



PROFESSIONAL TIMING

Users manual

TAG Heuer Displays

HL 960 / HL 990

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Table of content

- Table of content / First advices / In general	page	2
- Power Supply for TAG Heuer displays / Transport	page	3
- Chapter 1 – The display connected to a timing device	page	4
- Chapter 2 – Programming	page	5
- Chapter 3 – The economical mode (low consumption)	page	8
- Chapter 4 – The display in automatic Self Timer mode.....	page	9
- Chapter 5 – The display in automatic Speed Trap mode	page	10
- Chapter 6 – The display in automatic time-of-day mode	page	11

First advices

- Upon arrival of your TAG Heuer display, first take away the two screws that fix the plexiglas. Slide it to the left before removing it totally. Detach the protection plastic and put the plexiglas back in place carefully. This operation is easy to do if the display is laid down horizontally.
- Always keep your display clean and free of dust. To get rid of dirt, use a soft wiper for the plexiglas, then a humidified towel. Never clean the plexi with a dry towel ! This could scratch your display. When you pull out the plexi, be sure it is clean.
- To make good use of this user manual, we advise to first read the concerned chapter, and than undertake the described action according to the manual. This way, your first steps with the TAG Heuer display will be extremely simple !

In general

- Upon arrival, your display should be programmed according to the application that you mentioned. However, your display can be programmed for many applications. We advise to carefully read '**Chapter 2 – Programming**'.
- The positioning of the digits can easily be changed. Pull out the plexi, take away the separations between the digits (which can be used on both sides, either : or .). Losen a bit the screws on the digits that you want to move, and slide them on the rail. Put back the separations and screw the digits.
- Your TAG Heuer display features many great applications. According to the type of use you make of it, the display can be put in « Economical » also called « Low Consumption » mode. If your display is exposed to serious bumps (on top of a car for example), your display is able to **check all digits every second**. But if your display doesn't move at all during its application (on top of a timing hut for example), you don't need the display to check all its digits every second, and **make an important consumption saving** (especially if you work with an external battery pack) ! Please read '**Chapter 3 – The economical mode (low consumption)**' !

Power Supply for TAG Heuer displays

Our displays can be powered in 2 different ways.

- 1) using our stabilized 220/110V power supplies, providing 12V DC (8 ÷ 12 Ampers)
- 2) by external power pack (car battery for example) providing 12V DC

Important : The 12V output of petrol generators is not stabilized. We herewith forbid use of these kind of power supplies with our displays.
Though, it is possible to use the 220/110V output for our power supplies.

Transport

TAG Heuer displays have been developed to assure maximum solidity, whilst keeping volume and weight reduced as much as possible. However, we strongly advice to transport the display in its original transport box, when shipped « non-accompained ». A transport protection hose has been planned.

Chapter 1 – The display connected to a timing device

- 1) Connect the HL 960-8 power supply cable to the POWER socket on the display, then to the 12V power supply itself, respecting the polarities + (red) and – (black). Also read the technical specifications of the power supply.
- 2) Connect the display to the timing device, or to the computer, using the available 'data' cables (lengths 5 m, 10 m or 'on request'). For 'time-of-day' or 'self timer' functions, these cables will not be used.
- 3) First switch on the timing device (or computer).
- 4) Switch on the display with the ON/OFF button, where you see
 - during 3 seconds, '8's are shown (or '0' when the display is in « Low Consumption » mode) on all digits (functional check of these)
 - then, during 4 seconds, the programmed code, corresponding to the used timing device (see **Chapter 2 – Programming**)
 - the display is now ready for use

Chapter 2 – Programming

TAG Heuer displays can be programmed for different applications :

**+ competitor number (bib) if you have a 9 digits display
(except for the day-time and self timer functions).**

A) *With the following timing devices :*

CP 505	- net time at 1/100 th	59:59.99	code 100
	- net time at a second	23:59:59	code 110
	- day time at 1/100 th	59:59.99	code 120
	- day time at a second	23:59:59	code 130
CP 502	- net time at 1/100 th	59:59.99	code 200
	- net time at a second	23:59:59	code 210
	- day time at 1/100 th	59:59.99	code 220
	- day time at a second	23:59:59	code 230
SM 510	- speed at 1/100 th	999.99	code 300
CP 705 – Alpine ski :			
	- net time at 1/1'000 th	9:59.999	code 800
	- net time at 1/100 th	59:59.99	code 801
	- net time at 1/10 th	1:59:59.9	code 802
	- net time at a second	23:59:59	code 803
	- rank + number + rank	001.123.001	code 810
	- rank + number	001.123	code 813
	- speed at 1/1'000 th km/h	999.999	code 820
	- speed at 1/100 th km/h	999.99	code 821
	- speed at 1/10 th km/h	999.9	code 822
	- speed at 1 km/h	999	code 823
CP 705 – Dual :			
	- left net time at 1/1'000 th	9:59.999	code 808
	- left net time at 1/100 th	59:59.99	code 809
	- right net time at 1/1'000 th	9:59.999	code 818
	- right net time at 1/100 th	59:59.99	code 819
	- difference at 1/1'000 th and winner	9.9999	code 829
PTB 605 – Informatic mode (TAG Heuer / Soft Control softwares) :			
	- 9'600 bps, 8 bits, 1 stop bit, no parity	<i>depends on software</i>	code 000

B) *Automatic Use – Self Timer on internal time base :*

-	net time at 1/100 th without running time	59:59.99	code 700
-	net time at 1/100 th with running time	59:59.99	code 710
-	speed at 1/1'000 th kmh	999.999	code 750
-	speed at 1/1'00 th kmh	999.99	code 751
-	speed at 1/10 th kmh	999.9	code 752
-	speed at 1 kmh	999	code 753

C) *Internal Clock :*

-	time-of-day to the second	23:59:59	code 900
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Chapter 2 – Programming (continued)

To change the code of your display, the following points should be **READ CAREFULLY** :

Principle

- Immediately after switching on the display (POWER to ON),
 - during 3 seconds, '8's are shown (or '0' when the display is in « Low Consumption » mode) on all digits (functional check of these)
 - then, during 4 seconds, the programmed code (on the 3 last digits)



X = numbers of the code

- Programming is done using the two-position switch.
(for 'VALID', push to the left – for 'PROGR', push to the right)

VALID
(to confirm)



PROGR
(to programm)

- When, trying to programm the displays' code, you made a mistake or weren't able to push the switch in the 4 second delay, please turn off the display, **wait 2 seconds** and turn it on again. This is the only way of returning to the the 4 second delay.

ACTION

- 1) Connect the display to its 12V power supply.
- 2) Switch on the display (all '8's on all digits).
- 3) In the 4 second delay, **and in this delay only**, push the switch to 'VALID', until the number 3 appears on the left



If the switch is not pushed in the 4 second delay, the former code remains !

It allows for programming the 1st number of the code



- 4) Push the switch to 'PROGR', as many times as necessary, to obtain the desired number.

Chapter 2 – Programming (continued)

- 5) Confirm by pushing the switch to 'VALID'.
the number 2 appears on the left



It allows for programming the 2nd number of the code



- 6) Push the switch to 'PROGR', as many times as necessary

- 7) Confirm by pushing the switch to 'VALID'.
the number 1 appears on the left



It allows for programming the 3rd number of the code



- 8) Push the switch to 'PROGR', as many times as necessary, to obtain the desired number.
9) Confirm by pushing the switch to 'VALID'.
The number 1 disappears. All '8's on all digits. Then, during 4 seconds, the new code.
10) Your display can now be used.

(295) = *plus 3 digits (competitor n°) if you are working with a 9 digit display.
(these digits will be empty during the programming-process)*

Chapter 3 – The economical mode (low consumption)

If your display is exposed to serious bumps (on top of a car for example), your display is able to **check all digits every second**. But if your display doesn't move at all during its application (on top of a timing hut for example), you don't need the display to check all its digits every second, and **make an important consumption saving** (especially if you work with an external battery pack) !

Important : Changing into « low consumption » mode is possible in all different applications, except for the automatic modes (which means those starting with the number '7') !!!

Here under, we will explain how to proceed in order to configure your display in economical mode :

- Turn on the display, in another mode than those starting with the number 7.
(Chapter 1 – The display connected to a timing device)
- Once the display **is running (for example with code 801 a running time must be running on the display)** in the programmed mode, you can change the consumption mode just by pushing the two-position switch to :

VALID	to go	Economic
PROGR	to go	Normal

An indication of whether the display is running in Normal or Economical mode is given while turning on the display :

'9' (number)	means running	Economically
'0' (zero)	means running	Normally

Chapter 4 – The display in automatic self timer mode

Of course, the display is programmed in code 700 (or 710 for running time) !
See **Chapter 2 – Programming** to programm the display.

- 1) Connect the HL 960-8 power supply cable to the POWER socket on the display, then to the 12V power supply itself, respecting the polarities + (red) and – (black). Also read the technical specifications of the power supply.
- 2) Turn on your display where you can see :
 - during 3 seconds, '8's are shown (or '°' when the display is in « Low Consumption » mode) on all digits (functional check of these)
 - Then, during 4 seconds the programmed code (700 or 710)
 - To introduce the **average net time**, and during the 4 second delay only, you should push the two position switch **to the left to VALID, then immediately to the right to PROGR and stay at the right, until the number 4 is shown**

The display shows



- 3) Push the switch to PROGR, as many times as necessary, to obtain the desired number on digit n° 4 (tens of a second – f.ex. 4 for an average time of 45 ± 10).
- 4) Confirm by pushing the switch to VALID. The number 3 appears on the left.
- 5) Push the switch to PROGR, as many times as necessary, to obtain the desired number on digit n° 3 (seconds – f.ex. 5 for an average time of 45 ± 10).
- 6) Confirm by pushing the switch to VALID. The number 2 appears on the left.
- 7) Push the switch to PROGR, as many times as necessary, to obtain the desired number on digit n° 2 (tens of a second – f.ex. 1 for an average time of 45 ± 10).
- 8) Confirm by pushing the switch to VALID. The number 1 appears on the left.
- 9) Push the switch to PROGR, as many times as necessary, to obtain the desired number on digit n° 1 (seconds – f.ex. 0 for an average time of 45 ± 10).
- 10) Confirm the introduced average net time by pushing the switch to VALID (45 ± 10) :
 - The display shows all '0' (or '°') on all digits...
 - ... then the programmed code (700 or 710) during 4 seconds
- 11) Once your display is entirely 'black', it is now ready to receive the start impulse of the first competitor on the banana type START input.

Please note that all finish impulses received beyond the introduced average net time (between 35 and 55 seconds in our example) will not be accepted ! This is to eliminate the inconvenience of false impulses !

Chapter 5 – The display in automatic Speed Trap mode

***Of course, the display is programmed in code 750 (or 751, 752, 753 – see page 5) !
See Chapter 2 – Programming to programm the display.***

- 1) Connect the HL 960-8 power supply cable to the POWER socket on the display, then to the 12V power supply itself, respecting the polarities + (red) and – (black). Also read the technical specifications of the power supply.
- 2) Turn on your display where you can see :
 - during 3 seconds, '8's are shown (or '°' when the display is in « Low Consumption » mode) on all digits (functional check of these)
 - Then, during 4 seconds the programmed code (750, 751, 752 or 753)
 - To introduce the ***distance between the measure points***, and during the 4 second delay only, you should push the two position switch **to the left to VALID, then immediately to the right to PROGR and stay at the right, until the number 4 is shown**

The display shows



4 3 2 1

- 3) Push the switch to PROGR, as many times as necessary, to obtain the desired number on digit n° 4 (thousands of meters – f.ex. 0 for a distance of **0010** meters).
- 4) Confirm by pushing the switch to VALID. The number 3 appears on the left.
- 5) Push the switch to PROGR, as many times as necessary, to obtain the desired number on digit n° 3 (hundreds of meters – f.ex. 0 for a distance of **0010** meters).
- 6) Confirm by pushing the switch to VALID. The number 2 appears on the left.
- 7) Push the switch to PROGR, as many times as necessary, to obtain the desired number on digit n° 2 (tens of meters – f.ex. 1 for a distance of **0010** meters).
- 8) Confirm by pushing the switch to VALID. The number 1 appears on the left.
- 9) Push the switch to PROGR, as many times as necessary, to obtain the desired number on digit n° 1 (meters – f.ex. 0 for a distance of **0010** meters).
- 10) Confirm the introduced distance between measure point by pushing the switch to VALID :
 - The display shows all '0' (or '°') on all digits...
 - ... then the programmed code (750, 751, 752 or 753) during 4 seconds
- 11) Once your display is entirely 'black', it is ready for the first speed measurement between banana type START and STOP plugs.

Chapter 6 – The display in automatic time-of-day mode

Of course, the display is programmed in code 900 !
See **Chapter 2 – Programming** to programm the display.

- 1) Connect the HL 960-8 power supply cable to the POWER socket on the display, then to the 12V power supply itself, respecting the polarities + (red) and – (black). Also read the technical specifications of the power supply.
- 2) Turn on your display where you can see :
 - during 3 seconds, '8's are shown (or '°' when the display is in « Low Consumption » mode) on all digits (functional check of these)
 - Then, during 4 seconds the programmed code (900)
 - To introduce the ***time-of-day for synchronisation***, and during the 4 second delay only, you should push the two position switch **to the left to VALID, then immediately to the right to PROGR and stay at the right, until the number 4 is shown**

The display shows



- 3) Push the switch to PROGR, as many times as necessary, to obtain the desired number on digit n° 4 (tens of hours – f.ex. 1 for synchronisation at 15h30).
- 4) Confirm by pushing the switch to VALID. The number 3 appears on the left.
- 5) Push the switch to PROGR, as many times as necessary, to obtain the desired number on digit n° 3 (hours – f.ex. 1 for synchronisation at 15h30).
- 6) Confirm by pushing the switch to VALID. The number 2 appears on the left.
- 7) Push the switch to PROGR, as many times as necessary, to obtain the desired number on digit n° 2 (tens of minutes – f.ex. 3 for synchronisation at 15h30).
- 8) Confirm by pushing the switch to VALID. The number 1 appears on the left.
- 9) Push the switch to PROGR, as many times as necessary, to obtain the desired number on digit n° 1 (minutes – f.ex. 0 for synchronisation at 15h30).
- 10) Confirm the introduced time-of-day for synchro by pushing the switch to VALID (15h30) :
 - The display shows all '0' (or '°') on all digits...
 - ... then the programmed code (900) during 4 seconds
- 11) Once your display is entirely 'black', it is ready for synchro on the banana type SYNCHRO input.