Series **50AC**

55W Isolated Regulated AC-DC Power Supply

PICO Electronics, Inc.

PRODUCT OVERVIEW

The 50AC series is a switching AC-DC power supply available in single, dual and triple outputs. They offer excellent line and load regulation and continuously protected against short circuits. The highly reliable module is capable of up to 55W power in a wide ambient temperature range -25ºC to +70ºC. These modules are the perfect design choice for your most stringent industrial applications.

The case has a low profile height, 0.500", and threaded inserts to mount securely for high vibration and shock applications.

FEATURES

- Up to 55W output power
- Single, dual and triple outputs
- Low profile size - 5.6" x 4.3" x 0.5"
- 1200V input/output isolation
- Through hole mounting
- Continuous short-circuit protection
- Two input voltage ranges
- Fixed operating frequency
- No external components required

Contact Pico for part number of available options:

- Expanded operating temp: -55°C to +85°C
- Select screening per MIL-STD-883:
  - Stabilization Bake
  - Temperature Cycle
  - Burn-In
- Special Input Voltage, Output Voltage, or Output Power
- Low Isolation Capacitance

H	50AC	5	T	12
INPUT VOLTAGE RANGE	**SERIES NAME**	**MAIN OUTPUT VOLTAGE**	**NUMBER OF OUTPUTS**	**TRIPLE OUTPUT AUXILIARY**
BLANK = 90 - 130VAC	**50AC**	**5** = 5V	**S** = SINGLE	**5** = ±5V
H = 170 - 240 VAC		**12** = 12V	**D** = DUAL	**12** = ±12V
		15 = 15V	**T** = TRIPLE	**15** = ±15V
		24 = 24V		
		28 = 28V		

MODEL LIST

SINGLE OUTPUT

Pico Part Number		Output Voltage	Output Current		Output Power	Load Regulation 10-100% (1)	Output Voltage Tolerance (2)	Efficiency (2)
90-130 VAC Input	170-240 VAC Input	[VDC]	Min. [A]	Max. [A]	[W]	[%] max	[±%]	[%] typ.
50AC5S	H50AC5S	5	900	9000	45	0.75	1	75
50AC12S	H50AC12S	12	458.3	4583	55	0.3	0.5	80
50AC15S	H50AC15S	15	366.7	3667	55	0.3	0.5	83
50AC24S	H50AC24S	24	229.2	2292	55	0.3	0.5	86
50AC28S	H50AC28S	28	196.4	1964	55	0.3	0.5	86

Note 1: Maintain minimum 10% of rated load to prevent a voltage surge.
Note 2: Tested at nominal input voltage and full output load.

DUAL OUTPUT

Pico Part Number		Output Voltage	Output Current Per Output		Output Power Per Output	Load Regulation 10-100% (1)	Output Voltage Tolerance (2)	Efficiency (2)
90-130 VAC Input	170-240 VAC Input	[±VDC]	Min. [±A]	Max. [±A]	[±W]	[%] max	[±%]	[%] typ.
50AC5D	H50AC5D	5	450	4500	22.5	0.75	1	75
50AC12D	H50AC12D	12	229.1	2291	27.5	0.3	0.5	80
50AC15D	H50AC15D	15	183.3	1833	27.5	0.3	0.5	83

Note 1: Maintain minimum 10% of rated load to prevent a voltage surge.
Note 2: Tested at nominal input voltage and full output load.
Note 3: Dual output loads must be balanced.

TRIPLE OUTPUT

Pico Part Number		MAIN / AUXILIARY						
		Output Voltage	Output Current		Output Power	Load Regulation 25-100% (1)	Output Voltage Tolerance (2)	Efficiency (2)
90-130 VAC Input	170-240 VAC Input	[VDC]	Min. [mA]	Max. [mA]	[W]	[%] max	[±%]	[%] typ.
50AC5T12	H50AC5T12	5 / ±12	800 / ±20.8	8000 / ±208	40 / 2.5	0.75 / 1	0.5 / 5	75
50AC5T15	H50AC5T15	5 / ±15	800 / ±16.7	8000 / ±167	40 / 2.5	0.75 / 1		75
50AC12T5	H50AC12T5	12 / ±5	375 / ±50	3750 / ±500	45 / 2.5	0.25 / 1		77
50AC15T5	H50AC15T5	15 / ±5	300 / ±50	3000 / ±500	45 / 2.5	0.25 / 1		79

Note 1: Maintain minimum 10% of rated load to prevent a voltage surge.
Note 2: Tested at nominal input voltage and full output load.
Note 4: Auxiliary outputs must be balanced.

SPECIFICATIONS (V_{IN}, Full Load, T_A = +25°C, 1 hour warm up unless otherwise specified)

INPUT

Parameter	Condition		Min.	Typ.	Max.	Units
Input Voltage Range	50AC models		90	115	130	VAC
	H50AC models		170	220	240	
Input Frequency			47	60	440	Hz
Input Fuse Recommendation	With external 2.5Ω inrush thermistor	50AC models	3A, Rated Voltage ≥ Input Voltage			
		H50AC models	2A, Rated Voltage ≥ Input Voltage			
Input Thermistor Recommendation			-	2.5	-	Ω

OUTPUT

Parameter	Condition	Min.	Typ.	Max.	Units
Line Regulation		-	-	0.2	±%
Output Ripple	1MHz bandwidth	-	-	50	mVp-p

ENVIRONMENTAL

Parameter	Condition	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient without derating	-25	-	+70	°C
Storage Temperature Range	Ambient	-55	-	+125	°C
Temperature Coefficient		-	0.02	-	%/°C
Cooling	Free Air Convection				

GENERAL

Parameter	Condition	Min.	Typ.	Max.	Units
Operating Frequency		40	-	60	kHz
Isolation Voltage	Input to output	1200	-	-	V_{RMS}
Size	L x W x H	5.6 x 4.3 x 0.5 (142.24 x 109.22 x 12.7)			inches (mm)
Weight	Single output models	-	475	-	grams
	Dual output models	-	485	-	
	Triple output models	-	495	-	
Case	6-Sided Epoxy Insulated Metal				
Potting	Vacuum Impregnated Epoxy				
Box Packaging	8 x 7.5 x 1.5 (203.2 x 190.5 x 38.1) or 12 x 9 x 1.5 (304.8 x 228.6 x 38.1)				inches (mm)

PROTECTIONS & FEATURES

Parameter	Condition	Min.	Typ.	Max.	Units
Short circuit	Continuous, auto-recovery				

SPECIFICATIONS (V_{IN}, Full Load, T_A = +25°C, 1 hour warm up unless otherwise specified)

DESIGNED TO MEET

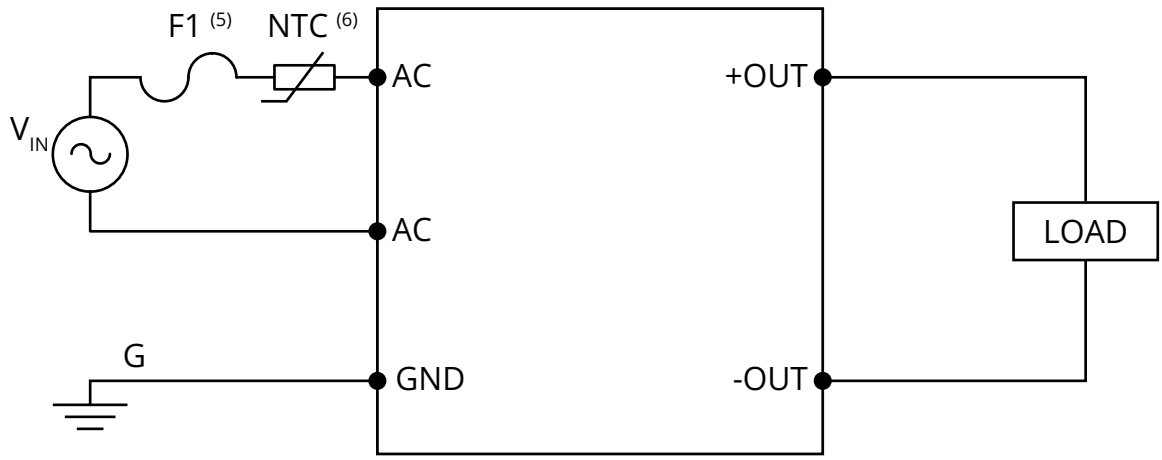
Test	Referenced Standard	Description
Vibration	MIL-STD-202	Method 204, Vibration, High Frequency, Condition D
Shock	MIL-STD-202	Method 213, Shock (Specified Pulse), Condition I
Humidity	MIL-STD-202	Method 106, Moisture Resistance
Altitude	MIL-STD-202	Method 105, Barometric Pressure (Reduced), Condition D

OPTIONS AVAILABLE – CONTACT PICO FOR PART NUMBER

Parameter	Referenced Standard	Description
Stabilization Bake	MIL-STD-883	Referenced Method 1008 Non-operating maximum storage temperature for 24 hours
Temperature Cycle	MIL-STD-883	Referenced Method 1010 Non-operating at temperature extremes, 15 mins/temp, 10 cycles
Burn-In	MIL-STD-883	Referenced Method 1015 Max operating temperature for 160 hours
Expanded Operating Temperature Range	-55°C to +85°C	

TYPICAL CONNECTION CIRCUIT

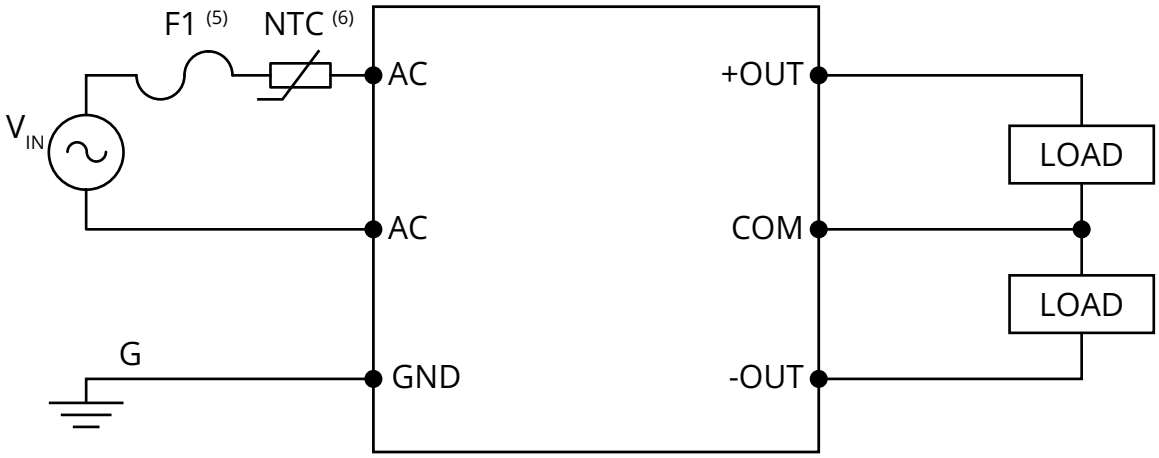
SINGLE OUTPUT



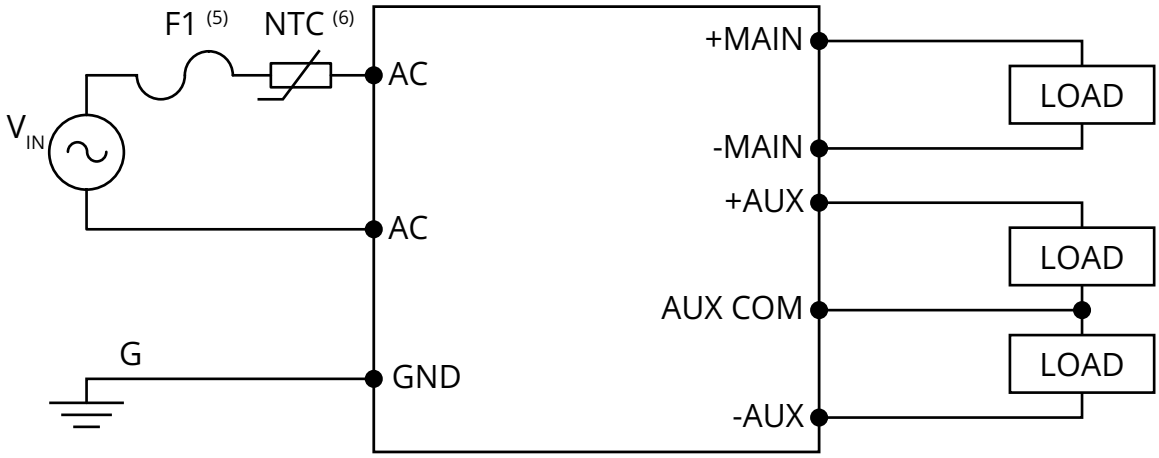
Note 5: For 50AC models, a 3A fuse is required on the input. For H50AC models, a 2A fuse is required on the input.
Note 6: A 2.5Ω inrush thermistor is required on the input.

TYPICAL CONNECTION CIRCUIT

DUAL OUTPUT



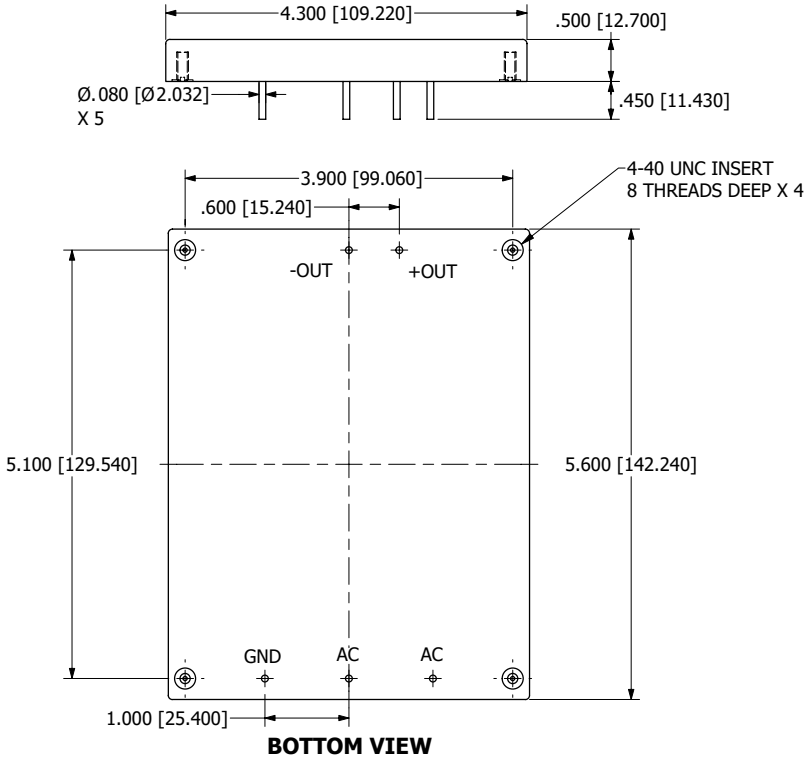
TRIPLE OUTPUT



Note 3: Dual output loads must be balanced.
Note 4: Auxiliary outputs must be balanced.
Note 5: For 50AC models, a 2.5A fuse is required on the input. For H50AC models, a 1.5A fuse is required on the input.
Note 6: A 2.5Ω inrush thermistor is required on the input.

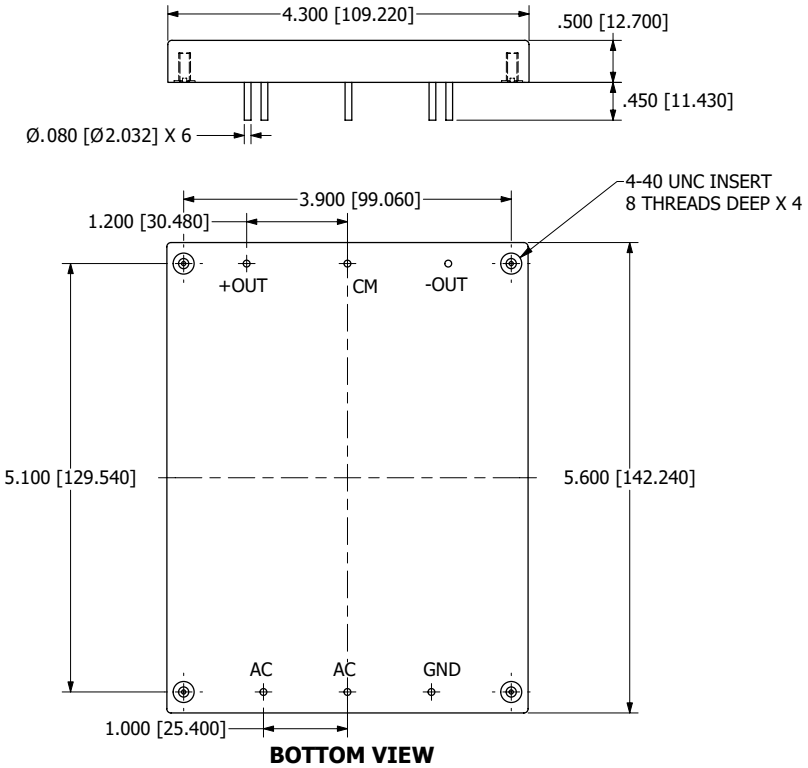
MECHANICAL DRAWINGS

SINGLE OUTPUTS



BOTTOM VIEW

DUAL OUTPUTS



BOTTOM VIEW

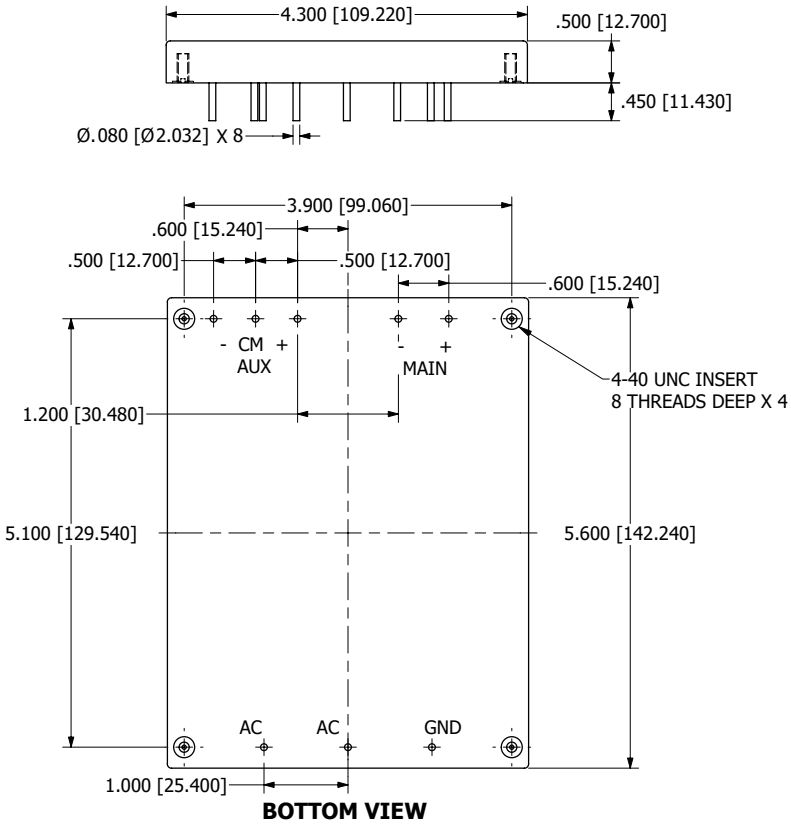
NOTES

a. ALL DIMENSIONS ARE IN INCHES, [ ] = MM

b. THE RECOMMENDED TORQUE FOR MOUNTING SCREWS IS 3-5 IN-LBS.

MECHANICAL DRAWINGS

TRIPLE OUTPUTS



BOTTOM VIEW

NOTES

a. ALL DIMENSIONS ARE IN INCHES, [ ] = MM

b. THE RECOMMENDED TORQUE FOR MOUNTING SCREWS IS 3-5 IN-LBS.

BOX PACKAGING - BULK