



**TAGHeuer**  
by  
*Chrono*Timing  
Systems*elec*

# Global Solution for Skating







# TAGHeuer

PROFESSIONAL TIMING



## **A new and unrivalled Timekeeping Total solution.**

Today, TAG Heuer more than ever confirms its status as the reference in the universe of motor racing. From Jo Siffert to Kimi Räikkönen and Lewis Hamilton, from Scuderia Ferrari to Vodafone McLaren Mercedes, from FIA F1 to Le Mans and Indy 500, TAG Heuer's historic partnerships with the greatest, finest and fastest events, teams and drivers in motor racing are unparalleled in the world of timekeeping.

TAG Heuer's involvement is stronger than ever: the reference standard for high-level sports chronographs and timing instruments since 1860 has joined forces with Chronolec, a leader in the transponder market, to push timing technology to a new extreme of precision and offer a "Timing complete products platform and solutions" to the most prestigious sports .

Partnering with Chronolec represents a bold new step in TAG Heuer's relentless pursuit of the ultimate in precision timekeeping. Both brands and expertises are a perfect fit. Chronolec provides cutting-edge transponder technology to prestigious and utterly complex events such as the 24 Hours of Le Mans and the Le Mans Series Championship. Coupled with the TAG Heuer peerless heritage — Official timekeeping instruments for the Olympic Games in the 1920s and again in the 1980's at Moscow and Lake Placid, Official Timekeeper of the Scuderia Ferrari from 1971 to 1979, Team McLaren Official Timekeeper since 1985, the F1 World Championship from 1992 to 2003 at the 1/1000th of a second, the Indy Racing League from 2004 to 2006 and the Race of Champions since 2005 at the 1/10.000th of a second — together, TAG Heuer and Chronolec are going to bring about impressive innovations in the world of timekeeping.

The TAG Heuer–Chronolec partnership agreement is the first collaboration of its kind in the world, and demonstrates the determination of two superlative timekeeping specialists to combine forces and push again the frontier of timing technology .

Thanks to its partnership with Chronolec, TAG Heuer has drawn up all its timing know-how and professionalism to produce unique timing total solutions, combining ultimate precision and unsurpassed reliability. All of them are modular and expandable and will satisfy the most demanding timekeeping requests, confirming TAG Heuer's extensive knowledge and experience in the field of highly precise time measurement for sport.

They are an invitation to the constant quest for ultimate precision.



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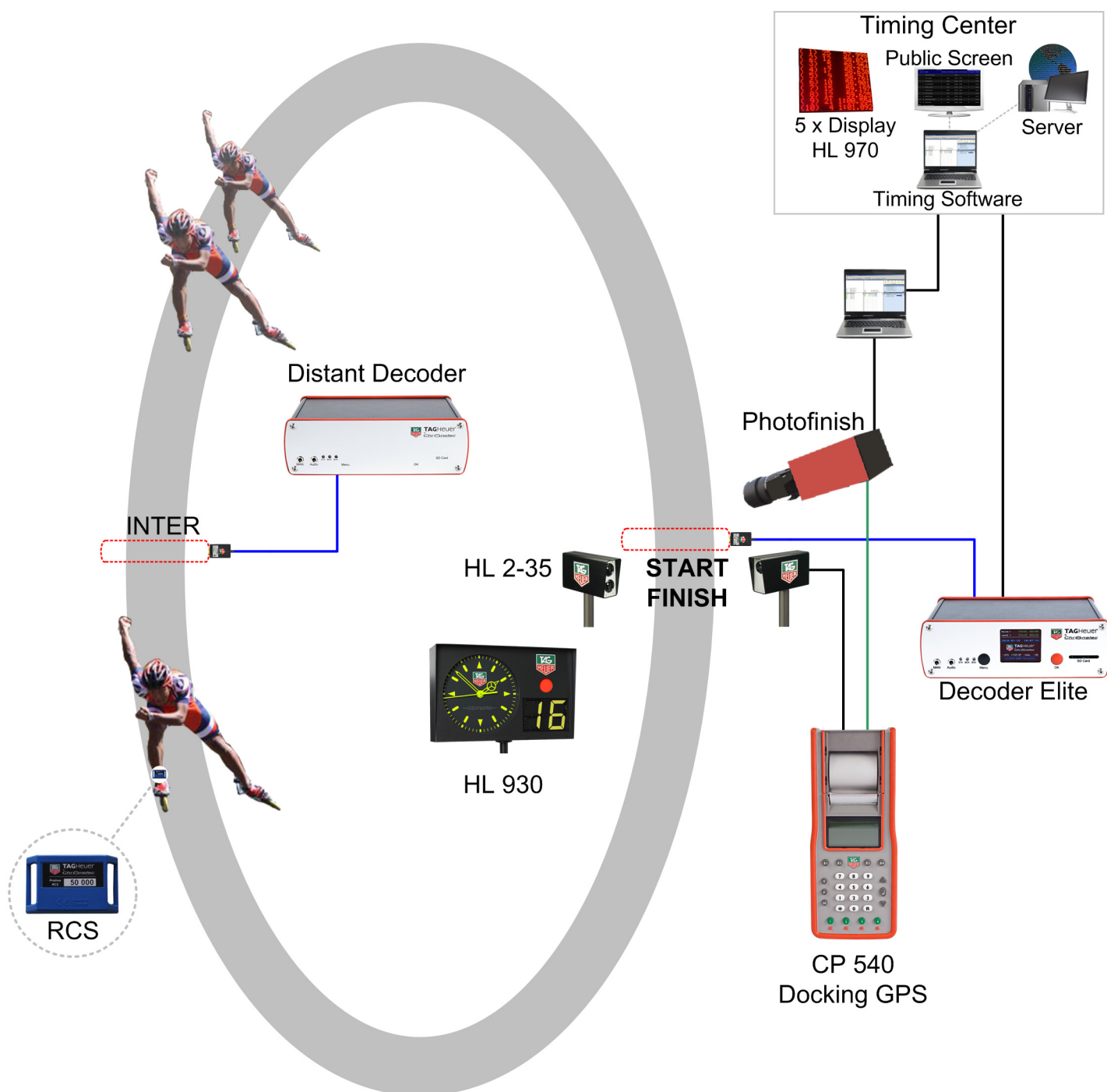




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## Roller Speed Skating Solution

- Decoder Elite
- Decoder Distant
- Transponder RCS
- Start Clock HL 930
- Chronoprinter 540
- Photocells HL 2-35
- Full Matrix Display HL 970





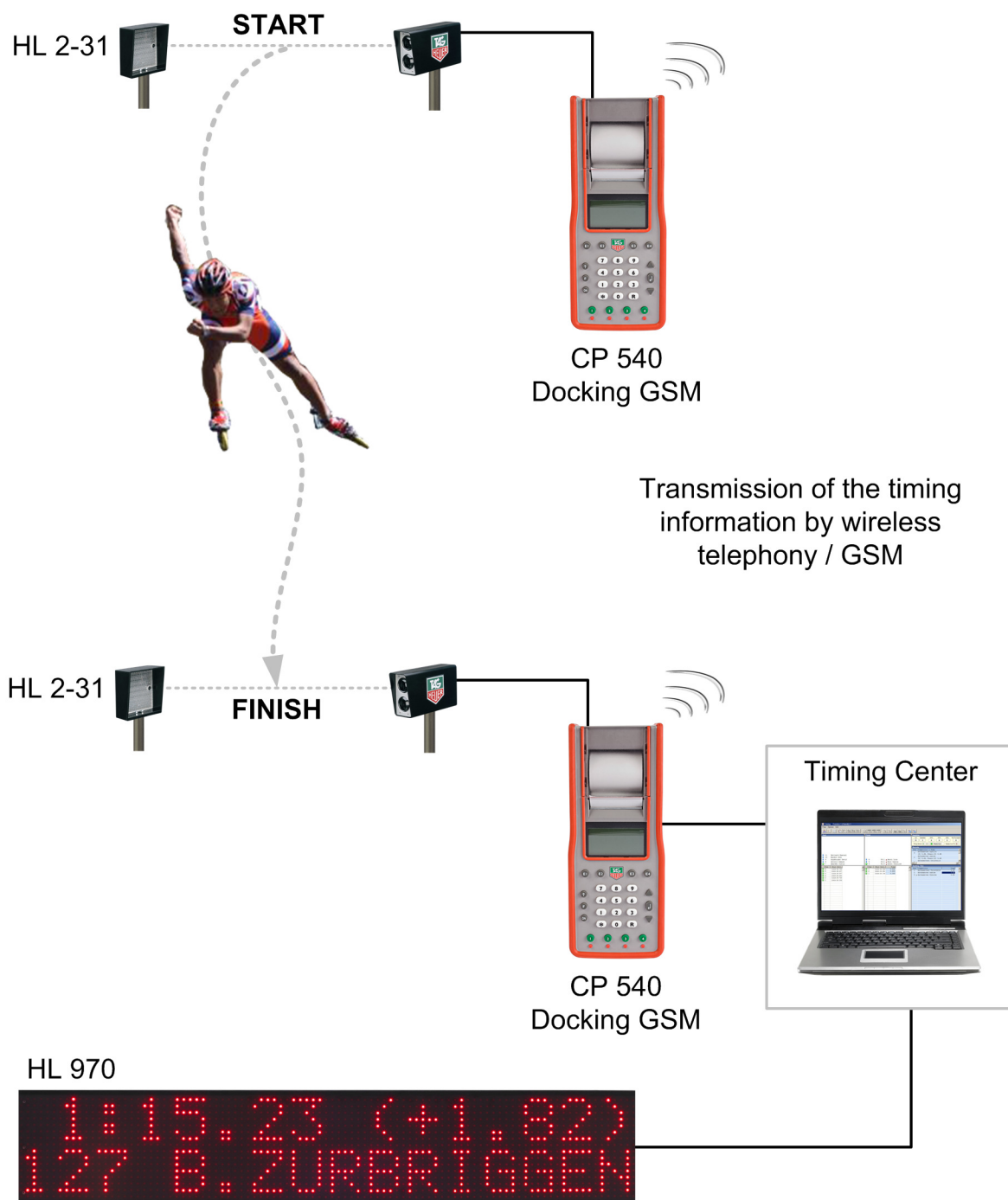


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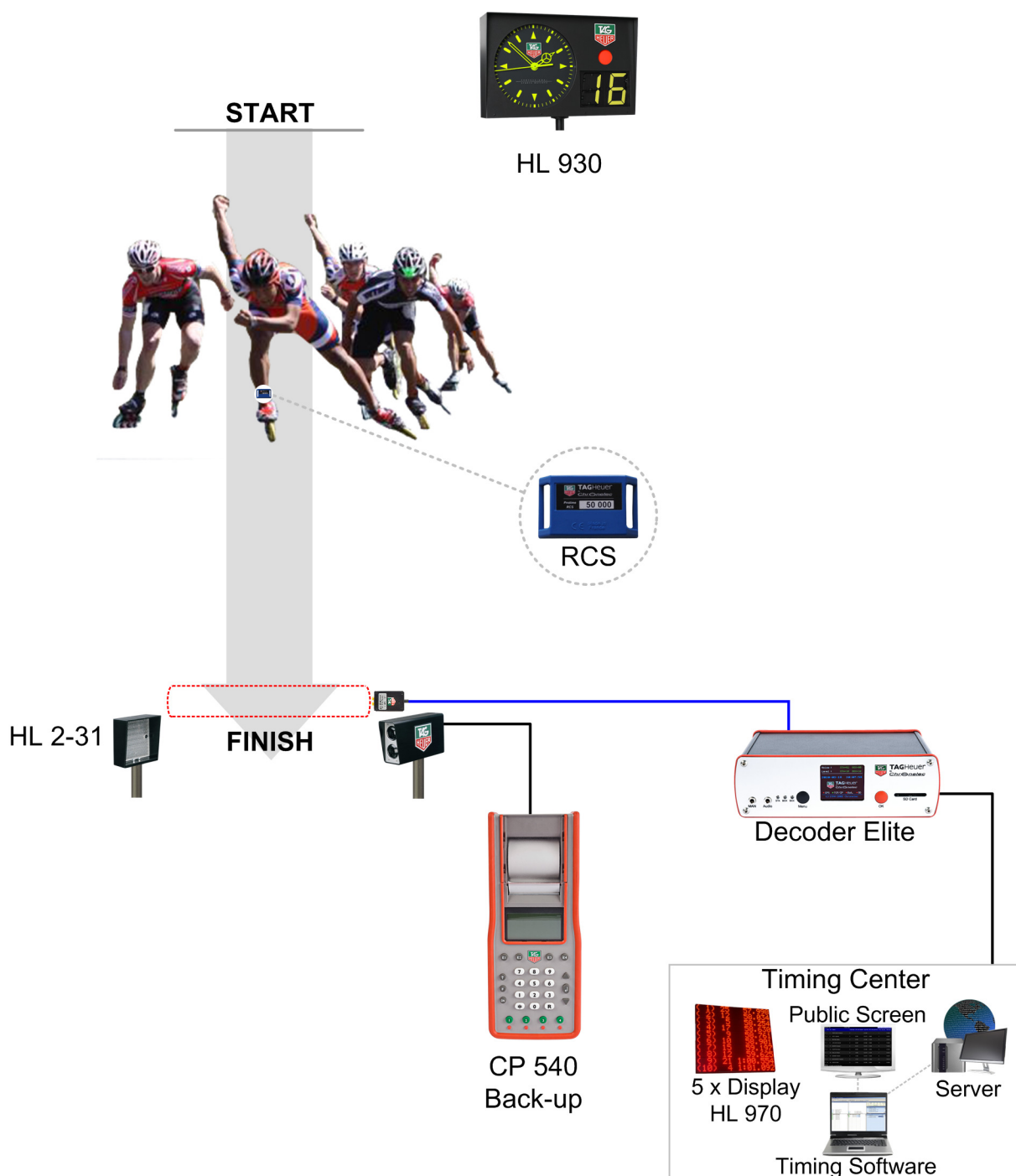
## In Line Downhill – Individual Solution

- Chronoprinter 540
- Docking station GSM
- Photocells HL 2-31
- Full Matrix Display HL 970



## In Line Downhill – Team Solution

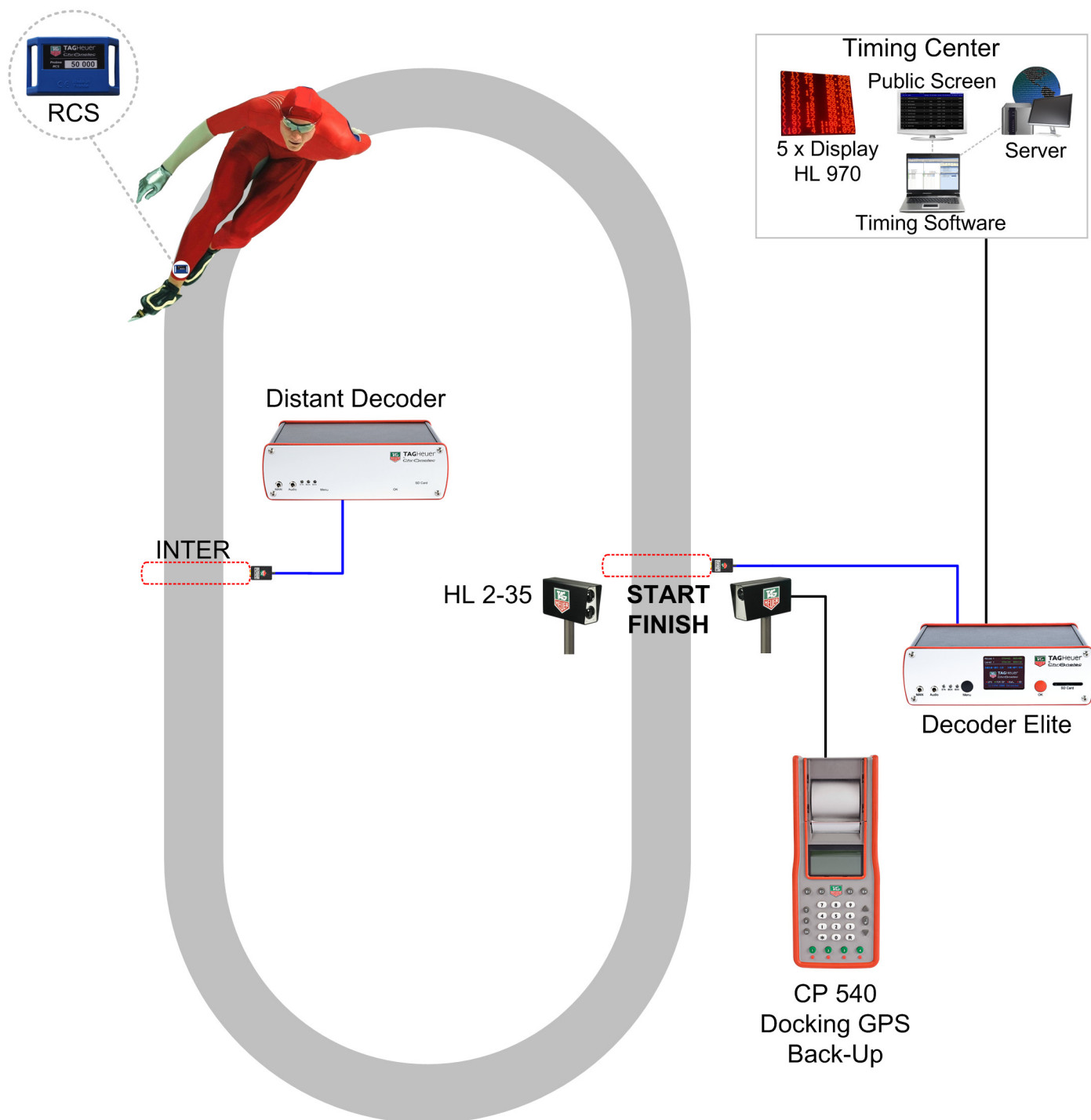
- Decoder Elite
- Transponder RCS
- Start Clock HL 930
- Chronoprinter 540
- Photocells HL 2-31
- Matrix Display HL 970





## Ice Skating Solution

- Decoder Elite
- Decoder Distant
- Transponder RCS
- Chronoprinter 540
- Photocells HL 2-35
- Full Matrix Display HL 970





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# PROTIME ELITE DECODER





# Protime Elite Decoder

- Color display
- GPS synchronization
- Resolution : 0.001 sec.
- SD Card removable memory
- Emergency power supply integrated
- Until 32 loops management

## Description

The Protime Elite decoder is especially used in races that require an accurate timing to the 1/1'000th of a second.

The decoder stores all competitor's passing's on SD card, allowing a restore in case of problems or missed passing's.

An internal battery ensures the functioning of the decoder during a power failure, while continuing to function for 2 hours.

The graphic OLED display shows useful information such as the noise level, the loop detection level, the last transponder ID. It also displays the race time or day time, which can be synchronized by GPS or by the computer.

The decoder has a TCP/IP and RS232 interface for the communication with the computer.

## Connections

- 2 loops input (track loop and pitlane loop)
- 1 photocell input
- 1 manual input (to simulate a transponder passing)
- 1 audio output (beep for each transponder passing)
- 1 AUX output (intermediate loops)
- 1 RS232 output
- 1 Ethernet output (IP address)

## Detection loop

- Maximum width of the track (passive loop) : 25 m (82 ft)
- Maximum width of the track (active loop) : 10 m (33 ft)
- Maximum length of the coaxial cable : 100 m (330 ft)

## Compatible products

- Protime ELITE Pro, ELITE, LS, RK, RCS transponders
- Active and Passive loop
- Distant decoder

**3 Year Warranty**

## Specifications

### Clock stability

Oscillator TCXO 0.5 ppm

### Power

12 VDC via adapter

### Temperature range

-20 to 55 °C (-4 to 131 °F)

### Dimensions

160 x 100 x 52 mm  
6.3 x 3.9 x 2 in

### Resolution

0.001 s

### GPS Synchronization

**SD Card (stores all passings time)**

**Intermediate loops (1 to 32)**



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# DISTANT DECODER





# Distant Decoder

- Time accuracy
- Depending on the Elite decoder
- Saves passings
- Resolution : 0.001 s
- Secure Communications Protocol

## Description

This decoder provides **intermediate times** on a circuit. The decoder can be connected with a RS485 network or a radio network.

A secured dialog enables the main decoder to receive every passings recorded by the distant decoder. Up to 32 distant decoders can be used on your circuit.

By using two loops with one distant decoder, you can measure an instantaneous passing speed. The test center of F1 BMW Miramas in France, Madras India, FFSA (French Federation of Auto Sport) has used this configuration for many years.

## Connections

- 1 loop input (finish line)
- 1 photocell input
- 1 manual input (to simulate a transponder passing)
- 1 audio output (beep for each transponder passing)
- 1 AUX output (red lights, horn)
- 1 RS485 or RS232 output

## Option

- 2 loops input (Speed Trap)
- 1 GPS synchronisation
- 1 SD Card reader

## Detection loop

- Maximum width of the track (passive loop) : 25 m (82 ft)
- Maximum width of the track (active loop) : 10 m (33 ft)
- Maximum length of the coaxial cable : 100 m (330 ft)

## Compatible products

- ELITE PRO and ELITE decoder

## Specifications

### Clock stability

Oscillator TCXO 0.5 ppm

### Power

12 VDC via adapter

### Temperature range

-20 to 55 °C (-4 to 131 °F)

### Dimensions

160 x 100 x 52 mm  
6.3 x 3.9 x 2 in

### Resolution

0.001 s

**3 Year Warranty**



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# PROTIME RCS TRANSPONDER



# Protime RCS Transponder

- Ecological – Not disposable
- Rechargeable by Chronolec
- 4 years autonomy
- The detection is done up to 120 km/h (75mph)

## Description

The Protime R.C.S Transponder is part of the new generation of transponders for non-motorized races. It is particularly recommended for cycling, roller-skating, skiing, running...

This transponder is delivered with a Lithium-ion battery. With its small dimensions, it can easily be placed on a belt, around the wrist or the leg without embarrassing the competitor.

The information on the level of charge is sent to the decoder when the transponder passes over the loop

## Features

### Lithium-ion battery

- Autonomy : 4 years

## Specifications

- Emission : magnetic induction
- Maximum speed : 120 km/h (75 mph)
- Maximum height of detection : 1,60 m (5.24 ft)
- Temperature range : - 35 °C to + 70 °C (-31 to 158 °F)
- Dimensions : 33 X 28 X 11 mm (1.3 x 1.1 x 0.4 in)
- Weight : 18 g (0.63 oz)

## Related products

- Mounting Clip
- Neopren strap

## 3 Year Warranty



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# CHRONOPRINTER CP 540



# Chronoprinter CP 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 such as NET TIME, PARALLEL SEQUENTIAL or PARALLEL, TRAINING, SPEED, LAP, SPLIT/LAP 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 software, 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.

### COMFORT

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.

### DOCKING STATION

Three docking stations are available: « ACCU », « ACCU + GPS » and « ACCU + GPS + GSM »

## 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 25'000 times and 99 timing sessions
- Sequential Nr / Competitors Nr from 1 to 9.999

### Time base

- Thermo-compensated quartz 12.8 MHz
- Precision: +/- 0.5 ppm at 25° C
- Precision: +/- 1.5 ppm between -30°C and +65°C

### Inputs / Outputs

- Four Inputs with banana jack for Timing impulses
- COMPUTER / Bidirectional RS232 or to drive external display
- ETHERNET
- Extension port for Docking

### Power supply

- Internal: five alkaline 1.5V batteries (AA)
- External: 12 V DC by adaptor (HL540-1) or 12 V battery

### Autonomy

- 6'000 printed times with one battery set

### Dimensions / Weight

- 270 x 100 x 65 mm
- CP 540 without transport case: 860g. (with batteries and 1 paper roll)
- CP 540 with transport case and power supply : 1'800g.

### Display

- Matrix LCD display with backlighting
- Eight information lines with 21 characters
- Adjustable contrast and brightness



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# **PHOTOCELL 20m WITH REFLECTOR HL 2-31**





# Photocell with reflector

## HL 2-31

- 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.

### Technical specifications

#### General

- Infrared type photocell using a coded modulated frequency of 32.7 kHz. Triggering detection by frequency discrimination

#### Operating type and Distance limits

- Transmitter / Reflector, up to 20 Meters

#### Output Trigger

- Infra-red photocell with internal or external power supply and 2 functions 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.

#### Reaction Time

- Less than 0.5 ms

#### Precision

- +/- 0,02 ms for repetitive impulses

#### Internal Power

- Three alkaline batteries type 1.5V (AA)

#### External Power

- 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

- 500 gr. complete set  
All photocell sets are delivered in their own transport case



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# PHOTOCELL 80m HL 2-35



# Photocell 80m with transmitter and receiver HL 2-35

## « For maximum 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.

- Timing line width up to 40 meters in "LOW" power position and up to 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 20meters.

## Technical specifications

### General

- Infrared type photocell using a coded modulated frequency of 32.7 kHz. Triggering detection by frequency discrimination

### Operating type and Distance limits

- Transmitter / Receiver Type, up to 80 Meters

### Output Trigger

- Infra-red photocell with internal or external power supply and 2 functions 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.

### Reaction Time

- Less than 0.5 ms

### Precision

- $\pm 0,02$  ms for repetitive impulses

### Internal Power

- Three alkaline batteries type 1.5V (AA) for each (Tx / Rx)

### External Power

- 6-12 VDC via 4-pole bayonet type jack.

### Autonomy at 20° C

- About 100 hours

### Operating Temperature

- $-20^{\circ}$  C to  $+70^{\circ}$  C

### Indicators

- LED diodes for batteries and alignment.

### Mounting

- Fitted for standard photographic  $\frac{1}{4}$ " tripod or TAG Heuer mounting brackets HL 4 / HL 4-3

### Dimensions

- Hot-lacquered black aluminium case  
150 x 80 x 40 mm

### Weight

- 800 gr. complete set
- All photocell sets are delivered in their own transport case



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# START CLOCK HL 930



# Start Clock HL 930

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

- 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 colour 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 synchronization signals.
- Option: remote Control.

## TECHNICAL SPECIFICATIONS

### General

- 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.

### Time Base

- 16 MHz Thermo compensated Quartz
- +/- 0,5 ppm at 68° F (20°C)
- +/- 2,5 ppm from –22° F (-30°C) to 167° F (75°C)

### Temperature Range

- 77° F (-25° C) to + 167° F (75° C)

### Power Supply

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

### Autonomy

- 18 hours at 68° F (20° C)
- 8 hours at –90° F (-20° C)

### 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



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# Docking – CP 540





# Docking – CP 540

**The Chronoprinter 540 can be plugged in a Docking Station**

## **Internal battery**

- Lithium-Ion rechargeable battery which ensures the autonomous operation of the CP 540 for long-duration timing sessions even at low temperatures (-20°C)

## **GPS Module**

- A GPS satellite module which allows you 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 sessions.
- An Input and Output “Master/Slave” which allows you the connection and synchronization of several CP540's together. In this way, the same time's-of-day is guaranteed on several devices.
- A “Top-Minute” impulse output is available for synchronizing any timing devices

## **GSM Module**

- A GSM module that gives you the possibility to transmit the timing information by wireless telephony

## **Docking (HL 540 – BATT)**

Include an internal battery

## **Docking (HL 540 – GPS)**

This docking station is recommended for an absolute precision and professional timing.

Include:

- Internal battery
- GPS module

## **Docking (HL 540 – GSM)**

This docking station is recommended for an absolute precision and professional timing and allows you to communicate between several systems in a difficult environment.

Include

- Internal battery
- GPS module
- GSM module

## **General**

- Operating condition -20°C to +60°C
- External power supply 12VDC

## **Battery**

- 7.4V Li-Po 2700mAh
- Charging condition 0° to +40°C
- Charging current 500mA (~5.5 hours)

## **GPS**

- 12 channels, continuous tracking receiver
- Precision  $\pm 50$  nanoseconds
- Current consumption when activated: 30mA
- Connector for external antenna
- Top minute output (optocoupler)
- In and Out connectors for Master/Slave operation (2xRJ13)

## **GSM**

- Quad-band EGSM 850/900/1800/1900MHz
- Output Power
  - Class 4[2W] @ 850 / 900MHz
  - Class 1 [1W] @ 1800 / 1900MHz
- Data transmission:
  - CDS , 9600 bds, V.92, V.110 (Modem)
  - GPRS class 10
- Standby consumption: TBD
- Average consumption in Modem mode: TBD
- Average consumption in GPRS mode: TBD
- Connector for external antenna

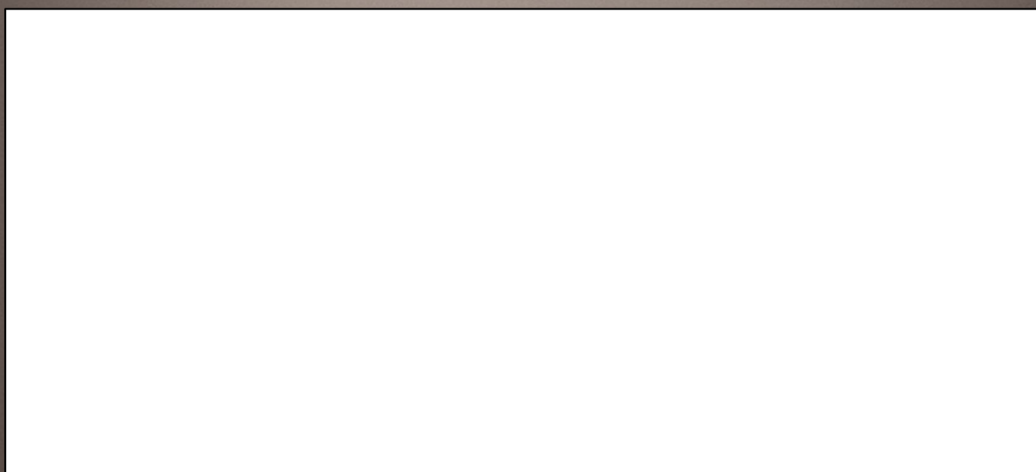


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**TAG Heuer Professional Timing**  
6A Rue Louis-Joseph-Chevrolet  
2300 La Chaux-de-Fonds / Suisse  
Tel.: +41 32 919 8000 / Fax: +41 32 919 9026

**[www.tagheuer-timing.com](http://www.tagheuer-timing.com)**  
[info@tagheuer-timing.com](mailto:info@tagheuer-timing.com)