

CARDIOVIT AT-2 plus



TWO in ONE!
ECG & Spirometry



SCHILLER

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The Art of Diagnostics

AT-2 plus – the "double winner"!



The diagnostic value of spirometry as a tool for the early detection of chronic-obstructive pulmonary function restriction and other heart diseases is high. However, with the constant rise in the number of patients there is clearly a need to conduct pulmonary function tests on a routine basis.

SCHILLER combined the **two most frequently used cardiac/pulmonary function tests in one single unit:**

the **CARDIOVIT AT-2 plus** offers ECG and spirometry all in one product.

This innovative device can be used for quick and easy initial clarification, for routine examinations of affected patients, and to monitor the progress of therapy. This "double winner" scores high, due to its low purchasing costs, its economic operation and the possibility of "double" reimbursement (for ECG as well as spirometry).

World-renowned ECG technology

- 6-channel print-out in realtime at 5, 25 or 50 mm/s
- Automatic print-out function for 6 and 12 channels on one or two sides of the paper
- Fast, reliable, computer-aided ECG interpretation program including complete measurement for adult and pediatric ECGs (optional).



Simple to handle – double the benefit!

- Two tests in one – meaning double reimbursement from health insurance schemes
- Two different instrument functions – but only one operating system
- Easy to transport due to low weight and compact dimensions
- Maximum quality and absolute reliability
- The built-in printer supplies A4 print-outs in ready-to-file cardex format
- Print-out with diagnosis guidance and all measurements in less than 20 seconds
- Integrated rechargeable battery
- Expanded print-out possibilities and unlimited copying function
- Splash-resistant alphanumeric keyboard with direct function keys makes it quick and easy to enter patient data
- Possibility of saving test results for more than 60 patients (optional)
- Interface enables data transmission

- The curve quality of all 12 leads can easily be checked on the integrated 3-channel monitor – saving both time and paper!
- The repetition rate is cut to zero because the curve quality on the print-out is optimized using the SSF SCHILLER Smoothing Filter and the SBS SCHILLER Baseline Stabilizer.

The very highest standards in spirometry

- The unique SP-250 disposable sensor minimizes the risk of cross-contamination
- Compact size and low weight
- Calibration is simple and fast
- Inspiratory / expiratory tests: FVC, SVC, MV, MVV as well as pre and post medication tests
- Predicted value tables are stored for free selection.

- A4 print-out within seconds
- Visual patient support due to realtime curves and measurement information on the large screen.

Technical data AT-2 plus

System:
Dimensions: 400 x 330 x 101 mm; approximately 5 kg
Built-in monitor:
- 120 x 90 mm effective display area
- 320 x 240 dots resolution
On-screen status indicators:
- Battery status
- Date, time
- Power source
Control panel and keyboard:
User-friendly, alphanumeric keyboard, LED indicator and monitor
Power supply requirements: 220 - 240 V (nominal), 50/60 Hz; 110 - 115V (nominal), 50/60 Hz; stand-alone operation with built-in rechargeable battery. LED indicator for mains operation, integrated power supply unit.
Battery capacity: Up to 3 hours of normal use
Printer:
Chart paper: Thermo-reactive, Z-folded, 210 mm wide (A4), approx. 60 m, ready to file
Printing process: High-resolution thermal head printer, 8 dots / mm (amplitude axis), 40 dots/mm (time axis) @ 25 mm/s.
Chart print-out speed: 5 / 10 / 25 / 50 mm/s (manual printout)
Sensitivity: 5 / 10 / 20 mm/m, either automatically adjusted or manually selected
Recording tracks: 6/12-channel presentation, optimal positioning on a width of 200 mm, automatic baseline adjustment
Automatic lead programs:
- 6/12-channel presentations of 12 simultaneously recorded standard leads on one or more A4 pages
- Numerous print-out formats can be selected
Interface: RS-232 interface to connect spirometry sensor, data transmission to PC (SEMA-200), and external modem connection.
Safety standards:
Safety standard:
CF according to IEC 60601-1 and IEC 60601-2-25
Protection class: I according to IEC 60601-1 (with internal battery), IIa according to MDD 93/42 EEC (medical protection class)
Conformity: CE according to 93/42 EEC
Environmental conditions:
- Temperature during operation: 10° to 40° C
- Temperature during storage: -10° to 50° C
- Relative humidity: 25 to 95 % (non-condensing)
- Pressure during operation: 700 to 1060 pHa

ECG:
Patient input circuit: Fully floating and isolated, defibrillation-protected (only with original SCHILLER patient cable)
Monitor display:
- 3-channel display of the selected leads
- 25, 50 mm/s
- 5, 10, 20 mm/mV
- Filter status (on/off)
- Insufficient electrode contact
- Heart Frequency, HF
- mm/mv, mm/s
ECG amplifier:
- Simultaneous recording of all 9 active electrode signals (= 12 leads)
- Sampling frequency: 1000 Hz
- Pacemaker detection: $\geq \pm 2$ mV/ ≥ 0.1 ms
Leads: 12 simultaneous leads: Standard / Cabrera
Data record:
- Patient data (name, age, height, weight, BP), user ID
- Listing of all ECG recording conditions (date, time, filter)
- With optional measurement (M) and interpretation (C) program: ECG measurement results (intervals, amplitudes, electrical axes), average complexes with optional measurement reference markings, guidance on interpreting adult and pediatric ECGs

Filter:
Myogram filter (muscle tremor filter): 25 or 35 Hz, can be switched on/off
Line frequency filter: Distortion-free suppression of superimposed 50 Hz or 60 Hz sinusoidal interference by means of adaptive digital filtering.
Frequency range of digital recording system: 0.05 Hz to 150 Hz (IEC/AHA)

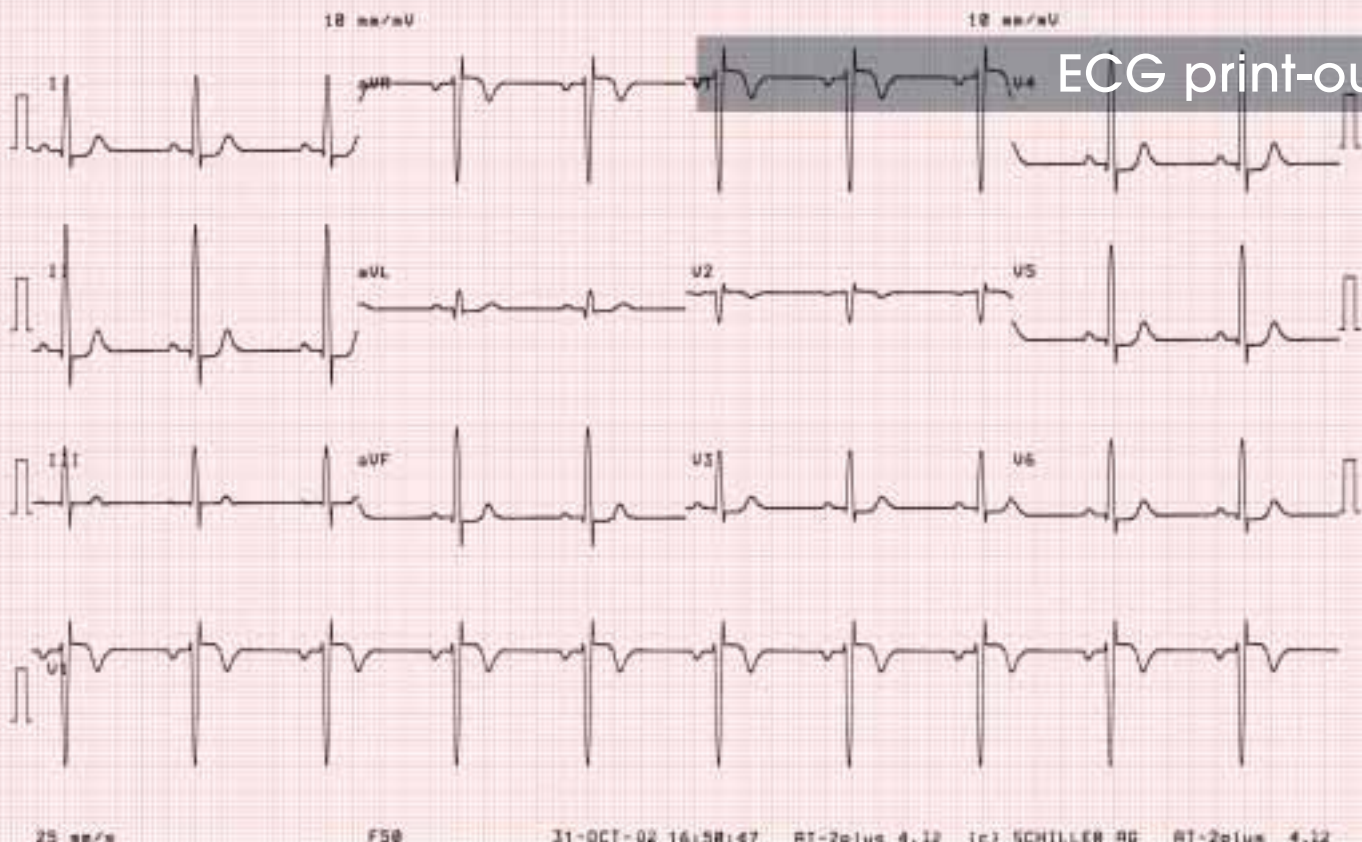
Spirometry (Option):
Measured values:
FVC: FVC, FEV _{0.5} , FEV _{1.0} , FEV _{3.0} , FEV _{0.5} / FVC, FEV _{1.0} / FVC, FEV _{3.0} / FVC, FEF _{0.2-1.2} , FEF _{25-75%} , FEF _{75-85%} , PEF, FEF _{25%} , FEF _{50%} , FEF _{75%} , FIVC, FIV _{1.0} , FIV _{1.0} / FVC, PIF, FIF _{50%} , FMFT
SVC: SVC, ERV, IRV, TV
MVV: MVV, RR, TV
Presentation possibilities (printout and screen):
- Flow/volume graph
- Volume/time graph
- Table of measured values
- Realtime flow curve
Data record:
- Patient data (name, age, height, weight), user ID
- Registration conditions (date, time, date of last calibration)
- Flow/volume graph and/or volume/time graph
- Table of measured values with PREDICTED/ACTUAL / DIFFERENTIAL values
- Diagnosis guidance
- Memory for more than 60 ECGs or spirometry records
Prediction equation:
Adults: ECCS, Austria, Crapo, Morris, Knudson, Knudson 76, Polgar, Berglund, Finland, India, Composite
Children: Quanjer & Tammeling, Austria, India, Knudson, Knudson 76, Polgar
Extrapolated predicted values
Comparison of PRE/POST medication is possible
Standards Compliance: ATS, OSHA, NIOSH
SPIROVIT SP-250 Pneumotach Flowsensor for pulmonary function testing with disposable mouthpiece:
Dimensions of SP-250: 118 x 36 x 28 mm; approx. 120 g; 4.6 x 1.4 x 1.1 in, approx. 0.26 lbs
Measuring method: Pneumotachometer
Measuring accuracy: According ATS < 3 %
Flow impedance: < 0.2 mbar*s/l at 12 l/s
SPIROVIT SP-260 Pneumotach Flowsensor for pulmonary function testing with reusable mouthpiece:
Dimensions of SP-260: 125 x 36 x 28 mm; approx. 160 g; 4.9 x 1.4 x 1.1 in, approx. 0.34 lbs
Measuring method, Measuring accuracy, Flow impedance same as SP-250
Scope of delivery:
- 1 pneumotach sensor; choice of SP-250 disposable (P/N 2.100022) or SP-260 reusable sensor (P/N 2.100551)
- Accessories: 2 noseclips and either 1 pack of disposable plastic mouthpieces for SP-250 (P/N 2.100077) or 1 pack of disposable filters for SP-260 (P/N 2.100123)
- 1 operating manual

Scope of delivery for CARDIOVIT AT-2 plus Standard:
Resting ECG with 12 simultaneous leads, pacemaker detection
Accessories:
- 1 10-lead patient cable
- 1 set of electrodes or disposable electrodes
- 1 power cable
- 1 pack chart paper
- 1 operating manual
Software option:
- Automatic ECG measurement and computer-aided ECG interpretation for pediatric and adult ECGs
- Memory for up to 40 ECGs or 40 spirometry records
- SEMA 200 PC software to save, validate and archive ECG and spirometry data on a PC
Hardware option:
- Equipment trolley
- Spirometry sensor, SP-250
- Calibration syringe

Patient: HR 68/min

Rolando

12-33-126
25 year / M
188 cm / 71 kg
128/88 mmHg
NO



ECG print-out

Patient:

Marcus, Ray

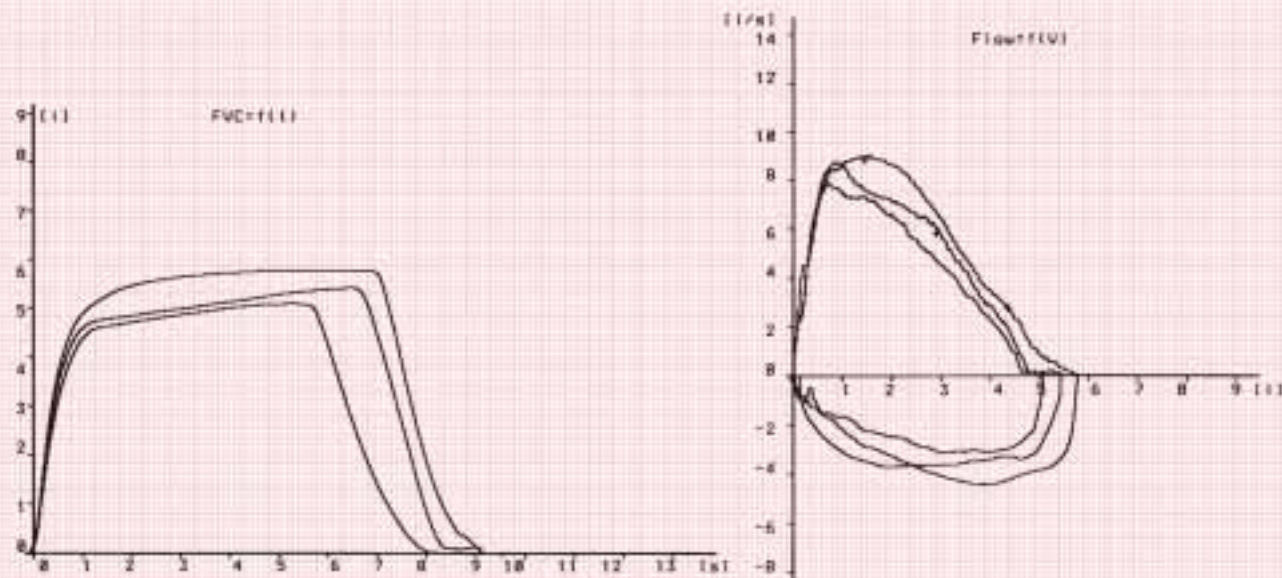
18738325
25 year / M
184 cm / 88 kg
W

Normals: ECCS/Duanjer

NORMAL

		BEST	PRED.	SPRED	MEAS1	MEAS2	MEAS3
FVC	l	5.79	5.68	183	5.79	5.42	5.89
FEV1	l	4.98	4.78	184	4.98	4.68	4.48
FEV1/FVC	%	84.6	82.7	182	84.6	84.9	86.3
FEF1.2-1.2	l/s	7.82			7.82	7.14	6.56
FEF25-75%	l/s	5.56	5.28	187	5.56	5.26	4.92
FEF75-85%	l/s	1.74			1.74	1.67	2.82
PEF	l/s	9.88	18.39	87	9.88	8.71	7.74
FEF25%	l/s	8.98	8.85	181	8.98	7.77	7.31
FEF58%	l/s	6.66	5.89	114	6.66	6.43	5.36
FEF75%	l/s	2.75	2.81	98	2.75	2.71	2.64
FIVC	l	5.83			5.83	5.24	2.84
FIV1	l	3.82			3.82	3.24	2.84
FIV1/FIVC	%	65.5			65.5	60.8	55.9
FIF	l/s	4.49			4.49	3.76	3.22
FIF58%	l/s	4.89			4.89	3.71	2.93

Spirometry print-out



Cal.: 16.07.05 16-JUL-03 18:27:34 AT-2plus 4.12 (c) SCHILLER AG AT-2plus 4.12 CM

Your specialist:



The Art of Diagnostics

Headquarters: SCHILLER AG, Altgasse 68, CH-6341 Baar, Switzerland, Phone +41 41 766 42 42, Fax +41 41 761 08 80, sales@schiller.ch

Asia**SCHILLER Asia-Pacific**

10 C, Jalan SS 3/33
Taman Universiti
47300 Petaling Jaya
Selangor, Malaysia
Phone +603 78 77 5336
Fax +603 78 77 5744
sales@schiller.com.my

Austria**SCHILLER Handelsgesellschaft mbH**

Kampfmüllerweg 24
A-4040 Linz
Phone +43 732 70 99-0
Fax +43 732 757 000
sales@schiller.at

C.I.S. & Russia**SCHILLER AG****Moscow Representative Office**

Office 414, 1-st Yamskogo Polya 15
125124 Moscow, Russia
Phone/Fax
+7 (095) 970 11 33,
+7 (095) 956 29 10
mail@schiller-ag.com
www.schiller-cis.com

France**SCHILLER Médical S.A.S.**

4, rue Louis Pasteur
F-67162 Wissembourg/Cedex
Phone +33 3 88 63 36 00
Fax +33 3 88 94 12 82
info@schiller.fr

Germany**SCHILLER Medizintechnik GmbH**

Rudolf-Diesel-Strasse 14
D-85521 Ottobrunn
Phone +49 89 62 99 81-0
Fax +49 89 609 50 90
info@schillermed.de

India**SCHILLER Healthcare India Pvt. Ltd.**

D.C. Silk Mills Compound, 'A' Wing, 1st floor
5, Chunawala Estate, Kondivitta Lane
Andheri-Kurla Road, Andheri (E)
Mumbai - 400 059, India
Phone +91 22 826 35 20
Fax +91 22 826 35 25
schiller@vsnl.com

Japan**SCHILLER Japan, Ltd.**

Biomedical Research Building 218
1-2-3 Kasumi, Minami-ku
Hiroshima 734-8551
Phone +81 82 250 2055
Fax +81 82 253 1713
koji.maekawa@schiller.jp
www.schiller.jp

Spain**SCHILLER ESPAÑA, S.A.**

Avenida Baviera, 12 - 14 Posterior
E-28028 Madrid
Phone +34 91 713 01 76
Fax +34 91 355 79 33
schiller@schiller-es.com

Switzerland**SCHILLER-Reomed AG**

Riedstrasse 14
CH-8953 Dietikon
Phone +41 1 744 30 00
Fax +41 1 740 37 10
sales@schiller-reomed.ch

Turkey**SCHILLER TÜRKİYE**

Halil Rifat Paşa Mah.
Darülaceze Cadd.
Perpa Ticaret Merkezi
B/Blok No: 41 K: 2
Okmeydanı-Sisli - İstanbul
Phone +90 212 210 8681 (pbx)
Fax +90 212 210 8684
sales@schiller-turkiye.com

USA**SCHILLER America Inc.**

11300 NW 41st Street
Miami, Florida 33178
Phone +1 786 845 06 20
Fax +1 786 845 06 02
sales@schilleramerica.com

SCHILLER

www.schiller.ch