BANNER R45C-MUU-UUQ Modbus to Dual Analog Input Output Converter Featured

BANNER R45C-MUU-UUQ Modbus to Dual Analog Input Output Converter User Guide

Contents

1 BANNER R45C-MUU-UUQ Modbus to Dual Analog Input Output Converter
2 Features
3 Overview
4 Mechanical Installation
5 Specifications
6 Banner Engineering Corp Limited Warranty
7 Documents / Resources
7.1 References

BANNER R45C-MUU-UUQ Modbus to Dual Analog Input Output Converter

Features

This guide is designed to help you set up and install the R45C ModBus to Dual Analog Input-Output Converter. For complete information on programming, performance, troubleshooting, dimensions, and accessories, please refer to the Instruction Manual at www.bannerengineering.com. Search for part number 232576 to view the Instruction Manual. Use of this document assumes familiarity with pertinent industry standards and practices.

Overview

Analog In

When an analog input value is received by this converter, the numerical representational value is sent to the appropriate ModBus register.

Analog Input Ranges:

- Voltage = 0 mV to 11,000 mV
- Current = 0 µA to 24,000 µA

Analog Out

This converter also allows for the user to output an analog value by sending the numerical analog value by entering the analog value into the appropriate ModBus register.

Analog Output Ranges:

- Voltage = 0 mV to 11,000 mV
- Current = 0 µA to 24,000 µA

PDO Outside Valid Range (POVR)

If the Process Data Out (PDO) value sent to this converter is outside of the PDO Analog Range value, then the actual analog output value will be set to the one of the three selectable POVR levels after a 2 nsecond delay:

- Low (default): 0 V or 3.5 mA

- High: 10.5 V or 20.5 mA
- Hold: Level retains previous value indefinitely

Mechanical Installation

Install the R45C to allow access for functional checks, maintenance, and service or replacement. Do not install the R45C in such a way to allow for intentional defeat. Fasteners must be of sufficient strength to guard against breakage. The 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 R45C accepts M4 (#8) hardware.
CAUTION: Do not overtighten the R45C's mounting screw during installation. Overtightening can affect the performance of the R45C.

Status Indicators

The R45C ModBus to Dual Analog Input-Output Converter has four amber LED indicators on both sides for IOLink and analog communications to allow for installation needs and still provide adequate indication visibility. There is also a green LED indicator on both sides of the converter, which signals the device's power status.

ModBus Amber LED

Indication	Status
Off	ModBus communications are not present
Flashing Amber (4 Hz)	ModBus communications are active
Solid for 2 Seconds to Off	ModBus communications are lost after connection
Solid for 2 Seconds to Flashing Amber (4 Hz)	ModBus communications momentarily lost, but communication reestablished

Analog In Amber LED

Indication	Status
Off	Analog current value is less than setpoint SP1 OR analog value is greater than setpoint SP2
Solid Amber	Analog current value is between setpoint SP1 AND setpoint SP2
Default Current Values: • SP1 = 0.004 A • SP2 = 0.02 A	Default Voltage Values: • SP1 = 0 V • SP2 = 10 V

Analog Out Amber LED

Indication	Status
Off	Turns off if written PDO analog value is outside the allowable output range
Solid Amber	Turns on if written PDO analog value is inside the allowable output range
Allowable Current Range: 0 mA to 24 mA	
Allowable Voltage Range: 0 V to 11 V	

Specifications

- Supply Voltage 12 V DC to 30 V DC at 50 mA maximum
- Power Pass-Through Current 4 A maximum
- Analog Input Impedance
  - Current version: Approximately 250 ohms
  - Voltage version: Approximately 14.3K ohms
- Analog Output Load Resistance
  - Current version: 1 kilo-ohm maximum load resistance at 24 V DC
  - Maximum Load Resistance = [(Vcc – 4.5) ÷ 0.02 ohms]
  - Voltage version: 2.5 kiloohms minimum load resistance
- Supply Protection Circuitry
  Protected against reverse polarity and transient voltages
- Leakage Current Immunity 400 µA
- Accuracy 0.5%

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)
- Resolution 14 bits
- Connections
  1. Integral 5pin M12 male quickdisconnect connector
  2. Integral 4-pin M12 female quick-disconnect connector
- Construction
  - Coupling Material: Nickel-plated brass
  - Connector Body: PVC translucent black
- Environmental Rating
  - IP65, IP67, IP68
  - UL Type 1
- Operating Conditions
- Temperature: –40 °C to +60 °C (–40 °F to +140 °F) 90% at +60 °C maximum relative humidity (noncondensing)
- Storage Temperature: –40 °C to +80 °C (–40 °F to +176 °F)

Required Overcurrent Protection

WARNING: Electrical connections must be made by qualified personnel in accordance with local and national

electrical codes and regulations.

Overcurrent protection is required to be provided by end product application per the supplied table. Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply. Supply wiring leads < 24 AWG shall not be spliced. For additional product support, go to **www.bannerengineering.com**.

Supply Wiring (AWG)	Required Over current Protectio n (A)	Supply Wiring (AWG)	Required Over current Protectio n (A)
20	5.0	26	1.0
22	3.0	28	0.8
24	1.0	30	0.5

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.

THIS LIMITED WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES WHETHER EXPRESS OR IMPLIED (INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE), AND WHETHER ARISING UNDER COURSE OF PERFORMANCE, nCOURSE OF DEALING OR TRADE USAGE.

This Warranty is exclusive and limited to repair or, at the discretion of Banner Engineering Corp., replacement. IN NO EVENT SHALL BANNER ENGINEERING CORP. BE LIABLE TO BUYER OR ANY OTHER PERSON OR ENTITY FOR ANY EXTRA COSTS, EXPENSES, LOSSES, LOSS OF PROFITS, OR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES RESULTING FROM ANY PRODUCT DEFECT OR FROM THE USE OR INABILITY TO USE THE PRODUCT, WHETHER ARISING IN CONTRACT OR WARRANTY, STATUTE, TORT, STRICT LIABILITY, NEGLIGENCE, OR OTHERWISE. Banner Engineering Corp. reserves the right to change, modify or improve the design of the product without assuming any obligations or liabilities relating to any product previously manufactured by Banner Engineering Corp. Any misuse, abuse, or improper application or installation of this product or use of the product for personal protection applications when the product is identified as not intended for such purposes will void the product warranty. Any modifications to this product without prior express approval by Banner Engineering Corp will void the product warranties. All specifications published in this document are subject to change;

Banner reserves the right to modify product specifications or update documentation at any time. Specifications and product information in English supersede that which is provided in any other language. For the most recent version of any documentation, refer to: www.bannerengineering.com. For patent information, see **www.bannerengineering.com/patents**.

Document title: R45C Modbus® to Dual Analog InputOutput Converter Quick Start Guide
Part number: 232575
Revision: B
Original Instructions

Documents / Resources

	BANNER R45C-MUU-UUQ Modbus to Dual Analog Input Output Converter [pdf] User Guide R45C-MUU-UUQ Modbus to Dual Analog Input Output Converter, R45C-MUU-UUQ, Modbus to Dual Analog Input Output Converter, Dual Analog Input Output Converter, Analog Input Output Converter, Input Output Converter, Output Converter

References

- Banner Engineering
- Patents
- User Manual