


United Electronic Industries

2020

QUICK REFERENCE GUIDE

CHASSIS & I/O BOARD SPECIFICATIONS









RUGGED • RELIABLE • COMPACT • FLEXIBLE

10 YEAR AVAILABILITY GUARANTEE

STANDARD WARRANTY 3 YEAR

100% TEST VERIFIED

RoHS3 2015/863/EU

PJLA ACCREDITED ISO/IEC 17025

ISO 9001:2015 CERTIFICATION Intertek

CE

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Build Your Perfect System with UEI

UEI has created a quick and easy way to build your perfect I/O system. We have identified 3 segments – chassis, I/O selection, and software/programming options – that allow you to assemble an ideal system for your application. Below is a graphical overview of each segment and what is included in the build process.

STEP 1
CHOOSE YOUR CHASSIS

STEP 2
CHOOSE YOUR I/O

ANALOG INPUTS VIn, TCs, RTDs, Strain, ICP/IEPE, etc.	**ANALOG OUTPUTS** Vout to 115 VDC, 4-20 mA, etc.	**LOGIC LEVEL DIO**	**INDUSTRIAL & HIGH VOLTAGE DIO**	**DMM**	**AVIONICS** ARINC 429/708/453, MIL-1553, AFDX etc.	**SERIAL COMM.** Async & Synchronous
RVDT/LVDT SYNCHRO/RESOLVER Input and simulated out	**QUADRATURE, FREQUENCY/SPEED/PWM**	**IRIG/GPS/1588**	**CAN-BUS** Including J-1939 and .DBC	**WIFI & GSM** Wireless interfaces	**FUNCTION GENERATOR OUTPUTS**	**AND MORE**

STEP 3
CHOOSE YOUR SOFTWARE/PROGRAMMING

HOSTED

OSs

QNX, VxWorks, Linux, Windows 10

Plus most Open & Proprietary OSs

Software/Programming

C/C++, python, LabVIEW, Visual Studio, C#, MATLAB, AND MORE LANGUAGES

OR

STANDALONE/EMBEDDED

OSs

VxWorks, RealTime

Software/Programming

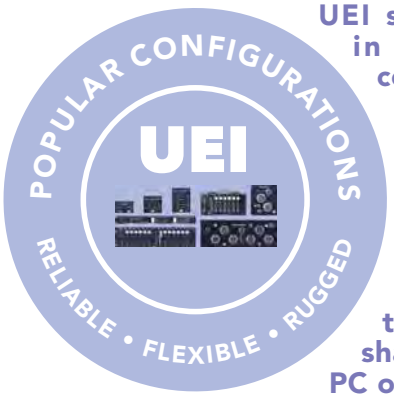
C/C++, SIMULINK, AND MORE LANGUAGES

Applications

OPC, EPICS, UEI IoT, Modbus, EtherCAT, VISTAS, iDDS, IADS

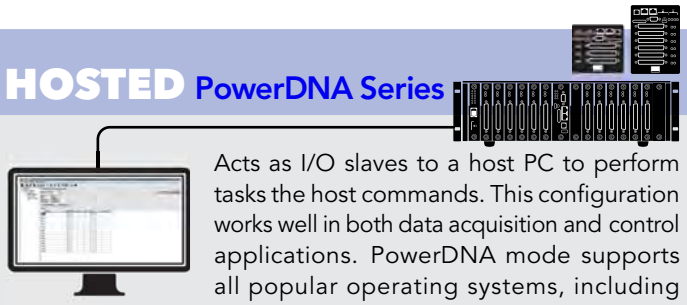
It's really that simple!

Get To Know UEI's System Configurations



UEI systems are deployed in a wide variety of configurations – including I/O slaves under control of a host PC, fully stand-alone data loggers or embedded controllers – and even as a hybrid, running applications locally, but taking direction from (or sharing data with) a host PC on the network.

HOSTED PowerDNA Series

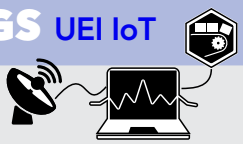


Acts as I/O slaves to a host PC to perform tasks the host commands. This configuration works well in both data acquisition and control applications. PowerDNA mode supports all popular operating systems, including Windows®, Linux®, QNX®, VxWorks®, InTime and more. PowerDNA also supports many popular application software including MATLAB®, LabVIEW®, and more.

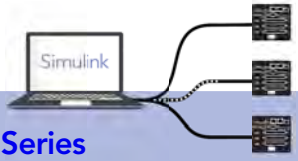
EMBEDDED UEIPAC Series

Stand-alone embedded controllers or data loggers. Build your application on a Linux PC, Windows PC using Cygwin, or on VxWorks machines. Once your code is developed, compile and download it to the UEIPAC to run stand-alone and/or to keep on your network to provide updates to your host. UEIPAC can also be used as a local control node tied to a host PC to execute local applications as directed by the host.

INTERNET OF THINGS UEI IoT



IoT is a networked system of interconnected physical objects that can share data with each other and cloud services for archiving and analysis. UEI's Linux-based PACs come preinstalled with Eclipse Mosquitto (MQTT) which implements the MQTT machine-to-machine (M2M) protocol. UEI also supports Helix Device Cloud, Amazon AWS IoT and Microsoft Azure. Available on embedded and OPC-UA platforms.



SIMULINK UEISIM Series

Easily run your Simulink models on real I/O. Build a standard Simulink application and then generate and compile code using Mathworks Embedded Coder. Run your models standalone or under supervisory control of the host PC. UEISIM creates a powerful solution for developing and tuning real-time (and non-real-time) applications including model verification, rapid prototyping, and HIL testing.

MODBUS UEIModbus Series

Perfect I/O system to run from your Modbus TCP host. The UEIModbus is compatible with all popular Modbus host applications and software. The UEIModbus communicates with a host computer or PLC over Modbus TCP. This flexibility allows you to configure one or more chassis to match the specific I/O requirements of your application, especially those for industrial applications.

OPC-UA UEIOPC-UA Series

Run as a standard OPC-Unified Architecture server as defined in IEC 62541. As such, it is supported by a huge number of currently available applications packages, written in-house and by third party developers. The UEIOPC-UA is an ideal solution in a wide variety of oil & gas, HVAC, machine health monitoring as well as host of other industrial control and monitoring functions. Support included for Data Access, Alarms and Historians.

ETHERCAT DNA-ECAT Series

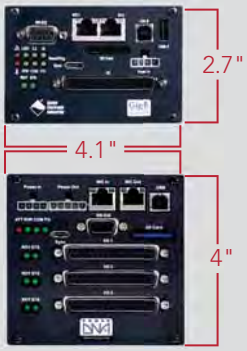
Uses EtherCAT (deterministic Ethernet) with a special CPU module specifically designed to run as an EtherCAT slave for RT applications. The EtherCAT master/host communicates with DNA-ECAT over CAT5e/6/7 series cables. No Ethernet switches/routers needed for multi-chassis connectivity. Other key specifications include built-in watchdog timers, safe state default conditions, and cable redundancy. Offers unparalleled channel density (i.e. I/O channels per cubic foot).

CHASSIS OVERVIEW

PowerDNA
CUBE ARCHITECTURE

6 SLOT CUBE
Up to 300,000 hours

1 SLOT CUBE
160,000 hours



3 SLOT CUBE
Up to 300,000 hours

7 SLOT CUBE
Up to 300,000 hours

Common Features

- 1, 2, 3, 4, 6 or 7 available I/O slots
- 9-36 V DC Input
- Diagnostic serial port
- SYNC port, 1588 (board-to-board and cube-to-cube)
- -40° C to 85° C
- 5g Vibration,100g Shock, 120,000 ft
- SSD, Encryption Hardware
- LED Health / Status Indicators
- USB
- 10/100/GigE or Fiber

THE **CUBE** IS THE IDEAL SOLUTION WHEN YOUR APPLICATION CALLS FOR MAXIMUM RUGGEDNESS IN THE SMALLEST POSSIBLE PACKAGE.

Wireless Ready (GSM, CDMA, WiFi)
All UEI Chassis are wireless-ready, except for MIL Series. Inquire further with your UEI representative.

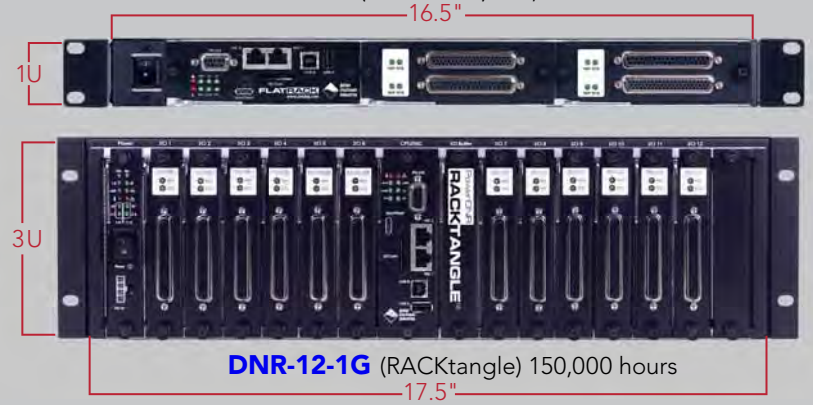
PowerDNR
RACKtangle® ARCHITECTURE

Common Features

- 4, 6 or 12 I/O boards
- Passive backplane with temp sensors
- CPU/NIC board same as GigE Cube (2 independent)
- Extensive built-in test & diagnostics
- 5g Vibration, 100g Shock, 70,000 ft
- -40° C to +70° C
- USB
- 2 independent GigE NICs
- SSD, Encryption Hardware

DNR-6-1G (HALF RACKtangle)
130,000 hours

DNF-4-1G (FLATRACK) 130,000 hours



DNR-12-1G (RACKtangle) 150,000 hours

THE **RACKtangle** IS DESIGNED TO ALLOW YOUR SYSTEM TO BE QUICKLY & EASILY RECONFIGURED.

UEI's Cube, RACKtangle® and FLATRACK™ I/O chassis are compact and rugged data acquisition (DAQ) interfaces, ideally suited for a wide variety of industrial, military, aerospace, energy, laboratory DAQ and control applications. Each Cube/RACKtangle chassis includes a CPU, a real-time OS, Ethernet interface and slots allowing the installation of I/O boards. All our boards are compatible with all of our chassis options. With more than 60 I/O boards available, we're sure to have just what you need. UEI supports all popular Windows, Linux and Real-time operating systems. Our software suite provides a simple, universal API and supports all common programming languages. Our Cube/RACKtangle chassis fully support an extensive array of application packages including LabVIEW, MATLAB, Simulink and more.

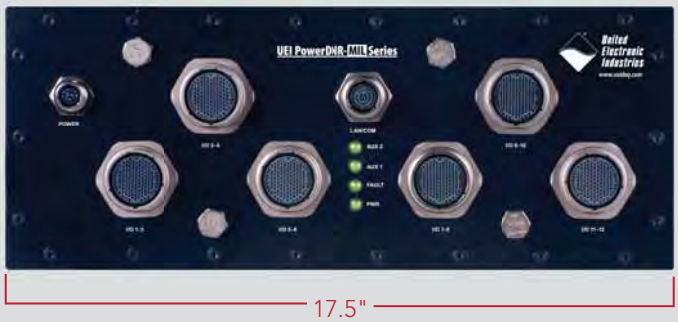
Please note that PowerDNA® (Distributed Networked Automation) refers to our unique chassis. Cubes are designated with a "DNA" prefix, RACKtangles a "DNR" prefix, and FLATRACK a "DNF" prefix. UEINet™ is our single slot cube. "MIL" designates a chassis designed to meet military-grade specifications MIL-STD-704/1275/461/810.

CHASSIS OVERVIEW CONTINUED

UEI MIL Chassis
RACKtangle® ARCHITECTURE

4 SLOT DNA-MIL
(MIL-CUBE)
130,000 hours

12-SLOT DNR-MIL
(MIL-RACK)
130,000 hours



6-SLOT DNR-MIL-6
(MIL-RACK)
130,000 hours

Common Features

- Military/Rugged 38999 connectivity
- 100% COTS solution
- Supported by over 70 standard DNA-series I/O boards
- 5g vibration, 100g shock, sealed to IP66
- Dual GigE ports (control and diagnostic)
- Designed for MIL-STD-461/1275/704/810 compliance
- Extensive built-in system diagnostics
- Compatible with all PowerDNA and PowerDNR boards & software
- Extensive software support including Windows, Linux, QNX, INtime and more
- VxWorks support available in embedded or hosted configurations

EtherCAT
CUBE ARCHITECTURE

For your high channel count, rugged EtherCAT requirements

EtherCAT Conformance tested

DNA-ECAT-200
(2 SLOT ETHERCAT BASED I/O CUBE)
>350,000 hours
- Up to 96 I/O channels

DNA-ECAT-400
(4 SLOT ETHERCAT BASED I/O CUBE)
>350,000 hours
- Up to 192 I/O channels

DNA-ECAT-800
(8 SLOT ETHERCAT BASED I/O CUBE)
>350,000 hours
- Up to 384 I/O channels

Common Features

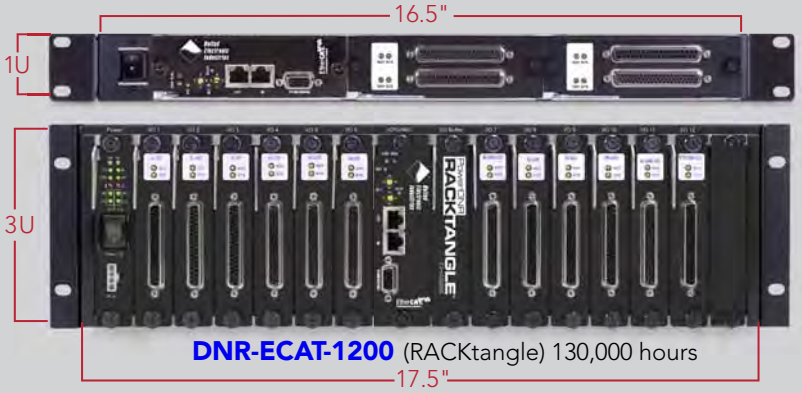
- Fully EtherCAT compliant
- Flexible enough to match your application
- 9-36 VDC Input
- Diagnostic serial port
- -40° C to 85° C
- 5g Vibration, 100g Shock, 120,000 ft
- 1 kHz update rates
- LED Health / Status Indicators
- Standard Ethernet 100BaseT EtherCAT Interface
- 350 Vrms Isolation

THE FLEXIBLE **ECAT SERIES** SUPPORTS MOST ETHERCAT MASTERS SO YOU CAN BUILD YOUR PERFECT SYSTEM.

EtherCAT
RACKtangle® ARCHITECTURE

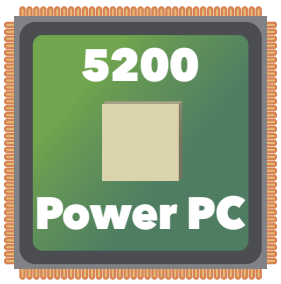
DNR-ECAT-600 (HALF RACKtangle) 160,000 hours

DNF-ECAT-400 (FLATRACK) 130,000 hours



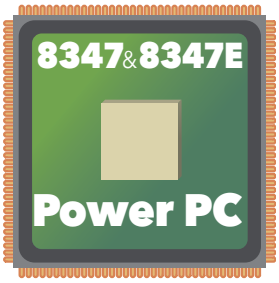
DNR-ECAT-1200 (RACKtangle) 130,000 hours

PROCESSOR OVERVIEW



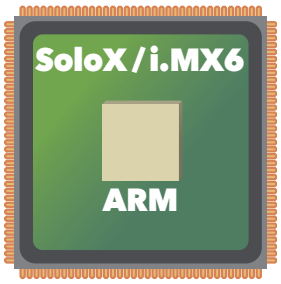
5200 Processor

- On all DNA-PPCx Cube products
- Fiber or Copper 10/100BaseT Ethernet
- Lowest Power
- Same Software API



8347 & 8347E Processors

- Available for all chassis
- 2 Independent 1000BaseT Ethernet
- Options for 256 MB RAM, 128 MB Flash
- 8, 32 GB SD Cards
- 8, 16, 64 GB SSD Options
- IEEE 1588 Synchronization



SoloX Processor

- SoloX / i.MX6 A9/M4
- 2 Independent 1000BaseT Ethernet
- RS-232, USB 2.0, HDMI, M.2 PCIe
- 1 GB RAM, 8 GB Flash
- MicroSD to 32 GB, SSD to 64 GB, M.2 SSD up to 512 GB
- 5 Watts, IEEE 1588, Wireless via M.2 card

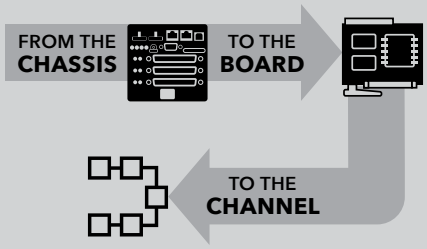
CYBER SECURITY READY
- Hardware Encryption Engine optional
- Hardware Assured NVRAM Protection

GUARDIAN SERIES ADVANTAGE: On-board I/O Monitoring System

REAL-TIME DIAGNOSTICS

- Open/Broken Sensor Detection
- Channel Self-Test without Field Wiring Disconnection
- Current/Voltage Monitoring
- Circuit Breaker Functionality

COMPLETE SELF-CHECK



ELIMINATE HEADACHES

- Save Time
- Reduce Monitoring Complexity
- Lower Costs (No External Test Equipment)

SPECIFICATIONS

Processor	Part Number	Memory	Connectivity	Non-volatile Memory	Notes	MTBF
5200 PowerPC	DNA-PPCx	128 MB RAM, 4 MB Flash	10/100Base-T, Switch	SD Card	3.5 Watts	>300,000
5200 PowerPC	DNA-FPPCx	128 MB RAM, 4 MB Flash	Fiber 10/100Base-T, Switch	SD Card	3.5 Watts	>300,000
8347 PowerPC	-1G-00 -1G-02	256 MB RAM, 32 MB Flash	USB2.0 2 GigE (Independent)	SD Card, Flash, SSD	7 Watts, IEEE 1588	>160,000
Encrypted 8347	-1G-03	256 MB RAM, 128 MB Flash	USB2.0 2 GigE (Independent)	SD Card, Flash, SSD	7 Watts, IEEE 1588, Hardware Encryption	>160,000
SoloX / i.MX6 ARM	-1G-11 -1G-12	1 GB RAM, 8 GB Flash	2 GiGE (Independent), USB 2.0, HDMI, M.2 PCIe	MicroSD, SSD, M.2	5 Watts, IEEE 1588, Wireless via M.2 card	>160,000

ANALOG INPUT

Board Type	Part Number (DNx-)	Number of Channels	Resolution (Bits)	Maximum Sample Rate (Channel) kS/sec	Maximum Sample Rate (Board) kS/sec	Simultaneous Sampling (no MUX)	Maximum Input Range	Minimum Input Range	Channel-to-Channel Isolation	MTBF
General Purpose, Low Noise	AI-207	16	18	16	16	-	± 10 V	± 12.5 mV	-	>600,000
High Speed, Simultaneous Sampling	AI-217	16	24	120	1000	✓	± 10 V	± 156 mV	-	275,000
High Density	AI-248-230	24	18	0.25	6	-	+ 32 / - 2 V	± 32 mV	-	550,000
High Density, High Speed	AI-201-100	24/12	16	100	100	-	± 15 V	± 1.5 mV	-	600,000
High Speed, High Voltage	AI-205	4	18	250	1000	✓	± 100 V	± 100 mV	✓	>600,000
High Speed, Fully Isolated	AI-218	8	24	120	480	✓	± 10 V	± 156 mV	✓	290,000
High Voltage, Fully Isolated	AI-228-300	8	24	120	480	✓	± 300 V	± 37.5 V	✓	290,000
Current Input	AI-202	12	16	16	16	-	± 150 mA	± 1.5 mA	-	>600,000
0-20 / 4-20 mA Input	AI-204	24	18	1	24	-	0-20 mA	0-0.2 mA	-	>500,000
Thermocouple – Fully Isolated	AI-212	12	24	1.5	18	✓	± 2.048 V	± 32 mV	✓	230,000
Thermocouple, High Resolution, High Density	AI-225	25	24	1	25	✓	± 1.25 V	-	-	520,000
RTD / Resistance	AI-222	12	24	0.150	1.8	✓	40k Ω	100 Ω	✓	230,000
Strain/Bridge Input, Low Cost	AI-208	8	18	8	8	-	± 10 V	± 12.5 mV	-	>600,000
Strain/Bridge Input, High Performance	AI-224	4	18	100	400	✓	± 10 V	± 78 mV	✓	260,000
ICP / IEPE Accelerometers	AI-211	4	24	125	500	✓	+ 25 / - 13 V	± 2.5 V	✓	250,000
LVDT / RVDT	AI-254*	4	16	5	20	✓	28 Vrms	2 Vrms	✓	275,000
Synchro / Resolver	AI-255*	2	16	4	8	✓	28 Vrms	2 Vrms	✓	275,000
Synchro / Resolver	AI-255-815*	2	16	4	8	✓	115 Vrms	5 Vrms	✓	275,000
LVDT / RVDT, Synchro / Resolver, High Drive	AI-256*	2	16	10	20	✓	28 Vrms	5 Vrms	✓	275,000
Digital Multimeter (DMM)	DMM-261	1	6.5 digit	Range Dependent	Range Dependent	n/a	300 VDC 2 ADC 100 MΩ	100 mVDC 1 mADC 10 Ω	✓	300,000

Guardian Series – Includes a variety of powerful diagnostic and BIT functionality.

*Also functions as simulated output

ANALOG OUTPUT–GENERAL PURPOSE

Board Type	Part Number (DNx-)	Number of Channels	Update Rate (Channel) kS/sec	Update Rate (Board) kS/sec	Output Range (Volts)	Output Current Drive (mA)	Channel-to-Channel Isolation	MTBF
General Purpose	AO-308	8	100	500	+/- 10	+/- 5	-	480,000
Fully Isolated With Readback	AO-318	8	10	80	+/- 10	+/- 10	✓	480,000
High Current	AO-308-350	8	100	800	+/- 10	+/- 50	-	480,000
High Density	AO-332	32	10	320	+/- 10	+/- 10	-	400,000
High Density	AO-332-828	28	10	280	+/- 10	+/- 10	-	400,000
High Density With Readback	AO-333	32	10	320	+/- 10	+/- 10	-	400,000
Medium Voltage/Current	AO-308-352	8	100	800	+/- 13.5	+/- 13.5	-	480,000
High Voltage	AO-308-353	8	100	800	+/- 40	+/- 5	-	480,000
Current Output (0-20 mA)	AO-308-020	8	100	800	-	0 - 20	-	480,000
Current Output (Sourcing) Isolated with Readback	AO-318-020	8	10	80	-	0 - 20	✓	480,000
Current Output (Sourcing) Isolated with Readback	AO-318-024	8	10	80	-	0 - 24	✓	480,000
Current Output (Sinking) Isolated with Readback	AO-319-420	8	10	80	-	4 - 20	✓	480,000
Current Output (4-20 mA)	AO-308-420	8	100	800	-	4 - 20	-	480,000
Function Generator / AWFG	AO-364	4	150	600	+/- 12	+/- 10	✓	290,000
High Current Buffer (External)	DNA-STP-AO-200	8	-	-	+/- 10	+/- 250	-	200,000
High Current, High Voltage (External)	DNA-STP-AO-250	4	-	-	0 - 35	+/- 250	-	200,000
High Voltage Amplifier (External)	PD-AO-AMP-115	16	-	-	+/- 115	+/- 10	-	100,000

ANALOG OUTPUT–SIMULATION

Board Type	Part Number (DNx-)	Number of Channels	Update Rate (Channel) kS/sec	Update Rate (Board) kS/sec	Output Range (Volts)	Output Current Drive (mA)	Channel-to-Channel Isolation	MTBF
SIMULATED DEVICE/SENSOR								
Strain Gage Simulator, 120/350/1k Ω	AO-358-120/350 or 1k	8 Bridges	5	40	N/A	N/A	-	300,000
Simulated LVDT / RVDT	AI-254	4	5 kHz exc	-	0 - 6.7 Vrms	65 mA	✓	275,000
Simulated Synchro / Resolver	AI-255	2	4 kHz exc	-	0 - 28 Vrms	1.2 VA	✓	275,000
Simulated S/R & RVDT/LVDT, High Drive	AI-256	2	10 kHz exc	-	0 - 19.8 Vrms	2.4 VA	✓	275,000
Transformer for AI-254	TRF-254-447	4	5 kHz	-	4.47:1 ratio	4.47:1 ratio	-	-
Transformer for AI-254	TRF-254-122	4	5 kHz	-	1.22:1 ratio	1.22:1 ratio	-	-
Simulated Thermocouple with CJC	TC-378	8	1 kHz	8 kHz	+/- 100 mV 16 bits	+/- 10 mA	✓	250,000
Simulated RTD	RTD-388-100	8	200 Hz	200 Hz	23-390 Ω, 7500 steps	+/- 4 mA Input	✓	>400,000
Simulated RTD	RTD-388	8	200 Hz	200 Hz	180-3900 Ω, 7500 steps	+/- 4 mA Input	✓	>400,000

Guardian Series – Includes a variety of powerful diagnostic and BIT functionality.

DIGITAL I/O

Board Type	Part Number (DNx-)	Number of Channels	Input (kHz)	Output (kS/s)	Drive Capacity (Continuous/ Peak)	Range (min V)	Range (max V)	Change of State	MTBF
DISCRETE I/O									
Logic Level	DIO-403	48	10	20	16 mA	2.5	5.5	✓	>600,000
Sourcing Outputs, 3.3-36 VDC Inputs	DIO-404	12 in / 12 out	100	100	350 mA / 500 mA	3.3	36	✓	375,000
Sourcing Darlington Outputs, 5-36 VDC Inputs	DIO-405	12 in / 12 out	1	1	80 mA / 200 mA	5	36	✓	>600,000
Sinking Outputs, 3.3-36 VDC Inputs	DIO-406	12 in / 12 out	100	100	1 A / 1.5 A	3.3	36	✓	375,000
DISCRETE INPUTS									
5-36 VDC Inputs	DIO-401	24	1	-	-	5	36	✓	>600,000
0-32 VDC Inputs	DIO-448	48	1	-	-	-1	32	-	550,000
0-150 V AC/DC Inputs	DIO-449	48	1	-	-	-150	150	✓	500,000

Board Type	Part Number (DNx-)	Number of Channels	Input (kHz)	Output (kS/s)	Drive Capacity (Continuous/ Peak)	Range (min V)	Range (max V)	PWM	MTBF
DISCRETE OUTPUTS									
Sourcing Darlington Outputs	DIO-402	24	-	1	80 mA / 200 mA	7	36	-	>600,000
Solenoid Drive (Source/Sink), 3.3-36 VDC	DIO-416-32	32	-	0.125	500 mA / 3.5 A	3.3	48	-	130,000
Sinking Outputs, 3-36 VDC	DIO-432	32	-	1	600 mA / 3.5 A	3.3	36	✓	260,000
Low-leakage, Sinking Outputs, 3-36 VDC	DIO-432-800	32	-	1	600 mA / 3.5 A	3.3	36	✓	260,000
Sourcing Outputs, 3-36 VDC	DIO-433	32	-	1	600 mA / 3.5 A	3.3	36	✓	260,000
Low-leakage, Sourcing Outputs, 3-36 VDC	DIO-433-800	32	-	1	600 mA / 3.5 A	3.3	36	✓	260,000
RELAY OUTPUTS									
Solid State Relay Outputs, Form A	DIO-430	30	-	1	400 mA / 2 A	0	55 VDC / 55 VAC	-	600,000
Relay Outputs, Form C	DIO-452	12	-	0.125	2 A	0	220 VDC / 250 VAC	-	275,000
Relay Outputs, Form C	DIO-462	12	-	0 .125	2 A	0	220 VDC / 250 VAC	-	260,000
Solid State Relay Outputs, Form A (NO)	DIO-463	12	-	0.125	2 A	0	51 VDC / 51 VAC	-	260,000
High Current Relay Outputs, Form C	DIO-470	10	-	0.125	5 A	0	140 VDC / 150 VAC	-	275,000

MULTI-PLEXERS									
Board Type	**Part #**	**Number of Channels**	**Relay Type**	**Output**	**Drive Capacity Continous/Peak**	**Maximum On/Off Resistance**	**Range (max V)**	**Channel-to-Channel Isolation**	**MTBF**
3 to 1 Routing Board	MUX-414 / 418	14 / 18	SSR	300 Hz	2 A / 3 A	200 mΩ / 10^12 Ω	60 VDC	✓	> 400,000
28 Channel 170 Vrms MUX	MUX-461	28/14 2/4 wire	Reed	4 Hz	0.5 A	300 mΩ / 10^12 Ω	170 Vrms	✓	180,000

Guardian Series – Includes a variety of powerful diagnostic and BIT functionality.

SERIAL / CAN BUS

Communications Bus Protocol	Part Number (DNx-)	Physical Interface	Number of Channels	Transfer Rate	Notes	Channel-to-Channel Isolation	MTBF
High Speed CAN	CAN-503	CAN 2.0	4	1 Mbit	J1939 and CAN .DBC support	✓	350,000
I2C/SMBus	I2C-534	I2C	4	100k, 400k, 1M bit	Guardian read-back of master transmissions confirms validity of transmit data	✓	350,000
4-port Serial	SL-501	RS-232/422/485	4	2 Mbaud	J1587/J1708, Interrogation Scheduler	✓	350,000
4-port High Speed Serial	SL-501-804	RS-232/422/485	4	4 Mbaud	J1587/J1708, Interrogation Scheduler	✓	350,000
8-port Serial	SL-508	RS-232/422/485	8	2 Mbaud	J1587/J1708, Interrogation Scheduler	✓	290,000
HDLC/SDLC Synchronous	SL-504	RS-232/422/423/485	4	4 Mbaud	HDLC/SDLC TX/RX Synch.	✓	350,000
On-board Synchronous Serial Interface (SSI)	SL-514	RS-485/422	4	2.5 MHz	Master, Slave 3-32 bits, FIFO onboard	✓	350,000
GP Synchronous Serial Communications	CT-602-804	RS-485/422	4	16 Mbaud	General Purpose	✓	350,000

Guardian Series – Includes a variety of powerful diagnostic and BIT functionality.

Remote Serial Server available for all RS232/422/485 boards on Linux & Windows.

COUNTER / TIMERS

Counter/timer function	Part Number (DNx-)	Type	Number of Channels	Clock Rate	Notes	Channel -to-Channel Isolation	MTBF
High Speed Counter/Timer	CT-601	32 Bits	8	66 MHz	Debouncing on Ext Clock & Gate	-	350,000
Differential Counter/Timer	CT-602	32 Bits	4	66 MHz	RS-422/485 Logic Levels	✓	350,000
Quadrature Encoder Input	QUAD-604	A,B, & Z inputs	4	16.5 MHz	Buffered or Single Point Readings	-	350,000
Universal Speed Input	VR-608	50 mV - 250 V p-p	8	300 kHz	4 Freq Out, Double/Low Tooth	✓	180,000
IRIG Timing Gen & Synch	IRIG-650	A/B/E/G type	1	1, 5, 10 MHz	On-board GPS Receiver	✓	240,000
Precision Timing Interface	CT-651	ICD-GPS-060	4	1 PPS	Slaved or Free Run/Fix Wheel	✓	350,000

AVIONICS I/O

Protocol	Part Number (DNx-)	Type	Number of Channels	Transfer Rate	Notes	Channel -to-Channel Isolation	MTBF
1553 (Dual Redundant)	1553-553	2 Ports	2	1 Mbaud	Bus Cont, Remote Term, or BM	✓	275,000
ARINC-429	429-566	6 TX / 6 RX	12	12.5/100 kb	Williamsburg V1 Support	-	470,000
ARINC-429	429-512	12 RX	12	12.5/100 kb	Williamsburg V1 Support	-	470,000
ARINC-429	429-516	16 TX / 24 RX	24	12.5/100 kb	256 labels/ch on-board scheduler, 2k I/O FIFO/Channel	✓	470,000
ARINC-615	429-XXX	Up to 16	16	12.5/100k baud	Williamsburg for Airborne & Portable Data Loader	✓	470,000
ARINC-708/453	708-453	2 TX / 2 RX	4	1 Mbaud	Weather or Ground Prox Radar, WXPD	✓	275,000
ARINC-825	CAN-503	4 Ports	4	83.3-1000 kb	Sensors, Actuators, Software Timing – Transport Only	✓	350,000
AFDX & ARINC-664	AFDX-664	2 Ports	2	100 Mbaud	Dual Redundant or Independent	-	130,000
ARINC-615A	AFDX-664	2 Ports	2	100 Mbaud	Airborne & Portable Data Loader for Ethernet	-	130,000
CSDB	CSDB-509	8 TX / 8 RX	8	12.5/100 kHz	11 bit, character and frame clocks	✓	290,000
M272/PRF/PIM	CT-602-808	M272 and PRF/PIM	1	1 Mbaud	Hellfire Missile Interface	N/A	350,000

Guardian Series – Includes a variety of powerful diagnostic and BIT functionality.

WIRELESS COMMUNICATIONS

Wireless Protocol	Part Number (DNx-)	Type	Number of Channels	Notes	MTBF
GPS Receiver and IRIG I/O	IRIG-650	Active Antenna	1	Time Derived From GPS/IRIG String	275,000
WiFi, 3G, 4G LTE, GNSS, Bluetooth	-11 and -12 CPU Options	M.2 42, 60, 80 mm B-key	1	One M.2 Slot Can support any modem with Linux drivers	-

POWER SUPPLIES

Output Voltage	Part Number (DNx-)	Number of Channels	Output V	Current (Max)	Notes	Fully Isolated	MTBF
10 V	PC-910	1	+/- 10	1.5 A	Isolation Current/Voltage Feedback	✓	150,000
15 V	PC-911	1	+/- 15	1.2 A	Isolation Current/Voltage Feedback	✓	150,000
24 V	PC-912	1	+/- 24	1.6 A	Isolation Current/Voltage Feedback	✓	150,000
45 V	PC-913	1	+/- 45	0.4 A	Isolation Current/Voltage Feedback	✓	150,000
MIL-704/1275	PC-921-D	Internal	-	-	MIL-STD-704/1275/461 Power Conditioner	✓	150,000

RECONFIGURABLE

Board Type	Part Number (DNx-)	Connection	Notes	FPGA
Reconfigurable FPGA	PL-820	2x 62 Pin	104 DIO Pins, JTAG Connections	MAX10 / Cyclone II

INSTRUMENTS

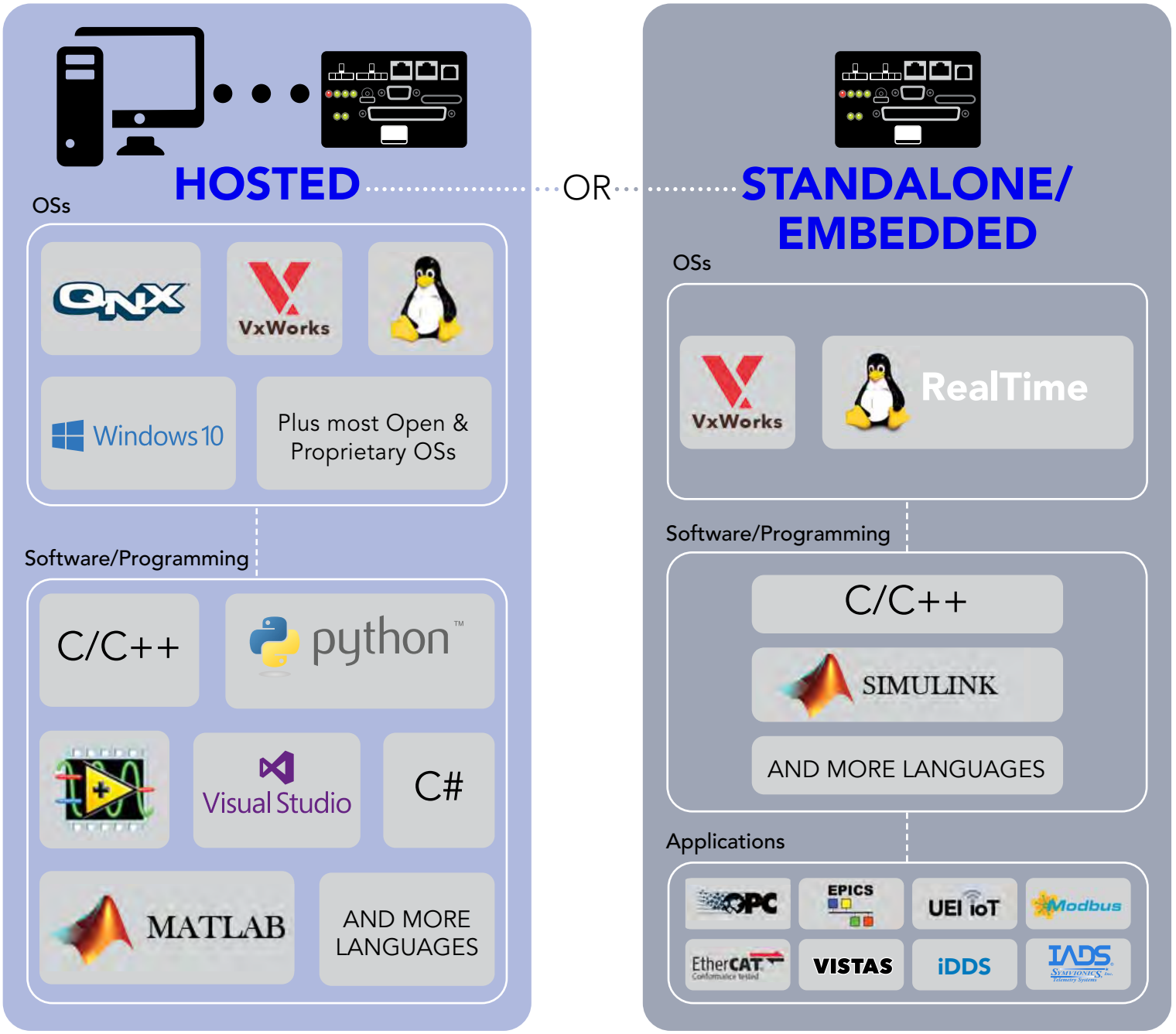
Board Type	Part Number (DNx-)	Number of Channels	Update Rate (Channel)	Ranges	Type	Current	Channel -to- Channel Isolation	MTBF
6.5 Digit DMM	DMM-261	1	100 Hz	+/- 300 VDC, +/- 100 mVDC, +/- 250 Vrms, +/- 125 mVrms, 100 MΩ to 10 Ω	VDC, VAC, IDC, IAC and Resistance	+/- 2 A AC/DC +/- 1 mA AC/DC	✓	300,000

Board Type	Part Number (DNx-)	Number of Channels	Relay Type	Output	Drive Capacity Continous/ Peak	Maximum On/Off Resistance	Range (max V)	Channel -to- Channel Isolation	MTBF
Multiplexer	MUX-414 / 418	14 / 18	SSR	300 Hz	2 A / 3 A	200 mΩ / 10^12 Ω	60 VDC	✓	>400,000

Board Type	Part Number (DNx-)	Number of Channels	Update Rate (Channel)	Ranges	Type	Current	Channel -to- Channel Isolation	MTBF
Multiplexer	MUX-461	28 2-wire or 14 4-wire	4 Hz	+/- 170 Vrms +/- 0.5 A	2-wire voltage 2-wire current 2 or 4-wire resistance	+/- 0.5 A	✓	180,000
Function / Arbitrary Waveform Generator	AO-364	4	150 kHz	+/- 12 V	Sine, Square, Triangle, Trapezoid, AWFG	+/- 10 mA	✓	290,000

The **Flexibility You Need** for Your Applications

We pride ourselves on being operating system and software agnostic. Learn more about some of the popular OSs, programming languages and applications UEI supports.



Applications

EtherCAT Conformance tested

Hosted. Full EtherCAT compliance in UEI's DNA-ECAT Series.

VISTAS

Embedded. **V**irtual **I**nteroperable **S**imulation for **T**ests of **A**vionics **S**ystems is used to create a protocol for testing avionics systems using a virtual environment with real & virtual equipment.

OPC

Embedded. OPC and OPC-UA.

EPICS

Hosted & Embedded/ Standalone. EPICS - Experimental Physics and Industrial Control System.

Modbus

Embedded. Modbus TCP.

iDDS

Embedded. A common DDS application protocol for plug-and-play data acquisition and control instruments to publish and subscribe data to and from multiple sources and displays.

IADS Symtronics Telemetry Systems

Embedded. IADS is a real time and post test display and analysis software suite.

UEI IoT

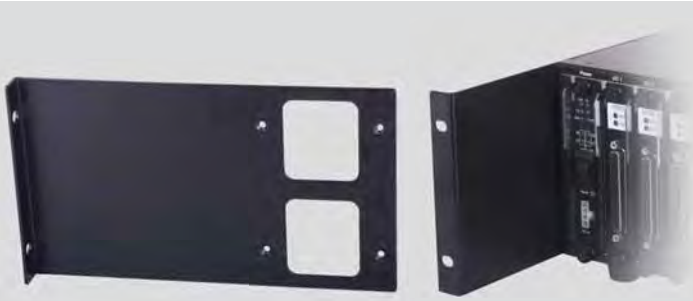
Embedded. Mosquitto - MQTT. Helix Device Cloud. Amazon AWS IoT. Microsoft Azure.

All the Accessories You Need to

CUBE, RACK & MIL CHASSIS: AVAILABLE OPTIONS

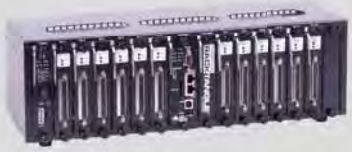
DIN RAILS, BRACKETS/CLIPS

FLANGES



EXTENDER BRACKETS

CONFORMAL COATING



FANLESS RACKS

SPECIALIZED COTS

CHROMATE

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1553 Cables

Cables

SSD & SD Cards

Screw Terminal Boards

Power Supplies

Universal Screw Terminal Panels

Test Adapters

Interconnect Boards

DON'T SEE WHAT YOU NEED?

We most likely have it! Contact your UEI representative today.

Complete **Your Perfect I/O System**

SCREW TERMINAL ACCESSORY PANEL

Board Type	Part #	Board Specific	Number of Channels	Connection	Included with Board
37-channel Input Panel	DNA-STP-37	Any 37 pin connections	-	37	-
37-channel Input Panel - DIN Rail Mount	DNA-STP-37-DR	Any 37 pin connections	-	37	-
62-channel Input Panel	DNA-STP-62	Any 62 pin connections	-	62	-
62-channel Input Panel - DIN Rail Mount	DNA-STP-62-DR	Any 62 pin connections	-	62	-
Universal 37/62 Channel	DNA-STP-3762	37/62 pin connections	-	37/62	-
78-channel Input Panel - DIN Rail Mount	DNA-STP-78-DR	Any 78 pin connections	-	78	-
Universal Analog Input Panel	DNA-STP-AI-U	DNx-AI-207/217, DNx-AI-225	16 and 25	37/62	-
37-way Terminal Panel with CJC Sensor	DNA-STP-37CJC	DNx-AI-207	16	37	-
Thermocouple Input Panel	DNA-STP-AI-207TC	DNx-AI-207	16	37	-
Strain Gage Input Panel	DNA-STP-AI-208	DNx-AI-208	8	37	-
Thermocouple Input Panel	DNA-STP-AI-212	DNx-AI-212	12	37	✓
High Current Input Panel	DNA-STP-37HC	DNx-DIO-470	10	37	-
Serial 8-port Input Panel	DNA-STP-508	DNx-SL-508	8	62	-
Accelerometer Input Panel	DNA-STP-211	DNx-AI-211	4	37	✓
GPS Input Panel	DNA-STP-GPS	DNA-GPS	1	DB9	✓
Sync Connection Panel	DNA-STP-SYNC-1G	All	Up to 6 chassis	STP, BNC, DNA-CBL-SYNC-RJ	-
Screw Terminal/Interconnect with CJC Compenssation	DNA-STP-TC-378	DNx-TC-378	-	37	-
Debug Adapter for 37 pin boards	DNA-TADP-37	All	-	37	-
Debug Adapter for 37 pin boards	DNA-TADP-62	All	-	62	-

Loop Back Test Adaptors: Call UEI

CABLES

Cable Description	Part #	Shielded	Lengths (Ft)	For Use With
RS-232 port to female DB-9 connector	CBL-SX6-DIAG	✓	3	-11/-12 SoloX CPU Board
37-way, round cable (Male-Female)	DNA-CBL-37S	✓	1, 3, 5, 10, 20	All I/O boards with 37-pin connectors
37-way, flat ribbon cable (Male-Female)	DNA-CBL-37	-	3	All I/O boards with 37-pin connectors
Right angle 37-way, round cable (Male-Female)	DNA-CBL-37RA	✓	3	All I/O boards with 37-pin connectors
Special 37-way, high current (5 A) cable	DNA-CBL-37HC	✓	3, 6, 12	DNx-DIO-470
62-way, round shielded cable (Male-Male)	DNA-CBL-62	✓	2.5, 6, 10, 20, 40	All I/O boards with 62-pin connectors
Right angle 62-way, round shielded cable (Male-Male)	DNA-CBL-62RA	✓	3	All I/O boards with 62-pin connectors
78-way, round shielded cable (Male-Female)	DNA-CBL-78	✓	5	All I/O boards with 78-pin connectors
MIL Male 128-pin 38999 to 1x DB-37F	DNA-CBL-37M-03	✓	3	DNx-MIL chassis
MIL Male 128-pin 38999 to 1x DB-62M	DNA-CBL-62M-03	✓	3	DNx-MIL chassis
MIL Male 128-pin 38999 to 1x DB-37F and 1x DB-62M	DNA-CBL-6237M-3	✓	3	DNx-MIL chassis
MIL Male 128-pin 38999 to 2x DB-37F 38999	DNA-CBL-12837-5	✓	5	DNx-MIL chassis
MIL Male 128-pin 38999 to 2x DB-62M 38999	DNA-CBL-12862-5	✓	5	DNx-MIL chassis
MIL Power connector cable	DNA-CBL-1315-03	✓	3	DNx-MIL chassis
MIL LAN/Serial/Sync connector cable	DNA-CBL-LAN-06	✓	6	DNx-MIL chassis
BNC connections for Clock/IRIG & 1553	DNA-CBL-650	✓	2	DNx-IRIG-650 (Included with board)
Male 62-pin to four MIL-STD-1553 connectors	DNA-CBL-1553-553	✓	1	DNx-1553-553 (Included with board)
10-32 UNF Coaxial to Std Full-Size BNC cable/Adaptor	DNA-CBL-BNC	✓	3	DNx-AI-211
37-way to 4 single Serial ports, round shielded cable	DNA-CBL-COM	✓	1.5	DNx-SL-501, DNx-CAN-503, DNx-I2C-534
Cube Synchronization Cable	DNA-CBL-SYNC-10	✓	10	DNR/DNF series racks and PPCx-1G Cubes

Typical Products Lead Time Is 2 Weeks with UEI

UEI HAS YOU COVERED! A brief word on our warranties and guarantees to ensure your peace of mind

STANDARD WARRANTY 3 YEAR

UEI is so confident in the dependability of our hardware that our standard warranty is 3 years and is upgradable to 5 years. With a warranty return rate of less than 0.2%, it's easy to understand why we are capable of offering such a warranty!

10 YEAR AVAILABILITY GUARANTEE

UEI guarantees the availability of all chassis & I/O products for a minimum of 10 years. Unless you are specifically notified at the time of purchase, all chassis & I/O products will be available for repurchase for at least 10 years. Protecting you from obsolescence is a priority!

Successful Applications start with **UEI Hardware & I/O**

Here is a sampling of typical application story briefs that illustrate the dynamic capabilities of UEI.

FLIGHT SIMULATION

FlightSafety International selected UEI's RACKtangle I/O chassis for their flight simulators. The UEI system provides the interface between the controlling computers and the simulator's various systems, including Avionics Instrument Control, Control Loading and Motion and Flight Deck I/O. UEI was selected because of our high channel density, our I/O combined with a Gigabit Ethernet interface to the real-time operating system, and our built-in diagnostics and self-test capabilities.

Learn More

MARINE CRAFT CONTROL

The Navy needed a rehost for obsolescence and dependability on 75 LCAC marine crafts. They were looking for a TRL9 redundant craft command and control system. A system that is designed not to fail. UEI was selected for our COTS embedded military rack system with included 1553, analog and digital I/O, RS-485, and more. UEI's system ran VxWorks and reduced maintenance time by an impressive 75%. UEI's rugged and dependable hardware met and exceeded expectations.

Learn More

JET ENGINE TEST CELL

The Air Force developed a next-gen standard design of a test cell for high performance gas turbine engines. The system was designed for thrust frames to be separable from the cell so they could be configured and calibrated as an off-line task – independent of the cell the frame was installed in. UEI equipment moved with the thrust frame so the system could be configured, tested, and calibrated with the engine either in or out of the test cell. Without our rugged COTS system, this would not be possible.

Learn More

ROCKET LAUNCH SYSTEM

From ground control to the International Space Station, our hardware is being used to control and monitor a large number of space related applications. Whether the application is military, NASA or with our growing list of commercial space customers, our hardware is becoming a staple in the space industry. Our redundancy and control feedback capabilities are crucial in these environments. UEI is the go-to vendor for launchpad hardware and I/O systems.

Learn More

HARDWARE IN THE LOOP

Whether it is supersonic flight, Spaceflight, avionics, or automotive ADAS, all these industries depend upon UEI for test and validation hardware for their systems. UEI offers superior hardware-in-the-loop (HIL) I/O for your control, test and monitoring simulations. We focus on exactly what you need – from software integration (SIMULINK to C), hardware I/O (avionics, simulated synchro, LVDT, RTD, TC, etc), to signal routing (simulated, real or fault signals) to the device under test. You get the right system and unmatched support from UEI.

Learn More

SMART MUNITION TESTER

Common Armament Test Set (CATS) and Common Aircraft Armament Test Set (CAATS) programs are designed to test smart munitions equipment in a go/no go fashion. Many existing units in service today are based on dated VME technology that cannot handle increasing complex signal I/O, including MIL-STD-1760 and other sophisticated testing requirements. UEI hardware matches these needs, while being smaller, lighter, less expensive, and more powerful than existing VME test systems. UEI products have been chosen to replace many of these dated systems.

Learn More

POWER PLANT TEST SYSTEMS

To ensure proper operation, most power plants, or at least sub-sections of the plants are periodically shut down, allowing a full test of the plant control system. UEI's product line is ideal for these test systems, as it includes all standard I/O capabilities as well as products that simulate TCs, RTDs, LVDT/RVDTs, Synchro/Resolvers, I2C and any serial device. UEI's systems are also easily distributed across large areas and easily expanded to meet the test requirements of even the largest facility.

Learn More

HEALTH USAGE & MONITORING

UEI enables your sensor based monitoring system to measure the performance and health of your mission critical components. From intercity buses to air force helicopters, our hardware is used on more than 1000 vehicles to pin-point faults before they become catastrophic failures. Our systems provide actionable intelligence to allow for better informed maintenance decisions. Reduce cost, enhance safety, increase availability of your high value asset with UEI.

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