NOVA
Quick Reference

1 Getting Started

The Nova is equipped with "soft keys." That is, the functions of the keys change as indicated by the legend above each key. When the Nova is first switched on with a sensor attached, the first screen usually has a digital display with a bargraph at the bottom. In order to access the soft keys, press the menu button, located in the second row on the right of the panel. Pressing the menu button again will access more functions. Pressing it yet again will bring it back in a cyclical manner to the original bargraph screen.

To connect sensor to the Nova meter:
1. Insert the D type connector of the measuring sensor cable into the socket marked "Head Input" on the rear panel of the Nova meter.

To switch the Nova on:
1. Push up the slide switch on the left side of the Nova meter. The unit will switch on, and the display will appear. Note that the sensor must be plugged in before the unit is switched on.

To switch the Nova off:
1. Return the slide switch to its original position.
2. If you wish to save the current Nova configuration, use the "configure" function before switching off. See below, section 2 or refer to the main manual for details.

To set line frequency:
1. Disconnect the sensor and switch off then on again. "Head Disconnected" will appear.
2. Press "select" until "line" is highlighted.
3. Press "go" then change to correct frequency.
4. Press "exit" and the change will be saved.

To zero instrument:
1. Disconnect sensor, turn off then on again. "Head Disconnected" will be displayed.
2. Press "select" until "zero" is highlighted.
3. Press "go".
4. Make sure instrument is not in an electrically noisy environment and is undisturbed. Press "go" and wait for message, "zeroing completed". Press "exit".
5. For thermal heads, zeroing with the head may also be necessary. See section 3.5.2 in the full manual.

Warning:

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

Note: Some sensors have only one time setting for all pulse lengths. In that case "N.A." appears.

4.2 Setting Startup Configuration
1. From the bargraph energy measurement mode, press the menu button until "more" appears. Press "more".
2. Press "select" until "config" is highlighted. Press "go".
3. Press "value" to choose "power" or "energy" for the desired startup screen.
4. Press "select" until the laser wavelength is highlighted. Now press "value" to select the laser type you wish to be the default.
5. Press "select" and "value" to choose the pulse length you wish to be the default.
6. Now press "select" and "value" again to choose the default energy range.
7. Press "exit" then "all" to save. For further details on configuration see sections 6.2 and 6.3 of the main manual.

4.3 Setting up PE-DIF Diffuser Sensors to Diffuser IN or OUT Setting
1. Press the menu button twice and press "setup".
2. Press "select" until the diffuser setting is highlighted and select "IN" or "OUT" as desired. Make sure the diffuser is physically installed or not installed on the sensor. Press exit.
3. Press the menu button twice and press "laser" until the correct wavelength is selected. Note that only wavelengths compatible with the diffuser setting are visible. (All wavelengths for diffuser IN have a D suffix, e.g. 106D = 1.06µm, diffuser in).
4. If you wish to save these settings as the defaults, from the main display, press the menu button twice then press "more". Select "config" and press "go". Press "exit" and "all" to save all present settings including diffuser IN or OUT.

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 9.2 of the main manual. Otherwise, there is a risk of damaging the absorber. Use the supplied test slide to test damage if you are in doubt. 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
1. To go from the bargraph energy measurement screen to power measurement, press the menu button then press "power". Alternately, you can press the leftmost soft key directly from the bargraph screen to go to power measurement.
2. To go from the bargraph power measurement screen to energy measurement, press the menu button then press "energy". Alternately, you can press the leftmost soft key directly from the bargraph screen to go to energy measurement.

To use the Nova to measure laser energy and frequency:
1. In measurement mode, verify that the units are mJ, µJ etc. If not, press the left most soft key.
2. Press the menu button once then press "range" then the "up" "down" soft keys until the proper range is highlighted. The correct range is the lowest one that is larger than the pulse energy measured. See section 6.4 of the main manual for details.
3. Press "exit" then press the menu button twice to return to the bargraph measurement screen. If you wish to have the frequency displayed, press the menu button only once.

To use the Nova to measure laser power:
1. Verify that the display shows power units in W, mW etc.
2. If the display shows energy units of J, mJ etc. then press "power" to switch to the power measurement mode.

To expand the bargraph scale fivefold about the present reading:
1. From the bargraph energy or power measurement screen press the menu button then press "zoom", then press the menu button twice, or just press the center button from the bargraph screen.
2. Press "zoom" again to return to full scale.

To measure total energy exposure:
1. Press the menu button until "more" appears. Press "more".
2. Press "select" until "exposure" is highlighted. Press "go".
3. Select parameters then press "go". Press go again. The Nova will start summing laser energy exposure and the legend will change to "stop". When you wish to stop measuring, press "stop". If you wish to reset reading to zero before another reading, press "reset".
4. To return to the bargraph screen, press "exit".

2 Thermal Sensors

2.1 Use of Nova with Thermal Type Sensors

To set type of laser being used:
1. While the Nova is off, plug in the sensor then switch it on again.
2. From bargraph measurement screen, press the menu button twice and press "laser" until the correct laser type is displayed.
3. Return to bargraph screen by pressing the menu button again.

To choose manual or automatic ranging in power measurement:
1. From the bargraph measurement screen, press the menu button once, then press "range" or simply press the right most soft key directly from the bargraph screen.
2. Select the appropriate manual range or autorange.
3. Press "exit" and then press the menu button twice to return to the bargraph measurement screen.

To choose power or energy measurement:
1. To go from the bargraph power measurement screen to the energy measurement screen, press the menu button then press "energy".
2. Alternatively, you can press the leftmost soft key directly from the bargraph screen to go to energy measurement.
3. To go from the energy measurement screen to power measurement press the "power" soft key.

2.2 Setting and Saving Startup Configuration

1. From the power measurement mode, press the menu button located on the right side until "more" appears. Press "more".
2. Press "select" until "configure" is highlighted. Press "go".
3. Press "value" to choose "power" or "energy" for the desired startup screen.
4. Press "select" until the laser type is high-lighted. Now press "value" to select the laser type you wish to be the default.
5. Press "select" and "value" to choose the manual power range you wish to be the default or choose autorange.
6. Now press "select" and "value" again to choose the default energy range.
7. Press "exit" then "all" to save all present settings.
   Further details on configuration in section 4.3. of 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 9.2. in the main manual. Otherwise, there is a risk of damaging the absorber.

To use the Nova to measure laser power:
1. Verify that the display shows power units in W, mW etc.
2. If the display shows energy units of J, mJ etc. then press "power" to switch to the power measurement mode.

To expand the bargraph scale ±10% about the present reading:
1. From the bargraph power measurement screen press the center button.
2. Press the center "zoom" button again to return to full scale.

To subtract background and set current reading to zero:
1. From the bargraph power measurement screen press the menu button twice then press "offset". Press the menu button once to return to the bargraph screen.
2. Press "offset" again to cancel. See section 4.4.2.2. of the main manual for full details.

To use the Nova to fine tune laser power:
1. From the bargraph power measurement screen press the menu button twice then press "more".
2. Press "select" until "tune" is highlighted. Press "go".
3. Set the percentage range of the power scale to be displayed by repeatedly pressing the left key.
4. Set the horizontal sweep time using the middle soft key. See section 4.4.2.3. of the main manual for full details.

To use the Nova to measure laser energy:
1. In measurement mode, verify that the units are J, mJ etc. If not, press the menu key until "energy" appears. Press that key to switch to energy measurement mode. Alternately, press the left soft key directly.
2. The energy mode is manual ranging. Press "range" then the "up" "down" soft keys until the proper range is highlighted then press "exit". The correct range is the lowest one that is larger than the pulse energy measured.
3. When the Nova screen flashes "ready," on and off, fire the laser. See section 4.5 of the main manual for full details.

To save configuration:
To save configuration, follow directions in section 2 above.

3 Photodiode Sensors

3.1 Use of Nova With Photodiode Type Sensors

To set type of laser being used:
1. From bargraph measurement screen, press the menu button twice and press "laser" until the correct laser wavelength is displayed.
2. Return to bargraph screen by pressing the menu button again.

To choose manual or automatic ranging or dBm in power measurement:
1. From the bargraph measurement screen, press the menu button once.
2. Press "range" and then select the appropriate manual range, autorange or dBm (logarithmic scale).
3. Press "exit" and then press the menu button twice to return to the bargraph measurement screen. Alternately, range is accessed directly by pressing the right most soft key from the bargraph screen.

3.2 Selecting Chosen Wavelengths

1. From the power measurement mode, press the menu button until "more" appears. Press "more".
2. Press "select" until "wavelength" is highlighted. Press "go".
3. Press "change" then "up" and "down" to select the first wavelength. Repeat steps 2 and 3 for other wavelengths desired. Up to 6 wavelengths may be selected.

3.3 Setting Startup Configurations

1. From the power measurement mode, press the menu button until "more" appears. Press "more".
2. Press "select" until "configure" is highlighted. Press "go".
3. Now press "value" to select filter in or out to be the default.

4. Press "select" and "value" to choose the manual power range you wish to be the default or choose autorange.
5. Now press "select" and "value" again to choose the startup laser wavelength. For further details on configuration see section 5.3. of the main manual.

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 9.2 of the main manual. Otherwise, there is a risk of damaging the absorber.

To expand the bargraph scale 10% about the present reading:
1. From the bargraph power measurement screen press the menu button. Then press "zoom". Now press the menu button twice again. Alternatively press the center button from the bargraph screen without the menu button.
2. Press "zoom" again to return to full scale.

To offset current reading and set to zero:
1. From the bargraph power measurement screen press the menu button, press "offset" then press menu twice to return to the bargraph screen. Alternatively press the left upper button from the bargraph screen.
2. Press "offset" again to cancel. See section 5.4.5. of the main manual for more details.

To use the Nova to fine tune laser power:
1. From the bargraph power measurement screen press the menu button twice, then press "more".
2. Press "select" until "tune" is highlighted. Press "go".
3. With the left soft key set the percentage range of the power scale to be displayed.
4. Set the horizontal sweep time using the middle soft key. See section 4.4.2.3. of the main manual for full details.

4 Pyroelectric or Photodiode Energy Sensors

4.1 Selecting Chosen Wavelengths

1. While the instrument is switched off, plug in the sensor, then switch on.
2. From the bargraph screen which appears, press the menu button until "more" appears. Press "more".
3. Press "select" until "wavelength" is highlighted. Press "go".
4. Press "select" then "change" then "up" and "down" to change the first wavelength. Now press "done". Repeat steps 2 and 3 for other wavelengths desired up to 6.
5. Save as described in section 2.4.4. of the main manual.

To set type of laser being used:
1. From bargraph measurement screen, press the menu button twice and press "laser" until the correct laser type or wavelength is displayed.
2. Return to bargraph screen by pressing the menu button again.

To set laser pulse length and average:
1. From the bargraph measurement screen press the menu button twice then press "setup".
2. Press "value" to choose 50µs or 1ms depending whether the pulses of your laser are less than or greater than 50 micro-seconds.
3. Press "select" then "value" to choose the time period over which you wish to average energy readings. Press "exit".
4. Save as described in section 2.4.4. of the main manual.