Super Clock

SC-5

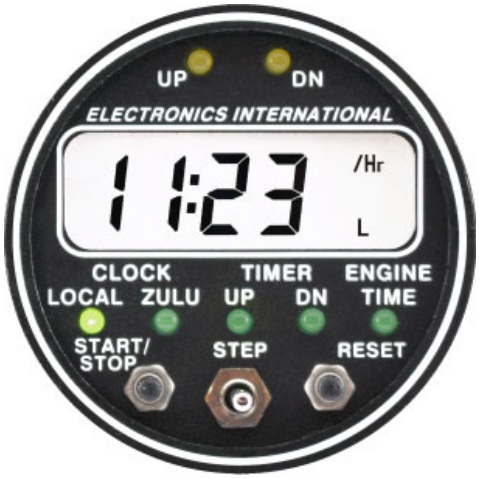
Operating Instructions

D-Sub

OI 0313961

3/13/96
Rev C: 02/08/23

You must read this manual before installing or operating the instrument. This manual contains warranty and other information that may affect your decision to install this product and/or the safety of your aircraft.



Electronics International Inc. ®

63296 Powell Butte Hwy • Bend, OR 97701 • (541) 318-6060 • iFlyEi.com

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Important Safety Notice

***** MUST READ *****

If you think it is not important to read this manual, you're wrong! This manual contains important information that may affect the satety of your aircraft.

Read the Warranty/Agreement. There is information in the Warranty/Agreement that may alter your decision to install this product. **If you do not accept the terms of the Warranty/Agreement, do not install this product**. This product may be returned for a refund. Contact Electronics International Inc. for details.

It is possible for any instrument to fail thereby displaying inaccurate high, low or jumpy readings. Therefore, you must be able to recognize an instrument failure and you must be proficient in operating your aircraft safely in spite of an instrument failure. If you do not have this knowledge, contact the FAA or a local flight instructor for training.

The pilot must understand the operation of this product before flying the aircraft. Do not allow anyone to operate the aircraft that does not know the operation of this product. A copy of this manual must be kept in the aircraft at all times.

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Contents

Warranty / Agreement

Electronics International Inc. warrants this instrument and system components to be free from defects in materials and workmanship for a period of one year from the user invoice date. Electronics International Inc. will repair or replace any item covered under the terms of this Warranty provided the item is returned to the factory prepaid.

1. This Warranty shall not apply to any product that has been repaired or altered by any person other than Electronics International Inc., or that has been subjected to misuse, accident, incorrect wiring, negligence, improper or unprofessional assembly or improper installation by any person. This warranty does not cover any reimbursement for any person's time for installation, removal, assembly or repair. Electronics International retains the right to determine the reason or cause for warranty repair.

2. This warranty does not extend to any machine, vehicle, boat, aircraft or any other device to which the Electronics International Inc. product may be connected, attached, interconnected or used in conjunction with in any way.

3. The obligation assumed by Electronics International Inc. under this warranty is limited to repair, replacement or refund of the product, at the sole discretion of Electronics International Inc.

4. Electronics International Inc. is not liable for expenses incurred by the customer or installer due to factory updates, modifications, improvements, upgrades, changes, or any other alterations to the product that may affect the form, fit, function or operation of the product.

5. Personal injury or property damage do to misinterpretation or lack of understanding this product is solely the pilots responsibility. The pilot must understand the operation of this product before flying the aircraft. Do not allow anyone to operate the aircraft that does not know the operation of this product. Keep the Operating Manual in the aircraft at all times.

6. E. I. Inc. is not responsible for shipping charges or damages incurred under this Warranty.

7. No representative is authorized to assume any other liability for Electronics International Inc. in connection with the sale of Electronics International Inc. products.

8. If you do not agree to and accept the terms of this warranty, you may return the product for a refund.

This Warranty is made only to the original user. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES OR OBLIGATIONS: EXPRESS OR IMPLIED. MANUFACTURER EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. PURCHASER AGREES THAT IN NO EVENT SHALL MANUFACTURER BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING LOST PROFITS OR LOSS OF USE OR OTHER ECONOMIC LOSS. EXCEPT AS EXPRESSLY PROVIDED HEREIN, MANUFACTURER DISCLAIMS ALL OTHER LIABILITY TO PURCHASER OR ANY OTHER PERSON IN CONNECTION WITH THE USE OR PERFORMANCE OF MANUFACTURER'S PRODUCTS, INCLUDING SPECIFICALLY LIABILITY IN TORT.

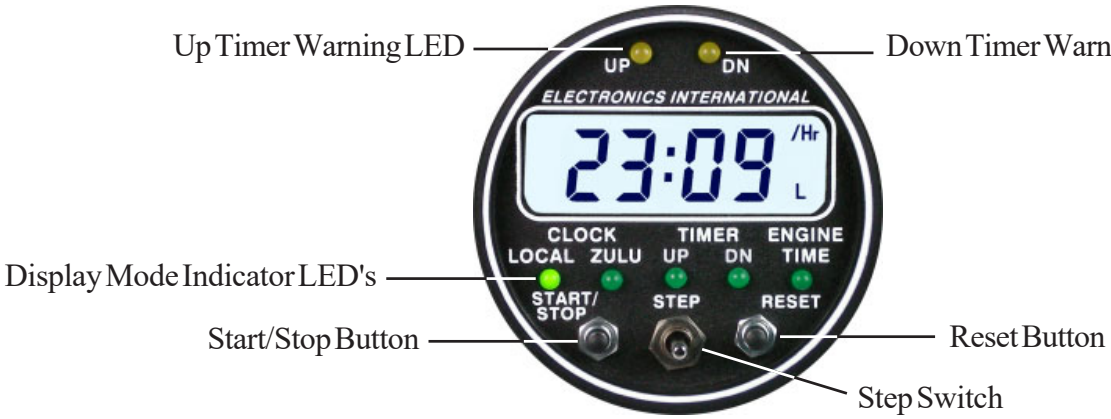
SC-5
Operating Instructions

General Description:

The SC-5 is a Super Clock instrument packaged in a 2.5" by 2.5" by 2.7" depth case. The instrument uses a D-Sub connector to allow the SC-5 to be removed from the instrument panel at any time. The SC-5 uses a clock IC incorporating a 20+ year lithium battery.

The SC-5 has the following five display modes:

1. "LOCAL" Clock - In this mode the SC-5 will display Local Time. The Local Clock may be programmed to display in a 12 or 24-hour format.



2. "ZULU" Clock - In this mode the SC-5 will display Zulu Time.

3. "UP" Timer - In this mode the SC-5 will display the "UP" Timer. This Timer counts up and starts automatically when your aircraft's engine is started. In this way the Timer acts as a Flight Timer. Also, the timer may be used as a pilot programmable Recurring Alarm. This can be used to alert you at appropriate time intervals. Example: If the alarm is set for 30 minutes, you will get an alarm at 30 minutes, 60 minutes, 90 minutes, etc. This alarm can be used to remind you to check your fuel level, course, position or instruments at set time intervals. The yellow Warning LED marked "UP" over the digital display will "blink" when the programmed time interval is reached. The "START/STOP" and "RESET" buttons control this Timer.

4. "DN" Timer - In this mode the SC-5 will display the "DN" Timer. This Timer counts down when running and the Start Time may be set. When the Timer reaches 0:00, the yellow Warning LED marked "DN" over the digital display will "blink" and the display will show the time past the zero point as a negative number. This can be very helpful for timing approaches. The "START/STOP" and "RESET" Buttons control this Timer.

5. "ENGINE TIME" - In this mode the SC-5 acts as a Hobbs Meter. The SC-5 will display the total time the engine has been running. An "/Hr" will be displayed in the upper right corner of the LCD, indicating that the Engine Time is being displayed in hours. The "/Hr" will "blink" when the SC-5 is recording Engine Time. Push the "RESET" button to display tenths and hundredths of an hour. This Timer cannot be reset. You may push and hold the "Start/Stop" button to display bus voltage.

Operating Features and Display Modes:

1. Digital LCD Display and LED Mode Indicators:

The digital LCD display is easy to see in direct sunlight. If the digital LCD display backlight has been connected to a rheostat, the display intensity can be adjusted for low ambient light or night operation.

During night operation the green LED Display Mode Indicators may be too bright. If so, turn the panel light rheostat up and the LEDs will dim. The SC-5 may be connected to Electronics International's CP-1 (LED Intensity Control Pot). If this is the case, the CP-1 will control the intensity of the LEDs.

2. "UP" Timer Warning LED:

The "UP" Timer Warning LED located over the digital display will "blink" when the "UP" Timer reaches the pilot programmed Recurring Alarm setting or a multiple of this setting. Example: If the alann is set for 30 minutes, you will get an alarm at 30 minutes, 60 minutes, 90 minutes, etc. Push any button or switch to stop the blinking and tum off the "UP" Timer Warning LED. The "UP" Timer Display Mode section of this manual explains more about the operation of this alarm.

3. "DN" Timer Warning LED:

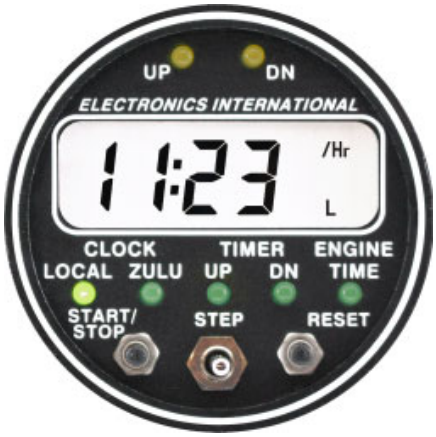
The "DN" Timer Warning LED located over the digital display will "blink" when the "DN" Timer reaches 0:00. Push any button or switch to stop the blinking and turn off the "DN" Timer Warning LED. The "DN" Timer Display Mode section of this manual explains more about the operation of this alarm.

4. Power-Up:

When the aircraft Master Switch is turned on, the SC-5 will perform a self-diagnostics test, display "88:88" and flash the yellow warning LED's. This allows you to check the Timer Warning LEDs and the LCD display for proper operation.

5. "LOCAL" Clock Display Mode:

By pushing the "STEP" Switch to the right or left, you can select the various display modes. In the "LOCAL" Clock Mode, the SC-5 will display Local Time. In this mode you may set the "LOCAL" Clock to display in a 12 or 24-hour format. In the "LOCAL" Clock Display Mode a "/Hr" will appear in the upper right comer of the display indicating the display is shown in hours and minutes. Also, an "L" will appear in the lower right of the display indicating you are in the "LOCAL" Clock Display Mode.



To set the "LOCAL" Clock, see the Power-up Programming section of this manual.

To set the format of the "LOCAL" Clock, perform the following steps:

A. Select the "LOCAL" Clock Display Mode.

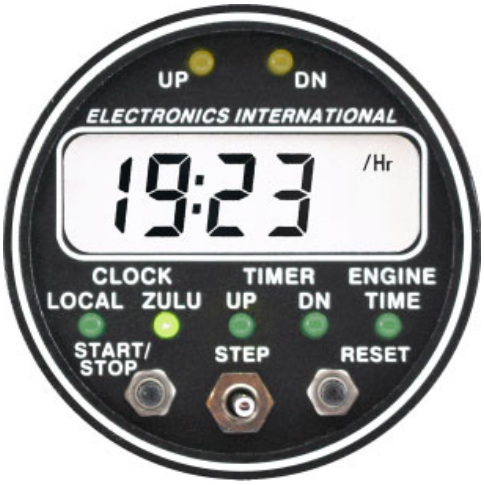
B. Momentarily push both the "START/STOP" and "RESET" Buttons at the same time. The display will show "12: F" or "24: F".

C. To toggle the display between "12: F" and "24: F", push the "STEP" Switch to left or right.

D. To exit this programming mode, momentarily push both the "START/STOP" and "RESET" Buttons at the same time.

6. "ZULU" Clock Display Mode:

By pushing the "STEP" Switch to the right or left, you can select the various display modes. In the "ZULU" Clock Mode, the SC-5 will display Zulu Time. In this an "/Hr" will appear in the upper right corner of the display indicating that the display is shown in hours and minutes. To set the "ZULU" Clock, see the Power-up Programming section of this manual.



7. "UP" Timer Display Mode:

By pushing the "STEP" Switch to the right or left, you can select the various display modes. In the "UP" Timer Mode, the SC-5 will display the current time on the "UP" Timer. When the UP Timer LED is not blinking, push the "RESET" Button to stop the Timer and reset the time to 0:00. Push the "START/STOP" Button to toggle the start and stop of this Timer. The "UP" Time will start automatically when your engine is started. In this way the "UP" Time acts as an automatic Flight Timer.

The "UP" Timer has a pilot programmable Recurring Alarm. This alarm may be set from 0:00 to 99:59 (minutes : seconds). If the time on the Up Timer reaches the Recurring Alarm setting, the yellow "UP" Timer Warning LED will "blink." Pushing any button will stop the blinking LED without starting, stopping or resetting the Timer. This alarm will reoccur at multiple intervals of the Recurring Alarm setting. Example: For a setting of 30 minutes, you will get an alarm at 30 minutes, 60 minutes, 90 minutes, etc. This alarm can be used as a reminder to check fuel levels, flight plan, instruments, etc., at regular intervals during the flight.

When the Up Timer has reached 59 minutes and 59 seconds, the display will switch from minutes and seconds to hours and minutes and an "/Hr" will appear in the upper right corner of the display. Anytime you see an "/Hr" in the display the reading is in hours and minutes; otherwise, it is in minutes and seconds.

To program the Recurring Alarm, perform the following steps while in the "UP" Timer Display Mode:

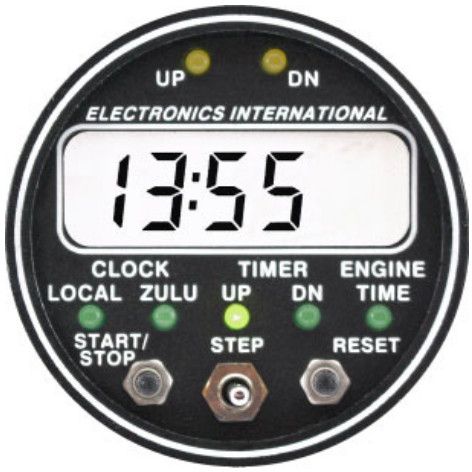
A. Momentarily push both the "START/STOP" and "RESET" Buttons at the same time. The far left digit will "blink."

B. Set the Recurring Alarm using the following procedure.

a) Select the Digit to be programmed - Only the digit that is blinking can be changed. Push the "START/STOP" Button to "blink" the next digit to the left and push the "RESET" Button to "blink" the next digit to the right.

b) Increase or Decrease a Blinking Digit - Move the "STEP" Switch to the right to increase the blinking digit by one. Move the "STEP" Switch to the left to decrease the blinking digit by one.

c) To Exit - To exit the "UP" Timer Programming Mode, momentarily push both the "START/STOP" and "RESET" Buttons at the same time.



8. "DN" Timer Display Mode:

By pushing the "STEP" Switch to the right or left, you can select the various display modes. In the "DN" Timer Display Mode, the SC-5 will display the current time on the "DN" Timer. Push the "RESET" Button to stop the Timer and reset the time to the programmed Start Time. Push the "START/STOP" Button to toggle the start and stop of this Timer.

The "DN" Timer has a pilot programmable Start Time. The Start Time may be set from 0:00 to 99:59 (minutes: seconds). For time set over 59 minutes and 59 seconds the Down Timer will display in hours and minutes and an "\Hr" will appear in the upper right comer of the display. Anytime you see an "/Hr" in the display, the reading is in hours and minutes; otherwise, it is in minutes and seconds.

If the time on the "DN" Timer reaches 0:00, the yellow "DN" Timer Warning LED will "blink" and the display will show the time past to 0:00 point as a negative number. Pushing any button will stop the blinking LED without starting, stopping or resetting the Timer.

To program the Recurring Alarm, perform the following steps while in the "UP" Timer Display Mode:

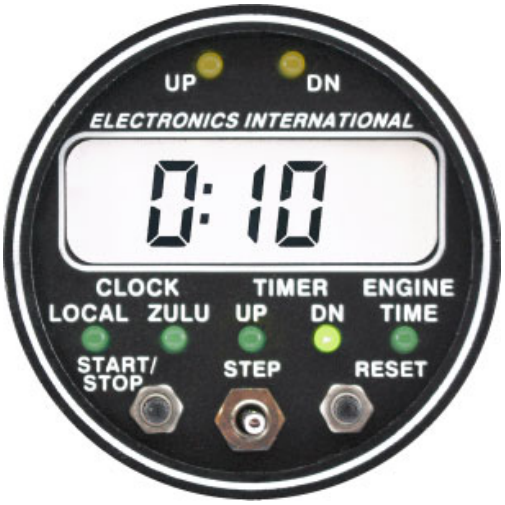
A. Momentarily push both the "START/STOP" and "RESET" Buttons at the same time. The far left digit will "blink."

B. Set the Start Time using the following procedure.

a) Select the Digit to be programmed - Only the digit that is blinking can be changed. Push the "START/STOP" Button to "blink" the next digit to the left and push the "RESET" Button to "blink" the next digit to“the right.

b) Increase or Decrease a Blinking Digit - Move the "STEP" Switch to the right to increase the blinking digit by one. Move the "STEP" Switch to the left to decrease the blinking digit by one.

c) To exit the "DN" Timer Programming Mode. momentarily push both the "START/STOP" and "RESET" Buttons at the same time.

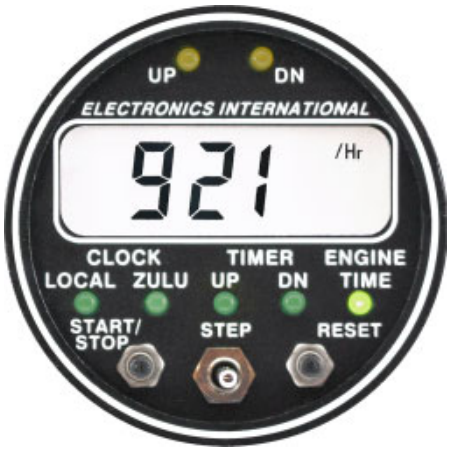


9. "ENGINE TIME" Display Mode:

By pushing the "STEP" Switch to the right or left, you can select the various display modes. In the "ENGINE TIME" Display Mode, the SC-5 will display the total time the engine has been running. In this mode, the SC-5 acts as a Hobbs Meter. Push and hold the "RESET" Button to display the tenths and hudredths of an hours. The displayed Engine Time cannot be reset. You may push and hold the "Start/Stop" button to display bus voltage.

In the "ENGINE TIMER" Display Mode an "/Hr" will appear in the upper right corner of the display indicating that the display is shown in hours. When the Engine Timer is running, the "/Hr" in the display will “blink." The Timer will run when the bus voltage is above 13 volts for a 12-volt system or 26 volts for a 24-volt system. Note: An alternate installation method is to connect the SC-5 to the battery through an Oil Pressure Switch. With this installation method, the Engine Timer will run any time you have oil pressure(regardless of the bus voltage). This allows the SC-5 to be used for bill time.

While in this mode, push and holding the Left Button to display the current bus voltage.



Power-up Programming:

During power-up you may enter the Power-up Programming Mode. In this mode you can set the Local and Zulu Clock Time. To enter the Power-up Programming mode perform the following steps:

A. With the aircraft power off, push and hold both the "START/STOP" and "RESET" Buttons and turn the aircraft power on. The far left hours digits will be blinking. An "L" will be showing in the lower right corner of the display indicating you are setting the Local Clock. The Local and Zulu Clocks are always set in a 24-hour format.

B. Set the Local Clock using the following procedure.

a) Select the Digit to be programmed - Only the digit that is blinking can be changed. Push the "START/STOP" Button to "blink" the next digit to the left and push the "RESET" Button to “blink" the next digit to the right.

b) Increase or Decrease a Blinking Digit - Move the "STEP" Switch to the right to increase the blinking digit by one. Move the "STEP" Switch to the left to decrease the blinking digit by one.

c) Change Functions (Local to Zulu) - To display and set the Zulu Clock, push the "RESET" Button until the "L" in the lower right comer disappears. Use the "STEP" Switch to increase or decrease a blinking digit. To go back to programming the Local Clock, continue to push the "START/STOP" Button until the "L" in the lower right corner of the display appears.

To display and set the Minutes Lock Configuration, push the "RESET" Button until you see a "Loc" or "ULoc" in the display. Use the "STEP" Switch to toggle the display between "Loc" and "ULoc." The "Loc" indicates the Zulu and Local minutes will be locked together. (i.e., the Zulu and Local minutes will always read the same. If you change one, the other will automatically change also). If you operate your aircraft only in one hour time zones, set the display to "Loc." In this configuration when the Local Clock is set to a standard the Zulu Clock minutes will automatically be set to the correct time.

If you operate your aircraft in half hour time zones, set the display to "ULoc." In this configuration the Local and Zulu Clock work independently of each other.

To go back to programming the Zulu Clock or Local Clock, continue to push the "START/STOP" Button until you get the appropriate display.

d) To Exit - To exit the Power-up Programming Mode, momentarily push both the "START/STOP" and "RESET" Buttons at the same time.

Specifications and Operating Features:

Model: SC-5 (Super Clock)

Case Dimensions: 2.5" x 2.5" x 2.7" depth, 2-1/4" Bezel.

Weight: Unit Only - 11 Oz.

Environmental: Meets DO-160C

Power Requirements: 7.5 to 35 Volts, 1/10 Amp.

Green Display Mode Indicator LEDs: The intensity of these LEDs is controlled by the dimming wire. 12 or 24 volts on this wire will dim the LEDs for night operation.

Yellow "UP" Timer Warning LED: The "UP" Timer Warning LED located over the digital display will "blink" when the "UP" Timer reaches the pilot programmed Recurring Alarm setting or a multiple of this setting. Push any button or switch to stop the blinking (acknowledge the alarm) and turn off the "UP" Timer Warning LED.

Yellow "DN" Timer Warning LED: The "DN" Timer Warning LED located over the digital display will "blink" when the "DN" Timer reaches 0:00. Push any button or switch to stop the blinking and turn off the "DN" Timer Warning LED.

Digital Display: LCD (viewable in direct sunlight), with 12 and 24 volt backlight control wires for night operation. Displays "88:88" on power up.

External Warning Control Line: Grounds when any yellow Timer Warning LED is blinking. Current should be limited to 2/10 amp.

Maximum Displayed Range or Setting:

TIMER (displayed) - 00:00 to 17 hours, 59 minutes.

Recurring Alarm (setting) - 00:00 to 99 minutes, 59 seconds.

Start Time (setting) - 0:00 to 99 minutes, 59 seconds.

Accuracy:

Local and Zulu Clock - +/- 2 minutes/month.

UP and Down Timer - +/- .005% plus +/- .5 second.

Engine Timer - +/- .005% plus +/- .5 second.

U.S. Department
of Transportation
**Federal Aviation
Administration**

**Transport Airplane Directorate
Aircraft Certification Service**

1601 Lind Avenue S.W.
Renton, Washington 98055-4056

NOV 18 1997

In Reply
Refer To: 97-190S-721

Mr. Ron Roberts
President
Electronics International, Inc.
12620 SW 231st Place
Hillsboro, OR 97123

Dear Mr. Roberts:

This is in regard to your letter and application for supplemental type certificate (STC), both dated November 11, 1997, for replacement clocks to be installed in small airplanes. We consider this change to be minor in accordance with Federal Aviation Regulation (FAR) 21.93(a). Accordingly, an STC is not required to install Electronics International clocks in non-transport category airplanes. Per FAR 21.95 copies of this letter may be given to installing mechanics as evidence that this installation is considered minor.

Since an STC is not required, we are returning your data submittal and application. If you have any questions regarding this matter please contact Mr. Jeff Morfitt of this office at (425) 227-2595.

Sincerely,

A. J. Pasion
Manager, Special Certification Branch
Seattle Aircraft Certification Office

Enclosures

Providing Superior Products and
Unparalleled Customer Service Since 1979

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