

NTP Network Time Server

(NTP-2)

User Manual

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Introduction

Network time protocol server NTP-2 is a high-tech intelligent time server that can work independently and have a complete reference clock source (PRS), it provides based on the NTP / SNTP protocol The standard time and Self-improvement of monitoring and high stability of a clock synchronization signal.

NTP-2 get time form GPS system, and if lost satellite signal, NTP-2 keeps time by the internal crystal oscillator , And out put the time through a dedicated port and protocol transmission, Can be through a dedicated interface with the device and get connected to the corresponding service. LAN through TCP / IP transmission time information to support a variety of Time Protocol such as NTP, time / UDP, The company also supports the definition of neutron time data protocol. NTP and time / UDP port number that were fixed in RFC-123 and RFC-37 designated by 123 and 37, NTP-2 of the SNTP protocol also supports broadcast mode.

Connects directly to Ethernet, fits in a compact size, incorporates a GPS Computer Clock, tracks up to 12 satellites, with remote GPS antenna that can be positioned up to 30m (100 ft) away as standard, or up to 100m (300ft) .with optional antenna extension kit. With LED signal strength display for easy installation, an integral time display and Ethernet CAT5 connection. Software driver for uni-cast, broadcast or multi-cast NTP time synchronization. Conforms to Network Time Protocol.

NTP-2 use 110-220AC to 9V DC power adapter.

- Ready-to-operate Secure Stratum 1 NTP Time Server
- Support for NTP and SNTP compatible clients
- The average accuracy of better than 10ms for network
- 50 times per second to meet the service request
- Configured across network via a windows configuration utility
- Flash memory enables software to be upgraded
- RJ-45 Ethernet interfaces 10MBit
- Front Panel display for NTP and Satellite Status
- Includes GPS active antenna
- Standard GPS antenna cable length up to 30m (100ft)
- syslog error reporting

Applications

1)、 Configure NTP-2

Note: NTP-2 before being used must obtain a unique IP address in order to work properly.

NTP-2 devices default IP addresses of the factory is set to:

Default IP = 192.168.0.211 (Users can freely modify according to actual needs)

This means that you can login directly through telnet port 9999 set of parameters. For example:

```
telnet 192.168.0.211 9999
```

If your network has DHCP server and an Ethernet port IP address set to 0.0.0.0, NTP-2 will be automatically obtained from a DHCP server, IP address, subnet mask and gateway address; If there is no DHCP server, NTP-2 device has been set up to allow automatic IP address, then the NTP-2 will be randomly assigned to himself a C class IP address.

Temporary IP address

If you have forgotten IP address, you can manually through the following methods to set the network port on the IP address.

1、 by the network port settings

(1), in the UNIX mainframe or a Windows system, DOS prompt, type the following command:

```
arp-s 192.168.0.123 00-03-B9-XX-XX-XX
```

00-03-B9-XX-XX-XX is the NTP-2 of the MAC address (Each NTP-2 are clearly written in the local MAC address affixed with labels)

"192.168.0.123" is the IP addresses which is set for NTP-2.

(2), enter "telnet 192.168.0.123 1", then will soon be given an error message, you can ignore these messages.

(3), type telnet 192.168.0.123 9999 , Port number 9999 is designed for remote management of the TCP port

Note:

Unless from the 9999 login NTP-2, settings and save the new IP address, arp set IP address is temporary, DN power after this temporary IP address will be invalid.

2、 Using especial software to find IP address

If you have forgotten IP address, you can use the newly created section dedicated search software DNTEST.exe to discover IP addresses, Please refer to the contents of the CD-ROM or contact us.

After NTP-2 has be set up IP address, you can enter "telnet 192.168.0.123 9999" in the "run" menu of windows, note there is a space Between the 123 and the 9999.

press the Enter key after the following information and menus can be seen

*** NTP-2 Server ***

Serial Number 7109655 MAC address 0003B97125B7

Software version V11.0 (110503) NTP-2

Press Enter for Setup Mode

*** basic parameters

Hardware: Ethernet Autodetect

IP addr 192.168.0.211, no gateway set

***** NTS parameters*****

Serial output:NMEA 0183,9600,O,8,1

NTP Ref.Identifier: "GPS"

Send NTP datagram every 001 minutes

Send NTP datagram to(Broadcast or Multicast IP address):000.000.000.000

Second pulse is enabled

Sending UDP datagram to Port 0000(hex) every 000 minutes

UDP datagram disabled

Change Setup:

0 Server configuration

1 NTS configuration

2 Time&GPS

5 Reboot system

7 Factory defaults

8 Exit without save

9 Save and exit

Your choice ?

0 Server configuration

Select 0 to set the server NTP-2 parameters, such as IP address, subnet mask, gateway and so on, note that IP addresses must be unique within the LAN, the subnet mask for the bit0 of the number of bits (see appendix).

telnet password

Port 9999 for remote login has a password protected, the password up to 4 byte, with the password when using telnet will be given first to enter the password.

1 NTS configuration (NTS settings)

1)、SNMP manager IP addr Set the IP address of SNMP network server, according to Y after setting IP addresses.

(You can set up two SNMP trap IP address).

2)、Syslog IP addr with the UNIX system to monitor NTP-2 working condition of the IP address. The following four states can be recorded:

- NTS startup
- NTS sync'ed

- NTS unsynch'ed

- NTS sign. Lost

A SYSLOG record example:

"Apr 12 16:10:27 sb244 V: 04.4b5 (010412) / S / N: 1200354 / MAC: 00:03: B9: 12:01:62
/ MSG: NTS startup"

The file name to save the information can be specified as LOCAL0 - LOCAL7.

3)、 Change SNTP Ref.Identifier "GPS" to change the SNTP

logo 4-bit symbol can enter a different GPS clock

source.

4)、 Send NTP datagram every n minutes every n minutes to send the packet

5)、 Neutron Datagram UDP Port (hex 0000) the definition of the new Techtronic time data packets UDP port number. If set to 0 was not allowed to send.

2 Time&GPS

display current time ,the satellite numbers and the NTP service status

5 Reboot system

To reboot NTP-2 remotely.

7 Factory defaults

Select 7 will restore all the parameters into factory value, but the IP address, subnet mask and gateway remain unchanged.

8 Exit without save

The previous modifications will be null and void, NTP-2 will restart.

9 Save and exit

Save the parameters of changes, exit and restart the NTP-2.

Time Data Packet Format

1、 NTP

NTP-2 working in Server status, does not support the symmetry of the work. Support NTP1.0, NTP2.0, NTP3.0, NTP4.0.

2、 time / UDP

For the old UNIX systems and some special PC software.

3、 NEUTRON time data packet

A total of 32 bytes of data in each minute (this option can be changed) , specify the following

Offset	Description
00...01	Year (00...99)
02...03	Month (01...12)
04...05	Day (01...31)
06...07	Hour (00...23)
08...09	Minute (00...59)
10...11	Seconds (00...59)
12	day of week (1-Mo, 2-Tue, ...)
13	DST enabled (0-no, 1-yes)
14	String termination, '\0'
15	Reserved (always 00)
16...19	CET/CST Time on UNIX Format 32bit value, network byte order seconds since 1/1/1970
20...23	GMT Time on UNIX Format 32bit value, network byte order seconds since 1/1/1970
24...31	Reserved (always 00)

Serial output

NTP-2 there is a RS232A serial port can be used to get time and location messages.

RS232A the output format to 9600 baud, 8 data bits, odd parity, 1 start bit and 1 stop bit.

Format: NMEA0183,ZDA+GGA messages

Examples:

```
$GPZDA,050915.00,13,05,2011,,*6B
$GPGGA,050915.00,3957.6688,N,11619.6806,E,1,05,1.54,00069,M,-006,M,,*4B
$GPZDA,050916.00,13,05,2011,,*68
$GPGGA,050916.00,3957.6688,N,11619.6806,E,1,05,1.54,00069,M,-006,M,,*48
$GPZDA,051726.00,13,05,2011,,*64
$GPGGA,051726.00,3957.6693,N,11619.6810,E,1,05,1.49,00062,M,-006,M,,*4E
$GPZDA,051727.00,13,05,2011,,*65
$GPGGA,051727.00,3957.6693,N,11619.6810,E,1,06,1.45,00062,M,-006,M,,*40
$GPZDA,051728.00,13,05,2011,,*6A
$GPGGA,051728.00,3957.6693,N,11619.6810,E,1,05,1.67,00062,M,-006,M,,*4C
$GPZDA,051729.00,13,05,2011,,*6B
$GPGGA,051729.00,3957.6693,N,11619.6810,E,1,06,1.45,00062,M,-006,M,,*4E
$GPZDA,051730.00,13,05,2011,,*63
$GPGGA,051730.00,3957.6693,N,11619.6810,E,1,06,1.45,00062,M,-006,M,,*46
$GPZDA,051731.00,13,05,2011,,*62
$GPGGA,051731.00,3957.6693,N,11619.6810,E,1,05,1.67,00062,M,-006,M,,*44
```

Interface and LED

1 serial side

SAT --- ●● --- SYN

PWER --- ●● ---LOST

LED	indicator	Function
SYN	green	ON : synchronized with GPS Blink: time synchronization progress OFF : No valid time input source
SAT	green	blinking 1x: got 2 satellites 2x: got 1 satellites 3x: no satellites OFF: got >3 satellites
LOST	Red	Use with SYN led ON, SYN blinking 1x: EPROM checksum error 2x: RAM error 3x: network controller error 4x: EEPROMerror 5x: IP address already used on network 6x: software version error Blinking, SYN blinking 4x: network error 5x: no DHCP response Blinking, SYN OFF No valid time source OFF, SYN blinking time synchronization progress
PWER	red	On for normal power

2 ethernet side

LINK --- ● ● --- TX
PWER --- ● ● --- RX

LED	indicator	function
LINK	Yellow	On for right network connection
TX	Green	Blink for ethernet data transmit
RX	Green	Blink for ethernet data receive
PWER	red	On for normal power

3 DB9/M serial port

num	signal	direction
1	CD	Input
2	RXD	Input
3	TXD	Output
4	DTR	Output
5	GND	—
6	DSR	Input
7	RTS	Output
8	CTS	Input
9	-	-

4 RJ45 ethernet port

num	signal	direction
S1	TXD+	Output
S2	TXD-	Output
S3	RXD+	Input
S4	-	—
S5	-	—
S6	RXD-	Input
S7	—	—
S8	—	—

Appendix

netmask list:

netmask	Host bits in telnet
255.255.255.252	2
255.255.255.248	3
255.255.255.240	4
255.255.255.224	5
255.255.255.192	6
255.255.255.128	7
255.255.255.0	8
255.255.254.0	9
255.255.252.0	10
255.255.248.0	11
..	
..	
255.128.0.0	23
255.0.0.0	24