Pro-face
Human Machine Interface

Pro-face®

PS-3650A/PS-3651A Series

Battery Unit
Driver Manual

Preface

Thank you for purchasing Pro-face's PS-3650A Series Battery Unit. This manual outlines the functions of the Battery Unit and settings for the Battery Unit driver.

Before operating your Battery Unit, be sure to read this manual and manuals related to this unit to familiarize yourself with the Battery Unit's operation procedures and features.

NOTICE

1. Copying this manual's contents, either in whole or in part, is prohibited without the express permission of Digital Electronics Corporation, Japan.

2. The information contained in this manual is subject to change without notice.

3. If you find any errors or omissions in this document, please contact Digital Electronics Corporation to report your findings.

4. Regardless of Clause 3 above, Digital Electronics Corporation shall not be held responsible for any damages, losses or third-party damages resulting from the use of this product.

Information Symbols

This manual uses the following icons.

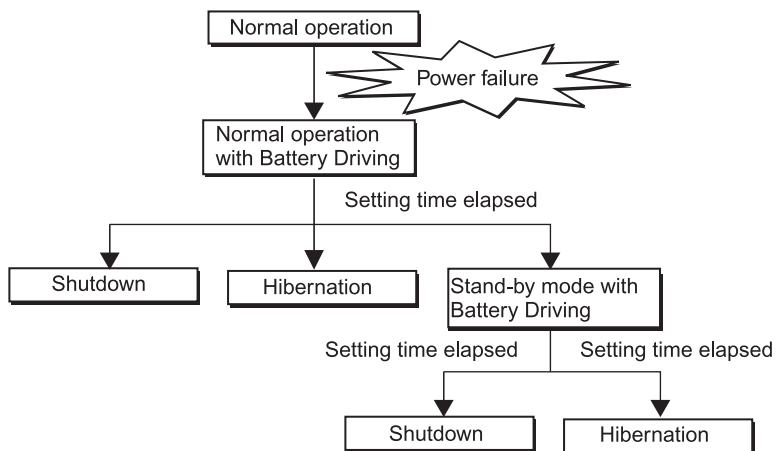|	
IMPORTANT	Indicates a warning or a product limitation. Be sure to follow the instructions given with this icon to ensure the safe operation of the PS-A.
NOTE	Contains additional or useful information.
(1) (2)	Indicates steps used to accomplish a given task. Be sure to follow these steps in the order they are written.
*1	Indicates useful or important supplemental information in a footnote.
SEE →	Indicates pages containing related information.

Contents

Chapter 1   Overview

This chapter describes the outline of functions and driver of the Battery Unit.

1.1   Outline of Functions

This Battery Unit offers an uninterruptible power supply system by installing the Battery Unit on a PS-3650A/PS-3651A series unit (hereafter referred to as the PS-A), which is an industrial personal computer. In case of a power failure such as a blackout, it is possible to move the PS-A's status to automatic shutdown, hibernation, and Stand-by mode by supplying the power source with the battery. After a power failure happens, a normal operation is available for 60 seconds max until those procedures start. Stand-by mode can be kept for 30 minutes max.

```
              ┌─────────────────────┐
              │  Normal operation   │
              └─────────────────────┘
                        │        ╱╲ Power failure ╱╲
                        ▼
              ┌─────────────────────┐
              │  Normal operation   │
              │ with Battery Driving │
              └─────────────────────┘
                        │  Setting time elapsed
        ┌───────────────┼──────────────────┐
        ▼               ▼                   ▼
  ┌───────────┐   ┌───────────┐   ┌─────────────────┐
  │ Shutdown  │   │Hibernation│   │ Stand-by mode with│
  └───────────┘   └───────────┘   │ Battery Driving  │
                                  └─────────────────┘
                          Setting time elapsed   Setting time elapsed
                                  ▼                   ▼
                            ┌───────────┐     ┌───────────┐
                            │ Shutdown  │     │Hibernation│
                            └───────────┘     └───────────┘
```

During the battery driving, if a low level of the remaining battery and the temperature anomaly of the battery are detected, regardless of the setting time, the condition of the PS-A unit moves to a shutdown or hibernation immediately.

If power supply is restored within the setting time, the operation condition gets back to normal operation.

1.2 Driver

In order to use a Battery Unit, a Battery Unit driver is required.

The Battery Unit driver supports Microsoft® Windows®2000 and Microsoft® Windows®XP.

If your PS-A has a hard disk with pre-installed OS, the Battery Unit driver has been installed.

If your PS-A has a hard disk with no pre-installed OS, visit our website and download the Battery Unit driver on your PS-A.

URL: http: //www.pro-face.com/otasuke/

1.3 File

When the Battery Unit driver is installed, files are installed in the folders as shown below.

Do not delete these files from the folders.

Folder	File	File Function
C:\Proface\Battery	IpcBattNotify.exe	Application that displays the status on the Taskbar, using the icon
For Windows® 2000 C:\WINNT\system32 For Windows® XP C:\Windows\system32	IpcBatt.dll	Battery Unit driver DLL
	IpcBattEvtLog.dll	Resource for displaying the event log
	IpcBatt.cpl	Control panel applet

Chapter 2   Operation Specification

This chapter describes the operation when a power failure occurs.

2.1   Operation Type in Power Failure

Operation in power failure follows the settings of the IPC Power Options of the control panel.

The following settings can be set with the [Battery Config] tab of the [IPC Power Options].

| Setting items		Details

Setting Operation 1	The setting of operation in power failure.	Select one of the followings.
		  Stand by
		  Hibernate
		  Shut down

Delay 1	The setting of the delay time till when the operation in a power failure is executed.	0 to 60 sec.

Setting Operation 2	When choosing Stand by for Setting operation 1, this setting is the setting of operation to be executed after the completion of battery runtime in Stand-by mode.	Select one of the followings.
		  Hibernate
		  Stand by

Delay 2	The setting of battery runtime in Stand-by mode.	1 to 30 min.

2.2 Flow of Operation in Power Failure

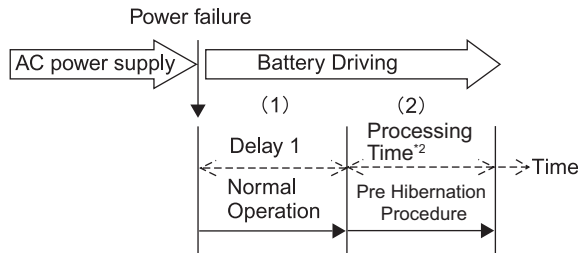### 2.2.1 Setting Operation 1 is a Shut down or Hibernation case

(1) When a power failure occurs, and AC power supply is stopped, normal operation continues by the battery driving until the period of Delay 1 elapses.

- If power supply is restored during Delay 1, Setting operation 1 is skipped, and the condition of the PS-A unit is back to normal operation.

(2) When the period of Delay 1 elapses with the AC power supply stopped, Setting operation 1 is applied.

- When a power failure occurs in Stand-by mode, the condition moves from Stand-by mode to normal operation once, and then moves to Setting operation 1.

- When Shut down is selected for Setting Operation 1, waiting time for about 30 seconds is generated in normal operation. After the waiting time elapses, the condition moves to the Shut down processing.

<A case in which a power failure has occurred in normal operation>

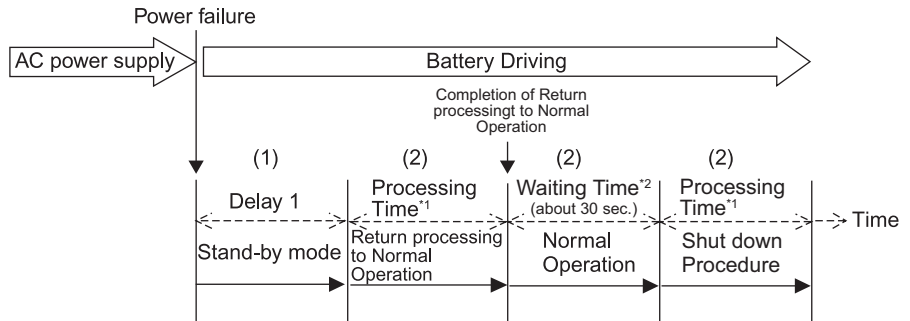Setting Operation 1: Shut down
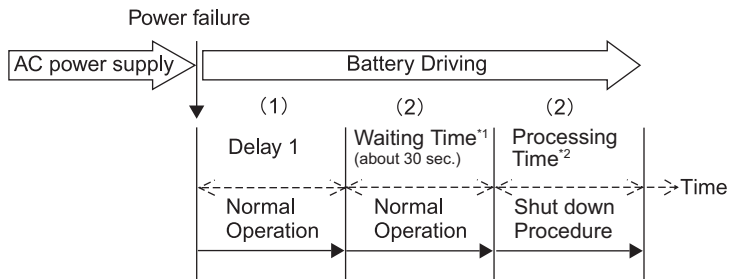
Setting Operation 1: Hibernate

| IMPORTANT | • Regardless of the setting time of Delay 1, the condition of the PS-A unit moves to shut down or pre hibernation procedure based on Setting Operation 1 immediately if the temperature anomaly of the battery and a low level of the battery power are detected during the battery driving. |

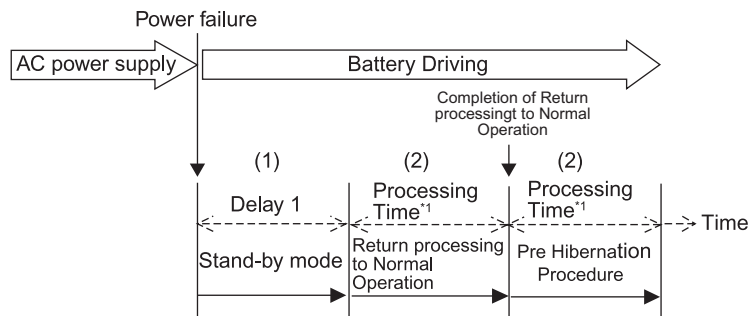*1. Even if power supply is restored during the Waiting time, the Shut down processing is performed.

*2. Each processing time depends on the conditions of the OS or application program operations.

<A case in which a power failure has occurred in Stand-by mode>

Setting Operation 1: Shut down

Power failure

| AC power supply | Battery Driving |

Completion of Return processingt to Normal Operation

(1)	(2)	(2)	(2)
Delay 1	Processing Time*1	Waiting Time*2 (about 30 sec.)	Processing Time*1	Time
Stand-by mode	Return processing to Normal Operation	Normal Operation	Shut down Procedure

Setting Operation 1: Hibernate

Power failure

| AC power supply | Battery Driving |

Completion of Return processingt to Normal Operation

(1)	(2)	(2)
Delay 1	Processing Time*1	Processing Time*1	Time
Stand-by mode	Return processing to Normal Operation	Pre Hibernation Procedure

IMPORTANT
- Regardless of the setting time of Delay 1, the condition of the PS-A unit moves to shut down or pre hibernation procedure based on Setting Operation 1 immediately if the temperature anomaly of the battery and a low level of the battery power are detected during the battery driving.

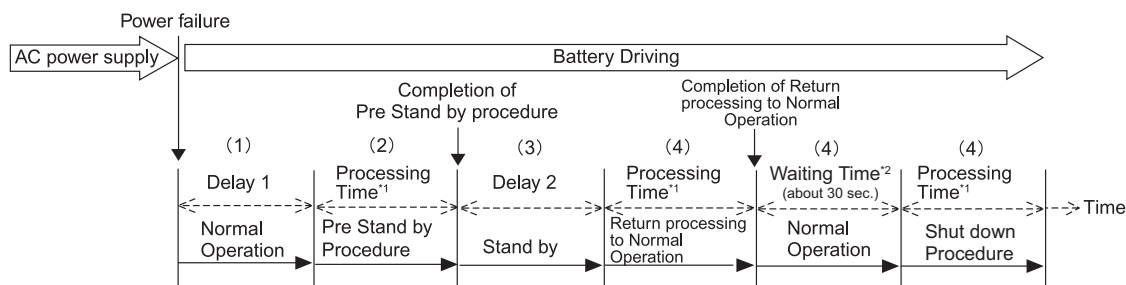*1. Each processing time depends on the conditions of the OS or application program operations.

*2. Even if power supply is restored during the Waiting time, the Shut down processing is performed.
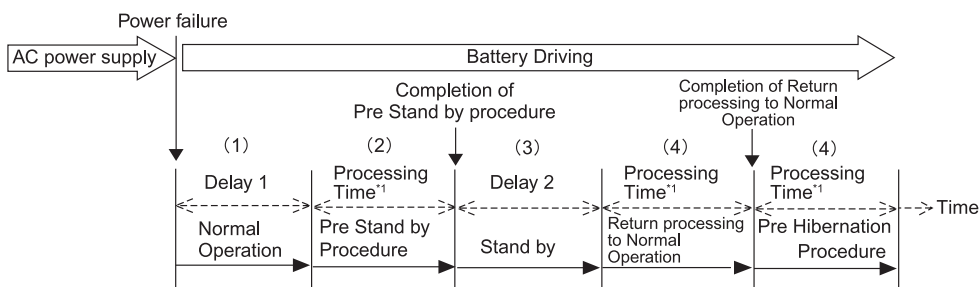
2.2.2   Setting Operation 1 is a Stand By Case

(1)   When a power failure occurs, and AC power supply is stopped, normal operation continues by the battery driving until the period of Delay 1 elapses.

- If power supply is restored during Delay 1, Setting Operation 1 is skipped, and the condition of the PS-A unit is back to normal operation.

(2)   When the period of Delay 1 elapses with the AC power supply stopped, Stand-by mode is applied.

- If a power failure occurs in Stand-by mode, the operation proceeds to (3) keeping Stand-By mode.
- If power supply is restored in the process of Pre Stand-By mode, the condition moves to Stand-by mode once, and then the return processing to normal operation starts immediately.

(3)   As being Stand-by mode, the operation of the PS-A unit waits until Delay 2 elapses.

- If power supply is restored during Delay 2, the condition of the PS-A unit moves from Stand-by mode to normal operation.
- When normal operation is back during Delay 2 by touch operation or input from USB device etc., the count for Delay 2 is cleared, and the condition of the PS-A unit moves to Stand-by mode again.

(4)   When the period of Delay 2 elapses with the AC power supply stopped, the condition of the PS-A unit returns from Stand-by mode to normal operation once, and then moves to Setting peration 2.

- When Shut down is selected for Setting Operation 2, waiting time for about 30 seconds is generated in normal operation. After the waiting time elapses, the condition moves to the Shut down processing.

<A case in which a power failure has occurred in normal operation>

Setting Operation 2: Shut down

Setting Operation 2: Hibernate

IMPORTANT
- Regardless of the setting time of Delay 1/Delay 2, the condition of the PS-A unit moves to shut down or pre hibernation procedure based on Setting Operation 2 immediately if the temperature anomaly of the battery and a low level of the battery power are detected during the battery driving.
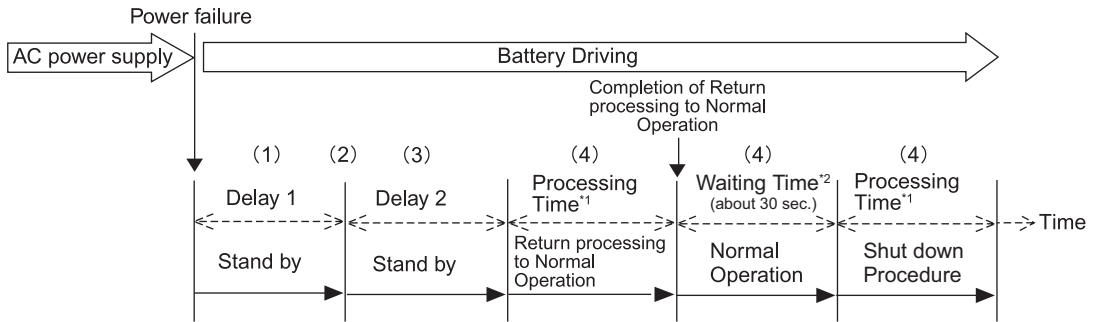
NOTE
- It is possible to specify "Yes/No" for the setting whether or not condition of the unit is moved from Stand-by mode to normal operation, using the input device (e.g touch panel, keyboard, and mouse etc.) by making power source settings of the input device with the device manager.

*1. Each processing time depends on the conditions of the OS or application program operations.

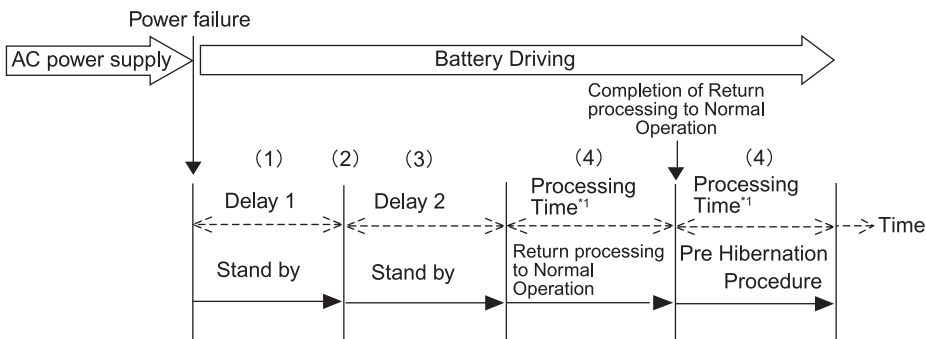*2. Even if power supply is restored during the Waiting time, the Shut down processing is performed.

<A case in which a power failure has occurred in Stand-by mode>

Setting Operation 2: Shut down

Setting Operation 2: Hibernate

IMPORTANT
- Regardless of the setting time of Delay 1/Delay 2, the condition of the PS-A unit moves to shut down or pre hibernation procedure based on Setting Operation 2 immediately if the temperature anomaly of the battery and a low level of the battery power are detected during the battery driving.

NOTE
- It is possible to specify "Yes/No" for the setting whether or not condition of the unit is moved from Stand-by mode to normal operation, using the input device (e.g touch panel, keyboard, and mouse etc.) by making power source settings of the input device with the device manager.

*1. Each processing time depends on the conditions of the OS or application program operations.

*2. Even if power supply is restored during the Waiting time, the Shut down processing is performed.

2.3 LED Display

The HDD/IDE access lamp is located on the front face of the PS-A unit. In the battery driving, the display of the HDD/IDE access lamp changes and it shows the condition of the system.

In that case, the condition of the HDD/IDE access cannot correspond to the status of the HDD/IDE access lamp.

LED	PS-A Status
Green (lit)	Currently in access to HDD/IDE
Off	Stoppage in access to HDD/IDE
Orange (lit)	PS-A is in operation with battery driving
Red (lit)	PS-A is in Stand by with battery driving

NOTE

• If a power failure occurs in Stand-by operation in the Start menu or under the condition of a Stand-by mode such as a function of Screen-saver, the PS-A condition during Delay 1 is shown in orange. After a lapse of Delay 1, the LED will turn red.

2.4 Icon Display

When turning ON the "Always show icon on the taskbar" checkbox in the [Advanced] tab of [IPC Power Options], the icon that shows the current power status appears on the Taskbar.

The following icons are displayed.

Icon	Power Status
	Running with AC power.
	Running with the battery. Estimated battery remaining capacity is approximately 0 %.
	Running with the battery. Estimated battery remaining capacity is approximately 25 %.
	Running with the battery. Estimated battery remaining capacity is approximately 50 %.
	Running with the battery. Estimated battery remaining capacity is approximately 75 %.
	Running with the battery. Estimated battery remaining capacity is approximately 100 %.

2.5 Message Output

If there is a change in the battery status, the messages are output to the event log.

These messages are displayed in the [Battery Status] tab of [IPC Power Options] in the control panel as well.

In addition, when [Notify the battery status] is enabled with the [Battery Config] tab of [IPC Power Options],

if there is a change in the battery status, it is possible to notify its contents by displaying the message box.

$\boxed{\textbf{SEE} \rightarrow}$ *3.1 Setting Items of [Battery Status] Tab (page 3-2)*
    3.2 Setting Items of [Battery Config] Tab (page 3-4)

Message	Remarks
Battery temperature has risen.	When the battery temperature has exceeded over 70 °C and the charge is stopped, this message is displayed. (Temperature anomaly)
Battery temperature returns appropriate.	When the charge is restarted after the battery temperature is returned to the normal one (65 °C or lower, or 5 °C or higher) from temperature anomaly, this message is displayed.
Battery temperature has fallen.	When the charge is stopped due to the battery temperature depression (less than 0 °C), this message is displayed. (Temperature anomaly)
The battery is low.	When the battery is low, this message is displayed.
The time to replace batteries is approaching.	When the battery performance decreases and the replacement time is approaching, this message is displayed. [1]
Communication with battery unit is interrupted.	When the communication with the Battery Unit is interrupted, this message is displayed.
Communication with battery unit begins.	When the communication with the Battery Unit is restored, this message is displayed.
Battery is not connected.	When the battery is not connected or the fuse burned out, this message is displayed.
A power failure was detected at the server.	This message is stored only in the event log. When a power failure was detected, this message is stored.
Power has been restored.	This message is stored only in the event log. When AC power supply is restored, this message is displayed.
Windows has been [stand by/hibernate/shut down].	This message is stored only in the event log. This message is stored immediately before [stand by/hibernate/shut down] procedure by a power failure.

*1.   When repeating the charge/discharge for 200 times, this message is displayed.

    Even when this message is not displayed, however, the battery may come closer to the

    end of its life, since the battery life depends on the use conditions.

Chapter 3   Setting of IPC Power Options

This chapter describes [IPC Power Options] for the operation setting in power failure.

When the Battery Unit driver is installed, the setting items of power options of the control panel are changed to ones for the Battery Unit.

The settings of the [Power Schemes] tab, the [Advanced] tab and the [Hibernate] tab are similar to settings of Standard Windows®. Refer to the help of Windows® etc. for more information.

This section describes the setting items of the [Battery Status] tab and the [Battery Config] tab excluding those described above.

3.1 Setting Items of [Battery Status] Tab

In the [Battery Status] tab, the conditions of the Battery Unit are shown.

Status Group

Information Group
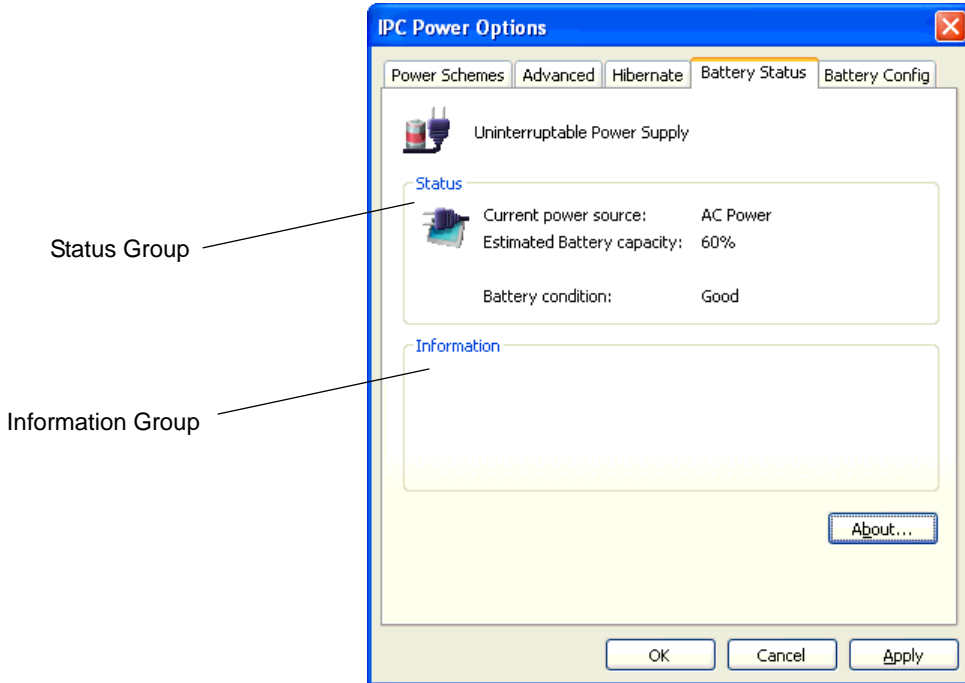
■ Status Group

The condition of the Battery Unit is displayed.

◆ Current power source

Current power source (AC power/Battery) is displayed.

◆ Estimated UPS capacity

The estimated remaining battery capacity is displayed in %.

◆ Battery condition

Battery condition (Good/Needs Replacing) is displayed.

■ Information Group

Abnormality (about the condition of the communication with the Battery Unit, and so on) occurring in the Battery Unit are displayed. Refer to "2.5 Message Output (page 2-9)" for the contents displayed.

NOTE

• It is also possible to display the contents displayed in the information group in the message box. Moreover, they are output to the event log. Refer to "3.2 Setting Items of [Battery Config] Tab (page 3-4)" for the message box.
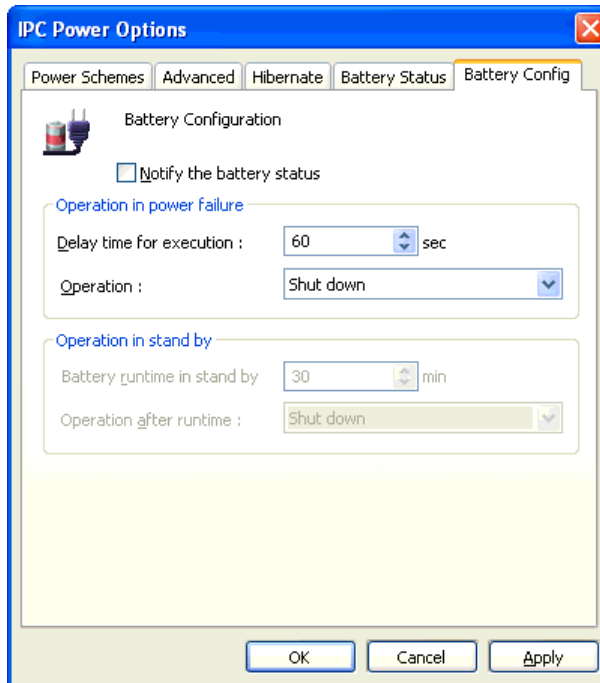
■ [About] button

The versions of the control panel applet, the Battery Unit driver and the firmware of the Battery Unit are
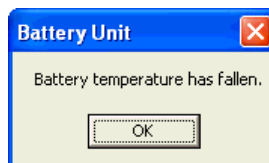displayed by pressing the [About] button.
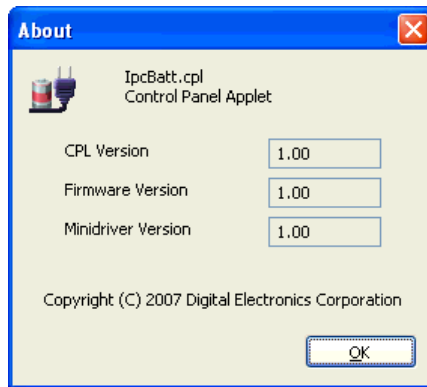
3.2   Setting Items of [Battery Config] Tab

With the [Battery Config] tab, the operation of the Battery Unit can be set.

■ Notify the battery status

When checking the check box, if there is a change in the battery status, its content is notified by displaying the message box.

■ Operation in power failure

The operation when the supply of AC power is cut off can be set.

◆ Delay time for execution

Set the delay time from when the supply of AC power is cut off till when the operation chosen in [Operation] is executed.

Setting range: 0 to 60 sec.

Initial setting is 60 sec.

◆ Operation

Set the operation that is executed after the supply of AC power is cut off and the delay time elapses. Select from Stand by, Hibernate or Shut down.

Initial setting is [Shut down]

IMPORTANT
- Be sure to enable ACPI before selecting [Stand by]. Select [None] in [Disable ACPI_Sx] in the [Advanced] menu of the system setting screen. (The factory default setting is [None].)
- Be sure to enable Hibernation before selecting [Hibernate]. Enable [Enable hibernation] with the [Hibernate] tab of [IPC Power Options].

■Operation in Stand by

Operation when moving to Stand by after the supply of AC power is cut off can be set.

◆ Battery runtime in stand by

Set the standby duration time. This setting can be set only when [Stand by] is selected as the operation in power failure.

Setting range: 1 to 30 min.

Initial setting is 1 min.

IMPORTANT
- As for the battery runtime in Stand by, 30 minutes max can be set. However, depending on the hardware constitution and the condition of a system load, the battery power drops and the moving to shutdown or hibernation might be done earlier than the setting time.

◆ Operation after runtime

Set the operation after the standby duration time elapses. This setting can be set only when [Stand by] is selected as the operation in power failure.

Select Hibernate or Shut down.

Initial setting is [Shut down].

Chapter 4   Restrictions

This chapter describes restrictions in using the battery unit and the driver.

- Depending on the model, the interface for the battery output may differ. Refer to the table below to check that the COM Port and On Board Serial Port for your model have been enabled.

Series	Models	COM Port	Enabled On Board Serial Port
PS-3650A Series	PS3650A-T41	COM2	On Board Serial Port 2
PS-3651A Series	PS3651A-T41		
PS-3650A Series	PS3650A-T42	COM3	On Board Serial Port 3
	PS3650A-T42S		
PS-3651A Series	PS3651A-T42		
	PS3651A-T42S		

  Set [On Board Serial Port] to [Enable] in [I/O Device Configuration] in the [Advanced] menu of the system setting screen. (The factory default setting is [Enable].)

- Be sure to enable ACPI before selecting [Stand by].
  Select [None] in [Disable ACPI_Sx] of the [Advanced] menu of the system setting screen. (The factory default setting is [None].)

- Be sure to enable hibernation before selecting [Hibernate]. Enable [Enable hibernation] with the [Hibernate] tab of [IPC Power Options] in the control panel.
  Also, to move to hibernation, the space capacity no less than the memory capacity in the system disk (C drive) is requested. When the capacity of the system disk is insufficient, hibernation can not be enabled.

- Depending on applications used and other drivers, the moving to Stand by or hibernation might not operate normally.

- As for the battery runtime in Stand by, 30 minutes max can be set. However, depending on the hardware constitution and the condition of a system load, the battery power drops and the moving to shutdown or hibernation might be done earlier than the setting time.

- For Windows® 2000, be sure to disable [Prompt for password when computer goes off standby] with the [Advanced] tab of [IPC Power Options] in the control panel. If this setting is enabled, Windows is not normally shut down when the shutdown event occurs during standby.

- Once the battery temperature has fallen to less than 0 °C (Temperature anomaly) and the charge has stopped, it does not restart until the battery temperature is 5 °C or higher although the specified low ambient operating temperature is 0 °C.

- Approximately ±5 °C difference may be found from the specified temperature range for the battery temperature monitoring function. Due to this difference, the battery protection function such as the charge stop may be activated even when Battery Unit is used within the specified temperature range.

- The message of "The time to replace batteries is approaching." is displayed when you repeat the charge/ discharge for 200 times. Even when this message is not displayed, however, the battery may come closer to the end of its life, since the battery life depends on the use conditions.

  It is strongly recommended that batteries should be replaced earlier than the service life as shown in the table below.

Conditions for the battery	Service life (years)
Hours of use per a day　　　　: 24 hours 　　　　　　　　　　　　　　(continuous use) Backup operation　　　　　　: Once a month Surrounding air temperature　: 30 °C	5
Hours of use per a day　　　　: 24 hours 　　　　　　　　　　　　　　(continuous use) Backup operation　　　　　　: Once a month Surrounding air temperature　: 40 °C	4