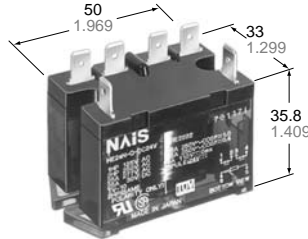


**Panasonic**  
ideas for life

**TV-15, 30 AMP (1 Form A)  
Power Relay**

**HE RELAYS**



mm inch

## FEATURES

- High contact capacity with superior inrush current characteristics;

	1 Form A	2 Form A
Rating	30 A 277 V AC	25 A 277 V AC
TV rating	TV-15	TV-10

- Excellent high heat-resistance;
- High dielectric strength: 10,000 V surge Conforming to VDE0806 (Insulation gap: 8 mm .315 inch) VDE, TÜV also approved

## SPECIFICATIONS

### Contacts

Type	DC coil type		AC coil type		
	1a	2a	1a	2a	
Arrangement					
Contact material	Silver alloy				
Initial contact resistance, max. (By voltage drop 6 V DC 1A)	100 mΩ				
Rating (resistive)	Nominal switching capacity	30 A 277 V AC	25 A 277 V AC	30 A 277 V AC	25 A 277 V AC
	Max. switching power	8,310 VA	6,925 VA	8,310 VA	6,925 VA
	Max. switching voltage	277 V AC, 30 V DC			
	Max. switching current	30 A	25 A	30 A	25 A
	Min. switching capacity#1	100 mA, 5 V DC			
Expected life (min. operations)	Mechanical (at 180 cpm)	10 <sup>7</sup>		5×10 <sup>6</sup>	
	Electrical (at 20 cpm)	10 <sup>5</sup> (1a: 30 A 277 V AC, 2a: 25 A 277 V AC) 2×10 <sup>5</sup> (1a: 30 A 250 V AC, 2a: 20 A 250 V AC)			

### Coil (at 20°C 68°F)

	DC coil type	AC coil type
Nominal operating power	1.92 W	See Coil data (next page)

#1 This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.

### Remarks

- \* Specifications will vary with foreign standards certification ratings.
- \*1 Measurement at same location as "initial breakdown voltage" section
- \*2 Detection current: 10 mA
- \*3 Wave is standard shock voltage of ±1.2×50μs according to JEC-212-1981
- \*4 Excluding contact bounce time
- \*5 Half-wave pulse of sine wave: 11ms; detection time: 10μs
- \*6 Half-wave pulse of sine wave: 6ms
- \*7 Detection time: 10μs
- \*8 Refer to 6. Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT (see catalog).

### Characteristics

	DC coil type	AC coil type
Maximum operating speed	20 cpm	
Initial insulation resistance*1	Min. 1,000 MΩ at 500 V DC	
Initial breakdown voltage*2	Between open contacts	2,000 Vrms for 1 min.
	Between contacts and coil	5,000 Vrms for 1 min.
	Between contact sets (2a)	4,000 Vrms for 1 min.
Surge voltage between coil and contact*3	Min. 10,000 V	
Operate time*4 (at nominal voltage)	Max. 30 ms	
Release time*4 (at nominal voltage)	Max. 10 ms	Max. 30 ms
Temperature rise, max. (resistive load)(at 55°C)	60°C	65°C
Shock resistance	Functional*5	98 m/s <sup>2</sup> {10 G}
	Destructive*6	980 m/s <sup>2</sup> {100 G}
Vibration resistance	Functional*7	10 to 55 Hz at double amplitude of 1 mm
	Destructive	10 to 55 Hz at double amplitude of 1.5 mm
Conditions for operation, transport and storage*8 (Not freezing and condensing at low temperature)	Ambient temp.	-50°C to +55°C -58°F to +131°F
	Humidity	5 to 85% R.H.
	Air pressure	86 to 106 kPa
Unit weight	Approx. 90 g 3.17 oz (Plug-in type)	

## TYPICAL APPLICATIONS

- Home appliances
  - Air conditioners
  - Microwave ovens
  - TV sets
  - Heaters
  - Stereo
- Office equipment
  - Copiers
  - Vending machines

## ORDERING INFORMATION

Contact arrangement	Pick-up voltage	Terminals	Coil voltage
1a: 1 Form A 2a: 2 Form A	N: 70% of nominal voltage	Nil: Plug-in terminal type S: Screw terminal type SW: Screw terminal type (wide pitch) Q: NEMA terminal type P: PC board terminal type*	DC: 6, 12, 24, 48, 110 V AC: 12, 24, 48, 120, 240 V

Standard packing: Carton: 20 pcs.; Case: 100 pcs.

\* PC board terminal are available only for 1 Form A type of DC coil voltage. UL/CSA, TÜV approved type is standard.

## TYPES

	Terminal shape	Contact arrangement	
		1 Form A	2 Form A
DC type	Plug-in terminal	HE1aN-DC6V	HE2aN-DC6V
		HE1aN-DC12V	HE2aN-DC12V
		HE1aN-DC24V	HE2aN-DC24V
		HE1aN-DC48V	HE2aN-DC48V
		HE1aN-DC110V	HE2aN-DC110V
	Screw terminal	HE1aN-S-DC6V	HE2aN-S-DC6V
		HE1aN-S-DC12V	HE2aN-S-DC12V
		HE1aN-S-DC24V	HE2aN-S-DC24V
		HE1aN-S-DC48V	HE2aN-S-DC48V
		HE1aN-S-DC110V	HE2aN-S-DC110V
	Screw terminal (wide pitch)	HE1aN-SW-DC6V	HE2aN-SW-DC6V
		HE1aN-SW-DC12V	HE2aN-SW-DC12V
		HE1aN-SW-DC24V	HE2aN-SW-DC24V
		HE1aN-SW-DC48V	HE2aN-SW-DC48V
		HE1aN-SW-DC110V	HE2aN-SW-DC110V
	NEMA terminal	HE1aN-Q-DC6V	HE2aN-Q-DC6V
		HE1aN-Q-DC12V	HE2aN-Q-DC12V
		HE1aN-Q-DC24V	HE2aN-Q-DC24V
		HE1aN-Q-DC48V	HE2aN-Q-DC48V
		HE1aN-Q-DC110V	HE2aN-Q-DC110V
PC board terminal	HE1aN-P-DC6V	—	
	HE1aN-P-DC12V	—	
	HE1aN-P-DC24V	—	
	HE1aN-P-DC48V	—	
	HE1aN-P-DC110V	—	

	Terminal shape	Contact arrangement	
		1 Form A	2 Form A
AC type	Plug-in terminal	HE1aN-AC12V	HE2aN-AC12V
		HE1aN-AC24V	HE2aN-AC24V
		HE1aN-AC48V	HE2aN-AC48V
		HE1aN-AC120V	HE2aN-AC120V
		HE1aN-AC240V	HE2aN-AC240V
		HE1aN-S-AC12V	HE2aN-S-AC12V
	Screw terminal	HE1aN-S-AC12V	HE2aN-S-AC12V
		HE1aN-S-AC24V	HE2aN-S-AC24V
		HE1aN-S-AC48V	HE2aN-S-AC48V
		HE1aN-S-AC120V	HE2aN-S-AC120V
		HE1aN-S-AC240V	HE2aN-S-AC240V
	Screw terminal (wide pitch)	HE1aN-SW-AC12V	HE2aN-SW-AC12V
		HE1aN-SW-AC24V	HE2aN-SW-AC24V
		HE1aN-SW-AC48V	HE2aN-SW-AC48V
		HE1aN-SW-AC120V	HE2aN-SW-AC120V
		HE1aN-SW-AC240V	HE2aN-SW-AC240V
		HE1aN-Q-AC12V	HE2aN-Q-AC12V
	NEMA terminal	HE1aN-Q-AC12V	HE2aN-Q-AC12V
		HE1aN-Q-AC24V	HE2aN-Q-AC24V
		HE1aN-Q-AC48V	HE2aN-Q-AC48V
HE1aN-Q-AC120V		HE2aN-Q-AC120V	
HE1aN-Q-AC240V		HE2aN-Q-AC240V	

## COIL DATA at 20°C 68°F

	Nominal voltage	Pick-up voltage, V DC (max.)	Drop-out voltage, V DC (min.)	Nominal coil current, mA ( $\pm 10\%$ )	Coil resistance, $\Omega$ ( $\pm 10\%$ )	Nominal operating power, W	Max. allowable voltage (at 50°C 122°F), V DC
DC coil type	6 V DC	4.2	0.6	320.9	18.8	1.92	6.6
	12 V DC	8.4	1.2	160	75	1.92	13.2
	24 V DC	16.8	2.4	80	300	1.92	26.4
	48 V DC	33.6	4.8	40	1200	1.92	52.8
	110 V DC	77.0	11.0	17.5	6300	1.92	121.0

	Nominal voltage	Pick-up voltage, V AC (max.)	Drop-out voltage, V AC (min.)	Nominal coil current, mA ( $\pm 10\%$ )	Coil resistance, $\Omega$ ( $\pm 10\%$ )	Nominal operating power, VA	Max. allowable voltage (at 50°C 122°F), V AC
AC coil type	12 V AC	8.4	1.8	138*	75	1.7	13.2
	24 V AC	16.8	3.6	74*	300	1.8	26.4
	48 V AC	33.6	7.2	39*	1200	1.9	52.8
	120 V AC	70.0	18.0	22.1*	5200	2.7	132.0
	240 V AC	140.0	36.0	10.8*	20800	2.6	264.0

\*Value at 60 Hz