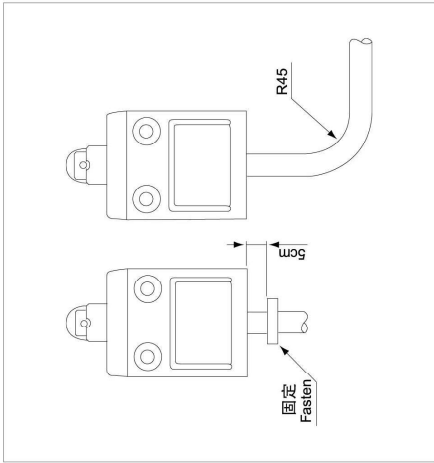


TZ-3 防水限位开关 Waterproof Limit Switch

配线注意事项 Fastening Of The Switch Cable

配线需注意于离开关 5cm 处须加以固定，而电线之弯曲半径不得小于 R45cm，注意勿伤及电线绝缘体，以避免电线漏电情形。

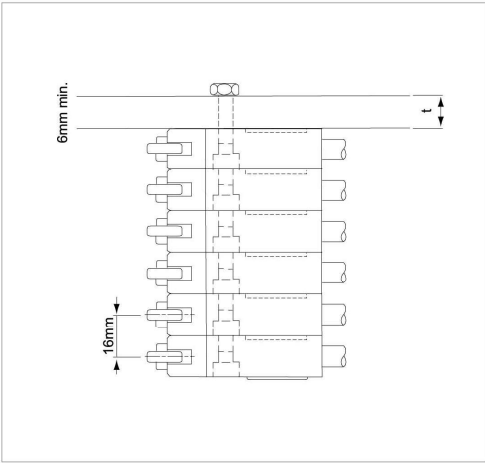
The switch bodies are fixed with resin. To avoid stressing the cable and switch body, fasten the switch at 5 cm or farther away from the switch body, should the wire be bent, the bending radius shall be at least 45mm.



多连接使用的场合 Switch Bank Mounting

需连接多组使用的场合时，最多可连接 6 组开关，连接时，开关表面之凹凸槽相互配合，另板厚 t 之尺寸应在 6mm 以上为适当。

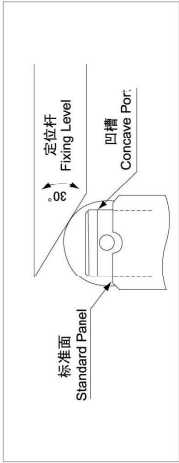
A maximum of six switches may be mounted together as a switch bank. During the installation, the convex part of the switch back. The mounting panel shall be 6mm or thicker.



安装注意事项 Installation

凸轮与定位杆等形状，频率及动作后移动薄，将会影响使用寿命与精度，因此建议定位杆之角度约 30°，而定位杆之表面粗糙度，以上，硬度 HVA400-500，在设定开关之行程时，凹沟必须高于标准面之上，为最适当之位置。

The service life and accuracy of switches will be effected by the shape of actuator operation frequency & over travel. So the angular of the fixing level should be about 30° , the surface finish of the fixing level should be over, the hardness is from HVA400-500. When installing, the position of the concave part should be above the standard panel



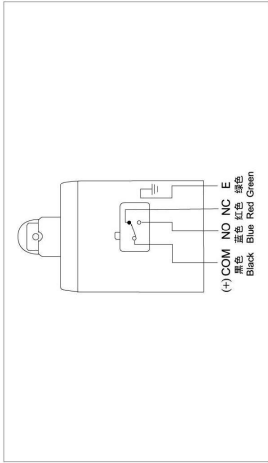
安装注意事项 Mounting

请依下表所示选择最适当之旋转扭力，施行做紧作业，以避免伤害开关本体。

Recommended tightening torque according to the following form.

编号	Model	螺丝尺寸 Screw type	最适当之旋转扭力 Torque
1		M5 六角孔螺栓之固定螺丝 No fastening screws	43.4-52lb.in (150-60kgf.cm)
2		头径 M3.5 之安装螺丝 M3.5 installing screws	6.9-7.9lb.in (8-9kgf.cm)

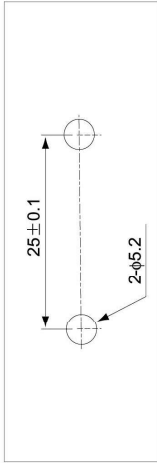
接点型式 Contact Types



装配孔之尺寸 Mounting Holes

安装板发生弯曲或凸起之状态，会造成安装上之不良，安装板请经筛选确认后，再予以使用。

Mount the switch body to a rigid mounting panel using two M5 screws.



特征 Features

- 强制断开动作装置 (仅 NC 接点)，可以在发生叠接点熔断等故障时断开接点。
- 标准的接点保证了接触的高可靠性，可用于标准负载及微小负载。
- 强化了顶部密封结构，以提高密封性能。
- 内藏接点座具有速动型：1NC/1NO、2NC、慢动型：1NC/1NO、2NC
- Forced open action device (NC contacts only), it can disconnect the contact when the contact has fusing and other failures.
- Standardized gold-plated contacts provide high contact reliability. Can be used with both standard loads and microloads.
- Strengthened top seal structure improves the sealing performance.
- Built-in contact holder has fast-action type: 1NC/1NO, Slow-action: 1NC/1NO and 2NC

特性 Characteristics

保护等级 *1 Protection level*1	IP66
寿命 *2 Life*2	电气 Electrical 50 万次以上 (AC250V 3A、电阻负载)*3 More than 50,000 times (AC250V 3A, resistive load)*3 30 万次以上 (AC250V 10A、电阻负载) More than 30,000 times (AC250V 10A, resistive load)
操作速度 Operating speed	1 ~ 500mm/s (T4N-1120)
操作频率 Operating frequency	最大 30 次/min Max. 30 times/min
接触电阻 Contact resistance	25mΩ 以下 25 mΩ or less
最小使用负载 *4 Minimum working load *4	DC5V 1mA 电阻负载 (N 标准参考值) JmA (resistive load below DC5V (N standard reference value))
额定绝缘电压 (UI) Rated insulation voltage (UI)	300V
防触电保护等级 Protection class	Class II (双重绝缘) Class II (double insulated)
污染度 (使用环境) Pollution degree (environmental condition)	污染度 3 (EN60947-5-1) Pollution degree 3 (EN60947-5-1)
耐电压 Withstand voltage	同极端子间: 2.5kV 异极端子间: 4kV Between homopolar terminals: 2.5kV Between heteropolar terminals: 4kV
绝缘电阻 Insulation resistance	端子间和非充电金属端子: 6kV Between terminals and uncharged metal parts: 6kV 100MΩ 以上 Above 100MΩ
接点间隙 Contact gap	最小 2 × 0.5mm 速动型、 最小 2 × 2mm 慢动型 Minimum 2 × 0.5mm quick-action type, Minimum 2 × 2mm slow-action type
振动 Vibration	浪动作 Vibration 10 ~ 55Hz 0.75mm 单振幅 1.000m/s ²
冲击 Impact	浪动作 Vibration 300m/s ²
环境温度 Ambient temperature	-20 ~ +70°C (无结冰、结露) -20 ~ +70°C (No ice or dew)
环境湿度 Ambient humidity	95%RH 以下 Less than 95% RH
质量 Weight	约 75g (T4N-4120) About 75g (T4N-4120) 约 83g (配连接器) About 83g (With gland)

- 注 1. 上述值为初始值。
2. 一旦接点连接标准负载，就可用于连接更大、更重的负载。否则可能导致接点表面粗糙，从而失去接触可靠性。
(1) 保护等级是依据 (EN60947-5-1) 规定的测试法得出的。使用前务必在实际使用的负载、条件下输入其密封性。开关基本具有防尘、防尘结构，但应尽可能保持头部在没有任何粉尘、油渍、化学物质的场所进行使用。否则可能导致导电接触、损坏或故障。
(2) 耐久性的条件是使用环境湿度 5°C ~ 35°C、使用环境湿度 40% ~ 70% RH。
(3) 其他特殊条件请另行咨询。
(4) 使用环境温度为 35°C 以上时，禁止使用 2 回路以上的 3A/AC250V 负载。
(5) 这个值是指开关频率、环境温度、可靠性等综合因素影响而不同。请事先在实际负载上运行确认。

T4N 小型安全限位开关 Miniature Safety Limit Switch



型号说明 Model Designations

T4N - ④ ① ② ③

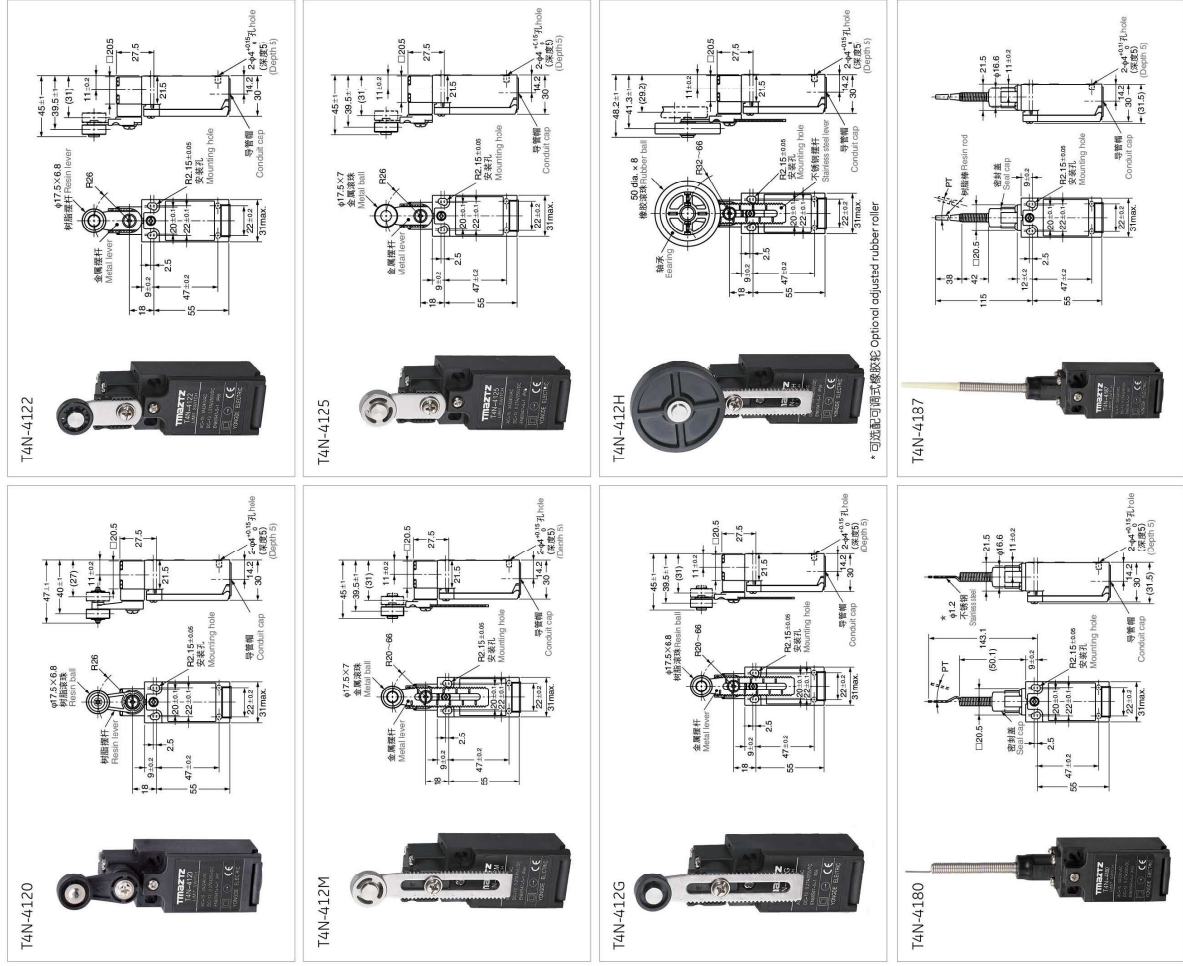
项目 Item	代号 Code	说明 Description
① 导管 / 连接器尺寸 Conduit / connector size	1	Pg13.5 (1 号管型) Pg13.5 (1 conduit type)
	2	G1/2 (1 号管型) G1/2 (1 conduit type)
	4	M20 (1 号管型) M20 (1 conduit type)*
	5	Pg13.5 (2 号管型) Pg13.5 (2 conduit type)
	6	G1/2 (2 号管型) G1/2 (2 conduit type)
	8	M20 (2 号管型) M20 (2 conduit type)
② 内藏开关 Built-in switch	1	1NC/1NO (速动型) 1NC/1NO (quick-action type)
	2	2NC (速动型) 2NC (quick-action type)
	A	1NC/1NO (慢动型) 1NC/1NO (slow-action type)
	B	2NC (慢动型) 2NC (slow-action type)
	20	滚珠型 (树脂型) 滚珠型 (树脂型)
	22	滚珠型 (金属型) 滚珠型 (金属型)
③ 头部及传动杆 Head and driving rod	25	滚珠型 (金属型) 滚珠型 (金属型)
	26	可调滚珠型 (金属型) 可调滚珠型 (金属型)
	2H	可调滚珠型 (金属型) 可调滚珠型 (金属型)
	2M	可调滚珠型 (金属型) 可调滚珠型 (金属型)
	31	顶部柱型 Top plunger type
	32	顶部柱型 Top plunger type
④ 塑料棒型 Plastic stick type	62	单侧型 单侧型 (水平)
	72	单侧型 单侧型 (垂直)
	80	单侧型 单侧型 (垂直)
	87	单侧型 单侧型 (垂直)
	88	单侧型 单侧型 (垂直)
	89	单侧型 单侧型 (垂直)

* 导管连接器尺寸规格 M20 x 1.5 M20x1.5 cable gland that can be equipped

- 注 1. The above values are initial values.
2. Once the contact is connected to a standard load, it can not be used to connect a smaller load. If so, the contact may result in rough surface, thus losing contact reliability. Please ensure its sealing under actual environmental conditions before use. The switch has hot dust and oil resistance structure, but it should be used in places without dust, oil and chemicals. Otherwise it may lead to premature wear, damage or malfunction.
(2) The durability is for ambient temperature of 5°C ~ 35°C and humidity of 40% to 70% RH.
(3) For additional details, please contact us.
(4) The values will vary with different switching frequency, environmental conditions, reliability level and other factors. Please confirm on the actual load in advance.

T4N 小型安全限位开关 Miniature Safety Limit Switch

外观和尺寸 Appearance and Dimension



* 不锈钢轴和塑料杆的使用范围从前端 35mm 以内，整个动作在 70mm 以内

* Use of application of stainless steel washers and plastic stick are within 35mm from the front end, the entire action is within 70mm

T4N-R 手动复位限位开关 Manual Reset Limit Switch

特征 Features

- 强制断开动作装置（仅 NC 触点），可以在发生触点熔断等故障时断开接点。
- 标准的银金触点保证了接触的高可靠性，可用于标准负载及微小负载。
- 接点形式 1NC/1NO 及 2NC（仅限慢动型）。
- Forced open action device (NC contacts only), it can disconnect the contact when the contact has fusing and other failures
- Standardized gold-cld contacts provide high contact reliability. Can be used with both standard loads and microloads
- Contact forms 1NC/1NO and 2NC (only slow type)

特性 Characteristics

保护等级 *1 Protection level*1	IP66
寿命 *4 Life *4	50 万次以上 AC250V 3A、电阻负载 *3 More than 50,000 times AC250V 3A, resistive load *3 30 万次以上 AC250V 10A、电阻负载 *3 More than 30,000 times AC250V 10A, resistive load
操作速度 Operating speed	1 ~ 500mm/s (T4N-1A20R)
操作频率 Operating frequency	最大 30 次/min *4a, 30 times/min
接触电阻 Contact resistance	25mΩ 以下 25 mΩ or less
最小使用负载 *4a Minimum working load *4a	DC5V 1mA 电阻负载 (N 标准参考值) Link resistive load below 25Ω (N standard reference value)
额定绝缘电压 (UI)	300V
防触电保护等级	Class II 双重绝缘
防触电保护等级	Class II (double insulated)
污染度 (使用环境) Pollution degree (environmental condition)	污染度 3 (IE60947-5-1) Pollution degree 3 (IE60947-5-1)
耐压 Withstand voltage (IE60947-5-1)	同极间端子: 2.5kV Between homopolar terminals: 2.5kV 异极间端子: 4kV Between heteropolar terminals: 4kV 各端子和非带电金属部件间: 6kV Between terminals and uncharged metal parts: 6kV 100MΩ 以上 Above 100MΩ
绝缘电阻 Insulation resistance	最小 2 × 0.5mm 慢动型、 最小 2 × 2mm 慢动型、 Minimum 2 × 0.5mm quick-action type, Minimum 2 × 2mm slow-action type
接点间隙 Contact gap	10 ~ 55Hz 0.75mm 单振幅 10 ~ 55Hz 0.75mm single amplitude
振动 Vibration	1000m/s ²
冲击 Impact	300m/s ²
环境温度 Ambient temperature	-20 ~ +70°C (无结冰、结露) -20 ~ +70°C (No ice or dew)
环境湿度 Ambient humidity	95%RH 以下 less than 95% RH
重量 Weight	约 92g (T4N-4A20R) About 92g (T4N-4A20R) 约 100g (配连接器) About 100g (With gland)

注 1. 上述值为初始值。

2. 一旦接点连接标准负载后，就不可用于连接更大容量的负载，否则可能导致接触电阻增大，从而产生故障。

(1) 防护等级为 IP66，开关本体具有防尘、防水功能，但可能因密封头存在没有密封粉、油污、化学品的渗入而产生故障，因此可能产生故障、损坏或故障。

(2) 耐久性的条件是使用环境温度 5°C ~ 35°C、使用湿度 40% ~ 70% RH。

其他使用条件是参照使用说明书。

(3) 使用环境温度 35°C 以上时，禁止使用 2 回路以上的 3A/AC250V 负载。

(4) 这个值会因开关频率、环境条件、可靠性等影响因素而不同，请事先在实际负载上进行确认。



型号说明 Model Designations

T4N - ④ ③ ② ① ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰ ⑱ ⑲ ⑳ ㉑ ㉒ ㉓ ㉔ ㉕ ㉖ ㉗ ㉘ ㉙ ㉚ ㉛ ㉜ ㉝ ㉞ ㉟ ㊱ ㊲ ㊳ ㊴ ㊵ ㊶ ㊷ ㊸ ㊹ ㊺ ㊻ ㊼ ㊽ ㊾ ㊿

项目 Item	代号 Code	说明 Description
1	Pg13.5 (1 号管型)	Pg13.5 (1 conduit type)
2	G1/2 (1 号管型)	G1/2 (1 conduit type)
4	M20 (1 号管型)	M20 (1 conduit type)*
6	G1/2 (2 号管型)	G1/2 (2 conduits type)
8	M20 (2 号管型)	M20 (2 conduits type)
A	1NC/1NO (慢动型)	1NC/1NO (slow-action type)
B	2NC (慢动型)	2NC (slow-action type)
20	滚珠接杆型 (树脂接杆)	Roller lever (resin lever, resin ball)
22	滚珠接杆型 (金属接杆)	Roller lever (metal lever, resin ball)
25	滚珠接杆型 (金属接杆)	Roller lever (metal lever, metal ball)
26	滚珠接杆型 (Form Lock (金属接杆, 树脂接杆))	Roller lever (metal lever, Form Lock (metal lever, resin ball))
2H	滚珠接杆型 (Form Lock (金属接杆, 橡胶接杆))	Roller lever (metal lever, Form Lock (metal lever, rubber ball))
2M	滚珠接杆型 (Form Lock (金属接杆, 金属接杆))	Roller lever (metal lever, Form Lock (metal lever, metal ball))
31	顶杆柱塞型	Top plunger type
32	顶杆柱塞接杆型	Top plunger ball type
62	单侧滚珠接杆型 (水平)	Unilateral roller lever ball type (horizontal)
72	单侧滚珠接杆型 (垂直)	Unilateral roller lever ball type (vertical)

* 号管接杆尺寸规格 M20 × 1.5 M20 × 1.5 cable gland that can be equipped

Note 1. The above values are initial values.

2. Once the contact is connected to a standard load, it can not be used to connect a smaller load. If so, the contact may result in rough surface, thus losing contact reliability.

(1) The protection level is gotten based on test method of (IE60947-5-1). Please make sure its sealing under actual environmental conditions before use. The switch box has dust and oil resistance structure, but it should be used in places without dust, oil and chemicals. Otherwise it may lead to premature wear, damage or malfunction.

(2) The durability is for ambient temperature of 5°C ~ 35°C and humidity of 40% to 70% RH. For additional details, please contact us.

(3) When the ambient temperature is above 35°C, more than 2 circuits 3A/250VAC loads are prohibited.

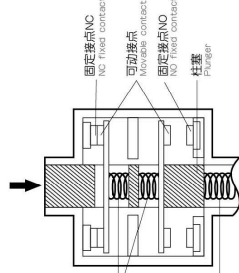
(4) The values will vary with different switching frequency, environmental conditions, reliability level and other factors. Please confirm on the actual load in advance.

T4N-R 手动复位限位开关 Manual Reset Limit Switch

强制断开构造 Forced disconnect structure

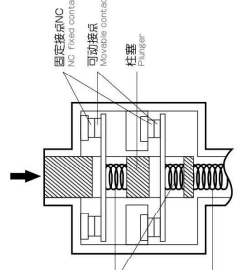
1NC、1NO 接点 (慢动作型)
1NC and 1NO contacts (slow-action type)

仅限 NC 接点具有强制断开构造。
当发生异常时，通过按下柱塞，可以分离接点，切断回路。(符合 EN60947-5-1 强制断开操作)。
Only NC contacts forced disconnect structure.
When melting occurs, the contact can be isolated by pressing the plunger to cut off the loop. (in accordance with EN60947-5-1 force disconnect operation).



2NC 接点 (慢动作型)
2NC contacts (slow-action type)

双侧 NC 接点具有强制断开构造。
当发生异常时，通过按下柱塞，可以分离接点，切断回路。(符合 EN60947-5-1 强制断开操作)。
When melting occurs, the contact can be isolated by pressing the plunger to cut off the loop. (in accordance with EN60947-5-1 force disconnect operation).



接点形式 Contact form

型号 Model	接点 Contact	接点形式 Contact form	动作模式 Operation mode	说明 Explanation
T4N- □ A □ R (慢动作型) (Slow-action type)	1NC/1NO	11-12 33-34	常通 Conductive	仅 NC 接点 (11-12) 具有强制断开功能 (⊖)。 Only NC contact (11-12) has forced disconnect function (⊖). 接点 (11-12) 和 (33-34) 可作异极性使用。
	1NC/1NO	11-12 33-34	常通 Conductive	仅 NC 接点 (11-12) 具有强制断开功能 (⊖)。 Only NC contact (11-12) has forced disconnect function (⊖). 接点 (11-12) 和 (33-34) 可作异极性使用。
T4N- □ B □ R (慢动作型) (Slow-action type)	2NC	11-12 31-32	常通 Conductive	仅 NC 接点 (11-12) 具有强制断开功能 (⊖)。 Only NC contact (11-12) has forced disconnect function (⊖). 接点 (11-12) 和 (31-32) 可作异极性使用。
	2NC	11-12 31-32	常通 Conductive	仅 NC 接点 (11-12) 具有强制断开功能 (⊖)。 Only NC contact (11-12) has forced disconnect function (⊖). 接点 (11-12) 和 (31-32) 可作异极性使用。

动作特性 Action characteristics

型号 Model	T4N-□□ 20R	T4N-□□ 22R	T4N-□□ 26R	T4N-□□ 2HR	T4N-□□ 31R	T4N-□□ 32R	T4N-□□ 62R	T4N-□□ 72R
额定力 LF	6.45N	6.45N	5.6V	5.4N	10.8N	10.8N	7.5	7.9N
额定行程 IT	55°	55°	55°	55°	4.5mm	4.5mm	7mm	7mm
额定行程 PT1	18-27°	18-27°	18-27°	18-27°	2mm	2mm	4mm	4mm
额定行程 PT2	(44°)	(44°)	(44°)	(44°)	(2.9mm)	(2.9mm)	(4.3mm)	(4.3mm)
额定行程 OP	--	--	--	--	34±0.5mm	44±0.8mm	53±0.8mm	27±0.8mm
总行程 T	80°	80°	80°	80°	(6mm)	(6mm)	(9mm)	(9mm)
强制断开预行程 DOT	50°	50°	50°	50°	3.2mm	3.2mm	5.8mm	5.8mm
强制断力 DOF	20N	20N	20N	20N	20N	20N	20N	20N

- 注: (1) 2NC 接点的断路器 / 开器动作的瞬时性有所参差，使用时请务必确认。
(2) 以额定行程 32mm 时的额定值。
(3) NC 接点为开型 (OFF) 状态时的 PT 值。
(4) NO 接点为开型 (ON) 时的 PT 一般值 (仅 NC/1NO 型)。
(5) 参考值。
(6) 负载和行程的值为额定值。为确保安全，请务必保持在额定行程和行程范围内。
Note: (1) The simultaneity of ON / OFF operation of 2NC contacts have difference, please make sure before using it.
(2) The property value when length of lever is 32mm.
(3) PT value when NC contact is at open (OFF) state.
(4) PT common value when NO contact is at close (ON) state (only for 1NC/1NO types).
(5) Reference values.
(6) Load and travel values of forced disconnect structure. To ensure safety, be sure to remain within the upper and lower range.

T4N-R 手动复位限位开关 Manual Reset Limit Switch

外观和尺寸 Appearance and Dimension

