

Generator Start Wiring Monitor – CS0-RSP-GWM-3-3

The Generator Start Wiring Monitor provides continuous, independent monitoring of the 3-wire engine start circuit between up to three Automatic Transfer Switches (ATS) and their associated generators. Designed for wall mounting, it can be installed up to 1,000 feet from each monitored ATS. Equipped with LEDs, the panel provides a clear visual display of circuit status for all three ATS/generator pairs. Each generator output relay operates independently — a wiring fault or start request on one ATS starts only that circuit's generator, while all three relays open together only on loss of panel power. Additionally, it features a common alarm output for system notifications, an audible alarm, and a silence/acknowledgment button for alarm management. The panel is designed to facilitate compliance with NEC Article 700.10(D)(3) requirements for engine start signal monitoring.



Overview

- Monitor 3 independent ATS/generator circuits
- Install up to 1,000 ft. from each ATS
- Continuous supervision of NO and NC wiring
- Fail-safe: generators start on fault or power loss
- Visual and audible alarm indication
- Common alarm relay output
- Modbus/RTU communications (standard)
- Optional Modbus/TCP, SNMP, and BACnet/IP adapter
- ABS enclosure, IP67 rated, UL94-V0
- Meets or exceeds UL 508A OICP standard
- Facilitates NEC 700.10(D)(3) compliance
- Larger configurations available (up to 6 ATSS)

Assembly



Front View



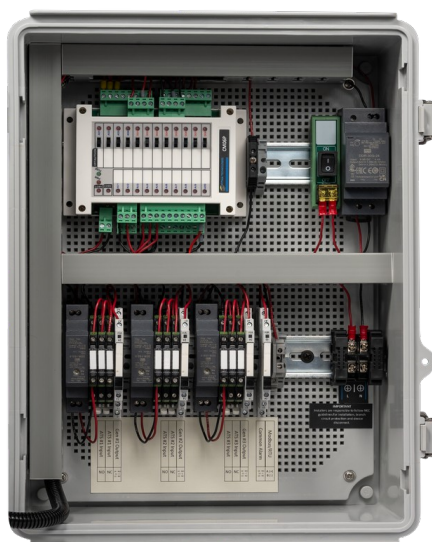
Back View

Dimensions: 20" H × 16.1" W × 7.9" D

Front Panel Indicators and Controls

Indicator/Control	Description
UNIT 1 LED	GREEN when ATS #1-to-Generator #1 wiring is intact; OFF on fault
UNIT 2 LED	GREEN when ATS #2-to-Generator #2 wiring is intact; OFF on fault
UNIT 3 LED	GREEN when ATS #3-to-Generator #3 wiring is intact; OFF on fault
ALARM LED	RED when any fault condition exists on any unit
POWER LED	GREEN when panel has power
HOLD TO ACKNOWLEDGE	Press and hold to silence audible alarm

Wiring



Terminal Block Assignments

Terminal	Contacts	Description
Power Input	+Vin / –Vin	12-36VDC power input (typically from generator battery)
ATS #1 Output	5V+	+5VDC supervision output to ATS #1 relay Common
ATS #1 Input	NO / NC	Supervised inputs from ATS #1 relay NO and NC contacts
Gen #1 Output	NO / C / NC	Generator #1 start relay output
ATS #2 Output	5V+	+5VDC supervision output to ATS #2 relay Common
ATS #2 Input	NO / NC	Supervised inputs from ATS #2 relay NO and NC contacts
Gen #2 Output	NO / C / NC	Generator #2 start relay output
ATS #3 Output	5V+	+5VDC supervision output to ATS #3 relay Common
ATS #3 Input	NO / NC	Supervised inputs from ATS #3 relay NO and NC contacts
Gen #3 Output	NO / C / NC	Generator #3 start relay output
Common Alarm	NO / C / NC	Common alarm relay output — driven by any active unit alarm
Modbus/RTU	A(+) / B(–)	RS-485 communications

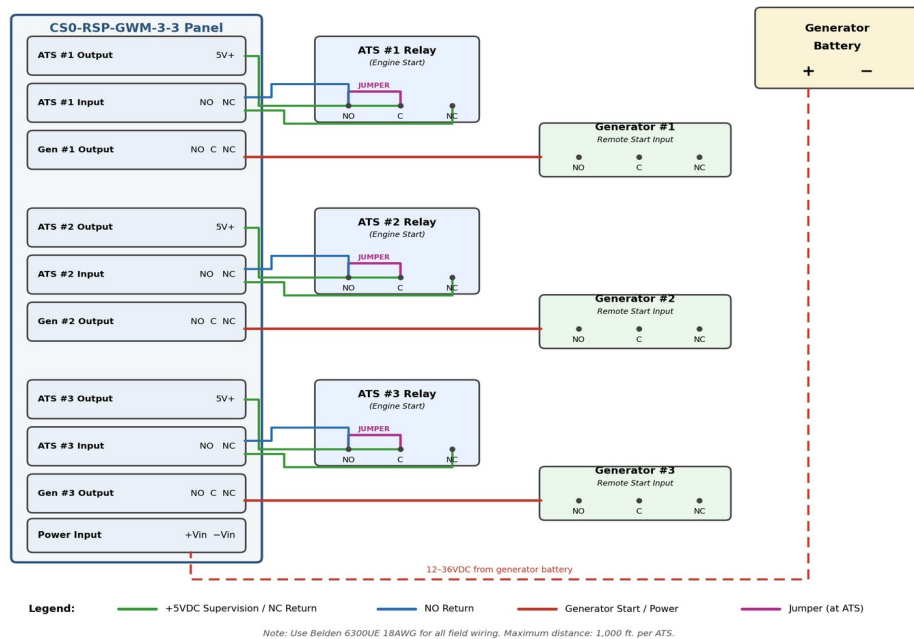
NOTE

If an ATS/Generator pair (Unit 1, 2, or 3) will not be used, that unit's supervision circuit must still be satisfied at the panel terminal block, or the panel will report a wiring fault and open that unit's generator output relay. Install a jumper wire directly from 'ATS #X Output — 5V+' to 'ATS #X Input — NO', and a second jumper from 'ATS #X Output — 5V+' to 'ATS #X Input — NC'. This holds the unused unit's UNIT X LED GREEN and its Gen #X output relay CLOSED without requiring a physical ATS connection.

Example ATS Wiring

The diagram below shows the typical wiring configuration for monitoring three independent 3-wire engine start circuits between three ATSs and their associated generators.

Example ATS Wiring Diagram — CS0-RSP-GWM-3-3



Theory of Operation

The panel provides an independent, supervised +5VDC signal to each ATS relay. The installer jumpers this signal at each ATS from Common to Normally Open, creating a supervised circuit. The panel monitors both the NO and NC return circuits for integrity on all three units independently.

Fail-Safe Design:

Each generator output relay is normally CLOSED when the panel has power and that unit's wiring is healthy. When a fault is detected on a unit, or the panel loses power, that unit's relay OPENS, which initiates generator start. A fault or start request on one ATS affects only its own generator — the other two circuits continue operating independently. All three relays OPEN simultaneously only when panel power is lost, ensuring all generators start even if the monitoring panel itself fails.

Normal Operation (No Fault):

- +5VDC present on all three ATS NO and NC inputs
- All three UNIT LEDs are GREEN
- All generator output relays remain CLOSED (generators not running)

ATS Start Request or Fault Condition (per unit):

- If ATS #N requests start OR any wire on Unit N is open, shorted, or the panel loses power
- Gen #N output relay OPENS (starting Generator #N only)
- UNIT N LED turns OFF; ALARM LED turns RED
- Audible alarm sounds; common alarm relay activates
- Press and hold the ACK button to silence the audible alarm
- The other two units continue operating independently and are unaffected

Panel Power Loss:

- All three generator output relays OPEN simultaneously
- All three generators receive a start command
- This fail-safe behavior ensures all generators start even if the panel itself fails

Wiring Steps

1. Connect 12–36VDC power from the generator battery to the panel Power Input terminals.
2. For each ATS (Units 1, 2, and 3): run a single conductor from the panel 'ATS #X Output 5V+' terminal to that ATS relay's Common (C) input.
3. At each ATS, install a jumper wire from the relay Common (C) to the Normally Open (NO) input.
4. Run a single conductor from each ATS relay NO output back to the corresponding panel 'ATS #X Input NO' terminal.
5. Run a single conductor from each ATS relay NC output to the corresponding panel 'ATS #X Input NC' terminal.
6. Run a 3-conductor cable from each 'Gen #X Output' (NO, C, NC) to the corresponding generator's remote start input.
7. Turn on panel power.

Ordering

Please visit online at www.pythiatech.com for part numbers and pricing.

Contact us for custom configurations including additional ATSs (up to 6) and alternate generator output configurations.

Specifications

Model	CS0-RSP-GWM-3-3
Configuration	3 ATS inputs, 3 Generator outputs (one per ATS)
ATS Input	Supervised +5VDC through NO and NC contacts (independent per unit)
Generator Output Relays	Form C (NO/C/NC), one per ATS; normally closed, opens on that circuit's fault or start request; all open on panel power loss
Maximum Distance	1,000 ft. from panel to each ATS
Common Alarm Output Relay	Form C (NO/C/NC), designed for Class 2 circuits. 6A/250VAC, 6A/30VDC. Driven by any active unit alarm
Panel Ratings	ABS Panel IP67 Rated, UL94-V0
Dimensions	20" H × 16.1" W × 7.9" D
Operating Temperature	–30°C to 45°C / –22°F to 113°F inside enclosure
Relative Humidity	5 to 95%, non-condensing
Power	12-36VDC (typically from generator battery)
Communications (Standard)	Modbus/RTU, 19.2K, N,8,1, ID:254
Communications (Optional)	Modbus/TCP, SNMP, BACnet/IP
Wiring Recommended	Belden 6300UE 18AWG (ATS wiring), Belden 6300FE 18AWG (communications)
NEC Compliance	Designed to facilitate compliance with NEC 700.10(D)(3)
Additional Configurations	Larger configurations available: up to 6 ATSS. Contact Pythia Technologies.