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Find the *National Instruments cFP-DO-410* at our website: *Click HERE*

Digital Output Modules for Compact FieldPoint

NI cFP-DO-400, NI cFP-DO-401, NI cFP-DO-403, NI cFP-DO-410

- 8 or 16 digital outputs
  - 5 VDC
  - 12 VDC
  - 24 VDC
- Fused outputs for short circuit protection cFP-DO-410
- 2,300 V_{rms} bank isolation for transient overvoltage protection
- Hot-swappable with autoconfiguration
- -40 to 70 °C operating range



Module	Output Channels	Output Ranges	Output Current Rating (see Specifications for More Details)	Compatibility Examples	Electronically Fused Outputs	All Channel Update Rate
cFP-DO-400	8	10 to 30 VDC, sourcing	1.5 A	12 and 24 VDC	–	20 KHz
cFP-DO-401	16	10 to 30 VDC, sourcing	1.5 A	12 and 24 VDC	–	20 KHz
cFP-DO-403	16	5 to 30 VDC, sinking	2 A	5, 12, and 24 VDC	–	20 KHz
cFP-DO-410	8	5 to 30 VDC, sourcing	1 A	5, 12, and 24 VDC	✓	20 KHz

Overview

The National Instruments cFP-DO-4xx devices are versatile digital output modules for Compact FieldPoint that you can use to control digital signals ranging from 5 to 30 V. These modules are commonly used to control indicator lights, external relays, and CMOS and TTL devices. All the modules include onboard diagnostics to ensure trouble-free installation and maintenance.

Digital Output Modules

The cFP-DO-4xx modules provide built-in module-to-module isolation to protect your Compact FieldPoint system and controller or communication interface from high voltage levels. All the digital output modules use a common ground plane for the digital output channels.

The cFP-DO-400 and cFP-DO-401 sourcing digital output modules are capable of providing up to 2 A per channel, with a maximum power limit across the entire module as explained in the specifications section.

The cFP-DO-403 sinking digital output module is capable of providing up to 2 A per channel, with a maximum power limit across the entire module as explained in the specifications section.

The cFP-DO-410 sourcing digital output module is capable of providing up to 1 A per channel. It also features an electronic fuse that prevents damage to the module due to short circuits or other overcurrent situations. The fuses automatically reset when the output returns to a normal state. An LED indicates an overcurrent fault.

All the channels on the cFP-DO-4xx modules feature LEDs that indicate the output state of each channel. The modules feature an all-channel update rate of 20 kHz. Overall data throughput depends on software loop speeds and network speeds.

Isolation

The cFP-DO-4xx modules feature optical bank isolation with 2,300 V_{rms} of breakdown isolation. These Compact FieldPoint modules do not have channel-to-channel isolation.

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Field I/O Connections

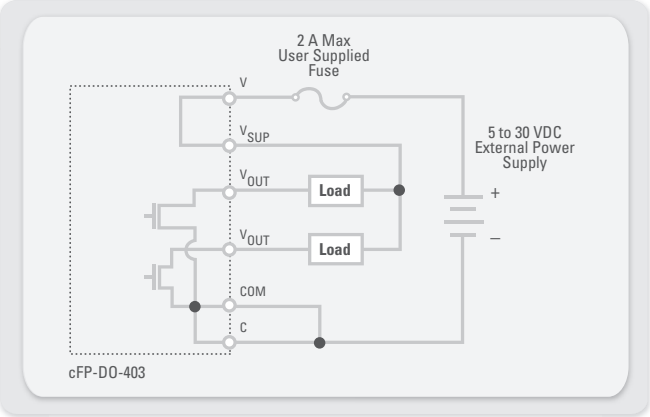
Compact FieldPoint modules include a built-in power distribution bus that offers multiple power connections on the module. A field-wired power supply connected to the voltage (V) and common (C) terminals is internally connected to a power distribution bus that provides additional breakout terminals for voltage supply (V_{SUP}) and common (COM). These terminals deliver a convenient way to distribute power to field devices that require external power.

Each cFP-DO-400 and cFP-DO-410 has:

- 8 digital output terminals (V_{OUT})
- 16 common terminals (COM)
- 8 power connections to power field devices (V_{SUP})

Each cFP-DO-401 and cFP-DO-403 has:

- 16 digital output terminals (V_{OUT})
- 8 common terminals (COM)
- 8 power connections to power field devices (V_{SUP})



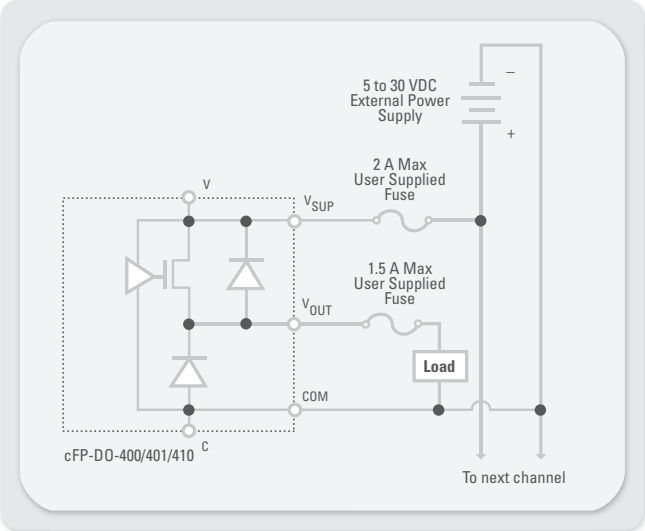


Figure 1. Wiring Schematics for Digital Output Modules

Ordering Information

NI cFP-DO-400	777318-400
NI cFP-DO-401	777318-401
NI cFP-DO-403	777318-403
NI cFP-DO-410	777318-410

Recommended Compact FieldPoint System Products

NI cFP-2020	777317-2020
NI cFP-BP-4	778617-04
NI cFP-CB-1	778618-01
NI PS-4 power supply	778805-90
NI Developer Suite Professional Control Edition	777906-03

BUY NOW!

For complete product specifications, pricing, and accessory information, call 800 813 3693 (U.S.) or go to **ni.com/info** and enter **cfpdo400**, **cfpdo401**, **cfpdo403**, and/or **cfpdo410**.

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Specifications

Typical for -40 to 70 °C unless otherwise noted.

Digital Output Channels

Number of output channels	
cFP-DO-400, cFP-DO-410	8
cFP-DO-401, cFP-DO-403	16
Voltage range	5 to 30 VDC
Output impedance at 10 to 30 V	0.3 (0.3 V drop at 1 A)
cFP-DO-403	0.12 Ω
Output impedance at 5 to 10 V	2 Ω
Maximum output current per channel at 10 to 30 V range	
cFP-DO-400, cFP-DO-401	1.5 A
cFP-DO-403	2.0 A
cFP-DO-410	1 A
Maximum output current on all channels	
cFP-DO-400	8 A^2
cFP-DO-401	8 A^2
cFP-DO-403	16 A^2 at -40 to 60 °C 12 A^2 at 60 to 70 °C
cFP-DO-410	8 A
Maximum output current at 5 to 10 V range	
Per channel	0.67 A
All channels, cFP-DO-400[1]	1.35 A^2
All channels, cFP-DO-401[1]	1.2 A^2
Output delay time	
Turn ON	20 µs
Turn OFF	50 µs
Protection	
Flyback diode to COM for inductive loads	
Leakage, overcurrent condition	
Power-on state	Off, until set to power-on state stored in local network module

[1]The sum of the squares of the output currents on every channel must be less than or equal to this value.

Power Requirements

Power from network module	
cFP-DO-400	300 mW
cFP-DO-401 and cFP-DO-403	600 mW
cFP-DO-410	400 mW

Isolation Voltage

Channel-to-channel isolation	No isolation between channels
Transient overvoltage	2,300 V_{rms}

Physical Characteristics

LED indicators	
POWER (green)	Power on and self-test passed
READY (green)	Module configured and ready
<0...15> or <0...7> (green)	On/off state of each channel
Dimensions (including terminal base)	10.7 by 10.9 by 9.1 cm (4.2 by 4.3 by 3.6 in.)
Weight	136 g (4.8 oz)

Environment

Operating temperature	-40 to 70 °C
Storage temperature	-55 to 85 °C
Relative humidity	10 to 90%, noncondensing

Shock and Vibration

Operating vibration, random	
(IEC 60068-2-64)	10 to 500 Hz, 5 g_{rms}
Operating vibration, sinusoidal	
(IEC 60068-2-6)	10 to 500 Hz, 5 g
Operating shock	
(IEC 60068-2-27)	50 g, 3 ms half sine, 18 shocks at 6 orientations; 30 g, 11 ms half sine, 18 shocks at 6 orientations

Safety and Compliance

Safety

This product is designed to meet the requirements of the following standards of safety for electrical equipment 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 visit **ni.com/certification**, search by model number or product line, and click the appropriate link in the Certification column.

Electromagnetic Compatibility

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

- EN 61326 EMC requirements; Minimum Immunity
- EN 55011 Emissions; Group 1, Class A
- CE, C-Tick, ICES, and FCC Part 15 Emissions; Class A

Note: For EMC compliance, operate this device according to product documentation.

CE Compliance

This product meets the essential requirements of applicable European Directives, as amended for CE marking, as follows:

- 2006/95/EC; Low-Voltage Directive (safety)
- 2004/108/EC; Electromagnetic Compatibility Directive (EMC)

Note: Refer to the Declaration of Conformity (DoC) for this product for any additional regulatory compliance information. To obtain 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.

Waste Electrical and Electronic Equipment (WEEE)

EU Customers: At the end of their life cycle, all products must be sent to a WEEE recycling center. For more information about WEEE recycling centers and National Instruments WEEE initiatives, visit **ni.com/environment/weee.htm**.

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