



# VoBo TC

## LoRaWAN® 12 Channel Thermocouple Endpoint

The VoBo TC™ is an industrial grade 12 channel thermocouple LoRaWAN® bridge certified for Class 1 Division 2 hazardous areas. It has integrated Cold Joint Compensation for reliable measurements and has open circuit detection. The VoBo TC can be configured locally through a serial connection or over the air with downlinks. Its rugged enclosure and internal antenna permit it to be installed almost anywhere without concern for the elements. The LoRaWAN® radio technology provides for economical scaling and years of battery life.

With the addition of Volley Boast's proprietary VoBoSync\* technology, which synchronizes data collection across any number of VoBoSync\* enabled devices, the VoBo TC is ideal for enhancing your Industry 4.0 edge compute and analytics program.

### Applications

- Steam Trap Monitoring
- Heat Trace monitoring
- Detecting vessel hotspots
- Rotating Equipment condition monitoring
- Heat Exchanger Fouling
- Heat Flux monitoring
- Thermal Profiling
- Food and Beverage processing Quality Control

### Features

- 12 Thermocouple Inputs
- J, K, T, E, N, S, R, and B
- Integrated Cold Joint Compensation
- Programmable Calibration
- Open Circuit Detection
- Reports in °C or mV
- Wake Up Input
- Battery Powered, 3+ years
- Data Logging
- Analytics Plug-In Capable
- LoRaWAN® Compliant
- Available with VoBoSync\*
- Class 1, Division 2 Certified
- IP66 / NEMA 4X

\*Patent Pending

# Specifications

## Input / Output

Thermocouple Inputs	12 channels
Thermocouple Types*	J, K, T, E, N, S, R, and B
Measurement Units*	°C or mV
Measurement Numerical Format	FP32
Digital Interrupt (WKUP)	1 input
Configuration Port	RS-232

\* Per channel selectable

## Functionality

Data Logging	Sensor data, events, configuration changes
Sensor Data Logging Capacity	~5000 payloads
Data Logging Access	Serial or downlink/uplink
Operation Modes	Online* / Offline**
Sample Cycle Time	1 to 2880 minutes***
Wakeup by External Magnet	Yes
Burnout/Open Circuit Detection	Yes
Cold Joint Compensation	Integrated
Heartbeat Cycle	24 hours
Heartbeat Data	Battery voltage, signal strength, node status

\* Transmits on LoRaWAN® plus local data logging

\*\* Local data logging only

\*\*\* On demand when digital interrupt (WKUP) is triggered

## Accuracy

Measurement Resolution	16 bit, ±0.001mV
Cold Joint Compensation	±0.44 °C
NIST ITS-90 Table Interpolation	Yes

Note: consult manufacturer specifications for thermocouple accuracy

## Power

Battery Size	LSH20 (D size)
Battery Type	Li-SOCl <sub>2</sub>
Battery Access	User replaceable
Battery Voltage	3.6 V nominal
Battery Capacity	13.0 Ah nominal
Battery Life*	3+ years
Sleep Current	~68 uA

\* Battery life based on 30 min. cycle time @70 °F

## Radio

Protocol	LoRaWAN® 1.0.4
Antenna	Internal
Range	Up to 6 miles LOS
Frequency	ISM band, US 915 MHz
Data Encryption	AES 128
FCC/IC Conformance	FCC ID: AU792U13A16857 IC:125A-0054

Compatibility Backward compatible with LoRaWAN® compliant devices

## Physical

Enclosure Material	GRP
Enclosure Dimensions*	8.63" x 4.69" x 3.5"
Cord Grip Holes**	3 holes, 0.875" diameter
Cord Grip Capacity	0.18 to 0.4" diameter
Input Terminals	24 to 12 AWG
Weight	3.3 lbs
Cover Fasteners	Captive, 316 stainless

\* Excluding cord grips

\*\* Will accommodate a 1/2" conduit fitting

## Environmental

Temperature	-40 to 80 °C
NRTL Listed	UL-62368-1, CSA C22.2 No. 62368-1 E115256 UL 121201 and CAN/CSA C22.2 No.213
Certified Use	Class I, Division 2, Groups C,D T4 Class II, Division 2, Groups F,G T135 °C Class III, Division 1 IP66 / NEMA 4X

## Mounting

Direct Mount Spacing	8.03 x 3.23"
Optional Mounts*	Rubber mounting feet Pole mount

\* Contact Volley Boast for available mounts

