User's Guide

DeviceNet™

DN-101

Rev. A.1

HURON NET WORKS

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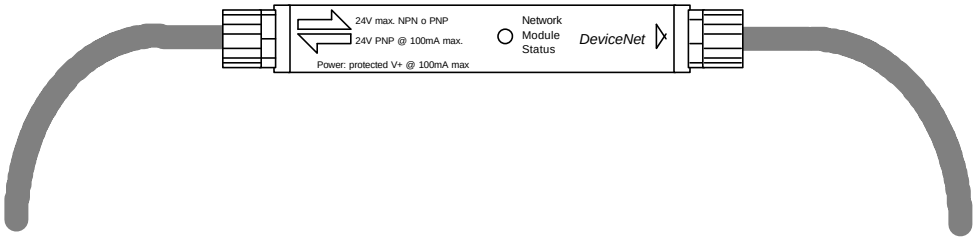
1. INTRODUCTION

The DN-101 allows simple 24V DC input and output devices to be easily connected to DeviceNet™. The DN-101 will accomodate input devices such as proximity sensors, photo-electric sensors, limit switches, and other dry contact devices. Output devices such as solenoids, incandescent bulbs, or LED lamps can be driven. This provides a convenient low cost networking solution for such devices. The rugged construction allows the use of the DN-101 in harsh environments without the need for expensive enclosures. Standard connector offering includes 1.5ft. (0.5m) of cable and a mini-style (18mm) connectors on each end allowing for quick and easy system installation, troubleshooting, and sensor/actor replacement. A no connector option is available for either side. Custom connecor and cable configurations are available upon request.

The DN-101 is fully powered by the DeviceNet network, so that no separate power supply is required. The network power is also used to provided power for the input and output devices. Input device power is turned off if overloaded. Power is automatically restored when the overload is removed. Output device power is provided at a constant 24V level even at very low DeviceNet bus voltages.

The input on the DN-101 will automatically accept either sourcing (PNP) or sinking (NPN) devices without configuration. This allows any mix of standard 3-wire 24 VDC sensors. The 24V sourcing (PNP) output provides up to 100 ma load current.



DeviceNet is a trademark of the Open DeviceNet Vendors Association.

2. INSTALLATION

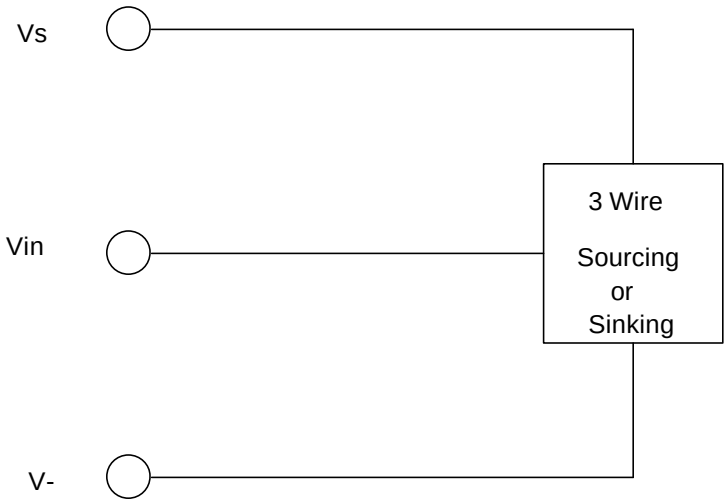
2.1. Mounting

The DN-101can be mounted using standard cable clamps or cable wraps. It is also designed to fit within a standard 1-5/8 in. unistrut channel.

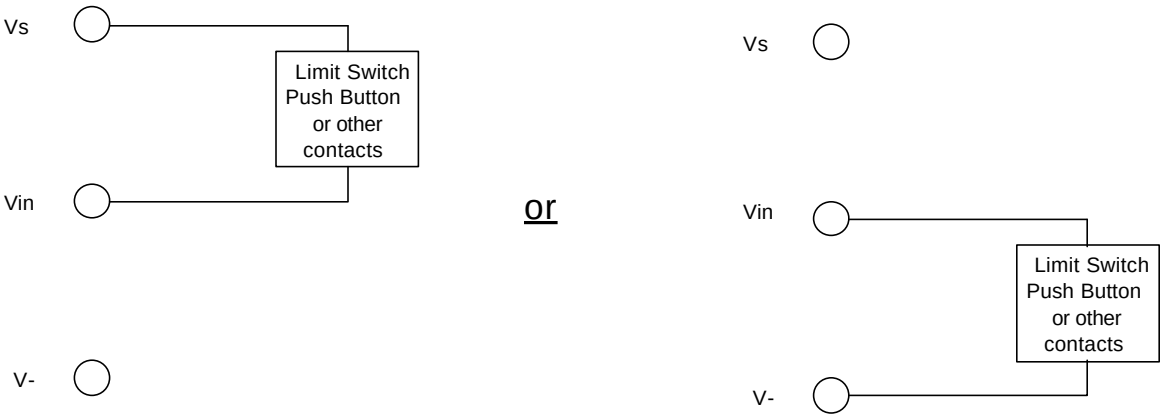
2.2. Wiring

Either pre-molded cordsets or field installed connectors can be used to attach to the DN-101 connectors.

Wiring for 3-wire sourcing (PNP) or sinking (NPN) input devices:

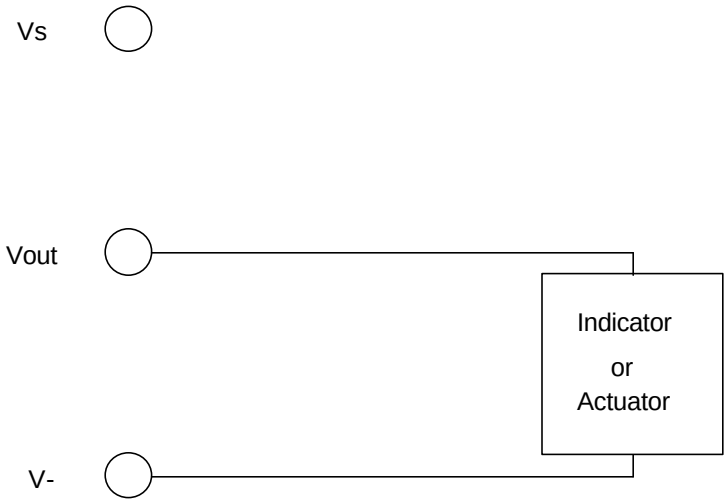


Wiring for simple contact closure, limit switches, and push buttons:



Since the V- input is connected to V- of the DeviceNet network, no local connection should be made to earth ground. If a grounded sensor is to be attached, external ground isolation should be added.

Wiring for sourcing (PNP) output devices:



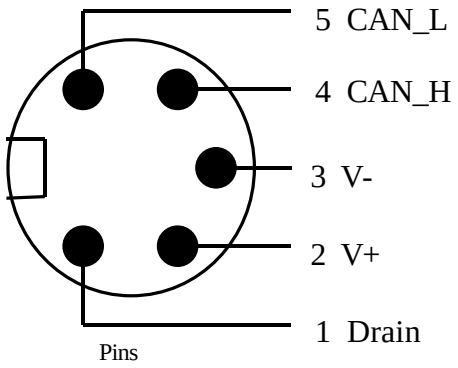
The DN-101 may be attached to the DeviceNet network in any manner consistent with the DeviceNet Specification.

2.3. Connector Pin Out

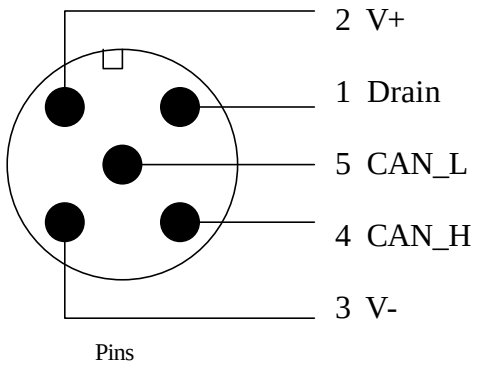
DeviceNet Color	Signal Name
Red	V+
White	CAN_H
Bare	Drain
Blue	CAN_L
Black	V-

I/O Color	Signal Name
Brown	Vs
White	Vout
Blue	V-
Black	Vin

The DeviceNet connector pin-outs are as follows:

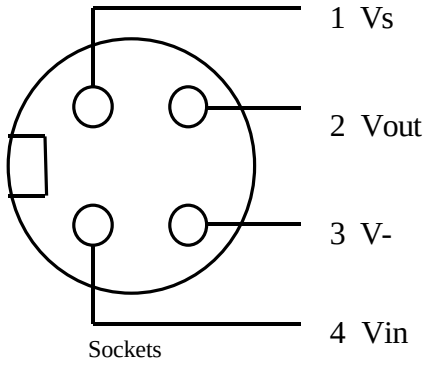


Mini DeviceNet Connector Pinout

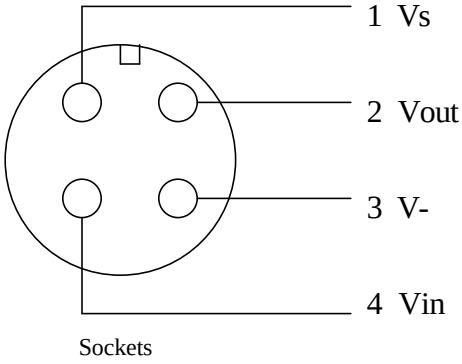


Micro DeviceNet Connector Pinout

The standard input and output connector pin-outs are as follows:

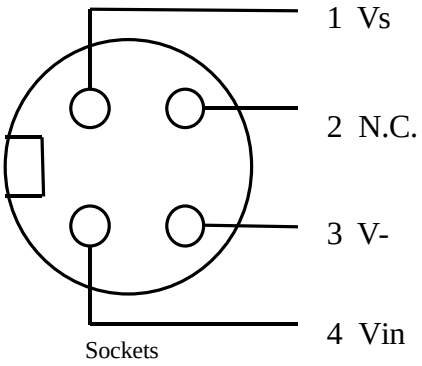


Mini I/O Connector Pinout

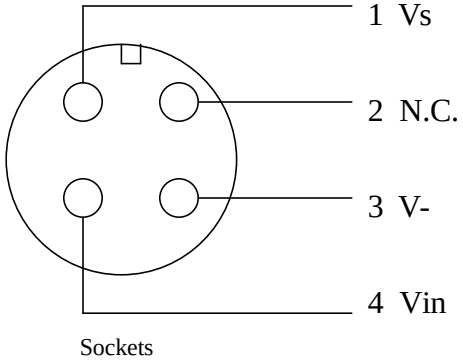


Micro I/O Connector Pinout

The standard input only connector pin-outs are as follows:



Mini Input only Connector Pinout



Micro Input Only Connector Pinout

3. CONFIGURATION

To configure the node address, or MAC ID, and the data rate, or baud rate, of the DeviceNet connection, a separate DeviceNet configuration tool is required. Several tools are available which will work and can be found via the Open DeviceNet Vendors Association (ODVA). The factory default values are 63 for the node address and 125 Kbaud for the data rate. Any modification of these values should be done before the DN-101 is connected to the DeviceNet network. After the node address has been changed the DN-101 will re-start. This can be observed on the Combined Module and Network Status LED. The use of a newly set data rate will not happen until network power to the DN-101 is removed and then re-applied.

4. SPECIFICATIONS

Overall Dimensions	
Diameter	7/8 in.
Length	7 in.
Weight	8 oz.
Environmental	
Operating temperature range	0 to 60 C
Storage temperature range	-20 to 85 C
Humidity	5 to 95% RH non-condensing
DeviceNet	
Data rates & configuration	125, 250, 500 set over network non-volatile storage, default = 125
Node address & configuration	0 to 63 set over network non-volatile storage, default = 63
Connector	5 pin mini male
Indicators	Combined Module/Network Status
Bus power consumption (not including I/O current)	60 ma max.
Protocol capabilities*	Group 2 only slave with Polled I/O and Explicit Messaging
Device type	0 (Generic)
Input	
Sensor supply (Vs) voltage	11 to 25 VDC (follows V+ on DeviceNet)
Sensor supply (Vs) current	100 ma max. at room temp. derate 1% per degree C above room
On/Off threshold voltage for sourcing (PNP) devices	Vin = 2/3 Vs (min.) see input model
On/Off threshold voltage for sinking (NPN) devices	Vin = 1/3 Vs (max.) see input model
Output	
On state voltage	Vout = 22 v min., V+ max.
Load current	100 ma max.

* For a more complete discription for the DN-101 protocol capabilities see the DN-IO100 Device Profile, Publication # 2200012.

Polled I/O Message Content:

There is one byte in the Poll Request Message. The Poll Response also contains one byte. The I/O are mapped into the Poll request and response bytes as shown below. A zero(one) indicates that the input or output is off(on). The diag bit is zero when there is no output fault. The diag bit will be set to one when an output fault is detected. This condition will remain until the fault is removed.

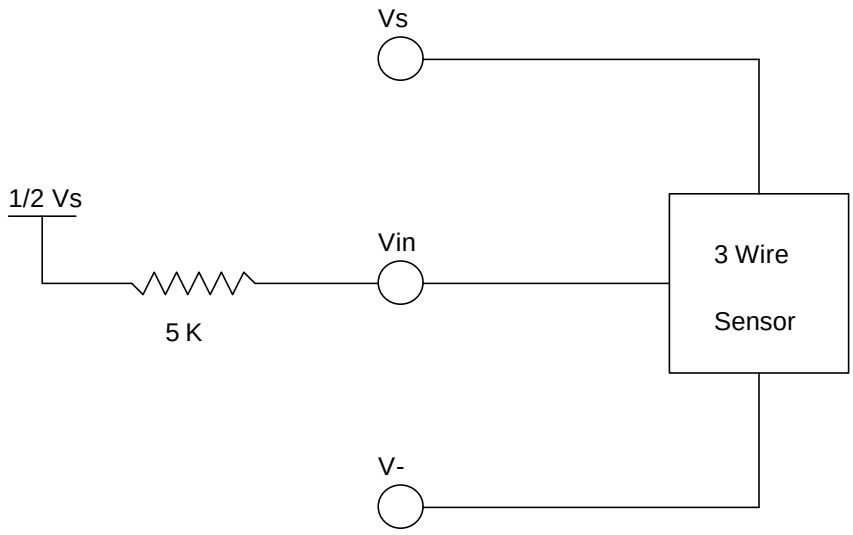
Poll Request data format:

Byte	7	6	5	4	3	2	1	0
0	0	0	0	0	0	0	0	output

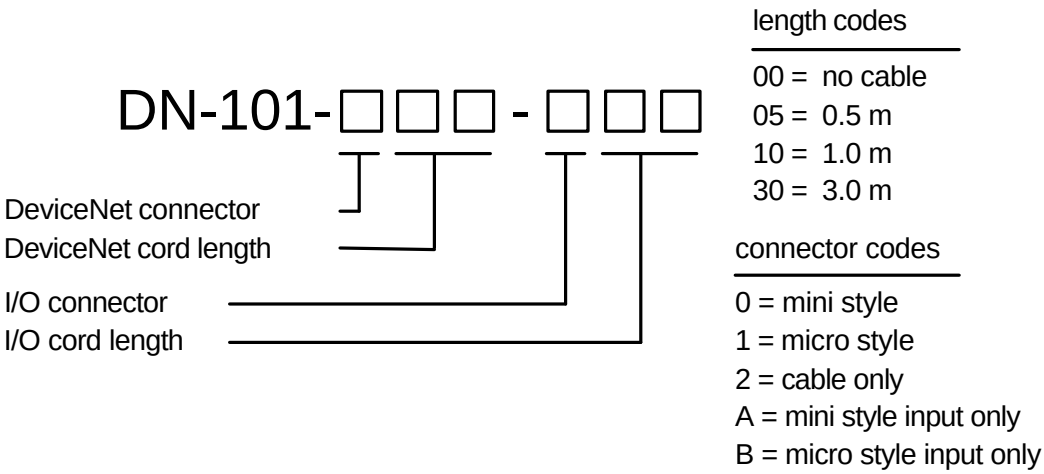
Poll Response data format:

Byte	7	6	5	4	3	2	1	0
0	0	0	0	0	diag	0	0	input

Input Model:



5. ORDERING INFORMATION



Standard Products:

DN-101-005-005

DN-101-005-205

DN-101-005-A05

DN-101-005-000

DN-100 (PCB only) - wire pigtails 150mm, #22 AWG

This is a certified compliant DeviceNet product.

DeviceNet is a trademark of ODVA.