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uctions

tal Input Module

how to install and use
For information about
304 over a network, refer to
work module you are using.

l input module with the

g-output devices

p to 60 VDC on up to

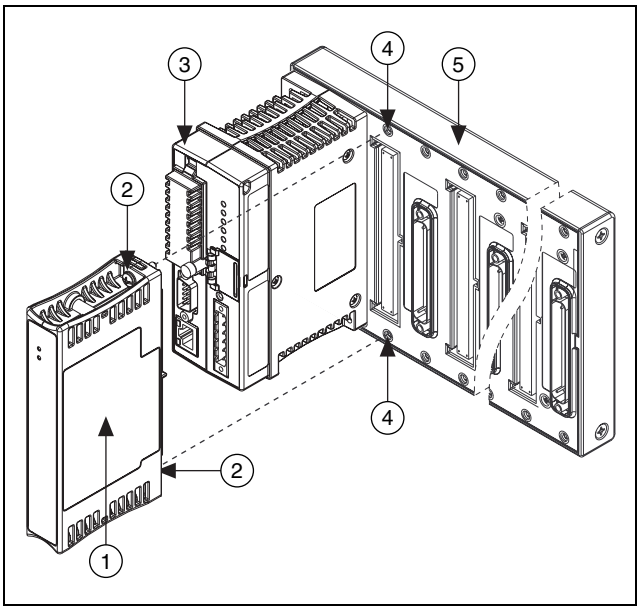
nel-to-ground isolation,
ric withstand test

4

t FieldPoint backplane
power to the module.
ered backplane does not
bank.

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3. Using a number 2 Phillips screwdriver with a shank of at least 64 mm (2.5 in.) length, tighten the captive screws to 1.1 N · m (10 lb · in.) of torque. The nylon coating on the screws prevents them from loosening.



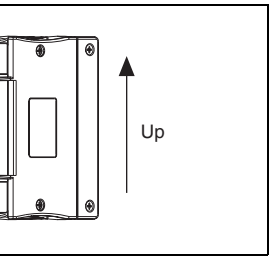
1	cFP-DI-304	4	Screw Holes
2	Captive Screws	5	cFP-BP-x Backplane
3	cFP Controller Module		

Figure 1. Installing the cFP-DI-304

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pright

y, mount the Compact
ule vents are at the top and



ystem Upright

ch of the 32 input channels.
connections for only
ut terminal, V_{IN}.

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signments

V_{IN} Terminal
1
2
3
4

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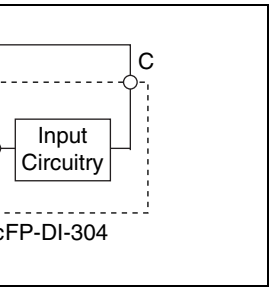
Table 1. Terminal Assignments (Continued)

Channel	V_{IN} Terminal
10	11
11	12
12	13
13	14
14	15
15	16
16	17
17	18
18	19
19	20
20	21
21	22
22	23
23	24
24	25
25	26
26	27
27	28
28	29
29	30
30	31
31	32

You can wire each channel for use with a *sourcing-output* device. A sourcing-output device provides a path to a voltage source.

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cing-output device to one



onnected to One Channel

nnected devices to the

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s. You can connect a voltage
annels share a common
other modules in the

to a V_{IN} terminal, current
annel is ON. When you
minal, the channel is OFF.
nd 10 V, the channel may be

hich means that current
nput circuitry. The inputs are
ces capable of sourcing

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Status Indicators

The cFP-DI-304 has two green status LEDs, **POWER** and **READY**. After you insert the cFP-DI-304 into a backplane and apply power to the connected network module, the green **POWER** indicator lights and the cFP-DI-304 informs the network module of its presence. When the network module recognizes the cFP-DI-304, it sends initial configuration information to the cFP-DI-304. After the cFP-DI-304 receives this initial information, the green **READY** indicator lights and the module is in normal operating mode.

In addition to the POWER and READY lights, each channel has a numbered green status indicator that lights when the channel is in the ON state.

Upgrading the FieldPoint Software

In order to use the cFP-DI-304, you must have FieldPoint software version 5.0 or later installed on the host computer. Go to `ni.com/support`, select **Drivers and Updates»Current Versions»Distributed I/O—FieldPoint**, and select the latest version under **Driver**.

Upgrading the FieldPoint Firmware

You may need to upgrade the FieldPoint firmware when you add new I/O modules to the FieldPoint system. For information about determining which firmware you need and how to upgrade your firmware, go to `ni.com/info` and enter `fpmatrix`.

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delines

nformation before
P-DI-304 to any circuits
oltages.[1]

the cFP-DI-304 and
y standards. The field
he backplane and the
e isolation barriers in the
nt Category II continuous
ground isolation, verified
nd test.[2] The cFP-DI-304
with IEC 61010-1 for
standards (such as those
use of double insulation
uman-accessible parts or

between human-accessible
stations) and circuits that
ormal conditions, unless the
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ed to handle applications
e guidelines to ensure a safe

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re properly insulated from

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oltages (the V and

- For Compact FieldPoint, you *must* connect the protective earth (PE) ground terminal on the cFP-BP-*x* backplane to the system safety ground. The backplane PE ground terminal has the following symbol stamped beside it: ⏚. Connect the backplane PE ground terminal to the system safety ground using 14 AWG (1.6 mm) wire with a ring lug. Use the 5/16 in. panhead screw shipped with the backplane to secure the ring lug to the backplane PE ground terminal.
- As with any hazardous voltage wiring, make sure that all wiring and connections meet applicable electrical codes and commonsense practices. Mount terminal bases and backplanes in an area, position, or cabinet that prevents accidental or unauthorized access to wiring that carries hazardous voltages.
- Do *not* use the cFP-DI-304 as the only isolating barrier between human contact and working voltages higher than 250 V_{rms}.
- Operate the cFP-DI-304 only at or below Pollution Degree 2. Pollution Degree 2 means that only nonconductive pollution occurs in most cases. Occasionally, however, temporary conductivity caused by condensation must be expected.
- Operate the cFP-DI-304 at or below Measurement Category II. Measurement Category II is for measurements performed on circuits directly connected to the low-voltage installation. This category refers to local-level distribution, such as that provided by a standard wall outlet.

Safety Guidelines for Hazardous Locations

The cFP-DI-304 is suitable for use in Class I, Division 2, Groups A, B, C, D, T4 hazardous locations; Class I, Zone 2, AEx nC IIC T4 and Ex nC IIC T4 hazardous locations; and nonhazardous locations only. Follow these guidelines if you are installing the cFP-DI-304 in a potentially explosive environment. Failing to follow these guidelines may result in serious injury or death.

Caution Do *not* disconnect I/O-side wires or connectors unless power has been switched off or the area is known to be nonhazardous.

Caution Do *not* remove modules unless power has been switched off or the area is known to be nonhazardous.

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Caution Substitution of components may impair suitability for Class I, Division 2.

Caution For Zone 2 applications, install the Compact FieldPoint system in an enclosure rated to at least IP 54 as defined by IEC 60529 and EN 60529.

Caution For Zone 2 applications, connected signals must be within the following limits:

Capacitance ..... 0.2 µF max

Special Conditions for Safe Use in Europe

This equipment has been evaluated as EEx nC IIC T4 equipment under DEMKO Certificate No. 03 ATEX 0251502X. Each module is marked Ex II 3G and is suitable for use in Zone 2 hazardous locations.

Safety Guidelines for Hazardous Voltages

If hazardous voltages are connected to the module, take the following precautions:

Caution Ensure that hazardous voltage wiring is performed only by qualified personnel adhering to local electrical standards.

Caution Do *not* mix hazardous voltage circuits and human-accessible circuits on the same module.

Caution Make sure that devices and circuits connected to the module are properly insulated from human contact.

Caution When terminals on the connector block are live with hazardous voltages, make sure that the terminals are *not* accessible.

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Specifications

These specifications are typical for the range –40 to 70 °C unless otherwise noted. Specifications are subject to change in future revisions.

Input Characteristics

Number of channels 32

Input voltage ..... 0–30 VDC

Input type ..... Sinking

Digital logic levels

- OFF state
  - Input voltage ..... ≤5 V
  - Input current ..... ≤150 µA
- ON state
  - Input voltage ..... ≥10 V
  - Input current ..... ≥330 µA
- Hysteresis
  - Input voltage ..... 2 V min
  - Input current ..... 60 µA min

Input impedance ..... 30 kΩ ±6%

I/O protection

- Input voltage
  - Eight channels ..... 60 VDC/channel max
  - 32 channels ..... 30 VDC/channel max
- Reverse-biased voltage
  - Eight channels ..... –60 VDC/channel max
  - 32 channels ..... –30 VDC/channel max

Physical Characteristics

Indicators ..... Green **POWER** and **READY** indicators, 32 green input state indicators

Weight ..... 193 g (6.81 oz)

Power Requirements

Power from network module ..... 1 W

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ctric withstand test.

250 V_{rms}
2,300 V_{rms}, 5 s max

250 V_{rms}
2,300 V_{rms}, 5 s max
None

ndoor use only. For outdoor
aled enclosure.

-40 to 70 °C

-40 to 65 °C
-55 to 85 °C
0 to 90% RH,
noncondensing
2,000 m; at higher altitudes
he isolation voltage ratings
must be lowered.
2

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0–500 Hz, 5 g_{rms}

Safety Standards

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

- EN 61010-1, IEC 61010-1
- UL 61010-1
- CAN/CSA-22.2 No. 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

Emissions ..... EN 55011 Class A at 10 m; FCC Part 15A above 1 GHz

Immunity ..... EN 61326:1997 + A2:2001, Table 1

CE, C-Tick, and FCC Part 15 (Class A) Compliant

Note For EMC compliance, you must operate this device with shielded cabling.

CE Compliance

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

Low-Voltage Directive (safety) 73/23/EEC

Electromagnetic Compatibility Directive (EMC) 89/336/EEC

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.

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Where to Go for Support

For more information about setting up the FieldPoint system, refer to these National Instruments documents:

- FieldPoint network module user manual
- Other FieldPoint I/O module operating instructions
- FieldPoint terminal base and connector block operating instructions

Go to `ni.com/support` for the most current manuals, examples, and troubleshooting information.

National Instruments corporate headquarters is located at 11500 North Mopac Expressway, Austin, Texas, 78759-3504. National Instruments also has offices located around the world to help address your support needs. For telephone support in the United States, create your service request at `ni.com/support` and follow the calling instructions or dial 512 795 8248. For telephone support outside the United States, contact your local branch office:

Australia 1800 300 800, Austria 43 0 662 45 79 90 0,
Belgium 32 0 2 757 00 20, Brazil 55 11 3262 3599,
Canada 800 433 3488, China 86 21 6555 7838,
Czech Republic 420 224 235 774, Denmark 45 45 76 26 00,
Finland 385 0 9 725 725 11, France 33 0 1 48 14 24 24,
Germany 49 0 89 741 31 30, India 91 80 51190000,
Israel 972 0 3 6393737, Italy 39 02 413091,
Japan 81 3 5472 2970, Korea 82 02 3451 3400,
Lebanon 961 0 1 33 28 28, Malaysia 1800 887710,
Mexico 01 800 010 0793, Netherlands 31 0 348 433 466,
New Zealand 0800 553 322, Norway 47 0 66 90 76 60,
Poland 48 22 3390150, Portugal 351 210 311 210,
Russia 7 095 783 68 51, Singapore 1800 226 5886,
Slovenia 386 3 425 4200, South Africa 27 0 11 805 8197,
Spain 34 91 640 0085, Sweden 46 0 8 587 895 00,
Switzerland 41 56 200 51 51, Taiwan 886 02 2377 2222,
Thailand 662 278 6777, United Kingdom 44 0 1635 523545

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