GTR51 - Time and frequency transfer GNSS receiver

Type designation: **GTR51**
PN (RN): **2065.100.10, 2065.100.11, 2065.100.12**

The GTR51 is a multisystem/multifrequency GNSS (Global Navigation Satellite System) receiver intended for time and frequency transfer. The receiver supports both code and phase measurements using signals of several systems in several frequency channels. 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.

The receiver is produced in three variants, see table.

DEVICE		**SYSTEMS**		
		GPS	**GALILEO**	**SBAS**
GTR51	2065.100.10	•	•	•
	2065.100.11	•		•
	2065.100.12	•		

Description

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

MESIT asd, s.r.o.
Sokolovská 573, Mařatice
686 01 Uherské Hradiště
Česká republika

asd@mesit.cz
T +420 572 522 200
F
www.mesitasd.cz

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 V-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	<15 ps rms (short-baseline common view)
OUTPUT DATA FORMATS	
CGGTTS	all tracks/all satellites in view, MSIO iono-delay, versions 01 and 02
RINEX	(observation / navigation files) versions 2.11, 3.01, 3.05 and 4.00
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
L3P_30s	standard P3 data, 30 s sampling period
L3P_1s	P3 data, 1 s sampling period
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/A , L1P, L2C, L2P, L5	
GLONASS: L1OF, L1SF, L2OF, L2SF	
GALILEO: E1, E5a	
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 V-240 V AC/50 Hz-60 Hz
Operating temperature	0 ºC to 50 ºC
ANTENNA	
Antenna supply	5 V/up to 90 mA (plus on inner contact)
Recommended antenna	Novatel GNSS-850

Documentation

GTR51 operating instructions	2065.010.12

Set

Type designation	**PN (RN)**	**Name**
GTR51	2065.000.10	Time and frequency transfer GNSS receiver set
GTR51	2065.000.11	Time and frequency transfer GNSS receiver set
GTR51	2065.000.12	Time and frequency transfer GNSS receiver set

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