

**FEATURES/BENEFITS**

- Phase angle controller — microcontroller inside
- Analog switching
- Overvoltage protection by varistor
- Green LED for input visualization
- IP20 touch-proof flaps
- Designed in conformity with EN60947-4-3 (IEC947-4-3) and EN60950/VDE0805 (Reinforced Insulation)



SHPXXNXXA relays



SHPXXNXXR relays



Removable input spring connectors  
Gray: Supply  
Orange: Analog input  
0–10V



IP20 touch-proof flaps

Part Number	Load Voltage	Load Current	Control Range	Also Requires
SHP24N50A	90–280Vac	50A	0–10Vdc	8–30Vdc Supply
SHP24N50R	90–280Vac	50A	4–20mA	
SHP48N75A	200–480Vac	75A	0–10Vdc	8–30Vdc Supply
SHP48N75R	200–480Vac	75A	4–20mA	
SHP48N125A	200–480Vac	125A	0–10Vdc	8–30Vdc Supply
SHP48N125R	200–480Vac	125A	4–20mA	

**ELECTRICAL SPECIFICATIONS**  
(+25°C ambient temperature unless otherwise specified)

**INPUT (CONTROL) SPECIFICATIONS**  
SHPXXNXXA RELAYS

	Min	Max	Units
Control Voltage	8	30	V
Supply Current		12	mA
Reverse Supply Voltage		30	V
Analog Voltage Range	0	10	V
Analog Input Current		100	μA
Reverse Analog Voltage		30	V
Analog Input Impedance (Typ.)		120	kΩ

**ELECTRICAL SPECIFICATIONS**  
(+25°C ambient temperature unless otherwise specified)

**INPUT (CONTROL) SPECIFICATIONS**  
SHPXXNXXR RELAYS

	Min	Max	Units
Control Current Range	4	20	mA
Voltage Range	-0.6	7.5	V
<b>Dynamic Impedance</b>			
SHP24N50R		>100	mΩ
SHP48N75R		150	mΩ
SHP48N125R		150	mΩ
Reverse Polarity Protection		Yes	
Input Current		50	mA

TYPICAL APPLICATION

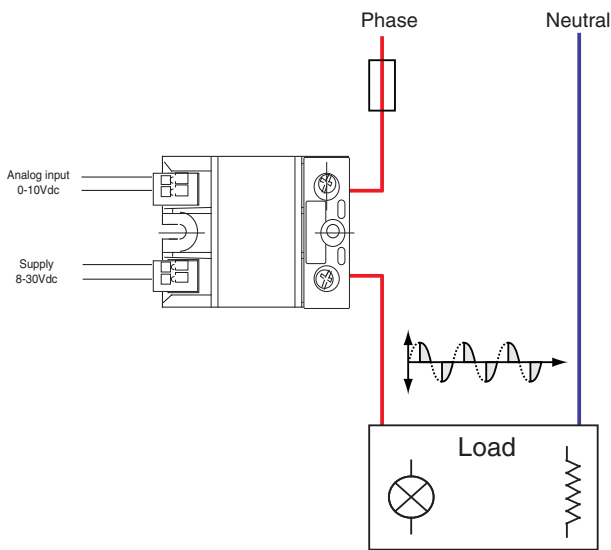


Figure 1a — SHPXXNXXA relays

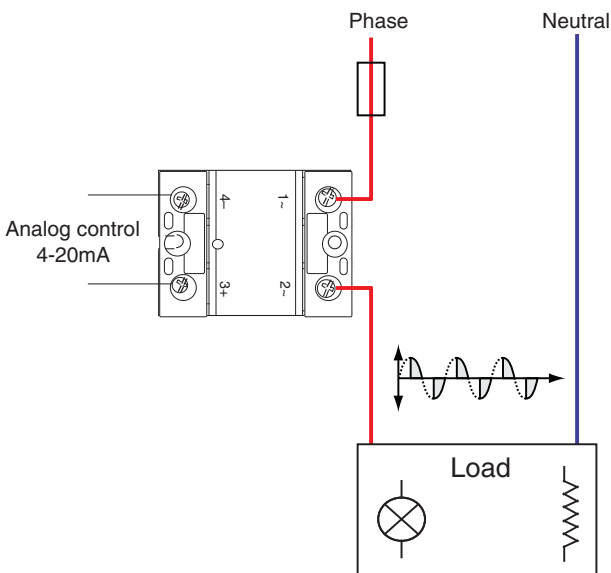


Figure 1b — SHPXXNXXR relays

MECHANICAL SPECIFICATION

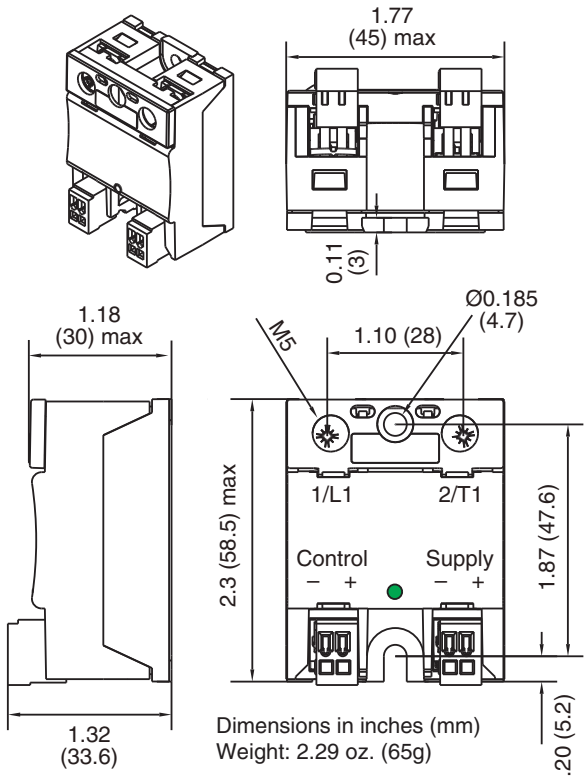


Figure 2a — SHPXXNXXA relays

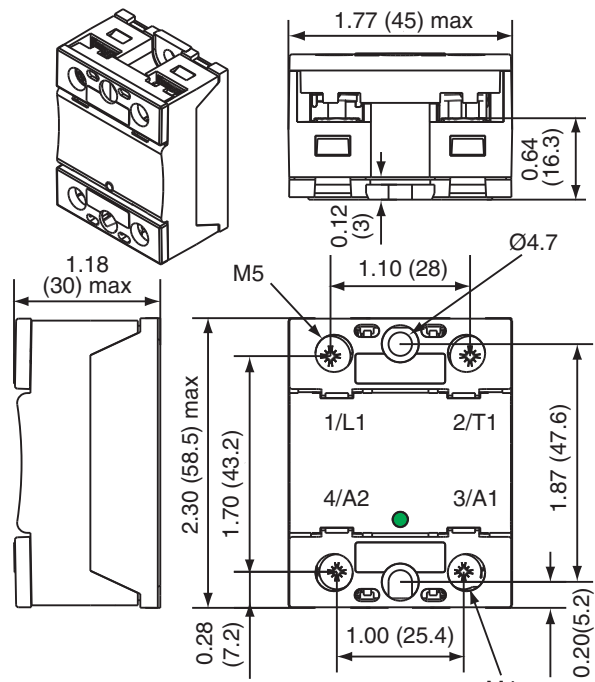


Figure 2b — SHPXXNXXR relays

ELECTRICAL SPECIFICATIONS (+25°C ambient temperature unless otherwise specified)				OUTPUT (LOAD) SPECIFICATIONS (Continued)			
OUTPUT (LOAD) SPECIFICATIONS				Min	Max	Units	
<b>Operating Range</b>							
SHP24N50A	90	280	Vrms				
SHP24N50R	90	280	Vrms				
SHP48N75A	200	480	Vrms				
SHP48N75R	200	480	Vrms				
SHP48N125A	200	480	Vrms				
SHP48N125R	200	480	Vrms				
<b>Peak Voltage (VDR Clamping)</b>							
SHP24N50A		600	Vpeak				
SHP24N50R		600	Vpeak				
SHP48N75A		1200	Vpeak				
SHP48N75R		1200	Vpeak				
SHP48N125A		1200	Vpeak				
SHP48N125R		1200	Vpeak				
<b>Latching Voltage</b>							
SHP24N50A	10		V				
SHP24N50R	10		V				
SHP48N75A	20		V				
SHP48N75R	10		V				
SHP48N125A	20		V				
SHP48N125R	20		V				
<b>Load Current Range (See Fig. 5)</b>							
SHP24N50A	0.1	50	Arms				
SHP24N50R	0.1	75	Arms				
SHP48N75A	0.1	125	Arms				
SHP48N75R	0.1	50	Arms				
SHP48N125A	0.1	75	Arms				
SHP48N125R	0.1	125	Arms				
<b>Non-Repetitive Overload Current</b>							
SHP24N50A	550	720	A				
SHP24N50R	550	720	A				
SHP48N75A	1000	1200	A				
SHP48N75R	1000	1200	A				
SHP48N125A	2000	2200	A				
SHP48N125R	2000	2200	A				
<b>On-State Voltage Drop</b>					0.9		V
<b>On-State Dynamic Resistance</b>							
SHP24N50A		12	mΩ				
SHP24N50R		12	mΩ				
SHP48N75A		4.5	mΩ				
SHP48N75R		4.5	mΩ				
SHP48N125A		2	mΩ				
SHP48N125R		2	mΩ				
<b>Output Power Dissipation (Max)</b>					$0.9 \times 0.9 \times I + 0.012 \times I^2$		W
<b>Off-State Leakage Current</b>							
SHP24N50A			2				mA
SHP24N50R			1				mA
SHP48N75A			2				mA
SHP48N75R			1				mA
SHP48N125A			2				mA
SHP48N125R			1				mA
<b>Init Time (60 Hz)</b>					83.3		ms
<b>Delay Time (60 Hz)</b>					16.6		ms
<b>Rise, Fall Time (60 Hz)</b>					52.3		ms
<b>Operating Frequency</b>				40	70		Hz
<b>Off-State dv/dt</b>				500			V/μs
<b>Maximum di/dt (Non-Repetitive)</b>					50		A/μs

OUTPUT (LOAD) SPECIFICATIONS (Continued)

	Min	Max	Units
I <sup>2</sup> t for fuse matching (<10ms)			
SHP24N50A		2500	A <sup>2</sup> s
SHP24N50R		2500	A <sup>2</sup> s
SHP48N75A		7200	A <sup>2</sup> s
SHP48N75R		7200	A <sup>2</sup> s
SHP48N125A		7200	A <sup>2</sup> s
SHP48N125R		7200	A <sup>2</sup> s

Conducted Immunity Level

IEC/EN61000-4-4 (bursts)	4kV criterion A
IEC/EN61000-4-5 (surge)	4kV criterion A

Internal Overvoltage Protection	820(@1mA)	V
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GENERAL SPECIFICATIONS  
(+25°C ambient temperature unless otherwise specified)

ENVIRONMENTAL SPECIFICATIONS

	Min	Max	Units
Operating Temperature	-40	+100	°C
Storage Temperature	-40	+125	°C
Ambient Humidity	40	85	%
Input-Output Isolation	4000		V <sub>rms</sub>
Output-Case Isolation	4000		V <sub>rms</sub>
Insulation Resistance @500Vdc	1000		MΩ
Rated Impulse Voltage		4000	V
Protection Level (CEI529)		IP20	
Vibration (10–55 Hz according to CE168)		1.5	mm
Shock (according to CE168)		30/50	g
Thermal Resistance (Junction to Case) SHP48NXXR		0.5	C°/W
Housing Material	PA6 UL94VO		
Baseplate	Aluminum, nickel-plated		

SURGE CURRENT

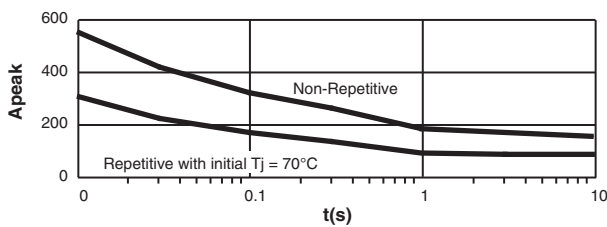


Figure 3a — 50A output current

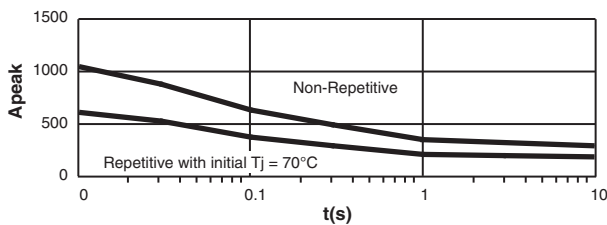


Figure 3b — 75A output current

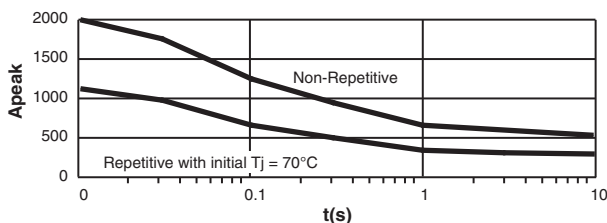


Figure 3c — 125A output current

TRANSFER CHARACTERISTIC

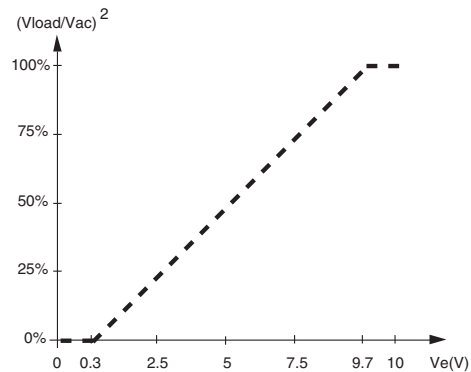


Figure 4a — SHPXXNXXA

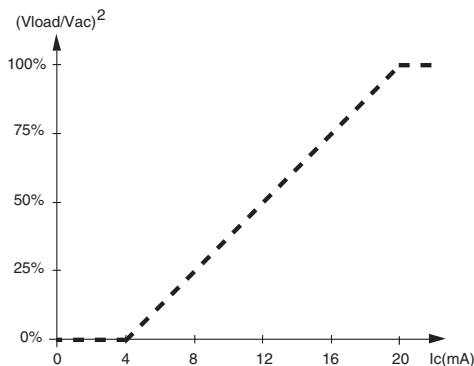


Figure 4b — SHP48NXXR

**THERMAL CHARACTERISTICS**

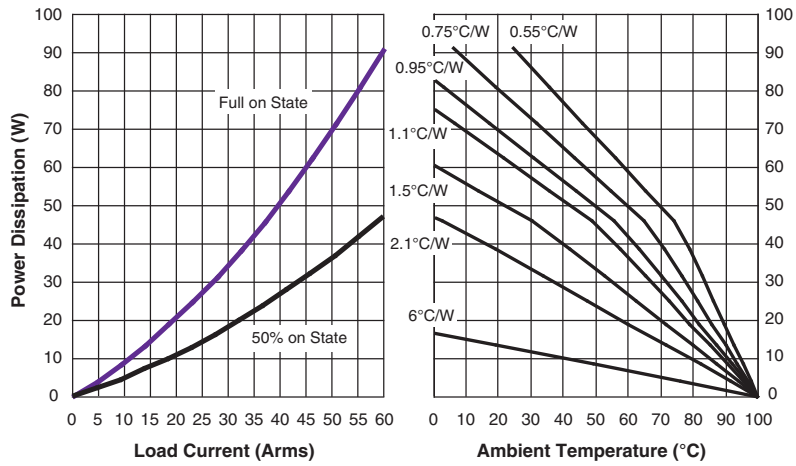


Figure 5a — 50A output power

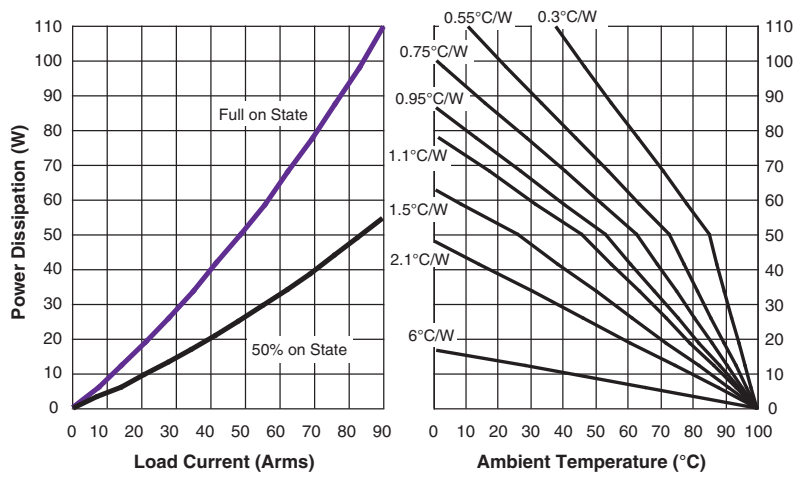


Figure 5b — 75A output power

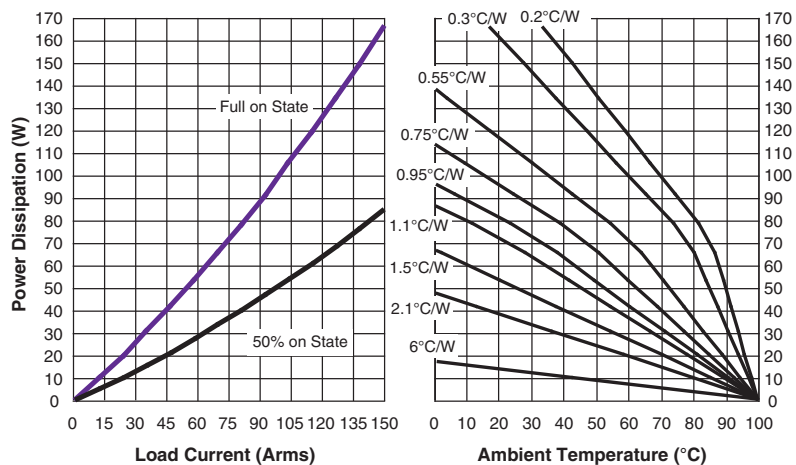


Figure 5c — 125A output power

OPTIONAL CONNECTIONS



Directly with wires,  
with or without ferrules



With tips  
(ring terminals)

CONTROL WIRING - SHPCCNXXA



Pluggable removable input  
spring connectors  
Minimum: AWG28  
Maximum: AWG14



Connector  
WAGO 734



With clip

CONTROL WIRING - SHPXXNXXR

Number of Wires				Screwdriver Type	Recommended Torque
1		2			
Solid (no ferrule)	Fine Stranded (with ferrule)	Solid (no ferrule)	Fine Stranded (with ferrule)		M4
					N.m
AWG18...AWG14	AWG18...AWG14	AWG18...AWG14	AWG18...AWG14		Pozidriv 2

POWER WIRING

Number of Wires				Screwdriver Type	Recommended Torque
1		2			
Solid (no ferrule)	Fine Stranded (with ferrule)	Solid (no ferrule)	Fine Stranded (with ferrule)		M5
					N.m
AWG16...AWG8	AWG16...AWG10	AWG16...AWG8	AWG16...AWG10		Pozidriv 2

Power with tips

W max = 12.6 mm

AWG6 (16mm<sup>2</sup>)

AWG4 (25mm<sup>2</sup>)

AWG2/AWG3  
(35mm<sup>2</sup>)

AWG0/AWG1  
(50mm<sup>2</sup>)

Options

Fastons: Call us

Special kit for high current

AWG2 (35mm<sup>2</sup>)

AWG0 (50mm<sup>2</sup>)

Mounting  
HIPpak SSRs must be mounted on heat sinks. A large range of heat sinks is available. For heat-sink mounting, use thermal grease or a thermal pad with high conductivity specified by Teledyne.



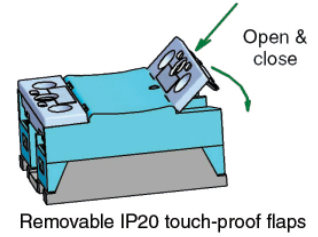
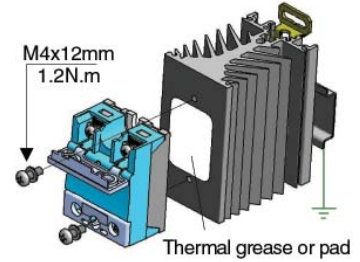
2-2.5°C/W  
Teledyne P/N FW151



1.1°C/W  
Teledyne P/N FW108



Thermal Pad  
Teledyne P/N -12



Removable IP20 touch-proof flaps