



NetPage Network Wireless Paging System (POCSAG)

NP-14 Series



Operation Manual

CCW152231-001

INTRODUCTION

The NP-14 Network wireless paging system is a fully-programmable, single-board, POCSAG encoder with the Hi power synthesized transmitter for every on-site paging System applications.

The unit provides a combined alarm input and link command paging solution via either the external computer console, ON/OFF closing contacts, RS232 port, RJ-45 Ethernet port. It is suitable for the industrial alarm and commercial site paging to obtain a fast response to all kinds of the security problem monitoring situations. The typical applications include the Fire, Security and Nurse Call System etc fields.

The communication to the transmitter via the RS232 port or RJ-45 port uses a Common and simple protocol such as the SCOPE, TAP, Comp1, Comp2,....

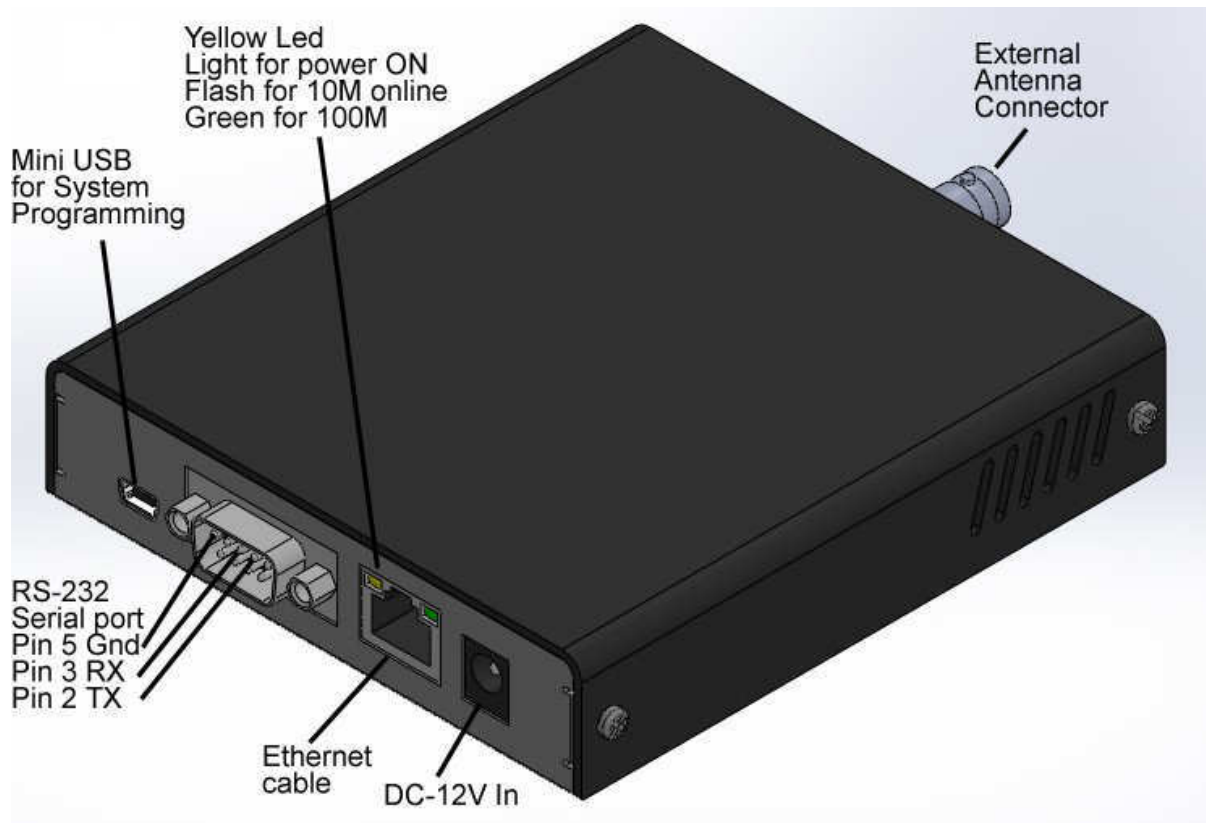
About the transmission, the NP-14 is a single-board synthesized message transmitter that operates in the 410-490MHz, 868MHz, 915MHz, 931MHz, frequency bands.

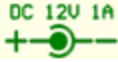
The NP-14 inside encoder contents, which are the capcode, speed and message Etc, can be sent by the tone-only, numeric(4-bit), alphanumeric(7-bit) using the POCSAG paging protocol out from either the serial port or from the Ethernet port.

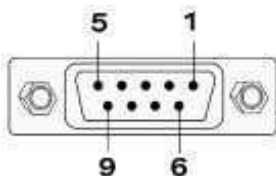
The NP-14 option selection also has 8 ON/OFF contacts for the alarm paging applications. Each input is an independent port control for the contact input status either from the open to short or from the short to open. Once the alarm is activated, the pre-programmed input capcode and message will be sent out immediately. All of the programming 8 inputs paging carrier must be set in the same set frequency. Others such as the paging address, data rate, message, repeater call time etc can be independent either same or all in different.

- The NP-14 Alarm contacts up to eight input control lines.
- The NP-14 eight contacts input are all independent.
- The NP-14 operates can be by the RS-232 serial input.
- The NP-14 operates can be by the RJ-45 Ethernet input.
- The NP-14 transmitter section is the frequency synthesized unit.
- The NP-14 system communication protocol are by SCOPE, COMP2...

Appearance



1. DC-12V IN :  10V-13.8V In Minimum 1A.
2. Ethernet cable: Connect to the Internet HUB by Cat.5 and up cable.
3. Ethernet LED indicate
 - Yellow on for power ON
 - Yellow flash for Net 10M link
 - Green flash for 100M link
4. RS-232 Serial port.
 - Pin 2 **TX** (data output To PC DB-9 Pin 2 RD)
 - Pin 3 **RX** (data received From PC DB-9 Pin 3 TD)
 - Pin 5 **GND** (required to PC DB-9 pin 5)



5. Mini USB for the System programming
6. RF output to antenna or RF amplifier.

PROGRAMMABLE FEATURES

The photo screen below describes the NP-14 programmable features

Tx Parameter

Frequency-MHz: Carrier frequency-MHz: Deflection-Hz: Tx Power-dBm: Deviation-KHz: Modulation:

Data Polarity: Preamble:

Key-in to paging per-program

Pager No.	Capcode	Type	Rate	Tone	Message	Repeat
1	1234567	A	512	D	Door 1 Alarm	1
2	1234568	A	1200	D	Door 2 Alarm	1
3	1234569	A	1200	D	Fire case on 4FL	3
4	1234570	A	1200	D	Fire case on B1	3
5	1234571	A	1200	D	Strongbox Open	1
6	1234572	A	1200	D	Engine room door open	1
7	1234573	A	1200	D	Engine room Fire case	3
8	1234999	A	1200	C	Group paging come to lobby	2
9						
10						
11						
12						
13						
14						
15						
16						

System program

KeyNumber: Buzzer: Serial Interface: Com set: Protocol:

Key Action: Debounce (sec):

Disconnect

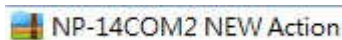
↑ Figure 2. Programming screen

Programmable and set up

While programming, the NP-14 DC plug must be off and disconnected. Just use the DC power source from the PC USB.

Tips to set up the programming parameters

1. Install the programming AP execution file



2. Click PMX-NP and then runs the programming software.
3. Connect the USB plug into your device and the PC USB port.

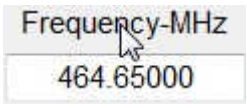
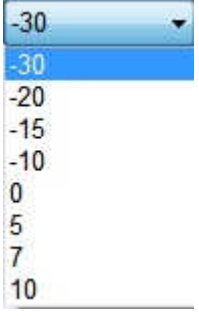

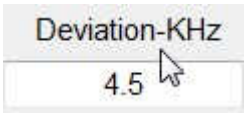

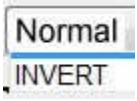
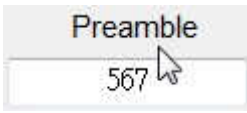


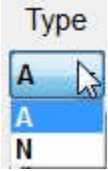
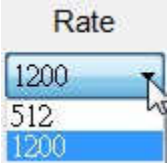
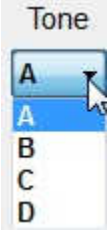
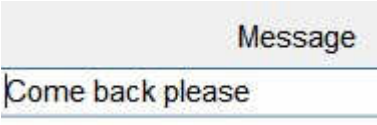

If show Disconnect

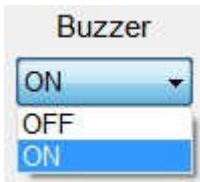
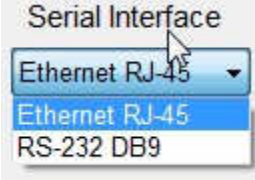
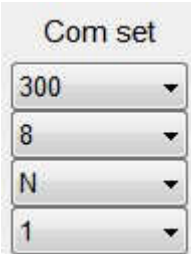
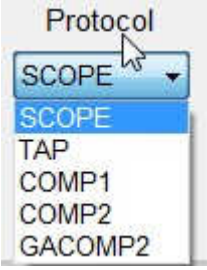
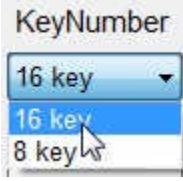
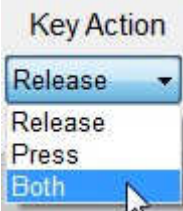


Check USB Jack again.


Example Programming Screen as Below:

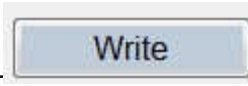
Item	Function	Value
<p>A- Carrier Frequency</p> 	Radio Frequency set-up key-in your own frequency	410.000 to 490.995 850.000 to 890.995 910.0000 to 931.9375
<p>B- TX RF Power</p> 	Transmitter RF Power set-up The % Just for reference and must connect with RF power meter for the accurate output power adjustment.	
<p>C- FSK Deviation</p> 	Frequency Deviation set-up	Normal 4.0K or 4.5K (Max) for POCSAG or 2 level data rate
<p>D- Modulation type select</p> 	Frequency modulation set-up	Normal 2-FSK (2 level FSK) for POCSAG
<p>E- Data Polarity</p> 	Data Polarity in Normal or Invert set-up	Normal = 01010101--- Invert = 10101010--- General select Normal
<p>F- POCSAG Preamble:</p> 	Preamble for pager power saving	Normal set 576 bits or more.
<p>G- Page number of copcode</p>	Pager copcode address set-up	No 1-8 or 1-16 pager copcode can be all same or all difference.

<p>Pager No. Capcode</p> <table border="1"> <tr><td>1</td><td></td></tr> <tr><td>2</td><td></td></tr> <tr><td>3</td><td></td></tr> <tr><td>4</td><td></td></tr> <tr><td>5</td><td></td></tr> <tr><td>6</td><td></td></tr> <tr><td>7</td><td></td></tr> <tr><td>8</td><td></td></tr> </table>	1		2		3		4		5		6		7		8			<p>7digital POCSAG address range from 0000008 to 2097151.</p>
1																		
2																		
3																		
4																		
5																		
6																		
7																		
8																		
<p>H- Pager display type selection</p> 	<p>Numeric or Alphanumeric Display Pager set-up</p>	<p>N for numeric display type, A for alphanumeric display type.</p>																
<p>I- Data Rate</p> 	<p>Data speed set-up</p>	<p>POCSAG data speed and baud rate in 512bps or 1200bps Must be same as pager speed.</p>																
<p>J- Pager alert tone</p> 	<p>Pager alert tone select</p>	<p>A=1beep per Sec, B=2beeps per Sec, C=3beeps per Sec, D=4beeps per Sec.</p>																
<p>K- Pre-program Message</p> 	<p>Pre-programmed Message</p>	<p>All ASCII words</p>																
<p>L- Paging repeater</p> 	<p>Repeater call times for each paging</p>	<p>1=1 call 2=2 time call 3=3 time call 4=4 time call</p>																
<p>M- Buzzer On/off select</p>	<p>NP-14 TX Buzzer On or Off</p>	<p>When NP-14 transmitting, the</p>																

		buzzer beep sound can be set either by ON or OFF
<p>N- Link interface select</p> 	<p>Command interface by RS-232 serial or by RJ-45 Ethernet</p>	<p>RJ-45 = Internet RS-232 = Serial port</p>
<p>O- PC Communication set-up</p> 	<p>O,P,Q,R-for Comport set up:</p>	<p>General set 9600,8,N,1</p>
<p>S- Command protocol</p> 	<p>PC or Console command protocol</p>	<p>SCOPE, TAP, Comp1, Comp2 GACOMP2.... Select 1 to meet your console protocol</p>
<p>T- Number of alarm input</p> 	<p>Select alarm input option 8 input or 16 input</p>	<p>The NP-14 default is 8 alarm input only</p>
<p>U- Alarm Trig switch level</p> 	<p>Select Alarm switch from NC to NO for action or NO to NC for action or any (both)</p>	<p>Release = Normal close to open Press = Normal open to short Both = Normal close to open and Normal open to close for alarm action</p>
<p>V- Alarm Trig over time</p>	<p>Duration action prohibited</p>	<p>If set 1 Sec, then over 1 sec and</p>

Debounce (sec) 1	after the 1st activation	more time is allowed for the next alarm action. If under 1 sec. will be no action.
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X-  X-for Rea : Reading the programmed contents from your devices.

W-  W-for Write: Write the programming contents into your devices.

INSTALLATION

Introduction

This chapter provides basis information in installation help of the NP-14 Netpage transmitter device.

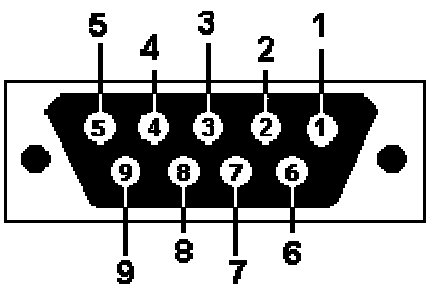
Installation

Installing the NP-14 involves identifying the interface connections for communication with the host equipment and connecting the module. The connector pin orientation is shown in Figure 20. Corresponding signal name and color codes are listed in table 1-1.1-2.1-3.1-4.mount and connect the NP-14 as follows:



←Figure 20. Main I/O of Rear view

Table 1-1.COM1,RS232 SERIAL PORTS (9 way female) PIN SIGNAL DIRECTION

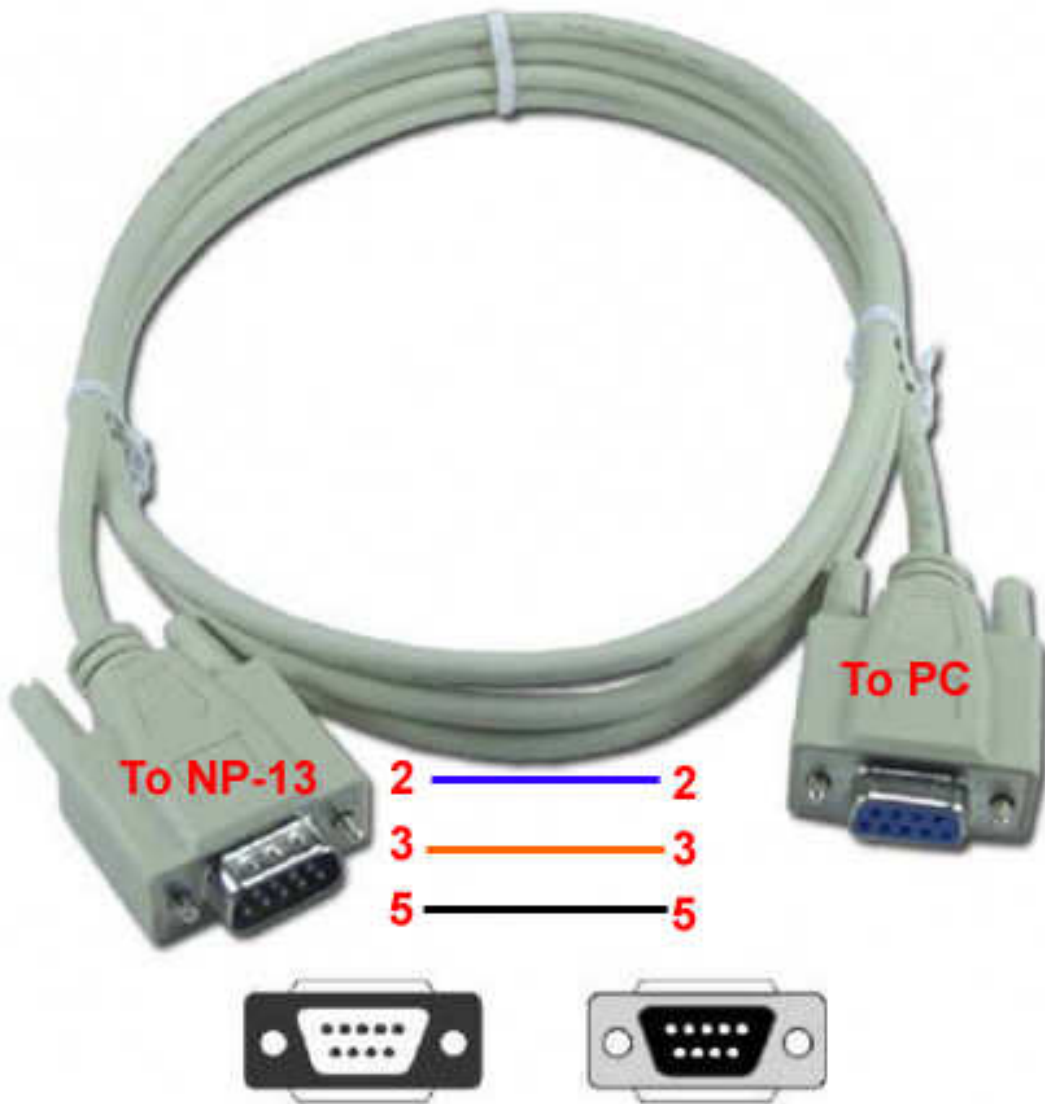
<p>DB9 - View looking into female connector (NP-14 side)</p> 	<p>1 N/C 2 RECEIVE DATA (RX) IN 3 TRANSMIT DATA (TX) OUT 4 N/C 5 GROUND (GND) 6 N/C 7 N/C 8 CLEAR TO SEND (CTS) IN</p>
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Link by RS-232

Plug the RS-232 Cable into an available DB9 serial port connector on the back of a Host Device, such as a PC or Nurse Call system or other Host Device. If the serial port has a DB25 connector, you must provide a DB25 to DB9 adapter, which is available from NP-14 or from a computer supply company. Tighten the connector screws. Plug the RS-232 Cable into the DB9 female connector on the Transmitter Unit. Tighten the connector screws again.

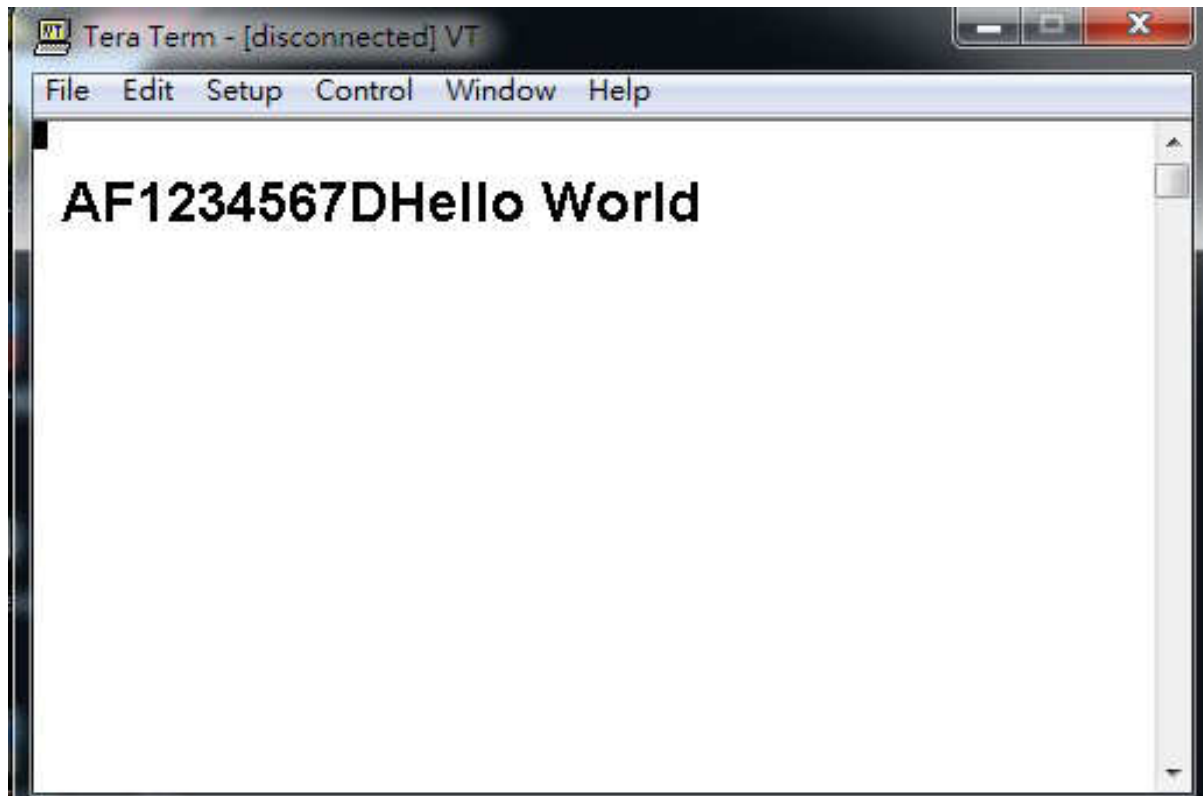
The RS-232 Cable is a parallel wire: Pin 5 to pin 5, Pin 2 to pin 2, Pin 3 to Pin 3.

Option serial RS-232 cable Part NO.86852933-00



Command Protocol

For example by Hyperterminal



AF1234567DHello World.....

[A] Pager type Alphanumeric, N=Numeric

[F] Data bud rate, F=1200bps, N=512 bps, S=2400bps, if blank= Default 1200bps.

[1234567] Pager copcode, pager address.

[D] Pager tone alert, A for tone A, B for tone B, C for tone C, D for tone D.

[Hello World] message word.

Protocol Format Error Respond:

If the first character other than A or N --- Invalid Command format1!<CR><LF>

capcode fields appear with letter of alphabet --- Invalid Command

format2!<CR><LF>

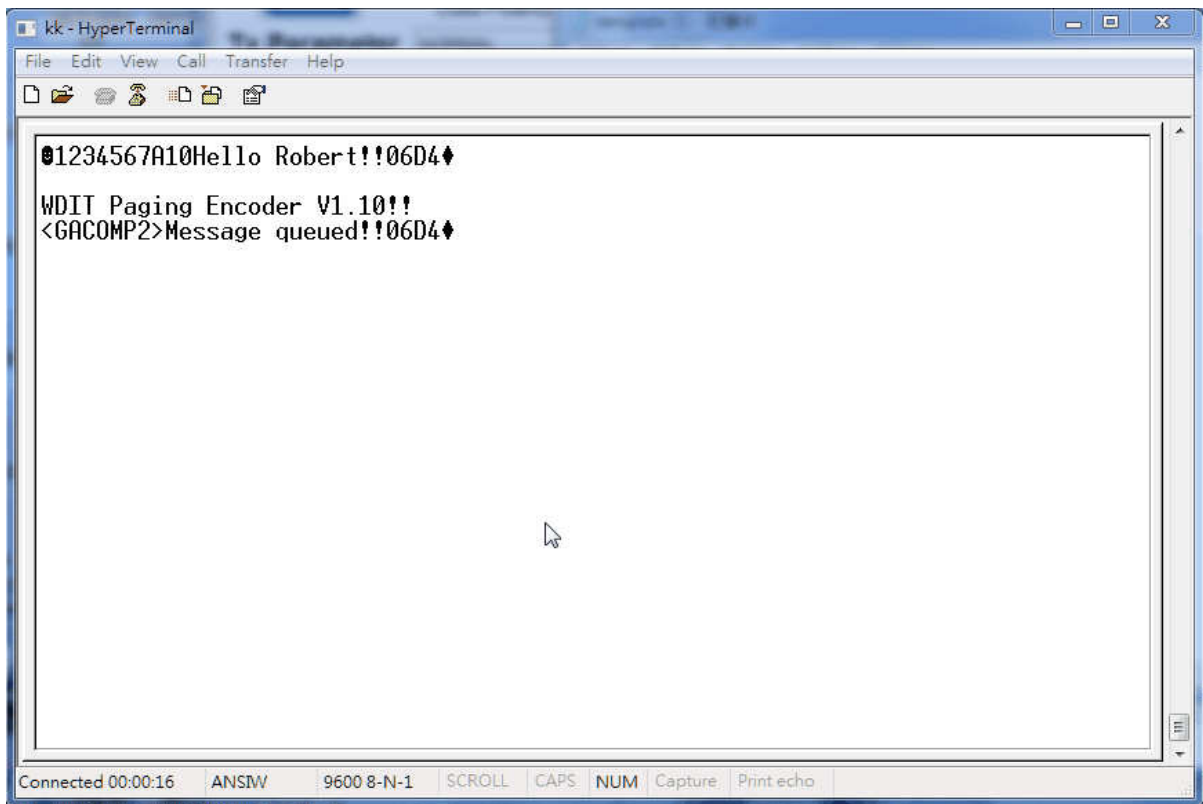
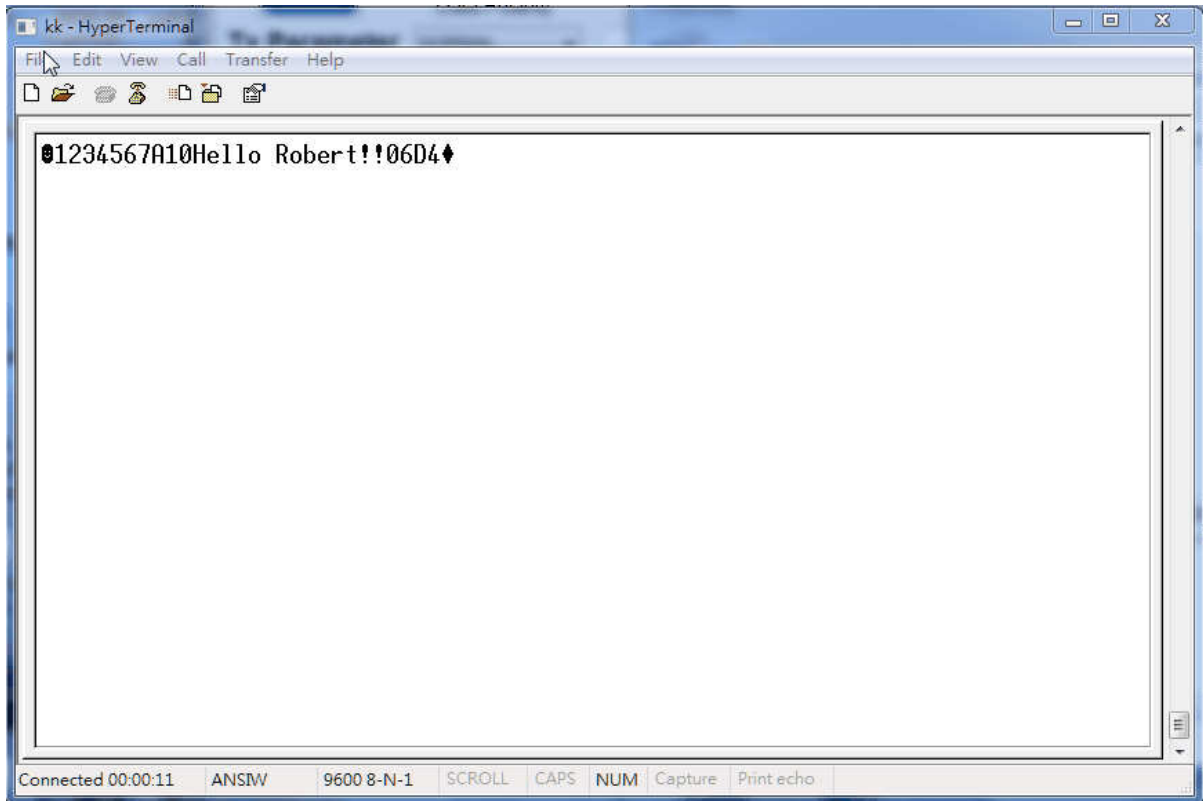
capcode <8, >2097151 --- Capcode over range!<CR><LF>

message type field appears character out of the ABCD--- "Invalid Command

format3!\r\n"

message has the invisible character --- "Invalid Command format4!\r\n"

For example by Hyperterminal with GACOMP2 protocol



GACOMP2 protocol V1.32

This protocol is defined for a POCSAG encoder with RS-232 in baud rate (9600 ,N,8,1) of PC .

PC send to Transmitter

Transmitter command format (All contents is visible ASCII code exclude the STX and EOT) =

STX + Capcode content + Message content + CheckSum + EOT
= **02H + AAAAAAERF + Message content + CCCC + 04H**

Format Description :

Contents are all visible ASCII code value ≥ 20 Hex except the STX and EOT command

STX is **02** Hex code , it is not visible in ASCII code

EOT is **04** Hex code , it is not visible in ASCII code

Capcode content = **AAAAAAERF**

(a) **AAAAAAA** is a 7 digits numeric between 0000008 - 2097151 representing a pager or RCM receiver capcode

(b) **E** is 0,n,or **N** represent numeric encoding, and 1,a,or **A** represent alphanumeric encoding

(c) **R** is RF data rate, where **5** represents 512 bps, **1** represents 1200 bps, and **2** represents 2400 bps

(d) **F** is 0,**1,2,3**,or **4** defines the function code to be delivered.

It is 0 represent the default value for F is 4 when the E value is alphanumeric, and 1 when the E value is numeric

Numeric message = 0 to F Hex that transfer to visible ASCII code is 30H to 39H (0 – 9) and 41H to 45H (A – F).

Message content = any message you want send out ,if you did not carry any message then it will send out a "Tone Only" message output

CheckSum(**CCCC**) is a 4 number of ASCII code include all contents before CheckSum (STX + Capcode content + Message content)

CheckSum example : Capcode content Message content CheckSum

EX 1. Num.1200bps **100001N11** 1234ABCD 03D8

Description :

CheckSum = 3D8H (02H+31H+30H+30H+30H+30H+30H+31H+4EH+31H+31H+31H+32H+33H+34H+41H+42H+43H+44H)

CCCC = 03D8 (30H,33H,44H,38H)

Total contents = 02H + "100001N111234ABCD03D8" + 04H

EX 2. Alpha 1200bps **0000128A11** abcdefghijk 0662

Description :

Checksum = 662H (02H+30H+30H+30H+30H+31H+32H+38H+41H+31H
+31H+61H+62H+63H+64H+65H+66H+67H+68H+69H+6AH+6BH)

CCCC = 0662 (30H,36H,36H,32H)

Total contents = 02H + "0000128A11abcdefghijk0662" + 04H

EX3. Num. 512 bps **1000122N51** xxx... 6A3C

Description : CheckSum = 126A3CH (only use last 4 digits as valid) CCCC = 6A3C
(36H,41H,33H,43H)

Transmitter send to PC

If command accept to transmitter then transmitter send CCCC + **ACK(06H)** to PC .
the CCCC is check sum of message.

if command did not accept to transmitter will not send back CCCC + **ACK(06H)** within
200 mS .

**Note: Transmitter encoder message must be based on two conditions as below.
Then, it can encode all messages and send out all messages at one time.**

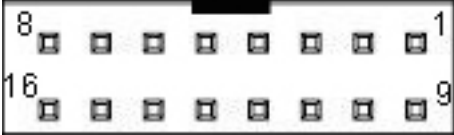
- 1. PC send message then receive the ACK from transmitter and PC send first
byte of next message less than 150mS after last ACK.**
- 2. Transmitter received total messages less then 15K bytes. Idle Capcode is
from 2007664 to 2007671.**

Also, if the NP-14 option selection is for 8 dry alarm contacts.

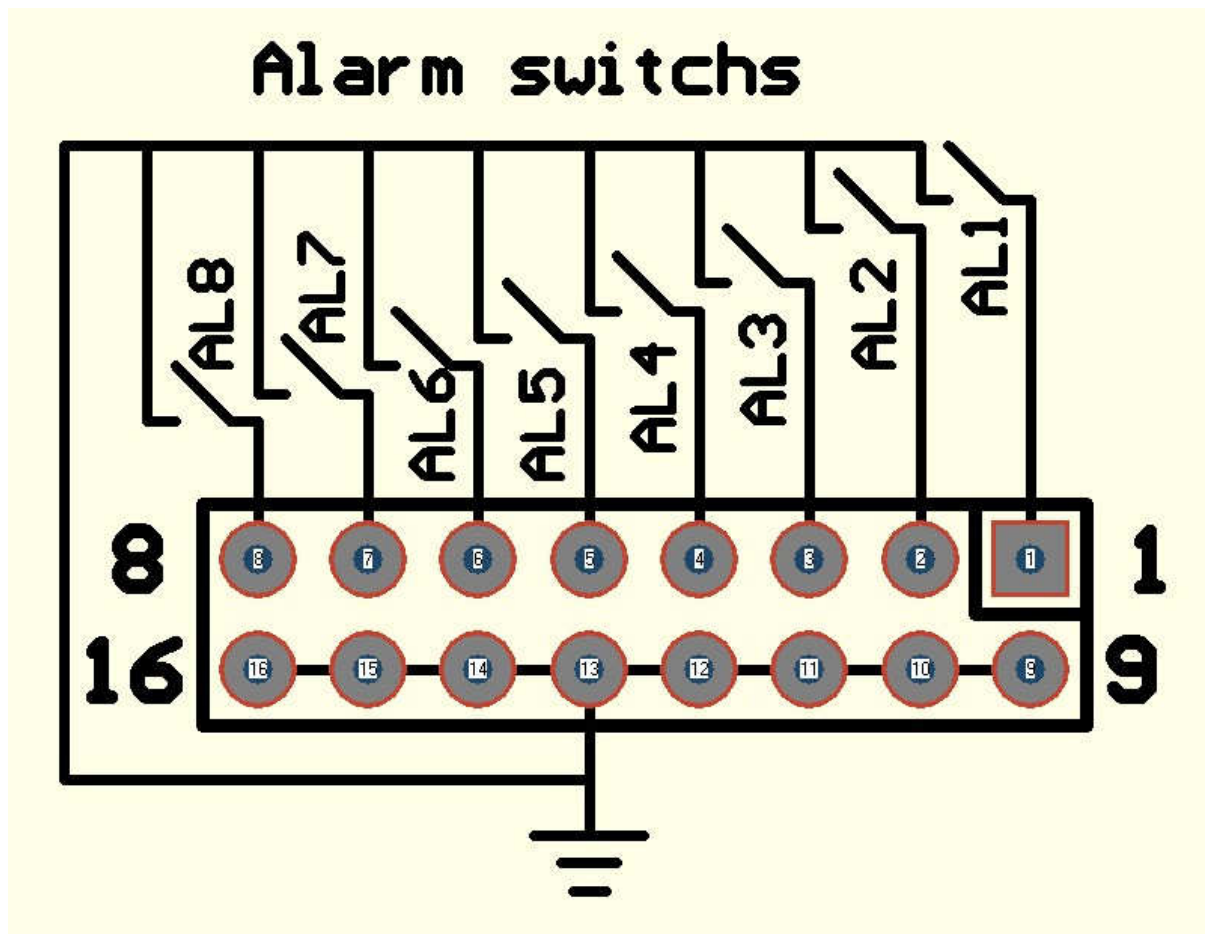
The following 8 Pins 2 Rows Header Connector will replace the com1 DB9 position.

Table 1-2. 2x8 Header connector for 8 contacts alarm input

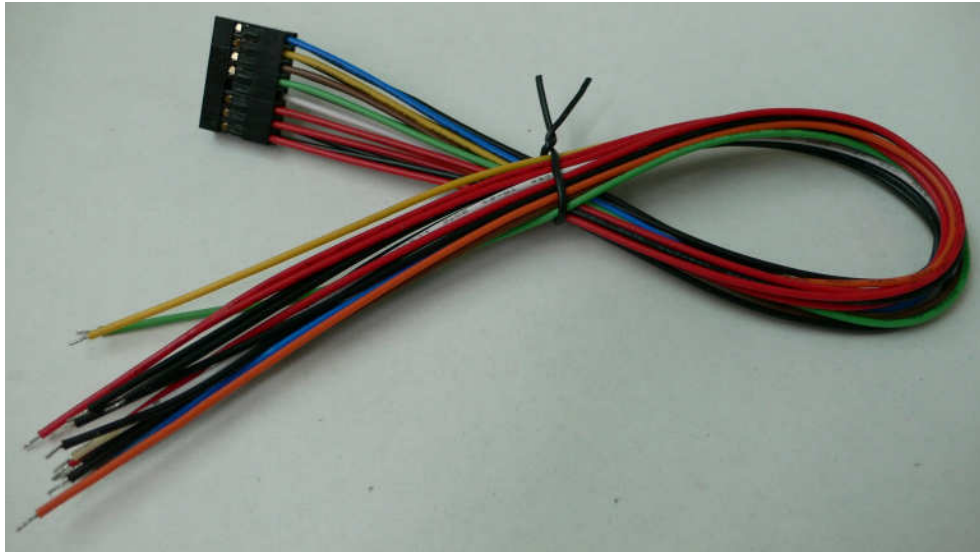
PIN SIGNAL DIRECTION

<p>Header 2x8 - View looking into connector (NP-14 side)</p> 	<ul style="list-style-type: none"> 1 Alarm contact 1 input 2 Alarm contact 2 input 3 Alarm contact 3 input 4 Alarm contact 4 input 5 Alarm contact 5 input 6 Alarm contact 6 input 7 Alarm contact 7 input 8 Alarm contact 8 input 9 -16 Ground <p>Each alarm switch NO to NC, or NC to NO be alarm active.</p>
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↓ More switch of alarm input information

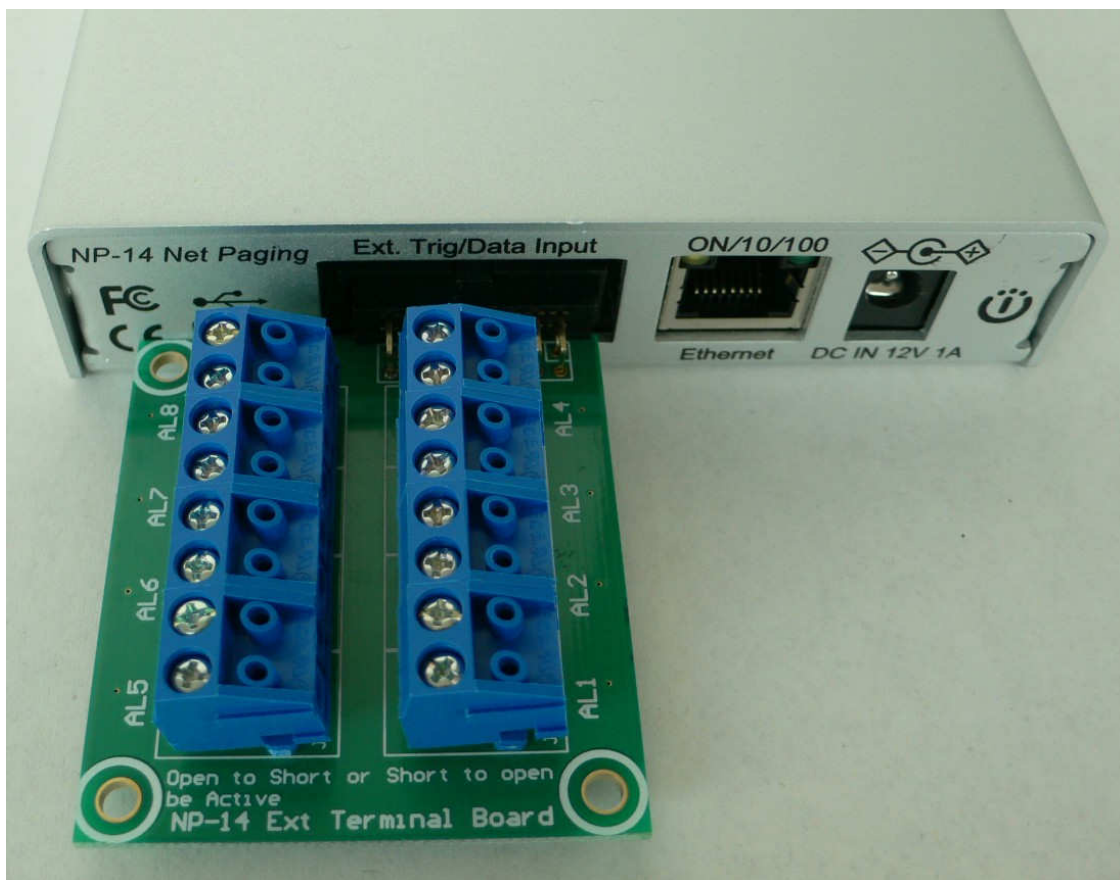
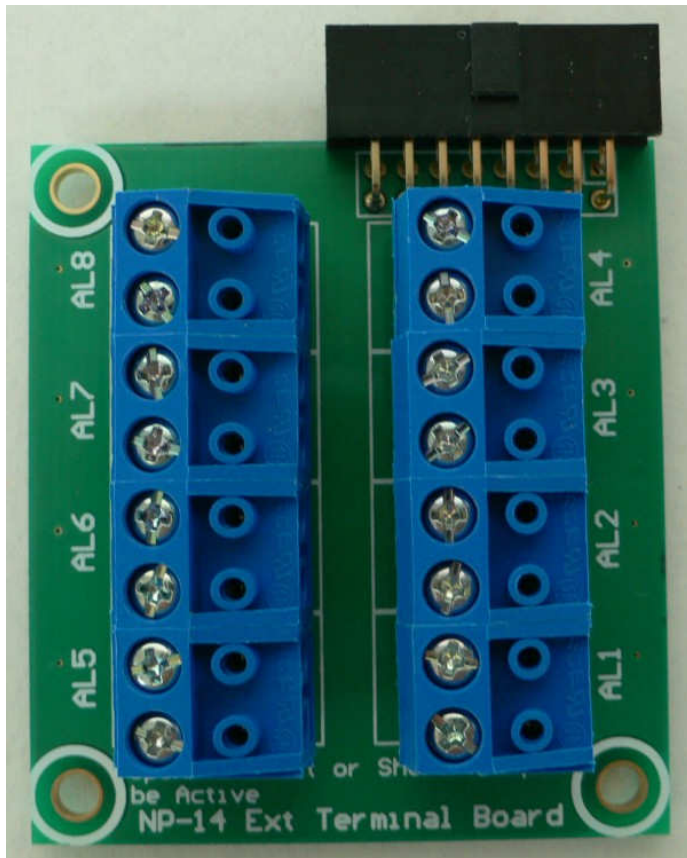


Option for ext trig wires - Part No. 86864528-00



Alarm switch or alarm sensor direct connection with wires

Option for ext trig alarm terminal board Part No. 86864700-00



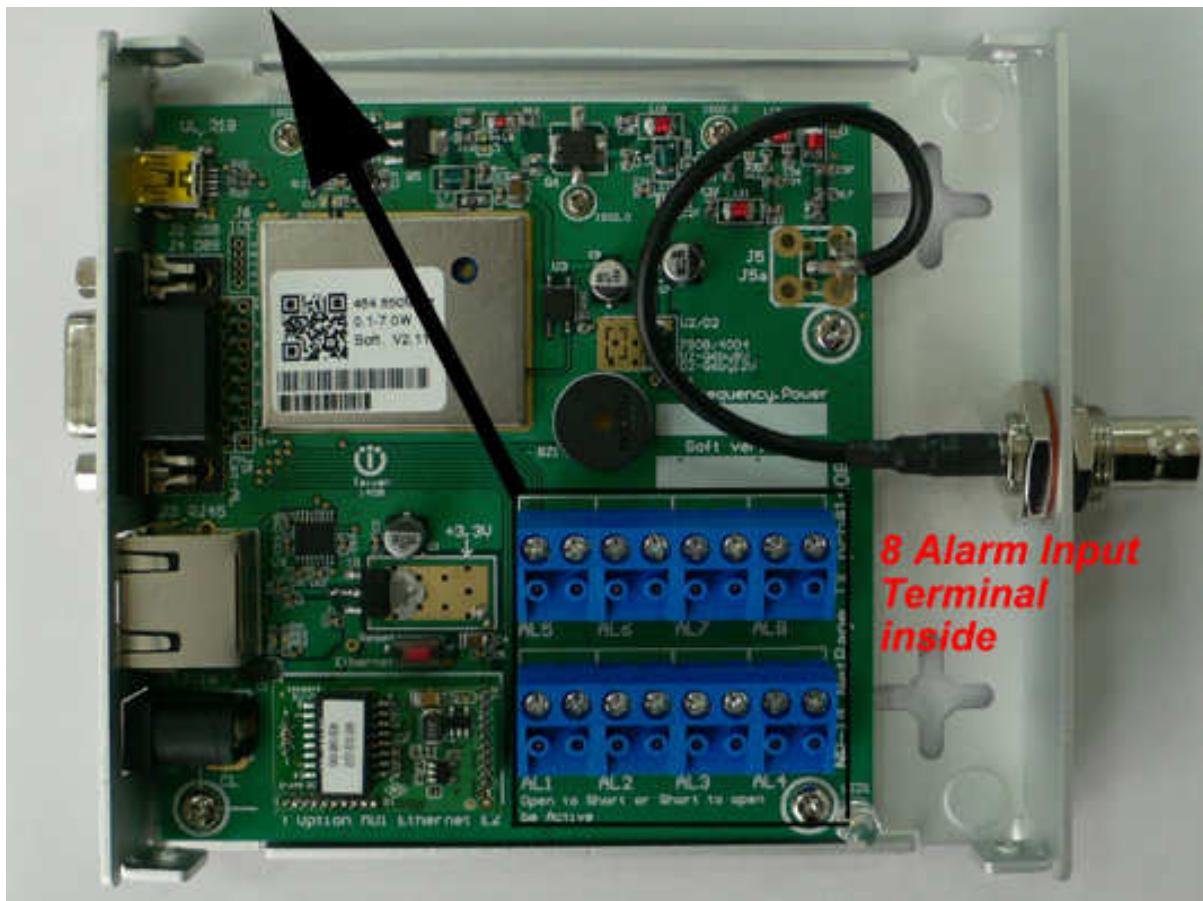
Use ext terminal board into the NP-14 Ext. trig port.

Table 1-3. Inside contacts input terminal (8 port) PIN SIGNAL DIRECTION

G	S	G	S	G	S	G	S
J15		J16		J17		J18	
AL5		AL6		AL7		AL8	
G	S	G	S	G	S	G	S
J11		J12		J13		J14	
AL1		AL2		AL3		AL4	
Open to Short or Short to open be Active							

1 AL1 Alarm 1 in S= Trigger, G=Ground
 2 AL2 Alarm 2 in S= Trigger, G=Ground
 3 AL3 Alarm 3 in S= Trigger, G=Ground
 4 AL4 Alarm 4 in S= Trigger, G=Ground
 5 AL5 Alarm 5 in S= Trigger, G=Ground
 6 AL6 Alarm 6 in S= Trigger, G=Ground
 7 AL7 Alarm 7 in S= Trigger, G=Ground
 8 AL8 Alarm 8 in S= Trigger, G=Ground

Each contact G-S open to short, or short to open be alarm active.



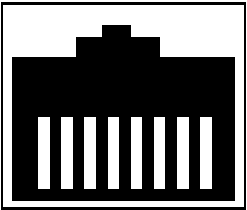



The alarm cable can be in/out on side hole of NP-14


NP-14 Net-Paging System

Ethernet IP set up Guide

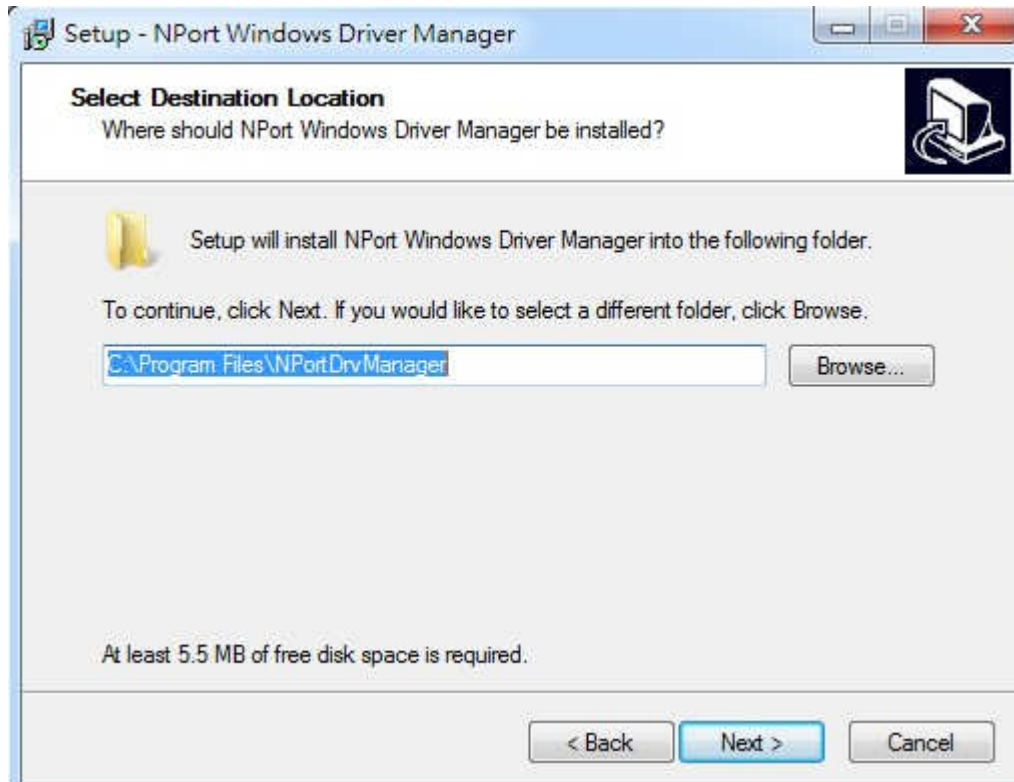
Table 1-4. RJ-45 ETHERNET PORTS (8 pin receptacle) PIN SIGNAL DIRECTION

<p>RJ-45 - View looking into receptacle (NP-14 side)</p>  <p>8 1</p>	<p>1 TD+ 2 TD- 3 RD+ 4 NA 5 NA 6 RD- 7 NA 8 NA</p>
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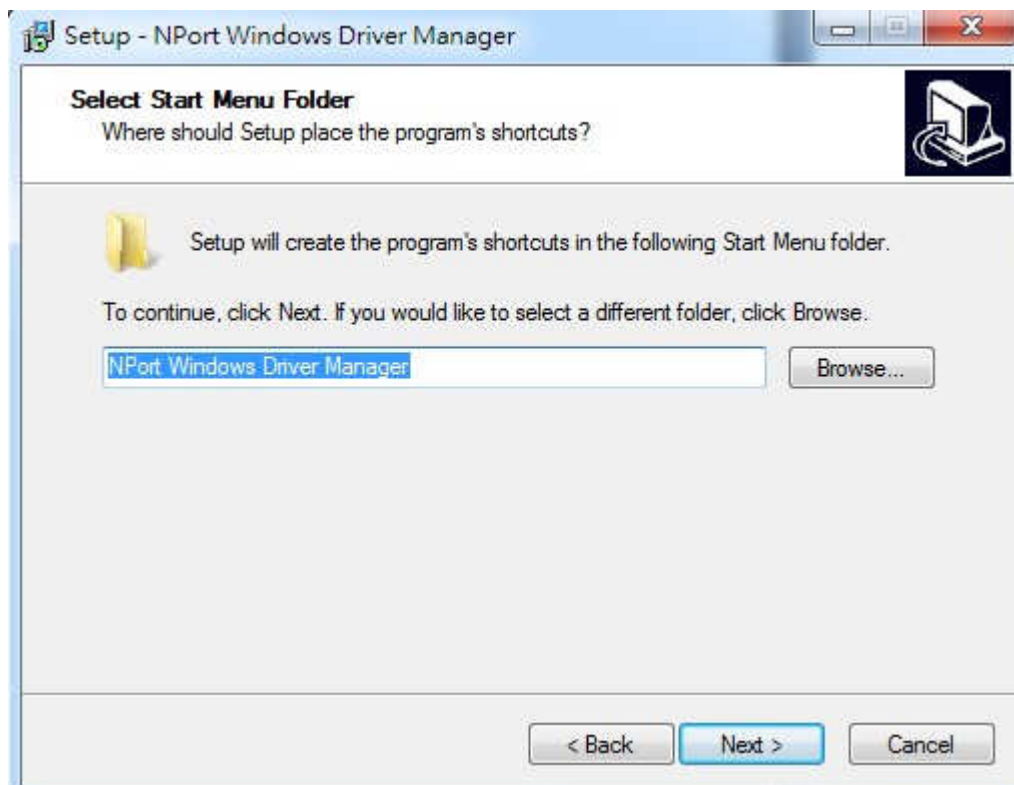
Click →  Moxa MiiNePortE2 Driver

Click →  drvMgr_setup_Ver1.17_Build_13020109_whql to install NPort

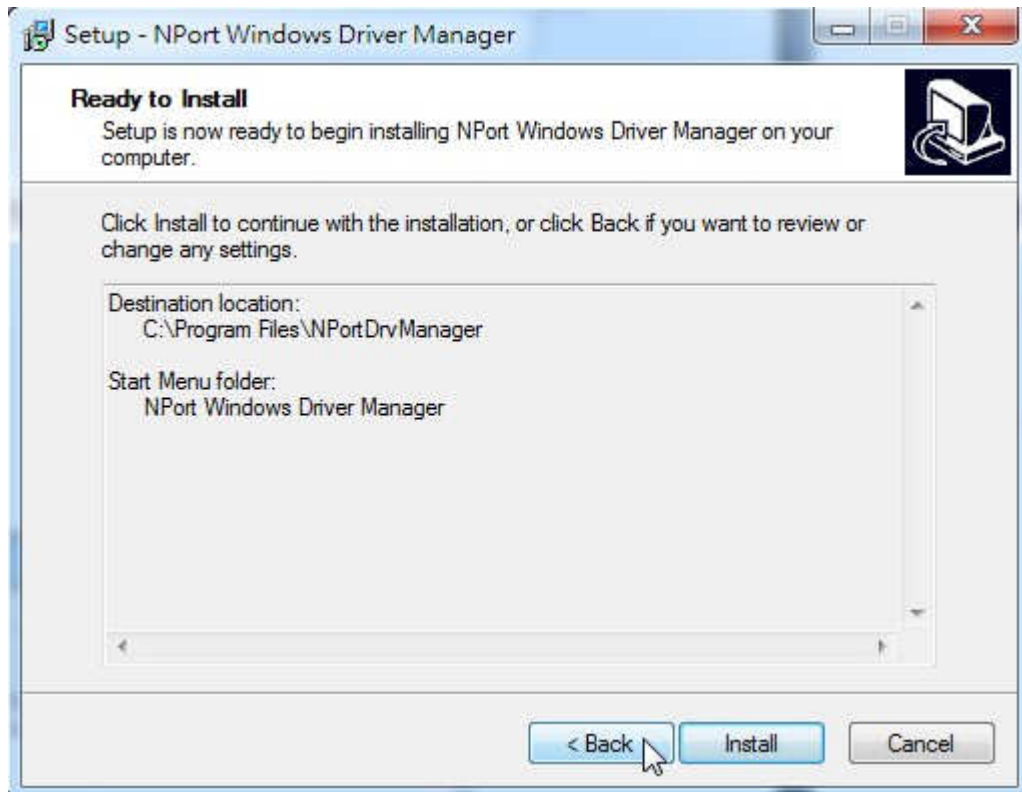




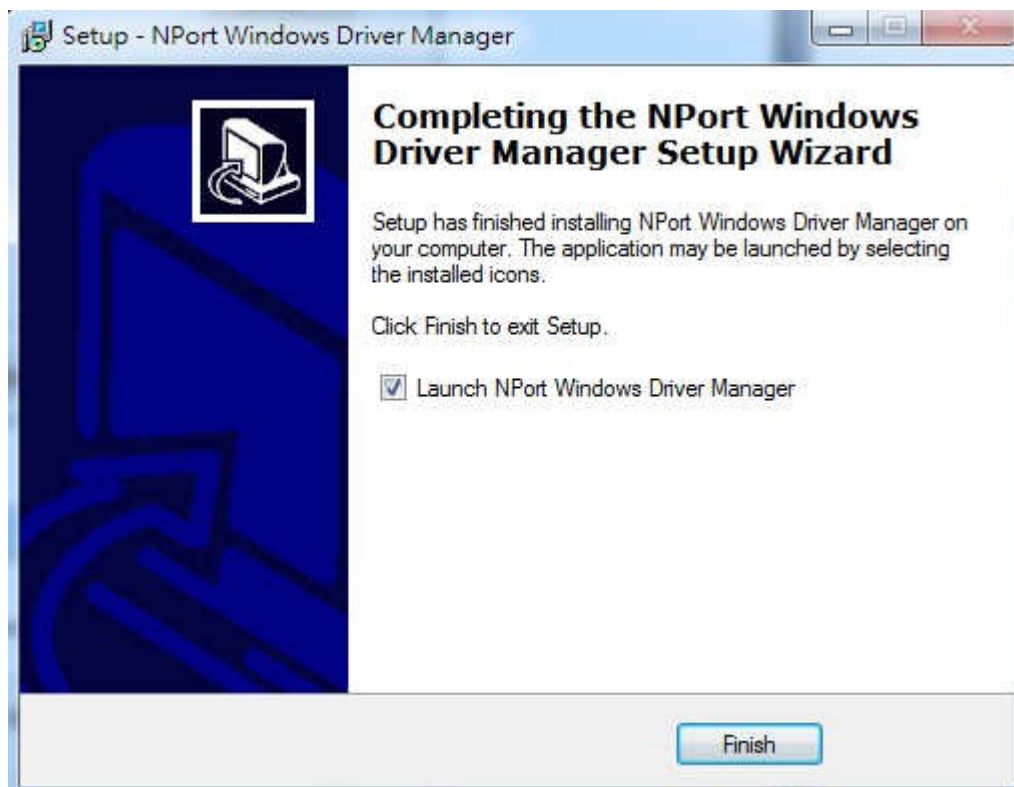
Click →Next



Click →Next



Click → Install



Click → Finish

Click → Search

Select From List

Mapping IPv6 COM Port

Search Select All Clear All

No	Model	MAC 1	Address 1	MAC 2	Address 2

Input Manually

Real COM Redundant COM Reverse Real COM

NPort IP Address

First Mapping Port:
Data Port:
Command Port:
Total Ports:

? Help OK Cancel

To find a IP address

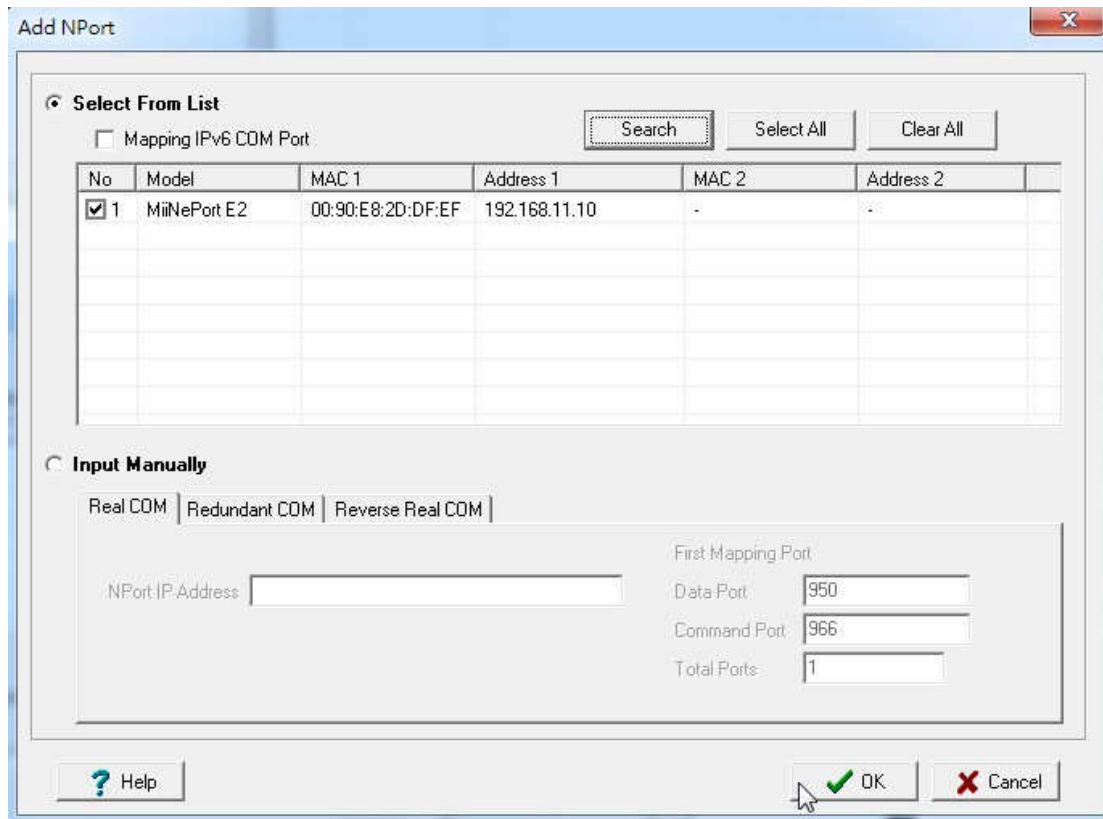
Searching for NPort...

Mapping IPv6 Stop

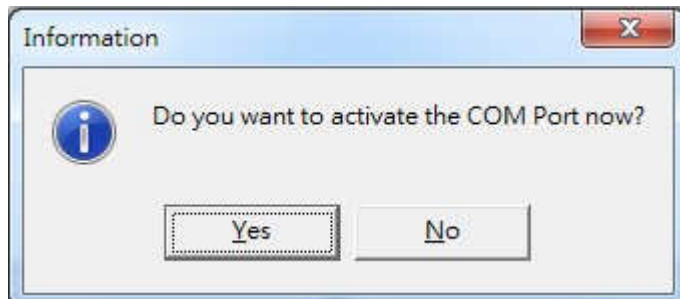
Found 1 NPort(s), remain timeout = 2 second(s)

No	Model	MAC 1	Address 1	MAC 2	Address 2
1	MiNePort E2	00:90:E8:2D:DF:EF	192.168.11.10	-	-

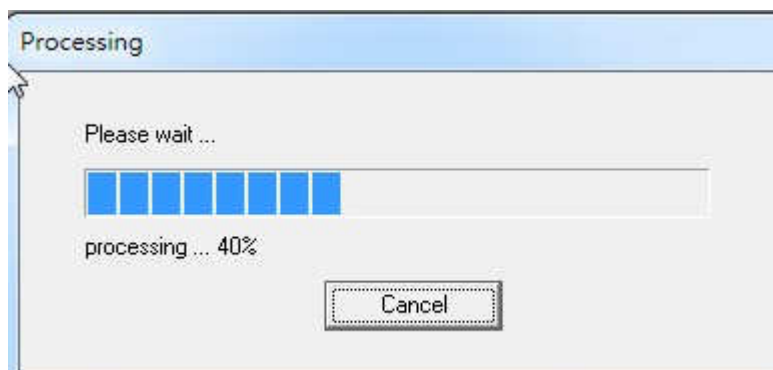
Click → OK



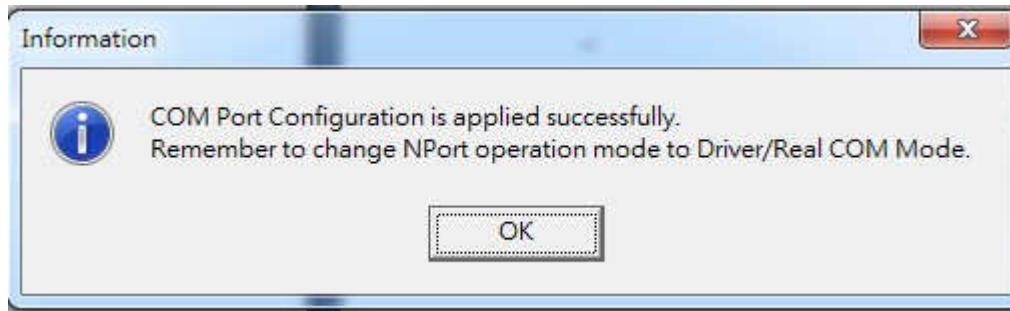
Click → Yes



Waiting...



NPort is ready

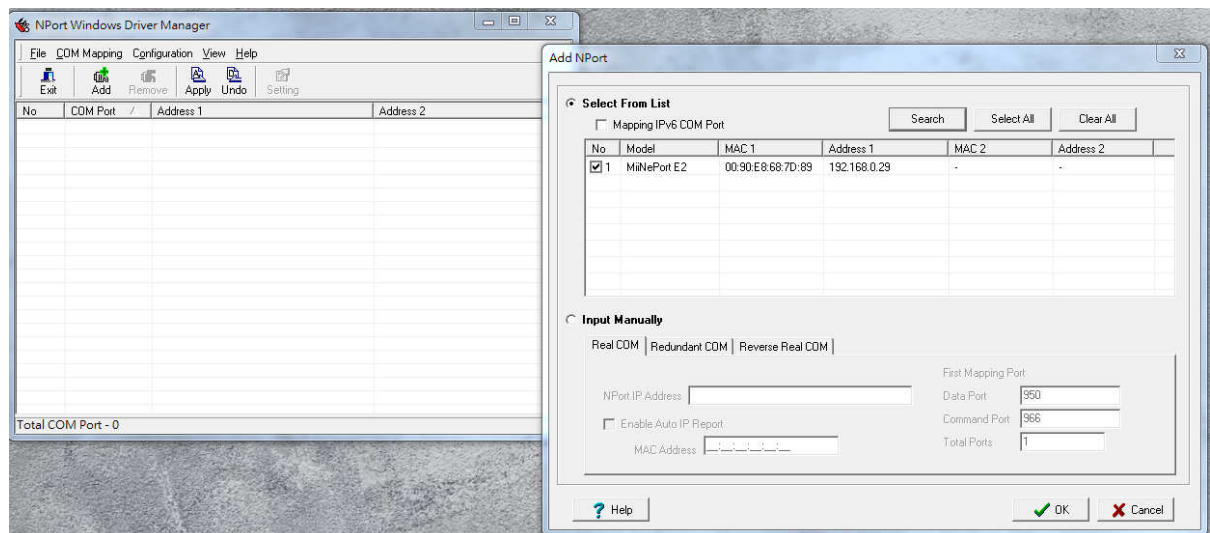


More information for set up NP-14E as Com Port or TCP/IP

1. To set up NP-14E as com port in the local network.

First use the NPort software to search the NP-14E

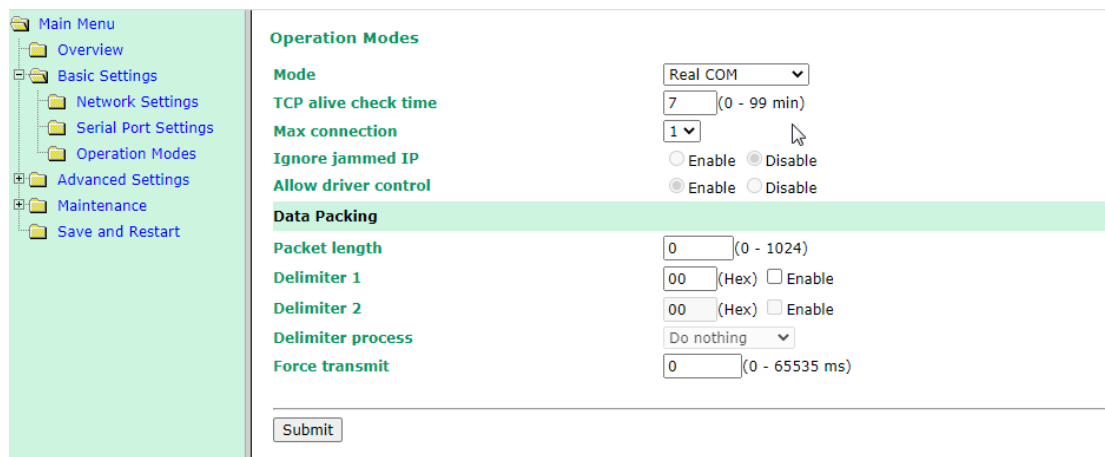
https://drive.google.com/file/d/16cwU54jzU_omOCnnhGUaX6ZHKG9Xmsxz/view?usp=sharing



And there is IP address for the NP-14E(in this example 192.168.0.29)

Then open the IP address in the browser.

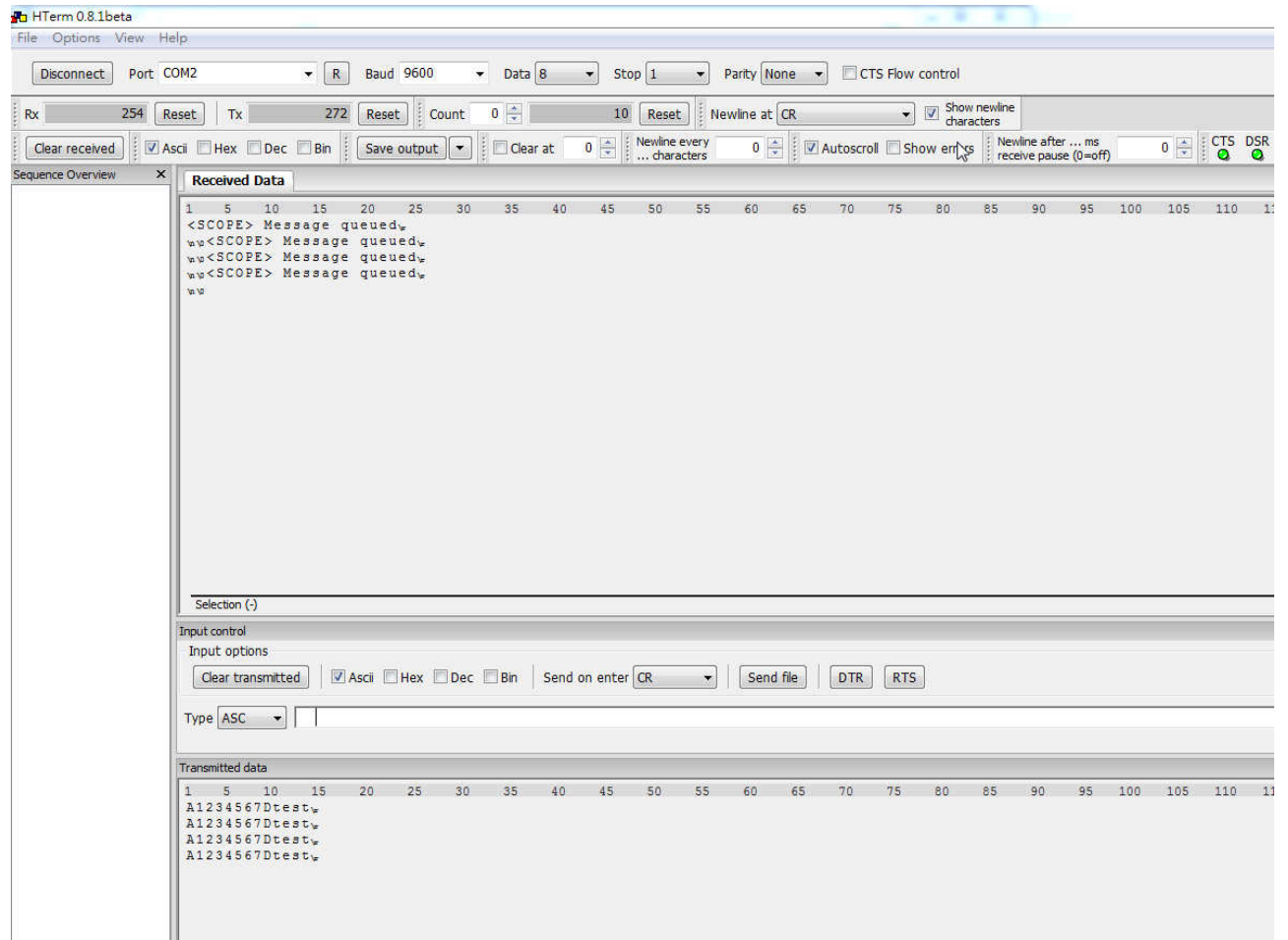
If required password (the password is “moxa”)



Under Basic Setting/Operation Modes choose “Real Com” and click on Submit/save and restart.

Back to the NPort software and click on OK and yes.

Now the N-14E can be connected as Com port.
For example using Hterm software.
(<https://www.der-hammer.info/pages/terminal.html>)
Set connection
(9600/8/n/1)

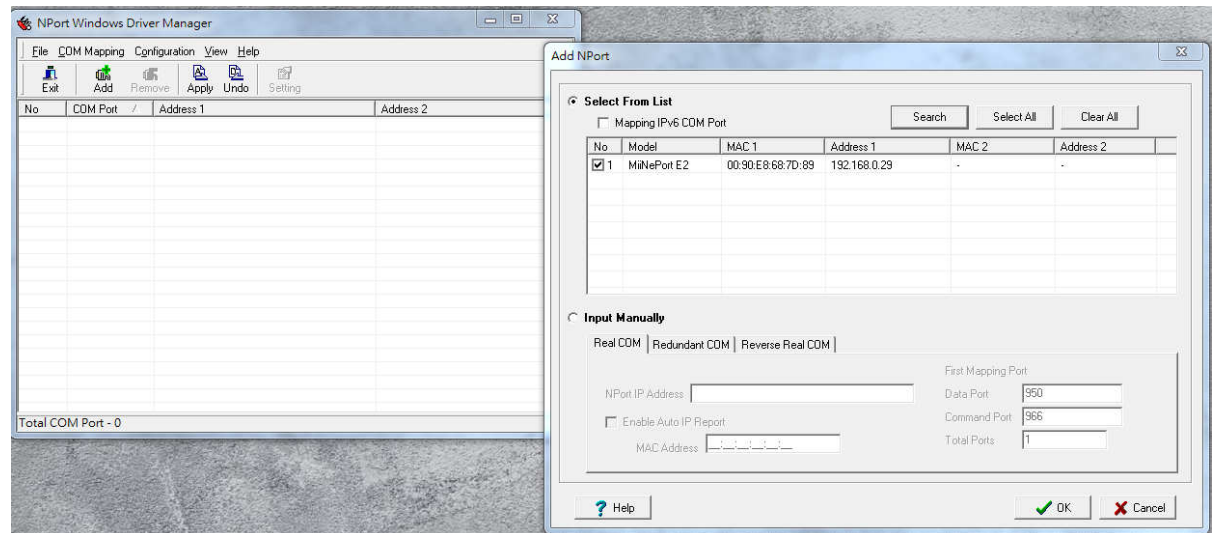


Using Scope Protocol (send on enter CR).

2. To set the NP14E as TCP/IP on the network.

First use the NPort software to search the NP-14E

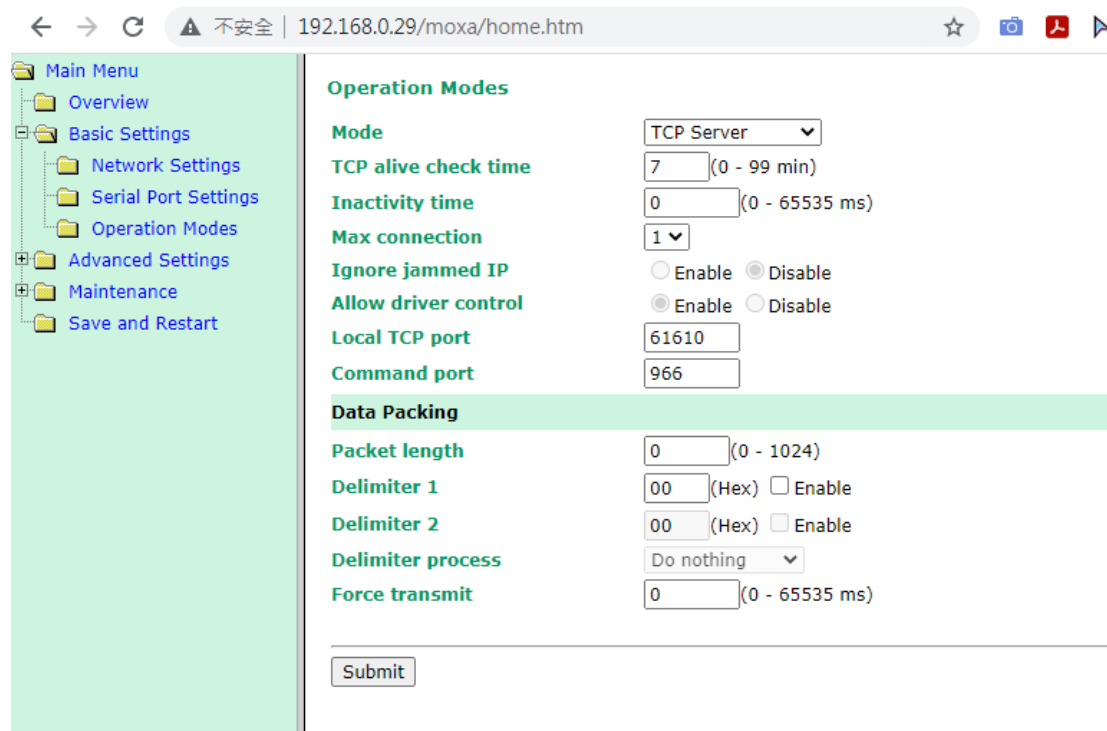
https://drive.google.com/file/d/16cwU54jzU_omOCnnhGUaX6ZHkG9Xmsxz/view?usp=sharing



And there is IP address for the NP-14E(in this example 192.168.0.29)

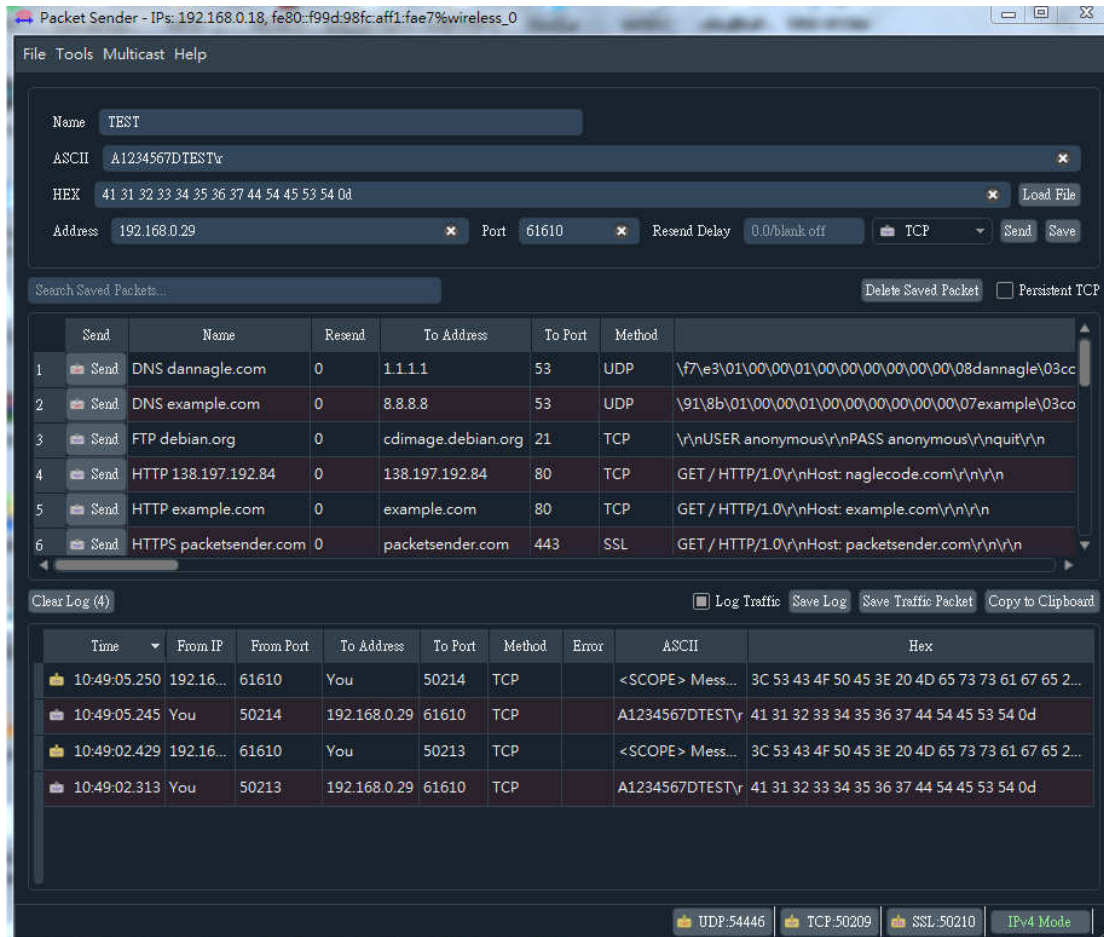
Then open the IP address in the browser.

If required password (the password is “moxa”)



Under Basic Setting choose for example TCP server. And click on Submit/save and restart.

And using TCP/IP terminal software ex. Packetsender(<https://packetsender.com/>)



Using the Message type Scope protocol follow by “\r”

Same method goes with UDP mode.

RF/Antenna output



RF/Antenna output by BNC

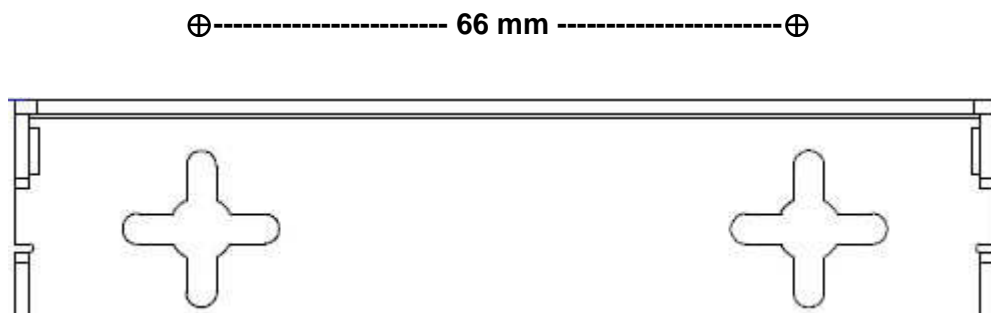
The BNC Jack for RF output for antenna connection.

IF RF power under 2 W, the NP-14 antenna can be used by the rubber wipe antenna

IF RF power over 2W, the NP-14 must use the external antenna, which must be Set at least 1.5 meters away from the NP-14 unit to avoid the interference.

Mount

Mount on the wall by screw max 5 ϕ mm



NP-14 NetPage Paging System Specifications

Frequency:	410-490 MHz Synthesized	868-915 MHz Synthesized
Paging format:	POCSAG.	
Pager Baud rate:	512bps / 1200bps / 2400bps.	
Message type :	ASCII	
Channel Spacing:	6.25K / 12.5K / 25K. Frequency Synthesized by USB programming	
Modulation:	NRZ NFSK, for POCSAG	
Deviation:	3.5-4.5Khz	
Stability:	+-10ppm.	
RF output power:	0.1~7 W (programmable)	0.1~4 W (programmable)
RF output connector:	BNC female (SMA female option)	
P/C Interface:	USB 2.0 and RS-232 9600bps	
Ethernet:	RJ-45 TCP/IP 10/100M	
Operation temperature:	-25°C ~ 70°C	
Power Supply:	DC 12V 1A(Minimum)	
Size:	120 mm X 110 mm X 25 mm.	
Model Weight:	0.8KGs. include AC 100~240 to DC 12V 2A switching power adapter.	

Notes: Specifications are subject to change without notice

CCW152231-001 ---- END ---- March.24.2021.