Model 78C2

6U, cPCI, MULTI-FUNCTION I/O CARD

Features

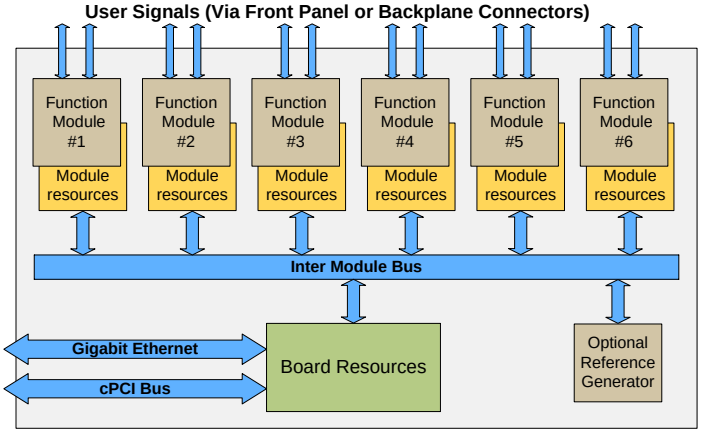
- Multiple I/O and serial communication functions on a single slot 6U cPCI card.
- User can specify six different function modules.
- Automatic background BIT testing continually checks and reports the health of each channel.
- Control via cPCI or Ethernet.
- Connections via Front panel, Rear panel, or both.
- Designed for both Commercial and MIL applications.
- Conduction or Convection cooled versions.
- Software Support Kit and Drivers available

Convection Cooled

Conduction Cooled

Proudly made in the USA

Description



The 78C2 is a 6U cPCI multi-function I/O and serial communications card. The "mother board" contains 6 independent module slots, each of which can be populated with a function specific module, and can be controlled via Ethernet (10/100/1000Base-T) as well as the cPCI bus. 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 78C2 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.

General Board Specification

- **Power** – +5VDC ●**Operating Temp** – 0º C to 70º C or -40º C to 85º 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**
	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**
	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	12 (16)[3]	±80V	±80V	Input or Output	Isolated switch (600mA)
Relay	**Module**	**Channels**	**Type**	**SW Volt/Current**	**SW Power (max)**	**Notes**
	KN, KL	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	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

78C2 – XX XX XX XX XX XX X X X X X –XX

Slot # 1 2 3 4 5 6

MODULE (SLOT) DEFINITION
Enter Module Designation (i.e.**C1**) for each slot (1 through 6)
Enter "Z0" if slot is not populated

ON-BOARD REFERENCE SUPPLY (M7)
0 = No On-Board Reference Supply
1 = 2-28Vrms, programmable freq.
2 = Reserved for future use
3 = 115Vrms Fixed, programmable freq.

MECHANICAL
F = Front Panel I/O only; **P** = Blank Front Panel with Rear I/O only
W= P conduction cooled with wedgelocks;
B = Front Panel and Rear I/O.

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

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

ENCODER OUTPUTS FOR SYNCHRO / RESOLVER MODULES
0 = No Encoder outputs
1 = Encoders included for each specified Synchro module

SPECIAL OPTION CODE (OR LEAVE BLANK

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

For Ordering Information:
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