



TIMEMASTER Z2

User Manual (versions up to 1.2)

Congratulations of purchasing the new lap timing device TIMEMASTER Z2 from K-BROS electronics. The device is essential for each racer for evaluating and improving riding techniques and results as for fine tuning.

The main characteristics of TIMEMASTER Z2 are:

- ✦ **measuring of lap times and storing them into memory (up to 2500 laps)**
- ✦ **measuring of up to 4 split times**
- ✦ **big display numbers for high visibility**
- ✦ **best lap indicator with flashing ultrabright LED**
- ✦ **automatic power-off feature after 10 min. of inactivity**
- ✦ **upgradable firmware of device**
- ✦ **download data to a PC and evaluate results with a special designed software (optional)**
- ✦ **easy mounting and use**

1 Mounting

Basic set of TIMEMASTER Z2 system for measuring of lap times consists of:

- central unit for display and store measured results
- infrared sensor for indication of coded signal
- IR transmitter for lap time (START/FINISH) – optionally the split time transmitters can be bought (Z2 can measure up to 4 split times)

For mounting a device to a vehicle, follow the steps:

1. On the bottom of central unit you can place included adhesive VELCRO tape
2. the same you do on IR the sensor
3. Find the proper place on the vehicle for central unit to be as much visible for the driver and there put the other VELCRO tape
4. IR sensor should be mounted so the small red window is heading to the transmitter, which is placed at the track and there must be no obstacle between transmitter and receiver. Take care that IR receiver is mounted as far from heat sources.
5. Transmitter should be placed at the track with IR diodes turned toward IR sensor. There should be at least 1,5 m distance between other sources of IR (other transmitters).

The central unit is powered by external power source of 7-15 VDC (vehicle's battery) via included cable wire (see bottom picture)



It's necessary that it must be care taken at mounting a sensor on the right place on the vehicle. It should be placed as far from heating sources and the window turned toward transmitter at the track (see picture). It's important that optical visibility of IR sensor and transmitter to avoid missing results. Before final mounting, you should make some test laps to see everything works and to see that lap-timer is activated every time it passes the transmitter. In case of missing transmitter signal, try to find more suitable position of IR sensor!



Mounting examples:



Central unit mounting



IR sensor mounting



Power supply cable wires connected to motorcycle's battery

2 Functions and settings

For setting and using TIMEMASTER Z2 lap timing device, 4 buttons are used: MENU, arrow up, arrow down and SET. For turning on the unit **press and hold** MENU button until graphics shows on the display.



There are 4 main menus available:

RUN SESSION → VIEW SESSION → SETTINGS → POWER OFF

Each can be selected by up/down arrow buttons and selected by SET button. Indicator of menu selection is right arrow at the left of menu.



2.1 START SESSION menu

This menu is selected for measuring lap ties. There are 50 sessions available for storing the results. Each session can record up to 50 laps with up to 4 split times. Session can be selected by up/down arrows and confirmed with SET button. For exiting of START SESSION menu you can press MENU button

Sessions are numbered from #01 to #50. If there are recorded results in the session, the best time is indicated right next to the session number, if it's empty, the » - - » indicator is shown.



If we select session with previous stored results, it can be overwritten.



After confirming the selection with SET button, lap timer is prepared to start recording times.



Upper left corner indicates current session number (Sxx) and current lap (Lxx)
As we pass the transmitter, the lap-timer starts measuring time.

Current session can be finished by pressing SET button and all results are stored to eeprom memory.

In case of split time transmitters placed at the track there will be number of split time indicated in upper line (SPLIT #x) and the split time recorded in bottom line.



In case of achieving best lap time result in session, it's indicated in upper line as »BEST LAP« and the ultra bright LED »BEST LAP« is flashing for 5 seconds.



2.2 VIEW SESSION menu

This menu is selected for viewing the results stored in memory. The wanted session can be selected with up/down arrow buttons and confirmed with SET button. All sessions with recorded results have best result of the session displayed next to the session number, if it's empty it indicates »- - -«. For exiting this menu, MENU button can be used.



After selecting and confirming session, the results can be browsed with up/down arrow button. Upper line indicates best lap of this session and other lines contain lap time results (L#xx __:__.__) The best lap in this session is marked with an »*«



If there are split times recorded in the session they can be viewed with selecting the lap time we want so split times to be viewed and confirming selection with SET button.

The display then indicates current lap in upper line and lap time result, the bottom lines then indicate split times for this lap (Sp #x __:__.__) For exiting the MENU button can be used.



2.3 SETTINGS menu

Menu settings is used for setting and customizing the lap timing unit. It contains 5 submenus for different functions. They can be browsed by up/down arrow button and selected with SET button.

The menus are:

SPLIT times → SENSOR lag → LAP-HOLD time → ERASE Memory → DOWNLOAD data



SPLIT times – number of split times we want to record (number of split time transmitters placed at the track): 0-4 which we choose with up/down arrow buttons. With SET button the settings are stored in eeprom memory.



TIMEOUT sensor (Sensor lag) – for disabling a sensor for estimated time to avoid errors of other sources of IR signals. It means that after unit receives right signal from transmitter (start/finish or split) the IR sensor is inactive for chosen time and it activates after time is expired.

This time should be set that the sensor activates cca. 5-10 seconds before reaching next transmitter (split time transmitter or start/finish transmitter). If there are split times transmitters placed at the track, it should be considered that the minimal time between two recording times should be taken as the reference.

The time is displayed as **minutes:seconds** and could be changed with up/down arrow buttons and saved to memory by SET button. For exiting the MENU button can be used.



LAP-HOLD time – is the time the result remains displayed after passing the transmitter (this time can be less or equal to SENSOR LAG time). After elapsed time, the stopwatch time is displayed again.

The time is displayed as **minutes:seconds** and could be changed with up/down arrow buttons and saved to memory by SET button. For exiting the MENU button can be used.



ERASE Memory – for erasing results memory

If we choose this menu and confirm option, there's one more confirmation needed as all results are erased from memory. After pressing SET button, the »Erasing ...« message displays which indicates erase cycle start. Erasing takes few seconds and after finishing it returns in previous menu. The erase cycle cannot be interrupted!



DOWNLOAD data – for downloading data to a PC computer RS-232 for later analysis
All recorded data can be transferred to a computer by special cable and software (optional) for later analysis and evaluation. Option can be chosen by pressing SET button. The display indicates »Downloading ...« and the transferring begins.

CAUTION!!! Before confirming option with SET button, the software for downloading must be prepared for download and data cable connected. Further instructions are in software user manual.



2.4 POWER OFF menu

With selecting and confirming POWER OFF menu in main menu we can shut down the device. This device has implemented auto-off function which automatically shut's down the device after 10 minutes of inactivity.



3 Transmitter

Transmitter consists of:

- transmitter unit
- power supply cable
- optional accumulator or battery

Transmitter unit can be powered by 8x AA batteries (battery holder inside unit) or external battery via included power supply cable



Transmitter(s) should be placed at the track to ensure the best optical visibility between transmitter IR diodes and IR sensor on vehicle. Minimum distance between two transmitters (same or other vendors) should be at least 1.5 m to avoid disturbances.

Transmitter is powered up by power switch on the side of unit and red LED indicator is lighted on.

Transmitter can run in two modes – HIGH POWER (default) or LOW POWER (for lowering transmitting power and minimizing power consumption – when running on batteries). These modes can be selected by jumper on board inside transmitter unit (see picture). Connected jumper means HIGH POWER and unconnected means LOW POWER.

