# **Chrono Touch**

# **Operating Manual**





Greiner Vibrograf AG Mittelstrasse 2 CH-4900 Langenthal Switzerland Tel : +41 /(0)62/916 60 80 Fax: +41 /(0)62/916 60 81 e-mail: info@greinervibrograf.ch www.greinervibrograf.ch



Helmut Klein GmbH Fritz-Neuert-Str. 31 D-75181 Pforzheim Germany Tel : +49 / (0)7231/9535-0 Fax: +49 / (0)7231/9535-95 e-mail: info@klein-messtechnik.de www.greinervibrograf.ch

1.	Device	description

<ul> <li>- 1.1 Front view</li> <li>- 1.2 Side view</li> <li>- 1.3 Rear view</li> <li>- 1.4 Accessories</li> <li>- 1.5 Cleaning</li> </ul>	Page 3 Page 3 Page 4 Page 4 Page 5
2. Commissioning	Page 6-11
3. Measurement	
- 3.1 Testing mechanical watches	Page 12 - 14
- 3.2 Testing watches with a coaxial escapement	Page 15 - 16
- 3.3 Testing pendulum clocks with a clip-on microphone	Page 17 - 18

# 4. Technical data

Page 19

# 1.1 Front



# 1.3 Rear view



# **1.4 Accessories**



## Microphone MP12 for mechanical watches

The connection is made at the rear of the Chrono Touch using the LEMO socket.

The watch case or preferably the crown must be touching at least one of the sensors.



# Clip-on microphone for pocket watches and large clocks

The clip-on microphone can be connected to the 15-pin connector at the rear of the Chrono Touch instead of the MP12.

# 1.5 Cleaning



**Before cleaning** 

Always clean the LCD monitor when switched OFF (power supply disconnected) and always make sure the user interface has cooled down first.

#### Removing dust

Please use exclusively microfibre cloths or special monitor cleaning cloths.

#### Cleaning the monitor with a damp cloth

In exceptional cases, a commercially available glass cleaning agent or even better a special screen cleaner can be used for cleaning the monitor. Never spray the screen cleaner (glass cleaner in exceptional cases) directly onto the monitor surface, but onto the cleaning cloth.

Never apply any pressure to the monitor surface when cleaning off marks and do not attempt to remove marks by scratching with your fingernail, etc.

#### Drying the monitor

After cleaning with a damp cloth, dry off the user interface with a new microfibre cloth. Once you have finished cleaning, it is important to wait approximately 30 minutes before switching the device on again.

# 2. Commissioning

Connect the device to the power supply using the mains cable.

Put the rocker switch at the top right-hand side of the case into the "I" position (see Fig. 1.2).

The device is now ready for operation.

The following display appears on the screen after a short time:

Confi	guration
Language	User
Date / Time	Default parameter
Back	
elect Configuration	29.05.2013 - 08:25

After touching the "Info" button, the following information on the current status of the device's software appears:

Device type	Chrono Touch
irmware	V 1.0.0.3 / 0
	Helmut Klein GmbH 75181 Pforzheim www.greinervibrograf.com
Back	

This information can prove necessary in the event of any technical queries.

After touching the "Back" button, the start screen appears again:



After touching the "Configuration" button, the following screen appears:



After touching the "Language" button, the following screen appears:



Select the required language and confirm by touching the relevant button. The selected language button now has a green background. By touching the "Save" button, the selected language is saved. The following appears on the screen again:



Select the Date/Time button. The following screen appears:



Modify and select the individual parameters by touching and then program into the menu by touching the "Save" button.

The following appears on the screen again:



The following screen appears when you touch the "User" button:

	U	lser		
Name	HELMU	T KLEIN GMBH		
Street	FRITZ-	NEUERT-STRASSE 31		
ZIP-Code	75181			
City	PFORZ	HEIM		
Cancel		Save	>	
tup user data		29	.05.2013 - 08	

Each user can program and save his own address data in this box.

				M	lam	e				
1	2	3	4	5	6	7	8	9	0	-
Q	w	E	R	т	z	U	I	0	Р	X
A	s	D	F	G	н	J	к	L		
Y	x	с	v	в	N	м		Space		Ok

By touching the "Save" button, the modified user data is saved:

	U	ser			
Name	HELMUT	HELMUT KLEIN GMBH			
Street	FRITZ-N	Z-NEUERT-STRASSE 31			
ZIP-Code	ZIP-Code 75181				
City	PFORZH	EIM			
Cancel		Save	>		
Setup user data		29	.05.2013 - 08:27		

If you touch the arrow



the following screen appears:

	User	1
Print user data	Yes	
		<

If you touch the "Cancel" or "Save" buttons, you are taken back to the Configuration page:

Confi	guration
Language	User
Date / Time	Default parameter
Back	
onfiguration	29.05.2013 -

By touching the "Standard parameters" button, the following screen appears:

D	efault param	neter	_
Watch type	Mechanica	Co-Axial	Pendulum
Beat number	Automatic	Beats	/h fix/man.
Beats/h fix		3	3240
Meas. time [sec.]		2	2
Cancel		Save	>
ect default parameter		29.0	5.2013 - 08:2

The user can specify and program the test program he requires himself here. The required parameter buttons are selected and touched. The selected parameters are saved to the menu with the "Save" button. If you touch the arrow

the following s	screen appears:		
	C	Default para	meter
	Lift angle [°]		52
	Customer data	• Yes	No
	Filter	Active	Not Active
			-
	Select default paramete	F as	29.05.2013 - 08:29

Select and program the required parameter buttons. With the **C** button go back to the "Standard parameters" program and save by touching the "Save" button.

De	efault param	neter	
Watch type Beat number	Mechanica     O	Co-Axial	Pendulum /h fix/man.
Beats/h fix Meas. time [sec.]		3	3240
Cancel		Save	>
elect default parameter .		29.0	5.2013 - 08:29

Touch the "Save" or "Cancel" buttons to return to the menu:

Confi	guration
Language	User
Date / Time	Default parameter
Back	
Configuration	29.05.2013 -

If you touch the "Back" button, you are taken back to the Start menu.

## 3. Measurement

#### 3.1 Testing mechanical watches

The following screen appears here again:

guration
nfo
I

The following screen appears when you touch the "Measurement" button:

	Measure	
Watch type	Mechanica	Co-Axial OPendulum
Beat number	Automatic     Beats/h fix/m	
Beats/h fix		28800
Lift angle [°]		52
Meas. time [sec.]		2
Back		Start
elect parameter		29.05.2013 - 09:2

The selected and programmed values are displayed.

When you touch the "Start" button, the following screen appears:



Once the values are determined, a diagram showing how the measured watch is running appears on the screen:

Watch type Mechanical	Beat number /h 28800	Lift angle [°] 52	Meas. time [sec.]
+			
-			
+ 2.9 s/c Rate	286 Ampli	o tude	0.1 msec

In the case of a mechanical watch the following values are displayed: beat number, lift angle, measurement time, rate variations, amplitude and beat error.

If you touch the screen, the following appears:

Diagram	Selection
Stop Measurement	Rate
	Print
Single beat noise	Double beat noise

By touching the "Print" button, the following screen appears:

	Customer dat	ta
Name	TESTUSER	
Serial number	0123456789	
Clear all		Ok
etup customer data		29.05.2013 - 09:44

The watch data can be programmed into the "Name" and "Serial number" boxes. To do this the two boxes are touched one after the other and the data entered. Confirm and print out with "OK".

You can use the "Delete all" button to delete all the data again.



If you touch "Single beat", the following display appears on the screen:



By touching the display in the bottom right-hand corner of the screen, ++++ you will go immediately to the following screen:



## 3.2 Testing watches with a co-axial escapement

Start via the "Chrono Touch" screen:

Chrono To	uch
Measure	Configuration
Greiner Vibrograf	Info
L	29.05.2013 - 09:12

After touching the "Measurement" button, the following appears:

	Measure	-	
Watch type	Mechanica OC	o-Axial	OPendulum
Beat number	Automatic	ОВе	ats/h fix/man.
Beats/h fix			28800
Lift angle [°]			38
Meas. time [sec.]			2
Back			Start
elect parameter			29.05.2013 - 09:27

On the "Measurement" screen, select "Co-axial" as watch type. Enter the beat number, fixed beat number, lift angle, and measurement time. After touching "Start", this appears on the screen:



Measurement starts and the rates are displayed:



The other measurements are called up and programmed like in the "Mechanical watches" program (see pages 12 + 13)

# 3.2 Testing pendulum clocks with a clip-on microphone

Start via the "Chrono Touch" screen:

Measure	Configuration

The following screen appears when you touch the "Measurement" button:

	Measure		
Watch type		Co-Axial	Pendulum
Beat number	Automatic	DBe	eats/h fix/man.
Beats/h fix			3240
Lift angle [°]			38
Meas. time [sec.]			2
Back			Start
lect parameter au			29.05.2013 - 09:

On the "Measurement" screen, touch "Pendulum" watch/clock type. Enter the beat number, fixed beat number, lift angle and measurement time ranges.

After touching "Start", this appears on the screen:



**Operating Manual Chrono Touch** 

# MEASUREMENT

Once the values are determined, the rate of the pendulum clock appears on the Watch type Beat number /h Lift angle [\*] Meas. time [sec.] screen: Pendulum 3240 38 2 + -8.1 s/d 0.1 msec Rate Beat error

Testing pendulum clocks with an unknown beat number is carried out in the "Diagram selection" program:



Touch the "Variable beat number" button.

The following display appears on the screen:

Variable beat number detection T / 00:00:00.30 / 0 N-CNT: 28793 / h N-ITG: 28793 / h For further options, please touch the screen!

In the "N-CNT" area: In the "N-ITG" area:

Displayed on counter "T" is the test time elapsed. the currently measured beat number in beats/h is displayed. the integrated beat number/h determined over the entire test time is displayed.



Weight: Mains voltage:	1.720 g. 110 V - 230 V, 60/50 Hz, automatically controlled
Power consumption: Power supply: Accuracy of quartz crystal: Connections:	max.7.20 W 24 V +/- 5% +/- 1 ppm (at 25°C) Ethernet (LAN), DSUB 15, 2 USB ports, Lemo socket for microphones, mains adapter,
Measurement options:	Mechanical watches: Beat number (automatic and manual) Rate variation Amplitude Beat error Oscilloscope display of double and single beat noise
Additional options:	Clip-on microphone