

ECHO Remote Monitoring System

Features

- IP68 protection, dust-proof and water-proof;
- Multiple power supply options are available;
- Wireless transmission, no field wiring;
- Wide range measurement, pressure, temperature, level, flow, image, drain well cover etc.;
- Multi-channel, max. 8-way sensor parameters access;
- Remote setting for collection, transmission and image interval;
- Sensor available with upper and lower limit of threshold value and web real-time warning;
- PC and mobile terminal data application;
- Support customer self-built system and configuration application;
- Provide mounting accessories;
- Solution for underground well.



Introduction

ECHO Remote Monitoring System is a compact device with battery supply, ultra-low power consumption, IP68 protection, wireless communication and various sensor data collection function, in specific circumstance, multiple power supply options are available. It is suitable for monitoring sensors without power supply condition and in harsh environments. It is multi-functional including data collection, storage, alarming and transmission for underground water, hydrant water, dam water, water supply and drainage pipeline.

With a wide coverage of wireless networks, the product detects the real-time data of many monitoring sites in a wide range of areas like tap-water pipeline pressure, flow, underground water, agricultural irrigation, dam level, water monitoring, wind, rain, ambient temperature and humidity, air quality monitoring, water flow monitoring, image and firefighting pipeline monitoring, especially suitable for Underground Well detection application in a harsh environment.

Specifications

Power

Power Supply	Non-Recyclable Battery	Rechargeable Battery	DC Power	AC Power/12VDC Adapter	Solar Power
Battery Capacity	(See description on label / Nameplate)	20Ah/12V	12VDC	110V~240V AC 50/60Hz	20 Ah/12V Solar Panel: 12V/20W
Battery Lifetime	3~5 years (Related to transmission frequency)	Longer than 1 month (Related to transmission frequency)	\	\	More than 1 month (Related to Transmission frequency)
Feed	100mA/14.4V DC	100mA / 12VDC	100mA / 12V DC	100mA / 12V DC	100mA / 12V DC
Power Consumption	Sleep Current $\leq 30\mu\text{A}/14.4\text{V}$ Transmission Average Current $\leq 50\text{mA}/14.4\text{V}$				

Interface Parameters

Interface	AI	DI/PI	RS485	Camera
Count	3	2	1	1
Signal	0V~5V DC/ 4mA~20mA DC	Switch/Pulse	ModBus RTU	For taking pictures only, video transmission not available
Notes	Collection accuracy $\pm 0.5\%$ FS	Low level 0~1VDC High level 5~12VDC Pulse Frequency $\leq 10\text{Hz}$	Max.3-ch sensor parametric analysis, It's also used in parameter settings	RS485
Hints	Available with max. 8-channel sensor input; Max. 4 physical interfaces; Default interfaces: 1×RS485, 1×AI; If more than 4 interfaces are required, the extra connection boxes would be necessary.			

Data Transmission

Communication Mode		Standard/Band	Transmission Distance
2G		GSM 850/900/1800/1900MHz	Global Bands
Multi-Bands	China	TDD-LTE B38/B39/B40/B41 FDD-LTE B1/B3/B8 TD-SCDMA B34/B39 WCDMA B1 CDMA 1X/EVDO BC0 GSM/GPRS/EDGE B3/B8	Global Bands
	EMEA/ Korea/ Thailand/ India	FDD-LTE B1/B3/B5/B7/B8/B20 WCDMA B1/B5/B8 GSM/GPRS/EDGE B3/B8	
	North America	FDD-LTE B2/B4/B12 WCDMA B2/B5	
	South America/ Australia/ New Zealand/ Taiwan	TDD-LTE B40 FDD-LTE B1/B2/B3/B4/B5/B7/B8/B28 WCDMA B1/B2/B5/B8 GSM/GPRS/EDGE B2/B3/B5/B8	
	Japan	FDD-LTE B1/B3/B8/B18/B19/B26	
NB-IoT		B1/B3/B8/B5/B20/B28	Global Bands
LoRa		433/470/868(Europe)/915MHz(United States)	≤5km (According to site environment)

Wake-up mode: magnetic activation/ timing/ alarm wake-up

Collection interval: 1,5,10,30,60,360,720,1440 minutes optional; Alarms will be given at the interval, and maximum 3 times warning can be sent in one interval to ensure longer battery life.

Transmission interval: 1,5,10,30,60,360,720,1440 minutes optional

Image interval: 30,60,720,1440 minutes optional

Upload information: sensor data, battery information, network status, self check information

Data Storage

Local storage, Flash 4 MB (more than 200,000 history storage space)

Configuration

Configuration mode: local/remote

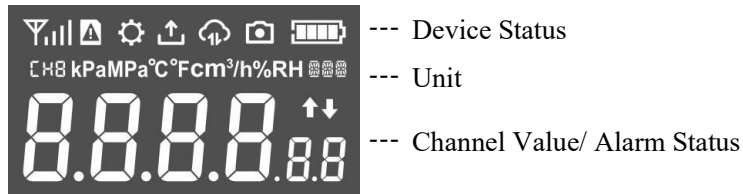
Environmental Conditions

Operation temp.: -20 °C~70 °C

Storage temp.: -40 °C~85 °C

Display

Segment LCD with backlight



Other Specifications

Protection: IP68(can work normally for 72 hours at 1m below the water)

Housing: PA6+30% GF

Installation method: hoop and wall mounting

Outline dimension: 147×262.5×105.5mm

Weight: about 2.3kg

Accessories: fixed support×1, magnetic bar×1, M5 bolt×1, ϕ 8mm expansion bolt×3, ϕ 200mm hoop×2

System Topology



The above sensors can be used with the ECHO. It supports up to 8-way sensor inputs and the sensors can be selected according to customer's needs. It is not limited to these sensors.

Outline Construction (Unit: mm)

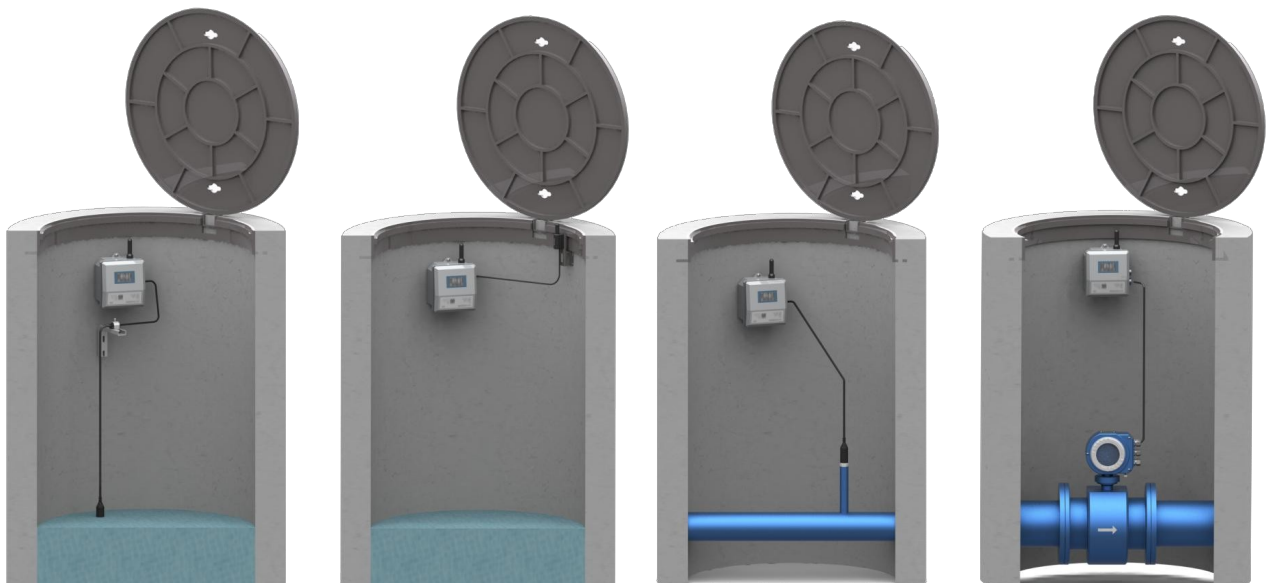


Installation Method



ECHO Remote Monitoring System uses hoop and wall-mounting method which are easy for installation and convenient for maintenance and we also provide installation accessories.

Underground Well Applications



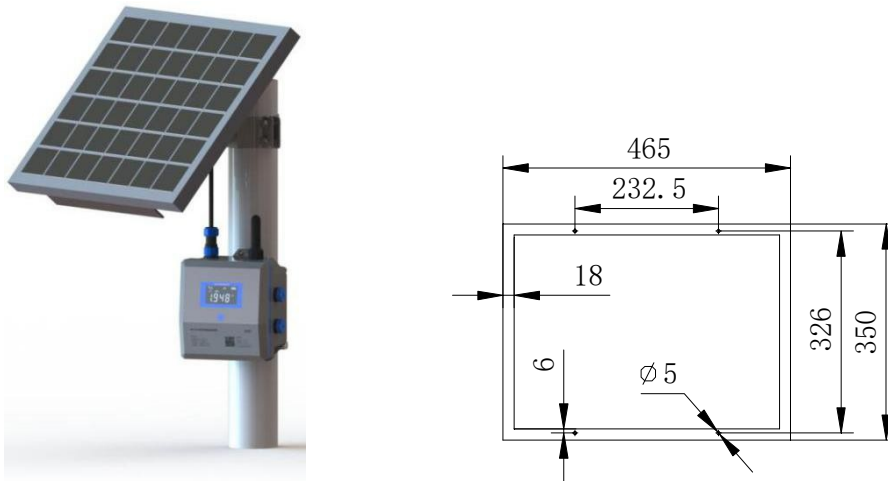
Level

Well Cover

Pressure

Flow

Solar Power Application



Solar Panel Power	Solar Panel Dimension	Solar Panel Material	Pole Dimension	Mounting bracket&Pole
12V/20W	465×350×17mm	Monocrystal silicon	Suggested DN100 pole, about 3 meters high	The customer could design and prepare

Notes: Customers can purchase the solar panels by themselves referring to the above specifications. A pair of cable connectors can be provided by the company.

Notes

1. The factory default interface is 1*RS485, 1*AI. If you need more interfaces, please note in the order.
2. For the number of AI, AU interfaces, $x+y=3$, namely, the maximum interface number of the analog input is 3, and the AI interface is an independent interface, which cannot be extended by the junction box;
3. The maximum number of openings at the bottom of the housing is 4. When the total number of RS485, AI/AU, DI/PI, and Ca interfaces is more than 4, you need to purchase an external junction box. For details, please refer to the MST091 waterproof junction box. Please note in the order;
4. For products with RS485 interface, customers need to provide the Protocol;
5. If Lora version is needed, please note the area of application. There is no need to install SIM card, but need to be used matching with an ECHO;
6. For sensor and specification selection, please refer to the corresponding datasheet;
7. There is only 1pc of BD9 configuration line packaged along with each order. If extra lines are required, please note in the order;
8. If User need to configure products, please purchase the USB to RS485 serial cable separately (Z-TEK Lite ZE628 suggested). There is only 1pc of USB to RS485 serial cable packaged along with each order;
9. Any special requirement, please contact us and note in the order.

Order Guide

ECHO	Remote Monitoring Terminal							
	Code	Communication mode						
	G2	2G						
	GC	Multi-Bands in China						
	GE	Multi-Bands in EMEA/Korea/Thailand/India						
	GA	Multi-Bands in North America						
	GS	Multi-Bands in South America/Australia/New Zealand/Taiwan						
	GN	NB-IoT						
	L	LoRa [433/470/868 (Europe) / 915 (USA) MHz]						
	Code	Antenna type						
	A ₁	Integrated antenna(Suggested)						
	A ₂	External suction antenna(Antenna length 3m)						
	Code	Power supply						
	B	Non-recyclable battery(Suggested)						
	C	Rechargeable Battery(12V/20Ah)						
	D	DC Power(12V DC)						
	E	12VDC External power adapter(110V~240V AC 50/60Hz)						
	A	220V AC Power (110V~240V AC 50/60Hz)						
	S	20W Solar Power (Customers purchase by themselves)						
	Code	Interface Types						
	R4	1*RS485, can be extended to 3 channels (1-ch as Default)						
	xAI	x means any number among 1 ~ 3, represents 1 ~ 3 ch 4 ~ 20mA input (1-ch as default)						
	yAU	y means any number among 3-x, represents 1~3ch 0~5V input (0-ch as default)						
	zDI	z means any number between 1~2, represents 1~2 ch DI/PI input(0-ch as default)						
	Ca	1*Camera, only support MST071 Camera(0-ch as default)						
	Code	Software service type						
	M	Stork Solutions big data platform						
	C	Customer self-built platform						
	Code	SIM card						
	S ₁	Additional IoT network card (available for domestic users only)						
	S ₂	Self-owned SIM card						
	Code	USB to RS485 Serial cable						
	U ₁	Recommended and need to be purchased separately						
	U ₂	User-supplied, and Z-TEK Lite ZE628 suggested						
z								
ECHO	G1	A ₁	B	R4 ₁ AI	M	S1	U ₁	The whole spec.