



SL MD-220 Digital Opto-Electronic Interface

Two-Channel Interface With On-Board Processing and a Digital Data Output



Overview

The SL MD-220 is a two-channel digital interface for Sensor Line fiber-optic road sensors. Like the analog MA-x10 units, it feeds light into each sensor and reads how much is transmitted. Unlike them, it processes that signal on board and reports it over a digital data link.

Where the analog interfaces respond dynamically and hand off a raw trigger, the SL MD-220 is a static interface built around a 16-bit mixed-signal processor. It conditions each channel, handles threshold detection in firmware, and delivers the result as serial data, an isolated digital trigger, or a 0 to 10 V analog output.

Powered by Sensor Line technology, the SL MD-220 is part of Quarterhill's road-traffic portfolio.

On-Board Intelligence

At the core of the SL MD-220 is a 16-bit mixed-signal processor that conditions each channel and handles detection in firmware. Trigger thresholds are selectable at 0.2%, 0.4%, 0.8%, and 1.6% light-transmittance change, and adaptive threshold processing can be switched on to track signal amplitude at configurable ratios of 50%, 25%, 12.5%, or 6.25%, holding detection stable as sensor and road conditions shift over time.

Static Measurement

The SL MD-220 is a static interface, so it holds its reading while a load stays on the sensor rather than decaying to zero the way a dynamic, AC-coupled interface does. That lets it report sustained load and presence, not only the momentary pulse of a passing axle.

Three Ways to Deliver Data

Each installation connects to the host the way it needs to. The SL MD-220 provides a serial interface over RS-232 or RS-485 for data-level integration, floating optocoupler outputs that behave like isolated relay contacts, and a 0 to 10 V analog output. A sensor-failure indication flags a lost or faulty sensor.

Built for the Roadside Cabinet

The SL MD-220 runs on a 12 to 24 VDC supply at under 140 mA and operates from -40 to 85 °C. It carries reverse-power and output short-circuit protection, connects to sensors through SMA fiber-optic plugs, and can be stacked two boards at a time to expand channel capacity from a single supply. It is backed by a 2-year warranty.

Technical Specifications

General

Specification	Value
Channels	2 independent
Function	Static two-channel digital opto-electronic interface for fiber-optic road sensors
Processor	16-bit mixed-signal
Data Interface	RS-232 or RS-485 serial
Stacking	Two boards for expanded channel capacity
Warranty	2 years

Detection & Signal Processing

Specification	Value
Trigger Thresholds	0.2%, 0.4%, 0.8%, 1.6% light-transmittance change (jumper-selectable)
Adaptive Threshold Processing	Switchable at 50%, 25%, 12.5%, and 6.25% of signal amplitude

Connectivity & Outputs

Specification	Value
Optical Connection	SMA fiber-optic plugs
Outputs	Serial data, isolated optocoupler digital output (60 V, 25 mA), 0–10 V analog, sensor-failure indication
Connector	10-pin screw-clip connector bar for power and signals

Electrical & Environmental

Specification	Value
Supply Voltage	12–24 VDC
Current Consumption	<140 mA
Dimensions	100 × 110 × 19 mm
Operating & Storage Temperature	-40 to 85 °C
Humidity	80% at 25 °C

Safety & Compliance

Specification	Value
Protection	Reverse polarity and output short-circuit protection
Compliance	LED Risk Group RG 0

The Digital Member of the Interface Family

The SL MD-220 adds on-board processing and a digital data output to Quarterhill's fiber-optic sensing, turning two sensors into conditioned, threshold-detected signals available as serial data, isolated triggers, or analog voltage. Powered by Sensor Line technology, it is the digital counterpart to the analog SL MA-x10 interfaces, for installations that integrate at the data level.