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Rockwell Automation DPI Wireless Interface Module

by Larry Putnam - Account Manager, Kendall Electric - Three Rivers

The DPI Wireless interface module (WIM) provides a wireless communication between a Pocket PC, laptop computer with Bluetooth wireless technology, and any device supporting Allen-Bradley DPI (or SCANport) protocol. So, instead of toting cables around to connect to your PowerFlex drives, evaluate the features of the WIM.

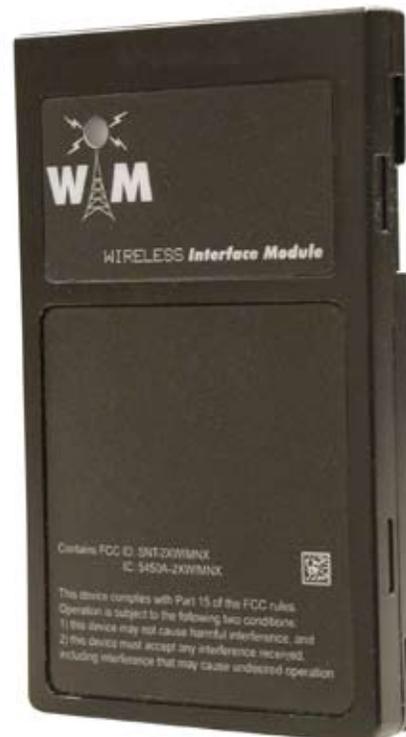
Any Allen-Bradley product supporting DPI (or SCANport) will connect to the WIM. This includes PF 7 drive family and peripherals, and legacy products 1336 drives. The DPI WIM is offered in NEMA 1 and NEMA 4 (20-WIM-N1 and 20-WIN-N4S). It can be installed on the front of an enclosure door or in the HIM cradle on the drive itself. The NEMA 4 version is designed for permanent mounting.

To communicate and configure drives there are multiple options; PowerFlex DPI WIM, or Pocket DriveExplorer and DriveExplorer or DriveExecutive. To connect, simply configure point-to-point to PF drive using the DPI WIM and then route out over the EtherNet/IP, ControlNet, DeviceNet or RS-485 DF1 is used to access other AB drives. This eliminates the need for a separate network connection and interface to each drive. For legacy products like 1305 and 1336 PLUS II drives

use the SCANport. The DPI WIM can be kept secure by using the security mode parameter to limit access to qualified personnel.

Other features include user configurable fault response, diagnostics for troubleshooting the network connection, the ability to view actual logic commands, and Flash upgradability.

No one likes to hassle with those tedious cables. A solution has finally arrived. For further information on Rockwell Automation's DPI Wireless Interface Module, or a demo, please contact your Kendall Account Manager.





InSight Explorer v4.5 two new EasyBuilder features

This Tech Tip will highlight two of many new features added to InSight Explorer v4.5. The Plot Tools and Links Tab. This Tech Tip will demonstrate how you can display Text Graphics with X and Y position in the EasyBuilder runtime display. Change the text color to Green or Red based upon the inspection results.

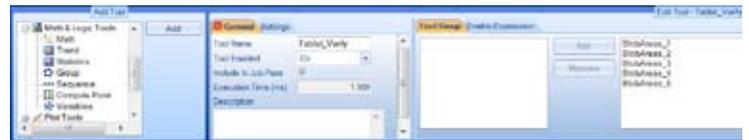
The Plot Tools have been added to the Inspect Part step. These tools are used to create conditionally enabled graphics placed on the image based on mathematical expressions. The list of Plot Tool objects are Arc, Circle, Cross, Line, Point, Region and String. This Tech Tip will illustrate the Plot tool example showing a "Pass" or "Fail" string based upon the inspection results.

The Links tab was added to the Palette view, which allows you to quickly link specific tool input and output properties to other tools. Links between tool Output properties and Input properties can be made by either dragging the Output property node to the applicable Input property node, or by right-clicking the Input property and selecting the applicable Output property from the Link From context menu. This Link example will demonstrate the ability to change the Plot String color based upon the inspection results.

The first step in creating the Plot string to display the Inspection Pass/Fail is to group the results. In this example we will Group the 5 Blob Area tools. If any Blob Area tool fails the group will fail. This provides the result for the Plot String. See Display Results images.



- 1) Add the "Tablet_Verify" Group Tool from the Math & Logic Tools. Add the specific Inspection tools that will provide the Pass/Fail result. In this example I added the 5 Blob Area Tools that look for the Tablets to be present. Set the Tool Enabled set to On (default).



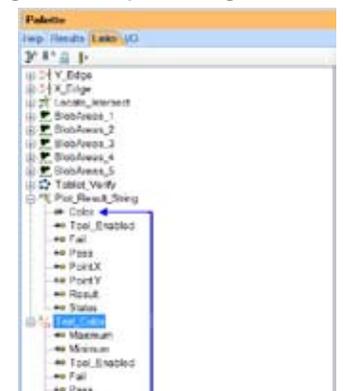
- 2) Add the Plot String tool from the Plot Tools. In the Plot String enter (225) in the X Tab and (200) Y Tab pixel coordinates. This positions the String text. In the String Tab enter the following: `If((Tablet_Verify.Pass),"Pass","Fail")` expression. This will display the "Pass" or "Fail" string in the display.



- 3) Add the "Text_Color" Math Tool from the Math & Logic Tools. In the Expression tab enter `If((Tablet_Verify.Pass), 8,1)`. This will set the color of the Plot String text to Green(8) or Red(1) for a Pass or Fail condition.



- 4) Now we need to Link the "Text_Color.Result" tool's Output property to the "Plot_Result String.Color" tool's Input property. Click on the Link Tab in the Palette View. Expand the "Text_Color" and "Plot_Result_String" tools. Drag the "Text_Color.Result" on to the "Plot_Result_String. Color" property. You will now see a blue linking arrow pointing to the Color property. You have successfully linked these 2 properties.



In Summary we now can Display the string "Pass" or "Fail" and change the color based upon the result of the group tool "Tablet_Verify" Result.



Rockwell Automation GreenPrint™ Methodology

by Dan Sherburn - GMS Director, Kendall Electric - Grand Rapids

Forward thinking Energy Management process

Large retailers such as Wal-Mart have begun to judge suppliers based on “scorecards” that track products’ environmental impact through the supply chain, illustrating to consumers a company’s social responsibility. Even if a manufacturer isn’t subject to such scrutiny, adopting a forward thinking energy management program is crucial to the ability to boost product profitability. When we speak of energy management, we speak in terms of many forms of energy by use of an acronym “WAGES” (water, air, gas, electric, and steam).

An industrial GreenPrint™ (or energy management blueprint) is a four stage plan for achieving WAGES optimization. A GreenPrint™ can help manufacturers gain better control of how they use resources; reducing the burden of utilities cost on profitability and lessen the risk associated with the external factors affecting price and supply.

Stage One: Awareness

In stage one, companies conduct ongoing audits and assessments to identify a wide range of changes that can help reduce energy consumption. Leveraging existing automation infrastructure, companies can collect WAGES data to give them a better picture of consumption; when, where, and how. Recommendations may include low investment modifications such as shifting certain maintenance operations to non-peak times. Kendall Electric and Rockwell Automation can help companies get started with “stage one” by commissioning an audit or an assessment conducted by a certified energy management engineer, as well as providing WAGES data collection hardware and software and consulting.

Stage Two: Efficiency

By leveraging the consumption data in the awareness stage, the efficiency stage allows companies to make changes based on consumption and implement “departmental billing”. Departmental billing allows companies to more accurately access actual energy costs by production areas so that they may more accurately and actively manage WAGES by department. For example, a paint department may want to aggressively pursue utilizing VFDs on fans and blowers in an effort to lower

electrical consumption. This can be monitored through the use of an internal electric bill, by department, created through the use of sub metering and RSEnergyMetric software. In addition, companies in this stage begin to utilize WAGES web-based software dashboards, such as the Rockwell Automation VantagePoint and Historian products.

Stage Three: Optimization

This stage refers to the ability of companies to model production with WAGES as one of the variables. Utilizing all of the data collection and reporting tools in phase two, plant and scheduling managers can utilize software simulation tools to see the affect that peak and off-peak energy costs, emission costs, raw material and labor costs have on production. As an example, plant management can also forecast the need to cogen electricity if the cost of natural gas increases to a certain level.

Stage Four: Aggregation

Armed with optimized production information obtained in previous stages, manufacturers are able to project in advance how much energy will be required for similar loads or batches. Manufacturers can include WAGES as requirements into resource planning systems the same way they look at the availability of raw materials on the bill of materials. This can help profitability, for example, by allowing management to schedule certain batches or production runs that are energy intensive to off-peak times.

The Power of Knowledge

A manufacturer operating a liquid blending application uses a series of large pumps that run continuously. On a slow day, plant personnel decided to perform routine maintenance on the pumps that required them to run a back-up set of pumps. Before shutting down the primary pumps, both sets were running continuously for 45 minutes. This obviously raised the facility’s energy consumption. Unfortunately, this task occurred during the facility’s peak demand window of 10 a.m. to 10 p.m. and the facility received a peak penalty charge from the utility provider that totaled \$95,000 for the year.

A manufacturer utilizes a series of Rockwell Automation

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power monitors in an effort to gain visibility to where electrical energy is being consumed during the production of parts. They were able to compare the “internal” electric bill to those they received from their local utility. An error was discovered on the utility side and the resultant savings were in the thousands of dollars.

Kendall Electric and Rockwell Automation have a suite of hardware and software products designed to help you monitor WAGES and provide visibility (knowledge) as to where and how these resources are being consumed. Rockwell Automation can also assist with audits, assessments and energy consulting. Contact your Kendall Electric Account Manager for more information.



Arrow Hart's X-Switch

by Davey Robison - Account Manager, Kendall Electric - Kalamazoo

Recently a customer approached me about a food manufacturer that is trying to change their standards for certain products that are brought into the work environment. One of the concerns was to address some issues pertaining to motor control switches. Over time my customer had noticed that they have replaced switches because of failures. Harsh environments such as those in food & beverage manufacturers can cause failures within switches because of improper use and/or or poor design. The switch may not be rated for frequent wash-down applications which in turn will cause the electrical components to corrode and fail.

After doing some research and talking with a few vendors, I presented to my customer the X-Switch by Cooper Wiring Devices also known as Arrow Hart. The X-Switch is a very durable switch that deters oils, chemicals, water, and moisture. It is a switch suitable for food processing, meat-packing, distilleries, bottling and other food handling environments. Not only is the X-Switch built to last, but it is built to address the needs of safety, reduce downtime, and also complies with code.

What makes the X-Switch stand out even more is that it is the only NSF (National Sanitation Foundation) Splash Zone Certified motor control switch on the market. Splash Zone environments are where liquids used in processing or cleaning may splash, spill or otherwise soil the surface of the device. The NSF requires that the products go through a series of harsh tests to become approved for the food and beverage facility requirements.

The X-Switch has numerous configurations, accessories, features and benefits such as a 30 amp, 40 amp or up to a 60 amp 3-pole 600 volt rated switch, with three different horsepower ratings. Below are some highlights of the X-Switch:

- Type 4X Enclosure
- Pad lockable handle
- Quick access to interior
- Available with pre-wired SOFTPower Connectivity
- Multiple input and output configurations
- Optional breather drain
- Pre-drilled holes
- Pre-Wired grounding lug

The use of the SOFTPower Connectivity is a great way to speed up installation with quick means of connecting or disconnecting power to reduce downtime for the facility. SOFTPower Connectivity is rated for 10 amps, 5HP at 480 V/AC. If your application falls within that rating, there would be an opportunity for some savings via reduced downtime by using SoftPower Connectivity.



For further information about ArrowHart's X-Switch, please contact your Kendall Account Manager.



The Next Generation of Safety Relays

by Mike Wolfgram - IC/Safety/Sensor Specialist, Kendall Electric - Saginaw

Rockwell Automation has released the newest family of Allen-Bradley Guardmaster Safety Relays that will significantly increase what we can easily accomplish with safety relays. This includes six units capable of monitoring a wide range of safety devices. These six units can achieve most of the functions safety systems require, solving most machine guarding applications. And with only 6 catalog numbers to remember, this helps to simplify purchasing and parts management. The new family is designed to meet new the functional safety standards, such as EN ISO 13849-1 or IEC / EN 62061 and offers several key functions to simplify installation and system complexity, reduce costs, save time to install, and reduce panel space.

Two Dual Safety Inputs

The functionality of two standard safety relays can be achieved in one device, allowing connection of two dual channel input devices into one safety relay.

Universal Inputs

A broad range of safety devices are all compatible with the same relay without any additional configuration including dry contacts e.g., safety interlock switches, emergency stop devices. Additionally pressure sensitive safety mats and voltage output devices such as safety light curtains all wire to the same terminals.

Simple Logic Functions

Flexible "AND/OR" logic can be configured simply and quickly in a single relay or through a combination of relays via single wire connection. Commissioning a global e-stop or creating safety zones is a much easier process. This gives a simple safety relay the capability of solving applications previously requiring extensive inter-wiring, or a programmable controller.

Single Rotary Switch

This TÜV approved feature utilizes a single rotary switch to set the required function of the safety relay and eliminates typical redundant switch setting. Selectable functions include simple logic, reset, timing, and diagnostics.

Single Wire Safety Connection

This innovative and patented concept simplifies cascading and expanding safety functions by linking relays with a single wire connection. A dynamic signal from device to device provides a linkage in accordance with SIL3, PL e, allowing easy addition of extra I/O which can be configured with simple "AND/OR" logic combinations.

Logical Grouping of Terminals

All device inputs, and power terminals are located on the top of the relay, and outputs and the single wire logic link terminals are located on the bottom. This orientation is especially suited for routing of cables, reducing stripping of cable jackets and allowing input wiring to stay within the same wireway in the control panel.

This new family is available in single or dual input with dual channel operation, with the option for a dual input relay with solid state outputs. Additionally, expansion modules are available to expand output capabilities with an option for a timing function. All units are 22.5mm wide providing significant space saving over many previously existing safety relay options.



Be sure to ask your Kendall Electric Account Manager about Allen-Bradley's next generation of safety relays.

PlantPax Automation System

July 20, 2011/ 8:00am-5:00pm

Kendall Electric

5101 S. Sprinkle Rd, Portage, MI 49002

Online registration @ training.kendallelectric.com ,
then click on the "Training" tab

Kendall Electric, Inc., in conjunction with Rockwell Automation, Endress + Hauser, Prosoft Technology, and Spectrum Controls is pleased to extend an invitation to you for a full day seminar consisting of an overview of our Process and Traditional DCS Solutions. Join us at this technology application seminar with a focus on process solutions.



Plantwide Benefits of EtherNet/IP

August 17, 2011 / 8:30am-4:30pm

Grand Valley State University - 2nd Floor – Eberhard Center

301 Fulton Street West • Grand Rapids • MI 49504

Event Information: Ronda Kaechele

269 792-7037 • rakaechele@ra.rockwell.com

Register online at www.rockwellautomation.com/events/northamerica

You will receive a Certificate of Completion for 6 PDHs that can be submitted for CEUs.

- Fundamentals of Ethernet/IP Networking
- Industrial and IT Network Convergence
- Designing the Physical Layer for Ethernet/IP
- Networking Best Practices
- Network Resiliency and Redundancy
- Securing Ethernet/IP Networks
- Rockwell Automation EtherNet/IP Product Selection



Automation Fair 2011

November 16-17, 2011

McCormick Place West Chicago, Ill

Online registration opens August 1

For registration and information on Kendall Electric trip packages, visit af.kendallelectric.com or contact your Kendall Electric Account Manager

Learn about smart, safe, sustainable automation solutions that optimize production and drive competitive advantage during this year's 20th anniversary of Automation Fair.

Attend industry forums, hands-on labs, technical sessions, and demonstrations. And view advanced technology displays from Rockwell Automation and our PartnerNetwork members.





Rockford Ball Screw

by Steve Swailes - Automation Specialist, Kendall Electric - Grand Rapids

As you may or may not know, Kendall Electric carries a full line of mechanical components to compliment our line of electrical products. We carry the following:

- Planetary and industrial gearboxes (Wittenstein and Stober)
- AC/DC motors, gear motors and stepper motors (Marathon Motors, Bison Gear, Oriental Motor)
- Explosion proof servo motors (Elwood)
- Couplings for standard and servo motor applications (KTR and Wittenstein),
- Heavy duty ball screw actuators (Edrive Actuators)
- Belt and ball screw linear actuators (THK and Paletti)
- Linear stages and electric cylinders (Rockwell Automation)

And with the addition of the Rockford Ball Screw Company, we have added a source for ball and ACME screw assemblies and precision profile guide rails.

Rockford Ball Screw Company was founded in 1973 with three goals in mind:

1. Provide the customer with a quality product
2. Provide the customer with a competitive price
3. Provide the product on time

Today, the Rockford Ball Screw Company continues as a family owned and operated business, and the three goals endure as the backbone of their growth and commitment to their customer's needs. For over thirty years, they have achieved a tremendous growth rate and have realized this growth by providing their customers with the highest level of quality, service and engineering expertise. You expect the highest quality products and services from Kendall Electric, and Rockford Ball Screw fits right in with our line of products in that regard.

Rockford Ball Screw has been manufacturing ball screws, ACME screws and linear motion components for 38 years. They maintain one of the largest inventories of screws that are made entirely in the USA in their 52,000 square foot facility in Rockford, Illinois. They stock in excess of 56 ball screw models, over 25 ACME screws sizes, many types of bearing mounts, and other linear motion products. Many products are stocked in a variety of materials such as high and low carbon alloy steels and various grades of stainless steel. They are equipped to sup-



ply your ball and ACME screw requirements with second to none service and delivery times.

Rockford Ball Screw also offers the most complete line of standard bearing mounts in the industry including the BMF Series of fixed bearing mounts, the BMR Series of 'simple radial' supports and the BM Series 'simple' supports. Fixed rigid bearing mounts of the BMF series are designed to support radial and axial load components of force. The BMR Series simple radial supports are suited for radial loads and the BM Series are "simple" supports for radial and axial loads. All three series are available for common sizes of standard ACME and ball screws. Custom bearing mount solutions are also available. You can design your own assemblies on their website (www.rockfordballscrew.com) and download a 2D/3D CAD file that you can open with your CAD software (they 29 formats to choose from, including Autocad, CADkey, CATIA, IGES, Inventor, Pro/E, Solidworks, STEP and Unigraphics). Rockford Ball Screw also offers Precision Linear Rail and Guides through their wholly owned subsidiary, Rockford Linear Motion, LLC.

Rockford Linear Motion is Motion Simplified™.

You may be asking, what does this mean, exactly? And more so, how does it benefit me and the work I do? It's really quite simple. Motion Simplified™ represents a commitment to make working with Rockford Linear Motion simple in all aspects; simple to find the data you need, simple to specify and customize products, simple to buy and most importantly, simple to work with their team on custom applications and technical support.

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Why is this important? That's simple too. Rockford Linear Motion realizes their product is not overly complex. In fact, profile linear guide rail systems are pretty simple point A to point B solutions, yet recognized by customers as key components to their applications. Consequently, it should be easy for you to get what you need, when you want it, faster and simpler than ever before. The Rockford Profile Linear Guide Series can be interchanged with most competitors' products. In the linear motion industry profile, linear guide rails may also be referred to as linear slides, guide rails, or LM guides. The Rockford Linear Motion website (www.rockfordlinear-motion.com) has a cross reference, the Competitor Profile Guide Rail Interchange, where you can cross reference other manufacturers linear guide rails to Rockford's.

They also have a configurator, much like the ball screw website, where you can configure your linear rail system and download a CAD model.



The next time you have an application that requires linear motion, contact your Kendall Account Manager and let us help you put Rockford to work for you.



DesignStation 2.0 for PanelView Component

by Derek Humphreys - Automation Specialist, Kendall Electric - Kalamazoo

Are you familiar yet with the line of operator interface optimized for use with the Component class line of controllers? Just enough control for the application, but with easy to use features, multiple communication options, and display sizes, the PanelView Component may be just the right choice for your application.

No need to purchase or install software. It can be programmed directly using Internet Explorer 7 or Firefox right within the browser. No need to buy a special program cable either. Just use a standard Ethernet or USB cable that you probably already own. If you didn't have the terminal at the beginning of the project, the PVC could be programmed off line through the optional and free emulator. Unfortunately with the first launch, both the online and offline, programming experiences were "less than desirable" and speeds were slow. So we are pleased to be able to introduce the latest enhancement to the PVC line, DesignStation 2.0. This offline software tool was engineered to vastly improve the design time experience.

This tool is free and available as a download from: <http://www.ab.com/eoi/graphicterminals/get/PVcDesignStation20.zip>.

It can also be found within the new Connected Components Workbench software: http://files.rockwellautomation.com/Public/CCW_Version_1.0.zip

The firmware download site is: <http://www.ab.com/eoi/graphicterminals/get/2711C-PVCFirmware-01-50.zip>

Compared to the performance of the 1.2 and 1.5 emulator, Design Station 2.0 works at improved speeds. Depending on the computer power, expect to see a dramatic speed boost when editing. Launching the dashboard previously might have taken 1 – 2 minutes. With DesignStation2.0 and firmware version 1.5, expect this to drop by a factor of 10. Performance enhancements will also be apparent with all the editing functions, from copy and paste to save and close. Much easier to use than the emulator, file transfer will also be accomplished via USB memory stick. Future enhancements will include a test mode and validation. DesignStation 2.0 currently supports IE 7 or 8.

So don't wait, download DesignStation 2.0 or Connected Components Workbench and start programming. There's no time to waste!



Cognex Checker 4G Series Vision Sensors

by Tim Dunaj - Automation Specialist, Kendall Electric - Benton Harbor

Cognex Corporation continues to be an industry leader bringing new products and technologies to market. The 4G Series of Checker vision sensors adds many features to the already powerful 3G Series Checker, and prior Checker models. Solving your product inspection requirements, can easily be handled by one of nine available Checkers. As with all previous models, the 4G strives to provide a cost effective solution. The emphasis for the 4G Series is placed upon networkability and the many benefits it can lead towards.

A continually growing majority of industrial applications utilize Ethernet. The Checker 4G can now be directly added to your Ethernet network. Multiple 4G Checkers can be setup, via TCP/IP. This eliminates the need to have a point-to-point connection for that initial set-up. Additionally, all 4G checkers can be remotely monitored. The devices can be password protected to eliminate unauthorized configuration changes.

The next logical step, after adding Ethernet capability, is PLC integration. PLC integration can be achieved using EtherNet/IP, or Profinet, in industrial Ethernet applications. The integration can be as easy as getting "pass/fail" results from inspections, or initiating job changes. No additional modules are required, the connectivity is built into the 4G. A definite advantage to integrating the 4G with a "Logix" controller, from Rockwell Automation, is the availability of an Add-On Profile (AOP) for RSLogix5000. The AOP is developed by Cognex and validated by Rockwell Automation. The AOP will streamline any required ladder logic programming.

Once the Checker 4G is commissioned and running, inspection images can be saved to an FTP Server. This can be done directly from the 4G. Imagine the value in being able to detect suspect parts and to see what the Checker detected. Images can be transferred at two different rates. The 4G7 Model can transfer 10 images/second while the 4G1 Model is capable of transferring 70 images/second.

Aside from image transfer rates, the two models of the



4G have multiple differences and are intended for different applications. The 4G1 is a High Speed unit, with 128 x 101 resolution. This high speed vision sensor can be internally triggered to inspect 6,000 ppm (Parts Per Minute), or externally triggered to inspect 25,000 ppm. The 4G7 is a High Resolution solution, with a resolution of 752x480. Although slower than the 4G1, it is still capable of handling many non-stationary applications. The 4G7 can inspect 800 ppm, internally triggered, or 3,750 ppm, externally triggered.

Please contact your Kendall Electric Account Manager for additional information on Checker 4G Series, and any of the Cognex Machine Vision products. We would be happy to schedule an evaluation by our vision application engineer on staff. Our application evaluation documentation will provide you with product selection, application setup details, captured images, and recommendations.



We've Got an App for That...

by Doug Mason - Automation Specialist, Kendall Electric - Grand Rapids

Transform your iPhone, iPad or iPod into a Mobile HMI. ProSoft Technology (www.prosoft-technology.com) has released the ProSoft i-View, a mobile application for the iPhone, iPad, and iPod touch platforms. ProSoft i-View transforms these devices into mobile human machine interfaces to enable real-time remote process control for engineers, plant floor operators and maintenance technicians.

With ProSoft i-View, control engineers can remotely monitor and modify live data from programmable automation controllers (PAC) on an EtherNet/IP or Modbus TCP/IP network, including flow measurements, valve control, process data, and status data. The app creates a secure cellular or 802.11 interface between the iPhone/iPad/iPod touch devices and the control system. For 802.11 plant-floor network access, the WiFi function of the phone can be utilized in conjunction with ProSoft Technology 802.11 Industrial Hotspot™ solutions. For applications with wide geographic disparity such as pipeline and well-head monitoring, or where engineers require access from long distances, the ProSoft Technology Intelligent Cellular series can be utilized to broaden the range of access to virtually anywhere in the world.

Real-time alarm management

ProSoft i-View displays live process control values in stylized lists and includes user-established variance allowances with real-time alarms, including local notifications. Controls and data displays are color coded based on the value. Engineers are able to monitor these variables in real time and make adjustments on the fly from an iPhone device.

Secure remote monitoring and modification of live process data

Upon configuration, ProSoft i-View provides a feature which requires the user to assign a matching security code as both a password for network access and as a Security Tag in the Central Processing Unit (CPU) of the PAC. When ProSoft i-View launches, the Security Code must match that on the CPU in order to create a connection. ProSoft i-View also supports the Retina Display feature of the iPhone 4 and iPod touch 4th generation.

ProSoft i-View works in conjunction with the Industrial

Hotspot series of radios or industrial cellular series. Cumulative security features are offered by these industrial grade wireless solutions, as well as the iPhone/iPad/iPod touch devices themselves, to prevent unauthorized access to the network. ProSoft Technology's Industrial Hotspot radios feature WPA2-PSK and 802.11i RADIUS security, which prevent unauthorized access and modification to the network.



For plant engineers, this solution enables:

- Live monitoring of process data to engineers and plant floor operators
- Secure remote monitoring and modification of live process data
- Real-time alarm management

For further information about Prosoft's i-View mobile application, please contact your Kendall Electric Account Manager.

Allen-Bradley® Training Schedule

Because of the complexity of the industrial control that is currently being installed in factory automation, the need for a thorough understanding and knowledge of the equipment is imperative to keep your company productive and profitable. Training from Allen-Bradley can reduce downtime because employees trained on equipment can solve problems faster. It also maximizes utilization of equipment because personnel knowledgeable about all performance capabilities of the equipment will use those capabilities to the best advantage and potential. Additionally, Allen-Bradley's training increases worker participation towards your company's goals and objectives. Many productive suggestions for solving ongoing problems and for increasing productivity come from workers who fully understand control equipment.

Course Title	Course	Days	Cost	Troy	Wayland	Fishers	Indianapolis	Lafayette	Rensselaer
SOFTWARE PROFICIENCY SKILLS									
RSLogix5000 Level 3: Project Development	CCP143	4	\$1,875	---	8/16	7/19	---	---	---
RSLogix5000 Level 1: ControlLogix System Fundamentals	CCP146	2	\$1,125	9/13	8/9	---	---	---	---
RSLogix5000 Level 2: Basic Ladder Logic Programming	CCP151	2	\$1,125	---	8/11	---	---	---	---
RSLogix5000 Level 4: Function Block Programming	CCP152	2	\$1,125	---	8/23	---	---	---	---
RSLogix5000 Level 3: ControlLogix Maint. & Troubleshooting	CCP153	4	\$1,875	9/20	---	---	---	---	7/12
RSLogix5000 Level 4: Structured Text/Seq. Function Chart Progr.	CCP154	2	\$1,125	---	---	---	---	---	---
RSLogix5000 Level 1: CompactLogix Fundamentals & Troubleshoot.	CCP298	4.5	\$2,250	---	---	---	---	---	---
RSLogix5000 Level 1: ControlLogix Fundamentals & Troubleshooting	CCP299	4.5	\$2,250	8/22	---	8/22	---	---	---
RSLogix5000 Level 2: Basic Ladder Logic Interpretation	CCCL21	2	\$1,125	9/15	---	---	---	---	---
Introduction to Automation & Integrated Architecture	CIA101	2	\$1,125	---	---	---	---	---	---
PROGRAMMABLE CONTROLLERS									
PLC-5 / SLC500 & RSLogix Fundamentals	CCP122	2	\$1,125	8/16	---	9/7	---	---	---
PLC-5 Advanced Maintenance & Troubleshooting	CCP409	4	\$1,875	---	---	---	---	---	---
PLC-5 & RSLogix 5 Programming	CCP410	4	\$1,875	---	---	---	---	---	---
PLC-5 & RSLogix 5 Advanced Programming	CCP411	4.5	\$2,250	---	---	---	---	---	---
PLC-5 & RSLogix 5 Maintenance & Troubleshooting	CCP412	4	\$1,875	8/30	---	---	---	---	---
PLC-5 to ControlLogix Transition	CCP710	2	\$1,125	---	---	---	---	---	---
SLC 500 & RSLogix 500 Programming	CCPS41	4	\$1,875	---	---	9/13	---	---	---
SLC 500 & RSLogix 500 Advanced Programming	CCPS42	4	\$1,875	---	7/12	---	---	---	---
SLC 500 & RSLogix 500 Maintenance & Troubleshooting	CCPS43	4	\$1,875	9/27	---	9/20	---	---	---
MOTION CONTROL									
PLC-5/SLC 500 & RSLogix Fundamentals	CCN122	2	\$1,125	---	---	---	---	---	---
Kinetix 6000 Maintenance & Troubleshooting	CCN200	2	\$1,125	---	---	---	---	---	---
SAFETY									
GuardLogix Application Development	SAF-LOG101	2	\$1,125	---	---	---	---	---	---
GuardLogix Maintenance & Troubleshooting	SAF-LOG102	2	\$1,125	---	---	---	---	---	---
Lock-out/Tag-out Implementation	SAF-SFT100	1	\$750	---	---	---	---	---	---
NFPA 70E - ARC Flash Awareness	SAF-SFT106	1	\$750	7/19	---	---	---	---	---
NFPA 70E - Electrical Safety & ARC Flash Compliance	SAF-SFT112	2	\$1,125	7/20	---	---	---	---	---
Safety Seminar - Machine Safety	SAF-SEM	1	\$375	---	---	---	8/3	---	---
AC & DC DRIVES									
AC/DC Motors & Drives Fundamentals	CCA101	2	\$1,125	---	---	---	---	---	---
PowerFlex 700 Vector Control Configuration & Startup	CCA161	1	\$750	9/8	---	---	---	---	---
PowerFlex 700 Vector Control Communications on a DeviceNet	CCA162	1	\$750	---	---	---	---	---	---
PowerFlex 700 Maintenance & Troubleshooting	CCA163	1	\$750	9/9	---	---	---	---	---
PowerFlex 755 AC Drives Maintenance & Troubleshooting	CCA180	2	\$1,125	---	---	---	---	---	---
COMMUNICATIONS									
DeviceNet & RSNetwork Configuration & Troubleshooting	CCP164	3	\$1,500	---	---	8/30	---	---	---
ControlNet Design & RSNetWorx Design & Configuration	CCP170	2	\$1,125	---	---	8/9	---	---	---
ControlNet & RSNetWorx Maintenance & Troubleshooting	CCP172	2	\$1,500	---	---	---	---	---	---
EtherNet/IP Design & Configuration	CCP174	2	\$1,125	---	---	---	---	---	---
EtherNet/IP Design & Troubleshooting	CCP178	3	\$1,500	---	7/19	7/12	---	---	---
RSVIEW									
RSView32 Project Development	CCV201	4.5	\$2,250	---	---	---	---	---	---
FactoryTalk View ME & PanelView Plus Programming	CCV204	4	\$1,875	7/26	---	---	---	---	---
FactoryTalk View SE Maintenance & Troubleshooting	CCV206-LD	2	\$1,125	---	---	---	---	---	---
FactoryTalk View Site Edition Programming	CCV207	4.5	\$2,250	7/11	---	---	---	---	---
PANELVIEW									
PanelView 300/550/600/900/1000/1400 & PanelBuilder 32 App. Develop.	CCP196	2	\$1,125	---	---	---	---	---	---
SOFTWARE									
RSTestStand Enterprise Project Development	RS-RSTS101-LD	2	\$1,125	---	---	---	---	---	---
QUALITY MANAGEMENT									
Basics of Electricity	MFG244	1	\$750	---	---	---	---	---	---
Lean Fundamentals	LEAN501	2	\$1,125	---	---	---	---	---	---
VIBRATION TRAINING CLASSES									
Vibration Analysis Fundamentals	EK-ICM101	3	\$1,460	---	---	---	---	---	---
Vibration Analysis: Level I	EK-ICM201	3.5	\$1,460	---	---	---	---	7/19	---

To enroll in any of these classes, contact your local Kendall Electric, or register online at www.kendallelectric.com.

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