SEMARS DIGITAL

SEMARS

Smart Equipment Monitoring and Resolution System

SENSORS
DATA SHEET

SEMARS DIGITAL

India : MSR North Tower, 16th Floor, MS Ramaiah North City, Manyata, Bengaluru - 560045
UAE : FDRK5907, Compass Building, Al Hamra Ind Zone-FZ, UAE
Oman : OFC 2/16, Focus Business Center, Way56, Muscat, Oman
Netherlands : 23-Aramstraat, 1336 HR, Almere, Netherlands
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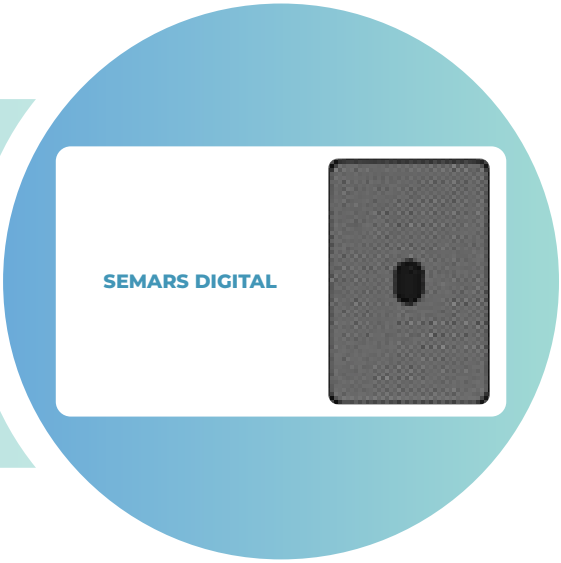
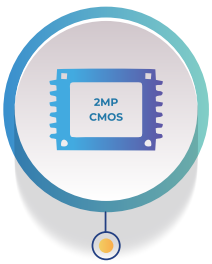
Waste bin Sensors

Designed to monitor the fill level of waste containers in real time. Use ultrasonic technology to measure the distance between the sensor and the waste surface, providing accurate data on bin capacity utilization. Equipped with wireless connectivity (NB-IoT) for remote data transmission and GPS tracking for location-based monitoring. Built with weatherproof and rugged enclosures (IP65/IP67) suitable for outdoor environments and can withstand harsh conditions.



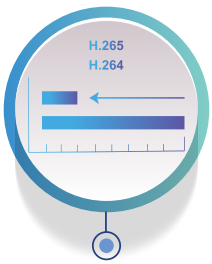
Its features and applications are as follows:

1.1 Key Features:



Ultrasonic distance measurement for bin fill level

Tilt detection and temperature monitoring



NB-IoT connectivity with excellent penetration and coverage

3GPP NB-IoT frequency bands

Protocol stack: IPv4/IPv6, UDP, CoAP, LwM2M, DTLS, TCP, MQTT

OTA firmware upgrade capability

GNSS positioning capability (NB-IoT variants)

GPS

Easy installation on waste bins or containers

Manageable via Semars Cloud

1.2 Applications:

- Smart City Waste Management
- Commercial Complexes & Shopping Malls
- Airports, Railway Stations & Bus Terminals
- Industrial & Manufacturing Facilities
- Event Venues & Stadiums
- Residential Communities & Apartments
- Hospitals & Healthcare Facilities
- Remote or Rural Areas

This type of sensor is particularly suitable for industrial or commercial environments requiring precise monitoring and integration with existing systems.

1.3 Specifications

SL No.	Specification	Value
1	Technology	NB-IoT ,LoRaWAN, LTE-M
2	Bands	NB-IoT bands vary by region
3	Work Mode	Standard NB-IoT protocols
4	Temperature	Digital CMOSens (MEMS)
5	Humidity	Digital CMOSens (MEMS)
6	CO_2	Photoacoustic
7	TVOC	MOX (MEMS)
8	Power Supply	Built-in battery
9	Battery Life	Up to 10 years (depends on reporting interval)
10	Distance Measurement	Ultrasonic or ToF
11	Tilt Detection	Accelerometer
12	Temperature	Thermistor
13	Range	
14	Distance Measurement	0.3 m to 4 m
15	Tilt Detection	0° to 90°
16	Temperature	-20 to 70 °C
17	Accuracy	
18	Distance Measurement	±1%
19	Tilt Detection	±2°
20	Temperature	±0.3 °C
21	Resolution	
22	Distance Measurement	1 mm
23	Tilt Detection	0.1°
24	Temperature	0.1 °C
25	Physical Details	
26	Housing & Color	Rugged enclosure, Black
27	Ingress Protection	IP67
28	Dimensions	Approx. 105 × 71 × 69 mm
29	Weight	Approx. 400 g

1.4 Note:

Operating and storage conditions :

- --20 to 70 °C
- 0–95% (non-condensing)
  Mounting on bin lid or container

Certifications :

- CE Certified
- RoHS Compliant
- IPV6 Packing
- ISO 9001 Manufacturing Standards