

# Uninterruptible Power Supply Selection for Intellex

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## Purpose

Unexpected power loss can result in file corruption on Intellex, and if the files affected are used by the operating system, it could prevent the Intellex from restarting after power is restored. This type of failure can be prevented through the use of an Uninterruptible Power Supply, also known as a UPS. The focus of this application note is to protect Intellex from damage caused by power line disturbances, blackouts, and brownouts.

## What is a UPS?

A UPS is basically a battery, battery charger, and inverter packaged in the same box with a power switchover circuit. When power is available on the mains, the connected equipment is powered from the mains and the charger keeps the battery fully charged. Most UPS systems also provide power conditioning that prevents noise spikes on the power mains from damaging the connected equipment. If the power mains should fail, the switchover circuit transfers the connected equipment to the inverter that converts power from the battery into the same voltage and frequency as the mains. The switchover takes place in milliseconds so that the connected equipment never loses power. The connected equipment remains fully functional as long as the battery can deliver power. Most modern UPS systems intended for use with computers also have a control interface that can be used to properly shut down the computer before the battery is fully discharged. This prevents file corruption during long power failures.

## Using a UPS with Intellex

A UPS can be configured with an Intellex unit in one of three ways. The selection of the configuration and UPS model will depend on the specifics of the installation and application. In every case, the Intellex and any external storage systems, such as an ESM, RAID, or tape system, must be powered through the UPS. In the case where the operator must manually shut down the Intellex, the monitor must also be powered through the UPS.

### Configuration 1: Simple Power Supply with Manual Shutdown and Startup

This configuration uses the UPS as a short duration power supply for Intellex and a power conditioner to prevent damage from surges. The Intellex and associated equipment are plugged into the power outlets on the UPS, and in the event of a power failure or brownout, the UPS supplies power to the Intellex until the UPS battery discharges. When the battery discharges, power to the Intellex is cut off and damage to the file system could occur. To prevent this damage, it is critical that the Intellex is shutdown by the operator using the Utility/Shutdown command before the battery is discharged. The Intellex must then be manually restarted when power is restored. The advantages of this configuration are that it is simple to install and multiple Intellex units can be powered from the same UPS. The disadvantages are that an operator must manually shut down and restart the Intellex and that a larger capacity UPS must be used in order to power the monitor and to provide sufficient time for the operator to shut down the unit. This configuration is appropriate only when an operator is continuously monitoring the Intellex and has the authority to shut down the unit. This configuration is not recommended for general use with Intellex.

### Configuration 2: Power Supply with Automatic Shutdown

This configuration uses the power management features of the Microsoft Windows 2000 operating system to automatically shut down Intellex before the UPS battery is discharged. The Intellex and any external storage devices are plugged into the UPS and a USB control cable is connected between the UPS and the Intellex. The Windows Power management is then configured to allow the UPS to shut down the Intellex when the battery power reaches a defined level. (Refer to Appendix A for more information on configuring the power management.) This configuration

guarantees that in case of a power failure the Intellex will be shut down properly to prevent file corruption due to power loss. When power is restored, however, the Intellex must be manually restarted, unless the power failure was long enough to fully discharge the battery even with the Intellex shutdown. This is because Intellex will only start automatically when the mains power to the Intellex is completely lost and then restored. The advantages of this configuration are that no operator actions are required to ensure proper shutdown of Intellex and that a smaller capacity UPS can be used because the monitor does not need to be supplied by the UPS. The disadvantages are that the Intellex must be manually restarted when power is restored, drivers for the USB control interface might have to be installed, and only one Intellex can be connected to each UPS unit. This configuration is recommended only when it is acceptable for manual intervention to be required to restart the Intellex after a power failure.

### Configuration 3: Power Supply with Automatic Shutdown and Restart

One model of UPS has been evaluated that supports automatic restart of Intellex after a power failure. The APC Smart Power UPS can be configured to properly shut down Intellex after a power failure and restart it when power is restored. The Intellex and any external storage devices are plugged into the UPS and a USB control cable is connected between the UPS and the Intellex. The APC PowerChute software is installed on the Intellex and configured according to the instructions in Appendix B. The Intellex will be properly shutdown in the event of a power failure. When power is restored, the Intellex will restart automatically. The advantages of this configuration are that no operator actions are required to ensure proper shutdown of Intellex or to restart Intellex when power is restored. The disadvantages are that additional software must be installed and configured on Intellex and that few models of UPS support this feature. Also, only one Intellex can be connected to each UPS unit. This configuration is recommended for general application with Intellex because it provides automatic shutdown in the event of a power failure and automatic restart when power is restored.

## Selecting a UPS for Intellex

In addition to the requirements imposed on the UPS based on the desired configuration described above, requirements for power capacity, surge suppression, and battery capacity must also be considered. Use the following guidelines in making a UPS selection.

Mains Voltage and Frequency	Power Capacity	Battery Capacity	Control Interface	Power Conditioning
As required	350W min. or as required	5 minutes min. or as required	USB	400 Joules min, per UL1449

### Mains Voltage and Frequency

Select a UPS that is compatible with the power mains voltage and frequency in your region.

### Power Capacity

The power rating for a UPS to support a single desktop or rackmount Intellex should be at least 350 Watts. For a UPS to support a single RMS unit, the power rating should be at least 450 Watts. To support a single desktop or rackmount Intellex and up to three ESM units, the power rating of a UPS should be at least 475 Watts. These power ratings are without a monitor or any other accessory. If a monitor must be connected to the UPS to allow the operator to shutdown Intellex in the event of a power failure, add the monitor power requirements to the above ratings. If more than one Intellex is to be powered from a single UPS, then these power ratings should be multiplied by the number of units connected. Remember that connecting multiple Intellex units to a single UPS does not support use of the automatic shutdown features and it is not recommended for that reason. Be careful when comparing UPS power ratings. The VA (Volt-Ampere) rating is higher than the power (Watts) rating. Always use the power rating.

### Battery Capacity

The battery capacity of a UPS is usually determined by the power rating of the UPS and the total power load connected. The battery should be able to supply the Intellex and all other connected equipment for at least 5 minutes to allow enough time for a proper shutdown. If additional time is needed for an operator to recognize the power failure and reach the Intellex to shut it down, then that time must be added on to the 5 minute minimum.

### Control Interface

Select a UPS unit with a USB control interface and not RS-232. The only RS-232 port on the Intellex unit is dedicated to TouchTracker connection.

### Power Conditioning

The UPS should have integrated surge suppression and noise filtering. The surge suppression capacity is usually dependent on the power rating, but it should be at least 400 Joules. The surge suppression should meet the requirements of UL1449.

### Outlets

The UPS should have enough outlets to supply the equipment to be connected. Do not use power strips or expanders to connect more equipment. The outlets should meet local standards for mains connected equipment.

### Safety and Regulatory Ratings

The UPS should be certified to meet the safety and regulatory standards for your region.

## Recommended Commercially Available UPS Sources

Configuration 1	Configuration 2	Configuration 3
Not Recommended	APC Back-UPS RS 800VA	APC Smart-UPS 750VA

Any commercially available UPS unit that meets the above criteria is acceptable for use with Intellex. Users should be aware that there are other variables that can be specific to either a particular installation or a particular set of peripheral equipment that could disqualify a particular UPS unit. An example of this is with large distributed systems where grounding and power line phasing can cause interference, or where a particular model of camera or monitor is sensitive to the line filtering, inverter, or grounding characteristics of a UPS.

The only UPS models that have been tested and demonstrated to meet the requirements of Configuration 3 are the American Power Conversion Corp. Smart UPS family of UPS units.

## Configuring a UPS for Automatic Shutdown

- 1 Follow the UPS installation instructions and connect the unit to the USB connection on the Intellex unit.
- 2 Click on Start, Settings, Control Panel and set Power schemes to "Always On".
- 3 Change all Settings for Always On power scheme to "Never" for Plugged in and running on batteries.
- 4 Click the Alarms tab and check the "Activate low battery alarm when power reaches" box and set to the desired percentage, and click okay. In the event of a power failure, this will shut down the Intellex unit when battery power reaches the selected percentage. Once power has been restored, it will be necessary to press the power switch on the Intellex unit to restart.
- 5 Uncheck the Critical battery alarm box
- 6 Click the Alarm Action button and in the Notification box and uncheck Sound alarm and Display message.
- 7 In the Power level setting, check the "When the alarm goes off, the computer will" box and set to Shutdown.
- 8 Click the Hibernate tab and uncheck the Enable hibernate support box.

### **Note**

Intellex does not support standby or hibernate modes. Enabling these modes will result in watchdog reboots and loss of video data.

## Configuring the APC Smart Power UPS with Intellex

The APC Smart UPS 750 was evaluated with Intellex and found to meet all of the requirements for automatic shutdown and restart. These instructions describe how to configure the system for automatic operation.

- 1 Follow the installation instructions and connect the unit to the USB connection on the Intellex unit.
- 2 Load the PowerChute application from the CDROM.
- 3 Launch the PowerChute application.
- 4 Double click on the host name (Intellex) to bring up the Device Properties screen.
- 5 Check the "Show advanced items" box.
- 6 Click Shutdown, Power Failure and set "When power fails, begin a shutdown procedure" to the desired time. Set "When power returns, reboot UPS" to immediately.
- 7 Click Shutdown, Shutdown Type and set the operating system shutdown type to "Shutdown".

### **Note**

Intellex does not support standby or hibernate modes. Enabling these modes will result in watchdog reboots and loss of video data.

## Contact Information

If you have any questions regarding this bulletin, please contact Technical Services by phone at 800-507-6268, Option 2 or via e-mail at [adtechservices@tycoint.com](mailto:adtechservices@tycoint.com).

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