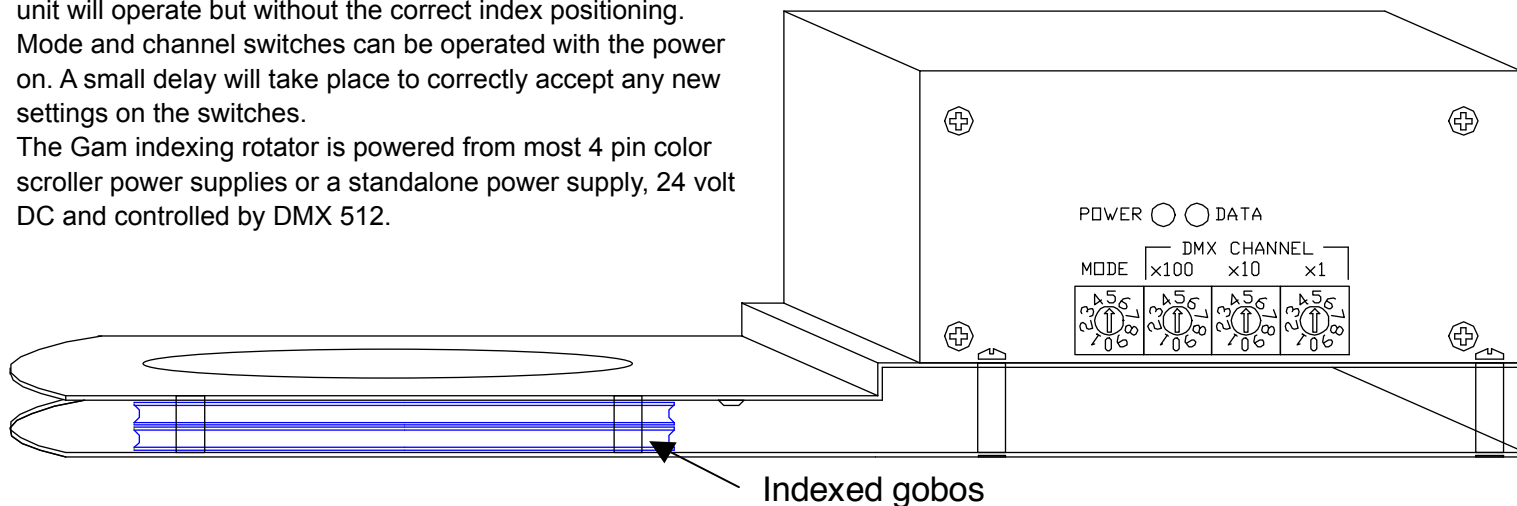


INDEXING TWINSPIN™ (1 MOTOR) OPERATING INSTRUCTIONS

- The Indexable TwinSpin™ is a twin rotator for two gobos driven from one motor and can be fitted with one or two gobos. The gobo on the flat side of the rotator is fully indexed and the second gobo follows all the actions of the first one in reverse.
- Four 10-position switches are on the control box. The MODE switch is the one nearest the Gobo end of the motor box. The switch farthest from the gobo is X1 DMX address the X10 and x100
- There are five programmable DMX controlled modes and four built-in pre-programmed effects which don't require a DMX signal.
- The GAM indexing rotator is controlled by the DMX512 protocol and is powered by 24 volts DC, either from most color scroller power supplies or a standalone power supply. *
- Once powered, the unit will show a red power LED to indicate the power is on. The unit is also fitted with a green LED which indicates the status of operation.
- At power on, the unit needs to initialize to find the home position of the Gobos. This takes about 2 seconds during which time the green data LED will flash. Once the home sensing is complete, the flashing will stop. If the green data LED is not lit, then there is no DMX signal present. If the LED continues flashing, it means there has been a fault detecting the sensor. The unit will operate but without the correct index positioning.
- Mode and channel switches can be operated with the power on. A small delay will take place to correctly accept any new settings on the switches.
- The Gam indexing rotator is powered from most 4 pin color scroller power supplies or a standalone power supply, 24 volt DC and controlled by DMX 512.



INSTALLING PATTERNS - Install the patterns in the Gobo holders using the provided retaining rings. Older warped patterns should be installed with the bent parts bowed away from each other so they won't catch when rotating. You must 'Burn in' new patterns before rotating for the first time by placing the TwinSpin™ (with the patterns mounted) in the fixture and the lamp at full for approximately two minutes. Do not rotate the gobos. Failure to 'Burn in' will most likely result in a jam. If the patterns catch on each other or the retaining ring is not properly secured and slips, the TwinSpin™ may jam and stop turning. Turn off motor and light as soon as possible and remove the unit to free the jam.

PREPARE THE FIXTURE - Before installing the TwinSpin™ in the fixture, it is important to align the lamp. The circle of light should be as smooth and even as possible, without hot spots.

INSTALLING THE TwinSpin™ - Slide the TwinSpin™ straight down into the iris slot (the wide slot right in front of the pattern slot). Make sure it is seated straight and as far down as it will go. Secure the 4-pin cable so that it does not contact the hot lamp house.

Please Note; The TwinSpin™ is not intended for use in the older 1000W ellipsoidal spotlights. For continuous applications we suggest the new cool beam units such as the ETC Source IV, the Altman Shakespeare or the Strand SL and other cool beam type units.

* The connections via the 4-pin XLR connector are as follows;

Pin 1 -24 V DC	Pin 2 DMX signal, re-routed
Pin 4 +24 V DC	Pin 3 DMX signal, re-routed

Unit will function properly on reversed polarity (as found on some color changer supplies).

Each unit has a male XLR input connector and a female XLR (with power and DMX signal feed through) allowing daisy chaining multiple TwinSpins™ and scrollers on one line.

The current draw of the unit is about 500ma. If using many units on one supply, make sure the total current draw of TwinSpins™ and scrollers does not exceed the supply limits. As well, make sure the 4-pin cables (especially at the beginning of the chain) can handle the load.

MODE 1 OPERATION -- MODE SWITCH = 1 -- 1 CHANNEL OPERATION

- Speed and position control on a single fader
- Set DMX address - This number will correspond to channel control for the rotator
- The indexing gobo is controllable according to the following table:

FADER %	HEXADECIMAL	FUNCTION
100%	255 = FF	STOP
76 to 99%	193 to 254	0.1 to 25 Rpm counterclockwise
75%	191 to 192	STOP
51 to 74%	129 to 190	25 to 0.1 Rpm clockwise spin
50%	128	STOP
0 to 49%	0 to 127	Index 0 to 359 degree at 5 Rpm shortest route

All indexing takes place at 5 Rpm.

MODE 2 OPERATION -- MODE SWITCH = 2 -- 2 CHANNEL OPERATION

- Separate speed and position control
- Set DMX address
- The indexing gobo is controllable according to the following table:

FADER % Speed - channel 1	HEXADECIMAL	FUNCTION 1. Speed and direction of continuous spin
100%	255 = FF	STOP
50 to 99%	129 to 254	25 to 0.1 Rpm counterclockwise spin
50%	128	STOP
1 to 49%	0 to 127	0.1 to 25 Rpm clockwise spin
0%	0	STOP - at position set by indexing fader
FADER % Speed - channel 2	HEXADECIMAL	FUNCTION Index / Position of gobo
1 to 100%	0 to 255	Index position (8 bit) 0 - 359 degrees
0%	0	Continuous rotation as set by speed channel

- If the indexing channel is set to zero, then the gobo will continuously rotate according to the setting of the speed channel.
- In Index Mode (channel 2 is set above 1%), the gobo will take the shortest route to its position.
- The speed of indexing is set by channel 2 and for index mode, the speed-control-channel stop positions are not used.
- 0% is full speed indexing
- 50% is 0.1 rpm indexing
- 100% (full) is full indexing

MODE 3 OPERATION -- MODE SWITCH = 3 -- THREE CHANNEL OPERATION

- Separate speed control and 16 bit position control
- Set DMX address
- The indexing gobo is controllable according to the following table:

FIRST CHANNEL %	HEXADECIMAL	FUNCTION 1. Speed of indexing 2. Speed and direction of continuous spin
100%	255 = FF	STOP
50 to 99%	129 to 254	0.1 to 25 Rpm counterclockwise spin
50%	128	STOP
1 to 49%	1 to 127	25 Rpm to 0.1 clockwise spin
0%	0	STOP
SECOND CHANNEL %		
SECOND CHANNEL %	HEXADECIMAL	FUNCTION Index position coarse
1 to 100%	1 to 255	Index position coarse (8bit) 0 - 359 degrees
0%	0	Continuous rotation controlled from first channel
THIRD CHANNEL %		
THIRD CHANNEL %	HEXADECIMAL	FUNCTION Index position fine
0 to 100%	0 to 255	Index position fine (16 bit)

Three channel selection operates the gobo indexing in 16 bit mode for smooth low speed tracking operation. Ideal when using desk fade timing for live movement. Indexing takes the shortest route to the set position and uses the speed set by the first channel of gobo control. If the speed /direction channel is set to zero then indexing will take place at 5 Rpm.

MODE 4 OPERATION -- MODE SWITCH = 4 -- 4 CHANNEL OPERATION

- Operates in 16 bit indexing mode and uses an extra channel to activate the index position while gobo is rotating. Rotate and stop control is a one channel operation.
- Set DMX address
- Indexing gobo is controllable according to the following table:

FIRST CHANNEL %	HEXADECIMAL	FUNCTION 1. Speed and direction of indexing 2. Speed and direction of continuous spin
51 to 100%	129 to 255	0.1 to 25 Rpm counterclockwise spin
50%	128	STOP
0 to 49%	1 to 127	25 Rpm to 0.1 clockwise spin
SECOND CHANNEL %	HEXADECIMAL	FUNCTION Index position coarse
0 to 100%	0 to 255	Index position coarse (8 bit) 0 - 359 degrees
THIRD CHANNEL %	HEXADECIMAL	FUNCTION Index position fine
0 to 100%	0 to 255	Index position fine (16 bit)
FOURTH CHANNEL %	HEXADECIMAL	FUNCTION Stop at index position or continuous rotation control
60% to 100%	153 to 255	Indexing by set direction
40% to 59%	102 to 152	Continuous rotation
0 to 39%	0 to 101	Indexing by shortest direction

- When indexing the speed and or direction is selected by channel 1
- In index mode the speed-control-channel stop positions are not used
- 0% is full speed indexing
- 50% is 0.1 rpm indexing
- 100% (full) is full indexing

MODE 9 OPERATION -- MODE SWITCH = 9 -- 3 CHANNEL OPERATION

- This mode is equal to DHA/Rosco Mode 3
- Operates indexing gobo in 16 bit mode for smooth tracking operation when using desk timing for live movement
- Set DMX address
- Indexing gobo is controllable according to the following table:

FIRST CHANNEL %	HEXADECIMAL	FUNCTION 1. Speed and direction of indexing 2. Speed and direction of continuous spin
50%	128	STOP
50 to 99%	129 to 254	0.1 to 25 Rpm counterclockwise spin
50%	128	STOP
1 to 49%	1 to 127	25 Rpm to 0.1 clockwise spin
0%	0	STOP
SECOND CHANNEL %	HEXADECIMAL	FUNCTION Index position coarse
1 to 100%	1 to 255	Index position coarse (8bit) 0 - 359 degrees
0%	0	Continuous rotation controlled from first channel
THIRD CHANNEL %	HEXADECIMAL	FUNCTION Index position fine
0 to 100%	0 to 255	Index position fine (16 bit)

Index mode is running whenever the second control channel is above zero. Indexing occurs at the speed and direction set by the first channel of each gobo control. If the speed / direction channel is set to zero then indexing will take place at 5 Rpm and will take the shortest route to the next set position.

STANDALONE MODES

- No DMX required. Self generated movements are set with address switches
- Four modes of operation

SET MODE SWITCH = 0

Operation is set by the following table parameters:

Index gobo	X100	X10	X1
clockwise	0	Set 0-99 for speed control	
counterclockwise	1	Set 0-99 for speed control	

SET MODE SWITCH = 5

Function: pendulum sway

Index gobo rotates back and forth is a smooth motion similar to a swinging pendulum

X100 switch 0 - 9 sets the gravity of the pendulum

X10 switch 0 - 9 sets the maximum speed of the pendulum

SET MODE SWITCH = 6

Function: Random roll forward and backwards

X100 switch 0 - 9 sets the time taken per cycle

X10 switch 0 - 9 sets the dwell time (while stopped) on the change of direction

X1 switch 0 - 9 sets the speed of the gobo rotation

SET MODE SWITCH = 7

Function: Timed roll forward and backwards

X100 switch 0 - 9 sets the time taken per cycle

X10 switch 0 - 9 sets the dwell time (while stopped) on the change of direction

X1 switch 0 - 9 sets the speed of the gobo rotation