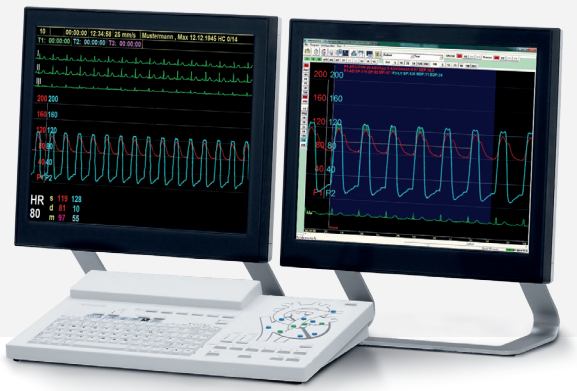
evo**superior**

High-end heart cathlab system
two monitors, two PCs

schwarzer cardiotek
SMART. PRECISE. RELIABLE.

evo**superior** has been designed to meet highest requirements for state-of-the-art diagnosis and analysis in left and right heart cath procedures.

The system comprises of recording, measurement and calculation of hemodynamic parameters It is valued for its brilliance in signal acquisition and signal representation.



Perfomance characteristics of evo**superior**

Intuitive operation via extended function keyboard

- One single keyboard for the entire workflow – from measuring to reporting
- Quick access to relevant curve sections by means of button commands
- Editing the oxygen saturation of the relevant heart section by one-button-functionality
- Switching between various measuring intervals, changing the gain of the ECG-signal and sweep speed happens by pushing a single button

Measurements

- Automatic and simultaneous recording of signal sections
- Manual and automatic measuring
- Manual adjustment of measured sections
- Automatic assignment of pullback curves

In addition to 12 standard measuring positions, further measuring points are configurable. The common measuring algorithms can be freely assigned to the newly generated positions.

Examination room displays

Next to the real-time signals, the slave monitor displays all measurements jointly with their respective conditions, easy to be monitored by the operator in the examination room.

For reporting purposes the system automatically populates a procedure log during the case, which also allows for manual additions.

Calculations

Calculated parameters are:

- **Pressure gradients**
- Cardiac-Output
- Vascular Resistance
- Valve Opening Area
- Systemic and Pulmonal Flow
- Shunts
- Bodysurface Area BSA

Algorithms and formulas can be edited by the user; retrospectively changed values will be considered for the calculations.

ECG Signal Management

The ECG signal is continuously measured in real-time, enabling an immediate reaction to an ischemic condition. Due to the stabilization of the zero position (can be switched on/off), reliable results can be obtained even under rough circumstances.

Full Disclosure File

All signals are automatically recorded in “full disclosure mode”; therefore the whole data set can be reviewed and analyzed retrospectively after examination.

Safety concept

The evo**superior** is equipped with two separate computer systems. In the unlikely event of a system crash, the secondary system takes over the online monitoring function. This concept guarantees a safe and monitored termination of the examination by displaying ECG and the vital parameters as well as hemodynamic signals.

Standard Interfaces

HL7 (Health Level 7), optional

- Transfer of patient data from HIS to evo**superior**
- Transfer of examination report from evo**superior** to HIS

DICOM (Digital Imaging and Communications in Medicine)

- Via DICOM Work List Management (WLM) patient data is transferred to the imaging modality
- Via DICOM Modality Performed Procedure Step (MPPS) the dose information is transferred from the modality to evo**superior** and documented in the report
- Via DICOM PACS the report is transferred and stored on the PACS.

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Quality Management System
EN ISO 13485:2012, EN ISO13485:2012/AC:2012
Directive 93/42/EWG Annex II

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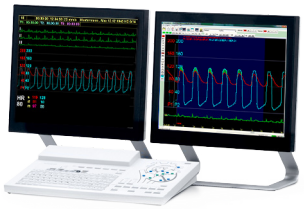

Components

- Base Unit (Chassis)
  - Central Interface Unit
  - Power Supply, 230V
  - Isolation Transformer
  - 2 PCs
- 2 x 19“ TFT-Monitors
- Patient Headbox
- Function Keyboard DE/EN/FR
- Laserprinter
- Mouse
- UPS; APC-Smart-UPS 1500W/230V
- Options
  - Vitalmonitor for Cardiac-Output, NiBP, SPO_2
  - (Colour-)Laserprinter
- Cabling
  - Serial connection cable to patient headbox
  - 4 carbon fibre cables (radio transluscent), length= 90cm
- Standard Accesories
  - Transducer
  - ECG adhesive electrodes
  - 2 pressure cables
  - 1 mounting set for 2 pressure-transducers
  - ECG patient cable with electrode leads

Technical Specs

Classification acc to European MDD (93/42/EWG):	Class IIb
Patient connection box, Preamplifier	
ECG Amplifier	
Number of amplifiers	9
Sampling rate	500 Hz
IBP Amplifier	
Number of amplifiers	4
Signal Display	
Number of channels	Max. 18
Recording programs	Freely programmable
ECG	
Derivations	I, II, III, aVL, aVR, aVF, V1-V6
Amplification	5, 10, 20 mm/mV
Range of heart rate	20 to 240 beats/min
Invasive blood pressure	
Amplification	10, 25, 50, 100, 200, 400 mmHg
Signal Output	
Analog	8 channels selectable
Trigger	Open collector
Computer OS	Windows 7, 32bit
Monitor	2 x 19” TFT
Printer	Laser monochrom
Applied standards	IEC 60601-1:1988 + A1:1991 + A2:1995 UL 60601-1:2003 IEC 60601-1-1:2000 IEC 60601-1-2:2001+ A1:2004 IEC 60601-2-25:1993 + A1:1999 IEC 60601-2-34:2000 IEC 60601-1-4:1996 + A1:1999 IEC 60601-1-6:2004
Patient Safety	Protection class I, type CF according to IEC 60601-1; Patient connections protected against the effects of defibrillation
Dimensions (h x w x d)	
Basic Unit	710 x 560 x 600 mm
Patient Headbox	265 x 200 x 65 mm
Weight	
Base Unit	ca. 100 kg
Patient Headbox	ca. 0.8 kg
Function Keyboard	ca. 2.0 kg
TFT-Monitor	ca. 10.6 kg
Labeling	CE 0197

Notice: Content may be subject to change

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