XL SYSTEMS INC
14 Dora Ln Holmdel, NJ 07733
N Diesel DCC drop in for Life-Like C liner Item # 0001660

- Four diesel prime movers with randomly associated locomotive sounds
- User selectable 34 different horns and 8 bells
- 28 accessory functions allowing more sound control than ever
- Programmable individual sound volumes
- 1.0 amp capacity
- Programmable for either 2-digit (1-127) or 4-digit (1-9999) addresses
- Programmable start voltage
- Programmable acceleration rate
- Programmable deceleration rate
- Programmable top voltage
- Programmable 14, 28, 128 speed steps
- Selectable factory default speed curve
- Supports advanced consisting (CV19)
- Supports programming on the main (OPS mode)
- Compatible with NMRA DCC standards
- Complies with Part 15 of FCC
- Speaker included

INSTALLATION
This decoder will virtually "drop-in" to a Life-Like C Liner N scale diesel locomotive. Please follow instructions carefully. Remove the locomotive body following the instructions. Remove the original circuit board, and head light assembly. Then, using electrical or equiv plastic tape, carefully tape the chassis in the areas as indicated (See Fig 1) to isolate the decoder from the chassis. **This must be done to prevent damage to the decoder.** Gently bend the 2 sets of motorbrush contact pins on the decoder outward and slide the decoder into the chassis as in Fig 2. Then use a hobby knife or equivalent to spread the pins around the motor brush the motor contact plates, Fig 3).

DCC OPERATION
The decoder has start up and shut down features. If the loco was previously shut down you have to start up the engine. Press any function key to start up the engine before operating the loco. To shut down the engine you must bring the loco to idle and then press F8 three times. Double click F0 will turn on/off sound (CV49). You can't turn off horn which is always on. The decoder has four types of diesel prime movers, plus off. You can use F12 to select this feature or use CV 123. You can use F19 to select 34 different horn sounds and use F18 to select 8 different bell sounds. The decoder default is set to automatic notch. You can program CV122 to 3 formanual notch for realistic operation. And then use F9 to notch up and use F8 to notch down. There are many more program features available with this decoder. Please refer to the CV Chart to explore other features of the decoder.

TROUBLE SHOOTING
Whenever the decoder doesn't work, please use the program track to program CV# 125 with value 1 to restore the decoder to factory settings. This should bring the decoder to life with address #3. This decoder should perform well with all DCC systems.

RETURN PROCEDURE: This decoder carries a 6 month warranty against factory defects. This warranty does not include abuse, misuse, neglect, improper installation, or any modifications made to this decoder, including but not limited to the removal of the NMRA plug if applicable. If it should become necessary to return the decoder for warranty repair/replacement, please include a letter with your name, address, daytime phone number, and a detailed description of the problem you are experiencing. Please also include a check or a money order for $10.00 to cover return shipping and handling. If the decoder is no longer considered under warranty, then please contact XL Systems for a price quote to cover the cost of repair or replacement of the decoder, and return shipping and handling. Customers outside the continental United States, including; Hawaii, Alaska, Canada and Mexico, have to contact us for exact return shipping rates for both warranty and non-warranty repairs.
Contact to us at linzping@gmail.com.
Send the decoder to: XL SYSTEMS INC. 14 DORA LANE HOLMDEL, NJ 07733

FUNCTION CHARTER

Function	Idle/Moving
F0	Headlight on off Double click F0 will turn on off sound
F1	Bell on/off
F2	Horn
F3	Air release
F4	Coupling lever
F5	Brake release / brake squeal
F6	Dynamic brake on/off
F7	Air hose firing/uncoupling lever
F8	Click 3 times will shut down when in idle/Manual notch down
F9	Engine cooling fan / Manual notch up
F10	Rail wheel clack (only moving)
F11	Traction air compressor
F12	Change prime diesel rumble type (CV123, 4 types plus diesel off)
F13	Short air release
F14	Coupler crash
F15	Air compressor
F16	associated loco sound
F17	Flange squeal
F18	Change bell type (8 types plus off)
F19	Horn type select (total 34 different horns plus off)
F20	associated loco sound
F21	Change bell volume and turn on the bell
F22	Change horn volume
F23	Change diesel rumble volume
F24	Air release
F25	Flange noise
F26	associated loco sound
F27	Sand drop
F28	Air release

CV CHARTER

CV#	Description	Range	Default
CV1	Short address	1-127	3
CV2	Start voltage	0-32	10
CV3	Acceleration	0-32	0
CV4	Deceleration	0-32	0
CV5	Top voltage	0-32	32
CV29	Basic configuration		2
CV19	Advanced consist address	0-127	0
CV21	CV21=0, all accessory functions follow its own address. When CV21=1, all functions will follow the consist address		
CV49	odd number sound on, even number sound off	0-1	1
CV50	Horn type (34 types)	0-33	4
CV51	Horn volume	0-3	3
CV52	Bell type (8 types plus off, 8=off)	0-7	3
CV53	Bell volume	0-3	3
CV54	Bell ring rate	0-50	3
CV55	Diesel rumble volume	0-3	3
CV56	Brake squeal volume	0-3	3
CV57	Dynamic brake volume	0-3	3
CV58	Air release volume	0-3	3
CV59	Air pump volume	0-3	3
CV60	Safety pop valve volume	0-3	3
CV61	Engine cooling fan volume	0-3	3
CV62	Coupling volume	0-3	3
CV64	Rail wheel clack	0-3	3
CV65	Kick start voltage	0-63	63
CV67-94	28 speed steps table while CV29.4=1	1-255	
CV112	Air compressor volume	0-3	3
CV113	Coupling fire volume	0-3	3
CV114	Brake release volume	0-3	3
CV115	Auto brake squeal enable/disable	0-1	1
CV117	light mode: 0=on/off, 1=on/off/dim, 2=rule17	0-2	0
CV122	Diesel notch mode, 0=auto notch 3=manual notch	0-3	0
CV123	Diesel prime mover select	0-2	0
CV125	Program to "1" will restore some CV's to factory settings		0

Fig 1   wrap tape

Fig 2

Fig 3

Fig 4   Completed installation

SPEED TABLE CV67-CV94 FOR 28 SPEED STEPS

When CV29's bit 4 is set to "1" it will use the speed table formed by CV67-CV94 to control speed (motor voltage). It allows you to setup each speed for all 28 speed steps. First, program CV29 to 18 for short addresses (1-127) or program CV29 to 50 for long addresses (128-9999) to enable speed table control. Then select throttle to 28 speed steps and run your loco at speed step 1. Use program

CV on the main to change CV67's value (1-255) to adjust step 1's speed. The kick voltage, CV65 is only applied when the speed step changes from 0 to 1. You should switch between 0 to 1 many times to check step 1's speed. When done with CV67, select speed step 2 and program CV68. CV68's value must be greater then CV67's. When done with CV67-CV94, use read back CV to make sure their values are in increasing order.

Note: When using MRC Prodigy DCC to program addresses it will automatically disable the speed table (set CV29's bit 4 to "0"). Programming CV125 to 1 will also disable the speed table and re-program CV67-CV94 to a default linear speed setting.

FCC COMPLIANCE
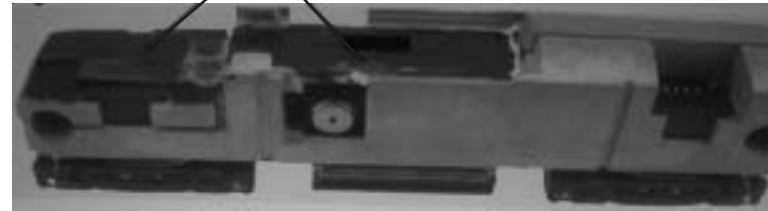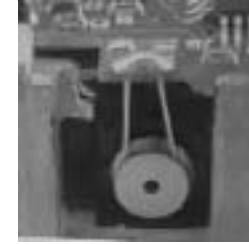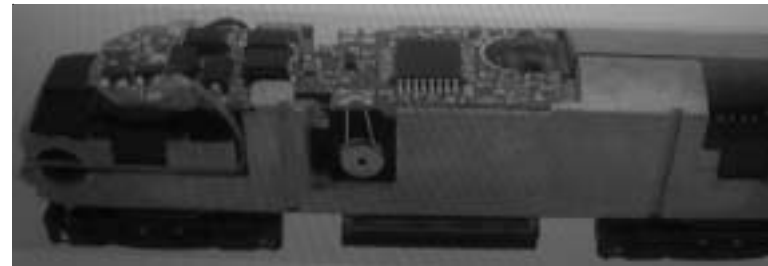
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions. (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

About US

XL Systems Inc has designed and manufactured model rail road products for MRC for more than 20 years. All MRC DCC products are made by XL Systems Inc. All our DCC products are compatible to MRC DCC products. We will introduce more new products to meet customer's beget. We also provide installation and special programming and modification for customer. If you have special needs please contact to us at: linzping@gmail.com or maxiulandcc@gmail.com. You also buy directly from XL to get more saving.