

# GTR51

## Time and Frequency Transfer GNSS Receiver

The GTR51 is a multisystem/multifrequency GNSS (Global Navigation Satellite System) receiver intended for time & frequency transfer. The receiver supports both code and phase measurements. Thanks to large receiver bandwidth and advanced signal processing, even the code measurements provide sub-nanosecond accuracy. Critical elements are placed in a thermostat box. The receiver can be directly connected to a local net/internet which allows remote control and output data download and upload.



### Operation

The operation is fully automatic. After the very first configuration, the receiver continuously collects the measurement data. Output files in several standard/proprietary formats can be generated from the collected data. The data processing can be started manually or by a scheduler which enables routine processing at given times (daily, weekly, ...). The resulting data files can be downloaded from the

receiver, automatically uploaded to a server or automatically saved to an external disk. A brief message is sent to an e-mail address after the processing is finished.

The output measurement data can be referenced to the input 1PPS and/or to the output 1PPS time mark.

### Remote control

The receiver can be controlled from any computer on the net. The User Interface has the form of a web page which can be accessed using a web browser. It enables control of the receiver, monitoring of the receiver operation, and download of the measurement data. Authorization is required to access the receiver.

### Diagnostic system

The diagnostic system indicates several dozens of operational events and states. The diagnostic messages can be recorded in the log, displayed in the User Interface, and sent to an e-mail address.

### Monitoring with graphical representation

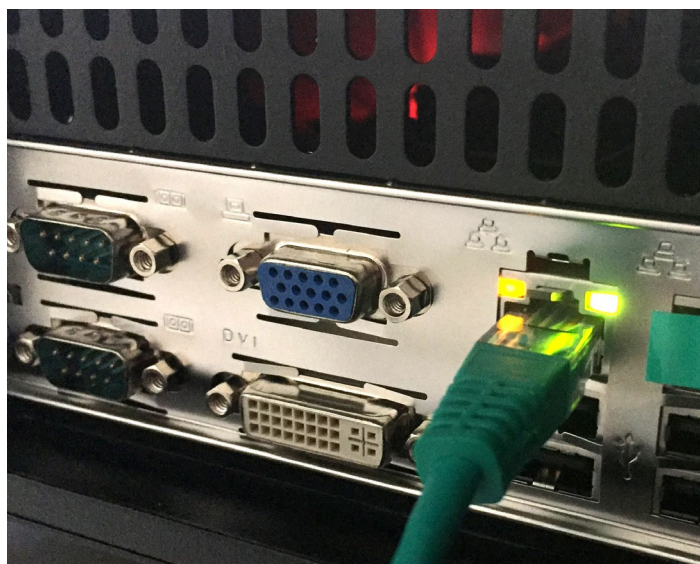
History of operational parameters (time difference, temperature, satellite elevation/azimuth, ...) is displayed in graphs in the User Interface.



## Technical parameters:

Time Reference Input:	
Input signal	1PPS (leading edge)
Input impedance	50 Ω
Trigger level	0 - 2 V adjustable
Max level	5.5 V / 50 Ω
Min level	-0.1 V / 50 Ω
The 1PPS mark must be coherent with the frequency reference at the 10 MHz input.	
Time Reference Output:	
Output signal	1PPS (leading edge)
Low level	<0.5 V / 50 Ω
High level	>1.8 V / 50 Ω
Frequency Reference Input:	
Input signal	10 MHz
Input impedance	50 Ω
Max level	3 Vpp / 50 Ω
Min level	0.5 Vpp / 50 Ω
Precision:	
Code measurement	< 0.5 ns rms (CGGTTS data, short-baseline common view, GPS, GALILEO, GLONASS)
Phase measurement	< 30 ps rms (short-baseline common view)
Output Data Formats:	
CGGTTS (L3P_30s)	all tracks / all satellites in view, MSIO iono-delay, version V2E; both standard CGGTTS and P3 data at once; 30 s sampling period; all GPS, GLONASS, Galileo, BeiDou, NAVIC signals
RINEX	(observation / navigation files) versions 2.10 (GPS only), 2.11 and 3.01
RAW	(proprietary format, all signals, both code and carrier phase data)
EL_MASK	(CNR analysis and search for obstacles)
STAT	(statistics of collected measurement data)
BETA	(proprietary format similar to planned CGGTTS V03, GPS, GALILEO, GLONASS)
1PPS_DIF	(proprietary format, 1PPS_IN - 1PPS_OUT difference)

GNSS Receiver:	
Supported signals:	
GPS	L1C, L1C/A, L1P, L2C, L2P, L5
GLONASS	L1OF, L1SF, L2OF, L2SF
GALILEO	E1, E5a, E5b
SBAS	L1, L5
Type of measurement	code / carrier phase referenced to input / output 1PPS
Receiver bandwidth	24 MHz
Number of satellites	all in view
Time Interval Counter:	
Precision	< 15 ps rms
Thermostat:	based on thermoelectric modules
Dimensions:	19"/2U standard chassis
Power Supply:	100 - 240 V AC / 50 - 60 Hz
Operating Temperature:	0 to 50°C
Antenna:	
Antenna supply	5 V / up to 90 mA (plus on inner contact)
Recommended antenna	Novatel GPS-703-GGG, Novatel GNSS-850 antenna



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