

High-Frequency Speed & Position Sensor for Motorsport & Industrial Automation

1. PRODUCT OVERVIEW & APPLICATIONS

The GE-PROX-M8-3W-NO is a high-speed, non-contact inductive proximity sensor housed in a compact M8 metric threaded brass barrel. Engineered for robust target detection in motorsport telemetry, dynamometer testing, and precision industrial automation, it reliably detects ferrous and non-ferrous metallic targets with zero mechanical wear. Featuring a wide 6 to 36 V DC supply range, a fast 500 Hz switching frequency, and an IP67 water/oil-proof enclosure, it serves as an ideal sensor for wheel speed, gearbox tooth counting, engine RPM synchronization, and mechanical position limits, seamlessly interfacing with the Gubellini Electronics CAN-BOARD-OPTO, GUBELOG, and MICROLOG acquisition systems.

2. KEY FEATURES

- **3-Wire DC Normally Open (N.O.):** Standard 3-wire configuration with solid-state N.O. output (available in PNP sourcing and NPN sinking).
- **Compact M8 Threaded Barrel:** M8 × 1.0 mm metric cylindrical body with nickel-plated brass housing, including dual hex jam nuts and lock washers.
- **Wide Voltage Range (6–36 V DC):** Operates reliably across 12 V and 24 V vehicle and industrial power supplies with built-in voltage stabilization.
- **High Switching Frequency (500 Hz):** High-speed response capability optimized for gear teeth, sprocket bolts, tone rings, and wheel speed monitoring.
- **IP67 Environmental Sealing:** Dust-tight and waterproof enclosure engineered to endure harsh spray, oil, fuel, and track vibrations.
- **Integrated Status LED:** High-visibility red/orange LED indicator at the rear of the barrel illuminates instantly upon target detection.
- **Industrial 2.0 m Cable:** Factory-fitted 3-core oil-resistant flexible PVC cable with strain-relief collar for long-term mechanical reliability.

3. DIMENSIONAL & MECHANICAL SCHEMATIC

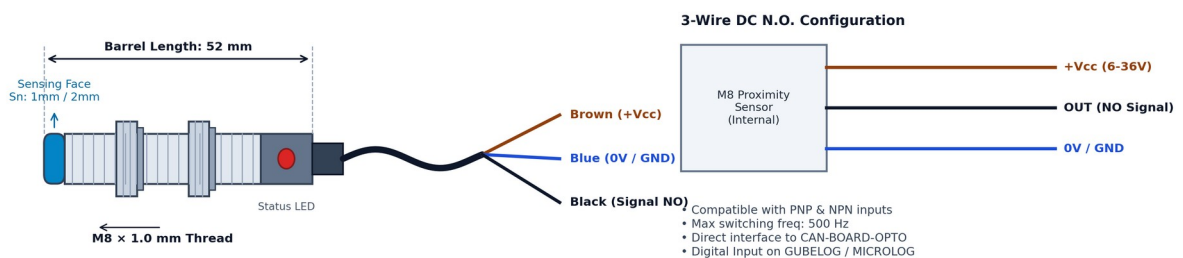


Figure 1: GE-PROX-M8-3W-NO Dimensions (M8x1 barrel, 52 mm length, nuts) and 3-wire DC connection pinout.

4. ORDERING INFORMATION & ACCESSORIES

Part Number	Description	Compatible System
GE-PROX-M8-PNP-NO	M8 Inductive Sensor, 3-Wire PNP N.O., Sn: 2mm, 6-36V, 2m Cable	CAN-BOARD-OPTO / GUBELOG
GE-PROX-M8-NPN-NO	M8 Inductive Sensor, 3-Wire NPN N.O., Sn: 2mm, 6-36V, 2m Cable	CAN-BOARD-OPTO / MICROLOG
GE-CB-OPTO	CAN Bus Module with 2x Opto-Isolated Frequency Inputs (32-bit)	CAN 2.0B Telemetry Bus

5. TECHNICAL SPECIFICATIONS

Parameter	Specification
Operating Principle	High-frequency inductive metal detection (eddy current)
Nominal Sensing Distance (Sn)	2.0 mm (Non-flush model) / 1.0 mm (Flush model)
Assured Operating Distance (Sa)	0 to 1.6 mm (for Sn = 2.0 mm ferrous target)
Standard Target Object	Mild Steel (Iron): 8 mm × 8 mm × 1 mm (Fe 360)
Hysteresis (Differential Travel)	≤ 10% of nominal sensing distance (Sn)
Supply Voltage Range	6 to 36 V DC (Ripple P-P ≤ 10%)
No-Load Current Consumption	< 10 mA at 24 V DC (< 8 mA at 12 V DC)
Output Configuration	3-Wire DC, Normally Open (N.O.), Transistor Switch
Output Polarities Available	PNP (Positive Sourcing) / NPN (Negative Sinking)
Maximum Load Current	200 mA continuous (with thermal & overload protection)
Residual Voltage Drop	≤ 1.5 V DC at 200 mA load current
Switching Frequency	500 Hz maximum (fast dynamic edge detection)
Response Time	< 2.0 ms (ON / OFF transition)
Output Status Indicator	Integrated rear LED (Red/Orange, ON when target detected)
Reverse Polarity Protection	Integrated diode protection on +Vcc and GND terminals
Short-Circuit Protection	Integrated cyclic pulsed short-circuit output protection
Enclosure Ingress Rating	IP67 (EN 60529 standard, dust-tight and waterproof)
Operating Temperature Range	-25°C to +70°C (-13°F to +158°F)
Housing & Cable Construction	Nickel-plated brass body, PBT sensing face, 2.0 m 3-core PVC cable

6. SYSTEM INTEGRATION & WIRING (GUBELLINI DAQ)

The GE-PROX-M8-3W-NO connects directly to the Gubellini Electronics CAN-BOARD-OPTO frequency acquisition interface or the digital RPM inputs on GUBELOG and MICROLOG dataloggers. The CAN-BOARD-OPTO detects pulse frequencies with 32-bit resolution up to 50 kHz and broadcasts calculated wheel speed or shaft RPM onto the vehicle CAN bus.

Conductor Color	Signal Function	Polarity / Level	CAN-BOARD-OPTO / DAQ Terminal
Brown (BN)	Power Supply (+Vcc)	+6 to +36 V DC Power	Terminal +12V / +V_AUX Supply
Blue (BU)	Ground Return (0V)	Power Ground (GND)	Terminal GND (System Ground)
Black (BK) - PNP	Signal Output (PNP N.O.)	Switches to +Vcc upon trigger	Terminal DIG_IN (Frequency Input)
Black (BK) - NPN	Signal Output (NPN N.O.)	Pulls to GND upon trigger	Terminal DIG_IN (Internal Pull-Up)

7. INSTALLATION & HANDLING GUIDELINES

- **Mounting Torque Limit:** Do not exceed 5.0 Nm tightening torque when securing the M8 hex nuts against mounting brackets to prevent body deformation.
- **Metal Clearances (Non-Flush):** For non-flush models (Sn 2mm), maintain at least 8 mm radial clearance from surrounding metal to avoid false triggers.
- **Target Material Reduction Factors:** Sensing distance varies by metal: Steel = 1.0 × Sn, Stainless Steel = 0.7 × Sn, Brass = 0.4 × Sn, Aluminum = 0.35 × Sn.