

The new multipurpose time server for the LAN and NTP-based Distributed Time System by MOBATIME

DTS 4138.timeserver

The DTS 4138.timeserver sets new standards as a time reference for NTP clients in medium and large networks (Ethernet/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 4138.timeserver:

- Features two completely separated LAN ports:
  - provides NTP in two different networks
  - can be synchronized over one LAN port and synchronize a separated network over the other LAN port
- High degree of system redundancy due to redundant operation via fiber-optic link:
  - high availability
  - master-slave operation with automatic switch over in case of an error
- Multipurpose device due to the different time code outputs: NTP, IRIG/AFNOR, serial RS232/RS485, DCF, high accurate pulses

Can be used in many different applications due to its multiple functions.

DTS 4138.timeserver - the innovative and precise time reference for LAN-based devices

Time precision

Best accuracy can be achieved by synchronizing the DTS 4138.timeserver via a connected GPS receiver, and thanks to an intelligent time management. 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). To achieve utmost accuracy, the quartz drift and aging is continuously compensated.

Top performance - even for large networks

The high performance DTS 4138.timeserver can reply more than 250 NTP and SNTP requests per second. It can also work as an NTP time reference for a network, being synchronized from a superior NTP-Server in a physically separated network (client and server at the same time).

NTP authentication

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



Front view

Connectors:

- 2 LAN connectors RJ 45, 10/100 MBit Ethernet
- USB connector for software update, file upload to the time server (e.g. telegram files, time zone table...) and maintenance

LEDs: Power, alarm, synchronization and network transmission control.

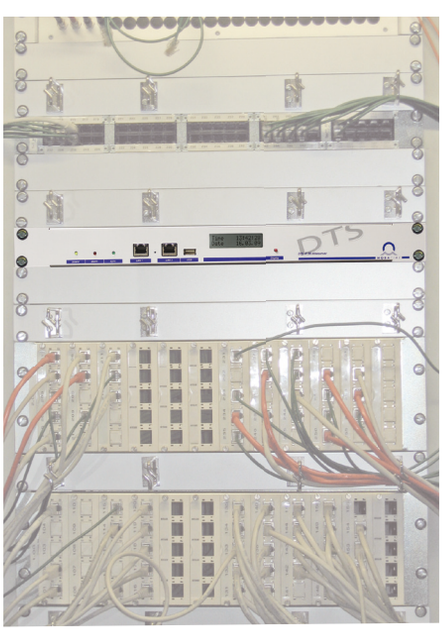
Display: Time, date, status, alarm, IP...



Rear view

Connectors:

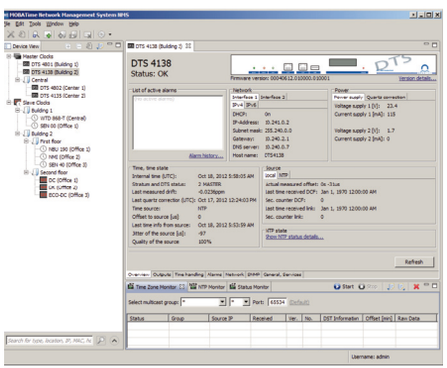
- Power: 2 DC power supply inputs, DC output (e.g. for GPS)
- Alarm: alarm relay contact, alarm input
- Synch. inputs: IRIG-B/AFNOR input (BNC), DCF current loop
- Synch. outputs: DCF current loop, DTS link (GBIC-module)
- Serial: 1 RS 232/485, for script file programmable serial message
- IRIG: 1 IRIG-B/AFNOR output (BNC)
- IRIG DC: 1 DC level IRIG-B/AFNOR output (RS 422 & opto coupler)
- Pulses: 1 DCF or pulse/frequency output (RS 422 & opto coupler)



DTS device mounted in a 19" IT-Rack

DTS 4138.timeserver - the time source for LAN-based clock and time distribution systems

The DTS 4138.timeserver is a versatile time reference in several respects.
On the one hand, it relays the external time signals with high precision and reliability directly to all NTP unicast (IP based) or multicast devices, such as slave clocks with NTP movement (e.g. NBU 190, ...), digital clocks, and digital information displays with NTP synchronization.
On the other hand, it can also synchronize the NMI (Network MOBALine Interface), which can synchronize master clocks and slave clocks with MOBALine and DCF 77 output.
Even PCs/workstations, photocopiers, printers, fax equipment, time recording terminals, access control systems, central fire alarm systems, image and sound recording equipment, and many other kind of clients in the network can be directly synchronized by means of the network time protocol (NTP).



DTS 4138.timeserver - greatest priority for accuracy and reliability

Redundant NTP server operation

To avoid time deviation between two DTS 4138.timeservers, they can be linked via a fiber-optic connection by using two GBIC modules.

The two timeservers automatically negotiate their state as master or slave. The slave is always synchronized by the master. In case of GPS failure, 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.

Redundant power

The DTS 4138.timeserver has two monitored inputs for entirely redundant power supply. The stand-by power supply input is also monitored.

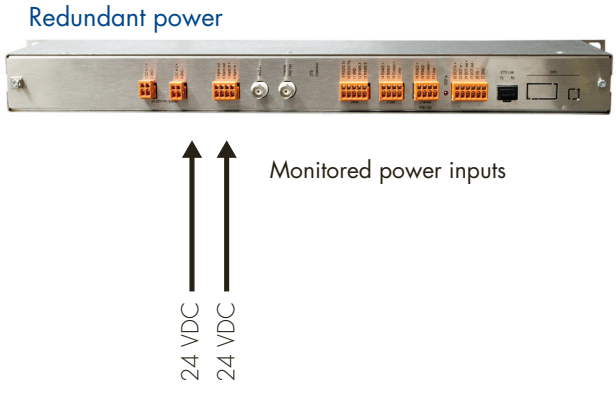
Possible power variants:

- 24 VCD, non-redundant
- 24 VDC + 24 VDC, redundant

Redundant outputs

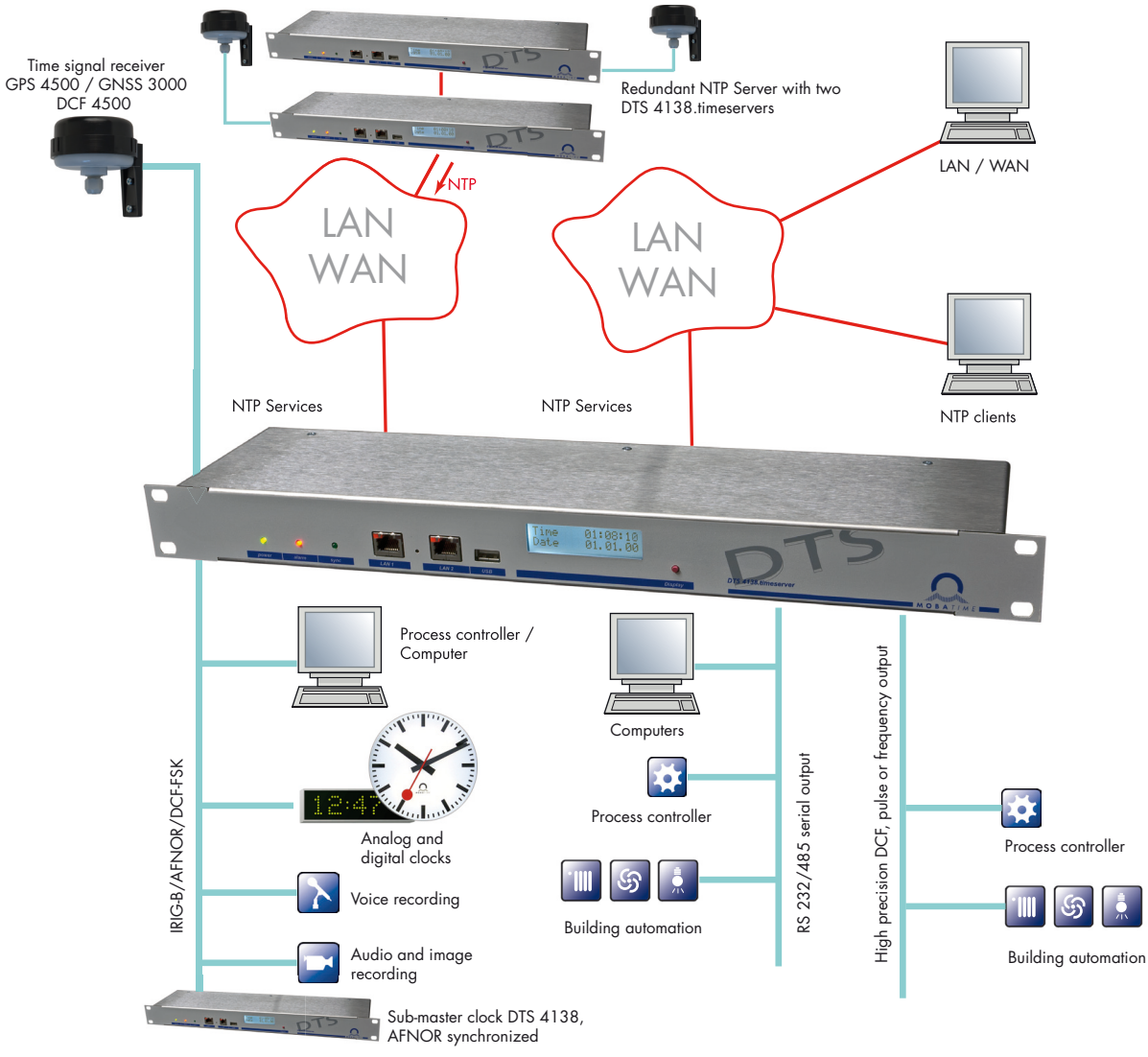
Redundant IRIG-B/AFNOR, serial telegram, DCF and/or pulse/frequency outputs can be achieved by an external change over unit.





DTS 4138.timeserver, versatile high precision master clock and NTP time server

DTS 4138.timeserver as NTP server and master clock features one high precision IRIG-B/AFNOR output, one RS 232/485 serial interface and one technical pulse or frequency output.



DTS 4138.timeserver features one IRIG-B/AFNOR output to synchronize analog and digital slave clocks, process controllers, voice recording systems and many other technical equipment.

DTS 4138.timeserver also features one programmable RS 232/485 serial output (message definable by script file), for synchronization of any kind of technical equipment like e.g. computer server, process controller, fire alarm system, ...

For utmost precision of the synchronization, one high accurate pulse output is provided. It can either be used as DCF output (RS 422 and opto coupler) or for periodical pulses.

Typical applications are industries, power distribution stations and power plants, where high reliability, high precision, no time leaps and permanent availability are required.

DTS 4138.timeserver - Technical and performance details

Technical Data		
Time signal outputs	2 x NTP V4 (fully V3 compatible) /SNTP, NTP multicast, physically separated DCF time signal output (opto coupler passive) 1 x DCF 77, programmable pulses/frequency (RS 422 and opto coupler) 1 x RS 232/485 serial message programmable by script file 1 x IRIG-B/AFNOR output, with analog (BNC) and DC level (RS 422 and opto coupler) output	IRIG-B 122, IRGI-B 123, AFNOR A, AFNOR C, DCF-FSK, ...
DTS Links (Redundancy)	Max. length of the fiberglass cable, e.g. multimode fiber Ø 50 µm: multimode fiber Ø 62.5 µm:	max. 550 m max. 275 m
NTP-slave clock line	For slave clocks synchronization by NTP multicast or unicast (IP based) Time zone server function with up to 15 different time zone entries.	
Network services	NTP client NTP server, max. no. of NTP and SNTP client requests: SNMP V1, V2c, V3 (get, put, notification, trap) with MD5 authentication and DES for encryption E-Mail for alarm messages (2 addresses possible) DATE, TIME, FTP (for update)	typical > 250 request/sec
Network Interface	10BaseT / 100BaseTX (IEEE 802.3) Data transmission rate: auto-negotiation / manual Connection: RJ45 (only shielded cable permitted)	
IP configuration	DHCP, static IPv4, IPv6	
Operation	Via LAN: MOBA-NMS, Telnet, SSH, SNMP (special software necessary) USB connector for software update, maintenance (config. and log files upload) or file download (e.g. telegram files...)	
LED indication	Power supply, synchronization status, LAN status, alarm, DCF input	
Display	Display for status information: Time, date, IP, alarm... (2 lines with 16 characters)	
Local time calculation	Automatic, preprogrammed daylight saving time change Up to 80 pre-defined time zone entries and 20 user-definable entries All outputs can be individually allocated to a time zone (UTC or local time)	
Accuracy	GPS (DCF input) to NTP server: GPS (DCF input) to DCF 77 / pulse output: NTP to internal time: Redundant operation: master to slave GPS (DCF input) to IRIG (analog) GPS (DCF input) to IRIG (digital) Internal time to serial outputs (jitter: ± 10 ms)	typical < ± 100 µs typical < ± 10 µs typical < ± 100 µs typical < ± 1 µs typical < ± 100 µs typical < ± 10 µs typical < ± 10 ms
Time keeping (internal) DTS 4138 -> TCXO	Synchronized with GPS: Hold over (after > 24h synch. from GPS) at 20°C ± 5°C: Hold over (after > 24h synch. from GPS) at constant temperature: After restart without synchronization (for 24h) at 20°C ± 5°C:	± 10 µs to UTC < ± 10 ms/d or < 0.1 ppm < ± 1ms/d or < 0.01 ppm < ± 250 ms/d or < 2.5 ppm
External time source	External NTP / SNTP server (4 NTP sources possible), or DCF 77 time signal receiver (opto coupler, e.g. GNSS 3000), or GPS time signal receiver (opto coupler, e.g. GPS 4500), or IRIG-B12x/AFNOR (analog) Manual time setting (only for test purposes)	
Alarm relay	Potential free, opening contact for signalizing disturbances	open -> alarm
Alarm input	1 alarm input for monitoring of an external device, 18 - 36 VDC, max. 6 mA	input open -> alarm
Power supply	2 x DC input: 24 VDC +20 % / -10 % / max. 10 W DC output: DC input voltage -2 V, max. 400 mA	
Dimensions	19" rack, 1 rack unit, W x H x D	483 x 44 x 125 mm
Weight		approx. 1.8 kg
Power reserve	No internal active running reserve, timekeeping with RTC for short power outages	
Ambient temperature	0.. 60°C, 10 - 90 % relative humidity, without condensation	
Options	Mini GBIC module (GigaBit Interface Converter) SX LC 1000Mpbs, 3.3V fiber optic cable, 2xLC/LC50/125µm patch cable FiberChannel duplex 100 cm	