FEATURES

- Arduino and Raspberry Pi client software libraries.
- Dust and waterproof
- Calibration functions for EC and Dielectric permittivity
- Low cost and easy to use.
- Fairly accurate readings

ELECTRICAL PROPERTIES

	Min/Sleep	Typical	Max
Supply voltage (VCC), V	2.5	3.3	3.5
Working current（VCC=3.6V）, mA	-	12	14
Operating Temperature Range, Celsius	-20	25	70

In case your application needs to power up sensor before measurement, time to wait before taking measurement is 100ms (1.7s for old version before v1.1).

MEASUREMENT PROPERTIES

	Resolution /avg Tolerance	Range
Dielectric permittivity (ε) (Temperature corrected)	0.1 ε /5%	1 (air) to 80 (water)
Electrical Conductivity (mS/m)	0.01 mS/m /20%	0···300 mS/m
Temperature (°C)	0.1°C /3%	-20 to 70°C
Volumetric Water Content (%) calculated from dielectric permittivity by Topp equation (Topp et al, 1980): $\theta = 4.3 \cdot 10{-6}\,\varepsilon\,3 - 0.00055\,\varepsilon\,2 + 0.0292\,\varepsilon - 0.053$	1%	0 – 100% VWC

PHYSICAL PROPERTIES

Sensor dimensions 114 x 24 x11
Cable length 2.4m

RASPBERRY PI

wiring to Raspberry Pi connector:

Raspberry Pi pin #1 - sensor **red** (3.3v)
Raspberry Pi pin #3 - sensor **green** (SDA)
Raspberry Pi pin #5 - sensor white (SCL)
Raspberry Pi pin #9 - sensor **black** (GND)
Raspberry Pi pin #9 - sensor shield(GND)

Enable i2c interface in Raspberry Pi

see this manual

Get software

This sample software demonstrates hot to make command line interface for the sensor. Sensor default I2C address is 0x63.
To get software execute following on Raspberry Pi:
git clone https://github.com/tinovi/i2cRaspberry
cd i2cRaspberry
chmod 777 *.sh to add permissions for execute
./mk.sh to make demo executable
./read.sh to read data from sensor
./svcs 0x63 addr 0x65 to change default address 0x63 to new I2C address: 0x65

CALIBRATION RASPBERRY

1) Download and install raspberry pi software described in previous section
2) **cd i2cRaspberry** - cd to software directory
3) **./read.sh** - read data
4) **./cal_air.sh** - hold sensor in the air, and execute this command to calibrate sensor in the air
5) **./cal_water.sh** - submerge sensor in the water or soil with the water, and execute this command to calibrate water.
6) **./cal_ec.sh <ec uS/m>** - put sensor to the soil or calibration fluid with known uS/m and write correct uS/m
7) **./read.sh** - read data

WARNING!!! for SDA and SCL lines use sensor VCC (VCC max 3.6v) voltage levels only. Please use voltage level converter module, connect sensor to B side, 5v arduino to A side (see picture)
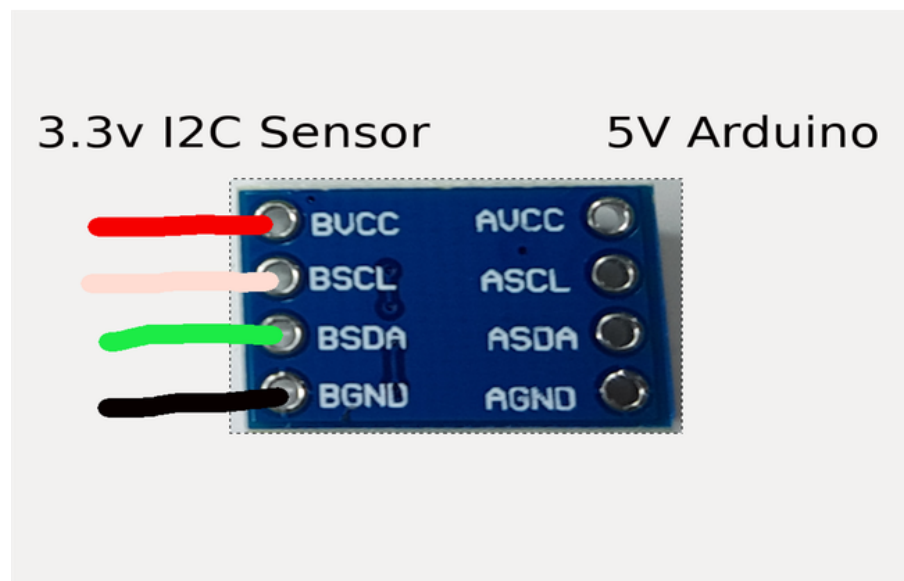
wiring to Arduiono:

Arduiono pin #3V3 - sensor **red** (3.3v)
Arduiono pin #A4 - sensor **green** (SDA)
Arduiono pin #A5 - sensor **white** (SCL)
Arduiono pin #GND - sensor **black** (GND)
Arduiono pin #GND - sensor shield (GND)

Get software

This sample software demonstrates hot to read data from sensor.
Sensor default I2C address is 0x63.
Download Arduino library from there.