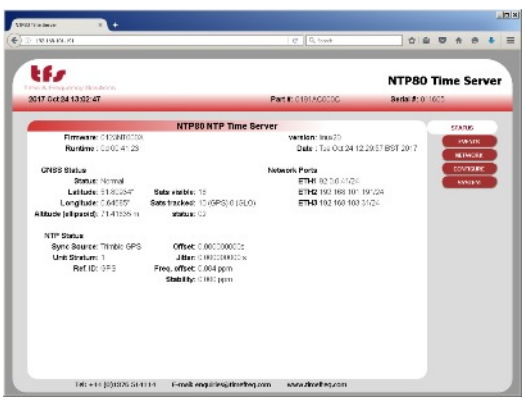
NTP80 PLUS - TRIPLE-PORT NETWORK TIME SERVER

A secure Stratum 1 GPS based

Triple Port NTP Time Server Unit



NSF-ISR Registered to AS9100 (with ISO 9001)

ANAB ACCREDITED ISO/IEC 17025 ANSI/NCSL Z540-1

AS9100D Certificate Number : C0210021-AS3

JOSCAR

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Product Overview

This Stratum 1 GNSS/GPS multi-network NTP Master time clock system is an advanced, cyber secure, high precision master clock timing platform that is commonly specified for use in critical network timing applications that depend upon a reliable, quality time standard.

Built to demanding AS9100D aerospace quality standards, the unit offers three truly independent and isolated NTP network ports, each of which can be individually configured for network security and access levels.

The unit is readily configured as a Stratum 1 Master Time Clock reference server or as a Peer to Peer sub-master client in order to form a multi-network distributed time system.

Options include a choice of TCXO, OCXO or Rubidium oscillators together with a choice of standard or long distance antennae. Constellation options are user selectable via the 32 channel C/A GNSS/GPS antenna covering GPS, GLONASS & BEIDOU combinations.
Alternatively and instead of GNSS, there is also an IRIG & NASA36 sync option available.

Typical Applications

The NTP80 Plus is commonly specified where high reliability and cyber security are key considerations in the network application.

These high integrity units are common place and thoroughly proven worldwide in network timing applications such as airports, rail/transit networks, financial institutions and exploration installations where traceable, precision time stamping and time distribution is required.

The robust design and unrivalled build quality delivers exceptional performance and trouble free product field longevity.

Key Feature Summary

Master Clock

- 32 Channel GNSS/GPS receiver synchronised - Standard and long Distance Antenna options
- Constellation selections : GPS, GPS+GLONASS, GPS+BEIDOU, GLONASS, BEIDOU
- TCXO, OCXO and Rubidium disciplined oscillator options
- Alternative IRIG time synchronisation option available
- 3 Fully isolated, secure and independent NTP ports supporting up to 1500 clients
- Stratum 1 Triple port NTP Server mode
- Peer-to-Peer client mode - Sub master clock operation and NTP distribution mode
- Client NTP system accuracy within 50 µs to UTC
- Automatic holdover switching
- 1pps output - 100ns accuracy to UTC On Time Sync Signal
- Configurable Serial Time Code Output via RS232/ RS422 port
- Non-volatile internal event log

Network Interfaces

- NTP Version 3 [RFC 1305], NTP Version 4 [RFC5905], Also SNTP compatible
- SNMP v1 & v2c - Enterprise MIB (RFC1155, RFC1157, RFC1213)
- Daytime Protocol (RFC867), Time Protocol (RFC 868)
- Ethernet/IEEE802.3
- Ipv4 (IPv6-ready)
- UDP/IP
- ICMP

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Product Features

Combining a Linux operating system with a high performance embedded single board controller, the NTP80 Plus delivers exceptional levels of cyber security and operational reliability across multi network connections.

A 32 channel C/A GPS receiver delivers high coverage and rapid GNSS sync lock (GPS/GLONASS/BEIDOU) while a physical 1PPS On Time signal output is made available at a rear panel BNC, allowing other equipment to be readily synchronised. Alternatively there is an option for IRIG & NASA 36 time code synchronisation, with automatic code detect.

A high contrast 40 x 2 LCD display and 5 button menu navigation console provides real time system information about the GNSS - GPS/GLONASS/BEIDOU satellite status, system sync status and fault conditions.

Each NTP port is effectively isolated in terms of physical connection and software network access, thereby ensuring maximum network security integrity. These ports can be individually configured to suit the application and network security constraints.

System setup and configuration is performed via a standard web browser that provides an intuitive graphical interface accessing the extensive feature set of the machine. Alternatively a text based and menu driven setup utility can be accessed after logging into the unit via Telnet or the RS232 configuration port.

The NTP80 Plus can be operated, monitored and logged using a Clock Management System. An extensive SNMP interface (SNMP V1, V2.c and V3) facilitates monitoring and update of all relevant system parameters , including operating system parameters, network interface statistics, GNSS/GPS and NTP status information and system configuration.

The NTP80 Plus is offered with a choice of three oscillator options, TCXO, OCXO & Rubidium atomic clock, which determine the maintained accuracy (holdover) of the unit in the event that the GNSS/GPS signal is lost or jammed.

Standard antenna options provide for unit to antenna distances of up to 150m (500ft), while a proprietary “head-end” antenna option allows operation up to distances of 500m (1600ft).

Oscillator Options

Synchronised to GNSS/GPS, the NTP80 Plus units provides an accuracy of < 100ns to UTC at 1 pulse per second (1PPS). Network Time Protocol client reception accuracy is typically < 50 µs to UTC.

If the timing signal e.g. GPS is lost for any reason, then the NTP80 plus continues to provide high accuracy timing based upon the disciplined oscillator configuration during this holdover period.

The NTP80 Plus is 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 Averaging Time Error						Holdover accuracy at constant temperature after loss of reference		
								Time	Frequency	
		1s	10s	100s	1000s	10000s	1 Day	1 Day	1 Day	3 Days
TCXO Pt No 180BC000N	$1.5x10^{-8}$	$2x10^{-9}$	$2x10^{-9}$	$5x10^{-10}$	$5x10^{-10}$	$6x10^{-11}$	$1x10^{-12}$	<2 ms	$<2.0x10^{-8}$	$<3.0x10^{-8}$
OCXO Pt No 180BC000S	$1.2x10^{-10}$	$3x10^{-10}$	$3x10^{-10}$	$3x10^{-12}$	$4x10^{-10}$	$5x10^{-11}$	$1x10^{-12}$	<60 µs	$<2x10^{-9}$	$<4x10^{-9}$
Rubidium Pt No 180BC000R	$7x10^{-12}$	$3x10^{-11}$	$8x10^{-12}$	$3x10^{-12}$	$3x10^{-12}$	$2x10^{-12}$	$8x10^{-13}$	<1 µs	$<1.0x10^{-11}$	$<1.5x10^{-11}$

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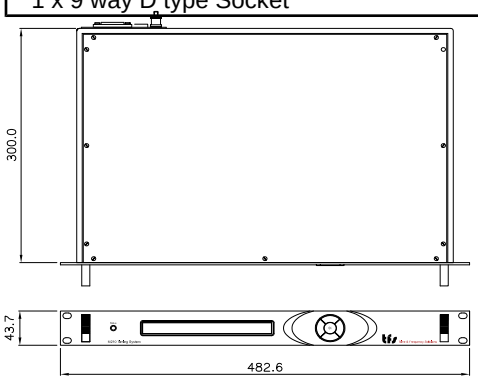
SPECIFICATIONS	
Timing	**Specification**
GNSS Constellation Selections	GPS+GLONASS, GPS+BEIDOU, GLONASS, BEIDOU
Timing Accuracy	100ns On Time to UTC : 1 PPS NTP Clients : < 50µs to UTC
IRIG & NASA 36 Sync Option (replaces GNSS)	Automatic detection of all AC IRIG codes + NASA 36 : Min 30mV pk-pk I/P
AC UNIVERSAL POWER SUPPLY	
Input voltage range	90-132 / 180-264 VAC 50/60Hz 60W - Fused at 3A anti surge
Connection	3 pin IEC Mains Lead
Approvals	VDE, UL - IEC950, EN60950, UL1950
MTBF	> 100,000 hrs
MECHANICAL	
Size	19-inch rack mounting 1U high 200mm deep
Weight	3 kg
Display	2 rows by 40 character LCD. Character height 5mm
Keyboard	5 button keyboard for equipment configuration & control.
Environment (Operation & Storage)	
Temperature:	-5°C to +50°C
Humidity	up to 95% RH (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
Connection Ports	
3 x RJ45	NTP Network 10/100BaseT
1 x 50 ohm BNC	1 PPS Sync
1 x 9 way D type Socket	RS232/RS422 Time code output and configuration port



Additional Options

The NTP80 is normally supplied with 30m RG58 cable and an Active GPS antenna with options available for alternative lengths and cable types.

For distances between unit and antenna exceeding 100 metres, a long distance antenna option is available to pair with the unit and to cater for distances up to 500m.

Company overview

Time and Frequency Solutions Limited is privately owned and operated by Brandywine Communications based in Tustin, California. The TFS factory based in Essex, U.K. provides an engineering, production, design and support function for TFS and Brandywine products sold and distributed throughout Europe, Australasia and the Far East.

Brandywine Communications own and operate a state of the art surface mount & conventional PCB manufacturing and assembly factory Santa Ana near the the Tustin Sales & R&D headquarters in California.

Both companies have a highly respected and long standing history in the design and development of precision time and frequency measurements products and systems. The combined strengths of both businesses give TFS & Brandywine an unrivalled portfolio and capability in the delivery of quality and value for their customers.

All product is manufactured and quality controlled to the aerospace enhanced version of ISO9001 - AS9100D