

# User Guide

## IPn4G

IPn4G LTE Ethernet Bridge/Serial Gateway  
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## Revision History

Revision	Description	Initials	Date
1.0	Initial Release	PEH	Dec 2012

# FCC/IC Regulatory Notice

## **Modification statement:**

Microhard Systems Inc has not approved any changes or modifications to this device by the user. Any changes or modifications could void the user's authority to operate the equipment.

## **Interference statement:**

This device complies with Part 15 of the FCC Rules and Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

## **Radiation Exposure Statement:**

IPn4G complies with FCC/IC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines in Supplement C to OET65 and RSS-102 of the IC radio frequency (RF) Exposure rules. Nevertheless, the product should be used in such a manner that the potential for human contact during normal operation is minimized. This equipment should be installed and operated with minimum distance of 20 cm between the radiator and any person and must not be collocated with other transmitters except otherwise authorised.

This device is approved to be used with a dipole antenna with a maximum gain of 2 dBi.

This product integrates and is authorized to be co-located with a Novatel Wireless' Expedite® E371 PCI Express Mini Card (FCC ID: PKRNVWE371, IC: 3229A-E371). The Novatel Wireless' Expedite® E371 PCI Express Mini Card is granted with a modular approval for mobile applications. Integration has been done meeting the following conditions:

1. At least 20cm separation distance between the antenna and any person body is maintained at all times.
2. To comply with FCC/IC regulations limiting both maximum RF output power and human exposure to RF radiation, the maximum antenna gain including cable loss in a mobile only exposure condition does not exceed 3.5 dBi for 850 MHz frequency band, 5.0 dBi for 700 MHz frequency band, 5.0 dBi for 1700 MHz frequency band and 3.0 dBi for 1900 MHz frequency band.
3. The Novatel Wireless' Expedite® E371 PCI Express Mini Card antenna is not co-located with any other antennas except with the antenna of the IPn4G product.

## **FCC Class B digital device notice**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

# FCC / IC Avis réglementaire

## Instruction de modification:

Microhard Systems Inc n'a pas approuvé les modifications apportées à cet appareil par l'utilisateur. Les changements ou modifications pourraient annuler l'autorité de l'utilisateur à utiliser cet équipement.

## Déclaration sur les interférences:

Cet appareil est conforme à la Partie 15 de la réglementation FCC et Industrie Canada exempts de licence RSS norme (s). Son fonctionnement est soumis aux deux conditions suivantes: (1) cet appareil ne doit pas provoquer d'interférences, et (2) cet appareil doit accepter toute interférence, y compris les interférences pouvant provoquer un fonctionnement indésirable de l'appareil.

## Déclaration d'exposition aux radiations:

IPN4G est conforme à l'exposition aux radiations FCC / IC définies pour un environnement non contrôlé et répond aux directives d'exposition de la fréquence de la FCC radiofréquence (RF) dans le Supplément C à OET65 et RSS-102 de la fréquence radio (RF) IC règles d'exposition. Néanmoins, le produit doit être utilisé d'une manière telle que le potentiel pour le contact humain pendant l'utilisation normale soit minimisé. Cet équipement doit être installé et utilisé à une distance minimum de 20 cm entre le radiateur et toute personne et ne doit pas être co-implanté avec d'autres émetteurs, sauf autorisation contraire.

Ce dispositif est approuvé pour être utilisé avec une antenne dipôle avec un gain maximum de 2 dBi.

Ce produit intègre et est autorisé à être co-localisés avec une Novatel Wireless Expedite<sup>®</sup> E371 PCI Express Mini Card (FCC ID: PKRNVWE371, IC: 3229A-E371). Le Novatel Wireless Expedite<sup>®</sup> E371 PCI Express Mini Card est accordée à un agrément modulaire pour les applications mobiles. L'intégration a été fait aux conditions suivantes:

1. Au moins 20 cm de distance de séparation entre l'antenne et toute personne corps est maintenue en tout temps.
2. Pour se conformer à la FCC / IC règlements qui limitent à la fois la puissance maximale de sortie RF et l'exposition humaine aux rayonnements RF, le gain maximal de l'antenne, y compris la perte de câble dans une condition d'exposition seulement mobile ne dépasse pas 3,5 dBi pour 850 MHz bande de fréquence, 5,0 dBi pour des fréquences 700 MHz bande, 5,0 dBi pour 1700 MHz et 3,0 dBi bande de 1900 MHz bande de fréquence.
3. Le Novatel Wireless Expedite<sup>®</sup> E371 PCI Express Mini Card antenne n'est pas co-localisé avec d'autres antennes, sauf avec l'antenne du produit IPn4G.

## FCC Classe B préavis appareil numérique

Cet équipement a été testé et déclaré conforme aux limites imposées aux appareils numériques de classe B, conformément à la partie 15 de la réglementation FCC. Ces limites sont conçues pour fournir une protection raisonnable contre les interférences nuisibles dans une installation résidentielle. Cet équipement génère, utilise et peut émettre une énergie de fréquence radio et, s'il n'est pas installé et utilisé conformément aux instructions, il peut causer des interférences nuisibles aux communications radio. Cependant, il n'existe aucune garantie que des interférences ne se produiront pas dans une installation particulière. Si cet équipement provoque des interférences nuisibles à la réception radio ou télévision, ce qui peut être déterminé en mettant l'équipement hors et sous tension, l'utilisateur est encouragé à essayer de corriger l'interférence par une ou plusieurs des mesures suivantes:

- Réorienter ou déplacer l'antenne de réception.
- Augmenter la distance entre l'équipement et le récepteur.
- Brancher l'équipement dans une prise sur un circuit différent de celui sur lequel le récepteur est branché.
- Consulter le revendeur ou un technicien radio / télévision qualifié pour obtenir de l'aide.

## 2.0 Quick Start

This QUICK START guide will walk you through the setup and process required to access the WebUI configuration window and to establish a basic wireless connection to your carrier.

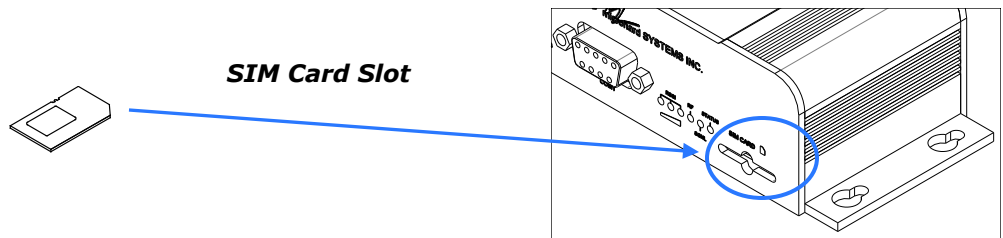
Note that the units arrive from the factory with the Local Network setting configured as 'Static' (IP Address 192.168.168.1, Subnet Mask 255.255.255.0, and Gateway 192.168.168.1), in DHCP server mode. (This is for the LAN Ethernet Adapter on the back of the IPn4G unit.)

### 2.1 Installing the SIM Card



To reset to factory defaults, press and hold the CFG button for 8 seconds with the IPn4G powered up. The LED's will flash quickly and the IP4G will reboot with factory defaults.

- ✓ Before the IPn4G can be used on a cellular network a valid **SIM Card** for your Wireless Carrier must be installed. Insert the SIM Card into the slot as shown below.



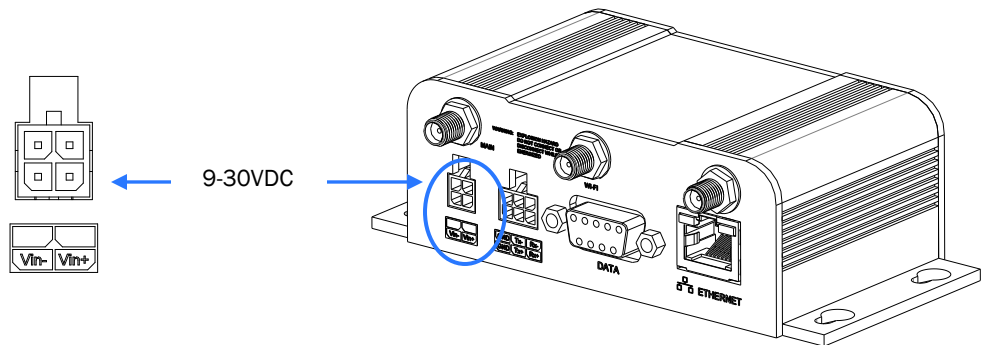
### 2.2 Getting Started with Cellular

- ✓ Connect the power connector to the power adapter and apply power to the unit, the RF & SGNL LED's will flash during boot-up, once they stop, proceed to the next step.



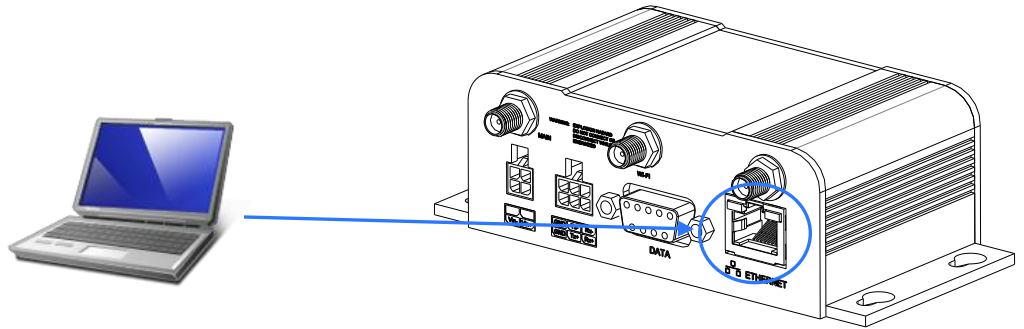
Use the MHS-supplied power adapter or an equivalent power source.

The unit can also be powered via PoE using a MHS PoE injector.



## 2.0 Quick Start

- ✓ Connect A PC configured for DHCP directly to the **ETHERNET** port of the IPn4G, using an Ethernet Cable. If the PC is configured for DHCP it will automatically acquire a IP Address from the IPn4G.



- ✓ Open a Browser Window and enter the IP address 192.168.168.1 into the address bar.



The factory default network settings:

**IP: 192.168.168.1**  
**Subnet: 255.255.255.0**  
**Gateway: 192.168.168.1**



192.168.168.1

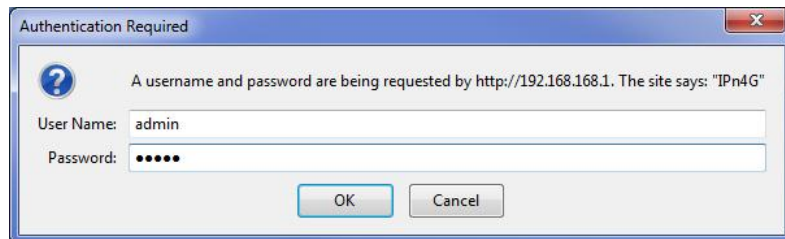
- ✓ The IPn4G will then ask for a Username and Password. Enter the factory defaults listed below.



The factory default login:

**User name: admin**  
**Subnet: admin**

It is always a good idea to change the default admin login for future security.




The Factory default login:

User name: **admin**  
 Password: **admin**

## 2.0 Quick Start

- ✓ Once successfully logged in, the System Summary page will be displayed.

System				Network	Carrier	Wireless	Comport	I/O	GPS	Firewall	VPN	Tools
Summary				Settings	Access Control	Services	Maintenance	Logout	Reboot			
<b>System Information</b>												
<b>System Information</b>						<b>Carrier Status</b>						
<b>System:</b>						<b>Module Status</b>	Enabled					
Host Name	IPn4G					<b>Current APN</b>	Unknown					
System date	2012-12-13					<b>Activity Status</b>	Disconnected					
System time	14:05:42					<b>Network</b>	Unknown					
System uptime	8 min					<b>Home/Roaming</b>	Home					
<b>Version:</b>						<b>Current Technology</b>	UMTS					
Product Name	Nano_OFDM_4G					<b>Core Temperature(°C)</b>	51					
Firmware Version	IPn4G					<b>IMEI</b>	012773002005526					
Hardware Type	v1.0.0					<b>IMSI</b>	302720406982934					
Build Version	v1.1.0 build 1005u_3					<b>SIM Number (ICCID)</b>	89302720401025355549					
Built date	2012-12-10					<b>Phone Number</b>	+15878938641					
Built time	17:10:08					<b>RSSI (dBm)</b>	-59 dBm 					
NMS status	Disabled <a href="#">NMS Setting</a>					<b>Connection Duration</b>	0					
Supply Voltage(V)	11.82											

- ✓ As seen above under Carrier Status, the SIM card is installed, but an APN has not been specified. Click on the Carrier > Settings tab and enter the APN supplied by your carrier in the APN field. Some carriers may also require a Username and Password.

System		Network	Carrier	Wireless	Comport	I/O	GPS	Firewall	VPN	Tools	
Status		Settings	Keepalive	Traffic Watchdog	Dynamic DNS	SMS Config	SMS				
<b>Carrier Configuration</b>											
<b>Configuration</b>											
Carrier status	Enable <input type="button" value="v"/>										
IP-Passthrough	Disable <input type="button" value="v"/>										
DNS-Passthrough	Disable <input type="button" value="v"/>										
APN	staticip.apn <input type="text"/>										
SIM Pin	<input type="text"/>										
Technologies Type	ALL <input type="button" value="v"/>										
Technologies Mode	AUTO <input type="button" value="v"/>										
Data Call Parameters	<input type="text"/>										
Primary DNS Address	<input type="text"/>										
Secondary DNS Address	<input type="text"/>										
Primary NetBIOS Name Server	<input type="text"/>										
Secondary NetBIOS Server	<input type="text"/>										
IP Address	<input type="text"/>										
Authentication	Device decide <input type="button" value="v"/>										
User Name	<input type="text"/>										
Password	<input type="text"/>										

- ✓ Once the APN and any other required information is entered to connect to your carrier, click on "Submit". Return to the System > Summary tab.

## 2.0 Quick Start

- ✓ On the Carrier > Status Tab, verify that a WAN IP Address has been assigned by your carrier. It may take a few minutes, so try refreshing the page if the WAN IP Address doesn't show up right away. The Activity Status should also show "Connected".

The screenshot displays the Carrier Status page with the following data:

Carrier Status			
Current APN	staticip.apn	Core Temperature(°C)	53
Activity Status	Connected	IMEI	012773002005526
Network	ROGERS	SIM PIN	READY
Home/Roaming	Home	SIM Number (ICCID)	89302720401025355549
Service Mode	Automatic	Phone Number	+15878938641
Service State	WCDMA CS and PS	RSSI (dBm)	-66
Cell ID	2744979	RSRP (dBm)	N/A
LAC	63333	RSRQ (dBm)	N/A
Current Technology	HSPA+	Connection Duration	0 sec
Available Technology	UMTS, HSDPA, HSUPA, HSPA+	WAN IP Address	74.198.186.193
		DNS Server 1	64.71.255.198

Received Packet Statistics		Transmitted Packet Statistics	
Receive bytes	19.315KB	Transmit bytes	32.201KB
Receive packets	95	Transmit packets	182
Receive errors	0	Transmit errors	0
Drop packets	0	Drop packets	0

Stop Refreshing Interval: 20 (in seconds)

- ✓ To access devices connected to IPn4G remotely, one or more of the following must be configured: IP-Passthrough, Port Forwarding, DMZ. Another option would be to set up a VPN.





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