

PLC133 LAB 3.4: DEVICENET RIGHTSIGHT PHOTOEYE PROPERTIES

Student Name: _____

Student ID: _____

LAB OUTCOMES:

1. Explain the properties information for a RightSight Photoeye
2. Demonstrate how to display the properties for a RightSight Photoeye
3. Demonstrate how modify the address settings for a RightSight Photoeye

LAB PROCESS:

This Lab Exercise will view Properties information for the RightSight Standard Diffuse Photoeye. This Lab Exercise will also demonstrate testing of the RightSight Standard Diffuse Photoeye

Part 1

EQUIPMENT REQUIRED:

ControlLogix Demo board with 1756-DNB module, 1756-processor
1756-Ethernet Communication Module
Discrete Input / Output Modules

DeviceNet Demo Board with 871TM Prox switch
RightSight Standard Diffuse Photoelectric Sensor
855T – Stack Light
1791D 8B8P Compact Block I/O
PowerFlex 4 VFD

Note: Other components are also installed on DeviceNet Demo Board

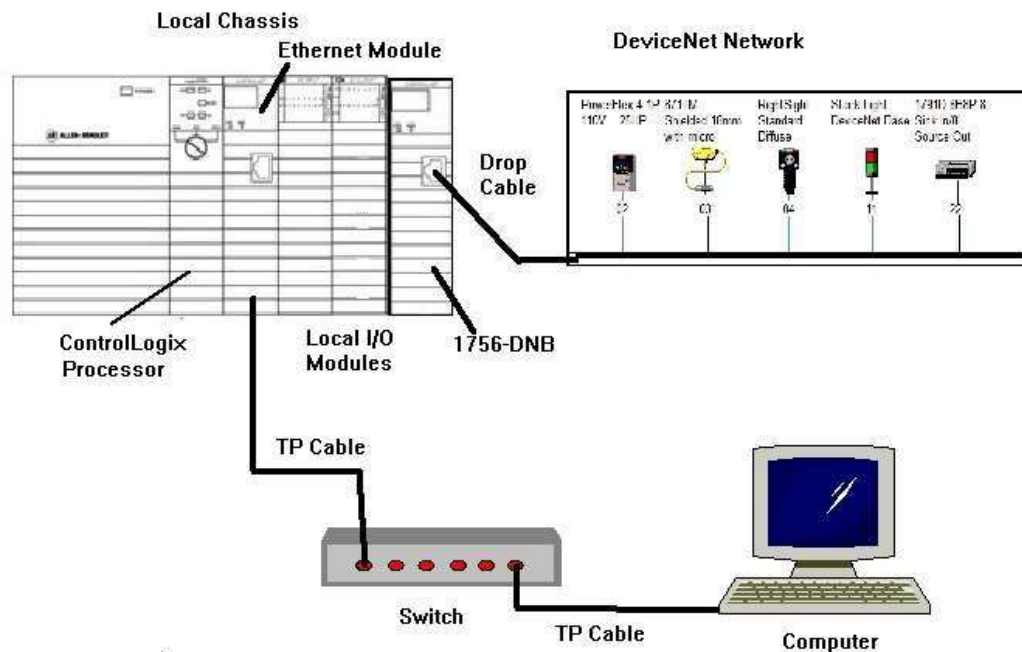


Figure 1-A

Ensure all the DeviceNet component's cables are connected to the IDC taps on the bottom of the DeviceNet Demo Board

Twisted pair Ethernet cables from Computer Ethernet Port the 1756-EtherNet Module Note: the cable may be directly connected - no Switch required

DeviceNet drop cable to connect the DeviceNet Demo Board to the front port on the 1756-DNB Module located on the ControlLogix Demo Board.

Power-up ControlLogix and DeviceNet Demo Boards

Note: If the display on the 1756-DNB Module shows - No Network Power – the 1756-DNB Module is not receiving power from the DeviceNet network (drop cable) cable.

In the Lab exercise a connection will be made from the computer's Ethernet Port thru RSNetWorx for DeviceNet using a RSLinx, EtherNet/IP Driver to connect to the DeviceNet network

Ensure the Computer can connect to the ControlLogix Demo board using the 1756 – Ethernet Communication Module with an EtherNet/IP driver.

Note: DeviceNet Scanner Module - 1756-DNB – located in slot 6.

Open RSNetWorx for DeviceNet.

Start a new RSNetWorx for DeviceNet file

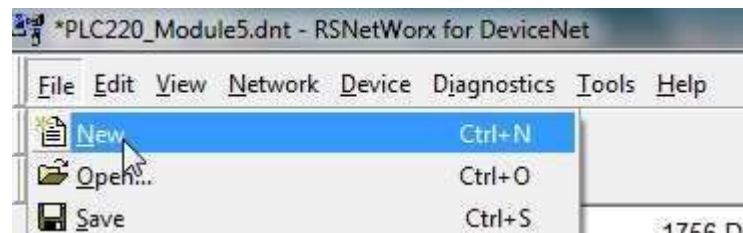


Figure 2-A

Go Online to the DeviceNet Demo Board

Browse the DeviceNet network

RightSight Standard Diffuse Photoeye icon is shown on the Network Layout window.

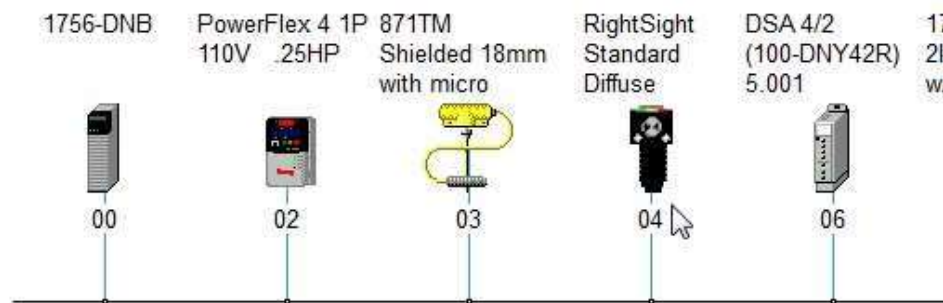


Figure 3-A
Network Scan

1. Right click the RightSight Standard Diffuse Photoeye icon – Choose Properties from the context menu

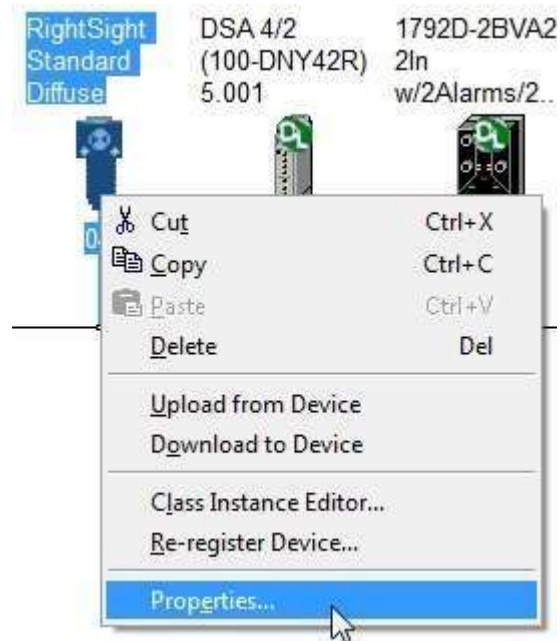


Figure 4-A
RightSight Standard Diffuse Properties

Note: The Properties for the 871TM Shielded 18mm with micro Proximity Switch contains Properties similar to the RightSight Standard Diffuse Photoelectric Sensor (Photoeye)

Both components are input style of devices with 1 Byte of input data

2. General Tab – Shows component information

Name:

Address: Default Address - 63

Catalog: device part number

Revision; device revision level

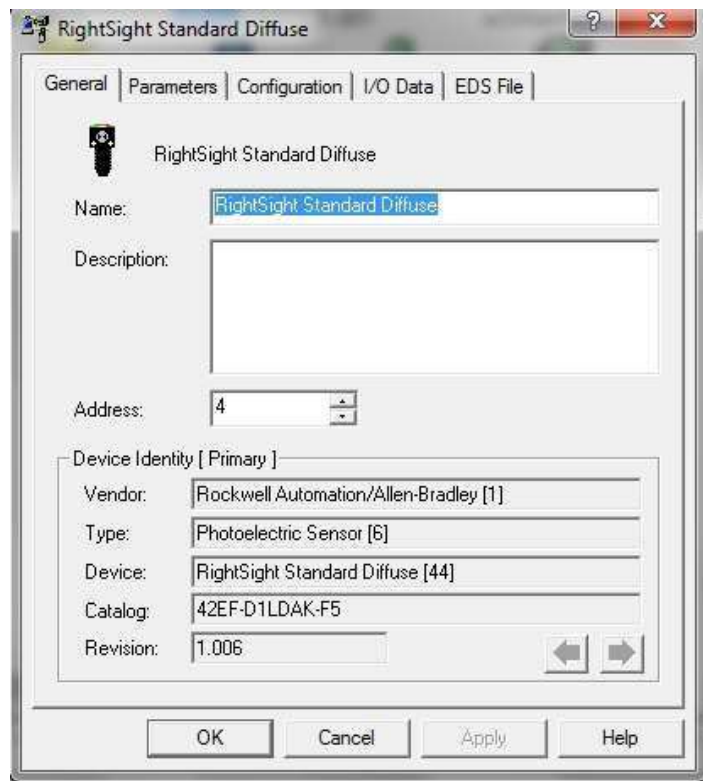


Figure 5-A
RightSight Standard Diffuse – General Tab

Note: Components with software settable Node Addresses (MAC ID), the Address selection (Spin) box can be used to change the components address (MAC ID).

Modifying the Address setting will use the Node Commission Tool to make the change.

RSNetWorx for DeviceNet will automatically run the Node Commission Tool. No user interaction with the Node Commission Tool is required.

If changes are made - click the Apply button to save settings

3. Click the Parameters Tab – Shows RightSight Standard Diffuse Parameter list



Symbol denotes Read- Only Parameter

See Figure 6-A

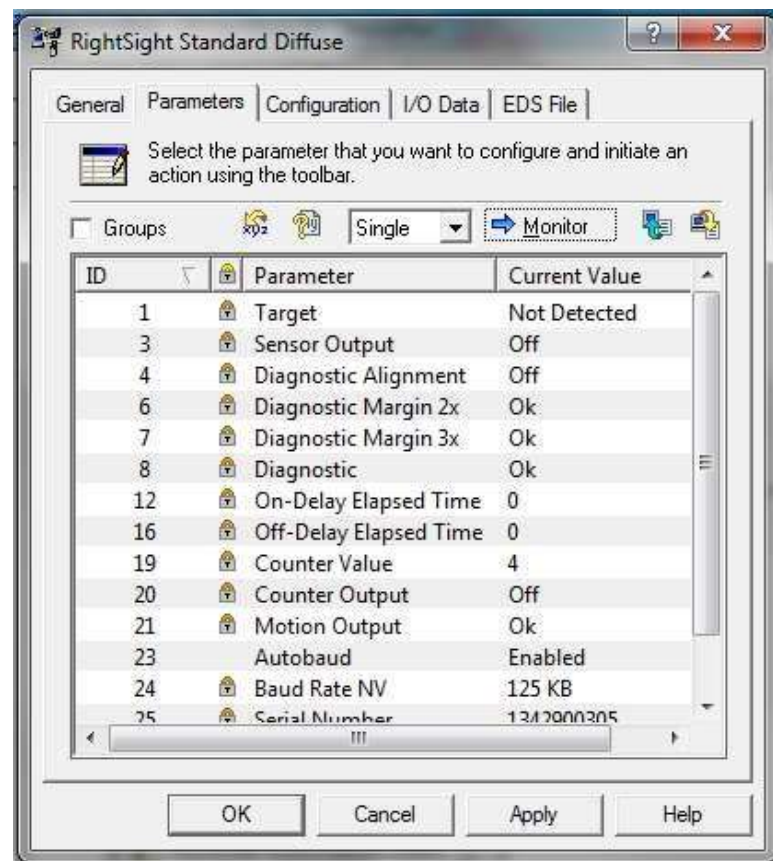


Figure 6-A
RightSight Standard Diffuse – Parameters Tab

By default, the Parameters are presented in a Linear List.

Note: Autobaud – Parameter 23 (ID column) is a settable Parameter
Autobaud – Enabled –default setting

For the RightSight Standard Diffuse Photoeye all other Parameters in the
Parameters tab are Read-Only

For Parameter Help highlight a Parameter and click the Help icon



Figure 7-A

RightSight Standard Diffuse – Help Icon

A Help window for the chosen Parameter provides a description.

See Figure 8-A

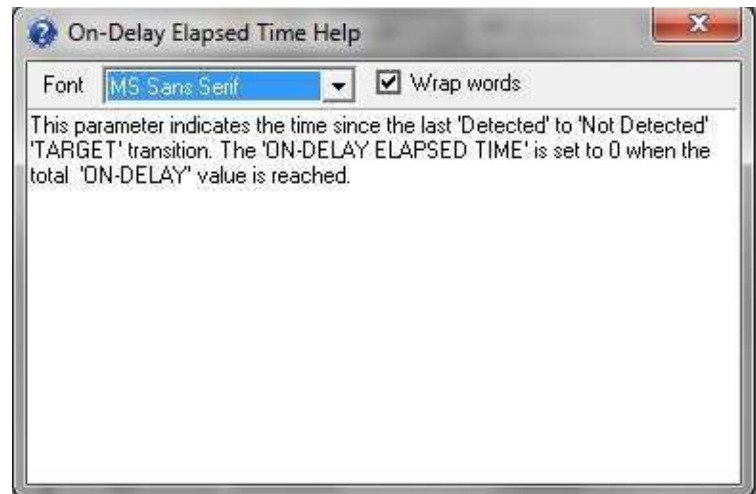


Figure 8-A

Help Window for RightSight Standard Diffuse Parameter

Click Groups Check Box to show Parameter Groups View

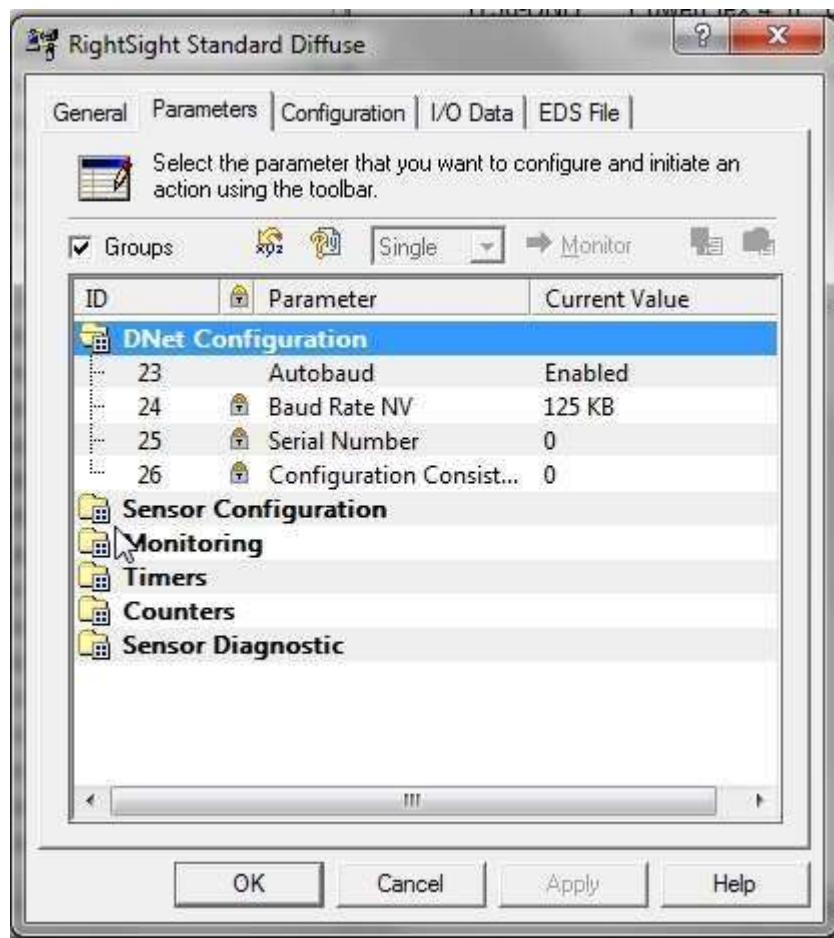


Figure 9-A
RightSight Standard Diffuse - Parameter Tab – Group View

4. Click the Configuration Tab – Show RightSight Standard Diffuse Parameter list

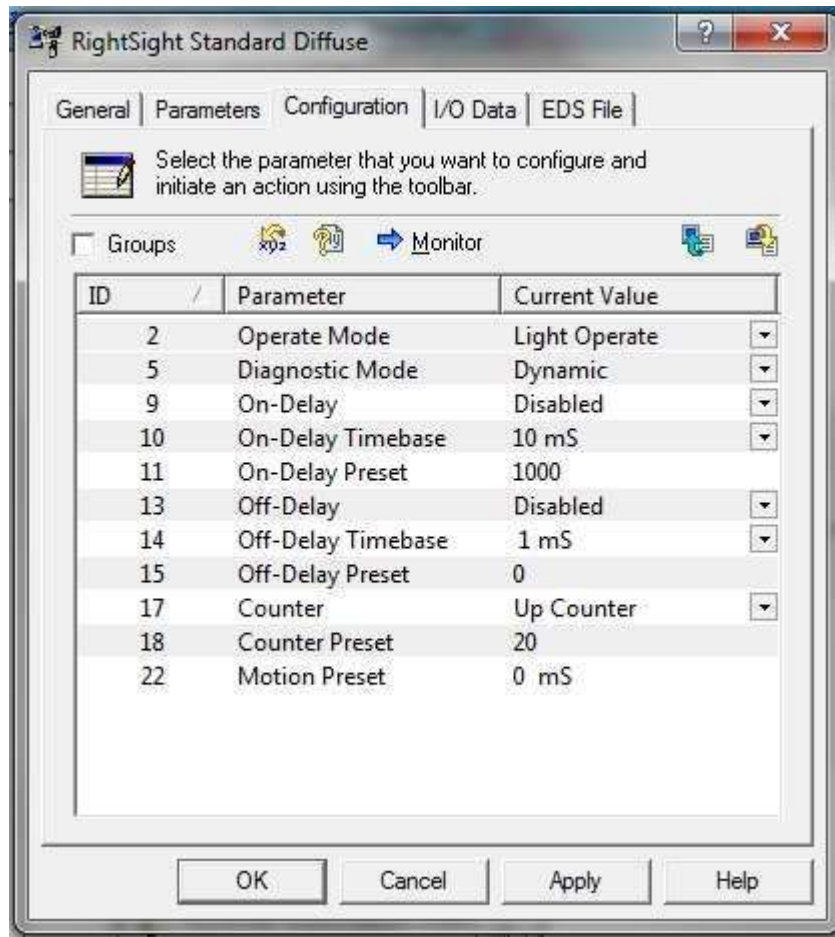


Figure 10-A
RightSight Standard Diffuse - Configuration Tab

The Configuration tab for the RightSight Standard Diffuse Photoeye shows changeable (configurable) Parameters.

Click the yellow arrow icon (left of Help icon) to reset Configurable Parameters to default setting.



Figure 11-A
Reset Parameters Icon - Configuration Tab

Note: Individual Parameters can be reset by selecting the Parameter and pressing Ctrl-D on the computer keyboard.

Click Yes button on EDS Editor window to reset all the Parameters to default settings.

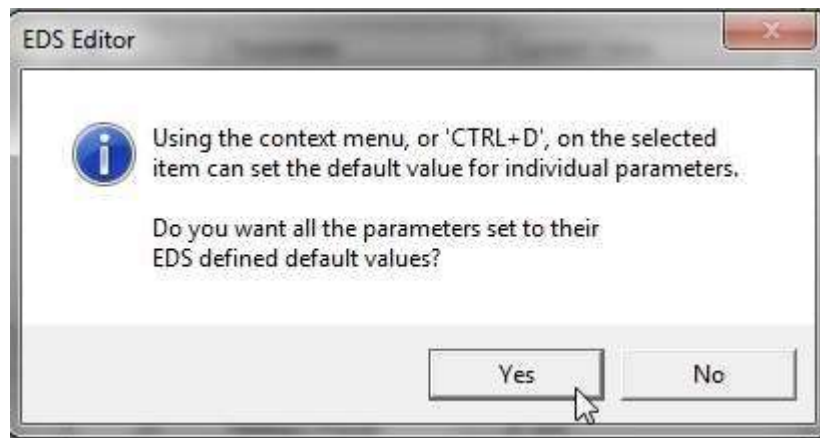


Figure 12-A
Confirming Reset Parameters

Note: Groups Check Box and Help icon – Provides same functions as on Parameter tab.

RightSight Standard Diffuse configurable Parameters include:

- ID 2 – configures RightSight Standard Diffuse Photoeye's response when sensing a target
- ID 9 – configures On-Delay Timer in photoeye
- ID 10 – configures On-Delay Timer Timebase in photoeye
- ID 11 – configures On-Delay Timer Preset value in photoeye
- ID 13 – configures Off-Delay Timer in photoeye
- ID 14 – configures Off-Delay Timer Timebase in photoeye
- ID 15 – configures Off-Delay Timer Preset value in photoeye
- ID 17 – configures Counter in photoeye
- ID 15 – configures Counter Preset value in photoeye

Click the drop-down arrow to the right of Parameter's Current Value.

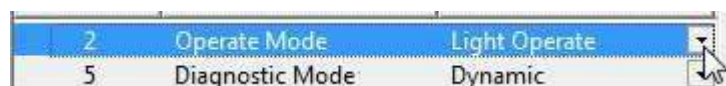


Figure 13-A
Confirming Reset Parameters

The drop-down box shows available settings for the selected Parameter

ID	/	Parameter	Current Value
2		Operate Mode	Light Operate
5		Diagnostic Mode	Light Operate
9		On-Delay	Dark Operate
10		On-Delay Timebase	1 mS

Figure 14-A

Parameter Configuration Values

5. Click the I/O Tab – Shows Message type and I/O Data Size

Note: Default Message Type in **Bold** – COS in Figure 15-A

Note: Message Size listed in Bytes – default data size for DeviceNet

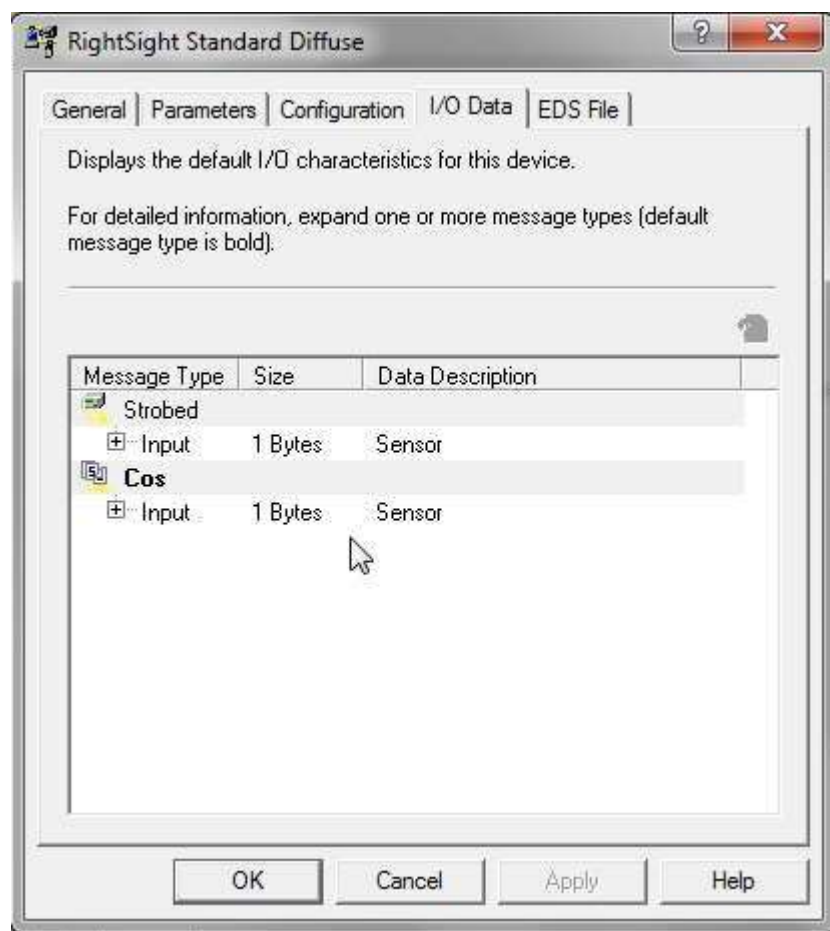


Figure 15-A

I/O Data - RightSight Standard Diffuse Photoelectric Sensor

Click the + sign to the left of **COS** -> Input to view bit information

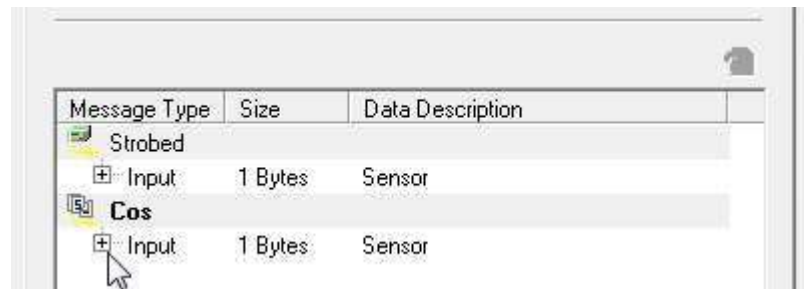


Figure 16-A

See Figure 17-A

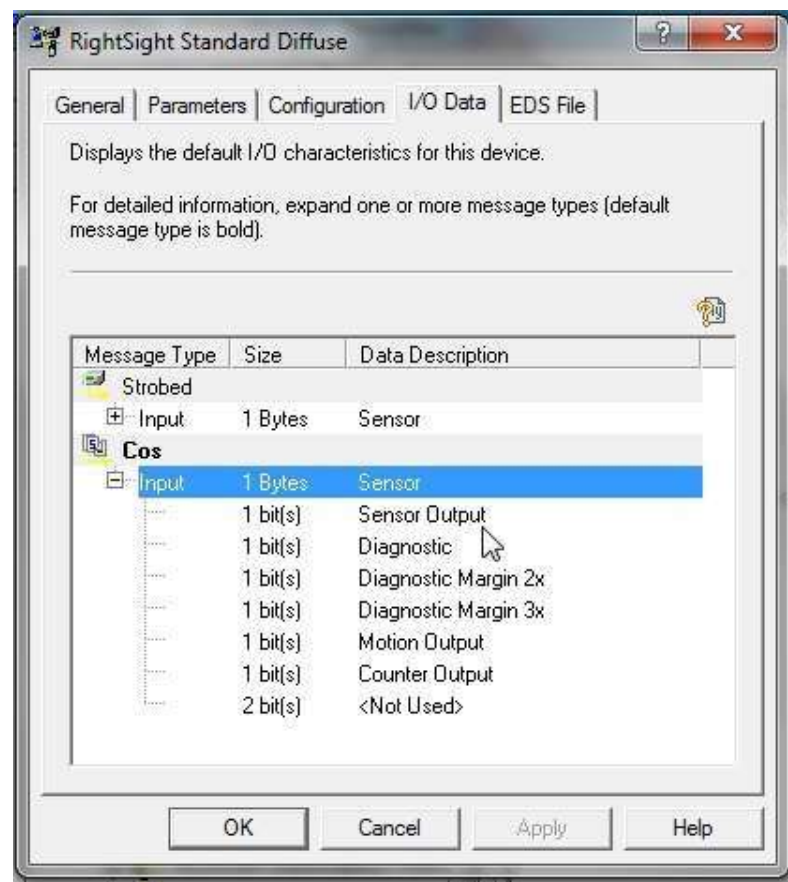


Figure 17-A

Bit Data - RightSight Standard Diffuse Photoelectric Sensor

Highlight - Input 1 Bytes Sensor (See Figure 17-A) to activate the Help icon on the right side of the I/O window.



Figure 18-A
Help Icon – I/O Data Window

Click the Help icon to view additional component I/O information.

See Figure 19-A

Note: Some components do not have I/O Date Help – See 871TM Proximity Switch

DB – data bit

DB 0 - DB7 – 8 bits (1 Byte)

See Figure 19-A

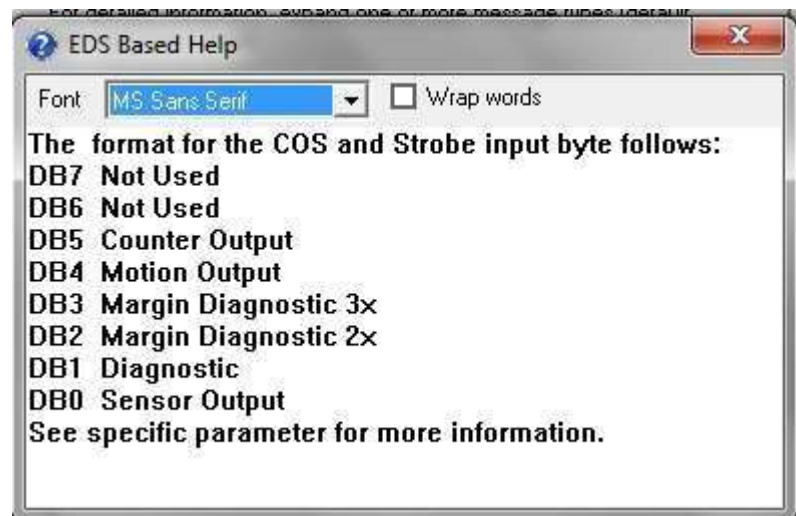


Figure 19-A
Data Help – I/O Data Window

6. Click the EDS File Tab – Shows Electronic Data Sheet (EDS) information

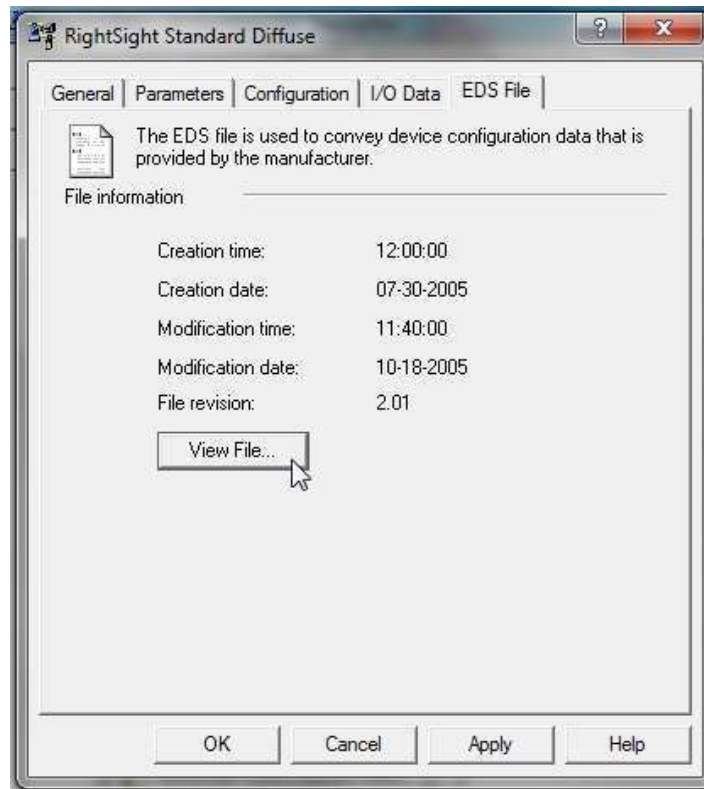


Figure 20-A

EDS Tab - RightSight Standard Diffuse Photoelectric Sensor

All DeviceNet network components require a registered EDS File to function on a DeviceNet network


```

RSI_EDS_00010006002C0100_Rightsight Standard Diffuse Rev 1.4.txt - Notepad
File Edit Format View Help
$ Description: Rightsight 42EF Photoelectric Sensors Ser A, 1.0x
$ Last changes: 2.01 PAH 10/30/05 Cfg Assy added, updated naming, vendor name,
$ IO Assy added, diagnostic enumeration, data types
$ Note: !!! Not compatible with old .dnt files !!!
$ Edit History:
$ 1.01 BJT 3/26/98 Created
$ 1.02 BJT 6/26/98 Updated with changes from MKT
$ 1.03 PAH 10/10/00 Updated for RSnetworks alpha 2.51 parms 9,10,13,14
$ 1.04 PAH 10/01/03 Help update/formatting, Data types, ico
$ 2.01 PAH 05/17/05 Assy section added, Device Classification section
$ Cfg Assy added, updated param naming, vendor name,
$ IO Assy added, diagnostic enumeration, conformant c

[File]
DescText = "Rightsight 42EF Photoelectric Sensor EDS File";
CreateDate = 07-30-2005;
CreateTime = 12:00:00;
ModDate = 10-18-2005;
ModTime = 11:40:00;
Revision = 2.01; $ EDS revision.
HomeURL = "http://www.ab.com/networks/eds/DN/00010006002C0100.eds";

[Device]
VendCode = 0001;
VendName = "Rockwell Automation/Allen-Bradley";
ProdType = 6;
ProdTypeStr = "Photoelectric sensor";
ProdCode = 44;
MajRev = 1; $ Device Major Revision
MinRev = 4; $ Device Minor Revision
ProdName = "Rightsight Standard Diffuse";
Catalog = "42EF-D1LDAK-F5";
Icon = "42EF PhotoSensor.ico";

[Device Classification]
Class1 = DeviceNet;

[IO_Info]
I_cosepPathNotSupported = 1; $ no settin
  
```

Figure 21-A

EDS File - Rightsight Standard Diffuse Photoelectric Sensor

To register an EDS file, select Tools -> EDS Wizard from the RSNetWorx for DeviceNet menu toolbar.

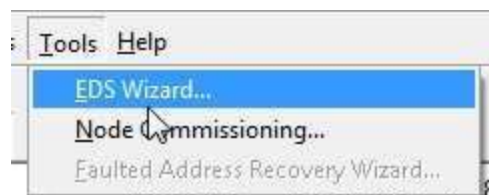


Figure 22-A

EDS File Wizard

Testing RightSight Standard Diffuse Photoelectric Sensor:

Ensure RSNetWorx for DeviceNet is online to the DeviceNet Demo Board

Right click on RightSight Standard Diffuse Photoelectric Sensor, choose Properties from context menu.

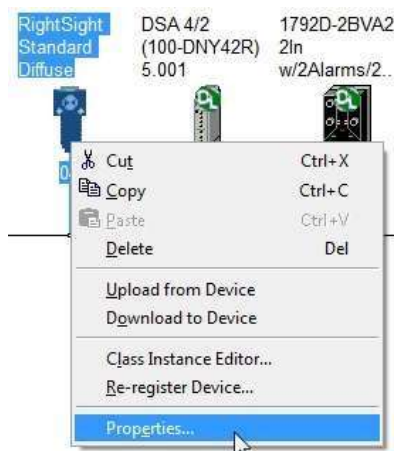


Figure 23-A

RightSight Standard Diffuse Properties

Click the Parameters tab

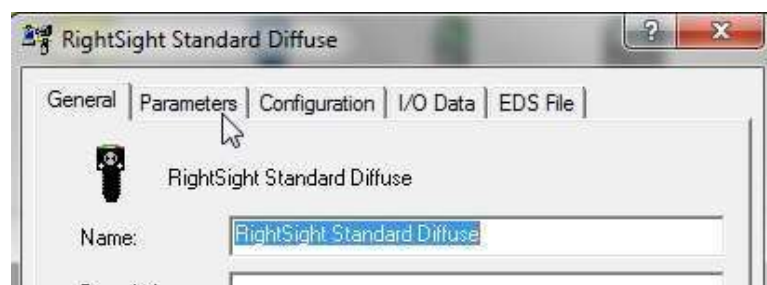


Figure 24-A

RightSight Standard Diffuse Parameters Tab

Click Upload button to upload device Parameters



Figure 25-A

RightSight Standard Diffuse Properties

Note: Upload and Download icons on the right side of the Parameter window are active. Same icons on Configuration tab window.

Same

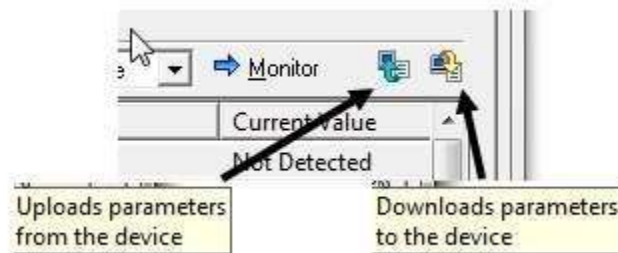


Figure 26-A

Parameter Upload and Download Icons

Click the drop-down selection box and choose Single

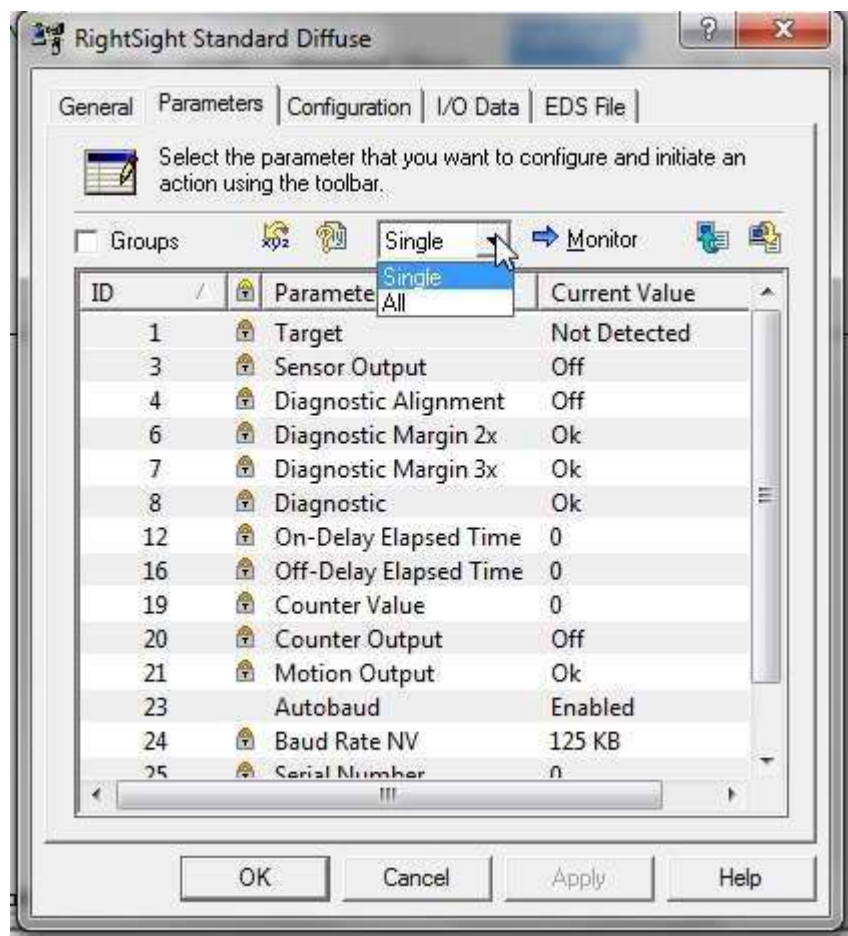


Figure 27-A
Parameter Tab

Select Parameter 1 (ID) Target

Note: Current Value – Not Detected

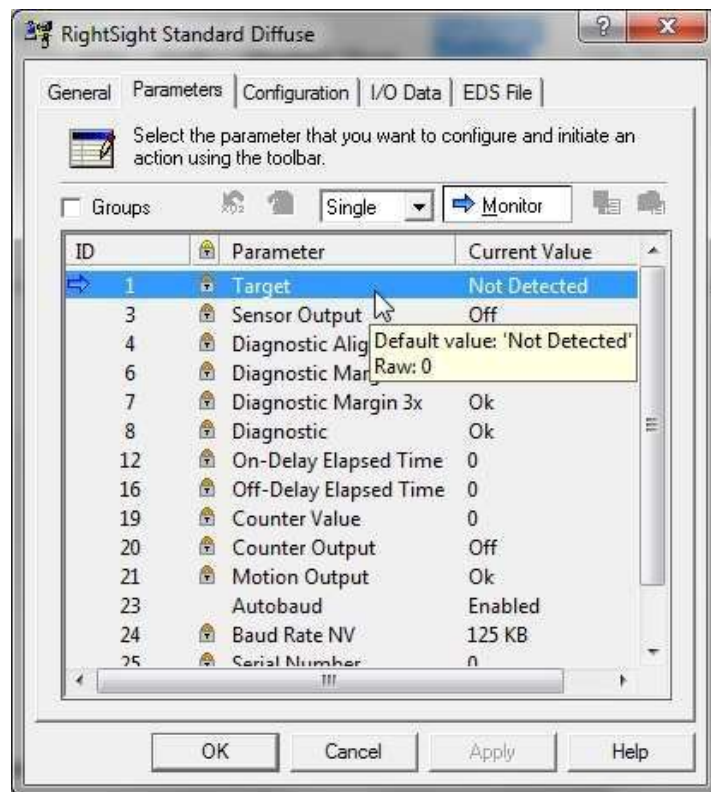


Figure 28-A

Parameter Tab – Parameter 1 Selected

Note: Single - will update only the selected Parameter

All- will Scan the list of Parameters and update the Parameters as they are scanned.

Click the Monitor box go online to the device – RightSight Standard Diffuse Photoeye

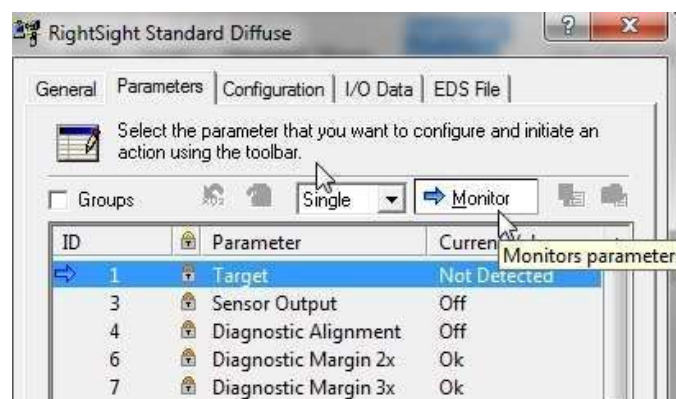


Figure 29-A

Monitor – Selected Parameter

Note: Parameter 1 Current Value – Not Detected

Present a target for the RightSight Standard Diffuse Photoeye to sense

Parameter 1 – Target: Current Value will show Detected if the Photoeye is functioning.

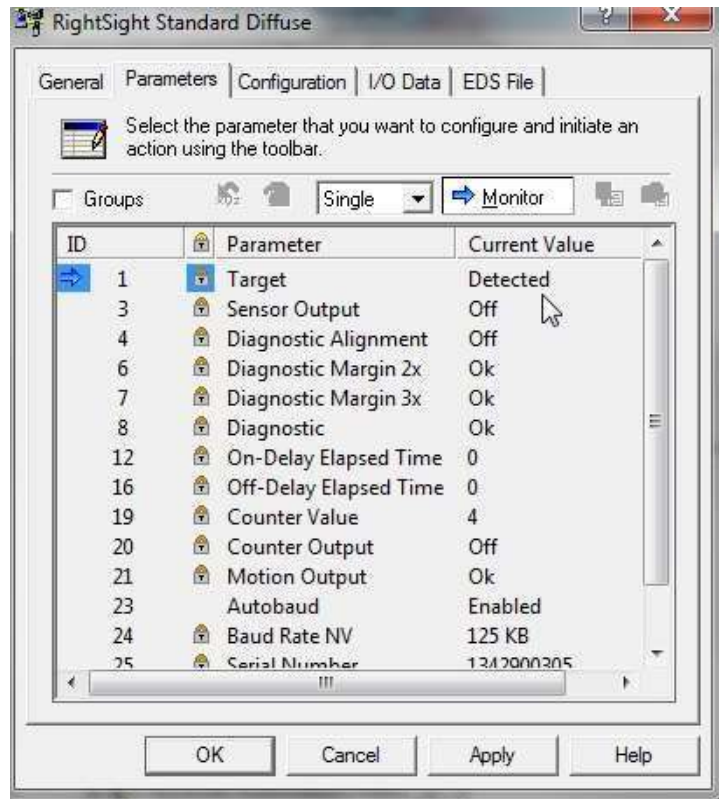


Figure 30-A
RightSight Standard Diffuse Photoeye- Target Detected

Remove target for Photoeye

Select Parameter 3 (ID) – Sensor Output

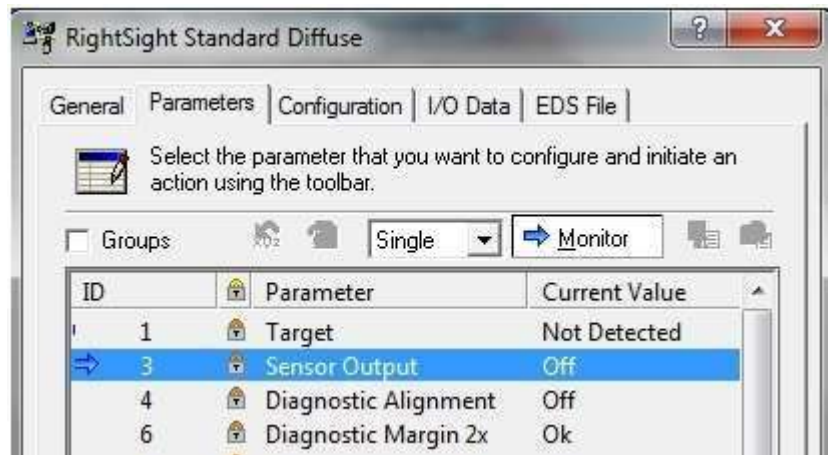


Figure 31-A

RightSight Standard Diffuse Photoeye- Target Detected

Note: Current Value of Parameter 3 – Sensor Output - OFF

Present a target for the RightSight Standard Diffuse Photoeye to sense

Parameter 3 – sensor Output: Current Value will show on if the Photoeye is functioning

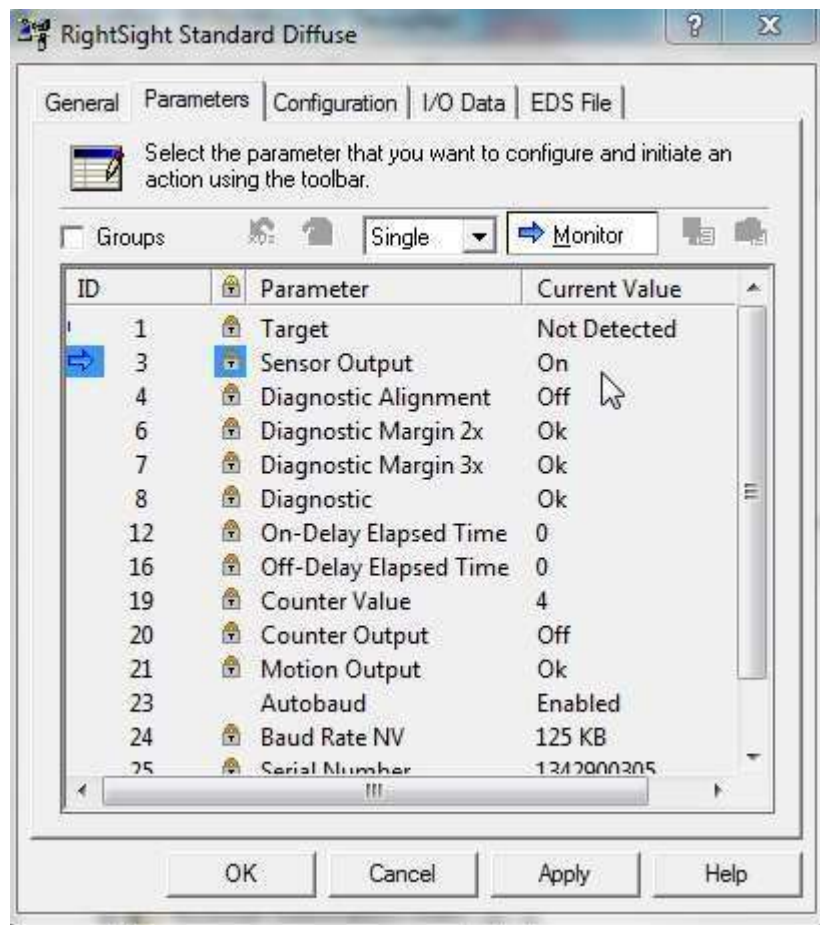


Figure 32-A
Monitor Parameter 3 – Sensor Output

Note: If the RightSight Standard Diffuse Photoelectric Sensor has Timers or Counter enabled:

- Parameter 12 will show On-Delay Elapsed Time, i.e. Timer ACC value
- Parameter 16 will show Off-Delay Elapsed Time, i.e. Timer ACC value
- Parameter 19 will show Counter Value, i.e. Counter ACC value
- Parameter 20 will show Counter Output, i.e. Counter Done bit value

Note: Other Parameter can also be monitored to test configuration settings

Review Questions

1. True or False. A DeviceNet component must have a registered EDS File to operate on a Network
2. The default node address a RightSight Standard Diffuse Photoelectric Sensor is:
 - a) 00
 - b) 01
 - c) 63
 - d) 64
3. Which type of function can be enabled on a RightSight Standard Diffuse Photoelectric Sensor:
 - a) Timer
 - b) Counter
 - c) Sequencer
 - d) PID
4. True or False. Autobaud is not Enabled on a RightSight Standard Diffuse Photoelectric Sensor by default.
5. Which data bit is the RightSight Standard Diffuse Photoelectric Sensor output:
 - a) 1
 - b) 2
 - c) 3
 - d) 0
 - e) 5
6. True or False. The RightSight Standard Diffuse Photoelectric Sensor has only one Operate Mode
7. True or False. The 871TM Proximity Switch has a similar Parameter Set as the RightSight Standard Diffuse Photoelectric Sensor
8. True or False. The Parameter that monitors an On-Delays Timer's ACC value is called On-Delay Timer Elapsed Time.

9. True or False. Help Information is included in the RightSight Standard Diffuse Photoelectric Sensor Properties windows
10. What data bit is the RightSight Standard Diffuse Photoelectric Sensor Counter Output
- a) 7
 - b) 3
 - c) 5
 - d) 0

The outcomes of this exercise (listed on page 1) specifies the skills that the Student must demonstrate to the Instructor. Once the Instructor is satisfied with the demonstration of Knowledge & Skills by the individual student, they will sign this document (for the student), then enter a 100% into the Hands-On Lab grade in Sakai.

I verify that this student has completed all of the requirements of this Hands-On Assessment:

Student Name: _____

Faculty Signature: _____ Date: _____

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