GENSET CONTROL MODULE

RSS4

Features:

- One model for both 12V electric air-cooled or water cooled engines.
- Provisions for local and remote start/stop control.
- Single alarm light output for all fault shutdowns.
- User selectable starting mode: full cycle-cranking, or single-cycle crank limiter.
- User selectable start delay for remote start applications.
- Loss of speed signal protection for crank motor circuit.

General Description:

The Genset Control Module is a microprocessor based control system which provides complete automatic control of standby generator set engines. Fuel solenoid and/or ignition control, cranking control are via heavy duty industrial type relay contacts. If used, engine temperature and oil pressure monitoring are obtained from engine mounted sensor contacts. Overspeed shutdown and crank termination control are provided internally via main generator frequency monitoring input terminals.

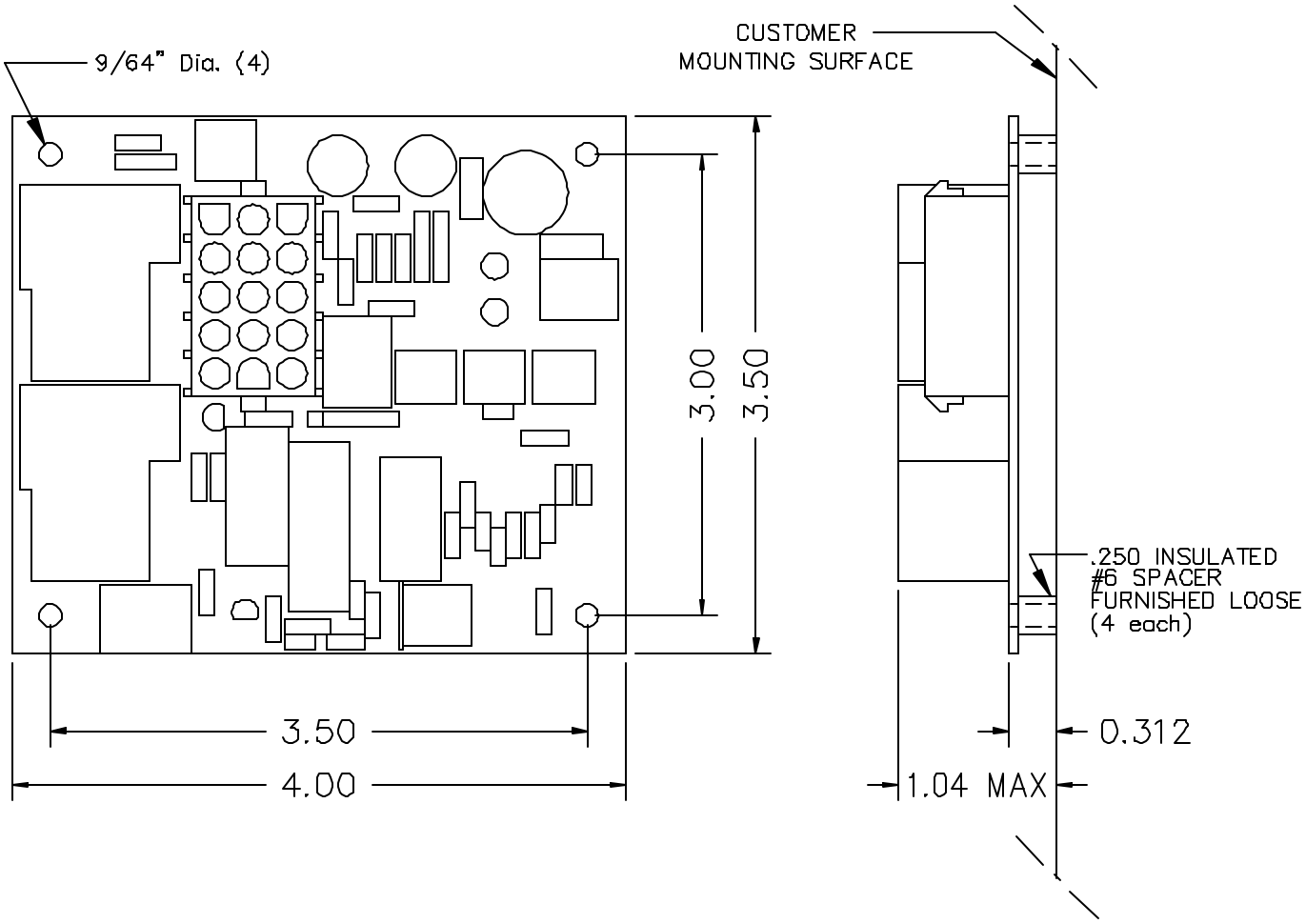
RSS4 Specifications

Input Voltage: 12VDC nominal, 16VDC max; transient and reverse polarity protected.
(Typical: Pickup at 10VDC, Dropout at 6VDC.)
Supply Current: In Auto-standby: 1mA
Maximum (running): 150mA maximum plus alarm light burden.
Relay Load Contacts: FS and CS: 10A at 28VDC continuous duty. (20A contacts available.)
MAG: 2A intermittent duty (for low-voltage side of magneto ignition systems.)
Alarm Light Load: 150mA maximum (incandescent inrush is permitted.)
Shutdown Contact Inputs: 1 (See operating instructions for start-up override times.)
Main Generator Frequency Input: 120VAC nominal, 150VAC maximum.
Overspeed trip point is fixed at 69Hz.
Crank disconnect is fixed at 16Hz. (Approximately 500 RPM)
Crank Control: Single-cycle crank limiter: continuous 30 sec. crank period (non-adjustable.)
Cycle-cranking: 5 cycles of 12 sec. crank and 12 sec. rest (non-adjustable.)
Time Delays: Delay on start from remote signal (If used): 5 seconds. (non-adjustable.)
Delay on shutdown from remote signal: 90 seconds. (non-adjustable.)
Shielding: Customer must mount control in protective enclosure away from any EMI producing components.
Ambient Temperature: -25° F to +140° F
Finish: PC Board: Protected with moisture/fungus proof varnish.
Terminal Connections: Customer furnished (1) AMP Universal Mate-N-Lok 15 pin plug, AMP #1-480710-0 (Digikey #A1462-ND), with (15) socket connectors, AMP #350550-1 (Digikey #A1441-ND).

Bouchette Electronics, Inc.

N11325 County Highway Y, Clintonville, WI 54929
(715) 823-7770 (715) 823-7771 Fax *www.bouchette.com*

RSS4 Dimensions



Bouchette Electronics, Inc.

N11325 County Highway Y, Clintonville, WI 54929
(715) 823-7770 (715) 823-7771 Fax *www.bouchette.com*

GENSET CONTROL MODULE
RSS4

Control Switch Inputs

The following operator panel controls are wired into the microprocessor through the 15-pin plug.

1. Run/Stop/Auto Switch

a. "Run" position causes the engine to start and run immediately.

b. "Auto" position allows the unit to be controlled via any remote single-pole dry-type contact (transfer switch, remote start switch, etc.). Contact closure causes the unit to start and run, while contact opening causes the unit to shut down. *Also see Delay-On-Start Select and Delay-On-Shutdown for time delay options.*

c. "Stop" position de-energizes the engine control for immediate shutdown.

Relay Functions

1. Master Control Relay (FS)
Operates fuel solenoid and/or ignition control.

2. Cranking Control Relay (CS)
Controls engine cranking functions.

3. Magneto Relay (MAG)
Grounds the low-voltage side of magneto ignition systems on shutdown. (If Used.)

Safety Inputs

1. External Safety Device(s) (if used.)
Monitoring of the safety input begins 12-seconds after the unit starts and remains in effect until the unit is shut down. Safety inputs may include Low Oil Pressure, High Water or High Head Temperature, etc. and are derived from engine mounted sensors. Safety input contacts must be open under normal operating conditions and closed for fault conditions. Contact closure after the 12-second period will result in engine fault shutdown and alarm light indication.

2. Overspeed (OS) Shutdown.
Overspeed shutdown protection is provided by a frequency sensing network within the control module. The OS signal is derived from a 120VAC winding of the main generator. The trip point of the frequency network is factory set at 69Hz. Exceeding this speed will result in engine fault shutdown and alarm light indication.

Cranking Control

1. Overcrank (OC) Protection

Two different cranking cycles are programmed into the microprocessor:

a. Fixed Single Cycle Cranking

Provides a single non-adjustable crank period of 30-seconds. Failure of the engine to start within that time results in engine fault shutdown and alarm light indication.

b. Cycle Cranking

The controller may be field converted to the "cycle cranking" feature by cutting the "CCI" clip wire on the control module. Provides a series of five cranking cycles; each containing a 12-second crank period with a 12-second rest period. Failure of the engine to start by the fifth crank period results in an “overcrank” fault shutdown and alarm light indication. Refer to the RSS4 Connection Diagram for clip wire location.

Caution: *Do not allow ends of clip wire to come in contact with other components. Completely remove clip wire, or cut in the middle and separate ends about 1/8".*

2. Cranking Disconnect

The cranking termination speed is obtained from the frequency network within the control module. The microprocessor automatically sets the cranking termination speed at approximately 500 RPM.

3. Loss of Frequency Signal

The microprocessor will detect an absence of the frequency signal while cranking. If the cycle cranking feature (b) above was selected, and no frequency was detected within the first 11-seconds of cranking, the microprocessor overrides this selection and continues cranking as described in the fixed single cycle cranking feature (a) above. This feature protects the engine starter from re-engaging in the event the engine is running and generator frequency is not present.

Delay-On-Start Select

The controller may be field converted to include this feature by cutting the "TDI" clip wire on the control module. This feature prevents unnecessary starting of the engine due to momentary power outages by delaying the start-up of the engine for 5-seconds after the Customer Remote Run/Stop Contact is closed. This timing feature can be made active only in the “Auto” switch position, and still permits instantaneous manual starting in the “Run” position. Refer to the RSS4 Connection Diagram for clip wire location.

Caution: *Do not allow ends of clip wire to come in contact with other components. Completely remove clip wire, or cut in the middle and separate ends about 1/8".*

Delay-On-Shutdown

This feature provides a cool-down period for the engine by delaying the shutdown of the engine for 90-seconds after the Customer Remote Run/Stop Contact is opened. This timing feature can be made active only in the “Auto” switch position, and still permits instantaneous manual shutdowns in the “Stop” position.

Microprocessor Program Notes

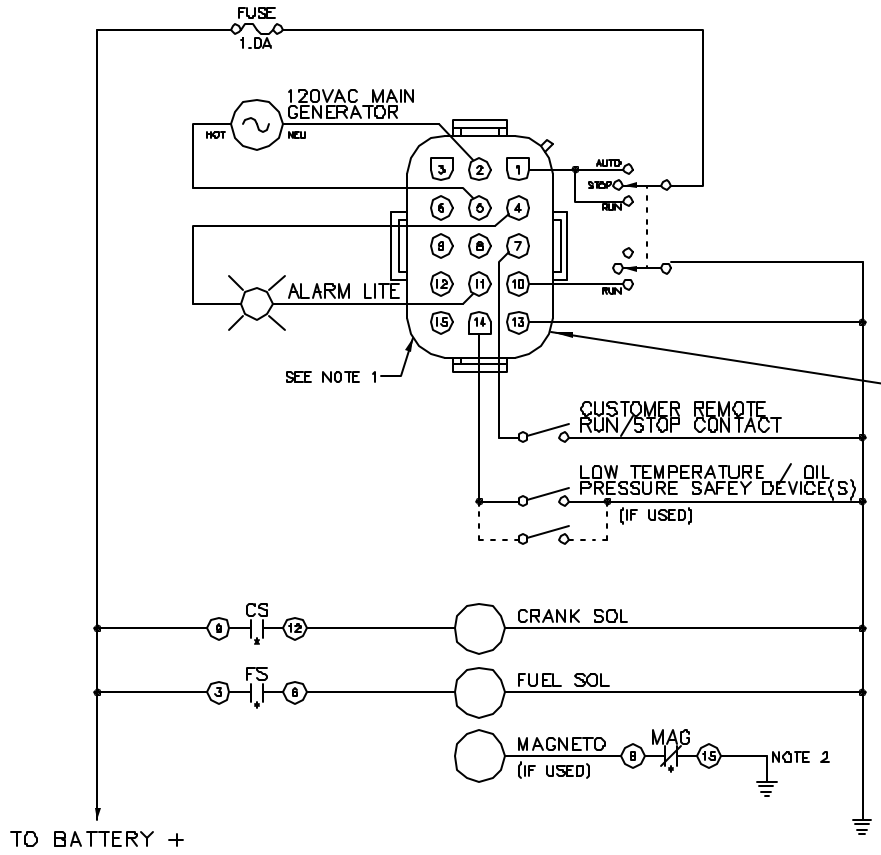
Internal protection against loss of frequency input signal is programmed in after the unit has started normally. A sustained signal loss of 7-seconds will result in engine fault shutdown and alarm light indication.

Resetting a Fault Shutdown

A shutdown with alarm, due to any fault condition, will prevent any subsequent operation of the generator set. The Run/Stop/Auto Switch on the operator control panel must be momentarily placed in the "Stop" position to reset this function.

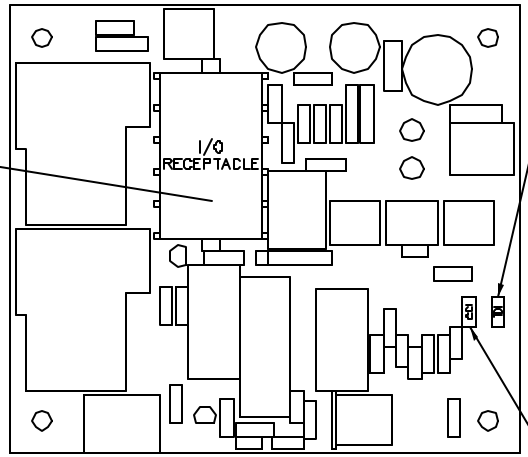
Bouchette Electronics, Inc.

N11325 County Highway Y, Clintonville, WI 54929
(715) 823-7770 (715) 823-7771 Fax *www.bouchette.com*



START-UP TIME DELAY SELECT

TO ADD A 5 SECOND TIME DELAY ON THE ENGINE START-UP (REMOTE START ONLY), CUT THE "TDI" JUMPER WIRE.



CRANKING SELECT

THE REMOTE START/STOP BOARD IS SHIPPED CONFIGURED FOR A SINGLE CRANK PERIOD OF 30 SECONDS. TO CONVERT TO CYCLE CRANKING, CUT THE "CCI" JUMPER WIRE AS SHOWN.

NOTES:

1.) CUSTOMER TO SUPPLY AMP 1-480710-1 PLUG WITH (15) 350550-1 SOCKET CONNECTORS. VIEW SHOWN FROM BACK (WIRING END) OF PLUG.

2.) MAGNETO GROUND MUST BE KEPT SEPARATE FROM CONTROL GROUND (PIN 13.)

* MAG, CS, AND FS ARE RELAY CONTACTS LOCATED WITHIN THE ENGINE CONTROL.

Bouchette Electronics, Inc.
N11325 County Highway Y Clintonville, WI 54929

TITLE			
CONNECTION DIAGRAM – RSS4 REMOTE START/STOP CONTROL			
DATE	DWN BY	CHK	SCALE
12/28/99	DSB	TJB	NONE
P/N	CAD REF	DWG NO	
		E205-1	