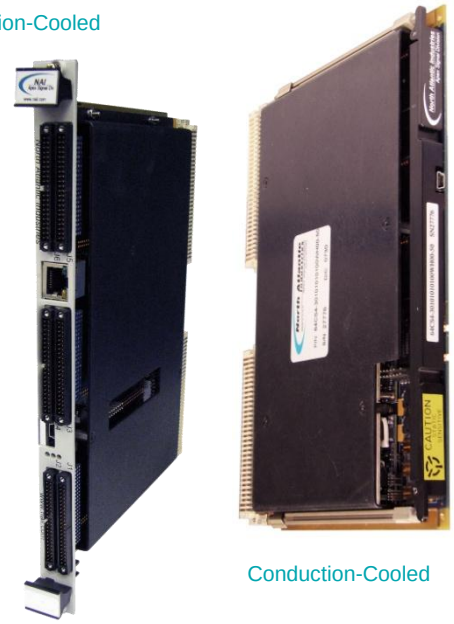
Model 64CS4

6U, VME, D/S and MULTI-FUNCTION I/O CARD

Features

- Multiple I/O and serial communication functions on a single slot 6U VME card.
- Up to ten separate D/S Channels.
- User can specify five different function modules.
- Automatic background BIT testing continually checks and reports health of each channel.
- Control via VME or Ethernet.
- FIFO Buffering/Trigger (select modules).
- Optional onboard 5 VA programmable reference supply.
- Connections via front panel, rear connector, or both.
- Designed for both Commercial and MIL applications.
- Convection and Conduction cooled versions.
- Software Support Kit and Drivers available.

Convection-Cooled

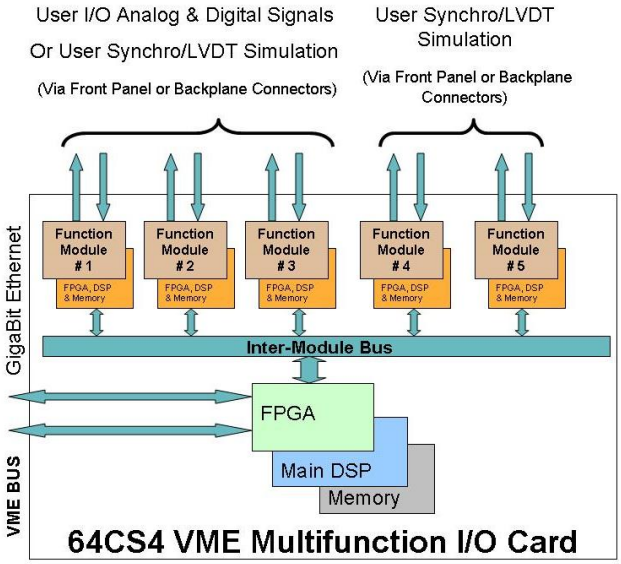


Conduction-Cooled

Proudly made in the USA

Description

The 64CS4 is a single slot Multi-function 6U VME card for applications requiring higher power Digital-to-Synchro/Resolver or L(R)VDT (D/S, D/L(R)VDT) stimulus output, as well as I/O and Communication functions. The 64CS4 provides up to ten separate D/S channels with multiple programmable features. The “mother board” contains 5 independent module slots, each of which can be populated with a function specific module. 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 64CS4 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.

North Atlantic Industries
Excellence in ALL we do

General Board Specification

• **Power** – +5VDC, (±12VDC for select modules) • **Operating Temp** – 0° C to 70° C or -40° C to 85° C • **Size** – 233mm x 20mm x 160mm (6U)

Available Function Modules

(GEN2 Platforms)

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
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 (max)**
	3*, 4*[1]	1	47 Hz – 10 KHz	16 bit	(±) 0.067°	3.0 VA / channel
	1*, 2*[1]	2	47 Hz – 10 KHz	16 bit	(±) 0.017°	1.5 or 2.2 VA / channel
	6*[1]	3	47 Hz – 10 KHz	16 bit	(±) 0.1°	0.25 VA / channel
D/L(R)VDT	**Module**	**Channels**	**Frequency**	**Resolution**	**Accuracy**	**Power (max)**
	5*[1]	2 / 4	47 Hz – 10 KHz	16 bit	(±) 0.1% FS	1.5 VA / channel
	5*[1]	3	47 Hz – 10 KHz	16 bit	(±) 0.2% FS	0.1 VA / channel
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[2]	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)/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[2]	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

Part Number Designation

64CS4 - XX XX XX XX XX X X X X X X– XX

SLOT 1, 2 & 3 DEFINITION
Enter either D/S, DLV, S/D, LVD, Multifunction or Ref Module W1 as defined below. **See Note**

SLOT 4 & 5 DEFINITION
Enter D/S or DLV Module only or Z0 if no module is used in this slot

ON-BOARD REFERENCE SUPPLY (M7)
0 = No On-Board Reference Module
1 = 2-28Vrms, 360-10kHz Programmable On-Board Ref Module
2 = Reserved for future use
3 = 115Vrms Fixed, 360-10kHz Programmable On-Board Ref Module

MECHANICAL
F = Front Panel J1-J5 and P2 & P0 I/O; S = Front Panel J1-J5 and P2 I/O (No P0);
P = P2 & P0 I/O only; G = P2 I/O only (No P0); W = P With Wedge locks;
A = VME64 Blank Front Panel and P2 & P0 I/O only; R = VME64 Blank Front Panel and P2 only (No P0); B = VME64 Front Panel J1-J5, P2 & P0 I/O;
T = VME64 Front Panel J1-J5, P2 I/O (No P0); D = VME64 Blank Front Panel, Low profile extractors and P2 & P0 I/O only

ENVIRONMENTAL
C = 0°C to +70°C; E = -40°C to +85°C; H = E With Removable Conformal Coating
K = C With Removable Conformal Coating

ETHERNET
0 = No Ethernet; 1 = Front Panel Ethernet Connection; 2 = P0 Ethernet Connection

ENCODERS (used only with S/D or LVDT Module (in slots 1 and/or 2)
0 = No Encoder outputs; 1 = Encoders included for each specified Synchro/LVDT module

±12V DC POWER OPTION
0 = VME Power is used; 1 = VME ±12VDC Power is isolated from PCB power planes.

SPECIAL OPTION CODE (Leave blank for standard)

Note: Enter 'Z0' if slot is not populated and no On-board Reference Supply is chosen. If slot is unpopulated and an On-board Reference Supply is selected, enter either 'W6' if low voltage supply is selected (1), or 'W7' if high voltage supply (3) is selected

For detailed specifications & complete part number designation, visit **www.naii.com** to download Operations Manual.

For Ordering Information:
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64CS4 Data Sheet Rev A5