

Technical Data

Rate measurement

- Measurement over the quartz frequency, signal sensing acoustical, capacitive or over the supply current.
- Measurement over the motor pulses, magnetical signal sensing or over the supply voltage.
- Measurement over the LCD-operating frequency (binary display frequencies).

Signal sources: Motor, quartz 32kHz, LCD. Automatic change-over between magnetic motor pulses and current pulses.
Automatic change-over between acoustical/capacitive quartz frequency and quartz frequency over the current.

Measuring time: Automatic definition over one motor period i.e. inhibition periode, min. 2s, max. 120s. Also manual setting: 2, 4, 10, 12, 20, 60, 120, 480 and 960s.

Automatic detection of watches with inhibition adjustment (deviation of the quartz frequency >0.5s/d).

Results display: Measuring range ± 327 s/d, resolution 0.01s/d.

Graphic display: Measuring range -1s up to +10s, logarithmic scale. Display of the momentary value, independent of the selected measuring time. Simultaneous display of the quartz accuracy for watches with inhibition adjustment.

Status display: Count down of the remaining measuring time.

No Signal in case of missing signal.

Unstable and beep in case of an unstable signal.

Out of Range and beep if out of measuring range.

Pulse analysis (for analog watches)

Results display: Pulse period of the stepping motor, inhibition period, pulse width and running mode *End of Life*.

Graphic display of the chopping rate.

Module supply

Mobile probes for direct contacting or by means of test leads with probe tips. Mirror for the observation of the hands during the measurement.

Supply voltage: Adjustable, 0 - 3.5V, resolution 0.05V, accuracy ± 0.02 V.

Current measurement

- Instantaneous measurement of the IC current.
- Integrated measurement of the total current over a measuring period.

Measuring time: Automatic over 2 pulse periods, min. 2s, max. 60s. Also manual setting.

Results display: Total current: Measuring range 20mA, resolution 1nA.

IC current: Measuring range 20mA, resolution 1nA.

Accuracy: 1% up to 5mA, <5% for >5mA.

Graphic display: Momentary value of the total current, independent of the selected measuring time.

Display range 20 μ A, logarithmic scale.

Error displays: Warning beep and overrange display for current >20mA.

Trace

Long time diagram tracing of the rate and current measurement or of the rate measurement and chopping rate.

Time scale: Automatic in accordance with the selected measuring time; one pixel per measurement. Tracing length 8 min. to 60h.

Value scale: Rate -1 to + 10s, logarithmic scale. Current 20 μ A, logarithmic scale.

Rate measurement mechanical watches

Beat number: 18'000, 19'800, 21'600, 25'200, 28'800, 32'400 and 36'000.

Measuring time: 8s.

Results display: Measuring range ± 300 s/d, resolution 0.1s/d.

Graphic display: Display range ± 50 s/d, logarithmic scale.

Battery

Measurement of the battery voltage with loads of 2M Ω (no Load) and 2k Ω (low Drain). Additional measurement with 100 Ω .

Results display: Voltage No Load, Low Drain, High Drain.

Measuring range: 0 up to 3.5V, resolution 10mV.

Accuracy: 0.5% of the measuring value, ± 10 mV.

Resistance

Measurement of the coil resistance and detection of short circuits and interruptions.

Measuring range: 10 Ω - 10 M Ω , 3 digit display with automatic range selector.

Accuracy: 1% of the measuring value.

Measuring voltage: Max 0.3V.

Error display: Short und warning beep for R<10 Ω .

Scope

Oscillogram of the current pulses. The positive and negative pulses are alternately displayed.

Time scale: 8 /16ms.

Current scale: Range 1mA, logarithmic.

Numeric display: Pulse width and chopping level.

Pulse generator

- Supply of the stepping motor with programmable pulses.
- Test of acoustic signal transmitters (Buzzer).

Bipolar pulses with oscillogram presentation of the selected pulse form.

Pulse width: Programmable 2.94 - 31.36ms in steps of 0.49 i.e. 0.98ms.

Repetition frequency: Programmable 1, 2, 4, 8, 16 and 32Hz.

Chopping level: Programmable 37.5 - 100% in steps of 6.25%.

Voltage: Programmable from 0 up to 3.5V.

Buzzertest: Bipolar square wave signal. Frequency 2kHz. Programmable voltage from 0 up to 3.5V peak.

Time base

Pre-aged, thermostabilized quartz time base.

Temperature stability: 10 $^{\circ}$ - 40 $^{\circ}$ ± 0.004 s/24h. Aging (first year)

± 0.03 s/24h. Optional synchronization with Witschi GPS receiver,

Accuracy: ± 0.001 s/d.

Display

LCD graphic display 1/4 VGA (320x240 dots), monochrome blue/white, LED backlight. Optional with color LCD display. Movable for an optimal view angle.

Casing

Glass/aluminium.

Dimensions: Width 290 mm, depth 170 mm, height display swiveled up 180 mm (retracted 70 mm).

Weight: 2.8 kg including mains adapter.

Mains connection

AC mains adapter: 9V~, 1.2A.

Available for 230V~ (210-240V~) or 115V~ (105-120V~).

Accessories

- Printer: Thermo printer Martel with graphic mode, available for 230V~ (210-240V~) or 115V~ (105-120V~).
- Witschi GPS receiver for time base calibration or for time base and real time clock synchronization.
- AutoPrint - PC software for text and graphic files transmission to a PC, serial link cable included.

Analyzer Q1 – The new testing instrument for quartz watches High-performance – Compact – Versatile – User-friendly



Field of Application

ANALYZER Q1 is the perfect test instrument to be used quickly and efficiently in the repair service, but also for analysis in the sales department and the watch-testing laboratory.

New technologies provide extended test and measurement facilities, allowing a professional troubleshooting of quartz watches. Measuring cycles are largely automated.

The combined rotating/push button provides a simple and quick parameter setting. The ergonomic and functional layout of the operating elements and the large LCD display significantly improve user-friendliness.

The chopping level of the motor pulses on watches with asservissement will be detected and displayed.

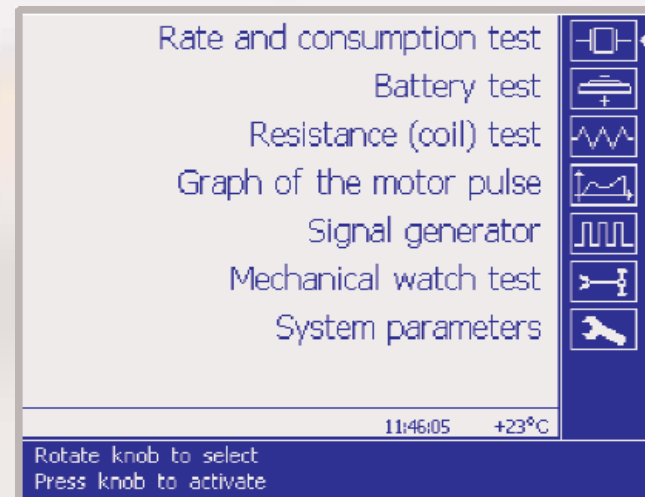
We Open New Dimensions

The Analyzer Q1 sets new technical standards in the analysis and repair of quartz watches. With its new VARIO display mode for rate measurement of mechanical watches, the Analyzer Q1, designed for universal use, is indeed a very versatile instrument.

Operation

The operation is simple and easy to understand. Ordinary standard measurements can be largely automated. The instrument determines the associated parameters.

For more advanced users, measuring parameters can also be manually selected according to requirements.



The results, menus and parameters appear on the 1/4 VGA LCD graphic display.

Menus and parameters are selected with a rotary knob.

The information needed for selecting parameters and interpreting results can be called in the *HELP* menu.

Rate Measurement

The measurement process is based on the pulses of the stepping motor, on the acoustical or capacitive detection of the quartz frequency, or on the display frequency emitted by a LCD watch.

The integrated signal transducer allows checking watches with closed watchstrap.

The measuring time is automatically set up according to the period of motor pulses or the inhibition cycle.

New: Pulse Generator

The stepping motor can be tested with programmable pulses (voltage, length, chopping level and period).

New: Long-Range Recording

Long-range recording as a measurement diagram of the rate and current or, with closed watches, of the rate and chopping level (watches with "asservissement"). Recording time up to 60 hours.

New: TRIPLESENS Sensor

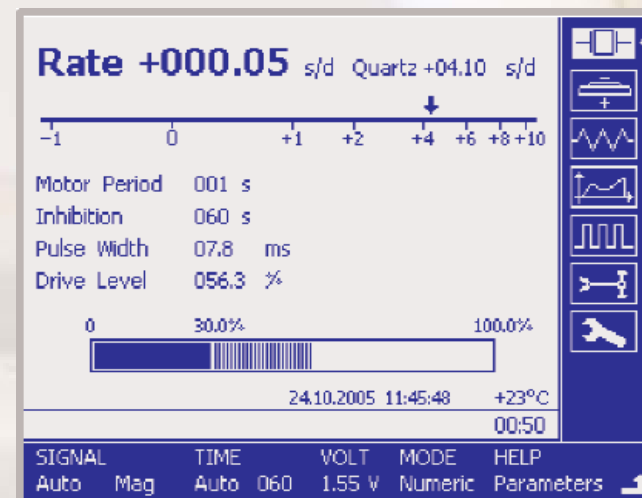


Acoustical, capacitive and magnetic signal captures are integrated into the new sensor developed by Witschi Electronic AG.

It is much easier to position closed or open watches with this autonomous sensor.

New: Pulse Analysis

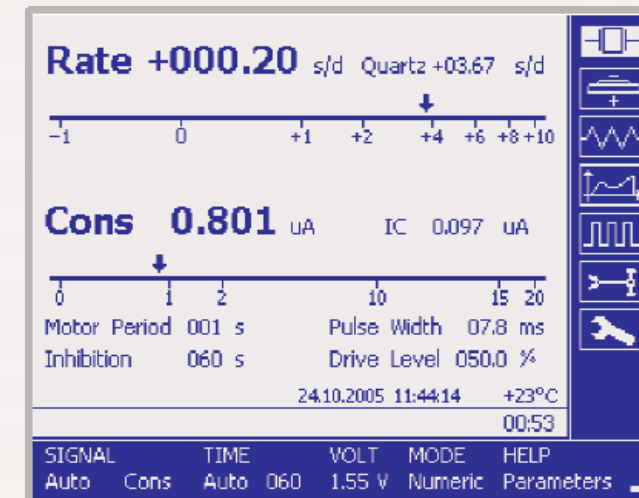
The analysis of the magnetic signal can provide the period and the pulse width as well as the inhibition period and the chopping level.



With this information, it is possible to determine the efficiency of a watch drive with asservissement without opening the watch.

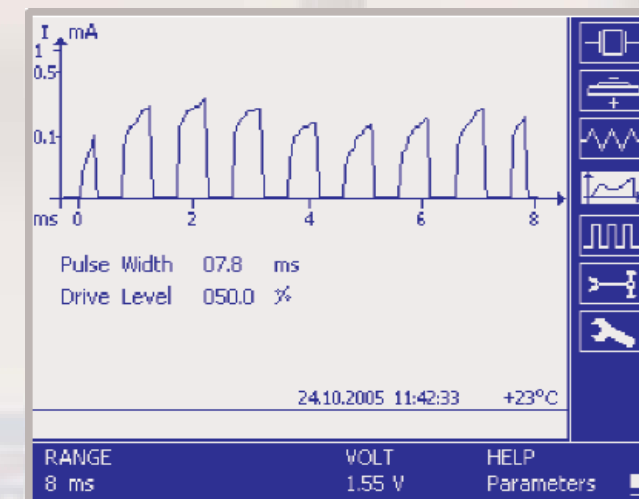
Module Supply – Current Measurement

The watch to be tested is supplied with a variable voltage. The rate measurement signal is drawn from the supply current of the watch.



The dial can be observed during measurement by means of the built-in mirror. Moveable probes are used as contact elements.

New: Pulse Analysis Motor Current



The shape of the motor pulse current is shown as a curve. The pulse shape is an important criterion about the good operation of the watch. The pulse width and the chopping level are displayed numerically.

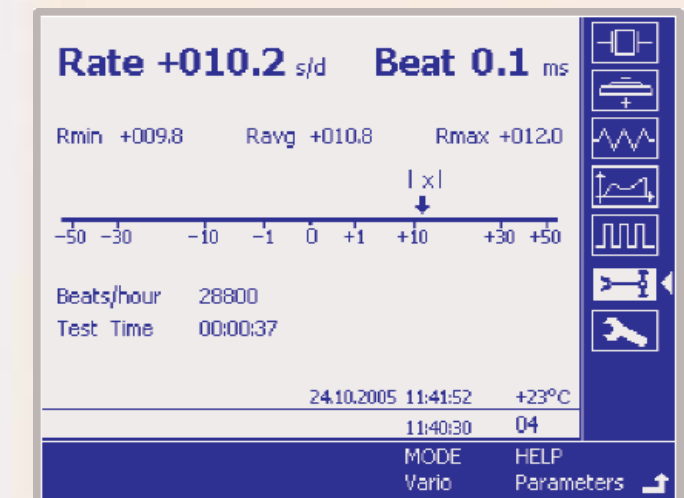
Battery Test

Low drain batteries are automatically tested with a load resistance matching the battery and high drain batteries are manually tested by pressing a button.

Resistance Measurement

Measurement of the coil resistance and insulation and detection of short-circuits and breaks.

Rate Measurement of Mechanical Watches



The new VARIO display mode provides very clear and efficient measurements of the rate and its quality for mechanical watches.

Additional Functions

- Measurement log print-out or export of the results to a database installed on the PC.
- Real-time clock. Date and time are displayed and printed in the log.
- The temperature, an important factor of the rate deviation, is displayed and printed in the log.

Compact and Space-Saving



With its ergonomic design and a movable LCD display for an optimal view angle, the Analyzer Q1 is the ideal instrument when space is at a premium and for applications on other sites such as training.

New: Time Base Synchronisations

The synchronisation provided by the Witschi GPS receiver available as accessory, results in an unmatched accuracy.