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FP-CTR-502 and cFP-CTR-502

Eight-Channel, 16-Bit Counter Module

These operating instructions describe how to install and use the National Instruments FP-CTR-502 and cFP-CTR-502 counter modules (referred to inclusively as the [c]FP-CTR-502). For information about configuring and accessing the [c]FP-CTR-502 over a network, refer to the user manual for the FieldPoint network module you are using.

Features

The [c]FP-CTR-502 is a FieldPoint counter module with the following features:

- Eight 16-bit counters with individual count-input terminals
- Four gate-input channels configurable as either gates or digital inputs
- Four output channels configurable as either generic digital outputs or associated outputs for the count-input channels
- 5–30 VDC sourcing inputs and sinking outputs, compatible with TTL devices and other 5, 12, and 24 VDC devices
- Internal frequency references of 1 kHz and 32 kHz
- Internally cascadable counters
- Software-enabled 50 kHz or 200 Hz lowpass filter on count-input channels
- On/Off LED indicators
- 2,300 V_{rms} transient overvoltage protection
- Hot swappable

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NATIONAL INSTRUMENTS

Installing the FP-CTR-502

The FP-CTR-502 mounts on a FieldPoint terminal base (FP-TB-*x*), which provides operating power to the module. Installing the FP-CTR-502 onto a powered terminal base does not disrupt the operation of the FieldPoint bank.

To install the FP-CTR-502, refer to Figure 1 and complete the following steps:

1. Slide the terminal base key to either position X, used for any module, or position 8, used for the FP-CTR-502 module.
2. Align the FP-CTR-502 alignment slots with the guide rails on the terminal base.
3. Press firmly to seat the FP-CTR-502 on the terminal base. When the module is firmly seated, the terminal base latch locks it into place.

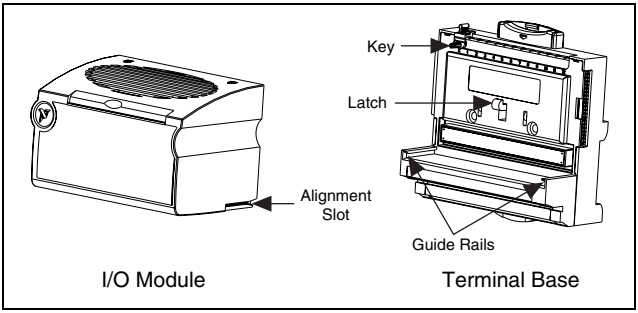


Figure 1. Installing the FP-CTR-502

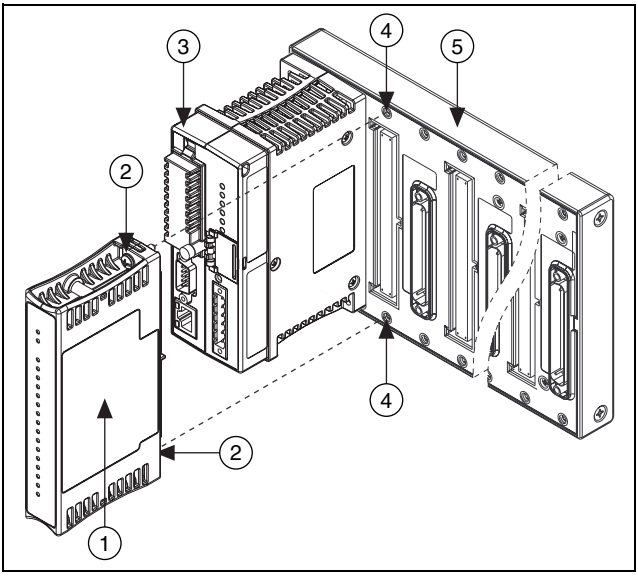
Installing the cFP-CTR-502

The cFP-CTR-502 mounts on a Compact FieldPoint backplane (cFP-BP-*x*), which provides operating power to the module. Installing the cFP-CTR-502 onto a powered backplane does not disrupt the operation of the FieldPoint bank.

To install the cFP-CTR-502, refer to Figure 2 and complete the following steps:

1. Align the captive screws on the cFP-CTR-502 with the holes on the backplane. The alignment keys on the cFP-CTR-502 prevent backward insertion.

2. Press firmly to seat the cFP-CTR-502 on the backplane.
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 I/O Module	4	Screw Holes
2	Captive Screws	5	cFP Backplane
3	cFP Controller		

Figure 2. Installing the cFP-CTR-502

Wiring the [c]FP-CTR-502

The FP-TB-*x* terminal base has connections for each FP-CTR-502 channel and for an external power supply to power the input channels and field devices. The cFP-CB-*x* connector block provides the same connections for the cFP-CTR-502. The V and V_{SUP} terminals are all internally connected, as are the C and COM terminals.

Use a 5–30 VDC external power supply for the input channels. The power supply must provide enough current to power all of the input channels and all of the field devices on the output channels. Connect the external power supply to multiple V and V_{SUP} terminals and to multiple C and COM terminals as needed to ensure that the maximum current through any terminal is 2 A or less.

Install a 2 A maximum, fast-acting fuse between the external power supply and the V or V_{SUP} terminal on each channel. Install a 1 A maximum, fast-acting fuse suitable for the load at the V_{OUT} terminal. The detailed wiring diagrams in this document show fuses where appropriate.

Table 1 lists the terminal assignments for the signals of each channel. Terminal assignments are also listed on the side panel of the cFP-CTR-502 and under the slide-in card on the front of the FP-CTR-502.

Table 1. Terminal Assignments

Channel Name	Terminal Numbers		
	V_{IN} or V_{OUT}[1]	V_{SUP}[2]	COM
Count Inputs			
Count Input 0	1	17	18
Count Input 1	2	17	18
Count Input 2	3	19	20
Count Input 3	4	19	20
Count Input 4	5	21	22
Count Input 5	6	21	22
Count Input 6	7	23	24
Count Input 7	8	23	24
Gate Inputs			
Gate 0	9	25	26
Gate 1	10	25	26
Gate 2	11	27	28
Gate 3	12	27	28

Table 1. Terminal Assignments (Continued)

Channel Name	Terminal Numbers		
	V_{IN} or V_{OUT}[1]	V_{SUP}[2]	COM
Outputs			
Output 0	13	29	30
Output 1	14	29	30
Output 2	15	31	32
Output 3	16	31	32

[1] Install a 1 A maximum, fast-acting fuse on each V_{OUT} terminal.
[2] Install a 2 A maximum, fast-acting fuse on each V and V_{SUP} terminal.

Inputs

Each input channel has one input terminal, V_{IN}. Each channel also has V_{SUP} and COM terminals that can supply power to field devices or provide additional connections to the external power supply. You can connect the eight count-input channels and four gate-input channels to devices with sinking outputs. The [c]FP-CTR-502 has *sourcing* inputs, which means that the V_{IN} terminal provides a path to a voltage supply.

The [c]FP-CTR-502 input channels are optically isolated from the rest of the FieldPoint bank and have current-limiting circuitry. All the input channels are referenced to the V and V_{SUP} terminals. In the ON state, an optoisolator is turned on between the positive external supply voltage (V and V_{SUP}) and the input (V_{IN}).

When choosing your external devices and power supply, keep in mind that the input-logic thresholds are defined by the power supply as detailed in the *Specifications* section.

$$V_{threshold} = V_{SUP} - V_K$$

where $V_{threshold}$ is the threshold voltage for the channel

V_{SUP} is the supply voltage, measured across V_{SUP} and COM

V_K has a value of 2–3 V

When V_{IN}, the voltage across V_{IN} and COM, is lower than $V_{threshold}$, the channel is ON. Therefore, if you connect a 24 V power supply to the [c]FP-CTR-502, an input channel registers an ON state when

V_{IN} is 21 V or lower, and an OFF state when V_{IN} is 22 V or higher. The channel state is indeterminate when V_{IN} is between 21 V and 22 V.

Ensure that the sinking-output devices have OFF state leakage currents of less than 0.3 mA so they do not send false ON state readings to the [c]FP-CTR-502.

Note You *must* use the same ground for all of the input and output channels on the [c]FP-CTR-502.

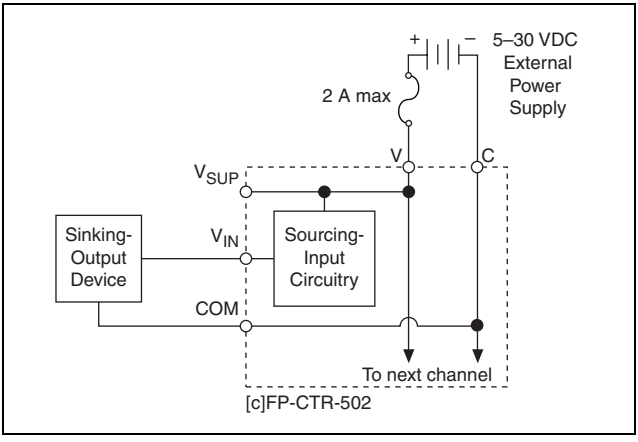


Figure 3. Wiring a Count-Input or Gate-Input Channel to a Sinking-Output Device

Outputs

Each output channel has one output terminal, V_{OUT}. Each channel also has V_{SUP} and COM terminals that can supply power to field devices.

The [c]FP-CTR-502 has *sinking* outputs, which means that V_{OUT} provides a path to ground. You can connect the [c]FP-CTR-502 outputs to sourcing-input devices.

In the ON state, a transistor is turned on between the output (V_{OUT}) and common (C and COM). In the OFF state, this transistor is turned off, allowing only a small leakage current to flow. Ensure that the load on any output channel does not draw more than 1 A.

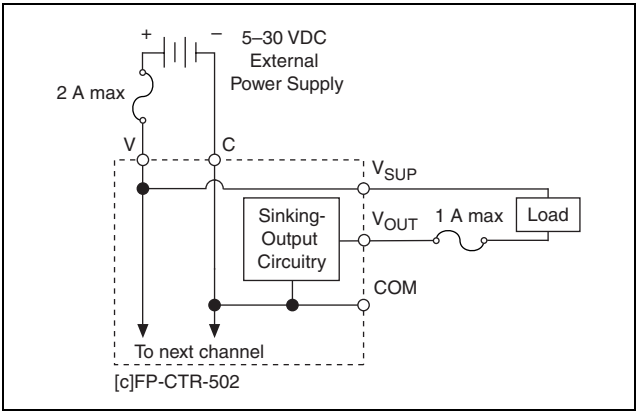


Figure 4. Wiring an Output Channel to a Sourcing-Input Device

If you connect a [c]FP-CTR-502 output to an externally powered sourcing-input device, be aware that the voltage applied to the V_{OUT} terminal by the external device must not exceed the voltage level of the power supply connected to the [c]FP-CTR-502.

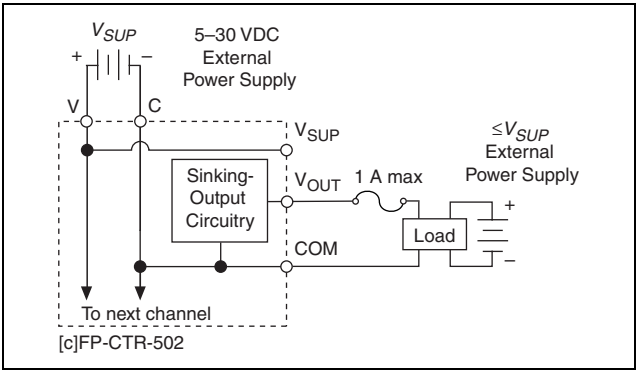


Figure 5. Wiring an Output to an Externally Powered Sourcing-Input Device

Configuring Count-Input Channels

Channels 0–7 are count-input channels. In FieldPoint software, you can configure each count-input channel to operate with attributes and commands. In the Channel Configuration dialog box, select attributes for each channel from the Attributes menu and commands from the Commands menu. The following sections describe the different attributes and commands you can select when you are configuring the count-input channels. For more information about using FieldPoint software, refer to the FieldPoint software help file.

Terminal Count

To set the terminal count, enter a value from 0 to 65,535 in the Value field. The default value is 65,535. When the count-input channel exceeds its terminal count, the count resets to 0 and triggers any outputs associated with it. For more information about associating outputs with a count-input channel, refer to the *Configuring Output Channels* section. The count-input channel also sends a count trigger to the next count-input channel if that channel is set to use the previous channel as the count source.

Channel Status

In FieldPoint software, the [c]FP-CTR-502 reports one of the following statuses: **`Successful`** or **`Overflow since last read`**. The default channel status is **`Successful`**. If a count-input channel exceeds the terminal count, the channel resets to 0 and starts counting again, and the channel status changes to **`Overflow since last read`**.

Count Source

Select one of the following count sources from the Value menu: **External Count Input**, **Previous Channel**, **1 kHz Reference**, or **32 kHz Reference**. Select **External Count Input**, **1 kHz Reference**, or **32 kHz Reference** to configure the channel so that it counts low-to-high (off-to-on or rising-edge) transitions of the count source.

Select **Previous Channel** if you want the channel to count the number of times that the previous count-input channel reaches its terminal value and resets to 0. You can configure multiple counters to operate as one large counter. You can slave Channel 1

to Channel 0, Channel 0 to Channel 7, Channel 7 to Channel 6, and so on. If you select this option for all of the channels, no counting occurs.

Gate Source

Select **Gate Input 0–3** from the Value menu to associate a gate-input channel with a count-input channel. If the count-input channel uses one of the external gate inputs, counting is enabled when the gate-input signal is high and is disabled when the signal is low, as shown in Figure 6. The gate-input signal is high when the channel is ON. The external device determines the high and low intervals of the gate-input signal. If you do not associate a gate-input channel with the count-input channel, select **Always Disabled** or **Always Enabled**. Select **Always Enabled** if you want the count-input channel to count at all times, even if there is nothing wired to the gate input. Always Enabled is the default value.

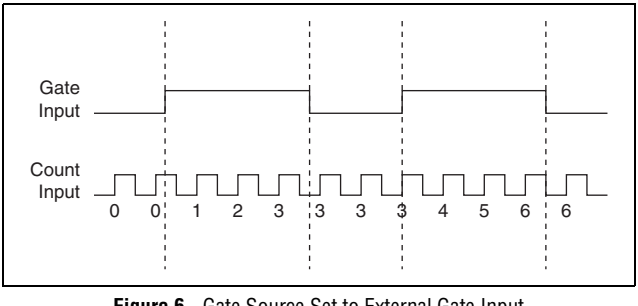


Figure 6. Gate Source Set to External Gate Input

Read Reset Mode

You can configure each count-input channel to reset each time the FieldPoint network module reads it by selecting **Reset on Read** from the Value menu. A read-initiated reset also resets any outputs associated with the target channel. The default is Don't Reset On Read.

Note Read Reset mode is not intended to be used with FieldPoint Ethernet network modules.

Noise Rejection

Each count-input channel has a software-enabled lowpass filter that you can set to reject frequencies above 200 Hz or 50 kHz. Select **200 Hz** or **50 kHz** from the Value menu to configure noise rejection. The default is 50 kHz.

Control

You can set the Control command to increment or reset by selecting **Increment** or **Reset** from the Action menu. The increment-control command increases the count-input channel in value by one. The reset-control command resets the count-input channel. The control commands ignore the gate-source setting and gate-input state.

Configuring Gate-Input Channels

Channels 8–11 are gate-input channels. The only difference between the input circuits of the gate-input channels and those of the count-input channels is that the gate-input channels do not have a programmable lowpass filter. The states of the gate inputs can always be read as simple digital inputs on Channels 8–11.

You do not need to configure anything in software for the gate-input channels.

Configuring Output Channels

Channels 12–15 are digital output channels. In the Channel Configuration dialog box of FieldPoint software, you can select attributes for each output channel from the Attributes menu. The following sections describe the different attributes you can select for output channels.

Output Source

You can configure each output channel to operate either as an associated output for one of the eight count-input channels or as a generic digital output. Select **Counter Channel 0–7** from the Value menu if you want the digital output channel to operate as an output for a corresponding count-input channel. Select **Discrete Data** from the Value menu if you want to use this channel as a generic digital output. When you write data to an output channel, you affect the output state only if you configure the Output Source as Discrete Data.

Output Mode

For each output channel select one of the following output modes from the Value menu: **Toggle, Reset Off**; **Toggle, Reset On**; **On Pulse**; or **Off Pulse**. The output modes work only if you select **Counter Channel 0–7** for the **Output Source**. The following sections describe the different output modes.

Toggle, Reset Off

In Toggle, Reset Off mode, the output channel starts low and goes high when the terminal count is exceeded. The output channel returns to low the next time the terminal count is exceeded or when you send a reset command to the associated count-input channel. In Figure 7, the terminal count is 4.

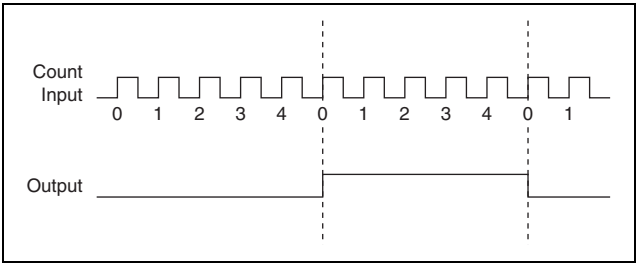


Figure 7. Output of a Channel Set to Toggle, Reset Off Mode

Toggle, Reset On

In Toggle, Reset On mode, the output channel starts high and goes low when the terminal count is exceeded. The output channel returns to high the next time the terminal count is exceeded or when you send a reset command to the associated count-input channel. In Figure 8, the terminal count is 4.

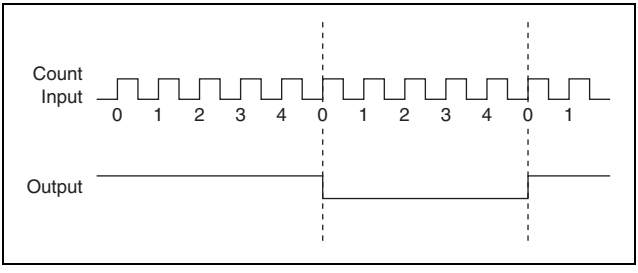


Figure 8. Output of a Channel Set to Toggle, Reset On Mode

On Pulse

In On Pulse mode, the output channel starts low and goes high when the terminal count is exceeded. The output channel returns to low after one count. In Figure 9, the terminal count is 4.

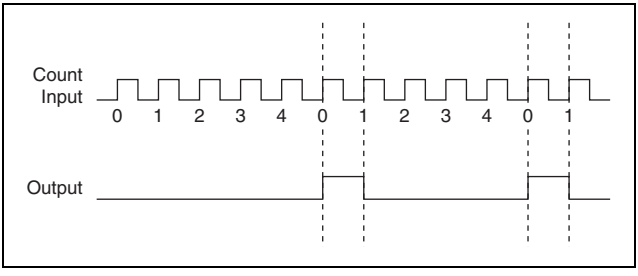


Figure 9. Output of a Channel Set to On Pulse Mode

Off Pulse

In Off Pulse mode, the output channel starts high and goes low when the terminal count is exceeded. The output channel returns to high after one count. In Figure 10, the terminal count is 4.

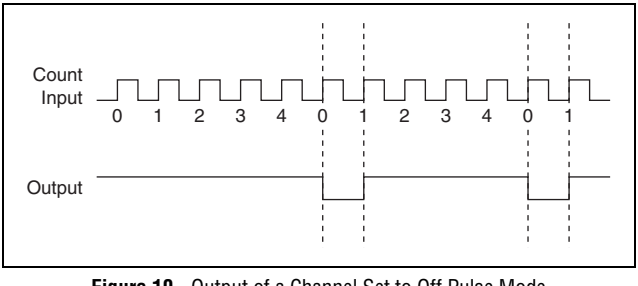


Figure 10. Output of a Channel Set to Off Pulse Mode

Application Note: Generating a Continuous Pulse Train

You can use two [c]FP-CTR-502 count-input channels and one output channel to generate a continuous pulse train with a controllable duty cycle and period. The first count-input channel serves as a clock prescaler and divides the input clock by a fixed value. This generates a slower clock for the second count-input channel, which serves as the pulse counter. The pulse counter is the output source for the output channel.

Figure 11 shows the components of a continuous pulse train.

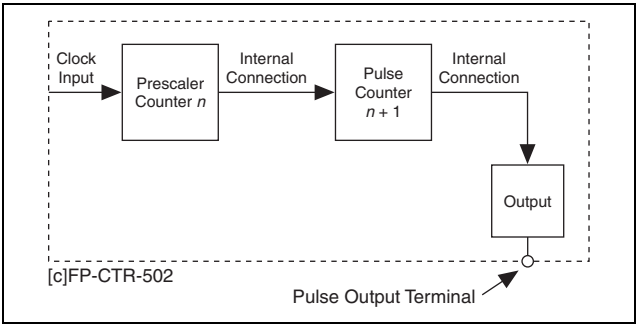


Figure 11. Continuous Pulse Train

Step 1. Set Up the Prescaler Counter

To set up the prescaler counter, complete the following steps:

1. If you do not need to scale the frequency of your clock input, you can configure the pulse counter to use the clock input directly instead of the prescaler counter. To set up the pulse counter, skip to *Step 2. Set Up the Pulse Counter*.
2. Select two count-input channels and an output channel to use. Select count-input channels that are numbered sequentially (for example, Channels 1 and 2, 5 and 6, or 7 and 0). The count-input channel with the lower number is the prescaler counter and the count-input channel with the higher number is the pulse counter.
3. Set the Gate Source attribute of the prescaler counter to **Always Enabled**, and set Read Reset Mode to **Don't Reset On Read**.

4. Set the Count Source of the prescaler counter to the clock on which you want to base your pulse train. This can be the external counter input or one of the [c]FP-CTR-502 internal references.
5. Subtract 1 from the value that you want to divide the input clock by, and set the terminal count of the prescaler counter to the result. For example, a terminal count of 4 divides the input clock by 5. If you use the 1 kHz reference as the prescaler count source, this setting generates a 200 Hz clock for the pulse counter.

To determine the frequency of the prescaler output, use the following formula:

$$f_{pre} = \frac{f_{src}}{term_{pre} + 1}$$

where f_{pre} is the frequency of the prescaler counter output

f_{src} is the count-input frequency for the prescaler counter

$term_{pre}$ is the terminal count value for the prescaler counter

Step 2. Set Up the Pulse Counter

To set up the pulse counter, complete the following steps:

1. Set the Count Source of the pulse counter (the count-input channel with the higher number) to **Previous Channel** so that it uses the output from the prescaler counter.



Note If you are not using a prescaler counter, set the Count Source to the clock on which you want to base your pulse train.

2. Set the Read Reset Mode of the pulse counter to **Don't Reset On Read** and set the Gate Source to **Always Enabled**.
3. Subtract 1 from the value that you want to divide the count input by and set the Terminal Count of the pulse counter to the result.

   The internal output from the pulse counter triggers the output channel that you selected for the pulse train output.

To determine the frequency of the output from the pulse counter, use the following formula:

$$f_{pulse} = \frac{f_{pre}}{term_{pulse} + 1}$$

where f_{pulse} is the pulse counter output frequency

f_{pre} is the prescaler counter output frequency

$term_{pulse}$ is the terminal count value for the pulse counter

Step 3. Configure the Pulse Train Output Channel

To configure the pulse train output channel, complete the following steps:

1. For the output channel that you selected, set the Output Source to the pulse-counter channel.
2. Set the Output Mode of the output channel. To generate a pulse train with variable duty cycle, use one of the pulse modes—On Pulse or Off Pulse. To generate a 50% duty-cycle pulse train, use one of the toggle modes.

To determine the duty cycle, use the following formulas:

For On Pulse mode, use

$$d = \frac{1}{term_{pulse} + 1}$$

For Off Pulse mode, use

$$d = 1 - \left(\frac{1}{term_{pulse} + 1}\right)$$

where d is the duty cycle of the pulse train

$term_{pulse}$ is the terminal count value of the pulse counter

When you set the output to one of the pulse modes, the frequency of the pulse train (f_{pulse}) is the same as that shown in *Step 2. Set Up the Pulse Counter* , but the output frequency is half that value when you set the output channel to one of the toggle modes.

Status Indicators

Figure 12 shows the status indicator LEDs on the [c]FP-CTR-502.

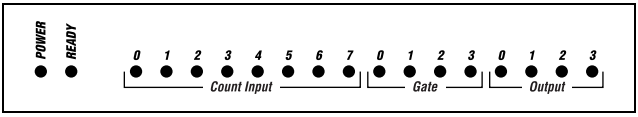


Figure 12. Status Indicators

The [c]FP-CTR-502 has two green status LEDs, **POWER** and **READY**. After you install the [c]FP-CTR-502 onto a terminal base or backplane and apply power to the connected network module, the green **POWER** indicator lights and the [c]FP-CTR-502 informs the network module of its presence. When the network module recognizes the [c]FP-CTR-502, it sends initial configuration information to the [c]FP-CTR-502. After the [c]FP-CTR-502 receives this initial information, the green **READY** indicator lights and the module is in normal operating mode.

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

Upgrading the FieldPoint Firmware

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

Isolation and Safety Guidelines

Caution Read the following information before attempting to connect the [c]FP-CTR-502 to any circuits that may contain hazardous voltages.

This section describes the isolation of the [c]FP-CTR-502 and its compliance with international safety standards. The field wiring connections are isolated from the backplane and the inter-module communication bus. The isolation is provided by the module, which has optical and galvanic isolation barriers designed and tested to protect against transient fault voltages of up to 2,300 V_{rms}.

Follow these guidelines to ensure a safe total system.

- The [c]FP-CTR-502 has a safety isolation barrier between the I/O channels and the inter-module communication bus. There is no isolation between channels unless otherwise noted. If any of the channels on a module are wired at a hazardous potential, make sure that all other devices or circuits connected to that module are properly insulated from human contact.
- Do *not* share the external supply voltages (the V and C terminals) with other devices (including other FieldPoint devices), unless those devices are isolated from human contact.
- 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.
- Operate the [c]FP-CTR-502 only at or below Pollution Degree 2. Pollution Degree 2 means that only nonconductive pollution occurs in most cases. Occasionally, however, a temporary conductivity caused by condensation must be expected.
- Refer to the FieldPoint product label for regulatory certification under hazardous location standards. If the FieldPoint product is not certified for operation in hazardous locations, do not operate it in an explosive atmosphere or where there may be flammable gases or fumes.

Specifications

The following specifications are typical for a range of –40 to 70 °C unless otherwise noted.[1]

Input Characteristics

Number of channels ..... 12 (8 count, 4 gate)

Input type ..... 5–30 VDC sourcing, compatible with TTL devices and other 5, 12, or 24 VDC devices

Maximum input voltage ..... 30 VDC

Input threshold level (V_{SUP} is the external supply voltage)

- Typical ..... V_{SUP} – 2.5 V
- Maximum ..... V_{SUP} – 2.0 V
- Minimum ..... V_{SUP} – 3.0 V

Input current limiting ..... 6 mA

Input bandwidth

- Count inputs ..... 50 kHz; 200 Hz with software-enabled lowpass filter
- Gate inputs ..... 50 kHz

Minimum input pulse width ..... 10 µs with 50 kHz, 2.5 ms with 200 Hz

Maximum off-state leakage current for external devices ..... 0.3 mA

Output Characteristics

Number of channels 4

Output type ..... 5–30 VDC sinking, compatible with TTL devices and other 5, 12, or 24 VDC devices

Supply voltage ..... 5–30 VDC, user-provided

[1] The operating range of the cFP-CTR-502 is –40 to 60 °C.

Maximum output current
- Per channel ..... 1 A
- Across all channels ..... 4 A

Output impedance ..... 0.12 Ω

Output bandwidth ..... 16 kHz for a current flow ≥3.2 mA

Maximum off-state leakage current ..... 50 µA

Physical Characteristics

Indicators ..... Green **POWER** and **READY** indicators, 16 green input/output state indicators

Weight
- FP-CTR-502 ..... 143 g (5.0 oz)
- cFP-CTR-502 ..... 113 g (4.0 oz)

Power Requirements

Power from network module ..... 800 mW

Isolation Voltage

Channel-to-channel isolation ..... No isolation between channels

Transient overvoltage ..... 2,300 V_{rms}

Environmental

FieldPoint modules are intended for indoor use only. For outdoor use, they must be mounted inside a sealed enclosure.

Operating temperature
- cFP-CTR-502 ..... –40 to 60 °C
- FP-CTR-502 ..... –40 to 70 °C

Storage temperature ..... –55 to 85 °C

Humidity ..... 10 to 90% RH, noncondensing

Maximum altitude ..... 2,000 m; at higher altitudes the isolation voltage ratings must be lowered

Pollution Degree 2

Shock and Vibration

These specifications apply only to the cFP-CTR-502. NI recommends Compact FieldPoint if your application is subject to shock and vibration.

Operating vibration, random (IEC 60068-2-64)..... 10–500 Hz, 5 g_{rms}

Operating vibration, sinusoidal (IEC 60068-2-6)..... 10–500 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

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 3121-1, UL 61010C-1
- CAN/CSA C22.2 No. 1010.1

For UL, hazardous location, and other safety certifications, refer to the product label or to `ni.com`.

Electromagnetic Compatibility

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

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

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

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, click **Declarations of Conformity Information** at `ni.com/hardref.nsf/`.

Mechanical Dimensions

Figure 13 shows the mechanical dimensions of the FP-CTR-502 installed on a terminal base. If you are using the cFP-CTR-502, refer to your Compact FieldPoint controller user manual for the dimensions and cabling clearance requirements of the Compact FieldPoint system.

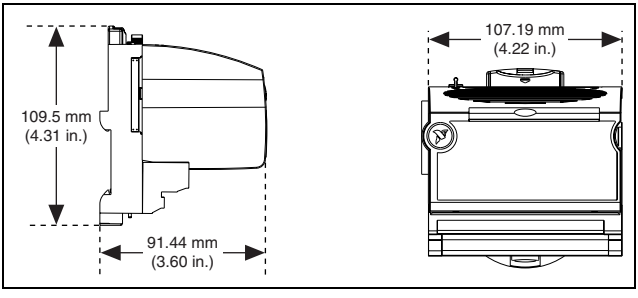


Figure 13. FP-CTR-502 Mechanical Dimensions

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.

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 (Calgary) 403 274 9391,
Canada (Montreal) 514 288 5722,
Canada (Ottawa) 613 233 5949, Canada (Québec) 514 694 8521,
Canada (Toronto) 905 785 0085,
Canada (Vancouver) 514 685 7530, China 86 21 6555 7838,
Czech Republic 420 2 2423 5774, 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, Greece 30 2 10 42 96 427,
India 91 80 51190000, Israel 972 0 3 6393737,
Italy 39 02 413091, Japan 81 3 5472 2970,
Korea 82 02 3451 3400, Malaysia 603 9131 0918,
Mexico 001 800 010 0793, Netherlands 31 0 348 433 466,
New Zealand 1800 300 800, Norway 47 0 66 90 76 60,
Poland 48 0 22 3390 150, Portugal 351 210 311 210,
Russia 7 095 238 7139, Singapore 65 6226 5886,
Slovenia 386 3 425 4200, South Africa 27 0 11 805 8197,
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