



## LPC90 INSTRUCTIONS

Connect all units together before powering up to 12 to 24 VDC. *(Note: If the power plug to the LPC90 is unplugged with the motor cable plugged in and powered, the motor will run unwanted frames. Always unplug the motor coil cable first when powering up or down.)*

First plug the connector with red code into the red power input on the right side of the LPC90. It is marked 12-24 VDC above the connector.

Connect the black four pin coil cable into the **MOTOR** socket on the back of the LPC90 and the other end into the **REMOTE** socket on the single frame motor.

Connect the motor power cable to the motor.

When using the light meter, plug the yellow coded coil cable from the **METER** socket on the LPC90, to the yellow coded socket on the **METER**. (The intervalometer can be used without the meter plugged in.)

Put the motor **ON/OFF** switch in **OFF** position.

Connect 12 to 24 VDC power to the red coded power cable. Also power the single frame motor with 12 to 24 VDC. (If the battery has a four pin connector and you have only one battery you may need a 'Y' cable for the LPC90 and the motor for power. With a banana plug you can piggy back the two plugs.)

When you first power up the display will show '**NORRIS**', '**LPC90**' then displays the last calibrated interval used. (The unit will have a shutter speed, interval, and burst value in the memory when delivered.)

The interval countdown is controlled by the motor switch. **ON** is time interval countdown, and **OFF** is hold, or timer stop.

**EXPOSURE, INTERVAL, and BURST** settings. A momentary press of the menu button will change the menu options.

**MENU** mode shows just two letters on the left of the display. They are **EX, IV, or BU**. On the right of the display are the values for **EX, IV, and BU**.

**EXPOSURE:** Mode (**MENU**) Shows **EX** on the left side of the display. They are the exposure value on the right. To change the shutter speed, press the small red button above the **UP** or **DOWN** words on the face panel. It will move very rapidly so you must only bump it to change single numbers. The exposures are read in 1/16ths using the 16th on the face panel. The two numbers on the far right from 1 to 15 above the 1/16th on the face panel. The two numbers on the far right from 1 to 15 above the 1/16th on the face panel are 16ths of a second. (16ths only applies to shutter speeds. All other numbers are time and frames.)



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**EXAMPLE:** 1 is 1/16 sec, 2 is 1/8 sec, 3 is 3/16 sec, 4 is 1/4 sec, 5 is 5/16 sec, 6 is 3/8 sec, 7 is 7/16 sec, 8 is 1/2 sec, and so on.

**EXPOSURE** range is from 1/16 sec to 990 seconds. (16 min, 50 sec)

**INTERVAL** mode: (**MENU**) Pressing the menu button again will change the **EX** to **IV** is the **INTERVAL** mode. **IV** on the left of the display with its value or setting on the right.

**INTERVAL** range is 1 sec to 99 hrs, 59 min, and 59 sec in one second increments. It is also changed by the **UP** or **DOWN** buttons. When pressing the **UP** button the numbers rapidly count up. If you press the **DOWN** button the numbers will go back to one and then count downward from the longest number which is 99 hours 59 minutes and 59 seconds. The zero has been removed.

The display interval countdown will be minus two seconds because the just finished shutter speed is displayed for two seconds for viewing. It uses two of the seconds from the interval countdown. Add two seconds to the displayed interval for the true interval. (One and two seconds will not show a count down. Three and longer will.)

*NOTE: THE INTERVAL IS INCLUDED IN THE EXPOSURE TIME.*

**BURST** mode: (**MENU**) Pressing the menu button again will change the **IV** to **BU** which is **BURST** or the amount of frames per initial pulse.

**BURST** range is 1 frame to 9999 frames. It is also changed by the **UP** or **DOWN** switch when in menu mode.

**NORMAL OPERATING MODE:** The next depression of the menu button will change the burst back to **NORMAL OPERATING MODE**. This being the three letters on the left of the display. Now any values, changed or not, can be reset by pressing the **RESET** button.

**NORMAL OPERATING MODE** Will show an **EXP** for exposure or **INT** for interval on the left of the display. Their values on the display right.

*NOTE: THE RESET BUTTON ONLY RESETS IN THE NORMAL OPERATING THREE LETTER MODE AND DURING INTERVAL COUNTDOWN.*

If **RESET** becomes hard to achieve because of a particular interval or burst you must press the **RED SQUARE BUTTON** just before pressing the **RESET** button.

**NORMAL OPERATING MODE** Will show an **EXP** for exposure or **INT** for interval on the left of the display. Their values on the display right.



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*NOTE: THE RESET BUTTON ONLY RESETS IN THE NORMAL OPERATING THREE LETTER MODE AND DURING INTERVAL COUNTDOWN.*

If **RESET** becomes hard to achieve because of a particular interval or burst you must press the **RED SQUARE BUTTON** just before pressing the RESET button.

When **RESET** is accomplished the display reads **NORRIS, LPC90** and then will display exposure and interval of the new calibrated setting if changed.

**MENU** reset and **METER** reset.: (**INT/LPC**) If you want to reset only the **EXPOSURE, INTERVAL,** and **BURST**, put the **INT/LPC** button in **INT.** and press the reset button. If you want to reset everything, including the meter, put the **INT/LPC** button in **LPC** and press **RESET**. This resets exposure, interval, burst, meter and display.

**MANUAL** operation: The red square button on top is the manual button. When the timer motor switch is in off or hold position, the red square button becomes the manual mode. The manual button will also make frames in the **ON** position while the timer is counting down. (The manual square button will not make a frame when the **LPC90** is in menu mode.)

When the square button is depressed a frame is made at the preset exposure or the metered exposure. (**INT** or **LPC**) If it is held down, frames will continue to be made as fast as the exposures can time out. (1/4 sec between frames.)

In **INT** mode the exposures will be constant as programmed.

In **LPC** mode with light meter plugged in, the exposures will be metered and will change in length if the metered light changes.

The numbers above the **EV** on the face panel are **EXPOSURE VALUE**. These numbers are there to give the operator some idea of where the light is in the 1 to 19 range of the meter. The **EV** is displayed on the LPC90 to closely match the meter numbers and not have to look into the meter. It also helps in checking the reset from the last meter setting change.

There is a dot on the face panel next to the **EV** that denotes 10ths in **EXPOSURE VALUE**. The **EV** is displayed only while the shutter speed is counting down. Shorter exposures will be hard to read because it is only displayed during the exposure time.



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**IMPORTANT:** Especially when filming in low light, a cap should be put on the meter viewing eyepiece. The meter EV value can change from light coming in the eyepiece.

**MOTOR** switch. **ON** and **OFF:** **ON** energizes the timer countdown. **OFF** halts the timer countdown. The manual button is used when motor switch is **OFF**.

**INT/LPC** switch:

- a. **INT:** Manual and intervalometer operation. (constant exposures.)
- b. **LPC:** Metered automatic shutter speed control with intervalometer operation.

**DIM:** Dims the display when in **NORMAL OPERATING** mode. The display can be dimmed completely out. The menu settings will not change while display is blank.

*NOTE: USING LOW DISPLAY BRIGHTNESS OR DIMMED OUT DISPLAY WILL GREATLY EXTEND BATTERY LIFE.*

**RESET:** Resets **EXPOSURE, INTERVAL, BURST, METERING,** and **DISPLAY BRIGHTNESS.**

**CAPPING SHUTTER:** When using a capping shutter, move the coiled cable from the (**REMOTE**) socket on the motor to the (**CONTROLLER**) socket on the capping shutter. And also plug the capping shutter **DIN** plug (5 pin) into the (**AUX**) socket on the motor. The motor **ON/OFF** switch controls the capping shutter function when the capping shutter is in the system. When the motor switch is in off position the capping shutter stops operating also.

If the motor switch is switched off during an exposure, the system will finish the exposure being made then stop. If a burst of frames is in progress you can press red square manual button and it will go back to the interval countdown. If you start a burst of frames with the motor switch on it will finish the burst.

**WHEN NOT USING LIGHT METER OR LIGHT METER IS UNPLUGGED, PUT INT/LPC SWITCH IN INT POSITION.**

**MEMORY:** Memory saves last calibrated shutter speed, interval, burst, and display brightness. This updates each time the reset button is reset. (i.e. battery change.) If the display shows solid dots, the memory chip may be full or NG.

**LOW VOLTAGE:** Stops motor rotation when low voltage occurs. (a small red switch on the circuit board switches low voltage sensing on or off.) The LPC90 is shipped with low voltage sensing on.



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**METERING: IMPORTANT** The meter is powered by the LPC90. **THE LPC90 AND THE METER BATTERIES CANNOT BE IN PLACE AT THE SAME TIME.** The three small batteries for the meter should **NOT** be put into the base of the meter. The meter would get too much power and may fail. The meter trigger is wired **ON** or in read position as if depressing the trigger and would run the batteries down in a short time.

The meter should be attached to a small tripod or the like as it must be locked into a fixed position for accurate metering.

Meter a light value that is representative of the area to be exposed. A gray scale just outside of the frame can be used. Point the meter on the gray card and lock the tripod. Make sure it is in a lighted area calculated to average the overall area to be photographed. You can use the meter to average the different points in the scene using the calculator wheel on the side of the meter.

Put the linear scale indicator at the number selected from reading the meter (1 to 19.) The top of the meter scale will indicate shutter speed and f stop. If the f stop cannot be obtained with the selected lens opening a filter will be needed. Filter factors can be subtracted from the linear scale number. A filter can be used in front of the meter to obtain the same effect.