

3sigma Reference Guide Addendum

This addendum adds to/modifies information presented in the *3sigma Reference Guide* (QD-19.8), dated February 2002. Versions of the manual dated later than February 2002 include the information presented in this addendum.

Topics specifically addressed:

- Analog Output
- Attenuation
- Baseline Clip (BCLIP)
- LCD Display Contrast Adjustment
- Measuring Energy With a Thermal Probe
- New Energy Measurement Screen
- Pyro Zeroing
- Range Reporting
- RS-232 Cable Assembly
- RS-232 Pinouts on the 3sigma
- Units

Analog Output

(*3sigma Reference Guide*—p. 61) Analog output is 0 to 1 V.

Attenuation (firmware V1.05 only)

Attenuation correction does not function when a *thermopile* probe is connected to 3sigma. *Optical and pyroelectric probes are not affected.* This is a known bug for instruments running firmware Version 1.05. *Contact Coherent to arrange for a firmware upgrade.*

Baseline Clip (BCLIP)

Pyroelectric sensors produce a negative offset proportional to the average power applied. A BCLIP error is produced when the average power, and thus the negative baseline voltage, exceeds the ability of 3sigma to measure in the negative direction.

3sigma normally injects a positive voltage that compensates for the negative voltage produced over the full-scale operating range of the sensor. A BCLIP error may indicate that 3sigma is not able to apply enough compensation under the current operating conditions. That is, the average power applied to the probe is too high, or there is a technical problem with the 3sigma.

Average power is computed as irradiance times frequency. Example: 1 J at 1 Hz = 1 W average power. Reducing the irradiance or the frequency of the laser can reduce average power.

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Baseline Clip (BCLIP) (cont'd)

The following factors may cause a BCLIP error to display:

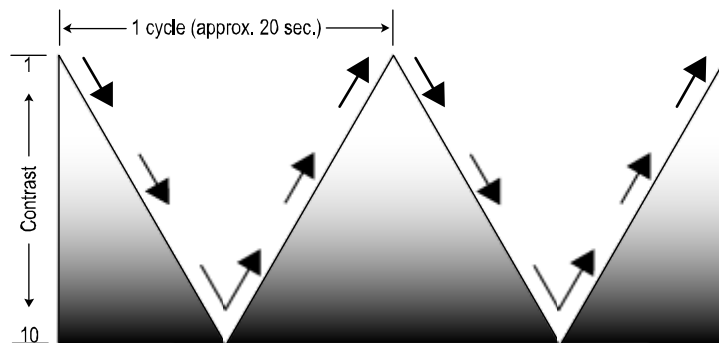
- Using a 3sigma that has a November 2001 or earlier calibration date. *Contact Coherent to arrange for a recalibration of your 3sigma.*
- Using a JSA probe adapter with a defective input path. *Contact Coherent to arrange repair of your JSA probe adapter.*
- Using an active probe that has an incorrect value of DC offset stored in its EEPROM. *Contact Coherent for assistance.*
- Using a 3sigma unit that has a bad or corrupt calibration table, which, in turn, causes the unit to incorrectly configure its offset control circuitry. *Contact Coherent for assistance.*

Note: For more information, refer to *Pyro Zeroing*, later in this document.

LCD Display Contrast Adjustment (firmware V1.07 and later)

(*3sigma Reference Guide*—p. 9) Pressing and holding the Display Control button for more than ½ second incrementally adjusts the LCD display contrast until it reaches either the minimum or the maximum contrast intensity. At that point, contrast begins adjusting towards the other extreme.

Example: (refer to the following illustration) Assuming that minimum (lightest) contrast intensity = 1 and maximum (darkest) contrast intensity = 10, the sequence of contrast changes is: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 2, 3, 4, 5 . . .

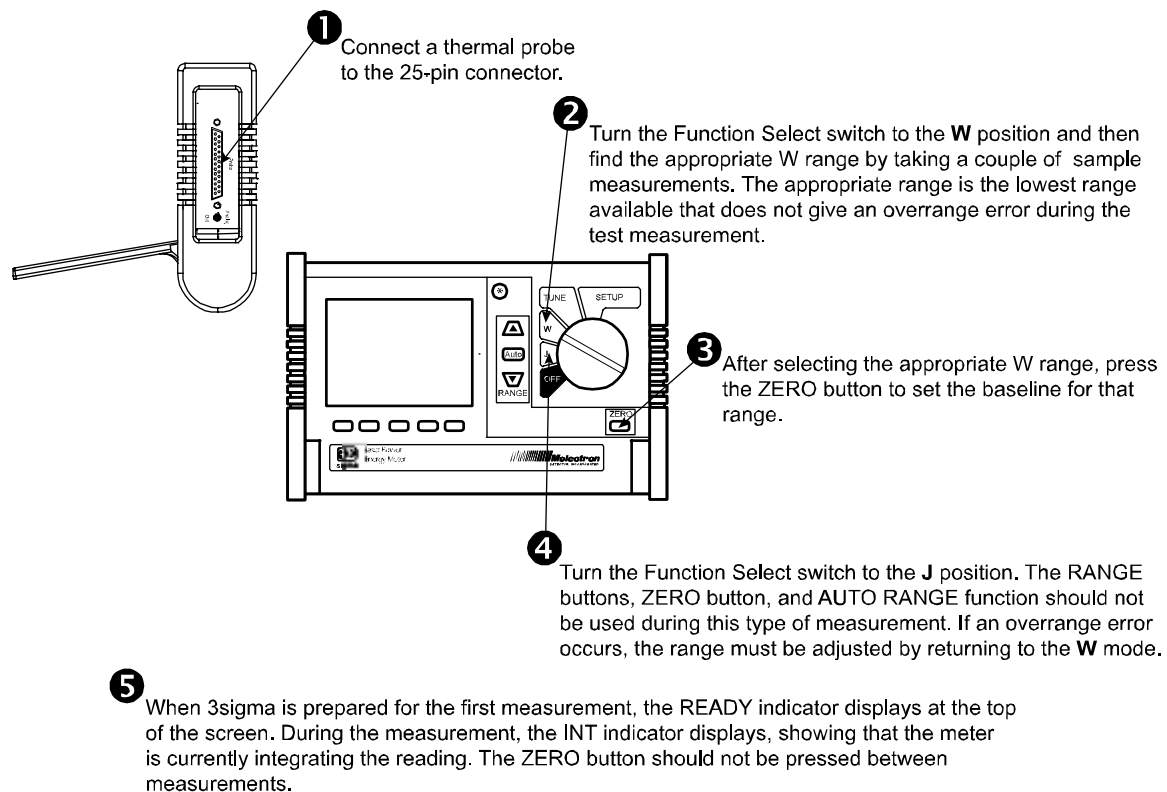


Note: Whenever 3sigma powers-up and the Display Control button is initially pressed and held, contrast adjusts towards the *minimum* (lightest) contrast level. Also note that whenever 3sigma first powers-up, contrast intensity is automatically set to the *last* contrast level previously used.

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Measuring Energy With a Thermal Probe

(3sigma Reference Guide—p. 3) The graphic in the *Quick Start* section has been revised, as shown here:



New Energy Measurement Screen (firmware V1.07 and later)

(3sigma Reference Guide—p. 23) A new energy measurement display screen has been added to the two screens already available. This new screen displays joules mode (integrated power with a thermopile probe) on the first line, followed by average power on the second line. Here is an example display:

1.274 mJ
0.656 mW

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Pyro Zeroing (firmware V1.07 and later)

Pyro zeroing refers to dynamically correcting the baseline voltage of a pyroelectric probe. There are three instances when this correction takes place:

1. Powering-up 3sigma with a pyro probe attached. In this case, the zero cycle runs automatically as part of the power-up sequence.
2. Plugging in a pyro probe when the instrument is already powered up.
3. Pressing the Zero button. In pyro mode, pressing the Zero button always causes the instrument to run a zero cycle on the probe. **Note:** There is no need to press the Zero button unless a BCLIP error occurs (for more information about BCLIPs, refer to *Baseline Clip (BCLIP)*, earlier in this document).

Depending on how far out the baseline is, the zero cycle takes from ½ to 3 seconds. A “Wait...” indicator appears on the screen while the zero cycle is running.

For accurate pyro zeroing:

- *There must be no pulses coming out of the probe.* To get an accurate zero: shut off the beam or remove the probe from the beam, wait three seconds for the probe baseline to stabilize, and then press the Zero button. Measurements can resume once the zero cycle is complete.
- *Run the probe within the specified repetition rate.* If the probe is running at a higher than specified repetition rate and a BCLIP error occurs, pressing the Zero button may not clear the error.

Note: For more information about BCLIPs, refer to *Baseline Clip (BCLIP)*, earlier in this document.

Range Reporting (firmware V1.05 only)

When using 3sigma, picowatts are incorrectly reported as femtowatts, and picojoules are incorrectly reported as femtojoules. This is a known bug for instruments running firmware Version 1.05. *Contact Coherent to arrange for a firmware upgrade.*

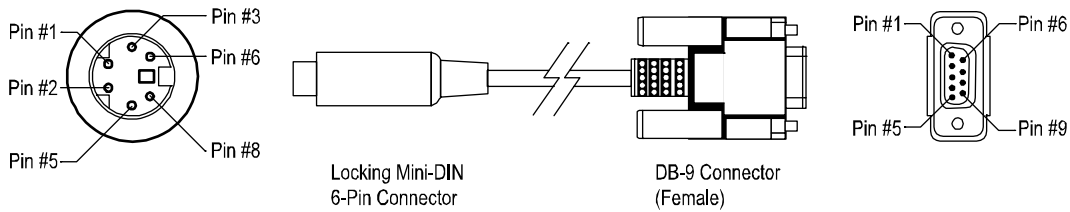
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RS-232 Cable Assembly

This section shows the wiring configuration between the mini-DIN 6-pin connector and a DB-9 connector:

WIRING CONFIGURATION

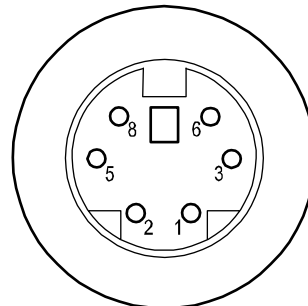
Mini-DIN 6 Pin #		DB-9 Pin #
-		1
3	TO	2
2	TO	3
-		4
1	TO	5
-		6
-		7
-		8
-		9
Shell	TO	Shell



RS-232 Pinouts on the 3sigma

(3sigma Reference Guide—p. 62) The RS-232 chart has been revised:

Pin	Assignment
1	GND
2	Receive (from computer to 3sigma)
3	Transmit (from 3sigma to computer)
5	-
6	-
8	-



Note: The above pinout chart refers to the connector on the 3sigma unit.



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Units

(3sigma Reference Guide—pp. 14, 15) Please add picojoules and picowatts to the lists.

Customer Service
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