

Christmas Countdown Timer



Model **FS-30**

Operation Manual

5/03/18

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Introduction

The following pictures show what the FS-30 looks like in the dark and shows some of the available user programmable color combinations. (See manual ON-LINE for colors www.skutchelectronics.com).



The FS-30 is a large, 4' by 1', indoor/outdoor Christmas Countdown timer. It features large 4" digits with user programmable colors. It displays DAYS, HOURS, MINUTES, and SECONDS. DAYS, HOURS, and MINUTES have one programmable color, and the SECONDS have a separate programmable color. The color selection is Blue, Red, Green, White, or Auto. In Auto mode, the color automatically changes every hour. The FS-30 has battery backup so it will keep track of time even when the unit is unplugged for long periods of time. The unit uses a standard CR-2032 "coin" battery that can be changed by the user. In moderate temperatures, the battery should last at least 5 years.

The user programs the current time and the FS-30 automatically calculates the countdown values. It even adjust for leap years. When Christmas arrives the FS-30 will flash ZEROs. It will flash ZEROs until the new year starts. Once the new year begins, the FS-30 automatically resets and displays the new countdown for the new year.

Features:

- * Designed for Inside or Seasonal Outdoor use.
- * Large 4" tall digits allows viewing up to 100 feet away.
- * Color of Digits can be user programmed as Blue, Red, Green, White or AUTO.
(Days, Hours, Minutes= 1st color and Seconds= 2nd color)
With AUTO, colors change every hour.
- * Fixed White illuminated "Countdown to Christmas" and "Days, Hours, Minutes, and Seconds" labels.
- * Up to 10 Year Battery Backup using standard, user changeable CR-2032 battery.
- * PROGRAM MODE allows User to SET CLOCK and SET color of Digits.
- * All digits flutter at every MINUTE change.
- * All digits flash ZEROs from Christmas until the new year. Unit automatically resets at new year.
- * Has three D-RING mounting clips for easy mounting

Outdoor Use

The FS-30 has been designed for seasonal outdoor use. This means that we do NOT recommend it to be permanently mounted outdoors. Permanently mounting the FS-30 outdoors will drastically shorten the lifespan of the unit.

Mounting

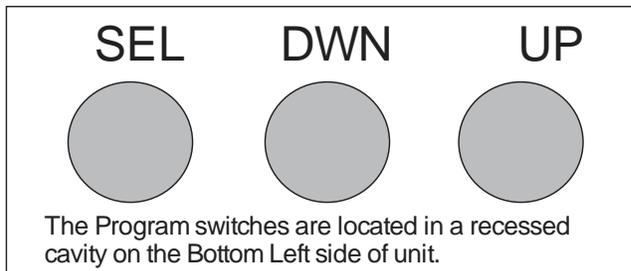
The FS-30 is supplied with three D-Rings for mounting, two on the top (pre-installed) and one on the bottom (must be attached). The bottom D-Ring is supplied to secure the FS-30 from the light wind.

Make sure that you use adequate strength material to support the FS-30. The FS-30 weighs 14 lbs. When using outdoors, always position the FS-30 with the "TOP" up, as shown on the first page of this manual. The FS-30 has been designed to be water resistant ONLY in the normal mounting position. Failure to do this could cause water to enter the interior of the FS-30 and damage it which would be considered "MISUSE" and would not be covered under the warranty.

Programming Instruction:

Once you enter PROGRAM mode, the unit will automatically abort and cancel all changes if no switch activity is detected within 2 minutes. When programming, the unit will display the current setting for each parameter.

Program Switches

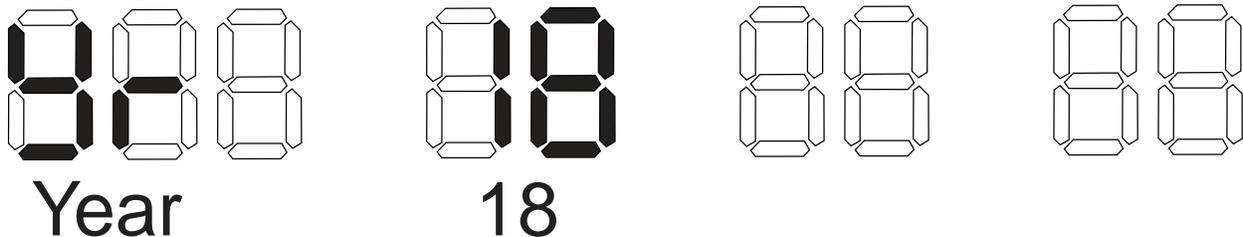


Looking from the FRONT of the FS-30

Time Set:

Note: If you are setting the clock during Daylight Savings Time, then program the unit for exactly one hour earlier than the current timer. Daylight Savings Time normally starts the 2nd Sunday of March, and ends on the 1st Sunday of November.

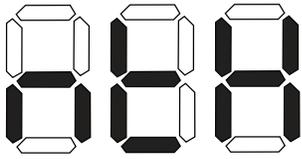
1- Depress and hold down both the [SEL] and [DWN] buttons for 5 seconds, or until the display shows:



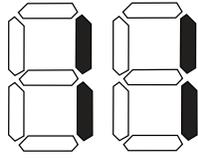
2- Repeatedly depress the [UP] or [DWN] button until the desired two digit YEAR is displayed (18-99). Press [SEL] to continue.

3- Select the current MONTH by repeatedly depressing the [UP] or [DWN] button until the desired two digit MONTH is displayed (01-12). Press SEL to continue or to abort all changes, depress and hold down

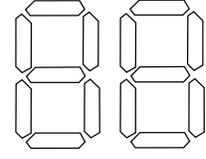
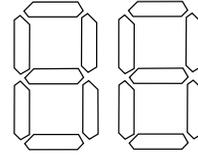
the [SEL] and [DWN] button until the display changes back to normal.



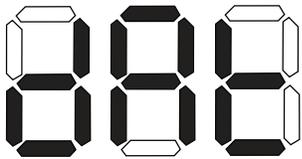
Month



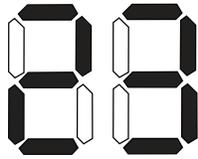
November



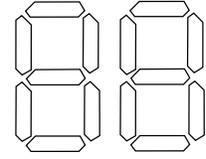
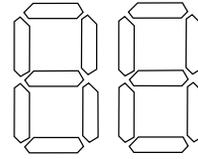
4- Select the current DATE by repeatedly depressing the [UP] or [DWN] button until the desired two digit DATE is displayed (01-31). Press SEL to continue or to abort all changes, depress and hold down the [SEL] and [DWN] button until the display changes back to normal.



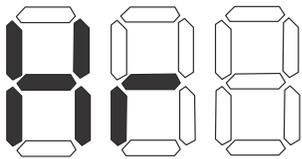
Date



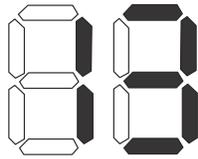
23rd



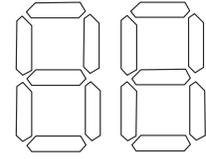
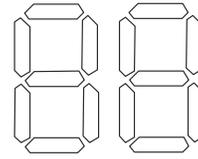
5- Select the current HOUR, in 24 Hour Format (Military Time), by repeatedly depressing the [UP] or [DWN] button until the desired two digit HOUR is displayed (00-23). Press [SEL] to continue or to abort all changes, depress and hold down the [SEL] and [DWN] button until the display changes back to normal.



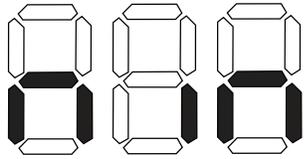
Hour



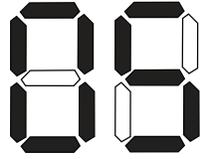
1 pm



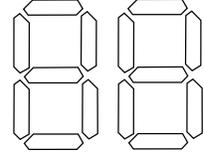
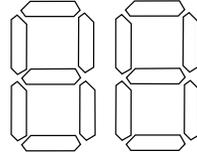
5- Select the current (MINUTE plus 1) by repeatedly depressing the [UP] or [DWN] button until the desired two digit MINUTE is displayed (00-59). The SECONDS are always set to 00. The FS-10's clock is SET at the moment you depress the [SEL] button. Wait until your reference clock changes to the next minute and immediately depress the [SEL] button to start and synchronize the clock. To abort all changes, depress and hold down the [SEL] and [DWN] button until the display changes back to normal.



Minute



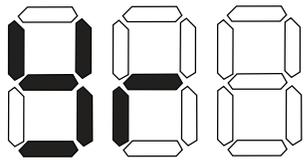
5



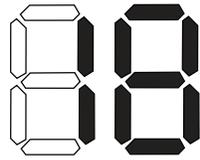
The display will display a GREEN Flutter to indicate that the parameters have been saved, then will return to NORMAL MODE.

Color Programming:

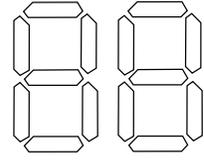
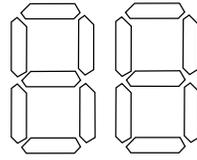
1- Depress and hold down both the [SEL] and [DWN] buttons for 5 seconds, or until the display shows:



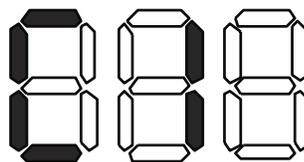
Year



18

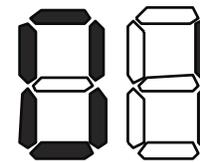


2- For a second time, Depress and hold down both the [SEL] and [DWN] buttons for 5 seconds or until the display changes. The display will show the current values for the color selection.



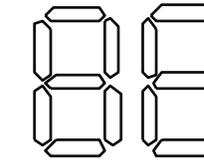
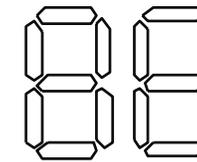
Color 1

This is the color control for Days, Hrs, and Min



1

- 1=Blue
- 2= Red
- 3= Green
- 4= White
- 5= Auto change every Hour



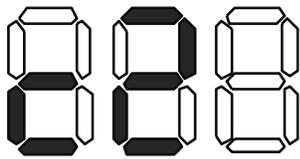
3- You are now on the Color 1 control. This controls the color of the "DAYS, HOURS, and MINUTES". The selection is as follows:

- 1= Blue
- 2= Red
- 3= Green

4= White

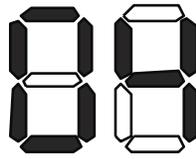
5= AUTO. The color changes at the beginning of every hour. The Color ONLY changes if FS-30 is powered up.

Repeatedly depress the [UP] or [DWN] button until the desired Color number has been selected. Press [SEL] to continue or , to abort the changes, depress and hold down the [SEL] and [DWN] button until the display changes back to normal.



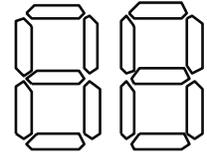
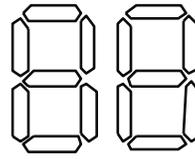
Color 2

This is the color control
for the Seconds digits



1

1=Blue
2= Red
3= Green
4= White
5= Auto change every Hour



4- You are now on the Color 2 selection. This controls the color of the two “SECONDS” digits. The selection is as follows:

1= Blue

2= Red

3= Green

4= White

5= AUTO. The color changes every Hour. The Color ONLY changes if FS-10 is powered up at this time.

Repeatedly depress the [UP] or [DWN] button until the desired Color number has been selected. Press [SEL] to SAVE both color changes or , to abort the changes, depress and hold down the [SEL] and [DWN] button until the display changes back to normal.

The display will display a GREEN Flutter to indicate that the parameters have been saved, then will return to NORMAL MODE.

Battery Backup Life:

While we have not completely tested the battery backup life, from the information that we have found we have come up with the following information:

1- At 70°F, room temperature, the Battery Backup life with a NEW CR-2032 should be about 10 Years.

2- Cold temperatures drastically reduce the battery life. At 32°F the battery should last approximately 5 Years. Colder temperatures will reduce the battery life even more.

3- High temperatures also reduce the battery life. At 104°F the battery should approximately last 7 years. Higher temperatures will reduce the battery life even more. The inside of the FS-30 gets hotter than the outside temperature.

Changing the Battery

The FS-30 uses a standard CR-2032 coin battery. To replace the battery, disconnect the FS-30 from power. This **MUST** be done for safety to prevent the possibility of electric shock or possible electrocution. Locate the battery access cover on the rear of the unit. Remove the 4 screws and pry off the cover. Replace the battery with the positive side down. Remove the old silicone from the cover before replacing it. Lightly tighten the four screws, then caulk all of the edges on the cover with clear silicone to prevent water from entering the FS-30 cabinet.

Do NOT disassemble the FS-30

There are **NO** user serviceable parts inside the FS-30 except for the battery which is accessible through the battery cover. For your safety against electrical shock or even possible electrocution, do **NOT** disassemble the FS-30. Disassembly of the FS-30 will destroy the water seal of the unit and will **VOID** your warranty.

Clock Calibration Instructions

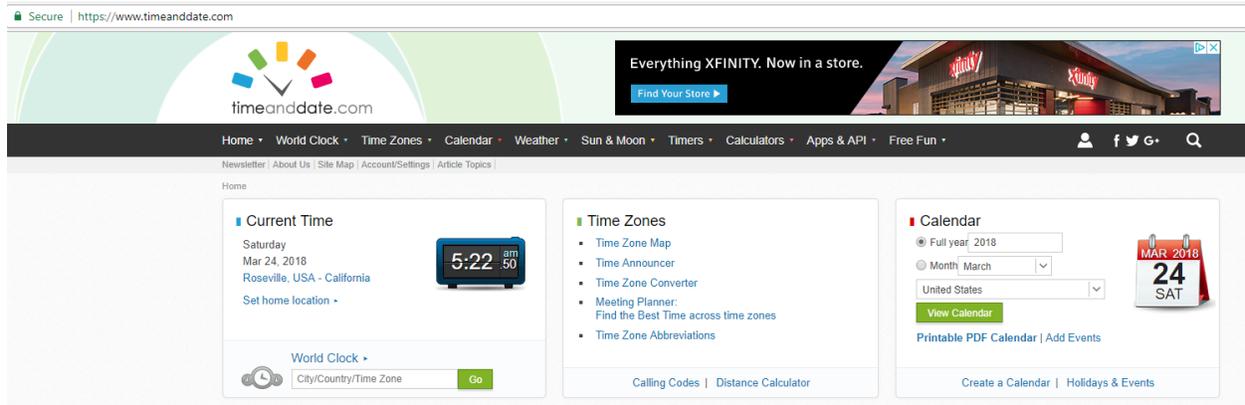
The FS-30 uses an internal crystal that is like a metronome for the internal clock. Due to component tolerances, temperature variations, and aging, this crystal can sometimes either run a little fast or slow causing the countdown time to get a little off over a long period of time. During the manufacturing process, we calibrate the FS-30 at room temperature, so in general, calibration is not required.

For those who want the maximum accuracy, we have added a TRIM function to the FS-30. Since temperature variations affect the timing, we suggest that the FS-30 be located where it is to be operated while making the calibration.

The calibration procedure is based on syncing the FS-30's clock to a known accurate REFERENCE COUNTDOWN TIMER, waiting for a minimum time period of 48 hours, then documenting the number of seconds that the FS-30 is OFF. Based on this information you use the calibration formula to calculate a TRIM value that is programmed into the FS-30. The FS-30, will maintain the TRIM value as long as your BATTERY is good, which is at least 5 years. After changing the battery, you can either re-enter the TRIM value or re-calibrate.

A lot of people assume that the time on their CELL phone is an ACCURATE clock source. My research shows that CELL phone clocks are **NOT** always an ACCURATE clock source. There are reports of CELL phone clocks being off anywhere from 1.48 seconds to over 30 seconds. Wow!

I suggest using the www.timeanddate.com site for both setting the FS-30 clock and for the Reference Countdown time.



Reference Current Time

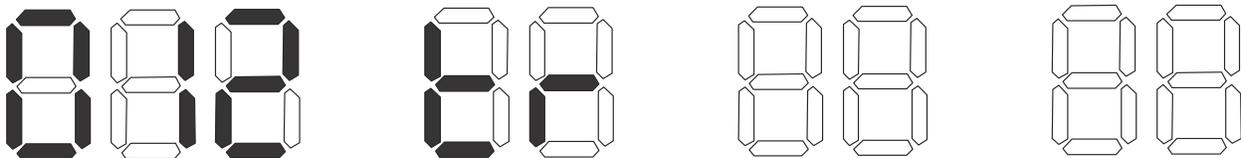
At the HOME page (www.timeanddate.com), click on [World Clock] then [Main World Clock]. Enter your city name, then click [SEARCH]. Select and save this page as a FAVORITE or BOOKMARK as “Reference Current Time”. Use this page to set the time on your FS-30. If you have internet capability on your cell phone, save this page on it. It’s much easier to use your cell phone to calibrate the FS-30.

Reference Countdown Timer

At the HOME page (www.timeanddate.com), click on [Timers], then [Countdown to Any Date], then click on [Christmas] under Countdown Design, at Location of Event, enter your city, then scroll down and click [Create Countdown]. Save this page as a FAVORITE or BOOKMARK as “Countdown to Christmas”. Use this page as your reference time for START and STOP of calibration test and also to verify that the FS-30 is in Sync. If you have internet capability on your cell phone, save this page on it. It’s much easier to use your cell phone to calibrate the FS-30.

Viewing the current TRIM value

We calibrate all FS-30 units before they are shipped. To view the current TRIM value, from normal MODE, press and hold down ALL THREE program buttons until the display changes to a RED display as follows. It takes about 5 seconds.

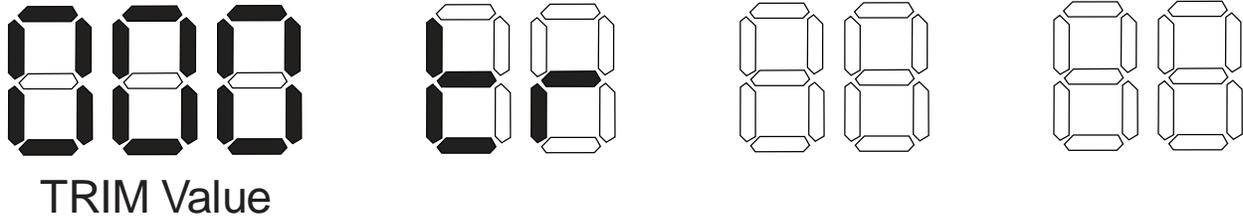


TRIM Value

To exit without making any changes, press and hold down the [UP] and [SEL] buttons until the unit returns to normal mode (about 4 seconds). The unit will also automatically RESET to normal mode, without making any changes, after 2 minutes without any button activity.

Calibration Procedure

1- Before you start the calibration, the TRIM value on the FS-30 MUST be re-set to **ZERO**. From normal MODE, press and hold down ALL THREE program buttons until the display changes to (RED):



If the TRIM value is NOT ZERO, use the [UP] or [DWN] buttons to change the value to ZERO, then press [SEL] to save. A Green FLUTTER on the display indicates that it was saved. To exit without saving, press and hold down the [UP] and [SEL] buttons until the display returns to normal mode. The unit will also RESET to normal mode after 2 minutes of no button activity.

2- Set the clock on the FS-30 to the Reference Current Time. Remember that if you are currently in DAYLIGHT SAVINGS time, then set the clock exactly one hour earlier than the current REFERENCE TIME. Check to make sure the Countdown time is IN SYNC with the “Reference Countdown Timer”.

3- On the Calibration Work Sheet, write down the exact [Start of Test] time from the reference countdown time. You MUST always start and end the test when the SECONDS are on 00. See the FS-30 manual for the TIME SET procedure.

4- Now wait a minimum of 48 hours. The longer the test period, the more accurate the adjustment will be, so a test period of four days is more accurate than two days.

5- On the Calibration Work Sheet write down the [End of Test] time that you plan to use on your Reference Countdown Timer. The [End of Test] time seconds MUST be 00. Wait until the reference countdown changes from 01 to 00 seconds. At the moment the reference clock changes to 00, check the FS-30 display and write down the number of seconds on the FS-30.

6- If the FS-30 shows 00 seconds, then the FS-30 clock is right ON and does not require TRIMMING. Otherwise calculate the [Sec_Off] (seconds off) and write it down and circle either FAST or SLOW on the Work Sheet:

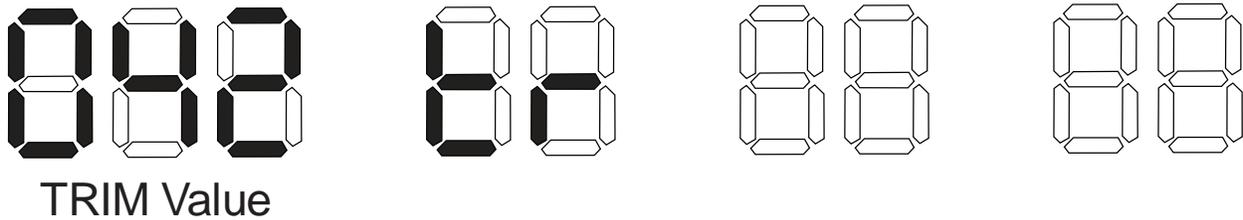
SLOW: If the FS-30 seconds are in the range of (01 to 22), then the FS-30 is SLOW where:
[Sec_Off]= the number of seconds on the FS-30 display.

FAST: If the FS-30 seconds are in the range of (38 to 59), then the FS-30 is FAST where:
 $[Sec_Off] = 60 - (\text{displayed FS-30 seconds})$.

7- Using the Calibration Work Sheet, calculate the new TRIM value.

If the TRIM value is outside the stated VALID RANGE, then you will not be able to accurately TRIM the clock.

8- Program the new TRIM value. From normal MODE, press and hold down ALL THREE program buttons until the display changes to (RED):



Make sure that the current TRIM value is ZERO. If not the calculations are no good and you need to change the TRIM value to ZERO and re-do the calibration test.

Use the [UP] or [DWN] buttons to change the TRIM value to the newly calculated value then press [SEL] to save. A Green FLUTTER on the display indicates that it was saved. To exit without saving, press and hold down the [UP] and [SEL] buttons until the display returns to normal mode. The unit will also RESET to normal mode after 2 minutes of no button activity.

9- SET the clock on the FS-30 using the Reference Current Time. That's it!

Calibration Work Sheet

Start of Test: Days= _____ Hours= _____ Minutes= _____ Seconds= 00

End of Test: Days= _____ Hours= _____ Minutes= _____ Seconds= 00

 Totals [D]= _____ [H]= _____ [M]= _____ Seconds= 00
 (Subtract) When borrowing add 24 When borrowing add 60

FS-30 Seconds OFF: **[Sec_Off]**= _____ circle either **[FAST]** or **[SLOW]**

Convert [D_Sec]= _____ [H_Sec]= _____ [M_Sec]= _____ Seconds= 00
 To Seconds D x 86,400 H x 3,600 M x 60

Total Seconds in Test: **[Test_Sec]** = _____

$$[D_Sec]+[H_Sec]+[M_Sec]$$

Calculation:

TRIM= (Sec_Off/Test_Sec) x 983,040 (TRIM must be in range of 0-127)

$$\text{TRIM} = \left(\frac{\text{Sec_Off}}{\text{Test_Sec}} \right) \times 983,040$$

If FS-30 is **SLOW** then add 128 to TRIM Value **TRIM= TRIM+128**

Round TRIM to the nearest Whole Number.

New TRIM value = _____

Specifications:

- 1- Dimensions: Width= 49.5" x Height= 12.25" x Depth= 3"
- 2- Weight: 14 lbs
- 3- Power Requirements: 110- 120VAC @ 60Hz at 600mA (72 Watts)
- 4- Power Cord: 5' Long. 3 Prong US Cord (Non-Detachable).
- 5- Replacement Battery= CR-2032 Lithium "Coin" battery (3V). 20mm diameter.
- 6- Battery Backup battery current= 925nA
- 7- Battery Backup Voltage = 1.3 to 3V
- 8- Approximate shelf life of CR-2032 battery= 8 years.
- 9- Digit Height = 4"
- 10- Color Selection= Blue, Red, Green, White, AUTO (changes color every Hour)
- 11- Front and rear Panel Material= Black Extruded ABS Plastic. Epoxy fill on Alpha-Numeric.
- 12- Operating and Storage Temperature Range -40°F to +158°F (internal)

Limited 3 Year Warranty

This SKUTCH PRODUCT is warranted against defects for a period of three (3) years from the date of the original invoice. Within this period, we will repair it without charge for parts and labor. To obtain warranty service the product must be returned, at the customer's expense, to SKUTCH Electronics along with a copy of the original invoice. After the unit has been repaired, SKUTCH will ship the PRODUCT back via UPS GROUND service at our expense ONLY within the continental United States. The customer MUST pay 100% of the return shipping cost on units shipped to outside of the continental United States. If any other form of return shipment is requested, the customer will pay for 100% of the shipping cost. This Warranty does not apply if in the sole opinion of SKUTCH Electronics, the PRODUCT has been damaged by lightning or any other Acts of God, or by accident, misuse, neglect, or improper packing, shipping, modification or servicing by other than an authorized SKUTCH Service Center. EXCEPT AS SPECIFICALLY PROVIDED IN THIS AGREEMENT, THERE ARE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND IN NO EVENT SHALL SKUTCH ELECTRONICS BE LIABLE FOR LOSS OF PROFITS OR BENEFITS, INDIRECT, SPECIAL, CONSEQUENTIAL OR OTHER SIMILAR DAMAGES ARISING OUT OF ANY BREACH OF THIS WARRANTY OR OTHERWISE.