LUNA

Setup Guide | Luna LWA 7600

Many regions prohibit the disposal of WEEE (Waste Electrical and Electronic Equipment) in the normal waste stream, to comply with the Restriction of Hazardous Substances (RoHS) released into the environment. Please contact your local waste authority for instructions on proper recycling of the electronic product(s) described in this *User Guide*.

Luna LWA 7600:
***LWA 7600* Setup Guide**

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1 Safety

The advisory words **Danger**, **Warning** and **Caution** used in this manual identify the level of hazard that may be encountered by the user.

- **DANGER** means if the danger is not avoided, it will cause death or serious injury.
- **WARNING** means if the warning is not heeded, it can cause death or serious injury.
- **CAUTION** means if the precaution is not taken, it may cause minor or moderate injury.

 Warning

The protection provided by the equipment may be impaired if the equipment is used in a manner not specified by the manufacturer, resulting in serious injury or death.

The power cord is the main electrical disconnect for this equipment. If it is necessary to ensure no power to the unit, remove the power cord.

The use of controls, adjustments, performance, or procedures other than those specified herein may result in hazardous laser radiation exposure and one or more safety protections may be impaired or rendered ineffective.

 Attention

La protection fournie par l'équipement peut être compromise si l'équipement est utilisé d'une manière non spécifiée par le fabricant, entraînant des blessures graves ou la mort.

Le cordon d'alimentation est le principal disjoncteur électrique de cet équipement. S'il est nécessaire de ne pas mettre l'appareil hors tension, retirez le cordon d'alimentation.

L'utilisation de commandes, d'ajustements, de performances ou de procédures autres que celles spécifiées ici peut entraîner une exposition dangereuse au rayonnement laser et une ou plusieurs protections de sécurité peuvent être altérées ou rendues inefficaces.

2 System Overview

The Luna Lightwave Analyzer (LWA) 7600 provides users with the ability to make high resolution insertion loss and return loss measurements of optical devices in both reflection and transmission. These measurements can be viewed in both the delay and spectral domains for improved visibility in characterizing and screening optical components and networks.

2.1 LWA 7600 Hardware Configuration

The flexibility of the reflection or transmission measurement modes allows you to design and execute tests that perfectly fit your needs. First, it can be set up to measure an optical device in reflection, meaning the measurement data will consist of all of the light that was reflected from the device under test and back to the instrument. Secondly, it can be set up to measure in transmission, meaning that the measurement data will consist of all of the light that passes through the device under test and then back into the instrument.

3 What you get with the LWA 7600

The LWA 7600 measurement instrument is shipped with all supporting hardware, software, documentation, and cables necessary for setup and testing. Read and follow all assembly and startup instructions before attempting to operate the LWA 7600.

The following components are shipped with each LWA 7600:

LWA 7600 Instrument

Power cord for the LWA 7600

Optical fiber connector cleaner

Optical fiber bulkhead cleaners

Dedicated instrument controller (Laptop)

Laptop Power adapter

USB 3.1 Type C to Type C Cable

If any components are missing or damaged, contact Luna toll free at 866-586-2682 or by e-mail at support@lunainc.com.

3.1 A Closer Look at the LWA 7600

3.1.1 Front Panel

The front panel of the LWA 7600 contains both optical and electrical connections.

Two LED system status indicators (shown in green box).

Power Lit while the system is powered on (press to turn on/off)
Reset Indicates instrument status

White	Blinking	Instrument Starting
White	Solid	Instrument Idle
Orange	Blinking	Laser is Starting
Orange	Solid	Laser Started
Blue	Blinking	System Arming
Blue	Solid	System Collecting Measurements
Purple	Blinking	Embedded SW Update in Progress
Red	Solid	System Error

Figure 3-3-1 LWA 7600 Power and Reset Buttons, shown in green box.

USB and Ethernet Connections (shown in blue box).

Figure 3-2 – LWA 7600 USB and Ethernet Connections, shown in blue box.

Two optical connectors are located on the front panel of the system (shown in red box. The Left port is for Reflection/Transmission out; the Right port is for Transmission return). In order to keep the optical connections clean, it is important to keep dust covers attached while no fiber of a DUT is attached to the instrument. Refer to the Maintenance and Cleaning section of this guide for instructions.

Figure 3-3 LWA 7600 Optical Connections, shown in red box (Left port: Reflection/Transmission out; Right port: Transmission return).

3.1.2 **Rear Panel**

The rear panel of the system contains the Power Entry Module

Figure 3-4 LWA 7600 Rear Panel Power Entry.

3.1.3 **Air Vents**

Air vents are located on both sides of the LWA 7600 (shown in red). These vents should remain unobstructed whenever the system is powered on.

Figure 3-5 LWA 7600 Air Vents.

4 Assembly

1. Remove all the LWA 7600 components from the packaging and verify that the components are undamaged.
2. Place the unit on a stable surface capable of supporting the entire weight of the unit.
3. Confirm that airflow into and out of the vents at the side and rear of the unit is not obstructed.
4. Clean the optical connectors of the device to be tested using the provided optical connector cleaner (see Maintenance and Cleaning section of this guide for cleaning instructions).
5. Unpack and set up the instrument controller (laptop) according to the manufacturer's instructions.
6. Connect the LWA 7600 to the controller using the supplied ***USB 3.1 Gen 1*** cable.
7. Attach the power cords to the controller and LWA 7600.

⚠ Attention: Luna requires the use of surge protected and grounded outlets with the LWA 7600.

8. Turn on the LWA 7600 and the instrument controller (laptop).

   Note: The LWA 7600 can be restarted without restarting the laptop.
9. Log into the laptop using the following credentials:

   User Name: odisi

   Password: odisi

Attention: In order to keep the optical connections clean, it is important to keep connector dust covers attached while no optical fiber/device is connected to LWA 7600. It is also extremely important to clean connectors before attaching optical fibers to the LWA 7600 for testing. Failure to do so may result in noisy data or damaged equipment. Refer to the Maintenance and Cleaning section of the Setup Guide for cleaning instructions.

5 Software Setup

This section provides a short introduction to the main displays in the LWA 7600 software. For complete instructions on how to start and configure the application, refer to the LWA 7600 User's Guide, which can be accessed from the Help menu on the LWA 7600 software.

5.1 Reflection Mode

When the LWA 7600 software is started, the system will initialize and then launch the hardware in reflection mode. When the "Measure" button is pressed, a measurement will be made and will be displayed to the screen.

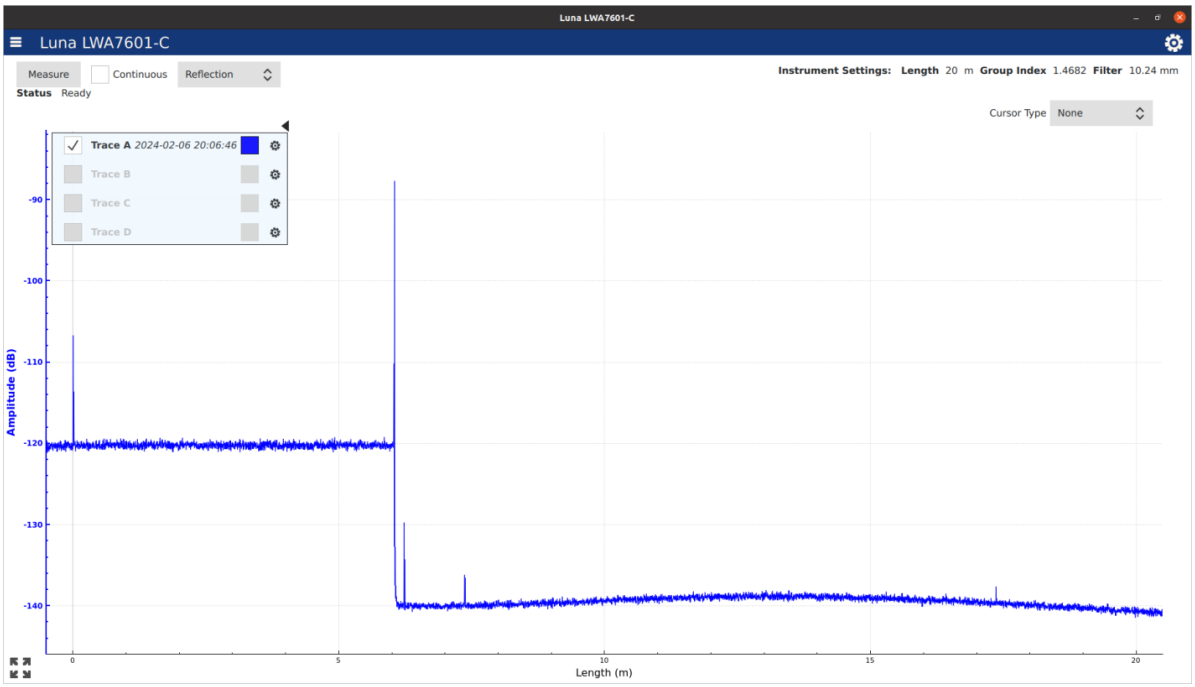

Figure 5-1 Reflection measurement of a fiber, shown in Delay Plot.

It is possible to view this data in different ways using a combination of three plot types by selecting or deselecting the optional views in the Options page which can be accessed by clicking the gear icon on the upper right corner of the screen.

- The main "Delay Plot" shows the reflected light as a function of optical time of flight (generally shown in meters).
- The optional "Spectral Plot", shown on the lower part the screen, allows you to see the spectral amplitude response from a subset of the delay data.
- The optional "Events" table, shown on the right part of the screen, displays insertion loss and return loss measurements for any fiber events detected within the delay data.

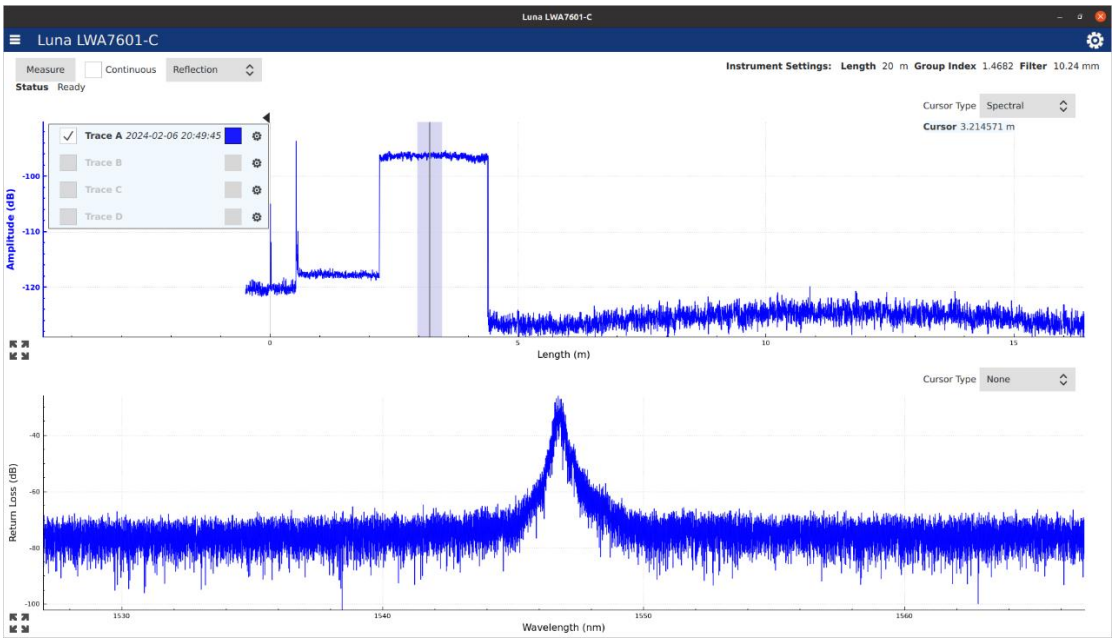

Figure 5-2 Spectral amplitude response plot (lower screen) showing the spectral amplitude of a section of FBG.

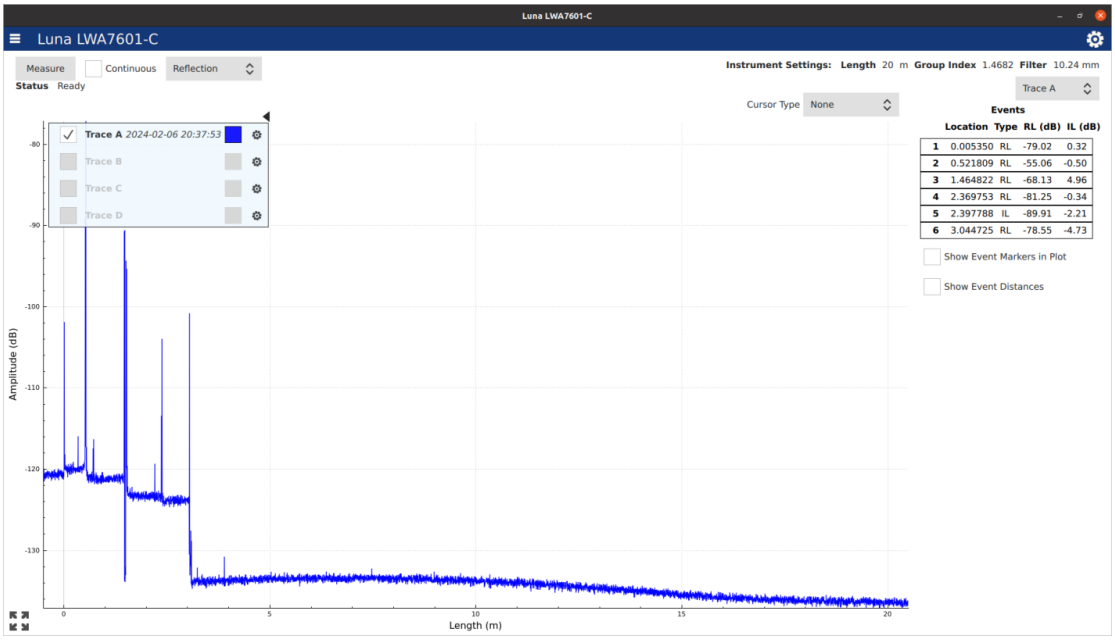

Figure 5-3 Events table (right side) showing found events and their associated insertion and return losses.

Note: It is important to disconnect any devices from the transmission port on the LWA 7600 when using the reflection measurement mode.

5.2 Transmission Mode

The LWA 7600 can be swapped to transmission mode using the measurement type option menu located in the upper left corner of the screen. The system will configure itself for transmission measurements and then you will be able to use the same three plot types to interpret the transmission data.

While in transmission mode, the delay plot shows the amount of transmitted light as a function of time of flight delay (shown in meters). For any single optical path, there should be one clear peak, located at the path length of the device being measured. The spectral plot and event plots work in the same manner as in when in the reflection mode.

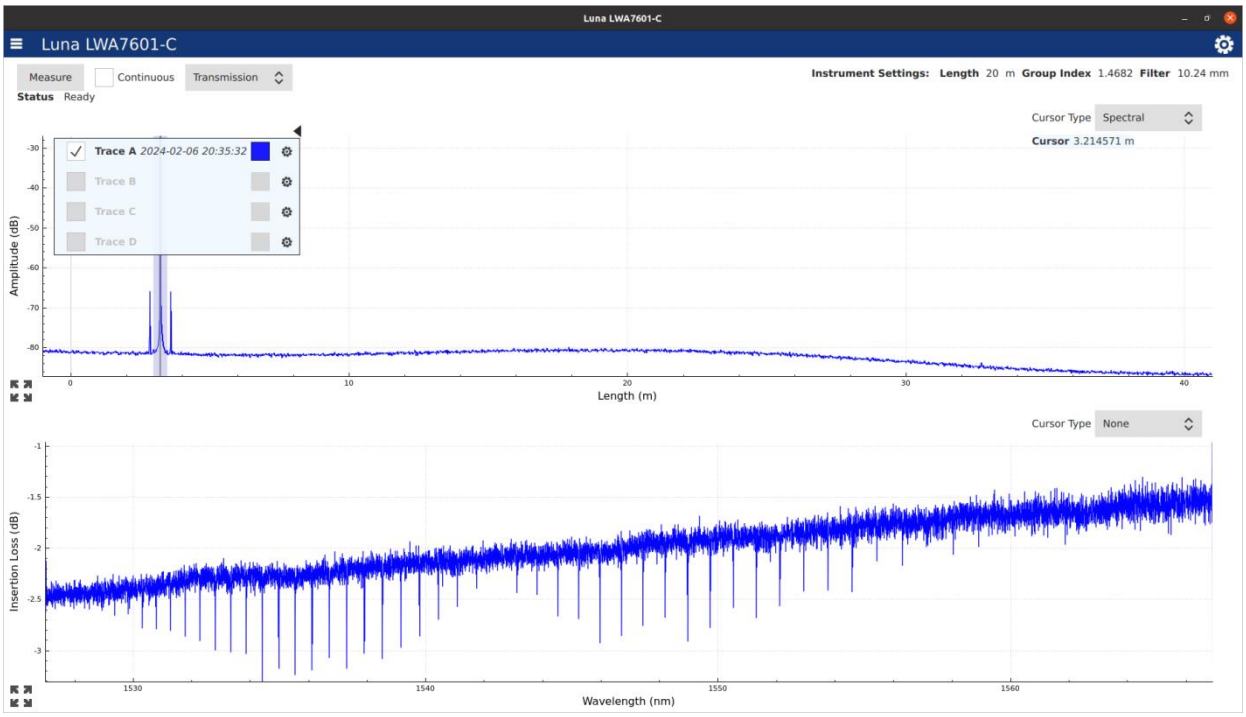

Figure 5-4 Transmission measurement of an optical device containing a gas absorption cell.

6 Maintenance and Cleaning

6.1 Optical Connector Cleaning Materials

It is extremely important to clean connectors before attaching optical fibers to the LWA 7600 for testing. Failure to do so may result in noisy data or damaged equipment. Optical fiber connectors on cables should be cleaned before every connection to the LWA 7600. The bulkhead connectors on the front panel should be cleaned frequently, roughly once every 25 connections.

The cleaning supplies used with the LWA 7600 are:

- CLETOP connector cleaner – P/N F1-6270 (included with LWA 7600)
- CLETOP connector cleaner replacement reel – P/N F1-6271 (replacement part for the above cleaner, not included)
- CLETOP 2.5mm Stick (5/package) – P/N F10400 (included with LWA 7600)
- AFL One-Click® Cleaner SC, ST, FC 2.5mm Ferrule (500+ cleans) – P/N 85001MZ (alternative cleaner, not included)

These supplies can be ordered from:

FIS Incorporated
161 Clear Road
Oriskany, NY 13424
Web: www.fiberinstrumentsales.com
E-mail: info@fiberinstrumentsales.com

Important: Use only cleaners approved for use with fiber optic bulkheads and fiber connectors. Do not use any type of cleaning fluid, cotton swabs, or cloths. Using unapproved cleaning tools or fluids may result in erroneous or noisy data or may damage the fibers and LWA 7600 components.

The optical fiber connector cleaner recommended for cleaning all LWA 7600 optical connectors is the Cletop Connector Cleaner (Type A with Blue Tape):

Figure 6-1 Connector Cleaner

Cletop sticks are used to clean the LWA 7600 bulkhead connectors:

Figure 6-2 Cletop 2.5mm Sticks

Alternatively, One-Click® Cleaner can also be used to clean the LWA 7600 optical connector and bulkhead connectors:

Figure 6-3 One-Click® Cleaner SC, ST, FC 2.5mm Ferrule Cleaner

6.2 Cleaning Optical Connectors

1. Expose the cleaning tape by pushing down the cover release lever.

The cleaner tape has two cleaning strips:

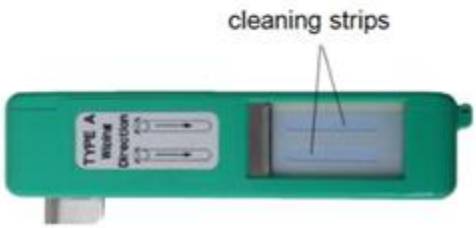

Figure 6-4 Exposing the Cleaning Tape

2. Hold the fiber connector perpendicular to the cleaner tape surface.
3. Swipe the tip of the connector down the first cleaning strip, then swipe on the second strip.

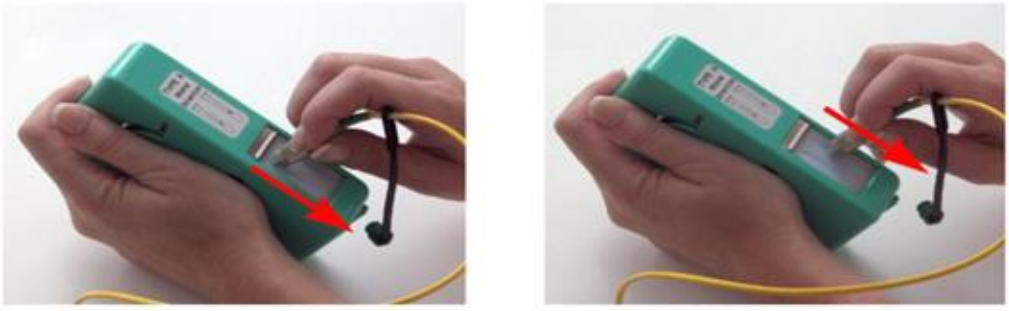

Figure 6-5 Cleaning the Connector on the Tape

4. Close the cleaning tape cover before swiping another connector. This advances the cleaning tape.

6.3 Cleaning Optical Bulkhead Connections Using a Cletop Stick

Important: The bulkhead should be cleaned approximately every 25 connections. Dirty connections can lead to connector damage and poor system performance.

1. Turn off the LWA 7600.
2. Make sure that no devices are connected to the LWA 7600
3. Open the protective cover on the front panel.
4. Gently insert one of the supplied cleaning sticks, as shown below.
5. Twist the stick through two full revolutions in one direction and then remove.

Do not rotate stick in a back-and-forth motion; one direction only. Sticks should be discarded after a single use.

Figure 6-6 Cleaning Optical Bulkhead Connections using a Cletop Stick

6.4 Cleaning using optional One-Click® Cleaner

6. Configure the fiber cleaner based on the connector type being cleaned. For a receptacle/bulkhead connection, the entire cap should be removed (see figure 6-3). For a male fiber ferule (only the dust cap should be opened).
7. Center the cleaning probe over the opening or ferule.
8. Press the body of the cleaning tool towards the connector until it clicks. The probe end will compress as the fiber end face is cleaned.

Figure 6-7 Fiber cleaner configurations. Dust capped (left), male fiber ferule (middle), bulkhead/receptacle (right)

6.5 Cleaning the Case

1. Clean the case by wiping it with a soft cloth dampened with water or a mild, non-abrasive cleaning fluid such as window cleaner.

Warning ⚠

Do not spray any fluid directly on case surfaces. It may seep into the interior of the case and damage components.

6.6 Replacing Fuses

The fuse drawer is located on the power module of the instrument on the back panel.

Warning ⚠

To avoid the risk of serious injury or death, ensure that the power cord is disconnected from the instrument when checking or replacing fuses.

1. Disconnect the instrument power cord.
2. Place the blade of a screwdriver or similar tool in the slot at the bottom of the fuse drawer, then gently pry the drawer out of the power module.

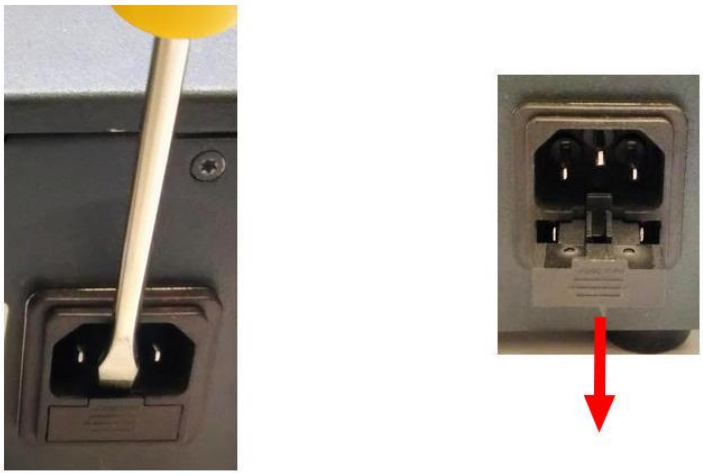

Figure 6-8 Remove Fuse Drawer

3. Replace fuses with Bussmann AGC-2 type 2A @ 250VAC 1 ¼" x ¼" fast acting (FA) fuses, rated FS01008.

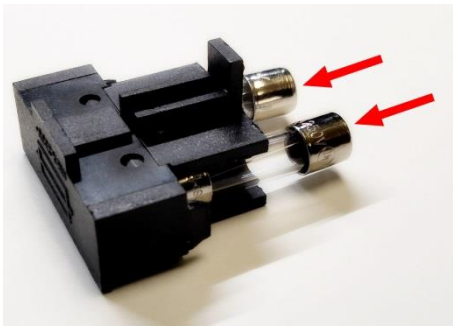

Figure 6-9 Insert New Fuses

4. Push the drawer back into the power module until it snaps into place.
5. Reconnect the power cord.

7 Product Support Contact Information

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