DMX-SSR8

DMX 8-channel Solid-State Relay Output Module

Information and Installation Guide

OVERVIEW

The DMX-SSR8 is a DMX512-A (“DMX”) compatible, 8-channel solid-state relay output module designed for fixed installations. The module is capable of switching up to 8 loads from 8 DMX slots. It features an optically-isolated receiver to eliminate ground loops. The module accepts a wide voltage range from 12 – 24 VDC. An optional kit is available for mounting the module on a DIN rail.

ORDERING INFORMATION

Model	Output Channels	DIN Mounting Kit
DMX-SSR8	8	DIN-DMX-SR8

MODULE INFORMATION

Dimensions	6.4” x 2.875”
Supply Voltage	12 – 24 VDC ±10%
Power Consumption (max.)	6 W
Working Temperature	-40 to +85°C
Output Channels	8
Relay Output Contacts	NO, COM
Relay Output Rating	10 A / 230 VAC
DIN Rail Mountable	Yes, with optional kit
DMX IN Isolated Receiver	Yes, 1kV isolation
DMX IN Termination	Yes, built-in DIP switch selectable
DMX THRU Port	Yes, passive loop
DMX Unit Load	1
DMX Start Slot	Selectable, from 1 - 512 (0 - 511 on DIP switch)
DMX Update Rate	Full 44 updates/second
DMX Start Code Handling	Responds to NULL start code, all others ignored
DMX Data Loss Handling	Maintain last state
DMX Output Activation	0 – Off / 1 to 255 – On (programmable, shipping default)

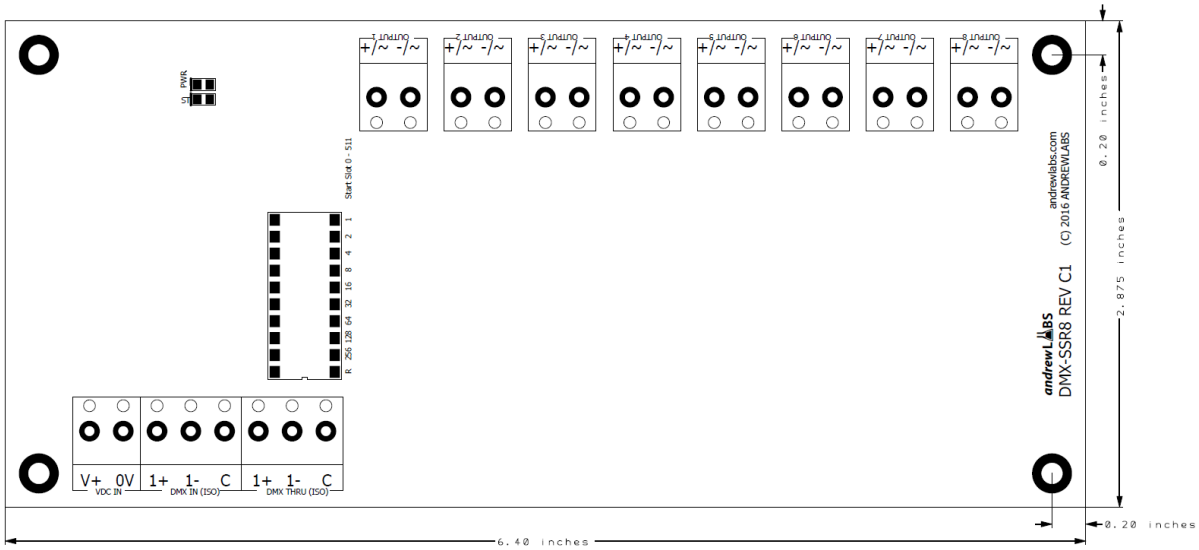
OPERATION

Each solid-state relay output is controlled by a single DMX slot, beginning from the configured start slot, and incrementing sequentially for each subsequent SSR output. The default solid-state relay output activation level is 1, where slot values greater or equal to 1 will turn on the relay (see PROGRAMMING THE ACTIVATION LEVEL below). Each SSR has an LED indicator which lights up when it is activated. During normal operation, the ST LED flashes once every second. During data loss, the ST LED turns off, with a short duration flash every 2 seconds. The PWR LED lights when power is supplied to the module.

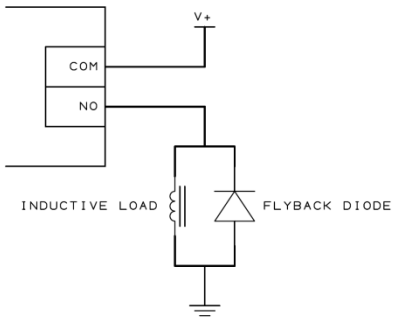
INSTALLATION

- Mount securely using mount points on corners of PCB (4 x 3.2mm dia. for M3 screws), or with optional DIN mounting kit.
- Connect power supply to "VDC IN" terminals.
- Connect DMX output from DMX master or previous unit to "DMX IN" terminals.
- Connect "DMX THRU" terminals to next unit. If the DMX-SSR8 is the last unit in daisy chain, turn on "R" switch on DIP switch to terminate the DMX bus with the built-in 120R resistor.
- Connect controlled devices to relay outputs (see INDUCTIVE LOADS below).
- Select the DMX start slot using the DIP switch (see CONFIGURING THE START SLOT below).

BOARD LAYOUT



INDUCTIVE LOADS (DC-ONLY)



A flyback diode must be connected across inductive DC (direct current) loads to avoid damage to output DC solid-state relay.

CONFIGURING THE START SLOT

The DMX start slot is configurable from 1 – 512. A position on the DIP switch should be off if the setting is ‘0’, and on if the setting is ‘1’. Refer to the start slot listing below for specific DIP settings.

Example:
Start Slot – 80, DIP Setting – 001001111 (binary value – 79)

DIP Switch Position	256	128	64	32	16	8	4	2	1
Setting	Off	Off	On	Off	Off	On	On	On	On

DMX START SLOT LISTING

Start Slot	DIP Setting	Start Slot	DIP Setting	Start Slot	DIP Setting	Start Slot	DIP Setting
1	000000000	65	001000000	129	010000000	193	011000000
2	000000001	66	001000001	130	010000001	194	011000001
3	000000010	67	001000010	131	010000010	195	011000010
4	000000011	68	001000011	132	010000011	196	011000011
5	000000100	69	001000100	133	010000100	197	011000100
6	000000101	70	001000101	134	010000101	198	011000101
7	000000110	71	001000110	135	010000110	199	011000110
8	000000111	72	001000111	136	010000111	200	011000111
9	000001000	73	001001000	137	010001000	201	011001000
10	000001001	74	001001001	138	010001001	202	011001001
11	000001010	75	001001010	139	010001010	203	011001010
12	000001011	76	001001011	140	010001011	204	011001011
13	000001100	77	001001100	141	010001100	205	011001100
14	000001101	78	001001101	142	010001101	206	011001101
15	000001110	79	001001110	143	010001110	207	011001110
16	000001111	80	001001111	144	010001111	208	011001111
17	000010000	81	001010000	145	010010000	209	011010000
18	000010001	82	001010001	146	010010001	210	011010001
19	000010010	83	001010010	147	010010010	211	011010010
20	000010011	84	001010011	148	010010011	212	011010011
21	000010100	85	001010100	149	010010100	213	011010100
22	000010101	86	001010101	150	010010101	214	011010101
23	000010110	87	001010110	151	010010110	215	011010110
24	000010111	88	001010111	152	010010111	216	011010111
25	000011000	89	001011000	153	010011000	217	011011000
26	000011001	90	001011001	154	010011001	218	011011001
27	000011010	91	001011010	155	010011010	219	011011010
28	000011011	92	001011011	156	010011011	220	011011011
29	000011100	93	001011100	157	010011100	221	011011100
30	000011101	94	001011101	158	010011101	222	011011101
31	000011110	95	001011110	159	010011110	223	011011110
32	000011111	96	001011111	160	010011111	224	011011111
33	000100000	97	001100000	161	010100000	225	011100000
34	000100001	98	001100001	162	010100001	226	011100001
35	000100010	99	001100010	163	010100010	227	011100010
36	000100011	100	001100011	164	010100011	228	011100011
37	000100100	101	001100100	165	010100100	229	011100100
38	000100101	102	001100101	166	010100101	230	011100101
39	000100110	103	001100110	167	010100110	231	011100110
40	000100111	104	001100111	168	010100111	232	011100111
41	000101000	105	001101000	169	010101000	233	011101000
42	000101001	106	001101001	170	010101001	234	011101001
43	000101010	107	001101010	171	010101010	235	011101010
44	000101011	108	001101011	172	010101011	236	011101011
45	000101100	109	001101100	173	010101100	237	011101100
46	000101101	110	001101101	174	010101101	238	011101101
47	000101110	111	001101110	175	010101110	239	011101110
48	000101111	112	001101111	176	010101111	240	011101111
49	000110000	113	001110000	177	010110000	241	011110000
50	000110001	114	001110001	178	010110001	242	011110001
51	000110010	115	001110010	179	010110010	243	011110010
52	000110011	116	001110011	180	010110011	244	011110011
53	000110100	117	001110100	181	010110100	245	011110100
54	000110101	118	001110101	182	010110101	246	011110101
55	000110110	119	001110110	183	010110110	247	011110110
56	000110111	120	001110111	184	010110111	248	011110111
57	000111000	121	001111000	185	010111000	249	011111000
58	000111001	122	001111001	186	010111001	250	011111001
59	000111010	123	001111010	187	010111010	251	011111010
60	000111011	124	001111011	188	010111011	252	011111011
61	000111100	125	001111100	189	010111100	253	011111100
62	000111101	126	001111101	190	010111101	254	011111101
63	000111110	127	001111110	191	010111110	255	011111110
64	000111111	128	001111111	192	010111111	256	011111111

Start Slot	DIP Setting	Start Slot	DIP Setting	Start Slot	DIP Setting	Start Slot	DIP Setting
257	100000000	321	101000000	385	110000000	449	111000000
258	100000001	322	101000001	386	110000001	450	111000001
259	100000010	323	101000010	387	110000010	451	111000010
260	100000011	324	101000011	388	110000011	452	111000011
261	100000100	325	101000100	389	110000100	453	111000100
262	100000101	326	101000101	390	110000101	454	111000101
263	100000110	327	101000110	391	110000110	455	111000110
264	100000111	328	101000111	392	110000111	456	111000111
265	100001000	329	101001000	393	110001000	457	111001000
266	100001001	330	101001001	394	110001001	458	111001001
267	100001010	331	101001010	395	110001010	459	111001010
268	100001011	332	101001011	396	110001011	460	111001011
269	100001100	333	101001100	397	110001100	461	111001100
270	100001101	334	101001101	398	110001101	462	111001101
271	100001110	335	101001110	399	110001110	463	111001110
272	100001111	336	101001111	400	110001111	464	111001111
273	100010000	337	101010000	401	110010000	465	111010000
274	100010001	338	101010001	402	110010001	466	111010001
275	100010010	339	101010010	403	110010010	467	111010010
276	100010011	340	101010011	404	110010011	468	111010011
277	100010100	341	101010100	405	110010100	469	111010100
278	100010101	342	101010101	406	110010101	470	111010101
279	100010110	343	101010110	407	110010110	471	111010110
280	100010111	344	101010111	408	110010111	472	111010111
281	100011000	345	101011000	409	110011000	473	111011000
282	100011001	346	101011001	410	110011001	474	111011001
283	100011010	347	101011010	411	110011010	475	111011010
284	100011011	348	101011011	412	110011011	476	111011011
285	100011100	349	101011100	413	110011100	477	111011100
286	100011101	350	101011101	414	110011101	478	111011101
287	100011110	351	101011110	415	110011110	479	111011110
288	100011111	352	101011111	416	110011111	480	111011111
289	100100000	353	101100000	417	110100000	481	111100000
290	100100001	354	101100001	418	110100001	482	111100001
291	100100010	355	101100010	419	110100010	483	111100010
292	100100011	356	101100011	420	110100011	484	111100011
293	100100100	357	101100100	421	110100100	485	111100100
294	100100101	358	101100101	422	110100101	486	111100101
295	100100110	359	101100110	423	110100110	487	111100110
296	100100111	360	101100111	424	110100111	488	111100111
297	100101000	361	101101000	425	110101000	489	111101000
298	100101001	362	101101001	426	110101001	490	111101001
299	100101010	363	101101010	427	110101010	491	111101010
300	100101011	364	101101011	428	110101011	492	111101011
301	100101100	365	101101100	429	110101100	493	111101100
302	100101101	366	101101101	430	110101101	494	111101101
303	100101110	367	101101110	431	110101110	495	111101110
304	100101111	368	101101111	432	110101111	496	111101111
305	100110000	369	101110000	433	110110000	497	111110000
306	100110001	370	101110001	434	110110001	498	111110001
307	100110010	371	101110010	435	110110010	499	111110010
308	100110011	372	101110011	436	110110011	500	111110011
309	100110100	373	101110100	437	110110100	501	111110100
310	100110101	374	101110101	438	110110101	502	111110101
311	100110110	375	101110110	439	110110110	503	111110110
312	100110111	376	101110111	440	110110111	504	111110111
313	100111000	377	101111000	441	110111000	505	111111000
314	100111001	378	101111001	442	110111001	506	RESERVED
315	100111010	379	101111010	443	110111010	507	RESERVED
316	100111011	380	101111011	444	110111011	508	RESERVED
317	100111100	381	101111100	445	110111100	509	RESERVED
318	100111101	382	101111101	446	110111101	510	RESERVED
319	100111110	383	101111110	447	110111110	511	RESERVED
320	100111111	384	101111111	448	110111111	512	RESERVED

PROGRAMMING THE ACTIVATION LEVEL

The activation level is the slot value at which the output solid-state relay starts to turn on. It is programmable from 0 to 255. The programmable activation level feature is available on units shipped from 12 June 2023.

By default, the activation level is programmed to 1: 0 – Off / 1 to 255 – On.

To program the activation level, follow the steps below:

1. Ensure DMX-RL8 is powered off and DMX signal is removed.
2. Set DIP switch to 111111110. Turn power on.
3. Turn power off. Set DIP switch to 111111101. Turn power on. ST LED flashes 5 times.
4. Turn power off. Set DIP switch to 111111011. Turn power on. ST LED flashes 5 times.
5. Turn power off. Set DIP switch to 0*nnnnnnnn*, where *nnnnnnnn* is the activation level expressed in binary. Turn power on. ST LED turns remains on and steady.
6. Set DIP switch to 1*nnnnnnnn* (turn on '256' position switch). ST LED flashes 5 times.
7. New activation level is programmed.

Example:
Activation level – 128 (binary value – 10000000)

1. Connect power to DMX-RL8 using a switch and ensure power switch is off.
2. Set DIP switch to 111111110. Turn power switch on.
3. Turn power switch off. Set DIP switch to 111111101.
4. Turn power switch on. Observe ST LED flash 5 times.
5. Turn power switch off. Set DIP switch to 111111011.
6. Turn power switch on. Observe ST LED flash 5 times.
7. Turn power switch off. Set DIP switch to 010000000.
8. Turn power switch on. Observe ST LED turn on and remain on.
9. Set DIP switch to 110000000 (only turn on '256' position switch). Observe ST LED flash 5 times.
10. New activation level is programmed. New activation values: 0 to 127 – Off / 128 to 255 – On.