N2 Power Adapter Designer's Guide

Introduction

This document defines the criteria, both electrically and mechanically, that a power adapter for the N2 device must meet. The power adapter can be connected to the external power adapter jack, the internal serial slot or the Newton Interconnect Connector. When a power adapter is connected to any of these connections, it will supply to power the system and recharge batteries, if a rechargeable battery pack is used and identified by the system.

Electrical Requirements

The output specification need not be met below the range specified here except that the output voltage must never exceed 7.5 volts. If the adapter output is connected to a 6 Volt source at the output connector with no input AC power, the adapter will accept no more than 100 micro amps from the source.

DC Output Requirements

The output of the adapter must be designed to appear as a Thevenin equivalent source with an open circuit voltage of 6.75 to 7.50 volts and have a source resistance of 0.2 to 0.4 ohms over an output current range of 5 ma to 1300 ma.

Below 5 ma output current, the source voltage may not exceed 7.7 volts. The output from the adapter must be current limited to between 1.1 and 1.3 amps over the output voltage range of 4.5 to 7.0 volts.

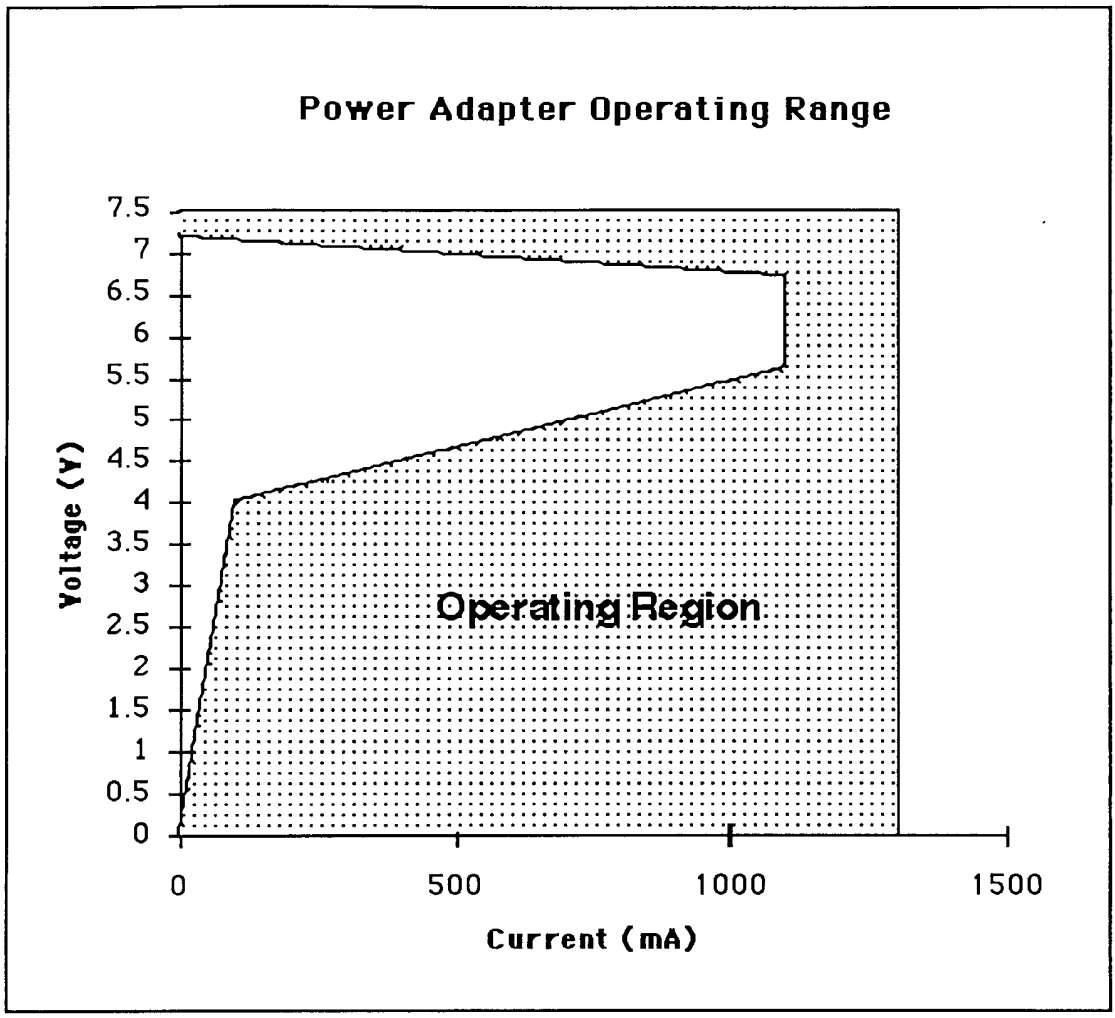
Below 4.0 volts output, the current limit may be folded back or stepped back without damage. The following table gives the acceptable output range for several load conditions:

Constant Voltage Mode			Constant Current Mode		
Output Current	**Voltage limits**		**Output Voltage**	**Current limits (mA)**	
Milliamps	min	max.	Volts	min	max
5	7.27	7.50	7.50	1100	1300
500	7.07	7.50	7.00	1100	1300
1000	6.87	7.50	5.60	1100	1300
1300	6.75	7.50	4.00	100	1300
			0.00	0	1300

Other Electrical Requirements

PARAMETER	NOM.	MAX.	UNITS
Ripple pk. to pk.		100	mV
Leakage Current VIN		0.75	mAmp
Instantaneous Over Voltage Protection	10.0	12.0	V

The following graph shows the acceptable operating region for a Power Adapter.



Mechanical Requirements

This section describes the Mechanical connections and pinouts for the three connections that can accept a Power Adaptor on the N2 system. Only one power adaptor may be connected on any of the connectors at a time.

Output Connection for External Power Adaptor Jack

When connecting a power adapter to the external Power Adaptor Jack, the Power Adaptor will require a female plug, EIAJ type 3, (Hosiden part number JXP4600-01 or equivalent). The pin out of the Power Adaptor Jack is as follows:

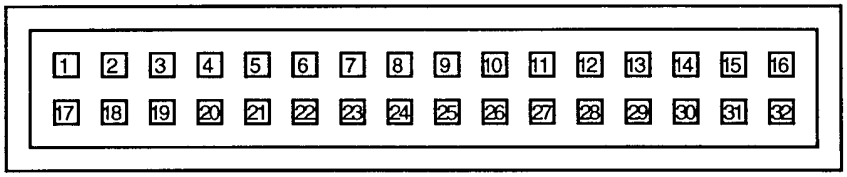
Output Connection for Internal Serial Slot

A power adapter can be connected to the N2 device on the Internal Serial Slot Connector. Connecting to the Internal Serial Slot requires a JAE 32 pin SMD header (part number IL-WX-32P*-VF-A1-B). Because the same signals on the internal Serial Slot connection can also be used as a power source, the N2 system must be informed that the device connected to the Internal Serial Slot will be providing a Power Adaptor.

To inform the N2 system, the device must present a 10 ma current limited voltage at the same level as unFusedPSVin to the signal PsAdptIn. This can be accomplished by placing a 100K Ohm resistor to this PsAdptIn and the voltage source. If this current limited voltage is not presented on this signal, damage to the N2 device will occur.

The Power Adaptor inputs reside on the following Internal Serial Slot pins.

Pin	Name	Function
10	PsAdptIn	External Power Adapter Present. Set to same voltage as unFusedPsVin with 10ma Current Limit
13	unFusedPsVin	Positive Power Adapter Voltage
14	unFusedPsVin	Positive Power Adapter Voltage
15	unFusedPsVin	Positive Power Adapter Voltage
16	PsGND	Power Adapter Ground
31	PsGND	Power Adapter Ground
32	PsGND	Power Adapter Ground



Internal Serial Slot Peripheral Connector

(Align pin 1 with • marking on Main Logic Board)

Output Connection for Newton Interconnect Connection

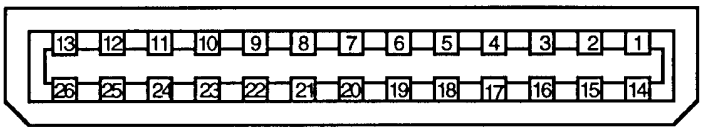
A power adapter can be connected to the N2 device on the Newton Interconnect Connector. Connecting to the Newton Interconnect Connector requires a JAE 26 pin custom Plug. This plug is available in locking and non locking configurations. The non-locking connector configuration should be used when designing accessories that require smooth connection and have other mechanical means of securing the accessory to the N2 device, such as a dock. The JAE part

number for the non-locking connector is RX04-26P1-SF1.

The locking connector configuration should be used when designing accessories that require a more secure connection, such as a cable. The JAE part number for the locking connector is RX04-26P-SF1.

The Power Adaptor inputs reside on the following Newton Interconnect pins:

Pin	Name	Function
2	PowerInPos	Positive Power Adapter Voltage
3	PowerInNeg	Power Adapter Ground
14	PowerInPos	Positive Power Adapter Voltage
15	PowerInNeg	Power Adapter Ground
16	PowerInNeg	Power Adapter Ground



Newton Interconnect Peripheral Side