## Graigar HGM410N

# Smartgen HGM410N Generator Controller

### Instruction Manual

Model: HGM410N | Brand: Graigar

## 1. Product Overview

The Smartgen HGM410N is a single unit automation and remote signal start/stop generator controller. It integrates digital, intelligent, and network technologies to provide comprehensive automation and monitoring for generator sets. This controller is designed for automatic start/stop operations, data measurement, alarm protection, and remote control capabilities (with an SG485 module for remote communication).

Featuring an LCD display and multi-language interface, the HGM410N offers reliable performance and ease of use for various generator applications.

## 2. Key Features

- **Integrated Technology:** Combines digitization, intelligence, and network technology for comprehensive genset automation and monitoring.
- **Automatic Start/Stop:** Controls generator operation based on remote signals (ASM - Automatic Start Module).
- **Data Measurement:** Provides real-time data monitoring for various generator parameters.
- **Alarm Protection:** Offers extensive alarm and protection functions for safe operation.
- **"Three Remote" Functionality:** Supports remote control, remote measuring, and remote communication when paired with an SG485 module.
- **User-Friendly Interface:** Equipped with an LCD display and supports multiple languages including Chinese, English, Spanish, Turkish, Russian, and French.
- **System Compatibility:** Suitable for 3-phase 4-wire, 3-phase 3-wire, single phase 2-wire, and 2-phase 3-wire systems with 120/240V voltage and 50/60Hz frequency.
- **ATS Control:** Features ATS (Auto Transfer Switch) control with fault indication and protection.

## 3. Package Contents

Upon opening the package, please verify that all components are present and undamaged. The standard package includes:

- Smartgen HGM410N Generator Controller Unit

- Mounting Hardware (screws and clamps)
- Instruction Manual




Image: The HGM410N controller, instruction manual, and mounting hardware as found inside the product packaging.

Your browser does not support the video tag.

Video: An unboxing demonstration of the Smartgen HGM410N Generator Controller, showing the contents of the package.

## 4. Product Components and Interface

The HGM410N controller features a clear front panel for operation and a rear panel for electrical connections.

### 4.1 Front Panel Overview




Image: Front view of the HGM410N controller, displaying the LCD screen, alarm indicators, and control buttons.

- **LCD Display:** Shows operational data, alarms, and menu options.
- **Alarm/Status Indicators:** LEDs for visual alerts (Alarm, Status).
- **Navigation Buttons:** Up, Down, and Set/Confirm buttons for menu navigation and parameter adjustment.
- **Operation Buttons:**
  - **Stop (Red 'O'):** Stops the generator and clears alarms.
  - **Auto (Swirl icon):** Puts the controller in automatic mode, allowing remote start/stop.
  - **C/O (Switch icon):** Controls the circuit breaker (Close/Open).
  - **Manual (Hand icon):** Allows manual control of the generator.
  - **Start (Green 'I'):** Starts the generator in Manual mode.

## 4.2 Rear Panel and Connections

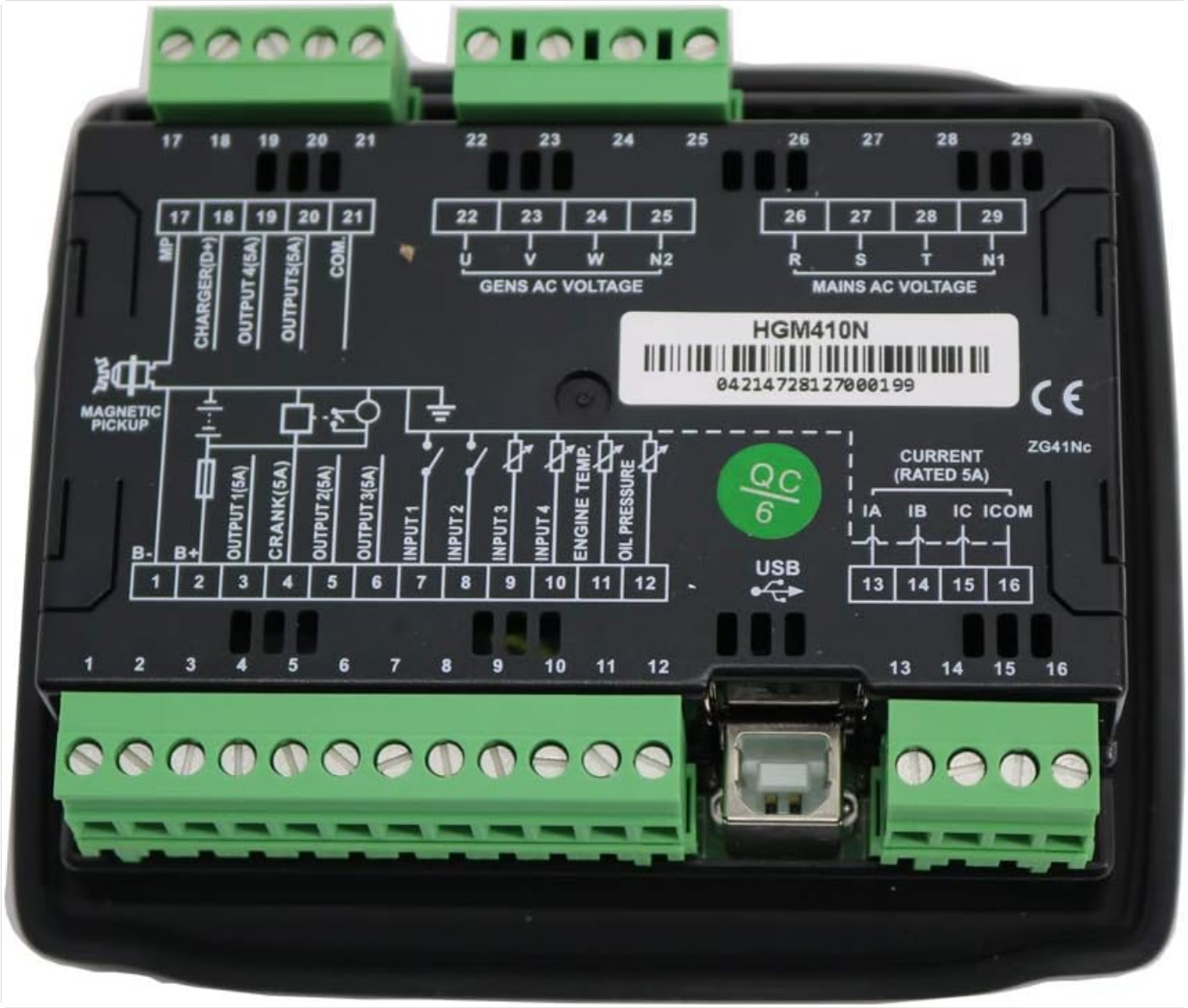



Image: Rear view of the HGM410N controller, detailing the various input/output terminals and the USB port for configuration.

The rear panel provides all necessary terminals for connecting to the generator, sensors, and power supply. Key connection points include:

- **DC Power Input:** Terminals for connecting the controller's DC power supply.
- **Magnetic Pickup Input:** For engine speed sensing.
- **Output Relays:** Configurable outputs for fuel, crank, and other control functions.
- **Digital Inputs:** For various sensor inputs (e.g., oil pressure, engine temperature).
- **AC Voltage Inputs:** For monitoring generator and mains AC voltage (3-phase 4-wire, 3-phase 3-wire, single phase 2-wire, 2-phase 3-wire).
- **Current Transformer (CT) Inputs:** For current measurement.
- **USB Port:** For PC communication and configuration using Smartgen software.

## 5. Setup and Installation

Proper installation is crucial for the safe and reliable operation of the HGM410N controller. It is recommended that installation be performed by qualified personnel.

### 5.1 Mounting

The HGM410N is designed for panel mounting. Ensure adequate space for ventilation and wiring access. Use the provided mounting hardware to secure the controller firmly in place.




Image: The HGM410N controller shown alongside its included mounting clamps and screws, used for securing the unit to a panel.

### 5.2 Wiring Connections

Refer to the detailed wiring diagram provided in the physical instruction manual for precise connections. Ensure all connections are secure and correctly terminated to prevent damage to the controller or generator.

- **Power Supply:** Connect the controller to a stable DC power source (typically 8-35V DC). Observe polarity.
- **Engine Inputs:** Connect engine sensors (oil pressure, water temperature, fuel level, etc.) to the designated digital inputs.
- **Generator AC Inputs:** Connect the generator's AC output to the controller's AC voltage and current transformer inputs. Ensure correct phase sequence and CT polarity.
- **Output Relays:** Wire the output relays to the generator's starter, fuel solenoid, and other control devices as required.
- **Communication:** If remote communication is desired, connect an SG485 module to the controller's communication port.

**Warning: Incorrect wiring can cause severe damage to the controller, generator, or pose a safety hazard. Always disconnect power before making any connections.**

## 6. Operating Instructions

The HGM410N controller offers various operating modes to suit different application needs.

### 6.1 Control Modes

- **Manual Mode:** Press the **Manual** button to enter this mode. In Manual mode, you can manually start and stop the generator using the **Start** and **Stop** buttons. This mode is typically used for testing or specific operational needs.
- **Auto Mode:** Press the **Auto** button to enter this mode. In Auto mode, the controller monitors external signals (e.g., remote start signal, mains failure) and automatically starts or stops the generator as programmed. This is the primary mode for automated operation.
- **Stop Mode:** Press the **Stop** button. This mode stops the generator and clears any active alarms. The controller will remain in a stopped state until another mode is selected.

### 6.2 Navigating the Display and Parameters

Use the **Up** and **Down** arrow buttons to scroll through different display pages, showing various generator parameters (voltage, current, frequency, engine speed, oil pressure, water temperature, etc.).

Press the **Set/Confirm** button (gear icon) to enter the parameter setting menu. Use the Up/Down buttons to navigate parameters and the Set/Confirm button to select and modify values. Refer to the detailed manual for specific parameter settings and their functions.

## 7. Maintenance

Regular maintenance ensures the longevity and optimal performance of your HGM410N controller.

- **Cleaning:** Keep the controller's front panel clean and free of dust. Use a soft, dry cloth. Do not use abrasive cleaners or solvents.
- **Connection Checks:** Periodically inspect all wiring connections for tightness and signs of corrosion. Loose connections can lead to erratic behavior or damage.
- **Environmental Conditions:** Ensure the controller is operated within its specified environmental limits (temperature, humidity) to prevent premature failure.
- **Firmware Updates:** Check the manufacturer's website for any available firmware updates that may improve performance or add features.

## 8. Troubleshooting

This section provides basic troubleshooting steps for common issues. For complex problems, consult the full instruction manual or contact technical support.

| Problem | Possible Cause | Solution |
|---|---|---|
| Controller display is blank. | No power supply; Incorrect wiring; Blown fuse. | Check DC power input connections. Verify power supply voltage. Check for blown fuses in the power line. |
| Generator does not start in Auto mode. | No remote start signal; Incorrect Auto mode settings; Engine fault. | Verify remote start signal is active. Check controller settings for Auto mode. Inspect engine for fuel, battery, or other starting issues. |
| Alarm indicator is active. | Active fault condition (e.g., low oil pressure, high temperature). | Check the LCD display for the specific alarm message. Address the underlying fault condition. Press the Stop button to clear the alarm after the fault is resolved. |
| Incorrect readings on display. | Sensor malfunction; Incorrect parameter settings (e.g., CT ratio). | Verify sensor connections and functionality. Check and correct parameter settings in the controller's configuration menu. |

## 9. Specifications

| Parameter | Value |
|---|---|
| Model Name | HGM410N |
| Brand | Graigar |
| Item Weight | 1.7 Pounds (approx. 0.77 kg) |

| Parameter | Value |
|---|---|
| Material | Plastic |
| Color | Black |
| Voltage Compatibility | 120/240 Volts |
| Frequency | 50/60 Hz |
| Special Feature | Automatic Start Stop |
| Included Components | Controller, Manual |
| Manufacturer | Graigar |
| Country of Origin | China |
| UPC | 761272052783 |

## 10. Warranty and Support

For information regarding warranty coverage, technical support, or service, please refer to the official documentation included with your product or contact Graigar customer service directly. Contact details are typically found on the manufacturer's website or in the full product manual.

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