



INDUSTRIAL SHIELDS

DIN Rail Power Supply

Family User Guide

Power Supply Unit Family

Revised September 2023

Preface

This User Guide has been implemented by Boot & Work, S.L. working under the name Industrial Shields.

Purpose of the manual

The information contained in this manual can be used as a reference to operating, to functions, and to the technical data of the signal modules, power supply modules and interface modules.

Intended Audience

This User Guide is intended for the following audience:

- Persons in charge of introducing automation devices.
- Persons who design automation systems.
- Persons who install or connect automation devices.
- Persons who manage working automation installation.

Application Considerations and Warranty

Read and understand this manual

Please read and understand this manual before using the product. Please consult your comments or questions to Industrial Shields before using the product.

Application Consideration

THE PRODUCTS CONTAINED IN THIS DOCUMENT ARE NOT SAFETY RATED. THEY SHOULD NOT BE RELIED UPON AS A SAFETY COMPONENT OR PROTECTIVE DEVICE FOR ENSURING SAFETY OF PERSONS, AS THEY ARE NOT RATED OR DESIGNED FOR SUCH PURPOSES.

Please know and observe all prohibitions of use applicable to the products.

FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, NEVER USE THE INDUSTRIAL SHIELDS PRODUCTS.

NEVER USE THE INDUSTRIAL SHIELDS PRODUCTS BEFORE THEY ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

Industrial Shields shall not be responsible for conformity with any codes, regulations or standards that apply to the combination of products in the customer's application or use of the product.

The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses may be suitable for the products:

- Systems, machines, and equipment that could present a risk to life or property.
- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installation subject to separate industry or government regulations.
- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this document.

At the customer's request, INDUSTRIAL SHIELDS will provide applicable third party certification documents identifying ratings and limitations of use that apply to the products. This information by itself is not sufficient for a complete determination of the suitability of the products in combination with the system, machine, end product, or other application or use.

Intended use of Industrial Shields products

Consider the following:

Industrial Shields products should only be used for the cases of application foreseen in the catalogue and the associated technical documentation. If third-party products and components are used, they must have been recommended or approved by Industrial Shields.

The correct and safe operation of the products requires that your transport, storage, installation, assembly, operation and maintenance have been carried out in a correct manner. It must respect the permissible ambient conditions. You should also follow the indications and warnings that appear in the associated documentation.

The product / system dealt with in this documentation should only be handled or manipulated by qualified personnel for the task entrusted and observing what is indicated in the documentation corresponding to it, particularly the safety instructions and warnings included in it. Due to their training and experience, qualified personnel are in a position to recognize risks resulting from the handling or manipulation of such products / systems and to avoid possible hazards.

Disclaimers

Weights and Dimensions

Dimensions and weights are nominal and they are not used for manufacturing purposes, even when tolerances are shown.

Performance Data

The performance data given in this manual is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of INDUSTRIAL SHIELDS's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the INDUSTRIAL SHIELDS Warranty and Limitations of Liability.

Errors and Omissions

The information in this document has been carefully checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical, or proofreading errors, or omissions.

Residual Risks

These components may only be operated in closed housings or in higher-level control cabinets with protective covers that are closed, and when all of the protective devices are used. These components may only be handled by qualified and trained technical personnel who are knowledgeable and observe all of the safety information and instructions on the components and in the associated technical user documentation. When carrying out a risk assessment of a machine in accordance with the EU Machinery Directive, the machine manufacturer must consider the following residual risks associated with the control and drive components of a PDS.

Table of Contents

1 General Description	5
1.1. Electrical	5
1.2. Input Parameters	5
1.3. Output Parameters	6
1.4. Protection	6
1.5. Mechanical dimension	7
1.6. Serigraphy	7
2 Operating Specifications:	8
2.1 Environment	8
2.2. Safety/EMC	8
3 Block diagram	9
4 Derating Curve	9
5 Output Derating VS Input Voltage	10



1 General Description

1.1 Electrical

Model	Nominal Input Voltage	Output Voltage	Output Current	Ripple (Typ.) and Noise *Note 2	Efficiency (Typ.)
ISED24024	240 Vac (Leakage Current = < 1mA)	24 Vdc	10 A	150mVp-p	87.5%
ISED12024	240 Vac (Leakage Current = < 1mA)	24 Vdc	5 A	150mVp-p	88%
ISMDR4012	240 Vac (Leakage Current = < 1mA)	12 Vdc	3.33 A	150mVp-p	86%
ISMDR4024	240 Vac (Leakage Current = < 1mA)	24 Vdc	1.7 A	150mVp-p	88%

Note 1: All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.

Note 2: Ripple & noise are measured at 20MHz of bandwidth by using 1 12" twisted pair-wire terminated with a 0.1uF & 47uF parallel capacitor.

1.2 Input Parameters

PARAMETER	MODEL	CONDITIONS	MIN	TYP	MAX	UNITS
Input Voltage	ISED24024		180		264	Vac
			235		370	Vdc
	ISED12024		95		264	Vac
			135		370	Vdc
	ISMDR4012		85		264	Vac
			120		370	Vdc
	ISMDR4024		85		264	Vac
			120		370	Vdc
Input Frequency	ISED24024		47		63	Hz
	ISED12024					
	ISMDR4012					
	ISMDR4024					
Input Current	ISED24024	Full load, Vin=115Vac		2.5		A
	ISED12024			-		
	ISMDR4012	Full load, Vin = 230Vac		2.8		
				1.4		
ISMDR4024		1.1				
		0.7				
Inrush Current	ISED24024	Cold start, Vin = 115Vac			-	A
					55	
	ISED12024				30	
					45	
	ISMDR4012	Cold start, Vin = 230Vac			30	
					60	
	ISMDR4024				30	
					60	

1.3 Output Parameters

PARAMETER	MODEL	CONDITIONS	MIN	TYP	MAX	UNITS
Output Voltage tolerance *Note 3	ISED24024			±2		%
	ISED12024			±1		
	ISMDR4012			±1		
	ISMDR4024			±1		
Output Voltage adjustment range	ISED24024			22-27		Vdc
	ISED12024			24-28		
	ISMDR4012			12-15		
	ISMDR4024			24-30		
Current range	ISED24024		0		10	A
	ISED12024				5	
	ISMDR4012				3.33	
	ISMDR4024				1.7	
Line regulation	ISED24024			±0.5		%
	ISED12024			±0.5		
	ISMDR4012			±1		
	ISMDR4024			±1		
Setup, rise time *Note 4	ISED24024	Vin = 230 Vac Full load, Vin = 115Vac		1200, 60 -		ms
	ISED12024			1200, 60 2500, 60		
	ISMDR4012			500, 30 500, 30		
	ISMDR4024			500, 30 500, 30		
Hold up time	ISED24024	Vin = 230 Vac Full load, Vin = 115Vac		16 -		ms
	ISED12024			16 10		
	ISMDR4012			50 20		
	ISMDR4024			50 20		

Note 3: Tolerance: includes set up tolerance, line regulation and load regulation.

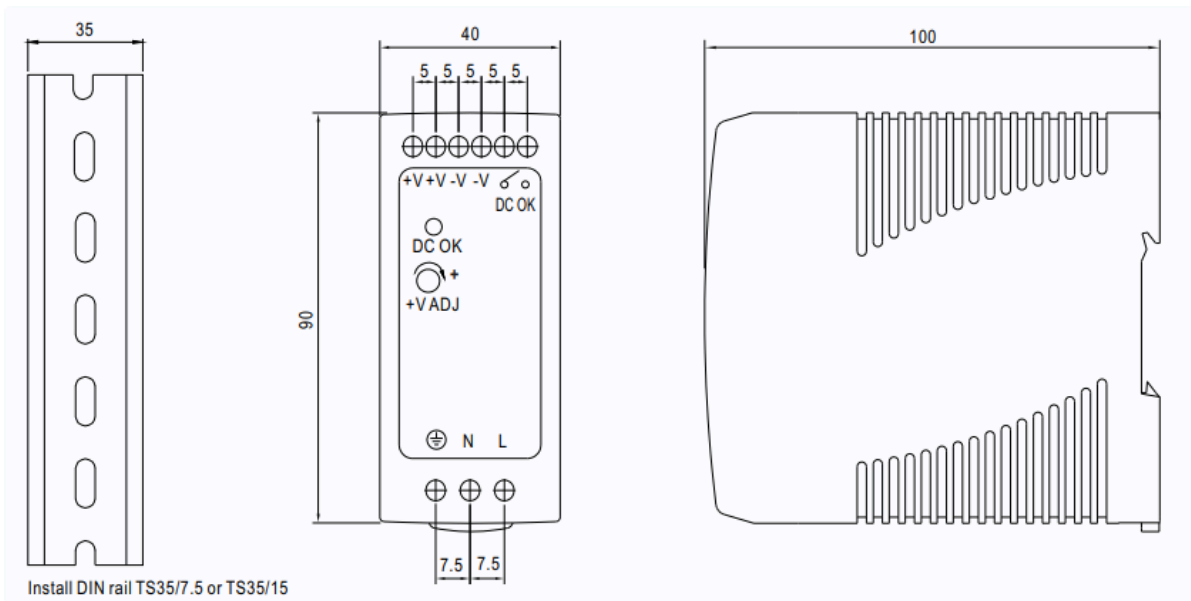
Note 4: Length of set up time is measured at first cold start. Turning ON/OFF the power supply may lead to an increase of the set up time.

1.4 Protection

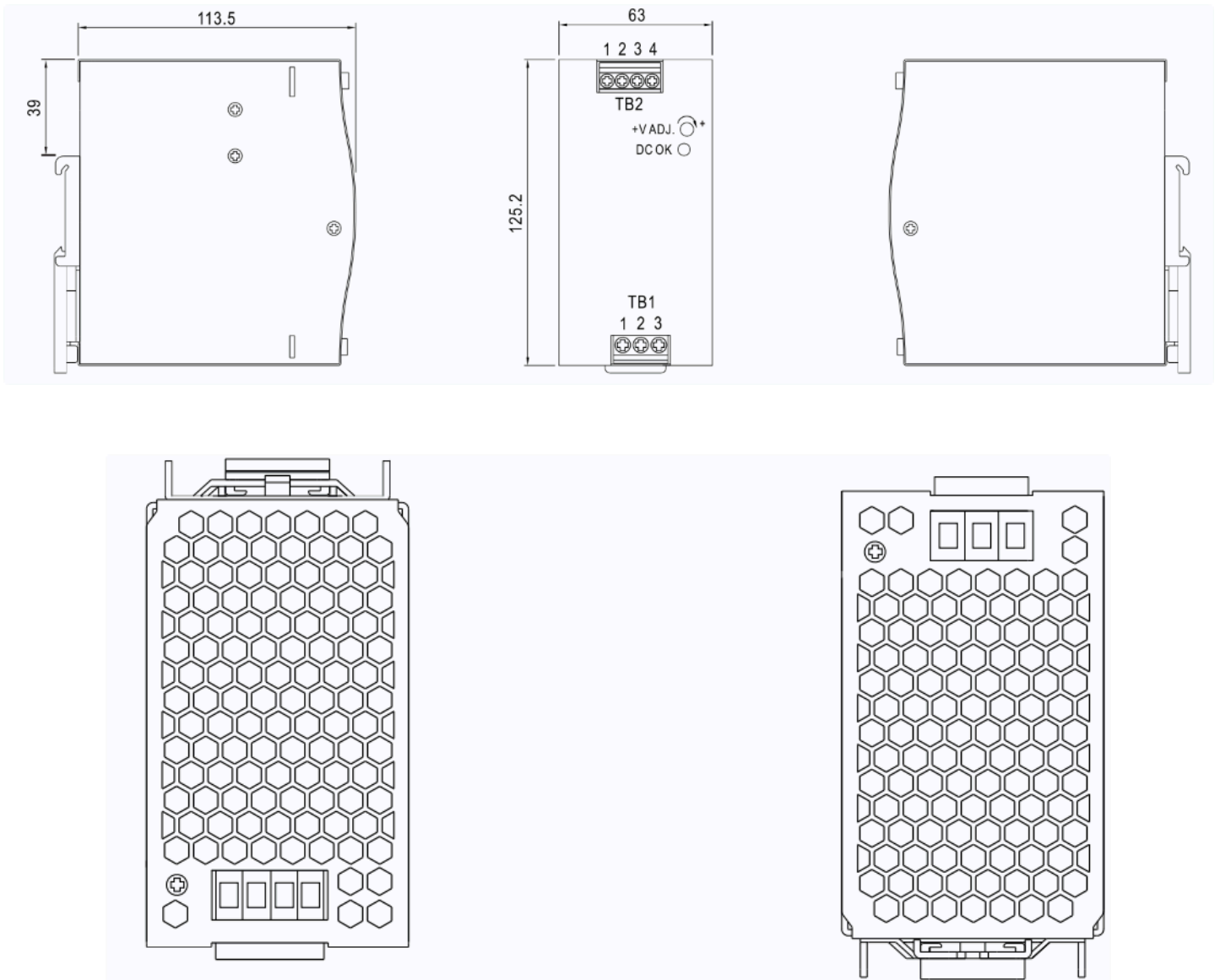
	ISED24024	Over Voltage protection value 14V - 17V
	ISED12024	Over Voltage protection value 29V - 33V
	ISMDR4012	Over Voltage protection value 15.6V - 18V
	ISMDR4024	Over Voltage protection value 31.2V - 36V
Over Voltage	Protection type: Shut down o/p voltage, re-power on to recover.	
Overload	105 ~ 150% rated output power.	
	Protection type: Constant current limiting, recovers automatically after fault condition is removed.	

1.5 Mechanical dimensions

1.5.1 ISEDR24024 and ISEDR12024

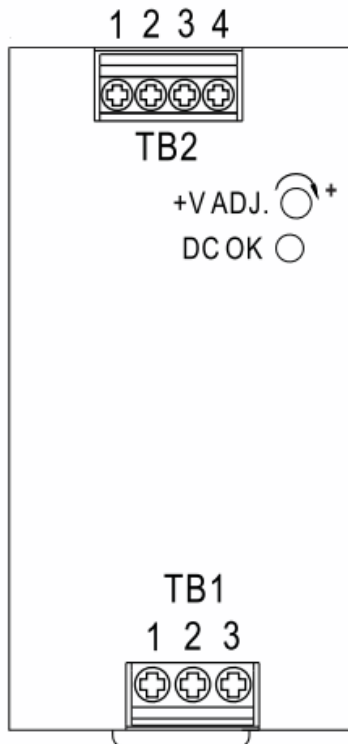


1.5.2 ISMDR4012 and ISMDR4024



1.6 Serigraphy

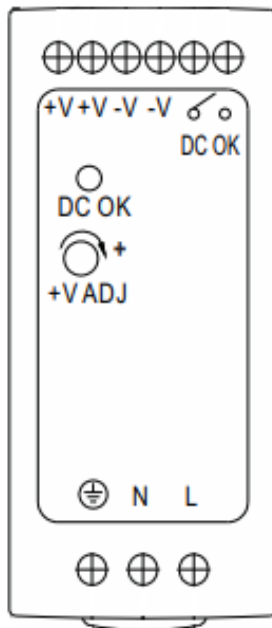
1.6.1 ISEDR12024 and ISEDR12024



TB2 terminal pin definition	
Pin number	Pin function
1,2	DC OUTPUT-V
3,4	DC OUTPUT+V

TB1 terminal pin definition	
Pin number	Pin function
1	FG
2	AC/N or DC-
3	AC/L or DC+

1.6.2 ISMDR4012 and ISMDR4024



Marking	No.	Assignment
+	1	DC(+) Output Terminal
+	2	
-	3	DC(-) Output Terminal
-	4	
L	5	AC(L) Input Terminal
N	6	AC(N) Input Terminal
≡	7	AC Grounding Terminal
V-ADJ	/	DC Output voltage adjustment trimmer
DC OK	/	DC Output OK indication LED (Green)

2 Operating Specifications:

2.1 Environment

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Ambient Operating temperature	Startup at rated voltage	-20		60	°C
Operating Relative humidity	Non Condensing	20		90	% RH
Storage Temperature	Humidity 10 - 95% RH	-40		85	°C
Cooling	Free air convection				
Mounting Method	Vertical				
Dimensions (WxHxD)	ISEDR24024	63.0 x 125.2 x 113.5 mm (2.48 x 4.929 x 4.46 inch)			
	ISEDR12024	40.0 x 125.2 x 113.5 mm (1.57 x 4.929 x 4.46 inch)			
	ISMDR4012	40.0 x 90.0 x 100.0 mm (1.57 x 3.54 x 3.93 inch)			
	ISMDR4024	40.0 x 90.0 x 100.0 mm (1.57 x 3.54 x 3.93 inch)			
Weight	ISEDR24024	880 g			
	ISEDR12024	489 g			
	ISMDR4012	300 g			
	ISMDR4024	300 g			
Packing	ISEDR24024	15pcs / 15.5Kg / 1.16cuft / carton			
	ISEDR12024	30pcs / 15.5Kg / 1.16cuft / carton			
	ISMDR4012	42pcs / 13.6Kg / 0.82cuft / carton			
	ISMDR4024	42pcs / 13.6Kg / 0.82cuft / carton			

2.2 Safety / EMC

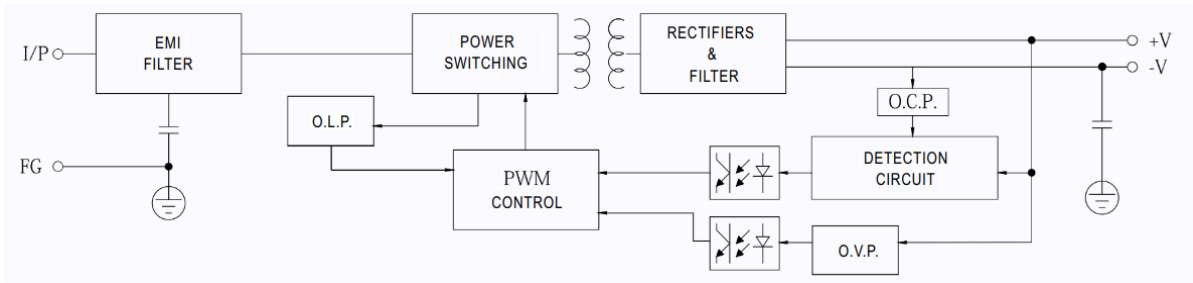
Withstand Voltage	I/P-O/P: 1.5KVac, I/P-FG: 1.5KVac, O/P-FG: 0.5KVac	
Isolation Resistance	100MΩ Max. / 500Vdc / 25°C / 70%RH	
Safety	ISED24024	Design refer to EN60204-1
	ISED12024	Design refer to EN60204-1
	ISM4012	Design refer to UL60950-1, Class I
	ISM4024	Design refer to UL60950-1, Class I

EMC *Note 5	EMC Emission: Compliance to EN55011, EN55022 (CISPR32) EMC Immunity: Compliance to EN61000-4-2, 3, 4, 5, 6, 8, 11
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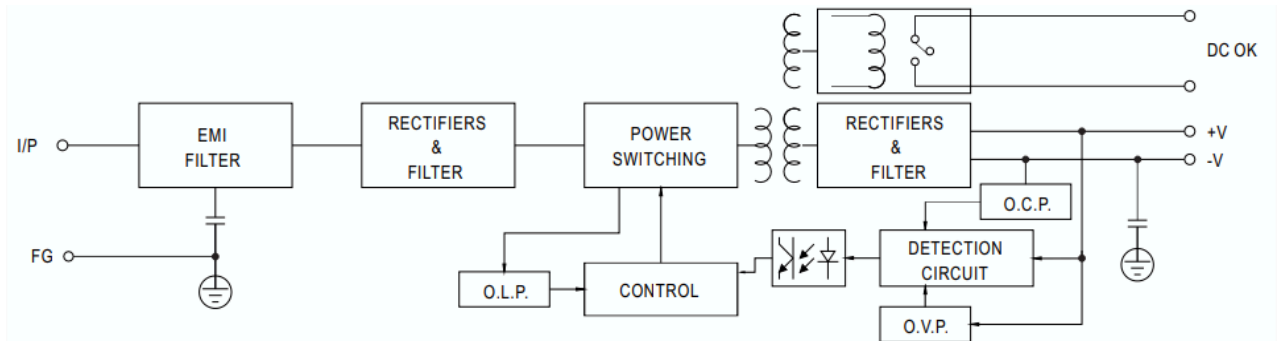
Note 5: The power supply is considered a component which will be installed into the final equipment. The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to “EMI testing of component power supplies”.

3 Block diagram

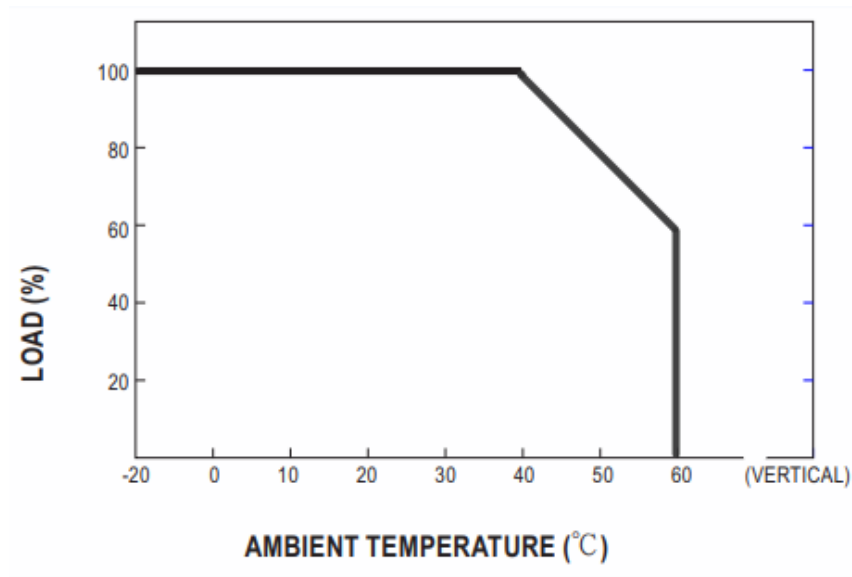
3.1 ISEDR24024 and ISEDR12024



3.2 ISMDR4012 and ISMDR4024

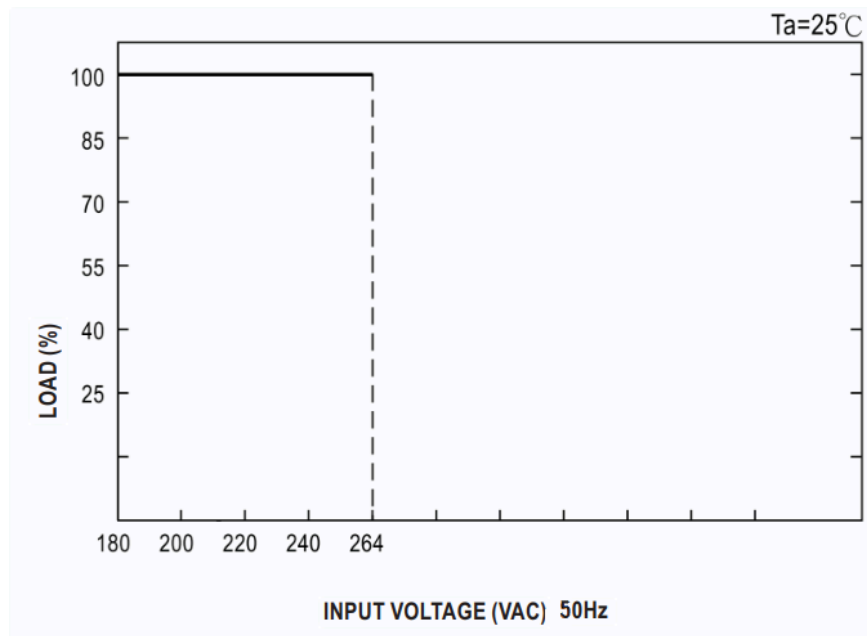


4 Derating Curve

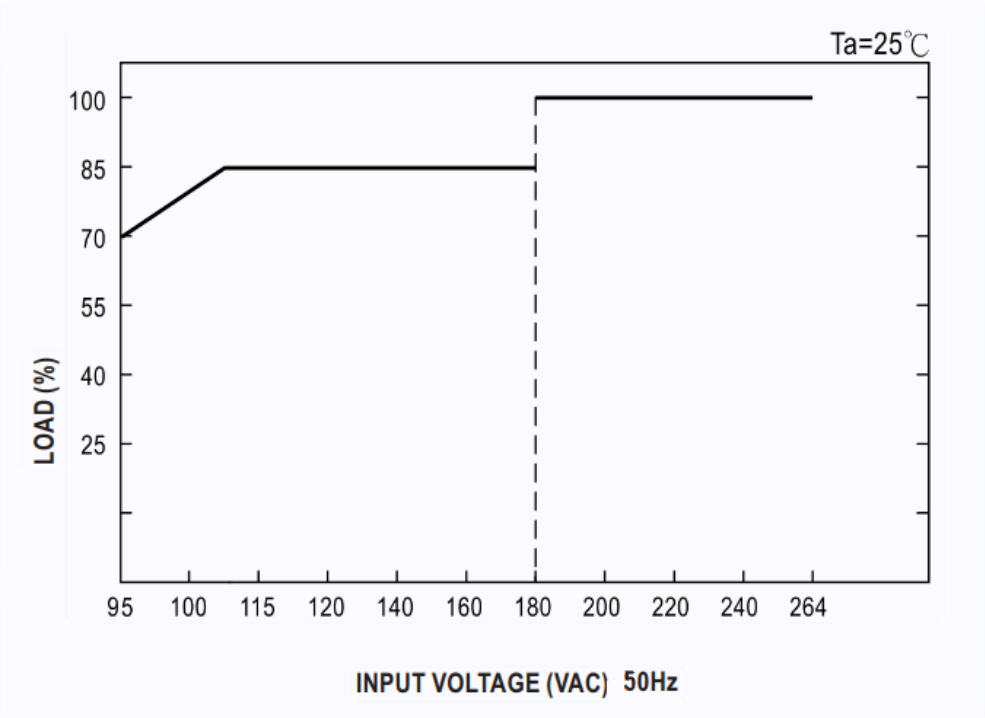


5 Output Derating VS Input Voltage

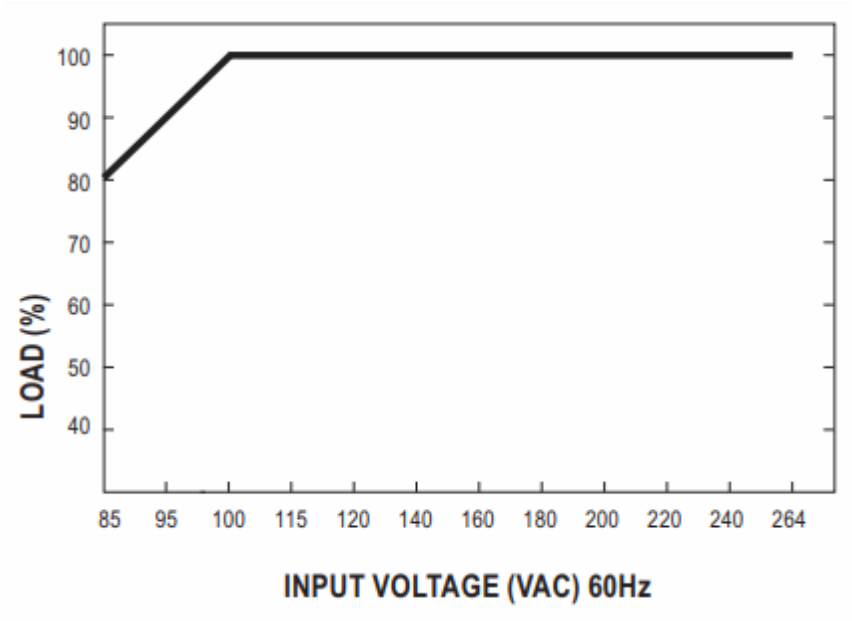
5.1 ISEDR24024



5.2 ISEDR12024



5.3 ISMDR4012 and ISMDR4024



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