

## WS2型防水開關系列 Waterproof switch series

### ◆ 特點和用途 Characteristics and usage

- 通過橡膠密封圈和環氧樹脂填封達到穩定的密封性。  
可以在會淋水或多塵埃的地方使用。  
To be stably sealed by sealed rubber ring and epoxy resin.  
Can be used in wet or dusty places.
- 配備焊接端子和帶導線端子  
Provide solder terminal and wire terminal
- 配備各種形式動臂  
A variety of levers
- 原材料符合環保要求(RoHS)  
Raw material comply with RoHS
- 可在汽車、農業機械、大型家電、辦公設備等有耐環境性要求的場合使用。  
Can be used in environment resistant places and application, outdoor apparatus such as automobile, vending machine, refrigerator, ice machine, bath equipment, water heater and air-conditioner etc.



### ◆ 技術特性 Specifications

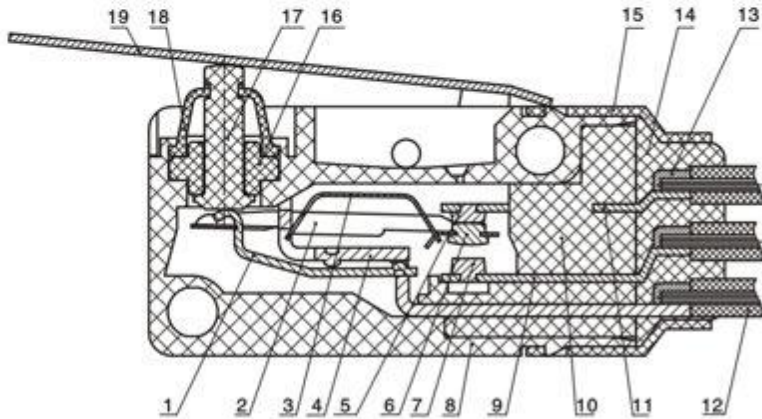
項目 Item		特性值 Value
工作速度 Operating speed		0.1mm ~ 1m/s (無動臂時 no lever)
工作頻率 Operating frequency		機械 60次/min; 電氣 25次/min Mechanical 60 cycles/min; Electrical 25 cycles/min
絕緣電阻 Insulation resistance		$\geq 100M\Omega$ (500VDC)
接觸電阻 Contact resistance		$\leq 30m\Omega$ (初始值 Initial value)
耐電壓 Test voltage	同極不相接端子間 Between not connect terminals of the same polarity	AC1000V, 50/60Hz, 1min
	帶電金屬零件與地(外殼)之間、接線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.	AC1500V, 50/60Hz, 1min
抗振動 Vibration resistance		10 ~ 55Hz, 1.5mm 雙振幅 Double amplitude
抗衝擊 Shock resistance		耐久 endurance: $1000m/s^2$ (約100G approx. 100G) max 誤動作 Wrong action: $300m/s^2$ (約30G approx. 30G) max
防觸電保護等級 Electric shock proof protection grade		I 級 class
外殼防護等級 Degree protection provided by enclosure		IEC IP67 (端子型的端子部位除外 Besides terminal part of terminal type)
壽命 Life		機械 $\geq 1,000,000$ 次; Mechanical $\geq 1,000,000$ cycles 電氣 $\geq 10,000$ 次; Electrical $\geq 10,000$ cycles
安全認證 Safety approvals		UL、CUL、TUV、CE

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

WS2 □-□□□-□□□-□□-□  
1 2 3 4 5 6 7 8 9 10

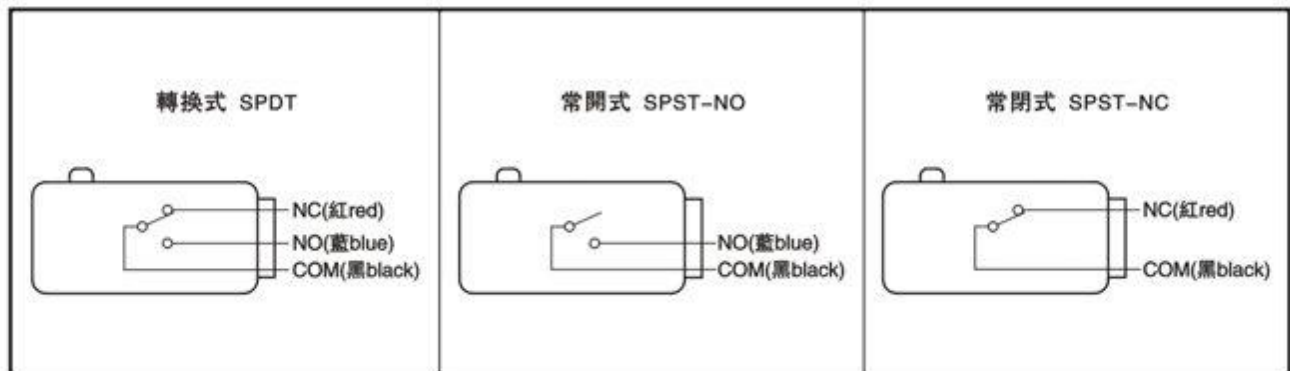
<b>1</b> 溫度等級 Degree of temperature	無標記 No mark: T85 T:25T125	<b>7</b> 按鈕規格 Plunger specs	無標記 No mark: 標準按鈕 standard plunger □:非標準按鈕 not standard plunger 注: □表示非標準按鈕的代號 Note: □Indicate not standard plunger
<b>2</b> 額定值 Ratings	10:10(3)A250VAC/10.1A125VAC 05:5(2)A250VAC/5A125VAC /5A30VDC 01:0.1A250VAC/0.1A125VAC /0.1A 30VDC	<b>8</b> 導線長度 Wire length	用毫米數表示 Indicate with number- "mm"
<b>3</b> 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 (見說明圖 See illustration)	<b>9</b> 防護等級 Degree protection provided by enclosure	無標記 No mark: IP67 □□: IP□□
<b>4</b> 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表示動臂安裝在離按鈕的近端。 2)□表示非標準動臂的代號。 Note: 1) A indicate the lever near to the plunger, 2) □ Indicate not standard lever.	<b>10</b> 附加規格代號及 導線顏色配置代號 Append specs code and wire color code	適用於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. 3)當導線顏色不是默認的配置顏色時。 When the wire color is not the default color. ■ 附加規格代號用阿拉伯數字表示, 在沒有附加規格編號時, 該位置空缺。 Additional specs number shows by Arabic numerals. If there is no additional numbers, the place is vacant. ■ 導線顏色配置代號: 用三個英文字母按COM、NC、NO順序表示; 若是常開式或常閉式開關, 空缺位置用字母O表示。(顏色代號: 紅-R、白-W、黑-B、綠-G、藍-L、黃-M、灰-H、紫-P)。 Wire color code:indicate with 3 letters,the order is COM、NC、NO;if NO or NC,vacant place shows o. (Color code:red-R,white-W,black-B,green-G,blue-L,yellow-Y,greY-H,purple-P) 示例example: BWR, BOR, RRO  ■ 若同時有附加規格代號和導線顏色配置代號, 則導線顏色配置代號位于附加規格代號之後。 If there are append specs code and wire color code at the same time,then the wire color code should be after the append specs code. 示例 example: 02BWR
<b>5</b> 端子類型 Terminal types	F:端子型 Terminal type W:導線型 Wire type Y:非標準端子 Not standard terminal		
<b>6</b> 動作力(max) Operating force	050: 0.5N 100: 1N 150: 1.5N 200: 2N 300: 3N 注: 若是非標準動作力, 用此動作力上限值表示。 Note: If it is not standard operating force, indicate with the upper limit.		

## ◆ 内部構造圖 Internal configuration drawing

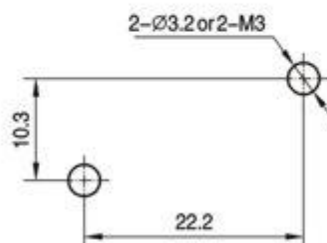


- |             |               |
|-------------|---------------|
| 1: 杠杆       | Lever         |
| 2: 可動片      | Moving piece  |
| 3: 簧片       | Spring sheet  |
| 4: 支架       | Support       |
| 5: 電觸點      | Contact       |
| 6: 電觸點      | Contact       |
| 7: 電觸點      | Contact       |
| 8: 基座       | Case          |
| 9: 端子       | Terminal      |
| 10: 固定塊     | Fixed piece   |
| 11: 端子      | Terminal      |
| 12: 導線      | Wire          |
| 13: 焊錫      | Soldering tin |
| 14: 環氧樹脂    | Epoxy resin   |
| 15: 護罩      | Cover         |
| 16: 護套      | Annulus       |
| 17: 開關子(按鈕) | Plunger       |
| 18: 密封圈     | Hermetic loop |
| 19: 動臂      | Moving arm    |

## ◆ 接觸形式說明圖 Circuit illustration



## ◆ 安裝孔尺寸 Mounting hole dimensions



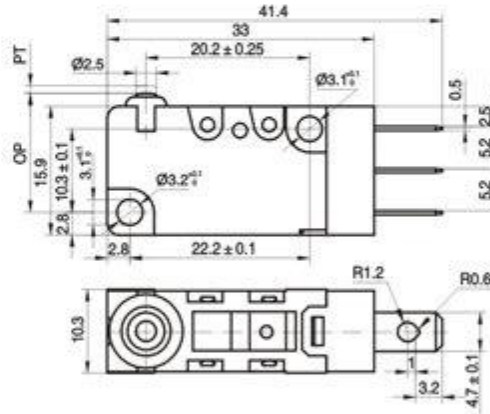




## ◆ 外形尺寸和動作特性 Dimensions and operating characteristics

### ■ 端子型 Terminal type

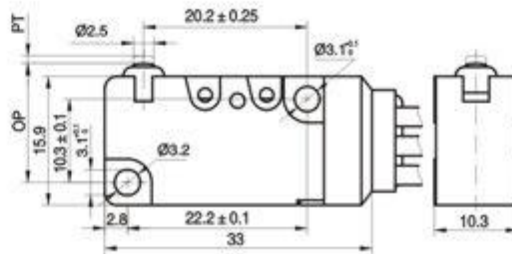
WS2-□Z0-F200-□



OF Max(N)	2.00
RF Min(N)	0.30
PT Max(mm)	1.2
OT Min(mm)	1.0
MD Max(mm)	0.4
OP(mm)	14.7 ± 0.4

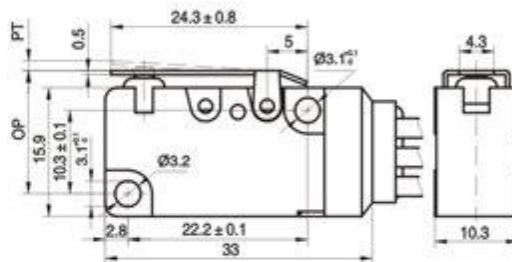
### ■ 導線型 Wire type

WS2-□Z0-W200-□



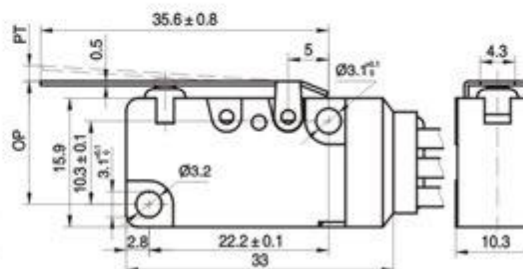
OF Max(N)	2.00
RF Min(N)	0.30
PT Max(mm)	1.2
OT Min(mm)	1.0
MD Max(mm)	0.4
OP(mm)	14.7 ± 0.4

WS2-□Z1-W200-□



OF Max(N)	2.00
RF Min(N)	0.20
PT Max(mm)	1.6
OT Min(mm)	0.8
MD Max(mm)	0.5
OP(mm)	15.2 ± 0.5

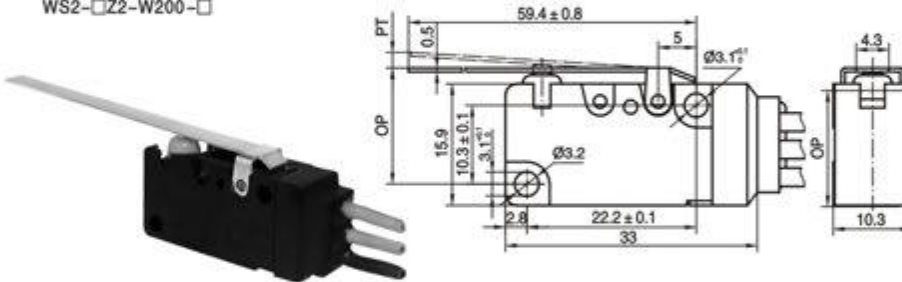
WS2-□Z3-W200-□



OF Max(N)	1.20
RF Min(N)	0.15
PT Max(mm)	4.0
OT Min(mm)	1.6
MD Max(mm)	0.8
OP(mm)	15.2 ± 1.2

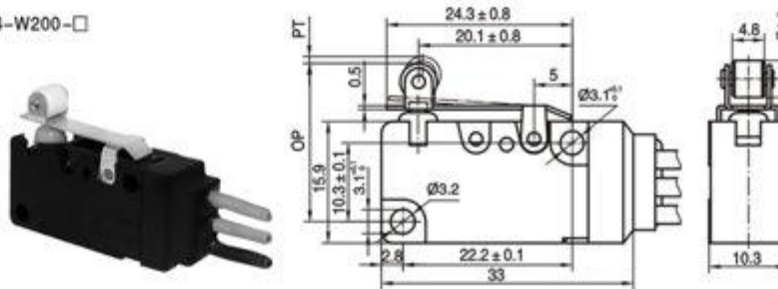
**◆ 外形尺寸和動作特性 Dimensions and operating characteristics**

WS2-□Z2-W200-□



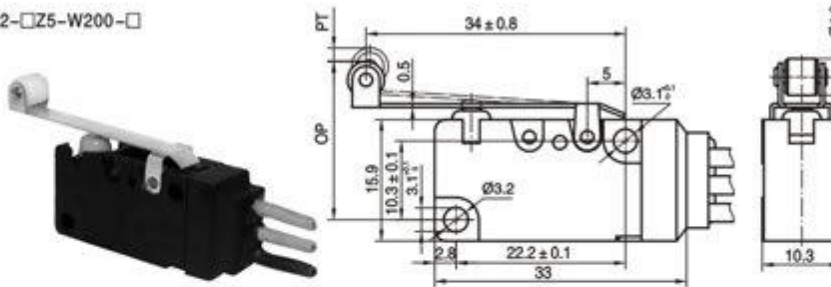
OF Max(N)	0.60
RF Min(N)	0.05
PT Max(mm)	9.0
OT Min(mm)	3.2
MD Max(mm)	2.0
OP(mm)	15.2 ± 2.6

WS2-□Z4-W200-□



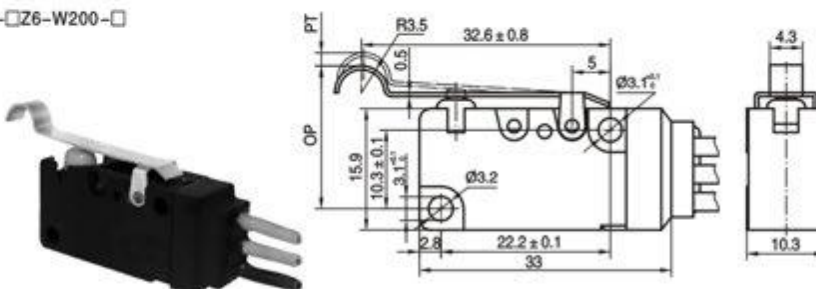
OF Max(N)	2.25
RF Min(N)	0.20
PT Max(mm)	1.6
OT Min(mm)	0.8
MD Max(mm)	0.5
OP(mm)	20.7 ± 0.6

WS2-□Z5-W200-□



OF Max(N)	1.20
RF Min(N)	0.15
PT Max(mm)	4.0
OT Min(mm)	1.6
MD Max(mm)	0.8
OP(mm)	20.7 ± 1.2

WS2-□Z6-W200-□



OF Max(N)	1.20
RF Min(N)	0.15
PT Max(mm)	4.0
OT Min(mm)	1.6
MD Max(mm)	0.8
OP(mm)	18.7 ± 1.2

注：以上外形尺寸中，未注公差為 ±0.4mm。 Note: above dimension, general tolerance: ±0.4mm.

## ◆ 請正確使用 Please use it correctly

【共通注意事項】請參閱相關頁。

【Common points for attention】please refer to related pages

### ■ 注意事項 Attention items

#### (1) 關於保護構造 Concerning protection structure

請勿在水中使用。開關雖然滿足IP67的試驗條件，但這些試驗是在水中放置一段時間後確定進水程度的試驗，而非在水中進行開閉動作的試驗。

Do not use switch in the water. Although the switch meets the test requirement of IP67, these tests the water entering degree after switch put in the water after period of time, it is not test the ON/OFF operation in the water.

#### (2) 關於油污、化學品的附着 Concerning greasy dirt, chemical attachment

請避免油污、化學品的附着。否則可能出現使用材質變質及引起老化。

Please avoid the greasy dirt & chemical adhesion. Otherwise, the quality of using material may deteriorate and aging.

### ■ 關於使用 Concerning using

使用過程中應充分注意不要損壞按鈕處的密封橡膠。

Please do not damage the sealed rubber around the button in the process of usage.

### ■ 關於安裝 Concerning installation

(1) 開關的安裝、拆卸和配線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，並請使用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.

### ■ 關於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內使用開關，並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 protection circuit according to the needs.

