

Analyzer Twin



Combined Instrument for Quartz and Mechanical Watches

This combined measurement and test instrument associates all functions of test equipments for quartz watches and test equipments for mechanical watches. It is the ideal test instrument for the repair service, the lab and watch sales outlets. Basic functions and measurement sequences, largely automated, provide a fast and efficient operation.

Additional measurement modes provide a way to measure watches with special escapements. The instrument, based on the "all-in-one" concept, only requires a very small work area. With its hi-res colour display, this top class instrument certainly draws attention, also in the sales room.

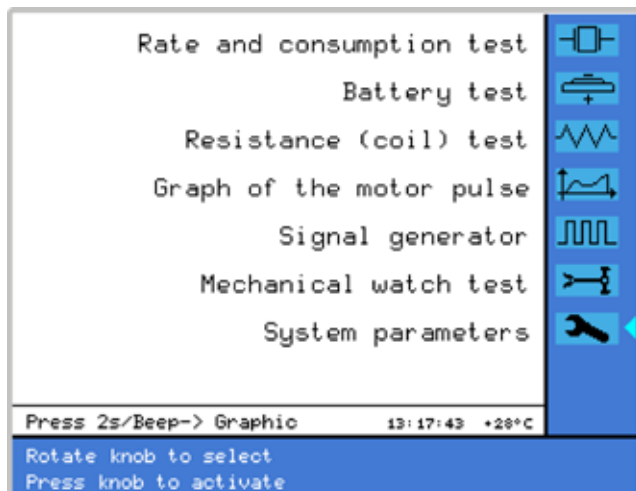
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General Description

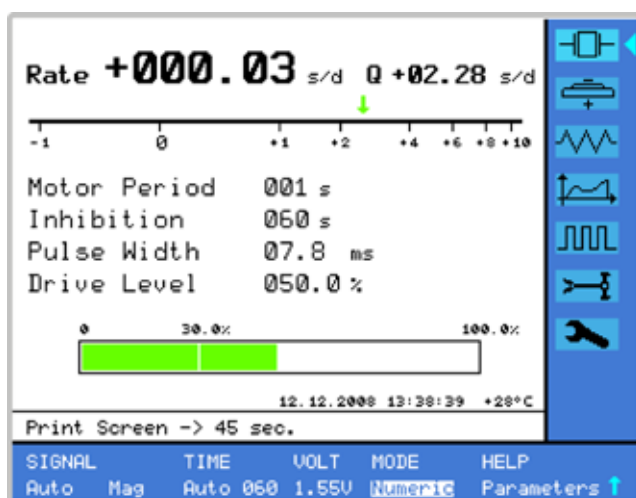
A new technology provides extended test and measurement facilities, allowing fast and professional troubleshooting of quartz and mechanical watches.



Largely automated measurement sequences provided by the instrument result in an unmatched user-friendliness. For more advanced users, measurement parameters can also be manually selected according to requirements. The main menu, results, parameters, submenus and information are presented on a colour display.

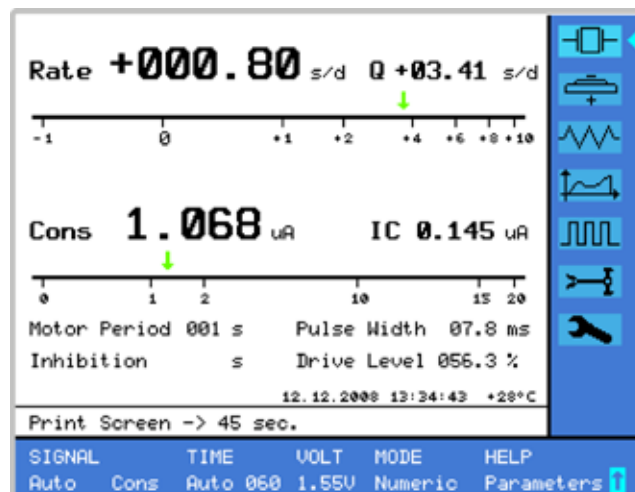
Testing Quartz Watches

Rate Measurement and Pulse Parameters



The analysis of the magnetic signal provides a display of the accuracy. It also allows checking the period duration, the pulse width as well as the inhibition period and the drive level. Based on this information, it is possible to determine the efficiency of a watch drive without opening the watch.

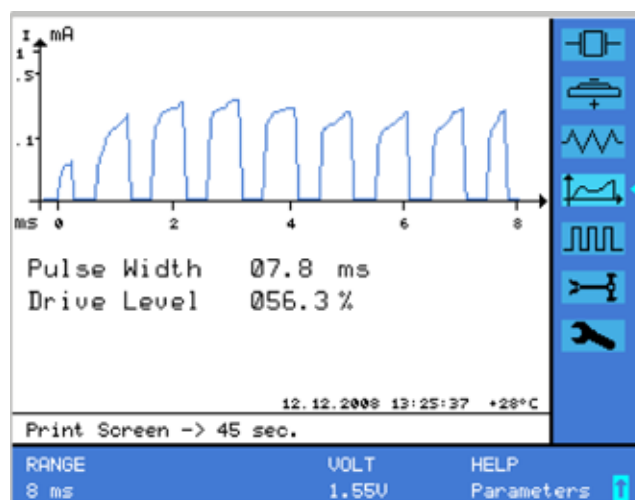
Rate and Consumption Measurement



The watch to be tested is supplied with a variable voltage. Moveable probes are used as contact elements. The hands can be observed during measurement by means of the built-in mirror.

The instantaneous values of the rate deviation and of the total consumption are displayed on a logarithmic scale. The IC current, the period duration, the pulse width, the inhibition period and the drive level are numerically displayed.

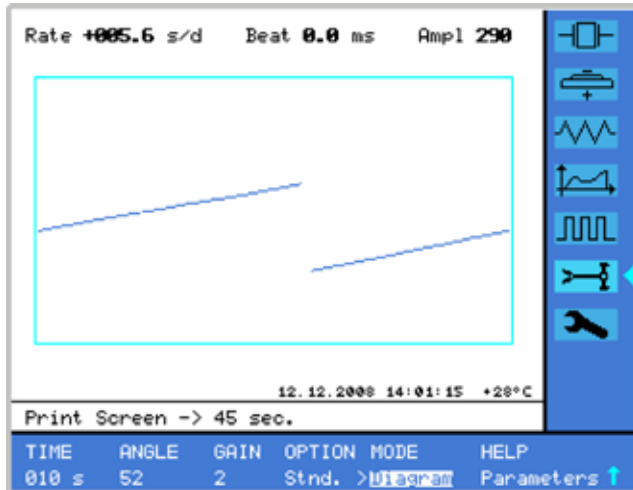
Pulse Analysis of the Motor Current



The current pulses are shown as a curve. The pulse shape is an important criterion about the good operation of the watch. Faults can be detected in the mechanical part of the watch by comparing its measurements to those of a watch of the same type in good condition. In addition, the pulse width and the drive level are displayed numerically.

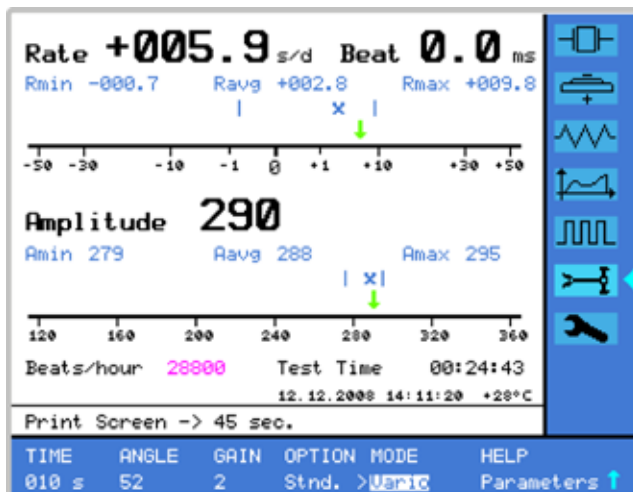
Testing Mechanical Watches

Diagram Display Mode



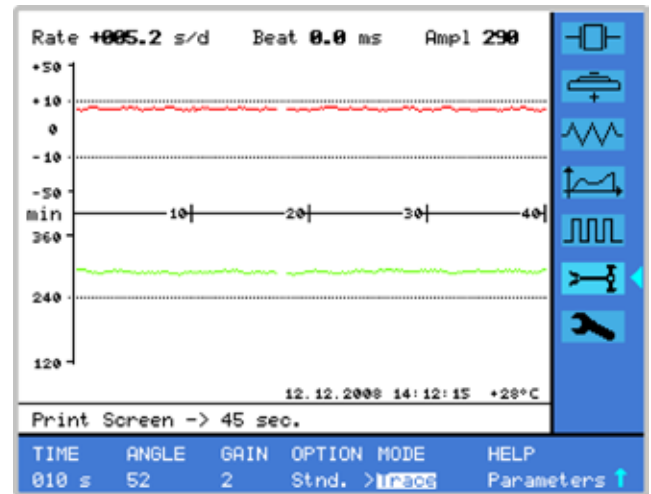
The diagram is continuously drawn. The numerical rate, amplitude and beat measurements are displayed at the end of the first measuring time. The average of the single measurements is updated every 2 seconds, even with a longer set measuring time.

Vario Display Mode



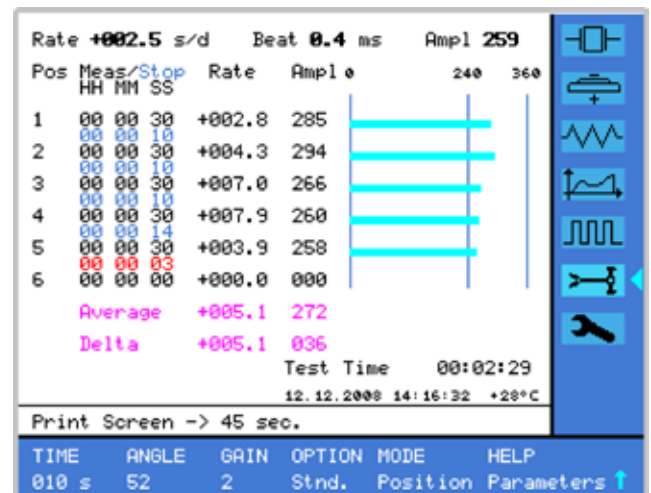
This mode provides a clear-cut assessment of the rate and amplitude stability. The results are displayed in graphical form on a logarithmic scale. The min., average and max. values of single measurements since the beginning of the measurement process are displayed under the current results. The beat number as well as the measuring time since the beginning of the measurement process are also displayed.

Trace Display Mode



In this mode, the measurement result of rate and amplitude are recorded graphically in a time range depending on the measuring time. It can be selected from 8 minutes to max. 64 hours. This provides a way to detect and locate recurring deviations (e.g. faults in the gear train).

Position Display Mode



This mode provides measurement cycles with 2 to 6 test positions by manually rotating the microphone. The instantaneous measurements of rate, beat and amplitude are collected during the measurement process. The average of the rate and amplitude for each test position is displayed at the end of the measurement cycle. The measured values of the amplitudes are also represented by a light blue bar.

Technical Data

Measurement Possibilities

Rate deviation, current measurement, resistance measurement, battery voltage, chopping level of motor pulse and rate measurement of mechanical watches.

Rate Measurement

- Measurement over the quartz frequency, signal sensing acoustical, capacitive or over the supply current.
- Measurement over the motor pulses, signal sensing magnetically or over the supply voltage.
- Measurement over the LCD-operating frequency.

Signal sources: Motor, quartz 32 kHz, 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 period, min. 2 s, max. 120 s. Also manual setting: 2, 4, 10, 12, 20, 60, 120, 480 and 960 s.

Result display: measuring range ± 327 s/d, resolution 0.01 s/d.

Graphic display: measuring range -1 s to +10 s, 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.

Module Supply

Mobile probes for direct contacting or by means of test leads with probe tips.

Supply voltage: adjustable, 0 - 3.5 V, resolution 0.05 V.

Current Measurement

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

Measuring time: Automatic over a pulse period, min. 2 s, max. 60 s.

Also manual setting.

Display total current: measuring range 20 mA, resolution 1 nA.

Display IC current: measuring range 10 μ A, resolution 1 nA.

Graphic display: momentary value of the total current, independent of the selected measuring time. Display range 20 μ A, logarithmic scale.

Error display: warning beep and over range display for current >20 mA.

Trace

Long time tracing of the rate and current measurement diagrams. Time scale: automatic in accordance with the selected measuring time; one pixel per measurement. Tracing length 6 min. to 50 h.

Resistance

Measurement of the coil resistance and detection of short circuits and interruptions. Measuring range: 1 Ω - 10 M Ω , 3 digit display with automatic range selector. Accuracy 1% of the measured value. Error display: Short and warning beep for $R < 1 \Omega$.

Battery

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

Pulse Generator

- Test of stepping motor with programmable pulses.
- Test of acoustic signal transmitters (buzzer).

Pulse width: programmable 2.94 - 31.25 ms in steps of 0.49 i.e. 0.98 ms.

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

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

Voltage: programmable 0 to 3.5 V.

Buzzer test: bipolar square wave signal. Frequency 2kHz. Programmable voltage from 0 up to 3.5 V peak.

Pulse Analysis

Stepping motor: the positive and negative pulses are alternately displayed in the time scale of 8 or 16 ms.

Current scale: range 1 mA, logarithmic.

Numeric display: pulse width and chopping level.

Testing Mechanical Watches

Automatic selection of the beat number: 12'000, 14'400, 18'000, 19'800, 21'600, 25'200, 28'800, 32'400, 36'000, 43'200. Selectable measuring time: 2, 4, 8, 20, 60, 120, 240, 480 and 960 s.

Range of the rate measurement: ± 300 s/d, resolution 0.1 s/d.

Graphic display of the rate: ± 50 s/d, logarithmic scale.

Amplitude: measuring range 80° to 360°. Lift angle adjustable from 10° to 90°.

Beat error: measuring range 0 ms to 9.9 ms.

Measuring modes for watches with AP- and coaxial escapement.

Functions

Selectable languages: English, German and French.

Interfaces:

2 x RS232 for the connection of the Witschi thermo printer, of a PC and of the Witschi GPS receiver.

1 x USB for firmware updates via PC.

DIN 8-pin for the connection of an external signal sensor.

Details

Time base: pre-aged, thermo-stabilised high frequency quartz, OCXO.

Stability: ± 0.004 s/d between 10° and 50° C.

Aging for the first year: max. ± 0.03 s/d.

Casing: aluminium, glass and plastic.

Display: TFT colour graphic display, 1/4 VGA (320 x 240 dots) with LED lighting.

Dimensions: 290 x 180 x 170 mm (w x h x d).

Weight: 3.8 kg microphone and mains adapter included.

Mains connection: mains adapter for 230 V~ or 120 V~, 1.2 A.

Accessories

Thermo printer with ticket cutter JB01-740RS232
100 - 2640 V~, cable and paper roll

Thermo paper, roll JB01-MM60-740RS

Witschi GPS receiver for time base calibration or for the time base and real time clock synchronisation. 19.91PK1

AutoPrint: PC software for result and graphic file transmission to a PC. 64.55.901PK1