Three Phase Solid State Relay

PCS24

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

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)

	10A	15A	25A	40A	50A	60A
Load Current (200mA min)**						
Max I^2t (10 ms, A^2s)	50	112	312	800	1250	1800
Max Surge Current (10 ms, Apk)	100	150	250	400	500	600
Thermal Resistance Junction to Case (Rjc, °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
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 Off-State (dv/dt)		200 V/us	
Min Power Factor		0.5	
Frequency Range		47 Hz to 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 to 80°C
Storage Temperature	-30°C to 100°C
Relative Humidity	45% ~ 85%
Weight	315g

ORDERING INFORMATION

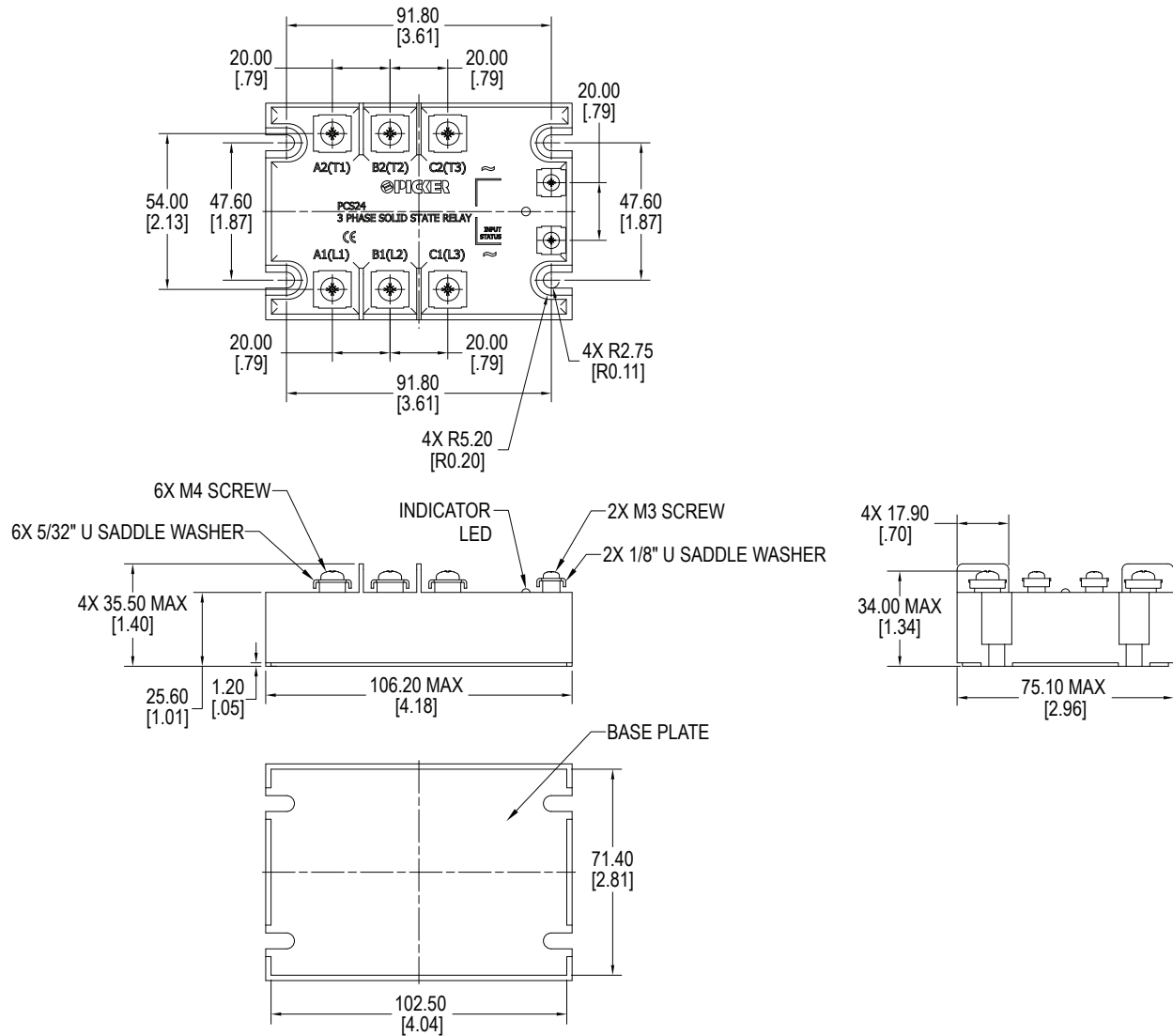|								
Example	PCS24	-D	-380A	-25	Z		L	P

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
Output Component	Nil = Triac (380A only) S = SCRs (480A only)
Over Voltage Protection	Nil = None Y = With Varistor (MOV)
Status LED	L = Indicator LED
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.
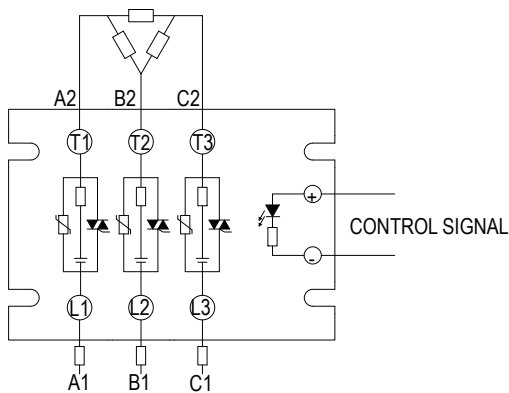
PRECAUTIONS

1. When choosing a Solid State Relay (SSR), note the actual load current and ambient temperature and reference the Characteristic Curves.

2. SSRs require an adequate heat sinking or other effective cooling measure.

3. With ambient temperature above 35°C, refer to the curve of Max Load Current vs. Ambient Temperature for load current derating.

4. 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.

5. 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.

6. 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.

7. 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 snummber circuit may be required.

8. 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 realy in your application to ensure the output is not damaged.

9. 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.

10. 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)

11. 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.
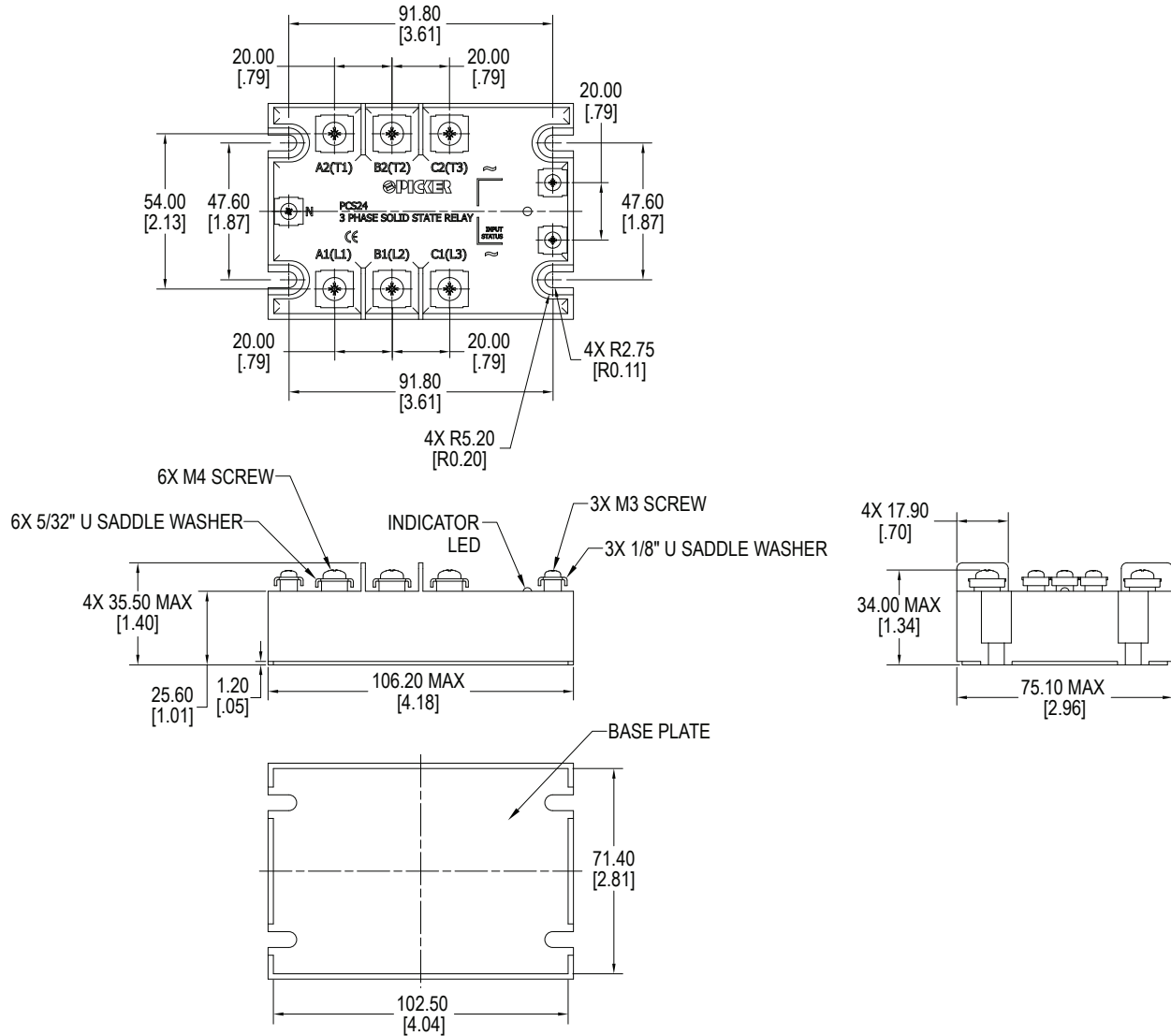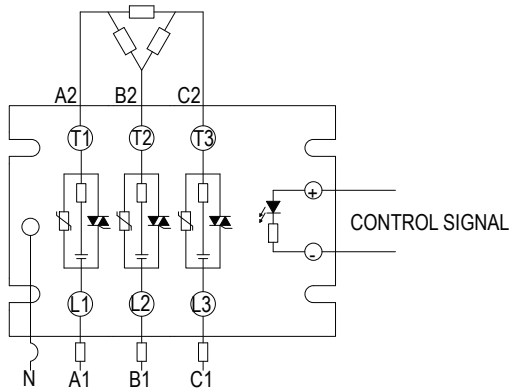
Dimensions are shown for reference purposes only.
PCS24 Rev C 01/2023

Specifications and availability subject to change without notice.

DIMENSIONS — **No Phase Loss Protection** *mm (inches)*

91.80 [3.61]

20.00 [.79] 20.00 [.79]

20.00 [.79]

A2(T1) B2(T2) C2(T3)

54.00 [2.13] 47.60 [1.87]

PCS24
3 PHASE SOLID STATE RELAY

INPUT STATUS

47.60 [1.87]

A1(L1) B1(L2) C1(L3)

20.00 [.79] 20.00 [.79]

91.80 [3.61]

4X R2.75 [R0.11]

4X R5.20 [R0.20]

6X M4 SCREW

6X 5/32" U SADDLE WASHER

INDICATOR LED

2X M3 SCREW

2X 1/8" U SADDLE WASHER

4X 35.50 MAX [1.40]

25.60 [1.01] 1.20 [.05]

106.20 MAX [4.18]

4X 17.90 [.70]

34.00 MAX [1.34]

75.10 MAX [2.96]

BASE PLATE

71.40 [2.81]

102.50 [4.04]

WIRING DIAGRAM

A2 B2 C2

T1 T2 T3

CONTROL SIGNAL

L1 L2 L3

A1 B1 C1

DIMENSIONS — **With Phase Loss Protection** *mm (inches)*

6X M4 SCREW

6X 5/32" U SADDLE WASHER

INDICATOR LED

3X M3 SCREW

3X 1/8" U SADDLE WASHER

BASE PLATE

WIRING DIAGRAM

CONTROL SIGNAL

N   A1   B1   C1

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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
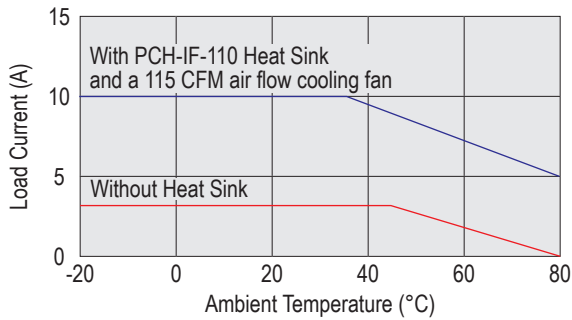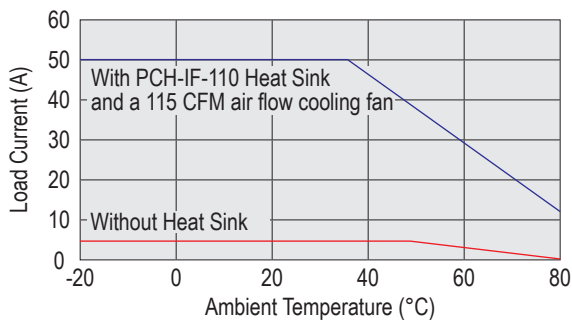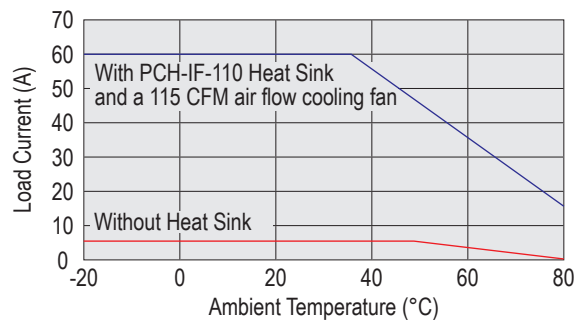

Max Load Current vs. Ambient Temperature - 10A
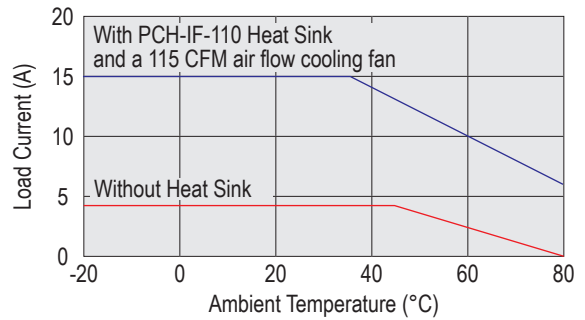
Max Load Current vs. Ambient Temperature - 15A
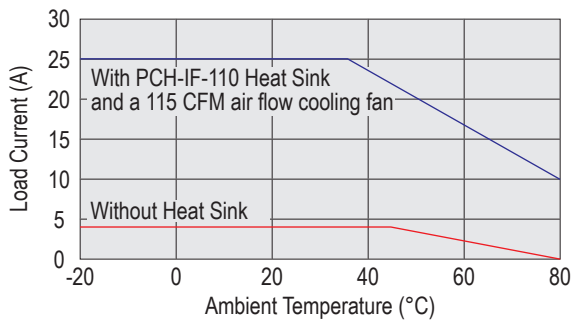
Max Load Current vs. Ambient Temperature - 25A
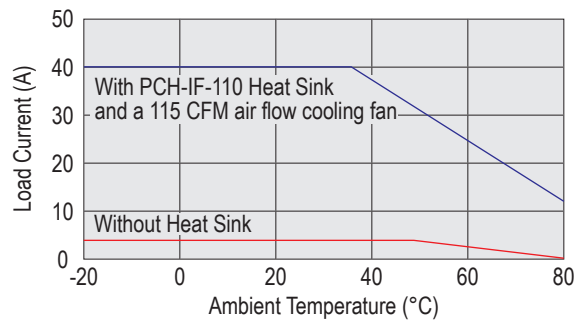
Max Load Current vs. Ambient Temperature - 40A

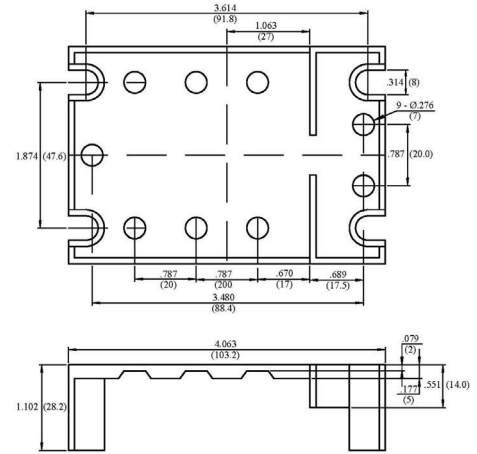Max Load Current vs. Ambient Temperature - 50A

Max Load Current vs. Ambient Temperature - 60A

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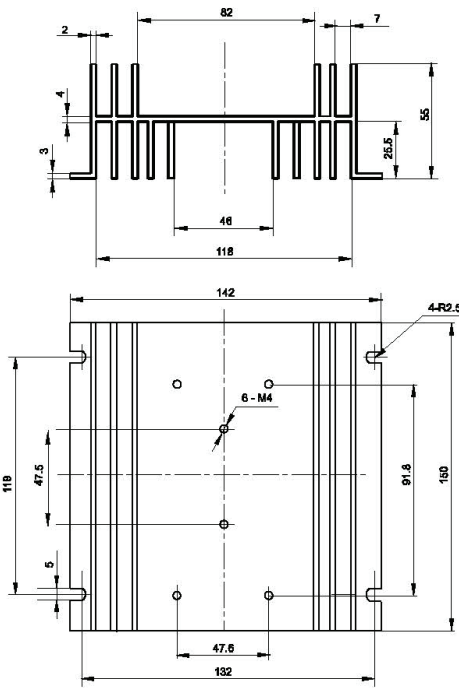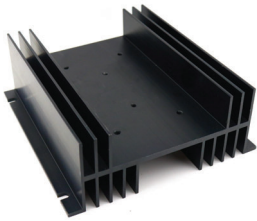
ACCESSORIES

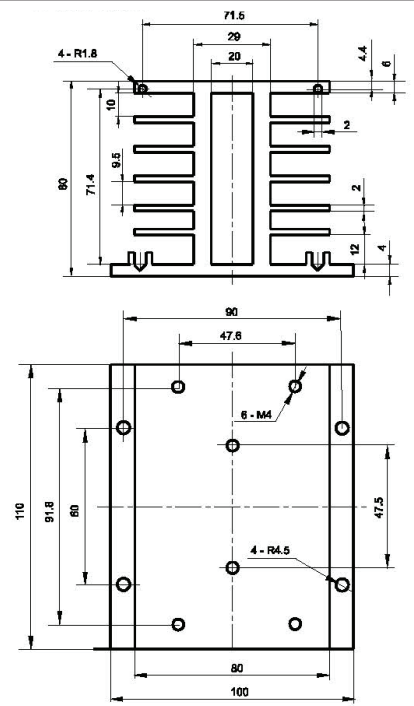HTP300 — Heat Transfer Pad

SSR300— Protective Cover
Removable, made of UL94V-O approved clear polycarbonate

PCH-H-150 Heat Sink
55x142x150mm; Thermal Resistance 0.6°C/W

*shown with Orion Fan
part number OD8025-12HB
NOT INCLUDED*

PCH-IF-110 Heat Sink
80x100x110mm; Requires additional 80mm cooling fan, **not** included.
Orion Fan OD8025-12HB is recommended

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