

# **PSRL0402DM SERIES**

90~264VAC Input Voltage Range 200W Convection Cooling, 400W with Forced Air Dual Outputs, Active PFC Medical AC/DC Switching Power Supplies



## **FEATURES**

- Dual Outputs
- RoHS Compliant
- High Quality & Reliable Component Usage
- Variable Fan Speed & Low Acoustical Noise
- 90~264VAC Input Voltage Range
- MTBF: 100,000 Hours (MIL-HDBK-217F)

- Active Power Factor Corrected to EN61000-3-2 Class D
- U-Chassis and Enclosed with Built-in Fan Mechanical Options
- Short Circuit, Input Circuit, Over Power, Input Voltage, Over Voltage, and Over Temperature Protection
- UL60601-1, EN60601-1, IEC60601-1 (3<sup>rd</sup> Edition) Medical Approvals

## DESCRIPTION

The PSRL0402DM series of AC/DC switching power supplies offers up to 400 Watts of output power. This series consists of dual output models with active PFC and a 90~264VAC input voltage range. These supplies also have short circuit, input voltage, over voltage, over power, and over temperature protection. Models are available in U-Chassis (Type U) and enclosed with built-in fan (Type E) designs. This series has UL60601-1, EN60601-1, and IEC60601-1 (3<sup>rd</sup> Edition) medical approvals. For single output models see the PSRL0402M series.



Input Current     6.35.A at 90VAC full load       Invals Current     0.98 at 230VAC and full load       Over Factor Correction     0.98 at 230VAC and full load       Output Over Correction     0.98 at 230VAC and full load       Output Over Correction     0.98 at 230VAC and full load       Output Adjustability     See Table       Output Adjustability     Output adjustable 5% minimum       Output Adjustability     Output adjustable 5% minimum       Output Adjustability     See Table       Output Adjustability     See Table       Output Adjustability     See Table       Maintum Look     See Table       Output Adjustable 5% minimum and is required to maintain the ripple and regulation       Riple 6. Nose     1%       Tamisoni Responsity     Responsity on minital Wile of Table add       Overshoot     Tamisoni Responsity on minital Wile of Table add       Tamisoni Responsity     1 No Ado 250 (rises instratif       Maintum Look     Table 300 file add at ant antamatic recovery       Overshoot     Tamisoni Responsity     Table 300 file add attomatic recovery       Source Court Protection     Table 300 file add attomatic recovery       Overshoitge Prote					
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INPLT SPECIFICATIONS 00   Input Voltage 00   Input Voltage 07   Input Carrent 635.4   Input Carrent 635.4   Input Carrent 635.4   OUTPUT SPECIFICATIONS 0.98 at 230VAC ath full load   Output Voltage Soc Table   Orput Voltage Soc Table   Output Carrent Tar-coloff at exceed 5% over noniaid voltage   Hold-1p Time 200se min at 8% of full load   Tam-coloff at exceed 5% over noniaid voltage Hold-1p Time   Dare Table Tam-coloff at exc	A				
Input Voltage     V0 - 264 VAC full lead       Input Progency     47 to 65 IdL       Input Current     635 Aa 900 VAC full lead       Insub Current     0.98 at 230 VAC with full lead and cold start       Power Factor Correction     0.98 at 230 VAC with full lead       OTTUT SPECTRATIONS     Output Answer Action VAC with full lead       Output Now for Now J     See Table       Output Answer Action VAC with full lead     Output Answer Action VAC with full lead       Output Answer Action VAC with full lead     Output Answer Action VAC with full lead       Output Answer Action VAC with full lead     Output Answer Action VAC with full lead       Output Answer Action VAC with full lead     Full Hammann VAC with Full lead       Output Answer Action VAC with Full lead     Full Hammann VAC with Full Parker       Output Answer Action VAC with Full Parker     Parker Machine VAC with Full Parker       Output Answer Action VAC with Full Parker     Parker Machine VAC with Full Parker       Output Answer Action VAC with Full Parker     Parker Machine VAC with Full Parker       Output Answer Action VAC with Full Parker     Parker Machine VAC with Full Parker       Output Answer Action VAC with Full Parker     Parker Machine VAC with Full Parker       Parker Parker Machine VAC with Park		We re	eserve the right to change specifications based on technological advances.		
Input Program     47 to 6312       Input Current     635A at 0WAC full load       New Factor Correction     0.98 at 20WAC with full load and cold start       Output Voltag     55A mas at 20WAC with full load and cold start       Output Voltag     See Table       Output Voltag     See Table       Output Adjust     Tame-node Table See Table       Tame-node Table See Table     Tame-node Table See See See See See See See See See S		ONS			
Input Current insols Current is 33.4.4 90VAC full load is and eads and is an early of the full load and eads a	1 0				
Inimab Current     954 max at 230VAC with full load and cold start       OUTPUT SPECIFICATION     958 at 230VAC and full load       OUTPUT SPECIFICATION     See Table       Output Voltage     See Table       Output Voltage     See Table       Output Voltage     See Table       Output Adjustable 5% minimum     Output Adjustable 5% minimum       Total Regulation     See Table       Output Current     See Table       Output Current     See Table       Minimum Load     10% minimum loads is required to maintain the rippe and requisition       Transitort Response     Entrained to within 1% in less data 2.5ms for a 50% load change and the peak transient does not exceed 5%       Present Marcine Response     There wort of full load       Foreiton     There wort of full load atomatic recovery       Foreiton     There wort of full load atomatic recovery       Present babic domatime at 120VAC     Present babic domatime atomatic recovery       Present babic domatime at 120VAC     Present babic domatime atomatic recovery       Present babic domatime at 120VAC (rand XC current for a seconds     Present babic domatime atomatic recovery       Present babic domatime atomatic recovery     Present babic domatime atorecond or 10% VC and	Input Frequency				
Paver Factor Correction     0.98 at 230VAC and full load       Output Voltage     See Table       Output Adjustability     Output adjustabile x5% minimum       Output Adjustability     Output adjustable x5% minimum       Output Adjustability     Output adjustable x5% minimum       Output Adjustability     See Table       Output Current     See Table       Minimum Load     19% minimum load is required to maintain the ripple and regulation       Tamissient Response     Refue to within 1% in less than 2.5ms for a 50% load change and the peak transient does not exceed 5%       Overshoot     Turn-enroff for do exceed 5% over normal voltage       Overshoot     Turn-enroff for do exceed 5% over normal voltage       Port Portection     Turn-enroff for do exceed 5% over normal voltage       Port Portection (primary)     Two 78 Ad250V fisses inserted       Port Portection     For word matchmum and 120V AC       Port Portection     Labing down will care wise exquit training exceeds 130%. Recycle AC input to reset       Port Port Portection     Labing down will care exceed 310%. Recycle AC input to reset       Port Host Port Host Protection     Labing down will care excless 0 sporting a minima 18% or dhat attomatic recovery       Porent Volt Prot Protection     Labing d					
OLTPUT SPECTECNIONS     See Table       Output Voltage     See Table       Output Adjustability     Output adjustability       Output Adjustability     Output adjustability       Output Adjustability     See Table       Output Adjustability     Output adjustability       Output Current     See Table       Minimum Load     10% iminimum load is required to maintain the ripple and regulation       Returns to within 1% in less than 2.5ms for a 50% boat change and the peak transient does not exceed 5%       Overshoet     Turn-on Delay       Ilod-Up Time     20ms min, at 80% of fail load       Turn-on Delay     I second maximum at 120VAC       PROTECTION     Turn Tow TAV250V fuses inserted       Ipput Circuit Protection (primary)     Two TAV250V fuses inserted       See Table     110-140% of I-max and automatic recovery       Over Potection     Prove Toward automatic recovery       See Table     100-140% of I-max and automatic recovery       Over Voltage Protection     Protection in trap without damage and automatic recovery       See Carbone     Protection in trap without damage and automatic recovery       Over Voltage Protection     Protexet1 daward automatic recovery  <					
Output Note J/C     Sec Table       Output Adjustability     Utput adjustability ::     Output adjustability ::       Total Regulator     19%       Output Adjustability ::     Sec Table       Output Current     Sec Table       Minimum Load ::     Sec Table       Output Current ::     Sec Table       Transcrint Responder ::     Reprite As Noise ::       Transcrint Responder ::     Returns to within 1% in less than 2.5m: for a 50% load change and the peak transient does not exceed 5%.       Overshoot ::     Trans-ord file load ::     Transcrint Responder ::       Overshoot ::     Trans-ord Responder ::     Power shutdown under 80 ±5VL Card recovered over 8VVC       Over obver protection ::     Tov TA/25V Uses inserted ::     Power shutdown under 80 ±5VL card recovered over 8VVC       Over obver protection ::     Tov TA/25V Uses inserted ::     Power shutdown under 80 ±5VL card recovered over 8VVC       Over obudage Detection ::     Power shutdown under 80 ±5VL card recovered over 8VVC     Power shutdown under 80 ±5VL card recovered over 8VVC       Over obudage Detection ::     Power shutdown under 80 ±5VL card recovered over 8VVC     Power shutdown under 80 ±5VL card recovered over 8VVC       Over obudage Detection ::     Prover shutdown under 80 ±5VL car			0.98 at 230VAC and full load		
Output Adjustabily     See Table       Total Regulation     +5%       Output Adjustabile + 5%     See Table       Output Current     See Table       Minimum Load     10% minimum load is required to maintain the ripple and regulation       See Table     10% minimum load is required to maintain the ripple and regulation       Minimum Load     10% minimum load is required to maintain the ripple and regulation       Oreshoot     Turn-on Delay     Turn-on Tool exceeced 5% over nominal voltage       Ton-So Delay     20ms min. at 80% of full load     See Table       Porter Detection     106-140% of Funax and automatic recovery     Turn-on Delay       Proter Protection     Turn TAA250V fuscs in secreted     Turn Tool Table Secreted 130%. Recycle AC input to reset       Porter Protection     Protected in the event of excessive operating ambient 85% and automatic recovery     Core Notage Protector       Short Chruit Protection     Protected in the event of excessive operating ambient 85% and automatic recovery     Core Notage Protector       Burn-in     1500/VAC Cor 3 seconds     1500/VAC Cor 3 seconds     1500/VAC Cor 3 seconds       Primary to Secondary     1000/VAC Cor 3 seconds     1500/VAC Cor 3 seconds     1500/VAC Cor 3 seconds		ΓIONS			
Output Adjustability     Output adjustable 3% minimum       Output Current     See Table       Minimum Lock     See Table       Minimum Lock     See Table       Minimum Lock     See Table       Ripple & Noise     41%       Transeint Responsion     Term-on Off not exceed 5% over nominal voltage       Overshoot     Turm-on Off not exceed 5% over nominal voltage       Overshoot     Turm-on Off not exceed 5% over nominal voltage       Overshoot     Turm-on Off not exceed 5% over nominal voltage       Overshoot     Turm-on Off not exceed 5% over nominal voltage       Overshoot     Tow TaX250V fuses inserted       Overshoot     Tow TaX250V fuses inserted       Over Power Protection     Power shutdown under 80 +57 VAC and recovered over 86 VAC       Over Voltage Protection     Power shutdown under 80 +57 VAC and recovered over 86 VAC       Over Voltage Protection     Toy Vibut damage and automatic recovery       Over Tomerature Protection     Power shutdown under 80 +57 VAC and recovered over 86 VAC       Over Tomerature Vortection     Prover shutdown under 80 +57 VAC and recoverey       Over Tomerature Vortection     Prover shutdown under 80 +57 VAC and recoverey       GENEAL SPECIFICATIONS </td <td></td> <td></td> <td></td>					
Tedi Regination   45%     Output Current   See Table     Minimum Land   10% minimum load is required to maintain the ripple and regulation     Ripple & Noise   41%     Transient Response   Returns to within 1% in less than 2.5ms for a 50% load change and the peak transient daes not exceed 5%.     Overshoot   Turn-on Diff du scood 5% over constantion Voltage     Hold-Di Time   20ms min. at 80% of full load     Turn-son Delp   Tow TSA/250% bass inserted     PROTECTION   100-140% of Fmax and automatic recovery     Short Circuit Protection   Prover Stav250% bass inserted     Over Power Protection   Tow TSA/250% bass inserted     David Ublage Protection   Protected and automatic recovery     Over Toware Protection   Travin base during and automatic recovery     Over Toware Protection   Travin base during and automatic recovery     Over Toware Protection   Travin base during and automatic recovery     Over Toware Protection   Travin base during and automatic recovery     Over Toware Protection   Travin base during and automatic recovery     Over Toware Protection   Travin base during and mode matic recovery     Generation   Travin base during and mode matic recovery     Genet Lassia </td <td></td> <td>2)</td> <td colspan="3"></td>		2)			
Odaput Current See Table   Minimum Load 10% minimum load is required to maintain the ripple and regulation   Ripb & Noise 41%   Transcitt 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-onoff not exceed 5% over nominal voltage   Holds Up Time 20ms min at 80% of full load   Turns on Dalay 1 second maximum at 120VAC   PROTECTION 100-140% of Lanax and automatic recovery   Doer Protection (primary) Two TSA.250V fases inserted   Dave Tower Protection (primary) Two TSA.250V fases inserted   Dave Tower Protection Prover shutdown made 50 45VAC: and recovered over 86VAC   Over Vortection Tow Toward 80 45VAC: and recovered over 86VAC   Over Vortection Tow to Max and automatic recovery   Over Vortection Tow recovers   Stort Circuit Protection Primary to Core   Primary to Core 1500VAC (Gr 3 seconds   Primary to Core 1500VAC (Gr 3 seconds   Primary to Core 1500VAC (Gr 3 seconds   Primary to Core 200µ 40A from ground pin to the earthed connection point. Max allowable resistance is 0.1G   Cooling U'rype Modes   Primary to Core 200µA   Grounding Tot -200µA   Grounding Tot -2					
Minimu Load     10% minimu load is required to maintain the ripple and regulation       Minimum Load Roybe &     11% minimum load is required to maintain the ripple and regulation       Overshoot     Transon Log in					
Ripple & Noise     11%					
Transient Response     Returns to within 1% in less than 2.5ms for a 20% load change and the peak transient does not exceed 5%.       Overshoot     Turn-on/off on texceed 5% over nominal voltage       Hold-Up Time     20ms min. at 80% of full load       Turn-on/off on texceed 5% over nominal voltage     Norte Control 1000000000000000000000000000000000000					
Overshout     Turn-on/Of not exceed 5% over nominal voltage       Hold-Lp Time     20ms min. at 80% of full load       Turn-on Delay     I second maximum at 120VAC       PROTECTION     International second maximum at 120VAC       PROTECTION     International second maximum at 120VAC       Over Protection (primary)     Two T8A/250V fuses inserted       Diver Protection     Prover shutdown under 80 =5VAC and recovered over 86VAC       Over Voltage Protection     Porter shutdown under 80 =5VAC and recovered over 86VAC       Over Voltage Protection     Protected in the event of excessive operating ambient 85°C and automatic recovery       Over Toruperature Protection     Protected in the event of excessive operating ambient 85°C and automatic recovery       Stricting Frequency     1500VAC (20mA DC cut off current) for 3 seconds       Filting requency     1500VAC (20mA DC cut off current) for 3 seconds       Primary to Secondary     452°C for one hour at 220VAC with full load.       Leakage Current     452°C for one hour at 220VAC with full load.       Leakage Current     Apply 40A from ground pin to the carthed connection point. Max allowable resistance is 0.102       String Temperature     0°C to +70°C ambient, de-rating at 2.5% per degree from +50°C to +70°C.       Storage Themmity to core     5% to 90	11				
Hold-ID Time   20ms min. at 80% of full load     PROTECTION   Is second maximum at 120VAC     PROTECTION   Input Circuit Protection (primary)   Two T8A/250V fuses inserted     Over Power Protection   110-140% of I-max and automatic recovery   Over 86VAC     Over Voltage Protection   Latching down will occur when output voltage exceeds 130%. Recycle AC input to reset     Short Circuit Protection   Trip without damage and automatic recovery     Over Temperature Protection   Protected in the event of excessive operating ambient 85°C and automatic recovery     Over Temperature Protection   Protected in the event of excessive operating ambient 85°C and automatic recovery     Cever Temperature Protection   Protected in the event of excessive operating ambient 85°C and automatic recovery     Cever Temperature Protection   Protected in the event of excessive operating ambient 85°C and automatic recovery     Core 1   1500VAC for 3 seconds     Primary to Secondary   4000VAC for 3 seconds     Burn-in   45±5°C for one hour at 230VAC with full load.     Leakage Current   < 2400 LA form ground pin to the earthed connection point. Max allowable resistance is 0.1Ω					
Tum-on Delay     1 second maximum at 120VAC       PROTECTIO            Page 1200 (minimage 1000)           Two T8A/250V fuses inserted        Over Protection          110-140% of 1-max and automatic recovery					
PROTECTION     Two T8A/250V fuses inserted       Over Power Protection     110-140% of 1-max and automatic recovery       Input Circuit Protection     Power shudown under 80-5VAC and recovered over 86VAC       Over Voltage Protection     Latching down will occur when output voltage exceeds 130%. Recycle AC input to reset       Short Circuit Protection     Trip without damage and automatic recovery       Over Temperature Protection     Protected in the event of excessive operating ambient 85°C and automatic recovery       GENERAL SPECIFICATIONS     Trip without damage and automatic recovery       Switching Trequency     30KHz fixed frequency       Efficiency     75%-85% depending on model       Primary to Scendary     4000VAC for 3 seconds       Bum-in     455°C for now hour at 230VAC with full load.       Lakage Current     < 200µA					
Input Circuit Protection (primary)     Two T8A/250V fuses inserted       Over Power Protection     110-140% of 1-max and automatic recovery       Over Oblage Protection     Latching down will occur when output voltage exceeds 150%. Recycle AC input to reset       Over Oblage Protection     Latching down will occur when output voltage exceeds 150%. Recycle AC input to reset       Short Circuit Protection     Protected in the event of excessive operating ambient 85°C and automatic recovery       GENERAL SPECIFICATIONS     30KHz fixed frequency       Switching Frequency     1500 VAC (2mA DC cut off current) for 3 seconds       Efficiency     1500 VAC (2m AD Cc cut off current) for 3 seconds       Bun-in     4545°C for one hour at 230VAC with full load.       Leakage Current     < 200µA			1 second maximum at 120 VAC		
Over Protection     I10-140% of 1-max and automatic recovery       Input Voltage Protection     Dower shutdown under 80 ±VAC Cand recovered over 86VAC       Over Voltage Protection     Latching down wild occur when output voltage exceeds 130%. Recycle AC input to reset       Short Circuit Protection     Trip without damage and automatic recovery       Over Tomperature Protection     Protected in the event of excessive operating ambient 85°C and automatic recovery       GENERAL SPECIFICATIONS     Switching Frequency       Switching Frequency     30KHz fixed frequency       Efficiency     Trimary to Scondary       Primary to Scondary     4000/VAC for 3 seconds       Burn-in     4515°C for one hour at 230VAC with full load.       Leakage Current     < 200µA		(primory)	Two T&A/250V fuces inserted		
Input Voltage Protection     Power shutdown under 80 ± 5VAC and recovered over 80VAC       Over Voltage Protection     Latching down will occur when output voltage exceeds 130%, Recycle AC input to reset       Stort Circuit Protection     Protected in the event of excessive operating ambient 85°C and automatic recovery       GENERAL SPECIFICATIONS     30KHz fixed frequency       Switching Frequency     30KHz fixed frequency       Efficiency     75% ± 5%3 (depending on model       Primary to Secondary     4000VAC (2mA DC cut off current) for 3 seconds       Primary to Secondary     4000VAC for 3 seconds       Primary to Secondary     4000VAC for 3 seconds       Primary to Core     1500VAC for 3 seconds       Primary to Core     1500VAC for 3 seconds       Bum-in     45±5°C for one hour at 230VAC with full load.       Leakage Current     < 200µA		printary)			
Over Voltage Protection     Latching down will occur when output voltage exceeds 130%. Recycle AC input to reset       Short Circuit Protection     Trip without damage and automatic recovery       Over Temperature Protection     Protected in the event of excessive operating ambient 85°C and automatic recovery       GENERAL SPECIFICATIONS     SWithing Frequency     30KHz fixed frequency       Efficiency     75%-85% depending on model     75%-85% depending on model       Primary to Secondary     4000VAC for 3 seconds     1500VAC (or 3 seconds       Burn-in     Lackage Current     455% C for one hour at 230VAC with full load.     455% C for one hour at 230VAC with full load.       Carounding Test     Apply 40A from ground pin to the carthed connection point. Max allowable resistance is 0.1Ω       ENVIRONMENTAL SPECIFICATIONS     0°C to +70°C ambient, de-rating at 2.5% per degree from +50°C to +70°C.       Storage Temperature     0°C to +70°C ambient, de-rating at 2.5% per degree from +50°C to +70°C.       Storage Temperature     0°C to +70°C ambient, de-rating at 2.5% per degree from +50°C to +70°C.       Storage Temperature     0°C to *70°C ambient, de-rating at 2.5% per degree from +50°C to +70°C.       Storage Temperature     0°C to *70°C ambient, de-rating at 2.5% per degree from +50°C to +70°C.       Storage Temperature     0°C to *70°C ambient, de-rating at 2					
Short Grouth Protection     Try without damage and automatic recovery       Over Temperature Protection     Protected in the event of excessive operating ambient 85°C and automatic recovery       Switching Frequency     30KHz fixed frequency       Efficiency     75%-85% depending on model       Input Line to Chassis     1500VAC (2mA DC cut off current) for 3 seconds       Bum-in     45±5°C for one hour at 230VAC with full load.       Leakage Current     42±5°C for one hour at 230VAC with full load.       Grounding Test     Apply 40A from ground pin to the earthed connection point. Max allowable resistance is 0.1Ω       Grounding Test     0°C to +70°C ambient, de-rating at 2.5% per degree from +50°C to +70°C.       Storage Temperature     0°C to +70°C ambient, de-rating at 2.5% per degree from +50°C to +70°C.       Storage Temperature     0°C to +70°C ambient, de-rating at 2.5% per degree from +50°C to +70°C.       Storage Temperature     0°C to +70°C ambient, de-rating at 2.5% per degree from +50°C to +70°C.       Storage Temperature     0°C to +70°C ambient, de-rating at 2.5% per degree from +50°C to +70°C.       Storage Humidity (non-condensing)     5% to 90% RH       Storage Humidity (non-condensing)     5% to 90% RH       Prope Models     E Type Models       Cooling     U Type Models	000				
Over Temperature Protection   Protected in the event of excessive operating ambient 85°C and automatic recovery     GENERAL SPECIFICATIONS   30KHz fixed frequency     Switching Frequency   30KHz fixed frequency     Efficiency   75%-85% depending on model     Primary to Secondary   4000VAC for 3 seconds     Primary to Core   1500VAC for 3 seconds     Burn-in   45±5°C for on chour at 230VAC with full load.     Leakage Current   < 200µA					
GENERAL SPECIFICATIONS     30KHz fixed frequency       Switching Frequency     30KHz fixed frequency       Efficiency     175%-85% depending on model       Fileioncy     175%-85% depending on model       H1-POT test     Imput Line to Chassis       Primary to Scondary     4000VAC for 3 seconds       Bum-in     4455°C for one hour at 230VAC with full load.       Leakage Current     < 200µA		tion			
Switching Frequency   J0KHz fixed frequency     Efficiency   75%-85% depending on model     Efficiency   Input Line to Chassis   IS00VAC (2m A DC cut off current) for 3 seconds     Primary to Secondary   4000VAC for 3 seconds   Primary to Secondary     Bum-in   45±5°C for one hour at 230VAC with full load.     Leakage Current   < 200µA			Frotected in the event of excessive operating another 85°C and automatic recovery		
Efficiency     75%-85% depending on model       H1-POT test     Input Line to Chassis     1500VAC (2mA DC cut off current) for 3 seconds       Burn-in     4000VAC for 3 seconds     4000VAC for 3 seconds       Burn-in     4545°C for one hour at 230VAC with full load.       Leakage Current     <200µA		AHONS	30KHz fixed frequency		
$\begin{array}{  l l l l l l l l l l l l l l l l l l $					
$\begin{array}{ c c c c c c } HI-POT test & \hline Primary to Secondary & 4000VAC for 3 seconds \\ \hline Primary to Core & I500VAC for 3 seconds \\ \hline I500VAC for 5 \\ \hline I500VAC for 8 \\ \hline I500VAC for 8 \\ \hline I500VAC for 8 \\ \hline I500V for 5 \\ \hline I500VAC for 8 \\ \hline I500V for 5 \\ \hline I500V for 8 \\ \hline I500V for 8 \\ \hline I500V for 9 \\ \hline $	Efficiency	Input Line to Chassis			
$\begin{array}{                                    $	HI-POT test				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					
$ \begin{array}{c c c c c c } & < 200 \mu A \\ \hline \end{tabular} Test & Apply 40A from ground pin to the carthed connection point. Max allowable resistance is 0.1\Omega \\ \hline \end{tabular} \en$	Burn-in				
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $					
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 95% RH     Storage Humidity (non-condensing)   5% to 95% RH     Vibration     Convection     Convection     Convection     Convection     Convection     Convection     Convection     FUNCTIONS     Remote Sense   Designated as RS+ and RS- on the CN3     Remote ON/OFF     Designated as RS <sup>+</sup> and RS- on the CN3     Power Suply ON     Green LED in from panel (E Type only). Any protection occurred or RSW applied low signal will emit orange     Power Good     Farype Models   2.87 lbs (1.3kg)     UType Models   2.87 lbs (1.3kg)     UVDC/400mA is available to drive an external fan.     PHYSICAL SPECIFICATIONS     Weight   U Type Models   8.5 x 1.6					
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	0	PECIFICATIONS			
$ \begin{array}{llllllllllllllllllllllllllllllllllll$			0°C to +70°C ambient, de-rating at 2.5% per degree from +50°C to +70°C.		
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Storage Temperature				
Storage Humidity (non-condensing)   5% to 95% RH     Vibration   Frequency 5 to 50Hz, acceleration $\pm 7.35 \text{ m/(s x s) on X, Y, and Z axis.}$ Cooling   UType Models   Convection     E Type Models   Fan     MTBF   100,000 hours at 30°C according to MIL-HDBK-217F     FUNCTIONS     Remote ON/OFF   Designated as RS+ and RS- on the CN3     Remote ON/OFF   Designated as RSW on the CN3, requires a low signal to inhibit output.     Power Supply ON   Green LED designated as LED 1 on the PCB     LED Display   Bi-color green LED in front panel ( <i>E Type only</i> ). Any protection occurred or RSW applied low signal will emit orang     Power Good   Designated as PG on the CN3 will go high 100-500ms after regulation and goes low Ims before loss of regulation     PHYSICAL SPECIFICATIONS   12VDC/400mA is available to drive an external fan.     PHYSICAL SPECIFICATIONS   UType Models   2.87 lbs (1.3kg)     E Type Models   2.87 lbs (1.3kg)   UType Models   3.53 lbs (1.6kg)     Dimensions (L x W x H)   UType Models   9 x 5 x 1.6 inches (203.2 x 127 x 40.64 mm)   E     SAFETY & EMC   Safety Approvals   UL60601-1( <sup>40</sup> , EN60601-1, IEC60601-1 (3 <sup>rd</sup> Edition)   EN61000-3-3     EMI Conduction & Radiation   EN60601-1.		1-condensing)			
VibrationFrequency 5 to 50Hz, acceleration $\pm 7.35$ m/(s x s) on X, Y, and Z axis.CoolingU Type ModelsConvectionBTBF100,000 hours at 30°C according to MIL-HDBK-217FFUNCTIONSRemote SenseDesignated as RS+ and RS- on the CN3Remote ON/OFFDesignated as RS+ on the CN3, requires a low signal to inhibit output.Power Supply ONGreen LED designated as LED 1 on the PCBLED DisplayBi-color green LED in front panel ( <i>E Type only</i> ). Any protection occurred or RSW applied low signal will emit orange Power GoodPower GoodDesignated as PG on the CN3 will go high 100-500ms after regulation and goes low Ims before loss of regulation 12VDC/400mA is available to drive an external fan.PHYSICAL SPECIFICATIONSWeightU Type Models2.87 lbs (1.3kg)Dimensions (L x W x H)U Type ModelsSafety ApprovalsSafety ApprovalsLEM Conduction & RadiationEMIC conduction & RadiationEMI Conduction & RadiationEMI Conduction & RadiationENG000-3-2, EN61000-3-3					
CoolingU Type Models E Type ModelsConvectionMTBF100,000 hours at 30°C according to MIL-HDBK-217FFUNCTIONSRemote SenseDesignated as RS+ and RS- on the CN3Remote ON/OFFDesignated as RSW on the CN3, requires a low signal to inhibit output.Power Supply ONGreen LED designated as LED 1 on the PCBLED DisplayBi-color green LED in front panel ( <i>E Type only</i> ). Any protection occurred or RSW applied low signal will emit orangPower GoodDesignated as PG on the CN3 will go high 100-500ms after regulation and goes low Ims before loss of regulationFan Drive12VDC/400mA is available to drive an external fan.PHYSICAL SPECIFICATIONSU Type Models2.87 lbs (1.3kg)WeightU Type Models2.87 lbs (1.3kg)Dimensions (L x W x H)U Type Models8 x 5 x 1.6 inches (203.2 x 127 x 40.64 mm)SAFETY & EMCSafety ApprovalsU L60601-1( <sup>40</sup> , EN60601-1, IEC60601-1 (3 <sup>rd</sup> Edition)EMI Conduction & RadiationEN60601-1-2 class BHarmonic CurrentEN61000-3-2, EN61000-3-3		6/	Frequency 5 to 50Hz, acceleration ±7.35 m/(s x s) on X, Y, and Z axis.		
Cooling   E Type Models   Fan     MTBF   100,000 hours at 30°C according to MIL-HDBK-217F     FUNCTIONS     Remote Sense   Designated as RS+ and RS- on the CN3     Remote ON/OFF   Designated as RSW on the CN3, requires a low signal to inhibit output.     Power Supply ON   Green LED designated as LED 1 on the PCB     LED Display   Bi-color green LED in front panel ( <i>E Type only</i> ). Any protection occurred or RSW applied low signal will emit orang:     Power Good   Designated as PG on the CN3 will go high 100-500ms after regulation and goes low 1ms before loss of regulation     Fan Drive   12VDC/400mA is available to drive an external fan.     PHYSICAL SPECIFICATIONS   U Type Models   2.87 lbs (1.3kg)     Weight   U Type Models   2.87 lbs (1.3kg)     Dimensions (L x W x H)   U Type Models   8 x 5 x 1.6 inches (203.2 x 127 x 40.64 mm)     SAFETY & EMC   Safety Approvals   UL60601-1 <sup>(4)</sup> , EN60601-1, IEC60601-1 (3 <sup>rd</sup> Edition)     E MI Conduction & Radiation   EN60601-1.2 class B   EN60601-1.2 class B     Harmonic Current   EN61000-3-2, EN61000-3-3   Safety Approvals		U Type Models			
FUNCTIONS     Remote Sense   Designated as RS+ and RS- on the CN3     Remote ON/OFF   Designated as RSW on the CN3, requires a low signal to inhibit output.     Power Supply ON   Green LED designated as LED 1 on the PCB     LED Display   Bi-color green LED in front panel ( <i>E Type only</i> ). Any protection occurred or RSW applied low signal will emit orang:     Power Good   Designated as PG on the CN3 will go high 100-500ms after regulation and goes low 1ms before loss of regulation     Fan Drive   12VDC/400mA is available to drive an external fan.     PHYSICAL SPECIFICATIONS   U Type Models   2.87 lbs (1.3kg)     Weight   U Type Models   2.87 lbs (1.3kg)     Dimensions (L x W x H)   U Type Models   8 x 5 x 1.6 inches (203.2 x 127 x 40.64 mm)     SAFETY & EMC   U L60601-1 <sup>(4)</sup> , EN60601-1, IEC60601-1 (3 <sup>rd</sup> Edition)     EMI Conduction & Radiation   EN60601-1-2 class B     Harmonic Current   EN61000-3-2, EN61000-3-3	Cooling	E Type Models	Fan		
FUNCTIONS     Remote Sense   Designated as RS+ and RS- on the CN3     Remote ON/OFF   Designated as RSW on the CN3, requires a low signal to inhibit output.     Power Supply ON   Green LED designated as LED 1 on the PCB     LED Display   Bi-color green LED in front panel ( <i>E Type only</i> ). Any protection occurred or RSW applied low signal will emit orang:     Power Good   Designated as PG on the CN3 will go high 100-500ms after regulation and goes low 1ms before loss of regulation     Fan Drive   12VDC/400mA is available to drive an external fan.     PHYSICAL SPECIFICATIONS   U Type Models   2.87 lbs (1.3kg)     Weight   U Type Models   2.87 lbs (1.3kg)     Dimensions (L x W x H)   U Type Models   8 x 5 x 1.6 inches (203.2 x 127 x 40.64 mm)     SAFETY & EMC   U L60601-1 <sup>(4)</sup> , EN60601-1, IEC60601-1 (3 <sup>rd</sup> Edition)     EMI Conduction & Radiation   EN60601-1-2 class B     Harmonic Current   EN61000-3-2, EN61000-3-3			100,000 hours at 30°C according to MIL-HDBK-217F		
Remote ON/OFF   Designated as RSW on the CN3, requires a low signal to inhibit output.     Power Supply ON   Green LED designated as LED 1 on the PCB     LED Display   Bi-color green LED in front panel ( <i>E Type only</i> ). Any protection occurred or RSW applied low signal will emit orang.     Power Good   Designated as PG on the CN3 will go high 100-500ms after regulation and goes low 1ms before loss of regulation     Fan Drive   12VDC/400mA is available to drive an external fan.     PHYSICAL SPECIFICATIONS   U Type Models   2.87 lbs (1.3kg)     Weight   U Type Models   2.87 lbs (1.3kg)     Dimensions (L x W x H)   U Type Models   8 x 5 x 1.6 inches (203.2 x 127 x 40.64 mm)     SAFETY & EMC   UL60601-1 <sup>(4)</sup> , EN60601-1, IEC60601-1 (3 <sup>rd</sup> Edition)     EMI Conduction & Radiation   EN60601-1-2 class B     Harmonic Current   EN61000-3-2, EN61000-3-3	FUNCTIONS				
Power Supply ON   Green LED designated as LED 1 on the PCB     LED Display   Bi-color green LED in front panel ( <i>E Type only</i> ). Any protection occurred or RSW applied low signal will emit orang     Power Good   Designated as PG on the CN3 will go high 100-500ms after regulation and goes low 1ms before loss of regulation     Fan Drive   12VDC/400mA is available to drive an external fan.     PHYSICAL SPECIFICATIONS   U Type Models   2.87 lbs (1.3kg)     E Type Models   3.53 lbs (1.6kg)     Dimensions (L x W x H)   U Type Models   8 x 5 x 1.6 inches (203.2 x 127 x 40.64 mm)     SAFETY & EMC   U L60601-1( <sup>4</sup> ), EN60601-1, IEC60601-1 (3 <sup>rd</sup> Edition)     EMI Conduction & Radiation   EN60601-1.2 class B     Harmonic Current   EN61000-3-2, EN61000-3-3	Remote Sense				
LED Display   Bi-color green LED in front panel ( <i>E Type only</i> ). Any protection occurred or RSW applied low signal will emit orang.     Power Good   Designated as PG on the CN3 will go high 100-500ms after regulation and goes low 1ms before loss of regulation     Fan Drive   12VDC/400mA is available to drive an external fan.     PHYSICAL SPECIFICATIONS   U Type Models   2.87 lbs (1.3kg)     Weight   U Type Models   2.87 lbs (1.3kg)     Dimensions (L x W x H)   U Type Models   8 x 5 x 1.6 inches (203.2 x 127 x 40.64 mm)     SAFETY & EMC   U L60601-1( <sup>4</sup> ), EN60601-1, IEC60601-1 (3 <sup>rd</sup> Edition)     EMI Conduction & Radiation   EN60601-1-2 class B     Harmonic Current   EN61000-3-2, EN61000-3-3					
Power Good   Designated as PG on the CN3 will go high 100-500ms after regulation and goes low Ims before loss of regulation     Fan Drive   12VDC/400mA is available to drive an external fan.     PHYSICAL SPECIFICATIONS     Weight   U Type Models   2.87 lbs (1.3kg)     E Type Models   3.53 lbs (1.6kg)     Dimensions (L x W x H)   U Type Models   8 x 5 x 1.6 inches (203.2 x 127 x 40.64 mm)     SAFETY & EMC   9 x 5 x 1.6 inches (228.6 x 127 x 40.64 mm)     Safety Approvals   UL60601-1( <sup>4)</sup> , EN60601-1, IEC60601-1 (3 <sup>rd</sup> Edition)     EMI Conduction & Radiation   EN60601-1-2 class B     Harmonic Current   EN61000-3-2, EN61000-3-3	Power Supply ON		Green LED designated as LED 1 on the PCB		
Fan Drive $12VDC/400mA$ is available to drive an external fan.     PHYSICAL SPECIFICATIONS     Weight   U Type Models $2.87 lbs (1.3kg)$ E Type Models $3.53 lbs (1.6kg)$ Dimensions (L x W x H)   U Type Models $8 x 5 x 1.6$ inches ( $203.2 x 127 x 40.64 mm$ )     SAFETY & EMC   5 x 1.6 inches ( $228.6 x 127 x 40.64 mm$ )     Safety Approvals   U L60601-1( <sup>4)</sup> , EN60601-1, IEC60601-1 (3 <sup>rd</sup> Edition)     EMI Conduction & Radiation   EN60601-1-2 class B     Harmonic Current   EN61000-3-2, EN61000-3-3	LED Display		Bi-color green LED in front panel (E Type only). Any protection occurred or RSW applied low signal will emit orange		
PHYSICAL SPECIFICATIONS     Weight   U Type Models   2.87 lbs (1.3kg)     E Type Models   3.53 lbs (1.6kg)     Dimensions (L x W x H)   U Type Models   8 x 5 x 1.6 inches (203.2 x 127 x 40.64 mm)     SAFETY & EMC   5 x 1.6 inches (228.6 x 127 x 40.64 mm)     Safety Approvals   UL60601-1( <sup>4)</sup> , EN60601-1, IEC60601-1 (3 <sup>rd</sup> Edition)     EMI Conduction & Radiation   EN60601-1-2 class B     Harmonic Current   EN61000-3-2, EN61000-3-3					
$ \begin{array}{c} Weight & U Type Models & 2.87 lbs (1.3kg) \\ \hline E Type Models & 3.53 lbs (1.6kg) \\ \hline Dimensions (L x W x H) & U Type Models & 8 x 5 x 1.6 inches (203.2 x 127 x 40.64 mm) \\ \hline E Type Models & 9 x 5 x 1.6 inches (228.6 x 127 x 40.64 mm) \\ \hline \textbf{SAFETY \& EMC} \\ \hline Safety Approvals & UL60601-1(^4), EN60601-1, IEC60601-1 (3^{rd} Edition) \\ \hline EMI Conduction \& Radiation & EN60601-1.2 class B \\ \hline Harmonic Current & EN61000-3-2, EN61000-3-3 \\ \hline \end{array} $			12VDC/400mA is available to drive an external fan.		
Weight     E Type Models     3.53 lbs (1.6kg)       Dimensions (L x W x H)     U Type Models     8 x 5 x 1.6 inches (203.2 x 127 x 40.64 mm)       SAFETY & EMC     5 x 1.6 inches (203.2 x 127 x 40.64 mm)       Safety Approvals     UL60601-1( <sup>4</sup> ), EN60601-1, IEC60601-1 (3 <sup>rd</sup> Edition)       EMI Conduction & Radiation     EN60601-1-2 class B       Harmonic Current     EN61000-3-2, EN61000-3-3	PHYSICAL SPECIFIC				
C     E Type Models     5.53 lbs (1.0kg)       Dimensions (L x W x H)     U Type Models     8 x 5 x 1.6 inches (203.2 x 127 x 40.64 mm)       E Type Models     9 x 5 x 1.6 inches (228.6 x 127 x 40.64 mm)       SAFETY & EMC     UL60601-1( <sup>4</sup> ), EN60601-1, IEC60601-1 (3 <sup>rd</sup> Edition)       EMI Conduction & Radiation     EN60601-1-2 class B       Harmonic Current     EN61000-3-2, EN61000-3-3	Weight				
Dimensions (L x W x H)     E Type Models     9 x 5 x 1.6 inches (228.6 x 127 x 40.64 mm)       SAFETY & EMC     UL60601-1( <sup>4</sup> ), EN60601-1, IEC60601-1 (3 <sup>rd</sup> Edition)       EMI Conduction & Radiation     EN60601-1-2 class B       Harmonic Current     EN61000-3-2, EN61000-3-3					
SAFETY & EMC     Safety Approvals   UL60601-1( <sup>4</sup> ), EN60601-1, IEC60601-1 (3 <sup>rd</sup> Edition)     EMI Conduction & Radiation   EN60601-1-2 class B     Harmonic Current   EN61000-3-2, EN61000-3-3	Dimensions (I v W v H)				
Safety Approvals     UL60601-1 <sup>(4)</sup> , EN60601-1, IEC60601-1 (3 <sup>rd</sup> Edition)       EMI Conduction & Radiation     EN60601-12 class B       Harmonic Current     EN61000-3-2, EN61000-3-3	E Type Models		9 x 5 x 1.6 inches (228.6 x 127 x 40.64 mm)		
EMI Conduction & Radiation EN60601-1-2 class B   Harmonic Current EN61000-3-2, EN61000-3-3	SAFETY & EMC				
Harmonic Current EN61000-3-2, EN61000-3-3	Safety Approvals				
	EMI Conduction & Radiation				
EMS Immunity EN60601-1-2, IEC61000-4-2,3, 4, 5, 6, 8, 11					
	EMS Immunity		EN60601-1-2, IEC61000-4-2,3, 4, 5, 6, 8, 11		



# **MODEL SELECTION TABLES**

Rev. D

U-CHASSIS MODELS (TYPE "U")							
Model Number		Input Voltage Range	Output Voltage	Max. Output Current		Max. Output Power	
				Convection	22.95CFM	Convection	22.95CFM
PSRL0402DMU-0312	V1	90 ~ 264 VAC	+3.3 VDC	30 A	40 A	200W	300W
	V2		+12 VDC	16.7 A	25 A		
PSRL0402DMU-0324	V1		+3.3 VDC	30A	40 A	200W	300W
	V2		+24 VDC	8.34 A	12.5 A		
PSRL0402DMU-0512	V1		+5 VDC	30 A	40 A	200W	300W
PSRL0402DM0-0512	V2		+12 VDC	16.7 A	25 A		
PSRL0402DMU-0524	V1		+5 VDC	30 A	40 A	200W	300W
	V2		+24 VDC	8.34 A	12.5 A		
PSRL0402DMU-1224	V1		+12 VDC	16.7 A	25 A	250W	40011
	V2		+24 VDC	8.33 A	12.5 A	230W	400W

ENCLOSED WITH BUILT-IN FAN MODELS (TYPE "E")						
Model Number		Input Voltage Range	Output Voltage Max. Output Current		Max. Output Power	
PSRL0402DME-0312	V1	90 ~ 264 VAC	+3.3 VDC	40 A	- 300W	
	V2		+12 VDC	25 A	300 W	
PSRL0402DME-0324	V1		+3.3 VDC	40 A	300W	
	V2		+24 VDC	12.5 A	300 W	
PSRL0402DME-0512	V1		+5 VDC	40 A	300W	
	V2		+12 VDC	25 A	300 W	
PSRL0402DME-0524	V1		+5 VDC	40 A	300W	
	V2		+24 VDC	12.5 A	300 W	
PSRL0402DME-1224	V1		+12 VDC	25 A	400W	
	V2		+24 VDC	12.5 A	400W	

## NOTES

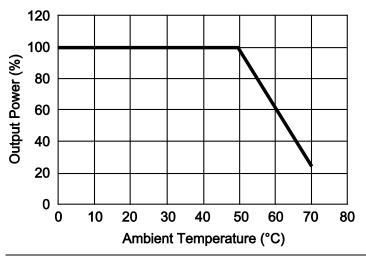
1. Optional top cover (Type "C") is also available for U-Chassis Models. Please call factory for more details.

2.10% minimum load is required to maintain the ripple and regulation specifications.

3. For single output models see the PSRL0402M series.

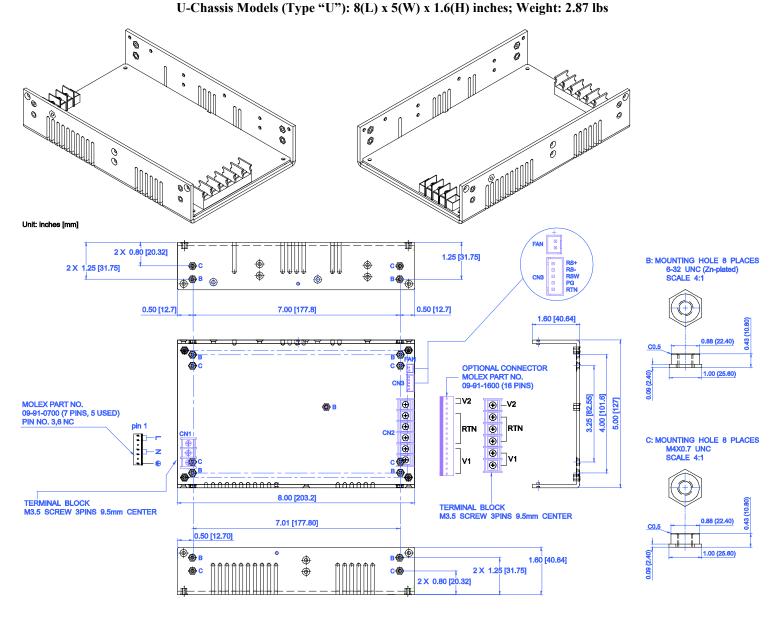
4. This product is Listed to applicable standards and requirements by UL. *\*Due to advances in technology, specifications subject to change without notice.* 

# **DERATING CURVE**





## **MECHANICAL DRAWING**



Rev. D

I/O CONNECTOR PIN ASSIGNMENTS:

## Input Connector (CN1):

PSRL0402DMU (U-Chassis Type): Mating Molex Part No. 09-91-0700 (7pin, 5 used) or Howder Terminal block (HD-121-3P) PSRL0402DME (Enclosed with Built-in Fan Type): IEC320 or equivalent Snap-in mounting type or DINKLE Terminal block (DT-35-A02W-03)

#### Output Connector (CN2):

Mating Molex 16 pins (09-91-1600) or Howder (HD-121-6P) M3.5, 8 pins terminal block, 9.5 mm center

#### Logic Signal Connectors (CN3):

Mating JST XHP-9 or equivalent (CHYAO SHIUNN JS-2001-05) Mating Pins: JST SXH-002T-P0.6 for AWG 30 to 26

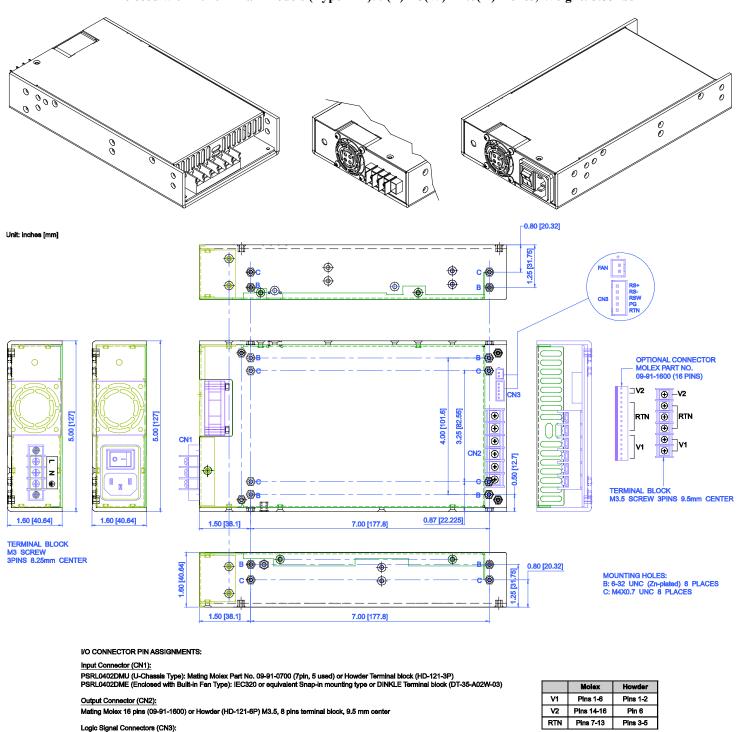
### Mounting Inserts:

6-32, M4 4 places individually with maximum penetration 0.15" on bottom side and 0.25" on both sides

	Molex	Howder
V1	Pins 1-6	Pins 1-2
V2	Pins 14-16	Pin 6
RTN	Pins 7-13	Pins 3-5



## **MECHANICAL DRAWING**



## Enclosed with Built-in Fan Models (Type "E"): 9(L) x 5(W) x 1.6(H) inches; Weight: 3.53 lbs

Rev. D

Mounting Inserts:

Wall Industries, Inc. • Tel: 603-778-2300 • Toll Free: 888-597-9255 • website: www.wallindustries.com • e-mail: sales@wallindustries.com

Mating JST XHP-9 or equivalent (CHYAO SHIUNN JS-2001-05) Mating Pins: JST SXH-002T-P0.6 for AWG 30 to 26

6-32, M4 4 places individually with maximum penetration 0.15" on bottom side and 0.25" on both sides



## **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: 2015 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:

Phone:	<b>2</b> (603)778-2300
Toll Free:	<b>a</b> (888)597-9255
Fax:	<b>2</b> (603)778-9797
E-mail:	sales@wallindustries.com
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	Exeter, NH 03833

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