Model 76CS3

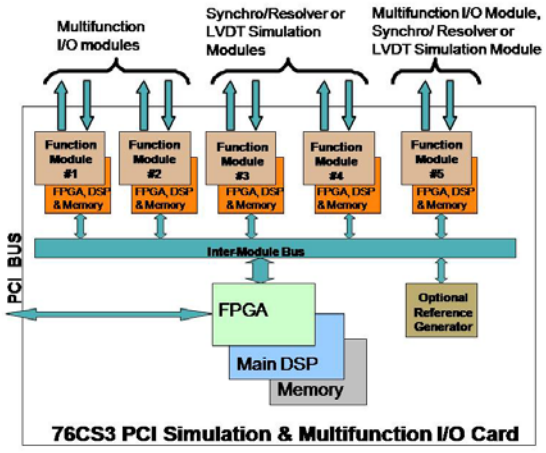
PCI, Synchro/Resolver/LVDT/RVDT Simulation/Measurement & Multifunction I/O Card

Features

- Mix & Match Multiple functions on a single slot PCI card.
- User can specify up to five different function modules from extensive library.
- Six D/S at 1.5 / 2.2 VA or Three at 3.0 VA, or combination of other multifunction I/O and communications functions
- Automatic background BIT testing continually checks and reports health of each channel.
- 16 bit resolution for all functions.
- 1 arc min accuracy for Synchro Measurement & Simulation
- FIFO Buffering/Trigger (select modules).
- Optional on board 3 VA programmable reference supply.
- Automatically supports either 5V or 3.3V PCI bus
- Multi-speed ratios between 2 and 255 are programmable for S/D and D/S functions.
- No adjustments or trimming required
- Commercial or MIL applications.
- Software Support Kit and Drivers available.

Description

The 76CS3 is a Multi-function PCI card for applications requiring higher power Digital-to-Synchro/Resolver/ LVDT/RVDT Stimulus and Measurement, as well as I/O and Communication functions. This unique design eliminates the need for specialized, single function cards by providing a broad assortment of I/O, Synchro/Resolver and LVDT/RVDT functions on one single card that can be controlled via the PCI bus. This single slot card can be configured for separate high power D/S channels, or D/S in combination with 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 to communications functions (such as RS-232/422/423(188C)/485, MIL-STD-1553, CANBus and ARINC 429/575).



The D/S channels include ON/OFF output capability, individual reference inputs for each channel, and rotation with start and stop angles in addition to many other programmable features. Short circuit protection is standard and user can ground one of the outputs without effecting performance. The D/S functions can drive small Torque Receivers directly without booster amplifiers or external amplifiers can be added to drive up to 30 VA. The board also allows for an optional 3 VA reference supply for Synchro / Resolver & LVDT / RVDT functions. In addition to the enhanced Digital-to-Synchro (D/S) functions, this card also features advanced Synchro-to-Digital (S/D) capabilities that include programmable Bandwidth, Synchro-Resolver (S-R) selection, Loss of Signal (LOS) thresholds, Loss of Reference (LOR) thresholds, angle change alert, various interrupts, and the ability to read real time incoming signal and reference voltage levels. The 76CS3 can be configured as pin for pin, functional equivalent replacements for all 76CS1/76CS2 & 76CL1 SYN/RSL and L(R)VDT combination simulation and measurement cards.

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 (±12 V for select modules) ●**Operating Temp**: 0° C to 70° C or -40° C to 85° C ●**Size**: Full size PCI

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

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MODULE #1 & #2 = MULTIFUNCTION or REFERENCE
Enter either S/D, LVDT, Multifunction or Reference Module W[1]. **See Note**

MODULE #3 & #4 = D/S or DLV Only
Enter 1Ch, 2Ch D/S or 2/4 Ch DLV only, or Z0 if no module is used in this slot.

MODULE #5 = D/S, DLV, or MULTIFUNCTION or REFERENCE
Enter D/S, DLV, S/D, LVD, Multifunction or Reference Module W[1], or Z0 if no module is used in this slot.

ON-BOARD REFERENCE SUPPLY (M7)
May be specified when slot 1 is populated with either an S/D, LVDT or is left empty.
0 = No On-Board Reference Module;
1 = 2-28Vrms, 360-10kHz Programmable On-Board Reference Module
2 = Reserved for future use
3 = 115Vrms Fixed, 360-10kHz Programmable On-Board Reference Module

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

ENCODERS (used only with S/D or LVDT Module)
0 = None; 1 = Yes

ALTERNATE SLOT 5 PIN-OUT
0 = Default Pin-out – Slot 5 pin-outs on DB25A Auxiliary connector
1 = Alternate Pin-out – Slot 5 pin-outs on front J1 connector. (See Operation Manual)

CODE (Utilized for special options – leave blank for standard)

Note: Module 1; 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.

To download detailed specifications & complete part number designations, visit www.naii.com.

For Ordering Information:
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