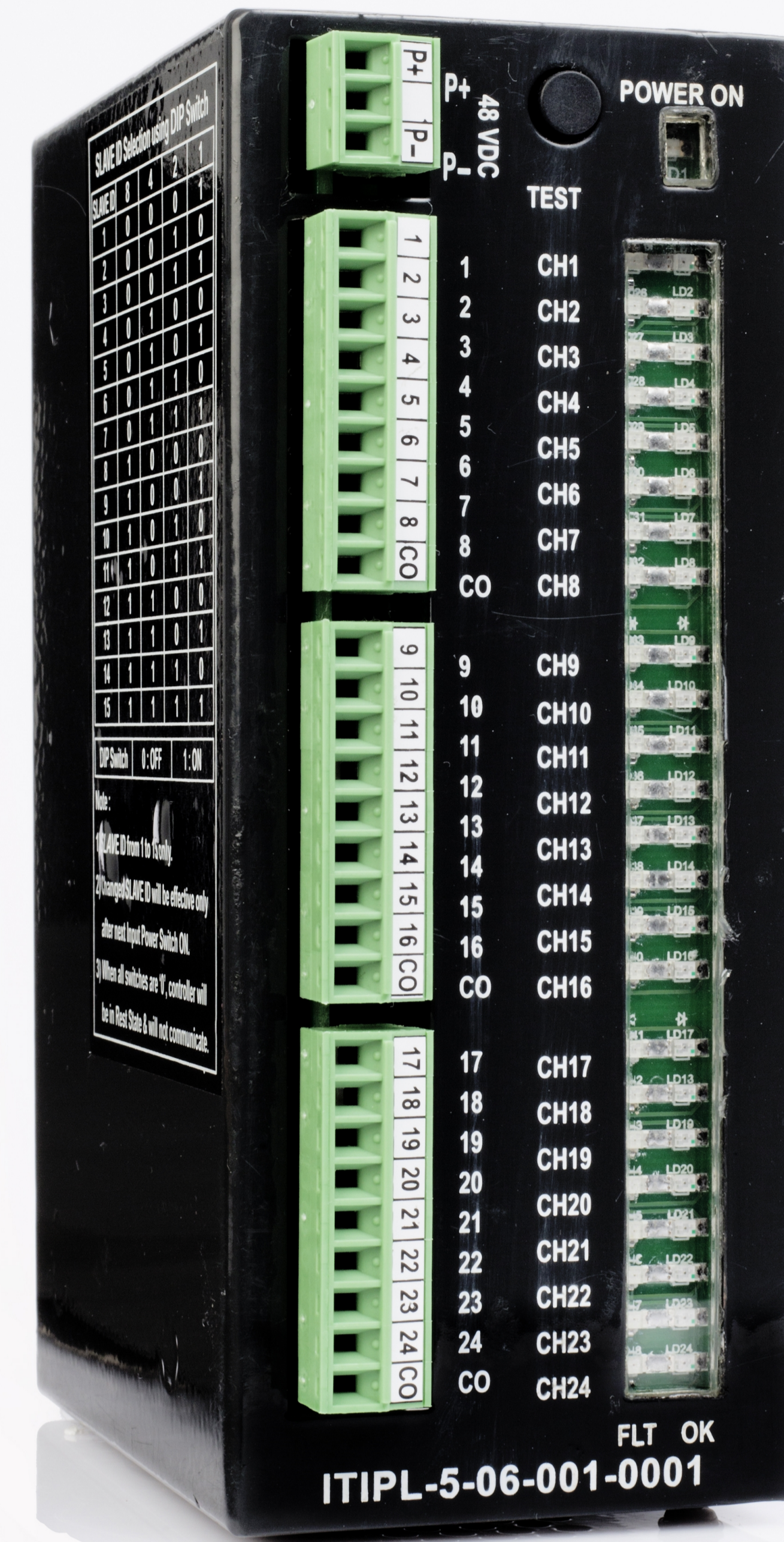




# Battery Monitoring System

## Sensors



### About

Invendis Battery Management System (BMS) provides an automated monitoring and analysis for batteries deployed in customers sites (Telecom Towers, solar plants, ext.) where power failures account for critical operational downtime.

It can connect up to 24 batteries in series, it provides complete visibility into the battery bank and individual cells. Customers can monitor and manage their battery bank from anywhere, it also enables the identification of faulty cells and helps customers to proactively replace the faulty cell before it kills the entire batter bank.

Live battery status is sent to the users, followed by pattern analysis and consequent generation of alerts to aid immediate preventive measures. The product applies continuous monitoring of fixed parameters, which are used to collate information, calculate various factors and deduce actionable insights. In addition to that, the product early and near real-time alert system, acts as an anti-theft mechanism should a battery suddenly go offline for no technical reason.

### Technical Details

BMS is mainly designed to monitor battery voltage of Telecom battery bank of 24 units of 2.2v each (24 x 2.2V=52.8V) or 4 units of 12V each (4*12=48V)	
Input Voltage	48V DC (36V DC to 70V DC)
Measuring range	1V DC to 55V DC (Each channel)
Accuracy	± 0.3V
No. of channels for measuring	24Channel
Communication	RS485 Modbus
Mounting	DIN Rail Mount
For correct voltage	Green LED
For Lower voltage	Red LED
<b>1) Dimensions &amp; Mounting:</b>	
Over all dimension	55 (W) x 105 (D) x 145 (H) in mm
Mounting	Din Rail Mount
<b>2) Environment :</b>	
Operating Temperature	0-55° C
Relative humidity	Max. 90%(Non-condensing)



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# Wireless Fuel Sensor



## Sensors

### About

Invendis wireless fuel sensor is a tailor-made pressure-based fuel sensor with wireless communication capability. The sensor which senses the fuel level in the tank is primarily a pressure-based fuel sensor that gets immersed into diesel. The intelligent transmitter element is a 4G / NB-IoT module. The sensor sends information of fuel level directly to a cloud-based platform for monitoring. The sensor comes with a built-in Lithium battery would last up to 2 years when query interval is kept at once in every 8 hours.

### Other details

- Measurement Range - 1.5m/3.0m (can customize)
- Input Voltage - DC12V/40mA
- Communication protocol - RS485 Baud rate: Configurable
- Measuring accuracy -  $\pm 1\text{mm}$
- Repetition - 0.3mm
- Resolution 0.1mm
- Nominal working pressure - 0~0.6MPa 0~1.6MPa 0~2.5MPa
- Working medium density - 0.4~1.3g/cm<sup>3</sup>

### Technical Details

Parameter Description	Desired Values
Range	0 to 2m Diesel (density 842Kg/m <sup>3</sup> ) 0 to 1.6m Water (density 1000Kg/m <sup>3</sup> )
Total accuracy	$\pm 0.5\%$ FS (typ.)
Stability	$\pm 0.2\%$ FS/year
Compensation temp.	(0~ 50) <sup>o</sup> C
Operation temp.	(-10~ 80) <sup>o</sup> C
Storage temp.	(-40~ 100) <sup>o</sup> C
Power supply	(8~ 28)VDC
Output	(4~ 20)mA DC
Impact	20g, (20~ 5000)Hz 20g, 11ms
Protection	IP68
Media compatibility	Diaphragm: stainless steel 316L
Media compatibility	Housing: stainless steel 1Cr18Ni9Ti
Weight	O-ring: Viton ~160g



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# Waterleak Sensor



## Sensors

### About

The water leak sensor is used to detect water seepage on floor where it becomes critical to avoid hazard of electrical short circuit due to water coming in contact between the two terminals of electrical system. The sensor uses the principle of conductivity of water and enables and alarm when water comes in contact between the two leads of the sensor.

This signal will be picked up by the data logger to sense water leak. The sensor works on 12V DC power and is sensitive to thin film of water contacting the two leads.

### Technical Details

Parameter Description	Desired Values
Range	0 to 2m Diesel (density 842Kg/m <sup>3</sup> ) 0 to 1.6m Water (density 1000Kg/m <sup>3</sup> )
Total accuracy	±0.5% FS (typ.)
Stability	±0.2% FS/year
Compensation temp.	(0~ 50)°C
Operation temp.	(-10~ 80)°C
Storage temp.	(-40~ 100)°C
Power supply	(8~ 28)VDC
Output	(4~ 20)mA DC
Impact	20g, (20~ 5000)Hz 20g, 11ms
Protection	IP68
Media compatibility	Diaphragm: stainless steel 316L
Media compatibility	Housing: stainless steel 1Cr18Ni9Ti
Weight	O-ring: Viton ~160g



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# Environmental Sensors



## Sensors

### About

#### Module Temperature Sensor

This is an easy to install surface-based temperature sensor that is mainly used to read the temperature of the Solar cells surface.

#### Technical Details

- ✓ IP65 Enclosure
- ✓ Accuracy +/- 0.3° C
- ✓ PT100 RTD
- ✓ 4-20 mA output
- ✓ Measuring range 0-100 ° C

#### Irradiance Sensor

This is a pyranometer that measures the irradiance on a flat surface. The measured irradiance (Global Irradiance) is the sum of direct solar irradiance and diffuse irradiance. This is a Second Class pyranometer that is based on a thermopile sensor.

#### Technical Details

- ✓ Measuring Range 0-2000 W/m<sup>2</sup>
- ✓ Viewing angle 2π sr

- ✓ Operating Temperature / Humidity (-40 - 80 °C) / (0 - 100%)
- ✓ Protection IP67

#### Weather Station

This a compacted weather station that combines, An ambient temperature sensor, ambient humidity sensor, and an anemometer. The weather station is easy to install and comes with an IP67 Modbus module that connects all the sensors internally and allows minimal wiring for communication.

#### Technical Details

- ✓ Temperature Accuracy: +/- 0.5 °C
- ✓ Humidity Accuracy: +/- 3% RH
- ✓ Range 1 to 200 mph, 1 to 173 knots, 0.5 to 89 m/s, 1 to 322 km/h
- ✓ Accuracy ±2 mph (2 kts, 3 km/h, 1 m/s) or ±5%, whichever is greater



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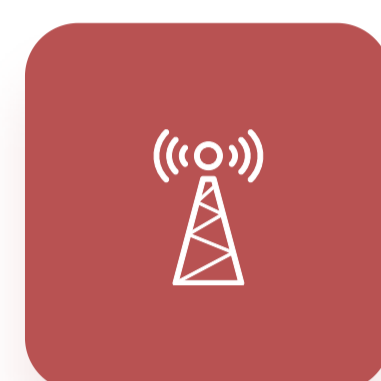


# About Invendis



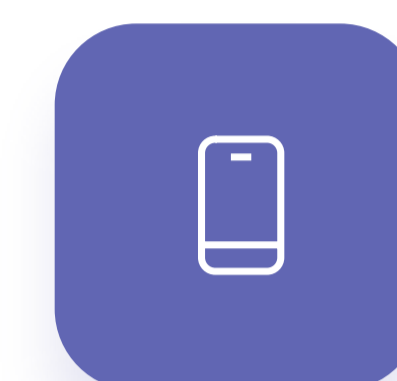
## Innovative products

We manufacture agnostic IoT, M2M & AI hardware & software products. Our hardware products can be installed in all weather conditions whereas our software can be deployed in VM and in all environments.



## Smart & Secure sites

Our products are used to make remote site equipment smart as well as to secure them with advance alarming & notifications transmitted on near real-time basis.



## Empower Field Force

We improve field force productivity with smart mobile applications and empower them with technology to directly access and control site equipment on the go.

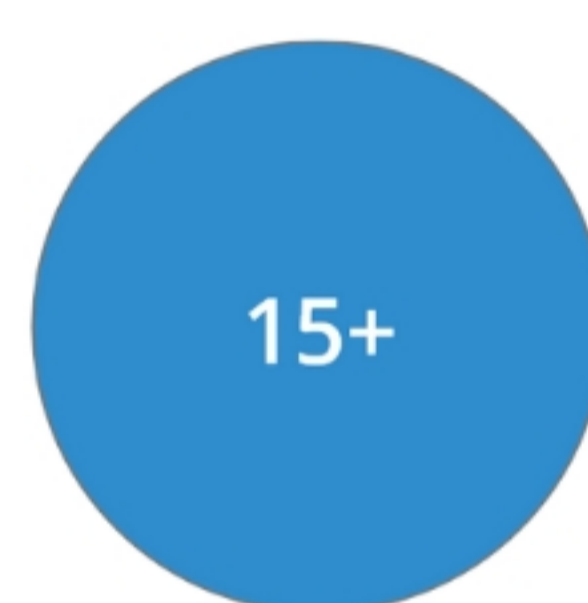
### OUR SOLUTIONS HAVE SERVICED



Telecom Towers



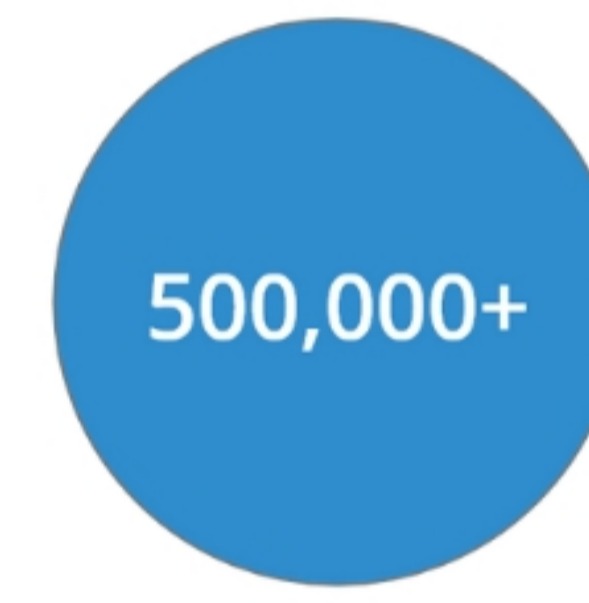
Solar Portfolio



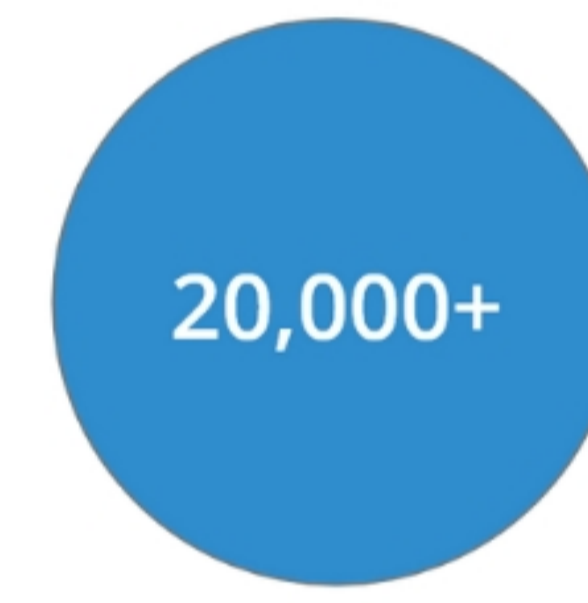
Global MNO/ Tower CO



Countries



Connected Assets



Enterprise Users

Invendis designs develops and markets the most widely usable remote monitoring systems and services to global infrastructure companies to enable them to monitor, control, maintain and manage their distributed infrastructure assets efficiently

We at Invendis Technologies India Pvt. Ltd. recognizes that Information Security and assets are the responsibility of each one of us in the organization. We are committed to creating a secure ecosystem that will enable us to secure information against unauthorized changes, tampering, destruction, or loss by implementing the "Information Security Management System".



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