Series ZWS / ZWD

invensys LAMBDA

5-150 WATTS

POWER SUPPLY AC/DC

SINGLE/DUAL OUTPUT

PFC (ZWS75PF, 100PF, 120PF, 150PF)

Low profile

Universal input 85–265VAC

Fully regulated outputs

Conducted EMI conforms to EN55022 class B

Pluggable connector Molex or JST

1 year warranty

INPUT

Input voltage range:	
ZWS-5, 10, 15, 30, 50:	85-265VAC (47-440Hz) universal input
ZWS-75PF, 100PF, 120PPF, 150PF, ZWD-75:	85-132/170-265VAC (50/60Hz) auto selectable
PFC:	ZWS-75PF...ZWS-150PF (passive filter) conform to EN61000-3-2 Class D ZWS-50AF...ZWS-150AF (active filter).

OUTPUT

Over current protection:	Current limiting with automatic recovery
Over voltage protection:	See tables
Load regulation:	0.8% ZWS-120PF: 0.5% ZWD-75: 5%(Ch1) 10% (Ch2)
Line regulation:	0.4% ZWS-120PF: 0.1% ZWD-75: 5%(Ch1) 10%(Ch2)
Hold up time:	17ms typ

GENERAL

Efficiency:	62% to 84%

ENVIRONMENTAL

Operation temperature range:	ZWS-5...ZWS-120PPF: -10°C - +60°C (derating above 50°C) ZWS-150PF -10°C - +60°C (derating above 30°C convection, above 50°C forced air cooled)
Cooling method:	Convection or forced air cooling (dependent upon output loading and local ambient)
Withstand voltage:	
Input-output:	3000VAC 1 minute
Input-ground:	2000VAC 1 minute
Output-ground:	500VAC 1 minute

SAFETY APPROVALS

Conforms to EN60950, UL1950, CSA222 No:234, CE marked for LVD

EMI

Meets EN55022 B, VCC1-2, FCC Class B

WARRANTY

Warranty:	1 year including parts and labour

All specifications guaranteed worst case unless otherwise noted

TECHNICAL CHARACTERISTICS SINGLE OUTPUT

Model No.	ZWS-5-3	ZWS-5-5	ZWS-5-12	ZWS-5-15	ZWS-5-24
Nominal Output Voltage	3.3V	5V	12V	15V	24V
Max. Average Output Current	1.0A	1.0A	0.42A	0.34A	0.22A
Max. Peak Output Current (<10 sec)	1.2A	1.2A	0.51A	0.41A	0.27A
Max. Output Power	3.3W	5.0W	5.04W	5.1W	5.28W
Max. Peak Output Power (<10 sec)	3.96W	6.0W	6.05W	6.12W	6.34W
Efficiency (typ)	62%	67%	68%	68%	70%
Output Voltage Range	± 10%				
Overvoltage Protection	140% Clamping by Zener Diode				
Size (WxHxD)	45x21x98mm				

Model No.	ZWS-10-3	ZWS-10-5	ZWS-10-12	ZWS-10-15	ZWS-10-24
Nominal Output Voltage	3.3V	5V	12V	15V	24V
Max. Average Output Current	2.0A	2.0A	0.85A	0.7A	0.45A
Max. Peak Output Current (<10 sec)	2.4A	2.4A	1.02A	0.84A	0.54A
Max. Output Power	6.6W	10.0W	10.2W	10.5W	10.8W
Max. Peak Output Power (<10 sec)	7.92W	12.0W	12.24W	12.6W	12.96W
Efficiency (typ)	62%	70%	70%	71%	71%
Output Voltage Range	±10%				
Overvoltage Protection	140% Clamping by Zener Diode				
Size (WxHxD)	50x21x105mm				

Model No.	ZWS-15-3	ZWS-15-5	ZWS-15-12	ZWS-15-15	ZWS-15-24
Nominal Output Voltage	3.3V	5V	12V	15V	24V
Max. Average Output Current	3.0A	3.0A	1.25A	1.0A	0.65A
Max. Peak Output Current (<10 sec)	3.6A	3.6A	1.5A	1.2A	0.78A
Max. Output Power	9.9W	15.0W	15.0W	15.0W	15.6W
Max. Peak Output Power (<10 sec)	11.88W	18.0W	18.0W	18.0W	18.72W
Efficiency (typ)	63%	71%	71%	71%	71%
Output Voltage Range	±10%				
Overvoltage Protection	140% Clamping by Zener Diode				
Size (WxHxD)	50x21x125mm				

Model No.	ZWS-30-3	ZWS-30-5	ZWS-30-12	ZWS-30-15	ZWS-30-24	ZWS-30-36	ZWS-30-48
Nominal Output Voltage	3.3V	5V	12V	15V	24V	36V	48V
Max. Average Output Current	6.0A	6.0A	2.5A	2.0A	1.3A	0.9A	0.7A
Max. Peak Output Current (<10 sec)	7.2A	7.2A	3.0A	2.4A	1.56A	1.08A	0.84A
Max. Output Power	19.8W	30.0W	30.0W	30.0A	31.2W	32.4W	33.6W
Max. Peak Output Power (<10 sec)	23.76W	36.0W	36.0W	36.0W	37.44W	38.88W	40.32W
Efficiency (typ)	70%	75%	77%	77%	78%	78%	78%
Output Voltage Range	±10%						
Overvoltage Protection	140% Clamping by Zener Diode						
Size (WxHxD)	55x26x133mm						

Model No.	ZWS-50-3	ZWS-50-5	ZWS-50-12	ZWS-50-15	ZWS-50-24	ZWS-50-36	ZWS-50-48
Nominal Output Voltage	3.3V	5V	12V	15V	24V	36V	48V
Max. Average Output Current	10.0A	10.0A	4.3A	3.5A	2.1A	1.4A	1.1A
Max. Peak Output Current (<10 sec)	12.0A	12.0A	5.16A	4.2A	2.52A	1.68A	1.32A
Max. Output Power	33.0W	50.0W	51.6W	52.5A	50.4W	50.4W	52.8W
Max. Peak Output Power (<10 sec)	39.6W	60.0W	61.92W	63.0W	60.48W	60.48W	63.36W
Efficiency (typ)	73%	77%	80%	81%	82%	82%	82%
Output Voltage Range	±10%						
Overvoltage Protection	115%-135% Output shutdown, manual reset						
Size (WxHxD)	55x26x195mm						

TECHNICAL CHARACTERISTICS SINGLE OUTPUT (continued)

Model No.	ZWS-75PF-3	ZWS-75PF-5	ZWS-75PF-12	ZWS-75PF-15	ZWS-75PF-24	ZWS-75PF-36	ZWS-75PF-48
Nominal Output Voltage	3.3V	5V	12V	15V	24V	36V	48V
Max. Average Output Current	15.0A	15.0A	6.3A	5.0A	3.2A	2.1A	1.6A
Max. Peak Output Current (<10 sec)	18.0A	18.0A	7.5A	6.0A	3.8A	2.5A	1.9A
Max. Output Power	49.5W	75.0W	76.0W	75.0A	76.8W	75.6W	76.8W
Max. Peak Output Power (<10 sec)	59.4W	90.0W	90.0W	90.0W	91.2W	90.0W	91.2W
Efficiency (typ)	70%	75%	77%	78%	80%	80%	80%
Output Voltage Range	±10%						
Overvoltage Protection	115%-135% Output shutdown, manual reset						
Size (WxHxD)	55x35x222mm						

Model No.	ZWS-100PF-3	ZWS-100PF-5	ZWS-100PF-12	ZWS-100PF-15	ZWS-100PF-24	ZWS-100PF-36	ZWS-100PF-48
Nominal Output Voltage	3.3V	5V	12V	15V	24V	36V	48V
Max. Average Output Current	20.0A	20.0A	8.5A	6.7A	4.3A	2.8A	2.1A
Max. Peak Output Current (<10 sec)	24.0A	24.0A	10.0A	8.0A	5.0A	3.4A	2.5A
Max. Output Power	66.0W	100.0W	102.0W	100.5A	103.2W	100.8W	100.8W
Max. Peak Output Power (<10 sec)	79.2W	120.0W	120.0W	120.0W	120.0W	122.4W	120.0W
Efficiency (typ)	72%	78%	80%	80%	82%	82%	82%
Output Voltage Range	±10%						
Overvoltage Protection	115%-135% Output shutdown, manual reset						
Size (WxHxD)	62x35x222mm						

Model No.	ZWS-150PF-3	ZWS-150PF-5	ZWS-150PF-12	ZWS-150PF-15	ZWS-150PF-24	ZWS-150PF-36	ZWS-150PF-48
Nominal Output Voltage	3.3V	5V	12V	15V	24V	36V	48V
Max. Average Output Current	30.0A	30.0A	12.5A	10.0A	6.3A	4.2A	3.2A
Max. Peak Output Current (<10 sec)	36.0A	36.0A	15.0A	12.0A	7.5A	5.0A	3.8A
Max. Output Power	99.0W	150.0W	150.0W	150.0W	151.2W	151.2W	153.6W
Max. Peak Output Power (<10 sec)	118.8W	180.0W	180.0W	180.0W	180.0W	180.0W	182.4W
Efficiency (typ)	72%	78%	80%	80%	82%	82%	82%
Output Voltage Range	±10%						
Overvoltage Protection	115%-135% Output shutdown, manual reset						
Size (WxHxD)	75x40x222mm						

Model No.	ZWS-120PPF-24	ZWS-120PPF-36
Nominal Output Voltage	24V	36V
Max. Average Output Current	5.0A	3.4A
Max. Peak Output Current (<10 sec)	10.0A	6.7A
Max. Output Power	120.0W	122.4W
Max. Peak Output Power (<10 sec)	240.0W	241.2W
Efficiency (typ)	84%	84%
Output Voltage Range	±10%	
Overvoltage Protection	115%-135% Output shutdown, manual reset	
Size (WxHxD)	80x40x208mm	

TECHNICAL CHARACTERISTICS DUAL OUTPUT

Model No.	ZWD-75-0512		ZWD-75-0524	
Output	CH1	CH2	CH1	CH2
Nominal Output Voltage	+5V	+12V	+5V	+24V
Minimum Output Current	0.5A	0.8A	0.5A	0.8A
Max. Average Output Current	3A	3A	3A	2A
Max. Peak Output Current (<5 sec)	6A	4A	6A	3A
Max. Output Power	51W		63W	
Max. Peak Output Power (<5 sec)	75W		75W	
Output Voltage Range	+/- 5%	Fixed	+/-5%	Fixed
Efficiency (typ)	73%		75%	
Size (WxHxD)	99x35.5x160mm			

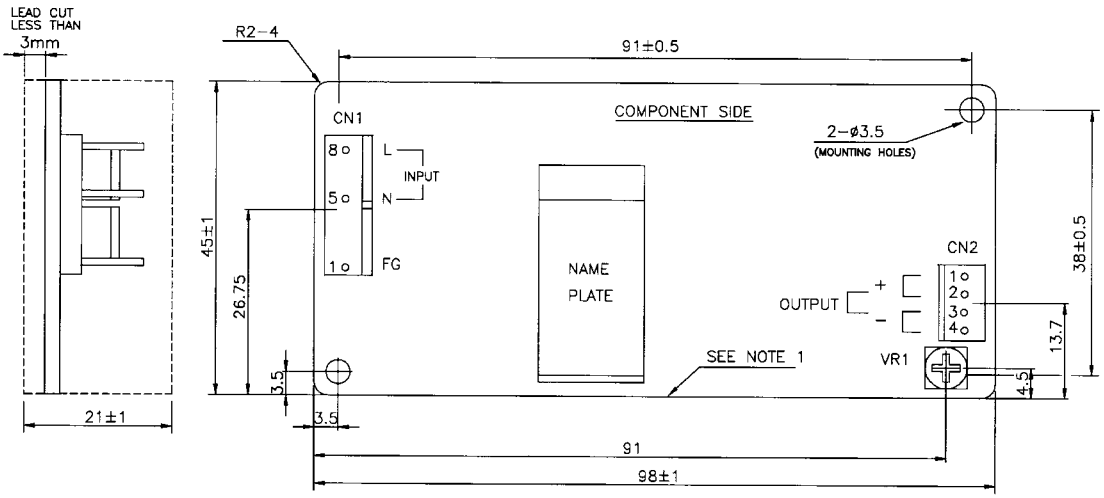
OPTIONS

Connector	All models available with molex or J.S.T. connectors (except ZWS120PPF).
Case	For models with J.S.T. connectors and suffix 'J' – ZWS30-12/J.

Consult with Technical Sales for further details

PHYSICAL SPECIFICATION

ZWS5



CONNECTORS USED:

PART DESCRIPTION	PART NAME	MANUFACT.	QTY
PIN HEADER (INPUT SIDE CN1)	6373-A8A(102)52	MOLEX	1
PIN HEADER (OUTPUT SIDE CN2)	6373-A04A-102	MOLEX	1

MATCHING HOUSINGS & PINS (NOT INCLUDED WITH THE PRODUCT):

SOCKET HOUSING (CN1)	7880-08B	MOLEX	1
SOCKET HOUSING (CN2)	7880-04B	MOLEX	1
TERMINAL PINS (CN1,2)	7879-2-P912	MOLEX	7

HAND CRIMPING TOOL : 11-01-0037 OR JHTR2262A MANUFACTURER : MOLEX

NOTES

1: TO KEEP THE DISTANCE MORE THAN 4mm BETWEEN PC-BOARD EDGE AND CUSTOMER CHASSIS.

(unit : mm)

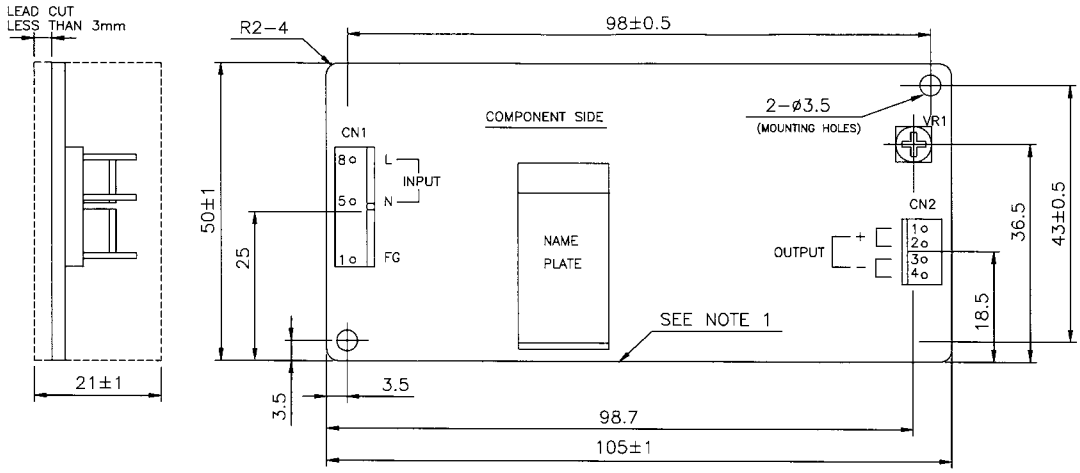
MODEL NAME ZWS5

NEMIC-LAMBDA

A152-02-01C

Invensys LAMBDA

ZWS10



CONNECTORS USED:

PART DESCRIPTION	PART NAME	MANUFACT.	QTY
PIN HEADER (INPUT SIDE CN1)	6373-A8A(102)52	MOLEX	1
PIN HEADER(OUTPUT SIDE CN2)	6373-A04A-102	MOLEX	1

MATCHING HOUSINGS AND PINS(NOT INCLUDED WITH THE PRODUCT):

SOCKET HOUSING (CN1)	7880-08B	MOLEX	1
SOCKET HOUSING (CN2)	7880-04B	MOLEX	1
TERMINAL PINS (CN1,2)	7879-2-P912	MOLEX	7

HAND CRIMPING TOOL : 11-01-0037 OR JHTR2262A CN1,2 MANUFACTURER : MOLEX

NOTES

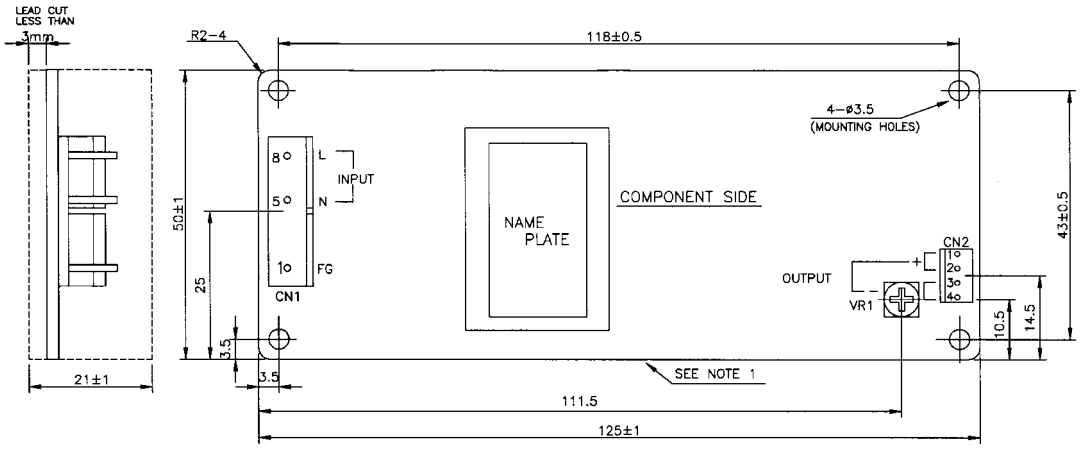
1: TO KEEP THE DISTANCE MORE THAN 4mm BETWEEN PC-BOARD EDGE AND CUSTOMER'S CHASSIS.

(unit : mm)

MODEL NAME	ZWS10

A153-02-01D

ZWS15



CONNECTORS USED:

PART DESCRIPTION	PART NAME	MANUFACTURER	QTY
PIN HEADER (INPUT SIDE CN1)	6373-A8A(102)52	MOLEX	1
PIN HEADER(OUTPUT SIDE CN2)	6373-A04A-102	MOLEX	1

MATCHING HOUSINGS AND PINS(NOT INCLUDED WITH THE PRODUCT):

SOCKET HOUSING (CN1)	7880-08B	MOLEX	1
SOCKET HOUSING (CN2)	7880-04B	MOLEX	1
TERMINAL PINS (CN1,CN2)	7879-2-P912	MOLEX	7

HAND CRIMPING TOOL : 11-01-0037 OR JHTR2262A CN1,2 MANUFACTURER : MOLEX

NOTES

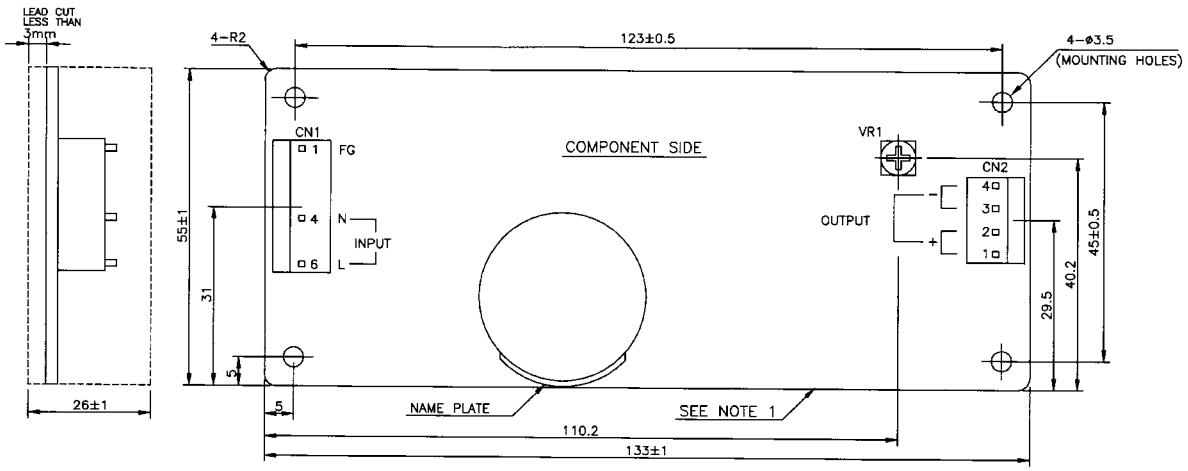
1 : TO KEEP THE DISTANCE MORE THAN 4mm BETWEEN PC-BOARD EDGE AND CUSTOMER'S CHASSIS.

(unit : mm)

MODEL NAME	ZWS15

A154-02-01D

ZWS30



CONNECTORS USED:

PART DESCRIPTION	PART NAME	MANUFACTURER	QTY
PIN HEADER (INPUT SIDE CN1)	5414-30B	MOLEX	1
PIN HEADER(OUTPUT SIDE CN2)	5273-04A	MOLEX	1

MATCHING HOUSINGS AND PINS (NOT INCLUDED WITH THE PRODUCT):

SOCKET HOUSING (CN1)	5239-06	MOLEX	1
SOCKET HOUSING (CN2)	5239-04	MOLEX	1
TERMINAL PINS (CN1,CN2)	5167PBTL	MOLEX	7

HAND CRIMPING TOOL : JHTR2445A CN1,2 MANUFACTURER : MOLEX

NOTES

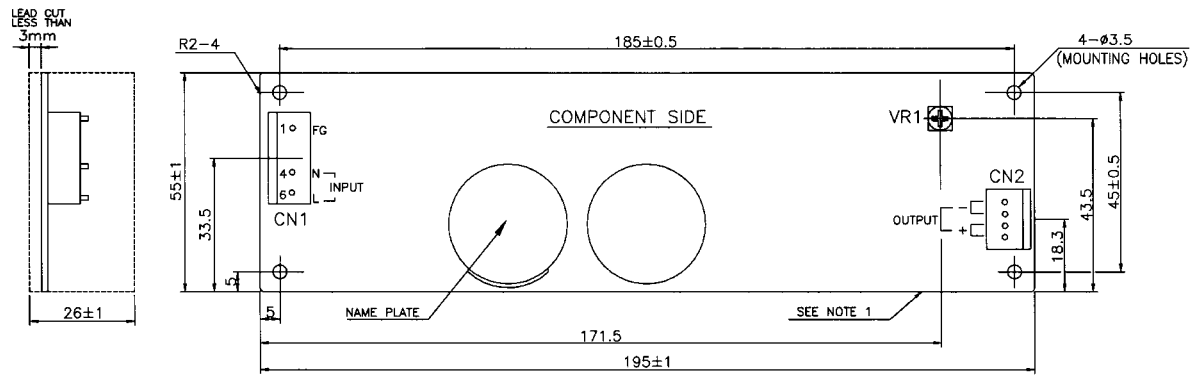
1 : TO KEEP THE DISTANCE MORE THAN 4mm BETWEEN PC-BOARD EDGE AND CUSTOMER'S CHASSIS.

(unit : mm)

MODEL NAME	ZWS30
NEMIC-LAMBDA	

A155-02-01B

ZWS50



CONNECTORS USED:

PART DESCRIPTION	PART NAME	MANUFACTURER	QTY
PIN HEADER (INPUT SIDE CN1)	5414-30B	MOLEX	1
PIN HEADER(OUTPUT SIDE CN2)	5273-04A	MOLEX	1

MATCHING HOUSINGS AND PINS(NOT INCLUDED WITH THE PRODUCT):

SOCKET HOUSING (CN1)	5239-06	MOLEX	1
SOCKET HOUSING (CN2)	5239-04	MOLEX	1
TERMINAL PINS (CN1,CN2)	5167PBTL	MOLEX	7

HAND CRIMPING TOOL : JHTR2445A CN1,2 MANUFACTURER : MOLEX

NOTES

1 : TO KEEP THE DISTANCE MORE THAN 4mm BETWEEN PC-BOARD EDGE AND CUSTOMER'S CHASSIS.

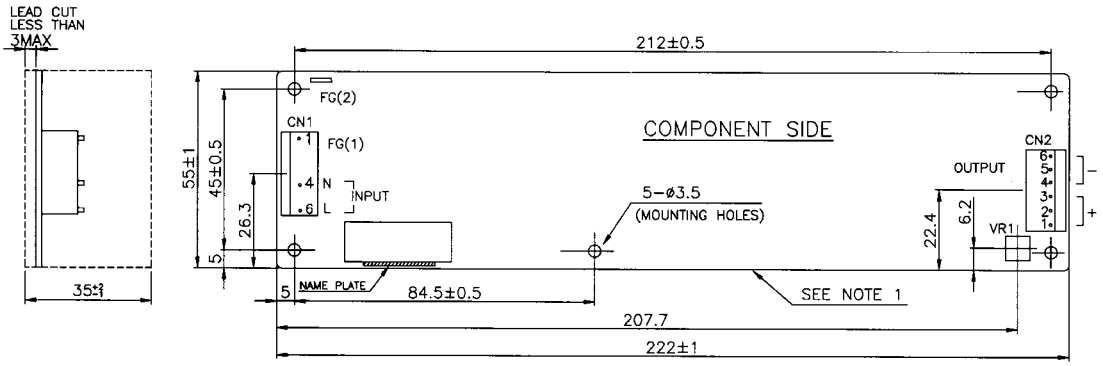
(unit : mm)

MODEL NAME	ZWS50
NEMIC-LAMBDA	

A156-02-01-B

Invensys LAMBDA

ZWS75



CONNECTORS USED

PART DESCRIPTION	CATALOG NO.	MANUFACTURER	QTY
PIN HEADER (INPUT SIDE CN1)	5414-30B	MOLEX	1
PIN HEADER(OUTPUT SIDE CN2)	5273-06A	MOLEX	1

MATCHING HOUSINGS & PINS.
* NOT INCLUDED WITH THE PRODUCT.

SOCKET HOUSING (CN1)*1	5239-06	MOLEX	1
SOCKET HOUSING (CN2)*1	5239-06	MOLEX	1
TERMINAL PINS (CN1, 2)	5167PBT	MOLEX	9

HAND CRIMPING TOOL: JHTR2445A MANUFACTURER: MOLEX

*1 FOLLOWING HOUSING ARE RECOMMENDED AS EQUIVALENT PARTS

MAIN PARTS	SUB PARTS 1	SUB PARTS 2
5239-06	09-50-3061 (MOLEX) (2139-06)	09-91-0600 (MOLEX) (3069-06)

NOTES:

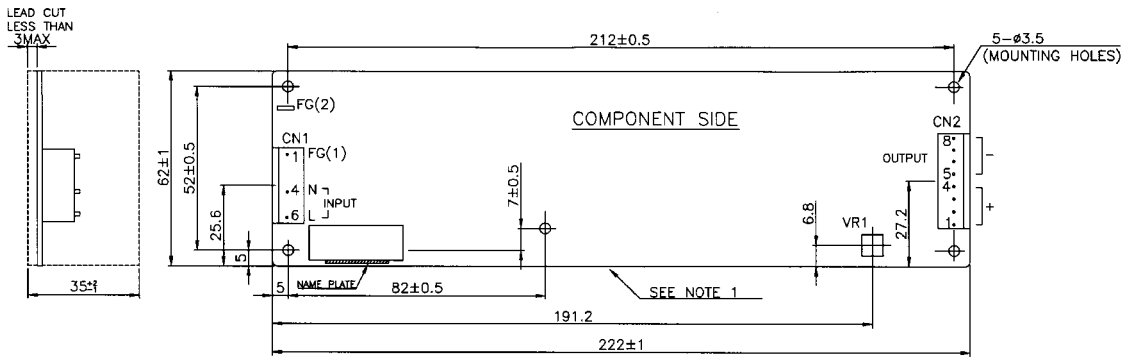
1.TO KEEP THE DISTANCE MORE THAN 4mm BETWEEN PC-BOARD EDGE AND CUSTOMER'S CHASSIS.

(unit : mm)

MODEL NAME	ZWS75PF
NEMIC-LAMBDA	

CA705-02-01B

ZWS100



CONNECTORS USED

PART DESCRIPTION	CATALOG NO.	MANUFACTURER	QTY
PIN HEADER (INPUT SIDE CN1)	5414-30B	MOLEX	1
PIN HEADER(OUTPUT SIDE CN2)	5273-08A	MOLEX	1

MATCHING HOUSINGS & PINS.
* NOT INCLUDED WITH THE PRODUCT.

SOCKET HOUSING (CN1)*1	5239-06	MOLEX	1
SOCKET HOUSING (CN2)*1	5239-08	MOLEX	1
TERMINAL PINS (CN1, 2)	5167PBT	MOLEX	11

HAND CRIMPING TOOL: JHTR2445A MANUFACTURER: MOLEX

*1 FOLLOWING HOUSING ARE RECOMMENDED AS EQUIVALENT PARTS

MAIN PARTS	SUB PARTS 1	SUB PARTS 2
5239-06	09-50-3061 (MOLEX) (2139-06)	09-91-0600 (MOLEX) (3069-06)
5239-08	09-50-3081 (MOLEX) (2139-08)	09-91-0800 (MOLEX) (3069-08)

NOTES:

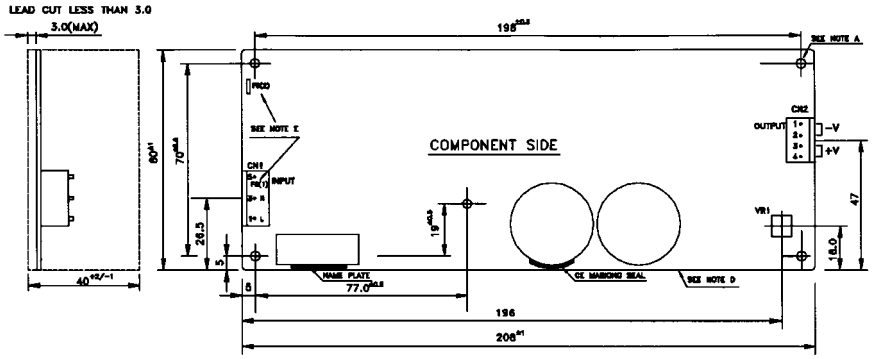
1.TO KEEP THE DISTANCE MORE THAN 4mm BETWEEN PC-BOARD EDGE AND CUSTOMER'S CHASSIS.

(unit : mm)

MODEL NAME	ZWS100PF
NEMIC-LAMBDA	

CA706-02-01B

ZWS120



CONNECTORS USED

PART DESCRIPTION	CATALOG NO.	MANUFACTURER	QTY
PIN HEADER (INPUT SIDE CN1)	B3P-S-VH	J.S.T	1
PIN HEADER (OUTPUT SIDE CN2)	B4P-VH	J.S.T	1

MATCHING HOUSINGS & PINS.

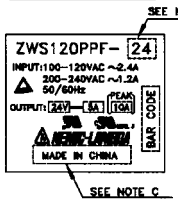
* NOT INCLUDED WITH THE PRODUCT.

SOCKET HOUSING (CN1)	VHR-3N	J.S.T	1
SOCKET HOUSING (CN2)	VHR-4N	J.S.T	1
TERMINAL PIN (CN1,2)	SVH-21T-P1.1	J.S.T	7

HAND CRIMPING TOOL: YC-160R, CN1,2 MANUFACTURER: J.S.T

CE MARKING SEAL

NAME PLATE



NOTES:

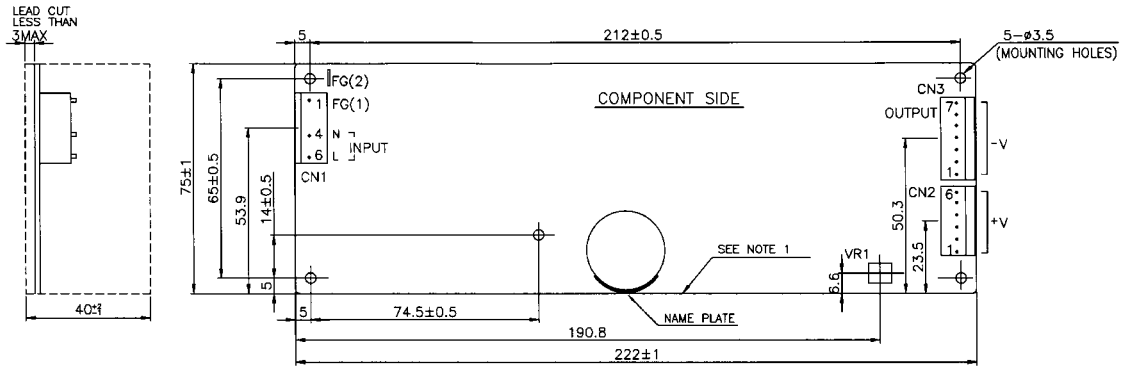
A. THE 5-ø3.5 HOLES ARE CUSTOMER'S CHASSIS MOUNTING HOLES. ALL MUST BE SCREWED IN ORDER TO CONFORM THE VIBRATION SPEC.
B. MODEL NAME, NOMINAL OUTPUT VOLTAGE, AVERAGE OUTPUT CURRENT AND PEAK OUTPUT CURRENT ARE SHOWN HERE IN ACCORDANCE WITH THE SPECIFICATIONS.
C. COUNTRY OF MANUFACTURE WILL BE SHOWN HERE.
D. TO KEEP THE DISTANCE MORE THAN 4M/M BETWEEN PC-BOARD EDGE AND CUSTOMER'S CHASSIS.
E. FG(1) OR FG(2) IS FOR SAFETY GROUND CONNECTION.

(unit : mm)

MODEL NAME	ZWS120PPF
NEMIC-LAMBDA	

CA706-02-01C

ZWS150



CONNECTORS USED

PART DESCRIPTION	CATALOG NO.	MANUFACTURER	QTY
PIN HEADER (INPUT SIDE CN1)	5414-3OB	MOLEX	1
PIN HEADER(OUTPUT SIDE CN2)	5273-06	MOLEX	1
PIN HEADER(OUTPUT SIDE CN3)	5273-07A	MOLEX	1

MATCHING HOUSINGS & PIN.

* NOT INCLUDED WITH THE PRODUCT.

SOCKET HOUSING (CN1)*1	5239-08	MOLEX	1
SOCKET HOUSING (CN2)*1	5239-06	MOLEX	1
SOCKET HOUSING (CN3)*1	5239-07	MOLEX	1
TERMINAL PINS (CN1, 2, 3)	5167PBT	MOLEX	16

HAND CRIMPING TOOL: JHTR2445A MANUFACTURER: MOLEX

*1 FOLLOWING HOUSING ARE RECOMMENDED AS EQUIVALENT PARTS

MAIN PARTS	SUB PARTS 1	SUB PARTS 2
5239-08	09-50-3081 (MOLEX) (2139-06)	09-81-0800 (MOLEX) (3069-08)
5239-07	09-50-3071 (MOLEX) (2139-07)	09-81-0700 (MOLEX) (3069-07)

NOTES:

1. TO KEEP THE DISTANCE MORE THAN 4mm BETWEEN PC-BOARD EDGE AND CUSTOMER'S CHASSIS.

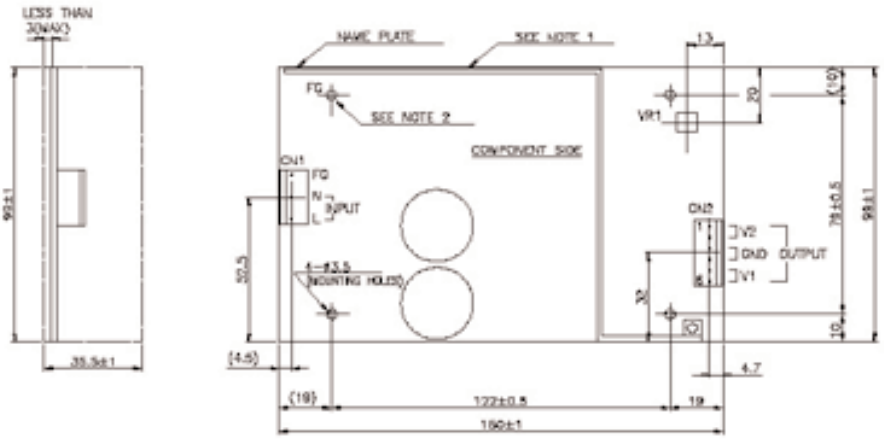
(unit : mm)

MODEL NAME	ZWS150PF
NEMIC-LAMBDA	

CA707-02-01B

Invensys LAMBDA

ZWD75



CONNECTORS USED:

PART DESCRIPTION	PART NAME	MANUFACTURER	QTY
PIN HEADER (INPUT SIDE CN1)	B3P-5-VH	J.S.T	1
PIN HEADER (OUTPUT SIDE CN2)	B6P-VH	J.S.T	1

ACCESSORIES:

SOCKET HOUSING (CN1)	VHR-5N	J.S.T	1
SOCKET HOUSING (CN2)	VHR-6N	J.S.T	1
TERMINAL PINS (CN1,2)	SVH-21T-P1.1	J.S.T	9

HAND CRIMPING TOOL : YC-10 OR YC-160R CN1,2 MANUFACTURER : J.S.T

NOTES

1 : TO KEEP THE DISTANCE MORE THAN 3mm BETWEEN PC-BOARD EDGE AND CUSTOMER CHASSIS.

2 : BOTH FG HAVE TO BE CONNECTED WITH THE SAME FRAME. IF NOT, VALUE OF EMI & OUTPUT NOISE WOULD BE OUT SPEC.

(unit : mm)

MODEL NAME	ZWD-75

PA780-02-01-E