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Intermec CN2 & CN3 Comparison

Introduction

The Intermec CN3 Mobile Computer is a small, rugged, ergonomically designed mobile computer built on the Microsoft® Windows® Mobile 5.0 operating system. It is lightweight, easy-to-use, and runs most software developed for the Windows Mobile platform, including stand-alone, client-server, and browser-based applications. The CN3 features an Intel PX270, 520Mhz processor, 256 MB Rom, 128 MB Ram, Mini SD Card Slot, 3.5" QVGA Screen, Qwerty or Numeric Keypads, Standard (2200 mAh) or Extended (4000 mAh) battery, USB, Modem or Ethernet connectivity (optional), WLAN (802.11 b/g) radio standard, WWAN (GPS, GPRS, EDGE) radio (Optional), GPS with Integrated antenna (Optional), Bluetooth Radio (Standard), 1D-2D Scanner or 1.3MP Color Camera options.

The Intermec CN2 handheld computer is an ergonomically designed handheld computer built on the Microsoft® Windows® CE .NET operating system. It is a semi-rugged, lightweight computer that runs client/server applications and browser-based applications. The CN2 features an Intel PX255, 400Mhz processor, 64 MB Rom, 64 MB Ram, SD Card Slot, 3.5" QVGA Screen, Numeric Keypad, Standard (2150 mAh) battery, USB connectivity, WLAN (802.11 b/g) radio optional, Bluetooth Radio (Standard), 1D Scanner.

Windows Mobile 5 (WM5) vs Pocket PC 2003 (PPC2003)

Both the CN3 and CN2 provide suitable environments for the development of .Net applications using Visual Studio 2005. WM5 does however have some significant advantages over the PPC2003 in terms of device performance. The following information explains some of the significant differences between the two operating systems.

Persistent File Storage

Persistent storage is a new RAM/ROM paradigm that changes the way memory is managed, and it is important news for both users and developers. The first Pocket PCs with persistent storage will be running Windows Mobile 5.0 software. Now, rather than using RAM for both storage medium and system memory, WM5 Pocket PCs will use RAM only for system memory and will use ROM for data storage. This configuration is more similar to the way a desktop computer works with its RAM and hard disk. Because all data on a device running Windows Mobile 5.0 software is saved in ROM, it is protected from loss if the battery is fully drained.

Why this protection from data loss is an advantage is obvious to the many PPC2003 users who have left their devices unused for more than a few days and lost all their data. On most such occasions, the data was probably synchronized with a desktop computer, but sometimes valuable data was forever lost. In addition, the effort of redoing all device settings (such as e-mail accounts), reinstalling all applications, and restoring the data was difficult. The absolute worst case with WM5 and persistent storage is that you cannot use the device until it is recharged, but the data will still be there. Because the persistent storage file system is not cleared when the power is cut (from a completely discharged battery or removal of the battery), each device manufacturer will provide some mechanism for deleting the data if you really want to. The mechanism will be different from device to device, but every device will have it.

Improved Battery Performance

A very interesting side effect of persistent storage is that it also affects battery life. Before Windows Mobile 5.0, the RAM was always using the battery whether the device was turned on or off. The power that the RAM used was also proportional to the size of the RAM. Keeping the data in a RAM of 128 MB requires twice the power of 64 MB. With data saved in ROM, there is less need for RAM. For most scenarios, 64 MB of RAM will probably be sufficient, and reducing the RAM from 128 MB to 64 MB will cut the amount of power that the RAM requires in half.

Before persistent storage, it was critical not to drain the battery completely because data would be lost, and that resulted in the "72-hour rule" for PPC2003. The idea was that if you discovered on Friday that the battery was critically low, the device should have kept the data until Monday morning when you returned to the charger. The critically low level would actually turn the device off to preserve the power for at least 72 hours. Because a typical fully charged battery holds about 1,000 milliampere hours (mAh) and 128 MB of RAM uses about 500 mAh to stay resident for 72 hours, the device needed to be turned off when the battery was only 50 percent used. With persistent storage, the battery can be used until it is fully drained, doubling the usage time in the current example.

The reason why you never see 256 MB of RAM in a Microsoft Windows Mobile 2003–based Pocket PC is that the device would run for a minute, detect that the battery was critically low, and turn off. With ROM, the power consumption is different. ROM uses the same battery power independent of size; a 32-MB ROM uses about the same power as a 1-GB ROM. This news opens the possibility of devices with much larger storage space and without a battery-life penalty.
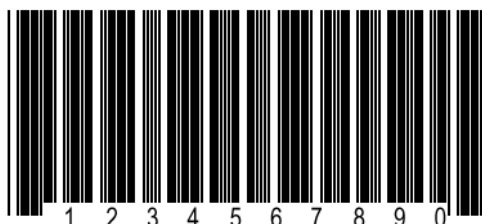
Communications Options

The communications options for the CN2 are limited. The CN2 has standard USB connectivity via a communications cradle to a host PC. Bluetooth is standard on the CN2 and allows for communication to other devices such as printers and barcode scanners. The CN2 can also be optionally fitted with an 802.11b/g radio for communications to a local WIFI based network.

The CN3 provides a much wider range of communications options. As with the CN2, the CN3 can communicate to a host PC via USB, but with optional cradle options, can communicate via Ethernet or Modem, eliminating the requirements for a localized host PC. WIFI communications is standard using the 802.11b/g radio. Bluetooth is also standard on the CN3 allowing for connection to printers and scanning devices. Where the CN3 excels is the Wireless Wide Area Network (WWAN) capabilities of the device. The CN3 can provide optional GSM phone connectivity for normal day to day mobile phone operation and optional GPRS / GPRS EDGE connectivity for data transfer over the mobile phone GSM network to a remote host. Additionally, the CN3 can also optionally have an integrated GPS receiver, which allows applications to receive GPS co-ordinates for field service applications or can be used with popular navigation software for in-vehicle usage.

Scanning Options

The CN2 has a standard 1D linear scanner built in and is capable or decoding all 1D symbologies. The scan engine is very aggressive and is capable of reading faded and partially damaged barcodes and is suitable for constant scanning applications

The CN3 is orderable with either a 2D Area Imaging scanner or a 1.3MP Color Camera. The 2D scanner is capable of scanning all 1D and 2D barcode symbologies and from any direction, eliminating the need to align the scanner and barcode. The scan engine is very aggressive and is capable of reading faded and partially damaged barcodes and is suitable for constant scanning applications. The color camera takes good quality digital images which can be used to verify product or service delivery.

1D – Code 39   2D – QR Code

Unique Micro Design Pty Ltd (A.B.N. 29-007-419-490)   Tel: +61-3-9582-7000
200 Wellington Road, Clayton VIC 3168 Australia   Fax: +61-3-9582-7001
www.umd.com.au   sales@umd.com.au

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Device Accessories

Both the CN2 and CN3 devices offer a range of accessories for device / battery charging and communications. Both offer single communications cradles with modem options. The CN3 cradle also offers Ethernet connectivity. Both also offer 4-way charging cradles and vehicle docks as well.

The CN3 comes standard with a hand strap, while this is an optional extra for the CN2 device.

Additionally, the CN3 also offers the ability to connect a "snap in" scan handle to allow the CN3 to act as a gun form factor. The CN2 does not offer this option.

The CN2 battery is a standard 2150mAh Lithium Ion battery. The CN3 also offers a standard 2200mAh Lithium Ion battery, but also offers and extended 4000 mAh battery for extended device usage.

Finally an additional accessory for the CN3 is the clip on Mag Stripe reader.

Performance

Both the CN2 and CN3 offer excellent performance using industry standard Intel XScale processors. These processors are backwards compatible with older ARM processors and will run applications designed for the ARM processors.

The CN2 and CN3 both also offer Industry standard memory configurations. The CN2 offers 64MB Ram / 64MB Rom. This does limit the amount of data storage space available for persistent storage of applications. The CN3 is now release with the highest memory configurations for devices in its class with 128MB Ram / 256 MB Rom.

Both devices offer SD card storage for secure loading and storage of data and applications.

Form Factor

The CN2 and CN3 both provide user friendly form factor which enables the most efficient usage by mobile workers. Both have 3.5" QVGA color touch screens.

The CN2 has a smaller form factor than the CN3 and is also a lighter device (337 grams). Only a numeric keyboard option is offered for the CN2.

The CN3 is heavier than the CN2 and ranges from 397 – 454 grams depending on battery configuration. The CN3 offers both numeric and qwerty keyboard options.

Unique Micro Design Pty Ltd   (A.B.N. 29-007-419-490)
200 Wellington Road, Clayton VIC 3168 Australia
www.umd.com.au

Tel: +61-3-9582-7000
Fax: +61-3-9582-7001
sales@umd.com.au

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Product Roadmap

The CN2 is a current Intermec product with no End Of Life (EOL) date available at this time. There are no plans within Intermec to provide additional development work on this device at this time, thus the current operating system, memory configuration and form factor is unlikely to change for the remainder of its lifecycle.

The CN3 is a current Intermec product with no End Of Life (EOL) date available at this time. The CN3 has recently has a memory upgrade and now supports 256MB ROM for extended persistent storage of applications. It is also expected that the CN3 will be available with Windows Mobile 6.0 by Q1 2008. Development work is continuing on this device and may in the future incorporate alternative scan engines, greater processor power and additional accessory options such as RFID readers.

In both cases, Intermec advises that parts for service will remain available for at least 3 years beyond the EOL date of the product.

Device Summary

Both the CN2 and CN3 are excellent choices for users and developers requiring mobile data capture applications. Below is a brief summary of the advantages and disadvantages of these devices:

CN2

Pros
- Smaller Form Factor
- Lightweight
- Good for Batch Applications, radio optional
- Standard Bluetooth
- Lower RRP - $1,800+ AUD

Cons
- No extended battery available
- Limited Persistent File Storage Space
- Hand Strap extra
- Limited communications options
- No scan handle available
- Limited scanning options
- Limited Keyboard options

CN3

Pros
- Extended battery available
- Larger Persistent File Storage Space
- Standard Hand Strap
- Standard Bluetooth
- Standard WiFi radio
- Optional GPRS and GPS radios
- Multiple keyboard options
- Scan Handle Available
- Additional connectivity features
- Faster Processor
- Ongoing development work by Intermec
- More scanning options (camera, 2D scanner)

Cons
- Larger Form Factor
- Heavier than CN2
- Higher RRP - $2,300 - $3100 AUD

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200 Wellington Road, Clayton VIC 3168 Australia
www.umd.com.au

Tel: +61-3-9582-7000
Fax: +61-3-9582-7001
sales@umd.com.au

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