Filter- and Cuvette-Holder with
Attenuator and TTL-Shutter
FHSA-TTL

Installation and Operation Manual
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Offices:

Ocean Optics, Inc.
830 Douglas Ave., Dunedin, FL, USA 34698
Phone 727.733.2447
Fax 727.733.3962
8 a.m.– 6 p.m. (Mon – Fri) ET

Ocean Optics GmbH
Maybachstraße 11, D73760, Ostfildern, Germany
Phone +49 (0)711 34 16 96-0
Fax +49 (0)711 34 16 96-85

E-mail: Info@OceanOptics.com (General sales inquiries)
Sales@OceanOptics.eu (GmbH sales inquiries)
OrderDesk@OceanOptics.eu (Questions about orders)
TechSupport@OceanOptics.eu (Technical support)
# Table of Contents

About This Manual ............................................................................................................. iii
  Document Purpose and Intended Audience ................................................................. iii
  What’s New in this Document ....................................................................................... iii
  Document Summary ...................................................................................................... iii
  Product-Related Documentation .................................................................................. iii
  Upgrades ....................................................................................................................... iii

## Chapter 1: Setup.............................................................................................................. 1

  Overview ...................................................................................................................... 1
  Unpacking the FHSA-TTL Unit .................................................................................... 1
  Contents ....................................................................................................................... 2
  Setup ............................................................................................................................ 2
  Adjusting Optical Power ............................................................................................. 3
  Converting from Filter Holder to Cuvette Holder ....................................................... 4
  Inserting the Filter into the Filter Holder ................................................................. 6
  Inserting a Cuvette into the Cuvette Holder ............................................................. 7

## Chapter 2: FHSA-TTL Specifications ............................................................................. 9

  Operating Environment ............................................................................................... 9
  Specifications .............................................................................................................. 10
  Pinout Information ..................................................................................................... 10

Index ............................................................................................................................. 11
About This Manual

Document Purpose and Intended Audience

This document provides you with an installation section to get your system up and running.

What’s New in this Document

This version of the Filter- and Cuvette-Holder with Attenuator and TTL-Shutter Installation and Operation Manual updates the product photo, contact information, and package contents.

Document Summary

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 1: Setup</td>
<td>Contains package contents and instructions for unpacking, setting up and adjusting the optical power of your FODS unit.</td>
</tr>
<tr>
<td>Chapter 2: FHSA-TTL Specifications</td>
<td>Contains operating specifications and pinout information.</td>
</tr>
</tbody>
</table>

Product-Related Documentation

You can access documentation for Ocean Optics products by visiting our website at http://www.oceanoptics.com. Select Technical → Operating Instructions, then choose the appropriate document from the available drop-down lists. Or, use the Search by Model Number field at the bottom of the web page.

You can also access operating instructions for Ocean Optics products on the Software and Technical Resources CD included with the system.

Engineering-level documentation is located on our website at Technical → Engineering Docs.

Upgrades

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

The following sections provide instructions on unpacking, setting up and adjusting your Filter- and Cuvette-Holder with Attenuator and TTL-Shutter (FHSA-TTL).

Unpacking the FHSA-TTL Unit

▶ Procedure

1. Unpack your new equipment carefully. Dropping this instrument can cause permanent damage.

2. Inspect the outside of the instrument and make sure that there is no damage. Do not use the instrument if damage is present. Contact your dealer for repair or replacement information, if necessary.

3. Use this instrument in a clean laboratory environment.
Contents

Your package should contain the following:

- FHSA-TTL device
- One IC-DB15-2 interface cable for shutter operation
- Power supply 12 Vdc @ max. 1500 mA
- Allen wrench key (SW1.3, SW2.0 and SW2.5)
- Cuvette holder
- 74-UV-mount for cuvette holder

Setup

► Procedure

To set up your FHSA-TTL device,

1. Plug the power supply into the main connection.

2. Plug the connector of the power supply into the 12 VDC Input connector of the FHSA-TTL device.

3. Remove the SMA connectors protection caps.

4. Attach the SMA connectors on your fibers to the SMA plugs.

5. Plug in the IC-DB-15-2 cable into the TTL connector for automatic TTL-operation (cable included).

6. Set the operating mode using the shutter switch.
Shutter Switch Positions

<table>
<thead>
<tr>
<th>Switch Position</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPEN</td>
<td>Shutter open</td>
</tr>
<tr>
<td>CLOSE</td>
<td>Shutter closed</td>
</tr>
<tr>
<td>TTL</td>
<td>Operation by external TTL signal:</td>
</tr>
<tr>
<td></td>
<td>• HIGH = Open</td>
</tr>
<tr>
<td></td>
<td>• Low = Closed</td>
</tr>
</tbody>
</table>

Adjusting Optical Power

The FHSA-TTL is adjusted at the factory for maximum power. If lower optical power is required, you can adjust it by turning the attenuation screw clockwise to decrease the power down to 0%.

► Procedure

Follow the steps below to adjust optical power:

1. Move the shutter switch to the OPEN position to open the shutter.
2. Connect a fiber optic spectrometer or an optical power meter to one side of the FHSA-TTL.
3. Loosen the locking screw with a hexagonal socket screw key (SW 2.0 mm).
4. Turn the attenuation screw clockwise to decrease optical power.
5. Tighten the locking screw when the optical power has been properly adjusted.
Converting from Filter Holder to Cuvette Holder

The FHSA-TTL device can be used as either a filter holder or a cuvette holder. To convert the unit from filter holder to cuvette holder, use the following procedure.

► Procedure

1. Turn the filter thumbwheel all the way to the end.

2. Loosen the 74-UV-mount screw and unscrew it out along with the collimating lens.
3. Unscrew the SMA Collimating assembly (74-UV, 74-UV-mount, filter thumbwheel, and filterholder) for the filterholder and remove it.

4. Screw in the 74-UV into the 74-UV-mount for the cuvette holder.

5. Screw the 74-UV-mount for the cuvette holder into the FHSA-TTL.
6. Dismount the filter holder by removing the screws.

7. Replace the filter holder with the cuvette holder.

8. Attach the cuvette holder to the unit with one of the screws.

Inserting the Filter into the Filter Holder

Filter Holder – Top View

► Procedure

1. Insert the filter into the filter slit.

2. Adjust the filter thumbwheel as desired.
Inserting a Cuvette into the Cuvette Holder

► Procedure

1. Insert the cuvette into the cuvette holder.

2. Adjust the cuvette using the plastic-tipped screws.
Chapter 2

FHSA-TTL Specifications

This section provides information on the environmental and physical specifications of the FHSA-TTL. It also provides pinouts for the 15-pin connector.

**Note**

Modification of specifications and design to improve device performance are possible without notice.

### Operating Environment

The following table provides information on optimizing the operating environment of your FHSA-TTL unit.

<table>
<thead>
<tr>
<th>Operating Environment</th>
<th>The FHSA-TTL Unit . . .</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moisture</td>
<td>Is designed for operation in dry rooms only.</td>
</tr>
<tr>
<td>Ventilation</td>
<td>Should be situated so that its location or position does not interfere with proper ventilation.</td>
</tr>
<tr>
<td>Heat</td>
<td>Should be situated away from any device that emits excessive heat.</td>
</tr>
<tr>
<td>Object and Liquid Entry</td>
<td>Should be positioned so that objects do not fall on top of the unit. Additionally, ensure that no liquids are spilled into the enclosure through openings.</td>
</tr>
<tr>
<td>Power Sources</td>
<td>Should be connected to an approved power supply, such as the Mikropack 12 VDC 1250mA analog regulated power supply (PS-12V/1.25A)</td>
</tr>
</tbody>
</table>
Specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spectral Range</td>
<td>UV-VIS</td>
</tr>
<tr>
<td>Shutter Input</td>
<td>TTL maximum 5 Hz</td>
</tr>
<tr>
<td>Power Requirements</td>
<td>12 VDC</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>Maximum 100 mA</td>
</tr>
<tr>
<td>Weight</td>
<td>Approximately 600 g</td>
</tr>
<tr>
<td>Size</td>
<td>140 x 50 x 50 mm</td>
</tr>
<tr>
<td>Filter Holder</td>
<td>Round or rectangular, width up to 7 mm</td>
</tr>
<tr>
<td>Cuvette Holder</td>
<td>Standard (10 x 10 mm)</td>
</tr>
</tbody>
</table>

Pinout Information

The following figure contains pinout information for the TTL connector:

![Pinout Diagram]
Index

C
conversion, 4
cuvette
   insert, 7
cuvette holder
   convert, 4
   insert cuvette, 7

D
document
   audience, iii
   purpose, iii
   summary, iii

F
filter
   insert, 6
filter holder
   convert, 4
   insert filter, 6

O
operating environment, 9
optical power
   adjusting, 3

P
package contents, 2
pinouts, 10
product-related documentation, iii

S
setup, 1, 2
specifications, 9

U
unpacking procedure, 1
upgrades, iii

W
what's new, iii