



PLANNING AND TRANSFER SYSTEMS

System User Guide
Revision 1.6

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1 GENERAL INFORMATION

1.1 Chapter Overview

1.1.1 Contents

Topics Covered

| Section | See |
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| Symbols Used in This Guide | Page 10 |
| Intended Use | Page 11 |
| Training & Documentation | Page 13 |

1.2 Contact Data & Legal Information

1.2.1 Contact Data

Support

If you cannot find information you need in this guide, or if you have questions or problems, contact Brainlab support:

| Region | Telephone | Email |
|------------------------------------|--|-------------------------|
| United States and Canada | Tel: (800) 597-5911 Fax: (708) 409-1619 | us.support@brainlab.com |
| Africa, Asia, Australia, Europe | Tel: +49 89 991568-44 Fax: +49 89 991568 5811 | support@brainlab.com |
| Latin America | Tel: +55 11 33 55 33 70 Fax: +55 11 33 55 33 79 | |
| Japan | Tel: +81-3-3769-6900 Fax: +81-3-3769-6901 | |
| France and French-speaking regions | Tel: +33-800-67-60-30 | support_fr@brainlab.com |

Feedback

Despite careful review, this manual may contain errors.

Please contact us at igs.manuals@brainlab.com if you have suggestions as to how we can improve this manual.

Manufacturer

All workstations described in this user guide have been manufactured by Hewlett-Packard for:

Brainlab AG
 Olof-Palme-Str. 9
 81829 Munich
 Germany

1.2.2 Legal Information

| | |
|--------------------------------|---|
| Copyright | This guide contains proprietary information protected by copyright. No part of this guide may be reproduced or translated without the express written permission of Brainlab. |
| Brainlab Trademarks | iPlan® is a registered trademark of Brainlab AG in Germany and/or the US. |
| Non-Brainlab Trademarks | <ul style="list-style-type: none">• Intel®, Pentium® and XEON® are registered trademarks of Intel Corporation.• Microsoft® and Windows® are registered trademarks of Microsoft Corporation.• HP is a registered trademark of the Hewlett-Packard Company. |
| Disposal Instructions | Electrical and electronic equipment should only be disposed of in accordance with statutory regulations. For information regarding the WEEE (Waste Electrical and Electronic Equipment) directive, visit: www.brainlab.com/weee |
| Sales in US | U.S. federal law restricts this device to sale by or on the order of a physician. |

1.3 Symbols

1.3.1 Symbols Used in This Guide

Warnings



Warnings are indicated by triangular warning symbols. They contain safety-critical information regarding possible injury, death or other serious consequences associated with equipment misuse.

Cautions



Cautions are indicated by circular caution symbols. They contain safety-critical information regarding possible problems with the device. Such problems include device malfunctions, device failure, damage to device or damage to property.

Notes

NOTE: Notes are formatted in italic type and indicate additional useful hints.

1.4 Intended Use

1.4.1 Using the System

Careful Hardware Handling



System components comprise precise mechanical parts. Handle them carefully.



Only trained medical personnel may operate the system.

Symbols on Hardware Components

| Symbol | Explanation |
|--------|--|
| | Attention! Consult accompanying documents |
| | MR Unsafe |
| | MR Conditional: The number shown on each label specifies the MR environment in which the device can be used with caution |

Plausibility Review



Before patient treatment, review the plausibility of all information input to and output from the system.

1.4.2 Laser Safety

DVD/CD Drive/Writer

The optical drive is a Class 1 laser according to IEC 60825-1. It contains a light emitting diode (LED) which may produce a stronger laser beam than a Class 1 laser.



It is dangerous to look directly at this laser beam. Do not remove any drive covers.

Mouse

The system is equipped with a laser mouse.



Do not look directly at the mouse laser.

1.5 Training & Documentation

1.5.1 Training

Brainlab Training To ensure safe and appropriate use, before using the system all users should participate in a training program held by a Brainlab representative.

Responsibility



This system solely provides assistance to the surgeon and does not substitute or replace the surgeon's experience and/or responsibility during its use.

1.5.2 Documentation

Reading User Guides

The user guides describe complex medical devices and surgical navigation software that must be used with care.

It is important that all users of system, instruments and software:

- Read the user guides carefully before handling the equipment
- Have access to the user guides at all times

NOTE: Technical specifications of hardware components are subject to change due to technical developments.

Available User Guides

| User Guide | Contents |
|--|--|
| Software User Guides | <ul style="list-style-type: none"> • Overview of treatment planning and image-guided navigation • Description of OR system setup • Detailed software instructions |
| Instrument User Guides | Detailed instructions on instrument handling |
| Cleaning, Disinfection & Sterilization Guide | Details on cleaning, disinfecting and sterilizing instruments |
| System User Guides | Comprehensive information on system setup |
| Technical User Guide | Detailed technical information on the system, including specifications and compliances |

Quick Reference Guides

Quick Reference Guides are available for most software applications and for some complex instruments. They provide condensed information on using the software or hardware, and are intended as a supplement to the User Guides.

NOTE: Quick Reference Guides do not replace the User Guides.

Hewlett-Packard Multilingual Safety Manual

Please refer to the *Safety Warnings Multilingual* manual (for DL360G6), an original document produced by the Hewlett-Packard Company. Brainlab AG has been officially authorised by the Hewlett-Packard Company to distribute this manual for OEM purposes.



The Safety Warnings Multilingual manual (for DL360G6) contains important safety information.

2 BEFORE YOU BEGIN

2.1 Chapter Overview

2.1.1 Contents

Topics Covered

| Section | See |
|------------------------------------|------------|
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| Servicing, Installation and Access | Page 18 |
| Handling Malfunctions | Page 19 |

2.2 Correct Handling

2.2.1 Handling the System Correctly

Liquids & Condensation



Ensure that liquid does not enter the system, as it is not IP protected (IPX0).



Avoid condensation during operation.



To prevent electric shock or permanent damage to the system, do not expose system components to excessive moisture.

Shocks



Do not drop the system.



Protect the system from severe shocks.



Make sure that no objects (for example, jewelry chains, paper clips) get inside the system. Danger of electrical shock.

MR Safety According to ASTM



The system is MR unsafe.



Computer accessories, such as USB flash drives, Zip disks, floppy disks, are MR unsafe. Loss of data may occur if these devices are brought beyond the 5 Gauss field line.

Restrictions to Environment



Do not use the system in the operating room. Always use it in accordance with all local and regional regulations.



Do not use the system in explosive environments.



The system is not suitable for use in the presence of flammable anesthetic mixtures containing air, oxygen or nitrous oxide.



Use the system in a hospital IT environment.

Restrictions to Monitor



The monitor is not intended for diagnostic use.



If the LCD panel is damaged (glass broken, for example), ensure that no escaping liquid comes into contact with skin, mucous membranes or foodstuffs. Do not inhale vapors. If parts of body and/or clothing have come into contact with such liquid, clean them with plenty of soap and water.

Network Environment



Only operate the system in secured networking environments. Do not connect the system to a network that is not secure, as this may cause infections from malicious software.

2.2.2 Servicing, Installation and Access

Startup Only operate the system if the rated voltage for the system is set to the local mains voltage.
Only run the system with accessories shipped/explicitly authorized by Brainlab.

Servicing



Risk of electrical shock: There are no user serviceable parts. All servicing to be carried out by trained technicians or referred to Brainlab.



Unauthorized opening and improper repairs can result in considerable danger to the user (danger of electrical shock, high-voltage danger, fire danger).



Repairs should only be performed by Brainlab or its authorized partners.

Installation

This system contains medical software.

Its installation properties or configuration settings may not be altered by personnel not trained/authorized by Brainlab (excluding local account settings regarding system security).

No software, other than that provided, may be installed on this embedded system.



During installation and before operating the system, observe the environmental requirements.

Prevent Unauthorized Access



Implement appropriate measures to prevent unauthorized access to the system.

2.2.3 Handling Malfunctions

System Damage or Failure

Do not continue to use the system if:

- The power cable or plug is damaged or frayed
- Liquid has been spilled into computer
- An object has fallen into computer
- The system does not operate normally when operating instructions are followed
- The computer has been dropped or the cover has been damaged
- System components exhibit a distinct decrease in performance, indicating need for servicing
- Liquids leak from the system
- Smoke is emitted by the system



Using the system when one of the above listed conditions exists may result in personal injury or damage to the system.

How to Respond to Damage or Failure

| Steps |
|------------------------------------|
| 1. Turn off system. |
| 2. Unplug system from wall outlet. |
| 3. Contact Brainlab support. |

3 IPLAN WORKSTATION PERFORMANCE AND IPLAN WORKSTATION PREMIUM

3.1 Chapter Overview

3.1.1 Contents

Topics Covered

| Section | See |
|---|------------|
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| Connections, Cabling, Indicators and Drives | Page 31 |
| Turning System On/Off | Page 35 |
| Troubleshooting | Page 38 |

3.2 System Components

3.2.1 Component Overview

Monitor



Figure 1

Workstation, Keyboard & Mouse



Figure 2

3.3 Safety Instructions

3.3.1 Laser Safety

**DVD/CD
Drive/Writer**

The optical drive is a Class 1 laser according to IEC 60825-1. It contains a light emitting diode (LED) which may produce a stronger laser beam than a Class 1 laser.



It is dangerous to look directly at this laser beam. Do not remove any drive covers.



Do not open the optical drives. There are no user-serviceable components inside.

Mouse

The system is equipped with a laser mouse.



Do not look directly at the mouse laser.

3.3.2 Confidentiality

Password Requirements Password protect your Windows user account to ensure confidentiality of stored data. The password should:

- Be difficult to detect by both humans and computer programs
- Consist of at least six characters (the more characters, the stronger the password)
- Contain a combination of letters, numbers and symbols (such as @, #, %), if allowed
- Be case-sensitive (use uppercase and lowercase letters)
- Avoid parts of the user name

Storing Patient Data If you are not working with the system, remove all removable data media (such as USB flash drive, CD/DVD) that contain confidential patient data and store them in a secure place.

When using internal drives (such as the DVD writer) for local backups, store the data media containing the backup data in a secure place.

BIOS The BIOS is password protected. Contact Brainlab support if it is necessary to enter it.

3.4 System Set Up

3.4.1 Pre-Installation & Environmental Sustainability

| | |
|-------------------------------------|--|
| Pre-Installation | The system is delivered pre-installed and can be used immediately. |
| Environmental Sustainability | The production and the selection material used within the system is optimized to be environmentally sustainable. |

3.4.2 Ventilation & Clearances

Ventilation



Do not block or cover ventilation slots on system cover or housing or other delivered equipment like the monitor. Air must be allowed to circulate through these slots to ensure that the system operates properly and does not overheat.



Do not place system near or over a radiator or heat register or in direct sunlight. Place system in a small enclosure only if proper ventilation is provided.

Clearances



To ensure adequate ventilation, a minimum clearance of 200 mm from left/right/above/front/rear is required.

3.4.3 System Batteries

Purpose The system contains an internal lithium battery for storing the setup data.
Depending on your system configuration, a battery is used for the internal BBWC (Battery Backed Write Cache) functionality of the RAID controller.

Authorization Only Brainlab support is authorized to replace system internal batteries.

Risk of Fire and Burns



There is risk of fire and burns if the battery pack is not handled properly. To reduce risk of personal injury, follow the precautions below.

- Precautions**
- Do not attempt to recharge the lithium battery (BBWC battery is recharged internally)
 - Do not expose battery to temperatures higher than 60°C
 - Do not disassemble, crush, puncture, short external contacts or dispose of battery in fire or water
 - Remove all watches, rings, or loose jewelry when working in hotplug areas of an energized server and storage products
-

3.4.4 Ergonomics

Introduction

For ease-of-operation, the monitor, keyboard and mouse are ergonomically designed.

Unfavorable arrangement of these devices, incorrect arm positioning or posture or uninterrupted input via the keyboard or mouse can lead to:

- Tenseness
- Signs of fatigue and injury to eyes, nerves, muscles, tendons, joints

To reduce the risk of this happening, follow the advice given below.

Workplace

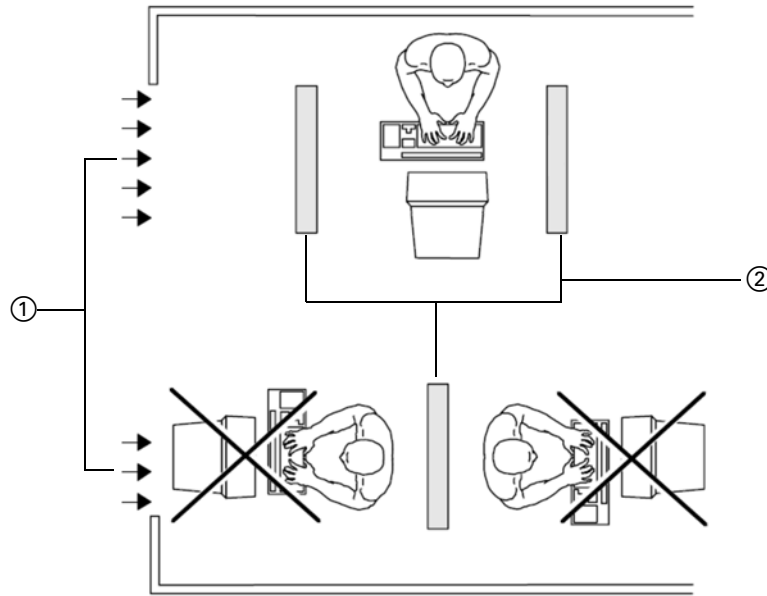


Figure 3

| No. | Component |
|-----|-----------|
| ① | Window |
| ② | Lighting |

How to Position the Monitor

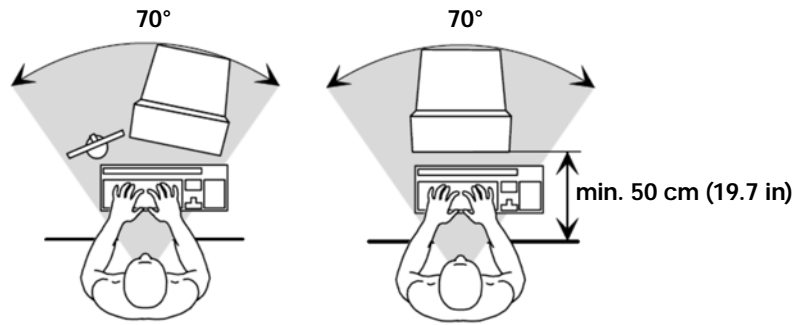


Figure 4

| Steps | |
|-------|--|
| 1. | Arrange monitor so that it is illuminated by a light source that is above it and to one side: <ul style="list-style-type: none"> • Place monitor perpendicular to window (neither behind nor facing the user) • Position work area between electric lights |
| 2. | Avoid direct glare (dazzling light sources in field of vision) and reflected glare (reflections on screen). |
| 3. | Adjust lighting, monitor brightness and contrast to general light conditions. |
| 4. | Position monitor so that you can see the display area without turning your head or the upper part of your body. This viewing sector is approximately 70°. Distance from user to monitor should be approximately 50 cm. |

How to Position Keyboard & Mouse

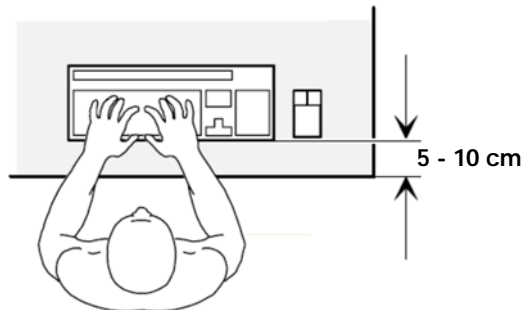


Figure 5

| Steps | |
|-------|---|
| 1. | Position keyboard and mouse so that you can operate them without any noticeable strain. |
| 2. | <ul style="list-style-type: none"> • Place keyboard parallel to upper part of body. • Place mouse and keyboard on same level. • Distance between keyboard and edge of desk should be 5 to 10 cm. |

**How to Adjust
Chair/Desk**

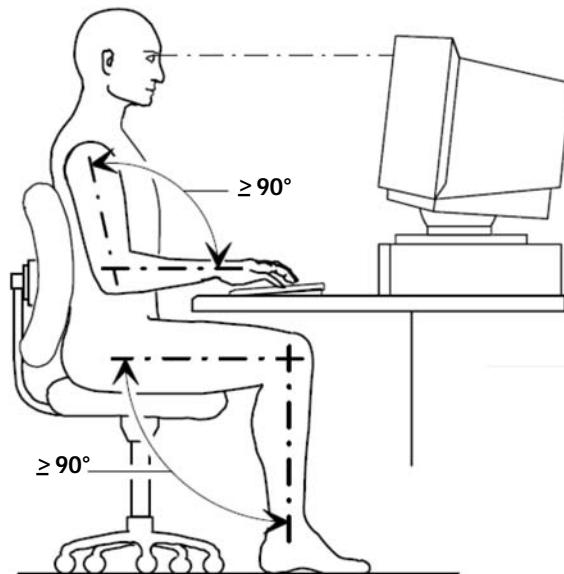


Figure 6

Step

Adjust chair and/or desk so that:













- Your feet rest flat on floor with your knees at an angle of at least 90°
- Your calves are relaxed, without any pressure on your joints
- Your forearms are parallel to floor and your shoulder and upper arms relaxed while inputting data
- Upper edge of monitor viewing area is in line with your eyes
- You can sit up straight and lower part of your back is supported

3.5 Connections, Cabling, Indicators and Drives

3.5.1 Connections

| | |
|---------------------|--|
| Location | Connection ports for external devices are at the back and the front of the system. |
| Availability | The connections available on your system depend on your configuration level. |
| Circuit | Connect the system and all attached peripherals to same circuit. |

Connection Ports The standard connection ports are marked with following (or similar) symbols:

| Symbol | Description | Color |
|---|-------------------------|-----------------------|
|  | PS/2 keyboard connector | purple |
|  | Parallel port/ Printer | burgundy |
|  | Serial ports 1 and 2 | teal or turquoise |
|  | Monitor port | blue |
|  | Microphone jack (mono) | pink |
|  | Headphones port | orange or light green |
|  | Audio input (Line in) | light blue |
|  | Audio output (Line out) | light green |
|  | USB 2.0 | black |
|  | LAN port | |
|  | PS/2 Mouse port | green |
|  | IEEE1394 | gray |

3.5.2 Cabling

**Connecting/
Disconnecting
Cables**

Brainlab support connects the system. If a cable is inadvertently unplugged, plug it into the corresponding port.

Do not pull cables.

When using cable management arm components in the rack, ensure that cables are slack enough. Otherwise they could be damaged when extending system from rack.



Danger of electrical shock or fire: Do not use damaged cables (damaged insulation, bare wires).



Arrange all cables so that nobody can stand on or trip over them.

**During a
Thunderstorm**

During a thunderstorm, remove all data transfer cables (LAN) and power cables from the LAN socket on the wall.



Do not connect or disconnect data transfer cables or power cables during a thunderstorm.

**Extension Cable/
Multiple Socket**

When using an extension cable or a multiple socket outlet, ensure that they are suitable for the system.



Amperage of all connected products may not exceed 80% of upper amperage limit of extension cable or multiple socket outlet.

LAN Wiring

Requirements according to EN 50173 and EN 50174-1/2 apply to locally used LAN wiring.

Use of a Category 5 for 10/100 Ethernet shielded cable or Category 5e for Gigabit Ethernet shielded cable applies as minimum requirement.

Take requirements of ISO&IEC 11801 specification into account.

System is designed only for indoor LANs. In case of external LAN feed, use a LAN switch to connect the LAN to the system.

3.5.3 Indicators

Location The indicators are on the system front.

Availability The indicators available on your system depend on your configuration level.

Illustration

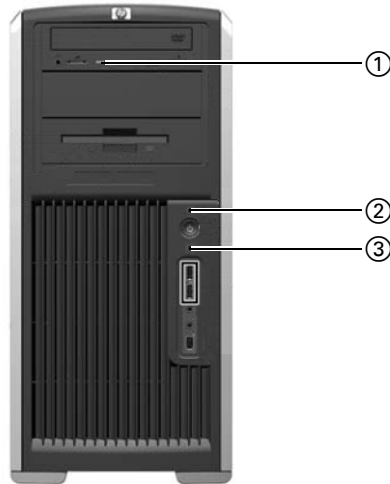


Figure 7

| No. | Component | Meaning |
|-----|--|---|
| ① | Optical drive activity light, e.g. DVD | Lights up when CD-ROM or DVD drive is accessed <i>NOTE: Only remove the CD/DVD when indicator is unlit.</i> |
| ② | Power-on light | <ul style="list-style-type: none"> Lights up green when system is switched on or has been switched off by pressing power button Flashing green when system is in standby/energy-saving mode Does not light up when system is shutting down <i>NOTE: After being switched on with the power button, system switches on or returns to state it was in before energy-saving mode.</i> |
| ③ | Hard drive activity light | Lights when hard disk drive is accessed |

3.5.4 Drives & Data Media

Available Disk Drives

| Drive | Comment |
|-----------------|---|
| External USB | For data exchange |
| Network | To connect the system to the computer network |
| USB | Optional |
| DVD/CD (writer) | |

Safe Handling of DVD/CD Writer



Do not use the internal DVD/CD writer to backup important patient data. The durable data integrity of DVDs can not be guaranteed due to limitations of technology. If you use the DVD writer for any backup purposes, use only DVDs with highest data integrity.

Scan Images

You can copy scan images from the USB drive to the system hard drive, or transfer them to the system via network.
 When you import scan images, you must process them using an **iPlan** software (see **Software User Guide**)

Saving Treatment Plans

You can save treatment plans to a data media for intra-operative use on the navigation station.

Safe Handling of Data Media



Ensure that data medium is not visibly damaged or defective.



Only use data media authorized by Brainlab.



Keep the data medium inserted until the active Brainlab application has been closed. Do not remove the data medium while it is being used by an active application (e.g. when exiting the application, copying data or saving screenshots). This can damage data on the data medium or lead to a software crash.

3.6 Turning System On/Off

3.6.1 Power Button

Illustration

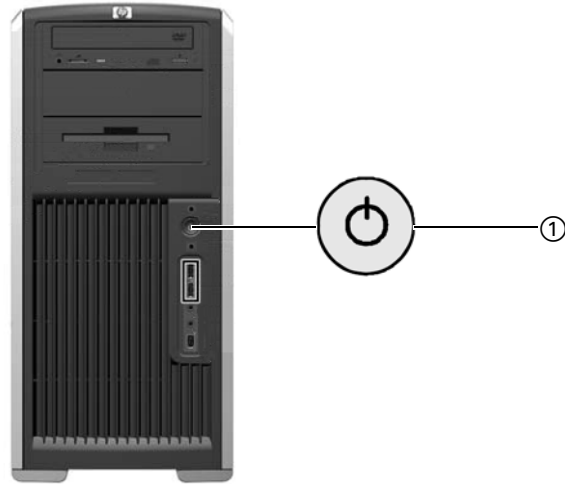


Figure 8

| No. | Component |
|-----|--------------|
| ① | Power button |

3.6.2 Turning On System

How to Turn On

| Steps | |
|-------|--|
| 1. | If necessary, switch monitor on. |
| 2. | Press power button. Power-on light lights green and workstation is started. |
| 3. | Wait for system to boot and follow instructions given in your Software User Guide . |

Raid5 Hard Disk System (Optional)

As a redundant storage system, the system uses a Raid5 hard disk system to increase data availability. High quality hard disks are used in the system to reduce the failure rate.

The status of the Raid5 hard disk system is reported during system boot up (before “Brainlab booting up” logo appears):

| Report Message | Meaning |
|--------------------------|---|
| Virtual Drive(s) online | All hard disks are working properly |
| Virtual Drive(s) offline | A hard disk is defective Call Brainlab support to replace it |

Waiting Period



If system has been turned off, wait at least 60 seconds before turning it on again. Otherwise, high input current may trip the circuit breaker.



If system is brought from cold environment into warm environment, condensation may appear. Before turning on, wait until it is absolutely dry and has reached approximately same temperature as in operating environment.

Power Supply



Operate system using the power source indicated on type plate. If you are unsure of the type of power available, consult Brainlab support or your local power company.

3.6.3 Turning Off System

Before You Begin



Close all applications before shutting down the system. Never use the power button to exit the software as data may be lost.

How to Turn Off

| Steps | |
|-------|--|
| 1. | Ensure that all software applications have been closed. |
| 2. | Shut down Windows XP via Start > Shut Down . |
| 3. | If operating system does not automatically switch off, press power button or switch system into energy-saving mode. <i>NOTE: The system now consumes a minimum amount of power.</i> |
| 4. | If necessary, switch off monitor and/or other peripherals. |
| 5. | The power button does not disconnect the system from mains voltage. To completely disconnect mains voltage, remove power plug from socket. |

Emergencies



In emergencies (such as damaged casing or cables, penetration of liquids or foreign matter), switch off system immediately, remove power connector and contact Brainlab support.



Ensure that the mains outlet which is used for the system is freely accessible.

Waiting Period



Do not turn off the system during boot up. Otherwise, configuration files and other data on hard disk may be damaged.

3.7 Troubleshooting

3.7.1 Screen, Mouse Pointer, Date & Time

Screen Stays Blank

| Reason | Solution |
|-----------------------------------|---|
| Monitor is switched off | Switch monitor on |
| Power saving is activated | Press any key on keyboard, or deactivate screen saver and enter appropriate password, if needed |
| Brightness control is set to dark | Adjust brightness control on monitor |
| Power cable is not connected | <ul style="list-style-type: none"> • Check that monitor power cable is properly connected to monitor and to a grounded mains outlet or to monitor socket of system • Check that system power cable is plugged properly into system and a grounded mains outlet • Switch on monitor and the workstation |
| Monitor cable is not connected | <ul style="list-style-type: none"> • Check that monitor cable is properly connected to system and monitor • Switch on monitor and workstation |

No Mouse Pointer Displayed on Screen

| Steps |
|---|
| 1. Shut down operating system. |
| 2. Switch off system. |
| 3. Ensure that mouse cable is properly connected to system. If you use an adapter or extension lead with the mouse cable, check connections. |
| 4. Ensure that only one mouse is connected. |
| 5. Switch on system. |

Time & Date Are Incorrect

| Reason | Solution |
|--------------------------------------|---|
| Time and/or date are incorrectly set | Set correct time and/or date within the operating system |
| On-board backup battery is flat | <ul style="list-style-type: none"> • If time and/or date are repeatedly wrong when switching on the system, the battery needs to be replaced • Contact Brainlab support |

4 IPLAN NET SERVER

4.1 Chapter Overview

4.1.1 Contents

Topics Covered

| Section | See |
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| Panels, LED Indicators & Drives | Page 54 |
| Turning System On/Off | Page 65 |

4.2 System Components

4.2.1 Component Overview

iPlan Net Server, Rack Model



Figure 9

Monitor/Keyboard/ Mouse Drawer Console



Figure 10

4.3 Safety Instructions

4.3.1 Safe Use

Observing the Documentation

To ensure safe use, observe the user guides:

- Retain and follow all product safety and operating instructions
 - Observe all warnings on system and in user guide
 - Always refer to the user guide and product documentation supplied with your system
 - If information between user guide and the product documentation is conflicting, the product documentation takes precedence
-

Openings on the System



Do not insert foreign objects through the openings.

Exchanging Parts

Unless authorized by Brainlab, do not open the server or exchange any parts including hot plug spare parts like redundant power supplies, hard disks and fans.

If not allowed by Brainlab, third-party accessories are not allowed for use with the server.

Power Cord



Plug power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.

Extension Cable/ Multiple Socket

When using an extension cable or a multiple socket outlet, ensure that they are suitable for the system.



Amperage of all connected products may not exceed 80% of the upper amperage limit of extension cable or multiple socket outlet.

4.3.2 Laser Safety

DVD/CD Drive/Writer

The optical drive is a Class 1 laser according to IEC 60825-1. It contains a light emitting diode (LED) which may produce a stronger laser beam than a Class 1 laser.



It is dangerous to look directly at this laser beam. Do not remove any drive covers.



Do not open the optical drives. There are no user-serviceable components inside.

Mouse

The system is equipped with a laser mouse.




Do not look directly at the mouse laser.

4.3.3 Symbols on the System Components

General Information Various symbols may be placed on the system to indicate the presence of potentially hazardous conditions.


Hazardous Energy Circuits

| Symbol | Meaning |
|---|---|
|  | Indicates presence of hazardous energy circuits or electric shock hazards. Refer all servicing to qualified personnel. |



To reduce risk of injury from electric shock hazards, do not open this enclosure. Refer all maintenance, upgrades, and servicing to qualified personnel.


Electric Shock Hazards

| Symbol | Meaning |
|--|---|
|  | Indicates presence of electric shock hazards when disassembling the system. Area contains no user or field serviceable parts. Do not open for any reason. |



To reduce risk of injury from electric shock hazards, do not open this enclosure.


Network Interface Connection

| Symbol | Meaning |
|---|---|
|  | Indicates a network interface connection. |



To reduce risk of electric shock, fire, or damage to equipment, do not plug telephone or telecommunications connectors into this receptacle.

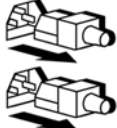
Hot Surface

| Symbol | Meaning |
|---|--|
|  | Indicates presence of hot surface or hot component. If surface is contacted, potential for injury exists. |



To reduce risk of injury from a hot component, allow surface to cool before touching.


Power Supply

| Symbol | Meaning |
|---|--|
|  | <p>Indicate that equipment is supplied by multiple sources of power.</p> |



To reduce risk of injury from electric shock, remove all power cords to completely disconnect power from system.

Weight

| Symbol | Meaning |
|--|---|
|  <p>Weight in kg Weight in lb</p> | <p>Indicates that component exceeds recommended weight for one individual to handle safely.</p> |



To reduce risk of personal injury or damage to equipment, observe local occupational health and safety requirements and guidelines for manual material handling.

4.3.4 Confidentiality

| | |
|------------------------------|---|
| Password Requirements | <p>Password protect your Windows user account to ensure confidentiality of stored data. The password should:</p> <ul style="list-style-type: none">• Be difficult to detect by both humans and computer programs• Consist of at least six characters (the more characters, the stronger the password)• Contain a combination of letters, numbers and symbols (such as @, #, %), if allowed• Be case-sensitive (use uppercase and lowercase letters)• Avoid parts of the user name |
| Automatic Logout | <p>The system automatically logs out the user after a certain period of time of inactivity to minimize the risk of unauthorized system access.</p> |
| Storing Patient Data | <p>If you are not working with the system, remove all removable data media (such as USB flash drive, CD/DVD) that contain confidential patient data and store them in a secure place.</p> <p>If you are using internal drives (such as the DVD writer) to make local backups, store the data media containing the backup data in a secure place.</p> |
| iLO 2 Password | <p>If you are using the integrated management controller (iLO 2), assign a cryptographic strong password for the management user account.</p> <p>To assign the password, press F8 during system POST.</p> |

4.4 System Set Up

4.4.1 Ventilation & Clearances

| | |
|-----------------------------|---|
| General Requirements | <p>For continued safe and reliable equipment operation, install or position system in a well-ventilated, climate-controlled environment.</p> <p>Fix the server at the lowest possible position in the server rack.</p> <p>Do not operate the system when a cover is open.</p> |
|-----------------------------|---|

Clearances To ensure adequate ventilation, specific clearances are required:

| | |
|---|---------|
| In front of rack | 63.5 cm |
| Behind rack | 76.2 cm |
| From back of rack to back or row of other racks | 122 cm |
| Between installed rack component and side panels of rack | 7 cm |
| In front of system | 7.6 cm |
| At back of system | |

Airflow The system draws in cool air through the front and expels warm air through the rear.

To allow ambient room air to enter and warm air to escape from the cabinet, front and rear rack doors must be adequately ventilated.

Ensure adequate airflow to prevent damage to the equipment:

- For front and rear doors of the rack (if the most commonly used 42U rack includes closing front and rear doors), you must allow 5.350 cm² of holes evenly distributed from top to bottom to permit adequate airflow (equivalent to a required 64% open area for ventilation).
- When vertical space in the rack is not filled by a component, gaps between components cause changes in airflow through the rack and across the system. Cover all gaps with blanking panels to maintain proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.



Do not block or cover ventilation slots of the system or rack (for example, by cables). Air must be allowed to circulate through these slots to ensure that the system operates properly and does not overheat.

Fans

The system supports variable fan speeds. Fans operate at minimum speed until a temperature change requires a fan speed increase to cool the server.

System shuts down in following scenarios:

At POST

- BIOS suspends the system for 5 minutes if it detects a cautionary temperature level. If cautionary temperature level is still detected after 5 minutes, BIOS performs an orderly shutdown and enters Standby mode.
- BIOS performs an orderly shutdown if two or more fans have failed.
- System performs an immediate shutdown if it detects a critical temperature level.

In the operating system

- Health Driver performs an orderly shutdown if it detects a cautionary temperature level. If the system detects a critical temperature level before orderly shutdown occurs, the system performs an immediate shutdown. Additionally, the Health Driver performs an orderly shutdown if more than one fan fails or is removed.
- When Thermal Shutdown is disabled in RBSU, the system performs an immediate shutdown if it detects a critical temperature level.

NOTE: Immediate shutdown is a hardware-controlled function which overrides any firmware or software actions.

Circuits

Verify that the AC power supply branch circuit which provides power to the system is not overloaded. This will reduce the risk of personal injury, fire, or damage to the equipment.

Total rack load should not exceed 80% of the branch circuit rating. Consult electrical authority which has jurisdiction over your facility wiring and installation requirements.

If possible, provide a separate electrical circuit for the system.

4.4.2 Handling Equipment Racks

Rack Safety



To reduce risk of personal injury or damage to equipment, take instructions below into account.

Loading Equipment Load the equipment rack from the bottom up.
Load the heaviest item into the rack first.

Moving Racks Only move equipment racks:

- With adequate assistance (due to their height and weight)
- On inclines smaller than 10°
- After equipment has been removed from rack

Lifting System When installing the system in or removing it from the rack:

- Use caution as the system could become unstable when not fastened to the rails
- Remove all pluggable power supplies and any other removable modules to reduce the overall weight
- At least two people must lift the system
- If system is loaded into rack above chest level, a third person must assist in aligning the rails while the other two support the system



The system exceeds the recommended weight for one individual to handle safely. Observe local occupational health and safety requirements and guidelines for manual material handling.

Stabilizing Ensure that:

- System is properly joined with rails. Improper joining may lead to instability
- Rack is adequately stabilized before extending a component from it
- Leveling jacks are extended to the floor, as full the weight of the rack rests on them
- Stabilizing feet are attached to the rack if it is a single-rack installation.
- Racks are coupled together in multiple-rack installations.

How to Extend System from Rack



Figure 11

| Steps | |
|-------|---|
| 1. | Power down the server. |
| 2. | Disconnect all peripheral cables and power cords. |
| 3. | Loosen the front panel thumbscrews. ①. |
| 4. | Extend server until server rail-release latches engage. |
| 5. | Perform installation or maintenance procedure. |
| 6. | Slide the server fully into the rack. |
| 7. | Secure the server by tightening the thumbscrews. |
| 8. | Connect the peripheral cables and power cords. |



When pressing the server rail-release latches and sliding the component into the rack, be careful that the sliding rails do not pinch your fingertips.



To reduce the risk of personal injury or equipment damage, be sure that the rack is adequately stabilized before extending a component from the rack.

Using Monitor/Keyboard/Mouse Drawer Console

The optional monitor/keyboard/mouse drawer console (19" rack) is intended for local maintenance and installation procedures.

Do not use the console for the normal workflow together with planning or transfer software. The environmental conditions in a server room cannot guarantee a suitable working environment for mentally demanding work.

4.4.3 Installing/Removing Hot-Plug SAS Hard Drive Options

General Guidelines When adding hard drives to the server, observe the following:

- The system automatically sets all device numbers
- If only one hard drive is used, install it in the bay with the lowest device number
- Hard drives must be supplied by Brainlab
- Drives should be the same capacity to provide the greatest storage space efficiency when drives are grouped together into the same drive array

Illustration

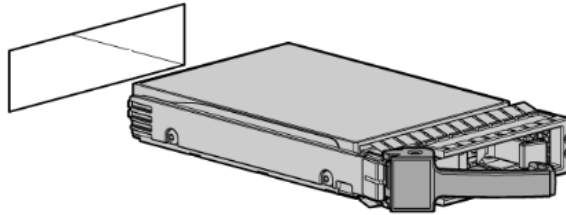


Figure 12

How to Install

| Steps | |
|-------|--|
| 1. | Remove SAS hard drive blank. |
| 2. | Install hard drive. |
| 3. | Determine hard drive status from hot-plug SAS hard drive LED combinations. |

How to Remove

| Steps | |
|-------|--|
| 1. | Determine hard drive status from hot-plug SAS hard drive LED combinations. |
| 2. | Back up all server data on hard drive. |
| 3. | Remove hard drive. |

4.4.4 Connecting Redundant Hot-Plug AC Power Supply

Precautions



To reduce risk of personal injury from hot surfaces, allow the power supply or power supply blank to cool before touching it.



To prevent improper cooling and thermal damage, do not operate system unless all bays are populated with either a component or a blank.

How to Connect

| Steps |
|--|
| 1. Access rear panel. |
| 2. Remove power supply blank. |
| 3. Slide power supply into power supply bay. |
| 4. Connect power cord to power supply. |
| 5. Route power cord through power cord anchor or cable management arm. |
| 6. Reposition cable management arm into operating position. |
| 7. Connect power cord to power source. |
| 8. Ensure that power supply LED is green. |
| 9. Ensure that front panel external health LED is green. |

4.4.5 Exchanging Hotplug Components

Authorization Only Brainlab support is authorized to exchange hotplug components. In certain cases trained service technicians could be authorized by Brainlab to open the system to exchange hotplug components.



If you have been authorized by Brainlab to open the system to exchange hotplug components, precisely follow the precautions below.

- Precautions**
- Properly ground the system to prevent damage to electrical components
 - Ensure proper grounding before beginning any installation procedure. Improper grounding can cause electrostatic discharge
 - Ensure that you do not use conductive tools that could bridge live parts
 - Remove all watches, rings, or loose jewelry when working in hotplug areas of an energized server and storage products
 - Hotplug power supplies are not designed to be removed or installed with AC power connected to the power supply. To reduce risk of electric shock or damage to equipment when handling hotplug power supplies:
 - Install power supply before connecting power cord to power supply
 - Unplug power cord before removing power supply from system
 - If system has multiple power sources, unplug all AC power cords from power supplies to completely disconnect power from system
 - Verify that the external power source connected to your system matches the type of power source indicated on type plate
-

4.4.6 System Batteries

Purpose The system contains an internal lithium battery for storing the setup data.
A battery is used for the internal BBWC (Battery Backed Write Cache) functionality of the RAID controller.

Authorization Only Brainlab support is authorized to replace system internal batteries.

Risk of Fire and Burns



There is risk of fire and burns if the battery pack is not handled properly. To reduce risk of personal injury, follow the precautions below.

- Precautions**
- Do not attempt to recharge the lithium battery (BBWC battery is recharged internally)
 - Do not expose battery to temperatures higher than 60°C
 - Do not disassemble, crush, puncture, short external contacts or dispose of battery in fire or water
 - Remove all watches, rings, or loose jewelry when working in hotplug areas of an energized server and storage products
-

4.5 Panels, LED Indicators & Drives

4.5.1 Front Panel Components

Illustration

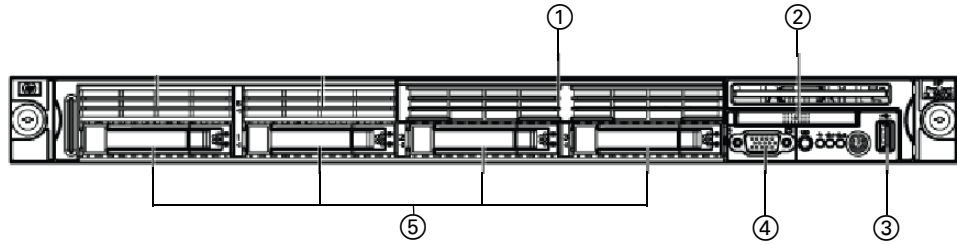


Figure 13

| No. | Component |
|-----|----------------------------|
| ① | DVD tray |
| ② | HP Systems Insight Display |
| ③ | Front USB connector |
| ④ | Video connector |
| ⑤ | Hard drive bays |

4.5.2 Front Panel LEDs & Buttons

Illustration

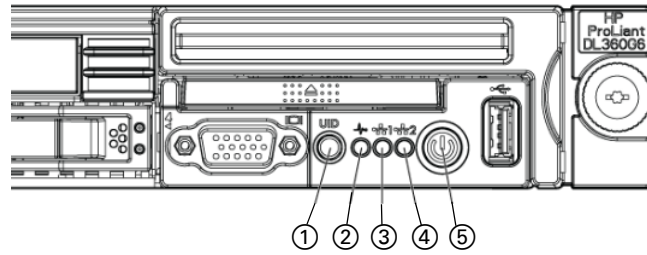


Figure 14

Status & Meaning

| No. | LED/Button | Status | Meaning |
|-----|--|----------|---|
| ① | UID LED button | Blue | Activated |
| | | Flashing | System being remotely managed |
| | | Off | Deactivated |
| ② | Health LED | Off | Normal (system off) |
| | | Green | Normal (system on) |
| | | Amber | Degraded ¹ |
| | | Red | Critical ¹ |
| ③ | NIC 1 link/activity LED | Green | Network link |
| ④ | NIC 2 link/activity LED | Flashing | Network link and activity |
| | | Off | Not connected to the network |
| ⑤ | Power On/Standby button/system power LED | Green | System on |
| | | Amber | System shut down, but power still applied |
| | | Off | Power cord not attached or power supply failure |

¹ Contact Brainlab support.

4.5.3 System Insight Display LEDs

Illustration

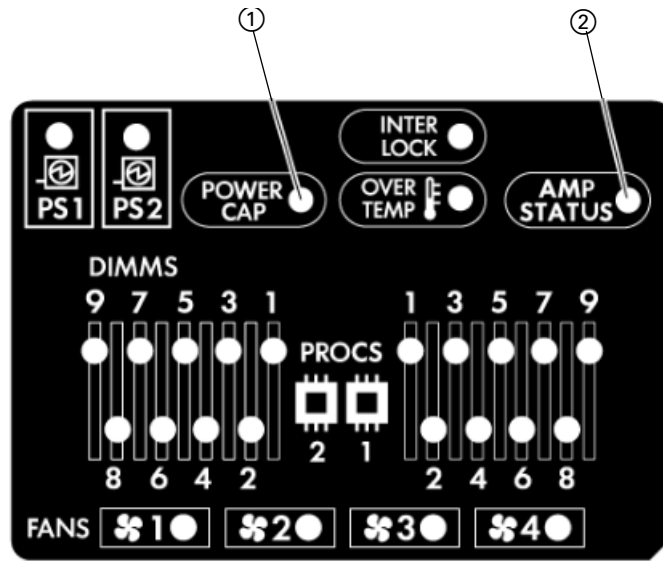


Figure 15

| No. | LED | Status | Meaning |
|-----|----------------|----------------|---|
| ① | Power cap LED | off | (system power LED amber) standby |
| | | green | (system power LED flashing green) waiting for power |
| | | flashing amber | (system power LED amber) power is available (system power LED green) power cap has been exceeded |
| ② | AMP status | green | AMP mode enabled |
| | | amber | failover |
| | | flashing amber | invalid configuration |
| | | off | AMP mode disabled |
| | All other LEDs | off | normal |
| | | amber | failure |

NOTE: The system's insight display LEDs represent the system board layout.

Troubleshooting

If more than one DIMM slot LED is illuminated, contact Brainlab support.

4.5.4 Rear Panel Components

Illustration

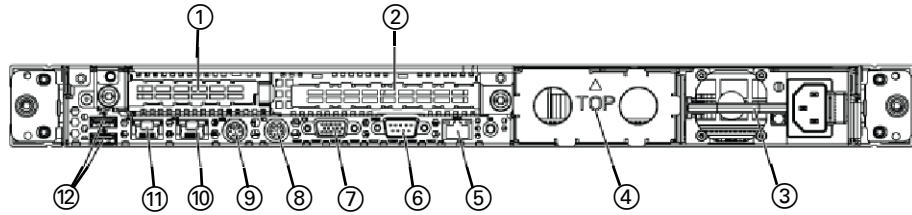


Figure 16

| No. | Component |
|-----|--------------------------------|
| ① | Fiber optic NIC |
| s | FX1800 graphics card |
| d | Power supply bay 1 (populated) |
| f | Power supply bay 2 |
| g | iLO 2/NIC connector |
| ⑥ | Serial connector |
| ⑦ | Video connector |
| ⑧ | Mouse connector |
| ⑨ | Keyboard connector |
| ⑩ | NIC 2 connector |
| ⑪ | NIC 1 connector |
| ⑫ | USB connectors (2) |

4.5.5 Rear Panel LEDs and Buttons

Illustration

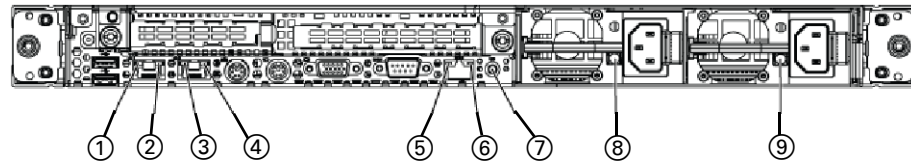


Figure 17

| No. | LED/Button | Status | Meaning |
|-----|-----------------------------------|--------------------------|--|
| ① | 10/100/1000 NIC 1 activity LED | Green Flashing Off | Activity exists Activity exists No activity exists |
| ② | 10/100/1000 NIC 1 link LED | Green Off | Link exists No link exists |
| ③ | 10/100/1000 NIC 2 activity LED | Green Flashing Off | Activity exists Activity exists No activity exists |
| ④ | 10/100/1000 NIC 2 link LED | Green Off | Link exists No link exists |
| ⑤ | iLO 2 NIC activity LED | Green Flashing Off | Activity exists Activity exists No activity exists |
| ⑥ | iLO 2 NIC link LED | Green Off | Link exists No link exists |
| ⑦ | UID button/LED | Blue Flashing Off | Identification is activated System is being managed remotely Identification is deactivated |
| ⑧ | Power supply 2 LED | Green Off | Normal One or more of the following conditions exists: <ul style="list-style-type: none"> • AC power unavailable • Power supply failed • Power supply in standby mode • Power supply exceeded current limit |
| ⑨ | Power supply 1 LED | Green Off | Normal One or more of the following conditions exists: <ul style="list-style-type: none"> • AC power unavailable • Power supply failed • Power supply in standby mode • Power supply exceeded current limit |

4.5.6 System Insight Display LEDs and Health LED Combinations

Introduction

When the health LED on the front panel illuminates either amber or red, the server is experiencing a health event (processor failure, PPM failure and DIMM).

Combinations of illuminated system LEDs, system power LED and the internal health LED indicate the system status.

LED Indications Regarding Failures

| Systems insight display LED | Health LED | System power LED | Status |
|------------------------------------|------------|------------------|---|
| Processor failure, socket X, amber | Red | Amber | One or more of following conditions may exist: <ul style="list-style-type: none"> • Processor in socket X has failed • Processor X is not installed in the socket • Processor X is unsupported • ROM detects a failed processor during POST |
| | Amber | Green | Processor in socket X is in a pre-failure condition |
| DIMM failure, slot X, amber | Red | | DIMM in slot X has failed |
| | Amber | | DIMM in slot X is in a pre-failure condition |

NOTE: In the event of failure indications, contact Brainlab support.

**LED Indications
Regarding Power**

| Systems insight display LED | Health LED | System power LED | Status |
|------------------------------------|-------------------|-------------------------|---|
| Power supply (amber) | Red | Amber | Only one power supply is installed and that power supply is in standby. <ul style="list-style-type: none"> • Power supply fault • System board fault |
| Power supply (amber) | Amber | Green | <ul style="list-style-type: none"> • Redundant power supply is installed and only one power supply is functional • AC power cord is not plugged into redundant power supply • Redundant power supply fault • Power supply mismatch at POST or power supply mismatch through hot-plug addition |
| Power cap (off) | - | Amber | Standby |
| Power cap (green) | - | Flashing green | Waiting for power |
| Power cap (flashing amber) | - | Amber | Power cap has been exceeded |
| Power cap (green) | - | Green | Power is available |

**LED Indications
Regarding Temperature**

| Systems insight display LED | Health LED | System power LED | Status |
|------------------------------------|-------------------|-------------------------|---|
| Over temperature, amber | Amber | Green | Health Driver has detected a cautionary temperature level |
| | Red | Amber | System has detected a hardware critical temperature level |
| Riser interlock, amber | Red | Green | PCI riser board assembly is not seated properly |
| Fan, amber | Amber | Green | One fan is failed or removed |
| | Red | Green | Two or more fans have failed or are removed |

4.5.7 SAS Device Numbers

Illustration



Figure 18

4.5.8 SAS Hard Drive LEDs

Illustration

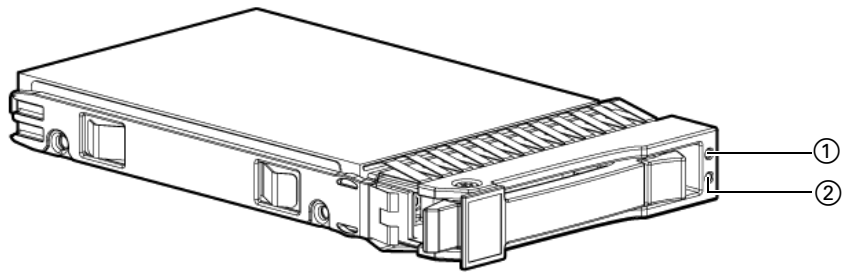


Figure 19

| No. | Component |
|-----|----------------------------|
| ① | Fault/UID LED (amber/blue) |
| ② | Online LED (green) |

**SAS Hard Drive
LED Combinations**

| Online LED (green) | Fault/UID LED (amber/blue) | Comment |
|---------------------------|----------------------------------|---|
| On, off, or flashing | Alternating amber and blue | Drive has failed, or a predictive failure alert has been received for this drive; it also has been selected by a management application |
| | Steadily blue | Drive is operating normally, and has been selected by a management application |
| On | Amber, flashing regularly (1 Hz) | A predictive failure alert has been received for this drive. Replace drive as soon as possible |
| | Off | Drive is online, but it is not active currently |
| Flashing regularly (1 Hz) | Amber, flashing regularly (1 Hz) | Do not remove drive. Removing a drive may terminate the current operation and cause data loss Drive is part of an array that is undergoing capacity expansion or stripe migration, but a predictive failure alert has been received for this drive To minimize risk of data loss, do not replace the drive until the expansion or migration is complete |
| | Off | Do not remove drive. Removing a drive may terminate the current operation and cause data loss Drive is rebuilding, or it is part of an array that is undergoing capacity expansion or stripe migration |
| Flashing irregularly | Amber, flashing regularly (1 Hz) | Drive is active, but a predictive failure alert has been received for this drive. Replace drive as soon as possible |
| | off | Drive is active and operating normally |
| Off | Steadily amber | A critical fault condition has been identified for this drive, and the controller has placed it offline. Replace drive as soon as possible |
| | Amber, flashing regularly (1 Hz) | A predictive failure alert has been received for this drive. Replace drive as soon as possible |
| | Off | Drive is offline, a spare, or not configured as part of an array |

NOTE: In case of failure indications contact Brainlab support.

4.5.9 Disk and Network Drives

Safe Handling of Data Media



Only use data media authorized by Brainlab.



Keep the data medium inserted until the active Brainlab application has been closed. Do not remove the data medium while it is being used by an active application (e.g. when exiting the application, copying data or saving screenshots). This can damage data on the data medium or lead to a software crash.

Back up of Patient Data



Do not use the internal DVD/CD drive for backup copies of any important patient data. The durable data integrity of DVDs cannot be guaranteed due to limitations of the underlying technology.

4.6 Turning System On/Off

4.6.1 Power On/Standby Button

Location The Power On/Standby button is located on the front panel ①.

Illustration

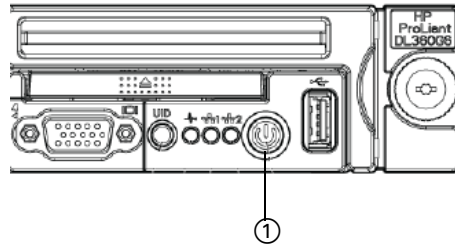


Figure 20

4.6.2 Turning On System

How to Turn On

| Step |
|--------------------------------|
| Press Power on/Standby button. |

Power Source



Operate system using the power source indicated on type plate. If you are unsure of type of power available, consult Brainlab support or your local power company.

Waiting Period



If system has been turned off, wait at least 15 seconds before turning it on again. Otherwise, high input current may trip the circuit breaker.

4.6.3 Turning Off

Before You Begin



Close all applications before shutting down the system. Never use the Power on/Standby button to exit software as this may cause data to be lost!

| | |
|-----------------------------|--|
| Continuous Operation | The server is designed for continuous operation (24 hours/day, 7 days/week). A shutdown should usually be avoided. |
|-----------------------------|--|

| | |
|------------------------------------|---|
| Installing Hot-Plug Devices | If installing a hot-plug device, it is not necessary to shut down the server. |
|------------------------------------|---|

How to Turn Off

| Steps | |
|-------|---|
| 1. | Back up server data. |
| 2. | <ul style="list-style-type: none"> • Shut down operating system, or • press Power On/Standby button to place server in standby mode. <p>When server enters standby power mode, system power LED changes to amber.</p> |
| 3. | <p>The Power On/Standby button does not disconnect the system from the mains voltage:</p> <ul style="list-style-type: none"> • Remove power plug from socket to completely disconnect mains voltage. • If an UPS is used, disconnect server from UPS. <p>The system no longer uses any power.</p> |

Emergencies



In emergencies (such as damaged casing, elements or cables, penetration of liquids or foreign matter), switch off system immediately, remove power connector and contact Brainlab support.

| | |
|----------------------------------|---|
| UID Button & UID LEDs | Pressing the UID button illuminates the blue UID LEDs on the front and rear panels. In a rack environment, this feature facilitates locating a server when moving between front and rear of rack. |
|----------------------------------|---|

Waiting Period



When turning the system on, wait as long as Windows needs to complete the boot up process, before turning it off again.



Do not turn off the system during boot up. Otherwise, configuration files and other data on hard disk may be damaged.

5 TECHNICAL INFORMATION

5.1 Chapter Overview

5.1.1 Contents

Topics Covered

| Section | See |
|---|------------|
| Power Specifications & Electrical Standards | Page 70 |
| System Specifications | Page 73 |
| Environmental Requirements | Page 76 |
| Compliances iPlan Workstations | Page 78 |
| Compliances iPlan Net Server | Page 80 |

5.2 Power Specifications & Electrical Standards

5.2.1 Power Specifications

iPlan Workstation Performance

| | Workstation | Monitor 19" |
|----------------------------------|---|--|
| Maximum operating voltage | 100 - 127 V: 10 A 200 - 240 V: 6 A | AC 100 - 120 V, 200 - 240 V (50 W max.) |
| Frequency | 50-60 Hz, autosensing | 50-60 Hz, autosensing |
| Power input ratings | 10 A : 100 - 127 V 6 A : 200 - 240 V | max. 0.8 - 0.45 A |

iPlan Workstation Premium

| | Workstation | Monitor 21" |
|----------------------------------|---|--|
| Maximum operating voltage | 100 - 127 V: 10 A 200 - 240 V: 6 A | AC 100 - 120 V, 200 - 240 V (80 W max.) |
| Frequency | 50-60 Hz, autosensing | 50-60 Hz, autosensing |
| Power input ratings | 10 A : 100 - 127 V 6 A : 200 - 240 V | max. 0.7 - 0.4 A |

iPlan Net Server

Input Voltage Range (Vrms): 100 to 240

Frequency Range (Nominal): 50 - 60 Hz

| Nominal Input Voltage | 100 | 120 | 200 | 208 | 220 | 230 | 240 |
|--|------------|------------|------------|------------|------------|------------|------------|
| Max. rated output (Watts) | 800 | 900 | 1200 | 1200 | 1200 | 1200 | 1200 |
| Nominal input current (A rms) | 9.7 | 9.0 | 7.0 | 6.8 | 6.4 | 6.1 | 5.9 |
| Max. rated input rating (Watts) | 930 | 1034 | 1348 | 1348 | 1348 | 1348 | 1348 |
| Maximum rated VA (Volt-Amp) | 970 | 1079 | 1406 | 1406 | 1406 | 1406 | 1406 |
| Efficiency at max. rated output Wattage (%) | 86 | 87 | 89 | 89 | 89 | 89 | 89 |
| Power factor | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Leakage current (mA) | 0.42 | 0.50 | 0.83 | 0.87 | 0.92 | 0.96 | 1.00 |
| Max. inrush current (A peak) | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| Max. Inrush current duration (mS) | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Maximum British Thermal Unit rating (BTU-Hr) | 3174 | 3530 | 4600 | 4600 | 4600 | 4600 | 4600 |

| | Monitor/keyboard/mouse drawer console kit (optional) |
|----------------------------------|---|
| Maximum operating voltage | 100-240 Vac |
| Frequency | 50-60 Hz |
| Power consumption | < 60 W |

5.2.2 Electrical Standards

iPlan Workstations

| | iPlan Workstations | Monitor |
|-----------------------|--|---|
| Certificate | <ul style="list-style-type: none"> • EN60950 • UL60950 • CSA22.2 No. 60950 • FCC part 15 class B | <ul style="list-style-type: none"> • EN60950 • UL60950 • CSA-C22.2 No. 60950 • TCO'99 |
| Classification | <ul style="list-style-type: none"> • CSA recognition mark • CE | <ul style="list-style-type: none"> • cTÜVus • CE |

iPlan Net Server

| | iPlan Net Server | Keyboard, Video, Mouse, LCD Console |
|-----------------------|--|--|
| Certificate | <ul style="list-style-type: none"> • EN60950 • IEC 60950 • UL60950/CSA • FCC Class A Part 15 | EMC: Class A <ul style="list-style-type: none"> • EN55022:2006 • EN55024:1998+A1:2001+A2:2003 IEC61000-4 Series • EN 61000-3-2:2006 & EN61000-3-3:1995+A1:2001+A2:2005 • FCC CFR 47, Part15 Subpart B • CISPR22 3rd Edition:1997 • Canadian ICES-003 |
| Classification | <ul style="list-style-type: none"> • CSA recognition mark • CE | <ul style="list-style-type: none"> • UL • CE |

5.3 System Specifications

5.3.1 Dimensions & Weight

iPlan Workstations

| | iPlan Workstations | Monitor |
|---------------|---------------------|---|
| Height | 455 mm | |
| Width | 220 mm | |
| Depth | 530 mm | |
| Weight | approximately 28 kg | approximately 8 kg (19") approximately 10 kg (21") |

iPlan Net Server

| | iPlan Net Server | Monitor/keyboard/ mouse drawer console |
|---------------|------------------|--|
| Height | 43.2 mm | 44 mm |
| Width | 426.2 mm | 448 mm |
| Depth | 695.3 mm | 634 mm - 880 mm |
| Weight | maximum 18 kg | maximum 20 kg |

5.3.2 Technical Specifications

iPlan Workstations

| | iPlan Workstation Performance | iPlan Workstation Premium |
|-----------------------------|---|--|
| Processor/ cache | E5440 x 1 (4 usable CPU cores) | E5440 x 2 2.83 GHz, 1.5 MB cache per core (8 usable CPU cores) |
| Hard disk drive | 1 x 250 GB (SATAII, 7200 rpm minimum, 8 MB cache minimum, usable disk space 160 GB) | 4 x 250 GB in RAID5 configuration (SATAII, 7200 rpm minimum, 8 MB cache minimum, usable disk space 160 GB) |
| Memory | Minimum 4 GB | |
| I/O support | <ul style="list-style-type: none"> • Wheel mouse • Keyboard • Audio in/out, Microphone in • LAN (1x Gbit/s) | |
| Data drives | <ul style="list-style-type: none"> • USB flash drive • DVD/CD writer | |
| Graphics | <ul style="list-style-type: none"> • Minimum Nvidia Quadro FX3700 • PCI x 16 interface, minimum 512 MB physical video memory | |
| Operating system | Windows XP SP2 or higher, 32 bit or 64 bit | |

**Flatscreen Monitor,
iPlan Workstations**

| | | |
|---------------------|---|-----------------------------|
| Display Type | 19" TFT active matrix, EIZO | 21" TFT active matrix, EIZO |
| Resolution | 1280 x 1024 | 1600 x 1200 |
| Colors | 16.7 million colors from a palette of 1.06 billion, 256 gray values from a palette of 1024 | |
| Input | VGA, DVI | |

iPlan Net Server

| | | |
|-------------------------------|--|--|
| Processor/ cache | 2 Quad-Core Intel® Xeon® Processor X5570 (2.93 GHz, 8MB L3 Cache, 95 Watts, DDR3-1333, HT Turbo 2/2/3/3) | |
| Memory | 6 DDR3 DIMM Slots with 2 GB PC3-10600 DDR3 Registered memories (6GB RAM per CPU, a total of 12GB RAM) | |
| Chipset | Intel® 5520 | |
| Storage Controller | HP Smart Array P410i/512 MB BBWC Controller (RAID5 + Hotspare setup) | |
| Hard disk drive | 4 small form factor (SFF) hot-plug drive bays, equipped with 4 HP 300GB 3G SAS 10K SFF DP ENT HDDs | |
| Network Controller | One HP NC382i Dual Port Multifunction Gigabit Server Adapter (two ports total) with TCP/IP Offload Engine, including support for Accelerated iSCSI, HP NC 373F PCI Express Multifunction Gigabit Server Adapter, 1000 SX, two LC Connectors and a Fiberoptic NIC | |
| I/O support | USB 2.0 Support. Three USB ports: one front and two rear accessible ports | |
| Data drives | Slimline media bay with DVD-RW | |
| Graphics | Integrated ATI ES1000, 32MB video standard, VGA and Nvidia Quadro FX 1800 Professional 3D Graphics Card PCIe x16 | |
| Redundancy | Multiple layers of fault tolerance through critical component redundancy (power supply and fan redundancy), Advanced ECC memory, embedded RAID capability | |
| Power Sources | Dual Common Slot Bays for High Efficiency, Right Sized, Hot plug and Redundant Power 1200W CS HE Silver Power Supply | |
| Form Factor | 1U Rack form factor (1.75"), less than 28 inches (70.5 cm) deep | |
| Operating system | Windows Server 2003 x64 or Windows Server 2008 x64 | |

**Monitor,
iPlan Net Server
(optional)**

| | | |
|-------------------------|---|--|
| Display type | 17" LCD Console with KVM for 19" rack integration | |
| Resolution | 1280 x 1024 native | |
| Input | VGA | |

5.4 Environmental Requirements

5.4.1 Moving, Storage and Operating Conditions

Restrictions to Location

- Store or operate system at locations which are protected against moisture, wind, sunlight, dust, salinity, and sulfur.
- Do not store system in near vicinity of chemical products or gas.
- Maximum rate of temperature change is 20°C/h.

iPlan Workstations

| | Moving/Storage Conditions | Operating Conditions |
|--------------------|----------------------------------|--------------------------------|
| Temperature | -10°C to 50°C (14°F to 122°F) | 15°C to 35°C (59°F to 95°F) |
| Humidity | 20% to 90% non condensing | 20% to 80% non condensing |

iPlan Net Server, Monitor

| | Moving/Storage Conditions | Operating Conditions |
|--------------------|-----------------------------------|--------------------------------|
| Temperature | -40°C to 70°C (-40°F to 158°F) | 10°C to 35°C (50°F to 95°F) |
| Humidity | 5% to 95% non condensing | 10% to 90% non condensing |

NOTE: Storage maximum humidity of 95% is based on a maximum temperature of 45°C (113°F).

Keyboard/Mouse Drawer Console

| | Moving/Storage Conditions | Operating Conditions |
|--------------------|----------------------------------|--------------------------------|
| Temperature | -20°C to 60°C (-4°F to 140°F) | 0°C to 50°C (32°F to 122°F) |
| Humidity | 10% to 90% non condensing | 10% to 90% non condensing |

Wet Bulb Temperature

| | iPlan Net Server | iPlan Net Server, Monitor/Keyboard/Mouse Drawer Console |
|-------------------------------------|------------------|---|
| Maximum Wet Bulb Temperature | 28°C (82.4°F) | 28°C |

NOTE: System performance may be reduced if system is operated with a fan fault or above 30°C.

Rack Installation



Consider the risk of elevated operating ambient temperature. If equipment is installed in a closed or multi-unit rack assembly, operating ambient temperature of rack environment might be higher than room ambient temperature. Install equipment in an environment compatible with operating temperature of this equipment.

**Considering
Altitude** All temperature ratings shown are for sea level. An altitude derating of 1°C per 300 m (1.8°F per 1,000 ft) to 3048 m (10,000 ft) is applicable. No direct sunlight allowed. Altitude maximum for storage corresponds to a pressure minimum of 70 kPa.

5.5 Compliances iPlan Workstations

5.5.1 Electromagnetic Immunity

| | |
|------------------------------------|--|
| Electromagnetic Environment | The iPlan Workstations are intended for use in the electromagnetic environment specified in the relevant declaration. Assure that the iPlan Workstations are used in such an environment. |
|------------------------------------|--|

| | |
|-----------------------------------|--|
| RF Emissions Interferences | The iPlan Workstations only use RF energy for internal functions. For this reason, RF emissions are very low and are not likely to cause interferences in nearby electronic equipment. |
|-----------------------------------|--|

Cables



Using accessories or cables other than those declared may result in increased emissions or decreased system immunity.

| | |
|-----------------------|---|
| FCC Compliance | The iPlan Workstations have been tested and found to comply with the limits for a “Class B” digital device, according to Part 15 of the FCC rules. |
|-----------------------|---|

5.5.2 Declarations & Certification

Declarations

The **iPlan Workstations** conform to the following product specifications and regulations:

- Safety IEC 60950-1:2001 / EN 60950-1:2001+A11:2004
- IEC 60825-1:1993+A1 / EN60825-1:1994+A11Class 1 for LED's and Lasers
- U.S.A. 21CFR Subpart J - for FC Laser module
- China GB4943-2001
- Russia GOST R 50377-92
- EMC EN 55022:2006 Class B
- EN 55024:1998+A1:2001+A2:2003
- EN 61000-3-2:2000
- EN 61000-3-3:1995+A1:2001+A2:2005
- U.S.A. FCC Part 15, Class B
- Japan VCCI Class B
- Australia/New Zealand AS/NZS CISPR22:2006 Class B
- China GB9254-1998 / GB17625-1998 Harmonic
- Region of Taiwan CNS 13438:1997 Class A
- Russia GOST R 51318.22-99 / GOST R 50839-2000

Certification

The **iPlan Workstations** are certified or verified by:

- Culus UL Listed to UL60950-1:2006, CSA C22.2 No. 60950-1-03 File E146385
-

5.6 Compliances iPlan Net Server

5.6.1 Electromagnetic Emissions

| | |
|------------------------------------|---|
| Electromagnetic Environment | The iPlan Net Server is intended for use in the electromagnetic environment specified in the declaration below. Assure that the iPlan Net Server is used in such an environment. |
|------------------------------------|---|

| | |
|-----------------------------------|---|
| RF Emissions Interferences | The iPlan Net Server only uses RF energy for internal functions. For this reason, the RF emissions are very low and are not likely to cause interferences in nearby electronic equipment. |
|-----------------------------------|---|

Cables



Using accessories or cables other than those declared may result in increased emissions or decreased immunity of the system.

| | |
|-----------------------|--|
| FCC Compliance | The iPlan Net Server has been tested and found to comply with the limits for a “Class A” digital device, according to Part 15 of the FCC rules. |
|-----------------------|--|

5.6.2 Declarations & Certification

Declarations

The iPlan Net Server Hardware conforms to the following product specifications and regulations:

EMC: Class A

- CISPR 22:2005
- EN 55022:2006
- EN 55024:1998 +A1:2001 +A2:2003
- EN 61000-3-2:2006
- EN 61000-3-3:1995 +A1:2001 +A2:2005

Safety:

- EN 60950-1:2001 +A11:2004
- IEC 60950-1:2001

The Keyboard Video Mouse LCD Console conforms to the following product specifications and regulations:

EMC: Class A

- EN55022:2006
- EN55024:1998+A1:2001+A2:2003 IEC61000-4 Series
- EN 61000-3-2:2006 & EN61000-3-3:1995+A1:2001+A2:2005
- FCC CFR 47, Part15 Subpart B
- CISPR22 3rd Edition:1997
- Canadian ICES-003

Certification

The iPlan Net Server Hardware is certified or verified by:

- HEWLETT PACKARD COMPANY EMC TEST REPORT - Project Number 09095: Class A limits of CISPR 22:2005; [EN55022: 2006; CNS13438: 2006; VCCI-03], and GENELEC EN55024: 1998 +A1 +A2
- TÜV SÜD, CB-Report 081-81252-000: IEC 60950-1:2001/EN60950-1:A2001+A11:2004
- TÜV SÜD GS, GS Main-Certificate No.: Z1A 09 01 18253 151: EN60950-1/A11:2004; EK1-ITB 2000-2008; ZEK 01.1-08/06.08
- UL, Report Reference# E149282-A22-UL-1: UL 60950-1, 1st Edition, 2007-10-31 (Information Technology Equipment - Safety - Part 1: General Requirements); CSA C22.2 No. 60950-1-03, 1st Edition, 2006-07 (Information Technology Equipment - Safety - Part 1: General Requirements)

The Keyboard Video Mouse LCD Console are certified or verified by:

- Gestek LAB, Report No.: 080538F-01: FCC CFR 47, Part15 Subpart B, CISPR22 3rd Edition:1997, Canadian ICES-003
 - UL: UL File E238996, UL Canada: File E238996
-

6 CLEANING

6.1 Chapter Overview

6.1.1 Contents

Topics Covered

| Section | See |
|-----------------------------|------------|
| General Instructions | Page 84 |
| System Unit Case & Keyboard | Page 85 |
| Monitor | Page 87 |

6.2 iPlan Workstations & iPlan Net Server

6.2.1 General Instructions

No Disinfection



Do not use manual or automatic cleaning and disinfection procedures.

No Sterilization



Do not sterilize system components.

No Liquids



Ensure that liquid does not enter the system components, as this could damage the component and/or the electronic.

6.2.2 System Unit Case & Keyboard

iPlan Workstations



Figure 21

iPlan Net Server



Figure 22

Components

| No. | Component |
|-----|---------------------------------------|
| ① | iPlan Workstation |
| ② | Keyboard |
| ③ | Mouse |
| ④ | iPlan Net Server |
| ⑤ | Monitor/Keyboard/Mouse Drawer Console |

How to Clean

| Steps |
|--|
| 1. Shut down system. |
| 2. Turn off all power and equipment switches. |
| 3. Unplug system from power supply. |
| 4. Clean system unit case, mouse, keyboard and surface of monitor/keyboard/mouse drawer console using a dry cloth. |
| 5. If particularly dirty, use a cloth that has been moistened in mild domestic detergent and then carefully wrung out. |
| 6. Clean keyboard and mouse with disinfectant wipes. |

NOTE: The system inside may only be cleaned by Brainlab support

Do Not Use



Do not use caustic cleaning solvents, as they may corrode plastic.

6.2.3 Monitor

Illustration



Figure 23

| No. | Component |
|-----|----------------------------|
| ① | iPlan Workstations Monitor |
| ② | iPlan Net Server Monitor |

How to Clean

| Steps |
|---|
| 1. Shut down system. |
| 2. Turn off all power and equipment switches. |
| 3. Unplug system from power supply. |
| 4. Wipe monitor face with a moist cloth |

Do Not Use



Do not use alcohol.

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