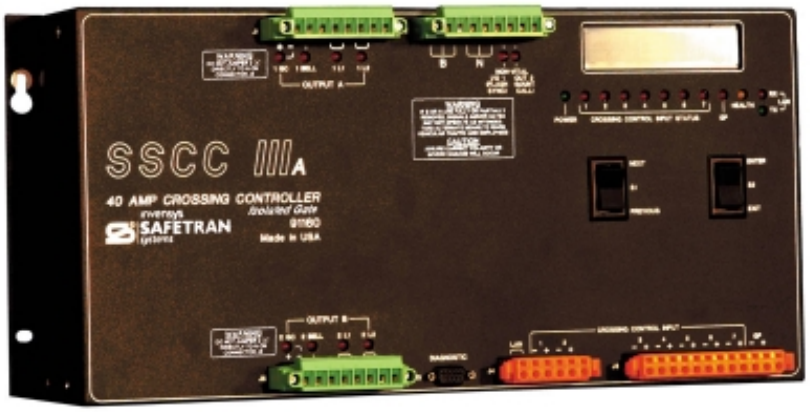
Safetran

SOLID STATE CROSSING CONTROLLER IIIA

SSCCIIIA



SYSTEM DESCRIPTION

The SSCCIIIA is designed to operate in conjunction with train detection devices, such as grade crossing predictors, motion sensors, or other equipment supplying an XR relay drive. It incorporates microprocessor controlled, solid-state switching and monitoring technology into a fully integrated crossing control package. The SSCCIIIA eliminates the XR Relay, Flasher Relay, Gate Control Relay, Gate Repeater Relay, Power-off Relay and the Lightning Transformer in every crossing installation. Front panel terminals accommodate all external connections and interconnecting wiring to the lighting/surge panel(s). The SSCCIIIA is available in two models: 20-amp and 40-amp lamp current. In both models of the SSCCIIIA the gate control output drive is isolated from negative battery (i.e., two-wire control). Thus, the integrated design of the SSCCIIIA provides advanced control features in a compact, lightweight unit that is easier and simpler to install and that reduces crossing costs.

The SSCCIIIA, which replaces the SSCCIII, has the following new features:

- Echelon® LAN connection for communicating to an external SEA/R or SEAR II brand recorder to capture diagnostic information
- Multiple SSCCIIIA units can be synchronized to flash in unison
- Loss of Shunt Timers for each input
- Input changes are recorded in the internal event log which records the last eight device activations
- Advanced test menu

OPERATING FEATURES

- Supports one gate control output and one bell output (20 amp model) or two gate control outputs and two bell outputs (40-amp model).
- 20-amp model provides one pair of lamp outputs that will drive up to a 20-amp lamp load. 40-amp model provides two pairs of lamp outputs, each of which will drive up to a 20-amp lamp load.

- **User programmable:**
  - Gate delay
  - Lamp flash rate
  - Voltage regulated lamp outputs
  - Optional bell off during gate rising
  - Programmable low battery indication threshold
  - Crossing and lamp test mode

- Up to seven vital control inputs "ANDed" together
- Nonvolatile real-time clock
- Password protection

The SSCCIIIA provides a user-programmable, regulated lamp voltage. This minimizes the chance of the lamp voltage dropping below acceptable limits when the AC power is off. The SSCCIIIA utilizes a highly efficient pulse width modulated voltage. To accurately measure the lamp voltage, the voltmeter must have a "true rms ac+dc" scale. All SSCCIIIA models can be ordered with a "true rms" volt meter included (see last page). A conversion chart that cross-references several conventional meters is included in the SSCCIIIA manual.

The SSCCIIIA has five, built-in test modes: lamps steady, flash lamps, timed lamps, timed lamps repeat and activate crossing. The "timed lamps repeat" test mode allows the maintainer to set a timing sequence that will flash the lights for "X" seconds after "Y" and "2Y" delay. This allows the maintainer to walk down the roadway approach to view the FLS while minimizing disruptions to traffic. The "lamps steady" test mode allows the maintainer to continuously light a lamp for alignment purposes. If a train is detected while the unit is in any test mode, the SSCCIIIA will default to normal operation.

During normal operation, system health is monitored by the CPU. The SSCCIIIA supplies a voltage sink output to a contact on a connector on the front panel that controls a maintenance call (MAINT CALL) lamp or crossing monitor device. If a problem occurs, the lamp output is turned off.

REQUIRED SURGE PROTECTION

The SSCCIIIA system requires primary surge protection on battery and external I/O circuits. Safetran Lighting Surge Panels provide primary surge protection for battery circuits, and for flashing light, gate control, gate repeater, and bell circuits. The panels can be mounted on the wall or on a 23-inch rack.

The Lighting Surge Panels provide insulated test links in all underground cable circuits to allow quick isolation for test purposes without disarrangement of the cables. In addition, the Lighting Surge Panels include lamp voltage adjustment resistors in the near signal lighting circuits to compensate for the longer cable going to the far signal. **Note:** the adjustment resistors may not be needed on 40-amp models since the voltage for each lamp output can be programmed independently.

Finally, the Lighting Surge Panels provide steering diodes for each gate control output to provide isolation when two gate mechanisms are controlled from one output.

Negative Battery Isolated (two-wire control) Field Circuits

For units where the gate control output is isolated from negative battery, both 20-amp and 40-amp models require one PN 91181-1 surge panel. 40-amp models generally require a second panel, PN 91181-2 to distribute the lighting circuits. Refer to the SSCCIIIA Installation and Maintenance Manual for circuit details.

Negative Battery Referenced Field Circuits

If a common return gate circuit connected to N is required in the gate, a single wire connecting GC- and negative battery must be installed. For units where the gate control output is referenced to negative battery, both 20-amp and 40-amp models require one PN 91170-1 surge panel. 40-amp models generally require a second panel, PN 91170-2 to distribute the lighting circuits. Refer to the SSCCIIIA Installation and Maintenance Manual for circuit details.

FAILURE MODE OPERATION

An individual processor controls each SSCCIIIA flashing lamp output and a master processor, in turn, synchronizes these processors. In addition, each processor is constantly running self-diagnostic tests, which results in complete on-line testing of the SSCCIIIA operation. As an example, if a lamp driver failure is detected in one of the flashing lamp outputs of a 20-amp SSCCIIIA, one lamp of a flashing pair would be in the failure state (either “on,” “off” or flashing) while the other lamp would continue to operate as intended. This situation is a Partial-Activation rather than an Activation Failure.

SSCCIIIA SPECIFICATIONS

Mechanical Specifications:

Packaging:	Black powder-coat metal enclosure
Mounting:	Wall, shelf or backboard mount 19-inch or 23-inch rack mount (must specify width when ordering)
Weight:	20-amp = 9.6 lb. (4.32 kg) (approx.), including mating connectors 40-amp = 11.4 lb. (5.13 kg) (approx.), including mating connectors
Depth:	4.125 in. (10.48 cm) 4.75 in. (12.07 cm) with mating connectors installed
Height:	8.72 in. (22.15 cm)
Width:	17.6 in. (44.70 cm) (front panel only), 19.0 in. (48.26 cm) overall on 19-inch rack mount base 23.0 in. (58.42 cm) overall on 23-inch rack mount base

Environmental Specifications:

Temperature:	-40° F to +160° F (-40° C to +70° C)
Humidity:	95% non-condensing

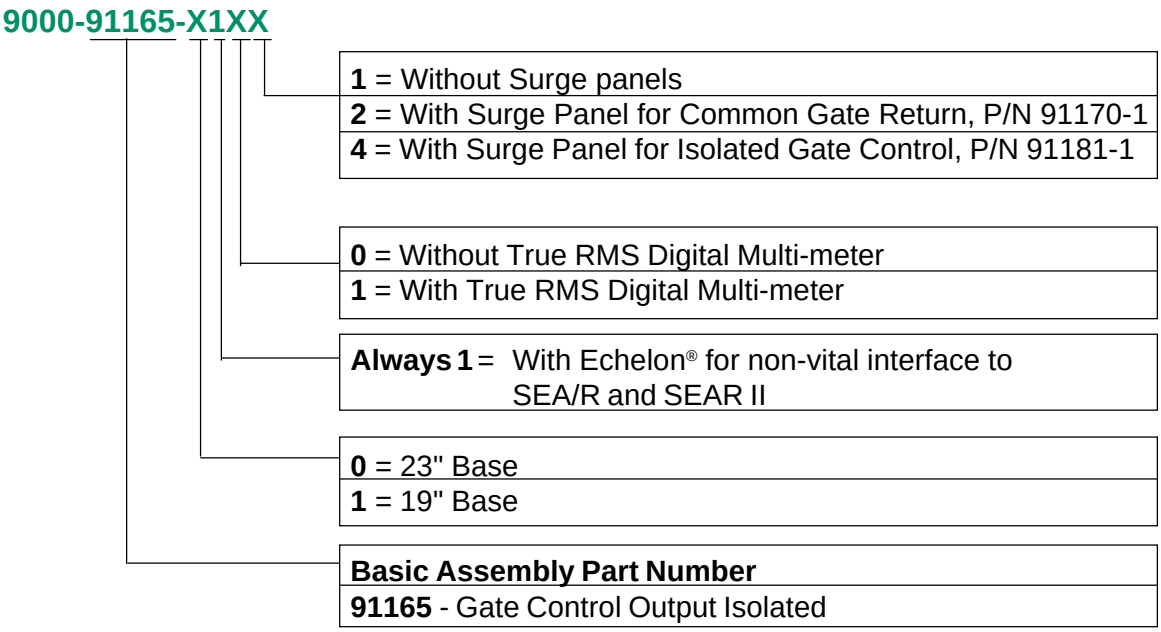
Site Power Requirements:

Input Power:	Customer supplied battery and charger for: 6 or 7 cells of lead; 9, 10, or 11 cells of nickel-cadmium. Unit operates normally between 9 volts and 16.5 volts.
Maximum Operating Current (not activated):	750 ma - 20 amp model 850 ma - 40 amp model
Ripple Voltage:	1.0V peak-to-peak (maximum)

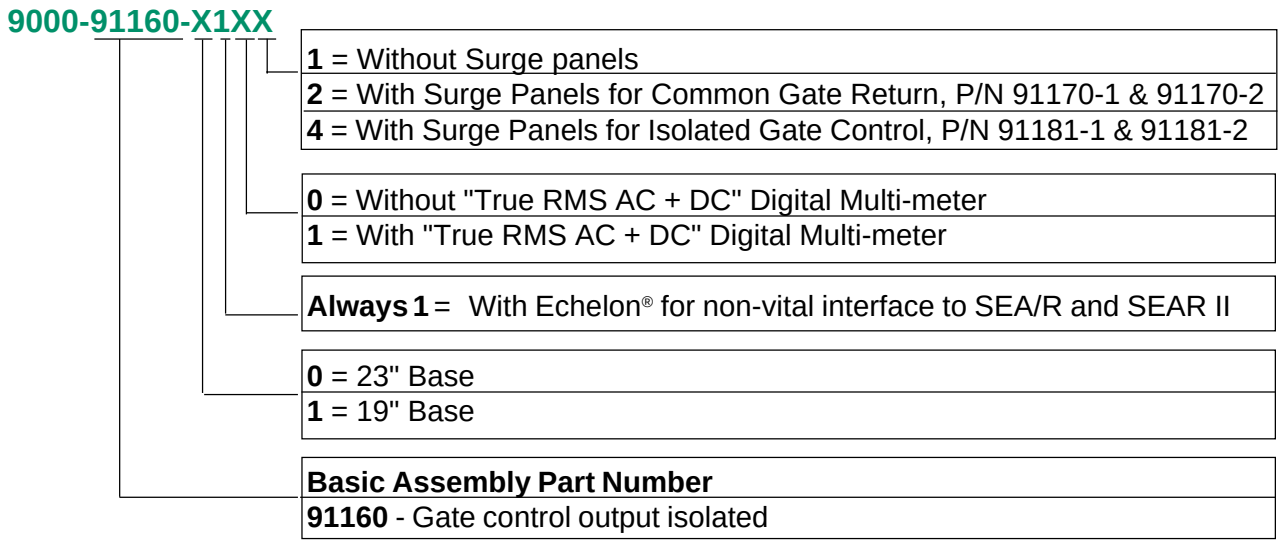
ORDERING INFORMATION

Part Numbers

20-AMP Model: PN 9000-91165-XXXX



40-AMP Model: PN 9000-91160-XXXX



For additional information contact your Safetran sales representative or Customer Service at Safetran's California Division at 800-793-7233.