

FEATURES

- Universal 85 - 305VAC input voltage.
- Operating ambient temperature range: -40°C to +70°C.
- Built-in active PFC function.
- Output short circuit, over-current, over-voltage protection, Over-temperature protection.
- Standby power 5V@1.5A.
- 400W with convection cooling, 450W with conduction cooling and 750W with forced air cooling (25CFM).
- High efficiency up to 94.5%.
- PG signal and remote sensing function.
- Compact size: 5"x3"x1.34" (above PCB).
- Operating altitude up to 5000m.
- Safety according to IEC62368-1

Models & Ratings

Model No. (4)	Cooling Method (5)	Rated Power (W) (1)	Output Voltage (V)	Output Current (A) (2)	Output Voltage Adjustable Range (V) (2)	Efficiency at 230VAC (%) Typ. (3)	Cap. Load Max. (µF)
TNB0750-12-X	Natural Convection	350.0	12	29.2	10.8 -13.2	94	5600
	Conduction Cooling	400.0		33.4			
	Forced air Cooling	700.0		58.3			
TNB0750-24-X	Natural Convection	400.0	24	16.7	21.6 - 26.4	94	3300
	Conduction Cooling	450.0		18.8			
	Forced air Cooling	750.0		31.3			
TNB0750-36-X	Natural Convection	400.0	36	11.12	32.4 - 39.6	94.5	2200
	Conduction Cooling	450.0		12.5			
	Forced air Cooling	750.0		20.9			
TNB0750-48-X	Natural Convection	400.0	48	8.4	43.2 - 52.8	94	1600
	Conduction Cooling	450.0		9.4			
	Forced air Cooling	750.0		15.7			

TNB0750-54-X	Natural Convection	400.0	54	7.5	48.6 – 56.7	94	1200
	Conduction Cooling	450.0		8.4			
	Forced air Cooling	750.0		13.9			

1.Rated Power

The total power output of the power supply (main power and standby power) should not exceed its rated power. This is crucial because exceeding the rated power can lead to overheating, damage, or reduced lifespan of the power supply.

2.Output Voltage/ Current

If the output voltage is increased, the total power should not exceed the rated power. This implies that if you raise the voltage, the current must be reduced accordingly to ensure the product's power rating is not exceeded.

Conversely, if the output voltage is decreased, the current should not exceed the rated output current. This is because lowering the voltage while maintaining a high current could push the power beyond the rated maximum.

3.Efficiency at 230VAC

Efficiency is measured under the following conditions: main power 700W / 750W at 50% load at 230VAC, 25°C.

4.Model No.

1. Model Name Description.

TNB 0750 - 12 - C
- VV - X
① ②

① VV : Output Voltage
Single Output :
12 : 12V Output.
24 : 24V Output.
36 : 36V Output.
48 : 48V Output.
54 : 54V Output.

② X: Optional
Blank : Open frame.
U : U Case.
C : With Cover.
F : With Enclose and Fan.

5.Conduction Cooling

Additional conduction cooling is required by attaching an aluminum plate and a power heatsink. The aluminum plate must have minimum dimensions are 450mm (L) x 450mm (W) x 1mm (H) (or equivalent volume).

Forced Air Cooling

Additional fan cooling is required, with an airflow rate of 25 CFM min.

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	Line AC input		85	-	305	VAC
Input Frequency	-		47	-	63	Hz
Input Current	115VAC & Maximum load		-	-	8	Arms
	230VAC & Maximum load		-	-	4	
	277VAC & Maximum load				3.5	
Inrush Current	115VAC	At 25°C, Cold start	-	40	-	A peak
	230VAC		-	80	-	
Power Factor	115VAC & Maximum load		0.98	-	-	-
	230VAC & Maximum load		0.95	-	-	-
Earth Leakage Current	264VAC/63Hz		-	-	3.5	mA
Standby power consumption	230VAC/50Hz, Only 5Vsb no load				0.5	W

Output Specifications

Item		Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage		See Models and Ratings table	12	-	54	VDC
Initial Set Accuracy		115/230VAC, 50% load	-	-	±1	%
Output Voltage Adjustment			-	-	±5	%
Minimum Load		-	0	-	-	A
Load Regulation		Output from 0 - 100% load	-		±2	%
Line Regulation		Rated load	-		±1	%
Ripple & Noise (6)		115VAC & 230VAC and maximum load,20MHz bandwidth.	-	-	1	%
Transient Response		Load change from 50% to 100%	-	-	±5	%
5V Standby (9)		Natural convection / Conduction cooling F-type application	0	-	1	A
		Fan cooling	0	-	1.5	A
12V Fan Power (7)		Output Load	-	-	0.5	A
Sequence time	Turn-on time	115/230VAC rated load from input AC turn on	-	-	1	S
	Rise time	10% to 90% of output voltage, main output	-		70	mS
	Hold-up Time	At 25°C, with 115 VAC and 230 VAC input, 80% of the maximum load.	10	-	-	mS
Short Circuit Protection		Output shut down and auto recovery/Hiccup	-	-	-	-
Over-current Protection		At 25°C, 230VAC, Main output shut down and auto recovery/Hiccup.	105	-	160	%
Over-voltage Protection		Main output shut down and latch off, manual reset (Re-power on or Re-remote on) 12V, 24V, 36V,48V	-	-	140	%
		Main output shut down and latch off, manual reset (Re-power on or Re-remote on) ,54V			63	V

Over-temperature Protection	Main output shut down and latch off, manual reset (Re-power on or Re-remote on)		-	-	-	-
Power on/off Control	Power on voltage	PS-ON = High/Floating	2	-	5.25	VDC
	Power off voltage	PS-ON = Low	0	-	0.8	
Remote Sense	When RS+ and RS- are connected to the system, with function of remote voltage compensation, if not needed, left RS+ and RS- open					
PG Signal (Sink current=0.5 mA Maximum) (8)	Power on	The PG signal goes high	-	-	500	ms
	Power off	The PG signal goes low	1	-	-	
	High level	High	2	-	5.25	V
	Low level	Low	0	-	0.8	

6. Ripple & Noise:

Please refer to Fig. A for measurement of Vo, line & load regulation and ripple voltage, Ripple and noise is the maximum peak-to-peak voltage value measured at the output with 20MHz bandwidth, at rated line voltage and output load, and with a 47μF electrolytic capacitor (C2) in parallel with a 0.1μF (C1) ceramic capacitor.

When the ambient temperature is below -20°C, some specification parameters may not be met, such as ripple and noise.

At input voltages above 264VAC, measure the output ripple with a 2200 μF electrolytic capacitor (C2) and a 0.1 μF ceramic capacitor (C1) connected in parallel across the output terminals.

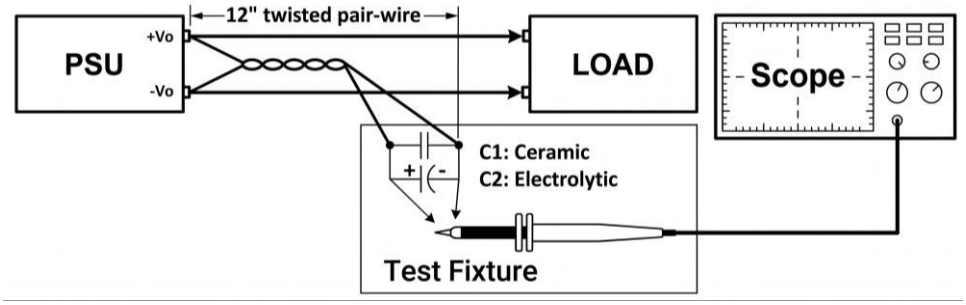


Figure A

7. Fan Power:

The fan power supply voltage tolerance is -10% to +10%, and the maximum output current is 0.5A.

Cross load table as below:

LOAD	Fan power	5Vsb
Cross regulation A	0.5A	0.1A
Cross regulation B	0.4A	1.5A
Cross regulation C	0.3A	1.0A

Other functions are not evaluated.

8. PG Signal:

The PG signal provides a warning before the output voltage drops due to an AC failure.

9. 5V Standby

Load Regulation shall be within ±2% at ambient temperatures above -20°C and within ±3% at ambient temperatures from -40°C to -20°C.

General Specifications

Item		Operating Conditions		Min.	Typ.	Max.	Unit
Operating Temperature		Refer to power de-rating curve		-40	-	+70	°C
Storage Temperature		Non-operation		-40	-	+85	
Operating Humidity		Non-condensing		10	-	90	%
Storage Humidity				5	-	95	
Power De-rating (9)	Operating Temperature	Forced cooled 700W/750W	+50°C to +70°C	2.15/2.0	-	-	%/°C
		Conduction cooling 400W/450W	+45°C to +70°C	2.0	-	-	
		Convection cooling 350W/400W	+40°C to +70°C	2.5			
	Input voltage	85VAC – 103VAC		1.67	-	-	%/VAC
Dielectric Strength test (10)		Input – Output		3000	-	-	VAC
		Input – FG		1800	-	-	VAC
		Output – FG		500	-	-	VDC
Insulation Resistance		Input – Case, 500VDC 1min. at 25°C and 70% RH		100	-	-	MΩ
Mean Time Between Failure		At 230VAC/50Hz 100% load 25°C, Telcordia SR332, issue4.		1,300,000	-	-	Hrs.
Over Voltage Category		IEC/EN/UL 62368-1 OVC III				2000	meter
Vibration		Operating：0.5G, 5 - 500Hz, 10 min/cycle, 30 min each axis (X, Y, Z)					
Shock		Non-operating (package)：20G, 11ms, 1 shock per direction per axis (X, Y, Z)					

10. Power De-rating:

Input voltage derating curve: refer to Figure B.

Temperature derating curve: refer to Figures C and D.

For low-temperature startup conditions between -40°C and -20°C, the maximum load is limited to 50% or less.

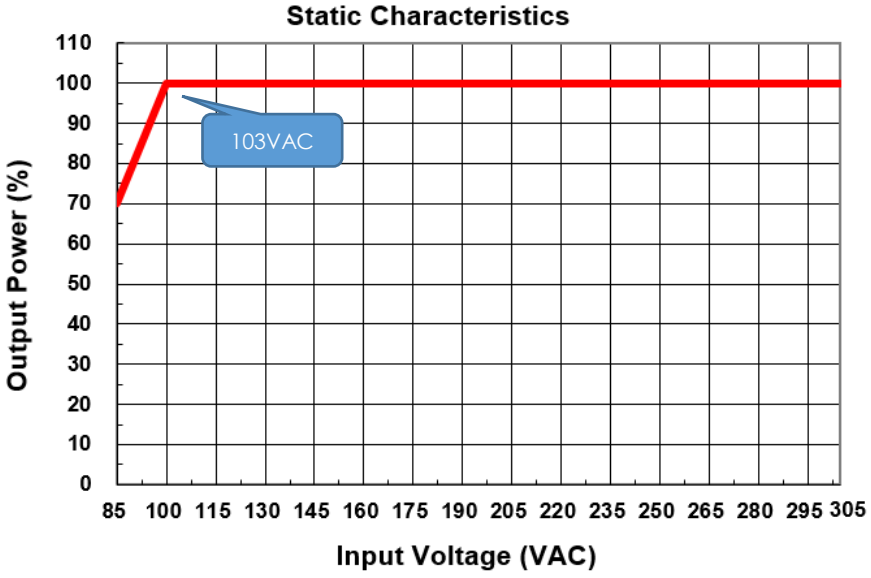


Figure B

Temperature De-rating Curves for 12V Output Voltage

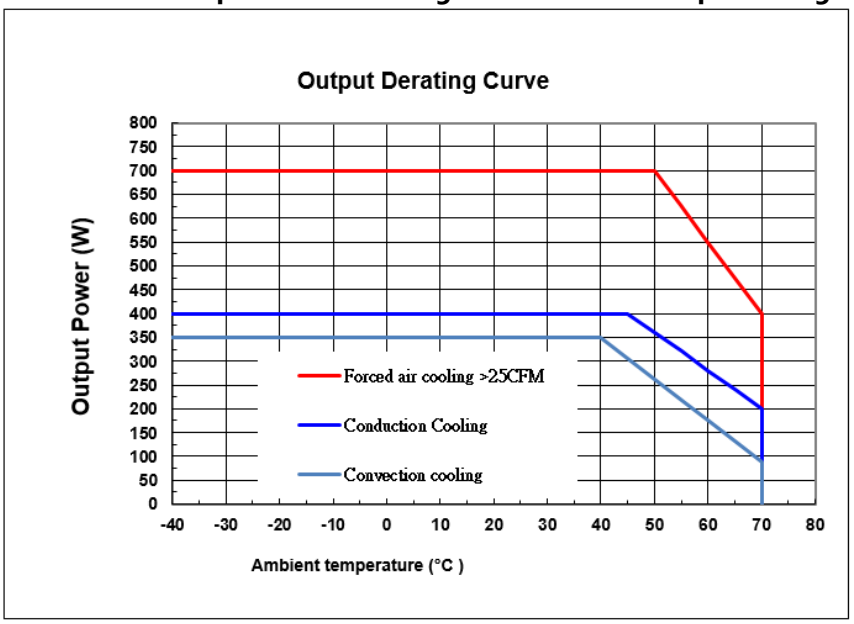


Figure C

Temperature De-rating Curves for 24V / 36V / 48V / 54V Output Voltages

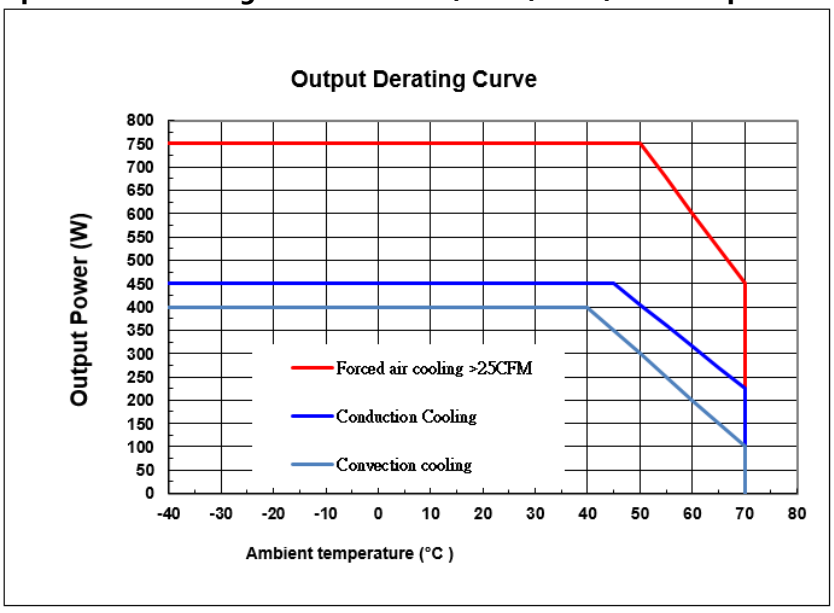


Figure D

11. Dielectric Strength test:

Safety electric strength test of LY production line was conducted for 3 seconds, leakage current < 10mA.

Altitude:

Above 2000m altitude, the operating ambient temperature shall be derated by 1°C per 305m.

Other:

Unless otherwise specified, all specifications is at 230VAC input voltage, 100% load, and 25°C.

Safety Approvals

Safety Standard	VIN=100VAC–240VAC, 277VAC only	UL62368-1, 3rd Edition, EN62368-1, 3rd Edition, IEC62368-1, 3rd Edition. (5000m altitude)
Safety Class		Class I

Electromagnetic Compatibility (EMC)

Emissions	CE	EN55032(CISPR32) Class B	
	RE	EN55032 (CISPR32) Class B	
	Harmonic Current	EN61000-3-2 Class A	
	Flicker	EN61000-3-3	
Immunity	ESD	EN61000-4-2, level 4, Contact +/- 8KV; Air discharge +/- 15KV	Criteria A
	RS	EN61000-4-3, level 3, 10V/m.	Criteria A
	EFT	EN61000-4-4, level 3, +/- 2KV.	Criteria A
	Surge	EN61000-4-5, level 3, Line to Line +/-1KV; Line to Earth +/-2KV	Criteria A
	CS	EN61000-4-6, level 3	Criteria A
	PFMF	EN61000-4-8, level 3	Criteria A
	DIP (100VAC)	EN61000-4-11, Dip >95%, 8.3ms	Criteria B
		EN61000-4-11, Dip 30%, 500ms	
		EN61000-4-11, Dip >95%, 5000ms	
	DIP (240VAC)	EN61000-4-11, Dip >95%, 10ms	Criteria B
		EN61000-4-11, Dip 30%, 500ms	
		EN61000-4-11, Dip >95%, 5000ms	

EMC:

For the RE test, with an external ferrite core (T18.67X14.27X10.16, material K5B) applied to the AC input L & N cable with 3 turns, the product complies with EN55032 Class B limits; without the external core, it complies with Class A.

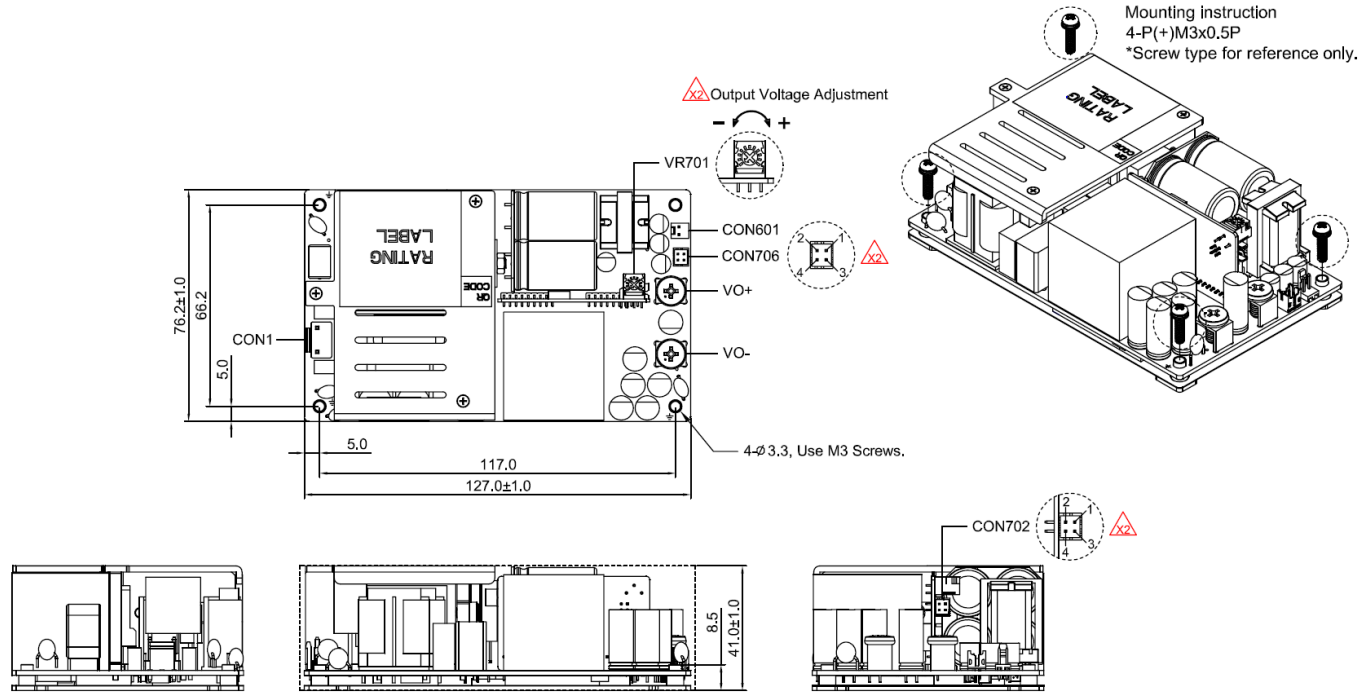
The power supply shall be considered an integral part of the system. All EMC tests were performed with the unit mounted on a 550 mm × 450 mm, 1 mm-thick metal plate. The electromagnetic compatibility of the power supply must be verified in conjunction with the terminal equipment.

Dimensions and Recommended Layout

Item	Value		Unit
Weight (Typ.)	TBD		g
Size (L x W x H)	127.0 x 76.2 x 41.0	Open frame	mm
	145.0 x 86.2 x 41.5	U: U Case	
	145.0 x 86.2 x 46.5	C: With Cover	
	170.0 x 82.0 x 41.5	F: With Enclose and Fan	

Outline Drawing: Refer to below figure

TNB0750-XX



CON1		
L—N	Input Connector	Mates Housing
	JST B2P3-VH(LF)(SN) JWT A3963WV2-3P(N2)	JST VHR-3N JWT A3963H02-3P(N2)

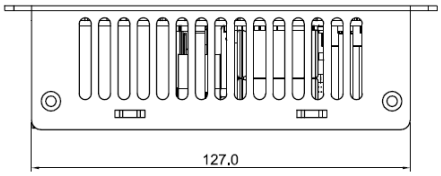
CON601		
2—1	Pin 1	Fan +
	Pin 2	Fan -
Output Connector	Mates Housing	
JWT A2508WV0-2P	JWT A2508H00-2P	
TKP 8812-02(LF)	TKP 8811-02(LF)	
ALEX 8812-02	ALEX 8811-02	
MOLEX 2204-1021	MOELX 51191-0200	

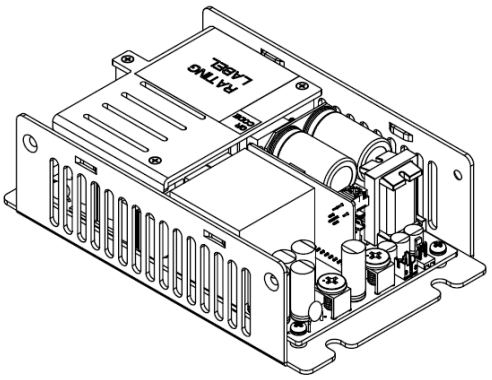
CON706		
2—1 4—3	Pin 1	SGND
	Pin 2	SGND
	Pin 3	PS-ON
	Pin 4	+5Vsb
Output Connector	Mates Housing	
TKP P20J1I-04 MOST WELL 2WF2VD-203602MT23A01	TKP H20J1-04 MOST WELL 2HG2CT-203202NP21A01	

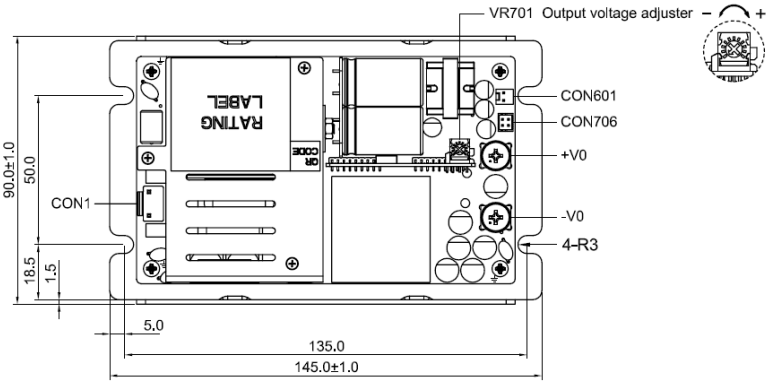
VO+, VO-			
Terminal block	Output Voltage	Wire size	Crimp terminal
ANYTEK AMT0450028DBDSZ0G	12V	AWG 8	JST 8-4X / 8-4 NICHIFU 8Y-4 / R8-4
	24V	AWG 12	JST Y3.5-4 / R3.5-4 NICHIFU Y3.5-4 / R3.5-4
ANYTEK AMT0440080DBDSZ0G	36V	AWG 16	JST Y1.25-4 / R1.25-4 NICHIFU Y1.25-4 / R1.25-4
	48V	AWG 18	
	54V		

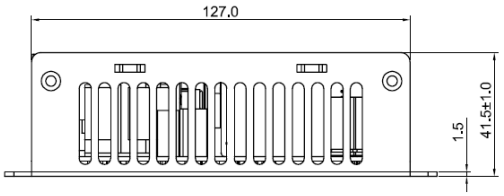
CON702		
2—1 4—3	Pin 1	RS+
	Pin 2	RS-
	Pin 3	PG
	Pin 4	SGND
Output Connector	Mates Housing	
TKP P20J1L-04 MOST WELL 2WF2HD-303602T1A1A03	TKP H20J1-04 MOST WELL 2HG2CT-203202NP21A01	

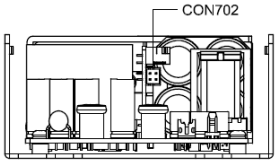
TNB0750-XX-U











CON1		
L—N	Input Connector	Mates Housing
	JST B2P3-VH(LF)(SN) JWT A3963WV2-3P(N2)	JST VHR-3N JWT A3963H02-3P(N2)

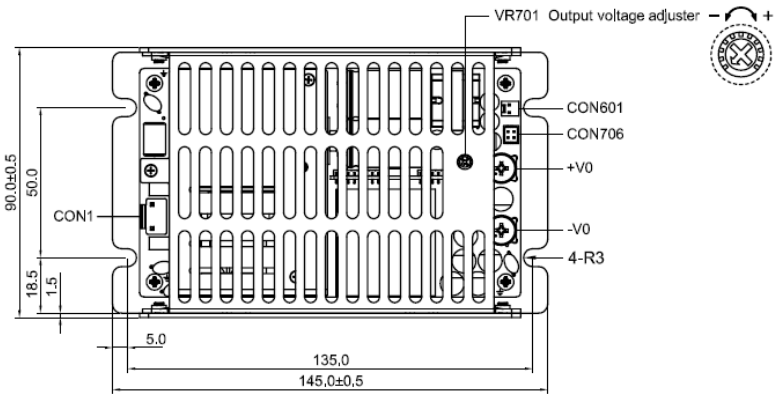
CON601		
2—1	Pin 1	Fan +
	Pin 2	Fan -
Output Connector	Mates Housing	
JWT A2508WV0-2P	JWT A2508H00-2P	
TKP 8812-02(LF)	TKP 8811-02(LF)	
ALEX 8812-02	ALEX 8811-02	
MOLEX 2204-1021	MOELX 51191-0200	

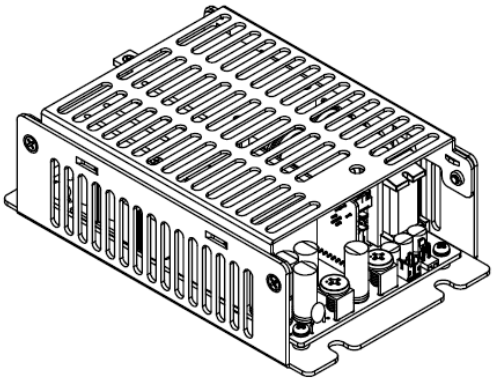
CON706		
2—1 4—3	Pin 1	SGND
	Pin 2	SGND
	Pin 3	PS-ON
	Pin 4	+5Vsb
Output Connector	Mates Housing	
TKP P20J1I-04 MOST WELL 2WF2VD-203602MT23A01	TKP H20J1-04 MOST WELL 2HG2CT-203202NP21A01	

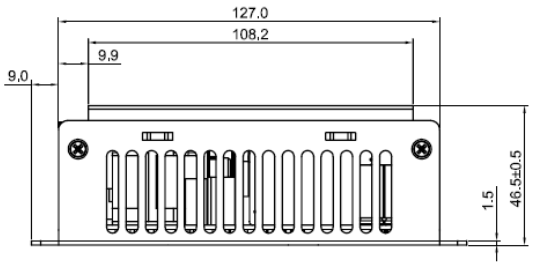
VO+, VO-			
Terminal block	Output Voltage	Wire size	Crimp terminal
ANYTEK AMT0450028DBDSZ0G	12V	AWG 8	JST 8-4X / 8-4 NICHIFU 8Y-4 / R8-4
	24V	AWG 12	JST Y3.5-4 / R3.5-4 NICHIFU Y3.5-4 / R3.5-4
ANYTEK AMT0440080DBDSZ0G	36V	AWG 16	JST Y1.25-4 / R1.25-4 NICHIFU Y1.25-4 / R1.25-4
	48V	AWG 18	
	54V		

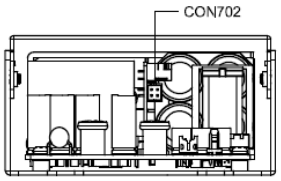
CON702		
2—1 4—3	Pin 1	RS+
	Pin 2	RS-
	Pin 3	PG
	Pin 4	SGND
Output Connector	Mates Housing	
TKP P20J1L-04 MOST WELL 2WF2HD-303602T1A1A03	TKP H20J1-04 MOST WELL 2HG2CT-203202NP21A01	

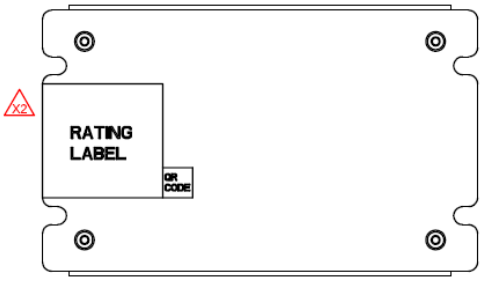
TNB0750-XX-C











CON1		
L—N	Input Connector	Mates Housing
	JST B2P3-VH(LF)(SN) JWT A3963WV2-3P(N2)	JST VHR-3N JWT A3963H02-3P(N2)

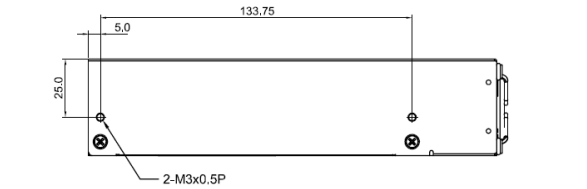
CON601		
2—1	Pin 1	Fan +
	Pin 2	Fan -
Output Connector	Mates Housing	
JWT A2508WV0-2P	JWT A2508H00-2P	
TKP 8812-02(LF)	TKP 8811-02(LF)	
ALEX 8812-02	ALEX 8811-02	
MOLEX 2204-1021	MOELX 51191-0200	

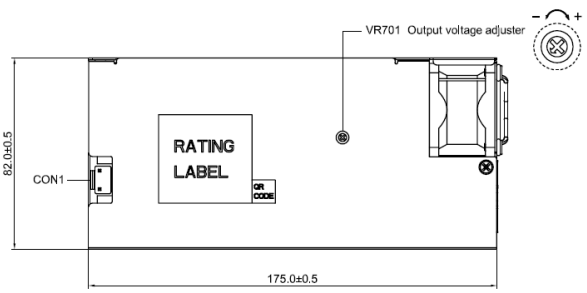
CON706		
2—1 4—3	Pin 1	SGND
	Pin 2	SGND
	Pin 3	PS-ON
	Pin 4	+5Vsb
Output Connector	Mates Housing	
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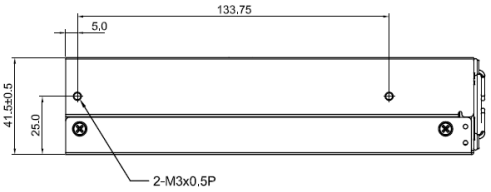
VO+, VO-			
Terminal block	Output Voltage	Wire size	Crimp terminal
ANYTEK AMT0450028DBDSZ0G	12V	AWG 8	JST 8-4X / 8-4 NICHIFU 8Y-4 / R8-4
	24V	AWG 12	JST Y3.5-4 / R3.5-4 NICHIFU Y3.5-4 / R3.5-4
ANYTEK AMT0440080DBDSZ0G	36V	AWG 16	JST Y1.25-4 / R1.25-4 NICHIFU Y1.25-4 / R1.25-4
	48V	AWG 18	
	54V		

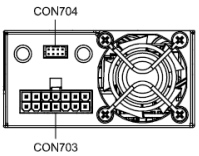
CON702		
2—1 4—3	Pin 1	RS+
	Pin 2	RS-
	Pin 3	PG
	Pin 4	SGND
Output Connector	Mates Housing	
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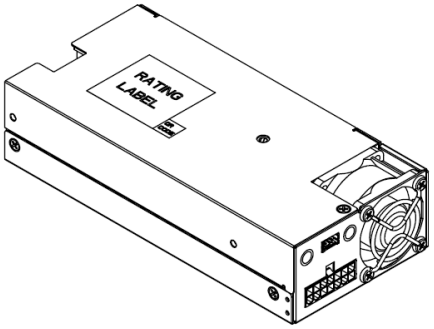
TNB0750-XX-F











CON1		
L — N	Input Connector	Mates Housing
	JST B2P3-VH(LF)(SN) JWT A3963WV2-3P(N2)	JST VHR-3N JWT A3963H02-3P(N2)

CON703				
14 8 7 1	Pin 1	+24V	Pin 8	+24V
	Pin 2	+24V	Pin 9	+24V
	Pin 3	+24V	Pin 10	+24V
	Pin 4	+24V	Pin 11	GND
	Pin 5	GND	Pin 12	GND
	Pin 6	GND	Pin 13	GND
	Pin 7	GND	Pin 14	GND
Output Connector		Mates Housing		
MOLEX 39-30-1140 TKP P6657L-14C		MOLEX 39-01-2140 TKP H6657R1-14		

CON704				
1 4 8 5	Pin 1	RS-	Pin 5	+5Vsb
	Pin 2	RS+	Pin 6	GND
	Pin 3	GND	Pin 7	PG
	Pin 4	PS ON	Pin 8	GND
Output Connector		Mates Housing		
JST B8B-PHDSS TKP P20J1I-08		JST PHDR-08VS TKP H20J1-08		