



Synchronise every moment

For an accurate, reliable and secure time

Time server: Netsilon 11

Bodet

www.bodet-time.com

MADE IN FRANCE

DESCRIPTION

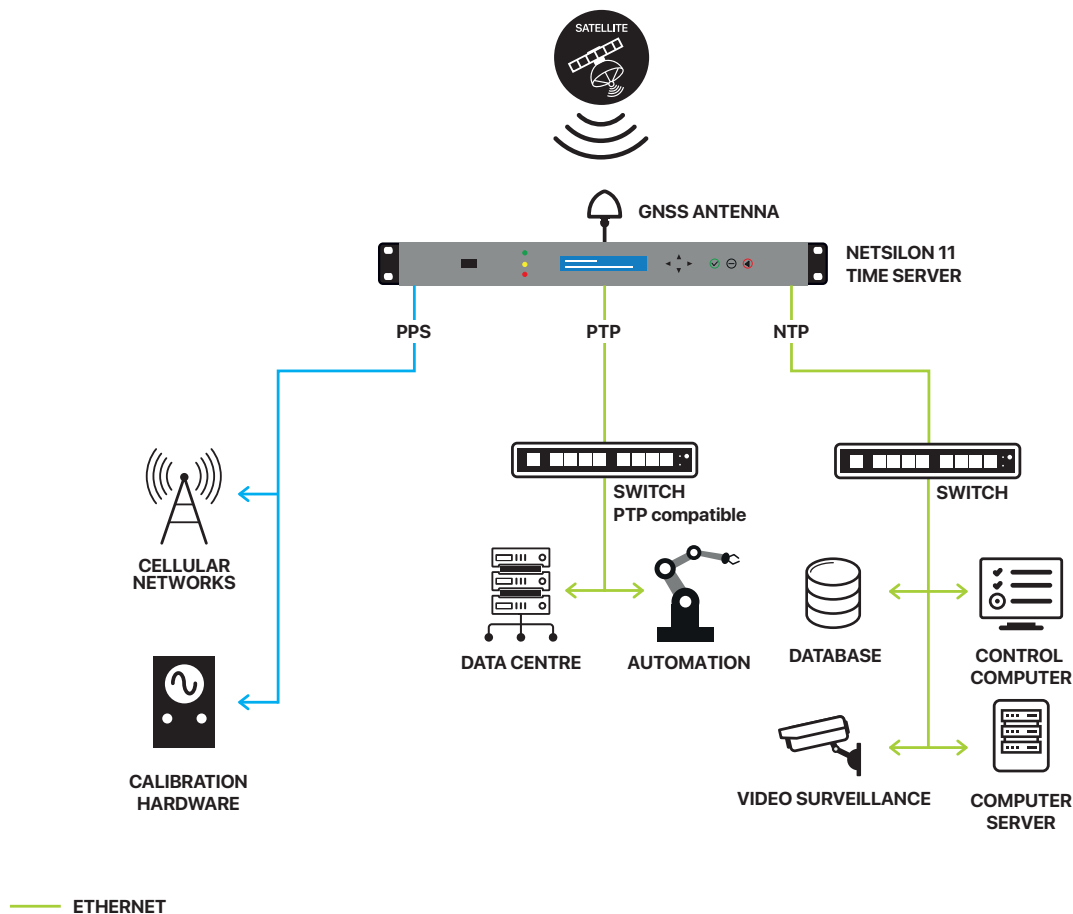
- Netsilon 11 is a compact and modular time server, acting as main reference clock (PRTC) for accurate and secure synchronisation of computer networks.
 - PTP/NTP time server with a highly accurate OCXO internal oscillator.
 - Configuration and supervision via an ergonomic and user-friendly web interface.
 - Modular design in a 19" 1U rack-mountable chassis offering a wide variety of input/output signals (up to 4 option cards).
 - Network security and performance: IPv4, IPv6, DHCP, HTTPS, SSH, SFTP, LDAP, RADIUS, 802.1X, 802.1Q, embedded firewall, Gigabit Ethernet port.
 - Alarm supervision in the form of Syslog, SNMP (v1/v2/v3) or e-mail.
- Product guaranteed for 3 years.



COMPLIANCE

- Directives: LVD 2014/35/EU, EMC 2014/30/EU.

INSTALLATION EXAMPLE





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TECHNICAL FEATURES

Reference signals

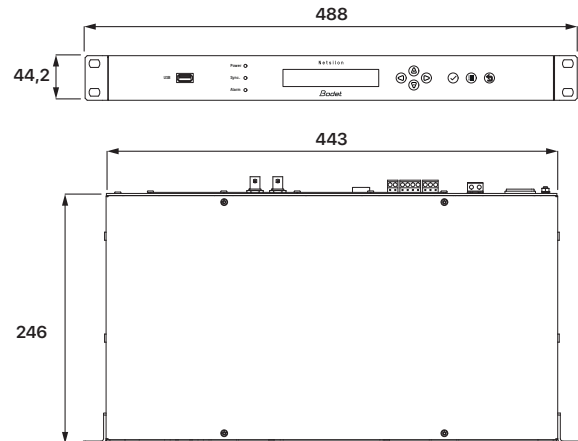
	Standard	Option
Inputs	GNSS (GPS/GLONASS/ GALILEO/BeiDou)	NTP
		PTP
	NTP	IRIG
Outputs	NTP	NTP
	10 MHz	PTP
	PPS	Coded time: NMEA 0183,...
		IRIG

Specifications

10MHz frequency output		Typical values of the OCXO quartz
Accuracy (average after 24h of GPS synchronisation)		1×10^{-11}
Medium-term stability (without GPS after 2 weeks of GPS synchronisation)		$1 \times 10^{-9}/\text{day}$
<i>Short-term stability (Allan Deviation)</i>		
1 sec		1×10^{-11}
Temperature stability (peak to peak)		1×10^{-9}
<i>Typical phase noise (dBc/Hz)</i>		
@10 Hz		-125
@100 Hz		-145
@1 kHz		-155
Signal form and levels		Sinusoidal, +13 dBm/50 ohm, BNC
1PPS output		
Accuracy in relation to UTC (1 sigma locked to GPS)		$\pm 50 \text{ ns}$
Holdover after 24h (after 2 weeks of GPS synchronisation at constant temperature)		$\pm 2,5 \mu\text{s}$
Signal form and levels		TTL (5Vp-p), 50 ohm, BNC

Mechanical features

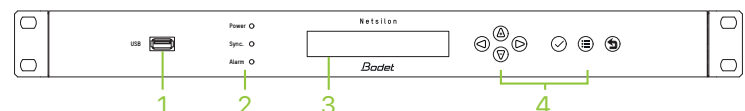
• Construction.....	Metal casing - 1 U rack - 19"
• Operating temperature.....	0°C to +50°C (fanless cooling).
• Relative humidity level (at 40°C)....	0 to 90% non condensing.
• Protection index.....	IP20.
• Weight.....	2.5 kg.
• Dimensions.....	See opposite.



Interface and connections

Front panel

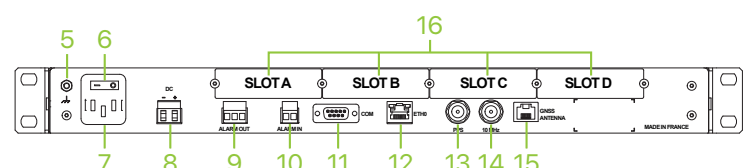
- 1 USB socket.
- 2 Status LEDs.
- 3 LCD screen.
- 4 Navigation and control keyboard.



Rear panel

- 5 Functional grounding.
- 6 ON/OFF switch.
- 7 AC IN mains connector.
- 8 DC IN power terminal block.
- 9 Alarm output.
- 10 Alarm input.
- 11 Serial port.
- 12 ETH0 network port.
- 13 1PPS output.
- 14 10MHz output.
- 15 Connection of multi-constellation antenna (GNSS).
- 16 Slots for option cards :

Option card	Compatible slots	Max number of card(s)
Network (RJ45)	A/B/C	2
Network fiber (SFP)	A/B/C	2
IRIG Output	A/B/C/D	4
IRIG Input	A/B/C/D	1
PTP/SyncE	A/B/C/D	1
ASCII	A/B/C/D	4



Power supply connectors on the rear panel depends on the model chosen (AC, DC, AC+DC, AC+AC).



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Electrical features

- Power supply..... AC only: 100-240V~ / 50-60Hz / 1.9-0.8A or DC only: 22-30V== / 3.2-1.9A or AC+DC | Redundant power supplies, or AC+AC | see features above. Fanless cooling.
- Consumption..... 20W (without option card).
- Alarm input..... Alarm IN. Input via potential-free dry contact. IIN ≤ 10 mA.
- Alarm output..... Alarm OUT. NC-NO-C relay. Maximum current: 1A/50V==, 1A/30V~.
- MTBF..... 100,000 hours.

Communication

- Network port..... RJ45, 10/100/1000 BASE-T.
- Serial interface (configuration)..... RS232, DB9 connector.
- Panel..... USB socket (can be disabled) for software backup and updates. Keyboard (can be locked) and LCD screen for network configuration.

Network features

Protocols

- NTP V2, V3, V4..... Compliant with RFC 1305 and 5905. Supports Unicast, broadcast, Multicast, Anycast, MD5 encryption, peering and Autokey.
- Maximum number of NTP requests per second. All Ethernet ports combined..... 7,000.
- Maximum number of NTP clients (typical)..... 32,000.
- SNTP V3, V4..... Compliant with RFC 1769, 2030, 4330 and 5905.
- TIME protocol..... Compliant with RFC 868.
- DAYTIME protocol..... Compliant with RFC 867.

Communication

- HTTP/HTTPS..... Compliant with RFC 2616 (management of signed certificates).
- SSH..... SSH v1.3, SSH v1.5, SSH v2 (openSSH) (password and/or authentication via certificates).

Management

- IP..... IPv4, IPv6: Dual stack.
- VLAN..... 802.1Q standard (single/multi).

Services

- DHCP..... DHCPv4, DHCPv6, Autoconf & Slaac.
- SMTP..... Mail forwarding.

Supervision

- Alarm..... SNMP traps, e-mail, and relay contact.
- SNMP..... v1 (RFC 1157), v2c (RFC 1901-1908) and v3 (RFC 3411-3418).
- Syslog..... Event log services over UDP, TCP or TLS-secured protocol.
- Relay contact / external input..... Sending and reception of alarms.

Security features

- Enabling/disabling protocols.
- Authentication via 802.1x protocol.
- Redundancy via LACP protocol.
- Protection by single authentication (login + password) or authentication via LDAP / LDAPS (on SSL) / Radius.
- DES and AES encryption.
- SHA1, MD5 authentication.
- SSL/TLS: securing exchanges via computer network.
- SCP: secure copy of Netsilon files via a SSH session.
- SFTP: secure transfer of Netsilon files via a SSH session.



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OPTION CARDS

Card - Network (RJ45)

- Number of ports..... 2.
- Connector..... RJ45, 10/100/1000 BASE-T.
- NTP requests/sec (max)..... 7,000
(All Ethernet ports combined).
- Management..... IPv4, IPv6.
- Mode..... Anycast, Multicast, Unicast.
- Max. number of cards..... 2, that is to say 5 ports max.
(1 on the server + 2 per card).

Card - Network (SFP)

- Number of ports..... 2.
- Connector..... SFP - Giga Ethernet.
- Standards..... SX/LX compatible.
- NTP requests/sec (max)..... 7,000
(All Ethernet ports combined).
- Management..... IPv4, IPv6.
- Mode..... Anycast, Multicast, Unicast.
- Max. number of cards..... 2, that is to say 4 SFP ports max.

Card - IRIG Output

- Number of outputs..... 2.
- Connectors..... BNC (IRIG AM & DCLS).
Removable terminal block (DCLS-RS422).
- Supported formats.....

Format	Type of modulation	Frequency	Coded expressions
A	0,1	0,3	0,1,2,3,4,5,6,7
B	0,1	0,2	0,1,2,3,4,5,6,7
E	0,1	0,1,2	0,1,2,3,4,5,6,7
G	0,1	0,4	1,2,5,6

+ AFNOR NF S 87-500 Variant A.

- Max number of cards..... 4, that is to say 8 outputs max.

Card - IRIG Input

- Number of inputs..... 1.
- Connectors..... BNC (IRIG AM & DCLS).
Removable terminal block (DCLS-RS422).
- Supported formats.....

Format	Type of modulation	Frequency	Coded expressions
A	0,1	0,3	0,1,2,3,4,5,6,7
B	0,1	0,2	0,1,2,3,4,5,6,7
E	0,1	0,1,2	0,1,2,3,4,5,6,7
G	0,1	0,4	1,2,5,6

+ AFNOR NF S 87-500 Variant A.

- Max number of cards..... 1.

Card - PTP/SyncE (RJ45+SFP)

- Number of ports..... 1.
- Connector..... Gigabit SFP/RJ45 combo port.
- Operation..... 1-Step or 2-Step.
Master or Slave.
- Resolution..... ± 8 ns.
- Capacity - master mode..... Up to 32 unicast slaves
at 128 frames per second.
- Management..... IPv4, IPv6.
- Mode..... Multicast, Unicast.
- Standard..... IEEE-1588 V2.
- Max number of cards..... 1.

Card - ASCII

- Number of connections..... 2 outputs (dependent).
- Connector..... Terminal block.
- Type of signal..... RS232/RS422/RS485.
- Type of message..... Standard coded time, GPS ZDA
GGA or programmable.
- Max number of cards..... 4.

REFERENCES

Netsilon time server

907 915..... Netsilon 11 AC.

907 916..... Netsilon 11 DC.

907 917..... Netsilon 11 AC+DC.

907 918..... Netsilon 11 AC+AC.

Option cards

907 920..... Network card (RJ45 - 2 ports).

907 921..... Network card (SFP - 2 ports).

907 922..... PTP card (RJ45+SFP).

907 926..... ASCII card (2 outputs).

907 930..... IRIG Output card (2 outputs).

907 947..... IRIG Input card (1 input).

ACCESSORIES

907 970..... GNSS antenna (receiver + bracket).

907 972..... Secure GNSS antenna (receiver + bracket).

907 975..... Lightning protection.

907 976..... GNSS interface for standard RF antenna.