



aerospace
climate control
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filtration
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hydraulics
pneumatics
process control
sealing & shielding



Xpress PAC

Finally, machine control beyond the box



ENGINEERING YOUR SUCCESS.



Truly Integrated Machine Control Solutions

Xpress PAC is the first truly integrated family of machine control solutions available from one vendor.

From HMI to mechanics and everything in between, Parker's Xpress PAC family of programmable automation control products offer unique advantages unavailable from any other source:

- **World-class visualization and motion platform products**
- **Fast, cost-effective motionbus**
- **Open Ethernet protocols**
- **Industry-leading mechanical solutions**
- **Industry's largest, strongest sales application support & service network**

Xpress PAC is a multi-faceted integrated automation solution offering:

- Visualization
- IEC Control
- Network/Fieldbus
- Motion Control
- Drive
- Motor
- Mechanics

A Good Investment Today...

The Xpress PAC family is specifically designed to offer unprecedented interoperability:

- **Expedite project implementation**
- **Reduce time to market**
- **Increase ROI**

The Xpress PAC family centers around our new ACR-96xx Programmable Automation Controller. A truly converged platform, the ACR-96xx includes logic, motion and HMI in a single scalable product.

Interact Xpress HMI is the machine-level member of the Xpress PAC family. Interact Xpress provides your system with a connection to the other side of the plant, or your plant on the other side of the world.

The Xpress PAC family supports standards-based development environments, open communications protocols and integrated remote support and data collection capabilities.

These features guarantee a migration path as your needs evolve and provide the industry's easiest tools for moving information off the plant floor to wherever it's needed.

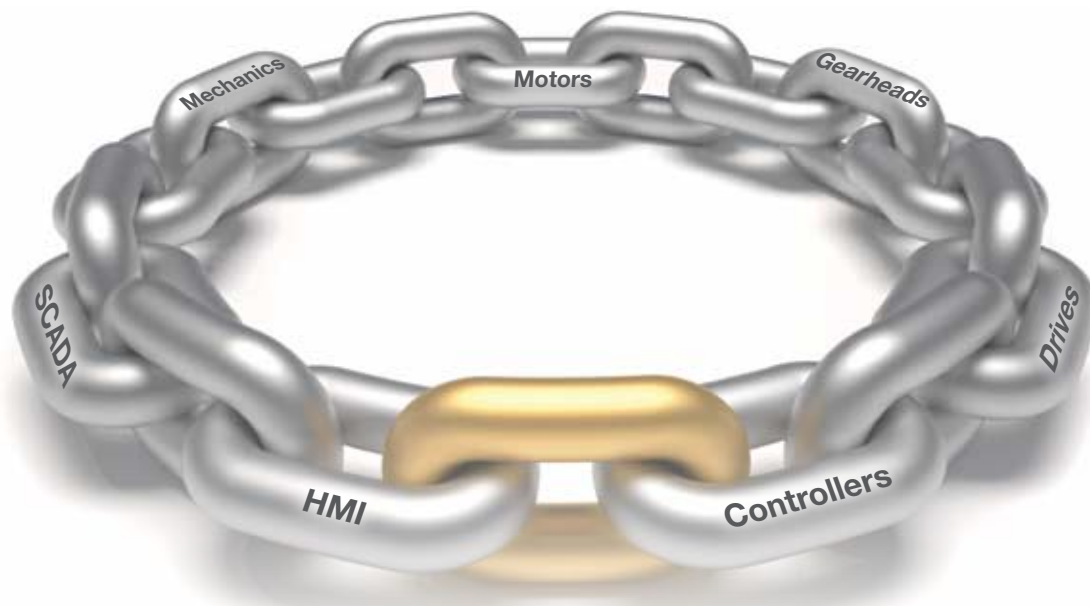




...and for the Future

The Xpress PAC family supports standards-based development environments, open communications protocols and integrated remote support and data collection capabilities.

These features guarantee a migration path as your needs evolve and provide the industry's easiest tools for moving information off the plant floor to wherever it's needed.



Xpress PAC Family Benefits

Development:	Guarantees interoperability from a single product family including HMI, controls, drives, motors, gearheads and mechanics
	Dramatically reduces development and integration time via automatically shared development tools and data
	Reduces or eliminates training with intuitive design tools that can be learned "on the fly"
	Moves "Information Anywhere" with the integrated web-publishing tools
Open Connectivity:	The ACR-96xx automatically generates a suite of common tags for each axis of motion
	HMI tags are automatically imported from our controllers and many third-party devices
	Support for open, industry-standard field bus protocols such as EtherNet/IP™ and CANopen
Machine Layout and Wiring:	Reduces wiring time and costs with ETHERNET Powerlink high-speed motion bus
	Quick and easy Ethernet cabling
Remote Support:	Remote editing and support over any IP connection

ACR-96xx Controller

A Proven Control Engine with IEC 61131-3 Programming

The ACR-96xx Controller provides multitasking of up to 16 simultaneous programs with multiple coordinate systems.

Motion and Programming Capabilities:

- IEC 61131 programming
 - Structured text, ladder logic and CFC
 - PLCOpen motion function blocks
 - Parker function blocks
- Linear interpolation up to 8 axes
- Up to 16 PLC tasks: timer, cyclic or interrupt configurable task priority
- Additional 16 AcroBasic tasks available
- Segmented electronic camming
- Electronic gearing with real-time phase advance
- Linear, circular and helical interpolation
- Analog or digital feedback
- Gantry lock
- Backlash and ballscrew compensation

Hardware Features:

- EPL versions support up to 16 axes of coordinated motion
- Available support for traditional analog drives
- Analog versions are available in 2-, 4-, 6- or 8-axis models
- Equipped with 2MB of user memory standard
- Robust connectors hold up in harsh environments
- EtherNet/IP, CANopen, USB2.0, RS232 and RS485 communications are supported, with multiple channels available simultaneously
- Industry-standard Ethernet/IP communications
- ETHERNET Powerlink digital motion bus
- CANopen I/O support for over 1000 points of I/O
- Indicator LED's improve your troubleshooting capability



ACR-96XX supports standard PLCOpen function blocks, and adds Parker custom multi-axis functions

PLCOpen Function Blocks:

Administrative

MC_Power
MC_ReadStatus
MC_ReadAxisError
MC_ReadParameter
MC_ReadBoolParameter
MC_WriteParameter
MC_WriteBoolParameter
MC_ReadActualPosition

Motion

MC_MoveAbsolute
MC_MoveRelative
MC_MoveAdditive
MC_MoveVelocity
MC_Home
MC_Stop

Parker Function Blocks:

Gear

ACR_GearIn
ACR_GearIn_Ihpos
ACR_GearIn_Trq
ACR_GearIn_Trqp
ACR_GearOut
ACR_GearOut_Trq
ACR_GearOut_Trqp

Cam

ACR_CamIn
ACR_CamIn_Ihpos
ACR_CamIn_Trq
ACR_CamIn_Trqp

Other Custom Functions

ACR_ReadFlag
ACR_ReadDintParameter
ACR_ReadRealParameter
ACR_WriteFlag
ACR_WriteDintParameter
ACR_WriteRealParameter
ACR_MoveCoordinated
ACR_TouchProbe

Industry-standard Programming In a Proven Platform

The ACR-96xx offers the best of IEC 61131-3 standard programming. With structured text, continuous function chart and ladder diagram programming, we offer the right language for your application.

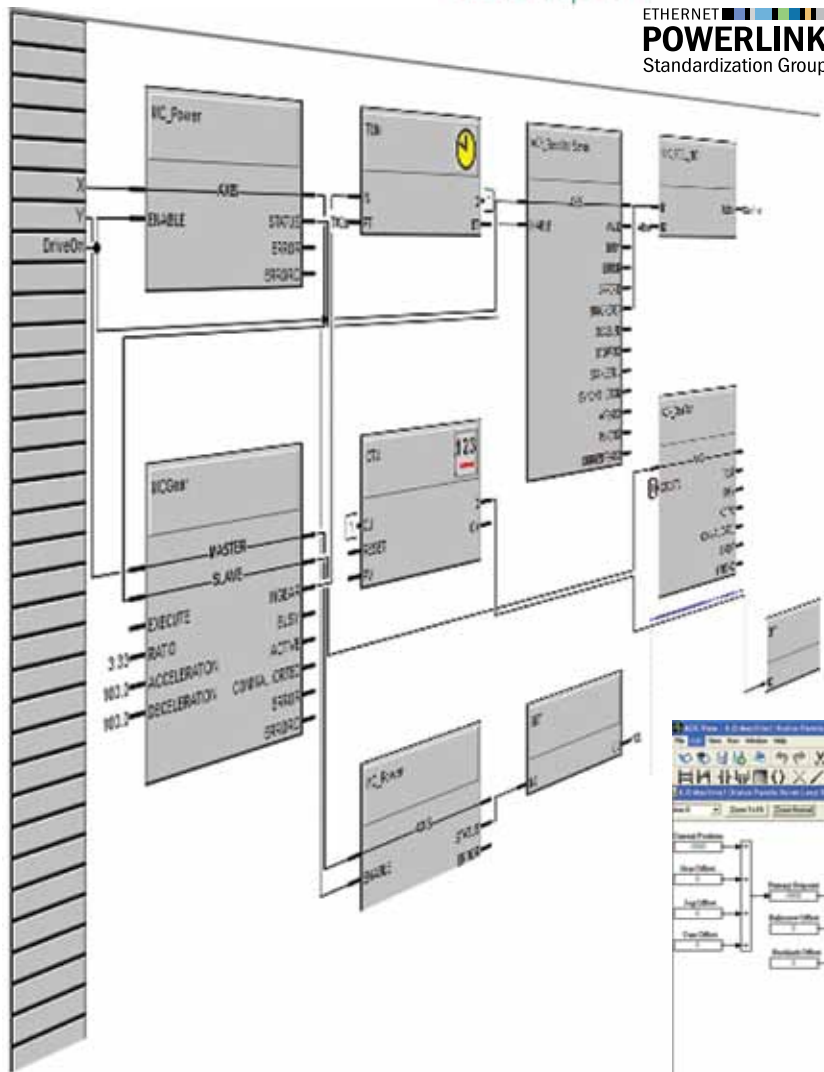
Get on the Right Bus!

The ACR-96xx supports EPL for high-speed motion and CANopen for analog and discrete I/O. EtherNet/IP is also supported for integration with other PLC's and HMI's.

EtherNet/IP, CANopen, USB2.0, RS232 and RS485 communications are supported, with multiple channels available simultaneously.

CANopen

ETHERNET
POWERLINK
Standardization Group



Scalability and Migration

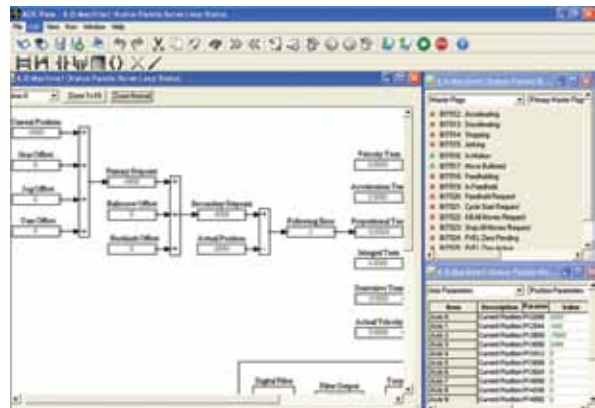
The ACR-96xx Xpress PAC utilizes industry standards wherever possible. This approach protects your development investment by allowing seamless migration to our future Xpress family controllers or even to third-party devices. Develop your application once and deploy it easily across multiple locations and controllers.

Leverage Your Installed Base

The Xpress PAC family products are designed to work together - but they also play well with others. Our commitment to industry standards allows the ACR-96xx to communicate with many vendors' existing protocols. And, where a more obscure connection is necessary, our Interact Xpress HMI offers communications and data transfer with virtually any device you may ever encounter.

ACR-View

ACR-View automatically generates a suite of common tags for each project you define. These tags can be automatically used in your Xpress HMI application.

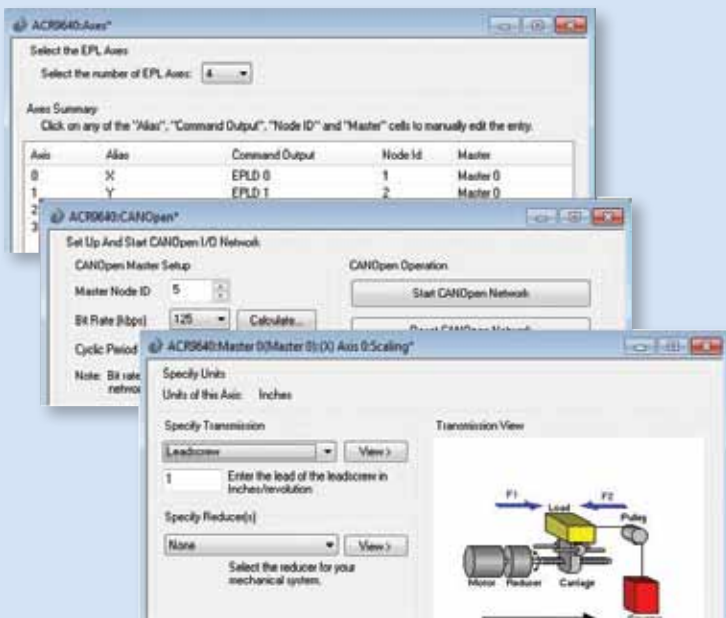


ACR-View Software Development Kit

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:

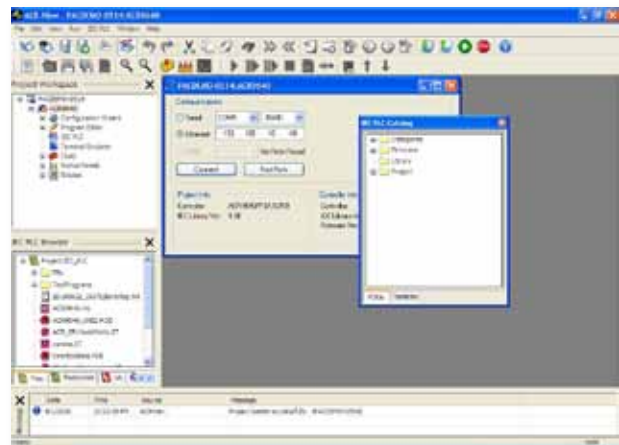
- **Ethernet, USB, CANopen and serial connection support**
- **Project Configuration Wizard**
- **Servo tuning tools**
- **Built-in oscilloscope, strip chart and XY plot**
- **IEC 61131-3 editor (structured text, ladder diagram and continuous function chart)**
- **Real-time terminal interface**
- **Servo loop diagnostic tool**
- **Comprehensive status panels**
- **Integrated help files**

Configuration Wizard



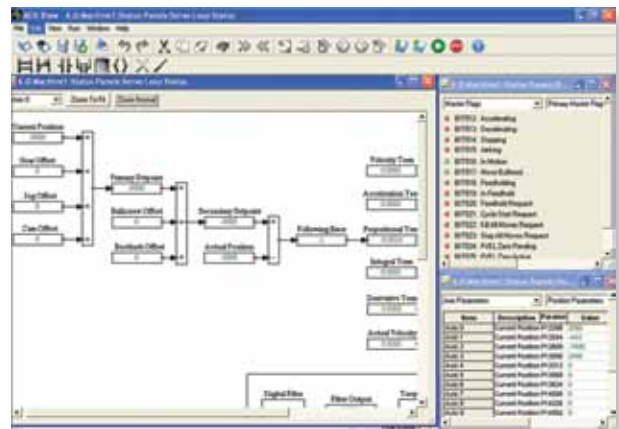
Project set-up is streamlined through the use of the Configuration Wizard. The ACR-9xxx can be configured in a matter of minutes as the user is guided through a series of simple steps. ACR-View will set the necessary parameters to have the controller ready for motion and code development.

Development Overview



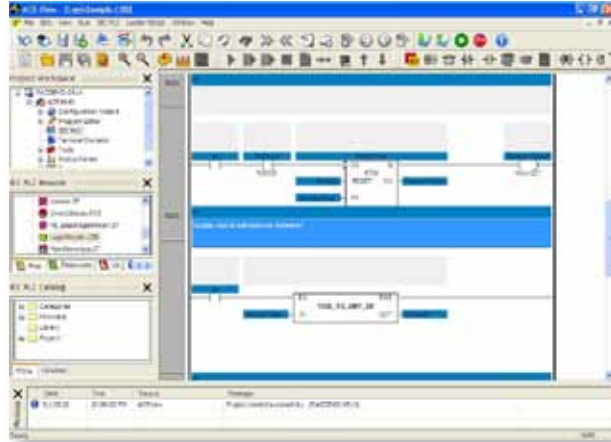
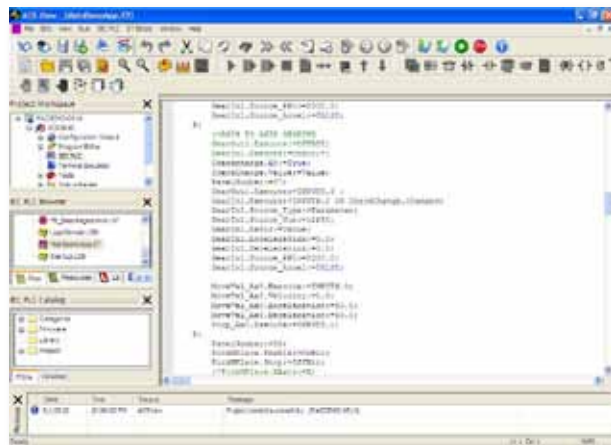
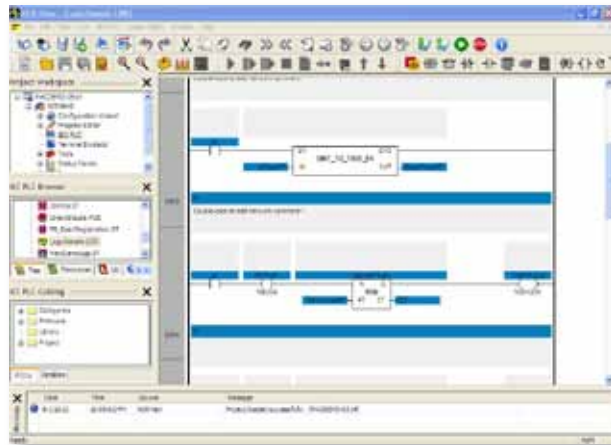
ACR-View's configurable environment allows you to create a development system that works the way you do. Elements of the environment can be docked, floated or moved to where they work best for you. Additional information is available from tool tips and a context sensitive help system.

Status Panels



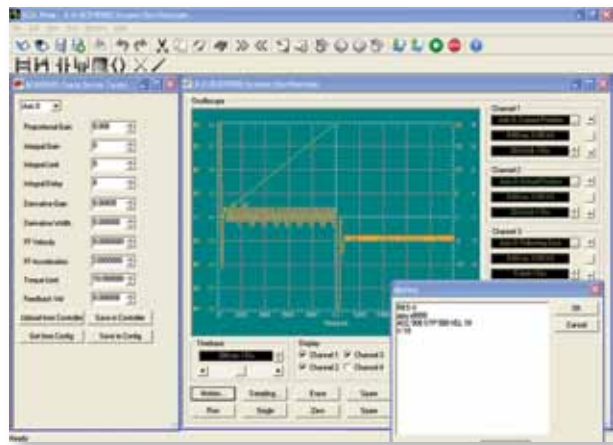
View virtually any parameter or flag within the controller using the Bit and Numeric Status panels. The Servo Loop Status panel allows in-depth analysis of servo operation.

Editors



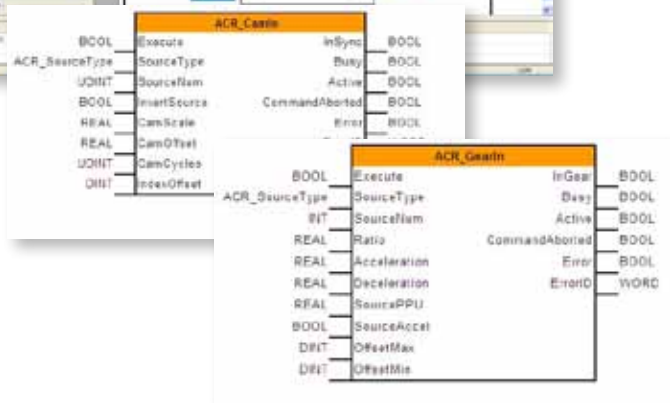
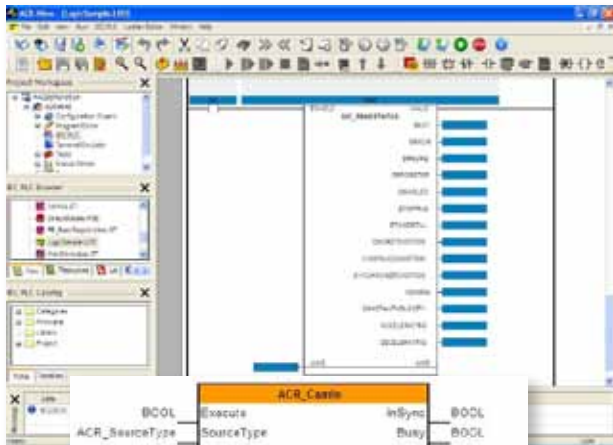
IEC 61131-3 editors support complete project development in one or several supported languages. Motion and I/O logic are supported in all languages.

Tuning



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.

Motion Control Function Blocks



ACR-View not only incorporates the industry-standard PLCOpen function blocks for motion, but goes beyond with proprietary multi-axis and coordinated function blocks.

Interact press HMI

Complete Control & Complete Information Anywhere... Anytime

Interact Xpress is the machine-level HMI member of the Xpress PAC family. Interact Xpress provides your system with a connection to the rest of the company or the rest of the world. It offers a completely web-published environment where any plant-floor data or information can be accessed from any web browser with an Ethernet connection to the XPR PowerStation on your machine.



- Reduces HMI development time by automatically sharing tags with the ACR-96xx programmable automation controller
- Pre-built template screens for common functions reduce your time to market
- Integrated development environment allows applications to be designed and edited on the runtime system
- HMI designer/editor supports multiple runtime versions, eliminating version control management headaches
- Easy, object-based screen development using a "tool bin" of pre-configured panels tools and drag-and-drop editing
- Panel tools include pushbuttons, numeric entry, selection entry, numeric displays, bar graphs, meters, gauges, sliders, message displays, time/date display and more
- 3-D, shaded panel tool graphic are available in multiple styles with no additional work



- Includes an integrated graphics library
- Jpeg (.jpg) and Flash (.swf) image support
- Complex animation capabilities and video support
- Web link support
- Pre-configured alarm tool with automatic collection of historical alarm data
- Integrated tag editor with drag-and-drop tools and import/export to Excel and other software packages
- Development software for offline design/editing supports Windows® 2000 and Windows® XP operating systems

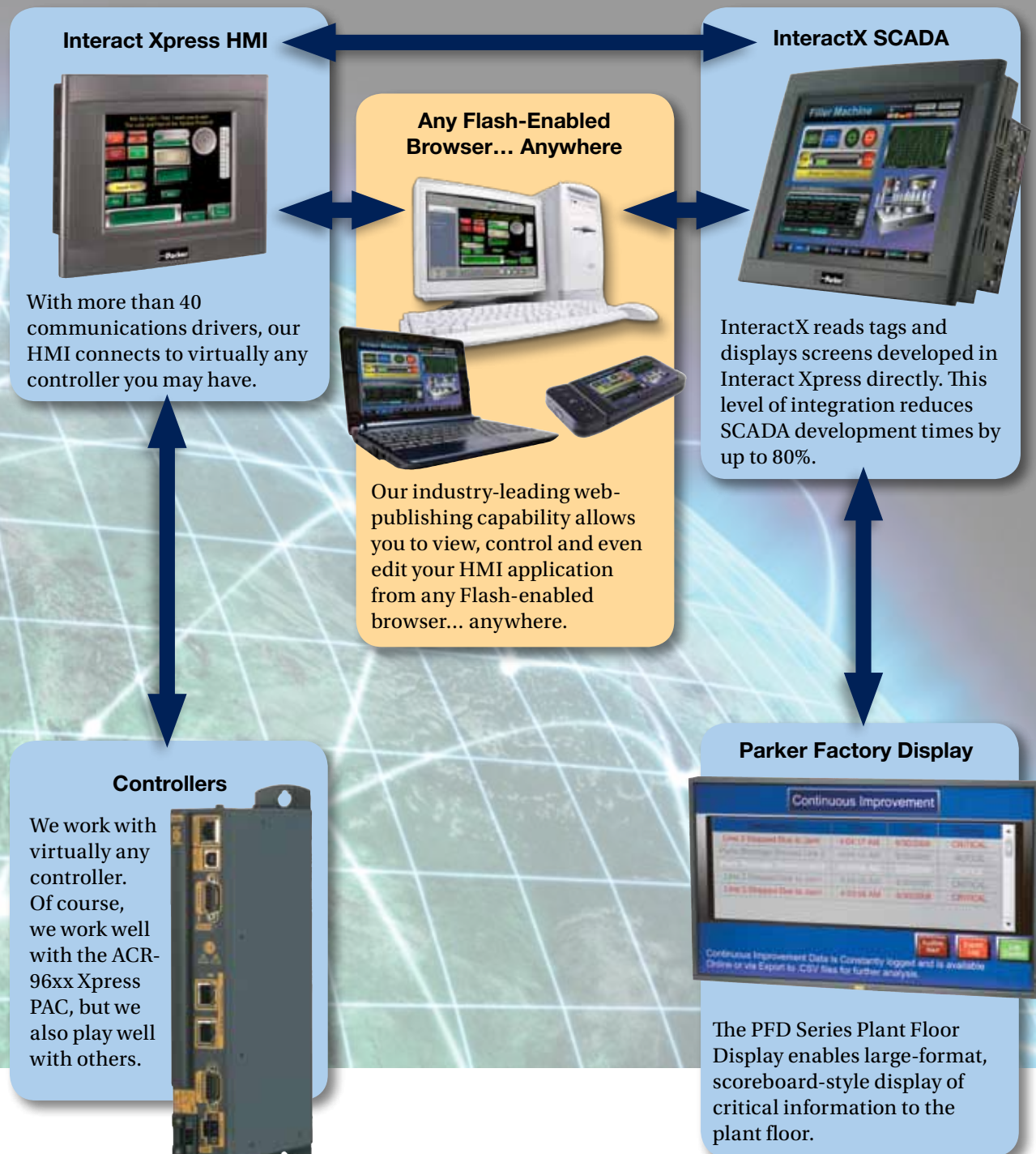
- Reduces SCADA development time by up to 80%, when used with our InteractX SCADA
- Interact Xpress is offered in everything from a no-display system to a 15" integrated display size
- More than 40 bundled communications servers allow Xpress to work with everything from our ACR-96xx Xpress to virtually any legacy equipment you may have

Real-time trending with 1000-point buffer for each pen.



Windows® is a registered trademark of Microsoft Corporation.

Parker's Interact Xpress HMI with InteractX SCADA delivers your plant-floor data wherever it's needed, when it's needed.



Xpress Drive Solutions

System Design Solutions

The Xpress PAC family features the high-speed ETHERNET Powerlink motionbus, which provides significant advantages in every step of your project from design through 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**

Two drive families to deliver the power range you need:

Aries	3 to 6.3 A RMS
Compax3	2.5 to 155 A RMS

Machine Design Flexibility

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.

With 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 is 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.



ETHERNET Powerlink Communications

- Replace the traditional $\pm 10V$ 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 $< 1 \mu s$

Ease of Troubleshooting

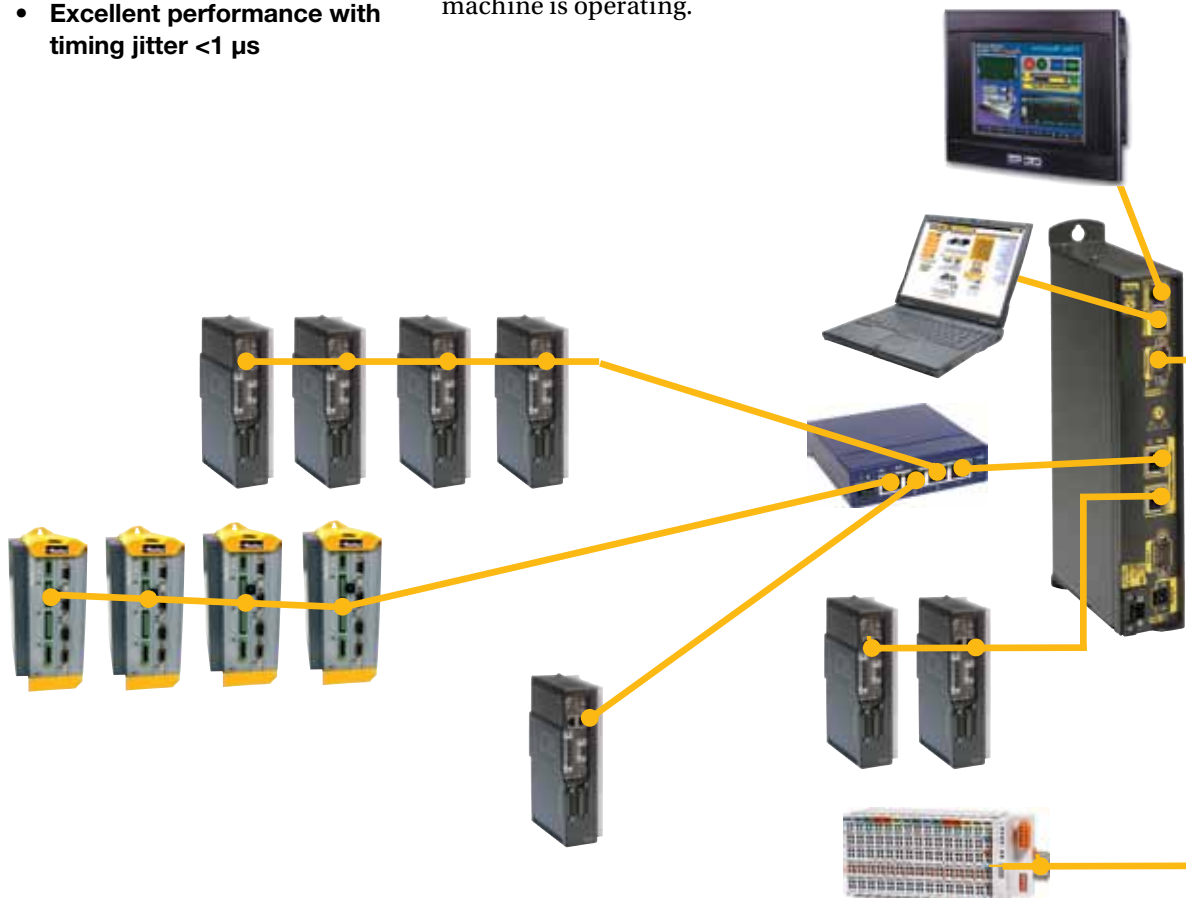
As part of the standard EPL cycle, a complete set of drive status parameters is transmitted back to the controller. HMIs, application programs and error-handling routines all have immediate access to this status information, greatly enhancing the EPL system's ability to intelligently handle and troubleshoot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

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.



Xpress Drive 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

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)

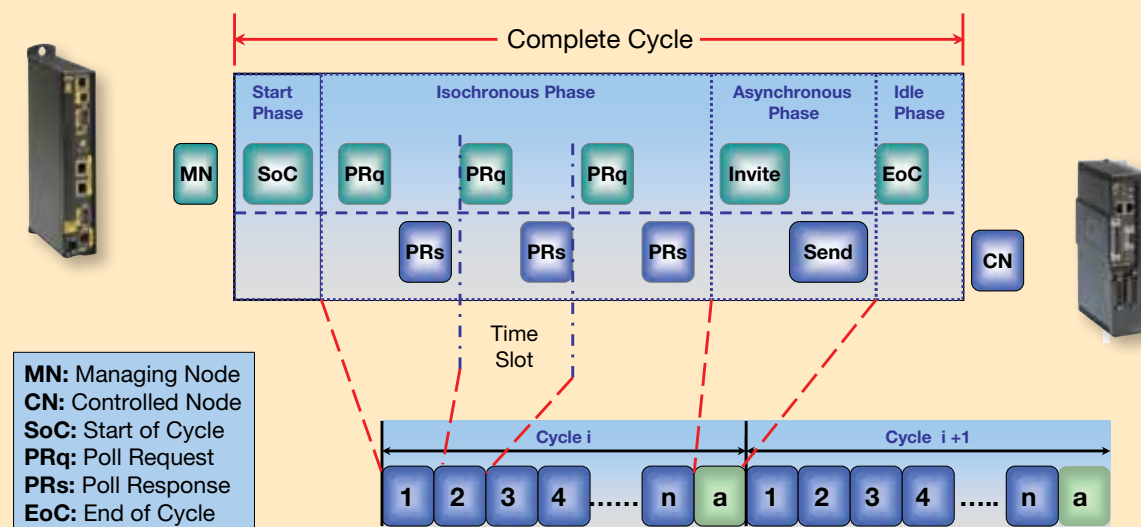
- Closing servo loops including torque, velocity and position loops
- Local I/O (7 in, 4 out)
- High-speed inputs for registration
- Encoder feedback from motor



ACR-9xxx Multi-axis
EPL Controller

Aries or Compax3
EPL Servo Drive

Slot Communications Network Protocol



Parker's Xpress Family Offers Everything from HMI to Mechanics

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



Rotary and Linear Motors

Parker offers a complete line of motor products meeting a broad range of application needs. Parker 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.

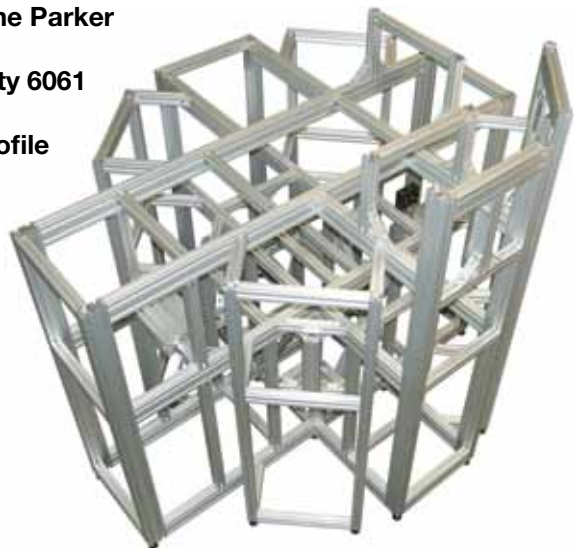


IPS

Parker offers the most value for your dollar in the structural framing, guarding, and support market. With multiple North American design centers, Parker IPS is readily available and easy to procure.

Parker IPS offers:

- Integrated CAD software for ease of inclusion into your designs
- A staffed application engineering team to design and draw solutions for you
- Flexibility in ordering from complete assemblies, kits and components, to raw materials and bulk orders
- Industry rivaled support network through the Parker sales network
- Robust, high-quality 6061 aluminum designs
- Metric and inch profile designs



ControlDesign.com FOR MACHINE BUILDERS

**2010 Reader's Choice
Award Winner for
Linear Actuators,
Slides & Guides**

Linear Mechanics

Parker offers customer-acclaimed, industry-leading linear mechanic designs ranging from high-precision sub-micron repeatabilities to large-area and economical positioning solutions. The product portfolio includes:

Miniature Motion with the LCR or MX80 Series

- High-frequency compact motion with the MX80
- MX80 positioning capability from 0.8 to 1.5 μm
- Linear motor, ball screw, lead screw, slides, or micrometer drives for the MX80 Series
- OEM-friendly designs
- Compact, value-priced positioning with the LCR Series
- Belt or lead screw drive trains
- Easy multi-axis solution capabilities with dowel pins for reference and mounting



Precision Positioning with the 400XR Series

- Highly flexible with over 1 billion permutations of the configurable part number
- Precision-machined bases
- High-precision ground ball screws
- Positioning repeatability from 1.3 to 3 μm
- Standard dowel pins for alignment to 120 arc-sec



Industrial Positioning with the HD Series

- Same great flexibility in configuration options
- Machined bases
- Maximum rigidity with deep channel design
- Positioning repeatability from 8 to 50 μm



Long-Travel, High-Speed Automation with the HPLA Series

- Flexible belt drive designs offering 8 different profile sizes ranging from 47 to 180 mm wide
- Flexible bearing options from roller wheels to square rail designs
- User friendly features for lower total cost of ownership
- Convenient gearbox and motor options



Complete Motion Systems

Parker's Electromechanical Automation Division brings together leading brands in industrial and high-tech automation, including Bayside, Compumotor, CTC, Custom Servo Motor, Daedal, IPS and Trilogy. Designed for easy configuration to make a complete motion system — from miniature precision for life sciences to overhead gantries for the factory floor — these best-of-breed individual components are available separately, so you can build a motion system from the ground up, or as a complete motion system to make integration simple, fast and easy.

Total System Solutions

Parker's team of highly qualified application engineers, product development engineers, and system specialists can turn pneumatic, structural and electromechanical products into an integrated system solution. Moreover, our Selectable Levels of Integration™ allows you to choose the appropriate system, subsystem, or component to meet your specific need.

24/7 Emergency Breakdown Support

The Parker product information center is available any time of the day or night at 1-800-C-Parker. Our operators will connect you with a live, on-call representative who will identify replacement parts or services for all motion technologies.

The Power of Parker

In today's competitive, fast-moving economy, what good is an application that isn't ready on time? This is especially true when compressed design cycles make the quick delivery of critical components essential. With factories strategically located on five continents, Parker offers an unrivaled delivery record, getting solutions out our door and onto your floor faster than ever.

Parker also has the industry's largest global distribution network, with more than 8,600 distributors worldwide. Each of these locations maintains ample product inventory to keep your downtime to a minimum. And many distributors have in-house design capabilities to support your system and subsystem requirements.

Throughout the design process, Parker's factory-trained electromechanical engineers work hand in hand with you and day or night at 1-800-C-Parker. Our operators will connect you with a live, on-call representative who will identify replacement parts or services for all motion technologies.



parkermotion.com

Our award-winning Web site is your single source for:

- Product information
- Downloadable catalogs
- Motion-sizing software
- 3D design files
- Training materials
- Product-configuration software
- RFQ capabilities
- Videos and application reports

For more information on Xpress PAC solutions, go to:

<http://www.parkermotion.com/PAC>

