Product Brief

LoRaWAN Radar Outdoor Flood Monitoring System
Model: LAS-E01

Ver.: 2.1

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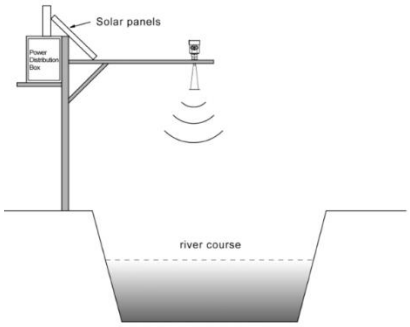
The LAS-E01 LoRaWAN Radar outdoor flood monitoring aims for the wireless radar level transmitter to measure water levels remotely, such as river or others application. With the latest radar sensor technology the LAS-E01 is unbeatable when it comes to more accuracy, reliability and versatility. Its long embedded battery-life, global connectivity and robust housing makes this sensor ideal for use across different remote measurement applications where no infrastructure is available.

FEATURES

- LoRaWAN Standard Compliance, 1.0.2, Class A/B/C
- Radar Sensor : Transmitting frequency as high as 26GHz
- Non-contacting radar, no abrasion and contamination
- Hardly influenced by corrosion and foam
- Hardly influenced by changes of steam vapor, temperature and pressure
- Hardly impacted by heavy dust
- LoRa Frequency Range : 862~932MHz (Japan, Taiwan, Thailand, Indonesia)/470MHz (China), Kiwi TLM-922S LoRaWAN module.
- Small beam angle and concentrated energy to avoid interferences
- High SNR to ensure performance even under fluctuation
- Applicable for flood monitoring (rivers, lakes, sea water) ; Wastewater
- Periodicity Upstream

Illustration and installation position



Schematic diagram of radar and stent

Note: The radar antenna microwave pulse, have certain emission angle. From the lower edge of the measured medium antenna to the surface, there are obstacles not and emission microwave beam radiation region

FEATURES

Self Adjusting Tracking Radar
Programmable (recommenced) and
Simple push-button calibration
Output 4-20mA / 20- 4mA
(Isolated on 4 Wire Model's only)
Optional RS232 OR RS485
For communications with calibration,
diagnostics & data logging software
PLC Compatible (Modbus RTU)
Three or four Wire Operation

APPLICATIONS

Flood Monitoring (RIVERS ,LAKES ,SEA WATER)
Food and Beverages
Water / Wastewater
Chemicals with vapors

MECHANICAL

Conduit Entry : 1/2" NPT x 2
Enclosure : Aluminum or S.S. - 94V0
Ingress Protection : NEMA Type 6 (IP68)

ENVIRONMENTAL IP68

Temperature : - 40 to 140 °F (- 40 to 60 °C)
Approvals : FCC Part 15 - Low Power Communication Device

FM(USA)

FM3810 (2005) Electrical Electronic Test, Mearuring and Process Control Equipment
ANSI/NEMA 250 (1991) :Enclosures for Electrical Equipment

FM(CAN.):

CSA C22.2 No. 1010.1 (2004) Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use - Part 1: General Requirements
CSA C22.2 No. 94 (2011) Special Purpose Enclosures
Installation Category : Class II

PROCESS

Temperature PP Rod : - 40 to 176 °F (- 40 to 80 °C)
Material Dielectric : Er > 1.4
Max. Pressure : 5 bar (without De-coupler)

Catalogue # - On the Web return to Home Page & Refer to Catalogue Number Structure for Ordering information.
In Product Documentation refer to Page 4.

TECHNICAL SPECIFICATIONS

Model	Range	Res.	Accuracy	I P	Operation
GEO-300 -017R6	5 m	+/- 3 mm	+/-0.03%	IP68	6.3 GHz 26 GHz
GEO-300 -033R6	10 m	+/-3 mm	+/-0.03%	IP68	6.3 GHz 26 GHz
GEO-300 -050R6	15 m	+/- 3 mm	+/-0.03%	IP68	6.3 GHz 26 GHz
GEO-300 -100R6	30 m	+/- 3 mm	+/-0.03%	IP68	6.3 GHz 26 GHz
GEO-300 -140R6	42 m	+/- 3 mm	+/-0.03%	IP68	6.3 GHz 26 GHz
GEO-300 -240R6	73 m	+/-3 mm	+/-0.03%	IP68	6.3 GHz 26 GHz
GEO-300 -340R6	103.6 m	+/-3 mm	+/-0.03%	IP68	6.3 GHz 26 GHz

Antenna Horn

Antenna Rod

Note - Minimum Range starts at the lower tip of the antenna or horn bottom for high dielectric materials (water). For low dielectric materials allow longer Minimum Range.

OPERATIONAL

Response Time : Standard Unit 2 - 3 echo's / sec.
: Std. with less damping 6 echo's / sec.
: Fast Protocol Unit 10 - 30 echo's / sec.
Frequency : 6.3 GHz. or combine 6.3 GHz & 26 GHz
Loss of Echo : Hold 3 min., 22mA or 2 mA. output
Transmit Power: 50 uW average
Calibration : Via communications port (required)
Diagnostics : (Echo Profile) via communications port
Antenna : Horn HR4 / HR6 - 4" or 6" Dia.
: Dielectric rod Std. Polypropylene APP or Optional Teflon ATE

ELECTRICAL SPECIFICATIONS

Power	Description
DC	12 to 30 VDC , 0.07 A max @ 24 Vdc R load = (Vs - 6) / 24 mA
Output	4-20 mA Output 6.1 uA resolution
	750 Ohms (Isolated on 4 Wire only)
	Optional RS232 or RS485 communications port.

SYSTEM	
LoRa	Kiwi TLM922-S module (FCC, TELEC, LoRaWAN AS923 certificate) Frequency : 862~ 932MHz RF output : 2~ 20 dBm Sensitivity : -138 dBm
LoRa Transmit RF power	-2 ~ +20dBm
Transmission Range (LOS)	10Km (Max.) * depends on situation
Water Level Distance	Default : Max 30m, depends on selection of type. (GEO-300-100R6)
LoRa Antennas	3dBi, outdoor application, IP67, fiberglass
Solar	5V, 2.5W
Battery	3.3v, 3200mAH

CONTROL BOX POWER SYSTEM		
Input Voltage Range	Type	3.3V LiFePO4 3200mAH
	Voltage range	3.0 ~ 3.6V
Battery life	5 min sample interval	Up to 2 month (1 x 3.3V 3200mAH LiFePO4 Battery)
External power charge	USB	5V
	Solar power	5V, 2.5W
Radar Sensor Power Input	DC	24V
IP Rating	IP65	

SYSTEM ENVIRONMENT	
Operating temperature	-25℃ ~ +75℃
Storage Temperature	-30℃ ~ +75℃