Description

The Holjeron Powered Roller Controller for use with DeviceNet has the features needed to handle up to four zones in a material handling system. A Brushless DC Powered Roller and a sensor, usually a photoelectric, define each zone.

Additionally, the PRC-DNT204 has an analog output signal that can be used to control the speed of the powered roller over DeviceNet.

Warranty/Remedy

Seller warrants its products to be free from defects in design, material and workmanship under normal use and service. Seller will repair or replace without charge any such products it finds to be so defective on its return to Seller within 18 months after date of shipment by Seller. **The foregoing is in lieu of all other expressed or implied warranties (except title), including those of merchantability and fitness for a particular purpose.** The foregoing is also purchaser's sole remedy and is in lieu of all other guarantees, obligations, or liabilities or any consequences incidental, or punitive damages attributable to negligence or strict liability, all by way of example.
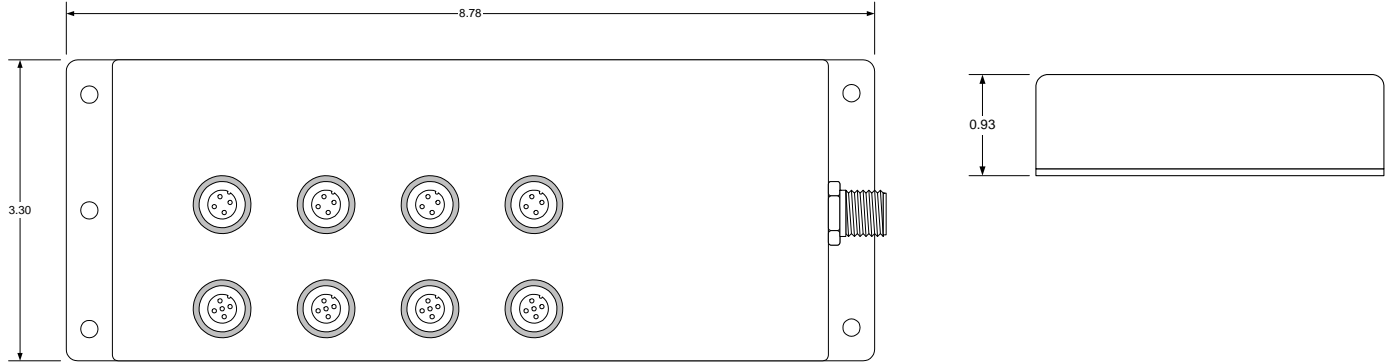
While Holjeron provides application assistance, personally and through our literature, it is up to the customer to determine the suitability of the product in the application.

All information contained herein, including illustrations, specifications and dimensions, is believed to be reliable as of the date of publication, but is subject to change without notice.
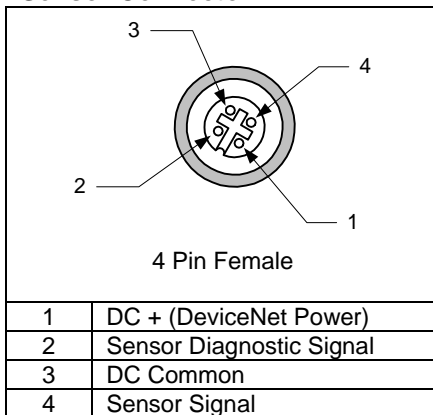
Specifications

Part Numbers	Powered Roller Controller for DeviceNet		PRC-DNT114
	With Speed Control		PRC-DNT204
DeviceNet Interface	Termination		5 pin M12 connector, Male
	DeviceNet Voltage Range		12-24 VDC
	Current Consumption		60 mA plus Sensors
	Data Rates		125, 250, and 500 kbps
Sensor Interface	Type		Autosense (NPN or PNP)
	Number		Four (4)
	Termination		4-pin M12, Female
	Voltage Range		12-24 VDC (DeviceNet power)
	Maximum Current		20 mA per sensor
Powered Roller Interface	Type		Powered Roller Driver Module
	Number		Four (4)
	Termination		5-pin M12, Female
	Voltage Range	Digital Outputs	24 VDC
		Analog Output	0-5 VDC
	Maximum Current		200 mA
	Isolation		1500 Vrms
Environmental	Temperature	Storage	-30° to 70° C (-22° to 158° F)
		Operating	0° to 60° C (32° to 140° F)
	Humidity		5-95% RH, non-condensing
	Vibration		2G at 10 to 500 Hz
	Shock		10G
Physical	Dimensions		8.78 H x 3.30 W x 0.93 D
	Weight		14 oz
	Mounting		Mounting Tabs
	Indication	MS/NS	Red/Green
		Activity	Green

Dimensions

8.78

3.30

0.93

Wiring

Sensor Connector

3
4
2
1

4 Pin Female

1	DC + (DeviceNet Power)
2	Sensor Diagnostic Signal
3	DC Common
4	Sensor Signal

DeviceNet Connector

4
3
5
1
2

5 Pin Male

1	Drain
2	DC +
3	DC Common
4	CAN_H
5	CAN_L
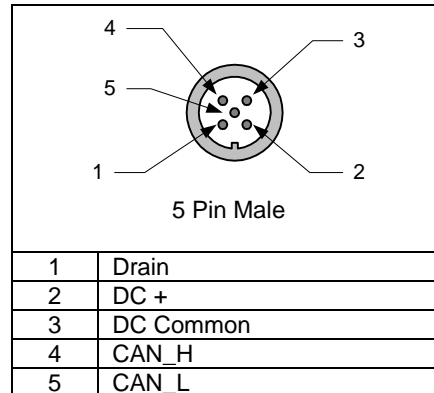
Powered Roller Connector

3
4
5
2
1

5 Pin Female

1	Roller Diagnostic Input
2	Roller Direction Output
3	Common
4	Roller Run Output
5	Motor Speed Output (0-5 V) (PRC-DNT204 Only)

Powered Roller Wiring

Roller Fault	7	PIN 1
Not Used	6	
Speed Input	5	PIN 5
Roller Direction	4	PIN 2
Roller Run	3	PIN 4
Common	2	PIN 3
24 VDC	1	

24 VDC
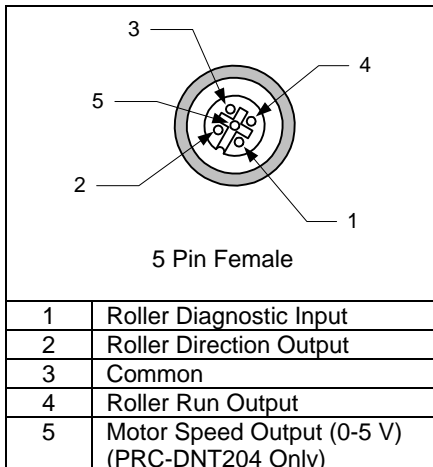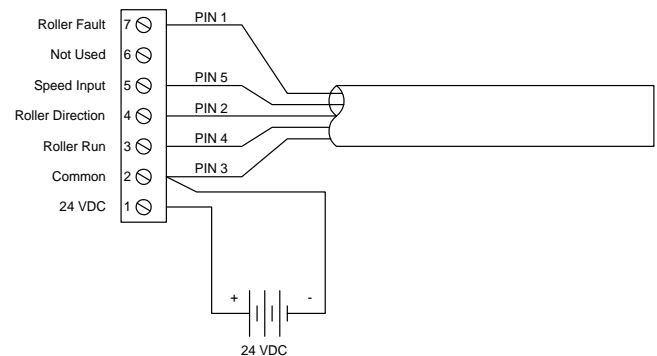
Configuration

The Powered Roller Controller can be configured using several tools. Consult the configuration manual for the tool being used.

Quick Start

The steps described below are the minimum configuration steps required to install a Powered Roller Controller.

Device MAC Id

Set the MAC Id of the device. All units are shipped from the factory as **address 63**.

> ***Note: Set the MAC Id before attaching a Powered Roller Controller to a complete bus. Otherwise, multiple devices may reside at the default address of 63.***

Operation

The Powered Roller Controller is a vendor-specific device functioning as a "Group 2 Only Server". In addition to explicit messaging, polled I/O is supported for the transfer of input and output information. Once a polled connection is established, the module expects a poll at least every 10 seconds, otherwise the module will time out and take action as specified in the watchdog timeout action attribute. Changing the Expected Packet Rate (EPR) for the polled connection, which is contained in Object 5, Instances 1 and 2, attribute 9, can alter the connection timeout.

Indication

The Powered Roller Controller is equipped with two LED's for indication. One is labeled MS/NS, which stands for Module Status/Network Status, while the other is labeled Activity.

The green Activity LED flashes when the PRC transmits a DeviceNet message. On startup, the dual-color (red/green) MS/NS LED flashes green, then red, then functions per the table below:

MS/NS LED States

State	Description
OFF	Not powered or not online.
Flashing Green	Device operational and on-line, not connected to a master.
Solid Green	Device fully operational and on-line, and is connected to a master.
Flashing Red	A connection to a master has timed out.
Solid Red	Unrecoverable fault due to a memory self-test error, or communications failed due to duplicate MAC-ID's or a bus off condition.
Flashing Green and Red	The device has detected a network access error and is in the Communication Faulted state.

Input Variable

The Input Variable is contained in an Assembly Object (Class 4, Instance 5) and is a collection of sensor inputs and diagnostics. The sensor inputs can be configured using the **Presence Sensing Object (Class 14, Instance 1-4)**. The fault condition of the powered roller driver is defined in the **Powered Roller Object (Class 100, Instance 1-4)**

Byte	Bit	Description
0	0	Sensor State Zone 1
	1	Sensor State Zone 2
	2	Sensor State Zone 3
	3	Sensor State Zone 4
	4	Sensor Diagnostic Zone 1
	5	Sensor Diagnostic Zone 2
	6	Sensor Diagnostic Zone 3
	7	Sensor Diagnostic Zone 4
1	0	Sensor Connected Zone 1
	1	Sensor Connected Zone 2
	2	Sensor Connected Zone 3
	3	Sensor Connected Zone 4
	4	Motor Fault Zone 1
	5	Motor Fault Zone 2
	6	Motor Fault Zone 3
	7	Motor Fault Zone 4

Presence Sensing Object

Sensor State
Attribute 1

The current state of the sensor.

This attribute maps to bits 0-3 of byte 0 in the input variable.

Sensor Diagnostic State
Attribute 4

The state of the sensor diagnostic line, subject to Sensor Diagnostic Mode (attribute 101).

This attribute maps to bits 4-7 of byte 0 in the input variable.

Operate Mode
Attribute 8

When the operate mode is set to a value of 1 the state of the sensor reported in the input variable in bits 0 through 3 will be inverted from the physical sensor state.

Sensor Connected State
Attribute 100

The Powered Roller Controller sensor port can detect whether a sensor is connected to the port. The Sensor Connected State wills on if there is a sensor attached to the port.

This attribute maps to bits 0-3 of byte 1 in the input variable.

Sensor Diagnostic Mode
Attribute 101

The table below describes how the settings for Sensor Diagnostic Mode affect the Sensor Diagnostic State.

Setting	Description
0	The state of the input detected on pin 2 of the sensor port is passed directly through to the Sensor Diagnostic State.
1	Light Operate mode causes the Sensor Diagnostic State to be on when both the physical sensor signal and its diagnostic line are on at the sensor port.
2	Dark Operate mode causes the Sensor Diagnostic State to be on when the physical sensor signal is off and the diagnostic line is on.

Powered Roller Object

Powered Roller Fault State
Attribute 8

The state of the fault line from the powered roller driver card.

This attribute maps to bits 4-7 of byte 1 in the input variable.

Output Variable

The Output Variable is contained in an Assembly Object (Object 4, Instance 35) and is a collection of discrete outputs as defined by the **Powered Roller Object (Class 100, Instance 1-4)**.

Note that byte 1, which allows speed control, is only available in the PRC-DNT204 with analog output.

Byte	Bit	Description
0	0	Run Zone 1
	1	Run Zone 2
	2	Run Zone 3
	3	Run Zone 4
	4	Reverse Zone 1
	5	Reverse Zone 2
	6	Reverse Zone 3
	7	Reverse Zone 4
1	0	Speed Zone 1
	1	Speed Zone 2
	2	Speed Zone 3
	3	Speed Zone 4
	4	Reserved
	5	Reserved
	6	Reserved
	7	Reserved

Powered Roller Object

Run State
Attribute 3

The current state of the run signal to a powered roller driver card.

This attribute maps to bits 0-3 in the output variable.

Direction State
Attribute 4

The current state of the direction signal to a powered roller driver card.

This attribute maps to bits 4-7 in the output variable.

Default Direction
Attribute 7

The default run direction for the powered roller.

> ***Note: It is recommended to leave the direction switch on the powered roller driver card to its default position. The Default Direction attribute replaces the switch function.***

Speed State
(PRC-DNT204 Only)
Attribute 5

When disabled (set to 0) the analog output on the PRC-DNT204 will be set to the value in attribute 10, speed setpoint 0. When enabled, the analog output value will be set to the value in attribute 11, speed setpoint 1.

Speed Setpoints 0 and 1
(PRC-DNT204 Only)
Attribute 10 and 11

The Speed Setpoint is a value between 0 and 255 that represents 0-5 VDC on the analog output of the PRC-DNT204, with 255 being full speed for the powered roller controller.

Speed Polarity
(PRC-DNT204 Only)
Attribute 13

A value of 1 in the Speed Polarity attribute inverts the analog output signal. Specifically, a value of 255 will cause 0 VDC on the analog output and a value of 0 will cause 5 VDC to be transmitted.

> ***Note: Some powered roller driver modules accept external potentiometers. The analog output signal may not be compatible with these driver modules, or may require using less than full scale in the Speed Setpoint or inverting the Speed Polarity to achieve the speed range desired for an application.***

Identity Object
Class 1, Instance 1

Attribute	Description	Data Type	R/W	Default Value
1	Vendor ID	INTEGER	R	693
2	Device Type	INTEGER	R	100 [Vendor-Specific]
3	Product Code	INTEGER	R	3 = 114, 4 = 204
4	Revision	BYTE [2]	R	1,1
5	Status	WORD	R	Bit 4 = I/O Power State
6	Serial Number	LONG INT	R	
7	Product Name	CHAR	R	Powered Roller Controller

DeviceNet Object
Class 3, Instance 1

Attribute	Description	Data Type	R/W	Default Value
1	MAC ID (0-63)	BYTE	W	63
2	Baud Rate	BYTE	W	0 (125K)
3	BOI	BOOLEAN	W	1
4	Bus-Off Counter	BYTE	W	
5	Allocation Information	BYTE [2]	R	

Connection Object
Class 5, Instance 1 and 2

Attribute	Description	Data Type	R/W	Default Value
1	State	BYTE	R	
2	Instance Type	BYTE	R	
3	Transport Class Trigger	BYTE	R	
4	Produced Connection ID	BYTE	R	
5	Consumed Connection ID	BYTE	R	
6	Initial Comm Characteristics	BYTE	R	
7	Produced Connection Size	INTEGER	R	
8	Consumed Connection Size	INTEGER	R	
9	Expected Packet Rate	INTEGER	W	
12	Watchdog Timeout Action	BYTE	W	
13	Produced Connection Path Len	INTEGER	R	
14	Produced Connection Path		R	
15	Consumed Connection Path Len	INTEGER	R	
16	Consumed Connection Path		R	

Assembly Object
Class 4, Instance 5
Class 4, Instance 35

Attribute	Description	Data Type
3	Input Variable	See the section on Input Variable for mapping
3	Output Variable	See the section on Output Variable for mapping

Presence Sensing Object
Class 14, Instance 1-4

Attribute	Description	Data Type	R/W	Default Value
1	Sensor State	BOOLEAN	R	
4	Diagnostic	BOOLEAN	R	
8	Operate Mode	BOOLEAN	W	0 (not inverted)
100	Sensor Connected State	BOOLEAN	R	
101	Sensor Diagnostic Mode	BYTE	W	0

Powered Roller Object
Class 100, Instance 1-4

Attribute	Description	Data Type	R/W	Default Value
3	Run State	BOOLEAN	W	0
4	Direction State	BOOLEAN	W	0
5	Speed Setpoint State (204 only)	BOOLEAN	W	0
7	Default Direction	BOOLEAN	W	0
8	Motor Fault State	BOOLEAN	R	
10	Speed Setpoint 0 (204 only)	BYTE	W	120 (scale of 0-255)
11	Speed Setpoint 1 (204 only)	BYTE	W	255 (scale of 0-255)
13	Speed Polarity (204 only)	BOOLEAN	W	0