

# NTS-4000-S Installation and Configuration Manual









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### **INTRODUCTION**

The NTS-4000-S timeserver provides the correct time to computers on a local network (LAN).

Correct time is derived from either Global Positioning Satellites (GPS), or Radio-based broadcasts from Cumbria in the UK (MSF), Frankfurt in Europe (DCF), and Fort Collins, Colorado in the US (WWVB). Once installed on a computer network the NTS-4000-S provides a standalone location for the Network Time Protocol (NTP).

Each PC on the network can retrieve the time from the server using an NTP Client. The NTS-4000-S Time Server provides a bridge between Ethernet wired LAN's and GPS and Radio-based time sources.

### **FEATURES**

- Consistent and reliable timing.
- Quick and user friendly setup.
- At 8 Watts, Unit stays cool maintaining efficiency.
- Compact standalone unit.
- Quick and easy readings from backlit LCD display.
- Interfaces directly to 10/100Mbps IEE 802.3 Ethernet networks.
- Firmware is stored in flash memory and can be upgraded.
- Power and network activity LED indicators.





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### WHAT SHOULD BE SHIPPED

### STANDARD PARTS

- NTS-4000-S standalone unit
- IEC power cable
- GPS or MSF or DCF or WWVB antenna \*
- Junction Box and IDC Cable Tool
- Mounting bracket and fixing for antenna
- CD containing manual and software

#### **OPTIONAL PARTS**

- Light Arrestor(s)
- Cable for extending the antenna(s)
- Gold and Premium Support
- Digital Wall Clock Ethernet Powered
- Secondary Time Source Available GPS Units only
- Antenna Cable Available from 100 to 1,000 metre rolls
- Additional Power Supply Recommended from 550 metres onwards

\* The antennas provided will depend on which has been ordered, however, all units come with at least one antenna

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### **TECHNICAL SPECIFICATION**

Protocols - NTP & SNTP	NTP v2 (RFC 1119) NTP v3 (RFC 1305)
	NTP v4 (RFC 2131)
	SNTP v3 (RFC 1769) SNTP v4 (RFC 2030)
Configuration	NTP Software
Technical Standard	NEMA 0183 V.2 Compliant
Network Interface	Standard 10/100 Base-T, RJ-45 Network
	Connection
MTBF Estimated	45,000 hrs.
Display	LCD with Backlight
Operating System	Proprietary OS (PIC Chip)
Operating Temperatures	0-50°C (32-122°F)
Heat Dissipation	80 BTU Perhour
Humidity	Max. 85% Non-Condensing
Mount	Rack
Function	Stratum 1 Time Server
Network Accuracy	Network: +/- 5 Milliseconds, Typical
	GPS/Radio: <1 Microseconds, Relative to UTC
NTP Time Requests	Up To 57 Per Sec
Power Supply Universal	85-260V, 47-63Hz
Power Consumption	8 Watts
Dimensions (mm) Packed	Packed Up: (H) 160 (W) 620 (D) 510
Unpacked	Unpacked 1U: (H) 45 (W) 425 (D) 163
Properties	Powder Coated Steel
Weight Packed	4.2kg
Unpacked with Antenna	2.4kg
Source	Satellite
	Radio
External	Active 12 Channel GPS
	MSF/DCF/WWVB Antenna



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### **SYSTEM OVERVIEW**

#### NTS-4000-S

The Galleon 4000 network time server synchronises time and provides a reliable stratum 1 response with 3,000 time requests per minute.

The IP address can either be automatically configured by DCHP or a static IP address can be entered manually.

Displaying necessary run-time information for the NTP subsystem on a backlit screen, the unit also supports NTP software and acts as a secure shell.





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#### **GPS ANTENNA**

Tracking up to 12 satellites at the same time, GPS offers an accurate signal capable of a reliable and consistent reading anywhere in the world. Used extensively for synchronising time from one location to another, GPS signals are received globally and maintain a high level of accuracy.

Functional up to 1000m (3,000 ft.) away from the time server, additional cable length can be added to the supplied 10m to increase cable size to desired length. An extra power supply is recommended past the length of 550m to ensure the unit is running at optimum efficiency.

The GPS antenna is encased in a weatherproof IP65 enclosure and should be mounted on the roof of a building with a 180-degree view of the sky.

The antenna can be mounted to the side of the building; however, limiting the view of the sky will have an effect on the units' ability to synchronise. Units mounted to the side of the building will experience short periods of time where the antenna is unable to see the three satellites required to achieve synchronisation.

Some things to avoid are older computer monitors, switch mode power supplies and air conditioning units.

The GPS antenna uses eight-core signal cable and will function on a cable run of up to 550 metres drawing power from the rack-mount unit, if you require the antenna to have an extended cable run of up to 1,000 metres then a power supply is required. This power supply feeds directly into the GPS antenna and as such, would need to be located on the roof too. In most cases however, 550 metres is more than adequate.

The Operating temperature for the antenna is -40 Celsius to +85 Celsius so it may be worth noting that the temperature inside the enclosure can be considerably different from the external temperature, especially when the antenna is located in a position where it is in direct sunlight.

When mounting a GPS antenna it may be worth noting that satellites dishes can have a negative effect on the unit, it's best to keep the GPS antenna at least ten metres from them.



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#### **MSF ANTENNA**

The MSF signal is broadcast from Anthorn in Cumbria and is maintained at a reliable frequency of 60 kHz, delivering a steady signal undisrupted by changing weather conditions and operational 24 hours a day. The radio signal is designed to cover the whole of the United Kingdom.

Functional up to 1000m (3,000 ft.) away from the time server, additional cable length can be added to the supplied 10m, to increase cable size to the desired length. An extra power supply is recommended past the length of 550m to ensure the unit is running at optimum efficiency.

One thing to bear in mind with a radio-based antenna is that certain electrical equipment generates noise on the same frequency as the radio signal and can cause interference. Some things to avoid are older computer monitors, switch mode power supplies and air conditioning units.

Radio based antennas are also directional antennas. The front of the antenna (this is the opposite side to where the cable enters the weatherproof box) should be facing the transmitter for the best signal reception.

For more information on the MSF signal, including information on scheduled maintenance times please refer to the National Physics Laboratory's website at www.npl.co.uk





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#### **DCF ANTENNA**

The DCF antenna receives a radio signal broadcast at 77.5 kHz from Frankfurt (Main). The signal covers the whole of Germany and impressively most of Europe too.

Functional up to 1000m (3,000 ft.) away from the time server, additional cable length can be added to the supplied 10m, to increase cable size to the desired length. An extra power supply is recommended past the length of 550m to ensure the unit is running at optimum efficiency.

One thing to bear in mind with a radio-based antenna is that certain electrical equipment generates noise on the same frequency as the radio signal and can cause interference. Some things to avoid are older computer monitors, switch mode power supplies and air conditioning units.

Radio based antennas are also directional antennas. The front of the antenna (this is the opposite side to where the cable enters the box) should be facing the transmitter for the best signal reception.

For more information on the DCF signal including information on scheduled maintenance times, please refer to the Physikalisch-Technische Bundesanstalt website at www.ptb.de English can be selected via the menu located at the top left side of the site.

There is an alternative website for information on the DCF signal, however, please note this website is provided only in German at www.dcf77.de



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#### **WWVB ANTENNA**

The WWVB antenna receives a radio signal broadcast at 60 kHz from two transmitters near Fort Collins in Colorado. One benefit of using the WWVB signal is that as they have two transmitters that have different scheduled down times, the WWVB signal is not affected by maintenance.

Functional up to 1000m (3,000 ft.) away from the time server, additional cable length can be added to the supplied 10m, to increase cable size to the desired length. An extra power supply is recommended past the length of 550m to ensure the unit is running at optimum efficiency.

One thing to bear in mind with a radio-based antenna is that certain electrical equipment generates noise on the same frequency as the radio signal and can cause interference. Some things to avoid are older computer monitors, switch mode power supplies and air conditioning units.

Radio based antennas are also directional antennas. The front of the antenna (this is the opposite side to where the cable enters the box) should be facing the transmitter for the best signal reception.

For more information on the WWVB signal please refer to the National Institute of Standards andTechnology(NIST)undertheTimeandFrequencyDivisionatwww.nist.gov/pml/div688/grp40/wwvb.cfm





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### WIRING THE UNIT

GPS

### Extending the antenna with Cat5e/Cat6 Cable





15 Wa	y D-Type Pir	Cable Colour
	6	Green/White
	7	Green
	11	Brown
	12	Brown/White
	13	Blue
	14	Blue/White

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### Extending the antenna with eight - Core Cable





15 Way	D-Type Pin	Cable Colour
	6	Yellow
	7	Green
	11	Red
	12	Black
	13	Blue
	14	Brown

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### RADIO – MSF/DCF/WWVB

### Extending the antenna with Cat5e/Cat6 Cable





15 Way D-Type Pi	Cable Colour
2	Orange
4	Brown
5	Brown/White

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### Extending the antenna with four - Core Cable





15 Way D-Type Pin	Cable Colour
2	Yellow
4	Red
5	Black







### **SETTING UP THE UNIT**

#### **CONNECTING EVERYTHING UP**

#### **Server Location**

Choose a suitable location for the NTS-4000-S; please bear in mind you will need to run a cable from this location preferably to the roof of the building or to a window.

#### **Connect to Network**

Connect the NTS-4000-S to the network using a standard RJ-45 cable. If your network supports DHCP then the unit will automatically obtain an IP Address.

#### **Install Antenna**

Choose an area to mount the GPS/Radio Antenna; the ideal place would be the roof of the building with a clear view of the sky (GPS) or facing the correct Transmitter (Radio). Things to avoid are air conditioning units and power distribution units, as these will cause electrical interference.

Please note that if you are extending the cable to a length of 550m or greater, then you will need an extra power source, located either on the roof or can be accessed from the roof.

#### **Connecting the Server to the Antenna**

The cable should be run from the rack mount enclosure to the selected mounting position.

Please note that it is a good idea to leave some slack cable in case you need to move the unit later. Also the maximum cable length should not exceed 1000m.

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#### **CONFIGURATION**

Once everything is connected up, the NTS-4000-S can then be powered up. The unit will start up and begin running the necessary processes. The LCD display will start and show the following:

- LCD INITIALISED
- ASMINT DISPON 20M

Next the unit will check for data coming into the serial connector:

- WAITING SERIAL DATA

The unit will display the current software version:

- S/W Version 205

The unit will seek to synchronise with either GPS or Radio:

- Waiting for 1st sync
- Unsynchronised

During the waiting period for synchronisation, the Unit will remain in an 'unsynchronised state':

- GPS: No Fix
- Unsynchronised

The unit will show that it 'knows' there is an antenna attached and understands the data:

- GPS: Data OK
- Fri Jul 15 13:58:31

Once in a 'synchronised state' the unit will display:

- Using GPS or MSF
- Fri Jul 15 13:59:58

In this state, the display will show the GPS/Radio information as well as the date and time

At all times, the unit will display the IP Address in the message cycle, as well as the number of NTP Messages sent on the network.





### SOFTWARE INSTALLATION AND CONFIGURATION

### Install Windows based Configuration Software

You need to install and run the Windows based configuration software to set up the network connection, which will allow you to configure NTP Clients to use the NTS-4000-S.

Run the setup program called 'NTS-4000-Config-2.0.exe'.



Click 'Next'.



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🔂 Setup - NTS-4000 Config V2.0	×
Information Please read the following important information before continuing.	3
When you are ready to continue with Setup, click Next.	
Copyright (C) 2005 Galleon System Ltd.	
NTS-4000 Configuration tool.	
< Back Next > Cancel	

Click 'Next'.

j号 Setup - NTS-4000 Config V2.0	
Select Destination Location Where should NTS-4000 Config V2.0 be installed?	
Setup will install NTS-4000 Config V2.0 into the following folder.	
To continue, click Next. If you would like to select a different folder, click Br	owse.
C:\Program Files (x86)\NTS-4000 Config V2.0	Browse
At least 1.3 MB of free disk space is required.	
< Back Next >	Cancel

Select where you would like the program installed and click 'Next'.

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15 Setup - NTS-4000 Config V2.0
Select Start Menu Folder Where should Setup place the program's shortcuts?
Setup will create the program's shortcuts in the following Start Menu folder.
To continue, click Next. If you would like to select a different folder, click Browse.
NTS-4000 Config Browse
< Back Next > Cancel

Select the Program Group and click 'Next'.

15	Setup - NTS-4000 Config V2.0	
	Setup is now ready to begin installing NTS-4000 Config V2.0 on your computer.	
	Click Install to continue with the installation, or click Back if you want to review or change any settings.	
	Destination location: C:\Program Files (x86)\NTS-4000 Config V2.0	*
	Start Menu folder: NTS-4000 Config	
	4	
Ø	< Back Install	Cancel

Review the options and click www.galsys.co.uk



'Install'.

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Click 'Finish' to exit the setup program. The Configuration program will be started straight away if the option here is left checked.



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program access for it to work correctly.

MTS-4000	Config				3
Search Cont	figuration Option	s Upgrade Debug			
		?			
Model Na	IP Address	MAC Address	S/W Version	Operation Mode	
NTS-4000	192.168.1.49	00:90:E8:22:FC:D0	205	Running Mode	
NTS-4000	192.168.1.69	00:90:E8:22:FC:9D	205	Running Mode	
NTS-4000	192.168.1.52	00:90:E8:22:FC:89	205	Running Mode	
NTS-4000	192.168.1.76	00:90:E8:22:FC:C8	205	Running Mode	
NTS-4000	192.168.1.78	00:90:E8:22:FC:6C	205	Running Mode	
NTS-4000	192.168.1.47	00:90:E8:22:FC:AF	205	Running Mode	
NTS-4000	192.168.1.79	00:90:E8:22:FC:CC	205	Running Mode	
NTS-4000	192.168.1.80	00:90:E8:22:FC:C6	205	Running Mode	
*					
4					

All of the NTS-4000-S Devices found are shown along with their current IP Address (if any), Hardware MAC Address and Software Version Number.

Select the unit you would like to configure and click 'Configuration'.



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### **Configure Network Settings**

The first configuration step is to set up the network so other devices can use the NTS-4000-S. The display always shows the currently active IP Address for the network connection.

The NTS-4000-S must be configured with a valid IP Address before the NTP options can be set.

First, determine whether you are going to use DHCP (automatic network configuration) or a static IP Address.

DHCP is short for Dynamic Host Configuration Protocol for assigning dynamic IP Addresses to devices on a network. With dynamic addressing, a device can have a different IP Address every time it connects to the network.

Configuration		×
Ethernet System	1	
Change Et	hemet Setting	
IP Address	192.168.1.49	
IP Netmask	255.255.0.0	
IP Gateway	192.168.1.1	
IP Mode	DHCP	
	ОК	Cancel

DHCP is on as default. You can change this to be static, by selecting 'Static IP' in the 'IP Mode'.

This is the easiest way to set up the server initially; however, it is recommended that a static address be assigned to the server, if possible, to fix the address permanently. With automatically assigned addresses using DHCP it is possible that the address could change, possibly requiring client Reconfiguration.

To assign static settings to the network, first determine the following:

- IP Address the server should use;
- Subnet Mask;
- Default Gateway.

These should be available from your network administrator.

Once the NTS-4000-S is correctly configured, the Windows Configuration program is no longer required for normal operation.

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### **Time Server Configuration Options**

To set the Time Server options for the NTS-4000-S, select the device as before, then click 'Options'. The current status is shown along with the options to send broadcasts and/or syslog messages.

Options	×
Status NTP Server Synchronised to MSF 2012/02/29 14:42:51	OK Cancel
Broadcast frequency (secs)	Syslog Server
Broadcast Addresses	
255 . 255 . 255 . 255	· · ·
· · ·	· · ·
· · · ·	· · ·
· · ·	· · ·
· · ·	· · ·
Default Broadcast	Default Multicast

Broadcasts are a way of sending a single timestamp to many computers at the same time. Multicasts are similar but may span more than one subnet if the network is set to do so. If the value of the broadcast frequency is set to 0, none are sent.

Other subnets may be sent broadcasts (called direct broadcasts). E.g. one could send a broadcast to subnet 192.168.10.xxx using a broadcast address of 192.168.10.255

The syslog server is where system status messages are sent using the syslog protocol. If this is set to 0.0.0.0 no syslog messages are ever sent.

#### **Upgrade Firmware**

The 'Upgrade' option allows the NTS-4000-S Software to be upgraded to add new features and/or fix problems. Select the device to be upgraded and click 'Upgrade'. Select the firmware file and click 'Open'. After approximately 1 minute, the NTS-4000-S will have completed the upgrade and restart automatically.

Check galleonsupport.com for any updates to the NTS-4000-S Software.

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### TROUBLESHOOTING

Use this section to quickly troubleshoot minor issues or common problems.

For any further support, please contact us using our Support Website, which can be found at:

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Q) What do the LED's on the front of the unit indicate?

A) On the front of the unit there are 3 lights and an on/off switch. The red 'A' light indicates that there is power to the unit. The green 'B' light will flash when the unit is picking up the signal from the GPS antenna. The yellow 'C' light will flash when the unit is picking up the signal from the Radio antenna. Both the green 'B' light and the yellow 'C' lights will flash when the unit is picking up the signal from the signal from both the antennas.

Q) On the LCD display the time on my rack-mount appears to be incorrect, however the unit is synchronised.

A) The rack-mount unit uses UTC (Coordinated Universal Time). This is time without time-zones or daylight savings.

Q) I forgot my password how can I reset?

A) Simply put, don't forget your password as the unit will have to be shipped back to us and we will have to reset the unit and send it back to you.



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### **TECHNICAL SUPPORT**

#### **DEBUG THE UNIT**

#### Installing the NESDK Software

You need to install and run the Windows based debug software to obtain any debugging information, which will allow you to assist Technical Support staff if they are contacted.

Run the setup program called 'NESDK\_2.9.exe'.

Setup - Network Enabler S	
	Welcome to the Network Enabler SDK Setup Wizard
	This will install Network Enabler SDK 2.9 on your computer.
	It is recommended that you close all other applications before continuing.
	Click Next to continue, or Cancel to exit Setup.
	Next > Cancel

Click 'Next'.



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Setup - Network Enabler SDK	
Select Destination Location Where should Network Enabler SDK be installed?	
Setup will install Network Enabler SDK into the following folder.	
To continue, click Next. If you would like to select a different folder, click	c Browse.
C:NESDK	Browse
At least 16.5 MB of free disk space is required.	
< Back Next >	Cancel

Select where you would like the program installed and click 'Next'.

	ks			
Which additional tasks	s should be perfor	med?		Ċ
Select the additional to Enabler SDK, then clic	asks you would lik sk Next.	ce Setup to perform wh	ile installing Netw	ork
Additional icons:				
Create a desktop	icon			
		< Back	Next >	Cancel
	Select the additional ta Enabler SDK, then clic Additional icons:	Select the additional tasks you would lik Enabler SDK, then click Next. Additional icons: Create a desktop icon	Select the additional tasks you would like Setup to perform wh Enabler SDK, then click Next. Additional icons: Create a desktop icon          Create a desktop icon	Select the additional tasks you would like Setup to perform while installing Netw Enabler SDK, then click Next. Additional icons: Create a desktop icon           Create a desktop icon

Select whether or not you wish to have an icon on the desktop and click 'Install'.

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🛃 Setup	- Network Enabler SDK	x
Read Set	<b>y to Install</b> tup is now ready to begin installing Network Enabler SDK on your computer.	
Clic cha	ck Install to continue with the installation, or click Back if you want to review or ange any settings.	
De	estination location: C:\NESDK	
	4	~
	< Back Install Ca	ncel

Review the options and click 'Install'.



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Click 'Finish' to exit the setup program. The Debug program will be started straight away if the option here is left checked.

Windows Secu	rity Alert	X
Windo	ows Firewal	l has blocked some features of this program
Windows Firewall h	as blocked some	e features of Sdkmger on all public and private networks.
	Name:	Sdkmger
/	Publisher:	Unknown
	Path:	C:\nesdk\utility\sdkmger\sdkmger.exe
Allow Sdkmger to d	ommunicate on t	these networks:
Private netv	vorks, such as m	y home or work network
Public network because the	orks, such as the se networks oft	en have little or no security)
What are the risks	of allowing a pro	ogram through a firewall?
		Allow access Cancel

You may get a warning from the PC; you must allow the program access for it to work correctly.

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Search Actions Help			
<mark>/?∞ EE</mark> ⊠¥¤¤ ¥ ▶ !			
Model Name Module Name IP Address Subnet Mask AP Name AP ID AP Version	N Kernel Version MAC Address	Serial No.	OP Mode
NE-4110S-P         GAL020070         192.168.1.76         255.255.0.0         ntpv205.fm         0xcd         0.0           NE-4110S-P         GAL020073         192.168.1.47         255.255.0.0         ntpv205.fm         0xcd         0.0           NE-4110S-P         GAL020078         192.168.1.47         255.255.0.0         ntpv205.fm         0xcd         0.0           NE-4110S-P         GAL020078         192.168.1.52         255.255.0.0         ntpv205.fm         0xcd         0.0           NE-4110S-P         GAL020074         192.168.1.49         255.255.0.0         ntpv205.fm         0xcd         0.0           NE-4110S-P         GAL020076         192.168.1.69         255.255.0.0         ntpv205.fm         0xcd         0.0           NE-4110S-P         GAL020071         192.168.1.79         255.255.0.0         ntpv205.fm         0xcd         0.0           NE-4110S-P         GAL020077         192.168.1.79         255.255.0.0         ntpv205.fm         0xcd         0.0           NE-4110S-P         GAL020077         192.168.1.78         255.255.0.0         ntpv205.fm         0xcd         0.0           NE-4110S-P         GAL020071         192.168.1.78         255.255.0.0         ntpv205.fm         0xcd         0.0	3.0         00:90:e8:22:fc::           3.0         00:90:e8:22:fc::	8 3257 f 3232 3394 0 3265 d 3214 6 3255 c 3261 c 3165	Running Running Running Running Running Running Running Running

All of the NTS-4000-S Devices found are shown along with their current IP Address (if any), Hardware MAC Address and other System Information.



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### **Using the NESDK Software**

The first step to starting the Debugging process is to select the unit you wish to debug from the list, and click the 'Run Application / Debug' button (Blue Triangle).

🔉 NE SDK M	anager									• ×
Search Acti	ons Help									
P 2 00			🖌 🕨 🙎							
Model Name	Module Name	IP Address	Subnet Mask	AP Name	AP ID	AP Version	Kernel Version	MAC Address	Serial No.	OP Mode
NE-4110S-P	GAL020074	192.168.1.49	255.255.0.0	ntpv205.frm	Oxed	0.0	3.0	00:90:e8:22:fc:d0	3265	Running
NE-41105-P NE-41105-P NE-41105-P NE-41105-P NE-41105-P NE-41105-P NE-41105-P	GAL020073 GAL020073 GAL020071 GAL020070 GAL020072 GAL020076 GAL020078	192.168.1.47 192.168.1.47 192.168.1.78 192.168.1.76 192.168.1.60 192.168.1.69 192.168.1.64 192.168.1.52	255.255.00 255.255.00 255.255.00 255.255.00 255.255.00 255.255.00 255.255.00 255.255.00	ntpv205.fm ntpv205.fm ntpv205.fm ntpv205.fm ntpv205.fm ntpv205.fm ntpv205.fm ntpv205.fm	Uxed Oxed Oxed Oxed Oxed Oxed Oxed Oxed	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	0190/e8/22/tria 0090/e8/22/tria 0090/e8/22/tric8 0090/e8/22/tric8 0090/e8/22/tric8 0090/e8/22/tri8 0090/e8/22/tri8 0090/e8/22/tri8	3261 3232 3165 3257 3255 3214 9332 3194	Hunning Running Running Running Running Running Running
				_						

	Windows Security Alert
	Windows Firewall has blocked some features of this program
	Windows Firewall has blocked some features of Sdkdbg on all public and private networks.
	Name: Sdkdbg
	Publisher: Unknown
	Path: C:\nesdk\utility\sdkmger\sdkdbg.exe
	Allow Sdkdbg to communicate on these networks:
	Private networks, such as my home or work network
	Public networks, such as those in airports and coffee shops (not recommended because these networks often have little or no security)
I	What are the risks of allowing a program through a firewall?
	Allow access Cancel
6	

You may get a warning from the PC; you must allow the program access for it to work correctly.





NESDK Debugger - GAL020074	4(192.168.1.49)
Config Application Log	
☞ 盐▶● ≥ ≮●	
Network Enabler Info	MSF Time saved Broadcast to 255.255.255.255 use ment 71659523 real ment 71660000 drift correction=30.9 me /br
AP Info     Ethernet Info	MSF Time saved Broadcast to 255,255,255,255
t±∾ Senai Into	sys ms=1/1/18519 real ms=1/1/20000 drift correction=31.0 ms/hc MSF Time saved Broadcast to 255.255.255.255
	sys ms=171778520 real ms=171780000 drift correction=31.0 ms/hc MSF Time saved Broadcast to 255 255 255 255
Status Info	sys ms=171838521 real ms=171840000 drift correction=30.9 ms/hc MSF Time saved
⊕- TCP/IP ⊕- Serial	sys ms=171898519 real ms=171900000 drift correction=31.0 ms/hc MSF Time saved
	Broadcast to 255.255.255.255 sys ms=171958521 real ms=171960000 drift correction=30.9 ms/hc MSF Time saved
	▼ 

The Debug Window will show whether the unit is synchronised or not as well as other details about the units status. Clicking the 'Start Debug Log' button, allows the software to write the output information to a text file which can be saved and used to aid Technical Support Staff.

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#### **SUPPORT WEBSITE**

Should you require any Technical Support on this product, please go to galleonsupport.com where you can find access to the Knowledgebase, for general information.

For any further questions please submit a ticket detailing the problems or technical issues you are having, and a member of the Technical Support Team will be available to support you. When submitting a ticket, please give as much information as possible.

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galleonsupport.com website with Knowledgebase and Support Ticket links.



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Digital Clocks (3)	To obtain any Technical Support with any of	our products, submit a ticket to us here: http:/	/support.galsys.co.uk/index.php7/Tickets/Submit If t	throughout the Technical Support process it is deemed that you
	need to send any products back for repair.	NØ		
	This is the Manual for TimeSync 4. It will pro	vide information regarding the installation and	configuration of the software.	
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The Technical Support Knowledgebase.

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The Technical Support Ticket System

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### WARRANTY AND MAINTENANCE

#### WARRANTY

Galleon Systems warrants the time server to be free from defects in material and workmanship during a six-year period. The Warranty begins on the date the unit is shipped from Galleon Systems. Extended warranties are available by speaking to the Galleon Systems Sales Team.

Galleon Systems' liability under this Warranty is limited to repairing or replacing, at Galleon systems' option, the defective equipment and providing upgrade version changes for firmware. In case of repair, the product must be returned to Galleon systems.

This Warranty does not apply if repairs are required due to acts of nature beyond Galleon systems' control such as, but not limited to, lightning strikes, power surges, misuse, damage, neglect, or if repairs/modifications have been made or attempted by anyone other than personnel authorised by Galleon Systems.

In no event will Galleon Systems be liable for any indirect, special, incidental or consequential damages from the sale or use of this product.

This disclaimer applies both during and after the term of the warranty. Galleon Systems disclaims liability for any implied warranties, including implied warranties of merchantability and fitness for a specific purpose.

### **TECHNICAL SUPPORT, REPAIR AND RETURNS**

To obtain any Technical Support with this product, contact Galleon Systems via the Support Website – galleonsupport.com

If throughout the Technical Support process it is deemed that you need to send any products back for repair, we will issue a Return Material Authorisation (RMA) Number and shipping instructions. Then ship the product, transportation prepaid, for inspection.

Typical Equipment repair or replacement time is five (5) business days, plus shipping times. Oneway shipping is the customer's responsibility. Galleon Systems will return ship the equipment by the same means it was received.

Galleon Systems will not be responsible for unauthorised returns or for returns that do not list the RMA Number on a packing list attached in plain view on the outside of the shipping container.

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