In This Issue:

Kendall. Wabash. Better Together
E-Commerce Update
Leviton - INFORM Technology
Bussmann - The Power of Space: CUBEFuse
Crouse-Hinds - Champ VMV LED Connected
Arrow Hart - Color Coded Locking Devices

Lighting & Control Solutions that createchange
Rockwell Automation - GuardLink Safety Technology
Rockwell Automation - PowerFlex 755T Drive Solutions
Appleton - LED Lighting Solutions
Mersen - Amp-Trap 2000 Fuses

Softing - tManager
Spectrum Controls - Universal Gateway
Grace Engineered Products - Maximizing ROI with Predictive Maintenance
Kendall Electric Hosted Rockwell Automation Classes
In late November, The Kendall Group completed the acquisition of Wabash Electric and Wabash Lighting. Since that time, we have been working hard to make this transition as smooth as possible for everyone involved.

On March 25, 2019, all Wabash Electric locations were renamed as Kendall Electric and Wabash Lighting locations were renamed to Kendall Lighting Center. All locations are also using the same business systems.

With this change, former Wabash customers now have access to all of the Kendall Electric inventory, e-commerce tools, and many other resources. Check out the map to see our expanded service area in northern Indiana.

All of us at The Kendall Group are excited about this transition and look forward to many more years as your preferred supplier of electrical, automation, and lighting products.

We have set up a web page to provide further information regarding this transition. Currently, there is banking and address information for remitting payments and a Kendall Electric W-9 form. This page will be updated as necessary with information and forms related to this transition:

www.kendallgroup.com/WabashTransition
Recently, the Kendall Electric OE Touch application received an update that provides better Apple iPad functionality than ever before. If you use this software on your phone, you understand its usefulness.

We have been asked many times to make it more iPad friendly. We took those requests back to the developer and they heard you. The software now makes better use of the larger screen.

The information is easier to read and use and it works in landscape mode as well.

Another improvement is the ability to scan a barcode directly on the shop.kendallelectric.com website. If you are using the site on a computer with a camera, or with a mobile device, you can scan a barcode into the site.

When you see an icon like this on the site, it indicates that you can scan a barcode here.

You can find the icon in the search bar at the top of all the pages (figure 1) or on pages such as the Quick Pad (figure 2).

Clicking the icon will start the scanning process. Hold the item in front of the camera, and once the camera detects the barcode, it will scan and use that information to search.

**Note** – The first time doing this on your computer or mobile device, you may be asked to allow access to the camera for the site. Please select “Allow” or “Yes” to enable this feature.

If you have any questions or comments about this article or anything on the shop site, please direct them to ecommerce@kendallgroup.com.

We look forward to hearing from you!
The financial burden of downtime is concerning for any business, but for manufacturing firms, it is one of the most critical issues faced and poses a significant threat to the bottom line. It is for this reason that manufacturers are hyper-focused on looking for ways to reduce downtime – especially unplanned downtime.

One mitigating action for reducing downtime is to develop a robust scheduled maintenance program that tracks the performance of all assets and uses that data to create an optimized schedule for maintenance tasks.

Another action is to monitor the performance of all assets in real-time to minimize response time to any unplanned interruption to production.

To be most effective, these actions require the ability to collect, store, and analyze performance data for all assets in the facility. Most new equipment can report such data, and even alert you when a maintenance task should be scheduled, or fault condition exists. However, even the most advanced machinery can only provide this valuable data if there is power flowing to it. This means you need to be able to monitor the performance of the devices that connect equipment to power – such as plugs, connectors, disconnect switches, etc.

Leviton – a premier manufacturer of power connectivity products – recognized this and has developed the INFORM™ Intelligent Platform. INFORM™ is Leviton’s technology platform that enables conventional Leviton products to provide real-time information used to improve operational safety, efficiency, and productivity. Embedding these intelligent platform elements into products now gives unprecedented visibility into the operating performance and health of Leviton commercial and industrial products.

For example, real-time indication of power present in the device serves as both a safety feature and troubleshooting tool when there is a power problem with connected equipment. Ground continuity monitoring ensures that shock hazards are reduced, and the effects of EMI are also reduced. IoT functionality provides remote monitoring and a notification system to optimize response time to abnormal operating conditions.

For more information, contact your Kendall Electric Account Manager.
Eaton’s Bussmann series products set the standard again, with the Compact Circuit Protector (CCP) and Class CF CUBEFuse now available up to 400 A.

The UL Class CF CUBEFuse, with Class J electrical performance, delivers the smallest footprint compared to any Class CC, J, or RK fuse solution—requiring up to 70 percent less space when combined with its unique fuse holder. The CUBEFuse is available in indicating and non-indicating versions, now from 1 to 400 A.

The CCP for use with Class CF CUBEFuse delivers the smallest footprint compared to any Class J disconnect solution—requiring up to 69 percent less space. It’s a UL 98 Listed fused, branch-circuit disconnect that packs up to a 200 kA short-circuit current rating (SCCR) to help increase equipment SCCR. The CCP is now available in 30, 60, 100, 200, and 400 A versions, all with through-the-front and through-the-side operators for greater flexibility, and multi-wire lug kits, which eliminate the need for a power distribution block.

With a disconnect switch and CUBEFuse now available up to 400 A, and requiring up to 70 percent less space, Bussmann series products are helping our customers go big, by going small.

For additional information about the CUBEFuse and CCP, visit kendallelectric.com/dl/BSC.
Champ VMV LED Connected: an Eaton Intelligent Power Solution

Eaton’s Crouse-Hinds series now offers the industry’s first integrated connected lighting solution for hazardous areas, helping industrial users advance their intelligent power management capabilities. Champ VMV LED Connected luminaires combine advanced LED lighting with communications and sensing technology to optimize industrial lighting applications based on space and specific usage requirements.

Utilizing intuitive software with wireless technology, the new Champ VMV LED Connected solution helps industrial users move beyond simply controlling light to optimizing that light for their specific applications. This enables users to eliminate the over-usage of lights and drive dramatic improvements in operating efficiencies and costs.

The Champ VMV LED Connected technology is certified for use in Class I, Division 2 hazardous-rated areas, and incorporates SmartMesh WirelessHART technology, a field-proven networking protocol for industrial applications. A web-based software program with permission-based user controls allows for easy management and fine-tuning of the lighting system.

Consider the Champ VMV LED Connected for applications including manufacturing plants; heavy industrial, chemical, and food and beverage facilities; mining; platforms; loading docks; tunnels; and outdoor wall and pole mounted areas.

Connected lighting functionality offers the following benefits:

• Advanced scheduling control for improving energy efficiency during non-operational hours
• Daylight harvesting for use of daylight and adjustment of light level
• Fixture grouping for maximized control within a defined area
• Occupancy sensing for areas that see infrequent traffic, such as storage areas of warehouses
• Advanced dimming controls to reduce energy consumption

For more information, contact your Kendall Electric Account Manager or visit kendallelectric.com/dl/CHS.
Black and White is BORING…Connect with COLOR!

Eaton’s Arrow Hart Ultra Grip Locking Devices are now available in six colors consistent with IEC 60309 color coding standards to help identify voltage ratings. As an industry first, Eaton’s color coded locking devices provide users enhanced safety with color coding to help users easily and quickly identify circuit voltage.

The superior safety of Eaton’s Arrow Hart locking devices has been enhanced with color coding to provide you a quick, clear and easy way to identify your circuit voltage. Designed to provide the long lasting, dependable service you have come to expect from Arrow Hart plugs and connectors, our color coded locking devices are the perfect solution for your commercial and industrial applications.

**Additional Features:**

- Ergonomic shape of plugs and connectors provide superior grip
- Voltage ratings are printed on the device and remain visible when mated
- Best in class cord grip allowing for a wide range of cord sizes plus IP20 protection
- Complete line of plugs and connectors, inlets and outlets plus receptacles

For more information, contact your Kendall Electric Account Manager.
createchange is a comprehensive collection of resources, tools, and product solutions designed to help you maximize energy savings while improving the quality of lighting. Whether you are completing a retrofit and upgrading inefficient lighting systems or starting from the beginning, Hubbell Lighting's financing and createchange resources help remove the barriers to finding the full solution for your space.

**Market Payback Analysis**
Our market payback analysis is a one-stop tool available to show how a new lighting system can work for you.

**Market Application Brochure**
Our application brochure provides lighting and control solutions, which target specific markets and focus on what you value.

**Audit Tools**
Having the right tools is a crucial step in the success of a lighting audit. Do you have what you need? Download the forms below to get started.

**Regulations and Codes**
Building energy codes and standards set minimum requirements for both retrofit and new lighting projects that impact people and environments.

**Case Studies**
Our case studies illustrate successful lighting project solutions from start to finish in a wide variety of industry applications.

**Industry Links**
Want to learn more? Our industry links page keeps you up-to-date on lighting education, regulations, codes and other energy related information.
GuardLink technology is a safety-based communications protocol that links safety to The Connected Enterprise. Allen-Bradley® Guardmaster® smart safety devices that feature GuardLink technology to deliver information, advanced functionality, and flexibility. This technology helps enhance safety, increase machine and plant-wide efficiency, all while simplifying installation.

GuardLink technology enabled devices offer advanced features and diagnostics that can be accessed through a GuardLink enabled connection tap. The benefits of GuardLink technology include:

- Real time individual safety switch diagnostics to significantly improve troubleshooting and minimize downtime
- Seamless and premier integration into a Rockwell Automation EtherNet/IP™ architecture with Add-On-Profiles
- Simple 4pin M12 cabling for installation

GuardLink – Device Level

- GuardLink provides access to diagnostic data of the daisy chained safety devices
- No configuration is required, with the wiring achieved through standard 4pin M12 cabling
- Up to 32 safety input devices can be connected in series up to 1,000 meters in length
- GuardLink supports connection of safety devices with either electromechanical or solid state safety outputs
- GuardLink provides: remote lock/unlock, status indication, reset and fault reset of safety input devices
- Certified for applications up to and including PLe Cat 4 (ISO 13849-1) and SIL cl3 (IEC 62061)

For more information, contact your Kendall Electric Account Manager or Industrial Control Specialist

GuardLink is a Better Safety Solution

- The Traditional Approach; Series connection of safety input devices is common practice in safety-related control systems. However, when the system trips, fault finding can be difficult due to the lack of diagnostic information. Providing diagnostics typically required additional wiring, increasing complexity along with installation time and cost.
- GuardLink simplifies this by providing safety and diagnostic information through the same cable. Connected to a safety relay and using an EtherNet/IP Network Interface, this information is easily passed through to the control system for increased diagnostics.

Check Out Our Components Page!

You can visit this informative micropage by visiting this link: kendallelectric.com/dl/AB or by scanning the QR code. The same QR code is also on the header of the 2019 Allen-Bradley shop calendars.
GUARDLINK – DEVICE LEVEL SAFETY LINKING TECHNOLOGY

GuardLink® provides access to diagnostic data of the safety devices.
- No configuration is required, with wiring performed through standard cabling with M12 connectors.
- Up to 32 safety input devices can be connected in series over 1200m (3660ft) between taps.
- GuardLink supports connection of safety devices with other electromechanical or solid state safety outputs.
- Remote LED reset indication, rest, and fault motor of safety input via the network interface.
- Certified for applications up to and including PLe 4 (ISO 13849-1) and SIL cl3 (IEC 62061).

WHY CHOOSE GUARDLINK?
Series connection of safety input devices is common practice in safety related control systems frameworks. When the system trips, fault finding can be difficult due to the lack of diagnostic information. Providing diagnostics typically required additional wiring, increasing complexity and installation time.

GuardLink simplifies this by providing safety and diagnostic information through the same cable. Connected to a safety relay and using an EtherCAT® Network Interface, the information is easily passed through to the control system for increased diagnostics.

GUARDLINK System Example

SensaGuard Non-contact Guard Interlock Switch
Connect Non-contact Interlock Switches to a GuardLink enabled tap and receive data on the location of the switch and any fault conditions through GuardLink when the guard door is opened or closed.

GuardLink Enabled Tap Indication
LED Input Indicator
Green = Connected input device healthy
Flashing Green = Connected input device healthy but fault on system
Red = Trip on connected input device
Flashing Red = Connected input device has not performed correctly

440G-LZ Guard Locking Interlock Switch
Guard Locking Switches lock switch signals can be provided, giving the devices current state and specific location within the system. Individual indication of the guard doors state including guard open, guard closed, guard locked or, guard unlocked can also be provided.

800F Emergency Stop Pushbutton
Connect Emergency Stop Pushbuttons to a GuardLink enabled tap easily and simply via an M12 connector. Get information on its location when the device is operated.

LED Link Indicator
Green = Operational
Red = Topped Flashing
Red = Faulty tap

GUARDLINK – DEVICE LEVEL SAFETY LINKING TECHNOLOGY

450L Light Curtains
450L Light curtains can be connected simply to GuardLink via a GuardLink enabled tap. Access to the light curtain status along with the location can be communicated.

GSR DG - Dual GuardLink Safety Relay
The GSR DG - Dual GuardLink Safety Relay can monitor two GuardLink channels and communicate status information for each safety input device via the EtherCAT® Network Interface.

Lifeline®
Connect a Lifeline™ 5 Cable Pull Switch to get the location of the switch to get the location of the switch and any fault conditions.

GuardLink Tap Indication
Red = Correct connected input device
Flashing Red = Connected input device has not performed correctly

Note: Rockwell Automation or 3rd party devices can be connected to the GuardLink device level safety linking technology.
PowerFlex® 755T Drive Solutions
The Next Step in Powerful Performance, Flexible Control.

The Rockwell Automation PowerFlex 755T drives were designed to provide harmonic mitigation, regeneration, and common bus solutions that help reduce energy costs, add flexibility, and increase productivity. These are the first drives to offer TotalFORCE™ technology which uses several patented features that were developed to help optimize your system.

The PowerFlex 755T line of drives also offers the advantage of a modular design for fast and easy installation and maintenance. The drive’s efficient design results in compact modules that can be easily removed and serviced – and also allows you to wire the drive just once. Power wiring can stay connected while a unit is rolled out for repair.

Look into the PowerFlex 755TL, PowerFlex 755TR, and PowerFlex 755TM drives and discover the next step in powerful performance and flexible control.

- PowerFlex 755TL drive for harmonic mitigation
- PowerFlex 755TR drive for regenerative solutions
- PowerFlex 755TM drive system for common bus solutions

Features
- Predictive diagnostics and maintenance settings monitor drive and motor operating conditions to help analyze system health
- Optimized packaging of power components and options reduces footprint and hardware
- Drives provide harmonic mitigation and meet the IEEE 519 standard
- Roll in/out design makes the power and filter modules easy to install and service
- Safe Torque Off and Safe Speed Monitor safety options
- Built-in dual EtherNet/IP ports
- Expanded power range: 10-6000 Hp (7.5 - 4500 kW)*

Innovative Design
PowerFlex 755T drives are built using a modular approach, which provides fast and easy installation and maintenance. This efficient design method provides convenient access to the compact modules that can be easily installed, removed and serviced.

- Market-leading power density is achieved by optimizing the packaging of power components for a reduced footprint
- Modular design allows convenient access to key components for streamlined servicing
- Service cart allows one person to easily insert or remove a module for simplified installation and maintenance
- The use of common hardware among the PowerFlex 755T drives reduces spare parts inventory
- Built-in components, such as dV/dt filters, decrease floor space requirements

Proactive Approach to Improving Uptime

Having the right information about the health of your system can be critical for reducing downtime and increasing productivity. PowerFlex 755T drives take a proactive approach to providing diagnostic data and continuously monitor drive health and compare the current performance to the application settings. This information is provided back to your control system, a capability that is driven by our patented TotalFORCE technology.

- PowerFlex 755T drives continuously monitor operation, compare the current performance of the drive components and motor variables to pre-determined settings and provide real-time information back to your control system
- The drive’s ability to be self-aware allows you to take proactive measures and helps reduce unplanned downtime
- Develop an effective maintenance plan using information provided by the drive
- Patented algorithms project the remaining life span of drive components – such as fans, bus and LCL capacitors, IGBTs, relay contacts – so preventive action can be taken if necessary. Access to this critical information helps you improve productivity

- A capacitor protection feature continuously monitors capacitor health using actual capacitor current feedback. The drive will shut down and the main input circuit breaker will open if an abnormal condition is detected. Abnormal conditions include high capacitor current and/or capacitance degradation that could lead to imminent capacitor failure
- A DC bus conditioner helps maintain DC bus voltage levels within drive specifications
- Voltage boost ride-through helps keep equipment running through power quality disturbances. By regulating the DC bus voltage independently of the incoming AC voltage, voltage boost ride-through control helps reduce downtime
- Thermal manager helps to assure that the thermal ratings of the power module are not exceeded. Reducing thermal stress to the drive’s power structure components helps increase the drive’s reliability and life

For more information contact your Kendall Electric Account Manager or Automation Specialist.
Making the Case for an Appleton LED Upgrade

Over the past decade, the Emerson lighting team has been hard at work developing a portfolio of LED lighting products designed to withstand some of the toughest environments on the planet. Despite cost efficiency improvements in LED technology, and clear maintenance and energy savings, Emerson estimates that 80-90% of the roughly 150 million lighting units installed in industrial facilities in the United States continue to rely on energy-inefficient High Intensity Discharge (HID) technology (e.g. Metal Halide, Pulse Start Metal Halide, Mercury Vapor, High Pressure Sodium).

In a recent industrial survey of end users, one in five respondents (20%) report using LED luminaires in all cases. The most common deterrent to doing so is the precedence of other business priorities (42%), followed by the expense (24%), questionable ROI (22%) and/or perception that doing so is not business critical (19%).

Clearly, when considering upgrading your lighting, getting buy-in from management before beginning the project is essential. With today’s LED solutions offering some of the most energy efficient and reliable lighting technologies available, making a compelling retrofit case with your manager should be a simple process once you have the facts.

Safety should be a business priority. Sufficiently bright, uniform lighting is critical for workers to perform their jobs safely and efficiently. However, in many facilities poor-quality lighting exists, with plant personnel focusing on illumination only when lamps are not working. According to a recent Bureau of Labor Statistics report*, fatal work injuries from falls, slips, or trips continued a general upward trend that began in 2011, increasing 6% to 849 in 2016 and 25% overall since 2011.

The long lifetime of LEDs can significantly cut back on maintenance, and less maintenance means less workers climbing ladders or operating mobile lifts to access luminaires for servicing and repair.

Because they are instant on, no wait time is required to restore light after a power loss or surge event. LEDs also offer better color rendering. And well-designed optics lead to evenly-distributed light and increased uniformity in hard to illuminate areas; improved light quality leads to safer environments for everyone.

If improved safety isn’t compelling enough, rethink the ROI. A facility that runs twenty-four hours a day, seven days a week requires 8,760 hours of illumination per year! When trying to meet this number of needed illumination hours – depending on luminaire run time, ambient temperature, and make/model – ballasts may need to be changed every two years or more. HID lamps can last 10,000 to 24,000 hours. Fluorescent typically lasts 20,000 hours. Incandescent lamps usually need to be changed every other month.

The time it takes to change a lamp can range from 15 minutes to an hour, depending on the location and height of the luminaire. And circuits need to be de-energized before removing dead ballasts from the interior of the luminaire.

Alternatively, LED luminaire lifetimes are reaching 100,000+ hours. This means LED luminaires can last 10 years or more, depending on the ambient temperature of the installation location. By upgrading to LEDs, maintenance personnel no longer need to change lamps and ballasts. To further explore potential maintenance, energy, and environmental savings accomplished by a LED retrofit, please check out Appleton’s Lighting Retrofit Calculator at kendallelectric.com/dl/ARC. This interactive tool will help your facility visualize savings specific to your location.

Hang a sample and see for yourself. Always request a sample prior to settling on a fixture design. Nothing compares to seeing a fixture hung in the actual application, and Appleton has a sample program to “try out” a fixture prior to making a large investment.

A lifeline that can be cut by an arc flash can disintegrate. Conductors can vaporize. Bus bars can break. And components like switchgear, MCC buckets, and motor starters can be destroyed, bringing your operation to a halt.

That incident can cost your business millions of dollars in liability. Add to that the costs of dealing with injuries and equipment repair, and you’re facing a real drain on your profitability.

Traditional fuses were designed to protect your electrical system from fire and explosion, and your people from the potential harm of an arc flash.

Mersen’s Amp-Trap 2000 current-limiting fuses do more than that. Opening in less than one-quarter cycle at fault currents up to 300kA, Amp-Trap 2000 fuses minimize the let-thru current that flows downstream.

Not only do Amp-Trap 2000 fuses save you from arc flash liability, they minimize the downtime that can diminish your productivity and profits.

Short circuit protection is just the beginning

In addition to the current-limiting protection that safeguards your equipment, Amp-Trap 2000 fuses offer you:

• **Total system coverage.** The Amp-Trap 2000 family includes Class L, Class J, Class RK1, and Class CC fuses in a wide range of amperages. It’s the only one you need to protect your complete low-voltage electrical system, from service entrance equipment to your smallest motors.

• **Reduced inventory.** Because one Amp-Trap 2000 fuse can replace multiple SKUs, you will reduce the number of fuses you use and stock — typically by up to 35%. That means decreased inventory and operating costs, and less time ordering and stocking.

• **Time-delay.** Amp-Trap 2000 fuses withstand high inrush currents from motors and transformers to eliminate nuisance opening. Time-delay also simplifies selection and permits the use of smaller amperage ratings, providing better protection in case of overloads.

• **Easy 2:1 selectivity.** When a fault occurs, a selective system ensures that the fuse closest to the fault opens without affecting fuses in upstream circuits, preventing nuisance shutdowns and “blackouts.” With Amp-Trap 2000, selectivity is achieved between any two fuses in series (above 60 amps) when the ratio of upstream rating to downstream rating is 2-to-1 or greater.

• **Improved safety.** High-energy arc flashes can create temperatures of 35,000°F and 1,500 pounds per square foot of force. Highly current-limiting Amp-Trap 2000 fuses protect personnel and equipment from these catastrophic effects. And their versatility and rejection-style design help to avoid hazardous misapplications.

• **Tomorrow’s protection today.** Current-limiting protection is the wave of the future. By installing Amp-Trap 2000 fuses, you will protect your equipment today and be ready for more stringent requirements tomorrow.

You NEED the Current-Limiting Protection of Mersen’s Amp-Trap 2000 Fuses

For more information, contact your Kendall Electric Account Manager.
Imagine you are manufacturing an automotive part, like a wheel. Let’s say the wheel is type “premium mag wheel”. There are a thousand parameters that describe how that wheel will be made, like size, color, where to drill holes, size of holes, wheel spokes, etc. This is called the recipe, and all of this depends on the production cell the part just scanned into, that is, the data has context. We call that – data with context – complex data.

If you manufacture 10 different wheels, you need 10 different recipes. Rather than hard coding 1,000 constants times 10 different wheel types into your PLC, you can setup tags, or UDTs in your PLC as variables. Why? So you’ll have one logic code base, with variables, where the variables will get updated each time you have a different part to manufacture.

How will you update these variables in the PLC for any of the 10 wheels you want to manufacture? That’s where an SQL database comes in. You are going to store the 1,000 constants times 10 wheels in an SQL database table – because that’s the power of an SQL database – storing and retrieving tons of complex information. The data in the SQL database will only be downloaded to the PLC when needed.

If you move all of this data off your PLC, and just keep the variables, this frees up valuable resources in your PLC such as memory, storage, performance, and you can repurpose your production lines in real-time. Also, it is much easier and safer to update an SQL table than to edit PLC logic.

SQL databases are perfect for handling complex data. When IT and OT converge, and when you focus the PLC on manufacturing and focus the SQL database on storing and sharing information, a really powerful synergy develops.

Find out how easily tManager from Softing connects CompactLogix and ControlLogix to SQL databases with a robust (auto failover, store and forward, network fault tolerant), in-chassis PLC connectivity module (not a PC connectivity solution, no Windows OS) for automation solutions such as recipe downloads, track and trace, high speed sorting, quality monitoring, or key performance indicator tracking.

For more information, contact your Kendall Electric Account Manager or Datacom Specialist or visit kendallelectric.com/dl/SM.
Spectrum Controls Universal Gateway makes it easier to integrate any device into your industrial control system. When modernizing networks, integrating new machines or putting your legacy devices back to good use, having the right gateway to address your communication needs makes all the difference. The new Universal Industrial Gateway raises the bar, providing a single solution for connecting multiple devices, across multiple protocols, simultaneously.

Being dubbed “A Better Way to Gateway”, the Universal Gateway provides the flexibility to scale to any need with nine built-in protocols: EtherNet/IP, EtherNet/IP-PCCC, Modbus TCP, Modbus RTU, Modbus ASCII, DF1-PCCC, DF1-CIP, PPI, and S7comm. Including an Ethernet port and multiple serial ports, all of which are fully configurable, it is easy to see how the Universal Gateway provides the functionality of multiple gateways for the price of one.

Setup is straightforward using a web browser, meaning no messy software to install or maintain and because it is a single solution, the configuration is consistent for any protocol. The Universal Gateway is also firmware upgradable from the field, with more protocols being developed for delivery in a future release. Whether you are an engineer, machine builder, system integrator or maintenance technician, the Universal Gateway is cost-effective and makes communications easy.

Spectrum Controls has been business since 1983, focusing on the industrial automation market, delivering new and innovative solutions while building Rockwell Automation compatible I/O, industrial displays, remote access devices, and gateways.

For more information, contact your Kendall Electric Account Manager or Datacom Specialist or visit kendallelectric.com/dl/SCG.

### Universal Industrial Gateway Matrix

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Serial Ports</th>
<th>Ethernet Ports</th>
<th>DF1-PCCC</th>
<th>DF1-CIP</th>
<th>Modbus RTU</th>
<th>Modbus ASCII</th>
<th>EtherNet/IP-PCCC</th>
<th>EtherNet/IP</th>
<th>S7comm (ISO15)</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>WP-G-221-P1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$650</td>
</tr>
<tr>
<td>WP-G-221-P2</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$850</td>
</tr>
<tr>
<td>WP-G-241-P1</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$950</td>
</tr>
<tr>
<td>WP-G-241-P2</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$1,150</td>
</tr>
<tr>
<td>WP-G-UPG-P2</td>
<td>Field upgrade your P1 to add all P2 protocols</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$299</td>
</tr>
</tbody>
</table>
Maximizing ROI with Predictive Maintenance

Reactive Maintenance vs Predictive Maintenance
Many facilities around the world operate under Reactive Maintenance or Run-to-Failure Scenarios. In this strategy, we wait for the asset to fail then either fix or replace the equipment, costing significant downtime due to unpreparedness. This isn’t the optimal strategy when the cost of downtime is greater than the cost of the maintenance activity. With the GraceSense Predictive Maintenance System, maintenance becomes predictable and allows preparation before a costly, unexpected downtime scenario occurs.

The GraceSense Predictive Maintenance System
Grace Engineered Products’ mission is to make maintenance smarter, safer, and more productive. At the forefront of this cause is a complete monitoring system made possible on a cloud-based platform providing continuous monitoring of critical assets to improve productivity and reduce the likelihood of unplanned downtime.

GraceSense Predictive Maintenance System is comprised of four distinct components:

Vibration and Temperature Nodes
- Tri-Axial sensor with advanced edge processing and proprietary Zigbee compatible communication monitors vibration and temperature to insightfully predict health on any rotating equipment.

Panel-Mount Node or CloudGate
- Easy to configure, stackable architecture with a wide selection of inputs, transducers, radios, and power options; these nodes can be mounted in an environmentally rated GracePort® housing or other user-specified enclosures.

Hot Spot Monitor (HSM)
- GraceSense Hot Spot Monitor is a non-conductive temperature monitoring device that detects potential hot spots and alerts personnel of any temperature anomalies occurring in electrical equipment.

Maintenance Hub
- The Maintenance Hub is an intuitive web-based app providing real-time dashboards, analytics, and configuration. The Hub displays system information and issues alerts via SMS and email, which you can convey your personalized step-by-step remediation instructions.

These components combine to create actionable data and analytics across a wide variety of critical asset classes from control cabinets and rotating equipment to power distribution equipment and structural systems.

For more information, contact your Kendall Electric Account Manager.
## Upcoming Rockwell Automation Training Classes

Hosted at Kendall Electric Locations

For more information, visit training.kendallelectric.com/Rockwell-Schedule

<table>
<thead>
<tr>
<th>Start</th>
<th>End</th>
<th>Course Code</th>
<th>Course Name</th>
<th>Kendall Electric Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/23</td>
<td>4/23</td>
<td>SAF-SFT10618</td>
<td>NFPA 70E 2018 - Arc Flash Awareness</td>
<td>Muskegon, MI</td>
</tr>
<tr>
<td>4/23</td>
<td>4/25</td>
<td>FTAC</td>
<td>FactoryTalk AssetCentre System Design and Implementation</td>
<td>Fort Wayne, IN</td>
</tr>
<tr>
<td>4/30</td>
<td>4/30</td>
<td>CCA185</td>
<td>PowerFlex 525 Startup and Configuration</td>
<td>Bluffton, IN</td>
</tr>
<tr>
<td>4/30</td>
<td>5/1</td>
<td>CCP146</td>
<td>Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals</td>
<td>Saginaw, MI</td>
</tr>
<tr>
<td>4/30</td>
<td>5/1</td>
<td>CCN130</td>
<td>Motion Control Fundamentals</td>
<td>Fort Wayne, IN</td>
</tr>
<tr>
<td>4/30</td>
<td>5/1</td>
<td>CCA101</td>
<td>AC/DC Motors &amp; Drives Fundamentals</td>
<td>Kentwood, MI</td>
</tr>
<tr>
<td>5/6</td>
<td>5/10</td>
<td>CCP299</td>
<td>Studio 5000 Logix Designer Level 1: ControlLogix Fundamentals and Troubleshooting</td>
<td>Elkhart, IN</td>
</tr>
<tr>
<td>5/21</td>
<td>5/22</td>
<td>CCN130</td>
<td>Motion Control Fundamentals</td>
<td>Bluffton, IN</td>
</tr>
<tr>
<td>5/21</td>
<td>5/22</td>
<td>CCV209-A</td>
<td>FactoryTalk View ME &amp; PanelView Plus Maintenance and Troubleshooting</td>
<td>Lansing, MI</td>
</tr>
<tr>
<td>5/21</td>
<td>5/23</td>
<td>CCP183</td>
<td>Ethernet/IP Configuration and Troubleshooting</td>
<td>Grand Rapids, MI</td>
</tr>
<tr>
<td>5/21</td>
<td>5/22</td>
<td>CCP146</td>
<td>Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals</td>
<td>Portage, MI</td>
</tr>
<tr>
<td>5/23</td>
<td>5/24</td>
<td>CCN200</td>
<td>Kinetix 6000 Troubleshooting and Project Interpretation</td>
<td>Bluffton, IN</td>
</tr>
<tr>
<td>6/4</td>
<td>6/5</td>
<td>SPE201-LD</td>
<td>ThinManager Configuration</td>
<td>Bluffton, IN</td>
</tr>
<tr>
<td>6/4</td>
<td>6/7</td>
<td>MGF213</td>
<td>Industrial Electrical Controls Fundamentals</td>
<td>Portage, MI</td>
</tr>
<tr>
<td>6/10</td>
<td>6/14</td>
<td>CCV207</td>
<td>FactoryTalk View SE Programming</td>
<td>Elkhart, IN</td>
</tr>
<tr>
<td>6/11</td>
<td>6/12</td>
<td>CCP146</td>
<td>Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals</td>
<td>Grand Rapids, MI</td>
</tr>
<tr>
<td>6/13</td>
<td>6/14</td>
<td>CCP151</td>
<td>Studio 5000 Logix Designer Level 2: Basic Ladder Logic Programming</td>
<td>Grand Rapids, MI</td>
</tr>
<tr>
<td>6/18</td>
<td>6/21</td>
<td>CCP153</td>
<td>Studio 5000 Logix Designer Level 2: ControlLogix Maintenance and Troubleshooting</td>
<td>Saginaw, MI</td>
</tr>
<tr>
<td>6/18</td>
<td>6/19</td>
<td>CCP146</td>
<td>Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals</td>
<td>Fort Wayne, IN</td>
</tr>
<tr>
<td>6/20</td>
<td>6/21</td>
<td>CCV204-A</td>
<td>FactoryTalk View ME &amp; PanelView Plus Programming</td>
<td>Kentwood, MI</td>
</tr>
<tr>
<td>6/20</td>
<td>6/21</td>
<td>CCP151</td>
<td>Studio 5000 Logix Designer Level 2: Basic Ladder Logic Programming</td>
<td>Kentwood, MI</td>
</tr>
<tr>
<td>6/25</td>
<td>6/28</td>
<td>RS-FTHSEC</td>
<td>FactoryTalk Historian SE Configuration and Data Collection</td>
<td>Fort Wayne, IN</td>
</tr>
<tr>
<td>6/25</td>
<td>6/27</td>
<td>CCN202</td>
<td>Kinetix 5700 Troubleshooting and Project Interpretation</td>
<td>Fort Wayne, IN</td>
</tr>
<tr>
<td>7/9</td>
<td>7/12</td>
<td>CCPS43</td>
<td>SLC™ 500 and RSLogix™ 500 Maintenance and Troubleshooting</td>
<td>Portage, MI</td>
</tr>
<tr>
<td>7/16</td>
<td>7/17</td>
<td>CCA183</td>
<td>PowerFlex 750-Series Maintenance and Troubleshooting</td>
<td>Kentwood, MI</td>
</tr>
<tr>
<td>7/23</td>
<td>7/25</td>
<td>CCV210</td>
<td>Studio 5000 View Designer and PanelView 5500 Programming</td>
<td>Holland, MI</td>
</tr>
<tr>
<td>7/30</td>
<td>8/1</td>
<td>SAF-LOG104</td>
<td>GuardLogix Application Maintenance &amp; Troubleshooting &amp; Development</td>
<td>Fort Wayne, IN</td>
</tr>
<tr>
<td>7/30</td>
<td>7/31</td>
<td>CCN130</td>
<td>Motion Control Fundamentals</td>
<td>Kentwood, MI</td>
</tr>
<tr>
<td>8/13</td>
<td>8/16</td>
<td>CCP153</td>
<td>Studio 5000 Logix Designer Level 2: ControlLogix Maintenance and Troubleshooting</td>
<td>Grand Rapids, MI</td>
</tr>
<tr>
<td>8/20</td>
<td>8/21</td>
<td>CCP146</td>
<td>Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals</td>
<td>Alpena, MI</td>
</tr>
<tr>
<td>8/27</td>
<td>8/29</td>
<td>CCN202</td>
<td>Kinetix 5700 Troubleshooting and Project Interpretation</td>
<td>Kentwood, MI</td>
</tr>
<tr>
<td>8/27</td>
<td>8/28</td>
<td>CCP146</td>
<td>Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals</td>
<td>Muskegon, MI</td>
</tr>
<tr>
<td>9/4</td>
<td>9/4</td>
<td>CCA185</td>
<td>PowerFlex 525 Startup and Configuration</td>
<td>Elkhart, IN</td>
</tr>
<tr>
<td>9/9</td>
<td>9/13</td>
<td>CCP299</td>
<td>Studio 5000 Logix Designer Level 1: ControlLogix Fundamentals and Troubleshooting</td>
<td>Bluffton, IN</td>
</tr>
<tr>
<td>9/10</td>
<td>9/10</td>
<td>SAF-SFT10618</td>
<td>NFPA 70E 2018 - Arc Flash Awareness</td>
<td>Portage, MI</td>
</tr>
<tr>
<td>9/10</td>
<td>9/11</td>
<td>CCP146</td>
<td>Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals</td>
<td>Portage, MI</td>
</tr>
<tr>
<td>9/12</td>
<td>9/13</td>
<td>CCP151</td>
<td>Studio 5000 Logix Designer Level 2: Basic Ladder Logic Programming</td>
<td>Portage, MI</td>
</tr>
<tr>
<td>9/17</td>
<td>9/20</td>
<td>CCP143</td>
<td>Studio 5000 Logix Designer Level 3: Project Development</td>
<td>Elkhart, IN</td>
</tr>
<tr>
<td>9/17</td>
<td>9/20</td>
<td>CCP143</td>
<td>Studio 5000 Logix Designer Level 3: Project Development</td>
<td>Kentwood, MI</td>
</tr>
<tr>
<td>9/23</td>
<td>9/27</td>
<td>EMS-230</td>
<td>Motor Control and Troubleshooting</td>
<td>Holland, MI</td>
</tr>
<tr>
<td>Start</td>
<td>End</td>
<td>Course Code</td>
<td>Course Name</td>
<td>Kendall Electric Location</td>
</tr>
<tr>
<td>--------</td>
<td>--------</td>
<td>-------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>4/23</td>
<td>4/24</td>
<td>CCP146</td>
<td>Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals</td>
<td>Dalton, GA</td>
</tr>
<tr>
<td>5/14</td>
<td>5/17</td>
<td>CCP153</td>
<td>Studio 5000 Logix Designer Level 2: ControlLogix Maintenance and Troubleshooting</td>
<td>Knoxville, TN</td>
</tr>
<tr>
<td>5/14</td>
<td>5/15</td>
<td>CCV209-A</td>
<td>FactoryTalk View ME Software</td>
<td>Birmingham, AL</td>
</tr>
<tr>
<td>5/20</td>
<td>5/21</td>
<td>CCV-207</td>
<td>FactoryTalk View SE Programming</td>
<td>Kingsport, TN</td>
</tr>
<tr>
<td>5/21</td>
<td>5/22</td>
<td>CCP-151</td>
<td>Studio 5000 Logix Designer Level 2: Basic Ladder Logic Programming</td>
<td>Cleveland, TN</td>
</tr>
<tr>
<td>6/4</td>
<td>6/4</td>
<td>SAF-SFT10618</td>
<td>NFPA 70E 2018 - Arc Flash Awareness</td>
<td>Knoxville, TN</td>
</tr>
<tr>
<td>6/11</td>
<td>6/12</td>
<td>CCP146</td>
<td>Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals</td>
<td>Jackson, TN</td>
</tr>
<tr>
<td>7/9</td>
<td>7/10</td>
<td>SAF-SFT11218</td>
<td>NFPA 70E 2018 – Electrical Safety and Arc Flash Compliance</td>
<td>Cleveland, TN</td>
</tr>
<tr>
<td>7/9</td>
<td>7/10</td>
<td>CCP146</td>
<td>Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals</td>
<td>Birmingham, AL</td>
</tr>
<tr>
<td>7/9</td>
<td>7/12</td>
<td>CCP143</td>
<td>Studio 5000 Logix Designer Level 3: Project Development</td>
<td>Dalton, GA</td>
</tr>
<tr>
<td>7/22</td>
<td>7/26</td>
<td>CCP299</td>
<td>Studio 5000 Logix Designer Level 1: ControlLogix Fundamentals and Troubleshooting</td>
<td>Birmingham, AL</td>
</tr>
<tr>
<td>7/29</td>
<td>8/2</td>
<td>CCP299</td>
<td>Studio 5000 Logix Designer Level 1: ControlLogix Fundamentals and Troubleshooting</td>
<td>Knoxville, TN</td>
</tr>
<tr>
<td>7/30</td>
<td>7/31</td>
<td>CCP151</td>
<td>Studio 5000 Logix Designer Level 2: Basic Ladder Logic Programming</td>
<td>Birmingham, AL</td>
</tr>
<tr>
<td>7/30</td>
<td>7/31</td>
<td>CCA183</td>
<td>PowerFlex 750-Series Maintenance and Troubleshooting</td>
<td>Tuscaloosa, AL</td>
</tr>
<tr>
<td>8/6</td>
<td>8/7</td>
<td>CCA183</td>
<td>PowerFlex 750-Series Maintenance and Troubleshooting</td>
<td>Jackson, TN</td>
</tr>
<tr>
<td>8/19</td>
<td>8/19</td>
<td>CCP182</td>
<td>Essentials of Industrial Ethernet Networks for an OT Professional</td>
<td>Kingsport, TN</td>
</tr>
<tr>
<td>8/19</td>
<td>8/19</td>
<td>IMINS2</td>
<td>Managing Industrial Networks for Manufacturing with Cisco Technologies, v1.0</td>
<td>Birmingham, AL</td>
</tr>
<tr>
<td>8/20</td>
<td>8/23</td>
<td>CCP153</td>
<td>Studio 5000 Logix Designer Level 2: ControlLogix Maintenance and Troubleshooting</td>
<td>Knoxville, TN</td>
</tr>
<tr>
<td>8/20</td>
<td>8/21</td>
<td>CCA182</td>
<td>PowerFlex 750-Series Configuration and Startup</td>
<td>Montgomery, AL</td>
</tr>
<tr>
<td>8/21</td>
<td>8/22</td>
<td>CCP183</td>
<td>Ethernet/IP Configuration and Troubleshooting</td>
<td>Kingsport, TN</td>
</tr>
<tr>
<td>8/22</td>
<td>8/23</td>
<td>CCA183</td>
<td>PowerFlex 750-Series Maintenance and Troubleshooting</td>
<td>Montgomery, AL</td>
</tr>
<tr>
<td>8/26</td>
<td>8/30</td>
<td>CCP299</td>
<td>Studio 5000 Logix Designer Level 1: ControlLogix Fundamentals and Troubleshooting</td>
<td>Tuscaloosa, AL</td>
</tr>
<tr>
<td>9/17</td>
<td>9/20</td>
<td>CCP153</td>
<td>Studio 5000 Logix Designer Level 2: ControlLogix Maintenance and Troubleshooting</td>
<td>Birmingham, AL</td>
</tr>
<tr>
<td>9/24</td>
<td>9/25</td>
<td>CCA182</td>
<td>PowerFlex 750-Series Configuration and Startup</td>
<td>Knoxville, TN</td>
</tr>
<tr>
<td>9/24</td>
<td>9/25</td>
<td>CCP151</td>
<td>Studio 5000 Logix Designer Level 2: Basic Ladder Logic Programming</td>
<td>Jackson, TN</td>
</tr>
<tr>
<td>9/26</td>
<td>9/27</td>
<td>CCA183</td>
<td>PowerFlex 750-Series Maintenance and Troubleshooting</td>
<td>Knoxville, TN</td>
</tr>
</tbody>
</table>