FURUNO

Just connect to your usual instrument

Light, fast, accurate!

Palm sized “Atomic Clock”

High-precision OCXO embedded

Field Time Sync Generator

Model **TB-1**

Measuring synchronization delays in the field

No need for a heavy, unwieldy atomic clock to measure the synchronization delay of mobile base stations.
The quick start-up of the TB-1 dramatically increases the efficiency of field operations.

Reliable reference for frequency measurement

The frequency output of TB-1 is as stable as an atomic oscillator. It can be used as a reference signal for frequency checks of rubidium oscillators used in broadcasting stations and for field reception surveys.

Experiment on moving vehicle

TB-1 can be used for experiment in moving vehicles as it has a small form factor and is easy to handle. TB-1 is suitable for frequency and delay measurements in V2X system development, as well as for synchronizing multiple sensors with UTC.

Alternative for stationary equipment

TB-1 can be used for a wide range of applications, not only in the field , but also in indoor facilities. As long as the antenna receives GNSS signals (ex. at a window), TB-1 provides a 1 second pulse (1 PPS) and a 10 MHz reference frequency, both synchronized with UTC.

Features

●Two types of reference signal output
1 PPS (synchronized to UTC)
10 MHz (coherent and synchronized with 1 PPS)

●Reliable in various environments
(urban canyons, in vicinities of tall buildings, indoors near windows, etc.)

TB-1 internal GNSS receiver includes countermeasures against GNSS vulnerabilities such as multipath, jamming, spoofing and GNSS signal loss.

●Ultra-precise time
Just by receiving GNSS satellite signals, TB-1 can provide a timing signal (1 PPS) in the nanosecond order and a reference frequency (10 MHz) as precise as an atomic oscillator.

●Android™ app
GNSS satellite reception can be checked and device settings can be managed on a smartphone or a tablet device.

●Quick start
TB-1 starts providing a 1 PPS synchronized with UTC and a coherent 10 MHz reference frequency in about 5 minutes after power on. (In normal mode)

●Power supply via USB
TB-1 has two Type-C connectors, one for data communication (also available for power supply) and one for power supply only.

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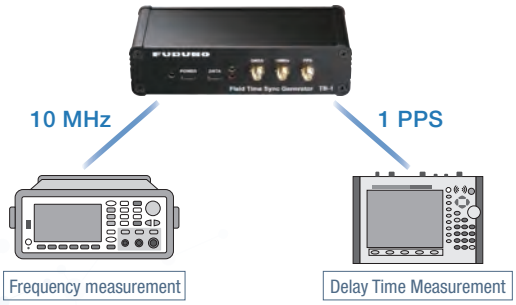
Items		Specifications
On-board Oscillator		OCXO
GNSS Reception Capability	Supported Systems	GPS L1C/A, GLONASS L1OF, Galileo E1B/E1C, QZSS L1C/A, QZSS L1S, SBAS L1C/A
10 MHz Output	Output level	6.5 dBm sine-wave
	Impedance	50 Ω
	Allan variance	$< 5\times10^{-11}$ (@ $\tau = 1$ s)
	Long term stability (24h average)	$< 1 \times 10^{-12}$
	Synchronization	1 PPS and Coherent
1PPS Output	Accuracy	< 40 ns
	Stability	< 4.5 ns (1σ) Compliant with PRTC-A / PRTC-B
	UTC Synchronization Edge	Rising (default. Software configurable)
	Output Level	3.3 V (LVCMOS)
Holdover	Long term	< ±1.5 µs/2h, < ±50 µs/24h
	Short term	< ±3 µs/1h (typ)
Time to Lock		< 5 min
Communication interface	Port	DATA USB
	Communication speed	Full Speed
	Connection point	Set via Android OS
LED		LOCK, ALARM, POWER
Power supply	Port	POWER USB, DATA USB
	Power, Electric current	DC 5 V, 2 A
Antenna terminal with superimposed DC voltage	To power the GNSS active antenna	3.3 V
Size		141.0 mm × 36.0 mm × 60.0 mm (Excluding the protruding SMA connectors)
Weight		255 g approx. (TB-1 unit only)
Environmental Specifications (TB-1 unit only)	Operating Temperature	-40 °C to 85 °C
	Operating humidity	Max 85 %

Items		Specifications
Connectors	GNSS Antenna	SMA
	10 MHz	SMA
	1 PPS	SMA
	POWER USB	USB Type-C
	DATA USB	USB Type-C
Accessories (Content of Carrying case)	TB-1 unit, active multi-GNSS patch antenna (5 m cable), USB cable (2 pcs.), and manual *Please prepare your own AC adapter or mobile battery.	

●Connection examples
(as an external reference for measuring instruments)



Confirmed list of compatible instruments (Examples)

Anritsu	MF2412C MP2110A MP2100B	Keysight Infiniium	9000 series 90000A series 53200 series	Tektronix	AFG1000 series AFG2000 series AFG3000 series
Rohde&Schwarz	RTE1000 RTO2000 RTP		S series 33210A Trueform series		AFG31000 series

Scan for the full list

Beware of similar products

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

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