DMM600
Duff Moisture Meter

The DMM600 Duff Moisture Meter is the product of collaboration between Campbell Scientific and USDA-Forest Service, Rocky Mountain Research Station, and Missoula Technology and Development Center. The DMM600 measures volumetric water content of organic forest floor material. It is a portable, battery-powered device that uses measurement methods sensitive to the dielectric properties of the material being measured.

The DMM600 consists of a cylinder that houses the electronics, a sample chamber with a compression knob, and an LCD readout. To measure duff water content, the sample is placed in the sample chamber and the compression knob is turned until an audible indicator signals the sample is properly compressed and the measurement is complete. Total time for measurement is about 30 seconds. Readings are displayed in real-time only; measurements are not stored.

The DMM600 comes with a sieve and case. The sieve fits in the opening of the sample chamber. Duff is moved through the wire mesh of the sieve to break up large fragments and improve measurement accuracy in duff materials with a large range of fragment sizes. The case eases transport and provides storage for the sieve and small items such as a spare battery, screwdriver, and pencil.

The DMM600 provides an accurate measurement of moisture content in duff material, which is critical to those conducting scheduled burns as well as those attempting to battle out-of-control fires.
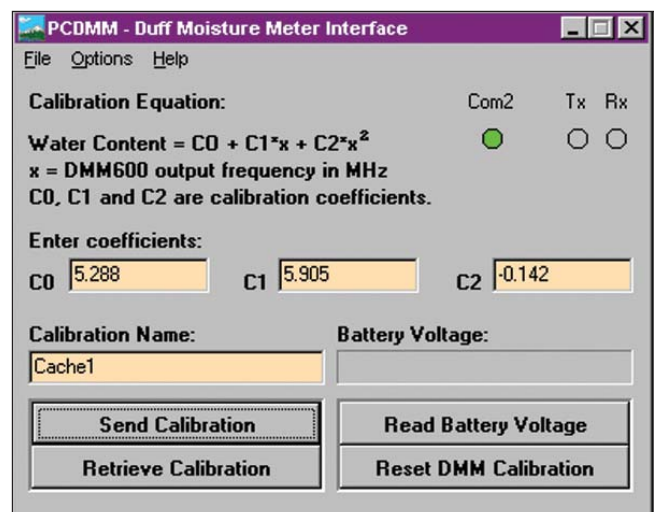
Calibration Coefficients

A standard calibration converts the output of the measurement circuit to volumetric water content. User-derived calibrations can be downloaded using PCDMM software. This is useful when using the DMM600 with atypical materials. Guidance is provided in the operating manual for deriving calibrations. This feature can also be used with known duff bulk density to convert result to gravimetric water content. Measurements derived from the standard and user-defined calibrations are alternately displayed on the LCD if a user-defined calibration has been downloaded.

PCDMM Software

PCDMM Software is supplied with the DMM600 and provides an interface using serial communications. PCDMM downloads and uploads calibration coefficients, monitors the battery voltage, and resets the DMM600.

PCDMM is PC software used to download user-defined calibrations, retrieve calibration coefficients from the DMM600, reset the DMM600, and monitor battery voltage.

Specifications

Physical

Dimensions:
    Diameter: 3.5 in. (8.9 cm)
    Length: 10 in. (25.4 cm)

Weight: 3.7 lbs (1.7 kg)

Sieve: #4, mesh = 0.187 in.

Power

Battery: 9 V alkaline.

Typical Current Drain:
    Between Measurements: ~3 mA (goes into a low-power sleep mode after five minutes of inactivity)
    Sleep Mode: 140 µA
    During Measurement: 85 mA for ~1 ms

Measurements per Battery: greater than 2000

Performance

Accuracy: ±5% full scale range

Resolution: 1% volumetric water content

The DMM600 includes the duff meter, 15749 Sieve Case, 10873 9-pin female-to-9-pin male RS-232 cable, 15697 mesh sieve, 9-V alkaline battery, 15601 padded carrying case, Phillips screwdriver (not shown), and CD containing PC-DMM software (not shown).

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The DMM600 was developed in cooperation with the USDA-Forest Service, Rocky Mountain Research Station, and Missoula Technology and Development Center.