

Three Phase Solid State Relay

PCS24



FEATURES

- SCR Output (530V version), Triac Output (440V version)
- LED Status Indicator
- Built-In RC Snubber
- Removable Finger Safe Cover Option
- Photoelectric Isolation



INPUT PARAMETERS (Ta = 30°C)

Control Voltage Range	4~32 VDC with LED
Must Turn-On Voltage	4 VDC with LED
Must Turn-Off Voltage	1 VDC
Max Input Current	35 mA
Max Reverse Protection Voltage	-32 VDC

OUTPUT CURRENT PARAMETERS (Ta = 30°C)

Load Current (200mA min)**	10A	15A	25A	40A	50A	60A
Max I ² t (10 ms, A ² s)	50	112	312	800	1250	1800
Max Surge Current (10 ms, Apk)	100	150	250	400	500	600
Thermal Resistance Junction to Case (R _{jC} , °C/W)	2.35	2.15	1.15	1.15	0.63	0.63

**Minimum current loading over range required to fully turn-on device. Standard UL endurance ratings are 6,000 cycles

OUTPUT VOLTAGE PARAMETERS

	380A	480A
Load Voltage Range (VAC)	48~440	48~530
Max Transient Voltage (Vpk)	800	1200
Min Off-State (dv/dt)	200 V/us	500 V/us
Max Off-State Leakage Current	10 mA	
Max On-State Voltage Drop	1.7 Vrms	
Max Turn-On Time	Zero Cross	1/2 cycle + 1ms
	Random	1ms
Max Turn-Off Time	1/2 cycle + 1ms	
Min Power Factor	0.5	
Frequency Range	47 Hz ~ 63 Hz	

CHARACTERISTICS

Insulation Resistance	1000 MΩ at 500 VDC
Dielectric Strength	4000 VAC, 50/60 Hz, 1 min, Input to Output
Max Capacitance	10pF, Input to Output
Operating Temperature	-30°C ~ 80°C
Storage Temperature	-30°C ~ 100°C
Relative Humidity	45% ~ 85%
Weight	315g

ORDERING INFORMATION

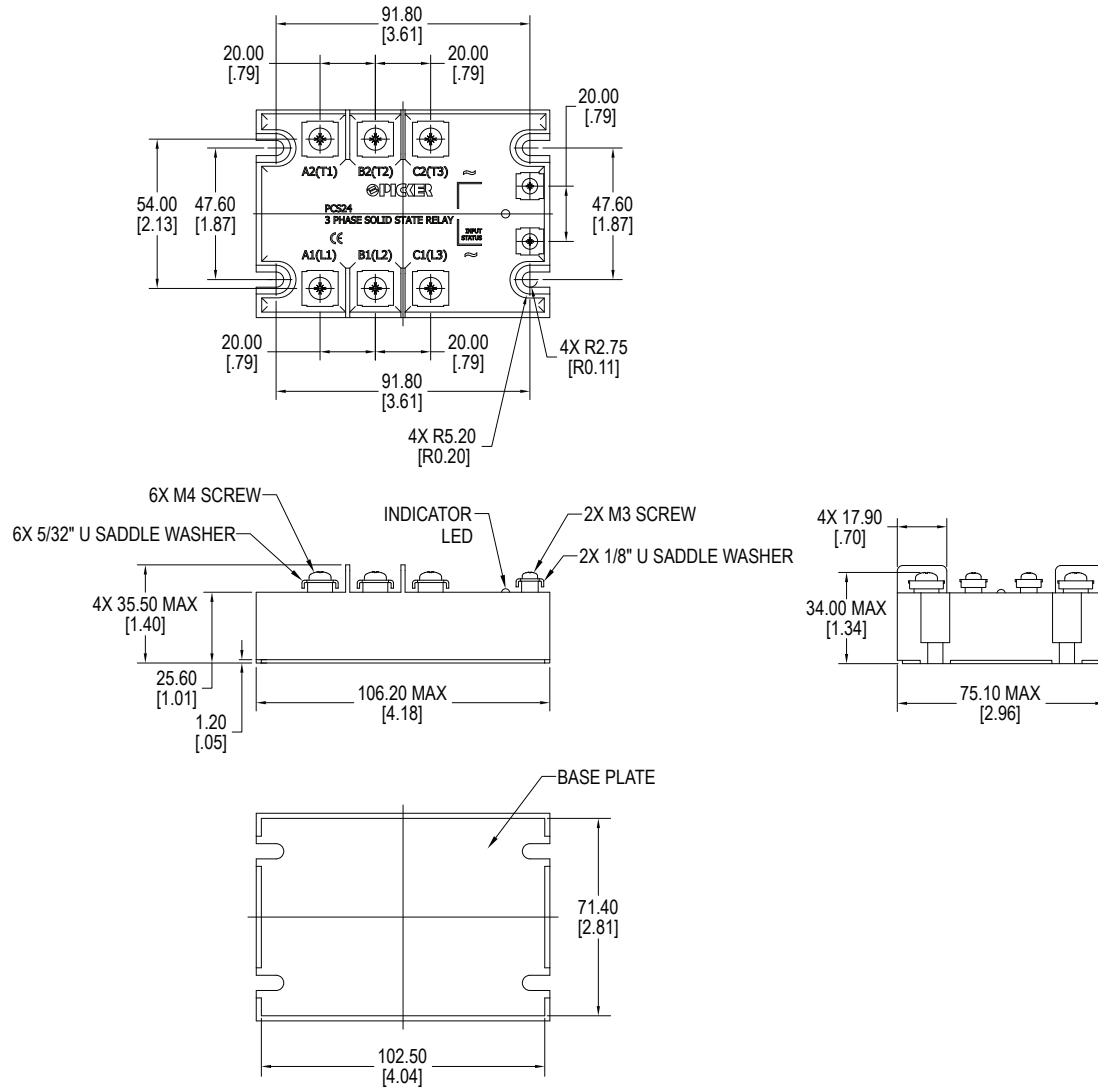
Example	PCS24	-D	-380A	-25	Z			L	P
Model:	PCS24								
Control Voltage	D = 4~32VDC with LED								
Load Voltage	380A = 48~440VAC 480A = 48~530VAC								
Load Current	10 = 10 Amp 15 = 15 Amp 25 = 25 Amp 40 = 40 Amp 50 = 50 Amp 60 = 60 Amp								
Switching Type	Z = Zero Crossing R = Random Turn-On / Instantaneous Turn-On (See Precaution #8)								
Output Component	Nil = Triac (380A only) S = SCRs (480A only)								
Over Voltage Protection	Nil = None Y = With Varistor (MOV)								
Status LED	L = Indicator LED, standard								
Phase Loss Protection	Nil = Without P = With Phase Loss Protections**								

** Phase Loss Protection : The input voltages are monitored. If one or two of the input line voltages drop to zero, the phase loss circuitry engages and all three outputs drop to zero volts. This feature protects the load that the SSR is switching. To indicate the Phase Loss Protection has engaged, the LED indicator will turn off. The LED indicator will only be lit if the SSR is functioning properly. The LED will not be lit if the control voltage drops to zero or if one of the line-in voltages drops to zero.

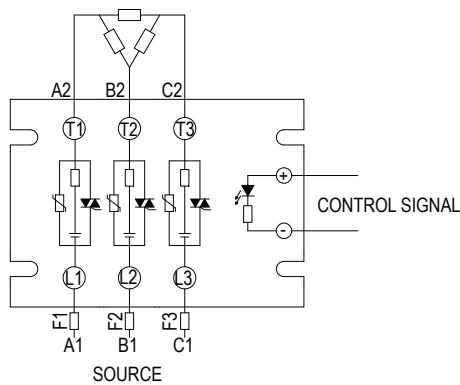
PRECAUTIONS

- When choosing a Solid State Relay (SSR), note the actual load current and ambient temperature and reference the Characteristic Curves.
- SSRs require an adequate heat sinking or other effective cooling measure.
- With ambient temperature above 35°C, refer to the curve of Max Load Current vs. Ambient Temperature for load current derating.
- Apply heat-conducting silicon grease or a thermal transfer pad on the space between the SSR and heat sink and screw the SSR firmly to the heat sink to avoid damage from overheating.
- Tighten the SSR terminal screws properly. We recommend screw installation torque as follows:
M4 screw mounting torque range is (0.98~1.37)N * m
M3 screw mounting torque range is (0.56~0.98)N * m
Loose screws will damage the SSR with heat generated from connections. Also, excessive screw torque may damage the relay's internal components.
- It is recommended to use a heat sink matched to the Current Load. With any heat sink, test that the SSR base temperature does not exceed 65°C.
- The surge current values listed are based on non-repetitive peak values. The standard value is 50% of the listed surge current. It is important to test the relay in the actual application. A fusing or a snubber circuit may be required.
- When using the PCS24 relay with an inductive load, it is suggested to select Random Turn-On. (i.e. a model with "R" Switching Type). Motor loads may generate high transient voltages; test the relay in your application to ensure the output is not damaged.
- The maximum transient voltage value listed in this datasheet is the non-repetitive peak value. If the transient voltage in the application exceeds the nominal value, a R-C network, TVS diode, or varistor is required across the output to prevent damage to the SSR.
- The PCS24 is not suitable for capacitive loads; if you must switch a capacitive load, do not choose the varistor protection option. (i.e. a model with the "Y" Over Voltage Protection)
- Listed parameters are based on resistive loads. Do not use the relay beyond the described current, temperature, load or voltage limits as described in this datasheet.

DIMENSIONS — No Phase Loss Protection mm (inches)

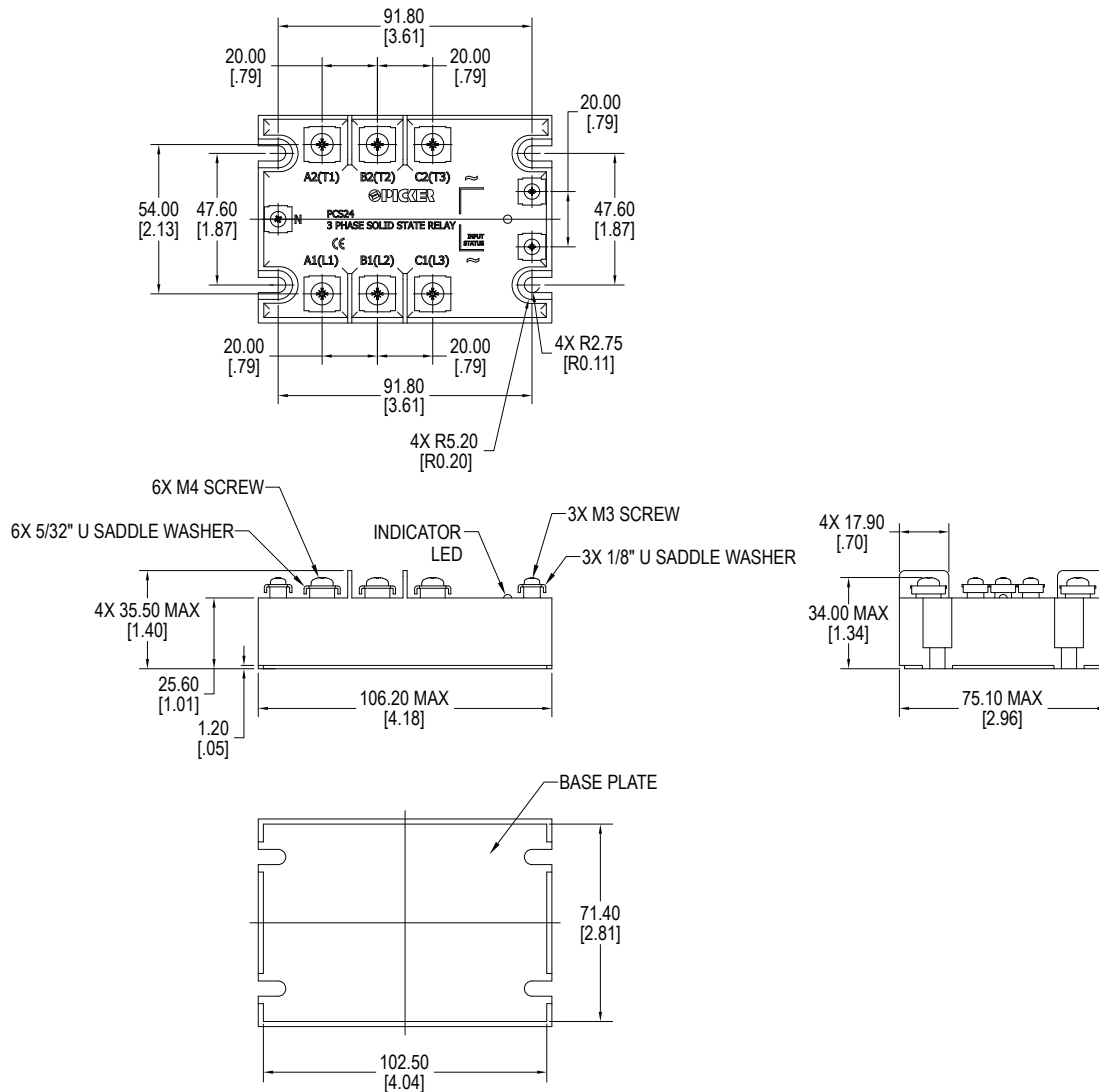


WIRING DIAGRAM

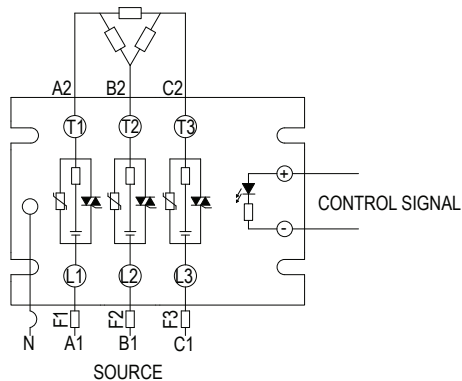


NOTE: F1, F2, F3 should be semiconductor fuses

DIMENSIONS — With Phase Loss Protection mm (inches)



WIRING DIAGRAM

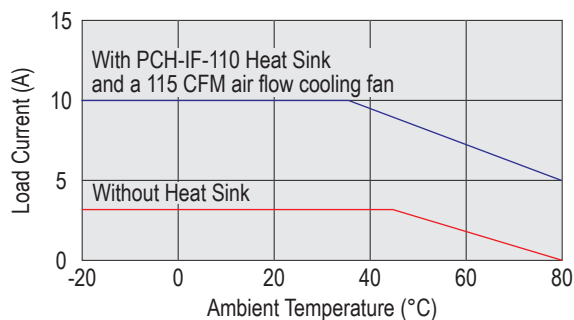


NOTE: F1, F2, F3 should be semiconductor fuses

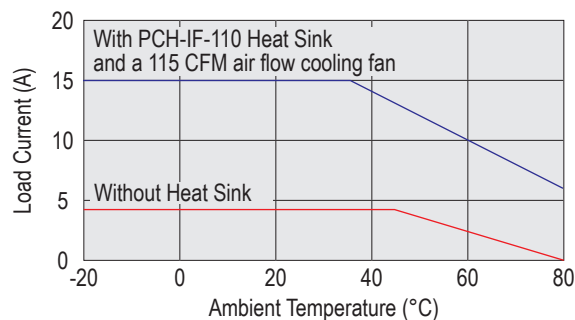
ACCESSORIES

Heat Transfer Pad	HTP300
Protective Cover	SSR300
Heat Sink	PCH-H-150 for applications up to 25 Amps @ 25°C
	PCH-IF-110 for applications up to 40 Amps and above @ 25°C (requires an additional 40 CFM cooling fan)

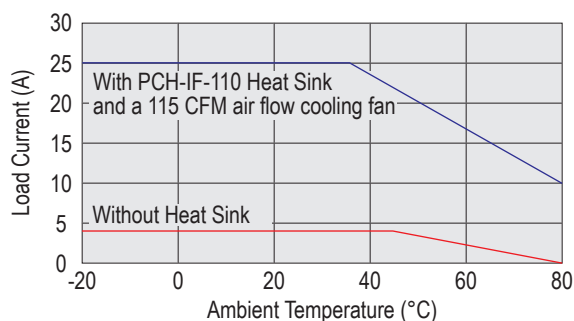
CHARACTERISTIC CURVES



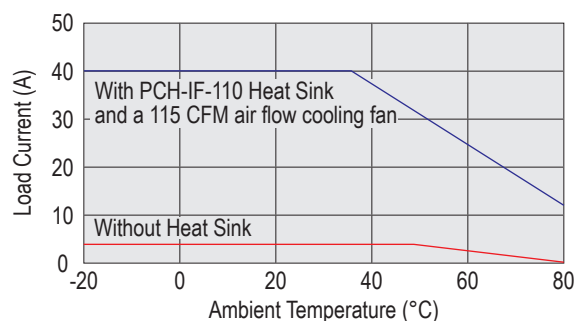
Max Load Current vs. Ambient Temperature - 10A



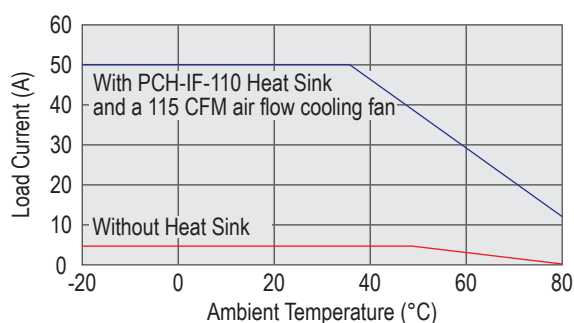
Max Load Current vs. Ambient Temperature - 15A



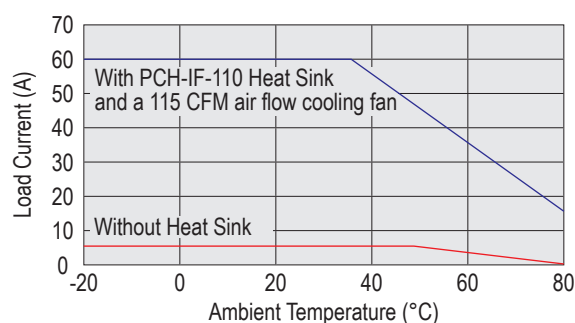
Max Load Current vs. Ambient Temperature - 25A



Max Load Current vs. Ambient Temperature - 40A



Max Load Current vs. Ambient Temperature - 50A



Max Load Current vs. Ambient Temperature - 60A

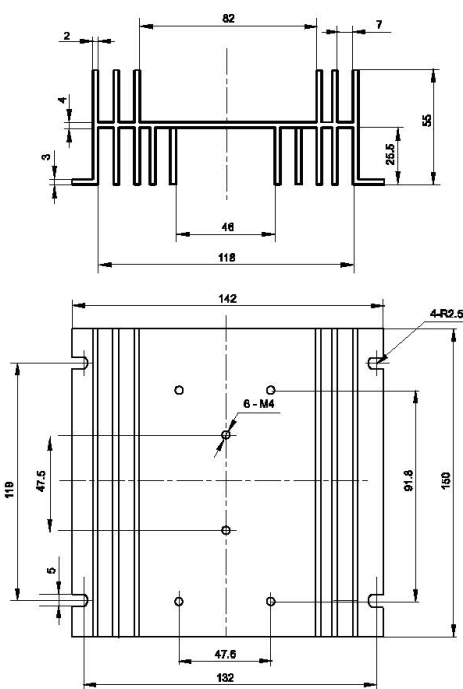
Technical drawing of a rectangular plate with dimensions in inches and millimeters. The drawing includes a top view and a side view.

Top View Dimensions:

- Overall width: 3.614 (91.8)
- Overall height: 1.874 (47.6)
- Distance from left edge to center of first hole: 1.063 (27)
- Distance between centers of first and second holes: .314 (8)
- Distance between centers of second and third holes: .787 (20.0)
- Distance between centers of third and fourth holes: .670 (17.3)
- Distance from center of fourth hole to right edge: .689 (17.5)
- Distance from left edge to center of first hole: .787 (20)
- Distance between centers of first and second holes: .787 (20)
- Distance between centers of second and third holes: .480 (12.2)
- Distance between centers of third and fourth holes: .314 (8)
- Distance from center of fourth hole to right edge: .689 (17.5)
- Overall width: 3.614 (91.8)
- Overall height: 1.874 (47.6)

Side View Dimensions:

- Overall width: 4.063 (103.2)
- Overall height: 1.102 (28.2)
- Distance from left edge to center of first hole: .787 (20)
- Distance between centers of first and second holes: .787 (20)
- Distance between centers of second and third holes: .480 (12.2)
- Distance between centers of third and fourth holes: .314 (8)
- Distance from center of fourth hole to right edge: .689 (17.5)
- Distance from left edge to center of first hole: .787 (20)
- Distance between centers of first and second holes: .787 (20)
- Distance between centers of second and third holes: .480 (12.2)
- Distance between centers of third and fourth holes: .314 (8)
- Distance from center of fourth hole to right edge: .689 (17.5)
- Overall width: 4.063 (103.2)
- Overall height: 1.102 (28.2)



Technical drawing of a rectangular plate with dimensions and features:

- Overall width: 100
- Overall height: 110
- Inner width: 80
- Inner height: 91.8
- Top edge features:
 - 4 - R1.8 (fillets)
 - 29 (distance between top holes)
 - 20 (distance between top holes and center)
 - 71.5 (total width of top section)
 - 4.4 (hole diameter)
 - 6 (hole spacing)
- Bottom edge features:
 - 47.5 (distance between bottom holes)
 - 6 - M4 (bottom holes)
 - 4 - R4.5 (fillets)
 - 47.5 (total width of bottom section)
- Side edge features:
 - 80 (inner width)
 - 91.8 (inner height)
 - 60 (distance between side holes)
 - 4 (hole diameter)



Specifications and availability subject to change without notice.