



TAG Heuer
PROFESSIONAL TIMING



TIMING SYSTEMS





TIMING SYSTEMS



TAG Heuer
PROFESSIONAL TIMING

Classée dans le peloton de tête des montres de sport professionnelles, TAG Heuer est également en prise directe avec les plus grands événements sportifs. Parce que le chronométrage exige une maîtrise absolue de la technique pour traduire en minutes, secondes et millièmes de seconde les exploits humains, TAG Heuer a choisi de mettre l'ensemble de ses connaissances au service de tous ceux qui doivent sanctionner les performances.

As a manufacturer of the finest professional sports watches, TAG Heuer has always been closely associated with the world's elite sporting events. Since timekeeping requires absolute mastery of the technique of translating human exploits into minutes, seconds and thousands of seconds, TAG Heuer has chosen to put its extensive experience at the service of all those who must sanction the performances.

Als Hersteller von professionellen Sportuhren der Spitzenklasse ist TAG Heuer auch am Puls der bedeutendsten Sportereignisse. Die Zeitnahme in Minuten, Sekunden und tausendstel Sekunden erfordert genaueste Kenntnisse und die Beherrschung dieser Technologie, um letzten Endes die sportlichen Leistungen zu werten und zu würdigen. Darin liegt ein wichtiger Grund, warum TAG Heuer seine Erfahrung in den Dienst all jener stellt, die sportliche Höchstleistungen erbringen.

Ai primi posti nella graduatoria degli orologi sportivi di tipo professionale, TAG Heuer è anche a stretto contatto con i maggiori eventi sportivi di livello mondiale. Poiché il cronometraggio professionale necessita di un'assoluta padronanza tecnica per tradurre in minuti, secondi e millesimi le prestazioni umane, TAG Heuer intende mettere a disposizione di tutti coloro che operano nella misurazione dei tempi la propria esperienza acquisita nei cronometraggi sportivi di altissimo livello.







CP 540

CHRONOPRINTER 540

Innovation and avant-garde give rise to excellence

TAG Heuer has gathered all its timing know-how and professionalism to produce this new timing device, resolutely dedicated to the future, combining high technology and precision.

The CHRONOPRINTER CP 540 is the culmination of many unique design advantages, confirming TAG Heuer's extensive knowledge and experience in the field of highly precise time measurement for sport.

- **FLEXIBILITY**
The numerous integrated timing modes will satisfy the most demanding timekeeper. The CP 540 is able to accommodate the majority of sports disciplines operating as a stand-alone unit. When connected to a PC running TAG Heuer's extensive range of race management softwares, it is also the ideal time base for all professional sports-timing.
- **PRECISION**
The CP 540's precision time base and buffered inputs guarantee measurements accurate to 1/100,000 of a second.
- **SIMPLICITY**
The hallmark of TAG Heuer timing philosophy. The operator has only a few essential keystrokes to master. Mistakes are kept to a minimum, and recovery from errors quick and painless.
- **CONFORT**
The large graphic LCD display with backlighting affords very clear vision of the timing information in all situations. The ergonomic, intuitive, snap-action keyboard provides well-spaced and extremely precise keys. The timekeeper will easily navigate the keyboard, even with gloves on.
- **DESIGN**
The originality of the design of the CP 540 is obvious. The choice of the materials with its robust ergonomics have been carefully studied and developed for durability in any environment.
- **EXPANDABILITY**
The CP 540 can be programmed with future and even custom timing modes through its exclusive bi-directional connection with a PC.



avant-garde



CP 540

CHRONOPRINTER 540

Integrated Timing Modes

- **PTB SEQUENTIEL**
Sequential recording of Time-of-Day on 4 channels with an external PC. Using bi-directional communication with a PC running TAG Heuer Software, it is possible to print all net times, current ranking and even the competitor name and affiliation directly on the CP 540 printer.
- **NET TIME**
Stand-Alone net timing using Start and Finish times with automatic or manual numbering. Keypad shortcuts for corrections and RECALL of memorized times for identification or modification. Ranking list and total time results, even if several runs are added. BIBO available in Alpine Ski mode.
- **NET TIME + 2 INTER**
Start, with two intermediate times and finish time. Automatic or manual numbering. Ranking list (as with NET TIME mode).
- **PARALLEL SEQUENTIAL**
Independent Start and Finish times on parallel race courses with competitor numbers. Ranking and addition of runs.
- **PARALLEL DIFFERENTIAL**
Time difference at the finish on parallel race courses. Penalty and listing of runs.
- **TRAINING**
Start with two intermediate and finish times [automatic numbering]. Run ranking and listing for each competitor in different runs.
- **SPLIT & SPLIT/LAP**
Split times, partial times or lap times with competitor numbering. Ranking or listing of a competitor's lap times.
- **SPEED**
Four speed calculations on four channels. Selectable units (Km/h – meter/sec – Miles/h and Knots), and selectable distances between 1 to 10'000 meters). Speed measurements available in all timing modes.

Communication

- **RS 232**
Bidirectional communication with a PC (ON LINE) or OFF LINE for downloading the memory to a PC. Uploading of new software versions. DISPLAY mode to drive external line displays.
- **ETHERNET**
10 Mbps, TCP/IP protocol.
Connection on a network (LAN) of several CP 540's, PC or other peripherals.

Innovative feature:

The CP 540 provides a visual (on the LCD) and audio alarm if an external input remains in short-circuit. This feature allows you to observe the status of TAG Heuer's new "direct-response" photocells. (HL2-31, & HL2-35) and allows the timekeeper to instantly determine if a photocell is out of alignment.



Connections are secure, reliable and accessible



The back-lighted LCD display affords a very clear vision of the timing information.

CP 540 – TECHNICAL SPECIFICATIONS

- **General**
 - Stand-alone multi-sport timing system.
 - Timing calculation (Speed) to the 1/1'600'000 sec.
 - Timing resolution (printer – PC) from 1 sec to 1/100'000 sec
 - Memory of 25'500 times and 99 timing sessions
 - Sequential N°/ competitors N° from 1 to 9'999
- **Inputs / Outputs**
 - Four Inputs with banana jack for Timing impulses (working contact or closing contact without potential / short-circuit, open collector)
 - COMPUTER / Bidirectional RS232 or to drive external display.
 - ETHERNET
 - Extension port for Docking
- **Keyboard**
 - One key to turn ON the device
 - Numerical keyboard
 - Three keys UP, DOWN and ENTER
 - Four validation keys (E1 – E4)
 - RECALL key
 - Paper feed key
 - Four manual triggering buttons with blocking and unblocking of the external input.
- **Display**
 - Matrix LCD display with backlighting
 - Eight information lines with 21 characters
 - Adjustable contrast and brightness
- **Printer**
 - Continuous rapid thermal printer
 - 24 characters per line
 - Control and switch off of the printer in case of discharged batteries
- **Time base**
 - Thermo-compensated quartz 12.8 MHz
 - Precision : +/- 0.5 ppm at 25° C
 - Precision : +/- 1.5 ppm between -30°C and +75°C
- **Operating temperature**
 - From -20°C to + 60°C
 - Docking recommended for low temperature
- **External power supply**
 - Five alkaline 1.5V batteries (UM3 – Energizer LR6)
- **External power supply**
 - 12 V DC by adaptor (HL540-1) or 12 V batteries
- **Autonomy**
 - 6'000 printed times with one battery set
- **Case**
 - Polyester P66 with Fibreglass / Santoprene
- **Dimensions / Weight**
 - 270 x 100 x 65 mm
 - CP 540 without transport case : 860g [with battery set and 1 paper roll]
 - CP 540 with transport case and power supply : 1'800g



CP 540 DOCKING

innovation

The CHRONOPRINTER 540
can be plugged in a DOCKING station.

Three versions of Docking are proposed

- DOCKING (HL 540 – BATT)
This docking station is equipped with a built in Lithium-Ion rechargeable battery which ensures the autonomous operation of the CP 540 for long-duration timing sessions even at low temperatures (-20°C).
- DOCKING (HL 540 – GPS)
This docking station is recommended for an absolute precision and professional timing.
It comprises the following avant-garde features:
 - A GPS satellite module which allows the automatic setting of the CP 540 to the exact time-of-day and the monitoring of the time-base precision relative to the GPS master during the entire timing session.
 - An Input and Output “MASTER – SLAVE” which allows the connection and synchronization of several CP 540's together. In this way, the same time's-of-day are guaranteed on several devices.
 - A “TOP MINUTE” impulse is available for synchronizing any timing device connected to the docking station.
 - Internal rechargeable Lithium-Ion Battery.
- DOCKING (HL 540 – GSM/CDMA)
All the features of the GPS version, with addition of a GSM / CDMA module that gives you the possibility to transmit the timing information by wireless telephony.





CP 520

CHRONOPRINTER 520

TECHNICAL SPECIFICATIONS

- **Timing modes**
 - NET TIME
with bib numbering from 1 to 9'999
 - REAL TIME
SEQUENTIAL Sequential numbering of information from 1 to 9'999 (independent for each input)
SPLIT / SPLIT - LAP / START - STOP - RESTART / RESET functions
 - START-FINISH With competitor No's from 1 to 9'999
 - LAP TIME With competitor No's from 1 to 9'999
- **Selectable definition**
 - NET TIME Second, 1/10th, 1/100th sec.
 - REAL TIME 1/10th, 1/100th, 1/1'000th sec.
- **Memory**
 - 8'000 times (128 RUNS at disposal)



- **Inputs**
 - 2 inputs for timing impulses ("banana" plugs for INPUT 1 and INPUT 2)
 - 1 auxiliary input for START-STOP-RESTART or RESET (selectable)
 - External triggering of inputs by working contact short-circuit
Ex: Manual contact (HL 18, HL 7-1)
Open collector (photocells)
 - An acoustic signal (selectable) is given at each received impulse
- **Output (RS 232 to 9'600 Bds)**
 - COMPUTER to transfer timing information
 - DISPLAY to drive our TAG Heuer displays (HL 960 / 965 / 990)
- **Keyboard**
 - Well-spaced professional quality keys
 - 1 key to turn ON the device (turn OFF : in the Menu)
 - 1 numeric field to introduce bib numbers and/or times
 - 2 validation keys, for both start and finish (E1/E2)
 - 1 RECALL key, to recall identified or unidentified times
 - 1 key to access the MENU (F)
 - 1 paper feed key
- **Display**
 - D"Low Temperature" LCD display (-20° C) with 4 lines of 16 characters
 - Adjustable contrast
 - Shows clearly all useful information
- **Printer**
 - High-tech continuous thermal printer
 - 24 characters per line
 - 8 printed lines per second
 - 5'000 printed lines per paper roll
 - Control and switch off of the printer (PRINTER OFF) in case of discharged batteries
- **Time base**
 - Professional thermo-compensated 8 MHz Quartz
 - Precision better than ± 0.5 ppm at + 20° C (± 0.0018 sec./h)
 - Precision better than ± 2.5 ppm between - 30° C and + 75° C
- **Operating temperature**
 - From - 20° C to + 50° C
 - For temperatures under - 5° C, we advise the use of an external battery
- **Internal power supply**
 - 5 alkaline 1.5 V batteries (UM3 - Energizer LR6)



- **External power supply**
 - 12 V DC by adaptor (HL 520-1) or 12 V battery
- **Autonomy**
 - 8'000 printed times with one battery set
- **Case**
 - Very resistant anthracite mineralized ABS
 - "High-tech" design and shape by TAG Heuer
- **Dimensions / Weight**
 - 247 x 107 x 63 mm
 - CP 520 without transport case : 750 gr.
 - CP 520 with transport case : 1'200 gr.
 - Delivered with batteries and one paper roll



CP 520

CHRONOPRINTER 520

Performances, precision, reliability and simplicity are the strong points of this new device proposed at a price which will be able to convince you.

precision



► Timing modes

- The **NET TIME** mode allows for automatic or manual competitor numbering, both at start and finish.

Entry or modification of a competitor No can be done after his crossing thanks to the **RECALL** function (recall of times).

Various rankings can be called up at any time (1 run or addition of any 2 runs).

- The **REAL TIME** mode offers 3 other choices :

SEQUENTIAL for sequential impulse counting with **SPLIT / SPLIT-LAP / LAP / START-STOP-RESTART / RESET** functions.

START FINISH for start, finish and running times with competitor No's and rankings.

LAP TIME for lap times with competitor No's and rankings or listings.

► Computer output (Computer - RS 232)

- For **ON LINE** timing with a computer or **OFF LINE** for downloading the memory of one or several CP 520.

This output also allows to upgrade the device, ensuring its evolution.

- **DISPLAY** to drive our TAG Heuer displays (HL960 / HL965 / HL990) and various other models.

► Printer

- The CP 520 uses a top technology continuous thermal printer.
- Printing quality is excellent down to temperatures lower than -20°C .
- The timing sleeve can be protected from heavy weather conditions.
- Changing of the large paper roll is particularly easy !

► Keyboard

- Provided with well-spaced "silicone" quality keys and laid out in calculator format so to avoid erroneous manipulations.
- Certain keys allow for fast corrections in case of timing errors.

► Menu (some examples)

- Timing Mode and choice of the precision to 1/1'000th sec.
- Ranking of one run or of two added runs.
- Creation of a new run.
- Download of updates via Internet (**UPGRADE**).
- Change of the parameters (blocking time of the inputs, display delay, LCD contrast, etc).
- Insert times.
- Printer activated or not.
- Individual or group starts.
- **POWER OFF** with saving of all timing information, even without batteries.





HL 640 CHRONOSPLIT

PERSONAL WIRELESS TIMING SYSTEM

TECHNICAL SPECIFICATIONS

CHRONOSPLIT HL 640

- Memory for 1000 times at 1,1000th sec. Display resolution to 1/100ths sec. Up to 99 Sessions in Memory
- Quartz Precision: +/- 5 ppm
- Overall system precision better than +/- 0,5 msec.
- Internal Battery Power AAA 1200mAh
- Battery Power Consumption in Auto Split / Auto Lap modes : 2 mA
- Battery Power consumption in Standby mode : 20 µA
- Autonomy : about 100 days at 5 hours of timing per day.
- Operating temperature range : -15°C à + 60°C
- « Low Temperature » LCD display
- Battery state indicator
- Radio Impulse Indicator
- Download data Interface Indicator
- Choice of 4 different « Teams »
- Adjustable Individual watch ID number
- Sealed ABS red case
- Dimensions : 90 x 60 x 19mm
- Weight: 87 grams

PC INTERFACE HL 640-2

- This accessory allows stored data in each CHRONOSPLIT to be sent to a PC. The PC interface connects automatically to the CHRONOSPLIT by radio signals and then to the PC via USB connection.
- TAG Heuer's timing analysis software provides a handy and effective tool for performance study of all downloaded data.
- Connection to PC's USB port (Windows 98 /NT/2000 /XP)
- RF timing data transmission frequency: 868.992MHz
- Range : about 3 meters

Data Transmission Software provided by TAG Heuer

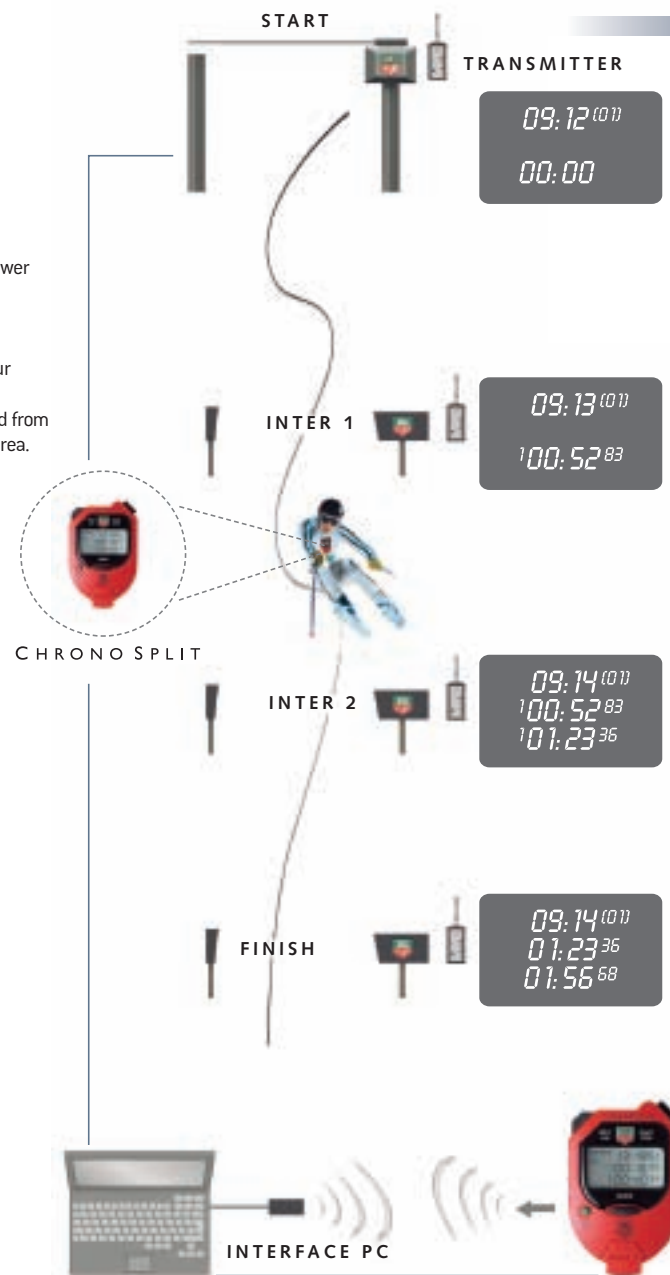
TRANSMITTER HL 640-1

- This low power transmitter sends the timing signals to the CHRONOSPLIT as it passes each timing point. The low-power transmitter does not require any special radio licensing in most countries.
- Each Transmitter is set to be used at the timing locations of your racecourse: Start, Intermediates or Finish. This allows the CHRONOSPLIT system to work automatically and to be protected from unwanted signals triggered by other competitors in the same area.

- 1 input for timing sensor connection via « banana plugs ».
- Normally open working contact.
- 4 programmable channel functions : (start / intermediates / finish)
- Choice of up to 4 team codes
- Battery State Test (BATT)
- Radio Transmission Test (TEST)
- Operating Frequency: ISM band, 868,992 MHz
- Transmitter power 4 mW, Antenna 1/4 wave. Imp. 50 Ohms
- Range : Up to 50m and better than 15m at 130 km/h
- Internal Lithium Battery
- Battery autonomy of about 3 years
- Water resistant Aluminum enclosure
- Dimensions : 150 x 82 x 32mm
- Weight: 380 grams

AVAILABILITY

- As Individual Components
- Kit HL 640-4 in case:
 - 4 CHRONOSPLIT
 - 2 Transmitters with antennas
 - 1 USB Interface with cable and software
 - 1 Operating Instructions
- Kit HL 640-8 in case:
 - 8 CHRONOSPLIT
 - 4 Transmitters with Antennas
 - 1 USB interface with cable and software
 - 1 Operating Instructions





HL 640 CHRONOSPLIT

Put precision and innovation
in your pocket

wireless

PERSONAL WIRELESS TIMING SYSTEM

With the new CHRONOSPLIT, now elite athletes and those who aspire to higher levels will benefit from TAG Heuer's legendary experience and professionalism that guarantees the dependable and precise measurement of performance.

- The CHRONOSPLIT is a new concept timer. It allows automated wireless timing from remote sensors with memorization of up to 1000 times at 1/1000th sec. precision in up to 99 different timing sessions or runs.
- The CHRONOSPLIT automatically receives wireless radio timing signals from our new radio transmitters that are placed at the Start, Intermediate and Finish locations. These transmitters are driven by timing impulses generated by start gates, photocells or any other timing sensor.
- The Start, an unlimited number of intermediate or split times, and the Finish are all differentiated and sequentially recorded as separate sessions on the CHRONOSPLIT. These times can be recalled for immediate review on the integrated LCD screen or downloaded via a wireless/USB interface to a PC for further analysis.
- The internal electronics module of the CHRONOSPLIT is a masterwork of electronics miniaturization. Using enhanced digital transmission protocols and algorithms the result is a remarkable degree of dependability and RF sensing capability for use in the most demanding of sports conditions.
- Each CHRONOSPLIT is carried by the athlete and can be worn around the neck, on a belt, in a pocket or even affixed on or in a vehicle. Regardless of how it is carried or installed it is always effective. Low operating consumption translates into months of use without battery replacement.
- A major system advantage is the dependability of the timing radio transmissions, particularly in difficult or undulating terrain or where great distances pose insurmountable problems for typical radio timing systems. Using a CHRONOSPLIT system is remarkably simple for all involved.
- The CHRONOSPLIT is also a fully functional manual stopwatch that can be used without the radio transmitters. It has all of the typical timing functions you would expect to find in a high-quality sports stopwatch.

TIMING MODES

- **AUTO SPLIT:** Automatic time measurement by wireless radio impulses. Start from zero, intermediate times and finish with sequential numbering. Each start creates a new timing session which is memorized with date and time-of-day.



- **AUTO LAP:** Automatic wireless lap timing with up to four intermediates.
- **MAN SPLIT:** Normal manual timing in split mode with sequential session numbering and running time in display. START / SPLIT / STOP / RESTART functions or RESET to zero for a new session.
- **MAN LAP:** Normal manual timing in lap mode with sequential numbering and running time in display. START / LAP / STOP / RESTART functions or RESET to zero for a new session.
- **PC:** Automated download of memorized times from the CHRONOSPLIT to a PC via the HL 640-2 USB interface. The data transfer software is supplied.





HL 2-32

DOUBLE PHOTOCELL



For maximum reliability

- This photocell system uses two physically separate but electronically synchronized photocell transmitters and two independent receivers that are placed on opposite sides of the timing line.
- If necessary, each pair (transmitter/receiver) can be used separately in different timing locations.
- Timing line width up to 40 meters in "LOW" power position and up to 80 meters in "HIGH" power position.
- The receivers feature the use of a special additional lens that helps in the precise alignment of the cells from the opposite side of the timing line.

Recommended use

- For all professional timing applications where two independent photocell systems must be installed (primary and back up). These photocells meet all requirements of the International Ski Federation (FIS).
- The photocells must be placed within close vertical proximity to each other when used at the same timing line in order to avoid large differences in triggering times.
- For added timing system dependability, use our HL 553 impulse distributor and optoisolator.

HL 4 / HL 4-3

- Supports recommended for photocells when tripods cannot be used (winter sports). With adjustable aluminum mounting ball.



HL 5

- Quality tripod delivered with adjustable mounting ball.

HL 2-31/32/35

TECHNICAL SPECIFICATIONS PHOTOCELLS

- **General**
 - Infrared type photocell using a coded modulated frequency of 32.7 kHz. Triggering detection by frequency discrimination
- **Operating type and Distance limits**
 - HL 2-31 : Reflector type, up to 20 Meters
 - HL 2-32 : Double Photocel, Transmitter / Receiver Type, up to 80 Meters
 - HL 2-35 : Transmitter / Receiver Type, up to 80 Meters
- **Output Trigger**
 - Infra-red photocell with internal or external power supply and 2 function modes:
 - IMPULSE mode with adjustment of duration of the output impulse (standard mode).

- DIRECT mode with timing impulse which correspond to the breaking of the Infra-Red beam. This mode makes possible the control of the good functioning and alignment of the photocells. This mode exists since up to 7000 serial number (HL 2-31).
- **Reaction Time**
 - Less than 0.5 ms
- **Precision**
 - +/- 0,02 ms for repetitive impulses
- **Internal Power**
 - Three alkaline batteries type 1.5V (UM3) « Energizer LR6 » for each (Tx / Rx)
- **External Power**
 - For the HL 2-31 and HL 2-35, 6-12 VDC via 4-pole bayonet type jack.
- **Autonomy at 20° C**
 - About 100 hours

- **Operating Temperature**
 - - 20° C to + 70° C
- **Indicators**
 - LED diodes for batteries and alignment.
- **Mounting**
 - Fitted for standard photographic 1/4 " tripod or TAG Heuer mounting brackets HL 4 / HL 4-3
- **Dimensions**
 - Hot-lacquered black aluminium case 150 x 80 x 40 mm
- **Weight**
 - HL 2-31, 500 gr. with reflector
 - HL 2-32, 1'700 gr. complete set
 - HL 2-35, 800 gr. complete set
- All photocell sets are delivered in their own transport case



HL 2-31

PHOTOCELL WITH REFLECTOR



- Infrared reflector-type photocell with an exceptional quality/price ratio.
- For timing line widths of up to 20 meters.
- Internal battery power as well as a plug for external power input of 6-12 V DC. If the external power fails, the batteries assure proper operation of the photocell.
- Impulse output length adjustment.
- Two indicator lamps (LED) provide information on battery condition and photocell signal alignment.
- Installation of standard photographic tripods (1/4" mount) or on HL 4 mounting brackets.

Recommended use

- This photocell satisfies the highest standards of timing accuracy for the majority of sports applications.
- In all cases, photocells that use reflector technology for timing sensing should not be employed whenever a risk of reflection from the object being timed exists.

reliability

TAG Heuer's extensive experience in the development of infrared photocells has led to the production of highly reliable and precise instruments that are very stable in adverse conditions



HL 2-35

PHOTOCELL WITH SEPARATED TRANSMITTER AND RECEIVER

- For use at timing lines with widths exceeding 40 meters in "LOW" power position and over 80 meters in "HIGH" power position.
- An indicator lamp visible through a separate lens in the receiver element allows one person to easily adjust the alignment from the opposite side of the timing line.

Recommended use

- For professional timekeeping applications where timing line width exceeds 20 meters.



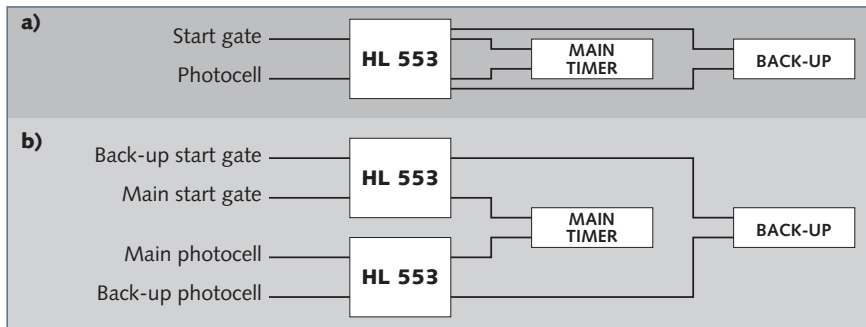


HL 553

IMPULSE DISTRIBUTOR & OPTOCOUPLER

For optimal reliability

- We recommend the use of optocoupled impulse distributors for the following reasons
 - Controls false triggering due to electronic interference on your timing connection wires.
 - Completely isolates your timing electronics to ensure that systems operating in parallel (back up) are not linked in any way to each other.
- The HL 553 Impulse Distributor houses two optocoupled control circuits that are totally separate in terms of electronic parts and power supplies. Each circuit has one input that triggers two isolated outputs.
- Set-up example (back up) :

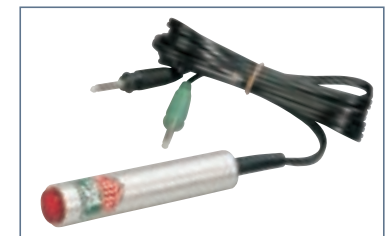


Your Guarantee of Success



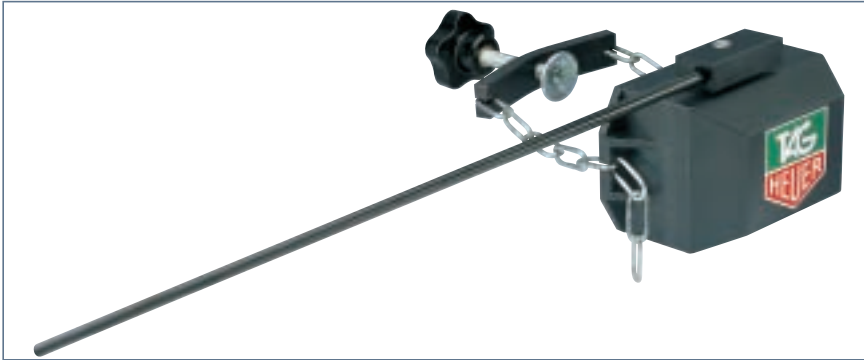
HL 18 MANUAL CONTACTOR

- Manual timing (hand-held) button. Comes in an anodized aluminum tube. High-quality working contact. Connection cable with banana jacks.





HL 7-1 START GATE



- In accordance with FIS requirements, the HL 7-1 Start Gate features two isolated timing contacts.
- While closed, the start gate is prevented from accidental opening caused by minor knocks and bumps through the use of a blocking feature.
- Braking action built into the wand mechanism camshaft is very effective at eliminating unwanted rebound action after opening.
- The new wand is a very rigid and thus highly accurate but durable product. It is installed by inserting it through the rear of the shaft holder and is held in place by a spring-mounted ball bearing.

HL 7-3 AUTOMATIC RETURN START GATE

- Similar to the HL 7-1, the HL 7-3 automatic return start gate uses an internal spring to bring the start gate wand back into the start position after each opening.
- Useful in training sessions or for automated racecourses, it is not allowed for FIS race use.

A professional accessory
result of our experience



HL 551 VOICE COMMUNICATION SYSTEM

- Used in conjunction with the same pair of wires that carries timing impulses, this system provides voice communication over long distances.
- High quality headsets are connected to adaptors and offer excellent two-way communications signal quality.
- Sound volume is adjustable

Recommended use

- To ensure the best possible communications signal quality, it may sometimes be necessary to isolate your timing and communications lines from sources of electrical noise and disturbance that can be caused by electric motors or bad effects from power supplies.
- Most of these problems can be remedied through the use of our HL 553 Impulse Distributor and Optocoupler.





Vodafone

Santander

Mobil 1
Mercedes-Benz

BOSS

Henkel

vodafone

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HL 670

RADIO TRANSMISSION

New product in 2008





HL 610

RADIO IMPULSE TRANSMISSION SYSTEM

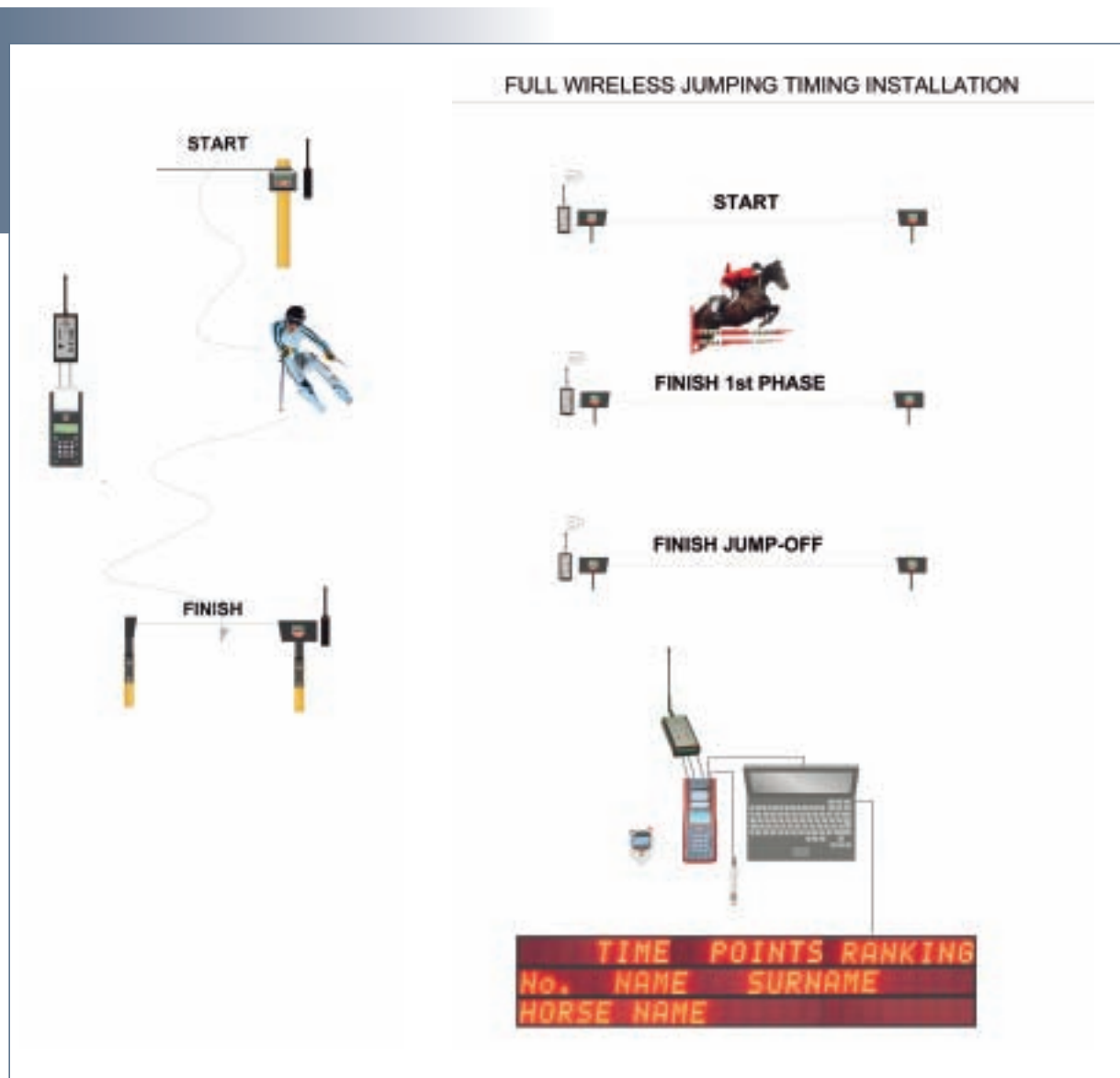
TECHNICAL SPECIFICATIONS

HL 610 Transmitter

- Very long battery life (up to 3 years of autonomy)
- 1 Input for timing impulses (banana plug for start gate, photocell or manual contactor)
- Programmable channels (1 to 4) to correspond with the Receiver's Outputs (1 to 4)
- Programmable team codes (1 to 4)
- 4 LEDs for battery condition, channel and team programming
- Acoustic signal for each transmitted timing impulse
- CHECK key to check the state of battery
- TEST key for transmission / reception test
- Water-resistant aluminium case
- Dimensions: 100 x 57 x 32 mm
- Weight: 175 g

HL 610 Receiver

- Rechargeable batteries (more than 24 hours of autonomy at 20°C)
- 4 opto-isolated Outputs (banana plugs)
- Programmable team codes (1 to 4)
- 4 LEDs to indicate the relative radio signal strength
- 4 LEDs to identify channel and team programming
- Acoustic signal for each received timing impulse
- Fixed repetitive delay of 100 ms to the timer, with accuracy better than 1/10'000 sec.
- ON / OFF power button
- 1 LED for battery state
- Water-resistant aluminium case
- Dimensions: 150 x 82 x 32 mm
- Weight 380 gr.
- The Receiver may be disturbed by other transmission systems





HL 610

RADIO IMPULSE TRANSMISSION SYSTEM

robust

TAG Heuer presents a revolutionary wireless transmission system at a very affordable price.

This new radio impulse transmission system offers decisive advantages for all timekeepers involved with training, testing or parallel (dual) events.

This innovative system HL 610 allows up to 4 simultaneous transmissions of timing impulses with only one receiver connected to the timer !



Supplied along with a carrying case able to contain:

- 1 to 4 Transmitters
- 1 Receiver
- 1 to 5 Antennas
- 1 Charger
- 1 Operating Instructions



MAIN FEATURES

- Low power radio transmission (10mW) for use without license (ISM band)
- Range of up to 0,6 mile line-of-site. Depending on the topography, the range can be reduced. However the HL610 will still fulfill the requirements of the above-mentioned applications.
- Up to 4 "Teams" are able to work in the same area without disturbing each other. Each Receiver can be programmed and can receive the impulse of 4 Transmitters (16 Transmitters with 4 Receivers)





HL 650 SPLITMASTER

TECHNICAL SPECIFICATIONS

Time Base

Timing device of which each unit integrates a thermocompensated time base and a radio module programmable at the time-of-day or automatically by GPS. Sequential numbering of times from 1 to 9'999.

Memory

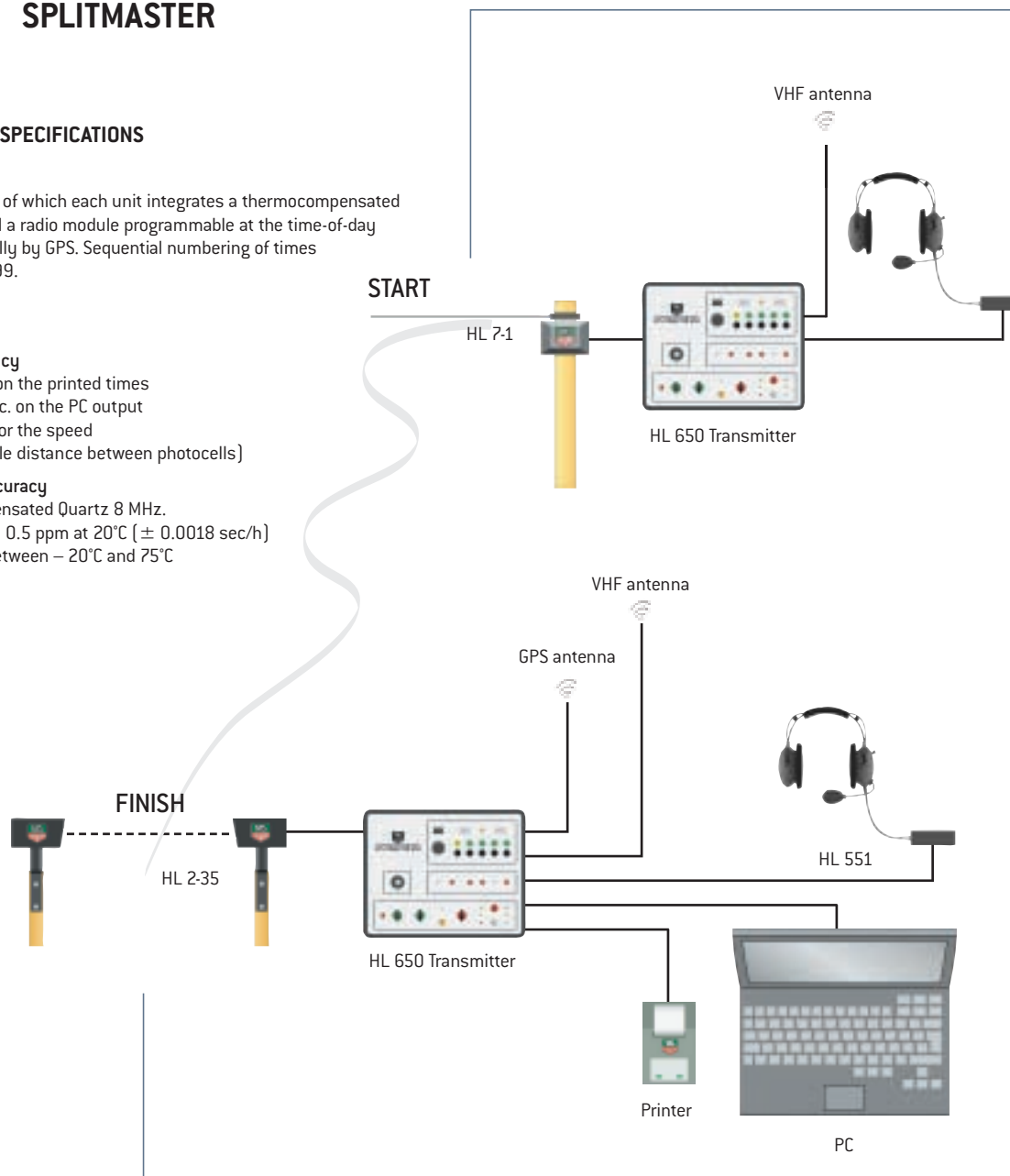
1980 times.

Timing Accuracy

1/1'000 sec. on the printed times
1/100'000 sec. on the PC output
1/100 Km/h for the speed
(programmable distance between photocells)

Time Base Accuracy

Thermocompensated Quartz 8 MHz.
Better than ± 0.5 ppm at 20°C (± 0.0018 sec/h)
 $\pm 2,5$ ppm between -20°C and 75°C



Radio Transmission Accuracy

Fixed delay of 600 ms for the impulse transmission with precision better than $\pm 5/100'$ 000 sec.
The finish impulse can be delayed of the same length to guarantee the real net time. The transmission of timing data is carried out in real time.

Mean Operating Frequencies

VHF programmable from 146 to 174 MHz
(exclusively by your TAG Heuer agent)

Transmission Mode

Two-way (Half-duplex)

Programmable Power

At 2.5 W or 5 W (exclusively by your TAG Heuer agent)

Range

Depends on the topographic configuration and of the antenna type and positioning. Better behavior than a traditional radio transmission system.

Power

Internal: 12 V rechargeable
External: 12 ÷ 18 V DC

Autonomy

24 hours with 1 impulse or data transmission every minute (2.5W).
More than 10 hours at -20° C

Operating Temperature

From -20°C to +60°C

Weight

Each unit 4.9 Kg

Dimensions

280 x 240 x 80 mm

Complete set includes

- 1 Transmitter
- 1 Receiver
- 1 Charger
- 2 Antennas VHF (Type FSP 2/h)
- 2 Antenna connection cables (5 m)
- 1 GPS antenna with connection cable

Options

- Additional Transmitter (s) / Charger (s)
- Headsets and adaptors for voice communication (HL 650-V)
- External fixation for the transmitter
- Professional antenna (s)



HL 650 SPLITMASTER

SECURITY WITH WIRELESS TIMING SYSTEM

TAG Heuer's SPLITMASTER is a revolutionary timing device that combines the precision of GPS technology and the proven reliability of thermo-compensated time bases linked by a powerful radio module. These unique features ensure the transmission and reception of your timing data.

- The Receiver acts as the master time base for the overall system using its internal timer. The Transmitter time base is constantly monitored and updated through radio communication when the Transmitter sends time data to the Receiver.
- The Receiver unit is also equipped with a GPS satellite module which allows the automatic setting of the system to the exact time-of-day and further monitors the working precision of the unit and the overall system during the timing session. The perfect synchronization of the SPLITMASTER system is guaranteed by the GPS time base of the Receiver unit which in turn monitors the time base of the Transmitter [s] via VHF radio connection.
- The Transmitter unit sends real start times in time-of-day by radio to the Receiver whenever the corresponding timing impulses are generated at the start.
- The Receiver collects that start data and then sends all timing information (the start and finish times) directly to a PC for processing. Triggering impulses which can drive a secondary timing device (back up system) are also generated and available on separate outputs.
- The SPLITMASTER memorizes all timing information on the Transmitter and on the Receiver. In case of radio transmission difficulties or GPS reception failure, no times generated can be lost ! All timing data can be printed or downloaded to a PC at a later time if necessary.
- The SPLITMASTER also allows for radio voice communication between start and finish. This communication is carried out by our TAG Heuer professional headsets with a Push-to-Talk button.
- Last but not least, the Transmitter can be used as a radio data transmitter and connected to a numeric keyboard for competitor number entry. It can also transmit the memory of a timing device or drive remotely installed displays.



OTHER ADVANTAGES OF THE SPLITMASTER:

- Visual and audio indicators allow you to verify the transmitted and received timing impulses or data.
- Two-way quality control of the radio transmission, with the possibility of re-transmitting timing information that is not acknowledged.
- Each unit can be used as a transmitter or as a receiver (except with GPS use)
- All useful timing parameters are manually programmable (without using a PC).
- Setting of time of day with synchronization of the whole system, use of the GPS with choice of the time zones, etc.
- The transmitter can be used to measure speed and an intermediate time. The distance between the photocells is easily selectable.
- The "VHF" frequency and the power are programmable by your TAG Heuer official agent





HL 930 START CLOCK

TECHNICAL SPECIFICATIONS

➤ General

- The Start Clock HL 930 is world-renowned
- 3 separate stepping motors make up this sophisticated movement to control the hours, minutes and seconds hands.
- An integrated GPS receiver ensures the exact synchronization to the official time-of-day at your location.
- In addition to the analogue movement, two seven-segment numeric indicators visually countdown the remaining seconds to each start interval.
- Further, another indicator comprised of a rotating red, green and yellow disk provides information on start validity.
- An acoustic signal rounds out the battery of indicators that serve this start clock

➤ Start Intervals

- From 10 seconds to 11 min 55 sec in 5 second increments

➤ Time Setting

- From internal GPS or manually

➤ Time Base

- 16 MHz Thermocompensated Quartz Crystal
- +/- 0,5 ppm at 20° C
- +/- 2,5 ppm from -30° to 75° C



➤ Inputs

- GPS Antenna Connector
- Timing Impulses
- SYNCRHO and TOP MINUTE signal synchronize other Timing Devices [CP520]
- Remote Control

➤ Outputs

- 1 RS 232 Data output /9'600 bds for Printer or PC (different settings of the Start Clock)
- 25 Pin Connector with multiple outputs of timing signals for lights, additional audio systems or other visual indicators

➤ Temperature Range

- 25° C to + 75° C (without heating)

➤ Power Supply

- Internal : 12V DC rechargeable battery
- External : 12-18V DC source

➤ Autonomy

- 18 hours at 20° C
- 8 hours at - 20° C

➤ Housing

- Hot lacquered black aluminum case
- Delivered with its transport case, charger, GPS antenna and setting software.

➤ Dimensions/Weight

- 6 kg alone (11,5 kg with transport case)
- 320 x 500 x 115 mm
- Clock face diameter : 270 mm
- digits height : 110 mm



The connections are well protected under the Start Clock

A lateral door gives easy access to the Start Clock settings





HL 930 START CLOCK

- The operation of the start clock is based on a microprocessor that checks the exact position and alignment of the clock hands every minute to ensure a total precision and reliability of the Official Time.
- Digital “Count-down” display for every start accompanied with acoustic “beeps” and the color changes of a rotating disk that indicates valid start periods (red, green and yellow available depending on sport regulations).
- Complete control by the operator for start interval changes during the competition.
- START / STOP function for start processes.
- An Input for timing signals (from start gates or photocells) allows the HL 930 to take and memorize every start time in sequential order.
- An RS 232 serial data port can be used to connect a dedicated printer (such as the PTB Printer) to print in hard copy all recorded start times as they happen. The differences between the start times and the ideal times are also printed.
- The RS 232 data port also serves as a way to control the function parameters of the HL 930 start clock.
- A supplementary output provides control signals for signal lights or additional loud speaker.
- Rechargeable batteries assure excellent operational duration down to – 25° C.
- Automated Time Setting is assured by a built-in time management system where the accuracy is controlled by GPS or other (DCF 77) synchronization signals.
- Option: remote Control.

There are many new innovative features on this Start Clock that uses a special 3-motor analogue movement developed entirely by TAG Heuer





HL 960

6 DIGITS DISPLAY



- The displays are easy to transport and install.
- Electronic control elements and circuits are likewise easily accessible and protected against weathering effects and shock damage.
- An internal clock in the displays allows for the autonomous use of the displays as a stand-alone device to display time-of-day or for use with any of the many automated functions as required for pay-to-race installations.
- A remote control is available as an option.
- Many HL 960 displays can be linked together in series or in parallel to display a variety of timing and other numeric information.

HL 990

9 DIGITS DISPLAY



- Both the HL 960 and HL 990 display boards use 7-segment bi-stable element technology that provide excellent visibility and low current consumption.
- The displays are housed in a simple and compact thermal lacquered aluminium case that is very rugged.
- The Plexiglas faceplate is removable making access to and positioning of the digits and the spacing thereof very easy.
- These displays are compatible with all TAG Heuer timing systems and can be driven directly by our PC software products.

HL 960/990

DISPLAY

- **General**
 - HL 960 & 990 digital display boards respond to many application demands. They are compact and solid units that are easily transportable. They can be used as a stand-alone unit or chained together in configurations of up to 10 boards
- **Compatibility**
 - With all TAG Heuer timing devices and accessories
 - Via our timing softwares
 - Via PC or RS 232
- **Configuration**
 - Different operating programs are user selectable with a button
- **Time Base**
 - Quartz oscillator for use as a stand-alone clock
- **Data Communication**
 - RS 232 at 9'600 bds for all types of data to be displayed
- **Inputs**
 - START and STOP for timing impulses
 - SYNCHRONIZATION
 - Remote Control [optional]
- **Outputs**
 - RS 232 connection to other displays
- **Models**
 - All with 15 cm high digits
 - HL 960 6 digits
 - HL 990 9 digits
 - Models with 25 cm high digits are available on request
- **Temperature Range**
 - -25° C to +70° C
- **Power Supply**
 - External 12V DC
 - Internal battery available as an option
- **Construction**
 - Hot lacquered black aluminum case
- **Dimensions/Weight**
 - 6 digits : 9,5 kg / 1'000 x 230 x 120 mm
 - 9 digits : 15 kg / 1'500 x 230 x 120 mm



TIMING AND DATA PROCESSING SOFTWARE

Download our timing software:
www.tagheuer-timing.com

The modern philosophy that links a timing device to a computer has allowed TAG Heuer to develop particularly successful timing softwares. The timing is undertaken on a PC that has flexible working area clearly displaying all relevant information. The timing device with integrated printer is the basis of official time

TAG Heuer offers the most effective system on the market with a very competitive price, due to the FREE SOFTWARE!

- **MSPORT PRO** (Multi-Sport) is universal multi-sport software allowing the management, processing and printing of sport results of virtually any type of competition. User configurable for mass, wave or single starts, the **MSPORT PRO** solution will make your event a success, regardless of what sport or activity you are timing.
- **SKI PRO** is program that has been developed particularly for club, national and international ski racing. Complete race management for alpine ski races with FIS / FFS / ÖSV recognition and even racing for "handicap" events. It also encompasses Cross Country, Biathlon, FreeStyle and Nordic Combined. It can be used for amateur races or mass participation events.

- **JUMPING PRO** is a program for the management of equestrian events (jumping). Entry of riders and horses, start lists, timing and printing of official results. **JUMPING PRO** respects the rules of the FEI (International Equestrian Federation).
- **DISPLAY PRO** is a program to enhance software proposed by TAG Heuer. This software will display on a second screen the race results and other user selectable information.
- **CIRCUIT PRO** is an advanced lap and race management tool for the PC. Time-trials and qualifying, start grid organisation, lap timing for each competitor, virtually everything you need for your race circuit is included in this very professional program.
- All of these programs are compatible with TAG Heuer devices in ON-LINE or OFF-LINE mode (downloading the memory after a race). Certain programs are compatible with a range of timing systems from other manufacturers. We offer a variety of software products that run in the 9x, NT, Vista Windows as well as other platforms :
- You can access our software range via internet: www.tagheuer-timing.com



Confrontation IRW OJ
Slalom
Official ranking

COMPETITION JURY
Y.B. SWISSOIN
CHIEF OF COMPETITION
COURT

LEADER Mue (CH)
Bühmann Peter (CH)
Ammann Serge (CH)

COURSE Les Frennes
START 25ème
FINIS 21ème
STOP 21ème

COMMISSIONERS Eugène Arlet (CH)
FOREMEN Pückiger Valentin (CH) - B. Casagrande Damiano (CH)

GATES 26
STARTING TIME 10h30

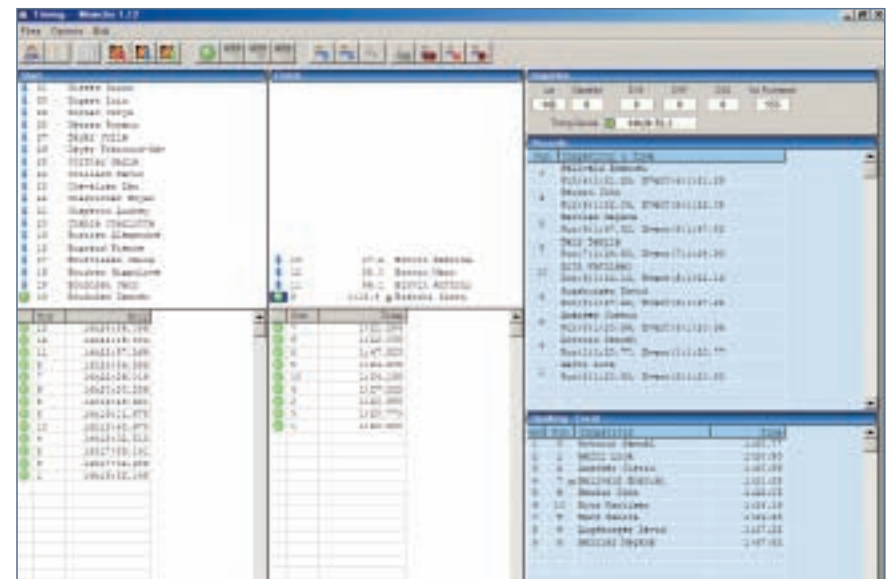
WEATHER Sunny SNOW Trace TEMPERATURE 3°C
WIND PRO - WIND FENELTY - 00.00 WOMEN FENELTY - 00.00

Rank	Pos.	Code	Nom et prénom	Année	Comité	Time	Gap	Points
1	23	318923	EGGERT SWYLER Mathieu	1992	ARS	13.95	0.00	
2	30	303007	REINCKE Marco	1994	ARS	14.35	0.30	13.12
3	20	333856	RAUBER Sébastien	1994	ARS	14.42	0.67	29.30
4	10	300166	ROSETT Mauro	1992	ARS	14.76	0.81	0.00
5	8	298692	QUILLERIN Zook	1993	ARS	14.97	1.02	8.86
6	5	208294	SMITH Finlay	1992	ARS	15.22	1.27	19.01
7	13	327174	CHAMPSON Audrey	1992	ARS	15.34	1.39	23.97
8	35	284910	BURNIER Alexandre	1992	ARS	15.41	1.46	63.84
9	17	338955	SCHULTHESS Melody	1994	GU	15.42	1.47	27.28
10	28	318845	KANGANG Michael	1992	GU	15.45	1.50	65.59
11	4	317951	CHABLE Charlotte	1994	ARS	15.86	1.71	37.20
12	2	314447	STÉLLET Océane	1992	GU	15.75	1.80	40.91
13	39	318541	JUNG Theo	1994	ARS	15.80	1.85	80.90
14	21	318924	COLLIARD Kevin	1992	ARS	15.82	1.87	81.77
15	41	327207	VUJICINSKI Nikola	1994	ARS	16.01	2.06	90.06
16	33	309034	MOESER Marc	1993	ARS	16.07	2.12	92.70
17	1	329150	WINKLES Florence	1992	GU	16.10	2.15	95.38
18	18	339463	TREMBLAY Catherine	1992	GU	16.30	2.35	63.64
19	32	316270	ZÖGLER Byron	1994	ARS	16.34	2.39	104.51
20	14	287608	WITSCHARDT Tania	1992	ARS	16.40	2.45	67.76
21	15	327175	SCHÖREBERET Sierra	1993	ARS	16.52	2.57	72.74
22	29	321561	CHVALERER Leo	1993	GU	16.67	2.72	118.94
23	31	306289	GENTET Jonathan	1992	ARS	16.72	2.77	121.13
24	44	326262	PAGE Anthony	1994	GU	16.76	2.81	122.87
25	9	338827	MOESER Eugène	1994	ARS	16.81	2.86	84.72
26	43	295882	AUGSBURGER David	1993	GU	17.13	3.18	139.05

DNS (2)
7 329033 THÜRLEER Andrea 1993 ARS
42 303007 YERSIN Alexandre 1995 ARS

DNF (2)
6 299124 PASCHÉ Gabriel 1992 GU
12 296599 OBERGIGLI Lucie 1994 ARS

08.03.2007 / Anata / Gilon Jorastan 1083 / 28.10.2007 at 10:30 / Page 12
TAG Heuer Professional Timing





HL 970

MATRIX LED DISPLAY HL 970

A dream of organizers

The new TAG Heuer matrix LED display will convince everyone considering multi-purpose uses with multiple parameter settings.

- A single HL 970 module has the ability to display extensive information.
- The combination of several HL 970 modules offers a large structure scoreboard (Up to 3 modules installed horizontally and vertically).
- The ideal dimensions and weight guarantee easy transportation and set up.
- A small external unit integrates the main electronics and the 12VDC power supply convertor. The connection is secured by a unique cable with weather resistant connectors
- The displays are addressed via a PC using our Professional TAG Heuer software.



HL 970 Display with 1 line of 8 characters



HL 970 Display with 2 lines of 16 characters

TECHNICAL SPECIFICATIONS

- **Dimensions**
1580 x 290 x 80 mm (matrix LED 96 x 16 Pixels)
- **Weight**
11 Kg without packaging (HL 970)
- **Dimensions of the electronic unit**
250 x 200 x 100 mm (able to drive 3 displays)
- **Communication**
RS 232 / RS 485 / USB / Ethernet
- **Integrated power supply (unit)**
110-220 VAC / 12Vdc
- **Power Consumption**
50 W with max. of luminosity
- **Visibility**
With 2 lines of 16 characters 110 mm high 50 metres
With 1 line of 8 characters 250 mm high 80 metres
- **Running time**
to the 1/10 of a sec.

Other information and public / sponsors messages between timing sessions



HL 980 & HL 985

ALPHANUMERIC DISPLAY

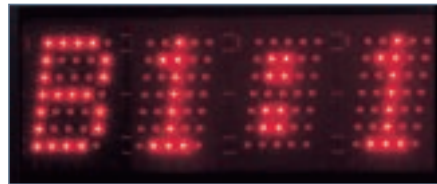
Visibility, modularity
and flexibility

The TAG Heuer Alphanumeric (LED) displays are undoubtedly at the forefront of the high quality products hierarchy.

- Excellent visibility, even in direct sunlight
- Modularity, to combine several modules, allows the display of the desired information such as running and finish time, competitors name and number, affiliation, point's penalties and even start's lists and rankings.
- Total flexibility guaranteed using our professional range of TAG Heuer software.
- Extremely competitively priced



HL 980 display with 8 digits of 14 cm high



HL 985 display with 4 digits of 28 cm high



Four HL 980 displays with competitor's time and gap compared to the best time, number and competitor's name.

TECHNICAL SPECIFICATIONS

- **Dimensions**
 - HL 980 1140 x 235 x 48 mm
 - HL 985 1140 x 470 x 48 mm
- **Character dimensions**
 - HL 980 140 mm [5 x 7 pixels]
 - HL 985 280 mm [5 x 7 pixels]
- **Weight**
 - 4.5 kg (HL 980 without packaging)
- **Communication**
 - RS232
- **Power supply**
 - 110-220 VAC or 12Vdc (HL 980-12)
- **Power Consumption**
 - 72 watts at maximum luminosity (HL 980)
- **Visibility**
 - HL 980 Up to 70 metres
 - HL 985 Up to 120 metres
- **Running time**
 - to the 1/10 of a sec.

Other information and public / sponsors messages
between timing sessions





SPEEDTRAP™

SPEED MEASUREMENT UNIT

TECHNICAL SPECIFICATIONS

- Robust construction in thermo-lacquered aluminium
- Fixation of the structure on 2 galvanized steel feet with under-plate to be screwed into a concrete base
- Digital display with 7 segment elements for speeds from 0.01 to 999.99 km/h
(Ref. HL960)
- Speed measurement by 2 infrared photocells (Ref. HL2-31);
The distance between photocells is variable (10 meters is best)
- Power supply 220 VAC / 12 VDC
- Dimensions :

Height	300 cm
Width	130 cm
Depth	29 cm
- Weight of the 2 galvanized steel feet : 104 kg
- Weight of the SPEEDTRAP™ structure: 72 kg
- Weight of the digital display: 10 kg

Reserve your SPEEDTRAP™ today so that you can install it during the summer and be ready to go next winter!

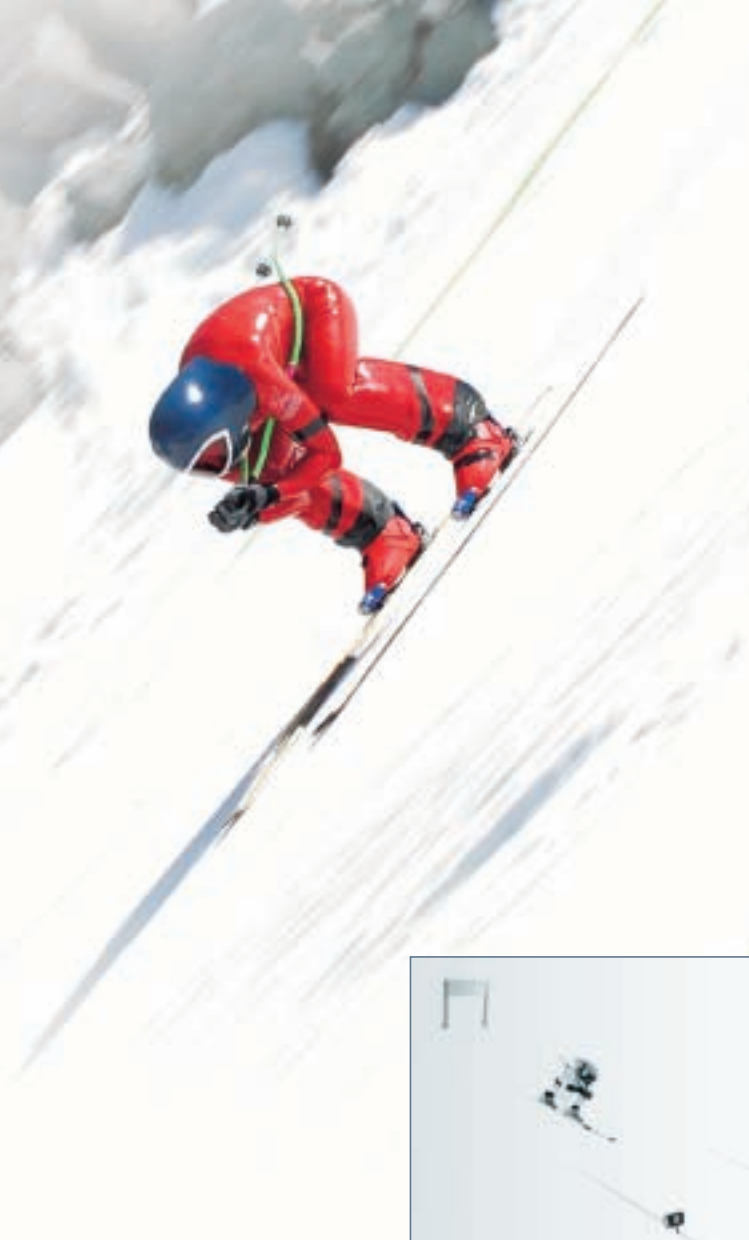


Diagram of the SPEEDTRAP™ installation



The TAG Heuer SPEEDTRAP™ is a speed measurement unit which combines design, prestige and performance.

Description of the SPEEDTRAP™ :

This avant-garde concept, born of the unique technological know-how of TAG Heuer, is above all destined to enhance the attractiveness of ski resorts.

Indeed, more and more skiers ask for new activities in order to make their day even more pleasant. The **SPEEDTRAP™** is placed along the slopes on which the speed of each skier is measured by two infrared photocells. What is more fun, among friends, than to have a competition where the loser offers the champagne!

The purpose of the **SPEEDTRAP™** is not to beat the world record at about 250 km/h but to entertain your guests! Declivities allowing to reach 60 to 80 km/h are sufficient to guarantee fun and sensations. TAG Heuer already has a large experience in these units either in Verbier, Davos, Gstaad / Schönried and Villars. Everywhere the **SPEEDTRAP™** was great success!

For this reason TAG Heuer has decided to create a well-designed and reliable product that can reinforce the entertainment aspect and convey an upscale image for winter sport resorts.

The **SPEEDTRAP™** stands out thanks to its very pure and high-tech lines. Its basic aluminium structure resists winds up to 180 km/h.

The assembly of the unit is of a surprising simplicity. Several fixing options of the frame are available in order to guarantee resistance and ecological respect of the site.

You will receive your **SPEEDTRAP™** with a detailed and illustrated user manual allowing you to easily and rapidly install the unit.







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