## **Digitrax Decoder Specification Sheet**

## **DH123D**

## 1.5 Amp HO Scale Mobile Decoder with Wired Interface



Physical	.66" x 1.2" x .25"	<b>Current Rating</b>	1.5/2.0 Amps
Size	16.76mm x 30.48mm x 6.35mm		

Interface	Decoder End	Wires		<b>Locomotive End/Plug</b>
Wired	Digitrax 9 pin	6.9"	175mm	Wires

# Functions	2	Function	125mA	Function	FX <sup>3</sup>
		<b>Current Rating</b>		Type	
<b>Prod Date</b>	11-2002	Discontinued	Current	Replaced By	Current
MSRP	US\$19.99	Feature Set	Economy		
			Series 3		

**FX**<sup>3</sup> **decoders** have motor isolation protection. If the decoder senses that the motor is not isolated, it will not run the motor. In this case, you will be able to control the loco's functions but the motor will not work.

## CVs are used for this decoder

CV#	Feature	Default	Range	Notes
Locon	notive Address CVs			
01	2 Digit Decoder Address	03	001-127	
17	4 Digit Address (High Byte)	00	0128-9983	CV17 & 18 are used
18	4 Digit Address (Low Byte)	00	0128-9983	Together to program the
				4 digit address. Current
				production Digitrax
				throttles handle this
				automatically. See
				calculator below if
				separate values are
				needed by your system
				for programming 4 digit
				address
29	Configuration Register	06	See CV29	Must be set to a value
	Controls Multiple Features		Value Table	that allows either 2 digit
			Below	or 4 digit addressing

Confi	guration Register CV					
29	Configuration Register	06				
	Address Selection, 2 or 4 digit	2 Digit	2 or 4 Digit			
	Normal Direction of Travel	Fwd	Fwd/Rev			
	(NDOT)					
	Speed Step Control	28/128	14 or 28/128			
	Speed Table On/Off	Off	Speed Table			
			On or Off			
	Analog Mode Conversion On/Off	On	On or Off			
Locor	motion CVs-Control					
	motive Motion					
	acteristics					
	eration and Deceleration	T				
03	Acceleration Rate	00	00 to 31	128 Steps		
04	Deceleration Rate	00	00 to 31	128 Steps		
	e Step Simple Speed Table & St					
02	Start Voltage	00	00 to 255	128 Steps		
05	Maximum Voltage	00	00 to 255	128 Steps		
				$00, 01 & 255 = \max$		
				voltage at step 28		
06	Mid Point Voltage	00	00 to 255	128 Steps		
				00 & 01= straight line		
20.04	G ITTII WAS COLUMN			curve		
	ep Speed Tables with 256 Step I		<b>1</b>	120 %		
65	Kick Start value	00		128 Step Interpolated		
66 67	Forward Trim	00		128 Step Interpolated		
	First Speed Table Entry	00		128 Step Interpolated		
68- 93	28 Step Speed Table Entries	00		128 Step Interpolated		
94	Maximum Speed Table Step	00		128 Step Interpolated		
95	Reverse Trim	00		128 Step Interpolated		
29	Configuration Register	06	See Above	Must be set to a value		
2)	Configuration Register	Speed	CV29	that enables speed tables		
		Tables	C V 2 )	that chaoles speed tables		
		are				
		disable				
		d				
Torai	ue Compensation and					
_	Switching Speed					
53	FX <sup>3</sup> Decoders do not use	NA	NA	Not Available		
$FX^3$	CV53					
53	FX Decoders used CV53 to			See instruction sheet for		
FX	designate FX effect generated			the FX decoder you are		
	on F3-Brown Wire	<u> </u>		using		
54	FX <sup>3</sup> Decoders use CV54 to	00	00=SS Off, TC			
$FX^3$	control		On			
	la ', 1' a 10		01-990 On TC	1		
	Switching Speed & Torque Compensation		01=SS On, TC			

See instruction sheet for the FX decoder you are using   See instruction sheet in FX decoder you are using   See instruction sheet in Section   See instruction sheet for the FX decoder you are using   See instruction sheet for the FX decoder you are using   See instruction sheet for the FX decoder you are using   See instruction sheet for the FX decoder you are using   See instruction sheet for the FX decoder you are using   See instruction sheet for the FX decoder you are using   See instruction sheet for the FX decoder you are using   See instruction sheet for the FX decoder you are using   See instruction sheet for the FX decoder you are using   See instruction she				16=SS Off, TC	
17=SS On, TC Off					
See instruction sheet for the FX decoder you are using   See instruction sheet for the FX decoder you are using				_	
FX				· ·	
Descriptions	53	FX Decoders used CV54 to			See instruction sheet for
Section	FX	designate FX effect generated			the FX decoder you are
DC Functions ON Not Used in FX3		on F4-White/Yellow Wire			using
In FX3	Funct				
49         F0F, forward light effect white         00         See FX³ section           50         F0R, reverse light effect yellow         00         See FX³ section           51         F1, Function 1 green         00         See FX³ section           52         F2, Function 2 violet         00         See FX³ section           113         F3, Function 3 brown         00         Not Available           114         F4, function 4 white/yellow         00         Not Available           115         F5, Function F5 white/yellow         00         Not Available           116         F6, Function F6 white/blue         00         Not Available           62         FX Rate and Keep alive adjust         00         00 to 255           63         Ditch Light Blink hold time         00         00 to 255           Master Light Switch         See FX³ section           Directional Headlight         Directional Forward & Reverse See CV61 Section           Forward & Reverse See CV61 Section           See CV61 Section         See CV61 Section           For AC Motors           See CV61 Section           Split Field Motor           Off Off on On See CV61 Section           S	13			Automatic	Not Used FX <sup>3</sup>
White	$FX^3F$	unctions			
FOR, reverse light effect yellow	49	F0F, forward light effect	00	See FX <sup>3</sup>	
yellow   section		white		section	
yellow	50	F0R, reverse light effect	00	See FX <sup>3</sup>	
Section   Section		yellow		section	
F2, Function 2 violet	51	F1, Function 1 green	00	See FX <sup>3</sup>	
Section   Section   Not Available					
113	52	F2, Function 2 violet	00	See FX <sup>3</sup>	
Transponding				section	
115         F5, Function F5 white/green         00         Not Available           116         F6, Function F6 white/blue         00         Not Available           62         FX Rate and Keep alive adjust         00         00 to 255           63         Ditch Light Blink hold time         00         00 to 255           Master Light Switch         See FX³ section           Directional Headlights, Transponding, Split Field Motor           61         Directional Headlight         Directional Forward & Reverse See CV61 Section         Not controlled by CV61 in FX³ Decoders           Transponding         Off         Off or On See CV61 Section         Sec CV61 Section           Split Field Motor         Off         Off or On See CV61 Section         For AC Motors           Scaleable Speed Stabilization (Back EMF)           55         Static Compensation         N/A         N/A         BEMF Not Available in Series 3 Economy Decoders           56         Dynamic Compensation         N/A         N/A         Speed Stabilizer-Droop         N/A         N/A           57         Speed Stabilizer-Droop         N/A         N/A         Default is MAX           Advanced Consisting	113	F3, Function 3 brown	00		Not Available
Transponding	114	F4, function 4 white/yellow	00		Not Available
Transponding	115	F5, Function F5 white/green	00		Not Available
adjust 00 00 to 255  Master Light Blink hold time 00 00 to 255  Master Light Switch See FX³ section  Directional Headlights, Transponding, Split Field Motor  61 Directional Headlight Directi onal Forward & Reverse See CV61 Section  Transponding Off Off or On See CV61 Section  Split Field Motor Off Off or On See CV61 Section  Split Field Motor Off Off or On See CV61 Section  Scaleable Speed Stabilization (Back EMF)  55 Static Compensation N/A N/A  SuperSonic (Quiet Operation)  9 Motor Frequency SuperSonic 00 00 to 255 Default is MAX  Advanced Consisting	116		00		Not Available
adjust  63 Ditch Light Blink hold time  Master Light Switch  Directional Headlights, Transponding, Split Field Motor  61 Directional Headlight  Onal  Forward & Reverse See CV61 Section  Transponding  Off Off or On See CV61 Section  Split Field Motor  Off Off or On See CV61 Section  Split Field Motor  Off Off or On See CV61 Section  Sealeable Speed Stabilization (Back EMF)  55 Static Compensation  N/A N/A  SuperSonic (Quiet Operation)  Map F0 Not controlled by CV61 in FX³ Decoders  For AC Motors  BEMF Not Available in Series 3 Economy Decoders  N/A N/A  SuperSonic (Quiet Operation)  Motor Frequency SuperSonic  O0 O0 to 255 Default is MAX	62	FX Rate and Keep alive	00	00 to 255	
Ditch Light Blink hold time   O0   O0 to 255		-			
Master Light SwitchSee FX³ sectionDirectional Headlights, Transponding, Split Field Motor61Directional HeadlightDirecti onalMap F0 Forward & Reverse See CV61 SectionNot controlled by CV61 in FX³ DecodersTranspondingOffOff or On See CV61 SectionSectionSplit Field MotorOffOff or On See CV61 SectionFor AC MotorsScaleable Speed Stabilization (Back EMF)For AC Motors55Static CompensationN/AN/ABEMF Not Available in Series 3 Economy Decoders56Dynamic CompensationN/AN/A57Speed Stabilizer-DroopN/AN/ASuperSonic (Quiet Operation)O000 to 255Default is MAXAdvanced Consisting	63	Ditch Light Blink hold time	00	00 to 255	
Directional Headlights, Transponding, Split Field Motor  61 Directional Headlight Directi onal Forward & Reverse See CV61 Section  Transponding Off Off or On See CV61 Section  Split Field Motor Off Off or On See CV61 Section  Split Field Motor Off Off Off or On See CV61 Section  Scaleable Speed Stabilization (Back EMF)  55 Static Compensation N/A N/A BEMF Not Available in Series 3 Economy Decoders  56 Dynamic Compensation N/A N/A N/A  SuperSonic (Quiet Operation)  99 Motor Frequency SuperSonic O0 00 to 255 Default is MAX  Advanced Consisting					See FX <sup>3</sup> section
Directional Headlight   Directi   Map F0   Not controlled by CV61     Forward & Reverse   See CV61     Section   Section     Transponding   Off   Off or On     See CV61   Section     Split Field Motor   Off   Off or On     See CV61   Section     Split Field Motor   Off   Off or On     See CV61   Section     Section   For AC Motors     Section   For AC Motors     Section   N/A   N/A     BEMF Not Available in Series 3 Economy     Decoders     Dynamic Compensation   N/A   N/A     Speed Stabilizer-Droop   N/A   N/A     SuperSonic (Quiet Operation)     Og Motor Frequency SuperSonic   O0   O0 to 255     Default is MAX     Advanced Consisting   Online   Online     Online Forward & In FX3     Decoders     Default is MAX     Online   In FX3     Decoders     Decoders     Online   In FX3     Online   In FX3     Decoders     Online   In FX3     Decoders     Online   In FX3     Online   In F	Direc		ng, Split F	ield Motor	
onal Forward & in FX³ Decoders  Reverse See CV61 Section  Transponding Off Off or On See CV61 Section  Split Field Motor Off Off or On See CV61 Section  Split Field Motor  Split Field Motor Off Off or On See CV61 Section  See CV61 Section  See CV61 Section  For AC Motors  See CV61 Section  N/A N/A  BEMF Not Available in Series 3 Economy Decoders  Decoders  Decoders  Speed Stabilizer-Droop N/A N/A  SuperSonic (Quiet Operation)  Motor Frequency SuperSonic Off Off or On See CV61 Section  Off Off or On See CV61 Section  For AC Motors  For AC Motors  For AC Motors  Section  Decoders  Default is MAX  Advanced Consisting					Not controlled by CV61
Transponding Off Off or On See CV61 Section  Split Field Motor Off Off or On See CV61 Section  Split Field Motor Off Off or On See CV61 Section  Scaleable Speed Stabilization (Back EMF)  Static Compensation N/A N/A BEMF Not Available in Series 3 Economy Decoders  Decoders  Dynamic Compensation N/A N/A SuperSonic (Quiet Operation)  Motor Frequency SuperSonic Off Off or On For AC Motors  For AC			onal	Forward &	in FX <sup>3</sup> Decoders
Transponding Off Off or On See CV61 Section  Split Field Motor Off Off or On See CV61 Section  Split Field Motor Off Off or On See CV61 Section  For AC Motors  Scaleable Speed Stabilization (Back EMF)  Static Compensation N/A N/A BEMF Not Available in Series 3 Economy Decoders  Dynamic Compensation N/A N/A  SuperSonic (Quiet Operation)  Motor Frequency SuperSonic O O O O O O O O O O O O O O O O O O O				Reverse	
Transponding Off Off or On See CV61 Section  Split Field Motor Off Off or On See CV61 Section  For AC Motors  Sealeable Speed Stabilization (Back EMF)  55 Static Compensation N/A N/A SuperSonic (Quiet Operation) O9 Motor Frequency SuperSonic O0 Off or On See CV61 Section  For AC Motors  Default is MAX  Advanced Consisting				See CV61	
See CV61 Section  Split Field Motor Off Off or On See CV61 Section  Scaleable Speed Stabilization (Back EMF)  Static Compensation N/A N/A BEMF Not Available in Series 3 Economy Decoders  Decoders  M/A N/A Speed Stabilizer-Droop N/A N/A SuperSonic (Quiet Operation)  Motor Frequency SuperSonic O0 O0 to 255 Default is MAX  Advanced Consisting				Section	
See CV61 Section  Split Field Motor  Off Off or On See CV61 Section  Scaleable Speed Stabilization (Back EMF)  Static Compensation N/A N/A BEMF Not Available in Series 3 Economy Decoders  Decoders  N/A N/A Speed Stabilizer-Droop N/A N/A SuperSonic (Quiet Operation)  Motor Frequency SuperSonic O0 O0 to 255 Default is MAX  Advanced Consisting		Transponding	Off	Off or On	
Split Field Motor  Off Off or On See CV61 Section  Scaleable Speed Stabilization (Back EMF)  55 Static Compensation N/A N/A BEMF Not Available in Series 3 Economy Decoders  56 Dynamic Compensation N/A N/A N/A  SuperSonic (Quiet Operation)  O9 Motor Frequency SuperSonic O0 O0 to 255 Default is MAX  Advanced Consisting				See CV61	
Scaleable Speed Stabilization (Back EMF)  55 Static Compensation N/A N/A BEMF Not Available in Series 3 Economy Decoders  56 Dynamic Compensation N/A N/A  57 Speed Stabilizer-Droop N/A N/A  SuperSonic (Quiet Operation)  09 Motor Frequency SuperSonic 00 00 to 255 Default is MAX  Advanced Consisting				Section	
SectionScaleable Speed Stabilization (Back EMF)55Static CompensationN/AN/ABEMF Not Available in Series 3 Economy Decoders56Dynamic CompensationN/AN/A57Speed Stabilizer-DroopN/AN/ASuperSonic (Quiet Operation)09Motor Frequency SuperSonic0000 to 255Default is MAXAdvanced Consisting		Split Field Motor	Off	Off or On	For AC Motors
Scaleable Speed Stabilization (Back EMF)55Static CompensationN/AN/ABEMF Not Available in Series 3 Economy Decoders56Dynamic CompensationN/AN/A57Speed Stabilizer-DroopN/AN/ASuperSonic (Quiet Operation)09Motor Frequency SuperSonic0000 to 255Default is MAXAdvanced Consisting				See CV61	
Static Compensation N/A N/A BEMF Not Available in Series 3 Economy Decoders  Dynamic Compensation N/A N/A N/A Speed Stabilizer-Droop N/A N/A SuperSonic (Quiet Operation)  Motor Frequency SuperSonic 00 00 to 255 Default is MAX Advanced Consisting				Section	
Static Compensation N/A N/A BEMF Not Available in Series 3 Economy Decoders  Dynamic Compensation N/A N/A N/A Speed Stabilizer-Droop N/A N/A SuperSonic (Quiet Operation)  Motor Frequency SuperSonic 00 00 to 255 Default is MAX Advanced Consisting	Scale	able Speed Stabilization (Back	EMF)		
56Dynamic CompensationN/AN/A57Speed Stabilizer-DroopN/AN/ASuperSonic (Quiet Operation)09Motor Frequency SuperSonic0000 to 255Default is MAXAdvanced Consisting				N/A	BEMF Not Available in
56 Dynamic Compensation N/A N/A  57 Speed Stabilizer-Droop N/A N/A  SuperSonic (Quiet Operation)  09 Motor Frequency SuperSonic 00 00 to 255 Default is MAX  Advanced Consisting					Series 3 Economy
57 Speed Stabilizer-Droop N/A N/A  SuperSonic (Quiet Operation)  09 Motor Frequency SuperSonic 00 00 to 255 Default is MAX  Advanced Consisting	<u></u>				Decoders
SuperSonic (Quiet Operation)  09 Motor Frequency SuperSonic 00 00 to 255 Default is MAX  Advanced Consisting	56	Dynamic Compensation	N/A	N/A	
SuperSonic (Quiet Operation)       09     Motor Frequency SuperSonic     00     00 to 255     Default is MAX       Advanced Consisting	57	Speed Stabilizer-Droop	N/A	N/A	
09 Motor Frequency SuperSonic 00 00 to 255 Default is MAX  Advanced Consisting	Super				
Advanced Consisting			00	00 to 255	Default is MAX
	Adva				
			00	00 to 255	Default is OFF

Advanced Consist Function	00	See CV21-22	
Control Override for F1-F8		Section	
Advanced Consist Function	00	See CV21-22	
Control Override for F0 &		Section	
F9-F12			
ion Mapping			
Function Mapping CVs	00	See Function	
		Mapping	
		Section	
er Reset to Default Values			
Reset Decoder to Factory	129	Set to 08 to	Set to 09 to reset all CV
Default CV Values		reset all CV	Values except 28 step
		Values.	speed table.
er IDs			
User Private ID #1	00		User Defined
User Private ID #2	00		User Defined
Version ID	64	Digitrax	Read Only
		Version ID	-
Manufacturer ID	129	Digitrax	Not affected by reset
	Control Override for F1-F8 Advanced Consist Function Control Override for F0 & F9-F12 ion Mapping Function Mapping CVs  er Reset to Default Values Reset Decoder to Factory Default CV Values  user Private ID #1 User Private ID #2 Version ID	Control Override for F1-F8  Advanced Consist Function Control Override for F0 & F9-F12  ion Mapping  Function Mapping CVs  O0  er Reset to Default Values  Reset Decoder to Factory Default CV Values  User Private ID #1  User Private ID #2  Version ID  O0  O0  O0  O0  O0  O0  O0  O0  O0  O	Control Override for F1-F8  Advanced Consist Function Control Override for F0 & See CV21-22 Section  F9-F12  ion Mapping  Function Mapping CVs  Punction Mapping CVs  Reset to Default Values  Reset Decoder to Factory Default CV Values  Per IDs  User Private ID #1 User Private ID #2  Version ID  Version ID  See CV21-22 Section  See Function Mapping Section  Page 129 Set to 08 to reset all CV Values  Values  Private ID #1 OO User Private ID #2  Version ID

Information provided here is correct to the best of our knowledge.