Product Catalogue

New technologies in cardiopulmonary diagnostics.
Our brand inspires innovation in cardiovascular diagnostics and efficient data flows in your IT environment. A committed team and competent sales and service partners take care of smooth workflows for you and your employees. We are able to respond flexibly to your organisational needs and requirements. All necessary steps, the preparation of the patient, data transfer from the devices and report generation are made available on each computer monitor in the network.

No matter if your installation is working on a single-user workstation or on a laptop, in a small PC network or in a large hospital - your custo med solution will be a profitable investment for the future.

Hans-Jörg Hoffmann  
Sales & Marketing
custo diagnostic for doctor’s offices

- Consistent work in all applications
- Continuous patient management
- Extensive search functions
- Paperless working
- GDT / BDT interface to your EPR system
- All evaluations and reports can be sent via email and as PDF files

custo diagnostic at a glance:

- Central, intuitive software platform for all applications
- Job list as central starting point for the order management
- Reconciliation between ad hoc examinations and emergency ECGs
- Order-related administration of holter devices
- Optimised workflow in the creation of reports due to adaptable filter functions in the evaluation search

custo diagnostic clinical at a glance:

- Integrated patient administration / Database
- Time and cost saving creation of reports
- Expandable at any time thanks to its modular structure
- Electronic archiving

custo diagnostic clinical at a glance:

- Central, intuitive software platform for all applications
- Job list as central starting point for the order management
- Reconciliation between ad hoc examinations and emergency ECGs
- Order-related administration of holter devices
- Optimised workflow in the creation of reports due to adaptable filter functions in the evaluation search
- Extended operating range due to wireless devices (Bluetooth)
- Mobile ECG systems by means of the custo diagnostic satellite system
- Automatic import of SCP / FDA XML files from standalone ECG writers
- Cost-optimised floating licence model
**custo diagnostic** always allows smooth data exchange with your EPR system via an internal BDT / GDT interface.

**custo diagnostic clinical** allows optimum workflow with the Hospital Information System via an internal HL7 interface. For communicating effectively with the PACS of your hospital, the system uses an internal DICOM interface.

The complete cardio-pulmonary functional diagnostics in a consistent and modular user interface.
Patient data and order information are transferred to the database via the highly flexible HL7 interface or DICOM worklist query.

The finished report including measured values is transferred to HIS or PACS via HL7 or DICOM.

The job list presents all examination orders. The medical technician starts the further process with a click.

Diagnostic software systems of other vendors can be integrated via custo connect. Finished examination reports can be imported directly into the custo diagnostic patient record.

Existing compatible ECG writers of other manufacturers can be comfortably integrated into the workflow via the SCP / FDA-XML interface.

In combination with custo med devices, the custo diagnostic system represents the central and consistent platform for all cardiopulmonary examinations in functional diagnostics.

The satellite feature of custo diagnostic allows examinations at the patient’s bedside or at remote locations. The worklist and examination functionality are also available in offline mode. The mobile system synchronises itself automatically as soon as the hospital network is re-connected. With mobile custo med solutions or already existing on-site medical carts examinations can be made directly at the patient’s bedside, independent of energy and network.

By means of a personal work schedule the doctor has got direct access to the examinations for which a report has still to be made.

Fast and comfortable generation of reports through freely definable text modules.

Patient demographics orders

The clinical custo med workflow

The finished report including measured values is transferred to HIS or PACS via HL7 or DICOM.
A modern doctor’s office without the consistent use of PCs and networks cannot be imagined today. EPR software or Hospital Information Systems permit easy access to all patient data from each workstation. The catchword is the “paperless” office. As a result, requirements for modern ECG diagnostics have also changed. Whereas conventional ECG writers used to be “linked” with PCs to save data electronically, “real” PCECGs have established themselves in the meantime. Only an external ECG amplifier remains connected with the PC, amplifying the patient’s ECG signals and transmitting them digitally and directly to the computer. The complete display of the measurement and the analysis of the ECG are then carried out by the PC. Integrated databases save resting and stress test ECGs of an arbitrary number of patients electronically. Previous evaluations can be recalled from the network terminals and be displayed at any time. Nevertheless, if paper documentation is required (e.g. for a referral, discharge letter etc.), it can be comfortably printed with the connected PC printer on normal paper.

custo med has met these requirements by introducing the 12-channel resting/stress test ECG modules custo cardio 100 and custo cardio 200, devices that satisfy any request without losing track of efficiency. Development has focused on economic arguments such as expandability, modularity and sustainability but also on aspects like ease of use and the ability to meet easily and quickly the standard requirements of an office schedule. When developing custo cardio 200, a closed ECG application system with integrated suction unit as well as an ECG module, our engineers have focused - besides the evident medical quality - on hygiene. custo cardio 200 is the only suction system worldwide which has been awarded the hygiene certificate of the German Society for Hospital Hygiene.
• custo cardio 100 is a 12-channel PC ECG with integrated wires, USB port and electrode clips. The device is defibrillation-protected and ensures reliable pacemaker detection. The flexibility of the ECG module allows ECG recording and display at any time and anywhere, no matter if you are working on a PC, notebook or tablet. In line with this system, we offer the custo sensive adhesive electrodes for optimum ECG signal quality, best skin compatibility and high efficiency.

- Sampling rate 1000 samples/sec. Extremities & chest wall (1 ms)
- 4000 samples/sec. Pacemaker (0.25 ms)
- Frequency response: 0.05 - 500 Hz
- Deviation: < 1.5 %
- A/D converter: 24 bit
- Input impedance: > 50 MΩ
- Amplitude quantification 0.3 μV/bit
- Defibrillation protection electrical strength (proof voltage): 5000 V, (recovery time < 10s)
- Voltage supply: USB cable
- Energy consumption 2.5 watts at maximum during the recording process

- Software filter & functions line filter, muscle filter, AD filter (anti-drift)
- Pacemaker detection
- Impedance measurement at all electrode leads (not N) with automatic indication for quality
- Dimensions: approx. 160 * 85 * 25 mm (L * W * H)
- Weight: approx. 330 grams
- Classification: protection class II, class IIa, type BF, defibrillation protected, DIN EN 60601-1, 60601-2-25, 60601-2-51
- Software requirements: custo diagnostic 3.3.1 or higher
Resting/Stress test ECG - custo cardio 130

12-channel PC ECG with digital pacemaker detection and defibrillation protection

Resting/Stress test ECG - custo cardio 100 / 110 BT

Removable, rechargeable battery

Medical BlueTooth for wireless ECG transmission

• Just like custo cardio 100 but additionally with rechargeable battery and Medical BlueTooth for wireless ECG transmission. This system provides advantages particularly with regard to treadmill stress tests because the ECG module and the patient are treated as a unit. There is no disturbing connection cable to the PC.

Stationary Systems

Resting/Stress test ECG - custo cardio 100 / 110 BT

Stationary Systems

• Just like custo cardio 100 but with standard port for using external patient cables or suction units.

- Sampling rate 1000 samples/sec. Extremities & chest wall (1 ms)
- 4000 samples/sec. Pacemaker (0.25 ms)
- Frequency response: 0.05 - 500 Hz
- Deviation: < 1.5 %
- A/D converter: 24 bit
- Input impedance: > 50MO
- Amplitude quantification 0.3 μV/bit
- Defibrillation protection electrical strength (proof voltage): 5000 V, (recovery time < 10s)
- Voltage supply: USB cable
- Energy consumption 2.5 watts maximum during the recording process
- Software filter & functions: line filter, muscle filter, AD filter (anti-drift)

- Pacemaker detection
- Impedance measurement at all electrodes leads (not N) with automatic indication for quality
- Dimensions: approx. 160 x 78 x 32 mm (L * W * H)
- Weight: approx. 425 grams
- Connection with 15-pole ECG input jack (D-SUB fitting or Siemens Plug)
- Classification: protection class II, class IIa, type BF, defibrillation protected, DIN EN 60601-1, 60601-2-25, 60601-2-51
- Software requirements: custo diagnostic 3.3.1 or higher
custo cardio 200

sets new standards in functionality, operability, quality of data transfer and particularly in the field of hygiene. The exchangeable, re-usable electrodes assure that every patient gets a hygienically impeccable electrode. It is not necessary to go through any time-consuming disinfection procedures or residence times. Following nature’s example (bionics), our engineers have managed to implement the unmatched functionality of an octopus sucker into the orbiters of custo cardio 200. As a result, the system can reduce suction pressure by up to 70%.

Due to its bionic features the electrode can be applied quickly and safely. It is not necessary to shave skin, thanks to the spiked, patented contact areas. The gentle application automatically reduces suction pressure to the required minimum. Workflow is optimised due to PC control and the automatic detachment of electrodes after the recording has been finished. The integrated ventilation programme of the suction lines increases life span of the system.

• custo cardio 200 is a resting/stress test ECG and a suction unit all in one. This technological innovation sets standards in functionality, operability, quality of data transfer, and particularly in the field of hygiene. The exchangeable, re-usable electrodes assure that every patient gets a hygienically impeccable electrode. It is not necessary to go through any time-consuming disinfection procedures or residence times. Following nature’s example (bionics), our engineers have managed to implement the unmatched functionality of an octopus sucker into the orbiters of custo cardio 200. As a result, the system can reduce suction pressure by up to 70%.

• The only suction system with hygiene certificate of the German Society for Hospital Hygiene
• Skin-friendly application (perfect for patients taking anticoagulant drugs)
• Automatic suction power regulation (gentle application)
• Patented, spiked contact areas
• Quick application of electrodes and automatic detachment
• Options of mobile use
• Electrodes and suction lines can be easily exchanged
• ECG and suction unit in one device

• custo cardio 200 is a resting/stress test ECG and a suction unit all in one. This technological innovation sets standards in functionality, operability, quality of data transfer, and particularly in the field of hygiene. The exchangeable, re-usable electrodes assure that every patient gets a hygienically impeccable electrode. It is not necessary to go through any time-consuming disinfection procedures or residence times. Following nature’s example (bionics), our engineers have managed to implement the unmatched functionality of an octopus sucker into the orbiters of custo cardio 200.
In the ECG overview the ECG is displayed in a 12-channel system over the complete recording period. This view allows the setting of amplitude, speed and channel selection individually, so that all details of each lead can be evaluated precisely. The zoom function and the calipers are helpful for parameter calculation. Parts of the ECG can be marked and be found again later immediately. It is possible to compare two arbitrary resting ECGs by using the comparison function.

Beats of a defined area of the ECG are marked by default, which are later used for parameter calculation. It is possible for the user to modify the selection of the beats. This allows receiving an evaluation of the recorded ECG which is adapted to the user’s needs. The recovery function allows a new analysis with the original values.

This view displays the already measured cumulative complexes of the ECG in a 12-channel mode. The fixed measurement lines describe the measurement points of each cumulative complex. So the user can quickly recognize changes in a QRS complex.

The tabular display of the measured values offers a general overview of all determined parameters, as for example axis position, times and amplitude values of each test point. They are clearly displayed on a screen.

In the single complex display the cumulative complex of a channel is at first shown enlarged. With the help of movable measuring lines the user is able to redetermine the test points manually. An overlay function which arranges the cumulative complexes of all channels on top of each other, serves as additional information source for the exact determination of the test points. On the right side the vector loop of the ECG is automatically displayed.

Due to the text modules which can be generated individually, the report manager offers an effective facility to create reports which are time-saving, precise and significant. It is possible to allocate arbitrary texts to four groups with eight function keys each. Within these texts various variables can be incorporated, containing measured values and indications as to the corresponding evaluation. Consequently, a complete report text can be created with a few keystrokes.

In the stress test summary all data and the recorded 12-channel ECG are clearly displayed on a screen. All described functions are available as with the resting ECG. In addition, the ST table and the recorded ST segments of each channel can be displayed. Here, cumulative complex display, measured value table and single complex display can even be displayed for each load step. The step comparison function allows the comparison of arbitrary load steps within the stress test.

The ECG display as well as the cumulative complex display (up to seven displays) of the load steps can be compared to each other.

Due to the online ECG monitoring the physician can monitor a running resting or stress test ECG in his consulting room, not only in the test room. All produced data and the ECG are transferred in real time. That makes it possible for the physician to control the stress test on his monitor without being physically present in the test room.
Stress test ECG measuring station - custo touch

Easy finger control ECG recording with just one touch

Clearly arranged display of evaluation

Optimise your workflow with the ECG pad.

LED and digital display at front and face side, display unit pivotable by 180 degrees

Handlebar pivotable by 360 degrees

Performance range 5 – 1000 watts

Set screws for uneven grounds

ECG pad: High-resolution, 12”, capacitive touchscreen, easy and intuitive handling

custo power station: For a continuous runtime of 8 hours

custo cardio 200: “2 in 1” ECG + suction unit, with hygiene certificate

Telescopic, minimum 1000 mm, maximum 1450 mm

Height adjustment + 20° to – 25°

Slewing range +/- 135°

Equipment cart custo easy plus: Particularly stable and heavy construction with quiet castors

Stress test ECG measuring station- custo ec3000

LED and digital display at front and face side, display unit pivotable by 180 degrees

Handlebar pivotable by 360°

Performance range 5 – 1000 watts

Set screws for uneven grounds

custo cardio 200: “2 in 1” ECG + suction unit, with hygiene certificate

Telescopic, minimum 1000 mm, maximum 1450 mm

Height adjustment + 20° to – 25°

Equipment cart custo mobil: Particularly stable and heavy construction with quiet castors

High-resolution TFT monitor

Laser printer

PC system including medical operating system custo diagnostic, TFT monitor, mouse and keyboard, tailored to daily work with ec3000 measuring station

custo ec3000: Ultra-silent and wear-free ergometer with rubber timing belt

custo ec3000: “2 in 1” ECG + suction unit, with hygiene certificate

Telescopic, minimum 1000 mm, maximum 1450 mm

Slewing range +/- 135°

Hygienically safe

custo cardio 200: “2 in 1” ECG + suction unit, with hygiene certificate

Telescopic, minimum 1000 mm, maximum 1450 mm

Height adjustment + 20° to – 25°
Stress test ECG measuring station - custo er2100

- custo er2100
  - High-quality and robust treadmill
- custo cardio 100 BT
  - Wireless 12-channel PC ECG
- LED and digital display at front and face side, display unit pivotable by 180°
- Handlebar pivotable by 360°
- Set screws for uneven grounds
- Performance range 5 – 1000 watts

CPET measuring station - custo mc3000

- custo cardio 200
  - "2 in 1" ECG + suction unit, with hygiene certificate
- Telescopic, minimum 1000 mm, maximum 1450 mm, Slewing range +/- 135°, Height adjustment + 20° to – 25°
- Respiratory mask with volume sensor
- LED and digital display at front and face side, display unit pivotable by 180°
- Handlebar pivotable by 360°
- Performance range 5 – 1000 watts
- custo er2100
  - High-quality and robust treadmill
- custo cardio BT
  - Wireless 12-channel PC ECG
- custo eco 3000
  - Ultra-silent and wear-free ergometer with rubber timing belt
- Running surface 170 x 60 cm
- Speed from 1 to 25 km/h
- Incline up to 25 %
- Equipment cart custo caddy plus
  - Particularly stable and heavy construction with quiet castors
- Colour laser printer
- PC system including medical operating system custo diagnostic, 2 x TFT monitor, mouse and keyboard, tailored to daily work with mc3000 measuring station
Respiratory tract diseases, particularly allergic reactions of the bronchial system, belong to the most frequent diseases today. A reliable pulmonary function test is an essential instrument with preventive medical examinations as well as an optimal check-up of therapeutic measures. It is the aim of a pulmonary function test to detect as exactly as possible the functional status of the respiratory system and of the lungs, in individual cases or in cases of population groups at risk. In many cases of lung disease, ventilation and blood circulation of the lungs are not well coordinated and consequently not enough oxygen is being absorbed. Therefore, the aim must be to detect diseases in their early stages and to relate them causally. The efficiency of initialised therapies is to be monitored and preventive measures are to be supported.

Standard examinations are carried out with a spirometer which can be upgraded with supplementary measuring methods according to the selected equipment technology. This allows working on special questions. The measured values are compared with predicted values.
The pulmonary function module allows precise measurements in just one breathing manoeuvre, even if home visits are made. custo spiro protect – the gold standard in bacterial and viral filters – gives your patients maximum protection against infection. It is not necessary to disinfect the measuring head in a time-consuming procedure and product lifetime is significantly increased.

Pulmonary Function - custo spiro mobile

- Predicted value tables: EGKS, Zapletal, Polgar 79, Polgar 71, Quanjer, Crapo, Morris, Hankinson, HSU, Ulmer, Austrian reference values: Knudson, Cherniack, Schindl, Baur
- Differential pressure gauge with laminar element
- BTPS Body Temperature Pressure Saturated
- Accuracy according to ATS standards, ISO 23747
- Air resistance 2 kPa at 12 l/s
- Measuring range ± 12 l
- Resolution 12 Bit
- Linearity ± 2 %
- Dimensions: approx. 190 * 150 * 30 mm (L * W * H)
- Weight: approx. 329 grams
- Classification: protection class II, class IIa, type BF, DIN EN 60601-1
- Software requirements: custo diagnostic 3.7 or higher

Pulmonary Function - custo spiro air

- Predicted value tables: EGKS, Zapletal, Polgar 79, Polgar 71, Quanjer, Crapo, Morris, Hankinson, HSU, Ulmer, Austrian reference values: Knudson, Cherniack, Schindl, Baur
- Differential pressure gauge with laminar element
- BTPS Body Temperature Pressure Saturated
- Accuracy according to ATS standards, ISO 23747
- Air resistance 2 kPa at 12 l/s
- Measuring range ± 12 l
- Resolution 12 Bit
- Linearity ± 2 %
- Size of measuring head: approx. 190 * 150 * 30 mm (L * W * H)
- Weight: approx. 240 grams
- Size of base station: approx. 130 * 130 * 30 mm (L * W * H)
- Weight: approx. 300 grams
- Classification: protection class II, class IIa, type BF, DIN EN 60601-1
- Software requirements: custo diagnostic 3.7 or higher
Pulmonary Function - custo vit m R

• In addition to spirometry, this established pulmonary function module with oscillometric resistance measurement supplies measured values independent of the patient’s cooperation. This system is particularly suited for patients with extreme obstructions, for children and old people.

• Hygienic measuring procedure through heated measuring sieve
• Measuring range: ±10 l/s
• Resolution: ±10 ml Accuracy flow/volume: ±2 %
• Combined measuring of FVC and FVC is possible with only one breathing manoeuvre (combined measurement)
• Measuring of all standard parameters
• Spasmolysis test, provocation
• Polyfrequent oscillometric resistance measurement
• Predicted value tables: EGKS, Zapletal, Polgar 79, Polgar 71, Quanjer, Crapo, Mannix, Hankinson, HSU, Ulmer, Austrian reference values: Knudson, Cherniack, Schindl, Baur
• Modularity for upgrade according to customer’s needs
• Dimensions: 300 x 150 x 100 mm (L * W * H)
• Weight: approx. 3 kg
• Software requirements: custo diagnostic 3.7 or higher

Pulmonary Function - Software

1. Pulmonary function measurement displaying flow-volume curve, predicted value and measured value table, as well as the current respiratory activity.
2. Child animation “Schnauft der Drache” (“Schnauft the dragon”) as a motivation for children.
3. Trend curve
4. Comparison

1. The results of all examinations of a patient are displayed side by side in the time-dependent course.
2. The comparative function offers an efficient therapy check-up for the evaluation of a drug therapy.
The most frequent causes of death in the western world are cardiovascular diseases. In this context, the sudden cardiac death is one of the main problems. In Germany, ten people per hour die of a sudden cardiac death. Particularly at risk are patients who have already had a myocardial infarction.

In addition, there is a high incidence of cardiac irregularities, over 80% of which are high frequency arrhythmias such as ventricular tachycardia, ventricular flutter and fibrillation. A small share is bradycardiac, i.e. low-frequency cardiac irregularities.

The earliest possible recognition of the high-risk patient is essential for starting suitable therapies and for reacting to complications in time.

For diagnostics this means a particular challenge, since methods of examination are required which take into account the individual habits of the patient. The electric activity of the heart is recorded on a long-term ECG over a period of usually 24 hours, at least 18 hours. During the recording process data are registered in a recorder and are then evaluated on the PC by means of analysis software. Holter ECG systems have been successfully developed by custo med for 25 years already and they are sold worldwide. The custo tera long-term ECG concept has been implemented in close cooperation with the users in hospitals and doctor’s offices. Even the basic version offers all functions that make it possible to create a long-term ECG report within the shortest time.

Additionally, our software solutions provide detailed RR variance examinations or comprehensive possibilities of reanalysis. The modular Holter ECG concept creates intelligent and economic solutions with a maximum amount of flexibility. The integration to existing network environments and the complete data exchange with hospital information or EPR systems is easily possible. Comfortable additional functions turn the system into an efficiently working evaluation centre for Holter ECG multi-user systems.
Short wires for artefact-free recording

- Rechargeable battery with a runtime of up to 7 days
- Comfortable to wear due to its slim design and low weight
- Protected position of memory card
- custo sensitive: the skin-friendly adhesive electrode

custo flash 501 is the Holter ECG recorder for facility sharing and evaluation centres. With three ECG channels and short, integrated ECG wires for artefact-free 24 hours of ECG recording. The slim design of the recorder and the use of only three adhesive electrodes per recording session are features that provide high wearing comfort and favourable operating costs. In line with this system, the custo sensitive adhesive electrodes ensure optimum ECG signal quality, best skin compatibility and high efficiency.

• Recording channels: 2
• Sampling rate: 2.5 ms ± 0.1 % per channel
• Amplitude quantification: 5.6 μV/Bit ±1% in total
• Frequency response: 0.05 - 45 Hz
• Runtime of accumulator up to 7 days
• Voltage supply: Lithium ion battery 3.7 V, 1500 mAh (approx. 2 - 4 hours charging time)
• Display & control elements, operating status display with LED, patient marker
• Dimensions: approx. 95 x 65 x 17 mm (L * W * H)
• Weight approx. 98 grams (incl. battery)
• Classification: protection class III, class IIa, type BF, DIN EN 60601-1
• Software requirements: custo diagnostic 3.5 or higher

custo flash 501 is the Holter ECG recorder for facility sharing and evaluation centres. With three ECG channels and short, integrated ECG wires for artefact-free 24 hours of ECG recording. The slim design of the recorder and the use of only three adhesive electrodes per recording session are features that provide high wearing comfort and favourable operating costs. In line with this system, the custo sensitive adhesive electrodes ensure optimum ECG signal quality, best skin compatibility and high efficiency.

If there is only low demand for long-term ECG examinations in a doctor’s office we recommend participating in a multi-user evaluation system. In this case, a single office only needs to acquire a recorder. The Holter Online System provides a comfortable and low-cost solution for multi-user evaluation systems with solid-state memory technology.

The ECG data are sent to the centre with the holter online software via email or remote data transmission. The integrated short analysis function allows the user to receive preliminary information about important pathological events without having to wait for the complete report from the centre.

This system works completely paperless. By using emails, the ECG data can be transferred to the centre and back again. The usual printouts of the report can be sent to the office as a PDF file via email. If no email function is available, the printouts can be sent directly to the office by means of a PC fax, where they are received again paperless by a PC fax.

After the data have been downloaded and the ECG data have been transmitted to the centre, the short analysis displays important events such as frequent extra systoles, ventricular tachycardia or asystolia together with the heart rate trend. It is not necessary to wait for the centre’s final report.

It is possible to validate the ECG analysed by the centre on one’s own PC. For that purpose, the analysis is sent back by the centre as an ECG data set and is then imported into the holter online program. This allows viewing, editing or marking interesting ECG sections and printing them with different resolutions.
Holter ECG - custo flash 500 / 510

- Recording channels: 3
- Sampling rate: 2.5 ms ± 0.1 % per channel
- Amplitude quantification: 5.6 μV/Bit ± 1 % with 10 Bit in total
- Frequency response: 0.05 – 45 Hz
- Recording up to 7 days with one rechargeable battery and 3 electrodes only
- Storage medium: SD card
- Data transfer: USB card reader
- Voltage supply: Lithium ion battery 3.7 V, 1500 mAh (approx. 2 – 4 hours charging time)
- Display & control elements, operating status display with LED, patient marker
- Dimensions: approx. 95 x 65 x 17 mm (L * W * H)

Holter ECG - custo cor 12

- 12 recording channels
- Sampling rate: 1.0 ms ± 0.1 % per channel
- Amplitude quantification: 0.3 μV/Bit
- Frequency response: 0.02 – 48.5 Hz
- Recording of 24 hours
- Storage medium: mini SD card
- Data transfer via Bluetooth, USB card reader
- Voltage supply: AAA battery 1.5 V LR03, accumulator AAA 800 mAh
- Display & control elements

- Colour display 128 * 128 px
- Patient markers
- Dimensions: approx. 78 x 57 x 16 mm (L * W * H)
- Weight: approx. 85 grams (incl. battery)
- Classification: protection class III, class Ila, type BF, DIN EN 60601-1
- Software requirements: custo diagnostic 3.7 or higher

- custo flash 500 is the flagship Holter ECG recorder with three channels, short integrated ECG wires and continuous ECG recording up to seven days. The slim design of the recorder and the use of only three adhesive electrodes per recording session are features that ensure high wearing comfort and favourable operating costs. In line with this, the custo sensive adhesive electrodes provide optimum ECG signal quality, best skin compatibility and high efficiency.

- With its 12 leads and an integrated O-LED display, custo cor is the recorder for special tasks and requirements. The recording time is 24 hours. The mini SD card provides fast and comfortable data transfer. In line with this, the custo sensive adhesive electrodes ensure optimum ECG signal quality, best skin compatibility and high efficiency.
The summary of the 24-hour recording is available immediately after the recorder data have been downloaded and the analysis of the saved ECG has been made. All pathological events with indication of appearance and maximum frequency are displayed in it. The most pathological value is particularly pointed out according to its point in time and duration. The heart rate trend is graphically displayed, simultaneously with a freely selectable pathology. With a mouse click (see orange mark) the display of the corresponding ECG example is directly recalled together with all important indications. The pathology trend curve which is displayed simultaneously allows a quick access to further events of the same type. The clearly structured user interface with its extensive editing functions facilitates the quick validation of the selected results, also available with QT analysis and Atrial Fibrillation detection.

In particular cases of evaluation, it may be necessary to have an overview of a longer section of the recorded ECG. It is possible to run the complete 24-hour ECG in one- or two-channel mode with configurable amplitude and speed on the screen. Editing individual or several examples is possible at any time.

The examination of heart rate variability in the time spectrum as well as in the frequency spectrum can be precisely followed thanks to the high-resolution ECG analysis of the custo.ter system. All standard trends (e.g. SDNN, ANNN, RMSSD, pNN50) are displayed. For interesting positions the corresponding ECG is immediately displayed. A two-dimensional "scatter plot" shows the time behaviour of consecutive RR intervals.

The pacemaker spikes registered by the recorder are analysed according to their time behaviour, the individual pacemaker data (starting frequency, frequency window and others) being considered. In addition, the system examines whether a pacemaker pulse is followed by a corresponding myogenic response. The results are displayed after having been edited accordingly (including, among other things, summary, trend and selected examples).
The ambulatory 24-hour blood pressure measurement creates an extensive profile of the blood pressure behaviour. The exact determination of blood pressure values - differentiated according to day and night phases - is indispensable for a validated diagnosis and therapy control.

The custo screen system variants provide customised solutions, according to the individual specifications of a doctor’s office. custo med supplies suitable software solutions for all customary PCs, which meet the highest demands from recorder programming through suitable documentation to the optimal database archiving. Data transmission is carried out via infrared technology (IRDA). The custo screen recorder uses the oscillometric measuring procedure.

An ergonomic shape, attractive design and the very low weight ensure high wearing comfort for the patients. Due to the extremely quiet mode of operation the patient does not perceive the recorder as a technical foreign body. The individual measuring operations are finished within 30 seconds.
The simultaneous recording of holter ECG and ABPM extends the diagnostic possibilities. The custo holter ABPM system uses the most advanced technology in the field of simultaneous recording of holter ECG and ABPM. The system provides high wearing comfort without any holter ECG cables which are disturbing or subject to failure. The custo holter ABPM also excels in terms of efficiency because the system works without adhesive electrodes and ECG wires.

- Oscillometric measuring procedure, automatic baseline compensation
- Measuring range heart rate 35 – 220 beats/min
- Systolic blood pressure 70 – 270 mmHg
- Diastolic blood pressure 40 – 155 mmHg
- Maximum cuff pressure 300 mmHg
- Maximum number of measurements 512
- Maximum recording time 72 hours
- Length of a measurement < 30 seconds
- Standard measurement intervals: day phase every 15 min., night phase every 30 min., if required creation of additional phases
- Intervals configurable between 5 and 90 min., setting of individual profiles

Custo screen 400 corresponds to custo screen 300, with the following additional features:
- Maximum recording time 24 hours with simultaneous reception and storage of ECG
- Storage medium: mini SD card
- Data transfer: USB card reader

Custo guard 3:
- Recording channels: 3
- Sampling rate max. 1.0 ms ± 0.1 % per channel
- Frequency response 0.5 Hz – 150 Hz
- Data transfer to custo screen 400 via radio frequency band ISM 2.4 GHz
- Voltage supply: lithium polymer battery 110 mAh

Custo screen 400 corresponds to custo screen 300, with the following additional features:
- Runtime of battery: 3.5 days, with 1 kHz ECG sampling rate
- Approx. 35 days in standby
- Charging time of battery approx. 2 hours (if completely discharged)
- LED status display for charge status
- Dimensions: approx. 70 * 42 * 12 mm (L * W * H)
- Weight: 27 grams
- IP65 water proof
- Classification: protection class III, class Ila, type BF, DIN EN 60601-1, DIN EN 60601-2-47
This additional module combines blood pressure severity with cardiovascular risk factors and determines the patient’s individual risk according to these parameters. The definition of blood pressure severity and the classification of risk factors are in accordance with the current guidelines of the German Hypertension League (DHL).

The risk factors are selected by simply clicking the check-boxes. They are saved and automatically integrated into the evaluation when further recordings are made. If risk factors change an adjustment can be made at any time.

In addition to the graphic display of the blood pressure curve, all measured values (systole, diastole, mean arterial pressure, pulse pressure amplitude etc.) are displayed numerically.

The tabular display points out an exact overview of all performed measurements. In addition, the patient’s comments can be taken from the recorded diary. The weighted average, the standard deviation and the proportional decrease during the night phase are displayed among other things.

Even the evaluation of a long-term therapy is possible with the custo screen program. All the recordings of a particular patient are compared side by side in the time-dependent course. It is possible to access single evaluations at any time.

An efficient control for the assessment of a drug therapy can be easily carried out thanks to the possibility of comparing two evaluations directly on the screen. Any preliminary examinations can be compared with the current examination precisely in time.

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In the proposal, the classification and the severity of hypertension, the blood pressure behaviour at night and the risk factors are indicated. Furthermore, the risk in percentage for heavy cardiovascular disease within the next 10 years is displayed. This proposal can be automatically taken over into the EPR system.

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Halter ECG and ABPM are displayed as a 24-hour trend after having been downloaded and analysed. The holter ECG additionally includes display and frequency of the events. From this start page you can change to the detailed views and analysing functions.

Printout: The printout summarises the single values in a chart and presents the measured value table, the risk evaluation and the proposal clearly arranged on a DinA 4 page.
The prevalence of sleep-related respiratory disorders (SRRD) is approximately 3 - 4 % of the total population with a frequency peak being composed of male patients between 45 and 65 years.

The most frequent types of sleep-associated respiratory disorders are obstructive apnoea and hypopnoea. The Obstructive Sleep Apnoea Syndrome (OSAS) is characterised by repeated episodes of respiratory stops (apnoea) or reduced respiration (hypopnoea), caused by a total or partial occlusion of the upper respiratory tract. They are typically accompanied by a drop of the oxygen content of blood, compensatory breathing efforts and arousal from sleep at the end of an episode. The terminating arousals cause a fragmentation of sleep during the night, which often results in a considerable reduction of recuperative sleep.

The consequences are:
- Cardiovascular diseases caused by cardiac reaction
- High blood pressure (approx. 50 – 70 % of OSAS patients!)
- Strokes
- Mild to excessive daytime sleepiness
- Reduced cognitive performance due to hypoxia

Although the OSA-syndrome with its serious consequences has been clinically known for decades, there is still an enormous number of undiagnosed patients needing medical treatment. In Germany alone this number is estimated to approx. 800,000 patients.

After an anamnesis with suspicion of OSAS there are only two possibilities for a physician to get a high-quality diagnosis:
- Admission to a sleep laboratory of a hospital
- Ambulatory screening in the patient’s bedroom

Advantages of ambulatory screening (home-care) compared with polysomnographic recording in the sleep laboratory
- Recording in a familiar environment under usual conditions
- Minimisation of the "first-night" effect
- Multiday-recording and follow-ups are easily possible
- Cost minimisation
- No long waiting periods
The characteristic features of custo night 310 are its compact and ergonomic design, its easy handling by lack of function keys as well as a high wearing comfort. A complete apnoea diagnosis (basic diagnosis) is possible with the application of only a few necessary sensors. Furthermore, the recorder is prepared for the modular connection of other sensors.

For validating the automatic detection of apnoea and hypopnoea phases the physician can switch over to the editing mode with a mouse click. As an example, the illustration shows the 5-minute section of a screening with a sequence of apnoea and hypopnoea phases. The physician can jump quickly from one phase to the next one. The order of trends and signals is freely configurable.

All analysis results are summarised in a table. One field is prepared for each apnoea analysis, desaturation analysis, frequency analysis and the list of events. In addition, the evaluation can be entered in another field.

All results can be arranged arbitrarily for documentation and they can be printed selectively as a report on a standard printer.

• Registration of respiration via patient-friendly triple thermistors (oral / nasal)
• Registration of snoring sound via an integrated microphone
• Recording of pulse oximetry
• Recording of heart rate
• Recording of body position (5 different positions)
• Registration of abdominal and thoracic respiratory movements
• Measurement of mask pressure (with therapy control)
• Recording and documentation of pulse wave
• Duration of recording: up to 7 nights
• Transmission time: approx. 40 seconds
• Energy: two AA/LR6 batteries
• Dimensions: 110 x 62 x 28 mm
• Weight: approx. 120 grams

Optional:
• One-channel ECG
• PLM sensor (periodic leg movement)
Supervise the ECG in real-time. Wireless.
custo belt is a textile, washable electrode belt which is connected to the ECG transmitter custo guard with a simply click. custo guard sends a high-resolution, high-quality and continuous ECG signal for cardiac supervision and diagnostics. This process is effected in real-time and the receiver of data can be selected according to the area of operation.

custo watch
The mobile indoor/outdoor single version: custo watch is a mobile ECG receiver in the form of a sports watch that continuously saves the ECG of the person who wears it. Optionally, if desired, it displays the current heart rate and can be freely configured. After the watch has been detached, data are downloaded and saved in the rehab system via a docking station.

custo kybe
The mobile indoor/outdoor group version: custo kybe is a mobile ECG receiver in the form of a smartphone which records ECG data of up to 5 patients simultaneously and also displays the individual ECG. All data are saved and available for later analysis at any time.

PC system
The classic stationary version: 8 training areas are displayed per monitor, with ECG and training profile. Up to 32 patients can be monitored simultaneously. The functions group start and stop allow a comfortable process control. Subsequent start of additional patients during the running training is possible.

custo guard:
1- or 3-channel ECG transmitter

custo belt:
1- or 3-channel electrode belt

1. ECG monitoring
2. Definition of training programmes
3. Control of training
4. Therapy process control / Summary

1. Up to 8 patients per monitor. Freely combinable training devices such as ergometer, treadmill or cross trainer, independent of manufacturer. Training parameters can be freely set. Modification of load is possible at any time.
2. Selection of the next training from already predefined sets. Individual adaptation to the current patient. Limit values can be set for alarm functions.
3. Clearly arranged tab system in the open training area. Fast access bar for modifying the most important parameters as well as process control. The complete ECG can be displayed and printed at any time.
4. Clearly arranged display of incoming stress test ECG, summary of the performed rehab training units and final stress test. It is possible to change to the detailed display of the stress test or the individual trainings.

Cardiac Rehabilitation - custo cardio concept

- Up to 32 patients can be monitored simultaneously.
- The functions group start and stop offer a comfortable process control. Subsequent start of additional patients during the running training is possible.

CustoGuard
-发送高分辨率、高质量和连续的ECG信号用于心脏监督和诊断。
-数据接收后可选在区域操作中选择数据接收器。

CustoWatch
-移动室内/室外单版本：CustoWatch是一种移动的ECG接收器，形式为运动手表，连续保存佩戴者的ECG。可选显示当前心率，自由配置。
-手表被拆卸后，数据下载并保存在康复系统中。

CustoKybe
-移动室内/室外组版本：CustoKybe是一种移动的ECG接收器，形式为智能手机，可以同时记录5位患者的ECG数据，并显示个人ECG。
-所有数据保存并可随时分析。

PC系统
-经典固定站版本：每个显示器显示8个训练区域，带有ECG和训练配置。
-最多32个患者可同时监测。
-功能组启动和停止提供舒适的流程控制。在进行训练期间，可以启动额外的患者。

CustoGuard
-1或3通道ECG发射器

CustoBelt
-1或3通道电极带
Profit from the free, manufacturer-independent choice of training equipment.

The cardio concept offers the therapist new possibilities of cardiac rehabilitation, from interval through rotational training up to comparative training methods. All data can be controlled by means of real-time ECG via a central cardio concept monitor.

With this new state-of-the-art technology the therapist is free to select the optimum rehab method. The patient wears the recording device on the body during the whole rehab training. Thus the ECG recording is not bound to any special endurance machine. Consequently, the therapist has the free choice between ergometer, treadmill, cross trainer or floor exercise - everything is possible now. All custo med training machines are equipped with medical Bluetooth, so that the recorded data are transferred to the therapist’s central cardio concept monitor via a wireless connection. The therapist can observe the cardiovascular effects of each single training method in real-time and react immediately by adapting the training or choosing another training method.

Advantages:

- Wireless, adhesive-electrode-free and waterproof ECG module for direct application on the patient’s body
- Reusable, textile and washable ECG belt
- Use of already existing training machines
- Individual training procedures on different endurance training machines
- Excellent ECG signal quality, even when exercising on a treadmill
- Up to 32 patients can be supervised simultaneously
Beginning of training
All participants of the training group automatically connect themselves to custo kybe and custo guard continuously transmits the ECG. On the display of custo kybe each participant is presented with name and current heart rate. The therapist can start the training by pressing the start key.

Performance of training
After having activated the start key, custo kybe starts recording the ECG signals. In the overview display patient name and the corresponding heart rate are always shown. If heart rate exceeds its upper limit or falls below its lower limit, an acoustic alarm signal will be issued and the patient concerned will be highlighted in red.

ECG display during the training
By clicking on the patient in question, it is possible to change from the overview page to the ECG display of this patient. The amplitude of the ECG is freely scalable. With a click on the back button you can switch to the overview page.

Termination of training
In order to finish the training it is sufficient to click on the stop key. The recording is then terminated.

Evaluation of training
The stored ECG data from the training are transferred from custo kybe to the custo Rehab Software via USB or SD card. They can be used to the full extent of the Rehab software. After the data download custo kybe can be programmed for a new training group.
The telemonitoring system is composed of custo kybe, custo belt, custo guard and the software module custo kybe center. Custo kybe stores ECG data continuously over months, detects arrhythmia and sends these events to the custo kybe center automatically. The type of transmitted events can be freely configured via the custo kybe center. The patient can trigger the sending of an additional event by pressing a button. The system provides continuous transmitting of live ECG to the custo kybe center via the ECG online streaming function.

Data are transmitted via mobile telephony, USB or WLAN. When using the mobile telephony version, a direct communication with the custo kybe user is possible by calling or by sending an SMS via the custo kybe center. The custo kybe is designed as a multi-parametric monitoring system and in addition to the ECG other sensors such as SpO2, blood glucose or blood pressure will be integrated in the near future.

In the list of events, all events of a custo kybe are displayed. These events are classified and can be freely edited. A difference is made between events detected automatically, those actively sent by the patient and ECG data requested by the doctor.

The custo kybe is configured via this page. The configuration parameters of custo kybe can be modified from the custo kybe center by remote control at any time.

As custo kybe continuously saves the ECG, previous ECG data can be requested selectively, precisely timed and in arbitrary length via this function.

With this function, custo kybe continuously transmits ECG in real-time which is being continuously displayed by the custo kybe center.