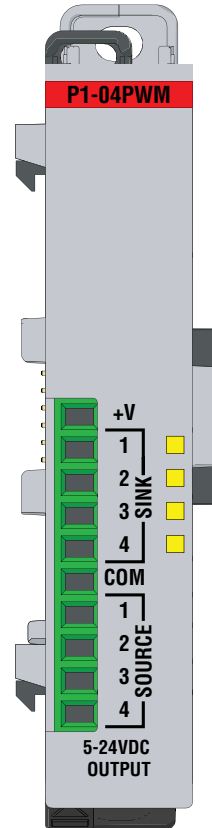


Output Specifications		
<b>Outputs per Module</b>	4 PWM outputs	
<b>Output Type</b>	Open drain N-CH MOSFET (sinking)	Open drain P-CH MOSFET (sourcing)
<b>Rated Voltage</b>	5–24 V	5–24 V
<b>Operating Voltage Range</b>	4.75–28.8 V	4.75–28.8 V
<b>Maximum Output Current</b>		
<i>Only Sinking Load</i>	200mA	0mA
<i>Only Sourcing Load</i>	0mA	200mA
<i>Both Sinking and Sourcing Loads</i>	100mA	100mA
<b>Minimum Load Current</b>	5mA @ 5V	5mA @ 5V
<b>Maximum Leakage Current</b>	0.1 mA @ 28.8 V	0.1 mA @ 28.8 V
<b>ON Voltage Drop</b>	0.6 V @ 50mA, 1.0 V @ 200mA	0.8 V @ 50mA, 1.7V @ 200mA
<b>Maximum Inrush Current</b>	500mA for 50ms	500mA for 50ms
<b>Maximum Frequency Inaccuracy</b>	0.5% of range	
<b>Maximum Duty Cycle Inaccuracy</b>	0.6% of range, below 10kHz 1.2% of range 10–20 kHz	
<b>Maximum Load Resistance for Stated Accuracy</b>	1KΩ	
<b>Accuracy vs. Temperature</b>	±50PPM max	
<b>Start/Stop PWM Response</b>	0.5 ms	
<b>PWM Frequency</b>	0–20 kHz	
<b>PWM Duty Cycle</b>	0–100% below 10kHz 5–95% 10–20kHz	
<b>Status Indicators</b>	Logic side 4 points	
<b>Commons</b>	1 non-isolated	
<b>Maximum Applicable Fuse</b>	1A	
<b>External Power Supply Required</b>	5–24 VDC @ 40mA, Class 2	

Power Specifications	
<b>Maximum Voltage</b>	28.8 V
<b>Minimum Voltage</b>	4.75 V
<b>Current Consumption Excluding Outputs</b>	60mA
<b>Maximum Current Consumption total for 4 sink or 4 source outputs</b>	800mA



## P1-04PWM Sinking/Sourcing DC Output

The P1-04PWM Pulse Width Modulation Module provides four channels of sinking or sourcing 0–20 kHz, 0–100% duty cycle outputs for use with the Productivity1000 system.

Output Specifications	1
General Specifications	2
Terminal Block Specifications	2
Wiring Diagram and Schematic	3
Module Installation Procedure	4
QR Code	4
Wiring Options	5
Module Configuration	5
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Warning	8

**Terminal Block sold separately, (see wiring options on page 5).**

Warranty: Thirty-day money-back guarantee. Two-year limited replacement (See [www.productivity1000.com](http://www.productivity1000.com) for details).

General Specifications	
<b>Operating Temperature</b>	0° to 60°C (32° to 140°F)
<b>Storage Temperature</b>	-20° to 70°C (-4° to 158°F)
<b>Humidity</b>	5 to 95% (non-condensing)
<b>Environmental Air</b>	No corrosive gases permitted
<b>Vibration</b>	IEC60068-2-6 (Test Fc)
<b>Shock</b>	IEC60068-2-27 (Test Ea)
<b>Field to Logic Side Isolation</b>	1800VAC applied for 1 second
<b>Insulation Resistance</b>	> 10MΩ @ 500VDC
<b>Heat Dissipation</b>	1400mW
<b>Enclosure Type</b>	Open Equipment
<b>Module Location</b>	Any I/O position in a Productivity1000 System
<b>Field Wiring</b>	Removable terminal block (sold separately). Use <b>ZIP</b> link Wiring System optional See "Wiring Options" on page 5.
<b>EU Directive</b>	See the "EU Directive" topic in the Productivity Suite Help File. Information can also be obtained at: <a href="http://www.productivity1000.com">www.productivity1000.com</a>
<b>Terminal Type (sold separately)</b>	10-position Removable Terminal Block
<b>Weight</b>	56g (2oz)
<b>Agency Approvals</b>	UL 61010-1 and UL 61010-2-201 file E139594, Canada & USA CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)*

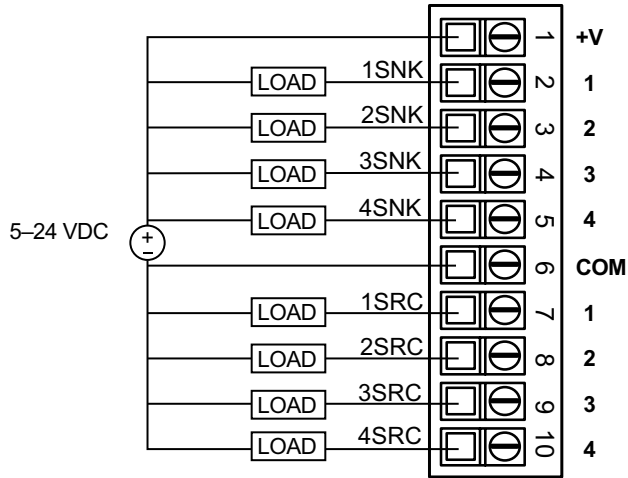
\*See CE Declaration of Conformance for details.

Terminal Block Specifications		
Part Number	P1-10RTB	P1-10RTB-1
<b>Positions</b>	10 Screw Terminals	10 Spring Clamp Terminals
<b>Wire Range</b>	30–16 AWG (0.051–1.31 mm <sup>2</sup> ) Solid / Stranded Conductor 3/64 in (1.2 mm) Insulation Max. 1/4 in (6–7 mm) Strip Length	28–16 AWG (0.081–1.31 mm <sup>2</sup> ) Solid / Stranded Conductor 3/64 in (1.2 mm) Insulation Max. 19/64 in (7–8 mm) Strip Length
<b>Conductors</b>	"USE COPPER CONDUCTORS, 75°C" or equivalent.	
<b>Screw Driver</b>	0.1 in (2.5 mm) Maximum*	
<b>Screw Size</b>	M2	N/A
<b>Screw Torque</b>	2.5 lb-in (0.28 N-m)	N/A

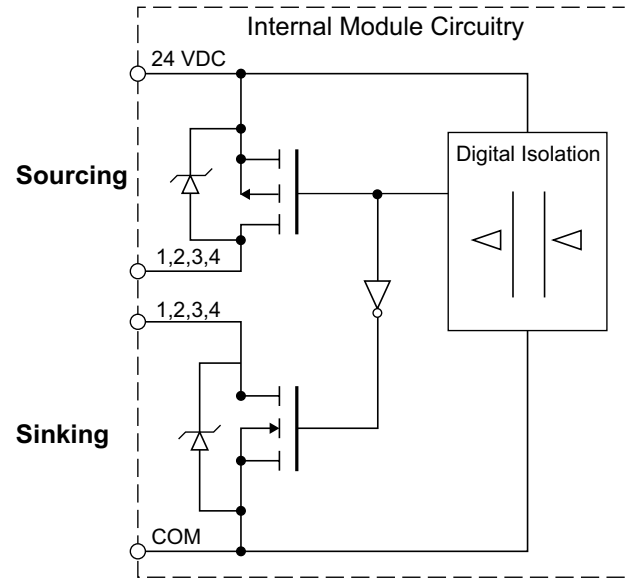
\*Recommended Screw Driver TW-SD-MSL-1

# P1-04PWM Schematic

# P1-04PWM Wiring Diagram



**Note:** Sinking and sourcing channels output the same frequency and duty cycle set in the hardware configuration.

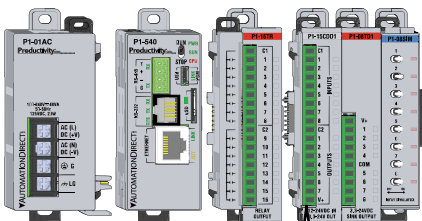


# Module Installation

# QR Code

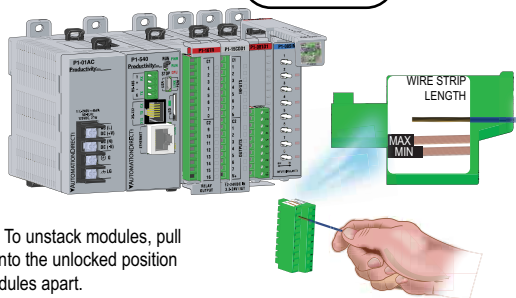
**WARNING:** Do not add or remove modules with field power applied.

**Step One:** With latch in "locked" position, align connectors on the side of each module and stack by pressing together. Click indicates lock is engaged.

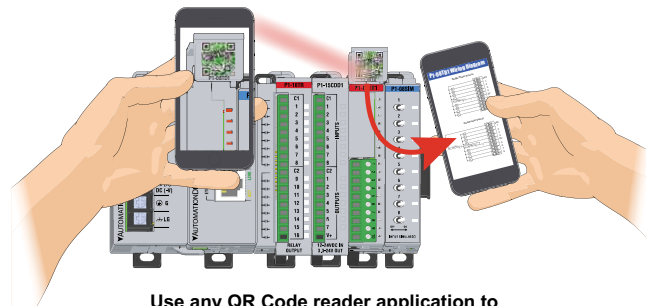
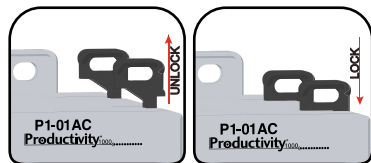


**Step Two:** Attach field wiring using the removable terminal block or ZIPLink wiring system.

Check all latches are secure after modules are connected.



**Step Three:** To unstack modules, pull locking latch up into the unlocked position and then pull modules apart.

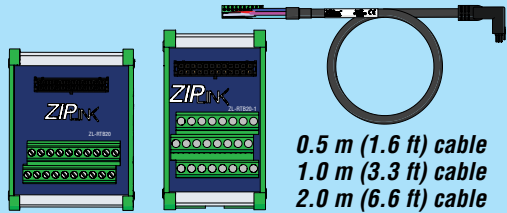


Use any QR Code reader application to display the module's product insert.

# Module Configuration

## Wiring Options

### 1 ZIPLink Feed Through Modules and Cables<sup>1</sup>



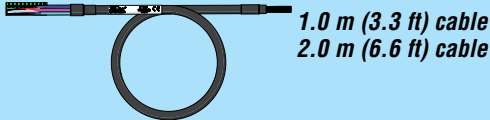
0.5 m (1.6 ft) cable  
1.0 m (3.3 ft) cable  
2.0 m (6.6 ft) cable



ZL-RTB20  
ZL-RTB20-1

ZL-P1-CBL10  
ZL-P1-CBL10-1  
ZL-P1-CBL10-2

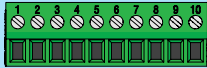
### 2 Terminal Block with pigtail cable



1.0 m (3.3 ft) cable  
2.0 m (6.6 ft) cable

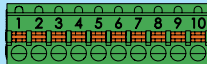
ZL-P1-CBL10-1P  
ZL-P1-CBL10-2P

### 3 Screw Terminal Block only



P1-10RTB  
(Quantity 1)

### 4 Spring Clamp Terminal Block only



P1-10RTB-1  
(Quantity 1)

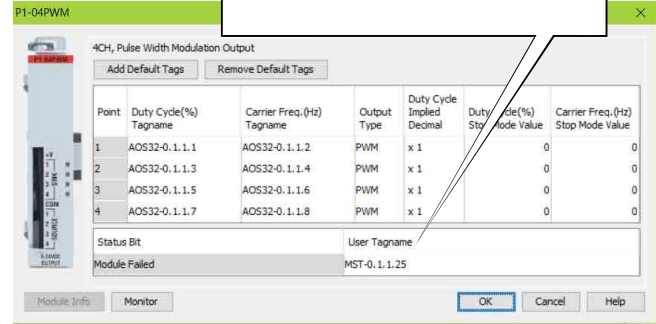
### 5 Accessories<sup>2</sup>



ZL-RTB-COM  
TW-SD-SL-1  
TW-SD-MSL-1

1. Cable + ZIPLink Module = Complete System
2. ZL-RTB-COM provides a common connection point for power or ground

Using the Hardware Configuration tool in the Productivity Suite programming software, drag and drop the P1-04PWM module into the base configuration.  
If desired, assign a *User Tagname* to each output point channel selected. A *Stop Mode Value* may also be assigned.



# Linear Scaling

The Scale (Linear) function can be used to:

- Convert an application specific range to range which is native to the analog output module.
- Make other linear conversions in ranges appropriate to the application.

Select the Input and Output tags appropriate for the application. Convert raw input signals to engineering units for use in the program, or convert engineering units to output signals for control purposes

Input value	Desired Output
0	0
1	1.55
2	3.07
3	4.59
4	6.11
5	7.63
6	9.15
6.5	10.67
7	12.19
7	12.19
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0

# Non-Linear Scaling

The Scale (Non-Linear) function can be used for Non-Linear applications.

Enter actual output values for each input value break point.

Input value	Desired Output
0	0
1	5
2	1.55
3	2.25
4	3.07
5	4
6	5
6.5	7
7	7
7	7
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0



**WARNING:** To minimize the risk of potential safety problems, you should follow all applicable local and national codes that regulate the installation and operation of your equipment. These codes vary from area to area and it is your responsibility to determine which codes should be followed, and to verify that the equipment, installation, and operation are in compliance with the latest revision of these codes.

***Equipment damage or serious injury to personnel can result from the failure to follow all applicable codes and standards. We do not guarantee the products described in this publication are suitable for your particular application, nor do we assume any responsibility for your product design, installation, or operation.***

If you have any questions concerning the installation or operation of this equipment, or if you need additional information, please call Technical Support at 770-844-4200.

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