

Time Transfer System TTS-5 - confidence through experience

It has been over 23 years since first "TTS" was introduced. Single frequency TTS-1 as first in the family, a very successful TTS-2, then TTS-3 with GLONASS, now TTS-5 - developed from scratch, released in 2015 after 2 years of R&D work. Till the date more than 150 units have been delivered to over 30 countries. As our core product, TTS is being continuously improved towards better observation results and deployment of the recent time & frequency knowledge. Software upgrades are provided free of charge every 3 months on average. **Excellent observation results, long and stable operation, wide configuration possibilities, as well as user friendly solutions are main advantages of the system.** TTS-5 generates data on its own and requires no daily assistance. The system is working under LINUX providing multitasking and integration with networks.



Time Transfer System TTS-5

Time Transfer System 5				GPS - 10								
PRN	Alt	Elev	SNR L1C	SNR L1P	SNR L2C	SNR L2P	SNR L5	SNR L5P	SNR L5C	SNR L5P	SNR L5C	
GPS-R	98.9 ms	23	68	118	55	47	47	53	60			
GLONASS-4r	96.9 ms	10	11	70	26	11	11					
Temperature	34.00	12	28	114	40	34	34	43				
Freq. Sync.	locked	5	12	98	39	24	24	31				
Freq. Level	ok	29	86	234	58	51	51	55				
Sync. Status	ok	7	33	54	48	36	36					
IPPS Status	ok	21	15	192	40	20	20					
Antenna DC	normal	20	12	42	42	33	33					
		8	31	312	47	33	33					
		31	50	282	53	42	42	47				
Position				GLONASS - 10								
X	Y	Z	hgt	PRN	Alt	Elev	SNR L1C	SNR L1P	SNR L2C	SNR L2P	SNR L5	SNR L5P
3738368.8568	1148161.7871	5621816.9913	124.453	9	-2	172	55	52	38	51	35	35
				16	-1	158	7	40	34	39	36	36
				2	-4	4	13	43	35	43	36	36
				10	-7	309	63	56	43	55	45	45
				19	3	36	74	55	50	54	51	51
				20	2	232	47	48	45	47	46	46
				11	0	328	12	40	31	39	33	33
				18	-3	48	15	44	40	43	41	41
				3	5	54	12	38	38	37	35	35
				26	-5	232	45	51	45	51	47	47
Delays				EGNOS/WAAS - 4								
Ref. Delay	C.000	C.000	C.000	PRN	Alt	Elev	SNR L1C	SNR L1P	SNR L2C	SNR L2P	SNR L5	SNR L5P
				126		38		179		42		
				120		25		216		46		
				136		29		196		45		
				127		2		136		37		
Ant. Cable				GALILEO - 1								
Ref. Delay	C.000	C.000	C.000	PRN	Alt	Elev	SNR L1C	SNR L1P	SNR L2C	SNR L2P	SNR L5	SNR L5P
				2		54		60		51		

Main screen of TTS-5

Access, Operation & Configuration

- built-in touch screen offers immediate access to observations, configuration and main parameters: delays, antenna position, key system status indicators.
- via WEB interface
- via USB keyboard

Data recording & storage

- Date can be:
 - downloaded from WEB interface (using WEB browser)
 - downloaded from integrated FTP server
 - sent to external FTP server (using WEB browser)
 - saved on USB memory (using console or WEB interface)
 - 1TB redundant data storage (RAID1 2*1TB)

Tracking features

Supported navigation systems:

GPS, GLONASS, Galileo, WAAS/Egnos

Number of channels: 216

Number of satellites: all-in-view

Supported frequencies:

GPS: L1, L2, L5

GLONASS: L1,L2 option: L3

GALILEO: E1, E5A , option: E5B, altBoc, E6

Supported codes:

GPS: L1C, L2C, L1P, L2P, L5P

GLONASS: L1C, L2C, L1P, L2P option: L3

GALILEO: E1, E5A , option: E5B, altBoc, E6

Input/Output

3-20 MHz frequency input (adjustable)

Local 1 PPS input

1PPS output

Antenna TNC connector

1000BASE-T Ethernet port

2 USB connectors on the front panel

2 USB connectors on the rear panel

Data characteristics & availability

Data type: Code and Carrier

Data output format: CGGTTS, RINEX. **The only**

CGGTTS Glonass/Galileo receiver on the market.

Data formats meet all formal requirements.

Data availability:

CGGTTS: 30 sec after each 13-min. observation session is finished

RINEX: real time

Physical & Enviromental

Main unit dimensions:

(410mm x 298mm x 133mm)

Rack ready, chassis made of heavy duty metal

Screen - 7" TFT LCD

Resolution 1024 x 600

Operating voltage: AC 230V +/-10%, 45 to 60 Hz

or AC 110V +/-10%, 55 to 65 Hz

Redundant power supply support

Operating temperature: 0°C to +50 °C

Time stability

Precision for phase observation for a short term, short baseline precision <12ps rms

Precision for code observation <0.4ns rms

(receivers connected to the same reference standard)

Antennas



Standard antenna



Choke ring antenna



Temperature stabilized choke ring antenna

Our main concern is improvement of TTS-5 performance. In result, every several months software upgrade is released and all TTS-5 users are notified. Software upgrades are free of charge.

We offer free of charge permanent customer assistance.

Time Transfer System TTS-5 is in compliance with requirements of European Union laws.

