

EC-05

Auto Start Module for Gasoline Engine Generators Operation Manual



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SECTION 1 : SPECIFICATION

DC Power Input

Voltage 9 – 36 Vdc
Fuse Spec. 5 x 20mm S505-10A slow-blow

AC Power Input

Voltage 5 – 300 Vac single-phase
Frequency 50 / 60 Hz

Start Signal Output

7 Amps @ 12 / 24 Vdc (Battery “+” terminal)

Stop Signal Output

7 Amps @ 12 / 24 Vdc (Battery “-” terminal)

Choke Signal Output

7 Amps @ 12 / 24 Vdc (Battery “+” terminal)

SECTION 2 : PRODUCT OVERVIEW

The EC-05 Auto Start Module can accept signals from a remote switch or an ATS to automatically start and stop a gasoline engine generator and obtain remote operation. It is suitable for key start gasoline engine generator equipped with a starter motor but without automatic start and stop function. The EC-05 control module has choke control function making it especially suitable for use in cold regions.

SECTION 3 : EXTERNAL WIRING AND PRECAUTIONS

- 3.1 **AC Input Terminals** : Generator AC Power Input Terminals. The controller cuts off the signal to the starter motor when AC power frequency is greater than 18 Hz.
Input Range : 5 – 305 Vac 50/60 Hz

Precautions :

The AC Power Input must come directly from the generator and cannot be connected and disconnected by a circuit-breaker. This is to avoid possible improper operation caused by the controller from loss of sensing of AC frequency leading to repeated start attempts even if engine is running.

- 3.2 **B+ & B- Terminals** : Battery positive (+) and negative (-) power input terminals.
Input Range : 9 – 36 Vdc

Precautions :

The battery must not be disconnected when the generator is running. This is to avoid the high voltage output of charging alternator being fed directly into the controller and damage it.

Static Power Consumption

Less than 0.2 watts

Operating Environment

Operating Temperature -20 to +70 °C
Relative Humidity Max. 90%
Vibration 5.5 Gs @ 60 Hz

Dimensions

107.0 (L) x 75.0 (W) x 28.0 (H) mm
4.21 (L) x 2.95 (W) x 1.10 (H) inch

Weight

170 g +/- 2%
0.37 lb +/- 2%

- 3.3 **Start Terminal** : Starter motor signal output terminal. Terminal output is the battery (+) of DC12V / 24V when the engine is cranking.

- 3.4 **Stop Terminal** : Engine stop signal output terminal. During engine shutdown the terminal output is the battery (-). When the Stop timer setting has been reached this terminal is de-energized.

- 3.5 **Choke Terminal** : Choke Solenoid signal output terminal. Terminal output is the battery (+) of DC12V / 24V when the engine is cranking.

- 3.6 **Remote Start Terminals** : Engine Remote Start Signal input terminals. When the contact is closed the engine is running. When the contact is open the engine is stopped.

Precautions :

The external remote start input must be a dry contact without power. Inputting a DC or AC signal may cause damage to the controller.

SECTION 4 : TIME DELAY AND FUNCTION SETTINGS

- 4.1 **Stop potentiometer** : Stop action timer.
Setting range : 1 – 20 secs. (stepless adjustment)

- 4.2 **Choke potentiometer** : Choke action timer.
Setting range : 1 – 20 secs. (stepless adjustment)

- 4.3 **Start potentiometer** : Starter cranking timer
Setting range : 1 – 10 secs. (stepless adjustment)
- 4.4 **Time between start attempts** : 6 secs. (not adjustable)
- 4.5 **Engine start attempts** : 3 times (not adjustable)

Precaution :

If AC voltage input is lost when the genset is running normally the Engine Running and Engine Start Failure indicators will flash at the same time. This indicates that the system has failed but the controller will not stop the engine. This situation could be caused by an AVR failure or poor connection of the AC voltage input.

SECTION 5 : LED STATUS INDICATORS

5.1 Engine Running Indicator LED (Green)

Flashing : Engine is in Standby mode

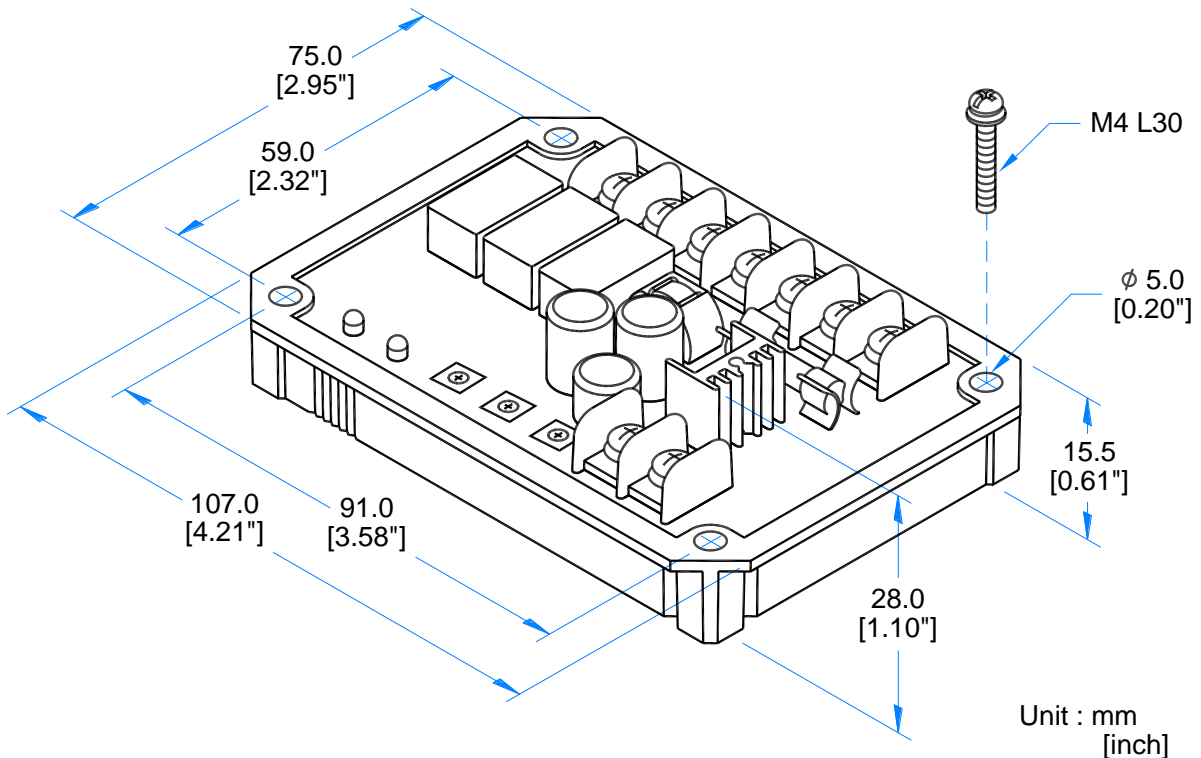
Illuminated : Engine is running

5.2 Engine Start Failure Indicator LED (Red)

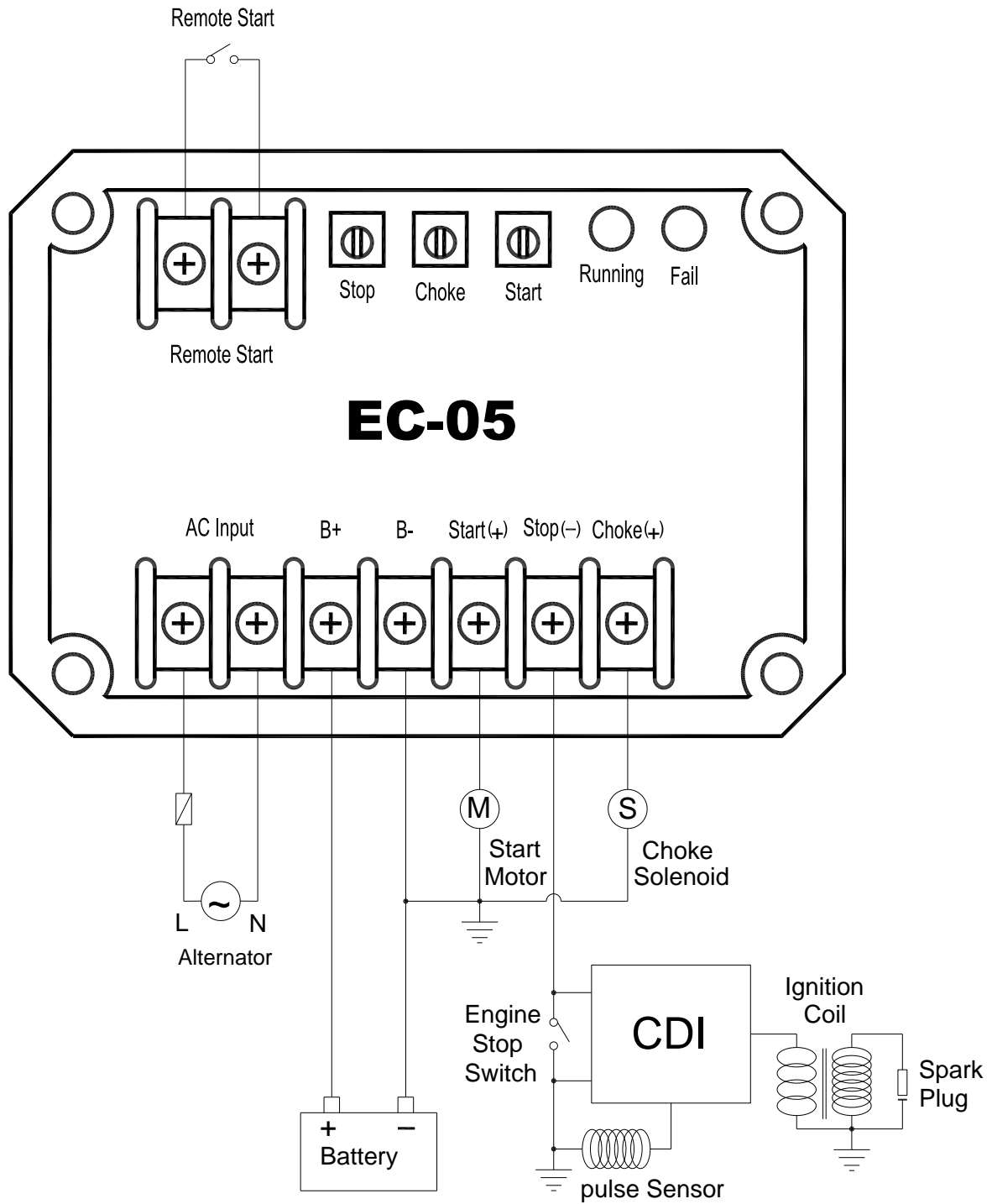
When three engine cranking attempts have been made but the engine will still not start normally the Engine Start Failure indicator will illuminate, indicating that the engine has failed to start.

Do not allow a remote start input signal to attempt start automatically before the fault is eliminated. This is to avoid possible improper operation of the controller caused by loss of sensing of AC frequency leading to repeated start attempts even if the engine is running.

SECTION 6 : APPEARANCE / DIMENSIONS / INSTALLATION DRAWING (mm)



SECTION 7 : RECOMMENDED CONNECTIONS DIAGRAM



- ※ Use only fuses of the type and rating specified in this manual.
- ※ Appearance and specifications of all products are subject to change for improvement without prior notice.