Model 68C3

3U, OpenVPX, MULTI-FUNCTION I/O CARD

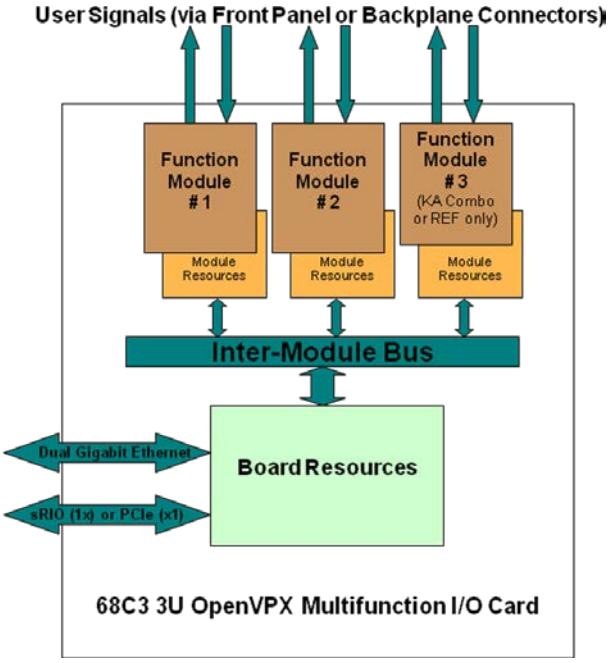
Features

- Multiple functions on a single slot, 3U, OpenVPX card
- **OpenVPX** Slot Profile: **SLT3-PER-1U-14.3.3**
- User can specify three different function modules
- Automatic background BIT testing continually checks and reports the health of each channel
- Control via Dual Gig-E interfaces
- sRIO (1x) or PCIe (x1) options
- Front and/or Rear I/O
- Conduction or Convection cooled versions
- Commercial and Rugged applications
- Software Support Kit and Drivers are available

Proudly made in the USA

Description

The 68C3 is a single slot, 3U, OpenVPX (0.8" pitch) multi-function I/O and serial communications card. Gigabit Ethernet (Gig-E) and High Speed PCI Express (PCIe) or Serial RapidIO (sRIO) control interface selections enable users to confidently take advantage of the OpenVPX form-factor, offering higher speed switched fabric communication options.



The motherboard contains three independent module slots, each of which can be populated with a function-specific module, and can now be controlled by the Gig-E and/or sRIO or PCIe. This enhanced motherboard using multiple DSPs enables higher processing power and dedicated pre-processing and control for each module function. This unique design eliminates the need for multiple, specialized, single-function cards by providing a single-board solution for a broad assortment of programmable, multi-channel signal interface I/O modules such as: Digital (TTL/CMOS, Differential, Discrete, Relay); Analog (A/D, D/A, RTD, Strain Gage, Isolated Power Supply); Positional/Motion Control (Synchro/Resolver/ LVDT/RVDT Measurement/ Simulation, AC Reference, Encoder/Counter).

In addition, the 68C3 incorporates communication modules such as RS-232/422/423(188C)/485, MIL-STD-1553, CANBus and ARINC 429/575. This approach increases packaging density, saves enclosure slots and reduces power consumption. Additional enhancements include FIFO data buffering for A/D, D/A, S/D and LVDT functions. (Please see all available functions on the following page.)

NAI's flexible, leading-edge, fully programmable and continuous background built-in-test (BIT) feature is always enabled and continually checks the health of each channel. If a fault is detected, it is immediately reported and the specific channel is identified with no downtime for troubleshooting. Testing is totally transparent to the user, requires no external programming, and has no effect on the standard operation of the card.

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General Board Specification

- **Power:** +5VDC ●**Operating Temp:** 0º C to 70º C or -40º C to 85º C ●**Size:** 100mm x 20mm x 160mm (3U)

Available Function Modules

Note 1 – Indicates wide selection (See part number in Operations Manual)
Note 2 – Contact factory for availability
Note 3 – Additional channels available from front panel on certain platforms

A/D Converter	**Module**	**Channels**	**Input Scaling**	**Resolution**	**Accuracy (±)**	**Sampling (programmable)**
	C1	10	±1.25,2.5,5 or 10 VDC	16 bit	0.05% FS	200 KHz max
	C2	10	±5,10,20 or 40 VDC	16 bit	0.1% FS	200 KHz max
	C3	10	0-25 mA	16 bit	0.1% FS	200 KHz max
	C4	10	±6.25,12.5,25 or 50 VDC	16 bit	0.1% FS	200 KHz max
	CA	10	(Channels 1-6 are C2 type and Channels 7-10 are C3 type)			
D/A Converter	**Module**	**Channels**	**Output Range**	**Resolution**	**Accuracy (±)**	**Settling time**
	F1	10	±10 or 0-10 VDC	16 bit	0.05% FS	15µs max
	F3	10	±5 or 0-5 VDC	16 bit	0.05% FS	10µs max
	F5	4	±25 or 0-25 VDC	16 bit	0.05% FS	10µs max
	J3	10	±1.25 or 0-1.25 VDC	16 bit	0.05% FS	10µs max
	J5	10	±2.5 or 0-2.5 VDC	16 bit	0.05% FS	10µs max
	J8	4	±20 to ±100 VDC	16 bit	0.15% FS	350µs max
Thermocouple	**Module**	**Channels**	**Update rate**	**Resolution**	**Accuracy (±)**	**Thermocouple Interface**
	G3	6	4.17 – 470 Hz	24-bit	0.75 – 2.0 °C	NIST J,K,T,E,N,B,R,S & ±100 mV
RTD	**Module**	**Channels**	**Update rate**	**Resolution**	**Accuracy**	**Interface**
	G4	6	16.7 Hz/channel	16 bit	(±) 0.05% FS	2, 3 or 4 wire
Strain Gage	**Module**	**Channels**	**Update rate**	**Resolution**	**Accuracy**	**Interface**
	G5[2]	4	4.7 Hz – 4.8 KHz	16 bit	(±) 0.1% FS	Conventional 4-Arm Bridge
Encoder/Counter	**Module**	**Channels**	**Signal Voltage**	**Resolution**	**Modes**	
	E7	4	RS422 / 24 VDC	32 bit	Encoder (SSI, A-Quad-B), Counter (up/down)	
L(R)VDT/D	**Module**	**Channels**	**Frequency**	**Resolution**	**Accuracy**	**Interface**
	L[1]	4	360 Hz to 20 KHz	16 bit	(±) 0.025% FS 2 or 3/4 wire	
SYN(RSL)/D	**Module**	**Channels**	**Frequency**	**Resolution**	**Accuracy**	**Tracking Rate**
	S[1]	4	50 Hz to 20 KHz	16 bit	(±)1 arc-min	190 RPS
D/SYN(RSL)	**Module**	**Channels**	**Frequency**	**Resolution**	**Accuracy**	**Power**
	6[1]	3	47 Hz – 10 KHz	16 bit	(±) 0.1°	0.25 VA / channel (max.)
D/L(R)VDT	**Module**	**Channels**	**Frequency**	**Resolution**	**Accuracy**	**Power**
	5[1]	3	47 Hz – 10 KHz	16 bit	(±) 0.2% FS	0.1 VA / channel (max.)
I/O, TTL/CMOS	**Module**	**Channels**	**Input Range**	**Output level**	**Programmable**	
	D7	16	0 – 5.5 V	TTL/CMOS	Input or Output	
I/O, Differential	**Module**	**Channels**	**Input Range (422)**	**Input Range (485)**	**Output Range (422/485)**	
	D8	11 (16)[3]	-10V to +10V	-7V to +12V	-0.25V to +5V	
I/O, Discrete	**Module**	**Channels**	**Input Range**	**Output Range**	**Programmable**	**Notes**
	K6 (v4)	16	0 – 60 VDC	0 – 60 VDC	Input or Output	(500 mA – 2 A) (source/sink)
	K7	12 (16)[3]	±80V	±80V	Input or Output	Isolated switch (600mA)
Relay	**Module**	**Channels**	**Type**	**SW Volt/Current**	**SW Power (max)**	**Notes**
	KN[2], KL[2]	4	DPDT (1 CH Form C)	220V / 2A (max)	60W / 62.5 VA	KN=non-latch, KL=latching
Serial Communications	**Module**	**Channels**	**HW Interface levels support**		**Bit rate (Async/Sync)**	**Tx/Rx Buffer** **Notes**
	P8	4	RS-232/422/423(MIL-STD-188C, unbalanced)/485		1 / 4 Mbit/s per Ch.	32KB Partial modem
	PC[2]	4	Isolated RS-422/485		1 / 4 Mbit/s per Ch.	32KB Partial modem
CANBus	**Module**	**Channels**	**CAN protocol**	**Message Buffer**	**Data rate (Prog)**	**Notes**
	P6, PA	4	P6= 2.0A/B / PA=J1939	16K RX/TX	1 Mb/s max.	Bosch® IP Core
MIL-STD-1553	**Module**	**Channels**	**Operational Modes**	**Onboard RAM**	**Bus Coupling Configuration**	
	N7, N8	2	BC,RT, BM, BM/RT	128Kbyte per ch	N7 = Transformer / N8 = Direct	
ARINC 429/575	**Module**	**Channels**	**Frequency**	**Input/output**	**Message Buffer**	
	A4	6	100 KHz or 12.5 KHz	RX/TX	256 word Tx/Rx	
DC Power Supply	**Module**	**Channels**	**Voltage Output**	**VOut Regulation**	**Current Output**	
	V1, V2	1, 2	± 15V	± 1%	± 450 mA(max)	
AC Reference	**Module**	**Channels**	**Frequency**	**Accuracy**	**Voltage**	**Power**
	W[1]	1	47 Hz – 20KHz	± 3%	2 – 115 VRMS	6 VA
A/D & Discrete I/O (Slot 3 only)	**Module**	**A/D Channels**	**Input Scaling**	**Resolution**	**Accuracy**	**Sampling**
	KA	4(multiplexed)	±10 VDC	14 bit	±0.1% FS	3 KHz max
		I/O Channels	**Input Range**	**Output Range**	**Format**	**Resolution**
		28	0 – 50 VDC	0 – 50 VDC	12 In /12 Out / 4 Prog.	12 bit
Reference (Slot 3 only)	**Module**	**Channels**	**Frequency**	**Accuracy**	**Voltage**	**Power**
	W6	1	360 Hz – 10KHz	± 2%	2 – 28 Vrms	3 VA (max.)
	W7	1	360 Hz – 10KHz	+- 2%	115 Vrms	3 VA (max.)

Part Number Designation

68C3 – XX XX XX X X X X 0 – XX
Slot # 1 2 3

MODULE (SLOT) DEFINITION
Enter module designation (i.e.C1) for each slot 1 & 2
Enter "Z0" if slot is not populated.

MODULE (SLOT) 3 DEFINITION
SLOT 3 can only accept either Module 'KA' or On-Board Reference
(W6, W7). Enter "Z0" if slot is not to be populated.

MECHANICAL
F = Front panel J1, J2, and rear I/O;
P = Blank front panel, rear I/O only
W = P with wedgelocks

ENVIRONMENTAL
C = 0 TO 70 °C; **K** = C with conformal coating
H = -40 TO +85 °C with conformal coating

ETHERNET
0 = No Ethernet; 1 = reserved;
2 = Single rear Ethernet connection, Port 1; 3 = reserved;
4 = Dual rear Ethernet, Port 1 & 2

HIGH SPEED INTERFACE CONNECTIONS
0 = none (Ethernet only);
1 = SRIO; 2-4 = reserved;
5 = PCIe; 6-8 = reserved

RESERVED
0

SPECIAL OPTION CODE (or leave blank)

For Ordering Information:
Phone – 631-567-1100
Fax – 631-567-1823

68C3 Data Sheet Rev A8