

# PART4

## TIMER



KDT-48 DIGITAL TIMER

KTM-AM MULTI-TIMER

KTM-3M TIMING RELAY

## 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		

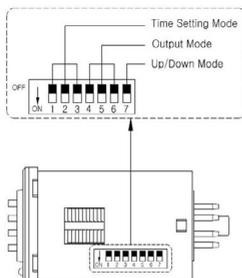
## KDT-48 DIGITAL TIMER



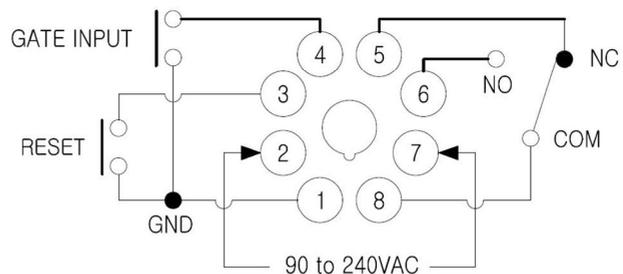
### Specification

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 μs ) 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 (not freezing condition)	
Ambient Humidity	35~85% RH	
Material	PC	
Weight	96 g	

### Function selection

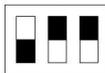
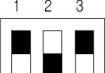
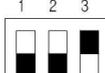
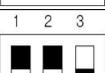
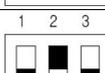


### Wiring diagram



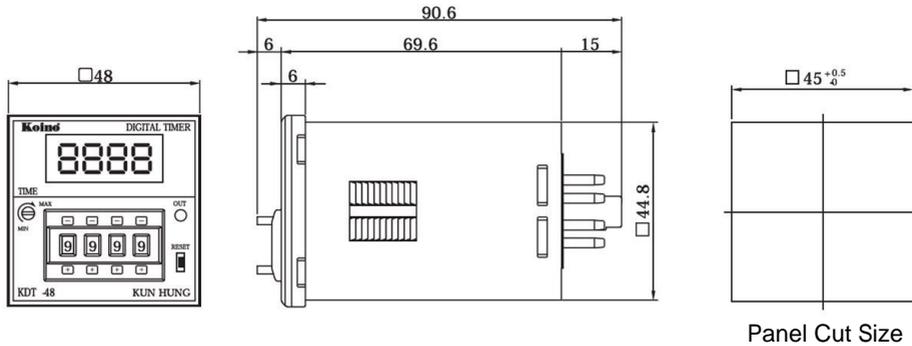
# TIMER COUNT

## Time range selection

Position	UP mode	Position	DOWN mode
1 2 3 OFF  ON	999.9 sec	1 2 3 OFF  ON	9,999 sec
1 2 3 OFF  ON	999.9 min	1 2 3 OFF  ON	9,999 min
1 2 3 OFF  ON	999.9 hours	1 2 3 OFF  ON	9,999 hours
1 2 3 OFF  ON	99 min 59 sec	1 2 3 OFF  ON	99 hours 59 min

## Dimensions

### KDT - 48



# TIMER COUNT

## Counter output selection (continued)



: One shot output (0.05~5sec Setting)



: Hold (Hold output)



: Non-Display

Position	UP mode	Position	DOWN mode
OFF ON 	Reset Setting Display Output	OFF ON 	Reset Setting Display Output
OFF ON 	Reset Setting Display Output	OFF ON 	Reset Setting Display Output
OFF ON 	Reset Setting Display Output	OFF ON 	Reset Setting Display Output
OFF ON 	Reset Setting Display Output	OFF ON 	Reset Setting Display Output
OFF ON 	Reset Setting Display Output	OFF ON 	Reset Setting Display Output
OFF ON 	Reset Setting Display Output	OFF ON 	Reset Setting Display Output
OFF ON 	Reset Setting Display Output	OFF ON 	Reset Setting Display Output
OFF ON 	Reset Setting Display Output	OFF ON 	Reset Setting Display Output

SQUARE LIGHT

TOWER LIGHT

BUZZER

TIMER & COUNTER

RELAY

SOCKETS

TERMINAL BLOCK

CONTROL BOX

## KTM-AM MULTI-TIMER



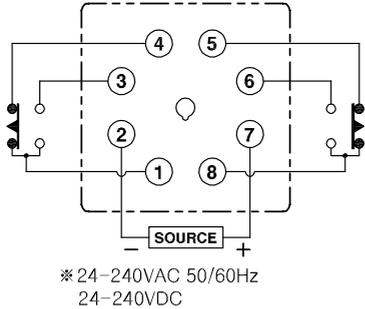
### Specification

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 μs ) 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		

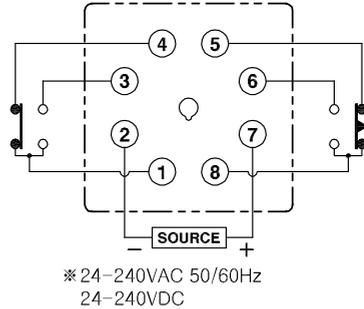
# TIMER COUNT

## Wiring diagram

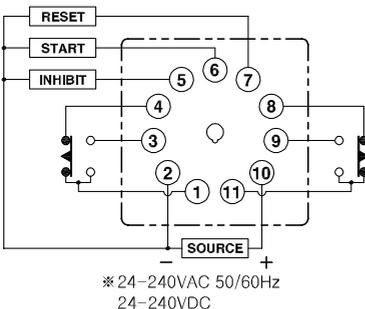
KTM-AM8: Mode 1 or 5



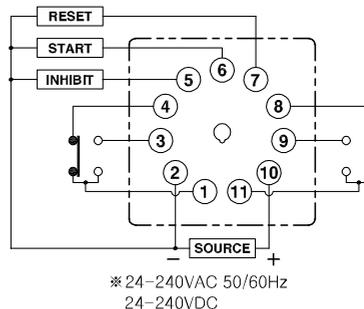
KTM-AM8: Mode 2, 3, 4, 6



KTM-AM11

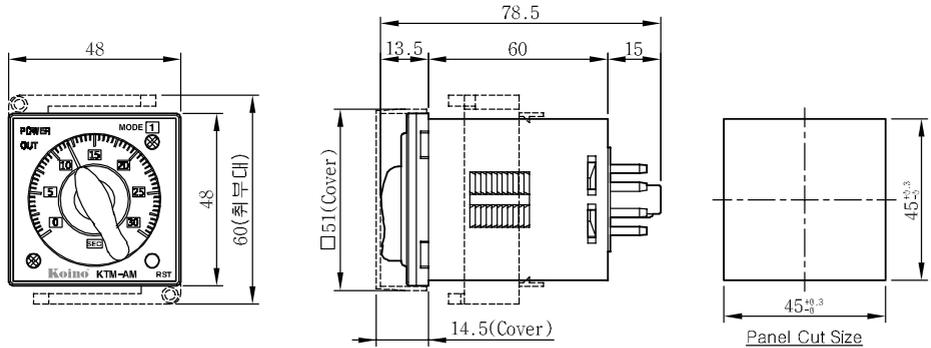


KTM-AM11E



## Dimensions

KTM-AM



SQUARE LIGHT

TOWER LIGHT

BUZZER

TIMER & COUNTER

RELAY

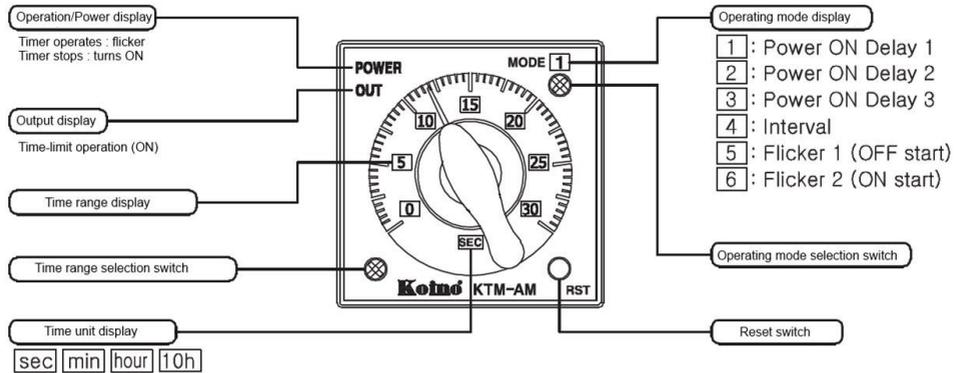
SOCKETS

TERMINAL BLOCKS

CONTROL BOX

# TIMER COUNTDOWN

## 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

# TIMER COUNT

Operating mode: KTM - AM8

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

- SQUARE LIGHT
- TOWER LIGHT
- BUZZER
- TIMER & COUNTER
- RELAY
- SOCKETS
- TERMINAL BLOCKS
- CONTROL BOX

# TIMER COUNT

Operating mode: KTM - AM11, KTM - AM11E

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

## KTM-3M TIMING RELAY

New generation: MCU type

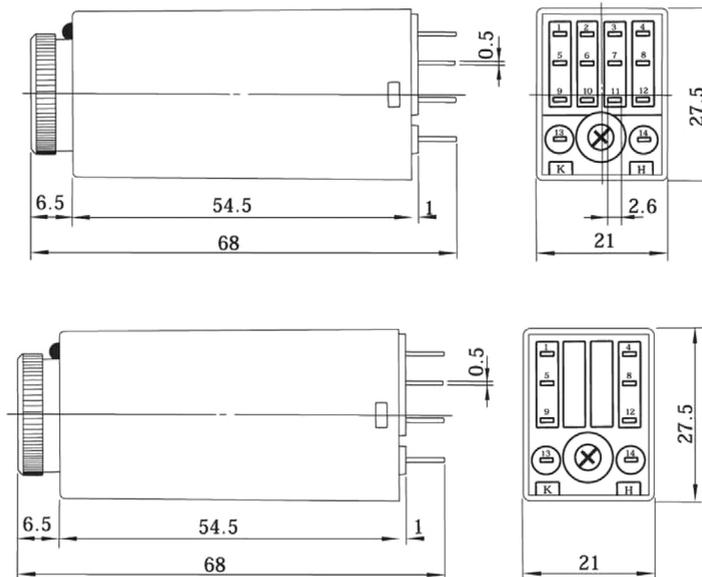
### ORDERING GUIDE

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



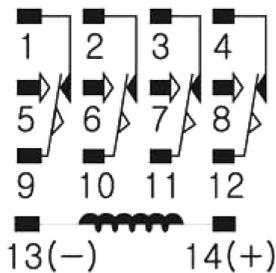
# TIMER COUNT

## Specification

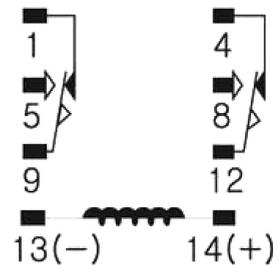
Model	KTM - 3M
Mounting	Socket
Operation	ON delay
Indicator	red LED
Compatible sockets	KH - RS - 14M, KH - RS - 14N
Rated Voltage	110/220VAC(50/60Hz) 12, 24, 48 VDC
Power Consumption	AC: 3VA max. DC:1.5W ma.
Returning time	100ms max.(Power reset)
Relay durability	Mechanical: 10M operations min. Electrical: 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. 100M (500VDC)
Dielectric strength	2000VAC, 50/60Hz, 1 minute (between live parts and non - live parts)
Shock resistance	30G (300m/s <sup>2</sup> )
Vibration resistance	10~55Hz at double amplitude: 0.5mm (X,Y,Z directions) for 1 hour
Ambient Temperature	- 10~+50 (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)

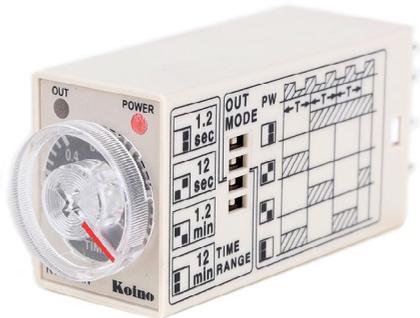


## KTM-3MN Series

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

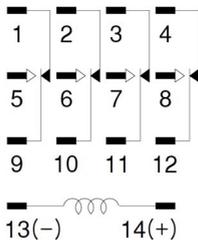
KTM-3MN- ① - ② - ③

	Mark	Description
		KTM-3MN
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

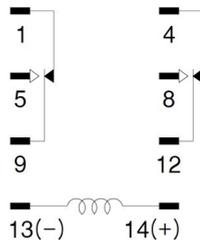
### WIRING

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

· KTM-3MN



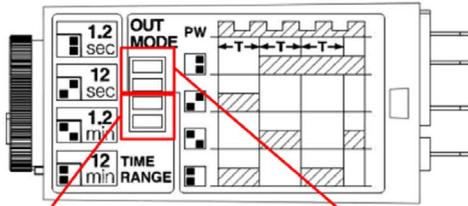
· KTM-3MN 2



# TIMER COUNT

## DIP switch settings

EX) 1.2sec~12min



Time 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	

Mode setting

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 the 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.

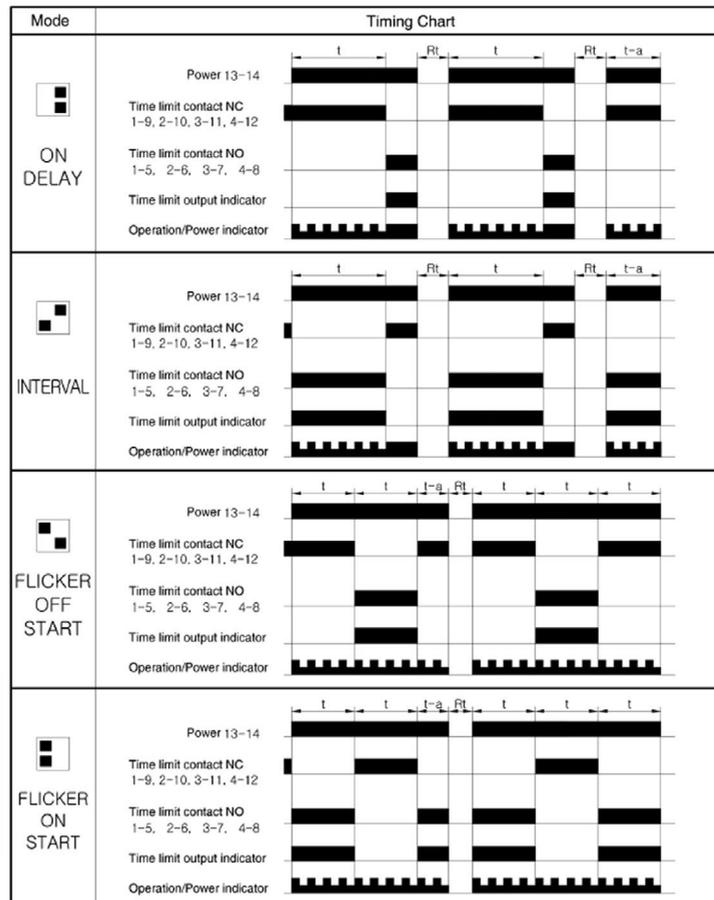
Do not use the unit at below places.

- 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

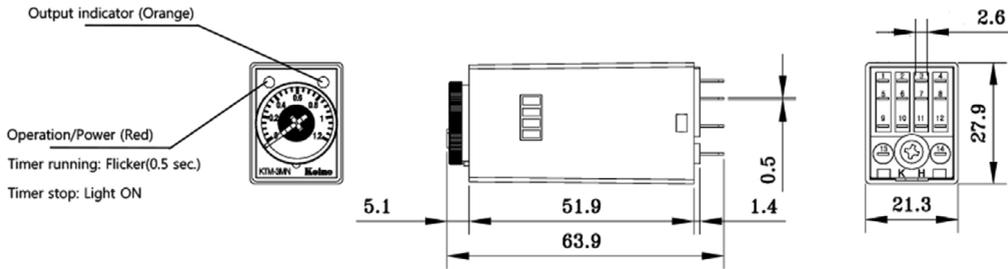
Indoor, Below 2000m altitude,  
Under pollution degree 2

## Timing chart



# TIMER COUNT

## 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	100M ( 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 <sup>2</sup> )			
Ambient Temperature	Operation: - 10 ~ +50 (with no icing)			
	Storage: -20 ~ +55 (with no icing)			
Ambient Humidity	35~85% RH			
Protection degree	IP40			
Materials	Case:ABS, Body:PC, Dial:PC			
Weight	Approx. 40g			

SQUARE LIGHT

TOWER LIGHT

BUZZER

TIMER & COUNTER

RELAY

SOCKETS

TERMINAL BLOCKS

CONTROL BOX

**KOINOX**