ETHERNET Powerlink
Real-Time Industrial ETHERNET Servo Drives & Controllers
EtherNet PowerLink

MotionBus Systems from the Global Leader in Motion Control

Parker understands the challenges facing OEMs in high-tech industries. To help meet their challenges, Parker’s team of highly experienced motion system designers use a systematic project management process to deliver the most advanced linear motion technologies available.

For all industrial automation solutions, Parker Automation combines speed, accuracy and high-load capability to give machine builders and OEMs a competitive edge.

Medical device manufacturers utilize Parker’s integrated automation solutions specifically designed to reduce time-to-market and engineering costs while improving compliance with today’s stringent government regulations.

For semiconductor manufacturers, our extensive expertise in vacuum preparation, cleanroom facilities and large-format systems enable us to design and build motion components and systems that increase throughput with increased precision, coordinated motion.

Parker is the only supplier that can provide complete technical and engineered solutions to OEMs for any packaging requirement. Parker’s innovative engineering, breadth of line, worldwide distribution, and outstanding customer service set the standard for the industrial motion market in all these areas:

• Application analysis
• Engineering assistance
• Systems design
• Assemblies, kits and subsystems
• 2-year warranty
• ISO certified
• Global support and services
System Solutions using ETHERNET Powerlink Communications

The high speed ETHERNET Powerlink motionbus provides significant advantages in every step of your project from design to commissioning and even field service. System design flexibility is built in, offering both the tight synchronization of centralized control and the flexibility of distributed control.

- Modular
- Scalable for future development or machine platforms
- Simplified cabling
- Single communication access point
- Centralized or decentralized architectures
- Replace the traditional ±10V analog control and feedback cables with an all-digital Ethernet network

- Real-time, deterministic data to and from nodes is guaranteed each cycle with the slot communications network protocol, illustrated in the diagram below
- Proven, robust CANopen profiles are sent over proven, robust Ethernet hardware
- Standard TCP/IP communications does not interrupt determinism, as it takes place during the asynchronous slot at the end of the cycle
- Excellent performance with timing jitter <1 μs
ETHERNET Powerlink

EPL Controller
Managing Node (MN)
• Stores and runs the motion program
• Supervises and controls local drive I/O and system expansion I/O
• Generates motion trajectories for all axes
• Sends position set points to drives
• Synchronizes positions of multiple axes for tightly coordinated motion

EPL ServoDrive
Controlled Node (CN)
• Closing servo loops including torque, velocity and position loops
• Local I/O (7 in, 4 out)
• High-speed inputs for registration
• Encoder feedback from motor

Slot Communications Network Protocol

Complete Cycle

MN: Managing Node
CN: Controlled Node
SoC: Start of Cycle
PRq: Poll Request
PRs: Poll Response
EoC: End of Cycle

ACR90xx Multi-axis
EPL Controller
Aries or Compax3
EPL Servo Drive
**The Winning Combination of Industrial Ethernet plus Digital MotionBus**

<table>
<thead>
<tr>
<th><strong>Industrial Ethernet</strong></th>
<th><strong>Digital Motionbus</strong></th>
<th><strong>ETHERNET Powerlink</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethernet networks have enjoyed popularity in industrial plants for many years. Typically applied at higher levels, Ethernet has been the chosen network for such non-time-critical communications as IT networks and gathering data from the factory floor. For automation applications, which require very precise timing, more dedicated network topologies utilizing lower-bandwidth fieldbus networks have been used.</td>
<td>A motionbus is a digital communications network that replaces the traditional analog ±10V command signal between a motion controller and a servo drive. In today’s world of digital drives and controls, it no longer makes sense to pass an analog signal from controller to drive.</td>
<td>ETHERNET Powerlink is a high-speed, digital motionbus solution connecting a motion controller to multiple drives and I/O points using standard Ethernet networking hardware. This centralized, real-time communication system for automation and motion control makes Ethernet deterministic for real-time industrial applications.</td>
</tr>
<tr>
<td>• Widely deployed and understood</td>
<td>In addition to the advantages of digital communications, a motionbus is designed with a high-bandwidth to pass both control and motor feedback information. This eliminates the need for a feedback cable from the drive to the controller, thereby reducing system wiring. Additional system benefits are then realized with faster installations, lower maintenance costs and higher system reliability.</td>
<td>ETHERNET Powerlink is a powerful motionbus solution that combines the benefits of fieldbus network wiring, Ethernet speeds and visibility, consumer volume hardware costs and open platforms.</td>
</tr>
<tr>
<td>• Network visibility</td>
<td>• All-digital system reduces EMI issues</td>
<td>ETHERNET Powerlink is an industrial Ethernet solution for automation featuring real-time performance, microsecond precision and standard Ethernet hardware. Determinism, or guaranteed timing of information, is achieved with standard Ethernet hardware by using network time-slot management. Each ETHERNET Powerlink-controlled node (CN) has a dedicated time slot with which to send and receive information to and from the managed node (MN).</td>
</tr>
<tr>
<td>• All digital system reduces EMI susceptibility</td>
<td>• Simplified cabling</td>
<td>ETHERNET Powerlink is an open standard maintained by the ETHERNET Powerlink Standardization Group. Multiple vendors, OEMs and users drive the standard so that it addresses the needs of the industry. Being an open standard, ETHERNET Powerlink is free from typical patent and IP ownership that can negatively affect the availability and attractiveness of a single-vendor solution.</td>
</tr>
<tr>
<td>• Commonality of Ethernet hardware components reduces cost</td>
<td>• Reduced installation time</td>
<td>• Simplified, standard cabling and hubs support any topology</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Single communication access point</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Centralized performance with distributed architecture</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Both the front office and the manufacturing floor can use the same Ethernet network</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Consumer volumes drive hardware costs down</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Open standard for greater flexibility</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• All-digital system reduces EMI issues</td>
</tr>
</tbody>
</table>
EPL Drives and Control Solutions

Aries EPL Servo Drive: Compact, Versatile Performance

The Aries EPL servo drives combine Parker’s high performance digital servo control technology with the real time performance benefits of ETHERNET Powerlink motionbus technology.

The Aries EPL servo drives deliver all the performance benefits that digital drive technology has to offer, including fast update rates and ease of installation. The Aries EPL can run rotary or linear servomotors with a wide range of feedback devices, making it the ideal drive choice to solve a variety of machine applications.

- ETHERNET Powerlink enabled servo drive
- Integrated 2-port Ethernet hub
- Rotary or linear servo motor control
- 3, 4.5 and 6.3 A RMS continuous current
- 120/240 VAC power input
- Multiple feedback options – Smart encoder, quadrature encoder, Heidenhain EnDat absolute encoder
- Auto-Tuning
- CE (EMC & LVD), UL recognized

Compax3 EPL Servo Drive: Rugged, Industrial, Powerful

The Compax3 servo drives combine a high performance, digital design with industrial ruggedness and expansive power capabilities. Compax3 servo drives are designed for industrial applications with heavy duty features such as built-in regeneration capabilities and AC input line filtering. The wide variety of power levels, up to 155 A RMS, ensures that no application is too large for the Compax3 servo drive.

- ETHERNET Powerlink enabled servo drive
- Integrated 2-port Ethernet hub
- Rotary or linear servo motor control
- From 2.5 to 155 A RMS continuous current
- Built-in regeneration and line filtering
- 120/240/480 VAC single- and three-phase power input
- Quadrature encoder, absolute encoder and resolver feedback
- CE (EMC & LVD), UL and cUL recognized
ETHERNET Powerlink expands the ACR EPL family by adding a real-time motion controller over standard Ethernet hardware. The high speed digital communications network enhances machine performance and configuration possibilities while reducing set-up time and installation complexity.

- Control of 16 ETHERNET Powerlink drives
- 10/100 Base-T Ethernet
- USB 2.0
- EtherNet/IP compatibility
- CANopen expansion I/O
- CE (EMC & LVD), UL and cUL Recognized
- Multitasking of up to 24 simultaneous programs
- Interpolation of 8 axes in any combination

Fast, Efficient, Connected

The ACR EPL family is Parker’s premier standalone motion controller family, capable of controlling up to 16 axes of motion. Connectivity and communication features give the ACR EPL flexibility for use in a wide variety of machine architectures. The ACR EPL excels as a standalone machine and motion controller, interfacing with a PC or working alongside a PLC. A powerful DSP makes the ACR EPL an outstanding multitasking servo controller. The ACR EPL includes easy-to-use project-development tools that enable fast, efficient application creation and maintenance. The ACR EPL is the solution for standalone applications requiring industry-leading performance in an affordable and easy-to-use package.

Available in Two Different Form Factors:

ACR9040
EPL Controller Only

The ACR9040 is a compact, cost-effective, EPL-only controller. Only requiring 24VDC input power, the 9040 includes Ethernet, USB and an integrated 2-port hub for ETHERNET Powerlink connections. I/O can be added using CANopen or by utilizing the inputs and outputs on the EPL drives.

ACR9030
EPL controller with additional stepper and servo outputs

The ACR9030 offers the flexibility of combining traditional servo and stepper outputs with EPL drives. The 9030 can be configured with 2, 4, 6, or 8 servo/stepper axes for a total of 16 axes of control. On-board I/O and auxiliary encoder inputs are included, and additional I/O can be added using CANopen or by utilizing the inputs and outputs on the EPL drives. This unit requires 120/240VAC input.
System Design Solutions

ACR EPL...Machine Design Flexibility

When the ACR EPL controllers are combined with the high-speed ETHERNET Powerlink motionbus, the design possibilities are virtually limitless. Whether the application requires the flexibility of distributed control, or the tight synchronization of high performance centralized control, the Parker EPL system delivers.

Drives can be linked in a simple, cost-effective daisy chain arrangement, in a tree structure or a combination of both, utilizing the built-in hubs in the drives and controller. Since EPL employs standard Ethernet hardware, devices can be separated by up to 100 meters, or external hubs can be employed to further expand the configuration possibilities.

The capability to specify up to 8 independent coordinate systems, program 16 separate concurrently running tasks and distribute drives throughout the machine Parker’s EPL system a truly modular design choice.

Connectivity

The ACR EPL controllers include a separate Ethernet port for TCP/IP and EtherNet/IP™ traffic. The ACR controller acts as a gateway between the real-time EPL domain and other communications, allowing the EPL network to remain focused on time critical motion and I/O functions. The controller can service multiple communications channels at once, giving users many options for PC and PLC connectivity in development and normal operation.

Faster Set-up, Enhanced Performance, Less Downtime

Parker’s EPL system offers many advantages before, during and after machine commissioning. Offering a choice of communications options, including Ethernet, USB or serial, the ACR EPL becomes a virtual hub allowing access to all the drives and I/O in the system. Drive configuration, set-up and even firmware upgrades can all be accomplished using the ACR-View Software Development Kit. Auto-inertia detection significantly simplifies the tuning process.

Ease of Troubleshooting

As part of the standard EPL cycle, a complete set of drive status parameters is transmitted back to the controller. HMI’s, application programs and error-handling routines all have immediate access to this status information, greatly enhancing the EPL system’s ability to intelligently handle and troubleshoot drive events.

Modular Maintenance

Since drives can be removed or added to the system without dropping the entire network, machine downtime can be reduced by enabling maintenance on independent machine modules while the rest of the machine is operating.

ACR EPL...Connect

The EtherNet/IP™ network is designed to use standard Ethernet and TCP/IP equipment for the industrial environment. The application layer protocol is an open standard—CIP™ (Control and Information Protocol). CIP is the same upper-layer protocol used by DeviceNet™ and ControlNet™ networks, allowing interoperability between various industrial devices.

EtherNet/IP Included

The ACR can operate as a server/slave device within an EtherNet/IP network. This protocol is enabled in all ACR controllers with Ethernet. No special order code or software is required. The EtherNet/IP protocol can run alongside standard TCP/IP, bringing together plant floor automation and office networks.

Integrating the ACR with Parker CTC’s HMI is accomplished over EtherNet/IP.

- Drivers are available to enable communications to PA, EPX, XPR, HPC and HPX series
- Supports point-to-point or networked connections
- Breakthrough graphic technology
- Panel tool library for easy screen development
- Integrated web publishing
Connectivity and communication features give the ACR flexibility for use in a wide variety of machine architectures. The ACR EPL excels as a standalone machine and motion controller, interfacing with a PC or working alongside a PLC.

**AcroBASIC**

The ACR series of controllers utilizes a dedicated high-level programming language called AcroBASIC. This easy-to-use language supports a wide range of motion, I/O and communication functions. Several hundred intuitive mnemonic commands are incorporated into AcroBASIC for quick application development. The open nature of the ACR appeals to advanced programmers as well. Virtually every possible motion parameter and flag can be readily accessed, allowing the user to tailor applications to the specific machine requirements.

**MultiTasking**

The ACR controllers are true pre-emptive multitaskers capable of performing multiple tasks simultaneously and toggling tasks based on the program conditions. The ACR multitasker can control up to 16 AcroBASIC programs and 8 ladder logic PLC programs simultaneously. Due to the preemptive nature of the multitasking kernel, programs are only allocated processing time when running. Programs can be called on an as-needed basis.

**Motion Features**

The ACR is loaded with powerful motion functionality, including:
- Segmented electronic CAM
- Electronic gearing with real-time phase advance
- Linear interpolation to 8 axes
- Programmable limit switch with multiple sources
- Advanced gantry control
- 3D arcs and tangent axis control
- Hardware & capture registers
- Time-based moves

**Advanced Motion with PLC Automation**

EtherNet/IP capability gives ACR users a popular connectivity option to PLCs and other master devices supporting the protocol. Applications can be developed in AcroBASIC and reside in the 9000. The controller is added to the EtherNet/IP network as a slave I/O device, allowing the master PLC to interrogate or set any controller parameter, variable value or to initiate a motion sequence. The master has continuous access to ACR parameters and flags. Simply assign an IP address to the ACR without any additional set-up to integrate into the network.

When advanced motion is required in a machine utilizing PLCs, the ACR is an easy-to-integrate alternative. Let the ACR be the “motion module” in the PLC system to handle complex motion requirements such as linear and circular interpolation, contouring, camming and gearing.

**Fast Ethernet & USB 2.0**

The ACR EPL controllers are equipped with both 100baseT Ethernet and USB2.0. ACR EPL supports connection of up to four separate devices over Ethernet or in combination with USB and RS232. Each ACR has a programmable IP address so single or multiple controllers can be easily integrated in factory networks.

**PC-Centric Applications**

In many machines, a host PC is responsible for management of the user interface, motion control, I/O, vision and other processes. For the OEM and end-users that require custom PC software, Parker supplies libraries for developing applications in C++, VB and .NET. The ComACR 32-bit OLE automation (COM) server supports connection of up to four separate devices over Ethernet or in combination with USB and RS232. Each ACR has a programmable IP address so single or multiple controllers can be easily integrated in factory networks.

Typical applications use implicit messaging for I/O data transfer. Data is sent cyclically based on a user-defined duration. In most PLCs, the ACR will be seen as an Ethernet-based I/O block.

Class 3 (TCP) CIP Messages (connected and unconnected)

Explicit messaging is a “Class 3” connection type, providing point-to-point, event-driven messaging over a TCP connection. The scanner/master PLC device reads and writes data to the slave. In a typical application, a function block in a ladder program would be used to send a message to the ACR to command or change motion.
ACR-View Software Development Kit

ACR-View is a powerful project-development suite that assists the user of the ACR family products in programming, debugging and commissioning their application. Many features are incorporated to assist both the novice and expert users in developing code. All the tools needed to build and maintain a motion project are included:

- Ethernet, USB, CANopen and serial connection support
- Project Configuration Wizard
- Servo tuning tools
- Built-in oscilloscope, strip chart and XY plot
- Structured text program editor
- Ladder logic program editor
- Real-time terminal interface
- Servo loop diagnostic tool
- Comprehensive status panels
- Integrated help files

Project set-up is streamlined through the use of the Configuration Wizard. The ACR9000 can be configured in a matter of minutes as the user is guided through a series of simple steps. ACR-View will set the necessary parameters to have the controller ready for motion and code development.

Terminal, Help and Project Tree

Within the Configuration Wizard is an easy-to-use commissioning tool. Quickly verify the key motion and hardware settings for each axis, such as direction, velocity and limit function. Users can then proceed to programming with confidence in the physical settings.
Tuning

In addition to the Oscilloscope, ACR-View includes an XY Plot, which allows the user to display X vs Y positions for two pairs of axes at once. Easily visualize a 2-D path, using any of the onboard position parameters.

Servo tuning can be optimized with ACR-View’s powerful Oscilloscope feature. Up to four channels of data can be observed and stored. Tuning gains are updated immediately and move profiles can be tailored to best fit the application’s needs.

Editors

Program and ladder editor tools allow straightforward development of both motion and I/O application code. Color-coded syntax checker assist in programming. PLC programs can be written in either ladder or text.

Status Panels

View virtually any parameter or flag within the controller using the Bit and Numeric Status panels. The Servo Loop Status panel allows in-depth analysis of servo operation.
# Specifications

## Aries and Compax3 EPL Drive

<table>
<thead>
<tr>
<th>Power Output</th>
<th>Aries EPL</th>
<th>Compax3 EPL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive Current, continuous (A RMS)</td>
<td>3, 4.5, 6.3</td>
<td>SxxxV2: 2.5, 6.3, 10, 15</td>
</tr>
<tr>
<td>Drive Current, peak (A RMS)</td>
<td>9, 13.5, 14.2</td>
<td>SxxxV4: 3.8, 7.5, 15, 30</td>
</tr>
<tr>
<td>Commutation</td>
<td>Sinusoidal</td>
<td>HxxxV4: 7.6, 15, 30, 60</td>
</tr>
<tr>
<td>PWM Frequency</td>
<td>16 or 32 kHz, motor dependent</td>
<td>HxxxV4: 75, 135, 188, 233</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Power Input</th>
<th>120/240 VAC</th>
<th>SxxxV2: 80–253 VAC;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Power Input</td>
<td>120/240 VAC, required</td>
<td>SxxxV4: 80–528 VAC;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HxxxV4: 350–528 VAC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Performance</th>
<th>Torque Loop update</th>
<th>62.5 μsec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Velocity Loop update</td>
<td>125 μsec</td>
<td>125 μsec</td>
</tr>
<tr>
<td>Position Loop update</td>
<td>125 μsec</td>
<td>125 μsec</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Communications</th>
<th>Ethernet, ETHERNET Powerlink</th>
<th>RS232/485, ETHERNET Powerlink</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Digital inputs</th>
<th>7 programmable inputs, 5–24 VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog inputs</td>
<td>N/A</td>
<td>2 (dedicated); 14-bit</td>
</tr>
<tr>
<td>Encoder input</td>
<td>2 MHz (pre-quadrature)</td>
<td>5 MHz (pre-quadrature)</td>
</tr>
<tr>
<td>Safety input</td>
<td>EN954-1 CAT3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outputs</th>
<th>Digital outputs</th>
<th>4 programmable outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog outputs</td>
<td>N/A</td>
<td>Two (dedicated); 8 bit; software configurable as monitor outputs</td>
</tr>
<tr>
<td>Fault Brake</td>
<td>5–24 VDC solid state, N.O., 1 amp @ 24 VDC max</td>
<td>N.O., 1.6 A @ 24 VDC max</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Feedback</th>
<th>Incremental encoder, Parker smart encoder, EnDat 2.1 absolute encoder</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Incremental encoder, resolver, EnDat and Hiperface absolute encoder</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental</th>
<th>Temperature</th>
<th>0–45°C (32–113°F) except AR-13, 0–40°C (32–104°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humidity</td>
<td>0–95%, non-condensing</td>
<td>0–85%, non-condensing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Regeneration</th>
<th>Internal capacitance, internal circuitry to accommodate external resistor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Internal capacitance, internal circuitry to accommodate external resistor</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standards</th>
<th>UL Recognized, CE (EMC), CE (LVD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>UL and cUL Recognized, CE (EMC), CE (LVD)</td>
</tr>
</tbody>
</table>

More detailed specifications are available in the product manuals at parkermotion.com
## ACR9030/ACR9040 EPL Controller

| Hardware | ACR9030: 2, 4, 6 or 8 servo/stepper axes (max 16 total axes); 16 EPL axes  
ACR9040: 16 EPL axes |
|----------|------------------------------------------------------------------|
| Power Requirement | ACR9030: 90–240 VAC  
ACR9040: 24 VDC, 1 amp |
| Processor | 32-bit floating-point DSP @ 150 MFLOPS / 75 MHz |
| User memory | 1 MB Flash-based. Retains user programs and system configuration parameters |
| Firmware | Flash-based |
| Operating system | Multi-tasking RTOS |
| Battery Backup | Non-volatile memory retains all system and user variables (optional) |

### Performance

- **Multi-tasking**: 8 coordinated systems/16 text programs/8 ladder programs  
- **Trajectory update**: 64-bit precision, 500 μs (axes dependent)  
- **Interpolation**: Linear, circular, sinusoidal, helical, elliptical, spline, 3D arcs

### Communications

- **ETHERNET**  
  Powerlink: ETHERNET Powerlink V2. Integrated 2-port Hub, RJ-45 connectors  
  Supports EPL DS402 Drives in Interpolated Position Mode
- **Serial Interface**: 1 serial port (RS232 and/or RS422)  
  Ethernet: 10/100 Base-T, RJ-45 connector. Supports IP Protocols TCP/UDP, EtherNet/IP
- **USB**: USB 2.0, Type B connection
- **CANopen**: Standard 9-pin D-Sub connector  
  Supports DS401 protocol for I/O devices

### Inputs/Outputs (ACR9030 only)

- **Analog outputs**: 16-bit resolution DAC, up to 8 outputs
- **Stepper outputs**: Up to 8 @ 2.5 MHz maximum
- **Encoder input**: Up to 10 at 20 MHz post-quadrature maximum  
  Software configurable for Synchronous Serial Interface (SSI), quadrature, step and direction, CW/CCW modes
- **Digital Onboard I/O**: 24 VDC optically isolated. Inputs support both NPN and PNP devices
- **General Purpose**: 12 general purpose inputs for 2 to 4 axes  
  40 inputs for 6 to 8 axes
- **High Speed Triggers (1 μsec capture time)**: 8 trigger inputs for 2 to 4 axes  
  16 trigger inputs for 6 to 8 axes
- **Outputs**: 4 outputs for 2 to 4 axes  
  8 outputs for 6 to 8 axes
- **Dedicated Axis I/O**: Drive Enable, Reset outputs, Fault Input on axes connector for or servo/stepper axes

### Provided Software

- **Development Software**: ACR-View Software Development Kit
- **Language Support**: Libraries for C++, VB6, C#, VB.NET, LabVIEW
Specifications

Aries EPL Dimensions

mm (in)

<table>
<thead>
<tr>
<th>Model</th>
<th>OW</th>
<th>Fin Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>AR-04PE</td>
<td>76.3 (3.01)</td>
<td>15.88 (0.625)</td>
</tr>
<tr>
<td>AR-08PE</td>
<td>85.9 (3.38)</td>
<td>25.40 (1.000)</td>
</tr>
<tr>
<td>AR-13PE</td>
<td>101.3 (4.38)</td>
<td>50.80 (2.000)</td>
</tr>
</tbody>
</table>
## Compax3 EPL Dimensions

### S025V2, S063V2, S100V2, S150V2

![Image of S025V2, S063V2, S100V2, S150V2](image)

<table>
<thead>
<tr>
<th>Compax3</th>
<th>Dimensions [mm]</th>
<th>Weight [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>H050V4</td>
<td>H: 453, B: 252, T: 245</td>
<td>–</td>
</tr>
<tr>
<td>H090V4</td>
<td>H: 669, B: 257, T: 312</td>
<td>–</td>
</tr>
<tr>
<td>H125V4</td>
<td>H: 720, B: 257, T: 355</td>
<td>–</td>
</tr>
<tr>
<td>H155V4</td>
<td>H: 720, B: 257, T: 355</td>
<td>–</td>
</tr>
</tbody>
</table>
## Specifications

### ACR9030/ACR9040 EPL Dimensions

*in (mm)*

#### ACR9030

**1 – 4 Axis**

- **Dimensions:**
  - Height: 45.5 (1.79)
  - Width: 38.1 (1.50)
  - Depth: 26.4 (1.04)

**5 – 8 Axis**

- **Dimensions:**
  - Height: 63.5 (2.50)
  - Width: 38.1 (1.50)
  - Depth: 234.9 (9.25)

### ACR9040

**Dimensions:**

- **Height:** 134.6 (5.30)
- **Width:** 22.23 (0.875)
- **Depth:** 6.4 (0.25)

For 8 axis version only:

- **Dimensions:**
  - Height: 254.0 (10.00)
  - Width: 22.23 (0.875)
  - Depth: 6.4 (0.25)
## ACR9030/ACR9040 Accessories

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ACR EPL to EPL Drive Accessories</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shielded ETHERNET cable to Aries EPL drives</td>
<td>71-028656-XX</td>
<td>Cables offered in 1' (-01), 3' (-03), 5' (-05), 10' (-10), 25' (-25) lengths, e.g., 71-028656-10</td>
</tr>
<tr>
<td><strong>9030 to Analog/Stepper Drive Cables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACR-to-Aries command cable (analog only)</td>
<td>71-021599-XX</td>
<td></td>
</tr>
<tr>
<td>ACR-to-ViX command cable</td>
<td>71-021110-XX</td>
<td></td>
</tr>
<tr>
<td>ACR-to-Compax3 command cable (analog only)</td>
<td>71-021108-XX</td>
<td></td>
</tr>
<tr>
<td>ACR-to-Dynaserv G3</td>
<td>71-023715-XX</td>
<td></td>
</tr>
<tr>
<td>ACR-to-Gemini command cable (analog only)</td>
<td>71-021112-XX</td>
<td></td>
</tr>
<tr>
<td>ACR-to-Gemini command cable (step &amp; direction only)</td>
<td>71-022316-XX</td>
<td></td>
</tr>
<tr>
<td>ACR-to-stepper cable (25 pin stepper connector)</td>
<td>71-021113-XX</td>
<td></td>
</tr>
<tr>
<td>26-pin flying lead cable</td>
<td>71-022344-XX</td>
<td></td>
</tr>
<tr>
<td><strong>Expansion I/O Cables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2’ Expansion I/O cable (9-pin D-sub to flying lead)</td>
<td>71-022338-02</td>
<td></td>
</tr>
<tr>
<td>4’ Expansion I/O cable (9-pin D-sub to flying lead)</td>
<td>71-022338-04</td>
<td></td>
</tr>
<tr>
<td><strong>RS232 Communication Cable</strong></td>
<td>71-016939-10</td>
<td>10’ RS-232 communication cable</td>
</tr>
<tr>
<td><strong>ACR9030 Breakouts</strong></td>
<td>VM25</td>
<td>25-pin screw terminal breakout board for onboard I/O connector and Limit/Home (2’ cable included)</td>
</tr>
<tr>
<td>VM26</td>
<td></td>
<td>26-pin screw terminal breakout board for axes connectors, DIN rail mount (2’ cable included)</td>
</tr>
<tr>
<td><strong>Aries EPL Breakouts</strong></td>
<td>VM25</td>
<td>25-pin screw terminal breakout board for local I/O (2’ cable included)</td>
</tr>
<tr>
<td>VM15-PM</td>
<td></td>
<td>15-pin screw terminal breakout for feedback connector</td>
</tr>
<tr>
<td><strong>9030 AC Power Adapter</strong></td>
<td>43-011905-01</td>
<td>240 VAC Power plug adapter</td>
</tr>
<tr>
<td><strong>Power Supply</strong></td>
<td>PS-60W</td>
<td>24 VDC, 60W power supply for I/O, enable and 9040 controller</td>
</tr>
<tr>
<td>PIO-337</td>
<td></td>
<td>PIO Bus coupler, CANopen standard</td>
</tr>
<tr>
<td>PIO-347</td>
<td></td>
<td>PIO Bus coupler, CANopen economy</td>
</tr>
<tr>
<td>PIO-430</td>
<td></td>
<td>PIO 24 VDC digital input module, 8 channel</td>
</tr>
<tr>
<td>PIO-402</td>
<td></td>
<td>PIO 24 VDC digital input module, 4 channel</td>
</tr>
<tr>
<td>PIO-400</td>
<td></td>
<td>PIO 24 VDC digital input module, 2 channel</td>
</tr>
<tr>
<td>PIO-530</td>
<td></td>
<td>PIO 24 VDC digital output module, 8 channel, 0.5 Amp</td>
</tr>
<tr>
<td>PIO-504</td>
<td></td>
<td>PIO 24 VDC digital output module, 4 channel, 0.5 Amp</td>
</tr>
<tr>
<td>PIO-501</td>
<td></td>
<td>PIO 24 VDC digital output module, 2 channel, 0.5 Amp</td>
</tr>
<tr>
<td>PIO-468</td>
<td></td>
<td>PIO 0-10 VDC analog input module, 4 channel</td>
</tr>
<tr>
<td>PIO-480</td>
<td></td>
<td>PIO 0-20 mA analog output module, 2 channel, differential isolated</td>
</tr>
<tr>
<td>PIO-550</td>
<td></td>
<td>PIO 0-10 VDC analog output module, 2 channel</td>
</tr>
<tr>
<td>PIO-552</td>
<td></td>
<td>PIO 0-20 mA analog</td>
</tr>
<tr>
<td>PIO-600</td>
<td></td>
<td>PIO end module</td>
</tr>
</tbody>
</table>
## Ordering Information

*Fill in an order code from each of the numbered fields to create a complete model order code.*

### Aries EPL

**Order Example:**

1. **Series**
   - AR- Digital drive
2. **Maximum Shaft Power**
   - 04 400 Watts, 3 A (rms)
   - 08 750 Watts, 4.5 A (rms)
   - 13 1300 Watts, 6.3 A (rms)
3. **Command Interface**
   - P ETHERNET Powerlink
4. **Motor Feedback**
   - E Encoder

### Compax3 EPL

**Order Example:**

1. **Series**
   - S025 V2 2.5 A (rms) / 120 - 240 VAC, 1Ø
   - S063 V2 6.3 A (rms) / 120 - 240 VAC, 1Ø
   - S100 V2 10 A (rms) / 120 - 240 VAC, 3Ø
   - S150 V2 15 A (rms) / 120 - 240 VAC, 3Ø
   - S025 V4 2.5 A (rms) / 208 - 480 VAC, 3Ø
   - S075 V4 7.5 A (rms) / 208 - 480 VAC, 3Ø
   - S150 V4 15 A (rms) / 208 - 480 VAC, 3Ø
   - S300 V4 30 A (rms) / 208 - 480 VAC, 3Ø
   - H050 V4 50 A (rms) / 400 - 480 VAC, 3Ø
   - H090 V4 90 A (rms) / 400 - 480 VAC, 3Ø
   - H125 V4 125 A (rms) / 400 - 480 VAC, 3Ø
   - H155 V4 155 A (rms) / 400 - 480 VAC, 3Ø
2. **Feedback**
   - F10 Resolver
   - F11 Absolute encoder/Sin-Cos®/Stegmann/Hiper-face
   - F12 Quadrature encoder/SineCosine linear/EnDat 2.1
3. **Control Options**
   - I30 T11 Positioning/Interpolation via EPL
   - I30 T30 IEC with EPL
   - I30 T40 IEC Cam control with EPL
4. **Additional Options**
   - M00 No options
   - M10 Additional I/O with HEDA
   - M11 HEDA
   - M12 Additional I/O

### ACR EPL

**Order Example:**

1. **Series**
   - 9030 120/240 VAC input
   - 9040 24 VDC input

   *All models include ACR-View Software Development Kit CD and power cable for 120 VAC installations (Parker P/N: 44-000054-01).*
2. **Communications**
   - P1 Ethernet, USB and Serial
   - P3 Add CANopen to P1 version

   **# of Axes, Encoder Inputs**
   - 9030 – EPL Only
     - U0 16 EPL Axes
     - 9030 – EPL + Servo/Stepper
     - U2 2 Axes, 3 Encoder inputs
     - U4 4 Axes, 5 Encoder inputs
     - U6 6 Axes, 8 Encoder inputs
     - U8 8 Axes, 10 Encoder inputs
3. **Memory**
   - B Add Battery Backed RAM

---

18
Other ACR-Related Parker Products

Human Machine Interface
Parker’s range of HMI solutions include cost-effective, dedicated HMI panels as well as flexible Industrial PC’s running Windows® based InteractX HMI software. Connectivity to the ACR is supported via EtherNet/IP. Application development is simplified by programming in a familiar environment, including support for OPC, ActiveX and Visual Basic.

Rotary and Linear Motors
Parker offers a complete line of motor products meeting a broad range of application needs. Parker Trilogy’s linear motors offer industry-leading solutions for both ironcore and ironless technologies. The wide range of rotary servo motors includes the high-torque MPP Series, the smooth/high-inertia SM Series and the cost-effective BE Series.

Positioning Tables
Parker offers the widest range of precision mechanical actuators in the industry. The 400XR series of modular linear positioners is available in an unrivaled array of sizes, features and options. Single- and multi-axis systems combine with the unique ACR features for performance and value.

Gantry Control: LOCK feature of ACR offers outstanding control of linear motor gantry systems. A dedicated feedback loop monitors and corrects the position of the parallel axes to maintain precise alignment.

Ballscrew Compensation: Use the error map data provided with a precision grade XR table to improve accuracy with the powerful yet easy-to-use ACR compensation feature.

PIO
The modular Parker I/O System (PIO) is a convenient and flexible product for connecting field devices to an ACR. The PIO communicates with the controller via CANopen. A wide variety of digital and analog modules are available.

Features
• Opto-Isolated
• Compact, DIN-rail mount
• Easy to install and expand
• Safe, reliable contacting
• Different voltages can be combined
• Error and status LEDs
EM Sales Offices

Australia
Parker Hannifin (Australia) Pty Ltd.
9 Carrington Road
Castle Hill NSW 2154
Australia
Tel: +61 (0) 2 9634-7777
Fax: +61 (0) 2 9634 3749

Brazil
Parker Hannifin Ind. Com Ltda.
Av. Lucas Nogueira Garcez 2181
Esperança
12325-900 Jacareí, SP
Tel: 12 3954 5100
Fax: 12 3954 5262
Email: automation.brazil@parker.com

Canada
Parker Hannifin (Canada) Inc.
160 Chisholm Dr
Milton, Ontario L9T 3G9
Tel: 905-693-3000
Fax: 905-876-1958
Email: miltoncustservice@parker.com

China
Parker Hannifin Motion & Control
(Shanghai) Co., Ltd
280 Yunciao Rd., Jin Qiao Export Processing Zone
Shanghai 201206, China
Tel: (86-21) 50312525
Fax: (86-21) 64459717

France
Parker SSD Parvex
8 avenue du Lac
B.P. 249
F-21007 Dijon Cedex
Tel: +33 (0) 3 80 42 41 40
Fax: +33 (0) 3 80 42 41 23

Germany
Electromechanical Europe
Parker Hannifin GmbH & Co KG
Robert-Bosch-Strasse 22
D-77656 Offenburg
Germany
Tel: +49 (0) 781 509 0
Fax: +49 (0) 781 509 98176

India
Parker Hannifin India Pvt. Ltd
Automation Group-SSD Drives Div.
133 & 151 Developed Plots Estate
Perungudi, Chennai 600 096
Tel: 044-4391-0799
Fax: 044-4391-0700

Italy
Parker Hannifin SpA
Via Gounod 1
20092 Cisnello Balsamo
Milano, Italy
Tel: +39 02 361081
Fax: +39 02 36108400

Korea
Parker Hannifin Korea
9th Floor KAMCO Yangjae Tower
949-3 Dogok 1-dong Gangnam-gu
Seoul 135-860, Korea
Tel: 82-2-559-0454
Fax: 82-2-556-8187

Mexico
Parker Hannifin de Mexico
Eje uno Norte No.100
Parque Industrial Toluca 2000
Toluca, CP 50100 México
Tel: 52-722-276-4200
Fax: 52-722-279-0316

Singapore
Parker Hannifin Singapore Pte Ltd
11, Fourth Chin Bee Road
Singapore 619702
Tel: (65) 6887 6300
Fax: (65) 6265 5125/6261 4929

Taiwan
Parker Hannifin Taiwan Co., Ltd
No. 40, Wuchiuan 3rd Road
Wuku Industrial Park
Taipei County, Taiwan 248
ROC
Tel: 886 2 2298 8987
Fax: 886 2 2298 8982

Thailand
Parker Hannifin (Thailand) Co., Ltd.
1023, 3rd Floor, TPS Building,
Pattanakarn Road,
Suanlueang, Bangkok 10250
Thailand
Tel: (66) 02717 8140
Fax: (66) 02717 8148

UK
Parker Hannifin Ltd.
Tachbrook Park Drive
Tachbrook Park
Warwick CV34 6TU
Tel: +44 (0) 1926 317970
Fax: +44 (0) 1926 317980

USA
Parker Hannifin Electromechanical Automation Division Main Office/ Compumotor/CTC
5500 Business Park Drive
Rohnert Park, CA 94928 USA
Tel: 707-584-7558
Fax: 707-584-9070
Email: emn_support@parker.com

Parker Hannifin Electromechanical Automation Division/Daedal
1140 Sandy Hill Road
Irwin, PA 15642
Tel: 724-861-8200
Fax: 724-861-3330
Email: ddlcat@parker.com

© 2010 Parker Hannifin Corporation
Parker Hannifin Corporation
Electromechanical Automation Div.
5500 Business Park Drive
Rohnert Park, CA 94928 USA
Tel: 707-584-7558
Fax: 707-584-8015
Email: emn_support@parker.com