



INSTALLATION AND OPERATION MANUAL

Document Number: 570-0049 Revision B

**2-WIRE REMOTE SWITCH INTERFACE 455-0032
AND ELT INTERFACE 455-0041 INSTALLATION**

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2. The interfaces 453-0032 or 453-0041 are only available in a pack list configuration 455-0032 and 455-0041 respectively.
3. The interface system does not function with any of the Artex remote switches, and can only operate with the single toggle switch 140-3349 provided in the pack list 455-0049.
4. Due to the large array of configurations possible, ACR Electronics, Inc. does not provide a harness as part of the installation of the ELT or the interface system.
5. The toggle switch 140-3349 is not available with a protective guard.
6. The interfaces 453-0032 and 453-0041 function with all Artex Emergency Locator Transmitters, other than the ELT-200 series.
7. The mating connector and contacts connecting to the ELT are found in the install kit included in the pack list at the time the beacon is purchased. Accordingly, the hardware included in the 455-0032 and 455-0041 is only used to connect each interface together.
8. The toggle switch 140-3349 is not grounded to the ELT, so the system works for metallic and composite aircrafts when the beacon and the toggle are installed far apart.
9. Follow standard aircraft wiring practices.
10. This manual is subject to regular updates and changes.

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LIST OF AFFECTED PAGES

PAGE #	DATE	REASON FOR CHANGE
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1. INTRODUCTION

This manual contains detailed information about the installation and operation of the interfaces 453-0032 and 453-0041 with any Artex Emergency Locator Transmitters. The interfaces do not function with the ELT-200 series.

The intent of the interface system is to provide a cost effective means to our customers to retrofit existing ELT installations using 2-wire connection between the ELT and a toggle switch.

This manual is not intended to be an installation for the ELT system. Use this manual in conjunction with any Artex ELT manuals.

2. PARTS LIST

The following parts should be included with the 455-0032, 455-0041, and 455-0049 Pack Lists. Please contact ACR Electronics, Inc. if shortages are found.

<u>QUANTITY</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
	455-0032	Pack List, 2-Wire RSWT Interface 453-0032
1 ea.	150-0022	Connector, Plug D-Sub 9-Pin Crimp
1 ea.	151-0006	Backshell, D-Sub 9-Pin Plastic
11 ea.	151-0042	Pin, D-Sub 22-26 AWG Crimp
2 ea.	201-0810	Screw, PHP 8-32 x 5/8 SS
2 ea.	241-0832	Nut, Hex 8-32 x ¼ SS
2 ea.	246-0001	Washer, Flat #8 OD3/8 SS
2 ea.	247-0800	Washer, Lock Internal Tooth #8
1 ea.	453-0032	2-Wire Remote Switch Interface

<u>QUANTITY</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
	455-0041	Pack List, 2-Wire ELT Interface 453-0041
1 ea.	150-0022	Connector, Plug D-Sub 9-Pin Crimp
1 ea.	151-0006	Backshell, D-Sub 9-Pin Plastic
11 ea.	151-0042	Pin, D-Sub 22-26 AWG Crimp
2 ea.	201-0810	Screw, PHP 8-32 x 5/8 SS
2 ea.	241-0832	Nut, Hex 8-32 x ¼ SS
2 ea.	246-0001	Washer, Flat #8 OD3/8 SS
2 ea.	247-0800	Washer, Lock Internal Tooth #8
1 ea.	453-0041	2-Wire ELT Interface

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<u>QUANTITY</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
	455-0049	Pack List, 2-Wire ELT/RSWT Interface
2 ea.	120-4007	Diode, 1N4007
1 ea.	140-3349	Switch, DPDT W/LED Tip 2-Pos.
1 ea.	455-0032	Pack List, 2-Wire RSWT Interface 453-0032
1 ea.	455-0041	Pack List, 2-Wire ELT Interface 453-0041
1 ea.	570-0049	Manual, 2-Wire RSWT Interface 455-0032 & ELT Interface 455-0041
1 ea.	591-0037	Label, Toggle Switch Horizontal
1 ea.	591-0092	Label, Toggle Switch

NOTES: For a new installation, the hardware required to connect the wires to the ELT end is included in the pack list during the purchase of the beacon.

For an existing installation using an Artex ELT, you can purchase the Installation Kit based on the ELT series of the beacon that you have if you do not have the necessary hardware on hand already.

Table 1: Installation Kits	
ELT SERIES	INSTALLATION KIT PART NUMBER
110-4, 100HM, 110-6	455-7004
C406-1, C406-1HM C406-2, C406-2HM G406-1, G406-2 G406-4, G406-4HM B406-4,	455-7421
C406-N, C406-N HM	455-7422
ME406, ME406HM, ME406P	455-7423

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3. INSTALLATION AND WIRING OVERVIEW

3.1 INSTALLATION OVERVIEW

The installation below is shown without an ELT.

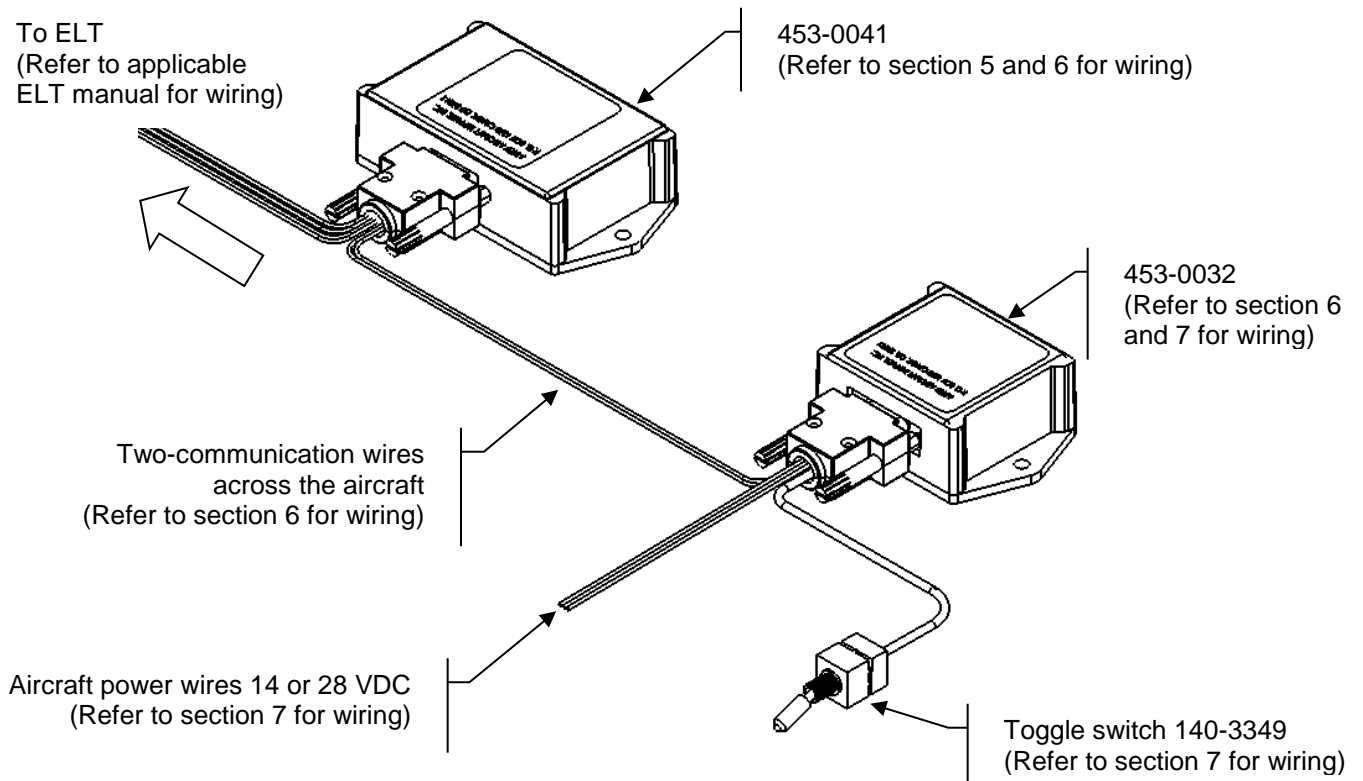


Figure 1: Installation Overview

**NOTE TO INSTALLERS:
 READ SECTION 3.2 SYSTEM OVERVIEW FOR RECOMMENDED
 INSTALLATION SEQUENCE.**

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3.2 WIRING OVERVIEW

Due to the range of ELT installation available, this manual does not illustrate each single wiring diagram pertaining to a specific ELT because the wiring is in fact very generic to all Artex beacons. All Artex ELTs follow the same wiring criteria, and have 5 basic electrical lines connecting the toggle switch to the beacon:

1. Light: This pin turns ON the toggle switch LED. The ELT output is a square wave pulse with 280 millisecond period. The ON period of the pulse is 140 milliseconds and the OFF period is 140 milliseconds.
2. Reset 1: This pin enables the ELT to determine the ON or ARM position of the toggle switch.
3. Reset 2: This pin enables the ELT to determine the ON or ARM position of the toggle switch.
4. External ON: This pin turns ON the ELT when it is grounded.
5. Ground: This pin is tied to Aircraft DC ground and references all control input and output signals.

The interface system alleviates the need to install the 5 electrical wires across the aircraft when the ELT and the toggle switch are installed apart. As such, the system uses 2 interfaces to convert the typical 5-wire communication line down to 2 wires.

The ELT interface 453-0041 has a built-in horn that is powered by the ELT.

Upon initialization of either the ELT or the toggle switch 140-3349, the event communication latency between these two products is less than 2 seconds. As such, a change in the lamp state (LED) also takes place within 2 seconds.

Once the system is operational, the standard LED flash rate is ~140 msec.

The quiescent state power consumption (with the toggle switch in the "ARM" position) of the interfaces is less than 100 μ A.

The color of the two communication wires between the interfaces is inconsequential, but each wire must:

1. Have the proper gauge (22-26).
2. Be properly connected to the appropriate contact on the D-sub mating connector of each interface as shown in the appropriate wiring diagram.

The voltage range of the 453-0032 interface is 6.5 to 30 VDC, but aircraft power is typically 14 and 28 VDC.

The interface 453-0041 contains a latching relay so a slight clinking noise should be expected during operation.

INSTALLATION SEQUENCE:

1. Install the switch (140-3349)
2. Install the front module (453-0032)
3. Install the rear module (453-0041)
4. Apply power source to modules
5. Connect ELT

NOTE: If this sequence is not followed during installation it is possible for the latching relay to be latched "ON" with the power off, causing the ELT to turn on when connected. Reset this condition by connecting power and toggling the switch from ARM to ON and back to ARM.

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4. CABLE HARNESS

Due to the large array of configurations possible, ACR Electronics, Inc. does not provide a harness as part of the installation of the ELT. Accordingly, it is the responsibility of the installer:

1. To manufacture the required harness(es) and ensure that the wires are adequate for the installation.
2. To check the integrity of the 2-communication wires installed across the aircraft.
3. To thoroughly check the integrity of any wires used in the installation to lessen wiring problems and increase operational readiness.
4. To follow standard aircraft wiring practices.

The D-sub crimp contact 151-0042 accepts 22 to 26 AWG wires and is used with Tyco crimping tool 91525-1 or equivalent.

Artex recommends using a shielded cable to prevent signals related to power frequency, audio frequency and electrical transients generated from on-board equipments from interfering with the ELT operation.

The mating connector and contacts connecting to the ELT are found in the install kit included in the pack list at the time the beacon is purchased. Accordingly, the hardware included in the 455-0032 and 455-0041 is only used to connect each interface together.

The interfaces 453-0032 and 453-0041 adequately communicate and allow operation of the toggle switch 140-3349 with the ELT when using 26 AWG wires with a length of 240 ft (73 meters). Other combinations of length and gauge size must be tested on a case by case basis to ensure proper communication between the ELT and the toggle switch.

4.1 INSULATION ADJUSTMENT PROCEDURE

On many tools, the insulation barrel crimp height is regulated by the Insulation Adjustment Knob (Figure 2). The insulation crimp should hold the insulation firmly without cutting into it. To determine the proper insulation crimp setting, test crimp a loose piece contact using the setting which corresponds to the insulation diameter:

- (1) for small
- (2) and (3) for medium
- (4) for large

D-Sub Crimp:



Do NOT cut or nick the wire strands during wire stripping.

Contact crimp 151-0042 accepts wire AWG 22 through 26.

DESCRIPTION	MANUFACTURER	GAUGE	TOOL PART NUMBER
Hand Tool Crimper	Tyco	22-26	92525-1 or equivalent

NOTE: Use Tyco Extraction/Removal Tool 91067-2 or equivalent.

For further information, refer to Tyco 91285-1 Insertion/Extraction Tool document IS9404 located on Tyco web site.

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4.2 CRIMPING INSTRUCTIONS

NOTES: This section is used in conjunction with the ELT and remote switch wiring sections

Refer to Tyco CERTI-CRIMP II Straight Action Hand Tools document 408-8547 for further information if required (Tyco web site).

- 4.2.1 Read the instructions before proceeding to familiarize yourself with the process.
- 4.2.2 Ensure that the wire intended for use is compatible with the wire size of the contact crimp.
- 4.2.3 Contact crimp 151-0042 accepts wire AWG 22 through 26.
- 4.2.4 Cut the wires to size according to the installation requirements and depending on the proximity of:
1. The ELT with reference to the 453-0041 interface
 2. The toggle switch with reference to the 453-0032 interface
 3. Each interface with respect to each other
- 4.2.5 Strip 0.100" \pm 0.010 of insulation from the ends of each wire.

Table 2: Strip Length				
CRIMP TOOL NUMBER	WIRE SIZE mm ² (AWG)	INSULATION DIAMETER mm (in)	STRIP LENGTH mm (in)	CRIMP HEIGHT mm (in)
TYCO 91525-1 or equivalent	0.38 – 0.12 (22 – 26)	1.27 max. (0.050 max)	2.54 \pm 0.25 (0.100 \pm 0.010)	0.88 – 0.76 \pm 0.05 (0.0345 – 0.0300 \pm 0.0020)

Unit of measurement: mm (millimeter), in (inch)

- 4.2.6 Crimp contact 151-0042 to the end of each wire connecting to an interface according to the following instructions.
- NOTE:** Once engaged, the ratchet will not release until the dies have been fully closed.
- 4.2.7 Hold the tool so that the front side is facing you.
- 4.2.8 Ensure that the tool ratchet is released by squeezing the tool handles and allowing them to open fully.
- 4.2.9 Holding the contact by its mating portion and looking straight into the crimp section, insert the contact from the back of the tool into the appropriate crimp chamber.
- 4.2.10 Position the contact between the crimpers so that the locator/insulation stop enters the slot in the contact. The wire barrel should butt against the locator/insulation stop. Refer to Figure 2 and Figure 3.

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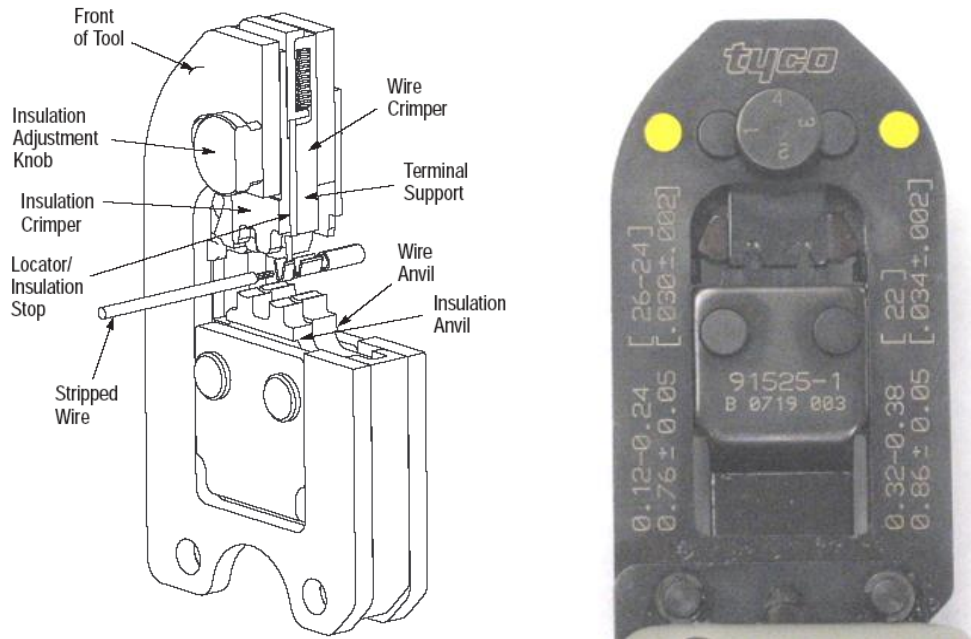


Figure 2: Tyco Crimping Tool

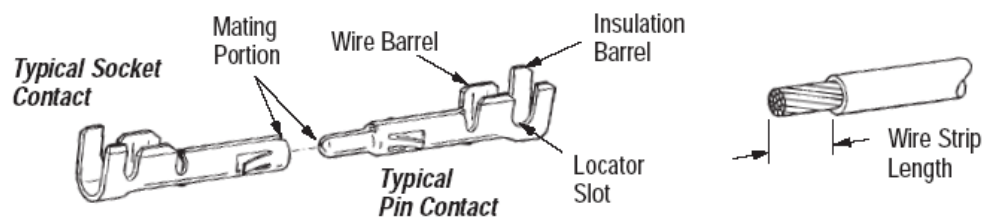


Figure 3: Crimp Overview

- 4.2.11 Hold the contact in this position and squeeze the tool handles together until the insulation anvil starts entry into the insulation crimper (usually two ratchet clicks). Do NOT deform the insulation barrel or wire barrel.
- 4.2.12 Insert a properly stripped wire through the locator slot and into the wire barrel of the contact until the insulation butts against the locator/insulation stop.
- 4.2.13 Hold the wire in place and crimp the contact to the wire by squeezing the tool handles together until the ratchet releases.
- 4.2.14 Allow the tool handles to open fully and remove the crimped contact from the tool.
- 4.2.15 Check the crimp height with a micrometer and ensure that it meets dimension 0.0300 to 0.0345 (± 0.0020).
- 4.2.16 Position the contact in the appropriate contact cavity of the D-sub (150-0022) based on the wiring diagrams mentioned in the appropriate section of this document depending if the 453-0032 or 453-0041 is installed.
- 4.2.17 Push the contact inside the cavity using the insertion/removal tool 91067-2 or equivalent (20-24 AWG), or 91285-1 or equivalent (24-28 AWG).
- 4.2.18 Ensure that the contact is locked in the cavity.
- 4.2.19 Repeat the previous steps for all the wires required in the D-sub connector attaching to an interface.

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- 4.2.20 Install the D-sub connector inside a backshell (151-0006).
- 4.2.21 Secure the strain relief using the screws provided in the backshell kit.
- 4.2.22 Install the thumbscrews and close the backshell with the screws.

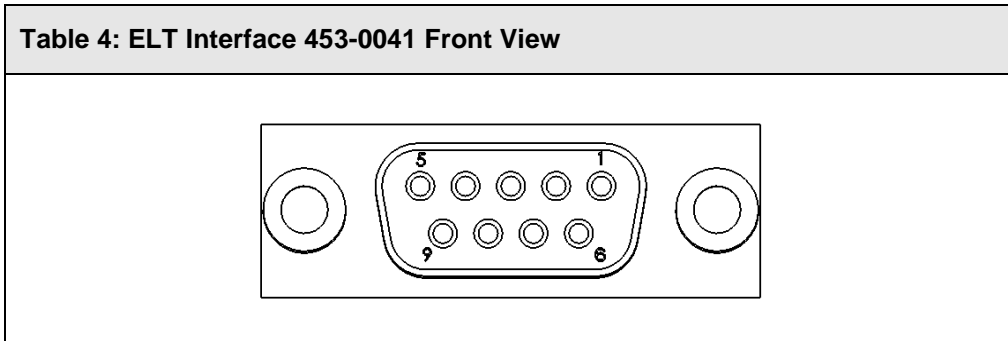
5. 453-0041 WIRING TO ELT

5.1 INSTRUCTIONS

- 5.1.1 The mating connector and contacts connecting to the ELT are found in the install kit included in the pack list at the time the beacon is purchased. Accordingly, the hardware included in the 455-0032 and 455-0041 is only used to connect each interface together.
- 5.1.2 The built-in horn inside the interface is powered by the ELT and does not require the 453-0032 interface.
- 5.1.3 The wiring of an Artex ELT to the interface 453-0041 interface is simply performed by:
 1. Referring to the wiring diagram inside the manual of the ELT under installation. Electronic copies of the manuals are available from Artex’s Web Site www.acrartex.com
 2. Identifying the pin out for the following electrical lines:
 - Light
 - Reset 1
 - Reset 2
 - External ON
 - Ground
 - Horn power
 - Horn ground
 3. Matching the electrical lines from the ELT to the 453-0041 interface connector based on the information presented below.

PIN LOCATION	453-0041 INTERFACE PIN #	GENERIC ELT SIGNAL DESCRIPTION
	1	N/A
	2	N/A
	3	Reset 1
	4	Reset 2
	5	Horn +
	6	Light
	7	Horn Ground (Aircraft Ground)
	8	External ON
	9	Aircraft Ground

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Table 4: ELT Interface 453-0041 Front ViewExample:

The following information highlights the wiring of the ME406 ELT series to the ELT interface 453-0041:

DESCRIPTION	ME406 SERIES ELT	453-0041 ELT INTERFACE
	PIN OUT	PIN OUT
Light	2	6
Reset 1	6	3
Reset 2	13	4
External ON	14	8
Ground	7	7 and 9
Horn power	8	5
Horn ground	7 or aircraft ground	7

- 5.1.4 The wires for the interface 453-0041 are crimped and inserted inside the D-sub connector 150-0022 using the same procedure highlighted in the “Cable Harness” section.

NOTE: Do not close the backshell if the two communication wires have not been installed yet. Refer to section “453-0032 wiring to 453-0041” in this document to complete the wiring across the interfaces.

- 5.1.5 Install the D-sub connector inside a backshell (151-0006) at the completion of the crimping process.
- 5.1.6 Secure the strain relief using the screws provided in the backshell kit.
- 5.1.7 Install the thumbscrews and close the backshell with the screws.
- 5.1.8 Attach the backshell to the interface 453-0041 using a torque between 1.5 and 2.0 in-lb (.7 to .22 Nm) at the completion of the entire wiring process.

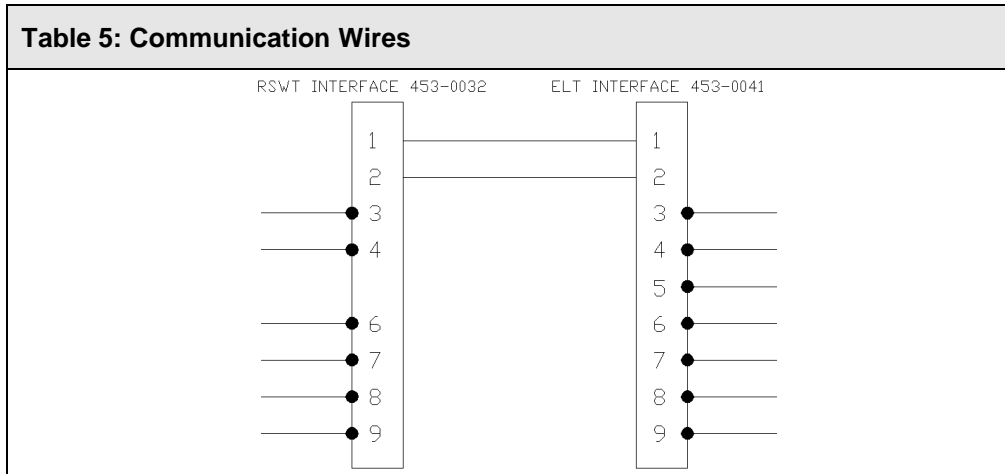
NOTE: Accidentally attaching the interface 453-0032 to the backshell instead of the 453-0041 does not harm the ELT, the toggle switch 140-3349, or any of the interfaces. The outcome is that the ELT cannot be activated remotely through the toggle switch 140-3349.

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6. 453-0032 WIRING TO 453-0041

6.1 INSTRUCTIONS

- 6.1.1 The size of the two wires is based on the D-sub crimp contact 151-0042 accepting 22 to 26 gauge wires.
- 6.1.2 The color of the two communication wires between the interfaces is inconsequential, but each wire must be properly connected to the appropriate contact on the D-sub mating connector.
- 6.1.3 The following information highlights the wiring between the two interfaces:



- 6.1.4 The ends of the two communication wires are crimped and inserted inside the D-sub connector 150-0022 using the same procedure highlighted in the “Crimping Instructions” section 4.

NOTE: Do not close the backshell if additional wiring to the D-sub is necessary. Refer to the appropriate sections in this document to complete the entire wiring process.

- 6.1.5 Install the D-sub connector inside a backshell (151-0006) at the completion of the crimping process.
- 6.1.6 Install each D-sub connector inside a backshell (151-0006).
- 6.1.7 Secure the strain relief using the screws provided in the backshell kit.
- 6.1.8 Install the thumbscrews and close the backshell with the screws.
- 6.1.9 Attach each backshell to the appropriate interface using a torque between 1.5 and 2.0 in-lb (.7 to .22 Nm) at the completion of the entire wiring process.

NOTE: Accidentally attaching the wrong interface to a backshell does not harm the ELT, the toggle switch 140-3349, or any of the interfaces. The outcome is that the ELT cannot be activated remotely through the toggle switch 140-3349.

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7. 453-0032 WIRING TO 140-3349 TOGGLE SWITCH

The interface has two connections available on the D-sub connector to connect either aircraft power 14 VDC or 28 VDC. The connections have internal current limiting resistors to protect the built-in LED on the toggle switch, so it is critical to establish the proper connection between the interface, the toggle switch, and the aircraft power.

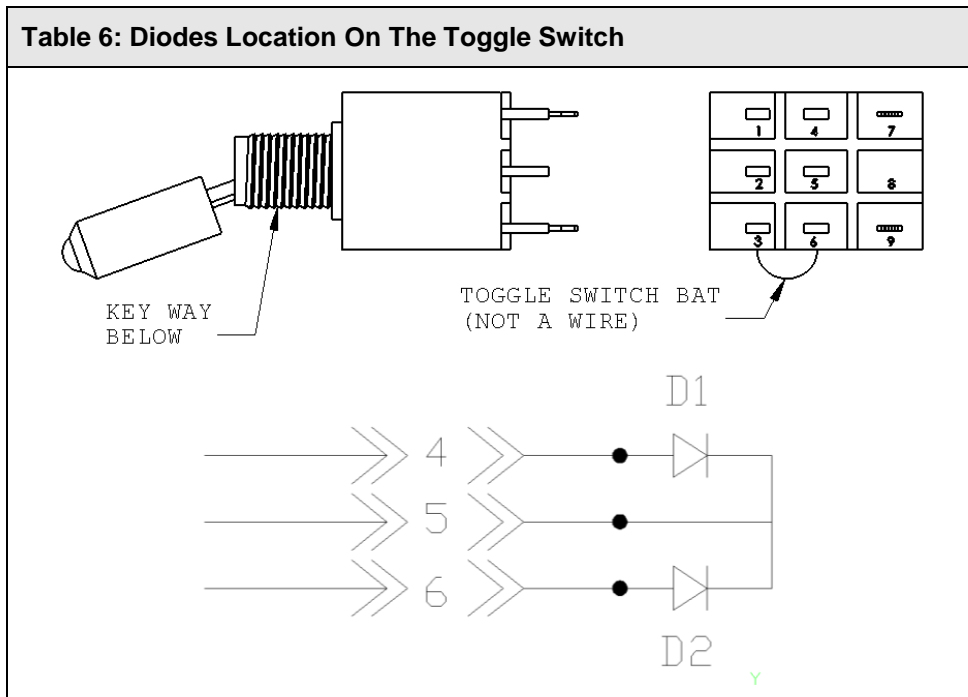
The power supply inside the interface is designed to operate on 6.5 to 30 V input. Due to this wide input range, a switching power supply is used to create 5 V for power distribution throughout the system. This switching supply allows the system to draw on average approximately 125 μ A from a 14 V battery and 65 μ A from a 28 V battery.

7.1 DIODES INSTALLATION



Ensure that the leads of the diodes do not touch the body of the toggle switch, or any other contacts other than the ones mentioned below.

7.1.1 Solder the diodes 120-4007 to the toggle switch according to the following information:



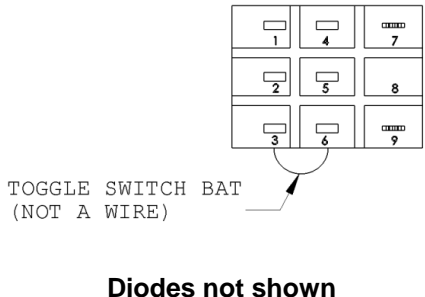
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7.2 140-3349 TOGGLE SWITCH WIRING (14 VDC INSTALLATION)



Improperly wiring the aircraft power to the D-sub will irreversibly damage the interface.

7.2.1 Solder the wires from the 453-0032 interface to the toggle switch according to the following information for 14 VDC aircraft power:

Table 7: 14 VDC Aircraft Power			
CONTACT LOCATION	TOGGLE SWITCH CONTACT #	453-0032 INTERFACE	
		DESCRIPTION	CONTACT #
 <p>TOGGLE SWITCH BAT (NOT A WIRE)</p> <p>Diodes not shown</p>	1	N/A	N/A
	2	Ground	9
	3	Ext. On	7
	4	Reset 1	6
	5	N/A	N/A
	6	Reset 2	3
	7	Aircraft Power (14 VDC)	4
	8	N/A	N/A
	9	Light 14 (-)	8

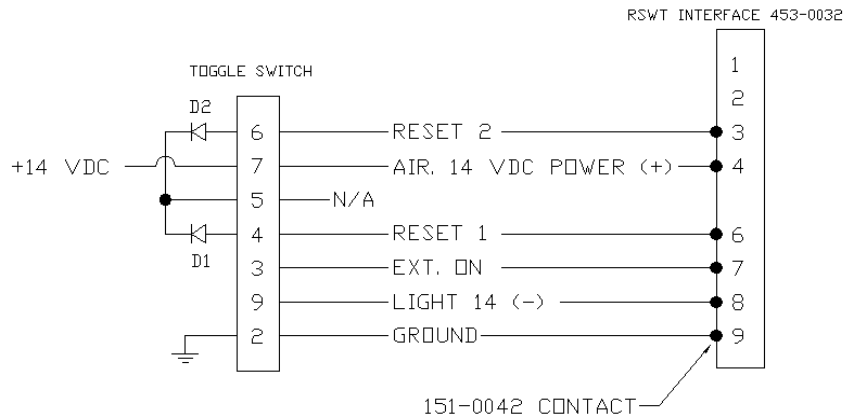


Figure 4: 453-0032 Wiring Diagram For 14 VDC Installation

NOTE: The toggle switch is not grounded to the ELT, so the system works for metallic and composite aircrafts when the beacon and the toggle are installed far apart.

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7.3 140-3349 TOGGLE SWITCH WIRING (14 VDC INSTALLATION)



Improperly wiring the aircraft power to the D-sub will irreversibly damage the interface.

7.3.1 Solder the wires from the 453-0032 interface to the toggle switch according to the following information for 28 VDC aircraft power:

Table 8: 28 VDC Aircraft Power			
CONTACT LOCATION	TOGGLE SWITCH CONTACT #	453-0032 INTERFACE	
		DESCRIPTION	CONTACT #
<p>TOGGLE SWITCH BAT (NOT A WIRE)</p> <p>Diodes not shown</p>	1	N/A	N/A
	2	Ground	9
	3	Ext. On	7
	4	Reset 1	6
	5	N/A	N/A
	6	Reset 2	3
	7	Aircraft Power (28 VDC)	4
	8	N/A	N/A
	9	Light 28 (-)	5

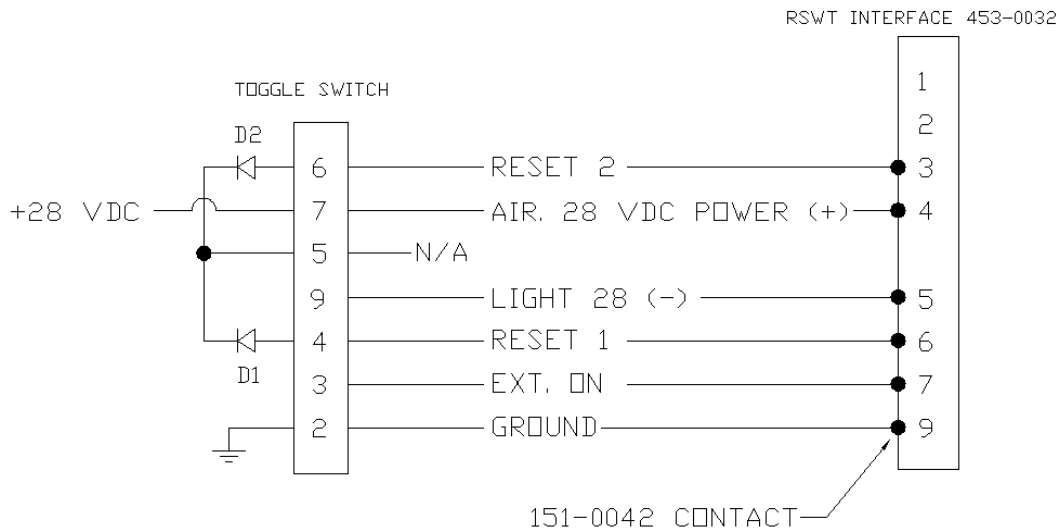
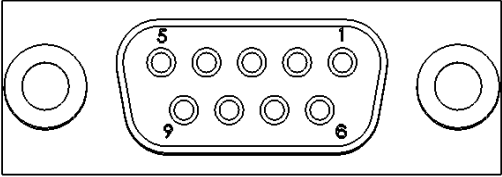


Figure 5: 453-0032 Wiring Diagram For 28 VDC Installation

NOTE: The toggle switch is not grounded to the ELT, so the system works for metallic and composite aircrafts when the beacon and the toggle are installed far apart.

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7.4 453-0032 WIRING

Table 9: Remote Switch Interface 453-0032 Front View		
VIEW	PIN #	SIGNAL DESCRIPTION
	1	N/A
	2	N/A
	3	Reset 2
	4	Aircraft Power (14 or 28 VDC)
	5	Light (28 VDC Installation)
	6	Reset 1
	7	External ON
	8	Light (14 VDC Installation)
	9	Aircraft Ground

- 7.4.1 The wires for the interface 453-0032 are crimped and inserted inside the D-sub connector 150-0022 using the same procedure highlighted in the “Cable Harness” section.

NOTE: Do not close the backshell if the two communication wires have not been installed yet. Refer to section “453-0032 wiring to 453-0041” in this document to complete the entire wiring process.

- 7.4.2 Install the D-sub connector inside a backshell (151-0006) at the completion of the crimping process.
- 7.4.3 Secure the strain relief using the screws provided in the backshell kit.
- 7.4.4 Install the thumbscrews and close the backshell with the screws.
- 7.4.5 Attach the backshell to the 453-0032 interface using a torque between 1.5 and 2.0 in-lb (.7 to .22 Nm) at the completion of the entire wiring process.

NOTE: Accidentally attaching the interface 453-0041 to the backshell instead of the 453-0032 does not harm the ELT, the toggle switch 140-3349, or any of the interfaces. The outcome is that the ELT cannot be activated remotely through the toggle switch 140-3349.

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8. INTERFACE INSTALLATION

8.1 INSTRUCTIONS

8.1.1 Secure the interfaces 453-0032 and 453-0041 to a structural member using the hardware found in the 455-0032 and 455-0041 respectively.

2 ea.	201-0810	Screw, PHP 8-32 x 5/8 SS
2 ea.	241-0832	Nut, Hex 8-32 x 1/4 SS
2 ea.	246-0001	Washer, Flat #8 OD3/8 SS
2 ea.	247-0800	Washer, Lock Internal Tooth #8

8.1.2 Torque the screws to 8 in-lb (0.90 Nm) \pm 1 in-lb (0.11 Nm).

9. PANEL CUTOUT/TOGGLE SWITCH INSTALLATION

9.1 INSTRUCTIONS

NOTE: The toggle switch 140-3349 is not available with a protective guard.

- 9.1.1 Select a mounting location where the toggle switch can be seen from the pilot's seated location, easily be reached by the pilot, out of direct sunlight, and can accommodate the switch and the label.
- 9.1.2 Choose the appropriate label based on the orientation on the control panel. Label 591-0037 and label 591-0092 are provided in the 455-0049 pack list.

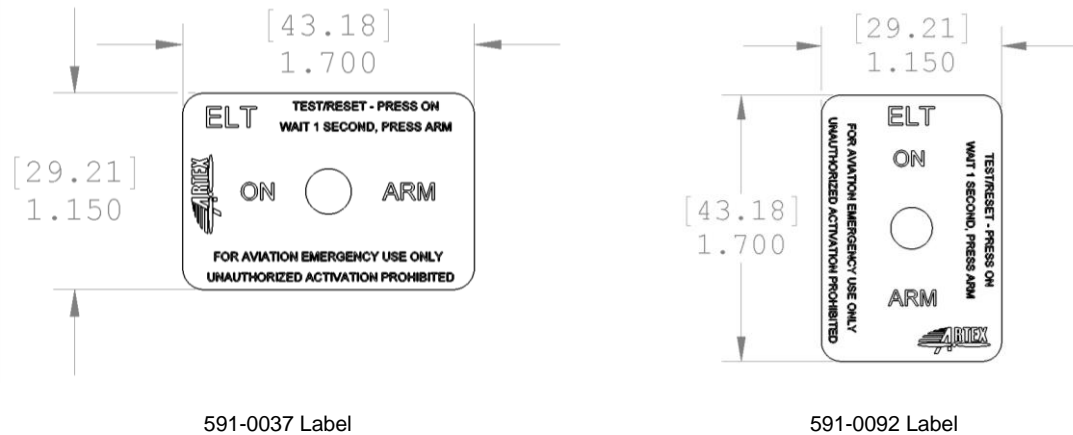


Figure 6 : Label 591-0037 & 591-0092

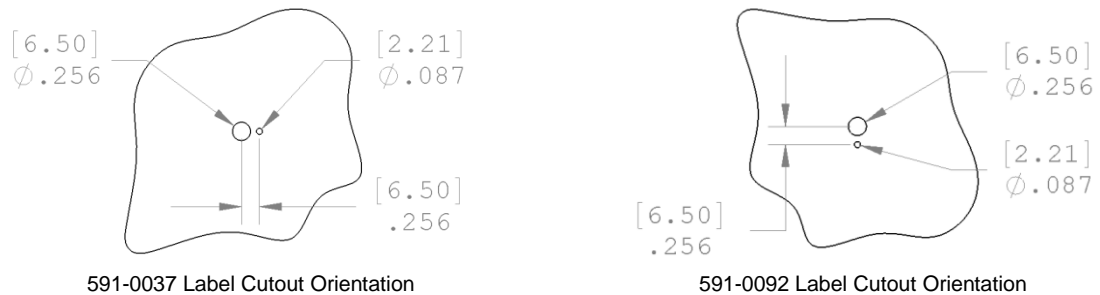
- 9.1.3 Create a cutout in the panel for the toggle switch according to the minimum dimensions specified below.

NOTES: The maximum panel thickness is .102" (2.6mm).

The .087" (2.21mm) diameter hole is intended to prevent the toggle switch from rotating once the locking ring is installed.

- 9.1.4 Adjust the hole-pattern appropriately on the panel depending on the orientation of the remote switch.

NOTE: Ø is the symbol for diameter



Tolerance: +.020, -.000

Figure 7 : Panel cutout dimensions

- 9.1.5 Clean the application surface area thoroughly prior to applying the label.
- 9.1.6 Remove the paper backing from the label and line up the label over the cutout.
- 9.1.7 Press firmly and evenly over the label to produce maximum adhesion.

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- 9.1.8 Slide the locking ring on the toggle switch.

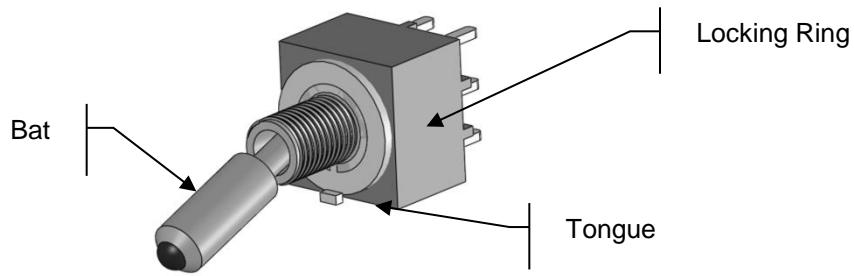
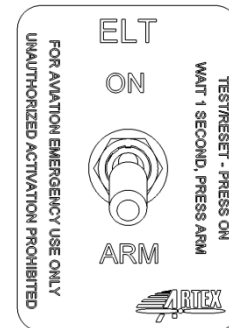


Figure 8: Toggle Switch Locking Ring

- 9.1.9 Slide the bat of the toggle switch through the cutout and insert the tongue of the locking ring inside the smaller hole.
- 9.1.10 Install the lockwasher and the mounting nut over the thread of the toggle switch.
- 9.1.11 Secure the nut using a torque screwdriver set to 6 lb-in (.67 Nm).



591-0037 Label Assembly



591-0092 Label Assembly

Figure 9: Hardware installation

- 9.1.12 Fasten the harness to the aircraft and ensure that it has enough slack to prevent tensile load on the contacts of the toggle switch.
- 9.1.13 Plug the D-sub connector leading from the harness on the toggle switch to the 453-0032 interface.
- 9.1.14 Refer to the Transmitter Test section of the appropriate ELT manual to check the operation of the complete connection to the ELT.

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10. SPECIFICATIONS

10.1 INTERFACE MATERIAL

10.1.1 Both interfaces 453-0032 and 453-0041 are made with flame retardant ABS plastic, UL94V-0.

10.1.2 The surface of each interface is polished finish.

10.2 INTERFACE DIMENSIONS

The following dimensions are displayed in [millimeters] and inches

NOTE: Ø is the symbol for diameter

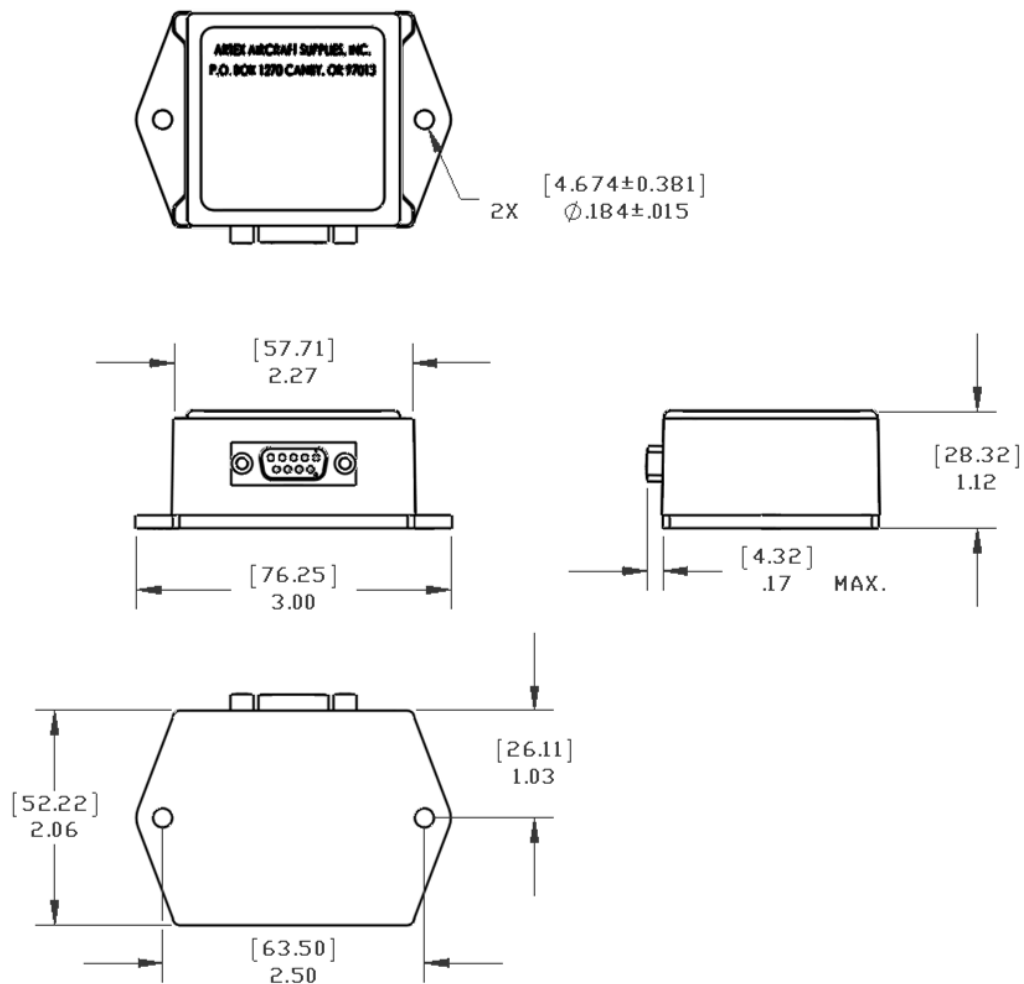


Figure 10: 453-0032 Interface

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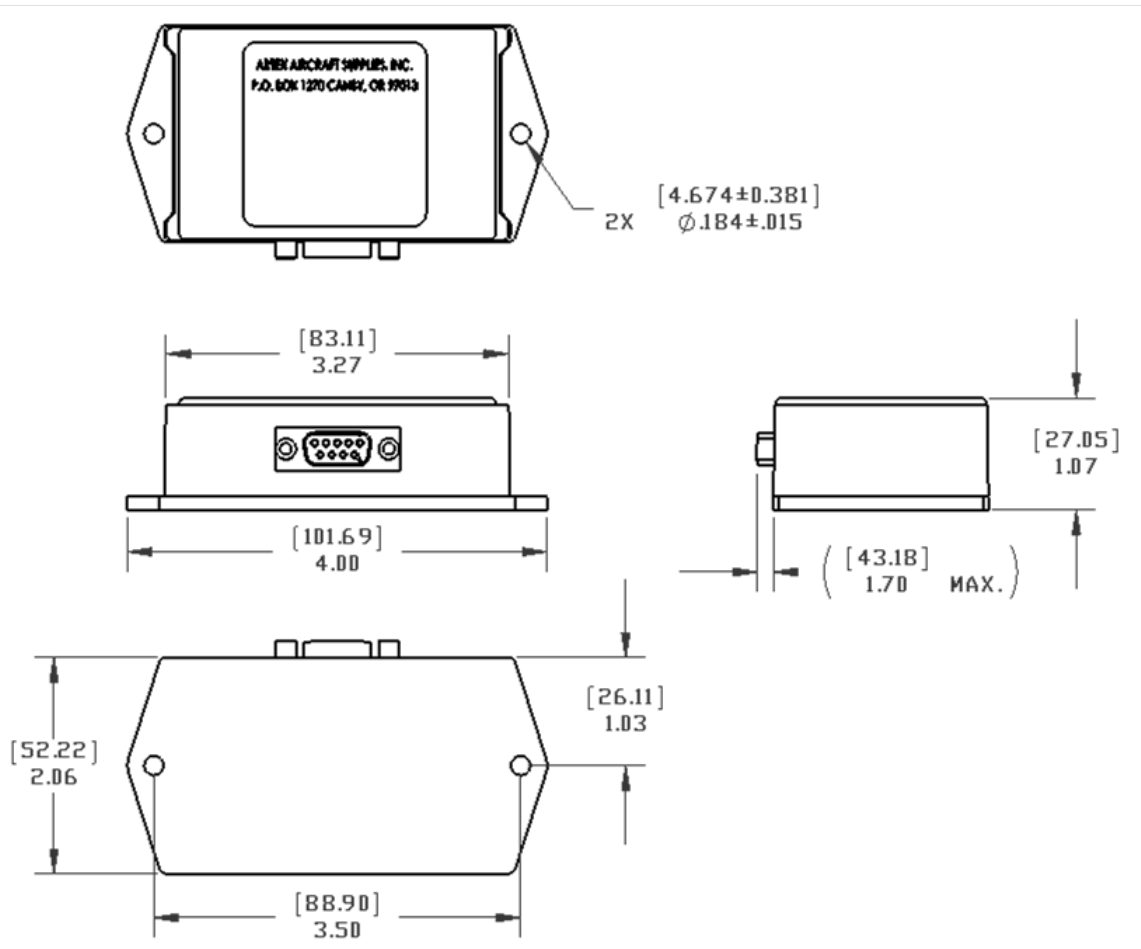


Figure 11: 453-0041 Interface

10.3 INTERFACE WEIGHT

PART NUMBER	DESCRIPTION	WEIGHT
453-0032	2-Wire Remote Switch Interface	2.07 oz (59 gr.) Max.
453-0041	2-Wire ELT Interface	2.78 oz (79 gr.) Max.

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10.4 TOGGLE SWITCH DIMENSIONS

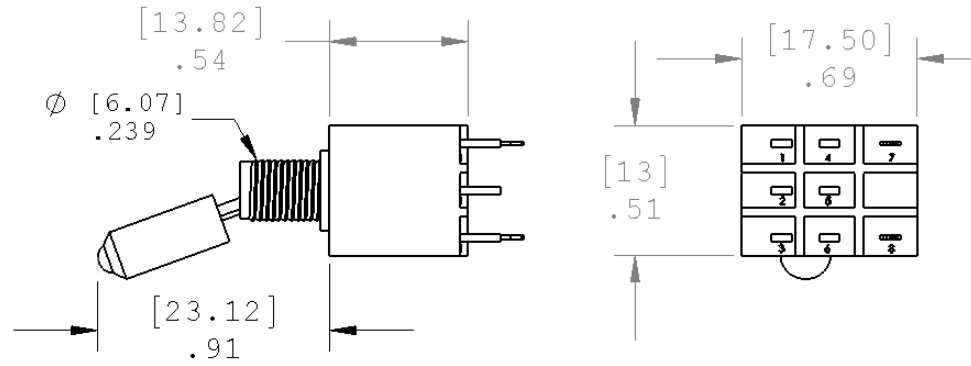


Figure 12: 140-3349 Toggle Switch

10.5 TOGGLE SWITCH WEIGHT

PART NUMBER	DESCRIPTION	WEIGHT
140-3349	Switch, DPDT W/LED Tip 2-Pos.	.35 oz (10 gr.) Max.

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10.6 MISCELLANEOUS COMPONENTS SPECIFICATIONS

Table 10: Components Specifications		
COMPONENT	SPECIFICATIONS	
Built-in Interface D-Sub	Shell Size	9
	Mounting Option	4-40 jackscrew
	Durability	1000 Cycle minimum
	Dielectric Withstanding Voltage	1000 VAC minimum for 1 minute
	Gender	Receptacle (female)
D-Sub 150-0022	Shell Size	9
	Wire Termination Type	Crimp snap
	Dielectric Withstanding Voltage	1000 VAC minimum for 1 minute
	Gender	Plug (male)
Pin Crimp 151-0042	Contact Termination	Crimp
	AWG	22-26
	Insertion/Extraction Tool	Tyco 91067-2 or equivalent (20-24 AWG) Tyco 91285-1 or equivalent (24-28 AWG)
	Crimp Hand Tool	Tyco 91525-1 or equivalent
	Gender	Pin (male)
	Size	20
	Insulation Diameter in[mm]	0.040 – 0.050 [1.01 – 1.27]
Backshell 151-0006	Color	Black
	Shell Size	9
	Thumbscrew	4-40
	Thumbscrew torque	1.5 to 2.0 in-lb (.7 to .22 Nm)
Toggle Switch 140-3349	Pole & Throw	DPDT
	Number of Position	2
	LED Color	Red
	Contact Material Rating	3A @ 30 VDC
	LED Forward Peak Current:	25 mA
	LED Continuous Forward Current	20 mA
	LED Forward Voltage	2.1 Volts
	Electrical Life	25000 operations minimum

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Table 10: Components Specifications		
COMPONENT	SPECIFICATIONS	
	Mechanical Life	50000 operation minimum
	Locking Mechanism	No
	Nut Mounting Torque	6 lb-in (.67 Nm)
	Angle of Throw	20°

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10.7 ENVIRONMENTAL CATEGORIES

DO-160D Env. Cat. C4XAAB[204]XXXXXXXXZAZA[UUU]M[XXXX]XXA

DO-160D Environmental categories break down:

Table 11: Environmental Categories		
CATEGORIES	TESTS	DO-160D SECTIONS
C4	TEMPERATURE & ALTITUDE	4
X	IN-FLIGHT LOSS OF COOLING	4.5.4
A	TEMPERATURE VARIATION	5
A	HUMIDITY	6
B	OPERATIONAL SHOCK AND CRASH SAFETY	7
[204]	VIBRATION	8
X	EXPLOSION	9
X	WATERPROOFNESS	10
X	FLUIDS SUSCEPTIBILITY	11
X	SAND AND DUST	12
X	FUNGUS	13
X	SALT SPRAY	14
X	MAGNETIC EFFECT	15
Z	POWER INPUT	16
A	VOLTAGE SPIKE	17
Z	AUDIO FREQUENCY SUSCEPTIBILITY	18
A	INDUCED SIGNAL SUSCEPTIBILITY	19
[UUU]	RADIO FREQUENCY SUSCEPTIBILITY	20
M	EMISSION OF RF ENERGY	21
[XXXX]	LIGHTNING	22
X	LIGHTNING DIRECT EFFECTS	23
X	ICING	24
A	ELECTROSTATIC DISCHARGE	25

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