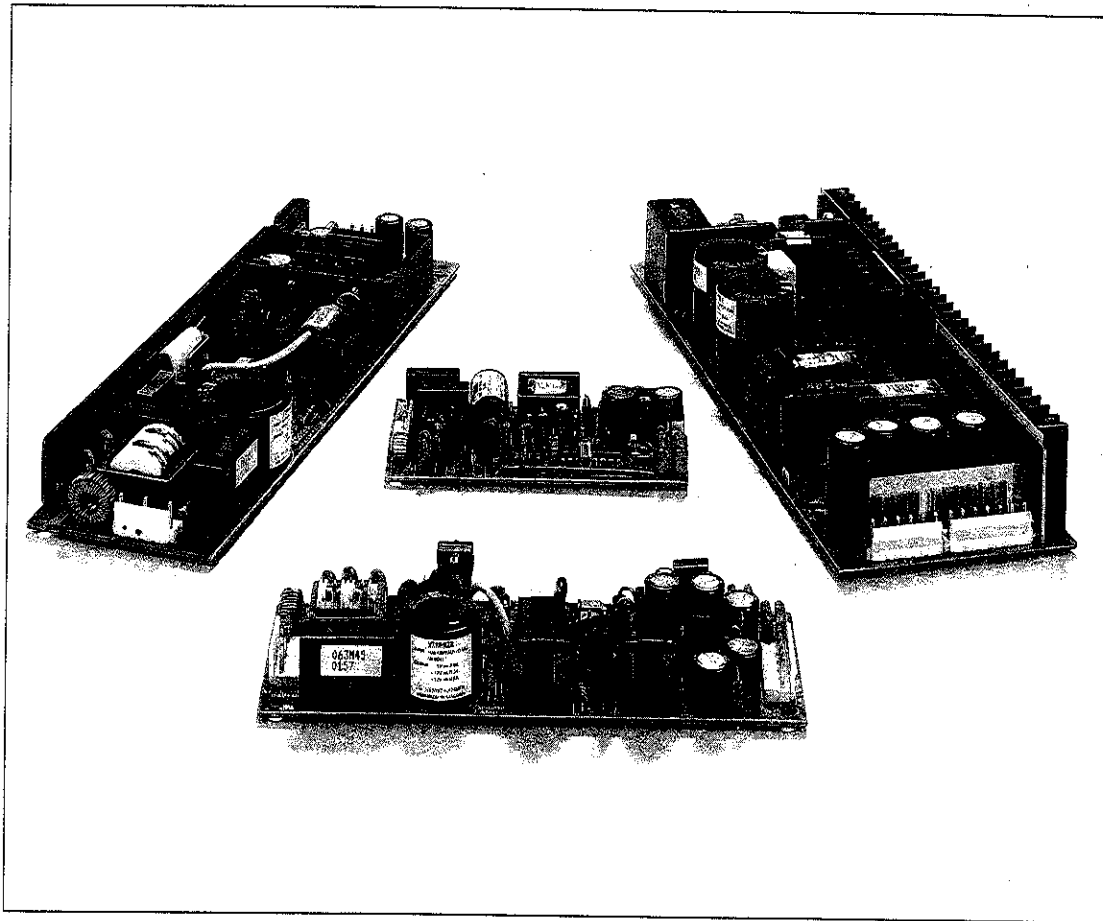


Part I – AC-to-DC Power Supplies

LAMBDA'S AND Z SERIES



Ideal For High Volume, Low Cost Office Automation Applications

The requirements for reliability and cost effectiveness are no longer mutually exclusive in office automation, point of sale equipment and other high volume applications. Lambda's V and Z Series provide high quality, reliable power at prices starting at \$21.

From 10W to 170W, the V & Z Series is available in single, dual and triple output packages. They are designed with open frame PC board construction and operate from 85-132VAC (V Series) for North America and the Pacific Rim or 85-132/170-250VAC (Z Series) for worldwide applications. All models are designed for worldwide safety applications and are currently under evaluation for UL/CSA/TUV/Dentori. Input EMI on many models conforms to FCC Curve B Limits.

All Lambda V and Z Series models are in stock for immediate delivery. Evaluation samples are available.

& Z SERIES FEATURES

Single, Dual, and Triple Outputs	From 10W to 200W, 120 different off the shelf modules ensures a standard solution for almost any application.		
Meets Worldwide EMI Requirements	Conducted EMI to VDE 0871 Curve B and FCC Class B ensures reliable system performance.		
Ease of Manufacturing and Service	Molex type input and output connections ensure easy manufacturing and service. Mating plugs and terminals are provided.		
Meets Worldwide Safety Requirements	Safety Agency Approvals to UL1950 and CSA 1402C designed for deliverable equipment.		
Output Current Surge Capability	Dual output models are capable of providing short term output current surges, ideal for motor start applications.		
Convection Cooled	Eliminates the need for forced air cooling and/or heatsinks.		
Auxiliary Monitoring Signal	The VD20 is designed with an auxiliary monitoring signal to provide output status indication.		
Isolation	Minimum Isolation (VAC)	Series	
		V	Z
	Input/output	2000	3750
	Input/ground	2000	2500
	Output/ground	500	500
90 Day Guarantee	Lambda's 90 day guarantee includes labor as well as parts.		
One Day Delivery	Lambda's V & Z Series power supplies are in stock for one day delivery.		

Z SERIES SPECIFICATIONS

AC Input

line 85-132 VAC/170-265 VAC,
47-440 Hz.

Efficiency

Package Model	Efficiency (Typical)
ZT30; ZS10-5, -12	70%
ZS10-15, -24; ZD30	71%
ZT60	72%
ZD50, ZD75	73%
ZT90	74%
ZS30-5; ZS50	75%
ZD120, ZT170	76%
ZS30-12; -15; ZS75-5	77%
ZS30-24, 36, 48; ZS75-12-15; ZS100-5; ZS150-5	78%
ZS100-12; -15; ZS150-12, -15	79%
ZS100-24; ZS150-24; ZS75-24, -36, -48	80%
ZS100-36; ZS150-36, -48	81%

DC Input

230 to 330 VDC.

EMI

Conducted EMI on the input conforms to FCC Docket 20780 Class B and VDE 0871 Class B.

DC Output

Voltage range shown in tables.

Regulated Voltage

regulation, line 0.4% maximum.
regulation, load 0.8% maximum.
ripple and noise
(pk-pk) 120mV on 5V models.
150mV on 12V models of ZD Series
and 12V and 15V models of ZS and
ZT Series.
160mV on 8V models of ZD Series.
200mV on 24V models of ZS Series.
240mV on 12V models of ZS Series.
400mV on 48V models of ZS Series.
480mV on 24V models of ZD-75.

Pre-Load Requirements

All multiple output units require pre-load on main 5V output.

Overload Protection

All outputs are short circuit protected. At no time should the average power (excluding transients) exceed the maximum continuous output power. Avoid operation in overload or dead short for sustained periods.

Overvoltage Protection

Overvoltage protection is provided on the main 5V output and all ZT Series models, CH1 of the ZD Series, and the ZS Series.

In-Rush Current Limiting

The typical turn-on current is as follows:

Series	In-Rush Current
ZD50, ZD120	20A
ZD30, ZD75	30A
ZD Series, ZT30, ZT170	15A @ 100 VAC/30A @ 200 VAC
ZT60, 90	30A

Cooling

All units are convection cooled except the ZT170 which is rated as shown with forced air cooling. Contact the factory for free convection ratings.

Isolation Rating

3750VAC input to output.
2500VAC input to ground
500VAC output to ground.

Operating Temperature Range

-10°C to +60°C.

Storage Temperature Range

-30°C to +85°C.

Connections

All input and output connections are via Molex type connectors.

Mounting

Ratings are for horizontal mounting, component side up. For other mounting configurations, consult factory for rating information.

Physical Data

Package Model	Lbs. Net	Lbs. Ship	Construction	Size Inches
ZS10	0.20	0.50	PCB	0.93 × 2.36 × 5.12
ZS15	0.25	0.55	PCB	0.83 × 2.36 × 5.63
ZS30	0.35	0.65	PCB	1.02 × 2.36 × 6.77
ZD30	0.48	0.70	PCB	5.50 × 3.14 × 1.03
ZS50	0.60	0.90	PCB	1.02 × 2.95 × 7.87
ZD50	0.77	1.00	PCB	7.28 × 3.54 × 1.03
ZS75	0.90	1.20	PCB	1.26 × 2.95 × 7.87
ZS100	1.00	1.30	PCB	1.46 × 3.15 × 8.74
ZD120	1.10	1.30	PCB	8.07 × 3.70 × 1.40
ZS150	1.30	1.60	PCB	1.69 × 3.54 × 8.74
ZS120P	1.10	1.40	PCB	8.19 × 3.15 × 8.74
ZT30	0.48	0.70	PCB	5.51 × 3.15 × 1.02
ZT60	.77	1.00	PCB	7.28 × 3.54 × 1.02
ZT90	1.08	1.30	PCB	8.07 × 3.70 × 1.41
ZT170	1.54	1.80	PCB	8.46 × 4.33 × 1.61

UL/CSA/TUV

Most models have received agency approval or have passed all tests and are waiting for formal notification. Contact the factory for the status of specific models.

Guarantee

90 day guarantee includes parts as well as labor.

Commercial Ratings Table – Single Output

K SERIES

- PCB Mount
- Small Footprint
- High Density

V SERIES

- Lowest Cost 110VAC Input
- PCB and Chassis Mount
- Meets FCC Curve B on Duals and Triples

Z SERIES

- Lowest Cost 110/220VAC Input
- PCB Construction
- Meets FCC and VDE Curve B

LV SERIES

- Chassis Mount
- 110/220VAC Input
- Molex Connections

LS SERIES

- 110VAC Input
- Chassis Mount
- High Density

MAX CURRENT (AMPS) AT AMBIENT TEMPERATURE OF				Vout ADJ. RANGE	COMPLETE ELEC. SPEC. PG.	UNIT PRICE PER DELIVERED QUANTITY					MODEL
25°C	40°C	50°C	60°C			1	10	25	100	250	
SINGLE OUTPUT. 110/220VAC.											
5V OUTPUT											
2.00	2.00	2.00	1.40	4.50-5.50	73	44	40	37	33	32	ZS10-5
3.00	3.00	3.00	2.10	4.50-5.50	73	52	50	46	39	36	ZS15-5
6.00	6.00	6.00	4.20	4.50-5.50	73	67	63	58	48	44	ZS30-5
10.00	10.00	10.00	7.00	4.50-5.50	73	84	79	72	58	55	ZS50-5
15.00	15.00	15.00	9.00	4.50-5.50	73	107	102	94	75	68	ZS75-5
20.00	20.00	20.00	14.00	4.50-5.50	73	131	124	114	93	85	ZS100-5
30.00	27.00*	24.00	21.00	4.50-5.50	73	195	186	172	138	126	ZS150-5
12V OUTPUT											
0.85	0.85	0.85	0.60	10.80-13.20	73	44	40	37	33	32	ZS10-12
1.25	1.25	1.25	0.88	10.80-13.20	73	52	50	46	39	36	ZS15-12
2.50	2.50	2.50	1.75	10.80-13.20	73	67	63	58	48	44	ZS30-12
4.30	4.30	4.30	3.01	10.80-13.20	73	84	79	72	58	55	ZS50-12
6.30	6.30	6.30	3.78	10.80-13.20	73	107	102	94	75	68	ZS75-12
8.50	8.50	8.50	5.95	10.80-13.20	73	131	124	114	93	85	ZS100-12
12.50	11.25*	10.00	8.75	10.80-13.20	73	195	186	172	138	126	ZS150-12
15V OUTPUT											
0.70	0.70	0.70	0.49	13.50-16.50	73	44	40	37	33	32	ZS10-15
1.00	1.00	1.00	0.70	13.50-16.50	73	52	50	46	39	36	ZS15-15
2.00	2.00	2.00	1.40	13.50-16.50	73	67	63	58	48	44	ZS30-15
3.50	3.50	3.50	2.55	13.50-16.50	73	84	79	72	58	55	ZS50-15
5.00	5.00	5.00	3.00	13.50-16.50	73	107	102	94	75	68	ZS75-15
6.70	6.70	6.70	4.69	13.50-16.50	73	131	124	114	93	85	ZS100-15
10.00	9.00*	8.00	7.00	13.50-16.50	73	195	186	172	138	126	ZS150-15
24V OUTPUT											
0.45	0.45	0.45	0.32	21.60-26.40	73	44	40	37	33	32	ZS10-24
0.65	0.65	0.65	0.46	21.60-26.40	73	52	50	46	39	36	ZS15-24
1.30	1.30	1.30	0.91	21.60-26.40	73	67	63	58	48	44	ZS30-24
2.10	2.10	2.10	1.47	21.60-26.40	73	84	79	72	58	55	ZS50-24
3.20	3.20	3.20	1.92	21.60-26.40	73	107	102	94	75	68	ZS75-24
4.30	4.30	4.30	3.01	21.60-26.40	73	131	124	114	93	85	ZS100-24
5.00	5.00	3.50	—	22.80-25.20	73	135	120	108	87	78	ZS120P-24
6.30	5.67*	5.04	4.41	21.60-26.40	73	195	186	172	138	126	ZS150-24

*Rating for VS150 is at 35°C.

Commercial Ratings Table—Single and Dual Output

K SERIES

- PCB Mount
- Small Footprint
- High Density

V SERIES

- Lowest Cost 110VAC Input
- PCB and Chassis Mount
- Meets FCC Curve B on Duals and Triples

Z SERIES

- Lowest Cost 110/220VAC Input
- PCB Construction
- Meets FCC and VDE Curve B

LV SERIES

- Chassis Mount
- 110/220VAC Input
- Molex Connections

LS SERIES

- 110VAC Input
- Chassis Mount
- High Density

MAX CURRENT (AMPS) AT AMBIENT TEMPERATURE OF				Vout ADJ. RANGE	COMPLETE ELEC. SPEC. PG.	UNIT PRICE PER DELIVERED QUANTITY					MODEL
25°C	40°C	50°C	60°C			1	10	25	100	250	
48V OUTPUT											
0.70	0.70	0.70	0.49	43.20-52.80	73	67	63	58	48	44	ZS30-48
1.10	1.10	1.10	0.77	43.20-52.80	73	84	79	72	58	55	ZS50-48
1.60	1.60	1.60	0.96	43.20-52.80	73	107	102	94	75	68	ZS75-48
2.10	2.10	2.10	1.47	43.20-52.80	73	131	124	114	93	85	ZS100-48
3.20	2.88*	2.56	2.24	43.20-52.80	73	195	186	172	138	126	ZS150-48

Vout	MAX CURRENT (AMPS) AT AMBIENT TEMPERATURE OF			MAX POWER (WATTS) AT AMBIENT TEMPERATURE OF			Vout ADJ. RANGE	COMPLETE ELEC. SPEC. PG.	UNIT PRICE PER DELIVERED QUANTITY					MODEL
	40°C	50°C	60°C	40°C	50°C	60°C			1	10	25	100	250	
DUAL OUTPUT. 110/220VAC INPUT.														
5V, 12V OUTPUT														
5V	1.00	1.00	0.70	30.20	30.20	21.00	±5% Fixed	73	\$ 78	\$ 73	\$ 70	\$ 56	\$ 52	ZD30-1205
12V	2.10	2.10	1.90				12.00-12.60							
5V	1.00	1.00	0.70	53.00	53.00	37.10	±5% Fixed	73	95	91	85	69	64	ZD50-1205
12V	4.00	4.00	2.80				12.00-12.60							
5V	3.00	2.10	1.20	51.00	35.70	20.40	4.75- 5.25	73	77	72	66	53	49	ZD75-0512
12V	3.00	2.10	1.20				±5% Fixed							
5V	2.50	2.50	1.75	120.50	120.50	84.30	±5% Fixed	73	135	129	122	97	90	ZD120-1205
12V	9.00	9.00	6.30				12.00-12.60							
5V, 24V OUTPUT														
5V	1.00	1.00	0.70	31.40	31.40	22.00	±5% Fixed	73	78	73	70	56	52	ZD30-2405
24V	1.10	1.10	0.77				24.00-25.20							
5V	1.00	1.00	0.70	53.00	53.00	37.10	±5% Fixed	73	95	91	85	69	64	ZD50-2405
24V	2.00	2.00	1.40				24.00-25.20							
5V	3.00	2.10	1.20	63.00	44.10	25.20	4.75- 5.25	73	77	72	66	53	49	ZD75-0524
24V	2.00	1.40	0.80				±5% Fixed							
5V	2.50	2.50	1.75	120.50	120.50	84.30	±5% Fixed	73	135	129	122	97	90	ZD120-2405
24V	4.50	4.50	3.15				24.00-25.20							
8V, 24V OUTPUT														
8V	0.70	0.70	0.49	32.00	32.00	22.40	±5% Fixed	73	78	73	70	56	52	ZD30-2408
24V	1.10	1.10	0.77				24.00-25.20							
8V	0.70	0.70	0.49	53.60	53.60	37.50	±5% Fixed	73	95	91	85	69	64	ZD50-2408
24V	2.00	2.00	1.40				24.00-25.20							
8V	2.00	1.40	0.80	64.00	44.80	25.60	7.60- 8.40	73	77	72	66	53	49	ZD75-0824
24V	2.00	1.40	0.80				±5% Fixed							
8V	2.00	2.00	1.40	124.00	124.00	86.80	±5% Fixed	73	135	129	122	97	90	ZD120-2408
24V	4.50	4.50	3.15				24.00-25.20							

*Rating for ZS150 is at 35°C.

Commercial Ratings Table – Triple Output

K SERIES

- PCB Mount
- Small Footprint
- High Density

V SERIES

- Lowest Cost 110VAC Input
- PCB and Chassis Mount
- Meets FCC Curve B on Duals and Triples

Z SERIES

- Lowest Cost 110/220VAC Input
- PCB Construction
- Meets FCC and VDE Curve B

LV SERIES

- Chassis Mount
- 110/220VAC Input
- Molex Connections

LS SERIES

- 110VAC Input
- Chassis Mount
- High Density

Vout	MAX CURRENT (AMPS) AT AMBIENT TEMPERATURE OF			MAX POWER (WATTS) AT AMBIENT TEMPERATURE OF			Vout ADJ. RANGE	COMPLETE ELEC. SPEC. PG.	1	UNIT PRICE PER DELIVERED QUANTITY				MODEL
	40°C	50°C	60°C	40°C	50°C	60°C				10	25	100	250	

TRIPLE OUTPUT. 110/220 VAC INPUT.

5V, +12V, –12V OUTPUT

5	3.00	3.00	2.10	33.00	33.00	23.10	5.00-5.25 ±5% Fixed	73	89	84	78	63	57	ZT30-522
+12	1.20	1.20	0.84				±5% Fixed							
-12	0.30	0.30	0.21				±5% Fixed							
5	5.00	5.00	3.50	61.00	61.00	42.70	5.00-5.25 ±5% Fixed	73	107	102	94	75	69	ZT60-522
+12	2.50	2.50	1.75				±5% Fixed							
-12	0.50	0.50	0.35				±5% Fixed							
5	10.00	10.00	7.00	92.00	92.00	64.40	5.00-5.25 ±5% Fixed	73	141	135	125	100	93	ZT90-522
+12	3.00	3.00	2.10				±5% Fixed							
-12	0.30	0.30	0.21				±5% Fixed							
5	20.00	20.00	14.00	172.00	172.00	120.40	5.00-5.25 ±5% Fixed	73	214	203	188	150	139	ZT170-522*
+12	5.00	5.00	3.50				±5% Fixed							
-12	1.00	1.00	0.70				±5% Fixed							

5V, +15V, –15V OUTPUT

5	5.00	5.00	3.50	62.50	62.50	43.75	5.00-5.25 ±5% Fixed	73	107	102	94	75	69	ZT60-5FF
+15	2.00	2.00	1.40				±5% Fixed							
-15	0.50	0.50	0.35				±5% Fixed							
5	10.00	10.00	7.00	95.00	95.00	66.50	5.00-5.25 ±5% Fixed	73	141	135	125	100	93	ZT90-5FF
+15	2.50	2.50	1.75				±5% Fixed							
-15	0.50	0.50	0.35				±5% Fixed							
5	20.00	20.00	14.00	175.00	175.00	122.50	5.00-5.25 ±5% Fixed	73	214	203	188	150	139	ZT170-5FF*
+15	4.00	4.00	2.80				±5% Fixed							
-15	1.00	1.00	0.70				±5% Fixed							

5V, +12V, –5V OUTPUT

5	3.00	3.00	2.10	30.90	30.90	21.63	5.00-5.25 ±5% Fixed	73	89	84	78	63	57	ZT30-525
+12	1.20	1.20	0.84				±5% Fixed							
-5	0.30	0.30	0.21				±5% Fixed							
5	5.00	5.00	3.50	57.50	57.50	40.25	5.00-5.25 ±5% Fixed	73	107	102	94	75	69	ZT60-525
+12	2.50	2.50	1.75				±5% Fixed							
-5	0.50	0.50	0.35				±5% Fixed							
5	10.00	10.00	7.00	88.50	88.50	61.95	5.00-5.25 ±5% Fixed	73	141	135	125	100	93	ZT90-525
+12	3.00	3.00	2.10				±5% Fixed							
-5	0.50	0.50	0.35				±5% Fixed							
5	20.00	20.00	14.00	165.00	165.00	115.50	5.00-5.25 ±5% Fixed	73	214	203	188	150	139	ZT170-525*
+12	5.00	5.00	3.50				±5% Fixed							
-5	1.00	1.00	0.70				±5% Fixed							

*Ratings for ZT170 Series apply when operated with forced air cooling. Consult factory for applicable ratings without forced air cooling.

Part I – AC-to-DC Power Supplies

AND Z SERIES MECHANICAL DRAWINGS

Table 1 (cont'd.) Dimensions are in ^{Inches}(mm) See Figure 1

DIM MODEL	A	B	C	D	E	F	G	H	J	K	L	M	N
ZS SERIES	ZS10	$\frac{2.36}{(60)}$	$\frac{1.969}{(50)}$	$\frac{.197}{(5)}$	$\frac{4.724}{(120)}$			$\frac{.83}{(21)}$		$\frac{1.84}{(46.75)}$	$\frac{5.12}{(130)}$	$\frac{1.49}{(37.75)}$	
	ZS15	$\frac{2.36}{(60)}$	$\frac{1.969}{(50)}$	$\frac{.197}{(5)}$	$\frac{5.236}{(133)}$			$\frac{.83}{(21)}$		$\frac{1.68}{(42.75)}$	$\frac{5.63}{(143)}$	$\frac{1.51}{(38.25)}$	
	ZS30	$\frac{2.36}{(60)}$	$\frac{1.969}{(50)}$	$\frac{.197}{(5)}$	$\frac{6.378}{(162)}$	$\frac{.138}{(3.5)}$	$\frac{3.228}{(82)}$	$\frac{1.02}{(26)}$		$\frac{1.13}{(28.75)}$	$\frac{5.77}{(172)}$	$\frac{1.02}{(26.00)}$	
	ZS50	$\frac{2.95}{(75)}$	$\frac{2.559}{(65)}$	$\frac{.197}{(5)}$	$\frac{7.480}{(190)}$	$\frac{2.343}{(59.5)}$	$\frac{2.972}{(75.5)}$	$\frac{1.02}{(26)}$		$\frac{.79}{(18.75)}$	$\frac{7.87}{(200)}$	$\frac{1.56}{(39.50)}$	
	ZS75	$\frac{2.95}{(75)}$	$\frac{2.559}{(65)}$	$\frac{.197}{(5)}$	$\frac{8.346}{(212)}$	$\frac{2.146}{(54.5)}$	$\frac{2.972}{(75.5)}$	$\frac{1.26}{(32)}$		$\frac{1.75}{(44.5)}$	$\frac{8.74}{(222)}$	$\frac{1.56}{(39.50)}$	
	ZS100	$\frac{3.15}{(80)}$	$\frac{2.756}{(70)}$	$\frac{.197}{(5)}$	$\frac{8.346}{(212)}$	$\frac{2.106}{(53.5)}$	$\frac{3.996}{(101.5)}$	$\frac{1.46}{(37)}$		$\frac{1.32}{(33.5)}$	$\frac{8.74}{(222)}$	$\frac{1.67}{(42.50)}$	
	ZS150	$\frac{3.54}{(90)}$	$\frac{3.150}{(80)}$	$\frac{.197}{(5)}$	$\frac{8.346}{(212)}$	$\frac{2.677}{(68)}$	$\frac{5.433}{(138)}$	$\frac{1.69}{(43)}$		$\frac{.91}{(23)}$	$\frac{8.74}{(222)}$	$\frac{2.62}{(66.5)}$	$\frac{1.95}{(49.5)}$
ZD-SERIES	ZD30	$\frac{3.15}{(80)}$	$\frac{2.756}{(70)}$	$\frac{.197}{(5)}$	$\frac{5.118}{(130)}$			$\frac{4.47}{(113.5)}$	$\frac{1.02}{(26)}$	$\frac{.197}{(5)}$	$\frac{.76}{(19.25)}$	$\frac{5.51}{(140)}$	$\frac{2.19}{(55.5)}$
	ZD50	$\frac{3.54}{(90)}$	$\frac{3.152}{(80)}$	$\frac{.197}{(5)}$	$\frac{6.890}{(175)}$	$\frac{.827}{(21)}$	$\frac{4.67}{(118.5)}$	$\frac{5.87}{(149)}$	$\frac{1.02}{(26)}$	$\frac{.28}{(7)}$	$\frac{.76}{(19.25)}$	$\frac{7.28}{(185)}$	$\frac{1.64}{(26.5)}$
	ZD75	$\frac{3.11}{(79)}$	$\frac{2.76}{(70)}$	$\frac{.197}{(5)}$	$\frac{6.50}{(165)}$	$\frac{1.36}{(34.5)}$	$\frac{3.94}{(100)}$	$\frac{4.88}{(124)}$	$\frac{1.57}{(40)}$	$\frac{.28}{(7)}$	$\frac{1.38}{(35)}$	$\frac{6.89}{(175)}$	$\frac{2.36}{(60)}$
	ZD120	$\frac{3.70}{(94)}$	$\frac{3.30}{(84)}$	$\frac{.197}{(5)}$	$\frac{7.68}{(195)}$	$\frac{2.81}{(71.5)}$	$\frac{4.33}{(110)}$	$\frac{5.3}{(134.5)}$	$\frac{1.42}{(36)}$	$\frac{.57}{(14.5)}$	$\frac{.96}{(24.5)}$	$\frac{8.07}{(205)}$	$\frac{1.00}{(25.5)}$
ZT SERIES	ZT30	$\frac{3.15}{(80)}$	$\frac{2.756}{(70)}$	$\frac{.197}{(5)}$	$\frac{5.118}{(130)}$			$\frac{3.66}{(93)}$	$\frac{1.02}{(26)}$	$\frac{.61}{(15.5)}$	$\frac{.87}{(22)}$	$\frac{5.51}{(140)}$	$\frac{1.02}{(26)}$
	ZT60	$\frac{3.54}{(90)}$	$\frac{3.152}{(80)}$	$\frac{.197}{(5)}$	$\frac{6.890}{(175)}$	$\frac{.827}{(21)}$	$\frac{4.803}{(122)}$	$\frac{5.61}{(142.5)}$	$\frac{1.02}{(26)}$	$\frac{.55}{(14)}$	$\frac{1.30}{(33)}$	$\frac{7.28}{(185)}$	$\frac{.83}{(21)}$
	ZT90	$\frac{3.70}{(94)}$	$\frac{3.307}{(84)}$	$\frac{.197}{(5)}$	$\frac{7.677}{(195)}$	$\frac{.945}{(24)}$	$\frac{4.626}{(117.5)}$	$\frac{5.10}{(129.5)}$	$\frac{1.42}{(36)}$	$\frac{.71}{(18)}$	$\frac{1.09}{(27.75)}$	$\frac{8.07}{(205)}$	$\frac{1.11}{(28.25)}$
	ZT170	$\frac{4.33}{(110)}$	$\frac{3.937}{(100)}$	$\frac{.197}{(5)}$	$\frac{8.071}{(205)}$	$\frac{1.535}{(39)}$	$\frac{4.449}{(113)}$	$\frac{4.49}{(114)}$	$\frac{1.61}{(41)}$	$\frac{.18}{(4.5)}$	$\frac{1.36}{(34.5)}$	$\frac{8.46}{(215)}$	$\frac{3.41}{(86.5)}$
													$\frac{2.58}{(65.5)}$

AND Z SERIES MECHANICAL DRAWINGS

SERIES
Z SERIES

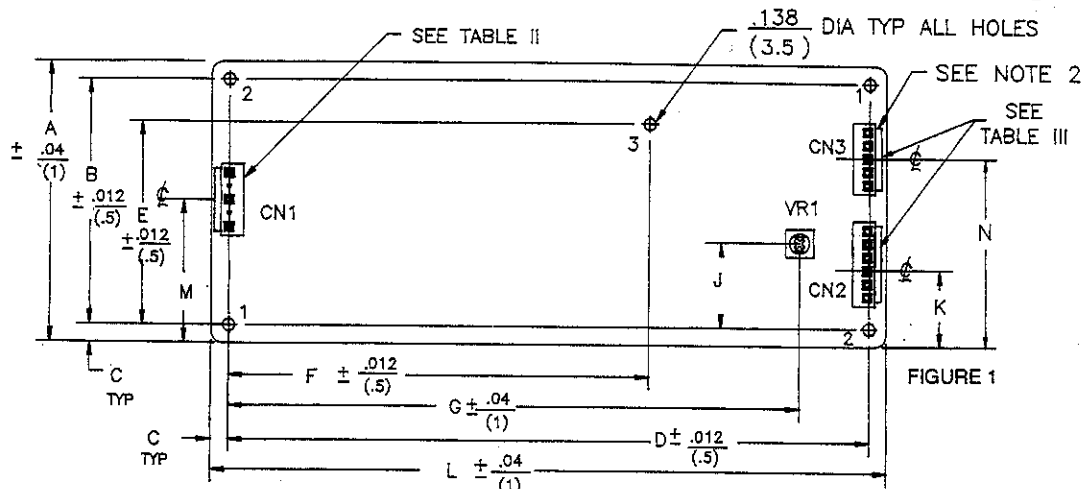


FIGURE 1

NOTES:

1. VS10 MODEL HAS TWO MOUNTING HOLES (MARKED 1 IN ABOVE DRAWING); ALL OTHER V AND Z MODELS HAVE FOUR OR FIVE MOUNTING HOLES. SEE TABLE 1 DIMENSIONS E AND F WHICH REFER TO FIFTH HOLE (MARKED 3 ABOVE).
2. SEE TABLE 1 FOR DIMENSIONS. DIMENSIONS ARE GIVEN IN INCHES OVER MILLIMETERS.

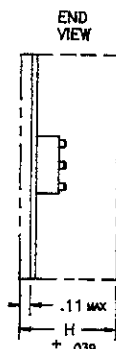


TABLE II

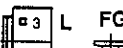
MODEL	VS-10 VS-15	VS-30 VD-20 VS-50 VT-15 VS-75 VT-30 VS-100 VT-60 VS-150	VD-75 ZD-75 (GROUND LUG IS LOCATED AT Z MOUNTING HOLE)	ZS-10 ZS-15	ZS-30 ZD-50 ZS-50 ZD-120 ZS-75 ZT-30 ZS-100 ZT-60 ZS-150 ZT-90 ZD-30 ZT-120
FIGURE					

TABLE III

VS-10	VS-15	VS-30 VS-50	VS-75	VS-100	VS-150	VD-20	VD-75	VT-15 VT-30	VT-60
CN2	CN2	CN2	CN2	CN2	CN2	CN3	CN2	CN2	CN2
ZS-10	ZS-15 ZS-30 ZS-50	ZS-75	ZS-100	ZS-150	ZD-30, ZD-50	ZD-75	ZD-120		
CN2	CN2	CN2	CN2	CN2	CN2	CN3	CN2		
ZT-30	ZT-60 ZT-90	ZT-170							
CN2	CN2	CN2							