AUTHOR

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Department** |  | **Signature** |  | **Print Name** |  | **Date** |
| R&D |  |  |  | Douglas Tenney |  |  |

SIGNATURES

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Department** |  | **Signature** |  | **Print Name** |  | **Date** |
| R&D |  |  |  | Ken Woodland |  |  |

Revision History

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Rev.** |  | **Date** |  | **Initials** |  | **Description** |
| 0.1 |  | 18-Oct-2018 |  | KW |  | Initial Release for Review |
| 0.2 |  | 16-Jul-2019 |  | DAT |  | Added Testing for Serial Number |
| 0.3 |  | 22-Jul-2019 |  | DAT |  | Updates after review |
| 0.4 |  | 24-Jul-2019 |  | DAT |  | Update after dry run of protocol |
| 0.5 |  | 26-Jul-2019 |  | DAT |  | Additional Updates after dry run of protocol |
| 0.6 |  | 26-Aug-2019 |  | DAT |  | Correction based upon review |
| A |  | 26-Sep-2019 |  | DAT |  | Updated to Revision A |

Glossary

SDS – Software Design Specification

DII – DYONICS POWER II Control System

References

1. 15000695 DYONICS POWER II System Controller Software Requirements Specification
2. 15000696 DYONICS POWER II System Controller Software Design Specification
3. 15000768 DYONICS POWER II Software Upgrade and Repair Specification

Table of Contents

[1. Introduction 3](#_Toc17720861)

[2. Verification of Software Upgrade 3](#_Toc17720862)

[2.1 Requirements and / or Specifications 3](#_Toc17720863)

[2.2 Test Script Setup 3](#_Toc17720864)

[2.2.1 Materials 3](#_Toc17720865)

[2.2.2 Equipment 3](#_Toc17720866)

[2.2.3 Skills 3](#_Toc17720867)

[2.2.4 Setup Environment or Test 3](#_Toc17720868)

[2.3 General Instructions 4](#_Toc17720869)

[2.4 Verification Instructions 5](#_Toc17720870)

[3. Summary / Report 21](#_Toc17720871)

[Issues, Notes 21](#_Toc17720872)

[3.1 Overall PASS / FAIL Status 21](#_Toc17720873)

# Introduction

The software on the DYONICS POWER II Control System will be upgraded to Software Version under test.

# Verification of Software Upgrade

## Requirements and / or Specifications

|  |  |
| --- | --- |
| **Software Upgrade and Repair Specification (referenced by the DYONICS POWER II System Controller SDS 2.1.2)** | ***What is covered***  **Using the Upgrade File to upgrade a system** |

## Test Script Setup

### Materials

DYONICS POWER II Software Upgrade USB Key

DYONICS POWER II Software Upgrade USB Key Modified versions

Reset Serial Number Test Key

### Equipment

DYONICS POWER II Control System, also referred to as DII

### Skills

A familiarity of how the DYONICS POWER II Control System works.

### Setup Environment or Test

DYONICS POWER II Control System under test with power cord plugged in and the cover panel for the USB removed.

Disconnect all accessories from the DYONICS POWER II.

Create a Reset Serial Number Test Key by saving a file with the name **ResetSerialNumber.txt** onto a blank USB Flash Drive (91000903).

Create a DYONICS POWER II Software Upgrade USB Key Modified Version by changing the reported software version of the System Controller software and Motor Controller software under test and create an upgrade file with the modified versions. Program a blank USB Flash Drive (91000903) with the resultant upgrade file.

## General Instructions

Record the equipment, part numbers, and serial number(s) if applicable of all equipment in the table below:

|  |  |  |  |
| --- | --- | --- | --- |
| Equipment | Part Number | Serial Number | SOFTWARE VERSION |
| DYONICS POWER II Control System | 72200873 |  |  |
| DYONICS POWER II USB Upgrade Key |  |  |  |
| DYONICS POWER II USB Upgrade Key  Modified Versions |  |  |  |

## Verification Instructions

| **Software Upgrade – Passed (Same)** | | | |
| --- | --- | --- | --- |
| **Step#** | **Verification Procedure** | **Summary Results** | **P / F** |
| 2.4.1 | 1. Power On the DII. 2. Press the “**Settings”** button. 3. Select the “**System Information**” option. 4. Record the current system information in the Summary Results. 5. Prior to continuing the test:    1. Confirm that the recorded Serial Number matches the Serial Number on the back on the DII.    2. Confirm that the recorded Software Version matches the version to be tested. | SN:  Software:  Application:  Motor Controller: | N/A |
| 2.4.2 | 1. Power Off the DII 2. Insert the **DYONICS POWER II USB Upgrade Key** provided into the USB 1 or USB 2 port on the DII rear panel. | The **DYONICS POWER II USB Upgrade Key** is connected to the DII USB 1 or USB 2 port. |  |
|  | 1. Power on the DII. Verify that the DII powers on when the power button is pressed. | The DII powers on. |  |
|  | 1. Verify that when the device starts up, the **Check Serial Number** screen is displayed, with the instruction to verify the Serial Number matches the one on the back of the unit. Three buttons: **Done**, **Change**, and **Continue** are displayed.     Note: Serial Number is unique to system | The **Check Serial Number** screen is displayed.  Serial Number: AAX  The instruction to “**Verify the Serial Number matches the one on the back of the unit.**” is displayed.  The three buttons: **Done**, **Change**, and **Continue** are displayed. |  |
|  | 1. Press the **Done** Button on the **Check Serial Number** screen. Verify that the user is instructed to remove the USB drive.     Note: Serial Number is unique to system | The user is instructed to “**Please remove the USB drive.**”  The three buttons: **Done**, **Change**, and **Continue** are no longer displayed. |  |
|  | 1. Remove the USB drive. The Check Serial Number screen. Verify that the instruction to remove the USB drive is replaced by the instruction to power down the system.     Note: Serial Number is unique to system | After removing the USB drive, the instruction “**Please remove the USB drive.**” is replaced by the instruction “**Please power down the system.**” |  |
| 2.4.3 | 1. Reinsert the USB drive into the DII. 2. Verify that the instruction to power down the system remains on the display. | After reinsert the USB drive into the DII, the instruction “**Please power down the system.**” remains on the display. |  |
|  | 1. Do not remove the USB drive. 2. Power cycle the DII 3. Verify the **Check Serial Number** screen is displayed and the Serial Number is unchanged. | The instruction to “**Verify the Serial Number matches the one on the back of the unit**.” is displayed.  The Serial Number matches the value recorded above. |  |
|  | 1. Press the **Change** Button on the **Check Serial Number** screen. 2. Verify that the Enter Serial Number screen is displayed with a numeric keypad. Buttons labeled **0** through **9**, **Del** and **Enter** are displayed. The user is instructed to enter a Serial Number.   [Enter Serial Number]    Note: Serial Number is unique to system | The **Enter Serial Number** screen is displayed with a numeric keypad.  The Serial Number matches the value recorded above.  The user is instructed to enter a Valid Serial Number starting at 5001 and containing no more than 7 digits. |  |
|  | 1. Use the Keypad to attempt to enter the following invalid serial numbers:   AAX  AAX0000  AAX5000  AAX00000  AAX05000  AAX000000  AAX005000  AAX0000000  AAX0005000 | Upon pressing the Enter key for each of the invalid serial numbers the Enter Serial Number screen remained on the screen indicating the value was rejected. |  |
|  | 1. Do not remove the USB drive. With an invalid serial number on the Keypad display. 2. Power cycle the DII. 3. Verify the **Check Serial Number** screen displays the device serial number. | The **Check Serial Number** screen displays the device serial number:  Serial Number: AAX |  |
|  | 1. Press the **Change** button to display the **Enter Serial Number** screen. 2. Enter the valid Serial Number, AAX5001, and press the **Enter** button. 3. Verify that the Serial Number, AAX5001, is displayed on the **Check Serial Number** screen. | The **Check Serial Number** screen displays the entered serial number:  Serial Number: AAX |  |
|  | 1. Press the **Change** button to display the **Enter Serial Number** screen. 2. Enter the valid Serial Number, AAX9999999, and press the **Enter** button. 3. Verify that the Serial Number, AAX9999999, is displayed on the **Check Serial Number** screen. | The **Check Serial Number** screen displays the entered serial number:  Serial Number: AAX |  |
| 2.4.4 | 1. Power Off the DII. 2. Remove **DYONICS POWER II USB Upgrade Key** from the rear panel of the DII. 3. Insert the **Reset Serial Number Test Key**, created per Section 2.2.4, into either the USB 1 or USB 2 port on the rear panel of the DII. 4. Power On the DII and wait for the DII to enter Factory Test Mode. 5. Power Off the DII. 6. Remove the Reset Serial Number Test Key from the rear panel of the DII. | The DII powers up in Factory Test Mode. | N/A |
|  | 1. Insert the **DYONICS POWER II USB Upgrade Key Modified versions,** created per Section 2.2.4, into either the USB 1 or USB 2 port on the DII rear panel. Power on the DII. After the DII powers up, verify the DII Displays the **Enter Serial Number** screen with a serial number of “**AAX**”. | After completion of power up, the DII Displays the **Enter Serial Number** screen with a serial number of “**AAX**”. |  |
|  | 1. Use the Keypad buttons to reenter the Serial Number from the rear panel of the DII and press the **Enter** button. 2. Verify that the **Check Serial Number** screen is displayed again, and the Serial Number matches the one on the rear panel of the unit. | The **Check Serial Number** screen displays the entered serial number.  Serial Number: AAX |  |
| 2.4.5 | 1. Press the **Continue** button. Verify the **Software Upgrade** screen is displayed listing the System Software and Motor Controller Software versions.   [Software Upgrade]  Cancel Start Motor Controller Versions Different  **Note:** Versions may be different than shown.  If the Motor controller does not need to be upgraded – the “x.xx.xx” text is replaced with: “No Change” | The **Software Upgrade** screen is displayed listing the System Software and Motor Controller Software versions:  System Software: to  Motor Controller Software: to |  |
|  | 1. Verify that a **Cancel** button and a **Start** button are displayed at the bottom of the screen. | A **Cancel** button and a **Start** button are displayed at the bottom of the screen. |  |
|  | 1. Press the **Cancel** button. Verify that the messages “**Update Canceled.**” and “**Please remove the USB drive.**” are displayed on the screen. | The text on the bottom of the Software Upgrade screen updated to:  **Update Canceled.**  **Please remove the USB drive.** |  |
|  | 1. Verify that the **Cancel** button and the **Start** button are no longer displayed on the screen. | The **Cancel** button and the **Start** button are no longer displayed on the screen |  |
| 2.4.6 | 1. Do not remove the USB drive. Power cycle the DII.   Verify that the **Check Serial Number** screen is displayed and the Serial Number matches the one on the back of the unit. | The **Check Serial Number** screen is displayed and the Serial Number matches the one on the back of the unit. |  |
|  | 1. Press the **Continue** button. Verify the **Software Upgrade** screen is displayed listing the Software and Motor Controller versions.   [Software Upgrade]  Cancel Start Motor Controller Versions Different | The **Software Upgrade** screen is displayed listing the System Software and Motor Controller Software versions:  System Software: to  Motor Controller Software: to |  |
| 2.4.7 | 1. Press the “**Start**” button. 2. Verify that the **Cancel** button and the **Start** button are no longer displayed at the bottom of the screen. 3. Verify the “**Updating Motor Board Program Flash**” is briefly displayed.   [Updating Motor Board Program Flash]  Updating Motor Controller Program Flash | The **Cancel** button and the **Start** button on the bottom of the **Software Upgrade** screen are replaced by the text:  **Updating Motor Board Program Flash…** |  |
| 2.4.8 | 1. Verify the “**Reading System Image Data…**” text is displayed   [Reading System Image Data] | The text on the bottom of the **Software Upgrade** screen updated to:  **Reading System Image Data…** |  |
|  | 1. Verify the “**Writing Lower Flash Data…**” text is displayed   [Writing Lower Flash Data] | The text on the bottom of the Software Upgrade screen updated to:  **Writing Lower Flash Data…** |  |
|  | 1. Verify the “**Writing Upper Flash Data…**” text is displayed.   [Writing Upper Flash Data] | The text on the bottom of the Software Upgrade screen updated to:  **Writing Upper Flash Data…** |  |
| 2.4.9 | 1. Verify that the “**Update Complete**” and the “**Please remove the USB drive”** messages are displayed on the Software Upgrade screen.   [Update Complete] Remove USB | The text on the bottom of the Software Upgrade screen is updated to:  **Update Complete.**  **Please remove the USB drive.** |  |
|  | 1. Remove the **DYONICS POWER II USB Upgrade Key Modified versions**. 2. Verify that the “**Power power down the system**” message is displayed on the **Software Upgrade** screen.   [Update Complete Power Down] | The text on the bottom of the Software Upgrade screen is updated to:  **Update Complete.**  **Please power down the system.** |  |
| 2.4.10 | 1. Power Off the DII. | The DII is powered down. | N/A |
|  | 1. Insert the **DYONICS POWER II Software Upgrade USB Key** into either USB Port 1 or USB Port 2 on the rear panel of the DII. 2. Power on the DII. 3. Verify that the **Check Serial Number** screen is displayed again, and the Serial Number matches the one on the rear panel of the unit. | The **Check Serial Number** screen is displayed again.  The Serial Number matches the one on the rear panel of the unit.  SN: |  |
|  | 1. Press the “**Continue**” button to proceed to the **Software Upgrade** screen. 2. Press the “**Start**” Button. 3. While the **Software Screen** displays “**Reading Flash Data…**” unplug the USB Flash Drive from the rear of the DII. 4. Verify the “**Reading Flash Data…**” is replaced with “**Update Failed.**” and “**Please power down the sytem.**” | After the USB Flash Drive is removed the Software Display screen was updated to display:  **Update Failed.**  **Please power down the sytem.** |  |
| 2.4.11 | 1. Reinsert the **DYONICS POWER II Software Upgrade USB Key** into either USB Port 1 or USB Port 2 on the rear panel of the DII. 2. Power cycle the DII. 3. Verify the DII displays the **Check Serial Number** screen. | After Power On the DII displays the **Check Serial Number** screen. |  |
|  | 1. On the **Check Serial Number** screen, press the “**Continue**” button. 2. On the **Software Upgrade** screen press the “**Start**” button. 3. Once the **Software Upgrade** screen displays “**Writing Lower Flash Data…**”, power Off the DII. 4. Remove the **DYONICS POWER II Software Upgrade USB Key** from the rear panel. 5. Power On the DII. 6. Verify the DII displays the **Flash Data Repair** screen.   [Flash Data Repair] Writing Lower Flash Data] | The DII displays the **Flash Data Repair** screen with the text:  **Lower flash data corrupt.**  **Repairing...**  **Writing Flash Data…** |  |
|  | 1. Verify that after the DII completes the repair the **Flash Data Repair** screen replaces the text “**Writing Flash Data…”** with the text “**Repair Complete.**” and “**Please power down the system**.”   [Flash Data Repair] Lower Flash Repair Complete | After the DII completes the repair the **Flash Data Repair** screen replaces the text “**Writing Flash Data…”** with the text:  **Repair Complete.**  **Please power down the system.** |  |
| 2.4.12 | 1. Reinsert the **DYONICS POWER II Software Upgrade USB Key** into either USB Port 1 or USB Port 2 on the rear panel of the DII. 2. Power cycle the DII. 3. Verify the DII displays the **Check Serial Number** screen. | After Power On the DII displays the **Check Serial Number** screen. |  |
|  | 1. On the **Check Serial Number** screen, press the “**Continue**” button. 2. On the **Software Upgrade** screen press the “**Start**” button. 3. Once the **Software Upgrade** screen displays “**Writing Upper Flash Data…**”, power Off the DII. 4. Remove the **DYONICS POWER II Software Upgrade USB Key** from the rear panel. 5. Power Cycle the DII. 6. Verify the DII displays the **Flash Data Repair** screen. | The DII displays the **Flash Data Repair** screen with the text:  **Upper flash data corrupt.**  **Repairing...**  **Writing Flash Data…** |  |
|  | 1. Verify that after the DII completes the repair the **Flash Data Repair** screen replaces the text “**Writing Flash Data…”** with the text “**Repair Complete.**” and “**Please power down the system**.” | After the DII completes the repair the **Flash Data Repair** screen replaces the text “**Writing Flash Data…”** with the text  **Repair Complete.**  **Please power down the system.** |  |
| 2.4.13 | 1. Insert the **DYONICS POWER II Software Upgrade USB Key** **Modified versions** into either USB Port 1 or USB Port 2 on the rear panel of the DII. 2. Power cycle the DII. 3. Verify the DII displays the **Check Serial Number** screen. 4. On the **Check Serial Number** screen, press the “**Continue**” button. | After Power On the DII displays the **Check Serial Number** screen.  The **Software Upgrade** screen is displayed listing the System Software and Motor Controller Software versions:  System Software: to  Motor Controller Software: to |  |
|  | 1. On the **Software Upgrade** screen press the “**Start**” button. 2. Wait the DII to prompt for the removal of the USB Drive. 3. Remove the USB Flash Drive from the rear panel. 4. Power off the DII | After the USB drive is removed the text on the bottom of the **Software Upgrade** screen updated to:  **Update Complete**  **Please power down the system.** |  |
|  | 1. Insert the **DYONICS POWER II Software Upgrade USB Key** into either USB Port 1 or USB Port 2 on the rear panel of the DII. 2. Power cycle the DII. 3. Verify the DII displays the **Check Serial Number** screen. 4. On the **Check Serial Number** screen, press the “**Continue**” button. | After Power On the DII displays the **Check Serial Number** screen.  The **Software Upgrade** screen is displayed listing the System Software and Motor Controller Software versions:  System Software: to  Motor Controller Software: to |  |
|  | 1. On the **Software Upgrade** screen press the “**Start**” button. | The text on the bottom of the **Software Upgrade** screen updated to:  **Updating Motor Board Program Flash…**  **Reading System Image Data…**  **Writing Lower Flash Data…**  **Writing Upper Flash Data…** |  |
|  | 1. Verify the **Software Upgrade** screen displays “**Update Complete**”. “**Please remove the USB drive.**”. | After completion of writing the upper flash the **Software Upgrade** screen updated to:  **Update Complete**  **Please remove the USB drive.** |  |
|  | 1. Remove the USB Flash Drive from the rear panel. 2. Power off the DII | After the USB drive is removed the text on the bottom of the **Software Upgrade** screen updated to:  **Update Complete**  **Please power down the system.** |  |
| 2.4.14 | 1. Reinsert the **DYONICS POWER II Software Upgrade USB Key** into either USB Port 1 or USB Port 2 on the rear panel of the DII. 2. Power On the DII. 3. Verify the DII displays the **Check Serial Number** screen. 4. On the **Check Serial Number** screen, press the “**Continue**” button.   Software Upgrade Same Software     1. Verify the **Software Upgrade** screen displays “**Update System Software:**” with both version numbers the same and “**Motor Controller Software:**” the version number and “**(No Change)**”. | After Power On the DII displays the **Check Serial Number** screen.  The **Software Upgrade** screen is displayed listing the System Software and Motor Controller Software versions:  System Software: to  Motor Controller Software: (No Change) |  |
|  | 1. On the **Software Upgrade** screen press the “**Start**” button. 2. Verify that the **Software Upgrade** only reports the System Software is updated. 3. Verify the **Software Upgrade** screen displays “**Update Complete**”. 4. Remove the USB Flash Drive from the rear panel. 5. Power Off the DII. | The text on the bottom of the **Software Upgrade** screen updated to:  **Reading System Image Data…**  **Writing Lower Flash Data…**  **Writing Upper Flash Data…**  **Update Complete**  **Please remove the USB drive.**  and finally after the USB Flash Drive is removed:  **Update Complete**  **Please power down the system.**  The text on the bottom of the **Software Upgrade** screen is NOT updated to:  **Updating Motor Board Program Flash…** |  |
| 2.4.15 | 1. Power On the DII. 2. Press the “**Settings”** button. 3. Select the “**System Information**” option. 4. Record the current system information in the Summary Results. | System is upgraded to the to-be-tested baseline versions of software for release.  **Note:** Baseline software loaded.  SN:  Software:  Application:  Motor Controller: |  |

# Summary / Report

## Issues, Notes

## Overall PASS / FAIL Status

|  |  |
| --- | --- |
| Overall Pass / Fail Status |  |
| Date |  |
| Signature |  |
| Printed Name |  |
| Department |  |
| Title |  |

# 