4 Pyroelectric or Photodiode Energy Sensors

4.1. Zeroing Instrument against Sensor

For most accurate calibration, you should zero the pyroelectric sensor against the Vega it is being used with. Proceed as follows:
Make sure the sensor is in a quiet environment and not subject to pulsed radiation. Plug sensor into Vega and turn on. Press "Menu", select "Zero" and enter. Press "Start". When "ZEROING COMPLETED" appears, press "Save".

4.2. Changing Chosen Wavelengths (metallic type only)

1. Select "Laser" and Enter.
2. Select the wavelength you wish to use and enter. To save this wavelength as the startup default, press "Save" before exiting.
3. To modify one of the wavelengths, select the closest wavelength and press the right navigation key.
4. Using the up/down keys to change the numbers and the right/left keys to move to the next number, modify to the wavelength you want.
5. When finished, press "Save" and exit. If you only want a temporary change, exit without "Save".

4.3. To Set Type of Laser Being Used

From main measurement screen, select "Laser" and enter. Choose the desired laser type or wavelength. To save this as the startup wavelength, press "Save" before exiting.

4.4. Setting Startup Configuration

1. Turn on the Vega with the sensor connected, select "Menu" and Enter. Select "Configure".
2. With the navigation keys select "Startup Mode", select "Power" or "Energy" as the startup mode. Press the Enter key to exit.
3. With the navigation keys select "Display Mode". Press the Enter key and select the type of screen you wish to start up with. Press "Save" and exit. If you do not want to save this as the startup mode but only change for now, exit without save. (This choice is saved in the instrument and not the sensor so the Vega will start up from the screen selected for all sensors).
4. Select "Energy Range", press Enter and choose the manual energy range you wish to be the default.
5. Select "Average" to select the average power period over or select the default, "NONE".
6. If the sensor is a diffuser sensor, set diffuser to IN or OUT.
7. Select "Max Pulse Len" and choose the shortest pulse length setting that is longer than your laser's pulse length.

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

8. Select "Laser" and select the laser type you wish to be the default.
9. Press "Save" to save all present settings then "Exit" to get back to the main measurement screen.

Note: Some sensors have only the long pulse setting for all pulse lengths. In that case N/A appears. For further details on configuration see Sections 6.2 and 6.3 of the manual.

4.5. Energy or Average Power Measurement

Warning:

Do not exceed maximum sensor limits for power, energy, power density and energy density as listed in tables 5 and 6 in section 10.2 of the manual, Sensor Specifications. Otherwise, there is a risk of damaging the absorber.

With the pyroelectric sensor, you have been supplied 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 shows damage, then either enlarge your beam or lower the laser energy until damage is no longer seen.

4.6. To choose Energy or Average Power Measurement

To switch from the main energy measurement screen to power measurement, press "Power". To switch from the main power measurement screen to energy measurement, press "Energy".

VEGA
Quick Reference

Vega Quick Reference

1 Getting Started

The Vega is equipped with "soft keys". That is, the functions of the keys change as indicated by the legend above each key. It is also equipped with 4 navigation keys and a round enter key in the center.

To connect sensor to the Vega 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 Vega meter.

To switch the Vega on:
Briefly press the on/off switch (bottom-most key). The unit will switch on, and the display will appear. Note that the sensor must be plugged in before the unit is switched on. The backlight for the Vega's LCD can be configured to toggle between full and partial illumination. Similarly, the keypad lighting can be configured to toggle between on and off. This toggling will be performed by briefly pressing the on/off switch after the Vega has been switched on. To switch the Vega off, press the on/off switch and hold it for ~ 3 seconds until the display blanks.
If you wish to save the current Vega configuration, use the "Configure" function. (See section 2.3.2.).

To set the display modes:
1. Disconnect the sensor and switch off then on again. "Head Disconnected" will appear.
2. Select "Display Mode" and enter. Choose the desired mode, press save. **The Vega will now be in this display mode for all sensors.**
3. Select "Date" and press the enter button. Using the navigation keys set to the correct date. Press save.
4. Select "Time" and enter. Using the navigation keys, set to the correct time. Press save.
5. For adjusting RS232 baud rate and An. Output voltage see the main manual.

To zero instrument:
1. Disconnect the sensor, turn off then on again. "Head Disconnected" will be displayed.
2. Make sure instrument is not in an electrically noisy environment and is undisturbed.
3. Press "Zero" and "Start". Wait until "ZEROING COMPLETED" appears. For more details, see main manual section 3.5.5.

2 Thermal Sensors

2.1. Use of Vega with Thermal Type Sensors

To set type of laser being used:
1. While the Vega is off, plug in the sensor then switch it on again.
2. Press the navigation keys until "Laser" is highlighted. Press the enter key and select the appropriate laser wavelength.
3. If you want to save this new wavelength as the startup default, press "Save".
4. Return to main screen by pressing the enter key.

To choose manual or automatic ranging in power measurement:
1. Select "Range" with the navigation keys. Press the Enter key.
2. Select the appropriate manual range or AUTO.
3. If you want to save this new range as the startup default, press "Save".
4. Press the Enter key to return to the main measurement screen.

To choose power or energy measurement:
To go from the main power measurement screen to the energy measurement screen, press the lower left soft key "Energy". To go from the energy measurement screen to power measurement, press "Power".

2.2. Setting and Saving the Startup Configuration

1. Turn on the Vega with the sensor connected, select "Menu" and enter. Select "Configure" and enter.
2. With the navigation keys select "Startup mode". Press the Enter key and select "Power" or "Energy" as the startup mode. Press the Enter key again to exit. Press "Save" to make this change permanent.
3. Select "Display Mode". Press the Enter key and select the type of screen you wish to start up with. Press Save to set this as the default display mode. If you do not want to save this as the startup mode but only change for now, press the Enter key. (This choice is saved in the instrument and will apply to all sensors that work with this Vega).
4. Select "Power Range". Press the Enter key and choose the manual power range you wish to be the default or choose auto range.
5. Select "Average" to select what period you wish to average power over or select the default, "NONE". See section 4.4.2.4 of the main manual for details.
6. Select "Energy Range" and choose the default energy range.
7. Select "Threshold" if you wish to change the energy threshold. Select "Laser" to select the laser type you wish to be the default. Press "Save" if you want to save this configuration, then press Exit to return 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 5 and 6 in section 10.2. of the main manual. Otherwise, there is a risk of damaging the absorber.

To use the Vega to measure laser power:
Verify that the display shows "Menu: Power" in the upper right hand side of the display. If the display shows "Menu: Energy" and units of J, mJ etc. then press "Power" to switch to the power measurement mode.

To select an analog needle type display for the Vega:
Select "Menu" and enter. Select "Needle" and enter. The display will now show a simulated analog needle type display. In order to expand the display, press "Expand".

To expand the bargraph scale ±5x about the present reading:
1. From the main power measurement screen 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 the "Offset" button.
2. Press "Offset" again to cancel. See Section 4.4.2.2. of the main manual for full details.

To use the Vega to fine-tune laser power:
1. From the main power measurement screen select "Menu" and enter. Now select "Tune" and enter.
2. Set the percentage range of the power scale to be displayed by repeatedly pressing the ±50% key.
3. Now select the horizontal sweep time you desire by selecting "Graph" and choosing the time scale.
4. You may now use the screen to tune the laser power. See Section 4.4.2.3. of the main manual for full details.
5. Press "Power" to exit to the main measurement screen.

To use the Vega to measure laser energy:
1. Verify that the display shows "Energy" in the upper right hand side of the display. If the display shows "Power" and units of W (or mW etc) then press "Energy" to switch to the energy measurement mode.
2. The energy mode is manual ranging. Select "Range", enter then use the navigation keys to select the proper range. Press "Save" if you want this range to be the startup default. 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.
3. When the Vega screen flashes "READY", on and off, fire the laser. See Section 4.5 of the main manual for full details.

3 Photodiode Sensors

3.1. Selecting Chosen Wavelengths

1. While the Vega is off, plug in the sensor then switch it on again. From the main measurement screen, press "Laser" to select the correct laser wavelength. If you want to save this new wavelength as the startup default, press "Save" before exiting.
2. If the wavelength you want is not among the wavelengths in the six wavelengths list and you want to change or add a wavelength, then move to the wavelength you wish to change or add. Press the right navigation key.
3. Using the up/down keys to change each number and the right left keys to move to the next number, key in the desired wavelength. Press enter twice. To save this new wavelength as a startup default, press "Save", then press Enter.
4. Follow the directions on configuration in section 3.2 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 Enter to return to the main measurement screen. To save the selected range as the startup default, press "Save" before exiting.

3.2. Setting the Startup Configuration

1. Select "Menu" and press Enter. Select "Configure" and Enter.
2. Select "Filter" and Enter. Choose filter in or out to be the default.
3. Select "Display Mode" and choose which screen you want the instrument to start up in. Press Enter. (Note that this is an instrument setting and will be valid for all sensors.)
4. Select "Power Range" and choose the manual power range you wish to be the default or choose autorange or dBm.
5. Select "Average" and choose which period to average power over or leave the default "NONE".
6. Select "Laser" to choose the startup laser wavelength. When you are finished, to save this as the default startup, press "Save". If you only want to change for now, exit without saving. For further details on configuration see Section 5.3 of the main manual.

3.3. Power Measurement

Warning:

Do not exceed maximum sensor limits for power, energy, power density and energy density as listed in tables 5 and 6 in section 10.2 of the manual, Sensor Specifications. Otherwise, there is a risk of damaging the absorber.

To expand the bargraph scale ±5x about the present reading:
1. From the main power measurement screen, 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 the "Offset" button.
2. Press "Offset" again to cancel. See Section 5.4.5 of the main manual for details.

To use the Vega to fine-tune laser power:
1. From the main power measurement screen select "Menu" and Enter. Select "Tune" and Enter.
2. Set the percentage range of the power scale to be displayed by repeatedly pressing the ±50% key.
3. Now select the horizontal sweep time you desire by selecting "Graph" and choosing the time scale.
4. You may now use the screen to tune the laser power. Press "Power" to exit to the main measurement screen. See Section 4.4.2.3 of the manual for details.