DigiRail-4C

Digital Counter Input Module

INSTRUCTION MANUAL

INTRODUCTION

The Modbus Module for Digital Inputs - **DigiRail-4C** is an electronic unit with four digital counter inputs An RS485 serial interface allows reading and configuration of these inputs, through communication network. It's appropriate for mounting on DIN 35 mm rails.

The inputs are electrically insulated from the serial interface and the module supply. There is no electrical insulation between serial interface and supply. There is no electrical insulation between the inputs 1 and 2 (common negative terminal), as well as between the inputs 3 and 4.

Configuration of the **DigiRail-4C** is performed through the RS485 interface by using Modbus RTU commands. The **DigiConfig** software allows the configuration of all features of the **DigiRail** as well as its diagnostics. The **DigiConfig** offers features for detecting the devices present in the Modbus network and for configuring the communication parameters of the **DigiRail-4C**.

This manual provides the instructions for installation and connection of the module. The installer for **DigiConfig** and the documentation regarding Modbus communication for the **DigiRail-4C** (*Communication Manual of the DigiRail-4C*) are included in the CD-ROM which accompanies the product. They are also available for download at www.novusautomation.com.

SPECIFICATIONS

Inputs: 4 Digital Inputs: Logical level 0 = 0 to 1 Vdc; Logical level 1 = 4 to 35 Vdc

Internal current limitation at the inputs: approximately 5 mA

Maximum count frequency: 1000 Hz for signals with square wave and working cycle of 50%. Input 1 can be configured for counting signals of up to 100 kHz.

Counting capacity (per input): 32 bits (0 to 4.294.967.295)

Special countings: Capable of counting pulses in given time intervals (pulse rate) and retaining peak countings in given time intervals (peak rate). Independent time intervals for both functions.

Power: 10 to 35 Vdc / 50 mA maximum. Internal protection against polarity inversion.

Electrical insulation between inputs and supply/serial port: 1000 Vdc for 1 minute

Serial communication: RS485 at two wires, Modbus RTU protocol. Configurable parameters: Communication speed: from 1200 to 115200 bps; Parity: even, odd or none

Key for restoring communication parameters: The RCom key, at the front panel, will set the device in diagnostics mode (address 246, baud rate 1200, parity even, 1 stop bit), able to be detected and configured by the DigiConfig software.

Frontal light indicators for communication and status:

TX: Signalizes that the device is sending data on the RS485 line;

RX: Signalizes that the device is receiving data on the RS485 line;

Status: When the light is permanently on, this means that the device is in normal operation; when the light is flashing in a second interval (approximately), this means that the device is in diagnostics mode.

Software configurator in Windows environment: DigiConfig

Electromagnetic compatibility: EN 61326:2000

Operating temperature: 0 to 70 ℃

Operational relative humidity: 0 to 90% RH

Assembly: DIN 35 mm rail

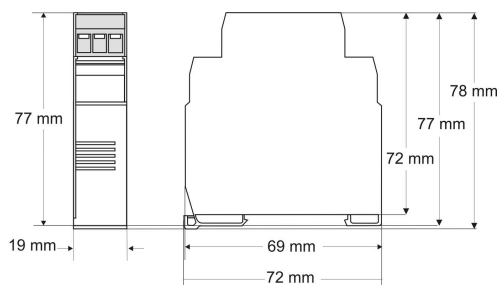**Dimensions: Figure 1** shows the dimensions of the module.

Figure 1 – Dimensions

ELECTRICAL INSTALLATION

RECOMMENDATIONS FOR INSTALLATION

- Input and communication signal conductors must pass through the system plant separated from the electrical network conductors, if possible, in grounded conduits.
- The supply for the instruments must be provided from a proper network for instrumentation.
- In control and monitoring applications, it is essential considering what may occur if any of the system parts should fail.
- We recommend the use of RC FILTERS (47R and 100nF, series) in parallel with contactor and solenoid coils which are close or connected to **DigiRail**.

ELECTRICAL CONNECTIONS

Figure 2 shows the necessary electrical connections. The terminals 1, 2, 3, 7, 8 and 9 are intended for the input connections, 5 and 6 for the module supply and 10, 11 and 12 for the digital communication. For obtaining a better electrical contact with the connectors, we recommend the use of pin terminals at the conductors' end. For direct wire connection, the minimum gage recommended is 0.14 mm², not exceeding 4.00 mm².

> ⚠️ Be careful when connecting the supply terminals to the **DigiRail**. If the positive conductor of the supply source is connected, even momentarily, to one of the communication connection terminals, the module may be damaged.
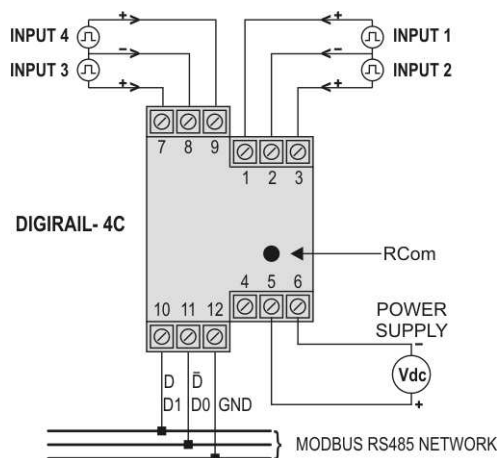

Figure 2 – Electrical Connections

Additional information regarding the connection and use of the communication network can be found in the *Communication Manual of DigiRail-4C*, included in the CD-ROM which accompanies the product.

CONFIGURATION

The application **DigiConfig** is a program for Windows® used for configuration of the modules **DigiRail**. For its installation, run the ***DigiConfigSetup.exe*** file from the CD-ROM of the product and follow the instructions as shown.

DigiConfig is provided with a complete help file, giving all the information necessary for its full use. For using the help feature, start the application and chose the "*Help*" menu or press the F1 key.

If you do not have the CD-ROM which comes together with the product, go to www.novusautomation.com in order to obtain the installer for **DigiConfig** and the additional product manuals.

WARRANTY

This product is covered by a 12-month warranty provided the purchaser presents the sales receipt and the following conditions are met:

- Products are covered for one year from the original date of purchase. Please retain the dated sales receipt as evidence of the date of purchase. You will need it for any warranty service.

- Within this period, warranty against defects in material and workmanship under normal use is free of charge.

- For repair, send the product and the sales receipt to our address. Expenses and transportation risks are under the purchaser's responsibility.

- This warranty does not cover any damage due to accident, misuse, abuse, or negligence.