User Manual

NC9100
NC9200
NC9300

Ver 0.4
31 90 01
2004-09-14

Contents

1. Introduction

By using Net Controller, equipment's with serial communication by RS232/RS422/RS485, can be connected to a standard Ethernet network with TCP/IP.

The communication is completely transparent. Ethernet with TCP/IP offers a well thought and open architectur for communication on different platforms regarding computers and operating systems. Gives advantage in form of easy integration. By using the network instead of own serial cables and telephone line for modem, it is possible to reduce the costs for installation and maintain

Net Controller is a general standalone product and easy to integrate in systems. Two models is available, table and DIN rail model. Is power supplied
With 12-48V AC/DC. Direct or with an AC adapter.

Each Net Controller has its own IP address and each serial port has its own TCP-port number.
Handle subnets with one standard Gateway and Netmask addressing.

Net Controller has two serial ports, it can be used for different equipment, with separate remote IP-address connection. The communication is completely transparent.

The serial port has following signals.
GND Ground
RD Receive Data
TD Transmit Data
DSR Data Set Ready
DTR Data Terminal Ready
RTS Request To Send
CTS Clear To Send
DCD Data Carrier Detect
RI Ring

Switchable between RS232 and RS422/RS485 interface. RS422/RS485 can handle 4-wire and 2-wire connections.

In modem mode, it can simulate Modem with AT commands. This function makes it possible to replace a Modem with a Net Controller, and connect is made with IP address instead of telephone number.

Configuration of parameters such as IP-addresses, TCP-ports, Serial communication and Timeouts is managed over the network with Web browser/Telnet or via the serial port with Terminal utility software, NCsetup.

Has Flash memory for easy update of the Net Controller software via the serial port.

2. Reset button

The Reset button R with two functions, a short press make a reset, and a long press, at least in 5 sec, start the configuration.

3. Serial port RS232

The serial port can be setup with speed ,data format and control.
See parameter *Baud rate, Serial Option Flags: Enable 8 Databits, Enable Parity, Enable Odd parity, Enable 2 Stopbits.*

Terminate with character or timeout

Received characters is buffered until a defined termination character or a time gap is discovered and thereafter is send via TCP/IP. The character and the time gap is selectable. Default time is 2 characters gap.
See parameter *Serial Receive timeout, End character.*

Flow Control

For flow control the RTS and CTS is used. Normal no flow control is used. With this option the RTS control the flow from Net Controller and CTS control the flow to Net Controller.
See parameter *Serial Option Flags: Enable flow control.*

Modem mode

In modem mode, the Net Controller acts as Modem. Make it possible to connect with AT command and use IP address instead of telephone number (simulate a Modem).
See parameter *SerialOption Flags: Enable AT mode, Enable ATH command, Enable Close via DTR.*

AT V0/1

Default value for V0/1 is selectable by this option.
With AT command V0 or V1, selects response code in numeric form V0 or text form V1.
See parameter *Serial Protocol Flags: Enable Text code AT V0/1.*

AT X0/1

Default value for X0/1 is selectable by this option.
With AT command X0 or X1, selects response code in standard X0 or extended X1.
See parameter *Serial Protocol Flags: Enable Extended code AT X0/X1.*

AT H

Allow disconnect by +++ and ATH command. If disabled, only disconnect can be made by control signal DTR or timeout.
See parameter *Enable ATH command, Enable Close via DTR.*

Modem command and data state

In modem mode the Net Controller is in command or data state. In Command state, it is possible to send instruction , AT commands. In Data state, everything is accepted as data.

Command state

Net Controller is shifted to Command state on power up, disconnect, DTR off and on escape sequence +++

Data state

Net Controller is shifted to Data state on connect and ATO.

Commands

AT Command prefix. A AT command string must start with this characters except escape (+++).
DT Connect with IP address. The address must be 12 digits without any dots. All the digits in the group must be filled out with zeros to three digits number. IP Adress192.168.0.1 will be 192168000001 and force to data state.
Response with CONNECT and set DCD On.
H0 Disconnect.
Response with OK and set DCD Off.
O Go on-line and force to data state.
Response with CONNECT.
Vn Verbose response codes. V0= Numeric, V1= Text.
Response with OK.
Xn Extended response codes. X0= Standard, X1/X2/X3/X4= Extended.
Response with OK.
+++ Escape sequence, force to command state.
Response with OK.
DTR Off, disconnect and force to command state.
Response with NO CARRIER and set DCD Off.
DTR On, availble for command and listen for connect.
RI Ring and force to data state.
Response with RING, CONNECT and set DCD On.

Response code

Code	Text	X setup
0	**OK**	**0 - 4**
1	**CONNECT**	**0**
2	**RING**	**0 - 4**
3	**NO CARRIER**	**0 - 4**
4	**ERROR**	**0 - 4**
5	**CONNECT 1200**	**1 - 4**
10	**CONNECT 2400**	**1 - 4**
11	**CONNECT 4800**	**1 - 4**
12	**CONNECT 9600**	**1 - 4**
16	**CONNECT 19200**	**1 - 4**

Example on AT strings

Example on useable AT strings

Init string for extended numerical response codes
ATV0X2
OK

Connect with IP address 192.168.0.1
ATDT192168000001
CONNECT

Connect with IP address 192.168.0.2 and TCP port number 10002.
ATDT19216800000210002
CONNECT

Disconnect
+++ ATH0
OK

Entering Command state and keeping the Data connection
+++ AT ATO
OK CONNECT

Figure of Serial port RS232

Signal names defined with Net Controller as DCE, Data Communication Equipment.

DB9F connector RS232	
Stift	**Benämning**
1.	>DCD
2.	>RD
3.	<TD
4.	<DTR
5.	GND
6.	>DSR
7.	<RTS
8.	>CTS
9.	>RI

4. Serial port RS422/RS485

Selectable for 4-wire and 2-wire, with half- or full-duplex and multipoint. 2-wire use half-duplex and multipoint (select b=1, m=1, f=1).
Signal levels: Mark “1” T/R- T/R+ (idle), Space “0” T/R+ T/R-.
See parameter *Serial Option Flags: Enable RS485.*
RS485 Interface
For DIN rail model, the option for RS485 must be set.
Se parameter **Option RS485 Interf.**

Halfduplex

When half duplex is set, it shifts between *Transmit* and *Recive*. It is used for 2-wire system.
See parameter *Serial Option Flags: Enable 485-Halfduplex.*

Multipoint

Activate *Transmit* in none-active state (free) when data’s not transmitted. It is used for 2-wire system.
See parameter *Serial Option Flags: Enable 485-Multipoint.*

Low/high impedance

The termination can be selected to low (120 ohm) or to high (12 k ohm) impedance terminating.
See parametrar *Serial Option Flag: Enable Terminate Snd och Enable Terminate Rcv.*

Figure of serial port RS422/RS485

Shows 4-wire and 2-wire.

DB9F connector RS422/RS485

Pin	4-wire	2-wire
2.	T-	T-/R-
3.	R+	
7.	R-	
8.	T+	T+/R+

5. Log

To monitoring what the Net Controller is doing, the log output can be used. It is possible to select output port and log level. The output can be serial port or Telnet.
To select the port:

1 = Serial port-1.
2 = Serial port-2.
3 = Telnet.

To select level:

0 = Nothing.
1 = Errors.
2 = Mini.
3 = All.
4 = Network.

See parameter *Log Port, Log Level.*

Example on output

Start

Shows version and IP settings.

```
>0002 NC200 STD 0.72
>0003 Ethernet    00-02-b8-00-11-89
>0004 Local IP    0.0.0.0
>0005 Netmask     255.255.255.0
>0006 Gateway     255.255.255.255
>0007 Serial-1    9600
>0008 port-1 Listen 10001
>0009 Serial-2    9600
>0010 port-2 Listen 10002
>0011 DHCP start
>0012 DHCP stop   192.168.0.168   0001
```

Connect

Shows connection.

```
>0039 port-1 Connect from 192.168.0.100
>0040 port-1 Connect 10001
```

Send/Receive

Shows send and receive of data.

```
>0020 port-1 Recv 1
>0021 port-1 Send 1
>0022 port-1 Recv 1
>0023 port-1 Send 1
```

Close

Shows close.

```
>0045 port-1 Close 10001
```

AT command connect

Shows connect with adtd. Response code 1=Connect.

```
>0044 AT-Command atdt192168000001
>0044 AT-Response 1
```

AT command disconnect

Shows disconnect. Response code 3=No Carrier.

```
>0044 AT-Response 3
```

6. Ethernet TCP/IP

Communication protocol for the network is TCP/IP.

Has support for the following protocols:

- ARP Address Resolution Protocol.
- IP Internet Protocol.
- ICMP Internet Control Message Protocol.
- UDP User Datagram Protocol.
- TCP Transmission Control Protocol.
- DHCP Dynamic Host Configuration Protocol.
- HTTP Hyper Text Transfer Protocol.

7. Gateway

Net Controller has one default Gateway.

8. Web Server

Net Controller has an web server for homepages used for configuration.

9. Installation

Check with the network administrator if manual or automatic IP setting shall be used. (Automatic IP setting is set as default in Net Controller, IP address is 0.0.0.0). If manual IT setting, ask for the IP settings from the network administrator, such as IP address, netmask and deafult gateway.

On connection, check the LED **P Power** green is on (power and started). LED **A Active/Link** yellow is on (valid link for the network).
LED **H High speed** green is on if 100 Mbps link.

On automatic IP setting the network have a DHCP server to assign the Net Controller (the MAC address is factory labelled on Net Controller).

Manuel IP settings is managed over the network with Web browser/Telnet or via the serial port with Terminal utility software, NCsetup.

Terminal

Connect an Terminal (PC) to serial port S1 and start the NCsetup (or a terminal program).

1. Start the configuration by pressing the button R Reset (long press).
2. The following text shows:
   Configuration mode
   Net Controller NC200 STD 01.00
   Enter password (j ********)
   >
3. Enter the password with j command.
   >j control
4. The following text shows:
   Configuration open
   MAIN>
5. Enter the IP address with a command.
   MAIN>a 192.168.0.1
6. Store the changes to Flash memory with s command.
   MAIN>s
7. The following text shows:
   MAIN>Warning, Store Configuration to Flash? Confirm with y
8. Confirm with y.
   MAIN>y
9. The following text shows:
   MAIN>Store to Flash, Exiting Configuration

Net Controller has assigned an IP setting.

Telnet/Web browser

Make sure your PC is connected to the same subnetwork. The Ethernet MAC address of the Net Controller is printed on a label, outside of the Net Controller (serial number S/N).

1. Enter IP and MAC address with the **arp** command (use command):
   >***ARP –S 192.168.0.1 00-02-B8-00-00-01***
2. Start the web browser with the assigned IP address.
   http://192.168.0.1
   The start page is showed.
3. Enter the password ***control*** in **Enter password** field and click on **Ok.**
   The IP Settings is showed.
4. Select **IP settings** on the menu.
   Enter the IP address in **Local IP** field and click on **Ok.**
5. Select **Store to Flash memory** on the menu.
   Enter ***yes*** in **Confirm yes/no** field and click on **Ok.**

Net Controller has assigned an IP setting.

10. Test

To verify the Net Controller is configurated for the network, standard software can be used.
Ping to verify the IP settings, Telnet to verify TCP communication and Terminal to verify the serial port and modem connection.

IP address

1. Run ping command with the IP address to verify. Net Controller is answering if the IP address is correct.
   >***ping 192.168.0.1*** (example of assigned IP address)
   Verify network communication: LED **A Active/Link** yellow blinking.

TCP

1. Run **Telnet** with the IP address and the TCP port number that the serial port is assigned to.
   >***telnet 192.168.0.10 10001*** (example of assigned IP address and TCP port number).
   Verify that it connects.
2. Send/receive data by pressing a character key. Do loopback test by connecting TD-RD on the serial port.
   >***1122334455667788 99*** (Local Echo on).

Serial port

1. Run Terminal program and choise a com port with Modem. *You have to use a Modem port, it is not possible to enter the AT command characters one by one*. If no Modem is installed, choise a standard Modem 9600.
   Enter the Net Controllers IP address as telephone number. You have to use fix length on the number, fill out with leading zeros on each group so the number 12 digits. 192.168.0.1 etc 192168000001
2. **Connect** with ***IP address*** as **Telephon number**.
   After connection all characters is send.
3. **Disconnect**.

Network-Serial port

Verify the communication via the network and the serial port, by running both the Telnet and Terminal together.
1. Run the Telnet via the network.
2. Run the Terminalprogrammet via the serial port.
3. Connect the Telnet to Net Controller's IP address and TCP port (10001).
4. Enter character from the Telnet and they will be showed on the Terminalen and reversed.

11. Net Controller Program download

Download of new software (Firmware) to upgrade the Net Controller.
The software file type is ***.ihx**.

The download can only be done via the serial port with NCsetup. The latest version for the Net Controller can be dowloaded from our website www.whi.se

Download

Connect an Terminal (PC) to serial port S1 and start the NCsetup.

1. Start the configuration by pressing the button R Reset (long press).
2. The following text shows:
   Configuration mode
   Net Controller NC200 STD 01.00
   Enter password (j ********)
   >
3. Enter the password with j command.
   >j control
4. The following text shows:
   Configuration open
   MAIN>
5. Set the Net Controller in waiting state for download with the d command.
   MAIN>d
6. The following text shows:
   Waiting for download
7. Select File, Download… in NCsetup menu. Choose the download file in file window and click **Ok**.
   NC200 STD 00.72.ihx
8. Platform and current version shows in Download window. Click on **Start**.
   The download is started.
9. The download is completed then the Download window is closed.
   Net Controller restarts.

If wrong download file is loaded and the Net Controller fault to start, it is possible to force the Net Controller into waiting for download, by pressing the R Reset button at the same time power is connected.

12. NCsetup Windows

NCsetup is a terminal program used to communicate with the Net Controller via the serial port.

Install

Unpack and copy the file ncsetup.zip to a map. Consist of one file, ncsetup.exe.

13. Configuration

Configuration of parameters such as IP-addresses, TCP-ports, Serial communication and Timeouts is managed over the network with Web browser/Telnet or via the serial port with Terminal utility software, NCsetup.

To start configuration via the serial port-2, press the button R Reset (long press).
After the configuration is completed the Net Controller is turned back to data mode by either storing the parameter or by pressing the R Reset button (short press).

To configurate with Telnet or Webserver over the network, start either Telnet with telnet port or web browser. Terminal and Telnet use the same command syntax, CMD.

Command language CMD

Configuration via Terminal or Telnet use the same command syntax CMD.

Each command consist of one command letter, and argument and value. To only show the parameter, enter only the command.

With command ***?*** shows a list of all commands.
Setting of the serial port is done by a sub menu ***1*** (it also has ti's own list of commands **?**). Back to the main menu by the key **Esc**.

To make changes, a login must first be done.

Finish the configuration with **Store to Flash** or **Exit.**

Login

Login with password (control).
MAIN>j ********

Show menu

Show a list of commands.
MAIN>?
*** Main menu ***
NC200 STD 00.72

j nnnnnnnn	Check password
f	Enable service
e nn-nn-nn-nn-nn-nn	Ethernet MAC address
i nnnnnnnn	Identity
p nnnnnnnn	Password
a nnn.nnn.nnn.nnn	Local IP address
m nnn.nnn.nnn.nnn	Netmask
g nnn.nnn.nnn.nnn	Gateway IP address
k nnnnnnnn	Encryption key
l n	Log level 0-7, 0 = Off
h n	Log port, 1=Port-1, 2=Port-2, 3=TCP
c nnn	Connect timeout (sec)
v nnn	Activity timeout (milisec)
z	Restore to default values
s	Store to flash memory
r	Reset
b	Show statistics
d	Start download
x	Exit
1	Select port-1 menu
2	Select port-2 menu
o u=1	Enable UDP (Main option)

o e=1	Enable Encryption
o p=1	Enable Permission
o w=1	Enable Web

Restore to default value

Restore the parameters to default values.
MAIN>z
Warning, Restore configuration to Flash? Confirm with y
MAIN>y
Store to Flash, Exiting Configuration

Store to flash memory

Store the changes to the Flash memory.
MAIN>s
Warning, Store to Flash? Confirm with y
MAIN>y
Store to Flash, Exiting Configuration

Show statistic

Show statistics for the network.
MAIN>b
Received packets: 10
Transmitted packets: 10
Droped packets: 0
Error packets: 0
Port-1: Closed
Port-2: Closed

Start download

Set Net Controller into waiting for download of new software (Firmware). Start download from NCsetup with selected file.
MAIN>d
Start Download

Exit

Finish configuration mode and return to data mode.
MAIN>x
Exit Configuration

Enable service flag

Enable service functions, make it possible to change protected parameters.
MAIN>f 1

Ethernet MAC address

Show Ethernet MAC address. The address is unique for each Net Controller. The address is printed on the label outside the Net Controller (Serial number S/N). Hex 00-ff.
MAIN>e
00-02-b8-00-02-01

Identity

Identity. 8 characters, fill out with space. Used to give every Net Controller a unique id.
MAIN>i NC9100_ _

Password

Password. 8 characters, fill out with space. Used to login for configuration.

MAIN>p control_

Local IP address

Net Controller's own IP address. Point notation.
MAIN>a 192.168.0.10

Netmask

Net Controller's own netmask. Point notation.
MAIN>m 255.255.255.0

Gateway IP address

Net Controller's default gateway IP address. Point notation.
MAIN>g 255.255.255.255

Encryption key

Encryption key. 8 digits 64-bits key.
MAIN>k 12345678

Log port

Output port for log. 0=Turned off, 1=Serial port-1, 2=Serial port-2, 3=Telnet.
MAIN>h 1

Log level

Level for log. Selects level for the printouts. 0=Nothing. 1=Errors, 2=Connections, 3=All, 4=Network.
MAIN>l 3

Connect timeout

Sets the time for disconnect on idle line in seconds. If the communication is hold longer then the selected time, the line is disconnected. 0-255 Seconds, 0=Disabled.
MAIN>c 100

Activity timeout

Sets the time for restart on idle activity in minutes. If the communication is hold longer than the selected time, the Net Controller is reset. 0-255 Minutes, 0=disabled.

Main Option Enable UDP

Enable UDP instead of TCP Protocol. 0=TCP, 1=UDP.
MAIN>o u=1

Main Option Enable Encryption

Enable Encryption. 64-Bits encryption of the data.
MAIN>o e=1

Main Option Enable Permission

Enable permission control for extern connection via IP. Control against **Remote IP Adress**.
MAIN>o p=1

Main Option Enable Web

Enable start of Web Server.
MAIN>o w=1

Select port-1 menu

Select port-1 menu.
MAIN>1
PORT-1>

Select port-2 menu

Select port-2 menu.
MAIN>2
PORT-2>

Submenu for port-1 and port-2

Show menu

Show a list of commands for port-1 and port-2.
PORT-1>?
*** Port-1 menu ***

p nnnnn	Local TCP port
a nnn.nnn.nnn.nnn	Remote IP address
r nnnnn	Remote TCP port
b nnnnn	Baud rate
s nn	Start character
e nn	End character
t nnn	Serial recieve timeout (ms)
d nnn	RS485 timeout (ms)
o p=1	Enable Parity (Serial option)
o o=1	Enable Odd parity
o d=1	Enable 8 Databits
o s=1	Enable 2 Stopbits
o c=1	Enable Flow Control
o a=1	Enable AT commands
o h=1	Enable ATH commands
o t=1	Enable Close via DTR
o r=1	Enable Remote connect
o l=1	Enable Local connect
o k=1	Enable Break signal
o b=1	Enable RS485
o m=1	Enable Multipoint
o f=1	Enable Half duplex
o x=1	Enable Termination Rcv 120 ohm
o z=1	Enable Termination Snd 120 ohm
c v=1	Enable Text code AT V1
c x=1	Enable Extended code AT X1
c a=1	Enable Code AT CONNECT 1200
c c=1	Enable Control header
c h=1	Enable Handshaking
c e=1	Enable Exomatic
c n=1	Enable Nova tune

Back

Return to main menu from port-1 or port-2 menu.
PORT-1>Esc
MAIN>

Baud rate

Set communication speed for serial port. Speed 300-115200 bps.
PORT-1>b 9600

Serial recieve timeout

Sets the time for received time gap for serial port. Time = value x 4 x Bit-period. 0-255, 0=disabled.
PORT-1>t 10

RS485 timeout

Sets the time for activate Receive after Send for serial port RS485 in milliseconds. 1-255mS, 0=disabled.
PORT-1>t 5

Local TCP port

Net Controllers own TCP port number for serial port. Use number higher then 5000.
PORT-1>p 10001

Remote IP address

IP Address for the remote connection for serial port. Is the host the Net Controller is connected to on data received on serial port. Point notation.
PORT-1>a 192.168.0.200

Remote TCP port

TCP port number for the remote connection for serial port. Is the host the Net Controller is connected to on data received on serial port. Use number higher then 5000.
PORT-1>p 10001

Start character

Not used.
PORT-1>s 02 (Stx)

End character

Set the terminating character for received messages. The received character is buffered until a termination character or a time gap obtained.
PORT-1>e 03 (Etx)

Serial Option Enable Parity

Enable the parity for the serial port.
Aktiverar paritetskontroll för serieport.
PORT-1>o p=1

Serial Option Enable Odd parity

Select the parity for the serial port between odd, even. 0=Even, 1=odd parity.
PORT-1>o o=1

Serial Option Enable 8 Databits

Select the number of data bits for the serial port between 7 or 8. 0=7 Data bits, 0=8 Data bits.
PORT-1>o d=1

Serial Option Enable 2 Stopbits

Select the number of stop bits for the serial port between 1 or 2. 0=1 Stop bit, 1=stop bits.
PORT-1>o s=1

Serial Option Enable Flow control

Enable the flow control for serial port. On flow control the control signal RTS is used for data from Net Controller, and CTS is used for data to Net Controller.
PORT-1>o c=1

Serial Option Enable AT mode

Enable Modem mode and use AT commands. All command strings must start with the prefix AT. DTR must be On. The line goes disconnected by ATH command or set the DTR Off.
PORT-1>o a=1

Serial Option Enable ATH command

Enable detect of ATH command. In this option, the Net Controller is disconnect by timeout or control signal DTR.
PORT-1>o h=1

Serial Option Enable Close via DTR

Enable close with control signal DTR. By set DTR Off, the Net Controller disconnect.
PORT-1>o t=1

Serial Option Enable Remote connect

Enable to allow remote connections from remote host. If disabled the connection can only be made locally by received characters on serial port.
Aktiverar anslutning externt för serieport. 1=Tillåter anslutning till TCP-port, 0=Ingen anslutning tillåten.
PORT-1>o r=1

Serial Option Enable Local connect

Enable to allow local connection on received characters on serial port. If disabled the connection can only be made by remote host.
Aktiverar lokal anslutning för serieport. 1=Tillåter anslutning via serieport, 0=Ingen anslutning tillåten.
PORT-1>o l=1

Serial Option Enable Break signal

Enable to send/receive BREAK signal over the network for serial port.
PORT-1>o k=1

Serial Option Enable RS485

Enable RS422/RS485 interface for serial port. 0=RS232, 1=RS422/RS485.
PORT-1>o b=1

Serial Option Enable 485-Multipoint

Enable Z-state. The transmit line is in high impedance if nothing has to sent. Used in multipoint environment.
PORT-1>o m=1

Serial Option Enable 485-Halfduplex

Enable halfduplex. The receiver is turned off if a transmit is going on. Used in half duplex environment. In full duplex mode the receiver is always turned on. 0=Full, 1=Half duplex
PORT-1>o f=1

Serial Option Enable Termination Rcv

Enable low impedance termination (120ohm) for receive (RS485). 0=High termination, 1= Low termination.
PORT-1>o x=1

Serial Option Enable Termination Snd

Enable low impedance termination (120ohm) for transmit (RS485). 0=High termination, 1= Low termination.
PORT-1>o z=1

Protocol Enable Text code AT V0/1

Sets the default value for AT command Verbose response codes. 0= V0 numeric codes, 1=V1 text codes.
PORT-1>c v=1

Protocol Enable Extended code AT X0/1

Sets the default value for AT command Extension response codes. 0=X0 basics, 1=X1/X2/X3/X4 extended codes.
PORT-1>c x=1

Protocol Enable Code AT CONNECT 1200

Sets the default value for response code. 0=Standard, 1=CONNECT 1200 response code..
PORT-1>c a=1

Protocol Enable Control header

Enable protocol header.
PORT-1>c c=1

Protocol Enable Handshaking

Enable handshaking using signals RTS and CTS.
PORT-1>c h=1

Protocol Enable Exomatic

Enable Exomatic filter for serial port.
PORT-1>c e=1

Protocol Enable Nova tune

Enable Nova tune protocol for serial port.
PORT-1>c n=1

14. Default value

After clear the parameter has following values.

Main

Fält	Värde	Beskrivning
e	00-02-B8-00-00-01	Ethernet MAC address
i	NC910001	Identity (typ + mac)
p	Control	Password
a	0.0.0.0	Local IP address
m	255.255.255.0	Netmask
g	255.255.255.255	Gateway IP address
k	12345678	Encryption key
L	3	Log level
h	0	Log port
C	10	Connection timeout (sec)
v	0	Activity timeout (min)
o u	0	Option Enable UDP
o e	0	Option Enable Encryption
o p	0	Option Enable Permission
o w	1	Option Enable Web

Port-1/-2

Fält	Värde	Beskrivning
p	10001/10002	Local TCP port
a	0.0.0.0	Remote IP address
r	10001/10002	Remote TCP port
b	9600	Baud rate
t	10	Receive timeout (bits)
d	10	RS485 timeout (ms)
S	00	Start character
E	00	End character
o p	0	Serial Option Enable Parity
o o	0	Serial Option Enable Odd
o d	1	Serial Option Enable 8 Databits
o s	0	Serial Option Enable 2 Stopbits
o c	0	Serial Option Enable Flow Control
o a	0	Serial Option Enable AT Command
o h	0	Serial Option Enable ATH Command
o t	0	Serial Option Enable Close via DTR
o r	1	Serial Option Enable Remote connect
o l	1	Serial Option Enable Local connect
o k	0	Serial Option Enable Break signal
o b	0	Serial Option Enable RS485
o m	0	Serial Option Enable RS485 Multi point
o f	0	Serial Option Enable RS485 Half Duplex
o x	0	Serial Option Enable Termination Rcv
o z	0	Serial Option Enable Termination Snd
c v	0	Serial Protocol Enable Text code AT V1
c x	0	Serial Protocol Enable Extended code AT X1
c a	0	Serial Protocol Enable Code AT CONNECT 1200
c c	0	Serial Protocol Enable Control header
c h	0	Serial Protocol Enable Handshaking
c e	0	Serial Protocol Enable Exomatic
c n	0	Serial Protocol Enable Nova Tune

15. Reset button (R)

Pos	Name	Type	Description
R	RESET	Short press	Restart
R	CONFIG	Long press (3 sec)	Start configuration

16. LED function (P) (H) (A) (T) (R)

LED	Benämning	Colour	Description
P	Name	Green	Power and started
H	High Speed	Green	High speed 100 Mbps
A	LINK/ACTIVITY	Yellow	Link ok
A	LINK/ACTIVITY	Yellow blinking	Activity network
T	TRANSMIT DATA 1	Yellow blinking	Serial port-1 Transmit
R	RECEIVE DATA 1	Yellow blinking	Serial port-1 Receive
T	TRANSMIT DATA 2	Yellow blinking	Serial port-2 Transmit
R	RECEIVE DATA 2	Yellow blinking	Serial port-2 Receive

17. Power (PW) Terminal-T4 connector (NC9100, NC9200)

Pin	Text	Name	Decsription
1	+	12-48V AC/DC+ Primary	Power+ Primary
2	+	12-48V AC/DC+ Secondary	Power+ Secondary
3	0	12-48V AC/DC-	Power-
4	⏚	PGND	Protective ground

18. Power (PW) Jack connector

Pin	Name	Description
Pin	12-48V AC/DC-	Power
Header	12-48V AC/DC+	Power

19. Network port (TP) RJ45 connector

TP	10Base-T/100Base-TX

20. Serial (S1) DB9F connector (S2) (NC9200)

Pin	Name	Type
1	DCD	Output
2	RD/T-(R-)	Output
3	TD/R+	Input
4	DTR	Input
5	GND	Ground
6	DSR	Output
7	RTS/R-	Input
8	CTS/T+(R+)	Output
9	RI	Output

21. Digital (I/O) Terminal-T6 connector (NC9200)

Pos	Name	Type	Description
1 (*)	IN0	Input	Digital in-0
2	IN1A	Input	Digital in-1 anode
3	IN1C	Input	Digital in-1 catode
4	OUT0	Output	Digital out-0
5	OUT1	Output	Digital out-1
6	GND	Ground	Signal ground

(*) Position 1 top of terminal

22. Connectors NC9100, NC9200

Figure on connections for serial ports, I/O port and TP port

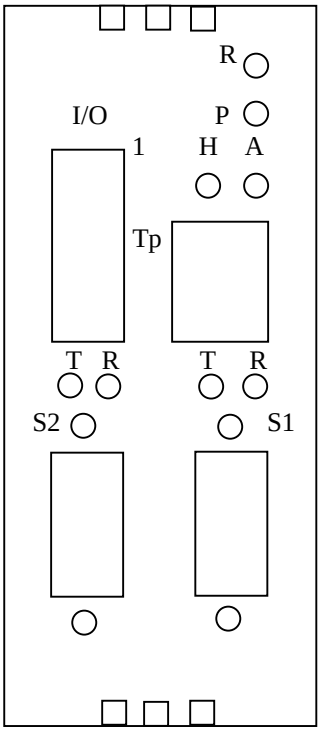
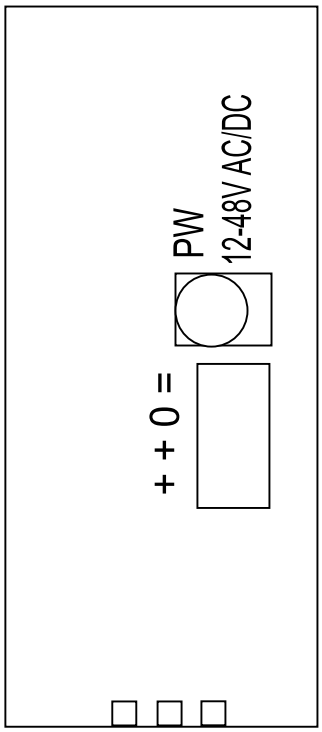


Figure on connections for Power



23. Connectors NC9300

Figure on connections for serial port and power

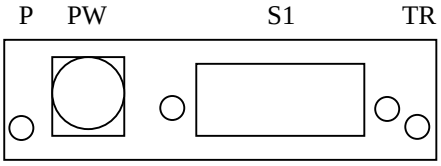
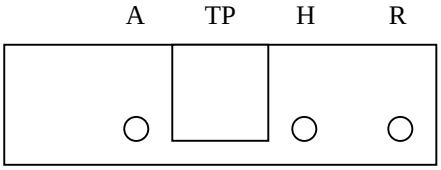


Figure on connections for TP port



24. Cable RS232 NC-PC

31 60 01 RS232 cable NC-PC

Serial cable for RS232 to PC, DB9M (Male) - DB9F (Female)

DB9M			DB9F
1.	>DCD	black	1.
2.	>RD	brown	2.
3.	<TD	red	3.
4.	<DTR	orange	4.
5.	GND	yellow	5.
6.	>DSR	green	6.
7.	<RTS	blue	7.
8.	>CTS	violette	8.
9.	>RI	grey	9.

25. Technical data

Processor 32-bits Risc 33 MHz.
Data memory 256 Kbytes SRAM for stack and buffers

Flash for easy update of software

Ethernet IEEE 802.3 10/100Mbps 10Base-T/100Base-TX RJ45.

Serial port RS232/RS422/RS485, complet control signaler DB9F.

Low power arkitecture with 3.3V logic.

Watchdog for program execution and restart on fault

Integrated power supply for external AC adapter

Power indicator green LED o indicate power and started.

High speed indicator with green LED to indicate 100 Mbps network communications
Link/Activity indicator with yellow LED to indicate link and network communications

Serial indicator R1 and T1 with yellow LED to indicate serial communication

TCP/IP-protocol with support for protocols ARP, IP, ICMP, TCP, UDP, DHCP and HTTP

Power requirements 12-48V AC/DC, 80mA

Physical dimensions
- NC9100 100 x 95 x 21 mm.
- NC9200 100 x 95 x 38 mm.
- NC9300 88 x 71 x 18 mm.

Weights
- NC9100 150 g.
- NC9200 240g.
- NC9300 86 g.

Ambient temperature 5-50°C/normal, -40-80°C/stock

Relative humidity 5-95% none-condensing

Assembled with case feet, case hole or DIN-rail

CE, confirms the requirements for Electromagnetic Compatibility according to EMC-directive