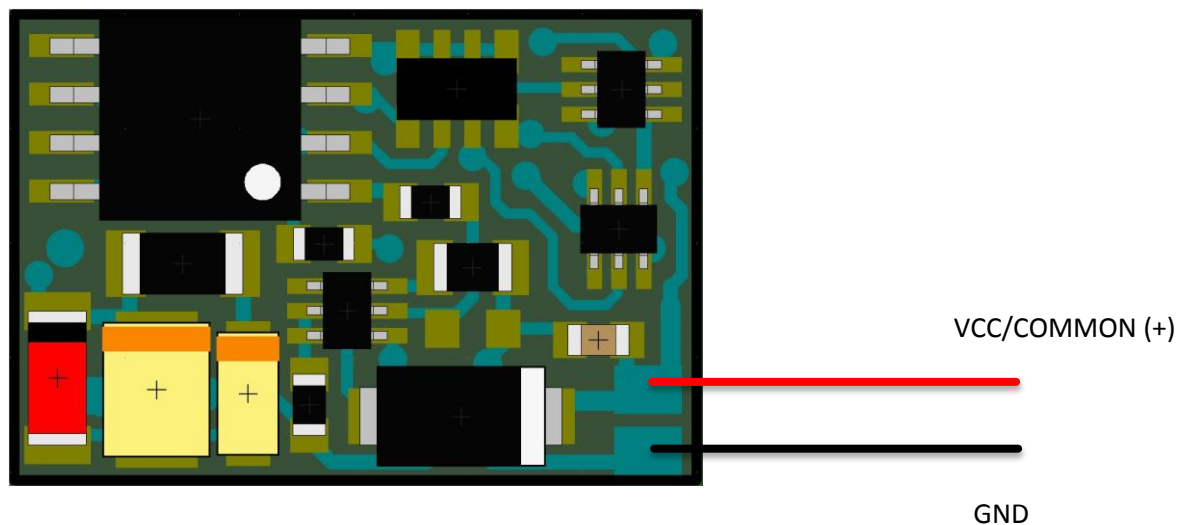
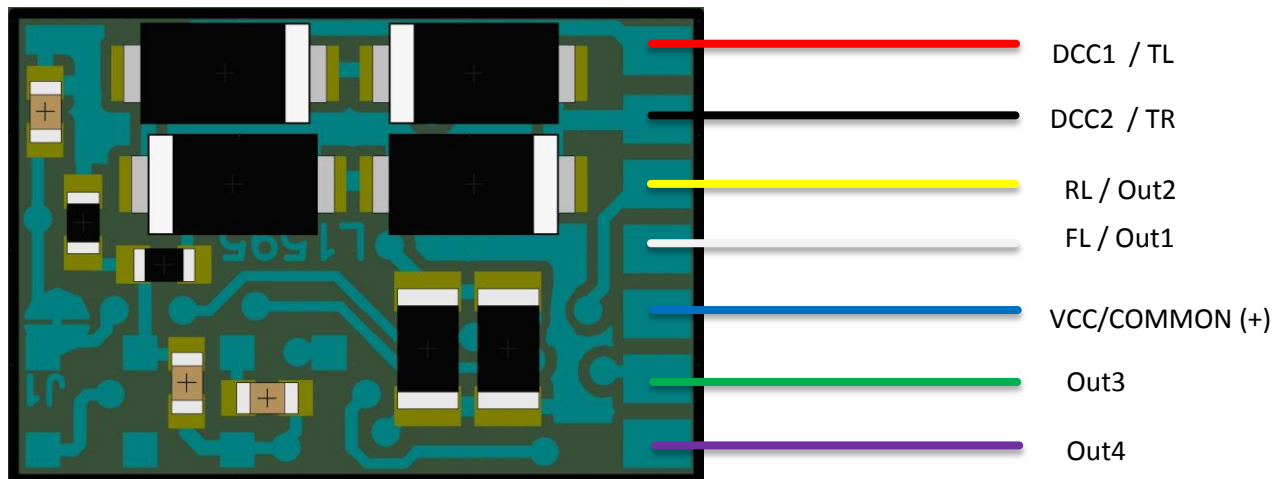


## FD Basic Connections



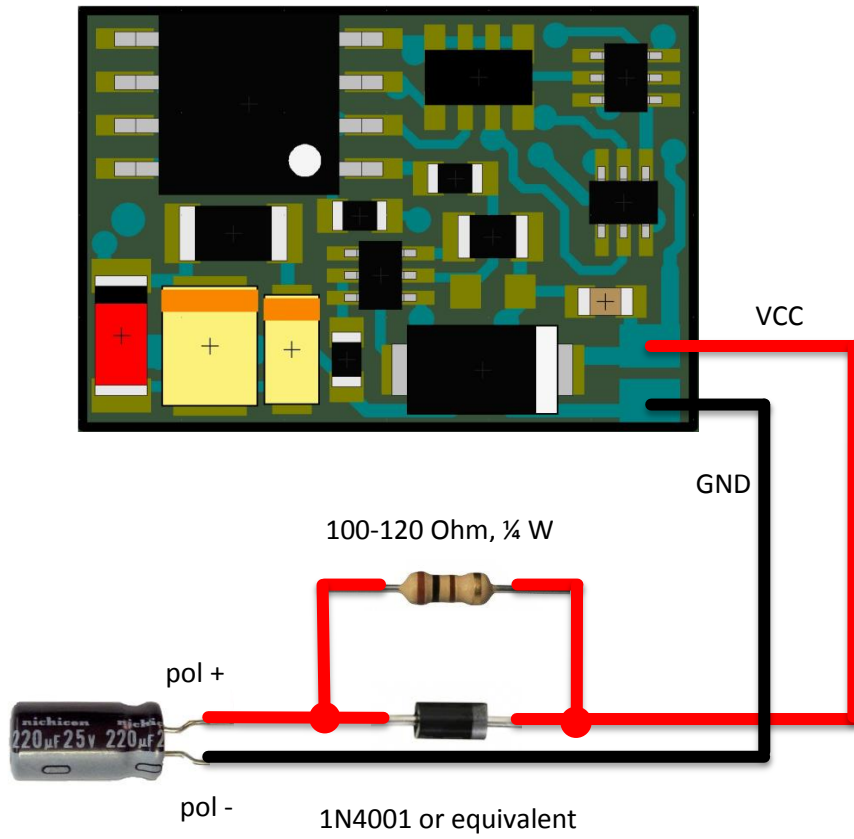
### Please note!

It is possible to connect an external capacitor (the polarity must be respected) between the VCC/COMMON (+) and GND terminals of the FD Basic. For details please see the next page. The recommended capacitor value is 220 - 470  $\mu\text{F}$  / 25V.

The outputs are Open Drain type; if LEDs are connected they should have a series current limiting resistor.

Out1 is equivalent to the standard FL, Out2 is equivalent to the standard RL. For function mapping please see the CV table.

## External capacitor connection



## FD Basic CV table

Revision V4

CV	Value (Default)	Range	Description
1	3	0-127	Decoder Adresse Short, 7 bits
7	4	0-255	Software Version
8	78		Manufactured ID/RESET
13	0	0-255	Analog Mode, Alternate Mode Function Status F1-F8 Bit0- F1, bit1- F2 ... bit7- F8, Value bit 1-On 0-Off
14	3	0-255	Analog Mode, Alternate Mode Function. Status FL,FR F9-F14, Bit0-FL front light, Bit1- FR rear light, Bit2-F9, ..., bit7- F14
15	0	0-7	LockValue: Enter the value to match Lock ID in CV16 to unlock CV programming. No action and ACK from decoder when LockValue different from LockID. In this situation only CV15 write is allowed.
16	0	0-7	LockID: To prevent accidental programming, ID number unique for decoders with same address (0..7) 1-loco decoder, 2-sound decoder, 3-function decoder, ...
17	192	192-255	Extended Address, Address High
18	3	0-255	Extended Address, Address Low
19	0	0-127	Consist Address If CV #19 > 0: Speed and direction is governed by this consist address (not the individual address in CV #1 or #17+18); functions are controlled by either the consist address or individual address, see CV's #21 + 22.
21	0	0-255	Functions so defined here will be controlled by the consist address. Bit 0 = 0: F1 controlled by individual address = 1: .... by consist address Bit 1 = 0: F2 controlled by individual address = 1: .... by consist address ..... F3, F4, F5, F6, F7 Bit 7 = 0: F8 controlled by individual address = 1: .... by consist address
22	0	0-63	Select whether the headlights are controlled with the consist address or individual address. Bit 0 = 0: F0 (forw.) controlled by individual address = 1: .... by consist address Bit 1 = 0: F0 (rev.) controlled by individual address = 1: .... by consist address Bit 2 = 0: F9 controlled by individual address = 1: .... by consist address Bit 3 = 0: F10 controlled by individual address = 1: .... by consist address Bit 4 = 0: F11 controlled by individual address = 1: .... by consist address Bit 5 = 0: F12 controlled by individual address = 1: .... by consist address
29	6	0-63	Configuration Data bit0 -Locomotive Direction: "0" = normal, "1" = reversed bit1 -FL location: "0" = bit 4 in Speed and Direction instructions control FL, "1" = bit 4 in function group one instruction controls FL bit2 -Power Source Conversion: "0" = NMRA Digital Only, "1" = Power Source Conversion Enabled bit3 -Bi-Directional Communications: "0" = Bi-Directional Communications disabled, "1" = Bi-Directional Enabled bit4 -Speed Table: "0" = speed table set by configuration variables #2,#5, and #6, "1" = Speed Table set by configuration variables #66-

			#95 bit5 - "0" = one byte addressing, "1" = two byte addressing (also known as extended addressing) bit6 -Reserved for future use bit7 -Accessory Decoder: "0" = Multifunction Decoder, "1" = Accessory Decoder
30	0	0-1	Error Report: 1-Over current protection, 0-No error, 0-to clear flag
33	15	0-15	Function Front Light mapping, bit0- Out1, bit1- Out2, bit2- Out3, bit3- Out4
34	15	0-15	Function Rear Light mapping, bit0- Out1, bit1- Out2, bit2- Out3, bit3- Out4
35	1	0-15	F1, Forward move, bit0- Out1, bit1- Out2, bit2- Out3, bit3- Out4
36	1	0-15	F1, Backward move, bit0- Out1, bit1- Out2, bit2- Out3, bit3- Out4
37	2	0-15	F2 mapping F2 = bit0- Out1, bit1- Out2, bit2- Out3, bit3- Out4
38	4	0-15	F3 mapping F3 = bit0- Out1, bit1- Out2, bit2- Out3, bit3- Out4
39	8	0-15	F4 mapping F4 = bit0- Out1, bit1- Out2, bit2- Out3, bit3- Out4
40	0	0-15	F5 mapping F5 = bit0- Out1, bit1- Out2, bit2- Out3, bit3- Out4
41	0	0-15	F6 mapping F6 = bit0- Out1, bit1- Out2, bit2- Out3, bit3- Out4
42	0	0-15	F7 mapping F7 = bit0- Out1, bit1- Out2, bit2- Out3, bit3- Out4
43	0	0-15	F8 mapping F8 = bit0- Out1, bit1- Out2, bit2- Out3, bit3- Out4
44	0	0-255	F9 / F13 mapping, F9 = bit0- Out1, bit1- Out2, bit2- Out3, bit3- Out4 F13 = bit4- Out1, bit5- Out2, bit6- Out3, bit7- Out4
45	0	0-255	F10 / F14 mapping, F10 = bit0- Out1, bit1- Out2, bit2- Out3, bit3- Out4 F14 = bit4- Out1, bit5- Out2, bit6- Out3, bit7- Out4
46	0	0-255	F11 / F15 mapping, F11 = bit0- Out1, bit1- Out2, bit2- Out3, bit3- Out4 F15 = bit4- Out1, bit5- Out2, bit6- Out3, bit7- Out4
47	0	0-255	F12 / F16 mapping, F12 = bit0- Out1, bit1- Out2, bit2- Out3, bit3- Out4 F16 = bit4- Out1, bit5- Out2, bit6- Out3, bit7- Out4
48	127	0-255	Out 1 Light intensity, [1-255] , 0-continous
49	127	0-255	Out 2 Light intensity, [1-255] , 0-continous
50	127	0-255	Out 3 Light intensity, [1-255] , 0-continous
51	127	0-255	Out 4 Light intensity, [1-255] , 0-continous
56	0	0-1	Save Last State 1-Save 0-DontSave
105	0	0-255	USER data
106	0	0-255	USER data
112	15	1-127	FadeIN AUX Light Effect Fade ON, ex.:1=8ms, 15=120ms 125=1000ms
113	3	1-127	FadeOUT AUX Light Effect Fade OFF
117	0	0-15	No Effect(Fading) on AUX, continues signal, Output Mapping, AUX Out 1-4

Value=Bit0\*1+Bit1\*2+Bit2\*4+Bit3\*8+Bit4\*16+Bit5\*32+Bit6\*64+Bit7\*128

Address High = 192 + (Extended\_Address divide 256)

Address Low = (Extended\_Address modulo 256)