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DATASHEET

NI REM-11154

Digital Input Module for Remote I/O



- Read digital input frequencies up to 5 kHz
- Adjustable filter time to improve measurement quality
- Spring-terminal connectors allow fast wiring without tools
- Communication to the higher-level system via EtherCAT
- -25 °C to 60 °C temperature range to meet a variety of application and environmental needs

Remote I/O Overview

Remote I/O is a low-cost, modular system for simple machine control and measurements. A Remote I/O system consists of an EtherCAT bus coupler and individual modules mounted on a DIN rail and is controlled from a Real-Time controller such as a CompactRIO Controller or Industrial Controller.

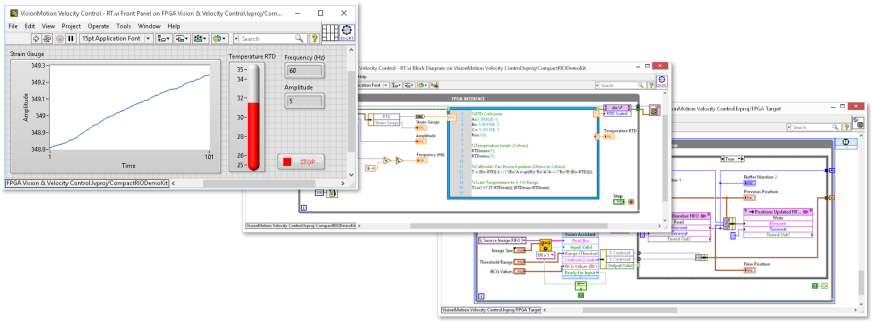
- Round out your system with low-cost I/O for simple tasks while your controller handles advanced tasks such as image processing and high-speed or specialty measurements.
- Add only the I/O you need where you need it with the modular, distributed system.
- Connect multiple Remote I/O systems and EtherCAT chassis to meet your I/O needs.

NATIONAL INSTRUMENTS

Figure 1. NI Remote I/O System

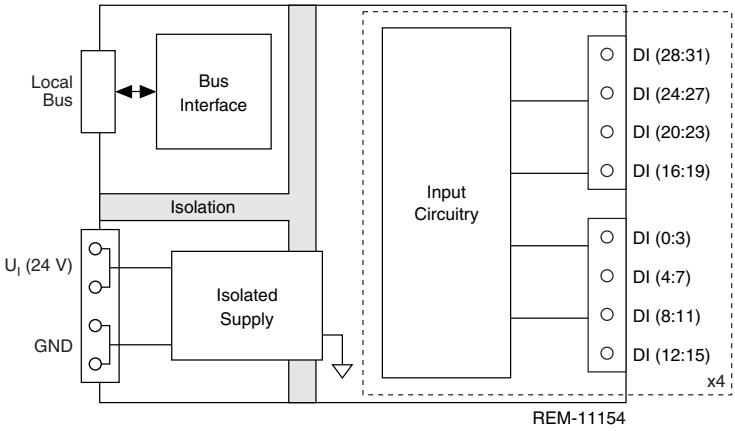


NI Embedded Control and Monitoring Suite



- Use a single toolchain for every phase of your design cycle – from modeling and simulation, to prototyping and validation, to deployment and beyond.
- NI ECM Suite combines LabVIEW Professional Development System with add-on software for programming Real-Time, FPGA, SoftMotion and Vision Acquisition devices.
- Combine LabVIEW with your expertise to efficiently design a system by integrating graphical, C code, .m files, and state-based simulations in one environment.
- Reduce development time with built-in constructs to manage low-level tasks such as timing and memory in an intuitive programming environment.
- Accelerate your development with over 950 available signal processing, analysis, control, and mathematics functions.
- Get to solutions faster with extensive support and training that scale with the complexity of your systems.

REM-11154 Input Circuitry



REM-11154 Specifications

The following specifications are typical for the range -25 °C to 60 °C unless otherwise noted.

Input Characteristics

Number of inputs	32
Description of the input	EN 61131-2 types 1 and 3
Nominal input voltage	24 VDC
Nominal input current	2.4 mA
Current flow	Linear until nominal current is reached, then constantly approx. 2.4 mA
Input voltage range	
"0" signal	-3 VDC to 5 VDC
"1" signal	11 VDC to 30 VDC
Input filter time	3000 µs (default), 1000 µs, <100 µs
Polarity reversal protection of the inputs	Parallel diode (30 V, 5 s)

Power Requirements

Communications power from U_{Bus}	5 VDC, via bus connector
Current consumption from U_{Bus}	120 mA, maximum
Power consumption from U_{Bus}	600 mW, maximum

I/O Supply

Supply of digital output modules U_I	24 VDC
Maximum permissible voltage range	19.2 VDC to 30 VDC (including all tolerances, including ripple)
Current consumption from U_I	50 mA, maximum
Power consumption at U_I	
Typical	960 mW
Maximum	1.2 W
Surge protection of the supply voltage	Electronic (35 V, 0.5 s)
Polarity reversal protection of the supply voltage	Parallel diode; with external 5 A fuse (for startup only)
External fuse rating	5 A

Caution Connect an external fuse to the 24 V U_I supply to protect against polarity reversal. The power supply must provide four times the nominal current of the external fuse. This rating ensures that the fuse trips in the event of an error.

Note Connect the module to a 5 A fuse. If all modules in the Remote I/O system are connected correctly, you can replace the 5 A fuse with an 8 A fuse. Do not connect the module to loads over 8 A.

Remote I/O Local Bus

Connection method	Bus connector
Transmission speed	100 MBit/s

Physical Characteristics

Note For more information about connecting your device, refer to the device getting started guide on *ni.com/manuals*

Spring-terminal wiring	
Gauge	0.2 mm^2 to 1.5 mm^2 (24 AWG to 16 AWG), solid or stranded
Wire strip length	8.0 mm (0.31 in.) of insulation stripped from the end
Wires per connection	One wire per spring terminal
Dimensions[1]	129.9 mm (5.11 in.) × 35.0 mm (1.38 in.) × 54.0 mm (2.13 in.)
Weight[2]	159 g (5.61 oz)

Note For dimensional drawings of the REM-11154, visit *ni.com/dimensions* and search by module number.

Isolation Withstand Voltages

Test section	Test voltage
5 V communications power (logic), 24 V supply (I/O)	500 VAC, 50 Hz, 1 min.
5 V supply (logic)/functional earth ground	500 VAC, 50 Hz, 1 min.
24 V supply (I/O)/functional earth ground	500 VAC, 50 Hz, 1 min.

Electromagnetic Compatibility

This product meets the requirements of the following EMC standards for electrical equipment.

- EN 61000-4-2 (IEC 61000-4-2): Electrostatic discharge (ESD); Criterion B; 6 kV contact discharge, 8 kV air discharge
- EN 61000-4-3 (IEC 61000-4-3): Electromagnetic fields; Criterion A; Field intensity: 10 V/m
- EN 61000-4-4 (IEC 61000-4-4): Fast transients (burst); Criterion B, 2 kV
- EN 61000-4-5 (IEC 61000-4-5): Transient surge voltage (surge); Criterion B; DC supply lines: ±0.5 kV/±0.5 kV (symmetrical/asymmetrical)
- EN 61000-4-6 (IEC 61000-4-6): Conducted interference; Criterion A; Test voltage 10 V
- EN 61000-6-2: Noise immunity

[1] The depth is valid when a TH 35-7.5 DIN rail is used (according to EN 60715).
[2] With connectors and bus connector.

- EN 61000-6-3: Noise emission
- EN 55022: Radio interference properties; Class B

CE Compliance CE

This product meets the essential requirements of applicable European Directives, as follows:

- 2014/30/EU; Electromagnetic Compatibility Directive (EMC)

Shock and Vibration

Vibration resistance (EN/IEC 60068-2-6)	5 g
Shock (EN/IEC 60068-2-27)	30 g
Continuous shock (EN/IEC 60068-2-27)	10 g

Environmental

Operating temperature	-25 °C to 60 °C
Storage temperature	-40 °C to 85 °C
Ingress protection	IP20
Protection class	III, EN/IEC 61140, VDE 0140-1
Operating humidity	5% to 95%, non-condensing
Storage humidity	5% to 95%, non-condensing
Maximum altitude	3,000 m
Air pressure	70 kPa to 106 kPa

Indoor use only.

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