Setting Up and Using Laser Alignment Fixtures

Special Instructions About the 8215/8225 Laser Fixtures

Caution!

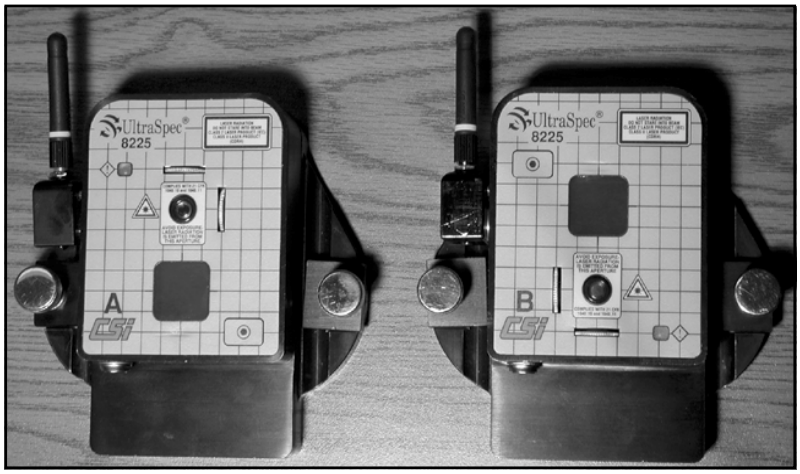
Prior to mounting the laser alignment fixtures on machine shafts, all switches operating the machines should be "locked out" (follow lockout procedures for your facility). After an alignment has been completed, the work area should be inspected to ensure that all equipment is clear of rotating shafts and couplings, prior to removal of the lockout protection.

Caution!

The 8215/8225 Laser Alignment Fixtures use a Class II (CDRH) laser or Class 2 (IEC) laser. This laser complies with 21 CFR 1040.10 and 1040.11 safety requirements with a power output < 1.0 mW (average) and a pulse repetition of 600 pulses/sec. The pulse duration is <110 microseconds. However, do not expose the human eye directly to the laser beam! Warnings are located on each sensor head.

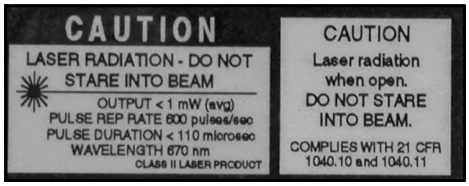
Caution!

Using the controls or adjustments in ways other than specified in this documentation may result in hazardous laser radiation exposure. Making the hardware, firmware, or software perform in ways other than specified in this documentation may result in hazardous laser radiation exposure.



Laser heads, front view

Laser heads, rear view



Laser radiation caution

Note

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of this device.

Note

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 a reasonable protection against harmful interference when the equipment is operated in a residential 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 his own expense.

Caution!

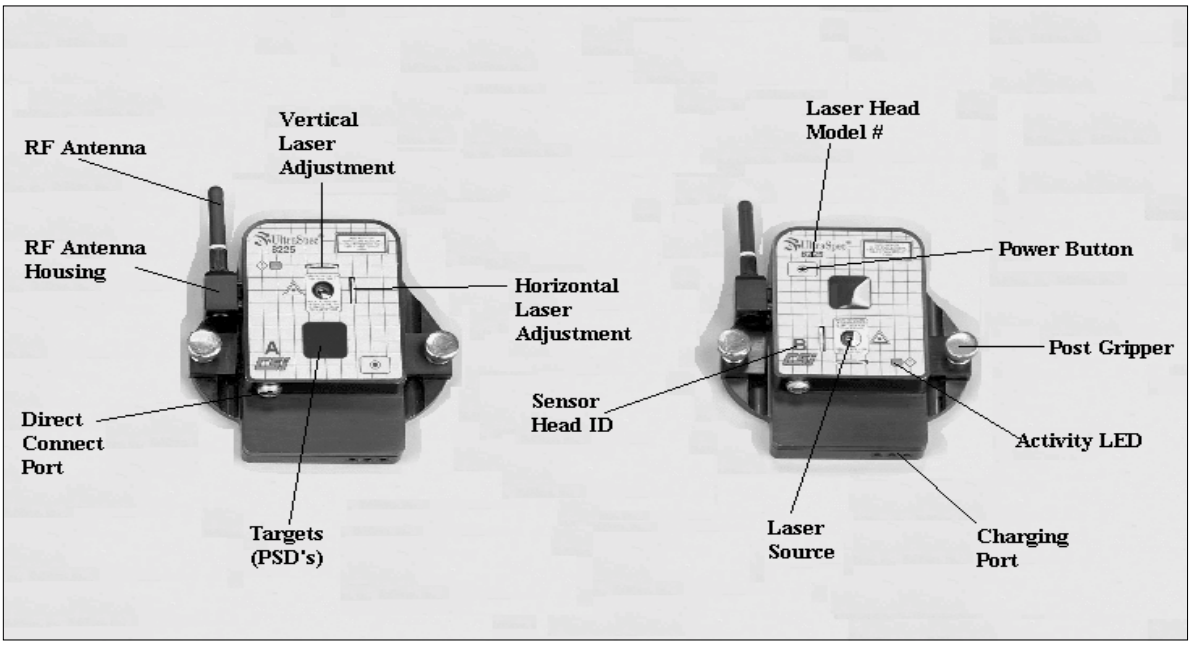
Changes or modifications not expressly approved by CSI could void the user's authority to operate the equipment.

Caution!

This device has been designed to operate solely with the antenna type provided, CSI part number 88200. An antenna having a higher gain is strictly prohibited per regulations of Industry Canada.

General Description

Sensor Head Description



The sensor head with the laser source on top is the “Master” head (known as head “A”). The other head is the “Slave” (known as head “B”). The model number is listed on the back of each head. They can be identified by the letter A or B on the front.

The difference between the Model 8215 sensor heads and the 8225 sensor heads are the target (PSD) size, laser distance, and the front overlay. The 8215 sensor head has a 10mm x 10mm PSD with a 30’ laser while the 8225 sensor head has a 20mm x 20mm PSD with a 100’ laser.

The Activity LED on the front panel can be red, yellow, or green. An explanation of their meaning is shown in the following table.

LED Status			Meaning	Required Action
Green	**Yellow**	**Red**		
X			Normal Operation - When the Laser Head systems are all functioning properly and the laser beam from the companion Laser Head is striking the PSD in the linear region. This is the desired state. The Laser Head is in the acceptable condition to perform an alignment.	No Action Required
X (flashing)			Sensor head in standby (sleep) mode - When the Laser Head sees no activity for five minutes, they automatically places themselves in Sleep Mode to conserve battery power. The color will be the one that was active, solid or flashing, before this state was entered. When this sleep mode is entered, the LED will be flashed off for 1.5 sec. and on for 0.5 sec.	Use analyzer to wake up when needed by initiating communication with the laser heads.
	X		Minor Error*	Refer to “Laser Head Status Screen” on page 3-8 for more information on the error and the required action.

LED Status			Meaning	Required Action
Green	Yellow	Red		
	X (flashing)		Low battery 1st warning (sensor head) - The Laser Head has the ability to monitor its own battery power. The battery power is checked periodically to determine if it is below the minimum acceptable power. When the battery power reaches 4.8 volts, the LED will be flashed off for 0.5 sec. and then flashed on for 0.5 sec. Data is accepted when the battery is this state.	Recharge sensor heads.
		X	Major Error*	Refer to "Laser Head Status Screen" on page 3-8 for more information on the error and the required action.
		X (flashing)	Low battery 2nd/final warning (sensor head) - The Laser Head has the ability to monitor its own battery power. The battery power is checked periodically to determine if it is below the minimum acceptable power. When the battery power reaches 4.2 volts, the LED will be flashed off for 0.5 sec. and then flashed on for 0.5 sec. Data is not accepted when the battery is this state.	Recharge sensor heads.

* If a minor error is present, the data being acquired may be marginal. The data quality will depend on the error. If a major error is present, then some kind of hardware or system problem exists. Therefore, the data being acquired is rejected.

LED Functionality Difference Due to Dual Pass mode

The functionality of the LED differs slightly from the states described in the above table when the Dual Pass mode of operation is selected. The difference lies in the LED state when the companion Laser Heads laser beam is on the PSD. In Dual Pass mode, when the laser beam is on or off of the PSD the LED will be a solid yellow, EVEN WHEN THE BEAM IS IN THE LINEAR PORTION OF THE PSD. The beam will then flash to green whenever a valid data point is acquired. This deviation is necessary to allow for the indication to the user that the Laser Heads are acquiring data as they are rotated past each other.

> ***Note***
>
> To determine the actual error, press the Options key, then Laser Head Status (on the UltraSpec analyzer). This will activate the Laser Heads Status screen (next graphic). If an error condition actually exists, its type will be shown in a popup window within 60 seconds. Refer to "Laser Head Status Screen" on page 3-8 for more information.

General Maintenance

Additional maintenance information is located in Chapter 10.

Care and Handling

To ensure satisfactory service from this system, follow these procedures:

- Keep the mounting base and chain mounting posts lightly oiled to prevent them from corroding.
- To maintain repeatability and accuracy, avoid dropping fixture items. Refer to the Customer Assistance section for repair, update, and calibration.
- Do not subject system items to large temperature swings.
- Do not engrave on the sensor heads.
- Keep all lens free of grease, dirt, oil, and other smudges.
- Clean the laser and target lens with a soft, lint-free cloth and standard lens cleaning solution (a field size cleaner container is available from CSI). Never use an organic solvent such as a thinner or benzine.
- Store sensor heads in protective drawstring bag when not in use.

Calibration

The Model 8215/8225 calibration should be checked every two years. Return the sensor head to CSI for a calibration check. All calibrations are NIST traceable.

Warning!

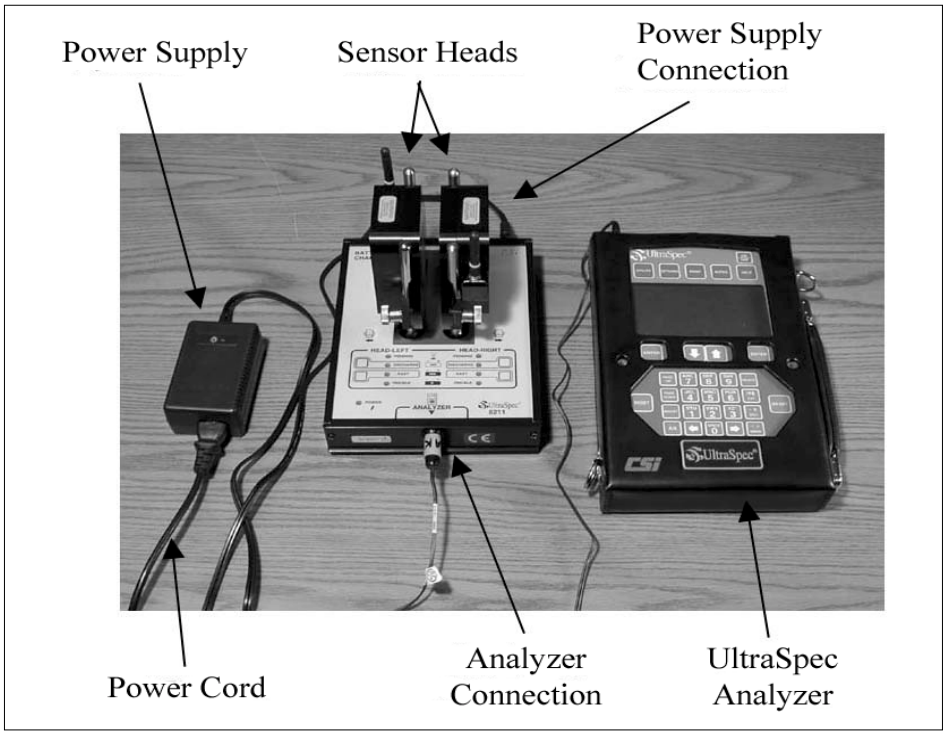
Do NOT remove the CSI Quality label on the back of the sensor head. This will VOID your warranty.

Battery Charging

Batteries may be charged with the Model 8211 or the Model 8212. The Model 8211 is a “smart, drop-in” charger that can provide a fast- or trickle-charge for the laser heads and analyzer. In fact, it can discharge the laser heads, if necessary. The Model 8212 is an “overnight” trickle-charger that can only trickle-charge laser heads and the analyzer.

Model 8211 Smart Charger

The Model 8211 provides all battery charging needs and comes with the system. It is a “smart, drop in” charger for the laser heads; it will also charge the analyzer when plugged into a cable. The following picture shows both of the laser heads *and* the UltraSpec analyzer being charged.



Charging the Sensor Heads and Analyzer with Model 8211 Charger

To set up the 8211, complete these steps:

1. ··· Plug the power cord into the power supply.
2. ··· Plug the power cord into an AC receptacle.
3. ··· Plug the power supply into the 8211 in the top end cap.

At that time, the beeper will sound indicating that power has been applied to the battery charger. As a test, all LEDs will illuminate for 1.5 seconds.

4. ··· Plug the analyzer charging cable into the bottom end cap.

The sensor heads and analyzer can now be charged either individually or, all at the same time.

> ***Warning!***
>
> **Do not plug the 8211 Power Supply directly into the UltraSpec analyzer. If you do, the equipment may be severely damaged.**

Charging the Sensor Heads with the Model 8211 Charger

Drop them over the posts so that the head faces outward as shown in "Charging the Sensor Heads and Analyzer with Model 8211 Charger" on page 4-9. Heads can be charged individually or together.

Indicator Light	Charging Status
Pending	Waiting for safe voltage and temperature
Discharge (steady)	Batteries discharging
Discharge (flashing	Discharge requested, waiting for safe voltage or temperature
Fast (steady)	Batteries in fast charge
Fast (flashing)	Fast charge requested, waiting for safe voltage or temperature
Trickle	Batteries in trickle charge, topping-off, or charge complete