

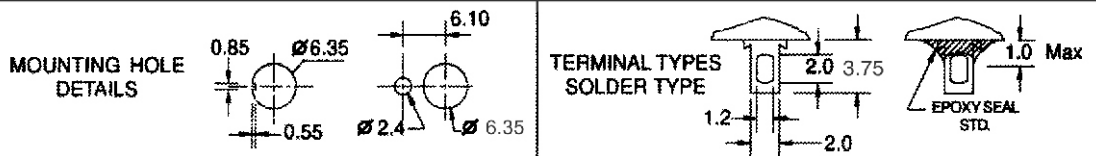
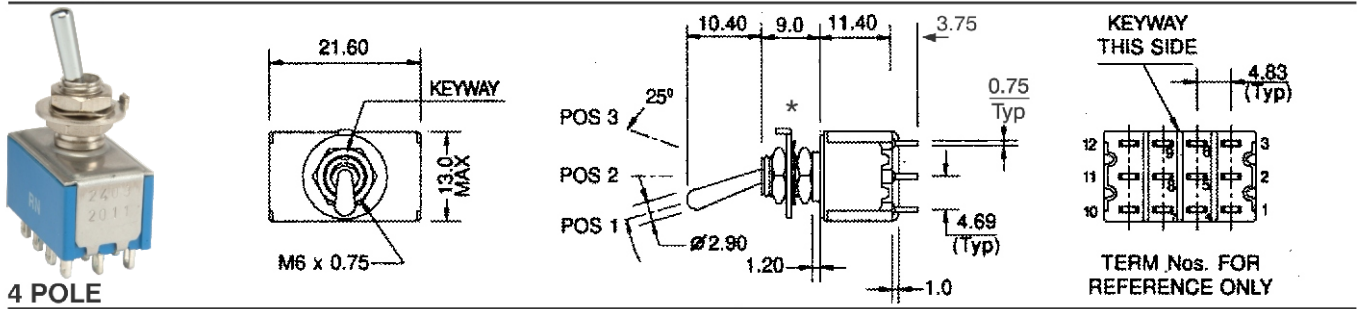
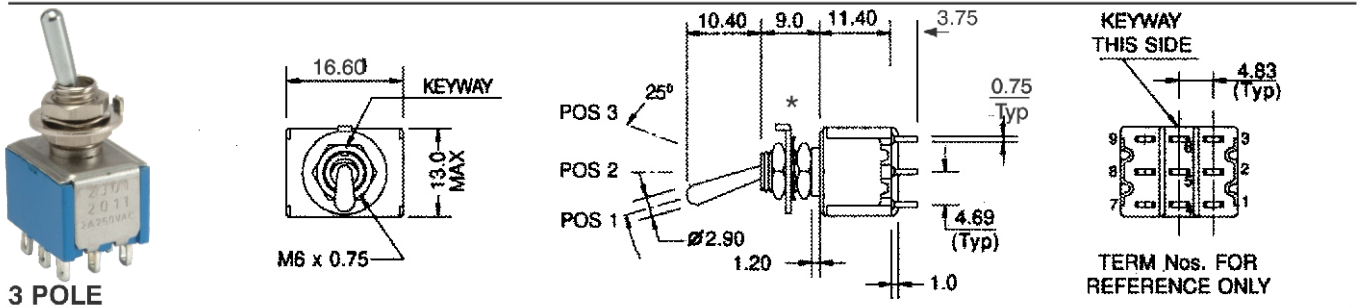
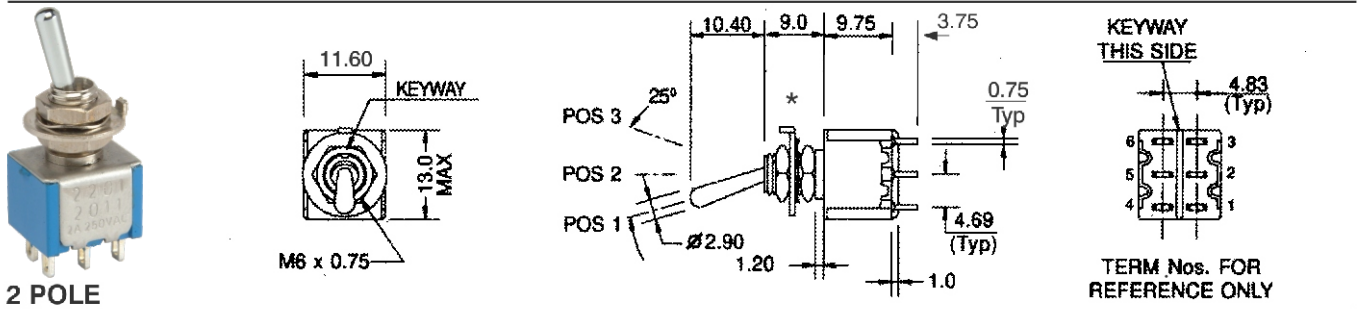
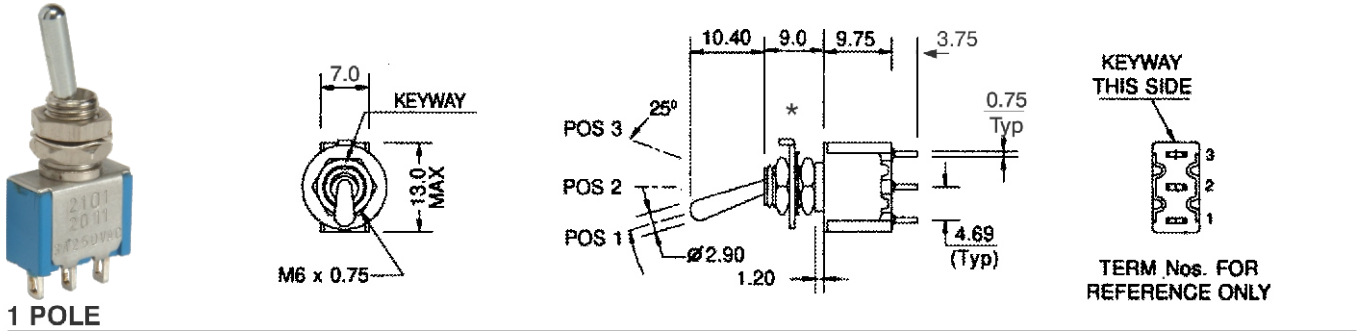
# TOGGLE SWITCHES



## Series 20 - Solder Type

### DESCRIPTION :

**Integral (Series 20) Toggle Switches** meet the needs of customers wanting a high quality, high current carrying switch in small volume. Standardisation of design in components used from single to four poles, careful choice of materials and attention to details result in reliable and consistent performance. They are available with popular actuator types and sizes. Design variations in the contacts result in all the required switching functions. Only limited types LCSO approved switches to JSS51201 available.



\* Locating Ring will be supplied on request.

### NOTE :

Actuator shown In Pos. 1 (i.e. Away from key way)  
Refer to A9/A10 for alternate selection of ACTUATORS & MOUNTING

All Dimensions in mm.

### SWITCHING FUNCTION

Order Code	Pos. 1	Pos. 2	Pos. 3
<b>1</b>	ON	NONE	ON
<b>3</b>	ON	OFF	ON
<b>5</b>	(ON)	OFF	(ON)
<b>7</b>	ON	OFF	(ON)
<b>8</b>	ON	NONE	(ON)

CONNECTED TERMINALS	Pos 1	Pos 2	Pos 3
<b>1 POLE</b>	2-3	OPEN	2-1
<b>2 POLE</b>	2-3	OPEN	2-1
	5-6		5-4
<b>3 POLE</b>	2-3		2-1
	5-6	OPEN	5-4
	8-9		8-7
<b>4 POLE</b>	2-3		2-1
	5-6		5-4
	8-9	OPEN	8-7
	11-12		11-10

(Refer to **A12** for other special switching functions)

### SPECIFICATIONS

CONTACT RATING	: 3 Amps @ 230 V AC ; 5A @ 28 V DC. See Contact selection for others.
ELECTRICAL LIFE	: 100,000 make-and-break cycles at full load on all models ending in-1 (ON-NONE-ON). All other models, 40,000 cycles.
CONTACT RESISTANCE	: Below 10 milliohms initial @ 2-6 V DC. 100 mA for both silver and gold plated contacts.
INSULATION RESISTANCE	: 1000 Megohms min.
DIELECTRIC STRENGTH	: 1000 VRMS min. @ sea level.
OPERATING TEMP.	: -30°C to 85°C.

### MATERIALS & FINISHES

BODY	: Diallyl Phthalate (DAP)	HARDWARE	: Brass nickel plated
ACTUATOR	: Brass Nickel plated	TERMINAL SEAL	: Epoxy
HOUSING	: Stainless steel	CONTACTS	: See below under contact selection.
BUSHING	: Brass Nickel plated		

### MOUNTING SELECTION

Order Code	<b>0</b>	M6x0.75 Threaded bush, 6.1 long with key
	<b>1</b>	M6x0.75 Threaded bush, 7.7 long with key
	<b>2</b>	Ø6 Unthreaded bush, 7.7 long with key
	<b>3</b>	Ø6 Unthreaded bush, 6.1 long with key
	<b>4</b>	M6x0.75 Threaded bush, 7.4 long with panel and Toggle splash proof seal.
	<b>5</b>	M6x0.75 Threaded bush 7.7 long with milled flat.

(Refer to **A10** for further details)

### CONTACT SELECTION

Order Code	<b>0</b>	CONTACTS & ALL TERMINALS. RATING	: Copper/Copper alloy silver plated : 2 Amps. @ 230 V AC
	<b>1</b>	END CONTACTS CENTRE CONTACTS. ALL TERMINALS. RATING	: Coin silver, silver plated : Copper alloy silver plated. : 3 Amps. @ 230 V AC; 5A @ 28 V DC.
	<b>2</b>	CONTACTS & TERMINALS RATING	: Copper alloy gold plate over nickel plate. : 0.4 VA max. @ 20 V AC or DC max. (Dry Circuit)
	<b>3</b>	END CONTACTS CENTRE CONTACTS & ALL TERMINALS. RATING	: Coin silver gold plate over nickel plate. : Copper alloy gold plate over nickel plate. : 0.4 VA max. @ 20 V AC or DC or 3 Amps @ 230 V AC ; 5A @ 28 V DC.

(This contact can be used where either dry circuit or power conditions exist. However when dry circuit rating is exceeded the gold plating is removed from the contact and the switch cannot be used in dry circuits.)

### ACTUATOR SELECTION

Order Code	<b>01</b>	Toggle 10.4 long
	<b>02</b>	Toggle 7.0 long
	<b>03</b>	Toggle 21.4 long
	<b>04 to 11</b>	Plastic moulded actuator.
	<b>12</b>	Toggle 10.4 long with Rubber boot.
	<b>13 to 15</b>	Toggle 10.4 long with cap.
	<b>20 to 23</b>	Actuator with lock

(Refer to **A9** for details)

POLE SELECTION	One	Two	Three	Four
Order Code	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>

ORDERING CODE

**2**

**2**

**integral**

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An ISO 9001:2008 Company **Website:** www.integralsys.in **E-mail:** inty.systems@gmail.com / sales@integralsys.in

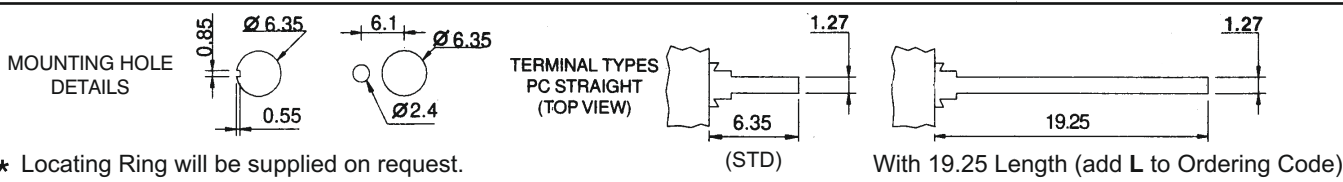
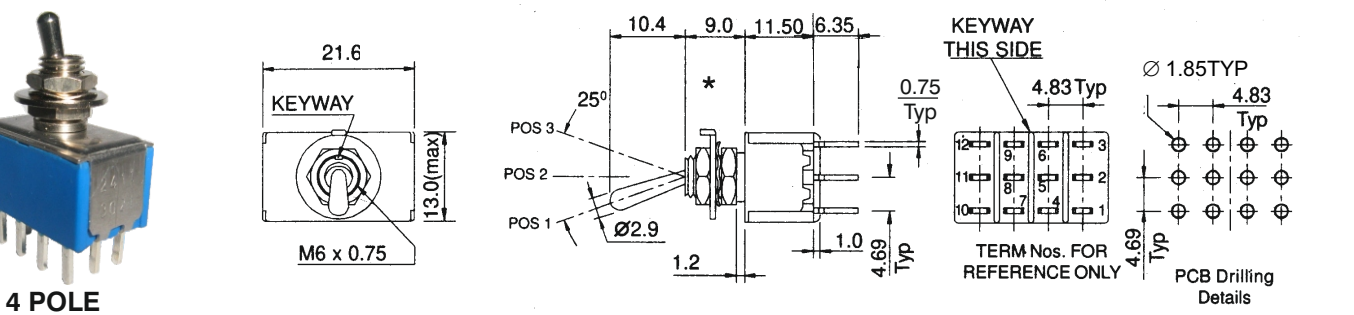
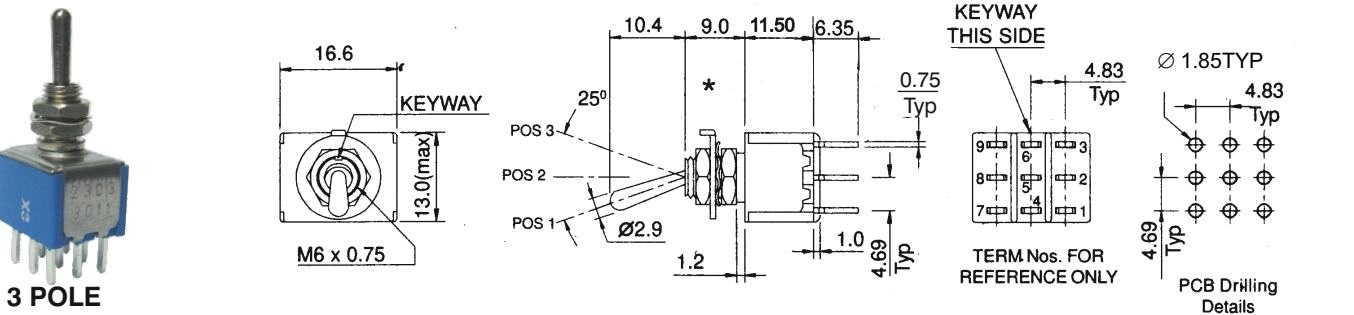
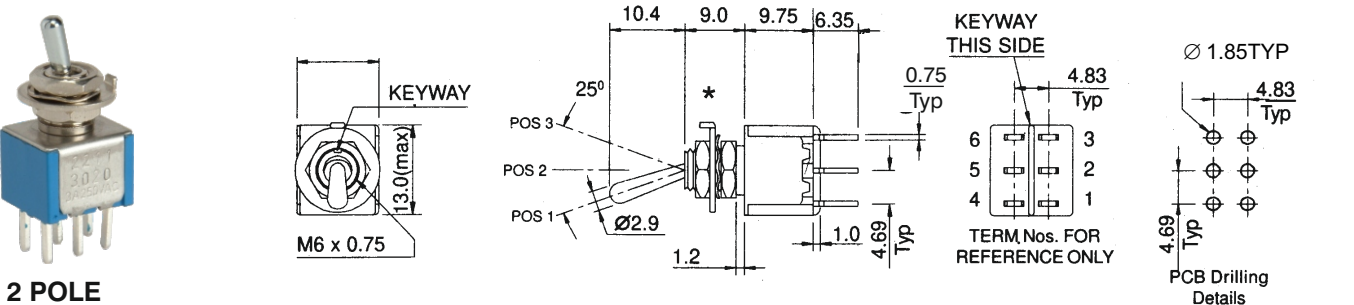
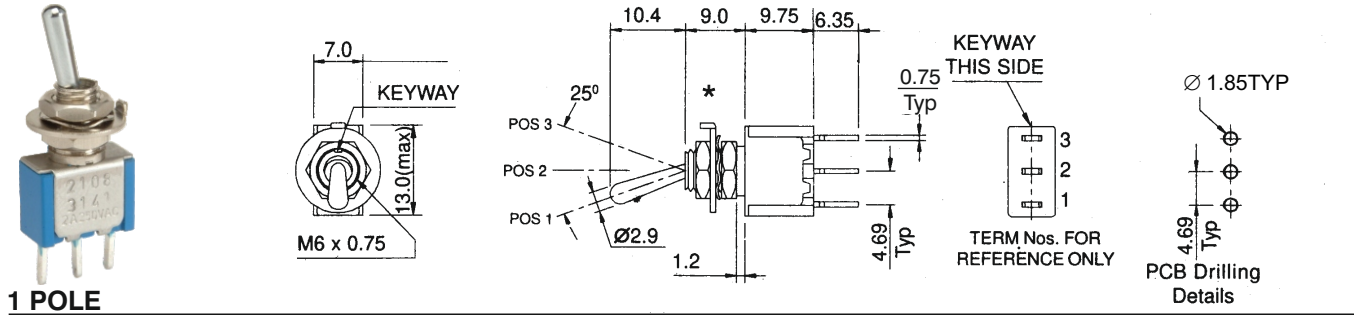
# TOGGLE SWITCHES



## Series 20 - PCB Mounting Type - Straight (PC)

### DESCRIPTION :

**Integral (Series 20) Toggle Switches** of the PCB mounting type with straight operation meet the needs of customers wanting a high quality, high current carrying switch in small volume. Standardisation of design in components used from single to four poles, careful choice of materials and attention to details result in reliable and consistent performance. They are available with popular actuator types and sizes. Design variations in the contacts result in all the required switching functions.



\* Locating Ring will be supplied on request.

All Dimensions in mm.

**NOTE :**  
 Actuator shown In Pos. 1 (i.e. Away from key way)  
 Refer to A9/A10 for alternate selection of ACTUATORS & MOUNTING

### SWITCHING FUNCTION

Order Code	Pos. 1	Pos. 2	Pos. 3
1	ON	NONE	ON
3	ON	OFF	ON
5	(ON)	OFF	(ON)
7	ON	OFF	(ON)
8	ON	NONE	(ON)

CONNECTED TERMINALS	Pos. 1	Pos. 2	Pos. 3
1 POLE	2-3	OPEN	2-1
2 POLE	2-3	OPEN	2-1
	5-6	OPEN	5-4
3 POLE	2-3		2-1
	5-6	OPEN	5-4
	8-9		8-7
4 POLE	2-3		2-1
	5-6	OPEN	5-4
	8-9		8-7
	11-12		11-10

(Refer to **A12** for other special switching functions)

### SPECIFICATIONS

CONTACT RATING	: 3 Amps @ 250 V AC ; 5A @ 28 V DC. See Contact selection for others.
ELECTRICAL LIFE	: 100,000 make-and-break cycles at full load on all models ending in-1(ON-NONE-ON). All other models, 40,000 cycles.
CONTACT RESISTANCE	: Below 10 milliohms initial @ 2-6 V DC. 100 mA for both silver and gold plated contacts.
INSULATION RESISTANCE	: 1000 Megohms min.
DIELECTRIC STRENGTH	: 1000 V RMS min. @ sea level.
OPERATING TEMP.	: -30° C to 85° C.

### MATERIALS & FINISHES

BODY	: Diallyl Phthalate (DAP)	HARDWARE	: Brass nickel plated
ACTUATOR	: Brass Nickel plated	TERMINAL SEAL	: Epoxy
HOUSING	: Stainless steel	CONTACTS	: See below under contact selection.
BUSHING	: Brass nickel plated		

### MOUNTING SELECTION

Order Code	
0	M6x0.75 Threaded bush 6.1 long with key way.
1	M6x0.75 Threaded bush 7.7 long with key way.
2	Ø6 Unthreaded bush 7.7 long with key way
3	Ø6 Unthreaded bush 6.1 long with key way.
4	M6x0.75 Threaded bush 7.4 long with panel and Toggle splash proof seal.
5	M6x0.75 Threaded bush 7.7 long with milled flat.

(Refer to **A10** for details)

### CONTACT SELECTION

Order Code		For (Resistive Load)
0	CONTACTS & ALL TERMINALS.	: Copper/Copper alloy silver plated
	RATING	: 2 Amps. @ 250 V AC
1	END CONTACTS	: Coin silver, silver plated
	CENTRE CONTACTS & ALL TERMINALS.	: Copper alloy silver plated.
	RATING	: 3 Amps. @ 250 V AC; 5A @ 28 V DC.
2	CONTACTS & TERMINALS	: Copper alloy with gold plate over nickel plate.
	RATING	: 0.4 VA max. @ 20 V AC or DC max.
3	END CONTACTS	: Coin silver with gold plate over nickel plate.
	CENTRE CONTACTS & ALL TERMINALS.	: Copper alloy with gold plate over nickel plate.
	RATING	: 0.4 VA max. @ 20 V AC or DC or 3 Amps @ 250 V AC ; 5A @ 28 V DC.

(This contact can be used where either dry circuit or power conditions exist. However when dry circuit rating is exceeded the gold plating is removed from the contact and the switch cannot be used in dry circuits.)

### ACTUATOR SELECTION

Order Code	
01	Toggle 10.4 long
02	Toggle 7.0 long
03	Toggle 21.4 long
04 to 11	Plastic moulded caps.
12	Toggle 10.4 long with Rubber boot.
13 to 15	Toggle 10.4 long with cap.
20 to 23	Actuator with lock

(Refer to **A9** for details)

POLE SELECTION	One	Two	Three	Four
Order Code	1	2	3	4

ORDERING CODE

2



3



L

Terminal 19.25 Long

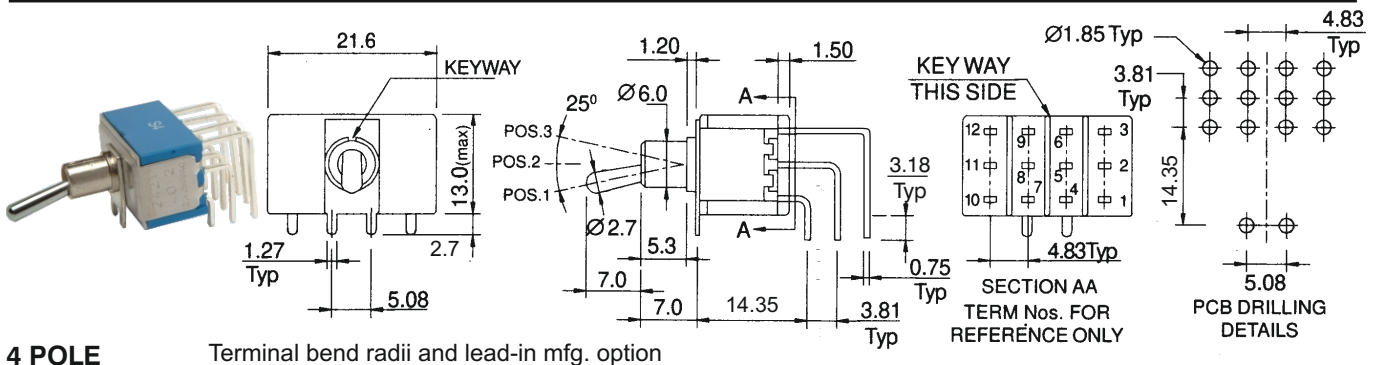
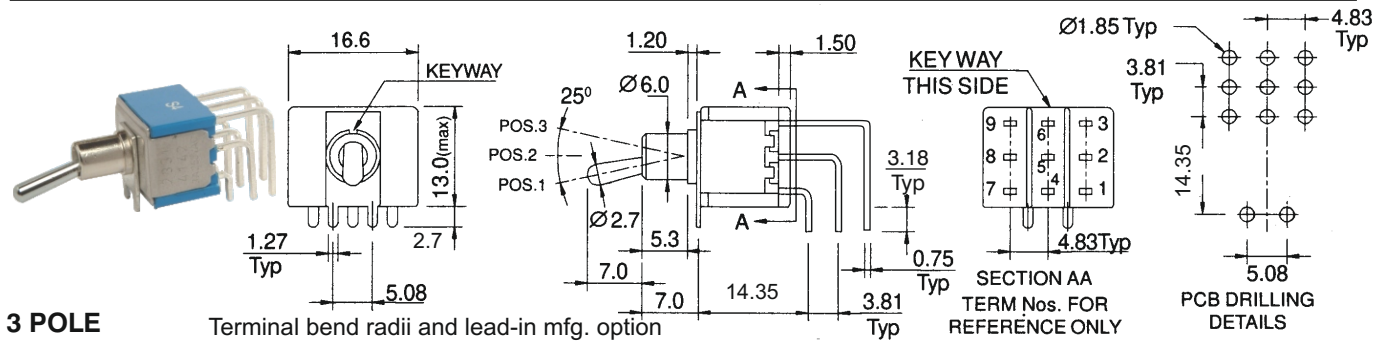
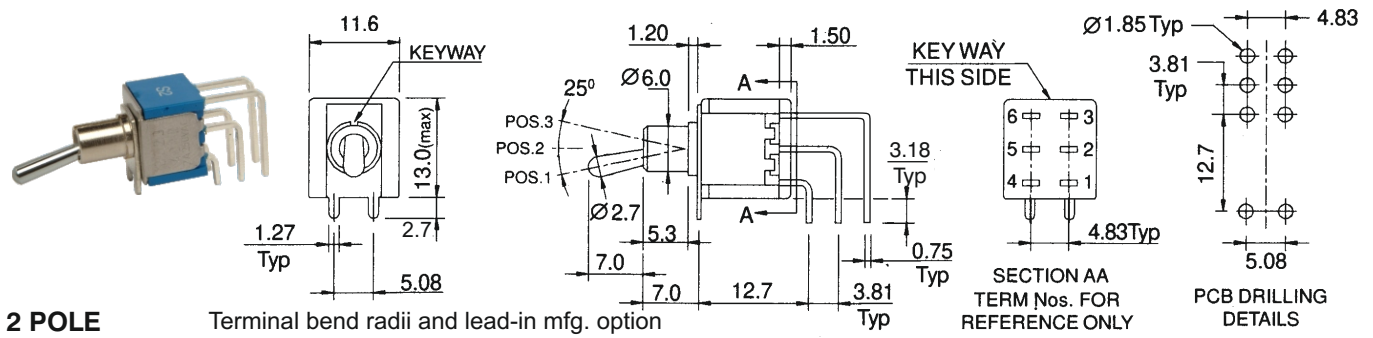
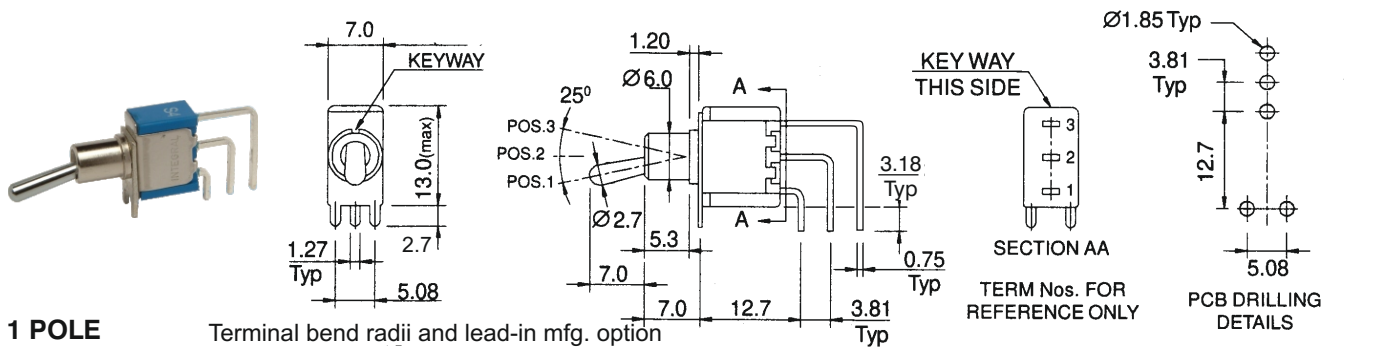
# TOGGLE SWITCHES



## Series 20 - PCB Mounting Types - Vertical Operation (PCR)V

### DESCRIPTION :

**Integral (Series 20) Toggle Switches** of the PCB mounting types with vertical operation meet the needs of customers wanting a high quality, high current carrying switch in small volume. Standardisation of design in components used from single to four poles, careful choice of materials and attention to details result in reliable and consistent performance. They are available with popular actuator types and sizes. Design variations in the contacts result in all the required switching functions. Though all the mounting bush options are available, the standard ones are unthreaded type, since the mounting on the PCB is rigid.



### NOTE :

Actuator shown In Pos. 1 (i.e. Away from key way)  
Refer to A9/A10 for alternate selection of ACTUATORS & MOUNTING

All Dimensions in mm.

### SWITCHING FUNCTION

Order Code	Pos. 1	Pos. 2	Pos. 3
<b>1</b>	ON	NONE	ON
<b>3</b>	ON	OFF	ON
<b>5</b>	(ON)	OFF	(ON)
<b>7</b>	ON	OFF	(ON)
<b>8</b>	ON	NONE	(ON)

CONNECTED TERMINALS	Pos.1	Pos.2	Pos.3
<b>1 POLE</b>	2-3	OPEN	2-1
<b>2 POLE</b>	2-3	OPEN	2-1
	5-6	OPEN	5-4
<b>3 POLE</b>	2-3		2-1
	5-6	OPEN	5-4
	8-9		8-7
<b>4 POLE</b>	2-3		2-1
	5-6		5-4
	8-9	OPEN	8-7
	11-12		11-10

(Refer to **A12** for other special switching functions)

### SPECIFICATIONS

CONTACT RATING	: 3 Amps @ 250 V AC ; 5A @ 28 V DC. See Contact selection for others.
ELECTRICAL LIFE	: 100,000 make-and-break cycles at full load on all models ending in-1 (ON-NONE-ON). All other models, 40,000 cycles.
CONTACT RESISTANCE	: Below 10 milliohms initial @ 2-6 V DC. 100 mA for both silver and gold plated contacts.
INSULATION RESISTANCE	: 1000 Megohms min.
DIELECTRIC STRENGTH	: 1000 V RMS min. @ sea level.
OPERATING TEMP.	: -30° C to 85° C.

### MATERIALS & FINISHES

BODY	: Diallyl Phthalate (DAP)	HARDWARE	: Brass nickel plated
ACTUATOR	: Brass Nickel plated	TERMINAL SEAL	: Epoxy
HOUSING	: Stainless steel	CONTACTS	: See below under contact selection.
BUSHING	: Brass nickel plated		

### MOUNTING SELECTION

Order Code	Description
<b>0</b>	M6x0.75 Threaded bush 5.3 long with key way.
<b>1</b>	M6x0.75 Threaded bush 6.9 long with key way.
<b>2</b>	Ø6 Unthreaded bush 6.9 long with key way
<b>3</b>	Ø6 Unthreaded bush 5.3 long with key way.
<b>4</b>	M6x0.75 Threaded bush 6.60 long with panel and Toggle splash proof seal.
<b>5</b>	M6x0.75 Threaded bush 6.9 long with milled flat.

(Refer to **A10** for details)

### CONTACT SELECTION

Order Code	Description	For (Resistive Load)
<b>0</b>	CONTACTS & ALL TERMINALS. RATING	: Copper/Copper alloy silver plated : 2 Amps. @ 250 V AC
<b>1</b>	END CONTACTS CENTRE CONTACTS ALL TERMINALS. RATING	: Coin silver, silver plated : Copper alloy silver plated. : 3 Amps. @ 250 V AC; 5A @ 28 V DC.
<b>2</b>	CONTACTS & TERMINALS RATING	: Copper alloy with gold plate over nickel plate. : 0.4 VA max. @ 20 V AC or DC max.
<b>3</b>	END CONTACTS CENTRE CONTACTS ALL TERMINALS. RATING	: Coin silver with gold plate over nickel plate. : Copper alloy with gold plate over nickel plate. : 0.4 VA max. @ 20 V AC or DC max or 3 Amps @ 250 V AC ; 5A @ 28 V DC.

(This contact can be used where either dry circuit or power conditions exist. However when dry circuit rating is exceeded the gold plating is removed from the contact and the switch cannot be used in dry circuits.)

### ACTUATOR SELECTION

Order Code	Description
<b>01</b>	Toggle 10.4 long
<b>02</b>	Toggle 7.0 long
<b>03</b>	Toggle 21.4 long
<b>04 to 11</b>	Plastic moulded caps.
<b>12</b>	Toggle 10.4 long with Rubber boot.
<b>13 to 15</b>	Toggle 10.4 long with cap.
<b>20 to 30</b>	Actuator with lock

(Refer to **A9** for details)

POLE SELECTION	One	Two	Three	Four
Order Code	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>

ORDERING CODE

**2**



**4**



**integral**

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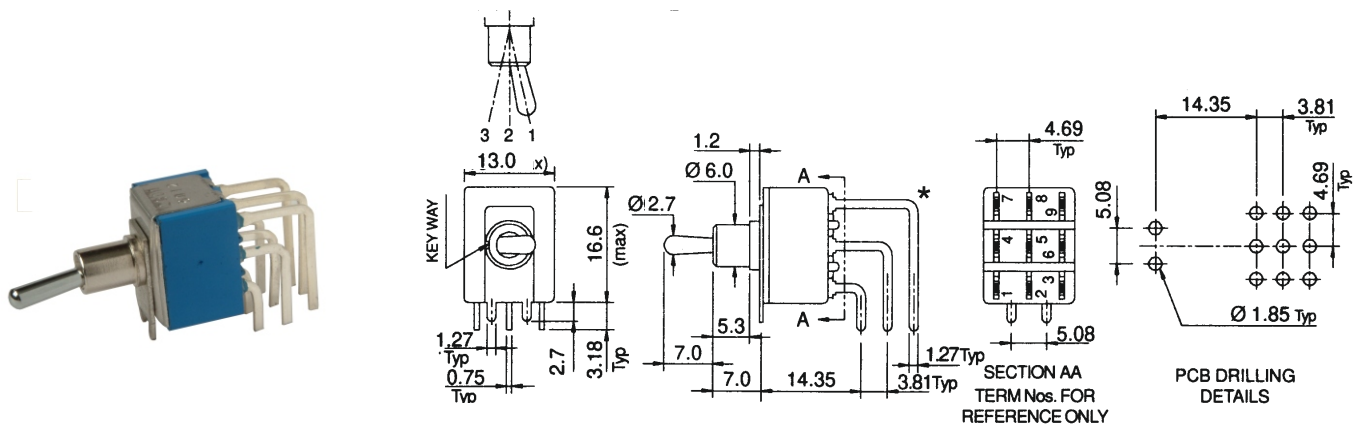
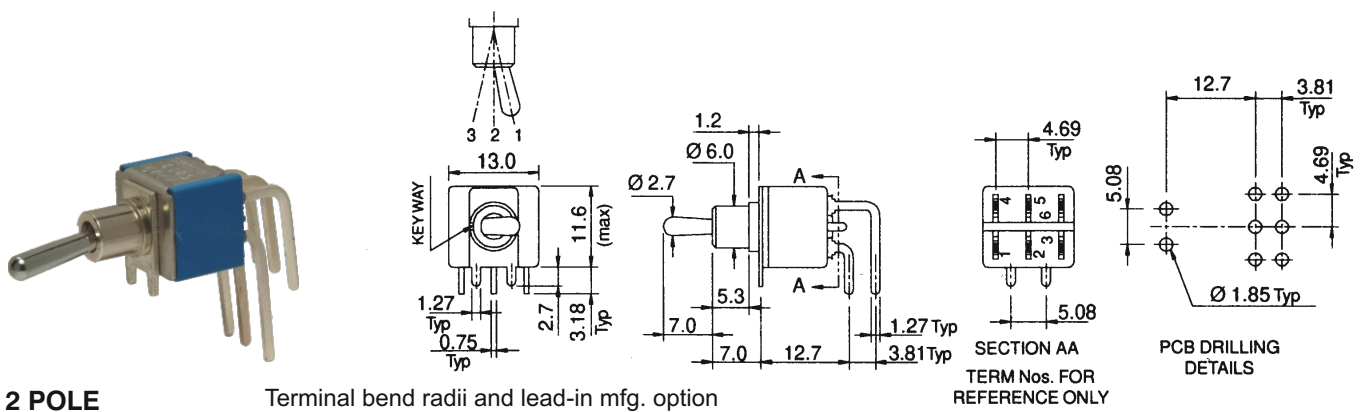
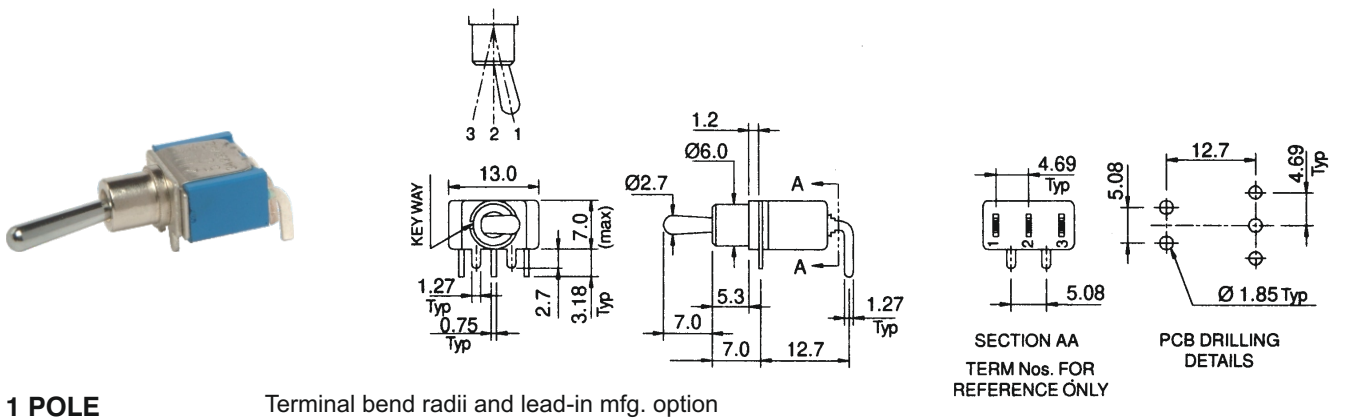
# TOGGLE SWITCHES



## Series 20 - PCB Mounting Types - Horizontal Operation (PCR)

### DESCRIPTION :

**Integral (Series 20) Toggle Switches** of the PCB mounting types with horizontal operation meet the needs of customers wanting a high quality, high current carrying switch in small volume. Standardisation of design in components used from single to three poles, careful choice of materials and attention to details result in reliable and consistent performance. They are available with popular actuator types and sizes. Design variations in the contacts result in all the required switching functions. Though all the mounting bush options are available, the standard ones are unthreaded type, since the mounting on the PCB is rigid.



### NOTE :

Actuator shown In Pos. 1 (i.e. Away from key way)  
Refer to A9/A10 for alternate selection of ACTUATORS & MOUNTING

All Dimensions in mm.

### SWITCHING FUNCTION

Order Code	Pos. 1	Pos. 2	Pos. 3
<b>1</b>	ON	NONE	ON
<b>3</b>	ON	OFF	ON
<b>5</b>	(ON)	OFF	(ON)
<b>7</b>	ON	OFF	(ON)
<b>8</b>	ON	NONE	(ON)

CONNECTED TERMINALS	Pos.1	Pos.2	Pos.3
1 POLE	2-3	OPEN	2-1
2 POLE	2-3	OPEN	2-1
	5-6		5-4
3 POLE	2-3		2-1
	5-6	OPEN	5-4
	8-9		8-7

(Refer to **A12** for other special switching functions)

### SPECIFICATIONS

**CONTACT RATING** : 3 Amps @ 230 V AC ; 5A @ 28 V DC. See Contact selection for others.

**ELECTRICAL LIFE** : 100,000 make-and-break cycles at full load on all models ending in-1 (ON-NONE-ON). All other models, 40,000 cycles.

**CONTACT RESISTANCE** : Below 10 milliohms initial @ 2-6 V DC. 100 mA for both silver and gold plated contacts.

**INSULATION RESISTANCE** : 1000 Megohms min.

**DIELECTRIC STRENGTH** : 1000 V RMS min. @ sea level.

**OPERATING TEMP.** : -30° C to 85° C.

### MATERIALS & FINISHES

**BODY** : Diallyl Phthalate (DAP)      **HARDWARE** : Brass nickel plated

**ACTUATOR** : Brass Nickel plated      **TERMINAL SEAL** : Epoxy

**HOUSING** : Stainless steel      **CONTACTS** : See below under contact selection.

**BUSHING** : Brass nickel plated

### CONTACT SELECTION

Order Code		For (Resistive Load)
<b>0</b>	CONTACTS & ALL TERMINALS.	: Copper/Copper alloy silver plated
	<b>RATING</b>	: 2 Amps. @ 230 V AC
<b>1</b>	END CONTACTS	: Coin silver, silver plated
	CENTRE CONTACTS & ALL TERMINALS.	: Copper alloy silver plated.
	<b>RATING</b>	: 3 Amps. @ 230 V AC; 5A @ 28 V DC.
<b>2</b>	CONTACTS & TERMINALS	: Copper alloy with gold plate over nickel plate.
	<b>RATING</b>	: 0.4 VA max. @ 20 V AC or DC max.
<b>3</b>	END CONTACTS	: Coin silver with gold plate over nickel plate.
	CENTRE CONTACTS	: Copper alloy with gold plate over nickel plate.
	ALL TERMINALS.	
	<b>RATING</b>	: 0.4 VA max. @ 20 V AC or DC max or 3 Amps @ 230 V AC ; 5A @ 28 V DC.

(This contact can be used where either dry circuit or power conditions exist. However when dry circuit rating is exceeded the gold plating is removed from the contact and the switch cannot be used in dry circuits.)

### MOUNTING SELECTION

Order Code	
<b>0</b>	M6x0.75 Threaded bush 5.3 long with key way.
<b>1</b>	M6x0.75 Threaded bush 6.9 long with key way.
<b>2</b>	Ø6 Unthreaded bush 6.9 long with key way
<b>3</b>	Ø6 Unthreaded bush 5.3 long with key way.
<b>4</b>	M6x0.75 Threaded bush 6.60 long with panel and Toggle splash proof seal.
<b>5</b>	M6x0.75 Threaded bush 6.9 long with milled flat.

(Refer to **A10** for details)

### ACTUATOR SELECTION

Order Code	
<b>01</b>	Toggle 10.4 long
<b>02</b>	Toggle 7.0 long
<b>03</b>	Toggle 21.4 long
<b>04 to 11</b>	Plastic moulded caps.
<b>12</b>	Toggle 10.4 long with Rubber boot.
<b>13 to 15</b>	Toggle 10.4 long with cap.
<b>20 to 30</b>	Actuator with lock

(Refer to **A9** for details)

POLE SELECTION	One	Two	Three
Order Code	<b>1</b>	<b>2</b>	<b>3</b>

ORDERING CODE

**2**



**5**



**L**

Extended terminal (without cutting)

**integral**

**INTEGRAL SYSTEMS AND COMPONENTS PRIVATE LIMITED**

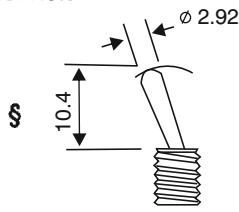
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## Series 20 Actuator Selection (M6x0.75)

\* Refer Note

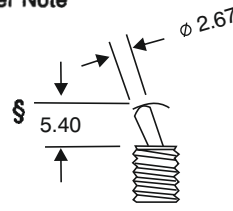


Order Code : 01

§

Add 1.60 mm for bushing under Order Code '0' & '3'

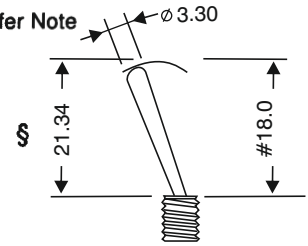
\* Refer Note



Order Code : 02

Add 1.60 mm for bushing under Order Code '0' & '3'

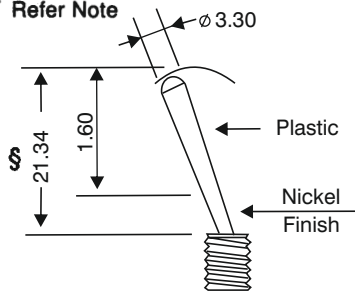
\* Refer Note



Order Code : 03 # 50

Add 1.60 mm for bushing under Order Code '0' & '3'

\* Refer Note



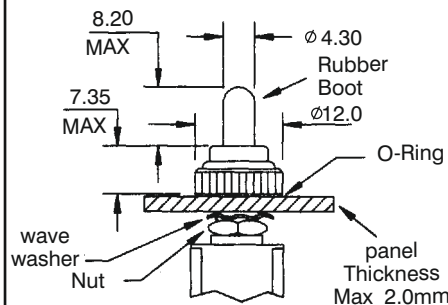
Order Code : 04 to 11  
(See Table below)

§

Add 1.60 mm for bushing under Order Code '0' & '3'

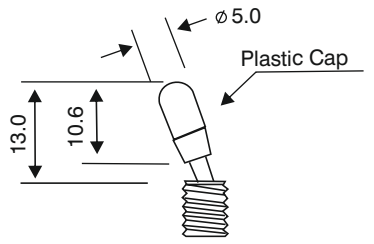
(Plastic moulded actuator)

Order Code	Moulding Colour
04	White
05	Black
06	Red
07	Yellow
08	Green
09	Blue (Std)
10	Brown
11	Grey



RUBBER BOOT (Black)  
Order Code : 12  
Available only with Actuator or and Bush 1,4,5

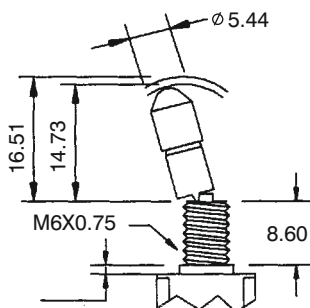
\* Refer Note



Order Code : 13 to 16  
(See Table below)

Actuator with cap

Order Code	Cap Colour
13	Black (Std.)
14	Red
15	Yellow
16	Green



Actuator with Lock

Order Code	Cap Colour
20	Black (Std.)
21	White
22	Red
23	Golden yellow
24	Nickel Plated

### VARIOUS TYPES OF SWITCHING FUNCTION

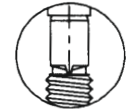
(Key way on right side)



Type - 1  
2 pos. lock



Type - 3 & 9  
3 pos. lock



Type 5 & 6  
1 pos. lock



Type - 7  
2 pos. lock



Type - 8  
1 pos. lock

\* NOTE : Dimensions shown above are with respect to bushing types (2,3,4 & 5)

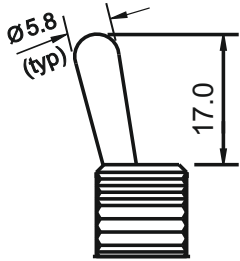


All Dimensions in mm.

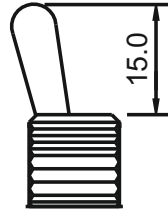
# TOGGLE SWITCHES



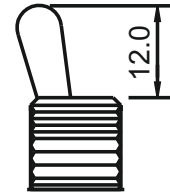
## Series - 20 Actuator Selection (For M12 Bushes)



Order Code : 43

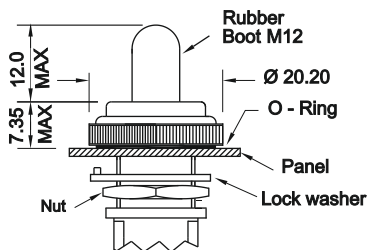


Order Code : 41



Order Code : 44

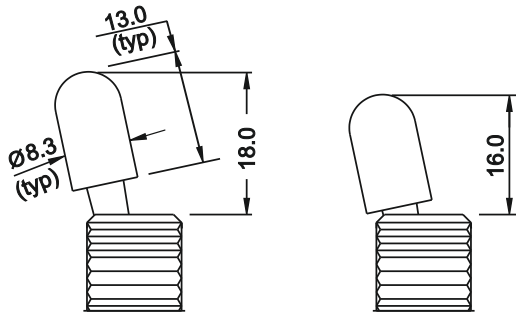
### PANEL SEALING TYPE (Rubber Boot Type)



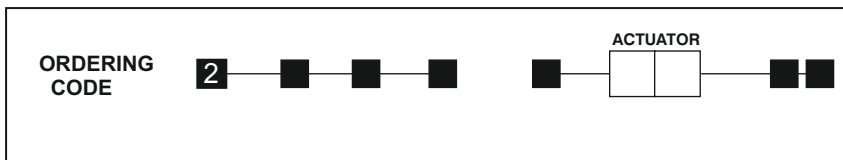
Order Code : 42

Note:- Actuator Length will be - 15.0mm only.

### PLASTIC CAP SELECTION



NOTE:- Cap's available in Red & Black Colour only. for 15.0 & 17.0 mm Actuator only.



**INTEGRAL SYSTEMS AND COMPONENTS PRIVATE LIMITED**

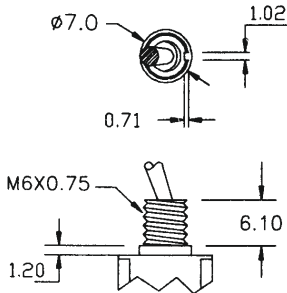
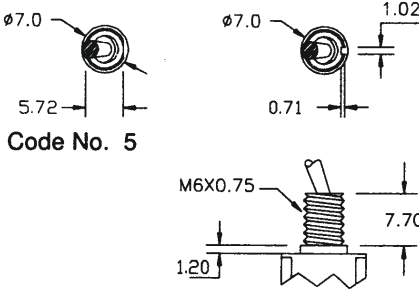
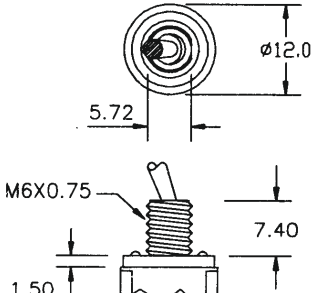
D-388/1, 1st Block, 1st Stage, Peenya Industrial Estate, Bangalore - 560 058, India

Telefax: (080) 2839 1707 / 2839 1708 / 2839 1709 / 2839 1710

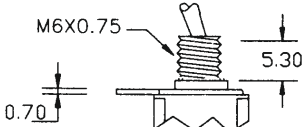
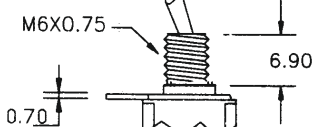
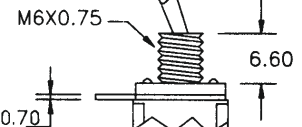
An ISO 9001:2008 Company Website: www.integralsys.in E-mail: inty.systems@gmail.com / sales@integralsys.in

**Series 20 Mounting Selection (M6x0.75)**

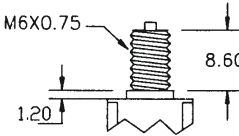
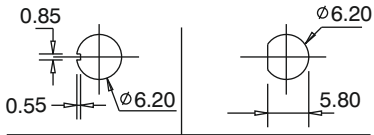
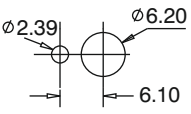
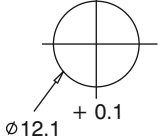
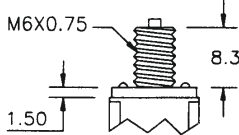
**BUSH DETAILS FOR PC STRAIGHT AND SOLDER TYPES**

 <p><b>Code No. 0</b></p> <p><b>Order Code</b>      <b>Description</b></p> <p><b>0</b>    Short threaded bush</p> <p><b>3</b>    Same as 0 without threading</p>	 <p><b>Code No. 1</b></p> <p><b>Order Code</b>      <b>Description</b></p> <p><b>1</b>    Standard threaded bush</p> <p><b>2</b>    Same as 1 without threading</p> <p><b>5</b>    Same as 1 with milled flat</p>	 <p><b>Code No. 4</b></p> <p><b>Order Code</b>      <b>Description</b></p> <p><b>4</b>    Threaded bush with panel seal and toggle splash proof seal.</p>
---	---	--

**BUSH DETAILS FOR PCR / PCRV TYPES**

 <p><b>Code No. 0</b></p> <p><b>Order Code</b>      <b>Description</b></p> <p><b>0</b>    Short threaded bush</p> <p><b>3</b>    Same as 0 without threading</p>	 <p><b>Code No. 1</b></p> <p><b>Order Code</b>      <b>Description</b></p> <p><b>1</b>    Standard threaded bush</p> <p><b>2</b>    Same as 1 without threading</p> <p><b>5</b>    Same as 1 with milled flat</p>	 <p><b>Code No. 4</b></p> <p><b>Order Code</b>      <b>Description</b></p> <p><b>4</b>    Threaded bush with panel seal toggle and splash proof seal. (Available on request)</p>
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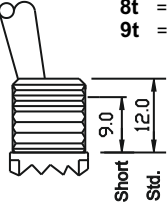
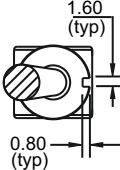
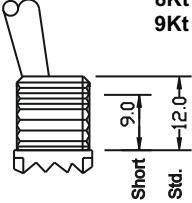
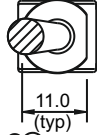
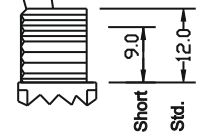

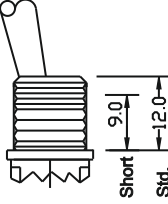

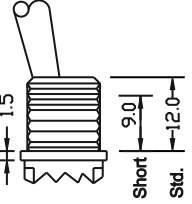

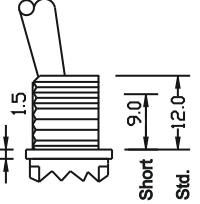

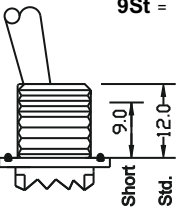

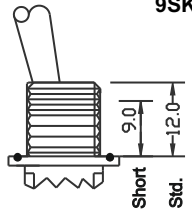

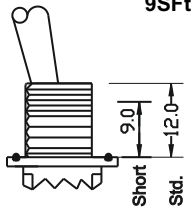
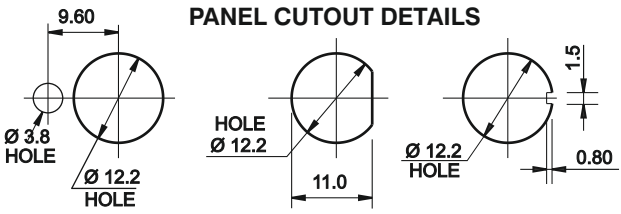

**BUSH DETAILS (FOR LOCKING TYPE)**

 <p><b>Code No. 1</b></p> <p><b>Order Code</b>      <b>Description</b></p> <p><b>1</b>    Threaded bush</p> <p><b>2</b>    Same as 1 without threading</p>	<p><b>PANEL MOUNTING WITHOUT LOCKING RING</b></p>  <p><b>WITH STANDARD LOCKING RING</b></p>  <p><b>FOR 12.0 mm BUSH</b></p> 
 <p><b>Code No. 7</b></p> <p><b>Order Code</b>      <b>Description</b></p> <p><b>7</b>    Threaded bush with panel seal and toggle splash proof seal.</p>	<p><b>NOTE :</b>      Above shown various types of bushes with M6 x 0.75 threading are readily available. For any other special type bush please contact factory.</p> <p><b>BUSHING FINISH</b> will be nickel plated (Standard)</p> <p><b>ORDERING CODE</b>      ■ ■ ■ ■ ■      ■ ■ ■ ■ ■ □</p> <p style="text-align: right;"><b>BUSHING</b></p>

All Dimensions in mm.

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## Series - 20 Mounting Selection for M12 Bushes

 <p><b>Order Code</b> <b>Standard Bush</b></p> <p><b>8</b> = Ø12 Unthreaded Bush <b>9</b> = M12x0.75 Threaded Bush</p> <p><b>Short Bush</b></p> <p><b>8t</b> = Ø12 Unthreaded Bush <b>9t</b> = M12x0.75 Threaded Bush</p> 	 <p><b>Order Code</b> <b>Standard Bush</b></p> <p><b>8K</b> = Ø12 Unthreaded Bush <b>9K</b> = M12x0.75 Threaded Bush</p> <p><b>Short Bush</b></p> <p><b>8Kt</b> = Ø12 Unthreaded Bush <b>9Kt</b> = M12x0.75 Threaded Bush</p> 	 <p><b>Order Code</b> <b>Standard Bush</b></p> <p><b>8F</b> = Ø12 Unthreaded Bush <b>9F</b> = M12x0.75 Threaded Bush</p> <p><b>Short Bush</b></p> <p><b>8Ft</b> = Ø12 Unthreaded Bush <b>9Ft</b> = M12x0.75 Threaded Bush</p> 	
 <p><b>Order Code</b> <b>Standard Bush</b></p> <p><b>8C</b> = Ø12 Unthreaded Bush <b>9C</b> = M12x0.75 Threaded Bush <b>9CS</b> = M12x0.75 Threaded Bush</p> <p><b>Short Bush</b></p> <p><b>8Ct</b> = Ø12 Unthreaded Bush <b>9Ct</b> = M12x0.75 Threaded Bush <b>9CSt</b> = M12x0.75 Threaded Bush</p> 	 <p><b>Order Code</b> <b>Standard Bush</b></p> <p><b>8KC</b> = Ø12 Unthreaded Bush <b>9KC</b> = M12x0.75 Threaded Bush <b>9KCS</b> = M12x0.75 Threaded Bush</p> <p><b>Short Bush</b></p> <p><b>8KCt</b> = Ø12 Unthreaded Bush <b>9KCt</b> = M12x0.75 Threaded Bush <b>9KCS</b> = M12x0.75 Threaded Bush</p> 	 <p><b>Order Code</b> <b>Standard Bush</b></p> <p><b>8FC</b> = Ø12 Unthreaded Bush <b>9FC</b> = M12x0.75 Threaded Bush <b>9FCS</b> = M12x0.75 Threaded Bush</p> <p><b>Short Bush</b></p> <p><b>8FCt</b> = Ø12 Unthreaded Bush <b>9FCt</b> = M12x0.75 Threaded Bush <b>9FCS</b> = M12x0.75 Threaded Bush</p> 	
<p><b>NOTE :- PANEL SEALING CAN BE GIVEN FOR ABOVE BUSH SELECTION EXCEPT FOR UNTHREADED BUSH.</b></p>			
<p><b>SPLASH PROOF</b></p>			
 <p><b>Order Code</b> <b>Standard Bush</b></p> <p><b>9S</b> = M12x0.75 Threaded Bush</p> <p><b>Short Bush</b></p> <p><b>9St</b> = M12x0.75 Threaded Bush</p> 	 <p><b>Order Code</b> <b>Standard Bush</b></p> <p><b>9Sk</b> = M12x0.75 Threaded Bush</p> <p><b>Short Bush</b></p> <p><b>9SkT</b> = M12x0.75 Threaded Bush</p> 	 <p><b>Order Code</b> <b>Standard Bush</b></p> <p><b>9SF</b> = M12x0.75 Threaded Bush</p> <p><b>Short Bush</b></p> <p><b>9SFt</b> = M12x0.75 Threaded Bush</p> 	
<p><b>PANEL CUTOUT DETAILS</b></p> 			<p>Above shown various type of Bushes with M12 x 0.75 Threading are readily available. For any other special type Bush please Contact Factory.</p> <p>BUSHING FINISH will be Nickel Plated (Standard)</p> 
<p>t=Short Bush, R=Round, K=Key way, F= Milled Flat, C= Collar, S=Sealing.</p>			

# TOGGLE SWITCHES



## Series 20 - Special Custom Built Switches

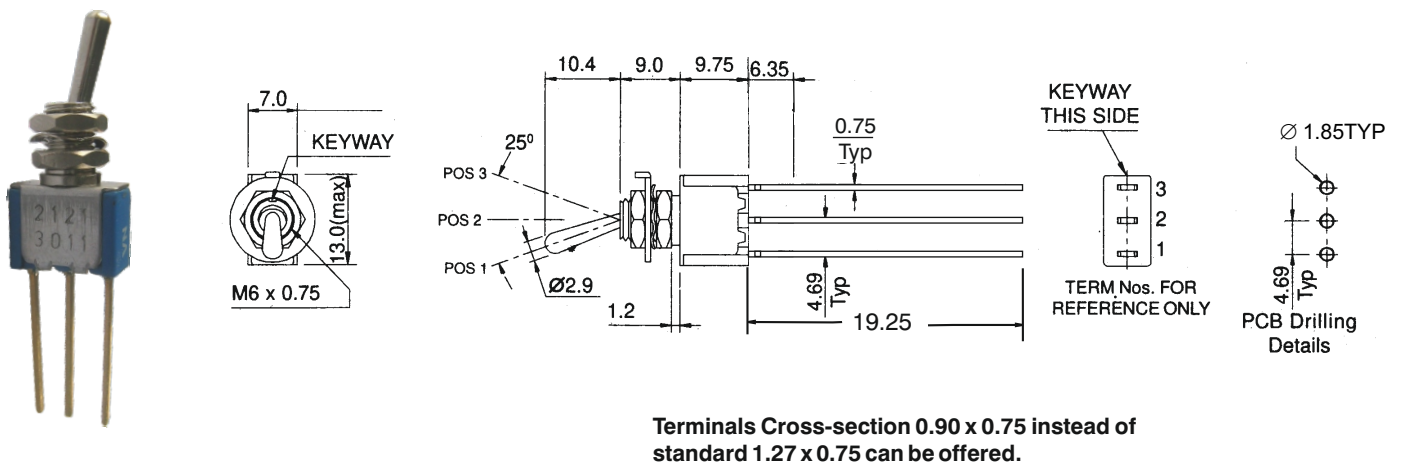
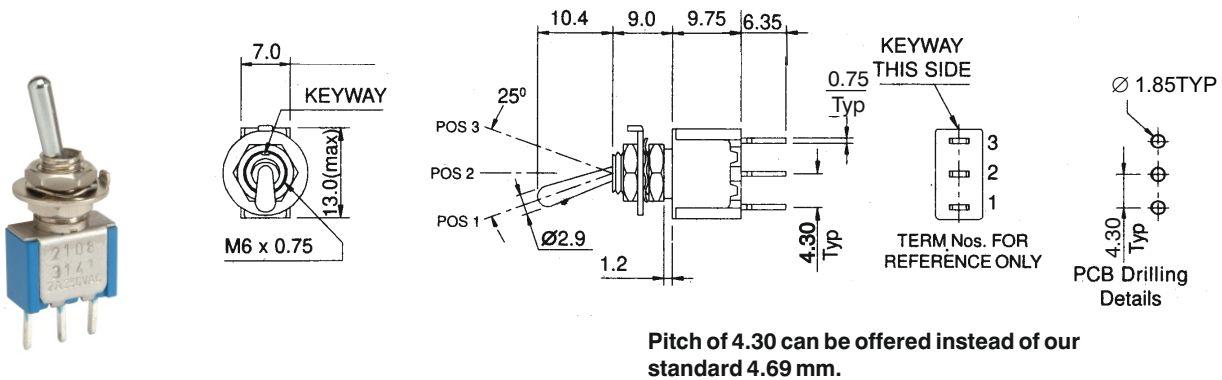
### DESCRIPTION :

In Series 20 Toggle Switches, modifications are possible to meet customer's special requirements.

A very large number of variations are possible in our standard line of switches due to a wide selection possible in choosing the number of poles, switching function, contact selection, actuator and mounting selection.

However sometimes there may be a customer requirement which is not met by any one of the innumerable combination. In such cases Integral can develop samples as per the customer's drawings. Due to employment of modern production techniques even small number of samples can be made to exact dimension.

### For Example :



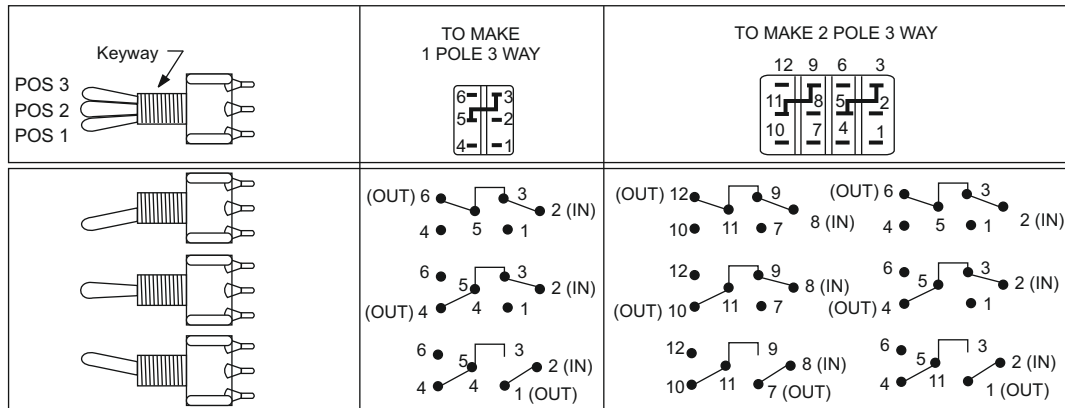
The factory can be contacted for special switches with specifications/drawings/samples, if available. Counter samples will be offered at the earliest.

All Dimensions in mm.

## Series 20 Special Switching Functions

On our Standard 20 Series Toggle Switches, IP-3 Position and 2P-3 Position Toggle Switch with ON-ON-ON Switch Functions may be externally wired for 3 Way Function (See Wiring Design and Schematics given below)

Note : External Jumpers to be added by customer wiring for 3 Way Switches



ORDER CODE	POSITION 1	POSITION 2	POSITION 3
4	ON	ON	MOM
6	MOM	ON	MOM
9	ON	ON	ON

ORDER CODE	SWITCHING FUNCTION	CONNECTED TERMINALS					
		POSITION 1		POSITION 2		POSITION 3	
2	1P 3 WAY	2-3	5-6	2-3	5-4	2-1	5-4
4	2P 3 WAY	2-3	5-6	2-3	5-4	2-1	5-4
		8-9	11-12	8-9	11-10	8-7	11-10




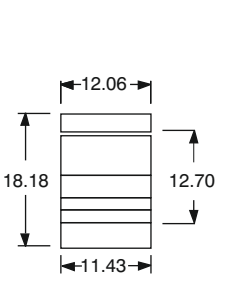
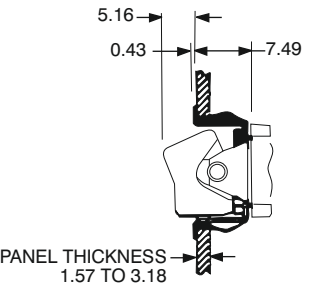
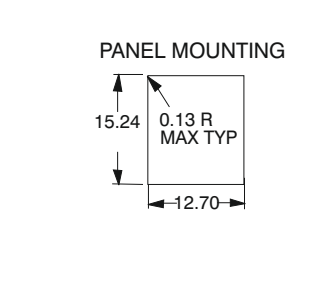
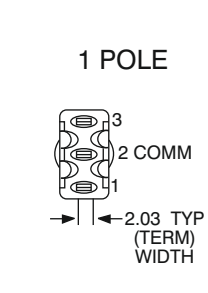

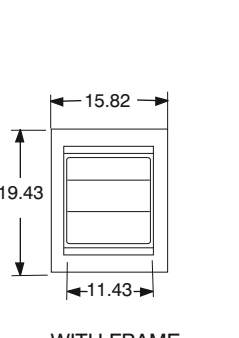
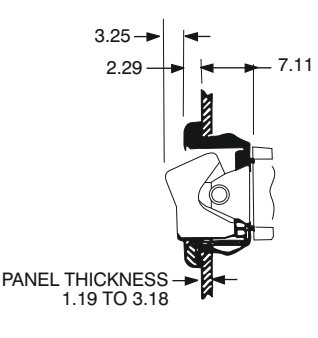
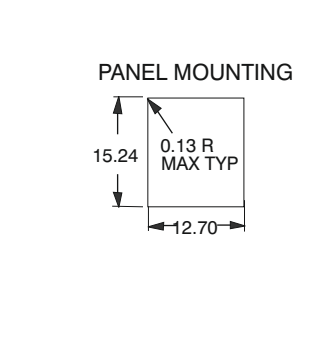
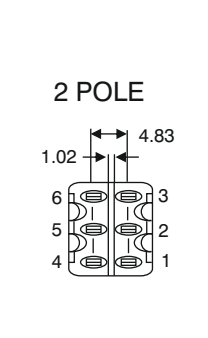

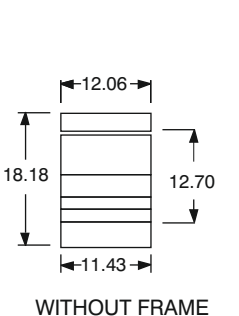
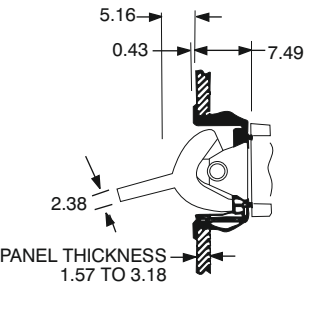
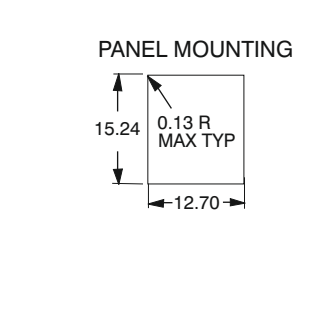
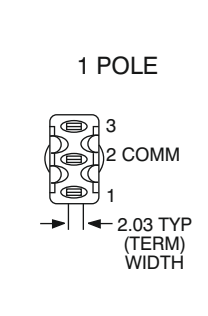

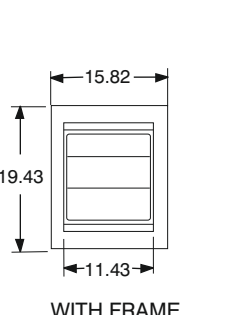
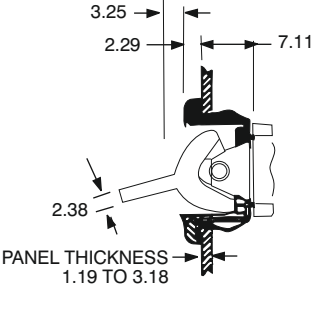
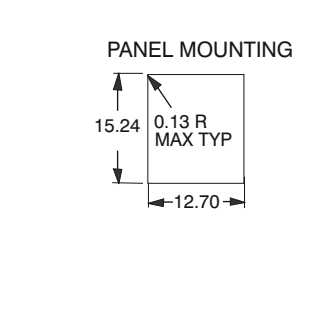
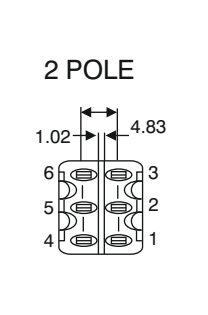
# ROCKER / PADDLE SWITCHES



## Series 20 - Snap in - Front Mounting Option

### DESCRIPTION :

**Integral Miniature Rocker/Paddle Switches** available with single and double pole options meet the needs of the customers wanting a very highly reliable and modern looking switch to go with the contemporary panel design. The components used are the same as in the highly reliable Standard Toggle Switches. Careful choice of materials and attention to details result in a high quality, high current carrying switch in a small volume. Available with standard solder type and straight PC mounting type the switches can be mounted by 'clicking' into the panel without any other hardware.

<p><b>ROCKER TYPE</b></p> 	 <p>WITHOUT FRAME</p>	 <p>PANEL THICKNESS 1.57 TO 3.18</p>	<p>PANEL MOUNTING</p> 	<p><b>1 POLE</b></p> 
	 <p>WITH FRAME</p>	 <p>PANEL THICKNESS 1.19 TO 3.18</p>	<p>PANEL MOUNTING</p> 	<p><b>2 POLE</b></p> 
<p><b>PADDLE TYPE</b></p> 	 <p>WITHOUT FRAME</p>	 <p>PANEL THICKNESS 1.57 TO 3.18</p>	<p>PANEL MOUNTING</p> 	<p><b>1 POLE</b></p> 
	 <p>WITH FRAME</p>	 <p>PANEL THICKNESS 1.19 TO 3.18</p>	<p>PANEL MOUNTING</p> 	<p><b>2 POLE</b></p> 

All Dimensions in mm.

### NOTE :

Refer to A12 for SPECIAL SWITCHING FUNCTIONS.

SWITCHING FUNCTION			
Order Code	Pos. 1	Pos. 2	Pos. 3
1	ON	NONE	ON
3	ON	OFF	ON
5	MOM	OFF	MOM
7	ON	OFF	MOM
8	ON	NONE	MOM
CONNECTED TERMINALS			
	Pos.1	Pos.2	Pos.3
1 POLE	2-3	OPEN	2-1
2 POLE	2-3	OPEN	2-1
	5-6		5-4

**SPECIFICATIONS**

CONTACT RATING : 3 Amps @ 250 V AC ; 5A @ 28 V DC.  
 ELECTRICAL LIFE : 100,000 make-and-break cycles at full load on all models ending in-1 (ON-NONE-ON). All other models, 40,000 cycles.  
 CONTACT RESISTANCE : Below 10 milliohms initial @ 2-6 V DC. 100 mA for both silver and gold plated contacts.  
 INSULATION RESISTANCE : 1000 Megohms min.  
 DIELECTRIC STRENGTH : 1000 V RMS min. @ sea level.  
 OPERATING TEMP. : -30° C to 85° C.

**MATERIALS & FINISHES**

BODY : Diallyl Phthalate (DAP)      HARDWARE : Brass nickel plated  
 ROCKER : Nylon      TERMINAL SEAL : Epoxy  
 HOUSING : Stainless steel      CONTACTS : See below under contact selection.  
 BUSHING : Brass nickel plated  
 FRAME : Nylon

**FRAME**

ORDER CODE  
 0 - No Frame  
 1 - With Frame

**ORDER CODE**

ROCKER	PADDLE	COLOUR
25	30	BLACK
26	31	RED
27	32	YELLOW

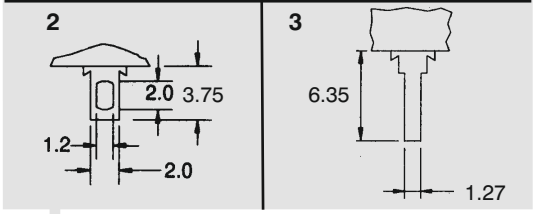
**CONTACT SELECTION**

Order Code	CONTACTS & ALL TERMINALS.	RATING	CONTACTS & TERMINALS	RATING	END CONTACTS CENTRE CONTACTS ALL TERMINALS.	RATING
0	: Copper/Copper alloy silver plated	: 2 Amps. @ 250 V AC				
1	: Coin silver, silver plated		: Copper alloy silver plated.			
2	: Copper alloy with gold plate over nickel plate.	: 0.4 VA max. @ 20 V AC or DC max.				
3	: Coin silver with gold plate over nickel plated.		: Copper alloy with gold plate over nickel plated.	: 0.4 VA max. @ 20 V AC or DC max or 3 Amps @ 250 V AC ; 5A @ 28 V DC.		

(This contact can be used where either dry circuit or power conditions exist. However when dry circuit rating is exceeded the gold plating is removed from the contact and the switch cannot be used in dry circuits.)

**TERMINATION**

ORDER CODE  
 2 : Solder Type Contact  
 3 : Straight PC Contacts



**POLE SELECTION**

	One	Two
Order Code	1	2

ORDERING CODE

<b>2</b>						
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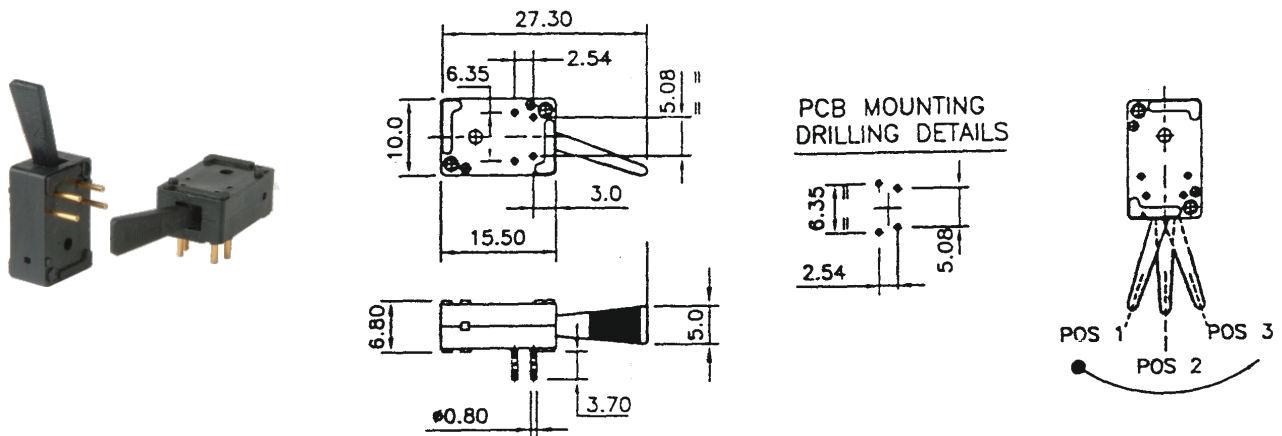
# PLASTIC - TOGGLE SWITCHES



## Series 29 - PCB Mounting Type

### DESCRIPTION :

**Integral Miniature Plastic Switch** of the PCB mounting type with horizontal operation type meet the needs of customer wanting a high quality, low current carrying switch in a small volume for dry circuit operations. Standardisation of design in components and careful choice of materials result in reliable and consistent performance. They are available with different colours of levers (Actuators). Design variations in the contacts result in different switching functions i.e. ON-None-ON, ON-OFF-ON, MOM-None-ON etc.,



SWITCHING FUNCTION			
Order Code	Pos. 1	Pos. 2	Pos. 3
1	ON	NONE	ON
3	ON	OFF	ON
5	MOM	OFF	MOM
7	ON	OFF	MOM
8	ON	NONE	MOM

### SPECIFICATIONS

CONTACT RATING : 0.4 VA max @ 20 VAC or DC  
 ELECTRICAL : 20,000 operations  
 CONTACT RESISTANCE : Below 20 mΩ initial @ 2-6 V DC. 100 mA  
 INSULATION RESISTANCE : 100 MΩ min  
 DIELECTRIC STRENGTH : 500 V RMS  
 OPERATING TEMP. : -20° C to 55° C.

### MATERIALS & FINISHES

PLASTIC PARTS : PBT (UL Grade) / Acetal  
 CONTACT & TERMINALS : Brass Gold Plated  
 NOTE : Body will be Black Colour (Std.)

ORDERING CODE

2 9 2 [ ] 3 [ ]

SWITCHING FUNCTION

LEVER COLOUR

0 - Black  
 1 - Red  
 2 - White

All Dimensions in mm.



## INTEGRAL SYSTEMS AND COMPONENTS PRIVATE LIMITED

D-388/1, 1st Block, 1st Stage, Peenya Industrial Estate, Bangalore - 560 058, India

Telefax: (080) 2839 1707 / 2839 1708 / 2839 1709 / 2839 1710

An ISO 9001:2008 Company Website: www.integralsys.in E-mail: inty.systems@gmail.com / sales@integralsys.in

# TINY TOGGLE SWITCHES



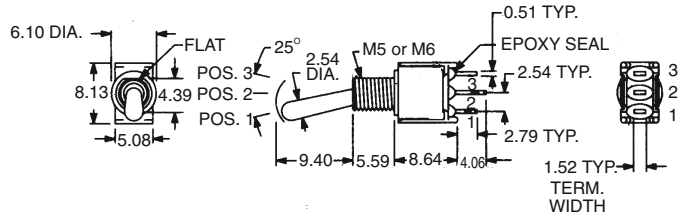
## Series 50

### DESCRIPTION :

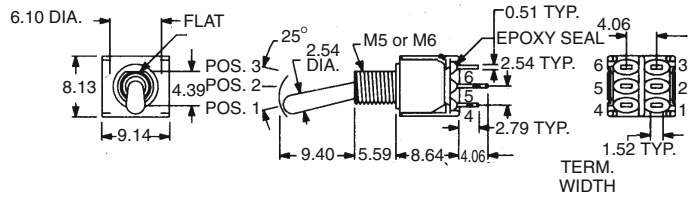
**Integral Tiny Toggle Switches** embody all the design features of our highly popular miniature Toggle Switches such as epoxy sealing of terminals, silver inlay contacts for higher current operation, gold plated contacts for low-level circuit operation, various type of switching function, etc. P.C. versions with mounting on 0.1" (2.54mm) centres with very small volume and height, save space in PCB. This data sheet offers the normally used types of the switch. Many other variations can be offered on specific enquiry.



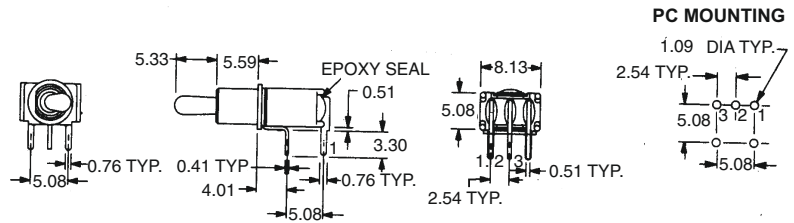
**1 POLE**



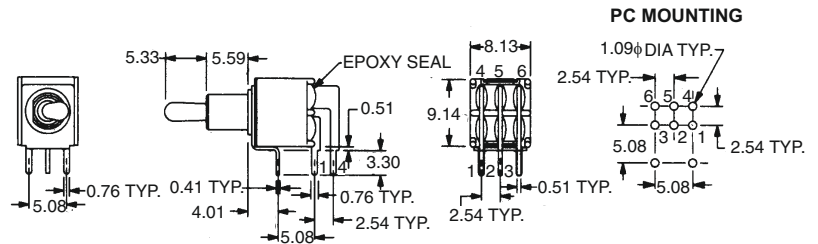
**2 POLE**



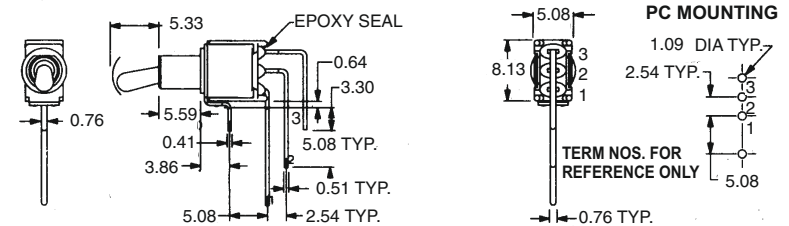
**1 POLE (PCR TYPE)**



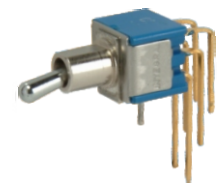
**2 POLE (PCR TYPE)**



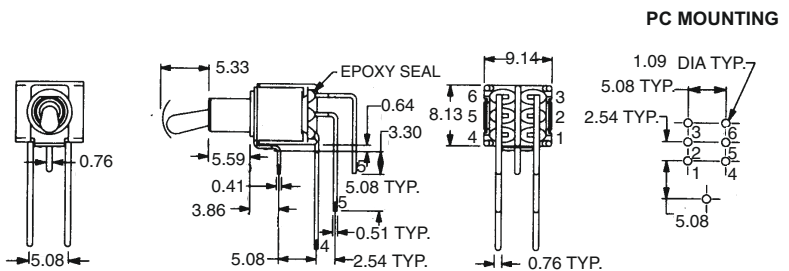
**1 POLE (PCRV TYPE)**



Term. bend radii and lead-in mfg. option



**2 POLE (PCRV TYPE)**



All Dimensions in mm.

**SPECIFICATIONS**

CONTACT RATING : See below under CONTACT SELECTION.  
 ELECTRICAL LIFE : 30,000 make-and-break cycles at full load  
 CONTACT RESISTANCE : Below 20 milliohms initial @ 2-6 V DC.  
 100 mA for both silver and gold plated contacts.  
 INSULATION RESISTANCE : 1000 Megohms (min)  
 DIELECTRIC STRENGTH : 1000 V RMS min. @ sea level.  
 OPERATING TEMP. : -30° C to 85° C.

**MATERIALS & FINISHES**

BODY : Glass filled Nylon or DAP  
 ACTUATOR : Brass nickel plated  
 HOUSING : Stainless steel  
 BUSHING : Brass nickel plated  
 HARDWARE : Brass nickel plated  
 SWITCH SUPPORT: Brass electro-tin plated  
 TERMINAL SEAL : Epoxy  
 CONTACTS : See below under contact selection.

**ORDERING INFORMATION :** Given below are the variations possible and corresponding ordering code.

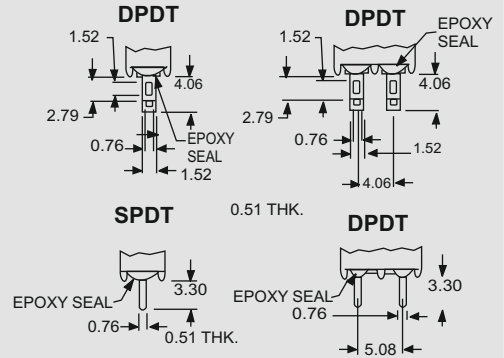
SWITCHING FUNCTION			
Order Code	Pos. 1	Pos. 2	Pos. 3
1	ON	NONE	ON
3	ON	OFF	ON
5	(ON)	OFF	(ON)
7	ON	OFF	(ON)
8	ON	NONE	(ON)

CONNECTED TERMINALS			
	Pos.1	Pos.2	Pos.3
1 POLE	2-3	OPEN	2-1
2 POLE	2-3	OPEN	2-1
	5-6		5-4

**TERMINATION**

Order Code  
 2 Solder Type Contacts  
 3 Straight PC Contacts  
 4 Bent PC Contacts for vertical operation (PCR)  
 5 Bent PC Contacts for horizontal operation (PCR)



**CONTACT SELECTION**

Order Code  
**0** CONTACTS & ALL TERMINALS. : Copper/Copper alloy Silver plated  
 RATING : 100 mA @ 120 V AC or 28 V DC  
**1** END CONTACTS : Coin silver, silver plated  
 CENTRE CONTACTS & ALL TERMINALS. : Copper alloy silver plated.  
 RATING : 3 Amps. @ 120 V AC or 28 V DC  
**2** CONTACTS & ALL TERMINALS : Copper alloy with gold plate over nickel plate.  
 RATING : 0.4 VA max. @ 20 V AC or DC max.  
**3** END CONTACTS : Coin silver with gold plate over nickel plate.  
 CENTRE CONTACTS & ALL TERMINALS. : Copper alloy with gold plate over nickel plate.  
 RATING : 0.4 VA max. @ 20 V AC or DC max or 3 Amps @ 120 V AC or 28 V DC.  
 (This contact can be used where either dry circuit or power conditions exist. However when dry circuit rating is exceeded the gold plating is removed from the contact and the switch cannot be used in dry circuits.)

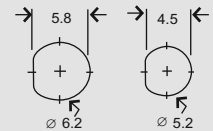
**ACTUATOR**

Order Code  
**01** Toggle 10.4 long  
**02** Toggle 5.4 long

**MOUNTING**

Order Code  
**0** Bush threaded M5 x 0.5, 5.5 long  
**1** Bush threaded M6 x 0.75, 7.9 long  
**2** Bush unthreaded Ø 6.0, 7.9 long  
**3** Bush unthreaded Ø 5.0, 5.5 long  
**4** Bush threaded M6 x 0.75, 6.0 long (Without collar)

**PANEL MOUNTING HOLES**



POLE SELECTION	One	Two
Order Code	1	2

ORDERING CODE



All Dimensions in mm.



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