NX APPLICATION NOTE

Using a Bar Code Scanner to Validate Product ID

Overview

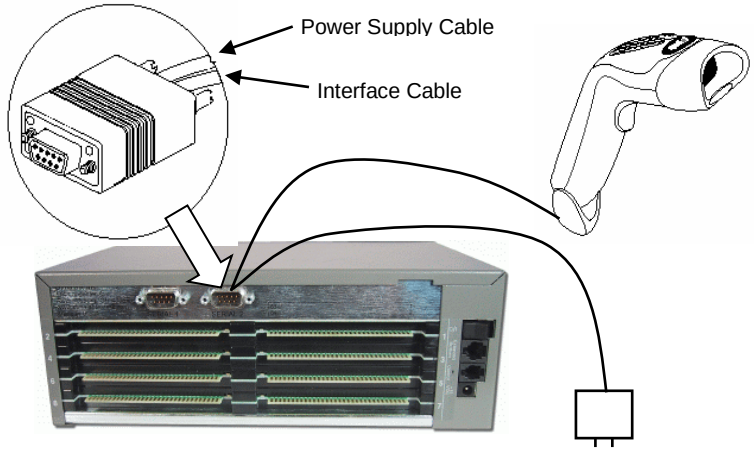
This document explains how to program the Dynalab NX Tester to scan bar-coded product information from a label and validate that the product ID is correct.

This application note applies to the following scenario:

- Labels are applied to wire harnesses before they are tested
- The labels contain a bar code that represents the part number
- Before testing begins, a scanner attached to a NX Tester is used to scan the barcode. The NX Tester compares the scanned data with the part number that is associated with the test program.
- If the scanned data matches the part number associated with the test program, testing begins.
- If the scanned data does not match the part number associated with the test program, an error message is displayed.

The Dynalab Bar Code Scanner, is recommended for this application. The scanner is supplied with an interface cable terminating in a DB-9 connector and a power supply.

The DB-9 connector must be plugged into an available serial port of the NX Tester as illustrated below:



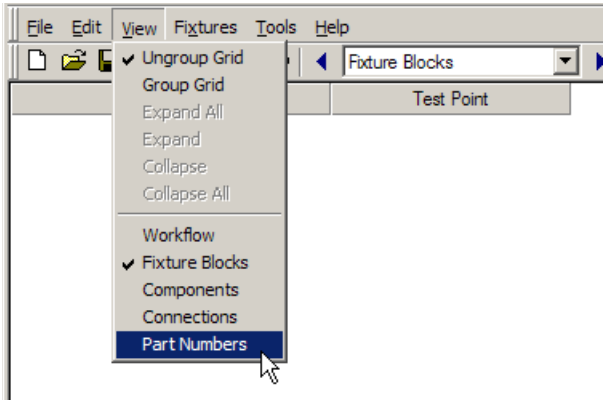
NOTE: Barcode scanners not supplied by Dynalab, must be configured to include a LINE FEED "<LF>" character at the end of the string data. However, it is up to the user to verify compatibility

NX Editor Programming

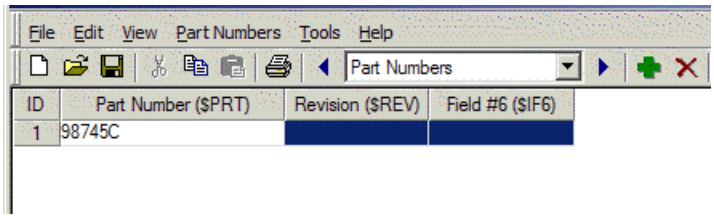
The following sections describe the necessary steps to configure the NX Editor program for bar code validation of the product ID.

Define Part Number

To implement bar code validation of product ID, the NX Editor must have the part number defined in the test program. To define the part number, select Part Numbers from the View dropdown menu:



Then enter the part number in the Part Number column in the Part Numbers view:



Note that the part number is stored in the NX system variable $PRT

Workflow

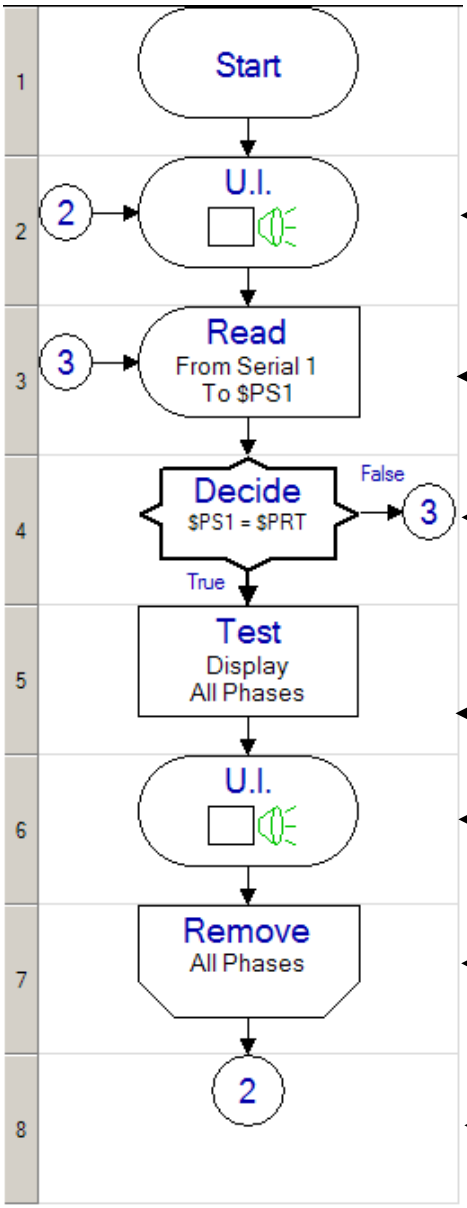
The Workflow must have a the following items to support bar code validation:

1. A User Interface cell configured to instruct the operator to scan the bar code
2. A Read cell that reads data from the serial port to which the scanner is connected
3. A Decide cell that determines if the scanned data is equal to the part number
4. Jump Arrow Properties for the Decide cell's jump arrow associated with a false result, configured to provide an error message if the scanned data does not match the part number

An example Workflow is shown on the next page.

Workflow Overview

The following is an overview of an example Workflow. Additional details for each Workflow item are provided in subsequent pages of this document.



This User Interface item is configured to prompt the Operator to scan the bar code

This Read item is configured to read the scanned data from the serial port to which the scanner is connected, and to store the results in Program String Variable 1 ($PS1)

This Decide item is configured to determine if the scanned data stored in $PS1 is equal to the part number defined in system variable $PRT. If the comparison is True, execution resumes with the next Workflow cell. If False, execution jumps back to cell 3 – this jump arrow is configured to provide an audible tone and an error message indicating that the scanned data is invalid.

This Test-Display item tests the wire harness for continuity and shorts

This User Interface item is configured provide an audible sound and a message indicating that the harness has passed all tests, and to remove the wire harness from the test fixture

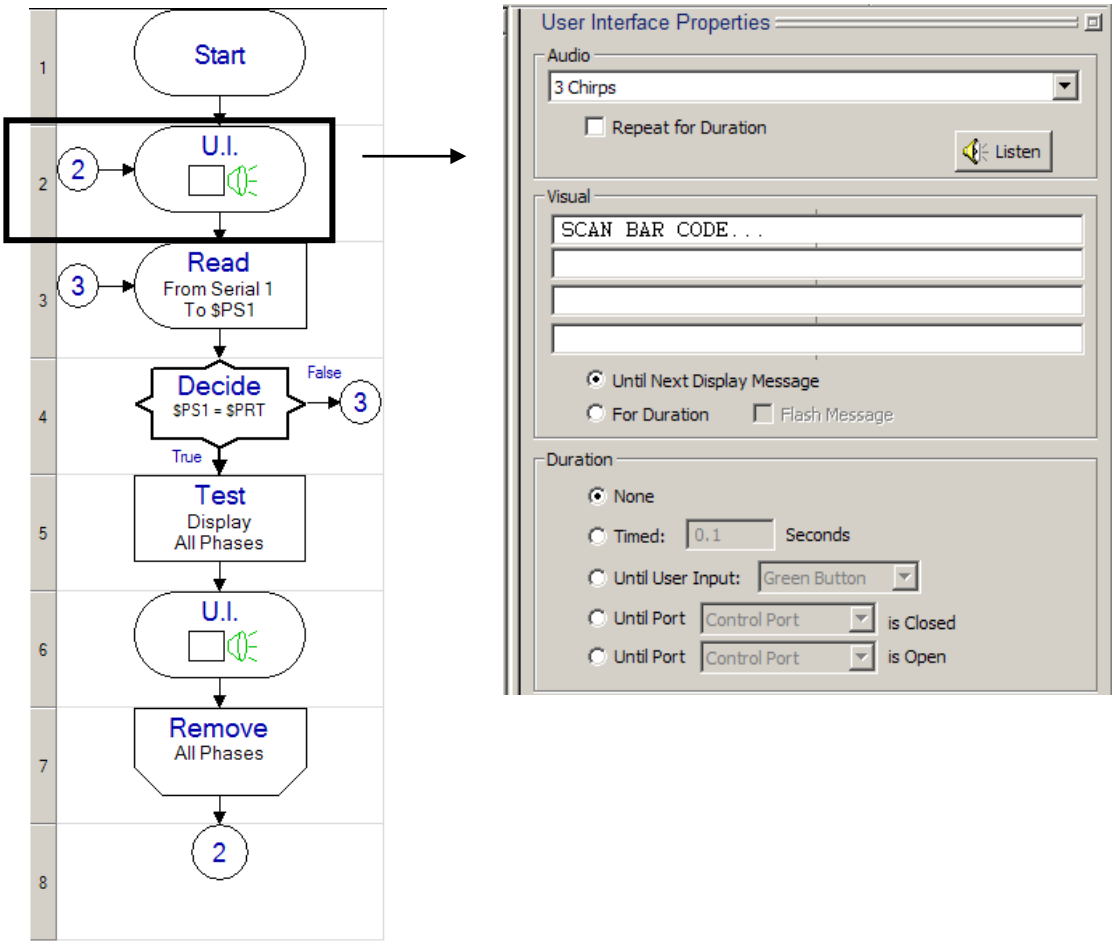
This Remove item ensures that the harness is removed from the test fixture

This Jump item is configured to cause execution to jump back to cell 2 so that the next harness can be scanned and tested

Workflow Item Details

The following is a detailed view of each Workflow item's properties.

Cell 2 – User Interface

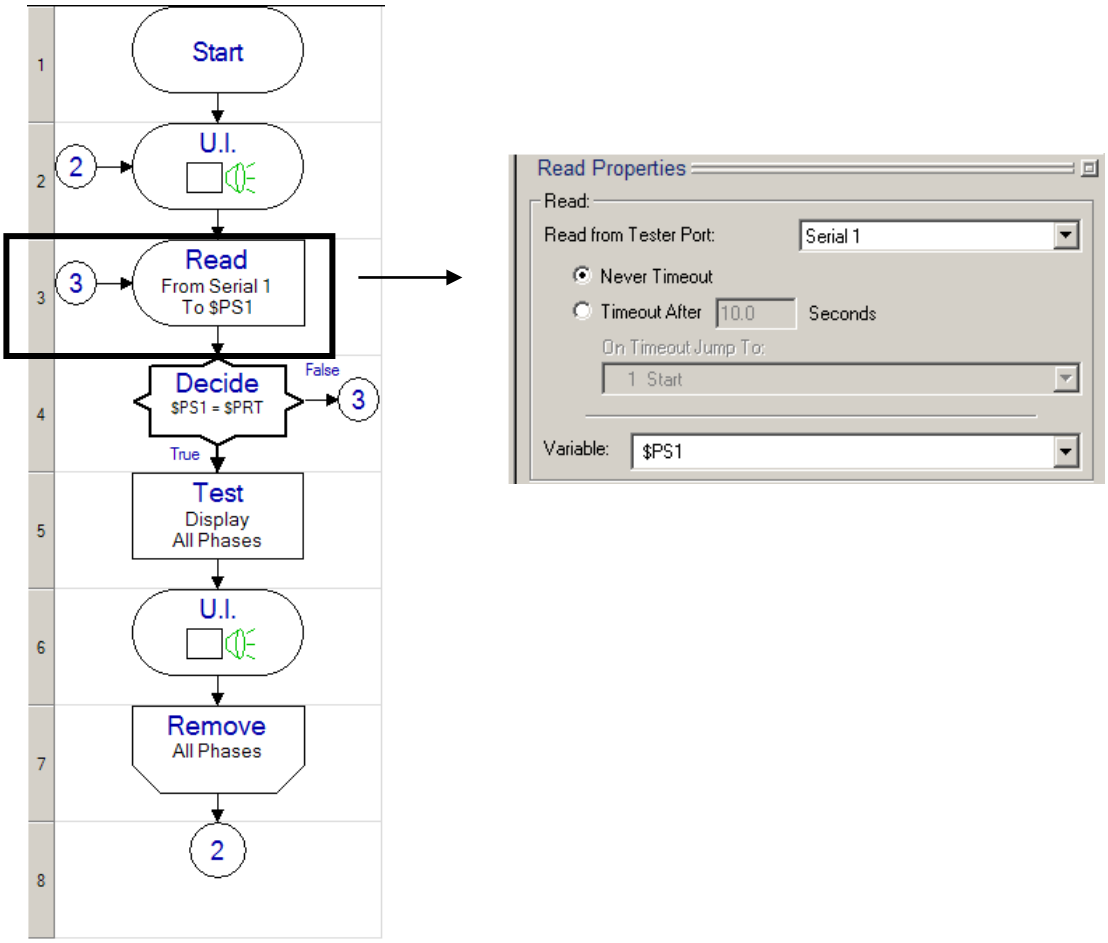


An audible sound of 3 chirps is selected to provide an alerting sound (this is optional – if no alerting sound is desired, select "NONE" in the Audio section.

This UI item displays a message, instructing the operator to scan the bar code: "SCAN BAR CODE".

The option labeled "Until Next Display Message" is checked, ensuring that this message will remain visible until it is overwritten by a subsequent message.

CELL 3 - Read

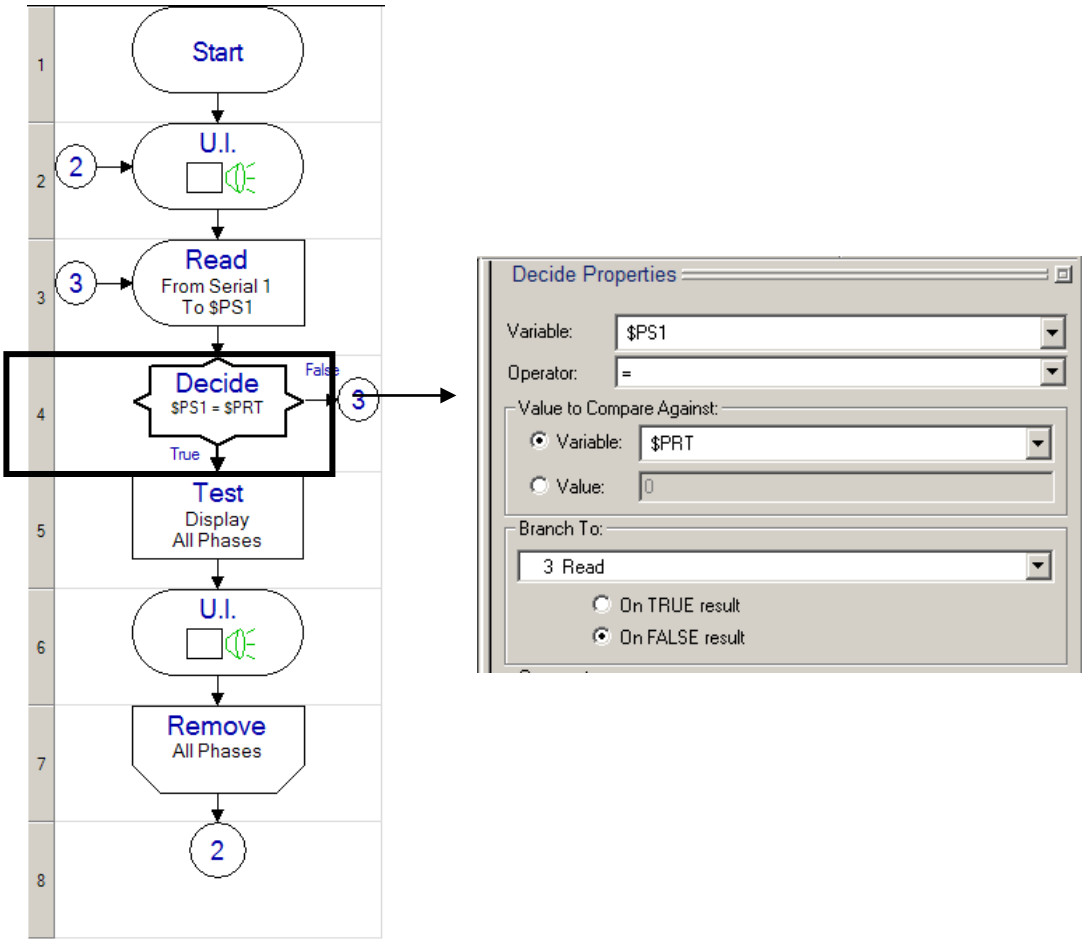


This Read item is configured to read from Serial Port 1. The serial port must be the one to which the scanner is connected.

In this application, the Read item must be configured to never timeout.

The Read item is configured to store the scanned data in the string variable $PS1.

CELL 4 – Decide

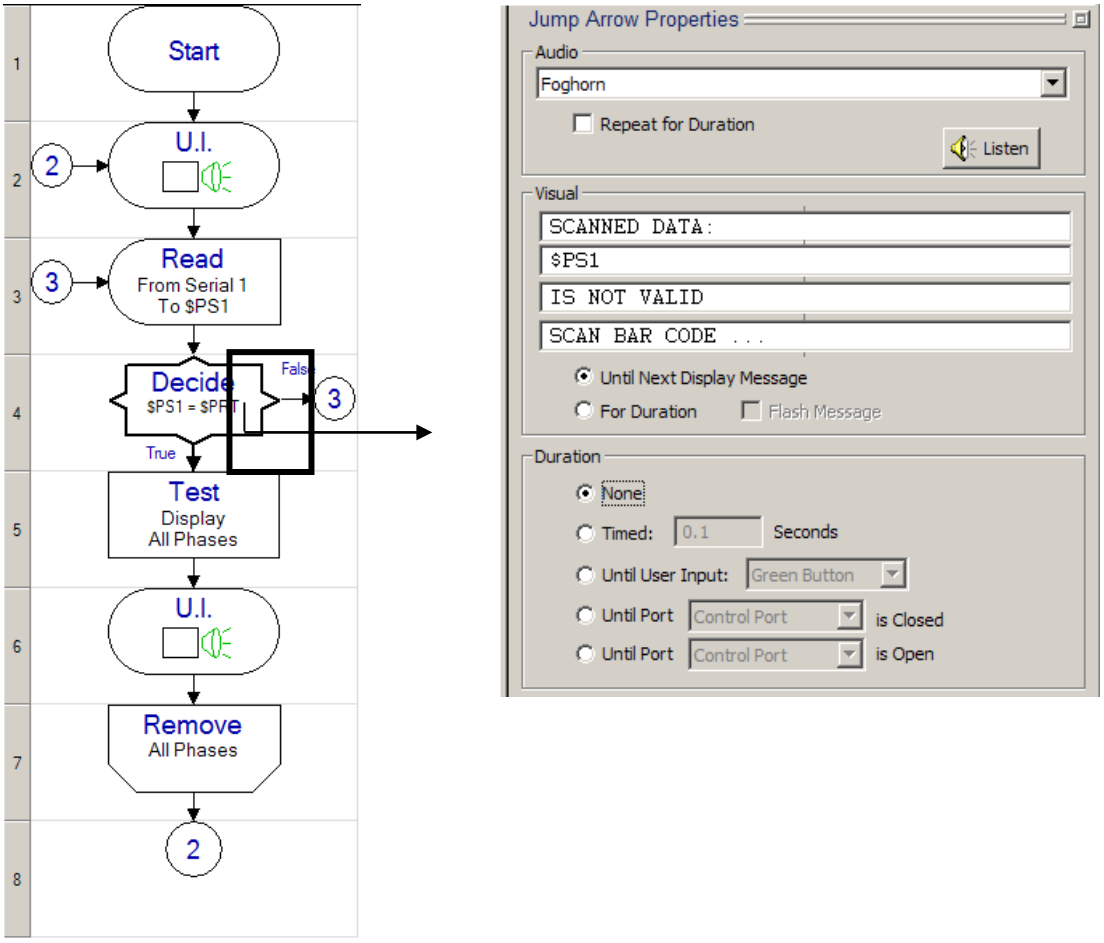


This Decide item is configured to compare scanned data contained in variable $PS1 to the part number contained in variable $PRT, and determine if they are equal.

If $PS1 and $PRT are not equal, execution branches to cell 3

CELL 4 – Decide Jump Arrow Properties

To see the Decide Jump Arrow Properties, use the mouse and click on the arrow that extends from the Decide Workflow item to the circle containing "3". The Jump Arrow Properties pane will appear in the right half of the screen.



An audible sound "Foghorn" is selected to provide an alerting sound, indicating an invalid scan (this is optional – if no alerting sound is desired, select "NONE" in the Audio section.

The Visual section is configured to display a message that shows the scanned data ($PS1) and indicates that the data is not valid, followed by an instruction to scan the next bar code.

The option labeled "Until Next Display Message" is checked, ensuring that this message will remain visible until it is overwritten by a subsequent message.

CELLS 5 – 8

The Workflow items in cells 5-8: Test-Display, UI, Remove, and Jump are identical to those provided in the default Workflow.

Barcode Scanner Configuration

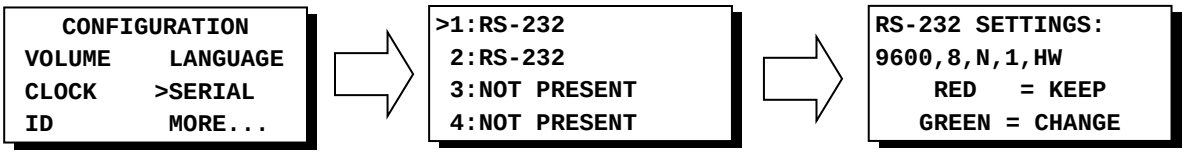
Dynalab Supplied Barcode Scanners

Dynalab offers the below barcode scanners. These barcode scanners are pre-configured to assure proper communication with the NX Testers.

Bar Code Scanner – 1D: Part number **5-1083**
Bar Code Scanner – 1D: Part number **5-1183** (Wireless)

Bar Code Scanner – 2D: Part number **5-1086**
Bar Code Scanner – 2D: Part number **5-1186** (Wireless)

The default option for the serial port function is RS-232 on the NX Testers. In the case of null communication of the scanner verify that the serial port is properly set for RS232.



Note: A Supervisor key must be inserted to gain access to the SETUP menus

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Customer Supplied Barcode Scanners

Serial Ports settings

The default settings for the serial port on the NX Tester are:

- Mode: RS-232
- Baud Rate: 9600 bits per second
- Data Bits: 8
- Parity: none
- Stop Bits: 1
- Handshaking: none

Change these parameters as needed. To adjust the **RS-232** settings, see the document entitled "*NX Tester User's Guide*".

Data Format

Barcode scanners must be configured to include a LINE FEED "<LF>" character at the end of the string data.

Configuring Zebra Barcode Scanners

To configure a Zebra barcode scanner (sold by Dynalab) for operation with a Dynalab tester, scan the below barcodes. These configuration barcodes have been validated on the Zebra LS2208 and DS6708 barcode scanners, though should be applicable to other Zebra barcode scanners.

Scan the following barcodes in order from top to bottom:

Set All Defaults

Standard RS-232

Data Format:

Scan Options

<DATA> <SUFFIX>

Enter

Do Not Check For Received Errors

Configuring Honeywell Barcode Scanners

To configure a Honeywell barcode scanner for operation with a Dynalab tester, scan the below barcodes. These configuration barcodes have been validated on the Honeywell 1470G2D barcode scanner, though should be applicable to other Honeywell barcode scanners.

Scan the following barcodes in order from top to bottom:

Remove custom settings

Reset to factory default settings

Configure for RS232 serial port: 115200 baud, 8 data bits, no parity, 1 stop bit, <CR><LF> suffix

Override the baud rate to 9600