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.

Find the *Newport ESP300-111111* at our website: *Click HERE*

ESP300

1–3 Axis Motion Controller/Driver

Key Features

- *1–3 axes universal motion controller/driver*
- *Uses one driver module for stepper, DC open-loop and closed-loop motors at 3 A (max.) per axis*
- *ESP Stage compatible for "plug and play" capability*
- *1000x programmable micro-step resolution for ultra-smooth low speed stepper positioning*
- *Synchronized circular/linear interpolation and continuous path contouring for complex motion profiling*
- *RS232-C communications link for easy computer interfacing*
- *Optional front panel, joystick, trackball, hand-held keypad, IEEE-488 interface, and rack mount*



The ESP300 motion control platform offers excellent functionality at an affordable price. The ESP300 is an integrated controller and driver in one chassis which simplifies system hookup and provides improved reliability. The ESP300 can drive and control up to three axes of motion using any combination of DC and/or stepper motors. Each driver module will drive 2- or 4- phase stepper and brush DC servo motors at 3 A (max.) per axis. This capability will allow you to drive a large selection of stages and actuators.

Technology

The ESP300 uses a 32-bit, floating point, DSP processor for high precision synchronized control. A digital PID-FF (feed-forward) servo loop ensures precise velocity profile tracking and accurate positioning. A 1000x programmable micro-step resolution provides ultra-smooth low-speed stepper positioning capability, and 18-bit DC motor command output ensures improved stability for precision applications.

Motion

The ESP300 provides several modes of positioning including synchronized and non-synchronized point-to-point, jogging, linear or circular interpolation, and continuous path contouring. With electronic gearing, any axis of the ESP300 can be "slaved" to any other axis, even if they have different motor/gearhead ratios or lead screw pitches. Other sophisticated motion features include on-the-fly position, velocity, or trajectory changes for complex motion and alignment routines. Software limits can be set to improve systems safety. An advanced origin search routine includes encoder index pulse consideration for precision homing. Backlash and linear error compensation eliminate repeatable system errors.

Inputs/Outputs

16 bi-directional digital I/O can be user programmed as either inputs or outputs for internal or external event synchronization. When configured as inputs, they



The alphanumeric keypad ESP-K allows the user to access the full command set without the use of a host computer. The digital joystick and trackball provide convenient manual jog control.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

ESP300 Compatible Linear Stages and Actuators



VP-25XA Series
page 929



VP-5ZA Series
page 934



IMS Series
page 937

Only IMS-PP



ILS Series
page 942



MTM Series
page 946

Except V6 versions



UTM Series
page 950

Except V6 versions



MFA Series
page 954



UZM Series
page 957

Except V6 versions



VP-25AA Series
page 1005



CMA Series[1]
page 1016



LTA Series
page 1010

Note 1:
For CMACC operation, adaptor P/N ESP300-CMACC is needed to connect to the controller. To initiate jog motion via the ESP300 front panel, please see support.newport.com

can be used to execute a program or to stop a motion. When configured as outputs, they can monitor the status of a motion to provide a hardware interface for external equipment. An additional watchdog timer and remote interlock are supplied as an invaluable safety feature.

Programming

The ESP300 makes programming complex motions easy using a powerful programming language with over 100 commands. Each ESP300 features a standard RS-232-C communication link for easy computer interfacing. An optional IEEE-488 (GPIB) interface is available for high speed parallel communication. 64kB Flash non-volatile user program memory allows for storage of to 100 user-defined programs for computer independent usage. A complete library of LabVIEW™ drivers covering all ESP300 commands and communication DLL's for all most popular Windows versions are available and get constantly updated through our website at www.newport.com. Powerful software utilities reduce start-up time and support application development.

Auto-Configuration

When used with ESP compatible motion devices, the ESP300 motion controller will automatically configure itself providing true plug-and-play compatibility. PID parameters, motor types and gear ratios are automatically set for you at power up—there are no PID or gear factors to set. The ESP300 can also be configured to operate non-Newport stages that fit within driver module specifications.

Options

ESP300 options include a user-friendly front panel interface providing an intuitive menu system from which you can execute motion programs, initiate manual moves, and configure operating parameters. A hand-held keypad allows local programming and a digital joystick or trackball can provide convenient jog control.

Ordering Information

The ESP300 part number is configured as follows:

Example

ESP300 - 1 1 N 1 N 2

Axis 1 Driver Option
1 Driver
N No Driver

Axis 2 Driver Option
1 Driver
N No Driver

Axis 3 Driver Option
1 Driver
N No Driver

Display Option
1 Front Panel Display

IEEE-488 (GPIB) Option
1 IEEE-488
N No IEEE-488

Power Supply Option
1 150 W
2 350 W

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

ESP300 Compatible Rotary Stages



RV Series
page 973

Except V6 versions



URM Series
page 985

Except V6 versions



URS Series
page 981



SR50 Series
page 990



PR50 Series
page 992



BGM Series
page 995

Except V6 versions

Accessories

Model	Description
ESP300-R	19 in. Rack Mount Brackets
ESP-K	Hand-held Keypad
ESP300-J	Joystick (digital switchstick)
ESP300-T	Trackball (digital)
ESP300-CMACC	Cable Adapter for CMACC



How to Order

The ESP300 is configured by first specifying driver options for each axis. Next, options are chosen for the front panel, communications interface, and power supply. The example here specifies a ESP300 configured with a front panel display, drivers for 2 axes, and a 350 W power supply. No other options are selected.

A passthrough board is available to connect to an external amplifier. If interested, please contact our technical support group.

NOTE: Please refer to the max. motor driver power consumption table ([T-727475]) when configuring your system. The total power consumption of all stages must be smaller than the available drive power of the ESP300 (150 W or 350 W) in order to operate all stages simultaneously and at maximum speed.

Specifications

Number of Axes	1–3 axes of any combination of stepper and DC motors
Computing Power	400 µs servo cycle up to 3 axes
	32 Bit, 60 MHz DSP processor
	Digital PID servo loop with velocity and acceleration feed forward
Motion	Trapezoidal and s-curve velocity profile
	Synchronized and non-synchronized point-to-point
	Jogging, Continuous moves
	3D Linear interpolation, 2D Circular Interpolation
	Master-slave, Electronic gearing
	On-the-fly trajectory modification, changes of target position, speed, acceleration, PID
Contouring	2D Contouring with continuous buffer loading
External Event Synchronization	Program execution depending on TTL I/O status
Operating Modes	Real-time command execution via computer interfaces
	Stand-alone execution of stored programs
	Front panel manual motion command execution (optional)
	Digital joystick, trackball, hand-held keypad (all optional)
Programming	100+ intuitive, 2 letter ASCII commands
	Command set includes: User defined units, software limits, home search (with and w/o top zero), linear error and backlash compensation, etc.
Software Drivers	Communication DLL for Windows 95/98/2000/NT/ME/XP
	Drivers for LabView 6i
	Software development tools compatible with Windows 95/98/2000/NT/ME: Setup, PID tuning program, Motion Wizard (used to configure non-ESP compatible stages)
Computer Interfaces	RS-232-C, IEEE-488-1 (optional)
I/O	16 user programmable TTL I/O (programmed in groups of 8)
	"Watchdog" timer and remote interlock
Memory	64 kB Flash non-volatile user program memory (last for approx. 6,000 commands)
	512 kB Flash non-volatile firmware memory
Front Panel Display (Optional)	Backlit LCD display, 4 lines x 20 characters, 21 mm x 70 mm
DC Motor Control	DC brush motors at 48 V, 3 A max.
	Open- or closed-loop operation
	18-bit DAC resolution
	5 MHz max. encoder input frequency
Stepper Motor Control	2 or 4-phase stepper motors at 48 V, 3 A max.
	Open- or closed-loop operation
	10 kHz commutation rate
	1000x max. (programmable) micro-step resolution
Total Available Motor Power	150 W or 350 W, 48 V, 3 A max per axis
Power Requirements	115/230 V, 50/60 Hz auto-select, 400 W (max.)
Dimensions (W x D x H)	16.5 x 12 x 3.25 in. (+0.5 in. bottom clearance) (419 x 305 x 83 mm) for 150 W power supply option; 16.5 x 13.5 x 3.25 in. (+0.5 in. bottom clearance) (419 x 343 x 83 mm) for 400 W power supply option
Weight	6 kg max for 150 W power supply option 8 kg max for 350 W power supply option

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

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