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User Guide to Windows® 10 Updates

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Chapter 1: Windows 10 Updates and Your PC

Microsoft changed the process that it uses to deploy updates. Starting with Windows 10, Windows automatically downloads and installs operating system updates when they become available. You now have less control over when Windows applies these updates to your PC. The amount of control that you have is based on the edition of Windows that you are using.

This guide shows you how to do the operations that follow:

- Configure your PC to prevent Windows 10 updates from causing problems with your A3200 and INtime configuration.
- Correct an A3200, INtime, or Windows configuration that was changed by a Windows 10 update.

The table that follows shows you the different types of updates that can occur in Windows 10.

Table 1-1:   Types of Windows 10 Updates

Update Type	Description	Availability
Driver Updates	Fix problems, improve performance, and add new features to hardware.	Windows might automatically download and install these updates through Windows Update.
Feature Updates	Add new functionality and make improvements to applications.	Approximately twice per year.
Quality Updates	Apply security and reliability fixes.	Approximately twice per month.

Why Are Windows 10 Updates a Concern?

Most Windows driver updates and quality updates that keep your PC running securely do not cause problems for an A3200 system or the TenAsys INtime real-time operating system.

For Windows 10, Microsoft automatically pushes feature updates to most users. Feature updates are different from quality updates and driver updates because Windows feature updates are a full operating system upgrade. As a result, some feature updates can cause major changes to your PC.

For information about the problems that updates can cause, refer to the lists that follow.

Driver and Quality Updates

- Some driver updates can cause problems with the A3200. You can easily disable them to prevent these problems.
- Driver and quality updates can cause your PC to automatically restart at unwanted times, such as during a manufacturing process, to complete the installation of an update.

Feature Updates

- A feature update might change the device drivers used in Windows Device Manager. Your driver update settings do not prevent these changes from occurring:

  - **INtime Devices**: The update might cause these devices to be passed back to Windows.
  - **Windows Devices**: Windows might select a more up-to-date device driver for a device such as a display adapter. As a result, the new driver might have a different timing impact on INtime than the previous driver.

- A feature update might re-enable power management features, such as Fast Startup, that cause problems for INtime.

- A feature update might cause Windows Boot Configuration Data (BCD) to use default values:

  - Your processor core configuration might change back to the default Windows setting.

    ### For Example

    You configure INtime to use one core and Windows to use three cores. But a new feature update causes all four cores to be given to Windows.

  - A feature update might re-enable Hypervisor settings, which can cause problems for INtime.
  - A feature update might cause APIC mode settings to use the default values, which can cause problems for INtime.

- Feature updates can cause your PC to automatically restart at unwanted times, such as during a manufacturing process, to complete the installation of an update.

Chapter 2: Comparing Different Editions of Windows 10

Microsoft created different update channels for Windows 10. You can control which updates you receive by purchasing the recommended edition of Windows 10 and by configuring your PC. The table that follows shows the editions of Windows 10 that Aerotech supports and recommends. These recommendations are based on the amount of control that you have over the Windows 10 update behavior.

Table 2-1:   Recommendations for Windows 10 Editions

Windows Edition	Aerotech Supported	Aerotech Recommended
Windows 10 Enterprise LTSB [1]	✓	✓
Windows 10 Enterprise	✓	✗
Windows 10 Professional	✓	✗
Windows 10 Home	✗	✗
(1) If you purchase a Windows 10 PC from Aerotech, it ships with Windows 10 Enterprise LTSB pre-installed.		

About Windows 10 Enterprise LTSB Edition

This is the long-term servicing branch of Windows 10.

Support

Aerotech recommends and supports this edition of Windows. Most Aerotech-supplied PCs ship with Windows 10 Enterprise LTSB pre-installed.

Update Types

Windows downloads and installs driver and quality updates only. Windows does not download and install feature updates.

Update Configuration Options

You can control when Windows installs driver and quality updates.

A3200 Compatibility

This edition of Windows is the most compatible with the A3200 because you can get quality updates without also having to get feature updates that can cause problems.

About Windows 10 Enterprise and Professional Editions

Support

Aerotech supports these editions of Windows, but does not recommend them.

Update Types

Windows downloads and installs driver, feature, and quality updates.

Update Configuration Options

You can control when Windows installs driver, feature, and quality updates. You can also defer feature updates.

A3200 Compatibility

To use these editions of Windows with the A3200, Aerotech recommends that you do one of the configurations that follow:

- Disable automatic downloads for Windows updates. Then download and install updates manually when the A3200 is not being used. For instructions about how to manually download and install updates, refer to Chapter 3: Recommended Update Settings.
- Manage and control Windows automatic updates on your corporate network. To do this, you must use a Windows Server Update Services (WSUS) server and configure the Domain Group Policy. Your IT department must help you complete this configuration.

If you install Windows updates and a feature update is included, it might be necessary for you to correct your A3200 and INtime configuration. For instructions about how to do this, refer to Chapter 4: Correcting Your A3200 Configuration.

About Windows 10 Home Edition

Support

Aerotech does not support or recommend this edition of Windows.

Update Types

Windows downloads and installs driver, feature, and quality updates.

Update Configuration Options

Windows downloads and installs all of the updates. You have limited control over when they occur.

A3200 Compatibility

This edition of Windows is not compatible with the A3200.

Chapter 3: Recommended Update Settings

Aerotech recommends that you use the procedures that follow to configure Windows 10 updates. By configuring these updates, you can prevent your PC from automatically restarting itself at unwanted times and from installing driver and feature updates that cause problems.

Device Driver Updates

Disable device driver updates to prevent a Windows 10 update from downloading and installing other device drivers.

TO DISABLE DEVICE DRIVER UPDATES

1. On the **Start** menu, type **Control Panel**. Then select **Control Panel**.

2. In the **Control Panel**, click the **View by** arrow and select **Category**.

3. Click **System and Security → System → Advanced System Settings**.

4. In the **System Properties** dialog, select the **Hardware** tab. In the **Device Installation Settings** section, click **Device Installation Settings**.

5. In the **Device Installation Settings** dialog, select **No (your device might not work as expected)**. Then click **Save Changes**.

Local Group Policy

You can configure your Local Group Policy to control when Windows downloads and installs updates and to prevent your PC from automatically restarting.

TO CONFIGURE YOUR LOCAL GROUP POLICY

N O T E : If your PC is on a corporate network and is configured to use a Domain Group Policy, the group policy settings configured by your IT department might override some of the settings in this section. If this occurs, Aerotech recommends that you discuss these settings with your IT department.

1. On the **Start** menu, type **gpedit.msc**. Then select **gpedit.msc** or **Edit Group Policy**.

2. In the **Local Group Policy Editor** dialog, select **Computer Configuration → Administrative Templates → Windows Components → Windows Update**.

3. In the right-hand pane, click the **Setting** column header to sort the settings in alphabetical order.

4. Configure the **Allow Automatic Updates immediate installation** setting:

   A. Double-click this setting.

   B. In the dialog that comes into view, select **Disabled**. Then click **OK**.

5. Configure the **Configure Automatic Updates** setting:

   A. Double-click this setting.

   B. In the dialog that comes into view, do one of the options that follow:

   - **Recommended**. If you want Windows to stop automatically downloading, installing, and telling you about available updates, select **Disabled**. Then click **OK**.

- If you want Windows to tell you about available updates, select **Enabled** and then select **(2) - Notify for download and auto install**. Then click **OK**.

- For **Windows 10 Enterprise LTSB** Only. If you want Windows to automatically install quality updates without telling you, select **Enabled**. Then select **(4) - Auto download and schedule the install**. Then click **OK**.

  > **NOTE:** To prevent Windows from downloading and installing feature updates that can cause problems, do this step only if you are using Windows 10 Enterprise LTSB.

6. Configure the **Do not include drivers with Windows Updates** setting:

    A. Double-click this setting.

    B. In the dialog that comes into view, select **Enabled**. Then click **OK**.

7. Configure the **No auto-restart with logged on users for scheduled automatic updates installations** setting:

    A. Double-click this setting.

    B. In the dialog that comes into view, select **Enabled**. Then click **OK**.

8. Configure the **Reschedule Automatic Updates scheduled installations** setting:

    A. Double-click this setting.

    B. In the dialog that comes into view, select **Disabled**. Then click **OK**.

9. Close all applications. Then restart your PC for these changes to have an effect.

Manually Downloading and Installing Updates

Because Aerotech recommends that you disable most of the automatic updates, you might want to keep your PC up-to-date by manually downloading and installing the latest security updates. If you are using Windows 10 Enterprise or Professional and manually downloading and installing the latest updates, Windows might also require you to install feature updates. If feature updates are required, install all of the updates only when the PC is not being used.

TO MANUALLY DOWNLOAD AND INSTALL THE LATEST UPDATES

> **WARNING:** If you are manually downloading and installing the latest updates for Windows 10 Enterprise or Professional and Windows also requires you to install feature updates, install all of the updates only when the PC is not being used.

1. Connect your PC to the Internet or to a network that is running an update server.

2. On the **Start** menu, select **Settings**.

3. In the **Settings** dialog, click **Update & Security**.

4. The Windows Update dialog shows one or more buttons based on your settings and the available updates. Click one or more of the buttons that follow:

   - **Check For Updates**
   - **Download**
   - **Restart now**

5. Let Windows complete all of the updates. Then restart the PC.

6. Continue to check for and install updates until no more updates are available.

7. Restart your PC before you use the A3200 again. When you manually restart your PC after an update, it prevents an automatic restart from occurring.

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Chapter 4: Correcting Your A3200 Configuration

If Windows installs a feature update on your PC or you make the decision to install one, then you must correct your A3200 and INtime configuration. Refer to the procedure that follows.

TO CORRECT YOUR A3200 AND INTIME CONFIGURATION AFTER A WINDOWS 10 FEATURE UPDATE

1. Configure your Windows 10 update settings according to the recommendations in Chapter 3: Recommended Update Settings. This prevents Windows from downloading and installing automatic feature updates in the future.

2. Correct the optimization settings that follow:

   NOTE: For specific instructions about how to correct these settings, refer to Optimizing Performance Guide.

   A. Open **Device Manager**.

      i. Disable all the devices under **Sound, video, and game controllers**.

      ii. Based on the type of display driver that you are using, do one of the options that follow:

         - If you are using the display driver supplied by the manufacturer and it does not cause real-time performance problems, continue to **Step B**.

         - If you are using the display driver supplied by the manufacturer and it causes real-time performance problems, change your display driver to the **Microsoft Basic Display Adapter**.

   B. Make sure that all of the **Power Options** stay configured based on the instructions in the **Change Power Options in Windows** section of the Aerotech **Optimizing Performance Guide**.

   C. Disable **Fast Startup**. Windows usually re-enables this feature after a feature update occurs.

3. For **A3200 6.03 or newer** Only. INtime automatically corrects the **Boot Configuration Database (BCD)** settings after a feature update occurs. After the feature update is installed, a **BCD Change Detected** dialog comes into view and prompts you to restart your PC. Make sure that you restart it.

4. For **A3200 6.02 or older** Only. Do the steps that follow to correct your **Boot Configuration Database (BCD)** settings:

   A. Select **Start → All Programs → INtime → INtime Configuration**. Then double-click **INtime Node Management**.

   B. Without making changes, click **Close**. Then click **Exit** to exit the **INtime Configuration Panel**.

   C. If INtime prompts you to restart your PC, restart it.

5. Pass all the necessary devices to INtime. Do one or more of the options that follow based on the types of devices that you have.

   - If you are using a **FireWire/IEEE-1394** card:

      A. Select **Start → All Programs → INtime → INtime Configuration**. Then double-click **INtime Device Manager**.

      B. Find your FireWire/IEEE-1394 card. Right-click the FireWire card and select **Pass to INtime using polling**. At this time, the FireWire card is under INtime control.

- If you are using a **HyperWire** card:

  A. Select **Start → All Programs → INtime → INtime Configuration**. Then double-click **INtime Device Manager**.

  B. Find your HyperWire card. Right-click the HyperWire card and select **Pass to INtime using MSI**. At this time, the HyperWire card is under INtime control.

- If you are using a network adapter for **PC Modbus**:

  A. Select **Start → All Programs → INtime → INtime Configuration**. Then double-click **INtime Device Manager**.

  B. Find the network adapter that you are using for PC Modbus. Right-click the network adapter and select **Pass to INtime using MSI**. At this time, the network adapter is under INtime control.

Final Notes

A default Windows 10 installation can cause problems with the A3200 and INtime because of how Microsoft deploys updates. But if you use the instructions in this guide to configure your PC or use an Aerotech supplied PC that is already configured, you can prevent these problems from occurring.

Appendix: Revision History

Table 5-1: **Revision History**

Revision	Date	Description
1.01.00	April 19, 2018	New Guide

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