INTERMATIC®

MODEL EJ500 SERIES
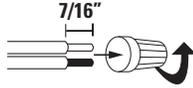## DIGITAL ASTRONOMIC TIMER
Installation and User Instructions

⚠ **WARNING** *Risk of Fire or Electrical Shock*

- **Risk of injury or death. Remove electrical power at service panel before installing.**
- **Risk of fire and burns. Do not recharge, disassemble, heat above 212˚F (100˚C), crush, or incinerate the batteries. Keep out of reach of children.**
- **Do not use timer to control devices that could have dangerous consequences due to inaccurate timing such as sun lamps, sauna, heaters and crock pots.**
- **Follow local electrical codes during installation.**

Installing the Switch Timer

1. Turn off power at the circuit breaker or fuse and verify that the power is OFF before wiring.
2. Strip wire ends to 7/16".
3. Make wire connections using the twist on connectors provided.

7/16"

Before Installing the Switch Timer, Install and Check Battery

Before installing the switch timer into the wall, make sure the supplied batteries are installed and working.
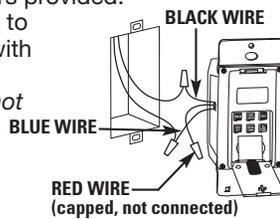
1. Open the access door to reveal the battery tray, located below the keypad.
2. Remove the tab to connect the installed batteries. Make sure battery tray is pushed fully into place.
3. The display will initialize itself then flash "12:00 AM" in MANual mode.

NOTE: If display doesn't flash "12:00 am", the batteries may be dead. Replace the batteries before installing the switch timer. Use type LR44, SR44, A76 or Equivalent.

4. Take one of these actions.
   - If you have a single switch setup, then perform the procedure "Installing the Timer with a Single Switch Setup".
   - If you have a 3-way switch setup, then perform the procedure "Installing the Timer with a 3-way Switch Setup".
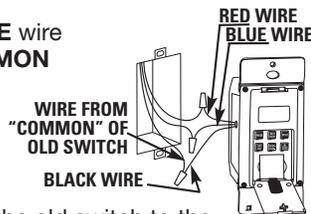
Installing the Switch Timer with a Single Switch Setup

1. Connect one wire from the wall to the black wire from the switch timer with the twist connectors provided.
2. Connect the other wire from the wall to the blue wire from the switch timer with the twist connectors provided.
3. *NOTE: Cap the RED wire, which is not used in single-switch installations, with a twist connector.*
4. Connect the BARE COPPER wire to the grounding screw in the box. If a plastic box, connect to ground as supplied.
5. Gently tuck wires into the timer wall box leaving room for the timer.
6. Using screws provided, mount the switch timer into the wall box, then install the wall plate.
7. Turn the power back on at the service panel.
8. Go to "Intro to Programming: Read Before you Begin."

BLACK WIRE
BLUE WIRE
RED WIRE (capped, not connected)

Installing the Switch Timer with a 3-Way Switch Setup

- *The distance between switch timer and remote switch must not exceed 100 feet.*
1. Using diagram #1, identify the **LINE** wire previously connected to the **COMMON** terminal of the old 3-way main switch.
2. Connect the BLACK wire from switch timer to the LINE wire, using a twist connector.
3. Connect the other two wires from the old switch to the BLUE and RED wires from the switch timer.
4. Connect the BARE COPPER wire to the grounding screw in the box. If a plastic box, connect to ground as supplied.
5. Using diagram #1, identify and remove wire "C" from the

RED WIRE
BLUE WIRE
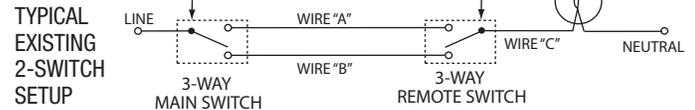WIRE FROM "COMMON" OF OLD SWITCH
BLACK WIRE

RATINGS:
- Single or multiple gang installations
- 4 Amp 500 W Tungsten
- 120 VAC, 60 Hz.
- Do not use with "PAR" or "R"-type outdoor flood lamps larger than 150 watts.
- Do not use with **H.I.D.** lamps, fluorescent lamps, compact fluorescent **(CFL)** lamps, nor **L.E.D.** lamps
- Do not use with appliances, radios, televisions, stereos.
- Do not use in combination with separate dimmers or photoelectric switches.

"COMMON" terminal of your existing remote switch.

DIAGRAM 1:
TYPICAL EXISTING 2-SWITCH SETUP

LINE "COMMON" TERMINAL WIRE "A" LOAD WIRE "C" NEUTRAL WIRE "B" 3-WAY MAIN SWITCH 3-WAY REMOTE SWITCH

6. Using diagram #2 remove and reconnect wires "B" and "C" to the "COMMON" terminal of your remote switch, using the supplied piece of jumper wire, if necessary.
   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 should be used at the remote location, as shown in diagram 3.
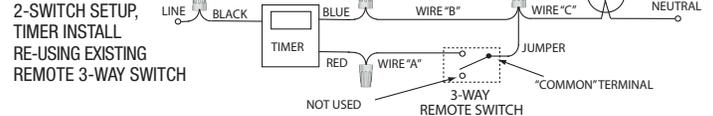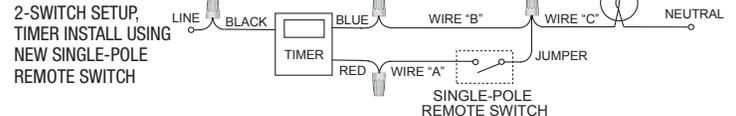
DIAGRAM 2:
2-SWITCH SETUP, TIMER INSTALL RE-USING EXISTING REMOTE 3-WAY SWITCH

LINE BLACK BLUE WIRE "B" WIRE "C" LOAD NEUTRAL TIMER RED WIRE "A" JUMPER NOT USED 3-WAY REMOTE SWITCH "COMMON" TERMINAL

DIAGRAM 3:
2-SWITCH SETUP, TIMER INSTALL USING NEW SINGLE-POLE REMOTE SWITCH

LINE BLACK BLUE WIRE "B" WIRE "C" LOAD NEUTRAL TIMER RED WIRE "A" JUMPER SINGLE-POLE REMOTE SWITCH

NOTE: If the building's wiring colors don't allow you to tell wire "A" from "B", just pick one of the two wires and connect as if it is wire "B". After the installation is complete, if the controlled light or device will not turn on properly, simply reverse wires "A" and "B". See Steps 10 through 13 below for how to check.

7. Gently tuck wires into the timer wall box leaving room for the timer.
8. Using screws provided, mount the switch timer into the wall box, then install the wall plate.
9. Turn the power back on at the service panel.
10. Make sure the switch timer displays "MAN" mode. Perform the test in Step 11 with the remote switch in each of its 2 positions.
11. Press the **NEXT/ON/OFF** button on the switch timer several times. Each time that you push the **NEXT/ON/OFF** button, the controlled light or device (the "load") should turn on or off. If so proceed to Step 13.
12. If the controlled light or device does not turn on or off, take one of these actions.
    - If the timer does not operate regardless of position of remote switch, re-check your wiring and make sure the load is functional.
    - If the timer only operates when the remote switch is in one of its 2 positions, you need to turn off the power at the service panel, then reverse wires "A" and "B". You can reverse wires "A" and "B" at the remote switch wall box, or you can reverse wires "A" and "B" where they connect to the red and blue wires of the switch timer. Then turn power back on at the service panel and repeat Step 11.
13. Verify that the controlled load turns on or off each time that the remote switch is operated. Your timer is ready to be set.
14. Proceed to Intro to Programming.

Intro to Programming: Read Before You Begin

- As you press the buttons to program, it will be helpful to have an overview of how they are organized. Press the **MODE** button to rotate through the timer's modes: CALendar, CLocK, ProGraM, AUTO, AUTO RANDDom, and MANual.
- Within each mode, menus "loop", so they repeat when you get to the end.
- You must set the CALendar and CLocK before programming ON/OFF times.
- If the timer is left idle for five minutes, the programmed settings are automatically saved.

NOTE: See section "Selecting Auto, Auto Random or Manual Operation" for description of each mode.

Clear Existing Programming

Before you program the timer, be sure to perform these instructions.
1. Open the control door.
2. Simultaneously press and hold **RESET** and **NEXT ON/OFF** buttons.
3. Release **RESET**. The screen initializes, then flashes "12:00 AM" in MANual mode.
4. Release **NEXT ON/OFF**. All previous settings are deleted.

Set the Calendar Information

In order for the timer to automatically adjust for seasonal changes in sunrise and sunset and adjust for Daylight Saving Time, the CALENDAR must be set correctly. Follow this procedure to set Calendar Info.

*NOTE: If you go too far, Press the button to scroll back around. For the year, you can also press the **YEAR+** button to scroll through the years.*

1. Press **MODE** to display CAL and the year. The time screen alternately displays YEAR and a flashing number (Fig. 1).
2. Press **YEAR+** or **YEAR-** as necessary to scroll to the correct year.
3. Press **NEXT ON/OFF**. The screen alternately displays **dATE** and a dashed line or flashing number. (Fig. 2).
4. Press **M+** to scroll to the correct month (Fig. 3).
5. Press **DAY/DST** to scroll to the correct date (Fig. 3). The calculated day of the week appears beneath the DATE.
6. Press **NEXT ON/OFF** to set Daylight Saving Time (dST). The display flashes between dST and AUTO (Fig. 4).
7. Press **DAY/DST** to select AUTO (dST on) or MAn (dST off).

Note: - If your area uses dST, select AUTO (Fig. 5).
   - If your area does not use dST, select MAN.

8. Press **NEXT ON/OFF** to save the DST setting. The screen alternately displays ZONE and CENTr (Fig. 5)`.
9. Press **ZONE+** as needed to select a zone, (SOUTh, NORTh, and CENTr). Use the map (Fig. 7) to determine your zone.
   NOTE: This feature tracks changes in sunrise and sunset times.
10. Press **NEXT ON/OFF**. The display alternates between SUNUp and an AM time (Fig. 8).
11. Take one of these actions:
    - If you DO NOT want to set exact Sunup and Sunset times: Go to "Set Time of Day".
    - If you want to set exact Sunup and Sunset times: Go to step 12.
12. Press **HOUR +** as necessary to set the correct SUNUp hour (Fig. 9).
    Note: The smaller letter "d" indicates Daylight Saving Time is in effect.
13. Press **M+** to scroll to the desired minute.
14. Press **NEXT ON/OFF** to advance to setting exact SNSEt time (Fig. 10).
15. Press **HOUR +** as necessary to set the correct SNSEt hour.
16. Press **M+** as necessary to set the correct SNSEt minute.

Fig. 1 — YEAR (CAL)

Fig. 2 — dATE (CAL)

Fig. 3 — 09 14 (CAL)

Fig. 4 — dST (CAL)

Fig. 5 — AUTO (CAL)

Fig. 6 — ZONE (CAL)

Fig. 7

Fig. 8 — SUNUp (CAL)

Fig. 9 — AM 6:32 d (CAL)

Fig. 10 — PM 8:52 d (CAL)

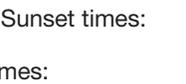## Set Time of Day

1. If you have not already done so, press **MODE** to scroll to CLK (clock) and a time. The first time, **12:00 AM** flashes (Fig. 11).
2. Press **HOUR +** to scroll to desired hour.
3. Press **M+** to scroll to the desired minute.
   NOTE: Make sure AM or PM is correct. Time and Date are now set.

Fig. 11 — AM 12:00 d (CLK)

Set an ON/OFF Program at Specific Times

1. Press **MODE** to scroll to the PGM ON screen. The display shows dashes if no time was set (Fig. 12) or shows a time if previously set (Fig 13).
2. Press **DAY/DST**. The screen displays a time and days of the week.
3. Press DAY/DST again to scroll to the desired day(s) that you want the ON program to operate. (Fig. 13). If you need to skip this ON program, scroll to dashes (Fig. 12) and proceed to step 6. See choices below:
   - everyday
   - weekdays only (Fig. 13)
   - weekends only
   - a specific day
   NOTE: If you go too far, keep pressing DAY/DST to loop back to the desired choice.
4. Press **HOUR+** to scroll to the hour desired to activate the load.(Fig. 14).
   Note: Make sure AM or PM is correct.
5. Press **M+** to scroll to the desired minute to activate the load (Fig. 14).
6. Press **NEXT ON/OFF** to scroll to the **PGM OFF** screen (Fig. 15).
7. Press **DAY/DST**. The screen displays a time and some days of the week. (Fig. 16).
8. Press **DAY/DST** to scroll to the desired day(s) you want this OFF program to operate. (Fig. 16). If you need to skip this OFF program, scroll to dashes (Fig. 15) and proceed to step 11.
9. Press **HOUR+** to scroll to the hour when you want the load to turn off. (FIg. 17).
   NOTE: Make sure AM or PM is correct.
10. Press **M+** to scroll to the minute when you want the load to turn off (Fig. 17).
11. Take one of these actions:
    - If all the required programs are set, press **MODE** to exit.
    - If another program needs to be set, press **NEXT ON/OFF** and repeat steps 2 through 10.

Fig. 12 — PGM -- : -- ON

Fig. 13 — PGM AM 12:00 ON

Fig. 14 — PGM PM 7:30 ON

Fig. 15 — PGM -- : -- OFF

Fig. 16 — PGM AM 12:00 OFF

Fig. 17 — PGM PM 11:30 OFF

Set an ON/OFF Program for Sunrise/Sunset

1. Press **MODE** to scroll to the **PGM ON** screen. Display shows dashes 1st time (Fig. 18) or shows the screen of Fig. 19 or 20 if previously set.
2. Press **DAY/DST.** The screen displays a time and days of the week. (Fig. 19 or 20).
3. Pressing **DAY/DST** to scroll to SNST ON screen (Fig. 20).
   Pressing **DAY/DST** to select the day(s) you want this SUNSET ON program to operate. (Fig. 20). See below for a list of choices:
   - everyday (MON - SUN)
   - weekdays only (Fig. 19) MON - FRI
   - weekends only (SAT - SUN)
   - a specific day of week
   *NOTE: If you go too far, Press **DAY/DST** to scroll around to the desired setting.*
   If you need to skip this SUNSET ON program, scroll to dashes (Fig. 18) and proceed to step 4.
4. Press **NEXT ON/OFF** to scroll to **PGM OFF** screen. (Fig. 21, 22, or 23).
5. Press **DAY/DST** to scroll to **SNUP** OFF screen (FIg, 23).
6. Press **DAY/DST** to select the day(s) when you want this SUNUP OFF program to operate. (Fig. 23). If you need to skip this SUNUP OFF program scroll to dashes (Fig. 21) and proceed to step 7.

Fig. 18 — PGM -- : -- ON

Fig. 19 — PGM AM 12:00 ON

Fig. 20 — PGM PM SNST ON

Fig. 21 — PGM -- : -- OFF

Fig. 22 — PGM AM 12:00 OFF

Fig. 23 — PGM AM SNUP OFF

7. Take one of these actions:
   - If all the required programs are set, press **MODE** to exit and go to *Selecting **AUTO, AUTO/RANDom,** or **MANual Operation***.
   - If another SUNSET or SUNUP program needs to be set, press **NEXT ON/OFF** and repeat steps 2 through 6. The program number next to "ON" or "OFF" will increase to help you keep track of multiple programs.
   - Go to *Setting Sunset ON/Specific Time OFF*.

Setting Sunset ON/Specific Time OFF

*NOTE: **Sunset ON / Specific Time OFF** is the most common setting for the switch timer. As a convenience, here is the full step by step.*

1. Press **MODE** to scroll to **PGM On** screen (Fig. 24, 25 or 26).

   PGM
   -- : -- 1
   ON
   Fig. 24

2. Press **NEXT ON/OFF** to scroll to a PGM ON screen that has a dashed line for time (Fig. 24).
3. Press **DAY/DST** to scroll to SNST (Fig. 26).

   PGM
   AM 12:00 1
   MO TU WE TH FR   ON
   Fig. 25

4. Press **DAY/DST** to select the days you want the program to activate.
   See the choices below:
   - everyday (MON - SUN)
   - weekdays only (MON - FRI)
   - weekends only (SAT - SUN)
   - a specific day of the week

   PGM
   PM SNST 1
   MO TU WE TH FR   ON
   Fig. 26

   *NOTE: If you go too far, Press **DAY/DST** to scroll around to the desired command.*
5. Press **NEXT ON/OFF** to scroll to a **PGM OFF** screen that has dashed lines (Fig. 27).

   PGM
   -- : -- 1   OFF
   Fig. 27

6. Press **DAY/DST**. A time and some days will be displayed (Fig. 28).
7. Press **DAY/DST** to select the day(s) on which you want the OFF program to operate. (Fig. 28).

   PGM
   AM 12:00 1   OFF
   MO TU WE TH FR
   Fig. 28

   NOTE: Because you are setting a specific OFF time to operate in conjunction with a SUNSET ON program that you already programmed in step 4, choose the same day(s) as selected in step 4 above.
8. Press **HOUR+** to set the hour you want the program to turn OFF.
9. Press **M+** to set the minute you want the program to turn OFF (Fig. 29).
   NOTE: Make sure AM or PM is correct.

   PGM
   PM 11:30 1   OFF
   MO TU WE TH FR
   Fig. 29

10. Take one of these actions.:
    - If all the required programs are set, press **MODE** to exit.
    - If another program needs to be set, repeat steps 2 through 9.

To Review or Revise Program Settings

1. Press **MODE** to scroll to PGM screen.
2. Press **NEXT ON/OFF** repeatedly to view the programs (ON 1-7 and OFF 1-7). Dashes indicate that program is skipped.
3. Repeat the programming steps above to make any desired changes.
4. Press **MODE** to select **AUTO, AUTO RANDom or MANua**l mode as described below.

Selecting AUTO, AUTO RANDom, or MANual Operation

After the timer programming is complete, select the controller mode.

1. Open the timer front cover.
2. Press **MODE** to select the desired **MODE**. Review the choices below.
- **AUTO -** uses the timer settings you have programmed
- **AUTO RANDom -** gives your home a "lived-in" look by varying your settings by a random amount of $\pm$ 20 minutes or so.
- **MANual -** maintains your settings but operates the timer like a standard ON/OFF switch. Press on the door of the timer for ON, press again for OFF.
3. Close the timer door and then press the door.
Note: Once the door is closed it operates as an ON/OFF switch.

Battery Memory Backup

Your timer contains 2 Type LR44 non-rechargeable batteries to maintain the date and time of day information for at least 4 consecutive days of AC power interruption. All other user settings are maintained indefinitely without AC power.

After an extended power outage, if the display is flashing "12:00 AM", you will need to re-enter the CALENDAR and TIME of DAY information, and replace the batteries.

Manual Override

To override a program (ON/OFF time) until the next scheduled time:
   Press the control door (over the programming buttons), or open the control door and press **NEXT ON/OFF**.

Troubleshooting Guide

Observed Problem	Possible Cause	Solution
Timer is blank until a button is pushed and display changes between ON and OFF when pressing door, but light stays OFF or flickers.	No power (fuse or circuit breaker blown), loose wiring connection or no load / burned out bulbs.	Make sure fuse is not blown and circuit breaker is on. Replace fuse if necessary.
Timer does not switch but display is normal.	Timer not in AUTO, AUTO RAND(om), or MAN(ual) mode.	Press **MODE** to select the desired operating mode.
Timer works manually but does not follow scheduled program.	Timer not in AUTO or AUTO RAND(om) mode.	Press **MODE** to select AUTO RAND.
Timer will not enter the AUTO or AUTO RAND modes when MODE is pressed.	Time of day and/or switching times are not programmed.	Make sure time of day and at least one scheduled activity are programmed. See Set an ON/OFF Program.
Timer switches at incorrect times or skips some switching times.	Programmed schedule(s) are incorrect.	Review ALL 7 ON/OFF switching time pairs by repeatedly pushing **NEXT ON/OFF** while in PGM mode and revise as necessary.
	Timer is in AUTO RAND(om) mode (varies switching times up to $\pm$ 15 minutes).	Press **MODE** to select AUTO mode.
When using a combination of Astronomic and specific switching times, the timer switches at unexpected times or does not switch when expected.	There are 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 the next column if you wish to identify and remove conflicting settings.	1. Complete the steps under "Setting the Calendar". 2. Temporarily change your timer's calendar setting to June 21st. 3. Review the SUNUP and SNST times by pressing **NEXT/ON/OFF**. 4. Make sure your specific ON or OFF time settings will not interfere with these Astronomic switching times. 5. Be sure to change the date when you are done.
Load state does not match programmed state immediately after programming the time or schedule.	The timer does not "catch up" to the programmed load state. Instead, the load will remain in its current state prior to entering the PGM mode. The timer will then begin following the scheduled program at the next contrary ON/OFF time.	After entering your schedule or the time, then returning to the AUTO modes, push **NEXT/ON/OFF** 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.	Verify the wiring is installed correctly, including the jumper.
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 by replacing the buried cable or doing without the remote switch. Consult factory for other options.
	Remote switch is defective or worn out.	Replace the remote switch.
Load turns off immediately after being turned on.	Remote switch or timer wired incorrectly, excessive length of wire (greater than 100 feet) 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.