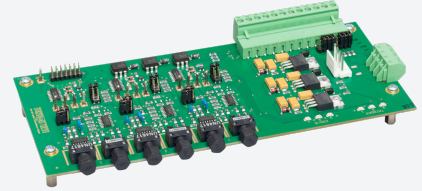




SL MA-310 Opto-Electronic Interface

Three-Channel Interface for Fiber-Optic Road Sensors



Overview

The SL MA-310 is the electrical bridge between embedded fiber-optic sensors and the system that acts on their data. It reads up to three fiber-optic load sensors and converts each one's optical signal into a clean trigger and analog output.

The interface sends light through each sensor and measures the amount transmitted. When a wheel loads the sensor and the transmitted light drops past a set threshold, the SL MA-310 generates a digital trigger for that channel, with sensitivity and hold time set to match the installation.

Powered by Sensor Line technology, the SL MA-310 is part of Quarterhill's road-traffic portfolio.

One to Three Channels

The SL MA-310 runs three sensors on independent channels. The same design is available as the single-channel MA-110 and the two-channel MA-210, so the interface scales to the number of sensors at a site without changing the integration approach.

Detection You Can Tune

Each channel is configured on its own. The trigger threshold is selectable across 0.04%, 0.16%, 0.32%, and 1.0% relative light drop, and the minimum pulse duration is set to 1, 22, or 47 ms, so sensitivity and timing match the traffic and the sensor at each lane. A dynamic, AC-coupled response returns every channel to zero between axles, keeping triggers crisp at speeds from 5 to 250 km/h.

Outputs That Fit the Host

Each channel drives an optocoupler output that behaves like a relay switch and can be set by jumper as a simple switch, a grounded switch, a current-sourcing output, or a true voltage output. That range meets most host inputs directly, without added external components. A separate service header exposes the analog load, monitor, trigger, and reference signals per channel for setup and diagnostics on an oscilloscope.

Built for the Roadside Cabinet

The board is made for permanent installation in a weatherproof roadside cabinet. It runs on a 12 to 24 VDC supply at under 400 mA, is protected against reverse polarity, and operates from -40 to 85 °C. Each channel carries its own trigger and error LED, and the interface flags a disconnected or failed sensor within seconds, so faults show up at the cabinet rather than in the data.

Technical Specifications

General

Specification	Value
Channels	3 independent; also available as SL MA-110 (1 channel) and SL MA-210 (2 channel)
Function	Opto-electronic interface for fiber-optic load sensors, transmittance-based

Optical Performance

Specification	Value
Optical Interface	850 nm IR LED transmitter with low-noise silicon photodiode detector
Optical Connectors	Six F-SMA (SMA-905) receptacles
Sensor Attenuation	3–25 dB
Feeder Cable Length	Up to 250 m
Speed Range	5–250 km/h

Detection & Signal Processing

Specification	Value
Trigger Thresholds	0.04%, 0.16%, 0.32%, 1.0% relative light drop
Minimum Pulse Duration	1 ms, 22 ms, or 47 ms (selectable)

Connectivity & Outputs

Specification	Value
Outputs	Per-channel optocoupler (60 V, 25 mA), configurable as switch or voltage output
Service Signals	Analog load, monitor, trigger, and reference outputs per channel
Output Connector	12-pin pluggable screw terminal

Electrical & Environmental

Specification	Value
Board Supply	12–24 VDC
Current Consumption	Under 400 mA continuous
Output Supply	5–24 VDC
Operating & Storage Temperature	-40°C to 85°C
Humidity	Under 80% RH @ 25°C
Board Length	203.2 mm (excluding connector)

Indicators, Safety & Compliance

Specification	Value
Indicators	Per-channel trigger and error LEDs
Protection	Reverse-polarity protection (ESD handling required)
Compliance	RoHS, LED Risk Group RG 0

A Clean Bridge From Sensor to System

The SL MA-310 turns the optical signal from up to three PUR sensors into clean, configurable trigger and analog output, with per-channel tuning, fault indication, and output modes that fit most hosts directly. Available in one, two, and three-channel versions, it connects embedded fiber-optic sensing to the systems that use it.