

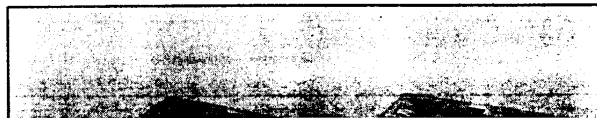
OMRON

313-7960

Solid-state Timer

H3CR-A

DIN 48 x 48-mm Multifunctional Timer
with Many Time Ranges, Operating
Modes and Wide Power Supply Ranges



Item	H3CR-A	H3CR-A8	H3CR-A8EL/-A8E
Mounting method	DIN track mounting, surface mounting, and flush mounting		
Approved standards	UL508, CSA C22.2 No.14, LR/NK		

Note: The internal circuits are optically isolated from the output. This enables application of either NPN or PNP transistors.

■ Time Ranges

Time unit		s (sec)	min	h (hrs)	x10 h (10 h)
Setting	0	Instantaneous output (To obtain instantaneous output, set to below 0.) (see note)			
	1.2	0.05 to 1.2	0.12 to 1.2		1.2 to 12
	3	0.3 to 3			3 to 30
	12	1.2 to 12			12 to 120
	30	3 to 30			30 to 300

Note: Instantaneous output is available with all H3CR-A models.

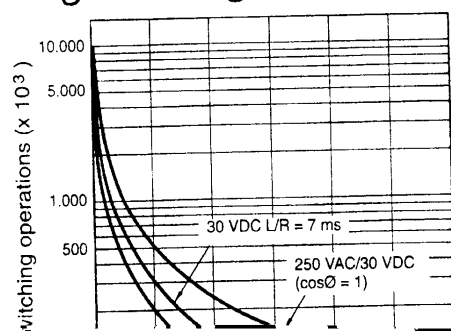
■ Ratings

Rated supply voltage	100 to 240 VAC (50/60 Hz), 24 VDC/VAC (50/60 Hz)
Operating voltage range	85% to 110% of rated supply voltage
Power reset	Minimum power-opening time: 0.1 s
No-voltage input	ON impedance: 1 k Ω max. ON residual voltage: 1 V max. OFF impedance: 100 k Ω min.
Power consumption	100 to 240 VAC: approx. 10 VA 24 VDC/VAC: approx. 2 VA (AC), approx. 1 W (DC)
Control outputs	Time limit contacts: 5 A at 250 VAC, resistance load ($\cos\phi = 1$) Instantaneous contact: 5 A at 250 VAC, resistance load ($\cos\phi = 1$)

■ Characteristics

Accuracy of operating time	+0.3% FS max. (+0.3%+10 ms in a range of 1.2 s)
Setting error	+5% FS +0.05 s max.
Reset time	Min. power-opening time: 0.1 s max. Min. pulse width: 0.05 s (H3CR-A/-AS)
Influence of voltage	+0.5% FS max. (+0.5%+10 ms in a range of 1.2 s)
Influence of temperature	+2% FS max. (+2%+10 ms in a range of 1.2 s)
Insulation resistance	100 M Ω min. (at 500 VDC)
Dielectric strength	2,000 VAC, 50/60 Hz for 1 min (between current-carrying metal parts and exposed non-current-carrying metal parts) 2,000 VAC, 50/60 Hz for 1 min (between control output terminals and operating circuit) 1,000 VAC, 50/60 Hz for 1 min (between contacts not located next to each other)
Impulse withstand voltage	3 kV (between power terminals) for 100 to 240 VAC, 48 to 125 VDC, 1 kV for 12 VDC, 24 VDC/VAC 4.5 kV (between current-carrying terminal and exposed non-current-carrying metal parts) for 100 to 240 VAC, 48 to 125 VDC, 1.5 kV for 12 VDC, 24 VDC/VAC
Noise immunity	+1.5 kV (between power terminals) and +600 V (between input terminals), square-wave noise by noise simulator (pulse width: 100 ns/1 μ s, 1-ns rise)
Static immunity	Malfunction: 8 kV Destruction: 15 kV
Vibration resistance	Destruction: 10 to 55 Hz with 0.75-mm double amplitude each in three directions Malfunction: 10 to 55 Hz with 0.5-mm double amplitude each in three directions
Shock resistance	Destruction: 1,000 m/s ² (Approx. 100G) each in three directions Malfunction: 100 m/s ² (Approx. 10G) each in three directions
Ambient temperature	Operating: -10°C to 55°C (with no icing) Storage: -25°C to 65°C (with no icing)
Ambient humidity	Operating: 35% to 85%
Life expectancy	Mechanical: 20,000,000 operations min. (under no load at 1,800 operations/h) Electrical: 100,000 operations min. (5 A at 250 VAC, resistive load at 1,800 operations/h)
Case colour	Light Grey (Munsell 5Y7/1)
Degree of protection	IEC: IP40
Weight	H3CR-A: approx. 90 g; H3CR-A8E/-A8EL: approx. 110 g

Engineering Data



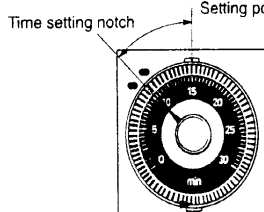
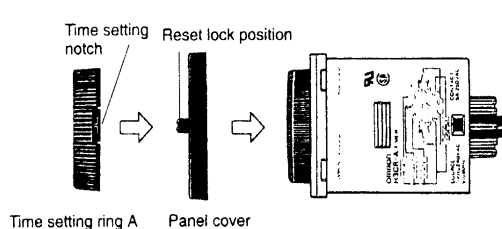
Reference: A maximum current of 0.15 A can be switched at 125 VDC ($\cos\phi = 1$) and a maximum current of 0.1 A can be switched if L/R is 7 ms. In both cases, a life of 100,000 operations can be expected. The minimum applicable load is 10 mA at 5 VDC (failure level: P).

■ Using the Setting Ring

Setting a Specific Time

Mount the Panel Cover on the Timer, set the desired time with the time setting knob, and place Time Setting Ring A onto the time set-

ting knob so that the time setting notch of Time Setting Ring A is in the centre of the reset lock position of the Panel Cover.



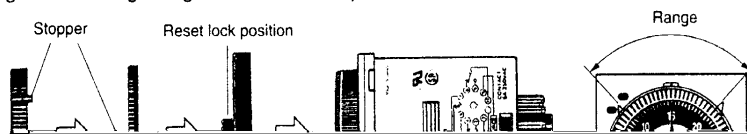
Example: To set the time to 10 s.

Limiting the Setting Range

Example: To set a range of 10 and 20 s.

Mount the Panel Cover on the Timer, set the time setting knob to 10 s (the lower limit of the setting range), and place Time Setting Ring C onto the time setting knob so that the stopper of Time Setting Ring C is on the right edge of the reset lock position of the Panel cov-

er. Next, set the time setting knob to 20 s (the upper limit of the setting range), place Time Setting Ring B onto the time setting knob so that the stopper of Time Setting Ring B is on the left edge of the reset lock position of the Panel Cover.

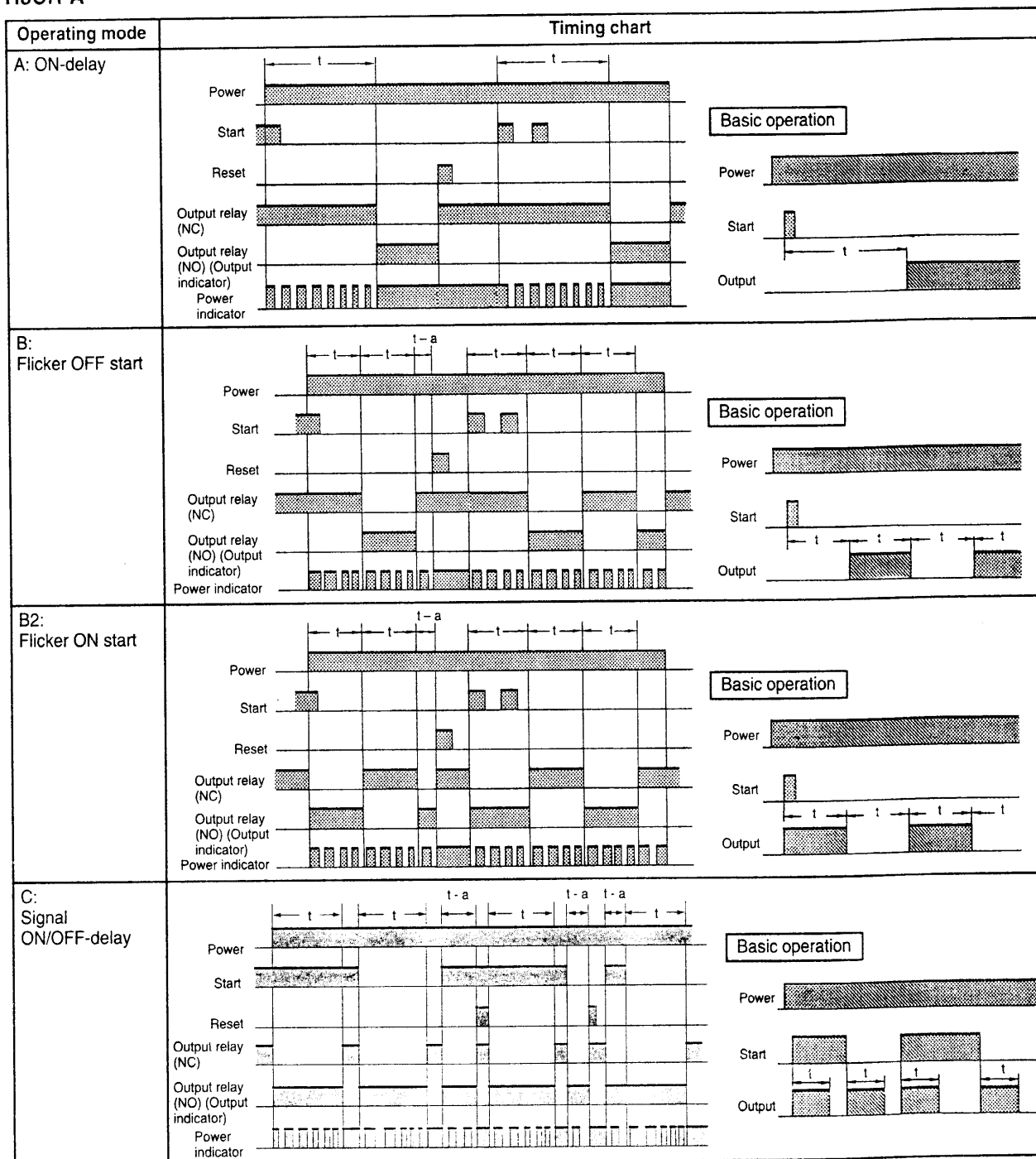


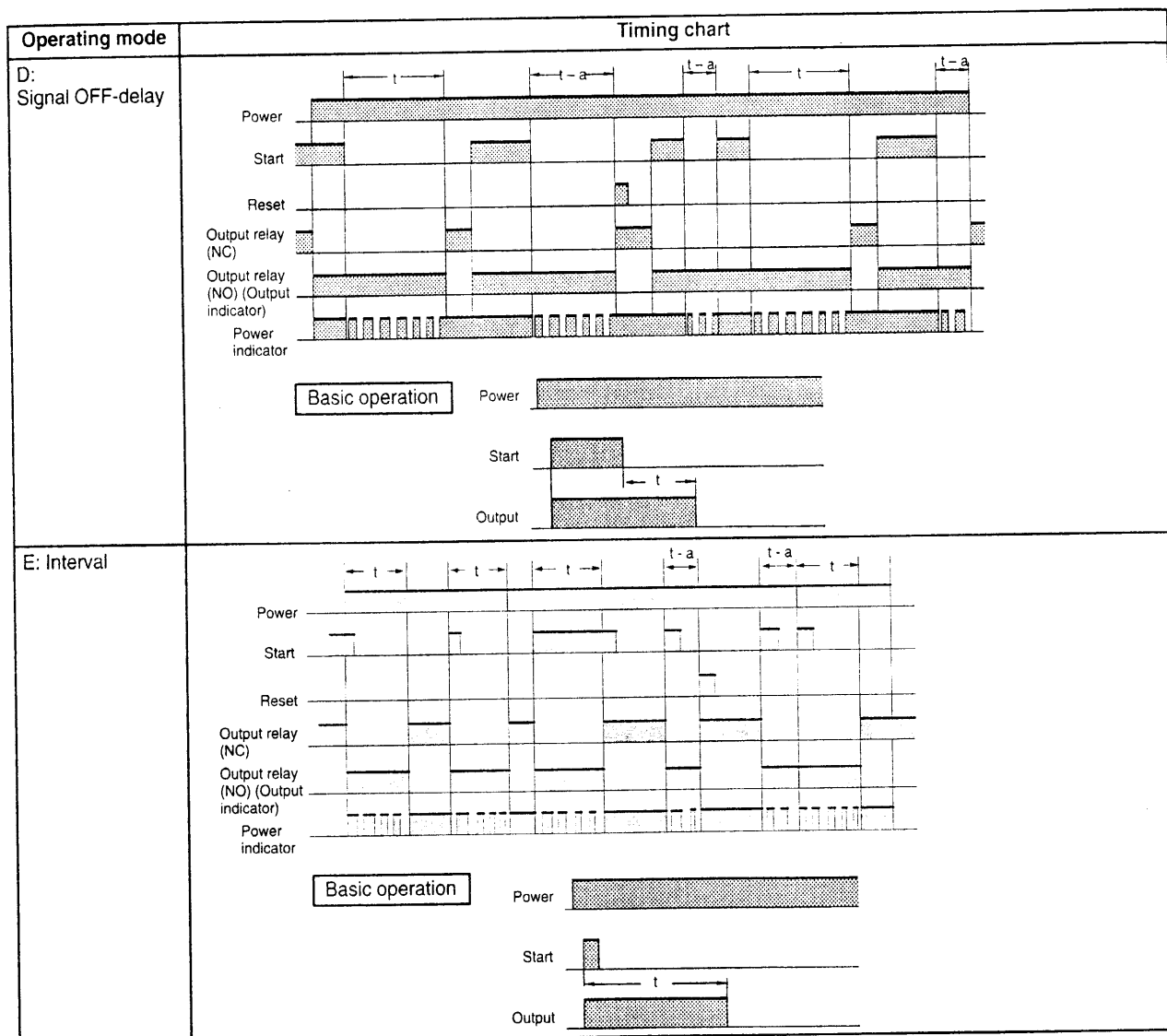
■ Timing Chart

Note: 1. The minimum power-opening time ("Rt") is 0.1 s and the minimum pulse width is 0.05 s.

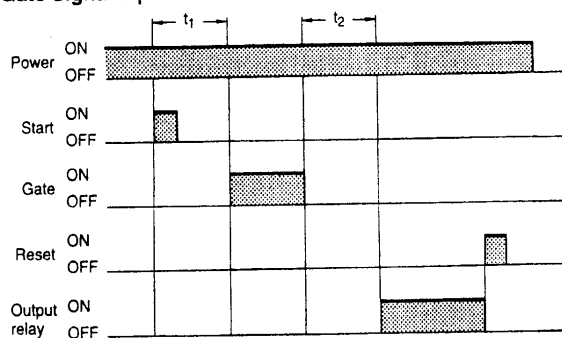
2. The letter "t" in the timing charts stands for the set time and "t-a" means that the period is less than the time set.

H3CR-A





Gate Signal Input



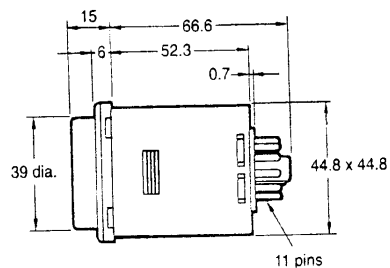
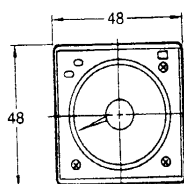
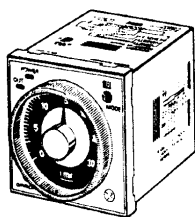
- Note:**
1. This timing chart indicates the gate input in operating mode A (ON-delay operation).
 2. The set time is the sum of t_1 and t_2 .

E: Interval		
E: Interval		
A: ON-delay		
Operating mode		Timing chart

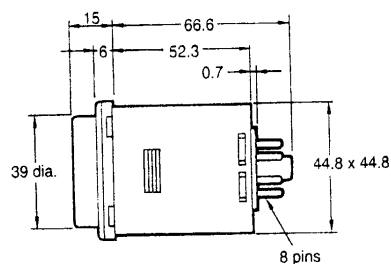
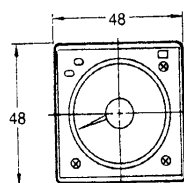
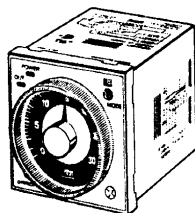
Dimensions

Note: All units are in millimetres unless otherwise indicated.
Panel cutout to be $45 \times 45 (+0.6_{-0})$

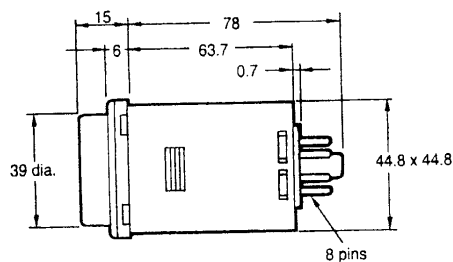
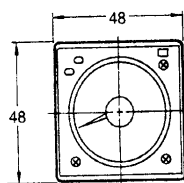
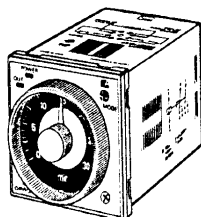
H3CR-A



H3CR-A8 H3CR-A8E



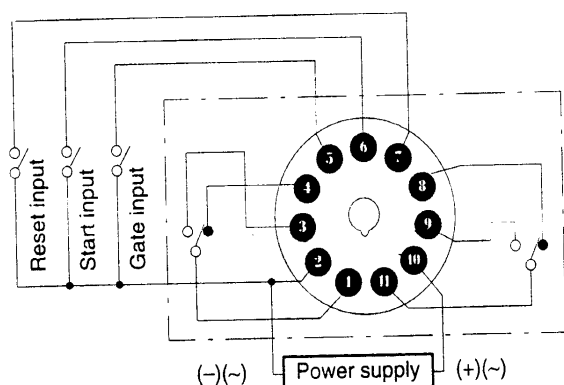
H3CR-A8EL



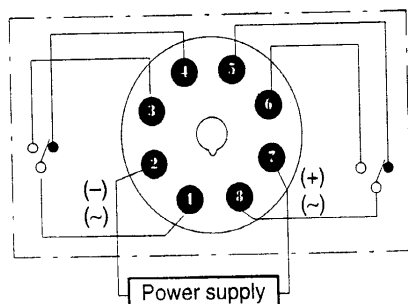
Installation

■ Terminal Arrangement

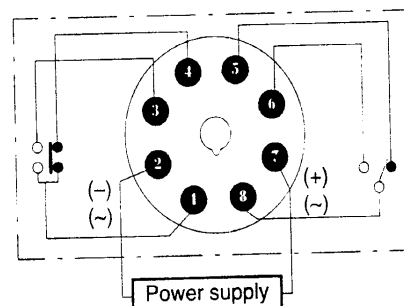
H3CR-A (Contact Output)



H3CR-A8 (Contact Output)



H3CR-A8EL/-A8E (Contact Output)



■ Changing of Setting

NOTICE: Do not change the time unit, time range, or operation mode while the timer is in operation or malfunction could result.

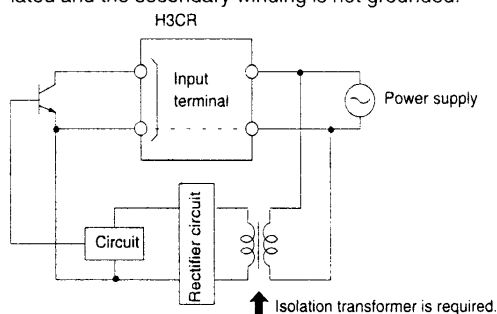
■ Power Supplies

An AC power supply can be connected to the power input terminals without regarding polarity. A DC power supply must be connected to the power input terminals as designated according to the polarity of the terminals.

A DC power supply can be connected if its ripple factor is 20% or less and the mean voltage is within the rated operating voltage range of the Timer.

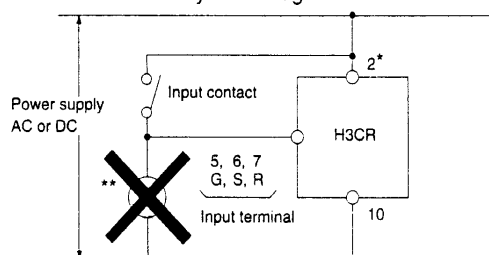
Connect the power supply voltage through a relay or switch in such a way that the voltage reaches a fixed value at once or the Timer may not be reset or a timer error could result.

For the power supply of an input device, use an isolating transformer, of which the primary and secondary windings are mutually isolated and the secondary winding is not grounded.



■ Input/Output

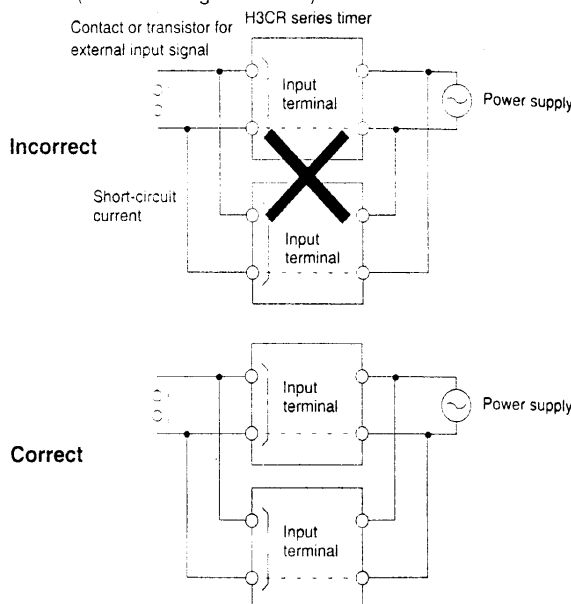
An appropriate input is applied to the input signal terminals of the Timer when one of the input terminals (terminals 5, 6, and 7) and the common terminal (terminal 2) for the input signals are short-circuited. Do not attempt to connect any input terminal to any terminal other than the common terminal or to apply voltage across other than the specified input and common terminals or the internal circuits of the Timer may be damaged.



*Power supply terminal 2 is a common terminal for the input signals (G, S, R) to the Timer. Never use terminal 10 as the common terminal for this purpose, otherwise the internal circuit of the Timer may be damaged.

**Do not connect a relay or any other load between these two points, otherwise the internal circuit of the Timer may be damaged due to the high-tension voltage applied to the input terminals.

When connecting a relay or a transistor as an external signal input device, pay attention to the following points to prevent short-circuiting due to a sneak current to the transformerless power supply. If a relay or transistor is connected to two or more Timers, the input terminals of those Timers must be wired properly so that they will not be different in phase or the terminals will be short-circuited to one another (refer to the figures below).



■ Environment

When using the Timer in an area with excess electronic noise, separate the Timer, wiring, and the equipment which generates the input signals as far as possible from the noise sources. It is also recommended to shield the input signal wiring to prevent electronic interference.

Organic solvents (such as paint thinner), as well as very acidic or basic solutions can damage the outer casing of the Timer.

■ Others

If the Timer is mounted on a control board, dismount the timer from the control board or short-circuit the circuitry of the power board before carrying out a voltage withstand test between the electric circuitry and non current-carrying metal part of the Timer, in order to prevent the internal circuitry of the Timer from damage.

Cross References

Cross reference of H3BA-8/H3BA-8H to H3CR-A Timers

H3BA-8	24 VAC	H3CR-A8 24 VAC/VDC
	24 VDC	
	100-120 VAC	H3CR-A8 100-240 VAC
	200-240 VAC	
H3BA-8H	24 VAC	H3CR-A8E 24 VAC/VDC
	24 VDC	
	100-120 VAC	H3CR-A8EL 100-240 VAC
	200-240 VAC	