1004

TRAIN CONTROL SYSTEMS

RoHS ![leaf] compliant

FL4

A "Fleetlighter" decoder with four 200mA function outputs.
.5 amp continuous, 1.0 amp peak capacity
Dimensions: .567"x.359"x.135" or 14.4mm x 9.1186mm x 3.429mm

- **Dimmed Brightness** of bulbs or LEDs is adjustable.
- **Factory Reset** is faster and easier to reset to the default settings.
- **Brake on DC** stops the train with deceleration when in a **DC block**, maintains lighting, then accelerates when DCC returns.
- **Momentary Pulse**: to uncouple, activate a sound module, or other function.
- Mars, Gyra, Rotary Beacon, Blinking Ditch Lights and Momentary Pulse are adjustable.
- **Decoder Lock** for programming same address decoders independently.
- **Function Remapping**: 13 buttons for most lights, 7 buttons for operations.
- OPS Mode Programming allows on the main track programming.
- All Program Modes are supported allowing use with any controller.
- Basic and Advanced Consisting for use with any controller.
- Standard 2 Digit or Extended 4 Digit Addressing.
- Additional lighting features not listed above include Random Flicker, Single & Double Strobe, and Constant Dim light.

Our Famous GOOF PROOF No Questions Asked Warranty !

WORKSHEET INSTRUCTIONS

- A blank outlined box is provided by each CV number. This is so you can preplan your decoder and have a record of your choices.
- In many cases you are recording a single value such as an address, a rate, or a limit.
- In some cases you are choosing more than one value such as actions, functions, or buttons. Each of these will have a value. Add the values of those you want active and enter that sum in the blank box.
- The other box by the CV number is the factory set value. If it is shaded, it can be reset with Factory Reset.

BASIC CONFIGURATION

Circle the values by all of the changes you want to make.

1	A	0	1	Reverse the direction the engine runs.
	C	4	-4	Disable analog (DC) operation.
	E	0	32	Make the decoder address 128 or higher.
CV 29		6		Adjust the Default Value by the values you have circled.

ADDRESSING

2 Digit Address   Use if the address is 127 or less.

2	CV 1	3		◄──────── Record your choice here.

4 Digit Address   Make sure Table 1 "E" = 32.

3			Your command station will assign the values of CV 17 and CV18
	CV 17	0	
	CV 18	0	◄──────── Record your four digit address here

For more information about CV 17 and 18 visit our web entry on this topic at:
http://www.tcsdcc.com/faq/four_digit_addressing.htm

Consist Address   If this is greater than 0, the regular address is unalterable.

Add 128 to reverse the loco when in consist. Some systems only!

4	CV 19	0	Use a 2 digit address when in a consist (Multiple units).

Decoder Lock   Same address decoders need a different sub address in CV 16.

To unlock a decoder, make CV 15 = 0 or CV 15 = CV 16.   To lock a decoder, make CV 15 not equal to CV 16.   To lock all same address decoders, make CV 15 = 7.

5	CV 15	0	All unlocked = 0	Decoder to unlock = 1 - 6	All locked = 7
	CV 16	1	Mobil = 1 Sound = 2	Light Only = 3 ___ = 4	___ = 5 ___ = 6

Headlight Dimming Control   Rule 17

13			Not used = 0	Dims when stopped = 16	Opposite light is dimmed = 32
	CV 61	0	Automatic Dimming Options		Dim stopped + Opposite dim = 48
	CV 64	15	Dimmed Brightness	(2 – 6 for LEDs, 12 – 18 for Bulbs)	

LIGHTING CONTROL

<table>
<tr><td rowspan="4">11</td><td>CV 51</td><td>32</td><td>Green Wire</td></tr>
<tr><td>CV 52</td><td>32</td><td>Purple Wire</td></tr>
<tr><td>CV 53</td><td>32</td><td>Brown Wire</td></tr>
<tr><td>CV 54</td><td>32</td><td>Pink Wire</td></tr>
</table>

Light Function Wires

Place the value attained from the table by the function wire that will control it.

* Auto-Mars: Automatically turns Mars light on when decelerating below 36% speed. This setting also turns the Mars light on steady above 36% speed.

Choose a value.

Light Effect	fwd ⇐	rev ⇒	both ⇔
Constant Bright Light	0	16	32
Random Flicker (fire box)	1	17	33
Mars Light	2	18	34
Flashing Light	3	19	35
Single Pulse Strobe	4	20	36
Double Pulse Strobe	5	21	37
Rotary Beacon	6	22	38
Gyra Light	7	23	39
Rule 17 (dimmable light)	8	24	40
Momentary Pulse	9	25	41
Ditch Light (Left or Right)	10	26	42
Ditch Light (Other side)	11	27	43
Constant Dim light (50%)	12	28	44
Auto-Mars*	13	29	45

Ditch Light Control

14	CV 63	64	Ditch Light Blink Holdover Time (12 = 1 second, 60 = 5 seconds)	
	CV 117	5	Ditch Light Blink Rate	(1 = slow, 12 = fast)

Analog (DC) Power Control

			Green = 2	Purple = 4	Brown = 8	Pink = 16
17	CV 13	255	Activate power to light functions on DC			
	Brake on DC		Activate by subtracting 4 from CV 29 in table 1.			

Consist Lighting Control

Activate lights to work in a consist.

			Green = 2	Purple = 4	Brown = 8	Pink = 16
18	CV 21	0				

Function Remapping

Choose the values for the buttons to activate a function.

Buttons	Fwd 0 Rev	1	2	3	4	5	6	7	8	9	10	11	12
Value	1	2	4	8	16	32	64	128	4	8	16	32	64	128

19	CV 35	4	Green Wire (0 – 6)					(7 – 12)		0	CV 37		
	CV 36	8	Purple Wire (0 – 6)					(7 – 12)		0	CV 38		
	CV 39	16	Brown Wire (0 – 6)					(7 – 12)		0	CV 41		
	CV 40	32	Pink Wire (0 – 6)					(7 – 12)		0	CV 42		
	CV 123	32	On/Off for Rule 17 Dimming (0 – 6)										
	CV 124	8	On/Off for Ditch Light Blink (0 – 6)										

When using Ditch Lights, use the same button to turn on both ditch light wires.

Factory Reset

Sets all CVs with a shaded value back to that value.

20	CV 30	0	As soon as you enter a 2 in either CV 8 or CV 30, The reset is complete.
	CV 8	153	

WIRING DIAGRAM

Red Wire To **Right Side Rail** (the Engineer's Side)

Blk / Wht stripe circuit ground (For Future Use)

Green Wire (Function button 1)

Purple Wire (Function button 2)

Brown Wire (Function button 3)

Pink Wire (Function button 4)

Blue Wire Power Supply for lights

Black Wire To **Left Side Rail** (the Fireman's Side)

| Red |
| Gray |
| Green |
| Purple |
| Brown |
| Pink |
| Blue |
| Black |

DECODER — Forward

The wiring order is shown from the side of the board that the wires are attached.

Programming the FL4 on the Programming Track:

If you are not able to program the FL4 on the programming track we recommend you temporally add a 60 ohm to100 ohm 1/4 watt resistor connected to one of the function outputs. Any one of the four will do as they are all turned on for the acknowledgement pulse. Use alligator clips or some other simple means to hook up the resistor. Connect it between the blue wire and the function lead (green, violet, brown or pink). You should have no problem at this point in programming your FL4 decoder. The FL2 decoder has a built in load circuit so you do not need an external load on any of the functions to accomplish the programming. This circuit was left out of the FL4 so the decoder could be made as small as possible.

PROGRAMMING OTHER FEATURES: Decoder Lock, Modifiable

Momentary Pulse, Mars, Gyra and Rotary Beacon Light. If you wish to use them, see **Simple Programming** at www.tcsdcc.com or get a copy at your Dealer.

Compatible with NMRA DCC standards.   Made by TCS in the USA.

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WARRANTY This decoder is covered by a one year goof proof, no questions asked replacement warranty. Send decoders in a padded envelope or small box directly to TCS. (If returning by mail, use the P.O. Box Address, otherwise use the street address.) Please include a brief description of the problem, your phone number, Email address, and return address when returning any items.

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