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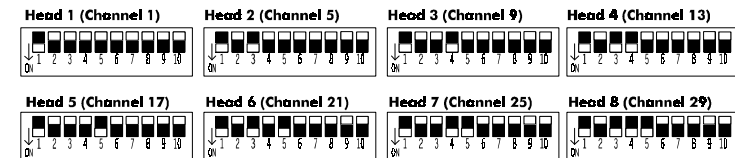
Universal Instruction Manual - Issue 1.3: Dec 2001
Written for Abstract Design to Light by Sabre Technology Ltd: 01482 831031

Instruction Manual

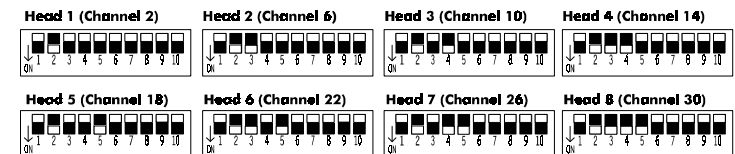
Dipswitch settings

The Abstract CE controller can show you a picture of how the dip switches should be set. If you are using this controller, ignore the settings below.

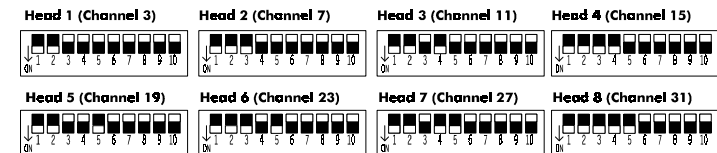
Settings for all “normal” heads



Settings for Twister 4



Settings for ClubColour



The dipswitches are set in binary code (1=switch 1 on). To work out how you need to set the dipswitches to get a certain channel number, use the following step-by-step procedure:

- Step 1: Is number more than 256? If so turn switch 9 on and subtract 256.
- Step 2: Is resulting number more than 128? If so turn switch 8 on and subtract 128.
- Step 3: Is resulting number more than 64? If so turn switch 7 on and subtract 64.
- Step 4: Is resulting number more than 32? If so turn switch 6 on and subtract 32.
- Step 5: Is resulting number more than 16? If so turn switch 5 on and subtract 16.
- Step 6: Is resulting number more than 8? If so turn switch 4 on and subtract 8.
- Step 7: Is resulting number more than 4? If so turn switch 3 on and subtract 4.
- Step 8: Is resulting number more than 2? If so turn switch 2 on and subtract 2.
- Step 9: Is result 1? If so turn switch 1 on.

If you have a calculator which can display binary, just convert the channel number to binary and turn on the '1' bits (switch 1 is the right hand bit).

Product Features

- Smoothly microstepped movements with automatic speed sensing
- Vivid dichroic colours
- Microstepped colour wheel with both smooth colour crossfading and fast colour snapping
- Microstepped gobo wheel (where fitted) for precise and fast gobo changing
- Variable speed strobe effect
- Controlled by standard DMX512, any channel 1-508
- Automatic switch to 'stand-alone' mode when DMX disconnected
- Synchronising stand alone 2-channel light show (compatible across whole Abstract range)
- DMX channel can be changed while unit is running
- DMX switch-through relay in case of unit failure
- DMX/Audio beat indication LED
- Units can be remotely reset (using Abstract controller)

Specifications

Beam movement: 160° (pan) x 100° (tilt) -(CS, FS1, MS)

Beam rotation: 0 - 80rpm variable speed bidirectional rotation (CR, TW4, GS, MS, MR)

Mirror drum swivel: 220° swivel (CR, GR, MR)

Microstepping: 0.1125° resolution (all channels)

Colours: White + 10 dichroic + multicolour (Club range, GS)
White + 7 dichroic + multicolour (FS1, GR, TW4, MR, MS, CF)

Gobos: 11 + open (Club range, GS)
7+open fixed to colours (FS1, GR, TW4, MR, MS, CF)

Lamp: 150W Arcstream 4000K (Club range, GS)
250W 24V A1-259 (FS1, GR, TW4, MR, MS)
100W 12V A1-231 (CF)

DMX: Receive on 1-508
Transmit on 1-8 (stand alone mode - non-standard DMX)
DMX active regeneration when not stand alone

Audio: Electret mic with AGC

Power consumption: 300W approx. Internal fuse: T3.15A

FS1 = Futurescan 1, GR = Gladiator Revolution, CS = Clubscan, CR = ClubRevolution, TW4 = Twister4,
MS = MoonScan, MR = MoonRay, GS = Galactic Star, CF = ColourFlood

Welcome

Congratulations on your purchase of this Abstract product. Your new unit offers many exciting features and can work in harmony with any other Abstract product in the range to produce an amazing light show.

This booklet contains instructions for the following products:

- ClubScan
- ClubRevolution
- ClubColour
- MoonScan
- MoonRay
- Futurescan 1 CE 250W
- Gladiator Revolution CE 250W
- Twister 4CE 250W
- Galactic Star
- Colourflood

All the instructions in this booklet apply to all the above products, unless the text says otherwise.

If you're in a hurry...

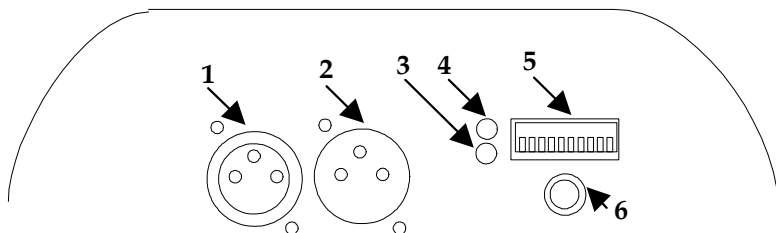
If you don't want all the details, and you just want to get it working in a hurry...

- If you are using a controller with the lights, go to page 9
- If you are running the lights in sound-to-light mode, go to page 6

Features of the unit

All the units have the same plugs and indicator lights, though they are in different positions on the different units. The main ones are:

1. **DMX output socket** (pin 3 cold, pin 2 hot, pin 1 grounded). Other DMX devices can be linked in to the system through this socket. (If you can't tell which is which, the output is the one where you can't touch the pins.)
2. **DMX input plug** (pin 3 cold, pin 2 hot, pin 1 screen). Used to connect the unit to either a DMX controller or to another Abstract unit in stand-alone mode. You can use a dedicated controller such as the Abstract CE controller, or another DMX lighting desk. If you are using a controller with a 5-pin DMX output, you will need to use a 5 to 3 pin adaptor with pins 2 and 3 swapped.
3. **Power on light** (red). This light should be on whenever the unit is powered up. If it doesn't come on there is either no power to the unit, or some internal problem with the unit.
4. **DMX present / Audio beat light** (green). This light is on constantly when DMX is being received (it may flicker a bit). When it is not lit, the unit is in stand alone mode and the light will flash when an audio beat is detected.



5. **Dip switches.** Dip switches 1-9 set the DMX channel that the unit will respond to (in binary code) when a DMX controller is being used. Switch 10 sets the stand alone 'group' of the unit when in stand-alone mode, either 1 (off) or 2 (on). See the last page of this booklet for help on setting the switches.

Maintenance of the unit

In typical use, the unit will get dirty due to smoke fluid, dust and cigarette smoke.

Every few weeks you should clean the mirror and lens of the unit using a soft damp cloth to ensure maximum light output. Do not use abrasive cleaners or solvents to clean the optics or case of the unit. Using a vacuum cleaner, remove fluff from the fan outlet and the air intakes on the unit. If the airflow becomes restricted or blocked, the unit will overheat. This will shorten the working life of the unit and may result in the thermal trip activating on Club series units.

If you are operating the unit regularly for prolonged periods (e.g. nightclub installations) you should take the unit to an Abstract dealer for full servicing and internal cleaning a few times a year. Do not attempt to open the case yourself as electrical hazards are present inside, and you risk damaging delicate internal parts.

Lamp replacement

To replace the lamp, first turn off the unit, remove the power, and if the unit has been operating, wait 15 minutes for it to cool down.

Club range units: Remove the lamp by taking out the thumbscrews in the end plate and withdrawing the lampholder through the rear end of the case. Remove the old lamp from the lampholder and fit the new lamp.

You must not touch the quartz glass of the lamp! Handle by the ceramic base only.

Replace the lamp into the unit and refit the thumbscrews. Power up the unit and set to open white. Adjust the lamp for best brightness and evenness of light using the 3 screws on the lamp plate.

Futurescan 1, Gladiator Revolution and ColourFlood: Open the hatch on the top of the unit by removing the thumbscrew. Slide out the old lamp. Pull the connector off the lamp and plug it onto the new lamp. Refit the lamp. Close the hatch.

Twister 4, MoonScan, MoonRay and Galactic Star: Open the hatch on the front of the unit by removing the two thumbscrews. Slide out the old lamp. Pull the connector off the lamp and plug it onto the new lamp. Refit the lamp. Close the hatch.

Try using a different DMX source (controller or another scan) to check if that is the problem.

If you've tried all these and the DMX still doesn't work, the DMX interface circuit may have been damaged by a line transient or induced interference (this happens occasionally). The unit will require repair. Check where your DMX cables run - if they are near or run alongside high voltage cables, power lines, or neon, you may have problems.

Some units respond to the controller, others do something different

You have a break in the DMX cabling - one unit is not receiving the DMX and is generating its own light show. Check the green LED's - one of the units which is misbehaving will be flashing its green LED in time to the music. The DMX link between this unit and the previous one is faulty.

Unit does not respond to sound

Check that the unit is not receiving DMX (the green LED should be off). Also check that the unit is not set to 'display' mode (see page 6) as it does not respond to sound in this mode. Otherwise, tapping the microphone should cause the green LED to flash. Quiet or high pitched sounds will not activate the unit.

Unit keeps resetting itself intermittently

Sometimes the fuse holder on the electronics board becomes loose. This results in an intermittent power supply, which may cause the unit to reset itself. You can rectify this by removing the fuse and squeezing the terminals on the fuse holder gently together. This fault can sometimes cause the fuseholder to get hot and desolder itself from the board, so check that as well.

If still you cannot resolve the problem, it may be that the unit has a fault. You should contact your Abstract dealer for assistance. If you have Internet access you can go to:

<http://www.abstractavr.com>

which has a technical help page.

6. **Microphone.** The unit can sense the beat of the music through this built-in microphone. The microphone is bass-filtered and will only pick up low-pitched sounds.

7. **Mains power** (not shown in picture). Power is supplied to the unit through an IEC connector on the back face of the unit. There is a power supply fuse built into this connector. If this fuse fails you should take the unit to an Abstract dealer for service.

Futurescan 1, Gladiator Revolution and ColourFlood have captive power leads instead of the IEC connector.

8. **Lamp alignment** (not shown in picture). ***ClubScan and ClubRevolution only.*** On the bottom of the unit (the opposite end from the mirror) there are 3 screws marked "Lamp align". These allow you to adjust the position of the lamp within the reflector to optimise the evenness of the light beam.

The alignment is set at the factory and you should not need to change it until you renew the lamp.

9. **Focus** (not shown in picture). You can focus the light beam for sharp gobo projection by turning the lens. If you turn the lens anticlockwise several turns, the lens will come out of the unit allowing it to be cleaned.

On the *Twister 4, MoonScan, MoonRay* and *Galactic Star*, there is a slider knob on the top of the case. Turn the knob anticlockwise to loosen it, focus by sliding backwards and forwards, then turn the knob clockwise to lock the focus position.

10. **High/Low switch** (not shown). *Not fitted on all units.* This switch is a "lamp saver" which controls the power to the lamp. When set in "Low" position, the lamp is run at a lower power which slightly reduces the brightness, but greatly increases the lamp life. "High" position gives full brightness and normal lamp life.

11. **Remote control socket** (*Futurescan 1, Gladiator Revolution and ColourFlood*). The "remote control" (3 buttons) can be connected to this socket using a stereo jack cable. Do not connect any other equipment to this socket or damage may result.

Note: when power is not connected to the unit, the DMX input and output connectors are bridged through by a relay to maintain the DMX circuit.

Installing the unit

- Make sure that fixings or lighting stands are sufficient to carry the weight of the unit.
- The unit is fan cooled, make sure that you don't block any vents.
- Ensure there is at least 1 metre between the lens of the unit and any surface which the light beam can shine on.
- For Club range units, the unit should be installed with the mirror at the top to ensure best light output.

When you turn the unit on, it will go through an initialisation routine where it moves all the motors to their zero positions. You may hear some bumping noises as the unit checks the limits of movement on the motors.

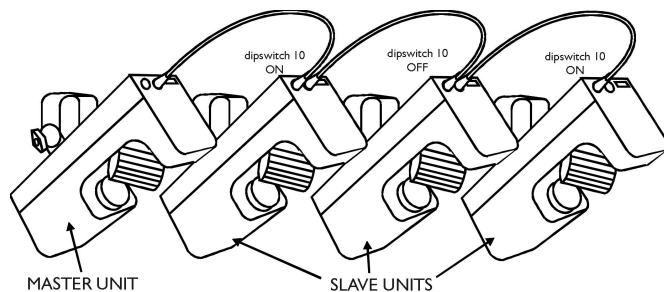
The initialisation routine takes about 20 seconds, after which the unit will begin to respond to DMX input, or to sound if no DMX is connected.

Note: Units with halogen lamps do not turn the lamps on until initialisation is complete.

Setup for Stand Alone mode

If you don't connect a controller, the unit will automatically run in stand alone (lightshow) mode. **You don't need to set any switches. for stand alone mode.** This mode is good when you want a quick and impressive show, or if you don't have time to program or operate the light show. If you want to control the unit yourself, see page 9.

If you have more than one Abstract unit, link the units together using 3-pin DMX cables. Connect the DMX out (the socket) on the first unit to the DMX in (plug) on the second unit. Then continue linking as many other units as you want. The first unit (the Master unit) will generate the light show and automatically control the other (Slave) units to give a synchronised light show.



If you have problems

The world of intelligent lighting can sometimes be confusing. You may at times wonder if the lighting is more intelligent than you are. The next section lists a few common problems you may encounter, with solutions.

No light from the unit

Check the 'Power on' (red) LED is lit and the fan is running. If not, there is no mains supply. Check your mains wiring and the fuse in the back panel.

Check if the lamp is alight. You should be able to see some light escaping through the fan. If power is present but the lamp is not alight it may need replacing.

Note: if the unit is in standby mode because all its control channels are at 'zero' position, it may have turned the lamp off. Set some controls to non-zero positions.

If the lamp is alight, check that the unit is not in "blackout". If you are using a controller, change the setting. If in stand alone mode, tap the microphone.

Unit turns itself off after working for a while

Club range units are fitted with a thermal trip which may operate if the fan vents are blocked or excessively dirty, or if the fan fails. The trip will automatically reset when the unit cools down. Ensure all vents are clean and have free airflow. If the fan does not run when the unit starts up, take the unit to an Abstract dealer for repair.

Unit not responding to DMX

Check if the green DMX LED is lit. If not, check that your DMX cables are connected properly and are wired correctly (the unit is wired with pin 2 'hot'; some controllers may have pin 3 'hot'). Also check you have connected the cables to the right connectors; it does matter which way round they are.

If the DMX LED (green) on the rear of the unit is lit, the unit is definitely receiving DMX but is probably not responding to the channel you think it is. Check the dipswitch settings. Also check the DMX polarity, as the green LED can sometimes light when the DMX is inverted.

If you have intermittent DMX problems, one 'leg' of the DMX may be disconnected, either in this unit or the previous one, or in your wiring (sometimes the connectors become loose on the electronics board). The DMX may work intermittently using the mains earth as a 'common'.

Gobo / Shutter / Moon rotation

DMX	Gobo	Shutter	MoonScan/Ray
0	Blackout	Blackout	Blackout (No rotation)
24	Open	Open	Open (No rotation)
40	Laser	"	Fastest clockwise rot.
56	Star	"	
72	Slice	"	Medium clockwise
88	Tunnel	"	
104	Heart	"	Slowest clockwise rot.
120	Eurostars	"	Stop rotation
136	Sunburst	"	Slowest anticlockwise
152	Triangle	"	
168	Slash	"	Medium anticlockwise
184	Bubbles	"	
200	Segment	"	
216	Bubbles	Open	Fastest anticlockwise
226	Slow strobe	Slow strobe	Slow strobe (No rotation)
230	Strobe 2	Strobe 2	Strobe 2
234	Strobe 3	Strobe 3	Strobe 3
238	Strobe 4	Strobe 4	Strobe 4
242	Strobe 5	Strobe 5	Strobe 5
246	Strobe 6	Strobe 6	Strobe 6
250	Strobe 7	Strobe 7	Strobe 7
254	Fast strobe	Fast strobe	Fast strobe

Note: Intermediate values will give part gobos

On MoonScan/MoonRay, rotation functions are for internal mirror dish. Dish is stopped during blackout and strobing.

Special functions

On units with halogen lamps (all except Club series) the unit will turn off the lamp if all control channels are at zero for more than about 10 seconds. The lamp will turn back on when any channel changes from zero. This helps to extend lamp life if the unit is left powered but in black out for some time.

You can tell which unit is the Master unit because its green light will be flashing in time with the music. The green light will be permanently lit on all the slave units.

Note: If you connect other manufacturers' products to the DMX line while using stand alone mode, they will probably not respond.

Remote control for Futurescan 1, Gladiator Revolution and Colourflood: Connect the remote control to the first unit in the DMX line using a stereo jack cable. Not all units are fitted with the remote control socket, so ensure a "master" unit fitted with the socket is first in the DMX line. The remote will then control all the other lights in the DMX line. *If the unit with the remote is not first in the DMX line, the remote will be ignored.*

Light show variations

To improve the light show, you can set Dipswitch 10 to "ON" on some units. This will make the unit do a variation on the lightshow (like inverting the movement or using a different colour). Units with Dipswitch 10 "OFF" will follow the Master unit.

If you've got four units, you might want to set Dipswitch 10 "ON" on the outside two units and "OFF" on the middle two, to create an exciting varied lightshow. Even with only two units, setting Dipswitch 10 "ON" on the Slave unit will make for a better lightshow.

On **units with Advanced Sound Response (ASR)**, if you set dip switch 10 "ON" on the Master unit, no blackouts will be used in the lightshow. This is useful if you are using a single unit. On units with "Supersound," the Master unit does not take any notice of Dipswitch 10. It always behaves as if the switch is OFF.

If you've got a variety of different Abstract products, they might have different versions of the light show programmed into them - we are continually improving the light show. If you have any units with ASR, make sure one of those is the Master unit.

Special options in stand alone mode

In stand alone mode, you can also set three options on the Master unit's Dipswitches which affect the light show:

- All dip switches on: Display mode - unit ignores audio and scans slowly through various patterns (including strobes)
- 1 off, 2-9 on: Slow mode - unit responds to audio but always moves slowly and gently. No strobing is used.
- 1 on, 2 off, 3-9 on: Strobe disable mode - unit behaves as for normal stand-alone mode but will not use strobing.

If you've got several units connected together, the slave units will obey the options on the Master unit. You can set the switches before or after the unit is turned on.

If you connect a DMX source while these special options are set, the unit will have a start channel of 1.

Operation in stand alone mode

If the unit is in stand alone mode (no DMX connected), it will automatically produce a light show in response to the music, and will control any other units connected to it. You can't change what it is doing, unless you use the special options above, or connect a remote control as described next.

Remote control (only on *Futurescan 1*, *Gladiator Revolution* and *Colourflood*): You can black out the unit (and any others connected to it by DMX) by pressing the Blackout button. You can make the unit strobe by pressing the Strobe button. You can make the unit move more slowly by pressing the Slow button.

If the unit is receiving DMX (either from a controller or another unit in stand-alone mode), the remote control will have no effect.

On the ColourFlood, if you hold down the Blackout button, the unit will strobe in white. The "**Colour**" button will lock the unit in one colour. Every time you press the button, the unit will step to the next colour. If you hold down the button, the unit will scroll continuously through all colours. The "**Sound**" button will put the unit in sound trigger mode (and turn off the Colour lock mode). If you hold down the button, the unit will go into Slow mode, and will fade between colours. The light next to the button will flash in Slow mode.

DMX values

Pan & Swivel

DMX	Result
0	Left
128	Central
255	Right

Tilt

DMX	Result
0	Top
128	Central
255	Bottom

Rotation (see Gobo table for MoonScan/MoonRay dish rotation)

DMX	Result
0	Stop
12	Fastest speed clockwise
112	Slowest speed clockwise
128	Stop
141	Slowest speed a.clockwise
244	Fastest speed a.clockwise
255	Stop

Colour and colour / gobo

DMX	Colour only	Colour / Gobo
0	White	Blackout (Twister 4 only)
10	White	White/open
26	Red	Red/dot tunnel
43	Blue	Blue/Slash
59	Green	Green/Segment
75	Yellow	Yellow/Triangle
91	Cyan	Cyan/Tunnel
108	Orange	Orange/Bubbles
124	Magenta	Pink/Stars
140	Neon Green	Multicolour
156	Pink	Orange/Bubbles
173	UV Blue	Cyan/Tunnel
189	Multicolour	Yellow/Triangle
221	UV blue	Blue/Slash
238	Pink	Red/dot tunnel (Slow strobe on Tw4)
254	Neon Green	Red (Fast strobe on Twister 4)

NB: Intermediate values will give mixed colours

Shutter

The Galactic Star, Futurescan I, Gladiator Revolution, MoonRay, MoonScan and ColourFlood have a separate channel to control blackout and strobe functions.

On all units except the Galactic Star, these functions are actually provided by the colour/gobo wheel, so you may see colours momentarily flash by when you select blackout. The strobe function operates on adjacent colours. If you want a black/white strobe, select "White" on the colour channel.

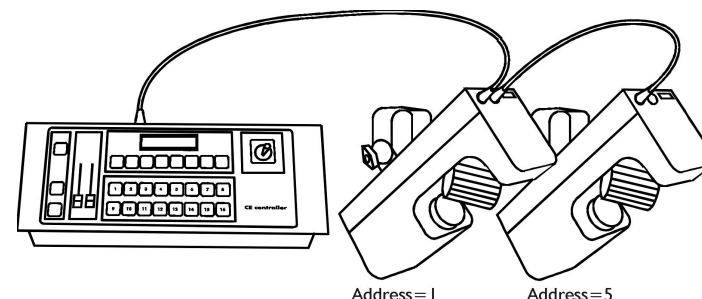
The **Galactic Star** has a separate shutter. Channel 1 must be set to a non-zero value before any light will come out of the unit.

Compatibility with other Abstract units

All units in the Abstract CE, VR and Club ranges are compatible with each other, even those which have different functions, or more colours and gobos. You will find that some colours are repeated on the simpler units; these match the extra colours or gobos on the more complex units.

Setup for DMX controlled mode

DMX controlled mode gives you full control over every function of the unit. Using a suitable DMX controller such as the Abstract CE controller, you can program the lightshow just the way you want it. However, it does take a bit more setting up, and a lot more programming time, than the stand alone lightshow.



Connect your controller to the "DMX in" socket on the first unit, using a 3-pin XLR cable. If you are using a controller with a 5-pin DMX output, you will need to use a 5 to 3 pin adaptor with pins 2 and 3 swapped (pin 2 is 'hot'). Connect the next unit, if you have one, to the DMX output plug.

This unit buffers the DMX signal as it passes through the unit, which means that you can connect as many units together as you want. You don't need to connect a line terminator in the last unit.

Setting the dip switches on the units

Your DMX controller sends out commands for all the units it is controlling down one cable. You need to tell each unit which commands to respond to by setting dip switches 1-9. The correct settings depend on what controller you are using, and how it is set up, but usually the first unit is set to "address 1", the second to "address 5", the third to "address 9" and so on - keep adding 4 to the address. (See the back page of this manual for more help).

Note: if you want two units to behave exactly the same, you can set the dip switches for both units to the same channel.

You can change the dipswitches while the units are running, and the new settings will take effect immediately. You don't need to turn the unit off and on.

If you are using the Abstract CE controller, or another “personality” based controller, you should set up the controller to match the heads you have connected. Refer to the controller manual for help on this. If the controller does not have an appropriate setting for the head, use the nearest similar setting. If in doubt, a VR8 or Futurescan setting will operate most of the units.

Operation in DMX controlled mode

To control the unit we recommend Abstract’s CE controller, Compact controller or ClubShow system, which are designed specifically for Abstract lighting units. However, you can use any DMX controller to operate the unit.

DMX channel usage

The following table shows you which function of the unit is controlled by each DMX channel, and how many channels are used. “Base” is the channel number you have set on the dip switches. The values for each function are on page 15.

Unit type	No. of chans	1 Base	2 Base + 1	3 Base + 2	4 Base + 3
ClubScan	4	Pan	Tilt	Colour	Gobo
ClubRevolution	4	Swivel	Rotation	Colour	Gobo
ClubColour	2	Colour	Gobo	-	-
Futurescan I	4	Pan	Tilt	Col/Gob	Shutter
Gladiator Revolutn.	4	Swivel	Rotation	Col/Gob	Shutter
Twister 4	2	Rotation	Col/Gob	-	-
MoonScan	4	Pan	Tilt	Col/Gob	Shut/Rot
MoonRay	4	Swivel	DrumRot	Col/Gob	Shut/Rot
Galactic Star	4	Shutter	Rotation	Colour	Gobo
ColourFlood	4	-	-	Colour	Shutter

Note: The ColourFlood uses 4 DMX channels, but the first two are ignored. This is to make it compatible with the other units in the range.

Pan/tilt

The mirror pan and tilt functions are proportional with automatic speed sensing - if you move the control fast, the mirror will move fast; if you move the control slowly, the unit will follow slowly and smoothly.

Rotation and Swivel

Units with rotation functions have a “stop” position at the centre of the DMX control (value 128), with rotation speed increasing anticlockwise as you go down the control or clockwise as you go up the control. There is also a “stop” position at the maximum and minimum values.

The “**Swivel**” function allows you to twist the mirror drum through 220 degrees, providing some amazing beam movements.

The MoonRay has two rotation functions, the mirror drum and an internal mirror dish. Channel 2 is the drum rotation, the internal dish rotation is controlled by the central part of channel 4.

Colour

The colour function is also proportional; this allows you to perform smooth crossfades between colours. To obtain correctly positioned colours you need to send the correct DMX values (the unit does not ‘snap’ to the colours). Many controllers can ‘learn’ these values. The Abstract controllers are pre-programmed with them.

On the **Futurescan I**, **Gladiator Revolution**, **Twister 4**, **MoonScan**, **MoonRay**, gobos are permanently fixed to the colours. You cannot select them separately.

Gobo (Club range & Galactic Star only)

These units also crossfade between gobos. This allows you to “fade out” the light by moving the control slowly from Open to Blackout. To obtain correctly positioned gobos, you need to send the correct DMX values to the unit.

If you move the control to the top end of its range (about 80%) you will enter the ‘strobe zone’. The unit will strobe slowly (about one flash per second) at 80%, up to full speed strobe (about 8 flashes per second) at 100%.

Note: Except for the Galactic Star, the gobo wheel is used to produce the strobe effect, so you cannot strobe on a gobo. The Galactic Star can strobe on any setting if you use the Shutter channel to control the effect.

If you move the control to zero, the unit will black out.