

M22 Series Pushbuttons

◆ Features

- ✓ For front panel cut-outs measuring $\varnothing 22.3\text{mm}$
- ✓ IP65 protection
- ✓ M3.5 screw terminals
- ✓ PCB ($\varnothing 0.1\text{t}$) terminals
- ✓ Tough and durable body material
- ✓ Available for multi-layer installations



◆ Recognition(s)

- ✓ CE – EN60947
- ✓ UL – UL508
- ✓ RoHS Compliant
- ✓ Reach Unaffected



◆ Characteristics

Positive Opening	Electrical Contact	Terminal Type	(1-layer) Contact Form(s)	(1-layer) Possible Poles & Throws	(1-layer) Possible Actuation Sequence(s)
Yes(NC) & No(NO)	max 12 (2-layers: 4 contact blocks with 2 lamp blocks)	Screw(M3.5), or PCB	Each Block: A, B Two Blocks: A+B, 2A, 2B	SPST, 2*SPST, DPST-NO/NC, DPST	Single Make, or Single Break, or Make & Break, or Double Make, or Double Break

Operating Temp.	AC Rated	DC Rated	Oil Resist	Dust Resist	Water Resist	IP
-25 to 70 C	Switch: 6A 230V LED: 14mA 30~230V	Switch: 3A 24V LED: 14mA 30V	Yes	Yes	Yes	65

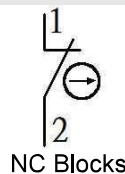
Operation Frequency	Service Life (min.ops)	Dielectric Strength
Momentary~3600/hr Alternate~1800/hr Selectors~2000/hr E-Stop~600/hr	Momentary=5,000,000 Alternate=1,000,000 Selectors=100,000 E-Stop=100,000	Between live part and ground=2500Vac, 1min Between terminals of different poles=2500Vac, 1min Between terminals of the same poles=1000Vac, 1min

Operating Humidity	Contact Resistance	Insulation Resistance	Vibration
85% RH max	50m Ω max. (initial)	100M Ω min. (500VDC)	1.5mm amplitude at 10-55Hz

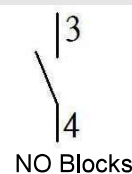
Recommended tightening forces

Purpose	Screw type	Tightening
Control Box		8.5 \pm 0.5 kgf.cm
Panel Mount	Lock Ring	2.0 N·m

Circuitry



NC Blocks



NO Blocks




Additional Characteristics: LED blocks (no contacts)	
Codename in nomenclature = E30	12~30VAC/DC, 5~14mA, 0.25W/24V
Codename in nomenclature = E230	85~264VAC, 5~15mA, 0.33W/24V

Additional Characteristics: Buzzer (M22BZ)	
Sound types:	Slow pulse, Fast pulse
Dimensions	Surface=ø29.7mm Length=53mm
Sound Pressure:	80dB at rated voltage within 1 meter
Sound Frequency:	2.5KHz±300HZ
Insulation Voltage:	60V AC/DC
Operating Voltage:	AC=110V, 220V DC=24V
Current Draw:	AC/DC<50mA
Operating Temperature:	-30 to 85 C
Operating Humidity	85% RH max
Insulation Resistance	100MΩ min. (500VDC)
Dielectric Strength	Between live and dead part=1000Vac, 1min
Vibration	1.5mm amplitude at 10-55Hz
Service Life (min.)	10,000 hours

◆ Materials

Actuation touch part	Electrical contact point	Enclosure
PC Plastic	Silver-Nickel Alloy	Nylon+Glass fiber (V-0 rating)

◆ Nomenclature




Flathead	Actuation:	Type of Terminal:	Contact Block(s):	Lamp:	Lens Color:	Symbol:
M22FP –	M	SF	01		G	
ø22.3mm SPST, or DPST	M =Momentary A =Alternate (Maintained)	<u>Front facing buckle</u> (for use with A3 adapter) SF =Screw terminals PF =PCB terminals  <u>Back facing buckle</u> (for use with control box) SB =Screw terminals	<u>One block</u> 10 =1x Form A 01 =1x Form B <u>Two blocks</u> 11 =1x Form A (& 1x Form B 20 =2x Form A 02 =2x Form B	Blank = non-illum E30 =LED30V E230 =LED230V 	R =Red G =Green Y =Yellow W =White BL =Blue <u>Opaque</u> WO =White RO =Red BKO =Black	Blank = None 






 **Note:**

- Illumination colors from lamps are the same as lens colors; unless otherwise specified.
- Please contact Moujen before production to customize symbols to your needs. Only applicable to indicated items.
- Please consider PCB terminal pins when designing your systems. Pins will conflict multi-layer designs if installed on top.

M22

Extended Head	Actuation:	Type of Terminal:	Contact Block(s):	Lamp:	Lens Color:	Symbol:
M22XP –	M	SF	01		G	
ø22.3mm SPST, or DPST	M =Momentary A =Alternate (Maintained)	<u>Front facing buckle</u> (for use with A3 adapter) SF =Screw terminals PF =PCB terminals  <u>Back facing buckle</u> (for use with control box) SB =Screw terminals	<u>One block</u> 10 =1x Form A 01 =1x Form B <u>Two blocks</u> 11 =1x Form A (&) 1x Form B 20 =2x Form A 02 =2x Form B	Blank =non-illume E30 =LED30V E230 =LED230V 	R =Red G =Green Y =Yellow W =White BL =Blue	Blank =None 





Double Actuator	Actuation:	Type of Terminal:	Contact Block(s):	Lamp:	Lens Color:	Symbol:
M22DP –		SF	02	E30	GR	<I,O>
ø22.3mm 2x SPST	Blank =Momentary (All M22DP are momentary)	<u>Front facing buckle</u> (for use with A3 adapter) SF =Screw terminals PF =PCB terminals  <u>Back facing buckle</u> (for use with control box) SB =Screw terminals	<u>Two blocks</u> 11 =1x Form A (&) 1x Form B 20 =2x Form A 02 =2x Form B	Blank =non-illume E30 =LED30V E230 =LED230V 	GR =Green & Red WB =White & Black	<I,O> <Start,Stop> <+,-> Blank =None 





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M22

Mushroom Actuator	Actuation:	Type of Terminal:	Contact Block(s):	Lamp:	Lens Color:	Symbol:
M22MP –	M	SF	01		G	<O>
ø22.3mm SPST, or DPST	M =Momentary A =Alternate (Maintained)	<u>Front facing buckle</u> (for use with A3 adapter) SF =Screw terminals PF =PCB terminals  <u>Back facing buckle</u> (for use with control box) SB =Screw terminals	<u>One block</u> 10 =1x Form A 01 =1x Form B <u>Two blocks</u> 11 =1x Form A (&) 1x Form B 20 =2x Form A 02 =2x Form B	<i>(not applicable)</i>	R =Red G =Green Y =Yellow W =White BL =Blue	<I,O> <Start,Stop> <+,-> Blank= None 



Illuminated Mushroom Actuator	Actuation:	Type of Terminal:	Contact Block(s):	Lamp:	Lens Color:	Symbol:
M22MPL –	M	SF	01	E30	G	<O>
ø22.3mm SPST, or DPST	M =Momentary A =Alternate (Maintained)	<u>Front facing buckle</u> (for use with A3 adapter) SF =Screw terminals PF =PCB terminals  <u>Back facing buckle</u> (for use with control box) SB =Screw terminals	<u>One block</u> 10 =1x Form A 01 =1x Form B <u>Two blocks</u> 11 =1x Form A (&) 1x Form B 20 =2x Form A 02 =2x Form B	E30 =LED30V E230 =LED230V 	R =Red G =Green Y =Yellow W =White BL =Blue	<I,O> <Start,Stop> <+,-> Blank= None 


 **Note:**

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- Please consider PCB terminal pins when designing your systems. Pins will conflict multi-layer designs if installed on top.

M22

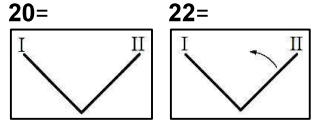
Selector Actuator	Actuator Style:	Operation:	Type of Terminal:	Contact Block(s):	Lamp:	Lens Color:
M22S –	R	30	SF	01	E30	G

ø22.3mm

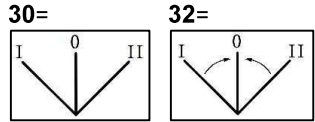
SPST, or DPST, or 2x SPST

R=
Rotary

T=
Thumb grip

Two Positions


Alternate (Maintained) ⚠️ Only at position "II" will the switch actuate; max <u>two</u> form C energizes simultaneously ⚠️ SPST or DPST; depending on contact blocks chosen.	Spring-return from right
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Three Positions


Alternate (Maintained) ⚠️ Positions "I" or "II" may actuate the switch; but only <u>one</u> form C energizes. ⚠️ 1 or 2 SPST; depending on contact blocks chosen.	Left & right spring return
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Front facing buckle
(for use with A3 adapter)
SF=Screw terminals
PF=PCB terminals

Back facing buckle
(for use with control box)
SB=Screw terminals

One block
10=1x Form A
01=1x Form B

Two blocks
11=
1x Form A (&
1x Form B
20=2x Form A
02=2x Form B

Blank= non-illum


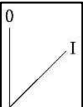
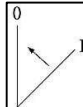
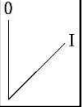
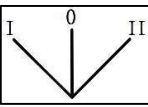
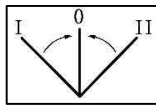
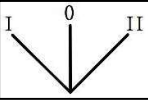
E30= LED30V
E230= LED230V (Lamps only applicable for "T" thumb grip style)

R=Red
G=Green
Y=Yellow
BL=Blue

Opaque
W=White

 **Note:**

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- Please consider PCB terminal pins when designing your systems. Pins will conflict multi-layer designs if installed on top.




Key Actuator	Operation:	Type of Terminal:	Contact Block(s):	Key Removal Positions:
M22K –	30	SF	01	3B
ø22.3mm SPST, or DPST, or 2x SPST	Two Positions	Front facing buckle (for use with A3 adapter) SF =Screw terminals PF =PCB terminals 	One block 10 =1x Form A 01 =1x Form B	Two Positions
	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> 20=  Alternate (Maintained) </div> <div style="text-align: center;"> 22=  Spring-return from right </div> </div> <p style="color: red; font-size: small;">⚠ Only at position "I" will the switch actuate; max <u>two</u> form C energizes simultaneously</p> <p style="color: red; font-size: small;">⚠ SPST or DPST; depending on contact blocks chosen.</p>	Back facing buckle (for use with control box) SB =Screw terminals	Two blocks 11 = 1x Form A (& 1x Form B 20 =2x Form A 02 =2x Form B	 <p>A= Only at "O"</p> <p>B= Both "O" and "I"</p>
Three Positions	30=	32=		Three Positions
	 Alternate (Maintained)	 Left & right spring return		 <p>A= Only at "O"</p> <p>B= All three "I, O, II"</p>
	<p style="color: red; font-size: small;">⚠ Positions "I" or "II" may actuate the switch; but only <u>one</u> form C energizes.</p> <p style="color: red; font-size: small;">⚠ 1 or 2 SPST; depending on contact blocks chosen.</p>			⚠ Keys are always non-removable and non-insertable at positions with spring-return function.




 **Note:**

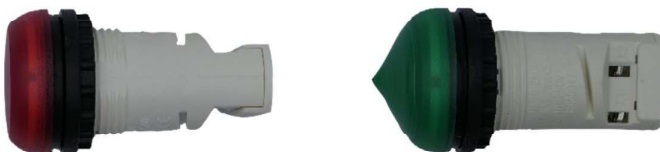
- Illumination colors from lamps are the same as lens colors; unless otherwise specified.
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M22

Pilot light	Actuator Style:	Type of Terminal:	Lamp:	Lens Color:	Symbol:
M22L –	F	SF	E30	G	
ø22.3mm Only LED Blocks	F =Flathead X =Extended-head	<u>Front facing buckle</u> (for use with A3 adapter) SF =Screw terminals PF =PCB terminals  <u>Back facing buckle</u> (for use with control box) SB =Screw terminals	E30 =LED30V E230 =LED230V 	R =Red G =Green Y =Yellow W =White BL =Blue	Blank =None 




Compact Pilot light	Actuator Style:	Lamp:	Lens Color:
M22LC –	F	E24	G
ø22.3mm No contact blocks needed	F =Flathead X =Extended-head	<u>AC/DC</u> E06 =LED6V E12 =LED12V E24 =LED24V E110 =LED110V E220 =LED220V 	R =Red G =Green Y =Yellow W =White BL =Blue




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M22

Emergency Stop	Operation:	Type of Terminal:	Contact Block(s):	Lamp:	Lens Color:
M22E –	T	SF	20		R
ø22.3mm SPST, or DPST	P =Pull to release K =Key to release T =Twist to release	<u>Front facing buckle</u> (for use with A3 adapter) SF =Screw terminals PF =PCB terminals  <u>Back facing buckle</u> (for use with control box) SB =Screw terminals	<u>One block</u> 10 =1x Form A 01 =1x Form B <u>Two blocks</u> 11 =1x Form A (&) 1x Form B 20 =2x Form A 02 =2x Form B	<i>(not applicable)</i>	R =Red





Illuminated Emergency Stop	Operation:	Type of Terminal:	Contact Block(s):	Lamp:	Lens Color:
M22EL –	T	SF	20	E30	R
ø22.3mm SPST, or DPST	P =Pull to release T =Twist to release	<u>Front facing buckle</u> (for use with A3 adapter) SF =Screw terminals PF =PCB terminals  <u>Back facing buckle</u> (for use with control box) SB =Screw terminals	<u>One block</u> 10 =1x Form A 01 =1x Form B <u>Two blocks</u> 11 =1x Form A (&) 1x Form B 20 =2x Form A 02 =2x Form B	E30 =LED30V E230 =LED230V 	R =Red


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Control Box	Box hole(s):	Color:
M22 –	B2	YB
ø22.3mm	B1 =one hole B2 =two holes B3 =three holes	YB =Yellow top, black bottom IB =Ivory top, black bottom

 Control Box alone does not come with actuators, illumination units, or contact blocks.
 Control Box cable wire through holes are not pre-opened. M20 and M25 sizes possible.



Buzzer	AC/DC Voltage:	Sound:	Illumination: (Optional only for 24VDC)
M22BZ –	024DC	F	L
ø22.3mm	220AC =220VAC 110AC =110VAC 024DC =24VDC	S =Slow pulse F =Fast pulse	Blank =none L =Red steady-light indication

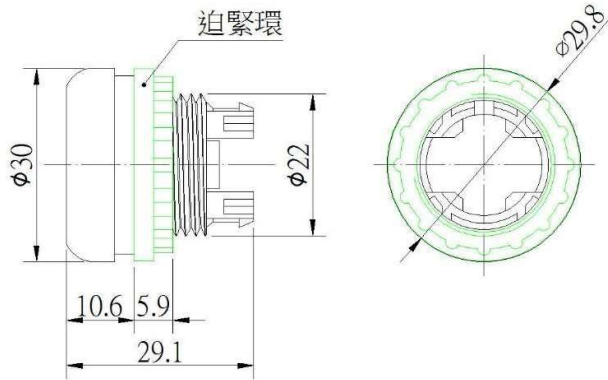
 Except illumination types, all else are opaque black.



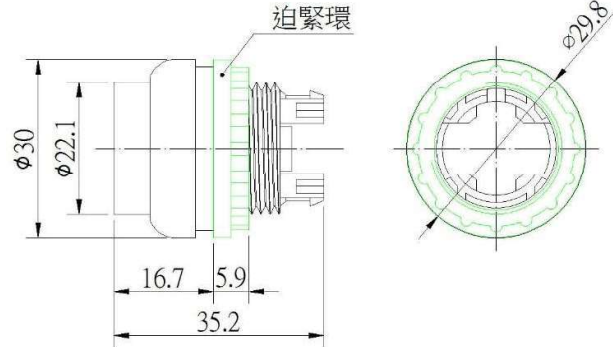
◆ Unit Dimensions

*Measurements in millimeters

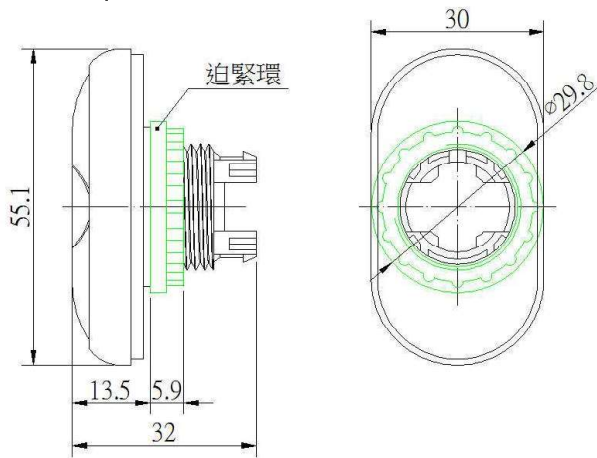
Flat head (FP)



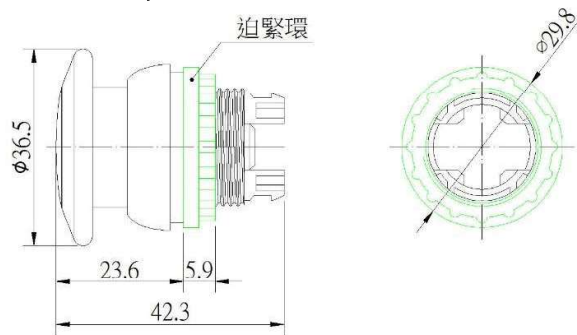
Extended head (XP)



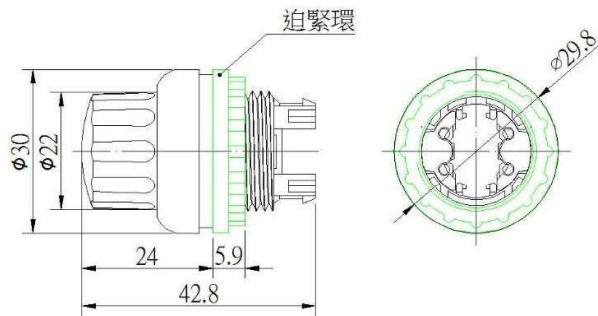
Double pushbutton (DP)



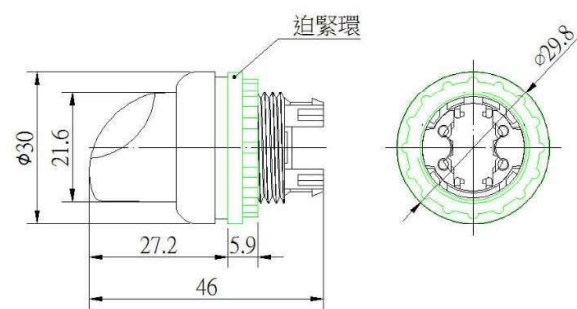
Mushroom pushbutton (MP, MPL)



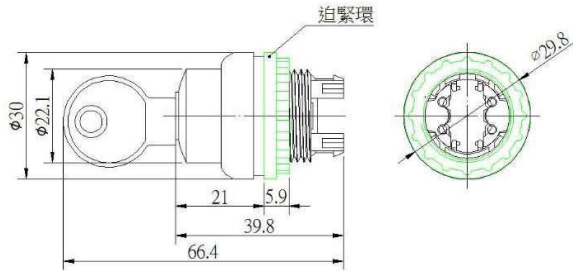
Selector (S) - Rotary



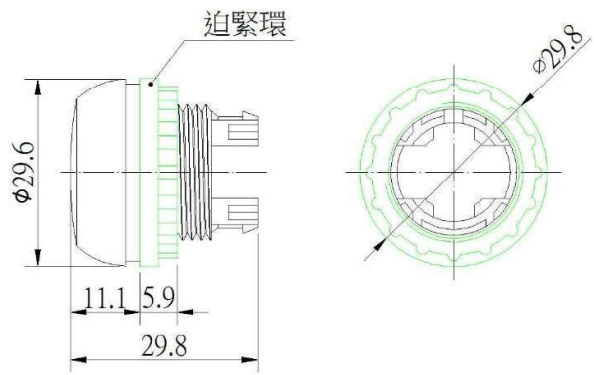
Selector (S) - Thumb grip



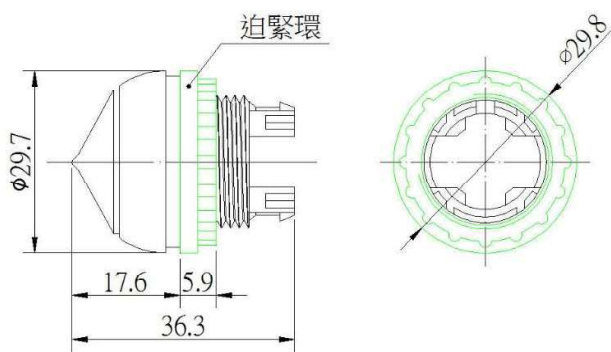
Key Selector (K)



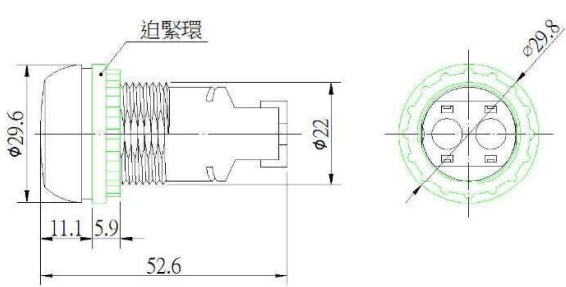
Pilot light (L) - Flat head



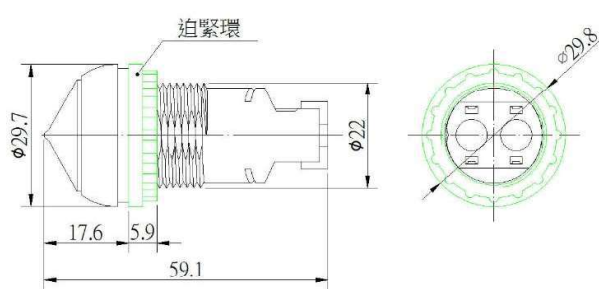
Pilot light (L) - Extended head



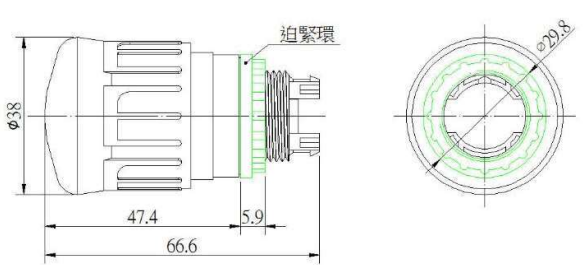
Compact pilot light (LC) - Flat head



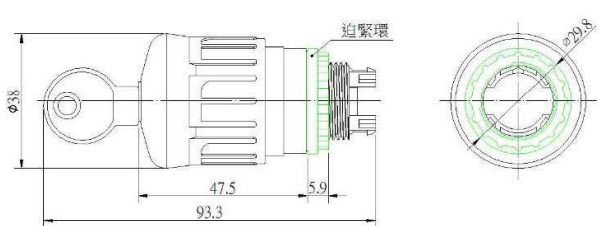
Compact pilot light (LC) - Extended head



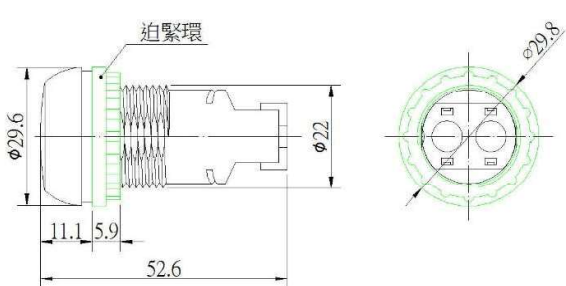
Emergency stop (E, EL) - Pull or Turn to release



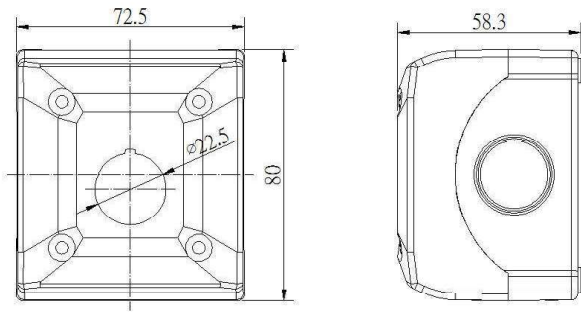
Emergency stop (E) - Key to release



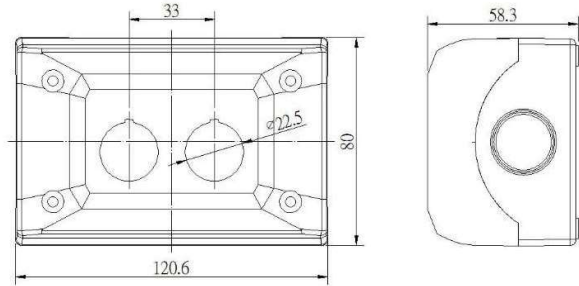
Buzzer (BZ)



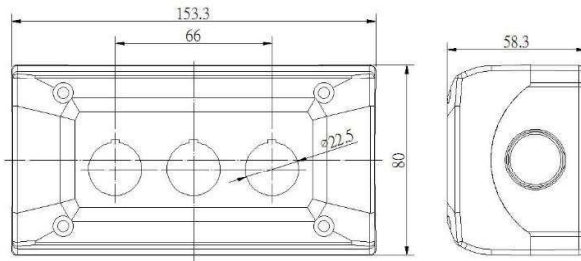
Control Box (M22B1) – 1 hole



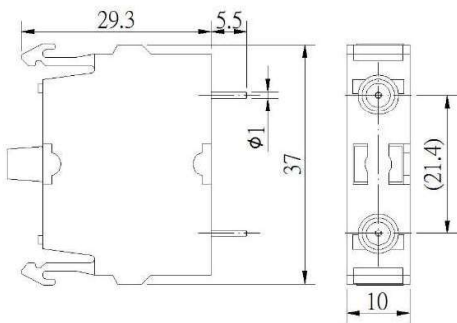
Control Box (M22B2) – 2 holes



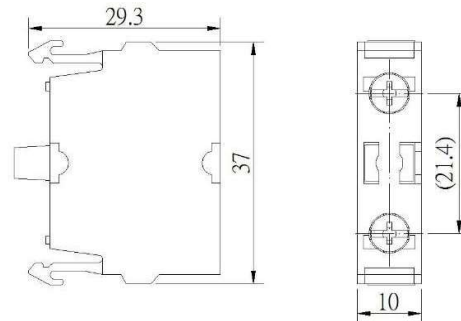
Control Box (M22B3) – 3 holes



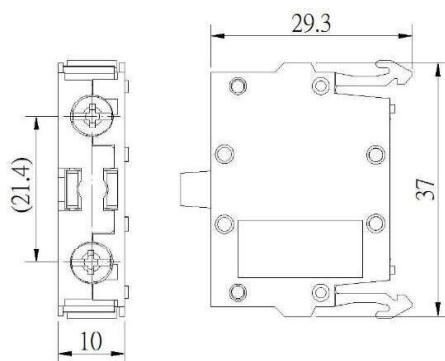
Contact Block (PF) -
PCB terminal, Front facing



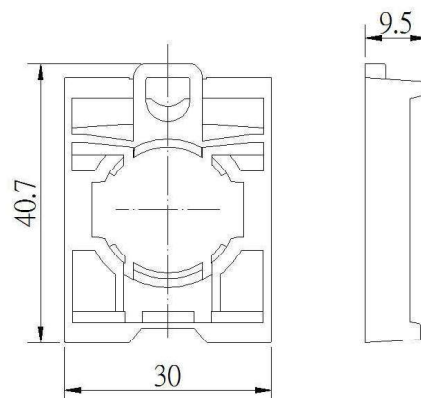
Contact Block (SF) -
Screw terminal, Front facing



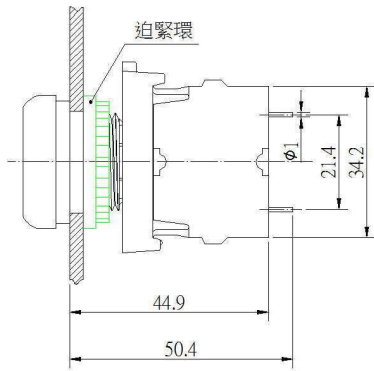
Contact Block (SB) -
Screw terminal, Back facing (for M22 Box)



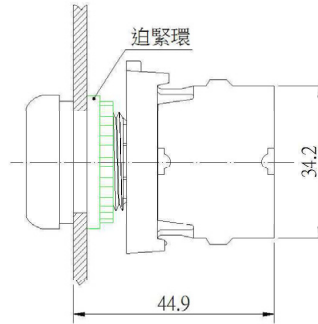
Adapter for front facing buckle
contact blocks (A3)



Dimensions with front facing PCB terminal contact block installation



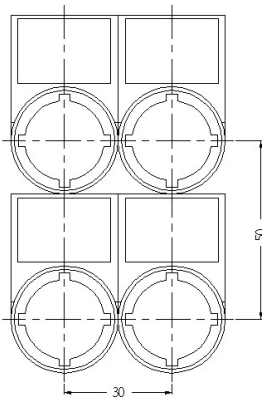
Dimensions with front facing Screw terminal contact block installation



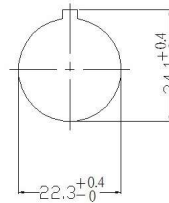
◆ **Panel cut-outs**

*Measurements in *millimeters*

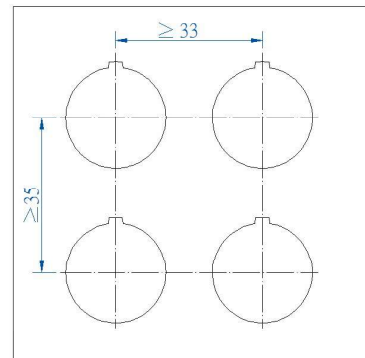
All M22-series products fits best in a circular panel cut out that measures 22.3mm in diameter, with a thickness of 1~4.5mm. Panels thicker than this may cause products to be secured improperly. Damage and bad operation may occur if installed onto incorrect through-holes or with incorrect tightening forces.



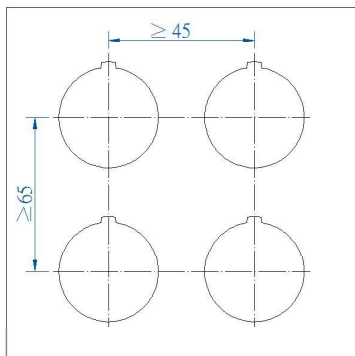
Multiple labeling (excl. M22DP)



Single unit panel cut-out



Multiple units panel cut-out (excl. M22DP)



Multiple units panel cut-out (for M22DP)