



## **Technical Application Notes**

# Maestro Heritage and

## Echelon i.LON™100 Internet Server





Application note: How to use the Maestro Heritage with a Echelon i.LON™100 Internet Server

### Abstract

This application note describes two ways to use the Maestro Heritage modem to add wireless GPRS connectivity to an Echelon i.LON™100 Internet Server.

First way uses the Maestro Heritage Main Unit as a standard GPRS modem (HER010).

While second way relies on the Maestro Heritage main Unit (HER010) + Ethernet add-on board (HER040) to expand LAN interface of the Echelon i.LON<sup>™</sup>100 Internet Server over a GPRS link.



## Section 1 - INTRODUCTION

The Maestro Heritage is a powerful GSM/GPRS/Edge/3G modem that can be used to extend local serial or Ethernet interfaces of the Echelon i.LON™100 Internet Server over Internet, through wireless link. This can be done straightforward using this document as a reference.

Maestro Heritage modem provide a highly reliable connection which can save costly try to the site or provide a communication link to a dangerous, or hazardous area.

#### The equipment and versions required are as follows:

#### 1x Laptop or Desktop PC and the following software pre-loaded

- Windows HyperTerminal or similar Terminal software

- Maestro Heritage Ethernet (HER040) configuration software
- 0

1x Maestro Heritage main Unit (HER010) Modem with firmware version gcc\_HERITAGE\_092a\_OAT425\_2687\_256KB.wpb.dwl or above with the following user manual:

- Maestro Heritage User Manual Rev.03 or above

0

#### 1x Maestro Heritage Ethernet Add-On Board (HER040)

Maestro Heritage Ethernet (HER040) user manual rev.04 or above
 Ethernet Board port forwarding manual: "how to do port forwarding with HER040.pdf"\*

\*Optional, only if you want to use the Port Forwarding feature







1x Echelon i.LON™100 Internet Server

1x GPRS Sim Card 0

0

- An access Point Name (refer later as APN)

1x Antenna (e.g. ACC-A01/ACC-A02/ACC-A04/ACC-A05) 0

- 1x Power Supply (e.g. ACC-PS01/ACC-PS02/ACC-PS03/ACC-PS09 0
- 1x Serial cable (ACC-CA07) 0

1x Configuration cable for HER040 Add-on board (ACC-CA13) 0















## Section 2 – SERIAL CONNECTION

#### 2.a Maestro Heritage Configuration

First step is to configure the Maestro Heritage top operate with the Echelon i.LON™100 Internet Server.

Insert a GPRS enabled SIM card into the Maestro Heritage, connect the antenna, the power supply and use a serial cable to connect the modem to a computer (for help please refer to "Maestro Heritage User Manual Rev.03" or above).

The Heritage should look like this:





#### 2.b Maestro Heritage Configuration with HyperTerminal

To ensure reliable and efficient communications you must use the default settings which are as follows:

115200; 8 data bits; 1 stop bits with no parity and no flow control

Open HyperTerminal (Menu Start > All Programs > Accessories > Communications > HyperTerminal)

Connection Description	
New Connection	Choose a name for your connection. Here I choose HER010-iLON. Click OK
Enter a name and choose an icon for the connection	
Name: HER010-iLON	
Lcon:	
OK Cancel	



Connect To	
	Setup the country and the area and choose "Connect using: COM1". Click OK
Enter details for the phone number that you want to dial:	
Country/region: France (33)	
Ar <u>e</u> a code: 852	
Phone number:	
Connect using: COM1	
OK Cancel	

COM1 Properties	Change "Bits per Second" to 115200
Port Settings	
Bits per second: 115200	Change "Flow control" to None
Data bits: 8	
Parity: None ▼	
Stop bits: 1	Click "Apply" and then "OK"
Elow control: None	
<u>R</u> estore Defaults	
OK Cancel Apply	



You may now have to setup the APN parameters given by your Internet Service Provider.

Type the following AT Command in HyperTerminal:

AT+CGDCONT=1, "IP", "your\_APN"



Setup the modem to use three wires communication by typing:

AT+IFC=0,0





## 2.c Maestro Heritage connection to the Echelon i.LON™100 Internet Server

The following table lists the enclosure markings for the RS-232 and RS-485 port screw terminals and the SmartServer and their connection types.

Screw Terminal	Enclosure Marking	EIA-232 Connection	
21	RTS	RS-232 RTS	
22	CTS	RS-232 CTS	
23	RXD	RS-232 Receive	
24	TXD	RS-232 Transmit	
25	GND	RS-232 Ground	





On the Echelon i.LON<sup>m</sup>100 Internet Server, use a wire to short the signals RTS (21) and CTS (22) of the RS232 interface.





Then connect pins 2 (RXD), 3 (TXD) and 5 (GND) of the Maestro Heritage serial port respectively to the pin 23 (RXD), 24 (TXD) and 25 (GND) of the Echelon i.LON<sup>™</sup>100 Internet Server.



Connect all antennas, power supplies and various cables as requested by your setup, then use the Web Interface of the Echelon i.LON<sup>™</sup>100 Internet Server to configure it. (refer to document: i.LON 100 e3 User's *Guide* from Echelon Corporation available at *www.echelon.com*)



#### 2.d Echelon i.LON™100 Internet Server configuration

The Echelon i.LON<sup>TM</sup>100 Internet Server configuration page can then be accessed from Internet at http://xxx.xxx.xxx:8000, where xxx.xxx.xxx is the IP address of your SIM card. If your SIM card does not have a fixed IP, you can use the DynDNS service supported by the Echelon i.LON<sup>TM</sup>100 Internet Server. (see *i.LON 100 e3 User's Guide*)

On the modem setup page of the Echelon i.LON<sup>™</sup>100 Internet Server. select the modem "External GSM Nokia 30 to 31 Series" .

Descent		Volum	
1 Modem		Internal Analog	Select "External GSM Nokia
User name for inc	oming calls	lion	20 to 21 Sories"
Password for inco	ming calls		30 10 31 361163
Re-enter password	i	++++	
▼ Advanced			
Local IP address fi	ar incoming calls	192 . 168 . 2 . 2	
PPP authenticatio	n for incoming calls	PAP .	
Modem country/r	egion *	Europe / North America 💌	Click the "Submit button"
(* Tone		C Pulse	
Dialing prefix			
Delay after prefix	ene an an an an an an an an an	0 seconds	
* Reboot required n go under the	e Network, LAN/W	'AN page,	Create a "new connection"
* Reboot required	e Network, LAN/W	/AN page,	Create a "new connection"
* Reboot required	e Network, LAN/W	AN page,	Create a "new connection"
* Reboot required T go under the nection Property nection name ne Number	if changed e Network, LAN/W Value New Connection	GPRS Persistent GPRS	Create a "new connection"
* Reboot required T go under the nection Property nection name ne Number r name. word	if changed e Network, LAN/W	CAN page,	Create a "new connection"
r Dat the Walt *Reboot required n go under the nection Property nection name ne Number r name word	If changed e Network, LAN/W Value New Connection	CAN page,	Create a "new connection"
reation Property meetion name ne Number r name word inter password ideanced	If changed e Network, LAN/W Value New Connection	AN page,	Create a "new connection" Use "*99***1#" as a phone
*Reboot required an go under the mection Property mection name me Number r name word inter pessword dvanced ote DNS server	If changed e Network, LAN/W Value New Connection	AN page, GPRS I Persistent GPRS	Create a "new connection" Use "*99***1#" as a phone number and tick the "GPRS"
*Reboot required an go under the nection Property nection name ne Number r name word unter password dvanced ote DNS server onnect if idle for	If changed e Network, LAN/W Value New Connection Obtain sutomatically 30 seconds	GPRS Persistent GPRS	Create a "new connection" Use "*99***1#" as a phone number and tick the "GPRS" box.
* Reboot required an go under the nection Property nection name ne Number r name word unter password dvanced ote DNS server onnect if idle far authentication for outgoine calls	if changed e Network, LAN/W Value New Connection Value Val	CAN page,	Create a "new connection" Use "*99***1#" as a phone number and tick the "GPRS" box.
*Reboot required action Property mection name ne Number r name word inter pessword dvanced ate DNS server onnect if idle for authentication for outgoing calls Use Dynamic DNS service	if changed e Network, LAN/W Value New Connection value val	CAN page,	Create a "new connection" Use "*99***1#" as a phone number and tick the "GPRS" box.
* Reboot required action Proporty meetion name the Number in name word other password dvanced othe DNS server connect if idle for authentication for outgoing calls Use Dynamic DNS service name (complete)	If changed e Network, LAN/W Value New Connection Value Val	CAN page,	Create a "new connection" Use "*99***1#" as a phone number and tick the "GPRS" box.
*Reboot required action Proporty mection name ne Number r name word ote DNS server connect if idle for authentication for outgoing calls Use Dynamic DNS service r name (complete) r name	If changed e Network, LAN/W Value New Connection Obtain sutomatically Obtain sutomatically Seconds Auto T	CAN page,	Create a "new connection" Use "*99***1#" as a phone number and tick the "GPRS" box.

You can then configure any SMTP or any other kind of server, the configuration step is done.



### Section 3 – ETHERNET CONNECTION

Note: in this section, we assume that there are only two devices in the setup: the Maestro Heritage and the Echelon i.LON<sup>™</sup>100 Internet Server. More complex setups can be easily derived from this note.



#### 3.a Maestro Heritage Configuration

First step is to setup the Maestro Heritage modem. Connect the HER010 and HER040 units together.

Align the connector end of HER040 and slide it into the mounting slot. The ribs on the connector end guide the sliding action. Push until the connector goes all the way in. The action is normally very smooth.



Use the 2 screws sized M2x6 and 2 spring washers, supplied together with HER040, to secure the two units in position.



Insert SIM card, connect antenna and power supply as described in the Maestro Heritage user guide.

Then, set up the Maestro Heritage main Unit (HER010), connect the HER010 to a computer and open HyperTerminal as described in section 2a and 2b.



#### 3.b Maestro Heritage Configuration with HyperTerminal

Once in HyperTerminal, type the following commands to enter Ethernet setup mode:

#### AT+CGDCONT=1, "IP", "your\_APN"

HER010-ILon - HyperTerminal         Ele Edit View Call Transfer Help         Image: AT+CGDCONT=1, "IP", "CORPF.NET"         OK	Hit "Enter" the modem will answer "OK"
AT+U2IPR	2=1
HER010-iLon - HyperTerminal         Ele Edit View Call Transfer Help         Image: Second Sec	Hit "Enter" the modem will answer "OK"
AT+HPLUGI	N=O
HEROIO-iLon - HyperTerminal     File Edit View Call Transfer Help     AT+HPLUGIN=0     OK   +WIND: 13   +WIND: 12,0   +WIND: 12,1	Hit "Enter" the modem will answer "OK" In some occasion the modem will continue working in background (+WIND), this is normal and will not affect the Heritage setup.



#### AT+WIOM=32,1,1



The Heritage Main Unit configuration is now finish, exit HyperTerminal and unplug the serial cable from the computer.

![](_page_15_Picture_1.jpeg)

#### 3.c Maestro Heritage Ethernet configuration with "Maestro Heritage Ethernet (HER040) configuration software"

Plug the Heritage Configuration cable (ACC-CA13) to the Maestro Heritage Ethernet Add-on boards, and then to the serial port of your computer.

![](_page_15_Picture_4.jpeg)

Launch the configuration software by clicking on the HERO40\_Configuration Executable Jar Files

![](_page_15_Picture_6.jpeg)

#### A window will pop-up

🕌 HERO4	40 Configuration	Select "COM1" and click "Ok"
	Serial Ports	
		COM1
Quit		Ok

![](_page_16_Picture_1.jpeg)

#### Use the following parameters

- o Default IP: 192.168.0.200
- o IP address: 192.168.0.200
- o Subnet mask: 255.255.255.0
- Port forwarding 1: 8000,192.168.0.222:80
- o DNS servers as provided by your telecom operator
  - (or 0.0.0.0 for automatic detection)

![](_page_16_Figure_9.jpeg)

![](_page_17_Picture_1.jpeg)

Once you are done, close the "Maestro Heritage Ethernet (HER040) configuration software" and disconnect the serial cable from your computer

In order to re-activate the HER040, you need to reconnect the Heritage Main Unit (HER010) to the computer, reconnect the Heritage Main Unit (HER010) serial cable to your computer and launch HyperTerminal as decribed in section 2a and 2b

Send the following command: AT+HPLUGIN=4

![](_page_17_Figure_5.jpeg)

+WIND: 13

0K

![](_page_18_Picture_1.jpeg)

#### 3.d Maestro Heritage Ethernet connection to the Echelon i.LON™100 Internet Server and configuration

Use a standard Ethernet crossed cable to connect the Maestro Heritage to the Echelon i.LON™100 Internet Server LAN port.

![](_page_18_Picture_4.jpeg)

![](_page_18_Picture_5.jpeg)

![](_page_19_Picture_0.jpeg)

![](_page_19_Picture_1.jpeg)

Simply setup the LAN parameters of the Echelon i.LON<sup>™</sup>100 Internet Server configurations as follows:

- Manually configure IP settings
- o LAN IP address: 192.168.0.222
- o Subnet mask: 255.255.255.0
- o Default gateway: 192.168.0.200
- DNS servers as provided by your phone operator

Right click items to mean	TCP/IP Property	Value	
自 🖾 i.LON 100	Ethernet #4C address	00-00-71-00-60-09	
B 450 Turneround Address	# Automatically obtain      P address     *		
webBinder - 2000.0	Manually configure IP settings *		
⊟- ∰ madreenet.de	LAN IP address *	10 , 2 , 124 , 6	
😑 🚽 my_malserver.my_domain.com	Subnet maik*	255 255 128 0	
⊟ ⊒ smtp.t-online.de	Default gateway *	10 . 2 . 0 . 1	
ing Email	Default DNS server	Chitain automatically.*	
	Backup DNS zerver		
	* Reboot required If change		
Manually configure the ID setting		· / / /	
Manually configure the Fr Setting			
		Set Lan IP Adress to	
		"192.168.0.222"	
Set subnet mask to "255.255.255.9"			
Set default gateway to # 192.168	3.0.200″		
	/		
	/		
	/		
Set DNS Server	r as provided by your	Telco	
L L			
Set default gateway to " 192.168	3.0.200″		

![](_page_20_Picture_1.jpeg)

#### References

- 1. Cecile Lin and K.K. Chan, *Maestro Heritage user manual*, rev. 03 Maestro Wireless Solutions.
- 2. Wallace Lee, *Maestro Heritage Software Tools*, rev. 1.2 Maestro Wireless Solutions.
- 3. Frank Tang and Pierre-Emmanuel Surga, *HER040 user manual*, rev. 4 Maestro Wireless Solutions.
- 4. *i.LON 100 e3 User's Guide* Echelon Corporation.

![](_page_21_Picture_0.jpeg)

![](_page_21_Picture_2.jpeg)

Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001 Адрес: 105318, г.Москва, ул.Щербаковская д.З, офис 1107

#### Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

#### http://moschip.ru/get-element

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

#### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.З, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж: moschip.ru moschip.ru\_4

moschip.ru\_6 moschip.ru\_9