

In order to avoid incorrect programming and incorrect connections, please read these instructions completely before installation. Decoders that are destroyed by incorrect connection cannot be repaired free of charge under the warranty.

First connect all the necessary lines and make sure before switching on the operating voltage again, that there are no faults or short circuits. If everything is in order, switch on the operating voltage and put the DSE F8 function decoder into operation.

The function outputs of the DSE F8 can be loaded with a maximum of 1 ampere. The total current can be arbitrarily on the outputs are divided. The total current of all outputs must also not exceed 1 ampere. So for example, if you have loaded one output with 0.6 amps, you still have a total of 0.4 amps left for the remaining outputs. The outputs that are actually used simultaneously must be taken into account in this calculation. In the SUSI operation Please refer to the operating instructions for your locomotive decoder for the maximum permissible current.

The basic functions of the DIETZ Modellbahntechnik DSE F8 function decoder correspond exactly to the NMRA standards and supports all operating modes with 14, 27, 28 and 128 speed steps, as well as short and long locomotive addresses, as well as consist operation (multiple traction). However, the mapping of the function outputs was implemented differently in order to enable a significantly greater variety of functions.

#### DSE X8 - CV table

Please note that the bits in this manual are counted starting with bit 0. To program the DSE F8 in DCC mode, a consumer must be connected to any output, e.g. standard model railway light bulb. The programming device must be able to write the corresponding CVs. Programming can either in DCC mode via a connected decoder or directly via the SUSI interface, e.g. with the DIETZ MODEL RAILWAY TECHNOLOGY Programmer SUSI-PR. Overwriting the corresponding CV in the DCC area also changes the corresponding one SUSI CV value and vice versa! The function decoder DSE F8 is factory set to SUSI area 2. - When changing the programming on SUSI range 1, the CV range 940 to 979 described in the following table is shifted to 900 to 939 according to the SUSI specification, when changing the programming to SUSI area 3, the CV area is shifted to CVs 980 to 1019.

CV(SUSI)CV(DCC)	Function of the corresponding CV	allowed values	default
897 - 938 58	SUSI area output configurations	1-3 0-255	2 0
	for the double assignment of the outputs optionally as function AND / OR bits 0 to 7 correspond to outputs A to H set the bit = 0 for function link OR, set the bit = 1 for function link AND		
940 8	Manufacturer identification (Manufacturer-ID) - read only	115 115	115 = DIETZ 115

**Function mapping:**

Since the function mapping according to NMRA does not allow many possibilities, here is a way of assigning outputs to functions selected that allows extensions compared to the standard. In addition, the DSE F8 outputs can be assigned double functions:

The number of the function that is to be switched is simply entered in CVs 67 - 74, i.e. 0 to 28 for F0 (light) to F28. With CVs 75 - 82 it is possible to use the same outputs again switch to another function. This can be selected either as an OR or as an AND function. The

The CVs can be written either with the CVs mentioned above in DCC programming or POM mode done or alternatively via the corresponding SUSI CVs.

In addition to the selected function, the following options can also be set:

A direction dependency can be achieved with bit 7 (+128).

The direction is selected with bit 6 (+64) 0=forward 1=backward

So adding 128 turns the function on only forwards, adding 192 only turns it on backwards.

The output signal can be inverted with bit 5

When the function is switched ON, the output is switched OFF and vice versa!

A value of 29 only switches the output to the direction bit, independently of a function.

Value 30 switches the output on as soon as the speed step is greater than 0.

If the value 31 is written into this CV, the output is deactivated.

942	67	mapping for output A	0-255	9
943	68	mapping for output B	0-255	10
944	69	mapping for output C	0-255	11
945	70	mapping for output D	0-255	12
946	71	mapping for output E	0-255	13
947	72	mapping for output F	0-255	14
948	73	mapping for output G	0-255	15
949	74	mapping for output H	0-255	16
950	75	mapping for output A	0-255	31
951	76	mapping for output B	0-255	31
952	77	mapping for output C	0-255	31
953	78	mapping for output D	0-255	31
954	79	mapping for output E	0-255	31
955	80	mapping for output F	0-255	31
956	81	mapping for output G	0-255	31
957	82	Mapping for output H	0-255	31

**Output configuration:** In addition to the mapping in CV 67-82 or SUSI CV 942-957, various properties such as flashing, inverse flashing or a timer function can be assigned. Please note that the possible double assignment of the outputs the set functions can influence each other. A value of 0 means continuous operation. Values between 1 and 31 specify the flashing frequency or the switch-on time for the timer function. The values for the time setting can be found in the separate time table at the end of this CV listing.

Bit 7 (+128) can be used to change the flashing to "inverse". This enables, for example, two outputs to flash alternately. With bit 6 (+64) each output can be switched to a timer. By setting this function, processes with a limited duty cycle can be implemented, e.g. remote-controlled decoupling. (The timer function is particularly useful here to avoid burning out the magnets or the motor.)

958	83	additional settings 1 for output A	0-31, 64-255	0
959	84	additional settings 1 for output B	0-31, 64-255	0
960	85	additional settings 1 for output C	0-31, 64-255	0
961	86	additional settings 1 for output D	0-31, 64-255	0
962	87	additional settings 1 for output E	0-31, 64-255	0
963	88	additional settings 1 for output F	0-31, 64-255	0
964	89	additional settings 1 for output G	0-31, 64-255	0
965	90	additional settings 1 for output H	0-31, 64-255	0
966	91	additional settings 2 for output A	0-31, 64-255	0
967	92	additional settings 2 for output B	0-31, 64-255	0
968	93	additional settings 2 for output C	0-31, 64-255	0
969	94	additional settings 2 for output D	0-31, 64-255	0
970	95	additional settings 2 for output E	0-31, 64-255	0
971	96	additional settings 2 for output F	0-31, 64-255	0
972	97	additional settings 2 for output G	0-31, 64-255	0
973	98	additional settings 2 for output H	0-31, 64-255	0
-	1	locomotive address DCC	1-127	3
-	17	long address, upper part (MSB)	192-231	192
-	18	long address, lower part (LSB)	0-255	0
-	19	multiple traction address (Consist) –	0-128	0

may be from 1 to 127. 0 and 128 mean "no multiple traction active".

Bit 7 (addition of 128) means the integration into a multiple traction, but "contrary to the normal driving direction", i.e. with "forward" the MTR drives the vehicle itself "backwards".

Attention - Creation and deregistration of an MTR is done via PoM (programming on the main track) - the vehicle must be on the track and digital impulses obtain. Please note this in particular when dissolving an MTR!

-	20	programming lock for DCC	0-255	115
---	----	--------------------------	-------	-----

If a value other than 115 is written into this CV, no further values can be entered in DCC mode CV no longer be overwritten. This is intended for the case that the DSE F8 be used together with other decoders that have the same CVs values save.

-	29	configuration parameters:	0...35	2
		bit 0= direction: 0=normal 1=forward-backward swapped		
		bit 1= light info: 0=14 speed steps 1=28 or more speed steps		
		bit 5= address length: 0=short (from CV1) 1=long address (from CV 17 and 18)		

979	53	Time ramp according to table if value in CV 56 / 57 = 32		
-	54	mode for LGB pulse chain bit0 to 4 key time - see table in the appendix bit6 = 1 light and f1 to f6 otherwise bit 6 = 0 outputs f1 to f8 bit7 = 1 (128)= LGB mode SERIAL		0
-	55	key mask - only when operating with LGB pulse chain bits 0 to 7 on = output switches off after an adjustable time (monoflop) bits 0 through 7 correspond to output A through H		0
898	128	decoder type - read only	88	88

Tables and connection plan:

Time table for output configuration		0-63		9
Value duration/change interval		Value duration/change interval		
1	100ms	17	1s	
2	150ms	18	1.5s	
3	200ms	19	2s	
4	250ms	20	2.5s	
5	300ms	21	3s	
6	350ms	22	4s	
7	400ms	23	5s	
8	450ms	24	6s	
9	500ms	25	7s	
10	550ms	26	8s	
11	600ms	27	9s	
12	650ms	28	10s	
13	700ms	29	11s	
14	750ms	30	12s	
15	800ms	31	12.7s	
16	900ms			

Time table only for CV 53 / 979

113 = 45 sec    161 = 63 sec    209 = 83 sec  
129 = 51 sec    177 = 70 sec    225 = 89 sec  
145 = 57 sec    193 = 76 sec    241 = 95 seconds

The DSE F8 decoder is connected in two different ways. When running DSE F8-S over commercially available and service-friendly pin headers. The counterparts to this are combined with the decoders delivered. The slightly larger space requirement and greater effort when soldering the cable to the pin headers brings the great advantage that nothing has to be done on the decoder in the event of service. This means work carried out directly on decoders can be avoided that could lead to warranty problems. If you do not carry out this work yourself - please contact your specialist dealer or DIETZ-MODELLBAHNTECHNIK directly. With the DSE F8-L version, the connection is made via soldering points.

Figure = Top  
Top with SUSI connection

Figure = underside  
Underside with solder bridge for switching to SUSI operation. For the Operation as a SUSI decoder, the two solder pads must be connected t with a piece of wire or a drop of solder. In the SUSI operation DCC commands coming from the track are ignored.

Connection Diagram:

This connection drawing refers to the decoder version with plug pins

G = track connection 8-24 Volt DCC  
+ = positive pole / common return conductor  
- = negative pole (ground)  
A-B = function outputs A + B on the top

C-H = function outputs C - H on the bottom  
Caution: The outputs are assigned from left to right

With solder pads, the connections are identical but for soldering standard model railway cables yourself

adjacent figure: shows the decoder with solder pads

Only use the decoder DSE F8 for the intended purpose! Permissible temperature range 0-70

Switch Mode instructions, CV29 bit 7=on (+128), are not translated.