

SEACHANGER



SeaChanger Tungsten Profile & Wash Legacy and Speedster Models Installation and Operation Manual

Document 6-2013 TUNGSTEN



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.

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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 Tungsten 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 Tungsten Profile and Tungsten Wash 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 produits 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

Limited Warranty: Unless otherwise stated, your *product unit* 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.

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.

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

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. 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.

Table of

Important Safety and Warranty Notices	i	
Safety Information	i	
Product Modification Warning	i	
Warranty Information	i	
Limited Warranty	i	
Returning an Item Under Warranty for Repair	i	
Freight	ii	
Table of Contents	iii	
About This Manual	iii	
Document Summary	iii	
Product-Related Documentation	iii	
Upgrades	iii	
Chapter 1	Features and Descriptions	1
Tungsten Profile and Wash Color Engine	1	
Tungsten Profile Description	1	
Tungsten Wash Description	1	
ETC S4 Component	2	
Standard Wheel Set and Studio Dichroic wheel set	2	
Tungsten Legacy and Speedster Models	2	
Seachanger Tungsten Features	3	
Chapter 2	Setup and Configuration	4
Unpacking the Products	4	
Package Contents	4	
Optional Accessories	4	
SeaChanger Tungsten Setup	5	
Installing a Power Cord Cap	5	
Mounting the SeaChanger on S4	6	
Fixture Orientation	7	
Optimizing Beam	7	
Determining a Valid DMX Base Address	8	

Setting the Base DMX Address	8
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Chapter 3	Operation	9
	Overview	9
	General Operation	9
	Power and DMX Connections	9
	Tungsten Display and Control Buttons	9
	DMX Signal Indicator	9
	Display Blanking	10
	USITT DMX512-A Manufacturer ID	10
	DMX Control	10
	Reset from DMX Console	10
	Keypad Control	11
	RDM Control	11,12,13
	Demo Mode	14,15
Appendix A	Specifications and Certifications	16
	SeaChanger Specifications	16,17
	RoHS	18
	CE Declaration	18
Appendix B	Maintenance and Part Numbers	19
	Cleaning the SeaChanger Tungsten Dichroic	19
	Spare Parts	20
	Fixture Part Numbers	21
Index		22

About This Manual

This document provides you with an installation section to get your SeaChanger Tungsten Profile and/or Tungsten Wash up and running.

Document Summary Product-Related Documentation

Chapter	Description
Chapter 1: Features and descriptions	Provides a list of product features.
Chapter 2 Setup and configuration	Contains instructions for unpacking, installing and configuring the SeaChanger Plasma Profile and Wash.
Chapter 3: Operation	Contains instructions for using the SeaChanger Plasma Profile and Wash.
Appendix A: Specifications and Certifications	Provides product specifications.
Appendix B: Maintenance and part numbers	Provides for cleaning the SeaChanger Plasma Profile and Wash dichroic.

You can access documentation for SeaChanger Tungsten Profile and Wash by visiting our website at

www.SeaChangerOnline.com

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 and Product Description

SeaChanger Tungsten Profile & Wash Color Engine:

The SeaChanger Tungsten Color Engine is an innovative dichroic color-mixing accessory for the ETC Source Four® ellipsoidal fixture. SeaChanger Tungsten gives you the freedom to mix any color as well as perform live fades from one color to another smoothly, silently, and cleanly. The SeaChanger Tungsten color wheels utilize dichroic borosilicate glass, which will not fade or change color. The SeaChanger Tungsten's are available in the standard "xG" configuration (p/n 451-01-03), which features a multiband trichroic RGB filter in addition to the cyan, magenta and yellow filters, and in the optional "DM" dimmer configuration (p/n 451-01-01), with a patterned aluminum douser in place of the "xG" filter.



The SeaChanger Tungsten Profile:

Attaches between the rear housing assembly and the front barrel assembly of the Source Four, and does not interfere with the gate area. You can still use patterns, irises, gobo changers, and all the usual accessories with your Source Four fixture. There are two CYM wheel sets for the profile, Standard with the CYM wheels at 95% saturation, producing more pastel theatrical colors and Studio Dichroic with the CYM wheels at 100% saturation producing more vibrant reds, blues and greens, for night clubs and Casinos. The Xg extreme green wheel is the same in both wheel set options.

The Seachanger Tungsten Wash:

The Seachanger Tungsten Wash utilizes a reflector housing assembly from an ETC Source Four 750. The Wash is intended for a soft edge beam profile that closely assimilates an ETC Par 64 fixture. The beam angle is manually adjustable for a FOV (Field of view) from 20 to 70 degrees.

ETC Components:

Rear Reflector Housing, Lamp Cap, Front End Assembly, Yoke and FOV Barrels are not included and must be supplied by the user.

Standard Wheel Set and Studio Dichroic Wheel Set

All Seachangers have four dichroic wheel positions with three of those wheels being CYM. In addition to the CYM wheels in the Tungsten Profile Seachanger, the 4th wheel position is generally an extreme green wheel or Xg wheel, a dimmer or custom wheel can also be substituted if desired.

The patterned wheel set (look like tiger stripes) in the standard tungsten Seachanger do not go to full saturation and is designed to allow 5% white light to pass through the patterning at the most saturated point. This small amount of white light allows for the mixing of large variety of pastel color combinations. When the Go wheel, which looks green to the eye, is added to the CYM mix it can add elements of RGB for hexachromic color mixing. The CYM and Xg will extend the typical color palette out beyond conventional dichroic color mixing systems.

The "Studio Dichroic" wheel set is pattern such that the CYM wheels are extended to 100% saturation but shortens the length of the patterning of the wheels, thereby reducing some of the varieties of pastel colors. The green Xg wheels for each wheel set are the same, with 98% saturation. .

In general the Studio Dichroic set will result in bigger blues, reds and purples at the expense of the subtle pastel color pallet while the 95% saturated standard wheels set will offer a larger all around color pallet, but will not have the very extreme saturated reds and blues. Most applications for the Studio Dichroic wheel set are for Cruise Ships, Casinos, Tour, and musicals. The standard set is favored by theaters and churches, with some opting for both wheel sets.

Legacy and Speedster Models of Tungsten Fixtures:

The Seachanger Tungsten Profile and Wash fixtures are available in two speeds, The Legacy (part number A451-01-03 profile and A 474-01-03) and the faster Speedster (part number A451-02-03 profile and A47402-03 wash).

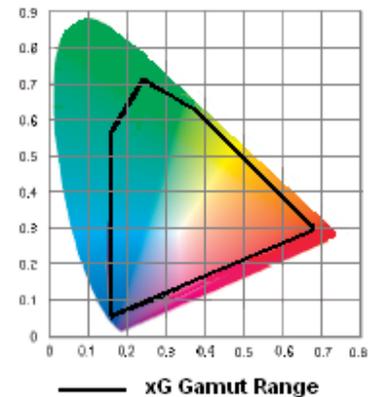
The Legacy units have a one second color change from clear to full saturation. The fixture is convection cooled and designed without cooling fans, resulting in total silent operation. This product is ideal for quiet venues such as Churches, Theaters and Studios.

The Speedster snaps to color changes in 0.5 seconds and uses a 24 V power supply to drive the wheel motors, as opposed to the 5.0 V supplies of the Legacy. The increase in voltage requires a fan to cool the electronics cage. The Speedster is ideal for Cruise Ships, Casinos, Night Clubs and Touring venues.

SeaChanger Tungsten Features

SeaChanger Tungsten Profile and Wash Color Engine offer the following features:

- Amazing color gamut provided by the xG “Extreme Green” multispectral filter, which, when used in concert with the CMY filters provides deep blues, rich reds, vivid greens, enhanced overtones and incredible tonal balance and control
- High-efficiency dichroic – 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 – The Profile can be used with any beam angle from 5 degree to 90 degree as well as EDB lens type
- Smooth color mixing – Includes pastel and saturated colors
- Installs in seconds with quick bayonet mounting to your Source Four
- Onboard drive electronics feature adaptive speed response algorithms giving full control over color mixing from smooth, transition movements to rapid color snaps and bumps
- Silent operation- Legacy/ Quiet operation- Speedster
- Live color fading from one color to another with no intermediate colors
- The Profile will exhibit no interference with Source Four gobos, irises, or gobo rotators
- Operates on four DMX channels: Cyan, Magenta, Yellow, and xG. (CMY and douser for the “DM” dimmer model)
- The SeaChanger Tungsten Wash has manual zoom optics from 20 to 70 degrees of angle.
- Wash has an adapter to accept Barn Doors and Top Hats
- The Wash uses a Fresnel lens for soft edge projection.



**SeaChanger Tungsten
Color Gamut**

Chapter 2

Setup and Configuration

Unpacking the Products

Unpack your SeaChanger products and verify that they are undamaged. If there is no damage, continue with the rest of the setup procedure (see [SeaChanger Tungsten Setup](#)).

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. Please call for a Return Material Authorization (RMA) number prior to return.

SeaChanger cannot accept any goods shipped without an RMA number (see [Error! Reference source not found.](#)[Error! Reference source not found.](#)

Package Contents

The SeaChanger Tungsten Color Engine ships with the following items:

- Safety cable
- User manual found on-line at <http://seachangeronline.com/technical/>

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, Stage Pin or Twist Lock plugs.
 - Barn Door/Top Hat adapter ring - Attach a 7.5" barn door or top hat to screen the light from the audience or scenery.
-

SeaChanger Tungsten Setup Overview

- a) Installing the proper power cord cap
- b) Attaching to on ETC Source Four
- c) Fixture orientation
- d) Beam adjustments
- e) Determining DMX Base addresses
- f) Setting the DMX start channels.

a) Installing a Power Cord Cap

Your SeaChanger Tungsten 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 Tungsten cannot make specific recommendations for the power cord cap. Contact a local authority for the type of power cord cap needed.

The SeaChanger Tungsten has a universal power supply 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

WARNING

- The SeaChanger Tungsten is Class 1 equipment. This equipment must be connected to an earth ground.
- The SeaChanger Tungsten is suitable for indoor use only.
- If the power cord becomes damaged, it must be replaced by the manufacturer or a qualified person in order to avoid a hazard.
- Maximum total color- changer cable length per SeaChanger Tungsten should not exceed 600 ft. (182.9 m).

ALERTE

- Le SeaChanger est de catégorie 1 de l'équipement. Cet équipement doit être connecté à une prise de terre.
- Le profil de tungstène SeaChanger est adapté pour une utilisation en intérieur uniquement.
- Si le cordon d'alimentation est endommagé, il doit être remplacé par le fabricant ou une personne qualifiée afin d'éviter un danger.
- Couleur maximale totale par la longueur du câble changeur SeaChanger ne devrait pas dépasser 600 pieds (182,9 m).

b) Mounting the SeaChanger Tungsten on a Source Four

The SeaChanger Tungsten requires no tools to install. It fits between the lamp and the lens module of the Source Four Ellipsoidal fixture. Perform this procedure *before* you connect the fixture to power.

WARNING

- **INTENSE HEAT** AVOID CONTACT BY PERSONS AND MATERIALS.
 - USE ONLY AN ETC SOURCE FOUR REFLECTOR HOUSING FITTED WITH LAMPS NOT EXCEEDING 750 WATTS MAXIMUM.
- ### ALERTE
- CHALEUR INTENSE. ÉVITER LE CONTACT PAR DES PERSONNES ET DES MATÉRIAUX. PAS POUR UN USAGE RESIDENTIEL.
 - UTILISER UNIQUEMENT BOÎTIER DE RÉFLECTEUR DE LA ETC SOURCE FOUR ÉQUIPÉS DE LAMPES NE DÉPASSANT PAS 750 WATTS MAXIMUM.
-

Installing Tungsten Profile in ETC Source 4

To install a SeaChanger Tungsten Profile Color Engine in a Source Four ellipsoidal fixture,

1. Remove the Source Four from the yoke assembly, setting aside the screws to use in Step 2.
2. Using the same screws, attach the SeaChanger Tungsten Profile as shown in the figure below. Adjust the SeaChanger Tungsten Profile to the desired orientation.
3. Remove the front barrel assembly of the Source Four ellipsoidal fixture by loosening the thumbscrew and the Philips set screw located above and beneath the lens barrel. Rotate the barrel assembly until it releases from the mounting tabs located in the rear housing assembly.
4. Insert the SeaChanger Tungsten Profile into the Source Four rear housing assembly by aligning the mounting tabs into the rear-locking ring of the SeaChanger Tungsten Profile. You must rotate the rear housing until the Source Four mounting tabs are captured in the SeaChanger Tungsten Profile locking ring channels. Tighten the thumbscrew and Philips set screw to lock the module onto the Source Four fixture.
5. Insert the front barrel assembly onto the front locking ring of the SeaChanger Tungsten Profile, engaging the barrel assembly into the locking ring channels.
6. Adjust the front barrel assembly to the desired orientation and tighten the thumbscrew and Philips set screw to lock the front barrel assembly to the SeaChanger Tungsten Profile.
7. Mount the unit using safety cable at the mounting location.

Attaching Tungsten Wash to Source Four reflector housing

1. Remove the Source Four from the yoke assembly, setting aside the yoke bolts, washers and Friction handle.
2. Using the same screws, attach the Yoke with washers and bolts from step 1 to the SeaChanger Tungsten Wash as shown in the figure below. Replace the friction handle and adjust the yoke to the desired orientation.
3. Remove the rear reflector housing assembly from the Source Four ellipsoidal fixture by loosening the thumbscrew and the Philips set screw
4. Rotate the barrel assembly until it releases from the mounting tabs located in the rear housing assembly.

5. Insert the Source Four rear housing assembly to the Seachanger Wash fixture by aligning the mounting tabs into the rear-locking ring of the SeaChanger Tungsten Wash. Rotate the rear housing until the Source Four mounting tabs are captured in the SeaChanger Tungsten Wash locking ring channels. Tighten the thumbscrew and Philips set screw to lock the module onto the Source Four fixture.

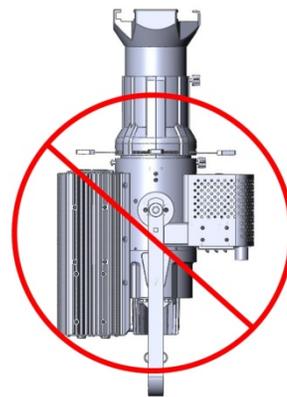
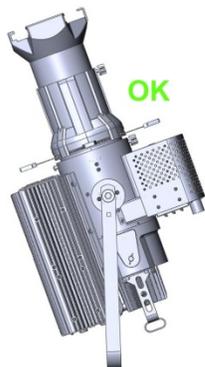
c) Fixture Orientation

The installed SeaChanger Tungsten can be oriented in either the “in-yoke” or “below-yoke” configurations as shown below:



WARNING

If you are using SeaChanger and Wash with the 11 inch or the Seachanger 16 inch extended yoke accessory, you must position the SeaChanger Profile or Wash at no greater angle than 70 degrees to vertical when the front barrel is pointing upward. This prevents the build-up of excessive lamp heat that can affect SeaChanger operation.



d) Optimizing Beam Angle

SeaChanger Tungsten Profile : For optimum performance from the Source Four front end barrel: when you need a soft edge, always move the lens tube out (away from the lamp housing) from the focus point, not towards; To sharpen the focus move one beam shutter into the beam and move barrel back and forth to achieve a sharp focus.

SeaChanger Tungsten Wash:

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 70 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, retighten the knob to set the adjustment.

e) Determining a Valid DMX Base Address for Seachanger Profile and Wash

The DMX base address (start channel) identifies each fixture on a link for the DMX controller. There are 512 available channels on each DMX link. These 512 channels are divided among *all* the devices on a particular link. 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 must not overlap any other device's channel range on the link. When two devices on the same DMX link have overlapping channel ranges, one or both devices will be disabled or behave erratically.

Remember the following 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 link without physically being the second fixture on the link.
- 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 link does not need to be assigned.
- The channel range required for a fixture differs depending on the fixture type. The SeaChanger Tungsten Profile uses a DMX block of 4 contiguous channels.

f) Setting the Base DMX Address

The SeaChanger Tungsten Profile and Wash are four channel DMX devices, 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. Channel 1 is assigned to this base address, and Channels 2 through 4 are assigned the next three DMX addresses.

Chapter 3

Operation

Overview

- a) General operation
- b) Power and DMX Connection
- c) Display and Control Buttons
- d) DMX Signal Indicators
- e) Display Blanking
- f) USITT DMX 512 A Manufacturing ID
- g) DMX Control
- h) Reset from Console
- i) Keypad Control
- j) RDM Control
- k) Demo Mode

a) General Operation

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

b) Power and DMX Connections

The SeaChanger has a self-contained universal AC/DC power supply, permitting connection to single-phase power sources with a voltage range of 100 – 250 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.

c) Display and Control Buttons

The SeaChanger 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.

d) DMX Signal Indicator

The SeaChanger 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.



e) Display Blanking

The SeaChanger display will blank the digits after a short 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.

f) USITT DMX512-A Manufacturer ID

All SeaChanger Tungsten Profile and Wash DMX512 addressable fixtures have an ESTA registered Manufacturer's ID of ASCII "SC" (decimal 83 & 67, or 53h 43h in hex).

See http://www.esta.org/tsp/working_groups/CP/mfctrlIDs.php for more information.

g) DMX Control

When connected to a suitable DMX controller, the SeaChanger can be operated via four DMX channels. The channels are assigned as in Table 1 below:

Table 1 – SeaChanger Tungsten Profile and Wash DMX Channel Map

Channel	Name	Parameter	Percent Range	DMX Range	Hex Range	Reset Default Percent Value
1	Cyan	Color Saturation	0 – 100%	0 – 255	0 – FF	0% Full clear
2	Magenta	Color Saturation	0 – 100%	0 – 255	0 – FF	0% Full clear
3	Yellow	Color Saturation	0 – 100%	0 – 255	0 – FF	0% Full clear
4	xGRB (Model SEA-XG)	Color Saturation	0 – 100%	0 – 255	0 – FF	0% Full clear
	Optional Douser (Model SEA-DM)	Brightness	0 – 100%	0 – 255	0 – FF	0% Full Dark

h) Reset from DMX Console

When connected to a suitable DMX controller, the SeaChanger 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 Tungsten Profile and Wash Reset Procedure

Channel	Name	Dwell (+3 sec) (% / DMX / hex)	Snap (% / DMX / hex)	Reset Default Percent Value
1	Cyan	100% / 255 / FF	0% / 0 / 0	0% Full clear
2	Magenta	100% / 255 / FF	0% / 0 / 0	0% Full clear
3	Yellow	100% / 255 / FF	0% / 0 / 0	0% Full clear
4	xGRB <small>(Model SEA-XG)</small>	0% / 0 / 0	0% / 0 / 0	0% Full clear
	Optional Douser <small>(Model SEA-DM)</small>	0% / 0 / 0	0% / 0 / 0	0% Full Dark

i) Keypad Control

The SeaChanger 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.

j) RDM Control

The SeaChanger is RDM (Remote Device Management) compliant to [ANSI E1.20-2006](#), "Entertainment Technology--Remote Device Management over USITT DMX512". RDM allows the SeaChanger base DMX address to be remotely set, and the operating mode or fixture settings to be changed. Available functions are listed in Table 3a for the SeaChanger xG and in Table 3b for the SeaChanger DM (optional patterned aluminum douser wheel).

Table 3a – SeaChanger Tungsten xG (xGRB Filter) Keypad / RDM Control Functions

Keypad / RDM Input	Function	Type
001 - 509	Set Fixture Base Address	Modal
700	Unassigned	-
701	Display Orientation Normal	Action
702	Display Orientation Inverted	Action
800	Start Demo Mode	Modal
900	All Out (Clear)	Modal
901	Cyan Full	Modal
902	Magenta Full	Modal
903	Yellow Full	Modal
904	All In (Full Dim)	Modal
905	Red (M + Y + xGRB) Full	Modal
906	Green (xGRB) Full	Modal
907	Roscolux #82 Surprise Blue	Modal
908	Roscolux #03 Dark Bastard Amber	Modal
909	Roscolux #158 Deep Orange	Modal
910	Roscolux #45 Rose	Modal
911	Roscolux #60 No Color Blue	Modal
912	Roscolux #51 Surprise Pink	Modal
913	Roscolux #94 Kelly Green	Modal
914	Roscolux #08 Pale Gold	Modal
915	L-341 Plum	Modal
916	L-162 Bastard Amber	Modal
917	L-113 Magenta	Modal
918	L-103 Straw	Modal
919	L-124 Dark Green	Modal
920	L-166 Pale Red	Modal
921	L-004 Medium Bastard Amber	Modal
922	Roscolux #310 Daffodil	Modal
923	Roscolux #46 Magenta	Modal
924	Roscolux #99 Chocolate	Modal
925	Roscolux #62 Booster Blue	Modal
990	Reset All Home Position	Action
991	Reset Cyan Home Position	Action
992	Reset Magenta Home Position	Action
993	Reset Yellow Home Position	Action
994	Reset xGRB Home Position	Action
<p>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.</p>		

Table 3b – SeaChanger Tungsten DM (Optional Douser) Keypad / RDM Control Functions

Keypad / RDM Input	Function	Type
001 - 509	Set Fixture Base Address	Modal
700	Unassigned	-
701	Display Orientation Normal	Action
702	Display Orientation Inverted	Action
800	Start Demo Mode	Modal
900	All Out (Clear)	Modal
901	Cyan Full	Modal
902	Magenta Full	Modal
903	Yellow Full	Modal
904	All In (Full Dim)	Modal
905	L-079 Just Blue	Modal
906	L-110 Middle Rose	Modal
907	L-104 Deep Amber	Modal
908	L-105 Orange	Modal
909	L-164 Flame Red	Modal
910	L-322 Soft Green	Modal
911	Roscolux #60 No Color Blue	Modal
912	Roscolux #51 Surprise Pink	Modal
913	Roscolux #21 Golden Amber	Modal
914	Roscolux #82 Surprise Blue	Modal
915	Roscolux #04 Medium Bastard Amber	Modal
916	L-142 Pale Violet	Modal
917	Roscolux #02 Bastard Amber	Modal
918	Roscolux #46 Magenta	Modal
919	Roscolux #59 Indigo	Modal
920	L-136 Pale Lavender	Modal
921	L-035 Light Pink	Modal
922	L-158 Deep Orange	Modal
923	L-248 Half Minus Green	Modal
924	Roscolux #05 Rose Tint	Modal
925	L-162 Bastard Amber	Modal
990	Reset All Home Position	Action
991	Reset Cyan Home Position	Action
992	Reset Magenta Home Position	Action
993	Reset Yellow Home Position	Action
994	Reset Douser Home Position	Action
<p>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.</p>		

k) Demo Mode

The SeaChanger Tungsten 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 4a for the SeaChanger Tungsten Profile xG or as in Table 4b for the SeaChanger Tungsten Profile DM (optional patterned aluminum douser wheel) below, with a four second dwell time at each color. Custom demo color tables are available at the time of order; please contact SeaChanger Tungsten Profile for more information.

Table 4a – SeaChanger Tungsten xG (xGRB Filter) Demo Sequence

Sequence Number	Function	RDM / Keypad Equivalent
1	Cyan Full	901
2	Magenta Full	902
3	Yellow Full	903
4	Red (M + Y + xGRB)	905
5	Extreme Green (xGRB)	906
6	Roscolux #82 Surprise Blue	907
7	Roscolux #03 Dark Bastard Amber	908
8	Roscolux #158 Deep Orange	909
9	Roscolux #45 Rose	910
10	Roscolux #60 No Color Blue	911
11	Roscolux #51 Surprise Pink	912
12	Roscolux #94 Kelly Green	913
13	Roscolux #08 Pale Gold	914
14	L-341 Plum	915
15	L-162 Bastard Amber	916
16	L-113 Magenta	917
17	L-103 Straw	918
18	L-124 Dark Green	919
19	L-166 Pale Red	920
20	L-004 Medium Bastard Amber	921
21	Roscolux #310 Daffodil	922
22	Roscolux #46 Magenta	923
23	Roscolux #99 Chocolate	924
24	Roscolux #62 Booster Blue	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.

Table 4b – SeaChanger Tungsten DM (Optional Douser) Demo Sequence

Sequence Number	Function	RDM / Keypad Equivalent
1	Cyan Full	901
2	Magenta Full	902
3	Yellow Full	903
4	L-079 Just Blue	905
5	L-110 Middle Rose	906
6	L-104 Deep Amber	907
7	L-105 Orange	908
8	L-164 Flame Red	909
9	L-322 Soft Green	910
10	Roscolux #60 No Color Blue	911
11	Roscolux #51 Surprise Pink	912
12	Roscolux #21 Golden Amber	913
13	Roscolux #82 Surprise Blue	914
14	Roscolux #04 Medium Bastard Amber	915
15	L-142 Pale Violet	916
16	Roscolux #02 Bastard Amber	917
17	Roscolux #46 Magenta	918
18	Roscolux #59 Indigo	919
19	L-136 Pale Lavender	920
20	L-035 Light Pink	921
21	L-158 Deep Orange	922
22	L-248 Half Minus Green	923
23	Roscolux #05 Rose Tint	924
24	L-162 Bastard Amber	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.		

Appendix A

SeaChanger Tungsten Specifications

Specification	Value
Mechanical	
Height (inches)	Profile 11.5 in/ Wash 11.5 in
Width (inches)	Profile 7.0in / Wash 7.0 in
Length (inches)	Profile 29.5 in / Wash 21.8 in without ETC Source Four Profile with ETC Source Four (26°) 30 in /Wash 22 in
Shipping Weight	Profile 20 lbs / Wash 23 lbs
Actual Product Weight	Profile 16 lbs / Wash 19 lbs
Electrical	Non-dimming circuit 100-250 VAC, 50/60 Hz (auto-sensing) 1.25 amps typical @ 115 VAC, 0.80 amps typical @ 230 VAC Onboard internal 24VDC, 60W switching mode power supply Fuse: T3.15 A/250 V internal fuse in line and neutral. Fuse is integral to power supply and not user-replaceable.
Environmental	
Maximum Ambient Temperature	30 °C (86 °F)
Minimum Ambient Temperature	0 °C (32 °F)
Maximum Exterior Surface Temperature*	200 °C (392 °F)
Cooling	Integral 4.7 CFM speed controlled fan- Speedster only

Lamp	
Type*	575W or 750W HPL incandescent lamp; can be used with Source 4 HID (high intensity discharge) fixtures
Control, Cabling and Terminator	
SeaChanger Tungsten Data Link	8 bit 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 Tungsten 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	Channel 1 - Cyan: 0-95% saturation /SD 100%saturation Channel 2 - Magenta: 0-95% saturation /SD 100%saturation Channel 3 - Yellow: 0-95% saturation /SD 100%saturation Channel 4 - standard – xG(RGB) filter: 0-99% saturation optional - patterned Al douser: 0-99% dimming custom – dichroic filters Dichroic patterned CMY and xG(RGB) coatings on optical glass substrates, BBAR coated, in-band transmission > 98% Patterned aluminum douser (SEA-DM model) with dielectric enhancement, on optical glass substrate
Speed	Speedster 0.3 sec /Legacy 1.0 sec-clear to full saturation Onboard drive electronics with adaptive speed response
Accessory Compatibility	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 yoke from mounting points; Bayonet mount to fixture -- Adaptable to Source Four tungsten or HID fixtures
Maintenance	Easy color engine removal for periodic cleaning
Safety	Safety cable ring, 3' safety cable included
* For more information, see the documentation for the ETC™ Source Four fixture.	

RoHS-Restriction of Hazardous Substances

SeaChanger Plasma Profile and Wash and SeaChanger Plasma Profile and Wash products comply with RoHS and do not contain any of the six banned substances: lead, mercury, cadmium, and 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

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.

Appendix B

Maintenance

Cleaning the SeaChanger Tungsten Dichroic

WARNINGS

Disconnect power cord connector from power source to isolate SeaChanger from line voltages before servicing.

Equipment surfaces may reach temperatures up to 67° C (153° F). Allow the fixture to cool before handling.

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



The filters can be easily accessed by removing (4) Philips screws and pulling the protective cage away from the color engine as shown below:

Clean the dichroic glass filters using a mild glass cleaner (containing no ammonia) and a soft, lint-free cotton cloth or swab.

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.

Spare Parts

AEL451-03	Sensor Cable
AEL451-06A	Main Board-Legacy
AEL451-06	Main Board-Speedster
AEL451-07	DMX Board
AEL451-08A	Display Board-Legacy
AEL451-08	Display Board-Speedster
AEL451-09	DMX Cable
AEL451-10A	Display Cable-Legacy
AEL451-10	Display Cable-Speedster
AEL451-11A	DC Power Cable-Legacy
AEL451-11	DC Power Cable-Speedster
EL451-20	Power Supply
EL451-20A	XP Power supply for Speedster
SA451-08	Sensor Board Assembly
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
SA533-04A	Plasma power supply
SA533-05A	Plasma Lamp Assembly
AEL 533-09	RF Generator with Wires

Fixture Part Numbers

Part Number	Description
TUNGSTEN	
Tungsten - Legacy - Silent no fans	
A451-01-03	Profile XG - Tungsten CYM w/ XG Filter Wheel
A451-01-01	Profile XG - Tungsten CYM w/ Dimmer Wheel
A451-01-04	Profile Studio Dichroic - Tungsten CYM w/ XG Whl
A451-01-05	Profile Studio Dichroic - Tungsten CYM w/ Dimmer Whl
A474-01-03	Wash - Tungsten CYM w/ XG Filter Whl
A474-01-01	Wash - Tungsten CYM w/ Dimmer Wheel
Tungsten - Speedster - .5 sec color change	
A451-02-03	Profile XG - Tungsten CYM w/ XG Filter Wheel
A451-02-01	Profile XG - Tungsten CYM w/ Dimmer Wheel
A451-02-04	Profile Studio Dichroic - Tungsten CYM w/ XG Whl
A451-02-05	Profile Studio Dichroic - Tungsten CYM w/ Dimmer Whl
A474-02-03	Wash - Tungsten CYM w/ XG Filter Whl
A474-02-01	Wash - Tungsten CYM w/ Dimmer Wheel
Tungsten - Special	
A451-01-06	Profile - Tungsten LDS
A451-02-08	Carnival Profile Tungsten/SD/DbI Cl/Hi Temp
HMI	
HMI - Speedster - .5 sec color change	
A451-533	Profile HMI CYM and Dimmer
A474-533	Wash HMI CYM and Dimmer
A451-533-OD	Outdoor Profile HMI CYM & Dimmer IP 54
A474-533-OD	Outdoor Wash HMI CYM & Dimmer IP 54
HMI - Special	
PPA451-100	Inno Kit-Back end HMI
PPA451-300	Inno Kit-Back end HMI-3000 Hour Lamp
A451-533	Seachanger Profile HMI only no light source-Speedster
A451-533-10-SB	Seachanger wash HMI only no light source-Legacy
PLASMA	
Plasma - Legacy - Silent no fans	
A533-01-01	Plasma Profile CYM-DM
A533-01-10	Plasma Wash CYM-DM
A533-500-01	CTE - Plasma Profile White Light Fixture
A533-600-01	CTE - Plasma Profile CTO/Dimmer
A533-510	CTE - Plasma Wash White Light Fixture
A533-610	CTE - Plasma Wash CTO/Dimmer
A638-01	Outdoor Plasma Profile CYM-DM
A638-10	Outdoor Plasma Wash CYM-DM
Plasma - Speedster - .5 sec color change	
A533-02-01	Plasma Profile CYM-DM
A533-02-10	Plasma Wash CYM-DM
A533-500-02	CTE - Plasma Profile White Light Fixture
A533-600-02	CTE - Plasma Profile CTO/Dimmer
A533-510-02	CTE - Plasma Wash White Light Fixture
A533-610-02	CTE - Plasma Wash CTO/Dimmer
A638-02-01	Outdoor Plasma Profile CYM-DM
A638-02-10	Outdoor Plasma Wash CYM-DM

Index

accessories, 4	A		M
audience, iii			
	B		O
beam optimization 7		operation-general,9	
soft edge, 7		operation overview, 9	
	C	orientation of fixture,7	
CE Declaration,18			P
cleaning dichroics, 19		performance	
color engine, 1		optimizing, 6	
connections ,9		power cord cap	
contents, 4		installing, 9	
	D	product documentation, iii	
demo mode,14,15		product modification, i	
display Blanking,10		purpose, iii	
DMX			R
base addressing,8		repair, i	
connection,9		returning product, i	
control,10		RDM control, 11,12,13	
determining, 8		RoHS Compliance, 18	
reset,10			S
signal indicator, 9		safety information, i	
start channels		SeaChanger, 5	
document	E	Seachangerfixture numbers,21	
documentation, iii		setup, 5	
		soft edge beam, 7	
ETC Component,2		Source Four, 2,6,7	
	F	spare parts,20	
features, 3		specifications, 16,17	
freight, ii		speedster,2	
	I	summary, iii	
installing			U
power cord cap, 4		unpacking, 4	
	K	upgrades, iii	
keypad control,11		USITT DMX512 Manuf ID,10	
	L		W
Legacy Model,2		warning, i,5,6,7,19	
		warranty, i	
		freight, ii	
		wheel sets,2	