

# Pulse Width Modulation Output Modules for Compact FieldPoint and FieldPoint

NEW

## NI [c]FP-PWM-520

- 8 outputs
  - 5, 12, and 24 VDC
  - 1 A per channel, maximum
  - 1 kHz max frequency
- Overcurrent protection on outputs
- 2,300 V<sub>rms</sub> bank isolation for transient overvoltage protection
- Hot swappable with autoconfiguration
- -40 to 70 °C operating range



Module	Output Channels	Output Voltages	Output Frequency	Output Duty Cycle	Maximum Current per Channel
cFP-PWM-520	8	5VDC or 10 to 30 VDC	Up to 1 kHz	0 to 100%	1 A

## Overview

The National Instruments [c]FP-PWM-520 devices are versatile pulse width modulation output modules for Compact FieldPoint and FieldPoint that can be used to control the power of many DC-powered devices. By pulsing the input voltage and varying the duty cycle, you can perform analog control on many DC devices. NI [c]FP-PWM-520 modules are commonly used to efficiently control DC devices, such as the speed of a DC servo motor, the intensity of a light bulb, or the heat output of an industrial heater. All the modules include onboard diagnostics to ensure trouble-free installation and maintenance.

## Pulse Width Modulation Modules

You can configure the output period for each PWM-520 channel to vary from 1 ms to 65.5 in 1 ms increments. You then programmatically set the duty cycle for each channel. The duty cycle is the percentage of the output period when output is high. You can set the duty cycle for 0 to 100 percent with 12-bit resolution (4,096 settings). Each output channel is an optically isolated sourcing output with overcurrent protection. The outputs are compatible with voltages from 10 to 30 VDC, or 4.5 to 5.5 VDC, and each output can drive up to 1 A. All the channels on the digital input modules feature LEDs that indicate the input state of each channel.

## Isolation

The PWM-520 modules feature optical bank isolation with 2,300 V<sub>rms</sub> of breakdown isolation. These Compact FieldPoint and FieldPoint modules do not have channel-to-channel isolation.

## Field I/O Connections

Compact FieldPoint and FieldPoint modules include a built-in power distribution bus that provides 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<sub>SUP</sub>) and common (COM). These terminals provide a convenient way to distribute power to field devices that require external power.

The PWM-520 has:

- 8 PWM digital output terminals (V<sub>OUT</sub>)
- 16 common terminals (COM)
- 8 power connections to power field devices (V<sub>SUP</sub>)

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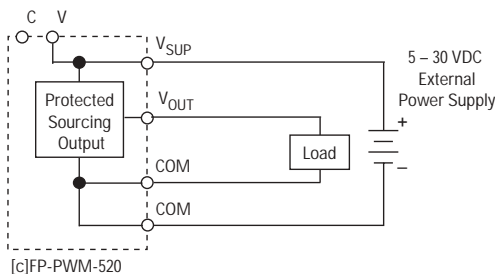


Figure 1. Wiring Schematic for PWM Modules

## Ordering Information

**Compact FieldPoint**  
NI cFP-PWM-520 .....777318-520

### Recommended Compact FieldPoint System Products

NI cFP-2020 .....777317-2020  
NI cFP-BP-4 .....778617-04  
NI cFP-CB-1 .....778618-01  
NI PS-5 Power Supply .....778805-90  
NI Developer Suite Professional Control Edition.....777906-03

### FieldPoint

NI FP-PWM-520 .....777518-520

### Recommended FieldPoint System Products

NI FP-1601 .....777792-01  
NI FP-TB-1 .....777519-01  
NI PS-4 Power Supply .....778586-90  
NI Developer Suite Standard Control Edition .....777905-03

## BUY ONLINE!

Visit [ni.com/info](http://ni.com/info) and enter *cfppwm520*, and/or *fppwm520*.

## Specifications

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

### Output Characteristics

Number of channels.....	8
Output type.....	Sourcing
Output voltage.....	Supply voltage – (Output current x Output impedance)
Supply voltage.....	5 VDC or 10 to 30 VDC, user-provided
Maximum output current	
FP-PWM-520.....	1 A per channel
cFP-PWM-520.....	1 A per channel at -40 to 50 °C; 0.75 A per channel at 50 to 60 °C; 0.5 A per channel at 60 to 70 °C
All channels.....	8 A
Output impedance.....	0.3 Ω typical at 10 to 30 VDC
Period.....	1–65,535 ms
Duty cycle.....	0 to 100%
Resolution.....	12 bits
Pulse-width accuracy.....	-1 to +3 μs ± 0.005%
Protection.....	Short-circuit

### Isolation Voltage

Channel-to-channel isolation.....	No isolation between channels
Transient overvoltage.....	2,300 V <sub>rms</sub>

### Physical Characteristics

LED indicators	
POWER (green).....	Power on and self-test passed
READY (green).....	Module configured and ready
Output <0...7> (green).....	Instantaneous on/off output status
Dimensions (FP only, including terminal base).....	10.7 by 10.9 by 9.1 cm (4.2 by 4.3 by 3.6 in.)
Weight.....	140 g (4.9 oz)

### Power Requirements

Power from network module.....	715 mW
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### Environment

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

### Shock and Vibration

These specifications apply only to Compact FieldPoint. NI recommends Compact FieldPoint if your application is subject to shock and vibration.

Operating vibration, random (IEC 60068-2-64).....	10 to 500 Hz, 5 g <sub>rms</sub>
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

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](http://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

For EMC compliance, 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

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/hardref.nsf/](http://ni.com/hardref.nsf/) and search by model number or product line.