SMARTGEN HEM8500

SMARTGEN HEM8500 Engine Controller User Manual

Model: HEM8500

1. Introduction

The SMARTGEN HEM8500 Engine CAN Monitoring Controller is an advanced instrument designed for intelligent engine management. It integrates microelectronic, electric measurement, digital-analog hybrid signal processing, CAN communication, and engine electronic control techniques. This controller is ideal for engineering vehicles requiring robust CAN communication and electric device control, offering high integration and powerful CAN gateway functions. It can serve as a comprehensive replacement for traditional Murphy displays.

2. Key Features

- **Advanced Microprocessor:** Equipped with a 32-bit ARM microprocessor for efficient performance.
- **User Interface:** Features a 4.3-inch LCD display with touch buttons. Supports both English and Chinese languages.
- **Dual CANBUS Ports:** Includes two CANBUS ports; one for connecting to the engine ECU and another for standby use.
- **RS485 Communication:** An RS485 communication port allows data exchange via MODBUS protocol, enabling PC monitoring software integration.
- **Analog Output:** Provides a 4-20mA output for connecting to speed tachometers and torque indicators.
- **Real-time Data Monitoring:** Through the CANBUS port, the controller can read real-time engine data such as speed, torque, water temperature, oil pressure, oil temperature, total fuel consumption, and instant fuel consumption.

Figure 2.1: Front panel of the HEM8500 controller, showing the LCD screen, power button, E-stop, throttle knob, and navigation buttons.

3. Setup and Installation

3.1 Physical Installation

The HEM8500 controller is designed for panel mounting. Ensure adequate space for ventilation and access to wiring terminals. Secure the unit using appropriate fasteners through the mounting holes provided on the bezel.

Figure 3.1: Side profile of the HEM8500, illustrating its compact design for panel integration.

3.2 Wiring Connections

All electrical connections are made via the terminals on the rear of the unit. Refer to the wiring diagram for precise connections. Ensure all power connections are made with the system de-energized to prevent damage.

- **Power Supply:** Connect the main power supply to the designated terminals. Observe correct polarity.
- **CANBUS:** Connect the primary CANBUS port to the engine ECU. The second CANBUS port can be used for additional CAN devices or as a backup.
- **RS485:** Connect the RS485 port for communication with a PC or other MODBUS-compatible devices.
- **Inputs/Outputs:** Connect various sensors (e.g., fuel level, water temperature, oil pressure) to the analog inputs and control outputs as required by your application.

Figure 3.2: Rear panel of the HEM8500, detailing the various input/output terminals, CANBUS ports, and RS485 interface.

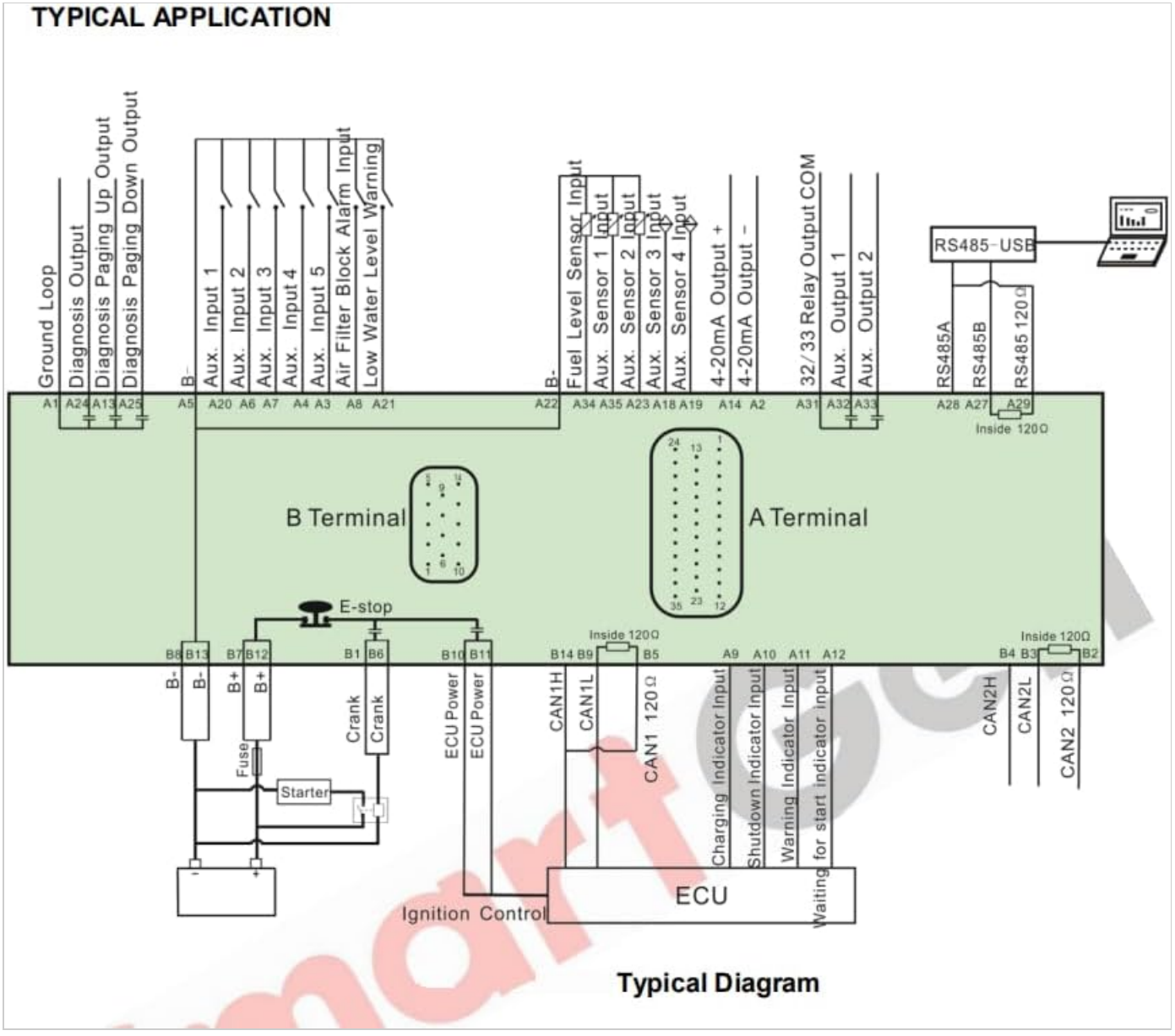

Figure 3.3: Comprehensive wiring diagram for a typical HEM8500 application, showing connections for power, CAN, RS485, and various engine sensors and controls.

4. Operating Instructions

4.1 Powering On/Off

To power on the controller, press the **Power** button located on the bottom left of the front panel. To power off, press and hold the same button until the display shuts down.

4.2 Emergency Stop (E-stop)

The red **E-stop** button is for immediate engine shutdown in emergency situations. Pressing this button will halt engine operation. To reset, twist the button clockwise to release it.

Figure 4.1: Angled view of the HEM8500, showing the prominent E-stop button and the manual throttle control.

4.3 Engine Start/Stop

- **Start:** Press the **Start** button (green) to initiate the engine starting sequence.
- **Stop:** Press the **Stop** button (red, next to power) to stop the engine under normal operating conditions.

4.4 Manual Throttle Control

The rotary knob labeled **Throttle** allows for manual adjustment of engine speed. Rotate clockwise to increase throttle and counter-clockwise to decrease. Ensure the controller is in manual mode for this function to be active.

4.5 Display Navigation and Diagnostics

Use the up/down arrow buttons to navigate through different display screens and menus. The **Diag** button provides access to diagnostic information and fault codes from the engine ECU.

5. Maintenance

Regular maintenance ensures the longevity and reliable operation of your HEM8500 controller.

- **Cleaning:** Periodically clean the display and housing with a soft, dry cloth. Avoid abrasive cleaners or solvents.
- **Connection Checks:** Annually inspect all wiring connections for tightness and signs of corrosion. Ensure all cables are securely fastened.
- **Software Updates:** Check the SMARTGEN-America website for any available firmware updates for improved performance or new features.

6. Troubleshooting

If you encounter issues with your HEM8500 controller, consider the following steps:

- **No Power:** Verify the power supply connections and check for blown fuses in the power circuit.
- **Display Not Responding:** Ensure the unit is powered on. If the screen is blank, try cycling the power.
- **Engine Not Starting:** Check the E-stop button is released. Verify all engine safety interlocks and fuel supply. Consult the diagnostic screen for error codes.
- **CANBUS Communication Errors:** Inspect CANBUS wiring for proper termination and continuity. Ensure the engine ECU is powered and functioning correctly.
- **Incorrect Sensor Readings:** Check sensor wiring and calibration. Ensure the correct sensor type is configured in the controller settings (if applicable).

For persistent issues, refer to the detailed troubleshooting guide available on the SMARTGEN-America website or contact technical support.

7. Technical Specifications

Specification	Value
Brand	SMARTGEN
Model	HEM8500
Display	4.3 inch LCD
Processor	32-bit ARM Microprocessor
CANBUS Ports	2
Communication Interface	RS485 (MODBUS protocol)
Analog Output	4-20mA
Material	Copper
Item Weight	0.9 Kilograms (1.98 pounds)

8. Warranty and Support

For warranty information, please refer to the documentation provided with your purchase or contact the seller, SmartGen-America, directly. Technical support and additional resources, including detailed manuals and software downloads, may be available on the official SMARTGEN-America website.
Contact Information: Please refer to your purchase invoice or the SMARTGEN-America website for the most current contact details for support.

Related Documents - HEM8500

	[SmartGen SG485-2CAN: User Manual for Communication Interface Conversion Module] User manual for the SmartGen SG485-2CAN, a communication interface conversion module that converts RS485 to CANBUS interfaces. Details specifications, wiring, electrical connections, and dimensions.
	[SmartGen HEM8500 Engine CAN Monitoring Controller User Manual] User manual for the SmartGen HEM8500 Engine CAN Monitoring Controller, detailing its features, specifications, operation, installation, and troubleshooting for engineering vehicles and industrial engines.
	[SmartGen HGM9510N/HGM9530N Paralleled Genset Controller User Manual] Comprehensive user manual for SmartGen HGM9510N and HGM9530N paralleled genset controllers. Learn about features, operation, specifications, wiring, protection, and commissioning for efficient generator synchronization and control.
	[SmartGen SGUE485 Communication Interface Conversion Module User Manual] 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.
	[SmartGen SG485-3 Interface Expansion Module User Manual] User manual for the SmartGen SG485-3 Interface Expansion Module. This document provides detailed specifications, wiring diagrams, connection examples, and installation guidelines for the RS485 communication module.
	[SmartGen HGM7000 Series Genset Controller User Manual] This user manual provides comprehensive information on the SmartGen HGM7000 series genset controllers, covering operation, specifications, installation, and troubleshooting for automated genset control systems.