ALPHANUMERIC
DISPLAY BOARD
HL 980 / V2

USER'S MANUAL

1. Concept

"A display board specifically designed to meet the needs of Sports Timing". This is the phrase that sparked the development of the TAG Heuer HL 980.

The HL 980 now allows you the ability to display text messages (competitor names, country) as well as numeric data (points, running time…) all with a reaction time of less than $1/10^{th}$ second.

Using the most recently developed LED (Light Emitting Diode) technology for maximum visibility, the RS232 interface allows for a non-multiplexed array – meaning that every character is driven by its own microprocessor.

Here is an example of an assembled array for Equestrian Jumping. Nine HL 980 display cases are used to form 3 lines of 24 characters:


2. DISPLAY BOARD DESCRIPTION
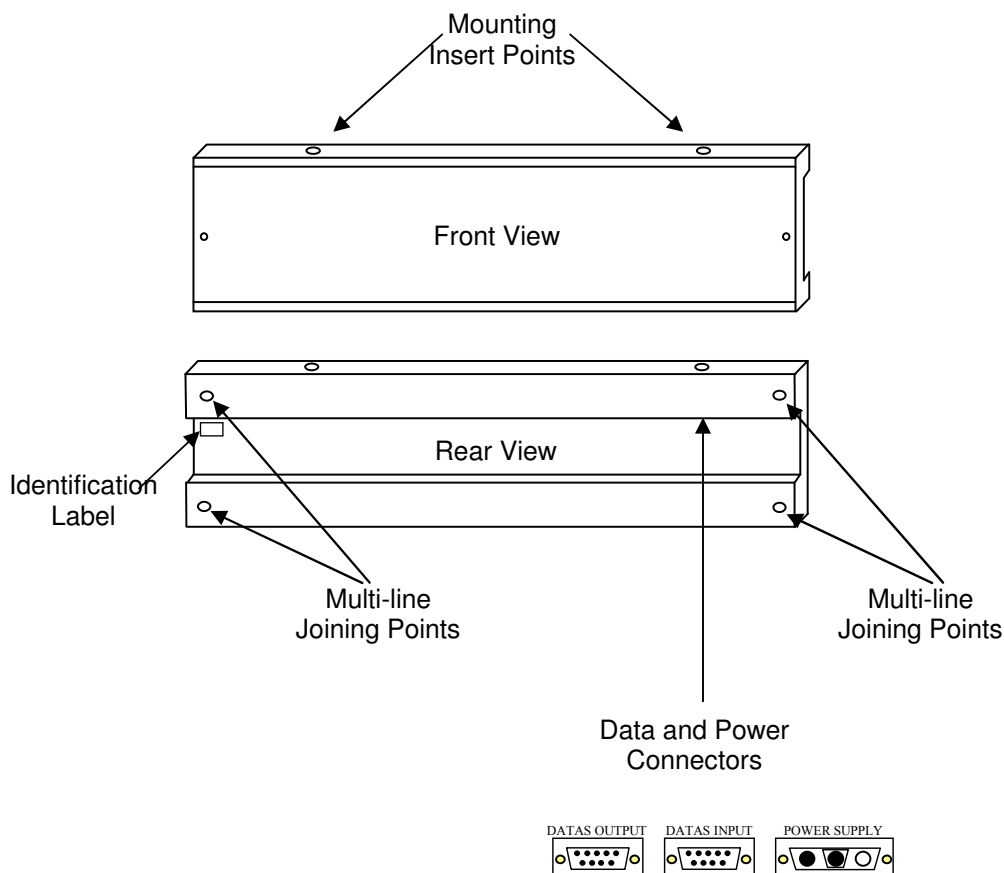
3. DISPLAY BOARD IDENTIFICATION

TAG HEUER's sport event management software (available separately) sends various timing data and event information to the display board from the RS232 serial port of your computer (PC). Each piece of information destined for a particular display is addressed with a tag number at the start of each data frame, known as the "display number".

It is therefore crucial that the correct parameter to address and route data to connected display(s) be correctly set in the display itself. The shipped factory default setting for the display number is "1". If this must be changed you can download display management software at: www.tagheuer-timing.com

Display management software (CA8_15_util) for the HL 980 allows you access to the following procedure:
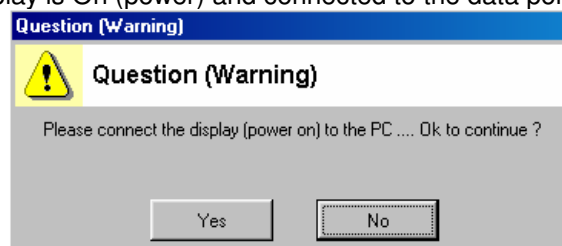
1 - Attach data (RS232) and power (12vdc) to the display board
2 - Close all other Windows applications and launch CA8_15_util
3 - Select the COM port to which the display is connected to your PC
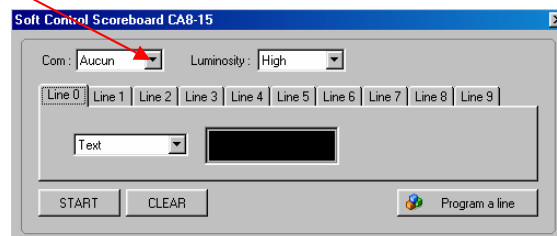
4 - Click on « Program a line »
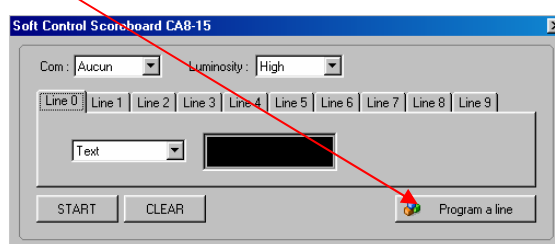
5 - You are asked if the Display is On (power) and connected to the data port (COM), if so, click on "Yes"

6 - Enter the new Display ("line") number value that you wish to use with the display and then click on "OK"
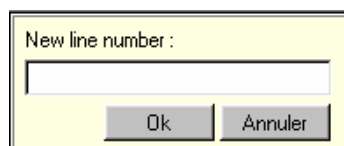
NOTE:

When the display is correctly programmed and the display number has been changed to a new value, a message of: "Line x" (x=new number of the display) will be shown on your PC screen. If this does not happen, power off the display, check you data connections and retry to process again.

4. USAGE RECOMMENDATIONS

Installation:

HL 980 displays use LED technology and thus are considered as "lights". The best visibility is achieved by placing the display in a shadowed position or out of direct sunlight. The display should also be protected from overheating in the same manner and by making sure the ventilation ducts are not blocked.

The display is designed to withstand some rain and water spray, but is never to be immersed.

Important:
A display board set in direct sunlight for a few hours can become very hot. We recommend handling precautions such as gloves at all times.

5. CARACTERISTIQUES TECHNIQUES

- Power Requirements: External 12 VDC (battery) @ 6 Amperes
- Voltage/Current protection: 8A internal fuse
- Power consumption: Standby : 200mA (no characters displayed)
                                 5A with all characters on at max. intensity (T_{amb}= 20°C)
- Temperature Range: –20°C to +60°C
- Weight: 4.5 Kg
- Dimensions :   1140 x 45 x 240 mm

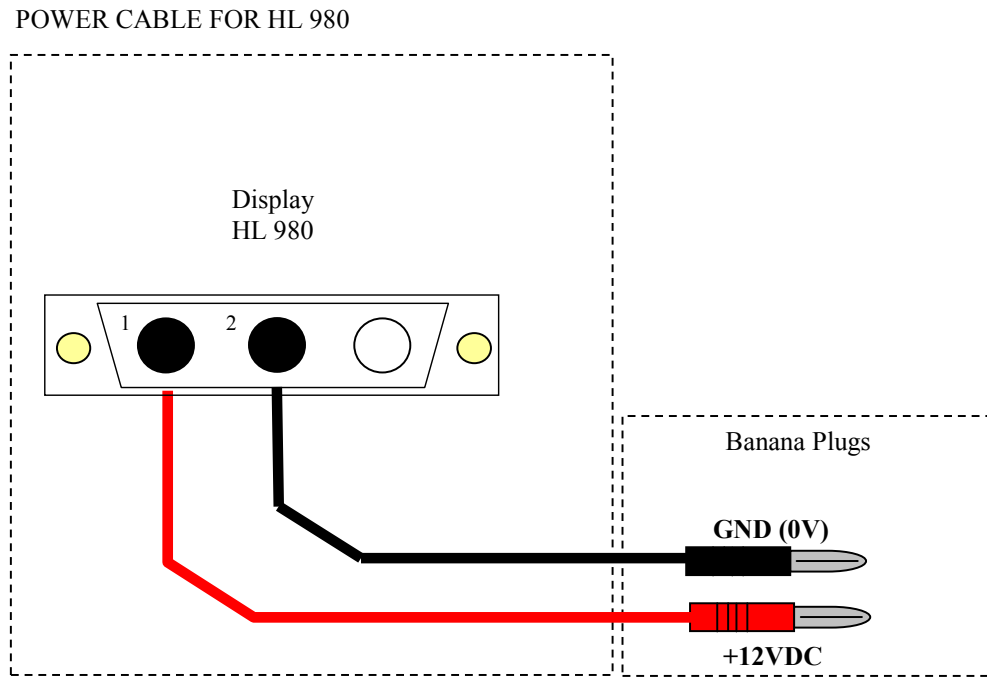# 6. DATA LINK

- Data Protocol: Protocol RS232 / 9600 Baud / 8 Data bits / 1 Stop bit / No Parity

- Data Frame Structure: <STX>NLXXXXXXXX<LF>
                                <STX> : Start of text (code <02>)
                                N : Display number / 1 to 9
                                L : Intensity / 1 to 3
                                X : Character to display
                                <LF> :End of Frame (code <0A>)

- Character List: ABCDEFGHIJKLMNOPQRSTUVWXYZ1234567890/ \ ( ) ' : . *
                            - + abcdefghijklmnopqrstuvwxyz

7. CONNECTIONS

- Connections to data and power should be done in a non-powered state
- Power polarity must be strictly respected:

<p style="text-align:center">**Red   +12VDC**
Black   GND (O Volts)</p>

POWER CABLE FOR HL 980

Display
HL 980

1   2

Banana Plugs

GND (0V)

+12VDC

Recommendation: Use min 16 gauge able for power connections

8. MOUNTING

The display is delivered with 2 mounting type M8 rings. There are 4 insert locations located on the top and bottom for these rings. If displays are to be joined together, 4 insert points are situated at each end of the display

9. WARRANTY

1 year from date of purchase. Transport charges are charged to the customer. Warranty is valid for "Normal" use. Damage caused by physical shock, over voltage, inverted polarity of power connections, etc. are excluded.

<p style="text-align:right">**TAG-Heuer Professional Timing**
Switzerland
www.tagheuer-timing.com</p>