



# 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. Each thermocouple channel can be independently configured and calibrated. The VoBo TC can be configured locally using a terminal application, the VoBoConfig Tool GUI interface, 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 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 Channels
- J, K, T, E, N, S, R, and B
- Integrated Cold Joint Compensation
- Programmable Calibration
- Open Circuit Detection
- Reports in °F, °C or mV
- Wake Up Input
- Battery Powered, 3+ years
- Online and Offline Modes
- Analytics Plug-In Capable
- LoRaWAN® Compliant
- Supports US915 and Other Channel Plans
- Available with VoBoSync\*
- Class 1, Division 2 Certified
- IP66 / NEMA 4X

# Specifications

## Input / Output

Thermocouple Inputs	12 channels
Thermocouple Types*	J, K, T, E, N, S, R, and B
Measurement Units*	°F, °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	US915 ISM Band, and other Channel Plans available
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	Listing # E115256 UL-62368-1, CSA C22.2 No. 62368-1 UL 121201 and CAN/CSA C22.2 No.213
Certified Use	Class I, Division 2, Groups B,C,D T4 Class II, Division 2, Groups F,G T135 °C Class III, Division 1
Ingress	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

