PTP GRANDMASTER CLOCK 964

Precise-Timeserver

The Peweta PTP Grandmaster 964 supplies the time, date, pulse, and frequency signal, received from diverse reference inputs such as GNSS / GPS satellite, German DCF77 time protocol radio transmitter, PTP, Freq. and Second interfaced Grandmaster link, to an IT / Non IT Network.

The Grandmaster is a combined high-performance device with which time distribution and high-precision time and frequency synchronization can be guaranteed in equal measure. Up to 4 LAN interfaces (IPv4/IPv6) are available apart from various non-network legacy outputs. A sophisticated redundancy concept, with conventional time control centres, ensures maximum reliability and availability. An over controlled crystal oscillator (OXCO) ensures accurate timekeeping even in cases of a missing reference signal which reduces the maximum deviation during autonomous operation +/- 2*10-8/year.

The PTP Grandmaster 964 from Peweta offers you these advantages:

- **Equipped with 4 fully independent LAN ports (3x RJ45, 1 x SFP):**
  - Provides PTP on 3 ports
  - 1- and 2-step master different profiles and domains per port
  - Multicast/Unicast
  - IPv4 / IPv6 / Layer 2
  - Provides NTP for 4 ports (more than 10,000 requests/second on all 4 ports)
- **Versatile due to different time code outputs:**
  - 1 x DCF / 1PPS
  - 1 x 10 MHz (BNC connector)
  - 1 x Precision pulse / frequency output on BNC, CL and RS 422
  - 2 x Serial output (RS 232/422/485), programmable by script file
  - 1 x IRIG-B, AFNOR output
  - 1 x DCF current loop output
- **High degree of system redundancy with second interfaced Grandmaster link via fibre optic connection:**
  - High availability
  - Master-slave operation with automatic switchover when an error occurs
- **High-precision time data from up to 5 time sources:**
  - Time reception via GNSS/GPS, Link, PTP, DCF & Frequency (1PPS, 10MHz, 2.048MHz)

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Technical details

General			
System	CPU Oscillator	ARM Cortex dual core Rubidium or OCXO	 see oscillator option
Housing	Dimensions (W x H x D)	483 x 44 x 190 mm	19``,1 HU
	Weight	2.3 kg (without packaging)	
Display	LCD, 2 lines, for status and time info	✓	
LAN interfaces	100/1000 MBit, RJ45	3	3 maintenance ports
	SFP (miniGBIC interface)	1	Be used for: - redundant operation (see redundant link) - Optical network for NTP/ PTP
Redundant link	For redundant operation of 2 corresponding PTP Grandmaster Clock 964 with master/slave negotiation	✓	Option to additional network port. See also LAN inter-faces miniGBIC/SFP
RS232 Interface	For operation control, D-Sub 9 connector	1	
USB Interface	For firmware update	1	
Supply	Redundant power supply (supplies 1, 2 and 3)	✓	
	Supply 1 (standard mains connector for 240VAC)	240 VAC	
	Supplies 2 & 3	22 .. 29 VDC	
Ambient temperature	at 10-90% relative humidity, without condensation	0 up to 50°C	
Input signal			
	GPS RF input (for GPS Antenna, N female connector) to internal GPS receiver 72 channels, tracking sensitivity -165 dBm	1	
	Optical link from second PTP Grandmaster Clock 964 (SFP)	1	
	PTP (from other Grandmaster)	3 (2 if optical link is used for redundant link)	
	DCF / E1 / 1PPS / 10MHz	1	
Output signal			
Network	NTP Server	>10'000req per second	on all 4 ports combined
	PTP Grandmaster (E2E, P2P, 1-step, 2-step, Multicast, Layer 2, IPv4/ IPv6)	RJ45 over 2x 1Gbit port SFP over 1Gbit port	
	PTP profiles: default E2E, P2P, utility (61850-9-3), IEEE 802.1 AS	3 as „hold-over redun-dancy“	
	SyncE	3 as „hold-over redun-dancy“	
Others	IRIG-B	1 (precision output, 50 Ohms)	BNC (AM) spring terminal (DC)
	Precision pulse/frequency output* on BNC, RS422 and CL	1	
	Serial outputs with configurable time telegrams (10 pin terminal block)	2 RS 232/422/485 RS 422: output only	
	E1 / 2.048MHz output (1:1), SSM (only qual. level (only opt. I)), 1x BNC, 1x RJ48	1	RJ48 (balanced) BNC (unbalanced)
	DCF 77 CL (Current loop) passive output (2 pin terminal)	1	
Network interface and services			
	100/1000BaseT	3	
	SFP for miniGBIC module 100/1000Base-T(X) or FX	1	
	PTP master IEEE1588-2008 (V2) 1 or 2-step	✓	2x RJ45 1x SFP
	SyncE master	✓	
	NTP V4 (V3 compatible) server	✓	
	NTP mode Server, Peer, Broadcast, Multicast	✓	
	SNTP	✓	
	MD5 authentication for NTP	✓	
	TIME, DAYTIME	✓	
	Telnet, SSH, FTP, SCP, SFTP - disengageable	✓	maintenance ports only
	SNMP Notifications (Traps)	V1/ V2c/ V3	maintenance ports only
	SNMP Get, Put	V1/V2c/V3	maintenance ports only
	IP V6 support	✓	
	Link Aggregation (IEEE 802.3 ad)	✓	over 2 dedicated LAN interfaces (LAN 2 & 3)
	VLAN	✓	

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IP configuration			
IPv4	DHCP	✓	
	static IP	✓	
IPv6	Autoconfiguration	✓	
	static IP	✓	
	DHCPv6	✓	
Alarm I/O			
Electrical	Output: Relay contact	✓	
Network	Output: SNMP notifications (traps)	V1/V2c	maintenance ports only
	Output: Mail	✓	maintenance ports only
	Supervision possible with NMS	✓	maintenance ports only
Accuracy			
Time source input	GPS to NTP	typ. < +/- 100µs	
	GPS to PTP	typ. < +/- 0.25µs	
	GPS to DCF	typ. < +/- 5µs	
	GPS to Pulse	typ. < +/- 5µs	
	GPS to IRIG (analog)	typ. < +/- 200µs	
	GPS to IRIG (digital)	typ. < +/- 1µs	
	Pulse/frequency output, BNC & RS422	typ. < +/- 200ns	
	Pulse/frequency output, current loop	typ. < +/- 10µs	
	SyncE	compatible	G.811, G.812, G.813
	E1	compatible	G.811, G.812, G.813
Internal accuracy	GPS to internal time	typ. < +/- 30 ns	
Operation Control			
	Telnet	✓	maintenance ports only
	SSH	✓	maintenance ports only
	SNMP (V1/V2c/ V3 get, put)	✓	maintenance ports only
	RS232 (PC-Terminal)	✓	
	LED Alarm	✓	
	LED Power	✓	
	LED Sync	✓	
Conformity			
	EMC: EN 50121-4, 61000-6-4, EN 61000-6-2	✓	
	Safety: IEC 62368	✓	
	CB	✓	
	G.703	compatible	
	IEEE 1588-2008	✓	
	NTP RFC 5905	✓	
	IEC 61850	✓	applicable for SNTP/NTP/ PTP synchronization only

If you have any questions or require additional information, please contact us, we will gladly give advice.