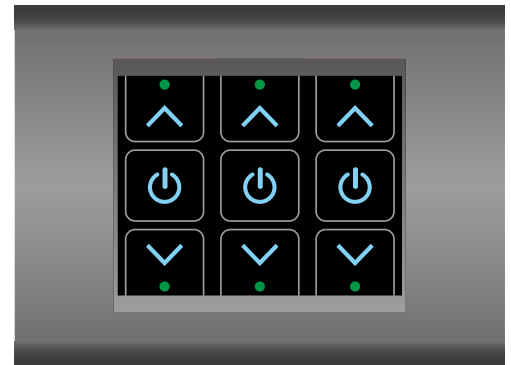# Touch Panel Switch Module

Introduction

The E-Plex 416TPS series has a resistive touch panel, with LED's for status indication. The touch panel display also includes an audible alarm for switch input verification or alert conditions.

Customizable artwork is available for button identification. The display's electroluminescent (EL) backlight allows the entire touch screen to be illuminated uniformly, making them easy to view in various lighting conditions. The backlight can also be operated in a screen saver mode which will blank it when not in use to extend the life of the EL panel. In addition, the audible alarm can be muted for nighttime operation.

Key Features

- 10 Green LED's for status indications.

- Up to 10 user-defined touch regions.

- Piezo buzzer for alert notification.

- Electroluminescent backlight for night-time display.

- 3" diagonal resistive touch panel.

- Custom artwork overlays with a variety of plastic bezel finishes for interior aesthetics.

- LEN value 6.

Design Specifications

- Impact resistance: 9g steel ball dropped from 30cm.

- Vibration: 1G, 10 - 500Hz for 1 hour, each direction.

- Moisture resistance: IP50.

- PCB characteristics: UL94V-0.

E-PLEX 416TPS

Electrical Specifications

Description	Minimum	Nominal	Maximum
Operating Voltage	7 VDC	12 / 24 VDC	32 VDC
Operating Current, no E-Plex loads	30 mA	-	65 mA

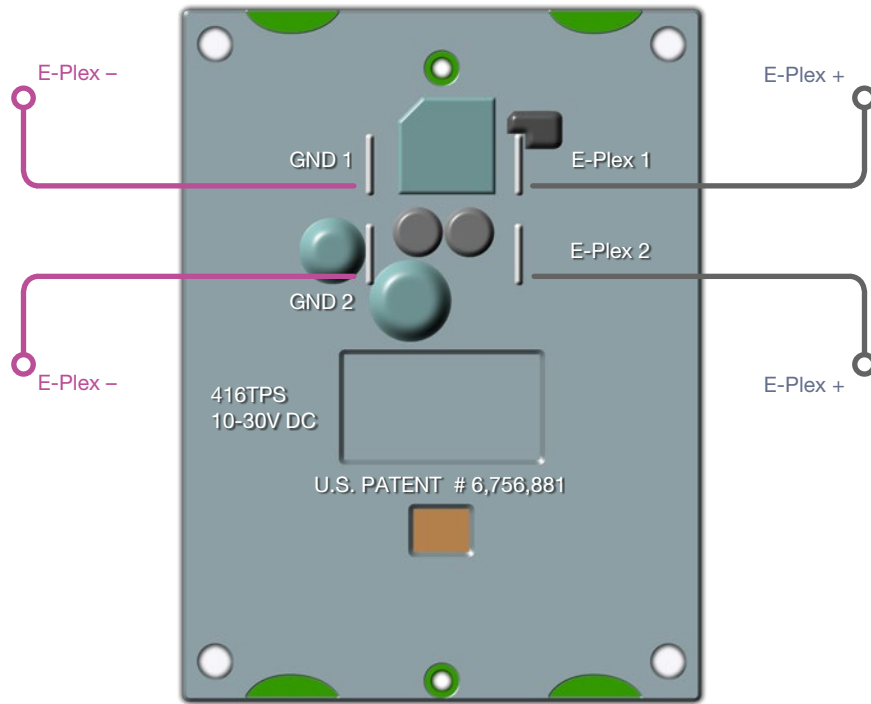## Physical Specifications

Front Bezel	ULV94-0 approved molded ABS
Back Cover	ULV94-0 approved molded ABS
LED's	50 mcd
Electroluminescent (EL) Backlight	5,000 hours typical half-life
Touch Glass Frame	Stamped Stainless Steel
Operating Temperature	-20°C to 60°C
Storage Temperature	-40°C to 85°C
Operating Humidity	5% to 95% (non-condensing)
Weight	2.1 ounces (60 grams)
Recommended Wire Specification for E-Plex Twisted Pair [1]	16 AWG (1.3 mm) - Unshielded, twisted pair General purpose: Belden 1035 A - Non-tinned Marine: Belden 9410 - Tinned

Wiring Specifications

Terminal Connector Specifications	Tin-plated male 0.250" quick-connect tabs
Mating Connector Specification	0.250" female spade terminal

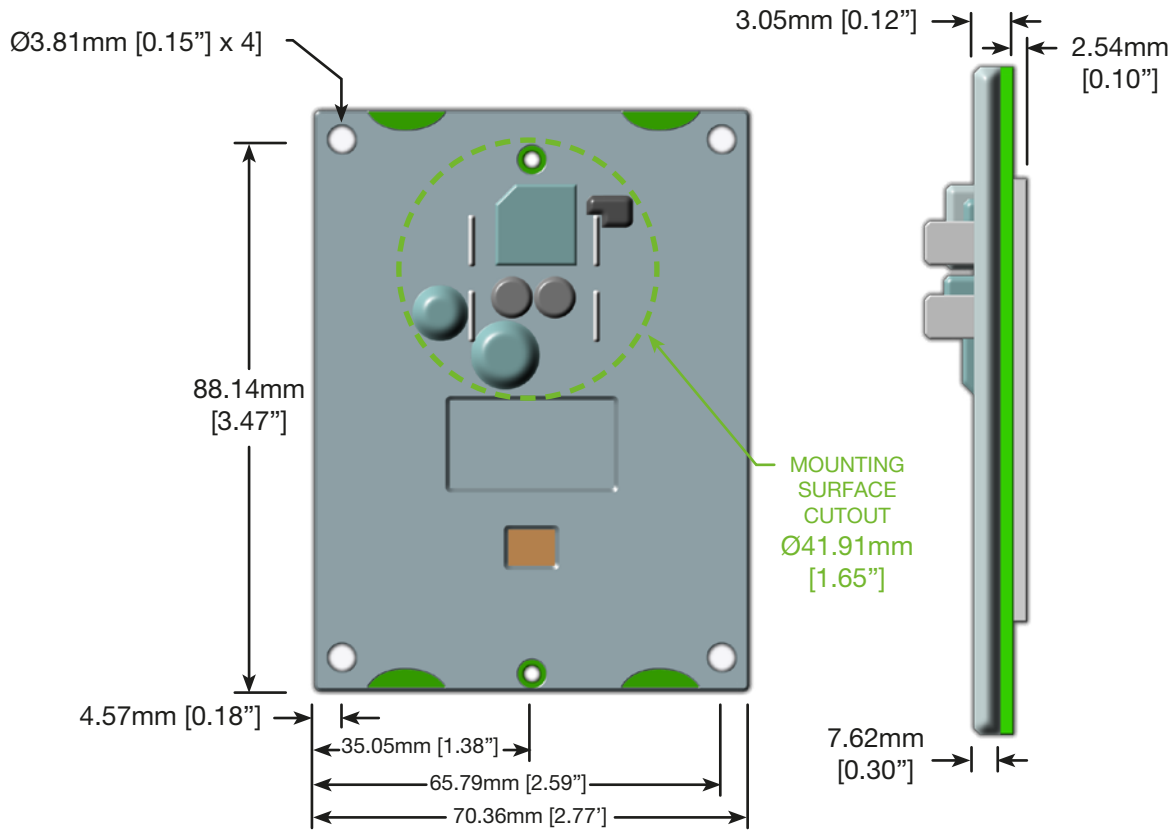NOTE: 1. Unrestricted topology: Star, Tree, Daisy Chain configurations all valid.

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Typical Wiring Diagram

E-Plex –

E-Plex +

GND 1

E-Plex 1

E-Plex 2

GND 2

E-Plex –

E-Plex +

416TPS
10-30V DC

U.S. PATENT # 6,756,881

Connection Specifications

Pin #	Pin Description	Inputs and Outputs
1	E-Plex Data Bus –	I / O
2	E-Plex Data Bus –	I / O
3	E-Plex Data Bus +	I / O
4	E-Plex Data Bus +	I / O

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Dimensional Diagram

Ø3.81mm [0.15"] x 4

88.14mm [3.47"]

4.57mm [0.18"]

35.05mm [1.38"]

65.79mm [2.59"]

70.36mm [2.77']

MOUNTING SURFACE CUTOUT Ø41.91mm [1.65"]

3.05mm [0.12"]

2.54mm [0.10"]

7.62mm [0.30"]

Dimensional Diagram

Cut a circular hole in the surface to allow the wiring and protruding components on the back side of the module to protrude through. The hole-saw cut should be at least 42mm [1.65"] diameter. Then, drill four mounting holes 3.81mm [0.15"] diameter for the mounting screws.

Mounting Specifications

Screw assembly to a flat mounting surface in 4 places, as shown in the illustration.
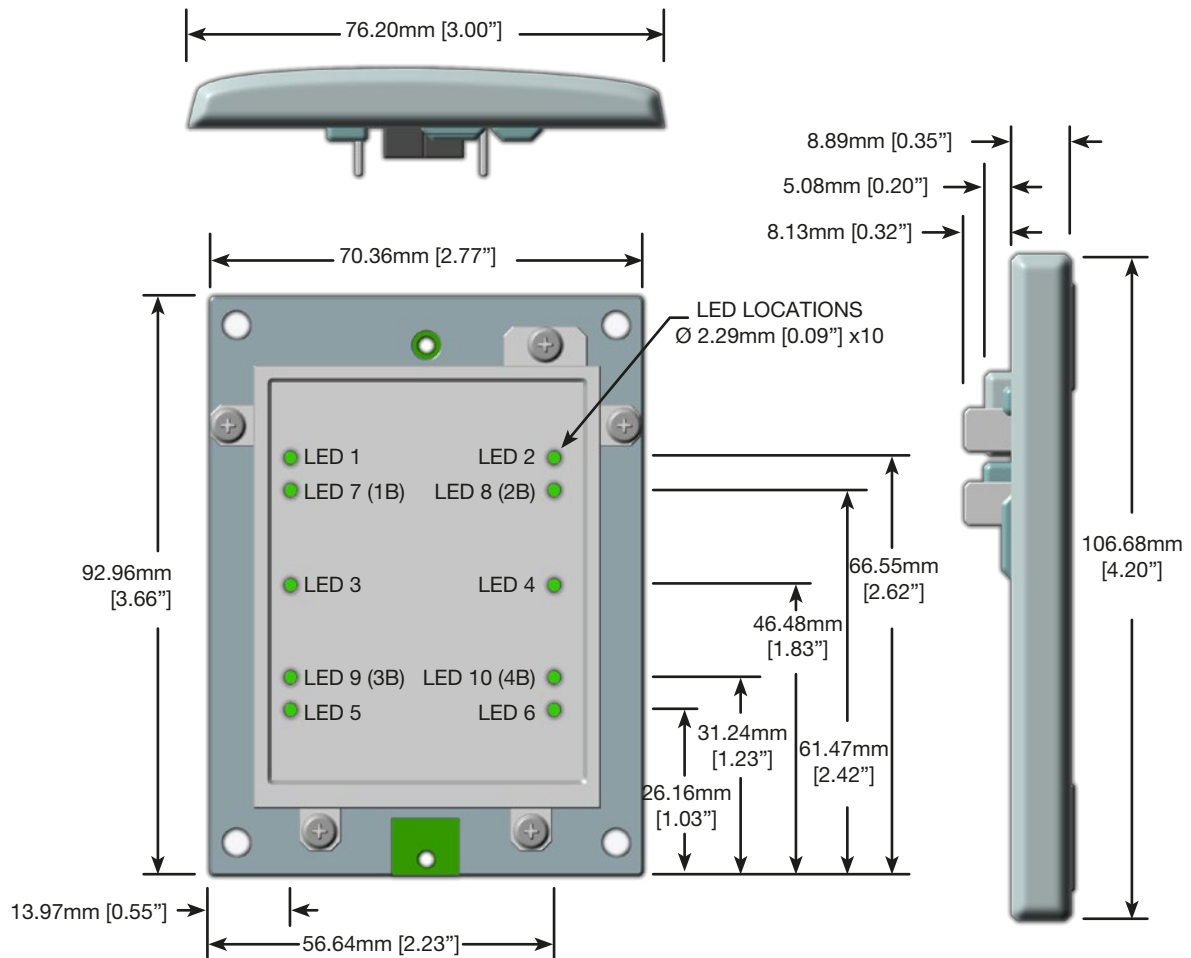
Mounting Instructions

Use M3 size screw and to 90~113 N-cm. Do not exceed this torque as it could cause damage to the electronics.

Imperial (English) fasteners: Use #6 size screws and torque to 8~10 in-lb. Do not exceed this torque as it could cause damage to the electronics.

The mounting screw head height must be less than 0.01" (0.254mm).

Dimensional Diagram

76.20mm [3.00"]

70.36mm [2.77"]

8.89mm [0.35"]
5.08mm [0.20"]
8.13mm [0.32"]

LED LOCATIONS
Ø 2.29mm [0.09"] x10

LED 1   LED 2
LED 7 (1B)   LED 8 (2B)

LED 3   LED 4

LED 9 (3B)   LED 10 (4B)
LED 5   LED 6

92.96mm [3.66"]

106.68mm [4.20"]

66.55mm [2.62"]

46.48mm [1.83"]

31.24mm [1.23"]

61.47mm [2.42"]

26.16mm [1.03"]

13.97mm [0.55"]

56.64mm [2.23"]
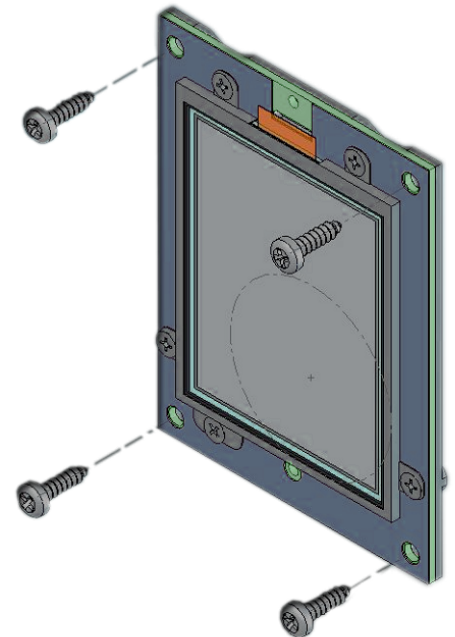
Ordering Information

Description	E-Plex Part Number
416TPS Series - Touch Panel Switch	EP-CONT-TPS-416TPS
Customer Defined Bezel (see below)	EP-BEZEL-TPS-XX

Standard Bezel Options
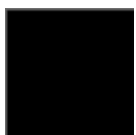
| Flat Black Bezel EP-BEZEL-TPS-BLACKMATT | Black Gloss Bezel EP-BEZEL-TPS-BLACKGLOSS | Bronze Bezel EP-BEZEL-TPS-BRONZE | Grey Gloss Bezel EP-BEZEL-TPS-GGREY | White Gloss Bezel EP-BEZEL-TPS-GLOSSWHITE | Silver Chrome Gloss Bezel EP-BEZEL-TPS-CHROME | Metallic Nickel Gloss Bezel EP-BEZEL-TPS-NICKEL |
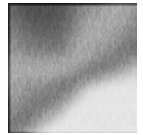
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