## The Innovative Switch Company

## IP3900 \& IS3900 SERIES

Illuminated Shaft, One Inch Diameter Body

Cole Instrument Corporation is proud to offer a rotary switch with illumination through the end of the shaft front. This can be used to light up any part of the rotary switch's knob. An LED (Light Emitting Diode) or an incandescent lamp is on the back end of the switch body, and a light pipe or fiber optics brings the concentrated light through the switch to the shaft front. The Series IP3900 and IS3900 switch offers maximum and optimum visibility at sunlight with minimum power levels. And at night, there is zero light leakage through the length of the switch. Light can meet most chromaticity or intensity requirements. The light can be an LED or a T1 incandescent lamp. The switch features good heat sinking capabilities, and delivers up to twice the light intensity of units at equivalent power levels. On light failure, reclamping can be done by the customer. Cole can provide the replacement assembly.

This switch can be used in airborne, shipboard, and submarine panel control displays and meets the brightness requirements of high altitude aircraft, as well as the MIL-S-901C shock requirement for submarines and ships.


IP3900 Illuminated Switch (See Page 3)


IS3900 Illuminated Switch (See Page 4)

## NOTE:

IP3900 Illuminated Switch - . 250 Shaft Dia., . 375 Ferrule Dia., . 688 Body Dia., (See Page 3). IS3900 Illuminated Switch - . 250 Shaft Dia., . 375 Ferrule Dia., . 688 Body Dia., (See Page 4).


| TABLE 2 (FOR 1/4 IN. SHAFT ONLY) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| INDEX | $\mathrm{A}^{\circ} \pm 1^{\circ}$ | NUMBER OF POSITIONS | NUMBER OF POLES | NUMBER OF DECKS |
| $30^{\circ}$ | $15^{\circ}$ | 12 | $1-2-3-4-6$ | 1 deck $=.725 \pm .050$ add .220 <br> to the length for each <br> additional deck. 6 decks <br> maximimum (see note no. 5 ) |
| $36^{\circ}$ | $18^{\circ}$ | 10 | $1-2$ | $1-2-4$ |

## NOTES:

1. Dimensions are in inches.
2. Unless otherwise specified, tolerances are $\pm .02$ and $\pm 2^{\circ}$ on angles.
3. Switch shall be marked with Cole P/N, Cage Code, Date Code and terminal identification.
4. Mounting hardware shall consist of one (1) hex nut, IAW MS25082, one (1) internal tooth lock washer, IAW MS35333, and one (1) non-turn key washer.
5. Switch can have up to six (6) decks. Add 0.220 to the length for each additional deck.
6. Optional 0.432 non-turn key washer available.
7. Switch shown is with an LED for illumination. For incandescent lamp application, contact factory.

## ORDERING INFORMATION

Sample Code


Switch shown in the sample code is $30^{\circ}$ indexing, 1 pole per deck, 12 positions per pole, 1 deck with shorting type contact.

## OPTIONS

The following options can be added to the standard switch. When ordering, simply add the letters after the basic part number.
A = Adjustable stops (Special, extra charge).
$\mathrm{F}=$ Fixed stops between the first and last position on a
full-turn switch.
$\mathrm{G}=$ RFI-EMI shielding.
$\mathrm{L}=$ Low level.
$\mathrm{P}=$ Panel and shaft seals.
$\mathrm{S}=$ Shorting (available in all configurations).
$\mathrm{Y}=$ Optional .432 Non-turn washer.
Screw terminals available. (Contact factory for special part number)


Recommended Panel Cutout

| $1 / 4$ in. SHAFT ONLY |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| INDEX ANGLE | $\mathrm{A}^{\circ} \pm 1^{\circ}$ | Number of Positions | Number of Poles | Number of Decks |
| $30^{\circ}$ | $15^{\circ}$ | 12 | $1-2-3-4-6$ |  |
| $36^{\circ}$ | $36^{\circ}$ | 10 | $1-2$ | deck to 6 decks |
| $45^{\circ}$ | $22^{\circ} 30^{\prime}$ | 8 | $1-2-4$ |  |
| $60^{\circ}$ | $15^{\circ}$ | 6 | $1-2-3$ |  |
| $90^{\circ}$ | $22^{\circ} 30^{\prime}$ | 4 | $1-2$ |  |

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Series IP3900 \& IS3900 Technical Data

| Specification | Unit | Value | Note: |
| :---: | :---: | :---: | :---: |
| Military Specifications |  | MIL-S-3786 style SR39 |  |
| Continuous (Non-Switching) Current Carrying Capacity | Amps | 5 |  |
| Switching Current Capacity at 28 VDC resistive | Amps | 1.000 | at Atmospheric pressure with $85^{\circ} \mathrm{C}$ and at reduced Barometric pressure with $25^{\circ} \mathrm{C}$ |
| Switching Current Capacity at 115 VAC resistive | Amps | 1.000 |  |
| Switching Current Capacity at 28 VDC inductive (2.8 H.) | Amps | 0.500 |  |
| Switching Current Capacity at 28 VDC resistive | Amps |  |  |
| Switching Current Capacity at 115 VAC resistive | Amps |  |  |
| Low Level max. capacity | mA |  | at 30 millivolts DC max. |
| Dielectric Strength, min. | VRMS | 750 |  |
| Contact resistance, max. (initial) | milliohms (mת) | 2 |  |
| Contact resistance, max. (after life) | milliohms (m $\Omega$ ) |  |  |
| Insulation resistance, min. (initial) | megaohms (M) | 100,000 |  |
| Insulation resistance, min. (after life) | megaohms (M) |  |  |
| Switching Life | cycles | 25,000 | switching 5 amps at 120 VAC. |
| Mechanical Life | cycles | 100,000 |  |
| Rotational Torque, min. | inch ounces | 8 |  |
| Rotational Torque, max. | inch ounces | 32 |  |
| Mounting Ferrule Strength | inch pounds | 10 |  |
| Weight | grams | 15 | 15 gram one deck switch +2 grams/deck |
| Molded Parts |  | thermoplastic |  |
| Contact Surfaces |  | Gold plated | . 00003 gold over pure silver |
| Altitude | feet | 80000 | typical pressure at 80,000 feet: 0.4 psi |
| Temperature, min. | degrees Celsius | -55 |  |
| Temperature, max. | degrees Celsius | 125 |  |
| Vibration Tested |  | Per MIL-S-3786 | Mil-Std-202, Method 204, test condition B, vibration grade 3 |
| Impact Shock, Medium |  | Meets | MIL-STD 202; Method 213 |
| Impact Shock, High |  | Meets | at 100g, MIL-STD 202, Method 207 |
| Moisture Resistant |  | Meets | MIL-STD 202; Method 106 |
| Salt Spray Resistant |  | Meets | MIL-STD 202, Method 101, Condition "B" |
| Explosion Proof |  | Meets | MIL-STD 202, Method 109 |
| Immersion |  | Meets | 3 feet water, MIL-STD-202, method 104, test condition "C" |
| EMI/RFI |  | Meets | MIL-S-3786, 2 ohms Shaft to ground max. |
| LED Specifications |  |  |  |
| Hewlett Packard P/N |  |  | HLMA-KH0O |
| Current | Amps | 0.02 |  |
| Voltage | VDC | 2.4 |  |
| Brightness | MCD | 200 | 35 min |
| Wavelength | mm | 615 |  |

