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DATASHEET

NI REM-11180

Bus Coupler for Remote I/O



- Deterministic communication and data transfer to host system
- EtherCAT cycle time of <100 us
- Connect up to 63 modules to a single bus coupler[1]
- Supports automatic addressing and Explicit Device ID assignment
- Two Ethernet ports for daisy chaining multiple systems
- -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.

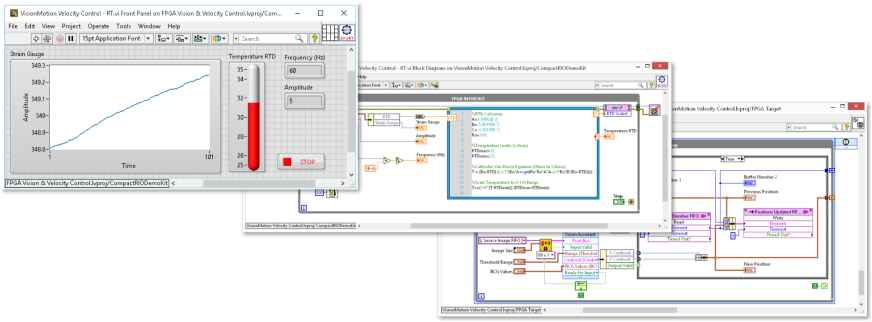
[1] The bus coupler supplies 2 A to the I/O modules. Refer to the device datasheet on *ni.com/manuals* to determine the power consumption for each module. If additional power is required, add a Bus Power Module.

NATIONAL INSTRUMENTS

Figure 1. NI Remote I/O System

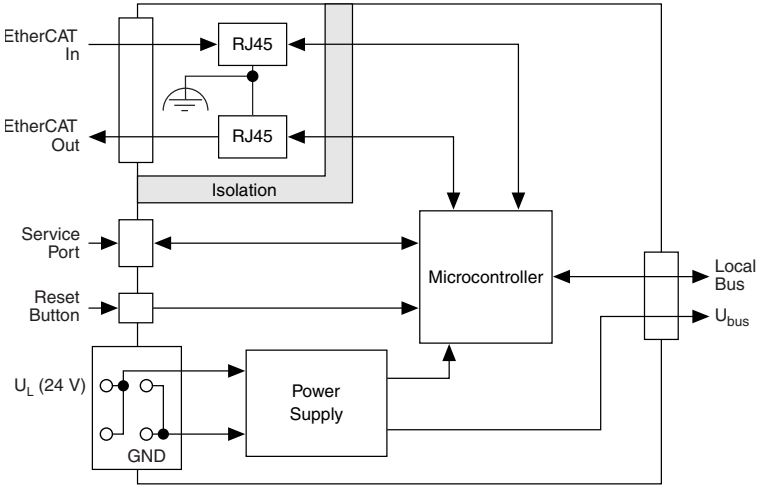


NI Embedded Control and Monitoring Suite



- 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-11180 Circuitry



REM-11180 Specifications

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

Caution Do not operate the REM-11180 in a manner not specified in this document. Product misuse can result in a hazard. You can compromise the safety protection built into the product if the product is damaged in any way. If the product is damaged, return it to NI for repair.

EtherCAT® Ports

Ports	2
Connection method	RJ45 socket, auto negotiation and autocrossing
Cycle time	100 µs
Transmission	
Speed	100 MBit/s (Full duplex)
Physics	Ethernet in RJ45 twisted pair
Length	100 m, maximum

Remote I/O Local Bus

Connection method	Bus connector
Transmission speed	100 MBit/s

Service Ports

Port	1
Connection method	Micro USB type B

System Limits

Amount of process data	1024 Byte (for each data direction)
Supported devices	63, maximum (per station)

Caution Overload can damage the hardware. Observe the logic current consumption of each device when configuring a Remote I/O system. Refer to the device datasheets on *ni.com/manuals* for the current consumption of each module.

Bus Coupler Supply

Supply of communications power U_L	24 VDC
Maximum permissible voltage range	19.2 VDC to 30 VDC (including all tolerances, including ripple)
Current supply at U_{Bus}	2 A
Current consumption from U_L	105 mA, typical with U_I = 24 V (REM-11180 only); 570 mA, maximum with U_I = 24 V (with a 2 A load on U_{Bus} from I/O modules)
Power consumption at U_L	2.5 W, typical (REM-11180 only) 13.7 W, maximum (with a 2 A load on U_{Bus} from I/O modules)
External fuse rating	8 A

Caution Connect an external fuse to the 24 V U_L supply to protect against overload. 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.

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	1
Dimensions[2]	125.9 mm (4.96 in.) × 45 mm (1.77 in.) × 74 mm (2.91 in.)
Weight[3]	177 g (6.24 oz)

Note For dimensional drawings of the REM-11180, visit *ni.com/dimensions* and search by module number.

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); field-bus cable shield: ±1 kV
- EN 61000-4-6 (IEC 61000-4-6): Conducted interference; Criterion A; Test voltage 10 V
- EN 61000-6-2: Noise immunity
- 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)

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

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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376549A-02 Oct16

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