
NI-6585/6585B

Specifications

2025-07-23



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FlexRIO Documentation

Table 1. FlexRIO Documentation Locations and Descriptions

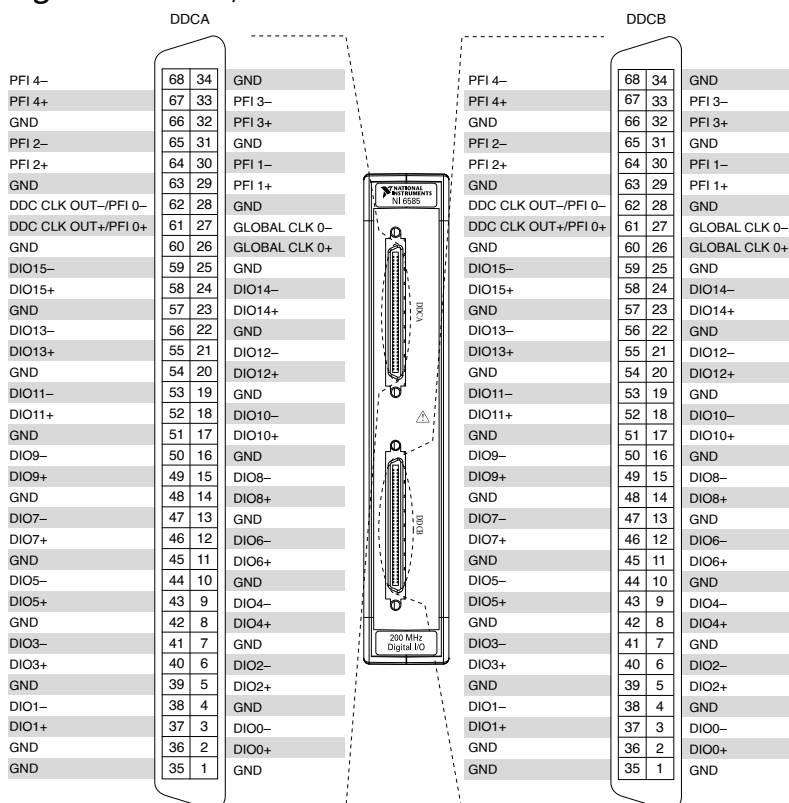
Document	Location	Description
Getting started guide for your FlexRIO FPGA module or Controller for FlexRIO	Available from the Start menu and at ni.com/manuals .	Contains installation instructions for your FlexRIO system.
Specifications document for your FlexRIO FPGA module or Controller for FlexRIO	Available from the Start menu and at ni.com/manuals .	Contains specifications for your FlexRIO FPGA module or Controller for FlexRIO.
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.
Real-Time Module Help	Embedded in LabVIEW Help and at ni.com/manuals .	Contains information about real-time programming concepts, step-by-step instructions for using LabVIEW with the Real-Time Module, reference information about Real-Time Module VIs and functions, and information about LabVIEW features on real-time operating systems.
FlexRIO Help	Available from the Start menu and at ni.com/manuals .	Contains information about the FPGA module front panel connectors and I/O, controller for FlexRIO front panel connectors and I/O,

Document	Location	Description
		programming instructions, and adapter module component-level IP (CLIP).
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.
FlexRIO product page	Located at ni.com/flexrio .	Contains product information and data sheets for FlexRIO devices.

NI 6585/6585B Pinout

Use the pinout to connect to terminals on the NI 6585/6585B.

Figure 1. NI 6585/6585B Connector Pinout





Note DIO <0..15>+/-, PFI <0..4>+/-, and DDC CLOCK OUT appear on both connectors, DDCA and DDCB.



Note PFI <0> can be used as an IO port. You can modify the CLIP for the NI 6585B to expose the signal as PFI <0>.

Table 2. Signal Descriptions

Signal Name	Pin(s)	Signal Type	Signal Description
GLOBAL CLOCK 0+	26 on DDCA	Clock	Input terminal for the external clock source, which can be used for dynamic acquisition or generation.
GLOBAL CLOCK 0-	27 on DDCA		
GLOBAL CLOCK 1+	26 on DDCB		
GLOBAL CLOCK 1-	27 on DDCB		
DIO <0..15>+	2, 5, 8 ,11 ,14, 17, 20, 23, 37, 40, 43, 46, 49, 52, 55 , 58	Data	Positive terminal of LVDS digital I/O data channels 0 through 15.
DIO <0..15>-	3, 6, 9, 12, 15, 18, 21, 24, 38, 41, 44, 47, 50, 53, 56, 59	Data	Negative terminal of LVDS digital I/O data channels 0 through 15.
DDC CLOCK OUT+/PFI 0+	61	Clock/Data	Positive output terminal for the exported Sample clock/Positive Programmable Function Interface terminal 0
DDC CLOCK OUT-/PFI 0-	62	Clock/Data	Negative output terminal for the exported Sample clock/Negative Programmable Function Interface terminal 0
PFI <1..4>+	29, 64, 32, 67	Data	Positive terminal of the Programmable Function Interface LVDS digital I/O

Signal Name	Pin(s)	Signal Type	Signal Description
			channels 1 through 4.
PFI <1..4>-	30, 65, 33, 68	Data	Negative terminal of the Programmable Function Interface LVDS digital I/O channels 1 through 4.
GND	1, 4, 7, 10, 13, 16, 19, 22, 25, 28, 31, 34, 35, 36, 39, 42, 45, 48, 51, 54, 57, 60, 63, 66	Ground	Ground reference for signals.



Caution To avoid damaging the NI 6585/6585B, disconnect all connected signals before powering down. Connect signals after the adapter module powers on by the FlexRIO FPGA module or Controller for FlexRIO.



Caution Connections that exceed the maximum ratings of connectors on the NI 6585/6585B might damage the device and the chassis. NI is not liable for any damage resulting from such connections.

Table 3. NI 6585/6585B DDCA Connector Signals and FlexRIO FPGA Module Signals

NI 6585/6585B		FlexRIO FPGA Module		
Connector	Signal Name	GPIO Out	GPIO Out Enable	GPIO In
DDCA	GLOBAL CLOCK 0	—	—	GClk_SE
	DIO 0+/-	GPIO_30_n	GPIO_31	GPIO_31_n
	DIO 1+/-	GPIO_12_n	GPIO_13	GPIO_13_n
	DIO 2+/-	GPIO_32	GPIO_32_n	GPIO_15_n
	DIO 3+/-	GPIO_14	GPIO_14_n	GPIO_15
	DIO 4+/-	GPIO_27_n	GPIO_28	GPIO_28_n
	DIO 5+/-	GPIO_9_n	GPIO_10	GPIO_10_n
	DIO 6+/-	GPIO_29	GPIO_29_n	GPIO_30
	DIO 7+/-	GPIO_11	GPIO_11_n	GPIO_12

NI 6585/6585B		FlexRIO FPGA Module		
Connector	Signal Name	GPIO Out	GPIO Out Enable	GPIO In
	DIO 8+/-	GPIO_22	GPIO_22_n	GPIO_23
	DIO 9+/-	GPIO_6_n	GPIO_7	GPIO_7_n
	DIO 10+/-	GPIO_26	GPIO_26_n	GPIO_27
	DIO 11+/-	GPIO_8	GPIO_8_n	GPIO_9
	DIO 12+/-	GPIO_19	GPIO_19_n	GPIO_20
	DIO 13+/-	GPIO_3_n	GPIO_4	GPIO_4_n
	DIO 14+/-	GPIO_20_n	GPIO_21	GPIO_21_n
	DIO 15+/-	GPIO_5	GPIO_5_n	GPIO_6
	DDC CLOCK OUT+/PFI 0+ DDC CLOCK OUT-/PFI 0-	GPIO_0	GPIO_0_n	GPIO_23_n
	PFI 1+/-	GPIO_1	GPIO_1_n	GPIO_24
	PFI 2+/-	GPIO_16	GPIO_16_n	GPIO_24_n
	PFI 3+/-	GPIO_17	GPIO_17_n	GPIO_25
	PFI 4+/-	GPIO_18	GPIO_18_n	GPIO_25_n

Table 4. NI 6585/6585B DDCB Connector Signals and FlexRIO FPGA Module Signals

NI 6585/6585B		FlexRIO FPGA Module		
Connector	Signal Name	GPIO Out	GPIO Out Enable	GPIO In
DDCB	GLOBAL CLOCK 1	—	—	GClk_LVDS
	DIO 0+/-	GPIO_46	GPIO_46_n	GPIO_47
	DIO 1+/-	GPIO_62_n	GPIO_63	GPIO_63_n
	DIO 2+/-	GPIO_47_n	GPIO_48	GPIO_48_n
	DIO 3+/-	GPIO_64	GPIO_64_n	GPIO_65
	DIO 4+/-	GPIO_43	GPIO_43_n	GPIO_44
	DIO 5+/-	GPIO_59_n	GPIO_60	GPIO_60_n
	DIO 6+/-	GPIO_44_n	GPIO_45	GPIO_45_n

NI 6585/6585B		FlexRIO FPGA Module		
Connector	Signal Name	GPIO Out	GPIO Out Enable	GPIO In
	DIO 7+/-	GPIO_61	GPIO_61_n	GPIO_62
	DIO 8+/-	GPIO_39	GPIO_39_n	GPIO_40
	DIO 9+/-	GPIO_54	GPIO_54_n	GPIO_55
	DIO 10+/-	GPIO_40_n	GPIO_41	GPIO_41_n
	DIO 11+/-	GPIO_55_n	GPIO_56	GPIO_56_n
	DIO 12+/-	GPIO_36	GPIO_36_n	GPIO_37
	DIO 13+/-	GPIO_51	GPIO_51_n	GPIO_52
	DIO 14+/-	GPIO_37_n	GPIO_38	GPIO_38_n
	DIO 15+/-	GPIO_52_n	GPIO_53	GPIO_53_n
	DDC CLOCK OUT+/PFI 0+ DDC CLOCK OUT-/PFI 0-	GPIO_49	GPIO_49_n	GPIO_57
	PFI 1+/-	GPIO_50	GPIO_50_n	GPIO_57_n
	PFI 2+/-	GPIO_33	GPIO_33_n	GPIO_58
	PFI 3+/-	GPIO_34	GPIO_34_n	GPIO_58_n
	PFI 4+/-	GPIO_35	GPIO_35_n	GPIO_59

Channel Specifications per Connector

Number of DDC connectors	2, DDCA and DDCB
Number of digital I/O channels	42 total (16 data, 5 PFI per DDC connector)
Direction control of data channels	Per channel
Power up state	Drivers disabled, 100 Ω differential impedance

Acquisition

Acquisition voltage levels	
Differential voltage threshold	± 50 mV
Voltage range	0 V min, 2.4 V max
Input impedance	100 Ω differential nominal
Maximum data rate	200 MBit/s single rate (SDR); 300 MBit/s double data rate (DDR)

Generation

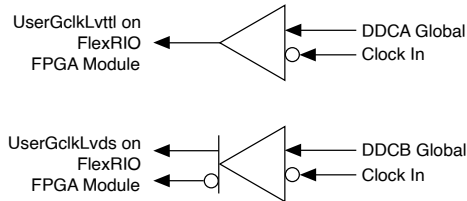
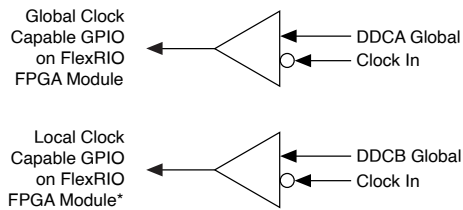
Table 5. Generation voltage levels (50 Ω LVDS load)

	Minimum	Maximum
Differential	247 mV	454 mV
Common Mode	1.125 V	1.375 V

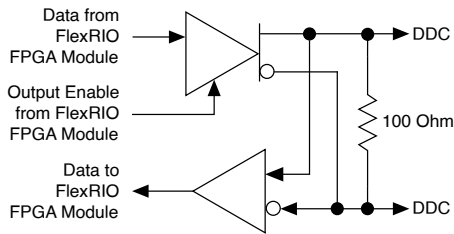


Note Generation expects 100 Ω termination at the destination in addition to the 100 Ω input termination of the NI 6585/6585B.

Characteristic impedance	100 Ω differential nominal
Maximum data rate	
Single data rate (SDR)	200 MBit/s
Double data rate (DDR)	300 MBit/s

Figure 1. Clock Input (NI 6585 variant)**Figure 1. Clock Input (NI 6585B variant)**

* DDCB Global Clock In can only clock DIO on the DDCB connector.

Figure 1. DIO <0..15> Data Channel, PFI <0..4>

Note Applies to each data and PFI channel. CLOCK OUT is the same as PFI 0.

Power

NI PXI-795xR/NI PXIe-796xR	
V_{CCOA}	315 mA, 1.1 W max
V_{CCOB}	315 mA, 1.1 W max
+3.3 V	36 mA, 0.12 W max
NI PXIe-797xR and NI-793xR (NI 6585B only)	

V_{CCO}	630 mA, 2.2 W max
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Physical

Dimensions	12.9 × 2.0 × 12.1 cm (5.1 × 0.8 × 4.7 in.)
Weight	284 g (10 oz)
Front Panel Connectors	Two 68-pin VHDCI connectors

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
Relative humidity range	10% to 90%, noncondensing

Storage Environment

Ambient temperature range	-20 °C to 71 °C
Relative humidity range	5% to 95%, noncondensing

Shock and Vibration

Operating shock	30 g peak, half-sine, 11 ms pulse
Random vibration	
Operating	5 Hz to 500 Hz, 0.3 g RMS
Nonoperating	5 Hz to 500 Hz, 2.4 g RMS

Compliance and Certifications

Safety Compliance Standards

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 C22.2 No. 61010-1



Note For safety certifications, refer to the product label or the [Product Certifications and Declarations](#) 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 [Product Certifications and Declarations](#) section.

Product Certifications and Declarations

Refer to the product Declaration of Conformity (DoC) for additional regulatory compliance information. To obtain product certifications and the DoC for NI products, visit ni.com/product-certifications, search by model number, and click the appropriate link.

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 ***Engineering a Healthy Planet*** 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.

EU and UK Customers

-  **Waste Electrical and Electronic Equipment (WEEE)**—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RoHS**—NI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NI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.)