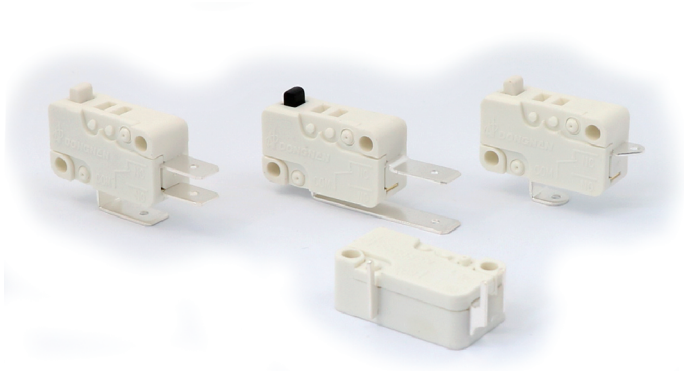
微動開關系列 MICRO SWITCH SERIES
KW3A
KW4A
KW4A(S)
KW10
MS1
MS2
MS3
MS5
MS10
防水開關系列 WATERPROOF SWITCH SERIES
WS1
WS1L
WS2
WS3
WS4
WS5
WS6
WS7
電源開關系列 POWER SWITH SERIES
KDC-A11
KDC-A04
PS4
PS5
PS6
RS1
RS2
RS3
其他開關系列 OTHER SWITCH SERIES
SP02
KXZ2
PRS1

MS1型微動開關系列 Micro switch series

◆ 品質優良的微動開關 Good quality micro switch

- 長壽命，高可靠。
  Long life, high reliability.
- 接綫端子種類齊全
  A variety of contact terminals
- 標準動作力和低動作力
  Standard operating force and low operating force
- 多種温度等級
  A variety of temperature class
- 配備各種形式動臂
  A variety of levers



◆ 技術特性 Technical Characteristics

項目 Item		特性值 Value
工作速度 Operating speed		0.1mm ~ 1m/s (與驅動方式有關) (Related with actuator forms)
工作頻率 Operating frequency		機械 60次/min;電氣 25次/min Mechanical 60 cycles/min;Electrical 25 cycles/min
絶緣電阻 Insulation resistance		≥100MΩ (500VDC)
接觸電阻 Contact resistance		動作力>0.75N： ≤50mΩ(見注) 動作力≤0.75N： ≤100mΩ(見注) OF>0.75N: ≤50mΩ(see note) OF≤0.75N: ≤100mΩ(see note)
耐電壓 Test voltage	同極不相接端子間 Between terminals of the same polarity	AC1000V，50/60Hz，1min
	帶電金屬零件與地(外殼)之間、接綫端與不帶電金屬件之間 Between current-carrying metal parts and ground(case), and between each terminal and non-current-carrying metal parts.	AC3750V ，50/60Hz，1min
抗振動 Vibration resistance		10 ~ 55Hz，1.5mm雙振幅 Double amplitude
抗衝擊 Shock resistance		破壞:動作力>0.5N: 1000m/s²(約100G)max 動作力≤0.5N: 400m/s²(約40G)max 故障:動作力>0.5N: 200m/s²(約20G)max 動作力≤0.5N: 100m/s²(約10G)max Destruction: OF>0.5N: 1000m/s²(approx.100G)max OF≤0.5N: 400m/s²(approx.40G)max Malfunction: OF>0.5N: 200m/s²(approx.20G)max OF≤0.5N: 100m/s²(approx.10G)max
壽命 Life		機械≥2,000,000次; Mechanical ≥2,000,000 cycles 電氣≥50,000次; Electrical ≥50,000 cycles
質量 Weight		約8g(無動臂型) Approx. 8g(No lever)
安全認證 Safety approvals		UL、CUL、ENEC、SEMKO、DEMKO、CE、EK、CQC

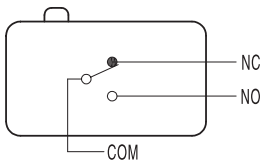
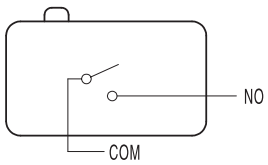
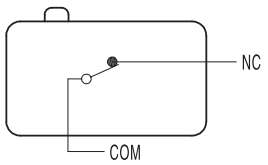
注：指無動臂時按鈕上的動作力。 Note: Refers to the operating force of no lever.

◆ 型號規格命名及含義 Model number legend and meanings

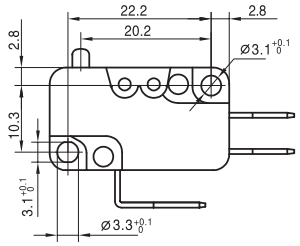
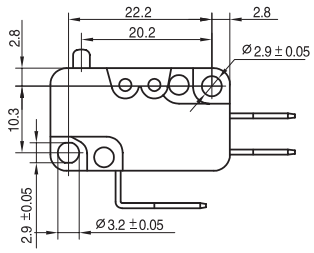
MS1 □–□ □ □–□ □ □ – (□)
1 2 3 4 5 6 7 8

1 温度等級 Degrees of temperature	無標記：10T125 No mark	**5** 端子類型 Terminal types	A：250快接端子之一 250 quick–connect terminal No.1 B：250快接端子之二 250 quick–connect terminal No.2 C：250快接端子之三 250 quick–connect terminal No.3 K：250快接端子之四 250 quick–connect terminal No.4 D：187快接端子(厚0.5mm) 187 quick–connect terminal(thick 0.5mm) E：187快接端子(厚0.8mm) 187 quick–connect terminal (thick 0.8mm) F：焊接端子 Solder terminal G：螺孔端子 Screw terminal H：端面PCB端子 Upper PCB terminal J：底面PCB端子 Bottom PCB terminal L：左側面PCB端子 Left side PCB terminal R：右側面PCB端子 Right side PCB terminal Y：非標準端子 Not standard terminal
2 額定值 Ratings	MS1–16: 16A125VAC,16GPA125/250VAC 16(4)A125/250VAC, 10A30VDC 1/2hp125/250VAC MS1–10: 10A125VAC,10GPA125/250VAC 10(3)A 125/250VAC, 6A30VDC 1/3hp125/250VAC MS1–06: 6A125VAC,6GPA125/250VAC 6(2)A125/250VAC, 4A30VDC 1/4hp125/250VAC MS1–03: 3A125VAC,3GPA125/250VAC 3(1)A125/250VAC MS1–01: 0.1A125VAC,0.1GPA125/250VAC 0.1(0.05)A125/250VAC		
3 接觸形式 Circuit	Z：轉換式 SPDT T：常開(按通)式 SPST–NO D：常閉(按斷)式 SPST–NC (見説明圖 See illustration)	**6** 安裝孔特徵 Mounting hole features	無標記： 國際型 No mark：international approved version U：美國型 US version
4 驅動形式 Actuator forms	0：無動臂 No lever A1/1：短動臂 Short lever A2/2：長動臂 Long lever A3/3：中動臂 Middle lever A4/4：短滾輪臂 Short roller A5/5：長滾輪臂 Long roller A6/6：弧形動臂 Arc lever A□/□：非標準動臂 Not standard lever 注：1)A 表示動臂安裝在靠近按鈕位置，無字母A表示動臂安裝在離按鈕較遠位置。 2)□ 表示非標準動臂的代號。 3)若動臂爲内安裝式，則在動臂代號後加注字母N。 Note: 1)A indicate the lever near to the plunger, no A indicate the lever far away from the plunger. 2)□ indicate not standard lever. 3)If lever is amounted inside.add letter “N” after the lever code.	**7** 動作力 (max) Operating force	015：0.15N 045：0.45N 075：0.75N 100：1N 170：1.7N 285：2.85N 400：4N 注：非標準動作力值，其動作力代號以其上限值表示。 Note: if it is not standard operating force, indicate with the upper limit.
		8 附加規格編號，適用于： Additional spec numbers apply to:	1)當開關使用了非標準零件如非標準端子時； When used not standard parts such as not standard terminal. 2)當顧客有特殊動作特性值或其它要求時。 When customer has particular operating value or other requirements. 附加規格編號用阿拉伯數字表示，在没有附加規格編號時，該位置空缺。 Additional specs number shows by Arabic numerals. If there is no additional numbers, the place is vacant.

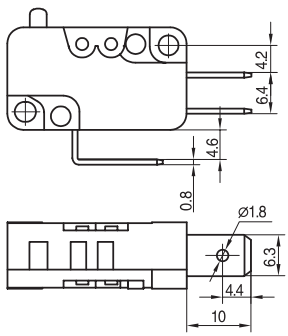
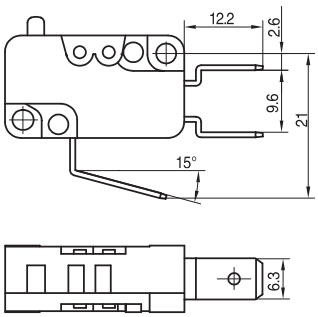
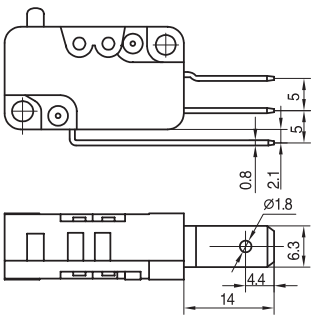
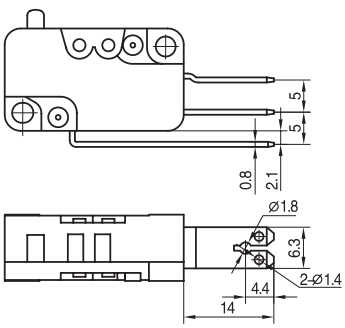
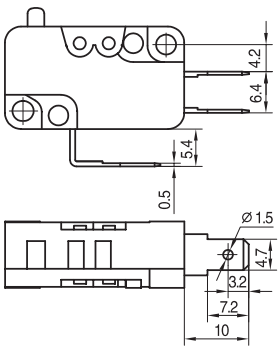
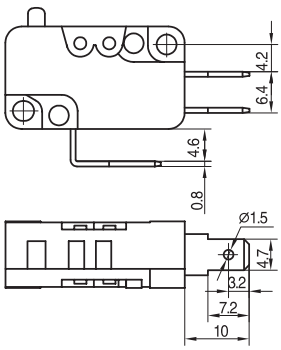
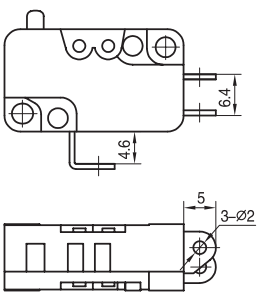
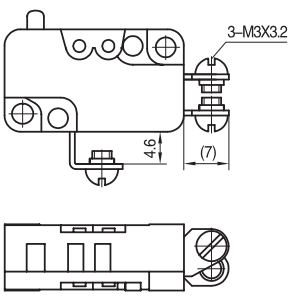
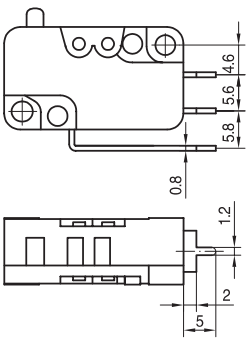
◆ 接觸形式説明圖 Circuit illustration

轉換式 SPDT	常開式 SPST–NO	常閉式 SPST–NC
		

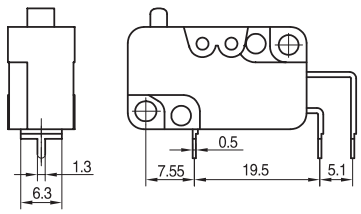
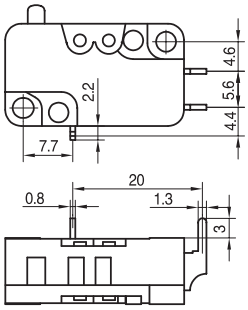
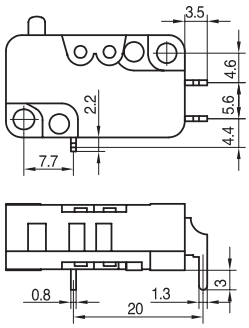
◆ 安裝孔特徵説明圖 Mounting hole characteristic illustration

國際型 International version	美國型 U.S. Version
	

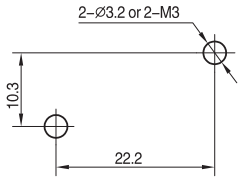
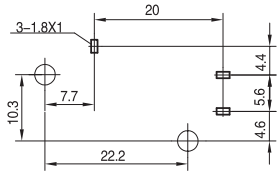
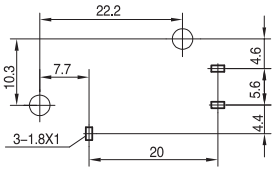
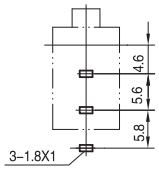
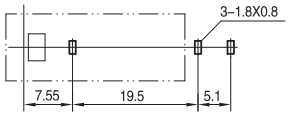
◆ 接綫端配置及尺寸 Connect terminals collocation and dimensions

A 快接端子#250之一 Quick-connect terminal #250 No.1	B 快接端子#250之二 Quick-connect terminal #250 No.2	C 快接端子#250之三 Quick-connect terminal #250 No.3
		
K 快接端子#250之四 Quick-connect terminal #250 No.4	**D 快接端子#187(t=0.5)** Quick-connect terminal #187(t=0.5)	**E 快接端子#187(t=0.8)** Quick-connect terminal #187(t=0.8)
		
F 焊接端子 Solder terminal	**G 螺孔端子 Screw terminal**	**H 端面PCB端子 Upper PCB terminal**
		

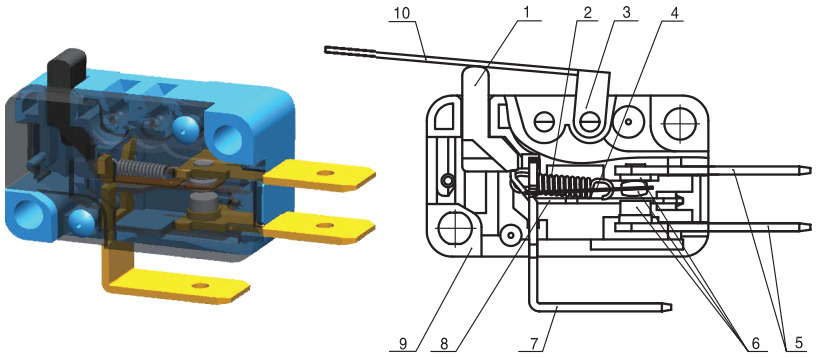
◆ 接綫端配置及尺寸 Connect terminals collocation and dimensions

J 底面PCB端子 Bottom PCB terminal	L 左側面PCB端子 Left side PCB terminal	R 右側面PCB端子 Right side PCB terminal
		

◆ 安裝孔尺寸 Mounting hole dimensions

	右側面PCB端子 Right side PCB terminal	左側面PCB端子 Left side PCB terminal
		
	端面PCB端子 Upper PCB terminal	底面PCB端子 Botton PCB terminal
		

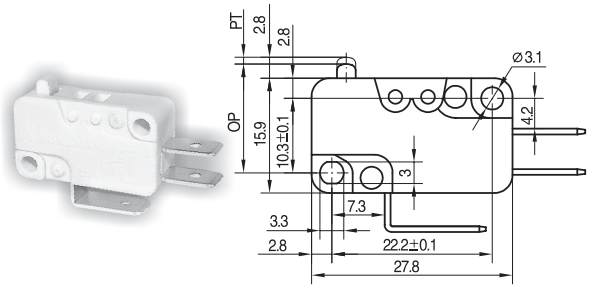
◆ 内部構造圖 Internal configuration drawing



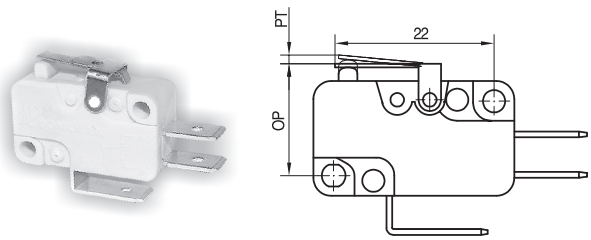
1：	按鈕	Plunger
2：	拉簧	Pull spring
3：	蓋	Cover
4：	可動片	Moving piece
5：	端子	Terminal
6：	電觸點	Contact
7：	支架	Support
8：	杠杆	Lever
9：	基座	Case
10：	動臂	Moving arm

微動開關系列 MICRO SWITCH SERIES
KW3A
KW4A
KW4A(S)
KW10
MS1
MS2
MS3
MS5
MS10
防水開關系列 WATERPROOF SWITCH SERIES
WS1
WS1L
WS2
WS3
WS4
WS5
WS6
WS7
電源開關系列 POWER SWITH SERIES
KDC-A11
KDC-A04
PS4
PS5
PS6
RS1
RS2
RS3
其他開關系列 OTHER SWITCH SERIES
SP02
KXZ2
PRS1

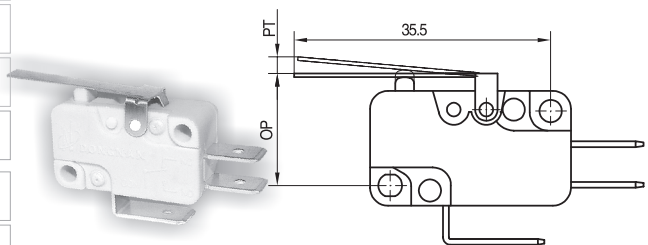
◆ 外形尺寸和動作特性 Dimensions and operating characteristics



型號 Model	OF Max(N)	PT Max(mm)	OT Min(mm)	MD Max(mm)	OP (mm)
MS1-01Z0-A075	0.75	1.2	1.3	0.25	14.2-15.2
MS1-03Z0-A075	0.75				
MS1-06Z0-A170	1.70				
MS1-10Z0-A285	2.85				
MS1-16Z0-A400	4.00				
MS1-01Z0-A015	0.15				
MS1-03Z0-A015	0.15				
MS1-06Z0-A045	0.45				
MS1-10Z0-A075	0.75				
MS1-16Z0-A100	1.00				

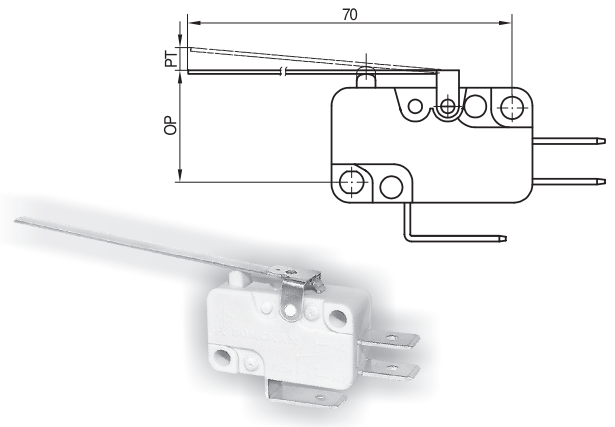


型號 Model	OF Max(N)	PT Max(mm)	OT Min(mm)	MD Max(mm)	OP (mm)
MS1-01Z1-A075	0.75	1.6	1.3	0.4	14.7-15.8
MS1-03Z1-A075	0.75				
MS1-06Z1-A170	1.70				
MS1-10Z1-A285	2.85				
MS1-16Z1-A400	4.00				
MS1-01Z1-A015	0.15				
MS1-03Z1-A015	0.15				
MS1-06Z1-A045	0.45				
MS1-10Z1-A075	0.75				
MS1-16Z1-A100	1.00				

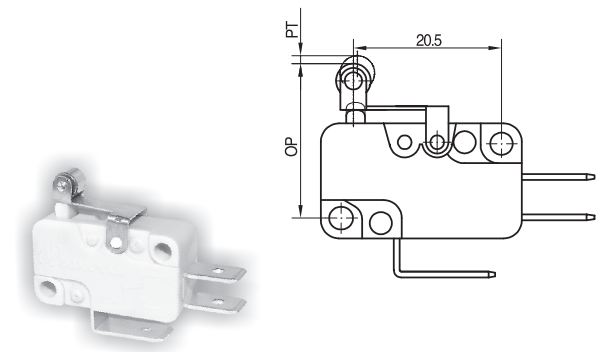


型號 Model	OF Max(N)	PT Max(mm)	OT Min(mm)	MD Max(mm)	OP (mm)
MS1-01Z3-A075	0.35	3.2	2.2	0.8	14.1-16.4
MS1-03Z3-A075	0.35				
MS1-06Z3-A170	0.86				
MS1-10Z3-A285	1.44				
MS1-16Z3-A400	2.00				
MS1-01Z3-A015	0.08				
MS1-03Z3-A015	0.08				
MS1-06Z3-A045	0.22				
MS1-10Z3-A075	0.37				
MS1-16Z3-A100	0.50				

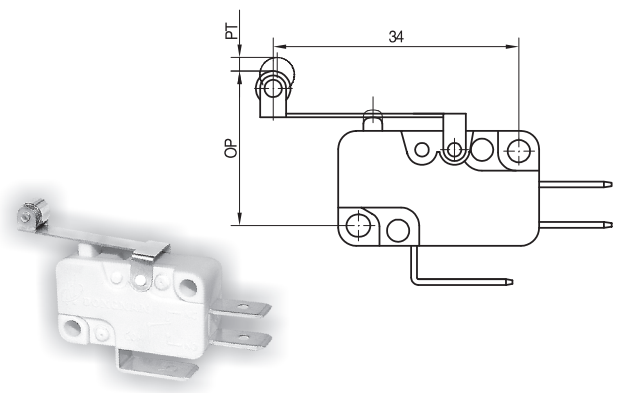
◆ 外形尺寸和動作特性 Dimensions and operating characteristics



型號 Model	OF Max(N)	PT Max(mm)	OT Min(mm)	MD Max(mm)	OP (mm)
MS1–01Z2–A075	0.17	7.6	4.7	1.7	12.7–17.8
MS1–03Z2–A075	0.17				
MS1–06Z2–A170	0.38				
MS1–10Z2–A285	0.63				
MS1–16Z2–A400	0.90				
MS1–01Z2–A015	0.035				
MS1–03Z2–A015	0.035				
MS1–06Z2–A045	0.10				
MS1–10Z2–A075	0.17				
MS1–16Z2–A100	0.22				

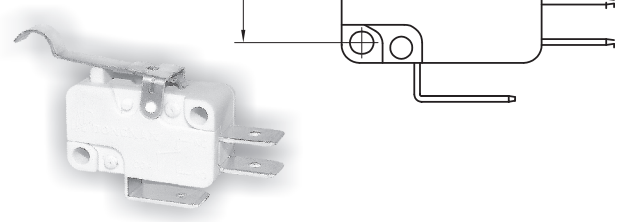


型號 Model	OF Max(N)	PT Max(mm)	OT Min(mm)	MD Max(mm)	OP (mm)
MS1–01Z4–A075	0.75	1.2	1.0	0.25	19.7–21.2
MS1–03Z4–A075	0.75				
MS1–06Z4–A170	1.70				
MS1–10Z4–A285	2.85				
MS1–16Z4–A400	4.00				
MS1–01Z4–A015	0.15				
MS1–03Z4–A015	0.15				
MS1–06Z4–A045	0.45				
MS1–10Z4–A075	0.75				
MS1–16Z4–A100	1.00				



型號 Model	OF Max(N)	PT Max(mm)	OT Min(mm)	MD Max(mm)	OP (mm)
MS1–01Z5–A075	0.35	3.2	2.2	0.8	19.3–21.6
MS1–03Z5–A075	0.35				
MS1–06Z5–A170	0.86				
MS1–10Z5–A285	1.44				
MS1–16Z5–A400	2.00				
MS1–01Z5–A015	0.08				
MS1–03Z5–A015	0.08				
MS1–06Z5–A045	0.22				
MS1–10Z5–A075	0.37				
MS1–16Z5–A100	0.50				

◆ 外形尺寸和動作特性 Dimensions and operating characteristics



型號 Model	OF Max(N)	PT Max(mm)	OT Min(mm)	MD Max(mm)	OP (mm)
MS1-01Z6-A075	0.36	3.2	2.2	0.8	17.8-20.1
MS1-03Z6-A075	0.36				
MS1-06Z6-A170	0.90				
MS1-10Z6-A285	1.50				
MS1-16Z6-A400	2.10				
MS1-01Z6-A015	0.08				
MS1-03Z6-A015	0.08				
MS1-06Z6-A045	0.23				
MS1-10Z6-A075	0.38				
MS1-16Z6-A100	0.52				

◆ 請正確使用 Please use it correctly

【共通注意事項】請參閱相關頁P3-10。【Common points for attention】please refer to related pages P3-10

- 關于使用 Concerning the using

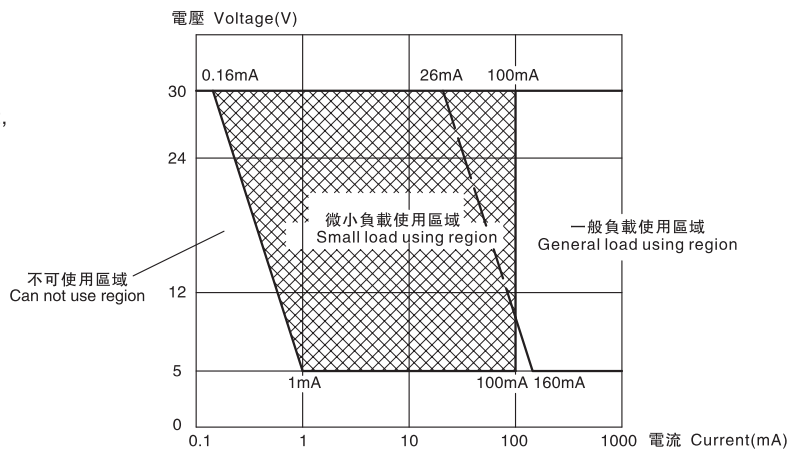
(1) 請注意開關的温度等級，在超過温度等級的環境條件下使用，將不能保證開關的規定特性。
Please pay attention to the temperature class, if use it beyond the temperature class, switch standard characteristics cannot be guaranteed.
(2) 對于低荷重型開關，由于其構造特殊，請注意不要讓開關跌落，以免損壞内部結構。
About the low operating force switches, please do not drop the switch so as to avoid damage to inside structure, because it is of special structure.

- 關于安裝 Concerning the installation

(1) 開關的安裝、拆卸和配綫作業以及維護檢查時，請務必斷開電源，否則會引起觸電和燒毀。
Please turn off the power when installing, disassembling, wiring work and maintenance check, otherwise, electric shock and burn will happen.
(2) 安裝時，使用2個M3螺釘，用平墊圈、彈簧墊圈等緊固，并請使用0.4~0.6N・m的緊固轉矩。
When installing,please use 2 M3 screws,then tight it with flat washer, spring washer, and also tight with 0.4~0.6N・m torque.
(3)開關請安裝在平面上。如果安裝面凹凸不平，可能導致開關歪斜、動作失常和外殼破損。
Please install switch on flat surface.If install it in uneven surface,switch deflection,malfunction and cover breakage will happen.

- 關于絶緣距離 Concerning insulation distance

根據IEC 61058-1/EN 61058-1/GB 15092.1之規定，本開關的最小絶緣層厚度爲1.1mm，端子和安裝板之間的最小空間距離爲1.9mm。如果無法確保零部件所要求的絶緣距離，請使用絶緣護罩或隔板來保證絶緣距離。
According to IEC 61058-1/EN 61058-1/GB 15092.1, the least thickness insulation lay er should be 1.1mm, the smallest space distance between the terminal and install board is 1.9mm. If the parts insulation distance cannot be guaranteed, please use insulate cover or guard board to guarantee the insulation distance.

- 關于微小負載電路中的使用

Concerning use in small load circuit
如果在開關微小負載電路中使用一般負載用開關，可能會引起接觸不良。
Use general load switch in small load circuit, bad contact may happen
請參考下圖在使用區域的範圍内使用開關，并根據需要插入觸點保護電路。
Please refer to the chart below, use switch within using region, and insert contact to protect circuit according to the needs.