BRAINLAB

KICK 2
NAVIGATION STATION

System and Technical User Guide
Revision 1.3

TABLE OF CONTENTS

1 GENERAL INFORMATION

1.1 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 and Fax	Email
United States, Canada, Central and South America	Tel: +1 800 597 5911 Fax: +1 708 409 1619	us.support@brainlab.com
Brazil	Tel: (0800) 892 1217	brazil.support@brainlab.com
UK	Tel: +44 1223 755 333	support@brainlab.com
Spain	Tel: +34 900 649 115	
France and French-speaking regions	Tel: +33 800 676 030	
Africa, Asia, Australia, Europe	Tel: +49 89 991568 1044 Fax: +49 89 991568 811	
Japan	Tel: +81 3 3769 6900 Fax: +81 3 3769 6901	

Feedback

Despite careful review, this user guide may contain errors. Please contact us at user.guides@brainlab.com if you have improvement suggestions.

Manufacturer

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

Expected Service Life

Brainlab provides a minimum of eight years of service for platforms. During this period of time, spare parts as well as field support are offered. The **Kick 2** lifetime is dependent on factors such as method and duration of each use, and handling between uses. Careful functional testing and inspection of the **Kick 2** before use is the best method for determining the end of lifetime. The end of lifetime is normally determined by wear and tear damage due to use. As part of preventive service, follow the maintenance instructions.

1.2 Legal Information

Copyright

Brainlab Trademarks

- **Brainlab**® is a registered trademark of Brainlab AG in Germany and/or the US.
- **Kick**® is a trademark of Brainlab AG in Germany and/or the US.

Non-Brainlab Trademarks

Intel® is a registered trademark of Intel Corporation in the United States and other countries.

Disposal Instructions

Only dispose of electrical and electronic equipment in accordance with statutory regulations. For information regarding the WEEE (Waste Electrical and Electronic Equipment) directive, visit:

www.brainlab.com/sustainability

Patent Information

This product may be covered by one or more patents or pending patent applications. For details, see: www.brainlab.com/patent.

CE Label

CE 0123

- The CE label shows that the Brainlab product complies with the essential requirements of Council Directive 93/42/EEC (the MDD).
- According to the principles set out in the MDD, **Kick 2** is a Class IIb product.

NOTE: The validity of the CE label can only be confirmed for products manufactured by Brainlab.

Registration, Evaluation and Authorization of Chemicals (REACH)

REACH is the European chemicals law that came into force to improve the protection of human health and the environment from risks that can be posed by chemicals. The identification of a substance as a substance of very high concern and its inclusion in the candidate list for REACH creates certain legal obligations for the importers, producers and suppliers of an article that contains such a substance. Brainlab requests suppliers to inform whether and to what extent substances from the list are used in their products. For further information regarding REACH processes at Brainlab, contact us here:

www.brainlab.com/sustainability

Sales in the US

US federal law restricts this device to sale by or on the order of a physician.

Federal Communications Commission (FCC) Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their expense.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

The WLAN module included in this product cannot be accessed by end users. The FCC ID of the WLAN module is listed on the WLAN label attached to the **Kick 2**. Contact Brainlab support for any related questions.

1.3 Symbols

Warnings

Warning

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

Cautions

Cautions are indicated by circular caution symbols. They contain important information regarding potential device malfunctions, device failure, damage to device or damage to property.

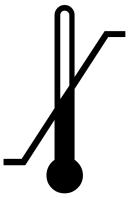
Notes

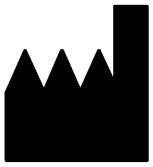
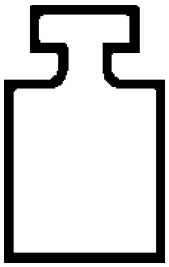
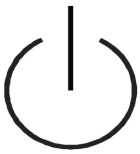
NOTE: Notes are formatted in italic type and indicate additional useful hints.

1.3.1 Hardware Symbols

Symbols on Hardware Components

The following symbols may be found on **Kick 2**:

Symbol	Explanation
	Caution
	Potential equalization point
	Keep dry
	Storage conditions for temperature: The specified temperature range is shown on each label.
	Storage conditions for relative humidity non-condensing: The specified humidity range is shown on each label.
	Storage conditions for air pressure: The specified air pressure range is shown on each label.
	Radio device
	Class 2 wireless LAN
	Serial number
	Article number

Symbol	Explanation
	Date of manufacture
	Manufacture
IPXY	Ingress Protection according to IEC 60529 • X = Protection against ingress of solid objects • Y = Protection against ingress of liquid
 	Laser warnings for **DVD Drive for Kick 2**: CLASS 1 LASER PRODUCT CAUTION - CLASS 3B LASER RADIATION WHEN OPEN AVOID EXPOSURE TO THE BEAM
	Weight
	Prescription only
	Regulatory compliance mark
	Unique device identification
	Danger of tilting: Do not move when brakes are locked or if device is blocked by obstacles.
	Power switch to power on the device.
	Consult accompanying documentation

1.4 Intended Use

Intended System Use

Kick 2 is intended for use as a mobile computing platform hosting one or more software applications. **Kick 2** facilitates the display and exchange of, as well as the interaction with data. **Kick 2** also offers interaction with external/additional devices or components within the defined performance specification while used in the intended use environment.

Integrating a suitable tracking unit and using a suitable application software, **Kick 2** can be used as navigation station.

Intended User Profile

The following describes the intended users of the system and their respective tasks.

Clinical team:

- Non-sterile preparation and set-up prior to surgery
- Non-sterile handling of device during surgery e.g., re-positioning of cart
- Sterile or non-sterile interaction with videos, images and data
- Shut down, tidying and storage of equipment after surgery

Cleaning staff:

- Cleaning of device after shut down

Hospital technician:

- Maintenance
- Oversee electrical safety of device during service life
- Disposal of the device after service life

Brainlab service:

- Installation of device including unpacking and transportation of device
- Training of users on device
- Troubleshooting and repair of device

Patient Population

The intended patient population consists of patients that could be treated via Brainlab application software that are released for the **Kick 2**.

For details refer to the relevant **Software User Guide**.

Place of Use

The system is only for use indoors, in a professional healthcare facility.

Frequency of Use

The frequency of use is defined to be between once per month and several times per week.

Essential Performance

As essential performance is defined by the clinical function(s), it is dependent on the Brainlab application used and the clinical procedure. Consult the corresponding **Software User Guide** to see if an essential performance is defined, and if so, which essential performance.

Frequently Used Functions

The following are frequently used functions of **Kick 2**:

- Moving and positioning device before and after surgery
- Connecting/disconnecting 3rd-party devices
- Transferring patient data to the device
- Unsterile re-positioning of the device during surgery
- Sterile use of touchscreen
- Start up/shut down
- Cleaning of device
- Preparation for travel and packing travel kit

Careful Hardware Handling

Only trained medical personnel may operate system components and accessory instrumentation.

System components and accessory instrumentation comprise precise mechanical parts. Handle them carefully.

Plausibility Review

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

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 Compatibility with Medical Devices

1.5.1 Brainlab Medical Devices

Compatible Brainlab Medical Components

Kick 2 is compatible with **Kick Monitor Drape**.

Compatible Optional Accessories

Kick 2 is compatible with an optional **Converter Kit DVI to S-Video**.

Other Brainlab Instruments

Additional instrumentation may become available after release of this manual. Contact Brainlab support if you have any questions regarding instrument compatibility with Brainlab software.

Only use instruments and spare parts specified by Brainlab. Using unauthorized instruments/ spare parts may adversely affect safety and/or effectiveness of the medical device and endanger safety of patient, user and/or environment.

1.6 Training

Brainlab Training

Before using the system, Brainlab recommends that all users should participate in a training program held by a Brainlab representative to ensure safe and appropriate use.

Supervised Support

Before using the system for surgical procedures where computer-aided navigation is considered critical, perform a sufficient number of complete procedures together with a Brainlab representative.

Extended OR Time

Brainlab Navigation Systems are sensitive technical equipment. Depending upon OR setup, patient positioning, calculation durations and complexity, surgery duration using navigation may vary. It is up to the user to decide whether a potential prolongation is acceptable for the respective patient and treatment.

1.7 Documentation

Terminology

Unless otherwise specified, the **Kick 2 Navigation Station** shall be referred to as “**Kick 2**” in this user guide.

Intended Audience

This user guide is intended for surgeons and hospital staff.

Reading User Guides

This guide describes complex medical software or medical devices that must be used with care.

It is therefore important that all users of the system, instrument or software:

- Read this guide carefully before handling the equipment
- Have access to this guide at all times

Available User Guides

NOTE: Available user guides vary depending upon the Brainlab product. If you have questions regarding the user guides you received, please contact Brainlab support.

User Guide	Contents
Software User Guides	• Overview of treatment planning and image-guided navigation • Description of OR system setup • Detailed software instructions
Hardware User Guides	Detailed information on radiotherapy and surgical hardware, typically defined as large complex instruments
Instrument User Guides	Detailed instructions on instrument handling
Cleaning, Disinfection and Sterilization Guide	Details on cleaning, disinfecting and sterilizing instruments
System User Guide	Detailed information on system setup
Technical User Guide	Detailed technical information on the system, including specifications and compliances
System and Technical User Guide	Combines the contents of the System User Guide and the Technical User Guide.

2 KICK 2 OVERVIEW

2.1 System Components

2.1.1 Overview

Kick 2

Kick 2 is a mobile Medical Electrical (ME) device. It consists of a **Monitor Cart**, including a medical computer unit (MCU) and a base display including touchscreen, with a suitable tracking unit. Moreover, it offers interfaces necessary for exchange of data with additional devices or components.

The **Monitor Cart** acts as a “base station” for connecting suitable tracking units.

The monitor can be declined to receive a good viewing angle for the user. For sterile use, the **Kick Monitor Drape** shall be used.

Operating Principle

Using the MCU, **Kick 2** processes information data that can be displayed on the display or provided at interface connections on the user panel. A projected capacitive touchscreen in the display enables the user to interact with the information data. Integrating a suitable tracking unit and using suitable application software, **Kick 2** can be used as navigation station.

2.1.2 Monitor Cart Components

Monitor Cart Components

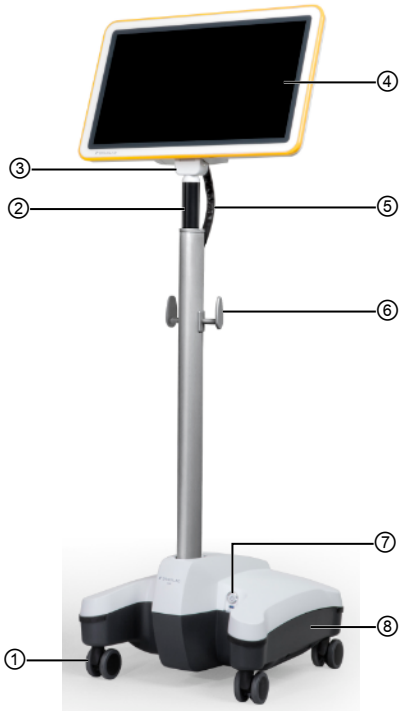


Figure 1

No.	Component
①	Wheels
②	**Monitor Cart** handle (release trigger located on back side of handle, not visible)
③	Monitor hinge
④	Touchscreen
⑤	Monitor cable (not visible in image)
⑥	Monitor post with cable hooks
⑦	Power button
⑧	**Monitor Cart** base, containing: • Medical computer unit • Connection panel

Connection Panel

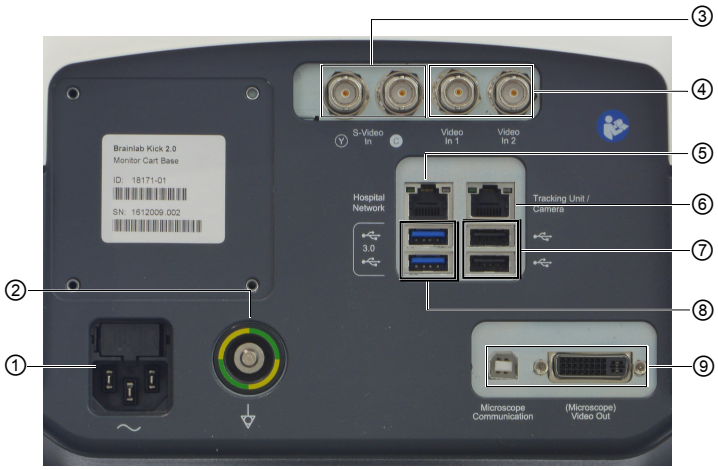


Figure 2

No.	Component
①	Mains power
②	Potential equalization
③	S-Video In
④	Video In
⑤	Hospital Network
⑥	Tracking unit
⑦	USB 2.0
⑧	USB 3.0
⑨	Microscope/Video Out

Tracking Unit

The **Kick 2** (article number 18170) can be used with either of the following components:

Component	Article Number
Kick 2 Spectra Camera Cart	18178
Kick 2 Vega Camera Cart	18172

Detachable Components

The **Kick 2** (article number 18170) comprises the following components:

Component	Article Number
Display with hinge (“monitor”)	18171-18
Monitor post	18071-04
Monitor protection cover	18174-02
DVD drive for Kick 2.0 (optional)	18176

Component	Article Number
Adapter (USB to Ethernet) (optional)	18177

2.2 Monitor

2.2.1 Overview

General Information

The **Kick 2** is equipped with a touchscreen monitor.

Viewing options vary depending on the software application and user preferences. For more information see the relevant **Software User Guide**.

Not for Diagnostic Use

The touchscreen does not comply with DIN EN 6868-157 and it is not intended for diagnostic use. Video images are not suitable for diagnostic use.

Monitor Components

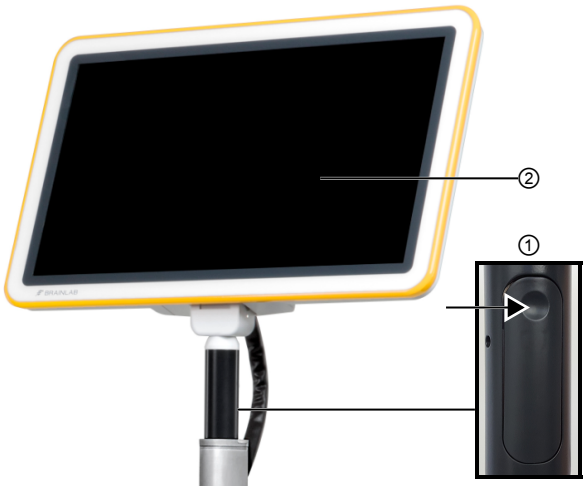


Figure 3

No.	Component
①	Monitor release trigger (back side of monitor handle)
②	Touchscreen

Touchscreen Use

Clean the touchscreen before use.

- When the system is powered on, the touchscreen is always on and can be used.
- Position monitor so as to not interfere with surgery or movement of the OR staff.

Protecting Touchscreen Surface

Do not use a damaged touchscreen. Always check the touchscreen condition before beginning a procedure.

Do not use sharp tools on the touchscreen.

Proper Cart Use

Do not attach or hang anything on the **Monitor Cart unless specified by Brainlab and do not** lean on the **Monitor Cart**. Doing so may cause the cart to tip over.

2.2.2 Range of Motion

Monitor Rotation

The monitor can be rotated via the monitor hinge on the horizontal plane:

- 22° backward
- 10° forward

The viewing angle of the monitor is at least 80° in all four directions.

2.3 Monitor Cart Ventilation

Ventilation Area

Figure 4

No.	Ventilation Area
①	Underside of the **Monitor Cart** base (on both sides)

Ensuring Ventilation

Do not block or cover ventilation openings on the system, for example, with drapes. Air must be allowed to circulate through the vents to ensure proper operation and to avoid overheating.

Do not place system near or over a radiator or heat register or in direct sunlight.

3 USING KICK 2

3.1 System Setup

3.1.1 Overview

Installation

The **Kick 2** is delivered pre-installed and ready for use.

All system components are suitable for continuous use during surgical procedures.

Interference

Kick 2 does not have an essential performance as defined by IEC 60601-1. However, the influence of electromagnetic disturbances might lower performance.

Strong electromagnetic interferences may affect the touch technology and the loss of wireless network connection. If the touchscreen is not reacting properly or creating phantom touch activations, relocate **Kick 2**.

The frequency or frequency band of transmission: 2.4 GHz and 5 GHz with a bandwidth of 20 MHz in 802.11 a/b/g standard, 40 MHz in 802.11n and up to 160 MHz in 802.11 ac

Warning

The system produces electromagnetic fields that may interfere with other sensitive equipment, and can itself be disturbed by other electromagnetic fields.

MR Safety

Warning

Kick 2 has not been tested in an MR environment.

System Position

Ensure that the system is set up in a way that the mains power plugs are easily accessible. In case of malfunction, you must be able to easily unplug the mains power cables.

Ensure that the system is set up so it is not possible for the patient to touch or come in contact with the equipment.

Electromagnetic Compatibility

Special precautions regarding electromagnetic compatibility (EMC) must be installed and put into service according to the EMC information provided in this guide.

Set Up Example

Figure 5

The set up procedure describes positioning the device in the OR and attaching a tracking unit (**Kick 2 Spectra Camera Cart** shown below).

Step	
1.	Remove protection cover before entering the OR.
2.	Position the system in the OR. *NOTE: Do not position the monitor or any other part of the system directly over the patient.*
3.	Lock all brakes on the **Monitor Cart**.
4.	Move monitor into desired position.
5.	Set up the tracking unit according to the instructions provided.
6.	Connect the Ethernet cable to the **Tracking Unit** port ④ on the **Monitor Cart**.
7.	Attach the mains power cable to the **Monitor Cart** ③ and plug in to wall outlet.
8.	Attach the mains power cable to the tracking unit ① and plug into wall outlet.
9.	Connect the Ethernet cable to the network port ② on the tracking unit. The system is now ready to be turned on.

3.1.2 OR Setup

General Information

The setup example below is only a suggestion. For detailed setup descriptions, see the relevant **Software User Guide**.

Kick 2 Setup Example

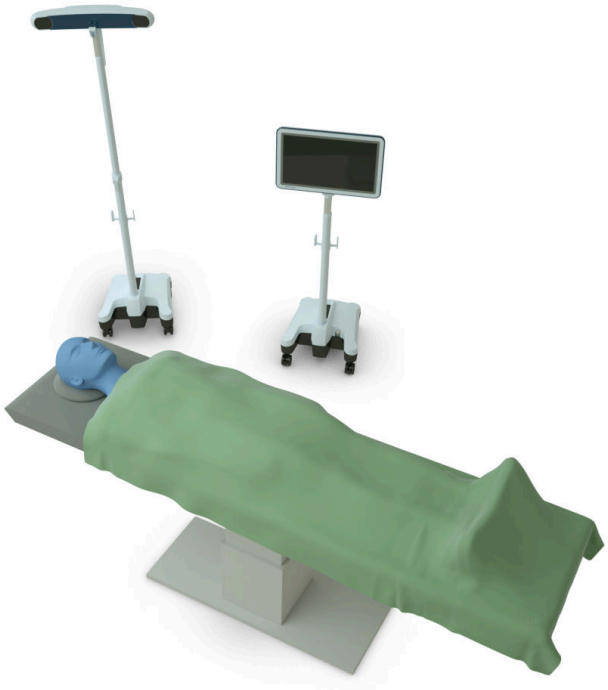


Figure 6

The following example shows the **Kick 2** with a tracking unit (in this example, **Kick 2 Spectra Camera Cart**).

3.2 Proper System Handling

3.2.1 Overview

Proper Handling

Warning

Prior to surgery, perform a functional test. Ensure that system boots correctly and patient data is correctly loaded in the relevant navigation application and communication to the tracking device is available.

Do not sit or stand on the **cart**. Do not lean against the cart as it creates a tilting hazard.

Patient Safety

System components should never come into direct physical contact with the patient.

Modification

Do not make any modifications to the **Kick 2**. Only Brainlab certified personnel may make modifications.

Warning

Only use the system components as delivered by Brainlab. Do not modify the system in any way. Altering the system or using it outside of its intended use may result in severe harm to the patient, user or third party.

Risk of Electrical Shock

To prevent electrical shock or permanent system damage, do not expose the **Kick 2** to excessive moisture.

Warning

Never touch the patient and any system parts or electrical interfaces at the same time, due to possible electrostatic discharge.

Warning

Only connect the Kick 2 to a mains power supply with protective earth. Failure to do so may result in personal injury.

Do not touch the electrical contacts of plugs.

Appropriate Positioning

To avoid damage to the **Kick 2**, other equipment or people, always move, park and operate in the respective appropriate position.

The **Kick 2** may only be used on level surfaces.

Fully brake the **Monitor Cart** during operation.

Do not place Kick 2 or any parts thereof over the patient.

Radio Interference

Warning

This equipment is intended for use by health care professionals only. It may cause radio interference or may disrupt the operation of other nearby equipment. It may be necessary

to take mitigation measures, such as reorienting or relocating Kick 2 or shielding the location.

Portable and mobile radio frequency communication may affect the equipment.

Other OR equipment may cause an interference with **Kick 2**, even if it is CISPR emission compliant.

Restrictions to Environment

Warning

System components are not suitable for use in the presence of flammable anesthetic mixtures containing air, oxygen or nitrous oxide.

Do not place system components on unstable ground where the system could tip over and be seriously damaged.

Protection Covers

Keep protection covers in a clean and dry place during surgery.

Related Links

4.4 Parking and Storage on page 58

7.2 Environmental Requirements on page 80

3.2.2 Moving Parts

Precautions

Touchscreen colors may be displayed incorrectly if the monitor is not positioned correctly. The user's line of vision must be perpendicular to the touchscreen to ensure that colors are viewed correctly.

Clamping Spots

Be extremely careful not to clamp fingers or other body parts when positioning the monitor. **Monitor Cart** joints that may clamp body parts include, but are not limited to:

Post fixation lever	
Monitor handle (during assembly)	
Wheels	

3.3 Turning On Kick 2

Power Supply

Operate **Kick 2** using the power source indicated on type plate. If you are unsure of type of power available, consult Brainlab-authorized support or your local power company. Using the wrong power source could seriously damage the device.

Only establish or interrupt an electrical connection when all associated devices are fully turned off.

Only operate **Kick 2** using the mains power cable provided. Do not use extension cords.

Power LED

The power LED is located in the power button on the **Monitor Cart**.

Color	Status	Explanation
Green	Off	Electronic components are off.
	On	Electronic components are on. Device is ready for use.

Related Links

2.1 System Components on page 19
3.7.2 How to Connect Mains Power Cable on page 44
3.7.2 How to Connect Mains Power Cable with V-Lock on page 44

How to Turn Kick 2 On

Figure 7

Step	
1.	Ensure that all required cables have been connected at the connection panel.
2.	Plug in mains power at the **Monitor Cart**.
3.	Press the power button ① to start the device.

3.4 Turning Off Kick 2

Loss of Data

Unplug mains power only after **Kick 2** has fully shut down. Failure to follow the shutdown procedure prior to disconnecting power may result in irreversible loss of data.

How to Reset

Step
To reset **Kick 2** (if it has frozen or has not completely shut down) press the power button for four seconds, until it turns off. Wait 10 seconds, then press the power button again to restart.

Waiting Periods

When disconnecting **Kick 2** from line voltage, wait at least 10 seconds before reconnecting it.

Do not turn off **Kick 2** during boot-up. Otherwise, configuration files and other data on hard disk may be damaged or lost.

Emergency

In case of emergency only, unplug detachable mains power cable to simultaneously disconnect all supply poles.

How to Shut Down

Step	
1.	Shut down **Kick 2** using the software or by pressing power button briefly.
2.	When the power LED turns off, unplug and secure all cables and storage devices.

Unplug mains power before connecting or disconnecting other cables.

The power button does not disconnect the **device** from mains voltage. Unplug mains power cable to ensure complete voltage disconnection.

3.5 Sterile Use

3.5.1 Sterile Kick Monitor Drape

General Information

Kick 2 is unsterile. The **Monitor Cart** may be used within the patient environment when using the **Kick Monitor Drape** provided by Brainlab.

The drape allows you to intraoperatively access all software functions and position monitor during surgery without compromising the sterile field.

Do not allow any system parts to enter the sterile field.

Packaging

The **Kick Monitor Drape** is delivered sterile. Ensure that drape packaging does not have any holes or tears.

Before use, check the expiration date on drape packaging. If the date has expired, dispose of the drape and do not use it.

The drape is delivered sterile. If the outer side of the drape comes in contact with an unsterile environment during unpacking or clinical use, it must be disposed of.

Do not use drape if packaging is broken or torn.

Draped Kick

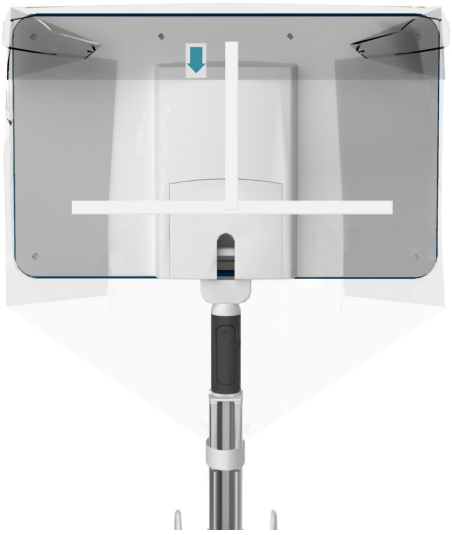


Figure 8

Operating Draped Touchscreen

Do not touch the drape with sharp tools.

To keep the field sterile, only touch the draped parts of the touchscreen and monitor housing.

Disposal

Dispose of the drape after use.

How to Drape the Monitor

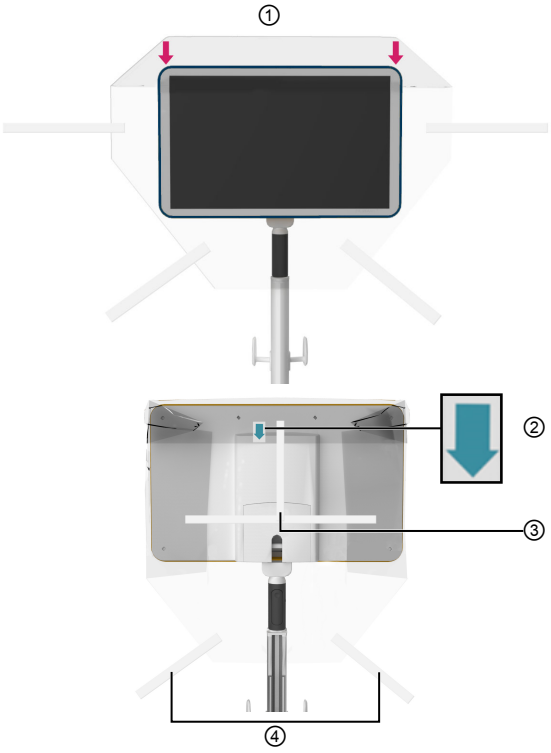


Figure 9

Step	
1.	Apply the drape over the top of the monitor ①. Ensure that the orientation arrow is on the back side of the monitor and pointing down ②.
2.	Peel the adhesive liner off the adhesive strips ③ on the upper part of the drape and attach them to the back of the monitor.
3.	Peel the adhesive liner off the adhesive strips ④ on the lower part of the drape and attach them to the monitor post.

3.6 System Connections

3.6.1 Third-Party Connections

General Information

It is possible to connect third-party devices to **Kick 2** using compatible connection cables.

Interfaces

The third-party connection and electrical interfaces are located on the back side of the cart.

USB

USB ports are located on the connection panel and on the front of the cart base.

Scan USB flash drives with an antivirus software before connecting them to the system.

Only connect low-power or self-powered USB devices to the **Monitor Cart** for which compliance has been tested (e.g., USB flash drive, mouse, keyboard, footswitch). Do not connect high-power USB devices (e.g., external hard drive, smartphones, portable music players) to the USB 2.0 and 3.0 ports on the front of the cart base. Otherwise safety and effectiveness of the equipment cannot be guaranteed.

Restrictions Connecting Equipment to Panels

Warning

Only connect equipment to the Kick 2 that is specified by Brainlab or for which Brainlab has declared compatibility.

Warning

Additional equipment connected to medical electrical equipment must comply with the respective IEC or ISO standards (e.g., IEC 60950 for data processing equipment and IEC 60601-1 for medical equipment). Furthermore, all configurations shall comply with the requirements for medical electrical systems (see IEC 60601-1-1 or clause 16 of the 3rd edition of IEC 60601-1, respectively). Anyone connecting additional equipment to medical electrical equipment configures a medical system and is therefore responsible that the system complies with the requirements for medical electrical systems. Please note that local laws take priority over the above-mentioned requirements. In doubt, consult your local representative or the technical service department.

Warning

Unless otherwise specified, the use of multiple socket outlet(s) or extension cords is not permitted.

Warning

Connecting electrical equipment to a multiple outlet socket creates an ME system and can result in a reduced level of safety.

LAN Connection

Only connect IEC compliant devices to the LAN ports.

Depending on the Brainlab application that is running on the system and the integration into the hospital network, connecting a system to the network offers patient data transfer, remote access, streaming and session sharing.

Networks must comply with 1000BASE-T or 100BASE-TX, according to IEEE 802.3.

The Monitor Cart interfaces provide no means of separation according to IEC 60601-1:2005. It is recommended to use an adequate separation device for the network (LAN) interface with a rating of minimum 1 MOOP and a dielectric strength of minimum 1.5 kV.

Wireless LAN Connection

It may be possible to connect the system to the hospital network via a wireless LAN connection. The availability of wireless LAN connection depends on your region.

The WLAN device is compatible with IEEE 802.11 a/b/g/n/ac. Wireless modulation technologies available are: DSSS, CCK, OFDM. Modulation Types available are: DBPSK, DQPSK, CCK, BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM.

In case of a weak connection or no wireless connection, use a LAN cable to connect. For patient data transfer use e.g. USB flash drives.

The wireless LAN transmitter uses a frequency band for sending and receiving:

Device ID	Frequency Band
FCC ID A8J-EUB1200AC-1	The WLAN transmitter uses a frequency band for sending and receiving between 2.400 and 2.484 GHz with 19.5 dBm effective isotropic radiated power (EIRP). The WLAN transmitter uses a frequency band for sending and receiving of 5.725 and 5.850 GHz with 17.5 dBm EIRP.
FCC ID Q87-WUSB6300	The WLAN transmitter uses a frequency band for sending and receiving between 2.400 and 2.454 GHz with 18.86 dBm effective isotropic radiated power (EIRP). The WLAN transmitter uses a frequency band for sending and receiving between 5.725 and 5.850 GHz with 21.87 dBm effective isotropic radiated power (EIRP).

Warning

The wireless system communication may interfere with other nearby wireless devices. Verify the correct function of the wireless system connection and other necessary devices prior to surgery.

Network Environment

Connecting the Kick 2 to the hospital network creates an ME system according to IEC 60601-1. It is recommended that the hospital network components are compliant with an adequate IEC standard.

Only operate the system in secured network environments. Make sure the network is protected against unauthorized access (e.g., user authentication, firewall) and against malicious software. Otherwise, system function cannot be guaranteed due to possible malicious software infections.

Display of 3D Content

Kick 2 delivers a progressive single stream signal with a resolution of 1920 x 1080 at 60 Hz. To correctly display 3D content created by some Brainlab software, an external display must support 3D line-by-line technology.

3.6.2 Back Panel Connections

Compatible Connection Cables

Port	Example	Handling
Hospital network		Ethernet port for connecting to hospital network or intraoperative data sources (min. Cat 5e RJ45 network cable for max. 1 GB network). There is a latch at the top which locks when plugged into the port. When removing the connector, press the latch, then pull plug out.
Intraoperative data		
Tracking unit		Ethernet port for connecting a tracking unit.
USB 2.0		USB ports for connecting passive USB 2.0 devices for patient data transfer.
USB 3.0		USB ports for connecting USB 3.0 devices.
S-Video In		To interact with Brainlab software video, connect S-Video source with a 26 AWG miniature coaxial cable (max. 5 m) with Mini-Din Hosiden plug to the Brainlab S-Video breakout cable. Correctly align the plastic coding knob before plugging in the cable. This connector cannot be locked. Use Hosiden 4-pin Mini-DIN connectors only. Similar connectors may appear to fit, but could lead to equipment damage.
S-Video breakout cable		Used for connecting S-Video sources to the **Monitor Cart**. Connect the black BNC connector to the S-Video In Y port on the connection panel. Connect the white BNC connector to the of the S-Video In C port on the connection panel.
Microscope		Only connect microscopes via a Brainlab microscope cable. Plug in the cable by connecting all connectors (DVI-I, USB, CVBS) to the corresponding port. For detailed information on microscope integration see the corresponding **Instrument User Guide**.
Video Out		Video out may also be used for the DVI connection. *NOTE: Brainlab does not provide this cable.*

3.6.3 Tracking Unit

General Information

Connecting a tracking unit to the **Monitor Cart** creates an ME system according to IEC 60601-1, and must meet the requirements set out in the standard.

Connect the tracking unit to the **Monitor Cart** when both devices are powered off.

*NOTE: Refer to the tracking unit user guide(s) before connecting it to the **Monitor Cart**.*

How to Connect a Tracking Unit

Step	
1.	Plug the Ethernet cable to the tracking unit port on the **Monitor Cart**.
2.	Connect the Ethernet cable to the tracking unit.
3.	Power devices on.

3.6.4 Optional Components

DVD Drive for Kick

The DVD Drive for **Kick** can read the following:

- Mastered disc
- CD-R
- CD-RW
- DVD-ROM
- DVD-R 3.95 GB
- DVD-R 4.7 GB authoring
- DVD-R 4.7 GB general
- DVD-RW
- DVD+R 4.7 GB
- DVD+R 8.5 GB (double layer)
- DVD+RW 4.7 GB
- DVD-RAM 4.7 GB

The DVD Drive for **Kick** can write to the following:

- CD-R
- CD-RW
- DVD-R 4.7 GB
- DVD+R 4.7 GB
- DVD+R 8.5 GB (double layer)
- DVD+RW 4.7 GB
- DVD-RAM 4.7 GB

Only insert standard DVDs of 120 mm diameter. Do not insert irregularly shaped DVDs.

How to Connect DVD Drive for Kick

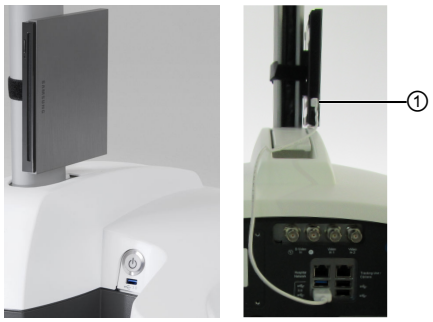


Figure 10

Step	
1.	Connect the USB cable to the DVD drive.
2.	Using the Velcro strap, attach the DVD drive at the bottom of the **Monitor Cart** post, so that the connection cable ① is on the lower side (closest to the base) and is pointing toward the back of the cart.
3.	Connect the cable to a USB 3.0 port on the connection panel.
4.	Press eject button to open the tray and insert/remove DVD.

How to Connect USB to Ethernet Adapter

The USB to Ethernet adapter allows you to connect a third-party device via an Ethernet port.

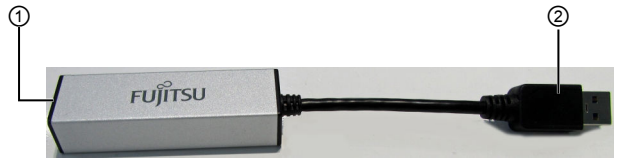


Figure 11

Step	
1.	Connect the USB plug ② of the adapter to a USB 3.0 port on the connection panel on the back of the **Monitor Cart** base.
2.	Connect Ethernet cable to third-party device.
3.	Connect Ethernet cable to the Ethernet port of the adapter ①.

*NOTE: Do not use the USB-to-Ethernet adapter to connect a tracking unit. Always connect the tracking unit directly to the Ethernet port labeled **Tracking Unit**.*

3.7 Cabling

3.7.1 Overview

General Information

This section provides information on the connection of cables, including:

- Potential equalization cable
- Mains power cable

Safe Handling of Cables

Do not connect or disconnect cables when the **Monitor Cart** is turned on.

Do not use broken or damaged cables.

Do not tug on or pull cables.

Risk of electrical shock: Do not touch cable plugs when **Kick 2** is turned on.

Ensure that tracking unit cable is not used to connect any device other than the **Monitor Cart** and **tracking unit**.

Check that cables are in good condition before using the system.

Disconnect and store all cables on the cable hooks when system is not in use or before moving it. Do not pull cables.

Ensure that there is sufficient slack when connecting cables. Do not strain or place the attached cables under tension.

Potential Equalization (Yellow/Green) Cable

- Equalizes potentials between different metal parts that can be touched simultaneously.
- Reduces differences of potential that can occur between medical electrical devices and other conductive parts of other objects during operation.

Before using the system, connect the potential equalization cable to the **Monitor Cart** and the corresponding wall outlet.

How to Connect the Potential Equalization Cable

Figure 12

Step	
1.	Plug potential equalization cable into potential equalization port of the **Monitor Cart**.
2.	Plug potential equalization cable into an equivalent wall outlet.

How to Connect Mains Power Cable

Step	
1.	Connect the mains power cable to power port on the **Monitor Cart**.
2.	Plug the other end of the mains power cable into wall outlet.

Always remove the mains power cable from the wall outlet first, before unplugging the cable from the system.

How to Connect Mains Power Cable with V-Lock

Figure 13

Depending on your region, the mains power cable may have a V-lock release mechanism.

Step	
1.	Connect the mains power cable to power port on the **Monitor Cart** connection panel.
2.	Plug the other end of the mains power cable into wall outlet.
3.	To disconnect the cable, press the yellow button to release it from the port (see arrow above).

Always remove the mains power cable from the wall outlet first, before unplugging the cable from the system.

3.7.2 Cable Storage

Cable Hooks

Figure 14

The following cables typically remain connected to the cart:

- Mains power cable
- Tracking unit cable
- Hospital network cable
- Potential equalization cable

Carefully bundle the cables together and hang them from the cable hooks.

4 ASSEMBLY, TRANSPORT AND STORAGE

4.1 Protection Cover

General Information

The monitor protection cover must be used during transport and storage to protect the sensitive components from damage. Remove the cover before entering the OR.

Do not cover monitor with protection cover when device is running, otherwise it could overheat and be seriously damaged. Ensure that device has been turned off and is completely cooled down before applying the protection cover.

To avoid damage, place protection cover over monitor before transport or storage.

Clean touchscreen before applying the monitor protection cover.

Related Links

5.2.1 How to Clean the Protection Cover on page 65

How to Attach the Protection Cover to Monitor

Figure 15

Step	
1.	Shut down, turn off and unplug the system.
2.	After the monitor has cooled down, pull the monitor protection cover over the monitor.
3.	Close the Velcro straps, ensuring that the cover sits properly on the monitor.

4.2 Transport Outside of the Hospital

4.2.1 Overview

Precautions

Consider the weight of the components before beginning assembly and disassembly.

After assembly ensure that all levers on the cart are securely closed. Verify that all mechanical connections are correct and secure.

During assembly and disassembly, system components should only be lifted by people who are bodily able (e.g., not by pregnant women).

Transport Cases

Figure 16

Three transport cases are needed for transporting the **Kick 2** outside of the hospital:

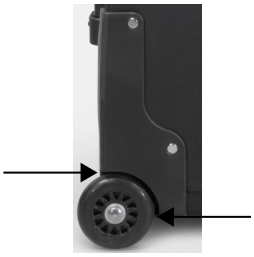
- Transport case for the monitor
- Transport case for the **Monitor Cart** base
- Shoulder bag for cart post and cables

In order to pack the system into the cases, it must be disassembled.

Moving Parts of Transport Cases

Be extremely careful not to clamp fingers or other body parts in the moving parts of the transport cases. Joints that may clamp body parts include, but are not limited to:

Retractable handles	

Zipper	
Wheels	

During Transport

Use two people to lift and load the cases.

For transport via car:

- Secure the transport cases, especially if the back seat of the car is used.

For transport via airplane:

- It is recommended to check in the transport cases as bulky luggage.
- Pack the system components in the transport cases only as described in this user guide.

Make sure that transport cases are secured when transporting (e.g., by car).

Post-Transport

After transporting, wait until the system has adjusted to room temperature before operating.

Related Links

7.3 System Specifications on page 81

4.2.2 Assembling the Kick 2

Assembly Workflow

Step	
1.	Insert the monitor post into the **Monitor Cart** base.
2.	Clip monitor cable to the top of the monitor post.
3.	Attach monitor to the monitor post.
4.	Attach monitor cable to monitor.

NOTE: The detailed descriptions of each step are provided in this section.

How to Attach the Post

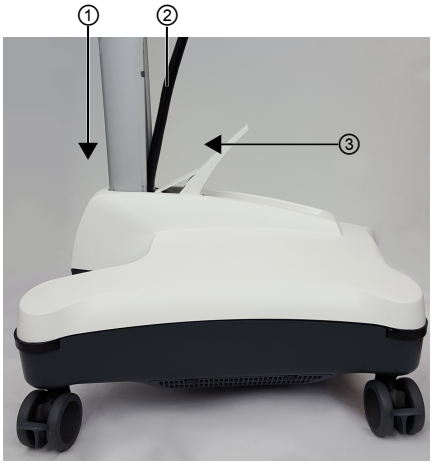


Figure 17

Step	
1.	Push back the post fixation lever ③.
2.	While holding monitor cable out of the way ②, slide bottom end of the monitor post into the **Monitor Cart** base ①.
3.	Close post fixation lever securely.

How to Clip the Cable to the Post

Figure 18

Step	
1.	Run the monitor cable up the monitor post channel.
2.	Insert the cable clip into the corresponding notch in the post.

How to Attach the Monitor

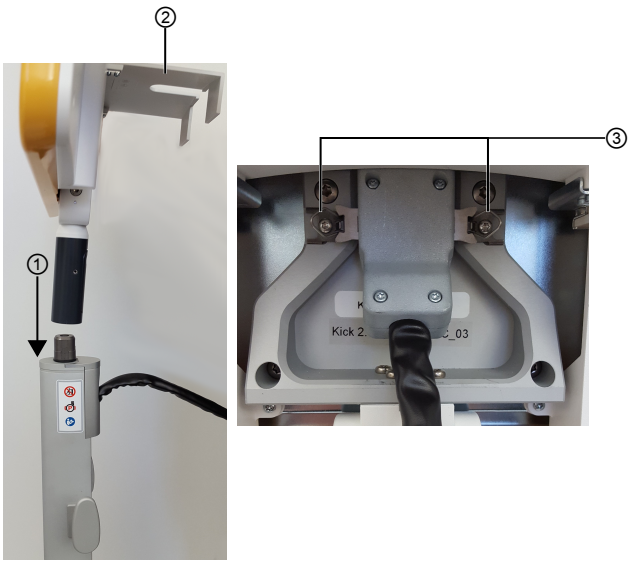


Figure 19

Step	
1.	Holding the monitor frame and the monitor handle, slide the monitor handle onto the end of the monitor post ①. The release trigger clicks when the monitor is securely attached.
2.	Open the flap on the back of the monitor ②.
3.	Attach monitor cable to the monitor and secure latching pins ③.

Step	
	Once attached, close the flap on the back of the monitor ②.

4.2.3 Disassembling and Transporting the Kick 2

Before You Begin

Consider the weight of the components before beginning assembly and disassembly.

Apply protection cover over monitor before disassembly.

Related Links

7.3 System Specifications on page 81

How to Prepare the Monitor Cart for Transport

Step	
1.	Shut down the system.
2.	Unplug mains power cable and disconnect cable from the **Monitor Cart**. Remove all other attached cables and components (e.g., PE cable, network cable, DVD drive). Store cables in the front pocket of the shoulder bag.
3.	Disconnect the monitor cable from the monitor.
4.	Press the release trigger on the monitor handle and remove the monitor from the post. Place the monitor into the corresponding case.
5.	Pull the monitor cable clip backwards to disconnect the cable from the post. Gently pull the cable out of the post channel.
6.	Pull up on the post fixation lever and remove the post from the **Monitor Cart** base. Place the post into the shoulder bag.
7.	Place the **Monitor Cart** base into the corresponding case.
8.	Cover the metal connector of the monitor cable with the cloth bag provided.
9.	Fully close the zipper of the transport case.

How to Transport the Monitor Cart Base

Figure 20

Step	
1.	Cover the metal connector of the monitor cable with the cloth bag ② provided.
2.	With the top foam insert flipped up, insert the **Monitor Cart** base into the case.
3.	Guide the monitor cable through the slit in the foam insert ① and replace the insert on top of the **Monitor Cart** base.
4.	Fully close the case zipper.

How to Transport the Monitor

Figure 21

Step	
1.	Place monitor in the foam insert of the transport case, with the touchscreen facing down ①.
2.	Fully close the case zipper.
3.	With the handle extended on the **Monitor Cart** base case, hang the shoulder strap of the monitor case over it ②.
4.	Attach the Velcro strap of the monitor case to the corresponding handle on the **Monitor Cart** base case.

How to Transport the Monitor Cart Post

Figure 22

Step	
1.	Place the post into the foam insert slot ① of the shoulder transport bag. *NOTE: The second slot is intended for the **Kick 2 Camera Cart** post.*
2.	Fully close the case zipper.

4.3 Proper Transport Inside the Hospital

Parking and Transport Position

- Protection cover must be attached to the monitor.
- Must be in upright position for transport.

Warning

Mains power cable and any other cables that shall remain attached to the Monitor Cart must be hung on the cable hooks.

Attached Accessories and Cables During Transport

Consider the weight of the below items if attached during transport. All other weight must be removed from the cart.

- Protection cover
- Mains power cable
- Ethernet cable
- Potential equalization cable
- Optional: **DVD drive for Kick 2**
- Adapter (USB to Ethernet)

How to Transport the Monitor Cart

Figure 23

Step
Use the monitor handle ① to transport the **Monitor Cart**.

Warning

Never move the cart on a surface with >10° tilt as transport speed increases on inclined surfaces, increasing the risk of the cart tipping over

How to Overcome Obstructions During Transport

If a clear, flat path is unavailable (e.g., an unavoidable depth variation between rooms), follow the proper procedure to overcome this obstruction.

Step
Pull the **Monitor Cart** to the point of depth variation, then carefully tilt the cart slightly and move one wheel at a time over the step. *NOTE: Do not lift the entire cart. Be careful not to tilt the cart so much that it tips over.*

4.4 Parking and Storage

4.4.1 Overview

General Information

Each wheel on the **Monitor Cart** has an individual foot brake so that it can be easily transported and securely parked.

Warning

Fully lock all brakes when the cart is stored, parked or in operation.

Before Transport

Release all brakes before moving the system.

How to Lock/Unlock Brakes

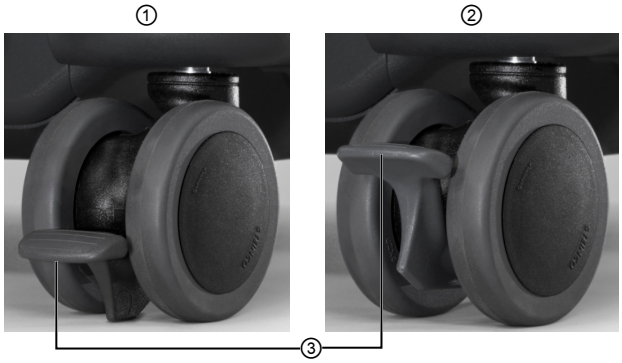


Figure 24

Options
To lock, push the brake pedal ③ down with your foot until it snaps into locked position ①.
To unlock, push brake pedal ③ up with your foot until it snaps into unlocked position ②.

4.4.2 Parking Kick 2

General Information

When the system is not in use, always keep the cart in the secure transport and parking position.

Warning
Never park the cart or take the cart out of transport position on a surface with >10° tilt.

4.4.3 Storage

Safe Storage

When storing the system, always use the protection cover.

Related Links

7.2 Environmental Requirements on page 80

4.4.4 Long Term Storage

General Information

Before and after placing the system into storage for an extended period of time, steps must be taken to ensure proper functioning.

Disposal

If you do not intend to use the system again, refer to the disposal information.

Related Links

1.2 Legal Information on page 8

Storage for 1-6 Months

Before storing system for one to six months:

Step	
1.	Unplug all external cabling and store it together with the equipment.
2.	Cover monitor with protection cover.
3.	Store equipment in a dry place with a temperature between 21°C (70°F) to 30°C (86°F).

Before using equipment that has been stored for approximately three months:

- Clean the equipment.
- Start system and verify correct function before using it for surgery.

Related Links

5.1 Cleaning the Monitor Cart on page 63

Storage for 6 Months or Longer

Before storing system for six months or longer:

Step	
1.	Unplug all external cabling and store it together with the equipment.
2.	Cover monitor with protection cover.
3.	Store equipment in a dry place with a temperature between 21°C (70°F) to 30°C (86°F).

Before using equipment that has been stored for six months or longer:

- Clean the equipment.
- Perform a recurrent test to verify safety and effectiveness of equipment (offered by Brainlab).
- Start system and verify correct function before using it for surgery.

Related Links

6.2 Recurrent Test Requirements on page 68

5 CLEANING

5.1 Cleaning the Monitor Cart

Before You Begin

Ensure that the system is fully shut down and disconnected from mains power before beginning cleaning.

Risk of electrical shock: Prior to and during all cleaning and disinfection work, ensure that tracking unit is disconnected from the **Monitor Cart**.

No Automatic Disinfection

Do not use automatic cleaning and disinfection procedures for any components.

Do not expose the **Kick 2** to direct UV light, as it may damage equipment.

No Sterilization

Do not sterilize any components. High temperatures from sterilization may damage components.

Disinfectant Compatibility

The **Kick 2** shall only be cleaned using the following disinfectant types:

Disinfectant Type	Example
Alcohol-based	Meliseptol, Mikrozid AF Liquid
Alkylamine-based	Incidin Plus 2%
Active oxygen-based	Perform
Aldehyde/chloride-based	Antiseptica Kombi - Flächendesinfektion

NOTE: Use only surface disinfectants released in your specific market.

NOTE: Surface disinfectants may leave a residue. This can be easily removed using a dry cloth.

Always closely follow the directions of the disinfectant manufacturer.

Using cleaning fluids, disinfection wipes or cleaning procedures others than those specified may damage equipment. It is suggested to only use disinfectants verified by Brainlab to avoid damaging the system.

No Liquids

Ensure that liquids do not enter the **Kick 2** components, as this could damage the component and/or the electronics. System components are not protected against the ingress of liquids.

Use only a moist cloth for cleaning. Other methods could allow liquids to enter the system and cause damage.

How to Clean the Monitor Cart

Step	
1.	Shut down the system and unplug the mains power.
2.	Disconnect the **Monitor Cart** from the tracking unit.
3.	Clean all housing surfaces using a surface disinfectant, following the disinfectant manufacturer’s recommendations.
4.	Carefully clean the interfaces, ensuring that no liquids enter the system.
5.	Clean the touchscreen with a lint-free wipe using a streak-free surface disinfectant.

5.2 Cleaning the Monitor Protection Cover

Illustration

Figure 25

How to Clean the Protection Cover

Step	
1.	Open Velcro straps and remove protection cover from monitor.
2.	Use clean water to clean the surface.
3.	If necessary, use a surface disinfectant to disinfect the surface, following the disinfectant manufacturer's recommendations. *NOTE: Use only a moist cloth to clean and disinfect surfaces. Do not allow the protection cover to become soaked with disinfectant.*
4.	Clean and disinfect only the outside surfaces of the protection cover. Do not clean or disinfect the inside surfaces of the cover.
5.	Allow the protection cover to fully dry before applying to the system. *NOTE: After drying, surface disinfectants may leave stains.*

NOTE: If a soiled cover cannot be sufficiently cleaned using the above steps, exchange the cover for a new one.

Do not wash, soak, iron or sterilize protection cover.

5.3 Cleaning Transport Cases

Illustration

Figure 26

How to Clean the Transport Cases

Step	
1.	Use clean water to clean the surface.
2.	If necessary, use a surface disinfectant to disinfect the surface, following the disinfectant manufacturer's recommendations. *NOTE: Use only a moist cloth to clean and disinfect surfaces. Do not allow transport cases to become wet or soaked with disinfectant.*
3.	Clean and disinfect only the outside surfaces of the transport cases. Do not clean or disinfect surfaces on the inside of the cases.
4.	Allow the transport cases to fully dry before inserting the system. *NOTE: After drying, surface disinfectants may leave stains.*

6 ELECTRICAL SAFETY

6.1 Equipment Classification

Monitor Cart Classification

The **Monitor Cart** is classified as Class I Equipment according to IEC 60601-1 and must be tested accordingly.

Classification	Definition
Class I	Refers to equipment classification regarding protection against electric shock. Protective means are provided for metallic accessible parts or metallic internal parts, such as connection to PE (protective earth).

Safety Requirements

To avoid the risk of electrical shock, the **Monitor Cart** must only be connected to a mains power supply with protective earth.

6.2 Recurrent Test Requirements

6.2.1 Overview

Interval

The recurrent test should be performed once annually.

For sustained safety of the equipment, a yearly electrical safety test according to IEC 62353 is required.

NOTE: Local regulations and requirements that vary from this standard take precedent. Alternatively, the test can be performed according to IEC 60601-1.

Scope

The electrical safety test must comprise all steps listed in the safety inspection form. In addition to the safety inspection form, the safety inspection also comprises the further inspections described in the Maintenance chapter.

In addition, Brainlab support or authorized partners shall regularly clean air intake filters and exchange the battery when necessary.

Inspections by Non-Brainlab Personnel

Only qualified, trained and skilled personnel are allowed to perform electrical safety tests.

The test must be performed by a qualified engineer who:

- Is qualified to carry out safety inspections on electrical medical equipment.
- Is familiar with the product safety information and product instructions, and has read and understood the user guides.
- Is up-to-date with current local regulations regarding industrial and non-industrial accident prevention.
- Informs Brainlab immediately in writing if the equipment is deemed unsafe.

Inspections by Brainlab Support

- If a suitably qualified person is not available at the customer site, Brainlab support will perform this inspection for a set fee.
- If you require a Brainlab support specialist, contact Brainlab support.

Related Links

8.1 Inspections on page 93

6.2.3 Safety Inspection Form – Recurrent Tests on page 70

6.2.2 Test Steps

Measuring Devices

The measurement instructions provided are an example for one measuring device.

The individual steps may vary from one measuring device to another. Refer to the corresponding manufacturer's instructions for the measuring device you are using.

NOTE: If you are unsure whether your measuring device is suitable, contact Brainlab support.

Test Guidelines

When performing recurrent tests:

- Perform required test steps in the order defined above.
- Measure all areas of the system indicated in the following chapters.
- All tests must be passed before the device can be considered safe.
- The calibration of the measuring device must be valid at the time of measurement.
- Perform all tests according to IEC 62353.

NOTE: The measurement outlet connection of the measuring device must remain established during the entire measurement cycle. If you unplug the measurement outlet during measurement, the measuring device recognizes that the connection is no longer established and you will need to repeat the entire test.

If a test does not pass, device must be repaired by Brainlab support. After repair, repeat the entire electrical safety test from the beginning.

Safety Inspection Form

- Print out or make a copy of the safety inspection form.
- Enter the inspection results.
- Compare measured values with critical values to determine if the test has been passed.
- Keep form as a record of the inspection.

Related Links

6.2.3 Safety Inspection Form – Recurrent Tests on page 70

Required Test Steps

Step	
1.	Perform visual inspection.
2.	Check protective earth resistance.
3.	Check equipment leakage current.
4.	Perform functional test.
5.	Report and evaluate results.
6.	Check and prepare for normal use.

6.2.3 Safety Inspection Form – Recurrent Tests

Test Steps to Be Performed

Step	Instructions and Conditions
Visual inspection	Check all relevant cables for dents, damaged isolation and blank lines. Move and bend the cables around your hand to slightly stretch the isolation. Any visible damage is not acceptable. Check the **Monitor Cart** for visible damage, broken cables and blank lines. With the exception of air vents, you should not be able to see the interior of the carts. Damaged cables, blank lines or visibility of the interior are not acceptable. Ensure that the **Monitor Cart** is correctly assembled, i.e.: • The post is securely inserted into the cart base • The monitor is locked into position on the post • The monitor hinge securely holds the monitor in position If any damages are detected, place the device out of operation, mark as such and contact Brainlab support.
Protective earth resistance	Plug the **Monitor Cart** into mains power supply using the original Brainlab mains power cable. If you have multiple mains power cables for your device, repeat this test with each cable. Test the protective earth resistance according to IEC 62353:2007 Chapter 5.3.2.2 using a measuring device capable of delivering a current of at least 200 mA into 500 mΩ. Perform measurement for one second. The open circuit voltage must not exceed 24 V.
Equipment leakage current	Plug the **Monitor Cart** into mains power supply using the original Brainlab mains power cable. Test the equipment leakage current according to IEC 62353:2007 Chapter 5.3.3.2.3 using the so-called “differential method” with the following additional conditions: • Measurements are performed at mains voltage • Measurements are performed in both positions of the mains plug, if possible When measuring in the various positions of the mains plug, document the higher value
Functional test	• Power on the **Monitor Cart** • Load patient data and start a software application • Check that touchscreen interaction is accurate • Accurately track a Brainlab instrument
Report and evaluate results	Generate a report and determine whether the device is safe and effective.
Check and prepare for normal use	After testing, check that the **Monitor Cart** is restored to the conditions necessary for normal use before being returned into service. Remove all devices that have been connected (e.g., measurement lines).

Critical Values

Test Step	Normal Condition
Protective earth resistance	≤ 0.3 Ω
Equipment leakage current	≤ 0.5 mA

Reference Dimension

Use the tables to enter the single measured values at each required measurement point.
Enter the maximum measured value in the table below:

Test Step	Normal Condition	Passed?
Protective earth resistance		
Equipment leakage current		

Serial number of measuring device: _____
Calibration valid through (date): _____
Test performed (date): _____by: _____

Related Links

6.4.3 Safety Inspection Form – Medical Electrical Systems on page 76

6.3 Performing Tests

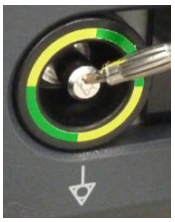
6.3.1 Protective Earth Resistance

General Information

Connect the measurement tip of your measuring device with the conductive parts shown in the table below and measure the resistance.

If a test does not pass, device must be repaired by Brainlab support. After repair, repeat the entire electrical safety test from the beginning.

Protective Earth Resistance Test

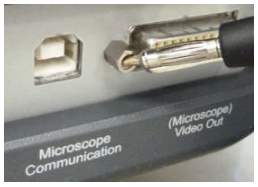
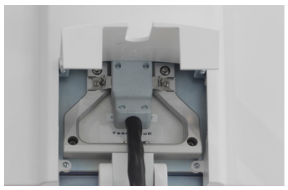
Point Tested		Measured Value	Test Passed?
Potential equalization port			

6.3.2 Equipment Leakage Current

General Information

Connect the measurement tip of your measuring device with the conductive parts shown in the table below and measure the leakage current.

Equipment Leakage Current Measurement Points

Point Tested		Measured Value	Test Passed?
Potential equalization port			
Microscope fixation screw			
Screw on the back of the monitor (any screw under flap)			
Post fixation			

6.4 Electrical Safety Test – Medical Electrical System

6.4.1 Overview

Interval

The test is mandatory when creating a medical electrical system according to IEC 60601-1 or IEC 60601-1-1 respectively.

An electrical safety test must be performed when a tracking unit is initially connected to an existing **Monitor Cart**, creating a **Kick 2 Navigation Station**.

Repeat this test any time the medical electrical system setup is changed (e.g., after repair of one or all combined equipment or after the exchange of equipment components like cables).

For sustained safety of each piece of equipment and the combination thereof, a yearly electrical safety test is required.

Scope

The test must include all the items specified in this user guide.

Inspections by Non-Brainlab Personnel

Only trained and skilled personnel are allowed to perform electrical safety tests.

The test must be performed by a qualified engineer who:

- Is qualified to carry out safety inspections on electrical medical equipment.
- Is familiar with the product safety information and product instructions, and has read and understood the user guides.
- Is up-to-date with current local regulations regarding industrial and non-industrial accident prevention.
- Informs Brainlab immediately in writing if the equipment is deemed unsafe.

Inspections by Brainlab Personnel

- If a suitably qualified person is not available at the customer site, Brainlab support will perform this inspection for a set fee.
- If you require a Brainlab support specialist, contact Brainlab support.

6.4.2 Testing Medical Electrical Systems

Measuring Devices

The measurement instructions provided are an example for one measuring device.

The individual steps may vary from one measuring device to another. Refer to the corresponding manufacturer's instructions for the measuring device you are using.

Testing Precautions

- The described test only covers the Brainlab equipment and not the connected equipment. Please additionally follow the description given by the manufacturer of the connected device.
- All devices shall be in operation mode: During the measurement all mains switches shall be in operating position (ON).
- Tests shall be performed in normal condition as well as in single fault condition.

Test Guidelines

When performing the test, keep the following points in mind:

- Perform required test steps in the order defined above
- Measure all areas of the system indicated in the following chapters
- All tests must be passed
- The calibration of the measuring device must be valid at the time of measurement
- Perform all tests according to IEC 60601-1:2005

NOTE: The measurement outlet connection of the measuring device must remain established during the entire measurement cycle. If you unplug the measurement outlet during measurement, the measuring device recognizes that the connection is no longer established and you will need to repeat the entire test.

If a test does not pass, **Kick 2** must be repaired by Brainlab support. After repair, repeat the entire electrical safety test from the beginning.

Safety Inspection Form

- Print out or make a copy of the safety inspection form.
- Enter the inspection results.
- Keep it as a record of the inspection.

Required Test Steps

Step	
1.	Perform visual inspection.
2.	Check touch current.
3.	Perform functional test.
4.	Report and evaluate results.
5.	Check and prepare system for normal use.

Related Links

6.4.3 Safety Inspection Form – Medical Electrical Systems on page 76

6.4.3 Safety Inspection Form – Medical Electrical Systems

Tests to be Performed

Test Step	Instructions and Conditions
Visual Inspection	• Check all relevant cables for dents, damaged isolation and blank lines. Move and bend the cables around your hand to stretch the isolation slightly. Any visible damage is not acceptable. • Check **Kick 2** for visible damage, broken cables and blank lines. With the exception of air vents, you should not be able to see the interior of the carts. Damaged cables, blank lines or visibility of the interior are not acceptable. • Ensure that **Kick 2** is correctly assembled. • If any damages are detected, place **Kick 2** out of operation, mark as such and contact Brainlab support.
Touch Current	• Connect the **Monitor Cart** and tracking unit and plug devices into mains power supply using the original Brainlab mains power cable. Connect all data connections for intended use. • Place the device(s) that shall be connected into operating mode, as described by the manufacturer of the device. • Connect the required cable(s) to create the medical electrical system and switch both devices on. • Test the equipment touch current according to IEC 60601-1:2012 Chapter 16.6.1 in normal condition and single fault condition. The interruption of any non-permanently installed protective earth connection is considered single fault condition.
Functional test	• Power on the **Kick 2**. • Load patient data and start a software application. • Check that touchscreen interaction is accurate. • Accurately track a Brainlab instrument. • Verify the actual function of the created medical electrical system.
Report and evaluate results	Generate a report and determine whether the device is safe and effective.
Check and prepare for normal use	• After testing, check that **Kick 2** is restored to the conditions necessary for normal use before being returned into service. • Remove all devices that have been connected (e.g., measurement lines).

Critical Values

Test Step	Normal Condition	Single Fault Condition
Touch Current	≤ 0.1 mA	≤ 0.5 mA

Reference Dimension

Enter the maximum measured value at each required measurement point in the table below:

Test Step	Normal Condition	Single Fault Condition	Passed?
Touch current			

Serial number of measuring device: _____

Calibration valid through (date): _____

Test performed (date): _____by: _____

Related Links

6.2.3 Safety Inspection Form – Recurrent Tests on page 70

6.4.4 Touch Current for Medical Electrical Systems

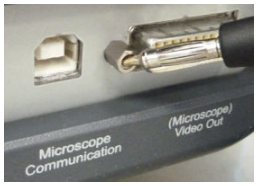
General Information

The touch current test for medical electrical systems repeats some of the steps in the standard equipment leakage current test.

Test Overview

Connect the measurement tip of your measuring device with the conductive part and measure the leakage current.

Measuring Test Points

Point Tested		Measured Value	Test Passed?
Microscope fixation screw			

Related Links

6.3.2 Equipment Leakage Current on page 73

7 COMPLIANCES AND SPECIFICATIONS

7.1 Electrical Standards

Certificates and Approvals

	Certificate/Approval
Certificates	IEC 60601-1 ANSI/AAMI ES60601-1 EN60601-1
IEC 60529	IP20

Power Specifications – North America

In North America: if the unit is connected to 240 V, connect it only to a center-tapped outlet labeled 240 V power supply.

7.2 Environmental Requirements

7.2.1 Transport/Storage and Operating Conditions

Local Restrictions

- Store and operate systems in locations that are protected against moisture, wind, sunlight, dust, salinity and sulfur.
- Do not store systems in the close vicinity of chemical products or gas.
- Do not expose systems to direct UV light.

Altitude Considerations

- Unless stated otherwise, the system is rated for use at an altitude < 3000 meters.
- Transport or store the system at an altitude < 6000 meters.

Adaption Time

Adaption time for use after extreme storage conditions is a minimum of one hour.

Environmental Conditions

The following environmental requirements apply for the **Kick 2**:

Specification	**Operating Conditions**
Temperature	10°C (50°F) to 30°C (86°F)
Humidity	30% to 75% non-condensing
Pressure	700 hPa to 1060 hPa

Specification	**Transport/Storage Conditions**
Temperature	-10°C (14°F) to 45°C (113°F) (for a period of time not exceeding 15 weeks)
Humidity	10% to 90% non-condensing
Pressure	500 hPa to 1060 hPa

NOTE: Transport/storage values are valid for the system when contained in the transport cases.

7.3 System Specifications

7.3.1 Physical Characteristics

Monitor with Protection Cover

Specification	Value
Height	355 mm
Width	560 mm
Depth	75 mm
Weight	8.12 kg
Monitor angle flexibility	

Monitor Cart Base

Specification	Value
Height	278 mm
Width	455 mm
Depth	485 mm
Weight	16.46 kg

Monitor Cart Post

Specification	Value
Height	947 mm
Width	132 mm
Depth	70 mm
Weight	1.32 kg

Complete Monitor Cart

Specification	Value
Height	1470 mm
Footprint	500 x 500 mm
Weight	25.8 kg

Related Links

5.1 Cleaning the Monitor Cart on page 63

7.3.2 Technical Specifications

Monitor Cart and Medical Computer Unit

Specification	**Value**	
Electrical Specifications	AC input	100 VAC - 240 VAC
	Frequency	50/60 Hz
	Power consumption	3 A @ 100 VAC 1.5 A @ 240 VAC
CMOS Battery	3V CR2032 Lithium Battery 210 mAh	
Processor	Intel® Core i5 4th generation with 2.0 GHz	
RAM	8 GB	
Supported I/O	• 2 USB 2.0 • 3 USB 3.0 • Potential equalization • S-Video In • 2 LAN 1 GBit/s connection • CVBS • DVI-I	
Mass Storage	Internal Solid State Disk (SSD) 2.5” 240 GB	
Audio	Loudspeaker integrated in the **Monitor Cart** base	
Display	21.5”, FHD resolution	
Touchscreen	Projected capacitive touchscreen	
Fuse	5 x 20 mm 6.3 A / 250 V T H	

DVI Converter

Please refer to the Brainlab instruction leaflet, **Converter Kit DVI to S-Video**.

7.4 Compliances

7.4.1 Electromagnetic Emissions

Electromagnetic Environment

The **Kick 2** is intended for use in the electromagnetic environment specified in the table below.

The user is responsible for ensuring that the systems are used in such an environment.

Portable RF Communications Equipment

Warning

Portable RF communications equipment (including peripherals like antenna cables and external antennas) should be used no closer than 30 cm from any part of the Monitor Cart including cables specified by Brainlab. Otherwise, degradation of the performance could result.

Declaration

The **Kick 2** is intended for use in professional healthcare facilities only. The following lists all applicable emission tests and standards, as well as the used compliance levels:

Emissions Test	Standard	Compliance Level
Conducted and radiated RF emissions	CISPR11	Group 1 Class A
Harmonic distortion	IEC 61000-3-2	Class A
Voltage fluctuations flicker	IEC 61000-3-3	Complies

NOTE: The emissions characteristics of this equipment make it suitable for use in industrial areas and hospitals (CISPR 11 class A). If it is used in a residential environment (for which CISPR 11 class B is normally required) this equipment might not offer adequate protection to radio-frequency communication services. The user might need to take mitigation measures, such as relocating or reorienting the equipment.

Warning

The system should not be used adjacent to, or in direct contact with other equipment. If this cannot be avoided, normal operation must be verified in the configuration in which it will be used.

7.4.2 General Electromagnetic Immunity

Electromagnetic Environment

The **Kick 2** is intended for use in the electromagnetic environment specified in the following sections.

The user is responsible for ensuring that the systems are used in such an environment.

Electromagnetic Immunity Declaration

The tables in the following sections provide guidance according to the manufacturer’s electromagnetic immunity declaration.

7.4.3 Electromagnetic Immunity

Electromagnetic Immunity Tests

The **Kick 2** is intended for use in professional healthcare facilities only. The following lists all applicable immunity tests and standards, as well as the used compliance levels:

Immunity Test	Standard	IEC 60601-1-2 Test Level	Compliance Level
Electrostatic Discharge – Contact	IEC 61000-4-2	±8 kV	±8 kV
Electrostatic Discharge – Air		±2 kV, ±4 kV, ±8 kV, ±15 kV	±2 kV, ±4 kV, ±8 kV, ±15 kV
Radiated RF EM Fields	IEC 61000-4-3	3 V/m 80 MHz to 2.7 GHz 80% AM at 1 kHz	3 V/m 80 MHz to 2.7 GHz 80% AM at 1 kHz
Proximity Fields from RF Wireless Communication Equipment 2450 MHz	IEC 61000-4-3	28 V/m	28 V/m
Proximity Fields from RF Wireless Communication Equipment – 5240 MHz, 5500 MHz, 5785 MHz		9 V/m	9 V/m
Electrical Fast Transient/ Burst – Input AC Power Port	IEC 61000-4-4	±2 kV 100 kHz repetition frequency	±2 kV 100 kHz repetition frequency
Electrical Fast Transient/ Burst – Signal Input/ Output Ports		±1 kV 100 kHz repetition frequency	±1 kV 100 kHz repetition frequency
Surge – Input AC Power Port Line-to-Line	IEC 61000-4-5	±0.5 kV, ±1 kV	±0.5 kV, ±1 kV
Surge – Input AC Power Port Line-to-Ground		±0.5 kV, ±1 kV, ± 2 kV	±0.5 kV, ±1 kV, ± 2 kV
Surge – Input/Output Ports Line-to-Ground		± 2 kV	± 2 kV
Conducted Disturbances Induced by RF	IEC 61000-4-6	3 V 0.15 MHz to 80 MHz 6 V 80% AM at 1 kHz	3 V 0.15 MHz to 80 MHz 6 V 80% AM at 1 kHz
Power Frequency Magnetic Field	IEC 61000-4-8	30 A/m 50 Hz or 60 Hz	30 A/m 50 Hz or 60 Hz
Voltage Dips	IEC 61000-4-11	0% U_t; 0.5 cycle At 0, 45°, 90°, 135°, 180°, 225°, 270° and 315° 0% U_t; 1 cycle and 70% U_t; 25/30 cycles Single phase at 0°	Complies
Voltage Interruptions		0% U_t; 250/300 cycle	Complies

IEC 61000-4-6, IEC 61000-4-3

<table>
<tr><th>Immunity Test</th><th>IEC 60601 Test Level</th><th>Compliance Level</th><th colspan="2">Electromagnetic Environment – Guidance</th></tr>
<tr><td rowspan="3">Conducted RF IEC 61000-4-6-</td><td rowspan="3">3 Vrms 150 kHz to 80 MHz</td><td rowspan="3">3 V</td><td colspan="2">Portable and mobile RF communications equipment should be used no closer to any part of the Kick 2, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.
Recommended separation distance:</td></tr>
<tr><td>$d = 1,2\sqrt{P}$</td><td>80 MHz to 800 MHz</td></tr>
<tr><td>$d = 2,3\sqrt{P}$</td><td>800 MHz to 2.5 GHz</td></tr>
<tr><td>Radiated RF IEC 61000-4-3</td><td>3 V/m 80 MHz to 2.5 GHz</td><td>3 V/m</td><td colspan="2">Where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m).
Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey[a] should be less than the compliance level[b] in each frequency range.
Interference may occur in the vicinity of equipment marked with this symbol:
  </td></tr>
<tr><td colspan="5">NOTE: At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.</td></tr>
<tr><td colspan="5">[a] Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the Kick 2 is used exceeds the applicable RF compliance level above, the Kick 2 should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the Kick 2.
[b] Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.</td></tr>
</table>

7.4.4 RF Communications Equipment

Electromagnetic Environment

Portable and mobile RF communications equipment can affect the systems.

The **Kick 2** is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled.

The **Kick 2** user can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the **Kick 2** as recommended below, according to the maximum output power of the communications equipment.

Separation Distances

Recommended separation distances between portable and mobile RF communications equipment and the **Kick 2**:

Rated Maximum Output Power of Transmitter (W)	**Separation Distance According to Frequency of Transmitter (m)**		
	150 kHz to 80 MHz $d = 1,2\sqrt{P}$	80 MHz to 800 MHz $d = 1,2\sqrt{P}$	800 MHz to 2.5 GHz $d = 2,3\sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.37	0.37	0.74
1	1.2	1.2	2.3
10	3.7	3.7	7.4
100	12	12	23
For transmitters rated at a maximum output power not listed above, the recommended separation distance *d* in meters (m) can be determined using the equation applicable to the frequency of the transmitter, where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer. *NOTE: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.* *NOTE: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.*			

7.4.5 Tested Cables

Use of Specified Cables

Warning

The use of accessories, transducers and cables other than those specified (with the exception of cables sold by Brainlab as replacement parts), may result in increased emissions or decreased immunity of the equipment, resulting in improper operation.

Cable Specifications

Kick 2 cables that have been tested for emission and immunity conformity:

Cable	Specification
Power	Provided by Brainlab; 4 m long
Potential equalization	Provided by Brainlab; 5 m long
S-Video	2 BNC coax cables, shielded, terminated, 75 Ohm; 30 m long
CVBS	BNC coax cable, shielded, terminated, 75 Ohm; 30 m long
Hospital network	Provided by Brainlab; 5 m long
Microscope	Provided by Brainlab; 10 m long
Cables for Converter Kit DVI to S-Video	Provided by Brainlab: S-Video cable 10 m long, DVI to HDMI cable 2 m long, Power cable 5 m long, DVI Converter

7.4.6 Hospital Network

General Information

Users must identify, analyze, evaluate and control the risks that may occur when connecting the **Kick 2** to a network or data coupling where other equipment is connected.

Wireless networks must comply with the definitions of the standard IEEE 802.11 b/g/n/ac.

Making changes to the network/data coupling could introduce new risks that require additional analysis. These changes may include, but are not limited to:

- Changes in configuration
- Connection or disconnection of additional equipment
- Update or upgrade of connected equipment

Network Information Flow

The connection of the device to the hospital network offers:

- Transfer of patient data from or to the system
- Remote access of information displayed on the display
- The possibility to stream, record and share a session depending on the Brainlab application running on the device and the integration into the hospital network

For patient data transfer, the **Kick 2** receives data from the hospital network server (e.g., PACS server).

For remote access, streaming, recording or session sharing, the **Kick 2** sends data to a streaming client inside the hospital network.

Hospital Network Requirements

Requirement	Values
Bandwidth	• Minimum: 2 Mbit/s (e.g., for data transfer) • Recommended: 10-50 Mbit/s (e.g., for streaming and remote access) • Optimum: 100 Mbit/s - 1Gbit/s (e.g., for session sharing)
Latency	• Maximum: ≤ 100 ms • Recommended: ≤ 25 ms • Optimum: ≤ 2 ms
Safety	• Only connect equipment to a secured network • Network protected against unwanted access (e.g., user authentication, firewall, etc.) • Network protected against malicious software • Internet Protocol Suite (TCP/IP)

Network Precautions

Streaming the display content of the **Kick 2** or using session sharing may create high traffic load on the hospital network.

When integrating the Kick 2 to a wireless hospital network, select an adequate encryption (WPA2 or better) to protect patient data from unauthorized access.

Potential Hazards of Network Failure

The following hazardous situations could result if the hospital network or data coupling does not meet the requirements listed in this section:

- Patient treated incorrectly due to:

  - Network failure during patient data transfer
  - Malware (e.g., viruses) causing PC to miscalculate data
- Unwanted exposure of the patient to anesthetics or radiation due to network failure during patient data transfer

7.5 Power Plugs

General Information

The **Kick 2** comes equipped with a specific power plug suitable for the region of use.

Use of Specified Power Cords

Warning

Reliable grounding can only be achieved when the system is connected to an equivalent receptacle marked “Hospital Only” (“Hospital Grade” in North America). Only insert the main plug into a socket outlet that is protectively earthed. Do not negate the protective action by the use of an extension cable.

8 MAINTENANCE

8.1 Inspections

8.1.1 Overview

Expected Service Life

Brainlab provides a minimum of eight years of service for platforms. During this period of time, spare parts as well as field support are offered.

The **Monitor Cart** lifetime is dependent on factors such as method and duration of each use, and handling between uses. Careful functional testing and inspection of the **Monitor Cart** before use is the best method for determining the end of lifetime.

The end of lifetime is normally determined by wear and tear damage due to use. As part of preventive service, follow the maintenance instructions.

Ensuring Safety and Functionality

Follow the instructions in this guide carefully for safe performance of routine maintenance.

Warning

Do not carry out inspections or maintenance while the Monitor Cart is being used for patient treatment.

The **Monitor Cart** should be maintained and inspected on a regular basis to ensure functionality and safety.

Interval

A detailed inspection should be performed by Brainlab support once a year.

Authorization

Only Brainlab and/or authorized partners are allowed to repair the system and equipment.

Risk of electrical shock: There are no user-serviceable parts in the **Monitor Cart**. Do not remove any covers. All servicing and maintenance is to be carried out by trained Brainlab authorized technicians.

Before Using the System

If the system has not been used for an extended period of time, verify that everything operates normally before beginning patient treatment.

8.1.2 Inspection Periods

Weekly

Component	Inspection
Cabling and connectors	Visual control (look for damage, twists, cracks)
Cleaning	Refer to cleaning chapter.

Monthly

Component	Inspection
Monitor Cart	• Functionality • Stability of the monitor fixation and no scratches on the touchscreen • Power button • Power LED • USB connection • Network connection • Inspect for physical damage • Marking and type plates readable • Function of connection to third-party equipment (e.g., microscope) • Check that there are no loose or missing screws
Wheels and brakes	Functionality

Related Links

5.1 Cleaning the Monitor Cart on page 63

8.1.3 Annual Inspection by Brainlab

Arrangement

- If you have a service contract, Brainlab automatically performs the annual inspection.
- If you do not have a service contract, contact Brainlab support to arrange the inspection.

Scope

This inspection covers all components and functions as well as the items specified on the safety inspection form.

Annual Inspection Points

Component	Inspection
Monitor Cart	• Functional test of device • Check of mechanical support system (posts, wheels and locks) • Air filter exchange • Electrical safety test

Related Links

6.1 Equipment Classification on page 67

8.2 Air Filter Exchange

Authorization

Only Brainlab, authorized partners and trained hospital technicians are allowed to exchange the air filter.

Exchange Interval

The **Monitor Cart** air filter must be exchanged annually. If you have a service contract, Brainlab automatically performs air filter exchange.

If you do not have a service contract, contact Brainlab support to request a replacement air filter.

Replacement Filters

Only use replacement air filters that are provided by Brainlab.

Replacement filters come attached to the air vent cover (i.e., the entire air vent cover is replaced).

How to Exchange Air Filter

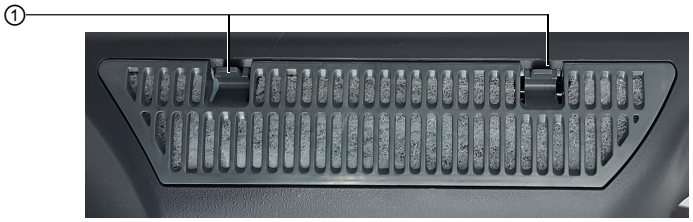


Figure 27

Step	
1.	Push down on the vent clips ① to remove the air vent cover.
2.	Replace with new air vent cover, ensuring the vent clips click into place.

8.3 Malfunctions and Return Instructions

System Damage or Failure

Do not continue to use the system if:

- The mains power cable or plug is damaged or frayed
- Liquid has been spilled into the device
- The system does not operate normally when operating instructions are followed
- A cart has tipped over or cover has been damaged
- System components exhibit a distinct decrease in performance, indicating need for servicing
- Liquids leak from system
- System emits smoke

If an error message appears on the touchscreen, contact Brainlab support. Do not use the system.

How to Respond to Damage or Failure

Step	
1.	Turn off system.
2.	Unplug system from wall outlet.
3.	Contact Brainlab support.
4.	Attach a notice such as “DO NOT USE” to equipment to prevent it from being used inadvertently.

If you continue to use equipment that has been found to be defective during an inspection, you risk causing injury to the patient.

8.3.1 Return Instructions

Reporting Damaged Equipment

Any defective components should be immediately reported to Brainlab support.

Brainlab support asks you for:

- Component article numbers (listed on the system plate)
- Description of problem

Repair and Replacement

Brainlab support:

- Provides you with cost estimate for repair or replacement
- Informs you when your device is expected to be operational again (usually within 48 hours)

Removing Components

Only remove defective components if instructed by Brainlab support.

Return Addresses

Brainlab Logistikzentrum Marsstr. 6a 85551 Kirchheim-Heimstetten **Germany**	**Brainlab Inc.** RMA Dept. 5 Westbrook Corporate Center Suite 1000 Westchester, IL 60154 **USA**
Brainlab KK RMA Dept. Tamachi East Bldg. 2F 3-2-16 Shibaura Minato-ku Tokyo 108-0023 **Japan**	**Brainlab Ltd.** RMA Dept. Unit 2102, 21/F, The Hennessy 256 Hennessy Road Wan Chai **Hong Kong**

How to Return Components

Step	
1.	Protect the component from further damage by wrapping it and safely packaging it.
2.	Complete and return the form that was faxed to you or that accompanied replacement part.
3.	Securely tape the box shut.
4.	Ship the defective component to relevant return address or follow instructions given by Brainlab support.

9 TROUBLESHOOTING

9.1 Troubleshooting the Kick 2

Repair and Service

Do not attempt to service your system. Contact Brainlab support for questions regarding repair and service.

Power to the Monitor Cart

Occurrence	Possible Cause
No power to the **Monitor Cart**	Check that the mains power cabling is correctly connected to power supply.

Touchscreen Display

There are two main functional monitor parts that affect the display:

- The display itself
- The backlight

Occurrence	Possible Cause
Some pixels (from which the displayed images are constructed) may fail over time.	The display may need to be replaced.

Touchscreen Functionality

Occurrence	Possible Cause
No touch functionality.	• The touch controller not functioning, or • The driver that controls the mouse cursor not functioning.

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