



480W Three Phase Industrial DIN RAIL with PFC Function

TDR-480 series



Features

- Three-Phase 340 ~ 550VAC wide range input (Dual phase operation possible)
- Width only 85.5mm
- Built-in active PFC function compliance to BS EN/EN61000-3-2
- High efficiency 93% and low power dissipation
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Cooling by free air convection
- Built-in constant current limiting circuit
- Can be installed on DIN rail TS-35/7.5 or 15
- UL508(industrial control equipment)approved
- BS EN/EN61000-6-2(BS EN/EN50082-2) industrial immunity level
- Optional DC OK relay contact
- 3 years warranty

Applications

- Industrial control system
- Semiconductor fabrication equipment
- Factory automation
- Electro-mechanical apparatus

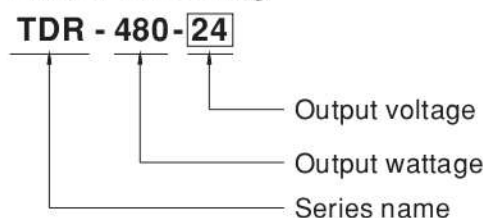
GTIN CODE

MW Search: <https://www.meanwell.com/serviceGTIN.aspx>

Description

TDR-480 is one economical slim 480W DIN rail power supply series, adapt to be installed on TS-35/7.5 or TS-35/15 mounting rails. The body is designed 85.5mm in width, which allows space saving inside the cabinets. The entire series adopts the full range AC input from 3 ψ 340VAC to 550VAC (Dual Phase operation possible) and conforms to BS EN/EN61000-3-2, the norm the European Union regulates for harmonic current. TDR-480 is designed with metal housing that enhances the unit's power dissipation. With working efficiency up to 93 %, the entire series can operate at the ambient temperature between -20°C and 70°C under air convection. It is equipped with constant current mode for overload protection, fitting various inductive or capacitive applications. The complete protection functions and relevant certificates for industrial control apparatus (UL508, IEC 62368-1 CB approved by UL.) make TDR-480 a very competitive power supply solution for industrial applications.

Model Encoding

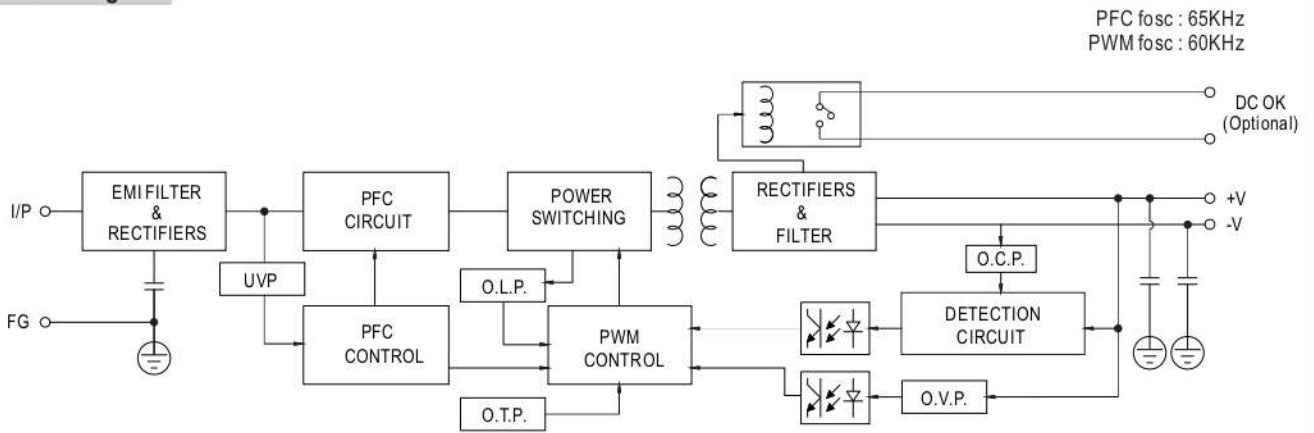




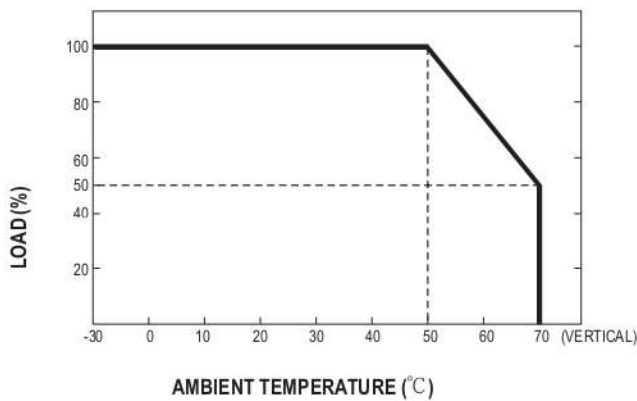
SPECIFICATION

MODEL		TDR-480-24	TDR-480-48	
OUTPUT	DC VOLTAGE	24V	48V	
	RATED CURRENT	20A	10A	
	CURRENT RANGE	0 ~ 20A	0 ~ 10A	
	RATED POWER	480W	480W	
	RIPPLE & NOISE (max.) <small>Note.2</small>	150mVp-p	150mVp-p	
	VOLTAGE ADJ. RANGE	24 ~ 28V	48 ~ 55V	
	VOLTAGE TOLERANCE <small>Note.3</small>	±1.0%	±1.0%	
	LINE REGULATION	±0.5%	±0.5%	
	LOAD REGULATION	±1.0%	±1.0%	
	SETUP, RISE TIME	120ms, 60ms/400VAC 800ms, 60ms/500VAC at full load		
HOLD UP TIME (Typ.)	20ms / 400VAC 20ms / 500VAC at full load			
INPUT	VOLTAGE RANGE <small>Note.4</small>	Three-Phase 340 ~ 550VAC (Dual phase operation possible) 480 ~ 780VDC		
	FREQUENCY RANGE	47 ~ 63Hz		
	POWER FACTOR (Typ.)	PF ≥ 0.9/400VAC PF ≥ 0.88/500VAC at full load		
	EFFICIENCY (Typ.)	92.5%	93%	
	AC CURRENT (Typ.)	0.85A/400VAC 0.7A/500VAC		
	INRUSH CURRENT (Typ.)	COLD START 50A		
	LEAKAGE CURRENT	<3.5mA/ 530VAC		
PROTECTION	OVERLOAD	105 ~ 130% rated output power Protection type : Constant current limiting, unit will shut down after 3 sec. ,re-power on to recover		
	OVER VOLTAGE	29 ~ 33V	56 ~ 65V	
	OVER TEMPERATURE	Shut down o/p voltage, recovers automatically after temperature goes down		
ENVIRONMENT	WORKING TEMP. <small>Note.5</small>	-30 ~ +70°C (Refer to "Derating Curve")		
	WORKING HUMIDITY	20 ~ 95% RH non-condensing		
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH		
	TEMP. COEFFICIENT	±0.03%/°C (0 ~ 50°C)		
	VIBRATION	Component:10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes; Mounting: Compliance to IEC60068-2-6		
SAFETY & EMC <small>(Note 4)</small>	SAFETY STANDARDS	UL508, IEC62368-1, UL 62368-1, AS/NZS 62368.1, BIS IS13252(Part1)(only for 24V), EAC TP TC 004 approved, Design refer to BS EN/EN62368-1		
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:2KVAC O/P-FG:0.5KVAC O/P-DC OK(optional):0.5KVAC		
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:>100M Ohms / 500VDC / 25°C / 70% RH		
	EMC EMISSION	Parameter	Standard	Test Level / Note
		Conducted	BS EN/EN55032(CISPR32) / BS EN/EN61204-3	Class B
		Radiated	BS EN/EN55032(CISPR32) / BS EN/EN61204-3	Class B
		Harmonic Current	BS EN/EN61000-3-2	Class A
		Voltage Flicker	BS EN/EN61000-3-3	----
	EMC IMMUNITY	BS EN/EN55035, BS EN/EN61204-3		
		Parameter	Standard	Test Level / Note
ESD		BS EN/EN61000-4-2	Level 4, 15KV air ; Level 4, 8KV contact	
Radiated Field		BS EN/EN61000-4-3	Level 3	
EFT / Burst		BS EN/EN61000-4-4	Level 3	
Surge		BS EN/EN61000-4-5	Level 4, 2KV / Line-Line, Level 4, 4KV/ Line-Earth	
Conducted		BS EN/EN61000-4-6	Level 3	
Magnetic Field		BS EN/EN61000-4-8	Level 4	
Voltage Dips and Interruptions	BS EN/EN61000-4-11	>95% dip 0.5 periods, 30% dip 25 periods > 95% interruptions 250 periods		
OTHERS	MTBF	1174.0K hrs min. Telcordia SR-332(Bellcore) ; 108.3K hrs min. MIL-HDBK-217F (25°C)		
	DIMENSION	85.5*125.2*128.5mm (W*H*D)		
	PACKING	1.51Kg ; 8pcs/13Kg/1.16CUFT		
NOTE	<p>1. All parameters NOT specially mentioned are measured at 400VAC input, rated load and 25°C of ambient temperature.</p> <p>2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1 μ F & 47 μ F parallel capacitor.</p> <p>3. Tolerance : includes set up tolerance, line regulation and load regulation.</p> <p>4. Dual phase operation is allowed under certain derating to output load. Please refer to derating curves for details.</p> <p>5. Installation clearances : 40mm on top, 20mm on the bottom, 5mm on the left and right side are recommended when loaded permanently with full power. In case the adjacent device is a heat source , 15mm clearance is recommended.</p> <p>6. The power supply is considered as an independent unit, but the final equipment still need to re-confirm that the whole system complies with the EMC directives. For guidance on how to perform these EMC tests, please refer to "EMI testing of component power supplies." (as available on https://www.meanwell.com/Upload/PDF/EMI_statement_en.pdf)</p> <p>7. The ambient temperature derating of 3.5°C/1000m with fanless models and of 5°C/1000m with fan models for operating altitude higher than 2000m(6500ft).</p> <p>※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx</p>			

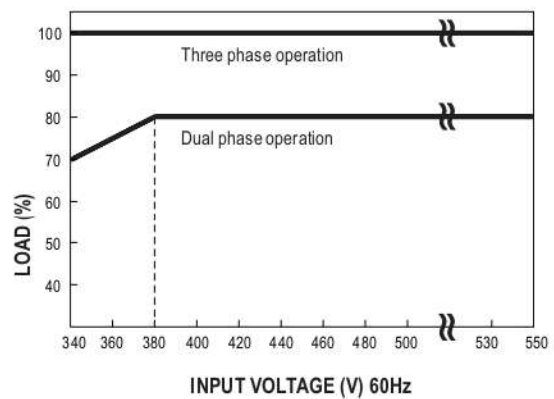
■ Block Diagram



■ Derating Curve



■ Output derating VS input voltage

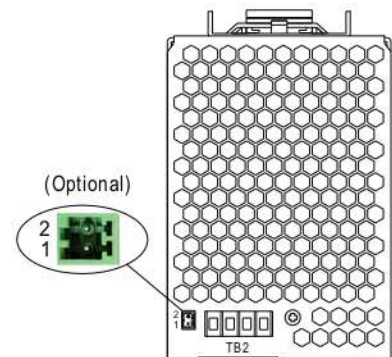


■ DC OK Relay Contact (Optional)

Contact Close	PSU turns on / DC OK.
Contact Open	PSU turns off / DC Fail.
Contact Ratings (max.)	60VDC/0.3A, 30VDC/1A, 30VAC/0.5A resistive load.

Control Pin (Optional) : DINKLE ECH250R-02P or equivalent (CN25)

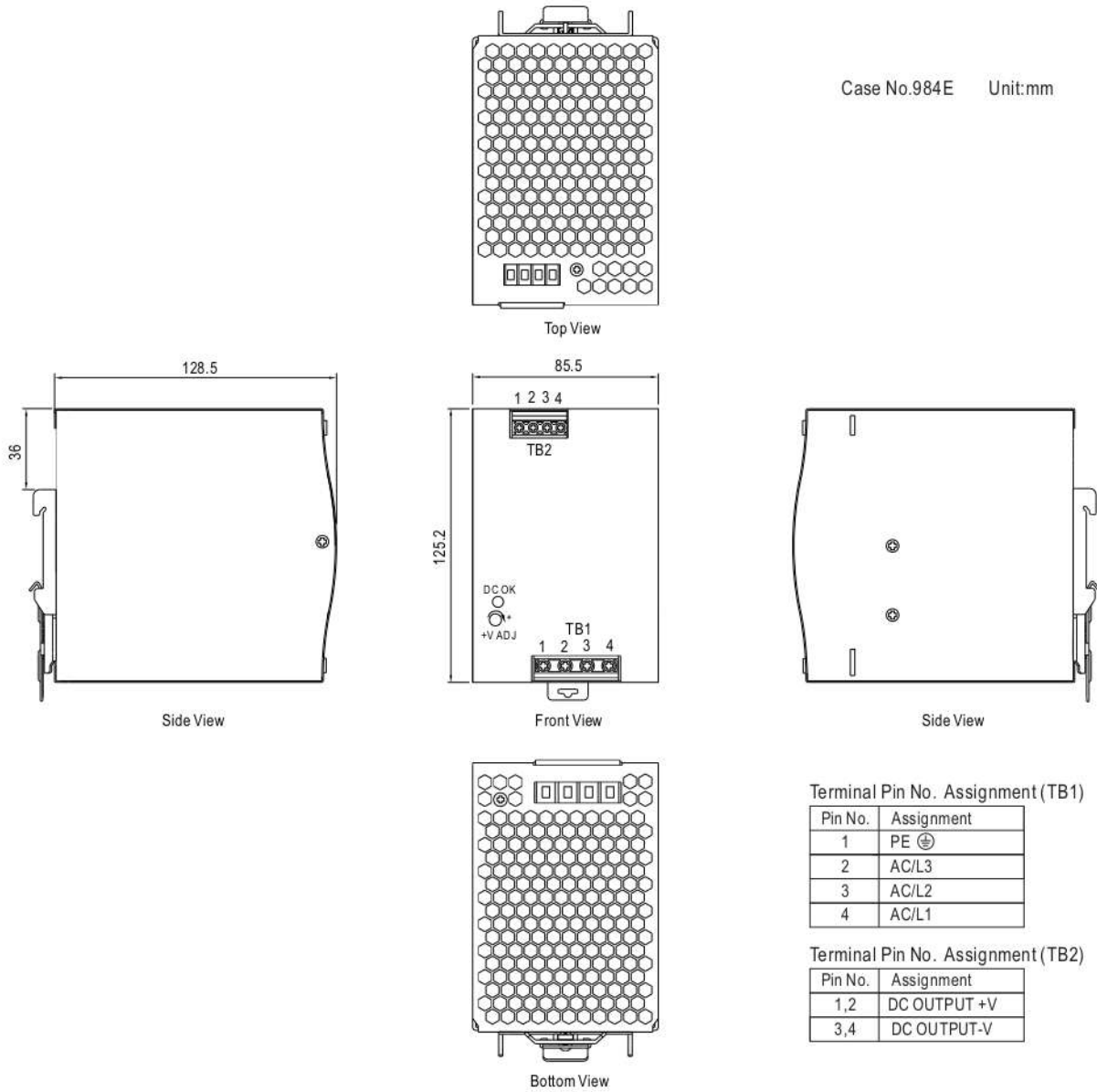
Pin No.	Assignment	Mating Housing	Wire Diameter
1,2	DC OK Relay Contact	Dinkle ESC250V-02P or equivalent (Including in the package)	0.081~0.517mm ² (20~28AWG)



※ Please contact MEAN WELL for more details.

Mechanical Specification

Case No.984E Unit:mm



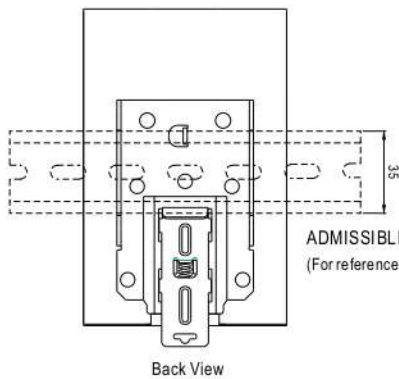
Terminal Pin No. Assignment (TB1)

Pin No.	Assignment
1	PE ⊕
2	AC/L3
3	AC/L2
4	AC/L1

Terminal Pin No. Assignment (TB2)

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

Installation Instruction



ADMISSIBLE DIN-RAIL: TS35/7.5 OR TS35/15
(For reference only. Not included with unit.)

This series fits DIN rail TS35/7.5 or TS35/15.
For installation details, please refer to the Instruction manual.

Installation Manual

Please refer to : <http://www.meanwell.com/manual.html>



■ Features :

- Three-Phase 340 ~ 550VAC wide range input (Dual phase operation possible)
- Width only 110mm
- Built-in active PFC function compliance to BS EN/EN61000-3-2
- High efficiency 94.5% and low power dissipation
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Cooling by free air convection
- Built-in constant current limiting circuit
- Can be installed on DIN rail TS-35/7.5 or 15
- UL508(industrial control equipment)approved
- BS EN/EN61000-6-2(BS EN/EN50082-2) industrial immunity level
- Current sharing up to 3840W(3+1)
- Built-in DC OK relay contact
- 100% full load burn-in test
- 3 years warranty

User's Manual



■ GTIN CODE

MW Search: <https://www.meanwell.com/serviceGTIN.aspx>

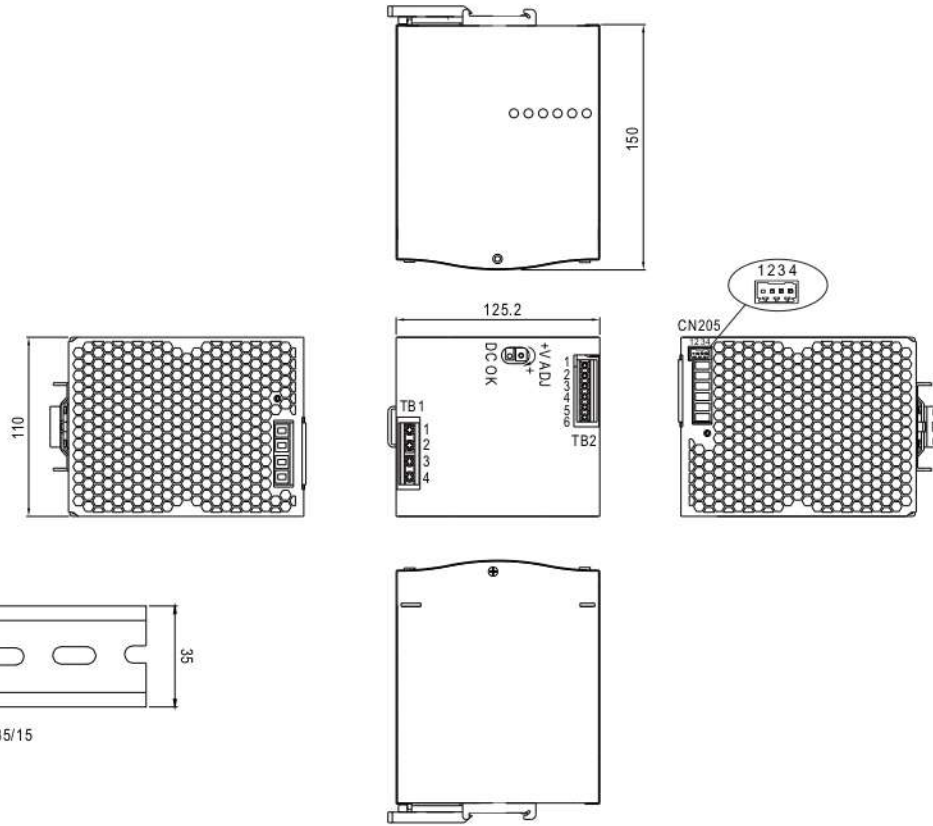


SPECIFICATION

MODEL	TDR-960-24	TDR-960-48	
OUTPUT	DC VOLTAGE	24V	48V
	RATED CURRENT	40A	20A
	CURRENT RANGE	0 ~ 40A	0 ~ 20A
	RATED POWER	960W	960W
	RIPPLE & NOISE (max.) Note.2	180mVp-p	250mVp-p
	VOLTAGE ADJ. RANGE	24 ~ 28V	48 ~ 55V
	VOLTAGE TOLERANCE Note.3	± 1.0%	± 1.0%
	LINE REGULATION	± 0.5%	± 0.5%
	LOAD REGULATION	± 1.0%	± 1.0%
	SETUP, RISE TIME	1000ms, 100ms/400VAC 800ms, 100ms/500VAC at full load	
HOLD UP TIME (Typ.)	12ms / 400VAC 14ms / 500VAC at full load		
INPUT	VOLTAGE RANGE Note.4	Three-Phase 340 ~ 550VAC (Dual phase operation possible) 480 ~ 780VDC	
	FREQUENCY RANGE	47 ~ 63Hz	
	POWER FACTOR (Typ.)	PF ≥ 0.88/400VAC PF ≥ 0.86/500VAC at full load	
	EFFICIENCY (Typ.)	94%	94.5%
	AC CURRENT (Typ.)	2A/400VAC 1.4A/500VAC	
	INRUSH CURRENT (Typ.)	COLD START 60A	
LEAKAGE CURRENT	<3.5mA / 530VAC		
PROTECTION	OVERLOAD	105 ~ 130% rated output power Protection type : Constant current limiting, unit will shut down after 3 sec. ,re-power on to recover	
	OVER VOLTAGE	29 ~ 33V	56 ~ 65V
	OVER TEMPERATURE	Shut down o/p voltage, recovers automatically after temperature goes down	
FUNCTION	DC OK REALY CONTACT RATINGS (max.)	60Vdc/0.3A, 30Vdc/1A, 30Vac/0.5A resistive load	
	CURRENT SHARING	Please refer to function manual	
ENVIRONMENT	WORKING TEMP. Note.5	-30 ~ +70°C (Refer to "Derating Curve")	
	WORKING HUMIDITY	20 ~ 95% RH non-condensing	
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C , 10 ~ 95% RH non-condensing	
	TEMP. COEFFICIENT	±0.03%/°C (0 ~ 50°C)	
VIBRATION	Component:10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes; Mounting: Compliance to IEC60068-2-6		
SAFETY & EMC (Note 6)	SAFETY STANDARDS	UL508, AS/NZS62368.1, EAC TP TC 004 approved, IEC62368-1 CB approved by SIQ; Design refer to BS EN/EN62368-1	
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:2KVAC O/P-FG:0.5KVAC O/P-DC OK:0.5KVAC	
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:>100M Ohms / 500VDC / 25°C/ 70% RH	
	EMC EMISSION	Compliance to BS EN/EN55032 (CISPR32), BS EN/EN61204-3 Class B, BS EN/EN61000-3-2,-3, EAC TP TC 020	
EMC IMMUNITY	Compliance to BS EN/EN61000-4-2,3,4,5,6,8,11, BS EN/EN55024, BS EN/EN61000-6-2 (BS EN/EN50082-2), BS EN/EN61204-3, heavy industry level, EAC TP TC 020		
OTHERS	MTBF	647.1K hrs min. Telcordia SR-332 (Bellcore) ; 59.5K hrs min. MIL-HDBK-217F (25°C)	
	DIMENSION	110*125.2*150mm (W*H*D)	
	PACKING	2.47Kg ; 6pcs/15.8Kg/1.47CUFT	
NOTE	<p>1. All parameters NOT specially mentioned are measured at 400VAC input, rated load and 25°C of ambient temperature.</p> <p>2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor.</p> <p>3. Tolerance : includes set up tolerance, line regulation and load regulation.</p> <p>4. Dual phase operation is allowed under certain derating to output load. Please refer to derating curves for details.</p> <p>5. Installation clearances : 40mm on top, 20mm on the bottom, 5mm on the left and right side are recommended when loaded permanently with full power. In case the adjacent device is a heat source, 15mm clearance is recommended.</p> <p>6. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives.</p> <p>7. The ambient temperature derating of 3.5°C/1000m with fanless models and of 5°C/1000m with fan models for operating altitude higher than 2000m(6500ft).</p> <p>※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx</p>		

Mechanical Specification

Case No.214A Unit:mm



ADMISSIBLE DIN-RAIL: TS35/7.5 OR TS35/15

Terminal Pin No. Assignment (TB1)

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

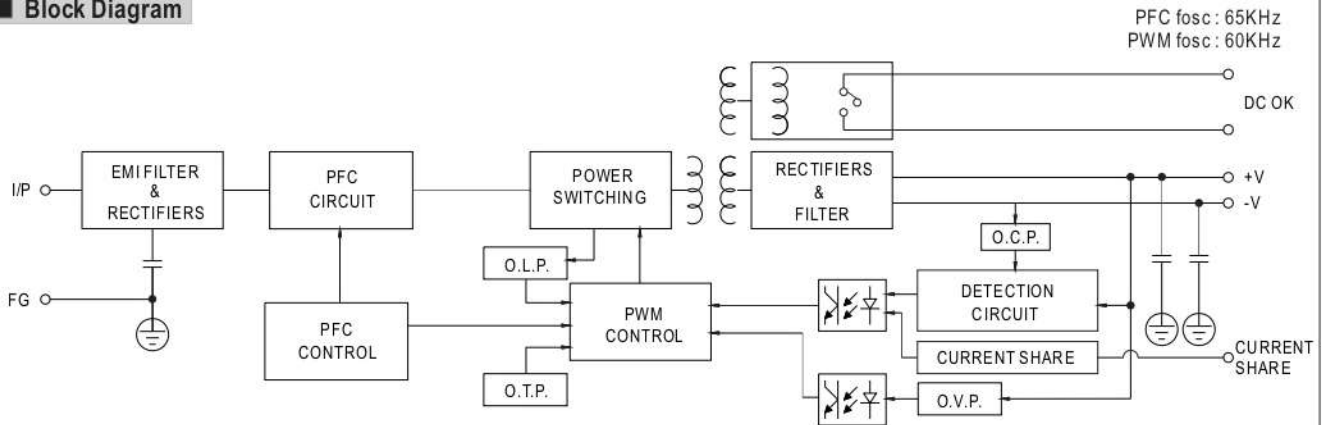
Terminal Pin No. Assignment (TB2)

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 ² (28~20AWG)
2	P+(Current Share)		
3,4	DC OK Relay Contact		

Block Diagram

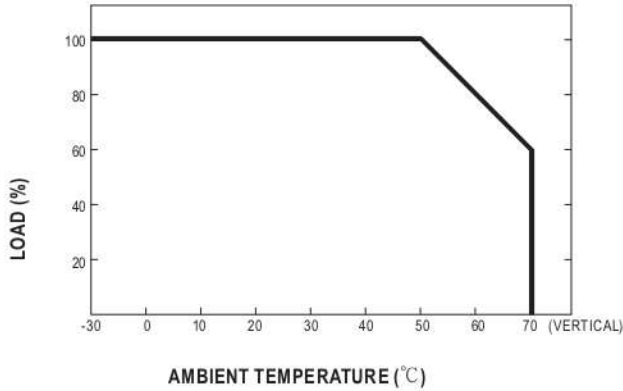


PFC fosc : 65KHz
PWM fosc : 60KHz

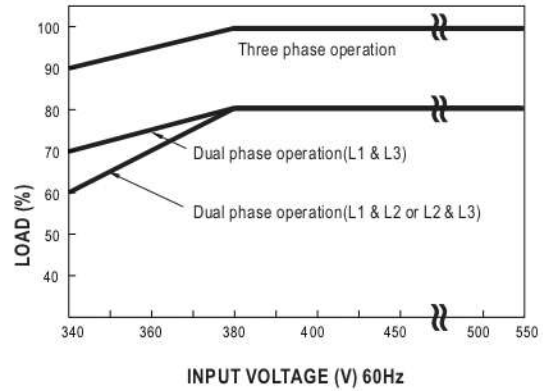
DC OK Relay Contact

Contact Close	PSU turns on / DC OK.
Contact Open	PSU turns off / DC Fail.
Contact Ratings (max.)	30V/1A resistive load.

Derating Curve



Output derating VS input voltage



Function Manual

1. Current sharing

- (1) Parallel operation is available by connecting the units shown as below (P+,P- are connected mutually in parallel).
- (2) Difference of output voltages among parallel units should be less than 0.2V.
- (3) The total output current must not exceed the value determined by the following equation (Output current at parallel operation)=(The rated current per unit) x (Number of unit) x 0.9.
- (4) In parallel operation 4 units is the maximum, please consult the manufacture for other applications.
- (5) The power supplies should be paralleled using short and large diameter wiring and then connected to the load.
- (6) When in parallel operation, the minimum output load should be greater than 5% of total output load.
(Min. load >5% rated current per unit x number of unit)
- (7) In parallel connection, maybe only one unit (master) operate if the total output load is less than 5% of rated load condition.
The other PSUs (slaves) may go into standby mode and their output LEDs & relays will not turn on.
- (8) Some minor noise may be heard at light load condition under parallel operation.
This is a normal phenomenon and the performance of the PSU will not be influenced.

