

## DTS 4160.Grandmaster for NTP and PTP

Hint: Refer to leaflet for more detailed information.

### Additional parts and options:

PCTel antenna: GNSS Antenna  
MOBA-NMS: configuration, management and supervision software

The **DTS 4160** is contained in a 19 " housing for rack mounting (1U). Main information, such as current time & date, synchronisation status, current network IP-address, power & alarm status, are displayed by LED's and on a LCD display (2 lines of 20 characters).

The DTS 4160 is PTP Grandmaster and NTP Server in order to provide PTP (precision time protocol) and NTP (network time protocol) time distribution services in unicast or multicast mode over Ethernet LAN / WAN network. It can operate as a NTP time zone server by providing up to 20 time zones into encoded NTP-frame for world time clock synchronisation.

In addition it provides the following synchronisation outputs: 2x RS232/RS422/RS485 configurable time telegram, 1x E1, 1x IRIG-B in both analog and DC level and 2x programmable pulse/frequencies.

The network parameters (IP and gateway addresses) of the master clock can be managed by DHCP protocol (dynamic) from a server or by SSH protocols (static).

Upon login/password identification, the master clock supports management and configuration through network remote access by MOBA-NMS software or via SNMP & encrypted SSH protocols. In addition a service port located on the front panel is available for direct configuration access.

The DTS 4160.Grandmaster can be synchronized by GPS, PTP, DCF, redundant Link or E1. After synchronization, it can also operate in stand-alone mode with phenomenal holdover accuracy thanks an embedded OCXO or Rubidium oscillator (in case of time source fail).

High degree of system redundancy by connecting two DTS 4160 via fibre-optic link:

- high availability
- master-slave operation with automatic switch over in case of an error

The DTS 4160.Grandmaster manage automatic and autonomous alarm notification by SNMP (alarm and alive traps), SMTP (e-mail) protocols and over embedded alarm relay.

Outputs:

- ⇒ NTP server (on all 4 LAN ports , > 10'000 req/s totally)
- ⇒ PTP Grandmaster (Multicast, Unicast, Layer 2, IPv4/IPv6, E2E, P2P, 1-step, 2-step) (2 x RJ45 and 1 x SFP)
- ⇒ PTP profiles: default E2E, P2P, utility (61850-9-3), telecom, IEEE 802.1AS
- ⇒ SyncE
- ⇒ 1x E1 / 2.048 MHz, G811, G812, G813 compatible (BNC and RJ48)
- ⇒ 1x IRIG-B, with analogue output (BNC) and with DC level output (spring terminal)
- ⇒ 2x programmable pulse/frequency high precision outputs (2 x BNC)
- ⇒ 2x serial interface RS 232 / 422 / 485 for configurable serial time telegram
- ⇒ 1x DCF current loop
- ⇒ 1x alarm: potential free opening contact (embedded alarm relay)

Network Interface: ⇒ 3x 100 /1000 Mbit (RJ-45 Ethernet)  
⇒ 1x SFP (miniGBIC interface) (e.g. optical LAN interface for redundant link)

Synchronisation: GPS, PTP, DCF, opt. Link from second DTS 4160 and E1  
Operation: Communication over LAN/WAN (MOBA-NMS, SNMP, SSH or Telnet) or via serial interface RS 232 (PC terminal)

Monitoring: LEDs: power, synchronization, alarm. Push button allowing to scroll information (status and alarm) on the LCD display.

Housing: metal 19 "rack mounting, like IT equipment

Dimensions: W x H x D in mm: 483 x 44 x 125

Power supply: Redundant: 1x 90-240 VAC, 50/60 Hz and 2x 24 VDC, +20% / - 10%, max. 20 W