Psion Teklogix
NEO HDK

User Manual

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ISO 9001 Certified
Quality Management System

PSION TEKLOGIX

2100 Meadowvale Boulevard, Mississauga, Ontario, Canada L5N 7J9

http:\\www.psionteklogix.com

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1 INTRODUCTION

1.1 About This Manual

This manual provides guidance on creating customized hardware add-ons for all variants of the **NEO** hand-held computer. The manual consists of the following chapters and appendices:

Chapter 1: Introduction

gives an overview of the **NEO** HDK features, as well as information about this manual.

Chapter 2: Hardware Information

describes the hardware features of the **NEO** as they relate to the HDK.

Chapter 3: Software Information

gives an overview of the software elements of the **NEO** HDK, including API definitions and registry keys.

Chapter 4: Mechanical Considerations

gives details on mechanical considerations for attaching add-on devices to the **NEO** hand-held computer.

Appendix A: Resources

lists manuals, software and other resources, and where to obtain them.

Appendix B: Registry Keys

gives information on all registry keys relevant to the **NEO** HDK.

Appendix C: NEO Hand-Held Computer Specifications

lists the technical specifications of the **NEO** hand-held computer.

Appendix D: Hardware Development Kit License Agreement

provides the licensing agreement for creating add-on devices using the **NEO** HDK.

1.2 Text Conventions

Note: Notes highlight additional helpful information.

Important: These statements provide important instructions or additional information that is critical to the operation of the computer or other equipment.

Warning: These statements provide important information that may prevent injury, damage to the equipment, or loss of data.

1.3 Contents of the NEO HDK

The NEO HDK includes the following items:

- This manual.
- A 3D CAD drawing of the NEO back housing.
- A 2D drawing of the NEO back housing, showing anchor points and connector pads.
- C++ header and library files for device control programming.

The CAD drawing and header/library files are discussed in more detail in Chapter 3: “Software Information”.

1.3.1 Files in the HDK

Table 1.1 Files included in the NEO HDK

Filename		Description
neo_housing_and_bracket_asm.igs		3D CAD drawing of the assembled NEO, in IGES format.
neo_expansion_PAD_DETAILS.pdf		2D drawing showing the precise locations of the device anchor points and connection pads
NeoHDKLibrary.zip		Zip file containing the following:
	PsionTeklogixNeoHDK.hpp	C++ header file with NEO HDK namespaces
	PsionTeklogixCE500\NeoHDKLibrary.lib	C++ library file with NEO HDK APIs

1.4 Obtaining the NEO HDK

The HDK files are available for download on the Psion Teklogix Community website (http://community.psionteklogix.com). You will need an account on the website in order to download files. An account can be easily created by clicking on the **Join** link in the upper right corner of the home page.

To download the HDK files, click on the **Developer** link in the top bar of the web page, then click on the **Downloads** tab in the bar immediately beneath that.
Select the **Psion Teklogix HDK** directory from the directory list that appears. The **Hardware Development Kit (HDK) for NEO** appears as a selection within that directory.

1.5 About the NEO Hand-Held Computer

The **NEO** is a versatile, light-weight hand-held computer for use in light industrial environments. It comes in either “Connected” (with 802.11 Wi-Fi connectivity) or “Batch” variants (without 802.11 Wi-Fi connectivity). The operating system can be either Windows Mobile 6.1 Classic, or Windows CE 5.0 (Professional for Connected variants, Core for Batch variants).

For more details on the variants and options available for each, see Section 2.2 on page 9.

1.6 Developing Add-Ons for the NEO

The expansion port of the **NEO** is designed with two basic classes of expansion in mind. The first is a simple trigger. This has no active electronics and is actuated by a SPST switch closure, such as in the PX3035 pistol grip.

The second class of expansion devices does contain electronics and is intended for RFID readers and other possible add-on devices. Communication between the host unit and add-on devices will be done using USB signalling. Since the power requirement for the add-on devices is not yet determined, in order to reserve the most flexibility the applied power supply is derived directly from the unregulated battery, and can be switched on and off through software.

HARDWARE INFORMATION 2

2.1 Overview

This chapter gives an overview of the hardware of the **NEO** hand-held computer.

2.2 NEO Variants

The **NEO** hand-held computer is available in several variants. The table below lists the features of each variant by part number. The part number can be found on a label inside the battery compartment, on the left-hand side wall.

Windows Mobile 6.1 Classic is available as an option for the operating system on all variants of the computer. The version of Windows CE.Net 5.0 available as an option (Core or Professional) depends on the variant type of the computer (Batch or Connected), as shown in the following table.

Part Number	Variant Type	*Bluetooth*® Radio	802.11 Wi-Fi Radio	Keyboard	Scanner / Imager	CE.Net 5.0 Version	IE Browser
1081070 [1]	Batch	No	No	26-Key Numeric	None	Core	No
1917143 [1]	Batch	No	No	48-Key Alpha	None	Core	No
1081071	Batch	Yes	No	26-Key Numeric	None	Core	No
1917144	Batch	Yes	No	48-Key Alpha	None	Core	No
1081072	Batch	Yes	No	26-Key Numeric	1D Laser	Core	No
1917145	Batch	Yes	No	48-Key Alpha	1D Laser	Core	No
1081073	Batch	Yes	No	26-Key Numeric	1D Imager	Core	No
1917146	Batch	Yes	No	48-Key Alpha	1D Imager	Core	No
1917148	Batch	Yes	No	26-Key Numeric	2D Imager	Core	No
1917149	Batch	Yes	No	48-Key Alpha	2D Imager	Core	No
1081074	Connected	Yes	Yes	26-Key Numeric	None	Pro	Yes
1081075	Connected	Yes	Yes	48-Key Alpha	None	Pro	Yes
1081076	Connected	Yes	Yes	26-Key Numeric	1D Laser	Pro	Yes

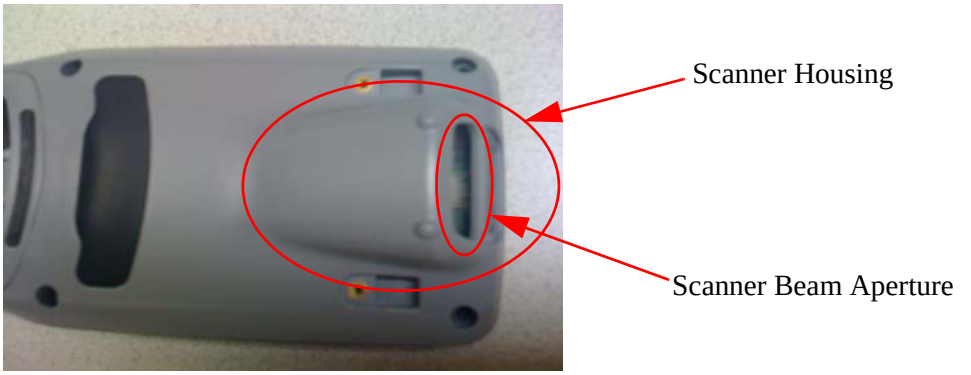
Part Number	Variant Type	*Bluetooth*® Radio	802.11 Wi-Fi Radio	Keyboard	Scanner / Imager	CE.Net 5.0 Version	IE Browser
1081077	Connected	Yes	Yes	48-Key Alpha	1D Laser	Pro	Yes
1081078	Connected	Yes	Yes	26-Key Numeric	1D Imager	Pro	Yes
1081079	Connected	Yes	Yes	48-Key Alpha	1D Imager	Pro	Yes
1917150	Connected	Yes	Yes	26-Key Numeric	2D Imager	Pro	Yes
1917151	Connected	Yes	Yes	48-Key Alpha	2D Imager	Pro	Yes

[1]The only variants that include no radio (*Bluetooth* or 802.11 Wi-Fi) are 1081070 and 1917143.
All other product variants include *Bluetooth* radios, and the Connected versions include 802.11 Wi-Fi radio as well.

2.2.1 Scanner Variants

The NEO hand-held computer comes standard with no internal scanner, but can be ordered with either a laser scanner, or a 1D or 2D imager for reading bar codes. There is a housing that protrudes between the top anchor points on the unit's lower casing where an internal scanner is installed, if required. If no scanner is installed, the same lower casing is used, but the scanner beam aperture will be fitted with an opaque black cover.

When designing add-on devices, be sure to take into account the dimensions of this scanner housing, and ensure that the add-on device does not block the scanner beam aperture.



2.3 The LED

A single tri-coloured LED is located on the upper-left corner of the **NEO**, just above the display. Default behaviour of the LED is described in the table below. The LED can also be controlled by application programs, using APIs found in the Psion Teklogix Mobile Devices SDK (see Appendix A: “Resources” for details on where to obtain this SDK).

LED Behaviour	Charge Status	Scanner State
Solid Green	Charge complete.	Successful decode
Fast Blinking Green	Charge in progress. Battery charged to less than 80% capacity.	N/A
Slow Blinking Green	Battery charged to greater than 80% capacity.	N/A
Solid Red	Temperature outside charge range (0 °C to 50 ° C / 32 °F to 122 °F).	Scan beam ON
Blinking Red	Battery is not charging. Battery fault.	Decode timeout

2.4 Battery & Power Management

The **NEO** is powered by a 3300 mAh lithium-ion rechargeable battery pack, and can also be connected to an external power source using a docking station or AC wall adaptor. When the **NEO** is connected to an external power source, the battery pack also charges.

When the battery output drops below 3.1 V, the hand-held will go into suspend mode to preserve information in volatile memory until the battery is recharged or replaced with a charged battery. If the battery output drops below 1.6 V, the hand-held will shut down completely, and any information in volatile memory will be lost.

Use only power sources recommended or sold by Psion Teklogix for the **NEO**.

2.5 Maintaining the NEO IP and Drop-Test Ratings

NEO has been designed and tested to meet IP54 and a 4´ drop rating to polished concrete (a total of 26 drops to include all corners, edges and faces). In some environments, it may be beneficial to use the Protective Rubber Boot (PX3062) to extend the product's durability.

Developers should ensure that any add-on peripherals are designed to achieve the required IP rating necessary for the intended usage environment, and to match the drop-test rating of the **NEO** alone.

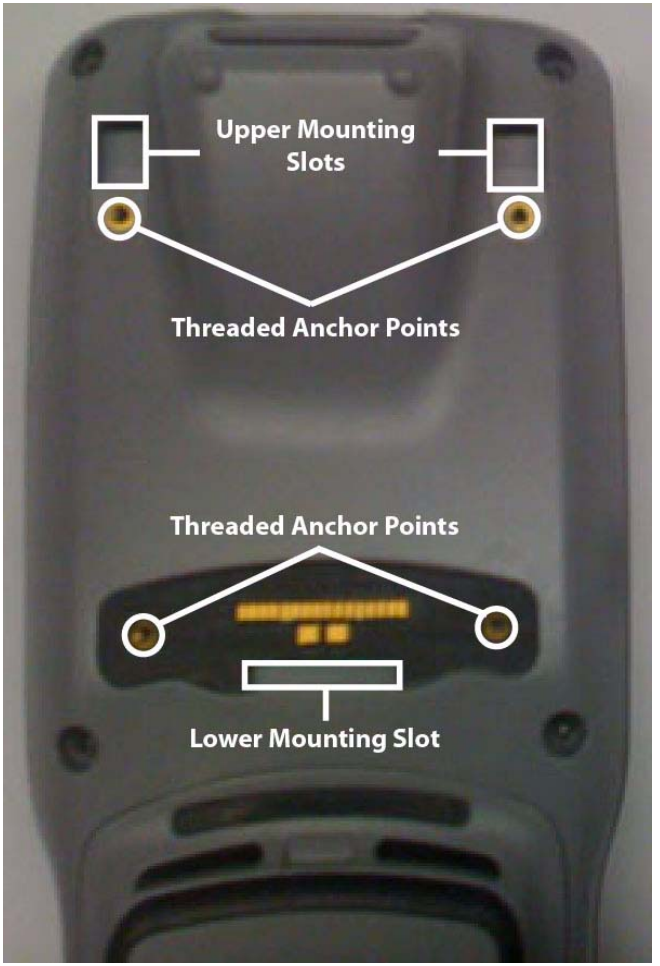
Note: The Expansion Connector Cover on the rear of the product is not required to achieve the IP54 rating.

2.6 Mechanical Description of the NEO Case and Anchor Points

The lower case of the **NEO** is made of injection-moulded Lexan EXL 9134 polycarbonate plastic, colour 7B5003 grey (as defined by Sabic/GE). The plastic texture is VDI 27.

Devices can be anchored to four threaded inserts (insert size M2 x 4), or snapped into place using the mounting slots located forward (2) and rear (1) on the unit. Exact locations and dimensions of the mounting points, and their positions in relation to the expansion port connector pads, can be found in the CAD file **neo_housing_and_bracket_asm.igs**.

Figure 2.1 **NEO** Expansion Port and Mounting/Anchor Point Locations



Designers should take care that attached devices:

- Do not obstruct the scanner beam.
- Do not interfere with removal and replacement of the battery cover and battery.
- Allow insertion into the single- or quad-charging stations, if required.

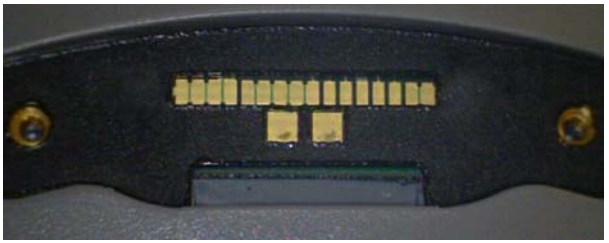
2.7 NEO Expansion Port

2.7.1 NEO Expansion Port Appearance

The **NEO** expansion port is on the back of the unit above the battery compartment, and is normally protected by a press-in rubber cover. The cover should be left in place if the expansion port is not in use.

Removing the cover reveals the expansion port, the two lower threaded anchor points, and the lower mounting slot. The expansion port comprises 16 small contact pads, and 2 larger contact pads. The pads are slightly recessed behind a black Mylar mask, which may need to be removed to ensure a proper connection (see Section 2.7.2 on page 14).

Figure 2.2 **NEO** Expansion Port



For detailed pinout information on these pads, see Section 2.7.4 on page 18.

2.7.2 Mechanical Description of the NEO Expansion Port

Electrical connection to the pins of the expansion port is made via exposed gold-plated pads. It is expected that connection between the port and the attached device will be made using sprung gold-plated fingers.

The recommended connector for attaching to the expansion port is a 16-pin connector from Hirose (HRS): product number **DF26A1.2-16CP-1.1V(51)**, part number **CL661-0003-8-51**.

To ensure proper connection with the expansion port contact pads, it may be necessary to remove the black Mylar® overlay that surrounds the expansion port. Remove the overlay by inserting a small flathead screwdriver between the overlay and the case and **carefully** lifting it off.

Figure 2.3 Expansion Port Label Removed

When designing connectors:

- Ensure that current is equally shared between the common pins for ground and battery.
- Design such that shock or vibration is not likely to force a disconnection of the DETECT pins.
- Ensure that connector pins are not likely to catch on the edges of the plastic mask during mounting or dismounting.

2.7.3 NEO Expansion Port Theory of Operation

The **NEO** expansion interface contains a USB host interface, a trigger input, a detect input, and a software-switched battery output.

The **USB host interface** can be used as the interface to USB devices. The USB power must be provided by the expansion device, by regulating the switched battery output. The Docking and Tether Port Service (DTS) enables the USB interface when an expansion device is detected.

The TRIGGER input signal is used to activate the built-in data capture scanner.

The DETECT input signal is sampled to detect an attached expansion device. An expansion module must pull the DETECT input low to indicate that it is attached. When an expansion device is detected, the *PCon* (peripheral controller) will allow the output power to be enabled. If the DETECT input goes high at any time, the PCon shuts off the output power, which cannot be reapplied until the attached device is detected again.

The **NEO** expansion port is designed with two basic classes of expansion in mind: **Trigger operation** and **USB operation**.

Trigger Operation

Trigger operation expansion devices provide a simple trigger to the **NEO**. These devices have no active electronics and involve a trigger switch.

When the user actuates the trigger, a PCon signal (EXP_~TRIG) is pulled to DGND. By default, and if a scanner is installed, the **NEO** begins scanning for a bar code. Software in the **NEO** provides the necessary de-bounce conditioning of the trigger signal on this input. The default trigger mapping can be configured through the Manage Triggers applet in the **NEO** Control Panel. Alternatively, the trigger mapping can be removed and the developer can use it for his own purposes through the Trigger namespace in the Psion Teklogix Mobile Devices SDK, available for download on the Psion Teklogix community website (http://community.psionteklogix.com).

USB Operation

USB operation expansion devices contain electronics and are intended for RFID readers and other active devices.

Communication between the host unit and add-on devices is done using USB signaling. Since the power requirement for the add-on devices is not yet determined, the expansion device's power supply is designed to derive from the VCC_BATT, rather than 5V for USB. This provides the most flexibility. The power can be turned on/off by the **NEO** PCon, as long as the attached device is detected.

The voltage range is between 2.7 V and 5 V; the add-on device should condition its input power to handle the input voltage range while still maintaining proper output voltage/current.

The switched power at the expansion connector is specified at a nominal 1000 mA. The current limit is set by a resistor on the **NEO** main logic board.

This current should be considered as peak and current use at this level should be restricted to 100 ms duration with a repetition rate greater than 5 seconds. The average current drawn through this interface should be 500 mA or less.

Reliable connections are necessary to provide power to the expansion module. It is expected that the connector surface will be cleaned before installation and sealed when in use. This will ensure that the multiple VCC and ground contacts effectively share the current.

When the USB-based device is attached to the expansion port it will be detected by a polling process running on the PCon. To detect the presence of expansion hardware, the PCon first asserts the pull-up resistor (P1.4), then reads the state of the EXP_DETECT signal (P1.3). A low state indicates that hardware is attached. When no devices are present, PCon will not turn on power to the expansion port. When a device is present, PCon will allow power to be turned on to the expansion port and will continue to monitor for device presence.

Once powered, the expansion device establishes a connection over USB and communicates its type, revision, etc. over USB.

Should a connected expansion device be detected as not present, power will be removed from the interface. For safety reasons, software prevents re-application of power until the device is detected once more.

When the **NEO** is docked, power to the expansion port is removed. Power can optionally be re-applied once the hand-held is removed from the dock, unless the expansion device has been detected as not present.

*Note: When using the PX3004 Quad charging station, the available current per charger slot is insufficient to allow the **NEO** to be turned on, to power the expansion slot, and to charge the battery, all at the same time.*

2.7.4 NEO Expansion Port Pinout

The **NEO** 16-pin expansion port connector has the following pinout:

Table 2.1 **NEO** Expansion Port Pinout

Pin	Signal Name	Type
1	GND	Ground reference
2	GND	Ground reference
3	USB-	Bidirectional
4	USB+	Bidirectional
5	GND	Ground reference
6	EXP_~TRIG	Input
7	EXP_~DETECT	Input
8	SW_VSYS_PWR	Power from computer
9	SW_VSYS_PWR	Power from computer
10	SW_VSYS_PWR	Power from computer
11	SW_VSYS_PWR	Power from computer
12	SW_VSYS_PWR	Power from computer
13	GND	Ground reference
14	GND	Ground reference
15	GND	Ground reference
16	GND	Ground reference

The pins are numbered from right to left, and the EXP_~TRIG (pin 6) and GND (pin 1) connections are also wired to the two oversize connector pads as shown:

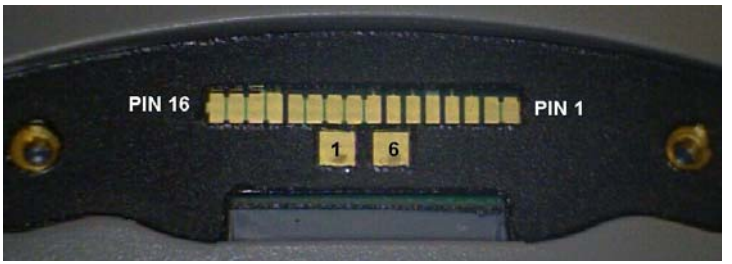
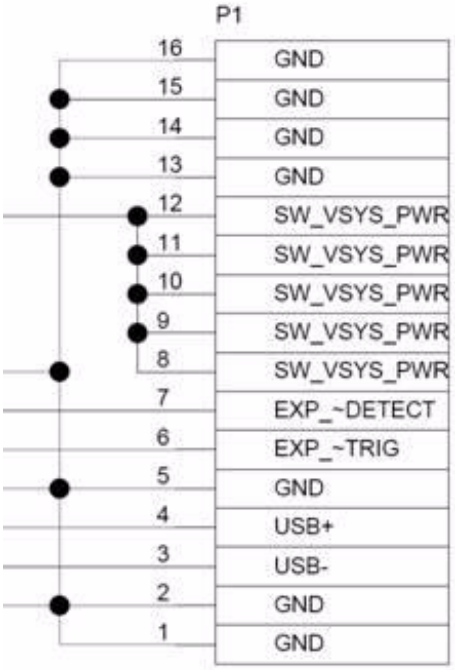


Figure 2.4 **NEO** Expansion Port Pin Schematic



SOFTWARE INFORMATION 3

3.1 Software Components of the NEO HDK

The **NEO** HDK includes the following 4 files:

- **81000197A.pdf** (this manual) – **NEO** HDK User Manual
- **neo_housing_and_bracket_asm.igs** – 3D CAD drawing of the assembled **NEO**
- **neo_expansion_PAD_DETAILS.pdf** – 2D drawing showing the precise locations of the device anchor points and connection pads
- **NeoHDKLibrary.zip** – C++ header and library files for device control programming

The 3D CAD drawing (IGES format) provides the physical shape of the NEO back cover and the anchor points where add-on devices can be attached. There are four threaded inserts on the underside of the unit that serve as anchor points for screw-on devices, as well as three recesses to accommodate snap-on devices. A close-fitting add-on device can be designed using this information.
The location and dimensions of the two large connection pads of the expansion port are also found in the 3D CAD drawing.

The 2D drawing (PDF format) gives precise locations and distances between the anchor points on the back of the **NEO**, as well as the location and layout of the 16 small electrical connection pads of the expansion port.

The HDK library file contains the C++ .hpp and .lib files necessary to write software controlling power to the expansion port. See Section 3.6: “NEO HDK API Reference” for more information on using these files.

3.2 NEO Expansion Port Power Control

The **NEO** peripheral controller (PCon) implements four power control states for the expansion port power. They are:

- **Off:** Power is turned off when this command is received.
- **On:** Power is turned on when this command is received, and will remain on, even when the hand-held is in suspend.
- **On with auto off:** Power is turned on when this command is received, and turned off when the hand-held suspends. The application is responsible for turning it back on after the hand-held resumes.
- **Auto on/off:** PCon turns the power on to the expansion port before booting/resuming the main processor, and turns it off when suspending.

There are two methods for managing the power output on the expansion interface: the application can allow the DTS (Docking and Tether Port Service) to manage the power, or the power can be managed directly through API function calls.

The method of power control is set through the following registry key:

Registry Key: [HKEY_LOCAL_MACHINE\Services\TekDTSvc\ExpansionPort\1\]

Registry Value: "Power"=dword

Managing Power Through DTS

To have DTS manage the power, set the **Power** registry value to one of the non-zero *TekDTSioctl_PortPowerState* enumeration values:

Table 3.1 TekDTSioctl_PortPowerState Enumerations

Value	Enumeration Name	Description
0	DtsPortPowerState_Off	Power disabled (Default).
1	DtsPortPowerState_On	Always powered.
4	DtsPortPowerState_AutoOnOff	Powered on when hand-held is running, powered off during suspend.

Note: Power states 2 and 3 are not supported by DTS in conjunction with this port.

DTS will read the registry value and update the expansion power state on computer reboot or resume.

Managing Power Through API Functions

To manage the power directly, set the **Power** registry value to *DtsPortPowerState_Off* (0), then use the following HDK API function calls:

ExpansionPortResult GetConnectState(bool &connected)
Determines if a peripheral is attached to the expansion port. The value of the **connected** boolean parameter reflects the presence or absence of a connected peripheral.

ExpansionPortResult SetPowerState(PortPowerState powerState)
Sets the power state of the expansion port. The **powerState** variable that is passed must be one of the values in the PortPowerState enumeration, as defined in the table below.

ExpansionPortResult GetPowerState(PortPowerState &powerState)
Determines the current power state of the expansion port. The **powerState** parameter will reflect the current state of the expansion port power, as defined in the PortPowerState enumeration table.

Table 3.2 PortPowerState Enumerations

Value	Enumeration Name	Description
0	PortPowerState_Off	Power disabled (Default).
1	PortPowerState_On	Always powered.
2	PortPowerState_OnAutoOff	Enable power now, disable power on suspend.
3	PowerPowerState_AutoOnAutoOff	Enable power now, disable power on suspend, re-enable power on resume.

All of the above API functions will return a value from the *ExpansionPortResult* enumeration, indicating the success or failure status of the operation:

Table 3.3 ExpansionPortResult Enumeration Values

Value	Enumeration Name	Description
0	ExpansionPortResult_Success	The function was successful.
1	ExpansionPortResult_ErrorFailure	The function failed.
2	ExpansionPortResult_ErrorInvalidParameter	One or more of the parameters was invalid.
3	ExpansionPortResult_ErrorNotSupported	The requested operation is not supported.

Note: During DTS initialization, the power state of this port will be set to whatever power state is set in the registry.

3.3 NEO Expansion Port USB Host Interface

The USB host interface is automatically enabled by the DTS (Docking and Tether Port Service) when the expansion device is detected. DTS can be configured to **not** enable the USB host interface through the following registry value:

Registry Key: [HKEY_LOCAL_MACHINE\Services\TekDTSvc\ExpansionPort\1\]

Registry Value: "ConfigTether"=dword

The value of **ConfigTether** should be set to one of the following values:

Table 3.4 ConfigTether Registry Value Settings

Value	Description
0	Disable USB Host Interface
3	Enable USB Host Interface

3.4 NEO Windows-Resident USB Drivers

NEO comes in two classes of hardware configuration: connected and unconnected (or "batch"). Connected versions of the **NEO** run Windows CE 5.0 Pro as the operating system, while the unconnected versions run Windows CE 5.0 Core. Both operating systems include drivers for operating USB devices through the USB interfaces on the device.

The docking interface on the base of the **NEO** has pins dedicated to USB communication, and can be used as either a USB host or USB device, via a partial USB On-the-Go interface (USB OTG). However, the USB interface pins on the expansion port can be used only as a USB host connection.

Without adding new drivers, both external USB host ports can be used to support external keyboards, bar code scanners, the Psion Teklogix USB-to-Serial adaptor, the Psion Teklogix USB-to-Ethernet adaptor, and USB memory keys. There is no support for a USB mouse, modem or printer.

3.5 NEO Serial (COM) Port Assignments

Table 3.5 Default **NEO** Serial (COM) Port Assignment

Serial Port	Default Assignment
COM3:	Console port (RX and TX data only, normally disabled)
COM4:	USB client port—used by ActiveSync.
COM5:	USB serial Port replicator
COM6:	Port replicator (not available but supported in driver)
COM7: / BSP1-9	Port replicator *Bluetooth* virtual devices
COM9:	Cradle modem
COM21	Internal scanner port
COM22	Internal *Bluetooth* radio.

3.6 NEO HDK API Reference

Getting Started

The **NEO** HDK software is composed of a static library (*NEOHdkLibrary.lib*) and a C++ header file (*PsionTeklogixNeoHDK.hpp*). No other module/file/DLL need be deployed to the device to implement functions specific to the **NEO** HDK.

Compiler Compatibility

The **NEO** HDK software components were compiled using Visual Studio 2005, but are compatible with Visual Studio 2008 (no cross CRT issues). However, they are not backwards-compatible with Microsoft's eMbedded Visual Tools suite.

API Documentation

Descriptions of the APIs exposed by the **NEO** HDK are described in detail in the *PsionTeklogixNeoHDK.hpp* header file in standard C/C++ comment format.

Limitations and Pitfalls

In order to use the **SetPowerState** function on a device that is newly attached to the expansion port, the DETECT pin must be grounded.

MECHANICAL CONSIDERATIONS 4

4.1 Overview

This chapter describes the physical connectors, space, and mounting of an add-on device.

4.2 HDK Mechanical Files

The **NEO** Hardware Development Kit provides the following mechanical models and drawings:

Filename	Description
neo_housing_and_bracket_asm.igs	3D CAD drawing of the back cover of the **NEO**
neo_expansion_PAD_DETAILS.pdf	2D drawing of the back cover of the **NEO**, with distances between anchor points

4.3 Installation

Add-on devices can be screw-mounted using the four threaded anchor points, or snap-mounted using the three mounting slots.

Important: If the add-on device connects to any of the 16 small connector pads, it should be screw-mounted. Snap-mounted devices should only connect via the 2 large connector pads.

To ensure proper connection with the expansion port contact pads, it may be necessary to remove the black Mylar overlay that surrounds the expansion port. To remove the overlay insert a small flathead screwdriver between the overlay and the case and **carefully** pry it off.

Figure 4.1 Expansion Port Label Removed

4.3.1 Screw-Mounted Devices

The four threaded anchor points on the back of the **NEO** are ISO Metric size M2, with a depth of 4mm. Devices attached using this method should use all four anchor points, with screws torqued to 0.226 N m (2.0 lb. in.).

Figure 4.2 Location of Screw-Mount Anchor Points

4.3.2 Snap-Mounted Devices

Add-on devices can be mounted using clips that snap into the three (two upper and one lower) mounting slots. This mounting method should not be used for devices that connect to any of the 16 small connector pads of the expansion port, as shock and vibration may cause inadvertent contact between adjacent pads. Use only the two large TRIGGER and DETECT connector pads (see Section 2.7: “NEO Expansion Port”) when attaching devices in this manner.

Figure 4.3 Location of Snap-Mount Anchor Points

APPENDIX A

RESOURCES

Most of the following resources are available on the Psion Teklogix Community website (*http://community.psionteklogix.com*). Website registration is required to log in to the site and obtain the materials.

A.1 Psion Teklogix Manuals

The following user manuals are available on the Psion Teklogix Community website, under **Knowledge Base > Product Manuals**:

- Psion Teklogix. 2009. **NEO** *Handheld Computer User Manual* (Part number 8100157)
- Psion Teklogix. 2009. *Mobile Devices SDK Developers Guide* (Part number 8100016)

A.2 Psion Teklogix Downloadable Software

The following software is available on the Psion Teklogix Community website, under **Service & Support > Software Downloads**:

- Psion Teklogix USB Setup utility

The following software is available on the Psion Teklogix Community website, under **Developers > Downloads**:

- **NEO** HDK (click on **Psion Teklogix HDK**)
- Mobile Devices SDK

A.3 Accessories

A complete list of **NEO** accessories is available at: *http://www.psionteklogix.com/products/handheld/neo_accessories.htm*.

APPENDIX B

REGISTRY KEYS

B.1 NEO Expansion Port Registry Keys

This appendix describes the registry keys that are used to affect and control devices attached to the **NEO** through the expansion port.

Registry values can be changed using the registry editor in the Tweak-it control panel applet.

NEO Expansion Port Power Control

This registry value is used to determine how power to the expansion port is managed:

Registry Key:
[HKEY_LOCAL_MACHINE\Services\TekDTSvc\ExpansionPort\1\]

Registry Value: "Power"=DWord

See Section 3.2: "NEO Expansion Port Power Control" for more details on setting this registry value.

NEO Expansion Port USB Host Interface

This registry key controls startup of the USB host interface:

Registry Key:
[HKEY_LOCAL_MACHINE\Services\TekDTSvc\ExpansionPort\1\]

Registry Value: "ConfigTether"=DWord

See Section 3.3: "NEO Expansion Port USB Host Interface" for more details.

APPENDIX C

NEO HAND-HELD COMPUTER SPECIFICATIONS

C.1 Hardware Specifications

Note: ***Performance specifications are nominal and subject to change without notice.***

Model Variants

- **NEO** Batch aka Unconnected (without 802.11 radio)
- **NEO** Connected (with 802.11 radio)

Physical Specifications

Dimensions:	168 mm x 64 mm x 34 mm (6.6" x 2.5" x 1.3") 56 mm (2.2") at grip
Weight:	275 g (0.6 lb.) including battery

Operational Specifications

Processor:	312 or 624 MHz PXA270
Memory:	128 MB SDRAM 128 MB Flash ROM

User Interface

Colour Touchscreen Display:	6.86 cm (2.7") diagonal Colour ¼VGA 240 x 320 Sunlight-readable transmissive TFT for outdoor use Adjustable, High reliability LED backlight QWERTY virtual option Easily replaceable and customizable bezel Passive stylus or finger operation
Keyboard:	48-key alphanumeric 26-key numeric LED backlit keypad Ergonomically designed for ambidextrous, one-handed operation
Indicators and Controls:	Tri-coloured LED indicates battery charge and scan status

Audio:	Built-in microphone and receiver (**NEO** Connected variants only) 85 db internal beeper Wireless headset via *Bluetooth*® (on equipped models)

Internal Expansion Slots

- One microSD memory card slot (user accessible)

External Connectors

- Docking Interface provides support for RS-232 serial, USB signalling, power, audio and dock recognition
- Expansion Interface

Power Management

- 3.7 V @ 3300mAh Li-ion rechargeable battery
- 10 hour battery operation at 5 scans, transmit and receive per minute
- Built-in gas gauge and performance monitor
- 3 power source options: battery, AC power, or automotive power supply
- System backup (up to 10 minutes) during battery swap
- 3 day real-time clock backup
- Adjustable battery allocation between system backup and runtime

Environmental Specifications

Operating Temperature:	-10 °C to 50 °C (14 °F to 122 °F)
Storage Temperature:	-20 °C to 60 °C (-4 °F to 140 °F)
Relative Humidity:	5% to 95% non-condensing
Rain & Dust Protection:	IP54, IEC 529
Drop Rating:	1.2 m (4 ft.), 26 drops to polished concrete
Shock & Vibration:	Random vibration 1 m^2s^3 @ 5 to 200 Hz, 0.5m^2s^3 @ 200 to 500 with duration of 30 minutes per axis (3 axes), Shock of 150 m/s^2 @ 11 ms and 300 m/s^2 @ 6 ms
ESD:	±8 kVDC air discharge, ±4 kVDC contacts

C.2 Software Specifications

Operating System

- Microsoft® Windows® CE 5.0 Professional (Connected variants)
- Microsoft® Windows® CE 5.0 Core (Batch variants)
- Microsoft® Windows® Mobile 6.1 Classic (all variants)

Programming Environment

- HTML, XML
- Psion Teklogix Mobile Devices SDK
- Psion Teklogix **NEO** HDK
- Java™ programming supporting JDK 1.2.2 or higher
- CE .NET, and C++ using Microsoft® Visual Studio® 2005 or 2008
- Standard Protocol APIs — Windows® sockets (WinCE)

Application Software

- Internet Explorer® 6 included with Windows® CE 5.0 Professional only
- Microsoft® Wordpad included with Windows® CE 5.0 Professional only
- Microsoft® ActiveSync
- Optional Psion Teklogix OpenTekTerm terminal emulation software, supports IBM 5250, IBM 3270, HP2392, ANSI and Teklogix Screen Subsystem (TESS) hosts
- MCC
- Naurtech
- Stay-Linked
- Psion Teklogix PTX Connect VoIP
- MCL

C.3 Radio Options

*Note: 802.11b/g and **Bluetooth** are available simultaneously.*

2.4GHz IEEE 802.11b/g Wireless Radio

802.11b:	1, 2, 5.5 and 11 Mbps Direct Sequence Spread Spectrum (DSSS)
802.11g:	6, 9, 12, 18, 24, 36, 48 and 54 Mbps Orthogonal Frequency Division Multiplexing (OFDM)

Configuration Options

- Psion Teklogix Wi-Fi (CCX Compliant)
- Windows® Zero Config (**not** CCX Compliant)

Bluetooth Class II, ver 2 Radio

- Supports Enhanced Data Rate (EDR) for up to 3 Mbps data rate
- Supports Advanced Frequency Hopping (AFH) for reduced interference with 802.11b/g radio.

C.4 Scanner Options

The **NEO** Connected variant has the following scanner options:

- 1D EV15 imager
- 1D SE955 laser scanner
- 2D HHP5000 imager

C.5 Accessories

Note: A complete list of accessories is available at http://www.psionteklogix.com/products/handheld/neo_accessories.htm.

Chargers and Docking Stations

- Desktop Dock (PX3001) charges main unit and spare battery. Micro USB port provides USB and Ethernet connection via appropriate cables.
- Quad Docking Unit (PX3004) supports simultaneous charging of 4 main units. Ethernet capability provided, with individual IP addresses for each main unit.
- Cradle Modem (PX3008) charges main unit and spare battery. Micro USB port provides USB host or client connection via appropriate cables. Built-in modem provides dial-up capability.
- Cigarette Lighter Adaptor (PX3056) supports charging via 12 - 24 VDC input when used with PX3054.
- Wall Charger Adaptor (PX3012) supports charging via 110 - 240 VAC input. International plug kit included. For use with PX3001, PX3008 and PX3054.
- Quad Battery Charger (WA3004) supports charging of up to 4 batteries at one time.

Cables and Adaptors

- Micro USB to STD USB Type A Male Cable (PX3058) connects Micro USB port to USB Client.
- Micro USB to STD USB Type A Female Cable/Dongle (PX 3053) connects Micro USB port to USB Host.
- HHT to RS-232 Adaptor (PX3050) attaches to main unit for serial support.
- HHT to Micro USB/DC Jack Adaptor (PX3054) attaches to main unit for USB support with external power.
- USB to Ethernet Cable (PX3052) connects Micro USB port to STD USB Type A Female, and STD USB Type A Male to Ethernet RJ45 (2 cable solution).

Carrying Accessories

- **NEO** Pistol Grip (PX3035)
- **NEO** Wrist Strap (PX3028)
- **NEO** Shoulder Strap (PX3022)
- **NEO** Hand Strap (PX3024)
- **NEO** Carry Holster (PX3020)
- **NEO** Belt Clip (PX3025)
- **NEO** Leather Carry Holster (PX3029)

C.6 Approvals

Safety:	CSA/UL60950-1, IEC 60950-1, EN60950-1
EMC:	FCC Part 15 Class B, EN 55022, EN 55024, EN 301 489
Laser:	IEC 60825-1, Class 2 FDA 21 CFR 1040.10 1040.11 Class II
Bluetooth®:	Version 2.0
RF (*Bluetooth* and 802.11b/g):	EN 300 328, FCC Part 15.247

APPENDIX D

NEO HDK LICENSE AGREEMENT

D.1 Hardware Development Kit License Agreement

Important: READ CAREFULLY:

This Hardware Developer Kit License Agreement ("Agreement") is a legal agreement between you and Psion Teklogix ("we"), the licensor of Psion Teklogix Hardware Developer Kit ("HDK") which is downloaded from the Psion Teklogix website, for developers of hardware expansion modules intended to be used with the Psion Teklogix handheld mobile devices.

By clicking on the "Accept" or other appropriate assent button and/or installing the HDK, you agree to be and are hereby bound by the terms and conditions of this Agreement. If you do not agree with this Agreement, we do not grant you a license to the HDK, and you may not install or use the HDK or any accompanying documentation.

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D.2 Grant of License

We hereby grant you and you hereby accept a non-exclusive, non-transferable, royalty-free license to use the HDK to develop hardware expansion modules to be used with the Psion Teklogix handheld mobile devices subject to the terms and restrictions set forth in this Agreement.

Except as explicitly set forth below, (i) you are not permitted to sell, lease or rent, distribute or sublicense the HDK or to use the HDK in a time-sharing arrangement or in any other unauthorized manner; (ii) no license is granted to you in the human readable code of the HDK (source code); and (iii) this Agreement does not grant you any rights to patents, copyrights, trade secrets, trademarks, intellectual property or any other ownership rights with respect to the HDK.

The HDK is licensed to be used on any personal computer and/or Psion Teklogix handheld mobile devices, provided that the HDK is used only in connection with your development of hardware expansion modules for use and compatible with the Psion Teklogix handheld mobile devices (the "Expansion(s)"). The HDK contains certain documentation, drawings, programs, files, specifications, datasheets and APIs. You may distribute the HDK in object code format solely as part of your Expansion. The HDK shall be distributed to your custom-

ers under the terms of your standard end user license agreement, provided it includes terms that are substantially similar to those described herein. You are required to include Psion Teklogix' copyright notices on your Expansion that includes the HDK.

D.3 Description of Requirements, Restrictions, Rights and Limitations

a. Distribution. Except as provided for in this Agreement, you may not distribute the HDK, in whole or in part, to any other third party.

b. Virus Program. You may not develop or knowingly incorporate any virus program that may be harmful to a computer or a network in conjunction with the HDK, or use the HDK for any other purpose as which may be harmful to a third party.

c. Assignment. You may not assign or transfer the HDK to a third party or allow a third party to use the same.

d. Reverse Engineering. Modification, reverse engineering, reverse compiling, or disassembly of the HDK is expressly prohibited.

e. Export Restrictions. You agree that you will not export or re-export the HDK, or any part or copies thereof, or any products utilizing the HDK in violation of applicable laws or regulations of the United States or the country in which you obtained them.

D.4 High Risk Activities

The HDK is not fault-tolerant and is not designed, manufactured or intended for use or resale as on-line control equipment in hazardous environments requiring fail-safe performance, such as in the operation of nuclear facilities, aircraft navigation or communication systems, air traffic control, direct life support machines, or weapons systems, in which the failure of the HDK could lead to death, personal injury, or severe physical or environmental damage (“High Risk Activities”). We specifically disclaim any express or implied warranty of fitness for High Risk Activities.

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D.9 Ending This Agreement

We may terminate this Agreement and your license immediately without notice if (a) you fail to comply with any term of this Agreement, or (b) your rights are assigned by you, by operation of law or otherwise. In such event, you must return or destroy all copies and com-

ponent parts of the HDK and documentation, as well as any other Psion Teklogix proprietary information in your possession, within fourteen (14) days of the date of termination. Any rights and obligations under this Agreement that by their nature continue after it ends, will remain in effect until they are completed.

D.10 General

The laws of the Province of Ontario and the federal laws applicable therein, excluding the conflict of laws provisions, govern this Agreement. If any provision of this Agreement is deemed invalid or unenforceable by any country, that particular provision will be deemed modified to the extent necessary to make the provision valid and enforceable, and the remaining provisions will remain in full force and effect. Failure by us to insist on strict performance or to exercise a right when entitled, does not prevent us from doing so at a later time, either in relation to that default or any subsequent one.

No modifications of this Agreement shall be effective unless in writing and approved by us.

You acknowledge that you have read this Agreement, understand it, and that it is the complete agreement between you and Psion Teklogix with respect to the subject matter hereof and supersedes all prior agreements, oral or written.

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