

User's Guide

DeviceNet™

DN-IO100

Rev. A.0

*HURON
NET
WORKS*

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1. INTRODUCTION

The DN-IO100 allows simple 24V DC input and output devices to be easily connected to DeviceNet™. The DN-IO100 will accommodate 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 DN-IO100 comes standard with six inch wires on each end color coded for easy connection. An enclosed version, DN-IO101, is also available with or without connectors.

The DN-IO100 is fully powered by the DeviceNet network, so that no separate power supply is required. The network power is also used to provide 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-IO100 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.

2. INSTALLATION

2.1. Wiring

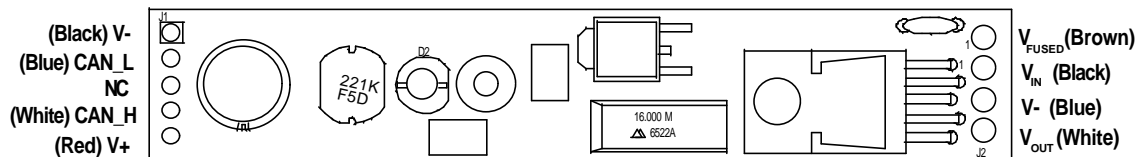
Six inch wires are offered on each end of the PCB to allow any desired connection of the DN-IO100.

DeviceNet Side

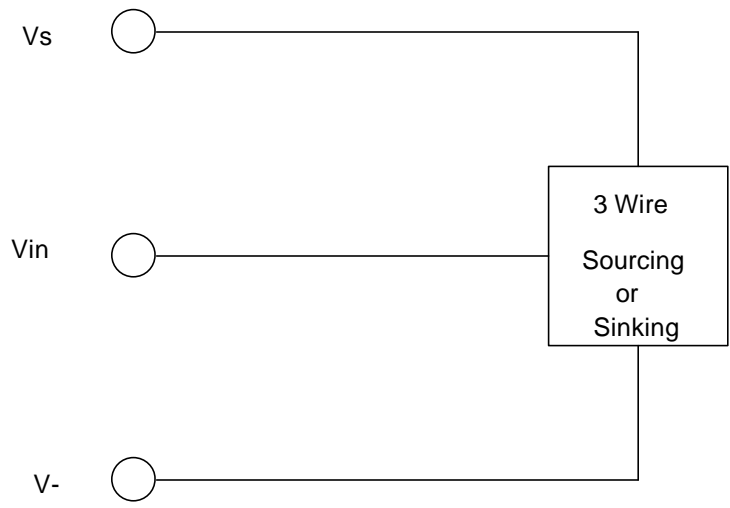
Red - V+
White - CAN_H
Blue - CAN_L
Black - V-

Input / Output Side

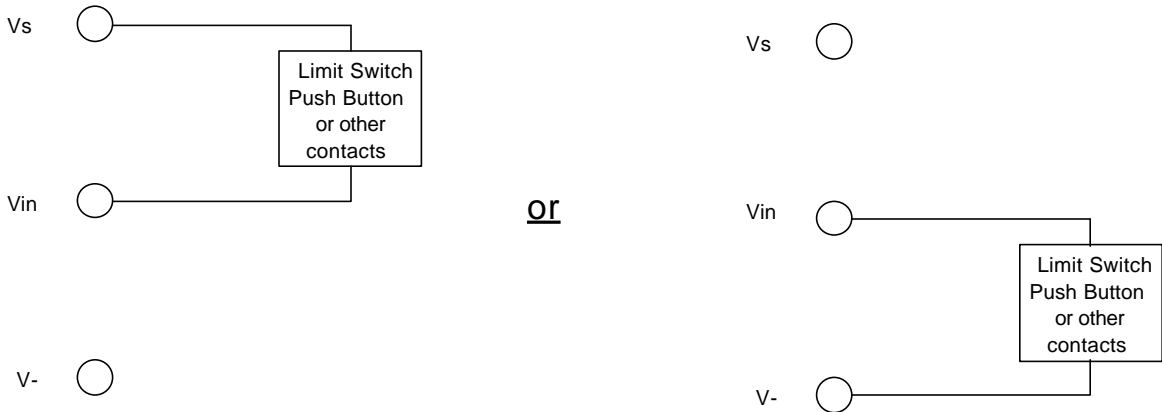
Brown - Protected V+
Black - V_{IN}
Blue - V-
White - V_{OUT} (24VDC PNP)



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



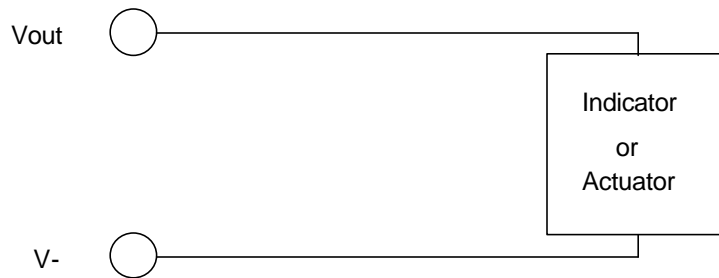
Wiring for simple contact closure, limit switches, and push buttons:



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:

Vs ○



The DN-IO100 may be attached to the DeviceNet network in any manner consistent with the DeviceNet Specification.

2.2. Wire Pin Out

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

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

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-IO100 is connected to the DeviceNet network. After the node address has been changed the DN-IO100 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-IO100 is removed and then re-applied.

4. SPECIFICATIONS

Overall Dimensions	
Length	3.25 in.
Width	0.6 in.
Weight	1.5 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
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	$V_{in} = 2/3 V_s$ (min.) see input model
On/Off threshold voltage for sinking (NPN) devices	$V_{in} = 1/3 V_s$ (max.) see input model
Output	
On state voltage	$V_{out} = 22 \text{ v min.}, V_+ \text{ max.}$
Load current	100 ma max.

* For a more complete discription for the DN-IO100 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:

