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GMSC-RM

Gas Module Signale Converter

Gas Module Signal Converter

For Nissha Fis5000 series -
PWM to Relay and Modbus

NEW !

The GMSC converter series is a control solution designed to manage the **Nissha FIS5000 modules**.

By interpreting PWM signals, the device determines the sensor's operational status and manages alarms in case of gas leakage or malfunctions (either sensor or controller), activating a relay and/or communicating via Modbus RS485.

The system features clear visual diagnostics through LEDs and remote diagnostics via Modbus. Its advanced firmware implements intelligent logic to monitor both the alarm status and the "life" of the sensor, making the product highly reliable for industrial and civil applications.

All operating parameters are configurable and readable via Modbus.

Key settings are stored in EEPROM to ensure configuration is retained even after power-off.

Features & Benefits

- **Smart Diagnostics: The firmware decodes the PWM duty cycle to determine sensor status.**
- **Operational Reliability: Initial relay test, watchdog, and monitoring/self-check loops ensure safe operation.**
- **Simplified Integration: Modbus RTU communication allows seamless integration with HMI, PLC systems.**
- **Instant Feedback: Dynamic LEDs provide intuitive visual diagnostics, including a "breathing" effect that indicates sensor life status.**
- **Fail-Safe Operation: The relay activates automatically in case of gas alarm, sensor malfunction, end-of-life status, or persistent PWM signal error.**
- **Low Maintenance: The board requires no routine maintenance.**

Applications

- **HVAC-R leak alarm solution**
- **Safety and alarm systems**
- **Industrial automation and remote supervision**
- **Sensor control and management panels**

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Visual Diagnostics & Relay Logic

The board uses three LEDs for visual diagnostics as described in the following table:

Led	Color	Status	Meaning
Status	Green	Breathing	System operational, valid signals
Off	--	Off	Malfunction or active alarm
Gas Alarm	Red	Solid	Malfunction or missing life signal
Fault	Red	Solid	Active gas alarm

Green led breathing effect

- Sensor in optimal state: slow breath (6 sec)
- Sensor in transition: medium breath (3 sec)
- Sensor nearing replacement: fast breath (1 sec)
- Invalid or missing signal: LED off

The relay activates automatically in case of

- Gas alarm
- Sensor malfunction
- Processor failure
- Sensor end-of-life
- Persistent PWM signal error

A relay test is performed at startup, with a configurable number of “clicks,” to verify proper operation.

Technical Features

Parameters	Values
Power Supply input	12/24V DC
Power Supply output (FIS5000)	5V DC
Power Consumption	Average <100mA (sensor included)
Operating Temperature	-40 to +60°C
Sensor Interface	PWM (375ms cycle)
GMSC-RM Output	Modbus RTU (RS-485) / Relay (NC COM NO)
Relay maximum current	2 A
Relay maximum voltage	24V DC / 240V AC
Diagnostic LEDs	Green (OK), Yellow (Standby), Red (Alarm)
Mounting	DIN rail
Certifications	CE – EMC – EN378
Modbus Configuration	
Baud Rate	19200
Parameters	8N1
Modbus Address	Configurable (1–247), default 1
Holding Registers	10 registers

Note: For gas leak alarm thresholds and sensor element diagnostics, refer to the gas module manual.

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