6101 Type - WiSenMeshWAN® Displacement & Temperature Interface Node (Vi/G)

Basics	
Battery Power	Qty. x 1 (3.6V Lithium primary D-Cell ER34615)
Accuracy Stop Voltage	2.1VDC
Mesh Stop Voltage	2.1VDC
Battery Connection	Standard Aluminium Battery Holder
Working Current	Max. 20mA (Typ. 12mA) @ GNSS module off
Alternative DC Input	3.6VDC e.g., M002 – Wisen 3.6V External Battery Unit
Local Storage	Min. 1500 Messages during Meshing at Mesh3.0 Protocol
Dimension (L x W x H)	100 x 100 x 60mm
Weight	Node: 0.4kg Displacement Sensor (1.0m cable) + NTC temperature Sensor with strong magnet fixing (1.0m cable): 0.25kg
Cable Gland	Qty. 1 x EMC-CMA12- Extend Power (through cable diameter, 3-6mm); Qty. 1 x EMC-CMA20 for Qty. 2 external sensors, i.e., Displacement and Temperature Sensor (each through cable diameter, 3-6mm)
Wire Connection	Spring type wiring terminal
WSN Interface	
Mesh Wireless Interface	WiSenMeshWAN® Protocol
External Primary Sensor (Optional to choose either or both)	

	Displacement	NTC 3kΩ Thermistor with Magnetic Clamp on Sensor Tip
Sensor Type		 Magnetic disk size: 30mm (diameter) x 15mm (thickness); Pulling force: 45kg.
Range	0 to 50/100/150/200mm Note: Overload cause irreversible damage	-40 to 85°C
Accuracy	0.1%FS	Better than 0.2°C
Resolution	0.0015%FS	0.1°C
IP Rating	IP68	IP68

External Sensor Connections

Node Connections	Sensor Wires	
In2	Displacement – Brown: Power	
In1	Displacement - Black: Signal	
GND	Displacement - Blue: GND	
T+	Thermistor (Red)	
T-	Thermistor (White)	

Please refer to: LVDT Displacement Sensor – Node Compatibility, Wiring Connections & Conversion Formula, for further details.

Internal GNSS Module (Optional! Minimum 10 weeks to manufacture)		
Output Parameter	Longitude, Latitude, Elevation	
Accuracy	5-30m (Limited by variety of site factors, such as openness of the top of the antenna, cloud cover, weather conditions, number of satellites received, etc.)	
Resolution	0.1m	0.1m
Standard System Parameter		
Internal Temperature	Range:-40 to 85°C; Accuracy: ±1°C, typical: ±0.5°C; Resolution: 0.1°C	
Voltage	Accuracy: ±0.1V	
Industrial Standard		
Casing and Painting Materials	Aluminium-Alloy Die Castings 12 (Epoxy Polyester Powder Coating)	
IP Rating	≥ IP66	
Operating Temperature	-40 to 85°C	
Fire Proof	Approved	

Applications

The unit is combined with:

A. High accuracy external displacement sensor, for railway track vertical movement or crack development;

B. High accuracy external temperature sensor, for railway track variation monitoring.

A vibration threshold trigger value can be set by command remotely, so that once the vibration threshold is reached by any object, such as a train passes by, a node can sample at 860Hz rate, and report to a gateway of maximum, minimum, average over a time interval.

On-Node Vibration Trigger Method via Remote Command

Sampling Method	Power Consumption	Internal Vibration Sensor & External Displacement Sensor	Application
Sampling per Time Interval **(Default after power cycle)**	Low	ONLY for 3s per Time Interval	Static Displacement; Used for conditional monitoring over a long period of time.
Triggered Sampling	Medium	When vibration is over the threshold configured in a node, the node will immediately sample the vibration and the displacement until the vibration is below the threshold. **Customised Threshold Range [1mg, 15000mg]**	Dynamic Displacement; Used for real-time rail track vertical movement monitoring.
Continuous Sampling	High	Constantly sample	Dynamic Displacement; High demand data sampling, e.g., during the key construction operation period.
Output Data: the max, min, average values for both the vibration and the displacement.			

Installation

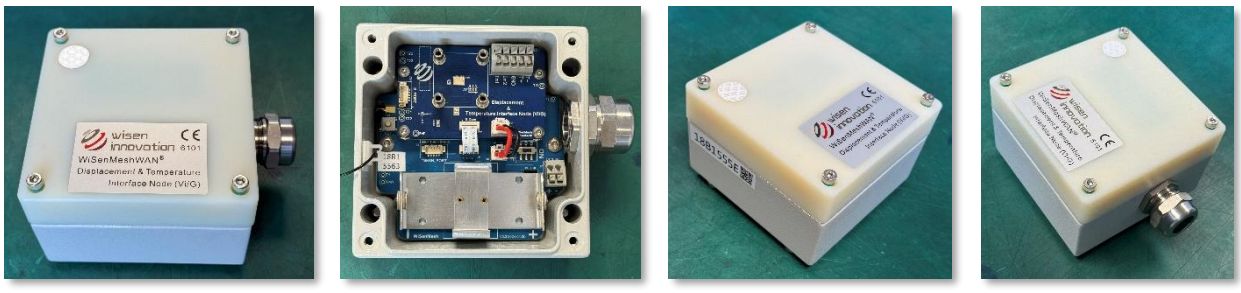
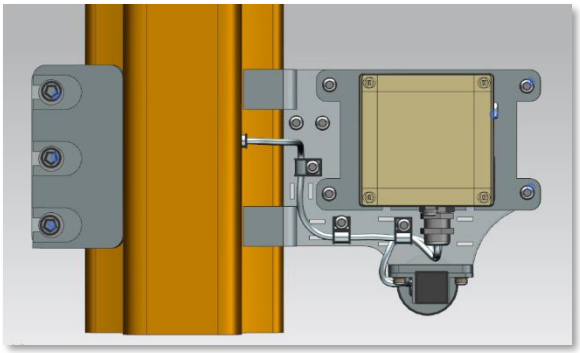
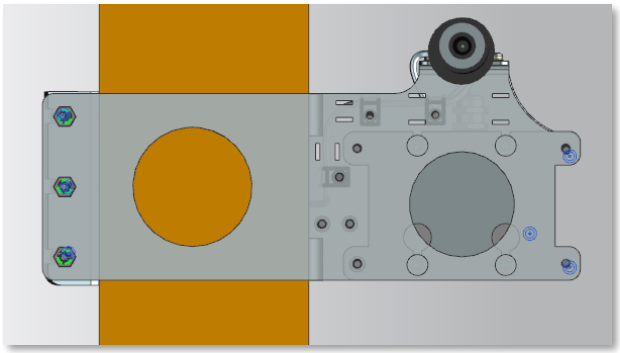


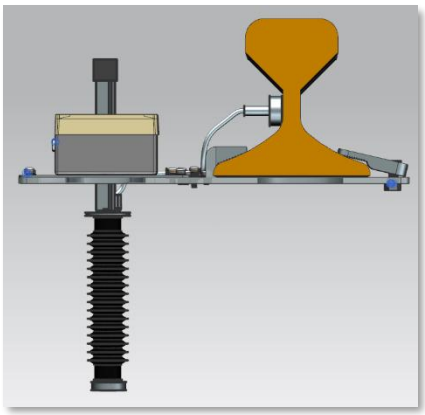
Figure. Product Photo.



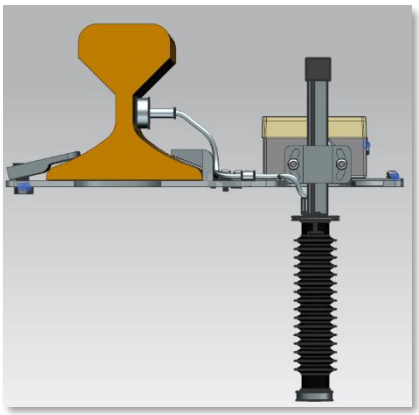
Top View



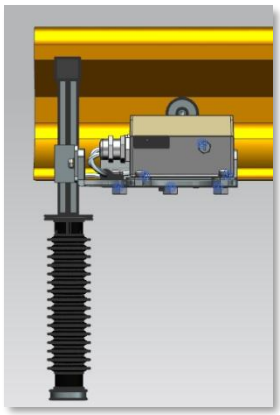
Bottom View



Side View 1



Side View 2



Side View 3

Figure. Displacement Sensor Node.