# Time server Overview

| | | DTS 4801.masterclock<br>DTS 4802.masterclock<br>DTS 4806.masterclock | NTS | DTS 4128.timeserver | DTS 4132.timeserver | DTS 4135.timeserver | DTS 4136.timeserver | DTS 4138.timeserver | DTS 4148.grandmaster | DTS 4150.grandmaster | DTS 4160.grandmaster | DTS 4210.timecenter |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Housing** | 19", 1 HE | √ | √ (Option) | √ | √ | √ | √ | √ | √ | √ | √ | 4 HE |
| | Table case | | √ | | | | | | | | | |
| **Power supply** | Redundant power supply (mains/DC or DC/DC) | dual PS | | | √ | √ | √ | √ | √ | √ | √ | √ |
| | Mains | 85..265 VAC | Ext. PS included | | 90..240 VAC | 90..240 VAC | 90..240 VAC | | | 90..240 VAC | 90..240 VAC | 2 x 90..240 VAC |
| | DC | 2 x 22..29 VDC | 1 x 22..29 VDC | 1 x 22..29 VDC | 2x 22..29 VDC | 2 x 22..29 VDC | 2 x 22..29 VDC | 2 x 22..29 VDC | 2 x 22..29 VDC | 1 x 22..29 VDC | 2 x 22..29 VDC | 2 x 22..29 VDC |
| **External time source** | NTP / SNTP servers | √ | √ | √ | √ | √ | √ | √ | √ | √ | | |
| | DCF 77 (DCF 450, DCF 4500) | √ | √ | √ | √ | √ | √ | √ | √ | | | |
| | GPS Antenna with internal module | | | | | | | | | √ | √ | √ |
| | GPS 4500, GNSS 3000, GNSS 4500 | √ | √ | √ | √ | √ | √ | √ | √ | (√) limited accuracy | (√) limited accuracy | (√) limited accuracy |
| | PTP | | | | | | | | | √ | √ | √ |
| | E1 | | | | | | | | | | √ | √ |
| | IRIG-B | | | | | √ | √ | √ | √ | | | |
| **Time signal outputs** | IRIG, AFNOR, DCF-FSK | option / - / -<br>(built in IF 488) | | | | 2<br>precison output,<br>50 Ohms | 2<br>precison output,<br>50 Ohms | 1<br>precison output,<br>50 Ohms | 1<br>precison output,<br>50 Ohms | | 1<br>precison output,<br>50 Ohms | 4<br>precison output,<br>50 Ohms |
| | NTP slave clocks + timezone server | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | PTP Grandmaster (E2E, P2P, 1-step, 2-step, | | | | | | | | only 2-step | √ | √ | √ |
| | DCF current loop (CL) passive output | 1 (+pulse) | 1 (+pulse) | 1 | 1 | 1 | 1 | 1 | 1 | 1 (+pulse) | 1 | 4 |
| | Precision pulse/frequency/DCF output on RS422 and CL | | | | 1 | 2 | 2 | 1 | 1 | | 1 | 4 |
| | Serial outputs with configurable time telegrams:<br>RS 232/422/485 (RS422: output only) | 1<br>4802/6: RS232 only | | | 2 | 2 | 2 | 1 | 1 | | 2 | 8 |
| | E1/2.048MHz, G.811, G.812, G.813 according oscillator | | | | | | | | | | 1 | 4 |
| | SynchE | | | | | | | | | √ | √ | √ |
| | 10 MHz (BNC connector) | | | | | | | | | | 1 | 4 |
| | T1 / 1.544 MHz option to E1 output | | | | | | | | | | future option | future option |
| | MOBALine or polarized Impulses (Impulse line) | 1 / 2 / 6 | | | 2 | | | | | | | |
| **Network interface** | SFP for miniGBIC module 100/1000Base-T(X) or FX | | | | | | | | | 1 | 1 | 4 |
| | 10BaseT / 100BaseTX | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | | | |
| | 100BaseTX / 1000BaseT | | | | | | | | | 3 | 3 | 12 |
| **Network services** | NTP server, (S)NTP client req. per s (typical 99% answered, long term) | 3000 | 250 | 1500 | 1500 / device | 3000 | 3000 | 1500 / device | 1500 / device | 10000 / device | 10000 / device | 5000 / port |
| | NTP server, max. (S)NTP client req. per s (burst, short time) | 10000 | - | | - | 15000 | 15000 | - | - | - | - | - |
| | NTP client (configurable timeserves) | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | future option | future option |
| | NTP V4 (V3 compatibel) | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| | NTP modes: Server, Peer, Broadcast, Multicast | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| | NTP MD5 authentication | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| | SNTP | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| | PTP 1588-2008 Grandmaster | | | | | | | | √ | √ | √ | √ |
| | SyncE | | | | | | | | | √ | √ | √ |
| | TIME, DAYTIME | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| | Telnet, SSH, FTP - disengageable | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| | SNMP Notifications | V1/V2c | V1/V2c | V1/V2c | V1/V2c | V1/V2c | V1/V2c | V1/V2c | V1/V2c | V1/V2c | V1/V2c | V1/V2c |
| | SNMP Get, Put | V1/V2c/V3 | V1/V2c/V3 | V1/V2c/V3 | V1/V2c/V3 | V1/V2c/V3 | V1/V2c/V3 | V1/V2c/V3 | V1/V2c/V3 | V1/V2c/V3 | V1/V2c/V3 | V1/V2c/V3 |
| | IP V6 support | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| **IP configuration** | DHCP | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| | static IP | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| | LAG | | | | | | | | | √ | √ | √ |
| | VLAN, QOS | | | | | | | | | √ | √ | √ |
| **GBIC-Link** | for redundant operation, with master - slave negotiation | | | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| **Accuracy** | GNSS to Internal Time (GNSS module & good satellite reception) | | | | | | | | | 30ns | 30ns | 30ns |
| | GPS* to NTP Server | typ. < +/- 0.5ms | typ. < +/- 0.5ms | typ. < +/- 0.1ms | typ. < +/- 0.1ms | typ. < +/- 0.1ms | typ. < +/- 0.1ms | typ. < +/- 0.1ms | typ. < +/- 0.1ms | typ. < +/- 0.1ms | typ. < +/- 0.1ms | typ. < +/- 0.1ms |
| | GPS* to PTP | | | | | | | | typ. < +/- 0.01ms | typ. < +/- 0.00025ms | typ. < +/- 0.00025ms | typ. < +/- 0.00025ms |
| | GPS* to DCF output | typ. < +/- 1ms | typ. < +/- 1ms | typ. < +/- 0.01ms | typ. < +/- 0.01ms | typ. < +/- 0.01ms | typ. < +/- 0.01ms | typ. < +/- 0.01ms | typ. < +/- 0.01ms | typ. < +/- 0.005ms | typ. < +/- 0.005ms | typ. < +/- 0.005ms |
| | GPS* to Puls / frequency output | typ. < +/- 1ms | | | typ. < +/- 0.01ms | typ. < +/- 0.01ms | typ. < +/- 0.01ms | typ. < +/- 0.01ms | typ. < +/- 0.01ms | typ. < +/- 1ms | typ. < +/- 0.005ms | typ. < +/- 0.005ms |
| | GPS* to IRIG (modulated) | Opt.: typ. < +/- 15ms | | | | < 0.2ms | < 0.2ms | < 0.2ms | < 0.2ms | | < 0.2ms | < 0.2ms |
| | GPS* to IRIG (digital) | | | | | < 0.01ms | < 0.01ms | < 0.01ms | < 0.01ms | | < 0.001ms | < 0.001ms |
| | GPS* to serial output | typ. < +/- 10ms | | | typ. < +/- 10ms | typ. < +/- 10ms | typ. < +/- 10ms | typ. < +/- 10ms | typ. < +/- 10ms | | typ. < +/- 10ms | typ. < +/- 10ms |
| | Master to slave (redundant operation) | | | typ. < +/- 0.001ms | typ. < +/- 0.001ms | typ. < +/- 0.001ms | typ. < +/- 0.001ms | typ. < +/- 0.001ms | typ. < +/- 0.001ms | | typ. < +/- 0.00025ms | typ. < +/- 0.00025ms |
| | Quarz Oscillator | standard | standard | TCXO | TCXO | TCXO | OCXO | TCXO | OCXO | TCXO | OCXO/Rubidium<br>(Option) | Rubidium |
| | Hold over (after >24h synchronisation) @ 20°C+/- 5°C | < +/- 100ms/d | < +/- 100ms/d | < +/- 10ms/d | < +/- 10ms/d | < +/- 10ms/d | < +/- 1ms/d | < +/- 10ms/d | < +/- 1ms/d | < +/- 1ms/d | depending on oscillator | 3*10-11 |
| **RTC** | Real Time Clock (disengageable) | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | always on | 1 | 1 |
| **Display** | 2 lines, 16 character each | √ | | | √ | √ | √ | √ | √ | 2 lines, 24 character | 2 lines, 20 character | 2 lines, 20 character |
| **Operation control** | MOBA-NMS | √ | √ (N/A for NTS IT) | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| | Telnet | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| | SSH | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| | RS 232 (PC-Terminal) | √ | | √ | √ | √ | √ | | | √ | √ | √ |
| | SNMP (V2c/V3 Get, Put) | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| | Webinterface | | only NTS IT | | | | | | | | | |
| | LED for alarm, synch, power | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| **USB** | for update | √ | | | √ | √ | √ | √ | √ | √ | √ | √ |
| **Alarm output** | Relais contact | √ | | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| | SNMP Notifications | V1/V2c | V1/V2c | V1/V2c | V1/V2c | V1/V2c | V1/V2c | V1/V2c | V1/V2c | V2c | V1/V2c | V1/V2c |
| | E-Mail | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| **Alarm input** | control inputs | 4 | | | 1 | 1 | 1 | 1 | 1 | | | |

* DCF input except for DTS 4160 and DTS 4210

(√) future option