



DEC 48
DMX DECODER

User's Manual

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<http://www.codelight.com>

General

Welcome to use *CODE DEC48* Decoder. *CODE DEC48* Decoder converts DMX512/1990 standard digital control signal that is adopted universally whole of the world to 0~10V analog control signal with advanced Micro-Processor-Unit control technique. It may be used to the situation which need for the analog dimmers combine with a digital console, or need for converting DMX512/1990 standard digital control signal to 0~10V analog control signal.

1.1 Specifications

Decode Output:	48 Channels
Control Signal:	DMX-512/1990 standard digital control signal
Output Signal:	0~10V analog control signal
Power Supply:	220V~, 50-60Hz
Standby Wasting:	11 Watts approx Temperature 0~50°C; Humidity ≤90%;
Operation Condition:	Without corrosive air or combustible gas; Ventilation place
Volume:	482mm(W)X44mm(H)X130mm(D) (19" standard , 1U)
Weight:	1.7kg

1.2 Package Contents Checking

<i>CODE DEC48</i> Decoder	1set
User's Manual	1piece
D25 25Pins Analog Signal Connectors	2pieces
Power Supply Cable	1piece

1.3 CODE DEC48 Front Panel Device



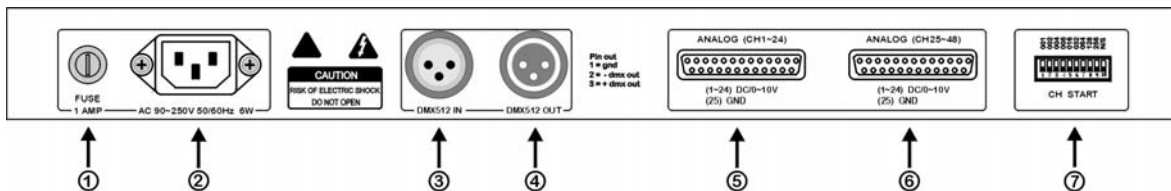
1. DMX-512 signal input pilot light

The pilot light is twinkling while receiving normal DMX-512 signal. Otherwise, it is blank.

2. Power supply switch

The switch turns on or turns off the power supply of *CODE DEC48* (I: turn on, O: turn off)

1.4 CODE DEC48 Rear Panel Device



1. Fuse for power supply;
2. Socket for power supply input;
3. Connector for DMX-512 digital signal input, XLR-D3M;
4. Connector for DMX-512 digital signal output, XLR-D3F (bypass);
5. Connector for 1-24 channel 0~10V analog signal output;
6. Connector for 25-48 channel 0~10V analog signal output;
7. DIP encoder (setup DMX-512 inception address number/select data memory mode)

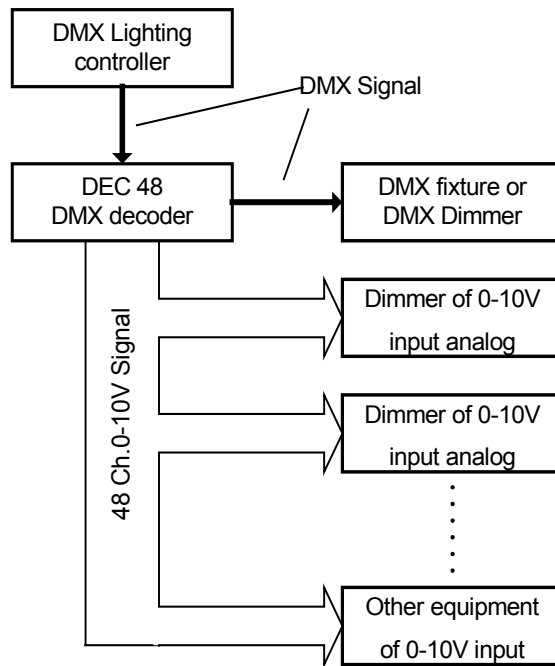
Warning: Before replace the fuse, must affirm the power supply cable be pulled out!

CONNECTION & OPERATION

2.1 System Connecting

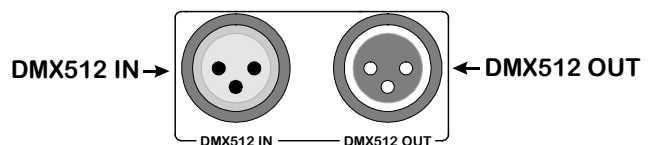
CODE DEC48 Decoder converts DMX-512 digital signal from a digital console to 0~10V analog signal that can control some analog devices.

The signal connection mode is as follow sketch maps:



DMX-512 Signal Connectors

Pin No.	Connection
1	COM
2	S-
3	S+



DMX signal cable is shielded wring-wires such as microphone cable. DMX signal has positive polarity and negative polarity. It must be adverted especially when making a cable with connectors.

In using, connect DMX output socket of a console and DMX input socket of *CODE DEC48* Decoder with a DMX signal cable.

If need, connect DMX output socket of this set and DMX input socket of the next set with a DMX signal cable once more. Such-and-such connecting. Up to the last set.

2.2 0~10V Analog Signal Output Connectors

Two D25 type connectors output 48 channels 0~10V analog signals aggregately.

One outputs CH1 ~ CH24, the other outputs CH25 ~ CH48.

The relation between the pins of the connectors and output channels is as follows:

ANALOG (CH 1~24)

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
CH No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	COM

ANALOG (CH 25~48)

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
CH No.	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	COM

2.3 Setup DMX-512 Address Code and output Control memory Mode

The DIP encoder on the rear panel of *CODE DEC48* Decoder takes on double-duty functions:

- Confirming the local inception address number by binary encoding;
- Confirming output state memory mode.

2.3.1 Confirming DMX-512 Local Inception Address Number

“Local Inception Address Number” is confirmed by 1~9bit switches of DIP encoder. No.1bit is LSB, No.9 bit is MSB. In all the address number is 512. The “Inception Address Number” is the channel number code of DMX signal that is accepted by the first channel of this set, the second channel accepts DMX signal code of “Inception Address Number” + 1, the third channel accepts DMX signal code of “Inception Address number” + 2, etc. (If Local Inception Address Number is “0”, then the first channel of this set accepts No.1 channel code of DMX signal.)

The relation between bit value of DIP encoder and DMX channel code may be deduced by two methods:

2.3.1.1 By Calculating

“DMX Local Inception Address Number” keeps to the formula below:

$$[\text{The sum value of 1~9bit switches of DIP encoder}] + 1 = \text{DMX inception address number}$$

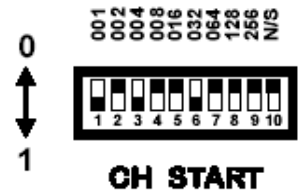
Moving-down No. “n” digit switch of DIP encoder, (set “1”), obtains its bit value;

Otherwise, its bit value is “0”.

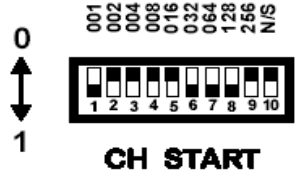
Bit value of DIP Encoder

DIP Bit	1	2	3	4	5	6	7	8	9
Value	1	2	4	8	16	32	64	128	256

Example 1: DMX inception address number is “38”
 Set No.1bit, No.3 bit and No.6 bit to “1”, the others to “0”.
 The sum value of 1~9bit of DIP encoder is 1+4+32=37.
 The result plus 1, then, DMX inception address number is 38.
 Namely: $[1 + 4 + 32] + 1 = 38$



Example 2: DMX inception address number is “226”
 Set No.1bit, No.6 bit No.7 bit and No.8 bit to “1”, the others to “0”.
 The sum value of 1~9bit of DIP encoder is 1+32+64+128=225.
 The result plus 1, then, DMX inception address number is 226.
 Namely: $[1 + 32 + 64 + 128] + 1 = 226$

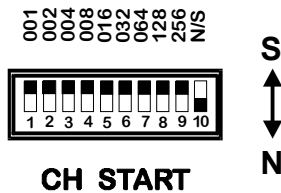


2.3.1.2 By Tabulating

The relation between switch position of DIP encoder and DMX inception address number is as the details in 《DMX Address Encoding Table》 .

2.3.2 Confirming Output State Memory Mode

Confirming the output state memory mode of *CODE DEC48* by No.10bit switch of DIP encoder. While the position of No.10bit switch is “N”(moved at downside), this set is in data memory state. It means of DMX-512 control signal broken off abruptly, the current output state of every channel is not changed. Whereas, the position of No.10bit switch is “S”(moved at upside), The data memory function is closed.



DMX Address Encoding Table

DIP Switch Encoding	DMX512 Address	DIP Switch Encoding	DMX512 Address	DIP Switch Encoding	DMX512 Address	DIP Switch Encoding	DMX512 Address
123456789	Number	123456789	Number	123456789	Number	123456789	Number
00000000	001	010011000	051	001001100	101	011010010	151
10000000	002	110011000	052	101001100	102	111010010	152
01000000	003	001011000	053	011001100	103	000110010	153
11000000	004	101011000	054	111001100	104	100110010	154
00100000	005	011011000	055	000101100	105	010110010	155
10100000	006	111011000	056	100101100	106	110110010	156
01100000	007	000111000	057	010101100	107	001110010	157
11100000	008	100111000	058	110101100	108	101110010	158
00010000	009	010111000	059	001101100	109	011110010	159
10010000	010	110111000	060	101101100	110	111110010	160
01010000	011	001111000	061	011101100	111	000001010	161
11010000	012	101111000	062	111101100	112	100001010	162
00110000	013	011111000	063	000011100	113	010001010	163
10110000	014	111111000	064	100011100	114	110001010	164
01110000	015	00000100	065	010011100	115	001001010	165
11110000	016	10000100	066	110011100	116	101001010	166
00001000	017	01000100	067	001011100	117	011001010	167
10001000	018	11000100	068	101011100	118	111001010	168
01001000	019	001000100	069	011011100	119	000101010	169
11001000	020	101000100	070	111011100	120	100101010	170
00101000	021	011000100	071	000111100	121	010101010	171
10101000	022	111000100	072	100111100	122	110101010	172
01101000	023	000100100	073	010111100	123	001101010	173
11101000	024	100100100	074	110111100	124	101101010	174
00011000	025	010100100	075	001111100	125	011101010	175
10011000	026	110100100	076	101111100	126	111101010	176
01011000	027	001100100	077	011111100	127	000011010	177
11011000	028	101100100	078	111111100	128	100011010	178
00111000	029	011100100	079	00000010	129	010011010	179
10111000	030	111100100	080	10000010	130	110011010	180
01111000	031	000010100	081	01000010	131	001011010	181
11111000	032	100010100	082	11000010	132	101011010	182
00000100	033	010010100	083	00100010	133	011011010	183
10000100	034	110010100	084	10100010	134	111011010	184
01000100	035	001010100	085	01100010	135	000111010	185
11000100	036	101010100	086	11100010	136	100111010	186
00100100	037	011010100	087	000100010	137	010111010	187
10100100	038	111010100	088	100100010	138	110111010	188
01100100	039	000110100	089	010100010	139	001111010	189
11100100	040	100110100	090	110100010	140	101111010	190
00010100	041	010110100	091	001100010	141	011111010	191
10010100	042	110110100	092	101100010	142	111111010	192
01010100	043	001110100	093	011100010	143	000000110	193
11010100	044	101110100	094	111100010	144	100000110	194
00110100	045	011110100	095	000010010	145	010000110	195
10110100	046	111110100	096	100010010	146	110000110	196
01110100	047	000001100	097	010010010	147	001000110	197
11110100	048	100001100	098	110010010	148	101000110	198
00001100	049	010001100	099	001010010	149	011000110	199
10001100	050	110001100	100	101010010	150	111000110	200

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123456789	Number	123456789	Number	123456789	Number	123456789	Number
000100110	201	010111110	251	001101001	301	011110101	351
100100110	202	110111110	252	101101001	302	111110101	352
010100110	203	001111110	253	011101001	303	000001101	353
110100110	204	101111110	254	111101001	304	100001101	354
001100110	205	011111110	255	000011001	305	010001101	355
101100110	206	111111110	256	100011001	306	110001101	356
011100110	207	000000001	257	010011001	307	001001101	357
111100110	208	100000001	258	110011001	308	101001101	358
000010110	209	010000001	259	001011001	309	011001101	359
100010110	210	110000001	260	101011001	310	111001101	360
010010110	211	001000001	261	011011001	311	000101101	361
110010110	212	101000001	262	111011001	312	100101101	362
001010110	213	011000001	263	000111001	313	010101101	363
101010110	214	111000001	264	100111001	314	110101101	364
011010110	215	000100001	265	010111001	315	001101101	365
111010110	216	100100001	266	110111001	316	101101101	366
000110110	217	010100001	267	001111001	317	011101101	367
100110110	218	110100001	268	101111001	318	111101101	368
010110110	219	001100001	269	011111001	319	000011101	369
110110110	220	101100001	270	111111001	320	100011101	370
001110110	221	011100001	271	000000101	321	010011101	371
101110110	222	111100001	272	100000101	322	110011101	372
011110110	223	000010001	273	010000101	323	001011101	373
111110110	224	100010001	274	110000101	324	101011101	374
000001110	225	010010001	275	001000101	325	011011101	375
100001110	226	110010001	276	101000101	326	111011101	376
010001110	227	001010001	277	011000101	327	000111101	377
110001110	228	101010001	278	111000101	328	100111101	378
001001110	229	011010001	279	000100101	329	010111101	379
101001110	230	111010001	280	100100101	330	110111101	380
011001110	231	000110001	281	010100101	331	001111101	381
111001110	232	100110001	282	110100101	332	101111101	382
000101110	233	010110001	283	001100101	333	011111101	383
100101110	234	110110001	284	101100101	334	111111101	384
010101110	235	001110001	285	011100101	335	00000011	385
110101110	236	101110001	286	111100101	336	10000011	386
001101110	237	011110001	287	000010101	337	01000011	387
101101110	238	111110001	288	100010101	338	11000011	388
011101110	239	00001001	289	010010101	339	00100011	389
111101110	240	10001001	290	110010101	340	10100011	390
000011110	241	010001001	291	001010101	341	01100011	391
100011110	242	110001001	292	101010101	342	11100011	392
010011110	243	001001001	293	011010101	343	000100011	393
110011110	244	101001001	294	111010101	344	100100011	394
001011110	245	011001001	295	000110101	345	010100011	395
101011110	246	111001001	296	100110101	346	110100011	396
011011110	247	000101001	297	010110101	347	001100011	397
111011110	248	100101001	289	110110101	348	101100011	398
000111110	249	010101001	299	001110101	349	011100011	399
100111110	250	110101001	300	101110101	350	111100011	400

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123456789	Number	123456789	Number	123456789	Number		
000010011	401	010000111	451	001011111	501		
100010011	402	110000111	452	101011111	502		
010010011	403	001000111	453	011011111	503		
110010011	404	101000111	454	111011111	504		
001010011	405	011000111	455	000111111	505		
101010011	406	111000111	456	100111111	506		
011010011	407	000100111	457	010111111	507		
111010011	408	100100111	458	110111111	508		
000110011	409	010100111	459	001111111	509		
100110011	410	110100111	460	101111111	510		
010110011	411	001100111	461	011111111	511		
110110011	412	101100111	462	111111111	512		
001110011	413	011100111	463				
101110011	414	111100111	464				
011110011	415	000010111	465				
111110011	416	100010111	466				
000001011	417	010010111	467				
100001011	418	110010111	468				
010001011	419	001010111	469				
110001011	420	101010111	470				
001001011	421	011010111	471				
101001011	422	111010111	472				
011001011	423	000110111	473				
111001011	424	100110111	474				
000101011	425	010110111	475				
100101011	426	110110111	476				
010101011	427	001110111	477				
110101011	428	101110111	478				
001101011	429	011110111	479				
101101011	430	111110111	480				
011101011	431	000001111	481				
111101011	432	100001111	482				
000011011	433	010001111	483				
100011011	434	110001111	484				
010011011	435	001001111	485				
110011011	436	101001111	486				
001011011	437	011001111	487				
101011011	438	111001111	488				
011011011	439	000101111	489				
111011011	440	100101111	490				
000111011	441	010101111	491				
100111011	442	110101111	492				
010111011	443	001101111	493				
110111011	444	101101111	494				
001111011	445	011101111	495				
101111011	446	111101111	496				
011111011	447	000011111	497				
111111011	448	100011111	498				
000000111	449	010011111	499				
100000111	450	110011111	500				

MEMO
