

Automatic Generator Control Unit

GCU-10



The Model GCU-10 is an Automatic Engine Control Module, designed to meet the demand of the generator industry. The module starts and stops the generator, and at the same time indicates the operation status and fault conditions, if it senses a fault it will automatically shut down the engine and indicates the engine failure by means of eight LED's. The technician can program the module according to different generator requirements complying with different conditions and protections.

Protection Setting

Engine fail to start reattempt

Engine tries 3 times to start

Engine High Water temperature Protection

Shutdown activated after 3 sec delay by NO Contacts

Engine Low Oil Pressure Protection

Shutdown activated after 3 seconds

Oil Pressure Switch Type: NO or NC Contacts

Engine Over-speed Protection

Shutdown activated after 3 seconds

At 50Hz activation at 55 Hz - 60Hz activation at 66 Hz

Engine Underspeed Protection

Shutdown activated after 5 seconds

At 50Hz activation at 55 Hz - 60Hz activation at 66 Hz

Emergency Shutdown

Shutdown activated by NO Contacts

Spare / User define Shutdown

Shutdown activated after 5 sec delay by NO Contacts

Low Battery Voltage Warning

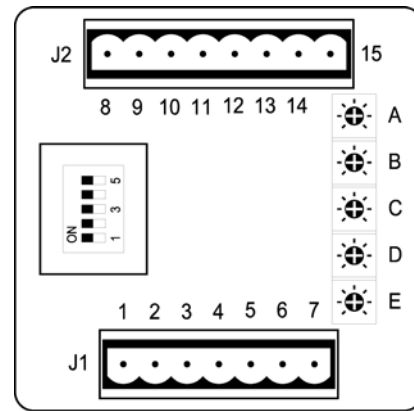
Activated after 5 seconds delay

For 12VDC activated at 10VDC - 24VDC activated at 20DCV

Icon Reference Table

ICON	DESCRIPTION	ICON	DESCRIPTION
	Power Source		Over-speed
	Engine Running		Under-speed
	Start Failure		Emergency Stop
	High Water Temperature		Spare Shutdown
	Low Engine Oil Pressure		Low Battery Voltage

Rear Panel Layout



Cut-Out: 66 x 66 ± 0.5 mm

Adjustment

In the back, the GCU-10 has five adjustment pots that changes five common time delay functions.

- **A - Engine Pre-Heat** Adjustable from 2 to 30sec
- **B - Starter Cranking time** Adjustable from 1 to 15sec
- **C - Energize to STOP** Adjustable from 1 to 15sec
- **D - Engine Idle (Elec. Governor)** Adjustable from 0 to 300sec
- **E - Engine Cool-down** Adjustable from 0 to 300sec

Function Setting

On the back of the control we have five pins dipswitches that set the specification of the genset.

SW 1: Generator Frequency

ON-50Hz - OFF-60Hz

SW 2: Battery Voltage

ON-12V - OFF-24V

SW 3: Fuel Solenoid

ON: Energize to Start - OFF: Energize to Stop

SW 4: Oil Pressure Switch Type

ON - Normal Open Sensor - OFF - Normal Close Sensor

SW 5: Oil Pressure Switch (Used For Crank Disconnect)

ON - Disabled, not used for crank disconnect

OFF - Enable, used for crank disconnect

Specification

ITEM	DESCRIPTION
DC Supply	9.0 to 36 VDC
Alternator Input Range	5 ~ 300VAC
Alternator Input Frequency	50/60 Hz
Fuel Solenoid Signal Output	5 Amp @ 12/24VDC
Start Signal Output	5 Amp @ 12/24VDC
Warm up Signal Output	5 Amp @ 12/24VDC
Alarm Signal Output	5 Amp @ 12/24VDC
Idle Control Conductor Capacity	5 Amp @ 12/24VDC
Operating Temperature	-20 °C to +70 °C
Relative Humidity	90% or Below
Power Consumption	Under 3VA
Weight	100 gram

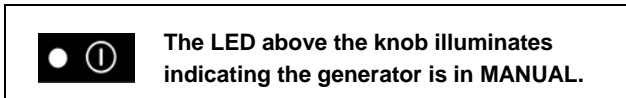
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Manual Operation

To initiate a start sequence moves the front control knob to MANUAL.



First, the Pre-Heat timer begins by energizing terminal 4. When Pre-Heat is not used sent adjustment "A" full counterclockwise.

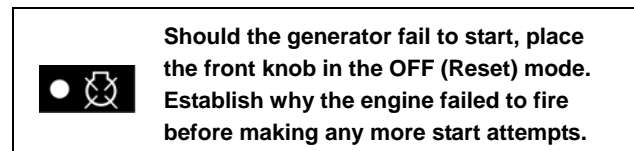
Second, the engine Fuel Solenoid is energizes by terminal 10, together with governor idle terminals 14 & 15.

Third, After a 1 sec. delay, the starter motor engages, and the engine cranks for the duration of the crank timer.

Fourth, after the engine fires, the starter motor is disengaged and locked out with the 18-Hertz signal from the generator output. Alternatively, the oil pressure switch can serve as an additional back up crank release.

Fifth, after the engine fires and if the Engine Idle option is activated, the ENGINE RUNNING LED will, continuous flash during the idle period indicating the status is IDLE. (If engine idle is not used set adjustment "D" full counterclockwise.

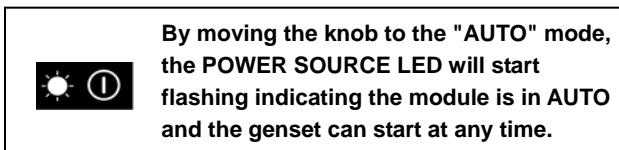
Sixth, should the engine not fire on the first attempt and the crank timer expires the module will once again attempt to start the engine until the engine fires or after the third attempt is completed.



After the generator starts, the module allows Oil Pressure, High Engine Temperature, Underspeed, and the Auxiliary fault input to stabilize without triggering any faults for 20 seconds. After 20 sec. full fault protection is available.

By moving the knob to the OFF position, the genset will STOP immediately.

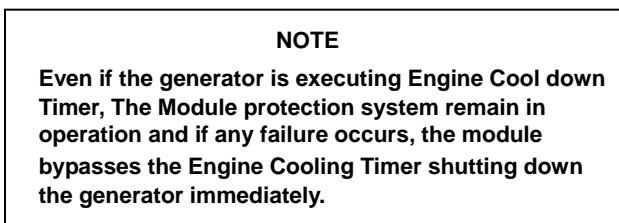
Automatic (Remote Mode) Operation



In the "AUTO" position, the module monitors input terminal 9 for a "REMOTE START" signal. Should a "REMOTE START" signal be detected a start sequence similar to previous manual start sequence is initiated.

When removing the Remote Start signal the Automatic Cool Down delay times out, the Fuel Solenoid is (de-energized or energized as the case may be) bringing the generator to a stop and the POWER SOURCE LED will start flashing, indicating the genset is on standby and ready to start.

Should the Remote start signal be re-activated during the cooling down period, the set will immediately return to load.



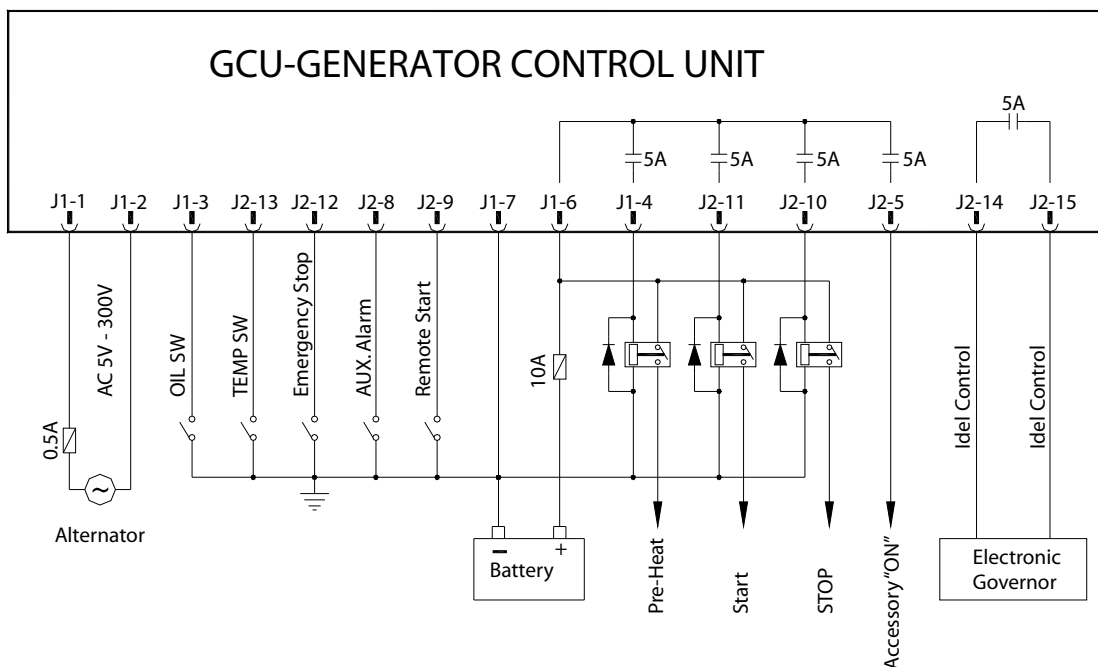
OFF Operation

The OFF position places the module into STOP or RESET mode.

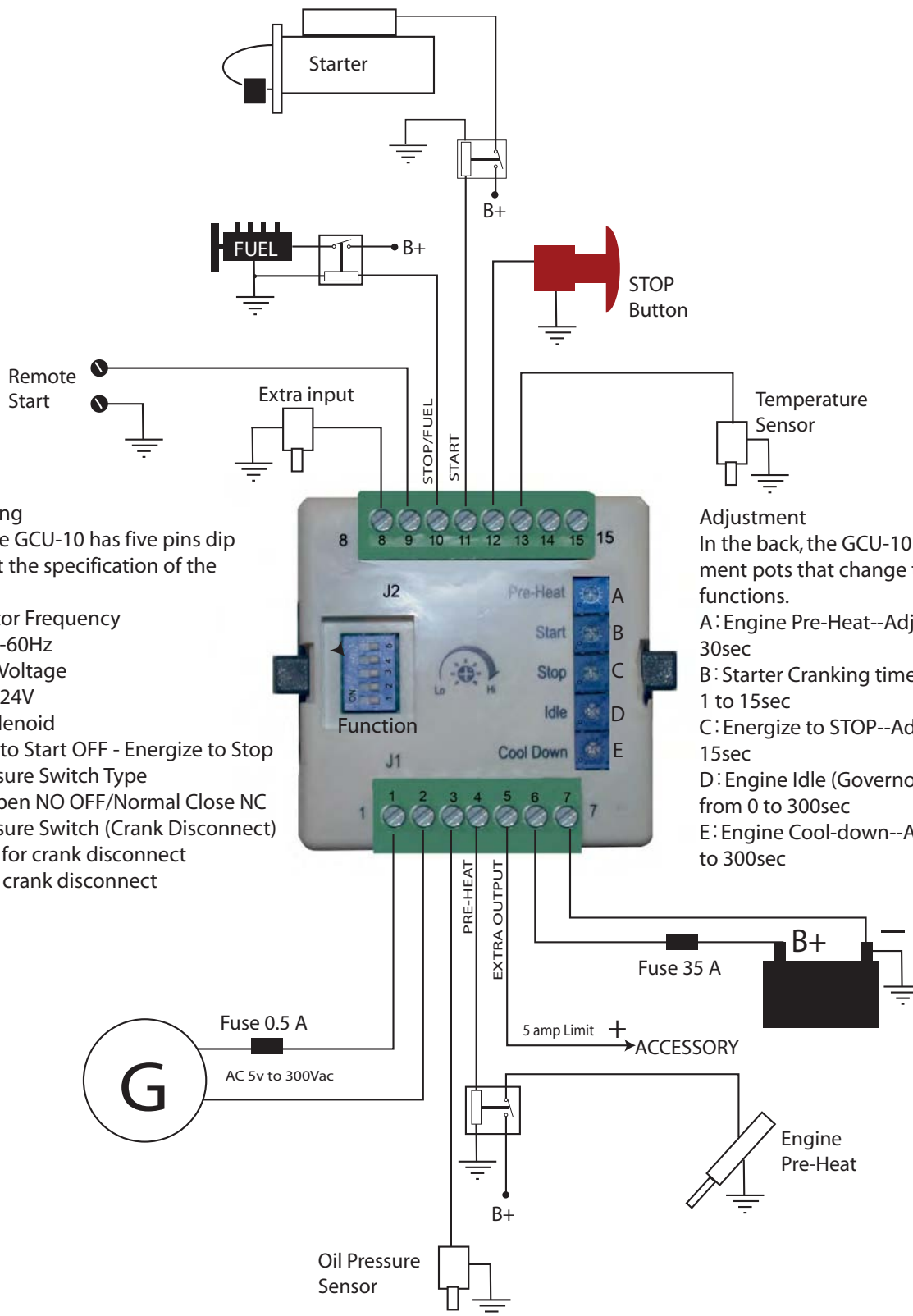
In RESET mode the operator must clear any fault conditions.

Selecting OFF when the engine is running automatically STOPS the generator. The fuel supply will be removed and engine will be brought to a standstill. Should a remote start signal be present while operating in this mode, a remote start will not occur.

Standard Wiring Diagram



Please link to <http://www.mtspowerproducts.com> for detailed manual



Function Setting

In the back, the GCU-10 has five pins dip switch that set the specification of the genset.

- SW 1 : Generator Frequency
ON-50Hz OFF-60Hz
- SW 2 : Battery Voltage
ON-12V OFF-24V
- SW 3 : Stop Solenoid
ON - Energize to Start OFF - Energize to Stop
- SW 4 : Oil Pressure Switch Type
ON-Normal Open NO OFF/Normal Close NC
- SW 5 : Oil Pressure Switch (Crank Disconnect)
ON - not used for crank disconnect
OFF - used for crank disconnect

Adjustment

In the back, the GCU-10 has five adjustment pots that change the time delay functions.

- A : Engine Pre-Heat--Adjustable from 2 to 30sec
- B : Starter Cranking time--Adjustable from 1 to 15sec
- C : Energize to STOP--Adjustable from 1 to 15sec
- D : Engine Idle (Governor)--Adjustable from 0 to 300sec
- E : Engine Cool-down--Adjustable from 0 to 300sec

