
HORNBIRD TECHNOLOGY CATALOGUE FOR SMART BUILDINGS CONNECTED DEVICES

Transform your buildings into the digital world with connected machine to machine devices for buildings wirelessly. Thus, saving you the costs of wirings and terminations that occupy so many spaces in the already crowded space.

Hornbird takes care of technology so you can focus on the business. Our technology making the best of wireless LORA with Low Power, Long Range and even making it more powerful with mesh of Lora Nodes further extending the already long-range connectivity of our devices.

Our Gateway receives the data from the meshed Lora nodes, provides edge computing, overseeing the health of the nodes and devices. Send commands back to the controllers and transmit data to the cloud server where the Web based applications are hosted. The Gateway can perform data analytics and artificial intelligence locally while the web application can further provide the extended capabilities should the system requires further computing power.

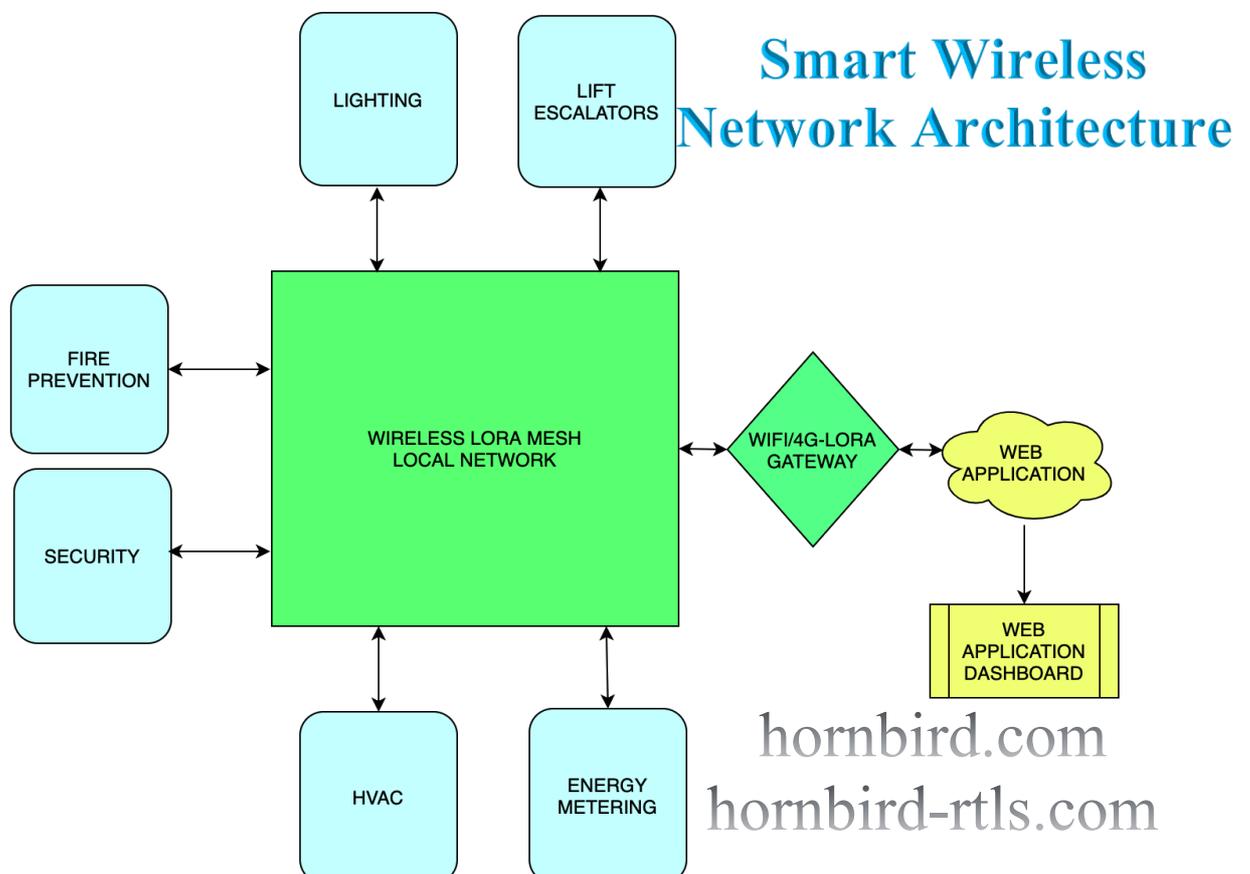
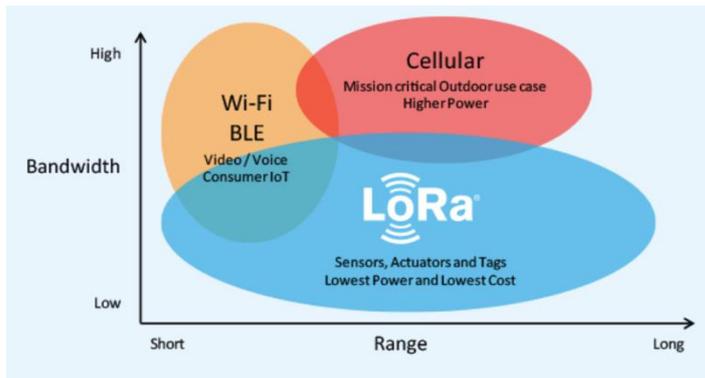


TABLE OF CONTENTS

WHAT IS LORA®?	3
LORA MESH ARCHITECTURE	3
HEATING VENTILATION AIRCONDITIONING	4
LORAWAN SENSOR NODES	4
<i>HBSN50 LORAWAN SENSOR NODE</i>	4
TEMPERATURE & HUMIDITY SENSOR	6
<i>HBTH65 LORAWAN TEMPERATURE-humidity SENSOR</i>	6
<i>HBT65 LORAWAN TEMPERATURE SENSOR</i>	7
<i>HBWT66 LORAWAN WATER PIPE TEMPERATURE SENSOR</i>	9
PRESSURE SENSOR	11
<i>HBDP01 LORAWAN DIFFERENTIAL PRESSURE SENSOR</i>	11
<i>HBBP02 LORAWAN BAROMETRIC PRESSURE SENSOR</i>	13
<i>HBWP01 LORAWAN WATER PRESSURE SENSOR</i>	14
<i>HBWDPO2 LORAWAN WATER DIFFERENTIAL PRESSURE SENSOR</i>	16
INDOOR AIR QUALITY IAQ SENSOR	17
<i>HBAQ05 LORAWAN INDOOR AIR QUALITY CO, CO2</i>	17
<i>HBAQ06 LORAWAN CO2 SENSOR</i>	19
WATER FLOW METER	21
<i>HBWM01 LORAWAN WATER METER</i>	21
WATER PID VALVE ACTUATOR	22
<i>HBWVA08 WATER VALVE MOTORIZED LORA ACTUATOR ON/FF, PID</i>	22
VFD VARIABLE FREQUENCY DRIVE ACTUATOR.....	23
<i>HBVF10 VFD VARIABLE FREQUENCY DRIVE</i>	23
MICRO CONTROLLERS AND DDC	26
<i>HBCO15 MICRO-COMPUTER CONTROLLER/GATEWAY</i>	26
<i>HBMC07 ESP32 BASED MICRO-CONTROLLER</i>	28
<i>HBMC08 STM32 BASED MICRO-CONTROLLER</i>	30
SMART ENERGY MANAGEMENT SYSTEM (SEMS)	32
SEMS LORA MESH ARCHITECTURE	32
CURRENT TRANSFORMER TO ENERGY METER	33
<i>HBEM30/HBEM31 SINGLE/THREE PHASE ENERGY METER</i>	34
<i>HBLB45 SMART POWER DISTRIBUTION LORA LOAD BALANCER</i>	35
LIGHTING LORA CONTROLLER	38
<i>HBLT50 LED LIGHT LORA CONTROLLER</i>	38
FIRE DETECTION & PREVENTION	40
HOW A LoRaWAN-BASED FIRE DETECTION SYSTEM WORKS.....	40
HEAT & SMOKE LORA DETECTOR.....	40
<i>HBSD23 LORA SMOKE DETECTOR</i>	40
<i>HBSD25 LORA HEAT & SMOKE DETECTOR</i>	42
AI CAMERA FIRE & SMOKE DETECTOR	43
<i>HBIP08 AI IP CAMERA FIRE & SMOKE DETECTOR</i>	43
<i>How it works</i>	43
<i>Your benefits</i>	43

WHAT IS LORA®?

LoRa (short for long range) is a spread spectrum modulation technique derived from chirp spread spectrum (CSS) technology. Hornbird LoRa devices and wireless radio frequency technology is a long range, low power wireless platform that has become the de facto technology for Internet of Things (IoT) networks worldwide. LoRa devices and the open LoRaWAN® protocol enable smart IoT applications that solve

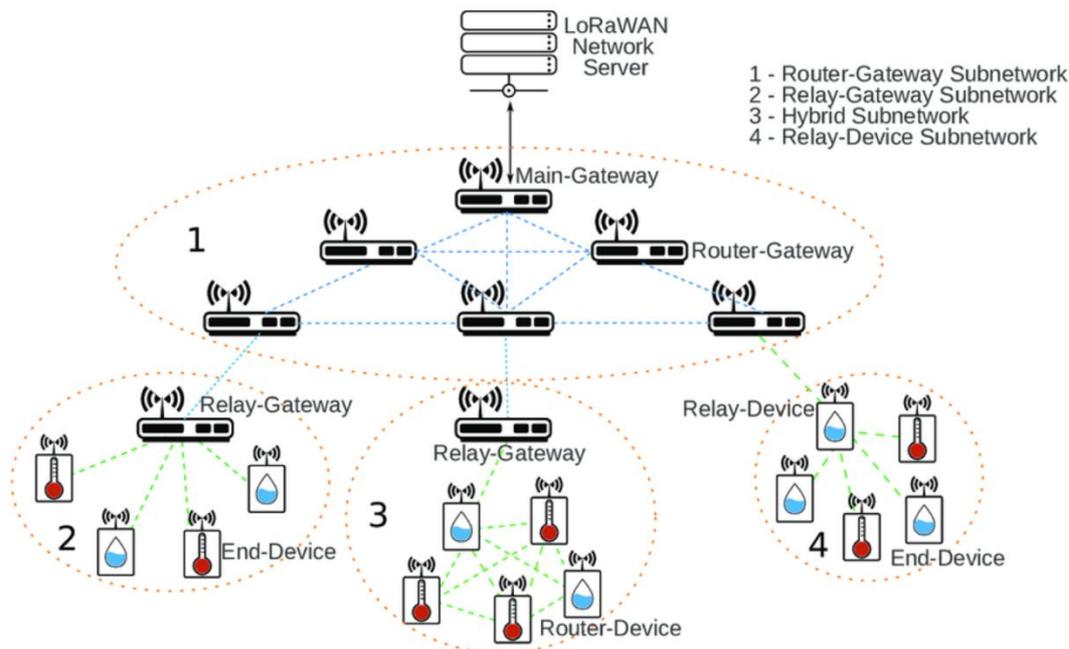


some of the biggest challenges facing our planet: energy management, natural resource reduction, pollution control, infrastructure efficiency, disaster prevention, and more. Hornbird LoRa devices and the LoRaWAN protocol have amassed several hundred known uses cases for smart cities, smart homes and buildings, smart agriculture,

smart metering, smart supply chain and logistics, and more. With over 178 million devices connected to networks in 100 countries and growing, LoRa devices are creating a Smarter Planet.

LoRa devices and the open LoRaWAN® protocol offers an efficient, flexible and economical solution to real-world problems in rural and indoor use cases, where cellular and Wi-Fi/BLE based networks are ineffective.

LORA MESH ARCHITECTURE



HEATING VENTILATION AIRCONDITIONING

LORAWAN SENSOR NODES

HBSN50 LORAWAN SENSOR NODE



DESCRIPTION

HBSN50 LoRa Sensor Node is a Long Range LoRa Sensor Node. It is designed for outdoor use and powered by Li/SOCl₂ battery for long term use. HBSN50 is designed to facilitate developers to quickly deploy industrial level LoRa and IoT solutions. It help users to turn the idea into a practical application and make the Internet of Things a reality. It is easy to program, create and connect your things everywhere.

HBSN50 wireless part is based on SX1276/SX1278 allows the user to send data and reach extremely long ranges at low data-rates. It provides ultra-long range spread spectrum communication and high interference immunity whilst minimising current consumption. It targets professional wireless sensor network applications such as irrigation systems, smart metering, smart cities, smartphone detection, building automation, and so on.

HBSN50 MCU part uses STM3210x chip from ST, STML0x is the ultra-low-power STM32L072xx microcontrollers incorporate the connectivity power of the universal serial bus (USB 2.0 crystal-less) with the high-performance ARM® Cortex®-M0+ 32-bit RISC core operating at a 32 MHz frequency, a memory protection unit (MPU), high-speed embedded memories (192 Kbytes of

Flash program memory, 6 Kbytes of data EEPROM and 20 Kbytes of RAM) plus an extensive range of enhanced I/Os and peripherals.

HBSN50 is an open source product, it is based on the STM32Cube HAL drivers and lots of libraries can be found in ST site for rapid development.

FEATURES:

- STM32L072CZT6 MCU
- SX1276/78 LoRa Wireless Modem
- Pre-load with ISP bootloader
- I2C,LPUSART1,USB
- 18 x Digital I/Os
- 2 x 12bit ADC; 1 x 12bit DAC
- MCU wake up by UART or Interrupt
- LoRa™ Modem
- Preamble detection
- Baud rate configurable
- LoRaWAN 1.0.2 Specification
- Software base on STM32Cube HAL drivers
- Open source hardware / software
- Available Band:433/868/915/920 Mhz
- IP66 Waterproof Enclosure
- Ultra Low Power consumption
- AT Commands to setup parameters
- 4000mAh Battery for Long term use

APPLICATIONS:

- Wireless Alarm and Security Systems
- Home and Building Automation
- Automated Meter Reading
- HVAC

DIMENSIONS AND WEIGHT:

- Weight: 140g
- Dimension: 65 x 50 x 50 mm

TEMPERATURE & HUMIDITY SENSOR

HBTH65 LORAWAN TEMPERATURE-HUMIDITY SENSOR



DESCRIPTION

HBTH65 Temperature & Humidity sensor is a Long Range LoRaWAN Sensor. It includes a **built-in SHT20 Temperature & Humidity sensor** and has an external sensor connector to connect to external sensors such as Temperature Sensor, Soil Moisture Sensor, Tilting Sensor etc .

The HBHT65 allows users to send data and reach extremely long ranges. It provides ultra-long range spread spectrum communication and high interference immunity whilst minimizing current consumption. It targets professional wireless sensor network applications such as irrigation systems, smart metering, smart cities, building automation, and so on.

It has a **built-in 2400mAh** non-chargeable battery which can be used for more than 10 years*. HBTH65 is full compatible with **LoRaWAN v1.0.2 protocol**, it can work with standard LoRaWAN gateway.

FEATURES:

- LoRaWAN Class A protocol
- Frequency Bands: CN470/EU433/KR920/US915/EU868/AS923/AU915
- AT Commands to change parameters
- Remote configure parameters via LoRaWAN Downlink
- Firmware upgradable via program port
- Built-in 2400mAh battery for more than 10 year use.
- Built-in Temperature & Humidity sensor

- Optional External Sensors
- Tri-color LED to indicate status
- 3200 set sensor record with time stamp

APPLICATIONS:

- Wireless Alarm and Security Systems
- Home and Building Automation
- Automated Meter Reading
- HVAC

HBT65 LORAWAN TEMPERATURE SENSOR



DESCRIPTION

The HBT65 is an Industrial LoRaWAN Temperature Transmitter, designed to monitor temperature for different environment. It supports to read **PT100 probe** and convert the value to temperature and uplink to IoT server via LoRaWAN protocol.

HBT65 supports **datalog feature**. User can retrieve the sensor value via LoRaWAN downlink command powered by **8500mA Li-SOCI2 battery** for long time measurement. The battery can run 2~10 years depends on the network environment and working mode.

Each HBT65 has two internal 16 bit ADC interfaces and are calibrated on 12 set resistors to make sure the accuracy measurement on wide range.

FEATURES:

- LoRaWAN v1.0.3 Class A
- Ultra low power consumption
- External DS18B20 Probe (default 2meters)
- Measure range -55°C ~ 125°C
- Temperature alarm
- Bands: CN470/EU433/KR920/US915
EU868/AS923/AU915/IN865
- AT Commands to change parameters
- Uplink on periodically or Interrupt
- Downlink to change configure

APPLICATIONS:

- Wireless Alarm and Security Systems
- Home and Building Automation
- Automated Meter Reading
- HVAC

HBWT66 LORAWAN WATER PIPE TEMPERATURE SENSOR



DESCRIPTION

HBWT66 Lora Plug Wireless Transducer Probe pt100 Temperature Sensor uses high-quality sensitive temperature measuring device, and is equipped with ultra-low-power microprocessor and high-precision sensor signal conditioning circuit. LoRa transmission mode is adopted to realize on-site monitoring data to wireless transmission in the cloud. The customer can obtain the measurement data by logging in to the relevant website through the Internet PC or mobile terminal, and realize the collection.

Data statistics, analysis, and formation of reports and data curves are intuitive, accurate, and efficient. The product is mainly used in water supply pipe network, gas supply pipe network, oil supply pipe network, environment, medical and health, manufacturing, chemical, energy, meteorology, warehousing, refrigeration, freezer and high-voltage transmission temperature monitoring.

SPECIFICATION:

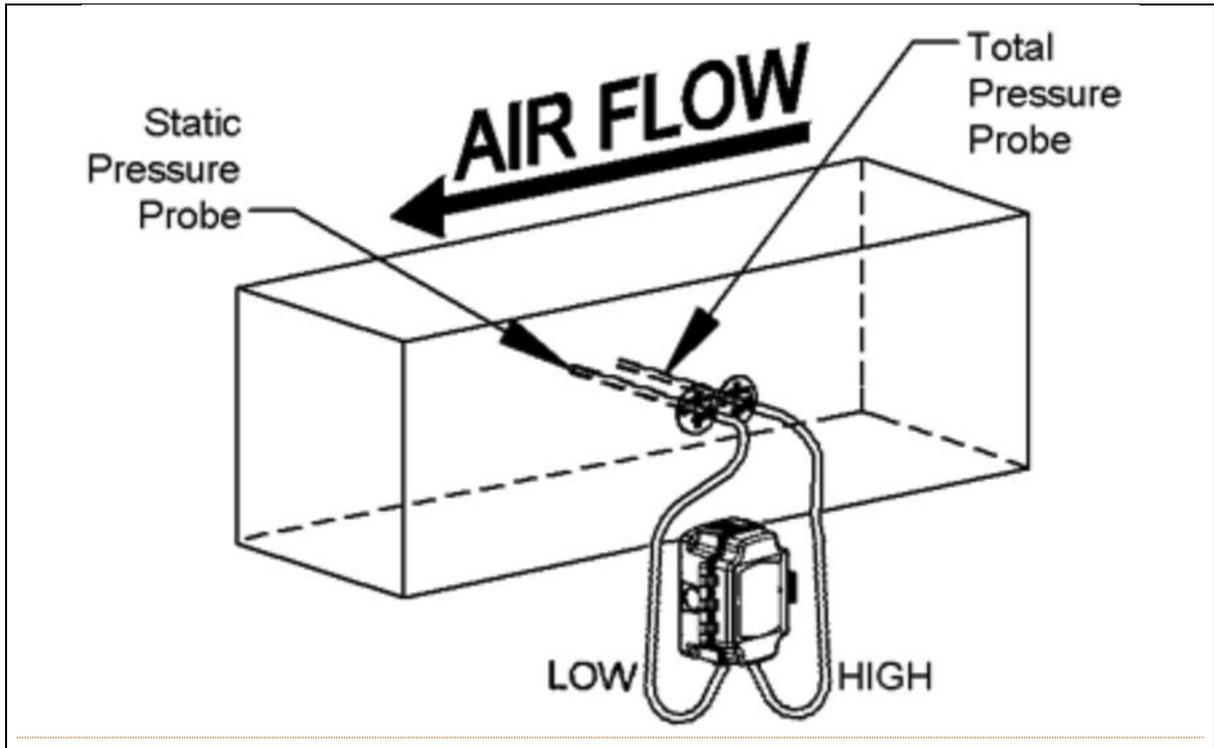
Temperature range (°C)	-50~120; -50~150; -50~200; -50~300; -50~400
Isolation size L1 (mm)	Non-isolated 20 50 75 100

Installation method (mm)	Plug-in type, insertion depth 50mm (standard), other can be customized according to user requirements
Probe size (mm)	Φ8
Supply voltage	3.6V lithium battery or 12~30VDC external power supply
Accuracy	±0.5 %FS ±1%FS
Protocol	Private protocol / LoRaWAN (Class A, OTAA mode activation)
Power consumption current	Sleep current : < 5uA, sample current : < 5mA
Battery capacity	12000mAh
Operating temperature	-20~+60°C
Long-term stability (1 year	±0.2 %FS
Sampling frequency	10s~12h can be set (default 10s)
Sending frequency	1~1440 minutes can be set
Protection grade	IP65
Housing Material	Aluminum Die Casting, 304 stainless steel
Threaded connection	M20*1.5 , G1/2 or other threads
Storage environment	Temperature -40~+85°C , moderate: 0~95%RH
Display mode	6-segment LCD display
Remark	When the temperature measuring medium exceeds 120 °C , the product is made by isolation.

PRESSURE SENSOR

HBDP01 LORAWAN DIFFERENTIAL PRESSURE SENSOR





DESCRIPTION

Measure Differential Pressure with the LoRaWAN Hornbird Status DP. Providing an industry leading accuracy of 0.1%, the Status DP can measure ranges between 25Pa and 5000Pa. Using a unique Multi-Range digital sensor which can be selected automatically or remotely, a single unit can cover the full pressure requirements of HVAC and other applications including:

- Variable Air Volume (VAV) filter monitoring
- Room or building pressure monitoring
- Hospital room pressure monitoring
- Cleanroom pressure monitoring
- Data centre monitoring
- Duct pressure monitoring
- Greenhouse pressure monitoring
- Fume hood monitoring

FEATURES:

- Range: 25Pa to 5000Pa (0.1" to 10" H₂O)
- Long term stability $\pm 0.1\%$ FSS
- Exceptional Zero Stability
- Selectable bandwidth filter
- Accuracy: 0.1% per range
- Integrated 50/60Hz filter

- LED Signal strength & battery level indicator
- Full configuration and monitoring via USB
- Available with IP67 (NEMA 4X, 13) seal
- LoRaWAN Class A compatible

APPLICATIONS:

- Wireless Alarm and Security Systems
- Home and Building Automation
- HVAC

HBBP02 LORAWAN BAROMETRIC PRESSURE SENSOR



DESCRIPTION

Wireless Barometric Pressure Sensor measures atmospheric pressure in the range of 300~1100 hPa. Featuring high-precision, stability, and high EMC robustness, this sensor is suitable for industrial applications such as weather stations, outdoor farms, tea plantations, greenhouses, and more.

This device incorporates a built-in LoRa transmitter based on SX1276 for long-range transmission, a barometric sensor, and a custom battery. It is specifically designed and optimized for use cases powering end devices by batteries for years. To minimize the power consumption, the device wakes up, transmits the collected air pressure data to the gateway, and then goes back to sleep.

Under the best of circumstances, the battery is expected to last for more than 8 years, depending on the environmental factors and data transmission intervals. Please kindly note that the default interval is once per hour.

FEATURES:

- Support LoRaWAN protocol Class A
- High reliability and stability
- Ultra-wide-distance transmission: 10km in line of sight scene, 2 km in urban scenes
- Battery life ≥ 8 years
- Rapid installation and deployment

APPLICATIONS:

- Wireless Alarm and Security Systems
- Home and Building Automation
- HVAC

HBWP01 LORAWAN WATER PRESSURE SENSOR



DESCRIPTION

The wireless communication of devices is based on SEMTECH RF integrated chip SX127X RF module, which is a high-performance Internet of things wireless transceiver, the special LoRa debugging method can greatly increase the communication distance, so it can be widely used in various occasions, to meet needs in long distance Internet of things wireless communications. Compared with the traditional 433Mhz wireless communication, LoRa combines digital spread spectrum, digital signal processing and forward error correction coding technology, and has the advantages of unprecedented volume, low power consumption, long transmission distance and strong anti-interference ability. It uses spread spectrum modulation technology to demodulate less than 20 db of noise, which ensures a high sensitivity and reliable connection while improving communication efficiency and eliminating interference.

LoRa technology achieves the communication distance which is much longer than other wireless protocols, which makes the LoRa system can work well without a repeater, thus reducing the total cost of projects.

FEATURES:

- LoRa 433Mhz use the new generated wireless sensor SX1278 from American Semtech, with strong sending power, long transmission distance, powerful penetrability and low attenuation. Beside, it adopts the frequency hopping and time sharing technology to make sure the reliability of the communication.
- The data collecting time could be set by customers from 1 minute to 1 hour, we suggest every 15mins in most occasion.
- The sensor have 3 working mode: Normal working mode, low voltage mode and temperature alarming mode. To better track the ambient temperature change, the data collecting time is different in each mode.
- Built-in 3.6V battery

SPECIFICATION:

Model	HBWP01 LoRa pressure sensor
Type	Wireless pressure sensor
Applications	Measurement of liquid, gas pressure
Measuring range	0.1/0.2/0.7/1/2/5/10/16/20/40/60/100/250/400/600/1000bar
Output signal	LoRa
RF Frequency	433 MHz
Maximum range in open area	5km
Transmit power	20dbm(Adjustable)
Transmit interval	1min-60mins (User definable)
Alarm Settings	Yes
Accuracy	0.5%FS, 0.25%FS
Power supply	3.6V battery
Operating temperature	-20....+85°C
Materials,-wetted-parts	Stainless steel
Threaded-connection	G1"1/2 A, 1"1/2 NPT, Flange DN50, DN80, DN100
Electrical Connection	M20x1.5 or 1/2" NPT
Housing-material	Aluminum (IP67) / Stainless steel (IP67)
RF Frequency	433 MHz
Display	LCD
Explosion Proof	Without approval / Intrinsically Safe(Ex ia IIC T6)

HBWDP02 LORAWAN WATER DIFFERENTIAL PRESSURE SENSOR



DESCRIPTION

HBWDP02 wireless differential pressure transmitter is suitable for pressure monitoring of petroleum oil and water well production, storage and transportation process. It adopts micro-power wireless communication mode, no wiring is required, installation is faster, safer and more convenient. Wireless communication uses LORA. There is also a matching wireless switching device, which can convert many wireless pressure signals into MODBUS standard signals and transmit them through Ethernet or serial port. The access measurement and control system has a wide range of applications.

SPECIFICATION:

Accuracy	0.5%
Pressure Range	0~10kPa~60Mpa
Overload pressure	150% F.S
Reporting cycle	1 minute to 12 hours can be set
Decimal places	0-3 can be set
Signal transmission	Lora wireless
Transmission power	≤ 150mW
Transmission distance	ordinary 2Km
Working power	3.6V lithium battery
Output Signal	Zigbee/Lora/4G/RTU
Process interface	Standard M20 × 1.5 (or customized as required)
Protection level	IP67
Explosion-proof grade	Exia II BT4 Ga
Product weight	1350g (net weight)
Working environment temperature	≤ 95% RH
Battery life	≥ 2 years (upload once every 120 minutes)

INDOOR AIR QUALITY IAQ SENSOR

HBAQ05 LORAWAN INDOOR AIR QUALITY CO, CO2



DESCRIPTION

LoRaWAN® Compliant Sensor Series - Temperature, Humidity, Light, Pressure, VOCs & CO2

The Hornbird room sensor is designed to measure Temperature, Humidity, Light, Barometric Pressure, VOCs and Carbon Dioxide (CO2) with long-range and low-power wireless connectivity by LoRaWAN®. It is integrated LoRa® wireless technology, CO2 sensor knowhow and high-performance MCU solution for various IoT markets usage.

With compensated Temperature/ Humidity/Pressure sensors and calibrated VOCs & CO2 sensor module integrations, the data is ready for use. Feature of this IAQ Sensor is its ability to output an Indoor Air Quality (IAQ) using its built-in sensors for gas, pressure, humidity and temperature. The calculation software utilises the 4-in-1 integrated sensors inside the VOC module and provides an Indoor Air Quality (IAQ) Index ranging from 0 to 500 which quantifies the quality of the air available in the surrounding. T

his, together with the relative humidity and the CO2 concentration, is an indicator for the correct commissioning of HVAC systems to prevent the transmission of airborne diseases like COVID-19

FEATURES:

LoRa® Module	SX1276
Frequency	AS923/AU915/EU868/US915

Dimensions	Wall-mount: 100(H) x 100(W) x 40(D) mm
Operating Temperature	-10 ... +50 °C
Operating Humidity	0 ... 95%RH, Non-condensation
Weight	140g
Power Supply	Lithium Batteries
Radiated RF Power	Configurable up to 100mW
RF-Input sensitivity	-132 dBm @ 980bps
SENSOR SPECIFICATION:	
Sensing Element	CO2: Gold-plated infrared (NDIR) wave-guide technology with Automatic Baseline Correction (ABC) and passive gas diffusion (no filter) Temperature & Humidity: CMOS sensor.
Response Time	CO2: < 10 sec. @ 30 cc/min. flow rate < 3 min. diffusion time Temperature: min. 3 sec. ; max. 30sec. at 63% Humidity: < 8 sec. at 63%
Accuracy (at 25°C)	CO2: ±30ppm + (± reading 3%) Temperature: ±0.3°C Humidity: ±3 %RH
Repeatability	CO2: ± 20ppm + (±reading * 1%) Temperature: ±0.1°C Humidity: ±0.1 %RH
Zero Drift	CO2: < ± 10ppm/yr. with Automatic Baseline Correction (ABC) Temperature: < 0.04 °C/yr Humidity: < 0.5 %RH/yr
Measurement Range	CO2: 0 ~ 10,000ppm Temperature: -40 ~ +125°C Humidity: 0 ~ 95 %RH
Pressure Dependence	CO2: 1.6% reading per kPa

HBAQ06 LORAWAN CO2 SENSOR



DESCRIPTION

The **Sick Building Syndrome** indicates a well-defined symptom picture, which manifests itself in a large number of buildings equipped with mechanical ventilation and air conditioning systems, without the introduction of fresh air from the outside.

Since, in this scenario, health or comfort problems are related to inadequate ventilation, it is necessary to intervene with adequate control systems and functional sensors.

The CO2 sensor developed by Hombird **ensures the highest levels of comfort in terms of IAQ (Indoor Air Quality)**, measuring the concentration of carbon dioxide present in indoor environments (with a range of 350 ÷ 2000 ppm). The device monitors the air quality and interacts with the ventilation system, in order to guarantee correct levels of environmental comfort.

The measurements carried out, together with the intelligence on board the IoT Smart Platform and the integration with HVAC, allow optimal control of the area in indoor environments.

FEATURES:

COMMUNICATION: SMART NETWORK PROTOCOL

The device acquires the air quality data (CO₂) and sends them to the Hombird Gateway using the proprietary Smart Mesh LORA Network protocol.

SPECIFIC MEASURES: CO₂

The sensor integrates a 16 bit ADC, with which it is possible to make measurements with good resolution and accuracy (± 50 ppm), in a range between 350 and 2000 ppm.

ACTUATION:

The device itself does not carry out implementation. However, it provides the data necessary for the Hombird IoT Smart Platform, which integrates various intelligence systems on board, and is able to send commands (e.g. ignition of the aerator) to third-party devices.

POWER SUPPLY: by BATTERY

The device is powered by 3 primary AA batteries of lithium thionyl chloride (nominal voltage of 3.6 V, 2.2 Ah each). Under standard use conditions (sampling frequency and data transmission equal to 5 minutes), it can guarantee a continuous average operation lasting 3 years.

SENSOR SPECIFICATION:

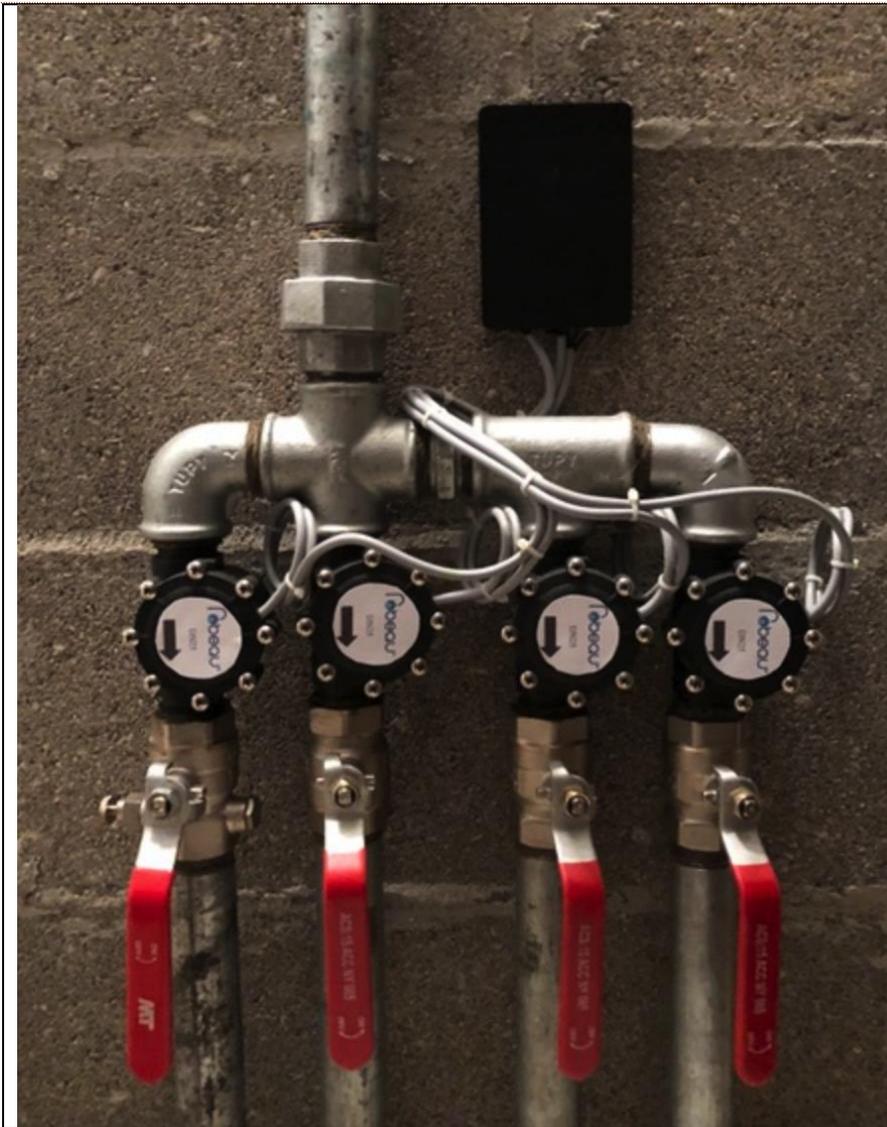
Configurable parameters

The measurement and data transmission parameters can be configured remotely, as shown in the following table:

Parameter	Description	Programmable Values
Polling Measurement	Measurement frequency CO ₂	30 – 900 sec.
Polling TX	Frequency of data transmission	1 – 900 sec

WATER FLOW METER

HBWM01 LORAWAN WATER METER



DESCRIPTION

For HOMES, OFFICES, HOTELS, SCHOOLS, RESTAURANTS, and all other facilities:
Manage and Monitor your Water Consumption with LoRa Technology!

FEATURES:

- Measure your direct live water consumption
- Wireless sensor

- DN15, DN20, DN25 available
- R160 (high precision – drop by drop) available
- Give you your daily water consumption to allow you to analyze them
- Can Set-up some alerts when detects over-consumption or leaks
- Can download the Excel Sheet with all consumptions detailed
- Reduce your consumption between 20% to 40% a year and save thousands of liters of water.
- Display your direct water consumption by tap or room, wherever you are, on your computer, smartphone, or tablet.
- Be alerted when a leak is detected or the tap is still opened, allowing you to act immediately to avoid huge water claims on your property.
- Calculate your water consumption by day, week, month, year, to analyze it and act to change your water consumption habits.

WATER PID VALVE ACTUATOR

HBWVA08 WATER VALVE MOTORIZED LORA ACTUATOR ON/FF, PID



DESCRIPTION

Our Motorized Ball Valve employs with equal percentage flow characteristics. It is ideal for all flow control applications with chilled or hot water.

For high rise and commercial applications where higher closed-off pressure is required: fan coils, air handling units, etc.

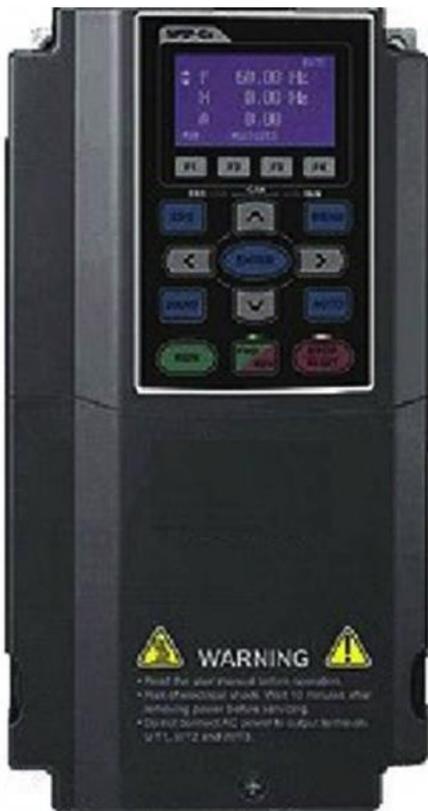
Motorized ball valves with actuators control the flow of hot and chilled water through coils and heat exchangers.

FEATURES:

- Bi-directional AC motor
- Apply to valves of DN15 to DN25
- Fire retardant engineering plastic, measure up UL94V-0 standard
- Integrate with on-off switch at the end of stroke for longer motor life
- With manual switch and position indicator
- Electrical on/off type or floating (PID adjusting) type
- Detachable design, easy to install and maintain
- Good heat insulation design to avoid overheating inside of actuator
- Reliable and high safety requirement level
- 0(2)~10V dc or 0(4)~20mA dc control input signal, proportional control.
- 0~10V feedback signal.
- PID Control.

VFD VARIABLE FREQUENCY DRIVE ACTUATOR

HBVF10 VFD VARIABLE FREQUENCY DRIVE



FEATURES

1. High Performance

1. High bandwidth control
2. Speed / torque / position control mode

3. Dual rating design(normal duty / heavy duty)
4. 4-quadrant torque control and limit
5. For both synchronous and asynchronous motors

2. Environmental Adaptability

1. 50°C operating temperature
2. Built-in DC reactor
3. Coated circuit boards
4. Built-in EMC filter
5. International safety standard (CE/UL/cUL)

3. Versatile Drive Controls

1. Built-in safe stop function
2. Built-in PLC function
3. Built-in brake unit
4. Supports various network protocols
5. Position control

4. Modular Design

1. Hot pluggable LCD keypad
2. I/O extension cards
3. Various PG (encoder) feedback cards
4. Network cards for fieldbus modules
5. Removable fan

VFD SPECIFICATION:

Control Method	Pulse Width Modulated (PWM)
Control Mode	230 V / 460 V model: 1: V / F,2: SVC,3: VF+PG,4: FOC+PG,5: TQC+PG,6: PM+PG,7: FOC sensorless,8: TQC sensorless,
	9: PM sensorless
	575 V / 690 V model: 1: V / F,2: V / F+PG,3: SVC
Starting Torque	Reach up to 150% or above at 0.5 Hz. Under FOC+PG mode, starting torque can reach 150% at 0 Hz
V / F Curve	4-point adjustable V / F curve and square curve
Speed Response Ability	5 Hz (vector control can reach up to 40 Hz)
Torque Limit	230 V / 460 V model: Normal duty 160%, heavy duty 180% of torque current;
	575 V / 690 V model: Maximum 200% of torque current
Torque Accuracy at TQC Mode	TQC + PG:±5%
	TQC Sensorless:±15%
Max. Output Frequency (Hz)	Light Duty / Normal duty: 0.01 ~ 599.00 Hz; Heavy duty: 0.00 ~ 300.00 Hz
Frequency Output Accuracy	Digital command: ±0.01%, -10 ° C ~ +40 ° C, Analog command: ±0.1%, 25 ±10 ° C
Output Frequency Resolution	Digital command: 0.01 Hz, Analog command: 0.03 * max. output frequency / 60 Hz (±11 bit)

Overload Capacity	230 V / 460 V model: Normal duty: 120% of rated current can endure for 1 minute during every 5 minutes ; 160% of rated current can endure for 3 seconds during every 30 seconds Heavy duty: 150% of rated current can endure for 1 minute during every 5 minutes ; 180% of rated current can endure for 3 seconds during every 30 seconds
	575 V / 690 V model: Light duty: 120% of rated current can endure for 1 minute Normal duty: 120% of rated current can endure for 1 minute, 150% can endure for 3 seconds Heavy duty: 150% of rated current can endure for 1 minute, 180% can endure for 3 seconds
Frequency Setting Signal	+10 V ~ -10V, 0 ~ +10 V, 4 ~ 20 mA, 0 ~ 20 mA, pulse input
Accel. / decel. Time	0.00 ~ 600.00 / 0.0 ~ 6000.0 Seconds
Main Control Function	Torque control, Speed / torque control switching, Feed forward control, Zero-servo control, Momentary power loss ride thru, Speed search, Over-torque detection, Torque Limit, 16-step speed (Max.), Accel / decel time switch, S-curve accel / decel, 3-wire sequence, Auto-Tuning (rotational, stationary), Dwell, Slip compensation, Torque compensation, JOG frequency, Fault restart, Frequency upper / lower limit settings, DC injection braking at start / stop, High slip braking, Parameter copy PID control (with sleep function), Energy saving control, MODOBUS communication (RS-485 RJ45, Max. 115.2 kbps)
Fan Control	230 V model: VFD150C23A (include) and series above: PMW control; VFD110C23A and below: on / off switch control 460 V model: VFD185C43A (include) and series above: PMW control; VFD150C43A and below: on / off switch control 575 V / 690 V model: PWM control

MICRO CONTROLLERS AND DDC

HBCO15 MICRO-COMPUTER CONTROLLER/GATEWAY



DESCRIPTION

Our microcomputer controller is based on Raspberry Pi 4 Model B, the latest product in the popular Raspberry Pi range of computers. It offers ground-breaking increases in processor speed, multimedia performance, memory, and connectivity compared to the prior-generation Raspberry Pi 3 Model B+, while retaining backwards compatibility and similar power consumption. For the end user, Raspberry Pi 4 Model B provides desktop performance comparable to entry-level x86 PC systems. This product's key features include a high-performance 64-bit quad-core processor, dual-display support at resolutions up to 4K via a pair of micro-HDMI ports, hardware video decode at up to 4Kp60, up to 4GB of RAM, dual-band 2.4/5.0 GHz wireless LAN, Bluetooth 5.0, Gigabit Ethernet, USB 3.0, and PoE capability (via a separate PoE HAT add-on). The dual-band wireless LAN and Bluetooth have modular compliance certification, allowing the board to be designed into end products with significantly reduced compliance testing, improving both cost and time to market.

FEATURES:

- Processor: Broadcom BCM2711, quad-core Cortex-A72 (ARM v8) 64-bit SoC @ 1.5GHz
- Memory: 1GB, 2GB or 4GB LPDDR4 (depending on model)
- Connectivity: 2.4 GHz and 5.0 GHz IEEE 802.11b/g/n/ac wireless LAN, Bluetooth 5.0, BLE Gigabit Ethernet 2 × USB 3.0 ports 2 × USB 2.0 ports. LORA.
- GPIO: Standard 40-pin GPIO header (fully backwards-compatible with previous boards) Video & sound: 2 × micro HDMI ports (up to 4Kp60 supported) 2-lane

MIPI DSI display port 2-lane MIPI CSI camera port 4-pole stereo audio and composite video port

- Multimedia: H.265 (4Kp60 decode); H.264 (1080p60 decode, 1080p30 encode); OpenGL ES, 3.0 graphics SD card support: Micro SD card slot for loading operating system and data storage
- Input power: 5V DC via USB-C connector (minimum 3A1) 5V DC via GPIO header (minimum 3A1)
- Power over Ethernet (PoE)–enabled (requires separate PoE HAT)
- Environment: Operating temperature 0–50°C

APPLICATION:

- VAV Air Distribution.
- FCU Control
- AHU Control
- Chiller distribution network control.
- Smart Energy Meter

HBMC07 ESP32 BASED MICRO-CONTROLLER



DESCRIPTION

- Material of shell: plastic. This is a new upgrade version which has built-in MPU9250; Connect several lines, In addition, it can also be used for industrial control, hotel panel, aluminum cutting machine, door lock system.
- The code download is obtained in the product description
- The M5Stack ESP32 development kit has been successfully certified by the Microsoft Azure IoT Starter Kit, which connects quickly and securely to the Azure cloud service platform.
- Just download the corresponding SDK, you can achieve with the Azure IoT platform docking.
- Office can be used as a recording pen and timer; out as a GPS recorder can be used; at home can be used as a smoke alarm, camera.
- Can perform PID control.
- LORA Interface.

FEATURES:

Product Dimensions

20 x 25 x 10 mm

Item Weight	0.176 ounces
Batteries	1 AA batteries required. (included)

APPLICATION:

- VAV Air Distribution.
- FCU Control
- AHU Control
- Chiller distribution network control.
- Smart Energy Meter

HBMC08 STM32 BASED MICRO-CONTROLLER



DESCRIPTION

- Material of shell: plastic. This is a new upgrade version which has built-in STM32; Connect several lines, In addition, it can also be used for industrial control, hotel panel, aluminum cutting machine, door lock system.
- The code download is obtained in the product description
- Office can be used as a recording pen and timer; out as a GPS recorder can be used; at home can be used as a smoke alarm, camera.
- Can perform PID control.
- LORA Interface.

FEATURES:

STM32F103C8T6

ARM® 32-bit Cortex® -M3 CPU Core	2 x 12-bit, 1 μ s A/D converters (up to 16 channels)
72 MHz maximum frequency, 1.25 DMIPS/MHz (Dhrystone 2.1) performance at 0 wait state memory access	Conversion range: 0 to 3.6 V
Memories § 64 or 128 Kbytes of Flash memory	Peripherals supported: timers, ADC, SPIs, I2 Cs and USARTs

20 Kbytes of SRAM	Up to 80 fast I/O ports
Clock, reset and supply management	26/37/51/80 I/Os, all mappable on 16 external interrupt vectors and almost all 5 V-tolerant § Debug mode
2.0 to 3.6 V application supply and I/Os	Serial wire debug (SWD) & JTAG interfaces
POR, PDR, and programmable voltage detector (PVD)	Three 16-bit timers, each with up to 4 IC/OC/PWM or pulse counter and quadrature (incremental) encoder input
4-to-16 MHz crystal oscillator	16-bit, motor control PWM timer with dead-time generation and emergency stop
Internal 8 MHz factory-trimmed RC	2 watchdog timers (Independent and Window)
Internal 40 kHz RC	SysTick timer 24-bit downcounter
PLL for CPU clock	Up to 9 communication interfaces
32 kHz oscillator for RTC with calibration	Up to 2 x I2C interfaces (SMBus/PMBus)
Low-power	Up to 3 USARTs (ISO 7816 interface, LIN, IrDA capability, modem control)
Sleep, Stop and Standby modes	Up to 2 SPIs (18 Mbit/s)
VBAT supply for RTC and backup registers	CAN interface (2.0B Active)
USB 2.0 full-speed interface	
APPLICATION:	
<ul style="list-style-type: none"> • VAV Air Distribution. • FCU Control • AHU Control • Chiller distribution network control. • Smart Energy Meter 	

SMART ENERGY MANAGEMENT SYSTEM (SEMS)

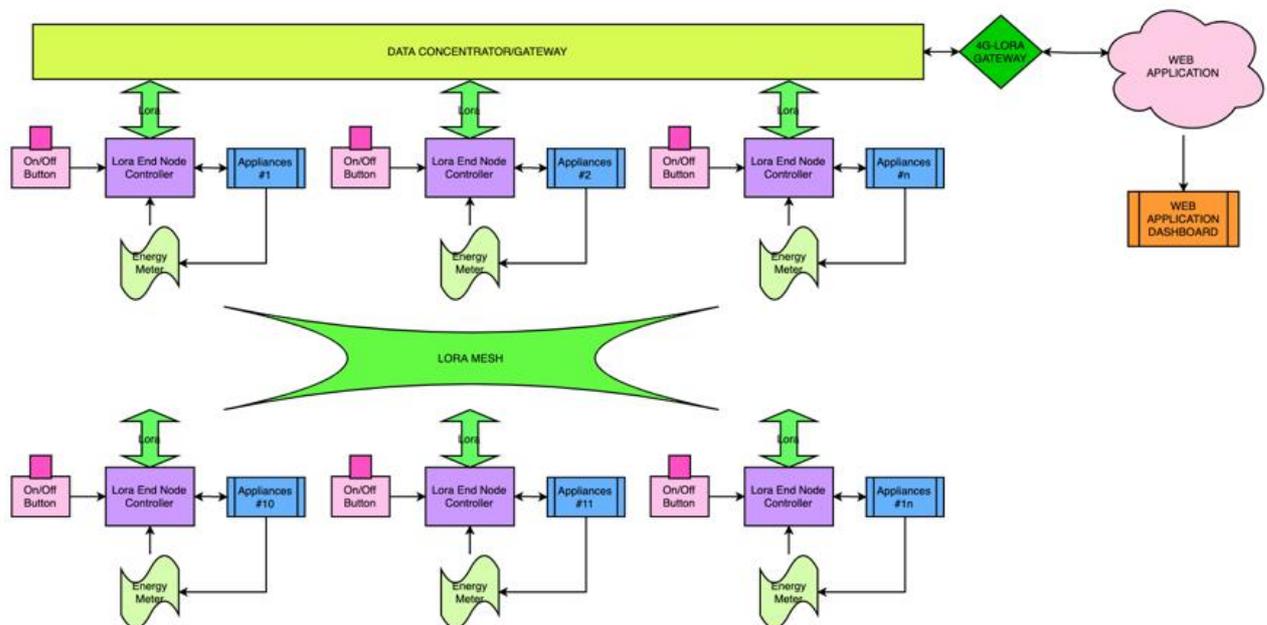
Hornbird Technology Smart Energy Management System (SEMS) uses a combination of Industry 4.0 technology with Internet of Things, Artificial Intelligence, Cloud and Edge Computing. The system have two parts, the Local Area Network (LAN) and the Wide Area Network (WAN).

The LAN comprised of the Hardware with Micro-Controllers, Actuators and Sensors to complement the Edge Computing and using the Long Range (LORA) communication protocol for the Machine to Machine (M2M) wireless communication. With the use of LORA for the M2M communication, it decentralized controls and maximize the power of the micro-controllers.

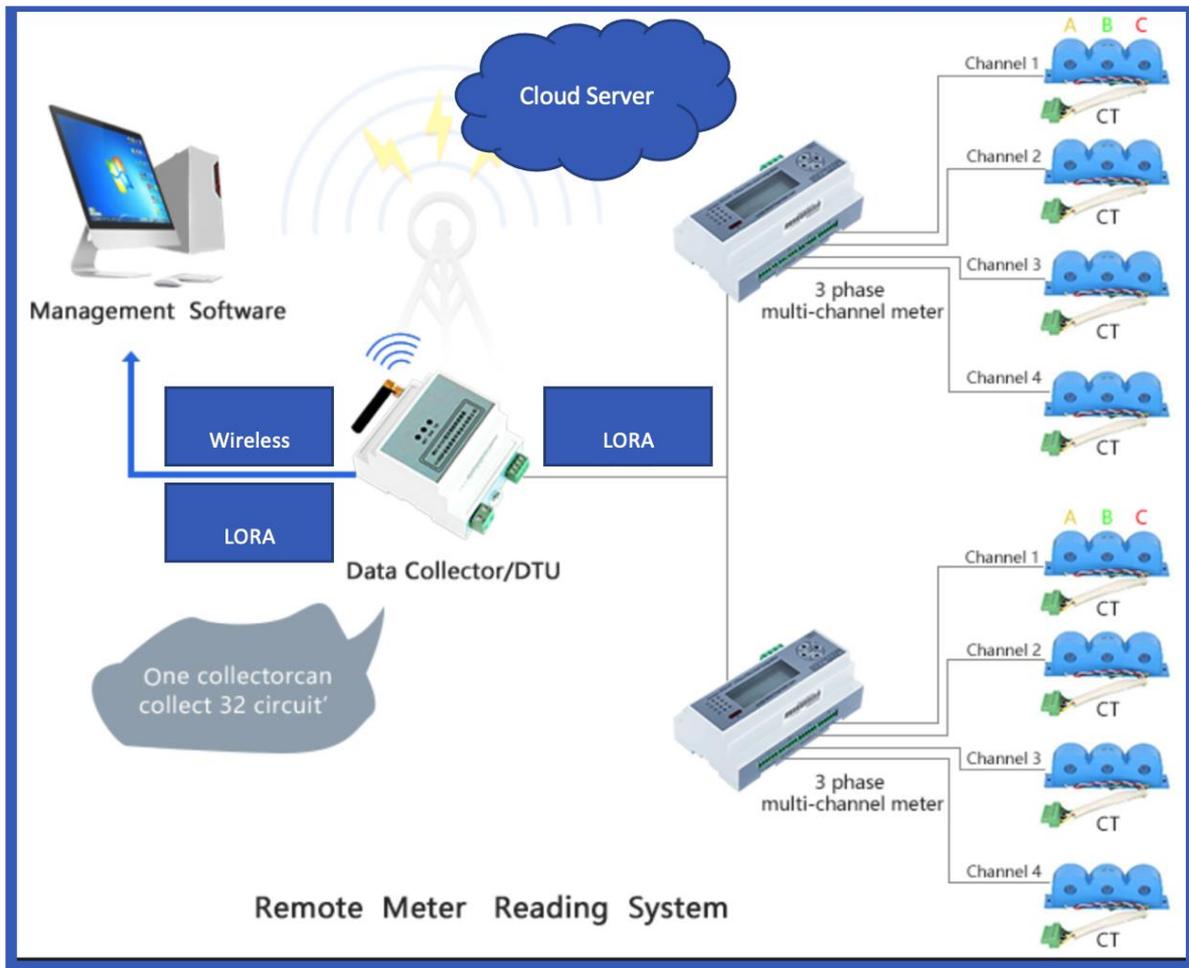
The SEMS also use Artificial Intelligence to Forecast Energy Consumption at the billing date, Identify consumption patterns, modulate the use of energy to stay within the desired energy consumption.

SEMS LORA MESH ARCHITECTURE

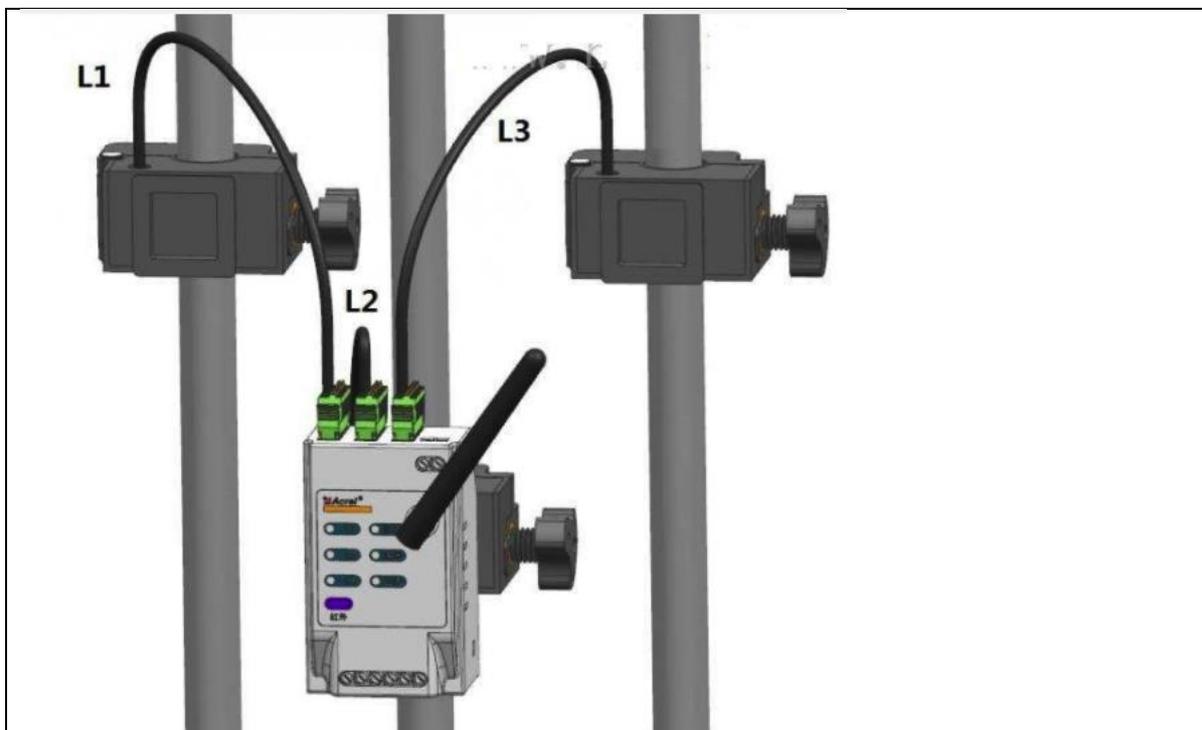
The wireless network architecture comprised of a number of MCU connected to individual appliances. The MCU receives the data from the current transformer where it is processed and calculate the energy meter, power factor, apparent power and the true power.



CURRENT TRANSFORMER TO ENERGY METER



HBEM30/HBEM31 SINGLE/THREE PHASE ENERGY METER



DESCRIPTION

HBEM30 is a multifunction power energy meter. There are functions like RS485 communication and Lora communication on 470MHz. With built-in MODBUS-RTU protocol, HBEM30 can match most of the system integrate requirement. HBEM30 has the advantage of higher accuracy, more compact and easy installing.

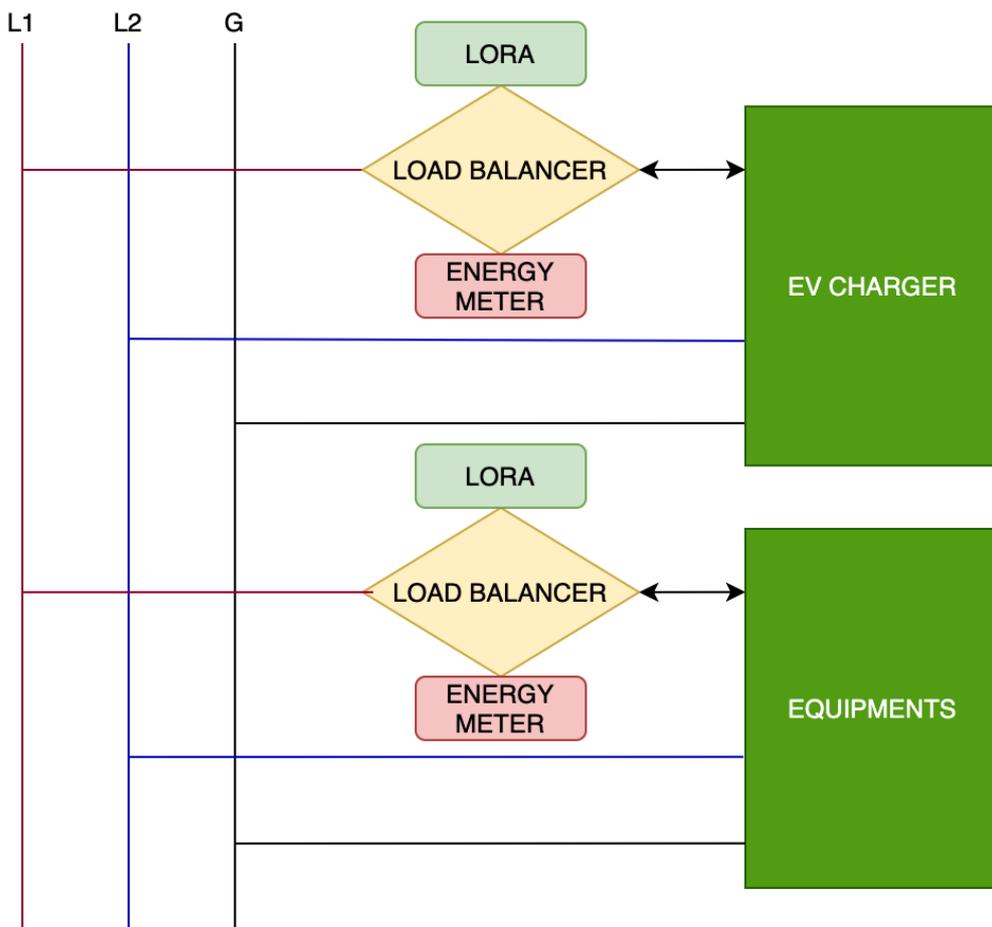
FEATURES:

Product Name	Three-phase four-wire single-channel DIN-rail smart meter
Product Model	HBEM30/ HBEM31
Technical specifications	
Metering	Reference voltage Un 3×220V/380V
Current specification	1.5(6)A\5(60)A\10(100)\100(400)
Working voltage	Reference voltage supply
Metering parameters	Voltage, current, power factor, frequency, positive/negative active energy, energy
Accuracy grade	Active 1.0; Inactive 2.0
Reference frequency	50\60Hz
Channel No.	1

Clock accuracy	≤0.5s/d(23°)
Rate	Support 2 sets of programmable rates.
Communication	LORA
Ambient temperature	-10°C~+45°C
Dimension and working environment	
Operating limit temperature	-25°C~+70°C
Rated operating voltage range	0.9Un~1.1Un
Limit operating voltage range	The electricity meter is not damaged within 4 hours at 1.9Un working voltage.
Relative humidity	25%RH~95%RH.
Dimensions	158mm×58mm×87mm
Net Weight	0.25kg

APPLICATION:

- VAV Air Distribution.
- FCU Control
- AHU Control
- Chiller distribution network control.
- Industrial appliances





DESCRIPTION

HBLB45 is a powerful energy and power load balancer. It dynamically regulate the current input to any appliances. Very useful to the power hungry Electric Vehicle charger where it consumes any available power in your facility if not regulated.

The HBLB45 is like the musicians in the orchestra listening to each other, self-regulating to ensure the total load do not exceed the designed system load plus it provides more power where it is needed.

FEATURES:

- 0-600 VAC
- 0-400 Amps
- LORA Mesh network
- Micro-controller providing the modulation to input power
- Over voltage/current protection

APPLICATION:

- Electric Vehicle Charging
- Appliances
- Equipments

LIGHTING LORA CONTROLLER

HBLT50 LED LIGHT LORA CONTROLLER



DESCRIPTION

LoRaWAN® Luminaire Controller IP68 is intended to remotely control the LED and HID luminaires using 0...10V analog or DALI control signal. Using LoRaWAN® network, the device supports customizable dimming profiles together with various configurable inputs (light intensity, movement etc.).

Luminaire Controller allows controlling an array of 32 luminaires over the DALI interface.

FEATURES:

- DALI interface
- Thermistor input
- Luminaire intensity control
- Digital input (e.g. movement sensor)
- Analog input (e.g. reflected light level)

- Sensor power supply
- Power metering
- Surge protection

SPECIFICATION:

Length	134.0 mm
Width	54.0 mm
Depth	33.0 mm
Weight	260 g
Operating temperature	-30°C ... +60°C
Power consumption	230V -15% .. +10% <1V A
Communication	LoRaWAN™
IP Rating	IP68
Activation type	OTAA

FIRE DETECTION & PREVENTION

HOW A LORAWAN-BASED FIRE DETECTION SYSTEM WORKS

Hornbird LoRa Technology enables connectivity, real-time analytics, reporting, and additional functions such as geolocation.

1. Signs of fire (heat, smoke, gas, or flames) data collected by sensor embedded with LoRa Technology.
2. Data from sensor is periodically sent to a LoRa-based gateway. Gateway sends information to network server where the data is analyzed by an application server.
3. Application server sends alerts on fire or smoke to property managers or emergency personnel via mobile device or computer.

HEAT & SMOKE LORA DETECTOR

HBSD23 LORA SMOKE DETECTOR



DESCRIPTION

HBSD23 is an intelligent wireless photoelectric smoke detector based on LoRaWAN protocol. Based on independent smoke alarm, it has been added functions of wireless communication and wireless networking, so the smoke fire detector has the features of high sensitivity, stable and reliable, attractive and durable, easy to deploy and easy to use, which can realize a centralized monitoring and management of smoke alarm.

HBSD23 also supports sound and light alarm function, which can help people get early-warning of fire, and be widely used in schools, communities, factories, hotels, nursing homes, welfare homes, ancient buildings and other places.

FEATURES:

- ◇ Support LoRa RF data transmission;
- ◇ Supports photoelectric smoke sensor detection;
- ◇ RF peripheral circuit function modular design;

- ◇ Battery powered;
- ◇ Roof mount type installation

SPECIFICATION:

Technical parameter	CPU	ARM 32bit-Cortex-M3 kernel; Main frequency: 32MHz
	Memory	128KB Flash 16KB RAM 4KB EEPROM
Hardware parameter	Sensor	built-in photoelectric smoke sensor
	LED indicator	Warning LED
	Antenna	Built-in LoRa antenna
Wireless parameter	Data rate	300bps ~ 5.4Kbps
	Working frequency	EU868 US915 AS923
	Protocol	Support LoRaWAN and P2P
	Maximum transmitted power	17dbm
	Rx sensitivity	-140dBm
Electrical specification	Overall power consumption	5mW
	Battery type	AA battery
	Working temperature	-10°C ~ 55°C
	Working humidity	10% ~ 90%
DC specification	Power supply	2pcs of AA batteries
	Input voltage	DC3V
	Sleep status	2uA
	Transmit status	110mA
Physical parameter	Dimension	110*60mm

HBSD25 LORA HEAT & SMOKE DETECTOR



- Power supply:
DC 2*1.5V AA battery operated
- Certification test for
Intertek, UL approval pending
- Wirelessly networking function
Wirelessly frequency: 868MHz
- Heat detection function
Suggestion 30 pcs interconnection

DESCRIPTION

Product Name	Smoke & Heat Alarm	Product number	GS559A
Certificate	Intertek	Approval	
Power	DC 2X1.5V AA battery operated	Life Time	10 years
Chamber	Photoelectric chamber for early detection from all directions	Signal Type	Wirelessly networking function Wirelessly frequency: 868MHz
Test Button	Test button for easy recommended weekly testing	Volume	>85dB(A)alarm signal @3M
Indicator	Flash alarm indicator(red LED), Low battery signal	Special Function	heat and smoke detection function Suggestion 30 pcs interconnection
Color	White	Sensitivity	0.115-0.168DB/M
Size	Ø120 * 36.7mm	Weight	

FEATURES:

- ◇ Support LoRa RF data transmission;
- ◇ Supports photoelectric smoke sensor detection;
- ◇ RF peripheral circuit function modular design;
- ◇ Battery powered;
- ◇ Roof mount type installation

AI CAMERA FIRE & SMOKE DETECTOR

HBIP08 AI IP CAMERA FIRE & SMOKE DETECTOR



DESCRIPTION

Smoke and Fire Detection by Hornbird IP Camera Software helps to prevent fires and, subsequently, avoid victims, loss of health and property.

HOW IT WORKS

- In case of detection of smoke or fire you receive an immediate notification to your monitor, phone or e-mail.
 - All the events detected by the module are recorded in the Event Log for the subsequent quick search in the archive.
 - You can integrate the Smoke and Fire Detection module with a fire alarm or a fire extinguishing system to ensure their joint operation.
-

YOUR BENEFITS

You do not need to look at video surveillance monitors 24 hours a day. Thanks to the Smoke and Fire Detection module, you can:

- promptly respond to fire and smoke and stop the breaking out or spreading of a fire
- promptly inform people in the danger zone for their quick evacuation
- find precise locations and causes of fire or smoke.

Thus, you will be able to ensure survival and preservation of health of the personnel and customers, as well as to minimize damage to the property

CONTACT US

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