

## Seamless Integration of Sensors, Machines and Humans

**Sunlux** is a technology-rich company specializing in development and manufacturing of world class products and solutions for sensing, control and integration. Having served various domains such as defense, aerospace, and process industries in the past, **Sunlux** has built an impressive track record of robust and reliable products which have been working in the extremely harsh environments for the most critical of applications. A few feathers in the cap:

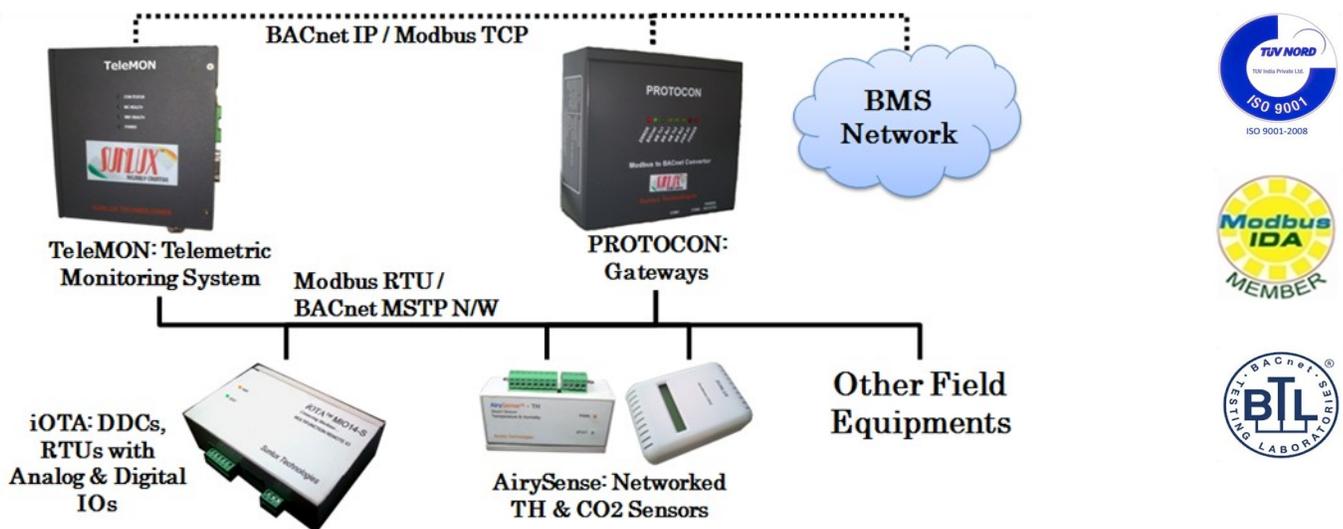
- **Rugged Fault Tolerant Control Systems and Sensors for Arihant class of Indian Submarines**
- **Fault Tolerant Thermal Data Acquisition and Control Systems using which Indian Spacecrafts such as Mars Mission, Chandrayana and others have been tested**
- **Specialized Robotic Systems serving in radioactive zones of Indian Atomic Energy Centers**

During the significant journey that **Sunlux** has traversed, the knowledge and experience have been exploited to develop various technologies in sensing, control, communication, software, reliability and product engineering. **Sunlux** is now exploiting the created intellectual property and developing innovative products for the dynamic and challenging domains of **HVAC and Safety Lighting in Buildings**.

### HVAC PRODUCTS

Modern indoor climate control has been advancing towards centrally controlled Variable Refrigerant Flow systems with Air Handling Units, Chillers, Boilers, and Zone distributions systems consisting of Fan Coil Units and Variable Air Volume Systems. The process of air conditioning and distribution in the present day demands sophisticated control system which is fully networked, providing continuous heads-up to the building maintenance teams at a central location. Integration of sensors, actuators and controllers on industry standard communication framework such as **Modbus** and **BACnet** is the need of the hour. **Sunlux** has been offering control products with these communication platforms enabling seamless integration for building automation systems thus achieving the **Interoperability for Smart Buildings**.

Energy demand for the exponentially growing infrastructure requires improvement in efficiency of the energy intensive HVAC systems. In Zone based climate control, the dynamics of the humans occupying the zones dictate the energy consumption patterns. Automatic sensing of these human dynamics form the basis of intelligent climate control methods such as **Demand Control Ventilation and Eco-friendly adaptation**. The aggregated measurement of indoor temperature, humidity and air quality levels along with outdoor temperature and humidity levels is necessary to achieve efficient climate control. **Smart Sensing** products have been developed by **Sunlux** for ambient condition measurements.



## iOTA™ Series: Remote IO Modules

**iOTA™** series of remote IOs have been developed considering the distributed architecture for monitoring and control in an Industrial or Building Automation setup. **iOTA™** series can enable integration of equipments and sensors on to the Modbus or BACnet framework.

**iOTA™** series is offered with a variety of combinations of industry hardened Analog and Digital Inputs and Outputs

- Analog Inputs are capable of Voltage (0-10V) and Current (0-20mA) and are field configurable
- Digital Inputs are capable of 24VAC or 24VDC
- Analog Outputs are capable of Voltage (0-10V), and Current (0-20mA) and are field configurable
- Digital Outputs with either Power Relay (up to 230VAC, 5A) for power switching or Solid State Relay (24VAC / DC, 0.5A) for high frequency switching
- Serial communication on Modbus RTU with RS485 capable of up to 64 nodes
- Can be powered by 24V AC / DC
- Current Offerings:
  - **iOTA™ MIO-14S: 4x AI, 2x AO, 4x DI, 4x DO**
  - **iOTA™ AIO-8S: 4x AI, 4x AO**
  - **iOTA™ DIO-24S: 12x DI, 12x DO**
  - **iOTA™ DO-8S: 8x DO**



## PROTOCON™ Series: Gateways

Total integration requires standardization of the communication framework. Our **PROTOCON™** series of gateways can inter-convert from one protocol to the other in real time. Modbus and BACnet have been the most popular along with proprietary protocols. Equipments such as AHUs, Chillers, VFDs, UPSs, and many more have been able to be integrated with the BMS network through our **PROTOCON™**.

- Serial Interfaces: Modbus RTU and Proprietary
- Ethernet Interfaces: Modbus TCP, BACnet IP and Proprietary on TCP/IP and UDP
- **PROTOCON™** can convert:
  - Modbus RTU or TCP to BACnet IP
  - Modbus RTU to Modbus TCP
  - BACnet IP to Modbus TCP
  - Proprietary to Modbus RTU or TCP
  - Proprietary to BACnet IP
- Web based GUI for protocol mapping
- Real time connectivity and conversion diagnostics
- Can be powered by 24V AC / DC



## AirySense™ Series: Smart Sensors

Ambient conditions of **Temperature, Humidity, and Indoor Air Quality** need to be measured at multiple locations by the controllers for Efficient Climate Control. Our **AirySense™** series of Smart Sensors can enable the controllers to perform remote measurements and control the Zone's HVAC system efficiently and effectively.

**AirySense™-TH** measures ambient temperature and humidity levels in a Zone.

- Temperature alone does not convey the thermal comfort.
- Relative Humidity levels are necessary to be within ASHRAE specified limits of 30-70%RH.
- **AirySense™-TH** uses semiconductor based precision sensor with low drift and hysteresis and excellent long term stability. **AirySense™-TH** can communicate on Modbus RTU or BACnet MS/TP on RS485. The sensor can perform auto-calibration.



**AirySense™-CO2** measures ambient Carbon Dioxide levels in a Zone.

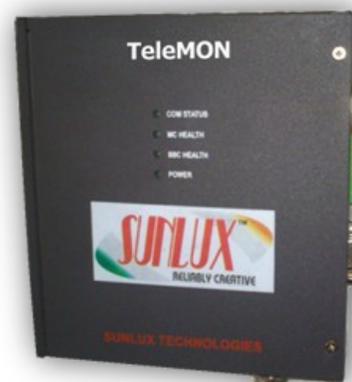
- ASHRAE prescribes the Indoor Air Quality in the form of CO2 Levels to be within 1000PPM for human productivity to be optimal.
- Demand Control Ventilation (DCV) reduces the throttle when humans are not present and achieves energy efficiency. CO2 Level in the Zone is an effective indicator of the human presence and hence is important to implement DCV.
- **AirySense™-CO2** employs a NDIR Absorption based sensor providing best in class accuracy and stability with very low power consumption.
- **AirySense™-CO2** can communicate on Modbus RTU or BACnet MS/TP on RS485 or can give out 0-10V analog signal. A power relay is provided for auxiliary switching based on a programmable setpoint. **AirySense™-CO2** can be optionally provided with a local LCD display. The sensor can perform auto-calibration.



## TeleMON™ : Telemetric Monitoring System

**TeleMON™** is a Telemetric Monitoring device developed by Sunlux to be deployed for remote connectivity of locations which are either sparsely manned or which need higher levels of integration.

- Connects to the field devices on either Serial network or Ethernet using standard Modbus or BACnet protocols and collect all the data required to be transmitted.
- Hosts a Webserver which can be accessed on a LAN for ad hoc monitoring and control of the field equipments.
- Transmits the field data to a remote cloud server on GSM / GPRS network at configurable periodicity.
- Logs the field data locally on a flash drive.



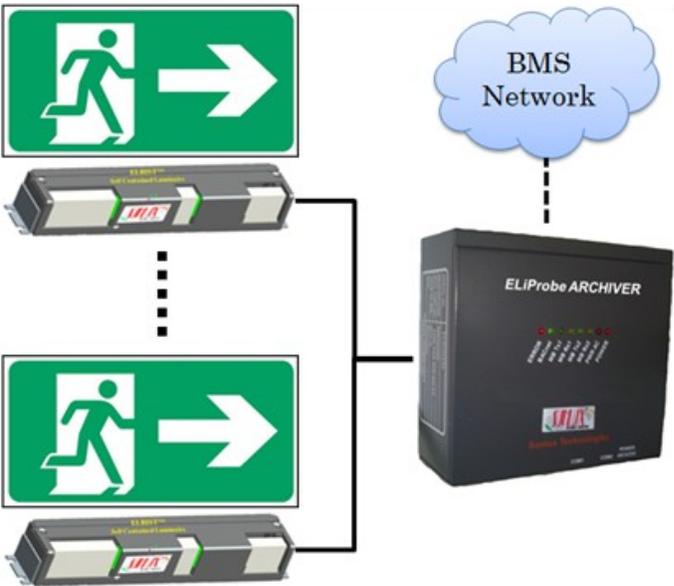
**Safety Lighting or Emergency Lighting** is the silent army for a building which works extensively during mishaps showing directions to safety. The International Building Codes state a necessity to periodically perform the health checks of the Safety Lighting so as to ascertain the readiness during the mishaps. **Sunlux** has developed a smart way of conducting these checks for the luminaires by enabling them to get connected on the building management system network. The machines perform all the statutory work for this silent army.

## ELiProbe™ Series: Smart Safety Lighting

Emergency Light Probe (**ELiProbe™**) is a smart device which can enable the maintained or non-maintained luminaires to perform self tests and report the health conditions of each of the components of the luminaire to a remotely located **ELiProbe™ Archiver**.

**ELiProbe™ Module:**

- Performs self tests at pre-configured schedules
- Tests and determines the health of Battery, Charger, Lamp, and Ballast
- Stores test report for up to a year on board
- **ELiProbe™** communicates with a remote **ELiProbe™ Archiver** enabling the user to perform following operations remotely:
  - Programming of the Test Schedule
  - Manually triggering a Functional Test
  - Retrieving the Test Data
- Multiple **ELiProbe™** enabled luminaires can be connected on a common network
- **ELiProbe™** is designed to be fail safe, such that even if it fails, the luminaire operation does not get affected



**ELiProbe™ Archiver:**

- Collects data from all the connected **ELiProbe™** enabled luminaires and store up to 5 years of data
- Has a web based GUI to configure and monitor the luminaires and retrieve the logged data

## CUSTOMIZATION OF PRODUCTS

For all the product range, along with all off-the-shelf variants, **Sunlux** also offers customization for the products to meet the specific requirements of the customers in terms of form factor, proprietary protocols, indications, mounting and power inputs. **Sunlux** also provides OEM branding of the products.

## CONTACT US

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