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Tracewell Systems

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Data Sheets

Tracewell HPC VXI bus

High-Performance 13-Slot C Size VXI System

Description

The Tracewell HPC VXI is the industry's highest performance 13-slot, C size VXI chassis. Featuring increased power and cooling, system monitoring, and a rugged modular design, HPC VXI is ideal for the latest generation of high-performance VXI instrumentation.

Capable of delivering over 3000W through the backplane, the Tracewell HPC VXI is available with single or dual power supplies that plug directly into the backplane, eliminating high-current DC wiring while providing exceptional dynamic load response. To efficiently manage this amount of power, the 13-slot backplane uses a unique power distribution scheme and special high current DIN connectors. The high-flow fan module is also pluggable and supplies 300 cfm of airflow at 0.125" of H_2O board restriction in a fully loaded chassis.

Tracewell HPC VXI also features comprehensive system monitoring. This intelligent system provides a warning to the operator when power and cooling readings go out of tolerance. The power monitor continuously verifies all seven VXI DC voltages, and has the unique ability to notify the user of a past voltage fault even if it returns to normal. The cooling monitor verifies fan function and is also available with a temperature monitor option. In the event a cooling fault is detected, the monitor shuts down the system to prevent costly damage to the installed VXI boards. A front panel display provides local status for power and cooling as well as other major system functions. In addition, a rear connector outputs both power and cooling monitor information for remote site operation.

This VXI plug&play compatible chassis occupies just 10U of rack space and is designed to accommodate a single tier receiver assembly. Using the optional extender kit, double-tier receiver assemblies can also be used. Other options include bottom mounted cable tray and rack slides.



Features

- Low-profile occupying only 10U of rack space
- 2KW or 4KW plugging power system
- 13-slot high-current VXI backplane
- Plugging fan module with (2) 340 cfm fans
- 300 cfm of airflow at 0.125" of H_2O restriction
- Intelligent monitoring with remote output
- VXI plug&play compliant for 1 & 2-tier receivers
- Temperature monitor and cabletray options
- TÜV Product Service certified to EN60950
- High-performance digital test ready

VXI bus

ISO 9001 certified

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Specifications

Physical

Construction: ***Sheet aluminum***, 5052-H32 alloy; sides (0.125"), top/bottom covers, HPC-4K power supply cover (0.050"), fan housing (0.062") optional 2U cabletray (0.080")
Sheet steel, ASTM A366; upper/lower cardcages, upper/lower front cableways/covers, HPC-2K power supply cover (0.060")
Aluminum extrusion, 6101-T6 alloy; cardcage front and mid profiles, rack flanges
Cardguide, snap-in, 0.062" pcb thickness, white nylon, UL 94V-2 flame rated material

Cardcage: Front loading, 6U x 340mm 'C' size, 13 slots maximum, IEEE 1101.1

Dimensions: 28.15"D (715 mm), 19.0" W (483 mm), 17.47" H (10U; 444 mm)

Weight: 73 lbs. (33.2 kg; HPC-2K), 85 lbs. (38.6 kg; HPC-4K)

Finish: Textured paint, Carbide Black per Sherwin Williams F63B12; all exterior surfaces; All other aluminum is brushed gold chromate per MIL-STD 5541, steel is black paint over primer

Cableways: 6 front cableways with covers; (2) upper, (2) lower and 1 per side

Rack-Slides: Designed to accept General Devices #CTHRS-124 rack slides

Cabletray: Optional 2U cabletray attaches to bottom of unit; capable of supporting up to 200 lbs. during bench-top operation; includes mounting hardware;
3U extender kits: two optional 3U extender kits available for mounting single or double-tier Virginia Panel Series 90 receiver frames; kit includes extended 14U front flanges, 3U side supports and mounting hardware; can be used with the optional 2U cabletray

Backplane

General: 13 slot, VXI 'C' size monolithic, 96 pin high current DIN connectors

Bus structure: VXI 32 bit

Assembly: SMT/press-fit assembly

Layer count: 8 layers

Control: Active automatic bus-grant and IACK jumpering, active termination

PCB construction: FR4 epoxy-glass laminate, multilayer, all-stripline, SMOBC, silkscreen on two sides, 1oz. copper signal and power planes minimum, UL94V-0, 0.125" (3.18mm) pcb thickness

Impedance: 50 Ohms nominal on all signal lines, non-loaded pcb

Termination: Active onboard, electrically inboard; Thevinin equivalent to 194 Ohms at 2.94V

Decoupling: High frequency decoupling at each slot (0.1F SMD ceramic); Bulk distributed low frequency (100F SMD Tantalum)

DC distribution: High current power midplane distributes power from plugging power supplies to backplane

Compliance: VXI-1 Rev. 1.4

Power†

Option codes PS1: HPC-2K with single 2KW power supply, AC input with PFC

Option codes PS2: HPC-4K with two 2KW power supplies, AC input with PFC

Total output: 2000W (HPC-2K), 3415W (230V; HPC-4K); maximum all outputs

Input: 90 – 264VAC, universal input

Frequency: 47 – 63 Hz

Efficiency: 75% typical

Power factor: 0.99 with PFC

Input current: 15A maximum (12A recommended; HPC-2K),
20A maximum (16A recommended, HPC-4K)

Inrush current: 90V/20A, 190V/29A, 208V/32A, 250V/38A (HPC-2K)
90V/40A, 190V/58A, 208V/64A, 250V/76A (HPC-4K)

Hold-up time: 20 ms minimum after removal of power at full load

ACFAIL: Logic low signal asserted to backplane after removal of AC power

DC outputs: HPC-2K: +5V/80A, -5.2V/60A, -2.2V/60A, +/-12V/18A (ea.), +/-24V/10A (ea.)
HPC-4K: *SUPPLY 1* (upper): +/-12V/36.0A (ea.), -2.2V/120A, +5V/120A; *SUPPLY 2* (lower): -5.2V/120A, +/-24V/30A (ea.)

Output adjustment: All outputs are adjusted at factory

Ripple/Noise: Less than 1% peak-to-peak or 50mV, whichever is greater; bandwidth limited to 20MHz

Load requirement: 10% minimum load required on + and – 24VDC

Remote sense: All outputs, 500mV maximum compensation

Inhibit: Global DC inhibit (wired to front panel switch)

Cooling: Internal DC fans

Cooling

Airflow: Rear intake, top/side exhaust, ducted plenum, pressurized

Fan: (2) 340 cfm, high-pressure tube-axial, 24VDC

Air filter: Front accessible, washable media, 30 PPI, tool accessible

Accessibility: Rear removable plugging module; tool accessible (philips driver)

Control and Input

Switches: Front panel: AC on/off (rocker); reset (pushbutton, momentary)

Reset control: 200ms debounced reset to backplane; asserted by front panel reset switch or VME module; also provides monitor reset

SYSFAIL: Signal driven only by backplane VME modules; front panel LED is only a status indicator

Indicators: Front panel SYSRESET, SYSFAIL DC Fault (red), power and cooling (tri-color) LED indicators

Power input: Rear panel AC inlet (IEC320) with fuse drawer, line cord provided with NEMA L6-20R plug, cord retainer bail

Circuit protection: Rear panel 2-pole magnetic switched circuit breaker; 15A (HPC-2K), 20A (HPC-4K)

Monitoring

Option codes M1: HPC chassis with multi-point, exhaust air temperature monitor

Interface: Front panel LED indicators and rear panel 9-pin status connector

Functions: ***Power:*** 7 independent voltage monitors for +5, -5.2, -2.2, +/-12, and +/-24VDC; power fault is generated when any voltage falls below 90% of nominal; power fault is a latched signal to record intermittent conditions; power DC Fault monitor (HPC-4K only); a power fault drives both a front panel LED and rear panel relay closure
Cooling: verifies RPM and voltage for each fan; cooling fault is generated if fan speed falls below 50% of nominal or 24V not present; a cooling fault drives front panel LED, rear panel relay closure and a system shutdown using global DC inhibit
Optional multi-point, exhaust air temperature (M1): 13 sensors distributed across top of cardcage monitor exhaust air temperature; cooling fault generated for air temperature >60^{o}C
Monitor reset: all monitor faults are latching and can be reset by depressing front panel reset button or by cycling AC power; 5 second delay occurs after any reset prior to further fault detection

Outputs: ***Power LED:*** Green = no fault exists; Red = fault currently exists; Yellow = intermittent fault occurrence
Cooling LED: Green = no fault exists; Red = system shutdown due to cooling fault; Yellow = system shutdown due to non-cooling fault (i.e. loss of fan power)
DC Fault LED: *(A and B):* power supply global DC OKAY monitor (red indicates fault; HPC-4K only)
Rear panel 9-pin remote status connector (AMP p/n 747321-4): Power and cooling faults drive relay closure
(see status connector pinout)

Environmental

Temperature: 0 – 50^{o}C operating; -20 – 70^{o}C non-operating

Shock/ Vibration: Basic transportation per ASTM 0775

Humidity: 5 – 95% non-condensing at 40^{o}C operating, 0 – 95% non-operating

Acoustic: <68 dBa (1 meter)

Agency Compliance††

Safety: TÜV Product Service certified to EN60950; #B 98 11 32557 003

Emissions: See note below

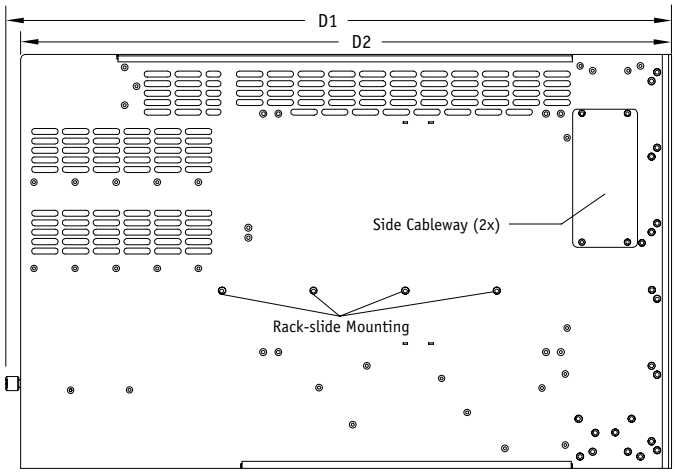
Warranty

1 year limited warranty

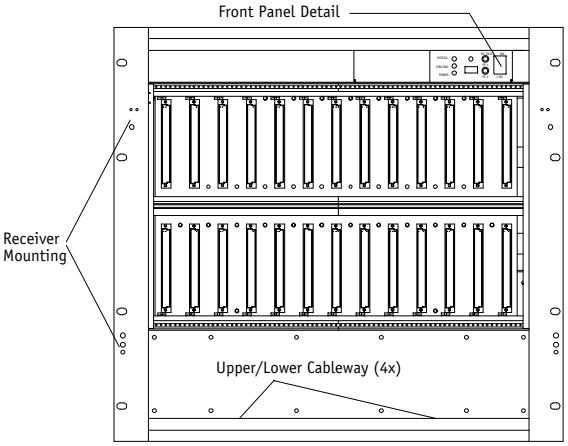
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Main Assembly

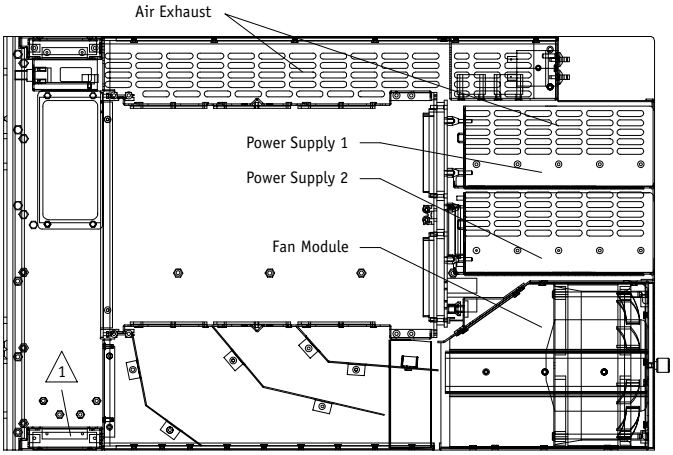
Drawings



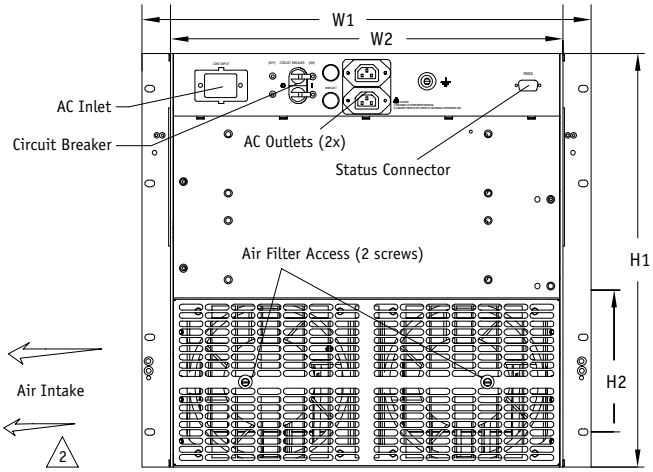
Left-side View



Front View

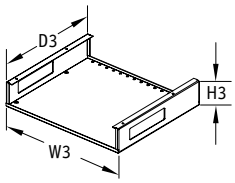


Right-side View (internal)

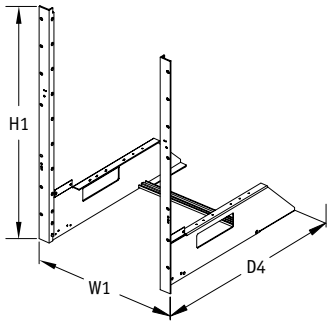


Rear View

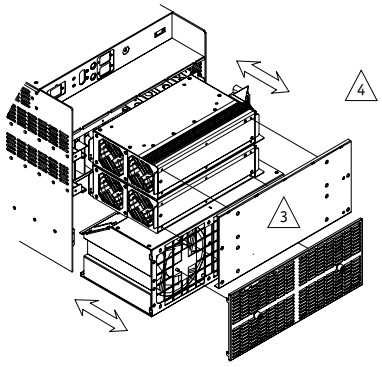
Sub-Assemblies and Options



Cabletray (2U) Kit



13U Adapter Kit

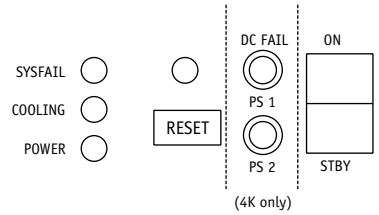


Rear Accessible Fan and Power Modules

Status Connector Pinout:

PIN	FUNCTION
1	Chassis Ground
2	Low Voltage NC Relay
3	Low Voltage NC Relay
4	Low Voltage NO Relay
5	Low Voltage NO Relay
6	Airflow Shutdown NC Relay
7	Airflow Shutdown NC Relay
8	Airflow Shutdown NO Relay
9	Airflow Shutdown NO Relay

Front Panel Detail:



Dimensions:

D1: 28.15" (715 mm)	W1: 19.00" (483 mm)	H1: 17.47" (444 mm)
D2: 27.52" (699 mm)	W2: 16.61" (422 mm)	H2: 6.00" (153 mm)
D3: 12.09" (307 mm)	W3: 15.56" (395 mm)	H3: 3.05" (78 mm)
D4: 23.18" (589 mm)		

Notes:

1. Lower cross member moves down for 13U adapter kit
2. Do not obstruct intake or exhaust vents
3. Power supply cover removes with (12) 6-32 screws
4. Disconnect AC power prior to service

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Tracewell HPC

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Ordering Information

The Tracewell HPC VXI includes chassis, backplane, power supply, cooling and monitoring per the following standard configurations:

Part number	Description
590-1006-F00-01	HPC-2K chassis with 2KW power system (PS1)
590-1006-F00-02	HPC-2K chassis with 2KW power system (PS1), multi-point temperature monitor (M1)
590-1003-F01-01	HPC-4K chassis with 4KW power system (PS2)
590-1003-F01-02	HPC-4K chassis with 4KW power system (PS2), multi-point temperature monitor (M1)

Accessories

106-1006-099-01	Non-shielded single-slot filler panel, 6U X 8T; installs in vacant slots
590-1105-C00-00	13U adapter kit for single-tier Virginia Panel Series 90 receiver
590-1102-C00-00	13U adapter kit for double-tier Virginia Panel Series 90 receiver
590-1101-C00-00	Cabletray (2U) kit

Notes:

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