Video recording and integration modules for Operating Rooms

INTEGRATOR





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INTEGRATION AND ARCHIVING SYSTEMS FOR OPERATING ROOMS







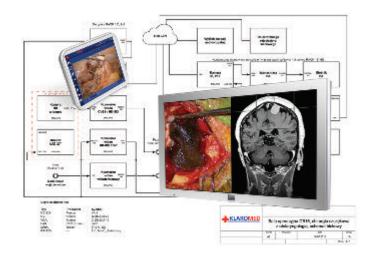
Next generation INTEGRATOR

INTEGRATOR is a multimedia surgical system, integrated with hospital information systems, as well as an intuitive set of applications for Full HD or SD video sequences recording, developing reports on operations and remote control of many important functions in the operating room. System integrated browser for images and video sequences applies DICOM 3.0 standard.

Local settings module allows creating a multi-level system platform. These solutions are designed in multilingual versions (languages available – Polish by default, as well as English and German). INTEGRATOR System offers access control based on user passwords.

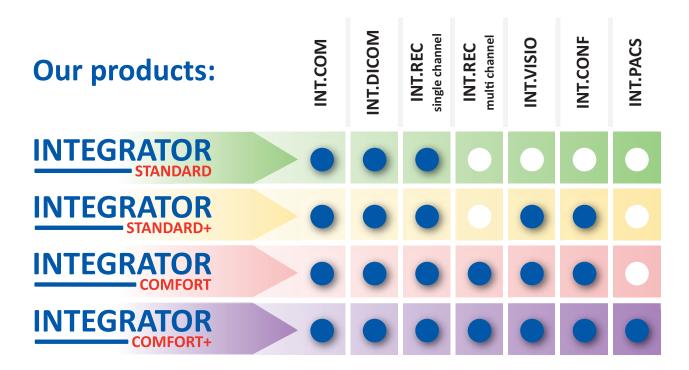
Local settings options allow individual modules selection for user's preferences. Due to the ease of maintenance, DICOM compatibility, easy installation and openness for other system applications the integration is the only solution that combines the reliability, efficiency, ergonomics and ease of use.

Modular solutions provide flexibility and operate in a way that can be configured for individual needs of the particular medical group. Ergonomic, clear, and intuitive interfaces based on unambiguous and readable characters further enhance the solutions





functional value. System investment is beneficial since it increases the operational efficiency and comfort. Modules simplified integration procedures allow for further enhancement using the existing hospital teletechnical infrastructure.



INT.COM- control and communication module

Any INTEGRATOR System version features INT.COM module, offers unlimited possibilities of the digital audio-visual communication. INT.COM module additionally offers professional supervision of different rooms. It was designed so as to provide an opportunity to observe many rooms simultaneously. The service level was maximised due to the screen level control of the touch tablet, laptop-type mobile computer, or standard PC station. The user can check and analyse the given operation unit room activity at any time.

Support for manager

INTEGRATOR INT.COM System module supports managers and leadership of the operational units in optimal using of the facilities and planning for ongoing work.

Network streaming

The solution is available as an INTEGRATOR System basic function. It enables network streaming, which provides for monitoring and audiovisual communication within or outside operating room. This function allows transmitting audio and video signals from the selected source via LAN network. In addition, there is a possibility of comparing IP streaming from the selected video signal source and control it at a system level.



In addition, INT.COM module provides for the audio signals control. Wireless tie clip microphones, user-connected MP3 players and other computers as a part of operating room and integration systems can be the signal sources.











Preview and display

During the working session the user in a simple way can choose and display video signals and IP cameras installed in the operating rooms or other key areas of the surgery unit. INT.COM module features provide freedom in verbal communication. Manager may connect to the operator at any time due to the installed audio system.



Remote control of features and equipment

INT.COM application module provides operating rooms functions and equipment remote control. It can serve for the operating room monitoring and control its functions, configuration, and settings of individual devices. With the device configurations memory the operating room can be quickly adapted to the users and different surgical specialities preferences.



In addition, INT.COM module provides control over:

- Video cameras as Full HD and SD,
- · Operating theatre lamps,
- Operating tables,
- Matrix Video Switch Full HD and SD with 4x4, 8x8 or 16x16 inputs/outputs,
- Video conferencing devices codecs,
- Other types of devices equipped with digital control interfaces.

Due to the ideal software solutions and possibility to integrate a wide range of peripheral devices the remote control can be used for the special needs of the surgeons' team. Devices interfaces and control panels have been designed, functionally and graphically displaye with a view of providing maximum comfort. The number of potentially connectable devices is constantly increasing.





Example:

- Communication installation mode (LAN, IP, Wi-Fi, IP.Port, VLAN, RS-232, RS-422, RS-485, etc.),
- Device control in the general operating rooms (e.g. operating theatre lamps),
- Communication mode assigned per each device element,
- Installation of devices readable and initiated based on the current position or forgotten state.





INT.DICOM - Browser module

To provide quick search for the patient date the INTEGRATOR System offers INT.DICOM module, which ensures connections using DICOM standard. This standard is widely used in the medical world to view and use the patient information in the centralized management system HIS (Hospital Information System and RIS – Radiology Information System; INT.DICOM module featuring broker function that names patient information is easily connected to the DICOM standard-based control systems or HL7 protocol. The system features a variety of DICOM compliant functions and solutions to meet the most important user needs in a modern operating room, which provides a lot of advantages.

"Dicomization"

The video or individual images obtained from the laparoscope or other signal source can be appropriately converted into a mandatory DICOM 3.0 standard and recorded in JPEG or DICOM-MPEG2.

Authentication

Also, there is a patient verification feature available, which checks the validity of operations data imported from external media using the Storage Commitment module. Any information should be verified that was recorded from studies allowing to confirm the patient data authenticity.



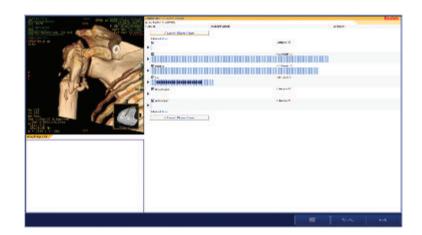


Electronic negatoscope

The electronic negatoscope feature allows selecting patient's records via submission of ID number, names or date of study from RIS local system (for example, computed tomography, magnetic resonance, and ultrasound). Negatoscope features the following devices: zoom, contrast change directly via touch screen. Additional mosaics and screens content switching options support the operator's work.

Integrated browser

Another INT.DICOM module function features displaying reports and associated images of the patient in DICOM format. Such a solution is analogous to the standard stations to view PC, which utilize a dual medical screen and screens content direct switching functions.





INT.REC – digital recording and video configuration module

INTEGRATOR in any version is equipped with an INT.REC module, used, primarily for digital audio/video repetitions, as well as quality images and Full HD and SD resolution recording and reading. Signal sources to be recorded with a highest quality offered may come from laparoscopes, endoscopes, microscopes, surgical education systems or directly from an omnidirectional camera that transmits live image from the operating room or HD/SD camera, built in the operating theatre lamp. The purpose of this solution is to expand and preserve patient documentation, subsequent publication and archiving, gallery creation, as well as reports development, editing and printing or direct representation on the screen in the course of operating procedures and subsequent use for educational purposes, and local archiving. Image and video sequence zooming option with INT.REC module is achieved via screen touch controls. The system also allows viewing, importing, and exporting multimedia on the typical carriers BlueRay, CD/DVD for subsequent archiving.



INT.REC also supports PenDrive mass storage and USB portable disks. In addition, system allows processing the material obtained by mixing and processing the selected HD audio/video record fragments. In addition, INTEGRATOR multimedia system utilizes matrix video switch allowing manual setting of video signals connection or reset settings previously recorded in system memory.

Video recording

Depending on the selected INT.REC module, touching a screen button enables the single-channel registration or multi-channel video images in Full HD or SD quality option.

User may decode at any time to capture images or video sequence. Recording occurs based on compressed JPEG, MPEG2, or MPEG4 (H.264) digital formats, and audio recording occurs using MPEG3 format.

The obtained material can be used to generate a report on the operation progress, printing or completing as a standalone CD/DVD disc with the purpose of replaying on other workstations.







INT.VISIO - review and display module

INT.VISIO module is designed for viewing video sources and multiplex displaying on multiple monitors in the operating room. During the working session the user can choose in a simple way to switch and display the video signals. Module monitoring feature is available in a full screen mode. As an option, the user can select the INT.VISIO module to adjust with the input/output switches of 4x4, 8x8, or 16x16 sizes, which allows switching the Full HD video signal sources. Video switch distributes the video signal around the room using LC optical wiring, concentric HD/SD-SDI or cables: S-Video, RGB HV, RGBs, YpbPr, DVI and Composite.





Streaming

System functionality enhancement is represented by the multimedia streaming within the operating room or outside. This option allows transmitting the selected audio/video signal sources via LAN network, as well as using HD/SD-SDI concentric wires.

There is an affordable solution as an option to match IP streaming from preferred audio and video signal source and control it at the system level.





INT.CONF – videoconference module

INT.CONF videoconference module solution utilizes the videoconference open standards to provide the solutions of various classes to meet the requirements of the user.

The user can choose between low budget and high-end solution based on the reputable suppliers' components, for example. CISCO (Tandberg), consisting of a professional video camera solution, hardware streaming encoder/decoder and large panoramic display.

Comfort of operation

INTEGRATOR System features INT.CONF module with a hardware-based videoconference streaming, which can be controlled by the application module to ensure maximum comfort for the operating room personnel and other videoconference participants. In addition, the system offers a telestration function providing the surgeon with the tools to accurately indicate the most important areas.

Improvement of work results

Videoconference system transforms and enhances the existing communication infrastructure inside and outside of the operating room. Our systems improve the patient treatment results and reduce costs due to the perfect control of the effectiveness and resources use.

Telephony

The system can be equipped with a telephony module. This solution is useful when the videoconference is impossible.

This advanced solution is based on the SIP protocols, VoIP Internet telephony and fixed telephony – with its help you can reach any corner of the world, wherever the telephone is available.







No barriers

INT.CONF module application breaks the distance barriers, thus providing access to the specialists from other places or countries in order to facilitate the situation. The module is an ideal solution, which supports and facilitates any kind of training and education. It is an ideal solution for establishing cooperation between many sites with advisory capacity.

INT.PACS - PACS server module

INT.PACS is an INTEGRATOR system module that meets all basic functions of the PACS server, such as storage and requests handling. The server also handles typical PACS modalities: CT, CR, US, as well as C-STORE, SCP/SCU, and Query/Retrieve methods: C-MOVE SCU/SCP, C_GET SCU/SCP.

Worklist

INTEGRATOR system can display the "Worklist" with the possibility of reading all the data associated with HIS/RIS hospital information system (such as patient identification, examinations, graphics, examination periods, patient examination lists). The mandatory worklist can be read for each modality available in the hospital. The modality includes CT (computed tomography), MRI (magnetic resonance imaging), US (ultrasonography), etc.





Server storage

Images and video sequences storage as a DICOM module in accordance with part 10 of DICOM 3.0 Regulation is provided on the basis of data from PACS server – Picture Archiving and Communication System. INT.PACS server module is available in the INTEGRATOR system as its own PACS server, which allows storing the recorded material from images and its subsequent use, as well as handling the requests from other DICOM applications running in the hospital.





INTEGRATOR STANDARD

Catalogue number: K00021



INTEGRATOR STANDARD is a multimedia, electronic system for integration of operating rooms, enabling the communication inside and outside the operating room as well as the integration with hospital information system. INTEGRATOR STANDARD is based on modular application solutions. It consists of the following modules:

- INT.COM,
- INT.DICOM,
- INT.REC single-channel,

Ergonomic, clear and intuitive interface based on unequivocal and comprehensible symbols increases functional values of the system. The simplified installation procedure of INTEGRATOR STANDARD enables its expansion with the use of the existing telecommunication infrastructure of hospitals. During the exchange of patient data as well as communication the system uses the latest DICOM 3.0 or HL7 standards.

In order to save files containing static images or video sequences, the INTEGRATOR STANDARD system has been equipped with the INT.REC module, which is used for single-channel recording. Using the record button, users can decide whether the observed on-screen image will be saved or not. The video recording is accomplished with the usage of compressed digital formats such as: JPEG, MPEG, BMP.

The local settings, saved individually for each user, cause that the INTEGRATOR STANDARD is a multilevel platform, that can be adjusted to the preferences of very different users. Thanks to the ease of use, compatibility with DICOM or HL7, simple installation and openness to other applications, the system is the only solution combining reliability, efficiency, ergonomics and user-friendliness. Thanks to the features offered by the INTEGRATOR STANDARD, the daily work of the operating theaters managers and supervisors becomes efficient, through the optimal and regular utilization of space for minor and major surgery.



INTEGRATOR STANDARD+

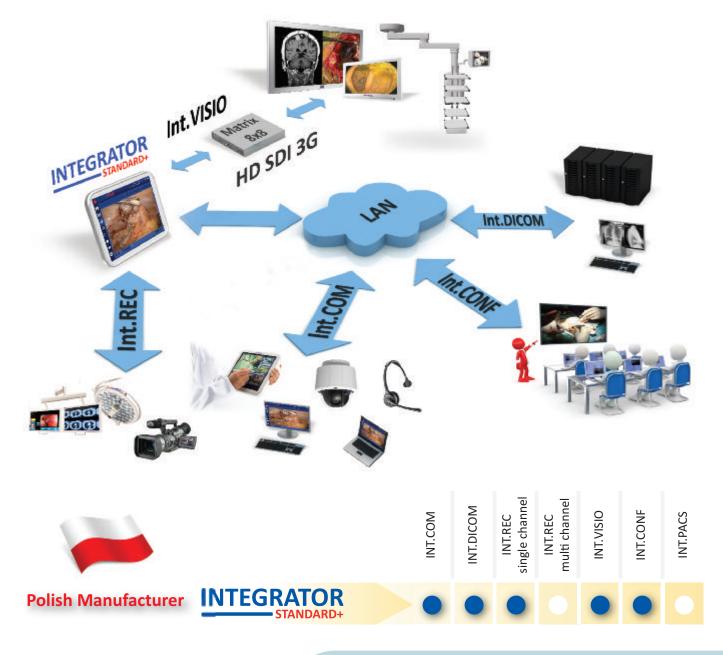
Catalogue number: K00041



INTEGRATOR STANDARD+ is a multimedia, electronic system for integration of operating rooms, enabling the communication inside and outside the operating room as well as the integration with hospital information system. INTEGRATOR STANDARD+ is based on modular application solutions. It consists of the following modules:

- INT.COM a module facilitating communication within the operating room and beyond, designated for managers of operating theaters,
- INT.DICOM an integrated image and video viewer, utilizing the latest DICOM 3.0 or HL7 standards for exchange and communication.
- INT.REC single-channel a functionality, that gives you the ability to record,
- INT.VISIO – a solution for connecting of unlimited number of monitors and video matrix switchers,
- INT.CONF a subsystem of conference serving for education and exchange of information.

The local settings, saved individually for each user, cause that the INTEGRATOR STANDARD+ is a multilevel platform, that can be adjusted to the preferences of very different users. The INT.VISIO module enables the best exploit of each monitor, existing or planned in the operating room. Thanks to the ease of use, compatibility with DICOM or HL7, simple installation and openness to other applications, the system is the only solution combining reliability, efficiency, ergonomics and user-friendliness.





INTEGRATOR COMFORT

Catalogue number: K00061



INTEGRATOR COMFORT is an advanced, electronic, multimedia system for integration of operating rooms, enabling the communication inside and outside the operating room as well as the integration with hospital information system. The INTEGRATOR COMFORT is based on modular application solutions. It consists of the following modules:

- INT.COM a module facilitating communication within the operating room and beyond, designated for managers of operating theaters,
- INT.DICOM INT.DICOM an integrated image and video viewer, utilizing the latest DICOM 3.0 or HL7 standards for exchange and communication,
- INT.REC multichannel a functionality, that gives you the ability to record up to 32 channels in the real time,
- INT.VISIO a solution for connecting of unlimited number of monitors and video matrix switchers
- INT.CONF a conference module, serving for education and information exchange.

The local settings, saved individually for each user, cause that the INTEGRATOR COMFORT is a multilevel platform, that can be adjusted to the preferences of very different users. Thanks to the ease of use, compatibility with DICOM or HL7, simple installation and openness to other applications, the system is the only solution combining reliability, efficiency, ergonomics and user-friendliness.



INTEGRATOR COMFORT+

Catalogue number: K00081



INTEGRATOR COMFORT+ is the most advanced, electronic, multimedia system for integration of operating rooms, enabling the communication inside and outside the operating room as well as the integration with hospital information system. The INTEGRATOR COMFORT+ is based on modular application solutions. It consists of the following modules:

- INT.COM - a module facilitating communication within the operating room and beyond, designated for managers of operating theaters,,
- INT.DICOM an integrated image and video viewer, utilizing the latest DICOM 3.0 or HL7 standards for exchange and communication,
- INT.REC multichannel a functionality, that gives you the ability to record up to 32 channels in the real time,
- INT.VISIO a solution for connecting of unlimited number of monitors and video matrix switchers,
- INT.CONF a conference module, serving for education and information exchange,
- INT.PACS a PACS server module that stores data and supports the INTEGRATOR COMFORT+ system.





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