LAZER® AUTOMATION

Lazer I Automation Solutions

- Reliable and functional
- Optimized and efficient
- Flexible and scalable
- Easily integrated and secure
- Open architecture

G&W Engineered to order. Built to last.

THE COST OF AN OUTAGE

Every time an outage occurs it costs time and money. Whether it is due to lost production, crews responding to the outage, or the negative effects from an interruption in service, everyone subjected to the outage pays the price.

LAZER I AUTOMATION

G&W's Lazer Automation solution is a pre-engineered or customized package that will enable you to improve the reliability, efficiency, safety, security, and economics of your overhead and underground distribution systems. In turn this will reduce or eliminate the costs associated with an outage, and improve your bottom line.

A Lazer Automation package consists of G&W's medium voltage 5kV to 38kV, distribution switching and protective devices, one or more protective relays, communication, and the integration knowledge to make it all work together. These packaged solutions can be used for applications as basic as two reclosers performing a transfer on voltage loss or as complicated as a networked switch/SCADA system with load flow adjusting capabilities.

A SMART GRID

A Smart Grid or distribution system consists of a network of devices communicating to make better decisions automatically. The goal is to maximize the reliability and efficiency of the network by using the best available information at the time of the event. G&W's Lazer Automation solutions utilize this information to automatically detect a loss of voltage or fault condition, isolate the fault and restore or reconfigure the circuit(s) to bring customers back into service as quickly and efficiently as possible.

APPLICATIONS

**Distributed Intelligence and
Peer–to–Peer Communication**

High speed transfers and restoration, distributed intelligence and peer-to-peer communication enable restoration time that can be measured in cycles or even sub-cycles if needed. All protection and restoration logic is stored in the individual relays. Each of the relays is responsible for circuit protection and communicating their status back to their peers through open protocols such as DNP 3.0. Each relay then makes restoration decisions based on information it has received from these peers. This type of solution is ideal for circuits that require a higher level of reliability such as high speed Closed Loop and Open Loop Fault Detection, Isolation, and Restoration (FDIR) Schemes, Loss of Voltage (LOV) Restoration Schemes, or Distributed Transfer Schemes.

Protection, Isolation, and Restoration

A wide variety of rule-based programmable options are available for protection, isolation, and restoration. Advanced communication assisted tripping schemes, such as Permissive Overreaching Transfer Trip (POTT) and Directional Comparison Blocking (DCB) can be employed to offer extremely high speed fault isolation on closed loop systems. These tripping schemes can include multiple independent settings groups which offer additional layers of control and flexibility. For example time current coordinated settings that provide back-up protection in the event that communication between relays is lost. Once the fault has been isolated, advanced schemes are implemented to restore service to as much of the system as possible.

CONTROL

G&W's Lazer solutions use industry proven relays from well-known manufacturers such as SEL, GE, and ABB. These relays enable key information to be acquired from current transformers, voltage sensors, and other devices and then stored until needed to execute pre-engineered logic for protection and restoration. Our solutions are control vendor agnostic and can incorporate user specified manufacturer's relays.

COMMUNICATIONS

Flexible communication and open protocols are critical when implementing a new control scheme, integrating into an existing scheme, or when planning to accommodate future needs. Lazer solutions incorporate communication options from industry leaders such as Ruggedcom®, MDS, L&G Utilinet, Sensus/ Telemetric, and SEL. The Lazer customization option enables each user to chose their preferred communication medium and protocol. Each Lazer package can incorporate various protocols such as:
• DNP 3.0 (serial and Ethernet)
• Modbus (serial and TCP)
• SEL Mirrored Bits®
• IEC 61850 with GOOSE messaging
• IEC 60870-5-101/104

LAZER SOLUTION EXAMPLES

High Speed, Single Phase Tripping, Closed Loop:
Seven Viper®-ST reclosers in a closed loop provide single phase fault isolation and restoration (See Diagram 1). Each device is communicating to its' peer using SEL Mirrored Bits® protocol over fiber optic cable. This type of scheme can reduce the number of customers subjected to an outage and provide the quickest fault isolation and restoration time without the inherent delay of an open loop scheme.
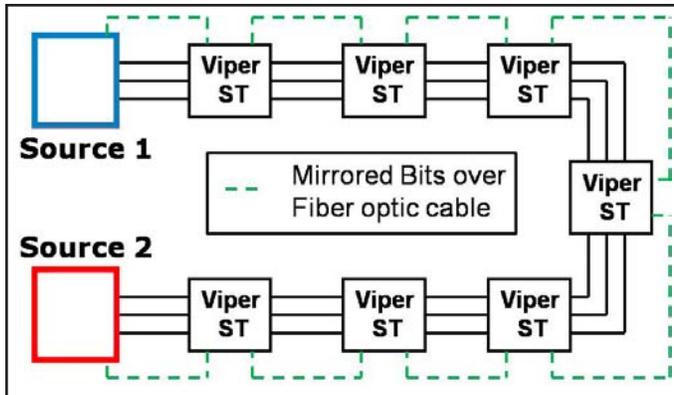

Diagram 1: Single Phase Tripping, Closed Loop

Upgradable Open Loop System
Eleven multi-way Trident® switches in an open loop system provide three phase fault isolation and restoration (See Diagram 2). Switches are identically programmed permitting easy add-on for future expansion. This type of peer-to-peer scheme can provide very quick restoration while minimizing those customers or equipment subjected to a fault. It also provides the flexibility and reliability that feeding customers from distinctly different sources can provide.
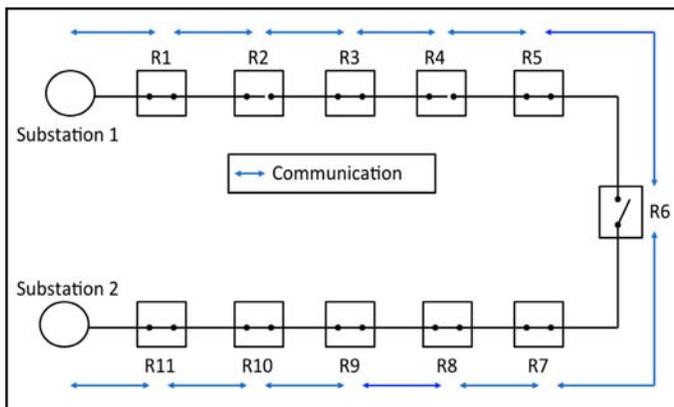

Diagram 2: Three Phase Tripping, Open Loop

Distributed Transfer Application:
Two Viper-S reclosers performing a voltage loss transfer and communicating through fiber optic cable using SEL Mirrored Bits® protocol (See Diagram 3). Each Viper-S operates in approximately 3.5 cycles. Paired with a fast communication method, this system can reconfigure in 8–10 cycles.
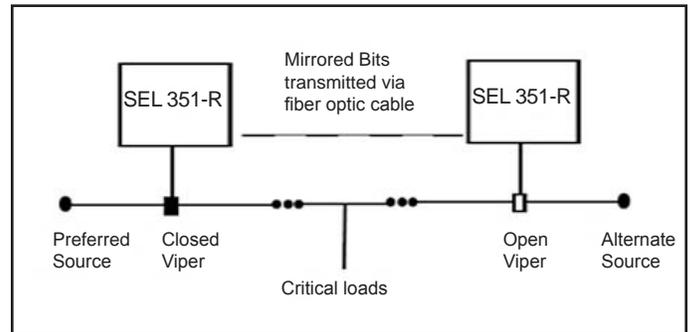

Diagram 3: Voltage Loss Distributed Auto-Transfer Control

LAZER SWITCHGEAR PACKAGE

G&W has supplied custom power solutions worldwide since 1905. We have one of the widest and most flexible selections of reclosing, load and fault interrupting switchgear available today. Our switchgear can be specified with time proven SF6 gas or solid dielectric technology. A full range of intelligent switchgear for overhead, padmount, and underground vaults in ratings through 38kV is available for your application. Combine this with the expertise to match the proper switchgear with intelligent relays and communication devices and you have the benefit of total system integration.

• Pre-packaged or Customized Solution
• Scalable to Meet Future Needs
• Open Protocols
• Flexible Communication Options
• Ease of Integration with Existing Equipment
• Complete Program and System Testing
• Field Services, Commissioning and Training

G&W Lazer Automation and switchgear packages can improve the reliability, efficiency, safety, security, and economics of your overhead and underground distribution system. In turn this will reduce or eliminate the costs associated with an outage, and improve your bottom line.

The Lazer Solution

Whether it's best products or an integrated best package, G&W can help. We will work with your engineers, consultants, and other suppliers to help build the best automation solution for any application. **There are no limits**. In addition, G&W can help to justify your capital investment through reliability improvements and system optimization.

Lazer I

Lazer I Automation uses stand-alone, peer-to-peer solutions. G&W has various pre-packaged rule-based automation solutions including the following:
- ❑ High Speed Closed Loop Systems
- ❑ Open Loop FDIR Systems
- ❑ Loss of Voltage Restoration Schemes
- ❑ Distributed Transfer Schemes

Lazer II

Lazer II Automation is a complete suite of Survalent software scaled down and packaged in an industrial computer that is capable of automating substations as well as feeders. The standard automation controller package consists of a rugged, industrial computer pre-loaded and configured with the following software:
- ❑ Worldview Graphic User Interface (GUI)
- ❑ SCADA Explorer for programming
- ❑ FDIR and LOV model based automation solutions for reconfiguration on faults and voltage loss
- ❑ IED Wizard to easily integrate and view IED's

Optional model-based software modules can be pre-loaded in the controller or added at a later date (See chart).

Lazer III

Lazer III Automation incorporates a complete suite of Survalent software in a master station control platform that can manage an entire network and act as a system enterprise integration platform. Lazer III Automation provides superior operation and visualization functionality when compared to traditional systems at a much greater value. The standard package consists of a rugged, industrial computer pre-loaded and configured with the following software:
- ❑ SmartSCADA – a full SCADA package with unlimited points
- ❑ SmartOMS – a fully integrated, flexible and feature-rich Outage Management System (OMS).
- ❑ SmartDMS – a fully integrated DMS platform that enables a wide-range of standard SCADA features such as multiple redundancy and a single user interface for both DMS and SCADA.

Ask about our performance guarantee.

Lazer Features Comparison Chart

Lazer Automation solutions are scalable from small stand alone systems (Lazer I) to controller based solutions (Lazer II) to entire network management solutions (Lazer III).

Feature	Lazer I	Lazer II	Lazer III
Rule-Based Solutions			
High Speed Closed Loop Systems	S	S	S
Open Loop FDIR Systems	S	S	S
Loss of Voltage Restoration Schemes	S	S	S
Distributed Transfer Schemes	S	S	S
Model-Based Solutions			
FDIR and LOV Automation	—	S	O
CVR	—	O	O
Volt/VAR	—	O	O
Load Flow	—	O	O
Automatic Generator Control	—	O	O
Short Term Load Forecasting	—	O	O
Load Estimation and Curtailment	—	O	O
Single-Phase Reconfiguration	—	O	O
Worldview Graphic User Interface	—	S	S
SCADA Explorer	—	S	S
IED Wizard/ Control Panel	—	S	S
WebSurv	—	S	O
SmartSCADA	—	—	S
SmartOMS	—	—	O
SmartDMS	—	—	S
AMI/AMR Interface	—	O	O
Operator Training Simulator	—	O	O
SCADA Replicator	—	O	O

Legend			
Standard	S	Option	O

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