



FLAG DROP TYPE FAULT INDICATOR



FEATURES

- The built-in switching contacts are applicable to the output from 4 circuits with different functions. The use of this indicator can save the auxiliary relays.
- The versions for voltage and current are so designed as to prevent wrong insertion.
- The inside element is a plug-in type, which facilitates maintenance and checks (or replacement).
- A no-voltage one-shot pulse contact can be incorporated.
- A variety of combinations of output contacts are available.

SPECIFICATIONS (RATINGS, PERFORMANCE)

Specification \ Type	TK
Rated insulation voltage (UI)	250V
Operating temperature	-22 to 55°C
Operating humidity	45 to 85%
Storing temperature	-40 to 70°C
Shape	Embedded in switchboard, with 1 element
Panel thickness	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)
Weight	450g



FLAG DROP TYPE FAULT INDICATOR

HOW TO ORDER Select from the following product coding.

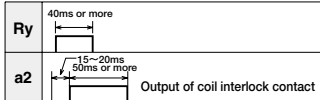
TK type

● Standard spec

TKL 121 -DC110-B

Basic type	Contact arrangement (see list of contact arrangement)		Coil spec		Front cover color	
	Code	Spec	Code	Spec	Code	Color
L	For voltage	(blank)	Standard coil spec		B	N1.5
H	For current	W	Double coil spec (1.0A DC only)		BG	7.5BG4/1.5

* Double coil spec time chart (High speed operation)



	Code	Rating (Voltage, Current)	Coil resistance (Ω)
L	DC024	24V DC	250 Ω
	DC030	30V DC	320 Ω
	DC048	48V DC	1,170 Ω
	DC110	100 / 110V DC	4,700 Ω
	DC125	125V DC	5,200 Ω
	DC220	200 / 220V DC	18,600 Ω
	AC110	100 / 110V AC	4,700 Ω
	AC220	200 / 220V AC	18,600 Ω
	AC240	240V AC	20,600 Ω
	H	DC0.5A	0.5A DC
DC0.7A		0.7A DC	2.0 Ω
DC1.0A		1.0A DC	0.75 Ω
DC2.0A		2.0A DC	0.35 Ω

● Power monitor spec (Normally exciting type)

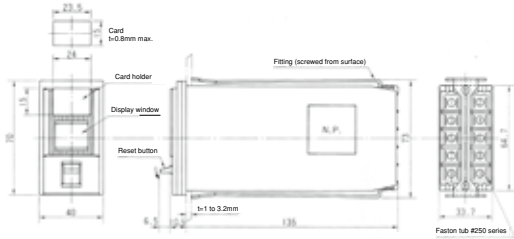
TKL 12B0 TX-DC110-B-O

Basic type	Contact arrangement (see list of contact arrangement)	Power monitor spec	Front cover color		Flag color (when power loses)	
			Code	Color	Code	Color
			B	N1.5	O	Orange
			BG	7.5BG4/1.5	R	Red

	Code	Rating (Voltage, Current)	Coil resistance (Ω)
L	DC024	24V DC	250 Ω
	DC030	30V DC	320 Ω
	DC048	48V DC	1,170 Ω
	DC110	100 / 110V DC	4,700 Ω
	DC125	125V DC	5,200 Ω
	DC220	200 / 220V DC	18,600 Ω
	AC110	100 / 110V AC	4,700 Ω
	AC220	200 / 220V AC	18,600 Ω
	AC240	240V AC	20,600 Ω
	H	DC0.5A	0.5A DC
DC0.7A		0.7A DC	2.0 Ω
DC1.0A		1.0A DC	0.75 Ω
DC2.0A		2.0A DC	0.35 Ω

PILOT LAMP & INDICATOR

TK TYPE



Normal condition (Black)



Fault condition (Orange)



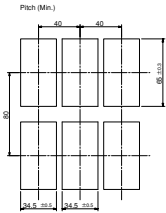
Continuous fault condition (Stripe pattern)

● Operation

: Manual resetting

: Automatic resetting

● Mounting hole size



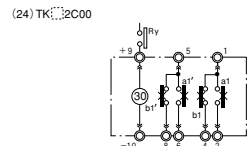
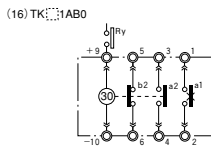
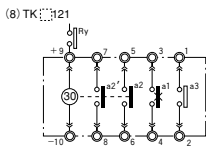
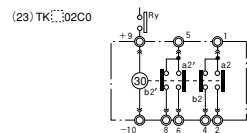
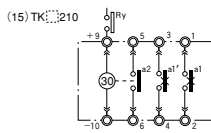
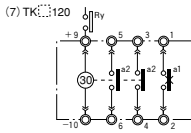
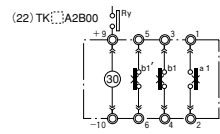
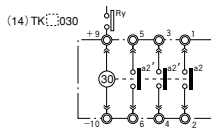
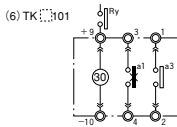
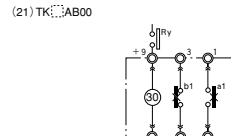
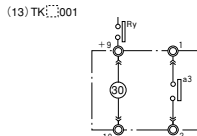
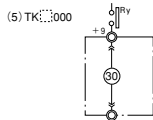
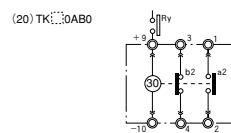
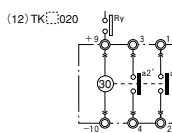
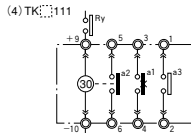
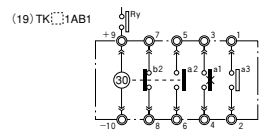
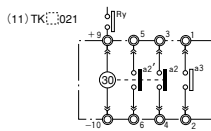
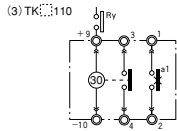
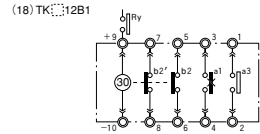
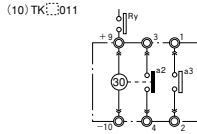
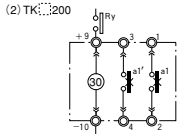
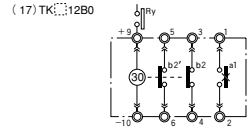
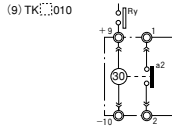
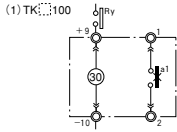
SPECIFICATIONS (RATINGS, PERFORMANCE)

Item	Type	Voltage operation type	Current operation type
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% of rating	80% of rating
Contact current-carrying capacity		3A	
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 = 12ms	
Operating time (at rated voltage and current)		a1 : 60±15ms a2 : 40±10ms a3 : 90±10ms	a1 : 50±15ms a2 : 20±10ms a3 : 80±10ms
Pulse contact time		50 to 70ms	
Display panel color (Munsell color)		In normal use: N1.5 (Black) At failure: 2.5YR6/13 (Orange) When failure persists: N1.5 and 2.5YR6/13 stripes	In normal use: N1.5 (Black) At failure: 2.5YR6/13 (Orange)
Insulation resistance		50MΩ or more (500V DC)	
Withstand voltage		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)	
Service life		10,000 times or more. each for electrical and mechanical life	
Vibration resistance		Frequency: 16.7 Hz Double amplitude: 4mm 10 min. in each of 3 axial directions	
Shock resistance		Shock resistance: 30G or more Each 2 axial directions: 2 times each	

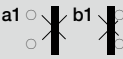




TK TYPE

CONTACT ARRANGEMENT DIAGRAM



LIST OF FUNCTIONS

No.	Model for each contact configuration	Input rating		Output contact		
		Voltage element (TKL)	Current element (TKH) (TKH...W)	Contact which interlocked with flag 	Contact which interlocked with coil 	One-shot pulse contact 
1	TK□100	○	○	a1×1	—	—
2	TK□200	○	○	a1×2	—	—
3	TK□110	○	○	a1×1	a2×1	—
4	TK□111	○	○	a1×1	a2×1	a3×1
5	TK□000	○	○	—	—	—
6	TK□101	○	○	a1×1	—	a3×1
7	TK□120	○	○	a1×1	a2×1	—
8	TK□121	○	○	a1×1	a2×2	a3×1
9	TK□010	○	○	—	a2×1	—
10	TK□011	○	○	—	a2×1	a3×1
11	TK□021	○	○	—	a2×2	a3×1
12	TK□020	○	○	—	a2×2	—
13	TK□001	○	○	—	—	a3×1
14	TK□030	○	○	—	a2×3	—
15	TK□210	○	○	a1×2	a2×1	—
16	TK□1AB0	○	○	a1×1	a2×1, b2×1	—
17	TK□12B0	○	○	a1×1	b2×2	—
18	TK□12B1	○	○	a1×1	b2×2	a3×1
19	TK□1AB1	○	○	a1×1	a2×1, b2×1	a3×1
20	TK□0AB0	○	○	—	a2×1, b2×1	—
21	TK□AB00	○	○	a1×1, b1×1	—	—
22	TK□A2B00	○	○	a1×1, b1×2	—	—
23	TK□02C0	○	○	—	c×2	—
24	TK□2C00	○	○	c×2	—	—

1. For the above □, specify L for voltage or H for current.

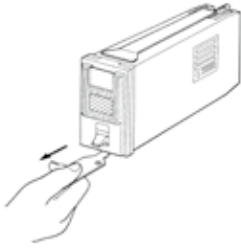
2. Please ask us when you need other contact type than the above.



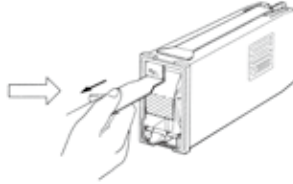
TK TYPE

HOW TO REMOVE THE INTERNAL ELEMENT

ACCESSORY

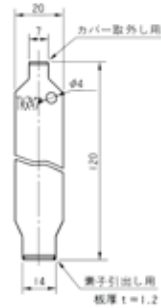


Removing the cover



Drawing the inside element

TK remover



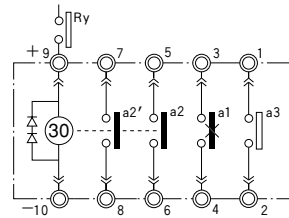
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OPERATIONAL INTRODUCTION

- When the failure detection contact of the outside protective relay is closed, the operating coil is excited, and the display panel falls off. The display window changes from black (N1.5) indicating the normal status to orange (2.5YR6/13) indicating the failure status.
- When the reset button is pressed, the display panel will be returned to blank. If the failure is instantaneous and no input is provided, the display window will return to the black display in the normal status. If the failure persists, however, the coil receives input and a pattern of stripes of orange and black is displayed indicating that the failure persists. Once the failure is rectified, the display will automatically return to the black display in the normal status.
- Max. 4 contacts are available.
Contacts interlocked with the display panel may be taken for a maximum of 2 circuits. Those interlocked with the coil may be taken for a maximum of 3 circuits. One-shot pulse contacts interlocked with the display panel may be taken for a maximum of 2 circuits. Each circuit is provided with contacts a and b.
- The one-shot pulse contacts output pulses (50 to 70 ms) at the initial operation only.

●Standard specification

Coil voltage					
Display color	Black	■	▨	▩	▪
	Orange		▨	▩	▪
	Stripe pattern	▨		▩	▪
Contact	Contact which interlocked with flag (a contact)	a1	▨	▩	▪
	Contact which interlocked with coil (a contact)	a2 · a2'	▨	▩	▪
	One-shot pulse	a3	▨		
Manual reset operation				↑	



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

●Power monitor specification (Normally excited type)

Coil voltage					
Display color	Black	■	▨	▩	▪
	Orange / Red	▨			
Contact	Contact which interlocked with flag (a contact)	a	▨	▩	▪
	Contact which interlocked with coil (b contact)	b	▨		
Manual reset operation				↑	

～ Remark ～

The coil is normally in excited status (black). Upon occurrence of a fault, the coil excitation is released, resulting in drop of the target (red). No continuing fault indicating function is provided.