DMX 8-Channel Servo Driver

Version 1.1a -2016
WD1568A

Overview

The DMX 8- Channel Servo Driver board is designed to provide 8- consecutive channels of standard or extended range movements for analog type R/C Servos with output control pulses from a DMX control signal. The board Base Address may be set between 1 and 504. Board Requires duo power supply- 9 VDC @ 0.5 Amp for onboard electronics and a 6-7 VDC @ 3.0 Amp or larger to power servos.

DMX 8-Ch Servo Board

DMX 3-Wire Connection Block
Power Supply: 9 VDC @ 0.5 Amp
Power Supply: 6 VDC @ 0< 3 Amp
3-1/8" W x 2-3/8""L x 1/2" H

Setup

DMX Bus connection:
Three wire connection terminal block.
Data + = 3 (Connector-3)
Data - = 2 (Connector-2)
Screen = G/ S (Connector-G)

DMX Fault LED:
DMX LED- **ON** when a suitable DMX signal is being received or a flashing LED when **NO** valid DMX signal stream is being received by the 8-Ch DMX Servo Driver board.

Address Selection:
The board base address may be set between 1 and 504 using the onboard DIP switches.

Range selection:
JP1 OFF: = Standard 90 degree servo range - JP1 ON: = Extended 180 degree servo range
 (Servo permitting, check servo date to see that servo is able to move 90 degree without damages)

Power Supplies 2X:
Two power supply wire connection terminal blocks with power indicator - ON LEDs
1- wire connection block - Board Electronics: 9 to 12Vdc @ 0.5 Amp
1- wire connection block - Servo Motors: 6.5 to 7.2Vdc @ < 3 Amps
(Be sure to observe the polarity + / - on the board when connecting up power supplies)

Servo Connections:
8 x 3 wire header pins @ 0.1 pitch with 1K0 series resistors servo connections1-8.
(*See servo setup and application example pages for details*)

Settings - *(See Pages on Control / Addressing for more details)*
Set the start base address of the 8-Channel Servo Board as follows:
Select a valid DMX number for servo channel-1 (address range 1 to 504). Look up the DMX switch settings for the selected value from the DMX addressing chart and then move the onboard DIP switches to the correct matching position (On / Off) for the selected DMX value. Example: DIP switches 16 and 32 set to **ON** position, the start base address is now 48 for the board, (Add the value of the address DIP switches set to the **ON** position to calculate the start base address), this value is used to determine the starting address of servo channel-1 for DMX control. The next servo DMX channel would be address 49 for servo channel-2, and for servo channel-3 DMX address 50 for servo channel-3, etc. Use this same process of adding the next servo channel to the next servo channel until you have all 8 servo channels address values identified. A control value of 0-255 will be sent to control the servo positions.

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DMX 8-Channel Servo Driver Board

Hook-up

DMX 8-Ch Servo Driver Board

Board Electronics Power Connection

Board Power LED

Servo Connection Header Pins 3X8

9VDC − +

Servo Power Connection

Manufacture Board Test Connector (Not Used)

5-6VDC − +

Servo Power LED

3 2 SG

DMX-Network Wire Connections
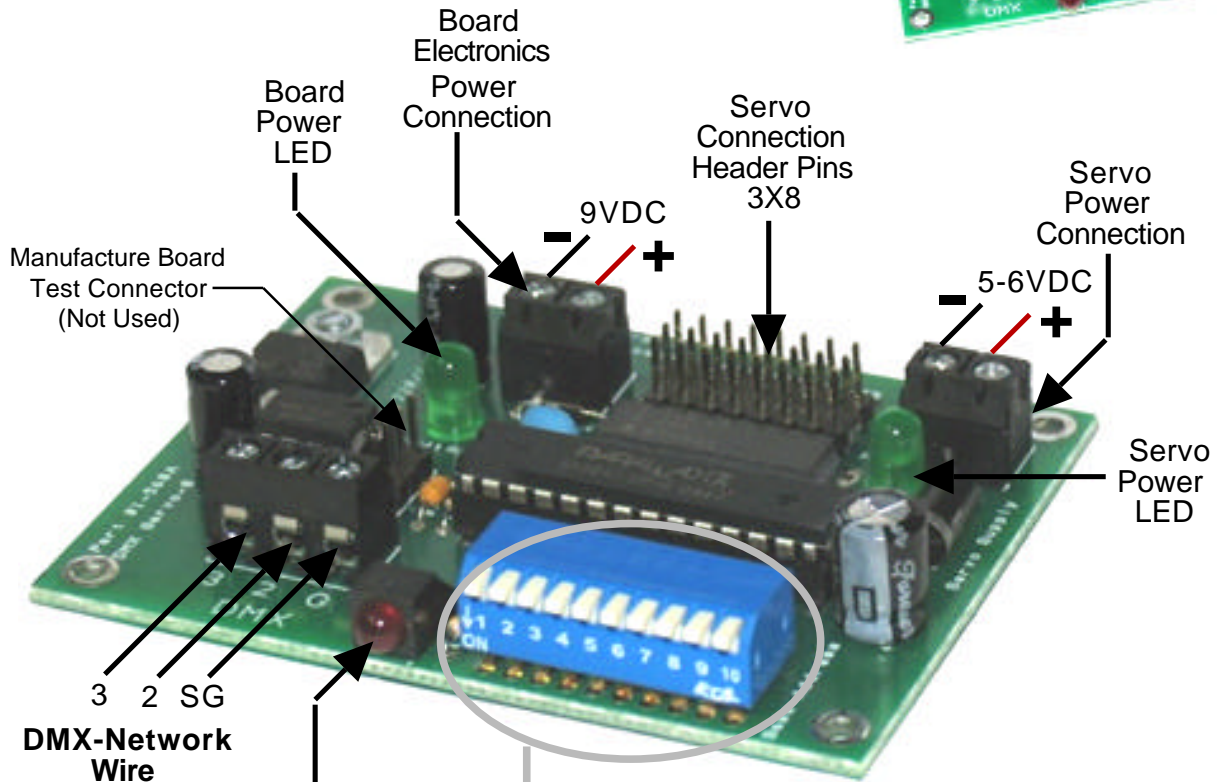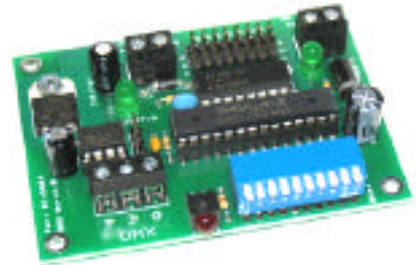
DMX- Signal LED

ON = DMX Signal Present
Flashing = No DMX Signal

DMX- Board Address DIP Switches

NOTE:
DIP Switch Numbers

J1 256 128 64 32 16 8 4 2 1

DIP Switches (Addressing)

↓1 2 3 4 5 6 7 8 9 10
ON
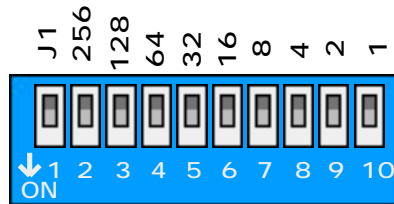
10 =	1
9 =	2
8 =	4
7 =	8
6 =	16
5 =	32
4 =	64
3 =	128
2 =	256
1 =	J1

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DMX 8-Channel Servo Driver Board

Power Connection

**Wall Plug Power Supply
9 Vdc @ 0.5 Amp**

**Wall Plug Power Supply
6 Vdc @ 4 Amp**

Board Electronics
Power Connection

9VDC

**Board Power
Connections**

5-6VDC

DMX Network Connection

Servo
Power
Connection

DMX -Network
Wire Terminal
Block

DMX-XLR
Wire

White = 3
Black = 2

3 2 SG

**5 Pin XLR Wire
Adapter**

**5- Pin
XLR Cable**

M

F

5-Pin (M) XLR
Connector

5-Pin (F) XLR
Connector
To DMX Controller

**XLR
Connection**

SG

Connection Wires

2

3
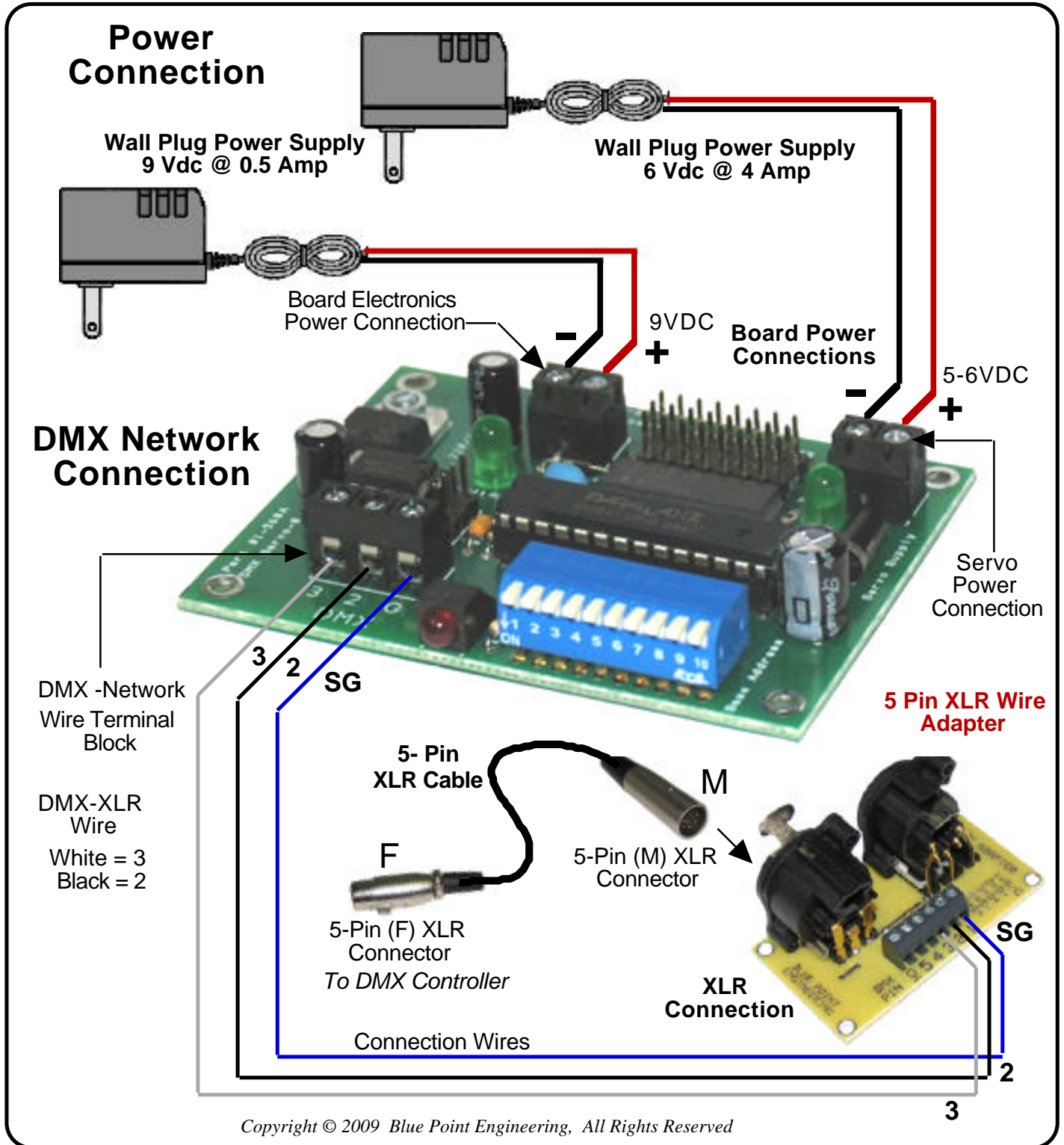
DMX 8-Channel Servo Driver Board

DMX Network Setup - 5 Pin
Overview
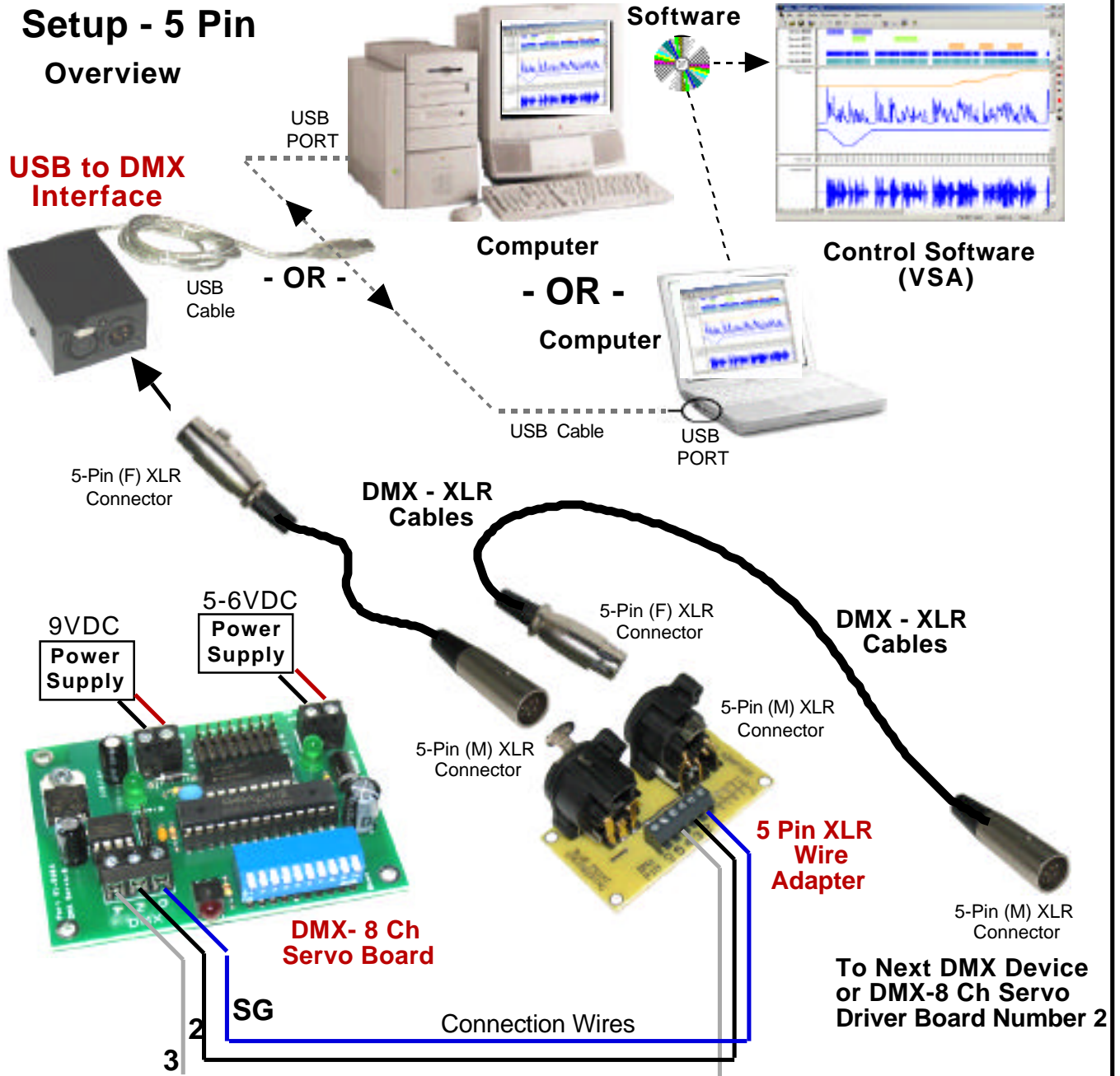
Software

USB PORT

USB to DMX Interface

USB Cable

- OR -

Computer

- OR -

- OR -

Control Software (VSA)

USB Cable

Computer

USB PORT

5-Pin (F) XLR Connector

DMX - XLR Cables

5-Pin (F) XLR Connector

DMX - XLR Cables

9VDC
Power Supply

5-6VDC
Power Supply

5-Pin (M) XLR Connector

5-Pin (M) XLR Connector

5 Pin XLR Wire Adapter

DMX- 8 Ch Servo Board

To Next DMX Device or DMX-8 Ch Servo Driver Board Number 2

5-Pin (M) XLR Connector

SG

2

3

Connection Wires

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DMX 8-Channel Servo Driver Board

Servo Connection

Overview

positions

A B

C

Standard +5 Vdc R/C Servo

Servo-8

positions

A B

C

Servo-1

Standard +5 Vdc R/C Servo

Servo-8
- Black
- Red
- Yellow / White

Servo-1
- Black
- Red
- Yellow / White

Connection

(-) BLACK
(+) RED
(s) YELLOW WHITE

Servo Ch-8
Servo Ch-7
Servo Ch-6
Servo Ch-5
Servo Ch-4
Servo Ch-3
Servo Ch-2
Servo Ch-1

Servo Connectors 3 Pin Header x 8

5-6VDC

– / +

Servo Power Connection

J1 256 128 64 32 16 8 4 2 1
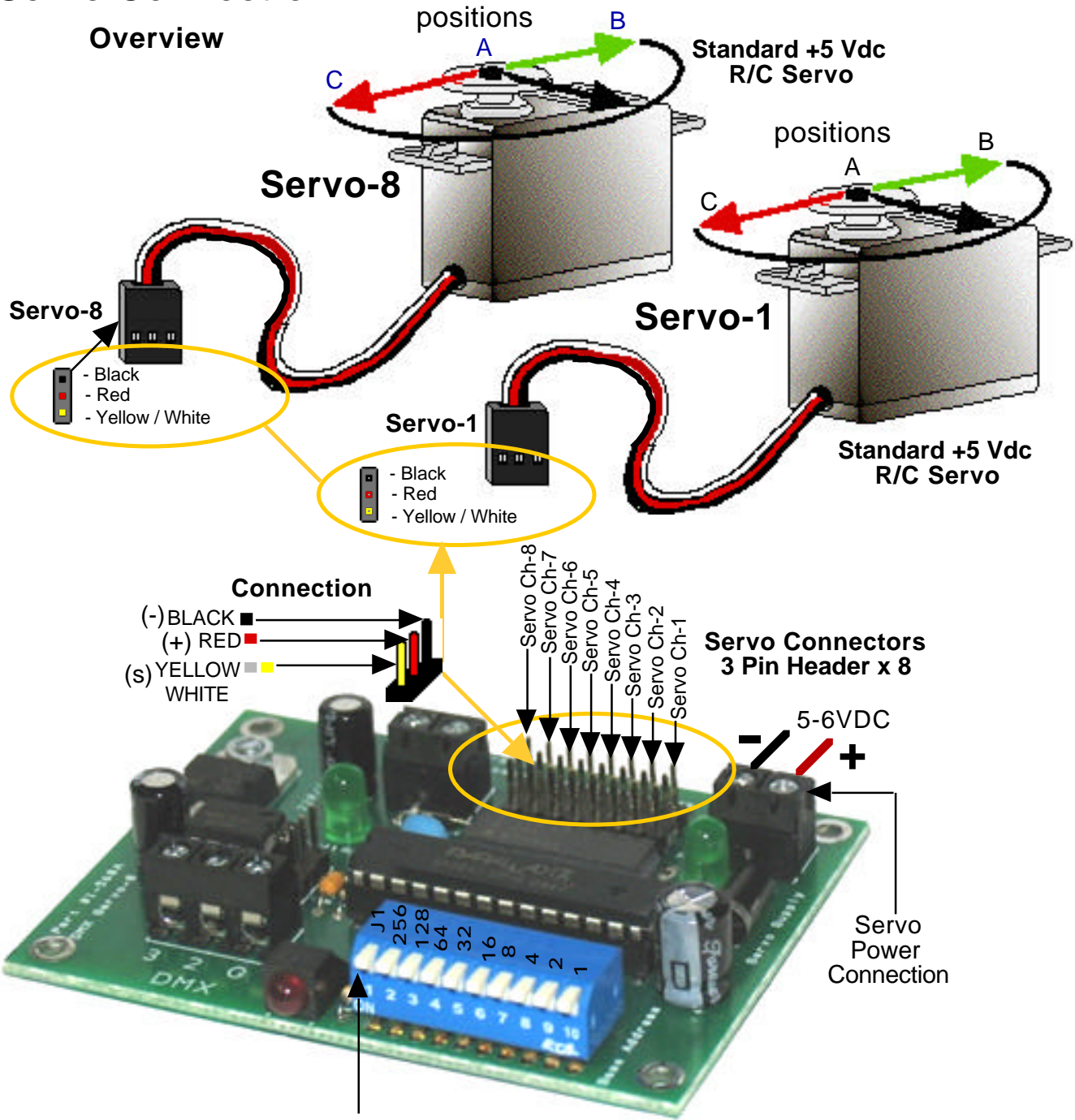
JP1 OFF: = Standard 90 degree servo range
JP1 ON: = Extended 180 degree servo range

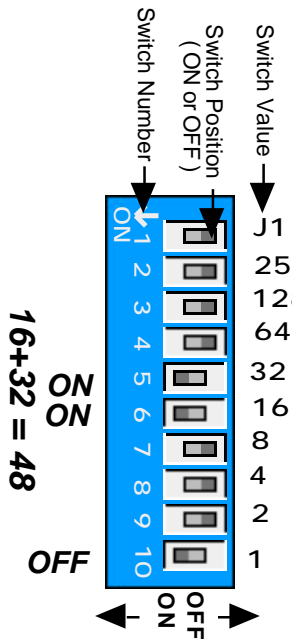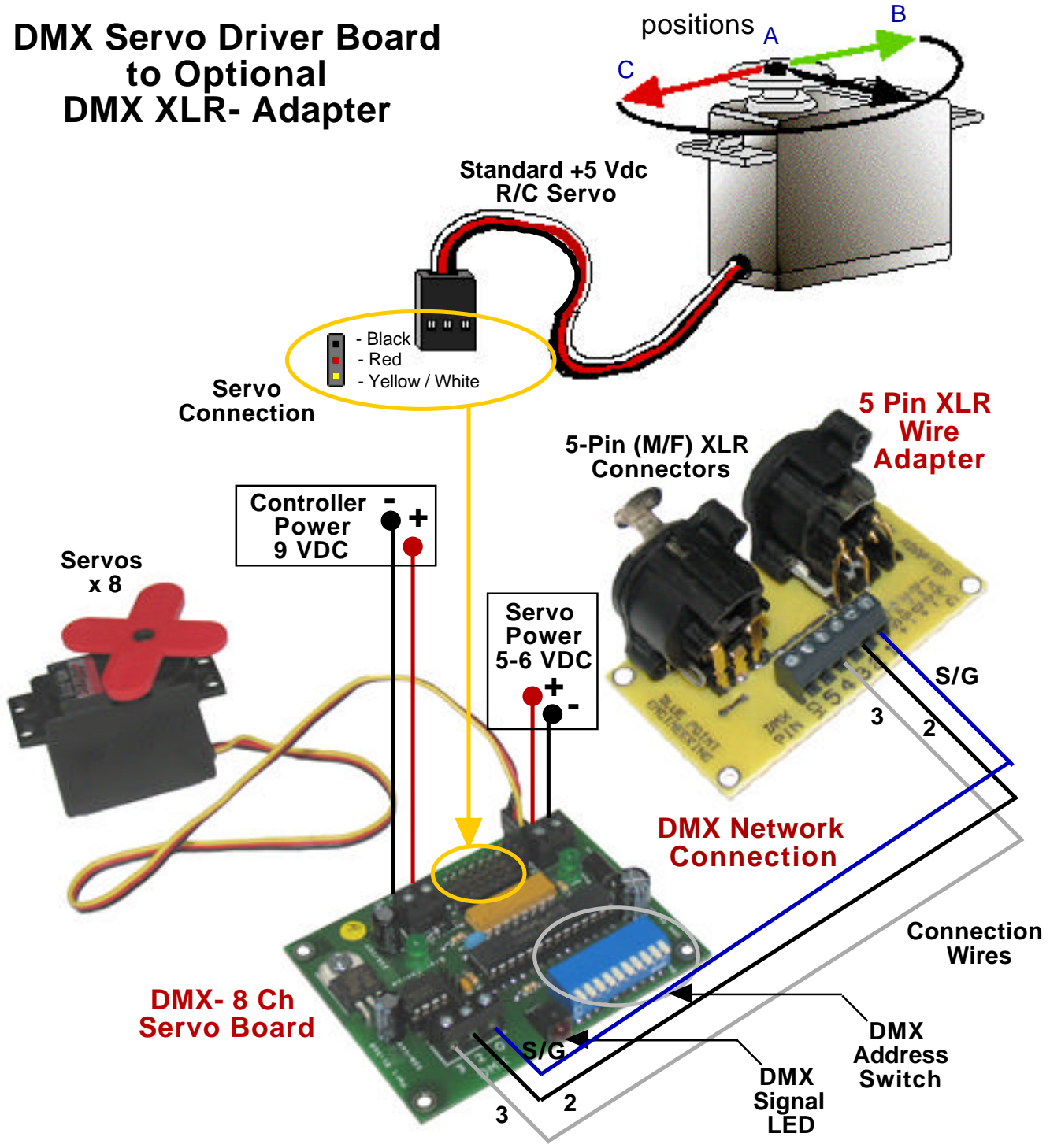*Copyright © 2009 Blue Point Engineering, All Rights Reserved*

DMX 8-Channel Servo Driver

Board Address
DMX - Values

Switch Number

Switch Position (ON or OFF)

Switch Value

DIP Switches (Addressing)

TOP VIEW

Switch	Value
1	J1
2	256
3	128
4	64
5	32
6	16
7	8
8	4
9	2
10	1

16+32 = 48

ON
ON

OFF

OFF
ON

Position

C   A   B

CH8
CH7

R/C Servo

CH2
CH1

Example

DMX Value 255 = Servo Position C/B
DMX Value 0 = Servo Position C/B
DMX Value 127 = Servo Position A - Center

Base address selectable between 1 and 504
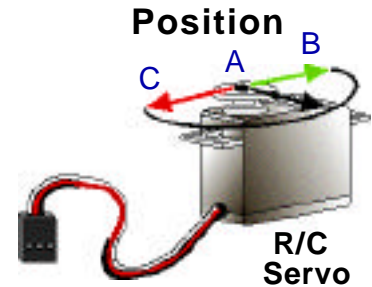
(CH=49)
(Value= 255)
(Servo move to Position C)
(Value= 0)
(Servo move to Position B)
(Value= 127)
(Servo move to Center Position A)
Values between 0-126 and128-255 =
Various Servo Positions

Setting the base address of Servo Channel Outputs

Add the value of the address DIP switches set to the **ON** position to calculate the base address.
Example: DIP switches 5 and 6 set to **ON** position, the base address is now 48, (16+32) this setting is used to determine the starting address output of Servo Channel-1, the next Servo Channel would be address 49 for Servo Channel-2, and the next 50 for Servo Channel-3, 51 for Servo Channel-4, 52 for Servo Channel-5, etc.

Example   Output Servo Ch-2

Dlp Switch 5 and 6 ON = **Base Address + 1 = 49 Channel- 2 Servo Output**   (Base Address starting at 48)
Switch 10 = OFF (90 Degree Standard Servo Rotation output)
Channel-2 at value 255 = Servo to position C
Channel-2 at value 0 = Servo to position B
Channel-2 at value 127 = Servo to position Center
Values between 0-126 and128-255 = Various Servo Positions

Range selection: (Servo permitting, check servo date to see that servo is able to move 90 degree without damages)
JP1 **OFF**: = Standard 90 degree servo range
JP1 **ON**: = Extended 180 degree servo range

DMX 8-Channel Servo Driver

DMX Servo Driver Board to Optional DMX XLR- Adapter

positions A B C

Standard +5 Vdc R/C Servo

- Black
- Red
- Yellow / White

Servo Connection

5 Pin XLR Wire Adapter

5-Pin (M/F) XLR Connectors

Controller Power 9 VDC − +

Servos x 8

Servo Power 5-6 VDC + −

S/G

3 2

DMX Network Connection

DMX- 8 Ch Servo Board

Connection Wires

S/G

3 2

DMX Signal LED

DMX Address Switch

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DMX 8-Channel Servo Driver

Servo Application
Animatronics

DMX - Hybrid Setup

8-Ch DMX Servo Driver
R/C Servos
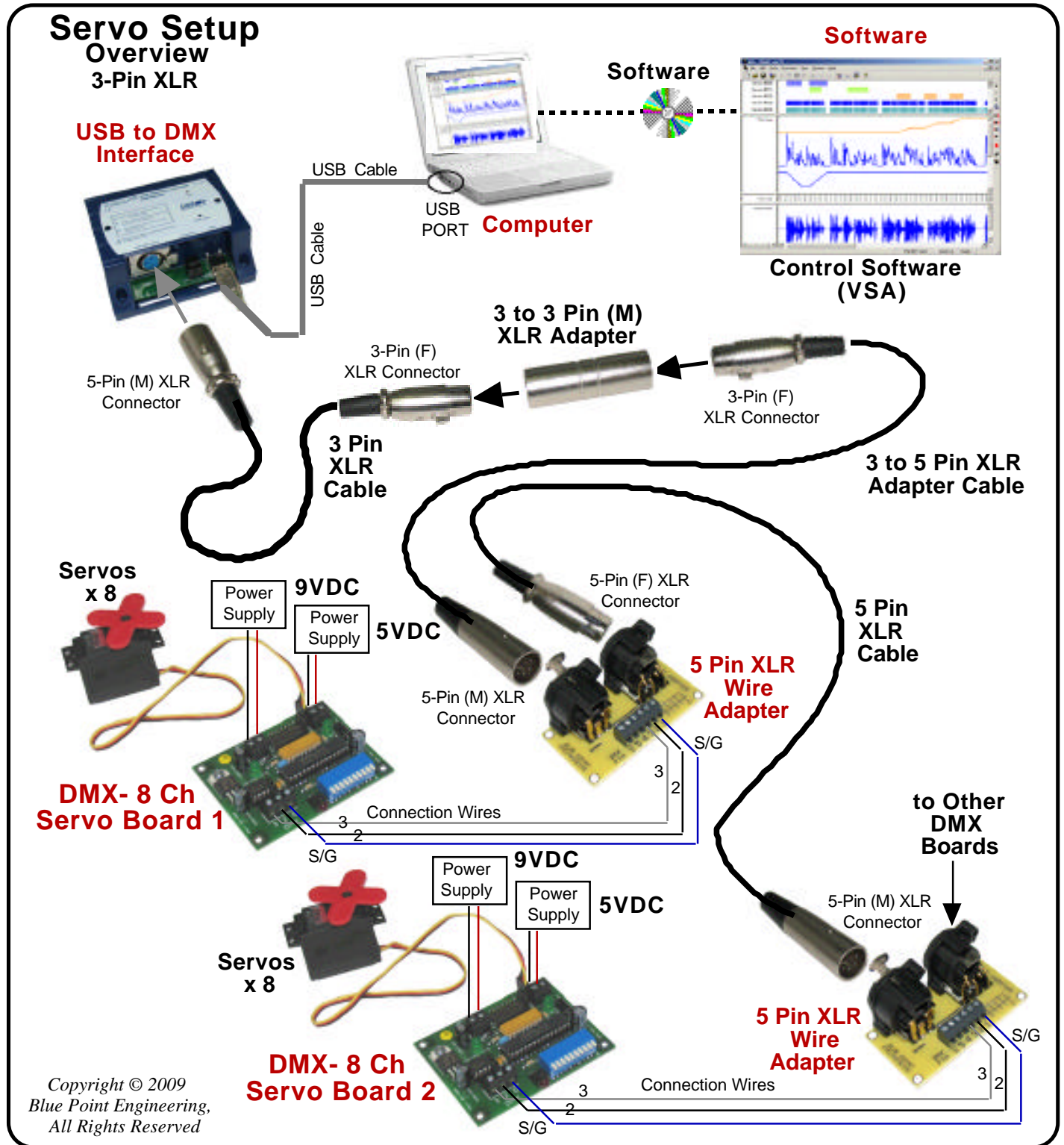Servo Cntroller Solid State Relays
MP3 Audio Player Board
AutoTalk Board

Relay C.NO

MP3 Audio Board

Audio Speaker

1-10 Ch Audio

Servo-2 Channel Solid State Relay

Relay Ch-1

Relay Ch-2

Servo Movement (U / D)

Servo Movement (O / C)

Servo Movement (L / R)

Servo Input

Mouth Sync Movement

AutoTalk Board

TO: Lighting Motors FX Devices

Mechanical Movement Module

Animatronic Character

Servos

Jumper to Remote Devices / Boards from DMX Servo Driver Board

Other Characters

Servo Output Channels 1-8

Servos

DMX- 8 Ch Servo Board

DMX Network Connection

Connection Wires

Servo Movement

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DMX 8-Channel Servo Driver

Servo Setup
Overview
3-Pin XLR

Software

Software

USB to DMX Interface

USB Cable

USB PORT **Computer**

USB Cable

Control Software (VSA)

5-Pin (M) XLR Connector

3 to 3 Pin (M) XLR Adapter

3-Pin (F) XLR Connector

3-Pin (F) XLR Connector

3 Pin XLR Cable

3 to 5 Pin XLR Adapter Cable

Servos x 8

Power Supply **9VDC**

Power Supply **5VDC**

5-Pin (F) XLR Connector

5 Pin XLR Cable

5-Pin (M) XLR Connector

5 Pin XLR Wire Adapter

DMX- 8 Ch Servo Board 1

S/G

3
2

Connection Wires

3
2

S/G

to Other DMX Boards

Power Supply **9VDC**

Power Supply **5VDC**

5-Pin (M) XLR Connector

Servos x 8

DMX- 8 Ch Servo Board 2

5 Pin XLR Wire Adapter

S/G

3
2

Connection Wires

3
2

S/G

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DMX 8-Channel Servo Driver

Optional Multi-Servo Board Connection
Overview
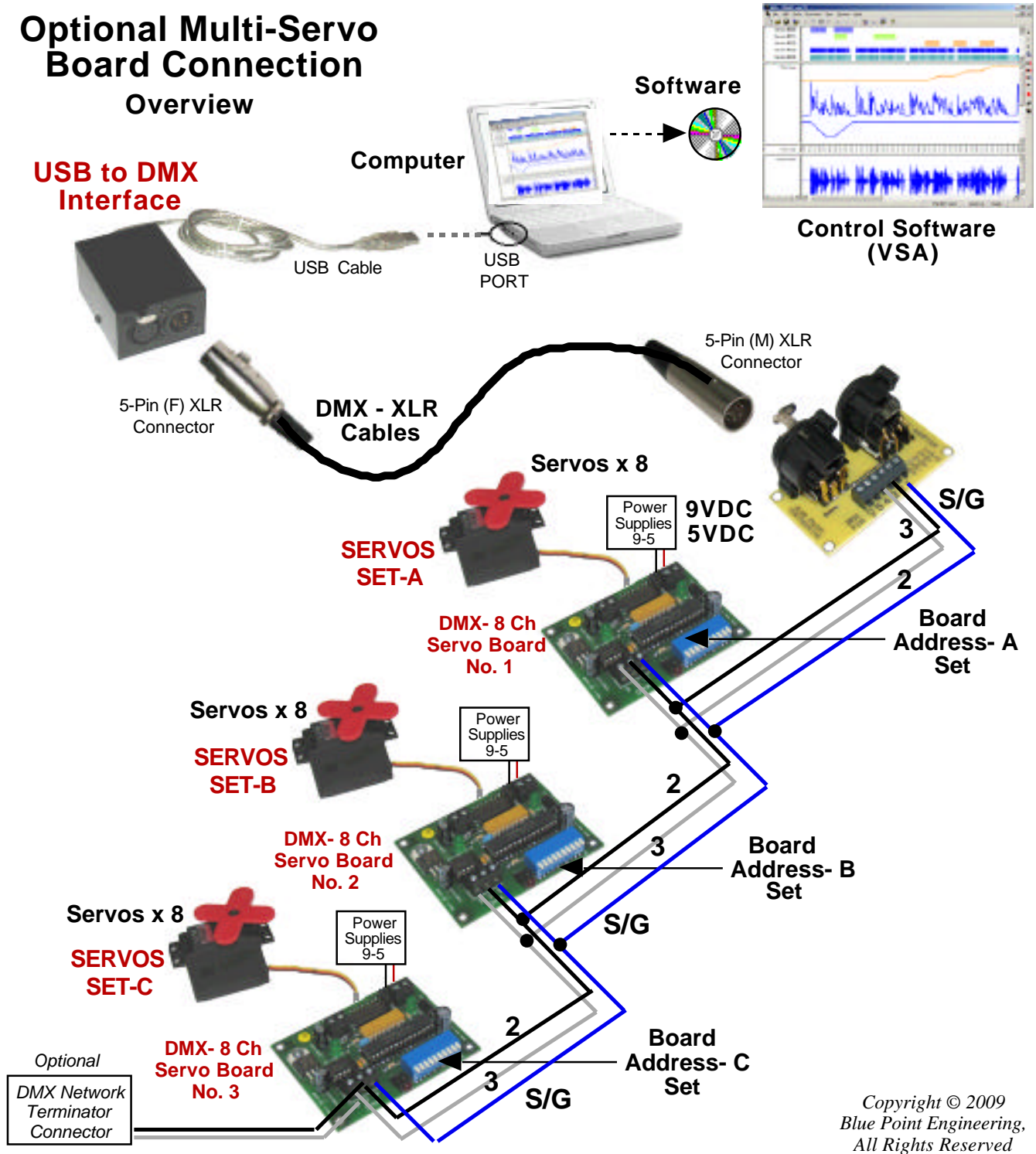
Software

Computer

USB to DMX Interface

Control Software (VSA)

USB Cable

USB PORT

5-Pin (M) XLR Connector

5-Pin (F) XLR Connector

DMX - XLR Cables

Servos x 8

SERVOS SET-A

Power Supplies 9-5

9VDC 5VDC

S/G

3

2

DMX- 8 Ch Servo Board No. 1

Board Address- A Set

Servos x 8

SERVOS SET-B

Power Supplies 9-5

2

DMX- 8 Ch Servo Board No. 2

3

Board Address- B Set

S/G

Servos x 8

SERVOS SET-C

Power Supplies 9-5

2

Optional

DMX Network Terminator Connector

DMX- 8 Ch Servo Board No. 3

3

S/G

Board Address- C Set

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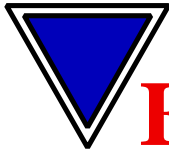
DMX 512 Chart - US Standard

Chart A - US Standard DMX 512

Ch - Switches	Ch - Switches	Ch - Switches	Ch - Switches	Ch - Switches
1 = 1	53 = 1, 3, 5, 6	105 = 1, 4, 6, 7	157 = 1, 3, 4, 5, 8	209 = 1, 5, 7, 8
2 = 2	54 = 2, 3, 5, 6	106 = 2, 4, 6, 7	158 = 2, 3, 4, 5, 8	210 = 2, 5, 7, 8
3 = 1, 2	55 = 1, 2, 3, 5, 6	107 = 1, 2, 4, 6, 7	159 = 1, 2, 3, 4, 5, 8	211 = 1, 2, 5, 7, 8
4 = 3	56 = 4, 5, 6	108 = 3, 4, 6, 7	160 = 6, 8	212 = 3, 5, 7, 8
5 = 1, 3	57 = 1, 4, 5, 6	109 = 1, 3, 4, 6, 7	161 = 1, 6, 8	213 = 1, 3, 5, 7, 8
6 = 2, 3	58 = 2, 4, 5, 6	110 = 2, 3, 4, 6, 7	162 = 2, 6, 8	214 = 2, 3, 5, 7, 8
7 = 1, 2, 3	59 = 1, 2, 4, 5, 6	111 = 1, 2, 3, 4, 6, 7	163 = 1, 2, 6, 8	215 = 1, 2, 3, 5, 7, 8
8 = 4	60 = 3, 4, 5, 6	112 = 5, 6, 7	164 = 3, 6, 8	216 = 4, 5, 7, 8
9 = 1, 4	61 = 1, 3, 4, 5, 6	113 = 1, 5, 6, 7	165 = 1, 3, 6, 8	217 = 1, 4, 5, 7, 8
10 = 2, 4	62 = 2, 3, 4, 5, 6	114 = 2, 5, 6, 7	166 = 2, 3, 6, 8	218 = 2, 4, 5, 7, 8
11 = 1, 2, 4	63 = 1, 2, 3, 4, 5, 6	115 = 1, 2, 5, 6, 7	167 = 1, 2, 3, 6, 8	219 = 1, 2, 4, 5, 7, 8
12 = 3, 4	64 = 7	116 = 3, 5, 6, 7	168 = 4, 6, 8	220 = 3, 4, 5, 7, 8
13 = 1, 3, 4	65 = 1, 7	117 = 1, 3, 5, 6, 7	169 = 1, 4, 6, 8	221 = 1, 3, 4, 5, 7, 8
14 = 2, 3, 4	66 = 2, 7	118 = 2, 3, 5, 6, 7	170 = 2, 4, 6, 8	222 = 2, 3, 4, 5, 7, 8
15 = 1, 2, 3, 4	67 = 1, 2, 7	119 = 1, 2, 3, 5, 6, 7	171 = 1, 2, 4, 6, 8	223 = 1, 2, 3, 4, 5, 7, 8
16 = 5	68 = 3, 7	120 = 4, 5, 6, 7	172 = 3, 4, 6, 8	224 = 6, 7, 8
17 = 1, 5	69 = 1, 3, 7	121 = 1, 4, 5, 6, 7	173 = 1, 3, 4, 6, 8	225 = 1, 6, 7, 8
18 = 2, 5	70 = 2, 3, 7	122 = 2, 4, 5, 6, 7	174 = 2, 3, 4, 6, 8	226 = 2, 6, 7, 8
19 = 1, 2, 5	71 = 1, 2, 3, 7	123 = 1, 2, 4, 5, 6, 7	175 = 1,2, 3, 4, 6, 8	227 = 1, 2, 6, 7, 8
20 = 3, 5	72 = 4, 7	124 = 3, 4, 5, 6, 7	176 = 5, 6, 8	228 = 3, 6, 7, 8
21 = 1, 3, 5	73 = 1, 4, 7	125 = 1, 3, 4, 5, 6, 7	177 = 1, 5, 6, 8	229 = 1, 3, 6, 7, 8
22 = 2, 3, 5	74 = 2, 4, 7	126 = 2, 3, 4, 5, 6, 7	178 = 2, 5, 6, 8	230 = 2, 3, 6, 7, 8
23 = 1, 2, 3, 5	75 = 1, 2, 4, 7	127 = 1, 2, 3, 4, 5, 6, 7	179 = 1, 2, 5, 6, 8	231 = 1, 2, 3, 6, 7, 8
24 = 4, 5	76 = 3, 4, 7	128 = 8	180 = 3, 5, 6, 8	232 = 4, 6, 7, 8
25 = 1, 4, 5	77 = 1, 3, 4, 7	129 = 1, 8	181 = 1, 3, 5, 6, 8	233 = 1, 4, 6, 7, 8
26 = 2, 4, 5	78 = 2, 3, 4, 7	130 = 2, 8	182 = 2, 3, 5, 6, 8	234 = 2, 4, 6, 7, 8
27 = 1, 2, 4, 5	79 = 1, 3, 4, 7	131 = 1, 2, 8	183 = 1, 2, 3, 5, 6, 8	235 = 1, 2, 4, 6, 7, 8
28 = 3, 4, 5	80 = 5, 7	132 = 3, 8	184 = 4, 5, 6, 8	236 = 3, 4, 6, 7, 8
29 = 1, 3, 4, 5	81 = 1, 5, 7	133 = 1, 3, 8	185 = 1, 4, 5, 6, 8	237 = 1, 3, 4, 6, 7, 8
30 = 2, 3, 4, 5	82 = 2, 5, 7	134 = 2, 3, 8	186 = 2, 4, 5, 6, 8	238 = 2, 3, 4, 6, 7, 8
31 = 1, 2, 3, 4, 5	83 = 1, 2, 5, 7	135 = 1, 2, 3, 8	187 = 1, 2, 4, 5, 6, 8	239 = 1, 2, 3, 4, 6, 7, 8
32 = 6	84 = 3, 5, 7	136 = 4, 8	188 = 3, 4, 5, 6, 8	240 = 5, 6, 7, 8
33 = 1, 6	85 = 1, 3, 5, 7	137 = 1, 4, 8	189 = 1, 3, 4, 5, 6, 8	241 = 1, 5, 6, 7, 8
34 = 2, 6	86 = 2, 3, 5, 7	138 = 2, 4, 8	190 = 2, 3, 4, 5, 6, 8	242 = 2, 5, 6, 7, 8
35 = 1, 2, 6	87 = 1, 2, 3, 5, 7	139 = 1, 2, 4, 8	191 = 1, 2, 3, 4, 5, 6, 8	243 = 1, 2, 5, 6, 7, 8
36 = 3, 6	88 = 4, 5, 7	140 = 3, 4, 8	192 = 7, 8	244 = 3, 5, 6, 7, 8
37 = 1, 3, 6	89 = 1, 4, 5, 7	141 = 1, 3, 4, 8	193 = 1, 7, 8,	245 = 1, 3, 5, 6, 7, 8
38 = 2, 3, 6	90 = 2, 4, 5, 7	142 = 2, 3, 4, 8	194 = 2, 7, 8,	246 = 2, 3, 5, 6, 7, 8
39 = 1, 2, 3, 6	91 = 1, 2, 4, 5, 7	143 = 1, 2, 3, 4, 8	195 = 1, 2, 7, 8	247 = 1, 2, 3, 5, 6, 7, 8
40 = 4, 6	92 = 3, 4, 5, 7	144 = 5, 8	196 = 3, 7, 8	248 = 4, 5, 6, 7, 8
41 = 1, 4, 6	93 = 1, 3, 4, 5, 7	145 = 1, 5, 8	197 = 1, 3, 7, 8	249 = 1, 4, 5, 6, 7, 8
42 = 2, 4, 6	94 = 2, 3, 4, 5, 7	146 = 2, 5, 8	198 = 2, 3, 7, 8	250 = 2, 4, 5, 6, 7, 8
43 = 1, 2, 4, 6	95 = 1, 2, 3, 4, 5, 7	147 = 1, 2, 5, 8	199 = 1, 2, 3, 7, 8	251 = 1, 2, 4, 5, 6, 7, 8
44 = 3, 4, 6,	96 = 6, 7	148 = 3, 5, 8	200 = 4, 7, 8,	252 = 3, 4, 5, 6, 7, 8
45 = 1, 3, 4, 6	97 = 1, 6, 7	149 = 1, 3, 5, 8	201 = 1, 4, 7, 8	253 = 1, 3, 4, 5, 6, 7, 8
46 = 2, 3, 4, 6	98 = 2, 6, 7	150 = 2, 3, 5, 8	202 = 2, 4, 7, 8	254 = 2, 3, 4, 5, 6, 7, 8
47 = 1, 2, 3, 4, 6	99 = 1, 2, 6, 7	151 = 1, 2, 3, 5, 8	203 = 1, 2, 4, 7, 8	255 = 1, 2, 3, 4, 5, 6, 7, 8
48 = 5, 6	100 = 3, 6, 7	152 = 4, 5, 8	204 = 3, 4, 7, 8	256 = 9
49 = 1, 5, 6	101 = 1, 3, 6, 7	153 = 1, 4, 5, 8	205 = 1, 3, 4, 7, 8	257 = 1, 9
50 = 2, 5, 6	102 = 2, 3, 6, 7	154 = 2, 4, 5, 8	206 = 2, 3, 4, 7, 8	258 = 2, 9
51 = 1, 2, 5, 6	103 = 1, 2, 3, 6, 7	155 = 1, 2, 4, 5, 8	207 = 1, 2, 3, 4, 7, 8	259 = 1, 2, 9
52 = 3, 5, 6	104 = 4, 6, 7	156 = 3, 4, 5, 8	208 = 5, 7, 8	260 = 3, 9

Ch - Switches	Ch - Switches	Ch - Switches	Ch - Switches	Ch - Switches
261 = 1, 3, 9	322 = 2, 7, 9	383 = 1, 2, 3, 4, 5, 6, 7, 9	444 = 3, 4, 5, 6, 8, 9	505 = 1, 4, 5, 6, 7, 8, 9
262 = 2, 3, 9	323 = 1, 2, 7, 9	384 = 8, 9	445 = 1, 3, 4, 5, 6, 8, 9	506 = 2, 4, 5, 6, 7, 8, 9
263 = 1, 2, 3, 9	324 = 3, 7, 9	385 = 1, 8, 9	446 = 2, 3, 4, 5, 6, 8, 9	507 = 1, 2, 4, 5, 6, 7, 8, 9
264 = 4, 9	325 = 1, 3, 7, 9	386 = 2, 8, 9	447 = 1, 2, 3, 4, 5, 6, 8, 9	508 = 3, 4, 5, 6, 7, 8, 9
265 = 1, 4, 9	326 = 2, 3, 7, 9	387 = 1, 2, 8, 9	448 = 7, 8, 9	509 = 1, 3, 4, 5, 6, 7, 8, 9
266 = 2, 4, 9	327 = 1, 2, 3, 7, 9	388 = 3, 8, 9	449 = 1, 7, 8, 9	510 = 2, 3, 4, 5, 6, 7, 8, 9
267 = 1, 2, 4, 9	328 = 4, 7, 9	389 = 1, 3, 8, 9	450 = 2, 7, 8, 9	511 = 1, 2, 3, 4, 5, 6, 7, 8, 9
268 = 3, 4, 9	329 = 1, 4, 7, 9	390 = 2, 3, 8, 9	451 = 1, 2, 7, 8, 9	512 = 0
269 = 1, 3, 4, 9	330 = 2, 4, 7, 9	391 = 1, 2, 3, 8, 9	452 = 3, 7, 8, 9	
270 = 2, 3, 4, 9	331 = 1, 2, 4, 7, 9	392 = 4, 8, 9	453 = 1, 3, 7, 8, 9	
271 = 1, 2, 3, 4, 9	332 = 3, 4, 7, 9	393 = 1, 4, 8, 9	454 = 2, 3, 7, 8, 9	
272 = 5, 9	333 = 1, 3, 4, 7, 9	394 = 2, 4, 8, 9	455 = 1, 2, 3, 7, 8, 9	
273 = 1, 5, 9	334 = 2, 3, 4, 7, 9	395 = 1, 2, 4, 8, 9	456 = 4, 7, 8, 9	
274 = 2, 5, 9	335 = 1, 2, 3, 4, 7, 9	396 = 3, 4, 8, 9	457 = 1, 4, 7, 8, 9	
275 = 1, 2, 5, 9	336 = 5, 7, 9	397 = 1, 3, 4, 8, 9	458 = 2, 4, 7, 8, 9	
276 = 3, 5, 9	337 = 1, 5, 7, 9	398 = 2, 3, 4, 8, 9	459 = 1, 2, 4, 7, 8, 9	
277 = 1, 3, 5, 9	338 = 2, 5, 7, 9	399 = 1, 2, 3, 4, 8, 9	460 = 3, 4, 7, 8, 9	
278 = 2, 3, 5, 9	339 = 1, 2, 5, 7, 9	400 = 5, 8, 9	461 = 1, 3, 4, 7, 8, 9	
279 = 1, 2, 3, 5, 9	340 = 3, 5, 7, 9	401 = 1, 5, 8, 9	462 = 2, 3, 4, 7, 8, 9	
280 = 4, 5, 9	341 = 1, 3, 5, 7, 9	402 = 2, 5, 8, 9	463 = 1, 2, 3, 4, 7, 8, 9	
281 = 1, 4, 5, 9	342 = 2, 3, 5, 7, 9	403 = 1, 2, 5, 8, 9	464 = 5, 7, 8, 9	
282 = 2, 4, 5, 9	343 = 1, 2, 3, 5, 7, 9	404 = 3, 5, 8, 9	465 = 1, 5, 7, 8, 9	
283 = 1, 2, 4, 5, 9	344 = 4, 5, 7, 9	405 = 1, 3, 5, 8, 9	466 = 2, 5, 7, 8, 9	
284 = 3, 4, 5, 9	345 = 1, 4, 5, 7, 9	406 = 2, 3, 5, 8, 9	467 = 1, 2, 5, 7, 8, 9	
285 = 1, 3, 4, 5, 9	346 = 2, 4, 5, 7, 9	407 = 1, 2, 3, 5, 8, 9	468 = 3, 5, 7, 8, 9	
286 = 2, 3, 4, 5, 9	347 = 1, 2, 4, 5, 7, 9	408 = 4, 5, 8, 9	469 = 1, 3, 5, 7, 8, 9	
287 = 1, 2, 3, 4, 5, 9	348 = 3, 4, 5, 7, 9	409 = 1, 4, 5, 8, 9	470 = 2, 3, 5, 7, 8, 9	
288 = 6, 9	349 = 1, 3, 4, 5, 7, 9	410 = 2, 4, 5, 8, 9	471 = 1, 2, 3, 5, 7, 8, 9	
289 = 1, 6, 9	350 = 2, 3, 4, 5, 7, 9	411 = 1, 2, 4, 5, 8, 9	472 = 4, 5, 7, 8, 9	
290 = 2, 6, 9	351 = 1, 2, 3, 4, 5, 7, 9	412 = 3, 4, 5, 8, 9	473 = 1, 4, 5, 7, 8, 9	
291 = 1, 2, 6, 9	352 = 6, 7, 9	413 = 1, 3, 4, 5, 8, 9	474 = 2, 4, 5, 7, 8, 9	
292 = 3, 6, 9	353 = 1, 6, 7, 9	414 = 2, 3, 4, 5, 8, 9	475 = 1, 2, 4, 5, 7, 8, 9	
293 = 1, 3, 6, 9	354 = 2, 6, 7, 9	415 = 1, 2, 3, 4, 5, 8, 9	476 = 3, 4, 5, 7, 8, 9	
294 = 2, 3, 6, 9	355 = 1, 2, 6, 7, 9	416 = 6, 8, 9	477 = 1, 3, 4, 5, 7, 8, 9	
295 = 1, 2, 3, 6, 9	356 = 3, 6, 7, 9	417 = 1, 6, 8, 9	478 = 2, 3, 4, 5, 7, 8, 9	
296 = 4, 6, 9	357 = 1, 3, 6, 7, 9	418 = 2, 6, 8, 9	479 = 1, 2, 3, 4, 5, 7, 8, 9	
297 = 1, 4, 6, 9	358 = 2, 3, 6, 7, 9	419 = 1, 2, 6, 8, 9	480 = 6, 7, 8, 9	
298 = 2, 4, 6, 9	359 = 1, 2, 3, 6, 7, 9	420 = 3, 6, 8, 9	481 = 1, 6, 7, 8, 9	
299 = 1, 2, 4, 6, 9	360 = 4, 6, 7, 9	421 = 1, 3, 6, 8, 9	482 = 2, 6, 7, 8, 9	
300 = 3, 4, 6, 9	361 = 1, 4, 6, 7, 9	422 = 2, 3, 6, 8, 9	483 = 1, 2, 6, 7, 8, 9	
301 = 1, 3, 4, 6, 9	362 = 2, 4, 6, 7, 9	423 = 1, 2, 3, 6, 8, 9	484 = 3, 6, 7, 8, 9	
302 = 2, 3, 4, 6, 9	363 = 1, 2, 4, 6, 7, 9	424 = 4, 6, 8, 9	485 = 1, 3, 6, 7, 8, 9	
303 = 1, 2, 3, 4, 6, 9	364 = 3, 4, 6, 7, 9	425 = 1, 4, 6, 8, 9	486 = 2, 3, 6, 7, 8, 9	
304 = 5, 6, 9	365 = 1, 3, 4, 6, 7, 9	426 = 2, 4, 6, 8, 9	487 = 1, 2, 3, 6, 7, 8, 9	
305 = 1, 5, 6, 9	366 = 2, 3, 4, 6, 7, 9	427 = 1, 2, 4, 6, 8, 9	488 = 4, 6, 7, 8, 9	
306 = 2, 5, 6, 9	367 = 1, 2, 3, 4, 6, 7, 9	428 = 3, 4, 6, 8, 9	489 = 1, 4, 6, 7, 8, 9	
307 = 1, 2, 5, 6, 9	368 = 5, 6, 7, 9	429 = 1, 3, 4, 6, 8, 9	490 = 2, 4, 6, 7, 8, 9	
308 = 3, 5, 6, 9	369 = 1, 5, 6, 7, 9	430 = 2, 3, 4, 6, 8, 9	491 = 1, 2, 4, 6, 7, 8, 9	
309 = 1, 3, 5, 6, 9	370 = 2, 5, 6, 7, 9	431 = 1, 2, 3, 4, 6, 8, 9	492 = 3, 4, 6, 7, 8, 9	
310 = 2, 3, 5, 6, 9	371 = 1, 2, 5, 6, 7, 9	432 = 5, 6, 8, 9	493 = 1, 3, 4, 6, 7, 8, 9	
311 = 1, 2, 3, 5, 6, 9	372 = 3, 5, 6, 7, 9	433 = 1, 5, 6, 8, 9	494 = 2, 3, 4, 6, 7, 8, 9	
312 = 4, 5, 6, 9	373 = 1, 3, 5, 6, 7, 9	434 = 2, 5, 6, 8, 9	495 = 1, 2, 3, 4, 6, 7, 8, 9	
313 = 1, 4, 5, 6, 9	374 = 2, 3, 5, 6, 7, 9	435 = 1, 2, 5, 6, 8, 9	496 = 5, 6, 7, 8, 9,	
314 = 2, 4, 5, 6, 9	375 = 1, 2, 3, 5, 6, 7, 9	436 = 3, 5, 6, 8, 9	497 = 1, 5, 6, 7, 8, 9	
315 = 1, 2, 4, 5, 6, 9	376 = 4, 5, 6, 7, 9	437 = 1, 3, 5, 6, 8, 9	498 = 2, 5, 6, 7, 8, 9	
316 = 3, 4, 5, 6, 9	377 = 1, 4, 5, 6, 7, 9	438 = 2, 3, 5, 6, 8, 9	499 = 1, 2, 5, 6, 7, 8, 9	
317 = 1, 3, 4, 5, 6, 9	378 = 2, 4, 5, 6, 7, 9	439 = 1, 2, 3, 5, 6, 8, 9	500 = 3, 5, 6, 7, 8, 9	
318 = 2, 3, 4, 5, 6, 9	379 = 1, 2, 4, 5, 6, 7, 9	440 = 4, 5, 6, 8, 9	501 = 1, 3, 5, 6, 7, 8, 9	
329 = 1, 2, 3, 4, 5, 6, 9	380 = 3, 4, 5, 6, 7, 9	441 = 1, 4, 5, 6, 8, 9	502 = 2, 3, 5, 6, 7, 8, 9	
320 = 7, 9	381 = 1, 3, 4, 5, 6, 7, 9	442 = 2, 4, 5, 6, 8, 9	503 = 1, 2, 3, 5, 6, 7, 8, 9	
321 = 1, 7, 9	382 = 2, 3, 4, 5, 6, 7, 9	443 = 1, 2, 4, 5, 6, 8, 9	504 = 4, 5, 6, 7, 8, 9	

Example

Address 422

2 + 4 + 32 + 128 + 256 = 422

Address = 422
Switch ON = 2, 3, 6, 8, 9

Switch Value — 1, 2, 4, 8, 16, 32, 64, 128, 256, Byte

DMX 8 Ch Servo Driver Board

OFF ← → ON

DIP Switches (Addressing)

Switch Value —

Switch Position (ON or OFF)

Switch Number —

DMX 8-Channel Servo Driver Board

Large Servo Connection

Powering Larger Servos from Separate Power Supply Setup

POWER SUPPLY

6-12 VDC
3- 5 Amp

- Black (-)

- Red (+)

Fuse

- Red (+)

- Black (-)

Clip Connector

CUT

LARGE SERVO 1

Optional Servo Power Connection

CAUTION

Servo Red wires must not be connected to controller board

Red No Connection

- Black

- White / Yellow

DO NOT Connect

LARGE SERVO 2

CUT

White or Yellow

Black (-)

Servo Connection

LARGE SERVO 3

White / Yellow

CUT

Optional Power Set-up Large Servo Motors 6-12 Vdc

CAUTION
Servo must be able to handle voltage greater than 5 Vdc

White / Yellow

Black (-)

TO SERVOS 4-8

DMX 8-Channel Servo Driver Board

Notes / Work Sheet:

DMX SERVO BOARD NO: _____

DMX SERVO BOARD Application: _____

Addressing	Servo Application
Servo - 8	_____
Servo - 7	_____
Servo - 6	_____
Servo - 5	_____
Servo - 4	_____
Servo - 3	_____
Servo - 2	_____
Servo - 1	_____
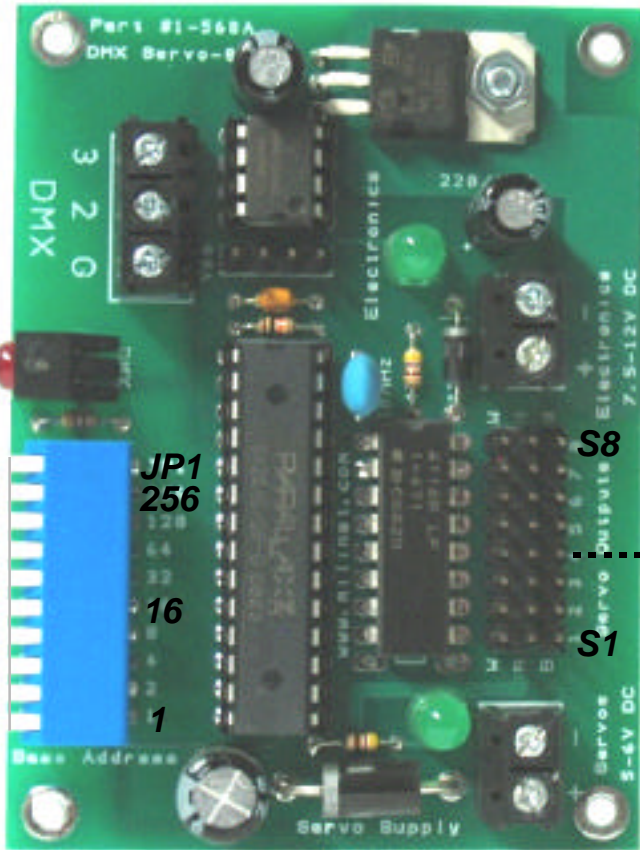
JP1 OFF: = Standard 90 degree servo range
JP1 ON: = Extended 180 degree servo range

Addressing

_____
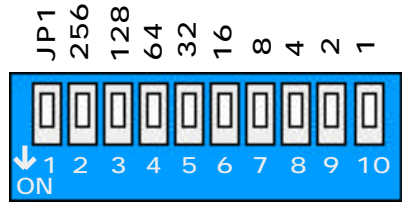
1 = ON
O = OFF

Switch Positions (UP / Down)

	JP1	256	128	64	32	16	8	4	2	1

Switch numbers: 1 2 3 4 5 6 7 8 9 10

OFF **UP**
ON **Down**
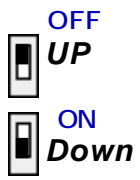
DMX Value	O OFF	1 ON
SW-1		_____
SW-2		_____
SW-3		_____
SW-4		_____
SW-5		_____
SW-6		_____
SW-7		_____
SW-8		_____
SW-9		_____
SW-10		_____
Addressing		_____

Custom Equipment, Unique Electronic Products

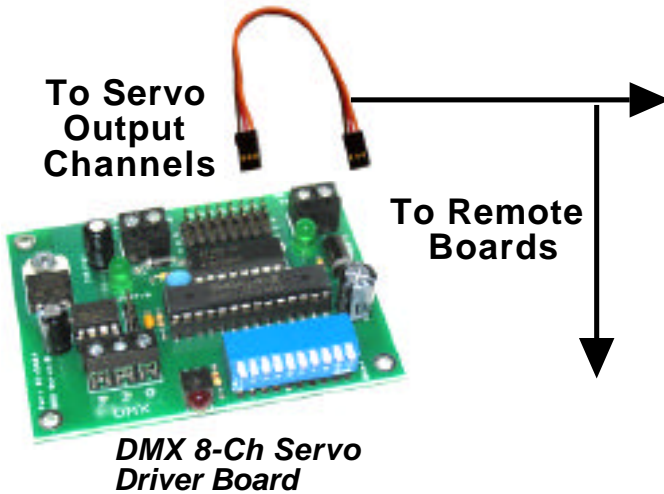*Blue Point Engineering*

Phone (303) 651-3794 (MST)
www.BPEsolutions.com

DMX 8-Channel Servo Driver

Version 1.0 -2009
WD1568

Optional Servo Application DMX- Hybrid Example

Servo Output to Solid State Relays

To Servo Output Channels
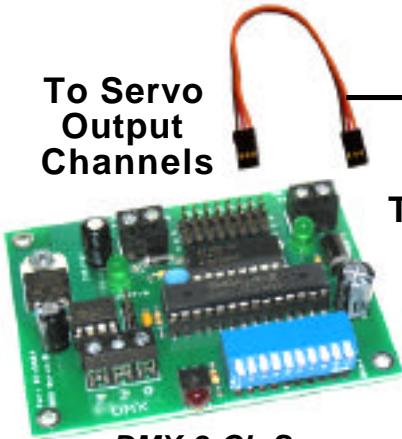
To Remote Boards
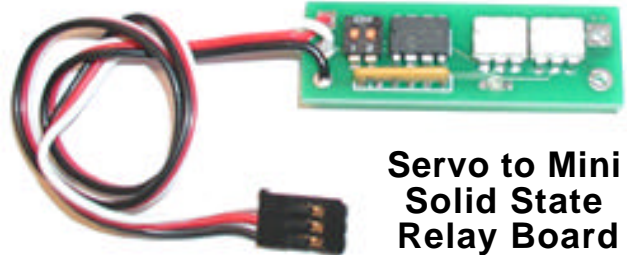
Servo to Mini Solid State Relay Board

Servo Input

DMX 8-Ch Servo Driver Board

Devices / Loads

• Lighting
• SPX Equipment
• Sound Equipment
• DC Motors
• Pneumatic (Air) Valves
• Water Pumps - DC
• Solenoid Valves (Water / Air)

Servo Input
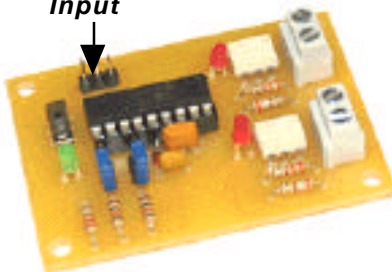
Servo Input

Servo to Duo 1Amp or Single 2Amp Solid State Relay
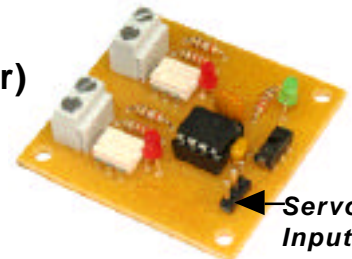
Servo to 2 Channel Solid State Relay

Servo Input
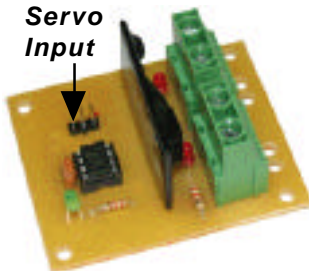
Servo Input

Servo to 10 Amp Solid State Relay

Jumper to Remote Devices / Boards from DMX Servo Driver Board

Servo to 10 Amp DC Motor Controller

Custom Equipment, Unique Electronic Products

Blue Point Engineering

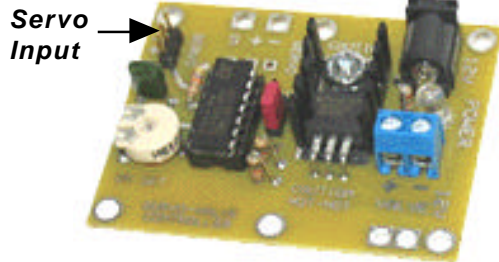*Phone (303) 651-3794 (MST)*
www.BPEsolutions.com

DMX 8-Channel Servo Driver Board

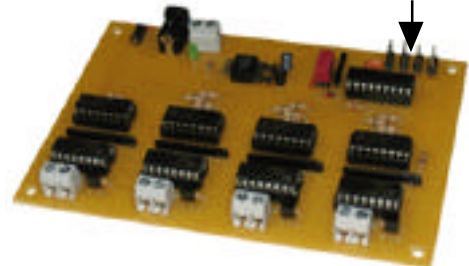**Optional Servo Application**
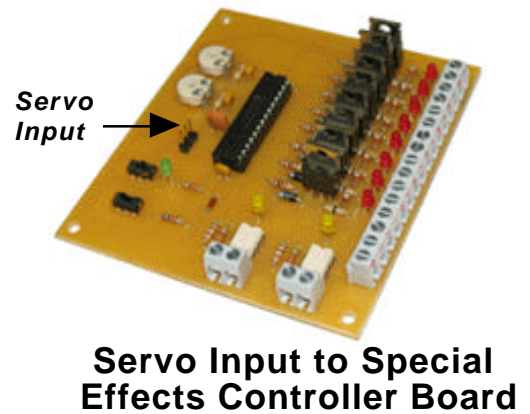**DMX- Hybrid Example**

Servo Output to Analog Converter
Will Operate Solid State 110 AC Dimming Controller

Servo Output Ch-1

Servo Jumper Wire
(3 Wire - Black, Red, White (Yellow)

0-10 Vdc Output

Ch-1

Ch-2

DMX 8-Ch Servo Driver Board

Servo to Analog Controller No-1

GND Output

Caution

110 AC Wall Plug in

AC V

2

- DC

+ DC

+3

Caution

110 AC Light Effects Unit (Plug In) Dimming 0-100% Max - 15 Amp

1

Solid State Dimmer Module Crydom (10PCV2415)

DC

4 -
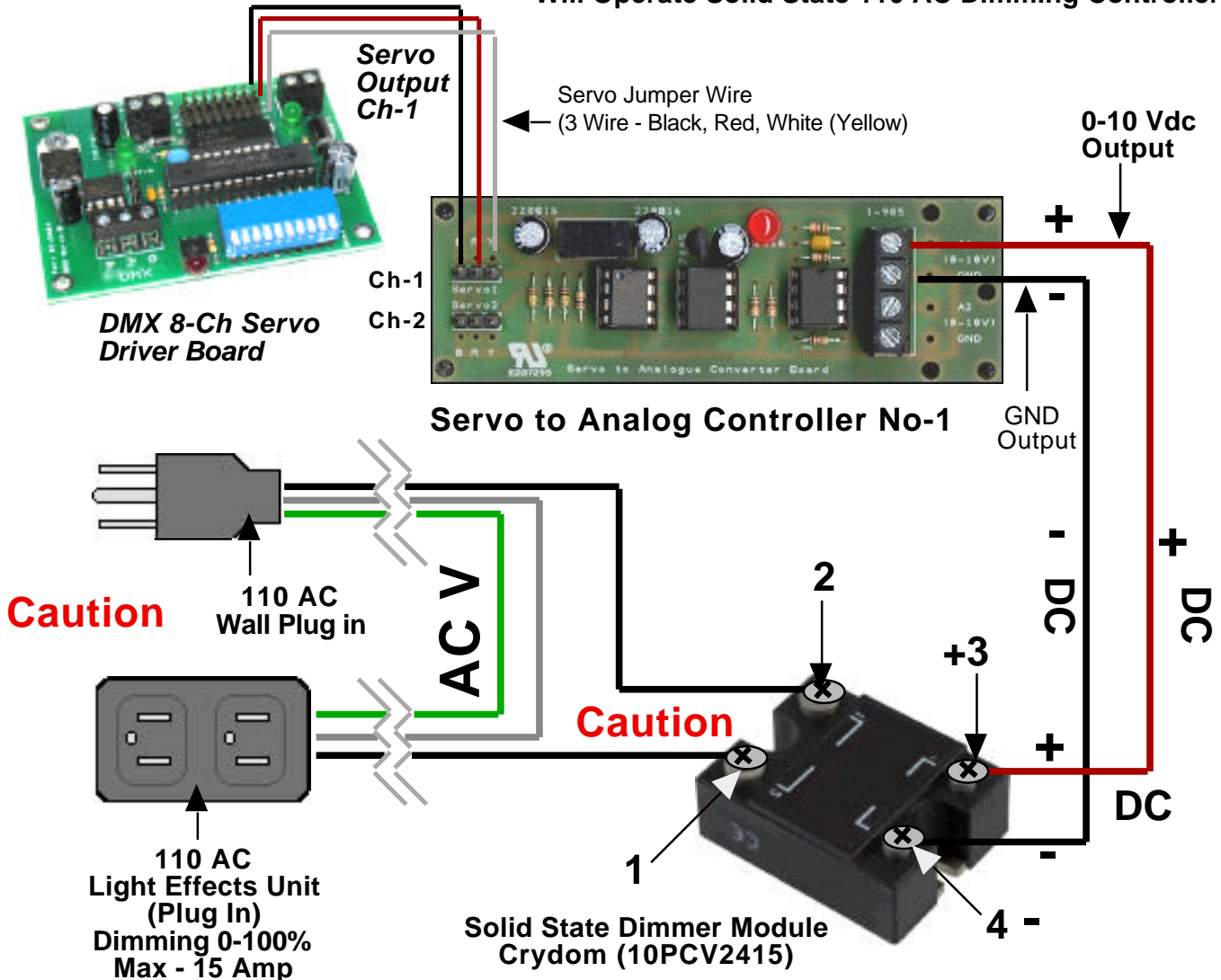
Caution: AC Voltage

Use caution when working with AC Voltage. Touching or incorrectly wiring this circuit could cause serious personal injury or damage to equipment.

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DMX 8-Channel Servo Driver Board

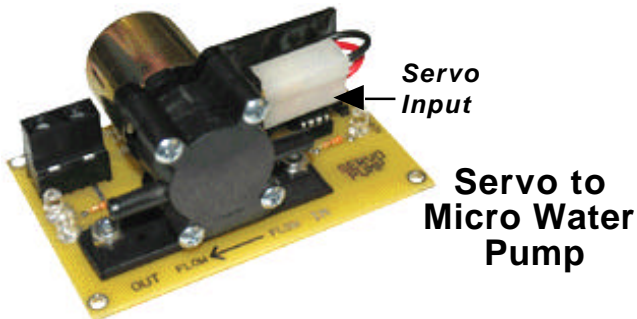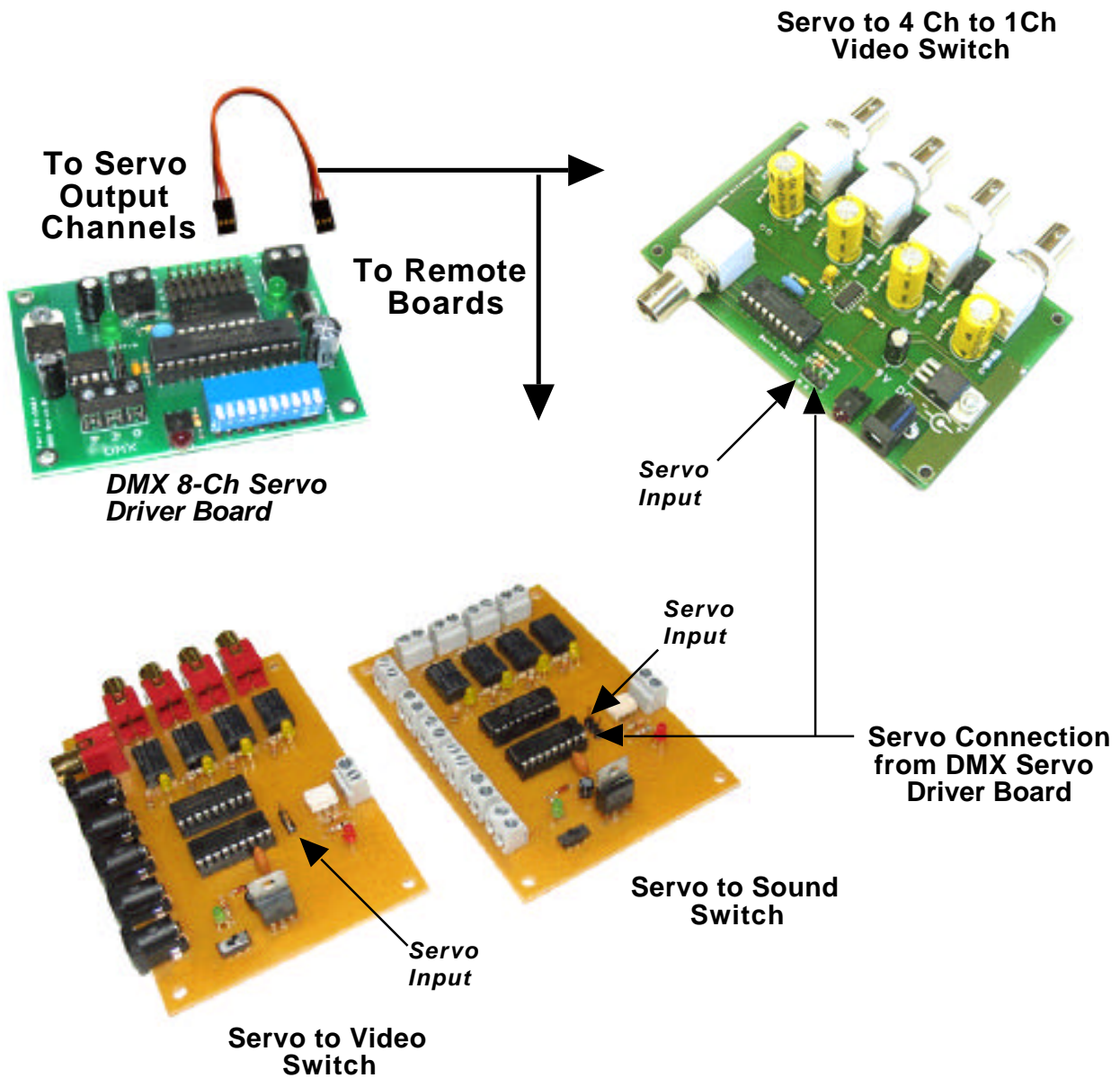## Optional Servo Application DMX- Hybrid Example

Servo Output to Devices

To Servo Output Channels

Servo to Voltage Output Driver

Servo Input

To Remote Boards

DMX 8-Ch Servo Driver Board

Servo Inputs 1-4

Servo Input

Servo to Micro Water Pump

4- Ch Servo to Analog Output (0-10 Vdc or 0-5 Vdc)

Servo Input

Servo Input

Servo to Pneumatic Valve (Air)
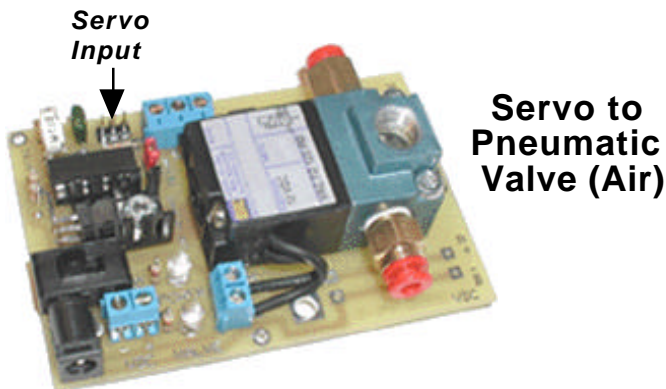
Servo Input to Special Effects Controller Board

Custom Equipment, Unique Electronic Products

Blue Point Engineering

DMX 8-Channel Servo Driver Board

Optional Servo Application DMX- Hybrid Example

Servo Output to Video / Sound Switch

Servo to 4 Ch to 1Ch Video Switch

To Servo Output Channels

To Remote Boards

DMX 8-Ch Servo Driver Board

Servo Input

Servo Input

Servo Connection from DMX Servo Driver Board

Servo Input

Servo to Sound Switch

Servo to Video Switch

DMX 8-Channel Servo Driver Board

Servo Information

SERVO RATINGS

The most common details available on a servo are its speed and torque rating. Nearly all servo packages are listed with brand name, model name/ number, speed, and torque output at 4.8 volts and 6.0 volts. Some information about metal, plastic gears or ball bearings may also be listed.

SERVO SPEED

60 Degrees

Time (Seconds) 0 to 60 Degrees

60°

16 ounces (oz) = 1 pound (lbs)

SERVO TORQUE

16 oz-in on 1" arm = 1 lbs lift

1" Arm

Weight (16 Ounces)
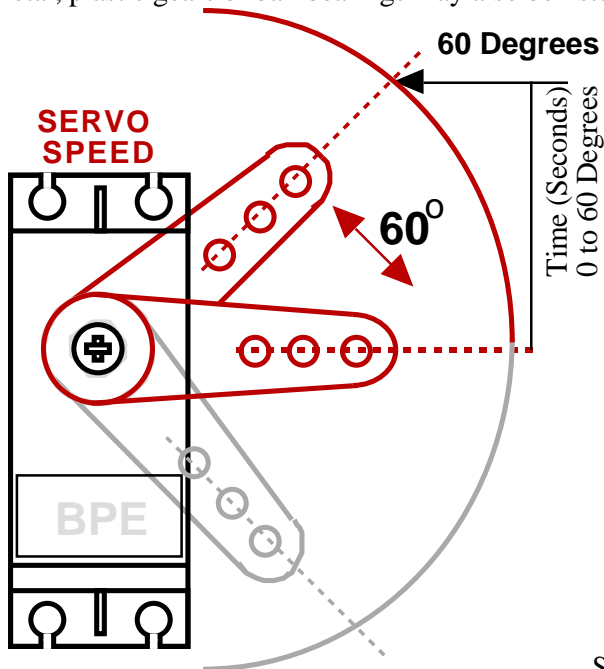
SERVO SPEED

Servo Speed is defined as the amount of time (in seconds) that a servo arm attached to the servo output shaft will move from 0 to 60 degrees.

Note: The lower the time (Seconds) the faster the servo can move an attached wheel or arm.

Servo Speed is measured by the amount of time (in seconds) it takes a 1 inch servo arm to sweep left or right through a 60 degree arc at either 4.8 or 6.0 volts. A servo rated at 0.22 seconds/60 degrees takes 0.22 seconds to sweep through a 60 degree arc. Some of the fastest servos available move in the 0.06 to 0.09 second range. In some servos, faster speeds may lower torque available.

SERVO TORQUE (Power)

Servo Torque is defined as ounce-inch (oz-in) The total push / pull power a servo can apply on a 1" servo arm when moving.
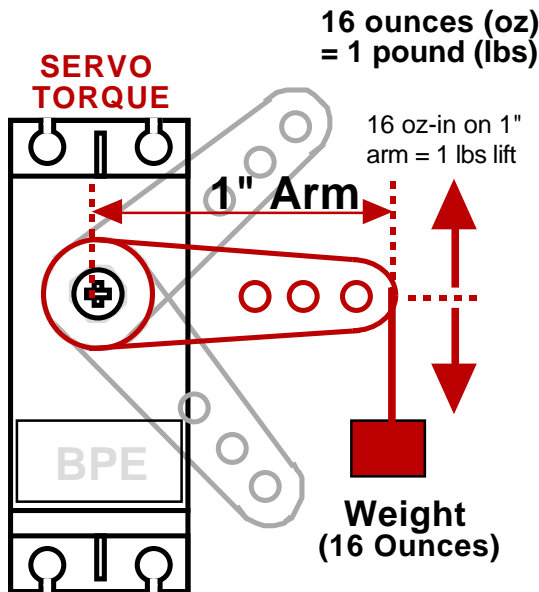
Servos have a certain amount of torque (strength) that is generally proportional to their size. Servos come in all kinds of sizes, strengths and weight. Torque is the measurement of force given over a distance. For most servos in the USA, torque is measured in oz-in (force in ounces times inches, or ounce-inch). Servo Torque is measured by the amount of weight (in ounces) that a servo can hold at 1-inch out on the servo output arm in the horizontal plane, again at either 5.0 or 6.0 volts to see when the servo stalls as it tries to lift the weight horizontally. The reported result is a measurement like this: Servo XYZ = 100 oz/in. @ 6.0 V. That means that Servo XYZ is capable of holding 100 ounces using a 1 inch output arm without excessive deflection at 6.0 input volts. To convert oz-in to kilogram-centimeters (kg-cm) just divide by 13.9

Note: If you need to know how many pounds a servo can push or lift on a 1" servo arm, divide the oz-in by the number 16. Different sized arms can be used. Use the length of the arm and divide the oz-in value by the arm length

DMX 8-Channel Servo Driver Board

Servo Information

R/C Servo

4.5 to 6.0 Voltage

Servo Connector

(S) Signal = Yellow
(+) 5 Vdc = Red
(-) Ground = Black

SERVO POWER (4.5- 6.0 VDC)

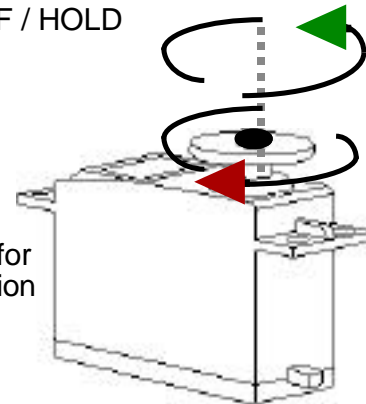*Servo Power is defined as the amount of DC Voltage needed to operate a Servo without damage.*

Servo operate from 4.5 to 6.0 volts DC. At the higher voltage servos tend to be faster and sometimes stronger, but can heat up faster when stalled or in a hold position with stress forces against the servo output shaft. Some servo controllers require a separate power source from the control source to deliver the higher 6.0 Vdc. The current drain (Amps required) depends on the torque being put out by the servo motor and can be in excess of one amp if the servo is stalled under load.

It is best to calculate 1 Amp per servo when figuring power supply needs for most servos.
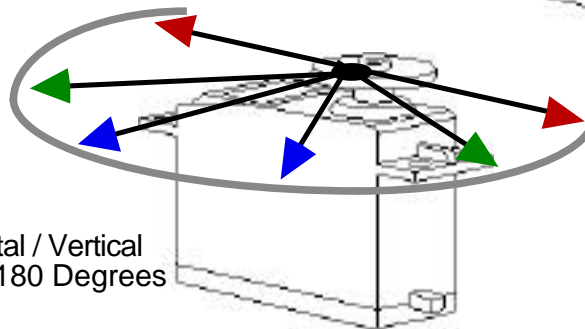
CW - ClockWise
CCW - Counter ClockWise
OFF / HOLD

Modified Servo for Continous Rotation
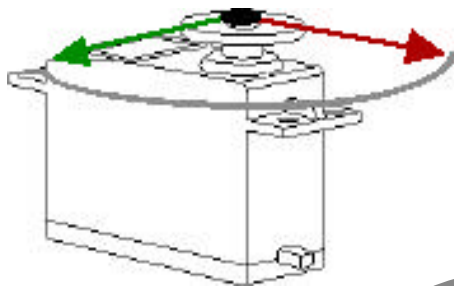
Positional Locations
0 - 90 Left
0 - 90 Right

Horizontal / Vertical
Rotation 180 Degrees