









At Milesight we are passionate about the connectivity of "things" to the cloud. We leverage the value of the top trending technologies that transform the world we live in and are committed to our partners who share the same passion. We believe that the complexity of data collection, storage and retrieval can be simplified into the Cloud-intelligence. Our development and distribution of these appliances and services demonstrates our commitment to the digital transformation and continues to deliver compelling connectivity for IoT world.

#### **Contents**

#### LoRaWAN® Gateway

UG65/UG6

#### **Ambience Monitoring Sensors**

AM104/AM107

#### **Environment Monitoring Sensor**

Temperature & Humidity Sensor EM300-TH Leak Detection Sensor EM300-SLD/ZLD Magnetic Contact Switch EM300-MCS

#### **Outdoor Environment Monitoring Sensor**

EM500 series

Soil Moisture, Temperature and Electrical Conductivity Sensor EM500-SMT

Light sensor EM500-LG

Pipe Pressure Sensor EM500-PP

Submersible Water Level Sensor EM500-SWL

ndustrial Temperature Sensor EM500-PT10

CO<sub>2</sub> Sensor (4 in 1) EM500-CO<sub>2</sub>

Ultrasonic Distance/Level Sensor EM500-UDI

#### **Outdoor LoRaWAN Controller**

UC501/UC50

#### **Compact Controller**

4G/LoRa

#### Milesight IoT Cloud

#### **Industrial Cellular Router**

UR3x & UR75-5G

#### **Connectivity Suite**



USST



















UG65 UG67\*

, ..

AM100 series

EM300 series

s EM500 series

UC500 Series

Compact LoRaWAN Controller

UR32

**UR35** 

UR75 5G





#### **Embedded Network Server**

- ▶ Real-time data collection & processing
- ▶ Receiving data from multiple Milesight gateways
- Save investment of external network service



#### **Powerful LoRa Capabilities**

- ➤ Semtech SX1302 LoRa chip
- ▶ Up to 15 kilometers range
- ➤ High capacity of up to 2000 nodes
- ➤ Support CN470/EU868/US915/AS923 and more



#### **Industrial Design**

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



#### **Optimized Packet Forwarder**

- ➤ Forwarding data to multiple network servers simultaneously
- Strengthened security and efficiency of data delivery to TTN, Loriot and ChirpStack

# **Specifications**

Model Product		UG65	UG67*	
	Channel	{	3	
	Frequency	CN470/RU864/IN865/EU868,	/US915/AU915/KR920/AS923	
LoRaWAN	Sensitivity	-140dBm Sensitivity @292bps		
	Output Power	27 dBm Max		
	Protocol	V1.0 /V1.0.2/V1.1.0, Class A and Class C		
	Processor	Quad-core 1.5GHz, 64-bit ARM Cortex-A53		
	Memory	512 MB DDR4		
Hardware	Flash	8 GB eMMC (pSLC mode)		
Панимане	Power Supply	9 ~ 48 VDC PoE PD (Optional)		
Ingress Protectio		IP65	IP67	
	Cellular	1 x SIM Slot, Support Global GSM/3G/4G LTE Frequency Bands		
Connectivity	Wi-Fi	IEEE 802.11b/g/n(Optional)		
	Ethernet	1 x 10/100/1000 Mbps		
	GPS	Optional		

\*Coming Soon 04

# Indoor **Ambience** Monitoring Sensors



Motion (PIR)





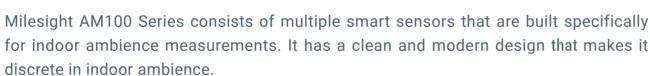
Barometric Pressure







CO<sub>2</sub> CO<sub>2</sub>





#### Clean and Modern Design

Bring "less is more" concept to indoor or HVAC environment



#### Multiple Sensors in One

Temperature, humidity, motion (PIR), CO<sub>2</sub>, 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 & Milesight IoT Cloud

Manage and configure your sensor easily



Model		AM107 AM104			
	Frequency		CN470/RU864/IN865/EU868/US915/AU915/KR920/AS923		
	Tx Power		17dBm (470) / 16dBm (868) / 20dBm (915)		
	Sens	sitivity	-147dBm @300bps		
Hardware	Mod	e	OTAA/ABP		
	Pow	er Supply	2 × AA alkaline batteries,	/Powered by Type C port	
	Batt	ery Lifetime	1 year (SF7), 0.9 year (SF10)	1.5 year (SF7), 1.2 year (SF10)	
	Temperature	Range	-20°C to	) + 70°C	
	Temperature	Accuracy	±0.3°C (0 ~ 70°C), ±0.6°C (-20 ~ 0°C)		
	Humidity	Range	0% to 100% RH		
	пиннину	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)		
Sensors	Ligitt	Accuracy	±30%		
	CO <sub>2</sub>	Range	400 ~ 5000 ppm		
	CU2	Accuracy	±30 ppm or ±3% of reading		
		Range	0 ~ 60000 ppb (total VOC)		
	TVOC	Accuracy	±15% of reading	N/A	
		Long-term Stability	1.3% accuracy drift per year		
	Barometric	Range	300 ~ 1100 hPa (-40 ~ 85°C)		
	Pressure	Accuracy	±1 hPa		



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



#### **Configure with One Touch**

NFC technology enables easy configuration and on/off operation



#### **Low Power Consumption**

Dual batteries (one battery by default) can last up to 10 years



# Compliant with ToolBox & Milesight IoT Cloud

Manage and configure your sensor easily



#### **Compact & Waterproof**

Small size with an IP67 rating enclosure



#### 100% Wire-Free

Up to 15 km wireless communication range

EM300-TH Temperature & humidity 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.

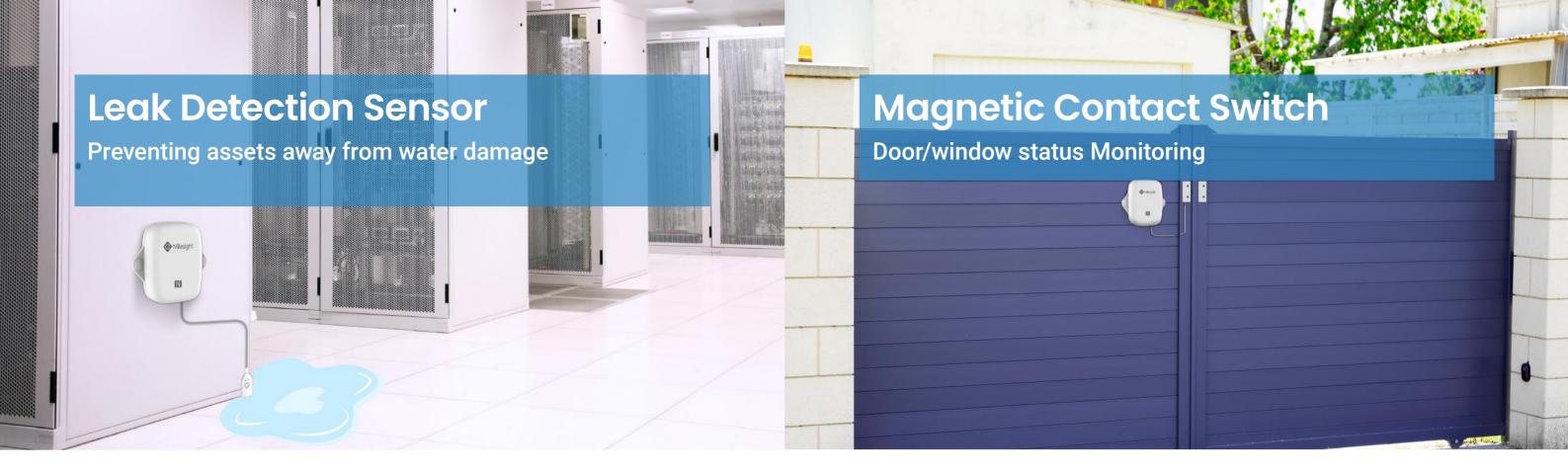
	Specifications Specification		
Protocol	LoRaWAN <sup>®</sup>		
Frequency CN470/IN865/EU868/AU915/US915/KR920/AS923			
Temperature	±0.3°C (0 ~ 70°C), ±0.6°C (-30 ~ 0°C)		
Humidity	±3% RH (10 ~ 90%), ±5% RH (0 ~ 10%, 90 ~ 100%)		
Power Supply	ER18505 Li-SOCI <sub>2</sub> Battery (4000 mAh/8000 mAh)		
Operating Temperature	-30 ~ 70°C		
Ingress Protection	IP67		
Dimensions	88 x 87 x 27 mm (3.46 × 3.42 × 1.06 in)		







Office Greenhouse Residence



The EM300-SLD/ZLD offers reliable performance to detect presence of water or other liquids, by remote alerting you the potential water leak before the issue becomes too serious, thus helping to prevent costly water damage.

Model	EM300-SLD	EM300-ZLD	
Sensor Type	Probe	Rope	
Cable Length	1.5 m	3 m	
Temperature	±0.3°C (0 ~ 70°C), ±0.6°C (-30 ~ 0°C)		
Humidity ±3% RH (10 ~ 90%), ±5% RH (0		RH (0 ~ 10%, 90 ~ 100%)	
Frequency	CN470/IN865/EU868/AU915/US915/KR920/AS923		
Power Supply ER18505 Li-SoCl <sub>2</sub> E		y (4000 mAh/8000 mAh)	
Ingress Protection	IP67		
Dimensions	Dimensions 88 x 87 x 27 mm (3.46 × 3.42 × 1.06 in)		





Warehouse



Hospital

Server Room

The 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 to your monitored conditions.

Specifications				
Sensing Distance	20 ~ 30 mm			
Hole Distance	22 mm			
Cable	ULI 1007 22AWG, 260mm			
Temperature	±0.3°C (0 ~ 70°C), ±0.6°C (-20 ~ 0°C)			
Humidity	±3% RH (10 ~ 90%), ±5% RH (0 ~ 10%, 90 ~ 100%)			
Frequency	CN470/IN865/EU868/AU915/US915/KR920/AS923			
Power Supply	ER 18505 Li-SOCl <sub>2</sub> Battery (4000 mAh/8000 mAh)			
Ingress Protection	IP67			
Dimensions	88 x 87 x 27 mm (3.46 × 3.42 × 1.06 in)			







Fire Door

Library

Residence



The EM500 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



#### 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 Milesight IoT Cloud

Manage and configure your sensor easily



Soil Moisture, Temperature and **Electrical Conductivity Sensor** EM500-SMT











Pipe Pressure Sensor EM500-PP





Submersible Water Level Sensor EM500-SWL





**Industrial Temperature Sensor** EM500-PT100





**Ultrasonic Distance/Level Sensor** EM500-UDL



CO<sub>2</sub> Sensor (4 in 1) EM500-CO<sub>2</sub>





EM500-SMT provides an external probe for receiving accurate and instantaneous information on soil moisture content, temperature, and salinity. It is an important tool for soil condition monitoring.

Model		Moisture	Temperature	Electrical Conductivity	
		Range	0 ~ 100% RH	/	
SMT-EC5	SMT-EC5	Accuracy	±2%RH		/
		Resolution	0.25%RH		
		Range	0 ~100% RH	-40 ~ 80°C	0 ~ 20000 μS/cm
	SMT-MEC20	Accuracy	2%RH (0 ~ 50%), 3% RH(50 ~ 100%)	±0.5°C	±3% (0 ~ 10000 μS/cm), ±5% (10000 ~ 20000 μS/cm)
		Resolution	0.03% RH(0 ~ 50%), 1%RH(50 ~ 100%)	0.1°C	10 μS/cm (0 ~ 10000 μS/cm), 50 μS/cm (10000 ~ 20000 μS/cm)







Grassland Farmland Greenhouse

EM500-LGT light sensor can accurately monitor the changes in the surrounding light intensity. It is suitable for light measurement and research in agriculture, forestry, greenhouse, horticulture, breeding, industrial workshops, warehouses, urban lighting, and buildings.

Model	LGT	
Frequency	CN470/IN865/EU868/AU915/US915/KR920/AS923	
Measuring Range	0 ~ 100000lux	
Accuracy	±3%(Acquired Value)	
Resolution	1lux	
Operating Temperature	-30 ∼ 60°C	
Operating Humidity	0 ~ 100%	
Cable length	3m	
Power Supply	Built-in 19000 mAh SOCI <sub>2</sub> Battery, working hours up to 10 years	
IP Rating	IP65	

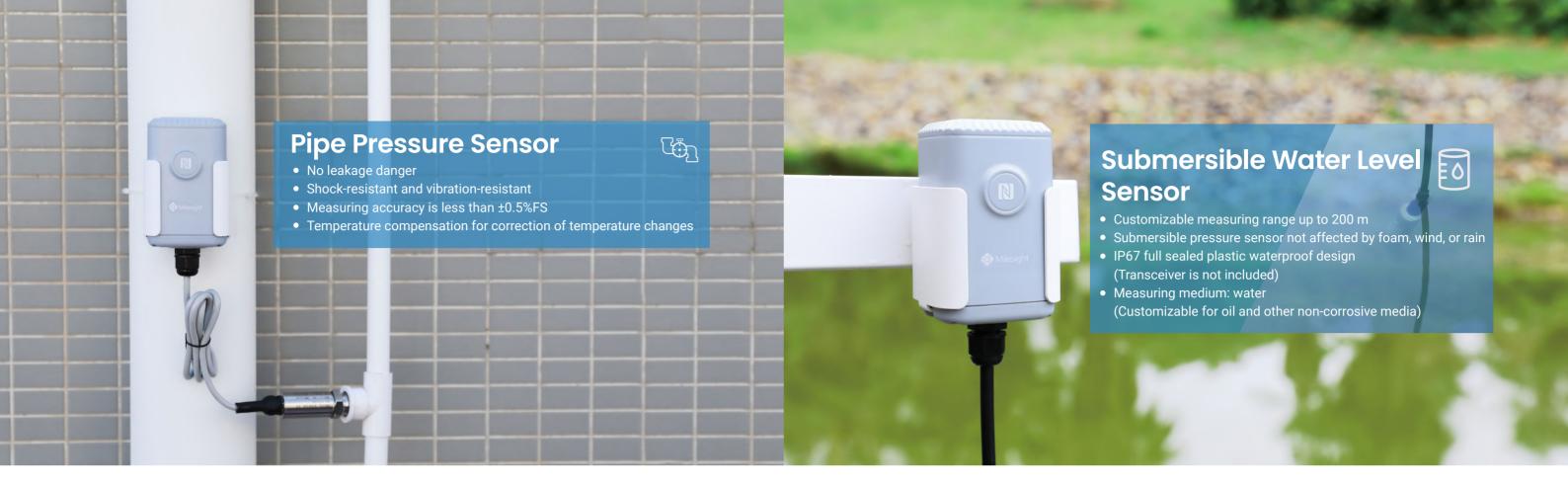






Agriculture Forestry

**Greenhouse Cultivation** 



EM500-PP sensor is designed for the pressure monitoring of tank level or leakage in pipes.

Model	EM500 - PP	
Frequency	CN470/IN865/EU868/AU915/US915/KR920/AS923	
Range	0 ~ 1600 kPa	
Accuracy	±0.5% FS	
Power Supply	Built-in 19000 mAh Li-SOCI <sub>2</sub> Battery, working hours up to 10 years	
IP Rating	IP66 (IP67 as required)	







**Constant Water Supply** 

**Hydraulic Equipment** 

**Barometric Pressure Detection** 

EM500-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.

	Model	Range	Accuracy	
	Frequency	CN470/IN865/EU868/AU915/US915/KR920/AS923		
	SWL-L003	0 ~ 3 m	±0.5%FS	
	SWL-L005	0 ~ 5 m	±0.5%FS	
	SWL-L010	0 ~ 10 m	±0.5%FS	
	Power Supply	Built-in 19000 mAh Li-SOCl <sub>2</sub> Battery, working hours up to 10 years		
IP Rating IP66 (IP67 as required)		s required)		







Reservoir

Tank

Lake



EM500-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.

Model	Range	Accuracy	Length
Frequency	CN470/IN865/EU868/AU915/US915/KR92		20/AS923
PT100-T50	-200 ~ 50°C	±0.5°C	1.5 m
PT100-T200	-50 ~ 200°C	±0.5°C	1.5 m
PT100-T500	-50 ~ 500°C	±0.5°C	1.5 m
PT100-T800	-50 ~ 800°C	±0.5°C	1.5 m
Power Supply	Built-in 19000 mAh SOCl <sub>2</sub> Battery, working hours up to 10 years		
IP Rating		IP66 (IP67 as required)	







Industrial Process Cold Chain

Laboratory

EM500-CO<sub>2</sub> is designed for measuring gaseous carbon dioxide (CO<sub>2</sub>) concentration in harsh environments. It is useful in the application where knowing CO<sub>2</sub> level is important like greenhouse, building ventilation, fruit and vegetable storage. Besides, it also supports temperature, humidity and barometric pressure measurement.

Model	Range	Accuracy	Resolution	
Frequency	CN470/IN865/EU868/AU915/US915/KR920/AS923			
CO2	400 ~ 5000 ppm	±30 ppm or ±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	
Power Supply	Built-in 19000 mAh Li-SOCl₂ Battery, working hours up to 10 years		rs up to 10 years	
IP Rating	IP66			







Smart City

Livestock Farming

**Forest Fire Monitoring** 



**UC500 Series LoRa Controller** 

Multi-interface Platform for Connecting Sensors





EM500-UDL provides highly accurate distance measurement for a variety of applications in harsh environments like flood monitoring, waster water management, fill level monitoring in grains or fertilizer. The measurement is based on ultrasonic waves transmitted and reflected back from nearby objects.

Model			
Frequency	CN470/IN865/EU868/AU915/US915/KR920/AS923		20/AS923
UDL-W050	0.3 ~ 5 m	±1%	1 mm
UDL-W100	0.5 ~ 10 m	±1%	1 mm
Power Supply Built-in 19000 m		Ah Li-SOCl2 Battery, working hou	rs up to 10 years
IP Rating	IP66 (IP67 as required)		







**Water Treatment** 

**Snow Depth** 

**Grain Silo** 

The UC500 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, the UC500 series LoRaWAN® Controller is ideal to work in harsh environments for remote monitoring and collecting data from sensors.

Model	UC501	UC502			
Frequency	CN470/IN865/EU868/AU915/US915/KR920/AS923				
Interface 1	2 × GPIO 1 × RS485/RS232 switchable 1 × 3.3 V output 1 × 5/9/12 V output switchable				
Interface 2	2 × analog input 1 × 3.3 V output 1 × 5/9/12 V output switchable				
Dimension	120.1 × 120.1 × 55.4 mm (4.73 × 4.73 × 2.18 in)				
Power Supply	Non-rechargeable Built-in 19000 mAh Li-SOCl₂ battery	Rechargeable 4900 mAh battery with solar panel			

# Compact LoRaWAN® Controller

The Compact LoRaWAN® Controller is designed for monitoring and controlling field devices, and collecting data to cloud.





#### **Specifications**

Model	Analog Input	Digital Input	Relay Output	RS232	RS485	Network	
UC1114	_	2	2	_	_		
UC1122	2	1	1	_	_	LoRaWAN	
UC1152	_	1	1	1	1		
UC3414	_	2	2	_	_		
UC3422	2	1	1	_	_	2G/3G/4G	
UC3452	_	1	1	1	1		

# Milesight IoT Cloud

The Milesight IoT Cloud provides unparalleled levels of vertical integration with Milesight LoRaWAN® 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

# **Industrial Cellular Router**

Rugged & Programmable 4G Router





#### **High Performance**

- NXP Industrial Grade Processor
- -40°C to 70°C Operating Temperature
- Support Wi-Fi, GPS, Serial, I/Os and Voice



#### **Intelligent & Programmable**

- Python Programming
- Support Modbus RTU/TCP



#### **Low Maintenance & Easy Operation**

- User-friendly GUI
- MilesightVPN for Remote Access
- DeviceHub Central Management



#### **Lower Investment**

- Affordable Price
- PoE-PSE for Less Wire Connection
- > Reduce Time Cost by Remote Management

# UR75 High-Performance 5G Industrial Router

Featuring the latest and fastest cellular technology - 5G, UR75 is not only an intelligent industrial IoT router, but also an unrivaled wireless networking solution.





#### **Outstanding Performance**

- > 5G NSA & NA Modes
- Qualcomm Quad-Core Processor
- CAT4/6/12/20 Cellular Modem (Optional)



#### **Rich Connectivities**

- > 2 × 2 MIMO 802.11ac Wi-Fi
- > 1 × RS232 + 1 × RS485
- > 1 × Digital Input & Output



## **Edge Intelligence**

- Azure IoT Edge
- AWS Greengrass
- Python Programming

## **Specifications**

			UR32		UR35		UR75	
	SIM Slots		2					
Interfaces	Ethernet Ports		2 x 10/100 Mbps	5 x 10	0/100 Mbps	5	× 10/100/1000 Mbps	
	Serial Ports	3	1 x RS232 or 1 x RS485	1 x RS23	32 + 1 x RS485	1	× RS232 + 1 × RS485	
	DI/DO			1 × DI + 1	1 × DO			
	Voice		N/A	1 × F	FXS (RJ11)		N/A	
	Antenna Connectors		2 x Cellular Connectors 1 x Wi-Fi /GPS Connector	1 x Wi	ular Connectors -Fi Connector PS Connector	1 x C	Cellular Connectors Cellular/GPS Connector x Wi-Fi Connectors	
	Cellular		4G CAT4		5G, 4G	CAT4/6/9/12/20 (Optional)		
	Wi-Fi (Optional)		IEEE 802.11b/g/n		IE	EEE 802.11a/b/g/n/ac		
Network	Serial Port		Transparent (TCP Client/Server, UDF Modbus Gateway (Modbus RTU to Modbus TCP), I					
	Network Proto	cols	PPP, PPPoE, SNMP v1/v2c/v3, TCP, UDP, DDNS, VRRP, HTTP, HTTPS, DNS, ARP, QoS					
	AAA		RADIUS, TACACS+, LDAP, Local Authentication					
	Firewall		URL Filtering/ACL/DMZ/Port Mapping/MAC Binding/			SPI/DoS Protection		
	Reliability		VRRP, WAN Fail-over, Dual SIM Back			Jb		
	VPN		OpenVPN, IPsec, PPTP, L2TP, DMVF			I, GRE		
Maintananaa	Managemer	nt	Web, CLI, SMS, Watchdog, On-demand Dial Up					
Maintenance	Multilevel Auth	ority		Multiple Levels of User Authority				
	CPU		528 MHz, 32-bit ARM Cortex-A7		716 MH	z, Quad-Core ARM Cortex-A7		
	Flash		128 MB		8 GB			
Canabilities	Memory		128 MB DDR3		512 MB DDR3			
Capabilities	Built-in		Watchdog					
	GPS (Optional)		GPS + GLONASS					
	Extended Memory		1 × micro SD card slot, up to 128 GB		1 × M.2 NVMe SSD Slot			
	Power Input		9 ~ 48 VDC					
	Power Output (Optional)		2 × 802.3af/at PoE PSE	4 × 802.3af/at PoE PSE		4 × 802.3af/at PoE PSE		
Hardware	Ingress Protec	tion		IP30				
riaraware	Housing & We	ight	Metal, 271 g (0.60 lb)	Metal, 481 g (1.06 lb)		Metal, 525 g (1.16 lb)		
	Dimensions	S	108 x 90 x 26 mm (4.25 x 3.54 x 1.02 in)	135 x 100 x 45 mm (5.31 x 3.94 x 1.77 in)		135 × 118 × 45 mm (5.31 × 4.65 × 1.77 in)		
	Mounting	lounting De		esktop, Wall or DIN Rail Mounting				
	Operating Tempe	erature	-40°C to +70°C (-40°F to +158°F) Reduced cellular performance above 60°C			ve 60°C		
	Storage Temper	ature	-40°C to +85°C (-40°F to +185°F)					
Others	Relative Humidity		0% to 95% (non-condensing) at 25°C/77°F					
	Certifications		RoHS, CE, FCC, PTCRB, AT&T, RCM, SPDDI, NBTC	RoHS, CE, FCC				
	Frequency Band	E	LTE: B1/B3/B5/B7/B8/B20/B38/		3G: B1/B5/B8		GSM: B3/B8	
		AF	LTE: B2/B4/B5/B12/B13/B14/B6		3G: B2/B4/B5		/	
	Tagasto, Julia	AU 500GL	5G NR: N1/N2/N3/N5/N7/N8/N12/N20/N28/ B17/B18/B19/B20/ N41/N66/N71/N77/N78/N79 B32/B66/B71		GSM: B2/B3/B5/B8 3/B4/B5/B7/B8/B9/B12/B13/B14/ /B21(TBD)/B25/B26/B28/B29/B30/ 8/39/B40/B41/B42/B48			
25							*For UR75 5G version only	

# **Connectivity Suite**

Applicable to Industrial Cellular Router and LoRaWAN® Gateway



Milesight DeviceHub is a web-based platform that lets you manage all your Milesight routers and gateways from a single location at anytime.

The Milesight 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.

The MilesightVPN is the core component of MilesightVPN solution. Typically it's hosted on your own server.

## **Software Requirements**

- ✓ OS: Ubuntu 16.04
- 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: 1T

