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MOBILEDEMAND XTABLET T8600

INTEGRATED BAR CODE AND MAG CARD READERS ADD VALUE

By Conrad H. Blickenstorfer, Ph.D., June 2007

When MobileDemand announced the xTablet T8600 in the summer of 2006, RuggedPCReview.com did a thorough review of what turned out to be a very versatile rugged tablet computer (see initial review of the MobileDemand xTablet T8600). The Cedar Rapids, Iowa based provider of mobile automation systems managed to offer a

unique next generation rugged Tablet PC with a handy feature that set it apart from most of the competition: the T8600 had an integrated numeric keypad that allows for easy data entry. That may sound like a minor thing, but it is not. Ask anyone who spends a lot of time on the road, entering data at client sites or in a vehicle. You need a keypad.

At the time of our review, however, two

additional very promising features of the T8600 were not available yet -- a bar-code reader and imager, and a magnetic card stripe reader. We had seen pictures and prototypes, but not the actual peripherals. For the past few weeks we've had a production T8600 in our lab, gave it a good workout, and analyzed how MobileDemand had integrated the scanner and mag card reader.

Why are they so important? Because just like the integrated keypad added extra convenience and functionality to an already very good tablet computer, a scanner and card reader add even more. MobileDemand is not just a hardware seller; it is a provider of mobile automation systems for variety of industries whose needs and requirements the company knows very well. For existing and prospective MobileDemand customers, the ability to do it all with one device is key.

In the same respect, not all customers need this capability, and so making high performance components available as reliable, integrated options without adding to the size and weight of the computer is quite a task, and one that MobileDemand elegantly solved. Both the scanner and the magnetic card reader easily, yet very securely bolted onto the T8600 system unit.

The Scanner

For a bar-code scanner and imager, MobileDemand chose an industrial grade



Class 1 LED optical 742 x 480 pixel CMOS module capable of reading linear, stacked linear and matrix bar codes. It is a very tough add-on mounted in a 2 x 1.5 enclosure that sticks out about 1.4 inches. It is built to survive 2,500G of shock, operate within a temperature range of -22 to 122 degree Fahrenheit, and take up to 95% relative humidity, meaning it's more than capable of taking the same kind of abuse the T8600 is built to handle. The focal point of the scanner is about seven inches from its face plate, though we found it to reliably scan codes over a rather wide range. The design viewing angle is plus/minus 40 degrees. The reader is mounted on top of the T8600's mini-USB port and uses it for communicating with the computer. The picture below shows the imager decode the very large barcode on a container and read it directly into the Windows Notepad.

Since businesses are likely to encounter a wide variety of different bar codes in their operations, MobileDemand made sure its imager is capable of reading all of the following:

Linear:

Code 39 (the first alphanumeric code, very common outside retail)

Code 128 (high density code with three coding schemes; can use special characters)

Codabar (Self-checking code with narrow and wide bars)

UPS

EAN (European name for barcodes that correspond to the US UCC codes)

Interleaved 2 of 5 (Very common continuous numeric code)

Reduced Space Symbology

Code 93 (Variable length code with four different bar widths; allows full ASCII characters)

Codablock (a stacked barcode based on Code 128)



Above: The MobileDemand xTablet T8600 with imager and mag stripe reader

2-Dimensional:

PDF417 (A stacked code symbology with error correction and over 1KB of data possible)

Micro PDF417 (Based on 417, but smaller and less data)

MaxiCode (fixed 1"-square that uses hexagonal dots)

Data Matrix (Squares or rectangles made up of square dots)

QR Code (Usually a square with three finder patterns and high data density)

Aztec (A square code where data squares emanate out looking like a pyramid)

Aztec Mesa (An Aztec variation)

Code 49 (Stacked code with two to eight rows)

UCC Composite

Postal:

Postnet (US) (Used in the US mail system; there are three types)

Planet Code (Also used by the US mail; includes in/outgoing confirmation)

BPO 4 State

Canadian Post

Japanese Post (A clocked code where bars are of different length and thickness)

KIX (Netherlands) Post

OCR Fonts:

OCR-A (a character set used for optical character recognition)

OCR-B (similar to OCR-A, but easier for humans to read)

The Magnetic Stripe Reader

Adding a magnetic stripe reader essentially turns the xTablet into a mobile Point of Sale (POS) device. This can come in very handy in a variety of industries such as hospitality, transportation, entertainment, etc., where workers can capture information encoded on cards while roaming around rather than having to bring customers (or whoever needs a card scanned) to a fixed location. This means faster processing, less waiting, and thus savings and higher customer satisfaction.

The MobileDemand Mag Stripe Reader bolts on to the right side of the computer and is powered via the system's USB port. It has two and three track reading capability for cards that contain two or separate magnetic tracks. For a very detailed listing of magnetic stripe card formats, click here. A less involved explanation: The first track of a card contains 76 alphanumeric characters and holds the account number, name, expiration and ad-

ditional data. The second track holds 37 numeric characters and also includes the account number, expiration and discretionary data, but not the account holder name. The third track can have up to 104 numeric characters and can be used for currency codes, cycles, authorized amounts and such. The reader used on the T8600 can handle all of them.

Cards can be swiped in either direction. No third party software drivers are required and the reader will last up to a million passes. Dual color LEDs show whether a card has been read properly. As far as standards go, the MobileDemand mag stripe reader can decode ISO (International Organization for Standardization), ANSI (American National Standards Institute), CDL (Card Definition Language) and AAMVA (American Association of Motor Vehicle Administrators) types of cards. The reader also provides standard HID (Human Interface Devices) and USB keyboard emulation, making it easily accessible by application software.

I should mention that the mag stripe card reader does require a compromise: though it uses just one USB port and leaves the second one available, it does cover the T8600's CF card slot and also the audio-out jack. That may or may not be an issue.

The xTablet T8600 Revisited

MobileDemand's core business is beer wholesalers where its T8400 and T8600 tablets help to improve beer and beverage sales and delivery operations.

Most of the time, the xTablets are mounted inside beverage trucks using MobileDemand's very intelligently designed vehicle cradle system that provides power, a direct connection to a printer and even includes a fan to keep the tablet cool to the touch in the summer where it can get pretty hot inside a delivery vehicle.

There is not much to add to the comprehensive review we've done on this exemplary rugged Tablet PC when it was first announced, so let's just recap the basics:

What MobileDemand offers with the T8600 is a Tablet PC created in a team effort between MobileDemand's engineers and one of Taiwan's most experienced and respected OEMs. With a footprint of just 10.6 x 7.2 inches and being just over an inch and a half thick, the T8600 is compact and handy. A very cleverly designed and comfortable handstrap makes it easy to carry the device in one hand. Despite its very rugged construction it weighs less than five pounds with the high capacity battery installed. That battery, incidentally, packs almost 80 watt-hours and lasts essentially a full shift (well, it's rated at seven hours). The Ultra Low Voltage processor provides a perfect balance between more than adequate performance, excellent battery life, and fan-less operation. A shock-mounted 40GB hard disk provides ample storage space, and a maximum of 1.28GB of DDR2 RAM is plenty for any Windows XP application. The 8.4-inch display has an active Wacom-style digitizer, which



xTablet T8600

Type: Rugged pen tablet with keypad

Chassis: Magnesium alloy

Processor: 1.1 GHz or higher Intel Dothan

OS: Windows XP Tablet PC Edition

Memory: 768MB expandable to 1.28GB DDR2

Display: 8.4" SVGA 800 x 600 pixel enhanced brightness TFT

Digitizer/Pens: Wacom active/1

Keyboard: Backlit numeric keypad with additional keys

Storage: 40 GB shockmounted hard disk

Size: 10.6" x 7.2" x 1.65"

Ruggedness: IP54, -4 to 122 F, fully rugged humidity/vibration specs

Weight: 4.6 pounds incl. battery pack

Power: 77 WHr Lithium-Ion (7 hours or more)

Communication: Gigabit LAN, 56K V.92 Modem, 802.11a/b/g wireless LAN radio, optional Bluetooth, EV-DO, EDGE/GPRS/GSM radio, xMount in-vehicle system, 1D/2D imager/bar code reader with digital imaging capability

Interface: USB 2.0, mini-USB, audio/mic, RJ-11, RJ-45, RS-232, 1 PC Card Type II, 1 CF Card Type II, surface mount dock

Price: depends on configuration

Contact: MobileDemand
www.myruggedtabletpc.com





means the slender, lightweight pen does not need batteries. The screen has 800 x 600 pixel SVGA resolution, marginal for web browsing, but good enough for the usually custom-designed vertical market applications software. MobileDemand calls the display "enhanced brightness," but this is still a display meant to be used indoors or in vehicles as opposed to direct sunlight.



The T8600's backlit numeric keypad is a tremendous productivity booster. It has a standard numeric layout, but also provides a 4-way navigation diamond, Enter Tab, Backspace and, via an orange function key, Esc, screen rotation, keypad back-light operation, brightness and volume control. There is the Tablet PC "Security" button that issues a Alt-Ctl-Del that brings up the Windows Task Manager, and a yellow Quick Launch button that can be assigned to any application. If you use the imager, most likely you'll use it to trigger the scan.

Unlike many fully rugged computers, the xTablet T8600 has good onboard connectivity. Along the bottom are a standard 9-pin serial port, a multi I/O connector for the dock, and power. Along the top are a RJ45 jack for the T8600's gigabit LAN, a PC Card slot, a mini-USB port and the pen tether hole. On the right side are two USB ports, a modem jack, a CF Card slot and audio in/out jacks.

The T8600 is a computer that simply makes sense. It doesn't seek to be all things to all people. Instead, it is a tool for the job, and generally very specific jobs. The addition of the optional imager and magnetic strip reader makes the xTablet T8600 that much more useful and opens up a large variety of additional areas where this machine could be used.

Ruggedness

Any machine used in the field must be

able to withstand much more punishment and much harsher environmental conditions than a standard consumer-grade notebook or tablet. Making a machine semi-rugged or rugged is difficult enough, but to provide all the functionality and

connectivity this mobile computer provides and make it rugged, that is not easy.

The T8600 carries an IP54 ingress protection rating, which means it is sealed against dust and protected against water



spray from all direction. Thanks to its magnesium alloy housing and construction, extensive shock-mounting, and clever design, the machine can be dropped from three feet. In tests, it survived 26 such drops. It can also operate in a very wide temperature range between -4 and 122 degrees Fahrenheit.

On MobileDemand's suggestion, we actually did our own water ingress protection test. Yes, we placed the T8600 into a shower stall, cranked up the machine and played a video on it so we could see if the T8600 stayed alive. Then we gave it a good shower -- full blast -- and recorded it. Click on the screenshot to the left to see the ac-

tual test. Did the T8600 pass? You bet. So if a delivery truck driver needs to step out into hard rain, no big deal. The T8600 can take it, easily.

Summary

With the optional bar-code imager and magnetic stripe reader available, MobileDemand's xTablet T8600 becomes an even more compelling choice for a variety of vertical market applications. Field data collection is easier than ever thanks to the various input methods.

And the combination of a compact, handy mobile tablet computer with this kind of ruggedness and superb battery life is hard to find.

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