VPX55-3BEHU 3U VPX Holdup Module

Up to 875 Watts, Ruggedized

VITA 62 Back End Plug-in Holdup Module, Conduction-Cooled

Made in the USA
Certified Small Business

Description

NAI's VPX55-3BEHU is capable of providing up to 875 Watts of Holdup time and plugs directly into a standard 3U VPX chassis with a VITA 62 power supply slot. This off-the-shelf solution is compatible with VPX standards.

NAI's VPX55-3BEHU stores energy from the VS1 (+12Vdc output) provided by either of NAI's 3U DC/DC converters (either +28Vdc or +270Vdc input); providing 50 milliseconds of holdup time at up to 875 Watts. The charge time is approximately 0.5 Seconds. During this time there will be a 10% increase in the power supply load. Once charged, the unit is in a standby state, drawing minimal power to drive supervisory circuits.

The Backend Holdup unit converts the 12V VS1 Output from the power supply to a higher voltage storage reservoir within the backend unit. The unit monitors input voltage and VS1 output voltage. When input power in not sufficient, the energy from the reservoir is converted to drive VS1. This approach maximizes efficiency, reduces power losses and has no affect on EMI performance.

There is continuous BIT running to monitor the reservoir voltage, the input voltage and VS1 voltage.

A redundant solid state switch will disengage the module if a failure is detected. It can be programmed to auto reset and restart.

The VPX55-3BEHU is designed to meet standard 3U VPX (VITA62) mechanical requirements at up to 1.4" width and is an ideal companion unit for all NAI VPX 3U DC/DC Converters. This COTS Holdup Module is specifically designed with NAVMAT component derating for rugged defense and industrial applications. It is also designed to meet the many harsh environmental requirements of military applications.

Features

- Ideal for rugged VPX power applications
- Standard VPX-compatible connector per VITA 62
- Compatible with System Management Bus per VITA 46.11
- Off-the-shelf solution for VITA 46.0 and VITA 65 systems
- Supports VITA standard I/O, signals, and features
- Works universally with either NAI +28Vdc input or +270Vdc input VPX Power Supplies
- Wedgelock, Plug-in Design (conduction cooled)
- Holdup
- Auxiliary Output
- BIT
- Optional Current Share

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Electrical Specifications

DC Input Characteristics	
Input	+12Vdc (Provided by VS1 of the power supply)
DC Output Characteristics	
Main DC Output Power	+12Vdc @ up to 875 Watts maximum
Auxiliary Output	+3.3Vdc @ 1.0 Amp
Holdup Time	Up to 875 Watts of primary power for up to 50 milliseconds.
Holdup Cap Replenishment Time	0.5 seconds.
Signals	
Vin_OK*	Monitors whether input voltage is within nominal range.
INHIBIT* / ENABLE*	
Geographical Addressing	As defined in VITA 46.
Synch	Synchronization between multiple units
Current Share	Allows multiple Holdup units to share system load. Optional, refer to ordering information.
Protocol	Per VITA 46.11 System Management Bus.

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Physical/Environmental Specifications	
Temperature Range	Operating: -40°C to +85°C at 100% load (temperature measured at card edge, conduction via card edge); Storage: -55°C to +100°C per VITA 47 CC4)
Reliability (MTBF)	100,000 hours, Ground Benign at 50°C Baseplate
Altitude	1,500 feet (below sea level) to +60,000 feet per VITA 47
Shock	30 G's each axis per MIL-STD-810G, Method 516.6, Procedure 1; Hammer shock per MIL-S 901, ½ sine wave per VITA 47 OS2
Acceleration	6 G's per MIL-STD-810G, Method 513.6, Procedure II
Vibration	Per MIL-STD-810G, Method 514.6, Procedure 1A
Humidity	95% at 71°C per MIL-STD-810G, Method 507.5 (non-condensing)
Salt & Fog	Per MIL-STD-810G, Method 509.5
Sand/Dust	Per MIL-STD-810G, Method 510.5
Fungus	Per MIL-STD-810G, Method 508.6
ESD	15 kV EN61000-4-2 per VITA 47
Enclosure	Aluminum housing to aluminum baseplate
Dimensions	Standard 3U, VITA 62, varying widths See Mechanical Layout
Finish	Chemical film IAW MIL-DTL-5541, Type II, Class 3
Interface	See Connector Specifications below
Weight	2.0 LBS max (varies by Pitch)

All specifications are subject to change without notice.

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Pinout Designations (P1)

Pin #	Name	Pin #	Name
P1	-DC_IN	B5	GA1*
P2	+DC_In	C5	SM0
LP1	CHASSIS	D5	SM1
A1	SYNCH_OUT*	A6	SM2
B1	NVMRO	B6	SM3
C1	GA2*	C6	RESERVED
D1	RESERVED	D6	VIN_OK*
A2	RESERVED	A7	VS1_SHARE
B2	HU_FAIL*	B7	VS2_SHARE
C2	HU_INHIBIT*	C7	RESERVED
D2	HU_ENABLE*	D7	SIGNAL_RETURN
A3	SYNCH_IN*	A8	VS1_SENSE
B3	+12V_Aux	B8	RESERVED
C3	RESERVED	C8	RESERVED
D3	RESERVED	D8	VS1 SENSE_RTN
A4	+3.3Vdc_AUX*NOTE 1	P3	(SOSA VS1) +12Vdc_Out**
B4	+3.3Vdc _AUX*NOTE 1	P4	Power Return
C4	+3.3Vdc _AUX*NOTE 1	P5	Power Return
D4	+3.3Vdc _AUX*NOTE 1	LP2	OPENCON1
A5	GA0*	P6	+12Vdc_Out

***NOTE 1: When not using the +3.3Vdc_Aux Output, leave these pins disconnected on backplane**

****NOTE 2: When paired with a +12Volt only or +12Volt Heavy power supply only**

Connector Specifications

Unit Option Code Dash #'s	Unit Connector	Backplane Connector
00	2314578-2; TE Connectivity	2309390-1; TE Connectivity
01	2313442-1; TE Connectivity U.S. Patent No. 11,276,948 Enhanced High Voltage	2313441-1; TE Connectivity U.S. Patent No. 11,276,948 Enhanced Enhanced High Voltage

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I²C Communication

Supports VITA 46.11 Tier 2 dual bus

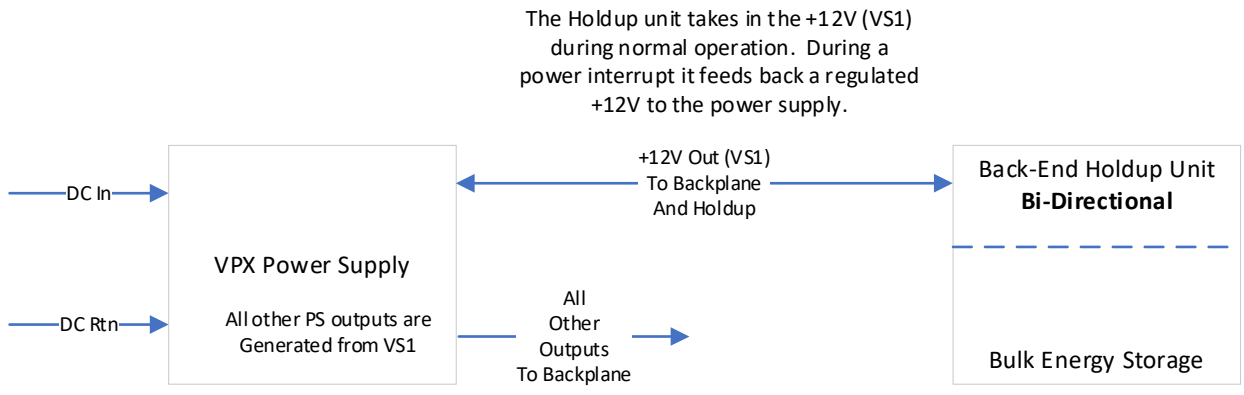
Provides all mandatory Sensor Data Record (SDR) and all required FRU data as well as real-time analog data

1. **Hardware Interface.**
   Electrical interface is based on I2C parameters at 100 kHz. The backplane or I2C master controller should provide pull up resistors on SDA and SCL lines to a 3.3V rail.
2. **Address.**

The I2C Address is 7 bits. Default base address is 0x20. *GA0, *GA1, and *GA2 provides 3 LSB's for the address. The *GA pins have pull-up resistors internal to the power supply to 3.3V. When left open, the address will be 0x20, with all three pins grounded the address will be 0x27, see table below.

Pin			I2C Address
*GA2	*GA1	*GA0	
Pin C1	Pin	Pin	
High	High	High	0x20
High	High	Gnd	0x21
High	Gnd	High	0x22
High	Gnd	Gnd	0x23
Gnd	High	High	0x24
Gnd	High	Gnd	0x25
Gnd	Gnd	High	0x26
Gnd	Gnd	Gnd	0x27

VPX55-3BEHU SIMPLIFIED OPERATION DIAGRAM



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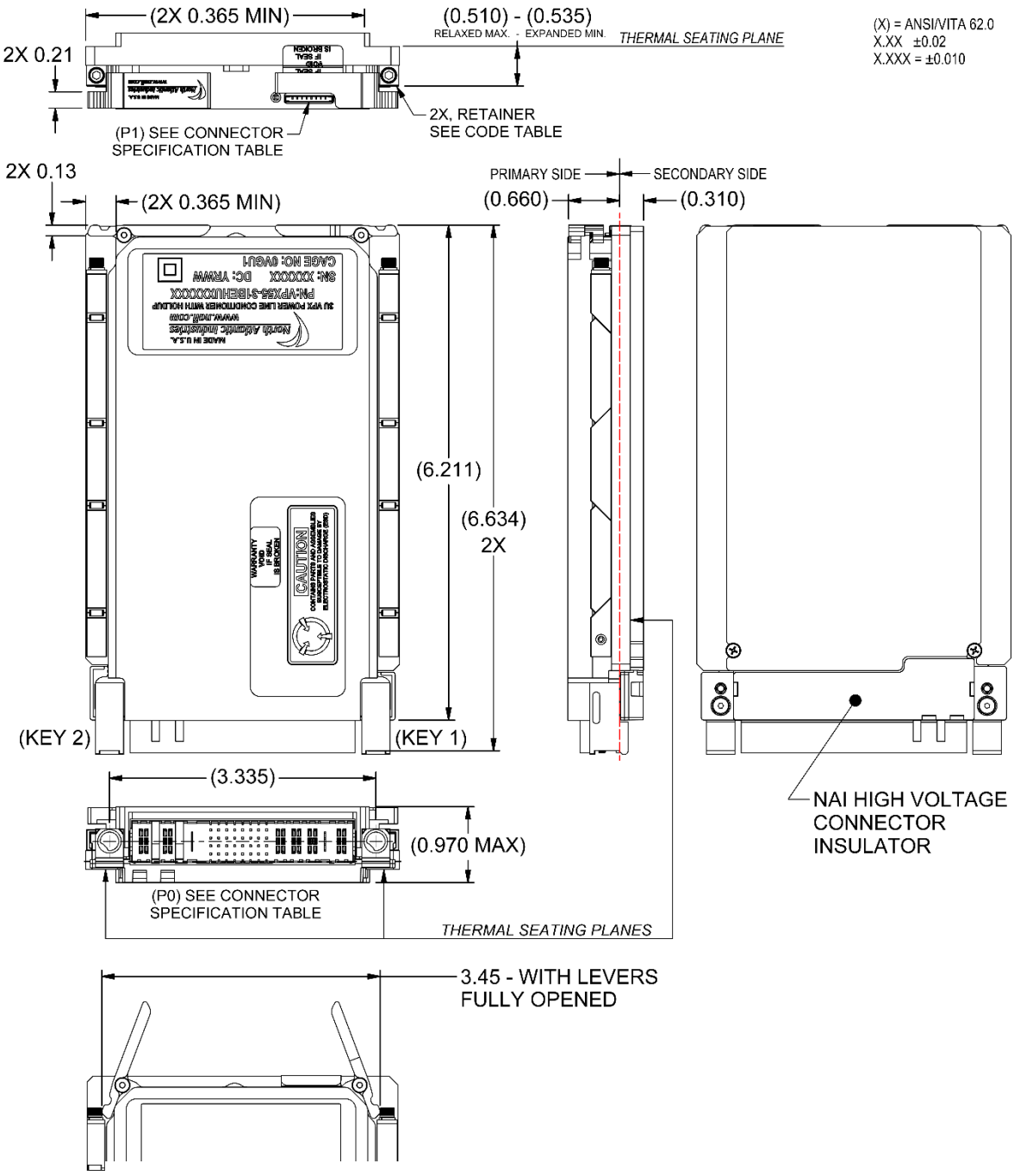
MECHANICAL LAYOUT VPX55-31BEHU, 600 WATT
STANDARD VITA 62.0 PLUG-IN MODULE



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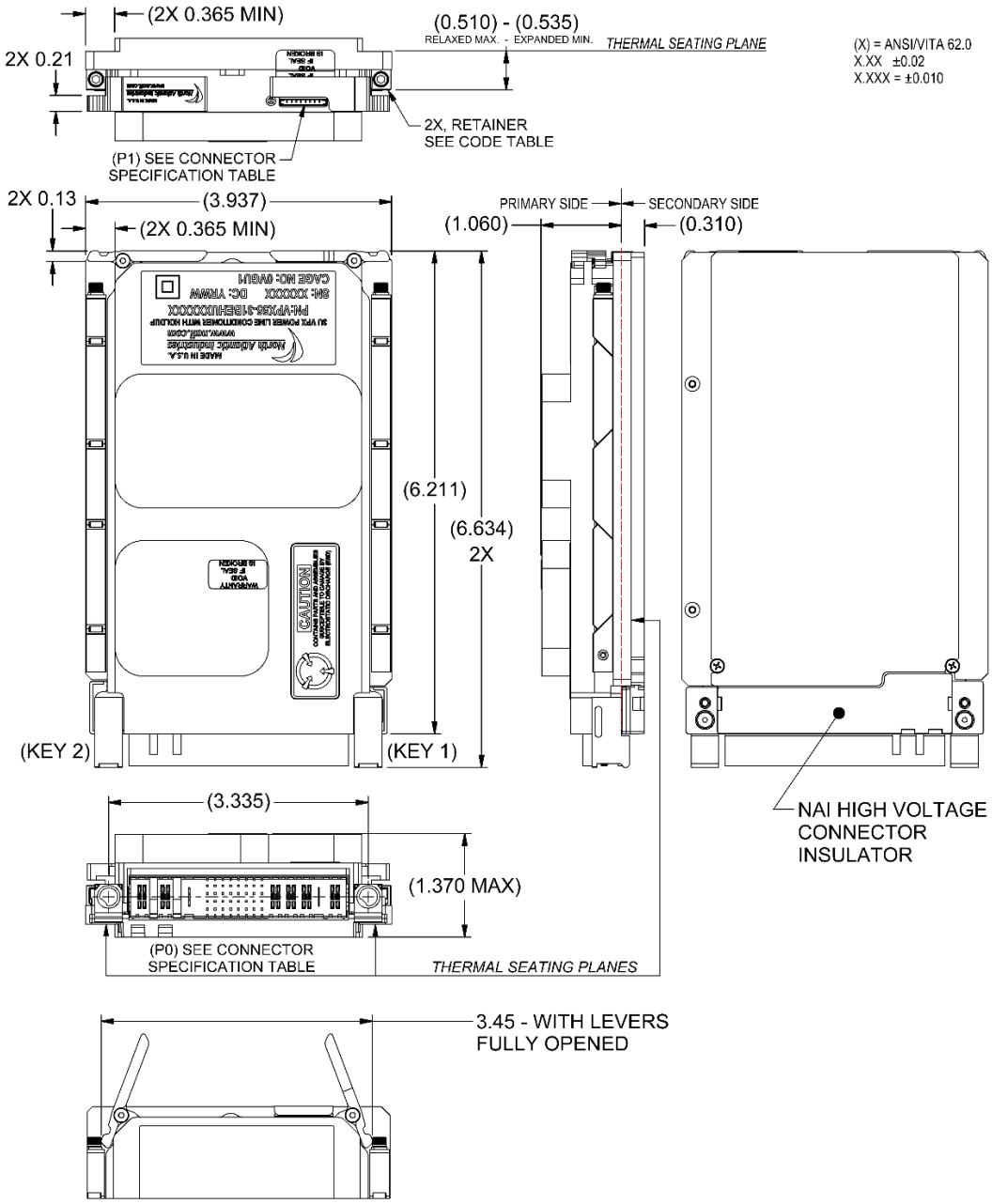
MECHANICAL LAYOUT VPX55-31BEHU, 850 WATT
STANDARD VITA 62.0 PLUG-IN MODULE



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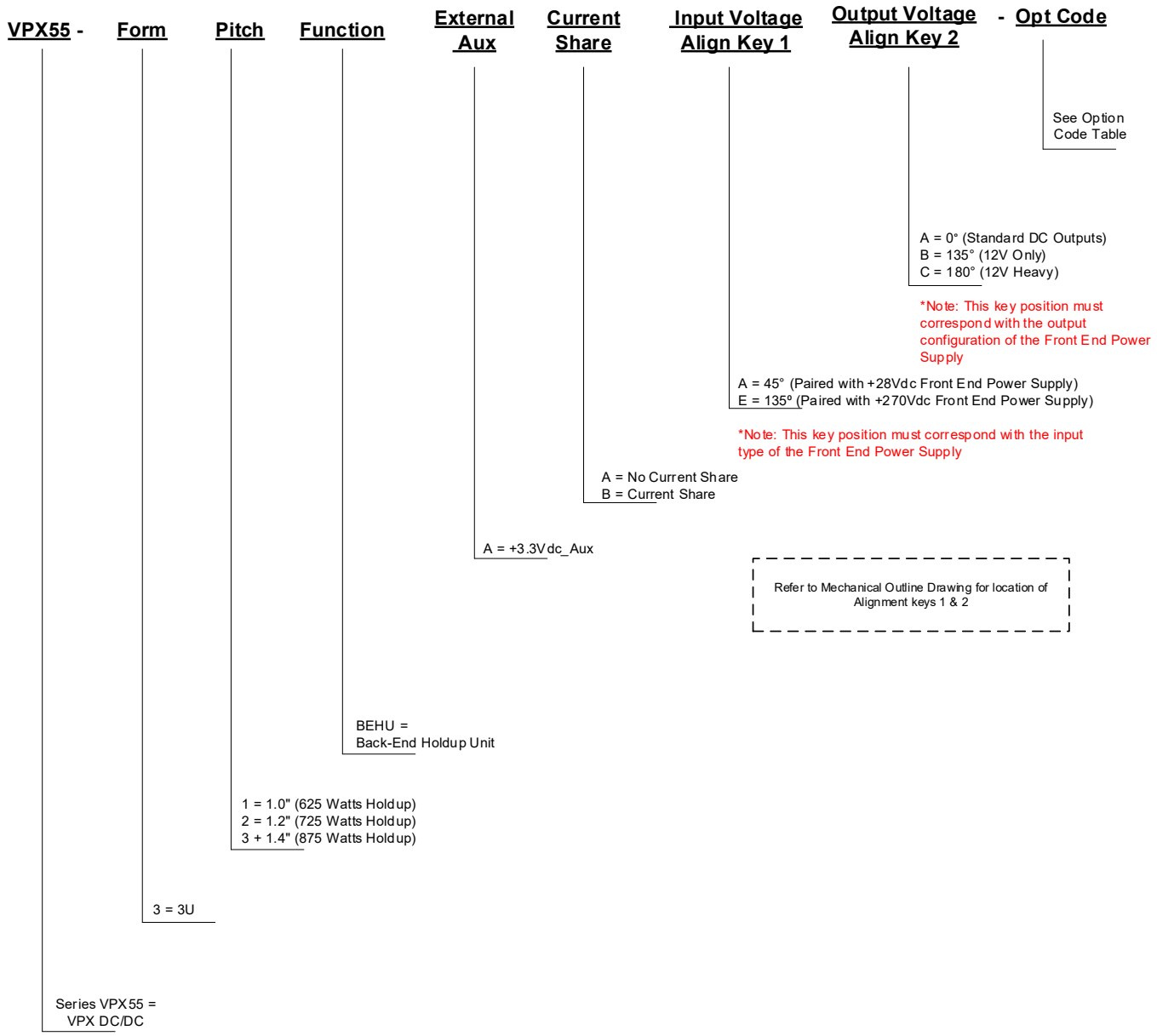
Ordering Information



Option Code Table

Code	Description
00	Standard unit, no additional options
01	• Addition of VITA 62.2 Connector with Spacers • Stainless Steel Guides

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