PART4

TIMER

KDT–48 DIGITAL TIMER
KTM–AM MULTI–TIMER
KTM–3M TIMING RELAY

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COUNTER & TIMER



Quick Selection Guide

Category			Front Panel Size	Pin Type	Mounting Type	Model No.
Counter/Timer Dual use			72X72	-	Flush mounting type	KCT - 72
			72X36	-	Flush mounting type	
Counter			48X48	8 pin	Flush mounting type	KPC - 48
Timer	Digital Timer		48X48	8 pin	Flush mounting type	KDT - 48
	Analog Multi Timer		48X48	8 pin	Flush mounting type	KTM - AM8
			48X48	11 pin	Flush mounting type	KTM - AM11
	IC Timer	Basic	50X62	8 pin	Surface mounting type	
			50X62	8 pin	Flush mounting type	
		Twin Timer	50X62	8 pin	Surface mounting type	
			50X62	8 pin	Flush mounting type	
		48 Timer	48X48	8 pin	Flush mounting type	
		Mini Multi Timer	36X40	8 pin	Flush mounting type	
	Timing Relay		21X27.5	14 pin(8 pin for 2P model)	-	KTM - 3M
	Flicker		50X62	8 pin	Surface mounting type	
			49X62	8 pin	Flush mounting type	
Display Only			72X36	-	Flush mounting type	

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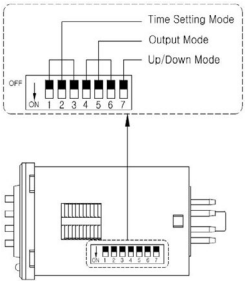
KDT–48 DIGITAL TIMER



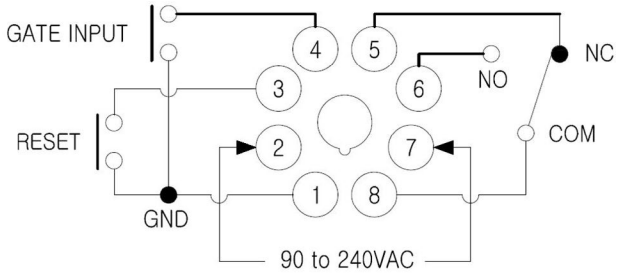
Specification

Display		Red LED(4 digits)
Wiring		8 pin Socket: KH-KTS-8, KH-RS-R8, KH-MR-8
Voltage		90~240VAC(50/60Hz)
Power Consumption		2.2VA
Returning Time		Power reset: 500ms/ Gate: 20ms
Output Ratings		250VAC 2A, 30VDC 2A(Resistive Load)
Output Relay Durability		Mechanical: 10,000,000 operations Electrical: 200,000 operations(Resistive Load)
Insulation resistance		min. 100MΩ(DC500V)
Dielectric strength		50/60Hz AC2,000V for 1 minute
Anti-noise resistance		Square wave(pulse width 1 ㎲) by noise simulator ± 2KV
Vibration	Resistance	10~55Hz at double amplitude: 0.75mm(X,Y,Z directions) for 1 hour
	Malfunction	10~55Hz at double amplitude: 0.5mm(X,Y,Z directions) for 10 min.
Shock	Resistance	30G, at 3 axis, 3 times
	Malfunction	10G, at 3 axis, 3 times
Accuracy		±0.01%
Protection		IP50
Ambient Temperature		-10~+55°C (not freezing condition)
Ambient Humidity		35~85% RH
Material		PC
Weight		96 g

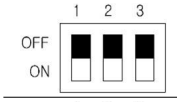
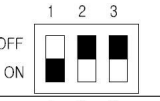
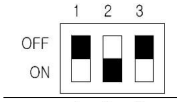
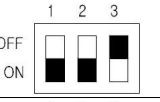
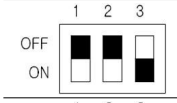
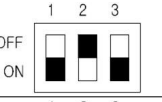
Function selection



Wiring diagram

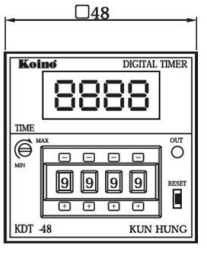


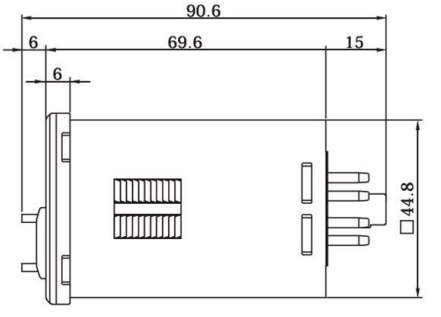
Time range selection

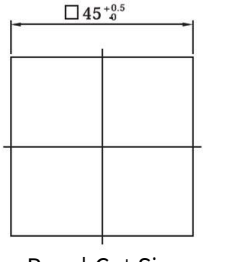
Position	UP mode	Position	DOWN mode
	999.9 sec		9,999 sec
	999.9 min		9,999 min
	999.9 hours		9,999 hours
	99 min 59 sec		99 hours 59 min

Dimensions

KDT-48





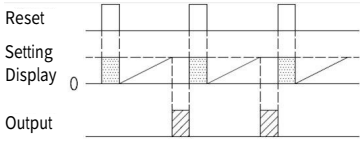
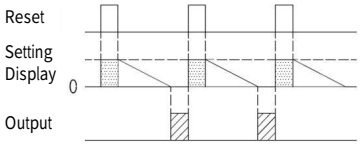
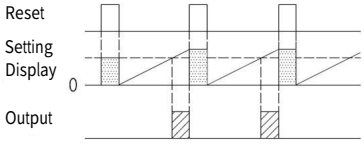
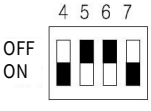
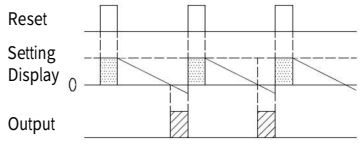
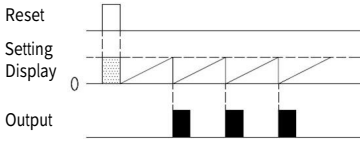
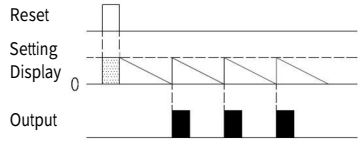
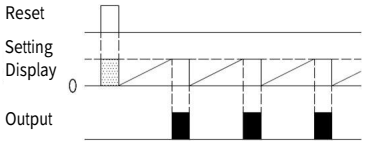
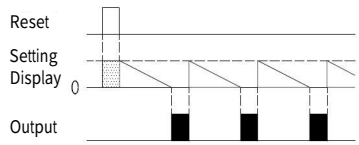
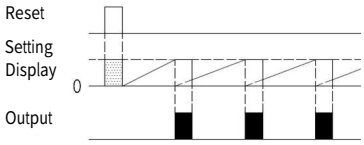
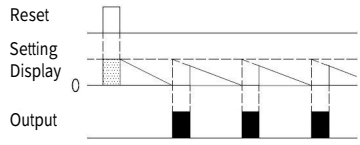
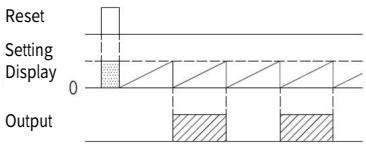
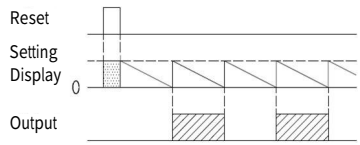
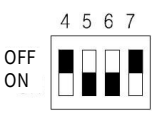
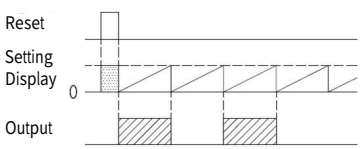
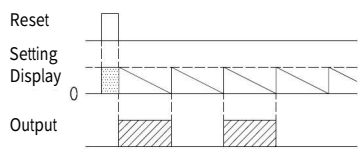
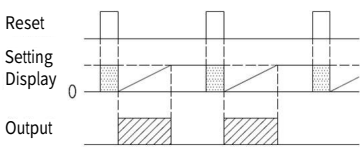
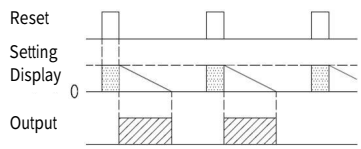


Panel Cut Size

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Counter output selection (continued)

: One shot output (0.05~5sec Setting) : Hold (Hold output) : Non–Dispiay

Position	UP mode	Position	DOWN mode
			
			
			
			
			
			
			
			

KTM–AM MULTI–TIMER



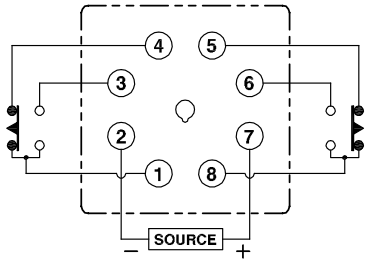
Specification

Model		KTM - AM8	KTM - AM11
Time Range		0.05sec~300 hours	
Voltage		24~240VAC(50/60Hz), 24~240VDC	
Power Consumption		24~240VAC: relay ON(2.5VA) relay OFF(0.8VA) 24~240VDC: relay ON(1.0W) relay OFF(0.3W)	
Output		Mode1&5: time - limit 2C	
Output		Mode2,3,4,6: instantaneous 1C+time - limit 1C	
Ratings		250VAC 5A(Resistive load)	
Relay durability		Mechanical: 10,000,000 operations Electrical: 100,000 operations	
Returning time		Max. 100ms	
Input	Start	-	Minimum signal width: 50ms
	Inhibit	-	non - voltage input
	Reset	-	non - voltage input
Repetition error		±0.3% Max.	
Setting error		±5%±50ms Max.	
Voltage error		±0.2% Max.	
Temperature error		±2% Max.	
Insulation resistance		100MΩ(500VDC)	
Dielectric strength		2,000VAC 50/60Hz for 1 minute	
Anti–noise resistance		Square wave (pulse width 1 ㎲) by noise simulator ± 2KV	
Vibration	Resistance	10~55Hz at double amplitude: 0.75mm(X,Y,Z directions) for 1 hour	
	Malfunction	10~55Hz at double amplitude: 0.5mm(X,Y,Z directions) for 10 min.	
Ambient Temperature		-10~+55℃ (not freezing condition)	
Ambient Humidity		35~85% RH	
Weight		100g	

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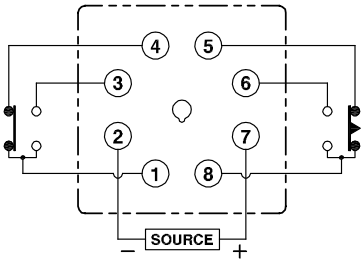
Wiring diagram

KTM-AM8: Mode 1 or 5



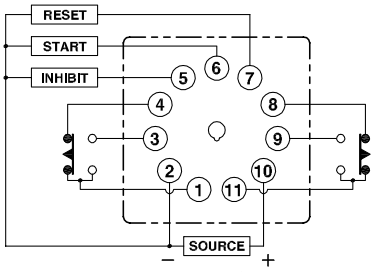
※24-240VAC 50/60Hz
24-240VDC

KTM-AM8: Mode 2, 3, 4, 6



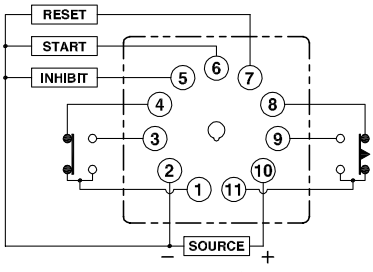
※24-240VAC 50/60Hz
24-240VDC

KTM-AM11



※24-240VAC 50/60Hz
24-240VDC

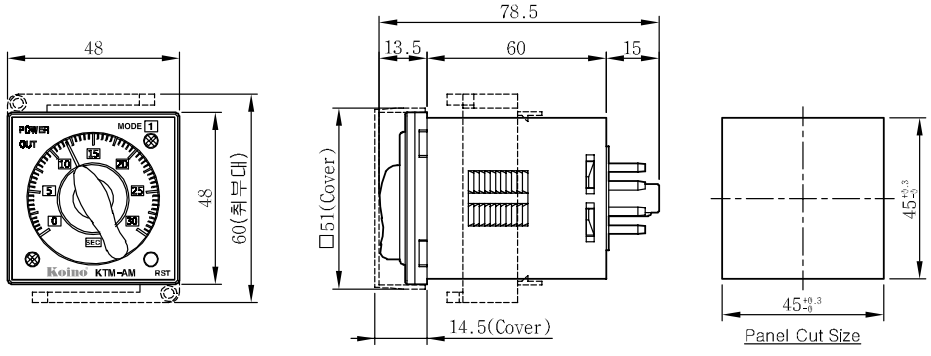
KTM-AM11E



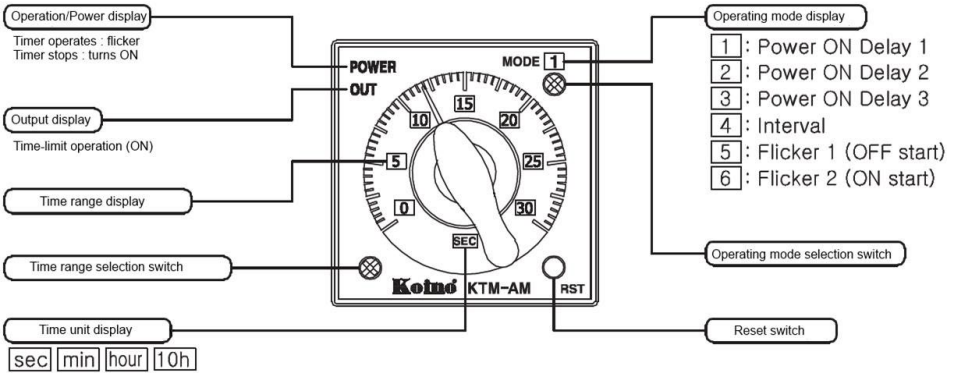
※24-240VAC 50/60Hz
24-240VDC

Dimensions

KTM-AM



Operating Front Panel



Time range

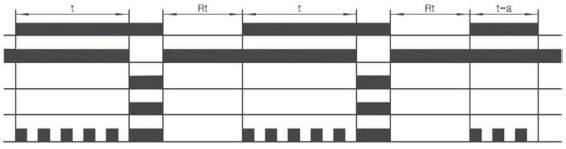
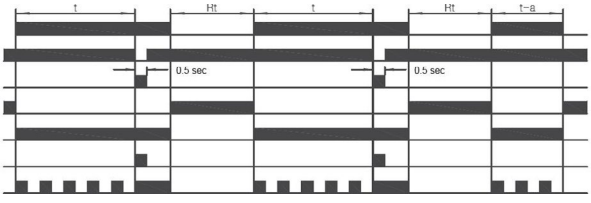
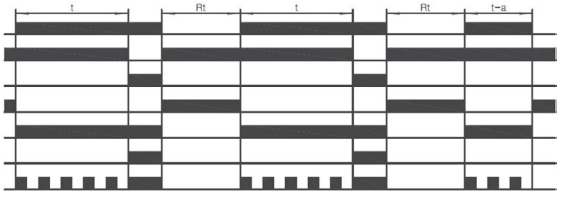
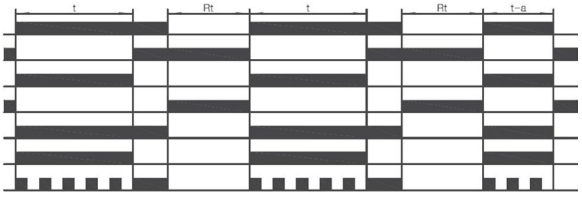
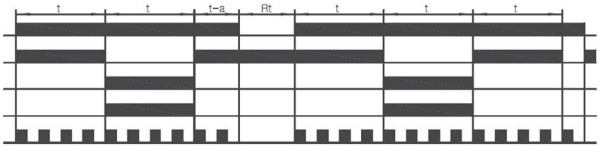
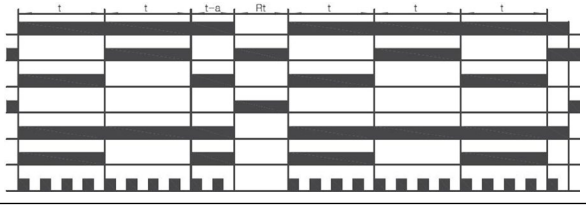
Time Unit	Time Range	Setting Time
Sec	1.2	0.05~1.2
Min	3	0.2~3
Hour	12	1~12
10 Hour	30	2~30

Mode Setting

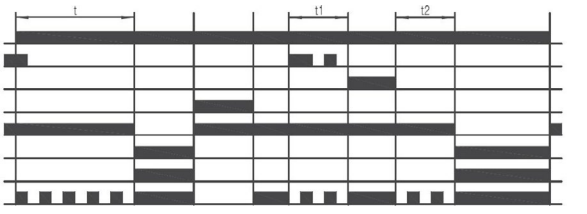
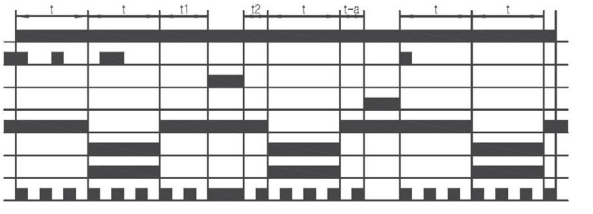
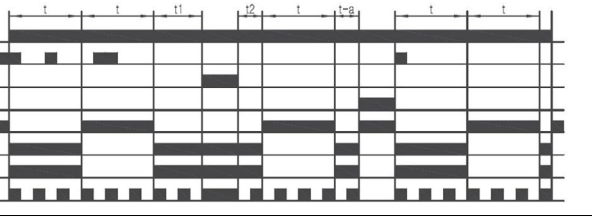
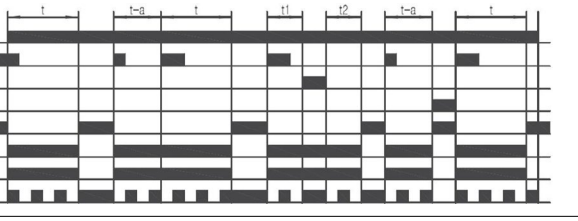
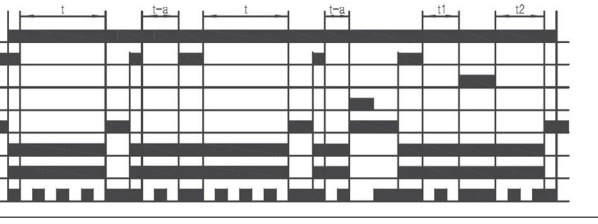
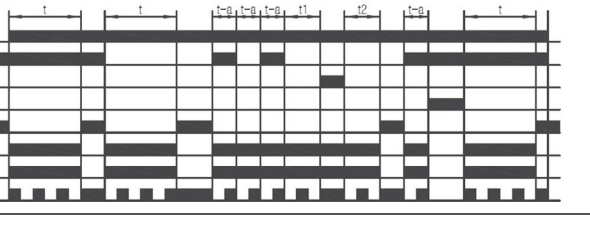
Mode	Output	Output
	KTM–AM8	KTM–AM11
1	POWER ON DELAY 1	SIGNAL ON DELAY
2	POWER ON DELAY 2	FLICKER 1(OFF START)
3	POWER ON DELAY 3	FLICKER 2(ON START)
4	INTERVAL	INTERVAL
5	FLICKER 1(OFF START)	SIGNAL OFF DELAY
6	FLICKER 2(ON START)	SIGNAL; ON/OFF DELAY

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Operating mode: KTM-AM8

Mode	Time line	
1 Power ON Delay 1	Power 2-7 Time limit NC 1-4, 8-5 Time limit NO 1-3, 8-6 Time limit Indicator Power indicator	
2 Power ON Delay 2	Power 2-7 Time limit NC 8-5 Time limit NO 8-6 Instantaneous NC 1-4 Instantaneous NC 1-3 Time limit Indicator Power indicator	
3 Power ON Delay 3	Power 2-7 Time limit NC 8-5 Time limit NO 8-6 Instantaneous NC 1-4 Instantaneous NC 1-3 Time limit Indicator Power indicator	
4 Interval	Power 2-7 Time limit NC 8-5 Time limit NO 8-6 Instantaneous NC 1-4 Instantaneous NC 1-3 Time limit Indicator Power indicator	
5 Flicker 1 (OFF start)	Power 2-7 Time limit NC 1-4, 8-5 Time limit NO 1-3, 8-6 Time limit Indicator Power indicator	
6 Flicker 2 (ON start)	Power 2-7 Time limit NC 8-5 Time limit NO 8-6 Instantaneous NC 1-4 Instantaneous NC 1-3 Time limit Indicator Power indicator	

Operating mode: KTM-AM11, KTM-AM11E

Mode	Time line
1 SIGNAL ON Delay 1	Power 2-10 START 2-6 INHIBIT 2-5 RESET 2-7 Time-limit contact NC Time-limit contact NO Time-limit output indicator Power/Operation indicator 
2 FLICKER1 (OFF START)	Power 2-10 START 2-6 INHIBIT 2-5 RESET 2-7 Time-limit contact NC Time-limit contact NO Time-limit output indicator Power/Operation indicator 
3 FLICKER2 (ON START)	Power 2-10 START 2-6 INHIBIT 2-5 RESET 2-7 Time-limit contact NC Time-limit contact NO Time-limit output indicator Power/Operation indicator 
4 Interval	Power 2-10 START 2-6 INHIBIT 2-5 RESET 2-7 Time-limit contact NC Time-limit contact NO Time-limit output indicator Power/Operation indicator 
5 SIGNAL OFF DELAY	Power 2-10 START 2-6 INHIBIT 2-5 RESET 2-7 Time-limit contact NC Time-limit contact NO Time-limit output indicator Power/Operation indicator 
6 SIGNAL ON/OFF DELAY	Power 2-10 START 2-6 INHIBIT 2-5 RESET 2-7 Time-limit contact NC Time-limit contact NO Time-limit output indicator Power/Operation indicator 

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KTM–3M TIMING RELAY



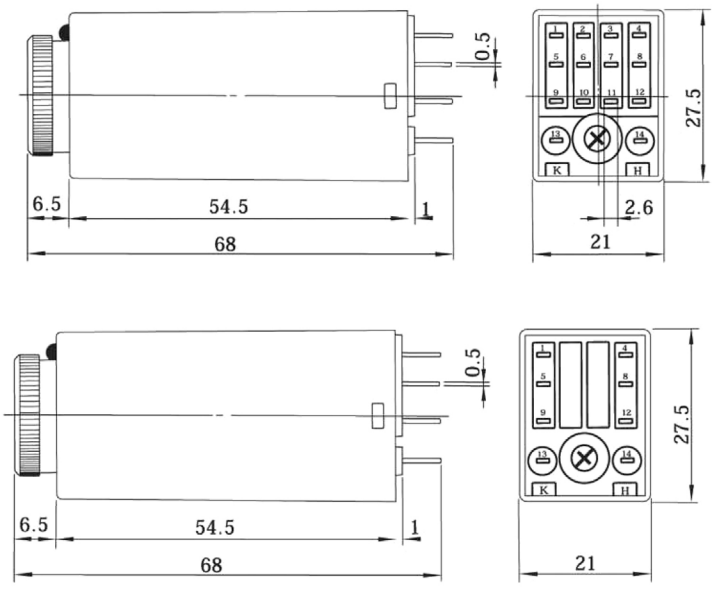
New generation: MCU type

ORDERING GUIDE

KTM-3M- □ - □□
① ② ③

① Time range	1S	1 second
	3S	3 second
	6S	6 second
	10S	10 second
	30S	30 second
	60S	60 second
② Power supply voltage	A1	100~120VAC
	A2	200~230VAC
	D1	12VDC
	D2	24VDC
	D3	48VDC
③ Pin type	None	4PIN
	2	2PIN

Dimensions

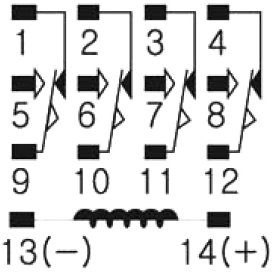


Specification

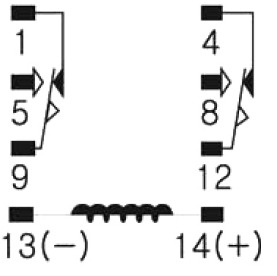
Model	KTM-3M
Mounting	Socket
Operation	ON delay
Indicator	red LED
Compatible sockets	KH-RS-14M, KH-RS-14N
Rated Voltage	110/220VAC(50/60Hz) 12, 24, 48 VDC
Power Consumption	AC: 3VA max. DC:1.5W ma.
Returning time	100ms max.(Power reset)
Relay durability	Mechnical: 10M operations min. Electrical: 200,000 operations min. (1,800 ops. per hour)
Contact Output Ratings	4 Pin: 220VAC, 5A (Resistive) / 4 Pin: 220VAC, 3A (Resistive)
Operation time deviation	±0.5% Max.(for maximum setting time)
Setting error	±5% Max.(for maximum setting time)
Voltage error	±0.2% Max.(for maximum setting time)
Temperature error	±2% Max.(for maximum setting time)
Insulation resistance	min. 100MΩ (500VDC)
Dielectric strength	2000VAC, 50/60Hz, 1 minute (between live parts and non-live parts)
Shock resistance	30G (300m/s²)
Vibration resistance	10~55Hz at double amplitude: 0.5mm (X,Y,Z directions) for 1 hour
Ambient Temperature	-10~+50°C (not freezing condition)
Ambient Humidity	35~85% RH
Protection	IP40 (Indoor use only)
Material	Case: ABS, Base: PC, Knob: PC
Weight	40g

Wiring diagram

KTM-3M



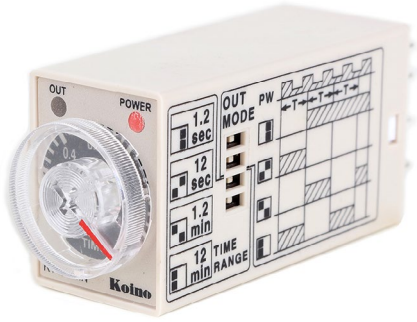
KTM-3M(2P)



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KTM–3MN Series

KTM - 3MN series multi timing relay
Miniature timer with multiple time ranges and operating modes



FEATURE
- Compact size
- Various time and mode setting
- Output and operation indicator
- Change setting in real time with DIP switch
- Time error maximum 5%

CLASSIFICATION

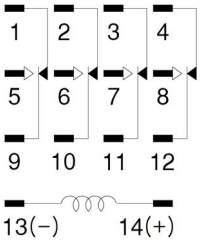
KTM-3MN- □ - □□ - □
① ② ③

	Mark	Description
	KTM - 3MN	KOINO 3M New (MULTI TIMING RELAY)
① Time range	1	1.2sec~12min
	3	3sec~30min
	7	1.2min~12hour
	9	3min~30hour
	5 (Order made)	6sec~60min
	6 (Order made)	6min~60hour
② Power supply voltage	A1	100~120VAC
	A2	200~230VAC
	D1	12VDC
	D2	24VDC
③ Pin type	None	4P
	2	2P

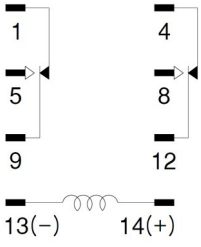
WIRING

*AC 100~120V, 200~230V
50/60hZ
*DC 12V, 24V
Be careful when connecting
wires to contact# 13 & 14

· KTM - 3MN□□□

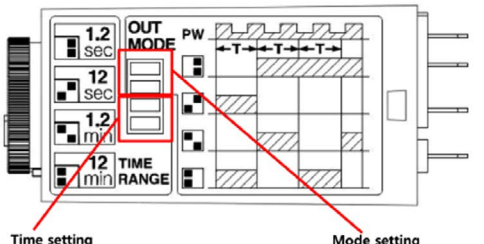


· KTM - 3MN□□□ 2



DIP switch settings

EX) 1.2sec~12min



Time setting

Mode setting

Model	Time range	Time setting range	DIP switch
KTM-3MN1x	1.2sec	0.05 ~ 1.2sec	
	12sec	0.5 ~ 12sec	
	1.2min	0.05 ~ 1.2min	
	12min	0.5 ~ 12min	
KTM-3MN3x	3sec	0.125 ~ 3sec	
	30sec	1.25 ~ 30sec	
	3min	0.125 ~ 3min	
	30min	1.25 ~ 30min	
KTM-3MN7x	1.2min	0.05 ~ 1.2min	
	12min	0.5 ~ 12min	
	1.2hour	0.05 ~ 1.2hour	
	12hour	0.5 ~ 12hour	
KTM-3MN9x	3min	0.125 ~ 3min	
	30min	1.25 ~ 30min	
	3hour	0.125 ~ 3hour	
	30hour	1.25 ~ 30hour	

Operating mode	
MODE 1	ON DELAY
MODE 2	INTERVAL
MODE 3	FLICKER OFF START
MODE 4	FLICKER ON START

*KTM-3MN5x, KTM-3MN6x: Order made only

*t= time, (t-a)<t

*Rt= Reset time (0.1 sec. min.)

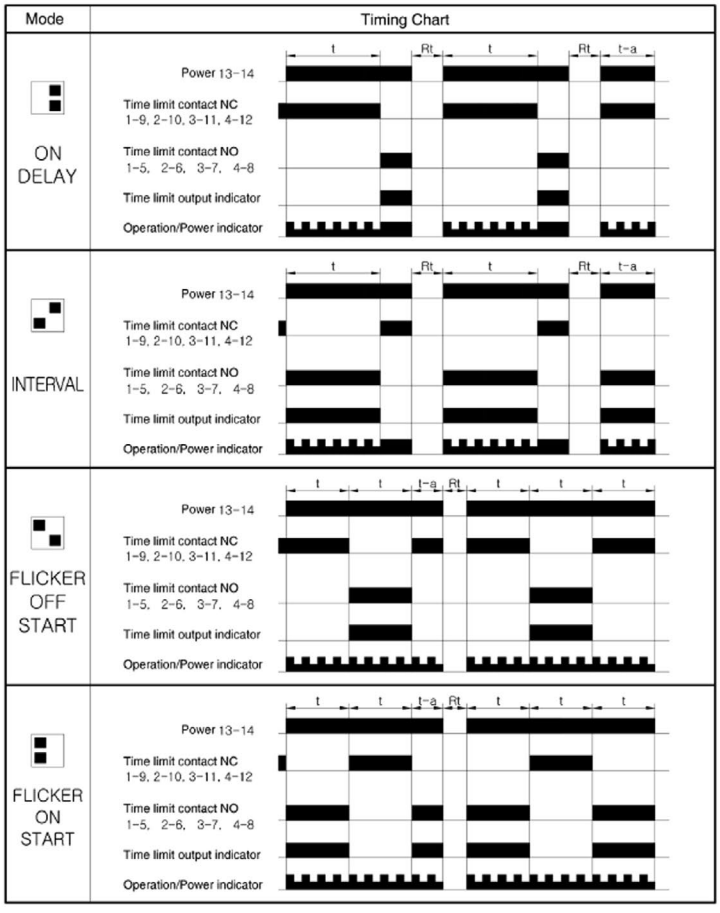
*2 PIN: Time limit contact NC(1-9, 4-12), Time limit contact NO(1-5, 4-8)

PRECAUTION

For DC power supply type, be sure to check t he polarity of terminals
In case of 12VDC, 24vAC/DC model, isolated and limited voltage/current or Class 2 source should be provided for power supply.

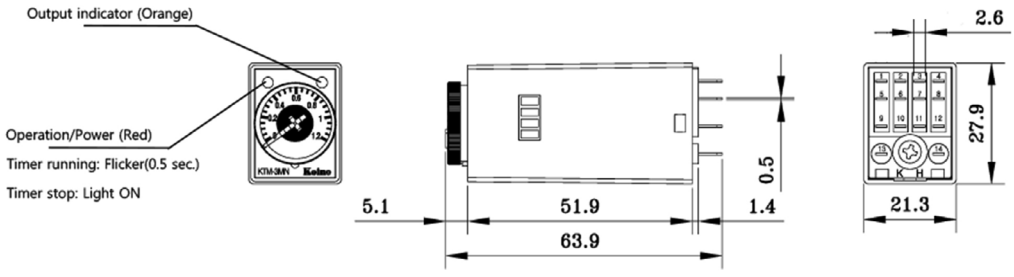
Do not use the unit at below places.
1.Place exposed to constant vibration and shock
2.Place where strong alkalis or acid are used.
3.Place exposed to direct sunlight
4.Place exposed to strong magnetic field or electrical noise
Appropriate installation location
Indoor, Below 2000m altitude,
Under pollution degree 2

Timing chart



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DIMENSIONS



TECHNICAL DATA

Model		KTM–3MNxA1(2)	KTM–3MNxA2(2)	KTM–3MNxD1(2)	KTM–3MNxD2(2)
Time		1.2sec~12min / 3sec~30min / 1.2min~12hour / 3min~30hour			
Operation mode		ON DELAY, INTERVAL, FLICKER ON START , FLICKER OFF START			
Compatible sockets		KH-RS-14M, KH-RS-14N (KOINO - 14pin Socket)			
Input Voltage		100~120VAC	200~230VAC	12VDC	24VDC
Operating voltage range		90~110% of rated voltage			
Power Consumption		3VA max.		1.5W max.	
Reset time		100ms max. (Power reset time)			
Contact Output Ratings		2PIN = 220VAC, 5A (Resistive) / 4PIN = 220VAC, 3A (Resistive)			
Relay durability	Mechanical	Minimum 10 million operations			
	Electrical	Minimum 200,000 operations (1800/ hour)			
Contact		2PIN : 2C (2a2b) / 4PIN : 4C (4a4b)			
Operation time deviation		±0.5%, 10msec Max. (at the maximum time setting)			
Set deviation		±5%, 50msec Max. (at the maximum time setting)			
Voltage deviation		±0.2% Max. (at the maximum time setting)			
Temperature deviation		±2% Max. (at the maximum time setting)			
Insulation resistance		100MΩ (at 500VDC)			
Noise–proof		By noise simulator (pulse width: 100 ns/ 1 us, 1-ns rise)±2,000V			
Dielectric strength		2,000VAC 50/60Hz for 1 minute (between live-part and dead - part)			
Vibration resistance		10 to 55 Hz, 0.5mm single double for 1 hour each in 3 directions			
Shock resistance		Approx. 30G (300m/s^2)			
Ambient Temperature		Operation: -10°C ~ +50°C (with no icing)			
		Storage: -20°C ~ +55°C (with no icing)			
Ambient Humidity		35~85% RH			
Protection degree		IP40			
Materials		Case:ABS, Body:PC, Dial:PC			
Weight		Approx. 40g			


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