

# PowerLink Connect

## Powerful HMI for Substation and Control Room Operations

PowerLink™ Connect is designed for organizations in need of safe, efficient and reliable management of electric power delivery. PowerLink Connect enables real-time collection and display of electrical infrastructure information, secure operator supervisory control, and efficient management of energy delivery, all using standards-based communications.

PowerLink Connect connects and communicates with energy management and other I/O devices in your facility, bringing together display, control and reporting functions under one easy-to-use interface, providing a dynamic window into your electrical network.

PowerLink Connect is an open, standards-based solution that's intuitive to configure and easy to own. It's scalable from smaller point count systems (5,000-10,000) to larger, complex electrical networks with utility control rooms (100,000+ points). With intuitive operations and simplified maintenance, PowerLink Connect enables you to ensure optimal operational and electrical performance.

### Applications

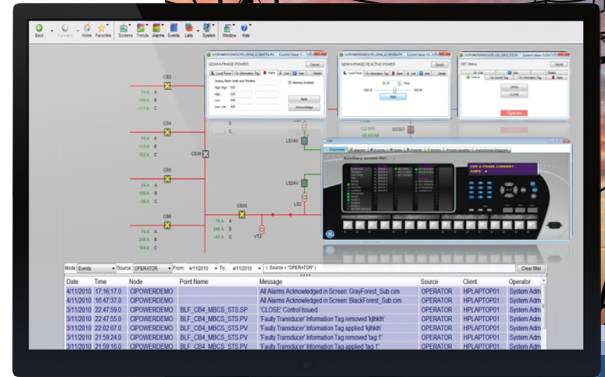
PowerLink Connect's proven design and wide range of supported electrical and industrial communication protocols enables it to fulfill a range of electrical management applications:

#### Electric Power Transmission & Distribution

- Substation automation / Substation management
- Secure operator access and control

#### Large Energy Users

- Site Energy Management
- Operations & management of critical energy delivery
- Substation automation / Substation management



## Key Features

- Real-time, dynamic data collection and display
- Remote and secure operator supervisory control
- High availability architecture
- Supports dynamic configuration without system restart
- Consistent control interfaces for different types of equipment
- Scalable – add more device monitoring points as needed
- Manufacturer agnostic (non-GE) equipment integration (supports a range of IED's)
- Alarm & event management
- Historical data storage, trending and reporting
- Mobile / Web-enabled operations

## Key Benefits

- Reliable, secure and auditable operations
- Enhanced operational decision making & safety
- Increased productivity & accountability
- Improved operations efficiency
- Extended equipment life
- Lower total cost of ownership
- Reduced configuration & training time
- Reduced downtime & equipment maintenance
- Easy-to-use, familiar and intuitive operator interfaces



## Features

PowerLink Connect consolidates data from all of your facility's electrical devices into a single platform and presents it as interactive information in intuitive, easy to use interfaces via secure clients and mobile applications.

### Essential Electrical Distribution Management Features

- Real-time data communication, database management, real-time dynamic data display
- Secure operator supervisory control
- Alarm, event, sequence of events
- Historical data collection with real-time and historical trending
- User-based security
- Online configuration

### Comprehensive, Customizable Displays

PowerLink Connect aggregates data from gateways and field devices and intelligently presents relevant information in an easy to understand, customizable graphical format with features such as interactive alarms and dynamic text displays to increase operator efficiency. Typical customizable displays include:

- One-line Diagrams
- Alarm / Event
- Trending
- Equipment Detail Pages
- Operator Access Log
- Operator Notes

### Menu Navigation

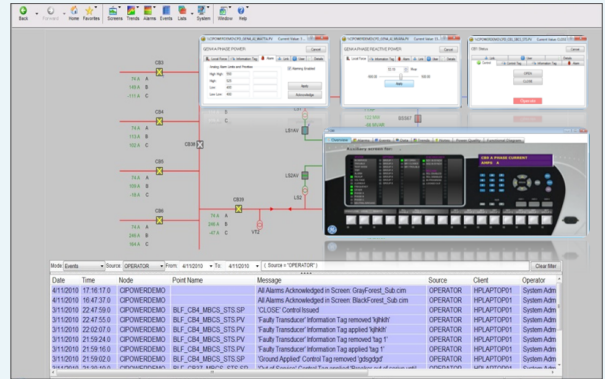
Intuitive menu provides familiar navigation functions such as "Home", "Forward", "Back" and "Favorites". Highly configurable, PowerLink Connect Menu is easy to use and flexible. Integrated security links screen access to user authentication (only screens operators are authorized to access are visible).

### Tab Displays

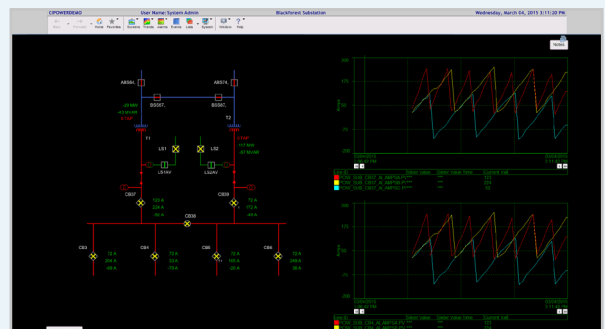
PowerLink Connect provides powerful, centralized equipment monitoring and control interfaces known as Tab Displays. These are one-stop containers for all relevant information and controls for substation equipment. They are consistent and familiar, making HMI substation operations more intuitive and easier to learn. Tab Displays are totally customizable to your operational standards and requirements.

### Operator Dialogs

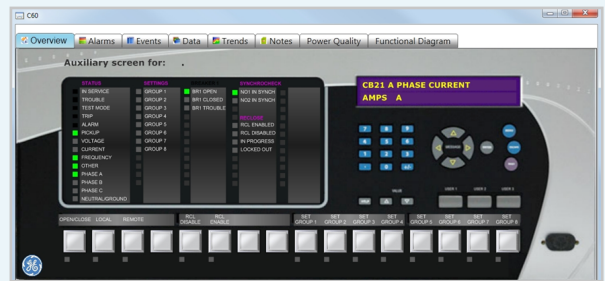
All operations such as issuing a control, placing a control tag, attaching an equipment note, disabling an alarm, etc., are achieved using Operator Dialogs. This provides consistent and intuitive operations. Each equipment type has an Operator Dialog specific to its operational needs. PowerLink Connect dialogs require no programming and are easily configured to meet all operational requirements.



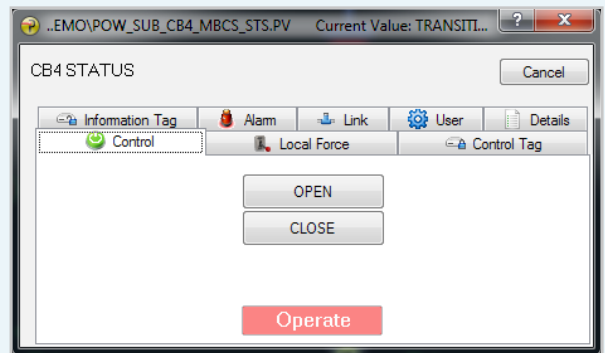
Real time data acquisition & control



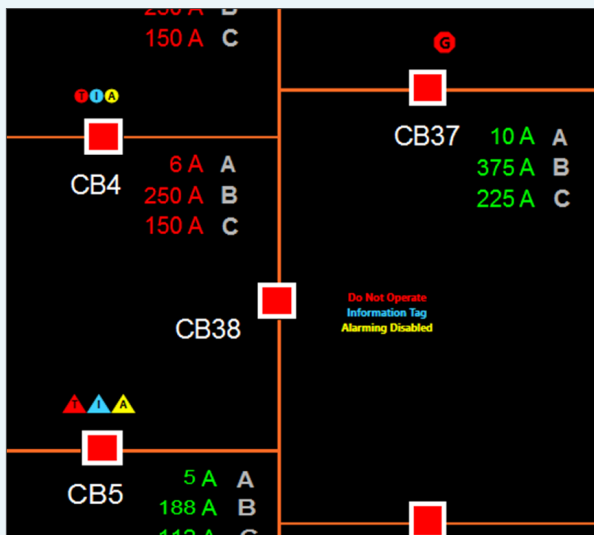
One-line screens for monitoring status, control and tagging



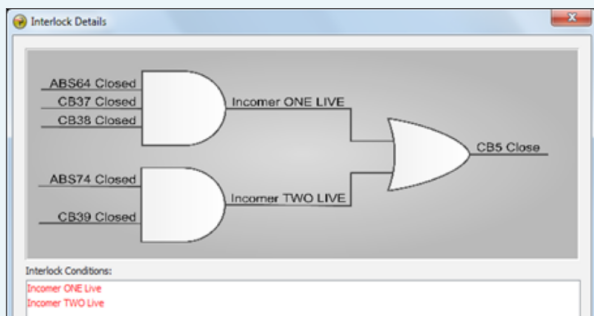
Tab Displays provide centralized, consistent control interfaces for substation equipment and IEDs



Operator Dialogs enable controls such as disabling alarms and opening or closing circuit breakers



Attributes provide clear indicators of equipment conditions



Intuitive Interlocking logic control diagrams

Mode	Alarm Summary	Location	Device	Priority	Message	First State	Current State	Date Last	Time Last	Device	Current Value	Date
LOW	BLF	BLF_BSS97_DI_STS	BUS SECTION SWITCH 07	CFN	OK	2014/08/20	15:57:48.061	BSS97	OPEN	2014	0.00	2014
CRITICAL	BLF	BLF_CB37_AI_RWR	KV3 PHASE	LO	LO	2014/08/20	15:57:21.129	CB33	0.0kV	2014	0.00	2014
MEDIUM	BLF	BLF_CB33_AI_KWA	KV PHASE A	LO	LO	2014/08/20	15:57:21.129	CB33	0.0kV	2014	0.00	2014
MEDIUM	BLF	BLF_CB33_AI_KWB	KV PHASE B	LO	LO	2014/08/20	15:57:21.129	CB33	0.0kV	2014	0.00	2014
MEDIUM	BLF	BLF_CB33_AI_KWC	KV PHASE C	LO	LO	2014/08/20	15:57:21.129	CB33	0.0kV	2014	0.00	2014
LOW	BLF	BLF_CB37_AI_AMPSA	CB37 A PHASE CURRENT	RATE	RATE	2014/08/20	16:02:22.079	CB37	245A	2014	245.0	2014
MEDIUM	BLF	BLF_CB37_AI_AMPSB	CB37 B PHASE CURRENT	HI	RATE	2014/08/20	16:02:22.079	CB37	366A	2014	366.0	2014
LOW	BLF	BLF_CB37_AI_AMPSC	CB37 C PHASE CURRENT	RATE	RATE	2014/08/20	16:02:22.079	CB37	5.4	2014	5.4	2014
LOW	BLF	BLF_CB37_AI_MVAR	CB37 MVAR	HI	HI	2014/08/20	16:02:06.000	CB37	11.8 MVAR	2014	11.8	2014
LOW	BLF	BLF_CB37_AI_MW	CB37 MW	LO	LO	2014/08/20	16:02:05.000	CB37	-11.8 MW	2014	-11.8	2014
CRITICAL	BLF	BLF_CB38_DIC_RCL	CB38 RECLOSE STATUS	CFN	CFN	2014/08/20	15:57:21.129	CB39	FAULTY	2014	0.00	2014
LOW	BLF	BLF_CB39_AI_AMPSA	CB39 A PHASE CURRENT	RATE	RATE	2014/08/20	16:02:22.079	CB39	245A	2014	245.0	2014
MEDIUM	BLF	BLF_CB39_AI_AMPSB	CB39 B PHASE CURRENT	HI	RATE	2014/08/20	16:02:22.079	CB39	366A	2014	366.0	2014
LOW	BLF	BLF_CB39_AI_MVAR	CB39 MVAR	LO	LO	2014/08/20	16:02:22.079	CB39	5.4	2014	5.4	2014
LOW	BLF	BLF_CB39_AI_MW	CB39 MW	LO	LO	2014/08/20	16:01:23.000	CB39	-2.2 MW	2014	-2.2	2014
LOW	BLF	BLF_CB39_AI_VOLTSC	CB39 C PHASE VOLTAGE	LO	LO	2014/08/20	16:02:22.079	CB39	67.8 MV	2014	67.8	2014
LOW	BLF	BLF_CB39_AI_VOLTSA	CB39 A PHASE VOLTAGE	LO	LO	2014/08/20	15:57:21.091	CB39	10.6 kV	2014	10.6	2014
HIGH	BLF	BLF_CB39_AI_VOLTSC	CB39 C PHASE VOLTAGE	HI	HI	2014/08/20	15:58:41.077	CB39	13.2 kV	2014	13.2	2014
HIGH	BLF	BLF_CB39_AI_VOLTSA	CB39 A PHASE VOLTAGE	LO	LO	2014/08/20	15:59:26.000	CB39	18.8 kV	2014	18.8	2014
CRITICAL	BLF	BLF_CB38_DIC_RCL	CB38 RECLOSE STATUS	CFN	CFN	2014/08/20	15:57:21.129	CB39	FAULTY	2014	0.00	2014
HIGH	BLF	BLF_CB37_AI_AMPSA	AMPS PHASE A	HI	HI	2014/08/20	15:59:20.054	CB3	163A	2014	163.0	2014
HIGH	BLF	BLF_CB37_AI_AMPSB	AMPS PHASE B	HI	HI	2014/08/20	15:57:21.129	CB3	307A	2014	307.0	2014
HIGH	BLF	BLF_CB37_AI_AMPSC	AMPS PHASE C	HI	HI	2014/08/20	16:03:55.068	CB3	3.0	2014	3.0	2014
HIGH	BLF	BLF_CB37_AI_KW3PH	KW 3 PHASE	LO	LO	2014/08/20	15:57:21.129	CB3	0.0kW	2014	0.00	2014
MEDIUM	BLF	BLF_CB37_AI_KWA	KW PHASE A	LO	LO	2014/08/20	15:57:21.129	CB3	0.0kW	2014	0.00	2014
MEDIUM	BLF	BLF_CB37_AI_KWB	KW PHASE B	LO	LO	2014/08/20	15:57:21.129	CB3	0.0kW	2014	0.00	2014
MEDIUM	BLF	BLF_CB37_AI_KWC	KW PHASE C	LO	LO	2014/08/20	15:57:21.129	CB3	0.0kW	2014	0.00	2014

Alarms List increases operator awareness, decreases response time and improves system reliability

### Standard Lists and Reports

- Alarms
- Events
- Sequence of Events
- Off-Normal
- Dynamic database display
- Control tag
- Information tag
- Local Force
- Off-Scan
- Disabled alarms
- Operator notes

## Equipment Attributes

Attributes provide easy to understand, high-visibility indicators for equipment conditions. They are informative graphical cues that can be designed and configured to meet your operational preferences. Attributes can indicate the presence of control tags, information tags, off scan, local force applications or disabled alarms.

## Safe Operations

PowerLink Connect features a range of comprehensive safety features and functions:

- Select before operate control
- Control timeout; control fail alarm
- Simultaneous control lockout
- Control tagging (control lockout)
- Information tagging
- Equipment "Attribute" indicators

## Control Interlocking

PowerLink Connect provides powerful logic-based control lockouts to prevent equipment operations when specific conditions are not met. Interlocking can be used to prevent harm to personnel on site when working on equipment by preventing operators from erroneously issuing controls in undesirable situations. It also protects electrical hardware by ensuring it is not subject to undesirable electrical loads. Interlocking includes graphical logic diagrams to illustrate why operations are blocked and what steps are not aligned to enable operation.

## Alarm Management

Central to the role of the operator is quickly identifying and addressing exception conditions within the system. PowerLink Connect provides a multitude of alarm notification and management functionality to increase operator awareness, decrease response time and improve system reliability.

- Visual and audible notification
- Historical logging
- Millisecond resolution time stamping
- Group, area and priority categories
- Advanced filtering and sorting

## Events List

The Event List is a comprehensive and permanent record of management activity including:

- A permanent, searchable, chronological record of operator actions and activity
- Advanced filtering
- Quick filtering on location and device
- Display historical events from any period
- High resolution sequence of events with millisecond accuracy to determine the exact sequence that critical changes have occurred
- Operators can record comments about events
- Operators can enter messages into events
- Auditing of operator actions for security and accountability

## Secure Control

PowerLink Connect provides enhanced security options and configurable user and group role-based security. Security configuration allows access and operational permissions to be set for individual users and for user groups. Furthermore, PowerLink Connect has an operator access and change log to audit operations and aid in security reporting.

## Open and Connected Communications

PowerLink Connect enables you to leverage your existing investments as well as future proofing the new devices you may choose tomorrow. With support for hundreds of drivers off-the-shelf, including, DNP 3.0, IEC 61850 and many others; and full OPC client and server support, PowerLink Connect is a truly open, vendor-independent solution that's flexible and interoperable – translating into real value.

- Proven communications software for multiple of brands of RTUs, IEDs, PLCs and other I/O devices
- Industry standard communications protocol compatibility for DNP 3.0, IEC 870-5-101, 870-5-104, IEC 61850
- Full OPC server and client support
- Multiple simultaneous serial and/or Ethernet communications channels
- VisiconX SQL wizard

**PowerLink Connect provides a complete, scalable, feature rich, secure solution to optimize resource efficiency and ensure reliability.**

PowerLink Connect can be installed as a stand-alone system (a single computer providing all functions) or with redundant server systems:

- Server functions such as real-time communication with IEDs and RTUs, database management, alarm and event management and historical recording including sequence of events (SOE).
- Client functions such as operator and/or engineering HMI, including monitoring, control and configuration.

## Technical Services

From initial Site Evaluation to ongoing maintenance of the system, the GE Digital Energy projects team provides services for the complete lifecycle of a solution.

- Site Evaluation
- Consultation
- System Design
- Project Management
- Procurement
- System component assembly
- Configuration and Commissioning Services
- System Testing
- Training
- Lifecycle Support of System

## Infrastructure Improvements

- System planning/design
- Power delivery equipment & systems
- Turnkey delivery

## Connectivity

- Enables visualization of assets
- Power system reconfiguration
- Communications enabling AMI

## Reliability & Optimization

- Self-healing power systems
- Network/asset planning & management systems
- Substation & feeder automation
- Equipment monitoring & diagnostics

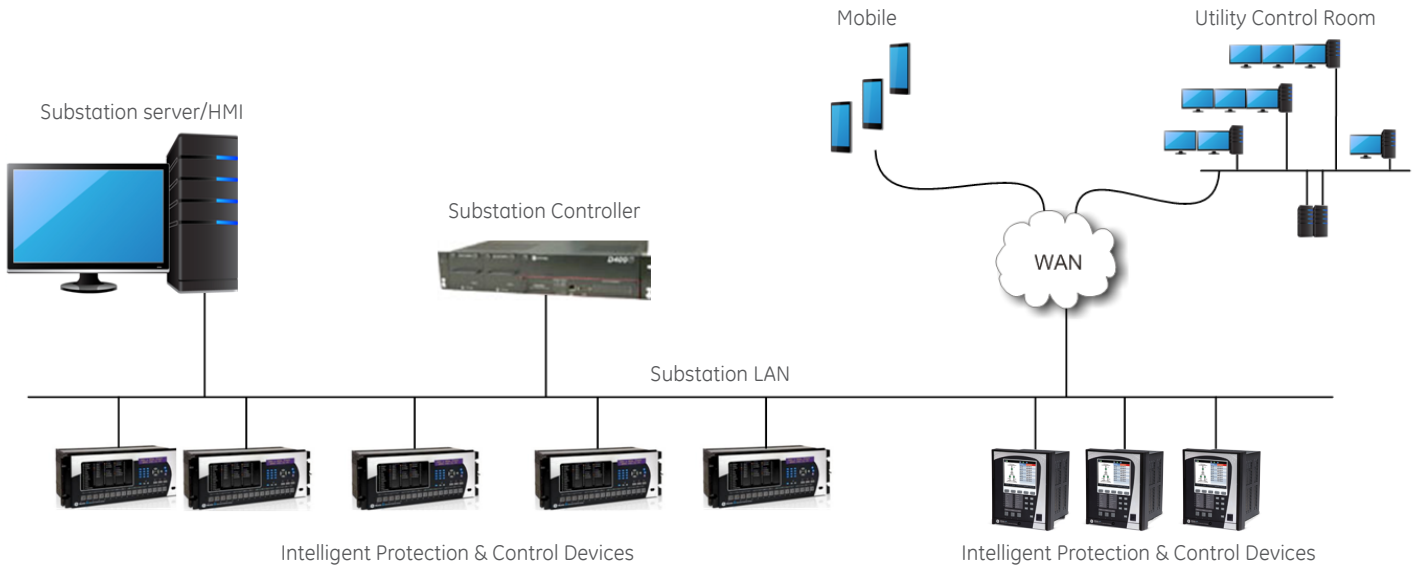
## Safety & Security

- Personnel & public safety
- Availability of electrical assets
- Cyber security & private networks

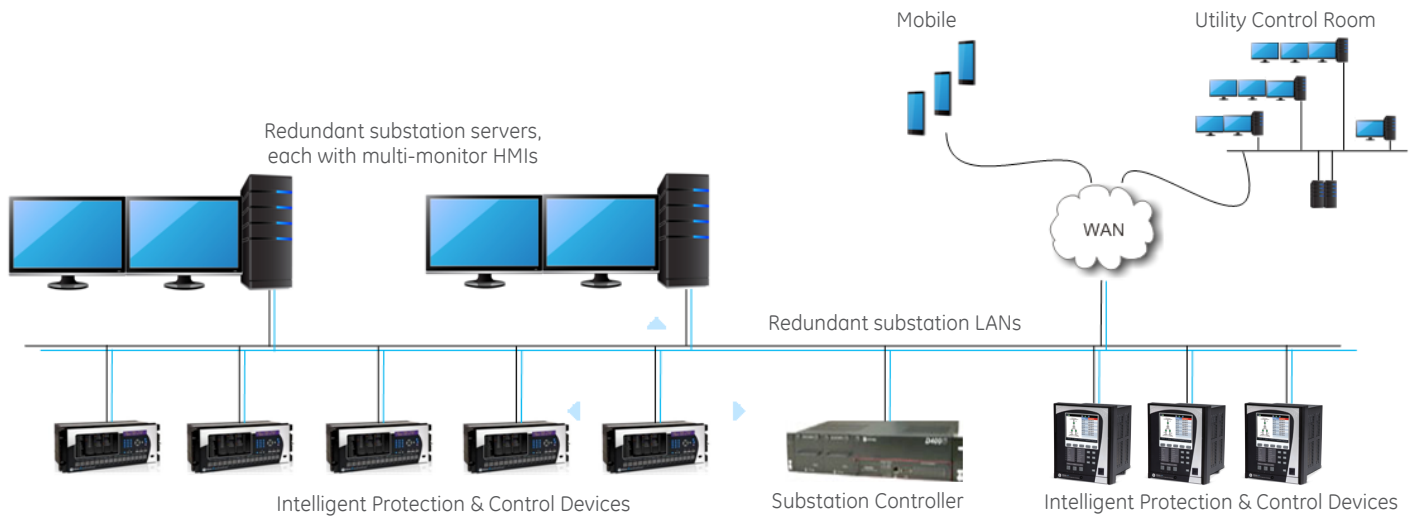
## Workforce Automation

- Outage managements systems
- Mobile workforce solutions
- Remote monitoring & diagnostics

### Single Computer Architecture



### Redundant Multi-Server Architecture



PowerLink Connect supports server redundancy to ensure high availability.

## System Requirements

Requirement	Specification
Supported Operating Systems	Note: Machines can be 32-bit or 64-bit Microsoft® Windows® Server 2012 R2 Microsoft® Windows® Server 2012 Microsoft® Windows® Server 2008 SP2 R2 Microsoft® Windows® 8.1 Microsoft® Windows® 8 Microsoft® Windows® 7 SP1
Computer & Processor	CPU: Intel® Core 2 Duo 3.0 GHz (minimum) Installation: DVD drive
Memory	RAM: 4 GB (minimum)
Hard Disk	HDD: 40 GB (minimum)
Display	SVGA or better color graphics monitor, 24-bit graphics card capable of 800x600 resolution (minimum)
Connectivity	One free direct-connect USB port (for license keys)   Some touch screens, pointing devices, and I/O drivers require a serial port   Additional ports for I/O hardware.

**Note:** Actual system requirements also depend on what features are included beyond the base system (e.g. whether or not data logging is enabled, application size). Therefore, it is strongly recommended that you test your particular system for performance needs to determine what hardware is appropriate above the base system recommendations.

## PowerLink Connect At-a-Glance

Solution	Description   Key Features	Outcomes   Key Benefits
Real-Time Equipment Monitoring	<ul style="list-style-type: none"> <li>Real-time, dynamic data collection and display (one-line / 3D graphics)</li> <li>Unlimited device connections &amp; communication</li> <li>Supports: meters / PLC / generators / PDU / trip units &amp; more</li> <li>Monitors: RMS current &amp; voltage / KW &amp; KWh / events / alarms &amp; more</li> <li>Widescreen, multi-monitor support, mobile device and Web-enabled operator interfaces</li> <li>Secure, supervisory control of devices &amp; operations</li> <li>Prioritized alarms, precision sequence of events, centralized monitoring of operations</li> <li>Vendor agnostic equipment support; works with anything</li> <li>Redundant system architecture ensures reliable operations</li> <li>Wide range of supported device communication protocols, including: BacNet, Modbus, IEC 61850, DNP3</li> </ul>	<ul style="list-style-type: none"> <li>Secure oversight of facility operations &amp; energy usage</li> <li>High availability, reliable services</li> <li>Scalability to add equipment as required without additional costs, &amp; freedom to choose your preferred supplier</li> <li>Flexibility to monitor &amp; control operations from anywhere</li> <li>Proven solution backed by industry-leading support and consulting services for dependable peace-of-mind</li> <li>Easy-to-use, familiar and intuitive operator interfaces enhance efficiency and improve day-to-day operations</li> <li>Active, ongoing system development ensures future-proof operations and real return on investment (ROI)</li> </ul>
Mobile Device & Web-Based Operations	<ul style="list-style-type: none"> <li>Realtime operational intelligence (RtOI) accessible anytime, anywhere</li> <li>Secure operator login access from any location via any Web-enabled mobile device</li> </ul>	<ul style="list-style-type: none"> <li>Place key information in the right hands at the right time</li> <li>Enhance decision making and improve operations</li> <li>Access operational data from anywhere and with any device, enable greater freedom and flexibility for operations</li> </ul>

## PowerLink Connect At-a-Glance (Cont'd)

Solution	Description   Key Features	Outcomes   Key Benefits
Big Data Energy Analysis & Trending	<ul style="list-style-type: none"> <li>High performance, 'Big Data' archiving and reporting solution</li> <li>Collection, archival and storage of large volumes of data from multiple sources into workable database structures</li> <li>Collation and formatting of disparate data structures into a single framework - turns big data volumes into meaningful, actionable information</li> </ul>	<ul style="list-style-type: none"> <li>Delivers meaningful context for vast amounts of raw data from across your operations</li> <li>Aggregates islands of information for true process visibility and feeds higher-level operations management systems with accurate, real-time information</li> <li>Enterprise performance &amp; scalability</li> </ul>
Intelligent Process Automation	<ul style="list-style-type: none"> <li>Automated control of devices and services</li> <li>Open/close breakers</li> <li>Intelligent load management</li> <li>Automated shutdown or startup processes</li> <li>Specialist GE consulting and development services to customize automations processes</li> </ul>	<ul style="list-style-type: none"> <li>High availability services with near-zero downtime</li> <li>Streamlined operations in complex environments</li> <li>Millisecond response to 'off-normal' situations with prescribed automatic procedures</li> <li>Optimal operations efficiency, sustainable competitive advantage, improved return on investment and advanced cost savings</li> </ul>

## GlobalCare Customer Support

Tailored support services to help you quickly resolve issues – maximizing operational availability and productivity, while minimizing risk.

### 24x7 Emergency Support

Rely on emergency service around-the-clock with our comprehensive infrastructure of phone and web-based support . Our support professionals provide the highest level of expertise for your emergency, no matter what time of day or where your operations are located.

### Free Product Upgrades and Maintenance

Keep pace with operating system advances and stay abreast with the latest technology innovations and features for your PowerLink Connect & Proficy products with free software version upgrades, to help optimize your investment.

### Multi-lingual Support

Offering support in 10 languages including: English, French, German, Spanish, Chinese, Czech, Italian, Japanese (primary languages of support); also Dutch and Slovak

### Benefits of GE's GlobalCare Support

		WHAT'S INCLUDED
Software Modernization	No Charge Software Version Upgrades	✓
Technical Support	Global Network of Support Professionals	✓
	Phone and Web Consultation during Standard Business Hours	✓
	24 x 7 Emergency Support	✓
Software Maintenance	Service Packs	✓
	Developer & Productivity Downloads	✓
GlobalCare exclusives	Free Test Bed Keys (expiration aligned with GlobalCare end date)	✓
	No Key Administration Fees	✓

# Ordering Code

PLH	Version	Type	Points	Drivers	Server Add-ins	Add-ins(1)	Add-ins(2)	Add-ins(3)	Add-ins(4)	Viewer	License Key	Global Support Care	Description
	A	S	DR05	D05	XXX	X	X	X	XXXX	XX	H	1	Uses Cimplicity v9.0 rev 2
License Type		S											Development Server License
		V											Runtime Viewer License
Points for Server			DR05										Server Development & Runtime System - 5,000 Points
			DR10										Server Development & Runtime System - 10,000 Points
			DR35										Server Development & Runtime System - 35,000 Points
			DRUL										Server Development & Runtime System - Unlimited Points
			RO05										Server Runtime Only System - 5,000 Points
			RO10										Server Runtime Only System - 10,000 Points
			RO35										Server Runtime Only System - 35,000 Points
			ROUL										Server Runtime Only System - Unlimited Points
			XXXX										Not Applicable (for viewer Licenses)
Drivers				D05									DNP3, 5,000 Points
				D10									DNP3, 10,000 Points
				D35									DNP3, 35,000 Points
				DUL									DNP3, Unlimited
				I05									IEC 61850, 5,000 Points
				I10									IEC 61850, 10,000 Points
				I35									IEC 61850, 35,000 Points
				IUL									IEC 61850, Unlimited
				XXX									Applicable for Viewer License
Remote-client add-in for the Server					W01								CIMPPLICITY Webspaces - 1 Concurrent user
					T01								CIMPPLICITY HMI Terminal Services 1 User
					T05								CIMPPLICITY HMI Terminal Services 5 User
					T10								CIMPPLICITY HMI Terminal Services 10 User
					XXX								Not Applicable
Redundancy						R							Cimplicity HMI Host Redundancy
						X							Not Applicable
System Sentry							S						Cimplicity System Sentry (1 Node)
							X						Not Applicable
Alarm Cast Standard								A					Cimplicity Alarm Cast Standard
								X					Not Applicable
SQL Server									SQ05				Standard SQL Server - 5 user
									SQ10				Standard SQL Server - 10 user
									XXXX				Use SQL Express as default. Do not need Standard SQL Server
Viewer Options										DV			CIMPPLICITY HMI Viewer Development & Runtime System
										RV			CIMPPLICITY HMI Viewer Runtime System
										XX			Not Applicable
License Type											H		USB Security Key [Hardware]
GlobalCare Support												1	1 year GlobalCare Support
												2	2 year GlobalCare Support
												3	3 year GlobalCare Support

## GE Digital Energy

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English  
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imagination at work