

SmartGen HGM7120N

SmartGen HGM7120N Auto Start Generator Controller User Manual

1. INTRODUCTION

1.1 Product Overview

The SmartGen HGM7120N series power station automation controllers integrate digitization, intelligentization, and network technology. These controllers are designed for genset automation and monitor control systems of single diesel units, enabling remote start/stop, data measurement, and alarm protection functions. The HGM7120N features an LCD display with optional language interfaces (e.g., Chinese, English), ensuring reliability and ease of use.

Utilizing 32-bit micro-processor technology, the HGM7120N provides precise parameter measurement, fixed value adjustment, time setting, and set value adjustment. Most parameters can be configured directly from the front panel, while all parameters can be adjusted and monitored via PC software through USB/RS485 ports. Its compact structure, simple connections, and high reliability make it suitable for various genset control automation systems.



Figure 1: Front view of the HGM7120N Controller.

1.2 Key Features

- **Advanced Microprocessor:** Employs a 32-bit ARM microcomputer for enhanced hardware integration and stability.
- **User Interface:** Features a 132x64 LCD with backlight and selectable language interface (Chinese, English, etc.) for convenient commissioning.
- **Durable Screen:** Hard-screen acrylic material protects the display, offering excellent wear and scratch resistance.
- **Environmental Resilience:** Silicone panel and pushbuttons ensure operation in extreme temperature environments.
- **Communication:** RS485 interface supports "three remote functions" (remote control, remote measuring, and remote communication) via MODBUS protocol.
- **Automatic Mains Failure (AMF):** The HGM7120N specifically supports AMF functionality, ideal for automatic systems integrating generators and mains power.
- **Data Logging:** Records total running accumulation up to 65535 hours.
- **Flexible Start Conditions:** Multiple crank disconnect conditions (speed, oil pressure, generator frequency) are optional.
- **Maintenance Reminder:** User-definable maintenance function and time due.
- **Parameter Configuration:** Most parameters can be adjusted from the front panel; all parameters are configurable via PC software through USB/RS485/ETHERNET port.
- **Event Recording:** One minute before genset fault shutdown, the controller can record up to five pieces of data including mains voltage, frequency, generator voltage, frequency, current, temperature, oil pressure, fuel level, and speed.
- **Waterproof Design:** IP65 security level achieved with a rubber seal between the controller enclosure and panel foil.

2. SETUP AND INSTALLATION

2.1 Physical Installation

The HGM7120N controller is designed for embedded installation, featuring a compact structure and modular design with pluggable connection terminals for simple wiring. Ensure the panel cutout dimensions are 186mm x 141mm for proper fit.

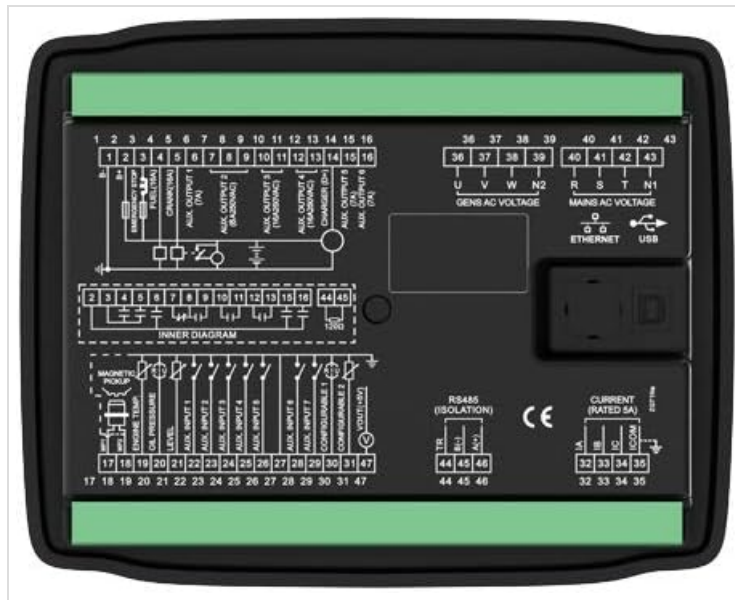


Figure 2: Rear view with connection terminals.

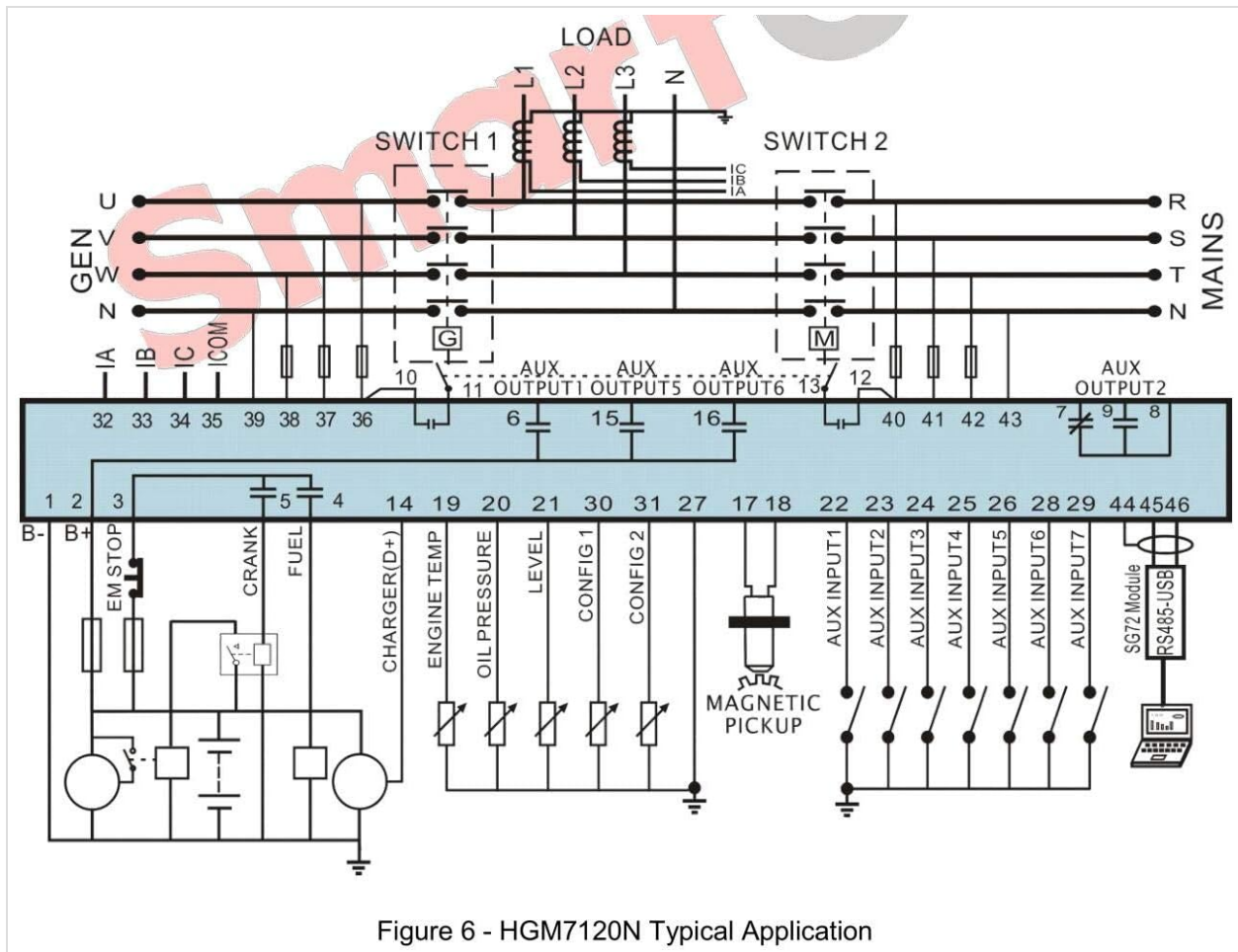


Figure 6 - HGM7120N Typical Application

Figure 3: HGM7120N Typical Application Wiring Diagram.

Refer to the detailed wiring diagram (Figure 3) for correct connection of load, mains, generator, and all input/output signals. Ensure all connections are secure and comply with local electrical codes.

2.2 Initial Configuration

Upon initial power-up, the controller may require configuration of basic parameters. Most parameters can be adjusted directly from the front panel using the navigation buttons. For comprehensive setup and advanced adjustments, connect the controller to a PC via the USB or RS485 port and use the provided PC software. This allows for detailed configuration of settings such as generator type, protection thresholds, and

communication parameters.

3. OPERATION

3.1 Control Panel Overview



The HGM7120N features a clear LCD display and intuitive pushbuttons for easy operation. The panel includes indicators for alarm and status, as well as dedicated buttons for various functions and navigation.



Figure 4: Angled view of the HGM7120N Controller.

3.2 Key Functions

The following table describes the primary functions of the control panel buttons:

Icon	Function	Description
	Stop/Reset	Stops the running generator in Auto/Manual mode. In stop mode, pressing this button resets alarms. Pressing and holding for 3 seconds tests indicator lights. Press again during stopping to immediately stop the generator.
	Start	Under manual mode, this button initiates generator start.
	Manual	Sets the module into manual mode.
	Auto	Sets the module into auto mode.
	C/O (Close/Open)	For HGM7120N only: Pressing this key controls the breaker close or open in C/O interface under manual mode.
	Set/Confirm	Enters the Main Menu. In parameter status, shifts cursor or confirms setting value.
	Up/Increase	Scrolls the screen up; shifts cursor up or increases the set value in parameter setting menu.
	Down/Decrease	Scrolls the screen down; shifts cursor down or decreases the set value in parameter setting menu.

Icon	Function	Description
	Homepage/Return	Returns to homepage if pressed in main screen; returns to previous page in parameter setting page; holding for 3 seconds resets trip alarm.

Note: Press any key to mute alarms in main screen.

4. TECHNICAL SPECIFICATIONS

The following table details the technical parameters of the SmartGen HGM7120N controller:

Item	Contents
Operating Voltage	DC8.0V to DC35.0V, Continuous Power Supply
Power Consumption	<4W (standby ≤2W)
Alternator Volt Input Range	15V AC - 360 V AC (ph-n)
3Phase 4Wire	30V AC - 620 V AC (ph-ph)
Single Phase 2Wire	15V AC - 360 V AC (ph-n)
2Phase 3Wire	15V AC - 360 V AC (ph-n)
Alternator Frequency	50 Hz/60Hz
Speed Sensor Voltage	1.0V to 24.0V (RMS)
Speed Sensor Frequency	10,000 Hz (max.)
Starter Relay Output	16 A 28V DC at supply output
Fuel Relay Output	16 A 28V DC at supply output
Programmable Relay Output 1	7A 28V DC power supply output
Programmable Relay Output 2	8A 250V AC volt free output
Programmable Relay Output 3	16A 250V AC volt free output
Programmable Relay Output 4	16A 250V AC volt free output

Item	Contents
Programmable Relay Output 5	7A 28V DC power supply output
Programmable Relay Output 6	7A 28V DC power supply output
Case Dimension	209mm x 166mm x 45mm
Panel Cutout	186mm x 141mm
CT Secondary Current	5A rated
Working Conditions	Temperature: (-25~+70)°C; Humidity: (20~93)%
Storage Condition	Temperature: (-25~+70)°C
Protection Level	IP65 Front panel
Insulating Intensity	Apply AC2.2kV voltage between high voltage terminal and low voltage terminal; The leakage current is not more than 3mA within 1min.
Weight	0.6kg
Product Dimensions	8.23 x 6.54 x 1.77 inches
Item Weight	1.32 pounds
Display Type	LCD

5. MAINTENANCE

The HGM7120N controller is designed for durability and minimal maintenance. Key aspects include:

- **Maintenance Function:** The controller includes a user-definable maintenance function, allowing you to set maintenance intervals and receive reminders.
- **Screen Protection:** The hard-screen acrylic material provides excellent wear and scratch resistance, contributing to the longevity of the display.
- **Environmental Durability:** The silicone panel and pushbuttons are designed to withstand extreme temperature environments, reducing the need for frequent replacement.
- **Waterproof Design:** An IP65 security level, achieved by a rubber seal between the controller enclosure and panel foil, protects against dust and water ingress, enhancing reliability in various conditions.
- **Cleaning:** Periodically clean the controller's surface with a soft, dry cloth. Avoid using abrasive cleaners or solvents.

6. TROUBLESHOOTING

In the event of an issue, the HGM7120N controller provides diagnostic capabilities to assist with troubleshooting:

- **Alarm Indicators:** The control panel includes alarm indicators to signal operational issues. Refer to the detailed user manual for specific alarm codes and their meanings.
- **Event Logging:** The controller can record up to five pieces of data (e.g., mains voltage, frequency, generator voltage, frequency, current, temperature, oil pressure, fuel level, speed) one minute before a genset fault shutdown. This data is invaluable for diagnosing the cause of a fault.
- **Parameter Review:** Verify all configured parameters using the front panel or PC software to ensure they match the system requirements. Incorrect settings can lead to operational problems.
- **Connection Check:** Ensure all wiring connections are secure and correctly terminated according to the wiring diagram (Figure 3). Loose or incorrect connections are a common source of issues.
- **Power Supply:** Confirm that the controller is receiving a stable power supply within the specified operating voltage range (DC8.0V to DC35.0V).



For persistent issues or complex diagnostics, it is recommended to consult the full SmartGen HGM7120N user manual or contact SmartGen technical support.





7. WARRANTY AND SUPPORT

Specific warranty terms and conditions for the SmartGen HGM7120N Auto Start Generator Controller are not provided in this document. For detailed warranty information, including coverage duration and claims procedures, please refer to the product packaging, the official SmartGen website, or contact your authorized SmartGen dealer or distributor.

For technical support, troubleshooting assistance, or inquiries regarding spare parts, please contact SmartGen customer service through their official channels. Providing your product model (HGM7120N) and any relevant purchase details will help expedite your support request.

Related Documents - HGM7120N

 <p>SmartGen SGUE485 COMMUNICATION INTERFACE CONVERSION MODULE USER MANUAL</p>	<p>SmartGen SGUE485 Communication Interface Conversion Module User Manual</p> <p>User manual for the SmartGen SGUE485, a communication interface conversion module that converts USB to isolated RS485. Details features, technical parameters, terminal descriptions, applications, and installation for generator control systems.</p>
 <p>SmartGen HGM6100N SERIES GENSET CONTROLLER USER MANUAL</p>	<p>SmartGen HGM6100N Series Genset Controller User Manual</p> <p>Comprehensive user manual for the SmartGen HGM6100N series genset controllers, detailing features, operation, specifications, and connections for automatic control and monitoring of single gensets.</p>

	<p>SmartGen HGM6100LT Series Genset Controller User Manual</p> <p>User manual for SmartGen HGM6100LT series genset controllers (HGM6110LT/HGM6120LT), detailing features, operation, specifications, and troubleshooting for automatic control and monitoring of generators in extreme environments.</p>
	<p>SmartGen HGM6100N Series Genset Controller User Manual</p> <p>Comprehensive user manual for SmartGen HGM6100N series genset controllers, detailing features, operation, specifications, installation, and troubleshooting for automatic generator control systems.</p>
	<p>SmartGen HGM9420N, HGM9420LT Genset Controller User Manual</p> <p>Comprehensive user manual for the SmartGen HGM9420N and HGM9420LT Genset Controllers. Learn about features, specifications, operation, wiring, protections, and troubleshooting for advanced genset automation, AMF, and synchronous transfer applications.</p>
	<p>SmartGen MGC120 Genset Controller User Manual Generator Automation</p> <p>Comprehensive user manual for the SmartGen MGC120 Petrol Genset Controller, detailing operation, specifications, installation, and troubleshooting for generator automation and monitoring.</p>