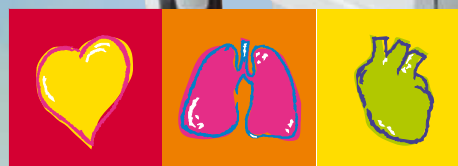




# CARDIOVIT CS-200

## INNOVATION AND EXCELLENCE

The CARDIOVIT CS-200 is a multitasking system solution, combining proven diagnostic capabilities with the modern computer technology and the most widely accepted user-interface.



# SCHILLER

The Art of Diagnostics

# CARDIOVIT CS-200

## The Gold Standard

The CARDIOVIT CS-200 is the key to complete diagnostic services, including:

- 12-channel Resting ECG
- Automatic ECG measurements and interpretation (adult and pediatric)
- Vector Cardiography
- Pacemaker measurement
- QT Dispersion
- 12-channel fulldisclosure Exercise ECG, with ST monitoring and rhythm monitoring
- 24-h ECG Holter
- Fully integrated data management system
- Connection to network systems
- Resting rhythm recording
- Analysis of Ventricular Late Potentials
- Spirometry
- Ergospirometry

The open system architecture allows the implementation of new programs, future system expansion and network integration.



### Innovations are our passion.

They belong to the SCHILLER brand and are the reason why SCHILLER ECG systems are outstanding and enjoy a worldwide reputation.

Thanks to 35 years of experience and close co-operation with the world's leading, practising cardiologists and physicians in the field of electrocardiography, we can provide you the CARDIOVIT CS-200, an ECG device which offers tailor-made solutions for professional diagnosis.

Due to a number of high-performance analysis and diagnostic tools, the CARDIOVIT CS-200 system has been able to extend its leading role. It offers even easier to use applications that increase the productivity, as well as innovative network solutions. Our excellent technologies facilitate the clinical decision-making and increase the reliability of your diagnoses.

New, advanced algorithms and analysis functions offer you additional opportunities when assessing the cardiac function during exercise

tests. The CARDIOVIT CS-200 keeps up with your demands, be it in a laboratory with a great work volume or in a small practice where exercise tests are only performed occasionally. And what is more:

The CARDIOVIT CS-200 system can be configured very easily according to your information management requirements and supports simple as well as complex network solutions. Exercise tests performed with the CARDIOVIT CS-200 system are characterised by their accuracy, convenient application and efficiency.



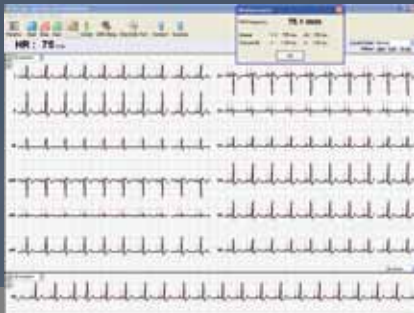
Direct function keys provide single button operation for immediate ECG printouts.  
Autonomous emergency ECG (unique world wide).



Leading-Edge Technology: SCHILLER sets new standards in technology and know-how.

## Filtering the stress out of stress test data

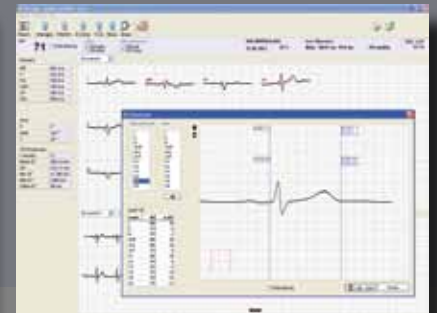
The greatest challenge in the exercise test environment is to manage noise and movement artefacts present during the test. Several factors can create noise. SCHILLER offers four industry-leading programs for artefact and noise management to effectively suppress noise without compromising critical ECG data.



Pacemaker measurement



SAECG



QT dispersion

### SPF SCHILLER Powerline Frequency Filter:

distortion-free suppression of superimposed 50 or 60 Hz sinusoidal interferences by adaptive digital filtering.

### SMF SCHILLER Smoothing Filter, SMF SCHILLER Myogram Filter (muscle tremor filter):

adaptive low pass smoothing filter to suppress muscle tremor and high-frequency noise: without affecting the QRS complex or the ST-T segment.

### SBS SCHILLER Baseline Stabilizer:

filter to suppress or greatly reduce base line fluctuations without distorting the low frequency content of the ST-T segment (for resting and exercise ECGs).

When used in combination, these filters provide the physician with excellent ECG quality. They neither distort the computerised ECG interpretation nor the computerised ECG measurement values or the original ECG complexes. They greatly help the user to obtain a usable ECG at the

first attempt. Unlike traditional filtering systems, these filters do not influence the important diagnostic features of the ECG.

Excellent signal processing (noise reduction) is decisive to produce a high-quality output that can be further evaluated and interpreted by the physician.

# CS-200 Resting ECG

## Dynamic algorithms

The CARDIOVIT CS-200 system offers you a comprehensive tool of clinically verified algorithms for the analysis and interpretation of ECGs.

The unique combination of arrhythmia and morphological algorithms creates further application opportunities for the disease management. This allows you to make more efficient therapeutic decisions and to employ invasive tests more specifically.

The SCHILLER measurement and interpretation software is the software of choice for hospitals, practices, clinics and clinical research institutes due to its excellent quality and reliability.



- **SCHILLER measurement and interpretation software for children and adults (optional):** 12-lead ECG analysis, offering quality and reliability without compromise. Your most valuable tool to get a clinically reliable second opinion.

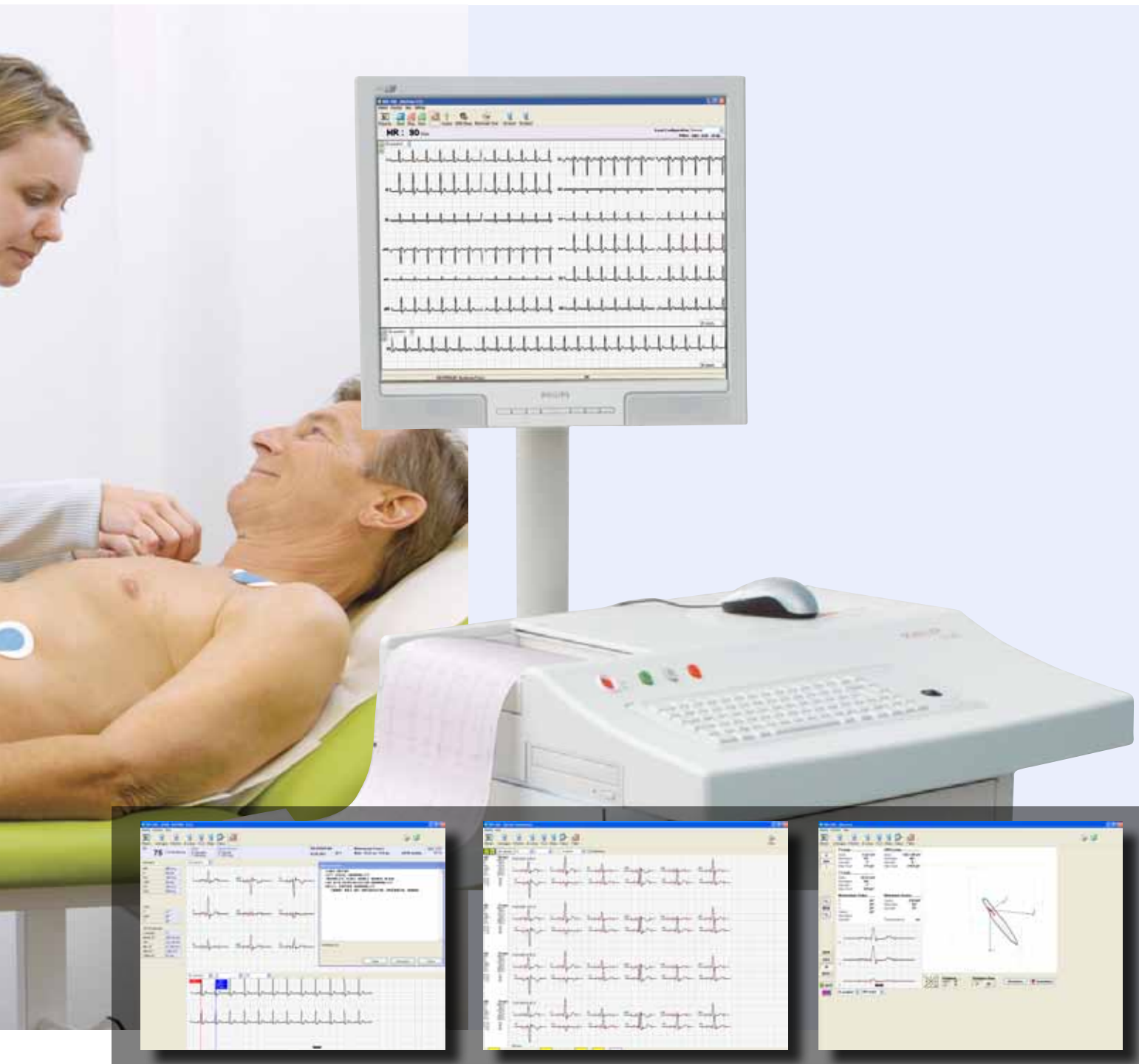
- **SAECG (high-resolution late potential analysis) (optional):** the intuitive illustration allows a more efficient assessment of arrhythmic substrate in the heart, offering a convenient alternative to invasive procedures.

- **Pacemaker detection software:** corresponding to the latest pacemaker technologies.

- **Pacemaker measurement software (optional):** this advanced program measures the pacing frequency, performs individual measurements of pulse width for atrial and ventricular stimulation and determines the AV intervals.

- **Vector cardiography (optional):** the vector ECG gives you a three-dimensional view of the electrical activity and improves the assessment of the interior-posterior part of the heart.

- **Serial ECG comparison:** expansion of the SCHILLER measurement and interpretation software, allowing the analysis of short- and long-term changes in patient ECGs. Serial ECGs proved to be most efficient in the detection of myocardial infarctions, both for new, asymptomatic myocardial infarctions as well as for acute



ECG measurement and interpretation

Serial comparison

Vector cardiography

myocardial infarctions in symptomatic patients. Serial electrocardiography is above all indispensable when assessing unstable angina pectoris.

- **QT dispersion:** Indicates inhomogeneities in the ventricular repolarisation. The greater the QT dispersion, the more inhomogeneous the ventricular repolarisation and the greater the risk for a sudden cardiac death of the patient. QT dispersion analysis can be used as a further non-invasive method – in addition to signal averaged ECG (SAECG) and heart rate

variability (HRV) – for patients with an increased risk of life-threatening arrhythmia.

- **Rhythm ECG recording:** 12-lead full disclosure ECG recording, collecting up to 60 minutes of diagnostic data.

# CS-200 Exercise Testing

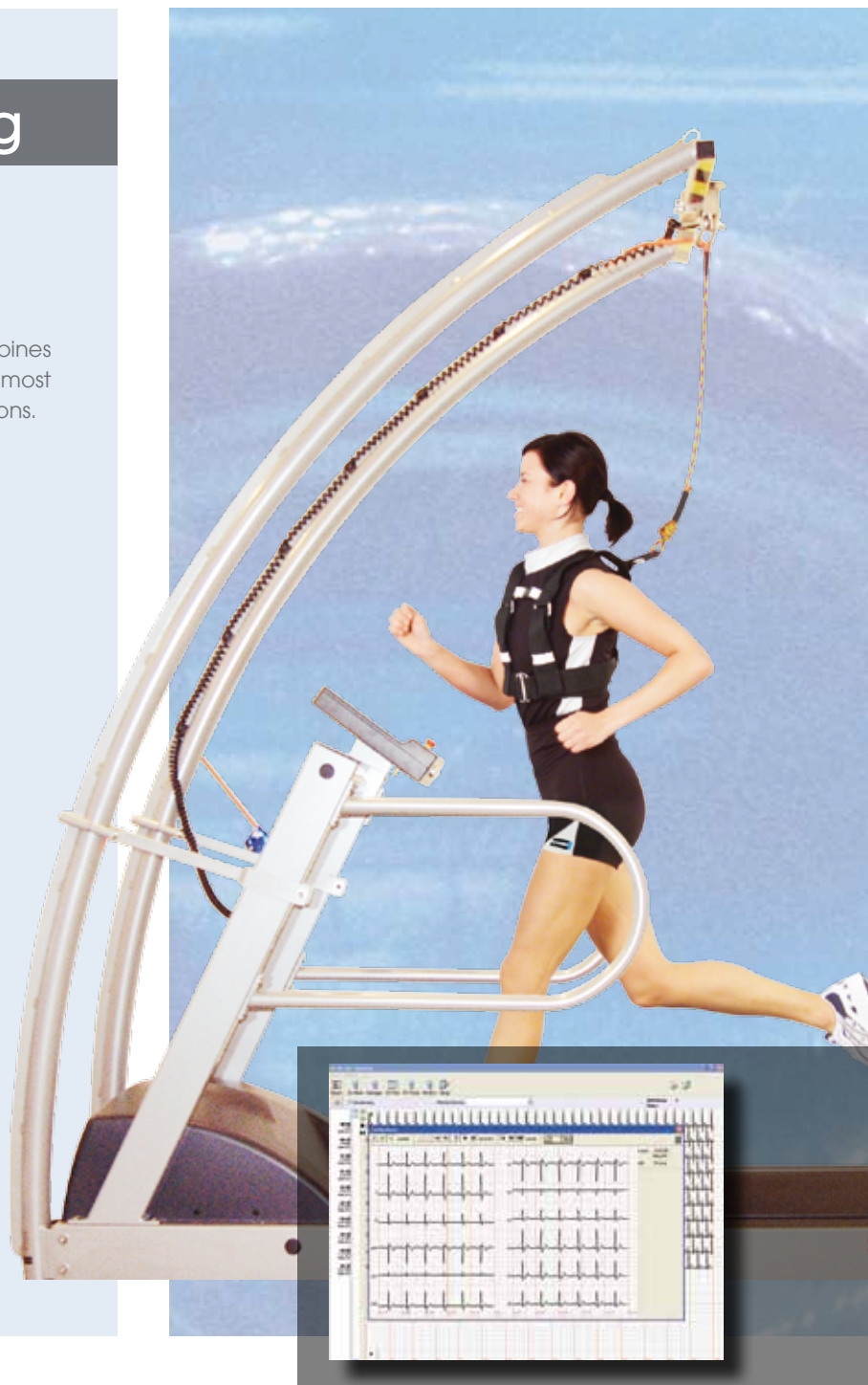
## Redefining excellence in exercise testing

The CARDIOVIT CS-200 exercise testing system combines SCHILLER's proven ECG know-how with today's most modern, state-of-the-art personal computer innovations.

## Covering the full Spectrum of Electrocardiography

The CARDIOVIT CS-200 offers the performance of a conventional exercise testing system:

- Built-in, full-size thermal printer for immediate real-time printouts
- No start-up delay – instant ECG reports at the push of a button
- Quick recording and printouts of ECGs
- Precise ECG measurements
- RS-232 and parallel interfaces
- Emergency ECG



Full disclosure

The CARDIOVIT CS-200 exercise system benefits from the leading SCHILLER technology and a flexible and easily customised interface that meets the varying needs of different clinical scenarios.

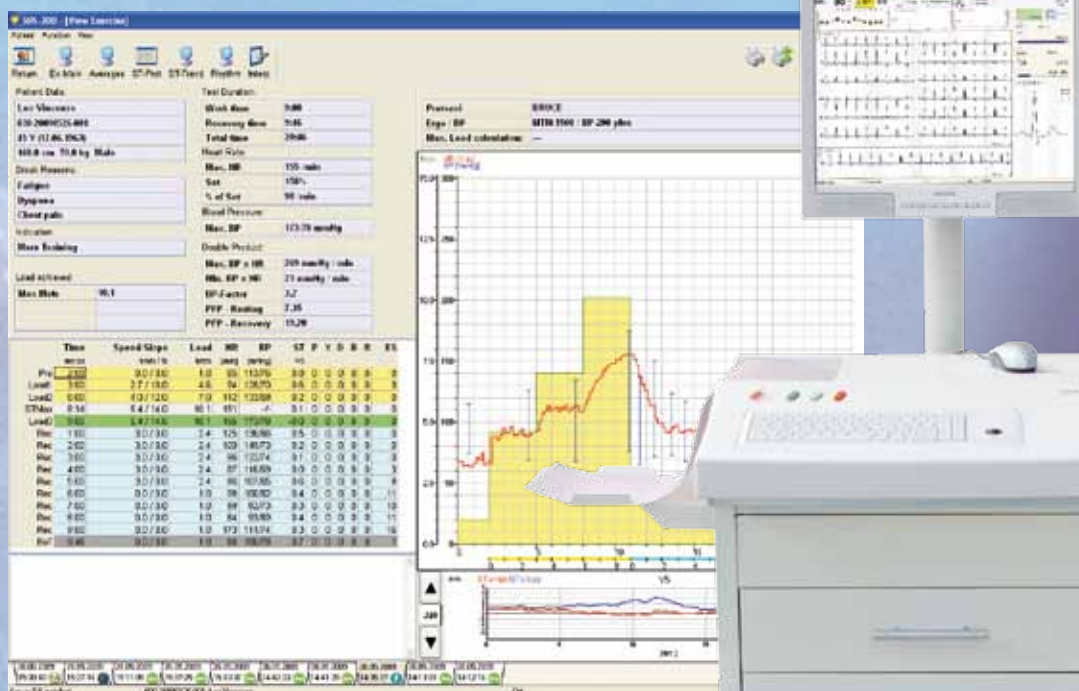
The CARDIOVIT CS-200 exercise system's advanced features include colour graphic auto-comparison with superimposed current and reference complexes, continuous screen presentation of ST level and slope for all 12 average complexes, adaptation and re-analysis of the J-point, and an

interface for automatic blood pressure measurements.

The CARDIOVIT CS-200 exercise system offers configurable user profiles and the editing options known from Windows® to make the entire testing and reporting process more efficient. Unlimited full disclosure patient studies may be stored on the internal hard disk; moreover, the CARDIOVIT CS-200 system allows using a high-speed laser printer to significantly reduce paper expenses. In order to facilitate the timely distribution of test results, non-proprie-

tary Adobe Acrobat® PDF technology is used to create a portable electronic file that can be e-mailed for convenient review. This provides easy access to final report data without additional software expenses.

SCHILLER offers four patented, leading analysis programs for artefact and noise management to provide exceptionally clean ECG recordings without compromising the diagnostic quality of the ECG data. SCHILLER filters use the inherent redundancy of the 12-lead ECG to measure consistency among the various leads. Just



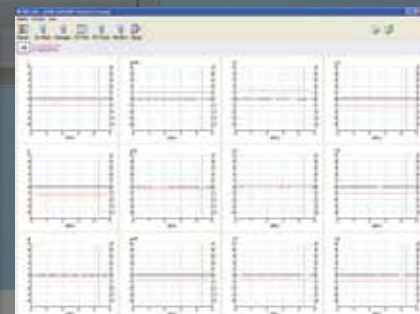
Exercise-testing summary



Step exercise



ST and arrhythm detection



ST trends

as a clinician can discern artefact from true signal by looking at multiple leads, SCHILLER filters perform a real-time analysis, resulting in clean ECG recordings without distortion of the true underlying signal.

SCHILLER BP-200 plus (optional) is an ambulatory blood pressure monitor for exercise testing. It is specifically designed for the use with treadmill, bicycle (ergometer) and pharmacological exercise tests. The SCHILLER BP-200 plus monitors the blood pressure, allowing you to focus on the

patient. Add the SpO<sub>2</sub> measurement option to make your exercise ECG system a complete and seamless diagnostic test centre. Whenever required, the SCHILLER BP-200 plus delivers reliable automatic blood pressure measurements. The BP-200 plus proprietary algorithms provide exceptional performance in this difficult environment. The hands-free interface makes BP-200 plus an indispensable part of exercise testing.

# CS-200 Spirometry

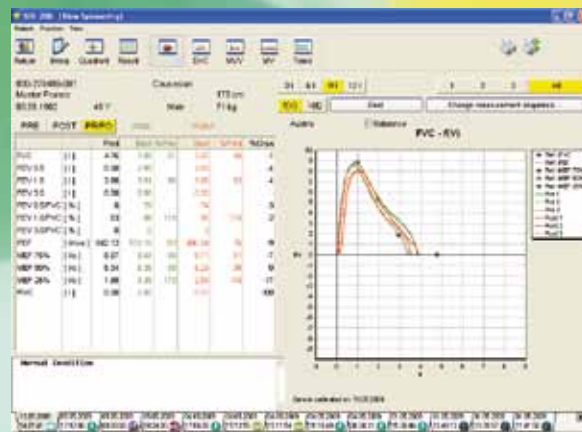
## PC spirometry of SCHILLER – easy and accurate

SCHILLER PC spirometry allows you to determine several diagnostically important parameters regarding static and dynamic lung volumes.

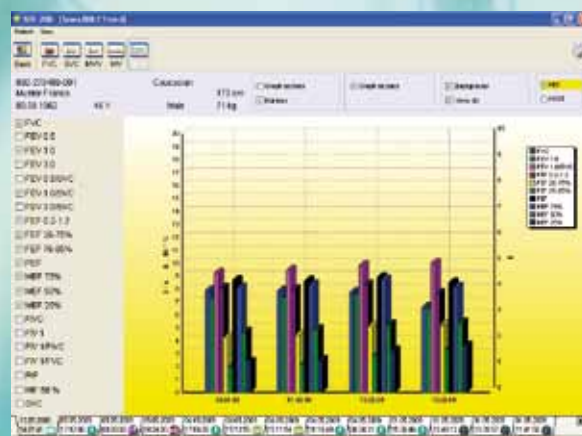
You can measure the slow (ERV, IC, VCin, VCex) and forced spirometry (FVC, VCmax, FEV1, MEF25, MEF50, MEF75, PEF, FEV1%VCmax, ...) as well as the maximum voluntary ventilation (MVV), and of course conduct pre-post comparisons. Easy operation pays off. You can enlarge the measurement windows to full screen with just a mouse click.

Moreover, the scaling of the axes can be adapted so that the curves are always clearly visible. SCHILLER PC spirometry is available with two alternative flow sensors. You can choose between the proven SP-150 disposable flow sensor (for optimal hygiene without calibration) and the reusable SP-20 sensor.

- Calibration program
- Spirometry / flow-volume / MVV / MV
- Trend report
- Interpretation program
- Pre-post comparison



Advanced, user-friendly spirometry PC-software



Long-term comparisons / trends



# CS-200 Ergo-Spirometry

**Long experience in ergospirometry – compact and concise**

**Key features at a glance:**

- The 12-channel ECG is completely integrated in the system
- Volume and Automatic gas calibration
- Ambient module
- Breath-by-Breath measurement
- Indirect Calorimetry  
(Nutrition assessment: For a perfect diet)
- Off-line blood gases/lactate
- Training and nutrition reports (LFsport)
- Interpretation with Ergocheck
- Online-display of test results
- Intra-breath: Testing during exercise
- Interfaces for hospital administration systems
- Modularly expandable



For your daily routine, you need an easy-to-use tool. We have therefore made the CARDIOVIT CS-200 ergo-spirometry even faster, more accurate and, above all, more economical.

The CARDIOVIT CS-200 ergospirometry is specialised in ergo-spirometric routine examinations. It combines everything you need in your daily routine, including practice-oriented performance data and an unparalleled ease of use. And the famous SCHILLER quality, of course. The modular concept permits upgrades

or expansion at a later stage – budget admitting or demands requiring.

To meet the high requirements, flow sensors are used in the CARDIOVIT CS-200 ergospirometry; these sensors are checked automatically, saving you time and effort. The patented flow sensors guarantee accurate measurements, have a small dead space and are light and small. They are therefore more comfortable for the patient, who is wearing a mask or mouthpiece with the sensor during the test.

In the same time it usually takes you to perform an exercise ECG or a pulmonary function test, you can conduct a complete, integrated metabolic test with the CARDIOVIT CS-200 ergospirometry. All you need for an exercise test with the CARDIOVIT CS-200 ergospirometry is integrated in a small device. No chemicals, expensive disposable tubes or flow sensors are required. All you need is calibration gas and disposable ECG electrodes (unless you prefer suction electrodes (optional)).

# SEMA-200 Data Management

## Manages and Archives Holter ECG and Ambulatory Blood Pressure Monitor (ABPM) data

Furthermore, in seamless combination with other SCHILLER applications, SEMA-200 will also manage and archive the following additional diagnostic data formats:

- Up to 72 hours of Ambulatory (Holter) ECG monitoring (requires MT-200 Holter program) including analysis of 2 or 3 channels, ST analysis, template matching, HR trend overview, HR variability, pacemaker templates, and re-classification in less than 2 seconds with „drag & drop“ functionality.
- Up to 48 hours of Ambulatory Blood Pressure monitoring (requires MT-300 ABP program) including a measurement table, comprehensive statistical calculations, trends, and histograms.



Are you contemplating an ECG management system? No problem with the CARDIOVIT CS-200.

Comprehensive network connectivity gives you access to the SCHILLER SEMA cardiology information system, optimising the workflow and enhancing the unit's functionality. Network access allows you to work more efficiently and receive additional support for clinical decisions.

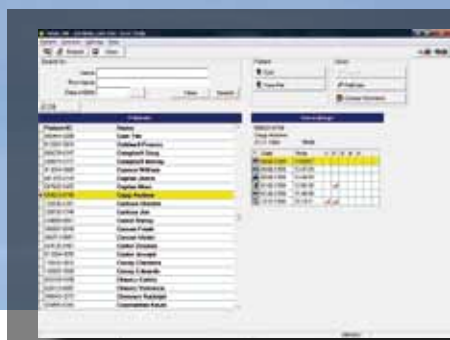
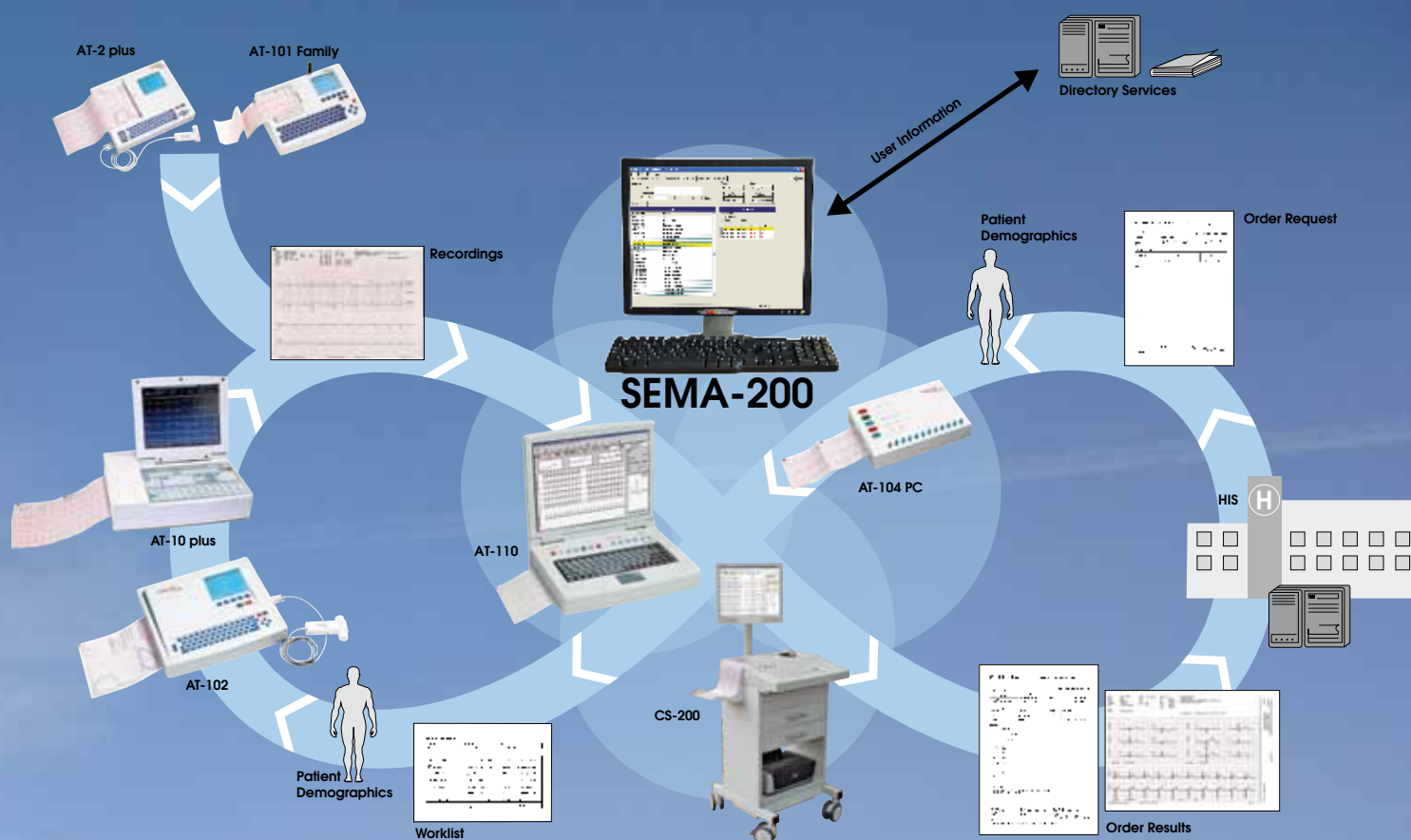
When connected to the SEMA-200 system, the CARDIOVIT CS-200 in-

cludes the functionality of a standard SEMA-200 client directly on the device. This offers unprecedented access to all previous studies and patient information at the time of testing. Analysis, interpretation and validation of recordings can either be done on the device itself, or in the comfort of your office on a SEMA-200 client.

Patient demographics can be automatically synchronised with Hospital Information Systems (HIS) or Electronic Medical Record (EMR) systems. This accelerates the time-consuming

entry of patient data and minimises the probability of data entry errors. The optional barcode reader further increases efficiency through the automated entry of patient identifiers.

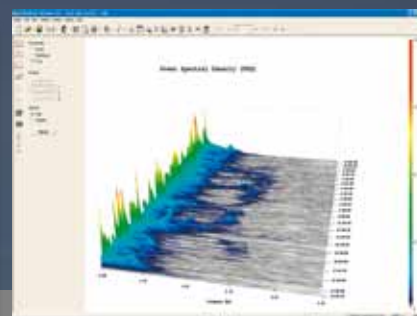
With the worklist function, a list of orders including patient demographics is downloaded directly to the device from HIS or EMR systems. This automates the ECG acquisition process and provides a traceable closed-loop workflow from order entry to billing.



Patient record



SEMAweb



3D visualisations

Integration with the SEMA-200 data management system enables the long-term archiving of your data, with easy to use search and editing tools to efficiently manage patients and recordings. Standard interfaces via HL7, GDT and XML further enable the CARDIOVIT CS-200 and SEMA-200 system to become integrated components in a larger systems solution, avoiding isolated information silos.

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