



High precision time server, grandmaster and PRC

DTS 4210.timecenter

The DTS 4210.timecenter is a combined time distribution and synchronization device with up to 16 network ports (IPv4/IPv6). With its high-precision and intelligent concept for redundant operation, it offers a high degree of reliability and availability.

Your benefits using DTS 4210.timecenter:

- Up to 16 completely separated LAN ports:
 - provides NTP in different networks (more than 5000 requests/s per port)
 - provides PTP in different networks
- Multi-purpose device due to the different time code outputs:
 - 4x E1
 - 4x DCF current loop output
 - 4x IRIG-B
- High degree of system redundancy by connecting two DTS 4210 via fiber-optic link:
 - high availability
 - master-slave operation with automatic switch over in case of an error
- High precision time:
 - Time reception from GPS, GLONASS or Beidou
 - Rubidium oscillator for holdover

DTS 4210.timecenter - Features

Time precision

Utmost accuracy is achieved with GPS synchronization. An intelligent time management ensures lasting high accuracy by continuously compensating quartz drift and aging.

The internal time is adjusted to the time reference (e.g. GPS) in one step or slowly shifted (in adjustable micro steps) to avoid any time leaps (e.g. after a longer loss of the time source).

Connectors



▲ Front view

Connectors:

- USB connector for software update, file upload to the time server (e.g. telegram files, time zone table...) and maintenance

LEDs: Power, alarm and synchronization.

Display: Time, date, status, alarm, IP...

Top performance for large networks

The high performance DTS 4210.timecenter can reply more than 5000 NTP and SNTP requests per second, which allows for the synchronization of several thousand clients.

▼ Rear view

Connectors:

- Power: Mains power connector, 2x DC power supply input
- Alarm: alarm relay contact
- Synch. outputs:
 - 4x E1
 - 8x serial RS 232 / RS 422 / RS 485 interfaces
 - 4x DCF current loop output
 - 4x IRIG-B
- LAN connectors
 - 8x RJ45 10/100/1000MBit
 - 4x RJ45 10/100MBit
 - 4x SFP
- GPS antenna connector BNC

NTP authentication

The DTS 4210 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), Telnet, SSH or SNMP protocols is possible. SSH and SNMP (MD5 authentication and DES for encryption) enable a secured connection. Special software is required for operation by SNMP protocol.

Fault indication

Alarms are reported via SNMP messages, e-mail or by alarm relay. Additionally, the display can be used to check the alarm state by pressing the red push button.



DTS 4210.timeserver - Redundant operation

Description

To avoid time deviation between two DTS 4210.timecenters, they can be linked via a fiber-optic connection by using two GBIC modules.

The two timecenters automatically negotiate their state as master or slave. The slave is always synchronized by the master. In case of a failure of the synchronization source (GPS or NTP), automatic swap between master and slave state will occur. The parameters for the swap can be configured. The "master" DTS time server always has the better NTP stratum level than the slave.

Possible synchronization sources

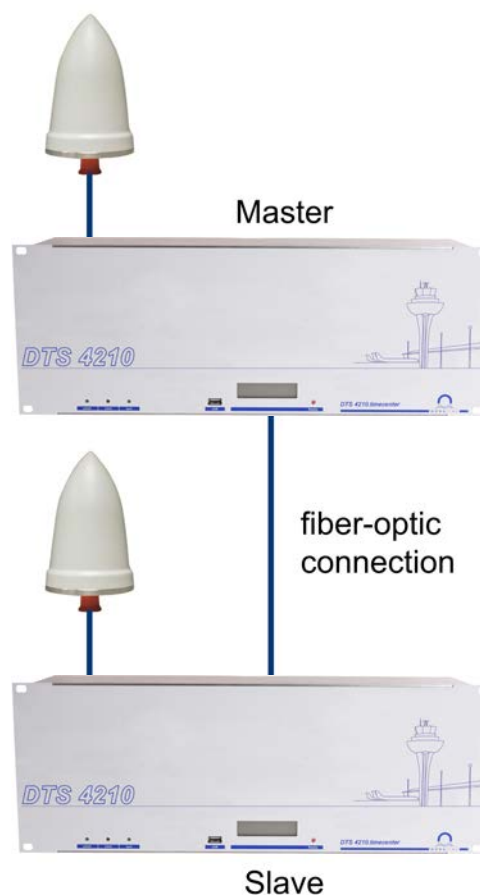
- 2 GPS receivers

Redundant power

The DTS 4210.timecenter has two monitored inputs for entirely redundant power supply. The stand-by power supply input is also monitored.

Possible power variants:

- 24 VDC, non-redundant
- 24 VDC + 24 VDC, redundant
- 230 VAC + 24 VDC, redundant



DTS 4210.timecenter - Technical details

| Specifications | | | |
|--------------------------|---|--|---|
| Architecture | Controller module | ARM Cortex module | FPGA included |
| | Oscillator | Rubidium | see oscillator options below |
| Housing | 19", 4 HU | ✓ | |
| Display | LCD, 2 lines, for status and time info | ✓ | |
| LAN interfaces | 10/100/1000 MBit, RJ45 | 8 | 2 are available for operation (SNMP, MOBA-NMS,...) |
| | 10/100 Mbit, RJ45 | 4 | 1 is available for operation (SNMP, MOBA-NMS,...) |
| | SFP (miniGBIC interface) | 4 | May be used for: -For redundant operation. Only available on 1 SFP, see redundant link. -Optical network for NTP -Additional network interface e.g. 100Mbit for NTP |
| USB interface | For firmware update | 1 | |
| Redundant link | For redundant operation of 2 corresponding DTS 4210 with master/slave negotiation | ✓ | Option to additional network port. See also LAN interfaces miniGBIC/SFP |
| Power supply | Redundant power supply (supply 1 and 2) | ✓ | |
| | Supply 1 (standard mains connector for 240VAC) | 240VAC or 22..29 VDC | |
| | Supply 2 | 22..29 VDC | |
| Ambient temperature | at 10-90% relative humidity, without condensation | 0 to 50°C | |
| Reference signal inputs | | | |
| | GPS RF input (for GPS Antenna, BNC connector) with internal GPS module.. GPS, Glonass, Beidou included. | 1 | |
| | Optical link from second DTS 4210.timecenter (SFP) | 1 | |
| Receivers / antennas | GPS Antenna (internal GPS module) | connected to GPS RF input | |
| Reference signal outputs | | | |
| Network | NTP server | >5000req/s | |
| | PTP Grandmaster (E2E, P2P, 1-step, 2-step, Unicast, Multicast, Layer 2) | over the 8 Gbit ports 1-step only over 4 Gbit ports | |
| | PTP profiles | default, utility | Optional: telecom |
| Others | IRIG-B (BNC) | 4 precision output, 50 Ohms (AM, DC connectors) | |
| | DCF 77 CL (Current loop) passive output (2 pin terminal) | 4 | |
| | Serial outputs with configurable time telegrams (5 pin terminal block) | 8 RS 232/422/485 RS 422: output only | |
| | E1 / 2.048MHz, G811, G.812, G813 according oscillator option, no protected output (1:1), no SSM, BNC | 4 | |
| Network interface | | | |
| | 10/100/1000BaseT | 8 | |
| | SFP for miniGBIC module 10/100/1000Base-T(X) or FX | 4 | |
| | 10/100Base-T | 4 | |
| Network services | | | |
| | PTP master IEEE1588-2008 (V2) 1 or 2-step | ✓ | 1 step only on 4 Gbit interfaces |
| | NTP V4 (V3 compatible) server | ✓ | |
| | NTP mode Server, Peer, Broadcast, Multicast | ✓ | |
| | SNTP | ✓ | |
| | MD5 authentication for NTP | ✓ | |
| | TIME, DAYTIME | ✓ | |
| | Telnet, SSH, FTP, SCP, SFTP - disengageable | ✓ | available only over 2 Gbit and 1 100Mbit LAN port |
| | SNMP Notifications (Traps) | V2c/V3 | available only over 2 Gbit and 1 100Mbit LAN port |
| | SNMP Get, Put | V1/V2c/V3 | available only over 2 Gbit and 1 100Mbit LAN port |
| | IP V6 support | ✓ | |

| IP configuration | | | |
|-------------------------------|--|--|---|
| | DHCP | ✓ | |
| | static IP | ✓ | |
| Alarm I/O | | | |
| | Output: Relay contact | ✓ | |
| | Output: SNMP notifications (traps) | V2c/V3 | available only over 2 Gbit and 1 100MBit LAN port |
| | Output: Mail | ✓ | |
| | Supervision with MOBA-NMS / DSS possible | ✓ | DSS future extension possible |
| Oscillator | | | |
| | Rubidium | 3*10 ⁻¹¹ @ 1sec 1.6*10 ⁻¹¹ @ 10sec 8*10 ⁻¹² @ 100sec 2.5*10 ⁻¹¹ per day 1*10 ⁻¹⁰ per month 1*10 ⁻⁹ per year | Hold over (after >7days synchronization) |
| Accuracy | | | |
| GPS RF input, internal module | GPS to NTP | typ. < +/- 0.1ms | |
| | GPS to PTP | typ. < +/- 0.00025ms | |
| | GPS to DCF | typ. < +/- 0.005ms | |
| | GPS to serial output | typ. < +/- 10ms (jitter 10ms) | |
| | GPS to IRIG (analog) | typ. < +/- 0.2ms | |
| | GPS to IRIG (digital) | typ. < +/- 0.001ms | |
| Redundant link | Master to slave (redundant operation) | typ. < +/- 0.00025ms | |
| Operation control | | | |
| | MOBA-NMS | ✓ | available only over 2 Gbit and 1 100MBit LAN port |
| | Telnet | ✓ | available only over 2 Gbit and 1 100MBit LAN port |
| | SSH | ✓ | available only over 2 Gbit and 1 100MBit LAN port |
| | SNMP (V2c/V3 get, put) | ✓ | available only over 2 Gbit and 1 100MBit LAN port |
| | LED Alarm | ✓ | |
| | LED Power | ✓ | |
| | LED Sync | ✓ | |
| Compliance | | | |
| | EMC: EN 50121-4, 61000-6-4, EN 61000-6-2 | ✓ | |
| | Safety: IEC 60950-1 | ✓ | |
| | G.703 | ✓ | |
| | G.811, G.812, G.813 | ✓ | |
| | IEEE 1588-2008 | ✓ | |