

#### 4.0 Control channels

DMX Channel	Function	Description
<b>Ch1</b>	Pan MSB	High Pan byte - in 8-bit operation, only this byte is sent
<b>Ch2</b>	Pan LSB	Low Pan byte for 16-bit positioning
<b>Ch3</b>	Tilt MSB	High Tilt byte - in 8-bit operation only this byte is sent
<b>Ch4</b>	Tilt LSB	Low Tilt byte for 16-bit positioning
<b>Ch5</b>	Iris	Iris aperture control
<b>Ch6</b>	Color	9 color combinations over the entire channel+rainbow+music change run
<b>Ch7</b>	Gobos	8 Gobos+gobos scrolling+music change
<b>Ch8</b>	Shutter/Strobe	Shutter and strobe with music sync / Black-out gobo and colour change
<b>Ch9</b>	Dimmer	Mechanical dimmer
<b>Ch10</b>	Gobo Rotation	Indexable position and rotation in both directions with adjustable speed
<b>Ch11</b>	Prisms	Allows the insertion of either of the two rotary prisms or neither
<b>Ch12</b>	Rotation Prisms	Regulation of prism rotation speed in one direction or the other
<b>Ch13</b>	Electronic Focus	Enables images to be focussed
<b>Ch14</b>	Zoom	Widening/narrowing of light beam (9°-24°)
<b>Ch15</b>	Effects	Effects + conversion filters
<b>Ch16</b>	Frost	Variable frost filter
<b>Ch17</b>	Mspeed	Movement speed Controlled crossfade Slow Fast
<b>Ch18</b>	Reset Lamp	
<b>Ch19</b>	Goboshake	Gobo oscillation adjustable speed
<b>Ch20</b>	Mod_colore	Indexable position, Full color hard change, Half color hard change, 8-speed Rainbow, Music sync color change
<b>Ch21</b>	Mod_rot.gobo	Indexable gobo position, gobo rotation, gobo shaker
<b>Ch22</b>	Macro	Macro Functions

#### 4.1 Iris channel -ch 5-

Adjustable using channel 5, gives linear variation of beam diameter. Diaphragm features include high opening/closing speed and low noise.

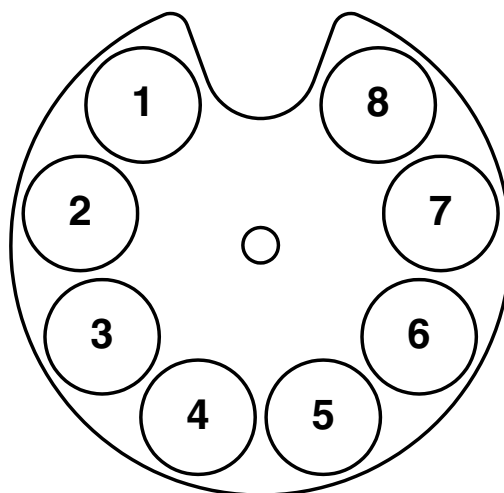
DMX VALUE	FUNCTION
0	MINIMUM APERTURE
0 - 255	LINEAR VARIATION
255	MAXIMUM APERTURE

## 4.2 Color channel -ch 6-

Giotto Spot is fitted with a color wheel comprising 9 dichroic filters. Color changes are controlled via channel 6, whereas 'color mode' is selected via channel 20. 5 different modes can be selected. (ref. CH20).

### With Color Mode CH20 = FULL COLOR

DMX VALUE	CENTRE VALUE	FUNCTION	POS.
0 - 27	14	WHITE	0
28 - 55	41	RED	1
56 - 83	68	YELLOW	2
84 - 111	97	GREEN	3
112 - 139	125	CYAN	4
140 - 167	153	BLUE	5
168 - 195	181	MAGENTA	6
196 - 223	209	AZURE	7
224 - 255	239	ORANGE	9



### With Color Mode CH20 = HALF COLOR

DMX VALUE	CENTRE VALUE	FUNCTION
0 - 24	12	WHITE
25 - 49	37	WHITE/RED
50 - 74	62	RED/YELLOW
75 - 99	87	YELLOW/GREEN
100 - 124	112	GREEN/CYAN
125 - 149	137	CYAN/BLUE
150 - 174	162	BLUE/MAGENTA
175 - 200	187	MAGENTA/ AZURE
201 - 225	212	AZURE / ORANGE
226 - 255	237	ORANGE/WHITE

### With Color Mode CH20 = SOFT COLOR

DMX512 Level Range	Centre Color Level	FUNCTION
Indexed Color Linear color regulation in every field	0	WHITE
	28	RED
	56	YELLOW
	84	GREEN
	112	CYAN
	140	BLUE
	168	MAGENTA
	196	AZURE
	224	ORANGE

### With Color Mode CH20 = SOFT RAINBOW

DMX VALUE	CENTRE VALUE	FUNCTION
0 -15	8	SPEED 1
16 - 31	24	SPEED 2
32 - 47	40	SPEED 3
48 - 63	56	SPEED 4
64 - 79	72	SPEED 5
80 - 95	88	SPEED 6
96 - 111	104	SPEED 7
112 - 127	120	SPEED 8
128 - 143	136	SPEED 9
144 - 159	152	SPEED 10
160 - 175	168	SPEED 11
176 - 191	184	SPEED 12
192 - 207	200	SPEED 13
208 - 223	216	SPEED 14
224 - 239	232	SPEED 15
240 - 255	248	SPEED 16

### With Color Mode CH 20=MUSIC HARD CHANGE

DMX VALUE	FUNCTION
0 - 127	HARD MUSIC CHANGE FULL COLOR
128 - 255	HARD MUSIC CHANGE HALF COLOR

**4.3 Gobo channel -ch 7-**

Gobos are selected using channel 7. The gobo group comprises a wheel with 8 rotary gobos and an open position. Gobos are all easily replaced and it's also possible to synchronize gobo changes with a musical bass beat, in which case, gobo selection is random and in any case not synchronized on the various fixtures. The gobos on the rotary wheel can rotate both clockwise and counter clockwise and their positions can be stored if this is foreseen.



DMX VALUE	CENTRE VALUE	FUNCTION
0 - 20	10	WHITE
21 - 41	31	GOBO1
42 - 62	52	GOBO2
63 - 83	73	GOBO3
84 - 104	94	GOBO4
105 - 125	115	GOBO5
126 - 146	136	GOBO6
147 - 167	157	GOBO7
168 - 189	178	GOBO8
190 - 196	193	SCROLLING SPEED 1
197 - 203	200	SCROLLING SPEED 2
204 - 210	207	SCROLLING SPEED 3
211 - 217	214	SCROLLING SPEED 4
218 - 224	221	SCROLLING SPEED 5
225 - 231	228	SCROLLING SPEED 6
232 - 238	235	SCROLLING SPEED 7
239 - 245	242	SCROLLING SPEED 8
246 - 255	252	GOBOS MUSIC CHANGE



side towards the lamp

SGM reserves the right to modify any specifications without prior notice.

**4.4 Shutter/strobe channel - ch 8-**

The Shutter/Strobe can be regulated via channel 8. The mechanism which enables the strobe effect to be generated is the same as that used for dimming the light beam, however it's also possible to control the light's intensity while the strobe's enabled. It also enables instantaneous blackout without any light spill. High-impact visual effects such as strobe effects in sync with the bass notes and blackout during color and gobo changes can be obtained using this channel.

DMX VALUE	CENTRE VALUE	FUNCTION
0 - 7	4	Closed
8 - 15	12	Strobe at frequency of 1Hz
16 - 23	20	Strobe at frequency of 1.38 Hz
24 - 31	28	Strobe at a frequency of 1.6 Hz
32 - 39	36	Strobe at a frequency of 1.9 Hz
40 - 47	44	Strobe at a frequency of 2.3 Hz
48 - 55	52	Strobe at a frequency of 2.7 Hz
56 - 63	60	Strobe at a frequency of 3.4 Hz
64 - 71	68	Strobe at a frequency of 4 Hz
72 - 79	76	Strobe at a frequency of 5 Hz
80 - 87	84	Strobe at a frequency of 6 Hz
88 - 95	92	Strobe at a frequency of 7 Hz
96 - 103	100	Strobe at a frequency of 8 Hz
104 - 111	108	Strobe at a frequency of 9 Hz
112 - 119	116	Strobe at a frequency of 10 Hz
120 - 136	128	Shutter strobe low strobe effect at maximum frequency in sync with bass notes
137 - 153	145	Music flash low
154 - 170	162	Autoshade open on the gobos
171 - 187	179	Autoshade open on the colors
188 - 204	196	Autoshade open on the gobos and colors
205 - 221	213	Open with slow gobo change
222 - 255		Open

#### 4.5 Dimmer –ch 9-

Adjustable via channel 9, allows linear regulation of luminous power. Giotto's dimmer is mechanical and ensures good linear adjustment as well as high operating speed and very low noise.

DMX512 Level range 0–255	FUNCTION
0 – 255	0 – 100% LINEAR REGULATION

#### 4.6 Gobo rotation -ch 10-

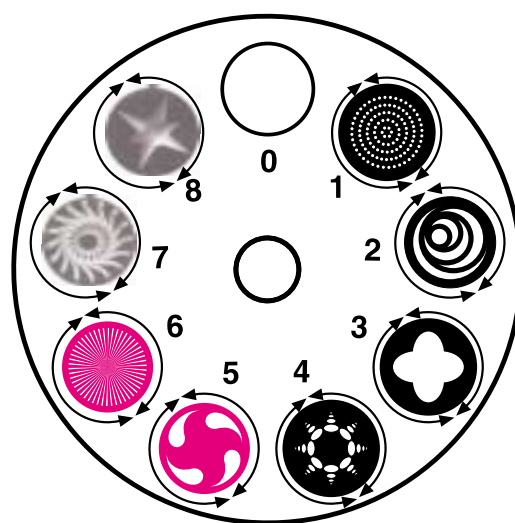
By means of this channel, it's possible to control rotation speed or positioning of the rotary gobos. Rotation can be in either direction at variable speed (adjustable from a minimum of 0.1 rpm to a maximum of 55 rpm) and gobos' positions can set over a range of 360°. This gobo system ensures absolutely smooth rotation. By means of channel 21 the required operating mode can be selected:

With Gobo Rotation Mode (Ch21) =Gobo position indexing

DMX512 Level range 0–255	FUNCTION
0...255	Linear regulation of gobo position over the full 360°

With Gobo Rotation Mode (Ch21) =Gobo rotation at adjustable speed in both directions

DMX512 Level range 0–255	FUNCTION
0...111	CLOCKWISE ROTATION [MAX... MIN ]
112 – 144	STOPPED
145...255	COUNTER CLOCKWISE ROTATION [MIN...MAX]



#### 4.7 Prisms -ch 11-

By means of this channel it's possible to select the fixture's two rotary prisms, which allow to multiply projected images by four, ensuring eye-catching graphic/decorative effects. The prisms can't be superimposed, so must be selected individually. Lastly, the system prism is completely independent from the gobo system, which means they can be combined.

DMX512 Level range 0-255	FUNCTION
0 – 84	NO PRISM INSERTED
85 – 170	COMET
171 – 255	4-FACET PRISM (14° BEAM)

#### 4.8 Prism rotation -ch 12-

By means of this channel it's possible to control the rotation speed of the fixture's two rotary prisms.

DMX512 Level range 0-255	FUNCTION
0 ... 111	CLOCKWISE ROTATION [ MAX...MIN ]
112 – 143	STOPPED
144 ... 255	COUNTER CLOCKWISE ROTATION [MIN... MAX]



**4.9 Electronic focus -ch 13-**

This channel is used for precise linear focussing, ensuring well-defined projections at any distance, or eye-catching blurred effects. **IMPORTANT!! For correct electronic focus operation, fit the dichroic gobos with their coated side outwards.**

DMX512 Level range 0-255	FUNCTION
0 - 255	0 – 100% LINEAR REGULATION

**4.10 Zoom -ch 14-**

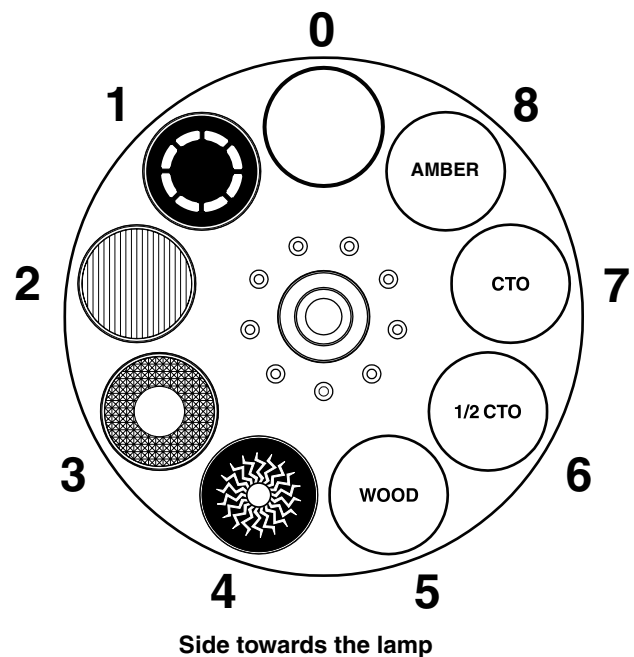
By means of this channel it's possible to widen or narrow the light beam from 9° to 24°. When the zoom is used, gobos remain in focus.

DMX VALUE	FUNCTION
0	ZOOM IN (9° ANGLE )
0 - 255	LINEAR VARIATION
255	ZOOM OUT (24° ANGLE)

**4.11 Effects wheel -ch 15-**

The effects wheel comprises 7 fixed gobos and an open position. The gobos fitted on this wheel can be combined with the rotary ones on the gobo wheel.

DMX VALUE	CENTRE VALUE	FUNCTION	POS
0 - 27	14	WHITE	-
28 - 55	41	TUNNEL	1
56 - 83	68	STRIPPED TEXTURE	2
84 - 111	97	HONEYCOMB TEXTURE	3
112 - 139	125	SPIDER	4
140 - 167	153	WOOD FILTER	5
168 - 195	181	FILTER ½CTO	6
196 - 223	209	FILTER CTO	7
224 - 255	239	AMBER	8



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**4.12 Frost -ch 16-**

Adjusted using channel 16, gives linear variable frost.

DMX VALUE	FUNCTION
0	FROST DISABLED
0 - 255	LINEAR VARIATION
255	FROST FULLY INSERTED

**4.13 Mspeed –ch 17-**

Mspeed affects PAN and TILT and is intended as the time required to complete a movement from one position to another. This means that the fixtures with the same Mspeed value will reach destination at the same instant. It's therefore possible to set movement times for each fixture which are independent of the times sent by the lighting console. The DMX values between 000-003 allow the console to control the movement, whereas with DMX value 004 a time can be allocated to the movement. To find Mspeed times, refer to the conversion table.

<b>DMX VALUE</b>	<b>FUNCTION</b>
0 -- 3	Controller crossfade
4 ... 255	Slowest ... Fastest

**4.14 Remote lamp striking and reset -ch 18-**

The ignition (or dousing) of the lamp can be controlled via DMX using a lighting console. In fact, after having switched on the Giotto, the lamp remains off until it receives a "lamp strike" command. This function has no effect if it's not enabled by means of the fixture's built-in microcomputer. In this case, the lamp will ignite automatically without waiting to receive the command from the lighting console. Should the lamp be accidentally switched off, it's advisable to wait at least 5 minutes before sending the ignition command. However, if the command is sent sooner, Giotto Spot will ignite the lamp by running restrike attempts at regular 3-minute intervals.

Lastly, Giotto Spot has a function which automatically reduces lamp power by 50% every time the shutter or dimmer is closed. This function ensures considerably better fixture cooling and increases lamp life. The lamp obviously returns to full power when the shutter or dimmer are reopened.

Should any problems occur, a reset command can be sent to the fixture in order that all the motors return to their starting positions before continuing to execute commands received from the console.

<b>DMX512 Level range 0-- 255</b>	<b>FUNCTION</b>	
0 - 60	Off	LAMP
61 - 129	Hysteresis	
130 - 179	On	
180 - 239	Hysteresis	RESET
240 - 255	Reset	

**4.15 Goboshake –ch 19-**

The Goboshake effect vibrates the gobo on a centre position and any of 16 different speeds can be selected.

<b>DMX VALUE</b>	<b>CENTRE VALUE</b>	<b>FUNCTION</b>
0 - 47	23	Goboshake disabled
48 - 60	54	Goboshake Speed 1
61 - 73	67	Goboshake Speed 2
74 - 86	80	Goboshake Speed 3
87 - 99	93	Goboshake Speed 4
100 - 112	106	Goboshake Speed 5
113 - 125	119	Goboshake Speed 6
126 - 138	132	Goboshake Speed 7
139 - 151	145	Goboshake Speed 8
152 - 164	158	Goboshake Speed 9
165 - 177	171	Goboshake Speed 10
178 - 190	184	Goboshake Speed 11
191 - 203	197	Goboshake Speed 12
204 - 216	210	Goboshake Speed 13
217 - 229	223	Goboshake Speed 14
230 - 242	236	Goboshake Speed 15
243 - 255	249	Goboshake Speed 16

**4.16 Color mode -ch 20-**

Used in combination with channel 6. From here it's possible to select the color wheel's operating 'mode'.

<b>DMX VALUE</b>	<b>VALUE CENTRE</b>	<b>FUNCTION</b>	
0 - 50	25	FULL COLOR	Digital regulation of the colors on centre positions
51 - 101	75	HALF COLOR	Digital regulation of the colors on intermediate positions
102 - 152	125	SOFT COLOR	Analog color selection on each position
153 - 203	175	SOFT RAINBOW	Continuous color rotation at adjustable speed
204 - 255	225	HARD MUSIC CHANGE	Digital color change in sync with bass notes

**4.17 Gobo mode -ch 21-**

Used in combination with Channel 10 - from here, it's possible to select the gobo wheel's operating 'mode'.

<b>DMX512 Level range 0-255</b>	<b>FUNCTION</b>
0...127	GOBO POSITION INDEXING
128...255	GOBO ROTATION AT ADJUSTABLE SPEED IN BOTH DIRECTIONS



## 4.18 Macro –ch 22-

From this channel it's possible to select one of the 16 preset Macros

DMX VALUE	CENTRAL VALUE	DESCRIPTION	CHANNELS USED
0-7	4	No Macro	
8-15	12	Slow dimmer opening ramp and fast closing	Dimmer Shutter
16-23	20	Slow dimmer closing ramp and fast opening	Dimmer Shutter
24-31	28	Odd-numbered fixtures run a slow dimmer opening ramp. Even-numbered fixtures run a slow dimmer closing ramp	Dimmer Shutter
32-39	36	Odd-numbered fixtures run a slow dimmer opening ramp and even-numbered fixtures' shutters are closed. Then even-numbered fixtures run a slow dimmer opening ramp and odd-numbered fixtures' shutters are closed.	Dimmer Shutter
40-47	44	Odd-numbered fixtures run a slow dimmer closing ramp while even-numbered fixtures' shutters are open. Then even-numbered fixtures run a slow dimmer closing ramp and even-numbered fixtures' shutters are open	Dimmer Shutter
48-55	52	Slow iris opening ramp and fast closing	Iris
56-63	60	Slow iris closing ramp and fast opening	Iris
64-71	68	Fast iris closing and opening	Iris
72-79	76	Odd-numbered fixtures run a slow iris opening ramp, even-numbered fixtures run a slow iris closing ramp	Iris
80-87	84	Odd-numbered fixtures run a slow iris opening ramp whereas even-numbered fixtures' irises are closed. Then even-numbered fixtures run a slow iris opening ramp and even-numbered fixtures' irises are closed	Iris
88-95	92	Odd-numbered fixtures run a slow iris closing ramp whereas even-numbered fixtures' irises are open. Then even-numbered fixtures run a slow iris closing ramp and odd-numbered fixtures' irises are open	Iris
96-103	100	Even-numbered fixtures close their irises, whereas odd-numbered fixtures open them and vice versa	Iris
104-111	108	Random strobe	Shutter
112-119	116	Slow Frost insertion ramp followed by slow removal ramp	Frost
120-127	124	Slow Frost insertion ramp followed by fast removal	Frost
128-135	132	Slow Frost insertion ramp on even-numbered fixtures, whereas Frost is disabled on odd-numbered units. Then slow Frost insertion ramp on odd-numbered fixtures and Frost disabled on even-numbered fixtures	Frost
136-143	140	Reserved for future use	-
144-151	148	Reserved for future use	-
152-159	156	Reserved for future use	-
160-167	164	Reserved for future use	-
168-175	172	Reserved for future use	-
176-183	180	Reserved for future use	-
184-191	188	Reserved for future use	-
192-199	196	Reserved for future use	-
200-207	204	Reserved for future use	-
208-215	212	Reserved for future use	-
216-223	220	Reserved for future use	-
224-231	228	Reserved for future use	-
232-239	236	Reserved for future use	-
240-247	244	Reserved for future use	-
248-255	252	Reserved for future use	-

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**Conversion table**



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