TIMER - multi function, digital

Cat: LB4064-101 (220/240V.AC. 50/60Hz)

DESCRIPTION: This **multi function Timer** is designed for use with Air Track Photo Gates and the IEC Free Fall instruments that use solenoid release system. It is high speed with resolution to 0.0001 S and has several counting modes. The rear face has sockets for powering Photo Gates and a power source and special socket for the Free Fall solenoid release at the instant that timing begins. Special features are:

- Convenient sloping front panel
- High speed timing to 100 microseconds resolution.
- Large six digit LED display. Press button operation, LED indication of functions.
- Automatic loading memory up to a depth of 20 values.
- Memory items can be selectively deleted to remove errors. Memory items can be scrolled, totalled or averaged.
- Output sockets for 2V, 6V and 12V.AC. supply for Photogate lamps.
- Power socket for solenoid to release ball for Free Fall experiment.
- Remote Reset socket behaves exactly the same as the RESET press button.

LB4064-101 timer – multi function (mains)

See sockets on rear face for Photo Gate power

And for Free Fall solenoid ball release.

Physical size: 190x140x110 LxWxH Weight: 1.3 kg

POWER: 220/240V.AC 50/60Hz. Internal fuse: 20x5mm LxD 0.5 amp.

ACCURACY: All timing operations are crystal locked ensuring an accuracy of better than: 0.01% +/-1 least significant digit. All functions are microprocessor controlled.

INITIAL POWER ON:

Units are fitted with IEC 3 pin mains socket to accept separate mains cable. Plug into a standard 220/240V.AC. power outlet. Digital display should illuminate.

- Small LEDs indicate the Function selected.
- Press FUNCTION buttons UP/Down to select timing Function required.

PRESS BUTTON OPERATIONS:

- **START:** initiates timing.
- **STOP:** stops timing and value is automatically stored in memory.
- **RESET:** If timer running, will 'freeze' display while held depressed. If timer stopped, will zero display. If pressed after pressing STOP, performs 'AutoMode' external connection check on START/STOP sockets (see below).
- **MEM UP / MEM DOWN** scrolls and recalls active memory locations.

TIMING: AutoRange: Up to 99.9999s by 0.0001s (0.1ms) then 999.999s by 0.001s

Resolution: 0.0001s up to 99.9999 seconds, then AutoRanges to 999.999 seconds by 0.001s.

AUTOMODE: This very useful function is set by pressing STOP then RESET buttons sequentially. When set, the starting and stopping of timing will occur **upon a change in status** of the START / STOP electrical connections. This excellent automatic feature can save classroom time and difficulty because there is no need to create or select 'making' or 'breaking' external connections for experiments.

MEMORY:

When STOP occurs by either press button or by external circuit, the last value is automatically stored into memory. When any value is stored, the small LED marked MEM lights. When the **first 20 values** are stored (memory full), the memory LED flashes and subsequent readings are not stored. The timer can be used normally even if the memory is full.

MEM UP/DOWN buttons scroll through the active memory store. When the first or last stored memory is reached, a longer beep sounds.

TOTAL button adds all memory values together. Press and hold until double beep is heard. Total of memory values will display whilst button is held depressed.

AVRG button calculates the average of all the memory values. Press and hold until double beep is heard. Average will display whilst button is held depressed.

PURGE button removes selected memory values. Scroll to select the unwanted value. Press and hold button until double beep is heard. Selection is now erased from memory leaving the other values untouched. Display shows '------'.

CLEAR button empties all memory values. Press and hold button until double beep is heard. Memory store will be empty and the small memory LED will be off.

TIMING FUNCTIONS FOR EXTERNAL CONNECTIONS:

START/STOP: When status of the START socket connections is changed momentarily the timer runs. The start connections then have no effect. When the status of the STOP connections is changed momentarily the timer stops and the value is stored into memory.

PHOTOGATE: When status of the START socket connections is changed the timer runs. When same sockets revert to original status the timer stops and the value is stored in memory. The sockets also provide the power required to run most photogate circuits. Sockets on the rear panel provide 2V, 6V, or 12V.AC. power to run photogate lamps or LEDs.

PERIOD: When the status of the START socket connections is changed the timer runs. When same sockets revert to their original status there is no effect. When same sockets are changed again, the value is stored in memory, display is reset and the next period is started. To stop the timing press STOP. Effectively, this is the time or period between successive Starts.

PENDULUM: When the status of the START socket connections is changed the timer runs. When same sockets revert to original status there is no effect. When same sockets are changed and reverted again, there is no effect. Upon the fifth change, the value is stored in memory, the timer is reset and then starts timing the next pendulum period. To stop timing press STOP. Effectively this is a double 'PERIOD' which occurs during a complete pendulum swing through a photogate.

REMOTE: duplicates the RESET and Memory Clear button function.

Using a long cable, this socket can be joined to the common or 'GRND' socket by a switch or press button to create a REMOTE RESET control. As with the Reset button, this socket will clear the memory locations if joined to 'GRND' until two beeps are heard.

ON REAR PANEL: LAMP or LED OUTPUT and SOLENOID RELEASE:

4mm banana sockets provide Common and 2V, 6V and 12V.AC. at 0.5 amp for Photogate lamps, LEDs etc..

SOLENOID RELEASE: An 'RCA' socket provides a constant current power source to the solenoid on a 'Free Fall' apparatus to hold ball in place. When timing is initiated, this power is instantly removed from the solenoid to allow the ball to fall. Provides approx. 150mA constant current to a 15 ohm solenoid coil.

Designed and manufactured in Australia