THE LATEST TECHNOLOGY FOR THE BEST MEASUREMENTS

Technical Data





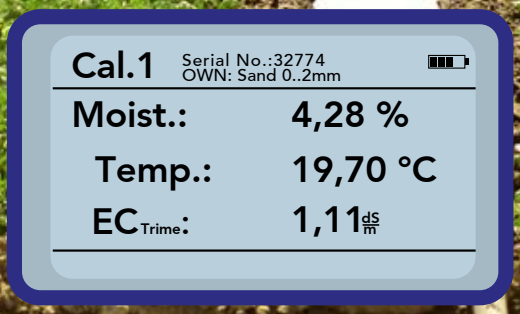
	TRIME©-PICO64			TRIME©-PICO32			TRIME©-PICO IPH 2		
Power supply:	7V..24V-DC								
Power consumption:	100mA @ 12V/DC during 2..3sec. of measuring								
Moisture measuring range:	0..100% volumetric water content								
Accuracy (in % volumetric water content):									
conductivity range:	0..6dS/m	6..12dS/m	12..50dS/m	0..6dS/m	6..12dS/m	12..50dS/m	0..6dS/m	6..12dS/m	>12dS/m
Moisture range 0..40%:	±1%	±2%	with material specific calibration	±1%	±2%	with material specific calibration	±2%	±3%	±4%
Moisture range 40..70%:	±2%	±3%		±2%	±3%		±3%	±4%	±5%
Repeating accuracy:	±0.2%	±0.3%		±0.2%	±0.3%		±0.3%	±0.5%	±1%
Temperature caused drift of electronics (full range):	±0.3%								
Soil temperature measuring range:	-15°C...50°C								
Soil temperature measuring accuracy:	±1,5°C absolute; ±0,5°C relative						±0,2°C		
Measurement volume:	1,25L ≙ 160x100mm diameter			0,25L ≙ 110x50mm diameter			3,0L ≙ 200x150mm diameter		
Operating Temperature:	-15°C...50°C (extended temperature range on request)								
Calibration:	Calibration for a wide range of standard soil types (in accordance with Topp (equation))								
	standard calibration for most soils, customizable material specific calibration, storage of up to 15 user defined calibration curves, calibration of dielectric permittivity is *possible*			standard calibration for most soils, customizable material specific calibration, storage of up to 15 user defined calibration curves, calibration of dielectric permittivity is *available*			standard calibration for most soils, customizable material specific calibration, storage of up to 15 user defined calibration curves, calibration of dielectric permittivity is *possible*		
Probe body:	waterproof sealed PVC (IP68)								
Size:	155 x Ø63mm			155 x Ø32mm			354 x Ø41mm		
Rod lenght:	standard: 160mm			standard: 110mm			standard: 200mm		
Rod diameter:	6mm			3,5mm			—		
Interfaces:	IMP-BUS RS485 Analogue output: 2x 0..1V, 0(4)..20mA[1] 0..100% vol. water content -40..+70°C soil temperatur						RS485		
Option 1 (RS485 & analogue):	1,5m cable with 7-pin female connector						3,5m cable with 7-pin female connector		
Option 2 (IMP-BUS):	1,5m cable with 7-pin female connector						—		
Option 3 (all interfaces):	5m cable with end splices (all interfaces) Optional available for cable extension: E-BOX (cable extension box) [1]Optional available for cable extension and current output: C-BOX (0..1V to 0(4)..20 mA converter box)						—		



Technical data HD2

Convenient one-hand operation. The multi-line LCD display shows all information at a glance.

Power supply:	4,8V-DC, 2000mAh battery capacity. Full battery for up to 1,500 measuring cycles sufficient.
Resolution:	0,01%
Calibration:	(on sensor)
Case:	Weatherproof, robust aluminium diecast (IP67)
Dimensions:	150 x 64 x 36mm (Length x width x height), Weight: 437g



The operating mode „normal“ is the ideal mode to display all collected soil parameters of a TRIME-PICO probe. It shows the moisture in „%“, the soil temperature in „° C“ or „° F“ and the soil conductivity EC_{TRIME} in „dS / m“.

Fast and easy moisture measurement for all kind of soils:



Get three important parameters at a glance:



All packed in a rugged carrying case:



IMKO GmbH ■ Am Reutgraben 2 ■ Germany-76275 Ettlingen ■ Phone +49-(0)72 43-59 210 ■ Fax +49-(0)72 43-59 21 40 ■ e-mail INFO@IMKO.de ■ www.IMKO.de

HD2 the Mobile Moisture Meter for Soils

Precise as laboratory and as mobile as a cell phone



- All of the TRIME-PICO probes can be connected to the HD2: TRIME-PICO64, TRIME-PICO32 und TRIME-PICO IPH 2.
- The TRIME-PICO pobes can now report soil EC as standard simultaneously with soil moisture content percentage.
- The TRIME-PICO probes measure conductivity with the same large soil volume as it will be used for the TDR moisture measurement.
- Both durable and waterproof construction ensures safe handling even under difficult environmental conditions.

A RELIABLE, PRACTICAL AND EASY-TO-USE DETERMINATION OF MOISTURE, SOIL CONDUCTIVITY AND SALT CONTENT WITH TRIME PROBES: PICO64, PICO32 AND PICO IPH 2.

IMKO´s TRIME TDR-probes can now report soil EC as standard simultaneously with soil moisture content percentage. A manual conversion based on researched curves for different soil types enables the user to derive a soil EC expressed in mg/l TDS (total dissolved salts).

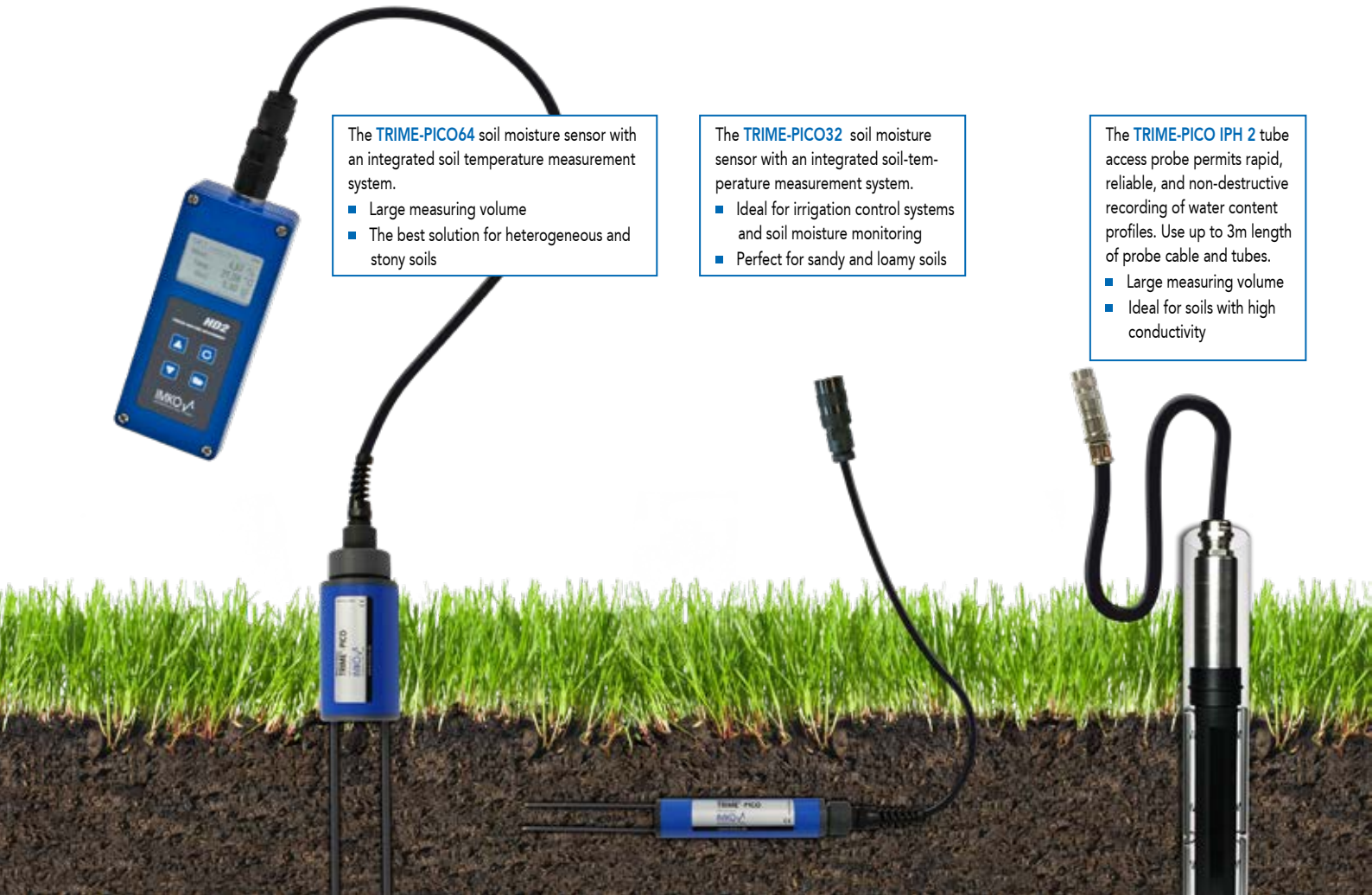
Note:
Only TRIME®-TDR guarantees excellent accuracy in high saturated soils with high pore water electrical conductivity.

- TRIME-PICO probes measure conductivity with the same large soil volume as it will be used for the TDR moisture measurement. The contact of the probe rods inside the soil is far less critical as with „galvanic“ EC probes with a point to point measurement where even small air gaps lead to significant deviations.
- TRIME-PICO probes use coated and therefore isolated rods which guarantee the non-appearance of galvanic accumulation along the rods allowing for long-run installations over many years. Unisolated rods means a risk of galvanic reactions and possible influence on the sensor´s reading with serious problems when the probes must be removed from larger depths due to a rod cleaning.
- TRIME-PICO probes measure moisture and conductivity very precisely at a frequency of 1GHz with a better and more exact separation of moisture and conductivity in comparison to capacitive probes with lower frequencies. This means that in practice, a reliable determination of the pore water conductivity ECw and respectively TDS (mg of salt per liter water) is possible at different moisture levels.
- All TRIME-PICO probes work with a concurrently basic calibration for moisture and conductivity. This allows a check of the limits of saline stress in soils according to standards of FAO2006 for specific soils.

The **TRIME-PICO64** soil moisture sensor with an integrated soil temperature measurement system.
- Large measuring volume
- The best solution for heterogeneous and stony soils

The **TRIME-PICO32** soil moisture sensor with an integrated soil-temperature measurement system.
- Ideal for irrigation control systems and soil moisture monitoring
- Perfect for sandy and loamy soils

The **TRIME-PICO IPH 2** tube access probe permits rapid, reliable, and non-destructive recording of water content profiles. Use up to 3m length of probe cable and tubes.
- Large measuring volume
- Ideal for soils with high conductivity



THE ANALYSIS OF SOILS FOR ELECTRICAL CONDUCTIVITY EC_{TRIME}

For agricultural and horticultural soils, the measurement of Electrical Conductivity is an immensely important measurement. Electrical Conductivity measures the amount of total dissolved salts (TDS) or total dissolved ions in water. To complicate matters, some ions such as Sodium and Chloride will contribute more to EC than others such as Phosphorus and Potassium.



Plants require nutrients such as Nitrogen, Phosphorus, Potassium, Magnesium in large quantities hence they are called major nutrients and also smaller amounts of elements such as Iron, Manganese , Molybdenum and these are called micro nutrients or sometimes referred to as trace metals. Fertilisers are supplied to plants as compounds for example Ammonium Nitrate which supplies Nitrogen in the form of Nitrate or Ammonium. Micro-organisms will break down these compounds so they are more readily available for uptake by the plants. Levels of some ions such as Chlorides are less desirable and in great quantities can be harmful to plant growth. The quantity of ions or salts in a soil is of huge importance. Too much or too few nutrients will create a restriction in plant growth.

IMKO has studied the subject in detail and has come up with a breakthrough. By using coated rods and measuring over the length of the probes, all TRIME probes can now accurately report what IMKO calls EC_{TRIME}. This measurement takes account of soil moisture and conductivity by volume. Because soil moisture is so important in the calculation of EC, all different TRIME probes now incorporate TDR calibration curves for a selection of soils. Special graphs have been constructed so that the user can convert the EC_{TRIME} reading to grams/litre of dissolved salt. So far curves are available for sandy and loam soils and it is intended to produce a handful of curves to cover most situations. At this moment in time, conversion of EC_{TRIME} to mg/l TDS is done manually.

