

# MPKit - Soil Moisture

The MPKit is a portable soil moisture sensor that enables rapid sampling of Volumetric Soil Water Content (VSW%). The MP406 is inserted to the required depth of measurement and the moisture content is read out on the display of the MPM160 meter. The readings are also stored for later recall or download to a computer.

## The MPKit consists of the following:

**MP406 Moisture Probe** rapidly measures the soil moisture by pushing the needles of the sensor into the soil surface or the soil profile in an augered hole. The needles are welded to the body and will not break.

**MPM160** is especially designed for use with MP406 Moisture Probe. It provides the power to the MP406 Moisture Probe for the reading and display of MP406 measurements. The measurements are displayed directly in both raw mV and calibrated Volumetric Soil Water Content (VSW%).

## The MPM160 also has:

- Memory
- Cable
- Download Software

**MPExt Rod** consists of a pair of chrome extension rods. Each rod is 35 cm long enabling measurement of soil moisture to 70 cm depth in the soil profile. One rod connects to the MP406 and the other has a "T" handle. Additional 35cm extension rods are available upon request.



The MPKit measuring surface volumetric moisture content



MPKit

**MP Case** is made of high quality aluminium with strong foam cutout. The case carries the MP406, MPM160 and MPExt Rod.

**MP Auger Set** (optional) consists of a spiral drill bit and T handle. The auger set drills a 50 mm diameter hole enabling the MP406 to be easily pushed to the depth required for measurement.



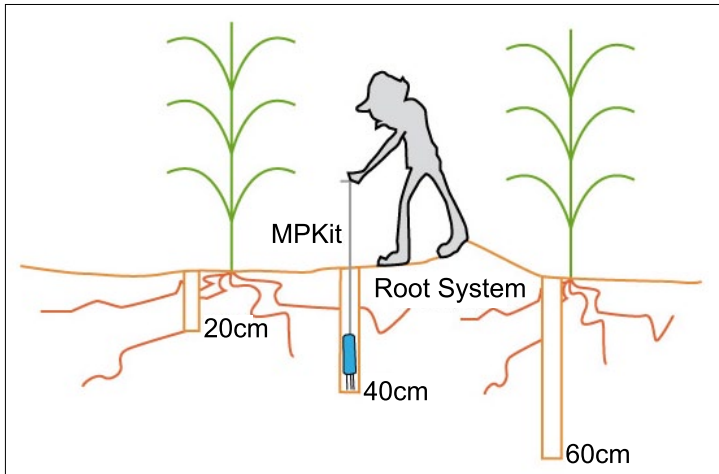
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## MP406 Soil Moisture Probe

The MP406 can be used to measure the soil moisture for scientific research or irrigation management. In either situation the MP406 can:

- Rapidly measure soil moisture by pushing the needles of the sensor into the soil surface or soil profile. (MPKit)
- The MPKit is a very suitable substitute for the Neutron Probe for irrigation scheduling
- Make measurements over time by permanently burying the MP406 and connecting it to a data logger. (MP406)
- Control irrigation by permanently burying the MP406 and connecting it into an irrigation controller with industry standard 4-20mA interface. (MP406C)

The MP406 Moisture Probe can also be used to measure the moisture content in many materials such as soil and materials used in roadway and building construction.



The MPKit can measure to any depth down an augered hole.



## Irrigation Scheduling

A series of holes are augered to the top (20cm), middle (40cm) and bottom (60cm) of the root zone. The augered holes have a 50mm PVC tube inserted. This enables routine measurement of soil moisture at the same location and depth for irrigation scheduling.

The MPKit, when used in this manner has the same application as the Neutron Probe.

## Theory of Operation

The MP406 has a high frequency moisture detector, which uses the standing wave principle to indicate the ratio of two or more substances forming a body of material, each substance having a different dielectric constant (Ka).

The moisture measurement of the material is based upon the fact that in a water:soil:air matrix, the dielectric constant is dominated by the amount of water present. Then the soil water content can be measured exactly because changes in water content of the soil result in changes in the dielectric constant of the soil.





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<b>MP406 Soil Moisture Sensor</b>	
Measurement Range	0-100 VSW% (Volumetric Soil Water %)
Accuracy	$\pm 1$ VSW% after calibration to a specific soil type, or $\pm 5$ VSW% using the supplied generic soil calibration
Response Time	Less than 0.5 seconds
Stabilisation Time	3 seconds approximately from power-up
Environment	Environmentally sealed, can be permanently buried in the soil
<b>Mechanical</b>	
Total Length	215 mm
Needle Length	60 mm
Needle Diameter	4 mm
Needle Separation	14 mm
Needles	Stainless Steel
Exterior	ABS Plastic
Cable	4.5 m Standard
<b>MPM160 Meter</b>	
Analogue input signal range	0-1200 mV
Resolution	0.1 VSW%
Display	1 line 16 character LCD which displays battery status, reading number, raw mV and calibrated VSW%
Keys	Light touch, field rugged keyboard, double sided READ key for easy right or left single handed field use.
Memory	1 mb
Download Cable	Cable with USB connector
Software	Windows Graphical User Interface (GUI) to download .CSV data file for importing to Excel
<b>Optional Auger Set</b>	
Shell Auger	50 mm x 1 m
Spiral Auger	50 mm x 1 m
Extension	40 mm x 0.6 mm



MP406

