Logicbus Z-SG

Logicbus Z-SG Strain Gauge Input Module User Manual

Model: Z-SG

1. INTRODUCTION

The Logicbus Z-SG is a versatile conditioner and isolator designed for strain gauge applications. It features a single input compatible with 4 or 6-wire load cells, providing analog voltage or current output, and supports Modbus RTU communication. This module is ideal for industrial measurement and control systems requiring precise signal conditioning.
Key features include:

- 1 input for 4 or 6-wire load cells with a configurable range of 1 to 64 mV/V.

- 1 analog output, configurable for current (0/4 to 20 mA) or voltage (0 to 5/10 Vdc).

- High 24-bit resolution for accurate measurements.

- Modbus RTU communication for integration into control systems (requires Z-PC-DINAL2-17.5).

- Flexible power supply options: 10 to 40 Vdc or 19 to 28 Vac.

Figure 1: Front view of the Logicbus Z-SG Strain Gauge Input Module, showing terminal blocks and status indicators.

2. SETUP AND INSTALLATION

Proper installation is crucial for the reliable operation of the Z-SG module. Ensure all connections are secure and follow local electrical codes.

2.1 Power Supply Connection

The Z-SG module accepts a wide range of power inputs. Connect the power supply to the designated terminals:

- **DC Power:** 10 to 40 Vdc
- **AC Power:** 19 to 28 Vac

Ensure the power source meets the specified voltage and current requirements to prevent damage to the module.

2.2 Strain Gauge Input Wiring

Connect your 4-wire or 6-wire load cell to the strain gauge input terminals. Refer to the module's labeling for correct pin assignments for excitation, signal, and sense lines.

Figure 2: Top view of the Z-SG module, illustrating the wiring terminals for power, strain gauge input, and communication.

2.3 Analog Output Wiring

Connect the analog output to your receiving device (e.g., PLC, data acquisition system). The output can be configured for either current or voltage:

- **Current Output:** 0/4 to 20 mA
- **Voltage Output:** 0 to 5 Vdc or 0 to 10 Vdc

2.4 Modbus RTU Communication

For Modbus RTU communication, connect the module to a compatible RS-485 network. Note that a Z-PC-DINAL2-17.5 module may be required for proper integration. Refer to the Modbus communication protocol documentation for addressing and register details.

2.5 Configuration

The input range (1 to 64 mV/V) and output type (current/voltage) are configurable via the RS-232 port using free software provided by the manufacturer. Connect the module to a computer via RS-232 and use the software to set the desired parameters for your application.
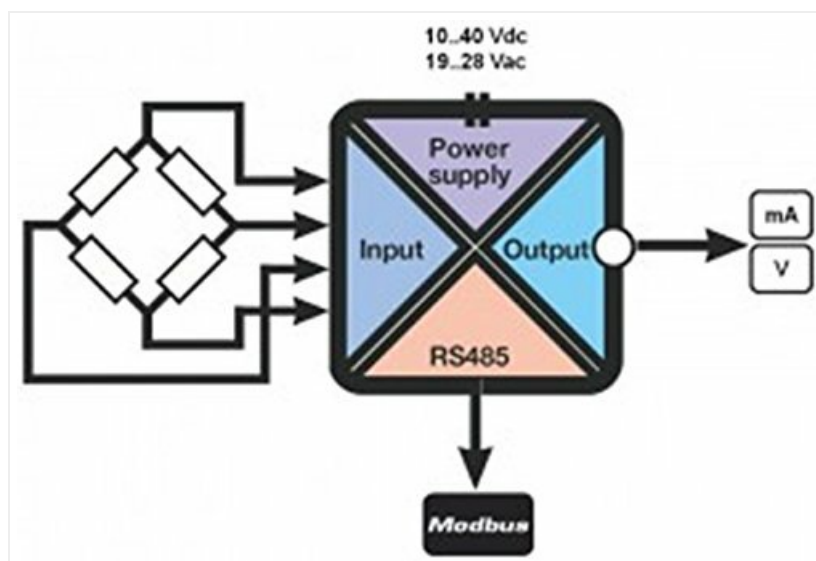

Figure 3: Functional block diagram illustrating the internal components and signal flow of the Z-SG module, including power supply, input, output, and Modbus communication.

3. OPERATION

Once properly installed and configured, the Z-SG module will convert the strain gauge signal into the specified analog output or transmit data via Modbus RTU.

3.1 Signal Conversion

The module continuously monitors the strain gauge input and converts the mV/V signal into a proportional analog current or voltage output, as configured. This output can then be read by a control system to monitor load or force.

3.2 Modbus Communication

For systems utilizing Modbus RTU, the module acts as a slave device, providing digital access to measured values and configuration parameters. Ensure your Modbus master device is correctly configured to communicate with the Z-SG module's address and baud rate.

Figure 4: Example application diagram demonstrating the Z-SG module integrated into a weighing system, connecting load cells to a control unit via Modbus RTU and providing an analog output to a display.

4. MAINTENANCE

The Logicbus Z-SG module is designed for long-term, reliable operation with minimal maintenance. However, periodic checks can help ensure optimal performance.

- **Visual Inspection:** Periodically inspect the module and its connections for any signs of physical damage, loose wiring, or corrosion.
- **Environmental Conditions:** Ensure the operating environment remains within the specified temperature and humidity ranges to prevent premature failure.
- **Cleaning:** If necessary, gently clean the exterior of the module with a soft, dry cloth. Do not use harsh chemicals or abrasive materials.
- **Recalibration:** Depending on the application and required accuracy, periodic recalibration of the strain gauge system, including the Z-SG module, may be necessary. Refer to your system's calibration

procedures.

5. TROUBLESHOOTING

If you encounter issues with your Z-SG module, consider the following troubleshooting steps:

- **No Power:** Check the power supply connections and ensure the voltage is within the specified range (10-40 Vdc or 19-28 Vac). Verify that the power indicator LED on the module is illuminated.
- **Incorrect Output:**
  - Verify the strain gauge wiring for correct polarity and secure connections.
  - Confirm the strain gauge is functioning correctly.
  - Check the module's configuration via the RS-232 software to ensure the input range and output type are set correctly for your application.
  - Ensure the receiving device (e.g., PLC) is correctly configured to read the analog output signal (current or voltage).
- **Modbus Communication Issues:**
  - Verify RS-485 wiring, including termination resistors if necessary.
  - Check the Modbus address and baud rate settings in both the Z-SG module (via configuration software) and the Modbus master device.
  - Ensure the Z-PC-DINAL2-17.5 module, if used, is correctly installed and functioning.
  - Observe the RX/TX indicator LEDs on the module for data transmission activity.
- **Error Indicator (ERR LED):** If the ERR LED is illuminated, consult the detailed product manual or contact technical support for specific error code interpretations.

Figure 5: Side view of the Z-SG module, highlighting the status LEDs (ERR, PWR, RX, TX, COM) which provide visual feedback on the module's operational status and communication activity.

6. SPECIFICATIONS

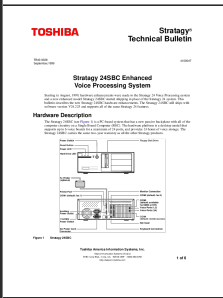| Feature	Value

Feature	Value
Model Number	Z-SG
Input Type	1 input for 4 or 6-wire load cells
Input Range	1 ~ 64 mV/V (configurable)
Analog Output	Configurable: 0/4 ~ 20 mA or 0 ~ 5/10 Vdc
Resolution	24-bit
Communication	Modbus RTU (requires Z-PC-DINAL2-17.5 for full functionality)
Power Supply	10 ~ 40 Vdc or 19 ~ 28 Vac
Product Dimensions	6.89 x 3.94 x 4.41 inches
Weight	4.94 ounces
Manufacturer	Seneca (Brand: Logicbus)

7. WARRANTY AND SUPPORT

For information regarding product warranty, technical support, or additional documentation, please contact Logicbus Inc. or visit their official website.

You can find more information and contact details on the Logicbus Store on Amazon.

Related Documents - Z-SG

USER MANUAL Z-4AI SENECA SENECA S.r.l. Via Austria 26 – 35127 – Z.I. - PADOVA (PD) - ITALY Tel. +39 049.8705355 – 8705359 Fax +39 049.8706287 www.seneca.it CE ORIGINAL INSTRUCTIONS	SENECA Z-4AI User Manual - Industrial Signal Acquisition Module Comprehensive user manual for the SENECA Z-4AI module, detailing its features, specifications, input connections, configuration via DIP-switches and software, and RS485 register table for industrial signal acquisition and conditioning.
	Self-Guard Portable DVR (CCTV) System Overview Comprehensive overview of the Self-Guard portable DVR (CCTV) system by STARNEX, detailing its features, specifications, applications, and available models (SG-110, SG-210, SG-310, SG-1000, SG-2000, SG-3000) and accessories.

[Hillstone A-Series Next-Generation Firewall: Features, Specifications, and Capabilities](#)
Detailed overview of the Hillstone A-Series Next-Generation Firewall, covering its advanced threat detection, high-performance hardware, smart policy operation, comprehensive features, and detailed model specifications.

[SENECA Z-4AI User Manual: Industrial Input Module](#)
User manual for the SENECA Z-4AI, a 4-channel industrial input module for acquiring single-ended voltage or current signals, featuring Modbus RTU communication, configurable inputs, and detailed technical specifications.

[SENECA Z-8AI Analog I/O Module Installation Manual](#)
This document provides installation instructions, technical specifications, and electrical connection details for the SENECA Z-8AI Analog Input/Output module. It covers safety warnings, configuration settings, and operational guidelines for industrial applications.

[Toshiba Stratagy 24SBC Enhanced Voice Processing System Technical Bulletin](#)
This technical bulletin describes the hardware enhancements of the new Stratagy 24SBC Enhanced Voice Processing System, which started shipping in August 1999. It details the system's PC-based architecture, voice board expansion capabilities, and available equipment options, maintaining compatibility with previous Stratagy systems.