



Capacitive Touch Switch

## General Description

The ARL Series capacitive touch switches provide an embedded capacitive-touch slider functionality with multiple options and appearances. An additional pushbutton switch allows additional functionality.

The vibration motor option can be used to provide vibration feedback to the user when the pushbutton switch is activated.

The optional time can be used for time-demand programs.

Applications include audio/video equipment, automotive, lighting, instrumentation and appliances.

## Absolute Maximum Ratings

Absolute maximum ratings are those values which damage to the device may occur

| Parameter               | Symbol           | Value      | Unit |
|-------------------------|------------------|------------|------|
| Input Voltage           | $V_{CC}$         | 0 ~ 28     | VDC  |
| Operating Temperature   | $T_{OP}$         | -20 ~ +75  | °C   |
| Storage Temperature     | $T_{STG}$        | -55 ~ +125 | °C   |
| Motor Operating Voltage | $V_{MOTOR(MAX)}$ | 4          | V    |

Note: GND is system ground

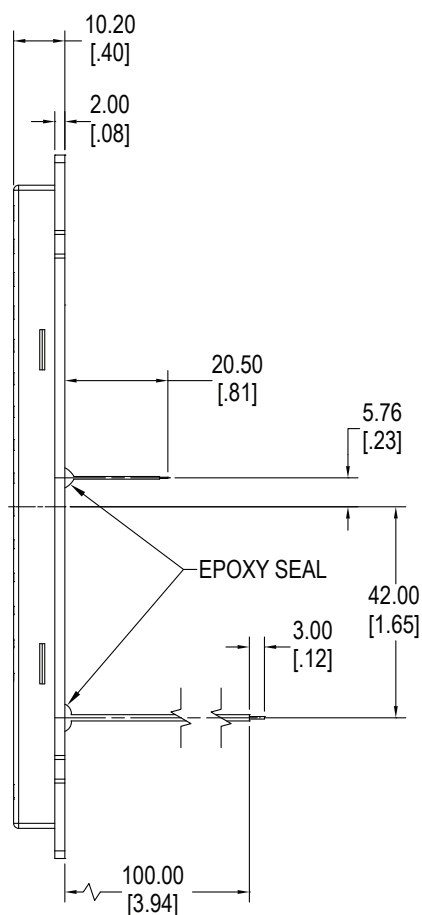
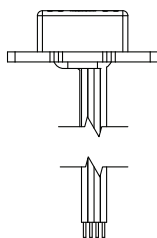
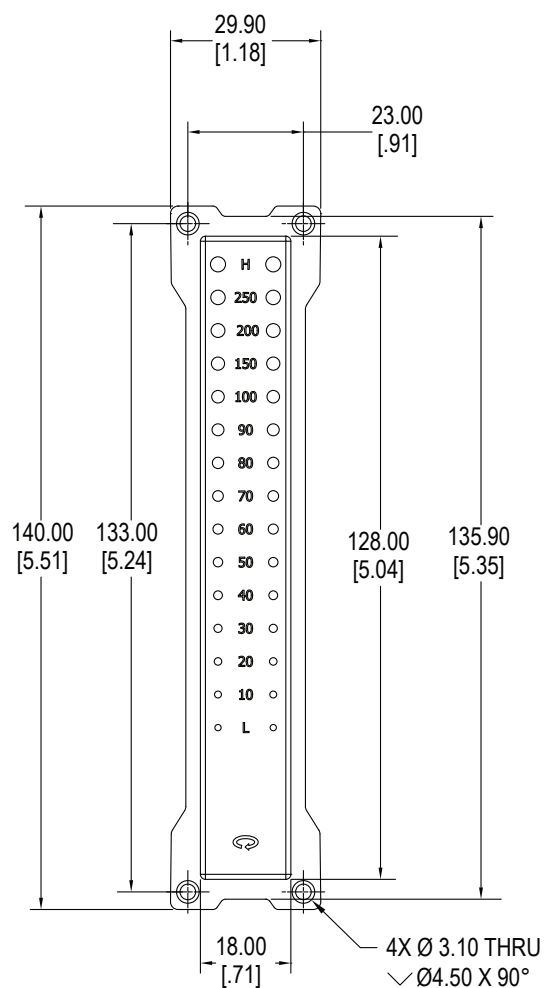
## DC Electrical Characteristics

| Parameter                  | Symbol            | Conditions                               | Min | Typ  | Max | Unit     |
|----------------------------|-------------------|------------------------------------------|-----|------|-----|----------|
| Operating Voltage          | $V_{DD}$          | $V_{CC} = 5.0V$                          | 2.8 | -    | 5.5 | V        |
| Operating Current          | $I_{CC}$          | $V_{CC} = 5.0V$                          | 2   | -    | 20  | mA       |
| Standby Current            | $I_{STB}$         | $V_{CC} = 5.0V$                          | -   | 7    | -   | mA       |
| Output High Voltage        | $V_{OH}$          | $V_{CC} = 5.0V$                          | -   | 3.4  | -   | V        |
| Output Low Voltage         | $V_{OL}$          | $V_{CC} = 5.0V$                          | 0   | 0.4  | 0   | V        |
| Motor Terminal Resistance  | $R_M$             | $T_{OP} = 25^{\circ}C$                   | 25  | 31   | 35  | $\Omega$ |
| Motor Operating Voltage    | $V_{MOTOR}$       | $T_{OP} = 25^{\circ}C$                   | 2.5 | 3    | 4.0 | V        |
| Motor Starting Voltage     | $V_{MOTOR-START}$ | $T_{OP} = 25^{\circ}C$                   | 2.3 | -    | -   | V        |
| Motor Starting Current     | $I_{MOTOR-START}$ | $T_{OP} = 25^{\circ}C, V_{MOTOR} = 3.0v$ | -   | 120  | -   | mA       |
| Motor Speed                | r/min             | $V_{MOTOR} = 3.0V$                       |     | 9000 |     | r/min    |
| Motor Steady State Current | $I_{MOTOR}$       | $V_{MOTOR} = 0.8V \sim 3.0V$             | 20  | -    | 90  | mA       |

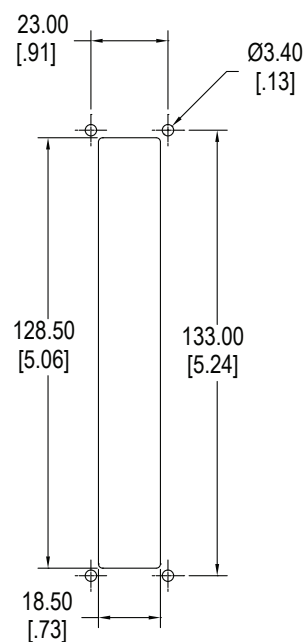
## AC Electrical Characteristics

| Parameter             | Symbol    | Conditions                            | Min | Typ | Max | Unit    |
|-----------------------|-----------|---------------------------------------|-----|-----|-----|---------|
| Output PWM Frequency  | $f_{PWM}$ | $V_{CC} = 5.0V, T_{OP} = 25^{\circ}C$ | 199 | 200 | 201 | Hz      |
| Output PWM Duty Cycle | T%        | $V_{CC} = 5.0V$                       | 3   | -   | 57  | %       |
| Output Rise Time      | $t_R$     | $V_{CC} = 5.0V, I_{CC} = 7mA$         | -   | 10  | 20  | $\mu S$ |
| Output Fall Time      | $t_F$     | $V_{CC} = 5.0V, I_{CC} = 7mA$         | -   | 10  | 20  | $\mu S$ |

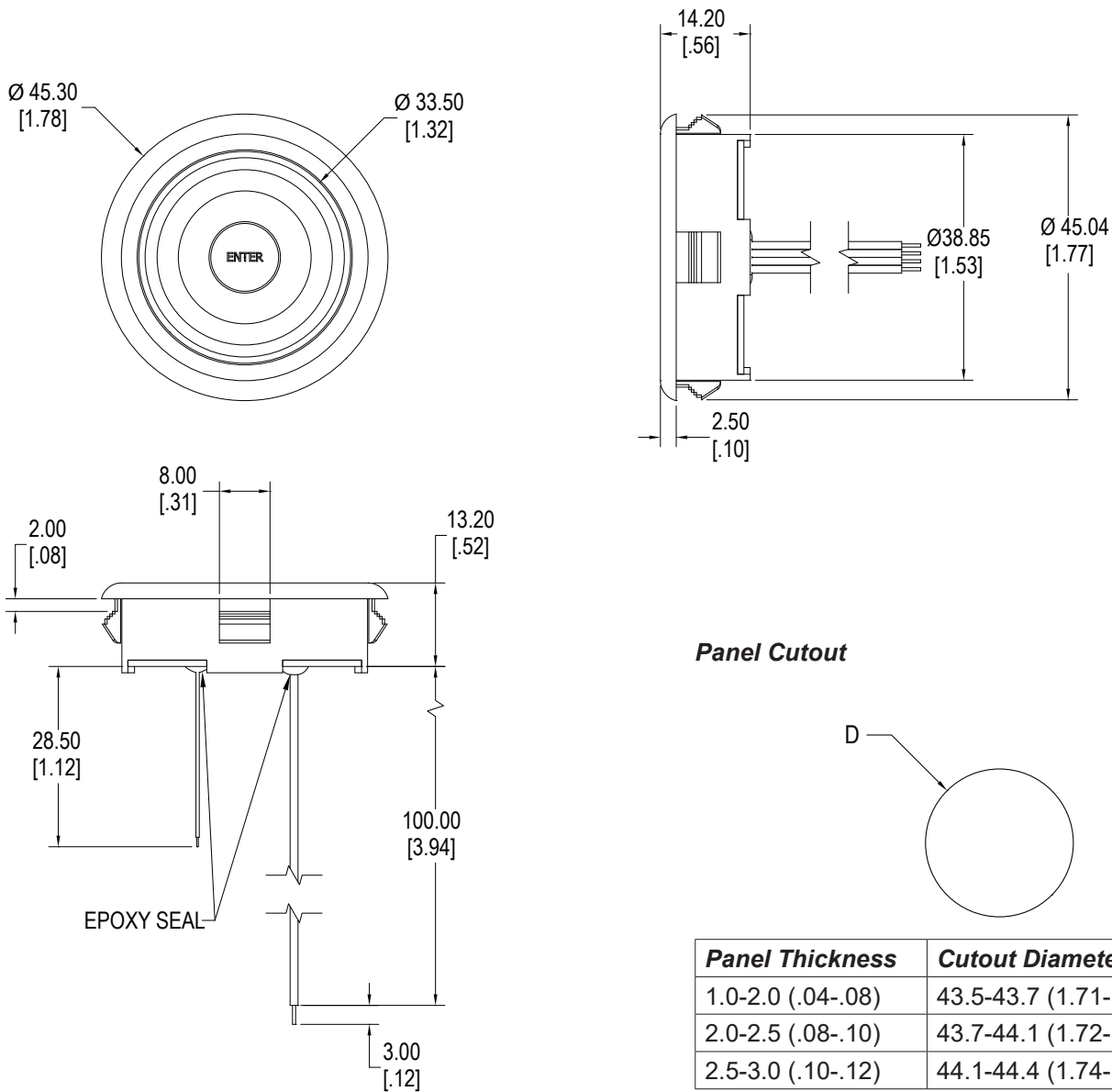
## Dimensions - Rectangle



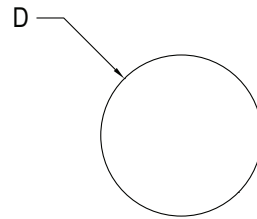
### Panel Cutout



## Dimensions - Rotary

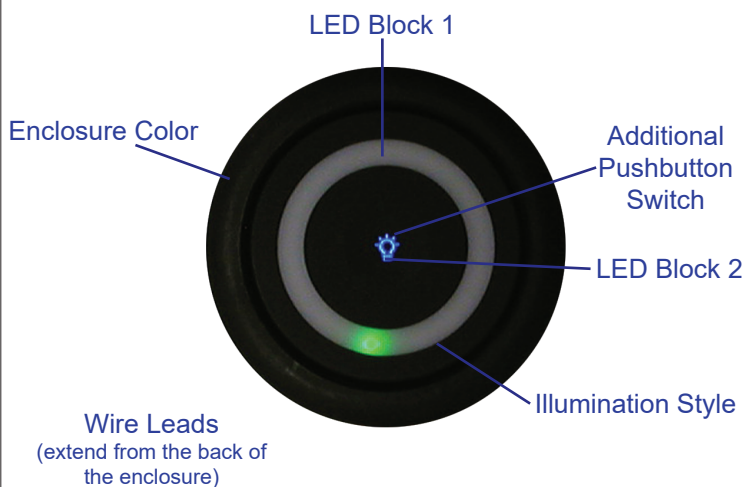


### Panel Cutout

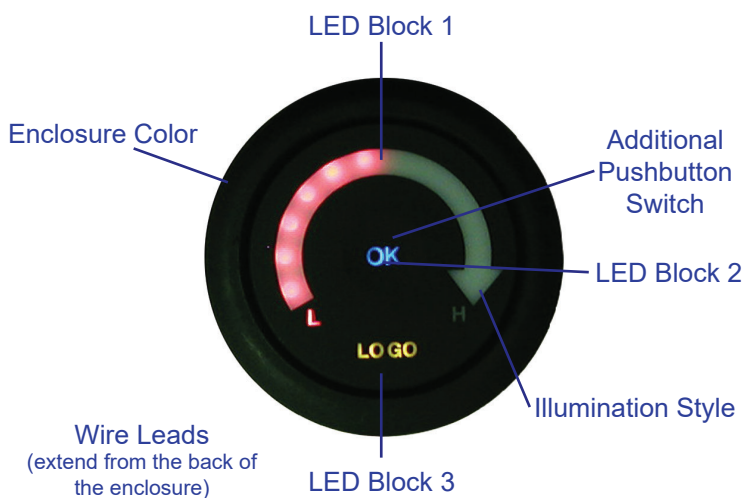


| Panel Thickness   | Cutout Diameter       |
|-------------------|-----------------------|
| 1.0-2.0 (.04-.08) | 43.5-43.7 (1.71-1.72) |
| 2.0-2.5 (.08-.10) | 43.7-44.1 (1.72-1.74) |
| 2.5-3.0 (.10-.12) | 44.1-44.4 (1.74-1.75) |

## Options and Features



**Rotary 18 Position**



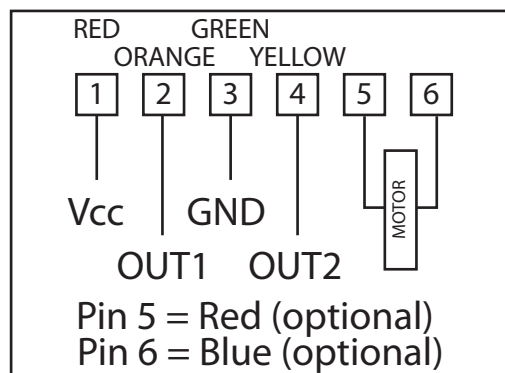
**Rotary 12 & 14 Position**

## Ordering Information

1. Series  
ARL
2. Style
  - A. Variable Resistor Slide : to operate, place your finger on the illuminated point of the display and drag it to the new desired location
  - B. Encoder, Touch Anywhere : to operate, place your finger on the desired location on the display and the illumination will appear at place of touch
3. Additional Pushbutton Switch
  - A. Momentary or toggle function
  - B. Optional vibration motor
  - C. LED color in normal position : red, green, yellow or blue
  - D. LED color when pressed : red, green, yellow or blue
  - E. User defined symbol : POWER, ON/OFF, other
4. Enclosure Color
  - A. White or black
5. Illumination Style

|                                     |                                                   |
|-------------------------------------|---------------------------------------------------|
| Rectangle                           | Rotary                                            |
| A. Illuminated Rectangles           | A. Circular Ring - 18 position                    |
| B. Illuminated Circles              | B. Illuminated Alpha Numeric Digits - 18 position |
| C. Illuminated Alpha Numeric Digits | C. Low to High Arrow - 12 & 14 position           |
| D. Horizontal Dashes                | D. Custom Illumination Style                      |
| E. Custom Illumination Style        |                                                   |
6. Legend
  - A. Alpha Numeric Digits
  - B. Printing Color : white, black or custom color
7. Timer \*only available with Rotary Style
  - A. Interval count down timer 5 seconds per position
  - B. Interval count down timer 1 minute per position
  - C. Contact factory for additional time intervals
8. LED Block 1
  - A. Red, green, yellow or blue
9. LED Block 2
  - A. Red, green, yellow or blue
10. LED Block 3
  - A. Red, green, yellow or blue
11. Optional Illuminated Logo (not available with rectangle style)
  - A. User defined symbol
  - B. LED color : red, green, yellow or blue
12. Wire Leads
  - A. 5 conductor colored 20AWG ribbon cable : specify length
  - B. Custom wire assembly with connector
13. Part Number :
  - A. Assigned by factory

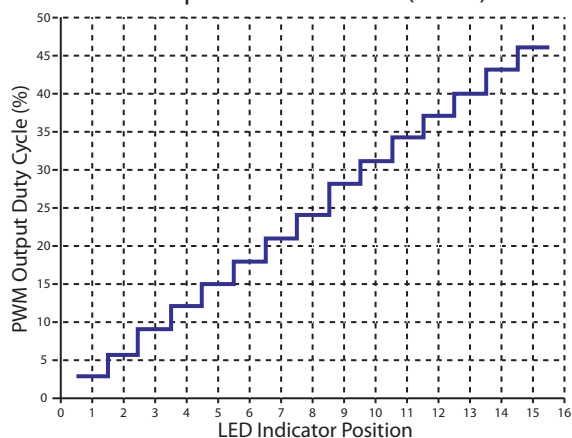
## Output Characteristics



## PWM Output Duty Cycle vs LED Indicator Position

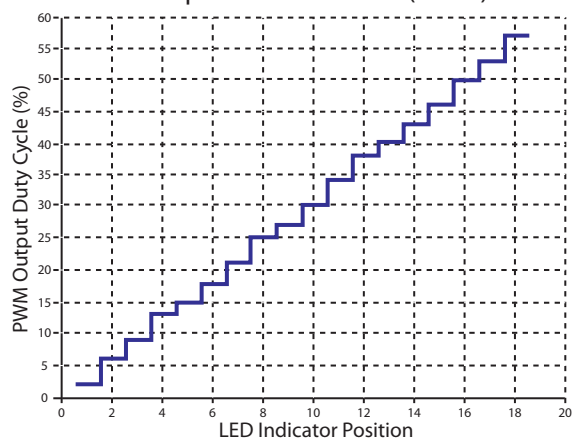
### Rectangle (15 position)

Output Characteristics (OUT1)



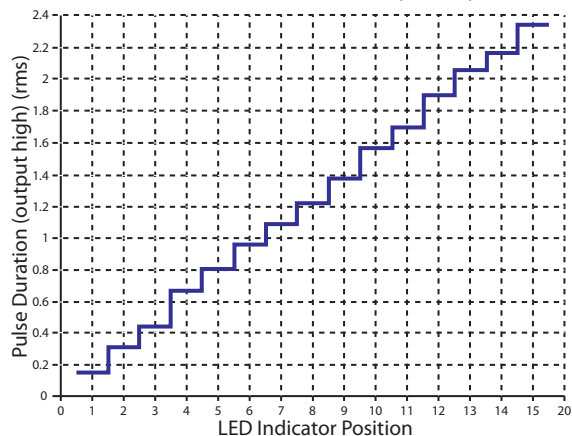
### Rotary (18 position)

Output Characteristics (OUT1)



## Pulse Duration vs. Indicated Position for all Models

PWM Pulse Duration (OUT1)



### Rotary (14 position)

Output Characteristics (OUT1)

