BRAINLAB

PLATFORM

1 | 18070 | KICK NAVIGATION STATION

Powerful and portable Image-Guided-Surgery station including a mobile display cart with separate mobile camera cart for flexible positioning of the infrared camera - featuring advanced optical, wireless passive marker tracking technology

- Total surgical control on a fingertip, accessible via 21.5" widescreen touch display
- Drapeable display allows operation within sterile field
- Excellent display quality with full HD resolution (1920x1080 pixels) without compromises due to touch interface (resistive technology)
- Small footprint of the display cart and separate camera cart including telescopic, pneumatic braking stand provide high set-up flexibility
- Infrared tracking camera with extended detection volume and laser pointer for quick and intuitive positioning
- Central ''Home Button'' ensures intuitive system control
- Connection panel for connectivity e.g. with surgical microscopes, endoscopes, ultrasound etc via analog video inputs (2 x CVBS, 1x S-Video) and analog/digital video output (1x DVI-I)
- Fast simultaneous access to e.g. PACS/hospital network and integration with e.g. C-Arms via 2x high-speed network connection (up to 1 Gbit/s each)
- Built in WLAN module for mobile wireless network communication to hospital access points (Wireless LAN 802.11b/g/n up to 300 Mbps - only available in specific countries)
- Powerful computer (Intel i5, 4 GB RAM memory and 160 GB storage)
- Direct patient data transfer from/to 6x USB
- Brainlab Session Sharing: viewing and control of Kick from Buzz
- Customer site pre-requisite for Brainlab Session Sharing: systems connected to local network infrastructure (minimum 100 Mbit/s, recommended 1 Gbit/s, effective network speed 40 Mbit/s, recommended maximum latency 2 ms)
- Intuitive Brainlab operating system for patient-centric data handling, application and display management
- Intuitive content management of available displays via "drag & drop" functionality
- Streamlined patient-centric access to DICOM and Brainlab xBrain image data from multiple sources (PACS, USB, Network)
- Unified search and load of patient image data from all available sources with optimized usability, including intelligent pre-fetching and buffering of patient image data for increased performance
- Ability to merge different patient data sets
- Export of treatment documentation (e.g. screenshots) and plans to network storage or USB
- HIPAA-compliant feature set including authentication, accountability log and automatic log-off

Medical Computer Unit of Display Cart

Power / Voltage	90VAC - 264 VAC
Frequency	47-64 Hz
Processor / Memory	Intel i5, 4 GB RAM memory and 160 GB storage
Graphic Card	Nvidia Quadro 600
Operating System	Microsoft Windows 7 (64-bit (Embedded Standard)
I/O Support	4x USB 2.0
	2x 1 Gbit/s LAN (up to 1 Gbit/s each)
	Video Inputs (2 x CVBS, 1x S-Video) and Analog/Digital Video Output (1x DVI-I)

		WLAN: 802.11 b/g/n (up to 300 Mbps)
System Noise Level		< 45 dB (A)
Certificates and Classification		IEC 60601-1:2005 (3rd edition); NRTL compliance by ETL
Heat Emmission		< 200 W
Touch Display		
Panel Size		21.5"
Resolution		1920x1080 px
White Luminance		250cd/m2
Viewing Angle		160° horizontal, 160° vertical
Contrast Ratio		10:01
Dimensions	Width	540 mm
	Height	330 mm
	Depth	70 mm
Scan Frequency		60 Hz
Display Technology		resistive touch
I/O Support		2x USB 2.0
Heat Emmission		< 60 W
Camera System		
Physical Characteristics	Width	630 mm
	Heigth	90 mm
	Depth	145 mm
Weight		3 kg
Max Camera Height		2230 mm
Min. Camera Height		1325 mm
Tracking Distance		300 cm
Heat Emmission		< 20 W
Camera Cart		
Dimensions	Width	455 mm
	Height	1450 mm
	Depth	485 mm
Weight		19 kg
Display Cart		
Dimensions	Width	455 mm
	Height	1550 mm
	Depth	485 mm
Weight		25.5 kg
Enviromental Requirements		
Temperature (Operation)		+10°C to +35°C
Temperature (Storage)		-10°C to +45°C
Humidity (Operation)		30 % to 75% non-condensing
Humidity (Storage)		10 % to 90% non-condensing
Pressure (Operation)		70 kPa to 106 kPa
Pressure (Storage)		50 kPa to 106 kPa

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

2 | 18460 | FOOTSWITCH (USB)
Footswitch to control the navigation software w/o necessarily using the touch screen for basic workflow steps (e.g. back, next, acquire..) and planning screen controls. Footswitch uses the USB connection to the navigation system computer.
Compatible with Kolibri, Curve and Kick platforms.

PLATFORM SOFTWARE FEATURES

3 | 30038 | ORIGIN DATA MANAGEMENT
Brainlab Origin operating system facilitating intelligent and automatic synchronization of data between platforms and offering easy access to all new software capabilities. Universal patient data management software that allows for import of patient data in DICOM format on Brainlab systems.

- Easy and intuitive user interface for streamlined access to patient data and applications
- Full control with support of touch gesture interaction as well as mouse and keyboard support
- Provides the same look and feel whether in the O.R. or office, while planning or navigating
- PACS access via DICOM "Query/Retrieve" (compatible to all major PACS systems)
- Import from PACS ("Query/Retrieve" and "Push"), USB, CD/DVD, Quentry and network
- Import of any modalities including CT, MR, PET/SPECT, X-ray
- Receipt of data via DICOM "Push"
- Selection of patient from patient list on PACS (C-FIND)
- Screenshots and video recordings in DICOM format (recording with article #25104 or #25105) can be sent to PACS (C-STORE)
- Intelligent export of screenshots (.png or DICOM) and video recordings (.mp4 or DICOM)
- Data export to different destinations (e.g. PACS, USB,..)
- Data import and export tools: media filter (CD, USB,…) and browsing of network folders
- Patient data management tools including new patient creation, merging and editing of patient data
- Patient pinning allows for manual pre-loading of DICOM images (e.g. all patients that are scheduled for O.R. 3 on Thursday) in order to reduce waiting times for PACS
- Support of DICOM worklist
- Group-based user rights
- Link to Brainlab remote support (iHelp)
- HIPAA-compliant feature set including authentication, accountability log and automatic log-off
- Generic license valid for all applications installed on system
- Until end of 2015: Includes related software updates and upgrades within terms of use - additional service costs occur if not installed remotely via iHelp
- Until end of 2015: Includes 24 hours, 7 days a week phone support hotline operated by technical professionals
- Until end of 2015: Includes training which will be delivered in the most appropriate format at the discretion of Brainlab including: remote training via Brainlab Learning Management System or onsite training at the customer facility

PACS requirements for optimal performance

- PACS should feature complete implementation of the DICOM query/retrieve protocol on study, series and instance level for optimal performance. Alternatively, operation on series and study level or study level only is possible resulting in loss of performance and fidelity of the user interface.
- PACS should allow for several parallel associations for optimal performance.
- DICOM data retrieved from a long-term archive should be cached for optimal performance.
- Recommended network connection speed of the client 1Gb/s with latency
- Recommended achievable download bandwidth from PACS 100Mb/s.

ELEMENTS

4 | 26217 | ELEMENTS IMAGE FUSION SUBSCRIPTION

- Fast and precise fusion, based on mutual information algorithm enables to exploit all anatomical & functional data sets simultaneously
- Automatic fusion of numerous modalities including CT, MRI (T1, T2, FLAIR, MRA), PET, SPECT (PET, SPECT fusion not available in Spine & Trauma 3D version 2.0)
- Automatic pair selection with instantaneous pre-alignment and fusion
- Possibility of manual fine-adjustments in all dimensions
- Definition of a "Region of Interest" in all dimensions to exclude areas from fusion
- Color overlay in amber-blue and Spyglass functionality for reviews
- Ability to fuse a series of image datasets from different modalities and points of time
- Compatible with datasets of various body regions
- Includes related software updates and upgrades within terms of use - additional service costs occur if not installed remotely via iHelp
- Elements subscriptions will automatically renew with extension by 12 months, unless written notice is provided to Brainlab at least 60 days before the expiration of the then current term
- Includes 24 hours, 7 days a week phone support hotline operated by technical professionals
- Includes training which will be delivered in the most appropriate format at the discretion of Brainlab including: onsite training at the customer facility or remote training via Brainlab Learning Management System

Platform support

- Buzz with minimum Patient Data Manager version 2.0
- Curve and Kick navigation systems with minimum Patient Data Manager version 2.0
- Brainlab planning workstations which meet minimum technical requirements
- Non-Brainlab customer workstations which meet minimum technical requirements. Quotation of article 10959 - CUSTOMER HARDWARE ID is mandatory
- Please note: server platforms including iPlan Net will be supported from 3rd quarter 2014 onwards

Minimum Technical Requirements

- Operating System: Windows 7 (64-bit) with Service Pack 1
- Graphics: DirectX 11 compatible with 512MB graphics memory
- Display resolution: 1280x1024
- Processor: 2 physical cores
- RAM: 4 GB

BRAINLAB

5 | 26211 | ELEMENTS DICOM VIEWER 3D SUBSCRIPTION

- Instantaneous, high-quality 3D visualization for analysis by and increased diagnostic confidence of the surgeon.
- 3D volume rendering of CT, MR, PET, SPECT datasets, with presets for visualization of skin, bone, vessel, DRR and MIP
- Superimposition of 3D dataset visualization and surgical planning data (volume objects, trajectories and labeled points)
- Selection of region of interest to cut and zoom onto the relevant anatomical volume (only available in Elements DICOM Viewer)
- Crop functionality to cut viewing plane into 3D visualization along any freely definable direction or pointer tip (only available in navigation software) respectively
- Threshold adjustment to adapt visualization to density of relevant anatomy
- Includes related software updates and upgrades within terms of use - additional service costs occur if not installed remotely via iHelp
- Elements subscriptions will automatically renew with extension by 12 months, unless written notice is provided to Brainlab at least 60 days before the expiration of the then current term
- Includes 24 hours, 7 days a week phone support hotline operated by technical professionals
- Includes training which will be delivered in the most appropriate format at the discretion of Brainlab including: remote training via Brainlab Learning Management System or onsite training at the customer facility

Platform support

- Buzz with minimum Patient Data Manager version 2.0
- Curve and Kick navigation systems with minimum Patient Data Manager version 2.0
- Brainlab Node Server
- Brainlab planning workstations which meet minimum technical requirements
- Non-Brainlab customer workstations which meet minimum technical requirements. Quotation of article 10959 - CUSTOMER HARDWARE ID is mandatory

Minimum Technical Requirements

- Operating System: Windows 7 (64-bit) with Service Pack 1
- Graphics: DirectX 11 compatible with 512MB graphics memory
- Display resolution: 1280x1024
- Processor: 2 physical cores
- RAM: 4 GB

6 | 26210 | ELEMENTS DICOM VIEWER SUBSCRIPTION

- Intuitive image viewing, manipulation and data enrichment software with a touchscreen-optimized user interface.
- Concurrent display of multiple medical image series with flexible hanging protocols
- Easy arrangement of windows via drag-and-drop
- Intuitive touch-based view manipulation functions (zoom, pan, scroll, flip, rotate)
- Measurement functions for distance, angles and circles
- Entering image annotations with virtual keyboard
- 3-D multi-planar reconstructions in multiple planes (axial, coronal, sagittal, oblique)
- Support of numerous modalities (x-ray, CT, MRI, PET, SPECT, ultrasound, secondary capture)
- Import and export of surgical plans from/to Brainlab planning workstation or Node Server / USB / CD for trajectories and labeled points
- Includes related software updates and upgrades within terms of use - additional service costs occur if not installed remotely via iHelp
- Elements subscriptions will automatically renew with extension by 12 months, unless written notice is provided to Brainlab at least 60 days before the expiration of the then current term

- Includes 24 hours, 7 days a week phone support hotline operated by technical professionals
- Includes training which will be delivered in the most appropriate format at the discretion of Brainlab including: remote training via Brainlab Learning Management System or onsite training at the customer facility

Platform support

- Buzz with minimum Patient Data Manager version 2.0
- Curve and Kick navigation systems with minimum Patient Data Manager version 2.0
- Brainlab planning workstations which meet minimum technical requirements
- Brainlab Node Server
- Non-Brainlab customer workstations which meet minimum technical requirements. Quotation of article 10959 - CUSTOMER HARDWARE ID is mandatory

Minimum Technical Requirements

- Operating System: Windows 7 (64-bit) with Service Pack 1
- Graphics: DirectX 11 compatible with 512MB graphics memory
- Display resolution: 1280x1024
- Processor: 2 physical cores
- RAM: 4 GB

7 | 26200 | ELEMENTS SMARTBRUSH SUBSCRIPTION

- Quick and easy volumetric outlining of pathologies and anatomical structures in medical images
- Immediate 3D contouring—Instant volume calculation by outlining on just two orthogonal slices
- Interactive target delineation by dynamically following the path of a cursor or touch of a finger
- Intelligent contour expansion with ambient edge detection
- Flexibility to outline, adapt and review in axial, coronal and sagittal planes
- Support of various CT, MR or PET sequence types for volumetric contouring and review
- Simultaneous inclusion of fused data sets with different modalities during outlining
- Dedicated spanned view to further review and optimize objects in all directions
- Slice-by-slice review and adaptation in brush mode
- Fast update and modifications of automated atlas segmentation results
- Intuitive user interface with both mouse and touch control compatibility
- Automatic creation of "Volumetric Report" PDF files per object with representative screenshots and details on geometrical measurements like volume, RECIST and Macdonald criteria
- Includes related software updates and upgrades within terms of use - additional service costs occur if not installed remotely via iHelp
- Elements subscriptions will automatically renew with extension by 12 months, unless written notice is provided to Brainlab at least 60 days before the expiration of the then current term
- Includes 24 hours, 7 days a week phone support hotline operated by technical professionals
- Includes training which will be delivered in the most appropriate format at the discretion of Brainlab including: onsite training at the customer facility or remote training via Brainlab Learning Management System

Platform support

- Buzz with minimum Patient Data Manager version 2.0
- Curve navigation systems with minimum Patient Data Manager version 2.0
- Brainlab planning workstations which meet minimum technical requirements
- Non-Brainlab customer workstations which meet minimum technical requirements. Quotation of article 10959 - CUSTOMER HARDWARE ID is mandatory

- Brainlab Node/Origin Server platform and virtual machines which meet minimum requirements. Quotation of article 10911 - BRAINLAB NODE SERVER or 10919 BRAINLAB NODE CUSTOMER HARDWARE

Minimum Technical Requirements

- Operating System: Windows 7 (64-bit) with Service Pack 1
- Graphics: DirectX 11 compatible with 512MB graphics memory
- Display resolution: 1280x1024
- Processor: 2 physical cores
- RAM: 4 GB

ENT UPGRADE

8 | 71204 | GENERATION UPGRADE: NAVIGATION SOFTWARE ENT 3.X

Software upgrade from previous 'VectorVision ENT, 'Kolibri ENT, 'ENT Unlimited' and ENT Essential' applications to navigation software 'ENT 3.x. including transfer of existing licensed software features. ENT 3.x provides following new features and additional options:

Appeareance and Views

- Simplified and reduced graphical user interface
- Customizable quick link button on main menu for easy access to frequently used functionality
- Dialogs with embedded 3D volume rendering view of patient data including intuitive touch manipulation
- Screenshots with anonymized user interface for presentation purposes
- Improved tracking data smoothing provides more stable navigation views
- Optimization for widescreen format provides more space to display and efficiently organize information
- New view layouts including 3x3 and 2+1 split-screens
- Possibility to extend navigation view to second screen without additional menu bar (for Curve Dual-display)
- Display of Perfusion data for additional functional information
- Visualization of instrument shapes in 3D for comprising overviews and improved spatial orientation
- Auto-zoom in to tool tip for magnification of target area
- Integration of video signals for live display on the navigation screen

Registration

- Semiautomatic Multi-Modality Donut Marker detection
- Quantitative deviation indication to verify accuracy of fiducials
- Intraoperative landmarks acquisition note after registration to ensure continuous navigation
- Automatic view update to most recent data set (initially, after registration, after receipt of intraoperative data)

Surface Matching Registration (optional)

- Complete new surface matching algorithm for increased robustness and reliability of Z-touch and Softouch registrations
- Optimized 3D thresholding for compensation of suboptimal data set quality
- Color-coded registration accuracy mapping with distance to surface indication
- Animated registration 'Guide' for set-up specific support with continual feedback
- Improve' option to acquire additional registration points

Planning

- Adjustment and review of multiple trajectories including navigated entry point definition
- Patient Data Manager' interface to save all changes and additions performed during navigation as additional plan

Microscope Integration (optional)

- Motorized alignment of the microsope to the position of a planned trajectory (optional with advanced microscope functionality)
- New Head-Up display menu for more intuitive navigation controls
- Dotted line visualization of injected objects (Head-Up display) provides more stable object outline views
- Support of latest microscope models such as Leica M720 OH5, Olympus OME9000, ZEISS OPMI Pentero 900 and Vario 700
- New microscope cable (required) included for customers with existing integrations

External Ultrasound Integration (optional)

- IGSonic' integration of BK Medical 'flexFocus' ultrasound system with digital transmission of images, automatic probe recognition and calibration adaptation to changes in frequency and depth

System environment and infrastructure

- Support of 'Patient Data Manager' for intuitive data selection
- Direct import and export of DICOM data without conversion
- Participation in Elements (optional) workflow with seamless and fast switching between applications
- Instant update of navigated patient data with new objects and fusions created with Elements (optional)
- Compatible Elements: DICOM Viewer, Image Fusion, Smartbrush, Trajectory Planning

Requirements:

- Instrument Calibration Matrix (Rev. 4) for using instrument adapters
- Minimum software: iPlan 3.x (optional)
- Platform: Kick, Curve

ENT ACCESSORIES

9 | B12003 | CMF ACCESSORY AND REFERENCE PACKAGE

53106 | POINTER WITH BLUNT TIP FOR CRANIAL/ENT
Standard instrument for the intra-operative registration of anatomical landmarks and surface point acquisition:

- Rounded tip for sliding and continuous point acquisition
- Wireless and autoclavable design for fast sterilization
- Requires Reflective Marker Spheres for wireless navigation
- Contains a blunt tip pointer and the corresponding gauge to be stored in sterilization tray

52122 | SKULL REFERENCE ARRAY
Reference star for the Skull Reference Array:
- Exact repositioning of star through predefined interface
- Integrated calibration point for instant instrument calibration
- Wireless and autoclavable design
- Requires Reflective Marker Spheres

52171 | SCREWDRIVER BLADE KLS MARTIN
Insert for screwdriver handle to be used for Disposable KLS MARTIN Self-drilling Screw (52170) for fixation of the Skull Reference Array

52126 | DRILL BIT 1.1MM
- Drill to pre-drill pilot hole for 1.5mm self-tapping screws
- Used in combination with Skull Reference Array
- Requires handle 52127

52127 | HANDLE FOR BLADES KLS MARTIN
- Handle for screwdriver blades or drill bits
- Used in combination with Skull Reference Array
- Requires article 52126 (Drill Bit 1.1mm) or article 52171 (Screwdriver Blade KLS MARTIN)

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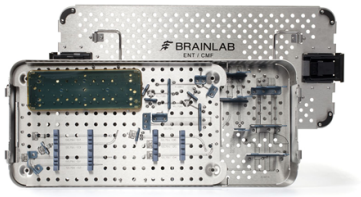


52311 | STERILIZATION TRAY ENT/CMF
For safe, efficient sterilization (autoclaving) and storage of Brainlab instruments

41798 | INSTRUMENT ADAPTER ARRAY SIZE M
- Size "M" tracking geometry enables navigation of various existing surgical instruments
- Compatible with different sized adapter clamps due to standardized attachment interface
- High-precision manufactured stainless steel
- Autoclavable design for easy sterilization
- Requires "Reflective Marker Spheres"
- Requires "Instrument Adapter Clamp"
- Requires "Instrument Calibration Matrix"

41801 | INSTRUMENT ADAPTER ARRAY SIZE L
- Size "L" tracking geometry enables navigation of various existing surgical instruments
- Compatible with different sized adapter clamps due to standardized attachment interface
- High-precision manufactured stainless steel
- Autoclavable design for easy sterilization
- Requires "Reflective Marker Spheres"
- Requires "Instrument Adapter Clamp"
- Requires "Instrument Calibration Matrix"

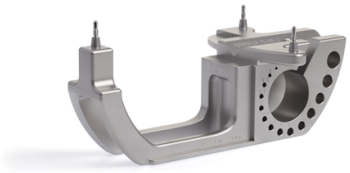
55102 | INSTRUMENT ADAPTER CLAMP SIZE M
Used in conjunction with an optical tracking geometry or an electromagnetic sensor, the instrument adapter clamp easily integrates a wide range of medium-sized surgical instruments into surgical navigation.
- Supported instrument diameters: 5.1mm - 10.5mm
- Flexible width jaws for attaching clamp to the instrument
- Standardized interface for attaching the tracking component to the clamp
- Compatible with "Instrument Adapter EM" for electromagnetic navigation
- Compatible with different sized "Instrument Adapter Arrays" for optical navigation
- Autoclavable design for fast sterilization

55103 | INSTRUMENT ADAPTER CLAMP SIZE L
Used in conjunction with an optical tracking geometry or an electromagnetic sensor, the instrument adapter clamp easily integrates a wide range of large-sized surgical instruments into surgical navigation.
- Supported instrument diameters: 7.0mm - 16.0mm
- Flexible width jaws for attaching clamp to the instrument
- Standardized interface for attaching the tracking component to the clamp
- Compatible with "Instrument Adapter EM" for electromagnetic navigation
- Compatible with different sized "Instrument Adapter Arrays" for optical navigation
- Autoclavable design for fast sterilization

55013 | INSTRUMENT ADAPTER OFFSET-LINK 45° / 20mm (STARLINK)
Provides an additional offset between adapter clamp / array & increases movement space if multiple instruments navigated:
- Flexible & optimized array positioning on instrument according to surgeons preference & free camera-array line of sight
- Offset mounted array allows free sight along instrument axis
- 8 different adapter clamp-offset snap-in positions selectable
- 8 different adapter array-offset snap-in positions selectable
- Compatible with STARLINK instruments without alignment pin
- Precision manufactured stainless steel for high durability
- Wireless and autoclavable design for fast sterilisation

55105 | INSTRUMENT ADAPTER CLAMP FOR CONICAL INSTRUMENTS (BLAKESLEY)
Used in conjunction with an optical tracking geometry or an electromagnetic sensor, the instrument adapter clamp easily integrates instruments such as blakesley forceps into surgical navigation.
- Adjustable fixation screw for attaching clamp to the instrument
- Standardized interface for attaching the tracking component to the clamp
- Compatible with "Instrument Adapter EM" for electromagnetic navigation
- Compatible with different sized "Instrument Adapter Arrays" for optical navigation
- Autoclavable design for fast sterilization

55061 | TOOL FOR INSTRUMENT ADAPTER
Allen key for fixation of Intrument Adapter Array



41874 | INSTRUMENT CALIBRATION MATRIX
Device for instant intra-operative calibration of length, diameter and vector of a rigid instrument:
- Supports a variety of rigid surgical instruments
- Precision manufactured stainless steel
- Autoclavable design for easy sterilization
- Compatible with Brainlab instrument arrays for manually or pre-calibrated tools
- Requires "Reflective Marker Spheres"
- Minimum software version required: VectorVision Cranial/ENT 6.01, -Hip 2.0, -Knee 1.5, -Spine 5.1, Kolibri Cranial/ENT 1.0

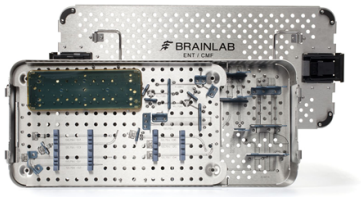
52129 | SKULL REFERENCE BASE
Hardware for patient referencing without head rest fixation:
- Enables flexible patient re-positioning and head movement
- Free positioning & variable fixation direct to bone structures
- Allows access to virtually any desired cranial site
- Stable fixation based on 3 cantilevers equipped with spikes
- Single screw fixation
- Precision manufactured stainless steel for high durability
- Wireless & autoclavable design for quick & easy sterilization
- Includes one base-plate
- Requires "Reflective Marker Spheres" for wireless tracking
- Requires two "Skull Reference Arrays"
- Requires 52170 Disposable KLS Martin Self-drilling Screw (**recommended**) with 52171 Screwdriver Blade and 52127 Handle for Blades
- Alternative: Requires 52128 Disposable KLS Martin Self-tapping Screw (**compatible**) with 52124 Screwdriver, 52127 Handle for Blades and 52126 Drill Bit

10 | B12002 | STANDARD ENT ACCESSORY AND REFERENCE PACKAGE

41877 | REFERENCE HEADBAND STAR
Enables dynamic tracking of patient movement:
- Single screw fixation on the Reference Headband
- Integrated calibration point for instant instrument calibration
- Precision manufactured stainless steel for high durability
- Wireless and autoclavable design for fast sterilization
- Requires Reflective Marker Spheres for wireless navigation

53106 | POINTER WITH BLUNT TIP FOR CRANIAL/ENT
Standard instrument for the intra-operative registration of anatomical landmarks and surface point acquisition:
- Rounded tip for sliding and continuous point acquisition
- Wireless and autoclavable design for fast sterilization
- Requires Reflective Marker Spheres for wireless navigation
- Contains a blunt tip pointer and the corresponding gauge to be stored in sterilization tray

BRAINLAB



52311 | STERILIZATION TRAY ENT/CMF
For safe, efficient sterilization (autoclaving) and storage of Brainlab instruments

41798 | INSTRUMENT ADAPTER ARRAY SIZE M
- Size "M" tracking geometry enables navigation of various existing surgical instruments
- Compatible with different sized adapter clamps due to standardized attachment interface
- High-precision manufactured stainless steel
- Autoclavable design for easy sterilization
- Requires "Reflective Marker Spheres"
- Requires "Instrument Adapter Clamp"
- Requires "Instrument Calibration Matrix"

41801 | INSTRUMENT ADAPTER ARRAY SIZE L
- Size "L" tracking geometry enables navigation of various existing surgical instruments
- Compatible with different sized adapter clamps due to standardized attachment interface
- High-precision manufactured stainless steel
- Autoclavable design for easy sterilization
- Requires "Reflective Marker Spheres"
- Requires "Instrument Adapter Clamp"
- Requires "Instrument Calibration Matrix"

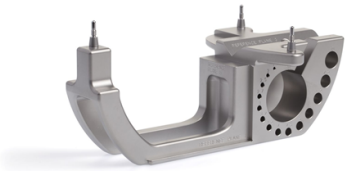
55102 | INSTRUMENT ADAPTER CLAMP SIZE M
Used in conjunction with an optical tracking geometry or an electromagnetic sensor, the instrument adapter clamp easily integrates a wide range of medium-sized surgical instruments into surgical navigation.
- Supported instrument diameters: 5.1mm - 10.5mm
- Flexible width jaws for attaching clamp to the instrument
- Standardized interface for attaching the tracking component to the clamp
- Compatible with "Instrument Adapter EM" for electromagnetic navigation
- Compatible with different sized "Instrument Adapter Arrays" for optical navigation
- Autoclavable design for fast sterilization

55103 | INSTRUMENT ADAPTER CLAMP SIZE L
Used in conjunction with an optical tracking geometry or an electromagnetic sensor, the instrument adapter clamp easily integrates a wide range of large-sized surgical instruments into surgical navigation.
- Supported instrument diameters: 7.0mm - 16.0mm
- Flexible width jaws for attaching clamp to the instrument
- Standardized interface for attaching the tracking component to the clamp
- Compatible with "Instrument Adapter EM" for electromagnetic navigation
- Compatible with different sized "Instrument Adapter Arrays" for optical navigation
- Autoclavable design for fast sterilization

55013 | INSTRUMENT ADAPTER OFFSET-LINK 45° / 20mm (STARLINK)
Provides an additional offset between adapter clamp / array & increases movement space if multiple instruments navigated:
- Flexible & optimized array positioning on instrument according to surgeons preference & free camera-array line of sight
- Offset mounted array allows free sight along instrument axis
- 8 different adapter clamp-offset snap-in positions selectable
- 8 different adapter array-offset snap-in positions selectable
- Compatible with STARLINK instruments without alignment pin
- Precision manufactured stainless steel for high durability
- Wireless and autoclavable design for fast sterilisation

55105 | INSTRUMENT ADAPTER CLAMP FOR CONICAL INSTRUMENTS (BLAKESLEY)
Used in conjunction with an optical tracking geometry or an electromagnetic sensor, the instrument adapter clamp easily integrates instruments such as blakesley forceps into surgical navigation.
- Adjustable fixation screw for attaching clamp to the instrument
- Standardized interface for attaching the tracking component to the clamp
- Compatible with "Instrument Adapter EM" for electromagnetic navigation
- Compatible with different sized "Instrument Adapter Arrays" for optical navigation
- Autoclavable design for fast sterilization

55061 | TOOL FOR INSTRUMENT ADAPTER
Allen key for fixation of Intrument Adapter Array



41874 | INSTRUMENT CALIBRATION MATRIX
Device for instant intra-operative calibration of length, diameter and vector of a rigid instrument:
- Supports a variety of rigid surgical instruments
- Precision manufactured stainless steel
- Autoclavable design for easy sterilization
- Compatible with Brainlab instrument arrays for manually or pre-calibrated tools
- Requires "Reflective Marker Spheres"
- Minimum software version required: VectorVision Cranial/ENT 6.01, -Hip 2.0, -Knee 1.5, -Spine 5.1, Kolibri Cranial/ENT 1.0

11 | B11002 | SKULL REFERENCE PACKAGE
Requires: 52170 DISPOSABLE KLS MARTIN SELF-DRILLING SCREW 1.5 X 6MM (5 PCS.)

52129 | SKULL REFERENCE BASE
Hardware for patient referencing without head rest fixation:
- Enables flexible patient re-positioning and head movement
- Free positioning & variable fixation direct to bone structures
- Allows access to virtually any desired cranial site
- Stable fixation based on 3 cantilevers equipped with spikes
- Single screw fixation
- Precision manufactured stainless steel for high durability
- Wireless & autoclavable design for quick & easy sterilization
- Includes one base-plate
- Requires "Reflective Marker Spheres" for wireless tracking
- Requires two "Skull Reference Arrays"
- Requires 52170 Disposable KLS Martin Self-drilling Screw (**recommended**) with 52171 Screwdriver Blade and 52127 Handle for Blades
- Alternative: Requires 52128 Disposable KLS Martin Self-tapping Screw (**compatible**) with 52124 Screwdriver, 52127 Handle for Blades and 52126 Drill Bit

52122 | SKULL REFERENCE ARRAY
Reference star for the Skull Reference Array:
- Exact repositioning of star through predefined interface
- Integrated calibration point for instant instrument calibration
- Wireless and autoclavable design
- Requires Reflective Marker Spheres

52171 | SCREWDRIVER BLADE KLS MARTIN
Insert for screwdriver handle to be used for Disposable KLS MARTIN Self-drilling Screw (52170) for fixation of the Skull Reference Array

52127 | HANDLE FOR BLADES KLS MARTIN
- Handle for screwdriver blades or drill bits
- Used in combination with Skull Reference Array
- Requires article 52126 (Drill Bit 1.1mm) or article 52171 (Screwdriver Blade KLS MARTIN)

12 | 18390 | SOFTOUCH POINTER

- Unsterile navigation pointer e.g. for standard registration, surface matching registration (optional), registration verification or craniotomy planning
- Active point acquisition with standard registration when using donut markers
- Multi-color LED for function display and battery level indication
- Exchangeable standard Lithium battery
- Cleaning and surface-disinfection possible
- Requires minimum software versions VV Cranial/ENT 7.9.1, or Kolibri Cranial/ENT 2.7.1 **Surface matching registration (optional feature extension)**
- Pointer for fast and reliable surface matching registration, as stand-alone registration method or in combination with Z-touch laser registration
- No facemask, headset or markers needed for scan
- Eliminates need for registration rescans, potentially reducing costs and patient radiation exposure
- Surface point collection without skin shift and in areas not visible to navigation camera
- Unique skin sensing tool tip works through the hairline and even for dry skin conditions
- Feature extension requires "Surface Matching Registration Software" (art.no. 21804)

13 | 18370 | Z-TOUCH LASER POINTER

Battery powered wireless laser pointer for quick and accurate patient registration without fiducials.

- Cost-efficient registration using existing diagnostic CT or MR data sets without the need for delicate disposables and extra scans
- Touch-free surface point collection causing no skin shift distortions
- Pilot laser beam with control LED for selective acquisition of optimal anatomical features at the patient's surface
- Only system to acquire projected 3D laser points directly in the patient coordinate system, maximizing accuracy
- Straightforward one-button device control
- Exchangeable standard lithium battery (FR03 / AAA)
- Comes with a storage case for Z-touch pointer and Softouch pointer
- Compliant with IEC 60601-1:2005+A1:2012 (Ed. 3.1)
- Laser product Class 3R according to IEC 60825-1:2007 (Ed. 2)
- Requires "Surface Matching Registration Software" (art.no. 21804)

14 | 55791 | HANDLE FOR MULTIPLE TIP POINTER

Pointer instrument for various and interchangeable tip shapes:

- Tip of choice navigation according intra-operative situation
- Snap-in fixation and alignment of tip in different orientations
- Autoclavable design for fast sterilization
- Suitable for optical and electromagnetic tracking
- Starlink interface for the assembly of the optical INSTRUMENT ADAPTER ARRAY (wireless) or INSTRUMENT ADAPTER ENT EM (wired)
- Requires various, interchangeable Pointer Tip geometries
- Version A is suitable for use with precalibrated tools (e.g. Eraser Pointer Tips).

15 | 55790-75 | SUCTION STANDARD (CHARR. 8) STARLINK INTERFACE FRAZIER TIP

Suction device equipped with Starlink interface for seamless integration into optical and electromagnetic navigation

- Geometry: 0° offset, 35 mm with tip end of 45° offset, 95 mm
- Autoclavable design for fast sterilization
- Suitable for optical and electromagnetic tracking
- Requires optical INSTRUMENT ADAPTER ARRAY (wireless) or INSTRUMENT ADAPTER ENT EM (wired)

16 | 55790-50 | SUCTION MAXILLARY SINUS (CHARR. 8) STARLINK INTERFACE

Suction device equipped with Starlink interface for seamless integration into optical and electromagnetic navigation

- Tissue safe tip design
- Designed for approach to maxillary sinus
- Autoclavable design for fast sterilization
- Suitable for optical and electromagnetic tracking
- Requires optical INSTRUMENT ADAPTER ARRAY (wireless) or INSTRUMENT ADAPTER ENT EM (wired)

17 | 55790-20 | SUCTION FRONTAL SINUS (CHARR. 8) RIGHT STARLINK INTERFACE

Suction device equipped with Starlink interface for wireless navigation in combination with an Instrument Adapter Array

- Tissue safe tip design
- Double bent design for approach to frontal sinus
- Wireless and autoclavable design for fast sterilization
- Suitable for optical tracking
- Requires INSTRUMENT ADAPTER ARRAY (wireless)

18 | 55790-10 | SUCTION FRONTAL SINUS (CHARR. 8) LEFT STARLINK INTERFACE

Suction device equipped with Starlink interface for wireless navigation in combination with an Instrument Adapter Array

- Tissue safe tip design
- Double bent design for approach to frontal sinus
- Designed for left-handed users
- Wireless and autoclavable design for fast sterilization
- Suitable for optical tracking
- Requires INSTRUMENT ADAPTER ARRAY (wireless)

CMF

19 | 21350 | IPLAN CMF SOFTWARE

Medical data enrichment for CMF indications:

- Navigator-guidance through streamlined planning process, provides direct access to all tasks and planning status overview
- Integrated module for data transfer management of DICOM images
- View and Alignment task including import of non-DICOM images
- Definition of Mirroring plane integrated in View and Alignment

- Reassesment/ Reduction of imported DICOM data to remove artefacts or not required data parts
- Fast and easy switching between tissue and bone in 3D
- User defined alignment of datasets for ENT and CMF cases
- Manual Image Fusion of multiple diagnostic data sets
- Automatic detection of Brainlab CT/MR markers and semi-automatic detection of donut patient registration markers
- Marking of anatomical landmarks in all planning steps
- Planning of multiple trajectories via definition of target and entry
- Regional zoom function in 2D/3D and grey level windowing
- Multiple distance and angle measurements
- Patient images catalog view for quick image selection
- Various options for object outlining such as "Brush" for manual outlining, "SeedBrush", "Smart Brush" and "Pipette Brush" for semi-automatic outlining, or "Smart Shaper" for object deformation
- Object (target volume, critical structure) outlining in different viewtabs including "Overview" (reconstructed axial/coronal/sagittal view)
- Drawing of objects in high resolution independent of data set quality
- User friendly adjustment of rotation point of object for advanced object manipulation and easier positioning of the object
- Mirroring function of segmented objects for utilization as virtual templates for reconstructions of defect/malformed/non-existing bony structures
- Plan content management with calculated volume information of 3D objects
- Fast visualization of volumetric information in axial, coronal,and sagittal planes/reconstructions
- Screenshot function for documentation including export to PACS
- Optional support of STL Data Import/Export for iPlan
- Optional support of iPlan Automatic Image Fusion
- Optional support of iPlan Automatic Atlas Bone Segmentation
- Recommended P4 with 3.2 GHz, 80 GB HDD, 2 GB RAM
- Requires OS XP and OpenGL capability for full 3D display
- Requires Brainlab Hardware with following specifications: Windows XP, SP2, 32 bit, 20GB HDD, 1,7GHz CPU, 2GB RAM, Nvidia 6800 512MB, 1024x768 display

20 | 21239 | IPLAN ADVANCED 3D ANALYSIS

Instantaneous, high-quality 3D visualization of patient data for more confident decision making in pre-planning of surgical procedures that require a high level of spatial anatomic orientation.

- 3D rendering based on CT, MR or PET data sets
- Extension of standard iPlan view types with structure specific view types
- Following additional view types are selectable depending on the data set displayed: Bone/Vessels (+ Skin Overlay), Vessels, Cerebrum (+Skin Overlay), Cerebrum (+ Bone Overlay), Maximum-Intensity-Projection, Digital Radiography
- Superimposition of 3D image and surgical plan data (objects, trajectories, labeled points)
- Flexible creation of plan data (trajectories, labeled points) in 2D planes or 3D image
- Cut and crop functionality to adjust 3D image
- Slide bar for easy structure type selection and threshold adaptation to relevant anatomy
- Minimum requirement (software): iPlan 3.0.3 (Cranial or Stereotaxy or ENT or CMF or Spine)
- Minimum requirement (hardware): iPlan Workstation 5.0 or iPlan Net Server 3.0

BRAINLAB

IGS DISPOSABLES

21 | 41878 | REFERENCE HEADBAND (20 PCS)

Rigid & fast fixation of the Reference Star to the patient head:

- Fits all head sizes from pediatric to adult patients
- Free access for otoscopic and rhinoscopic approaches
- 20 non-sterile Velcro fastener headbands
- Applicable for ENT , trauma and cranial navigation
- Slideable Ref. Star connector allows flexible positioning
- Requires two Headband Reference Stars for un-sterile registration and sterile conditions after draping

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ONSITE APPLICATION TRAINING -IMAGE GUIDED SURGERY

22 | 81022-05 | ENT (1 DAY)

The Brainlab Onsite Application Training Program (OAT) is a three-hour training program for all members of a clinical team who utilize Brainlab VectorVision® IGS products. Onsite training offers participants the opportunity to gain a basic proficiency and comfort level in using IGS technology.
Participants use the equipment and software to demonstrate proficiency in OR setup, patient registration, planning, navigation, and basic troubleshooting for a navigated case.
Each one-day OAT purchase includes the following:

- 2) three-hour training sessions for staff and surgeons, maximum six participants per session
- CEU/CE accreditation
- Participant educational materials
- Travel and accommodations for Application Trainer

ENT OAT purchases are transferable toward CMF product training.

23 | 81023-01 | CLINICAL CONSULTATION ENT - 1 CASE

On-site clinical support for a case with Brainlab equipment. Applicable to an ENT case. Facilitated by qualified and trained Brainlab Support Personnel. Requires 48 hours advance notice.

IGS SERVICES

24 | 81001-01 | NAVIGATION SYSTEM INSTALLATION (1 MOBILE UNIT)

Brainlab hardware set up onsite, software installation off-site/on-site and tests including:

- Assembly of all hardware and computer components
- Simulation of the data transfer customer specific steps
- Verification of functionality, precision and safety of all complete software and hardware components
- Acceptance protocol according to quality system