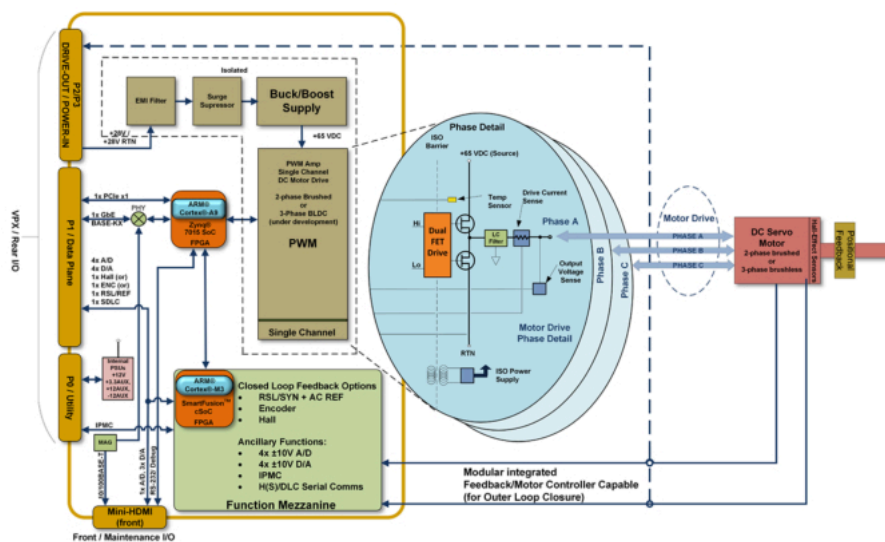




68PW1 3U OpenVPX PWM Servo Motor Drives

3U OpenVPX PWM Servo Motor Drive

The 68PW1 is a 3U OpenVPX single-axis PWM servo motor drive that can be configured with closed loop feedback measurement options including Hall, Resolver/Synchro or Encoder. The PWM drive provides programmable PWM output drive (up to 65 V @ 10 A continuous) from a single +28 VDC input source. Ideally suited for rugged Mil-Aero applications, the 68PW1 delivers off-the-shelf solutions that accelerate deployment of SWaP-optimized systems in air, land, and sea applications.



68PW1 PWM Motor Drive Module Basic Block Diagram

Features

- **3U OpenVPX (ANSI/VITA 65)**
- **Profiles Supported:**
 - MOD3-PAY-2U2U-16.2.16-1
 - SLT3-PAY-2U2U-14.2.17
 - Data plane: 1 x1 PCIe (default)
 - Control plane: 1x 1000Base-KX
 - P1 VPX TE MULTIGIG RT 3
- **PWM/Drive**
 - Single channel, H-Bridge
 - Motor types supported<
 - 2-phase brushed
 - 3-phase brushless (BLDC) (pending)
 - 28 Vin (nom) MIL-STD-704E drive power:
 - 22 (16) - 29 VDC operating
 - 18-50 VDC Transients
 - 24V to 65V programmable/regulated PWM output drive
 - 325 W continuous, 550 W peak
 - Discrete drive-enabled control pins
 - P2/P3 TE high-current blade connectors
- **Ancillary I/O**
 - 4x ±10V A/D, 12-bit min. (rear I/O)
 - 4x ±10V D/A, 12-bit min. (rear I/O)
 - 1x RS-422/485 SDLC (rear I/O)
 - Front/Maintenance I/O (mini-HDMI)
 - 1x RS-232 console/debug
 - 1x 10/100BASE-T
 - 1x AD & 3 D/A (parallel to rear)
- **Feedback/Control Options (pending)**
 - Hall
 - Resolver/Synchro + AC Reference
 - Encoder
- **IPMC Support (configured option)**
 - VITA 46.11 Tier-2 compatible
- **Power Input**
 - +12V, ±12V AUX, +3.3V AUX
 - ~10 W power dissipation (est./typ.)
 - ~96% efficient PWM Drive
- **Operating Systems (host supported)**
 - Xilinx PetaLinux
- **Intelligent I/O library support included**
- **Background Built-in-Test Continuous BIT (as applicable)**
- **Modular & Programmable Architecture**
- **Commercial or Rugged Applications**
- **Operating Temperature**
 - Rugged: -40°C to 85°C
- **Mechanical (ANSI/VITA 48)**
 - Conduction-cooled; 3U, 1.0" pitch
 - Weight: ~1.95 lbs.

PWM Function Specifications

PWM Amplifier Specifications (Single channel, unless otherwise specified) (after a 5 second warm-up period)	
Power (Amplifier switching supply)	65 VDC $\pm 5\%$ maximum programmable, internally supplied Standard: Brushed Motor interface or Brushless (BLDC) (pending)
Resolution/Loop Update Rate	12-bit (monotonic over temperature) / @ 115 kHz
Output	325 W continuous, 550 W peak Short circuit protected. Thermal protection determines duration of peak current drive.
Frequency	345 kHz
Bandwidth	800 Hz (minimum) open loop minimum in current mode w/ user programmable loop control variables.
Efficiency	96% (minimum, at 65 VDC / 5A)
Quiescent Power	+12 VDC at 900 mA under no load conditions +12V_AUX at 45 mA +12V_AUX at 45 mA +3.3V_AUX at 350 mA NOTE: +5V NOT required.
Master Drive Enable	A discrete input (normally open), opto-isolated from the motor supply, must receive a switch closure to permit operation (and cannot be overwritten).
Shutdown Conditions (@ 65 VDC nom.)	RS-422 time-out, PWM card time-out (software watchdog), Drive Fault (bias loss), Over-Temperature condition (110°C) at internal PS, Internal H-Bridge fault.
Output Filtering	LC Filter added to all motor drive signals (EMI mitigation).
Input Current Limit / Soft-Start	8A (input current)
Over-current Protection	Solid state circuit breaker 'detect and protect' - $>8.5 \text{ A @ } 9 \text{ ms}$ (output current)
Ancillary I/O Specifications	
A/D	4-Ch. $\pm 10\text{V}$, 12-bit (minimum) 16-bit (available) resolution, $\pm 0.25\%$ linearity FSR (1-Ch. [parallel] available on front debug/maintenance connector)
D/A	4-Ch. $\pm 10\text{V}$, 12-bit (minimum) 16-bit (available) resolution, $\pm 0.25\%$ linearity FSR (3-Ch. available on front debug/maintenance connector)
RS-422/485	1-Ch. programmable, up to 1.5 Mbps asynchronous or 10 Mbps synchronous (SDLC)
Ethernet, Command and Control	1-Port 1000BASE-KX provided on rear VPX connectors 1-Port 10/100BASE-T provided on front debug/maintenance connector
RS-232 Serial Debug/Console	1-Ch. RS-232, debug/console provided on front debug/maintenance connector
Feedback, Outer-Loop	1-Ch. Hall, Resolver/Synchro or Encoder (configured options, contact factory)
IPMC	VITA 46.11 Tier-2 basic, compatible (configured options, contact factory)
Connectors	Rear: TE CONNECTIVITY; P0: 2102772-1 (RT2-R.), P1: 2302785-1 (RT 3), P2: 1-1410271-1, P3: 1410279-7 Front Maintenance: mini-HDMI C-type receptacle

Architected for Versatility

NAI's Configurable Open Systems Architecture™ (COSA®) offers a choice of over 100 smart I/O, communications, or Ethernet switch functions, providing the highest packaging density and greatest flexibility of ruggedized embedded product solutions in the industry. Preexisting, fully-tested functions can be combined in an unlimited number of ways quickly and easily.

One-Source Efficiencies

Eliminate man-months of integration with a configured, field-proven system from NAI. Specification to deployment is a seamless experience as all design, state-of-the-art manufacturing, assembly and test are performed - by one trusted source. All facilities are located within the U.S. and optimized for high-mix/low volume production runs and extended lifecycle support.

Product Lifecycle Management

From design to production and beyond, NAI's product lifecycle management strategy ensures the long-term availability of COTS products through configuration management, technology refresh and obsolescence component purchase and storage.

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