV24 are active =0 not active
50	2	signal bit and works only if #29.2 is switched off.	If then analog voltage is applied to the decoder, it will enter braking mode if the voltage has the opposite polarity to the actual direction, otherwise it will keep the speed from the digital mode.
51		Function Control for outputs A, B	#51.0 if 0: lights are directional, =1 Rule 17 #51.1 if 1: F1 can dim the lights (=on is dimmed, =off is full brightness) Used in directional headlight mode only #51.2 if 1: F0 is dimmed when switched on by F4 (active in Rule 17 mode only) #51.3 if 1: F1 is dimmed when switched on by F4 (active in Rule 17 mode only)
52		52 contains the value for dimming	0 is dark and 255 is max. brightness
53		Special Effects for outputs C D	#53.0 if on C blinks #53.1 if on D blinks #53.2 if on Ditch Light mode C and D alternate when F2 is activated and C is on.

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CV	Bit	Description	Notes?
54		Function Assignment for Output C	#54.0 if on C is controlled by F1 #54.1 if on C is controlled by F2 #54.2 if on C is controlled by F3 #54.3 if on C is controlled by F4 #54.4 if on C is controlled by F5 #54.5 if on C is controlled by F6 #54.6 if on C is controlled by F7 #54.7 if on C is controlled by F8
55		Function Assignment for Output D	#55.0 if on D is controlled by F1 #55.1 if on D is controlled by F2 #55.2 if on D is controlled by F3 #55.3 if on D is controlled by F4 #55.4 if on D is controlled by F5 #55.5 if on D is controlled by F6 #55.6 if on D is controlled by F7 #55.7 if on D is controlled by F8
56		Blinking Rate	Blinking Frequency for outputs C and D
128		Decoder sub version	Contains the minor software revision number for decoders (this version has the value of 2)

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RP9.2.3

This section deals with special information dealing with the optional service mode commands. Please indicate if you support each format and, if so, any special considerations for the format.

Are there any special considerations for part **B: Service Mode Environment**?

No _____

Are there any special considerations for part **C: Entry to and Exit from Service Mode**?

No _____

Does the decoder support the **Basic Acknowledgment Mechanism** of part **D**? If so, are there any special considerations?

Yes- no special considerations _____

Does the decoder support the **Advanced Acknowledgment Mechanism** of part **D**? If so, are there any special considerations?

No _____

Does the decoder support part **E: Service Mode Instruction Packets for Direct Mode**? If so, are there any special considerations?

Yes- no special considerations _____

Does the decoder support part **E: Service Mode Instructions for Address-Only Mode**? If so, are there any special considerations?

Yes- no special considerations _____

Does the decoder support part **E: Service Mode Instruction Packets for Physical Register Addressing**? If so, are there any special considerations?

Yes- no special considerations _____

If **Physical Register Addressing** is supported, which of the fundamental 8 registers can be accessed?

all eight _____

Does the decoder support part **E: Service Mode Instruction Packets for Paged CV Addressing**? If so, are there any special considerations?

Yes- no special considerations _____

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Does the decoder support **Appendix A: Address Query Instruction**? If so, are there any special considerations?

Yes- no special considerations _____

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RP9.2.4

This section deals with special information dealing with the optional fail-safe characteristics. Please indicate if you support each characteristic and, if so, any special considerations for the format.

Does the decoder support part **A: Initialization of the DCC system?** If so, are there any special considerations?

Yes- no special considerations _____

Does the decoder support part **B: Converting Between Different Power Modes?** If so, are there any special considerations?

Yes supported- no special considerations _____

Does the decoder support part **C: Occurrence of Error Conditions?** If so, are there any special considerations?

No _____