



Engineered to Order
Built to Last

Automatic Transfer Control Package

Model ATC 451

G&W ATC 451 automatic transfer controls are available for G&W SF6 gas or solid dielectric insulated switchgear through 38kV. Switches can be dry or submersible vault, padmount or pole mount styles. The two incoming source ways can be located in one switch, or in two separate switches for added redundancy.

FEATURES

Uses SEL 451-4 relay - G&W's ATC 451 control utilizes the field proven Schweitzer SEL 451-4 relay for its protection logic and programming scheme.

Plug and play construction - The ATC 451 is pre-programmed and packaged with all required components to simplify installation and maximize reliable performance. Various styles of NEMA enclosures are available depending on the application.

Overcurrent protection for two fault interrupting ways - The ATC 451 can eliminate the need for separate vacuum interrupter controls. Depending on user preference and system protection schemes, various styles of separate interrupter controls are available.

SCADA ready - Each ATC 451 comes standard with several serial ports for communication to SCADA systems. Multiple protocols are available including DNP3.0 (standard), Mirrored Bits (standard), and IEC 61850 (option). Ethernet or fiber optic ports for communications are also available options.

Lazer™ ready - The SCADA ready capability of the ATC 451 simplifies the requirements for communication to other intelligent field devices for automatic power restoration schemes. This simplifies the integra-



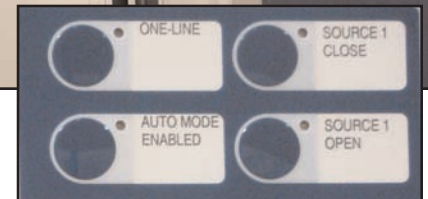
▲ G&W's ATC 451 incorporates large, pushbutton controls.

tion of the ATC into any G&W pre-engineered Lazer automation system where automatic transfer is required.

Generator source capability - The 451 can be programmed to permit a standby generator to be used instead of a second utility source.

Bus-tie configurations - The ATC 451 can be used with a bus-tie switch permitting automatic transfer on systems where the load is normally balanced between two sources.

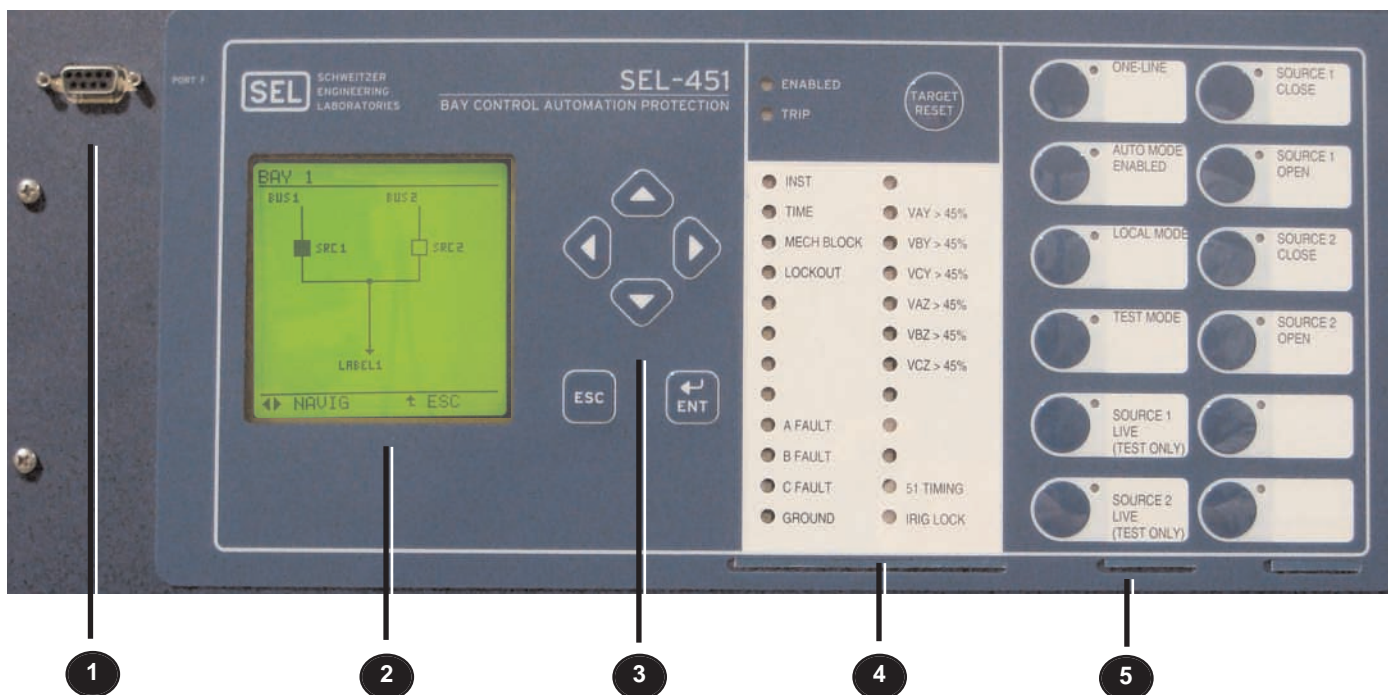
User friendly controls - Large pushbuttons are clearly labeled and provide easy control commands from the front panel.



Sequence of event recorder - Each ATC 451 includes a Sequence of Events Recorder (SER) which will record the last 1000 entries, including setting changes, powerups, and selectable logic elements.

Flexible voltage sensing options - Integral voltage sensing bushings are available which eliminate the need for cumbersome add-on devices. The bushings are 600A rated, fully submersible, and provide one analog output per phase and one digital output per way for voltage monitoring. Elbow mounted sensors and potential transformers are also available.

ATC 451 CONTROL PANEL



LEGEND

1. EIA-232 front serial port for quick, convenient system setup and local access.
2. One-line diagram display shows real-time information and system configuration.
3. Display navigation controls make more information readily accessible.
4. Detailed, programmable targets, with user configurable labels, provide fast and simple information to assist dispatchers and line crews for rapid power restoration.
5. Programmable control pushbuttons and configurable labels provide local switches to replace traditional panel switches.



▲ System parameters are laptop programmable.

AUTOMATIC TRANSFER SWITCHGEAR

Automating a manual switch for ATC applications begins with the actuators. Actuators provide the means to remotely open and close the two incoming source switches. G&W provides three types of actuators, each providing a different operation speed.

Motor Actuators

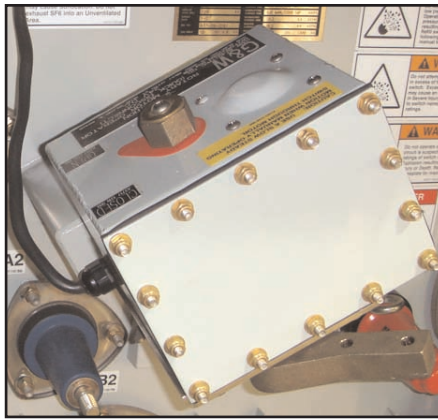
Motor actuators are externally mounted devices that attach to the operating shaft of a G&W SF6 switch. The motor turns to charge the operating springs of the switch mechanism and then reaches the toggle point when the mechanism latch throws and operates the switch. Open and closed position indication is sent back to the ATC control. Total transfer time is approximately 8-10 seconds.

Motor Actuators with Stored Energy Mechanism

Motor actuators may also be provided with SF6 switches incorporating an internal stored energy mechanism. In this offering, the actuator springs inside the switch are already charged. When the control sends an operation command to the switch, the mechanism latch is released and the switch operates immediately. The motor actuator then recharges the springs, awaiting the next operation command. Typical total transfer time is approximately 15-20 cycles.

Magnetic Actuators

For G&W Trident series, solid dielectric switches, magnetic actuators can be provided permitting extremely fast automatic transfer switching. The magnetic actuator is housed within the switch tank eliminating any external linkage or motors. Like the stored energy mechanism, it is charged and ready to operate immediately upon a control command. However, this mechanism does not have a motor recharge delay prior to its next operation. Total transfer time is approximately 8-10 cycles.



▲ Motor actuator directly mounted to the operating shaft of an SF6 switch.



▲ Front mounted actuator with stored energy mechanism on an SF6 switch.



▲ G&W Trident solid dielectric switch with integral magnetic actuator.

OPTIONS

- Stainless steel, NEMA 4X enclosure. Mild steel standard.
- NEMA 6P enclosure
- Faulted circuit indicators
- Padlockable enclosure
- Elbow mounted digital voltage sensors
- Integral voltage sensing bushings
- External solid dielectric potential transformers



Integral voltage sensing bushings

- Bushings are designed to ANSI/IEEE 386 standards with standard interface accepting conventional elbow style connectors and include an aluminum conductor with 5/8"-11 aluminum threaded stud and aluminum single hole pad (elbows must be ordered separately). Bushings are bolt-on style. Copper studs are available.



SF6 density switches - Permit remote indication of internal tank gas density to assure proper operating conditions.

TYPICAL SPECIFICATIONS

GENERAL

A microprocessor based automatic transfer control, model G&W ATC 451, shall be supplied with the switch. The control manufacturer shall be ISO 9001:2000 and ISO 14001:2004 certified.

CONTROL CONSTRUCTION

The control shall consist of an SEL 451-4 relay housed in a mild steel, 24" w x 24" h x 16" d, NEMA 4, padlockable enclosure suitable for mounting remotely or directly to the switch. The control shall be powered by 120 or 240 VAC with 24 VDC backup batteries and charger. A 120 VAC source shall be supplied by the customer. Batteries shall be good for 24 hours and 8 transfer operations if AC power is lost. In the event battery charge is lost, the ATC will operate directly off 120 VAC. The control shall be operable within a temperature range of -20°C to +50°C.

STANDARDS

The control shall meet applicable sections of the following standards:

- ANSI/IEEE C37.90.2
- ANSI/IEEE C37.90.1
- IEC 60255-22-2
- IEC 60255-21-1, First Edition - 1998
- IEC 60255-21-2, First Edition - 1998

CONTROL FUNCTIONS

The control shall provide the following functions:

- 1) Transfer time plus programmed time delays (at least 0.1 sec), if any.
- 2) Preferred feeder selection (source 1/source 2/none)
- 3) Field selectable time delays for transfer and return on each.
- 4) Upon loss of 75% of line voltage, control shall transfer to alternate source, and return transfer upon 80% voltage restoration of preferred source. Control will initiate transfer based on the loss of any phase.

- 5) Generator Control- The user will have the ability to set the alternate source as a generator. In this case, when the preferred source is lost and the initial transfer delay timer has expired, the control will activate (close) the Generator Start Contact. This contact will be connected to the generator. Once the generator is up and running, its voltage sensors will activate as a good source. The control will then initiate the transfer from the utility source to the generator alternate source. Once the preferred source returns and the return transfer delay timer expires, the control will initiate the return transfer to the preferred source; and begin the Generator Cool Down Timer. When the timer expires, the control will activate the Generator Stop Contact.

- 6) Low gas pressure lockout

- 7) Complete test capabilities to simulate loss of voltages, low gas pressure, and overcurrent.

ACCESSORIES

- 1) Voltage sensing shall be supplied using

___ Integral voltage sensing bushings
___ Capacitive test point, plug-on style caps mounted off the elbow connections of the two sources.

- 2) For SF6 switches, an SF6 density switch shall be provided to monitor gas density and provide a signal to the control for lockout if the gas level is low.

- 3) For SF6 switches, two 24 VDC motor actuators mounted to the switch operating mechanism shall be supplied.

OPTIONS

Options shall include

___ Stainless steel, NEMA 4X enclosure
___ NEMA 6P enclosure
___ Padlockable enclosure
___ Faulted circuit indicators
___ Integral battery test under load capability
___ External solid dielectric potential transformers