# Instructions for the UltrAA Lamp Control Module

**Part number:** 0010056900

Safety class 1 (IEC 1010-1)

Installation category II

The UltrAA lamp control module powers UltrAA lamps placed in lamp turret positions 1 and 2 of compatible SpectrAA instruments.

Newer SpectrAA instruments are fitted with a connector in the back panel of the instrument to facilitate connection of the UltrAA lamp control module. All other instruments require modification by an Agilent service representative. Unless the modification was specified at the time of ordering the instrument, this modification will be completed on-site by an Agilent service representative.

Version 1.4 (or later) of the SpectrAA OS/2 software is required to operate the UltrAA lamps.

UltrAA lamps may be used as conventional hollow cathode lamps in any position in the turret, and are installed, removed and aligned in the same way as normal hollow cathode lamps.

**NOTE** Photron Superlamps will act as normal hollow cathode lamps only. They cannot be powered with the UltrAA lamp control module.

## Unpacking

**CAUTION** The control module weighs over 7 kg. Use correct lifting procedures when handling it.

The control module is supplied with three power cables, four spare 2 amp time lag 5 x 20 mm glass fuses, four spare 4 amp time lag 5 x 20 mm glass fuses, four spare 1 amp fast action 5 x 20 mm glass fuses and four spare 2 amp fast-action 5 x 20 mm glass fuses.

Store the spare fuses, and select the appropriate power cord from those supplied.

Remove the control module from the packaging. The control module can be stored on top of the GTA power supply near the instrument.

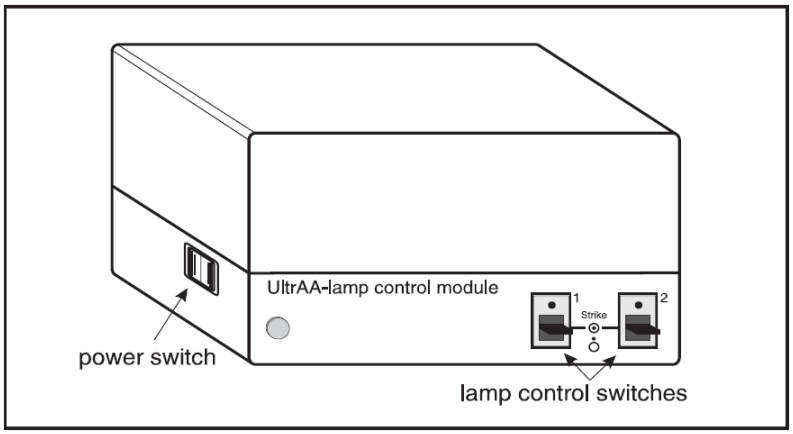


**Figure 1.** The UltrAA lamp control module — front view

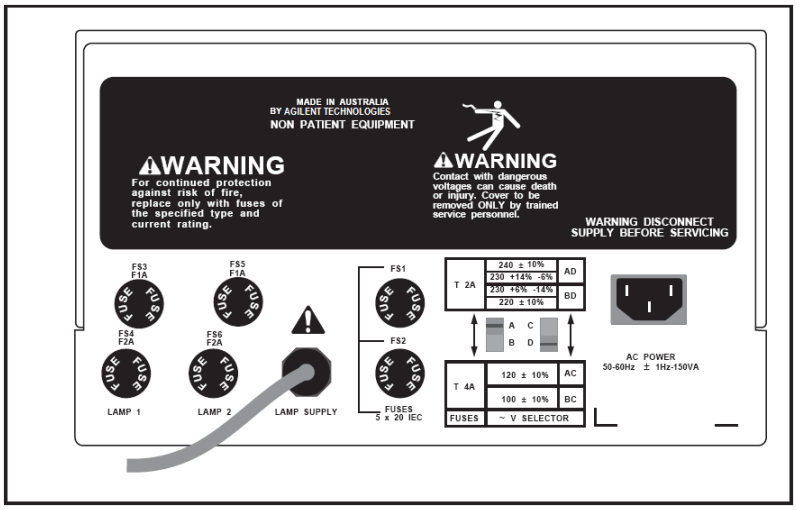


**Figure 2.** The back of the UltrAA lamp control module

## Installation

Set the correct power supply setting on the back of the control module and ensure that fuses FS1 and FS2 are the correct values. The fuse types are marked near the fuses, for example, fuse 4 (FS4) is a fast acting 2A fuse, and fuses 1 and 2 (FS1 and FS2) are either 2 or 4 amp time delay fuses.

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**WARNING**

**Fire Hazard**

**Application of an incorrect supply voltage can create a fire hazard. Never connect the accessory to the mains power supply until voltage selector switches and fuses have been correctly set.**

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Refer to the tables above and below the selector switches and set the switches as required. For example, if the accessory is connected to 240 volts, the table indicates that the switch setting should be ‘AD’. This means the left switch should be up (position ‘A’) and the right switch should be down (position ‘D’), and fuses 1 and 2 should both be 2 amp time delay fuses.

**WARNING**

**Electrical Shock, Fire and Hot Surface Hazard**

**To prevent reduced safety protection or unwanted fusing, always ensure that the marking on the fuse cap matches the text shown adjacent to the fuse holder voltage selector switches.**

The fuse characteristics are stamped on one end of the fuse. The first character describes whether the fuse is a quick acting (F) or time lag (T). The characters preceding the slash describe the current rating of the fuse, and the characters after the slash describe the voltage rating. For example, “T2A/250V” is a time lag 2 amp 250 volt fuse.

You must check the fuses before connecting the power to the accessory for the first time.

**To check the fuses:**

1. Undo the fuse cap by pressing the cap and turning it counterclockwise.
2. Pull the cap out carefully; the fuse should be held in the fuse-holder in the fuse cap.
3. Check that the fuses are the correct type and are not damaged. If necessary, replace the fuse in the holder.
4. Replace the fuse by pushing the cap in, then turning the cap clockwise.

To install the UltrAA lamp control module, place the control module near the instrument, and connect the 7-socket plug from the control module to the 7-pin connector from the instrument.

**WARNING**

**Electrical Shock Hazard**

**The lamps operate at dangerous voltages. To avoid death or electric shock, never touch the pins in the 7-pin connectors.**

**CAUTION** To avoid damaging the module, always switch off the lamps before connecting or disconnecting the 7-pin plug.

The 7-pin plugs are keyed, and will connect only when the keyways align. Hold the plugs so the keys align, push the plugs together and then rotate the metal collar clockwise until it locks into position.

When the control module is connected to the instrument, connect the control module to the mains power supply and turn on the mains power.

Refer to your instrument operation manual for details on how to install Hollow Cathode Lamps.

## Operation

**WARNING**

**Hot Surface Hazard**

**UltrAA lamps become hot in use. To avoid burns from an UltrAA lamp, turn it off and allow it to cool for a few minutes before touching it.**

To use an UltrAA lamp in boosted mode, switch the control power module on, then 'strike' the UltrAA lamp.

Instrument parameters are set in the normal way.

To strike the UltrAA lamp, move the lever of the appropriate switch ('1' or '2' on the front of the control module) to 'On' and wait three seconds – in some cases this alone will start the boost discharge. If necessary, move the lever to 'Strike' and then release it – the lever will return to the 'On' position.

**NOTE** The software will not strike the UltrAA lamp. To use an UltrAA lamp in boosted mode, you must strike the lamp manually before it is used (for example, before an unattended autorun) otherwise it will act as a normal hollow cathode lamp

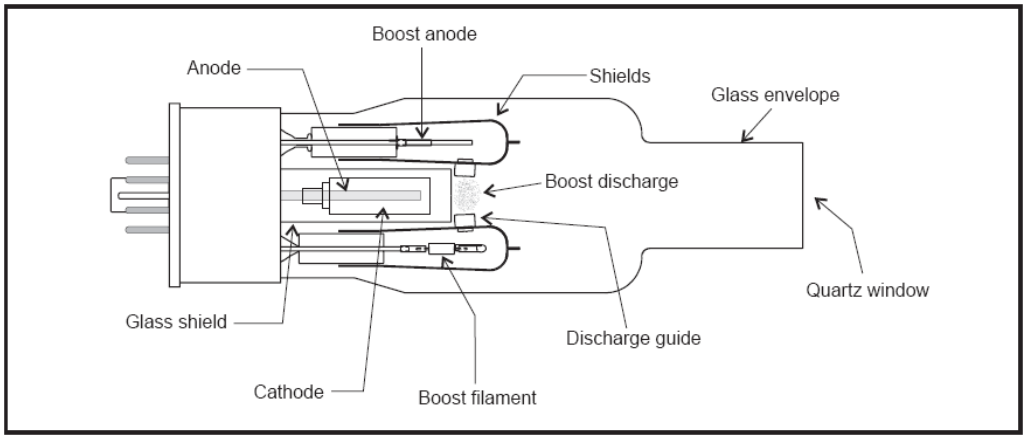


**Figure 3.** Diagram of an UltrAA lamp showing the boost discharge

To turn off the boost discharge, move the appropriate switch lever on the control module to 'Off'.

**NOTE** You must manually turn off the boost discharge. The software automatically turns off the normal lamp discharge.

# Troubleshooting

## Boost Does Not Strike

If the boost discharge does not start, try another UltrAA lamp in the same position. If the other lamp works correctly, you may need a new lamp. If the second lamp does not work, you should check the fuses. If the fuses are intact, then you should seek help from your Agilent field service engineer.

## 'Lamp Not Recognized' Message

Some older SpectrAA instruments do not recognize UltrAA lamps (SpectrAA 250 Plus and earlier).

You should check that the lamp position and lamp current specified in the method are correct, and ignore the error message.

# Specifications

## Electrical Supply

Independent lamp and boost supply circuits with fixed boost current supply.

Voltage 100, 120, 220 or 240 VAC ±10%

230 +14% / -6% (using 240 V tapping)

230 +6% / -14% (using 220 V tapping)

Frequency 50 or 60 Hz ±1 Hz

Power rating 150 VA maximum

Electrical output (typical)

Boost run current 150 mA +10% / -5%

Boost run voltage 40 VDC ±10 VDC

Boost strike voltage 400 VDC ±60 VDC

Filament voltage 1.2 VDC ±10% (lamp off)

12 VDC ±10% (prior lamp strike)

5 VDC ±10% (lamp run)

## Performance

### Drift

< 8% change in intensity per hour (after 25 minutes warm up)

### Characteristic Concentration (Furnace)

As < 0.5 µg/L

Pb < 0.5 µg/L

Se < 1.0 µg/L

### Noise

Approximately 30% less than that for a standard single-element Agilent hollow cathode lamp when tested on the same instrument under the same conditions.

### Signal Intensity (EHT)

Not less than a 10% reduction in the photomultiplier voltage (EHT) when compared to a standard single-element Agilent hollow cathode lamp tested on the same instrument under the same conditions. The following EHT voltages are desirable target values:

As < 380 V

Pb < 335 V

Se < 360 V

### Lamp Lifetime

Not less than 5000 mA hours at recommended operating lamp current.

Typical lifetime exceeds 8000 mA hours.

## Environmental Conditions

### Operating

Altitude 0 to 853 m (0 to 2800 ft.)

Temperature 10 to 35 °C (50 to 95 °F)

Humidity 8 to 80% (non-condensing)

Altitude 853 to 2133 m (2800 to 7000 ft.)

Temperature 10 to 25 °C (50 to 77 °F)

Humidity 8 to 80% (non-condensing)

### Storage

Altitude 0 to 2133 m (0 to 7000 ft.)

Temperature 5 to 45 °C (40 to 115 °F)

Humidity 20 to 80% (non-condensing)

### Weights and Dimensions

Net weight 7.5 kg (16.5 lb)

Shipping weight 11 kg (24 lb)

Height 145 mm (5.7 in.)

Depth 355 mm (14 in.)

Width 240 mm (9.5 in.)

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This information is subject to change without notice.

8510133200

Part Number: 8510133200

Edition 11/10
Issue 3
Printed in Australia



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