

■ PW1014D PTP Wander Analyzer



Two full Wander Analyzers in one equipment

IEEE 1588-2008 (PTP) slave

Two independent test simultaneously

Time Interval Error (TIE) measurements on 10.000 MHz, 2.048 MHz
and 10.000 MHz, 2.048 Mbit/s signals

Automatic signal format detection

0.9 ns resolution, 10 ns...200 :s automatic screen range

Up to 100 sample/seconds sampling rate

Short and long last tests, up to 1 Million seconds

Rubidium internal reference with external reference facility

4 hours battery powered operation with built in battery and automatic charger

Standalone WanderCalc software for RTIE, MTIE and TDEV calculations

EQUIPMENT FOR HIGH PERFORMANCE SYNCHRONISATION OF TELECOMMUNICATIONS NETWORK

IEEE1588-2008 Precision Timing Protocol Slave Unit (PTPS-1)

Packet Network Time and Frequency Synchronization clock	Fully compliant with IEEE1588-2008 standard
Functions	PTP Slave in Telecom networks Best Master Clock algorithm support Delay request-response and peer delay mechanisms (E2E, P2P) PTP Management messages support
Operation modes, sync rate	IPv4 Multicast/Unicast, Native Ethernet One- or Two step operation Sync rate: up to 128 Hz
Precision	30 ns rms typical (one step, direct connection to GM)
PTP connection	10/100 Base-T 8P8C (RJ-45) Ethernet connector
Holdover	Up to 1000 minutes (High stability OCXO oscillator)
Management	User friendly GUI - through serial connection (Integrated in WanderCalc sw) Local log files and error indications

Outputs

Output 1	1PPS, 0/2.5Vpp, 75 ohms
Output 2	1, 2, 5, 10 MHz (configurable), 0/2.5Vpp, 75 ohms
Output 3	TOD (Time Of Day) 0/2.5V, 75 ohms
Output 4	2.048MHz, G.703, 75 ohms
Connectors	1.6/5.6 coaxial

Connectios for Wander Tests

Test inputs	2.048 Mbit/s, 75 ohm, or high impedance, G.703 (9); 0C-26 dB attenuation range
	10.000 MHz or 2.048 MHz, 75 ohm, or high impedance, G.703 (13); This input can be connected to the PTP 2MHz output for the PTP slave wander test.
Reference inputs	2.048 Mbit/s, 75 ohm, or high impedance, G.703 (9) This input can be connected to the PTP 2MHz output for the PTP slave wander test.
	10.000 MHz or 2.048 MHz, 75 ohm, or high impedance, G.703 (13)
	10.000 MHz, 50 ohm, 1 Vpp
Connectors	1.6/5.6 coaxial

TIE measurement performance

Measurement Range	OC62 500 ns (128 UI)	
Measurement Resolution	0.95 ns	
Measurement Result Accuracy	Observation Interval	
	$0.05 \leq \tau \leq 1000 \text{ s}$	$\tau > 1000 \text{ s}$
	TIE value $\pm 5\% \pm (2.5 + 0,0275 \tau)$	TIE value $\pm 5\% \pm (29 + 0.001 \tau)$
Sampling Frequency	max. 100 Hz.	
Measurement Filter	10 Hz, according to ITU-T Rec. G.812 and ETSI EN 300 462 standard for short tests, or 0.1 Hz according to ETSI EN 300 462 standard for long last tests	

Rubidium reference

Outputs	2 pieces. 2.048 MHz, 75 ohm, G.703 (13), 2 pieces 2.048 Mbit/s, 75 ohm, G.703 (9), HDB-3, Farmed (PCM30C) or PRBS15 SSM byte settings possibility
Jitter on 2,048 MHz outputs	max. 0.02 Ulpp
Short term stability	3x10 ⁻¹¹ (1s) 1x10 ⁻¹¹ (10s) 3x10 ⁻¹² (100s)
Long term stability	$\pm 1,2 \times 10^{-11}$ /day $\pm 5 \times 10^{-11}$ /month $\pm 5 \times 10^{-10}$ /year
Tune Ability	$\pm 1.5 \times 10^{-9}$
Connectors	1.6/5.6 coaxial

Operating software

Functions (WanderCalc 3.xx)	User friendly GUI PW2014D instrument and PTP slave configuration TIE characteristics presentation Calculating and presentation of MTIE and TDEV characteristics Built in standard masks Direct export of TIE, RTIE, MTIE, TDEV characteristics to Windows documents
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General

Power	230 Volt, 50 Hz
Size	400 mm W, 155 mm H, 266 mm D
Temperature Ranges	Operation: +10°C +35°C Standby: -20°C +50°C Storage: -20°C +70°C
Optional Accessories	Hard carrying case 12Vdc/230Vac Power Inverter Test cable set GPS receiver