

Getting Started with Motorola

WHISP SM



Warranty Information

Motorola offers a warranty covering a period of one (1) year from the date of purchase by the retail customer. If a product is found defective during the warranty period, Motorola will repair or replace the product with the same or a similar model, which may be a reconditioned unit, without charge for parts or labor.

1. Congratulations!

You have purchased a Motorola WHiSP radio, the latest innovation in high speed wireless networking. The Motorola WHiSP radio lets you easily network at high speeds with no wiring.

- Network speeds of 10baseT.
- Small compact design
- No special set up on your PC.

2. Getting to Know your Radio.

- The base cover snaps off the gain access to connectors and LED's.



Installing WHiSP

Mount your WHiSP radio in a location where it is facing the transmitting tower



- Plug the power adapter's Ethernet patch into your PC Ethernet port.
- Connect an Ethernet cable between the other side of the power adapter Ethernet patch and the RJ45 socket on the WHiSP SM.
- See the section on "Aligning your WHiSP" in the trouble shooting section of this manual to insure best performance.
- IMPORTANT NOTE: To comply with FCC RF exposure compliance requirements, the following antenna installation and device operating configurations must be satisfied. The antenna used for this transmitter must be installed to provide a separation distance of at least 20cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. Installers and end-users must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

Configuring your computer

Your PC will not require any special setup beyond proper installation of Ethernet drives & drivers. Configuration of your computer's TCP/IP parameters will be specified by your ISP. However, you will need to temporarily configure your computer's TCP/IP parameters in order to configure your WHiSP radio.

Configuring your Windows 98 computer

These instructions are for Windows98 and presume you have already installed your Ethernet card or Network Interface Card (NIC), and have installed TCP/IP protocols. If these are not yet installed, they must be installed before proceeding.

To temporarily reconfigure your TCP/IP protocol to configure your WHiSP radio, first begin by RIGHT clicking on the Network Neighborhood icon on your desktop. A side menu appears, and you must LEFT click on the bottom item labeled "Properties".

Config The	uration Identif following <u>n</u> etwo Client for Micro 3Com EtherLinl	ication ork.com soft.Ne	Acces	s Control) are install	ed:	
The	following <u>n</u> etwo Client for Micro 3Com EtherLinl	ork corr soft Ne	nponents	are install	ed:	
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Presuming your Network Interface Card (NIC) or Ethernet card is already installed along with the TCP/IP protocol, you will see both under the list of network components installed.

Click the TCP/IP protocol item in the component list to highlight it, and then click on the "Properties" button.

This will bring up the TCP/IP Properties screen shown next.

In order to configure your WHiSP radio, you must temporarily assign a fixed IP address to your computer.

Click the radial "Specify an IP address" so that a dot appears. Then you may enter a temporary IP address and subnet mask. Enter the IP address 192.168.100.4, and subnet mask 255.255.255.0.

You may then click OK, and OK again to the Network Properties dialog. Your computer will copy some Windows install files, and may ask for the Windows CD if Windows install files (called CAB files) were not copied to your hard drive at installation time.

Your computer will typically indicate that it needs to reboot before the settings take effect. You will need to reboot before proceeding to configure your WHiSP radio.

CP/IP Properties			?>
Bindings	Advanced	N	letBIOS
DNS Configuration Ga	ateway WINS (Configuration	IP Address
An IP address can be If your network does n your network administr the space below.	automatically ass ot automatically a ator for an addre:	igned to this (assign IP addr ss, and then t	computer. esses, ask ype it in
C <u>O</u> btain an IP add	lress automaticall	y	
- © Specify an IP ad	dress:		
IP Address:	192.168.	100.4	
S <u>u</u> bnet Mask:	255.255.	255.0	
-			
		OK	Cancel

After configuring and alignment of your WHiSP radio, follow the service provider instructions for returning your TCP/IP properties to "**Obtain an IP address automatically**" or other "**specific IP address**" assigned value as instructed. Expect your system to reinstall files (or ask for the Windows CD if CAB files are not copied on your hard drive) and request reboot each time TCP/IP parameters are changed. You may return your TCP/IP parameters to the specific temporary IP address at any time to review or reconfigure your WHiSP radio.

Configuring your Windows 2000 computer

To temporarily reconfigure your TCP/IP protocol to configure your WHiSP radio, first begin by RIGHT clicking on the Network Neighborhood icon on your desktop. A side menu appears, and you must LEFT click on the bottom item labeled "Properties".





When you click properties a new window will come up, it will look something like this. When this window comes up, RIGHT click on the icon labeled Local Area Connection. Once again LEFT click the properties button that is on the very bottom of the box.

Presuming your Network Interface Card (NIC) or Ethernet card is already installed along with the TCP/IP protocol, you will see the card listed under the "Connect using" field, and the Internet Protocol (TCP/IP) under the list of components used by this connection.

Click the TCP/IP protocol item in the component list to highlight it, and then click on the "Properties" button.

This will bring up the TCP/IP Properties screen shown next.

By D'LINK DE220) ISA PnP LAN adapter	
omponents checke	ed are used by this conne	Configure
NWLink NetBIC)S	
NWLink IPX/SF	≫X/NetBIOS Compatible	Transport Protocol
Internet Protoco	ol (TCP/IP)	
4		[) (
Install	Uninstall	Properties
Description	1992	

In order to configure your WHiSP radio, you must temporarily assign a fixed IP address to your computer.

Click the radial "Use the following IP address" so that a dot appears. Then you may enter a temporary IP address and subnet mask. Enter the IP address 192.168.100.4, and subnet mask 255.255.255.0.

Once you have entered the IP address and subnet mask, you may click the OK button, since you are using Windows 2000 you will not need to restart your computer.

u can get IP settings assigned	d automaticallu if upur petwork supports
s capability. Otherwise, you ne appropriate IP settings.	eed to ask your network administrator fo
Obtain an IP address autor	matically
Use the following IP addre	ISS:
IP address:	192 . 168 . 100 . 4
Subnet mask:	255 . 255 . 255 . 0
Default gateway:	12 21 22
• • • • • • • • • • • • • • • • • • •	
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 Use the following DNS ser 	ver addresses:
Preferred DNS server:	
Preferred DNS server: Alternate DNS server:	
Preferred DNS server: Alternate DNS server:	2 2 2
Preferred DNS server: Alternate DNS server:	Advanced

After configuring and alignment of your WHiSP radio, follow the service provider instructions for returning your TCP/IP properties to "**Obtain an IP address automatically**" or other "**specific IP address**" assigned value as instructed. Since you are using Windows 2000 you will not need to restart your computer. You may return your TCP/IP parameters to the specific temporary IP address at any time to review or reconfigure your WHiSP radio.

Configuring the WHiSP radio

Once your computer TCP/IP properties have temporarily been assigned a IP address 192.168.100.4, you may communicate with the WHiSP radio. Open your web browser (such as Microsoft Internet Explorer) and enter the radio default address: 192.168.100.1. If the WHiSP radio is powered and properly connected to your computer, you will see the WHiSP radio homepage or status page open in your web browser. These web pages are within the WHiSP radio, and no connection with the Internet is required. Various web pages within the WHiSP radio can be selected from the choices on the left.





This is the WHiSP Zone <u>Home</u> page. You may select any of the other pages within the WHiSP radio, such as the <u>Status</u>, <u>Configuration</u>, <u>Alignment</u>, <u>Event Log</u>, <u>AP Eval</u> <u>Data</u>, <u>Link Test</u>, or <u>Packet Stats</u>.

Status

🗿 WhISP Home Page - I	Microsoft Internet Explorer	
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	The W	Vhisp Zone
Home	Software Version	WHISP Lamentations Jun 19 2001 09:33:06
<u>Status</u>	FPGA Version	061801cf
Configuration	Device ESN	0a-00-3e-00-00-05
Alianmont	Uptime	00:03:13
rugunen	System Time	00:03:13 01/01/2000
<u>Event Log</u>	Session Status	SCANNING
AP Eval Data	Data Slots Up	0
Link Test	Data Slots Down	0
T. 1 . 0.	Air Delay	0 (approximately 0.00 miles (0 feet))
Packet Stats	RSSI	29
	Jitter	15
	Ethernet Interface	10Base-T Full Duplex

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Device type	should read Subscriber Modem – Multipoint Mode. Any						
	other label indicates an inappropriate preconfiguration of the						
	WHiSP radio						
Software Version	should be noted in the event you have technical difficulties and						
	need to contact technical support						
FPGA Version	should be noted in the event you have technical difficulties and						
	need to contact technical support						
Device ESN	is the Link Layer Ethernet Address assigned to your WHiSP						
	radio. Every WHiSP radio, Ethernet card, or Network						
	Interface Card (NIC) will have a unique number preconfigured						
Uptime	is the length of time your WHiSP radio has been operating						
	since power was last applied						
System Time	is the time set by the wireless service provider						
Session Status	Scanning/Registering/Registered/Aiming						
	This information is for use of technical support						
Data Slots Up	This information is for use of technical support						
Data Slots Down	This information is for use of technical support						
Air Delay	This information is for use of technical support						
RSSI	This information is for use of technical support						
Jitter	This information is for use of technical support						
Ethernet Interface	10/100 Base T, either half or full Duplex						
	This information is for use of technical support						

Configuration

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Home Subscriber Modem Multipoint Mode Status ✓ 5270 Configuration □ 5290 Alignment □ 5310 Event Log □ 5330 AP Eval Data □ 192.168.100.2 Link Test □ Default Gateway Default Gateway □ 192.168.100.0		The Whisp Zone	
Status ✓ 5270 Configuration □ 5290 Alignment ■ 5310 Event Log □ 5330 AP Eval Data □ 192.168.100.2 Link Test □ Lan1 Subnet Mask Packet Stats □ Default Gateway	Home	Subscriber Modem - Multinoint Mo	de
AP Eval Data Lan1 IP 192.168.100.2 Link Test Lan1 Subnet Mask 255.255.05 Packet Stats Default Gateway 192.168.100.0	<u>Status</u> <u>Configuration</u> <u>Alignment</u> <u>Event Log</u>	 ✓ 5270 ☐ 5290 RF Frequency Scan List ☐ 5310 ☐ 5330 ✓ None 	
Link Test Lan1 Subnet Mask 255.255.255.0 Packet Stats Default Gateway 192.168.100.0	<u>AP Eval Data</u>	Lan1 IP 192.168.100.2	
Packet Stats Default Gateway 192.168.100.0	Link Test	Lan1 Subnet Mask 255.255.255.0	
	Packet Stats	Default Gateway 192.168.100.0	
Provider ID U		Provider ID 0	
Update Flash Reboot Clear Changes			1

Device type	The second line should read Subscriber Modem – Multipoint
	Mode . Any other label indicates an inappropriate
	preconfiguration of the WHiSP radio
RF Frequency	Check only RF Frequencies as instructed by your Wireless
Scan List	Internet Service Provider (ISP). Only check "None" should
	you be instructed by your service provider's technical support.
Lan1 IP	is preconfigured to the address 192.168.100.1 for all subscriber
	modems. Change this only at the instruction of your service
	provider's technical support.
Lan1 Subnet Mask	is preconfigured to the value 255.255.255.0 for all subscriber
	modems. Change this only at the instruction of your service
	provider's technical support.
Default Gateway	is preconfigured to the address 192.168.100.0 for all subscriber
	modems. Change this only at the instruction of your service
	provider's technical support. This may be password protected.
Provider ID	is the time set by the wireless service provider
Update Flash	overwrites configuration previously saved to the WHiSP radio.
	Changes will not take effect until the radio is power-cycled or
	rebooted.
Reboot	Initiates a radio reboot.
Data Slots Down	This information is for use of technical support
Clear Changes	Re-displays current configuration of WHiSP configuration.

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Alignment		Ena	ble Align	ment Mode ON		
Event Log		Disa	ble Alignr	ment Mode OFF		
AP Eval Data Link Test Packet Stats	L Pu:	ED Bar Graph sh Enable Align	ment Mo	de Button to Refi	resh Displ	ay

Alignment
Normal Operating Display

Operating Mode	This will read SM is in Operating Mode or SM is in						
	Alignment Mode as an indication of the currently selected						
	mode.						
Enable Alignment	Click this button to put the radio into Alignment Mode, or to						
Mode ON	update the Alignment Mode bar graph (should it not						
	automatically refresh every second).						
Disable Alignment	Click this button to return the radio back to normal operating						
Mode OFF	mode when alignment is satisfactory (aim the radio for						
	maximum number of LEDs on the bar graph)						
LED Bar Graph	Reflects the received signal strength from the service						
	provider's access point. Proper alignment is when the bar						
	graph shows the maximum number of lit LEDs. While in this						
	mode, the LED bar graph can be observed on the radio itself,						
	such that it is unnecessary to have visibility of the computer						
	screen while orienting the WHiSP radio.						

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Alignment Alignment Mode Display

Select "Alignment" on the "WHiSP Zone" web page to obtain the alignment mode web page. Click "Enable Alignment Mode ON" to display a bar graph of signal strength. This will assist in adjusting the WHiSP radio for maximum alignment (maximum signal strength). While the LED bar graph appears on your PC screen, the LEDs located inside the WHiSP radio Base Cover will display the identical bar graph. Using either of these LED bar graphs orient the WHiSP radio to maximize the signal strength. When done, disable the alignment mode, by clicking on the "Disable Alignment Mode OFF" button on the WHiSP zone web control.

Event Log



Information on Event Log is for tech support personnel only.

The user should not clear this data unless instructed to do so by tech support personnel.

AP Eval Data



Information on AP Eval Data is for tech support personnel only.



Information on Link Test is for tech support personnel only.

Packet Stats

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Status	inucastpkts Count	60	
Configuration	Innucastpkts Count	13	
Comiguration	indiscards Count	0	
Alignment Event Log AP Eval Data	inerrors Count	0	
	inunknownprotos Count	0	
	outoctets Count	25827	
Link Test	outucastpktsCount	56	
Packet Stats	outnucastpkts Count	0	
	outdiscards Count	0	
	outerrors Count	0	
	RxBabErr	0	
	TxHbErr	0	
	EthBusErr	0	
	CRCError	0	
	RxOverrun	0	
	LateCollision	0	
	RetransLimitExp	0	
TxUnderrun		0	
	CarSenseLost	0	

Information on Packet Stats is for tech support personnel only.

Specifications

Operating Frequency Range U-NII Mid band	5.25 to 5.35 GHz
Access Method	TDD/TDMA
Data Pata	
Multipoint	10 Mbps
Modulation Type	High Index BFSK/4FSK (Optimized for interference rejection)
Carrier to Interference (C/I)	3dB Ber 1*10 ⁻⁴
Receiver Sensitivity	-84dBm 1*10 ⁻⁴
Error Floor	Better than 10^{-9} BER, unfaded
Operating Range (All Weather)	Up to 2 miles with integrated antenna
Transmitter Power	Meets FCC UNII ERP Limit
DC Power	24 VDC @ 0.3 Amp (active state)
Interface	10 Base-T, RJ45 Rate auto negotiated (802.3 compliant)
Protocols Used by WHiSP	IPV4, UDP, TCP, ICMP, Telnet, HTTP, FTP, SNMP
Protocols Supported by WHiSP Switche protocols including IPV6, NetBIOS, DHC	d Layer 2 Transport with support for all common Ethernet P, IPX, etc.
Software Upgrade Path	Remotely downloaded into FLASH via RF link
Network Management	HTML, TELNET, SNMP
Environmental Wind Humidity Temperature	190 km/hr Relative Humidity 95% at 35 ?C -30? to +65? C
Physical Dimensions Weight	8.5"H x 4.0"W x 1.1"D (21.6 cm x 10.2 cm x 2.8 cm) Approx 1 lb, 0.5 kg