INTERMATIC®

MODEL EJ500
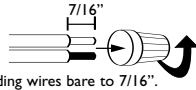# INSTALLATION AND OPERATING INSTRUCTIONS

Introduction
Thank you for purchasing Intermatic EJ500 Indoor Wall Switch Timer with Astronomic Feature. This timer can replace your regular or 3-way light switch (where two switches control the same light) to control incandescent and fluorescent lights. (See important notes) You will need a Decora style wall plate with this timer (wall plate not included).
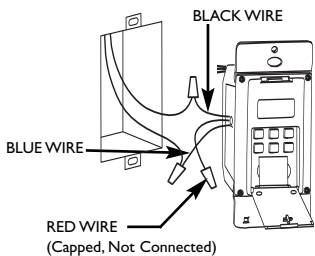
Features
• Automatic or manual operation. Push the control cover to switch ON or OFF at any time.
• Program up to 7 ON/OFF setting pairs.
• Automatic Daylight Savings Time (dST) option.
• Multiple daily settings options:
  o All days of the week
  o Individual days of the week
  o 5 weekdays
  o 2 weekend days
• LCD digital clock and readout.
• Random feature automatically varies switching times for a "lived-in" look.
• Two SR44/LR44 batteries keep time for up to 3 months, of power interruption.
• Built-in memory holds settings indefinitely without battery.

Installation Instructions - Single Switch or 3-way - to replace an existing switch:
1. TURN OFF POWER by REMOVING FUSE or turning the CIRCUIT BREAKER OFF.
2. Remove the existing wall switch.

7/16"

Trim building wires bare to 7/16".
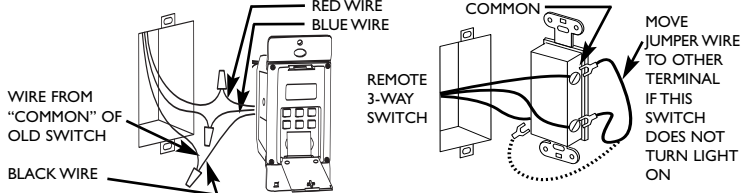
BLACK WIRE

BLUE WIRE

RED WIRE
(Capped, Not Connected)

Single switch:
3. Connect one of the building wires to the black wire from the timer, using the wire nuts provided. Connect the other building wire to the blue wire from the timer.
THE RED TIMER WIRE IS NOT USED FOR SINGLE SWITCH INSTALLATIONS. Cap the red wire with a wire nut.
BE SURE THAT ALL THE WIRE NUTS ARE SECURE.

3-way switch: *(See "Other Installations" if switching from 3 or more locations)*

3a. A three way switch has three wires connected to it. One of the wires is "common" (the terminal has a different colored screw or there are markings on the old switch). Connect the Black wire from the timer to the common wire. Connect the other two wires to the Blue and Red wires from the timer (it doesn't matter which goes to which.)

RED WIRE
BLUE WIRE
COMMON
WIRE FROM "COMMON" OF OLD SWITCH
BLACK WIRE
REMOTE 3-WAY SWITCH
MOVE JUMPER WIRE TO OTHER TERMINAL IF THIS SWITCH DOES NOT TURN LIGHT ON

3b. Identify the "common" terminal at the other (remote 3-way) switch. Connect the supplied jumper wire from the common terminal to one of the other two terminals of the switch.
(If the light does not turn on when you get to step 6, turn power off at the fuse or circuit breaker and switch the jumper wire to the other terminal.)

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4. Tuck the wires into the wall box leaving room for the timer.
5. Using the screws provided, mount the timer to the wall box then install the wall plate.

After display starts flashing "12:00 AM", press the **"NEXT/ON/OFF"** button. The display should switch between ON and OFF. Your timer is now ready to set.
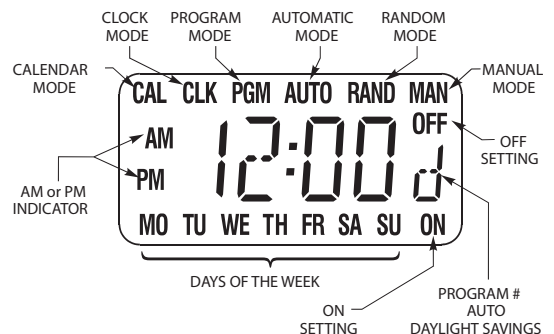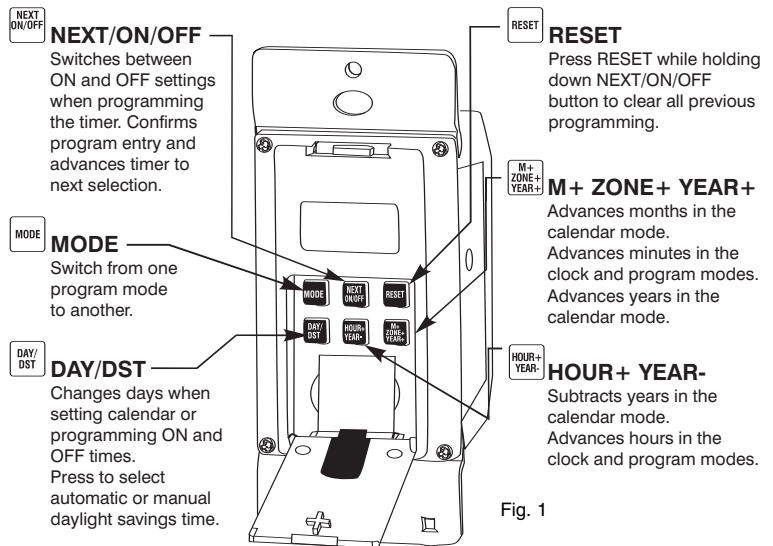
Ratings
500W single gang or 2 gang installations (40W minimum)
4A Tungsten (Incandescent)
4A Ballast (Inductive)
120VAC, 60 Hz
Operating Temperature: 0 deg C - +40 deg C.

IMPORTANT NOTES:
• This switch is suitable for use in up to 2 gang installations.
• EJ500 is designed to operate standard incandescent light bulbs or (thermally protected Class P ballast) fluorescent lighting ONLY.
• The switch can handle a minimum load totaling 40 Watts.
• This device is NOT TO BE USED to operate MERCURY VAPOR LIGHTS, APPLIANCES, RADIOS, TV's, STEREO's, etc.
• Separate dimmers and photoelectric switches cannot be used in combination with your timer.
• It is recommended that your timer not be used with PAR or "R" type outdoor flood lamps or lamps larger than 150 watts, since currents generated during lamp burn-out could damage the timer.

Battery Replacement
The two LR44/SR44 batteries maintain the time of day clock and the calendar during power interruptions, for up to 3 months of accumulated interruptions. All the other settings will remain in memory indefinitely without batteries or AC power. Remove the batteries if the timer will be without AC power for an extended time.Replace the batteries if the display is dim or the message "lobAT" is displayed. The batteries may be safely changed without removing AC power. If AC power is removed, please change batteries within 15 seconds to avoid losing your time of day setting.Remove the battery holder by prying at either finger hole, left and right of holder. Install the new batteries into the holder as marked inside holder. Re-install holder with the notch down. If the display is flashing 12:00 AM, reset the time and check the date settings. The "lobAT" message will disappear within 10 seconds of installing new good batteries.

NEXT/ON/OFF
Switches between ON and OFF settings when programming the timer. Confirms program entry and advances timer to next selection.

MODE
Switch from one program mode to another.

DAY/DST
Changes days when setting calendar or programming ON and OFF times.
Press to select automatic or manual daylight savings time.

RESET
Press RESET while holding down NEXT/ON/OFF button to clear all previous programming.

M+ ZONE+ YEAR+
Advances months in the calendar mode.
Advances minutes in the clock and program modes.
Advances years in the calendar mode.

HOUR+ YEAR-
Subtracts years in the calendar mode.
Advances hours in the clock and program modes.

Fig. 1

CLOCK MODE
PROGRAM MODE
AUTOMATIC MODE
RANDOM MODE
CALENDAR MODE
MANUAL MODE

CAL CLK PGM AUTO RAND MAN
AM
PM
12:00
OFF
OFF SETTING

AM or PM INDICATOR

MO TU WE TH FR SA SU ON

DAYS OF THE WEEK
ON SETTING
PROGRAM # AUTO DAYLIGHT SAVINGS

Glossary of Terms
Astronomic Feature – The EJ500 Wall Switch Timer with Astronomic Feature automatically compensates for changes in the length of daylight throughout the year. For example, the sunset in Chicago, IL varies from approximately 4:30 PM during December to approximately 9:00 PM during June. The EJ500 automatically adjusts for changes in daylight. SET THE TIMER ONCE AND NO RESETTING, BECAUSE OF DAILY TIME CHANGES, IS REQUIRED.

Daylight Savings Time (DST) – The EJ500 timer has an automatic Daylight Savings Time feature. The AUTO setting will adjust for daylight savings time changes. The MAN setting prevents automatic DST adjustments.

Program Zone – (See Fig 7) The Astronomic program divides the United States into 3 zones. The NORTH Zone refers to locations from Chicago, IL northward. The CENTRAL zone refers to locations between Chicago, IL and southern Missouri. The SOUTH zone refers to locations south of Missouri.

SUNUP – When using the Astronomic feature, the morning sunrise is automatically calculated by the timer. However, the exact sunrise setting can vary from area to area. The sunrise setting can be manually adjusted to match your exact sunrise time. Check your local newspaper or weather report for the exact sunrise time in your area.

SUNSET – When using the Astronomic feature, the evening sunset time is automatically calculated by the timer. The same adjustment that is used for SUNUP can be used for SUNSET.

Programming and Operating Instructions
Batteries
-EJ500 comes with two SR44/LR44 batteries
-To start the timer, pull the tab out from the bottom of the battery door (inside of the control cover). See Fig. 2.

HELPFUL HINTS. PLEASE READ BEFORE SETTING THE CALENDAR OR CLOCK:
1. If you wish to skip a programming step, such as SUNUP and SUNSET settings, press the MODE button to pass any section of the program.
2. When you complete each step in setting the CALENDAR and ON/OFF times, press the NEXT On/Off button. The next selection will flash on the display. In order to stop the flashing and enter your selection, press the applicable function button(s) once, and then enter your selection.
3. By pressing and holding any button, the display will advance rapidly.
4. In order for the Astronomic Feature and automatic DST settings to function properly, the CALENDAR settings must be entered correctly.
5. In the event that the batteries are allowed to run down, or are removed for more than 15 seconds, the timer will maintain the year, month, day and all prior programming settings. If the batteries are replaced on the same day, only the time of day would have to be re-entered.

Battery Tab   Fig. 2

Setting the Calendar
When the battery tab is pulled. The display will flash. See Figure 3
Press **MODE** to go to the Calendar (CAL) screen. See Fig 4.
Press **YEAR**+ once to stop the display from flashing.
Press **YEAR+** until the correct year is displayed.
If you went past the proper year, press **YEAR-** to get to the correct year.

Fig. 3

Fig. 4

Press **NEXT ON/OFF** and the display will flash DATE.
Press **M+ (MONTH)** or **DAY** button to stop the display from flashing. See Fig 5.
Press **M+** until the correct month is displayed.
Press DAY until the correct date is displayed.

Fig. 5

Press **NEXT ON/OFF** to see DST, AUTO flashing display. See Fig 6.
Press **DST** button once to stop the flashing. Press **DST** for AUTO or MANUAL selection (AUTO automatically will compensate for DST time changes; MANUAL requires a manual adjustment or no adjustment).

Fig. 6

Fig. 6A

Press **NEXT ON/OFF** to see ZONE, CENTR flashing display. See Fig 7
Press **ZONE+** button once to stop the flashing. Press **ZONE+** to choose NORTH, CENTRAL, or SOUTH. SEE THE MAP TO FIND THE AREA OF THE COUNTRY WHERE YOU ARE LIVING.

Fig. 7

Press **NEXT ON/OFF.** The display will flash between SUNUP and an AM time.
-If you wish to use the pre-programmed time setting, press NEXT to advance to the SUNSET (DISPLAYED AS SNSET) setting.
-If you wish to adjust the calculated SUNUP setting, press **HOUR+** or **M+** button once to stop the display from flashing. Using a local newspaper or weather report to determine your exact SUNUP time, use **HOUR+** and **M+** to adjust the SUNUP time to the proper hour and minute of sunrise.

Press **NEXT ON/OFF** to go to the SNSET setting. Follow the same directions as was used for SUNUP.
The CALENDAR settings are now complete.

Setting the Time of Day
Press **MODE** to go to the Clock (CLK) settings. The display will flash with 12:00 AM.
Press **HOUR+** to stop the flashing.
Press **HOUR+** and **M+** to set the current time in hours and minutes.
Make sure that AM and PM settings are correct.

Note: The day of the week is shown at the bottom of the display. If you have not programmed the calendar settings, be sure to also set the current day of the week while programming the current time. To do this, press **DAY** until the correct day of the week is shown. The CLOCK settings are now complete.

Fig. 8

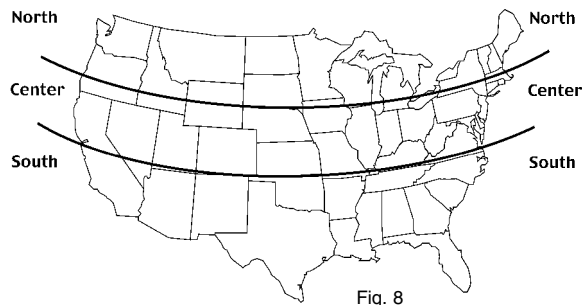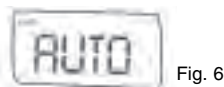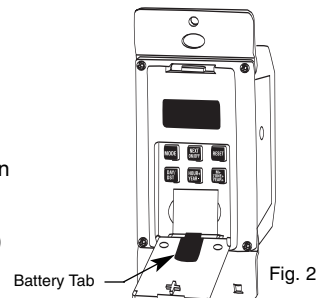**Programming ON/OFF Times**
Note: Programming ON/OFF Times
-There are two ways to program the EJ500 timer:
  o You may program each desired ON/OFF setting by selecting specific times **or**
  o You may use the ASTRO SUNUP or SUNSET settings.
-In order to use the ASTRO features you must have already followed all previous instructions.
-The EJ500 timer has up to 7 ON and 7 OFF settings.
-Each ON or OFF setting may be programmed to occur on any specific day, all days of the week, weekdays only, or weekends only.

For NON-ASTRO Event Settings:
Press **MODE** to go to the first PGM screen. See Fig.9
Use **DAY, H+** and **M+** buttons to set the days, hours and specific times that you would like the timer to turn ON.
(NOTE: Be sure the word ON is displayed when setting the ON time.)

Press **NEXT ON/OFF** to program an OFF time.

Repeat the same steps for all 7 ON/OFF operations, if required.

For ASTRO Event Settings:
For automatic SNSET and SUNUP On/Off settings, press **DAY** to scroll through all the day options until SUNUP or SNSET is shown.

Fig. 9

For ASTRO Event Settings:
For automatic SNSET and SUNUP On/Off settings, press **DAY** to scroll through all the day options until SUNUP or SNSET is shown.
SUNUP or SNSET can also be selected for specific days or groups of days by continuing to press **DAY** until the desired days are shown. SUNUP is always an OFF event and SNSET is always an ON event.

NOTE: When pressing **NEXT ON/OFF,** the words ON and OFF will alternate below and above the numbers 1 – 7. These are the seven possible ON and OFF settings. If you are setting the timer to turn ON and OFF only once per day, you would only need to program 1 ON and 1 OFF setting, with all seven days of the week displayed.

You have now completed EVENT settings.

Selecting AUTO, AUTO RANDOM or MANUAL OPERATION
Press **MODE**. The display will read the current time and AUTO. To change to AUTO RAND or MANUAL, press **MODE**.
-AUTO turns the timer ON and OFF according to your settings.
-AUTO RAND turns the timer ON and OFF with +/- 20 minutes of the programmed. This feature prevents your lights from turning ON and OFF at exactly the same time everyday, giving your home a "lived-in" look.
-MANUAL maintains the program in memory but does not turn the timer ON or OFF according to the program. To return to the program, press the MODE button until AUTO or AUTO RAND appears.

Congratulations! You have now completed setup of your EJ500.

Manual Override
There are two ways to override your EVENT settings:
        Open the control cover and press the **NEXT ON/OFF** button.
        Press the control cover.
The EVENT will be overridden until the next scheduled EVENT.

NOTE: It is suggested that the "air gap" switch not be used for daily ON/OFF switching. Continual use will speed up the depletion of the back-up batteries.

Replacing the Batteries
EJ500 uses two LR44/SR44 batteries. When the batteries are getting low, the display will show LoBAT. To remove the batteries, open the control cover and with the tip of a flat screwdriver, carefully pry the battery holder up. Replace the old batteries with fresh batteries, placing them in the battery holder as shown in the battery holder. See Fig 12. FIG 12 LINE ART BATTERY HOLDER). Firmly place the battery holder into the switch.
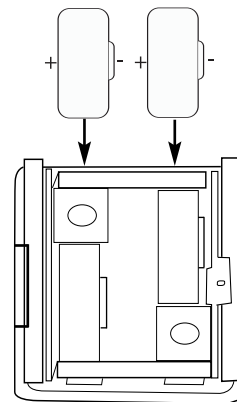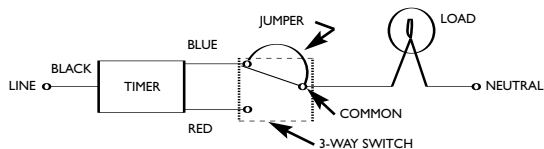
Fig. 10

Other Installations

MULTISWITCH APPLICATIONS USING THE ELECTRONIC TIMER ARE WIRED DIFFERENTLY THAN WHEN USING CONVENTIONAL TOGGLE SWITCHES. READ THE FOLLOWING INSTRUCTIONS CAREFULLY.

Multiple timers may be mounted in adjacent junction box slots.
No derating is required for multiple timers.

Wiring diagram, 2 switch installation (3-way):

JUMPER LOAD
BLUE
BLACK
LINE TIMER NEUTRAL
COMMON
RED
3-WAY SWITCH

NOTE: For new construction or to replace a dimmer switch, a lighted switch, or a 3-way switch without screw terminals, a single pole switch can be used at the remote location, as shown below.
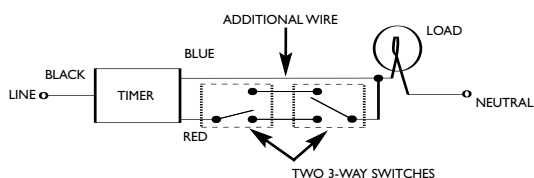
4 or more switch installation:

For 4 or more switch installations use the preceding 3 switch installation diagram and wire 4-way switches between the two 3-way switches.

Note: THE REMOTE SWITCH(ES) MAY NOT FUNCTION RELIABLY WHEN THE ACCUMULATED WIRE LENGTH TO THE REMOTE SWITCH(ES) EXCEEDS 100 FEET OR IF THE WIRING TO THE REMOTE SWITCH(ES) IS BURIED UNDERGROUND. Consult factory for details.

Note: Used remote switches from a previous conventional installation may not function reliably with an electronic timer. Try a brand new remote switch if function is intermittent.

Wiring diagram, 3 switch installation:

For 3 or more switch operation, AN ADDITIONAL WIRE MUST BE ADDED between the load and the timer. The jumper wire is not required for these applications.

ADDITIONAL WIRE LOAD
BLUE
BLACK
LINE TIMER NEUTRAL
RED
TWO 3-WAY SWITCHES

For existing 3 switch installations replace one 3-way switch with the timer and replace the 4-way switch with a 3-way switch.

LOAD MAINTENANCE

The manual "air gap"switch located at the top edge of EJ500is designed to turn power off for routine maintenance of the device being controlled (repairs, removing broken bulbs, etc.

NOTE: It is suggested that the "air gap"switch **not** be used for daily ON/OFF switching. Continual use will speed up the depletion of the back-up batteries.

CAUTION: THIS TIMER SHOULD NOT BE USED IN PRECISION TIMING APPLICATIONS WHERE INACCURATE TIMING COULD HAVE DANGEROUS CONSEQUENCES (I.E., SUN LAMPS, SAUNA, ETC.)

TROUBLESHOOTING GUIDE

SYMPTOM	POSSIBLE CAUSE	REMEDY
Timer is blank until any button is pushed, and display changes between **ON** and **OFF** when pressing door, but light stays **OFF**.	Bulb is missing, loose, disconnected or burned out. "Air Gap"switch at upper edge of timer is switched off, or no power. (Fuse or Circuit Breaker blown)	Make sure "Air Gap"switch is in it's ON position (= SLID to LEFT = slider in center of slot). Make sure bulb is good and that there are no other switches, photo controls, etc., in the circuit controlling the bulb. Make sure fuse or circuit breaker is on.
Timer does not switch but display is normal.	Timer not in AUTO, AUTO RAND(om), or MAN(ual) mode.	Use MODE pushbutton to select the desired operating mode.
Timer works manually but does not follow scheduled program.	Timer not in AUTO or AUTO RAND(om) mode.	Use MODE pushbutton to select AUTO or AUTO RAND
Timer won't enter the AUTO or AUTO RAND modes when MODE button is pushed.	Time of day and/or switching times are not programmed.	Make sure time of day and at least one scheduled activity are programmed.
Timer switches at incorrect times or skips some switching times.	Programmed schedule(s) are incorrect.	Review / Revise <u>ALL 7</u> ON/OFF switching time pairs by repeatedly pushing the next NEXT/ON/OFF button while in PGM mode.
	Timer is in AUTO RAND(om) mode (Varies switching times up to +/- 15 minutes).	Use MODE pushbutton to select AUTO mode.
When using a combination of Astronomic and Specific switching times, the timer switches at unexpected times or *doesn't* switch when expected.	Conflicting Astronomic and Specific switching time settings. Your timer automatically skips any conflicting ON EVENTS as summer approaches to prevent unwanted operation of lights. See "REMEDY"if you wish to identify and remove conflicting settings.	Complete the steps under "Setting the Calendar" then temporarily change your timer's calendar setting to June 21st. Now review the SUNUP and SNSET times by pushing the NEXT/ON/OFF button. Make sure your Specific ON or OFF time settings won't interfere with these Astronomic switching times. Be sure to change the date back to today's date when you're done.
Load state doesn't match programmed state immediately after programming the time or schedule.	Timer does not "catch up" to the programmed load state. The load will remain in it's state prior to entering the PGM mode. The timer will begin following the scheduled program at the next contrary ON/OFF time.	After entering your schedules or the time, then returning to the AUTO modes, push the next NEXT/ON/OFF button to change the load state if necessary.
Load only operates when the remote (3-way) switch is in one position or timer ignores the remote switch.	Remote switch is wired incorrectly.	Recheck wiring, especially for the jumper, per **"Installation Instructions - 3-Way Switch"** and **"Other Installations"**.
Timer ignores remote (3-way) switch even though it is wired correctly.	Excessive length of wire (greater than 100 feet) or buried wiring to the remote switch.	Eliminate condition, replace the buried cable, do without the remote switch, or consult factory for other options.
	Remote switch is defective or worn out.	Replace remote switch.
Load turns off immediately after being turned on.	Remote switch or timer wired incorrectly, excessive length of wire (greater than100') or buried wiring to remote switch, or defective timer.	If the problem persists with the timer's red wire disconnected or with a 'remote' switch temporarily connected right at the timer, replace the defective timer, otherwise try the above remedies.
Battery holder is difficult to snap in place	Batteries not seated in holder, holder misaligned, or contact tabs of holder are bent.	Seat the batteries, then install the holder with the notch facing down.

LIMITED ONE YEAR WARRANTY

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