Huron Net Works

DeviceNet DN-A101

Device Profile

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Revision # 0.3

Board Assembly 29000024
Board Revision A.0
Firmware Revision 1.1

Rev	Date	Note(s)
0.1	6/8/99	Original
0.2	6/23/99	Clerical changes
0.3	6/25/99	Add default values for digital ouput fault and idle behavior

1. Object Model

The DN-A101 has one digital output that controls a single phase motor starter and one 8 bit analog input which monitors motor current. This Device Profile is derived from the Generic Device Profile (Device Type 0).

1.1 Objects Present in Device

Object	Class Id	Optional/ Required	# of Instances
Identity	0x01	Required	1
Message Router	0x02	Optional*	1
DeviceNet	0x03	Required	1
Assembly	0x04	Required	2
Connection	0x05	Required	1 Explicit Messaging 1 Polled I/O
Discrete Output Point	0x09	Optional**	1
Analog Input Point	0x0A	Optional**	1

*Attributes and services are optional; behavior is required.

** Not required in Generic Profile.

1.2 Objects That Effect Behavior

Object	Class Id	Effect on Behavior
Identity	0x01	Supports the Reset Service
Message Router	0x02	No Effect
DeviceNet	0x03	Configures Port Attributes
Assembly #1	0x04	Defines input data format
Assembly #2	0x04	Defines output data format
Connection	0x05	Establishes the number of connections
Discrete Output	0x09	Manages Digital Output Attributes
Analog Input	0x0A	Manages Analog Input Attributes

1.3 Object Interfaces

Object	Class Id	Interface
Identity	0x01	Message Router
Message Router	0x02	Explicit Message Connection Instance
DeviceNet	0x03	Message Router
Assembly #1	0x04	I/O Connection or Message Router
Assembly #2	0x04	I/O Connection or Message Router
Connection	0x05	Message Router
Discrete Output	0x09	Message Router
Analog Input	0x0A	Message Router

1.4 Identification of I/O Assembly Instances

Number	Type	Name
1	Input	Device Inputs
2	Output	Device Outputs

1.5 Format of I/O Assembly Data Attribute

1.5.1 Assembly #1 -- Device Inputs

Byte	7	6	5	4	3	2	1	0
0	Analog In							

Map of I/O Assembly Data Attribute Components

Data Name	Class		Instance	Attribute	
	Name	Number	Number	Name	Number
Analog In	Analog Input	0x0A	1	Value	3

1.5.2 **Assembly #2 -- Device Outputs**

Byte	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
0								Run

Map of I/O Assembly Data Attribute Components

Data Name	Class		Instance	Attribute	
	Name	Number	Number	Name	Number
Run	Discrete Out	9	1	Value	3

2. Standard Objects

2.1 Identity Object (0x01)

There is a single instance of the identity object for the device.

2.1.1 Class Attributes

No class attributes are supported.

2.1.2 Instance Attributes

Attribute ID	Access Rule	Name	Data Type	Value
1	Get	Vendor	UINT	0x0014
2	Get	Device Type	UINT	0x0000
3	Get	Product Code	UINT	0x0011
4	Get	Revision	STRUCT	01.01
5	Get	Status	WORD	0x0000
6	Get	Serial #	UDINT	0x00003800*
7	Get	Product Name	STRUCT	17, Starter Interface
8	Get	State	USINT	[0..5]

* Base Serial Number

2.1.3 Instance Services

Service Code	Service Name	Description of Service
05	Reset	Reset the device to power up configuration
0E	Get_Attribute_Single	Returns the contents of the specified attribute

2.2 Message Router Object (0x02)

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

2.3 DeviceNet Object (0x03)

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

2.3.1 Class Attributes

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

2.3.2 Class Services

Service Code	Service Name	Description of Service
0E	Get_Attribute_Single	Returns the contents of the specified attribute

2.3.3 Instance Attributes

Attribute ID	Access Rule	Name	Data Type	Value
1	Get/Set	MACID Value	USINT	Range 0-63
2	Get/Set	Baud Rate Value	USINT	Range 0-63
3	Get/Set	BOI	BOOL	0x00 Fault
4	Get/Set	Bus-Off Counter	USINT	0x00
5	Get	Allocation Information	STRUCT	Allocate Service
6	Get	MAC ID Switch Changed	BOOL	0=No Change 1=Changed
7	Get	Baudrate Switch Changed	BOOL	0=No change 1=Changed
8	Get	MAC ID Switch Setting	USINT	Range 0-63
9	Get	Baudrate Switch Setting	USINT	Range 0-3

2.3.4 Instance Services

Service Code	Service Name	Description of Service
0E	Get_Attribute_Single	Returns the contents of the specified attribute
10	Set_Attribute_Single	Sets the value of the specified attribute
4B	Allocate	Creates predefined M/S connections
4C	Release	Deletes predefined M/S connections

2.4 Connection Object (0x05)

2.4.1 Class Attributes

No class Attributes are supported

2.4.2 Instance Attributes

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.

2.4.3 Instance Services

Service Code	Service Name	Description of Service
05	Reset	Reset the connection - restart timer transition from timed out state.
0E	Get_Attribute_Single	Returns the contents of the specified attribute
10	Set_Attribute_Single	Sets the value of the specified attribute

Explicit Message Connection (Instance #1)

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	0x5FB for MAC ID 63
5	Get	consumed connection ID	UINT	0x5FC for MAC ID 63
6	Get	initial comm characteristics	USINT	0x21
7	Get	produced connection size	UINT	0x000F
8	Get	consumed connection size	UINT	0x000F
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/Set	watchdog timeout action	USINT	0x01 Auto Delete
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>
17	Get	production inhibit timer	UINT	0x0000*

* Server devices do not use this timer

Poll I/O Message Connection (Instance #2)

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	0x3FF for MAC ID 63
5	Get	consumed connection ID	UINT	0x5FD for MAC ID 63
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/Set	watchdog timeout action	USINT	0x00 Time Out
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
17	Get	production inhibit timer	UINT	0x0000*

* Server devices do not use this timer

2.5 Discrete Output (0x09)

2.5.1 Class Attributes

No class attributes are supported for this class.

2.5.2 Instance Attributes

Attribute ID	Access Rule	Name	Data Type	Description	Value
3	Get/Set	Value	BOOL	Output Point Value 0 = off, 1 = on	0..1
5	Get/Set	Fault Action	BOOL	0 = use Fault Value 1 = hold last state	0..1 default = 1
6	Get/Set	Fault Value	BOOL	State of output after fault 0 = off, 1 = on	0..1 default = 0
7	Get/Set	Idle Action	BOOL	0 = use Idle Value 1 = hold last state	0..1 default = 1
8	Get/Set	Idle Value	BOOL	State of output during idle 0 = off, 1 = on	0..1 default = 0

2.5.3 Instance Services

Service Code	Service Name	Description of Service
0E	Get_Attribute_Single	Returns the contents of the specified attribute
10	Set_Attribute_Single	Modifies an attribute value

2.6 Analog Input(0x0A)

2.6.1 Class Attributes

Attribute ID	Access Rule	Name	Data Type	Description	Value
1	Get	Revision	UINT	Revision of this object	2

2.6.2 Class Services

Service Code	Service Name	Description of Service
0E	Get_Attribute_Single	Returns the contents of the specified attribute

2.6.3 Instance Attributes

Attribute ID	Access Rule	Name	Data Type	Description	Value
3	Get	Value	USINT	Input Point Value	0..255
8	Get	Value Data Type	USINT	Defines Value Data Type to be USINT	2

2.6.4 Instance Services

Service Code	Service Name	Description of Service
0E	Get_Attribute_Single	Returns the contents of the specified attribute