



## High precision time bridge

# DTS 4020.timebridge

The DTS 4020.timebridge serves as an interface between the IEEE1588 protocol (PTP slave) supplied across a packet network to traditional serial Time-of-Day (ToD), 1 PPS, 10MHz and IRIG B signals.

- Multi-purpose device due to the different time code and frequency outputs:
  - 1x Time of Day
  - 2x pulse/frequency/IRIG output
  - 1x IRIG-B/10MHz sinus

Your benefits using DTS 4020.timebridge:

- 2 completely separated LAN ports (2x RJ45):
  - synchronize to PTP on 1 port
    - 1- and 2-step slave
    - different profiles and domains
    - multicast/unicast
    - IPv4/IPv6/Layer 2
  - provide NTP on 2 ports (typically >10'000 requests/s on all 2 ports combined)

Applications:

- Telecom services
- Power utility
- Applications requiring Precise Timing delivered over a Packet Network

## DTS 4020.timebridge - Technical details

General specifications			
System	CPU	ARM Cortex dual core	
Housing	Dimensions (W x H x D)	221 x 43 x 252 mm (half rack)	With cap rail: H=51 mm With mounting brackets: W=483mm (19"), 1 HU
	Weight	ca. 2 kg	
	Options	19" mounting kit* DIN Cap Rail mounting kit*	
LAN interfaces	100/1000 MBit, RJ45	2	1 management port
Micro USB interface	For operation control, micro USB	1	
USB interface	For firmware update	1	
Power supply	Redundant power supply	✓	
	Supply 1	DC/DC power supply	24-60 VDC
	Supply 2 options	no second power supply	-
		DC/DC power supply*	24-60 VDC
	AC/DC power supply*	100-240 VAC	
	Power over Ethernet*		
Ambient temperature	at 10-90% relative humidity, without condensation	0 to 50°C	
Reference signal inputs			
	PTP Slave (E2E, P2P, 1-step, 2-step, Multicast, Unicast, Layer 2, IPv4/IPv6)	1	
	PTP profiles: default E2E, P2P, G.8275.1, G.8275.2		
	SyncE	1	
	Frequency/PPS	1	1PPS/10MHz
	NTP		future option
Reference signal outputs			
Network	NTP server	typically >10'000req/s	
Others	IRIG-B/10MHz sinus	1 analog output, 50 Ohms	
	Precision pulse/frequency/IRIG-B output	2 digital outputs	
	ToD (Time of Day) output / PPS	1	RJ45, CCSA (China mobile), 1PPS
Network interface			
	100/1000BaseT	2	
Network services			
	PTP slave IEEE1588-2008 (V2) 1 or 2-step	✓	1 x RJ45
	SyncE slave	✓	
	NTP V4 (V3 compatible) server	✓	
	NTP mode Server, Peer, Broadcast, Multicast	✓	
	SNTP	✓	
	MD5 authentication for NTP	✓	
	TIME, DAYTIME	✓	
	Telnet, SSH, FTP, SCP, SFTP - disengageable	✓	management port only
	SNMP Notifications (Traps)	V2c/V3	management port only
	SNMP Get, Put	V1/V2c/V3	management port only
	VLAN	✓	
IP configuration			
IPv4 & IPv6	Autoconfiguration	IPv6	
	static IP	IPv4, IPv6	
	DHCP	IPv4, IPv6	

\*at additional cost

Alarm I/O			
Electrical	Output: Relay contact	✓	
Network	Output: SNMP notifications (traps)	V2c/V3	management port only
	Output: Mail	✓	management port only
	Supervision possible with MOBA-NMS EXPERT (DSS)	✓	management port only future option
Oscillator			
	Hold over (after >24h synchronization) @ constant ambient temperature	<+/- 1ms/day (<0.01ppm)	
Accuracy			
Internal accuracy	PTP to internal time	typ. < +/- 50ns	
	PTP to NTP	typ. < +/- 100µs	
	PTP to IRIG-B (analog)	typ. < +/- 200µs	
	PTP to IRIG-B (digital)	typ. < +/- 200ns	
	Pulse/frequency output	typ. < +/- 200ns	
	SyncE	compatible	G.812, G.813
	PTP to Time of Day	typ. < +/- 100ns	
Operation control			
	MOBA-NMS	✓	management port only
	Telnet	✓	management port only
	SSH	✓	management port only
	SNMP (V2c/V3 get, put)	✓	management port only
	Micro USB (terminal)	✓	
	LEDs Alarm, Power 1, Power 2, Sync	✓	
Compliance			
	EMC: EN 50121-4, 61000-6-4, EN 61000-6-2	✓	
	Safety: IEC 62368	✓	
	CB	✓	
	IEEE 1588-2008	✓	
	NTP RFC 5905	✓	
	IEC 61850	✓	applicable for SNTP/NTP synchronization only

## DTS 4020.timebridge - Features

### PTP Slave

PTP Slave according to IEEE 1588 for high precision synchronization. In existing network infrastructure it provides a low cost upgrade enabling migration from a TDM to packet based timing and synchronization (e.g. Ethernet backhaul).

### Top performance for large networks

The high performance DTS 4020.timebridge can reply to more than 10'000 NTP and SNTP requests per second, which allows for the synchronization of several thousand clients.

### NTP authentication

The DTS 4020 supports NTP authentication for increased security, which allows the clients to verify the source of the received NTP packets.

### Safe and convenient operation

Operation over LAN via MOBA-NMS (SNMP), SSH or SNMP protocols is possible. SSH and SNMP (MD5 authentication and DES for encryption) enable a secured connection.

### Alarm indication

Alarms are reported via SNMP messages, e-mail or by alarm relay. Additionally, the alarm is indicated on the Alarm LED.



### ▲ Front view

- Power supply
- alarm relay contact
- pulse/frequency input
- 2x pulse/frequency/IRIG-B digital output
- pulse/frequency/IRIG-B analog output
- Time of Day (ToD) output, 1PPS
- USB input for firmware update
- LAN 2: PTP input / RJ45 100/1000MBit output
- LAN 1: management port / RJ45 100/1000MBit output
- Micro USB input for operation control