



NEXION MOBILE DATA SYSTEMS

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High Speed Communications Technology

# NX2540 MODEM Installation Guide

# NEXION Modem Installation Guide

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## 1.0.9

Configuration information contained in this guide applies to firmware version 5.22 / 2.2.

This Modem Installation Guide supersedes all previous versions.

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## NMDS – THE NEXION MOBILE DATA SYSTEM

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## INTRODUCTION

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### Product overview

The Nexion Mobile Data System (NMDS) is a complete high-speed mobile communication solution featuring simple integration into virtually any radio based transmission system. As a member of the NMDS family, the NX2540 is a high performance DSP based VHF/UHF radio modem supporting over the air data rates of up to 8,000 bits per second (raw) on a Wide Band 25Khz or Narrow Band 12.5Khz channel.

### Installation Warning (Acceptable Use)

Installation and configuration of the Nexion high-speed data modem must be performed by a suitably qualified radio technician/mechanic/engineer and the procedures outlined in this guide must be strictly adhered to.

Failure to adhere to the procedures outlined in this guide will result in poor performance, ineffective operation, failure or in some cases damage to property and/or life.

Non-standard installations may adversely affect modem performance. Nexion Data Systems does not support non-standard installations.

Non-standard installations may affect warranty terms. Please contact Nexion Data Systems at [www.nexiondata.com](http://www.nexiondata.com) for advice regarding your custom usage.

Further modem assistance may be obtained at [www.nexiondata.com](http://www.nexiondata.com).

The MPT 1362 code of practice for the installation of mobile radio and related ancillary equipment in land-based vehicles can be found at the radio communications agency web site [www.radio.gov.uk](http://www.radio.gov.uk)

Where applicable the National Fire Protection Association standard NFPA 58 for radio/modem installations into vehicles powered by liquefied petroleum gas can be found at [www.nfpa.org](http://www.nfpa.org)

For maritime installations, further information may be found at the International Maritime Organisation's web site at [www.imo.org](http://www.imo.org)

### Transceiver Duty Cycle

Nexion data modems transmit data as it is presented to its RS-232 port by the connected device/application. Continuous streams of data are sent to the radio without interruption by the Nexion modem.

**WARNING** – Many mobile transceivers in use are not capable of continuous transmit operation. A typical duty cycle is approximately 30%. This means for 2 minutes of continuous transmission the radio must remain idle (i.e. in receive mode) for 4 minutes. Ambient temperatures can affect this TX/RX ratio to some degree.

Caution must be taken when using these types of radio transceivers for either continuous or extended data transmissions. Short TX burst applications such as SCADA, Telemetry, GPS, etc are generally not affected.

### **Package contents**

Instruction booklet  
Nexion data modem  
HD-DB26 connector with back shell  
Universal Radio Interface Cable  
Mounting Brackets

### **System requirements**

Computer equipped with an unused standard communications port (eg. COM1 / COM2) or other Nexion integrated system.  
A suitable radio equipped for modem connection. Please refer to both the specifications and application notes (if available) to determine suitability.  
Radio cable to connect the modem to the VHF/UHF transceiver.  
Data cable to connect serial device to modem. Connection and construction guidelines for these cables are given in following sections of this manual.

## **INSTALLATION: PC CONNECTIONS**

The Nexion family of modems is designed to operate seamlessly with most PC based terminal programs capable of communicating with standard RS-232 serial devices.

### **Connect the cable**

Shut down the computer and ensure the modem is switched off. Locate a spare DB9 or DB25 COM port and connect the serial cable (Available separately) between the PC and the Nexion modem. Turn on the modem and restart the computer.

### **Configuring the Terminal program**

Using a standard terminal program such as HyperTerminal<sup>®</sup>, Tera Term<sup>®</sup> or ProComm<sup>®</sup>, configure the Com Port settings within these programs for the following settings...

<b>Data Speed:</b>	57,600bps
<b>Data Bits:</b>	8
<b>Parity:</b>	N
<b>Stop Bits:</b>	1
<b>Flow Control:</b>	Hardware

When completed and correctly configured, type ATI <ENTER> and the following example / format should appear...

```
Nexion NX2540 v5.xx  
ESN 000000400099  
OK
```

The Nexion modem is ready for use.

## INSTALLATION: RADIO HARDWARE

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### Power Connection

The Nexion modem requires a nominal 12 volts DC to operate, however any voltage supply between 10 and 16 volts DC will suffice. Power to the modem is usually provided via the radio.

### Transmit Audio (AOUT1)

The TX Audio out line must be connected to the 'transmit' audio path after any audio signal processing (ie. after pre-emphasis and just before the modulator). The minimum resistive load on the TX Audio line is 600 ohms and any DC biasing on this connection should not interfere with normal operation of the transceiver and/or modem.

### Receive Audio (AIN1)

The RX Audio in line must be connected to a point immediately before any audio signal processing (ie. before de-emphasis). This point is commonly referred to the discriminator output or the de-modulator output. This connection point must provide the modem with constant demodulated (ie. Flat) audio between 400mVp-p and 1.5Vp-p and should not be affected by the radio's mute or volume circuitry.

#### Please Note:

- In some situations, your radio transceiver manufacturer will provide an options connector / board where the transmit audio, receive audio, PTT and mute connections are made externally available. We strongly suggest that these option connectors / boards be used where available, thus eliminating the need for transceiver modifications that could possibly void the warranty with the radio manufacturer.
- The maximum signal level allowed on AIN1 is 3Vp-p. If this level is exceeded the warranty is voided as permanent damage may result.

### Press To Talk (PTT Out)

The PTT line must be connected to the radio at a point that provides transmit and enables the audio path for the modem Transmit Audio (AOUT1). As this output is an open collector driver, a pull up resistor may be required if not provided internally to the transceiver. Refer to the Electrical Specifications sections for further details.

### Busy Connection – Optional (Busy)

The Busy connection is used to inform the modem of an inbound received signal. The input level sense of this signal is currently set to Active Low.

### Mute Connection – Optional (Data Mute)

The mute connection can be configured to automatically disable the receivers' audio to provide silence during data reception. This pin will provide an active low output (default) to your radio transceivers internal mute circuitry. **Please Note** – do not connect the mute output directly across the speaker output.

## **INSTALLATION: VEHICLE OR OTHER HIGH RF ENVIRONMENTS**

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Additional precautions should be taken when installing Nexion modems into vehicles or other high RF environments, namely...

- Mount the modem where it will not become dislodged during a vehicle collision. For example:
  1. Under the drivers or passengers seats, but away from any other vehicle electronics.
  2. In the boot area of most standard sedans.
  3. In the rear cargo area of most standard wagons and/or 4WD vehicles.
- The modem case must be securely connected to a ground point. This is generally achieved by mounting the Nexion modem with the two modem mounting brackets (supplied) to a vehicle or chassis ground point or alternatively by attaching a ground lead to one of the four modem screws that holds one of the modem end covers.
- The radio to modem interconnecting cable should be as short as possible.
- The shield in the radio interconnecting cable must be terminated to a ground point. This is generally achieved by connecting the shield wire to a ground/chassis point near the 2-way radio.
- In a high RF environment such as a vehicle, please observe the following precautions...
  1. The serial cable must be kept as short as possible.
  2. Only terminate the required RS-232 signal lines and leave all others not connected. For example, if connecting to a serial device that requires TXD, RXD, GND, RTS and CTS, leave all other RS-232 signal lines (eg. DTR, RI, etc) to/from the Nexion modem not connected.
  3. Lengthy extensions of serial cable are not recommended. Where lengthy runs are used it is advisable to use a shielded cable and ferrite clamp (available separately) around the serial cable end closest to the modem. The ferrite clamp and shielding helps suppress electronic/electrical interference entering the Nexion modem.
- Mount the Nexion modem away from any strong RF interference, such as the vehicle's 2-way radio antenna.
- Do not expose the modem to weather or direct sunlight.
- Do not expose the modem to prolonged periods of high humidity.
- Observe caution when drilling into vehicle panels or chassis. Locate and clear items such as wiring looms, hydraulic pipes and fluid lines etc. before mounting any device.
- Care must be taken where the vehicle may enter a hazardous area where no 2-way radio transmissions are permitted. When entering a hazardous area, switch off all 2-way radio and modem equipment until the vehicle has left the hazardous area.
- Care must be taken where the vehicle may come into close proximity of sensitive electronic and/or medical equipment where no 2-way radio transmissions are permitted. When entering such an area, switch off all 2-way radio and modem equipment until the vehicle has left the said area.

**Warning:** Failure to comply with the above recommendations may...

- Damage the Nexion modem
- Void Warranty
- Cause damage to property and/or life

## INSTALLATION: SERIAL INTERFACE

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### RS-232 Conventions

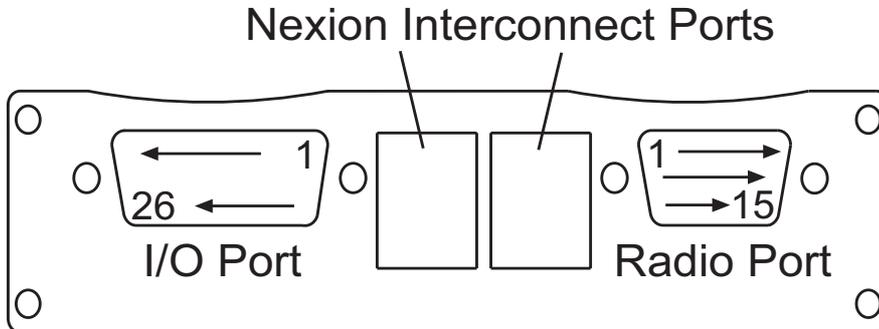
The Nexion radio modem is a DCE device. This means that for most PC applications a cable that connects the PC DTE serial port to the modems' DCE port will use a 1:1 cable i.e. RTS to RTS. The direction of all of the serial lines is given in the connector pin out diagrams. These flows are with respect to the modem.

### Example: PC to Modem COM1 Cable

PC end DB9 Female		Modem end HDB26 Male	
Function	Pin	Pin	Function
Data Carrier Detect (DCD)	1	10	COM 1 Data Carrier Detect
Received Data (RXD)	2	26	COM 1 Received Data
Transmitted Data (TXD)	3	13	COM 1 Transmit Data
Data Terminal Ready (DTR)	4	11	COM 1 Data Terminal Ready
Signal Ground (GND)	5	16	GND
Data Set Ready (DSR)	6	24	COM 1 Data Set Ready
Request To Send (RTS)	7	12	COM 1 Request To Send
Clear To Send (CTS)	8	25	COM 1 Clear To Send
Ring Indicator (RI)	9	23	COM 1 Ring Indicator

**CONNECTORS AND ADJUSTMENTS**

**Connector Pin Outs**



**Note :- The limits listed in the electrical specifications section must be complied with for all of these connections. Failure to do so will void the warranty and may cause permanent damage.**

**I/O Port**

Pin	Function	Flow	Abbreviation
1	N/C		
2	N/C		
3	Power	IN	PWR
4	Digital Output 2	OUT	DO2
5	N/C		
6	N/C		
7*	COM 3 Transmit Data	IN	COM3TXD
8*	COM 2 Request To Send	IN	COM2RTS
9*	COM 2 Transmit data	IN	COM2TXD
10	COM 1 Data Carrier Detect	OUT	COM1DCD
11	COM 1 Data Terminal Ready	IN	COM1DTR
12	COM 1 Request To Send	IN	COM1RTS
13	COM 1 Transmit Data	IN	COM1TXD
14	N/C		
15	Digital Output 3	OUT	DO3
16	GND		GND
17	Digital Input 1	IN	DI1
18	N/C		
19	N/C		
20*	COM 3 Received Data	OUT	COM3RXD
21*	COM 2 Clear To Send	OUT	COM2CTS
22*	COM 2 Received Data	OUT	COM2RXD
23*	COM 1 Ring Indicator	OUT	COM1RI
24	COM 1 Data Set Ready	OUT	COM1DSR
25	COM 1 Clear To Send	OUT	COM1CTS
26	COM 1 Received Data	OUT	COM1RXD

**Radio Port**

Pin	Function	Flow	Abbreviation
1	Audio Input	IN	AIN1
2	Audio Output	OUT	AOUT1
3*	COM 3 Received Data	OUT	COM3RXD
4*	Busy (CTCSS)	IN	Busy-CTCSS
5	Microphone Mute	OUT	Mic-Mute

6	GND		GND
7	Receive LED Indicator	OUT	RX_LED
8	Busy Connection	IN	Busy-In
9	Press To Talk	OUT	PTT-Out
10	Data Mute	OUT	Data-Mute
11*	COM 3 Transmit Data	IN	COM3TXD
12	Power	IN	PWR
13*	Local PTT detect (Digital In 4)	IN	PTT-In
14	Transmit LED Indicator	OUT	TX_LED
15	Digital Output 1	OUT	DO1

**Universal  
Radio Cable  
Colour code**

Pin	Colour	M.C.	Abbreviation
1	Black	Yes	AIN1
2	Brown	Yes	AOUT1
3*	Red		COM3RXD
4*	Orange		Busy-CTCSS
5	Yellow		Mic-Mute
6	Dark Green	Yes	GND
7	Dark Blue		RX_LED
8	Violet		Busy-In
9	White	Yes	PTT-Out
10	Grey		Data-Mute
11*	Pink		COM3TXD
12	Light Green	Yes	PWR
13*	Black with White stripe		PTT-In
14	Brown with White stripe		TX_LED
15	Light Blue		DO1

M.C. - Minimal connections for modem operation over a standard VHF and/or UHF transceiver.

Refer to Specifications for electrical details of the above pins (pins with an asterisk (\*) not implemented in current version of firmware).

### Radio Adjustment

The VHF/UHF transceiver must be first tested for proper performance as a stand-alone unit (no modem connected) with all the Transmit (TX) and Receive (RX) measurements noted and proven to be within the manufacturers specifications. Once the modem has been fitted to the transceiver, the transceiver should have its TX and RX measurements re-measured and compared to the original. Please note if there are any discrepancies, as these must be identified and corrected before continuing.

### Transmit adjustments

In Command Mode, use the built in test tone generator (see Test tones) AT&T3 to generate a 1.6khz tone. Adjust the radio deviation and modem output level controls (ATS300) for maximum deviation with no visible distortion when viewed on a communications analyser. Care must be taken to not let the radio's voice limiter distort the signal or to exceed the allowable deviation for the licensed emission designator. This point is usually achieved at 3khz to 4khz deviation on a wide-band (25Khz channel spacing) transceiver and 1.5Khz to 2Khz on a narrow-band (12.5Khz channel spacing) transceiver. The Nexion modems can be set to the same deviation levels as voice if the limiter does not distort the signal.

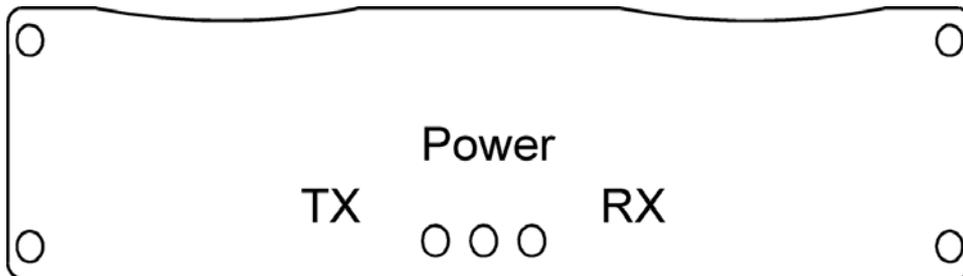
**Receive adjustments**

The NX2540 modem will accept a wide analogue audio input level between 400mV and 1.5V p-p (100K Impedance). The audio to the NX2540 modem should be flat audio (generally directly from the radio's discriminator) between 500Hz and 2550Hz with minimal signal distortion (ideally <3-4%).

**OPERATION AND CONTROLS**

**Indicator Panel**

The indicator panel houses three LED indicators: Transmit, Receive and Power. Their functions are tabled below.



Indicator Status			
On	Flashing	Off	Meaning
Power			Power connected
TX			Transmit
	RX		Data being received
		Power	No power
		TX	Not asserting PTT
		RX	No data being received

## AT command set and S registers

### Command and Data modes

The modem can operate in either data mode or Command mode. To change from data mode to Command mode use the following escape sequence. Wait one second. Send three '+' signs (+++) within one second. Wait one second and press Enter. The modem is now in command mode. To switch from Command mode to Data mode (i.e. Transparent mode/Broadcast mode) use the ATO command.

### AT commands

The modem responds to the commonly used AT commands with "OK". Only those commands that have some relevance to the operation of a radio modem have any effect on the operation of the modem.

The AT commands that elicit an "OK" response and optionally have some effect on the modem operation are listed in the following table. All "AT" commands not listed respond "ERROR". Default settings are **bold**.

Cmd	Function
<b>AT</b>	Responds "OK", no effect
<b>ATI</b>	Responds with firmware version number and modem serial number Example response: <b>ATI</b> Nexion NX2540 V5.xx ESN 000000400099 OK
<b>ATI1</b>	Responds with the modems build version Example response: <b>ATI1</b> DSP build Sep 7 2005 09:46:29 [5.22] OK
<b>ATO</b>	Exit command mode and return to data mode
<b>AT%Q</b>	Responds with statistical information on transmitted and received Nexion packets, including Over Air Headers (OAH), Nexion Packets (NX) and Nexion FEC packets (NX-fec). In Transmitted, NX-fec is a counter for all Nexion packets transmitted with FEC attached. In Received, NX-fec provides a valuable diagnostic tool to report the number of Nexion packets using FEC to successfully correct the received packet. If required, use ATZ to reset the counter. Example response: <b>AT%Q</b> Transmitted: OAH:0 NX:0 NX-fec:0 Received: OAH:0 NX:0 NX-fec:0 OK
<b>ATS</b>	Access an "S" register (see <b>S Registers</b> )
<b>ATZ</b>	Reset modem and re-load configuration data
<b>AT&amp;F</b>	Restore the default configuration
<b>AT&amp;T</b>	Test tone generator (see Test tones)
<b>AT&amp;V</b>	View configuration settings

Cmd	Function
	View the current modem configuration settings (in Command Mode only) Example response: <b>AT&amp;V</b> S300=025 S301=000 S304=050 S305=064 S306=000 S309=000 S311=000 S357=000 S400=005 S401=002 S403=100 S404=000 S504=016 S801=001 OK
<b>AT&amp;W</b>	Save configuration settings

### Test tones

In Command Mode the "AT&T" command can be used to generate tones for radio adjustment and testing. When entered with a numeric suffix it will output the tone and assert the PTT. When entered with no numeric suffix the tone will cease, the PTT will go off and the modem will return to normal operation. **Important: The deviation generated by the T3 test tone is approximately 80% of the peak deviation of the data.** For example, to achieve a transmitted data deviation of 2.5Khz, set the T3 test tone for 2.0Khz transceiver deviation.

Cmd	Function
<b>AT&amp;T3</b>	1600Hz
<b>AT&amp;T4</b>	600+2600Hz
<b>AT&amp;T / AT&amp;T0</b>	No tone, PTT off, Normal Link Mode operation
<b>Note:</b> Will only function in Command Mode.	

### S Registers

The “S” registers are employed to provide a means of controlling modem operation. Some “S” registers provide functions analogous to standard phone line modems to avoid problems with communications packages that access these.

The “S” register access commands that elicit an “OK” response and optionally have some effect on the modem operation are listed in the following table. All “S” register access commands not listed respond “ERROR”.

S Reg	Function	Default
<b>TRANSCEIVER INTERFACE PARAMETERS</b>		
S300	Transmit level (0-79). Example transmit levels using AT&T3: 0=2.5V p-p, 20=1.24V p-p, 40=0.6V p-p, 60=0.3V p-p (Level measured across a 100K Ohm load or greater). Default (25 = 0.980V p-p) Important – Using AT&T test tones, ensure the transmitted test tones have minimal distortion – Typically <3%.	25
S301	Reserved for factory use.	0
S304	Transmit Lead In Duration (LID) in milliseconds.	50
S305	Tail duration (ms), default 64ms	64
S306	Advanced Switches (Additive S register) 1 = PTT Output Sense (0=Active Low, 1 =Active High) 2 = Boot Up On-line Enable 4 = RX Tagging Enable 8 = PTT, Busy Status Auto-Reporting Enable 16 = Half Duplex Enable Eg. S306=6 – Boot up on-line (2) + RX tagging enabled (4).	16
S309	Busy In Enable / Active Sense	0
S311	Data mute output enable (0 = disable, 1 = close mute for data packets)	0
<b>MODEM PARAMETERS</b>		
S350	RF baud rate (0= 4000bps, 1= 8000bps)	1
S357	Forward Error Correction (FEC) settings 0 = No FEC 1 = 40% Header FEC, 0% Data FEC 2 = 40% Header FEC, 17% Data FEC 3 = 40% Header FEC, 40% Data FEC 4 = 40% Header FEC, 75% Data FEC 5 = 40% Header FEC, 95% Data FEC	0
<b>SERIAL PORT 1 PARAMETERS</b>		
S400	Serial port 1 baud rate (0 = 2400, 1 = 4800, 2 = 9600, 3 = 19200, 4=38,400, 5=57600, 6=115,200)	5
S401	Serial Port Hand-shaking enable (0=Don't check RTS/CTS, 2=Check RTS/CTS)	2
S403	Data gap time (ms). The amount of time the modem will wait after receiving the last byte from the serial port. When the data gap time expires the accumulated receive serial data is transmitted.	100
S404	Local Echo On/Off 0 = Echo Off, 2 = Echo On	2
<b>SPECIAL PARAMETERS</b>		
S801	ATI on power-up (1=enable, 0=disable)	1

### **S Register examples**

To change S register settings, use the above table to determine the values required and make these changes using the following format...

ATS300=10 Changes S register 300 to a value of 10  
ATS304? Displays an individual S register value

### **Additive S Register examples**

To change an additive S register setting, use the above table to determine the values, for example...

ATS306=1 Toggles the PTT Sense (0=Active Low, 1 =Active High)  
ATS306=2 Will boot-up the modem On-line (2) + PTT Sense (0)  
ATS306=18 Half Duplex Enable (16) + Boot Up On-line (2)

## **INSTALLATION, PROGRAMMING AND PERFORMANCE TIPS**

To ensure maximum performance, modems must be fitted according to the recommended model specific application note (if available). Please refer to our web site to see the complete list of application notes.

### **General application instructions**

- All wiring connections should be made using high quality connectors.
- Modem audio output must be introduced to the transceiver after all audio signal-processing circuits, ie. after pre-emphasis.
- Modem audio input must be taken before the transceivers audio processing circuitry, ie. before de-emphasis.

### **Programming tips...**

- After implementing any S register changes, save the setting (AT&W) and reset the modem with an ATZ command.
- Test tones will not operate whilst the modem is on-line (ie. data mode).
- Provided your terminal program / application can support it, use Hardware hand-shaking (ATS401=2).

### **Performance tips...**

- Using the AT&T3 test tone, adjust S300 (transmit level) to your maximum system deviation level. Measure the transmitted audio distortion level to test if the modem can transmit at these levels without audio clipping/distortion. Once the maximum transmitter deviation level is determined, turn S300 down until the transceiver is deviating 80% of the maximum level before clipping/distortion.
- Reduce S304 (lead in duration) to an acceptable level suitable to your transceiver and radio system.
- In mobile (ie. noisy) environments, use a small to medium amount of FEC (Forward Error Correction) to improve the reliability of the transmitted data. For fixed point-to-point applications, FEC can be reduced or disabled entirely to improve data throughput.

## SPECIFICATIONS

### Performance

<b>Data Transmission Rate</b>	Up to 8Kbps (raw, uncompressed)
<b>Data Transmission Types</b>	Broadcast / Transparent Only
<b>Link Establishment Time</b>	Typically < 65mS (not including any radio delays)
<b>DPS Processor</b>	140 MIPS
<b>Memory</b>	2Mb/4Mb Flash
<b>Serial Ports</b>	1 x Standard RS-232 / Com Port 1 x Transceiver Interface (optional) 1 x Available (external connectivity – GPS, etc.)
<b>Status LED's</b>	Power, TX & RX
<b>Audio Inputs</b>	1
<b>Audio Outputs</b>	1
<b>Digital Inputs</b>	4
<b>Digital Outputs</b>	6
<b>Operating Temperature</b>	-10° to +60° C ambient
<b>Size and Weight</b>	110mm W x 75mm D x 26mm H (including connectors); 180g

### Electrical

**Note: - The following limits must be complied with. Failure to do so will void the warranty and may cause permanent damage.**

<b>Primary Power</b>	12 V DC nominal @ 90mA 10-16 V DC operating range
<b>Serial Ports</b>	Standard RS-232 levels
<b>Module Interconnection</b>	RS-485
<b>Digital Inputs</b>	Low: Input voltage < 0.8V DC High: Input voltage > 2V DC
<b>Digital Outputs</b>	Open collector drive. Total Maximum current: 400mA (at 3V) Maximum applied voltage: 40VDC Maximum total power dissipation: 1.25W
<b>Analog Inputs</b>	400mVp-p to 1.5Vp-p Audio Input Audio bandwidth 400-2600 Hz ± 6dB Input impedance 100K ohms Maximum level 2.5Vp-p
<b>Analog Outputs</b>	400mVp-p to 2.5Vp-p Audio Output (Software controlled) Audio bandwidth 400-2600 Hz ± 6dB Output Impedance 600 ohms

### Australian Compliance Information

This modem complies with the relevant requirements of AS/NZS 4251.1 and carries the C tick compliance marking.



**Motherboard Link Configurations**

Signal Description	Active Sense	Install Link	Remove Link
Busy Input	Active Low (Default)	Link 3	Link 10
	Active High	Link 10	Link 3
PTT Input	Active Low (Default)	Link 1	Link 8
	Active High	Link 8	Link 1
Busy CTCSS Input	Active Low (Default)	Link 2	Link 9
	Active High	Link 9	Link 2
Digital 1 Input	Active Low (Default)	Link 5	Link 11
	Active High	Link 11	Link 5

**Important Note:** For each Link pair, please ensure only one link is fitted for either Active Low or Active High operation

Signal Description	Link 4	Link 6	Link 7
PTT Out Data Mute Out Microphone Mute Out Digital Out 1 Digital Out 2 Digital Out 3 TX LED RX LED	Install this link for all output lines to be pulled high to the PWR IN protected (13.2V) line (Default)	Install this link for all output lines to be pulled high to 5.0V	Install this link for all output lines to be pulled high to 3.3V

**Important Note:** Please ensure a maximum of one link is fitted.

## **FIRMWARE OPTIONS**

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The following options are available for this version of firmware...

- **Option NX41-50:** Enables Data Tagging / Status Reporting. The data tagging option makes available the ability to transmit / receive data over-air while in Command mode. This feature is useful when the modem is required to monitor remote I/O etc. in Command mode but is required to transmit and receive over-air data. A huge advantage of this Virtual Transparent mode is the reduction in time required for switching between Transparent and Command mode. The Status reporting feature reports the Local PTT signal state, the BUSY MUTE signal state and a 15 second history for each of these signal states.

## **FAQ / TROUBLESHOOTING**

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### **How to initialise the modem?**

Type ATZ in a terminal that is correctly connected to the COM port or cycle the power source.

### **My terminal program does not communicate with the modem.**

Check that the communications port you have chosen is not disabled in the system BIOS. Consult your systems hardware guide or your system supplier if necessary to check these settings.

Ensure that the communication port I/O settings and its IRQ do not conflict with any other devices. In Windows, go to the System icon in the Control Panel.

Win9x: Click Device Manager and look for alert symbols.

Win2k: Click Hardware and then Device Manager. Look for any alert symbols.

### **While testing the modem, the system gave an error message saying that it was unable to open the COM port.**

The port is probably in use by another application. Close all open applications and utilities that may be using the communications port before running the test. Temporarily remove items from the start-up group if necessary and re-boot the computer.

Ensure that the communication port I/O settings and its IRQ do not conflict with any other devices. In Windows, go to the System icon in the Control Panel.

Win9x: Click Device Manager and look for alert symbols.

Win2k: Click Hardware and then Device Manager. Look for any alert symbols.

### **There are incomprehensible characters appearing on the screen.**

Flow control and or terminal settings are incorrect for the system. Check the following:

Com Port settings (Nexion default is 57,600, 8, n, 1)

Enable RTS/CTS hardware flow control.

Disable XON/XOFF software flow control.

**For more FAQ's please visit our web site [www.nexiondata.com](http://www.nexiondata.com)**

## **TERMS AND CONDITIONS**

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### **Warranty**

Your Nexion modem is guaranteed against defects from workmanship for a period of 12 months from date of purchase when the registration process is completed within 30 days from date of purchase. Registration helps to ensure that we can advise all customers of enhancements and improvements as they are developed.

In the event of failure, a Return Material Authorisation (RMA) form must be completed before any goods can be accepted Nexion Data Systems for warranty repair and/or replacement.

This warranty shall not apply to any unit which has been subject to alteration, modification, abuse, negligence, accident, external voltage / lightning surge or used in any manner contrary to these instructions. The user is responsible for freight costs back to the service centre. The warrantor will be responsible for freighting the replacement / repaired unit back to the user. This warranty gives you specific legal rights and you may also have other rights that vary from state to state and country to country. The obligation is solely to repair or replace the product at the warrantor's discretion. The warrantor is not liable for any incidental or consequential damages due to such defects. Damage caused to the modem, or attached equipment by lightning strikes or over voltage surge is not covered under the terms and conditions of the warranty.

### **No Further Warranty**

Except as expressly set forth in this agreement, the product and any accompanying software is provided on an "as is" basis, without warranties or conditions of any kind, either express or implied including, without limitation, any warranties or conditions of title, non-infringement, merchantability, or fitness for a particular purpose. Each recipient is solely responsible for determining the appropriateness of using and distributing the product and any software and assumes all risks associated with its exercise of rights under these Terms and Conditions, including but not limited to the risks and costs of program errors, compliance with applicable laws, damage to or loss of data, programs or equipment, and unavailability or interruption of operations.

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## REGISTRATION DETAILS

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You can register your Nexion Data Products by e-mail.

When you register your Nexion High Speed Data Modem you will receive notifications of important software and/or firmware updates. These updates range from simple product enhancements to critical fixes that may or may not affect the operation of your modem.

E-mail registration:

Please e-mail us at [registration@nexiondata.com](mailto:registration@nexiondata.com) with at least one Nexion modem serial number in the subject line and your complete contact details in the body of the e-mail message.

For your records:

Please record your details here or store them in a convenient place.

<b>Nexion Model:</b>	
<b>Serial No.:</b>	
<b>Date of purchase:</b>	
<b>Distributor:</b>	
<b>Software Options:</b>	