

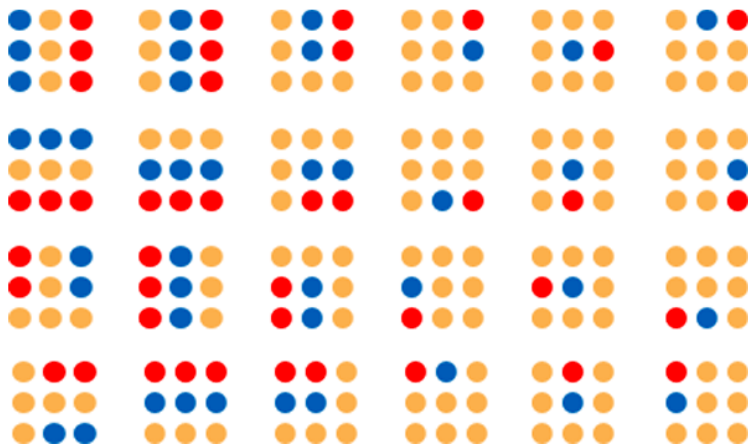
# Strengths of Murata soil sensors

- ↓ High-precision EC sensors
- ↓ High-performance EC sensors
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## High-precision EC sensors measure pore water EC with nine electrodes, an industry first.

Soil type, air type, water type, ion type . . . variables abound in EC measurement, but Murata EC sensors eliminate the uncertainty with multiple measurement patterns, and by changing resistance measurement ranges (cell constants).

< Example measurement patterns of Murata's nine-electrode EC sensor >

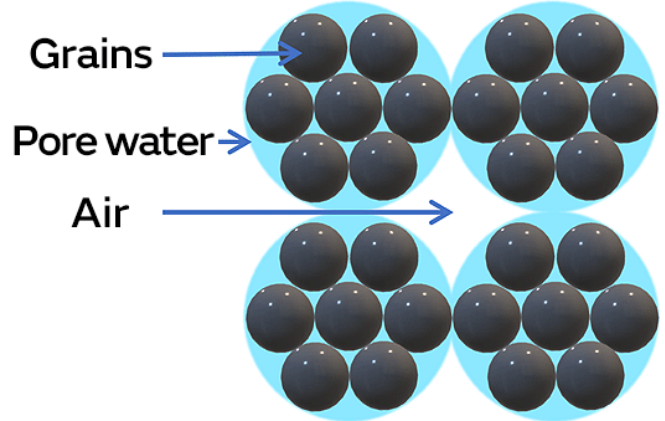


## High-performance EC sensors equipped with proprietary algorithms

With its three elements—grains, air, and pore water—soil is impossible to measure accurately with few electrodes due to the outsized impact of water content. However, Murata soil sensors are equipped with proprietary algorithms that make it possible to measure fertilizer content only.

## Three constituent elements of soil

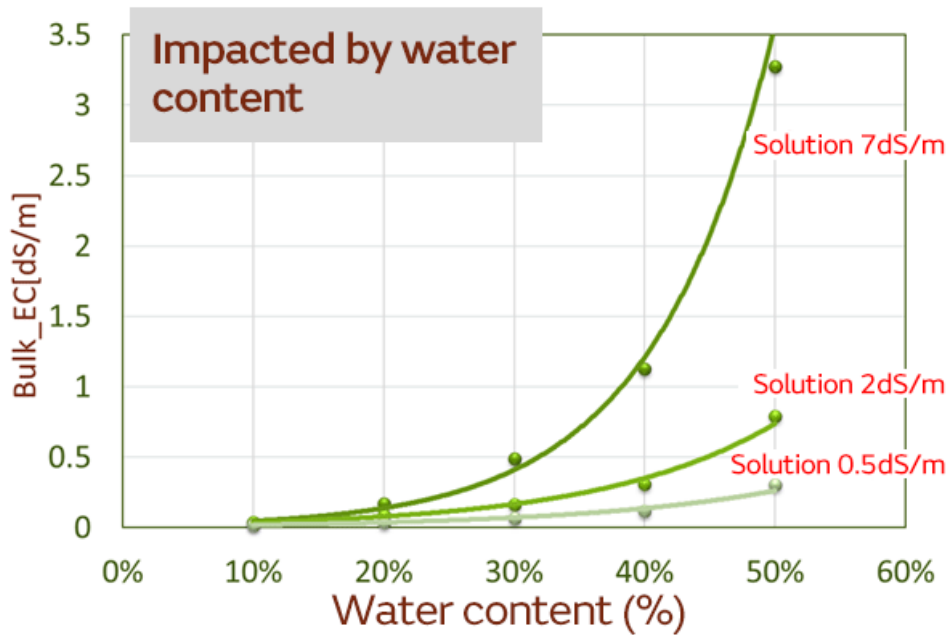
Soil comprises three elements: grains, air, and pore water.



## The difference between conventional EC sensors and Murata's high-performance EC sensors

Conventional EC sensors are impacted by **the amount of water and fertilizer** in soil.

Bulk EC is problematic because it considers all three soil elements to be resistors, and higher resistance values are more susceptible to the amount of water and fertilizer (ion) present.

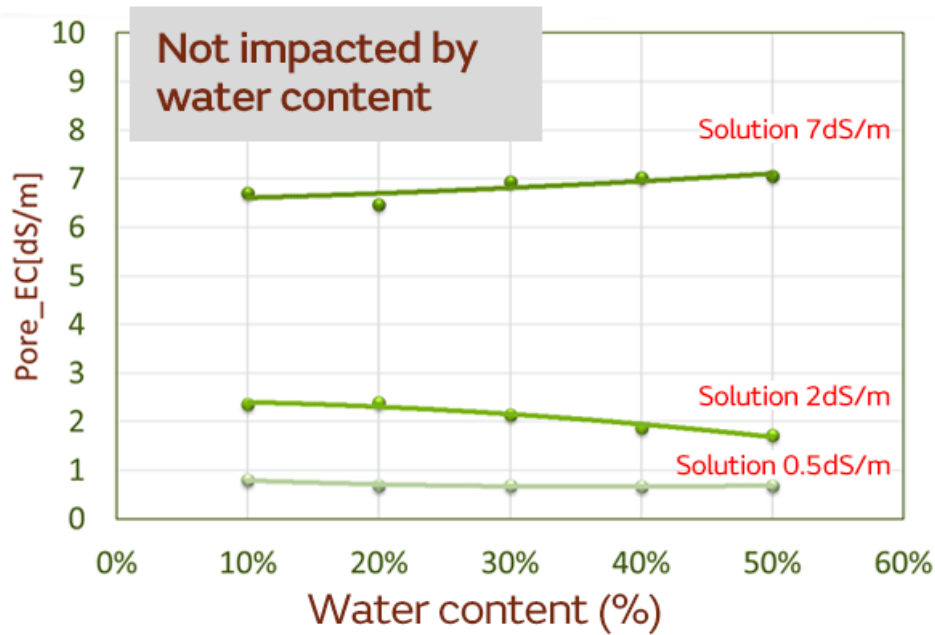


< Conventional EC sensor dependence on water content >



Murata soil sensors use proprietary algorithms to measure **fertilizer content only**.

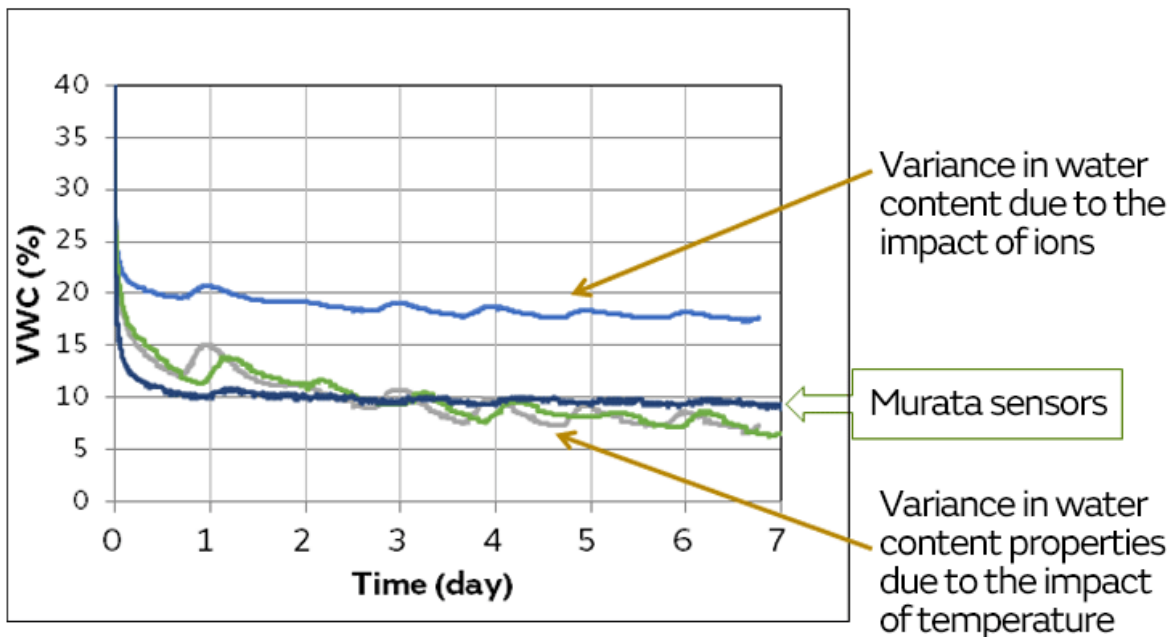
To grow crops, farmers need to know the amount of fertilizer ions present in pore water, and crop growth depends on the fertilizer content in pore water. It is also important to avoid contaminating the water by over-fertilizing or accumulation of chemical fertilizers in soil due to constant fertilization.



< Murata EC sensor dependence on water content >

## High-precision water content sensors that correct temperature dependence and control the impact of ions

Murata's sensors provide unfailingly accurate water content measurements with algorithm-enabled correction of temperature dependence and high-frequency measurements that control the impact of ions.



< Comparison of water content sensor properties >

# Lineup

Part Number	Interface
SLT5005	RS232
SLT5006	UART
SLT5007	RS485
SLT5008	SDI-12
SLT5009	RS485MODBUS

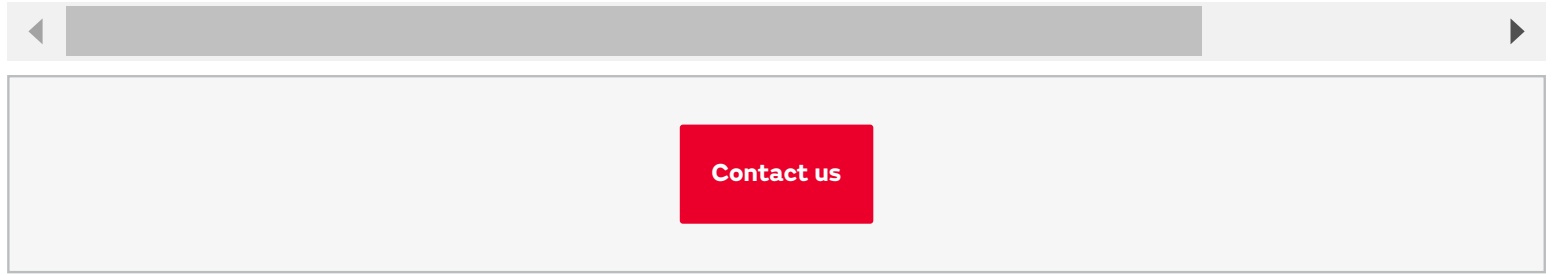
## Electrical specifications

Electrical conductivity (EC)		
Measurement range [dS/m]	0 - 5	
Resolution [dS/m]	0.001	
Accuracy [%]	±3	
Temperature		
Measurement range [°C]	-20 - 60	
Resolution [°C]	0.0625	
Accuracy [°C]	±1.0 ±1digit	
Moisture (volumetric water content)		
Measurement range [%]	0 - 60	
Resolution [%]	0.1	
Accuracy [%]	±3	



Items	minimum	typical	maximum	minimum	typical	maximum
	UART, RS232, RS485, MODBUS			SDI-12		
Voltage [V]	3.0	-	6.0	9.6	-	16
Working current [mA]	25	30	50	5	8.3	15
Working temperature [°C]	-20	-	60	-20	-	60

Items	minimum	typical	maximum	minimum	typical	maximum
Measurement cycle [ms]	Free			Free		
Dustproofing/waterproofing	IP68 equivalent			IP68 equivalent		



## Related links

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A Field Trial Utilizing a Soil Monitoring System to Visualize the Condition of Agricultural Land

> **Product News**

Growing the Future

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