RoboScan Pro 918

user manual

795 mm

~135 mm

180°

278 mm

308 mm

330 mm

Martin

Thank you for selecting the Martin RoboScan Pro 918. This scanner, with its highly efficient optical and thermal design, provides quiet operation and crisp, bright output in a compact, easy-to-handle package.

This manual covers all models of the RoboScan Pro 918 and describes the features found in CPU software version 1.0. The latest Pro 918 service and support information is available from the Martin Professional web site at http://www.martin.dk.

Safety precautions

The RoboScan Pro 918 is for professional use only. It presents potential risks due to electrical shock, heat and ultraviolet radiation burns, lamp explosion, falls, high-intensity light, and fire. A thorough understanding of the dangers, genuine concern for safety, and attention to detail are required to prevent accidents. Read this manual before powering or installing the fixture, follow the safety precautions listed below and observe the warnings in this manual and printed on the fixture, and always double check the safety conditions. If you have questions about how to operate the Pro 918, please contact your Martin dealer for assistance.

- **ALWAYS disconnect the fixture from AC power before:**
  - Changing the transformer or ballast settings
  - Installing or removing the lamp
  - Checking or replacing fuses
  - Removing any cover or part

- **ALWAYS allow the fixture to cool for 15 minutes before replacing the lamp.**

- **ALWAYS keep combustible materials at least 0.5 meters away from the fixture.**

- **ALWAYS ground (earth) the fixture electrically.**

- **ALWAYS ensure that the air flow through fans and vents is free and unobstructed.**

- **ALWAYS, when suspending the fixture above ground level, fasten the fixture as described and attach an approved safety wire to the eye hook.**

- **ALWAYS refer service operations not described in this manual to a qualified technician.**

- **NEVER expose the fixture to rain or moisture.**

- **NEVER locate the fixture where it can accidentally be touched or knocked over during operation.**

- **NEVER illuminate surfaces within 1 meter of the fixture.**

- **NEVER place filters or other materials over the lens or mirror.**

- **NEVER operate the fixture if the ambient temperature (Ta) exceeds 40° C (104° F).**

- **NEVER look directly into the light from a close distance.**

- **NEVER operate the fixture without all lenses and covers installed: an unshielded lamp can explode without warning and emits dangerous UV radiation that can cause burns and eye damage.**

- **NEVER modify the fixture or install other than genuine Martin accessories and upgrade kits.**

SETUP

This section describes the steps required to prepare the RoboScan Pro 918 for operation.

Unpacking

The RoboScan Pro 918 package includes:

- 1 5-meter, 3-pin shielded XLR control cable
- 1 3-meter, 3-wire IEC power cable
- 1 user manual
- 9 extra rotating gobos
- 1 spare rotating-gobo spring

The packing material is carefully designed to protect the fixture during shipment - always use it or a custom flight case to transport the fixture.

Installing or changing the lamp

The RoboScan Pro 918 is designed to work with either the Philips MSR-575/2 or the Osram HSR-575/2 discharge lamp. *Installing any other lamp may damage the fixture*. The lamp holder is pre-adjusted at the factory; precise alignment may be necessary due to slight variations between lamps. The procedure is described on page 20.

W A R N I N G !

Disconnect the fixture from AC power before proceeding. Always wear safety goggles to protect your eyes and allow a hot lamp to cool for at least 15 minutes before removing it from the fixture.

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1. The RoboScan Pro 918 must be cool and isolated from AC power. Remove the 2 screws (A) securing the lamp assembly to the back plate. Gently pull out the assembly.
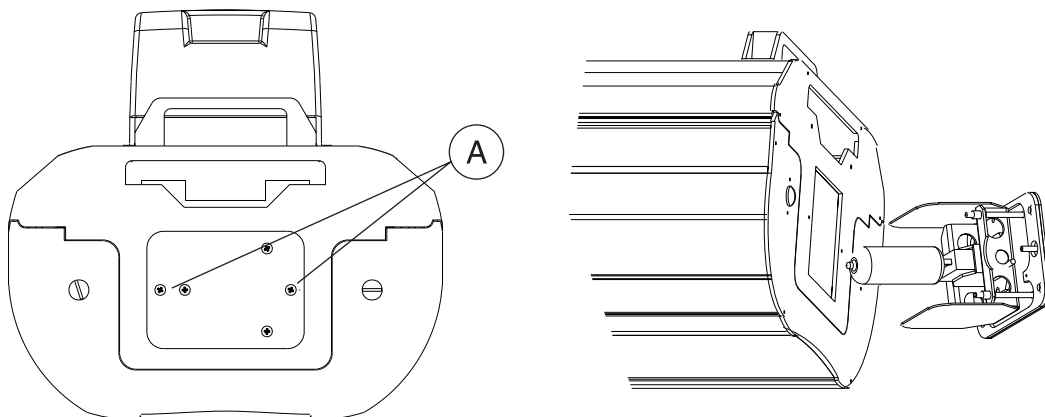
2. If changing the lamp, remove the old lamp from the socket.

3. Holding the new lamp by its ceramic base (do not touch the glass), insert it firmly and squarely into the lamp socket. Clean the glass bulb with the cloth supplied with the lamp, particularly if your fingers touch the glass. A clean, lint-free cloth wetted with alcohol may also be used.

4. Reinsert the lamp assembly and replace the screws.

5. Before turning the lamp on, reset the `RLAH` and `RLST` counters. See "Readouts" on page 14.

W A R N I N G !

Check voltage and frequency settings *before* applying power.
For safe operation, the fixture must be grounded (earthed).

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1. Verify that the voltage and frequency settings match the local AC supply. The settings are printed on the serial number label next to the control panel. Operating at the incorrect setting can result in poor light output, greatly reduced lamp life, overheating and damage to the fixture: if the voltage is not within 5 percent of the local supply or the frequency (50/60 Hz) is different, then the ballast and transformer must be rewired as described in section 5.

2. Install a grounding-type cord cap that fits your supply on the power cable. Following the manufacturer's instructions, connect the yellow/green wire to the ground (earth) pin, the blue wire to the neutral pin, and the brown wire to the live pin. The table shows some possible pin identification schemes; if the pins are not clearly identified, or if you have any doubts about proper installation, consult a qualified electrician.

Connections		Possible Markings		
Wire	**Pin**	**Typical**	**US**	**UK**
brown	live	"L"	yellow or brass	red
blue	neutral	"N"	silver	black
yellow/green	ground	⏚	green	green

3. Verify that the supply cable is undamaged and rated for the current requirements of all connected devices. When ready to operate, plug the prepared power cable into the 3-prong IEC inlet and the grounded AC power supply. Do not connect the Pro 918 to a dimmer system: doing so will damage the fixture.

Installation

The Pro 918 has an adjustable mounting bracket/floor stand for primary attachment and a reinforced eye hook for secondary attachment.
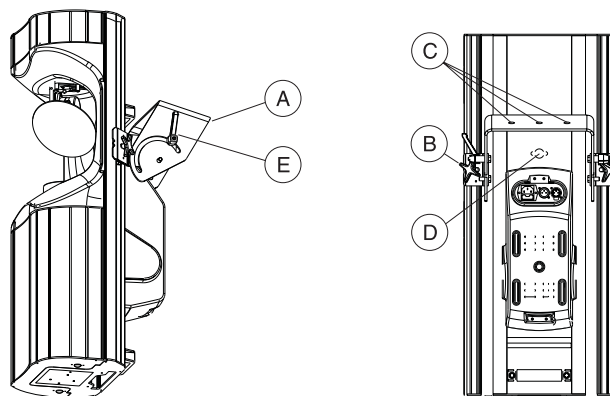
Using the mounting bracket as a floor stand

W A R N I N G

When standing the fixture with the lamp end down, the end panel must be a minimum of 75 mm (3 in) above the floor to provide adequate circulation.

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1. If standing the fixture with the mirror up, slide the mounting bracket to the lamp end and align the pointer with the last index line. The bracket shall not be placed any further from lamp end. Tighten the clamps securely. Loosen the swivel locks and set the angle to the extreme position, marked as "-". Tighten both swivel locks.

2. If standing the fixture with the mirror down, slide the mounting bracket to the mirror end and set the pointer near the last index line; the exact position is not critical. Tighten the clamps securely. Loosen the swivel locks and set the angle in between the 60° and 75° marks. Tighten both swivel locks.

3. Stand the fixture on a stable platform away from publicly trafficked areas. Verify that the fixture is stable and adjust the bracket if necessary.

Rigging

The adjustable mounting bracket allows the Pro 918 to be rigged at any angle with the mirror end up or down. The figure below shows the approximate index position for the balance point for different angles. While hanging the fixture in balance makes it more stable and easier to work with, it can also be hung out of balance if necessary.

WARNING!
Attach an approved safety cable to the eye hook.

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1. Set the mounting bracket to the initial position before suspending the fixture. Loosen the clamps (B) on each side of the mounting bracket and slide the bracket to the desired index position. Partially tighten the clamps.

2. Loosen the swivel locks (E) and tilt the bracket to the desired angle. Partially tighten the locks.

3. Bolt rigging clamps that are designed to handle the weight of the fixture to the mounting bracket. 1 clamp may be bolted to the center hole or 2 clamps may be bolted to the 2 outside holes (C). See page 31 for specially designed clamps available from Martin.

4. Make sure the structure can support the weight of all installed fixtures, clamps, cables, auxiliary equipment, etc.

5. Working from a stable platform, place the fixture on the rigging.

6. Install a safety wire that can hold at least 10 times the weight of the fixture. Use the eye hook (D) to fasten the safety wire to the fixture. *Never use the carrying handles or mounting bracket for secondary attachment.*

7. Tighten the rigging clamp(s) securely to the structure.

8. Fine-tune the position and tighten the slide clamps and swivel locks.
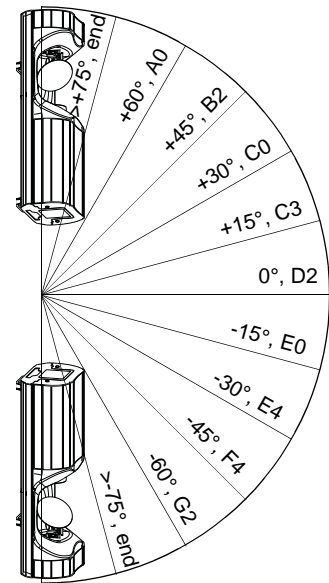
Connecting the serial link

The default pin-out is compatible with the DMX-512 standard.

The Pro 918 has locking 3-pin data I/O sockets that can be configured for DMX or Martin Protocol controllers. *The default pin-out is for DMX-512 controllers,* i.e., pin 1 to shield, pin 2 to (-) and pin 3 to (+). As many devices have 5-pin connectors or 3-pin connectors with reversed polarity on pins 2 and 3, adaptor cables may be required.

1. Connect the controller's data output to the RoboScan Pro 918's data input. For a
   - **DMX controller with 5-pin output**: use a cable with 5-pin male and 3-pin female connectors such as P/N 309160. Pins 4 and 5 are not used.
   - **DMX controller with 3-pin output**: use a normal cable with 3-pin male and female connectors.
   - **Martin RS-485 Protocol controller**: use a phase-reversing cable, such as P/N 309158, with 3-pin male and female connectors, or reconfigure the XLR output.
2. Continue the link: connect the output of the fixture closest to the controller to the input of the next fixture. Use a phase-reversing cable when connecting a DMX-standard (pin 3 +) device to a Martin-standard (pin 3 -) device.
3. Insert a male 120 Ω XLR termination plug in the output of the last fixture on the link.

3-pin to 3-pin Phase-Reversing Cable	3-pin to 5-pin Phase-Reversing Cable	5-pin to 3-pin Phase-Reversing Cable	5-pin to 3-pin Straight Cable	3-pin to 5-pin Straight Cable
Connections	Connections	Connections	Connections	Connections
Male　　Female	Male　　Female	Male　　Female	Male　　Female	Male　　Female
1 ——— 1 2 ╳ 2 3 ╳ 3	1 ——— 1 2 ╳ 2 3 ╳ 3 4 5	1 ——— 1 2 ╳ 2 3 ╳ 3 4 5	1 ——— 1 2 ——— 2 3 ——— 3 4 5	1 ——— 1 2 ——— 2 3 ——— 3 4 5
P/N 309158	P/N 309163	P/N 309162	P/N 309160	Construct

Tips for building a serial link

- **Use shielded twisted-pair cable designed for RS-485 devices.** Though standard microphone cable may work in some situations, it is prone to interference that can cause unpredictable performance. For links up to 300 meters (1000 ft.) long, the recommended cable is at least 24 AWG, low capacitance, 85-150 ohm characteristic impedance, shielded cable with 1 or more twisted pairs. For runs up to 500 meters (1640 ft.) use 22 AWG cable. Use an amplifier if the serial link exceeds 500 meters.
- **Never use a "Y" connector to split the link.** To split the serial link into branches use a splitter such as the Martin 4-Channel Opto-Isolated RS-485 Splitter/Amplifier.
- **Do not overload the link.** Up to 32 devices may be connected on a serial link.
- **Terminate the link** by installing a termination plug in the output socket of the last fixture on the link. The termination plug, which is simply a male XLR connector with a 120 ohm, 0.25 watt resistor soldered between pins 2 and 3, "soaks up" the control signal so it does not reflect back down the link and cause interference. If a splitter is used, terminate each branch of the link.

Setting control protocol and address

The RoboScan Pro 918 has one 1 Martin RS-485 and 4 DMX operating modes, each with different features and channel requirements as shown below. These are described in more detail in the next section.

Each fixture must be assigned its own channels to receive instructions from the controller. The address, also known as the start channel, is the first channel used. Addresses are independent of the physical order on the link: they may be set in any convenient order. Two Pro 918s may share the same address; however, they will receive the same instructions and independent control will not be possible.

Mode	Martin	DMX 1	DMX 2	DMX 3	DMX 4
Control	Vector	Tracking		Tracking and/or Vector	
Pan/tilt resolution	16 bit	8 bit	16 bit	8 bit	16 bit
Channels required	2	12	14	14	16

1. Apply power to the RoboScan Pro 918.
2. Press the [MENU] key and then press [↑] or [↓] until the display shows PSET. Press [ENTER].
3. Press [↑] or [↓] until the desired protocol appears on the display. Press [ENTER] to confirm.
4. Press [↑] or [↓] until the display shows dAdr (to set a DMX address) or MAdr (to set a Martin address). Press [ENTER] to confirm.
5. Press [↑] or [↓] to select the address. Press [ENTER] to confirm.
6. Press [MENU] to return to the main menu. The address is displayed.

OPERATION

This section describes the RoboScan Pro 918's controllable effects and the options for customizing them for your application. Selecting options from the menu is described in the next section.

Martin RS-485 control

The Pro 918 may be controlled with the Martin 3032 controller with version 2.04 or later software. While the Pro 918 is not officially implemented in version 2.04, it may be set up and operated as a MAC 500.

For the fixture to respond, the protocol setting (PSET) must be set to Martin (MART) or automatic protocol detection (SPEC/AUTO) must be enabled. If automatic protocol detection is enabled, you may need to send a dummy command for the fixture to interpret before sending real commands.

DMX-512 control

The Pro 918 has 4 DMX control modes with different channel requirements and characteristics. Mode selection will depend on the controller and your programming preferences.

Tracking control

Tracking is available in all 4 DMX modes. With tracking control, the controller calculates the positions along the path between an effect's starting point and it's ending point. It uses the fade time to calculate the change (delta) of each update or refresh, which the fixture "tracks." For smooth movement with any fade time, the Pro 918 has a filter algorithm that looks at several position updates (samples), and calculates the ideal speed.

This algorithm is adjustable to compensate for controllers that calculate position changes unevenly. In most cases the default settings work well.

If movement is not satisfactory there are 2 parameters that can be adjusted. The first is the calculation method used and is selected under SPEC/TRAC/MOdE. MOd1, the default, calculates speed based on the absolute value of the change in DMX; it is the best choice with controllers that calculate intermediate positions that are close to the line of travel. MOd2 uses the real value of the DMX delta to calculate speed and is better if the intermediate positions stray significantly from the line of travel.

The second parameter is the number of position updates used to calculate speed. The level is adjustable between 1 and 10 under SPEC/TRAC/CAL. Increasing the number of samples increases the distance over which speed is calculated, making movement smoother but less responsive to sudden changes.

The ideal settings for both parameters will vary from controller to controller: experiment for best results. The real value algorithm (MOd2) is recommended when using the Pro 918 with the Martin Lighting Director system.

Vector control

With vector control, available in DMX modes 3 and 4, the fixture is given just 1 position - the end position - and a speed, which is set on a separate channel. *For smooth movement, the fade time must be set to 0, i.e., the effect "bumps" or "snaps" from one position to the next.* With controllers that do not have programmable fade times, vector control provides a way to set speed. Because the end point and speed are known from the beginning, vector control results in smooth movement regardless the fade time or the controller's processing power.

The speed channels allow vector control to be turned off, resulting in tracking control. In addition, they offer a "blackout speed," described below, and overrides of the PTSP (pan/tilt speed) and SCUT (shortcuts) personality settings.

8-bit versus 16-bit pan/tilt resolution

With 8-bit pan/tilt resolution, the pan and tilt are divided into 256 equal increments. Finer position control and smoother movement is provided in the 16-bit modes, which divide the full pan range into 6400 increments and the full tilt range into 1280 increments.

Stand-alone control

The Pro 918 has test and demonstration sequences that can be run from the control panel. See page 15 for details.

Controllable effects

All mechanical effects are reset to a "home" position when the fixture is powered up and can be reset via DMX if necessary. Accidental resets can be prevented by turning DMX Reset (SPEC/dRES) off. An on-the-fly position correction system automatically corrects the position of the color wheels, fixed-gobo wheel, and rotating gobos. This feature can be disabled by turning Effects Feedback (SPEC/EFFb) off.

General operation may be optimized for speed or quietness with the Studio Mode setting (SPEC/MOdE).

Lamp

With the default setting, the lamp remains off until a "lamp on" command is sent from the controller. Note: A peak of electric current that can be many times the operating current is drawn for an instant when striking a discharge lamp. Striking many lamps at once may cause a voltage drop large enough to prevent lamps from striking or trip the main circuit breaker. If sending "lamp on" commands to multiple fixtures, program a sequence that strikes lamps one at a time at 5 second intervals.

The Pro 918 automatically strikes the lamp within 90 seconds of being powered on if the Automatic Lamp On (SPEC/ALON) setting is turned on. A delay determined by the address staggers lamp strikes to prevent excessive current draw.

Lamp power can be turned off from the controller. *Be careful*: it is not possible to strike the lamp within 8 minutes of having switched it off. Accidental lamp off commands can be prevented by turning DMX Lamp Off (SPEC/dLOF) to off.

Pan and tilt

The mirror pans 180° and tilts 72°. Movement may be optimized for speed by setting the pan/tilt speed (PTSP) personality to FAST, or for smoothness by setting it to SLOW. The setting may be overridden on the speed channel in vector mode. Setting the movement speed to "blackout" in vector mode causes the shutter to black out the light while the mirror is moving.

The pan and tilt channels (DMX) can be inverted and/or swapped for convenience using the pan/tilt (PATI) menu.

Color wheels

The Pro 918 has 2 9-position-plus-open color wheels, yielding a total of 100 possible combinations. In the standard configuration the 4 temperature correction filters and 14 dichroic colors combine in 67 useful ways that can be called on 1 DMX channel. The filters on color wheel 1 are easily replaceable, allowing you to configure the color wheel to suit your taste.

Both wheels can be scrolled, allowing for split color effects, snapped to fixed positions, and continuously rotated in both directions at different speeds. The 67 colors can be called randomly on DMX channel 4.

The shortcuts (SPEC/SCUT) setting determines whether the wheels take the shortest path to the next position or turn in one direction only. The setting may be overridden on the speed channel in vector mode.

Setting the color speed to "blackout" in vector mode causes the shutter to black out the light while the wheels are moving.

Focus

The beam may be focused from 2 meters (6.5 feet) to infinity. Depending on model, the beam angle is 17° or 23.5°.

Fixed (static) gobos

There are 2 operating modes available for the fixed-gobo wheel, which provides 9 metal gobos plus an open position. In "fixed" mode (SPEC/gMOd/FIX), the wheel steps between fixed positions and shakes at variable speeds. In "scroll" mode (SPEC/gMOd/SCRL), the wheel scrolls continuously, shakes at 1 speed, and rotates in 2 directions at variable speed.

Setting the fixed-gobo speed to "blackout" in vector mode causes the shutter to black out the light while the wheel turns from one position to another.

The Shortcuts (S P E C / S C U T) setting determines whether the gobo wheel takes the shortest path to the next position or turns in one direction only. The setting may be overridden on the speed channel in vector mode.

Rotating gobos

The Pro 918 has 5 rotating gobo positions. Gobos may be rotated in both directions at varying speeds or indexed to any position. The function and gobo are selected on channel 5 and the velocity or index position are selected on channel 6. Setting the rotating-gobo speed to "blackout" in vector mode causes the shutter to black out the light while the wheel turns from one position to another and, if indexing is selected, while the gobo rotates between positions.

To change the gobos, see "Changing rotating gobos" on page 19.

Iris

The iris closes from full open down to 10 percent. There are 6 variable/random pulsating iris effects callable on channel 9. These can be disabled by switching DMX Macros (S P E C / d M A C) off.

Rotating prism / variable frost

The 3-facet prism can rotate in both directions at varying speeds. There are 8 preprogrammed macros that combine the prism with rotating gobos on channel 10. These can be disabled by switching DMX Macros (S P E C / d M A C) off. Setting the prism speed to "blackout" in vector mode causes the shutter to black out the light while the prism moves in and out.

An optional frost filter may be installed in place of the rotating prism to provide a variable frost effect. If the frost filter is installed, the fixture type personality (S P E C / F T Y P) must be set to "F R O S" to enable the frost variation of the protocol.

Dimmer / shutter

The mechanical dimmer/shutter system provides smooth, high-resolution 100 percent dimming, "instant" open and blackout, random and variable strobe effects up to 23 Hz, and random and variable pulses in which the dimmer snaps open and slowly dims or snaps closed and slowly opens. The pulse and random strobe effects can be disabled by switching DMX Macros (S P E C / d M A C) off.
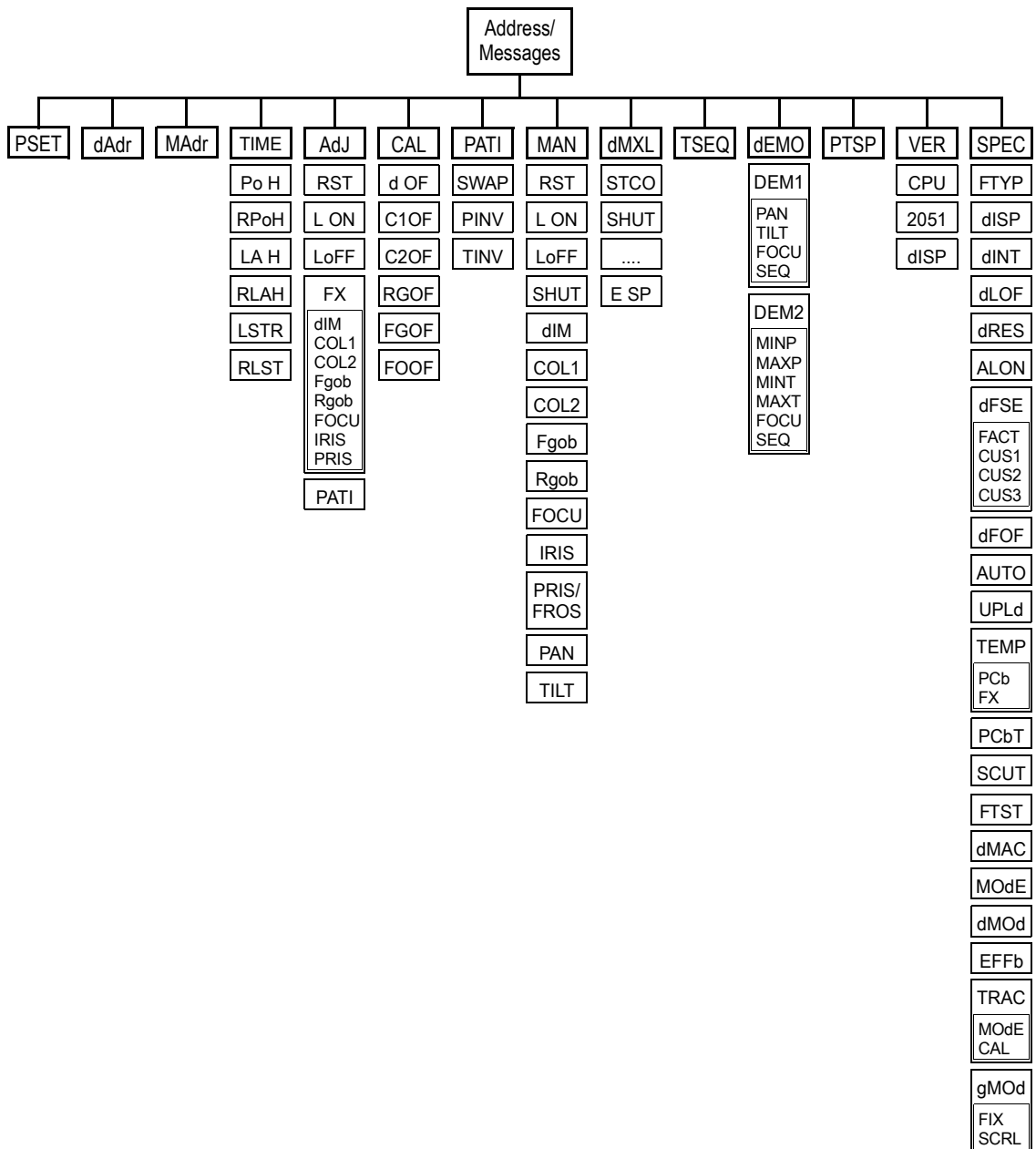
The Dimmer Mode (S P E C / d M O d) setting allows you to select between linear or simulated tungsten fade curves. The fade time must be 0 to simulate tungsten dimming.

CONTROL PANEL

The 4-digit LED control panel allows you to set the address and personalities, read lamp hours and other information, calibrate effects, control the fixture manually, and run stand-alone tests and demo programs. Most of these functions may be performed remotely via the serial link with the MPBB1 Uploader.

The display can be flipped for easy reading by pressing the [↑] and [↓] keys simultaneously. The intensity is adjustable and the display can be set to go out 2 minutes after the last key-press.

The DMX or Martin address, depending on the protocol setting, and any error messages are displayed when the RoboScan Pro 918 is turned on. To enter the menu, press [MENU]. Use the [↑] and [↓] keys to move within the menu. To select a function or submenu, press [ENTER]. To escape a function or menu, press [MENU].

						Address/ Messages						
PSET	dAdr	MAdr	TIME	AdJ	CAL	PATI	MAN	dMXL	TSEQ	dEMO	PTSP	VER	SPEC

Under **Address/Messages** tree:

- **PSET**
- **dAdr**
- **MAdr**
- **TIME**: Po H, RPoH, LA H, RLAH, LSTR, RLST
- **AdJ**: RST, L ON, LoFF, FX (dIM, COL1, COL2, Fgob, Rgob, FOCU, IRIS, PRIS), PATI
- **CAL**: d OF, C1OF, C2OF, RGOF, FGOF, FOOF
- **PATI**: SWAP, PINV, TINV
- **MAN**: RST, L ON, LoFF, SHUT, dIM, COL1, COL2, Fgob, Rgob, FOCU, IRIS, PRIS/FROS, PAN, TILT
- **dMXL**: STCO, SHUT, ..., E SP
- **TSEQ**
- **dEMO**: DEM1 (PAN, TILT, FOCU, SEQ), DEM2 (MINP, MAXP, MINT, MAXT, FOCU, SEQ)
- **PTSP**
- **VER**: CPU, 2051, dISP
- **SPEC**: FTYP, dISP, dINT, dLOF, dRES, ALON, dFSE (FACT, CUS1, CUS2, CUS3), dFOF, AUTO, UPLd, TEMP (PCb, FX), PCbT, SCUT, FTST, dMAC, MOdE, dMOd, EFFb, TRAC (MOdE, CAL), gMOd (FIX, SCRL)

Address and protocol selection

Protocol selection (PSET): Switch between MART, DMX1, DMX2, DMX3, or DMX4 to enable Martin mode or DMX mode 1, 2, 3, or 4.

DMX address (`dAdr`): Set the DMX address between channel 1 and 512.

Martin address (`MAdr`): Set the Martin address between channel 1 and 31.

Personality settings

Personality	Path	Options	Effect (Default settings shaded.)
Pan/tilt speed	`PTSP`	`FAST`	Optimize mirror movement for speed.*
		`SLOW`	**Optimize mirror movement for smoothness.***
Pan/tilt swap	`PATI/SWAP`	`ON`	Map DMX pan control to tilt channel and vice versa.
		`OFF`	**Normal pan and tilt control.**
Pan inverse	`PATI/PINV`	`ON`	Reverse DMX pan control, right → left.
		`OFF`	**Normal pan control, left → right.**
Tilt inverse	`PATI/TINV`	`ON`	Reverse DMX tilt control, down → up.
		`OFF`	**Normal tilt control, up → down**
Tracking algorithm	`SPEC/TRAC/MOdE`	**`MOd1`**	**Absolute delta value algorithm (for most controllers)**
		`MOd2`	Real delta value algorithm
Tracking samples	`SPEC/TRAC/CAL`	`1-10`	Tracking mode sample level - default is 6. Higher levels give smoother movement but slower acceleration.
Fixture type	`SPEC/FTYP`	**`PRIS`**	**Operate with rotating prism**.
		`FROS`	Operate with optional variable frost.
Display On/Off	`SPEC/dISP`	**`ON`**	**Display stays on.**
		`OFF`	Display goes out 2 minutes after last key press.
Display intensity	`SPEC/dINT`	`10-100`	Adjust display intensity.
DMX lamp off	`SPEC/dLOF`	`ON`	Enable DMX lamp off command.
		`OFF`	**Disable DMX lamp off command.***
DMX reset	`SPEC/dRES`	`ON`	Enable DMX reset command.
		`OFF`	**Disable DMX reset command.***
Automatic lamp on	`SPEC/ALON`	`ON`	Lamp strikes automatically within 90 seconds of power on.
		`OFF`	**Strike lamp from controller.**
Automatic protocol detection	`SPEC/AUTO`	`ON`	Enable automatic protocol detection.
		`OFF`	**Disable automatic protocol detection.**
shortcuts	`SPEC/SCUT`	**`ON`**	**Color wheels and fixed-gobo wheel turn the shortest direction.***
		`OFF`	Wheels turn same direction.*
DMX macros	`SPEC/dMAC`	**`ON`**	**Enable DMX-selectable macros and pulsating effects.**
		`OFF`	Disable DMX-selectable macros and pulsating effects
Fixed gobo mode	`SPEC/gMOd`	**`FIX`**	**Static gobo wheel steps between full positions**
		`SCRL`	Static gobo wheel scrolls continuously
Studio mode	`SPEC/MOdE`	**`NORM`**	**Optimize effects for speed.**
		`STUd`	Optimize effects for silence.
Dimmer mode	`SPEC/dMOd`	**`NORM`**	**Normal dimming curve.**
		`TUNG`	Simulated tungsten dimming curve.
Effects feedback	`SPEC/EFFb`	**`ON`**	**Enable feedback on color wheels, fixed-gobo wheel, and rotating-gobo index.**
		`OFF`	Disable feedback on color wheels, fixed-gobo wheel, and rotating-gobo index.

* Setting may be overridden via DMX. See protocol for details.

Readouts

Usage readouts (`TIME`)

Read the total number of power-on hours (`Po H`), power-on hours since last reset (`RPoH`), total lamp hours (`LA H`), lamp hours since last reset (`RLAH`), total number of lamp strikes (`LSTR`), and the number of lamp strikes since last reset (`RLST`).

The resettable counters may be used to track overall usage and lamp life. To reset to zero, display the readout and then press [↑] for 5 seconds.

DMX value readouts (`dMXL`)

Read the DMX start code (`STCO`) and DMX values received for each effect. This is an easy way to check if the fixture is receiving the expected commands. This feature is not applicable in Martin mode.

Software version readouts (`VER`)

Read the version number of the CPU software (`CPU`), 2051 microprocessor (`2051`), and display module software (`dISP`). The CPU software version is also displayed for a moment at power up.

Temperature readouts (`SPEC/TEMP`)

Read temperature at the main printed circuit board (`PCb`) and in the effects section (`FX`) in Celsius. Temperatures below 25° C are shown as −25; temperatures above 100° C are shown as +100.

The temperature sensors are calibrated at the factory and adjustment should not be necessary. The following procedure calibrates the sensors if they give no or faulty readings.

1. Allow the unit to cool to room temperature (powered off for at least 4 hours).
2. Measure the room temperature in Celsius. (To convert F° to C°, subtract 32° and then multiply by 0.555.)
3. Power up the unit and allow it to reset.
4. Press the [MENU] and [↓] keys at the same time and hold them for 3 seconds until "25" shows in the display.
5. Press the [↑] and [↓] keys until the display shows the temperature measured.
6. Press [ENTER] to save the setting.

Manual control

Manual control (`MAN`)

The manual control menu permits you to do the following without a controller:

*   reset the fixture (`RST`)
*   turn the lamp on and off (`L ON`, `LoFF`)
*   open, close, and strobe the shutter at 3 speeds (`SHUT`)
*   control the dimmer (`dIM`)
*   move the color wheels to each position and scroll them at 3 speeds (`COL1`, `COL2`)
*   move the fixed-gobo wheel to each position (`Fgob`)
*   move the rotating-gobo wheel to each position and rotate the gobos at 3 speeds (`Rgob`)
*   control the focus (`FOCU`)
*   control the iris (`IRIS`)
*   insert and rotate the prism (`PRIS`) at 3 speeds, or, if a frost filter is installed, vary the frost (`FROS`)
*   control pan and tilt (`PAN`, `TILT`)

Adjustment (`AdJ`)

The adjustment menu provides manual control for making mechanical adjustments. These should be performed by a qualified technician. The menu allows you to reset the fixture (`RST`), turn on and off the lamp (`L ON`, `LoFF`), control all effects (`FX`), and move the mirror to the home and extreme positions (`PATI`). The `FX` submenu allows you

to:

- open, close, and strobe the dimmer/shutter (d I M)
- move the color and gobo wheels through their positions (COL1, COL2, Fgob, Rgob)
- move the focus lens to its extreme positions (FOCU)
- open and close the iris (IRIS)
- insert and rotate the prism (PRIS)

Stand-alone sequences

Demonstration programs (dEMO)

This menu offers 2 preprogrammed demonstrations. Demo 1 shows each effect individually and in combination with others. Pan and tilt are static. Demo 2 pans and tilts within a defined area and shows various effect combinations.

Before running demo 1, set the pan/tilt position (PAN, TILT) to a good location for viewing the effects and then focus (FOCU) the beam. Select SEQ to run the demo. Demo 2 is similar but instead of defining a home position, you define an area such as a screen or wall by setting the minimum and maximum pan and tilt positions (MINP, MAXP, MINT, MAXT). Focus the beam in the center of the area.

Test sequences

Test sequence (TSEQ): Run a general test of all effects.

Printed circuit board test (SPEC/PCBT): This menu provides 4 tests of the circuit board for service use: TI, T2, T3, and LEd.

Factory test (SPEC/FTST): This menu provides an effects test (ETST), a movement test (MTST), and a sensor test (STST) used for quality control. The sensor test includes programs for testing sensors on the color and gobo wheels (COL1, COL2, Rgob, and Fgob).

Utilities

Calibration (CAL)

The calibration menu allows you to adjust the effects to achieve total uniformity between fixtures: it is not a substitute for mechanical adjustment. Select dimmer/shutter (d OF), color wheels (C1OF, C2OF), rotating-gobo wheel (RGOF), focus (FOOF), or fixed-gobo wheel (FGOF) and adjust the effect's offset with the arrow keys. Offsets are adjustable from 1 to 255 for all effects except the fixed-gobo wheel, which is adjustable from 127 to 129. Press [ENTER] to save the calibration.

Reset default offsets (SPEC/dFOF)

Reset all calibrations to their factory defaults. Select dFOF and press [ENTER] when SURE is displayed, or press [MENU] to escape.

Reset default personality settings (SPEC/dFSE/FACT)

Return all personality settings (not calibrations) to their factory defaults. Select FACT and press [ENTER] when LOAD is displayed.

Custom configurations (SPEC/dFSE/CUS1, CUS2, CUS3)

Save and load 3 sets of custom configurations. To save a custom configuration, adjust the settings as desired, go to CUS1, CUS2, or CUS3 and press [ENTER] when SAVE is displayed. To load a custom setting, select it and press [ENTER] when LOAD is displayed.

Upload mode (UPLd)

Upload mode prepares the RoboScan Pro 918 to receive control software. It is normally engaged automatically when using the MPBB1 Uploader. In certain circumstances, however, you may have to set upload mode manually as described under "Uploading software (hard boot mode)" on page 18.

section 5
BASIC SERVICE AND MAINTENANCE

Like all moving lights, the RoboScan Pro 918 is a complex electromechanical device that operates in the challenging conditions presented by heat, humidity, dust, and touring. It requires regular cleaning and lubrication to keep performing at its peak. This section takes you through the basic service and maintenance procedures. Any service procedure not described here should be referred to a qualified technician.

IMPORTANT!
Read the procedures carefully. If you do not feel completely competent to perform the service, consult qualified service personnel for assistance.

Accessing parts

WARNING!
Disconnect the fixture from AC power before removing any cover.

Effects section

1. Disconnect the fixture from AC power.

2. Turn the locking pins (A) on the back plate 1/2 turn.

3. Pull the cover back and off.

4. To replace the cover, position the rails on the cover in the grooves and slide the cover forward. Push the locking pins (A) all the way in to lock.
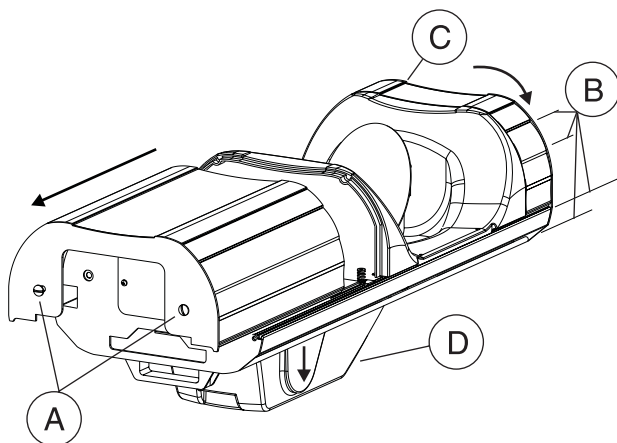
Printed circuit board

1. Disconnect the fixture from AC power.

2. Remove the 4 screws (B) from the front cover plate (C) with one hand on the section to prevent it from falling. Gently tilt the plate away from the body to access the printed circuit board. Removing the wires is not necessary for most service procedures.

3. Thread the screws (B) carefully when replacing the cover. Aluminum threads are easily stripped if screws are overtightened or cross-threaded.

Ballast, transformer, and mains filter/power-protection board fuse

The ballast (E), transformer (F), and mains filter circuit board (G) are accessed by removing the cover (D) from the top of the RoboScan Pro 918.

1. Disconnect the fixture from AC power.

2. Remove the 4 screws from the plastic ballast/transformer cover (D) and lift it off.
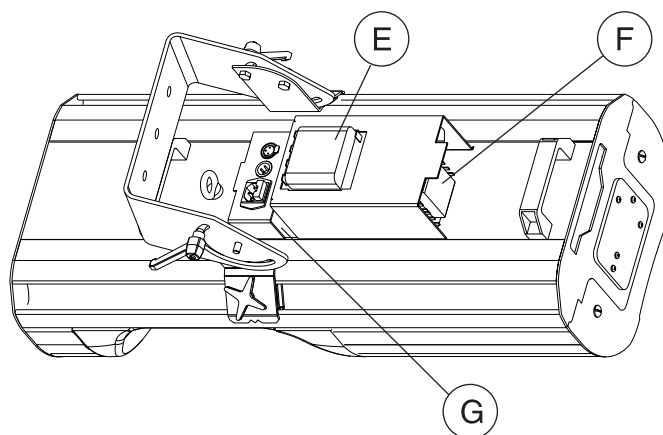
Changing voltage and frequency settings

EU version

Local AC Supply		Transformer		Magnetic Ballast	
Frequency	**Voltage**	**Setting**	**Terminal**	**Setting**	**Terminal**
50 Hz	200-210 V	210 V	4	200 V / 50 Hz	7
50 Hz	210-220 V			230 V / 50 Hz	10
50 Hz	220-235 V	230 V	6		
50 Hz	235-240 V			245 V / 50 Hz	12
50 Hz	240-260 V	250 V	8		
60 HZ	200-217 V	210 V	4	208 V / 60 Hz	4
60 HZ	217-240 V	230 V	6	227 V / 60 Hz	7

1. Make sure the RoboScan Pro 918 is isolated from AC power. Access the transformer and ballast as described above.

2. On the transformer (F), move the BROWN wire to the terminal listed for your voltage. The terminal numbers are printed in front of the connection tabs.

3. On the ballast (E), move the BROWN wire to the terminal listed for your voltage and frequency.

4. Replace the cover.

US version

W A R N I N G

Versions wired for 100 or 120 volt operation use a time-delay 10 A / 250 V main fuse (P/N 350009). Replace this with a time-delay 6.3 A / 250 V fuse (P/N 350008) when rewiring the fixture for 230 or 250 volt operation.

Local AC Supply		Transformer		Ballast	
Frequency	**Voltage**	**Setting**	**Terminal**	**Setting**	**Terminal**
60 Hz	98 - 105 V	100 V	red	227 V / 60 Hz	7
	118 - 126 V	120 V	orange	227 V / 60 Hz	
	220 - 240 V	230 V	yellow	227 V / 60 Hz	
	240 - 260 V	250 V	green	227 V / 60 Hz	
50 HZ	99 - 105 V	100 V	red	230 V / 50 Hz	10
	118 - 126 V	120 V	orange	230 V / 50 Hz	
	220 - 240 V	230 V	yellow	230 V / 50 Hz	
	240 - 260 V	250 V	green	230 V / 50 Hz	

1. Make sure the RoboScan Pro 918 is isolated from AC power. Access the transformer and ballast as described above.

2. Find the correct transformer setting for your AC supply in the table above. The colors refer to the wires that enter the connection block at the bottom. The figure to right shows the transformer connection block as seen from the top. On the transformer (F), move the BROWN wire to the correct terminal.

3. On the ballast (E), move the BROWN wire to terminal 7 (60 Hz), or terminal 10 (50 Hz). The other terminals are not used because the ballast is fed 230 volts from the transformer.

4. Replace the cover.

250 V
230 V
120 V
100 V
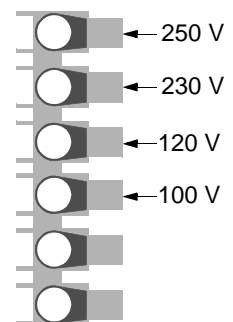
US version transformer connections

Replacing fuses

The RoboScan Pro 918 has 5 fuses. The main fuse is located in the power inlet and may be replaced without opening the fixture. Note: The main fuse may need to be replaced with one of another value when rewiring the fixture for operation at a different AC voltage. The fuses for each of the 3 low-voltage power supplies are located on the printed circuit board. If one of the circuit board LEDs does not light, one of these fuses may be blown. To replace:
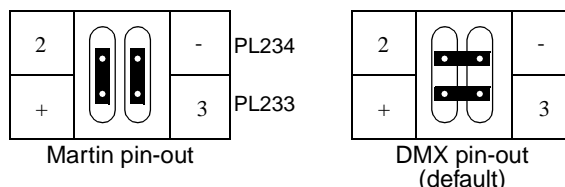
1. Access the printed circuit board as described above.

2. Locate and replace the defective fuse with a time-delay fuse of the same rating. Fuse locations are shown on the PCB layout diagram and their values are listed in the specifications.

The fifth fuse is located on the mains filter and power protection circuit board, located between the ballast and the AC power inlet. If this fuse is blown there will be no power to the transformer and the fixture will appear dead, but there will still be mains voltage on the ballast. To replace the fuse:

1. Make sure the RoboScan Pro 918 is isolated from AC power. Access the mains filter circuit board fuse as described above.

2. Remove the fuse with tweezers or a similar tool. **Replace only with a special fast-acting fuse of the same rating (P/N 350120).**

3. Replace the ballast/transformer cover.

Changing the XLR pin-out

This procedure reverses the signal polarity of pins 2 and 3 on the XLR connectors so that the fixture can be connected directly to Martin RS-485 protocol devices. Optionally, a phase-reversing cable may be used. .
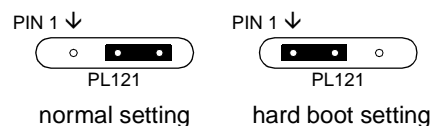
1. Access the printed circuit board as described above.

2. Position the jumpers on PL 233 and PL 234 for the desired XLR pin-out as shown.

Martin pin-out

DMX pin-out (default)

Uploading software (hard boot mode)

The latest CPU software for the RoboScan Pro 918 is available from your Martin dealer and the Martin web site. This software is uploaded to the RoboScan Pro 918 using the Martin MPBB1 Uploader. The display module and 2051 microprocessor software are not updated this way.

To upload software, the uploader is connected to the fixture just like a controller. Under normal conditions, software can be installed without setting the RoboScan Pro 918 to upload mode. Please refer to the MPBB1 manual for further instructions.

If there is no functional software in the RoboScan Pro 918 memory, the fixture must be set to boot mode manually. If the control panel works, select SPEC>UPLd and confirm when SURE is displayed by pressing [ENTER]. If the control panel does not work, perform a hard boot upload as follows.

PIN 1 ↓   PIN 1 ↓

PL121   PL121

normal setting   hard boot setting

1. Access the printed circuit board as described above.

2. Move jumper PL121 to pins 1 and 2 (hard boot setting) as shown. See also the circuit board layout diagram on page 29.

3. Apply power to the RoboScan Pro 918 and proceed with the upload as described in the MPBB1 manual.

4. After the upload, disconnect the fixture from the electricity, move the jumper back to the normal setting, and replace the circuit board section.

Ordering custom gobos

For best focus, custom gobos for the RoboScan Pro 918 should be made with the artwork reversed on the coated side. See page 30 for gobo specifications.

Note: We do not recommend using chrome coated glass gobos: they absorb more heat than enhanced aluminum gobos and are likely to break or oxidize. The lifetime of chrome gobos is extremely short in the Pro 918; but, if used, their lifetime can be extended somewhat by inserting the gobos with the coated side towards the lamp.

Changing rotating gobos

Without tools

1. Remove the effects section cover as described above.
2. Turn the gobo wheel until the easiest access to the desired gobo position is obtained. Turn the color wheel until the open position is over the gobo position.
3. Push the gobo and retaining spring out of the back of the holder. Avoid letting the spring and gobo fall into the effects compartment.
4. Insert the new gobo. See below for proper gobo orientation.
5. Insert the retaining spring with the bend facing out, away from the gobo. Working through the open position in the color wheel, push the gobo and spring all the way down into the gobo holder.

With needlenose pliers

With a little practice, this method is faster than the above method.

1. Remove the effects section cover as described above.
2. Turn the gobo wheel until the easiest access to the desired gobo position is obtained. Turn the color wheel until the open position is over the gobo position.
3. Turn the gobo holder until you can see the tab on the holder retaining spring.
4. Grip the tab on the retaining spring with a pair of small (needlenose) pliers. Place your index finger over the spring to prevent it from falling into the fixture. Open the spring and remove it from the gobo holder.
5. Remove the gobo holder from the bearing by pulling it forwards towards the mirror.
6. Push the gobo and gobo retaining spring out of the holder.
7. Insert the new gobo. See below for proper gobo orientation.
8. Insert the retaining spring with the bend facing out, away from the gobo. Push the gobo and spring all the way down into the gobo holder.
9. Replace the gobo holder in the bearing. Do not force the holder into the bearing: it will go in easily if it is installed straight.
10. Grip the retaining ring by the tab with the pliers. Place your thumb on the back of the gobo holder to press it all the way down in the bearing and use your index finger to hold the other end of the spring on the holder. Open the spring and place it in the groove.

Gobo orientation

When installing coated glass gobos, the coated side should face out towards the mirror for best focus. Glass gobos may be inserted with the coated side towards the lamp if required for proper projection.

Uncoated side towards lamp   **Coated side towards mirror**

When an object is held up to the uncoated side, there is a space between the object and its reflection. The edge of the gobo can be seen when looking through the uncoated side.

When an object is held up to the coated side, there is no space between the object and its reflection. The edge of the gobo cannot be seen when looking through the coated side.

Textured glass gobos must be installed with the smooth side facing the lamp.

Structured Glass Gobos

| **Smooth side towards lamp** | **Textured side towards mirror** |
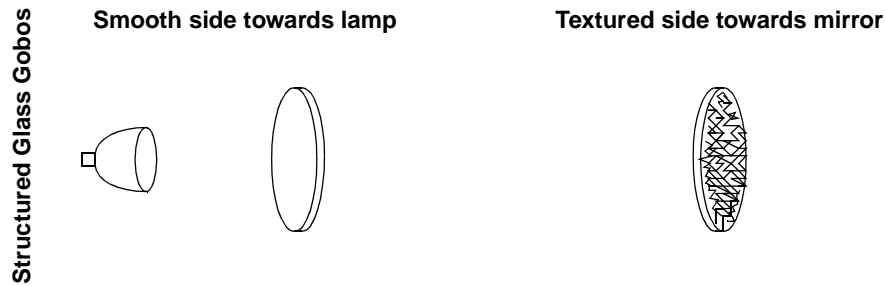
Text and image gobos**,** for correct projection**,** must be installed with the image facing the mirror.

Image Gobos

| **Reversed image towards lamp** | **Correct image towards mirror** |
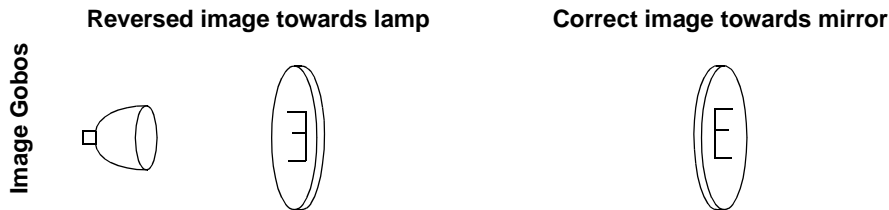
Changing color filters

1. Remove the effects section cover as described above.

2. Manually turn color wheel 1 (with replaceable color filters) until the desired filter is easy to remove.

3. Using a soft cloth or gloves, gently tilt the outside edge of the filter towards the mirror and remove.

4. To replace a filter, insert it in the wheel - with the protruding tab facing the lamp - until it clicks into place.

Replacing the lamp

Discharge lamps operate under high pressure. As the lamp ages, the glass envelope becomes more fragile. To reduce the risk of the lamp exploding, which may cause damage to the fixture, do not exceed the rated average life by more than 25 percent.

The procedure for installing the lamp is described on page 5. After installing the lamp, reset the lamp usage counters as described under "Readouts" on page 14.

Optimizing lamp alignment

1. Disconnect the fixture from AC power and allow to cool.

2. Make a preliminary adjustment: remove the lamp assembly and turn the 3 lamp adjustment screws with a 3 mm Allen wrench to position the lamp socket plate a distance of 38 mm (1.5", outside measurement) from the access plate as shown below.

3. Replace the lamp assembly.

4. Apply power to the fixture and allow it to reset.

5. Using either a controller or the control panel, strike the lamp and focus the light on a flat surface.

6. Center the hot-spot (the brightest part of the beam) using the 3 adjustment screws. Turn one screw at a time to drag the hot-spot diagonally across the projected image. If you cannot detect a hot-spot, adjust the lamp until the light is even.

7. To reduce a hot-spot, pull the lamp in by turning all three screws clockwise 1/4-turn at a time until the light is evenly distributed.

8. If the light is brighter around the edge than it is in the center, or if light output is low, the lamp is too far back in the reflector. "Push" the lamp out by turning the screws counterclockwise 1/4-turn at a time until the light is bright and evenly distributed.

RoboScan Pro 918
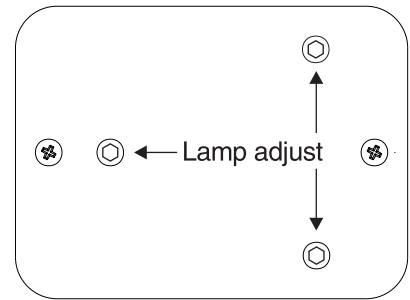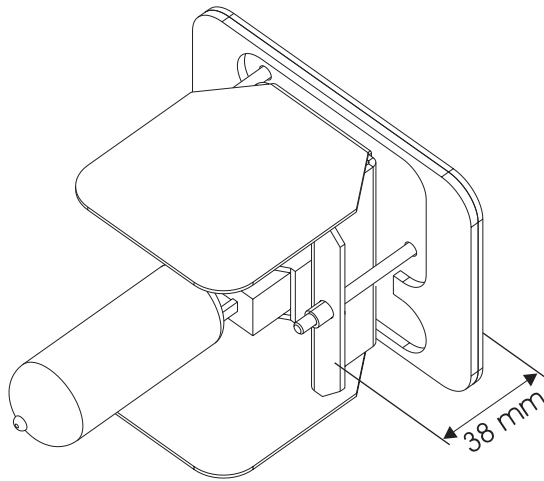
Adjusting mirror dampers

If the dampers are too loose, the mirror may lose step at high speeds. If the dampers are too tight, mirror movement will not be smooth at low speeds.

1. Loosen both dampers until the spring-loaded pin no longer touches the motor.
2. Turn on the lamp and focus the beam. Using a controller, pan the mirror slowly and watch the beam movement. Tighten the pan damper until the smoothness of the mirror movement is affected and it becomes "twitchy." Loosen the damper slightly.
3. Use the same method to adjust the tilt damper.

Maintenance schedule

The maintenance schedule will depend heavily on the application and should be discussed with your Martin technician. Cleaning and servicing the fixture is best left to a qualified technician. He has the experience, tools, lubricants and other materials required to keep the RoboScan Pro 918 performing at its best.

Cleaning optical components

Be very careful when cleaning the optical components. The colored surface on the dichroic filters is achieved by means of special multi-layer coatings and even small scratches may be visible. Residues from cleaning fluids can bake onto components and ruin them.

1. Allow the components to cool completely.
2. Wash dirty lenses and filters with isopropyl alcohol. A generous amount of regular glass cleaner may also be used, but no residues may remain.
3. Rinse with distilled water. Mixing the water with a small amount of wetting agent such as Kodak Photoflo will help prevent streaking and spotting.
4. Dry with a clean, soft and lint-free cloth or blow dry with compressed air.

Cleaning the fans

To ensure proper cooling of the fixture, it is important that the fans are free of dust. Vacuum or gently wipe the fans clean if they are dirty.

Lubricating the focus slide pins

The focus mechanism slides on 2 metal pins that must be lubricated periodically. Check the focus mechanism whenever the fixture is open for service and lubricate the slides if movement is rough.

1. Fill a syringe with Martin P/N 400003 synthetic, high-temperature oil.
2. Apply a few drops of oil to both slides. The oil will be distributed by the action of the focus mechanism. *Be careful not to get oil on drive belts or other parts.*

Lubricating the rotating-gobo bearings

Lubricate the rotating-gobo bearings if movement is rough on slow rotation or if they become noisy.

1. Fill a syringe with silicone-based lubricant, Martin P/N 400119 (500 ml) or P/N 400118 (200 ml). No other lubricant is approved for use.

2. Apply a few drops of oil to each bearing from the lamp side of the wheel. Remove excess lubricant and be careful not to get oil on other parts.

appendix a
DMX PROTOCOL

DMX Channel						Start code = 0
DMX1	DMX2	DMX3	DMX4	**Value**	**Percent**	**Function**
						Shutter, Strobe, Reset, Lamp On/Off
				0 - 19	0 - 7	Shutter closed
				20 - 49	8 - 19	Shutter open
				50 - 72	20 - 28	Strobe, fast→slow
				73 - 79	29 - 31	Shutter open
				80 - 99	31 - 39	Opening pulse, fast →slow
				100 - 119	39 - 47	Closing pulse, fast →slow
				120 - 127	47 - 50	Shutter open
				128 - 147	50 - 58	Random strobe, fast
				148 - 167	58 - 65	Random strobe, medium
				168 - 187	66 - 73	Random strobe, slow
	1			188 - 190	74 - 75	Shutter open
				191 - 193	75 - 76	Random opening pulse, fast
				194 - 196	76 - 77	Random opening pulse, slow
				197 - 199	77 - 78	Random closing pulse, fast
				200 - 202	78 - 79	Random closing pulse, slow
				203 - 207	80 - 81	Shutter open
				208 - 217	82 - 85	Reset fixture, see note 1
				218 - 227	85 - 89	Shutter open
				228 - 237	89 - 93	Lamp power on
				238 - 247	93 - 97	Shutter open
				248 - 255	97 - 100	Lamp power off: time > 5 seconds, see note 2

[1] If the DMX **reset** command is disabled, a reset can be executed if ch. 3 is at 177-180 (blue 111) and ch. 4 is at 165-168 (red 308).

[2] If the DMX **lamp off** command is disabled, the lamp can be turned off if ch. 3 is at 177-180 (blue 111) and ch. 4 is at 165-168 (red 308).

DMX1	DMX2	DMX3	DMX4	Value	Percent	Function
	2					**Dimmer**
				0 - 255	0 - 100	Closed → open
		3				**COLOR 1**
						Continuous scroll
				0 - 16	0 - 6	White → Blue 111
				16 - 32	6 - 13	Blue 111 → Red 301
				32 - 48	13 - 19	Red 301 → Magenta 507
				48 - 64	19 - 25	Magenta 507 → Green 202
				64 - 80	25 - 31	Green 202 →Yellow 604
				80 - 96	31 - 38	Yellow 604 → Purple 502
				96 - 112	38 - 44	Purple 502 → Blue 101
				112 -128	44 - 50	Blue 101 → Pink 312
				128 - 144	50 - 56	Pink 312 → Cyan 401
						Fixed color positions
				145 - 148	57 - 58	Cyan 401
				149 - 152	58 - 60	Pink 312
				153 - 156	60 - 61	Blue 101
				157 - 160	62 - 63	Purple 502
				161 - 164	63 - 64	Yellow 604
				165 - 168	65 - 66	Green 202
				169 - 172	66 - 67	Magenta 507
				173 - 176	68 - 69	Red 301
				177 - 180	69 - 71	Blue 111
				181 - 184	71 - 72	White
						Continuous rotation
				185 - 215	73 - 84	CW, fast → slow
				216 - 245	85 - 96	CCW, slow → fast
				246 - 255	96 - 100	Enable alternate color functions.

DMX1	DMX2	DMX3	DMX4	Value	Percent	Function
						COLOR 2: Normal Functions
						Continuous scroll
				0 - 16	0 - 6	White → CTC 3200-4100
				16 - 32	6 - 13	CTC 3200-4100 → CTC 3200-5600
				32 - 48	13 - 19	CTC 3200-5600 → Blue 104
				48 - 64	19 - 25	Blue 104 → Blue 108
				64 - 80	25 - 31	Blue 108 → Green 206
				80 - 96	31 - 38	Green 206 → Red 308
				96 - 112	38 - 44	Red 308 → Yellow 603
				112 -128	44 - 50	Yellow 603 → CTC 5500-2900
				128 - 144	50 - 56	CTC 5500-2900 → CTC 5500-4200
						Fixed color positions
				145 - 148	57 - 58	CTC 3200-4100
				149 - 152	58 - 60	CTC 3200-5600
				153 - 156	60 - 61	Blue 104
				157 - 160	62 - 63	Blue 108
				161 - 164	63 - 64	Green 206
	4			165 - 168	65 - 66	Red 308
				169 - 172	66 - 67	Yellow 603
				173 - 176	68 - 69	CTC 5500-2900
				177 - 180	69 - 71	CTC 5500-4200
				181 - 184	71 - 72	White
						Continuous rotation
				185 - 215	73 - 84	CW, fast → slow
				216 - 245	85 - 96	CCW, slow → fast
						67 random colors
				246 - 248	96 - 97	Fast
				249 - 251	98 - 98	Medium
				252 - 255	99 - 100	Slow
						Alternate Functions (Channel 3 set from 246 to 255.)
				0 - 255	0 - 100	67 different colors in following order: white, purple, pink, magenta, red, orange, yellow, green, cyan, blue, black
						Rotating Gobo Selection
				0 - 55	0 - 22	Open gobo
						Indexing - set position on channel 6
				56 - 75	22 - 29	Gobo 1
				76 - 95	30 - 37	Gobo 2
				96 - 115	38 - 45	Gobo 3
	5			116 - 135	45 - 53	Gobo 4
				136 - 155	53 - 61	Gobo 5
						Continuous rotation - set velocity on channel 6
				156 - 175	61 - 69	Gobo 5
				176 - 195	69 - 76	Gobo 4
				196 - 215	77 - 84	Gobo 3
				216 - 235	85 - 92	Gobo 2
				236 - 255	93 - 100	Gobo 1
						Rotating Gobo Index and Rotation (Select mode and gobo on channel 5.)
						Indexing
				0 - 126	0 - 49	Index CCW from default
	6			127	50	Default index
				128 - 255	50 - 100	Index CW from default
						Continuous rotation
				0 - 2	0 - 1	Static
				3 - 127	1 - 50	CW, slow → fast
				128 - 252	50 - 98	CCW, fast → slow
				253 - 255	99 - 100	Static

DMX1	DMX2	DMX3	DMX4	Value	Percent	Function
						Fixed Gobos
						Fixed gobo positions
				0 - 9	0 - 4	Open gobo
				10 - 19	4 - 8	Gobo 1
				20 - 29	8 - 11	Gobo 2
				30 - 39	12 - 15	Gobo 3
				40 - 49	16 - 19	Gobo 4
				50 - 59	20 - 23	Gobo 5
				60 - 69	24 - 27	Gobo 6
				70 - 79	27 - 31	Gobo 7
7				80 - 89	31 - 35	Gobo 8
				90 - 102	35 - 40	Gobo 9
`gMOd = FIX`						
						Gobo shake, fast → slow
				103 - 119	40 - 47	Gobo 9
				120 - 136	47 - 53	Gobo 8
				137 - 153	54 - 60	Gobo 7
				154 - 170	60 - 67	Gobo 6
				171 - 187	67 - 73	Gobo 5
				188 - 204	74 - 80	Gobo 4
				205 - 221	80 - 87	Gobo 3
				222 - 238	87 - 93	Gobo 2
				239 - 255	94 - 100	Gobo 1
						Fixed Gobos
				0 - 180	0 - 70	Continuous scroll
						Full positions:
				0	0	Open
				20	8	Gobo 1
				40	16	Gobo 2
				60	24	Gobo 3
				80	31	Gobo 4
				100	39	Gobo 5
				120	47	Gobo 6
				140	55	Gobo 7
				160	63	Gobo 8
7				180	70	Gobo 9
						Gobo shake
`gMOd = SCRL`				181 - 183	71 - 72	Gobo 9 shake
				184 - 186	72 - 73	Gobo 8 shake
				187 - 189	73 - 74	Gobo 7 shake
				190 - 192	74 - 75	Gobo 6 shake
				193 - 195	75 - 76	Gobo 5 shake
				196 - 198	77 - 78	Gobo 4 shake
				199 - 201	78 - 79	Gobo 3 shake
				202 - 204	79 - 80	Gobo 2 shake
				205 - 207	80 - 81	Gobo 1 shake
						Continuous rotation
				208 - 231	82 - 91	CW, fast → slow
				232 - 255	92 - 100	CCW, slow → fast
8						**Focus**
				0 - 255	0 - 100	Infinity → 2 meters
						Iris
				0 - 199	0 - 78	Open → close
				200 - 215	78 - 84	Close
9				216 - 229	85 - 90	Opening pulse, fast →slow
				230 - 243	90 - 95	Closing pulse, fast →slow
				244 - 246	96 - 96	Random opening pulse, fast
				247 - 249	97 - 98	Random opening pulse, slow
				250 - 252	98 - 99	Random closing pulse, fast
				253 - 255	99 - 100	Random closing pulse, slow

DMX1	DMX2	DMX3	DMX4	Value	Percent	Function
						Prism
				0 - 19	0 - 7	Prism out
				20 - 79	8 - 31	Prism in, CCW rotation, fast → slow
				80 - 89	31 - 35	Prism in, no rotation
				90 - 149	35 - 58	Prism in, CW rotation, slow → fast
				150 - 215	59 - 84	Prism out
10 Fixture type = prism (default)						**Rotating prism and gobo macros**
				216 - 220	84 - 86	Macro 1
				221 - 225	87 - 88	Macro 2
				226 - 230	89 - 90	Macro 3
				231 - 235	91 - 92	Macro 4
				236 - 240	93 - 94	Macro 5
				241 - 245	95 - 96	Macro 6
				246 - 250	96 - 98	Macro 7
				251 - 255	98 - 100	Macro 8
10 Fixture type = frost (optional)				0 - 255	0 - 100	**Variable Frost** No frost → full frost
11	11	11	11	0 - 255	0 - 100	**Pan Coarse (16-bit MSB)** Left → right (127 = neutral)
n/a	12	n/a	12	0 - 255	0 - 100	**Pan Fine (16-bit LSB)** Left → right (127 = neutral)
12	13	12	13	0 - 255	0 - 100	**Tilt Coarse (16-bit MSB)** Up → down (127 = neutral)
n/a	14	n/a	14	0 - 255	0 - 100	**Tilt Fine (16-bit LSB)** Up → down (127 = neutral)
n/a	n/a	13	15	0 - 2	0 - 1	**Pan/Tilt Speed** Tracking mode
				3 - 245	1 - 96	Fast → slow
				246 - 248	96 - 97	Tracking at slow speed, overrides PTSP FAST
				249 - 251	98 - 98	Tracking at fast speed, overrides PTSP SLOW
				252 - 255	99 - 100	Blackout while moving
n/a	n/a	14	16			**Effects Speed**
						Dimmer, iris, focus and gobo indexing
				0 - 2	0 - 1	Tracking mode
				3 - 245	1 - 96	Fast → slow
				246 - 248	96 - 97	Tracking with shortcuts disabled, overrides SCUT ON
				249 - 251	98 - 98	Tracking with shortcuts enabled, overrides SCUT OFF
				252 - 255	99 - 100	Maximum speed
						Color 1, color 2, and fixed gobo if gMOd = SCRL
				0 - 2	0 - 1	Tracking mode
				3 - 245	1 - 96	Speed, fast → slow
				246 - 248	96 - 97	Tracking with shortcuts disabled, overrides SCUT ON
				249 - 251	98 - 98	Tracking with shortcuts enabled, overrides SCUT OFF
				252 - 255	99 - 100	Blackout while moving
						Fixed gobo if gMOd = FIX
				0 - 245	0 - 96	Normal (as set on effect channel), no blackout
				246 - 248	96 - 97	Normal, shortcuts disabled, overrides SCUT ON
				249 - 251	98 - 98	Normal, shortcuts enabled, overrides SCUT OFF
				252 - 255	99 - 100	Blackout while moving
						Rotating gobo and prism
				0 - 251	0 - 98	Normal (as set on effect channel), no blackout
				252 - 255	99 - 100	Blackout while moving
						Gobo shake speed if gMOd = SCRL
				0 - 2	0 - 1	Fast
				3 - 245	1 - 96	Speed, fast → slow
				246 - 255	96 - 100	Fast

ERROR MESSAGES

Display readout	Appears if...	What to do
LERR (Lamp error)	... the lamp doesn't ignite within 10 minutes of receiving the 'Lamp ON' command. Likely reasons are a missing or defective lamp, or insufficient AC voltage.	• Check the lamp • Check that the voltage and frequency settings match the local supply.
MERR (Memory error)	...the EEPROM memory cannot be read.	• Contact Martin service personnel for assistance.
****	... there is no communication between the control panel and motherboard. This read-out appears briefly when switching on the fixture.	• Check fuses and replace accordingly. • Check that cable between control panel and motherboard is connected properly. • Reinstall software.
ShER (Short error)	... the fixture detects the lamp is ON but no 'Lamp ON' command has been received. This can occur if the lamp relay is stuck or if the lamp feedback circuit fails. The fixture may be operated but remote lamp on/off may be effected.	• Contact Martin service personnel for assistance.
Hot (Hot lamp)	... you attempt to strike the lamp within 8 minutes after having switched it off. The fixture will store the 'Lamp ON' instruction and strike the lamp once the 8 minute period has elapsed.	• Wait until the lamp strikes.
PTER (PCB temp. error) FTER (FX temperature error)	...there is a malfunction in the PCB or effects section temperature sensing circuit.	• Contact Martin service personnel for assistance.
C1ER (Color wheel 1 time-out) C2ER (Color wheel 2 time-out) FgER (Fixed gobo time-out) RgER (Rot. gobo time-out)	...the magnetic-indexing circuit malfunctions (e.g. sensor defective or magnet missing), or if the effect and/or magnetic sensor requires mechanical adjustment. After the time-out, the effect in question stops in a random position.	• Contact Martin service personnel for assistance.

TROUBLESHOOTING

Problem	Probable cause(s)	Remedy
One or more of the fixtures is completely dead.	No power to fixture.	Check that power is on and cables are plugged in.
	Primary fuse blown.	See "Changing voltage and frequency settings" on page 17.
	Secondary fuse(s) blown.	
	Filter/power protection fuse blown.	
Fixtures reset correctly but all respond erratically or not at all to the controller.	The controller is disconnected from the data link.	Connect controller.
	XLR pin-out of the controller does not match pin-out of the first fixture on the link (i.e. signal is reversed).	Install a phase-reversing cable between the controller and the first fixture on the link.
Fixtures reset correctly but some respond erratically or not at all to the controller.	Bad data link connection	Inspect connections and cables. Correct poor connections. Repair or replace damaged cables.
	Data link not terminated with 120 Ω termination plug.	Insert termination plug in output jack of the last fixture on the link.
	Incorrect addressing of the fixtures.	Check fixture address and protocol settings.
	One of the fixtures is defective and disturbs data transmission on the link.	Bypass one fixture at a time until normal operation is regained. Do this by unplugging the XLR in and out connectors and connecting them directly together. Have the fixture serviced by a qualified technician.
	XLR pin-out on fixtures does not match (pins 2 and 3 reversed).	Install a phase-reversing cable between the fixtures or swap pins 2 and 3 in the fixture that behaves erratically.
Magnetically indexed effect resets correctly but wanders after fixture reaches operating temperature.	Effect wheel or magnetic sensor requires mechanical adjustment.	Disable effects feedback (page 13). Contact Martin technician for assistance.
No light and "LERR" error message displayed.	The ballast and transformer settings do not match local AC voltage and frequency.	Disconnect fixture. Check ballast and transformer settings and correct if necessary.
	Lamp blown	Disconnect fixture and replace lamp.
	Lamp not installed	Disconnect fixture and install lamp.
Lamp cuts out intermittently.	Fixture is too hot.	Allow fixture to cool. Reduce ambient room temperature. Recalibrate temperature sensors.
	The ballast and transformer settings do not match local AC voltage and frequency.	Disconnect fixture. Check ballast and transformer settings and correct if necessary.

CIRCUIT BOARD LAYOUT

Hard boot jumper

XLR pin-out jumper

Lamp feedback
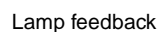
appendix e

SPECIFICATIONS

All measurements made with Philips MSR 575/2 lamp installed.

Measurements

- Dimensions without mounting bracket (LxWxH): .... 795 x 330 x 308 mm (31.3 x 13.0 x 12.1 in)
- Weight, EU version ....32.5 kg (71.5 lbs)
- Weight, US version ....36.5 kg (80.5 lbs)

Electrical, EU version

- Voltage taps (ballast).. 200/230/245 V @ 50 Hz; 208/227 V @ 60 Hz
- Power and current ....695 W, 3.8 A @ 230 V / 50 Hz
- Power factor (PF)... 0.79

Electrical, US version

- Voltage taps (transformer) ....100/120/230/250 V @ 50/60 Hz
- Power and current ....790 W, 8 A @ 120 V / 50 Hz
- Power factor (PF).. 0.79 @ 50 Hz, > 0.79 @ 60 Hz

Fuses

- Main fuse, fixture wired at 200 V or higher ....6.3 A / 250 V time delay, P/N 350008
- Main fuse, fixture wired at 100 or 120 V (US version only)..........................10 A / 250 V time delay, P/N 350009
- Fuse F601 ....5.0 A / 250 V time delay, P/N 350000
- Fuse F602 ....4.0 A / 250 V time delay, P/N 350005
- Fuse F603 ....0.315 A / 250 V time delay, P/N 350004
- AC filter and power protection fuse..2.0 A / 250 V special fast-acting, P/N 350120

Communication

- Receiver .... Opto-isolated RS-485
- Protocols ....USITT DMX512 (1990) / Martin RS-485
- DMX start code 0
- Recommended cable.. 24 AWG (min.), low capacitance, 85-150 Ω shielded twisted pair
- Connector type... 3-pin XLR male/female
- Pin-out (default).. pin 1: shield, pin 2: cold, pin 3: hot (DMX compatible)

Compatible lamps

- Osram HSR-575/2 ....575 W, 85 lm/W, 1000 h avg. life, 6000K, P/N 346039
- Philips MSR-575/2 ....575 W, 85 lm/W, 750 h avg. life, 6100K, P/N 346036

Photometric performance

- Light output ....8500 lm
- Center intensity, 17° version.. 234,000 cd
- Center intensity, 23.5° version.. 127,000 cd

Rotating gobos

- Outside diameter.. 27.8 +/- 0.2 mm
- Maximum image diameter...23 mm
- Maximum thickness...4 mm
- Recommended custom glass gobo thickness:...1.1 mm
- Recommended custom glass gobo coating:...enhanced aluminum
- Recommended custom gobo glass: ....high temperature, Borofloat or better

Thermal

- Maximum ambient temperature... 40° C (104° F)
- Surface temperature under normal conditions .... 80° C (176° F)

Accessories and selected spare parts

- Single unit flight case 911300
- Double unit flight case.. 911302
- Half-coupler clamp 850601
- G clamp.. 850603
- MPBB1 Uploader 920622
- 4 Channel Opto-Isolated RS-485 Splitter/Amplifier 920630
- Retention spring for rotating-gobo holder.. 373968
- Frost filter for MAC 500/RS 918, assembled 850096
- Rotating-gobo holder MUI058
- Retention spring for rotating gobo.. 373965