



CROPSCAN, Inc.

Multispectral Radiometry and Data Acquisition/Control Systems

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MSR SYSTEM CHECK LIST / RECOMMENDATIONS

Before Taking Readings:

- 1) Charge the DLC overnight.
- 2) Check that the MSR Program and configuration/calibration are loaded in the DLC.
- 3) Be sure Date, Time, GMT Diff, and Location (i.e. Latitude and Longitude) are set correctly for sampling location. Note: Latitude and Longitude need only be set to within about +/- 8 miles (12 km) of exact location.
- 4) Be sure the number of plot subsamples is set correctly.
- 5) Update the Remark line (REMark command or option 4 from the Reconfigure MSR menu, as appropriate for the location or experiment to be scanned, etc.
- 6) If any configuration changes were made, save the program and configuration/calibration settings to the DLC memory card. They can be quickly and easily reloaded into the DLC at some later time (like in the field), should that be necessary.
- 7) Attach sensor and cables then do a real-time VIEW mode readings test under a tungsten filament desk lamp or in sunlight, either inside or through a window, to verify that the millivolt readings correspond to changes in irradiance intensity. This will indicate if cables and connections are good.
- 8) Keep radiometer top and bottom cover glass clean.

(over)

Recommendations:

- o Carry an extra set of batteries (8 NiMH batteries AA size), a small phillips screw driver, and a small regular flatblade screwdriver in the field, should it be necessary to replace the batteries in the DLC. Note: when changing batteries, be careful to not bump or press the Hard Reset button on the back end of the DLC circuit card on which the battery cell holder is mounted otherwise the MSR program, configuration, calibrations values and data will be lost, requiring reloading of program and configuration/calibration. It is best to RETRIEVE data prior to battery changes.
- o Carry the DLC memory card in the field so the MSR program and last saved configuration/calibration can be quickly reloaded, if necessary.

Checklist in the Field:

- 1) If the radiometer has any bands 1100 nm or higher, allow at least fifteen minutes for the radiometer to adjust to the outside temperature.
- 2) Just before taking the first plot scan, with all cables connected, change the position of the top of the radiometer relative to the Sun and note that the IRR (I) reading value changes accordingly. This will indicate if cables and connections are properly made.
- 3) Check that the pole MSR Spirit Level Attachment (MSRSLA) is positioned par level with the radiometer.

When Taking Readings:

The best reading are obtained under clear skies or lightly cloudy days with IRR readings ('I' values on CT100 display when in the plot scanning mode) above about 300 Watts per square meter. If there are cumulus type clouds (the white puffy type) then you should wait until after the cloud has passed from in front of the sun. Note: The system can be configured for low light condition warning (option 10 IRR from Reconfigure MSR menu). Recommended low warning value is 300 (Watts per square meter).

- o Wear grays or darker colored clothes to reduce the amount of reflectance from your clothes onto the top of the radiometer or onto the sample area below the radiometer.

- o Try to position the radiometer front (serial number label side) towards the Sun when taking readings. This eliminates your shadow from falling across the sample area and also yields the best cosine response correction of the top or up-facing sensors.
- o After positioning and leveling radiometer and initiating a scan, you may begin to move to the next location as soon as the double astericks appear on the terminal or you hear the double-beep from the DLC.

Typical Sample Day-to-Day Operational Activities:

- 1) Connect System Components and verify proper operation (MSR program running and configuration/calibration loaded).
- 2) Collect field readings. When finished, put DLC to sleep.
- 3) RETRIEVE logged sensor data from DLC to a PC as .MV filetype.
- 4) Run POSTPROC to process .MV files to calculate percent reflectance and store in .RFL filetype.

Subsequent analysis would be done on the .RFL files.

Other:

- o **Always keep the .MV files.**

Sometimes it can be handy to go back and insert the calibration constants from a post data collection recalibration or correct dates, times, or other configuration settings and then recalculate the percent reflectances (rerun POSTPROC).

If you are unable to resolve a problem, send the .MV file(s) along with a brief description of the problem to ***CROPSCAN, Inc.***

- o **Recalibrate at least once per year.** Step-by-step instructions with pictures are at www.cropscan.com/techsupt.html, click on appropriate link under Calibration Instructions section.

Additional detail and step-by-step instructions with some pictures for some of the above steps can be viewed at www.cropscan.com by clicking on the Technical Support link and then clicking on the appropriate topic.