

UEIPAC Cubes and RACKs

Fourth Generation (G4) processor

Programmable Automation Controllers

- Powerful stand-alone embedded controller
- Flexible, compact and rugged
- Powerful ARM processor
- HDMI video output (optional)
- Standard Linux or VxWorks Operating System
- IOT/MQTT ready (pre-installed Mosquitto app)
- DDS support w/ iDDS, ZeroMQ, OpenSplice or CoreDX
- EPICS CAS support included
- M2 slot for peripherals including Cell cards
- Web/HTML/HTML5 Web Socket interface support
- Flexible: Over 80 I/O boards available
- Solid-State Drive and/or SD Card-based storage
- Synchronization via IEEE-1588
- Real-Time Linux kernel-based real-time capability

General Description:

The UEIPAC offers an unprecedented combination of flexibility, high performance, low cost and small controller. The unit is an ideal solution in a wide variety of measurement and control applications. The UEIPAC is also an ideal solution for embedded DAQ applications, allowing systems to operate without the cost or additional space required by an external host computer.

Enhanced CPU performance:

The Fourth Generation (G4) CPU is based upon a modern, low power G4 SoloX / i.MX6 series ARM processor. The new CPU joins the currently supported Freescale MPC5200/8347 based CPUs in the UEIPAC family and all three are covered by UEI's powerful 10-year availability guarantee. The G4's Cortex-A9 core runs up to 1 GHz and is fully available for user programs. The initial release will provide a Linux operating system on the A9 core. VxWorks and QNX support is expected in the future.

New features of the G4 CPU (beyond CPU power)

- Built-in HDMI (1366 x 768) support (optional)
- 1 GByte RAM / 8 GByte eMMC FLASH
- M.2 series I/O slot for SSD or other peripheral
- eUSB slot for additional SSD storage
- MicroSD card slot for removable data storage

Other Key CPU features

- Dual GigE ports (control/diagnostic or teamed/bonded)
- Direct USB connection
- IEEE-1588 / PTP timing/synchronization interface
- Direct support of DNx series sync port
- Extensive diagnostics including power supply and temperature monitoring
- All standard UEI chassis environmental specifications
- 9-36 VDC power (universal AC adaptor also included)
- Low power <10W in most configurations



The A9 core provides approximately 2.5 to 5 times the CPU horsepower of the previous 8347 generation, depending on the application. The G4 will be compatible with all 8347-based chassis and deployments which includes all GigE based chassis. The G4 version of the UEIPAC supports Linux OS with future support for VxWorks and QNX expected.

Linux Systems

- Uses Yocto Linux distribution: Yocto version 2.4 (Rocko), Linux kernel 4.9.88, PREEMPT_RT patch for real-time support
- Program in standard C/C++
- Eclipse IDE support
- Develop on Linux PC or Windows PC / Cygwin environment

VxWorks Systems

- Use your existing development license
- Obtain your run-time license from WindRiver
- Our BSP provides everything else required including examples
- One-time charge for the BSP regardless of the number of units deployed

The UEIPAC is supported by all UEI DNA/DNR/DNF series chassis. There are currently over 80 different I/O boards available including analog input (with up to 24 bit resolution), analog output, digital I/O, MIL-STD-1553, AFDX, ARINC 429/453/708, Serial and CAN communications, counter/timer, quadrature encoder input and more. With this many different I/O boards available, there is sure to be a configuration perfect for your application.

Generation 4 Cubes and RACKs provide dual Ethernet ports, each of which resides at a unique IP address. These are most commonly used to provide separate primary control and diagnostic ports but can also function as teamed/bonded redundant interfaces. An M.2 PCIe slot on the CPU can be used for SS Drives or other M.2 peripherals including Cell or WIFI interfaces.

Linux Programming

Your application runs as a regular Linux process giving you access to the standard POSIX API provided by the GNU C runtime library (glibc) as well as any other library that can be compiled for Linux (for example: libxml, libaudio file...).

New software provided with the UEIPAC includes an EPICS (Experimental Physics and Industrial Control System) Channel Access Server (CAS). Our new LibSharedData software allows easy connection of the UEIPAC to HTML/HTML5 browsers via Web Sockets or other PCs via TCP/IP Sockets.

Whether your application requires a few I/O channels or a few thousand, the UEIPAC is an ideal solution. The UEIPAC's unique combination of Linux operating system, real-time support, I/O flexibility, compact size, mechanical and electrical ruggedness, and ease of use is unparalleled.

UEIPAC Linux TK Programmer's Toolkit

The programmer's toolkit provides the software tools necessary to create an embedded application targeting Linux on the UEIPAC's ARM processor. This includes most popular versions of Linux such as Fedora and Suse. The development environment runs on a Linux PC or in the Cygwin environment on a Windows PC. The UEIPAC is also supported by the popular Eclipse IDE. Applications requiring hard real-time functionality are possible with the Real-Time Linux capability included in the 4.9.88 series kernel.

The UEIPAC development environment includes:

- GCC 7 based cross-compiler for applications targeting the UEIPAC ARM module
- GNU toolchain tools such as make
- Standard Linux libraries such as glibc
- UEIPAC library for the various I/O boards/devices

The UEIPAC Linux TK is not included with the UEIPAC and must be purchased as a separate item. *Only one Linux toolkit must be purchased, regardless of the number of UEIPAC deployed.*

The toolkit uses the same API as our popular PowerDNA Cubes, allowing you to reuse existing programs that were designed to run with a PowerDNA Cube over the network. This allows you to develop your application on your desktop, working directly with a "slaved" PowerDNA Cube. Once you are satisfied with your system, you may port the programs to run directly on the UEIPAC Cube with few modifications.

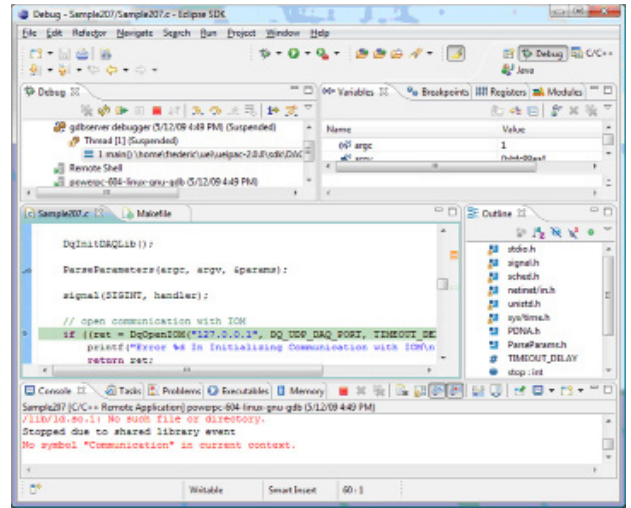
After the UEIPAC power-up, you have a ready to go Linux OS with FTP and web servers as well as a command line shell accessible from the serial port or SSH over the network.

EPICS:

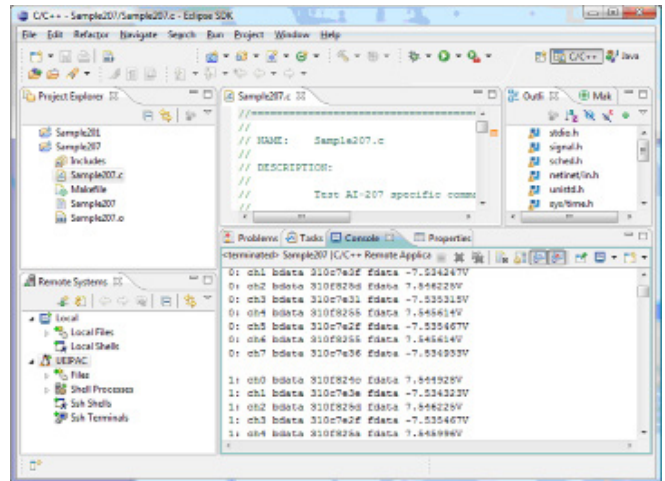
EPICS (Experimental Physics and Industrial Control System) is a popular standard in high-energy physics laboratories. Our new EPICS server provides the source code to set up the UEIPAC as an EPICS CAS (Channel Access Server), allowing you to configure any I/O input or output as a PV (Process Variable).

Eclipse IDE support

The UEIPAC is now supported by the Eclipse IDE. Programmers may now take advantage of the many powerful Eclipse tools to build their UEIPAC applications.



The Eclipse IDE debug screen.



A typical Eclipse IDE run-time screen.

New Software Support

Web Browser Interface: Our new LibSharedData API/library allows easy connection of the UEIPAC to HTML/HTML5 browsers via Web Sockets or other PCs via TCP/IP Sockets. The HTML5 interface is fully compatible with many mobile browsers including Safari for iOS and iPhones and iPads and the Android web browser. Of course the standard HTML interface is provided to interface to more general purpose web browsers.

IOT

The UEIPAC comes with Mosquitto pre-installed. Mosquitto implements a broker and a C library to publish/subscribe MQTT messages. Examples and API documentation can be found at <http://mosquitto.org>. UEIPAC comes with the SampleDMAP_MQTT example that can acquire and publish data from AI, DI or counter/timer layers. The example can also subscribe to external data and write it on AO and DO outputs.

VxWorks Programming

You may take advantage of all the hardware advantages of UEI's popular UEIPAC chassis and continue to develop your applications in VxWorks. This powerful combination provides hard real-time performance, an extremely robust and reliable operating system, allows you to develop your application in a familiar environment and last, but not least, allows you to preserve a great deal of previously written code! To deploy a UEIPAC application running VxWorks you'll need the following.

1. A UEIPAC (any version with GigE Ethernet ports)
2. The "UEIPAC VxW BSP". You only need to purchase the BSP once, regardless of the number of systems you deploy
3. A VxWorks v 7.x development system (from Wind River)
4. A VxWorks run-time license for each UEIPAC deployed (also purchased from Wind River)

Though it's beyond the scope of the datasheet to provide details on how to configure and program the UEIPAC in VxWorks, the following is the table of contents from the current revision of the VxWorks UEIPAC user manual. The steps mentioned should be familiar to existing VxWorks programmers and should help the reader understand the process.

1 Configuring and building a VxWorks kernel for UEIPAC

1.1 Installing Software

- 1.1.1 Extract files
- 1.1.2 Build PowerDNA driver

1.2 Building a VxWorks kernel for UEIPAC

- 1.2.1 Create a VxWorks Image Project
- 1.2.2 Kernel Configuration
- 1.2.3 Build Kernel

1.3 Booting VxWorks kernel on UEIPAC

- 1.3.1 Manual boot
- 1.3.2 Store kernel in flash
- 1.3.3 Automatic boot in VxWorks

2 Programming with PowerDNA API

2.1 Building PowerDNA library

- 2.1.1 Set-up environment
- 2.1.2 Install PowerDNA driver source and documentation
- 2.1.3 Build library using DIAB tools
- 2.1.4 Build library using GNU tools

2.2 Building an example as a kernel module

- 2.2.1 Creating workbench project
- 2.2.2 Running the example
- 2.2.3 Debugging the example

UEIPAC: 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 |
| Video output | Call for details |
| M2 PCIe slot (internal) | 1 slot, 22 or 30 width, 42, 60 or 80 length, B key |
| Net Teaming/bonding | Supported in both Linux and VxWorks deployments |
| Config/Serial Port | RS-232 port on LAN/COM 38999 |
| USB Port | USB 2.0 fully supported |
| Synch Options | Sync input/output port or IEEE-1588 |
| I/O Board Support | Series supported All DNR/DNA-series boards as appropriate |
| Software / Operating System | Embedded OS Linux, kernel 4.9.x or VxWorks 7.x |
| Real-time support | 4.9.88 kernel based Real-time Linux, VxWorks is a real-time OS |
| EPICS CAS interface | Yes (Linux version) |
| SNMP Library | Yes |
| Processor/system | CPU SoloX / i.MX6 series ARM processor Cortex A9 core @ 1Ghz |
| Memory | 1 Gbyte RAM |
| FLASH memory | 8 Gbyte |
| Solid-State Hard Drive | Optional 8 or 16 GB drives available* |
| µSD card interface | µSD cards up to 128 GB |
| USB drive interface | Standard USB 2.0 port |
| Physical Dimensions | 4 I/O slots UEIPAC 400-MIL: 6.2" x 7.1" x 8.7", 11 lbs. 6 I/O slots UEIPAC 600-MIL 10.6" x 7.0" x 6.4", 16 lbs. 12 I/O slots UEIPAC 1200-MIL: 17.5" x 8.1" x 7.0" 22 lbs. |
| Environmental | Temp (operating) UEIPAC 1200-MIL UEIPAC 600-MIL -40 °C to 85 °C (power dissipation of actual system may require derated max temp.) |
| Temp (operating) UEIPAC 400-MIL | -40 °C to 70°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, 5g (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 |
| EMI / RFI | Designed to meet MIL-STD-461 |
| Altitude | 70,000 feet, maximum |
| Sealing | Default unit sealed to IP 66 or better. Pressure relief valves support continuous altitude changes of 5000 fpm. |
| Power Requirements | Voltage 9 - 36 VDC designed to meet MIL--1275 / 704 |
| Reliability | MTBF 400-MIL >100,000 hours MTBF 1200/600-MIL >130,000 hours |

UEIPAC: Technical Specifications

| Computer Interface | UEIPAC xxx-1G series GigE Cubes | RACKtangle Chassis |
|-----------------------------|--|--|
| Primary Ethernet Port | 10/100/1000Base-T, RJ-45 connector | 10/100/1000Base-T, RJ-45 connector |
| Diagnostic Port | 10/100/1000Base-T, RJ-45 connector | 10/100/1000Base-T, RJ-45 connector |
| Other Port functions | Ports may optionally be bonded/teamed | Ports may optionally be bonded/teamed |
| Video | HDMI (1366 x 768 on CPU option 12) | HDMI (1366 x 768 on CPU option 12) |
| M2 PCIe slot (internal) | 1 slot for 42-22, 42-30, 60-22 or 80-22 M2 cards | 1 slot for 42-22, 42-30, 60-22 or 80-22 M2 cards |
| Config/Serial Port | Dual RS-232, one per CPU core | Dual RS-232, one per CPU core |
| USB Port | USB 2.0 fully supported | USB 2.0 fully supported |
| Synchronization Options | 1. DNA-SYNC-1G series cables and boards provide both clock and trigger sync signals. 2. DNA-IRIG-650 for IRIG and GPS synch 3. IEEE-1588 synchronization | 1. DNA-SYNC-1G series cables and boards provide both clock and trigger sync signals. 2. DNA-IRIG-650 for IRIG and GPS synch 3. IEEE-1588 synchronization |
| I/O Board Support | | |
| Series supported | All DNA-series boards | All DNR-series boards (DNF for FLATrack) |
| Software / Operating System | | |
| Embedded OS | Linux, kernel 4.9.x or VxWorks 7.x | Linux, kernel 4.9.x or VxWorks 7.x |
| Real-time support | 4.9.88 kernel based Real-time Linux, VxWorks is a real-time OS | 4.9.88 kernel based Real-time Linux, VxWorks is a real-time OS |
| Dev Language | C/C++, C++11/14/17, Eclipse IDE support | C/C++, C++11/14/17, Eclipse IDE support |
| Dev Environments | Linux PC or Cygwin Windows environment | Linux PC or Cygwin Windows environment |
| EPICS CAS interface | Yes | Yes |
| SNMP Library | Yes | Yes |
| Processor/system | | |
| CPU | SoloX / i.MX6 series ARM processor Cortex A9 core @ 1Ghz | SoloX / i.MX6 series ARM processor Cortex A9 core @ 1Ghz |
| Memory | 1 Gbyte RAM | 1 Gbyte RAM |
| FLASH memory | 8 Gbyte | 8 Gbyte |
| Solid-State Hard Drive | Optional 8 or 16 GB drives available* | Optional 8 or 16 GB drives available* |
| µSD card interface | µSD cards up to 128 GB | µSD cards up to 128 GB |
| USB drive interface | Standard USB 2.0 port | Standard USB 2.0 port |
| Physical Dimensions | | |
| 1 I/O slot | UEINET-PAC: 4.1" x 4.0" x 2.7" | n/a |
| 3 I/O slots | UEIPAC 300-1G: 4.1" x 5.0" x 4.0" | n/a |
| 4 I/O slots | n/a | UEIPAC 400R: 1.75" x 7.8" x 16" (Std 1U) |
| 6 I/O slots | UEIPAC 600-1G: 4.1" x 5.0" x 5.8" | UEIPAC 600R: 5.25" x 6.2" x 10.5" |
| 7 I/O slots | UEIPAC 700-1G: 4.1" x 5.0" x 6.6" | n/a |
| 12 I/O slots | n/a | UEIPAC 1200R: 5.25" x 6.2" x 17.5" (Std 3U) |
| Environmental | | |
| Electrical Isolation | 350 Vrms | 350 Vrms |
| Temp (operating) | -40 °C to 70 °C | -40 °C to 70 °C |
| Temp (storage) | -40 °C to 85°C | -40 °C to 85 °C |
| Humidity | 0 to 95%, non-condensing | 0 to 95%, non-condensing |
| Vibration | | |
| (IEC 60068-2-64) | 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, 3 g, Sinusoidal | 10–500 Hz, 3 g, Sinusoidal |
| Shock | | |
| (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 | 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 | 70,000 feet, maximum |
| Power Requirements | | |
| Voltage | 9-36 VDC (115/220 VAC adaptor included) | 9-36 VDC (115/220 VAC adaptor included) |
| Power | 7 Watts (not including I/O boards) | 10 Watts (not including I/O boards) |
| Reliability | | |
| MTBF | >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.

Extended Features:

Easy to configure and deploy

- Standard Linux operating system (VxWorks Available)
- Eclipse IDE support
- Optional 1366 x 768 HDMI video
- IOT ready with pre-installed MQTT support
- Supports DDS packages including ZeroMQ, OpenSplice and CoreDX
- EPICS CAS provided
- Web server
- Web Browser (Web Socket) interface included
- FTP server included
- Over 80 different I/O boards available
- Built-in signal conditioning
- Optional 8 or 16 GB Solid-State hard drives
- M2 PCIe slots
- Flange kit for mounting to wall/flat surface
- DIN rail and Rack Mount kits
- Standard "Off-the-shelf" products and delivery

Flexible Connectivity

- 100Base-T or GigE with Cat-5 or higher cable
- RS-232 Interface
- Supports Wi-Fi / GSM / Cell networks

Rugged and Industrial

- 100Base-T Cubes operation tested from -40 °C to 85 °C
- RACKs and GigE Cubes operation tested from -40 °C to 70 °C
- 100Base-T Cubes Vibration tested to 5 g
- RACKs and GigE Cubes Vibration tested to 3 g
- Shock tested to 100 g (operating)

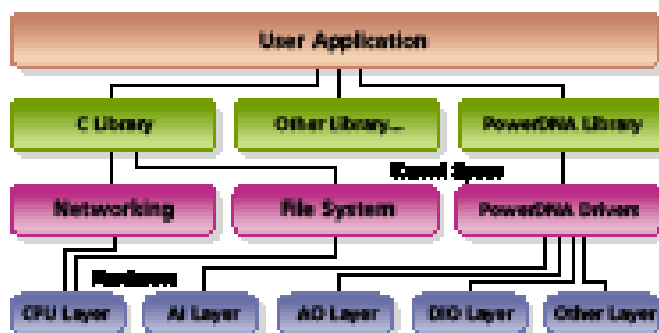
Compact Size and High Channel Density

- Analog Inputs: up to 175/300 chan. per Cube/RACKtangle
- ICP/IEPE: up to 28/48 channels per Cube/RACKtangle
- Analog Outputs: up to 224/384 channels per Cube/RACKtangle
- Digital I/O: up to 336/576 DIO per Cube/RACKtangle
- ARINC 429: up to 112/192 channels per Cube/RACKtangle
- Counter/Timer: up to 56/96 counter channels per Cube/RACKtangle
- CAN-bus: up to 28/48 ports per Cube/RACKtangle
- RVDT/LVDT: up to 28/48 channels per Cube/RACKtangle
- RS-232/422/485: up to 56/96 ports per Cube/RACKtangle
- Synchro: up to 28/48 channels per Cube/RACKtangle
- MIL-1553: up to 14/24 redundant ports per Cube/RACKtangle

Typical Applications:

- Embedded Controller
- Hardware-in-the-loop controller
- Unmanned vehicle controller
- Wind energy and turbine controller
- Smart, Flexible data loggers
- Slaved controller with fail-safe local control and/or shut-down if communication is lost
- HVAC / Environmental controller
- Modern replacement for obsolete VME systems
- Solar Energy system controller
- Machine Health Monitor
- DUT simulator
- In-vehicle test systems
- Avionics simulator
- Single and multiple PID loop controller
- Rugged and remote DAQ

System Block Diagram:



Connectors:

| Name On Physical Device | Interface Name | Part Number | Notes |
|-------------------------|-------------------|---|---|
| NIC1 | Ethernet | RJ45 | This is a standard, independent, 1G Ethernet interface. |
| NIC2 | Ethernet | RJ45 | This is a standard, independent, 1G Ethernet interface. |
| HDMI | HDMI | HDMI Type-A | HDMI Output resolution is limited to 1366x768 |
| USB1 | USB | USB Type-A | This is a standard USB 2.0 interface |
| USB2 | USB | USB Type-A | This is a standard USB 2.0 interface |
| uSD Card | MicroSD Card Slot | N/A | The maximum SD card size is 128GB |
| DIAG | Diagnostic Port | Hirose IX61G-B-10P | See below for pinout |
| Power In | Molex | <ul style="list-style-type: none"> Molex PN: 39-01-4040 (housing) Molex PN: 44476-3112 (pins) | See below for pinout |
| Sync | Sync Port | Hirose ST60-10P | See below for pinout |

Pinouts:

Power In¹ (molex)

| | |
|---|-------|
| 1 | + VIN |
| 2 | GND |
| 3 | GND |
| 4 | + VIN |

Synchronization

| | |
|----|------------|
| 1 | + 5 V |
| 2 | + 5 V |
| 3 | GND |
| 4 | SYNC OUT 2 |
| 5 | GND |
| 6 | SYNC IN 2 |
| 7 | GND |
| 8 | SYNC OUT 1 |
| 9 | GND |
| 10 | SYNC IN 1 |

Diagnostic

| | |
|----|------------|
| 1 | SYNC-IN-C |
| 2 | SYNC+3.75V |
| 3 | SYNC-OUT-C |
| 4 | SYNC-GND |
| 5 | N/C |
| 6 | RX1 |
| 7 | TX1 |
| 8 | RX2 |
| 9 | TX2 |
| 10 | DGND |

CBL-SX6-DIAG (Optional Diagnostic Serial Port Cable)

This cable brings the diagnostic RS-232 port on the CPU board out to a standard female DB-9 connector. Though the diagnostic port provides access to a wealth of boot-time information and configuration/set-up tools, most customers will never need to use it. For this reason, we have made the cable an optional purchase. However, though you certainly will not need a cable per chassis, we do recommend users purchase one or two of these cables for the development lab. Note that we do keep these cables in stock so should you need one in the future, it could be overnighted to you. Note also that the information displayed on the diagnostic port is also available on the HDMI port on option 12 CPUs that include the video port.



Serial/RS-232 (female dB9, cable is 1 m long)



PLEASE SEE ORDERING GUIDE ON THE FOLLOWING PAGE

Ordering Guide: (All chassis except -MIL series include: Universal AC power supply, Serial and Ethernet cables and pre-installed Linux OS.)

Chassis Configuration

| | |
|----------|---|
| 100-1G | Gigabit Ethernet, Programmable Automation Controller with 1 available I/O slots (a.k.a. UEINET-PAC) |
| 300-1G | Gigabit Ethernet, Programmable Automation Controller with 3 available I/O slots |
| 600-1G | Gigabit Ethernet, Programmable Automation Controller with 6 available I/O slots |
| 700-1G | Gigabit Ethernet, Programmable Automation Controller with 7 available I/O slots |
| 600R | Gigabit Ethernet, Programmable Automation Controller, RACKtangle with 6 available I/O slots |
| 1200R | Gigabit Ethernet, Programmable Automation Controller, RACKtangle with 12 available I/O slots |
| 400F-AC | 1U FlatRACK, rack mountable 4 slot chassis with Gigabit Ethernet and 100-240 VAC 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 |
| 600-MIL | Military style, 6 slot RACKtangle with GigE Ethernet ports and 38999 connectivity |
| 1200-MIL | Military style, 12 slot RACKtangle with GigE Ethernet ports and 38999 connectivity |

UEIPAC

***CPU Configuration**

| | |
|----|--|
| 11 | - Dual core SoloX / i.MX6 CPU with 1 GB RAM and 8 GB FLASH |
| 12 | - Dual core SoloX / i.MX6 CPU with 1 GB RAM, 8 GB FLASH and optional 1366 x 768 HDMI video interface |

Software Deployment options

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

µSD Card

| | |
|----|---------------------|
| 00 | - No µSD card |
| U8 | - 8 GByte µSD card |
| U3 | - 32 GByte µSD card |

***Boot Software Location**

The unit is designed to boot directly from FLASH Memory, though the unit can be configured to boot from SSD if one is installed.

Solid State Hard Drive

| | |
|----|---|
| 00 | - No SS Drive |
| 08 | - includes 8 GByte SS Drive in standard SSD slot |
| 16 | - includes 16 GByte SS Drive in standard SSD slot |

For example a 3-slot GigE Cube with HDMI, an 8 GB SS Drive, no SD card in standard PAC mode would be:

UEIPAC 300-1G - 12 - 08 - 00 - PA

Accessories & Software including SDK/Board Support Packages (Only one toolkit is required, regardless of the number of UEIPACs deployed)

| Part Number | Description |
|---------------------------------|--|
| UEIPAC VxW BSP (Software Only) | VxWorks Board Support Package (BSP) allows you to program your UEIPAC applications in VxWorks. |
| UEIPAC-Linux TK (Software Only) | UEIPAC Linux Programmer's Toolkit. |
| CBL-SX6-DIAG | Diagnostic cable. Connects diagnostic RS-232 connector on the CPU module to standard |