

Huron Net Works  
*DeviceNet* DN-IO100  
Device Profile

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Board Revision A  
Firmware Revision 1.0

**1.0 Object Model****1.1 Objects Present**

<b>Object</b>	<b>Optional/Required</b>	<b># of Instances</b>
Identity	Required	1
Message Router	Required	1
DeviceNet	Required	1
Connection	Required	2
Assembly	Required	2
Discrete Input Point	Required	2
Discrete Output Point	Required	1

**1.2 Objects That Effect Behavior**

<b>Object</b>	<b>Effect on Behavior</b>
Identity	Supports the Reset Service with parameter 0,1
Message Router	No Effect
DeviceNet	Configures Port Attributes
Connection	Establishes the number of connections Supports a reset service
Assembly #1	Input Assembly
Assembly #2	Output Assembly
Discrete Inputs	Read Inputs
Discrete Outputs	Write Outputs

### 1.3 Object Interfaces

<b>Object</b>	<b>Interface</b>
Identity	Message Router
Message Router	Explicit Message Connection Instance
DeviceNet	Message Router
Connection	Message Router
Assembly #1	I/O Connection or Message Router
Assembly #2	I/O Connection or Message Router
Discrete Input	Message Router
Discrete Output	Message Router

### 1.4 Identification of I/O Assembly Instances

<b>Number</b>	<b>Type</b>	<b>Name</b>
1	Input	INPUT
2	Output	OUTPUT

### 1.5 Format of I/O Assembly Data Attribute

#### 1.5.1 Assembly #1

<b>Byte</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>0</b>
0	0	0	0	0	DIAG	0	0	GPI1

Bit GPI1 is the single general purpose input. It is mapped to instance #1 of the Discrete Input Point Class (Class ID 8). DIAG is the diagnostic status bit from the output driver and is not mapped to any application object. DIAG = 1 means output GPO1 has a fault, DIAG = 0 means output GPO1 has no fault. The DIAG bit may have a delay of one poll cycle. When it goes to one the output will be forced off, regardless of the state of GPO1. When GPO1 is low (0) and DIAG is high (1) this could be either Overvoltage for an external supply, or Thermal Shutdown, or Output Shorted to Supply. When GPO1 is high (1) and DIAG is high (1) this could be either any of the three previously mentioned conditions, or Output Shorted to Ground, or Open Load, or Current Limit.

**1.5.2 Assembly #2**

Byte	7	6	5	4	3	2	1	0
0	0	0	0	0	0	0	0	GPO1

GPO1 is the single general purpose output. It is mapped to instance #1 of the Discrete Output Point Class ( Class ID 9). The value of GPO1 stays in its last state regardless of the presence of a fault condition which may force the actual output to an off state.

## 2.0 Standard Objects

### 2.1 Identity Object (1)

There is a single instance of the identity object for the device. No class attributes are supported. All of the instance attributes are contained in ROM or EEPROM and are gettable but not settable. The table below shows the values.

Attribute ID	Access Rule	Name	Data Type	Value
1	Get	Vendor	UINT	0x0014
2	Get	Product Type	UINT	0x0000
3	Get	Product Code	UINT	0x0009
4	Get	Revision	STRUCT	01.00
5	Get	Status	WORD	0x0000
6	Get	Serial #	UDINT	Serial # <sup>1</sup>
7	Get	Product Name	STRUCT	5,"1I-1O"

<sup>1</sup> Unique serial numbers are assigned in the range 0x00001400 to 0x000017FF.

#### Identity Object Services

Service	Service Code	Parameters
Reset	0x05	0,1
Get Attribute Single	0x0E	Attribute ID

### 2.2 Message Router Object (2)

There is no externally visible interface to the Message Router Object.

### 2.3 DeviceNet Object (3)

There is a single instance of the DeviceNet Object for the device

#### DeviceNet Object Class Attributes

Attribute ID	Access Rule	Name	Data Type	Value
1	Get	Revision	UINT	0x0002

#### DeviceNet Object Class Services

Service	Service Code	Parameters
Get Attribute Single	0x0E	Attribute ID

#### DeviceNet Object Instance Attributes

Attribute ID	Access Rule	Name	Data Type	Value
1	Get/Set	MACID	USINT	EEPROM <sup>1</sup>
2	Get/Set	Baudrate	USINT	EEPROM <sup>1</sup>
3	Get/Set	BOI	BOOL	0x00 Fault
4	Get/Set	Bus-Off Counter	USINT	0x00
5	Get	Allocation Information	STRUCT	Allocate Service

<sup>1</sup>The MACID defaults to 63 and the baudrate defaults to 125Kbaud. As these attributes are changed the values are copied to EEPROM and take effect on the next power cycle or RESET.

## DeviceNet Object Instance Services

Service	Service Code	Parameters
Get Attribute Single	0x0E	Attribute ID
Set Attribute Single	0x10	Attribute ID
Allocate	0x4B	Allocation Choice Master MACID
Release	0x4C	Release Choice

**2.4 Connection Object (5)**

There are two instances of the Connection Object in the device. Instance #1 is assigned to the explicit messaging connection. Instance #2 is assigned to the Polled I/O connection. The tables below show the attributes and the predefined values where applicable. No class attributes are supported.

## Explicit Message Connection (Instance #1) Attribute List

Attribute ID	Access Rule	Name	Data Type	Value
1	Get	state	USINT	0x03
2	Get	instance_type	USINT	0x00
3	Get	Xport Class trigger	USINT	0x83
4	Get	produced connection ID	UINT	0x5E3 for MAC ID 60
5	Get	consumed connection ID	UINT	0x5E4 for MAC ID 60
6	Get	initial comm characteristics	USINT	0x21
7	Get	produced connection size	UINT	0x0007
8	Get	consumed connection size	UINT	0x0007
9	Get/Set	expected packet rate	UINT	Application Dependent
10	N/A	N/A	N/A	Not Used
11	N/A	N/A	N/A	Not Used
12	Get	watchdog timeout action	USINT	0x01
13	Get	produced path length	UINT	0x0000
14	Get	produced path	Array of USINT	<NULL>
15	Get	consumed path length	UINT	0x0000
16	Get	consumed path	Array of USINT	<NULL>



## Poll I/O Message Connection (Instance #2) Attribute List

Attribute ID	Access Rule	Name	Data Type	Value
1	Get	state	USINT	0x03
2	Get	instance_type	USINT	0x01
3	Get	Xport Class trigger	USINT	0x82
4	Get	produced connection ID	UINT	0x3FC for MAC ID 60
5	Get	consumed connection ID	UINT	0x5E5 for MAC ID 60
6	Get	initial comm characteristics	USINT	0x01
7	Get	produced connection size	UINT	0x0001
8	Get	consumed connection size	UINT	0x0001
9	Get/Set	expected packet rate	UINT	Application Dependent
10	N/A	N/A	N/A	Not Used
11	N/A	N/A	N/A	Not Used
12	Get	watchdog timeout action	USINT	0x00
13	Get	produced path length	UINT	0x0006
14	Get	produced path	Array of USINT	20.04.24.01.30.03
15	Get	consumed path length	UINT	0x0006
16	Get	consumed path	Array of USINT	20.04.24.02.30.03

## Connection Object Services

Service	Service Code	Parameters
Get Attribute Single	0x0E	Attribute ID
Set Attribute Single	0x10	Attribute ID

**2.5 Discrete Input Object(8)**

There are two instances of the discrete input object. No class attributes are supported. The only instance attribute is the value(attribute #3). the only service is Get Attribute Single.

## Discrete Input Object Instance Attributes

Attribute ID	Access Rule	Name	Data Type	Value
3	Get	Value	BOOL	0x00 or 0x01

## Discrete Input Object Services

Service	Service Code	Parameters
Get Attribute Single	0x0E	Attribute ID

**2.6 Discrete Output Object(9)**

There is one instance of the discrete output object. One class attribute is supported which is the revision. The only instance attribute is the value(attribute #3). the only services are Get Attribute Single, and Set Attribute Single.

## Discrete Output Object Class Attributes

Attribute ID	Access Rule	Name	Data Type	Value
1	Get	Revision	UINT	0x0002

## Discrete Output Object Instance Attributes

Attribute ID	Access Rule	Name	Data Type	Value
3	Get/Set	Value	BOOL	0x00 or 0x01

## Discrete Input Object Services

Service	Service Code	Parameters
Get Attribute Single	0x0E	Attribute ID
Set Attribute Single	0x10	Attribute ID Attribute Value