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Knowtek EFC3062322

Knowtek EFC3062322 Engine Controller User Manual

Model: EFC3062322 | **Brand:** Knowtek

1. Introduction

The Knowtek EFC3062322 is an advanced electronic engine speed controller designed for precise regulation of generator genset engines, specifically compatible with K38 and K50 models. This unit ensures fast and accurate response to transient load changes, maintaining stable engine operation and precise speed regulation for diesel engines.

It integrates proportional, integral, and derivative (PID) values through separate circuits, allowing for fine-tuned control that optimizes engine response and stability under varying load conditions.

2. Key Features

- **Electronic Speed Control:** Designed as an all-electronic device for actuator control.
- **Rapid Response:** Provides fast and precise response to transient load changes.
- **Wide Speed Control Range:** Offers extensive control over engine speed.
- **Adjustable PID Values:** Separate circuits for proportional, integral, and derivative adjustments.
- **Stable Engine Response:** Ensures fast and stable engine response to load changes.
- **Precise Speed Regulation:** Maintains accurate speed regulation for diesel engines.
- **Actuator Compatibility:** Compatible with EFC 3408326 and DYNA7000 actuators.

3. Technical Specifications

Operating Voltage	12 or 24 volts ±20%
Steady State Speed Band	±0.25%
Ambient Operating Temperature	-40°C to +85°C

Temperature Stability	Better than ±0.5% over temperatures of -40°C to +125°C
Mechanical Vibration	Withstands 0.06 inch double amplitude at 5 to 18 Hz; 1 G at 18 to 30 Hz without failure or degraded performance.
Connections	Terminal strip
Enclosure	Die cast aluminum
Weight	635 grams (1.4 lbs.)
Magnetic Pickup Frequency Range	2500 - 5000 Hz
Output Signal	PWM current to 6A at max.
Actuator Compatibility	EFC 3408326, DYNA7000

4. Setup and Installation

Proper installation of the EFC3062322 engine controller is crucial for optimal performance and safety. This unit is designed to be connected to a generator genset engine's control system. Refer to the wiring diagram provided on the unit itself and consult your engine's specific service manual for detailed connection procedures.

General Installation Steps:

1. **Mounting:** Securely mount the controller in a location protected from excessive vibration, moisture, and extreme temperatures, within the specified ambient operating temperature range. The die-cast aluminum enclosure provides protection, but additional shielding may be necessary depending on the environment.
2. **Power Connection:** Connect the unit to a 12V or 24V power source, ensuring correct polarity. The operating voltage tolerance is ±20%.
3. **Actuator Connection:** Connect the controller to a compatible actuator (e.g., EFC 3408326, DYNA7000) using the designated terminal strip connections.
4. **Magnetic Pickup Unit (MPU) Connection:** Connect the MPU to the controller. The MPU provides engine speed feedback, operating within a frequency range of 2500-5000 Hz.
5. **Remote Speed Control (Optional):** If remote speed adjustment is desired, connect the remote speed control potentiometer to the appropriate terminals.
6. **Idle/Run Speed Settings:** Configure the idle and run speed settings as required for your specific engine application.
7. **Gain and Droop Adjustments:** Initial adjustments for gain and droop should be made according to engine manufacturer recommendations or standard practice for electronic governors. These settings influence the controller's response characteristics.

Always ensure all connections are tight and secure to prevent intermittent operation or damage.

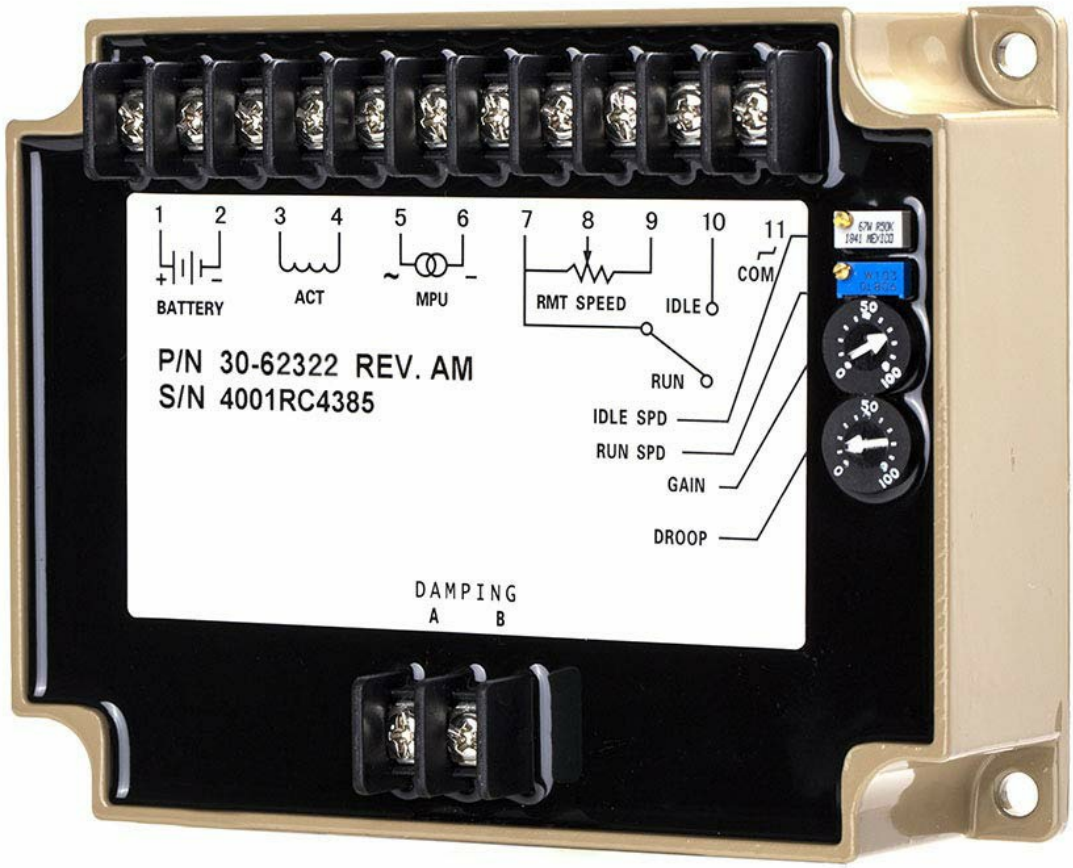


Figure 1: Top view of the EFC3062322 Engine Controller. This image displays the terminal strip for wiring connections, including battery, actuator, MPU, remote speed, idle, run, gain, and droop. Two small adjustment potentiometers are visible on the right side.

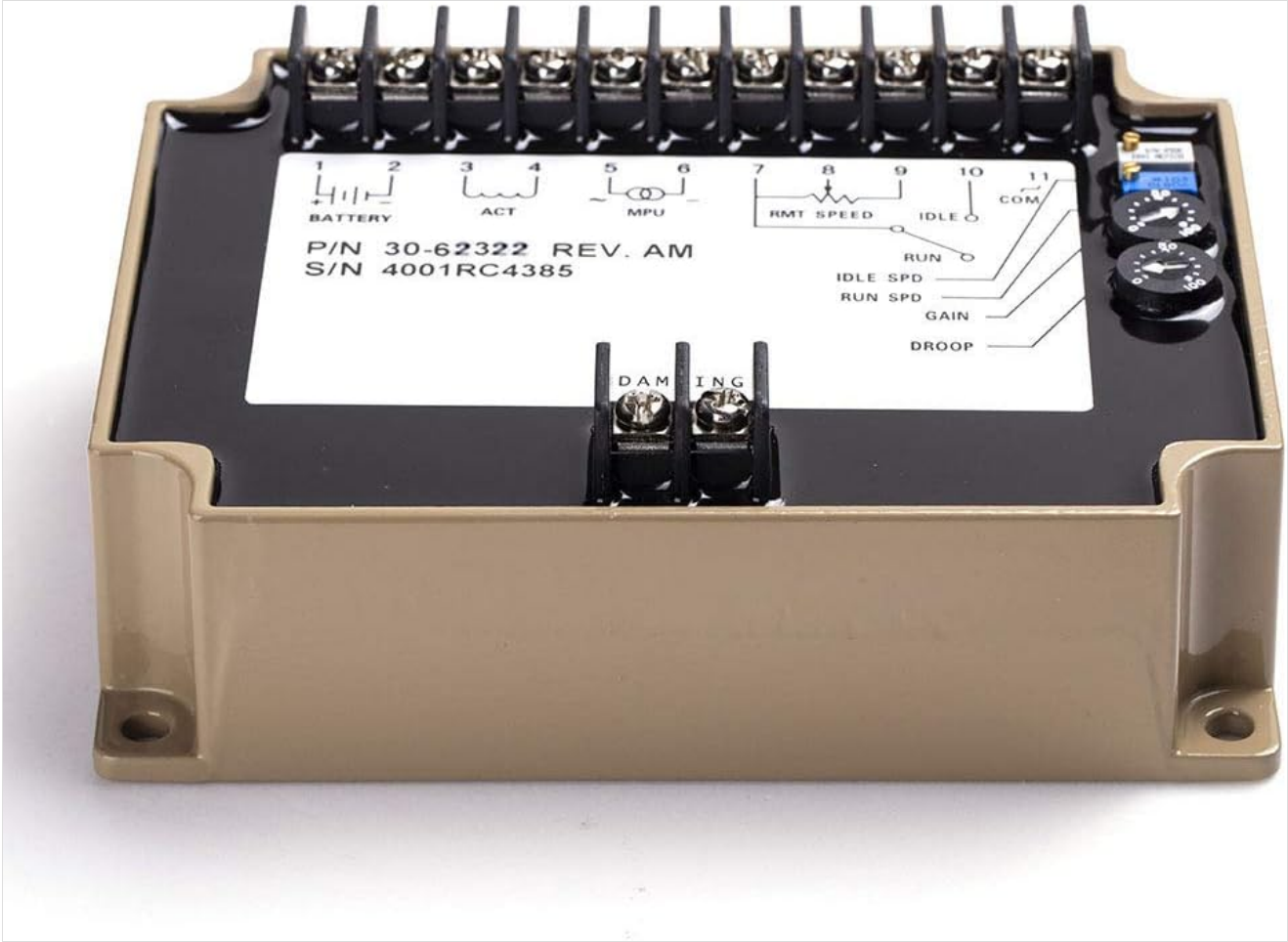


Figure 2: Angled view of the EFC3062322 Engine Controller. This perspective highlights the terminal strip and the robust die-cast aluminum enclosure.

5. Operation

Once installed and wired correctly, the EFC3062322 controller operates automatically to maintain the desired engine speed. The unit continuously monitors the engine's speed via the Magnetic Pickup Unit (MPU) and adjusts the fuel actuator to compensate for load changes, ensuring stable RPMs.

Adjustments:

- **Speed Adjustment:** The engine's operating speed can be set via the RUN SPD potentiometer on the unit or through a connected remote speed control.
- **Idle Speed:** If an idle function is utilized, the IDLE SPD potentiometer allows for setting the engine's idle speed.
- **Gain:** The GAIN potentiometer adjusts the sensitivity of the controller. Higher gain results in a faster response but can lead to instability if set too high. Adjust incrementally for optimal performance.
- **Droop:** The DROOP potentiometer controls the amount of speed reduction under load. A small amount of droop is often desirable for parallel operation of generators.
- **Damping:** The DAMPING terminals (A and B) may be used for external damping adjustments if required for specific engine characteristics to prevent oscillations.

Always make adjustments in small increments and observe engine behavior carefully to avoid over-correction or instability.

6. Maintenance

The EFC3062322 engine controller is designed for reliability and requires minimal maintenance. Regular inspections are recommended to ensure continued optimal performance.

- **Visual Inspection:** Periodically inspect the unit for any signs of physical damage, loose connections, or corrosion on the terminal strip.
- **Environmental Protection:** Ensure the mounting environment remains free from excessive moisture, dust, and extreme temperatures beyond the specified operating range.
- **Cleaning:** If necessary, gently clean the exterior of the unit with a dry, soft cloth. Do not use harsh chemicals or abrasive materials.
- **Connection Integrity:** Verify that all wiring connections to the battery, actuator, and MPU are secure and free from wear.

No user-serviceable parts are inside the sealed enclosure. Do not attempt to open the unit, as this may void the warranty and could lead to damage.

7. Troubleshooting

This section provides general guidance for common issues. For complex problems, consult a qualified technician.

Problem	Possible Cause	Solution
Engine speed unstable/oscillating	Incorrect Gain or Damping settings; loose MPU connection; MPU gap incorrect.	Adjust GAIN and DAMPING incrementally. Check MPU wiring and ensure proper gap to flywheel teeth.
Engine does not reach desired speed	Incorrect RUN SPD setting; actuator not responding; low battery voltage; MPU signal issue.	Verify RUN SPD setting. Check actuator connections and functionality. Ensure adequate battery voltage. Inspect MPU for damage or incorrect wiring.
No engine speed control	No power to controller; faulty MPU; faulty actuator; incorrect wiring.	Check power supply to the controller. Test MPU and actuator for proper operation. Review all wiring connections against the diagram.
Engine overspeeds	Actuator stuck; controller malfunction; MPU signal loss.	Immediately shut down the engine. Check actuator for mechanical issues. Verify MPU connection and signal. If issues persist, the controller may require replacement.

Always disconnect power before performing any wiring checks or component replacements.

8. Warranty and Support

The Knowtek EFC3062322 Engine Controller comes with a**1-year warranty** from the date of purchase. This warranty covers defects in materials and workmanship under normal use.

The warranty does not cover damage resulting from improper installation, misuse, neglect, unauthorized modifications, or external factors such as power surges or environmental damage.

For warranty claims or technical support, please contact Knowtek customer service through their official channels. Keep your proof of purchase for warranty validation.

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