B-949(4)

IDEC

EMERGENCY STOP DEVICE

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INSTRUCTION SHEET (ORIGINAL)

ϕ30 Emergency Stop Switch XN Series

Padlock Emergency Stop Switch XN4E Series

Thank you for selecting IDEC product. Please confirm that the delivered product is what you have ordered.

⚠ SAFETY NOTE

- Read this instruction sheet and the catalog for the XN4E series emergency stop switches to make sure of correct operation before starting installation, wiring, operation, maintenance, and inspection. Make sure that the instruction sheet is kept by the end user.
- Turn off the power to the XN4E before starting installation, wiring, maintenance and inspection of the XN4E. Failure to turn power off may cause electric shock or fire hazard.
- Use wires of a proper size to meet voltage and current requirements. Tighten the M3 terminal screws to a tightening torque of 0.6 to 1.0 N・m. Improper wires and loose terminals during operation will cause overheating and fire hazard. Provide a proper protection against electric shocks.

1 Type No. Development

XN1E - T V 4 0 3 Q 4 M R

Bezel Shape
1: Round, Plastic Type
5: Round, Metal Type (Flush Bezel)

Function
B: Non-illuminated
L: Illuminated
T: Illuminated (Push ON)

Button Shape
4: Mushroom (ϕ40mm)
5: Jumbo Mushroom (ϕ60mm)

Contact Arrangement

Monitor Contact	Main Contact
0: Without	1: 1NC
1: 1NO	2: 2NC
2: 2NO	3: 3NC
	4: 4NC

Button Color
R: Red
RH: Bright Red

Terminal Configuration
M: Screw Terminal
MF: Screw Terminal (IP20)

Lamp Type
Blank: Without Lamp
4: LED 24V

Lamp Voltage
Blank: Non-illuminated
Q: Full Voltage

XN4E - T L 4 0 3 Q 4 M R

Function
B: Non-illuminated
L: Illuminated
T: Illuminated (Push ON)

Button Shape
4: Mushroom (ϕ44mm)

Contact Arrangement

Monitor Contact	Main Contact
0: Without	1: 1NC
1: 1NO	2: 2NC
2: 2NO	3: 3NC
	4: 4NC

Lamp Voltage
Blank: Non-illuminated
Q: Full Voltage

Button Color
R: Red
RH: Bright Red

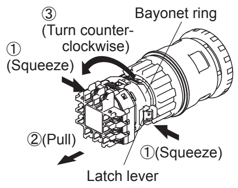
Terminal Configuration
M: Screw Terminal
MF: Screw Terminal (IP20)

Lamp Type
Blank: Without Lamp
4: LED 24V

2 Removing/Installing Contact Block and Panel Mounting

☐**Removing**

First unlock the operator button. Squeeze the latch lever on the yellow bayonet ring ① and pull back the bayonet ring with force until the latch pin clicks ②, then turn the contact block counter-clockwise and pull out ③.

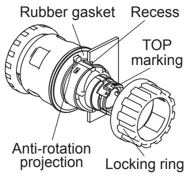


・Notes for removing the contact block

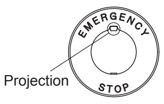
1) With the button in the locked position, do not remove the contact block, otherwise the switch may be damaged.
2) When the contact block is removed, the monitor contact (NO contact) is closed.
3) While removing the contact block, do not exert an excessive force, otherwise the switch may be damaged.
4) An LED lamp is built into the contact block for illuminated pushbuttons. When removing the contact block, pull out the contact block straight to prevent damage to the LED lamp. If an excessive force is exerted, the LED lamp may be damaged and fail to light.

☐**Panel Mounting**

Remove the locking ring from the operator and check that the rubber gasket is in place. Align the anti-rotation projection on the bezel with the recess in the panel, insert the operator from panel front into the panel hole.
and tighten the locking ring using ring wrench XN9Z-T1 or TWST-T1 to a torque of 2.5 N・m.

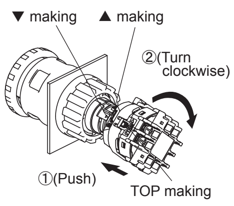


・When using the emergency stop nameplate
Before installing the emergency stop nameplate (Type No.: HNAV-*), break the projection on the nameplate using pliers.



☐**Installing**

First unlock the operator button. Align the small ▼marking on the edge of the operator sleeve with the small ▲marking on the yellow bayonet ring. Hold the contact block, not the bayonet ring. Press the contact block onto the operator and turn the contact block clockwise until the bayonet ring clicks.



・Notes for installing the contact block
1) **With the button in the locked position, do not install the contact block, otherwise the switch may be damaged.**
2) Make sure that the bayonet ring is secured in the locked position.

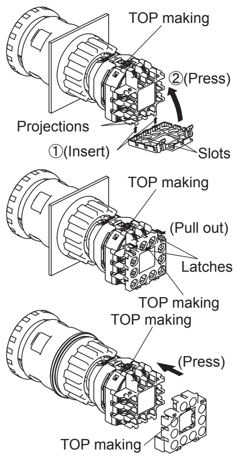
3 Installing and Removing the Terminal Cover

☐**Terminal Cover XW9Z-VL2M**

To install the terminal cover, align the TOP marking on the terminal cover with the TOP marking on the contact block. Place the two projections on the bottom side of the contact block into the slots in the terminal cover. Press the terminal cover toward the contact block.
To remove the terminal cover, pull out the two latches on the top side of the terminal cover. Do not exert an excessive force to the latches, otherwise the latches may break.

☐**Finger-safe Terminal Cover XW9Z-VL2MF**

To install the terminal cover, align the TOP marking on the terminal cover with the TOP marking on the contact block, and press the terminal cover toward the contact block.



・Notes for using the XW9Z-VL2MF
1) **Once installed, the XW9Z-L2MF cannot be removed.**
2) With the XW9Z-VL2MF installed, crimping terminals cannot be used. Use solid wires.
3) Install the XW9Z-VL2MF before wiring. It cannot be installed after wiring.
4) Make sure that the XW9Z-VL2MF is securely installed. IP20 cannot be achieved when installed loosely, and electric shocks may occur.

4 Notes for Operation

When using the emergency stop switch for safety-related equipment in a control system, refer to the safety standards and regulations in each country and region depending on the application purpose of the actual machines and installations to make sure of correct operation. Before using the emergency stop switch, perform risk assessment to make sure of safety.

☐**Wiring**
Tighten the terminal screws to a torque of 0.6 to 1.0 N・m.

☐**Contact Chatter/Bounce**
When the button is reset by pulling or turning, the NC main contacts will chatter. When pressing the button, the NO monitor contacts will chatter. When designing a conctrol circuit, take the contact chatter time into consideration (reference value: 20 ms).Do not expose the switch to external shocks, otherwise the contacts will bounce.

☐**LED Illuminated Switches**
The LED lamp is built into the contact block and cannot be replaced.

☐**Handling**
Do not operate the switch using a tool. Do not expose the switch to excessive shocks and vibrations, otherwise the switch may be deformed or damaged, causing malfunction or operation failure.

☐**Padlock Emergency Stop**
The padlockable emergency stop switches can be reset by turning only, and cannot be pulled to reset. Do not attempt to pull to reset, otherwise damage or malfunction may result.

5 Contact Ratings [Main Contact (NC:black) and Monitor Contact (NO:blue)]

Rated Insulation Voltage(Ui)				250V		
Conventional Free Air Thermal Current (Ith)				5A		
Rated Operational Voltage (Ue)				30V	125V	250V
Rated Operational Current	Main Contact	AC 50/60Hz	Resistive Load (AC-12)	-	5A	3A
			Inductive Load (AC-15)	-	3A	1.5A
		DC	Resistive Load (DC-12)	2A	0.4A	0.2A
			Inductive Load (DC-13)	1A	0.22A	0.1A
	Monitor Contact	AC 50/60Hz	Resistive Load (AC-12)	-	1.2A	0.6A
			Inductive Load (AC-14)	-	0.6A	0.3A
		DC	Resistive Load (DC-12)	2A	0.4A	0.2A
			Inductive Load (DC-13)	1A	0.22A	0.1A

6 Built-in LED Ratings

Rated Voltage	Operating Voltage	Operating Current
24V AC/DC	24V AC/DC ±10%	15 mA

7 Specifications

Applicable Standard	IEC60947-5-1, EN60947-5-1, JIS C8201-5-1 IEC60947-5-5*1), EN60947-5-5*1), JIS C8201-5-5*1) UL508, UL991, NFPA79 CSA C22.2 No.14, GB14048.5
Standard Operating Conditions	Operating temperature Non illuminated : -25 to +60 ℃ (no freezing) LED illuminated : -25 to +55 ℃ (no freezing) Relative humidity : 45 to 85% RH (no condensation) Storage temperature : -45 to +80 ℃ (no freezing)
Minimum Direct Opening Force	80 N
Minimum Direct Opening Travel	4.0 mm
Maximum Travel	4.5 mm
Contact Resistance	50 mΩ maximum (initial value)
Insulation Resistance	100 MΩ minimum (500V DC megger)
Overvoltage Category	Ⅱ
Impulse Withstand Voltage	2.5 kV
Pollution Degree	3
Operating Frequency	900 operations/hour
Mechanical Life	250,000 operations minimum
Electrical Life	100,000 operations minimum 250,000 operations minimum (24V AC/DC, 100mA)
Shock Resistance	Operating extremes : $150\ m/s^2$ Damage limits : $1{,}000\ m/s^2$
Vibration Resistance	Operating extremes : 10 to 500 Hz, amplitude 0.35 mm, acceleration $50\ m/s^2$ Damage limits : 10 to 500 Hz, amplitude 0.35 mm, acceleration $50\ m/s^2$
Degree of Protection	IP65 (panel front:IEC 60529)
Terminal Protection	IP20 (Screw Terminal type when installing XW9Z-VL2MF)
Short-circuit Protective Device	250V/10A fuse (Type aM IEC60269-1/IEC60269-2)
Conditional Short-circuit Current	1,000 A
Recommended Tightening Torque	0.6 to 1.0 N・m (Screw Terminal type)
Recommended Tightening Torque of Locking Ring	2.5 N・m
Applicable Wire	0.75 to 1.25 mm^2 (AWG18 to 16)
Total Weight of Padlock and Hasp (Padlock type only)	1500g maximum
Reinforced Insulation (IEC60664-1)	Between live parts and Bezel

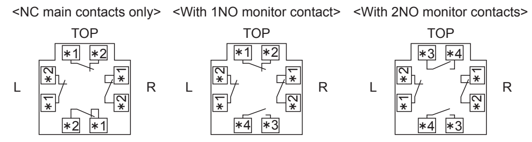
*1) only for using emergency stop switches(Button color: Red and bright red)

8 Terminal Arrangement (Bottom View)

☐**Screw Terminal Type**

・XN☐E-BV, XN4E-BL (Non-illuminated)

<NC main contacts only> <With 1NO monitor contact> <With 2NO monitor contacts>

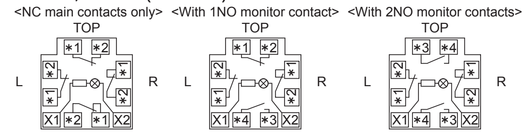


1NC: Terminals on R
2NC: Terminals on R and L
3NC: Terminals on R, L, and TOP

1NC: Terminals on TOP
2NC: Terminals on R and L

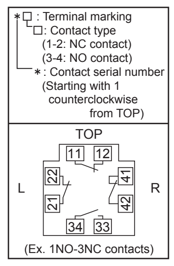
・XN☐E-LV, XN4E-LL (Illuminated)

<NC main contacts only> <With 1NO monitor contact> <With 2NO monitor contacts>



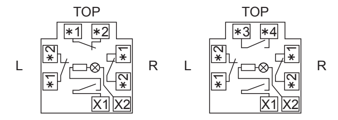
1NC: Terminals on R
2NC: Terminals on R and L
3NC: Terminals on R, L, and TOP

1NC: Terminals on TOP
2NC: Terminals on R and L



・XN☐E-TV, XN4E-TL (Illuminated Push ON)

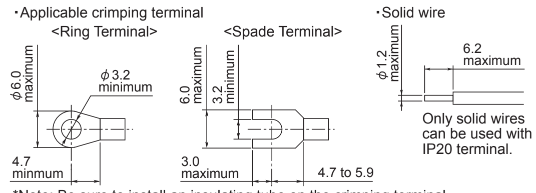
<NC main contacts only> <With 1NO monitor contact>



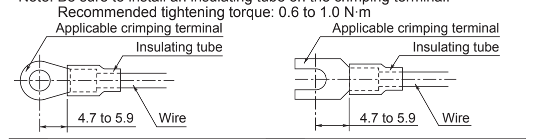
2NC: Terminals on R and L
3NC: Terminals on R, L, and TOP

9 Applicable Wire (Screw terminal type)

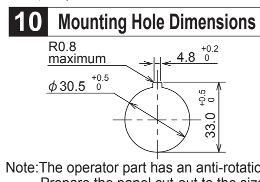
・Applicable crimping terminal
<Ring Terminal> <Spade Terminal>
・Solid wire



*Note: Be sure to install an insulating tube on the crimping terminal.
Recommended tightening torque: 0.6 to 1.0 N·m

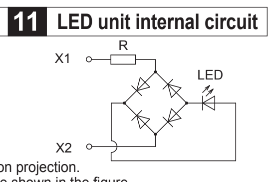


10 Mounting Hole Dimensions



Note:The operator part has an anti-rotation projection.
Prepare the panel cut-out to the size shown in the figure.

11 LED unit internal circuit

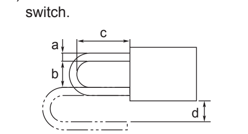


12 Padlock and Hasp

Applicable padlock and hasp are shown below.
Padlock size

a	b	c	d
7 mm maximum	19 mm minimum	39 mm minimum	15 mm minimum*2)

*2) Dimension d is 6 mm or more when attaching a padlock from the side of a switch.



Recommended Hasp

Manufacturer	Type
Shinwa	SHH002
PANDUIT	PSL-HD3 PSL-1A
Master Lock	420 421

Since various from and sizes are available, make sure of applicability using the actual padlock and hasp before use.
The total witght of the padlock and hasp can be a maximum of 1500g. When the total wiight exceeds this limit, the switch may malfunction or fail.

DECLARATION OF CONFORMITY
We, IDEC CORPORATION 7-31, Nishimiyahara 1-chome Yodogawa-ku, Osaka 532-8550, Japan declare under our sole responsibility that the product:
Description: Emergency stop switches
Model No. : XN Series
to which this declaration relates is in conformity with the EC Directive on the following standard(s) or other normative document(s). In case of alteration of the product, not agreed upon by us, this declaration will lose its validity.
Applicable EC Directive: Low Voltage Directive (2006/95/EC)
Machinery Directive (2006/42/EC)
Applicable Standard(s): EN 60947-5-5

IDEC CORPORATION

Manufacturer : IDEC CORP, 1-7-31 Nishimiyahara, Yodogawa-Ku, Osaka 532-8550, Japan
EU Authorized Representative : IDEC Elektrotechnik GmbH Wendenstrasse 331, D-20537 Hamburg, Germany
http://www.idec.com
2011.5

使用说明书 B-949(4)

IDEC

EMERGENCY STOP DEVICE

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使用说明书

ϕ30紧急停止开关 XN系列

挂锁加锁式紧急停止开关 XN4E系列

承蒙购买 IDEC产品，谨此衷心致谢！
请确认本产品是否为您所订购的产品后，按照下列项目要求正确使用。

⚠ 安全注意事项

- 在安装、接线作业、运转以及维修保养本产品之前，请仔细阅读本使用说明书以及本公司的产品样本后正确使用。
  另外，请提醒最终用户妥善保存本使用说明书。
- 在安装、接线作业、运转以及维修保养本产品之前，请务必先切断电源，以免引起触电或发生火灾的危险。
- 接线时，请使用符合施加电压、通电电流的电线。
  请**按推荐拧紧**扭矩（0.6 ～ 1.0N·m）拧紧**接线**螺丝（M3）。切勿使用不符合要求的电线或在螺丝松动的状态下使用，以免因异常发热而导致火灾发生的危险。
  另外，请采取适当的触电预防措施，以免引起触电或发生火灾的危险。

1 型号说明

XN1E - T V 4 0 3 Q 4 M R

镶嵌框
1：树脂框
5：金属框（平面镶嵌框）

功能
B：非照明
L：照明
T：连动照明

操作部形状
4：ϕ40 **大蘑菇头形**
5：ϕ60 **特大蘑菇头形**

触点构成

辅助触点	主触点
0：无	1：1NC
1：1NO	2：2NC
1：2NO	3：3NC
	4：4NC

操作按钮颜色
R：红色
RH：鲜红色

端子形状
M：**接线螺丝**
MF：**接线螺丝**（IP20）

照明单元
无：无灯泡
4：24V LED

电压规格
无：非照明
Q：全电压

XN4E - T L 4 0 3 Q 4 M R

功能
B：非照明
L：照明
T：连动照明

操作部形状
4：ϕ44 **大蘑菇头形**

触点构成

辅助触点	主触点
0：无	1：1NC
1：1NO	2：2NC
1：2NO	3：3NC
	4：4NC

电压规格
无：非照明
Q：全电压

操作按钮颜色
R：红色
RH：鲜红色

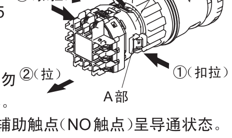
端子形状
M：**接线螺丝**
MF：**接线螺丝**（IP20）

照明单元
无：无灯泡
4：24V LED

2 触点单元的安装及拆卸与面板安装方法

☐**触点单元的拆卸方法**

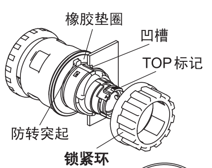
请确认操作部的按钮呈未被按下的情况下，将触点单元的锁扣部件（黄色）的A部，在向箭头方向扣拉的同时往端子方向拉锁扣部件，逆时针转动触点单元45度即可拆卸。



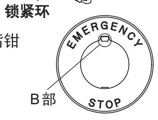
・拆卸触点单元时的注意事项
（1）在操作部的按钮呈被按下的状态时，请勿强行拆卸触点单元，以免造成开关损坏。
（2）请注意，从操作部上拆卸触点单元时，辅助触点（NO触点）呈导通状态。
（3）请勿强行拆卸触点单元以免导致开关破损。
（4）请注意，照明型开关的触点单元内置LED。拆卸时，请勿使LED磕碰到操作部或者对其施加过大的外力以免引起点灯不良或破损。

☐**安装至面板的方法**

从操作部上卸下锁紧环后，请确认橡胶垫圈是否安装正确。然后将操作部从面板前面插到安装孔内。请将操作单元的防转突起与面板安装孔的凹槽对准，用专用的锁紧环扳手（XN9Z-T1或TWST-T1）拧紧锁紧环，推荐扭矩为2.5N・m。

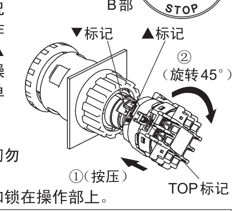


・使用紧急停止用标记板时
使用紧急停止用标记板（HNAV-☐）时，请用扁嘴钳折断标记板的突起B后再使用。



☐**触点单元的安装方法**

请确认，在操作部的按钮未被按下的情况下，握住触点单元的主体（黑色），将操作部的▼标记与触点单元的锁扣部件的▲标记（TOP侧）对齐，将触点单元在向操作部推压的同时顺时针方向转动触点单元45度后即可。

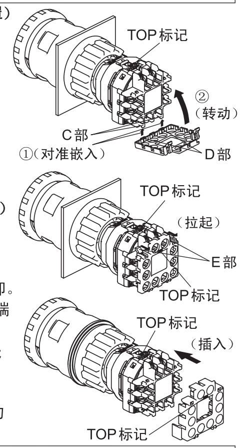


・触点单元安装时的注意事项
1）在操作单元的按钮被按下的状态下，请切勿强行安装触点单元，以免造成开关损坏。
2）请确认，触点单元的锁扣部件是否确实扣锁在操作部上。

3 端子套的安装及拆卸

☐XW9Z-VL2M（**接线螺丝型用防触电端子罩**）
将触点单元的TOP标记和XW9Z-VL2M的TOP标记对齐后，将XW9Z-VL2M咬合部的D（2处）与触点单元的突起部C（2处）在咬合的状态下，翻转XW9Z-VL2M即可。
拆卸XW9Z-VL2M时，将W9Z-VL2M的突起部E（2处）拉起即可。
请注意，切勿对突起部E过度用力，以免导致端子**罩**破损。

☐XW9Z-VL2MF（**接线螺丝型IP20用保护罩**）
将触点单元的TOP标记与XW9Z-VL2MF的TOP标记对齐后压入即可。



・XW9Z-VL2MF使用时的注意事项
（1）XW9Z-VL2M一旦安装后则不能再拆卸。
（2）安装XW9Z-VL2MF时，不能使用压接端子。请使用单线。
（3）XW9Z-VL2MF**型端子罩请务必在接线前安装，接线后则不能再安装。**
（4）请务必按照操作步骤将咬合安装牢固。若咬合安装不牢固，则不能满足IP20的规格要求，从而引起触电危险。

4 使用注意事项

在将本产品用于控制系统的安全设备部时，请根据机械设备实际使用的各国或地区的相对应的安全标准或规定正确使用。且，在使用前请实施危险性评估确认。

☐**接线注意事项**
请使用0.6 ～ 1.0N·m的**推荐扭矩拧紧接线螺丝型的接线**螺丝（M3）。

☐**触点反弹**
在主触点（NC触点）实施复位（拉出／旋转复位）操作时，辅助触点（NO触点）在操作按压时会发生触点反弹，请考虑防止措施。（参考值：20ms）
另，开关遭受外界冲击时也会发生触点反弹，请注意切勿对其施加外界冲击。

☐**使用LED照明型时的注意事项**
LED与触点单元为一体结构，不能拆卸及更换。

☐**其他注意事项**
请切勿使用工具操作开关，或向开关施加过度的冲击，以及施加振动，以免引起开关变形或损坏而导致动作运转不良或性能低下。

☐**挂锁加锁型注意事项**
挂锁加锁型的复位操作与其他机种不同，仅可通过旋转复位，不能进行拉出复位。请切勿通过拉出按钮进行复位操作。若强制拉出按钮进行操作可能引起开关破损或动作故障，请切勿实施。

5 触点容量［主触点（NC触点：黑色）/ 辅助触点（NO触点：蓝色）］

额定绝缘电压（Ui）				250V		
额定通电电流（Ith）				5A		
额定使用电压（Ue）				30V	125V	250V
额定使用电流	主触点	AC 50/60Hz	电阻性负载（AC-12）	-	5A	3A
			电感性负载（AC-15）	-	3A	1.5A
		DC	电阻性负载（DC-12）	2A	0.4A	0.2A
			电感性负载（DC-13）	1A	0.22A	0.1A
	辅助触点	AC 50/60Hz	电阻性负载（AC-12）	-	1.2A	0.6A
			电感性负载（AC-14）	-	0.6A	0.3A
		DC	电阻性负载（DC-12）	2A	0.4A	0.2A
			电感性负载（DC-13）	1A	0.22A	0.1A

6 内置LED容量

额定电压	使用电压	额定电流
24V AC/DC	24V AC/DC±10%	15mA

7 性能・规格

对应标准	IEC60947-5-1、EN60947-5-1、JIS C8201-5-1 IEC60947-5-5注1)、EN60947-5-5注1)、JIS C8201-5-5注1) UL508、UL991、NFPA79 CSA C22.2 No.14、GB14048.5
标准使用状态	环境温度 非照明 ：-25 ～ +60℃（无结冰） LED照明 ：-25 ～ +55℃（无结冰） 相对湿度 ：45 ～ 85%RH（无结露） **保存**环境温度：-45 ～ +80℃（无结冰）
最小直接开路动作力	80N
至直接开路动作功能的最小动作距离	4.0mm
最大动作**距离**	4.5mm
接触电阻	50mΩ以下（初始值）
绝缘电阻	100MΩ以上（500V DC兆欧表）
过电压**类型**	Ⅱ
脉冲耐电压	2.5kV
污染等级	3
切换频率	900次／小时
机械性使用寿命	25万次以上
电气性使用寿命	10万次以上 25万次以上（24V AC/DC 100mA）
抗冲击性	误动作：$150m/s^2$ 耐久性：$1000m/s^2$
耐振动	误动作：10 ～ 500 Hz、单振幅0.35 mm、加速度 $50\ m/s^2$ 耐久性：10 ～ 500 Hz、单振幅0.35 mm、加速度 $50\ m/s^2$
操作部保护等级	IP65（面板前面：IEC60529）
端子部保护等级	IP20（安装XW9Z-VL2MF时）
短路保护装置	250V/10A保险丝 （Type aM IEC60269-1 / IEC60269-2）
条件性短路电流	1000A
接线螺丝推荐拧紧扭矩	0.6 ～ 1.0N·m（螺丝端子型）
锁紧环推荐**拧紧**扭矩	2.5 N·m
对应电线	0.75 ～ 1.25mm^2（AWG18 ～ 16）
挂锁与HASP的总重量（仅限挂锁）	1500g以内
强化绝缘（IEC60664-1）	**带**电部与金属框间

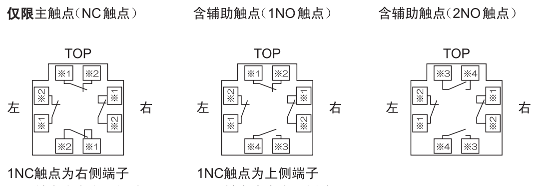
注1）仅限紧急停止用（操作按钮颜色：红色、鲜红色）。

8 触点排列图（底视图）

☐**接线螺丝型**

・XW1E-BV, XN4E-BL（非照明型）

仅**限**主触点（NC触点） 含辅助触点（1NO触点） 含辅助触点（2NO触点）

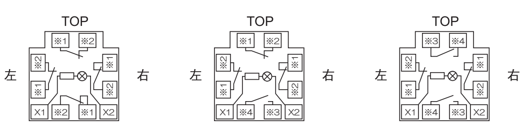


1NC触点为右侧端子
2NC触点为左右两侧端子
3NC触点为上、左、右侧端子

1NC触点为上侧端子
2NC触点为左右两侧端子

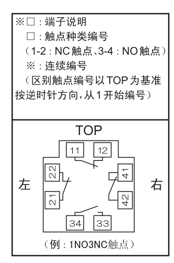
・XW1E-LV, XN4E-LL（照明型）

仅**限**主触点（NC触点） 含辅助触点（1NO触点） 含辅助触点（2NO触点）



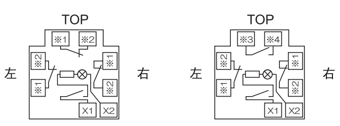
1NC触点为右侧端子
2NC触点为左右两侧端子
3NC触点为上、左、右侧端子

1NC触点为上侧端子
2NC触点为左右两侧端子



・XW1E-TV, XN4E-TL（连动照明型）

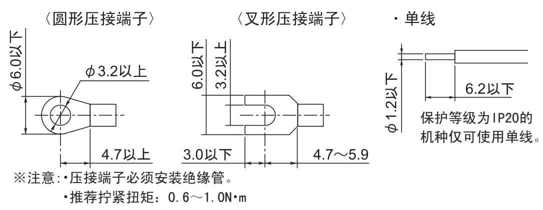
仅**限**主触点（NC触点） 含辅助触点（1NO触点）



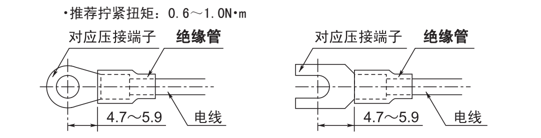
2NC触点为左右两侧端子
3NC触点为上、左、右侧端子

9 接线螺丝型对应压接端子

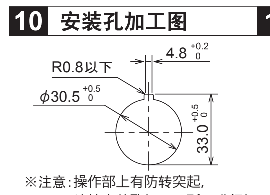
〈圆形压接端子〉 〈叉形压接端子〉 ・单线



※注意：・压接端子必须安装绝缘管。
・推荐拧紧扭矩：0.6～1.0N•m

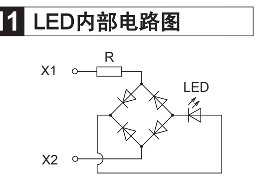


10 安装孔加工图



※注意：操作部上有防转突起，
请按安装孔加工图所示进行加工。

11 LED内部电路图

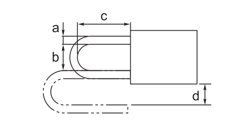


12 对应挂锁、搭扣（HASP）（仅限挂锁加锁型紧急停止开关）

对应挂锁和搭扣（HASP）如下图所示。
挂锁尺寸

a尺寸	b尺寸	c尺寸	d尺寸
7mm以下	19mm以上	39mm以上	15mm以上注2)

注2） 挂锁直接在开关侧面进行锁定时d尺寸为6mm以上。



推荐搭扣

厂商	型号
进和	SHH002
Panduit	PSL-HD3 PSL-1A
Master Lock	420 421

市面销售的挂锁和搭扣（HASP）有各种形状、尺寸，使用前请务必确认实物。使用的挂锁和搭扣（HASP）的总重量为1500g以下。使用时请勿超过此规定重量，以免引起开关的误动作或损坏。

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