GP-Probe DIN L1

Designed for telecom to monitor GNSS interference and synchronization quality

Cost-effective GNSS probe with built-in RF blocker, onboard GNSS interference detection and LUA scripting. Compatible with GP-Cloud

GP-Probe DIN L1 covers three primary applications: GNSS interference detection and classification, PPS accuracy monitoring, GNSS signal quality analysis, and logging. The device is easily installed between a GNSS antenna and a receiver or time server. When an event is detected, the GNSS and PPS outputs are immediately disabled, preventing any counterfeit signals from reaching your systems.

With Onboard Signal Processing option, GP-Probe DIN L1 can detect GNSS interference and anomaly without connecting to GP-Cloud

- PPS Accuracy Measurement
- LUA scripting for custom scenario
- RF spectrum analyzer
- Embedded GNSS blocker

Key Features

- Supported by GP-Cloud to provide centralized monitoring of your entire GNSS-dependent infrastructure. The combination of two features – GNSS interference detection and PPS accuracy tracking – makes the device perfect for ensuring robust and reliable synchronization systems for mission-critical infrastructure.
- Onboard Signal Processing Option – the device can detect anomalies of GNSS signal and interference without connection to GP-Cloud.
- Integrated GNSS RF switch with an embedded jammer. You can connect the device between a GNSS antenna and a protected time server. If GNSS signal anomalies or interference are detected, the GNSS output port is disabled. To protect against powerful spoofing attacks, there is a built-in jammer that assures blocking of fake signals of any power.

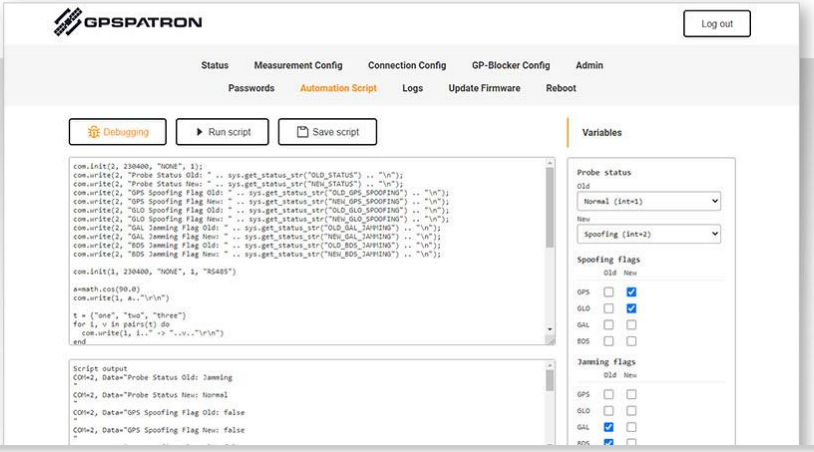
- Built-in PPS Phase Measurement Unit. You can connect a PPS output of your time server to a GP-Probe DIN L1 and receive real-time notification of PPS phase accuracy degradation.
- Embedded LUA script engine and debugger for custom user scenarios. You can develop your own LUA script to respond to interference or GNSS signals anomaly. A terrific option for quick integration of the device into your existing infrastructure.
- 65 MHz basic RF spectrum monitoring feature.
- Validated PPS signal output.
- The embedded real-time operating system FreeRTOS guarantees high availability and cybersecurity.
- Secure firmware auto-update engine.
- Embedded self-diagnostic and dispatching all error messages to the cloud.
- Web interface for configuration.

Onboard Spoofing Detection

The probe is compatible with GP-Cloud to detect advanced attacks and build a comprehensive monitoring system

Embedded Lua Scripting

You can develop complex LUA scenarios in response to GNSS spoofing/jamming/GNSS signal quality and PPS accuracy degradation



Specifications

Supported GNSS:	• GPS L1 C/A • QZSS L1 C/A L1S • GLONASS L1OF • BeiDou B1I/B1C • Galileo E1B/C • SBAS L1 C/A: WAAS, EGNOS, MSAS, GAGAN
Traceable GNSS:	Any combination of constellations
GNSS Channels:	One GNSS RF channel for interference/anomaly detection and signal quality analysis
Detected Threat Types:	Interference in 60 MHz band. Anomalies caused by: • asynchronous spoofing • synchronous spoofing with high power • synchronous spoofing after the start of parameter drifting
GP-Probe Configuration:	Browser-based configuration and monitoring, GP-Cloud
Display:	GP-Probe status Server connection settings and status GNSS channel status: satellites in view, RMS CN0
Mechanical	
Housing:	DIN rail housing. Polyamide with metal foot catch
Size:	139.4 x 118 x 25 mm
Weight:	0.5 kg
Environmental	
Operational Temperature:	-20°C to +50°C
Storage Temperature:	-20°C ~ +70°C
Humidity:	0% – 90% RH non-condensing @ 40°C
GNSS Antenna Input	
Connector:	SMA(F)
Max Input Power Level:	0 dBm
Impedance:	50 Ω
Antenna bias voltage:	3.3 VDC
Maximum Antenna Current:	50 mA
Detectable faults:	Short circuit Disconnected antenna
ESD protection:	±15-kV Air discharge mode IEC 61000-4-2
GNSS Antenna Output	
Connector:	SMA(F)
Impedance:	50 Ω

ESD protection:	±15-kV Air discharge mode IEC 61000-4-2
Embedded GNSS Jammer Output Power:	-50 dBm, RMS
Isolation Level for Closed Channel:	>60 dB
Maximum Allowable Input Voltage for Active Antenna Power Supply:	15 V
PPS Input	
Connector:	SMA(F)
Impedance:	50 Ω, TTL compliant
High-Voltage Level (50 Ω):	1.3 Min 5.5 Max
ESD protection:	±15-kV Air discharge mode IEC 61000-4-2
PPS Output	
Connector:	SMA(F)
Impedance:	TTL into 50Ω
Typical Accuracy (clear sky):	< ±20 ns RMS to UTC (USNO), typical
ESD protection:	±15-kV Air discharge mode IEC 61000-4-2
I/O Connections	
Network Interface:	10/100BASE-T RJ45
RS-232 interface:	HOST port for remote control of external equipment. ±15-kV Air discharge mode IEC 61000-4-2
Relay Output	
Relay Type:	1 Form C (SPDT); NO-C-NC
Contact Material:	Silver Alloy with Gold Alloy Overlay
Switching Power:	60 W, 125 VA
Switching Voltage DC:	220 V
Switching Voltage AC:	250 VAC
Switching Current:	2 A
Contact Resistance:	75 mOhms
Power Supply	
DC:	12 – 48 VDC
Power Consumption:	< 3.5 W
Supported Protocols	
GP-Cloud interaction:	HTTPS
Firmware Upgrade Server:	HTTPS
Ethernet Protocol:	IPv4, DHCP (RFC 2131)
Regulatory Compliance	
Complies with the requirements:	CE | FCC | RCM | ROHS

EMC:	ETSI EN 301 489-1 ETSI EN 301 489-19 FCC Part 15B
RF:	ETSI EN 303 413 ETSI EN 301 511
Safety:	EN 62368-1

Warranty & Support

Warranty:	1 year Extended warranty is available
Support:	1 year of complimentary technical support

Package Content

GP-Probe:	1 pc.
Manuals:	Quick start guide

Ordering Information

GP-Probe DIN L1 model number definition

GP-Probe	DIN L1	–	PPS	BL	RL	SCR
Product	Product series		PPS accuracy measurement	Built-in RF blocker	Relay and RS232	Display and keypad

PPS
PPS input, PPS output,
PPS phase measurement module.

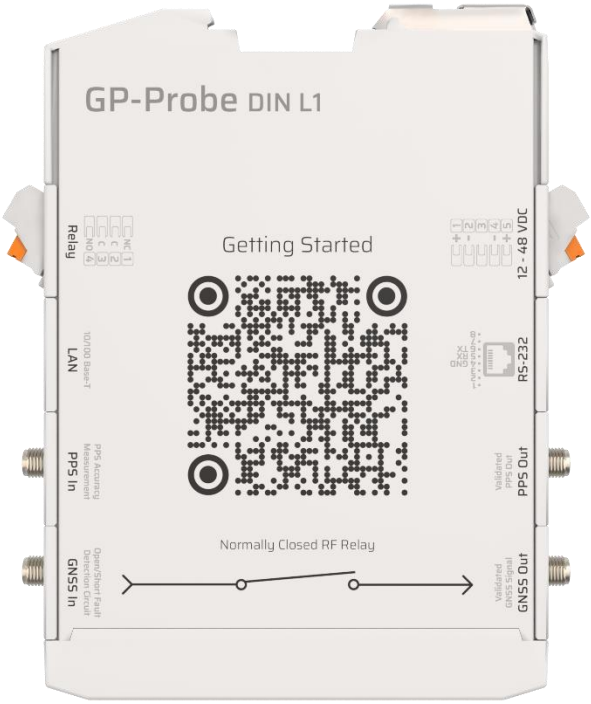
BL
GNSS output,
embedded RF blocker.

RL
NO-C-NC Relay,
RS232 port.

SCR
Display and keypad.

Software Options	
Subscription to GP-Cloud	With GP-Cloud, you can monitor all your connected GP-Probes in real-time, receive notifications of detected events, and log all data for post-analysis.
GP-Probe DIN L1 opt.: OSP	Onboard signal processing for interference and anomaly detection. The GP-Probe can work without connecting to the GP-Cloud servers.
GP-Probe DIN L1 opt.: LUA	Develop custom scenarios for external equipment remote control via RS232 with the embedded LUA scripting engine.
GP-Probe DIN L1 opt.: STREAM	The option enables streaming and logging of raw and processed GNSS data to an external server via websocket. It enables the GP-Probe DIN L1 to be integrated into your own spoofing and jamming detection systems.
Optional Accessories	
GP-Divider	GNSS power divider with GNSS antenna preamplifier current simulation. It allows you to use one GNSS antenna for two receivers at once.

Gallery


GP-Probe DIN L1
Getting Started
Relay
LAN
PPS In
GNSS In
12 - 48 VDC
RS-232
PPS Out
GNSS Out
Normally Closed RF Relay


GPSPATRON
GP-Probe DIN L1
GNSS Signals Authentication
PPS Accuracy Measurement
☑ Compatible with GP-Cloud
☑ GPS, Galileo, BeiDou, GLONASS
☑ Onboard GNSS Signal Authentication.
☑ Embedded Lua Scripting Engine for Custom Scenarios
GPSPATRON
gpspatron.com
GNSS receiver with built-in RF switch
Model: GP-Probe DIN L1
S/N: GPPD1-0000001
9 - 50 VDC, 0.3A Max
IP20
Manufactured by GPSPATRON Sp. z o.o.
Made in Poland


GNSS Out
PPS Out
RS-232
12 - 48 VDC


GP-Probe DIN L1
Relay
LAN
PPS In
GNSS In


GP-Probe DIN L1
Getting Started
Normally Closed RF Relay
probe-435
SPOOFING


GP-Probe DIN L1
Getting Started
Normally Closed RF Relay
SPOOFING
GNSS Out
PPS Out
RS-232
12 - 48 VDC
LAN
PPS In
GNSS In
Relay


GP-Probe DIN L1
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Normally Closed RF Relay
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