



# **RealScan 7802 Price Verifier User Guide**

497-0425530  
Release E  
June 2003

**Information Products  
RSD-Atlanta**

The product described in this book is a licensed product of NCR Corporation.

NCR RealScan is either a registered trademark or a trademark of NCR Corporation in the United States and/or other countries.

It is the policy of NCR Corporation (NCR) to improve products as new technology, components, software, and firmware become available. NCR, therefore, reserves the right to change specifications without prior notice.

All features, functions, and operations described herein may not be marketed by NCR in all parts of the world. In some instances, photographs are of equipment prototypes. Therefore, before using this document, consult with your NCR representative or NCR office for information that is applicable and current.

To maintain the quality of our publications, we need your comments on the accuracy, clarity, organization, and value of this book.

Address correspondence to:

Manager, Information Products  
NCR Corporation  
2651 Satellite Blvd.  
Duluth, GA 30096

Copyright © 2002  
By NCR Corporation  
Dayton, Ohio U.S.A.  
All Rights Reserved

# Table of Contents

Table of Contents.....	3
Revision Record.....	6
Chapter 1 - Introduction .....	7
What's in this Manual .....	7
NCR RealScan 7802 Models.....	7
The RealScan 7802 Description.....	7
Technical Knowledge Required.....	8
Installation .....	8
Operation.....	8
Application Program Interface (API).....	9
Technical Assistance .....	10
Service Responsibility .....	10
Chapter 2 - Installing the NCR RealScan 7802.....	11
Items Shipped with the RealScan 7802.....	11
Mounting the RealScan 7802.....	11
Mounting to a Wall.....	12
Mounting to Column.....	12
Mounting to a Pole .....	12
Mounting to a Stand.....	13
Wiring the Ethernet Model .....	14
Wiring the RF Wireless Model.....	15
Entering the ESS ID .....	15
Setting up a Wireless RF Link.....	16
Adding a Serial Printer .....	17
Wiring and Configuring the Serial Port.....	17
Sending Data to the Printer .....	17
Wiring Precautions.....	18
Chapter 3 - Installing the Software.....	19
Server Install .....	19
Unit Configuration .....	19
NCR RealScan 7802 Software Updates.....	20
V3.XX Software .....	20
V4.XX Software .....	20
Chapter 4 - Network Configuration.....	21
Introduction.....	21
Network Activity .....	21
NCR RealScan 7802 Configuration .....	22
Quick Start.....	22
Configuration Information Screens.....	22
UnitConfig Program.....	24
Using Unit Configuration.....	24
Configuration Rules .....	25
WEP Network Security.....	26
WEP Types .....	26
WEP Description.....	26
Setting WEP.....	26

Network Diagnostics.....	27
Diagnostic Configurations.....	27
Diagnostic Screens and Messages .....	28
Internal Error.....	28
Transfer Error.....	28
Connect Error.....	29
Chapter 5 - Interfacing to the Back Office Server .....	31
Overview .....	31
Software Developers Kit (SDK) .....	32
ProductInfo Protocol Description.....	32
Protocol Implementation Rules .....	34
NCR RealScan 7802 Implementation Rules .....	34
NCR RealScan 7802 Supported Modes.....	35
Fixed Unit Identification.....	35
User Configurable Unit identification .....	35
Setup for Windows Networking (SMB).....	35
RealScan 7802 FTP Server Configuration.....	36
Setup for FTP, QFX, NTP, PRODUCTINFO .....	36
Product Query configuration.....	36
Presentation configuration .....	37
Multiple Windows.....	38
Real Time Clock Display.....	38
Miscellaneous configuration .....	38
Command modes.....	41
Programmatic Modes.....	41
QFX Quick File Transfer Protocol .....	42
Tokens .....	42
INFO exchange.....	42
Using Graphics Characters.....	43
Using the Touch Screen .....	44
Introduction.....	44
Configuring Scanvue for Input Devices .....	44
New Touch Screen Modes.....	46
Chapter 6 - RealScan 7802-2000 Vacuum Fluorescent Display .....	47
Description .....	47
Operation.....	47
Text Slideshow .....	48
Changing Character Sets .....	48
Customer Messages.....	49
Creating Customer Messages on VF Display Models.....	50
Appendix A - Configuring with Barcodes .....	55
Barcode Reader Settings.....	55
Recommended Scanner Settings .....	55
Configuring the NCR RealScan 7802 .....	55
Appendix B - NCR RealScan 7802 Initialization File .....	59
Overview .....	59
Real Time Clock.....	59
Rules for the realscan.ini File .....	60
Sections & Commands .....	60
Example of Initialization File .....	63

Appendix C – Creating a Slideshow .....	65
Creating a Slideshow File .....	65
Using Multiple Graphic Windows .....	65
Rules .....	66
Section & Commands .....	66
Multiple Windows Commands .....	66
Example of Slideshow File .....	67
APPENDIX D – Font and Language Sets .....	71
Graphics (TFT) Display Models .....	71
Vacuum Fluorescent (V) Display Models .....	72
APPENDIX E – ProductInfo Protocol .....	75
Introduction .....	75
Protocol Types .....	75
Symmetry .....	75
Errors .....	75
Status Requests .....	76
Client Mode Changes .....	76
Packet Types .....	76
Nominal Mode Packets .....	77
Client Requirements .....	80
Capabilities .....	80
Modes .....	80
Appendix F – Mounting Bracket Outlines .....	81
Appendix G – Application Notes .....	85
Wallpaper .....	85
Description .....	85
Creating Wallpaper .....	86
Using Wallpaper .....	86
Text Over Graphics (Mixed Mode) Operation .....	87
Default Text Setting .....	88
Single TIB .....	88
Appendix H – Regulatory Information .....	89
Safety Warnings .....	89
Servicing .....	89
Fuse Replacement .....	89
Power Supply Cord Used as Disconnect Means .....	89
Grounding Instructions .....	89
Radio Frequency Interference Statements .....	90
Federal Communications Commission (FCC) .....	90
Canadian Department of Communications .....	91
Voluntary Control Council for Interference (VCCI) .....	91
International Radio Frequency Interference Statement .....	91
European Union Countries .....	91
Laser Safety .....	92
Laser Safety Label .....	92
Laser Power .....	92
Declaration of Conformity .....	93

## Revision Record

Issue	Date	Remarks
A	06/10/02	First Issue
B	07/29/02	Added Service Responsibility (page 8) and updated Appendix A
C	09/12/02	Added Serial Printer information
D	12/12/02	Updated to software version 5.0
E	June 2003	Updated Chapter 5, Using the Touch Screen

# Chapter 1 – Introduction

## What's in this Manual

This manual provides instructions for installation and operation of the NCR RealScan 7802 Price Verifier. Included is a description of the basic functions and features of the hardware. Following this is description of how to physically install the unit in its intended location, set it up to operate on your specific network, configure your network, and interface the RealScan 7802 to a back office server through its Application Programming Interface (API).

This manual is current with software versions 5.0 and later.

The RealScan 7802 is designed to accept newer software versions downloaded across the network. For ease of identification the current software version number is displayed on the first status screen appearing after powering up the unit. Scanning a specific barcode (see Appendix A) displays the status screen directly; the host can query the unit for the same information. Future software updates and later versions of this manual are made available on the NCR web server at [www.NCR.com](http://www.NCR.com) as they are released.

## NCR RealScan 7802 Models

The NCR RealScan 7802 family consists of a number of different models that appear externally identical but have different features. The RealScan 7802-1001 is a hard-wired only unit with a ¼ VGA color AMLCD display. The RealScan 7802-2001 has an optional 11Mbps (IEEE 802.11b) wireless Ethernet interface installed while the RealScan 7802-2000 has a 4x20 fixed width character vacuum fluorescent (VF) display with optional wireless Ethernet. The RealScan 7802-3000 has RS-232 communications. Each of these models can have an optional bank of four switches on the front panel. These switches have no pre-assigned functions but when depressed can send switch number and time open and close events to the host computer. The user may utilize these switch events in the host software in any manner desired. All models are transparent to the API – that is, they may be interchanged without having to modify host computer software or your network.

## The RealScan 7802 Description

The RealScan 7802 is a multi-function price verifier designed to permit a retail store customer to check the price of any UPC barcoded product without having to leave the aisle or shelf area. As well as displaying the price and description of scanned items, The RealScan 7802 color graphics LCD can show continuous advertising of specials or promotions, display manufacturers “paid – for” advertising or provide other customer information. Thus, as well as performing a service to the customer, The RealScan 7802 can directly generate advertising revenue for the store. The advertising display can be sequential still images (slides), short animation clips, text, graphics or a mix of all these types of display.

The contemporary housing design merges well with almost any store décor and custom color combinations are available if the units are ordered in sufficient quantities. Several different ways of mounting the RealScan 7802 unit in the aisle, on a column, at an endcap or at a POS location are available.

The basic RealScan 7802 consists of the following components.

- Barcode scanner in the underside of the housing
- 5½", ¼ VGA color graphics LCD display or optional 4/20 vacuum fluorescent display
- 4 optional front panel push button switches to perform any function required by user
- Embedded microprocessor based controller that manages the operation of the unit

Communications between the RealScan 7802 and the host computer may be hardwired 10baseT Ethernet or wireless 802.11x. An external RS-232 serial port is available through an optional Y cable and supports a hand-held scanner, a coupon printer, or any other serial device.

The electronics package is completely contained in a high impact ABS injection molded case. An integral metal bracket permits the unit to be mounted in several different ways with the addition of optional parts. The unit meets most worldwide regulatory safety and EMC standards including UL 1950, CSA22.2, FCC, CDRH and CE.

## Technical Knowledge Required

### *Installation*

The installation of the RealScan 7802 is a reasonably easy process for a person familiar with installing and maintaining local area networks (LAN's). Although NCR has provided various software tools to help with the network setup, this manual is not intended to be a training guide for novice network installers. It is assumed the installation is done by a person having a sufficient level of technical expertise with LAN hardware and software to understand the content of this manual and complete the job with minimal outside help. A system or network administrator is capable of performing the installation with ease. NCR can provide additional technical assistance in getting the system running, if required.

### *Operation*

Once the RealScan 7802 units are installed and configured, a graphics based presentation (slideshow) can be created. This can be done by anyone who is familiar with a PC and can write simple macros or script files. The slideshow is created using Microsoft WordPad™ or similar text editor. Image files can be obtained from many sources – downloaded from a website, scanned in from a digital scanner, or transferred from a digital camera. Familiarity with a graphics editor program would be helpful in preparing the images for slideshow presentations.



## ***Application Program Interface (API)***

An API that provides the interface between the RealScan 7802 and the network host computer application is described in detail in this document. The API is written in ANSI "C" and can be integrated with any ANSI 'C' compiler. The database application and its interface to the RealScan 7802 generally resides on the network host computer (sometimes called the network server). Any one of numerous different hardware or software platforms may be used as long as TCP/IP is the network transport protocol. Typical platforms are AS400, VAX or Wintel hardware running Windows NT/2000/ME/XP, Unix, VMS, Oracle, SQL....

The database application program is responsible for receiving a request from a scanner, retrieving the price and description from the database and returning that data to the unit that initiated the request. The development and maintenance of any host computer based application program required to access a product information database is the sole responsibility of the end user or their system integrator. NCR provides an SDK including some license free "C" source code to assist the end user in writing applications on their host machine.

## Technical Assistance

Should you need technical assistance installing or troubleshooting your scanner, please call the Help Desk for your region.

- In the United States: 1-800-262-7782
- In other countries: use the number for your regional Help Desk

## Service Responsibility

NCR is responsible for replacing a faulty NCR RealScan 7802 Price Verifier and ensuring that the scanner in the replacement unit is set to factory default parameters. Refer to *Recommended Scanner Settings* in *Appendix A* for information about doing this.

The customer is responsible for setting all parameters required for the unit to operate within their network environment. The customer is also responsible for assuring that all units communicate properly within their network – NCR is not equipped to perform this function.

## Chapter 2 – Installing the NCR RealScan 7802

### Items Shipped with the RealScan 7802

- The RealScan 7802 with barcode scanner and Display.
- DC power supply. A 24Vdc/20W AC outlet mounted 'brick' with a standard 8 pin DIN female connector. The Power Supply is available in 120 or 240 Vac input voltages. 120 Vac units are UL/CSA approved. 240 Vac units are CE and worldwide approved.
- SDK (software developers kit). Includes programs for and setting up the RealScan 7802 unit and the server, API code, demo programs, font files, user manuals in PDF format, and several useful utilities. This can be requested.
- Mounting hardware – depending on the model ordered, all necessary special hardware for wall mounting, column mounting, or a desk stand are supplied.
- Available accessory – 6' DC power extender cable with DINF to DINM connectors.
- Available accessory – Y cable for RS-232 hand-held scanner.
- Available accessory – Y cable for serial printer.

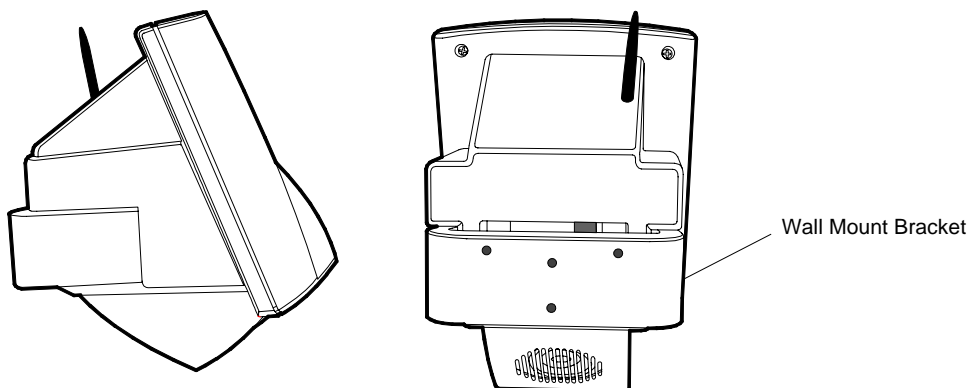
### Mounting the RealScan 7802

**Caution:** Read entire section prior to mounting a the RealScan 7802 unit

There are four ways the RealScan 7802 can be mounted. All four of these mounting methods utilize the same basic wall mount bracket provided with each unit. The pole mount, stand mount, and plate mount kits are options.

- Wall mounted from the back of the unit.
- Wall mounted from the back of the unit with a strengthening backplate.
- Pole mounted to a support column from the back of the unit.
- Stand mount for attaching to a flat surface.

The wall mount bracket is a U shaped channel that slides into slots in the housing from the back of the unit. Bosses molded in the side of the housing snap into two spring clips attached to the inside of the bracket to positively lock the housing to the bracket. To release the housing from the bracket, push flat blade screwdrivers into the two slots, one on each side, located on the underside of the mounting bracket. This forces the springs out of the locating bosses so the bracket can be pulled out of the housing.



20036

The wall mount bracket and housing are specifically designed to make installation easy. Removal has been made far more difficult to prevent vandalism. Unless you know exactly how to do it, removal is almost impossible without destroying the unit.

## ***Mounting to a Wall***

1. Remove the bracket from the housing by pushing flat blade screwdrivers into the release slots in the bottom of the mounting bracket.
2. Hold the bracket up to the wall where you want to mount the unit, **slots facing down**, and drill the 3 (or 4) mounting holes.
3. Using an appropriate fastener for the type of wall, attach the bracket securely, **slots facing down**.
4. Slide the RealScan 7802 housing onto its bracket until it snaps in place – the housing should slide all the way onto the bracket with the rear touching the back of the bracket when it snaps in. If the RealScan 7802 has connectors hanging down, make sure they are not caught between the bracket and the housing.

**CAUTION:** Do not install mounting bracket with the slots facing up. The bracket cannot be removed again without disassembling the unit.

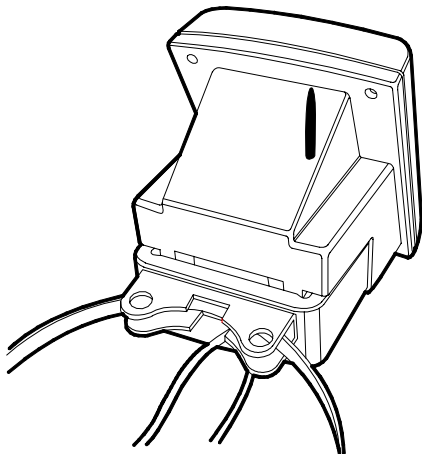
## ***Mounting to Column***

1. For columns larger than 18" in diameter, regardless of construction, either wall mount bracket may be used with shim washers on the outer mounting screws between the U bracket and the column. Sufficient washers should be used to prevent the bracket from bowing when it is secured in place. The width of the U bracket should be 6" at the open end of the U when correctly mounted and not bowed.
2. Slide the RealScan 7802 housing onto its bracket until it snaps in – the housing should slide all the way onto the bracket with the rear touching the back of the bracket when it snaps in. If the RealScan 7802 has connectors hanging down, make sure they are not caught between the bracket and the housing.

## ***Mounting to a Pole***

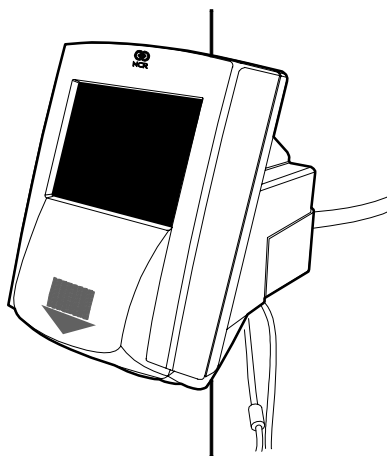
**CAUTION:** The pole mount should only be used on rigid aluminum or steel poles less than 18" in diameter. Wood, plastic or other compressible materials are not suitable for use with the pole mount.

1. Any column under 18" in diameter is called a pole in this section. A pole-mounted unit uses the same wall mount bracket previously described with the addition of a piggyback pole bracket and a worm drive flexible strap.



19449

2. Feed the strap through the two guides in the pole bracket. Position the mounting bracket at the height required on the column, then pass the flexible strap around the column and secure it tightly. Cut off the excess strap and remove any burrs.

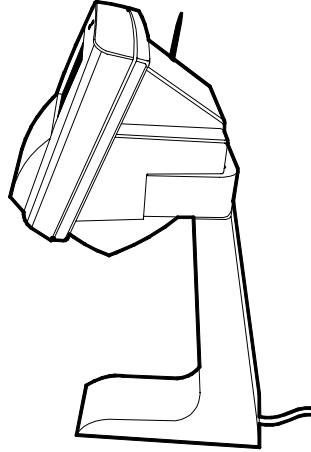


20022

3. Slide the RealScan 7802 housing on to the bracket until it snaps in – the housing should slide all the way onto the bracket with the rear touching the bracket when it snaps in. If the RealScan 7802 has connectors hanging down, make sure they are not caught between the bracket and the housing.

## **Mounting to a Stand**

1. The desktop stand is attached to the same wall mount bracket described above. The stand is screwed to the rear of the wall mount bracket.



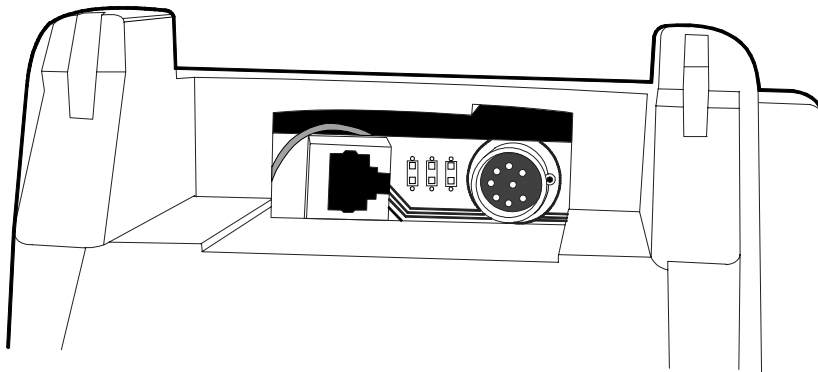
20023

2. Remove the front cover of the stand and mark the position of the two holes in the base for mounting it to a horizontal surface. The two connectors are routed down, inside the stand, and exit from the bottom. A hole may be drilled in the mounting surface to permit the connectors to pass through to the inside of a cabinet to hide the installation.
3. Slide the RealScan 7802 housing onto its bracket until it snaps in – the housing should slide all the way onto the bracket with the rear touching the back of the bracket when it snaps in. If the RealScan 7802 has connectors hanging down, make sure they are not caught between the bracket and the housing.

## Wiring the Ethernet Model

Once the RealScan 7802 unit is mounted in place there are only 2 cables that have to be connected before it can be operated. For aesthetic reasons NCR suggests the AC and network outlets are mounted close to (or in) the ceiling or close to the floor. The two cables may also be routed inside the wall or column and plug into the AC and network connections in the ceiling. This is the recommended method and provides the cleanest installation.

1. Plug the RJ45 cable Ethernet cable connected to the hub or switch on your LAN into the RJ45 connector in the rear of the RealScan 7802.
2. Connect the 8-pin DIN extension cord and the DIN connector coming from the RealScan 7802 unit. Line up the arrows on the two connectors and the pins are aligned for insertion. On later production units, the 8-pin DIN connector is mounted on a PC board that is accessible from the back of the unit underneath the mounting bracket. The RJ45 Ethernet connector is also mounted on this PC board.



20024

3. Plug the other end of the DIN extension cord into the DIN connector on the power supply.
4. Plug the power supply into a grounded electrical outlet – the RealScan 7802 unit starts its boot up sequence. Both 120V and 240VAC power supplies are available.

## Wiring the RF Wireless Model

If you purchased the wireless Ethernet option, the IEEE 802.11b RF Network Interface Card (NIC) already is installed and tested at the factory. There is another version called “RF ready”. This version has the familiar IEEE 802.3 RJ45 Ethernet connector installed as well as the internal slot for the RF NIC card – although it is not installed. You can easily recognize the RF wireless option by the short antenna on top of the housing. The installation is the same as previously described for a hardwired unit except for step 4, which is not required (unless it's an RF ready unit in which case connect the RJ45 to a hub with a CAT5 patch cable). The end user is responsible for providing and installing a compatible RF access point to the network and making it operational.

The RealScan 7802 wireless NIC card is an 11Mbps, DSSS, Wi-Fi compatible PC CARD and should communicate with most Wi-Fi compatible access points. Installation of RF communication links requires special expertise and is part of your site network and as such the manufacturer of the access point (and your network staff) should be the first line of technical support. Most of the manufacturers of access points have extensive technical documentation on performing RF site surveys and correct installation of the units on their web sites.

## Entering the ESS ID

Each wireless RF access point has a unique identification (ESS ID) that consists of up to 32 letters and numbers. When a new unit is shipped from the factory, a default ESS ID (INSTALL) is stored in configuration memory. Before the RealScan 7802 can communicate with the access point, it must have a matching ESS ID entered into its memory to replace the default. The ESS ID can only be entered through the unit's internal barcode reader.

The ESS ID is a barcode label in the following format.

NN nn x1 ..... x32

where NN = fixed characters, nn = # of characters in ID (1-32)

x1 ..... x32 = ID (1-32 characters)

### **Load the ESS ID as follows.**

1. Create a barcode label with the ESS ID formatted as described above.
2. Power the RealScan 7802 unit and verify the barcode scanner is operational – look at the underside and check the scanner is lit and rotating.
3. Scan the ESS ID barcode you created.
4. Scan the “Record Settings” barcode.
5. The RealScan 7802 reboots and should now start to communicate with the network.

### ***Setting up a Wireless RF Link***

Before installing a new wireless RF data link, it is important to perform an RF site survey to characterize the immediate environment and ensure a reliable system is designed. The general pointers indicated here assist in the initial installation and diagnosis of a link problem, however your first line of technical support is the specialized help available from the manufacturer of the access point or your VAR or IS personnel doing the installation.

1. Unobstructed line-of-sight is best. If you can, arrange the RealScan 7802 units so there is an unobstructed line-of-sight to the access point. Under these ideal conditions and assuming no interference from other 2.4Ghz sources, you should get up to 150' distance. In a typical office or retail environment 30'-50' is more typical.
2. Mount the access point as high as possible in the line-of-sight. This way the signals should travel above racks, shelving, customers, etc. The human body is 90% water and a good RF signal absorber – this is why cell phones often don't work well inside buildings and around crowds of other people.
3. Keep reflective surfaces like mirrors and polished stainless steel surfaces to a minimum and away from the antenna's as much as possible.
4. If you are having trouble making a connection try moving the RealScan 7802 closer to the access point, raising it or lowering it.

As the RealScan 7802 unit cannot easily be moved once installed, it is often more convenient to have a portable signal strength meter or an IEEE802.11b RF NIC card in a Windows based laptop computer during installs. The Windows NIC card driver has a similar RSSI graph or displays the signal strength as a percentage depending on the NIC card used.



## Adding a Serial Printer

Software versions 4.16 and later provide support for an external serial printer as well as the hand-held scanner. The factory default setting for serial port 2 is **SCANNER** for the hand scanner. If a serial printer is required instead of the scanner, serial port 2 configuration must be changed to **OUTPUT**. The port may also be disabled by setting it to **NONE**. You must also purchase a special Y cable that exposes the external RS232 port to connect the printer to RealScan 7802. This cable comes with a DB9 female connector and connects directly to the NCR 7197 Thermal Receipt Printer connector. Other manufacturers serial printers may require a different cable. Check with the factory before attempting to connect a different printer.

In **OUTPUT** mode, serial port 2 is an output only, RS232 data port. The RealScan 7802 receives pre-formatted data and control codes from a printer driver resident on the network host, which it passes, unmodified, through serial port 2 to the printer. Printer drivers are specific to the printer used and are the responsibility of the user.

## Wiring and Configuring the Serial Port

Use the modeset utility to change the serial port configuration to **OUTPUT** mode. If you are using an MS Windows system, open a DOS box and change to the C:\POS directory where modeset is stored and send the 2 following lines. The modeset utility, found on the CD-ROM, must be copied onto the server before these commands can be sent.

```
C:\POS modeset -iPort2function = OUTPUT <IP> ↵
C:\POS modeset -c -r <IP> ↵
```

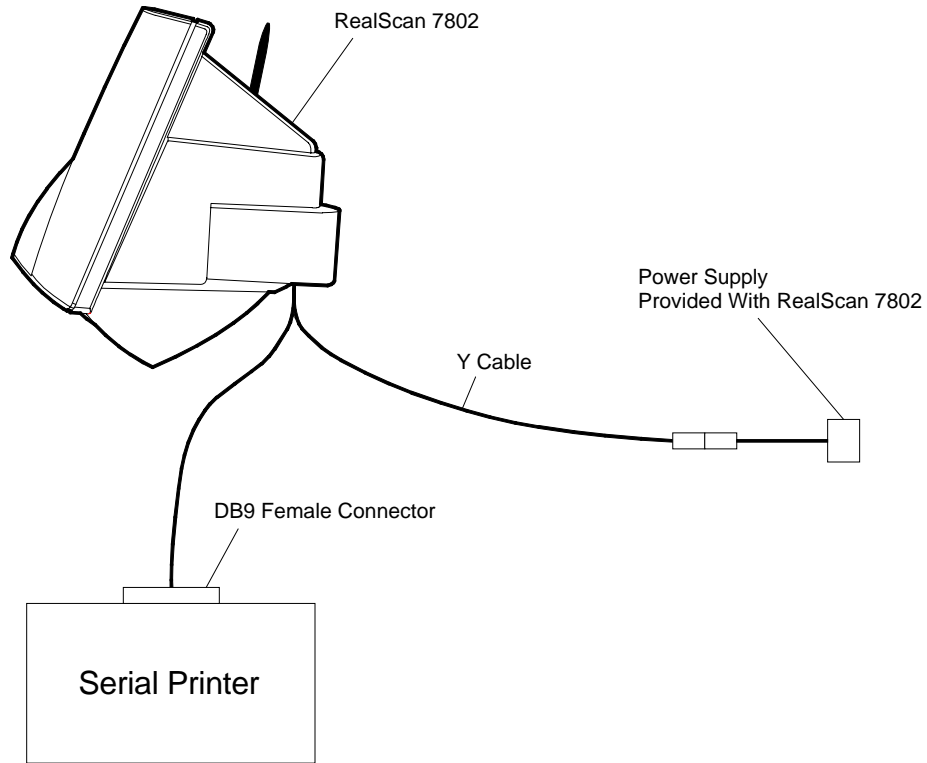
where <IP> is the unit's IP address.

The default serial port 2 settings are 9600 baud, no parity, 8 data bits, 1 stop bit. The printer port settings must be set to the same parameters as serial port 2 to be able to communicate with the RealScan 7802. If you want to run the printer faster or change other parameters, a utility program **PortSet** is provided on the CD-ROM for modifying serial port settings.

## Sending Data to the Printer

The host server must use nominal-mode ProductInfo packets to send data to the printer. The packets required are **Data** type, **Special Text** sub-type. Following is an example of a typical message.

Byte Count	Value (Oh)	Meaning
0-3	00 00 00 13	Length of packet (19 bytes)
4-7	44 41 54 41	'DATA' Data type
8-11	53 50 45 43	'SPEC' Special Text sub-type
12-18	48 65 6C 6C 6F 21 0A	'Hello!<LF>' Text sent to printer



20255

## Wiring Precautions

While The RealScan 7802 is designed to withstand power and data line surges, spikes and other anomalies in accordance with IEC and CE specifications, it is not designed to survive a direct lightning strike. In parts of the USA and worldwide where there is a high likelihood of thunderstorm activity it is good practice to install lightning surge protectors on all power and data lines. The RealScan 7802 should be treated like any other network and computer product installed in your facility.

## Chapter 3 – Installing the Software

The *SetupServer* program on the CD-ROM must be run on your Windows network server to create a specific RealScan 7802 directory called **POS** on your servers' hard disk, share it and copy the default *realscan.ini* file into this directory. RealScan 7802 units look for this *.ini* file in the POS directory when they boot up and can not operate if they can't find it.

You should also install *Unit Configuration* on the server as it provides the easiest way to change the configuration of a unit on the network (as opposed to scanning barcodes). You may also install *Unit Configuration* on a desktop or laptop computer for initially setting up RealScan 7802 units without a network complicating it. You need a network interface card (NIC) installed in your PC and configured properly to communicate with the RealScan 7802.

For servers that are running other than Windows, sources are provided for the server software. There are also freely available drivers to permit any operating system to act as a Windows-type server.

Important: The shared RealScan 7802 directory and the *realscan.ini* file must be on the server and the RealScan 7802 units must be able to find them when they power up. If you want to change the operating modes (or configuration) of a specific unit anytime after the system is up and running, the Unit Configuration program is available in the NCR directory.

### Server Install

When you place the NCR SDK CD-ROM (NCR part number 497-0426202) into a drive, the autoplay feature opens a window with the folders and program icons. Click on the NCR icon *SetupServer* and the install program leads you step by step through the process of creating the **POS** directory, sharing it, and copying the *realscan.ini* file into the directory.

Server install also creates a font directory under **POS** and loads all the fonts on the CD-ROM into this directory. The RealScan 7802 has one default font set programmed into the unit. This is a 16x32 pixel glyph containing all 256 characters of the extended ASCII character set – thus any Latin based language can be supported from this font set.

### Unit Configuration

Click on the NCR icon **UnitConfig** in the SDK CD-ROM window and the *Unit Configuration* program is installed. This program which consists entirely of the one screen shown in the section on using *Unit Configuration*, implements the specific set of commands and controls defined in the API for the RealScan 7802 (see *Interfacing to the Back Office Server*). The program is written in Visual Basic® and the sources and an OXC are provided on the CD-ROM so users can write directly to this program and make initiate mode changes from their application program

## NCR RealScan 7802 Software Updates

There are 2 basic models of the RealScan 7802 that utilize different internal processors and operating systems. This is transparent to the customer and the API user and there are no external functional or physical differences between the models with the exception of the process for online software updates. Future software releases include both update methods for both types of units.

When new software is loaded into the RealScan 7802, the file image is written into RAM memory. A CRC is calculated and compared with the CRC appended to the file sent from the host. If the two CRC's are identical, the file has been loaded without errors and it is then written into flash memory. The unit does not reboot itself and run the new software.

The model type is easily identified by the software version number on the status screen when the unit is booted.

### **V3.XX Software**

If the software version is 3.xx, then use the FLASH.BAT batch program to update the software. When the new software image is finished loading, FLASH.BAT immediately reads back the status of the file transfer and the flash write process by reading the ERRMSG file from the RealScan 7802. ERRMSG returns the CRC of the image and the number of bytes written.

### **V4.XX Software**

If the software version is 4.xx or later, then use the PUSH.EXE utility provided on the CD-ROM to load the new program. The command format is:

PUSH <7802 IP Address><updated file name>.

For example: PUSH 10.0.0.13 SVLIN40

It is possible for the user to get a file called EEPROM.BIN from the NCR 7892. This file contains an encrypted copy of the entire non-volatile memory. The only reason to do this is for remote diagnostic purposes and NCR recommends the user only do this under the direct guidance of a technical support engineer. The procedure is to connect to the unit using FTP set in binary transfer mode, then GET the file EEPROM.BIN.

# Chapter 4 – Network Configuration

## Introduction

The RealScan 7802 is a network-connected device that uses industry standard TCP/IP protocols for communication. Connecting a RealScan 7802 to your network requires the same kind of preparation as connecting a workstation to your network. This manual assumes you know how to obtain the relevant information about your existing network configuration and choose the appropriate configuration parameters so your network recognizes RealScan 7802 devices. NCR suggests using switches rather than hubs to connect to RealScan 7802 units as the bandwidth and response time is improved.

The RealScan 7802 has two primary activities – displaying product price and description and displaying a graphics slideshow. The unit has two primary modes of operation: an idle mode where a slideshow from 2 to 150 sequential images is continuously displayed, and a interactive mode where a customer scans an item and price and description information is returned by the host server. The four buttons on the front panel can be configured to only be active when in the interactive mode. In order to display product information, the RealScan 7802 must connect to a host computer that has the product information stored in its database.

If you are using an MS Windows network, NCR highly recommends Windows NT, 2000, XP, or ME. Windows 95 and 98 can be used as a server for the RealScan 7802, but they are not supported. NT 4 Server and Windows 2000 provide the best performance in terms of response speed, especially if you are using a RF wireless system rather than hardwired Ethernet (10/100baseT).

## Network Activity

The RealScan 7802 includes servers for FTP (port 21), ProductInfo (port 1283), and clients for FTP, SMB (Windows networking), ProductInfo (Product Information Protocol) and QFX (Quick File eXchange). FTP, SMB or QFX can be used to get the graphics files for the RealScan 7802's slideshow. SMB is the default mode.

The RealScan 7802 ships from the factory with the following default network settings.

<b>IP Address:</b>	DHCP (10.0.0.227 – some hard-wired models)
<b>Sub-Net Mask:</b>	255.255.0.0
<b>Unit ID:</b>	NCR RealScan 7802
<b>User Name:</b>	GUEST
<b>Password:</b>	None
<b>Windows Server:</b>	SVERVE
<b>Windows Share:</b>	POS

The RealScan 7802 requires a file server for storing graphics files and a ProductInfo server (host or back office computer) the price/description database. These servers may (but do not have to be) the same physical computer. The file server must have the The RealScan 7802 initialization file (realscan.ini) in its **POS** shared directory (if SBM-based) or the default directory for FTP or QFX, and may also have font, graphic, and slideshow

script files. The file server can be a Windows system, or an FTP or QFX server on any type of hardware or OS provided it runs TCP/IP.

The RealScan 7802 sends the UPC number read from a barcoded item placed under the scanner to the 'ProductInfo' server on the host computer which uses this number as a key to find the item in the price and description database(s). After the item records are retrieved, the host application prepares the response and sends it back to the RealScan 7802 where the information is displayed. The response can be text only, graphics only, or a combination of text and graphics.

## NCR RealScan 7802 Configuration

There are three ways to configure a RealScan 7802 unit: using its internal barcode reader to scan special purpose barcodes, across the network using the UnitConfig or modeset programs, or following the procedure in the 'Quick-Start Guide.' Of course the RealScan 7802 must be able to communicate with the server on the network before its configuration can be changed on the network.

If you are using wireless RF units, you must enter the **ESSID of the access point** you are communicating with via the barcode reader before the unit associates with the access point. Additionally, if your network uses **WEP128 security**, the RealScan 7802 must be setup to match the access point.

### Quick Start

The CD-ROM contains a short document called the *NCR RealScan 7802 Quick-Start Guide* (497-0426228), that describes how to easily configure your units to match the network settings using a desktop PC and a crossover cable or a passive hub (see the last 2 diagrams on page 27). This is the easiest way to bring up the first few units without the added complications of a network.

### Configuration Information Screens

When the RealScan 7802 boots up, two configuration status screens are displayed sequentially which show the current settings of the unit. Each screen is displayed for 10 seconds and then the unit gets the slideshow from the server and starts running it. These two screens can be displayed at any time by scanning the 'show config screen 1' and 'show config screen 2' barcodes shown in Appendix A. In software versions later than V4.15, wireless RF configurations are brown text and a light green background and hardwired Ethernet units are yellow text on a blue background.

```
RealScan 5.0 999999  
20020923101613 Beta1  
RealScan  
10.0.10.13:1283  
DHCP:10.04.12  
Mask 255.255.0.0
```

09:15:00 AM

20497-A

### Configuration Status Screen 1

```
GW 10.0.10.13  
SMB SVSERVE  
GUEST  
Trivial Protocol  
ESSID: INSTALL  
00:60:B3:66:06:54
```

09:15:22 AM

20497-B

### Configuration Status Screen 2

A third status screen shown only on demand displays key RF measurements from the internal wireless radio, which can be used to determine how well the radio is functioning in its present location. Scanning the 'show RF stats' barcode activates this screen.

The primary measurements are Channel = channel # used, ANL = average noise level, ASL = average signal level, and CQ = communications quality. This screen is a diagnostic aid and is not intended to be a replacement for a thorough site survey if you are having RF communication problems.

```
FIRM : 0.8.0  
PORT : ESS  
SSID : INSTALL  
CQ : 92  
ASL : 158 TXR : 8  
ANL : 0 CHAN : 6
```

09:14:21 AM

20497-C

### RF Statistics Screen

## UnitConfig Program

Configuring RealScan 7802 units over the network requires a GUI program called **Unit Configuration** that is installed from the CD-ROM. Generally, configuration by special barcode is kept for those occasions when a devices network configuration is incompatible with the local network. Changes can be made off-line that permit the unit to connect to the network, just like the 'Quick-Start Guide", but without needing the PC. Appendix B describes this method. Once the unit is network compatible the rest of the configuration can be done through **Unit Configuration**.

**Unit Configuration** is a VisualBasic® program that provides a simple graphical way to query and configure any RealScan 7802 unit. It uses the RealScan 7802 mode controls (see *Interfacing to the Back Office Server*) to setup the unit. The program is available in both source and executable form.

**Modeset** is an equivalent command-line program that can query and set modes through a text file or directly from the directory prompt.

Example: Modeset [mode value]	Sets the mode to the specified value
Modeset -g [mode]	Returns the value of the mode
Modeset	Lists all non-hidden modes and their values

## Using Unit Configuration

When the program is first started, all boxes in the screen are blank. Enter the IP address of the RealScan 7802 unit you wish to change in the **Unit IP Address** box. Click the **Read Modes** button - all the **Modes** and their **Contents** (values) are read from the subject unit and displayed as shown in the following illustration.

To change a mode; highlight the **New Content** box in the same row as the mode you want to change by left clicking it. Enter the new value in the box and click the **Set Mode** button. If the value is accepted, the box and the button turn green. If it is not accepted, the box and button turn red. Now click the **Commit** button, this commits the change to flash memory in the RealScan 7802 unit. Multiple changes can be made before committing them. If any of the changes are not accepted, the **Set Mode** button turns red and none of the changes are made.

Clicking the **Close** button blanks the screen including the IP address box and permits a new IP address, hence a new unit to be selected.

Clicking the **TextReset** button applies changes made to text modes so they can be seen immediately; however, like all other modes the changes are not permanently stored until the **Commit** button is clicked.

The **SaveToFile** button saves the screen to a text file where it can be stored and printed if necessary. This is usually done for troubleshooting or maintaining hard copy records of each unit's configuration.

The **Restart Unit** button causes a 'soft boot' of the selected unit.



Clicking the **Help** button brings up a help screen that is a brief overview of how to use the program. Additionally, the light color area at the bottom of the screen displays context sensitive help for each mode as the mode is highlighted. For some modes, the values available are indicated in this area. Other modes (for example **Serial Number**) cannot be changed and always turns the **New Content** box and **Set Mode** button red.

The **Exit** button closes the Unit Configuration program.

The screenshot shows the ModeSet application window. At the top, there is a text field for 'Unit IP Address' containing '10.0.0.226'. Below this are several buttons: 'Set Mode', 'Commit', 'Restart Unit', 'Exit', 'Read Modes', 'Close', 'TextReset', 'SaveToFile', and 'Help'. The main area contains a table with three columns: 'Mode', 'Content', and 'New Content'. The 'unitIP' row is highlighted in blue. Below the table is a yellow text area containing the text: 'The IP address of the unit, in standard IP dotted notation.'

Mode	Content	New Content
dateTime	20010330211657	
buildInfo	20010330101433	
productName	ScanVue5	
serialNumber	1248	
unitID	TestBench	
unitIP	10.0.0.226	
unitMask	255.255.0.0	
gatewayIP	(Not Set)	
domain	software	
windowsServ	kdq	
shareName	kqpos	
WINSserverIP	(Not Set)	
FTPServerIP	10.0.200.1	
userName	ScanVue5	
password	ScanVue5	
sloppiIP	10.0.10.13	
sloppiport	1283	
SLOPPITimeout	300	
QFXServer	10.0.10.13	
QFXport	1284	
QFXTimeout	100	
FTPTimeout	(Not Set)	

The IP address of the unit, in standard IP dotted notation.

## Configuration Rules

1. Specify the **UnitIP** as **DHCP** to have the RealScan 7802 obtain its networking information from a DHCP server.
2. You may specify any or all of the types of file servers. The one that is used is determined by the **ServerType** mode.
3. The **-default-** has a special meaning: it returns that mode to the factory default value.

## WEP Network Security

### WEP Types

The RealScan 7802 supports four different types of WEP (Wireless Equivalent Privacy) encryption in software versions 4.12 and later. WEP encryption is set by the WEPEncryption mode.

WEPEncryption Mode Value	Function
NONE	WEP encryption off
OPEN40	Open System 40-bit encryption
OPEN128	Open System 128-bit encryption
SHARED40	Shared System 40-bit encryption
SHARED128	Shared System 128-bit encryption

### WEP Description

There are four unique encryption keys, WEPKey1 through WEPKey4. Each key contains 10 hex digits for 40-bit encryption or 26 hex digits for 128-bit encryption. Default value of the keys is a string of zero digits of the appropriate length.

The mode WEPKeyIndex determines which of the four keys is used. The default is WEPKey1. The selected key must match the type of encryption selected. For example: if WEPEncryption is set to SHARED128 and WEPKeyIndex is set to WEPKey2, then WEPKey2 must contain 26 hex digits (or 128 bits). Neither WEPKeyIndex nor the encryption data can be set by barcode.

**Note:** If the encryption type is changed, the RealScan 7802 does not verify that the keys already stored are appropriate for the new type.

**Exception:** If you are using Symbol Technologies access points, they do not support Shared System WEP encryption.

## Setting WEP

### Before You Start

1. The WEP encryption mode and WEP keys for the network you are installing to must be known.
2. The WEP encryption mode and WEP keys in the access point and the RealScan 7802 must match exactly or they do not associate.
3. When installing and configuring a new or replacement RealScan 7802 into a network running WEP, you must disable WEP at the access point or the RealScan 7802 does not associate with it.
4. An alternative method is to bring up the RealScan 7802 offline, for example on a laptop, to set the WEP keys - all the rules still apply but the WEP keys can be loaded without disabling WEP on your network and UnitConfig can be run locally rather than on the network server
5. WEP keys are set with the UnitConfig program.

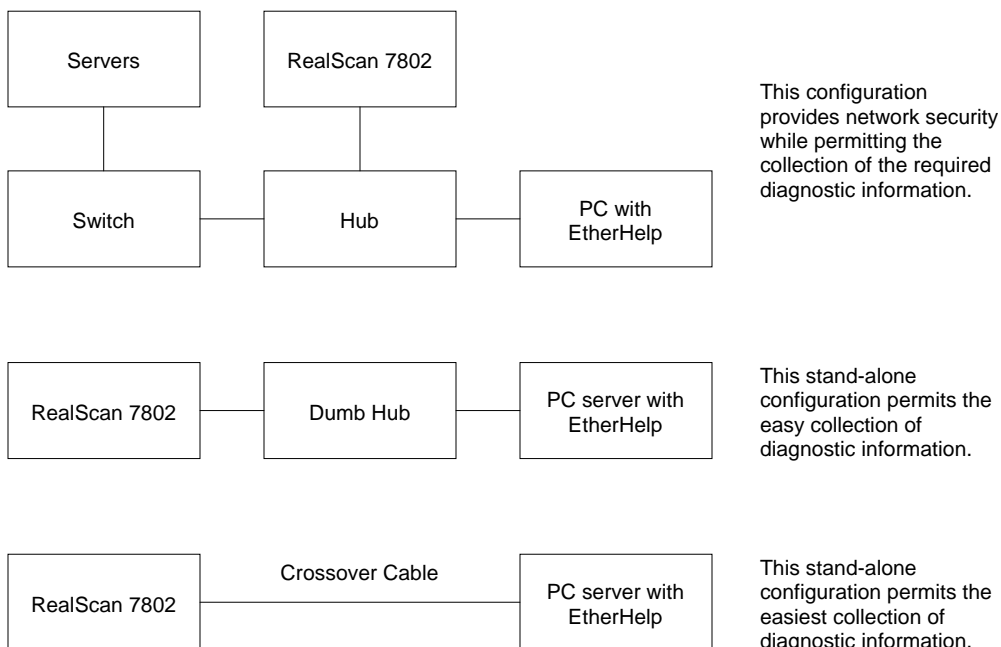
## Procedure

1. Disable WEP in the access point and boot up the RealScan 7802. It should boot up and associate (connect) with the access point.
2. Run the UnitConfig program.
3. Select **WEPEncryption** mode and set its value to one of the five choices shown in the previous table. If WEP is not being used, leave its default setting of NONE.
4. Select **WEPKey1** through **WEPKey4** and set all four key values.
5. Using **WEPKeyIndex** set the key value you are using.
6. Commit the changes and reboot the RealScan 7802. New WEP settings take effect when the unit has finished rebooting.
7. Enable WEP on the access point – provided the WEP encryption mode and WEP key selected on the RealScan 7802 matches the access point settings, the RealScan 7802 associates (connects) seamlessly.

## Network Diagnostics

### Diagnostic Configurations

If you are having problems communicating with RealScan 7802 units, NCR highly recommends that you download a program called **EtherHelp**® and its technical documentation from the [www.wildpackets.com](http://www.wildpackets.com) web site. **EtherHelp**® is the resident part of a remote network diagnostic tool (available on the RealScan 7802 CD) and uses for troubleshooting network problems. There is no charge for this tool. Three useful network configurations for troubleshooting are shown below.



The hub must be a “dumb” or passive hub, one that does not do any routing. If a switch or intelligent hub is used, **EtherHelp**® cannot capture all the packets from the RealScan 7802. When in doubt, the crossover cable is the best solution.

## ***Diagnostic Screens and Messages***

Version 3.10 and later software has a built in diagnostic that automatically attempts to determine and resolve network connectivity problems when the unit is powered up. By their very nature diagnostics are not completely fool proof, but they are powerful tools and many times can pin point problems exactly or provide a strong clue to the actual problem. The host must be able to ping the unit for the diagnostics to work.

Diagnostic screens have a bright red background, with text displayed in yellow on a blue background. The first line of the display indicates the type of connection being attempted - Windows networking (SMB), FTP, or Quick File Exchange (QFX). The unit displays, at most, one diagnostic screen between restarts. If you have multiple problems they show up one at a time.

The second line indicates the general class of error, **Internal**, **Connect**, or **Transfer**. The third line names the specific error, and if a file name is involved, it is displayed on the fourth line.

### ***Internal Error***

An **Internal** class error usually relates to a RealScan 7802 device failure and should never be seen. If the unit can be pinged it is working well enough to eliminate device failure as a cause of not connecting.

### ***Transfer Error***

**Transfer** class errors indicate problems with transferring data over the network after a connection has been established to the host. Again, the explanations provided are not necessarily the only possibilities.

#### **Data Transfer**

The unit is not able to send messages to the host even though it has a valid connection. This can be caused by broken server software or for some protocols, by firewalls between the unit and host.

#### **File Unavailable**

The requested file does not exist or security makes it unavailable. This diagnostic message may display even if everything else is working. It indicates a failure to get the **.INI** or the slideshow file. This message displays if the files are available but one of the graphics is not. This is generally a recoverable error. For the **INI** and slideshow files, the unit gets them when they show up; graphic files are bypassed.

#### **No Attribute**

This indicates that the Windows server has the file, but cannot provide its size or time stamp. This is a failure on the host or server.

## **Connect Error**

A **Connect** error is the most likely type to occur. The explanations given may not be the only possible reason for the message.

### **Connect Fail**

A general failure to connect to the host. If the host can ping the unit, getting this error should not be possible.

### **Connect Timeout**

The initial connection was made but the host has not responded to further communication in timely manner.

### **Refused**

The host is there and the unit can connect to it. The host may not have an appropriate server running, or security may otherwise refuse to permit the connection.

### **Logon**

The user name and/or password are incorrect.

### **Protocol Fail**

For Windows networking, the unit and the host could not find a mutually acceptable protocol level.

### **Share Unavailable**

The directory requested does not exist, or is not shared, or protections prevent the unit from connecting to it.

### **Host Resolution**

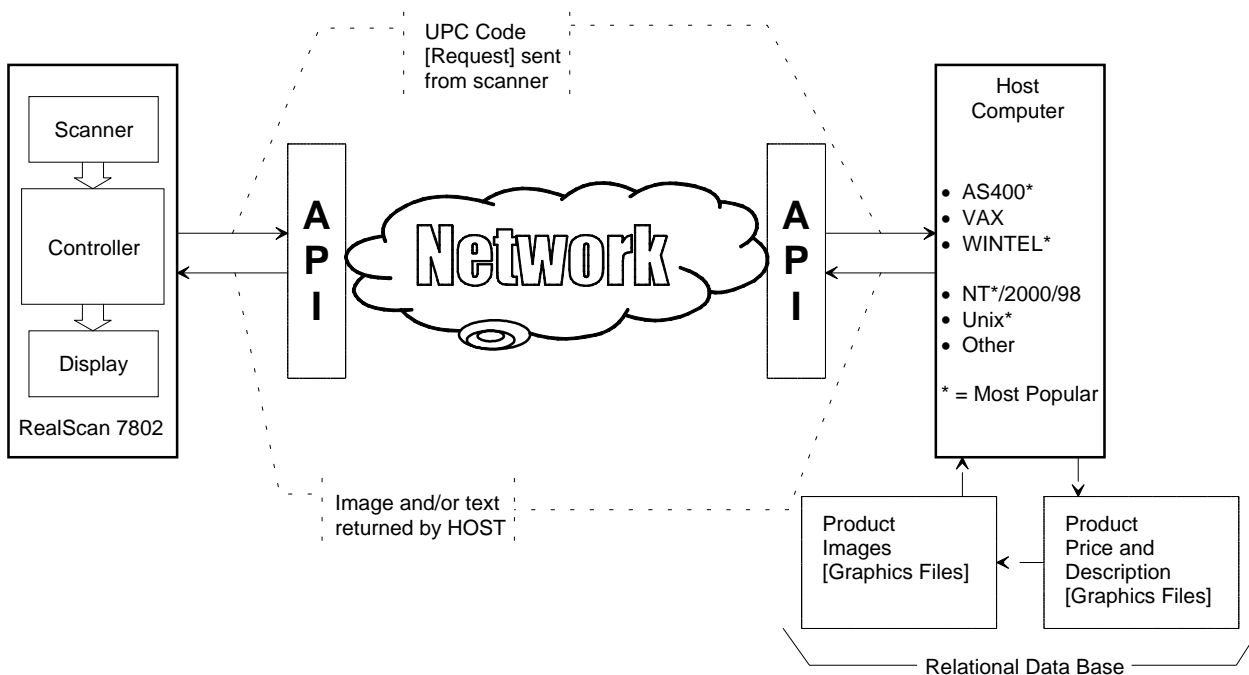
The specified host name cannot be resolved to an IP address. This can happen if the host name is incorrect or if the host is on another subnet and there is no WINS server available or the WINS server IP has not been set.

### **Transfer**

This may be a transient error that does not re-occur if you power cycle the unit and try again. Normally you should never see this message, as it indicates a failure of software and/or hardware on the host, the network, or on the unit.



## Chapter 5 – Interfacing to the Back Office Server



The API (Application Programming Interface) is a description of the ProductInfo protocol that enables the host computer to communicate with the RealScan 7802. Is not a physical piece of hardware. Both ends of the API are physically the same piece of software.

The RealScan 7802 only performs 3 functions.

1. Scan the product UPC (barcode) and send it to the HOST computer across the network.
2. Accept the response from the HOST and display the information appropriately.
3. Automatically download a slideshow from the HOST and play it.

20033

### Overview

A generic protocol called 'ProductInfo' has been created especially for interfacing price verifier units such as the RealScan 7802 with the back office server that has the database with item prices and descriptions. Implementations of ProductInfo directed at specific hardware platforms, the RealScan 7802 in this case, are a subset of the full protocol. This is one part of the API or Application Programming Interface for that specific device. The other part of the API is concerned with configuration, control and setting modes. Both parts are covered in detail in this Chapter.

The application that links the RealScan 7802 and the back office server's data must reside on the server. Almost any platform that runs a TCP/IP network can be used as a server. Known hardware platforms in use include AS400, VAX and Wintel. Software platforms include Windows NT, UNIX, Linux, and VMS running Oracle, SQL or other databases.

## Software Developers Kit (SDK)

The CD-ROM shipped with RealScan 7802 contains the following items:

- **Unit Configuration** program for setting up the RealScan 7802 from the network. Written in VisualBasic, the .exe, VB sources and an OCX are provided.
- **ServInstall** program for setting up the server to run slideshows.
- User manuals and other useful documents in Acrobat (.pdf) format.
- Source code for demo servers and some utilities. The sample programs demonstrate communications with the RealScan 7802 via the ProductInfo and QFX protocols and include ProductInfo and QFX servers. The VB sources and an OCX are provided for the Unit Configuration program so it may be embedded in the host application. All other programs are written in ANSI C and have been compiled and run without modification under NT, linux, UNIX, and VMS. QFX is a faster, lower overhead alternative to FTP and SMB and provides the added benefit of supporting graphic files in any format.
- A number of useful freeware and shareware utilities.
- The RealScan 7802 requires images in either GIF or FIF (Fast Image Format), ¼ VGA (320x240 pixel) format. NCR recommends the use of **ImageMagick** for image file conversion from other formats into either GIF or uncompressed form. **ImageMagick** is a collection of tools and libraries for reading writing and manipulating images in 68 standard formats including TIFF, JPEG, PNG, PDF, PhotoCD and GIF. Information on **ImageMagick** can be found at [www.imagemagick.org](http://www.imagemagick.org).

## ProductInfo Protocol Description

The RealScan 7802 has an embedded protocol engine that uses TCP/IP to send the UPC barcode number from the price verifier to the host computer and return the price and description information retrieved from the host computers' database by its resident application.

ProductInfo is a TCP based, bi-directional message-passing protocol that uses the same format when moving data in either direction. In normal operation, the client opens a connection for each request generated, usually a scanned barcode, and keeps it open until the server instructs the client to close it. The client can also wait for the server to open a socket thus permitting asynchronous operation.

The protocol also sends events marking a change of state (opening or closing) of any of the four optional front panel switches. These events may be used by the host's resident application to control functions or modes within the application, for instance to change language displayed when a switch is pressed.

An abstract system level diagram showing the relationship between the RealScan 7802, the network and the host computer is shown at the beginning of this section. The API is shown at both ends of the network for clarity. In practice the application to interface the host computer server to the RealScan 7802 resides on the host computer.

In the interest of robustness, both ends accept any message whether defined or not, invalid or unknown messages are simply discarded. **A maximum reasonable message length may be used as a means to detect implementation bugs that could result in loss of synchronization.** Such errors terminate the connection. If the client detects it, it may send an error token following re-establishment of the connection in order to log the error on the server. If the server is able to detect this condition, it can log it directly. When the server receives a product query from the price verifier, it must respond even



if the message is just to terminate the connection. Following submitting a query, the client may choose to take an error action if it receives nothing from the server within a defined timeout period. The server can make capability queries and/or mode changes before, during, after, or in lieu of sending any response. **If the server wishes to space messages more widely than the client's default timeout, it must send a 'Set Mode' packet to change the timeout; this only needs to be done once per query, but must be done on each query.**

The client may send capability messages regardless of whether the key name is known to the server and the server may retain this information. When the server needs to know the value of one of these capabilities, it can consult this retained information. If it is not known, a capability query may be sent and the server may wait a moment for a reply to be received. This reply asynchronously updates the server's information, and the value should be found there by a subsequent lookup following the brief interval required for the client to respond to the query. If it remains undefined, it can be assumed that the client declined to respond, probably because that capability name is not known to it.

Mode settings permit the server to select between optional behaviors or parameters in the client. Theoretically, this can work both ways. If the server wants the client to adopt a certain mode setting, it sends the command and the client responds appropriately. If not, an error report may be generated in response. Mode settings occupy a separate name-space from the capabilities table. A mode setting can be used to change the timeout value the client uses to decide that a socket connection has broken.

Error reports are used primarily as a debugging tool. The string starts with an error number, optionally followed by white space and explanatory text.

In the nominal case, messages consist of a length, followed by a token, possibly followed by more information as specified by the length and the token. In the trivial case, the message consists solely as a NUL-terminated text string; this is the case when each of the four bytes of length field is an ASCII printable character. When the server receives such a message, it is interpreted as a product query; it optionally contains the client's identification and white-space preceding the product code. When received by the client, it is interpreted as a single, textual response to a query.

Tokens		Data Types	
Terminate connection	TERM	No Operation	NOP_
Capability query	CAPQ	Display Text	TEXT
Capability	CAPR	Special Text	SPEC
Mode set/query	MDSQ	UNC	UNC_
Mode Response	MODR	URL	URL_
Error Report	ERR_	FIF	FIF_
Product query	PROD		
Data	DATA		
Registration	RGST		
Event	EVNT		

## Protocol Implementation Rules

1. Mode values changed during a query session are only retained during that session.
2. The host can make “permanent” changes to mode values for query sessions by connecting to the ProductInfo protocol port (Port 1283) of the client and setting the values. As long as that connection is maintained, the new values are used in all further queries.
3. Whether a “permanent” change can survive a power cycle of the client is implementation-dependent. Clients may provide special functions to record mode information in non-volatile storage.
4. Query sessions are best kept limited to information that is displayed immediately, so further queries can be answered.
5. Mode values that start or end with white space must be sent enclosed in double quotes. These quotes are removed when the value is stored. Double quotes within the string are treated as part of the value.
6. When using double-byte font files such as the Kanji font (7640 characters), text string must be defined as Big-Endian or Little-Endian depending on the server.

## NCR RealScan 7802 Implementation Rules

1. The RealScan 7802 maintains an asynchronous ProductInfo server. The host can open a connection and send messages to this listener at any time.
2. The RealScan 7802 sends carriage return/linefeed pairs to indicate an end-of-line (<NUL> marks end-of-string) to accommodate various host computers, but accepts either or both.
3. When started up, the RealScan 7802 makes a copy of the setup information stored in the non-volatile memory. Changing a mode’s value modifies this copy and is the source of mode values when a mode request is executed. Setting a mode does not preserve the new value in non-volatile memory; the new value(s) must be specifically committed. A second copy of the setup information is kept as the current value set. This copy is modified by the realscan.ini file contents.
4. The values that are read for modes are those default values and may not reflect the current operational values. This occurs when the initialization file overrides the default values. Setting values sets what is recorded to non--volatile memory, but may not affect immediate operations.
5. Changing a mode’s value may not cause the RealScan 7802 to immediately change its behavior; some changes require the unit be reset before they take effect.
6. Several modes are immediately affected when changed: Timeout, TrivialComm, SendUnitID, SendError, SendResponse, TextBackgnd, TextForegnd, and QueryPrefix.
7. The text display modes (TextHPos, TextVPos, TextRows, TextCols) can be forced to take effect by setting the TextReset mode to TRUE.
8. The QueryPrefix can contain binary information. To set a QueryPrefix with binary values, use a ‘C’ language format string for the value. The RealScan 7802 accepts “\x” followed by two hex digits as a single character with the value of the two hex digits; no other sequences are recognized.
9. When powered up, the RealScan 7802 attempts to register with the host system. If it cannot do so, it waits 10 seconds and tries again. After each failure, it waits one second longer than the previous time, ad infinitum. Additionally, whenever the RealScan 7802 detects that the initialization file has changed, it makes one attempt to re-register. This permits a host computer that has gone down to force all the RealScan 7802’s to register without knowing which or how many the RealScan 7802’s are on the network. Registration can be selectively disabled.

10. Text transfers using the default extended ASCII character set shown in Appendix D should be sent in nominal mode. This is because many libraries do not properly handle the characters outside of the usual ASCII range (32-127) correctly.

## NCR RealScan 7802 Supported Modes

This section defines the device specific implementation for the RealScan 7802.

**Note:** Mode names are case insensitive. Values have case preserved.

### ***Fixed Unit Identification***

#### **BuildInfo**

The date and time of the software release in the format YYYYMMDDhhmmss; read-only.

#### **ProductName**

"NCR RealScan 7802"; read-only.

#### **Serialnumber**

Contains the unique serial number for the unit; read-only.

### ***User Configurable Unit identification***

#### **UnitID**

The host name of the unit.

#### **UnitIP**

The IP address of the unit, in standard IP dotted notation.

#### **Unitmask**

The network mask for the unit, in standard IP dotted notation.

#### **GatewayIP**

The IP address of the gateway machine, in standard IP dotted notation. Required only if access to the various hosts must be routed on the LAN.

#### **UserName**

The username the RealScan 7802 uses when logging into the file server.

#### **Password**

The password the RealScan 7802 uses when logging into the file server.

### ***Setup for Windows Networking (SMB)***

#### **Domain**

Network domain is required when security is a concern.

#### **DNS**

Domain Name Server IP Address (if required to resolve network host names)

#### **NetworkName**

Name of the wireless network (ESSID). Identifies the network access point for wireless units.

#### **WINSServerIP**

The IP address of the WINS server, in standard IP dotted notation, if the file server is not on the local network.

#### **WindowsServ**

The host name of the Windows server.

#### **ShareName**

The name of the shared directory on the Windows server.

## **RealScan 7802 FTP Server Configuration**

**Note:** These modes are only applicable to models using the pSOS+ operating system. Models using the Linux operating system do not have an FTP server.

**FTPUserName**

The user name for logging into the RealScan 7802's FTP server.

**FTPPassword**

The password for the FTPUserName.

**FTPSuperName**

The Super-User name for logging into the RealScan 7802's FTP server (required for updating the software).

**FTPSuperPwd**

The Super-user's password.

## **Setup for FTP, QFX, NTP, PRODUCTINFO**

**ServerType**

Sets the file host as Windows networking ("SMB"), FTP ("FTP"), or QFX ("QFX").

**FTPServerIP**

The IP address of the FTP server in standard IP dotted notation.

**QFXPort**

The IP port to use for QFX communications.

**QFXServer**

The IP address of the QFX server.

**QFXTimeout**

The number of hundredths of a second to wait before timing out on QFX communications.

**NTPHost**

The IP address of the NTP server to provide the date and time, in standard IP dotted notation. The date obtained is assumed to be GMT.

**NTPZOffset**

The number of minutes to offset from GMT for the local time zone.

**SloppiIP**

The IP address of the PRODUCTINFO protocol server, in standard IP dotted notation.

**SloppiPort**

The IP port to use when sending product information requests and listening for connections.

**SloppiTimeout**

The maximum wait time, in hundredths of a second, for an initial response to a product information query, kept in non-volatile storage.

## **Product Query configuration**

**IgnoreAckNak**

Sets the RealScan 7802 to ignore ACK and NACK characters when received at the beginning of an expected packet. Default is FALSE.

**IgnoreResponseChars**

Sets the REALSCAN 7802 to ignore the number of characters specified, from 0-255 at the beginning of the response packet to a query; default = 0.

**QueryPadTo**

Sets the number of text characters for a barcode query to at least the specified number of bytes by adding NUL bytes after the query string. Value is 0 to 64. Default = 0. Has no effect if value  $\leq$  # bytes in barcode+3

**QueryPrefix**

Up to 198 characters. If set, it is prefixed to all query requests.

**SendError**

Controls whether error messages are sent in response to unknown messages, mode set commands with improper parameters, etc. The default is FALSE.

**SendResponse**

Controls whether confirmation messages are returned after setting a mode's value.

**SendUnitID**

Controls whether the UnitID string is sent as part of product information requests. The default is TRUE.

**Trivialcomm**

The protocol method to use for product information queries

## **Presentation configuration**

**TextCols**

The number of columns of text displayed (in pixels)

**TextRows**

The number of rows of text displayed (in pixels)

**TextHPos**

The horizontal offset from the left edge where text starts (in pixels). Must be an integral multiple of four pixels. Space must be available on the right side of the line ie characters cannot be pushed off the screen.

**TextVPos**

The vertical offset from the top edge where text starts (in pixels). Must be an integral multiple of four pixels.

**TextBackgnd**

The color index for background text.

**TextForegnd**

The color index for foreground text.

**TextDisplay**

Set to EXCLUSIVE for a text only display, or MIXED for a text window overlaid on a graphic image.

**FontFile**

The file name of the current font.

**MsgChecking**

The string that is displayed by the RealScan 7802 when making a product information request. If /filename.gif is used instead of a string, the image filename.gif is displayed rather than the string message. This is known as **wallpaper**.

**MsgUnavail**

The string that is displayed by the RealScan 7802 when the product information server does not respond.

**POStimeout**

The number of seconds that text is displayed before it is cleared and the slide show restarted.

**ShowShortPoll**

The delay, in seconds, before trying to read the INI file, if it has never succeeded; default = 60.

**ShowLongPoll**

The delay, in seconds, before checking for changes in the INI or slideshow file;  
default = 300.

**TextTransparent**

When set TRUE, the underlying image is visible through the text box background with only the characters being opaque.

## **Multiple Windows**

**Showtime**

Number of 1/100 sec ticks an image is displayed when using multiple graphic windows. Use in conjunctin with the DelayNextImage and @ x,y modes.

**DelayNextImage**

Number of 1/100 sec ticks before the next image is displayed.

**@ x,y**

Top left position of the window in pixels

## **Real Time Clock Display**

**ClockFontFile**

The filename and path of the font file for the clock display. A different font than the text display may be used.

**ClockHPos**

Leftmost (horizontal) position of the clock display in pixels. Top left corner of display screen is 0,0, bottom right corner is 319,219.

**ClockVPos**

Topmost (vertical) position of the clock display in pixels. Specifying ClockHPos, ClockVPos defines the top left corner of the clock display.

**Clock\_Fcolor**

Foreground color of clock display (0-255).

**Clock\_Bcolor**

Background color of clock display (0-255)

**ClockFormat**

= 0: 12-hour display, no AM/PM; = 12; 12-hour display with AM/PM

**ScanShowClock**

Turns off clock during a scan, or forces it to remain on at all times. TRUE = display clock at all times, FALSE = turn off clock during a scan.

**ClockTransparent**

When set TRUE, the underlying image is visible through the text background with only the clock characters being opaque. If set FALSE the clock is displayed in a box who" color is defined by Clock\_Bcolor.

## **Miscellaneous configuration**

**DateTime**

Current date and time in the format YYYYMMDDhhmmss. This is correct only if the host has set this value, or if NTPHost is set and the RealScan 7802 is able to obtain the correct time from the NTP server.

**EventEnd**

An 8 character string of hex digits representing a bitmap of which ending events are to cause a message to be sent to the host.

**EventStart**

An 8 character string of hex digits representing a bitmap of which starting events are to cause a message to be sent to the host.

Button Position	Left	2 <sup>nd</sup> from Left	3 <sup>rd</sup> from left	Right
Label	Event0	Event1	Event2	Event3
Value	00000001	00000002	00000004	00000008

Before an event is reported the value in the modes EventStart and EventEnd must be set. If EventStart is zero, no starting event is reported; likewise for EventEnd. If EventStart and EventEnd are both set to 00000001, then pressing the leftmost button generates an event report and releasing the button also generate an event report.

**WallPaperEvent**

An 8 character string of hex digits representing a bit map which enable event messages ( such as button pushes) to be sent only during the time wallpaper is displayed (usually after an item is scanned).

Button Position	Left	2 <sup>nd</sup> from Left	3 <sup>rd</sup> from left	Right
Label	Event0	Event1	Event2	Event3
Value	00000001	00000002	00000004	00000008

**User1**

A string up to 255 characters long that can be set and read by the application.

**RegisterINI**

The RealScan 7802 registers itself with the ProductInfo host after successfully reading a new INI file.

**RegisterStart**

The RealScan 7802 registers with the ProductInfo host upon startup.

**DisplaySetup**

Display the first information screen at startup.

**DisplaySetup2**

Display the second information screen at startup

**DisplayAll**

Display passwords on the information screens

**NoBarCodes**

Disable configuration by barcode mode

**Version**

Returns a string containing the software version number

**Diversity**

Enable diversity antennas. 'ENABLED'; 'PRIMARY'; 'SECONDARY'. Use primary or secondary only, the RealScan 7802 has only one antenna. The default is primary and the antenna is connected to the primary input on the RF NIC card.

**Wireless**

'TRUE' sets the RealScan 7802 communications to wireless RF. 'FALSE' sets communications to 10baseT Ethernet.

**FlashHash**

A CRC calculated on the content of flash memory. The CRC is displayed on the initial bootup status screen. Display format is CCCC-TTTT where the 1<sup>st</sup> four hex digits are the calculated CRC and the 2<sup>nd</sup> four hex digits are the received CRC from the host. Both CRC's must match to ensure no file corruption during download. There is no error correcting mechanism at this time. Also displays in UnitConfig.



**WEPEncryption**

Sets Wireless Equivalent Privacy (WEP) mode.

Value	Function
NONE	No Encryption (default)
OPEN40	Open System 40-bit encryption
OPEN128	Open System 128-bit encryption
SHARED40	Shared System 40-bit encryption
SHARED128	Shared System 128-bit encryption

**WEPKeyIndex**

Provides four unique encryption keys. Default key is WEPKey1 and default value of the keys is a string of zero digits of the appropriate length.

**WEPKey1, WEPKey2, WEPKey3, WEPKey4**

Each key has ten digits for 40-bit encryption and 26 hex digits for 128-bit encryption. The key entered must match the encryption mode.

**Port2Function**

Changes the function of the external RS-232 port between hand scanner (input data port) and serial printer (output data port). The function can be changed with the modeset utility. Factory default is scanner mode.

Value	Function
SCANNER	Serial port set to receive data from scanner
OUTPUT	Serial port set to pass through data sent by server

**BypassNCRPrefix**

Instructs the RealScan 7802 to accept NCR prefixed barcodes for programming. The default value = TRUE. NCR prefix mode does not have to be turned off to be able to program the unit with barcodes.

**ExtCharacterSet**

Applicable only to ScanVue420 VF (Century) display models. Selects a character set (language) for display. The default character set contains 'European' in 64 positions AO-DF. The extended language character sets are shown in Appendix D.

Value	Function
ASCII + European	EUROPEAN (default)
ASCII + Katakana	KATAKANA
ASCII + Cyrillic	CYRILLIC
ASCII + Hebrew	HEBREW



## Command modes

### Commit

Set TRUE, causes the mode settings received to be written in internal flash memory and become the defaults for future operation. FALSE indicates that some settings have been changed but not recorded.

### Invalidate

Sets all mode values to factory defaults and restarts the unit.

### Restart

Set TRUE, causes the unit to restart. This must be done after a commit to use the new settings.

### TextReset

Set TRUE, causes the setting for displayed text to be immediately enforced. FALSE indicates that some settings have changed. For the text values to become permanent, the commit command must also be issued.

## Programmatic Modes

Programmatic modes are for use within another program and cannot be read or set interactively with UnitConfig or modeset. For example, UnitStatus is a mode used within the 'heartbeat' utility program to report on the status of the unit being read. These modes may also be used within your own program.

### GiveHelpText

Appends help text to null MDSQ requests.

### Timeout

The maximum wait time, in hundredths of a second, for an initial response to a product information query. This is valid for the current connection only.

### UnitStatus

Reports on the state and activity of the unit. Returns a single line of values separated by spaces. Counters restart from zero if maximum count exceeded or unit is reset. Following are the values given in order.

- Number of seconds unit has been running since last reset. Largest number is 42949672 (~16 months).
- A single character that defines the current state of the slideshow. N = no slideshow running; R = slideshow running; L = slideshow being loaded.
- Total number of slideshows that have been successfully loaded and started. Maximum count 65535.
- Number of slides defined in current slideshow script. Maximum number 65535. If not running, it is the number in previous show or the current show that was not able to load slides.
- Number of slides successfully loaded. If the show is running this is the actual number of running slides. If not running, it is the number for the previous show or the current show that was not able to load slides, for example, 160 slides defined, 147 loaded.
- Total number of slides displayed since last reset. Maximum value is 4294967295.
- Total number of images displayed since last reset. Maximum value is 4294967295 and includes text messages, start up screen, frames from pushed animations...
- Number of barcodes scanned since startup. Maximum value is 4294967295 and excludes barcodes scanned while the unit is busy with another product request.

- Number of responses from the host to product information queries. Maximum value is 4294967295. Includes positive and negative response.
- Number of times the unit received no response from the server. Maximum value is 4294967295.

## QFX Quick File Transfer Protocol

QFX is a very low overhead protocol that is a much simpler and faster alternative to FTP for moving files quickly across the network. There is no authentication. The QFX server permits access to files in and below its default directory; this is the extent of security.

QFX packets consist of a 4-byte (network order) packet length, a 4-character token, and possibly data. Packet length includes the 4-byte length field.

### *Tokens*

**INFO**

File information request/response

**SEND**

File send request/response

**DIFF**

File timestamp comparison

**ERRR**

Error response

### *INFO exchange*

**Request**

[ length ][ INFO ][ filespec <NUL>]

**Response**

[ length ][ INFO ][ YYYYMMDDhhmmss size <NUL>]

Four digits for year, two each for month (January is 01), day (01-31), hour (00-23), minute (00-59), and second (00-59), followed by a single space character, and finally the size of the file, in bytes.

**Response**

[ length ][ ERRR ]

Requested file does not exist or request is malformed. Explanatory message is optional, should be string consisting of number, white space, optional text.

**Request**

[ length ][ SEND ][ filespec <NUL>]

**Response**

[ length ][ SEND ][ file data ]

**Response**

[ length ][ ERRR ]

Requested file does not exist or request is malformed. Explanatory message is optional, should be string consisting of number, white space, optional text.

**Request**

[ length ][ DIFF ][ filespec <NUL>][ YYYYMMDDhhmmss<NUL>]

**Response**

[ length ][ DIFF ][ Bool ]

Bool value is TRUE if the file's date/time are DIFFERENT than the provided timestamp and FALSE if it is the same.

**Response**

[ length ][ ERRR ]

Requested file does not exist or request is malformed. Explanatory message is optional, should be string consisting of number, white space, and optional text.

[filespec] uses UNIX style forward-slash directory notation. It is the responsibility of the server to convert the notation to the native method, and to guarantee that the path cannot extend outside of the default directory.

The directory '/' refers to the current directory; a leading '/' is ignored. The QFX server must guarantee the requested file is in or below its current directory.

Line-terminators are new-line characters; carriage returns are optional.

The server is responsible to read text files and transmit them with appropriate line breaks. Specifically, this applies to VAX/VMS.

## Using Graphics Characters

RealScan 7802 with an AMLCD can display graphics characters such as Kanji and Chinese (ideograms) as well as standard Roman text characters. The graphics font file is downloaded into the price verifier at boot up time by a command line in the realscan.ini file. As only one font file can be stored at a time, the display is limited to the characters in the loaded font set. Certain fonts contain other characters; for example the Kanji font set also contains English, Greek and Cyrillic characters.

Displaying graphics characters requires two hex bytes (double-byte text) per character be sent due to the large number of glyphs in the font set (Kanji has 7,640 characters). RealScan 7802 can send text in either single byte or double byte modes. The rules for using double byte text are shown here.

Double byte text strings come in two types, Big-Endian and Little-Endian. The server hardware determines if you will need big endian or little endian strings. Double byte strings sent in trivial mode must be double NUL (00 00) terminated whereas strings sent in nominal mode do not have to be.

Big-Endian text strings start with the bytes FE FF and end with the bytes 00 00.

Ex: FE FF b<sub>1</sub> b<sub>2</sub> b<sub>3</sub> b<sub>4</sub> b<sub>5</sub> b<sub>6</sub> b<sub>7</sub> b<sub>8</sub> b<sub>9</sub> b<sub>10</sub>.....00 00

Little-Endian text strings start with the bytes FF FE and end with the bytes 00 00

Ex: FF FE b<sub>1</sub> b<sub>2</sub> b<sub>3</sub> b<sub>4</sub> b<sub>5</sub> b<sub>6</sub> b<sub>7</sub> b<sub>8</sub> b<sub>9</sub> b<sub>10</sub>.....00 00

where b<sub>1</sub>-b<sub>10</sub> are a string of 5 double-byte character codes.

In realscan.ini, double byte strings can be used for wallpaper but the text must start with << instead of < or // instead of /.

For the Demoserve data file (data.dat) on the CD-ROM, the characters |> indicate a Big-Endian string and |< indicates a Little-Endian string.

**Note:** Demoserve actually sends the FE FF or FF FE bytes not |> or |<.

A utility program, dmp2gdf, provided on the CD-ROM creates a .gdf (double-byte) font file from a single byte ASCII font file.

## Using the Touch Screen

### Introduction

The NCR RealScan 7802 Price Verifier is a networked thin client and does not respond directly to any input from a local device. Activating any of the input devices—barcode scanner, touch screen, K590 printer, causes the RealScan 7802 to transmit the raw input data to a host computer for further action by the server based application.

### Touch Screen Description

The digital touch panel is organized as a 16 column x 12 row matrix. The LCD screen resolution is 320 x 240 pixels (¼ VGA), thus each of the 192 discrete touch areas formed by the matrix is a 20 x 20 pixel square [which is dimensionally ¼" x ¼"] and defines the maximum resolution of the touch screen. Touch screen resolution scaling—increasing the dimensional size of the touch areas—may be set for each axis independently down to 1 column x 1 row; in other words the whole display screen functions as a single touch button. The resolution scaling can also be changed dynamically by the users application. Factory default setting is at the touch screens highest resolution of 16 x 12 where the top left corner co-ordinate is y,x = 0,0 and the bottom right corner co-ordinate y,x = 11,15.

Touching the panel anywhere within a specific 20 x 20 pixel area or resolution scaled area will stuff the start mask and y,x co-ordinates of that touch area and the number of 10 millisecond clock ticks since the last event into the EVNT packet and transmit it to the host computer application.

## Configuring Scanvue for Input Devices

### General

RealScan 7802 must be running software version 5.02 or later to support the touch panel. Run the UnitConfig program on the server to configure the unit.

### Enable Multiplexer

An additional touch screen controller/multiplexer PCB is installed in all RealScan 7802 units with a touch panel. Set the MUX ENABLED mode to TRUE. The touch panel will not operate unless you do this. In software versions later than 5.02 the multiplexer is detected and enabled automatically and this mode will not show up in UnitConfig.

- Set MUX ENABLED to TRUE

## Start Event and End Event Masks

Start and end event masks are modes that can be set by UnitConfig. Each mode value is an 8 hex digit (32 bit) mask that defines the type of device initiating the event as shown in the table below. Factory default is all masks disabled (00000000). Both start and end masks are always present in the transmitted packet but one of the two is always disabled. For most applications the end event mask is not required, therefore leave it disabled. A start event is a complete packet and an end event is a complete packet.

- Set the mode values (mask setting) as shown in Table 1

## Touch Screen

The touch screen has only start events, however 2 or more touch areas pressed simultaneously will be recorded and transmitted in the same packet. The clock tick count in this case is the time elapsed from the prior event

- Set start mask only.

Mode (Description)	Value (Start Mask Setting)
Disable mask (factory default)	00000000 <sub>h</sub>
Touch panel pressed	00000010 <sub>h</sub>

Table 1

## Data Bytes (Parameters)

Each transmitted event packet contains three 8 hex digit words. Pressing the touch screen will cause the appropriate data to be stuffed into the parameter words as shown in the Table 2

Mode (Description)	Value (Setting)
<b>Touch Screen</b>	
Parameter 0	00000010 <sub>h</sub>
Parameter 1	scaled y co-ordinate (1-16)
Parameter 2	scaled x co-ordinate (1-12)

Table 2

## Structure of EVNT packet

### Notes

- Separate packets will be sent for start events and end events (if used).
- Pressing the touch screen transmits a (minimum) 33 byte message packet to the host computer in the following general format.

**[length+EVNT]+[24 data bytes]+[unit ID]+[0]**

where

length=4 bytes whose value is the number of bytes in the message including the length byte

EVNT=4 byte character string token

24 data bytes consisting of:

32 bit mask of events started (4 bytes)

32 bit mask of events ended (4 bytes)

32 bit unsigned count of the number of 10 millisecond clock ticks since last event (4 bytes)

32 bit parameter 0 data word (4 bytes)

32 bit parameter 1 data word (4 bytes)

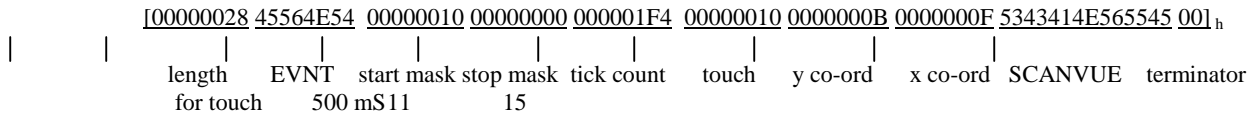
32 bit parameter 2 data word (4 bytes)

variable length character string containing unit ID (if mode enabled in UnitConfig)

0= message terminator containing 0 zero value (1 byte).

**Example (shown in hex form)**

**Touch screen start event packet for bottom right corner press (11,15)**



***New Touch Screen Modes***

Mode	Value	Description
pointerHscale	16,8,4,2,1	Scales H resolution to one of shown values
pointerVscale	12,6,2,1	Scales V resolution to one of shown values
lastpointerH		Returns last recorded H position (scaled value)
lastpointerV		Returns last recorded V position (scaled value)
PointerIsDown		Returns Boolean value of current state

## Chapter 6 – RealScan 7802-2000 Vacuum Fluorescent Display

**Note:** References in this manual to the use of graphics images, double-byte text and downloaded fonts are not applicable to the RealScan 7802-2000 model.

### Description

RealScan 7802-2000 has a 4 line x 20 character x 5mm high, 5x7 dot matrix vacuum fluorescent (VF) display and displays text in a fixed font size and pitch. The default character set is US-ASCII extended with 64 European characters. There are three more 64-character extended language sets Cyrillic, Hebrew, and Katakana that can be selected from the UnitConfig program by entering the character set name in the mode **ExtCharacterSet**. This feature permits the end user to set the character set to the language of choice. Once the RealScan 7802-2000 is set to display one of these optional character sets, any message sent to the display uses the characters in that chosen language set. The language character sets are shown in *Appendix D* and always contain the US-ASCII characters shown in the *Default ASCII Character Set for VF Display* chart plus one of the optional 64-character sets shown in the following four charts.

The user can change any or all of the three internal customer messages (factory default is English) into one of the four language character sets available on the VF Display. This permits the user to display customer messages in the language of the country where the unit is installed.

Since this model cannot show graphics or inherently run a slideshow, the customer greeting is normally displayed as a static screen. It is possible to create a loop of linked text messages on the server side that can be sent to the RealScan 7802-2000 in a timed sequence to create a 'text slideshow'.

### Operation

When RealScan 7802-2000 finishes booting up it displays the information status screens first, then the logo screen, and finally the static Greeting Screen. This screen is displayed until either an item is scanned or the host server sends a different message.



```
SELF SERVICE
PRICE VERIFIER
scan your item below
for price/sale info
```

#### Greeting Screen

When the scanner reads a barcoded item, the RealScan 7802 sends the ASCII characters to the server using the protocols described in Chapter 4 and 5. The host server should respond with a formatted text information block (TIB) of all 80 characters, including the blanks, to locate the actual text in the required positions on the lines - there are no direct text formatting commands in the present version.

Vintners Merlot Wine	
1/5 Gallon	\$11.49
ON SALE TODAY	
	\$8.99

**Item Description & Price Display**

## ***Text Slideshow***

If you want to send multiple messages in sequence, this must be controlled from the host server end. For instance, a text based series of messages for continuous advertising could be sent to the display under control of the host. The host would have to have the sequence of messages in a message file (or multiple small files) and send them in a sequential loop with a delay for adequate viewing time. The loop control requires an interrupt when the host receives data from the RealScan 7802 barcode reader to stop the message sequence, retrieve the item description and price, display it for a set time, and then return to the message loop.

## ***Changing Character Sets***

Appendix D shows the VF Display's default ASCII font set with 64 empty character codes between codes A0 and DF and the four extended language character sets that can fill these empty positions. Initially, the default character set is US-ASCII + European. The ASCII characters are always available but the extended character set can be changed from **UnitConfig** by selecting the mode **ExtCharacterSet** and entering the appropriate value in the New Content box. Only one extended language at a time can be loaded.

<b>Extended Language</b>	<b>Value</b>
ASCII + European	EUROPEAN (default)
ASCII + Katakana	KATAKANA
ASCII + Cyrillic	CYRILLIC
ASCII + Hebrew	HEBREW



## Customer Messages

Three internally generated customer messages are built into the RealScan 7802-2000. These messages give specific information to the customer while using the price verifier. The actual text content and language can be changed for use in other countries. Following are the messages.

### Checking.....One moment please

Message displayed when an item has been scanned and there is a delay in returning the price and description – usually due to heavy network traffic.

### Unavailable.....please try later

Message displayed if RealScan 7802-2000 times-out before the server returns price and description or an error message – usually means the network is down.

### Welcome to IEE ScanVue420....Scan your item here

Greeting screen. This is the static 'greeting screen' that is displayed to a customer.

## Changing Messages

1. Change the RealScan 7802-2000 character set to the one you want to use from **UnitConfig**. Make all the changes before restarting. The default character set is US-ASCII + European.
2. When creating new messages, standard characters (that is, those available on your computer keyboard) can be entered directly from the keyboard. Non-standard characters must be entered in hex code form. Hex codes consist of 4 hex digits (\xdd; where \x specifies that a hex code follows, and dd is the hex code for the character you want as shown the character code table) but occupy only 1 character space on the display. See examples in *Appendix G – Applications Notes*.
3. **Checking...** and **Unavailable...** messages can be changed by entering the new text in the **msgChecking** and **msgUnavailable** rows in the UnitConfig program screen. Non-standard ASCII characters must be entered as hex codes as previously described.
4. After changing these messages, click the Set Mode, Commit and Reboot buttons in sequence. The unit reboots and the new messages will be saved and active.
5. The **Welcome to IEE...** greeting screen can be changed by downloading a new text file into the RealScan 7802-2000 as described in the following.
  - Use a simple text editor like Windows Notepad to create a new text file.
  - All 80 (maximum) characters can be entered on a single line in the editor with spaces inserted at the appropriate places to center or offset text on each line of 20 characters. When the text file is sent to the display it will automatically word wrap at the end of each 20 character line.

For Example:

```

SELF SERVICE
PRICE VERIFIER
scan your item below
for price/sale info

```

The text file string to create this message is shown as follows. In this example \ is used to define the start and end of the text string and \* to denote a space. This example is only shown this way to make it clear, and is not required when you create an actual file.

```
\***SELF*SERVICE***PRICE*VERIFIER***Scan*your*item*below**for*price/sale*info*\  

  ↖
```

- Save the file as **century.txt**.
- Download the new greeting screen text file into the price verifier using the 'push' program in the following format.

**push <IP Address> \path\century.txt century.txt**

where <IP Address> is the IP Address of the price verifier, \path\century.txt is the new greeting file source and push.exe is the utility program to download to the price verifier.

There is a real example of changing messages and language in the Application Notes section (Appendix G).

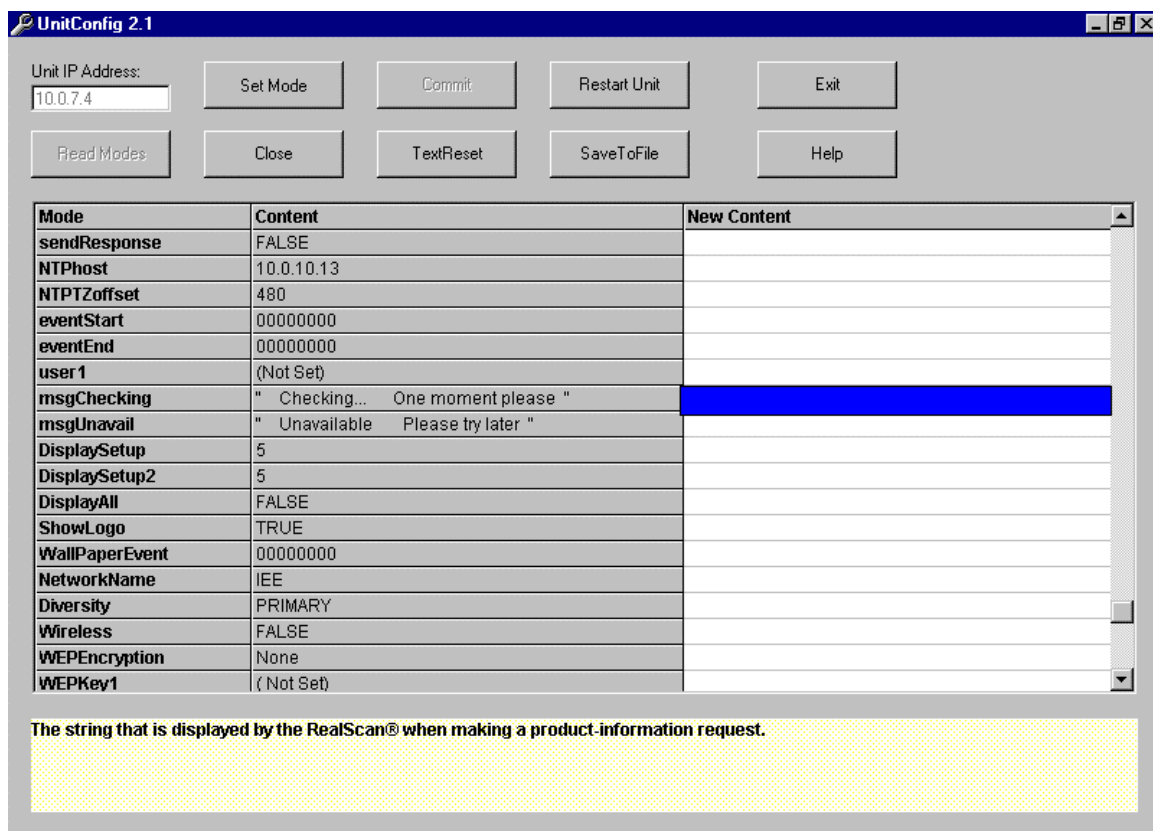
## ***Creating Customer Messages on VF Display Models***

The RealScan 7802-2000 VF Display model has four language character sets, ASCII + European (default), ASCII + Cyrillic, ASCII + Hebrew and ASCII + Katakana that can be changed with a mode command from **UnitConfig**. The four extended language sets are shown in Appendix D.

There is no display formatting utility or language character conversion capability in this version, so messages (80 characters max including blank spaces) must be padded with spaces to center text or get it to appear as you want on the display. Non standard ASCII characters – this means almost all characters other than English upper and lower case and symbols, must be entered in hex code format.

## Network Messages

Two network related customer messages generated within the price verifier can be changed by the user. The default messages are: **Checking..... one moment please** (Mode=msgChecking) and **Unavailable.....please try later** (Mode=msgUnavail). Using the **UnitConfig** program, locate the mode (row) for the message you want to change, highlight the New Content box and enter the new message.



### UnitConfig Screen, msgChecking Mode

When the message has been entered, click the buttons Set Mode, Commit and Restart in sequence. **Wait....** The unit reboots, but it takes about 1 minute before the initialize screen appears.

#### Example 1:

Changing " **Checking... one moment please** " into Spanish.

Highlight the New Content box in the **msgChecking** row as shown previously.

Enter " **Verificando... Un momento por favor**"

The quotes delineate the starting and ending positions of the message including spaces. In this message, there are 3 blanks at the start of the top line and 3 blanks at the end of

the top line to center the word **Verificando...** The U in Un starts at the 1st position in the second line (as the display word wraps after the 20th character). As the second line is exactly 20 characters, there are no blanks inserted and the quotes close off the message after the word favor. This message entered displays as follows.

```
Verificando...
Un momento por favor
```

**Example 2:**

Change " **Checking... one moment please** " into French.

Highlight the New Content box in the **msgChecking** row as shown previously.

Enter "V\xC6rifier.. Un moment s'il vous pla\xCCt "

In this example, 2 of the characters é (hex code \xC6) and î (hex code \xCC) are non standard and must be entered using the hex code method. When counting characters, hex codes occupy 1 character space position on the display. The message as entered displays as follows.

```
Vérier.. Un moment
S'il vous pla ît
```

## Greeting Message

A new customer greeting message is made by creating a formatted text file with a simple text editor such as Windows Notepad, then loading that text file into the price verifier display from the server. The following example shows this.

Change the following English greeting message shown below to Spanish.

Welcome to  
NCR RealScan 7802  
Scan Your  
Item Here

1. Create a single line text file in Notepad or similar text editor containing the message with spaces to place the characters where you want them on the display. The display word wraps the message after every 20 characters. The translated text string is as follows.

```
\**D\xC6*la*bienvenida*****a*ScanVue*420*****Escudri\xCEe*su*****Art\xCA  
cule*aqu\xCA****\
```

In this example text file \ indicates the start and end of the 80 character string and \* denotes spaces. These are only used in the example for clarity and are not required when a message file is created. The hex codes count as 1 character space.

2. Save the file as **century.txt**.
3. Load the new file into the price verifier using the command sequence.

**Push <IP Address> \path\century.txt century.txt**  
where \path\century.txt is the source (server) path and new greeting file.

4. The new file displays as follows.

Dé la bienvenida  
NCR RealScan 7802  
Escudriñe su  
Artículo aquí



# Appendix A – Configuring with Barcodes

## Barcode Reader Settings

You can easily change the default settings of the barcode reader by scanning the specific sequences of barcodes identified in the *NCR 7892 Bi-Modal Presentation Scanner User Guide*. The User Guide provides all the information necessary for making configuration changes to the scanner. This requires the *NCR Scanner Programming Tags* book (BSTO-2121-74). These documents are available on our web site at <http://www.info.ncr.com/>. After accessing this web site, click **General Search**, then enter the word Scanner in the **Title: (Contains)** field, and click **Search**.

## Recommended Scanner Settings

Standard default values. Scan the **Default** tag as the first tag scanned after applying power to the RealScan 7802. This sets the scanner to all standard default values.

## Configuring the NCR RealScan 7802

The RealScan 7802 can also be configured for the network by scanning barcodes with its barcode scanner instead of sending the commands over the network. This requires the *NCR Scanner Programming Tags* book (BSTO-2121-74) and the *NCR 7892 Bi-Modal Presentation Scanner User Guide* (B005-0000-1182).

Create Code39 barcode labels containing the network information as shown in the following table. A program such as '**Avery Label Pro**' or '**B-Coder Lite**' from Taltech can create these for you. It is the customer's responsibility to provide these labels.

Perform the follow the step-by-step procedures to configure the RealScan 7802 using barcodes.

1. Power up the RealScan 7802 unit. Wait until it finishes booting, the 2 green status screens have been displayed and the NCR logo clears. If you have an RF unit, a red connection diagnostic screen may appear if the unit doesn't connect to your network. Either way, you are ready to reconfigure.
2. Scan the following sequence of programming tags – *NCR Scanner Programming Tags* book (BSTO-2121-74). This enables the scanner to read the specific labels needed to configure the 7802 for the network parameters.
  - **Default** – Scanner should beep 8 times indicating 7802 Defaults.
  - **Program Mode** – Puts scanner in Base Programming State.
  - **Hex 1, Hex 6, Hex 2** – Remove Label Identifiers.
  - **Hex 1, Hex 4, Hex C, Hex 1** – Enable Code 39 Full ASCII (required is scanning Code 39 characters other than the standard Code 39 set: A-Z, 0-9, \$, /, +, %, space)
  - **Save and Reset**

**Note:** If the scanner did not beep 8 times, scan the following sequence of programming tags.

- **Hex 3, Hex 0, Hex 8** – 7802 defaults.
  - **Hex 1, Hex 6, Hex 2** – Remove Label Identifiers.
  - **Hex 1, Hex 4, Hex C, Hex 1** – Enable Code 39 Full ASCII (required is scanning Code 39 characters other than the standard Code 39 set: A-Z, 0-9, \$, /, +, %, space)
  - **Save and Reset**
3. Scan the specific labels (listed in the following table) required to change the configuration to your network's parameters. Each setup label beeps once when scanned correctly. The RealScan 7802 displays the raw code, then the setup name and entered value. Frequently used barcodes are provided as a .PDF file on the CD-ROM and may be printed and used directly from the page.
  4. When all the setup labels have been scanned in and visually verified, scan the **Save Configuration** label. This causes the complete configuration setup to be written to the RealScan 7802 non-volatile memory and reboot so the changes can take effect.
  5. At this point restore the scanner programming.
    - Remove power from the RealScan 7802, then apply power again.
    - Scan the **Default** tag, then any other programming sequence desired.

If you do not want to scan the **Default** tag, scan the following sequence of programming tags.

- **Programming Mode** – Puts scanner in Programming Mode State
  - **Hex 1, Hex 6, Hex 0** – Include Label Identifiers.
  - **Hex 1, Hex 4, Hex C, Hex 0** – Remove Full ASCII (if Full ASCII is required by the customer, do not scan these four programming tags).
  - Make any other programming changes needed.
  - **Save and Reset**
6. This completes the network configuration for the RealScan 7802. If your network servers have already been set up, the RealScan 7802 starts communication with the network normally.



<b>Mode/Setting</b>	<b>Barcode</b>	<b>Description</b>	<b>Default Setting</b>
Unit ID	IDLSS.....S	A unique unit name, 19 characters maximum.	RealScan 7802
Unit IP <sup>1,4</sup>	UIAAAAAAAA	IP Address. Each unit must have a unique address.	10.0.0.227 or DHCP
Network Mask <sup>1,4</sup>	UMAAAAAAAA	IP Sub-net mask	255.255.0.0 or DHCP
Windows Server <sup>2,6</sup>	WSLSS.....S	Host name of the file server, 83 characters max.	SVSERVE
Shared Directory <sup>2</sup>	SDLSS.....S	Share name on the file server, 83 characters max.	POS
File Server IP <sup>1,6</sup>	FSAAAAAAAA	IP Address of the FTP-based file server.	Not Set
Network User Name <sup>2</sup>	WULSS.....S	Used to connect to the file server, 19 characters max.	GUEST
Network Password <sup>2</sup>	WPLSS.....S	Used to connect to the file server, 31 characters max.	Not Set
Network Name <sup>2</sup>	NNLSS.....S	ESS ID-network name for wireless networks	NCR
DNS IP <sup>1</sup>	DNAAAAAAAA	IP Address of DNS	Not Set
Gateway IP <sup>1</sup>	GWAAAAAAAA	IP Address for routed or segmented networks.	Not Set
WINS Server IP <sup>1</sup>	WWAAAAAAAA	Required for Windows networking.	Not Set
Domain/Workgroup <sup>2</sup>	DWLSS.....S	Domain or workgroup name, 83 characters max.	NCR
Product Info IP <sup>1</sup>	DSAAAAAAAA	IP address of users ProductInfo server.	10.0.10.13
Product Info Port <sup>3</sup>	DPnnnnQ	Port number for ProductInfo.	1283
Product Info Timeout <sup>3</sup>	TONnnnQ	Duration (secs) product information is shown	30
Wireless RF <sup>3</sup>	WN0001Q	Selects wireless RF mode	Wireless = T, otherwise = F
10baseT Ethernet <sup>3</sup>	WN000Q	Selects hard wired Ethernet	Hardwired = T, otherwise = F
Diversity Antenna <sup>3</sup>	SA0000Q	Sets RF card diversity antenna mode	FALSE
Primary Antenna <sup>3</sup>	SA0001Q	Sets RF card primary antenna	TRUE
Secondary Antenna <sup>3</sup>	SA0002Q	Sets RF card secondary antenna	FALSE
Save Configuration	KQ00003	Save configuration in EEPROM.BIN file & and reboot.	N/A
Backup Configuration	CFGSAVE	Create backup of EEPROM.BIN file	N/A
Restore Configuration	CFGREST	Restore backup to EEPROM.BIN file	N/A
Factory defaults	IN123456789Q	Scan twice; restores factory default configuration	N/A
Reboot unit	IN987654321Q	Scan twice; reboot without saving config	N/A
Scanner defaults	USER MANUAL	Sets RealScan 7802 scanner to default settings.	N/A
Show config screen 1	IS0001Q	Displays 1 <sup>st</sup> config status screen	N/A
Show config screen 2	IS0002Q	Displays 2 <sup>nd</sup> config status screen	N/A
Show wireless stats	IS0003Q	Displays channel, signal strength, & noise stats	N/A

<sup>1</sup> IP addresses ('XXXXXXXX') are in hexadecimal notation. Each of the quads in the address becomes a pair of hex digits (e.g., 10.0.0.10 is encoded as 0A00000A).

<sup>2</sup> String values start with the count of characters ('L') followed by the characters of the string ('SSSSSS'). The RealScan 7802 preserves the case of characters in strings even if it is not meaningful to the network or host. If the string starts with a digit, the length field must be 2 digits, such as 01. If the string starts with a non-digit the length field can be 1 or 2 digits.

<sup>3</sup> Numerical values ('L' and 'NNNQ') are decimal. A non-digit character must follow numerical values. Purely numerical parameters (such as Product Info Port) should be followed by an upper-case alpha character to prevent confusion caused by check-characters and stop codes.

<sup>4</sup> If shipped as a hardwired unit it has the default IP address shown. If shipped as an RF wireless unit the default is DHCP.

<sup>5</sup> There are 2 different screens depending on the type of RF radio card installed.

<sup>6</sup> Setting the Host name also sets SMB file-access mode. Setting the File Server IP also sets FTP file-access modes.

Barcoded commands must be at least six characters long, including the 2-character prefix, but excluding the check character and the start and stop characters. Extra characters may be added to guarantee this. Such padding characters should be upper case alpha characters and are ignored. Numerical values may be zero padded (such as '0001' instead of '1') and should be terminated by a non-numeric character (which is otherwise ignored) to prevent ambiguity should the check character also be numeric.

## Appendix B – NCR RealScan 7802 Initialization File

### Overview

A default **realscan.ini** initialization file is placed into the share directory on the server by the installation program when the server software on the CD is installed. The .ini file must be on the server in the share directory and the RealScan 7802 units, which are hard-coded to look for the .ini file in the share directory, must be able to find it or they cannot be able to establish a connection to the network. The **realscan.ini** file is read by every display on that network server once a communication link is established. The .ini file controls the behavior of every unit linked to that server.

As well as defining the defaults for text display, colors and wallpaper, the ini file provides a way for the RealScan 7802 units to be grouped and access different slideshows. For example, within a multi-department retail location, each department can be running different slideshows at the same time, each one showing promotions or teaser advertising tailored to that department's specific products. Slideshows can also be changed as desired with specially created versions for holidays or sales events.

### Real Time Clock

A real time clock display can be superimposed on the LCD screen as defined in the realscan.ini file. The RealScan 7802 maintains an internal clock tick counter but does not store 'real time'. Date and time are initially set by the NTPServer and TZOffset modes in the .ini file or with UnitConfig and should be periodically updated by the DateTime mode from your server application. The host must be running an NTP or similar timeserver that the application can access for the current date and time.

The clock display font, foreground and background colors, and position on the screen are defined independently on the font used for text display. This is the only case where two different fonts can be used at the same time. The clock feature is intended for internal company purpose rather than for customers and may be used, for example, as a time clock for employees to clock in and out of the store by scanning their ID cards under the barcode reader.



Real Time Clock Display

## Rules for the realscan.ini File

1. The **.ini** file is a text file consisting of sections for specifying different parameters. Each section is marked in enclosing square brackets, example [Group].
2. Sections may be in any order. Initialization lines may be in any order within a section.
3. Lines that start with a single quote ( ' ) or octothorpe ( # ) are comments. Blank lines and white space (except possible in a value field) are ignored.
4. Initialization lines consist of a token, followed by zero or more blanks, followed by an equal sign, followed by zero or more blanks or tabs, followed by the initialization value for the token: TOKEN = Value.
5. Tokens/Value pairs may be directed to an individual unit by preceding the token with the Unit ID enclosed in angle brackets, example <Tools1>. Text\_Rows = 4
6. Tokens/Value pairs may be directed to all units in a group by preceding the token with the Group name enclosed in angle brackets, example <Shoedep>. Text\_Fcolor = Green.
7. Group names may consist of alpha and numeric characters only.
8. Tokens and sections that are unrecognized are ignored. Default values are used when a token is not present.
9. Values are set in the order they appear in the file. If there are duplicate tokens in a section, the value used is the last one on the list except when a Unit ID is specified. If the Unit ID is specified, only that token/value pair is used, regardless of the position within the section.
10. A font file must be specified (replaces the default font) if the text foreground and background colors are to be specified.
11. If the clock function is being used, a second font file may be specified for the clock display. This is the only case where two font files can be used at the same time.
12. The NPTServer mode sets the time when realscan.ini is run (at boot time). To keep the clock accurate, periodic updates using the TimeDate mode from your application is recommended.

## Sections & Commands

**Note:** Commands are not case sensitive.

### [DISPLAY]

Configures the way text is shown on the display.

### Text\_Rows

Number of rows in line-display operation mode.

### Text\_Cols

Number of columns or characters in line-display operation mode.

### Text\_Fcolor\*

Foreground color for displayed text (0-255).

### Text\_Bcolor\*

Background color for displayed text (0-255).

### TextHPos

The horizontal offset from the left edge where text starts (in pixels). Must be an integral multiple of four pixels. Space must be available on the right side of the line - characters cannot be pushed off the screen.

### TextVPos

The vertical offset from the top edge where text starts (in pixels). Must be an integral multiple of four pixels.

### FontFile

Full path for the file that contains the font.

**SlideshowFile**

The full path for the slideshow file.

**Msgchecking\*\***

A text string displayed when a barcode is scanned. The default string is **Checking...Please wait**. When the host returns the price and description, it overwrites this message. Alternatively, the value may be an image filename (/filename) instead of the message string, in which case the image (wallpaper) is displayed.

**MsgUnavail**

A test string displayed when a barcode is scanned and the host cannot be reached. The default string is **Unavailable...Please try later**.

**POSmOut**

The number of seconds that text is displayed before it is cleared and the slide show restarted. Can only be used in the .ini file. Performs the same function as the POSTimeout mode (in UnitConfig or modeset).

\* A font file must be specified (to replace the default font) to use these two parameters. The 256 color palette can be displayed on a desktop computer by running the file [textcolors.htm] on the CD-ROM from a browser.

\*\* Msgchecking can specify either a message string or an image file (called wallpaper) but not both.

**[GROUP]**

Assigns individual units to a group.

**GroupName**

The Token is the name of the group and the value is a list of one or more Unit IDs, separated by commas that belong to that group. The same group name can appear on more than one line, with more Unit IDs listed. Units may belong to more than one group.

**[REDIRECT]**

Permits specified unit to be redirected to another initialization file

**UnitID**

The Token is the unit's ID number, and the value is the UNC for the new initialization file. If the RealScan 7802 recognizes its ID in the list of IDs, it uses the value to obtain the new .ini file. A list of which initialization files have been referenced in this process must be kept so that loops can be detected and terminated.

**[CLOCK]**

Superimposes a real time clock display on the LCD screen.

**ClockFontFile**

Full path for the file that contains the required font.

**Clock\_Fcolor**

Foreground color for the clock display (0-255).

**Clock\_Bcolor**

Background color for the clock display (0-255).

**ClockTransparent**

If set to transparent, there is no text box around the display.

Value = TRUE, clock text box is transparent.

Value = FALSE, clock is in a text box of background color.

**ClockHPos**

Defines the horizontal (column) position of the left side of the clock display box (in pixels). The left column pixel is 0 and the right column pixel is 319.

**ClockVPos**

Defines the vertical (row) position of the top of the clock display box (in pixels). The top row pixel is 0 and the bottom row pixel is 219.

**ClockFormat**

Defines the format of the clock display.

Value = 0, 12-hour display without AM/PM.

Value = 12, 12-hour display with AM/PM.

Value = 24, 24-hour display.

**ClockUpdateInterval**

Defines the clock display update interval in seconds. If a multiple of 60 the seconds display is suppressed.

Value = 1-59 inclusive, displays count of seconds.

Value = 60, seconds display is suppressed.

**ScanShowClock**

Defines if clock display is suppressed during a scan cycle.

Value = TRUE, clock display is on all the time.

Value = FALSE, clock display is suppressed during a scan cycle.

**NPTServer**

Gets the time from a time server.

Value = <IP Address>, IP address of the time server.

**TZOffset**

Defines local time zone offset in minutes from GMT.

Value = n, n = # minutes difference from Greenwich Mean Time. US East Coast offset is 300 (minutes) from GMT.

## Example of Initialization File

```

# Define which NCR RealScan 7802 units are grouped together

[GROUP]
ToolDept
    = tools1, tools2, toolsentrance
Cosmetics
    = cosmet1, cosmet2, makeup1
HouseWare
    = kitchen, china, bridal, appliance
FourLine
    = tools1, tools2, cosmet1, kitchen
TwoLine
    = toolsentrance, cosmet2, makeup1, china, bridal, appliance

# Set up the display characteristics

[DISPLAY]
<FourLine>
    Text_Rows = 4
<TwoLine>
    Text_Rows = 2
    Text_Cols = 20
<FourLine>
    FontFile = VGAfonts/cour4x20
<TwoLine>
    FontFile = VGAfonts/cour2x20
Msgchecking
    = Checking...Please Wait
<Tooldept>
    SlideshowFile = shows/tools.sho
<HouseWare>
    SlideshowFile = shows/housewares.sho
    SlideshowFile = shows/everybodyelse.sho

# Text colors: tool dept, brown over green; cosmetics dept, yellow over blue
# From TextColors1htm color chart.

<ToolDept>
    Text_Fcolor = 44
<ToolDept>
    Text_Bcolor = 18
<Cosmetics>
    Text_Fcolor = 35
<Cosmetics>
    Text_Bcolor = 180

```

**# Members of these groups are directed to a different .ini file**

```
[REDIRECT]
<HouseWare>
  InitFile = tools.ini
<FourLine>
  InitFile = textonly.ini
```

**# Put a real time clock display in the bottom left corner of the screen**

```
[Clock]
# Clock font is 8x14 pixels/chr
  ClockFontFile = C:\POS\fonts\bit8x14.gft

# Clock position is bottom left corner of screen
  ClockHPos = 0
  ClockVPos = 300

# Foreground (character) and background (display box) colors
  Clock_Fcolor = 35
  Clock_Bcolor = 180

# Make the display box disappear so the characters are floating on the image
  ClockTransparent = TRUE

# 12-hour clock display with AM/PM meridian
  Clockformat = 12

# Display seconds
  ClockUpdateInterval = 1

# Turn off clock display during a scan cycle
  ScanShowClock = FALSE

# Get time and date from time server and send to the RealScan 7802
  NPIServer = 10.12.14.16

# Pacific coast time is 8 hours (480 minutes) later than GMT
  TZPffset = 480
```



## Appendix C – Creating a Slideshow

This section contains detailed instructions for creating a slideshow file. The easiest way to make a slideshow is to use a text editor such as Windows® Notepad to create the script necessary to run the graphics images (slides).

A **slideshow** is a file containing graphic images and a script (the instructions) on how these images are to be displayed. Slideshow files reside on the network in the servers' share directory and are 'pushed' to the displays by commands in the slideshow file and stored in the unit's RAM memory. The slideshow is executed from within the unit.

A **slideshow** file consists of a sequential list of references to graphics images in the order which they are displayed and the duration each image is displayed. The file uses Token = Value pairs to define the sources of the image files. Blank lines, lines starting with a single quote (') or an octothorpe (#) are ignored, as is white space around tokens or the equal sign separating the token and its value.

### Creating a Slideshow File

The **SLIDESHOW** section is a script that is interpreted by the RealScan 7802 as it is executed. Slideshow entries consist of two items of information: the slide image by sequence number and the duration the image is displayed in ticks where a tick = 1/100 second. A **FRAME** may be defined to equal a number of ticks; for example, **FRAME = 100** makes **FRAME = 1** second. Frame can be shortened to **F**, which can then be used as the duration (**F1** = 1 second or **F3** = 3 seconds)

**Caution:** Do not display a fixed image for long periods of time, this may cause a permanent latent (ghost) image on the LCD. The LCD warranty does not cover this effect.

This effect known as "imaging sticking" is caused by an ion charge buildup in the liquid crystal material and is inherent to all AMLCD displays. The LCD manufacturer recommends no longer than 5 minutes before changing the image, the purpose being to turn 'off' the pixels that are 'on' for a period of time. This prevents image sticking from occurring.

### Using Multiple Graphic Windows

Several graphic windows can be displayed on the screen simultaneously. Multiple window displays are specified from the slideshow file. Each window can be individually sized, positioned on the screen, and its display time and delay time to the next window selected.

Images used during multiple window presentations must be sized prior to running them in the slideshow file. It is also recommended that the same color palette be used for each of the images as the last palette loaded affects all previous images (windows) on the screen at that time. Images can be edited with any good commercial image-editing program such as CorelDraw, Corel Designer, Corel Picture Publisher, or Adobe Photoshop. A shareware program, ImageMagik, is provided on the CD-ROM. A full screen image is 320 x 240 pixels thus image windows need to be smaller than this size

depending on how the multiple windows are displayed. For example, if four non-overlapping images are used to fill the screen, each image needs to be 160 x 120 pixels. The images may also overlap each other. The minimum recommended image size is 160 x 120 pixels – any smaller than this gets difficult to see unless it's a logo or a name.

## Rules

1. Each of the 4 items can be on the same line, separated by commas or on different lines.
2. The text command **SLIDE** in an entry can be replaced with the percent sign for brevity. For example, **SLIDE15** would become **%15**.
3. Graphics image files (slides) must be in a 320x240 pixel non-interlaced GIF-89a format.
4. Image files (slides) for multiple window displays must be sized <320 x 240 pixels. All other image specifications apply.
5. The FTP server pushing the slideshow file to the RealScan 7802 must be set to binary mode.

## Section & Commands

### [SETUP]

Reference information for the rest of the file.

### FRAME

Number of ticks (1/100 second increments). Ex. FRAME = 100 makes FRAME = 1 second. Can be shortened to F in file.

### ROOT\_DIR

The root directory for graphics. The specified string is prepended onto the names of the graphics files in the show.

### [Files]

The list of graphics images (.GIF files) to be used in the slideshow.

### [Show]

Script for the slideshow. Controls the sequencing and timing for the slideshow.

### SLIDEn

The 'n' is replaced with the sequence number (which is not related to the order in which slides are displayed). Sequence numbers 1, 01, and 001 are the same sequence number. The value is the path to the file, relative to the root directory.

## Multiple Windows Commands

### Showtime

Number of ticks (1/100<sup>th</sup> second) the image is displayed.

### DelayNextImage

Number of ticks (1/100<sup>th</sup> second) before the next image is displayed.

### @X,Y

Top/Left position of the window (in pixels). X = 0 is the left edge and Y = 0 is the top edge of the screen display area.

## Example of Slideshow File

### Example 1

```
# Specify the root directory for the graphic image files
[SETUP]
ROOT_DIR = Graphics\MyShow
FRAME = 100

# Here are the image files. These all are 320 x 240 pixel GIF images.
[FILES]
SLIDE1 = FrontYard.GIF
SLIDE2 = WalkWay.GIF
%3 = Porch.GIF
%4 = FrontDoor.GIF
%5 = EntryHall.GIF
%6 = CoatCloset.GIF
%7 = FamilyRoom.GIF
%8 = Backyard.GIF
%9 = Kitchen.GIF
%10 = DiningRoom.GIF

# Here comes the slideshow
[SHOW]
SLIDE1, F10 - # Slide 1 display for 10 sec
SLIDE2, F5 - # Slide 2 display for 5 sec
SLIDE3, F5
SLIDE4, F5
SLIDE5, F5
SLIDE6, F2
SLIDE7, F5
SLIDE8, F5,
SLIDE9, F5,
SLIDE10, F100 - Slide 10 displays for 10 sec

# End - Slideshow will now start over
```

**Example 2****# Multiple Windows Display**

[SETUP]

ROOT-DIR = Graphics\MultipleWindows

FRAME = 500

**# Image files for multiple window displays.****# With four quarter screen images, size is 160 x 120 pixels.**

%11 = window1.GIF

%12 = window2.GIF

%13 = window3.GIF

%14 = window4.GIF

%15 = window5.GIF

**# Here's 5 overlapping windows displayed**

[SHOW]

# Format Example:

# %11 Showtime, DelayNextImage, @x,y

%11 1000,250 @0,0

# paints "window1.GIF" in top left corner of  
# screen. Window opens for 10 sec. 2½  
# sec. After start next window arrives.

%12 750,250 @53,40

# paints "window2.GIF". Top left corner at  
# 53 pixels from left edge, 40 pixels from top  
# edge. Window opens for 7½ sec. 2½  
# sec. after start, next window arrives.

%13 500,250 @106,80

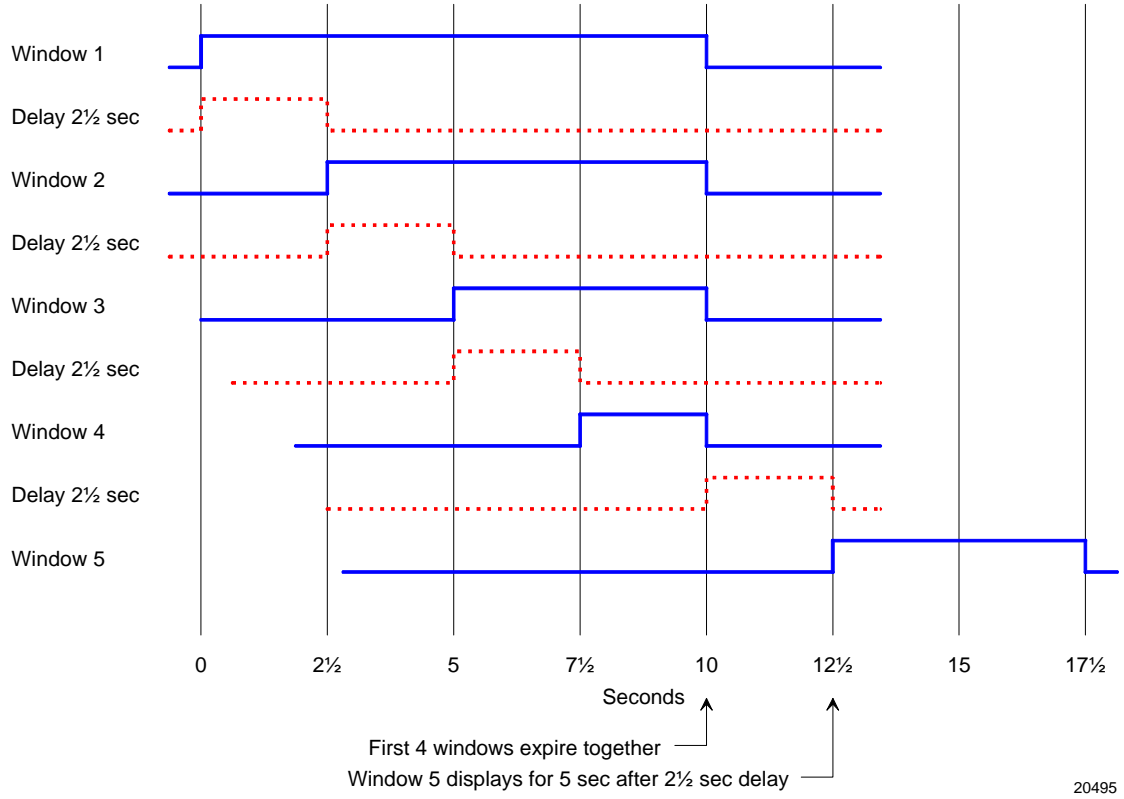
# paints "window3.GIF". Top left corner at  
# 106 pixels from left edge, 80 pixels from top  
# edge. Window opens for 5 sec. 2½  
# sec. after start, next window arrives.

%14 250,250 @160,120

# paints "window4.GIF". Top left corner at  
# 160 pixels from left edge, 120 pixels from top  
# edge. Window opens for 2½ sec. 2½  
# sec. after start, next window arrives.

%15 500 @80,60

# 4 prior images timeout. This image shows  
# for 5 sec. In the center of the screen then  
# times out. No other image is called as the  
# DelayNextImage parameter is not specified..



**Timing Chart for Multiple Window Example**



**Multiple Graphic Windows**



# APPENDIX D – Font and Language Sets

## Graphics (TFT) Display Models

The RealScan 7802 with TFT Display has one built-in default font set. The 16x32 pixel font contains the extended ASCII character set shown below (0-255) and can be displayed 20 characters per line. A different font can be downloaded when the unit boots by specifying it in the realscan.ini file. Only one font at a time can be in the unit.

While the RealScan 7802 can display characters outside of the usual ASCII range of 32-127, many libraries do not correctly handle those characters in normal text. Nominal mode transfers should be used to write text with the extended character set (128 - 255).

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣
18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
↑	!!	¶	\$	·	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
#	\$	%	&	'	(	)	*	+	,	-	.	/	0	1	2	3
52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68
4	5	6	7	8	9	:	;	<	=	>	?	@	A	B	C	D
69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85
E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102
V	W	X	Y	Z	[	\	]	^	_	`	a	b	c	d	e	f
103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119
g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w
120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136
x	y	z	{		}	~	À	Á	Â	Ã	Ä	Å	Æ	Ç	Ð	Ñ
137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153
ë	è	é	ì	í	î	ï	ä	å	æ	ç	ð	ñ	ö	ø	ù	ú
154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170
ü	φ	ƒ	¥	℞	f	á	í	ó	ú	ñ	ñ	ä	ö	ø	ù	ú
171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187
¼	½	¾	«	»	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬
188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204
J	J	f	l	L	L	T	t	-	+	f	f	ll	ll	ll	ll	ll
205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221
=	≡	±	±	±	±	±	±	±	±	±	±	±	±	±	±	±
222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238
▬	▬	α	β	γ	π	Σ	σ	μ	τ	ϑ	θ	ϑ	θ	ϑ	θ	ϑ
239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255
∩	≡	±	±	±	±	±	±	±	±	±	±	±	±	±	±	±

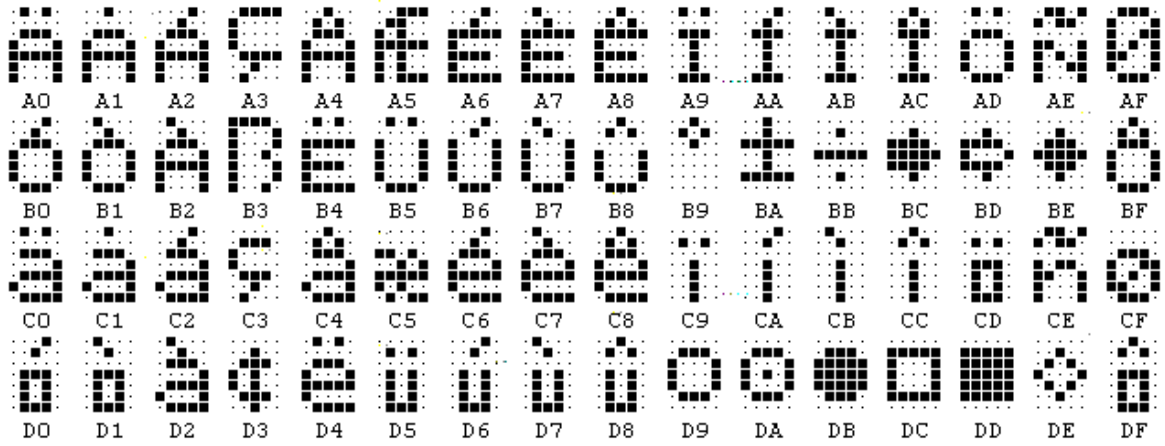
## Vacuum Fluorescent (V) Display Models

VF display models have the default built-in character set. The empty code positions from A0-DF can be filled with one of the language character sets.

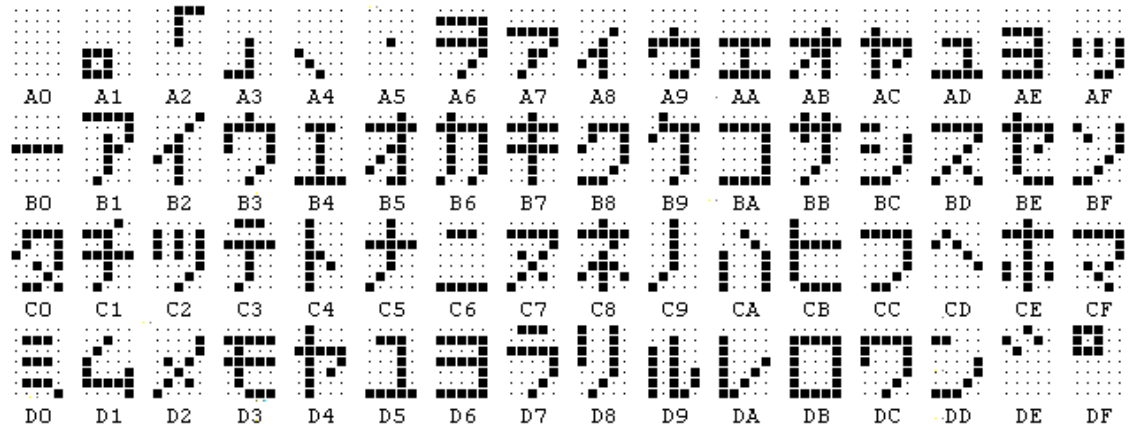
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10	11	12	13	14	15	16	17	18	19	1A	1B	1C	1D	1E	1F
20	21	22	23	24	25	26	27	28	29	2A	2B	2C	2D	2E	2F
30	31	32	33	34	35	36	37	38	39	3A	3B	3C	3D	3E	3F
40	41	42	43	44	45	46	47	48	49	4A	4B	4C	4D	4E	4F
50	51	52	53	54	55	56	57	58	59	5A	5B	5C	5D	5E	5F
60	61	62	63	64	65	66	67	68	69	6A	6B	6C	6D	6E	6F
70	71	72	73	74	75	76	77	78	79	7A	7B	7C	7D	7E	7F
80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F
90	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F
A0	A1	A2	A3	A4	A5	A6	A7	A8	A9	AA	AB	AC	AD	AE	AF
B0	B1	B2	B3	B4	B5	B6	B7	B8	B9	BA	BB	BC	BD	BE	BF
C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF
D0	D1	D2	D3	D4	D5	D6	D7	D8	D9	DA	DB	DC	DD	DE	DF
E0	E1	E2	E3	E4	E5	E6	E7	E8	E9	EA	EB	EC	ED	EE	EF
F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	FA	FB	FC	FD	FE	FF

### Default ASCII Character Set for VF Display





European Character Set for VF Display



Katakana Character Set for VF Display

A0	A1	A2	A3	A4	A5	A6	A7	A8	A9	AA	AB	AC	AD	AE	AF
B0	B1	B2	B3	B4	B5	B6	B7	B8	B9	BA	BB	BC	BD	BE	BF
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
D0	D1	D2	D3	D4	D5	D6	D7	D8	D9	DA	DB	DC	DD	DE	DF

Cyrillic Character Set for VF Display

A0	A1	A2	A3	A4	A5	A6	A7	A8	A9	AA	AB	AC	AD	AE	AF
											N/A	N/A	N/A	N/A	N/A
B0	B1	B2	B3	B4	B5	B6	B7	B8	B9	BA	BB	BC	BD	BE	BF
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
D0	D1	D2	D3	D4	D5	D6	D7	D8	D9	DA	DB	DC	DD	DE	DF

Hebrew Character Set for VF Display

# APPENDIX E – ProductInfo Protocol

**Abstract:** This specification describes a bi-directional message passing protocol called 'Product Information Protocol', that is designed especially for retail store price verifier applications. The protocol is designed to be generic and is not tied to any specific retail hardware device. Any network topology or configuration capable of using or connecting to TCP/IP can support ProductInfo based applications. The RealScan 7802 uses a subset of the ProductInfo protocol to meet its functionality requirements.

## Introduction

The ProductInfo Protocol provides a network-based messaging system whereby a client can obtain item price and description information about specific products. This information can be in any form such as text, graphic images, sound or combinations. The protocol is submitted as an RFC for the Internet community.

## Protocol Types

There are two forms of the protocol: trivial and nominal. The trivial version consists purely of <NUL> terminated text sent from the client to the host, or from the host to the client. From the client, it is a product query; from the host it is a text response. This may not support all the features of any particular device, so nominal mode must be used for advanced features.

The trivial and nominal cases can be distinguished by examination of the first byte; in trivial mode it always is a printable ASCII character – in nominal it is zero (unless you are sending individual packets in excess of 16MB). When the server receives a trivial-mode message it is interpreted as a product query; it optionally contains the client's identification and white space preceding the product code. When received by the client, it is interpreted as a single, text response to a query. In either case, the server closes sessions.

In the nominal case, messages consist of a length, followed by a token, possibly followed by more information as specified by the length and the token.

## Symmetry

The format is the same in both directions but the implementations at either end may or may not understand all the same tokens. In normal operation, the client opens a connection for each request, and keeps it open until the server instructs the client to close it. The client can also wait for the server to open a socket, to permit asynchronous operation. Either side may act as client, or server, or both.

## Errors

In the interest of robustness, both ends accept any message whether defined or not – invalid messages are discarded. A maximum reasonable message length may be used as a means to detect implementation bugs that could result in loss of synchronization; such errors terminate the connection. If the client detects a loss of synchronization it may

send an error token following re-establishment of the connection in order to log the error on the server. If the server detects this condition, it can log it directly.

Following a query, the client may choose to take an error action if it receives nothing from the server within a defined timeout period.

## Status Requests

The server can make capability queries and/or mode changes before, after, or in lieu of sending any response. The client may send capability messages regardless of whether the key name is known to the server; the server retains this information. When the server needs to know the value of one of these capabilities, it consults this retained information. If it is not known, a capability query may be sent and the server may wait a moment for a reply to be received. This reply asynchronously updates the server's information, and the value should be found there by a subsequent lookup following the brief interval required for the client to respond to the query. If it remains undefined, it can be assumed that the client declined to respond, most probably because that capability name is not known to it.

## Client Mode Changes

The notion of a mode setting is to permit the server to select between optional behaviors or parameters in the client. If the server wants the client to adopt a certain mode setting, it sends the command. The client does so, if applicable. If not, optionally, an error report may be generated in response. Mode values are set by using token-value pairs. Mode values can be queried by sending the mode name alone. Error reports are used primarily as a debugging tool. The string starts with an error number, optionally followed by white space and explanatory text.

## Packet Types

Packet Types		Data Types	
Function	Token	Function	Token
Terminate connection	TERM	No Operation	NOP_
Capability query	CAPQ	Display Text	TEXT
Capability response	CAPR	Special Text <sup>1</sup>	SPEC
Mode Set/Query	MDSQ	UNC	UNC_
Mode Response	MODR	URL	URL_
Error report	ERR_	File	FILE
Product query	PROD		
Data	DATA		
Registration	RGST		
Event	EVNT		

<sup>1</sup> The meaning of any Special Text is implementation-defined.

## Nominal Mode Packets

### General

Every nominal mode packet starts with a header containing the packet length and the token and may contain no other data. Packets are described below.

### Terminate Connection

Requires only the length and the token.

Byte #	Length				Token			
	0	1	2	3	4	5	6	7
	0	0	0	8	T	E	R	M

### Capability Query

The name of the capability to be queried is a string following the header. Capability names are case insensitive. The header for a SendUnitID capability query would be

Byte #	0	1	2	3	4	5	6	7
	0	0	0	19	C	A	P	Q

The query string "SENDUNITID" and a terminating <NUL> immediately follow the header.

### Capability Response

If the capability being queried is known, a response is sent. The name of the capability and its value is a string in token/value format following the header. The header for a SendUnitID response might be:

Byte #	0	1	2	3	4	5	6	7
	0	0	0	24	C	A	P	R

The response string "SENDUNITID = TRUE" and a terminating <NUL> immediately follow the header. There can be white space on either or both sides of the equals sign. The value starts with the first non-white space character. Values can be empty. If the capability query is a zero-length string, the RealScan 7802 responds with a <CR><LF> separated list of all supported capabilities and their types. If the query is a single asterix (\*), the RealScan 7802 responds with a <CR><LF> separated list of modes and their values.

**Mode Set/Query**

The name of the mode and its value are in a token/value string following the header. If the mode name alone is in the string, it is a query. Mode names are case-insensitive. The header for a SendUnitID query would be:

Byte #	0	1	2	3	4	5	6	7
	0	0	0	19	M	D	S	Q

The query string "SENDUNITID" and a terminating <NUL> immediately follow the header. To set SendUnitID, the string would be (e.g.) "SENDUNITID = ON", and byte 3 would be 22 instead of 19.

**Mode Response**

If the mode being queried of set is known, a response is sent. The name of the mode and its value is a string in token/value format following the header. The header for a SendUnitID response might be:

Byte #	0	1	2	3	4	5	6	7
	0	0	0	22	M	O	D	R

The response string "SENDUNITID = ON" and a terminating <NUL> immediately follow the header. There can be white space on either or both sides of the equals sign. If the mode query is a zero-length string, the RealScan 7802 responds with a <CR><LF> separated list of all supported modes and their types in the form "MODENAME = TYPE,SIZE" where TYPE is BOOLEAN, NUMBER, or STRING, and SIZE is the number of bytes in the STRING and only appears for STRING. If the mode query is the single-character string "\*", the RealScan 7802 responds with a <CR><LF> separated list of all supported modes and their current values.

**Error Report**

Error reports are primarily intended for debugging purposes. If enabled, error reports are sent if, for example, the host queries a capability that the client does not accept. Such error strings are in the format of a number possibly followed by white space and explanatory text. There is no assignment of numbers to specific errors, but the value zero should be reserved for non-error conditions. An "OK" error response could be:

Byte #	0	1	2	3	4	5	6	7
	0	0	0	13	E	R	R	_

The response string "0 OK" and a terminating <NUL> immediately follow the header.

**Product Query**

The product query string immediately follows the header. The header for a request about product ABC would be:

	0	1	2	3	4	5	6	7
Byte #	0	0	0	12	P	R	O	D

The query string "ABC" and a terminating <NUL> immediately follow the header. Mode settings can cause the client to send its unit ID and a <TAB> character before the product data, and/or add terminating <CR> and/or <LF> characters at the end of the query string.

**Data**

Data can be one of several types. The data-type token immediately follows the packet-type token, and the data follows after that. The header for a data packet to display the word "hi" would be:

	0	1	2	3	4	5	6	7	8	9	10	11
Byte #	0	0	0	15	D	A	T	A	T	E	X	T

The data string "hi" and a terminating <NUL> immediately follow the header.

**Registration**

Registration information consists of three sequential <NUL> terminated strings following the header. The first string is the unit ID, the second is the product-type identification, and the third is the IP address of the registering client. The header for a registration packet for "Entry", product type "RealScan 7802 200102161901", and IP address of "10.0.0.227" would be:

	0	1	2	3	4	5	6	7
Byte #	0	0	0	79	R	G	S	T

Each registration string and its terminating <NUL> immediately follows the header or the previous registration string. When a client receives a registration packet, it should respond by sending its own registration.

**Event**

A client can support up to 32 application specific events and can report the beginning and end of each event with a 100<sup>th</sup> second timer (which need not be supported). Events are mapped into a 32-bit word, in standard network order. Clients may permit the host to enable and disable individual events, or to select reports only for starting or ending events. The packet header for events from UnitID "Unit1" is:

Byte #	0	1	2	3	4	5	6	7
	0	0	0	26	E	V	N	T

Immediately following the header is: the 32-bit map of events that have started since the last report, the 32-bit map of events that have ended since the last report, a 32-bit timer value and a NUL terminated string that is the sending unit's UnitID. The bytes following the header if event zero started and event one ended at time 5 from UNIT1 would be:

0001 0002 0005 85787384 490.

## Client Requirements

### Capabilities

The following capabilities must be supported by a client:

**Timeout**

Changing the client's protocol timeout value is supported.

**SendUnitID**

Sending the unit's ID can be enabled and disabled.

**TrivialComm**

Controls the default communication method used for queries.

### Modes

The following modes must be supported:

**Timeout**

Hundredths of a second represented in a 32-bit value. This specifies the amount of time that a client waits, after sending an initial query, before it terminates the connection to the server and displays an error message (if no other response has been received). The default is 300 (3 seconds).

**TrivialComm**

Controls the communication method used for queries. The default is TRUE. The response to a trivial-mode query need not be in trivial-mode.

**SendUnitID**

Controls the inclusion of the Unit ID in a trivial mode query. The default is TRUE.

**SendError**

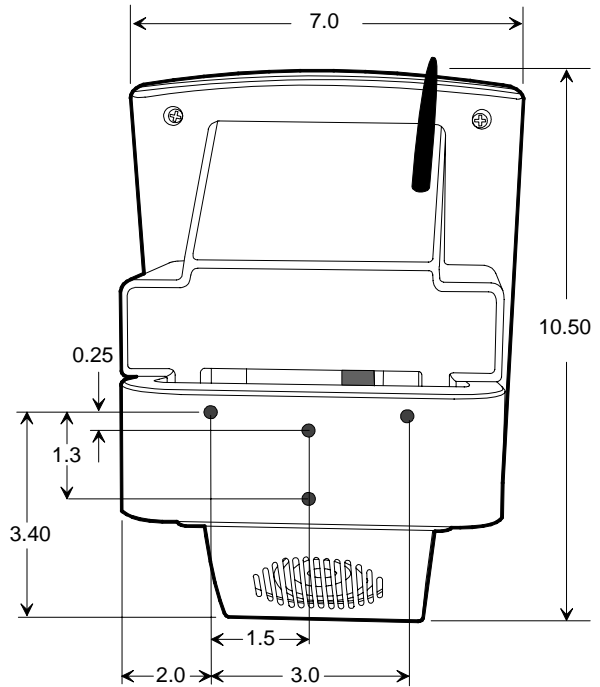
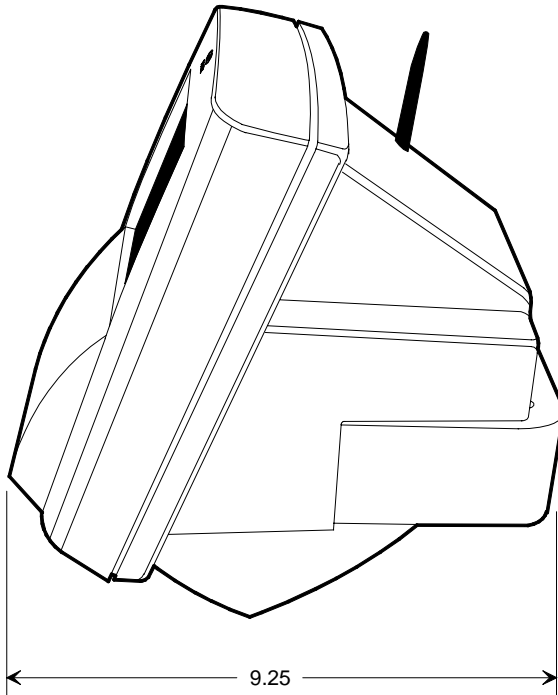
Controls the sending of error reports. The default is FALSE.

**SendResponse**

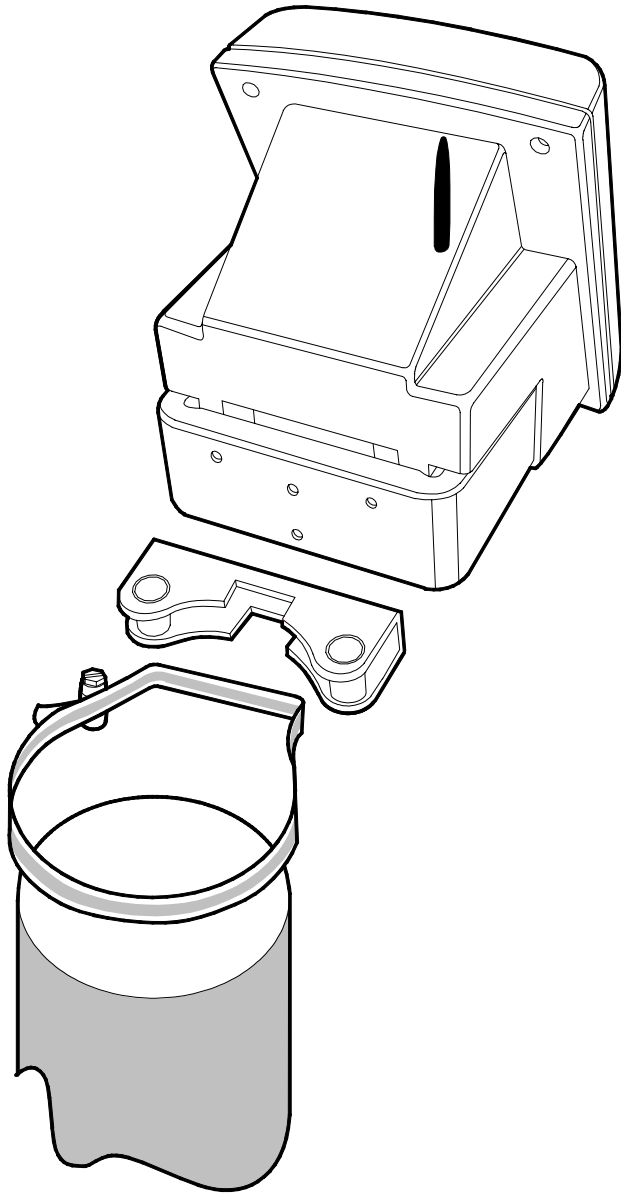
Controls the sending of responses to mode set commands. The default is FALSE.



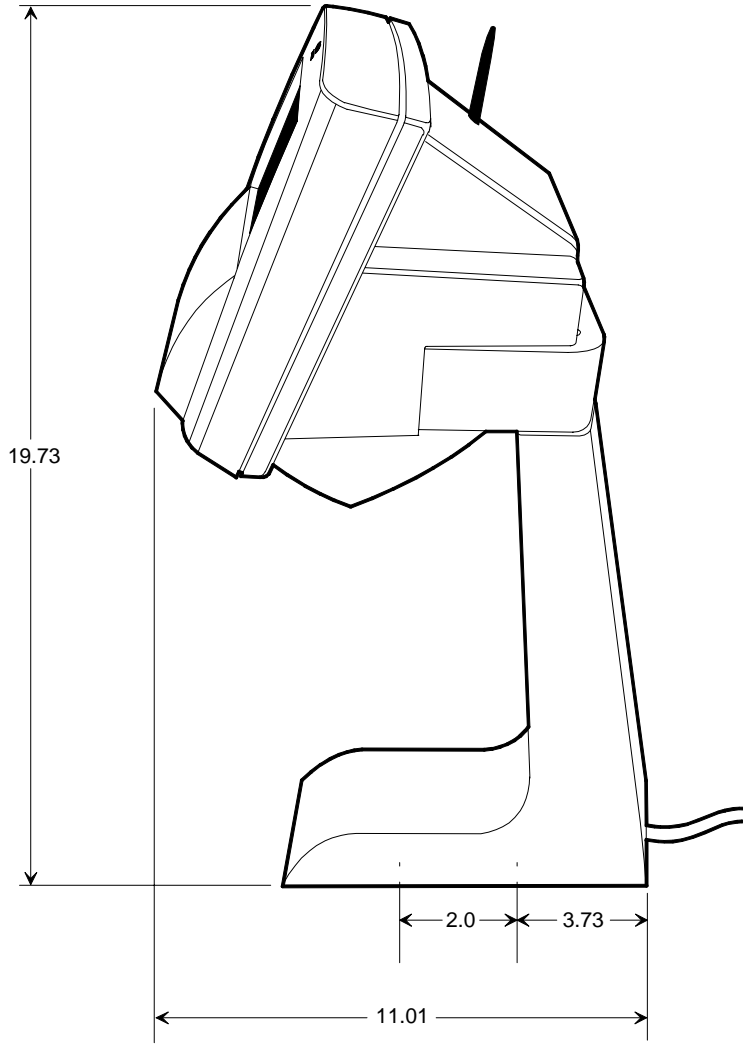
# Appendix F – Mounting Bracket Outlines



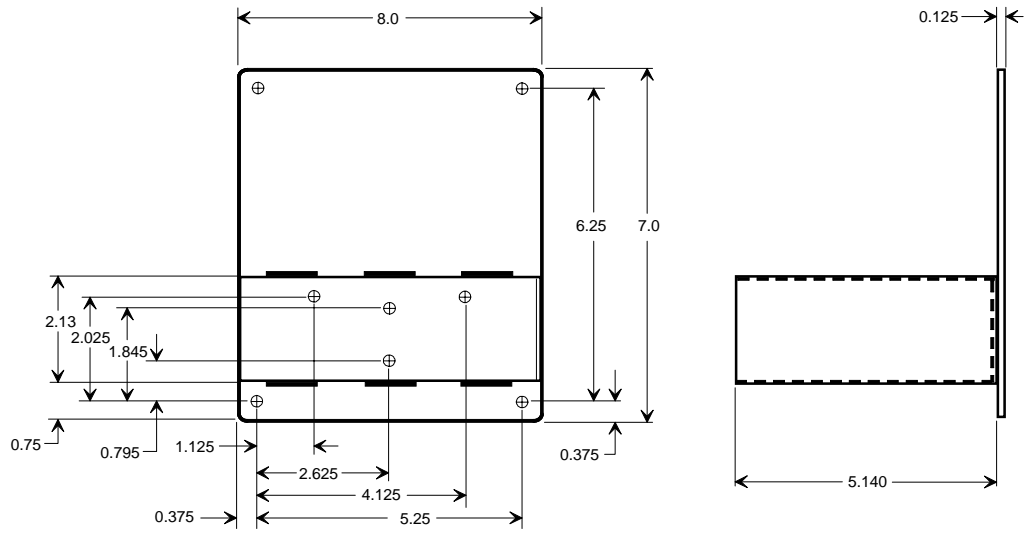
20028



20029



20030



20031

# Appendix G – Application Notes

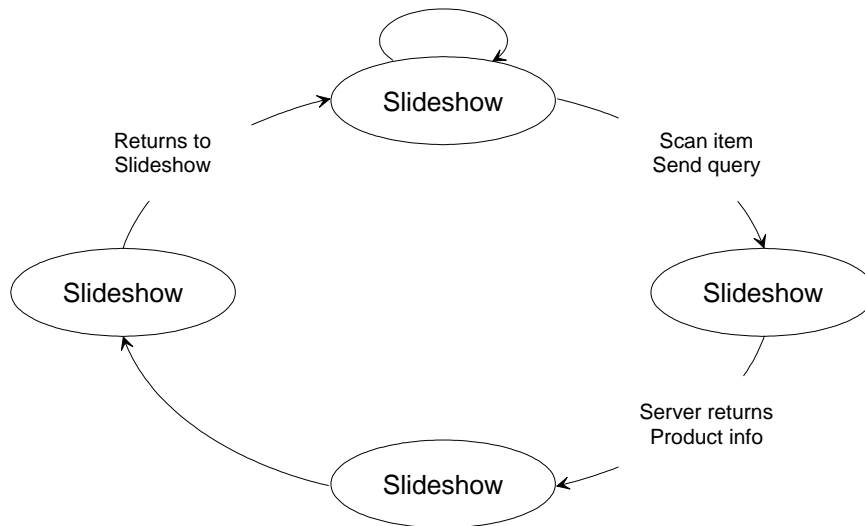
## Wallpaper

### Description

In its default configuration, scanning a barcode brings up a 'Checking...Please Wait' message in yellow characters on a blue background. When the server returns the price and description of the scanned item a new screen replaces the 'Checking...' screen. A user-defined image called 'wallpaper' can be displayed instead of the default message while waiting for the server to return the product information.

Wallpaper is a static image that is displayed immediately after a barcode scan and is used as a graphic backdrop for the price and description text that follows the barcode scan query. If wallpaper has to display a 'Please Wait' or similar message, that text must be embedded into the image (this is not to be confused with text over graphics or mixed mode operation). Another purpose for wallpaper is to provide labels for the four optional pushbutton switches. Again, these labels must be embedded into the wallpaper image.

Immediately following a barcode scan the slideshow is interrupted and wallpaper is displayed. The item price and description returned as a result of the barcode query is overlaid on the wallpaper image. This is true mixed mode (or text over graphics) operation. After a user settable timeout, the wallpaper and text are terminated and replaced by the slideshow until the next barcode scan.



20496

## Creating Wallpaper

A typical wallpaper might consist of a background image, for instance a company logo, with "Please Wait..." or a similar message in the center of the image and a 1-character high row at the bottom of the display containing text labels for the 4 switches (if the switch option was ordered). This is a single homogeneous GIF image created using a suitable image editing program that allows text to be embedded into an image. A shareware image-editing program "ImageMagick" is included on the SDK CD-ROM. Programs such as PC Paint, Corel Picture Publisher, Adobe Photoshop, Corel Draw, or Corel Designer can do this easily if you are more familiar with them.

**Note:** Remember, any image you create must be in 320x240 pixel, non-interlaced GIF89a format



Wallpaper Image

## Using Wallpaper

Once the wallpaper image has been created, copy it to the \pos\graphics subdirectory on the server (assuming \POS is the share directory). The preferred method of loading the wallpaper image into the RealScan 7802 is to include a line in the [Display] section of the realscan.ini file **MsgChecking = /graphics/wallpaper.gif** where wallpaper.gif is your wallpaper image file name. The wallpaper image is downloaded into RealScan 7802 the first time the scanner is used. An alternative way of loading the wallpaper is to enter the filename and path into the **MsgChecking** row in the **UnitConfig** program.

When a barcoded item is scanned and the wallpaper is displayed, price and description from the server must be sent back using mixed mode (text over graphics mode). The text is sent inside a TIB (text information block). The TIB is defined at the server in terms of # characters wide, # characters high and location in pixels (H,V) of the top left corner of the TIB. Character font, size, foreground and background colors must be defined and known before the TIB can be defined. The TIB boundaries (and the text inside the TIB) then overlay the wallpaper image, in the color defined as the background color.



### Text Over Wallpaper

## Text Over Graphics (Mixed Mode) Operation

When text is sent to the RealScan 7802 and overlays a graphic image being displayed without destroying the graphic, this is known as mixed mode (or text over graphics) operation. In this mode, text is displayed inside a text information block (TIB). The TIB is opaque and covers the image. As long as the TIB is smaller than the full 320x240 image size some of the image will show around the edges of the TIB. A TIB could be defined to be as small as 1 character wide x 1 character high and might only cover a small part of the image.

The RealScan 7802 can only have one 256-color palette at a time. When text is displayed any palette can be loaded. When text is displayed over a graphic, the palette from the graphic should be used, as it's easier to modify the text color than to deal with a corrupt appearing image. The best way to handle this is to have your art department use the same palette for all their work or reserve certain indices for certain color values.

## ***Default Text Setting***

The default text setting is 7 rows x 20 characters. At the default font and character size, the TIB covers the whole screen except for about 8 pixels top and bottom. If you do not change the default settings it appears mixed mode does not work correctly. NCR recommends you set the text to 2 rows or make the font much smaller before you start experimenting. Change it in the `realscan.ini` file.

Define the TIB using `modese` commands. The parameters are height in # characters, width in # characters, background color, foreground (text) color and the location of the top left corner TIB in pixels from left and top edges of the screen.

## ***Single TIB***

The normal mode of operation after an item is scanned is for the wallpaper to display, a text message (TIB) is sent by the host and overlaid on the wallpaper and then the host should hang up. If the host doesn't break the connection, the RealScan 7802 sits and waits for another TIB and appears to be hung. It eventually recovers (~30 min timeout), but the preferred way to ensure this doesn't happen is set the mode `SingleQTrans` to **TRUE**. This forces the RealScan 7802 to close the connection after the first TIB is received.

If you are sending multiple TIB's, then set **SingleQTrans** to **FALSE**; however, the host must ensure the connection is broken after the last TIB sent or the RealScan 7802 sits and waits.



# Appendix H – Regulatory Information

## Safety Warnings

The following safety warnings apply to the RealScan 7802 Price Verifier.

### *Servicing*

**Caution:** This product does not contain user serviceable parts. Only a qualified service technician should service this product.

### *Fuse Replacement*

**Caution:** For continued protection against risk of fire, replace only with the same type and ratings of fuse.

### *Power Supply Cord Used as Disconnect Means*

**Caution:** The power supply cord is used as the main disconnect device. Ensure that the socket outlet is located/installed near the equipment and is easily accessible.

**Attention:** Le cordon d'alimentation est utilisé comme interrupteur général. La prise de courant doit être située ou installée à proximité du matériel et être facile d'accès.

## *Grounding Instructions*

In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This product is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded in accordance with all local codes and ordinances. Do not modify the plug provided - if it will not fit the outlet, have the proper outlet installed by a qualified electrician. Improper connection of the equipment-grounding conductor can result in a risk of electric shock. The conductor with insulation having an outer surface that is green with or without yellow stripes is the equipment-grounding conductor. If repair or replacement of the electric cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal. Check with a qualified electrician or service personnel if the grounding instructions are not completely understood, or if in doubt as to whether the product is properly grounded.

Use only 3-wire extension cords that have 3-prong grounding plugs and 3-pole receptacles that accept the product's plug. **Repair or replace damaged or worn cords immediately.**

# Radio Frequency Interference Statements

## ***Federal Communications Commission (FCC)***

### **Note**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user is required to correct the interference at his own expense.

### **Information to User**

This equipment must be installed and used in strict accordance with the manufacturer's instructions. However, there is no guarantee that interference to radio communications will not occur in a particular commercial installation. If this equipment does cause interference, which can be determined by turning the equipment off and on, the user is encouraged to consult an NCR service representative immediately.

### **Caution**

NCR is not responsible for any radio or television interference caused by unauthorized modifications of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by NCR. Such unauthorized modifications, substitutions, or attachments may void the user's authority to operate the equipment. The correction of interferences caused by such unauthorized modifications, substitutions, or attachments are the responsibility of the user.

### **Wireless Units**

The antenna used for this transmitter must be installed to provide a separation distance of at least 20-cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End users and installers must be provided with antenna installation and transmitter operating conditions for satisfying RF exposure compliance.

## Canadian Department of Communications

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectriques édicté par le ministère des Communications du Canada.

### Wireless Units

The antenna used for this transmitter must be installed to provide a separation distance of at least 20-cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End users and installers must be provided with antenna installation and transmitter operating conditions for satisfying RF exposure compliance.

## Voluntary Control Council for Interference (VCCI)

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

16105

## International Radio Frequency Interference Statement

**Warning:** This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

## European Union Countries

Hearby, NCR Corporation declares that this RealScan 7802 is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

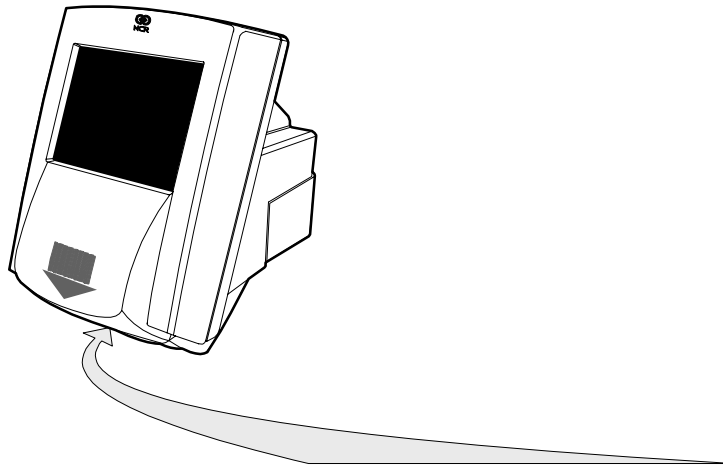
This device is intended for use in Austria, Belgium, Denmark, Finland, France (with frequency restrictions), Germany, Greece, Ireland, Italy, Luxembourg, Netherlands (with frequency restrictions), Portugal, Spain, Sweden, England (UK). This device is also authorized for use in Iceland, Norway, Switzerland, and Hungary.

## Laser Safety

The NCR RealScan 7802 Price Verifier is not intended for long-term viewing of the direct laser light. However, the unit is safe if used as it was intended.

**Note:** The NCR RealScan 7802 Price Verifier is a **CDRH Class IIa** and **IEC Class 1** Laser Product.

### Laser Safety Label



Class IIa Laser Product. Avoid Long-term Viewing of Direct Laser Light.  
 Appariel à Laser de classella Eviter Toute Exposition  
 Prolongée de la vue à la lumière laser directe.  
 Clase IIa Producto Laser. Trate De no ver directamente el Rayo  
 Laser por mucho tiempo. **(IEC CLASS 1 LASER PRODUCT)**

20252

### Laser Power

The NCR RealScan 7802 Price Verifier meets the following laser power requirements.

- Class 1 EN 60825-1: 1994 (Europäische Norm)
- Class 1 IEC 825-1: 1993 (International Electrotechnical Commission)
- Class IIA CDRH (Center for Devices and Radiological Health) FDA, U.S.A.

Following is the radiant energy of the laser light as applied to each of the specified requirements.

Standard	Measurement
Accessible Emission Limit (CDRH Calculation)	0.99 Milliwatts
Accessible Emission Limit (EN 60 825-1:1994+A11:1996 IEC Calculation)	0.81 Milliwatts

**Warning:** Use of controls or adjustments or performance of procedures other than specified herein may result in hazardous radiation exposure.

## Declaration of Conformity

<b>Manufacturer's Name</b>	NCR Corporation
<b>Manufacturer's Address</b>	NCR Corporation 2651 Satellite Boulevard Duluth, GA 30096-5810
<b>Type of Equipment</b>	Information Technology Equipment
<b>Model Number</b>	RealScan 7802

NCR Corporation, 1700 South Patterson Boulevard, Dayton, OH 45459, USA, declares that the equipment specified here conforms to the referenced EU Directives and Harmonized Standards.

<b>EU Directive</b>	<b>Harmonized Standards</b>
89/336/EEC (EMC)	EN 55022: 1994 + A1 (1995) + A@ (1997) EN 50082-1 Part 1: 1992 IEC 801-2: 1984, Severity Level 3 IEC 801-3: 1984, Severity Level 2 IEC 801-4: 1988, Severity Level 2
73/23/EEC (Low Voltage)	EN 60950: 1992 A1, A2, A3, A4, and A11 EN 60825-1: 1993 A1, A2

### Director of Quality Assurance

NCR Corporation  
RSD-Atlanta  
2651 Satellite Boulevard  
Duluth, GA 30096-5810  
U.S.A

Copyright © 2002 by NCR Corporation