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2023

V0.2



PRODUCT CATALOGUE

5G & IIoT



LoRaWAN® Gateway

KLG65 Semi industrial Gateway/KLG67 Outdoor Gatewaz



Embedded Network Server

- Gateway Fleet for receiving data from multiple gateways
- Real-time data collection & processing
- Save investment of external network service



Powerful LoRa Capabilities

- Semtech SX1302 LoRa chip
- LoRaWAN® Class A/Class B/Class C
- Up to 15 kilometers range
- Support CN470/EU868/US915/AS923 and more



Industrial Design

- IP65/IP67 waterproof
- PoE powered device
- -40°C to 70°C operating temperature



Advanced Gateway Features

- Node-RED development tool for codeless visual programming
- Multicast for sending downlink messages to a group of end-devices
- Noise Analyzer to improve network quality and deployment efficiency

Specifications

Model		KLG65	KLG67
Product Image			
LoRaWAN	Channel	8	
	Frequency	CN470/RU864/IN865/EU868/US915/AU915/KR920/AS923-1&2&3&4	
	Sensitivity	-140dBm Sensitivity @292bps	
	Output Power	27 dBm Max	
	Protocol	V1.0/V1.0.2, Class A/Class B/Class C	
Hardware	Processor	Quad-core 1.5 GHz, 64-bit ARM Cortex-A53	
	Memory	512 MB DDR4	
	Flash	8 GB eMMC (pSLC mode)	
	Power Supply	1. 9-24 VDC Jack Connector 2. 1 × 802.3af PoE input	1. 12 VDC with M12 Connector 2. 1 × 802.3af PoE input
	Ingress Protection	IP65	IP67
Connectivity	Cellular (Optional)	1 x SIM Slot, Support Global GSM/3G/4G LTE Frequency Bands	
	Wi-Fi	IEEE 802.11b/g/n	
	Ethernet	1 x 10/100/1000 Mbps	
	GPS	/	Yes



Mini LoRaWAN® Gateway

UG63

This UG63 Mini LoRaWAN® Gateway is delicately designed with a mini size and aesthetic appearance. Apart from standalone deployment, with strong and reliable performance as well as many advanced features like LBT, it fits the LoRaWAN® network coverage for indoor blind spots.



Gateway Fleet

Transmit received data to one controller gateway



Listen Before Talk

Enable multiple transmitting nodes to share a same channel



Blind Spot Coverage

Perfect for covering blind spot of LoRaWAN® network



Massive Connectivity

Adopting Semtech SX1302 LoRa chip, UG63 supports connection with more than 2000 LoRaWAN® nodes

Specifications

LoRaWAN	Channel	8
	Frequency	CN470/RU864/IN865/EU868/US915/AU915/KR920/AS923
	Sensitivity	-140dBm Sensitivity @292bps
	Output Power	27 dBm Max
	Protocol	V1.0/V1.0.2, Class A/Class B/Class C
Hardware	Processor	528 MHz, ARM Cortex-A7
	Memory	256 MB DDR4 RAM
	Flash	4 GB eMMC
	Power Supply	1 × 802.3af standard PoE input 5V by Type-C Port
	Ingress Protection	IP30
Connectivity	Ethernet	1 x 10/100 Mbps



Ambience Monitoring Sensor



AM103
AM103L

These **KL103 / KL103L** measures 3 key factors including carbon dioxide, temperature, and humidity. The tiny, eye-catching size and long battery life make it worthy for indoor ambience monitoring in offices, schools, hotels, etc.



3 Sensors in 1

Built-in high accuracy temperature, humidity and CO₂ sensor



Screen Display

Visualize sensor data, and CO₂ level with emoticon indication



Easy Configuration

Configure and switch the device wirelessly via NFC technology



Long Battery Life

2 replaceable batteries (5400 mAh) can be used for 3 ~ 4 years

Specifications

Model		KL103	KL103L
Hardware	Screen	2.13-Inch Black & White E-Ink Screen	N/A
	LED	1 × Traffic Light Status Indicator	
	Configuration	Mobile App via NFC	
	Frequency	CN470/RU864/IN865/EU868/AU915/US915/KR920/AS923-1&2&3&4	
	Work Mode	OTAA/ABP, Class A	
	Power Supply	2 × 2700 mAh ER14505 Li-SOCl ₂ Batteries	
Sensors	Temperature	Range	-20°C - 70°C
		Accuracy	0 to 70°C (±0.3°C), -20 to 0°C (±0.6°C)
	Humidity	Range	0% - 100% RH
		Accuracy	10% to 90% RH (±3%), below 10% and above 90% RH (±5%)
	CO ₂	Range	400 - 5000 ppm
		Accuracy	± (30 ppm + 3% of reading)

Ambience Monitoring Sensor

7in1

- Temperature & Humidity
- Barometric Pressure
- Activity Level (PIR)
- TVOC
- Light
- CO₂



- KL107
- KL104



These KL107 / KL104 devices consist of multiple smart sensors that are built specifically for indoor air quality monitoring. It has a clean and modern design that makes it a perfect match for indoor scenarios.

- Clean and Modern Design

Bring “less is more” concept to indoor or HVAC environment
- Multiple Sensors in One

Temperature, humidity, activity level (PIR), light, CO₂, TVOC, barometric pressure
- Configure with One Touch

NFC technology enables easy configuration and on/off operation
- Better Readability than LCD Monitor

E-ink technology offers high display clarity and sunlight visibility
- Low Power Consumption

AA alkaline batteries can last for 1 year and ensure low maintenance cost
- Smart Screen Mode

Screen will stop updating data if no motion is detected continuously for 20 minutes, which will save more power and prolong the use life of batteries.
- Compliant with ToolBox & IoT Cloud

Manage and configure your sensor easily

Model			KL107	KL104
Hardware	Frequency		CN470/RU864/IN865/EU868/US915/AU915/KR920/AS923	
	Tx Power		19dBm (470 MHz) / 16dBm (868 MHz) / 20dBm (915 MHz)	
	Sensitivity		-137dBm @300bps	
	Mode		OTAA/ABP, Class A	
	Power Supply		2 × AA alkaline batteries/Powered via Type C port	
	Battery Lifetime		Around 1 Year	Around 1.5 Years
Sensors	Temperature	Range	-20°C to + 70°C	
		Accuracy	±0.3°C (0 ~ 70°C), ±0.6°C (-20 ~ 0°C)	
	Humidity	Range	0% to 100% RH	
		Accuracy	±3% RH (10 ~ 90%), ±5% RH (0 ~ 10%, 90 ~ 100%)	
	PIR	Detection Area	94° Horizontal, 82° Vertical	
		Detection Distance	5 m	
	Light	Range	60000 lux (Visible + IR, IR)	
		Accuracy	±30%	
	CO ₂	Range	400 ~ 5000 ppm	N/A
		Accuracy	± (30 ppm + 3% of reading)	
	TVOC	Range	0 ~ 60000 ppb (total VOC)	
		Accuracy	±15% of reading	
		Long-term Stability	1.3% accuracy drift per year	
	Barometric Pressure	Range	300 ~ 1100 hPa (-40 ~ 85°C)	
		Accuracy	±1 hPa	

LoRaWAN® Ambience Monitoring Sensor

9in1

- AM319
- AM307

Temperature

Humidity

PIR

Light

TVOC

Barometric Pressure

CO₂ CO₂

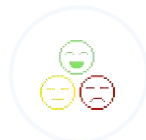
PM2.5 & PM10

HCHO

O₃ O₃



This KL307/KL319 device is an all-round ambience monitoring device designed for indoor air quality monitoring. It collects various indoor ambience conditions through 9 built-in sensors, and delivers the data to both mobile App and its 4.2 inch E-ink screen, to help you to understand the indoor comfort & health level visually.



Emoticon Indication

Indicating comfort level by emoticon on screen



Traffic Light Indicator

Presenting ambience conditions in a tri-color LED



Better Screen Display

Light & dark color theme with three display styles



Anti-Theft Design

Preventing the device being taken away thoughtlessly

		Specifications	
		Model	
		KAM319	KAM307
Hardware	Screen	4.2 inch E-ink	
	LED & Buzzer	1 × Traffic Light Status Indicator, 1 × Buzzer	
	Configuration	NFC (mobile App & NFC reader with PC), USB Type-C port	
	Frequency	CN470/RU864/IN865/EU868/AU915/US915/KR920/AS923-1&2&3&4	
Sensors	Work Mode	OTAA/ABP, Class C	OTAA/ABP, Class A
	Power Supply	5V/1A via Type-C Port	4 × 2700 mAh ER14505 Li-SOCl ₂ Batteries
	Temperature	Range	-40°C - 85°C
		Accuracy	±1°C
	Humidity	Range	0% - 100% RH
		Accuracy	±3%
	PIR	Detection Area	80 ° Horizontal, 55 ° Vertical
		Detection Distance	5 m
	Light	Range	0-60000 Lux (Determine as 6 levels, 0-5)
	TVOC	Range	0-500 (IAQ Index)
		Accuracy	±15%
	Barometric Pressure	Range	300 - 1100 hPa (-40°C - 85°C)
		Accuracy	±0.6 hPa
	CO ₂	Range	400 - 5000 ppm
		Accuracy	± (30 ppm + 3% of reading)

* This function is valid in the measurement of either HCHO or O₃.

Temperature and Humidity Sensor

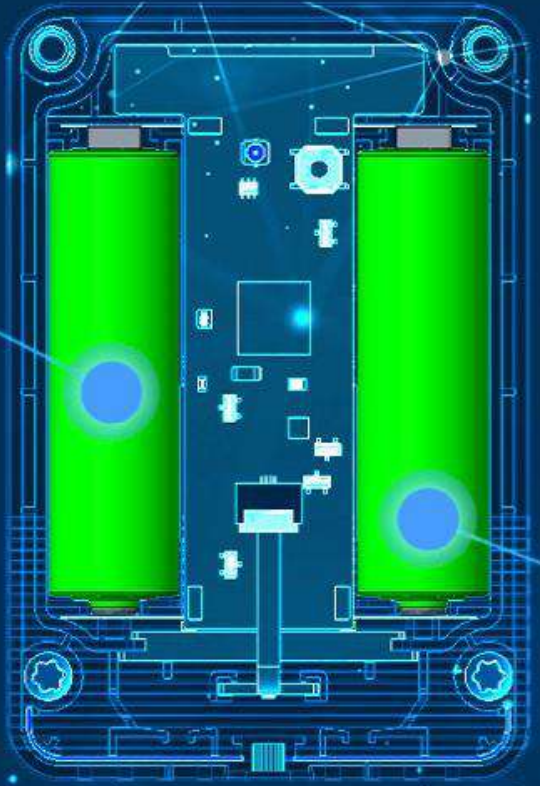


KL320-TH: A Huge Leap for Trustworthy and Holistic solutions

- Food-safe and IP67 Rated Enclosure
- Data Storage and Retransmission
- Magnetic/Standard Versions for Versatile Applications
- Optimized Accuracy and Resolution with the Best Price Competitiveness



5 Years
Battery Life



Featuring a simple yet modern design, compact size and waterproof capability, EM300 series are ideal to fit into the indoor or outdoor environment.

KL300-TH Humidity and temperature sensor is a sensor suitable for indoor and outdoor temperature and humidity monitoring. It can be widely used in office areas, greenhouses, houses and other environments.

Specifications	
Temperature	±0.3°C (0 ~ 70°C), ±0.6°C (-30 ~ 0°C)
Humidity	±3% RH (10 ~ 90%), ±5% RH (0 ~ 10%, 90 ~ 100%)
Frequency	CN470/RU864/IN865/EU868/AU915/US915/KR920/AS923
Power Supply	Easily replaceable battery with up to 10 years service life
Operating Temperature	-30 ~ 70°C
Ingress Protection	IP67
Dimensions	88.5 x 85.3 x 27 mm (3.48 x 3.36 x 1.06 in)



Configure with One Touch
NFC technology enables easy configuration and on/off operation



Low Power Consumption
Dual batteries (one battery by default) can last for up to 10 years



Compliant with ToolBox & IoT Cloud
Manage and configure your sensor easily



Compact & Waterproof
Small size with an IP67 rating enclosure



LoRaWAN® Wireless
Up to 15 km wireless communication range



Office



Greenhouse



Residence



Leak Detection Sensor

Preventing assets away from water damage



Magnetic Contact Switch

Door/window status monitoring

KL300-SLD/ZLD offers reliable performance to detect presence of water or other liquids by remotely alerting you the potential water leak before the issue becomes too serious, thus helping to prevent water damage.

Model	KL300-SLD	KL300-ZLD
Sensor Type	Probe	Rope
Cable Length	1.5 m	3 m
Temperature	$\pm 0.3^{\circ}\text{C}$ (0 ~ 70°C), $\pm 0.6^{\circ}\text{C}$ (-30 ~ 0°C)	
Humidity	$\pm 3\%$ RH (10 ~ 90%), $\pm 5\%$ RH (0 ~ 10%, 90 ~ 100%)	
Frequency	CN470/RU864/IN865/EU868/AU915/US915/KR920/AS923	
Power Supply	Easily replaceable battery with up to 10 years service life	
Ingress Protection	IP67	
Operating Temperature	-30 ~ 70°C	
Dimensions	105.6 x 85.3 x 27 mm (4.16 x 3.36 x 1.06 in)	



Hospital



Warehouse



Server Room

EM300-MCS can be mounted to any door or window to detect an opening or closing event. It adds physical security monitoring to your location by alarming for intrusion or unauthorized entry.

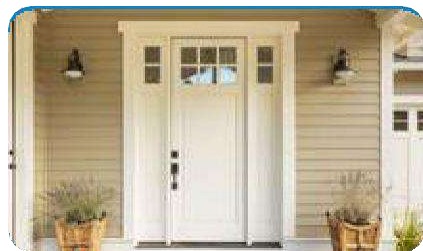
Specifications	
Sensing Distance	20 ~ 30 mm
Cable Length	1.5 m
Temperature	$\pm 0.3^{\circ}\text{C}$ (0 ~ 70°C), $\pm 0.6^{\circ}\text{C}$ (-20 ~ 0°C)
Humidity	$\pm 3\%$ RH (10 ~ 90%), $\pm 5\%$ RH (0 ~ 10%, 90 ~ 100%)
Frequency	CN470/RU864/IN865/EU868/AU915/US915/KR920/AS923
Power Supply	Easily replaceable battery with up to 10 years service life
Ingress Protection	IP67
Operating Temperature	-30 ~ 70°C
Dimensions	Transceiver: 105.6 x 85.3 x 27 mm (4.16 x 3.36 x 1.06 in) Magnet: 32 x 15 x 8 mm (1.25 x 0.59 x 0.31 in)



Fire Door



Library



Residence



KL310 - UDL device is an ultrasonic sensor featuring short blind zone and broad range distance measurement. It also has a 3-axis accelerometer to detect the device motion when it is moved or fell down, which is ideal for monitoring of solid or liquid level of containers like waste bin.

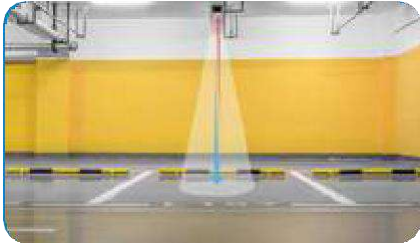
Specifications	
Ultrasonic Sensor	Range: 3 - 450 cm, 60° Accuracy: $\pm (1 + 0.3\% \times S)$, S = distance
Accelerometer	Normal/Tilt (device position detection)
Configuration	Mobile App via NFC
LoRaWAN® Frequency	CN470/RU864/IN865/EU868/AU915/US915/KR920/AS923
Power Supply	2 × 3500 mAh ER17505 Li-SOCl ₂ Batteries
Battery Life	7000 mAh battery to use for over 10 years with around 20 triggers per day
Ingress Protection	IP67
Operating Temperature	-15°C to +60°C



Waste Bin



Manhole Cover



Parking Lot



KL310-TILT is a LoRaWAN® tilt sensor mainly for angle measurement and asset movement detection. With a compact size and 3-axis accelerometer, EM310-TILT can also detect the movement based on angle changes and send threshold alarms.

Specifications	
Axis	X, Y, Z
Range	- 90° ~ +90°
Accuracy	$\pm 1^\circ$
Resolution	0.01°
Configuration	Mobile App via NFC
LoRaWAN® Frequency	CN470/IN865/RU864/EU868/US915/AU915/KR920/AS923-1&2&3&4
Power Supply	Built-in 7000 mAh battery to use for over 5 years
Ingress Protection	IP67
Operating Temperature	-20°C to +60°C



Bridge Piers Monitoring



Utility Pole Angles



Smart Manhole



Outdoor Environment Monitoring Sensor



The **KL500** Series are LoRaWAN® sensors designed for different professional applications. These sensors adopt a high ingress protection rating enclosure for use in the most challenging outdoor environmental conditions, and are powered by built-in battery for years-long use life.



High IP Rating Enclosure

IP rated as "dust tight" and protected against heavy fog or powerful jets of water



Rich Installations Available

Pole mounting, wall mounting, DIN rail mounting



Configure with One Touch

NFC technology enables easy configuration and on/off operation



Multiple Applications in Vertical Markets

Soil monitoring, water management, temperature & humidity measurement, etc.



Long Battery Use Life

19000 mAh replaceable battery ensures low maintenance cost



Compliant with ToolBox IoT Cloud

Manage and configure your sensor easily



Soil Moisture, Temperature and Electrical Conductivity Sensor
KL500-SMTC/SMT



Industrial Temperature Sensor
KL500-PT100



Light Sensor
KL500-LGT



Ultrasonic Distance/Level Sensor
KL500-UDL



Pipe Pressure Sensor
KL500-PP



Carbon Dioxide Sensor (4 in 1)
KL500-CO2



Submersible Water Level Sensor
KL500-SWL



Soil Moisture, Temperature and Electrical Conductivity Sensor

- Research-grade accuracy in multiple soil media
- Easy installation into undisturbed soil
- Rapid monitoring of growing conditions



Light Sensor



- Measuring ranges from 0 to 100, 000 lux
- Fast 1-second response
- 10-year battery life with low maintenance cost
- Accurately detect any light changes

KL 500-SMTC/SMT provides an external probe for receiving accurate and instantaneous information on soil moisture content, temperature, and electrical conductivity. It is an important tool for soil condition monitoring.

Model		KL500-SMTC	KM500-SMT
Moisture	Range	0 ~100% RH	0 ~ 100% RH
	Accuracy	±2% (0 ~ 50%), ±3% (50 ~ 100%)	±2% RH
	Resolution	0.01% RH	0.01% RH
Temperature	Range	-40 ~ 80°C	/
	Accuracy	±0.5°C	
	Resolution	0.1 °C	
Electrical Conductivity	Range	0 ~ 20000 µS/cm	/
	Accuracy	±3% (0 ~ 10000 µS/cm), ±5% (10000 ~ 20000 µS/cm)	
	Resolution	1 µs/cm	
Frequency		CN470/RU864/IN865/EU868/AU915/US915/KR920/AS923	
Power Supply		Built-in 19000 mAh high-capacity battery can be used for 10 years	
Ingress Protection		Transceiver: IP67 Sensor: IP67	
Operating Temperature		-30 ~ 70°C (Transceiver), -40 ~ 85°C (Sensor)	-30 ~ 70°C (Transceiver), -40 ~ 60°C (Sensor)



Grassland



Farmland



Greenhouse

KL 500-LGT can accurately monitor the changes in the surrounding light intensity. It is suitable for light measurement and research in agriculture Land, forestry, greenhouse, horticulture, breeding, industrial workshops, warehouses, urban lighting, and buildings.

Specifications	
Range	0 ~ 100000 lux
Accuracy	±3% (Acquired Value)
Resolution	1 lux
Cable length	3 m
Frequency	CN470/RU864/IN865/EU868/AU915/US915/KR920/AS923
Power Supply	Built-in 19000 mAh high-capacity battery can be used for 10 years
Ingress Protection	Transceiver: IP67 Sensor: IP65
Operating Temperature	-30 ~ 70°C (Transceiver), -30 ~ 60°C (Sensor)



Agriculture Land



Forestry



Greenhouse Cultivation



Pipe Pressure Sensor

- No leakage danger
- Shock-resistant and vibration-resistant
- Measuring accuracy is less than $\pm 0.5\%$ FS
- Temperature compensation for correction of temperature changes



Submersible Water Level Sensor

- Customizable measuring range up to 200 m
- Submersible pressure sensor not affected by foam, wind, or rain
- IP67 full sealed plastic waterproof design (Transceiver is not included)
- Measuring medium: water (Customizable for oil and other non-corrosive media)



KL500-PP is designed for the pressure monitoring of tank level or leakage in pipes.

Specifications	
Range	0 - 1600 kPa (16 Bar)
Accuracy	$\pm 0.5\%$ FS
Resolution	1 kPa (0.01 Bar)
Pressure Type	Gauge Pressure
Overload	150% FS
Long-term Stability	$\pm 0.3\%$ FS/year
Process Connection	G 1/2" Male
Frequency	CN470/RU864/IN865/EU868/AU915/US915/KR920/AS923
Power Supply	Built-in 19000 mAh high-capacity battery can be used for 10 years
Ingress Protection	Transceiver: IP67 Sensor: IP65
Operating Temperature	-30 ~ 70°C (Transceiver), -10 ~ 60°C (Sensor)



Constant Water Supply



Hydraulic Equipment



Barometric Pressure Detection

KL500-SWL is designed to measure the tank level or open water applications while fully submerged in liquid. It is robust and sealed to prevent corrosion and failure.

Specifications	
Range	0 - 3m/5m/10m (H ₂ O), Customizable up to 200 m and for other liquids
Accuracy	$\pm 0.5\%$ FS
Resolution	0.01 m
Pressure Type	Gauge Pressure
Frequency	CN470/RU864/IN865/EU868/AU915/US915/KR920/AS923
Power Supply	Built-in 19000 mAh high-capacity battery can be used for 10 years
Ingress Protection	Transceiver: IP67 Sensor: IP68
Operating Temperature	-30 ~ 70°C (Transceiver), -10 ~ 60 (Sensor)



Reservoir



Tank



Lake



Industrial Temperature Sensor

- Vibration-resistant construction
- Three-wire circuit
- Customizable temperature (-200 ~ 800°C)
- Terminal heads available in straight tube, armoured, SMT, threaded, magnet



CO₂ Sensor (4 in 1)



- Measuring ranges from 400 ppm to 5000 ppm
- Easy installation in any enclosed areas or outdoor environment
- 4 in 1 (CO₂, barometric pressure, humidity, temperature)

KL500-PT100 equips a highly accurate temperature sensor PT100. The platinum resistance temperature detector offers the most stable and precise temperature measurement from -200 to 800°C.

Specifications	
Range	T050: -200 °C to +50 °C T200: -50 °C to +200 °C T500: -50 °C to +500 °C T800: -50 °C to +800 °C (Customizable from -200 °C to +800 °C)
Accuracy	±0.5°C
Resolution	0.1°C
Frequency	CN470/RU864/IN865/EU868/AU915/US915/KR920/AS923
Power Supply	Built-in 19000 mAh high-capacity battery can be used for 10 years
Ingress Protection	Transceiver: IP67 Sensor: IP68 (T200) / IP30 (T050) / IP30 (T500) / IP30 (T800)
Operating Temperature	-30 ~ 70°C (Transceiver)



Industrial Process



Cold Chain



Laboratory

KL500-CO2 is designed for the application where knowing CO₂ level is important like greenhouse, building ventilation, fruit and vegetable storage. It also supports temperature, humidity and barometric pressure measurement.

Specifications			
Sensor Specs	Range	Accuracy (0 °C-50 °C)	Resolution
CO ₂	400 ~ 5000 ppm	± (30 ppm + 3% of reading)	1 ppm
Barometric Pressure	300 ~ 1100 hPa (-40 ~ 85°C)	±1 hPa	0.1 hPa
Temperature	-30°C ~ 70°C	±0.6°C (-40 ~ 0°C), ±0.3°C (0 ~ 70°C)	0.1°C
Humidity	0 ~ 100% RH	±3% RH (10 ~ 90%), ±5% RH (0 ~ 10%, 90 ~ 100%)	0.5% RH
Frequency	CN470/RU864/IN865/EU868/AU915/US915/KR920/AS923		
Power Supply	Built-in 19000 mAh high-capacity battery can be used for 10 years		
Ingress Protection	IP65		
Operating Temperature	-30 ~ 70°C		



Smart City



Livestock Farming



Forest Fire Monitoring



Ultrasonic Distance/Level Sensor



- Measuring ranges from 0.3 m to 10 m
- Measurements in very small containers or openings
- Suitable for measuring chemical mediums
- Non-contact detection for any corrosive liquid chemicals or combustibles

KL500-UDL provides highly accurate distance measurement for a variety of applications in harsh environments like flood monitoring, wastewater management, fill level monitoring in grains or fertilizer. The measurement is based on ultrasonic waves transmitted and reflected back from nearby objects.

Specifications

Range	W050: 0.3 ~ 5 m W100: 0.5 ~ 10 m
Accuracy	±1% FS
Resolution	1 mm
Frequency	CN470/RU864/IN865/EU868/AU915/US915/KR920/AS923
Power Supply	Built-in 19000 mAh high-capacity battery can be used for 10 years
Ingress Protection	IP67
Operating Temperature	-30 ~ 65°C



Water Treatment



Snow Depth



Grain Silo

CoWork Series



Explore the Potential of Workspace

This CoWork Series is designed for transforming the workspace into a smart office to help boost productivity, improve collaboration, reduce energy consumption and enhance security. It aims to build a workspace that works for the present and explore the potential of the future of work.



Better Use of Workspace



Reduce Cost



Boost Productivity



Improve Collaboration

LoRaWAN® Smart Button

CoWork Series



LoRaWAN® AI Workplace Sensor

CoWork Series



SV1211

The SW101 LoRaWAN smart button is an ultra-tiny device that allows you to remotely control appliances, triggering a scene or calling for help as whatever and wherever you need it.



Single/Double/Long Press Mode



Buzzer & LED Light for Status Indication



Easy Configuration via NFC



Over 5 Years Battery Life

Specifications

Button	1 × Action Button (white and red optional)
Press Mode	Single press, double press, long press
Configuration	Mobile App via NFC
LoRaWAN® Frequency	CN470/RU864/IN865/EU868/AU915/US915/KR920/AS923
Power Supply	Built-in 1650 mAh battery to use for over 5 years with around 10 presses per day
Ingress Protection	IP30
Operating Temperature	-30°C to +60°C

SV121 device is an AI powered workplace sensor featuring LoRaWAN® technology. It complies with GDPR and uses anonymous people counting data to help you see and understand your workspace utilization.



Anonymous Detection

No facial detection technology being applied nor PII collected



High Recognition Rate

95% recognition rate to determine objects as human or non-human



Large Detection Area

Covering up to 5 meters radius at 3 meters height (78 m² in total)



Custom Detection Region

Define 12 custom mapped regions as detection/non-detection region

Specifications

Field of View	190°Horizontal, 112°Vertical
Recognition Rate	>95%
Wi-Fi	IEEE 802.11b/g/n, as AP for configuration only
LoRaWAN® Frequency	CN470/RU864/IN865/EU868/AU915/US915/KR920/AS923
Power Supply	5V/1.5A by Type-C Port
Ingress Protection	IP30
Operating Temperature	-5 ~ +55°C

Outdoor LoRaWAN® Controller

Feature-Rich SensorHub for Connecting Sensors



KLC50X : Series LoRaWAN® Controller is a fully integrated and battery-powered LoRaWAN® node with solar panel and multiple communication interfaces for connecting to a wide range of external sensors. With quick installation and easy maintenance, **This** Series LoRaWAN® Controller is ideal to work in harsh environments for remote monitoring and collecting data from sensors.

Model	KLC501	KLC502
Power Supply	Rechargeable 5100 mAh battery with solar panel	Non-rechargeable Built-in 27000 mAh Li-SOCl ₂ Battery
Interface 1	2 × analog input 1 × 3.3 V output 1 × 5/9/12 V output switchable	
Interface 2	2 × GPIO 1 × RS485/RS232 switchable 1 × 3.3 V output 1 × 5/9/12 V output switchable	
Dimension	116 x 116 x 45.5 mm (4.56 x 4.56 x 1.79 in)	
Frequency	CN470/RU864/IN865/EU868/AU915/US915/KR920/AS923	
Protocol	OTAA/ABP, Class A & Class C	OTAA/ABP, Class A
Ingress Protection	IP67	
Operating Temperature	-20 ~ 60°C	

LoRaWAN® Solenoid Valve Controller



Empower Automatic & Precision Irrigation



KLC51X : Series LoRaWAN® Solenoid Valve Controller provides seamless ultra long range access capability for common irrigation valves. With **Device** IoT Cloud, the valve can be remotely controlled from anywhere at any time. Moreover, the embedded pulse counter feature enables the device to monitor flow easily, as well as to make irrigation precisely.



Solenoid Valve Control

- Time-Based Open/Close
- Volume-Based Open/Close



Flow Monitoring

- Connecting up to 2 Meters
- Configurable Volume per Pulse



Long Term Reliability

- IP67 Waterproof
- 3-Year Battery Life

Model	KLC511	KLC512
Power Supply	Rechargeable 5100 mAh battery with solar panel 1 month battery life without charging (Class C)	Non-rechargeable Replaceable 27000 mAh Li-SOCl ₂ battery Up to 3-year battery life (Class A)
Solenoid Interface	2 × 2-Wire 12 VDC Latching Solenoid	
Pulse Interface	2 × Pulse Input	
Dimension	116 x 116 x 45.5 mm (4.56 x 4.56 x 1.79 in)	
Frequency	CN470/RU864/IN865/EU868/AU915/US915/KR920/AS923	
Protocol	OTAA/ABP, Class A & Class B & Class C	OTAA/ABP, Class A & Class B
Ingress Protection	IP67	
Operating Temperature	-20 ~ 60°C	

Our IoT Cloud

IoT Cloud provides unparalleled levels of vertical integration with LoRaWAN® gateways, sensors and controllers. It visualizes field data and enables user to monitor and control remote assets on an intuitive dashboard.



Visualization

Transform real-time and historical data into drag-and-drop widgets on dashboard



Alerts

Enable email and mobile push notifications based on triggered events



Monitoring & Control

Control access and monitor your projects from anywhere



Security & Reliability

Built on AWS to provide the most confidential and reliable infrastructure for your data

Connectivity Suite

Applicable to Industrial Cellular Router and LoRaWAN® Gateway



Customers can access and connect to our gateways from a single location at any time. The DeviceHub is able to monitor all critical parameters of remote routers and gateways, perform configuration, upgrade firmware, analyze system log, create graphic reports and more. It helps to improve productivity, reduce costs, and enhance the intelligence of your network and business operations.

Software Requirements

- ✓ OS: Ubuntu 20.04
- ✓ Supports installation package
- ✓ Browser: Chrome, Firefox

Hardware Requirements

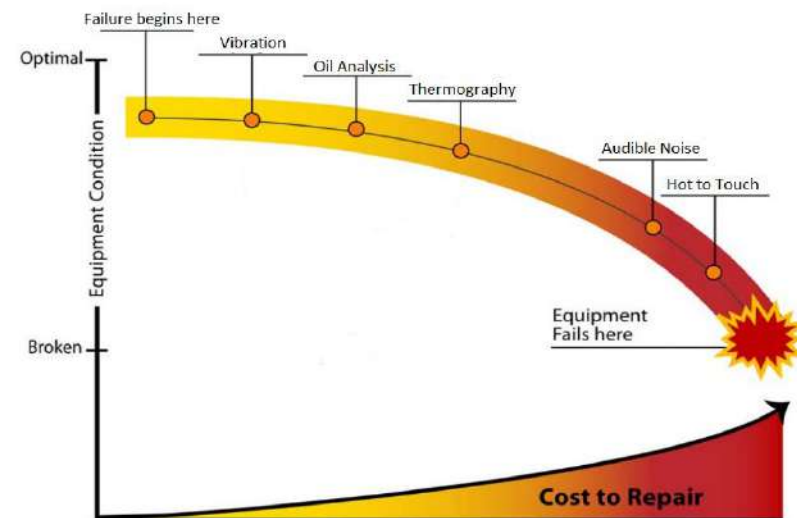
Your host hardware must meet the following minimum requirements:

- | For 500 devices | For 1000 devices |
|-----------------|------------------|
| ✓ RAM: 16 GB | ✓ RAM: 32 GB |
| ✓ Disk: 512 GB | ✓ Disk: 1 TB |

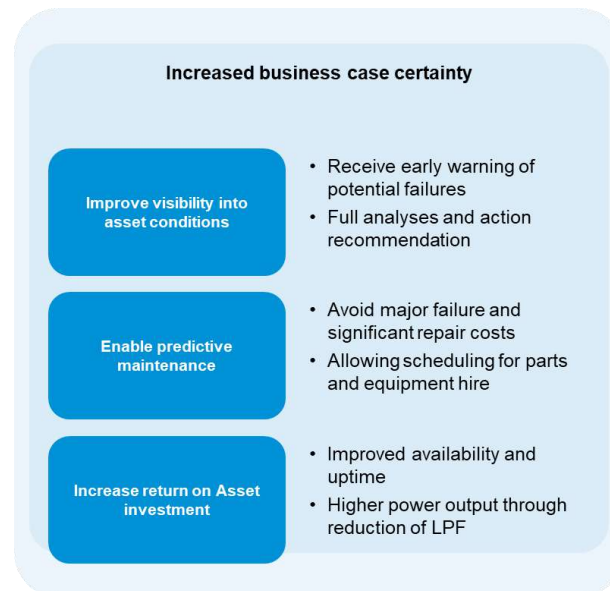
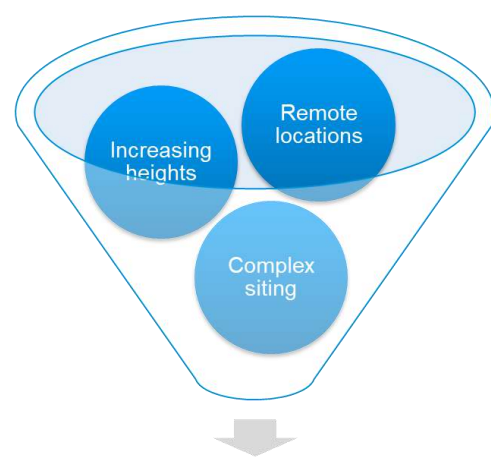


Tri-Axial Vibration Analyzers

Condition monitoring is developed to detect potential failures early and allow efficient planning of preventive maintenance. Whenever a failure begins to happen, vibration is one of the first indications as shown in the image below



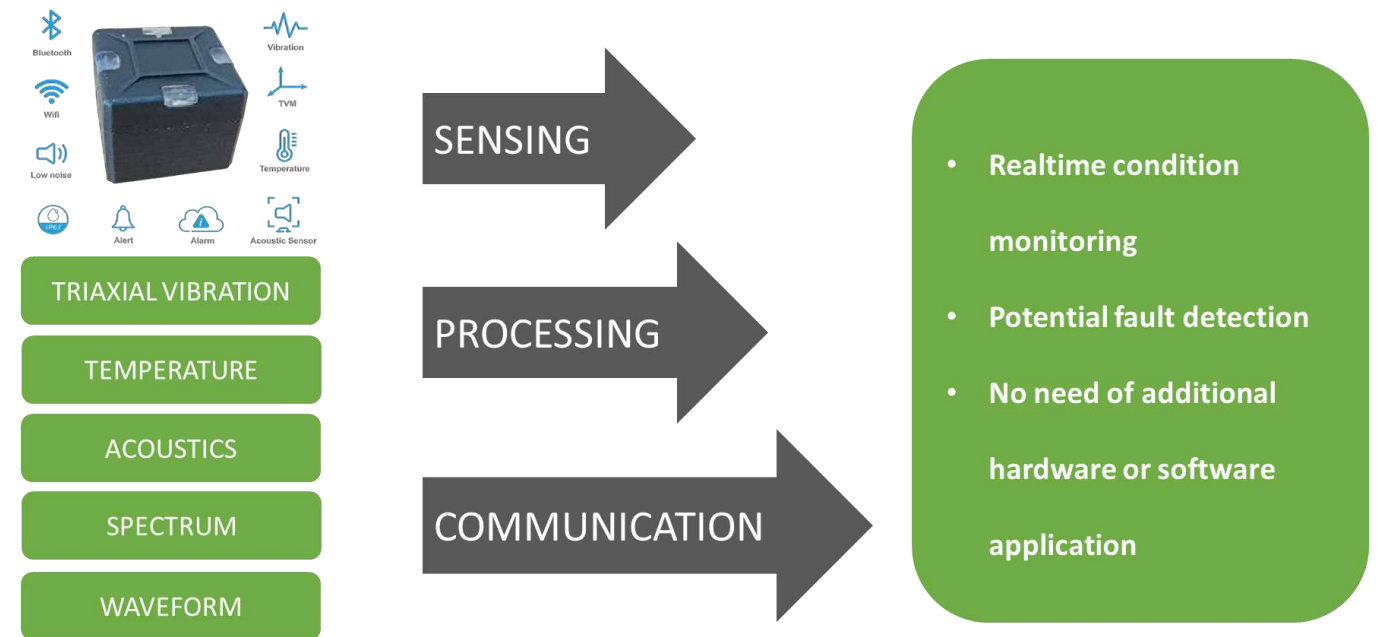
When done properly, condition monitoring can lead to significant cost reductions in O&M



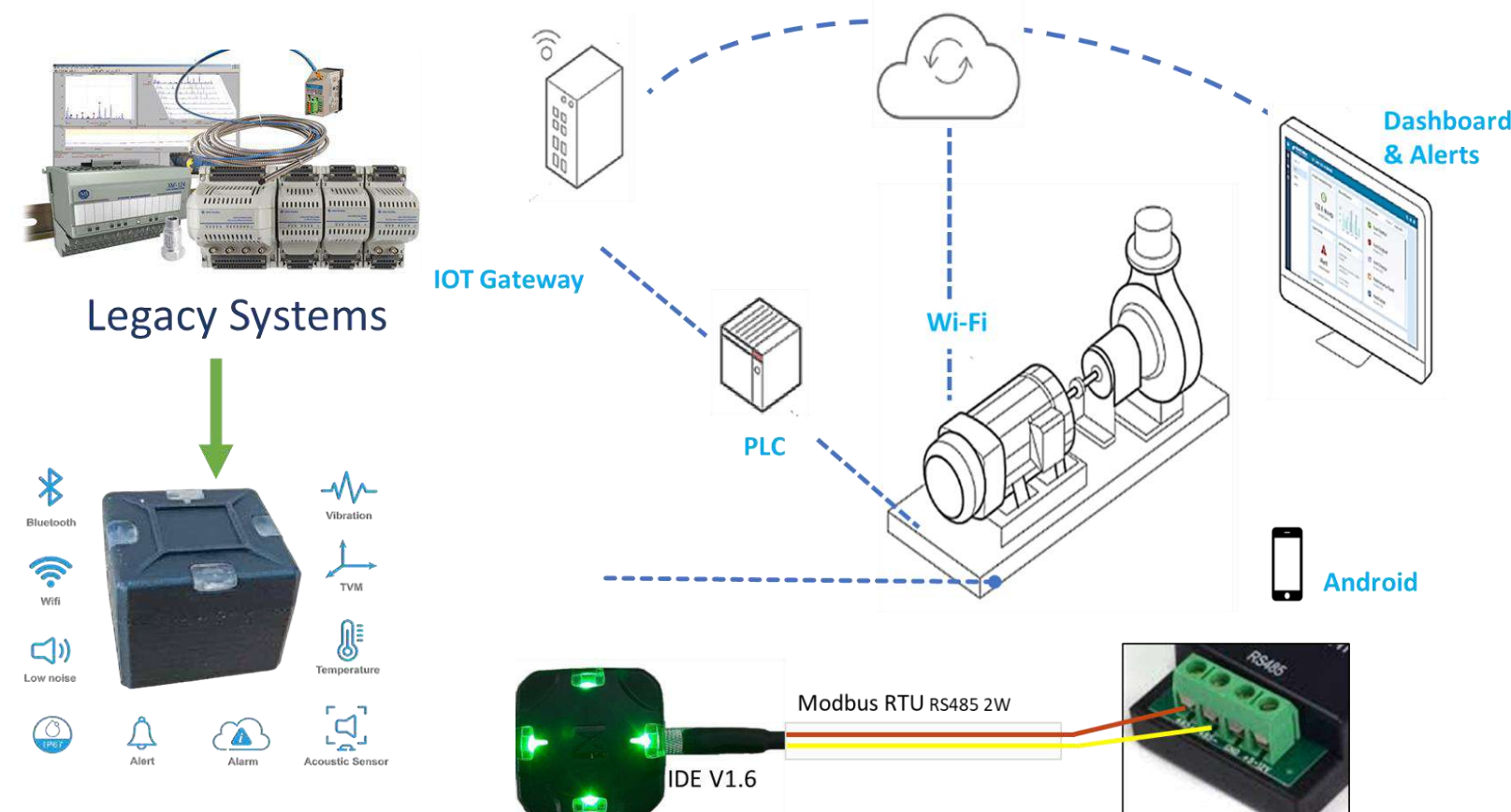
- Vibration-based condition monitoring systems are most used for monitoring the drivetrain of Equipment's.
- Condition monitoring is based on the fact that most damages in rotating machinery (like the drivetrain) lead to excessive vibration and that each mechanical unbalance or defect generates a unique vibration pattern.
- Sensors measure vibrations in the equipment and relay information to a Edge Computing device itself (iVibit).
- Vibration sensors can detect faults at an earlier stage than other sensors that equipment are equipped with (such as process parameter sensors, like temp).

Our Solution

We offer our users a complete condition monitoring solution that combines Integrated vibration + Temperature + Acoustic data. 80% of the potential failures can now be identified at 20% of the cost



Our sensors offer seamless cloud and PLC/DCS Integration through RS485



Advantages over other systems

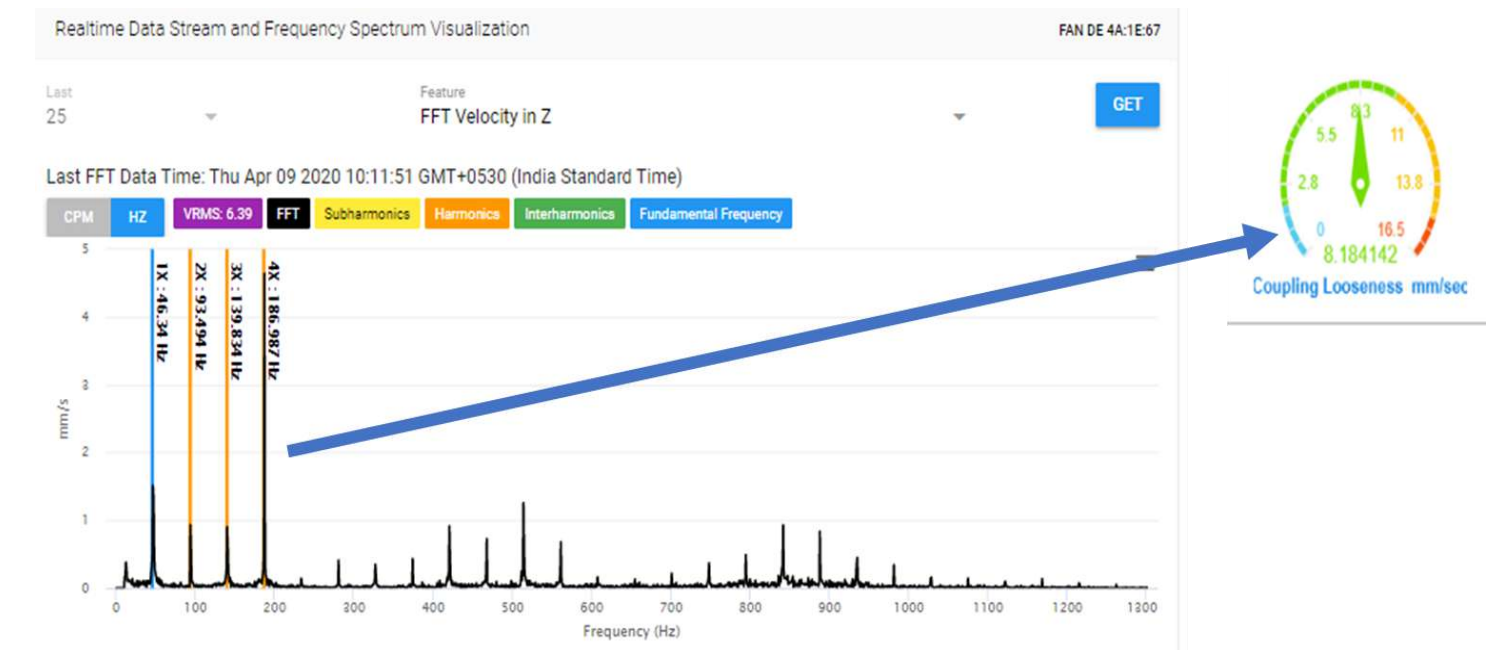
Data Capturing Mechanism	Offline	Online	On-Edge
Data Monitoring in No Load Condition	✓	✓	✓
Data Monitoring in Load Condition	✗	✓	✓
24 x 7 Equipment Condition Monitoring	✗	✓	✓
Event & Alert Capturing	✗	✓	✓
Trend Visualization	✗	✓	✓
Spectrum Analysis 24x7	✗	✗	✓
Real-time local diagnostic indication	✗	✗	✓
Local Alarms & Visual Alerts	✗	✗	✓
FFT Spectrum for fault isolation on Mobile	✗	✗	✓

Web Based Dashboard



Diagnostics Configuration

We offer configurable diagnostics at a device level to enable in-system diagnosis and prognosis for you to take the right action at the right time



Through configuration, we can predict the following faults:

