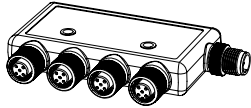


Quick Start Guide

This guide is designed to help you set up and install the R90C-4K-MQ IO-Link Master/Modbus Converter. For complete information on programming, performance, troubleshooting, dimensions, and accessories, please refer to the Instruction Manual at www.bannerengineering.com. Search for p/n 221301 to view the Instruction Manual. Use of this document assumes familiarity with pertinent industry standards and practices.



- Connects four IO-Link devices and provides access via Modbus RTU interface
- Rugged design; easy installation with no assembly or individual wiring required
- 5-pin M12 male quick disconnect connector
- Four 4-pin M12 female quick disconnect connectors
- Built-in indication for four IO-Link master ports
- Built-in indication for Modbus RTU connection status
- Rugged over-molded design meets IP65, IP67, and IP68

Overview

The R90C 4-Port Converter connects to four IO-Link devices and provides access to IO-Link data and functionality via a Modbus RTU connection.

Modbus registers allow for access to both IO-Link devices and their functions:

- Process Data In
- Process Data Out
- Connected device information
- ISDU data
- Discrete I/O configuration
- IO-Link events
- Data storage
- SIO mode

For more information, see p/n 221399 *IO-Link to ModBus Converter - Device Register Map*.

Status Indicators

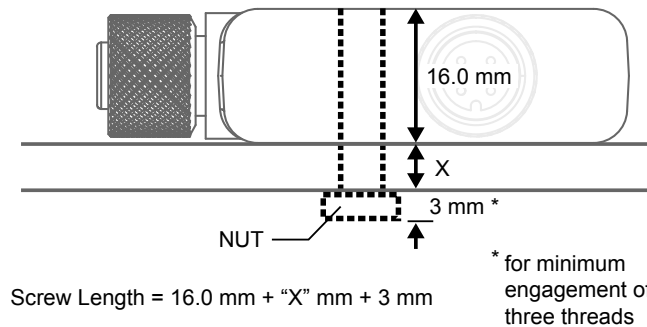
The R90C-4K-MQ IO-Link Master/Modbus Converter has matching RGB LED indicators on both sides for each IO-Link device port to allow for installation needs and still provide adequate indication visibility. There is also an Amber LED indicator on both sides of the converter, which is specific to the Modbus communication.

IO-Link Device Port 1, 2, 3, and 4 RGB LEDs		Modbus Communication Amber LED	
Indication	Status	Indication	Status
Off	Deactivated port	Flashing Amber (4 Hz)	Modbus communications are active
Flashing Green	Waiting for IO-Link device	Solid Amber (2 seconds) to Off	Modbus communications are lost after connection
Solid Green	IO-Link device is connected	Solid Amber (2 seconds) to Flashing Amber (4 Hz)	Modbus communications momentarily lost, but then reestablished
Flashing Red	Validation Error	Solid Amber	Modbus communications are intermittent, or communications error occurs more frequently once every 2 seconds
Solid Yellow	Signal high in SIO-mode	Off	Modbus communications are not present
Solid Blue	Processor communication error		

Mechanical Installation

Install the R90C 4-Port Converter to allow access for functional checks, maintenance, and service or replacement.

All mounting hardware is supplied by the user. Fasteners must be of sufficient strength to guard against breakage. Use of permanent fasteners or locking hardware is recommended to prevent the loosening or displacement of the device. The mounting hole (4.5 mm) in the R90C 4-Port Converter accepts M4 (#8) hardware. See the figure below to help in determining the minimum screw length.





CAUTION: Do not overtighten the R90C 4-Port Converter's mounting screw during installation. Overtightening can affect the performance of the R90C 4-Port Converter.

Specifications

Voltage Input Range

18 V DC to 30 V DC

Input Power

24 V DC at 4 A

Output Power

24 V DC at 100 mA + 200 mA/port = 900 mA maximum

Supply Protection Circuitry

Protected against reverse polarity and transient voltages

Leakage Current Immunity

400 µA

Indicators

RGB1: IO-Link Port 1 Status
 RGB2: IO-Link Port 2 Status
 RGB3: IO-Link Port 3 Status
 RGB4: IO-Link Port 4 Status
 Amber: Modbus Communications

Connections

(4) Integral 4-pin M12 female quick disconnect
 (1) Integral 5-pin M12 male quick-disconnect connector

Construction

Coupling Material: Nickel-plated brass
 Connector Body: PVC translucent black

Vibration and Mechanical Shock

Meets IEC 60068-2-6 requirements (Vibration: 10 Hz to 55 Hz, 0.5 mm amplitude, 5 minutes sweep, 30 minutes dwell)
 Meets IEC 60068-2-27 requirements (Shock: 15G 11 ms duration, half sine wave)

Environmental Ratings

For Indoor Use Only
 IP65, IP67, IP68, UL Type 1

Operating Conditions

-40 °C to +70 °C (-40 °F to +158 °F)
 90% at +70 °C maximum relative humidity (non-condensing)
Storage Temperature: -40 °C to +80 °C (-40 °F to +176 °F)

IO-Link Baud Rates

COM1: 4.8 kbps
 COM2: 38.4 kbps
 COM3: 230.4 kbps

Compliant Standards

IO-Link interface and System Specification v 1.1.2
 IO-Link Test Specification v 1.1.2

Master Communication Protocol

RS485 – Modbus RTU

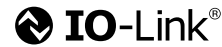
Digital Inputs (SIO [DI] Mode)

Input Current: 5 mA typical
 ON Voltage/Current: 15 V DC minimum/5 mA minimum
 OFF Voltage: 5 V DC maximum

Digital Outputs (SIO [DO] Mode)

On-Resistance: 120 mΩ typical, 250 mΩ maximum
 Current Limit: 0.7 A minimum, 1.0 A typical, 1.3 A maximum
 Off Leakage Current: -10 µA minimum, 10 µA maximum

Certifications



Banner Engineering Corp. Limited Warranty

Banner Engineering Corp. warrants its products to be free from defects in material and workmanship for one year following the date of shipment. Banner Engineering Corp. will repair or replace, free of charge, any product of its manufacture which, at the time it is returned to the factory, is found to have been defective during the warranty period. This warranty does not cover damage or liability for misuse, abuse, or the improper application or installation of the Banner product.

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