# Plug-in Installation Instruction
## Xenon 1900/1902 Scanner

## Table of Contents

## Introduction

This Guide provides information about installation and licensing the 2DTG's **IcEveryCode™** DPM Decoder for Xenon 1900/1902 Scanner integrated by means of Honeywell's **TotalFreedom™** Plug-In Software Development Kit.

Please note that some of the Plug-In features, described here, are available only with the latest version of the Xenon firmware, dated March 15-16, 2011.

It is recommended to disable system's Data Matrix decoder before or after Plug-In installation to speed-up reading. It can be done by reading configuration code or sending appropriate command from the Command Center as it is described in the **Honeywell Xenon 1900/1902 User's Guide** (p. 7-47):

> ❖     **IDMENA0** - temporarily disables System's Data Matrix Decoder

The system decoder can be enabled at any time if necessary by reading configuration code (or sending appropriate command from **Command Center**)

> ❖  **IDMENA1** (page 7-47).

## Installing EZConfig-Scanning Software

1.  Download and Install **«Honeywell Scanning and Mobility (HSM) USB serial driver»**:

http://www.honeywellaidc.com/en-AP/Pages/Product.aspx?category=Area%20Imager&cat=HSM&pid=1900

-   Uninstall any previous installed Honeywell USB Serial Drivers.
-   Extract the driver files and identify the two different types of installs supported:
    o   **Install_x86.bat** at – For installing on a 32-bit Operating System.
    o   **Install_x64.bat** – For installing on a 64-bit Operating System.

    **Note:** When installing on Windows® Vista or Windows 7 Operating Systems, you must have Administrator privileges or you will be prompted for an Administrator password.
-   To run the install, double click on the appropriate **Install_xx.bat** file.

    If the driver is installed correctly, `Device Manager/Universal Serial Bus Controllers` of your computer will be appended with a "**Honeywell Control Device**" line.

2.  Download and Install firmware updates for Xenon 1900/1902 using the same link above if they are newer than the ones below:

| N O | NAME | FILE NAME/PART NUMBER | VERSION/ DATE | SIZE |
|---|---|---|---|---|
| 2 | Firmware Update for Xenon 1900 | BI000075AAA.moc | 03.15.2011 | 1,055 KB |
| 3 | Firmware Update for Xenon 1902 | BK000036AAA01.moc (Base) BJ000035AAA01.moc (Scanner) | 03.16.2010 03.16.2010 | 445 KB 1,145 KB |

Downloading process is the same as for the Plug-In (Section 7. Downloading Plug-in).

3.  Download and Install "**EZConfig**" Utility (currently Revision 2.43) using the same link above.

    Unpack **EZConfig-Scanning_Rev2.43.zip** file, lunch **EZConfig-Setup** and follow on-screen installation instructions (Note for Windows XP users: make sure that you have **Windows XP SP2** (or higher) installed on your computer). If **.Net Framework 1.1** is not present on your PC it will be automatically installed during this process.

4.  After finishing the installation connect Xenon 1902 base or Corded Xenon 1900 scanner to PC via USB cable.

Note for Xenon 1902 users:
Plug Xenon 1902 scanner in the base to establish a link. The green LED on the base flashes to indicate the scanner's battery is charging. If the scanner and base have previously been linked, you will not receive any feedback. If this is the first time that the scanner and base are linked, both devices emit a short chirp when their radios link. At this point, one scanner is linked to one base.

5.   Double-click **EZConfig-Scanning** icon on your Desktop. You will see the message:



Scan **TRMUSB130.** configuration barcode on page 2-5 of the **Honeywell Xenon 1900/1902 User's Guide.** You will see a small window in the right-low corner of the screen "Found new hardware Xenon 1900" and then "Your new hardware is ready for use".
Note:   At this point **Device Manager** of your computer will be updated with 2 new lines:
        "Xenon 1900 Area-Imaging Scanner" - under "Universal Serial Bus Controllers"
        and "Xenon 1900 Area-Imaging Scanner (COM##)" - under "Ports (COM & LPT).

Click on "**File-> Preferences**" when "**ScanData**" is highlighted. Click on the Com Port dropdown list and select the appropriate COM port for your device (often the last in the list – on the picture it is "Com9 – Xenon 1902 …). Click "OK".

If you are still having difficulty connecting to a device, click "**Device/Connect**" in the top menu.

(See also **Connecting to a Device** article in the on-line Help in the Application Explorer window).
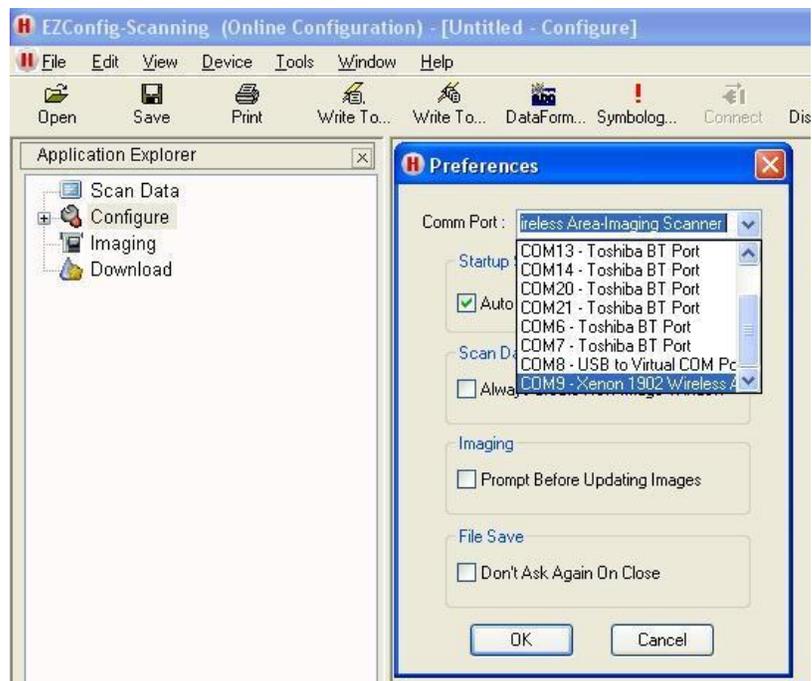
## Some features related to Xenon 1902:

I.  The syntax of the commands sent to a Xenon 1902 scanner is different from the ones used for Xenon 1900. You must use prefix "**:\*:**" in order to send command directly to the scanner, otherwise it will be send to the base:

> **:\*:<Command>** - if the command is intended for the scanner
> 
> **<Command>** - if the command is going to the base

For example, you must send "**:\*:RESET_.**" to reset the scanner otherwise the "**RESET_.**" will be sent to base.

II.  Most commands available for a scanner are duplicated in the base

III.  Scanner reads base settings when synchronizing with the base and considers them as "default" settings. Therefore, when you restart the scanner it accepts (after its synchronization with the base) parameter values that are set in the base, replacing its own data if it is not the same. These scanner settings, of course, can be changed after that by sending appropriate commands directly into the scanner (e.g., with the prefix "**:\*:**" – for example, **:\*: PLGDCE1**), but after you run the command **:\*:RESET_.** or disconnect USB-cable from the PC – all setting will reset back to the ones in the base.

IV.  Plug-in settings in the scanner's base do not reset when disconnecting USB-cable or by sending command **RESET_.** to the base - similar to how it is arranged in Xenon 1900.

V.  Name of configuration file in the **Licenses / Plug-in (Apps)** window of the EZConfig program is linked with the value parameter of the **PLGDCN <Config File Name>**-command in the base when synchronizing the program with the base. Therefore, in order to set configuration file in **EZConfig** you should send this command to the base through the **Command Center**, then restart **EZConfig**.

VI.  Plug-in directory is located in the scanner - not in the base! Therefore, all the commands relating to the current state of the plug-in should be sent directly to the scanner using the prefix «**:\*:**». This "current" status changes when you reboot, as indicated in the preceding paragraphs.

VII.  All 2DTG's Plug-in commands utilize special prefix "**990009C72**". In accordance with Section VI, all of our commands should be sent <u>only</u> to the scanner - the base will not accept them. Therefore, the syntax of this commands for Xenon 1902 is:

<**:\*:990009C72**><**command**> .

VIII.  Cleaning the Plug-in directory (**:\*: PLGDEL.**) does not remove it from the scanner's memory. To remove Plug-in from the memory, you must run the command **:\*: RESET_.**

## Installing Plug-in

6.  Unpack received from 2DTG **"icEveryCode_yyyymmdd.zip"** file containing Plugin MOC-files for Xenon 1900/1902. The content of the ZIP-file is as follows:

| N O | NAME | FILE NAME/PART NUMBER | VERSION/ DATE | SIZE |
|---|---|---|---|---|
| 1 | **Plug-in MOC-files** | **icEveryCode.moc** **icEveryCode _RF.moc** | **06.18.2011** **06.18.2011** | **189 KB** **189 KB** |

7.  <u>Downloading Plug-in.</u>

   ❖  Click on **Download** in the Application Explorer window**.**
   ❖  In the **Firmware Download** section of the opened **Download** Window browse to the folder where you have placed "**icEveryCode.moc**" ("**icEveryCode_RF.moc**" – for Xenon 1902) – file, supplied by 2DTG, and click "Open". Then click on "Download to Device".
   ❖  Wait until download process is finished and scanner stopped to generate different sounds, than click "OK" in the "Successfully flashed" window.
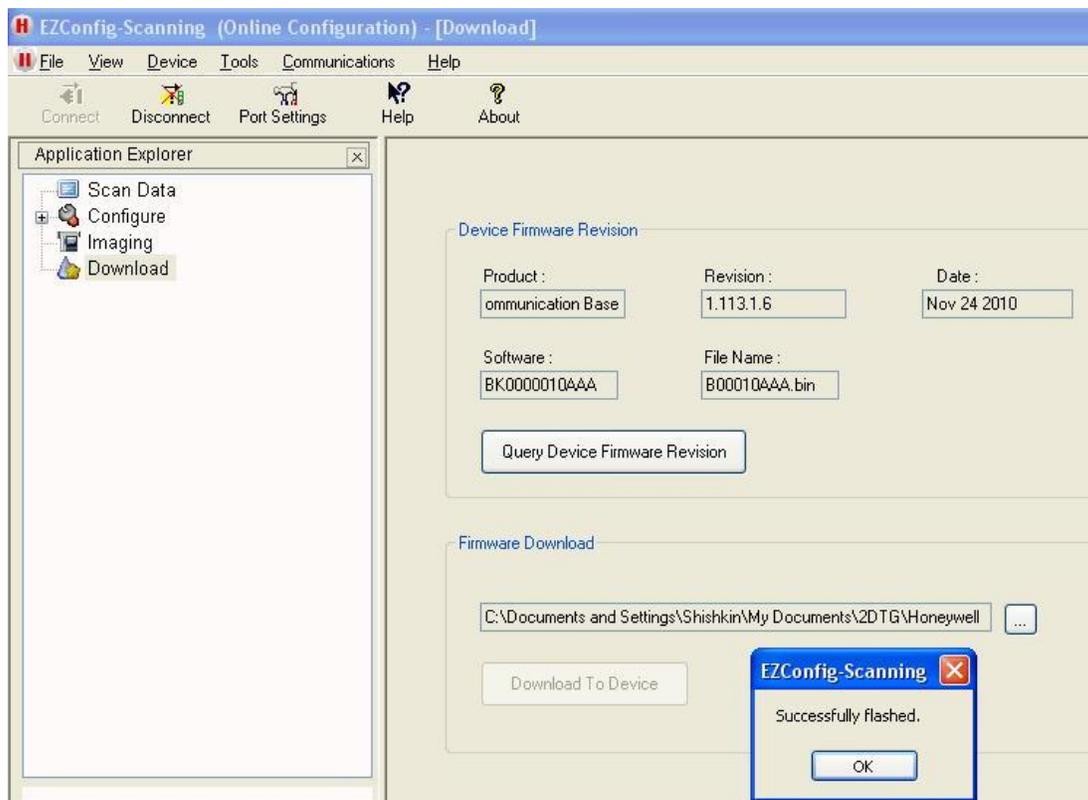
8. Enabling downloaded Plug-In and setting configuration file.

   ❖ Send command **PLGDCNicEveryCode.** to set configuration file.
   ❖ Send command **PLGDCE1.** to ensure decode class plug-ins are enabled.
   ❖ Reset the scanner by sending the **RESET_.** command (**:*:RESET_.** for Xenon 1902) to the scanner.

**Note:**
   ❖ Use **Command Center** to send command to the scanner:
   ❖ To call the **Command Center,** click **Scan Data** in the Application Explorer window, than select **View – Serial Command Window** from the main menu.
   ❖ Type command name in the "**Enter Command**" field and click **Send Command**.

9. Verifying Installation (optional).

   ❖ Switch scanner into Debug Mode by sending **PLGDBG1.** command.
   ❖ Send "**990009C72PLG?.**" (Xenon 1900 scanner) or "**:*:990009C72PLG?.**" (Xenon 1902 scanner) command to the scanner. You should see a return like this:

> [PLGUIN_DEBUG [ CR][ LF]
> [PLGUIN_DEBUG MatrixPluginProcessingBarcode[ CR][ LF]
> [PLGUIN_DEBUG Menu Data is: PLG?.[ CR][ LF]
> [PLGUIN_DEBUG Plugun mode = 0[ CR][ LF]
> 990009C72PLG?.[ACK]

It means that scanner accepts commands with <**990009C72>**-prefix now, but it is not linked with the Decoder, because it is not licensed yet.

## Licensing Plug-in

10. License for each scanner is generated using proprietary encryption mechanism which uses Scanner's **Serial Number** (SN) as an input parameter and returns **License key** (alphanumeric string of 20 characters). Scanner will call "check license function" by passing the SN as parameter every time the scanner is powered on. For RF scanner, it will check plug-in license before it established link with base.

The syntax for the license command to send to scanner is: **<Prefix>LIC#<License key>,**
where          <Prefix>:=**990009C72** for Xenon 1900 or
                    <Prefix>:=**:*:990009C72** for Xenon 1902

**Note:** Do not use LOW CASE characters for this command.

There are two options how to send this command to the scanner:

❖ Using **Command Center**, or
❖ Scanning configuration barcode supplied by 2DTG as part of the delivery
package (looking similar to the one on the right):
<u>Note:</u> this option currently is not supported for Xenon 1902.

You should see a return like this ("13045954AE2F47C5C49D" is a License key) after
sending the command:

:*:990009C72LIC#13045954AE2F47C5C49D.
[PLGUIN_DEBUG [ CR][ LF]
[PLGUIN_DEBUG MatrixPluginProcessingBarcode[ CR][ LF]
[PLGUIN_DEBUG Menu Data is: LIC#13045954AE2F47C5C49D.[ CR][ LF]
990009C72LIC#13045954AE2F47C5C49D.[ACK]

11. Reset the scanner by sending the **RESET_.** command (**:*:RESET_.** for Xenon 1902). At this
point the scanner is linked with the Decoder - Plug-in is turned "ON".

For Xenon 1900 you should see a return like this after sending the command:

RESET_.
[PLGUIN_DEBUG Core section allocation order:[ CR][ LF]
[PLGUIN_DEBUG [ HT].text[ CR][ LF]
[PLGUIN_DEBUG [ HT].text._Z9isECC_200ii[ CR][ LF]
[PLGUIN_DEBUG [ HT].rodata[ CR][ LF]
[PLGUIN_DEBUG [ HT].rodata.str1.4[ CR][ LF]
[PLGUIN_DEBUG [ HT].symtab[ CR][ LF]
[PLGUIN_DEBUG [ HT].strtab[ CR][ LF]
[PLGUIN_DEBUG [ HT].data[ CR][ LF]
[PLGUIN_DEBUG [ HT].this_plugin[ CR][ LF]
[PLGUIN_DEBUG [ HT].bss[ CR][ LF]
[PLGUIN_DEBUG Init section allocation order:[ CR][ LF]
[PLGUIN_DEBUG [ HT].init_array[ CR][ LF]
[PLGUIN_DEBUG final section addresses:[ CR][ LF]
[PLGUIN_DEBUG [ HT]0x808a40d0 .text[ CR][ LF]
[PLGUIN_DEBUG [ HT]0x808c41d8 .text._Z9isECC_200ii[ CR][ LF]
[PLGUIN_DEBUG [ HT]0x808c4478 .rodata[ CR][ LF]
[PLGUIN_DEBUG [ HT]0x808c50b0 .rodata.str1.4[ CR][ LF]
[PLGUIN_DEBUG [ HT]0x803f4910 .init_array[ CR][ LF]
[PLGUIN_DEBUG [ HT]0x808cacd8 .data[ CR][ LF]
[PLGUIN_DEBUG [ HT]0x808cb5dc .this_plugin[ CR][ LF]
[PLGUIN_DEBUG [ HT]0x808cb8f0 .bss[ CR][ LF]
[PLGUIN_DEBUG [ HT]0x808c5634 .symtab[ CR][ LF]
[PLGUIN_DEBUG [ HT]0x808c8e04 .strtab[ CR][ LF]
[PLGUIN_DEBUG 9, 0x803f4910, 1[ CR][ LF]

```
[PLGUIN_DEBUG /**************************/[ CR][ LF]
[PLGUIN_DEBUG     Init Decode Plugin[ CR][ LF]
[PLGUIN_DEBUG /**************************/[ CR][ LF]
[PLGUIN_DEBUG Serial Number: 10266B016E[ CR][ LF]
[PLGUIN_DEBUG Licensed = YES[ CR][ LF]
```

For Xenon 1902 – just "double beep"

12. Verify a content of the Plug-in folder in the scanner. Send **PLGDIR.** (or **:*:PLGDIR.** for Xenon 1902) command. The return should be like this:

```
:*:PLGDIR.
.                              .[ CR][ LF]
..                             .[ CR][ LF]
icEveryCode.plugin             191664[ CR][ LF]
icEveryCode                    864[ CR][ LF]
Lic.key                        10[ CR][ LF]
OptModes                       164[ CR][ LF]
2097152 total,1904450 free,192702 used[ CR][ LF]
PLGDIR[ACK].
```

13. In order to see the name of the new configuration file in the **EZConfig** – **Configer->Licenses / Plug-ins (Apps)** Window you have to restart the **EZConfig** tool, as follows:
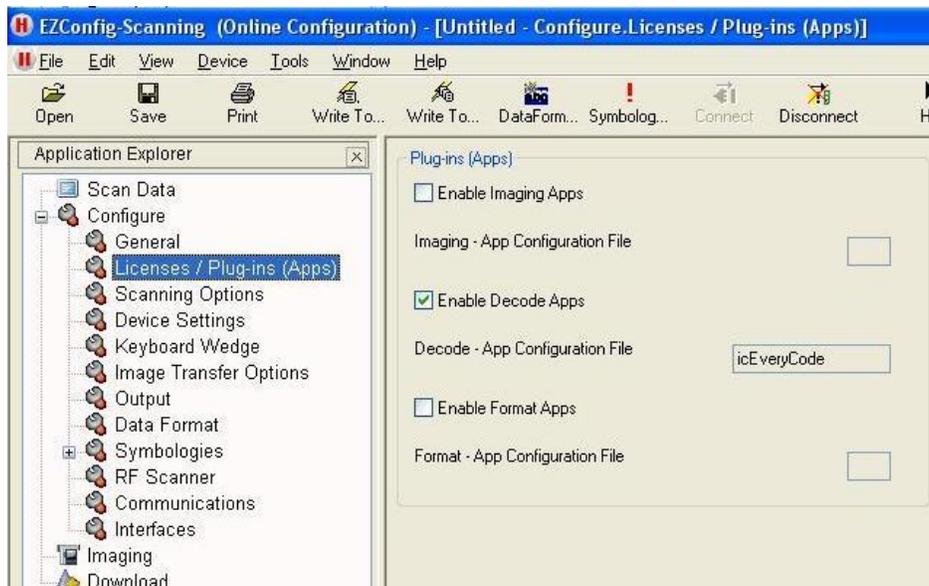


- ❖ Click "Enable Decode Apps" checkbox – **IMPORTANT** – as shown on the figure above.
- ❖ Close EZConfig Scanning program
- ❖ Disconnect scanner/base from the USB port
- ❖ Start EZConfig Scanning program
- ❖ Connect scanner/base to the USB port

## Finalizing Installation

14. Check DPM Decoder. If you can read Data Matrix symbols below, installation was successful.

| | |
|---|---|
| Test1 | Data Matrix xxx |
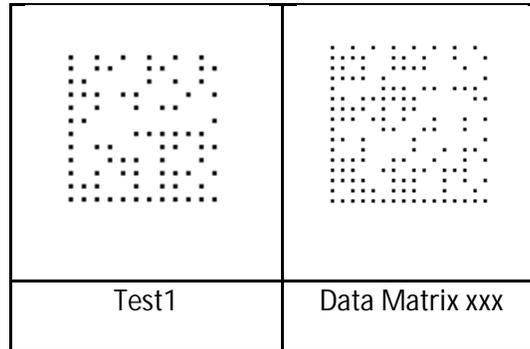
In the Debug Mode the return should be like this:

> [PLGUIN_DEBUG Plugin decode process[ CR][ LF]
> [PLGUIN_DEBUG Call system decoder for menuing[ CR][ LF]
> [PLGUIN_DEBUG Plugin decode process[ CR][ LF]
> [PLGUIN_DEBUG Next decoder is system decoder[ CR][ LF]
> [PLGUIN_DEBUG Plugin decode process[ CR][ LF]
> [PLGUIN_DEBUG Next decoder is a plugin[ CR][ LF]
> [PLGUIN_DEBUG ==== Focus: 0 ==== -------------- Dotpeen Decoding OK ------------[ CR][ LF]

Data Matrix xxx

15. Switch scanner back into Operational Mode by sending **PLGDBG0.** command.

16. Switch scanner from **EzConfig** to **Human Interface Device** Mode - send a command "**TRMUSB124.**" using the **Command Center (**Alternatively, you can scan Configuration code on the right). After that you can receive Scan Data both in EzConfig and any regular applications like, Notepad, Excel, etc.

Note: **Command Center** becomes disabled in this mode.

To re-connect scanner with the **Command Center** scan the **TRMUSB130** programming barcode to set the base/scanner to USB serial mode (**"Xenon™ 1900/1902 User's Guide"** p. 2-5):

**Note:**   It is recommended to disable the system decoder (or just system's Data Matrix decoder) while reading DPM marks to speed-up reading. It can be done by reading configuration code (or sending appropriate command from Command Center):

> ❖ **ALLENA0** on page 7-2 of the **"Xenon™ 1900/1902 User's Guide"** – temporarily disables the whole System Decoder, or

❖     **IDMENA0** (p. 7-47) - temporarily disables System's Data Matrix Decoder

After DPM reading is finished the system decoder can be enabled by reading configuration code (or sending appropriate command from **Command Center**)

❖ **ALLENA1** (page 7-2), or
❖ **IDMENA1** (page 7-47).

## Plug-in Control Tools

There is a number of useful commands allowing to monitor and control Plug-in. Most of them shall be executed in a Debug mode for the results to be displaced.

To switch scanner into the Debug mode use PLGDBG command in the **Command Center**:
**PLGDBG1** – turns Debug mode "ON"
**PLGDBG0** – turns Debug mode "OFF"

Plugin commands built by 2DTG use a special <Prefix>, as follows:
<Prefix>:=**990009C72** for Xenon 1900 or
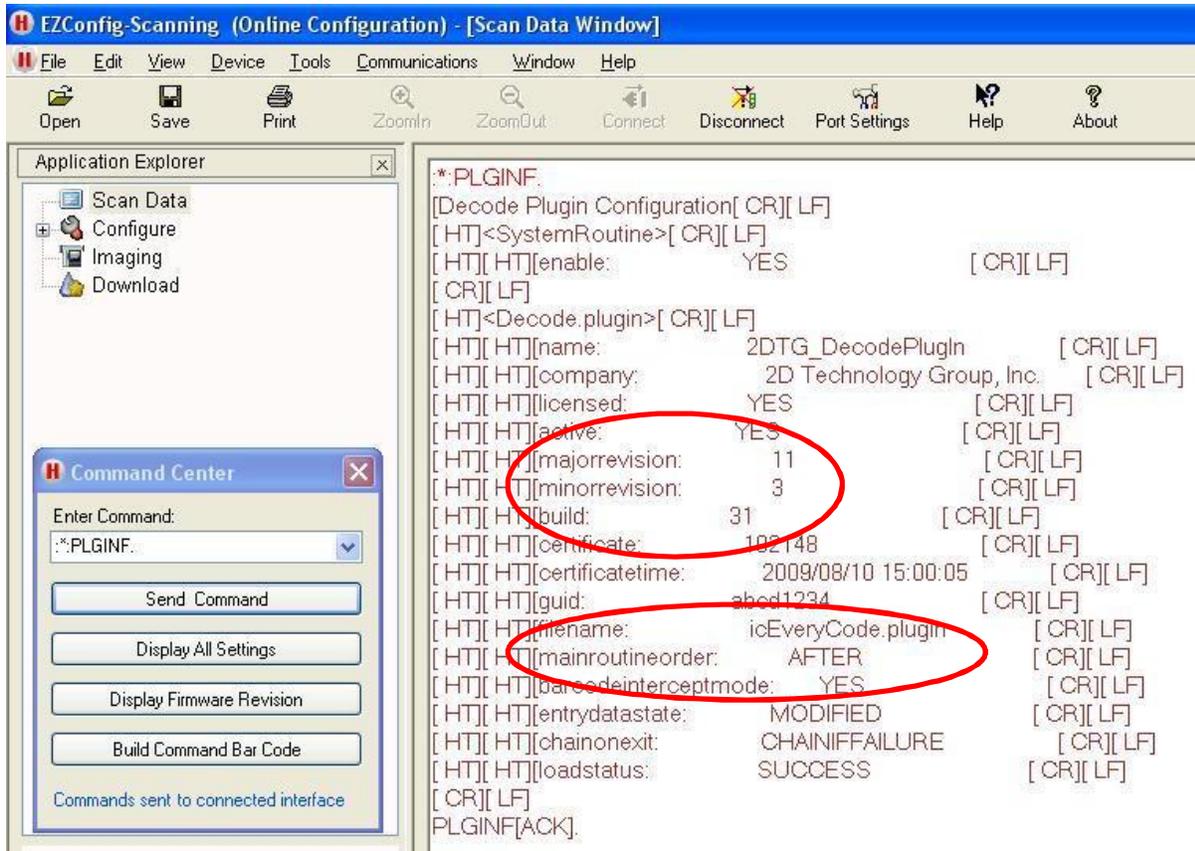<Prefix>:=:*:**990009C72** for Xenon 1902

1. Reading Data Matrix symbol in Debug mode. The return will be like this:

[PLGUIN_DEBUG Plugin decode process[ CR][ LF]
[PLGUIN_DEBUG Call system decoder for menuing[ CR][ LF]
[PLGUIN_DEBUG Plugin decode process[ CR][ LF]
[PLGUIN_DEBUG Next decoder is system decoder[ CR][ LF]
[PLGUIN_DEBUG Plugin decode process[ CR][ LF]
[PLGUIN_DEBUG Next decoder is a plugin[ CR][ LF]
[PLGUIN_DEBUG ==== Focus: 0 ==== -------------- Dotpeen Decoding OK ------------[ CR][ LF]
Data Mat******

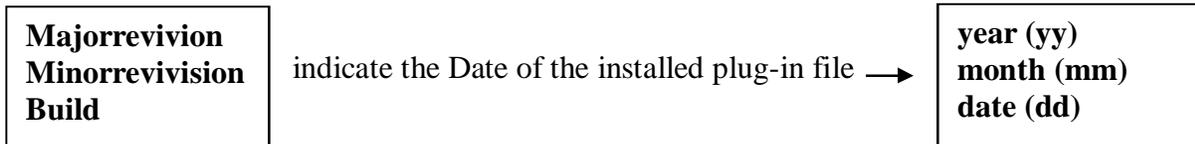2. Printing the list of files in the Plug-In directory of the scanner - **PLGDIR**

:*:PLGDIR.
.                                        .[ CR][ LF]
..                                       .[ CR][ LF]
icEveryCode.plugin              191664[ CR][ LF]
icEveryCode                     864[ CR][ LF]
Lic.key                         10[ CR][ LF]
OptModes                        164[ CR][ LF]
2097152 total,1904450 free,192702 used[ CR][ LF]
PLGDIR[ACK].

3. Printing Plug-in information – **PLGINF**

**Plug-in control Information:**

| Majorrevivion Minorrevivision Build | indicate the Date of the installed plug-in file ⟶ | year (yy) month (mm) date (dd) |

**Mainroutineorder** indicates the order of the Plug-in in the decode routine (AFTER or BEFORE the system decoder)

4. Turning Plug-in "ON"/"OFF":

**<Prefix>PLG0** – temporally switches Plug-In OFF (if scanner is power-cycled, the initial state of Plug-In will be restored). Default Plug-In Mode is "ON".
**<Prefix>PLG1** – switches Plug-In "ON"
**<Prefix>PLG?** – Query of Plug-in State (result is visible in Debug Mode only)

Return:

:*:990009C72PLG?.
[PLGUIN_DEBUG [ CR][ LF]
[PLGUIN_DEBUG MatrixPluginProcessingBarcode[ CR][ LF]
[PLGUIN_DEBUG Menu Data is: PLG?.[ CR][ LF]
**[PLGUIN_DEBUG Plugun mode = 0[ CR][ LF]**

<span style="color:navy">990009C72PLG?.[ACK]</span>

Or:

<span style="color:navy">:*:990009C72PLG?.
[PLGUIN_DEBUG [ CR][ LF]
[PLGUIN_DEBUG MatrixPluginProcessingBarcode[ CR][ LF]
[PLGUIN_DEBUG Menu Data is: PLG?.[ CR][ LF]
**[PLGUIN_DEBUG Plugun mode = 1[ CR][ LF]**
990009C72PLG?.[ACK]</span>

## Removing Plug-in

There are 2 Plug-in removing procedures:

**Procedure 1** - Removes Plug-in and configuration files (like **icEveryCode.plugin** and **icEveryCode** - example 2 of this Section), only. Should be used **BEFORE** installing the Plug-in with a <u>new name</u> into the scanner. This procedure preserves **License** settings in the scanner.

❖ **PLGDEL\<plugin file name\>.\<plugin\>**- removes **\<plugin file name\> Plug-in** ONLY (without removing other files and license) - can be done ONLY if it's scanned from configuration barcode (**Command Center** does not accept the commands containing the "period" in the middle of the command).

❖ **PLGDEL\<plugin file name\>** - removes **\<plugin file name\> -** configuration file**. Note: This command requires ":*:"-prefix when used on Xenon 1902.**

**Procedure 2** – Removes all files from Plug-In folder:
### PLGDLA
removes all files from Plug-In directory of the scanner (this includes removing **License**).

You have to reset scanner by sending the **RESET_.** command (**:*:RESET_.** for Xenon 1902) after each of this procedures.

After performing **PLGDLA** operation it is recommended to return scanner to its default settings by reading 2 configuration barcodes on page 1-10 of the **Honeywell Xenon 1900/1902 User's Guide** : **DEFOVR** (Remove Custom Defaults) and **DEFALT** (Activate Defaults).

## Troubleshooting HSM Serial Emulation Driver installation on Windows 7 and Vista Operating Systems

1. Download the **latest released** driver:  https://www.honeywellaidc.com/en-US/forms/HSMDownloadForm.aspx?df=CatalogDocuments/HSM%20USB%20Serial%20Driver%20r1.9.zip

NOTE 1:  Please make sure that you are logged into your system as a "**Local Administrator**" on that PC.

NOTE 2:  DO NOT PLUG THE SCANNER IN FIRST AND THEN USE THE WINDOWS INSTALL WIZARD!!

2. **Before installing/uninstalling the HSM Serial Emulation Driver, make sure that you have Admin rights on the computer.  Then follow the instruction below to set UAC to "never notify" position. To stop the continuous confirmation prompts on Windows 7** when installing the WHQL USB Serial driver.

   a. Windows 7 and Windows Server 2008 have 'User Account Control' (UAC) that is set to notify whenever a program tries to make a change to the computer. Changes can be made to the UAC to 'lower' or 'never' notify to avoid the confirmation prompt. By lowering this setting the HSM driver will go through the installation smoothly without all the prompts and has a better chance of getting a full, clean installation. Please follow the steps below to make these changes if wanted.
   b. Open Control panel and type UAC in the search field at the top right hand corner of the Control Panel Window.
   c. Select the option found to Change User Account Control Settings.
   d. User the slider control to set the notify level lower or to set it to 'never'.
   e. Click OK to apply the changes.

   Note: Make sure to re-enable UAC if required by your network admin

3. Uninstall the HSM Serial Emulation driver if it currently installed - run both:
   a. UnInstall_86.bat – For uninstalling on a 32-bit Operating System, and
   b. UnInstall_64.bat – For uninstalling on a 64-bit Operating System.

   Right-click on the appropriate UnInstall_xx.bat file and choose "**Run as Administrator**"

NOTE:    If you get message "Access Denied" - try to run Uninstal_xx.bat in the Command Prompt window. If you get this message again – try 2-3 times more – it will go through.

4. Identify the two different types of installs supported:
   a. Install_86.bat – For installing on a 32-bit Operating System.

b.  Install_64.bat – For installing on a 64-bit Operating System.

Note:     When installing on Windows® Vista or Windows 7 Operating Systems, you must have Administrator privileges or you will be prompted for an Administrator password.

5.  To run the install, right-click on the appropriate Install_xx.bat file file and chouse "**Run as Administrator**".

NOTE:    If you get message "Access Denied" - try to run Instal_xx.bat in the Command Prompt window. If you get this message again – try 2-3 times more – it will go through.

6.  Plug the Xenon Scanner into a USB port directly on your computer (not a hub). The driver autoinstalls for the device.

7.  Scan the attached USB Serial programming bar code – it will permanently switch scanner to the Serial Emulation mode.

**Note:** Do not use VISMN3 programming code, described in the EZConfig User's Guide.This code is a temporary USB Serial programming code.  If you unplug the scanner it defaults back to USB Keyboard.  **More than that, VISMN3 does not allow uploading firmware into the scanner – the operation will timeout.**

8.  Open Device Manager – you should be able to see your device in the "Universal Serial Bus Controllers" and "Ports (COM & LPT)" sections:
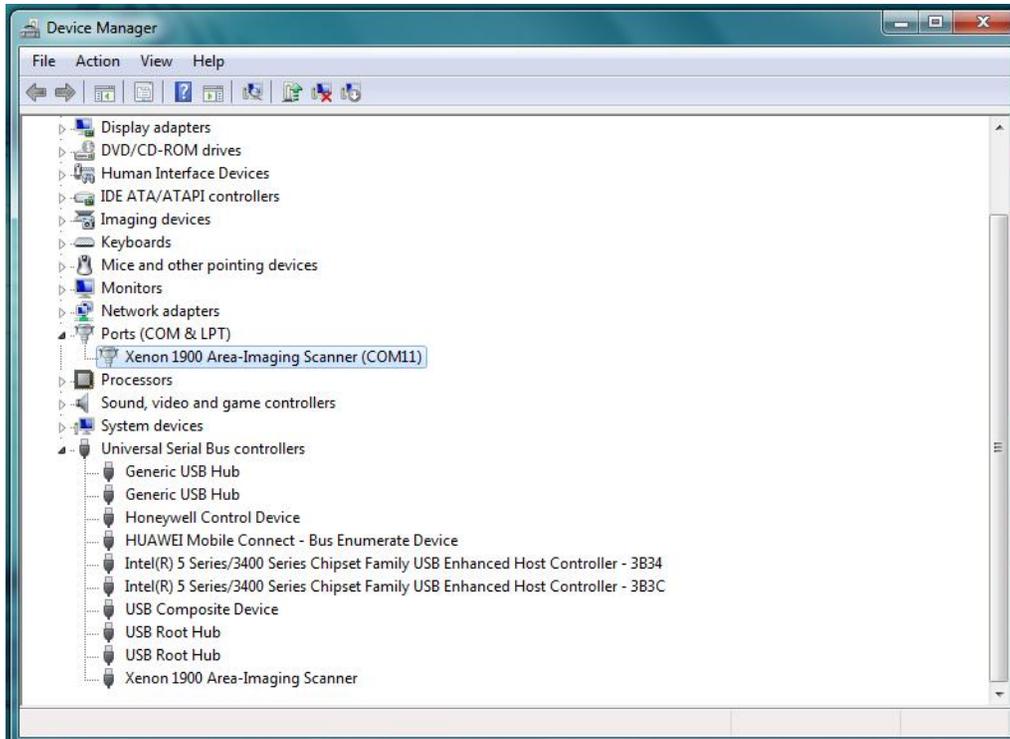
9.  If you still do not see the device, go into MS Windows "Devices and Printers". Make sure nothing has a yellow exclamation point (similar to this picture):

10. If it does; right click on it and choose properties

11. Click on the "Hardware" tab. Choose the device with the exclamation point and then choose "Properties"

12. In the newly opened window choose the "Driver" tab and then "Update Driver"

13. In the "Update Driver Software" wizard select "Browse my computer for driver software"

14. Point to the correct x86 (32bit) or 64 bit driver folder (downloaded in step # 1) -> choose "Next" and then "Finish"

15. Re-enable UAC if required by your network admin.