



## Tensio 100 – Mobile Field Tensiometer

The Tensio 100 was developed for the fast and easy in-situ determination of the tension. The design in combination with the auger included in the set allows for a fast installation without additional tools or great installation effort. Due to the specific ceramic and the pre-loading screw the response time is less than 3 seconds. Stowed in the protective tube auger and tensiometer can be carried easily and safely and are always ready for use.

The Tensio 100 is available with mechanical or electronic readout unit as well as optionally with an integrated data logger (only for electronic readout unit).

### Flexible Applications

The measurement principle of the Tensio 100 accords the measurement principle of conventional water filled tensiometers. The soil water is connected to the water volume inside the tensiometer via a porous ceramic cup. Inside the tensiometer the pressure is measured with a pressure transducer.

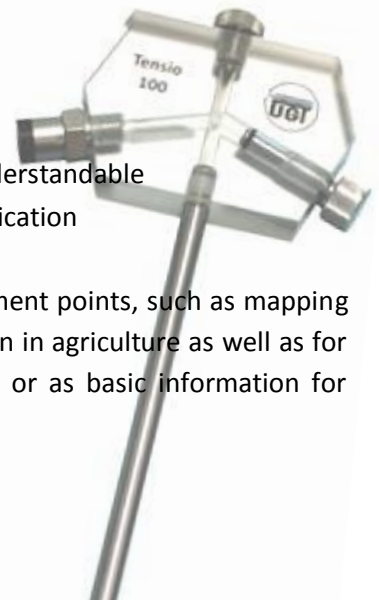
In line with the planned application different types with different pressure transducers and different standpipe length of the Tensio 100 are available.

#### Tensio 100 – with mechanical manometer

- Displays the current tension on a mechanical Manometer
- Simple and cost-efficient system
- Ideally suited for teaching purposes, since the operating principle is clearly understandable
- The diagram printed on the back of the tensiometer head enables a fast classification of the measured values even without extensive expertise
- Very suitable for short-termed measurement campaigns with many measurement points, such as mapping the current tension allocation or checking and optimising the state of irrigation in agriculture as well as for concomitant reference measurements for other sensors (e.g. soil moisture) or as basic information for sampling
- No data logging
- Not suitable to remain in the field

#### Tensio 100 RFID

- Displays the current tension on an electronic handheld device, which receives the data of an electronic pressure transducer via RFID
- The displayed data are stored on the handheld and are available as digital data set
- The diagram printed on the back of the tensiometer head enables a fast classification of the measured values even without extensive expertise
- Very suitable for capturing short-term tension changes over a period of up to one day.
- Very suitable for determining the short-term reaction of a soil/eco system to an event and for estimating the water movement in the soil
- Very suitable as concomitant measurement for infiltration tests
- Suitable to remain in the fields
- No automated data logging





### Tensio 100 RFIDplus

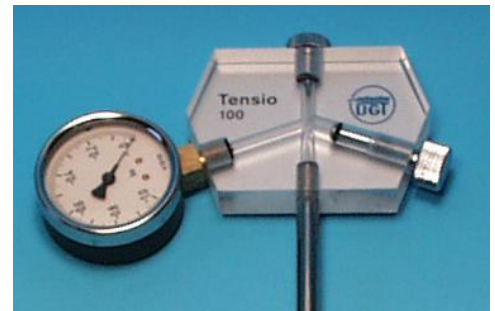
- Data recording with an electronic pressure transducer and storage on an integrated data logger
- The data can be transferred to a laptop or PC via an RFID adapter using the USB port
- The diagram printed on the back of the tensiometer head enables a fast classification of the measured values even without extensive expertise
- Very suitable for capturing medium-term tension courses over periods of up to several months
- Very suitable for measuring campaigns with changing measurement points, for example, for preliminary investigations as a basis for planning new measurement sites / project concepts

### Adjusted Length

Choose your Tensio 100 in the appropriate length for your designated measurement depths of our standard lengths 30 cm, 60 cm and 90 cm or order the Tensio 100 with a custom standpipe length that is tailored to your application.

### Easy Maintenance

Entrapped air is easily recognizable in the clear acrylic head of the Tensio 100 and can easily be fixed in the field using the simple venting function of the tensiometer. Even dried Tensio 100 tensiometers can be refilled trouble-free in the field. If necessary the ceramic cell can be exchanged in the field easily and without any additional tools.



### All in One Set

The Tensio 100 is offered as handy set for field use.

- **Tensiometer**, optionally Tensio 100, Tensio 100 RFID or Tensio 100 RFIDplus.
- **Insertion auger** made of stainless steel with cone-shaped outline for easy installation of the tensiometer in the soil and for optimum contact between ceramic cell and soil.
- **Protective Tube** for easy transport of tensiometer and auger, as protection against damage due to mechanical force and to prevent the tensiometer from drying out to keep it ready for immediate use.

### Advantages

- Can be easily and safely transported in the protective tube
- Always ready to use
- Robust design
- Fast and simple measurement





## Technical Specifications

	Tensio 100	Tensio 100 RFID	Tensio 100 RFIDplus
<b>Pressure measurement</b>	Precision vacuumeter	Electronic pressure transducer	Electronic pressure transducer
<b>Measurement range</b>	0 ... -85 kPa	0 ... -85 kPa	0 ... -85 kPa
<b>Output unit</b>	bar	bar	bar
<b>Accuracy</b>	0,01 bar	±0,0045 bar	±0,0045 bar
<b>Resolution</b>	0,01 bar	0,001 bar	0,001 bar
<b>Data output</b>	Manual reading	Display and storage on handheld device	Display and storage on Laptop/PC
<b>Interface</b>	/	RFID-Handheld device	RFID/USB
<b>Data memory</b>	/	/	Approx. 2048 pressure and temperature data sets with time stamp
<b>Power supply</b>	/	External via RFID-Handheld device	Integrated battery <b>Lifetime</b> at 25 °C approx. 4...5 years with permanently 1 measurement per minute <b>Storage life</b> at 25 °C approx. 10 Years with a self-discharge of approx. 1% per year
<b>Degree of protection</b>	IP54	IP67	IP67
<b>General</b>			
<b>Response time according to RICHARDS</b>	< 3 s		
<b>Operating temperature</b>	0 ... 40 °C		
<b>Ceramic</b>			
<b>Length</b>	24 mm		
<b>Diameter</b>	10 mm		
<b>Air entry point</b>	> -85 kPa		
<b>Hydraulic conductivity</b>	8.1x10 <sup>-8</sup> m/s		
<b>Standpipe</b>			
<b>Length</b>	30 cm / 60 cm / 90 cm / customised on request		
<b>Diameter (outer)</b>	10 mm		
<b>Material</b>	V2A stainless steel		