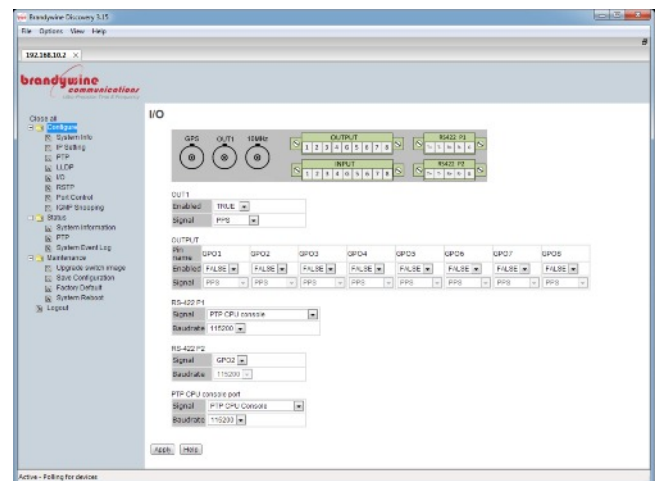
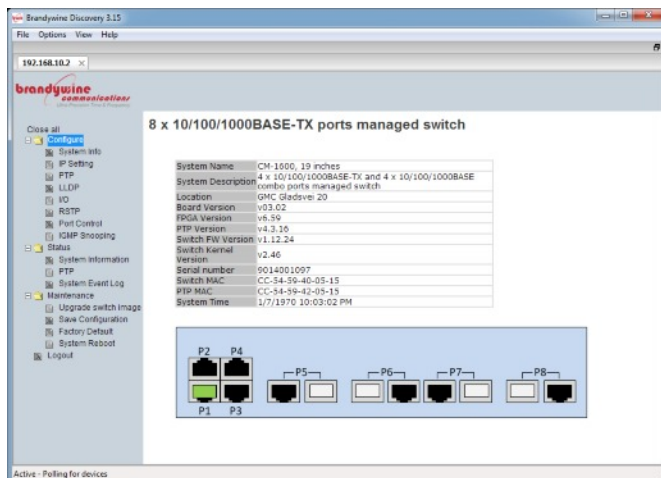


PTP8020/80 - PTP GRANDMASTER, BOUNDARY & TRANSPARENT CLOCKS



High Performance Dual Redundant Stratum 1 PTP Grandmaster, Boundary and Transparent Clocks with Multiple Ports and Time Code Outputs



AS9100D Certificate Number : C0210021-AS3



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Product Overview



The PTP-8020 & PTP-8080 are GPS Network Time Servers (NTS) for NTP or PTP IEEE 1588 that provide secure, accurate and reliable time synchronization for networks and offers integrated fully managed switch capabilities for 2 (PTP8020) or 8 (PTP8080) Gigabit Ethernet ports (10/100/1000BASE) . These dual redundant high reliability units can be used for data centres, test facilities, military installations, governmental agencies, financial services and technology firms which need precision timing to support their network operations.

These PTP Master Clocks provide exact time over Ethernet either based on the well-established NTP/SNTP protocol or PTP according to IEEE 1588 Std 2008. In addition to NTP and PTP timing capabilities, the units also provide a variety of time codes and signals, such as GPS emulation and IRIG-B for a wide range of applications. Such interfaces are normally provided on the network boundaries integrated on relevant SNTP clients or PTP Slave Clocks platforms.

Built to demanding AS9100D aerospace quality standards, these units are commonly specified for use in critical network timing applications that depend upon a reliable, quality time standard. The robust design and unrivalled build quality delivers exceptional performance and trouble free product field longevity.

Options include a choice of 2 ports (PTP8020) or 8 ports (PTP8080) along with build options for TCXO, OCXO or Rubidium oscillators depending upon holdover accuracy requirements.

Typical Applications

PTP8020/8080 units are commonly specified where precision, reliability and cyber security are key considerations in the network application. These high integrity units are common place and thoroughly proven worldwide in PTP and NTP network timing applications where traceable, precision time stamping and time distribution is required.

- Telecommunications : LTE & Ethernet/IP Backhaul
- Military and Governmental Installations
- WiMAX
- DAB/DVB broadcast transmitter synchronisation
- Research Institutions, Test and measurement facilities
- HFT High Frequency Trading : Financial transaction time stamping
- Power Utilities - Time of day information



Key Feature Summary

- | | |
|---|---|
| <ul style="list-style-type: none"> • PTP v1 or v2 Grand Master Clock • PTP v1 or v2 Transparent Clock • PTP v1 or v2 Slave Clock • Combined NTP client and PTP Boundary Clock • NTP time server • PTP protocol supports: - <ul style="list-style-type: none"> — Unicast or multicast — Layer 2 or IP — 1-step or 2-step clock — Peer-to-Peer (P2P) — End-to-End (E2E) delay mechanism — PTP version translation • Built-in GPS receiver (GMC variant) with time accuracy to absolute time < 50ns (with GPS lock) | <ul style="list-style-type: none"> • PTP accuracy < 20 nanosecond per network hop • 4(1) x 10/100/1000BASE-T(x) ports • 4(1) x 10/100/1000BASE-X combo ports • Wide operating temperature: -40°C to 70°C • Dual Redundant 100-240AC power inputs • Network redundancy: OnTime-Ring- or MSTP/RSTP/STP protocol • Network management: Web, telnet, CLI and SNMP v1/v2/v3 with RMON • Multicast filtering: IGMP snooping or static multicast filters • IEEE802.1Q VLAN • Event notification: through Syslog, Email, and SNMP trap |
|---|---|

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Product Features



The PTP-8020/80 is used for applications that require reliable timing to accurately synchronize networks, systems, and devices and to log events with legally traceable time. The series incorporates a broad range of features, including Network Master Clock configuration (NTP or PTP), Boundary and Transparent Clock configuration, monitoring and management capabilities together with a comprehensive software package to deliver high performance timing for network applications and devices. The units are easy-to-install and fully configurable to customize features, interfaces, ports and protocols.

Software features include remote login and file transfer capabilities, which provide the utmost security using industry standard interfaces. A full-suite of network protocols includes SNMP capability, support for enterprise directory servers to authenticate users, internal and external logging and monitoring of error messages through Syslog, DHCP for installation convenience, and Ipv4.

The PTP-8020/80 is a reliable and accurate NTP and PTP Grand Master Clock fulfilling the IEEE 1588 Std 2002 (v1) and IEEE 1588 Std 2008 (v2). The units contain a built-in state-of-the-art GPS receiver that is used as the time base for the GMC clock. The PTP-8080 platform supports both 1-step and 2-step clock modes and either E2E or P2P as the delay mechanism. This means that all possible PTP profiles can be supported.

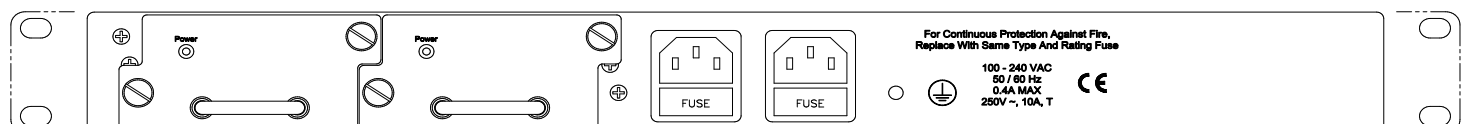
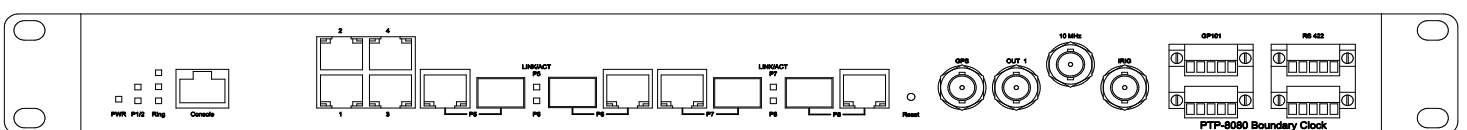
PTP performance, throughput and accuracy are maximised with all critical PTP functions implemented in hardware. The switch functionality in the PTP-8080 series offer full management based on HTTP, telnet, CLI or SNMP. Network Redundancy is achieved based on the OnTime-Ring- or MSTP/RSTP/STP (IEEE 802.1s/w/D) protocol. These units also deliver a wide operating temperature range: [-40°F to 158°F] / [-40°C to 70°C].

Oscillator Options

When synchronised to GNSS/GPS, PTP8020/80 units provide an accuracy of < 50ns to UTC at the On time 1 pulse per second (1PPS) output. Precision Time Protocol (PTP) client/slave reception accuracy is typically better than **100ns** to UTC depending on network and 20ns across networks boundaries, while NTP accuracy is typically 100µs or better.

If the timing signal e.g. GPS is lost for any reason, then the PTP8020/80 plus continues to provide high accuracy timing based upon the disciplined oscillator configuration during this holdover period. The units are offered with a choice of disciplined oscillator module to suit the Holdover time and frequency demands of the application and can be selected using the following chart.

Oscillator type	Stability per °C	Performance while disciplined						Holdover accuracy at constant temperature after loss of reference		
		Averaging Time Error						Time	Frequency	
		1s	10s	100s	1000s	10000s	1 Day	1 Day	1 Day	3 Days
TCXO	1.5×10^{-8}	2×10^{-9}	2×10^{-9}	5×10^{-10}	5×10^{-10}	6×10^{-11}	1×10^{-12}	<2 ms	< 2×10^{-8}	< 3×10^{-8}
OCXO	1.0×10^{-11}	5×10^{-12}	3×10^{-12}	1×10^{-11}	1×10^{-11}	3×10^{-12}	1×10^{-12}	<8 µs	< 2×10^{-9}	< 4×10^{-9}
Rubidium	7×10^{-12}	3×10^{-11}	8×10^{-12}	3×10^{-12}	3×10^{-12}	2×10^{-12}	8×10^{-13}	<1 µs	< 1.0×10^{-11}	< 1.5×10^{-11}



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SPECIFICATIONS	
FEATURE	SPECIFICATIONS
GNSS - Synchronisation	
Receiver	C/A Code L1-1575MHz - 12 parallel channels Acquisition time from cold < 5 minutes typical
Timing Accuracy	+/- 50ns On Time to UTC : 1 PPS PTP Slaves : < 100ns to UTC
IEEE 1588v2 (PTP) - Synchronisation	
PTP Slave	Capable of precision synchronisation to received PTP packets. Unicast / Multicast Operation : One step / two step operation
Alternate Source Synchronisation	
IRIG-B	50 Ohm BNC
NTP (Network Time Protocol)	NTP v3 RFC 1305
Outputs	
1PPS	2.5Vpp +/- 0.1V into 50 Ohm load - BNC
10 MHz sinusoidal phase aligned +/- 100ns to 1PPS	1.0Vrms into 50 Ohm load - BNC
NTP (Network Time Protocol) - Up to 1ms accuracy	NTP v3 RFC 1305 : RJ45 10/100BaseT (via DCN port)
IRIG-B	Range of selectable outputs including IEEE1344 extension - 50 Ohm BNC
Timing / Frequency Holdover Accuracy	
1PPS	+/- 50ns (30ns RMS) when locked to GPS
PTP Timing	Better than 1us possible (network dependant)
PTP Frequency	Better than 1 part per billion possible (network dependant)
Platform Technology	
Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1X for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 1588 Std 2002 (PTPv1) IEEE 1588 Std 2008 (PTPv2) RFC 4330 NTP
MAC Table	8192 MAC Addresses
Priority Queues	4
Switch Properties	Store-and-forward and full wire speed on all ports
Security Features	Enable/disable ports, MAC based port security Port based network access control (802.1x) VLAN (802.1Q) to segregate and secure network traffic Radius centralized password management SNMPv3 encrypted authentication and access security
Network Redundancy Management	OnTime-Ring STP/RSTP/MSTP Management HTTP, telnet, CLI and SNMP v1/v2/v3 or IPSet tool. iNET ready; iNET MIB v0.8.5 supported.
Other Protocols	Multicast filtering based on: - IGMP snooping v1, v2 or v3 - Static multicast filter setting - Up to 1024 multicast filters can be active Port rate limiting TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP Port configuration, status, statistics, monitoring, security
Console Ports	2 x RS-232 in RJ45 connector – service port for PTP- and switch CPUs. Baud rate setting: 9600bps, 8, N, 1

PTP8020/80 - PTP GRANDMASTER, BOUNDARY & TRANSPARENT CLOCKS

SPECIFICATIONS Continued..

FEATURE	SPECIFICATIONS
IEEE 1588	
PTP Clock Modes	Grandmaster Clock, Transparent Clock, Slave Clock
PTP Versions	Both PTPv1 and PTPv2 (only PTPv2 for TC-STND)
Delay Mechanisms	End-to-End(E2E) or Peer-to- Peer (P2P) (only E2E for TCSTND)
1 step- or 2 step clock	Both (only 1 step clock for TC-STND)
PTP version translation	PTPv1 to/from PTPv2 (not supported on TC-STND)
Accuracy across network boundaries	20ns
AC Universal Power Supplies	
Input Range	95VAC - 265VAC 50/60Hz - Dual Redundant, Hot Swappable
Power Consumption	20 Watts
Mechanical	
Size	19-inch rack mounting 1U high, ETSI Rack fixings 443.7(W) x 260(D) x 44(H) mm (17.47 x 10.24 x 1.73 inch.)
Weight	2.5 kg
Enclosure	IP30 Aluminium Case
Environment	
Operating Temperature Range	[-40°F to 158°F] / [-40°C to 70°C]
Storage Temperature Range	[-40°F to 185°F] / [-40°C to 85°C]
Humidity	0 - 95% Non Condensing
Approvals - CE Compliant	Emissions to EN55022 as EN55024 FCC Part 15B, Class A Immunity to To EN 50082-1 as EN61000-4-2 ESD, IEC 801-3 HF Field, IEC 801-4 Burst
Product Build Variants	
PTP Ethernet Ports	PTP8020 - 2 Ports PTP8080 - 8 Ports
Oscillator Options	PTP8020 - TCXO Pt No : 035001000 PTP8020 - OCXO Pt No : 035001001 PTP8020 - Rubidium Pt No : 035001002 PTP8080 - TCXO Pt No : 035001800 PTP8080 - OCXO Pt No : 035001801 PTP8080 - Rubidium Pt No : 035001802
PTP Transparent Clock Only	PTP8080 - 8 Ports Pt No : 035000501
Additional Product Options	
SFP-1000BASE-SX	1000 Mbps fiber transceiver, LC–connector, 850nm, multi mode, 550m
SFP-1000BASE-LX	1000 Mbps fiber transceiver, LC–connector 1310nm, single mode, 10km
SFP-1000BASE-LHX	1000 Mbps fiber transceiver, LC–connector 1310nm, single mode, 30km
GPS Cable	GPS cable 2/10 meters with female N- and male BNC connectors
GPS Cable	GPS cable 10 meters with female N connectors (relevant in case surge arrester is used)
GPS Antenna	GPS antenna with male N connector
GPS Surge Arrester	Huber +Suhner surge arrester with female N connector.



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Sales Contacts and Global Representatives

TFS UK Head Office

Mrs Laura Cain
 Sales Coordinator
 TFS, Witham, CM8 3AL, UK
 Tel : +44 (0) 1376 514114
 laura.cain@timefreq.com

Europe, Middle East, Africa, Australia

Mr David Wright
 Director of Sales, Europe, Middle East,
 Africa, Australia
 Tel : +44 (0) 1694 722891
 dwright@timefreq.com

Asia, China, India, Japan

Mr Neil Pitman
 Director of Sales - Asia
 China, India, Japan
 Mobile : +44 (0) 7973 859342
 neil.pitman@timefreq.com

Austria, Germany & Switzerland Semic RF Electronic GmbH <i>Contact : Wolfgang Gruber</i> Tel: +0049 89 614 1520 Email: sales@semic.de Web : www.semic.de	Israel IES Electronics Agencies (1986) Ltd <i>Contact : Avi Nataf</i> Tel: +00972 37530700 Email: info@nisko-ies.com Web : www.nisko-ies.com	Philippines Imaginet International Inc <i>Contact : Mr Blair Duncan</i> Tel: +63 2 895 9755 / Fax : +63 2 895 9766 Email: blair@imagnet.com.ph Web : www.imagnet.com.ph
Australia & New Zealand Unitronix <i>Contact : Tim Marshall</i> Tel: +0061 02 4977 3511 Email: sales@unitronix.com.au Web : www.unitronix.com.au	Italy Millimetrica RF & Microwave Components SRL <i>Contact : Aldo Cagno</i> Tel: +0039 011 317 9910 Email: acagno@millimetrica.it Web : www.millimetrica.it	Singapore PROGRESO Networks (S) Pte Ltd <i>Contact : Victor Tang</i> Tel: +65 6509 9600 / Mobile +65 9735 1700 Email: victor@progreso.com.sg Web: www.progreso.com.sg
Brazil Sigtron Instrumentos e Servicos Ltda <i>Contact : Eduardo Strafacci</i> Tel: +0055 11 5031 7359 Email: eduardo@sigtron.com.br Web : http://sigtron.com.br/	Japan Nacelle Co Ltd <i>Contact : Mr Hisato Tadokoro</i> Tel : +81 3 5921 5099 Email : tadokoro@nacelle.co.jp Web : www.nacelle.co.jp	Thailand CSG Solution (Thailand) Company Ltd <i>Contact : Mr Chinnaret Kusathisiriphan</i> Tel: +66 2 575 2971 / Mobile +66 94 951 6524 Email: chinnaretk@csgs.co.th Web: www.csgs.co.th
China, Hong Kong & Macau Spectrum & Master Comms. Technologies <i>Contact : Mr William Lai</i> Tel: +852 2529 1111 / Mobile +852 9378 9271 Email: smcthk@netvigator.com	Korea ETOOB <i>Contact : Jaydon Lee</i> Tel : +82-2-6677-3409 Email : jaydon.lee@etooob.co.kr Web : www.etooob.co.kr	Turkey Merit Elektronik <i>Contact : Levent Celebi</i> Tel: +0090 312 472 7495 Email: leventc@meritelektronik.com.tr Web : www.meritelektronik.com.tr
Indochina (Vietnam, Laos, Cambodia) Hanova JSC <i>Contact : Mr Hai Le</i> Tel: +84 91 351 4905 Email: hai.le@hanova.vn Web : www.hanova.vn	Malaysia Alam Sinergi Teknik Sdn. Bhd. <i>Contact : Mr HH Chew</i> Tel: +60 3 7847 5925 / Mobile: +60 13 5131068 Email: hhchew@alamsinergitekNIK.com	South Africa Satellite 2000 Systems International Inc <i>Contact : Fred Joubert</i> Tel: +001 818 991 9794 Email: sales@sat-2k.com Web : www.sat-2k.com
India PDAC Microsystems Pvt Ltd <i>Contact : Mr Pradeep Dhar</i> Tel: +91 40 40247626 / Mobile +91 80082 95670 Email: pradeep@pdac.in Web : www.pdac.in	North America : USA & CANADA Brandywine Communications Inc. Tel: +1 877 367 7962 Fax: +1 714 755 0175 Email: info@brandywinecomm.com Web : www.brandywinecomm.com	U.A.E. Zener Fire & Security LLC <i>Contact : Ranjith Nambiar</i> Tel: +0021321548618 Email: ranjith@zenerfire.com Web : www.zenerfire.com
Janus Trading Co <i>Contact : Mr Santosh Krishnan</i> Tel: +91 124 408 6641 Email: santosh@januscorp.in Web : www.januscorp.in	North Africa, Mauritania, Morocco, Tunisia, Algeria, Libya, Egypt, Chad, Mali ProComSat <i>Contact : Hussein Ait Si Selmi</i> Tel: +0021321548618 Email: hussein@procomsat.com Web : www.procomsat.com	
Signowave Solutions Private Limited <i>Contact : Santosh Kulkarni</i> Tel : +91 40 6717 2356 / Mobile : +91 70327 09060 Email: santosh.kulkarni@signowave.com Web : www.signowave.com	Spain & Portugal Tecnologia GPS S.A. <i>Contact : Jose Luis Estaban</i> Tel: +34 91 323 72 30 Email: comercial@tecnogps.es Web : www.tecnogps.es	

tfs Time & Frequency Solutions

25 Eastways, Witham, Essex, CM8 3AL, UK
 Phone +44 (0) 1376 514114 | Fax +44 (0) 1376 516116
 Email : enquiries@timefreq.com

brandywine communications

153 Warner Ave, Tustin, CA 92780, USA
 Phone +1 714 755 1050
 Email : Info@brandywinecomm.com

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