

# 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 print-out)

**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 connected spirometry sensor, data transmission to PC (SEMA-200), and external modem connection.

## Safety standards:

### Safety standard:

CE 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 mPa

## ECG:

**Patient input circuit:** Fully floating and isolated, deformation-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/m; mm/s

### ECG amplifier:

- Simultaneous recording of all 9 active electrode signals (= 12 leads)
- Sampling frequency: 1000 Hz
- Pacemaker detection:  $\geq \pm 2$  mV/ $\geq 0.1$  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, REV<sub>1.5</sub>, REV<sub>1.5</sub>, REV<sub>1.5</sub>, REV<sub>1.5</sub>/FVC, REV<sub>1.5</sub>/FVC, REV<sub>1.5</sub>/FVC, REV<sub>1.5</sub>/FVC, FEF<sub>1.5-1.5</sub>, FEF<sub>25-75%</sub>, FEF<sub>75-100%</sub>, PEF, FEF<sub>25%</sub>, FEF<sub>50%</sub>, FEF<sub>75%</sub>, FVC, RV<sub>1.5</sub>, RV<sub>1.5</sub>/FVC, RV<sub>1.5</sub>/FVC, RF, FF<sub>25%</sub>, FMT

**SVC:** SVC, ERV, RV, 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 & Tammeing, 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 Flow sensor for pulmonary function testing with disposable mouthpiece:**

**Dimensions of SP-250:** 116 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 of 12 l/s

**SPIROVIT SP-260 Pneumotach Flow sensor 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:

Quietest ECG with 12 simultaneous leads, pacemaker detection

### Accessories:

- 1 10-head 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