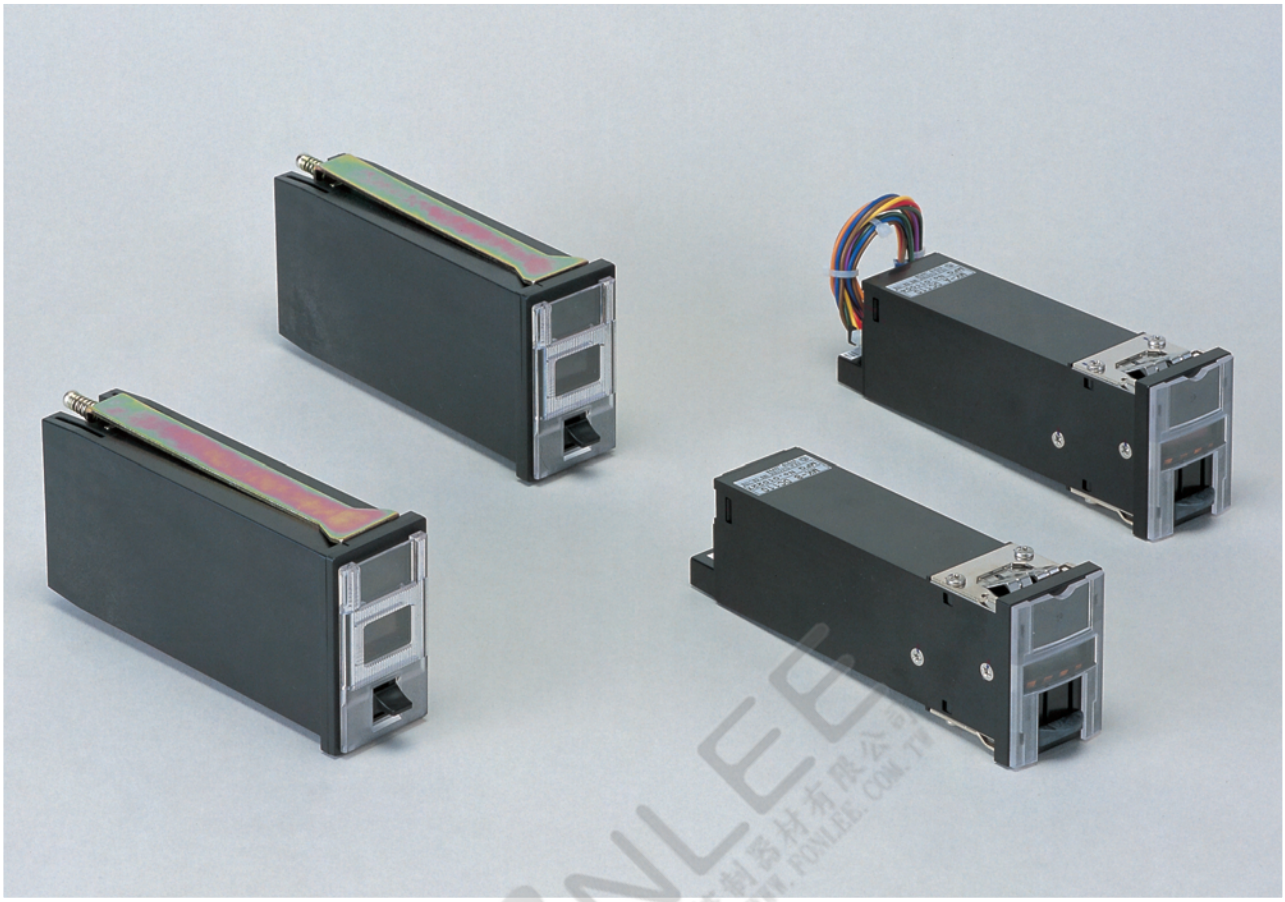
TARGET TYPE FAULT INDICATORS



FEATURES

- The built-in switching contacts is applicable for the output from 4 circuits with different functions. The use of this indicator allows saving the auxiliary relays.
- The versions for voltage and current are so designed as to prevent wrong insertion.
- The display element is a plug-in type facilitating maintenance and checks (or replacement).
- A no-voltage one-shot pulse contact may be incorporated.
- A variety of models with different combinations of output contacts are available.
- The indicator is housed in a plastic case and can be mounted either independently or in an assembly.

SPECIFICATIONS (RATINGS, PERFORMANCE)

Specification \ Type	TK	MK
Rated insulation voltage	250V	
Operating temperature range	–22 to 55°C	
Operating humidity range	45 to 85%	
Storing temperature	–40 to 70°C	
Shape	Embedded in switchboard, with 1 element	
Mounting panel	1 to 3.2mm	
Inclination of applicable panel	30 degrees max. from vertical plane	
Surface cover color	JIS (Munsell color) code: N1.5 7.5BG4/1.5 (N1.5 only for MK type)	

TARGET TYPE FAULT INDICATORS

ORDERING METHOD

Select from the following product coding.

PRODUCT CODING

TK type

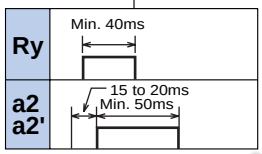
TKL 121□-DC11-B

Basic type

Model for each contact configuration (See the list of function.)

L	For voltage
H	For current

W	Double-coil version



Surface cover color

B	N1.5
BG	7.5BG4/1.5

	Abbreviation	Rating (voltage · current)	Coil resistance value (Ω)
L	**DC02**	24V DC	200Ω ± 10%
	DC04	48V DC	1,170Ω ± 10%
	DC11	100/110V DC	5,000Ω ± 10%
	DC12	125V DC	5,400Ω ± 10%
	DC22	200/220V DC	18,600Ω ± 10%
	AC11	100/110V AC	5,000Ω ± 10%
	AC22	200/220V AC	18,600Ω ± 10%
H	**DC0.5A**	0.5A	3Ω ± 10%
	DC0.7A	0.7A	2.0Ω ± 10%
	DC1A	1A	0.75Ω ± 10%
	DC2A	2A	0.35Ω ± 10%

MK type

MK-A DC110

Basic type

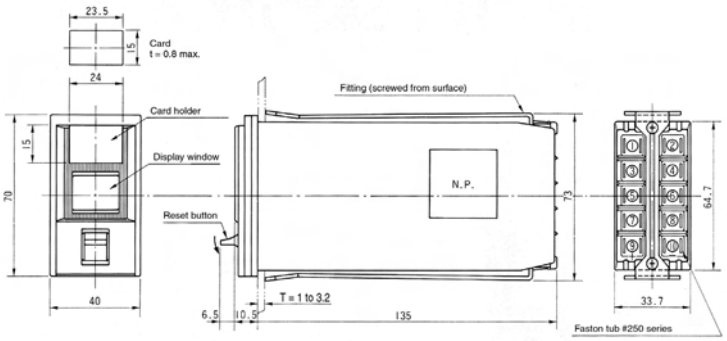
Circuit type

Code	Type
A	With built-in relay
B	Display only

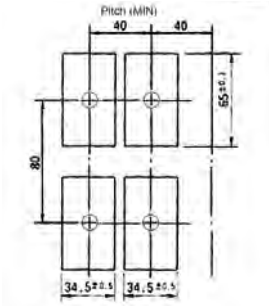
Voltage	100/110V DC

TK TYPE

TK TYPE



●Mounting hole size



● Operation ··· Dual modes: single-display manual resetting and multi-display automatic resetting

● Specification of element

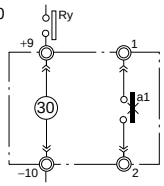
Items \ Type	For voltage	For current
Rating	Continuous at rated value	
Overload tolerance	Coil temperature rise of 55°C max. in the maximum operating range (1.3 times the rating for 3 hours)	30S at 500%
Minimum operating value	70% max. of rating	80% max. of rating
Contact current capacity	3A 110V DC	
Contact breaking capacity	R load: 0.4A (110V DC) 0.2A (220V DC) L load: 0.1A (110V DC) 0.03A (220V DC) L/R = 12 ms	
Operating time (rated voltage and current)	a1: 60±15 ms a2: 40±10 ms a3: 90±10 ms	a1: 50±15 ms a2: 20±10 ms a3: 80±10 ms
Pulse contact time	50 to 70 ms	
Display panel	In normal use: N1.5 At failure: 2.5YR6/13 When failure persists: N1.5 and 2.5YR6/13 stripes	In normal use: N1.5 At failure: 2.5YR6/13 ————
Insulation resistance	Min. 50MW (500V DC)	
Withstand votage	Whole terminals and contact points: 2,000V AC/1 min. Between electric circuit and contact: 2,000V AC/1 min. Between contact circuits: 2,000V AC/1 min. Between open contacts: 1,000V AC/1 min.	
Lightning impulse	Between open contacts: 3,000V (1.2/50μs) Between live parts and live part to assembly mounting panel: 4,000V (1.2/50μs)	
Durability	10,000 times min. each for electrical and mechanical durability	
Vibration resistance	Frequency: 16.7 Hz Doubloe amplitude: 4 mm Back-and-forth/horizontal/vertical for 10 minutes	
Shock resistance	Shock resistance: 30G Back-and-forth/horizontal: 2 times each	

TARGET TYPE FAULT INDICATORS

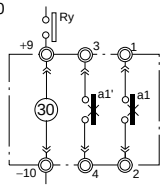
TK TYPE

CONTACT CONFIGURATION DIAGRAM

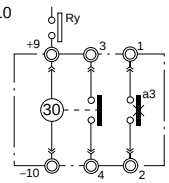
(1)TK□100



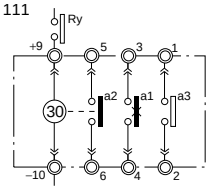
(2)TK□200



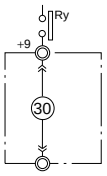
(3)TK□110



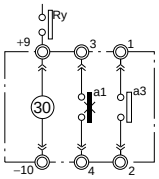
(4)TK□111



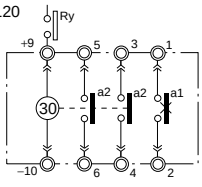
(5)TK□000



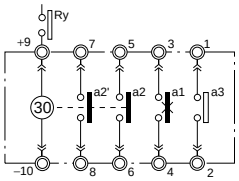
(6)TK□101



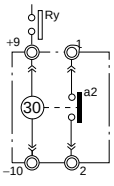
(7)TK□120



(8)TK□121



(9)TK□010



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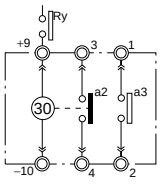

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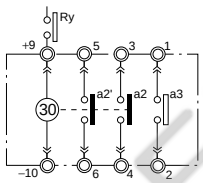
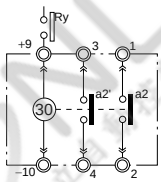
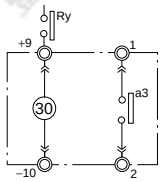


(12)TK□020



(13)TK□001



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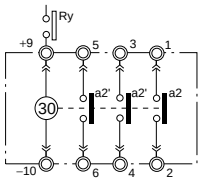
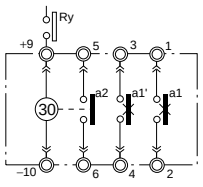
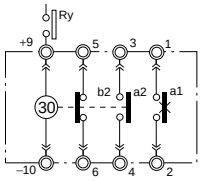


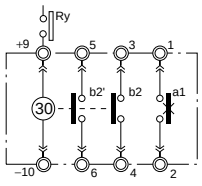
(15)TK□210



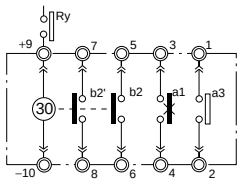
(16)TK□1AB0



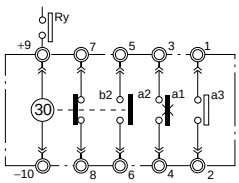
(17)TK□12B0



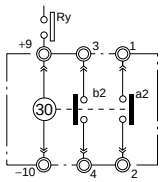
(18)TK□12B1



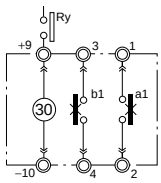
(19)TK□1AB1



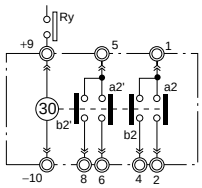
(20)TK□0AB0



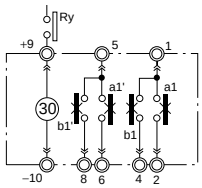
(21)TK□AB00



(22)TK□02C0



(23)TK□2C00



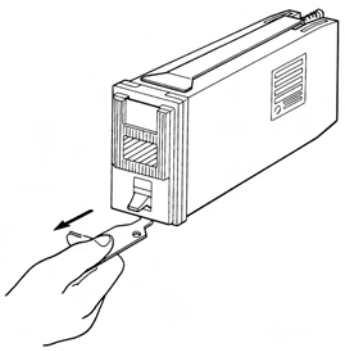
LIST OF FUNCTIONS

No.	Model for each contact configuration	Input rating		Output contact			Reference *Standard DC11 DC1A
		Voltage element (TKL)	Current element (TKH) (TKH···W)	Interlocked with display panel Manual resetting contact a1 b1	Interlocked with coil Automatic resetting contact a2 b2	Interlocked with display panel One-shot pulse contact a2 b2	
1	TK□100	○	○	1a	—	—	*
2	TK□200	○	○	2a	—	—	*
3	TK□110	○	○	1a	1a	—	
4	TK□111	○	○	1a	1a	1a	
5	TK□000	○	○	—	—	—	
6	TK□101	○	○	1a	—	1a	
7	TK□120	○	○	1a	2a	—	*
8	TK□121	○	○	1a	2a	1a	
9	TK□010	○	○	—	1a	—	
10	TK□011	○	○	—	1a	1a	
11	TK□021	○	○	—	2a	1a	
12	TK□020	○	○	—	2a	—	*
13	TK□001	○	○	—	—	1a	
14	TK□030	○	○	—	3a	—	
15	TK□210	○	○	2a	1a	—	
16	TK□1AB0	○	○	1a	1a1b	—	
17	TK□12B0	○	○	1a	2b	—	
18	TK□12B1	○	○	1a	2b	1a	
19	TK□1AB1	○	○	1a	1a1b	1a	
20	TK□0AB0	○	○	—	1a1b	—	
21	TK□AB00	○	○	1a1b	—	—	
22	TK□02C0	○	○	—	2c	—	
23	TK□2C00	○	○	2c	—	—	

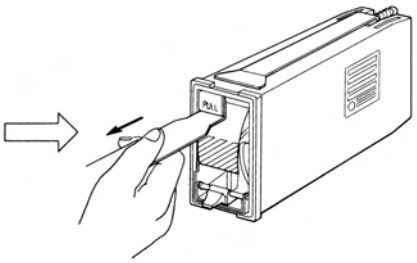
1. For the above □, specify L for voltage or H for current.
2. Contact configurations other than the above ones are also available. Contact the person in charge.

TK TYPE

DRAWING THE INTERNAL ELEMENT



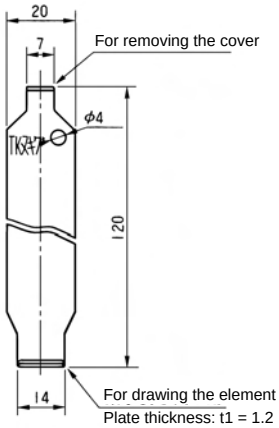
Removing the cover



Drawing the element

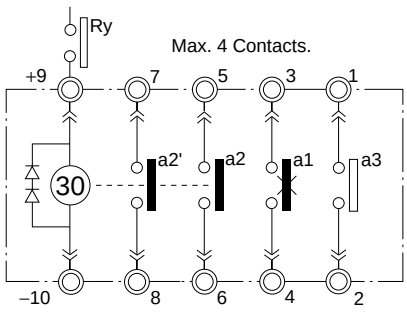
ACCESSORIES

TK remover



DESCRIPTION OF OPERATION

- When a operating coil is exited by a signal from the relay or other devices, the indication plate drops and the indication wicket changes the indication from normal black to orange (2.5YR6/13)
- Next, when the reset lever is pressed down, the indication plate is restored to its original position. If the fault is momentary and no input is now present, the normal black indication is restored. However, if the fault continues, an orange (2.5YR6/13)-and-black (N1.5) striped pattern appears to show the continuation of the fault because of the presence of input to the coil. When the fault is removed, the normal black indication is restored automatically
- Up to four contact circuits can be incorporated, as following diagram.
  Up to two manual-reset contact circuits linked with the indication plate, up to three auto-reset contact circuits linked with coils, and up to two one-shot pulse contact circuits linked with the indication plate can be incorporated in a unit. Contacts a or b are provided for each circuit.
- The one-shot pulse contact generates pulses only at the initial operational stage (50~70ms).



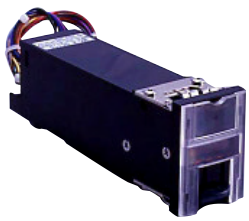
∗1: All the coils for voltage are added a counter induced-voltage absorption device.

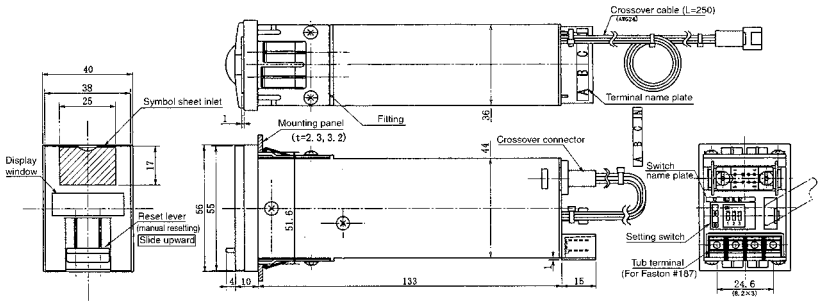
Failure detection contact		Ry	
Display panel	Black		
	Orange		
	Pattern of stripes		
Contact	Interlocked with display panel (manual)	a1	
	Interlocked with coil (automatic)	a2	
		a2'	
	One-shot pulse	a3	
Recovery operation			

TARGET TYPE FAULT INDICATORS

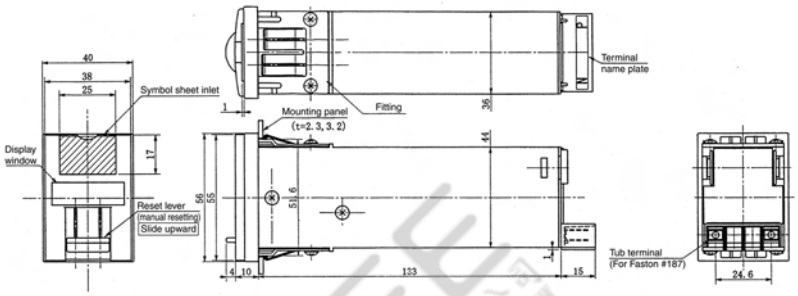
MK TYPE

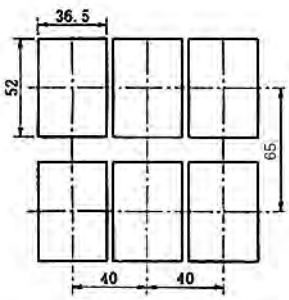
MK-A





MK-B

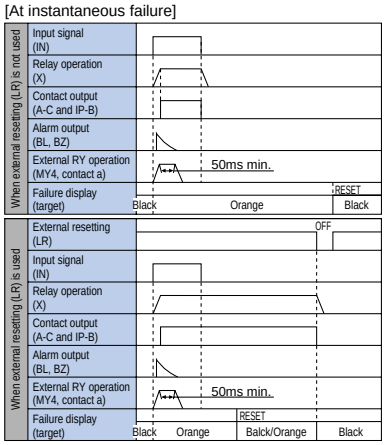




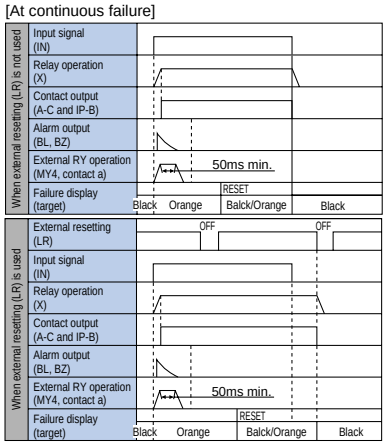
TIME CHART

MK-A

[At instantaneous failure]



[At continuous failure]

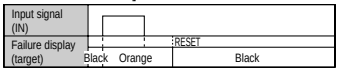


Failure (target)display	
Black	
Orange	
Black/ Orange	

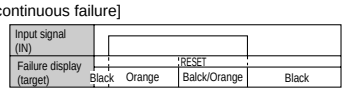
MK-B

● RESET: The target is manually reset.

[At instantaneous failure]



[At continuous failure]

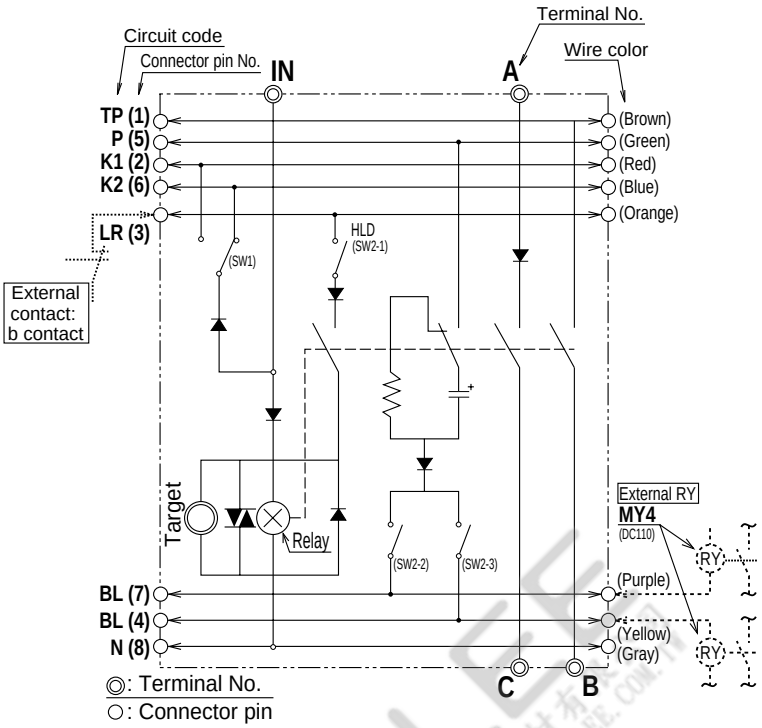


Failure (target)display	
Black	
Orange	
Black/ Orange	

MK TYPE

CIRCUIT DIAGRAM

MK-A



MK-B