

Intelligent Devices
DeviceTester Step by Step



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Table of Contents

Introduction	2
Overview	3
How to Add a Device.....	4
How to Use Easy Test.....	7
How to Add and Manage Scripts	8
How to Transfer Device Type Master Tables	14
How to Add a Device Type	15
Object Model	17

Introduction

Device Tester for NTCIP (National Transportation Communications for ITS Protocol) is the easy and fast way to test your NTCIP central or field device. The software allows automatic configurable testing of devices that conform to the NTCIP suite of standards.

Device Tester has an easy-to-use interface, a powerful object model and database structure, combined with NTCIP ActiveX control for communications, resulting in a product that is great for:

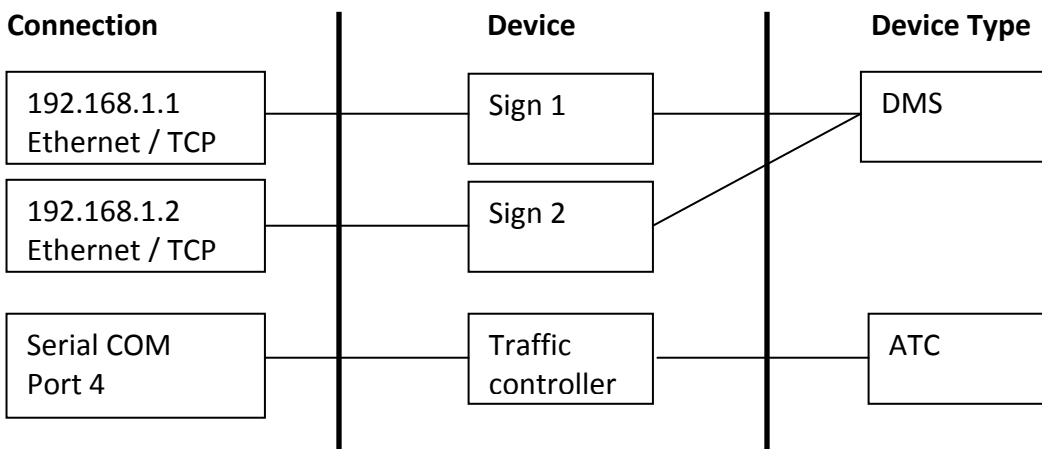
- Debugging new applications and products.
- Fault-finding during System Integration and Acceptance testing.
- Verifying product conformance.

Right out of the box, Device Tester comes with a set of device templates, all using the NTCIP standard. Device Tester can utilize a number of communication methods including Ethernet (both UDP and TCP are supported), dial up, and Direct Connect Multi-drop. Device Tester also ships with a standard list of scripts that are useful for testing a device's communications or for performing basic functions such as placing a message on a sign. For many customers, the standard devices and scripts are sufficient; however,

this guide will also explain in step-by-step detail how to configure and add devices and scripts to suit individual needs.

Overview

In Device Manager, there are three important categories to note: connections, which define how devices connect to Device Tester; Device Types, which define the particular NTCIP objects (parameters) supported by a type of device, and Devices, which contains information about the specific device and associates the device with a particular Device Type and Connection. See the diagram below for an example setup containing two signs and a traffic controller. Note that a device is linked to both a Device Type, which lists the OIDs available for the device, and a Connection, which gives the IP address or other relevant information. Many devices can be associated with a particular Device Type, but devices should link to connections on a one-to-one basis.

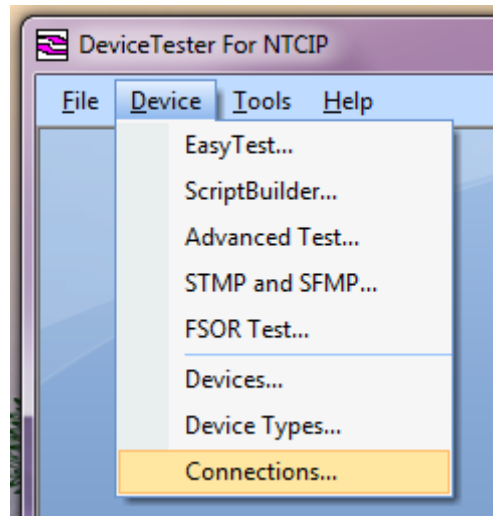


This guide will explain how to add and link all of these categories together to fit specific needs in a step-by-step format.

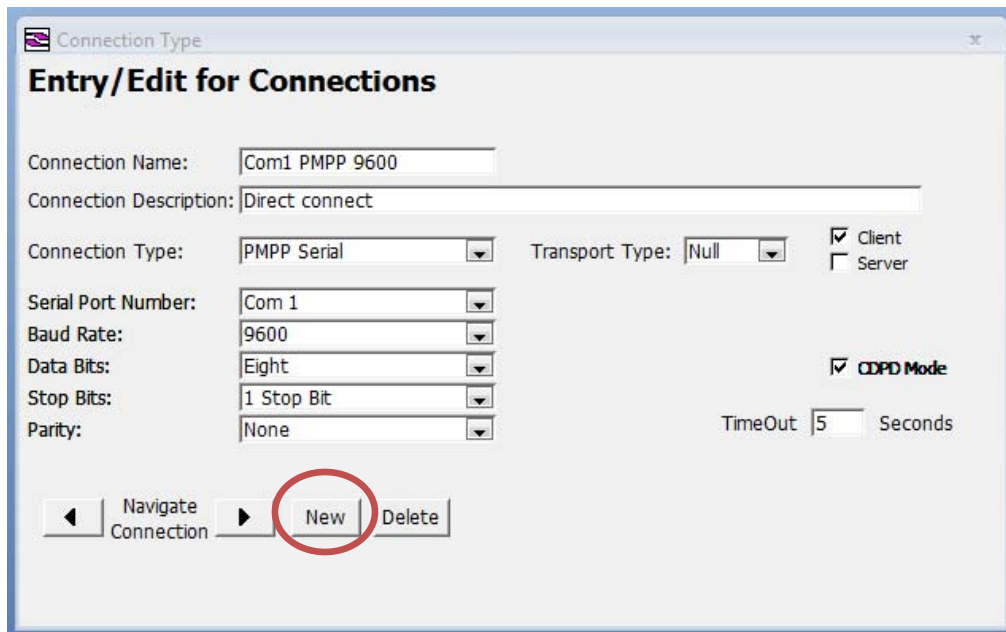
How to Add a Device

To add a device to Device Tester, follow the steps below:

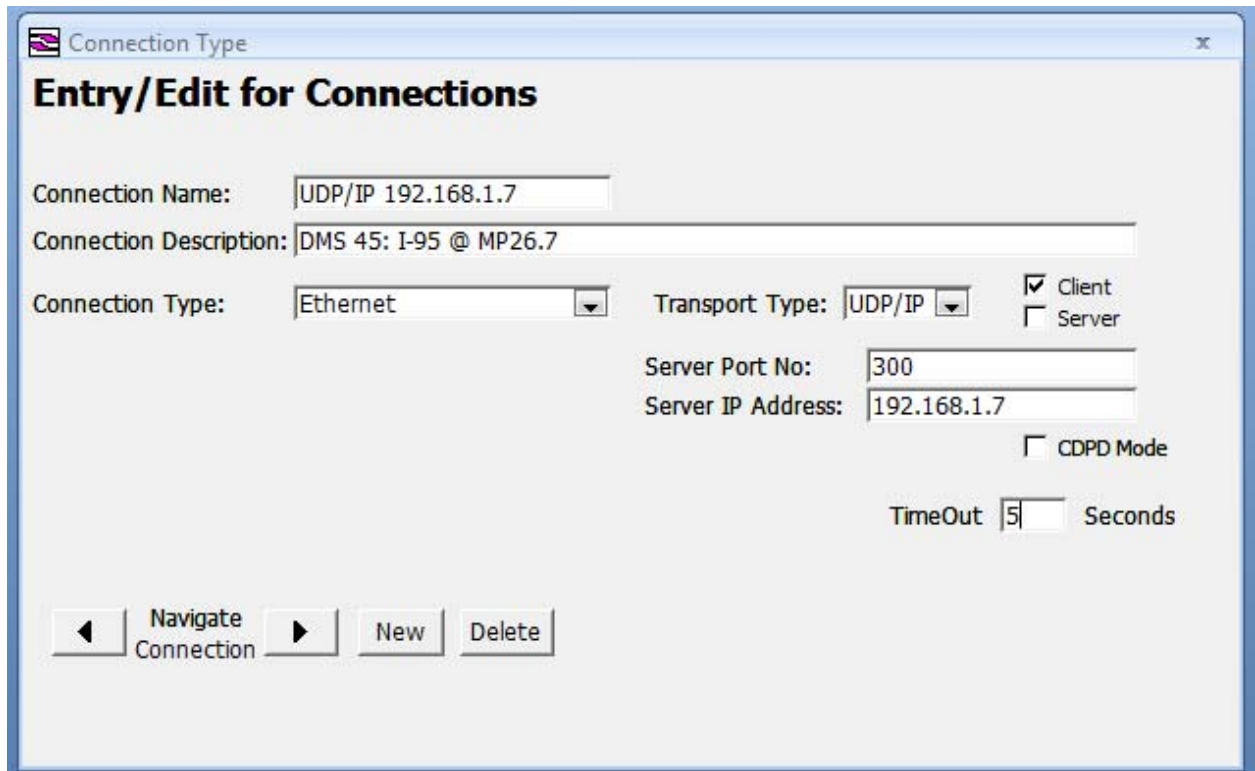
1. Open Device Tester.
2. The Home Screen will appear. The first step is to enter the connection information. At the top menu bar, navigate to Devices and then choose Connections.



3. The Connections form will load, showing the first connection in the database.



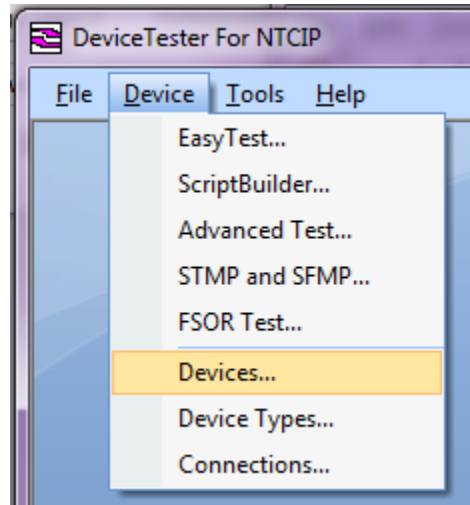
4. Press New.
5. Type in the information for the connection, giving it a name, a description, a type, and any additional information that will be required. For the example below, an ethernet connected sign is using UDP with an IP of 192.169.1.7 using port 300. IDI devices typically use port 200 for TCP/IP and port 300 for UDP/IP.



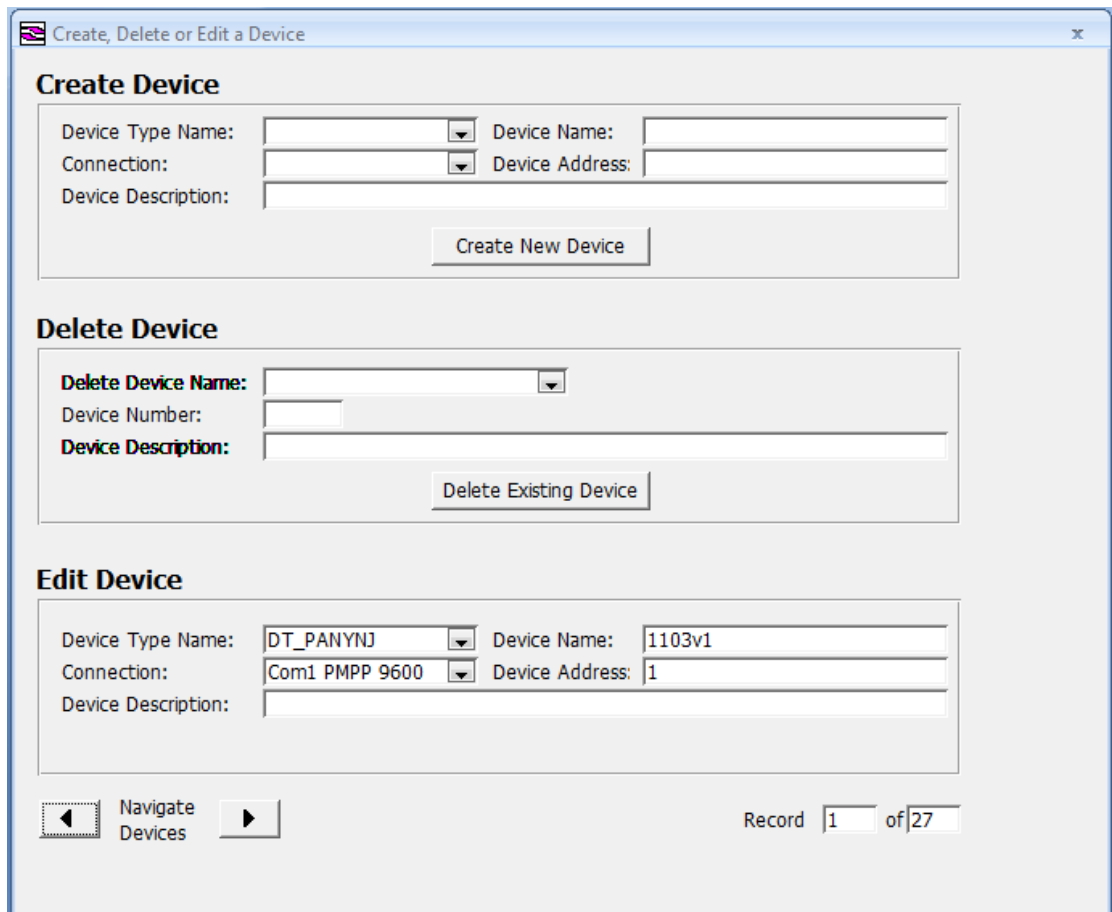
The screenshot shows a software window titled "Connection Type" with a subtitle "Entry/Edit for Connections". The window contains the following fields and controls:

- Connection Name:
- Connection Description:
- Connection Type:
- Transport Type:
- Server Port No:
- Server IP Address:
- TimeOut: Seconds
- Client:
- Server:
- CDPD Mode:
- Buttons: Navigate Connection

6. Once all the required information is entered, press the back arrow at the bottom left to return to the last entry to save.
7. The next step is to create a new device by selecting one existing Device Type and Connection. From the menu, select Device > Devices.

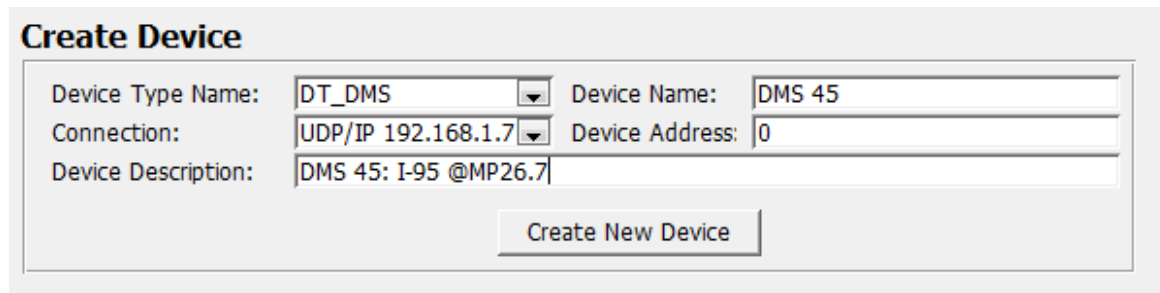


8. The Device form will load, allowing access to create, edit, and delete devices.



9. Use the top of the form to create the new device. Use the drop down menu to select a Device Type, and use the Connection drop down to select the

connection created in the previous steps. Enter a name and description. Note that for TCP/IP and UDP/IP connections, Device Address should be set to 0. For PMPP connections, Device Address should be set to the PMPP address.



The screenshot shows a 'Create Device' form with the following fields and values:

Device Type Name:	DT_DMS	Device Name:	DMS 45
Connection:	UDP/IP 192.168.1.7	Device Address:	0
Device Description:	DMS 45: I-95 @MP26.7		

At the bottom of the form is a button labeled 'Create New Device'.

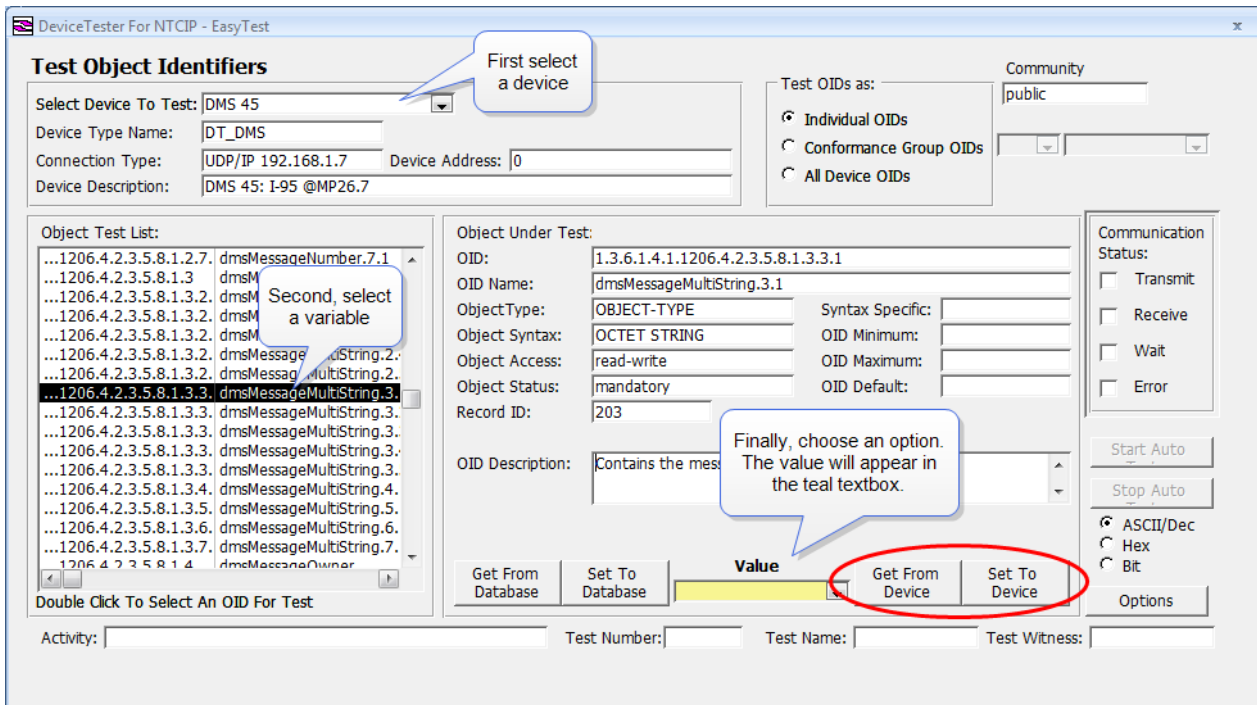
10. Press Create New Device.

11. Congratulations, the sign has now been entered into Device Tester and is ready to use.

How to Use Easy Test

Once a device is configured properly, several things can be done using the device. To Get (read) and Set (write) individual NTCIP objects, use Easy Test.

1. Select a device to test using the drop down menu. This will pull up a list of objects.
2. Double click the object to select it. Details about the object will appear in the window to the right.
3. To Get (read the value from) an object, click the "Get From Device" button. The value will appear in the "Value" box. If the information is in text form, it may appear in a box above the "Value" box. The format of the value can be changed by clicking one of the radio buttons to the right: "ASCII/DEC;" "Hex;" or "Bit."

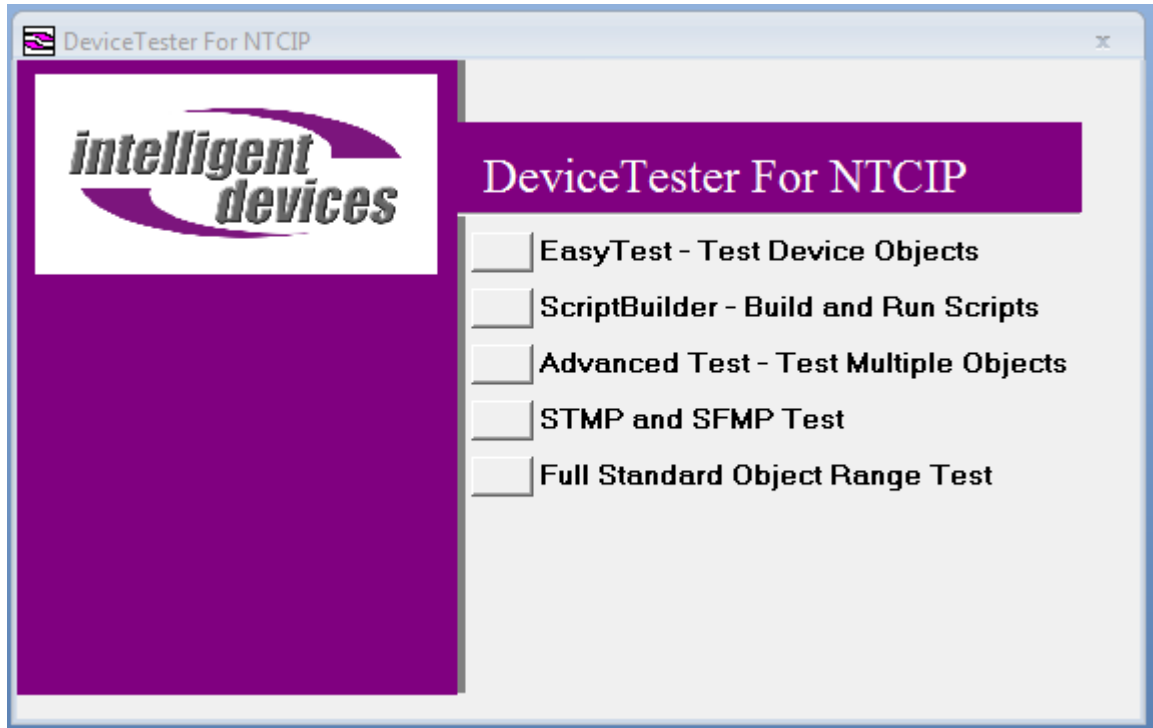


To Set (write a value to) an object, enter the value in the Value box, then click on the Set to Device box.

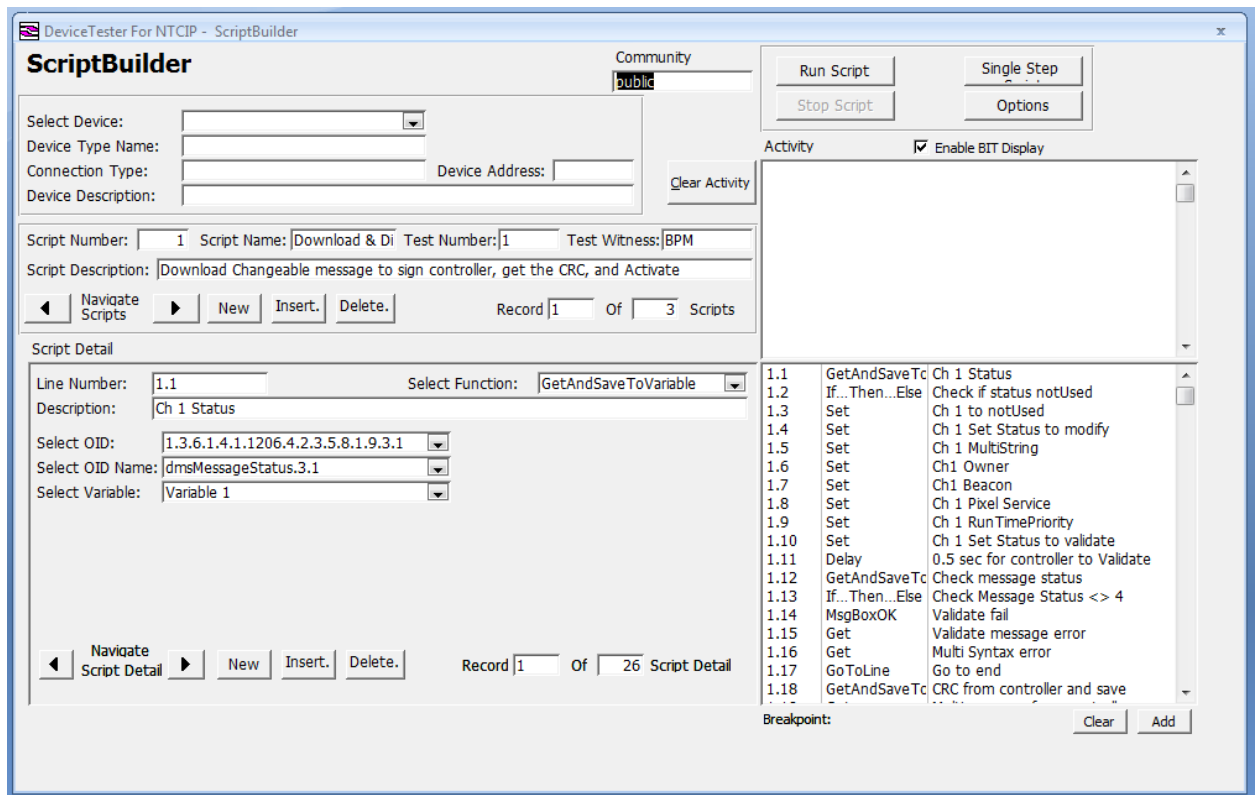
How to Add and Manage Scripts

Scripts are series of commands or tests to be run on a device, one by one. Scripts can GET or SET variables as defined by their Object ID.

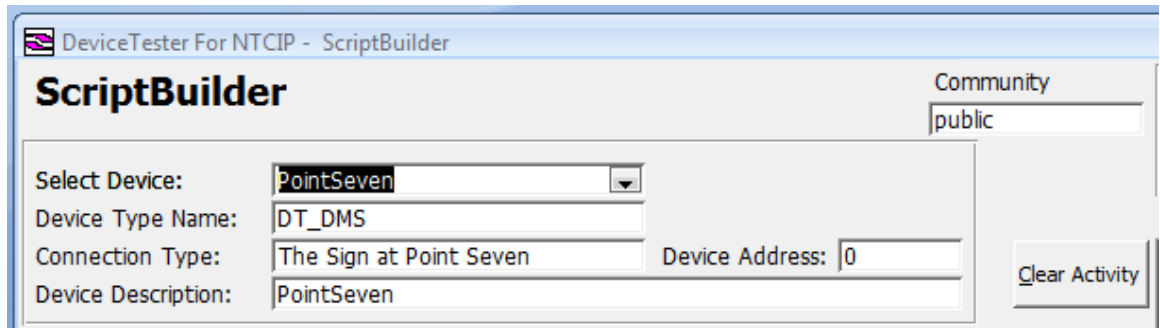
1. To run scripts, select ScriptBuilder from the Main Menu.



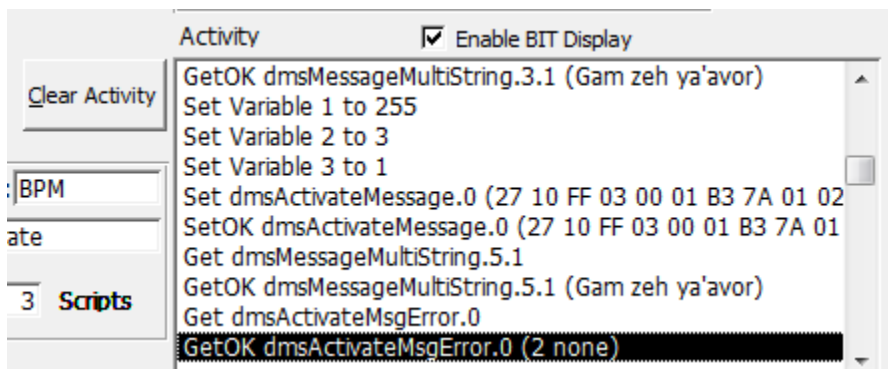
2. The form will load, as shown below.



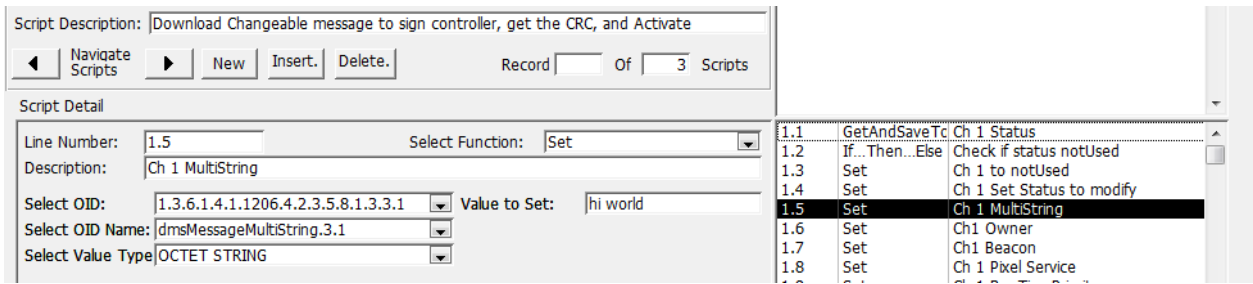
3. First, select the device you wish the script to run on using the Select Device drop down. The information at the top of the form will automatically fill in.



4. Now, select the script desired. Use the Navigate Scripts arrows to choose a script from among the ones loaded. The description will display what the script does. The bottom right window shows the list of steps to be performed when the script is run. If everything seems satisfactory, press Run Script.
5. The script will run, displaying the steps one by one in the Activity window.



To go back and edit a script, choose one of the lines from the bottom right window. Click on that line to bring it up in the window, and edit that value that requires a change. For example:

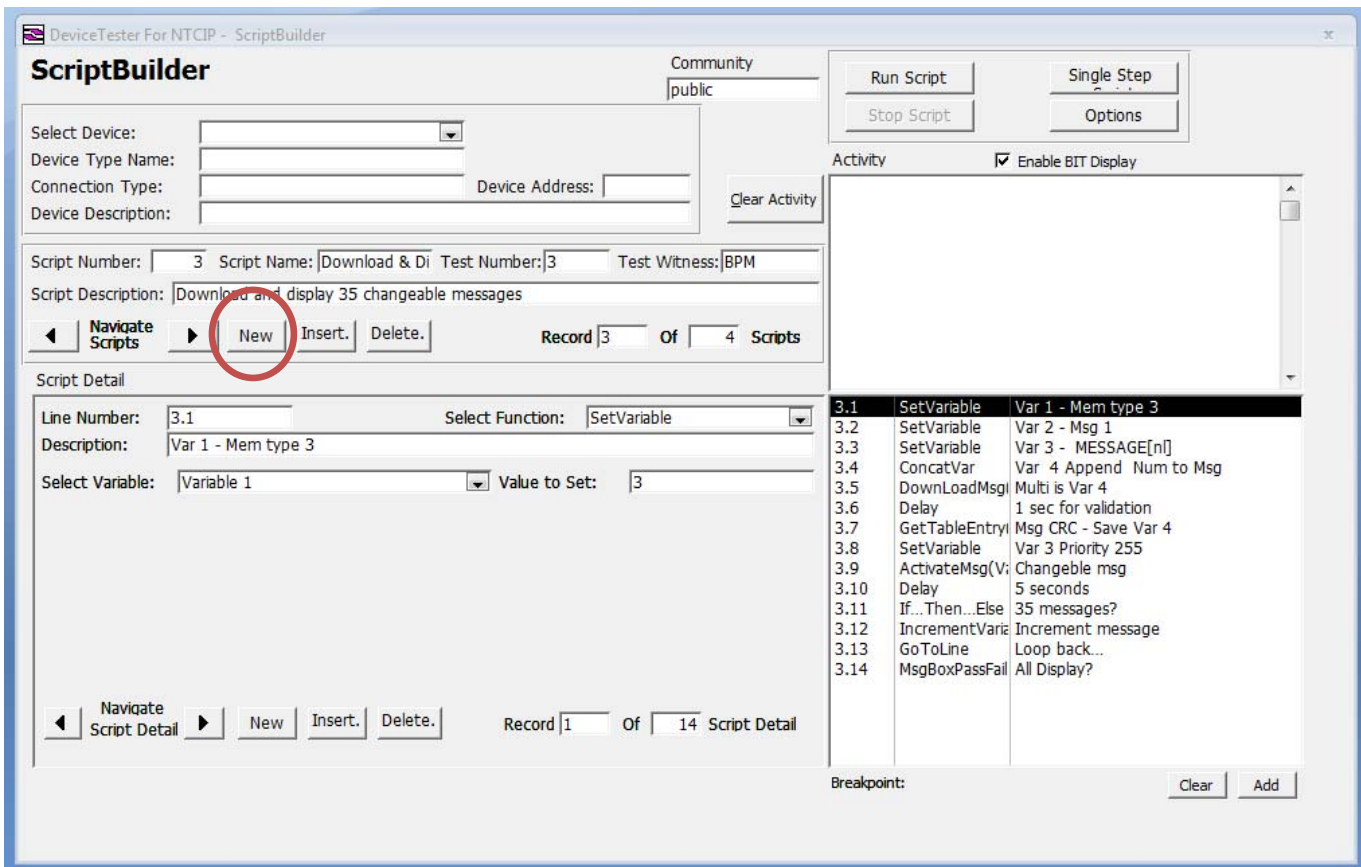


To change the message the script sends to the sign, click on line 1.5 Set MultiString, and change the “Value to Set:” to the message required. In the above example, the message displayed on the sign will now show “hi world.”

Note that the line number is not configurable.

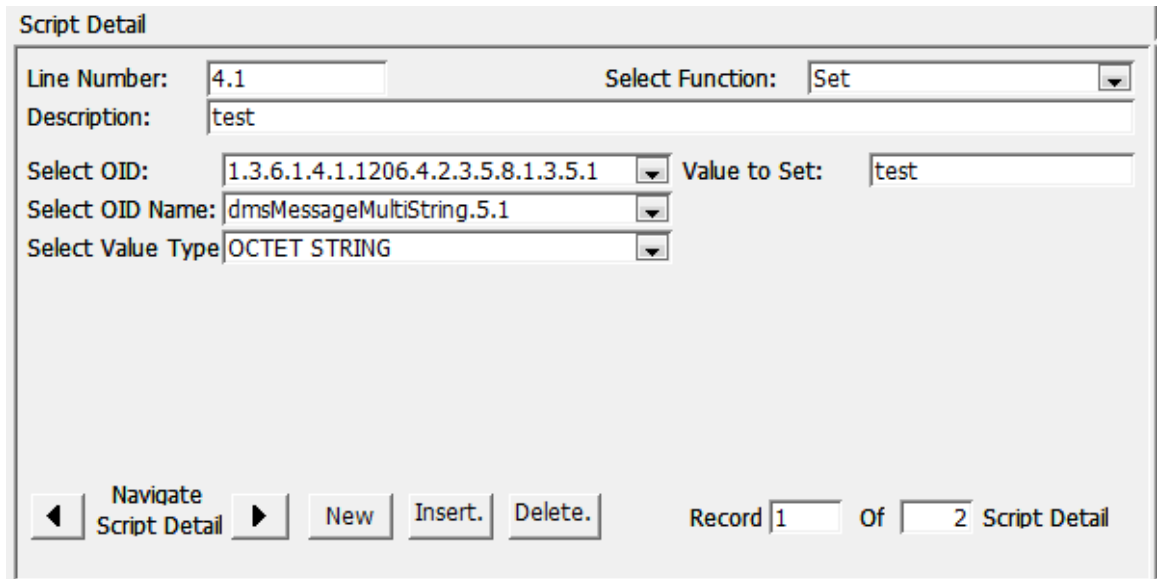
To create a new script, follow the steps below.

1. Open ScriptBuilder. Press New.



2. The script number will be automatically generated, but the description should be entered at this point. A test number (optional field that is a reference number) and a test witness (optional field for tests witnessed by a third party) can be entered as well.

3. Now, the Script Detail field should be filled in. The Line Number will be automatically generated, but the function should be selected using the drop down menu. Choose an object using either the object number the name with the drop down menu. Then select the value the OID should be set to. See the example below for setting a message to “test.”



The screenshot shows a 'Script Detail' window with the following fields and values:

- Line Number: 4.1
- Select Function: Set
- Description: test
- Select OID: 1.3.6.1.4.1.1206.4.2.3.5.8.1.3.5.1
- Value to Set: test
- Select OID Name: dmsMessageMultiString.5.1
- Select Value Type: OCTET STRING

At the bottom, there are navigation buttons: 'Navigate Script Detail' (with left and right arrows), 'New', 'Insert.', and 'Delete.'. To the right, it says 'Record 1 Of 2 Script Detail'.

The available functions are listed below.

Function	Parameters
NoOperation	None
GetAndSaveToVariable	Select OID Select OID Name Select variable
Get	Select OID Select OID Name
Increment Variable	Select Variable

Set	Select OID Select OID Name Select Value Type Value To Set
Decrement Value	Select Variable
GetNext	None
If...Then...Else	Select Variable Select Operator Compare Value True Then go To Line Else Go To Line
GetAndSaveToDatabase	Select OID Select OID Name
AscInc	Select Variable
SetFromDatabase	Select OID Select OID Name
AscDec	Select Variable
Delay	Seconds
Copyvar	Copy From Copy To
MsgBoxOK	Prompt
ConcatVar	To append result
MsgBox PassFail	Prompt
GetTableEntry (Var)	Index 1 Index 2 Index 3 Save To Base OID
MsgBoxYesNo	Prompt
ActivateMessage	Select Message Duration Priority Memory Type Msg Number MsgCRC IP Address
GoToLine	Line Number
ActivateMsg(Var)	Duration Priority Var Mem Type Var Msg Num Var

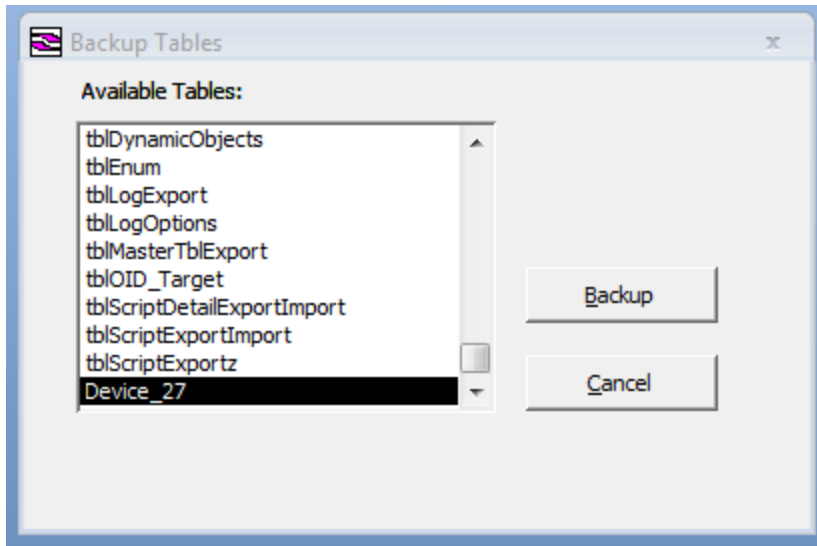
	Msg CRC IP Address
RunScript	Line Number
Download Message	Select Message Memory type Msg Number MULTI Message
SetVariable	Select Variable Value To Set
DownLoadMsg (Var)	Mem Type Var Msg Number Var MULTI Message Var
SetFromVariable	Select OID Select OID Name Select Value Type Select Variable
SetPositionReference	Select OID Select OID Name Mode Speed Pos or Offset
GetPositionReference	Select OID Select OID Name
SetHexValue	Select OID Select OID Name Select Value Type Value to Set
SetCommunityName	Name to set

Once the script is built, select a device and press Run Script to test it. For more information, please see the standard Device Tester User Guide, available on Intelligent Devices Inc.'s website at www.intelligentdevicesinc.com

How to Transfer Device Type Master Tables

Device Type information can be sent from one system to another by means of Master Tables. To transfer that information, use the Backup and Restore features.

1. To export, choose File > Backup Tables



2. Choose the device required in the list by highlighting it. Press Backup. A dialog window will appear, asking where to save the .MDB file. Once the file is saved, it can be transferred to another system.

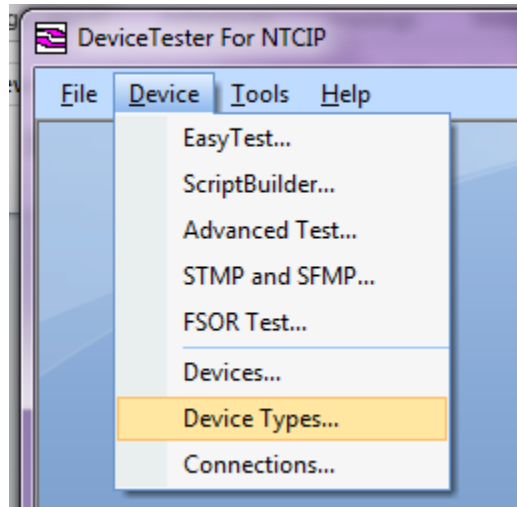
Once that .MDB file is located in the new system, the end user can import the information.

3. Navigate to File > Restore Tables... A dialog window will appear, asking the location of the .MDB file. Navigate to it, and select Open.
4. The user that is receiving the new Master Table must then follow the steps to add a device type, shown below, and then add a new device using the instructions shown previously in this guide.

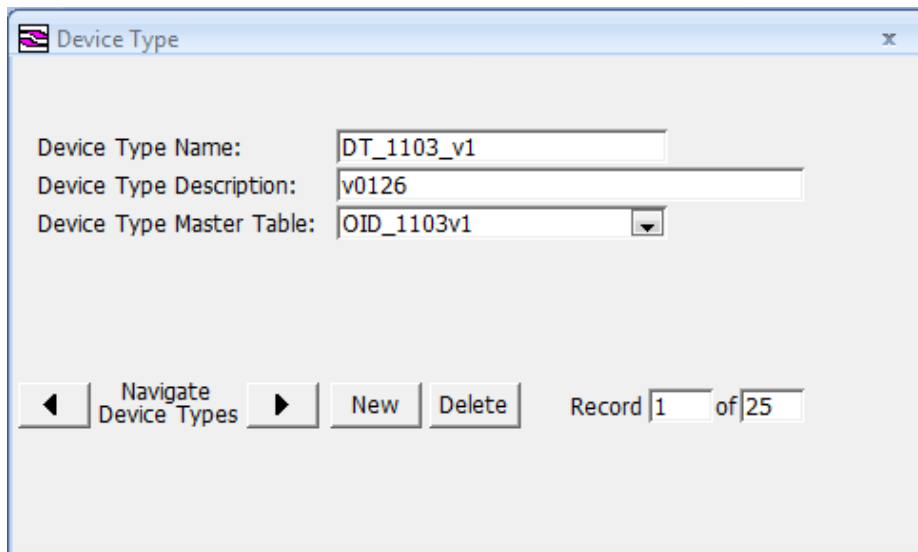
How to Add a Device Type

If new device types are necessary, or the names and descriptions need to be changed, follow these steps:

1. Navigate to the following menu.



2. The Device Type form will load, allowing access to current device types. If any changes are made, be sure to navigate using the arrows at the bottom left to save changes. To add a new device type, press New.



3. This will add a new record. Fill in the information and choose the master table.
The master table is a database table that is composed of all the available objects that describe a particular device. If a new master table is required, check the standard Device Manager User Guide for instructions.

Object Model

Testing and Control

