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4.2. To Set Type of Laser Being Used

1. From main screen, press “laser” until the correct laser type or wavelength is displayed in the upper left corner of the display. (For PD10 type sensor, press “menu” then “go” until the correct laser type or wavelength is displayed).

4.3. Setting Startup Configuration

1. From the main energy screen, press “menu” and select “configure”. Press “go”.
2. Press “value” to choose “power” or “energy” for the desired startup screen.
3. With the arrow keys select “Laser” and with “value” select the default laser type you wish.
4. Now in a similar manner choose the maximum pulse length.

Warning:

Incorrect readings will result if pulse length is not set up correctly.

Note: Some sensors have only the long pulse setting for all pulse lengths. In that case N/A appears.

5. Now choose the default “Energy Range”. Now select “Average Over” and choose what period to average power over or “NONE”. When finished press “save” and “exit”. If you wish to save these values only until the instrument is turned off, exit without saving.

4.4. Energy or Average Power Measurement

Warning:

Do not exceed maximum sensor limits for power, energy, power density and energy density as listed in tables 6 and 7 section 11.2 of the main manual, Head Specifications. Otherwise, there is a risk of damaging the absorber.

With the pyroelectric sensor, you have been supplied with a test slide with the same coating as on your pyroelectric detector. You can also obtain this slide from your dealer. You should use this slide to test the damage threshold with your laser pulses. If the slide is damaged, then either enlarge your beam or lower the laser energy until damage is no longer seen.

4.5. To Choose Energy or Average Power Measurement

To go from the main energy measurement screen to power measurement, press “power”. To go from the main power measurement screen to energy measurement, press “energy”.

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LaserStar Quick Reference

LASERSTAR

Quick Reference

1 Getting Started

The LaserStar is equipped with “soft keys”. That is, the functions of the keys change as indicated by the legend above each key.

To connect sensor to the LaserStar meter:
Insert the 15 pin D type connector of the measuring sensor cable into the socket marked “Head Input” on the rear panel of the LaserStar meter. If you are using the multisensor version of the LaserStar and are using only one sensor, it is preferable to use sensor input A.

To switch the LaserStar on and off:

1. Flick the toggle switch on the right side of the rear panel up. Note that there are three positions, down is off, the center is on and the upper position is on with backlight on. The unit will switch on, and the display will appear. Note that the sensor must be plugged in before the unit is switched on.
2. To switch off, return the toggle switch to its lowest position. If you wish to save the current LaserStar configuration, use the “configure” function. (See section 2.3.3).

To set line frequency:

1. Disconnect the sensor and switch off then on again. “Head Disconnected” will appear.
2. Press “select” to choose “line frequency”.
3. Press “value” to change to the correct line frequency.
4. Press “save” and the line frequency will be saved.

To zero instrument:

1. Make sure the instrument is not in an electrically noisy environment and is undisturbed.
   Disconnect the sensor, turn off then on again. “Head Disconnected” will be displayed.
2. Press “zero” and then press “go”. When zeroing is completed, “zeroing completed” will be displayed.
   For thermal sensor, zeroing with the sensor may also be necessary. See section 3.5.6 of the main manual.

2 Thermal Sensors

2.1. Use of LaserStar with Thermal Type Sensors

To set type of laser being used:
1. While the LaserStar is off, plug in the sensor then switch it on again.
2. From the main measurement screen, press the menu button. “laser” will be highlighted. Press “go” and select the appropriate laser wavelength.
3. If you want to save this new range as the startup default, press “save”.
4. Return to main screen by pressing “exit” then “esc”.

To choose manual or automatic ranging in power measurement:
1. From the main measurement screen, press “range”.
2. Select the appropriate manual range or autorange.
3. If you want to save this new range as the startup default, press “save”.
4. Press “exit” to return to the main measurement screen. The range will be displayed in the lower right corner of the main measurement screen.

To choose power or energy measurement:
To go from the main power measurement screen to the energy measurement screen, press “energy”. To go from the energy measurement screen to power measurement, press “power”.

2.2. Setting and Saving the Startup Configuration

1. From the main measurement screen, press “menu”.
2. Using the arrow keys, select “configure”. Press “go”.
3. Press “value” to choose “power” or “energy” for the desired startup screen.
4. Select “Laser”: Now press “value” to select the laser type you wish to be the default.
5. Now select “Average Over” to select what period you wish to average power over or select the default, “none”.
6. Now select “Power Range” and press “value” to choose the manual power range you wish to be the default or choose autorange.
7. Now select “Energy Range” and choose the default energy range.
8. Now select “Energy Threshold” if you wish to change the energy threshold.
9. Press “save” to save all present settings then “exit” and “esc” to get back to the main measurement screen.

Further details on configuration in section 4.3 of the main manual.

2.3. Power or Single Shot Energy Measurement

Warning:

Do not exceed maximum sensor limits for power, energy, power density and energy density as listed in tables 6 and 7 in section 11.2. of the main manual. Otherwise, there is a risk of damaging the absorber.

To use the LaserStar to measure laser power:
1. Verify that the display shows units of w, mw, etc. If the display shows units of J, mJ etc., press “power” to switch to the power measurement mode.

To expand the bargraph scale ±5x about the present reading:
1. Press the “zoom” button .
2. Press the “zoom” button again to return to the ordinary bargraph.

To subtract background and set current reading to zero:
1. From the main power measurement screen press “offset”.
2. Press “offset” again to cancel. See Section 4.4.2.2. of the main manual for full details.

To use the LaserStar to fine-tune laser power:
1. From the main power measurement screen press the menu button then select “tune”. Now press “go” then “setup”.
2. Set the percentage range of the power scale to be displayed by repeatedly pressing the value key.
3. Now select the horizontal sweep time you desire. Now select if you want an audio tone for tuning or not.
4. Now press “save” if you want to save the setting and then “exit” and use the screen to tune the laser power. See Section 4.4.2.3. of the main manual for full details.

To use the LaserStar to measure laser energy:
1. Verify that the display shows units of J, mJ, etc.
2. If the display shows units of W, mW etc., then press “energy” to switch to the energy measurement mode.
3. The energy mode is manual ranging. Press “range” then use the arrow soft keys to select the proper range. Press save if you want this range to be the startup default. Now press “exit”. The correct range is the lowest one that is larger than the pulse energy measured. Note that the range will be displayed in the lower right corner of the main display.
4. When the LaserStar screen flashes “ready”, on and off, fire the laser.

3 Photodiode Sensors

3.1. Use of LaserStar With Photodiode Type Sensors

1. While the LaserStar is off, plug in the Photodiode sensor, then switch it on again.
2. From the main measurement screen, press “laser” to select the correct laser wavelength. The wavelength will be displayed in the upper left corner of the display. If the wavelength you want is not listed, see section 3.2 below.
3. If you want to save this new wavelength as the startup default, follow the directions on configuration in section 3.3. below.

To choose manual or automatic ranging or dBm in power measurement:
1. Press “range” and then select the appropriate manual range, autorange or dBm (logarithmic scale).
2. Press “exit” to return to the main measurement screen. If you wish to save the selected range as the startup default, press “save” before exiting.

3.2. Selecting Chosen Wavelengths

1. From the power measurement mode, press “menu” and select “wavelength”. Press “go”.
2. Select the wavelength you wish to change and press “go”.
3. Using the up/down buttons, change to the desired wavelength. Now press “save”. If you do not want to save, press “esc”.
4. Repeat steps 2 and 3 for other wavelengths desired. Up to 6 wavelengths may be selected.
5. When finished, press “exit”, “esc” to return to the main measurement screen.

3.3. Setting the Startup Configuration

1. From the power measurement mode, press the menu button and select “configure”.
2. Press “go”. Now press “value” to select filter in or out to be the default.
3. Now select “Power Range” and choose the manual power range you wish to be the default or choose autorange or dBm.
4. Now select “Average Over” and choose what period to average power over or leave the default “NONE”.
5. Now select “Wavelength” to choose the startup laser wavelength.
6. When finished press “save” and “exit”. If you wish to save these values only until the instrument is turned off, exit without saving

3.4. Power Measurement

Warning:

Do not exceed maximum sensor limits for power, energy, power density and energy density as listed in tables 6 and 7 section 11.2 of the main manual, Head Specifications. Otherwise, there is a risk of damaging the absorber.

To expand the bargraph scale ±5x about the present reading:
1. Press the “zoom” button . Press the “zoom” button again to return to the ordinary bargraph.

To subtract background and set current reading to zero:
1. From the main power measurement screen press “offset”.
2. Press “offset” again to cancel. See Section 5.4.5. of the main manual for full details.

To use the LaserStar to fine-tune laser power:
1. From the main power measurement screen press the menu button then select “tune”. Now press “go” then “setup”.
2. Set the percentage range of the power scale to be displayed by repeatedly pressing the value key.
3. Now select the horizontal sweep time you desire.
4. Now choose audio tone to be on or off.
5. Now save and exit to use the screen to tune the laser power. See section 4.4.2.3. of the main manual for full details.

4 Pyroelectric or Photodiode Energy Sensors

4.1. Selecting Chosen Wavelengths (metallic type only)

1. While the LaserStar is off, plug in the pyroelectric sensor, then switch it on again.
2. From the power measurement mode, press “menu” and select “wavelength”. Press “go”.
3. Select the wavelength you wish to change and press “go”.
4. Using the up/down buttons, change to the desired wavelength. Now press “save” and “esc”. If you do not want to save, press “esc” .
5. Repeat steps 2 and 3 for other wavelengths desired. Up to 6 wavelengths may be selected.
6. When finished, press “exit”, “esc” to return to the main measurement screen.

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