

# GP-Probe TGE-1

Product information and specifications



## GP-Probe TGE-1 Time Guard Edition

### The GNSS Radio Probe for Time & Frequency Reference System Protection

GP-Probe Time Guard Edition is specifically designed to monitor and protect time servers (PNT).

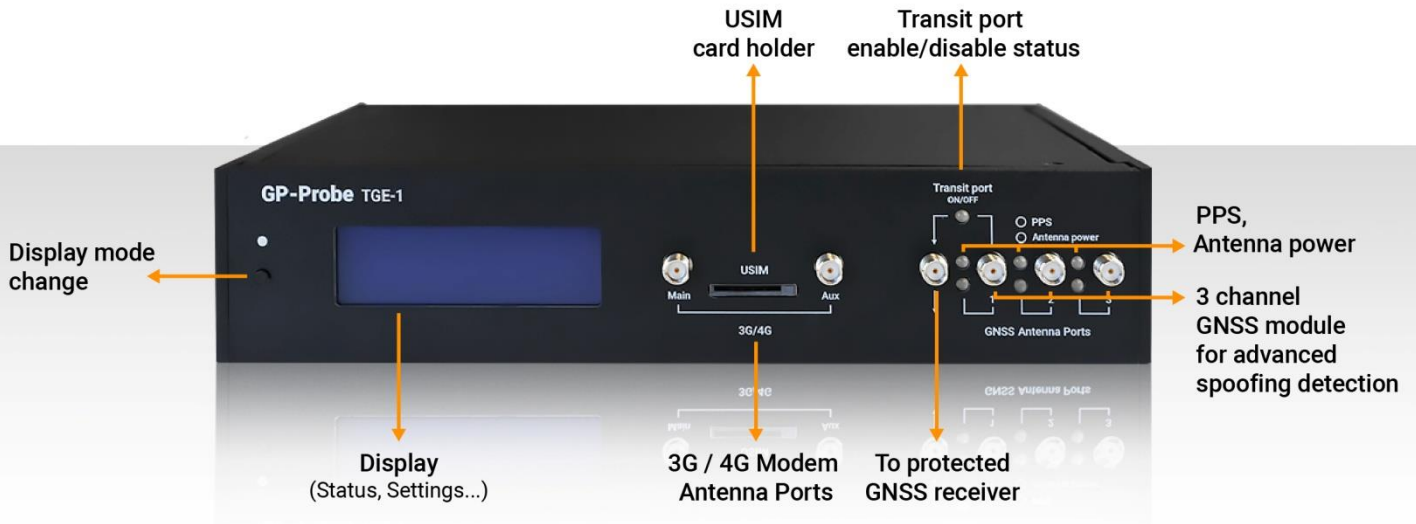
It conducts GNSS satellite signals measurements on 3 channels and transmits raw data to the GP-Cloud for real-time processing.

- PPS offset measurement;
- 19-inch rack half-size form factor;
- Dual power module: 110/220 AC; 18 – 75 DC.



### Key features:

- Three RF channels for advanced GNSS spoofing detection and signal quality estimation.
- Support: GPS/QZSS L1 C/A, GLONASS L10F, BeiDou B1I, Galileo E1B/C, SBAS L1 C/A: WAAS, EGNOS, MSAS, GAGAN.
- PPS input for PNT health checking. GP-Probe measures the time difference between internal and external PPS.
- GNSS transit port to connect the time server. It turns off in case of spoofing or low signal quality.
- Form factor: 19-inch rack half-size.
- Power supply: 110 – 220 AC or 18 – 75 DC.
- RS232 for external devices remote control. GP-Cloud can send a remote control commands to the connected equipment.
- Active/passive GNSS antennae support.
- 3G/4G modem and 100BASE-TX Ethernet for data transferring to the GP-Cloud.
- Web interface for configuration.
- Firmware auto-update engine.



## Specification

### Supported GNSS

- GPS/QZSS L1 C/A
- GLONASS L10F
- BeiDou B1
- SBAS L1 C/A: WAAS, EGNOS, MSAS, GAGAN
- Galileo E1B/C

### Concurrent GNSS modes

- GPS/Galileo/Glonass + SBAS/QZSS
- GPS/Galileo/BeiDou + SBAS/QZSS
- Glonass/BeiDou

### Minimum horizontal GNSS antenna separation

1 m

### Detected threat types

All types of jamming  
 1 ch. – asynchronous spoofing  
 2 ch. – synchronous spoofing  
 3 ch. – synchronous multiple-TX spoofing

### GP-Probe configuration

Browser-based configuration and monitoring,  
 GP-Cloud

<b>Display</b>	GP-Probe status Server connection settings and status GNSS channels status: satellites in view, RMS CNO
<b>LEDs</b>	GNSS Antenna Power 1PPS Transit port status
<b>Mechanical</b>	
<b>Housing:</b>	Iron, IP30
<b>Size:</b>	1 U half-size rack mount, 211.0 x 203.0 x 44.0 mm
<b>Weight:</b>	2.0 kg
<b>Environmental</b>	
<b>Operational Temperature:</b>	0°C to +50°C
<b>Storage Temperature:</b>	-20°C ~ +85°C
<b>Humidity:</b>	0% – 95% RH non-condensing @ 40°C
<b>Vibration and Shock:</b>	15g/0.53oz, 11ms half sine wave
<b>Vibration:</b>	10 – 55 Hz/0.07g, 55 – 500 Hz/1.0g
<b>GNSS Antenna Inputs</b>	
<b>Connector:</b>	SMA(F)
<b>Impedance:</b>	50 Ω
<b>Antenna bias voltage for the 1st channel:</b>	3.3 VDC or from the transit port
<b>Antenna bias voltage for the 2nd and 3rd channels:</b>	3.3 VDC
<b>ESD protection:</b>	15 KV
<b>GNSS Transit port</b>	
<b>Connector:</b>	SMA(F)
<b>Impedance:</b>	50 Ω
<b>RF insertion loss (when the channel is on):</b>	4.5 dB typical
<b>RF isolation (when the channel is off):</b>	70 dB min
<b>ESD protection:</b>	15 KV
<b>1PPS Input</b>	
<b>Connector:</b>	SMA(F)
<b>Impedance:</b>	50 Ω, TTL compliant
<b>1PPS Output</b>	
<b>Connector:</b>	SMA(F)
<b>Impedance:</b>	TTL into 50Ω
<b>Typical Accuracy (clear sky):</b>	< ±20 ns RMS to UTC (USNO), typical
<b>I/O Connections</b>	
<b>Network Interface:</b>	10/100BASE-T RJ45, 15KV ESD protection

<b>RS232 interface:</b>	HOST port for remote control of external equipment. 15KV ESD protection. Optical isolation 2.5KV. DB-9 male
-------------------------	---

## Power supply

<b>AC:</b>	100 - 240 VAC, 50/60 Hz IEC 60320 C14 connector
------------	--

<b>DC:</b>	18 – 75 VDC
------------	-------------

<b>Power Consumption:</b>	< 10 W
---------------------------	--------

## Supported Protocols

<b>GP-Cloud interaction:</b>	HTTPS
------------------------------	-------

<b>Firmware Upgrade Server:</b>	SFTP
---------------------------------	------

<b>Internet Protocol:</b>	IPv4, DHCP (RFC 2131)
---------------------------	-----------------------

## 3G/4G modem

<b>Data transfer:</b>	<ul style="list-style-type: none"> <li>• LTE CAT4 Uplink up to 50Mbps / Downlink up to 150Mbps</li> <li>• HSPA+ Uplink up to 5.76Mbps / Downlink up to 42 Mbps</li> <li>• UMTS Uplink/Downlink up to 384Kbps</li> <li>• EDGE Uplink/Downlink up to 236.8Kbps</li> <li>• GPRS Uplink/Downlink up to 85.6Kbps</li> </ul>
-----------------------	--

<b>Available bands:</b>	<ul style="list-style-type: none"> <li>• EH – for EMEA/Korea/Thailand regions LTE-TDD B38/B40/B41 LTE-FDD B1/B3/B5/B7/B8/B20 UMTS/HSPA+ B1/B5/B8 GSM/GPRS/EDGE B3/B8</li> <li>• AH – for North America LTE-FDD B2/B4/B12 UMTS/HSPA+ B2/B5</li> <li>• SA – for Australia/New Zealand/South America LTE-TDD B40 LTE-FDD B1/B2/B3/B4/B5/B7/B8/B28 UMTS/HSPA+ B1/B2/B5/B8 GSM/GPRS/EDGE 850/900/1800/1900MHz</li> <li>• JC – for Japan LTE-FDD B1/B3/B8/B18/B19/B26</li> <li>• WO – without built-in modem</li> </ul>
-------------------------	---

<b>(U)SIM:</b>	Mini-SIM (2FF) ISO/IEC 7810:2003, ID-000 Standard 3V/1.8V user card interface, 15KV ESD protection
----------------	--

<b>Antenna connectors:</b>	Main, Aux. SMA (f)
----------------------------	--------------------

## Regulatory Compliance

<b>EMC:</b>	EN 61000-3-2: 2014 EN 61000-3-3: 2013 EN 55022 EN 55024 ETSI EN 301 489-1
-------------	---

<b>RF:</b>	EN 301 511 EN 301 908 ETSI EN 301 489-52 ETSI EN 301 489-19
------------	--

<b>Safety:</b>	EN 60950-1: 2006+A2: 2013
----------------	---------------------------

<b>RoHS:</b>	EN 50581: 2012
--------------	----------------

### Warranty & Support:

<b>Warranty:</b>	1 year (Extended warranty is available)
------------------	---

<b>Support:</b>	Free-of-charge 1 year technical support
-----------------	---

### Package Content:

<b>GP-Probe:</b>	1 pc. Rack mount hardware included (assembly required)
------------------	--

<b>GNSS antenna:</b>	3 pcs. BeiDou, Galileo, GLONASS, GPS magnet-mount antennas
----------------------	--

<b>3G/4G antenna:</b>	2 pcs. Multiband antennas: 700 MHz, 800 MHz, 850 MHz, 900 MHz, 1.8 GHz, 1.9 GHz, 2.1 GHz, 2.3 GHz, 2.5 GHz, 2.6 GHz
-----------------------	---

<b>Manuals:</b>	Quick start guide
-----------------	-------------------

<b>Power Lead:</b>	1 pc. 1.7 m IEC power lead
--------------------	----------------------------

<b>Ethernet cable:</b>	1 pc. 3 m length
------------------------	------------------

### Optional Accessories:

<b>GPPA-A-DOME:</b>	Dome antenna. BeiDou, Galileo, GLONASS, GPS. Panel Mount, IP67
---------------------	--

<b>GPPA-C-010:</b>	10 m RG58 Cable
--------------------	-----------------

<b>GPPA-C-030:</b>	30 m RG58 Cable
--------------------	-----------------

<b>GPPA-C-050:</b>	50 m LMR195 Equivalent Cable
--------------------	------------------------------

<b>GPPA-C-100:</b>	100 m LMR400 Equivalent Cable <i>(Custom cable lengths available on request)</i>
--------------------	--

<b>GPPA-SPP:</b>	Multi-strike maintenance-free surge suppressor
------------------	--

<b>GPPA-AMP-20:</b>	GNSS Amplifier – 20db
---------------------	-----------------------

# Ordering information

## GP-Probe model number definition



### Number of channels:

- CH1** – asynchronous spoofing detection
- CH2** – synchronous spoofing detection
- CH3** – detection of synchronous multiple-TX spoofing. Uncompromising protection against all types of attacks

### 3G/4G modem bands:

- EH** – for EMEA/Korea/Thailand regions
- AH** – for North America
- SA** – for Australia/New Zealand/South America
- JC** – for Japan
- WO** – without built-in modem

### Onboard signal processing

- The GP-Probe can work without connecting to the GP-Cloud servers.
- Supports jamming and spoofing detection as well as signal quality analysis

