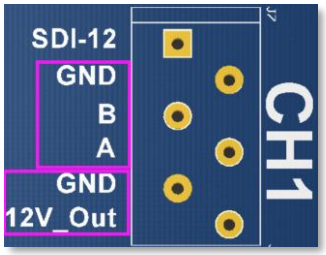
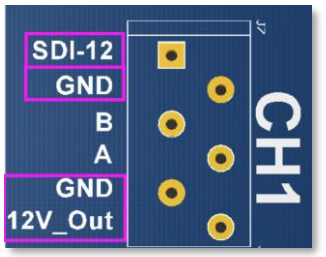
651X / 652X Type - WiSenMeshWAN® 4-Channel RS-485 / SDI-12 Interface Node	
Basics	
Battery Power	Qty. x 4 (3.6V Lithium primary D-Cell ER34615)
Accuracy Stop Voltage	2.1VDC
Mesh Stop Voltage	2.1VDC
Battery Connection	Standard Aluminium Battery Holder
Alternative DC Input	3.6VDC or 7-32VDC@Min. 1A
Output Current	Max. 600mA+@12V per channel (with Internal battery ONLY) Max. 1000mA@12V per channel (with External DC supply)
Local Storage	Min. 1500 Messages during Meshing at Mesh3.0 Protocol
Dimension (L x W x H)	180 x 140 x 60mm
Node Weight	1.3kg
Cable Gland	Qty. 4 x EMC-CMA14 (through cable diameter, 4-8mm)
Wire Connection	Spring type wiring terminal
Sensor Type	
Sensor Type	RS485 / SDI-12 interface sensor
No. of Inputs	4 Channels
Primary Sensor	
Please refer to the related sensors that are already compatible in this document. If there is any additional sensors that are requested, please let the Wisen team know.	
Standard System Parameter	
Temperature	Range:-40 to 85°C; Accuracy: ±1°C; Resolution: 0.1°C
Voltage	Accuracy: ±0.1V
WSN Interface	
Mesh Wireless Interface	WiSenMeshWAN® Protocol
Industrial Standard	
Casing and Painting Materials	Aluminium-Alloy Die Castings 12 (Epoxy Polyester Powder Coating)
IP Rating	≥ IP66
Fire Proof	Approved
Product Photo	

Figure. 4-Channel RS-485 / SDI-12 Interface Node Overview.

RS485 Connection	
12V_Out	12VDC Power Positive

GND	GND / Power Negative	
A	RS-485 A	
B	RS-485 B	
GND	Shielding wire (if exists)	
SDI-12 Connection		
12V_Out	12VDC Power Positive	
GND	GND / Power Negative	
SDI-12	SDI-12 Signal	
GND	Shielding wire (if exists)	

6517 Type - WiSenMeshWAN® Multi-Parameter Weather Sensor Node								
Basics								
Working Current	Max. 570mA (Typ. 210mA). Note: External 12VDC is strongly recommended when rain gauge is used.							
Dimension (L x W x H)	600 x 300 x 250mm							
Sensor Weight	3.0kg							
Primary Sensor*								
Channel Input	CH2 ONLY							CH4 ONLY ** Optional
Sensor Type	Temperature	Humidity	Light Intensity	Air Pressure	Noise Level	Wind Speed	Wind Direction	Rainfall/T
Range	-40~100°C	0~100%RH	0~200000Lux	30~1100hPa	30~130dB	0~45m/s	0~359°	0~6553.5mm/T
Accuracy	±0.3°C	±3%RH	±4%F.S.	±1hPa	±3dB	±(0.3+3%xSpeed) m/s	±3°	±1mm
Resolution	±0.1°C	0.1%RH	1Lux	0.11hPa	0.1dB	0.1m/s	1°	0.2mm
*Please refer to "X517 Weather Sensor Node Assembly Procedures" for the installation information. ** When Rain gauge is used, it is of high power consumption. And external power to the related node is required.								
Applications								
Outdoor Long term multi meteorological parameters monitoring, including: Temperature, Humidity, Light Intensity, Air Pressure, Noise Level, Wind Speed, Wind Direction and Rainfall per T. Note: CH2 must be connected with the combined weather sensors; CH4 must be connected with the rainfall sensor;								
Product Photo								

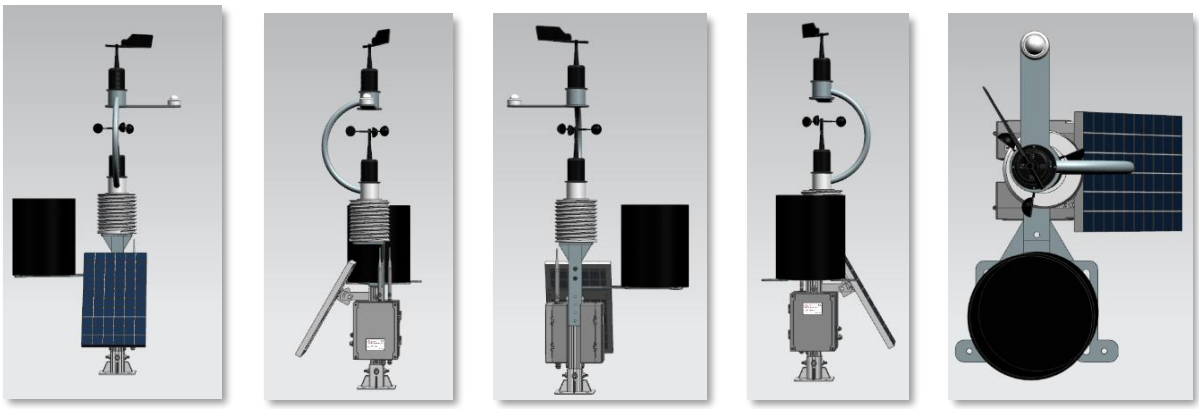


Figure. Weather Sensor Node, i.e., 651X- 4-Channel RS-485 Interface Node with Weather Sensor.

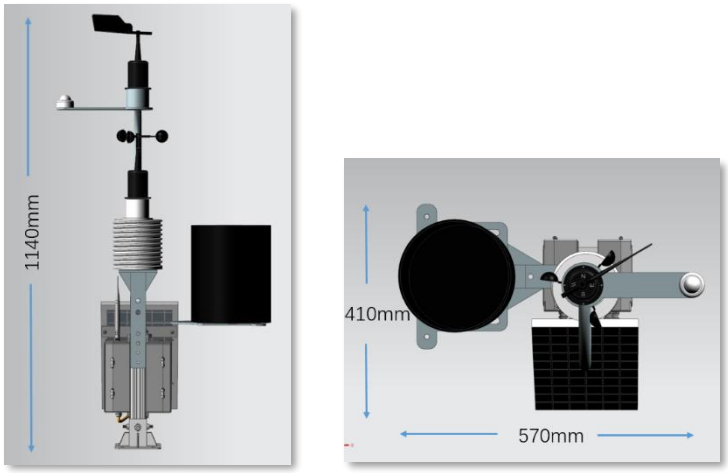


Figure. Dimensions of Weather Sensor Node.

6523 Type - WiSenMeshWAN® 4-Channel GeoInstruments HLC Interface Node

Basics

Working Current

RS485 Power Options	No. of HLC Sensors per RS-485 Channel
1). Node Internal Batteries	8 - 10
2). Wisen External Power Adaptor (12V, 3.3A)	10 - 15
3). M401 - Power Booster Unit	
A. Wisen External Power Adaptor (12V, 3.3A)	25+
B. Wisen M101 - Solar Unit (12V, 5.0A)	35+
C. 3rd Party External Power (24V, 10.0A)	50

Primary Sensor

No. of Inputs	4 Channels
Sensor Type	GeoInstruments Hydrostatic levelling cell (HLC) Type
Range	0- 50mbar
Linearity	0.03% FS
Resolution	0.02mm

Applications

Long term for monitor settlement with GeoInstruments Hydrostatic Levelling Cells (HLC).

https://www.geo-instruments.co.uk/news/settlement-monitoring-using-hydrostatic-levelling-cells

Product Photo

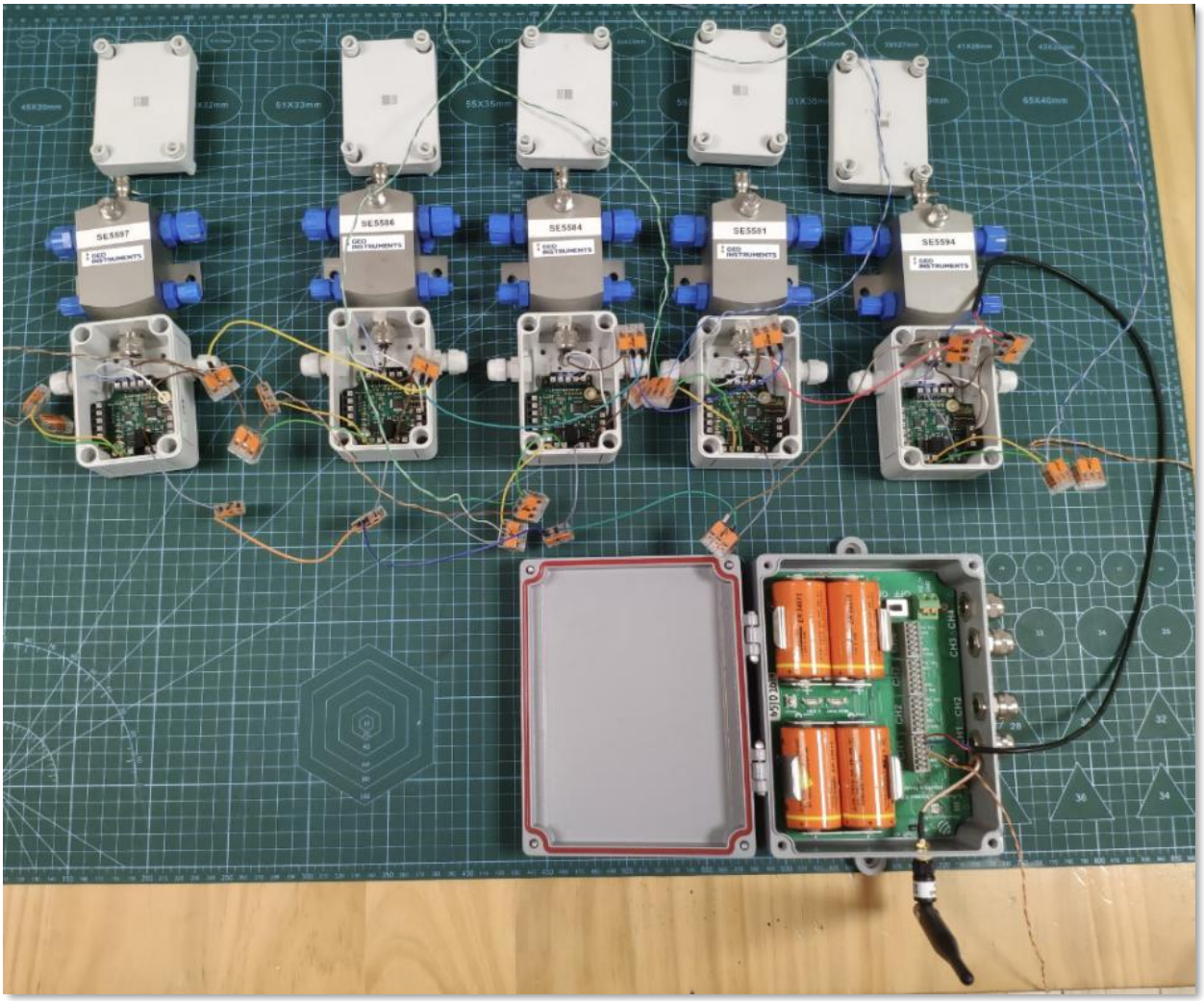
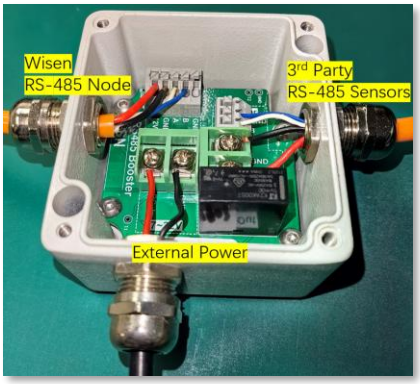


Figure. 6523- 4-Channel RS-485 Interface Node with GeoInstruments HLC.

M401- Power Booster Unit

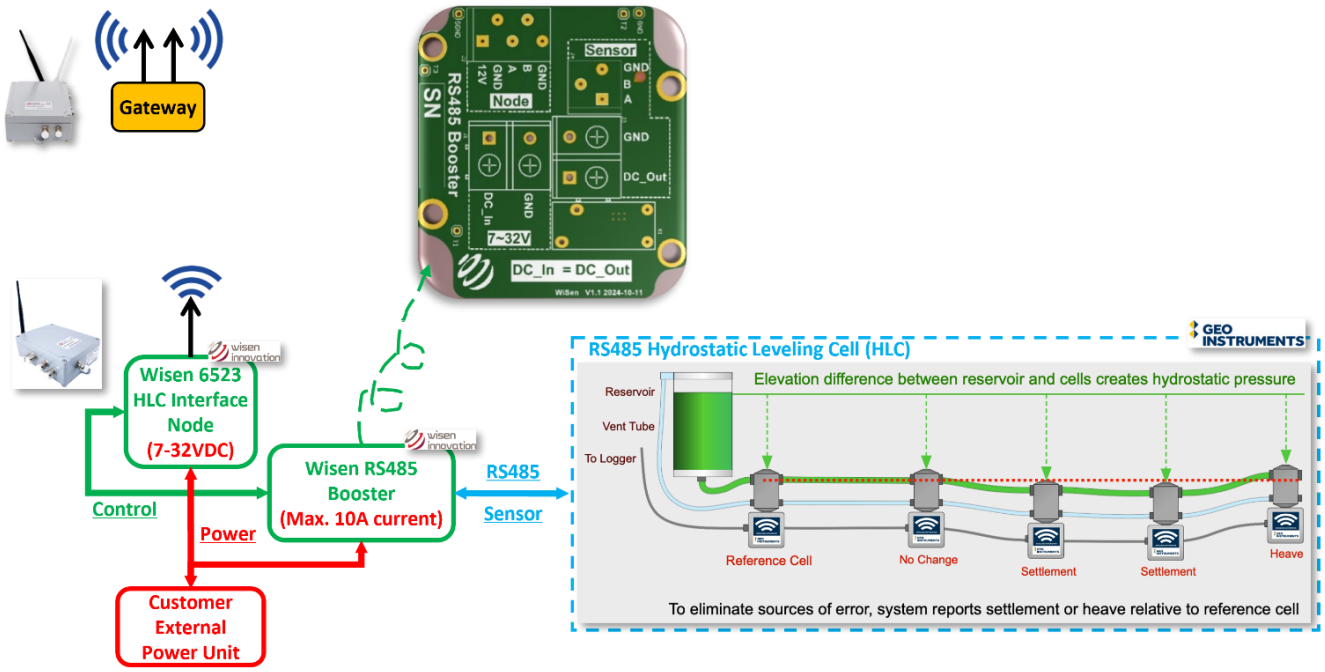
1) Each Power Booster Unit can only be connected with a single RS485 channel.
2) Powering from the external power source:
   Input voltage from: 7-32V;
   Max. through current ≤ 12A;
3) Note: the input DC voltage is identical to the output DC voltage.
4) Size: 80x75x57 !
5) Installation diagram is as below.

External Power Wire	Booster Unit Connection
Power +	DC_In
Power GND	GND
Wisen Node Wire	**Booster Unit Connection**
12V_Out	12V
GND	GND
A	A
B	B
3rd Party Sensor	**Booster Unit Connection**
Power +	DC_Out
GND	GND
A	A



B	B	
GND (if available)	GND	

6) Systematic diagram is as below.



Control
ONLY switch on the external power to the RS485 sensors during sampling time at each T;

Power
Ensure sufficient power in both voltage & current;
E.g., 24V, 20A to both the 6523 node and the HLC sensors.

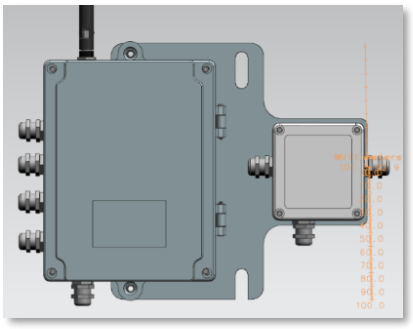
RS485 Sensor
Total number of HLC sensors supported at one single node channel ≤ Qty. 50;
Fact: The peak current is 150-200mA per HLC sensor.

7) During the normal working status:

A. External Power Unit ensures sufficient power in both voltage & current to supply the node and the RS485 sensors.
E.g., 24V, 10A to both the 6523 node and the Qty. 50 x HLC sensors.

B. RS485 node switchs on the external power to the RS485 sensors during sampling time at each T;

C. RS485 Sensor: Total number of HLC sensors supported at one single node channel ⩽ Qty. 50;
Fact: The peak current is 150-200mA per HLC sensor.



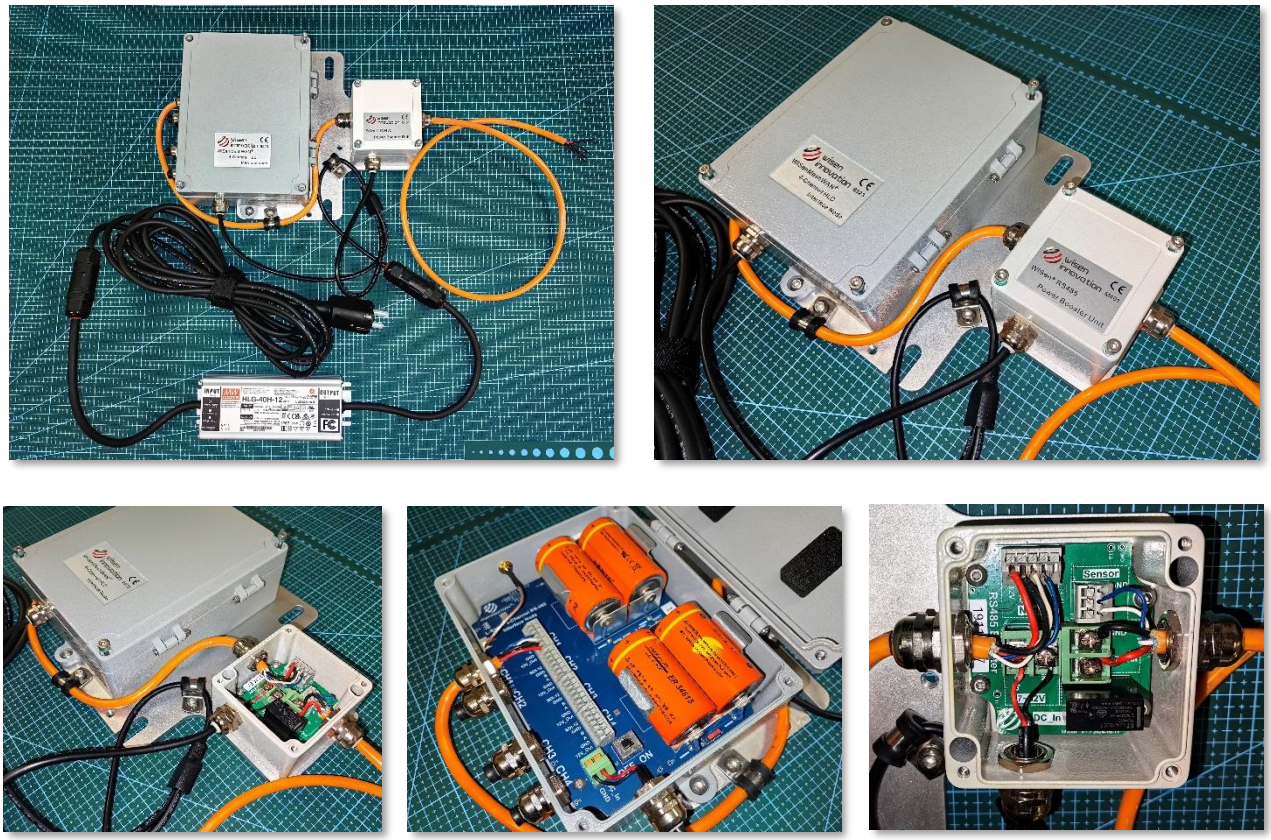
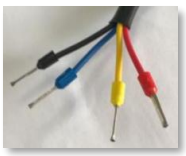


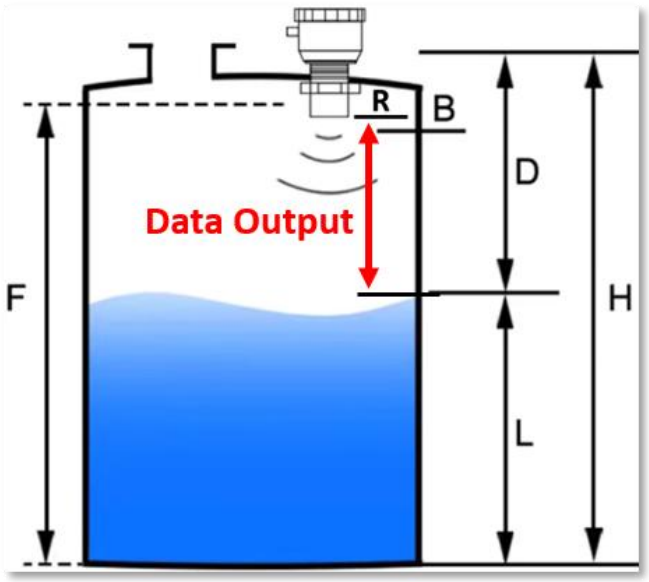
Figure. Product Photos on a bracket

6524 Type - WiSenMeshWAN® Ultrasonic Water Level Sensor Node		
Basics		
Working Current (DC)	Max. 160mA (Typ. 100mA)	
Sensor Weight	Approx. 1kg with 5.0m external extension cable (Excluding the brackets)	
Primary Sensor		
Channel Choice on Node	CH2 ONLY	CH4 ONLY
Sensor Type	Warning LED + Buzzer (*Optional*)	Ultrasonic Water Level
Range	-	0.4 to 12.0m
Accuracy	-	± 0.5%FS
Operating Air Pressure	-	One standard atmospheric pressure
Radiation Coverage Angle	-	21.5° ± 5%
Half Radiation Power Angle	-	9° ± 5%
IP Rating	IP68	IP68
Sensor Enclosure Material	ABS + Aluminum	ABS
Wiring Sequence	**Wire Colour** / **Definition**: Black / Power+/12V+; Red & White / GND	**Wire Colour** / **Definition**: Red / 12V+; Black / GND; Blue / A; Yellow / B 
Applications		
It is used for long-term monitoring of water level changes in, such as, Sewer wells, reservoirs and natural river channels; Ultrasonic water level sensor needs to be placed in the air, facing down to the water surface; The water level sensor output data is the spatial height between the bottom surface of the sensor and the water surface.		

Optional On-Node Warning LED & Buzzer unit can be added. The warning upper and lower limits can be set via remote command, so that when the water level reading exceeds the threshold, it will immediately issue red LED flashing and Buzzer sounds.

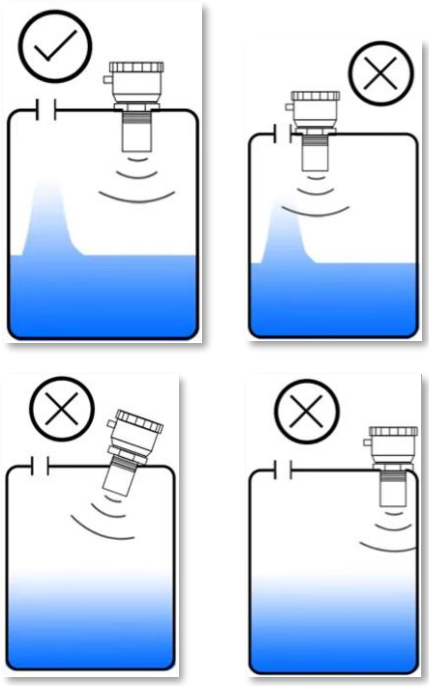
Please ensure Node Channel 2 is connected with Warning LED & Buzzer. Channel 4 is connected with Ultrasonic Water Level Sensor.

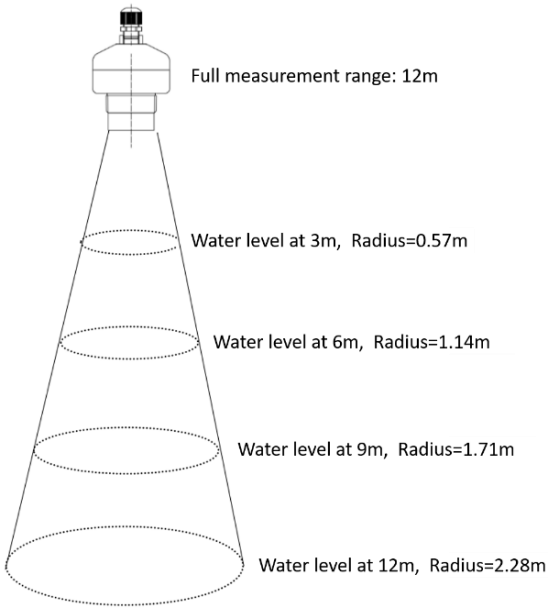
Installation Method



Data Output is as shown as the red arrow in the figure above.

R: Measurement reference plane, L: Water depth, B: Blind zone (≤ 0.4m).





Within the radiation radius of the installation location, there should be no obstacles higher than the measured object, such as stairs, pipelines, etc.

The final sensor position needs to be made according to radiation radius from the sensor. For example, as shown in the figure below, on site:

A. Installation height is at 6m;

B. Ultrasonic radiation radius at 6m is 1.14m;

There should be NO obstacles within a radiation radius of 1.14m centered on the sensor.

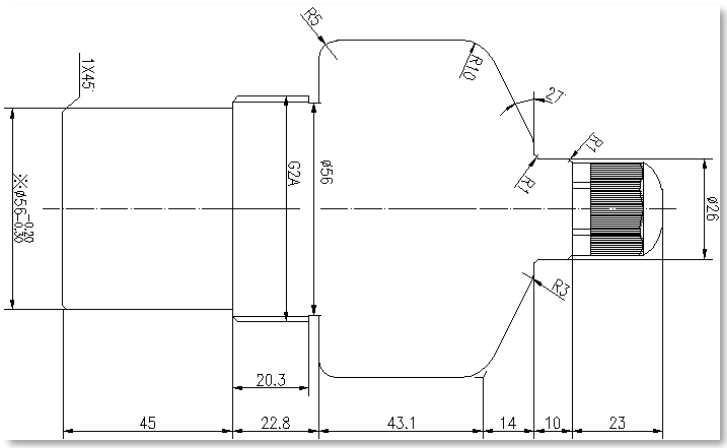


Figure. Sensor Dimension

Product Photo

Figure. Left: Ultrasonic Water Level Sensor; Right: 4-Chanel RS-485 Interface Node.

Figure. Left: Node connected with Ultrasonic Water Level Sensor connected;
Right: Node connected with Ultrasonic Water Level Sensor and Warning LED & Buzzer unit.

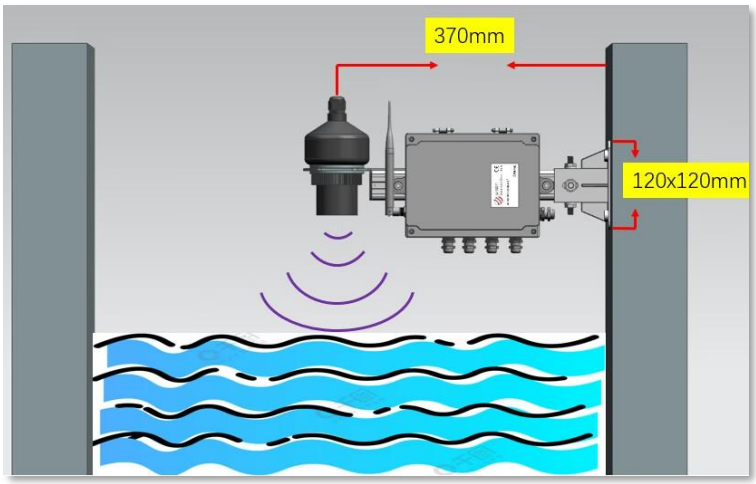


Figure. Installation above river.

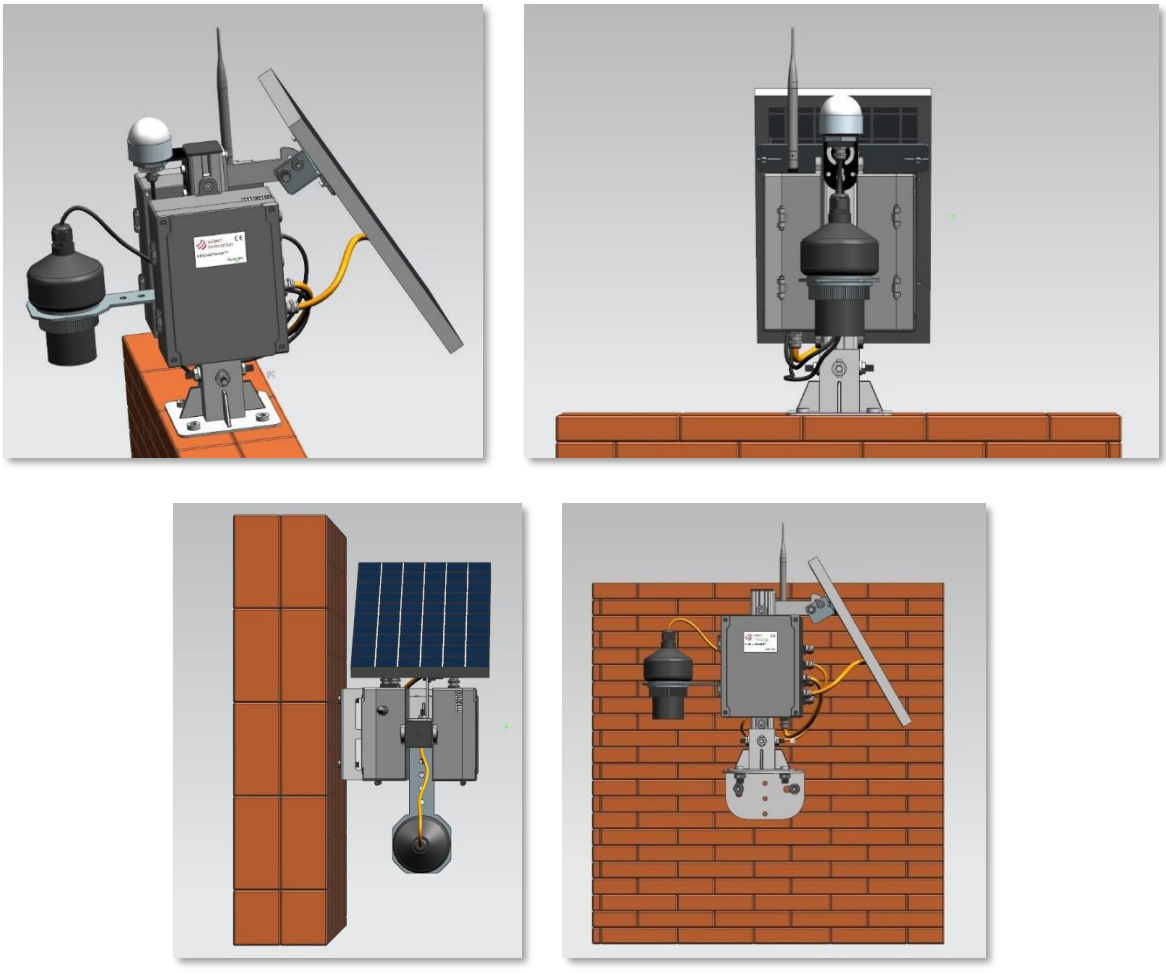


Figure. Installation with M101-Solar Unit.

Battery Life

T / min	Battery Life / Month
1	0.7
5	3.5
15	10.2
30	20.2
60	38.4

6525 Type - WiSenMeshWAN® 4-Channel Sisgeo IPI Interface Node

Basics

Dimension (L x W x H)	4 Channel Interface Node: 180 x 140 x 60mm
Node Weight	1.3kg
Cable Gland	Qty. 4 x EMC-CMA14 (through cable diameter, 4-8mm)
Wire Connection	Spring type wiring terminal

Primary Sensor

Sensor Type	SISGEO RS485 interface sensor with Modbus protocols For specific sensor parameters, please refer to the SISGEO brochure Each channel is capable of taking an array of IPIs (up to Qty. 40)

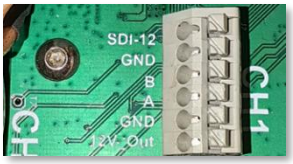
Applications

Theoretically compatible with all SISGEO Modbus protocols, based on protocol documentation from SISGEO.
https://e0c48a74.rocketcdn.me/wp-content/uploads/Prodotti/MODBUS/SISGEO%20MODBUS%20protocol%20manual%20-%20EN_05_20.pdf

Fully tested products:

1) BH-Profile in-place Inclinometers (photo below on the left)
https://sisgeo.com/products/ipi-in-place-inclinometers/bh-profile-in-place-inclinometers/
2) MD-Profile array (photo below on the right)
https://sisgeo.com/products/ipi-in-place-inclinometers/md-profile-system/

Wiring Sequence

Node: 6525-4xSisgeoIPI	Sisgeo IPI Sensor
	
12V_Out	Power (Brown)
GND	Ground (Black)
A	RS485 A (Blue)
B	RS485 B (White)
GND	Shields (Grey)

Note

1) Power on the 6525 typed node;
2) It takes 2-3 time intervals in order to see the IPI readings from the Wisen Platform.
3) At the power-on stage:
   a) A node is automatically scanning from channel 1 to channel 4 for the available SISGEO IPI IDs;

b) Each channel takes 120s;

c) Once a) and b) are completed, from the next time interval onward, the node will sample these IPI IDs at each channel recorded, and then report data back to the gateway, therefore display on the Web Platform.

Serial Number	Last Seen	Type	Batt_V	DC_V	Ref_485_V	Ref_V	Temp (℃)	Total_Packet	CH1_No._Sensor
17812A6B	2024-10-17 10:49:50	6525-4xSisgeoIPI	3.460	0.083	3.354	12.394	22.3	2	8

Channel No. 1 Total: 8 Only display IPIs after the latest reboot (Tips: Otherwise, display all in history)

Serial Number	Last Seen	Type	CH_No.	Sensor_ID	Temp (℃)	Hum (%RH)	sinA	sinB
V01001EA	2024-10-17 10:49:50	RS44-4104-SISGEO-IPI_RS485-1/2A xis	1	1	22.6	14.1	0.233923210	0.965976400
V02001EB	2024-10-17 10:49:50	RS44-4104-SISGEO-IPI_RS485-1/2A xis	1	2	21.8	15.7	0.098578274	0.990551500
V03001EC	2024-10-17 10:49:50	RS44-4104-SISGEO-IPI_RS485-1/2A xis	1	3	21.7	13.2	0.080529325	0.979425130
V04001ED	2024-10-17 10:49:50	RS44-4104-SISGEO-IPI_RS485-1/2A xis	1	4	21.1	CCCCCC	0.099036660	0.982572400
V05001F1	2024-10-17 10:49:50	RS44-4104-SISGEO-IPI_RS485-1/2A xis	1	5	21.1	CCCCCC	0.125467580	0.991652300
V06001F2	2024-10-17 10:49:50	RS44-4104-SISGEO-IPI_RS485-1/2A xis	1	6	21.2	CCCCCC	0.010804899	0.999379100
V07001F3	2024-10-17 10:49:50	RS44-4104-SISGEO-IPI_RS485-1/2A xis	1	7	21.0	CCCCCC	-0.018851213	0.999255800
V08001F9	2024-10-17 10:49:50	RS44-4104-SISGEO-IPI_RS485-1/2A xis	1	8	21.7	CCCCCC	-0.012366390	0.996328600

Figure. Web Platform for 6525 Overview.

650C/6526 Type - WiSenMeshWAN® 1/4-Channel METER TEROS 12/11 Sensor Interface Node		
Basics	**650C: 1-Channel**	**6526: 4-Channel**
Battery Power	Qty. x 1 (3.6V Lithium primary D-Cell ER34615)	Qty. x 4 (3.6V Lithium primary D-Cell ER34615)
Accuracy Stop Voltage	2.1V DC	
Mesh Stop Voltage	2.1V DC	
Battery Connection	Standard Aluminium Battery Holder	
Alternative DC Input	N.A.	7-32VDC@Min.1A 10.8V Battery Unit Solar Unit
Local Storage	Min. 1500 Messages during Meshing at Mesh3.0 Protocol	
Dimension (L x W x H)	100 x 100 x 60mm Plus various dimensions of different IPI sensors	180 x 140 x 60mm Plus various dimensions of different IPI sensors
Weight	0.45kg	1.3kg
Cable Gland	Qty. 1 x EMC-CMA14 for external sensor connections (through cable diameter, 4-8mm)	Qty. 4 x EMC-CMA14 for external sensor connections (through cable diameter, 4-8mm)
Wire Connection	Spring type wiring terminal	
Primary Sensor		
Sensor Type	MeterGroup TEROS 12 & MeterGroup TEROS 11	
Communication Protocol between Node and Sensor	SDI-12	
No. of Inputs	1 Channel	4 Channels
Sensor Per Channel	Qty. 1 to 6	Qty. 1 to 4
Applications		
Full compatibility with the sensors below: TEROS 12 sensor for monitoring of soil moisture, temperature & EC (Electrical Conductivity); https://metergroup.com/products/teros-12/ https://metergroup.com/products/teros-12/teros-12-tech-specs/		

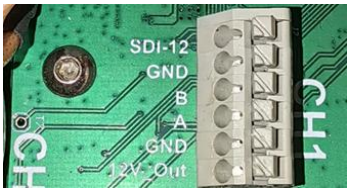
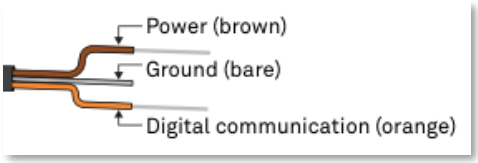
TEROS 11 sensor for monitoring of soil moisture & temperature.

https://metergroup.com/products/teros-11/

https://metergroup.com/products/teros-11/teros-11-tech-specs/



Wiring Sequence

Node: 6526	TEROS 12/11
	
12V_Out	Power (Brown)
GND	Ground (Bare)
SDI-12	Digital communication (Orange)

Product Photo




Figure. 4-Channel SDI-12 Interface Node Overview.