

# Chronoscope X1 (G2)



## Latest Technology for Testing Mechanical Watches

The Chronoscope X1 (G2) is the top-of-the-line instrument to be used during manufacturing, by the repair service or in the watch-testing lab. The 10.4" colour touch screen provides an intuitive and easy operation. Test automatic test cycles with up to 6 measuring positions are possible with the microphone Micromat C.

It provides 4 different display modes as well as a graphical representation of beat noises. PDF files can be individually stored with each measurement program. They can contain e.g. mounting drawings, limit data, lubricating schedules, etc. and can be called back whenever necessary. Network compatible to connect to WiCoTrace database.

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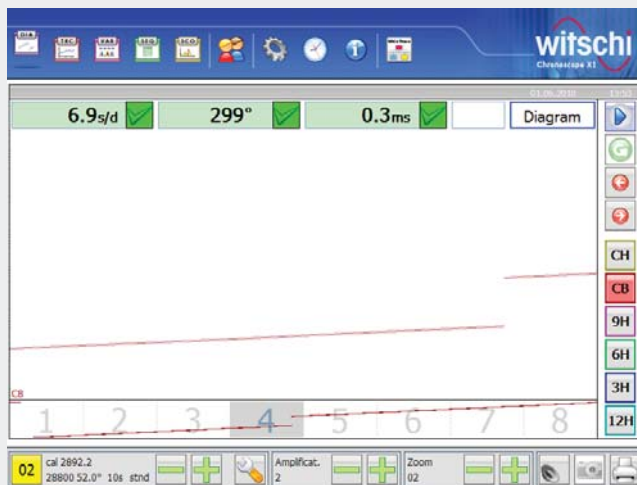
## General Description

The X1 (G2) terminal is used as the control and display unit. Its large screen provides three content-ordered menu bars with big, self-explanatory buttons around the main display. The 4 display modes show measurements in a way adapted to any individual requirements. The measurement results can be printed on an external printer without interrupting the on-going measurement process. It is possible to create up to 99 different measurement programs. The automated microphone Micromat C can be operated directly from the terminal or with its own function keys.

### Particular Features

- **Display of PDF documents**  
PDF documents, e.g. mounting drawings, maintenance recommendations, reference data, etc. can be individually assigned to each of the 99 measurement programs. For opening the PDF document, it is enough to key in the program number (paperless office).
- **Screen capture (camera function)**  
The current content of the screen is stored in PNG format into a plugged-in USB memory stick when the camera key is pressed.
- **Picture presentation**  
Up to 99 pictures in JPG format can be stored for the start/stop screen saver. The slide show runs at a rate of a new picture every 10 seconds.

## Continuous Diagram Recording



The rate deviation is continuously drawn on the screen. Measured values for rate deviation, amplitude and beat error are displayed numerically. In addition to the diagram recorded in the main window, the last eight diagram pages are shown as small format strip.

## Trace Display Mode



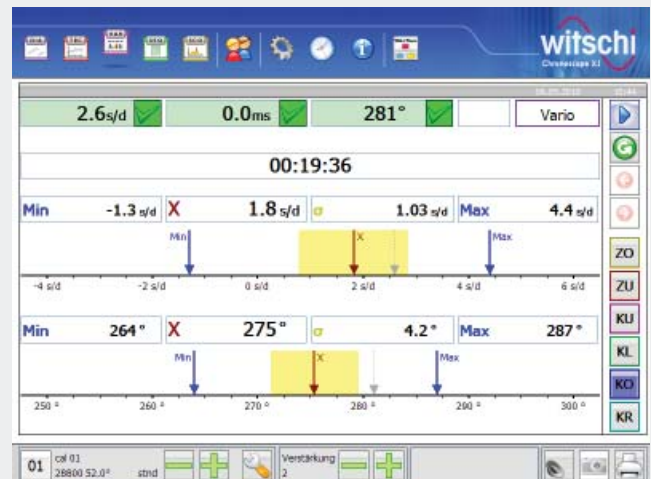
In this mode, the rate deviation and the amplitude are recorded in parallel in graphical format. The Trace mode provides long-term measurements up to 100 hours. This provides an extended time range (e.g. power reserve cycle) for measuring movements.

In addition to the graphics, the current test position of the watch as well as the running measured values for rate deviation; amplitude and beat error are also displayed.

### Handy Feature

It is possible to switch between the Trace and Vario modes while the measurement process is running.

## Vario Display Mode



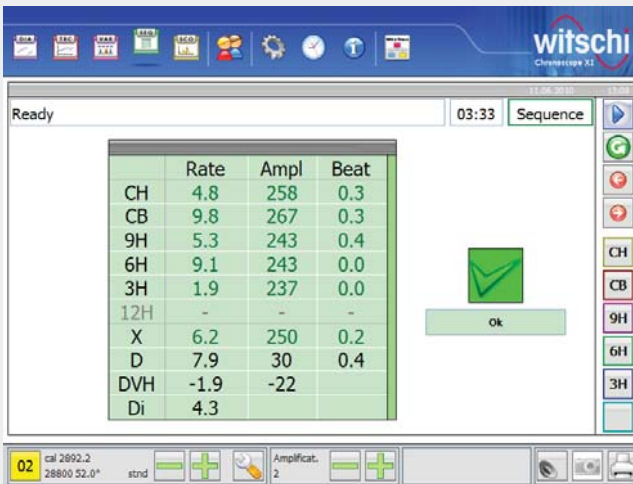
The Vario mode measures the rate and amplitude stability over a longer time range. Each numerical measurement is represented by an arrow on the linear scale.

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The following values are constantly updated as long as the measurement process is running:

- smallest measured value
- largest measured value
- average measured value and standard deviation
- elapsed measuring time.

## Sequence Display Mode



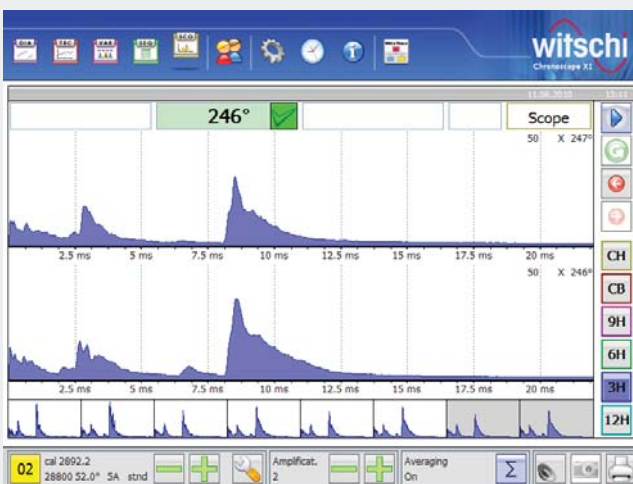
This neatly structured table clearly displays the measurement results in each position as well as the average and the largest difference between all positions and particular ones.

Programs can be created with up to 6 test position including stabilisation and measurement time. The sequence can also be initiated with the start key of the Micromat.

## Handy Feature

The arrow keys can be used for toggling between the Trace, Vario, Sequence and Diagram Recording measurement modes during or after measurement.

## Scope Display Mode



The Scope function graphically displays the acoustic beat noise of the watch. A detailed analysis of the beat noise, i.e. of the state of the escapement, can be carried out. The display can be switched from one to two horizontal axes. Thereby, the averaging of the signals of 1, 10, 20 and 50 beat noises is possible.

The last eight beat noises are displayed in a small format and continuously updated when the measurement process is running.

## Time and Date



This neatly structured display is ideal for setting up the date and time after a test.

In this mode, the time and date are displayed in analogue and digital form. A signal sound repeated every 15 seconds can be optionally switched on. A top-of-the-minute signal is generated whenever the last 5 seconds of the minute are reached.

If the instrument is connected to a network, the watch can be synchronised up to the second over the Internet by a time server (NTP).

## Further Features

- **Network Compatible**  
Can be connected to a network with optional software. Thus, measurement programs for sequential test cycles are available directly from the WiCoTrace database. Those, in the database stored measurement results can always be visualized via Witschi WebViewer.
- **Customer and watch data**  
Easy input via menu point of the customer and the watch data. If desired, the selected data appears on the printout and as header in the captured print screen as PNG file. Up to 99 customer data can be stored and retrieved in a list.

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## Technical Date

### Measurement Possibilities

Rate deviation, amplitude and beat error of mechanical watches. Diagram of the beat noises.

### Beat Number

Automatic selection of all common beat numbers.  
Manual selection of any beat number between 3'600 to 43'200 b/h.

### Measuring Modes

- Standard mode for watches with the Swiss escapement.
- Special1 Mode for watches with coaxial escapement.
- Special2 Mode for watches with AP escapement.
- Special4 Mode with specific amplitude filter for the measurement of watches with the Swiss escapement.

### Gain Control

Automatic. Manual control facility for watches with stray or unusual beat noises.

### Adjustment Possibilities

- **Continuous Diagram Recording**  
Selectable integration time: 2, 4, 6, 8, 10, 20, 30, 40, 60, 120, 180 and 240 s.  
Adjustable zoom: 1, 2, 4, 8, 16 x.
- **Trace Display Mode**  
Selectable measuring time: from 4 s to 99:59:58h.  
Adjustable zoom: 2, 4, 8 x.
- **Vario Display Mode**  
Measuring time: adjustable from 4 s to 99:59:58h.
- **Sequence Display Mode**  
Stabilisation time: adjustable from 2 s to 2 min.  
Measuring time: adjustable from 4 s to 10 min.  
Measuring cycle: adjustable from 1 to 6 test positions.
- **Scope Display Mode**  
Selectable time deviations: 20, 200, 400 ms.
- **Screensaver / Illuminating**  
May be switched on or off.  
Switch on time: 1 to 99 min.

### Measuring Ability

Rate accuracy: numerical display in s/d.  
Resolution: 0.1 s/d or 0.01 s/d.  
Measuring range:  $\pm 999$  s/d.  
Accuracy:  $\pm 0.1$  s/d.

Amplitude: numerical display in degrees.  
Resolution: 1° or 0.1°. Measuring range 80° to 360°.  
Accuracy:  $\pm 0.4^\circ$ .  
Lift angle adjustable from 10° to 90°. Resolution 0.1°.

Beat error: numerical display in milliseconds.  
Resolution: 0.1 ms. Measurement range 9.9 ms.  
Accuracy:  $\pm 0.1$  ms

### Details Micromat C

Automatic microphone with built in measuring electronics. By means of the inserted Joystick are manually up to 10, in the automatic Sequence mode up to 6 test positions selectable.

Acoustic check: audio out, Stereo Jack (3.5 mm).

Time base: Pre-aged and thermo-compensated high frequency quartz, OCXO.

Stability:  $+/- 0.004$  s/d between 10° and 50° C.  
Aging for the first year: max.  $+/- 0.03$  s/d.

Plastic housing: anthracite coloured.

Front panel: aluminium, colourless anodised.

Dimensions: 115 x 125 x 215 mm (w x h x d).

Weight: 1.7 kg.

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

### Details X1 (G2) Terminal

Display terminal with 10.4" SVGA TFT colour Touchscreen, resolution 800x600. LED backlight. Low consumption. Built in flash memory, 1GB.

Languages: English, German, French. Spanish, Italian.

Interface:

- 4 x USB
- COM 1
- Ethernet for network
- Slot for Micro SD-memory card, 32MB - 4GB.
- Audio output

Terminal in aluminium, silver coloured.

Stand in aluminium, anthracite coloured.

Dimensions: 264 x 275 x 158 mm (w x h x d).

Weight: 2.5 Kg.

Mains connection: universal mains adapter for 100 to 240 V~, 1.5 A.

### Accessories

Witschi thermo printer, universal mains adapter 90 V~ - 260 V~.	JB01-MCP7810
Thermo paper for MCP7810.	JB01-MM58-DPU20-N
Thermo printer with automatic paper cutter, 100 V~ - 240 V~	JB01-740RS232
Thermo paper for 740RS232.	JB01-MM60-740RS
Wireless mouse, Logitech VX Nano	JB03-910-000255
Mouse with cable, Optical V100.	JB03-931641-0914
Earphone, Sony MDR-E829V.	CA06-MDR-E829
Memorystick USB 2.0, 2GB.	JB15-OCZUSB2DC