

DMX-Mux

User's Guide



Artistic Licence Engineering Ltd.

Manual Revision V1.5 Firmware Revision V3

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I N T R O D U C T I O N

Overview

The DMX-Mux is a 1RU rack mount solution to the common problem of connecting analogue (0 to 10V) controllers to a single DMX512 line.

The DMX-Mux supports 72 analogue inputs and a DMX512 input. The two input types can be merged to produce a DMX512 output.

DMX512 Input

The DMX512 input accepts both flavours of DMX (pre and post 1990). A receive data indicator is provided for this input. The input is optically isolated from the analogue input and the output.

This is of particular benefit in removing earth loop problems in large installations and outdoor events. The DMX512 input is terminated at 120 ohms.

Analogue Input

The analogue input accepts 72 channels using three DB25 connectors. The product is calibrated for 0 to +10V operation although 0 to -10V operation may be selected internally. The input impedance is 15K ohms and data is converted at full eight bit resolution.

Device Operation

The DMX-Mux operates in three distinct modes:

- Analogue to DMX512 Conversion
- Analogue and DMX512 Merge
- Hog Trigger
- Test Mode

Analogue to DMX512 Conversion

The address wheels are set to 000 in order to enable Analogue to DMX512 conversion. In this mode, the DMX512 input is ignored and the received data indicator does not illuminate.

The DMX512 output transmits 512 channels of which the first 72 represent the analogue inputs.

Analogue and DMX512 Merge

The address wheels are set to a value in the range 001 to 512 in order to enable Analogue and DMX512 merge. In this mode, the DMX512 input and the analogue inputs are combined in a highest takes precedence form.

The address wheels set the channel address at which the analogue inputs are added to the DMX512 input.

Hog

The DMX-Mux can be configured to operate as an analogue trigger device for a Hog II.

This mode is enabled by setting the address wheels to 777.

The DMX-Mux is able to provide 72 DMX512 events to trigger Cues in the range 952 to 1023.

The trigger code is output in the first 10 channels of DMX512 as a binary number. A level of 255 represents binary '1' and a level of 0 represents binary '0'. The most significant bit (9) is output as channel 1 and the least significant bit (0) is output as channel 10.

The codes are triggered when one of the analogue inputs exceeds 50%. Operation is on a latest takes precedence (LTP) basis.

If no channels are above 50%, all zeros are output.

If more than one channel is above 50%, then the highest code will be transmitted.

The table below shows the specific operation:

Input >50%	Con	Cue Trig	DMX Ch 1	DMX Ch 2	DMX Ch3	DMX Ch 4	DMX Ch 5	DMX Ch6	DMX Ch 7	DMX Ch8	DMX Ch 9	DMX Ch 10
None	-	None	0	0	0	0	0	0	0	0	0	0
1	1-1	952	255	255	255	0	255	255	255	0	0	0
2	1-2	953	255	255	255	0	255	255	255	0	0	255
3	1-3	954	255	255	255	0	255	255	255	0	255	0
4	1-4	955	255	255	255	0	255	255	255	0	255	255
5	1-5	956	255	255	255	0	255	255	255	255	0	0
6	1-6	957	255	255	255	0	255	255	255	255	0	255
7	1-7	958	255	255	255	0	255	255	255	255	255	0
8	1-8	959	255	255	255	0	255	255	255	255	255	255
9	1-9	960	255	255	255	255	0	0	0	0	0	0
10	1-10	961	255	255	255	255	0	0	0	0	0	255
11	1-11	962	255	255	255	255	0	0	0	0	255	0
12	1-12	963	255	255	255	255	0	0	0	0	255	255
13	1-13	964	255	255	255	255	0	0	0	255	0	0
14	1-14	965	255	255	255	255	0	0	0	255	0	255
15	1-15	966	255	255	255	255	0	0	0	255	255	0
16	1-16	967	255	255	255	255	0	0	0	255	255	255
17	1-17	968	255	255	255	255	0	0	255	0	0	0
18	1-18	969	255	255	255	255	0	0	255	0	0	255
19	1-19	970	255	255	255	255	0	0	255	0	255	0
20	1-20	971	255	255	255	255	0	0	255	0	255	255
21	1-21	972	255	255	255	255	0	0	255	255	0	0
22	1-22	973	255	255	255	255	0	0	255	255	0	255
23	1-23	974	255	255	255	255	0	0	255	255	255	0
24	1-24	975	255	255	255	255	0	0	255	255	255	255
25	2-1	976	255	255	255	255	0	255	0	0	0	0
26	2-2	977	255	255	255	255	0	255	0	0	0	255
27	2-3	978	255	255	255	255	0	255	0	0	255	0
28	2-4	979	255	255	255	255	0	255	0	0	255	255
29	2-5	980	255	255	255	255	0	255	0	255	0	0
30	2-6	981	255	255	255	255	0	255	0	255	0	255
31	2-7	982	255	255	255	255	0	255	0	255	255	0
32	2-8	983	255	255	255	255	0	255	0	255	255	255
33	2-9	984	255	255	255	255	0	255	255	0	0	0
34	2-10	985	255	255	255	255	0	255	255	0	0	255
35	2-11	986	255	255	255	255	0	255	255	0	255	0
36	2-12	987	255	255	255	255	0	255	255	0	255	255
37	2-13	988	255	255	255	255	0	255	255	255	0	0
38	2-14	989	255	255	255	255	0	255	255	255	0	255
39	2-15	990	255	255	255	255	0	255	255	255	255	0
40	2-16	991	255	255	255	255	0	255	255	255	255	255
41	2-17	992	255	255	255	255	255	0	0	0	0	0
42	2-18	993	255	255	255	255	255	0	0	0	0	255
43	2-19	994	255	255	255	255	255	0	0	0	255	0
44	2-20	995	255	255	255	255	255	0	0	0	255	255
45	2-21	996	255	255	255	255	255	0	0	255	0	0
46	2-22	997	255	255	255	255	255	0	0	255	0	255
47	2-23	998	255	255	255	255	255	0	0	255	255	0
48	2-24	999	255	255	255	255	255	0	0	255	255	255

Input >50%	Con	Cue Trig	DMX Ch 1	DMX Ch 2	DMX Ch3	DMX Ch 4	DMX Ch 5	DMX Ch6	DMX Ch 7	DMX Ch8	DMX Ch 9	DMX Ch 10
49	3-1	1000	255	255	255	255	255	0	255	0	0	0
50	3-2	1001	255	255	255	255	255	0	255	0	0	255
51	3-3	1002	255	255	255	255	255	0	255	0	255	0
52	3-4	1003	255	255	255	255	255	0	255	0	255	255
53	3-5	1004	255	255	255	255	255	0	255	255	0	0
54	3-6	1005	255	255	255	255	255	0	255	255	0	255
55	3-7	1006	255	255	255	255	255	0	255	255	255	0
56	3-8	1007	255	255	255	255	255	0	255	255	255	255
57	3-9	1008	255	255	255	255	255	255	0	0	0	0
58	3-10	1009	255	255	255	255	255	255	0	0	0	255
59	3-11	1010	255	255	255	255	255	255	0	0	255	0
60	3-12	1011	255	255	255	255	255	255	0	0	255	255
61	3-13	1012	255	255	255	255	255	255	0	255	0	0
62	3-14	1013	255	255	255	255	255	255	0	255	0	255
63	3-15	1014	255	255	255	255	255	255	0	255	255	0
64	3-16	1015	255	255	255	255	255	255	0	255	255	255
65	3-17	1016	255	255	255	255	255	255	255	0	0	0
66	3-18	1017	255	255	255	255	255	255	255	0	0	255
67	3-19	1018	255	255	255	255	255	255	255	0	255	0
68	3-20	1019	255	255	255	255	255	255	255	0	255	255
69	3-21	1020	255	255	255	255	255	255	255	255	0	0
70	3-22	1021	255	255	255	255	255	255	255	255	0	255
71	3-23	1022	255	255	255	255	255	255	255	255	255	0
72	3-24	1023	255	255	255	255	255	255	255	255	255	255

Test Mode

The DMX-Mux provides a test mode that allows any single output to be switched to 50% or 100% without a DMX512 or analogue input signal.

- Selecting the 'hundreds' wheel to '6' sets 50% test mode.
- Selecting the 'hundreds' wheel to '7' sets 100% test mode.

The 'tens' and 'units' wheels are then used to select the channel. For example, a code of 701 sets the first output to full, whilst the code 623 sets output 23 to 50%.

Front Panel Indicators

The front panel shows status for both power and DMX512. The Power LED is illuminated when power is applied to the DMX-Mux. The Data LED is illuminated when valid DMX512 is received.

DMX512 Pin Data

The DMX512 input is connected to the male 5 pin XLR on the rear panel. The input is terminated at 120 ohms and cannot be looped. The DMX512 input is optically isolated from the analogue inputs and mains earth. Cable connection is as follows:

Pin 1	Protective ground	Connect to cable screen
Pin 2	Data complement	Connect to twisted pair wire
Pin 3	Data true	Connect to twisted pair wire
Pin 4	Not used	
Pin 5	Not used	

Power Supply

The internal power supply requires a 90-240V AC input with an earth connection. The mains fuse should only be replaced with a 3.15A Slow Blow.

Analogue Pin Data

The analogue inputs are all accessed via the 25 pin female DB connectors on the rear panel. Cable connection is as follows:

Connector Pin	I /P Con 1	I /P Con 2	I /P Con 3
1	1	25	49
2	2	26	50
3	3	27	51
4	4	28	52
5	5	29	53
6	6	30	54
7	7	31	55
8	8	32	56
9	9	33	57
10	10	34	58
11	11	35	59
12	12	36	60
13	13	37	61
14	14	38	62
15	15	39	63
16	16	40	64
17	17	41	65
18	18	42	66
19	19	43	67
20	20	44	68
21	21	45	69
22	22	46	70
23	23	47	71
24	24	48	72
25	Ground	Ground	Ground

Input Options

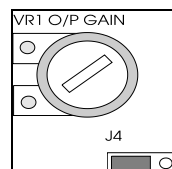
To adjust or calibrate the input of the DMX-Mux, use the following procedure:

- ⇒ Disconnect the power cable from the rear of the unit.
- ⇒ Remove the six pozi-drive screws which secure the lid.
- ⇒ Remove the lid.

Ensure that you are grounded before touching any internal components. You can achieve this by either wearing an anti-static wrist band or by touching an earthed metal surface at regular intervals.

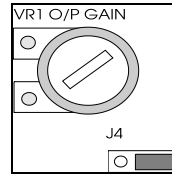
For 0 to +10V inputs

- ⇒ Move the shorting link on J4 to the position shown.
- ⇒ Adjust VR1 to ensure that a +10V input provides a full scale DMX512 output.



For 0 to -10V inputs

- ⇒ Move the shorting link on J4 to the position shown.
- ⇒ Adjust VR1 to ensure that a -10V input provides a full scale DMX512 output.



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