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SMARTGEN HMC9000A

SMARTGEN HMC9000A Marine Engine Controller User Manual

Model: HMC9000A

1. INTRODUCTION

The SMARTGEN HMC9000A Marine Engine Controller is an advanced digital, intelligent, and networked solution designed for genset automation and monitoring control systems. It enables automatic start/stop, data measurement, alarm protection, and "three remote" functions: remote control, remote measuring, and remote communication. Featuring a 4.3-inch TFT-LCD display with optional Chinese/English interfaces, the HMC9000A is reliable and user-friendly. Its powerful 32-bit ARM processor ensures precise parameter measurement, fixed value adjustment, and time setting, making it suitable for various diesel engine automation systems, including marine emergency units, main propulsion units, main generator units, and pumping units.

2. SAFETY INFORMATION

Please read and understand all safety instructions before installing, operating, or maintaining the HMC9000A controller. Failure to follow these instructions may result in personal injury, equipment damage, or improper operation.

- Ensure all power sources are disconnected before installation or maintenance.
- Installation and wiring should only be performed by qualified personnel.
- Protect the controller from moisture, extreme temperatures, and corrosive environments.
- Do not open the controller casing unless specifically instructed by the manufacturer.
- Use appropriate personal protective equipment (PPE) during installation and servicing.

3. PRODUCT OVERVIEW

The HMC9000A controller is built around a 32-bit ARM micro-processor, providing high performance and reliability. It features a clear 4.3-inch TFT-LCD display for easy monitoring and interaction.



Figure 1: Front view of the SMARTGEN HMC9000A Marine Engine Controller, showing the 4.3-inch TFT-LCD display and control buttons.

Key Features:

- **32-bit ARM Micro-processor:** For precision parameter measurement and control.
- **4.3-inch TFT-LCD Display:** With backlight and optional Chinese/English interface.
- **Automatic Start/Stop:** For genset automation.
- **Data Measurement:** Comprehensive monitoring of engine parameters.
- **Alarm Protection:** Integrated system for engine safety.
- **"Three Remote" Functions:** Remote control, remote measuring, and remote communication.
- **SAE J1939 Interface:** For communication with ECU engines, reducing wiring complexity.
- **RS485 Interface:** For communication and module expansion.

4. SETUP AND INSTALLATION

The HMC9000A is designed for compact installation and simple connections. Follow these guidelines for proper setup:

4.1 Mounting

Mount the controller in a secure, vibration-free location, protected from direct sunlight and excessive heat. Ensure adequate ventilation around the unit.

4.2 Wiring

All wiring should comply with local electrical codes and marine standards. Refer to the detailed wiring diagrams provided in the separate installation guide for specific connections.

- **Power Supply:** Connect the controller to a stable DC power source within the specified voltage range.
- **Engine Sensors:** Connect engine sensors (e.g., oil pressure, water temperature, engine speed) to the

designated input terminals. For ECU engines, the SAE J1939 interface can transmit these parameters, potentially eliminating the need for additional sensors and complex wiring.

- **Actuators:** Connect start/stop solenoids, fuel solenoids, and other actuators to the appropriate output terminals.
- **Communication Interfaces:**
 - **SAE J1939:** Connect to compatible ECU engines for data exchange.
 - **RS485:** Use for PC communication, remote control modules, or other module expansions.

Ensure all connections are secure and properly insulated to prevent short circuits or interference.

5. OPERATING INSTRUCTIONS

The HMC9000A controller is operated via its push-button interface and 4.3-inch LCD display.

5.1 Powering On/Off

To power on the controller, ensure the DC power supply is connected and switched on. The controller will perform a self-test and display the main interface. To power off, disconnect the DC power supply.

5.2 Navigating the Interface

Use the push-buttons on the front panel to navigate through menus, view parameters, and adjust settings. The LCD display provides clear visual feedback. The interface supports both Chinese and English languages, which can be selected in the system settings.

5.3 Automatic Start/Stop

The controller can be configured for automatic engine start and stop based on predefined conditions or remote commands. Refer to the system settings for configuring auto-start/stop parameters, including crank attempts, cool-down times, and protection delays.

5.4 Data Monitoring

The HMC9000A continuously monitors various engine parameters, including:

- Engine Speed (RPM)
- Water Temperature
- Oil Pressure
- Oil Temperature
- Battery Voltage
- Operating Hours
- And other relevant parameters depending on connected sensors and ECU.

These values are displayed on the LCD and can be accessed through the monitoring menus.

5.5 Alarm Protection

The controller provides comprehensive alarm protection for the engine. When an abnormal condition is detected (e.g., low oil pressure, high water temperature), the controller will trigger an alarm, display the fault on the LCD, and may initiate an automatic shutdown sequence to protect the engine. Alarm thresholds can be configured in the settings.

5.6 Remote Functions

The HMC9000A supports "three remote" functions:

- **Remote Control:** Allows remote start, stop, and other operational commands.
- **Remote Measuring:** Enables remote viewing of all monitored engine parameters.
- **Remote Communication:** Facilitates data exchange and configuration from a remote location, typically via the RS485 interface connected to a PC or a dedicated remote control module.

Configuration for remote functions is done through the communication interface or specific remote module settings.

5.7 Parameter Configuration

Most operational parameters, such as fixed values, time settings, and set values, can be configured directly from the front panel using the push-buttons. For more advanced configuration or bulk parameter adjustments, a PC can be connected via the communication interface (e.g., RS485) using SMARTGEN's proprietary software.

6. MAINTENANCE

Regular maintenance ensures the longevity and reliable operation of your HMC9000A controller.

- **Cleaning:** Keep the controller's display and casing clean using a soft, dry cloth. Do not use abrasive cleaners or solvents.
- **Connections:** Periodically check all wiring connections for tightness and signs of corrosion. Re-tighten or clean as necessary.
- **Software Updates:** Check the SMARTGEN website for any available firmware updates to ensure optimal performance and access to new features.
- **Environmental Check:** Ensure the operating environment remains within specified temperature and humidity ranges.

For any internal maintenance or repairs, contact SMARTGEN authorized service personnel.

7. TROUBLESHOOTING

This section provides solutions to common issues you might encounter with the HMC9000A controller.

Problem	Possible Cause	Solution
Controller does not power on.	No power supply; incorrect wiring; blown fuse.	Check DC power supply connection and voltage. Verify wiring. Check and replace fuses if necessary.
Engine fails to start automatically.	Auto-start function disabled; low fuel; engine fault; incorrect parameters.	Ensure auto-start is enabled. Check fuel level. Investigate engine fault codes. Verify start parameters.
Incorrect sensor readings.	Faulty sensor; loose connection; incorrect sensor type configured.	Check sensor wiring. Test sensor functionality. Verify sensor type in controller settings.
Communication error (J1939/RS485).	Incorrect wiring; incompatible device; software issue.	Check communication wiring (A/B lines, termination resistors). Ensure connected device is compatible. Update controller firmware or PC software.

If the problem persists after attempting these solutions, please contact SMARTGEN technical support.

8. SPECIFICATIONS

- **Model:** HMC9000A
- **Processor:** 32-bit ARM Micro-processor
- **Display:** 4.3-inch TFT-LCD with backlight
- **Interface Languages:** Chinese, English (selectable)
- **Communication Interfaces:** RS485, SAE J1939
- **Key Functions:** Automatic Start/Stop, Data Measurement, Alarm Protection, Remote Control, Remote Measuring, Remote Communication
- **Parameter Configuration:** Via front panel push-buttons or PC software
- **Manufacturer:** SMARTGEN
- **Item Weight:** 1.98 pounds (approximately 0.9 kg)

9. WARRANTY AND SUPPORT

For warranty information, please refer to the warranty card included with your product or visit the official SMARTGEN website. Technical support is available through SMARTGEN's customer service channels. When contacting support, please have your product model (HMC9000A) and any relevant error messages or symptoms ready.

SMARTGEN Official Website: www.smartgen.cn

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This manual is subject to change without notice.