X100 DIGITAL STOPWATCH

X-100
DIGITAL STOPWATCH
mm:ss.dd

FEATURES

❒ Power Supply: **9-12Vdc**.

❒ Management by a **Microchip PIC16F886 microcontroller**.

❒ **Quartz accuracy**.

❒ Range of measurement:

with Mode "**Double command for START and STOP**" = from **00:00.05** to **59:59.99**

with Mode "**Single command for START/STOP**" = from **00:01.00** to **59:59.99**

❒ Resolution: **0.01 s** (in 1/100 seconds).

❒ **Overflow** Indicator.

❒ Detection of **INTERMEDIATE times**.

❒ **4 operating mode**.

❒ **6 Display** (7 segment - 0.59" - 13 mm).

❒ 4 On Board command buttons: **START**, **STOP**, **RESET** and **MODE**.

❒ Screw terminal block for remote control of **START** and **STOP/INTERMEDIATE**.

❒ **User setting stored** in the microcontroller memory.

❒ Protection diode against **inversion polarity** of power supply.

❒ Easy to use.

❒ PCB dimensions: **100 x 65 mm**.
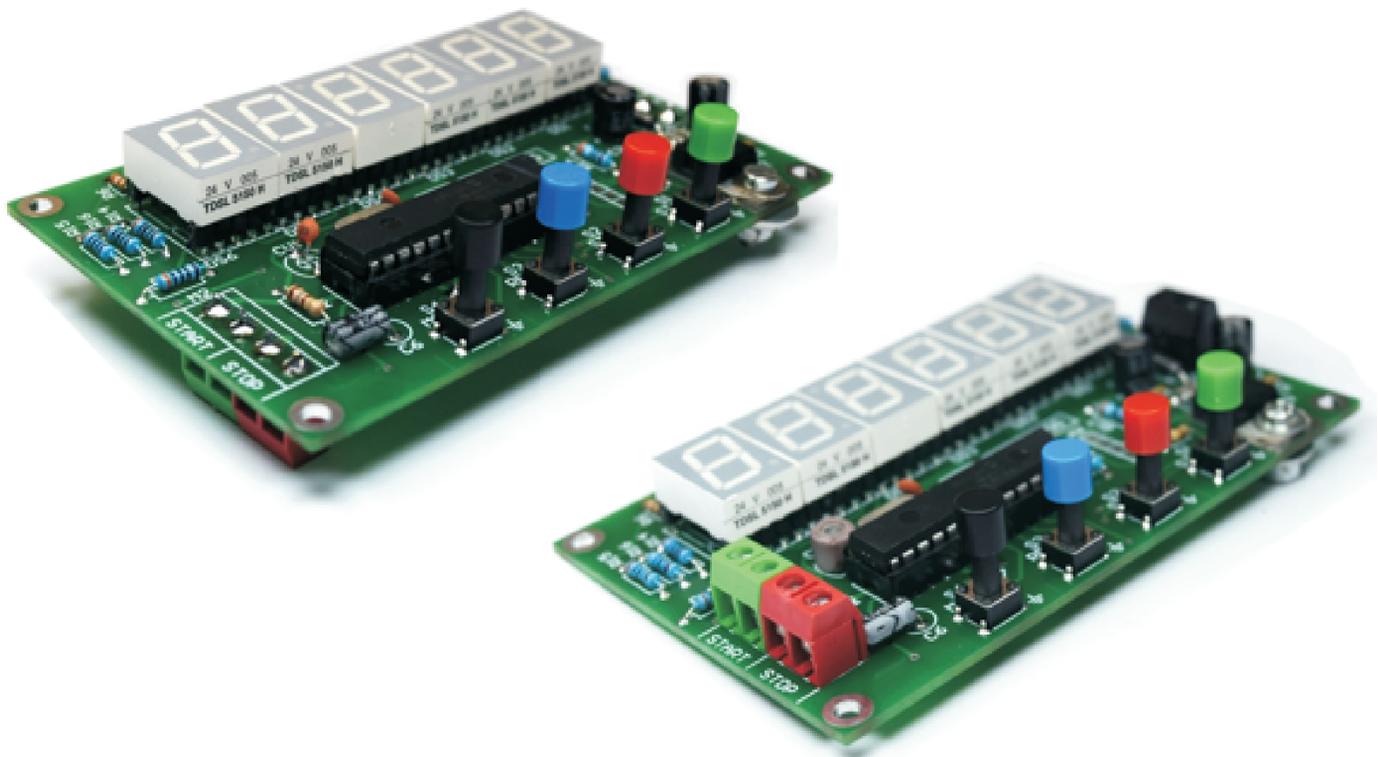
USER GUIDE

The **X100** Digital Stopwatch can detects times up to '**59:59.99**' and the turning ON the dot on the last display at the right indicates that the count is **Overflow** even if the count continue with dot on ('**00:00.00.**').

The use of this stopwatch is very simple and intuitive.

- ■ When power on, after the **TEST DISPLAY**, the stopwatch displays the value '**00:00.00**'.

- ■ **To start the count**, press the **START** button. The display shows the real time with a resolution of 1 hundredth of second.

- ■ **With "Double command for START and STOP"** - **To take the intermediate times**, always press the **STOP** button. The intermediate time will be stored on the display and will "frozen" until the **MODE** button is pressed.

- ■ **With "Single command for START/STOP"** - **To take the intermediate times**, always press the **START** button. The intermediate time will be stored on the display and will "frozen" until the **MODE** button is pressed.

  To return in real-time display of the count, press the **MODE** button.

- ■ **To reset the count**, press the **RESET** button: the display will return to stand-by mode and will show the value **00:00.00**'. The **RESET** button is active <u>only</u> when an intermediate time is shown on the display: any press of the **RESET** button during the real-time count will have no effect.

- ■ When the count exceeds the value '**59:59.99**' a small light dot will ON in the last display at the right and the stopwatch continues the count re-starting from '**00:00.00.**' (the right light dot indicates an **Overflow**).

The stopwatch also can be managed remotely by means of actuators to be connected on the **START** and **STOP** terminal block (M2 socket): the contacts of the actuators must be **N**ormally **O**pen (**N.O**.) and the contacts closed will activate the stopwatch.

CHOICE OF OPERATING MODES

This stopwatch can work in 4 different modes: two for **counting** and two for **commands**.

COUNTING MODE SELECTION

To set the counting mode, press and hold the **MODE** button and simultaneously press the **STOP** button.

Release the buttons when the first display at the right show the character *"C"* or *"r"* as specified below:

Continue count after each STOP

The character *"C"* indicates that after each STOP/INTERMEDIATE, the counting of the stopwatch continue and never restart to '**00:00.00**'.

Reset count after each STOP

The character *"r"* indicates that after each STOP/INTERMEDIATE, the stopwatch count always restarts from '**00:00.00**'.

COMMAND MODE SELECTION

To set the command mode, press and hold the **MODE** button and simultaneously press the **RESET** button.

Release the buttons when the first display at the left show the character *"d"* or *"S"* as specified below:

Double command for START and STOP

The character *"d"* indicates that the stopwatch works with the **START** button to start the count and the **STOP** button to take the stop or intermediate times.
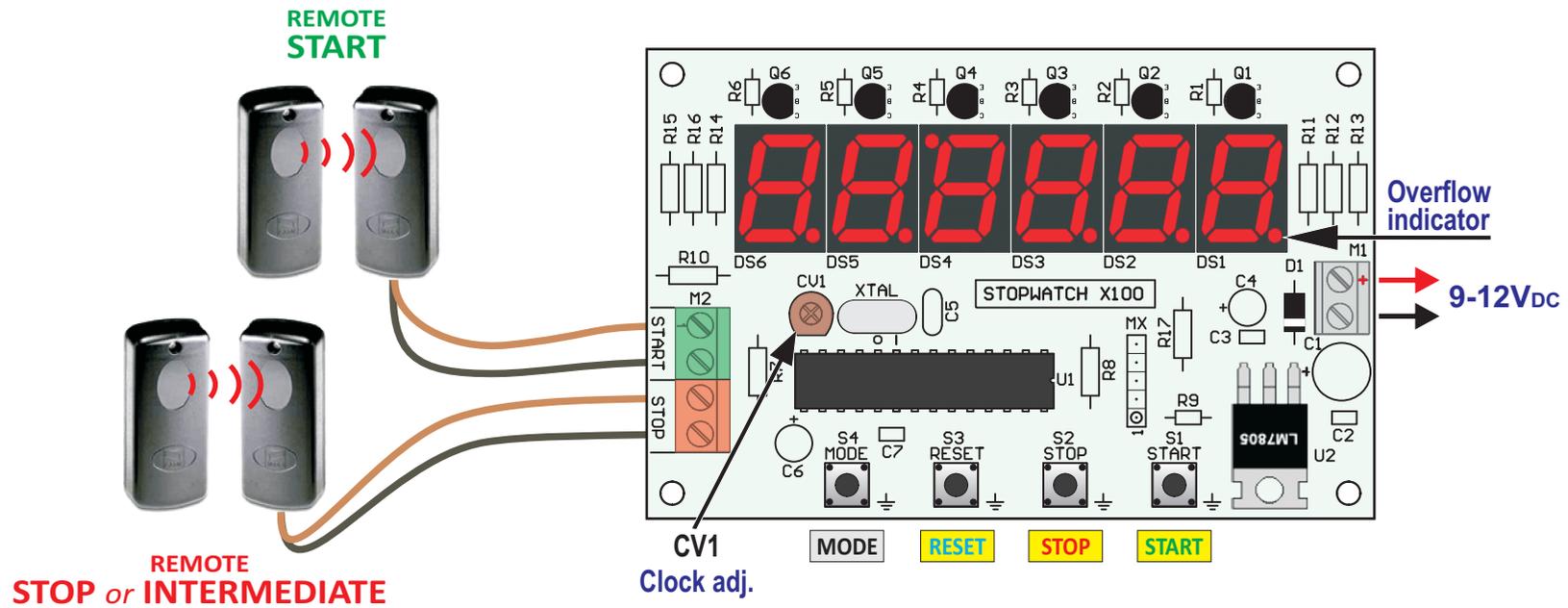
Single command for START/STOP

The character *"S"* indicates that the stopwatch works only with the **START** button (both for starting and for Stop/Intermediates). In this mode, the **STOP** button (and relative terminal block) has no effect.

The operating modes are saved in the memory of the microcontroller (non-volatile settings) and for this reason, after each power ON, the stopwatch will always work with the last modes programmed by the user.

The two operating modes chosen by the user will be displayed each time the stopwatch is power on, immediately after the DISPLAY TEST.
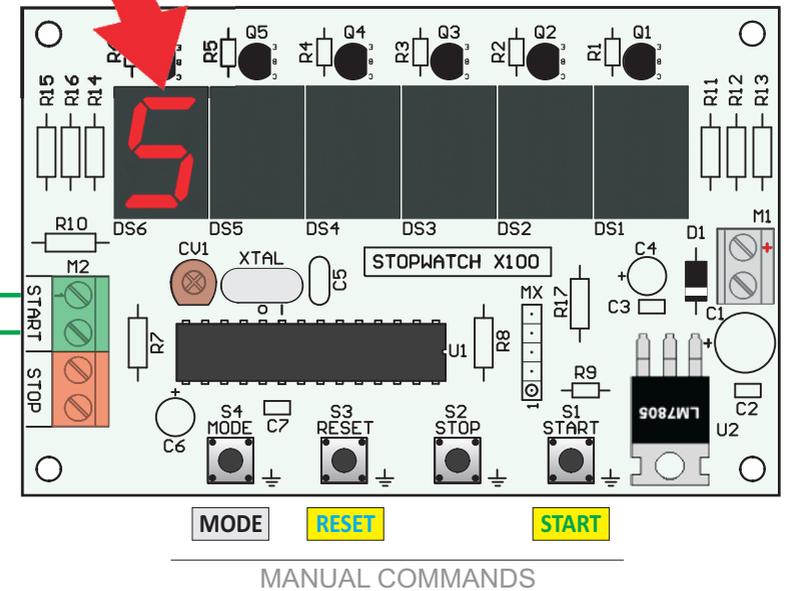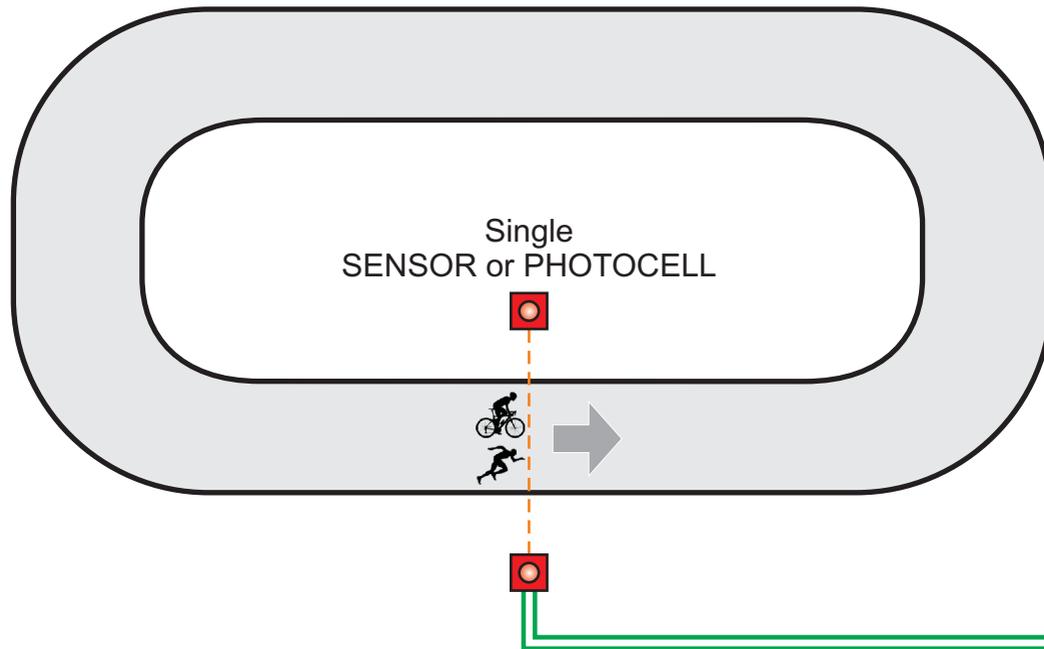
WIRING and COMMANDs

REMOTE
START

REMOTE
STOP *or* **INTERMEDIATE**

CV1
Clock adj.

Overflow
indicator

9-12V$_{DC}$

MODE   RESET   STOP   START

SENSORs or PHOTOCELLs
Contacts must be
Normally **O**pen (**N.O.**)

STOPWATCH with SINGLE COMMAND

PROGRAMMING:

5 = Single command for **START** and **STOP**/**INTERMEDIATE**

Single
SENSOR or PHOTOCELL

STOPWATCH X100

MANUAL COMMANDS

MODE | RESET | START

STOPWATCH with TWO COMMANDs (START and STOP)

PROGRAMMING:

⌐ = Double command: **START** and **STOP**/**INTERMEDIATE**

SENSORS or PHOTOCELLS

START   INTERM. 1   INTERM. 2   INTERM. 3   INTERM. X   FINAL

STOPWATCH X100

MODE   RESET   STOP   START

MANUAL COMMANDS