

Axon Preinstallation

Reference

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1.0 PURPOSE

The purpose of this document is to act as a generic reference for the preinstallation requirements for the Axon laser system, and a Quick Start Guide on delivery.

This document is not intended to act as a replacement for the Axon Operator's Manual. Users are expected to refer to the Operator's Manual before using the laser.



2.0 SCOPE

- This information is correct for the Axon laser system as of March 2020.
- The intended audience is Axon customers prior to delivery and during installation of their laser system. Any further questions should be directed to the local Coherent Representative.

3.0 SITE PREPARATION

The Axon laser system is designed such that unpacking and installation of the laser equipment is expected to be carried out by the customer. The customer should plan ahead for the installation, bearing in mind the following information.

3.1 Shipping Crate Dimensions

The system is delivered in a cardboard box per below.

Item	Dimensions (L x W x H), mm	Weight kg	Material
Axon laser head and power supply	700 x 550 x 400	26	CB

3.2 Storage

- After the equipment is delivered, the box should be protected from extremes of heat/cold/moisture during storage.
- If the storage area is very different in temperature/humidity from the intended lab location, it is advised that the equipment be allowed to thermalize in the lab environment overnight before connecting power.

3.3 Access

The customer should pre-visualize how the laser equipment will be moved to the lab location. The box is not suitable for a one-person lift.



NOTICE

Note that it is not recommended to carry the laser system up/down stairways. Access to higher/lower floors within a building should be via a lift (elevator) wherever possible.

3.4 Lab Requirements

3.4.1 General Environment

It is assumed that the customer will provide a suitable lab environment (see datasheet at [coherent.com](https://www.coherent.com)), an appropriate optical table for installation (see datasheet and Operator's Manual for component dimensions), and a standard PC.

3.4.2 Utilities

The system requires 1 x single-phase power outlets, 100-240 Vac auto-ranging, 50-60 Hz. Alternative fuses are shipped for 110-120 V and 220-240 V regions (see Operator's Manual).

3.4.3 Control PC

A customer-provided PC is required to run the system control software. Software installers are provided on our website at [coherent.com](https://www.coherent.com), and on the supplied USB memory device.

3.5 Location of Ancillary Equipment (Power Supply)

The customer should pre-visualize where the power supply unit will be located in the lab. The power supply/laser head are connected with a 7 m umbilical allowing flexibility in lab location.



NOTICE

Note that the head/PSU umbilical cannot be disconnected.

Remember that physical access to the keyswitch on the PSU is required on a regular basis.

3.6 Electrical Consumption

Typical values: 40 W (key=Standby), 75 W (key=Laser Enable)

3.7 System Mounting

For mounting options, check the Operator's Manual and/or consult your Coherent representative. It is expected that the head will be secured to a typical optical table or breadboard. Weights and dimensions are called out on the product datasheet and in the Operator's Manual. Approximate weights for guidance:

Head = ~5 kg

PSU = ~10 kg

Umbilical = ~5 kg

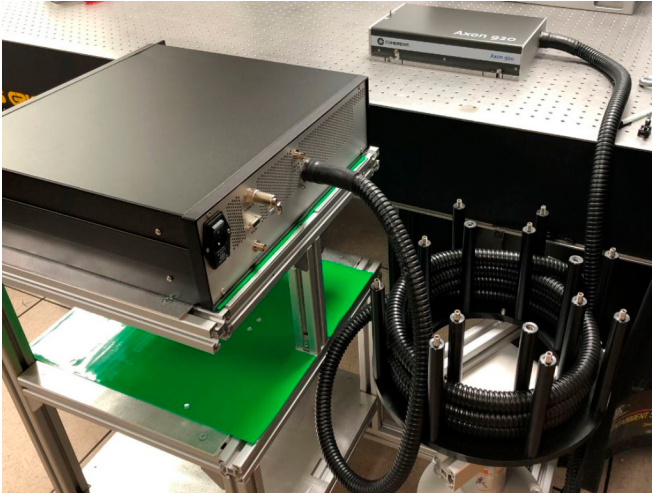
4.0 INSTALLATION

- The Axon laser system is designed to be customer-installable. Please consult the Operator's Manual before use, particularly Section 2 (Laser Safety).
- Please refer to the section on Packaging (section 11) before unpacking.



- Make sure that two persons are available when removing the system from the packing; one to take care of the head and umbilical, and the second to take care of the power supply. Attention is drawn to this point since the head is relatively light compared with the umbilical and power supply, and there is the potential for the head to be shifted around when the power supply is being moved.

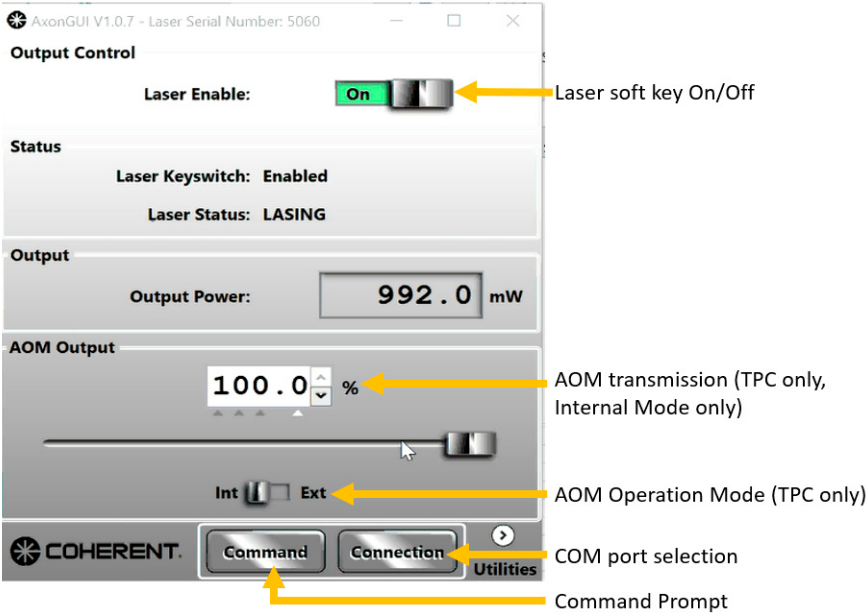
- Verify that the head is secure before removing the power supply from the packaging.



- It is recommended that the packaging is stored for potential future use.
- Verify fuse selection.
- Fit the external interlock defeat (supplied). For advice on external interlock circuits consult the Operator's Manual.
- Ensure that the laser output port is safely contained before switching on. Place the manual shutter in the closed position.
- Switch on mains power at the switch beside the power cord entry.
- Wait until the System Status LED has stopped flashing. The system is now ready to use.

5.0 AXON GRAPHICAL USER INTERFACE (GUI)

Although the system can be controlled from a user-created interface, or a terminal window, a GUI software installer is supplied with the system. The intuitive GUI gives basic functionality allowing the user to get started with the Axon system.



For a full explanation please refer to the Operator's Manual. It is anticipated the user will initially use the Axon GUI in order to get started, but may later decide to integrate the simple commands into their own interface.

6.0 PRE-COMPENSATION ADJUSTMENT

The following is offered as general advice in order to give users a reference for adjustment of the dispersion precompensation module built into the Axon laser head.

The precompensation is manually adjustable via a hex screw (2mm) on the side of the head. Although it is anticipated that the precomp will not be adjusted frequently, if regular access is expected then bear this in mind when deciding on mounting options.



The system is shipped with the precomp set for shortest pulse width (refer to product datasheet). To precompensate for positive dispersion in the customer beam delivery and experiment, the precomp adjustment adds negative dispersion to the pulse.



NOTICE

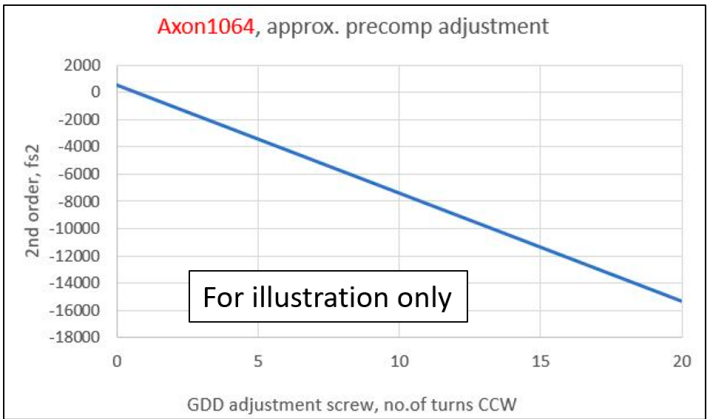
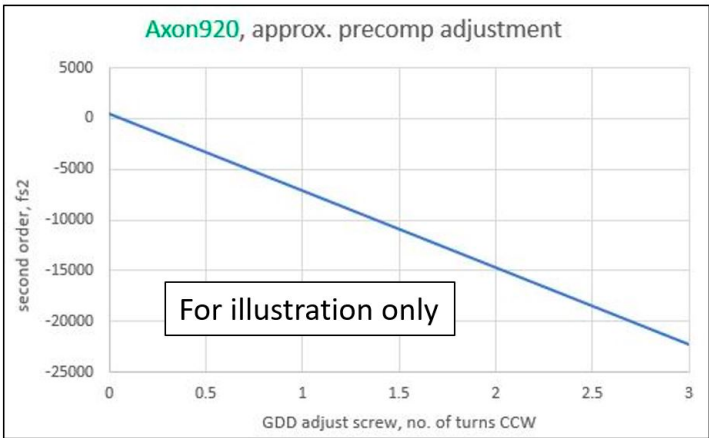
Note that the advice below is offered as a guide in order to assist customers quickly and easily set up their experiment - these are not specifications.



NOTICE

Note that adjustment scale on the x-axis of the graphs is defined as number of turns, CCW (Counter-Clock-wise), i.e. moving the adjuster outwards from the laser head.

Please also note the very different adjustment scales appropriate for the different Axon models - the Axon920 requires relatively few turns to make large changes to the precompensation, while the Axon1064 requires greater numbers of turns to impart a similar chirp to the pulse.



7.0 TOTAL POWER CONTROL (TPC)

The Axon products are offered in both standard and TPC versions. The TPC versions include an integrated Acousto-Optic Modulator (AOM). This feature enables user-controlled setting and modulation of the laser power. This capability would normally have to be provided by the user or third-party integrator, therefore having this fully integrated into the laser head, with beam quality characteristics specified after the modulation device, adds significant value for the user.

Utilizing the TPC function is straightforward; the user supplies an analog 0-5 V input (BNC connector on the rear of the Axon laser power supply), and the laser output follows the user input. Fast modulation (rise/fall < 1 s) and complex input waveforms are possible.

A set-up mode is also provided where the user can simply set the laser power transmission 0-100% through our intuitive GUI software, allowing for quick and easy installation and layout of external beam steering, for example.

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