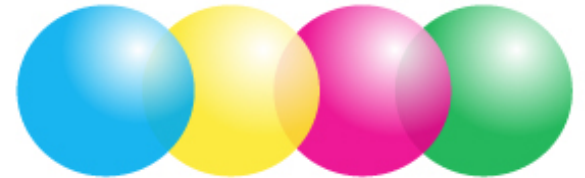# SEACHANGER

SeaChanger HMI Profile and Wash Installation and Operation Manual

Document Number 6-2013 HMI

FCC Information

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at their own expense.

Trademarks

SeaChanger HMI Profile is a trademark of SeaChanger/Ocean Thin Films, Inc. Source Four is a registered trademark of Electronic Theatre Controls, Inc. (ETC). All other products and services mentioned herein are the trademarks, service marks, registered trademarks, or registered service marks of their respective owners.

Limit of Liability

Every effort has been made to make this manual as complete and as accurate as possible, but no warranty or fitness is implied. The information provided is on an "as is" basis. SeaChanger HMI Profile shall have neither liability nor responsibility to any person or entity with respect to any loss or damages arising from the information contained in this manual.

Important Safety and Warranty Notices

Safety Information

Please read all instructions prior to assembling, mounting, and operating this equipment.

Product Modification Warning

SeaChanger products are designed and manufactured to meet the requirements of United States and International safety regulations. Modifications to the product could affect safety and render the product noncompliant to relevant safety standards.

Modification des produits d'alerte

SeaChanger products sont conçus et fabriqués pour répondre aux exigences des Etats-Unis et réglementations internationales de sécurité. Les modifications au produit pourrait affecter la sécurité et rendre le produit non conforme aux normes de sécurité applicables.

Warranty Information

a) Limited Warranty

Unless otherwise stated, your *product* is covered by a one-year parts and labor limited warranty. Dichroic filters are not guaranteed against breakage or scratches to coating. It is the owner's responsibility to furnish receipts or invoices for verification of purchase, date, and dealer or distributor. If purchase date cannot be provided, date of manufacture will be used to determine warranty period.

b) Returning an Item Under Warranty for Repair

It is necessary to obtain a Return Material Authorization (RMA) number from your dealer or point of purchase BEFORE any units are returned for repair. The manufacturer will make the final determination as to whether or not the unit is covered by warranty.

All product units or parts returned to SeaChanger must be packaged in a suitable manner to ensure the protection of such product units or parts. This packaging must be clearly and prominently marked to indicate that the package contains returned product units or parts and must also display its RMA number. Accompany all returned product units or parts with a written explanation of the alleged problem or malfunction. Ship returned product units or parts to: SeaChanger, 8060 Bryan Dairy Road, Largo, Florida, 33777.

REPAIR OR REPLACEMENT AS PROVIDED FOR UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY OF THE CONSUMER. SEACHANGER MAKES NO WARRANTIES, EXPRESS OR IMPLIED, WITH RESPECT TO ANY PRODUCT, AND SEACHANGER SPECIFICALLY DISCLAIMS ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Warranty is void if the product is misused, damaged, modified in any way, or for unauthorized repairs or parts. This warranty gives you specific legal rights; you may also have other rights, which vary from state to state.

c) Freight

The purchaser will pay all shipping charges. Items under warranty shall have return shipping paid by the manufacturer only in the continental United States. Under no circumstances will freight collect shipments be accepted. Prepaid shipping does not include rush expediting such as airfreight. Airfreight can be sent customer collect in the continental United States.

Note

Freight damage claims are invalid for fixtures shipped in non-factory boxes and packing materials.

Table of Contents

About This Manual

a) Document Purpose and Intended Audience

This document provides you with an installation section to get your SeaChanger HMI product up and running. This manual is intended for end users and installation technicians.

b) Document Summary

Chapter	Description
Chapter 1:*Features*	Provides a list of product features.
Chapter 2:*Setup and Configuration*	Contains instructions for unpacking, installing and configuring the SeaChanger Product.
Chapter 3:*Operation*	Contains instructions for using the SeaChanger Product.
Appendix A:*SeaChanger HMI Profile and Wash Specifications*	Provides product specifications.
Appendix B:*Maintenance*	Provides for cleaning the SeaChanger dichroics.

c) Product-Related Documentation

You can access the most recent documentation for SeaChanger Products by visiting our website at **www.seachangeronline.com.**

d) Upgrades

Occasionally, you may find that you need SeaChanger to make a change or an upgrade to your system. To facilitate these changes, you must first contact Customer Service and obtain a Return Merchandise Authorization (RMA) number. Please contact SeaChanger for specific instructions when returning a product.

Features

a) SeaChanger HMI Profile and Wash Color Engine

The SeaChanger HMI Color Engine is the first SeaChanger color-changing fixture with an HMI 575 watt lamp cap source or a 3000 long life lamp cap. SeaChanger HMI Profile gives you the freedom to mix any color as well as perform live fades from one color to another smoothly, quietly and cleanly.

Seachanger HMI Profile
575W lamp cap or 3000Hr lamp cap

Seachanger HMI Wash
575W lamp cap or 3000Hr lamp cap

The SeaChanger HMI Profile uses the front barrel assembly, with any ETC Source Four Lens Tube. The optical
design of the Seachanger will not interfere with the gate area, meaning patterns, irises, gobo changers, and all the usual accessories with your Source Four fixture will be in focus.

The Seachanger HMI Wash uses a Fresnel lens to create soft edges and includes a manual optical zoom from 20 degrees to 50 degrees. The optical fields closely patterns the Par 64 only with CYM color changing.

Yokes and ETC front end assemblies are not included and are available as an option

CYM Dim Dichroic Glass Wheels The SeaChanger HMI uses dichroic borosilicate glass, which will not fade or change color. The color created during rehearsals will be the same color you will see a week, a month, or a year later. Because the coating process of the wheels is so precise, and held to such a tight tolerance, the color output will be the same, years later with the acquisition of new Seachangers.

b) SeaChanger HMI Profile and Wash Features

SeaChanger HMI Color Engine offers the following features:

• High-efficiency dichroics - Less light loss with dichroic color than with a gel, and unlike gels, will never fade or wash out

• No interference with Source Four optics – Can be used with any lens tube (Profile)

• Smooth color mixing – Includes pastel and saturated colors

• Installs in seconds with quick bayonet mounting to your Source Four front-end lens barrel (Profile)

• Onboard drive electronics feature adaptive speed response algorithms giving full control over color mixing from smooth, step-less movement to rapid color snaps and bumps in 0.5 seconds for Speedster or 1.0 seconds for Legacy

• Live color fading from one color to another at any speed with no, intermediate or transitional colors or swipe

• No interference with Source Four's gobos, irises, or gobo Rotators (Profile).

• Operates on four DMX channels: Cyan, Magenta, Yellow, and a Dimmer Wheel., 5th channel on HMI power supply can be used to strike the lamp
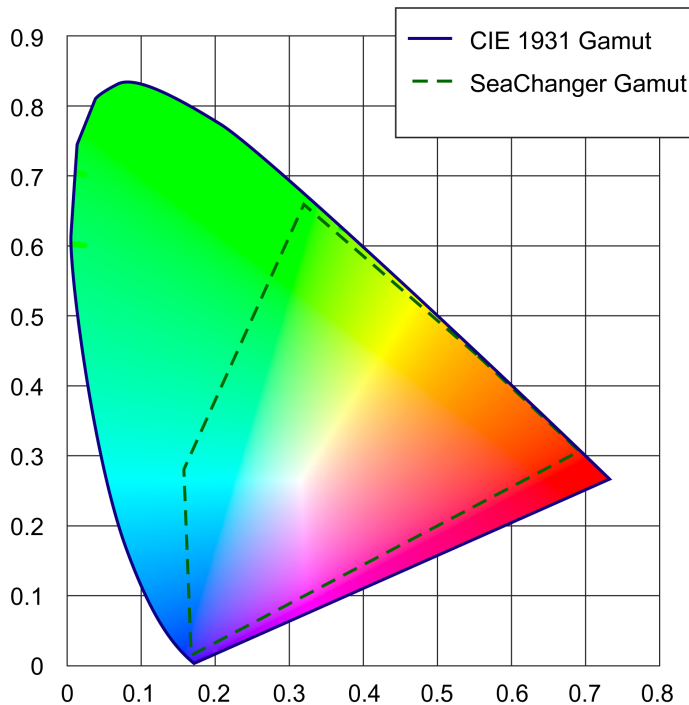
SeaChanger HMI Color Gamut

Setup and Configuration

Unpacking the Products

Unpack your SeaChanger product(s) and verify that they are undamaged. If there is no damage, continue with the rest of the setup procedure. If there is damage, notify both the shipping agent and the sales agent immediately.

Save the shipping carton and packing materials. The carton and packing materials are specifically designed to protect the product during transport. Return a product for repair in its original shipping carton and packing materials. SeaChanger assumes no responsibility for products that are damaged during transport. Before returning anything to the factory, call for a Return Material Authorization (RMA) number. SeaChanger cannot accept any goods shipped without an RMA number. See ***Returning an Item Under Warranty for Repair***.

Package Contents

The SeaChanger HMI Profile and Wash units with Color Engine ships with the following items:

User manual: Go to **http://seachangeronline.com/technical/** for latest edition
Safety cable
HMI Ballast
HMI Ballast Power Cord
MSR 575 watt Lamp or Long Life 3000 Hour Lamp
Seachanger HMI model A451-533 Profile or Seachanger HMI Wash Model A474-533

Optional Accessories

The following accessories are available from SeaChanger:

- Extended Yoke for down lighting or Front Of House installations

- Double Clutch Friction plates on both sides of the fixture to add to overall stability

- DMX Terminators to terminate the string of DMX lines to the fixtures

- Factory Installed Edison or Stage Pin plugs and High Temperature cords

SeaChanger HMI Profile and Wash Setup

Setting up the SeaChanger HMI Profile or Wash requires:
   a) Installing the proper power cord cap on the Color Engine
   b) Installing the proper power cord cap on the HMI Ballast
   c) The profile will require the installation of the ETC Lamp tube assembly and lens tube adapter
   d) Profile and Wash install orientation
   e) Installation of the HMI Lamp, (575 HMI Lamp or long life 3000 hour lamp)
   f) Lamp Alignment
   g) Setting up the HMI Ballast
   h) Optimizing the Light Field
   i) Determining Valid DMX Base Address
   j) Setting the DMX base address channels.

a) Installing a Power Cord Cap on the Color Engine

- Your SeaChanger HMI Profile and Wash Color Engine ships with a power cord that must be connected to a standard cord cap. Different locations may require a different power cord cap to connect the fixture to a power source.
- Because of the variety of power cord caps used worldwide, SeaChanger cannot make specific recommendations for the power cord cap. Contact a local authority for the type of power cord cap needed.
- The SeaChanger HMI Profile and Wash Color Engine have universal power supplies onboard that allows for connection to a wide variety of main power sources. Refer to the Specifications section for details
- When installing the power cord cap, note that the cores in the mains lead are colored in accordance with the following code:

Color	Function
Green with Yellow stripe	Ground
Blue	Neutral
Brown	Live

<div>

WARNING
The SeaChanger HMI Profile and Wash are Class 1 equipment. This equipment must be connected to an earth ground
Note
Maximum total color- changer cable length per SeaChanger Plasma Profile should not exceed 600 ft. (182.9 m).
AVERTISSMENT
Le SeaChanger est de catégorie 1 de l'équipement. Cet équipement doit être connecté à une prise de terre.
Note
Couleur maximale totale par la longueur du câble changeur SeaChanger ne devrait pasdépasser 600 pieds (182,9 m).

</div>

b) Installing a Power Cord Cap on the Lamp Ballast

- Your SeaChanger HMI Profile and Wash Lamp Ballast ships with a power cord that must be connected to a standard cord cap. Different locations may require a different power cord cap to connect the fixture to a power source.
- Because of the variety of power cord caps used worldwide, SeaChanger cannot make specific recommendations for the power cord cap. Contact a local authority for the type of power cord cap needed.
- The SeaChanger HMI Profile and Wash Lamp Ballast have universal power supplies onboard that allows for connection to a wide variety of main power sources. Refer to the Specifications section for details
When installing the power cord cap, note that the cores in the mains lead are colored in accordance with the following code:

….cont..Installing a Power Cord Cap on the Lamp Ballast

Color	Function
Green with Yellow stripe	Ground
Blue	Neutral
Brown	Live

WARNING
The SeaChanger HMI Profile and Wash are Class 1 equipment. This equipment must be connected to an earth ground
Note
Maximum total color- changer cable length per SeaChanger Plasma Profile should not exceed 600 ft. (182.9 m).
AVERTISSMENT
Le SeaChanger est de catégorie 1 de l'équipement. Cet équipement doit être connecté à une prise de terre.
Note
Couleur maximale totale par la longueur du câble changeur SeaChanger ne devrait pas dépasser 600 pieds (182,9 m).

c) Mounting the Source Four Lens Barrel Assembly on a SeaChanger HMI Profile only

The Source Four lens barrel assembly and Lens Tube are sold separately. The Source Four Lens Barrel Assembly requires a Philips screwdriver to install. It fits in front of the Color Engine Assembly. Perform this procedure *before* you connect the fixture to power. The optical design of the Seachanger will accommodate and ETC Source Four beam angle lens barrel from a 5 degree to a 90 degree field Of view, including an ETC Zoom lens and Enhanced Definition lens assemblies

Procedure

1. Insert the Front Barrel Assembly onto the front locking ring of the SeaChanger HMI Profile, engaging the barrel assembly into the locking ring channels.

2. Adjust the front barrel assembly to the desired orientation and tighten the Barrel Rotation Knob and Philips Retainer Bolt to lock the front barrel assembly to the SeaChanger HMI Profile.

3. Mount the unit using safety cable at the mounting location.

WARNING
INTENSE HEAT. AVOID CONTACT BY PERSONS AND MATERIALS.
DANGER
CHALEUR INTENSE. ÉVITER LE CONTACT PAR DES PERSONNES ET DES MATÉRIAUX. PAS POUR UN USAGE RESIDENTIEL

d) Profile and Wash install Orientation

The Seachangers can be mounted with the color engine above the optical barrel or below the optical barrel as shown below. The advantage is for installs that require a large angle of focus such that the heat will rise into the electronic and wheel cage, the underneath orientation will result in reduced internal temperatures. In addition there may be a positioning advantage in having the engine underneath.

To correct the DMX touch display to read true in either position, enter 701 or 702 in the

e) Lamp Installation

The supplied MSD lamps for the fixtures are factory-made adjusted. The lamps are marked with numbers on the package. The fixtures are also numbered. Use only the lamps and the fixtures with the same numbers.

Lamp Installation Philips MSR 575 W with a lamp life of 1000 hours the lamp is dimmable from 100% to 30% through DMX with the ECO - ballast and to "0" percent transmission (Fully Dark) when used in conjunction with the Seachanger dimmer wheel.

1) Make sure unit is unplugged.
2) Open the milled screw at the rear of the fixture with a screwdriver.
3) Pull the lamp house back and tipping it down slightly. It is secured from falling by the grounding cable.
4) Pull out the old lamp and Insert the new lamp, **without touching the quartz envelope**.
5) The lamps of the fixtures are factory-made adjusted. The lamps are marked with numbers on the package. The fixtures are also numbered. You have to use only the lamps and the fixtures with the same numbers.
6) Due to the differences by the manufacturing of the Philips MSD 575 lamp it's very important to pay attention to the lamp position. You should insert the lamp only as shown on the picture.
7) Re-place the lamp house on the guide rails and push the unit together.
8) Tighten the milled screw again with the screwdriver, until you hear a click from the Safety switch.

Philips MSD Label on this side
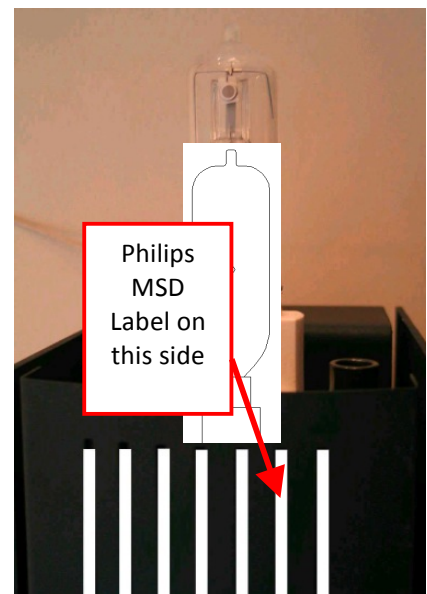
<u>Lamp Installation Philips 575/GX9, 5/ 6000 K</u> with a lamp life of 3000 hours. The MSD 575 lamps with 3000 hours can be dimmed through the ballast DMX with the ECO - ballast and to "0" percent transmission (Fully Dark) in conjunction with the Seachanger dimmer wheel but no hot re-strike.

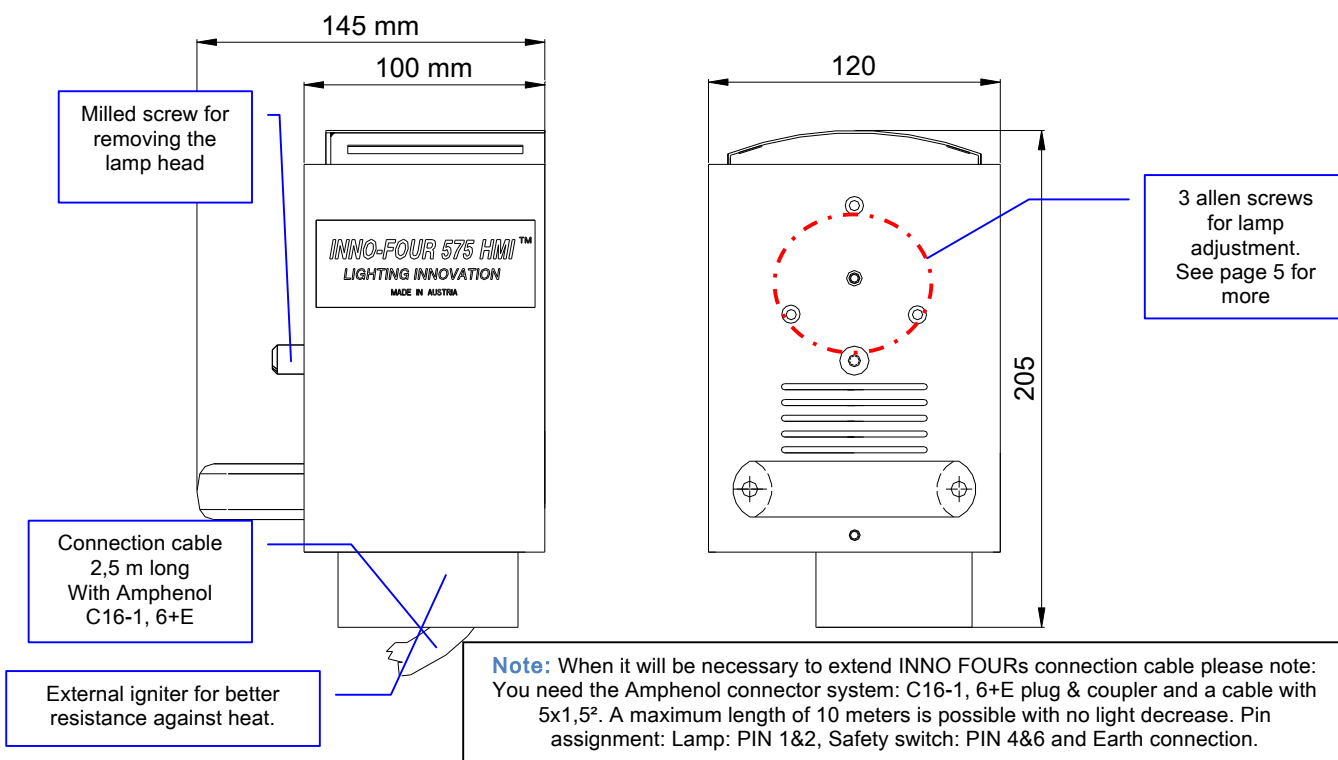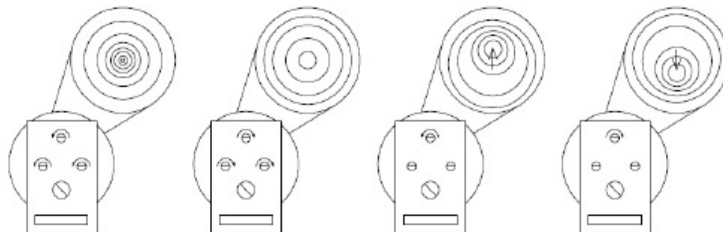1) Switch off the unit and wait until the lamp is cool. **Disconnect ballast & fixture   from power.**
2) Open the milled screw at the rear of the unit with a screwdriver.
3) Pull the lamp house back and tipping it down slightly. It is secured from falling by the grounding cable.
4) Pull out the old lamp and insert the new lamp, without touching the quartz envelope.
5) Re-place the lamp house on the guide rails and fit the unit together.
6) Tighten the milled screw again with the screwdriver, until you hear a click from the safety switch.

Overview about the INNO FOUR lamp housing

145 mm

100 mm

120

Milled screw for removing the lamp head

INNO-FOUR 575 HMI ™
LIGHTING INNOVATION
MADE IN AUSTRIA

205

3 allen screws for lamp adjustment. See page 5 for more

Connection cable 2,5 m long With Amphenol C16-1, 6+E

External igniter for better resistance against heat.

Note: When it will be necessary to extend INNO FOURs connection cable please note: You need the Amphenol connector system: C16-1, 6+E plug & coupler and a cable with 5x1,5². A maximum length of 10 meters is possible with no light decrease. Pin assignment: Lamp: PIN 1&2, Safety switch: PIN 4&6 and Earth connection.

f) Optimizing Lamp Alignment

For lamp Alignment when installing a new lamp for SeaChanger HMI Profile and Wash will require observing the output and optimizing the lamp three way adjustments to obtain a flat field.
The diagrams below show how to adjust the three screws at the back of the unit to achieve a flat field.

7

g) Setting up the HMI Ballast

The following chapters will guide you through the setup process and operation of INNO FOUR
With the new electronic ballast L14000.01E.
(weight: 4,5 Kg/9,9lbs; dimensions: 28x12x17 cm / 11x4,72x6,69")

- The INNO FOUR is for professional use only. Read this complete manual before you start using INNO FOUR. Do not open the cover as this will cancel warranty.
- Warranty of the electronic ballast: 2 years and for the igniter 1 year,
- The lamp is under normal use a wear part.
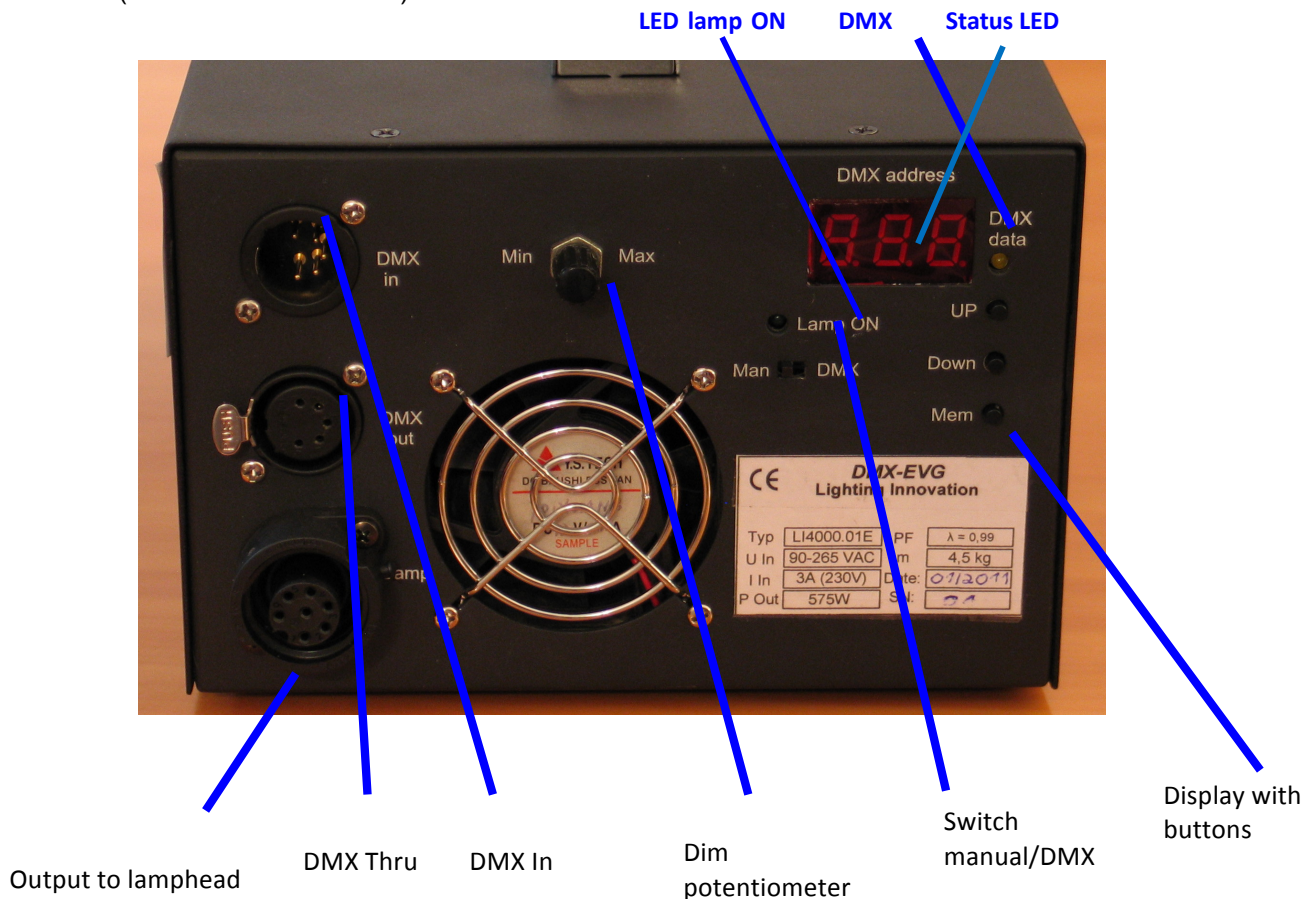
Unpacking & Power up:
Before connecting the ballast to A/C first assemble: The A/C connection on the ballast; if necessary the DMX connections; the head cable connection between the ballast and the Inno-Four fixture; and install the lamp.

A/C Connection:
The ballast requires direct 90-265VAC, 50/60Hz power. DO NOT PLUG THE ELECTRONIC BALLAST INTO A THEATRICAL DIMMER CIRCUIT, EVEN IF IT IS PROFILED IN THE LIGHTING CONTROL BOARD AS A NON-DIM. There is A/C cable provided. It has a schuko plug on the one side and a Neutrik Powercon NAC3FCA on the other side. Also there is an additional ICE female connector on the ballast to power the INNO DIM (Lighting Innovations dimmer shutter). Please consider the maximum output current (7A at 230VAC, 4A at 110VAC)

DMX-Connection:
DMX Input is connected to the built in XLR5 male connector. Additional DMX-units are connected to DMX thru. The last unit in the DMX-chain must have a termination (120Ω resistor between Pin2 and Pin3). It is recommended, that if the INNO Four is being used with an INNO DIM, then the DMX chain first runs to the INNO Four ballast and then is terminated at INNO DIM. Optional: There is a built in DMX termination switch on the INNO Dim, which then can be turned to "On" (See INNO DIM Manual).

Output to lamphead DMX Thru DMX In Dim potentiometer Switch manual/DMX Display with buttons

h) Determining a Valid DMX Base Address

DMX Input is connected to the built in XLR5 Male Connector. A XLR5 Female Connector is provided for DMX pass through.
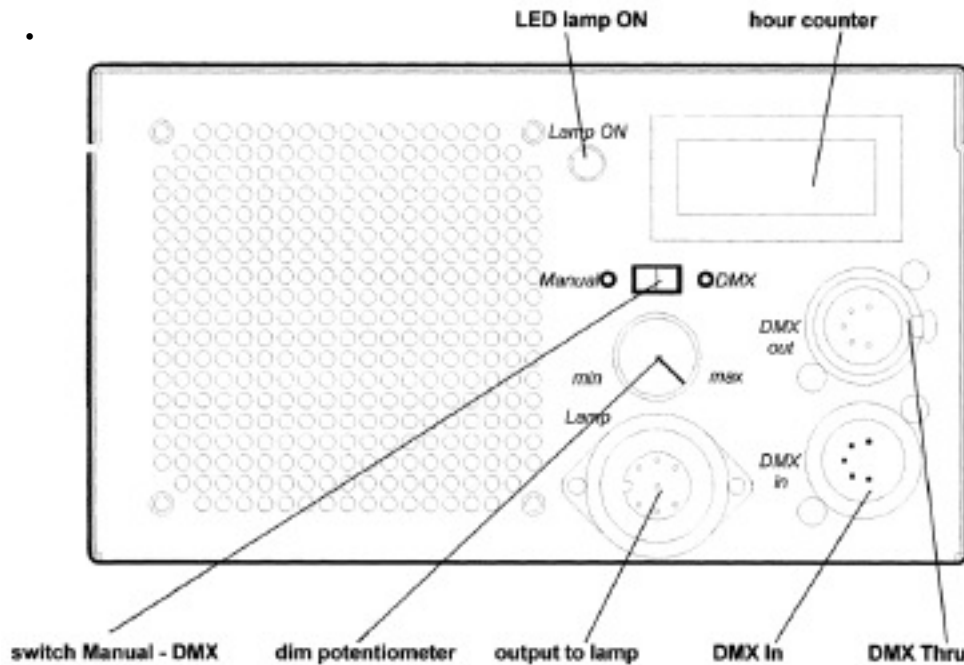
The DMX base address (start channel) identifies each fixture on a universe for the DMX controller. There are 512 available channels on each DMX universe. The number of channels a fixture requires is called the fixture's channel range. The DMX base address assigned to a particular fixture is the first channel available to a fixture in its channel range. The fixture's channel range should not overlap any other device's channel range on the universe. When two devices on the same DMX universe have overlapping channel ranges then one unit will be changing when you are not trying to control it.

Criteria when determining a valid base address:

- The base address is the number of the first channel in a consecutive block of channels assigned to an individual fixture.
- If you want two or more fixtures to respond to controller commands in exactly the same way, you can assign them the same base address. In that case, those fixtures must be the same type and must share the *entire* channel range.
- A fixture can be assigned the second block of DMX channels on a universe without physically being the second fixture in the universe.
- To avoid overlapping channels, place the start channel at the beginning of a range of available channels large enough to accommodate that fixture type.

Every channel in the universe does not need to be assigned

i)   Setting the Base DMX Address

The SeaChanger HMI Profile Color Engine is a four channel DMX device, and requires that a contiguous block of four DMX addresses be available. The display panel or RDM input is used to enter the DMX base address of the fixture. The first channel is assigned to this base address, and subsequent 3 channels are assigned the next 3 DMX addresses. The HMI Ballast is a two channel device.

9

Operation

Overview of SeaChanger Color Engine

The SeaChanger HMI Profile and Wash Color Engine can be operated by a DMX512 controller, RDM (Remote Device Management) device, or from the front panel display.

Adjusting Beam Zoom / Field Angle-Wash Fixture

The wash field size can be adjusted with the manual zoom adjust knob located on the opposite side of the lens housing from the drive enclosure. Simply loosen and move the knob forward (in the direction of the output Fresnel lens) for 50 degree wide field coverage or to the rear towards the lamp housing) for a tight 20 degree field with superior edge softness. When the desired wash field is obtained, simply retighten the knob to set the adjustment.

Power and DMX Connections

The SeaChanger HMI Profile and Wash Color Engine have a self-contained universal AC/DC power supplies, permitting connection to single-phase power sources with a voltage range of 110 – 240 VAC, at a frequency of 50 – 60 Hz.

The DMX I/O connectors are 5-pin XLR type, and are connected in a pass-through arrangement to enable daisy chaining of multiple fixtures. Either connector can function as an input or output. An external terminator plug (not supplied) is recommended for the last fixture in a DMX cable run.

SeaChanger HMI Profile Color Engine Display and Control Buttons

The SeaChanger HMI Profile and Wash Color Engine features a 3-digit LED display and corresponding panel buttons for numeric entry. Each button push increments the corresponding digit by 1, and from 9 back to 0. Addresses and functions programmed via the display panel take effect after a 3 second delay. On power-up, the firmware version number is displayed momentarily.

DMX Signal Indicator

The SeaChanger HMI Profile and Wash Color Engine display will show a decimal point if a DMX signal is present. The decimal point will go out when signal is not present or removed.

Display Blanking

The SeaChanger HMI Profile and Wash Color Engine display will blank the digits after a 5-minute delay. The DMX signal indicator (decimal point) will remain on as long as a DMX signal is present. The display can be powered on by pushing any of the display buttons once while blanked.

Automatic Color sequencing

The Seachanger HMI Profile and Wash color engine have an automatic sequencing mode when the number 800 is selected in the touch pad display that will bypasses the DMX electronics and I cycle through a 24 color transition. This setting can also be used to trouble shoot a DMX problem VS. a fixture problem

USITT DMX512-A Manufacturer ID

All SeaChanger HMI Profile and Wash Color Engines with DMX512 addressable fixtures have an ESTA registered Manufacturer's ID of ASCII "SC" (decimal 83 & 67, or 53h 43h in h
See*http://www.esta.org/tsp/working_groups/CP/mfctrIDs.php.*

DMX Control

When connected to a suitable DMX controller, the SeaChanger HMI Profile and Wash can be operated via 4 06 6 DMX channels. Channels 5 & 6 see ballast setting section. The channels are assigned as in Table 1 below:

Table 1 – SeaChanger HMI Profile and Wash Color Engine DMX Channel Map

The Inno Four Seachanger (HMI Seachanger) requires a total of 6 DMX channels

4 for SeaChanger, and 2 more for electronic ballast.

Individual start addresses need to be assigned to both devices

Channel	Name	Parameter	Percent Range	DMX Range	Hex Range	All Wheel Reset
1	Cyan	Color Saturation	0-100 %	0-255	0-FF	100%/DMX 255
2	Magenta	Color Saturation	0-100 %	0-255	0-FF	100%/DMX 255
3	Yellow	Color Saturation	0-100 %	0-255	0-FF	100%/DMX 255
4	Douser	Gradient Dimmer	0-99%	0-255	0-FF	0%/DMX 000
Electronic Ballast						
5	lamp on: DMX value 51-100% (128-255 decimal) / off 0-50% off at DMX value (0-127 decimal)					
6	lamp brightness control 0% (= 30% light output) to 100% (100% light output)					

To reduce heat load and extend lifetime, the dimmer and brightness channels should be coupled.

Thus, during dimming the lamp power is reduced at the same time.

The coupling in ETC EOS series consoles is achieved if "Intens" is assigned to parameter 4 and 6.

In simple desks both DMX addresses can be patched to one channel.

Reset from DMX Console

When connected to a suitable DMX controller, the SeaChanger HMI Profile and Wash Color Engine filter wheel positions can be reset from the console by a two step dwell and snap as shown in Table 2 below:

Table 2
SeaChanger HMI Profile and Wash Reset Procedure

Channel	Wheel ID	Dwell Time for reset (%/DMX/Hex	Snap (%/DMX/Hex	Wheel home position Percent value /Wheel Home position
1	Cyan	100%/DMX 255/FF	0 %/DMX 0%/ 0	0 %/ Full clear
2	Magenta	100%/DMX 255/FF	0 %/DMX 0%/ 0	0 %/ Full clear
3	Yellow	100%/DMX 255/FF	0 %/DMX 0%/ 0	0 %/ Full clear
4	Douser	0 %/ DMX 0/ 0	0 %/DMX 0%/ 0	0 %/ Full Dark

Keypad Control

The SeaChanger HMI Profile and Wash Color Engine keypad and LED display provides another interface to set the fixture base address, select the operating mode, and program settings. Settings take effect after a three second delay. These parameters are shown in Table 3.

RDM Control

The SeaChanger HMI Profile and Wash Color Engine is RDM (Remote Device Management) compliant to ANSI E1.20-2006,"EntertainmentTechnology--Remote Device Management over USITTDMX512". RDM allows the SeaChanger HMI Profile Color Engine base DMX address to be remotely set, and the operating mode or fixture settings to be changed. Available functions are listed in Table 3b for the SeaChanger HMI Color Engine.

Table 3
SeaChanger HMI Profile and Wash DM (Douser) Keypad / RDM Control Functions

Input	Function	Type
001-		
509	Set Fixture Base Addresses	Modal
800	24 Color Demo Mode	Modal
900	Dimmer in Full	Modal
901	Cyan Full	Modal
902	Magenta Full	Modal
903	Yellow Full	Modal
904	All Wheels in	Modal
905	L182-Light Red	Modal
906	R4490-90 Green	Modal
907	R2008 Storaro Indigo	Modal
908	L444Eighth straw	Modal
909	R20 Medium Amber	Modal
910	AP775 Sailors Delight	Modal
911	L172 Lagoon Blue	Modal
912	R4990 90 lavender	Modal
913	L68- Sky Blue	Modal
914	R316 Gallo Gold	Modal
915	L052Light Lavender	Modal
916	AP7850 Hot Lava Orange	Modal
917	AP7850 Hot Lava Orange	Modal
918	R49 Medium Purple	Modal
919	R2004	Modal
920	Orange	Modal
921	L144-No Color Blue	Modal
922	R2009 Storaro Violet	Modal
923	L197 Alice Blue	Modal
924	R16 Light Amber	Modal
925	L194 Surprise Pink	Modal
Action Keypad		
990	Reset all Wheels	Action
991	Reset Cyan	Action
992	Reset Magenta	Action
993	Reset Yellow	Action
994	Reset Dimmer/ Xg	Action
701	Display Orientation -Up position	Action
702	Display Orientation -Down position	Action

Modal functions remain in effect until another is selected. Actions return to the current mode after execution.
Gel Match functions 901 – 903 and 905 - 925 are based on Osram HPL750/115 lamp.
Functions take effect after a 3 second delay.

Demo Mode

The SeaChanger HMI Profile and Wash Color Engine demo mode provides for color changing without a DMX controller attached. Selection of "800" via RDM or keypad starts the demo mode. The fixture will
sequence through the colors in Table 4b for the SeaChanger HMI Profile and Wash Color Engine below, with a four second dwell time at each color.

Table 4b
SeaChanger HMI Profile Color Engine Demo Sequence

Sequence Number	Function	RDM/Keypad Equivalent
1	Cyan Full	901
2	Magenta Full	902
3	Yellow Full	903
4	L182-Light Red	905
5	R4490-90 Green	906
6	R2008 Storaro Indigo	907
7	L444-eEighth straw	908
8	R20 Medium Amber	909
9	AP775 Sailors Delight	910
10	L172 Lagoon Blue	911
11	R4990 90 lavender	912
12	L68- Sky Blue	913
13	R316 Gallo Gold	914
14	L052Light Lavender	915
15	AP7850 Hot Lava Orange	916
16	AP7850 Hot Lava Orange	917
17	R49 Medium Purple	918
18	R2004	919
19	R22 Medium Purple	920
20	L144-No Color Blue	921
21	R2009 Storaro Violet	922
22	L197 Alice Blue	923
23	R16 Light Amber	924
24	L194 Surprise Pink	925

Gel Match demo colors 1 - 24 are based on Osram HPL750/115 lamp. To cancel demo mode, select a DMX base address between 1 and 509 via RDM or keypad.

Ballast Operation

Local Operation

Select "Man" with the Manual or DMX selection switch. The Power Switch found next to the Powercon connector will turn on the ballast and strike the lamp. The potentiometer found above the fan will regulate intensity from 100% to 30% of the maximum output. The Lamp On LED will be on (Green) when the lamp is on.

DMX Operation

The electronic ballast takes two channels of DMX. Set the Selection switch to DMX, and turn the Power switch to On. Set the DMX address by pressing the MEM button to turn the display on. Use the UP and Down buttons to set the address, press the MEM button to store the address. The DMX data yellow LED will light when a valid DMX signal is present for 2 seconds.

Channel 1 Lamp Control		
DMX %	**DMX Decimal**	**Lamp**
0-49	0-127	Off
50-100	128-255	On

Channel 2 Intensity		
DMX %	**DMX Decimal**	**Intensity**
0-9	0-24	Minimum 30%
Oct-90	25-230	Variable Dimming
91-100	231-255	Maximum 100%

Important information on HMI Lamps

- Dim the intensity of the lamp through DMX when the Color Engine Dimmer wheel is in use to reduce the heat of the unit.
- To achieve operating temperature quickly operate the unit at full intensity for the first two minutes of operation
- After a hot re-strike do not switch off the lamp until it achieves operating temperature. This will cause ignition problems and reduces lamp life.
- Frequent power cycling with operating times less than two minutes will dramatically reduce lamp life.

Hot Re-Strike Information

There are two conditions that may cause hot re-strike to fail.

1)<u>After a ColdStart</u>: Normally you should NOT switch the ballast off when the lamp has not reached operating temperature (after 2 – 3 minutes). **This could cause problems with hot re-strike and reduces the lifetime of the MSR lamp**. On immediate restart (also after power loss) the lamp will attempt to ignite. If the lamp does not re-strike you will have to wait 3 -4 minutes for the lamp to cool before attempting to re-strike.

2)<u>After a longer operating time (more than 1hour</u>): If you try to hot re-strike the lamp the igniter will attempt to re-strike the lamp several times. **If an arc cannot be established the igniter will be deactivated:**
- **Switch the ballast Off**
- **Send another command through DMX but wait 3 -4 minutes before doing this.**

Appendix A

SeaChanger HMI Profile and Wash Specifications

Mechanical	
Height	Profile 11.5 in/ Wash 11.5 in.
Width	Profile 7.0 in / Wash 7.0 in
Length	Profile 29.5 in (with ETC S4) / Wash 21.8in (with Reflector housing
Shipping Weight	Profile 20.0 lbs/ Wash 22 Lbs
Actual Product Weight	9.98 kg (22 lbs.)
Electrical	Non-dimming circuit Color Engine 100/240 VAC, 50/60 Hz (auto-sensing) 2.9 Amps @ 110 VAC, 1.3 Amps @ 240 VAC (320W) Electronic Ballast 90/265 VAC 50/60 Hz (auto sensing) 7 Amps @ 110 VAC, 4 Amps @ 240 VAC
Environmental	
Maximum Ambient Temperature	45 °C (113 °F)
Minimum Ambient Temperature	0 °C (32 °F)
Maximum Exterior Surface Temperature*	200 °C (392 °F)
Cooling	Temperature controlled Ballast cooling fan
LAMP	
Type*	MSR 575 Watt or Long life 3000 hr
Control, Cabling and Terminator	

SeaChanger Data Link	DMX512 male and female 5-Pin XLR with DMX signal pass through for daisy-chaining
	Remote Device Management (RDM) per ANSI E1.20-2006
	DMX start address can be set via RDM or onboard display
Maximum Recommended Cable Length	182.9 m (600 ft.)
Compatible Terminator	120 ohms
SeaChanger Onboard Keypad / Display	Three button shielded membrane keypad with three digit, seven segment LED display and DMX signal indicator

Operating Features

Color Filter Type, Range and Control	Color Engine Channel 1 - Cyan: 0-100% saturation Channel 2 - Magenta: 0-100% saturation Channel 3 - Yellow: 0-100% saturation Channel 4 – standard - patterned Al douser: 0-99% dimming Electronic Ballast Channel 1 – Lamp Strike Channel 2 – Lamp Dimming 30 – 100% Dichroic patterned CMY and coatings on optical glass substrates, BBAR coated, in-band transmission > 98% Patterned aluminum douser with dielectric enhancement, on optical glass substrate
Speed	1.0 sec sec average clear to full saturation Onboard drive electronics with adaptive speed response
Accessory Compatibility	Profile- Preserves all ETC Source Four beam characteristics and compatibility with all beam-shaping ETC Source Four accessories such as gobos; gobo rotators; gobo changers; and 10,14,26,36,50,70 and 90 degree field-of-view barrels; and other beam shaping devices-
Mounting	Suspension on Source Four compatible yoke from mounting points
Maintenance	Easy color engine removal for periodic cleaning
Safety	Safety cable ring, 3' safety cable included

- For more information, see the documentation for the ETCᴛᴍSource Four fixture.
-

SEACHANGER

RoHS-Restriction of Hazardous Substances

SeaChanger HMI Profile products comply with RoHS and do not contain any of the six banned substances: lead, mercury, cadmium, hexavalent chromium, poly-brominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE), in quantities exceeding maximum concentration values.

RoHS-Restriction des Substances Dangereuses

SeaChanger et produits SeaChanger se conformer aux directives RoHS et ne contiennent aucune des six substances interdites: le plomb, le mercure, le cadmium, le chrome hexavalent, les poly-bromés (PBB) ni de polybromodiphényléthers (PBDE), en quantités n'excédant valeurs maximales de concentration

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Seachanger CE Declaration of Conformance

We declare under our sole responsibility that the product
Equipment Classification: Stage Lighting Devise
Equipment type: Color Changer
Model: A451-24-** SeaChanger, Profile, Color Engine
A451-01-** SeaChanger, Profile, Fixture
A474-24-** SeaChanger, Wash, Color Engine
A474-01-** SeaChanger, Wash, Fixture
Manufactured at:
Ocean Thin Films, Inc.
8060 Bryan Dairy Road
Largo, Florida 33777
that this declaration relates in conformity with the following standards:
EN61000-6-3:2001; EN55022; FCC part15; EN61000-3-2:1995, EN61000-3.3:1994;EN61000-6.1:2001; EN61000-4-2; EN61000-4-3; EN61000-4-4; EN61000-4-5; EN 610004-6;EN61000-4-6; EN61000-4-8; EN 610004-11
RoHs Directive 2002/95/EC
WEEE Directive 2002/96/EC
Part 15 of FCC Rules
Technical documents are maintained at Ocean Thin Films, Largo, Florida and will be made available upon request.

Conformity Declaration ECO Inno Four 575W HMI

Product Name: ECO INNO FOUR 575W HMI
Product Type / Model:all ECO INNO FOUR versions

This declaration conforms to the following industrial Norms:

73 / 23 / EWG Low Voltage Directive
89 / 336 / EWG EMC Directive
EN55 015 Limits and Methods of measurement if radio disturbance
characteristics if electrical lighting and similar equipment
EN60922A1:1992   General and Safety Requirements
DIN VDE 07112 Teil12:1992-12
IEC 922
EN 61000-3-2 Limits for Harmonic Current Emissions
IES 1000-3-2
EN60598-1 Luminaries, General requirements and tests
EN60589-17 Specifications for luminaries for stage lighting, television, film
                            and photographic studios
EN 55015: 2006+A1: 2007+A2: 2009
EN 61000-3-2: 2006+A1: 2009+A2: 2009
EN 61000-3-3: 2008
EN 61547: 2009

Appendix B

Maintenance

Cleaning the SeaChanger HMI Profile Dichroics

WARNINGS

- Disconnect power and turn power switch off before servicing
- Equipment surfaces may reach temperatures up to 45° C (113° F). Allow the fixture to cool before handling.

1) Remove the SeaChanger HMI color engine from the lens tube assembly by removing (4) Philips screws and extracting the color engine as:

2) The filters can be easily accessed by removing (4) Philips screws and pulling the protective cage away from the color engine as shown below:
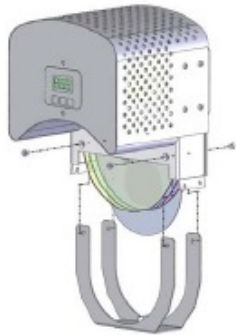
3) Clean the dichroic glass filters using a mild glass cleaner (containing no ammonia) and a soft, lint-free cotton cloth or swab.

4) Reverse the above steps for reassembly. When reassembling, ensure that the cage is oriented in the same direction as it was removed; the cage has a retaining slot for the aperture stop that will bend the aperture stop out of position if installed incorrectly.

Seachanger HMI Parts List

AEL451-03	Sensor Cable
AEL451-06	Main Board
AEL451-07	DMX Board
AEL451-08	Display Board
AEL451-09	DMX Cable
AEL451-10	Display Cable
AEL451-11	DC Power Cable
EL451-20	Power Supply
SA451-08	Sensor Board
SA451-11-01	Motor Assembly - Amber (motor/shaft/pulley/mount)
SA451-11-02	Motor Assembly - Cyan (motor/shaft/pulley/mount)
SA451-11-03	Motor Assembly - Magenta (motor/shaft/pulley/mount)
SA451-11-04	Motor Assembly - XG / DM (motor/shaft/pulley/mount)
SA451-23	Membrane Switch Assembly
ME451-57	Safety Bracket
OP474-5	Fresnel Lens for Wash
STK451-58	Timing Belt, .080" MXL, 130 Teeth
STK451-59	Timing Belt, .080" MXL, 112 Teeth
SA533-01-01	Wheel, 150MM, Magenta
SA533-01-02	Wheel, 150MM, Cyan
SA533-01-03	Wheel, 150MM, Amber
SA451-01-04	Wheel, 150MM, Dimmer
PPA451-100	Inno Kit-Back end HMI
A451-533	Seachanger HMI only no light source

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