Wall Industries, Inc.

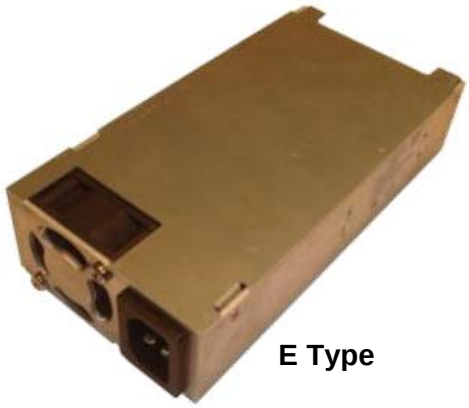
DATASHEET
Rev. A

PSPRL1103M SERIES

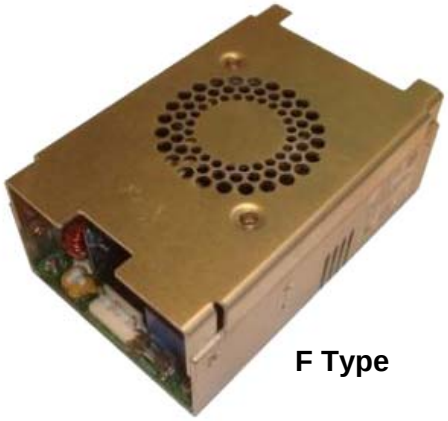
90~264VAC Input Voltage Range
150W Convection Cooling, 300W with Forced Air
PFC, Single Outputs
U-Chassis & Enclosed with Built-in Fan Options
Medical AC/DC Switching Power Supplies



U Type



E Type



F Type

FEATURES

- RoHS Compliant
- High Quality & Reliable Component Usage
- Variable Fan Speed & Low Acoustical Noise
- 90~264VAC Input Voltage Range
- Output Voltages Available from 12~52VDC
- Power Factor Corrected to EN61000-3-2 Class D
- MTBF: 100,000 Hours (MIL-HDBK-217F)
- Compact 300W with 1U Height Power Density: 12.5 Watts/cu in
- Providing Peak Power 600W within 500µs Duty Duration
- U-Chassis and Enclosed with Built-in Fan Mechanical Options
- Short Circuit, Over Power, Over Voltage, and Over Temperature Protection
- UL60601-1, EN60601-1, IEC60601-1 (3rd Edition) Medical Approvals

DESCRIPTION

The PSPRL1103M series of medical AC/DC switching power supplies offers up to 300 Watts of output power. This series consists of single output models with PFC corrected to EN61000-3-2 Class D and a 90~264VAC input voltage range. These supplies also have short circuit, over voltage, over power, and over temperature protection. Models are available in U-Chassis (Type U), enclosed with rear-side built-in fan (Type E), and enclosed with top-side built-in fan (Type F) designs. This series has UL60601-1, EN60601-1, and IEC60601-1 (3rd Edition) medical approvals. All models in this series are RoHS compliant.

SPECIFICATIONS: *PSPRL1103M SERIES*

All specifications are based on 25ºC, Nominal Input Voltage, and Maximum Output Current unless otherwise noted.
We reserve the right to change specifications based on technological advances.

INPUT SPECIFICATIONS		
Input Voltage		90 ~ 264VAC full range
Input Frequency		47 ~ 63Hz
Input Current		5A at 90VAC full load
Inrush Current		35A max at 115VAC and cold start; 70A max at 230VAC and cold start
Power Factor Correction (PFC)		Power Factor Correction Pass EN61000-3-2 class D
OUTPUT SPECIFICATIONS		
Output Voltage		See Table
Output Power *(See Note 2)*		See Table
Output Adjustability		Output adjustable ±5% minimum
Regulation *(See Note 4)*		±1%
Output Current		See Table
Minimum Load		1% minimum load is required to maintain the ripple and regulation
Ripple & Noise *(See Note 4)*		±1% (measured from 10KHz to 20MHz bandwidth with 0.1µF ceramic and 22µF electrolytic capacitors in parallel on the output)
Transient Response		Returns to within 1% in less than 2.5ms for a 50% load change and the peak transient does not exceed 5%
Overshoot		Turn-on & off overshoot < 5% over nominal voltage
Hold-Up Time		16ms min. at 120VAC and 80% of full load
Turn-on Delay		1 second maximum at 230VAC
PROTECTION		
Input Fusing Protection		Dual F5A/250V fuses inserted in primary
Over Power Protection		110~140% of I-max; automatic recovery
Over Voltage Protection		Unit latches down when output voltage exceeds 130%; recycle AC input to reset
Short Circuit Protection		Trip without damage and automatic recovery
Over Temperature Protection		Unit protected against excessive operating ambient 110°C±5°C; automatic recovery
GENERAL SPECIFICATIONS		
Switching Frequency		PFC: 50K~70KHz PWM: 65K~75KHz
Efficiency		88% typical at 230VAC and full load
HI-POT test	Input Line to Chassis	1500VAC (10mA DC cut off current) for 3 seconds
	Primary to Secondary	4000VAC for 3 seconds
	Primary to Core	1500VAC for 3 seconds
Leakage Current		< 300µA at 264VAC
Grounding Test		Apply 25A from ground pin of the three prong plug to the far most earth. Max allowable resistance is 0.1Ω
Burn-in		45±5°C for one hour at 230VAC and full load.
ENVIRONMENTAL SPECIFICATIONS		
Operating Temperature		0°C to +70°C ambient, de-rating at 2.5% per degree from +50°C to +70°C.
Storage Temperature		-20°C to +85°C
Operating Humidity (non-condensing)		5% to 90% RH
Storage Humidity (non-condensing)		5% to 95% RH
Vibration		5~50Hz, acceleration ±7.35 m/s*s on X, Y, and Z axis.
Cooling	U Type Models	Convection
	E & F Type Models	Fan
MTBF		100,000 hours at 30°C according to MIL-HDBK-217F
FUNCTIONS		
Remote ON/OFF		Designated as **INH** on pin 4 of CN3, requires a low signal to inhibit output.
Power Supply ON		Green LED designated as **LED 1** on the PCB
Power Good		Designated as **PG** on the CN3 goes high 100-500ms after DC regulation and goes low 1ms before loss of regulation (open collector)
Fan Drive		12VDC/300mA is available to drive an external fan.
Fan Fail (FF) Alarm		Designated as **FF** on pin 3 of CN3 is an open collector output rated for 28VDC/5mA sink current maximum; it will go high when a fan failure is detected.
PHYSICAL SPECIFICATIONS		
Weight	U Type Models	1.10 lbs (500g)
	E Type Models	1.32 lbs (600g)
	F Type Models	1.43 lbs (650g)
Dimensions (L x W x H)	U Type Models	5 x 3.2 x 1.5 inches (127 x 81.28 x 38.1 mm)
	E Type Models	6.5 x 3.2 x 1.6 inches (165.1 x 81.28 x 40.64 mm)
	F Type Models	5 x 3.2 x 2 inches (127 x 81.28 x 50.8)
SAFETY & EMC		
Safety Approvals		UL60601-1, EN60601-1, IEC60601-1 (3rd Edition)
EMI Conduction & Radiation		EN60601-1-2 class B
Harmonic Current		EN61000-3-2, 3
EMS Immunity		IEC61000-4-2,3, 4, 5, 6, 8, 11

MODEL SELECTION TABLES

U-CHASSIS MODELS (TYPE "U")

Model Number [1]	Input Voltage Range	Output Voltage [1]	Preset Voltage [1]	Output Current		Output Power [2]	
				Convection	Forced Air	Convection	Forced Air
PSPRL1103MU-12	90 ~ 264 VAC	12 ~ 13.8 VDC	12 VDC	12.5A	25A	150W	300W
PSPRL1103MU-15		14 ~ 16 VDC	15 VDC	10A	20A	150W	300W
PSPRL1103MU-24		23 ~ 28 VDC	24 VDC	6.25A	12.5A	150W	300W
PSPRL1103MU-36		35 ~ 43 VDC	36 VDC	4.17A	8.33A	150W	300W
PSPRL1103MU-48		44 ~ 52 VDC	48 VDC	3.125A	6.25A	150W	300W

ENCLOSED WITH REAR-SIDE BUILT-IN FAN MODELS (TYPE "E")

Model Number [1]	Input Voltage Range	Output Voltage [1]	Preset Voltage [1]	Output Current	Output Power [2]
PSPRL1103ME-12	90 ~ 264 VAC	12 ~ 13.8 VDC	12 VDC	25A	300W
PSPRL1103ME-15		14 ~ 16 VDC	15 VDC	20A	300W
PSPRL1103ME-24		23 ~ 28 VDC	24 VDC	12.5A	300W
PSPRL1103ME-36		35 ~ 43 VDC	36 VDC	8.33A	300W
PSPRL1103ME-48		44 ~ 52 VDC	48 VDC	6.25A	300W

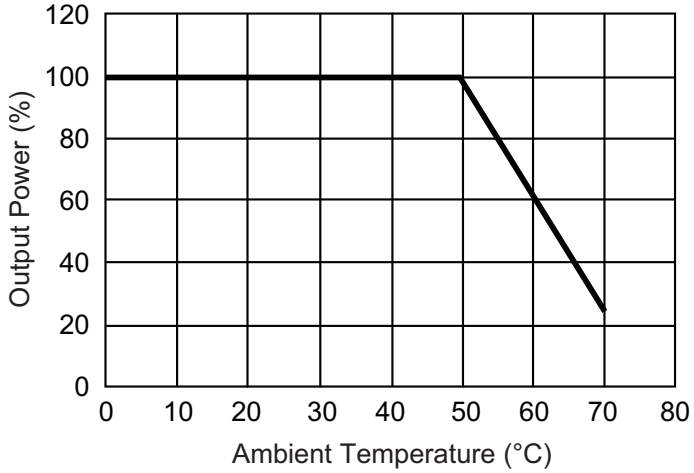
ENCLOSED WITH TOP-SIDE BUILT-IN FAN MODELS (TYPE "F")

Model Number [1]	Input Voltage Range	Output Voltage [1]	Preset Voltage [1]	Output Current	Output Power [2]
PSPRL1103MF-12	90 ~ 264 VAC	12 ~ 13.8 VDC	12 VDC	25A	300W
PSPRL1103MF-15		14 ~ 16 VDC	15 VDC	20A	300W
PSPRL1103MF-24		23 ~ 28 VDC	24 VDC	12.5A	300W
PSPRL1103MF-36		35 ~ 43 VDC	36 VDC	8.33A	300W
PSPRL1103MF-48		44 ~ 52 VDC	48 VDC	6.25A	300W

NOTES

1. *All output ranges are covered in agency certifications and the preset voltage will be set as standard models if nothing different is requested. If desired preset output does not appear, please contact factory.*
2. ***PSPRL1103MU Models** (U-Chassis): Needs 25CFM min. forced airflow to achieve 300W maximum power.*
   ***PSPRL1103ME Models** (Enclosed with rear-side built-in fan): 300W max. with built-in fan airflow.*
   ***PSPRL1103MF Models** (Enclosed with top-side built-in fan): 300W max. with built-in fan airflow.*
3. *Provides peak power to 600W within 500µs for all models; for longer duty duration must contact manufacturer.*
4. *1% minimum load is required to maintain the ripple and regulation specifications.*
5. *Output is fully isolated.*

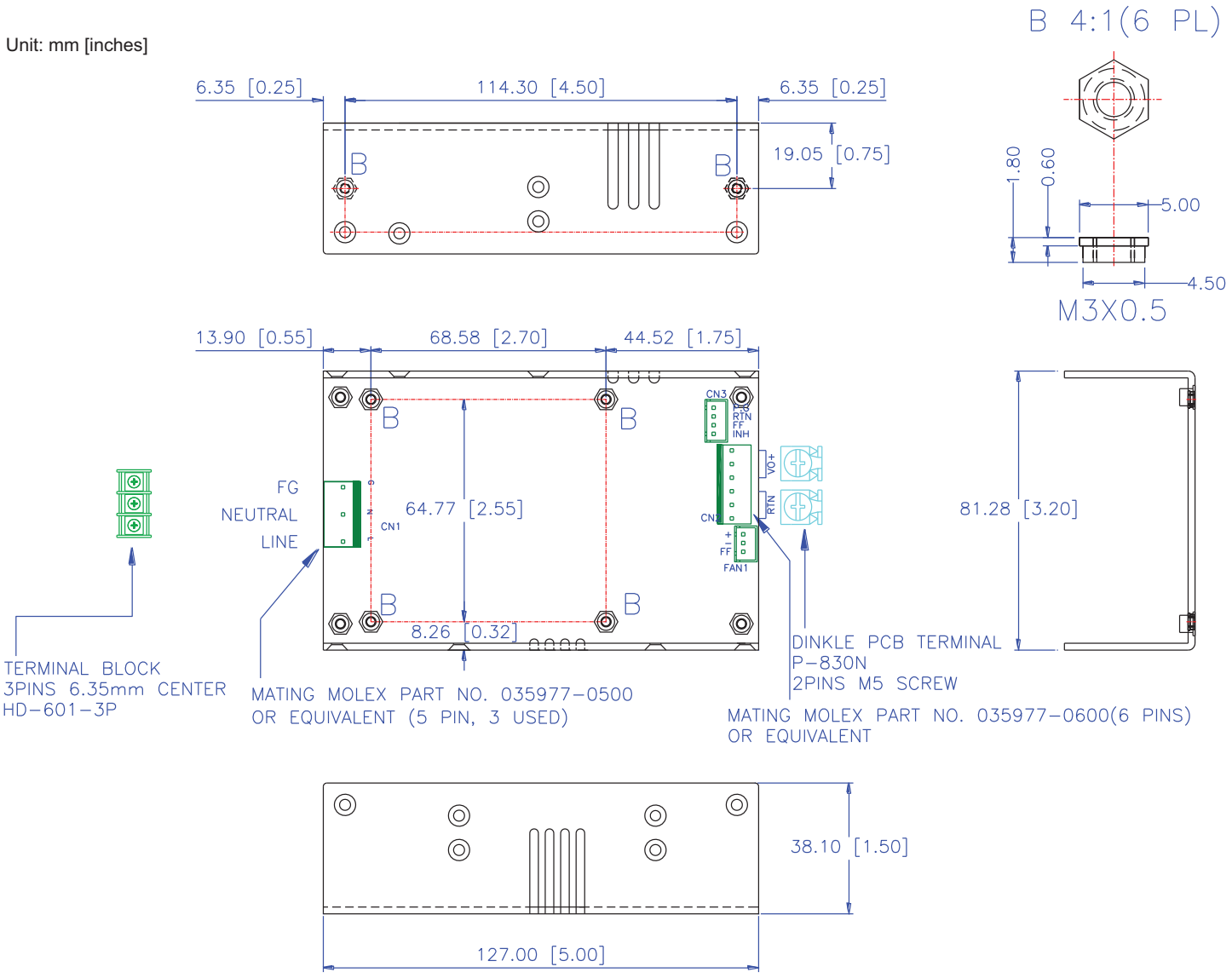
DERATING CURVE



MECHANICAL DRAWING

U-Chassis Models (Type "U"): 5(L) x 3.2(W) x 1.5(H) inches; Weight: 1.10 lbs

Unit: mm [inches]



I/O CONNECTOR PIN ASSIGNMENTS:

Input Connector (CN1):

PSPRL1103M U & F (U-Chassis & Enclosed with Top-Side Built-in Fan Types): Mating Molex Part No. 035977-0590 or equivalent (5pin, 3 used) or Terminal Block: Howder M3 screws 3 pin 6.35mm center Part No. HD-601-3P; PCB Labeling: L=Line, N=Neutral, G=Chassis Ground
PSPRL1103ME (Enclosed with Rear-Side Built-in Fan Type): IEC320 snap-in mounting type or Terminal Block: Howder HD-602-3P.

Output Connector (CN2):

Mating Molex Part No. 035977-0690; Terminal B-Dinkle P830N, M5 screws

OUTPUT PIN ASSIGNMENT		
	Dinkle	Molex
VO+	Pin 2	Pins 4~6
VO-	Pin 1	Pins 1~3

Mounting Inserts:

6 places M3. Maximum penetration 0.15" (3.8mm). See drawing for location.

Logic Signal Connectors (CN3):

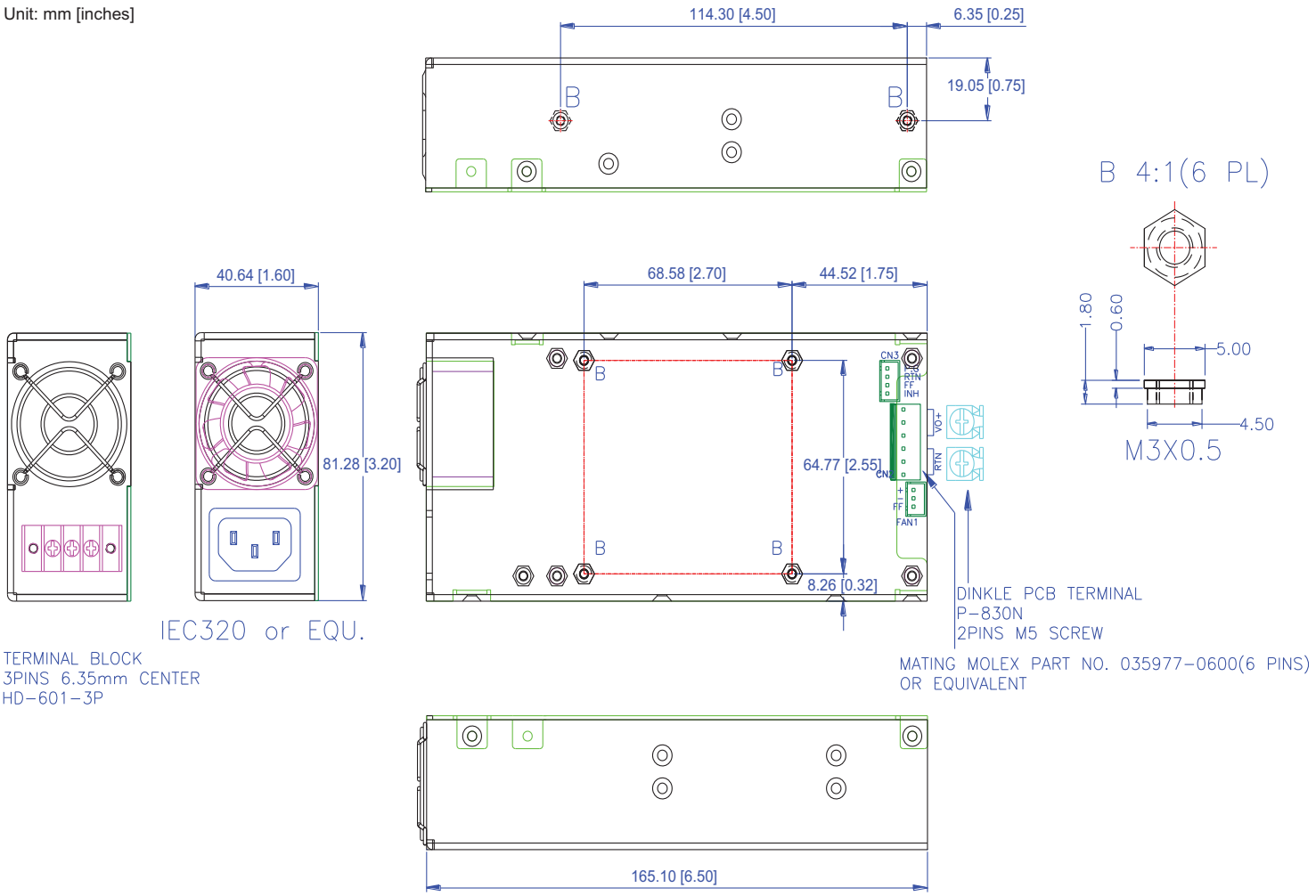
Mating JST XHP-4 or equivalent (CHYAO SHIUNN JS-2001-04); Mating Pins: JST SXH-002T-P0.6 for AWG 30 to 26

Fan Driver Connector (FAN1):
Mating Connector is JST P/N XHP-3 (3 pins 0.98 pitch) or equivalent (CHYAO SHIUNN JS-2001-03).

MECHANICAL DRAWING

Enclosed with Rear-Side Built-in Fan Models (Type "E"): 6.5(L) x 3.2(W) x 1.6(H) inches; Weight: 1.32 lbs

Unit: mm [inches]



I/O CONNECTOR PIN ASSIGNMENTS:

Input Connector (CN1):

PSPRL1103M U & F (U-Chassis & Enclosed with Top-Side Built-in Fan Types): Mating Molex Part No. 035977-0590 or equivalent (5pin, 3 used) or Terminal Block: Howder M3 screws 3 pin 6.35mm center Part No. HD-601-3P; PCB Labeling: L=Line, N=Neutral, G=Chassis Ground
PSPRL1103ME (Enclosed with Rear-Side Built-in Fan Type): IEC320 snap-in mounting type or Terminal Block: Howder HD-602-3P.

Output Connector (CN2):

Mating Molex Part No. 035977-0690; Terminal B-Dinkle P830N, M5 screws

OUTPUT PIN ASSIGNMENT		
	Dinkle	Molex
VO+	Pin 2	Pins 4~6
VO-	Pin 1	Pins 1~3

Mounting Inserts:

6 places M3. Maximum penetration 0.15" (3.8mm). See drawing for location.

Logic Signal Connectors (CN3):

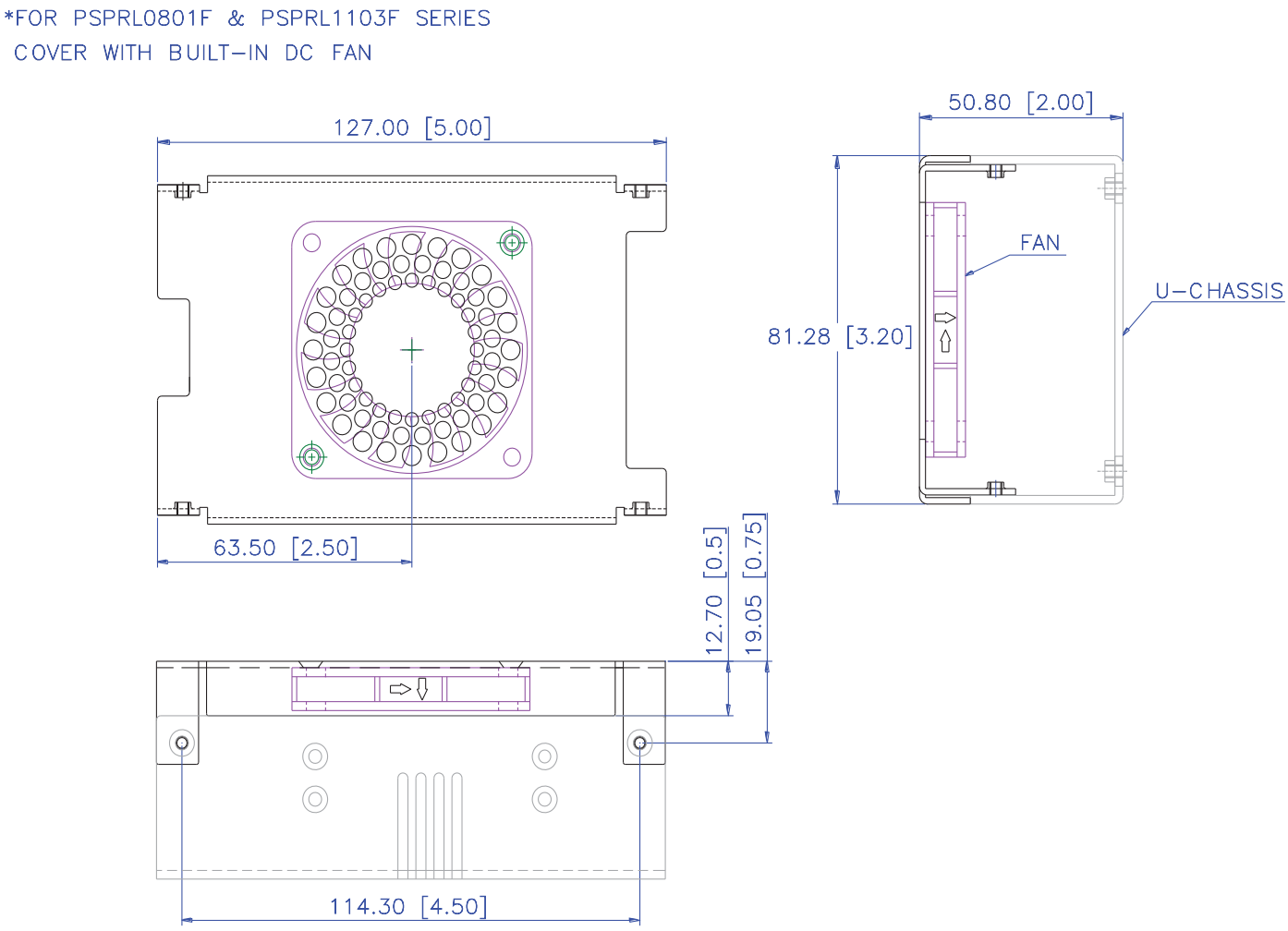
Mating JST XHP-4 or equivalent (CHYAO SHIUNN JS-2001-04); Mating Pins: JST SXH-002T-P0.6 for AWG 30 to 26

Fan Driver Connector (FAN1):
Mating Connector is JST P/N XHP-3 (3 pins 0.98 pitch) or equivalent (CHYAO SHIUNN JS-2001-03).

MECHANICAL DRAWING

Enclosed with Top-Side Built-in Fan Models (Type "F"): 5(L) x 3.2(W) x 2(H) inches; Weight: 1.43 lbs

Unit mm [inches]



I/O CONNECTOR PIN ASSIGNMENTS:

Input Connector (CN1):

PSPRL1103M U & F (U-Chassis & Enclosed with Top-Side Built-in Fan Types): Mating Molex Part No. 035977-0590 or equivalent (5pin, 3 used) or Terminal Block: Howder M3 screws 3 pin 6.35mm center Part No. HD-601-3P; PCB Labeling: L=Line, N=Neutral, G=Chassis Ground
PSPRL1103ME (Enclosed with Rear-Side Built-in Fan Type): IEC320 snap-in mounting type or Terminal Block: Howder HD-602-3P.

Output Connector (CN2):

Mating Molex Part No. 035977-0690; Terminal B-Dinkle P830N, M5 screws

OUTPUT PIN ASSIGNMENT		
	Dinkle	Molex
VO+	Pin 2	Pins 4~6
VO-	Pin 1	Pins 1~3

Mounting Inserts:

6 places M3. Maximum penetration 0.15" (3.8mm). See drawing for location.

Logic Signal Connectors (CN3):

Mating JST XHP-4 or equivalent (CHYAO SHIUNN JS-2001-04); Mating Pins: JST SXH-002T-P0.6 for AWG 30 to 26

Fan Driver Connector (FAN1):

Mating Connector is JST P/N XHP-3 (3 pins 0.98 pitch) or equivalent (CHYAO SHIUNN JS-2001-03).

COMPANY INFORMATION

Wall Industries, Inc. has created custom and modified units for over 50 years. Our in-house research and development engineers will provide a solution that exceeds your performance requirements on-time and on budget. Our ISO9001-2008 certification is just one example of our commitment to producing a high quality, well-documented product for our customers.

Our past projects demonstrate our commitment to you, our customer. Wall Industries, Inc. has a reputation for working closely with its customers to ensure each solution meets or exceeds form, fit and function requirements. We will continue to provide ongoing support for your project above and beyond the design and production phases. Give us a call today to discuss your future projects.

Contact **Wall Industries** for further information:

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