

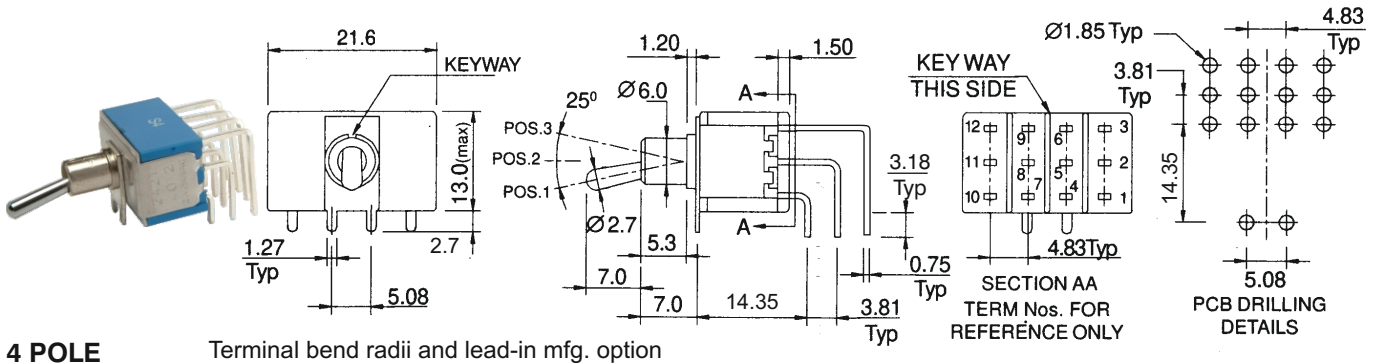
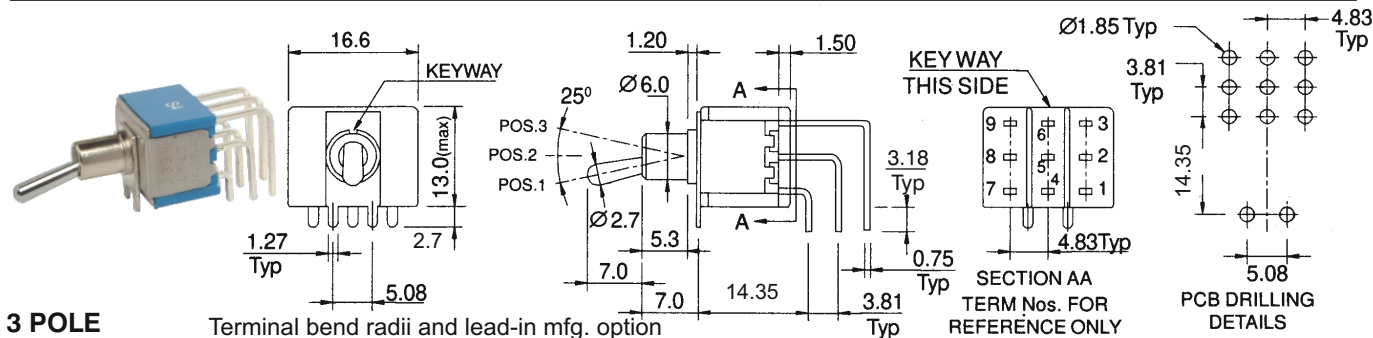
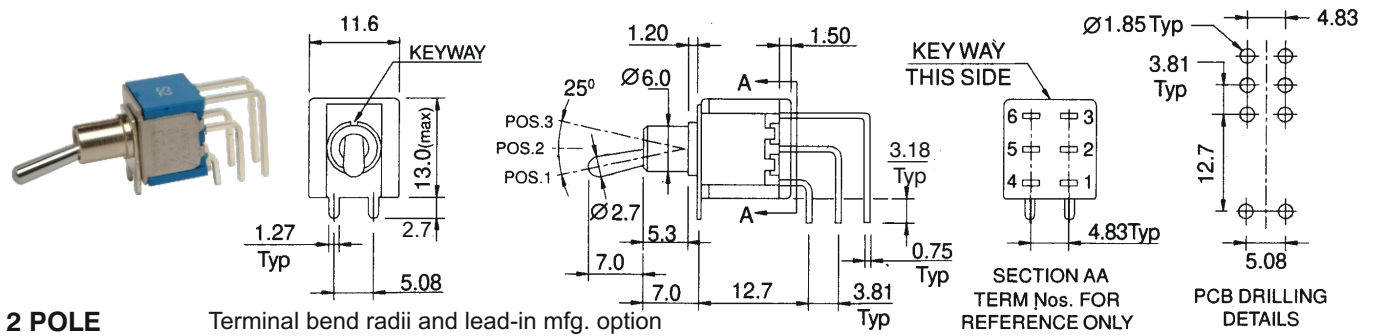
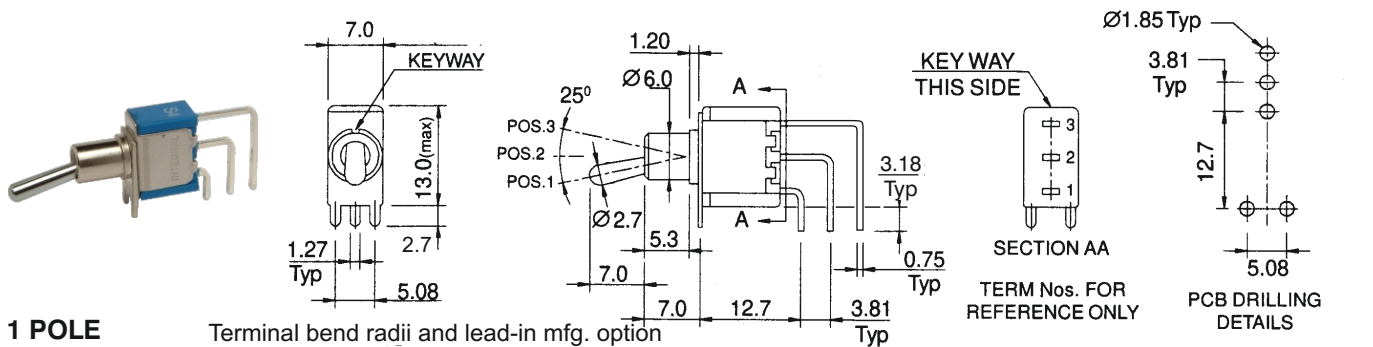
TOGGLE SWITCHES



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

(Refer to **A10** for details)

CONTACT SELECTION

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

(Refer to **A9** for details)

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

ORDERING CODE

2

4

integral

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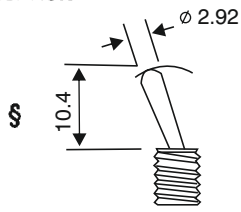
D-388/1, 1st Block, 1st Stage, Peenya Industrial Estate, Bangalore - 560 058, India

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 Actuator Selection (M6x0.75)

* Refer Note

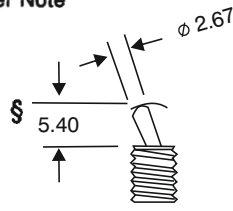


Order Code : 01

§

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

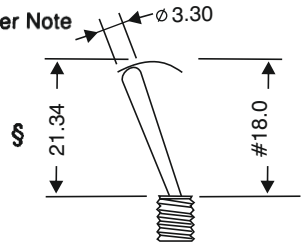
* Refer Note



Order Code : 02

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

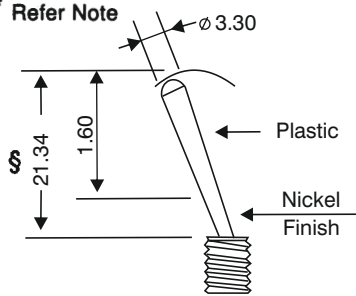
* Refer Note



Order Code : 03 # 50

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

* Refer Note



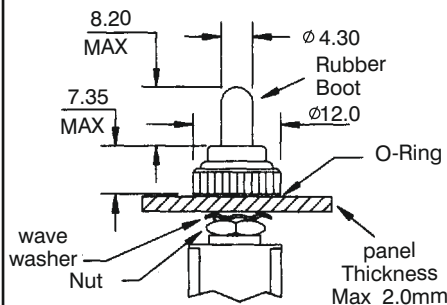
Order Code : 04 to 11
(See Table below)

§

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

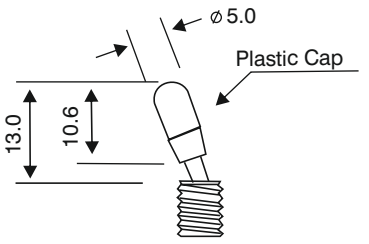
(Plastic moulded actuator)

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

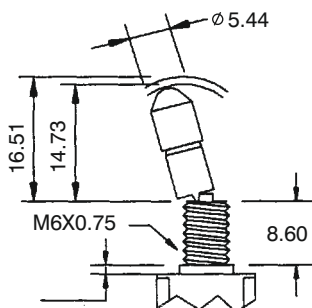
* Refer Note



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

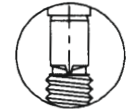
(Key way on right side)



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)

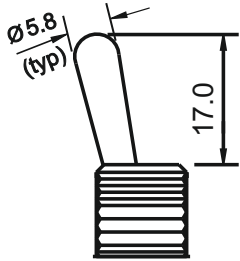


All Dimensions in mm.

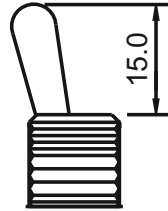
TOGGLE SWITCHES



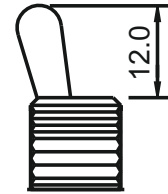
Series - 20 Actuator Selection (For M12 Bushes)



Order Code : 43

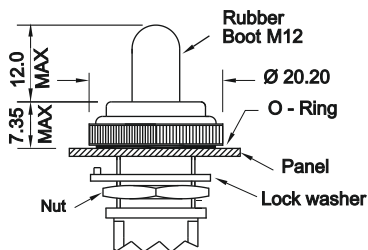


Order Code : 41



Order Code : 44

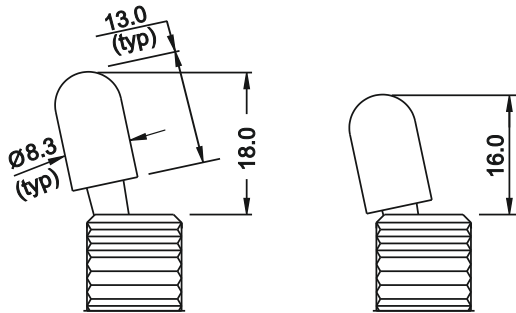
PANEL SEALING TYPE (Rubber Boot Type)



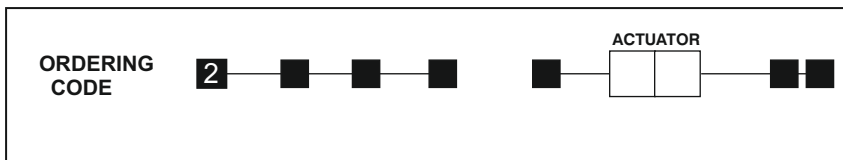
Order Code : 42

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.



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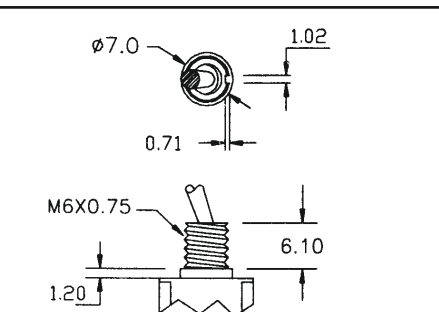
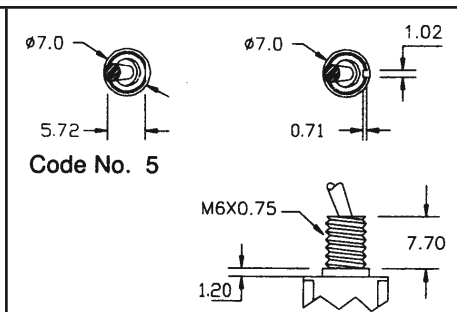
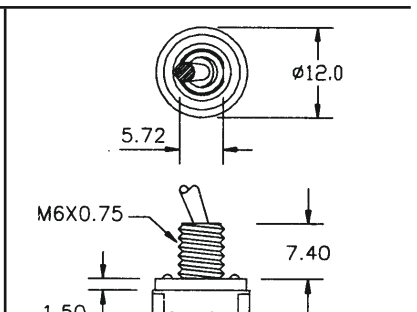
D-388/1, 1st Block, 1st Stage, Peenya Industrial Estate, Bangalore - 560 058, India

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

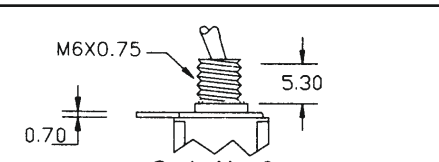
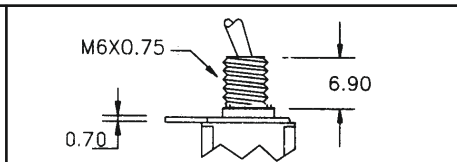
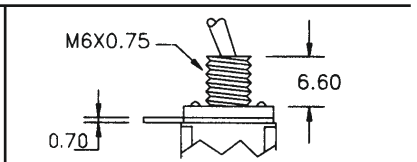
An ISO 9001:2008 Company Website: www.integralsys.in E-mail: inty.systems@gmail.com / sales@integralsys.in

Series 20 Mounting Selection (M6x0.75)

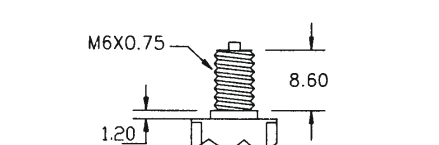
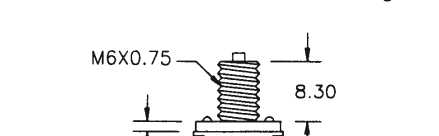
BUSH DETAILS FOR PC STRAIGHT AND SOLDER TYPES

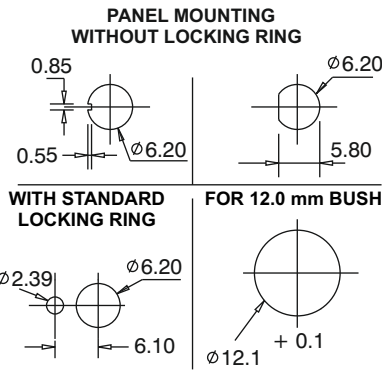
 <p>Code No. 0</p> <p>Order Code Description</p> <p>0 Short threaded bush</p> <p>3 Same as 0 without threading</p>	 <p>Code No. 1</p> <p>Order Code Description</p> <p>1 Standard threaded bush</p> <p>2 Same as 1 without threading</p> <p>5 Same as 1 with milled flat</p>	 <p>Code No. 4</p> <p>Order Code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

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

 <p>Code No. 1</p> <p>Order Code Description</p> <p>1 Threaded bush</p> <p>2 Same as 1 without threading</p>	 <p>Code No. 7</p> <p>Order Code Description</p> <p>7 Threaded bush with panel seal and toggle splash proof seal.</p>
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NOTE :


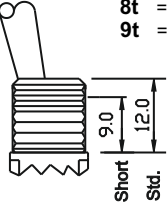
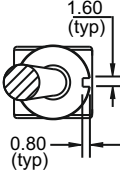
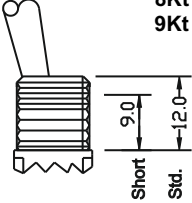
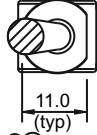
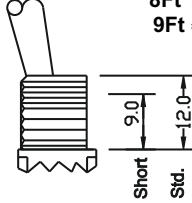

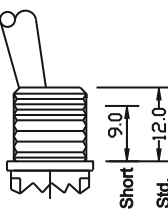

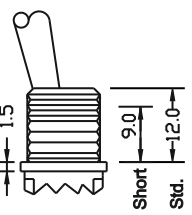

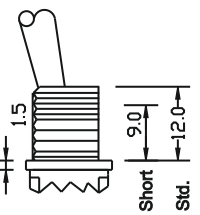

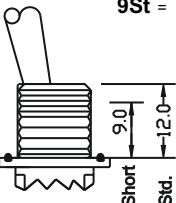

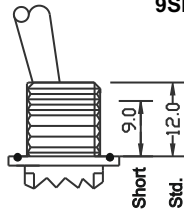

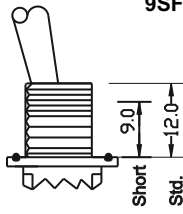
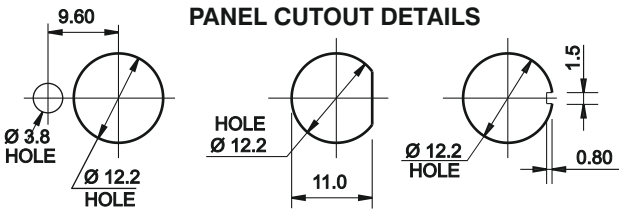

Above shown various types of bushes with M6 x 0.75 threading are readily available. For any other special type bush please contact factory.

BUSHING FINISH will be nickel plated (Standard)



All Dimensions in mm.

Series - 20 Mounting Selection for M12 Bushes

 <p>Order Code Standard Bush</p> <p>8 = Ø12 Unthreaded Bush 9 = M12x0.75 Threaded Bush</p> <p>Short Bush</p> <p>8t = Ø12 Unthreaded Bush 9t = M12x0.75 Threaded Bush</p> 	 <p>Order Code Standard Bush</p> <p>8K = Ø12 Unthreaded Bush 9K = M12x0.75 Threaded Bush</p> <p>Short Bush</p> <p>8Kt = Ø12 Unthreaded Bush 9Kt = M12x0.75 Threaded Bush</p> 	 <p>Order Code Standard Bush</p> <p>8F = Ø12 Unthreaded Bush 9F = M12x0.75 Threaded Bush</p> <p>Short Bush</p> <p>8Ft = Ø12 Unthreaded Bush 9Ft = M12x0.75 Threaded Bush</p> 
 <p>Order Code Standard Bush</p> <p>8C = Ø12 Unthreaded Bush 9C = M12x0.75 Threaded Bush 9CS = M12x0.75 Threaded Bush</p> <p>Short Bush</p> <p>8Ct = Ø12 Unthreaded Bush 9Ct = M12x0.75 Threaded Bush 9CSt = M12x0.75 Threaded Bush</p> 	 <p>Order Code Standard Bush</p> <p>8KC = Ø12 Unthreaded Bush 9KC = M12x0.75 Threaded Bush 9KCS = M12x0.75 Threaded Bush</p> <p>Short Bush</p> <p>8KCt = Ø12 Unthreaded Bush 9KCt = M12x0.75 Threaded Bush 9KCSt = M12x0.75 Threaded Bush</p> 	 <p>Order Code Standard Bush</p> <p>8FC = Ø12 Unthreaded Bush 9FC = M12x0.75 Threaded Bush 9FCS = M12x0.75 Threaded Bush</p> <p>Short Bush</p> <p>8FCt = Ø12 Unthreaded Bush 9FCt = M12x0.75 Threaded Bush 9FCS = M12x0.75 Threaded Bush</p> 
<p>NOTE :- PANEL SEALING CAN BE GIVEN FOR ABOVE BUSH SELECTION EXCEPT FOR UNTHREADED BUSH.</p>		
<p>SPLASH PROOF</p>		
 <p>Order Code Standard Bush</p> <p>9S = M12x0.75 Threaded Bush</p> <p>Short Bush</p> <p>9St = M12x0.75 Threaded Bush</p> 	 <p>Order Code Standard Bush</p> <p>9Sk = M12x0.75 Threaded Bush</p> <p>Short Bush</p> <p>9SkT = M12x0.75 Threaded Bush</p> 	 <p>Order Code Standard Bush</p> <p>9SF = M12x0.75 Threaded Bush</p> <p>Short Bush</p> <p>9SFt = M12x0.75 Threaded Bush</p> 
<p>All Dimensions in mm.</p>		
<p>PANEL CUTOUT DETAILS</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

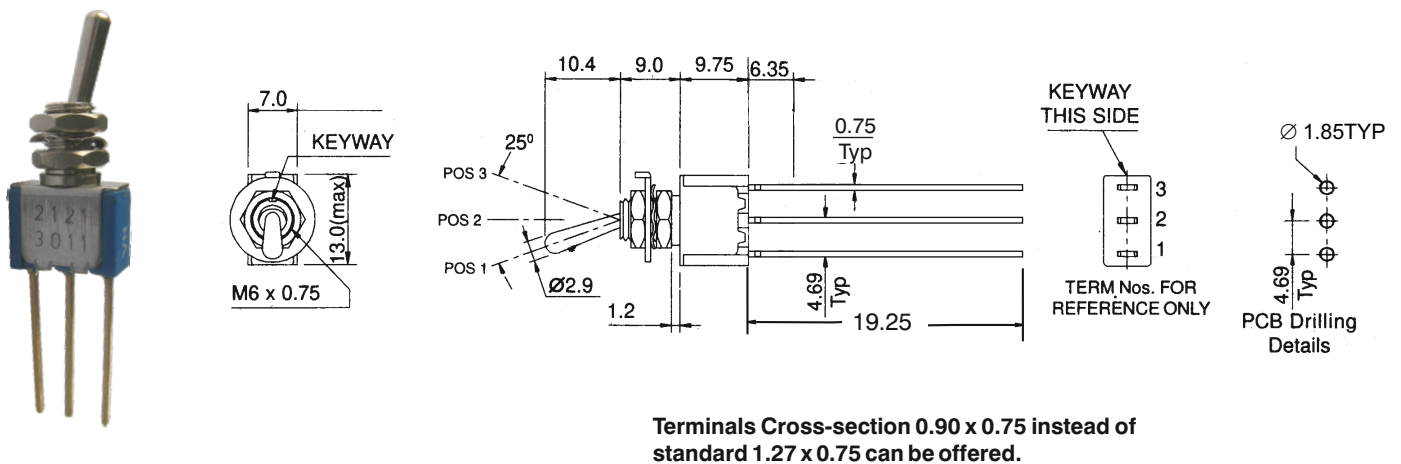
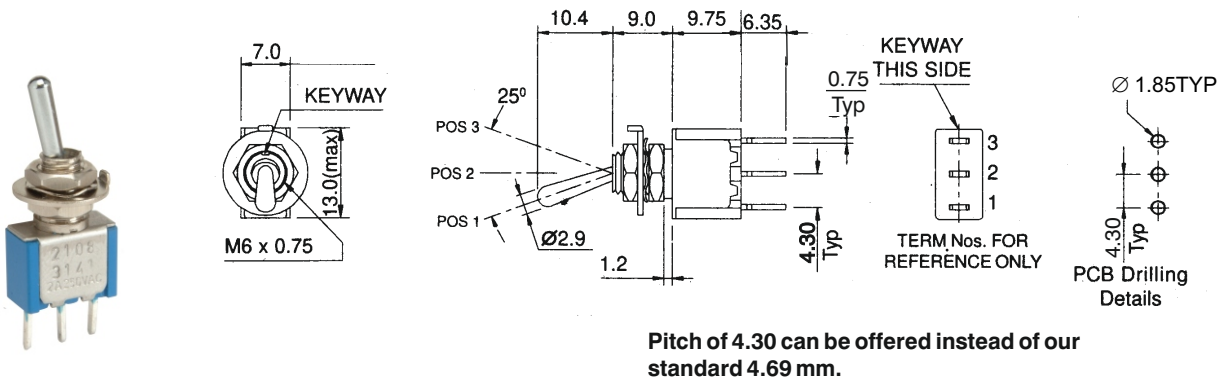
DESCRIPTION :

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 :



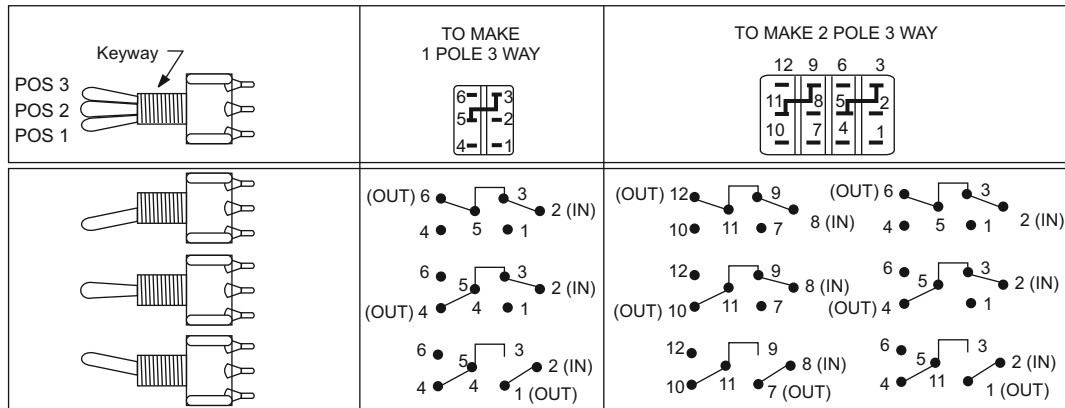
The factory can be contacted for special switches with specifications/drawings/samples, if available. Counter samples will be offered at the earliest.

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

