

Industrial Grade Power Supply

SIL MDR-60-48
SIL NDR-120-48
SIL NDR-240-48
SIL NDR-480-48

Industrial Grade Power Supply Unit



SIL NDR-120-48
Industrial PSU, 120W,
48V Output Voltage



SIL NDR-240-48
Industrial PSU, 240W,
48V Output Voltage



SIL NDR-480-48
Industrial PSU, 480W,
48V Output Voltage

OVERVIEW

The SIL DR PSU Range is an economical, slim Din rail power supply series, adapted to be installed on TS-35/7.5 or TS-35/15 mounting rails. The body is designed slim which allows space saving inside the cabinets. The entire series conforms to EN61000-3-2, the norm the European Union regulates for harmonic current.

SIL DR PSUs are designed with housing that enhances the unit's heat dissipation. With working efficiency up to 90%, the entire series can operate at the ambient temperature between -20°C and 70°C under air convection.

Features

- Universal AC Input / Full Range
- Protections from: Short Circuit / Overload / Over Voltage
- Cooling by Free Air Convection
- Can be installed on DIN Rail TS-35/7.5 or 15
- 100% Full Load Burn In Test
- UL 508 Industrial Control Equipment Approved
- EN61000-6-2 (EN500820-2) Industrial Immunity Level
- Operating Temperature of -20°C to 70°C
- Slim design for easy installation

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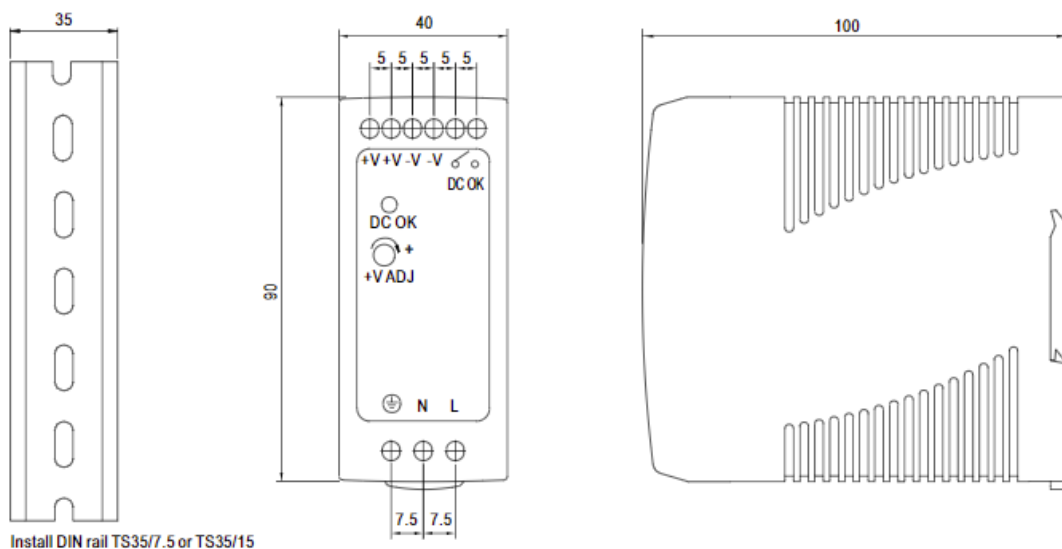
SIL-MDR-60-48

Industrial Grade PSU	SIL-MDR-60-48	
Output		
DC Voltage	48v	
Rated Current	1.25A	
Current Range	0~1.25A	
Rated Power	60W	
Ripple & Noise (max.) (Note.2)	200mVp-p	
Voltage ADJ Range	48 ~ 56V	
Voltage Tolerance (Note.3)	± 1.0%	
Line Regulation	± 1.0%	
Load Regulation	± 1.0%	
Setup, Rise Time (Note.5)	500ms, 30ms / 230VAC	20ms / 115VAC at full load
Hold Up Time (Typ.)	50ms / 230VAC	20ms / 115VAC at full load
Input		
Voltage Range	120 ~ 370VDC	
Frequency Range	47 ~ 63Hz	
Efficiency (Typ.)	87%	
AC Current (Typ.)	1A / 230VAC	
Inrush Current (Typ.)	Cold Start 60A / 230VAC	
Leakage Current	<1mA / 240VAC	
Protection		
Overload	105 ~ 150% rated output power, constant current limiting, recovers automatically after fault condition is removed	
Over Voltage	57.6 ~ 64.8V, shut down o/p voltage, re-power to recover	
Function		
DC OK Signal	Relay contact rating(max.): 30V / 1A resistive	
Environment		
Working Temp.	-20 ~ +70°C (Refer to “Derating Curve”)	
Working Humidity	20 ~ 90% 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, period for 60min each along X, Y, Z axis. Mounting: Compliant to IEC60068-2-6	
Safety & EMC		
Safety Standards	UL508, UL62368-1, TUV EN62368-1, Class 1, Div. 2 Group A, B, C, D, Hazardous Locations T4, EAC TP TC 004, BSMI CNS14336-1, AS/NZS 60950 1 Approved	
Withstand Voltage	I/P-O/P:3KVAC I/P-FG:2KVAC O/P-FG: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 EN55032 (CISPR32), EN61204-3 Class B, EN61000-3-2, -3, EAC TP TC 020, CNS13438 Class B	
EMC Immunity	Compliance to EN6100-4-2, 3, 4, 5, 6, 8, 11, EN55024, EN61000-6-2, EN61204-3, heavy industrial level, criteria A, EAC TP TC 020	
Others		
MTBF	299.2K hrs min. MIL-HDBK-217F (25°C)	
Dimensions	40*90*100mm (W*H*D)	
Packing	0.33kg; 42pcs/14.8Kg/0.82CUFT	
Notes:		
1. All Parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.		
2. Ripple & noise are measured at 20MHz of bandwidth by using a 12” twisted pair wire terminated with a 0.1uf & 47uf parallel capacitor.		
3. Tolerance: Includes set up tolerance, line regulation and load regulation		
4. 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. For guidance on how to perform these EMC tests, please refer to an “EMI testing of component power supplies” guide.		
5. Length of set up time is measured at first cold start. Turning ON/OFF the power supply may lead to increase of the set up time.		
6. 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).		

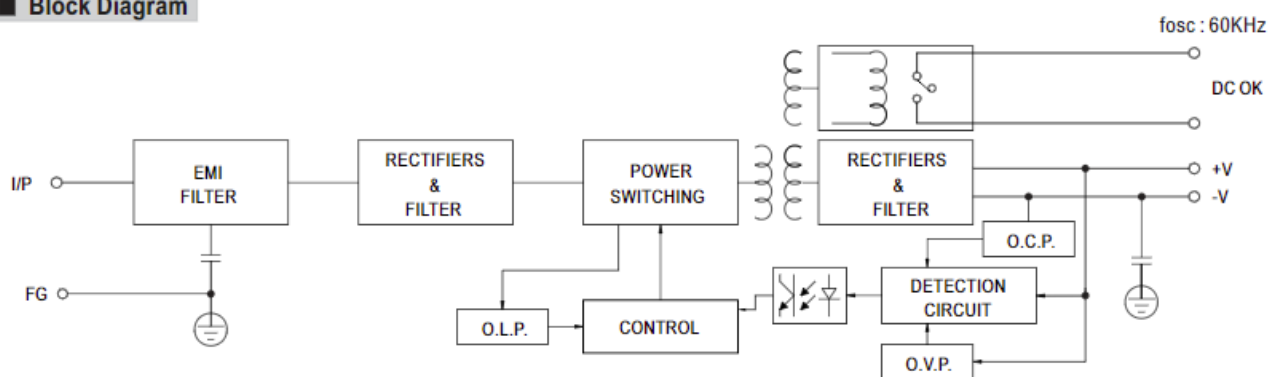
SIL-MDR-60-48

Mechanical Specification

Case No.962A Unit:mm



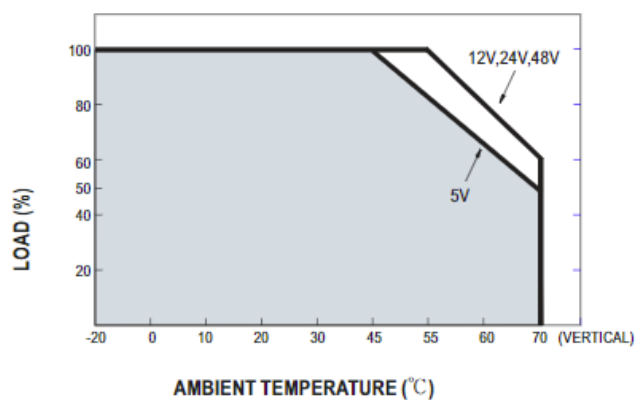
Block Diagram



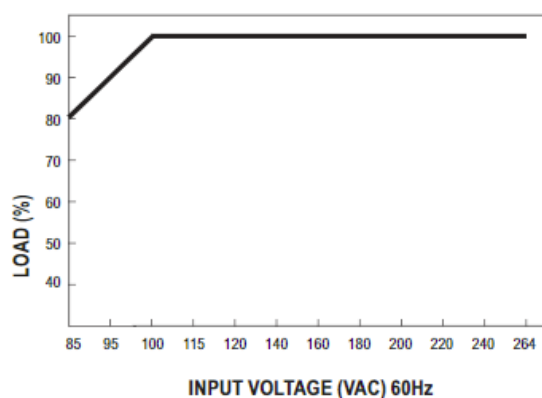
DC OK Relay Contact

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

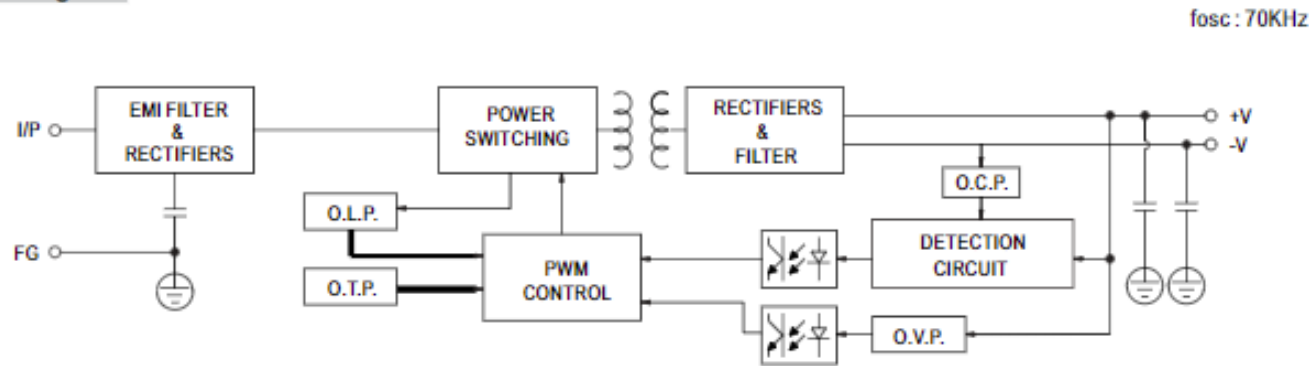


SIL-NDR-120-48

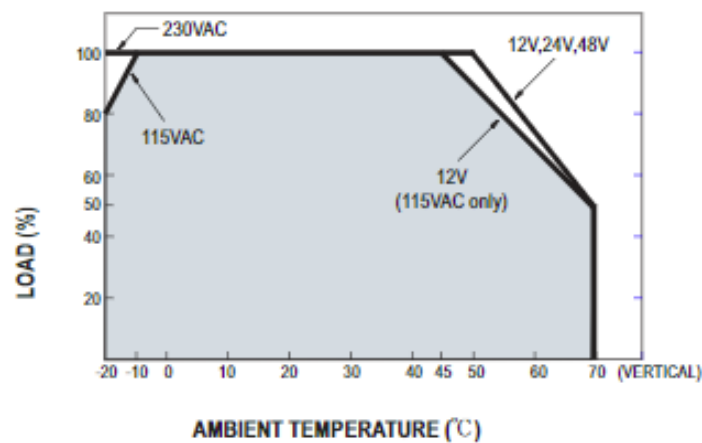
Industrial Grade PSU	SIL-NDR-120-48		
Output			
DC Voltage	48v		
Rated Current	2.5A		
Current Range	0~2.5A		
Rated Power	120W		
Ripple & Noise (max.) (Note.2)	150mVp-p		
Voltage ADJ Range	48 ~ 55V		
Voltage Tolerance (Note.3)	± 1.0%		
Line Regulation	± 0.5%		
Load Regulation	± 1.0%		
Setup, Rise Time (Note.5)	1200ms, 60ms / 230VAC	2500ms, 60ms / 115VAC at full load	
Hold Up Time (Typ.)	16ms / 230VAC	10ms / 115VAC at full load	
Input			
Voltage Range (Note.6)	90 ~ 264VAC 127 ~ 370VDC [DC input operation possible by connecting AC/L(+), AC/N(-)]		
Frequency Range	47 ~ 63Hz		
Efficiency (Typ.)	85.5%		
AC Current (Typ.)	2.25A / 115VAC	1.3A / 230VAC	
Inrush Current (Typ.)	20A / 115VAC	35A / 230VAC	
Leakage Current	<1mA / 240VAC		
Protection			
Overload	105 ~ 130% rated output power, constant current limiting, recovers automatically after fault condition is removed		
Over Voltage	56 ~ 65V, shut down o/p voltage, re-power to recover		
Over Temperature	Shut down o/p voltage, re-power to recover		
Environment			
Working Temp.	-20 ~ +70°C (Refer to “Derating Curve”)		
Working Humidity	20 ~ 90% 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, period for 60min each along X, Y, Z axis. Mounting: Compliant to IEC60068-2-6		
Safety & EMC (Note.4)			
Safety Standards	UL508, TUV EN62368-q, EAC TP TC 004 approved;(meet EN60204-1)		
Withstand Voltage	I/P-O/P:3KVAC	I/P-FG:2KVAC	O/P-FG: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 EN55032 (CISPR32), EN61204-3 Class B, EN61000-3-2, -3, EAC TP TC 020		
EMC Immunity	Compliance to EN6100-4-2, 3, 4, 5, 6, 8, 11, EN55024, EN61000-6-2 (EN50082-2), EN61204-3, Heavy industry level, criteria A, EAC TP TC 020		
Others			
MTBF	456.3K hrs min. MIL-HDBK-217F (25°C)		
Dimensions	40*125*113.5mm (W*H*D)		
Packing	0.6kg; 20pcs/13Kg/1.16CUFT		
Notes:			
1. All Parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.			
2. Ripple & noise are measured at 20MHz of bandwidth by using a 12” twisted pair wire terminated with a 0.1uf & 47uf parallel capacitor.			
3. Tolerance: Includes set up tolerance, line regulation and load regulation			
4. 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. For guidance on how to perform these EMC tests, please refer to an “EMI testing of component power supplies” guide.			
5. Installation clearances: 40mm on top, 20mm below, 5mm on the left and right sides are recommended when loading permanently with full power. In case the adjacent device is a heat source, 15mm clearance is recommended.			
6. Derating may be needed under low input voltage. Please check the derating curve for more details.			
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).			

SIL-NDR-120-48

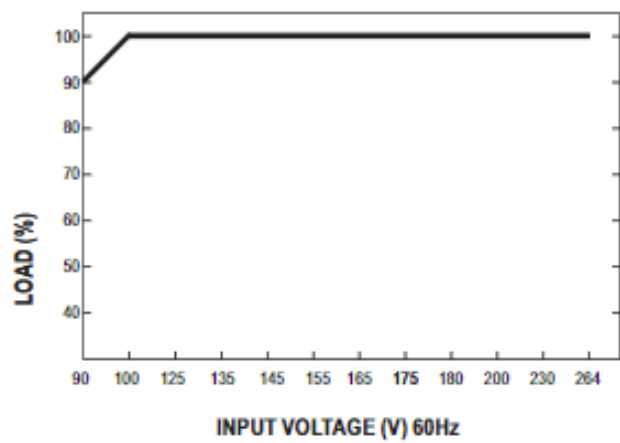
Block Diagram



Derating Curve

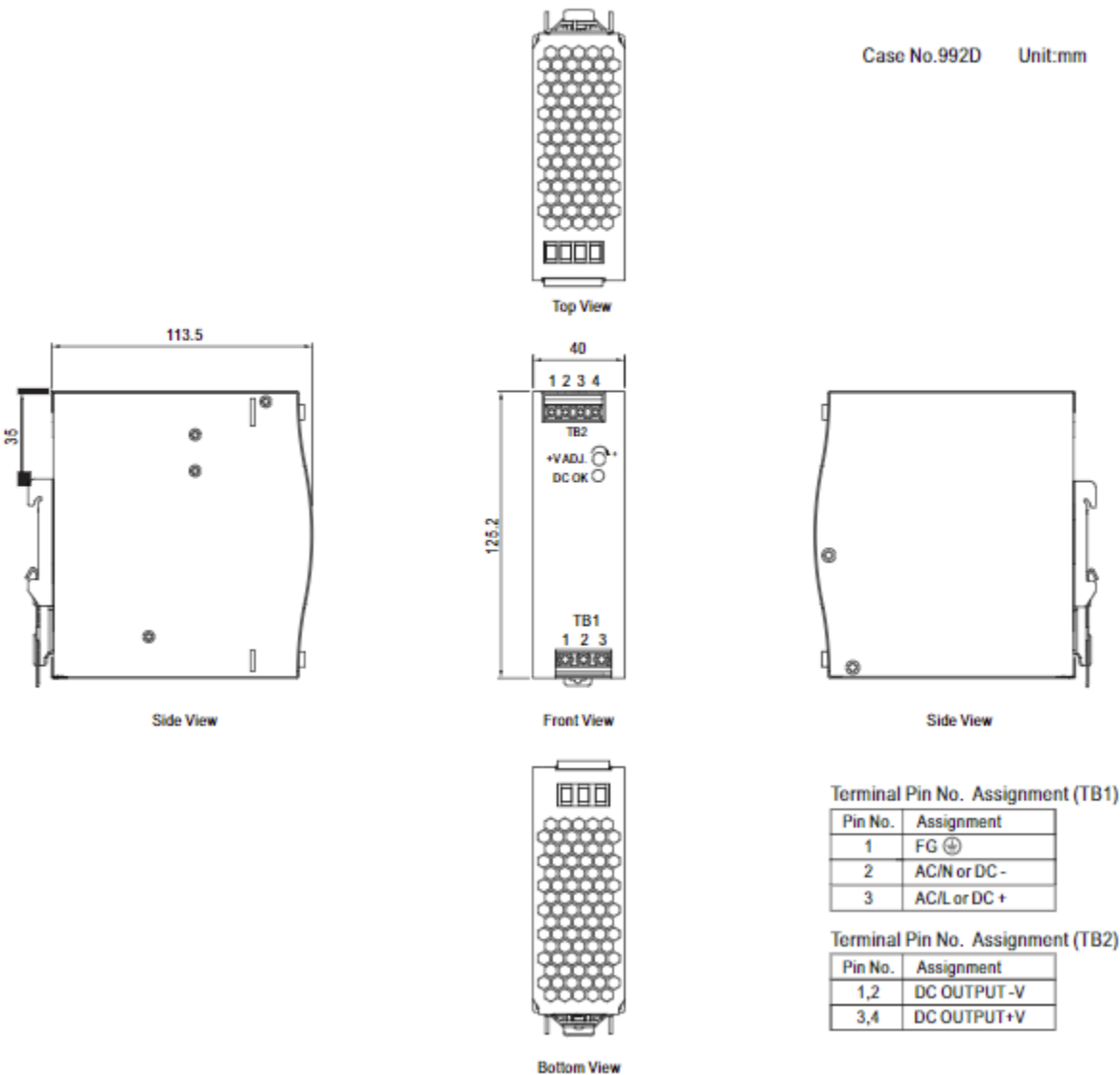


Static Characteristics

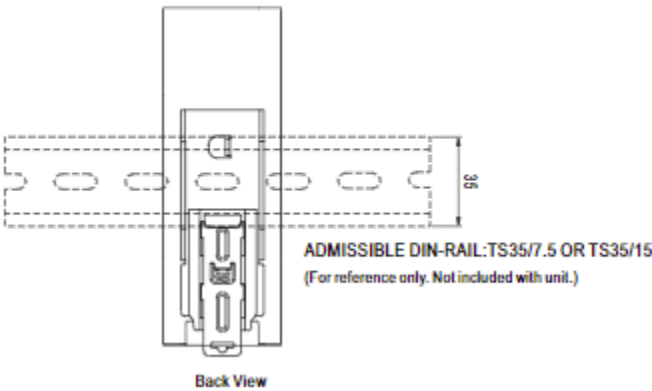


SIL-NDR-120-48

Mechanical Specification



Installation Instruction



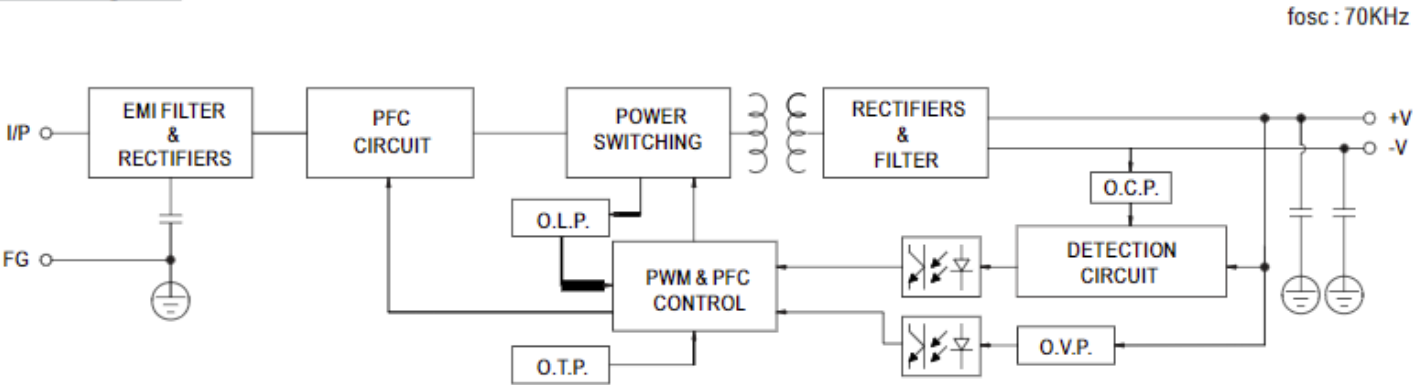
This series fits DIN rail TS35/7.5 or TS35/15.
For installation details, please refer to the Instruction manual.

SIL-NDR-240-48

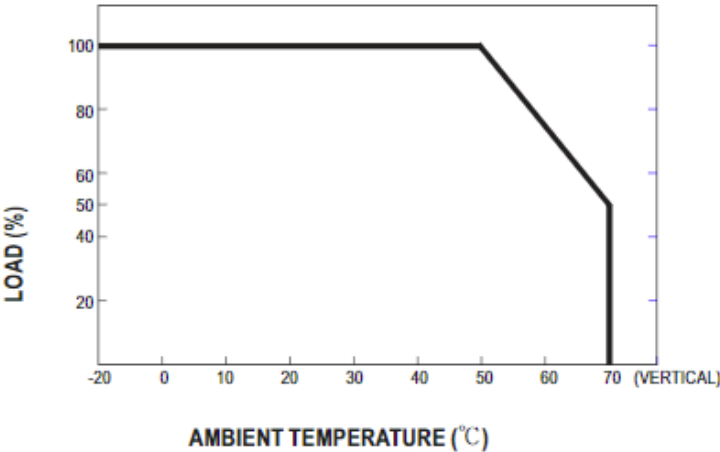
Industrial Grade PSU	SIL-NDR-240-48	
Output		
DC Voltage	48v	
Rated Current	5A	
Current Range	0~5A	
Rated Power	240W	
Ripple & Noise (max.) (Note.2)	150mVp-p	
Voltage ADJ Range	48 ~ 55V	
Voltage Tolerance (Note.3)	± 1.0%	
Line Regulation	± 0.5%	
Load Regulation	± 1.0%	
Setup, Rise Time	1500ms, 100ms / 230VAC	3000ms, 100ms / 115VAC at full load
Hold Up Time (Typ.)	28ms / 230VAC	22ms / 115VAC at full load
Input		
Voltage Range (Note.4)	90 ~ 264VAC 127 ~ 370VDC	
Frequency Range	47 ~ 63Hz	
Power Factor (Typ.)	PF>0.98 / 115VAC, PF>0.95/230VAC at full load	
Efficiency (Typ.)	88.5%	
AC Current (Typ.)	2.25A / 115VAC	1.3A / 230VAC
Inrush Current (Typ.)	20A / 115VAC	35A / 230VAC
Leakage Current	<1mA / 240VAC	
Protection		
Overload	105 ~ 130% rated output power, constant current limiting, recovers automatically after fault condition is removed	
Over Voltage	56 ~ 65V, shut down o/p voltage, re-power to recover	
Over Temperature	Shut down o/p voltage, re-power to recover	
Environment		
Working Temp.	-20 ~ +70°C (Refer to “Derating Curve”)	
Working Humidity	20 ~ 90% 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, period for 60min each along X, Y, Z axis. Mounting: Compliant to IEC60068-2-6	
Safety & EMC (Note.4)		
Safety Standards	UL508, TUV EN62368-1, EAC TP TC 004, BSMI CNS14336-1 approved,(meet EN60204-1)	
Withstand Voltage	I/P-O/P:3KVAC I/P-FG:2KVAC O/P-FG: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 EN55032 (CISPR32), EN61204-3 Class B, EN61000-3-2, -3, EAC TP TC 020, CNS13438	
EMC Immunity	Compliance to EN6100-4-2, 3, 4, 5, 6, 8, 11, EN55024, EN61000-6-2 (EN50082-2), EN61204-3, Heavy industry level, criteria A, EAC TP TC 020	
Others		
MTBF	230.2K hrs min. MIL-HDBK-217F (25°C)	
Dimensions	63*125.2*113.5mm (W*H*D)	
Packing	1kg; 12pcs/13Kg/1.1CUFT	
Notes: 1. All Parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12” twisted pair wire terminated with a 0.1uf & 47uf parallel capacitor. 3. Tolerance: Includes set up tolerance, line regulation and load regulation 4. Derating may be needed under low input voltage. Please check the derating curve for more details. 5. Installation clearances: 40mm on top, 20mm below, 5mm on the left and right sides are recommended when loading permanently with full power. In case the adjacent device is a heat source, 15mm clearance is recommended. 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. For guidance on how to perform these EMC tests, please refer to an “EMI testing of component power supplies” guide. 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).		

SIL-NDR-240-48

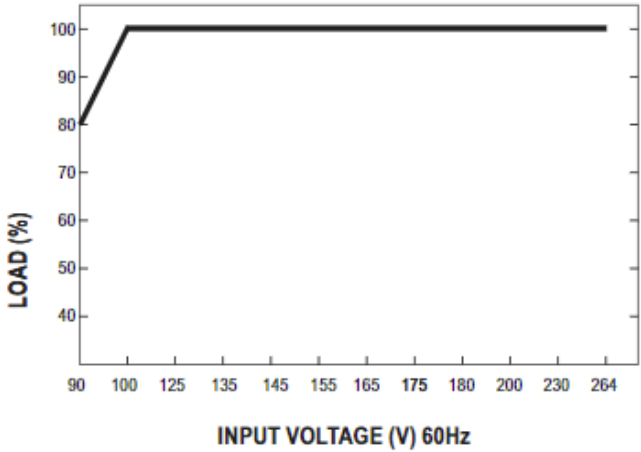
■ Block Diagram



■ Derating Curve

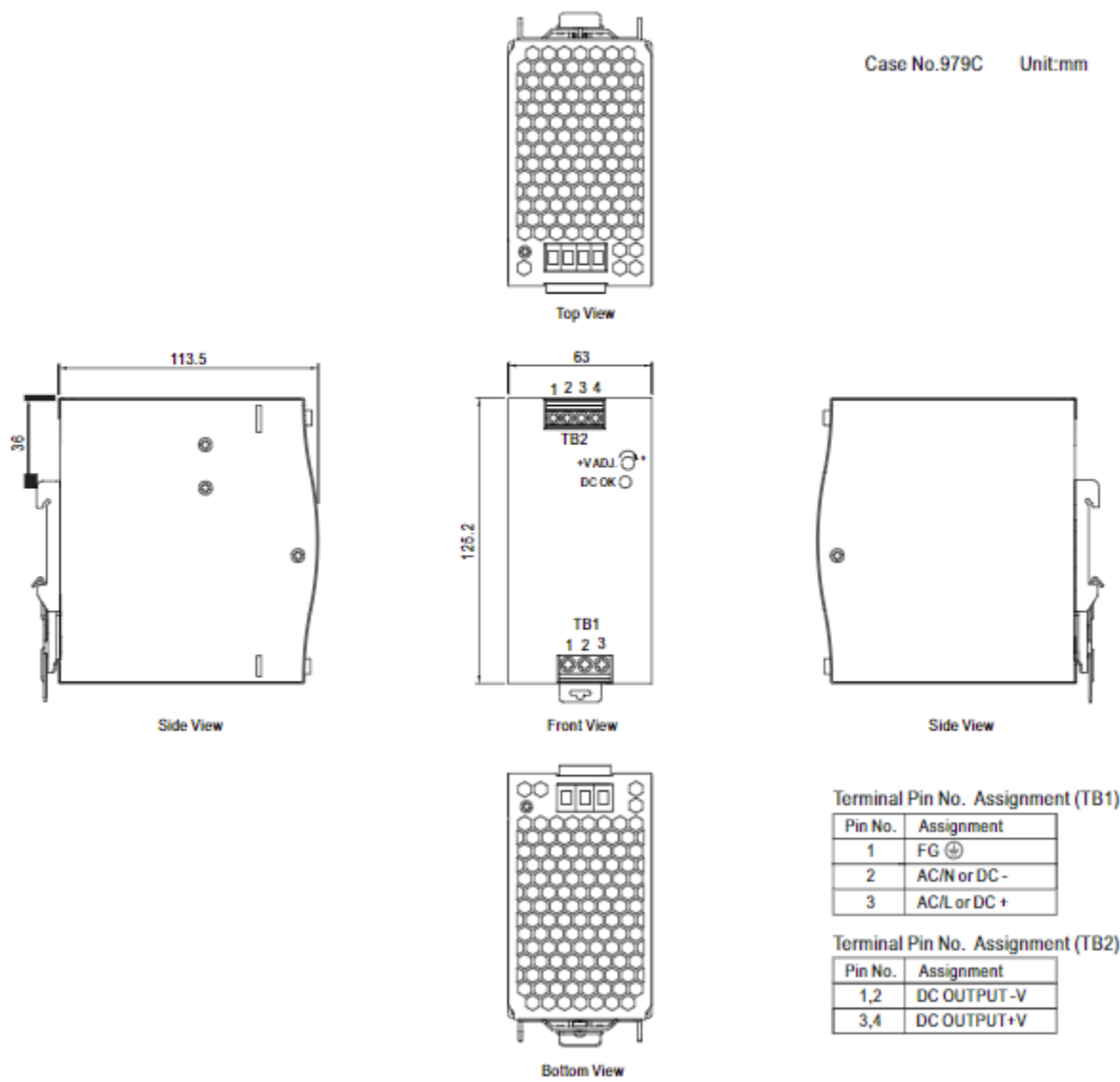


■ Output derating VS input voltage

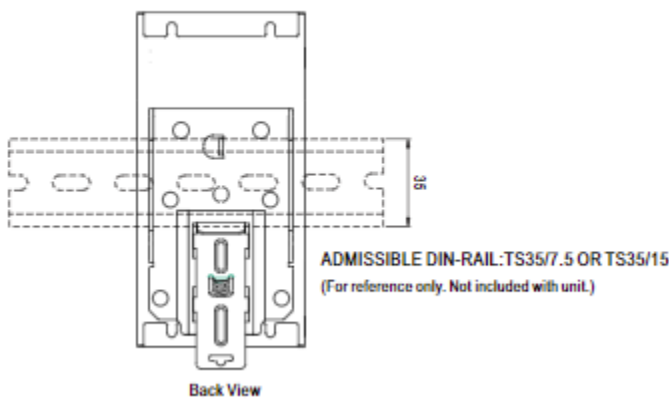


SIL-NDR-240-48

Mechanical Specification



Installation Instruction



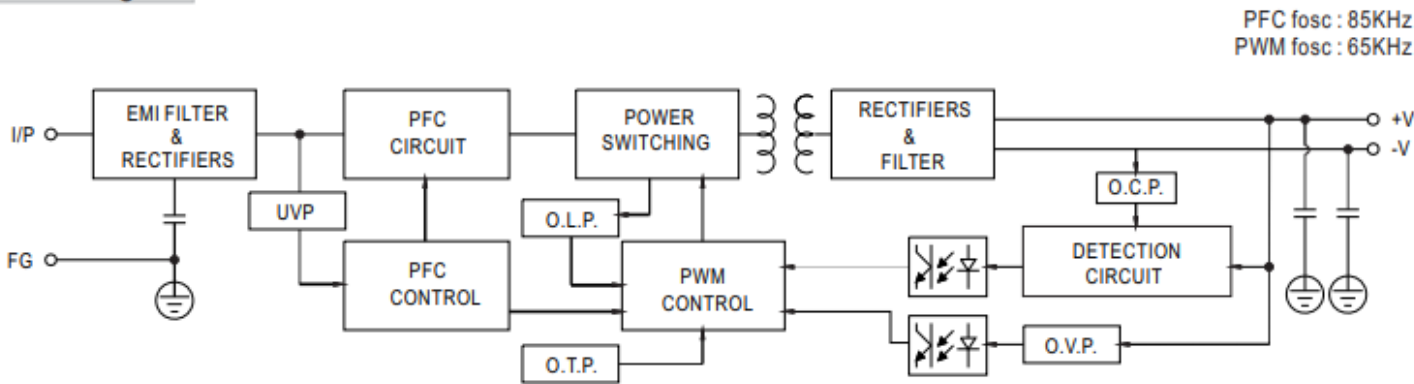
This series fits DIN rail TS35/7.5 or TS35/15.
For installation details, please refer to the Instruction manual.

SIL-NDR-480-48

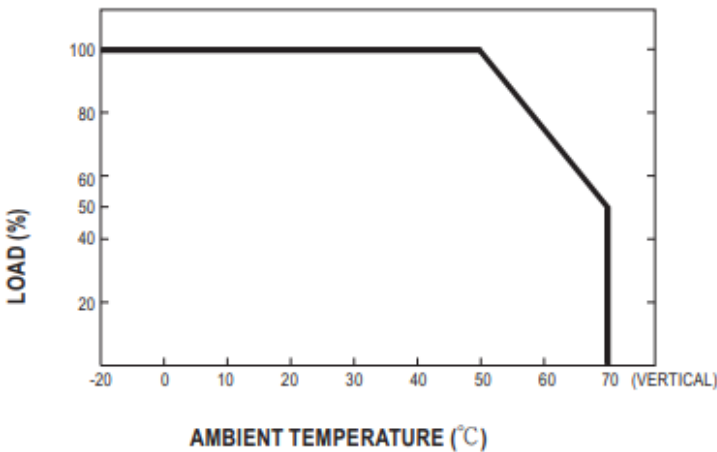
Industrial Grade PSU	SIL-NDR-480-48		
Output			
DC Voltage	48v		
Rated Current	10A		
Current Range	0~10A		
Rated Power	480W		
Ripple & Noise (max.) (Note.2)	150mVp-p		
Voltage ADJ Range	48 ~ 55V		
Voltage Tolerance (Note.3)	± 1.0%		
Line Regulation	± 0.5%		
Load Regulation	± 1.0%		
Setup, Rise Time	1500ms, 100ms / 230VAC	3000ms, 100ms / 115VAC at full load	
Hold Up Time (Typ.)	16ms / 230VAC	16ms / 115VAC at full load	
Input			
Voltage Range (Note.4)	90 ~ 264VAC 127 ~ 370VDC		
Frequency Range	47 ~ 63Hz		
Power Factor (Typ.)	PF>0.98 / 115VAC, PF>0.95/230VAC at full load		
Efficiency (Typ.)	92.5%		
AC Current (Typ.)	4.8A / 115VAC	2.4A / 230VAC	
Inrush Current (Typ.)	20A / 115VAC	35A / 230VAC	
Leakage Current	<2mA / 240VAC		
Protection			
Overload	105 ~ 130% rated output power, constant current limiting, recovers automatically after fault condition is removed		
Over Voltage	56 ~ 65V, shut down o/p voltage, re-power to recover		
Over Temperature	Shut down o/p voltage, re-power to recover		
Environment			
Working Temp.	-20 ~ +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, period for 60min each along X, Y, Z axis. Mounting: Compliant to IEC60068-2-6		
Safety & EMC (Note.4)			
Safety Standards	UL508, TUV EN62368-1, EAC TP TC 004, BSMI CNS14336-1 approved,(meet EN60204-1)		
Withstand Voltage	I/P-O/P:3KVAC	I/P-FG:2KVAC	O/P-FG: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 EN55032 (CISPR32), EN61204-3 Class B, EN61000-3-2, -3, EAC TP TC 020, CNS13438		
EMC Immunity	Compliance to EN6100-4-2, 3, 4, 5, 6, 8, 11, EN55024, EN61000-6-2 (EN50082-2), EN61204-3, Heavy industry level, criteria A, EAC TP TC 020		
Others			
MTBF	146.8K hrs min.	MIL-HDBK-217F (25°C)	
Dimensions	85.5*125.2*128.5mm (W*H*D)		
Packing	1.5kg; 8pcs/13Kg/0.9CUFT		
Notes:			
1. All Parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.			
2. Ripple & noise are measured at 20MHz of bandwidth by using a 12” twisted pair wire terminated with a 0.1uf & 47uf parallel capacitor.			
3. Tolerance: Includes set up tolerance, line regulation and load regulation			
4. Derating may be needed under low input voltage. Please check the derating curve for more details.			
5. Installation clearances: 40mm on top, 20mm below, 5mm on the left and right sides are recommended when loading permanently with full power. In case the adjacent device is a heat source, 15mm clearance is recommended.			
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. For guidance on how to perform these EMC tests, please refer to an “EMI testing of component power supplies” guide.			
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).			

SIL-NDR-480-48

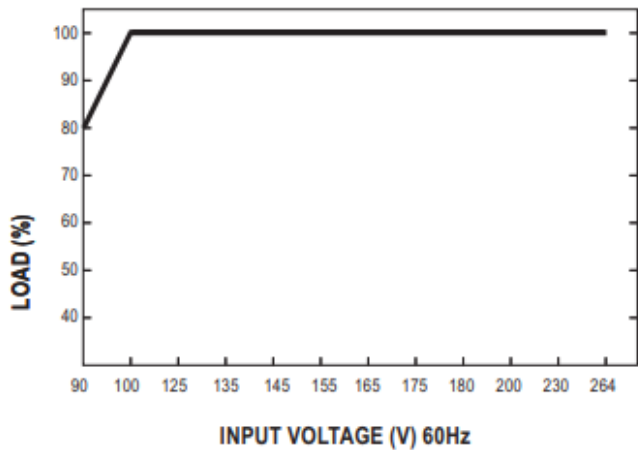
Block Diagram



Derating Curve

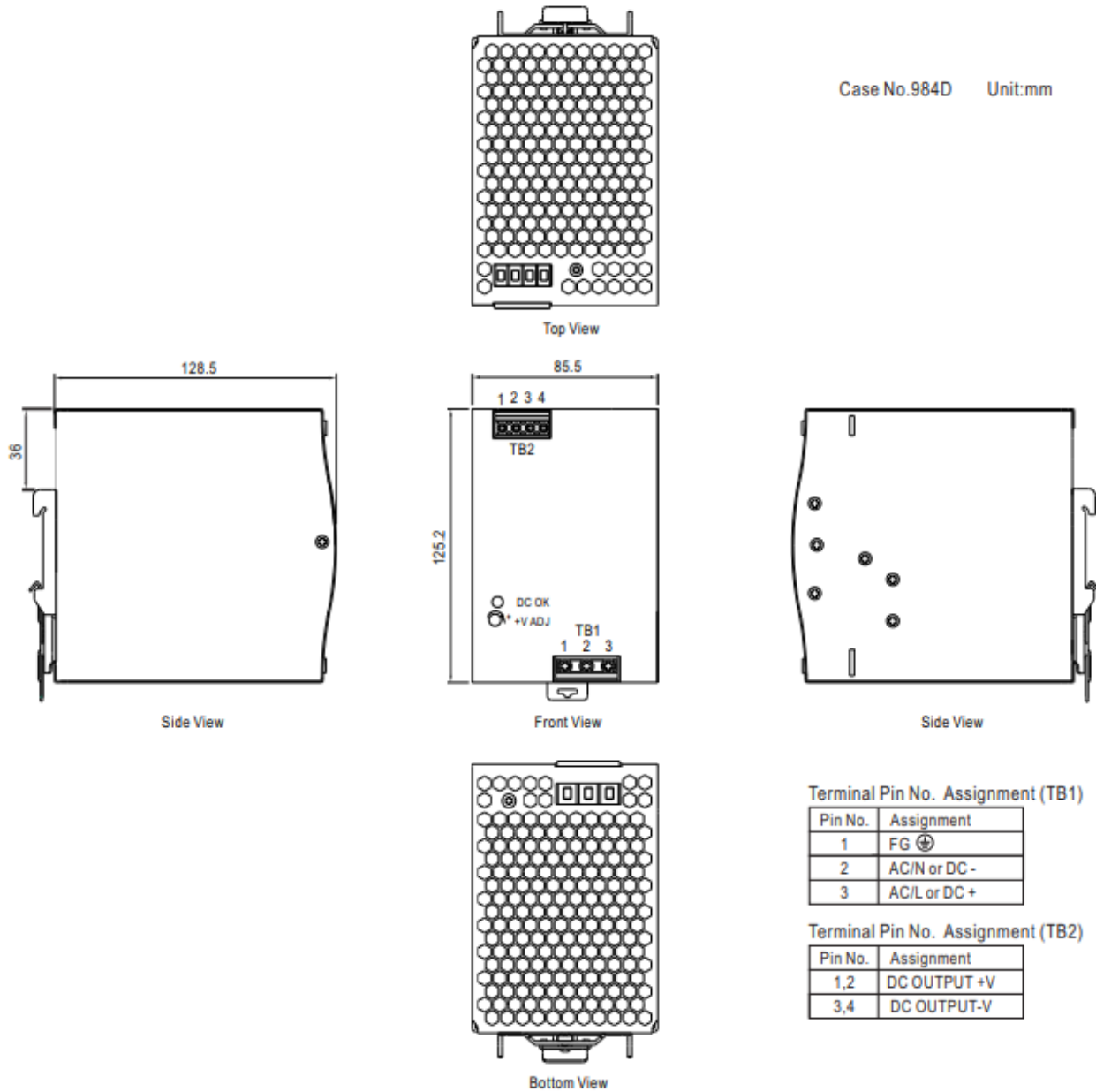


Output derating VS input voltage

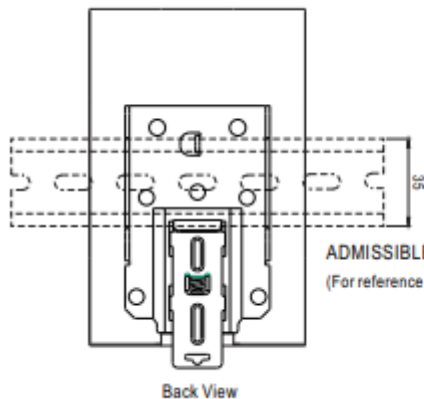


SIL-NDR-480-48

Mechanical Specification



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.