

ProDowser

Version 3

A DMX Controlled Projector and Light Source Shutter System

Operating Manual

9/5/07



Bakerwood Lite Industries
135 South Volusia Avenue
Wichita, KS 67211
316-200-4732

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Warranty and Disclaimer

Warranty

Bakerwood Lite Industries warrants this product against defects in materials and workmanship for a period of 1 year from date of purchase. If the unit is defective, we will, at our option, repair or replace the unit. We offer a full refund on the purchase price if returned in original condition in less than 7 days. Return the product with a description of the problem. We will return your item or its replacement by the same shipping method used to ship the product originally.

Disclaimer of Liability

Bakerwood Lite Industries is not responsible for any special, incidental, or consequential damages resulting from any breach of warranty, or any legal theory, including lost profits, downtime, goodwill, damage to or replacement of equipment or property, and any costs associated with the use of the Bakerwood Lite Industries products described herein. Bakerwood Lite Industries has a policy of continually improving our products as new technologies and materials become available. Bakerwood Lite Industries reserves the right to make changes and improvements to the specifications of this equipment at any time without notice. Bakerwood Lite Industries has made every attempt to ensure that the information in this document is accurate and complete. Bakerwood Lite Industries assumes no liability for any damages that result from the use of this manual or the equipment it documents. Bakerwood Lite Industries reserves the right to make changes to this document at any time without notice.

Contact:

Ed Baker
Bakerwood Lite Industries
135 South Volutsia Avenue
Wichita, KS 67211
316-200-4732

Pro-Dowser, DMX Projector Dowsing System

Features

- Allows DMX512 protocol control of flag-type lens shutter.
 - 30 millisecond close time through 45 degrees of travel.
 - Mini DIP address switches for full 512 channel access.
 - AC power adapter.
 - 5 pin Male and Female DMX signal connectors for daisy chain through connection.
-
- Optional Add-On units for multiple projectors on adjacent channels.
 - Optional DMX Termination switch onboard device.

SPECS

Input Signal

The Pro-Dowser accepts DMX512 input as specified by USITT. The unit is programmable to all 512 channels. If optional Add-On dowsers are used they must be assigned as the first three adjacent addresses after the start address as set by the DIP switch.

Shutter Flag Range and Motion

Default range is approximately 90 Degrees with DMX 00 = zero degrees and DMX FF = 90 degrees. Shutter speed and arc of travel are adjustable within the 90 degrees by means of the DMX value and fade time sent.

LED Indicator

The LED indicator located to the side of the DMX address window provides information regarding unit power and DMX signal as follows:

No Light = No power to the unit

Slow Flashing Light = Power Good but Dirty or No DMX Signal to Unit

Steady Light = Good Power and Good DMX Signal to Unit

Address switch

9 position mini DIP switch. The addressing scheme is binary total + 1. Refer to the addressing chart later in this document for more information.

Power requirements

110v AC, .3 Amps, 60 Hz. with “wall wart” Power Supply. May be powered remotely from 9v batteries.

Description

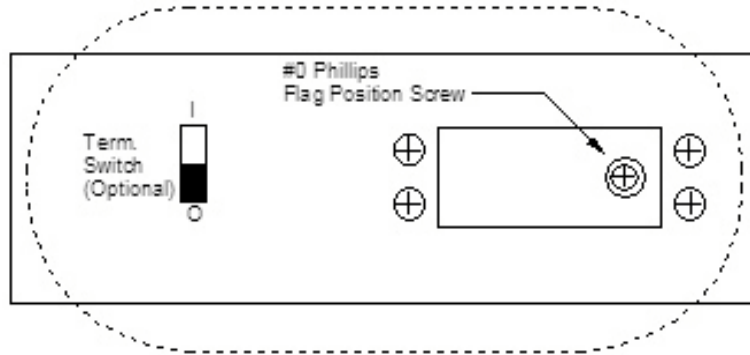
Physical Dimensions and Layout:

The durable ABS plastic case of the Pro-Dowser measures 3" x 6" x 2". The flat black aluminum dowsing flag is 5-3/4" long x 2-3/4" wide.

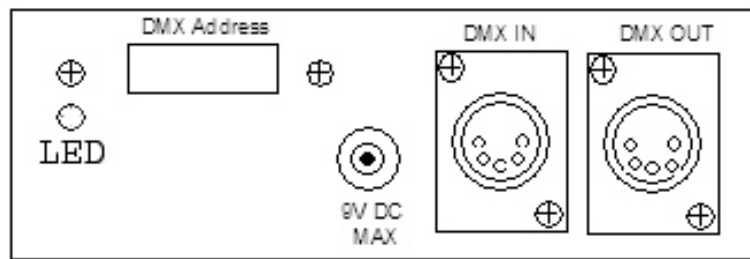
Connections:

Connection to the DMX network is via five pin XLR connectors located on the side opposite the flag motor drive. DMX "in" is the male connector. DMX "Pass Through" is via the female Connector.

The power connection for the unit is located on the side opposite the flag motor drive and between the Address Window and DMX Connectors. The power requirements for the unit are 9 volts, DC at no less than .30 amps.



Flag Side View



DIP Side View

If the Shutter Flag does not have a clear path of travel or hangs up on other hardware in the rig **Serious Damage can occur to the voltage regulator, motor driver or other circuitry.** Please be sure that you do not damage your dowser. Check for a clear path of travel for the Flag.

The use of the optional termination switch is very straight forward. If you wish to terminate a run with this device the switch should be in the "I" position. At all other times it should be in the "O" position. Be aware of your setup and do not "Over Terminate".

Using the ProDowser

When your ProDowser is shipped it is configured for top mounting as shown on the cover page of this document. When the DMX signal is at 00 (0%) the dowser flag will be in the down position, blocking the lens of the projector. When the DMX signal is at FF (100%) the flag will be up at about 90 degrees and out of the way of the lens.

Unless you want the flag to travel at less than its maximum speed of .40 seconds or less than the full travel of about 90 degrees, you may want to set the profile of the channel you use to “Full at 1%”. This will make the flag move to the open position at the beginning of long cues.

Recommended set up for this basic installation is as follows:

Before set up: Be certain that the installation of the dowser will not block access to projector controls or ventilation!

Stick the adhesive hook tape to the bottom of the dowser case. Apply the loop tape to the hook but do not expose the adhesive yet. Apply a DMX signal of 00 to the dowser (the Flag should be pointing down from the drive servo) and position the flag such that it is as close to the front of the lens as possible and fully blocks the lens of the projector. Now, expose the adhesive of the loop tape and stick it down to the top of the projector. Operate the flag by running the dimmer from 00 to FF a few times to **ensure that the flag has a clear path of travel** and fully blocks the lens when in the closed position. A ratchet strap, zip tie, gaff tape or other mechanical fastening system may be used in addition to the hook and loop tape.

The set up above may be altered to mount your dowser on the bottom of a top mounted projector, however, a ratchet strap **MUST** be used to secure the dowser unit.

In the event that you need to mount the dowser in front of the projector or off to the side, the flag can be adjusted to other angles on the drive servo. The black #0 Phillips keeper screw visible through the flag is removed and the flag assembly gently slid off of the splined drive shaft. Reposition the flag on the drive shaft as appropriate to your application and re install the keeper screw. Operate the flag by running the dimmer from 00 to FF a few times to **ensure that the flag has a clear path of travel** and fully blocks the lens when in the closed position. Adjust the position as needed and secure the dowser as mentioned above.

Setting the start address

The address is entered on the DIP switches in starting with 0. The Chart Below Lists all 512 Addresses with DIP settings.

Ch# = Dip Switch On	Ch# Dip = Switch On	Ch# = Dip Switch On	Ch# = Dip Switch On
1 = 0	65= 7	129 = 8	193 = 7,8
2 = 1	66= 1,7	130 = 1,8	194 = 1,7,8,
3 = 2	67= 2,7	131 = 2,8	195 = 2,7,8,
4 = 1,2	68= 1,2,7	132 = 1,2,8	196 = 1,2,7,8
5 = 3	69= 3,7	133 = 3,8	197 = 3,7,8
6 = 1,3	70= 1,3,7	134 = 1,3,8	198 = 1,3,7,8
7 = 2,3	71= 2,3,7	135 = 2,3,8	199 = 2,3,7,8
8 = 1,2,3	72= 1,2,3,7	136 = 1,2,3,8	200 = 1,2,3,7,8
9 = 4	73= 4,7	137 = 4,8	201 = 4,7,8,
10 = 1, 4	74= 1,4,7	138 = 1,4,8	202 = 1,4,7,8
11 = 2,4	75= 2,4,7	139 = 2,4,8	203 = 2,4,7,8
12 = 1,2,4	76= 1,2,4,7	140 = 1,2,4,8	204 = 1,2,4,7,S
13 = 3,4	77= 3,4,7	141 = 3,4,8	205 = 3,4,7,8
14 = 1,3,4	78= 1,3,4,7	142 = 1,3,4,8	206 = 1,3,4,7,8
15 = 2,3,4	79= 2,3,4,7	143 = 2,3,4,8	207 = 2,3,4,7,8
16 = 1,2,3,4	80= 1,3,4,7	144 = 1,2,3,4,8	208 = 1,2,3,4,7,8
17 = 5	81= 5,7	145 = 5,8	209 = 5,7,8
18 = 1,5	82= 1,5,7	146 = 1,5,8	210 = 1,5,7,8
19 = 2, 5	83= 2,5,7	147 = 2,5,8	211= 2 ,5,7,8
20 = 1,2,5	84= 1,2,5,7	148 = 1,2,5,8	212 = 1,2,5,7,8
21 = 3,5	85= 3,5,7	149 = 3,5,8	213 = 3,5,7,8
22 = 1,3,5	86= 1,3,5,7	150 = 1,3,5,8	214 = 1,3,5,7,8
23 = 2,3,5	87= 2,3,5,7	151 = 2,3,5,8	215 = 2,3,5,7,8
24 = 1,2,3,5	88= 1,2,3,5,7	152 = 1,2,3,5,8	216 = 1,2,3,5,7,8
25 = 4,5	89= 4,5,7	153 = 4,5,8	217 = 4, 5,7, 8
26 = 1,4,5	90= 1,4,5,7	154 = 1,4,5,8	218 = 1,4,5,7,S
27 = 2,4,5	91= 2,4,5,7	155 =2,4,5,8	219 = 2,4,5,7,8
28 = 1,2,4,5	92= 1,2,4,5,7	156 = 1,2,4,5,8	220 = 1,2,4,5,7,8
29 = 3,4,5	93= 3,4,5,7	157 = 3,4,5,8	221 = 3,4,5,7,8
30 = 1,3,4,5	94= 1, 3,4,5,7	158 = 1,3,4,5,8	222 = 1,3,4,5,7,8
31 = 2,3,4,5	95= 2,3,4,5,7	159 = 2,3,4,5,8	223 = 2,3,4,5,7,8
32 = 1,2,3,4,5	96= 1,2,3,4,5,7	160 = 1,2,3,4,5,8	224 = 1,2,3,4,5,7,8
33 = 6	97= 6,7	161 = 6,8	225 = 6,7,8
34 = 1,6	98 = 1,6,7	162 = 1,6,8	226 = 1,6,7,8
35 = 2,6	99 = 2,6,7	163 =2,6,8	227 = 2,6,7,8
36 = 1,2,6	100 = 1,2,6,7	164 =1,2,6,8	228 = 1,2,6,7,8
37 = 3,6	101 = 3,6,7	165 =3,6,8	229 = 3,6,7,8
38 = 1,3,6	102 = 1,3,6,7	166 = 1,3,6,8	230 = 1,3,6,7,8
39 = 2,3,6	103 = 2,3,6,7	167 = 2,3,6,8	231 = 2,3,6,7,8
40 = 1,2,3,6	104 = 1,2,3,6,7	168 = 1,2,3,6,8	232 = 1,2,3,6,7,8
41 = 4,6	105 = 4,6,7	169 = 4,6,8	233 = 4,6,7,8
42 = 1,4,6	106 = 1,4,6,7	170 = 1,4,6,8	234 = 1,4,6,7,8
43 = 2,4,6	107 = 2,4,6,7	171 = 2,4,6,S	235 = 2,4,6,7,S
44 = 1,2,4,6	108 = 1,2,4,6,7	172 = 1,2,4,6,8	236 = 1,2,4,6,7,8
45 = 3,4,6	109 = 3,4,6,7	173 = 3,4,6,8	237 = 3,4,6,7,8
46 = 1,3,4,6	110 = 1,3,4,6,7	174 = 1,3,4,6,8	238 = 1,3,4,6,7,8
47 = 2,3,4,6	111 = 2,3,4,6,7	175 = 2,3,4,6,8	239 = 2,3,4,6,7,8
48 = 1,2,3,4,6	112 = 1,2,3,4,6,7	176 = 1,2,3,4,6,8	240 = 1,2,3,4,6,7,8
49 = 5,6	113 = 5,6,7	177 = 5,6,8	241 = 5,6,7,8
50 = 1,5,6	114 = 1,5,6,7	178 = 1,5,6,8	242 = 1,5,6,7,8
51 = 2,5,6	115 = 2,5,6,7	179 = 2,5,6,8	243 = 2,5,6,7,8
52 = 1,2,5,6	116 = 1,2,5,6,7	180 = 1,2,5,6,8	244 = 1,2,5,6,7,8
53 = 3,5,6	117 = 3,5,6,7	181 = 3,5,6,8	245 = 3,5,6,7,8
54 = 1,3,5,6	118 = 1,3,5,6,7	182 = 1,3,5,6,8	246 = 1,3,5,6,7,8
55 = 2,3,5,6	119 = 2,3,5,6,7	183 = 2,3,5,6,8	247 = 2,3,5,6,7,8
56 = 1,2,3,5,6	120 = 1,2,3,5,6,7	184 = 1,2,3,5,6,8	248 = 1,2,3,5,6,7,8
57 = 4,5,6	121 = 4,5,6,7	185 = 4,5,6,8	249 = 4,5,6,7,8
58 = 1,4,5,6	122 = 1,4,5,6,7	186 = 1,4,5,6,8	250 = 1,4,5,6,7,8
59 = 2,4,5,6	123 = 2,4,5,6,7	187 = 2,4,5,6,8	251 = 2,4,5,6,7,8
60 = 1,2,4,5,6	124 = 1,2,4,5,6,7	188 = 1,2,4,5,6,8	252 = 1,2,4,5,6,7,8
61 = 3,4,5,6	125 = 3,4,5,6,7	189 = 3,4,5,6,8	253 = 3,4,5,6,7,8
62 = 1,3,4,5,6	126 = 1,3,4,5,6,7	190 = 1,3,4,5,6,8	254 = 1,3,4,5,6,7,8
63 = 2,3,4,5,6	127 = 2,3,4,5,6,7	191 = 2,3,4,5,6,8	255 = 2,3,4,5,6,7,8
64 = 1,2,3,4,5,6	128 = 1,2,3,4,5,6,7	192 = 1,2,3,4,5,6,8	256 = 1,2,3,4,5,6,7,8

Ch# = Dip Switch On	Ch# = Dip Switch On	Ch# = Dip Switch On	Ch# = Dip Switch On
257 = 9	321 = 7,9	385 = 8,9	449 = 7,8,9
258 = 1,9	322 = 1,7,9	386 = 1,8,9	450 = 1,7,8,9
259 = 2,9	323 = 2,7,9	387 = 2,8,9	451 = 2,7,8,9
260 = 1,2,9	324 = 1,2,7,9	388 = 1,2,8,9	452 = 1,2,7,8,9
261 = 3,9	325 = 3,7,9	389 = 3,8,9	453 = 3,7,8,9
262 = 1,3,9	326 = 1,3,7,9	390 = 1,3,8,9	454 = 1,3,7,8,9
263 = 2,3,9	327 = 2,3,7,9	391 = 2,3,8,9	455 = 2,3,7,8,9
264 = 1,2,3,9	328 = 1,2,3,7,9	392 = 1,2,3,8,9	456 = 1,2,3,7,8,9
265 = 4,9	329 = 4,7,9	393 = 4,8,9	457 = 4,7,8,9
266 = 1, 4, 9	330 = 1,4,7,9	394 = 1,4,8,9	458 = 1,4,7,8,9
267 = 2,4,9	331 = 2,4,7,9	395 = 2,4,8,9	459 = 2,4,7,8,9
268 = 1,2,4,9	332 = 1,2,4,7,9	396 = 1,2,4,8,9	460 = 1,2,4,7,8,9
269 = 3,4,9	333 = 3,4,7, 9	397 = 3,4,8,9	461 = 3,4,7,8,9
270 = 1,3,4,9	334 = 1,3,4,7,9	398 = 1,3,4,8,9	462 = 1,3,4,7,8,9
271 = 2,3,4,9	335 = 2,3,4,7,9	399 = 2,3,4,8,9	463 = 2,3,4,7,8,9
272 = 1,2,3,4,9	336 = 1,2,3,4,7,9	400 = 1,2,3,4,8,9	464 = 1,2,3,4,7,8,9
273 = 5,9	337 = 5,7,9	401 = 5,8,9	465 = 5,7,8,9
274 = 1,5,9	338 = 1,5,7,9	402 = 1,5,8,9	466 = 1,5,7,8,9
275 = 2, 5, 9	339 = 2,5,7,9	403 = 2,5,8,9	467 = 2,5,7,8,9
276 = 1,2,5,9	340 = 1,2,5,7,9	404 = 1,2,5,8,9	468 = 1,2,5,7,8,9
277 = 3,5,9	341 = 3,5,7,9	405 = 3,5,8,9	469 = 3,5,7,8,9
278 = 1,3,5,9	342 = 1,3,5,7,9	406 = 1,3,5,8,9	470 = 1,3,5,7,8,9
279 = 2,3,5,9	343 = 2,3,5,7,9	407 = 2,3,5,8,9	471 = 2,3,5,7,8,9
280 = 1,2,3,5,9	344 = 1,2,3,5,7,9	408 = 1,2,3,5,8,9	472 = 1,2,3,5,7,8,9
281 = 4,5,9	345 = 4,5,7,9	409 = 4,5,8,9	473 = 4,5,7,8,9
282 = 1,4,5,9	346 = 1,4,5,7,9	410 = 1,4,5,8,9	474 = 1,4,5,7,8,9
283 = 2,4,5,9	347 = 2,4,5,7,9	411 = 2,4,5,8,9	475 = 2,4,5,7,8,9
284 = 1,2,4,5,9	348 = 1,2,4,5,7,9	412 = 1,2,4,5,8,9	476 = 1,2,4,5,7,8,9
285 = 3,4,5,9	349 = 3,4,5,7,9	413 = 3,4,5,8,9	477 = 3,4,5,7,8,9
286 = 1,3,4,5,9	350 = 1,3,4,5,7,9	414 = 1,3,4,5,8,9	478 = 1,3,4,5,7,8,9
287 = 2,3,4,5,9	351 = 2,3,4,5,7,9	415 = 2,3,4,5,8,9	479 = 2,3,4,5,7,8,9
288 = 1,2,3,4,5,9	352 = 1,2,3,4,5,7,9	416 = 1,2,3,4,5,8,9	480 = 1,2,3,4,5,7,8,9
289 = 6,9	353 = 6,7,9	477 = 6,8,9	481 = 6,7,8,9
290 = 1,6,9	354 = 1,6,7,9	418 = 1,6,8,9	482 = 1,6,7,8,9
291 = 2,6,9	355 = 2,6,7,9	419 = 2,6,8,9	483 = 2,6,7,8,9
292 = 1,2,6,9	356 = 1,2,6,7,9	420 = 1,2,6,8,9	484 = 1,2,6,7,8,9
293 = 3,6,9	357 = 3,6,7,9	421 = 3,6,8,9	485 = 3,6,7,8,9
294 = 1,3,6,9	358 = 1,3,6,7,9	422 = 1,3,6,8,9	486 = 1,3,6,7,8,9
295 = 2,3,6,9	359 = 2,3,6,7,9	423 = 2,3,6,8,9	487 = 2,3,6,7,8,9
296 = 1,2,3,6,9	360 = 1,2,3,6,7,9	424 = 1,2,3,6,8,9	488 = 1,2,3,6,7,8,9
297 = 4,6,9	361 = 4,6,7,9	425 = 4,6,8,9	489 = 4,6,7,8,9
298 = 1,4,6,9	362 = 1,4,6,7,9	426 = 1,4,6,8,9	490 = 1,4,6,7,8,9
299 = 2,4,6,9	363 = 2,4,6,7,9	427 = 2,4,6,8,9	491 = 2,4,6,7,8,9
300 = 1,2,4,6,9	364 = 1,2,4,6,7,9	428 = 1,2,4,6,8,9	492 = 1,2,4,6,7,8,9
301 = 3,4,6,9	365 = 3,4,6,7,9	429 = 3,4,6,8,9	493 = 3,4,6,7,8,9
302 = 1,3,4,6,9	366 = 1,3,4,6,7,9	430 = 1,3,4,6,8,9	494 = 1,3,4,6,7,8,9
303 = 2,3,4,6,9	367 = 2,3,4,6,7,9	431 = 2,3,4,6,8,9	495 = 2,3,4,6,7,8,9
304 = 1,2,3,4,6,9	368 = 1,2,3,4,6,7,9	432 = 1,2,3,4,6,8,9	496 = 1,2,3,4,6,7,8,9
305 = 5,6,9	369 = 5,6,7,9	433 = 5,6,8,9	497 = 5,6,7,8,9
306 = 1,5,6,9	370 = 1,5,6,7,9	434 = 1,5,6,8,9	498 = 1,5,6,7,8,9
307 = 2,5,6,9	371 = 2,5,6,7,9	435 = 2, 5, 6, 8, 9	499 = 2,5,6,7,8,9
308 = 1,2,5,6,9	372 = 1,2,5,6,7,9	436 = 1,2,5,6,8,9	500 = 1,2,5,6,7,8,9
309 = 3,5,6,9	373 = 3,5,6,7,9	437 = 3,5,6,8,9	501 = 3,5,6,7,8,9
310 = 1,3,5,6,9	374 = 1,3,5,6,7,9	438 = 1,3,5,6,8,9	502 = 1,3,5,6,7,8,9
311 = 2,3,5,6,9	375 = 2,3,5,6,7,9	439 = 2,3,5,6,8,9	503 = 2,3,5,6,7,8,9
312 = 1,2,3,5,6,9	376 = 1,2,3,5,6,7,9	440 = 1,2,3,5,6,8,9	504 = 1,2,3,5,6,7,8,9
313 = 4,5,6,9	377 = 4,5,6,7,9	441 = 4,5,6,8,9	505 = 4,5,6,7,8,9
314 = 1,4,5,6,9	378 = 1,4,5,6,7,9	442 = 1,4,5,6,8,9	506 = 1,4,5,6,7,8,9
315 = 2,4,5,6,9	379 = 2,4,5,6,7,9	443 = 2,4,5,6,8,9	507 = 2,4,5,6,7,8,9
316 = 1,2,4,5,6,9	380 = 1,2,4,5,6,7,9	444 = 1,2,4,5,6,8,9	508 = 1,2,4,5,6,7,8,9
317 = 3,4,5,6,9	381 = 3,4,5,6,7,9	445 = 3,4,5,6,8,9	509 = 3,4,5,6,7,8,9
318 = 1,3,4,5,6,9	382 = 1,3,4,5,6,7,9	446 = 1,3,4,5,6,8,9	510 = 1,3,4,5,6,7,8,9
319 = 2,3,4,5,6,9	383 = 2,3,4,5,6,7,9	447 = 2,3,4,5,6,8,9	511 = 2,3,4,5,6,7,8,9
320 = 1,2,3,4,5,6,9	384 = 1,2,3,4,5,6,7,9	448 = 1,2,3,4,5,6,8,9	512 = 1,2,3,4,5,6,7,8

Troubleshooting

The Pro-Dowser unit is essentially plug and play. When all connections are properly made, addresses set and DMX signal present the shutter flag moves through 90 degrees of arc proportional to the input signal from the controller.

Signal Ground/common

In the unit there is NO connection between chassis ground and signal ground. Do not make one. On the DMX data cable, there is NO connection between the shield/XLR shell ground and the signal ground. Do not connect these together.

Termination

The Pro-Dowser does not contain a terminating resistor. It is up to the user to determine the termination requirements. If the unit is the last on the DMX network a terminating resistor can be installed on the open DMX connector, across pins 2 – 3.

Your Pro-Dowser can be ordered with on board termination switch option.

No Flag Movement

Check the DMX wires for signal. Be sure the DIP switch is set to a valid address. The unit's address should not be higher than the highest address received. The mini DIP switch is marked on and off.

Erratic output

This problem can be hard to track down.

First check the input signal integrity. Your Power/Signal LED should have a steady glow. If it is Blinking at about one second intervals you have no DMX signal at the Unit. Try another DMX instrument on the line. If the problem is in the cable check that the data line polarity is correct.

Drive Motor Chatter

Check the cue that is operating the dowser. The slower the fade time the slower the flag moves. The slower the flag moves the less smooth it will be. A weak or damaged power supply can also cause the shutter flag to chatter through the arc or at the ends of its travel.

Misc

Good solid connections are a must. DMX512 signal wires should be twisted pairs all the way to the connector. It is recommended that you use only the power supply that shipped with your Pro-Dowser. Occasionally unexpected problems can occur if power is "borrowed" from another source.