Newland

NQuire 200

Customer Information Terminal

User Manual

Pre-release version

Content

Unpack

When you unpack the NQuire, the following hardware should be available to you:

» NQuire 200 main unit

» Power Adapter

» VESA mount and screws

Declaration of Conformity

Tips and Cautions

The following tips and cautions are used in this manual

» TOOL, facilitates the use of the manual

» ATTENTION, be aware & read through

» TIPS, E.g., to help understand the product better

» EXAMPLE, to clarify a situation

Introduction of the NQuire 200

» The NQuire 200 customer information terminal is designed to read/scan, inform and interact with your customer. It is excellent for communicating prices, product information and loyalty points.

» This small and attractive information terminal reads multiple data carriers; from 1D EAN/UPC barcodes to complex 2D barcodes of mobile phone displays. It is even possible to equip the NQuire 200 with a RFID reader.

» The NQuire 200 complies with standard VESA brackets enabling easy mounting on shelves and walls. Furthermore, it is possible to add USB peripherals to expand this solution with a printer, a hand held scanner for scanning large objects, a magnetic stripe reader and more.

» The NQuire 200 supports various networking options: 10/100Mbps Ethernet, WiFi 802.11b/g, GPRS and Power-over-Ethernet so it can be easily integrated into your existing wireless or wired LAN.

» The NQuire 200 can be used for various applications such as price checking, product information inquiries, access control, mobile barcode/coupon/ticket validations and more...

4. Specifications

Specifications

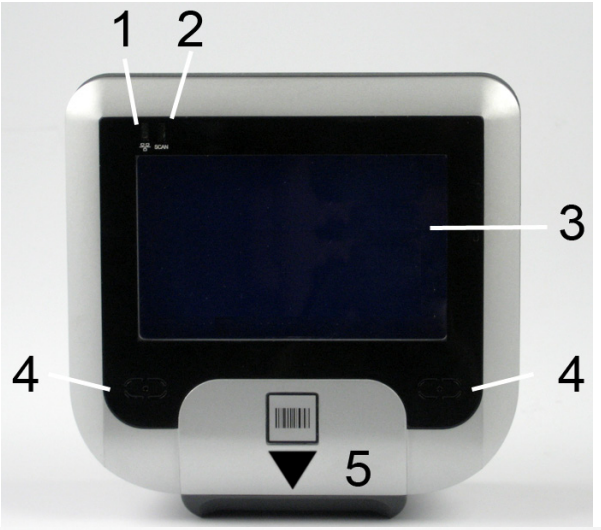
Specification		NQuire 201	NQuire 202	NQuire201/202 + RFID
CPU		32-bit ARM9 CPU		
Memory		SDRAM: 32 MB		
		Flash: 8MB		
		Support Mini SD up to 2GB		
Display		Blue-White 240*128 pixels graphical LCD (90mm x 55mm)		
Interface		10/100 Mbps Ethernet		
Optional Interface	WiFi	IEEE 802.11b/g, 2.4GHz, DSSS,14dBm, WEP 64/128, WPA		
	GPRS	GSM 850 / 900 / 1800 / 1900 MHz, 85.4Kbps(Max)		
External ports	USB	USB Host		
	GPIO	Free programmable GPIO (2 in - 2 out)		
Reading Modes		CCD	Image	RFID
Symbologies			PDF417,QR Code, Data Matrix, Aztec,Maxicode, Chinese-Sensible Code,LP Code ,etc.	Mifare(ISO 14443A) TI(ISO 15693) EM(125K)
		Code128,EAN-13,EAN-8,Code39,UPC-A,UPC-E, Codabar, Interleaved 2 of 5,China post 25,ISBN/ ISSN,Code93, etc.		
Precision		≥6 mil	≥3 mil	

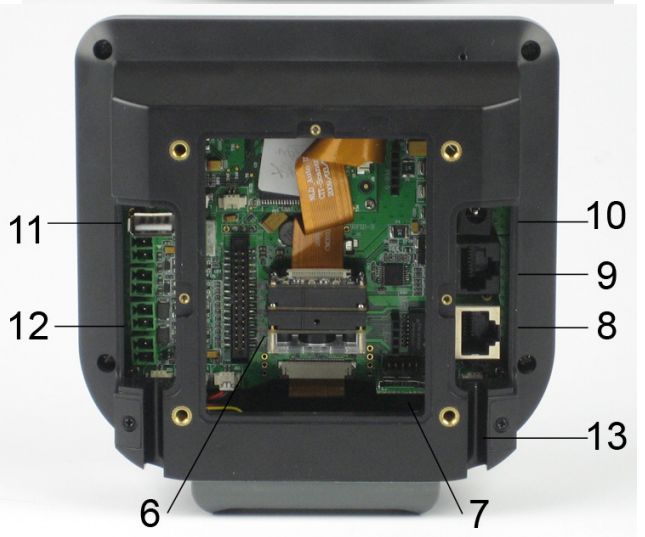
Specification

Specification		NQuire 201	NQuire 202	NQuire201/202 + RFID
Power	Adapter	3.7V Li-battery, 2400mAH		
	P-o-E	Power-over-Ethernet IEEE 802.3af (Optional)		
	Power Consumption	12DC 900mA		
Environment	Operate Temperature			
	Storage Temperature			
	Operate Humidity	5% - 90% (no condensation)		
	Storage Humidity	5% - 95% (no condensation)		
Drop				
Weight		440g		
Dimensions		140 mm(H) * 140 (W)mm * 60 (D) mm		
Operating System		Linux Kernel 2.6.25		
Certificates		FCC Part15 Class B, CE EMC Class B,CCC		

Product Outline

Outline





1.Network indicator	2.Good scan indicator	3.LCD display
4.Beeper speaker	5."Where to scan" arrow	6.Barcode scanner
7.Mini SD card Slot	8.Ethernet port	9.Debug port
10.Power jack	11.USB host	12.GPIO connectors
13.Cable run		

1. General Device Operation

How it works

The NQuire 200 is a terminal which receives its input via either:

- a 1D CCD barcode scanner (NQuire 201)

- a 2D CMOS barcode scanner (NQuire 202)

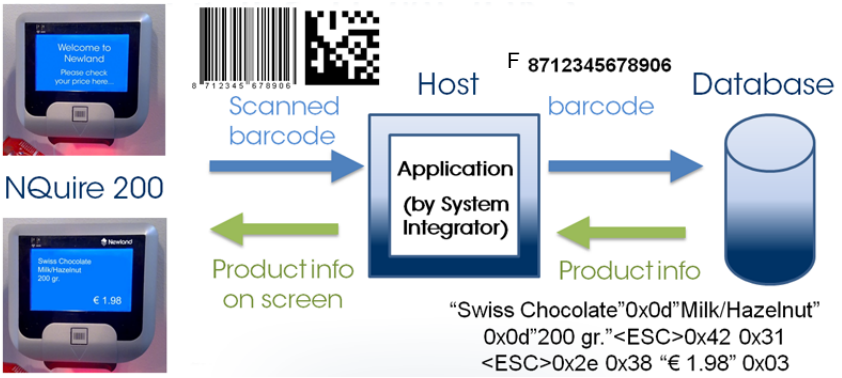
- optional RFID reader (on NQuire 201 or 202)

When the input is received, it is send to the application software which runs on a remote PC/server elsewhere. The application program will send the appropiate display information back to the NQuire 200.

The NQuire 200 sends its input according to the information in the barcode with~~out~~ code identifier and with [CR].

EAN 13	: F
EAN 8	: FF
Code 128	: #
EAN128	: P

Example



2. Installation

2.1 Mounting

The NQuire 200 comes standard with a VESA mount. Please follow the following instructions for mounting:

1. Determine the mounting location.
2. Choose a convenient scanning hight for your user environment.
3. Secure the mounting plate on a wall, countertop or shelve.
4. Secure the adjustable VESA plate on the back cover of the NQuire 200 using the 4 screws and screw inserts.
5. After having connected the appropiate cabling (See chapter 2.2 and 2.3), you can slide the NQuire into the mounting plate.

2.2 Power Supply

Please select, based on the model you have, between the following power supply options:

1. Newland AC power supply
2. Power-over-Ethernet

In case of the AC power supply:

1. Remove the right cover on the back of the NQuire 200
2. Plug in the power supply (see page 6)
3. Lead the cable trough the cable run for appropiate routing (see page 6)
4. Wired ethernet: Connect the Ethernet cable to the Ethernet port (see page 6) and close the cover and fix it with the screw.
5. Wireless ethernet: Close the cover and fix it with the screw.

In case of using Power-over-Ethernet:

1. Remove the right cover on the back of the NQuire 200.
2. Connect the Ethernet cable to the Ethernet port (see page 6).
3. Lead the cable trough the cable run for appropiate routing (see page 6).
4. Close the cover and fix it with the screw.
5. Connect the other end of the Ethernet cable into a PoE module or a Powered Switch (NOT supplied by Newland). The NQuire supports the Mid-span (using the 4 unused lines, 4,5,7,8) Power-over-Ethernet protocol.
6. Connect DC power to either the third party PoE module or Powered Switch.

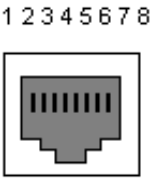
Do not use the AC power supply in conjunction with a Power-over-Ethernet solution. This can cause damage to the NQuire.

2.3 Connections

There are 5 physical connectors on the NQuire 200:

1. Power connector:
   - It has a positive center and the outer tab is ground
   - It is compatible with 100 ~240V ~50/60Hz
2. Debug connector: Not used/needed for operation
3. Ethernet connector:

PIN	Description
1	Tx+
2	Tx-
3	Rx+
4	Not Used / PoE
5	Not Used / PoE
6	Rx-
7	Not Used / PoE
8	Not Used / PoE



4. USB host connector: This can be used to connect external devices such as a hand held scanner, a printer or magnetic stripe card reader.

When your user environment aks for scanning large objects, you can connect a Newland HR100 or HR200 hand held scanner on the USB port.

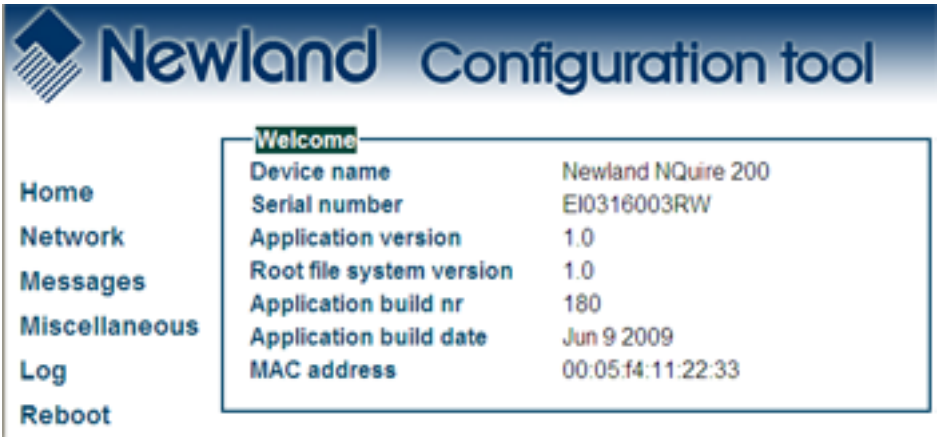
5. GPIO connectors (General Purpose Input/Output interface):
   - Two in (2 pin each)
   - Two out (2 pin each)

3. Configuration

3.1 General

The NQuire 200 uses a internal webserver for configuration. This eliminates Operating System restrictions. You can access the configuration tool by following this process:

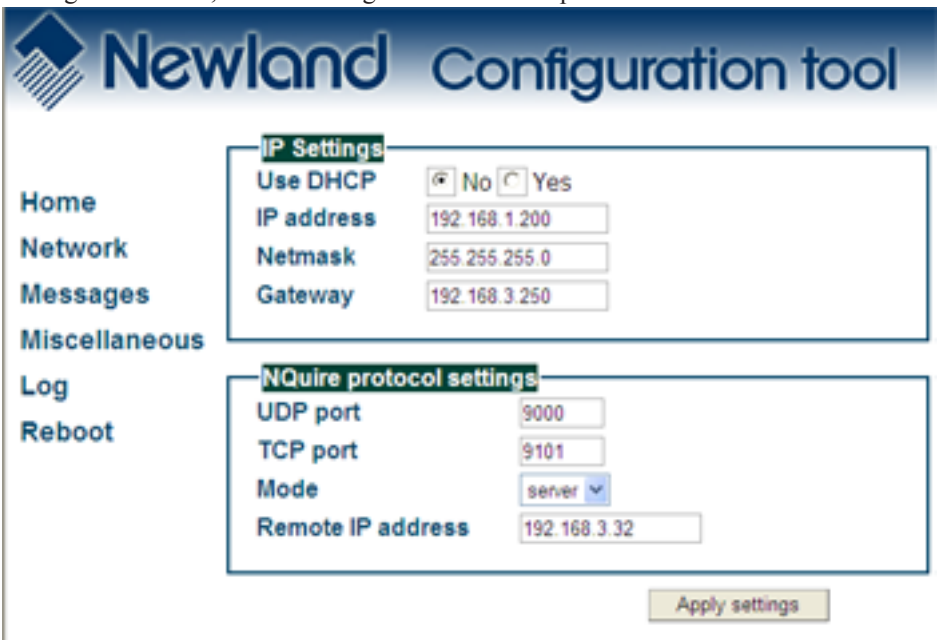
1. Open/Start your web browser.
2. Enter the NQuire IP address in the address bar (default 192.168.1.200).
3. The following screen should open:



4. In the event of an error screen, please try to "ping" the device:
   - Make sure your PC is in the same IP range as the NQuire, for instance 192.168.1.198
   - Type ping 192.168.1.200 in your "command prompt" (MS Windows: cmd.exe).
   - If this is not succuesful, please double check the IP address and phusical Ethernet connection.

3.3 Network settings

When you are using an Ethernet NQuire and you click on "Network" in the Configuration tool, the following screen should open:

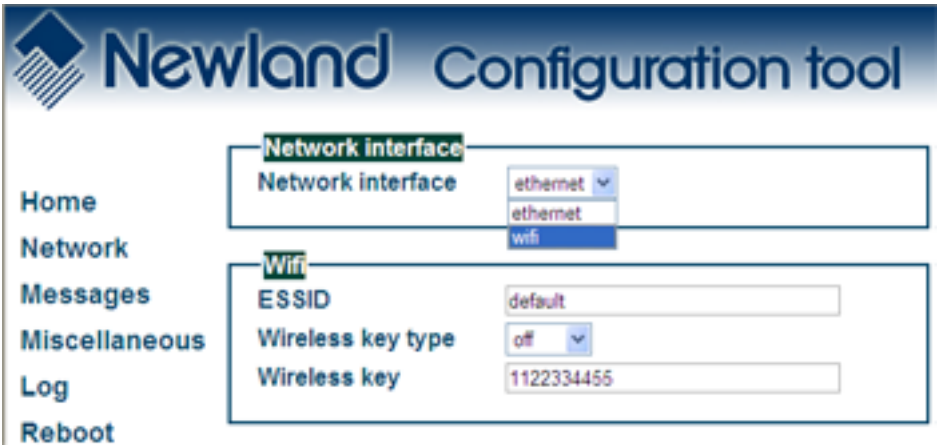


1. IP settings: Use of DHCP (automatic assignment of IP-address to NQuire 200) or not (NQuire has fixed IP-address).
2. NQuire protocol settings: Define UDP/TCP port and remote IP address

For each setting you want to change and save, click the "Apply" button after each change and in each box.

3.4 Wireless settings

When you have a WiFi NQuire, two extra boxes should appear in the "Network" screen as shown below:



1. Network interface: You can choose between either wired or wireless Ethernet
2. ESSID: Please type the ESSID name of your wireless router in this box
3. Wireless key type: You can choose between three security levels:
   - None: No encryption key is needed, the NQuire is, via your wireless router, available to all WiFi enabled devices.
   - WEP: Entry-level encryption with a wireless key to limit network access.
   - WPA: High-end encryption with a wireless key to limit network access.

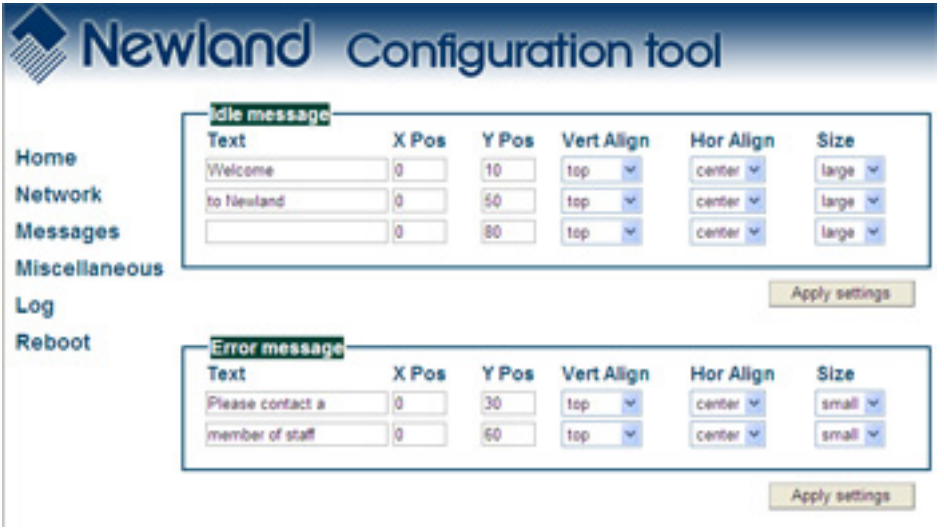
It is strongly advised to use a wireless key to avoid third parties to intrude your network. Please ask your administrator what network security level is available in your user environment.

4. Wireless key: Type the key which is going to be used to encrypt wireless data communication.

For each setting you want to change and save, click the "Apply" button after each change.

3.5 Idle screen settings

When you click on "Messages" in the Configuration tool, the following screen should open:

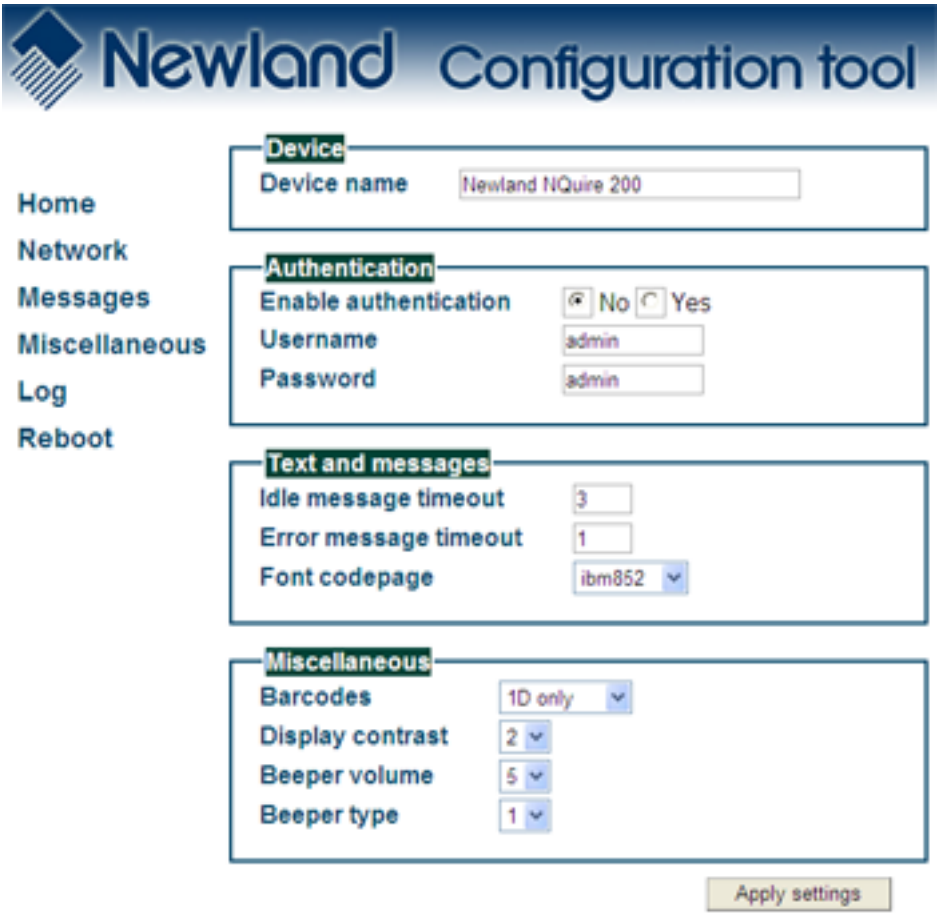


1. Idle message: You can type (on three lines) the text which is displayed on the screen at moments nothing is scanned:
   - X Pos / Y Pos: define the X-and Y positions per pixel on the screen.
   - Vert Align / Hor Align: Vertical and horizontal alignment options which have system default X -and Y screen positions.
   - Size: Choose between system default large -and small size text.
2. Error message: You can type (on two lines) the text which is displayed on the screen when the NQuire receives a timeout from the network (NQuire not connected / offline). Timeout settings can be changed in the "Miscellaneous" screen (page 15).

For each setting you want to change and save, click the "Apply" button after each change and in each box.

3.6 Miscellaneous settings

When you click on "Miscellaneous" in the Configuration tool, the following screen should open:



1. Device name: You can type a random name which you will use to for your own administration.
2. Authentication: You can choose wheter or not you want a password protection to access the NQuire configuration tool via a username and password.
3. Text and messages:
   - Idle message timeout: the period of time before the idle message is displayed again after a scan in seconds.
   - Error message timeout: the period of time the NQuire device waits for a response from the host pc/server in seconds. When this timeout is exceeded, the error message will be displayed for 5 seconds.
   - Font codeset: Choose either UTF-8 (universal fontset which supports most used language fonts) **or** one of the following codepages:

Codepage	Description
852	"Multilingual" West European Latin-1
866	Cyrillic DOS codepage
874	Thai
1250	Central and East European Latin
1251	Cyrillic
1252	West European Latin-2
1254	Turkish
1257	Baltic

4. Miscellaneous:
   - Decide on the level of contrast of the display dependant on the user environment.
   - Choose between different types of beeper tones and volumes dependant on the user environment.

For each setting you want to change and save, click the "Apply" button after each change and in each box.

4. How to scan

4.1 Introduction

The NQuire 200 is a terminal which receives its input via either:

- a 1D CCD barcode scanner (NQuire 201)

- a 2D CMOS barcode scanner (NQuire 202)

- optional RFID reader (on NQuire 201 or 202)

Each input device requires a different approach in scanning movement and orientation.

Please check Appendix C for example codes of the different 1D and 2D barcodes.

4.2 How to scan 1D with NQuire 201

The NQuire 201 is only able to read 1D barcodes and optionally RFID. A single line CCD scan engine reads 1D codes via a horizontal red line.

Example

Optimal reading orientation

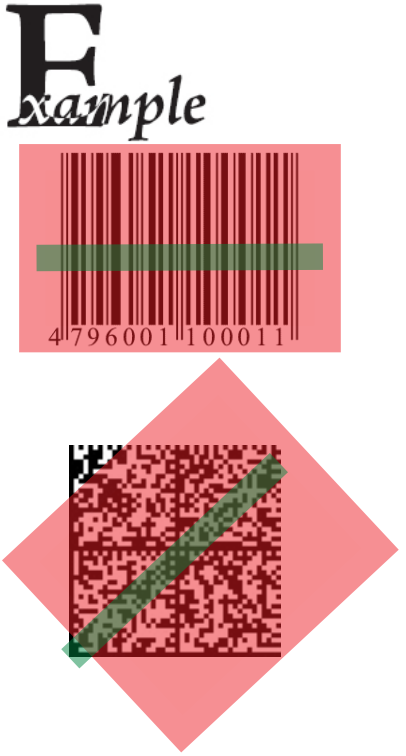
Optimal reading approach to scanner

TIPS

The optimal reading distrance from the scanner screen lies between 5 and 15 centimeters.

4.3 How to scan 1D/2D with NQure 202

The NQuire 202 is able to read 1D and 2D barcodes and optionally RFID. A omnidirectional imager reads 1D and 2D codes via red leds and a green line.



Reading orientation can be 360°

Optimal reading approach to scanner

The optimal reading distrance from the scanner screen lies between 5 and 15 centimeters.

4.3 How to scan RFID

The NQuire 201 and 202 can be equipped with a RFID as well. The most common use is for access control applications. A small sticker with a "RFID label" just below the LCD screen indicates the place to scan your RFID tags/cards.

Example

RFID label

The optimal reading distrance from the RFID scanner label lies between 0 and 10 centimeters.

Appendices

A. NQuire programming codes

Programming ON

Programming OFF

Beeper settings

No Beeper

Beeper Volume 1

Beeper Volume 2

Beeper Volume 3

Beeper Volume 4

Beeper Volume 5

Beeper Tone 1

Beeper Tone 2

Beeper Tone 3

Programming ON

Programming OFF

LCD display settings

Contrast level 1

Contrast level 2

Contrast level 3

Contrast level 4

Reboot

Reboot

Back to Factory Default & Reboot

Configuration

On screen configuration overview

B. NQuire control

Introduction

The NQuire 200 is controlled by means of ESC commands in order to configure:
- Cursor control
- Clear display
- Text alignment

Text

The NQuire uses proportional font widths. This means a "m" is physically wider than a "i". Consequently, you can not exactly measure how many characters fit on one line. When a line is "too long", some characters will not fit on the screen and will not be shown. Twenty characters per line can be shown on average.

ASCII values from 20 - 255 which are not part of a command are normally displayed on the screen.

The following commands control the position and control of text:
- Carriage return (go to start position next line): ESC 0x0d
- Linefeed (go to start position next line): ESC 0x0a
- Set cursor (for predefined cursor postions): ESC 0x2c
- Set pixel position (placing the cusror on any position): ESC 0x2C
- Align text (easy alignment, such as center of screen, right of screen): ESC 0x2e

The complete command set table is on page 24.

NQuire command set table

ESC	HEX	DEC	CHAR	Action	Parameters	
ESC	24 or 25	36 or 37	$ or %	Clear Display and move the cursor to the top left position		
ESC	27	39	‘	Set cursor position [1]	<POS> 0x30-0x3F	<LINE> 0x30-0x34
ESC	2C	44	,	Set current pixel position on display [2]	<POS> 0x30-0xAF	<LINE> 0x30-0X6F
ESC	2E	46	.	Align a string of text [3]	<ALIGN> 0x30-0x3E	<DATA> “...”[0x03]
ESC	42	66	B	Select font set Normal: 0x30 Large: 0x31	<FONTSET> 0x30-0x31	
ESC	5A	90	Z	Reboot		
ESC	5B	91	[	Enable/Disable scanning	<MODE> Disbale:0x30 Enable:0x31	
ESC	5E	94	^	Generate default beep		

[1] The actual pixel position is dependant on the selected font set:
- Every x-position is a multiple of 8 pixels
- Every y-position is dependant on selected font set; height of 24 or 32 pixels
- POS: 0-15 (0x30 - 0x3F)
- LINE: 0-4 (0x30 - 0x34)

[2] This allows a text to be displayed anywhere on the screen. A character will only be dsiplayed if it fully fits on the screen.
- POS: 0-127 (0x30) - oxAF)
- LINE: 0-63 (0x30 - 0x6F)

[3] Display a text, using current used font set, on a calculated position on the screen:

<ALIGN>	Action
0x30	Left top
0x31	Center top
0x32	Right top
0x33	Left center
0x34	Center
0x35	Right center
0x36	Left bottom
0x37	Center bottom
0x38	Right bottom

<ALIGN>	Action
0x39	Left, using current y-coordinate
0x3A	Center, using current y-coordinate
0x3B	Right, using current y-coordinate
0x3C	Top, using current x-coordinate
0x3D	Center, using current x-coordinate
0x3E	Bottom, using current x-coorinate

<DATA> field has a maximum length of 25 characters. If less characters are used, please use 0x03 (ETX) as last character.

Example screens

Here are some example on how to generate different screens on the NQuire 200:

Command	Action
<ESC> 0x42 0x30	Normal font size
<ESC> 0x25	Clear screen, cursor top left
“Cheese”	Text on screen
0x0d	Carriage return
“500 gr.”	Text on screen
<ESC> 0x42 0x31	Large font size
<ESC> 0x2e 0x38 “€ 5.69” 0x03	Align right bottom and text on screen

Command	Action
<ESC> 0x42 0x31	Large font size
<ESC> 0x24	Clear screen, cursor top left
<ESC> 0x2e 0x31 “Special offer!” 0x03	Align center top and text on screen
<ESC> 0x42 0x30	Normal font size
<ESC> 0x2e 0x34 “6-pack water 0.5L” 0x03	Align center and text on screen
<ESC> 0x42 0x31	Large font size
<ESC> 0x2e 0x37 “€ 0.99” 0x03	Align center bottom and text on screen

<ESC> should be sent as the hexadecimal value 1B
Notation of, for example, 0x25 means hexadecimal value 25

C. Testing Codes

Code128

UCC/EAN-128

UPC-E

UPC-A

Interleaved 2 of 5

Code 39

PDF 417

QR Code

Micro QR

Aztec

Data Matrix

Chinese-Sensible Code

D. Troubleshooting

Problem	Possible Cause	Possible Solution(s)
NQuire does not turn on	No power to the NQuire	**AC outlet power** - Connect the approved power supply to an AC power source and to the NQuire power connector. See page 6. **Power-over-Ethernet** - Connect Ethernet cable to NQuire Ethernet port. - Connect other end of Ethernet cable to Power-Over-Ethernet (POE) device. - Connect POE device power supply to an AC outlet. - Perform continuity check on the Ethernet cable.
NQuire does not respond to polls/pings from the host computer	No communication between NQuire and the host.	Check cables to the NQuire. Ensure the NQuire IP-address is the address the host is polling/pinging. Check communication parameters.
NQuire does not send data to host computer	NQuire is not connected to the host.	Check all cabling to host computer.
Parameter changes made usingWeb Configuration Tool were not retained after the NQuire was re-booted	Parameter changes were not saved.	For each setting you want to change and save, click the "Apply" button after each change and in each box

Headquarters
Fujian Newland Auto-ID Tech. Co., Ltd.
Newland Science & Technology Park
No.1 Rujiang West Rd., Mawei,
Fuzhou, Fujian 350001, China
TEL: 86-591-83979219
WEB: www.nlscan.com

AsiaPac Office
Newland Taiwan Co., Ltd.
7F.-6, No.268, Liancheng Rd., Zhonghe City, Taipei County, Taiwan
TEL: +886-2-77315388
WEB: www.newland-id.com.tw

EMEA office
Newland Europe BV
Nijverheidsweg 1-d-e 6651 KS Druten, The Netherlands
TEL: +31 (0) 487 58 88 99
WEB: www.newland-id.com

US Office
Newland North America Inc.
46559 Fremont Blvd., Fremont, CA 94538, USA
TEL: 510 490 3888
WEB: www.newlandna.com