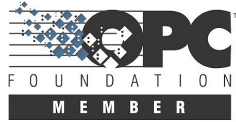# OPC-UA I/O Solutions

Powerful , Robust and Easy-to-Use

- Powerful I/O platform runs from your OPC-UA server
- Supported by all of UEI's popular Cube and RACKtangle chassis
- Flexible, compact and rugged
- Web/HTML configuration
- Flexible: Over 50 I/O boards available
- Remote connections possible through VPN and Firewalls
- 100Base-T, 100Base-FX (fiber), or Gigabit Ethernet
- Supports the OPC-UA Historian functionality
- 10-year availability Guarantee

OPC-UA support is available on all UEI's chassis!

General Description:

UEI's OPC-UA compatible I/O product family has been designated the UEI-OPC-UA series. It offers an unprecedented combination of flexibility, high performance, low cost, ruggedness and small size, all fully supported by your standard OPC-UA host. The OPC-UA functionality is available on all of UEI's popular Cube and RACKtangle form factors.

UEI-OPC-UA series supports the following profiles and facets

Server Profile: Embedded UA Server profile

Transport Profile: UA-TCP, UA-SC, UA Binary

Security Profiles: SecurityPolicy - Basic256Sha256, SecurityPolicy - Basic256 and SecurityPolicy – None

Access Types: Data Access, Historical Data Access

System configuration is made easy by the UEI-OPC-UA's intuitive, easy to use web/HTML interface. A screen capture of the web interface is shown on the following page. The web interface also supports the OPC-UA Historian functionality.

There are currently over 50 different I/O boards available providing the functions shown in the column to the right:

Input Boards
- 0-20 / 4-20 mA input
- Thermocouple input
- RTD input
- Strain and Wheatstone Bridge input
- Voltage input
- Digital I/O
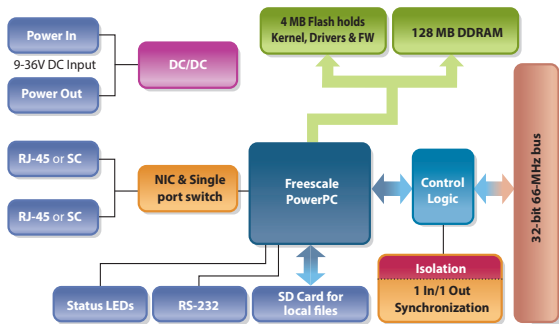- Speed/Frequency Input
- Quadrature Encoder Input

Output Boards
- 0-20 / 4-20 mA output
- Voltage output
- Digital Output
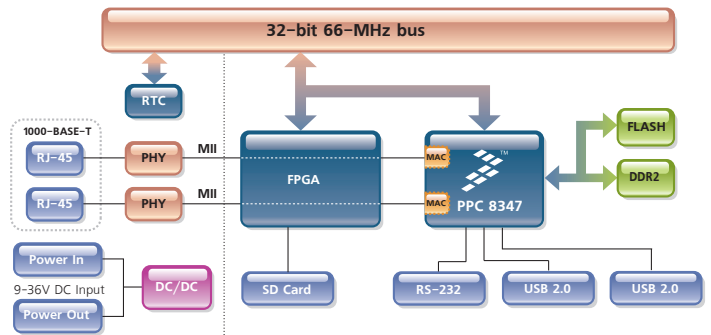- Relay Output
- plus many more.

With this many different I/O boards available, there is sure to be a configuration perfect for your application.

OPC-UA systems are ideal solutions in a wide variety of measurement and control applications in industries such as: Oil & Gas, Automotive, Energy Systems, Food & Beverage, Water Treatment, Chemical Processing and many more!

Block Diagrams

100 Base-T Cubes

GigE Cubes and RACKtangles

Example Configuration Screen

UEI's OPC-UA web based I/O configuration tool makes it very easy to configure your system and prepare it to connect to your OPC-UA server. The web based tool also allows you to select the channels you wish to store in the Historian for future reference.

UEIOPC-UA: Technical Specifications

Computer Interface	UEIOPC-UA xxx series Cubes	UEIOPC-UA xxx-1G series GigE Cubes	UEIOPC-UA RACKtangle Chassis
Primary Ethernet Port	10/100Base-T, RJ-45 connector	10/100/1000Base-T, RJ-45 connector	10/100/1000Base-T, RJ-45 connector
Diagnostic Port	Not applicable	10/100/1000Base-T, RJ-45 connector	10/100/1000Base-T, RJ-45 connector
Other Port Functions	Daisy chained single port switch provided	Ports may optionally be bonded/teamed	Ports may optionally be bonded/teamed
Optional Interface	100Base-FX Fiber (single or multi-mode)	n/a	n/a
Config/Serial Port	RS-232, 9-pin "D"	RS-232, 9-pin "D"	RS-232, 9-pin "D"
USB Port	Not supported	Not supported	Not supported
I/O Board Support			
Series supported	DNA-series boards	DNA-series boards	DNR-series boards (DNF for FLATrack)
Software / Operating System			
Embedded OS	Linux, kernel 4.4.89	Linux, kernel 4.4.89	Linux, kernel 4.4.89
Processor / System			
CPU	Freescale MPC5200, 400 MHz, 32-bit	Freescale 8347 or 8347E, 400 MHz, 32-bit	Freescale 8347 or 8347E, 400 MHz, 32-bit
RAM Memory	128 MB, 100 MB available to user apps	128 MB standard / 256 MB optional 100 MB / 228 MB available to user apps.	128 MB standard / 256 MB optional 100 MB / 228 MB available to user apps.
FLASH Memory	4 MB (0 MB available for user apps)	32 MB standard / 128 MB optional 16 MB / 112 MB available for user apps.	32 MB standard / 128 MB optional 16 MB / 112 MB available for user apps.
Solid-State Hard Drive	not available	Optional 8 or 16 GB drives available*	Optional 8 or 16 GB drives available*
SD Card Interface	SD cards up to 32 GB (8 GB included)*	SD cards up to 32 GB (8 GB included)*	SD cards up to 32 GB (8 GB included)*
USB Drive Interface	n/a	Standard USB 2.0 port	Standard USB 2.0 port
Physical Dimensions			
1 I/O slot		UEIOPC-UA 100-1G: 4.1" x 4.0" x 2.7"	
3 I/O slots	UEIOPC-UA 300: 4.1" x 4.0" x 4.0"	UEIOPC-UA 300-1G: 4.1" x 5.0" x 4.0"	n/a
4 I/O slots			UEIOPC-UA 400R: 1.75" x 7.8" x 16" (1U)
6 I/O slots	UEIOPC-UA 600: 4.1" x 4.0" x 5.8"	UEIOPC-UA 600-1G: 4.1" x 5.0" x 5.8"	UEIOPC-UA 600R: 5.25" x 6.2" x 10.5" (3U)
7 I/O slots	UEIOPC-UA 700: 4.1" x 4.0" x 6.6"	UEIOPC-UA 700-1G: 4.1" x 5.0" x 6.6"	
12 I/O slots	n/a	n/a	UEIOPC-UA 1200R: 5.25" x 6.2" x 17.5" (3U)
Environmental			
Electrical Isolation	350 Vrms	350 Vrms	350 Vrms
Temp (operating)	-40 °C to 85 °C	-40 °C to 70 °C	-40 °C to 70 °C
Temp (storage)	-40 °C to 100 °C	-40 °C to 85°C	-40 °C to 85 °C
Humidity	0 to 95%, non-condensing	0 to 95%, non-condensing	0 to 95%, non-condensing
Vibration			
(IEC 60068-2-64)	10–500 Hz, 5 g (rms), Broad-band random	10–500 Hz, 3 g (rms), Broad-band random	10–500 Hz, 3 g (rms), Broad-band random
(IEC 60068-2-6)	10–500 Hz, 5 g, Sinusoidal	10–500 Hz, 3 g, Sinusoidal	10–500 Hz, 3 g, Sinusoidal
Shock			
(IEC 60068-2-27)	50 g, 3 ms half sine, 18 shocks at 6 orientations; 30 g, 11 ms half sine, 18 shocks at 6 orientations	100 g, 3 ms half sine, 18 shocks at 6 orientations; 30 g, 11 ms half sine, 18 shocks at 6 orientations	100 g, 3 ms half sine, 18 shocks at 6 orientations; 30 g, 11 ms half sine, 18 shocks at 6 orientations
Altitude	70,000 feet (special version to 120,000')	70,000 feet, maximum	70,000 feet, maximum
Power Requirements			
Voltage	9-36 VDC (115/220 VAC adaptor included)	9-36 VDC (115/220 VAC adaptor included)	9-36 VDC (115/220 VAC adaptor included)
Power	3.5 Watts (not including I/O boards)	7 Watts (not including I/O boards)	10 Watts (not including I/O boards)
Reliability			
MTBF	>300,000 hours	>160,000 hours	>130,000 / 160,000 hrs DNR-12 / DNR-6

*THE SD CARDS AND SSD DEVICES USED ARE NOT BUILT BY UEI. AS WE DO NOT CONTROL THE SOURCE, WE CANNOT OFFER OUR 10-YEAR AVAILABILITY GUARANTEE ON THESE DEVICES.

UEIOPC-UA Technical Specifications:

Computer Interface	MIL series ruggedized chassis
Primary Ethernet Port	10/100/1000Base-T, 38999 connector
Diagnostic Port	10/100/1000Base-T, 38999 connector
Net Teaming/bonding	Supported
Config/Serial Port	on LAN/COM 38999 connector
USB Port	n/a on UEIOPC-UA
I/O Board Support	
Series supported	DNA/DNR-series
Software / Operating System	
Embedded OS	Linux, kernel 4.4.89
Real-time support	Standard Linux kernel
Processor/system	
CPU	Freescale 8347 or 8347E, 400 MHz, 32-bit
Memory	256 MB, 228 MB available to user apps
FLASH memory	32 MB standard / 128 MB optional 16 MB / 112 MB available for user apps
Solid-State Hard Drive	Optional 8 or 16 GB drives available*
SD card interface	SD cards up to 32 GB
Physical Dimensions	
4 I/O slots	UEIOPC-UA 400-MIL: 6.2" x 7.1" x 8.7", 11 lbs.
12 I/O slots	UEIOPC-UA 1200-MIL: 17.5" x 8.1" x 7.0" 22 lbs. (Std 3U)
Environmental	
Temp (operating)	-40 °C to 85 °C (power dissipation of actual system may require derated max temp.)
Temp (storage)	-40 °C to 85 °C
Humidity	0 to 95%, non-condensing
Vibration	MIL-STD-810G plus the IEC specs below
(IEC 60068-2-64)	10–500 Hz, 5*g* (rms), Broad-band random
(IEC 60068-2-6)	10–500 Hz, 5 *g*, Sinusoidal
Shock	MIL-STD-810G plus the IEC specs below
(IEC 60068-2-27)	100 *g*, 3 ms half sine, 18 shocks at 6 orientations; 30 *g*, 11 ms half sine, 18 shocks at 6 orientations
Altitude	70,000 feet, maximum
EMI / RFI	Designed to meet MIL-STD-461
Sealing	Default unit sealed to IP 66 or better. Pressure relief valves support continuous altitude changes of 5000 fpm. Units can be configured with bottom weep holes if desired.
Power Requirements	
Voltage	9 - 36 VDC designed to meet MIL-STD-1275 / 704
Reliability	
MTBF 1200-MIL	> 100,000 hours
MTBF 400-MIL	> 130,000 hours

UEIOPC-UA Advantages:

Easy to configure and deploy

- Uses standard OPC-UA protocol
- Over 50 different I/O boards available
- Web browser based configuration
- Built-in signal conditioning
- Cube, RACKtangle and MIL configurations
- Standard "Off-the-shelf" products and delivery

Flexible Connectivity

- 100Base-T or GigE with Cat-5 cable
- 10/100Base-FX Fiber interface available

Compact Size: 4" x 4" x 5.8" Cube allows:

- 175 analog inputs per cube
- 224 analog outputs per cube
- 336 digital I/O bits per cube
- 48 counter/timer channels per cube
- 48 quadrature encoder inputs per cube

Low Power:

- As low as 15 watts per chassis
- AC, 9-36 VDC or battery powered

Rugged and Industrial:

- Operation tested from -40℃ to 85℃
- Vibration tested to 5 g, (operating)
- Shock tested to 100 g (operating)
- All I/O isolated from chassis and host PC

Please refer to the ordering guide on the following page for information on options and part numbers.

Ordering Guide: (All chassis include: Universal AC power supply, Serial and Ethernet cables.)

Chassis Configuration

300[1, 2]	100Base-T Linux-based, OPC-UA I/O chassis with 3 available I/O slots
600[1, 2]	100Base-T Linux-based, OPC-UA I/O chassis with 6 available I/O slots
700[1]	100Base-T Linux-based, OPC-UA I/O chassis with 7 available I/O slots
100-1G	Gigabit Ethernet, OPC-UA I/O chassis with 1 available I/O slots (a.k.a. UEINET-OPCUA)
300-1G	Gigabit Ethernet, OPC-UA I/O chassis with 3 available I/O slots
600-1G	Gigabit Ethernet, OPC-UA I/O chassis with 6 available I/O slots
700-1G	Gigabit Ethernet, OPC-UA I/O chassis with 7 available I/O slots
600R	Gigabit Ethernet, OPC-UA I/O chassis, RACKtangle with 6 available I/O slots
1200R	Gigabit Ethernet, OPC-UA I/O chassis, RACKtangle with 12 available I/O slots
400F-AC	1U FlatRACK, rack mountable 4 slot chassis with Gigabit Ethernet and 100-240 V AC power
400F-DC	1U FlatRACK, rack mountable 4 slot chassis with Gigabit Ethernet and 9-36 VDC power
400-MIL	Military style, 4 slot Cube with GigE Ethernet ports and 38999 connectivity
1200-MIL	Military style, 12 slot RACKtangle with GigE Ethernet ports and 38999 connectivity

UEIPAC _____ - __ - __ - __ - __

*CPU Configuration

00	- standard CPU
01	- reserved
02	- Updated CPU board supports: • IEEE-1588 • solid-state hard drives • 256 MB of RAM
03	- Updated CPU board adds: • IEEE-1588 • solid-state hard drives • 8347E encryption ready CPU (IPsec support pending) • 128 MB of Flash, 256 MB of RAM

Software Deployment options

PA	- Standard UEIPAC deployment
SM	- Simulink (UEISIM) deployment option
MB	- Modbus (UEIModbus) deployment option
OP	**- OPC-UA (UEIOPC-UA) deployment option**

SD Card

00	- No SD card
S8	- 8 GByte SD card
32	- 32 GByte SD card

Solid State Hard Drive

00	- No SS Drive
08	- includes 8 GByte SS Drive
16	- includes 16 GByte SS Drive

*Boot Software Location

-00 CPUs: The CPU boots from the SD card

-02 CPUs: If an SSD is installed, the CPU boots from SSD. Otherwise it boots from the SD card.

-03 CPUs: The CPU boots from FLASH memory

For example a 3-slot GigE OPC-UA Cube with 8347E encryption, no SS Drive, and no SD card would be:

UEIPAC 300-1G - 03 - 00 - 00 - OP

For example a 12-slot OPC-UA RACKtangle without 8347E encryption, a 8 GB SS Drive, and no SD card would be:

UEIPAC 1200R - 02 - 08 - 00 - OP

[1] There are no CPU or Solid State Drive options available on the UEIOPC-UA 300, 600 and 700.

[2] The UEIOPC-UA 300/600 are available with 100Base-FX fiber connections or a DB-15 power connector. Contact UEI for details.