NI-5742 Safety, Environmental, and Regulatory Information

2022-07-06

Contents

NI 5742 Specifications

This document lists specifications for the NI 5742 adapter module. Pair these specifications with the specifications listed in your NI FlexRIO FPGA specifications document.

Caution To avoid permanent damage to the NI 5742, disconnect all signals connected to the NI 5742 before powering down the module, and only connect signals after the module has been powered on by the FlexRIO FPGA module.

Caution The protection provided by the NI 5742 can be impaired if it is used in a manner not described in this document.

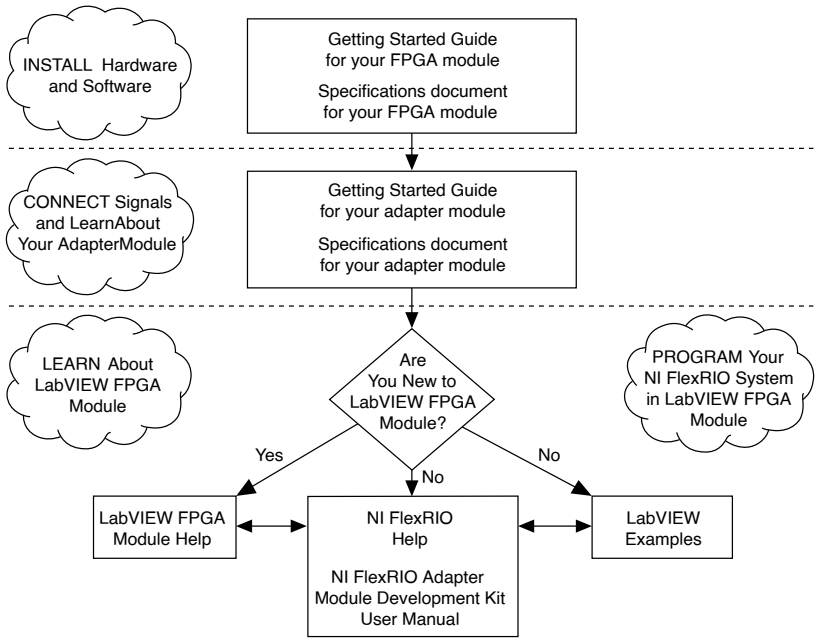
Note All numeric specifications are typical unless otherwise noted.

Specifications are subject to change without notice. For the most recent device specifications, visit ni.com/manuals.

How to Use Your FlexRIO Documentation

Refer to the following flowchart for information about how to use FlexRIO documentation.

Figure 1. How to Use Your FlexRIO Documentation



FlexRIO Documentation Locations

Document	Location	Description
Getting started guide for your FPGA module	Available from the Start menu and at ni.com/manuals.	Contains installation instructions for your FlexRIO system.
Specifications document for your FPGA module	Available from the Start menu and at ni.com/manuals.	Contains specifications for your FPGA module.
Getting started guide for your adapter module	Available from the Start menu and at ni.com/manuals.	Contains signal information, examples, and CLIP details for your adapter module.
Specifications document for your adapter module	Available from the Start menu and at ni.com/manuals.	Contains specifications for your adapter module.
LabVIEW FPGA Module Help	Embedded in **LabVIEW Help** and at ni.com/manuals.	Contains information about the basic functionality of the LabVIEW FPGA Module.
NI FlexRIO Help	Available from the Start menu and at ni.com/manuals.	Contains information about the FPGA module, adapter

Document	Location	Description
		module, and CLIP configuration information.
NI FlexRIO Adapter Module Development Kit User Manual	Available from the Start menu at Start > All Programs > National Instruments > NI FlexRIO > NI FlexRIO Adapter Module Development Kit > Documentation.	Contains information about how to create custom adapter modules for use with FlexRIO FPGA modules.
LabVIEW Examples	Available in NI Example Finder. In LabVIEW, click Help > Find Examples > Hardware Input and Output > FlexRIO.	Contains examples of how to run FPGA VIs and Host VIs on your device.
IPNet	Located at ni.com/ipnet.	Contains LabVIEW FPGA functions and intellectual property to share.
NI FlexRIO product page	Located at ni.com/flexrio.	Contains product information and data sheets for FlexRIO devices.

Table 1. FlexRIO Documentation Locations and Descriptions

Analog Output

General Characteristics

Number of channels	32
Connector type	VHDCI
Output type	Single-ended, DC-coupled
Digital data resolution	16-bit, unsigned, binary data[1]
Data update rate	Up to 1 MS/s[2]
Sample Clock sources	Internal FPGA-based data clock

DAC part number	AD5541A

Typical Specifications

Output impedance	0.8 Ω, typical
Output current drive	±2 mA
Overdrive protection	±20 V

Glitch

Mid-scale glitch	±10 mV at 3 µs
Turn-on glitch	±1 V for 2 ms

Noise

Average noise density	28 nV/√(Hz)
RMS noise to 1 MHz (single pole roll-off equivalent)	35 μV_{rms}

Gain and offset

Full-scale range	4.996 V ± 2.3 mV
Offset error	± 5.7 mV
Gain error	± 0.1%

Integral non-linearity (INL)

Typical	±0.5 least significant bits (LSB)

Maximum	± 2 LSB

Differential non-linearity (DNL)	
Typical	±0.5 LSB
Maximum	± 1 LSB

Settling time	
8 LSB	3.0 µs
4 LSB	3.8 µs
2 LSB	5.1 µs

Slew rate	10 V/µs

Programmable Function Interface (PFI 0, Front Panel Connector)

Connector	SMA
Direction	Bidirectional

AUX I/O (Port 0 DIO <0..3>, Port 1 DIO <0..3>, and PFI <0..3>

Number of channels	12 bidirectional (8 DIO and 4 PFI)
Connector type	HDMI
Interface standard	3.3 V LVCMOS

Interface logic	
Maximum V_{IL}	0.8 V
Minimum V_{IH}	2.0 V
Maximum V_{OL}	0.4 V
Minimum V_{OH}	2.7 V
Maximum V_{OH}	3.6 V
Z_{out}	50 Ω ± 20%
I_{out} (DC)	±2 mA

Pull-down resistor	150 kΩ
Recommended operating voltage	-0.3 V to 3.6 V
Overvoltage protection	±10 V
Maximum toggle frequency	100 MHz
+5 V maximum power	10 mA
+5 V voltage tolerance	4.2 V to 5 V

Environment

Maximum altitude	2,000 m (800 mbar) (at 25 °C ambient temperature)

Pollution Degree	2

Indoor use only.

Operating Environment

Ambient temperature range	0 °C to 55 °C (Tested in accordance with IEC 60068-2-1 and IEC 60068-2-2. Meets MIL-PRF-28800F Class 3 low temperature limit and MIL-PRF-28800F Class 2 high temperature limit.)
Relative humidity range	10% to 90%, noncondensing (Tested in accordance with IEC 60068-2-56.)

Storage Environment

Ambient temperature range	-40 °C to 71 °C (Tested in accordance with IEC 60068-2-1 and IEC 60068-2-2. Meets MIL-PRF-28800F Class 3 limits.)
Relative humidity range	5% to 95%, noncondensing (Tested in accordance with IEC 60068-2-56.)

Shock and Vibration

Operating shock	30 g peak, half-sine, 11 ms pulse (Tested in accordance with IEC 60068-2-27. Meets MIL-PRF-28800F Class 2 limits.)

Random vibration

Operating	5 Hz to 500 Hz, 0.3 g_{rms}
Nonoperating	5 Hz to 500 Hz, 2.4 g_{rms} (Tested in accordance with IEC 60068-2-64. Nonoperating test profile exceeds the requirements of MIL-PRF-28800F, Class 3.)

Compliance and Certifications

Safety

This product is designed to meet the requirements of the following electrical equipment safety standards for measurement, control, and laboratory use:

- IEC 61010-1, EN 61010-1
- UL 61010-1, CSA 61010-1

Note For UL and other safety certifications, refer to the product label or the Online Product Certification section.

Electromagnetic Compatibility

This product meets the requirements of the following EMC standards for electrical equipment for measurement, control, and laboratory use:

- EN 61326-1 (IEC 61326-1): Class A emissions; Basic immunity
- EN 55011 (CISPR 11): Group 1, Class A emissions
- EN 55022 (CISPR 22): Class A emissions
- EN 55024 (CISPR 24): Immunity
- AS/NZS CISPR 11: Group 1, Class A emissions
- AS/NZS CISPR 22: Class A emissions
- FCC 47 CFR Part 15B: Class A emissions
- ICES-001: Class A emissions

Note In the United States (per FCC 47 CFR), Class A equipment is intended for use in commercial, light-industrial, and heavy-industrial locations. In Europe, Canada, Australia, and New Zealand (per CISPR 11), Class A equipment is intended for use only in heavy-industrial locations.

Note Group 1 equipment (per CISPR 11) is any industrial, scientific, or medical equipment that does not intentionally generate radio frequency energy for the treatment of material or inspection/analysis purposes.

Note For EMC declarations, certifications, and additional information, refer to the Online Product Certification section.

CE Compliance CE

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

- 2014/35/EU; Low-Voltage Directive (safety)
- 2014/30/EU; Electromagnetic Compatibility Directive (EMC)

Online Product Certification

Refer to the product Declaration of Conformity (DoC) for additional regulatory compliance information. To obtain product certifications and the DoC for this product, visit ni.com/certification, search by model number or product line, and click the appropriate link in the Certification column.

Environmental Management

NI is committed to designing and manufacturing products in an environmentally responsible manner. NI recognizes that eliminating certain hazardous substances from our products is beneficial to the environment and to NI customers.

For additional environmental information, refer to the **Minimize Our Environmental Impact** web page at ni.com/environment. This page contains the environmental regulations and directives with which NI complies, as well as other environmental information not included in this document.

Waste Electrical and Electronic Equipment (WEEE)

> **EU Customers** At the end of the product life cycle, all NI products must be disposed of according to local laws and regulations. For more information about how to recycle NI products in your region, visit ni.com/environment/weee.

电子信息产品污染控制管理办法（中国 RoHS）

> **中国客户** National Instruments 符合中国电子信息产品中限制使用某些有害物质指令(RoHS)。关于 National Instruments 中国 RoHS 合规性信息，请登录 ni.com/environment/rohs_china。(For information about China RoHS compliance, go to ni.com/environment/rohs_china.)

[1] Data is written using a U16 data type.

[2] Each channel can be individually updated.