

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Visit our website - *Click HERE*

Power UMAC

CPU Board Features

- Up to 1.2 GHz Single or Dual Core
- Full real-time operating system (Linux w/real-time kernel)
- Full file management system (programs, data, files, etc.)
- 2 Ethernet 1GBPS ports
- 4 x PCI Express ports
- DVI Video Output
- Watchdog ouput
- Support for large memory
  - 1 or 2GB DDRAM active memory with error correction
  - 64 MB NOR flash for kernel & bootloader
  - SD card (SDHC, 32GB)
  - Interface for USB 2.0 devices (hard drive, USB Stick, keyboard, mouse, etc.)



Rack Features

The POWER UMAC is built into a 3U-format rack, typically housing a CPU card, accessory cards, and a power supply. These racks are also used for construc-ting/connecting MACRO Stations or 3U amplifier racks (or smaller systems might incorporate amplifiers into the POWER UMAC rack itself).

- 10.5, 15 and 21 slot rack widths
- 4, 6, 8, 10,12,14, 16 or 18 slot backplanes (for adding accessory cards)
- Power supply with 85-240 VAC or 24 VDC supply voltage
- Accepts 3U amplifiers/backplanes



10.5 slot rack width shown

The Power UMAC is a Machine and Motion Controller combining the brains of the cutting edge Power PMAC processor, the unsurpassed custom-designed Digital Signal Processor Gate3, and selection from a wide variety of accessory cards all into a 3U-format modular rack system to construct a highly versatile custom solution.

2- and 4-axis interface cards can be added as needed for as many as 34 axes of control, and additional axes can be added via MACRO (high speed fiber optic network). Through MACRO, the Power UMAC can connect with various MACRO drives or MACRO Station UMACs (UMACs with a MACRO CPU instead of a POWER PMAC CPU) for a possible total of 256 axes of centralized and coordinated motion control.

Various accessory cards can be added to obtain any of the following features:



Feedback

One ACC-24E3 Gate 3 Interface Card in a Power UMAC provides 2 or 4 axes of interface with one or a combination of the following feedback types:

- Sinusoidal x 16K/64K
- Resolver
- Halls (60°e/120°e)
- Kawasaki
- Analog +/- 10VDC
- LVDT / MLDT
- Mitsubishi
- Panasonic
- Yaskawa
- Nikon-D
- BiSS-B/C
- EnDat 2.1/2.2
- Mitutoyo
- Tamagawa
- SSI
- HiperFace

GP Inputs/Outputs

Digital I/O Accessory Cards:

- 24 in / 24 out, 12 to 24 Volt, protected and optically isolated, sinking or sourcing
- 48 in, 12 to 24 Volt, protected and optically isolated, sinking
- 48 out, 12 to 24 Volt, protected and optically isolated, sourcing
- 48 in/out, TTL (commonly used for parallel binary feedback such as absolute encoders and laser interferometers)

Analog I/O Accessory Cards:

- 16 x 12-bit inputs (+/-10V)
- 2 or 4 x 16-bit inputs (+/-10V)

Thousands of additional inputs and outputs can be added via various fieldbus options.

Output Control

One ACC-24E3 Gate 3 Interface Card in a Power UMAC provides 2 or 4 axes of interface with a combination of the following control signals:

- Direct PWM
- Pulse and Direction
- Sine Wave
- Analog +/- 10VDC
  - 13.5-bit filtered PWM
  - 16-bit true DAC (optional)
  - Velocity or torque mode

Axis I/O

ACC-24E3 provides the following for each axis:

- Positive and negative over-travel inputs
- Home and user flag inputs
- Amplifier enable relay (NO/NC contacts)
- Amplifier fault inputs
- High speed position capture flag output
- Encoder loss detection

Fieldbus Connectivity

Servo

- MACRO (Master/Slave)
- EtherCAT (Master)

I/O

- EtherNet/IP (Scanner/Adapter)
- EtherCAT (Master/Slave)
- Profibus-DP (Master/Slave)
- DeviceNet (Master/Slave)
- CANopen (Master/Slave)
- Open Modbus (Master/Slave)
- CC-Link (Slave)
- PROFINET IO RT (Controller/Device)

Safety & Other Features

- Watchdog output
- Thermal I2T protection
- Encoder count error and encoder loss detection
- Warning/fatal following error limits
- Automatic brake control

About the Power PMAC

The power and flexibility of the Power PMAC allows the integration of the Power PMAC EtherLite in virtually any kind of industrial motion control application.

Motor Servo Control

- Extremely fast update rates (Phase and Servo)
- Standard PID with full feedforward model
- Powerful automatic tuning and analyzer tools
- Analog, Pulse Width Modulated (PWM), Pulse Frequency Modulated (PFM), MACRO or EtherCAT Outputs
- Vibration suppression filters
- Multiple 7th order notch and low pass filters
- Adaptive control for varying loads
- Cascaded loops (force, height, camera auto-focus control)
- Support for custom-written commutation routines
- Support for custom-written servo routines
- Custom routines directly in C or from MATLAB®/Simulink®

Coordinate Systems / Forward and Inverse Kinematics

- Up to 256 axes of coordinated or independent motion
- Up to 128 independent coordinate systems
- Up to 32 independent axes per coordinate system
- Dynamic axes transformations (e.g. offsets, rotations, mirroring)
- Forward/Inverse kinematics for non-linear mechanisms
  -User defined routines convert between tool tip coordinates and actuator positions
  -Permits direct specification of tool tip path

Trajectory Generation - Motion Programs

- Auto-coordination of multiple sets of axes
- Linear, circular, rapid, position-velocity-time (PVT), LIN to PVT (curve fit), Spline move modes
- Seamless blending between linear, circular and PVT modes
- Automatic move until trigger (hardware input)
- True S-Curve accel / decel
- All move modes supported with user kinematics
- Dynamic multi-block lookahead with velocity/acceleration control and jerk limit
- Sub-millisecond segmentation time
- Negative feedrate for true motion reversal in lookahead
- Move block execution rate up to 10,000 blocks/sec
- G-code, M-code, and T-code ready
- Calculations and I/O synchronous to motion
- Tool radius compensation, 2D or 3D

Programmable Logic Control (PLCs)

- Access to all registers
- Trigonometric, transcendental, vector and matrix functions
- 64-bit floating-point architecture optimized math
- Executive functions for standalone operation
- Data gathering of up to 128 hardware/software registers per servo cycle
- Program in PMAC Script
- Program in ANSI C:
  -Real time with preemptive kernel routines
  -General purpose routines
  -MATLAB®/Simulink® Embedded Coder® generated code

Compensation Tables

- Position/torque compensation tables in 1D, 2D, or 3D with rollover and mirroring options
- 1st/3rd order interpolation between points every servo cycle
- Up to 256 compensation tables (64K each)
- Support for superimposed compensation table results
- Backlash compensation, fixed or in tables

Hardware Position Capture and Compare

- Specialized circuitry tying encoder counts to digital I/O
- I/O on exact count (w/sub-count interpolation) at any speed (within 10 nanoseconds)
- For probing, registration, measurement trigger, laser firing

Gantry Control

- Follower motor(s) executes leader's trajectory
- Automatic skew removal on homing
- Automatic gantry cross-coupling servo correction

Electronic Gearing and Cams

- Powerful master/slave techniques
- Position following (gearing) requires no program for motion
- External time base (cam) keeps full trajectory flexibility (non-returning, limited reversal, e.g. moving web application)
- Up to 256 cam tables (16k points each)
  - Position/torque profile(s)
  - Returning, forward/reverse travel
  - Extremely precise synchronized outputs

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP