



# Specifications

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**AC-DC Din Rail Mounted Power Supply  
TIS-960 Series, 960W(THREE PHASE)**

**PAIRUI ELECTRONICS**

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**2020**

# AC-DC Din Rail Mountable Power Supply

## TIS-960 SERIES, THREE PHASE INPUT

### Features

- Three-Phase 340 ~ 550VAC wide range input (Dual phase operation possible)
- 110mm slim width
- Built-in passive PFC function compliance to EN61000-3-2
- High efficiency 94.5% and low power dissipation
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Cooling by free air convection
- Full power between -30~+60° C
- Built-in constant current limiting circuit
- Can be installed on DIN rail TS-35/7.5 or 15
- UL61010(industrial control equipment)approved
- EN61000-6-2(EN50082-2) industrial immunity level
- Current sharing up to 3840W(3+1)
- Built-in DC OK relay contact
- DC OK relay contact
- 100% full load burn-in test



### Applications

- ✓ Process Control
- ✓ Traffic & Transportation System
- ✓ Factory Automation
- ✓ Other Industrial Applications

## Electrical

Part Number	Nominal Input Voltage	Output Voltage	Output Current	Ripple (Typ.)	Efficiency	Certificate
TIS960-24	340-550VAC	24V	40A	180mVp-p	94%	CE, FCC, CB, UL, CUL
TIS960-48	340-550VAC	48V	20A	250mVp-p	94.5%	CE, FCC, CB, UL, CUL

- NOTE:
1. The ripple values are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with 0.1uF & 47uF parallel capacitor under ambient temperature 25°C at rated input voltage and rated load;
  2. The efficiency values are measured under ambient temperature 25°C at rated input voltage and rated load.

## INPUT

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Input voltage		340		550	Vac
Input frequency		47		63	Hz
Power factor	Full load, Vin=400Vac Full load, Vin=500Vac		0.88 0.86		
Efficiency	Full load		94		%
Input current	Full load, Vin=400Vac Full load, Vin=500Vac		2 1.4		A A
Inrush current	Cold start		60		A
Leakage current	Vin=530Vac			3.5	mA

**OUTPUT**

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Output voltage accuracy			±1		%
Line regulation	Vin from 100Vac to 240Vac		±0.5		%
Load regulation	Vout from min. to max.		±1		%
Setup time	Full load, Vin=400Vac Full load, Vin=500Vac		1000 800		ms ms
Rise time	Full load, Vin=400Vac Full load, Vin=500Vac		100 100		ms ms
Hold up time	Full load, Vin=400Vac Full load, Vin=500Vac		12 14		ms ms

**Protection**

Over temperature	Shut down o/p voltage, recovers automatically after temperature goes down
Over load	105 ~ 130% rated output power
	Protection type : Constant current limiting, unit will hiccup after 3 sec.
Over voltage	TIS960-24: 29~33V TIS960-48: 56~65V
	Protection type : Hiccup mode, recovers automatically after fault condition is removed.

Environment

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Ambient operating temperature	Startup at rated voltage	-30		+70	°C
Operating relative humidity	Non condensing	20		95	%
Storage temperature	Humidity 10 ~ 95% RH	-40		+85	°C
TEMP. COEFFICIENT	±0.03%/C (0 ~ 60C)				
VIBRATION	Component:10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes; Mounting: Compliance to IEC60068-2-6				

Safety/EMC

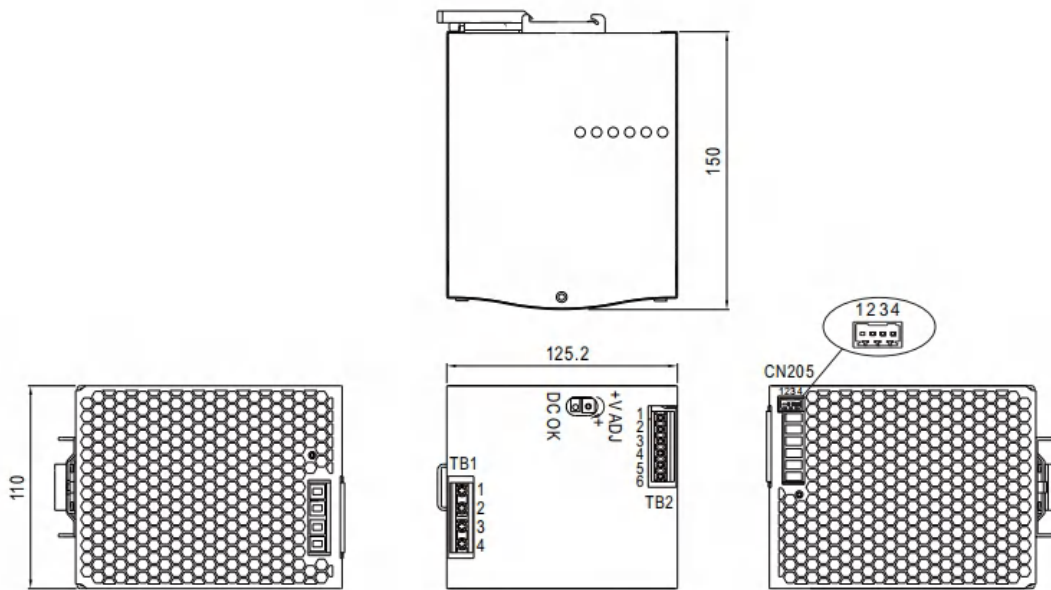
Safety standards	UL508 approved, EAC TPTC 004, IEC62368-1 CB approved by SIQ
Withstand voltage	I/P-O/P:3KVAC I/P-FG:2KVAC O/P-FG:0.5KVAC O/P-DC OK(optional):0.5KVAC
Isolationn resistance	I/P-O/P, I/P-FG, O/P-FG:>100M Ohms / 500VDC / 25C/ 70% RH
EMC emission	Conducted:EN55032(CISPR32)/EN61204-3,Class B Radiated:EN55032(CISPR32)/EN61204-3,Class B Harmonic Current:EN61000-3-2,Class A Voltage Flicker:EN61000-3-3.---
EMC immunity	ESD:EN61000-4-2,Level 4, 15KV air ; Level 4, 8KV contact Radiated Field:EN61000-4-3,Level 3 EFT/ Burst:EN61000-4-4,Level 3 Surge:EN61000-4-5,Level 4, 2KV / Line-Line, Level 4, 4KV/ Line-Earth Conducted:EN61000-4-6,Level 3 Magnetic Field:EN61000-4-8,Level 4 Voltage Dips and Interruptions:EN61000-4-11,>95% dip 0.5 periods, 30% dip 25 periods,>95% interruptions 250 periods

Others

MTBF	59.4K hrs min. MIL-HDBK-217F (25C)
Dimension	110*125.2*150mm (W*H*D)
Weight	2.47Kg
Packing	

NOTE: Unless otherwise specified, all the above parameters are measured at ambient temperature of 25°C and Vin=100Vac to 240Vac.

Mechanical



Unit: mm  
Tolerance: ±1.0

Terminal Pin No. Assignment (TB1)

Pin No.	Assignment
1	FG Ⓢ
2	AC/L3
3	AC/L2
4	AC/L1

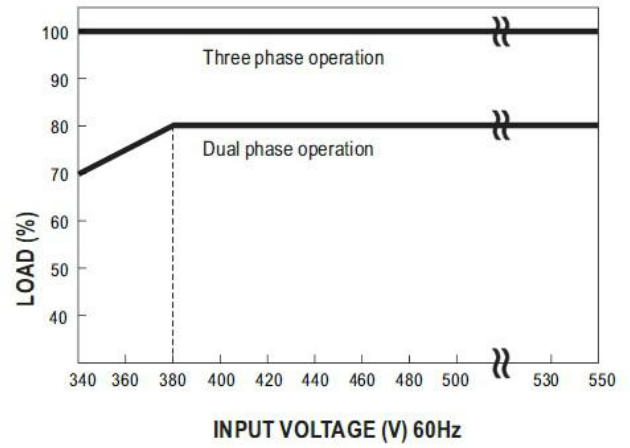
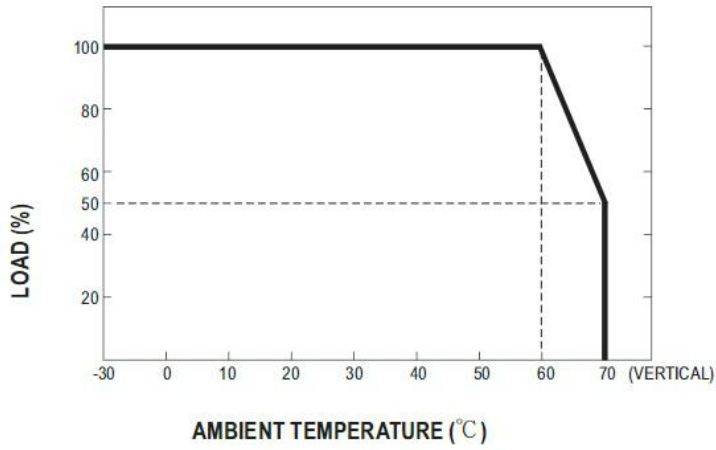
Terminal Pin No. Assignment (TB2)

Pin No.	Assignment
1,2,3	DC OUTPUT +V
4,5,6	DC OUTPUT -V

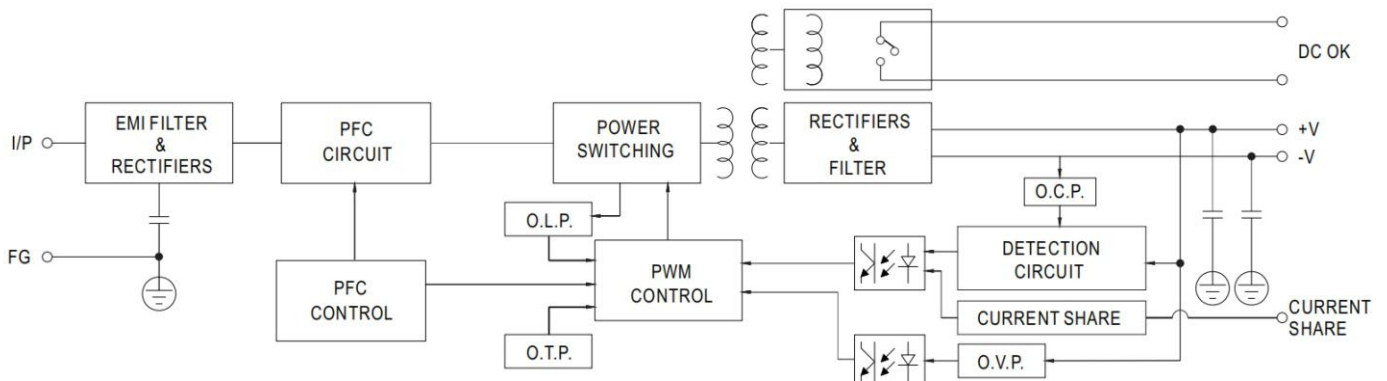
Control Pin (CN205) : DINKLE ECH250R-04P or equivalent

Pin No.	Assignment	Mating Housing	Wire Diameter
1	P-(Current Share)	DINKLE ESC250V-04P or equivalent (Including in the single package)	0.081~0.517mm <sup>2</sup> (28~20AWG)
2	P+(Current Share)		
3,4	DC OK Relay Contact		

## Electrical Curve



## Block Diagram

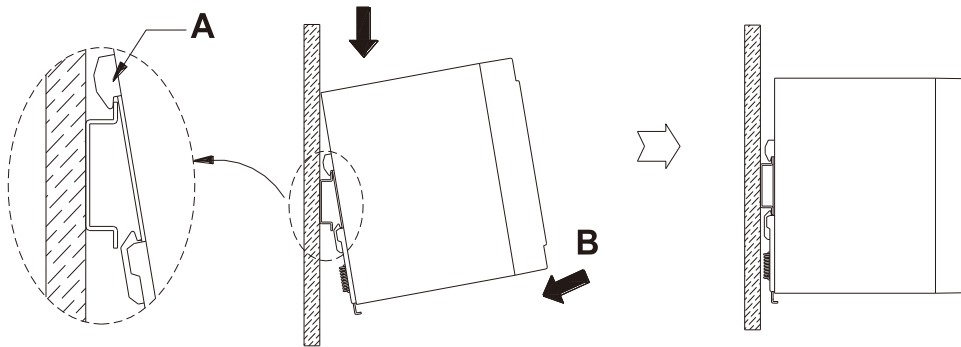


## Application Note

### 1. Mounting Method

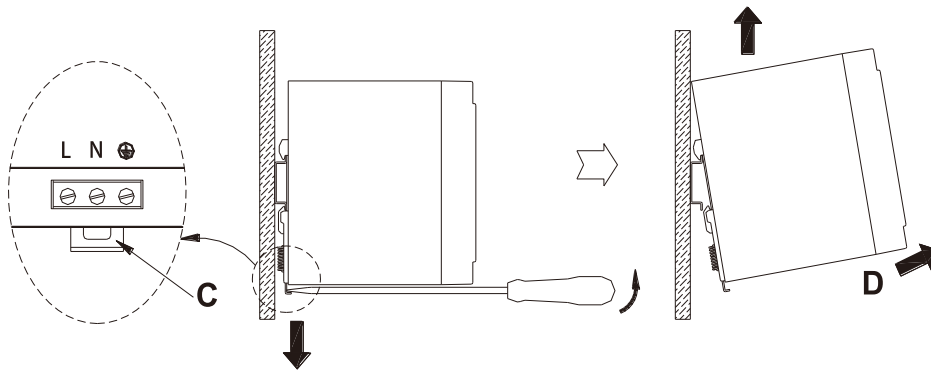
#### (1) How to fix

Firstly hang A part on the top of Rail as shown in below, then push the power supply into B direction to fix it.



#### (2) How to remove

Remove the power supply to D direction, pulling C part by using tools, such as a screwdriver, to downward direction.



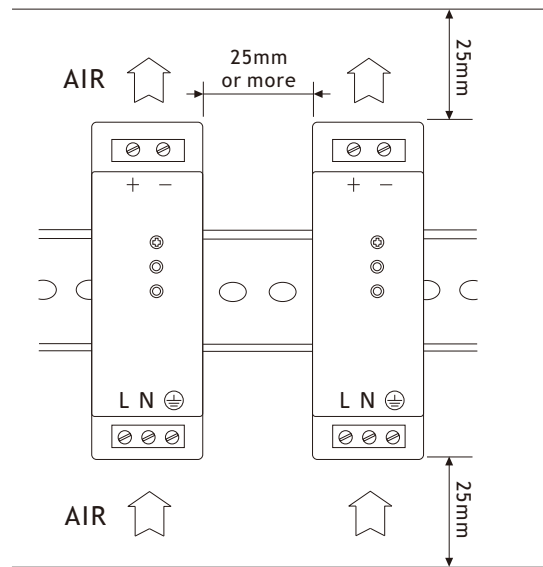


## Application Note

### 2. Mounting Method

#### (3) Mounting Spacing

Mounting method should be considered with airflow. Leave enough space between the units when several units are mounted together. Forced air cooling makes protection against heat better.



## Application Note

### 3. Cautions

- (1) Please confirm if the capacity of the product is suitable for your intended application before putting it in use;
- (2) Only the rated input voltage specified on the product should be used;
- (3) Only the wires with rated capacity should be connected to this product, as allowable voltage and current is varied according to each type of wire;
- (4) Ground terminal of the power supply must be grounded before use to prevent electric shock or electromagnetic interference;
- (5) Be cautious to keep the product clean as foreign matter near the input & output terminal or inside if the product could cause serious damages;
- (6) If a fuse installed in the product blows off, the product should experience damages not only to the fuse but also to other parts as well. Therefore, the product is to be required for maintenance work from customer service department as well as replacement of the fuse;
- (7) Due to constant leakage current flows within the product, extra caution should be made if multiple number of products are used connecting to each other as total leakage current could be amounted beyond the capacity;
- (8) Be sure to avoid any physical contact with the product since some of the parts inside of the product are being functioned at high voltage, which could cause serious electric shock;
- (9) For the purpose of safety as well as reliability of the product, please avoid using the product at the following sites:
  - A place near water or fire
  - A place with high room temperature and poor ventilation
  - A place with a presence of foreign subject or dust
  - A place near volatile or flammable compounds
  - A place with high humidity
  - A place vulnerable for vibration or shock
- (10) Do not inspect or repair the product while the power is applied;
- (11) Unauthorized modification should be avoided in order to prevent serious injury or physical loss due to any malfunction;
- (12) In case of power outage while in operation, be sure to turn off the power supply.

## Application Note

### 4. Warranty

(1) Repair service will be provided for free upon any mechanical, technical or functional defects during the guaranteed warranty, however, any defects or malfunction due to international infliction or negligence by customers will be repaired at the customer's expense;

(2) Guaranteed warranty of the product runs for 3 years, while appearance and specification of the product is subject for change without any prior notification for the purpose of quality improvement of the product.