APS-120-12 Datasheet

Aiming to create better and safer working environments and life experiences through the products we deliver.

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120W DIN Rail Type DC-DC Converter

APS-120-12

APS-120-12 is a 120W DIN Rail type DC-DC converter with main features including DIN rail-type easy installation, ultra slim width (32mm), 2:1 wide input voltage, fanless design, -40~+70℃ wide operating temperature, 4KVdc I/O isolation, 150% peak load, adjustable output voltage and full protective functions. APS-120-12 is 16.8~33.6V input and 12V output and can be used for industrial & railway control, security control, communication system and other fields. Suitable applications include DC buck/boost regulator, increasing system insulation level and voltage drop compensation along cable etc.

IEC62368-1 UL62368-1 AS/NZS 62368.1 TPTC004

Features & Benefits

- Compliance to BS EN/EN50155 and BS EN/EN45545-2 railway standard
- Width only 32mm
- 2:1 wide input range
- -40~+70℃ wide working temperature
- 150% peak load capability
- DC output adjustable
- Cooling by free air convection
- Can be installed on DIN rail TS-35/7.5 or 15
- Protections: Short circuit / Overload / Over voltage / Input reverse polarity Input under voltage protection
- 4KVdc I/O isolation(Reinforced isolation)
- 3 years warranty
- Suitable for bus，tram，metro or railway system, industrial control system, semi-conductor fabrication equipment, factory automation, electro-mechanical, wireless network, telecom or datacom system

Ordering Information

Model	Output power	Output Voltage & Current	Input Voltage	Efficiency
APS-120-12	120 W	12 V/10 A	16.8 ~ 33.6VDC	89% Typ.

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Specifications

Output		
DC Voltage		12V
Rated Current		10A
Current Range		0 ~ 10A
Rated Power		120W
Peak Current		15A
Peak Power	**Note.5**	180W (3sec.)
Ripple & Noise (Max.)	**Note.2**	50mVp-p
Voltage ADJ. Range		9 ~ 14V
Voltage Tolerance	**Note.3**	±1.0%
Line Regulation		±0.5%
Load Regulation		±1.0%
Setup, Rise Time		500ms, 60ms @24Vdc
Hold up Time (Typ.)		Please refer to Hold up Time(Load de-rating curve)
Input		
Voltage Range	**Note.4**	16.8 ~ 33.6Vdc
Efficiency (Typ.)		89%
DC Current (Typ.)		5.6A @24Vdc
Inrush Current (Typ.)		5A @ 24Vdc
Interruption of Voltage Supply		EN50155:2007-comply with S1 level (6ms) @ full load, S2 level (10ms) @ 70% load
		EN50155:2017-comply with S1 level
Protection		
Overload		Normally works within 150% rated output power for more than 3 seconds and then constant current protection 105~135% rated output power with auto-recovery
Over Voltage		14.4 ~ 16.8V
		Protection type : Shut down o/p voltage, re-power on to recover
Reverse Polarity		By internal MOSFET, no damage, recovers automatically after fault condition removed
Under Voltage Lockout		24Vin (B - type) :Power ON≥16.8V , OFF≤16.5V
Environment		
Working Temp.		-40 ~ +70℃ (Refer to "Derating Curve")
Working Humidity		5 ~ 95% RH non-condensing
Storage Temp., Humidity		-40 ~ +85℃, 5 ~ 95% RH non-condensing
Temp. Coefficient		±0.03%/℃ (0 ~ 55℃)
Vibration		Component:10 ~ 500Hz, 5G 10min./1cycle, 60min. each along X, Y, Z axes; Mounting: Compliance to IEC61373
Operating Altitude		5000 meters

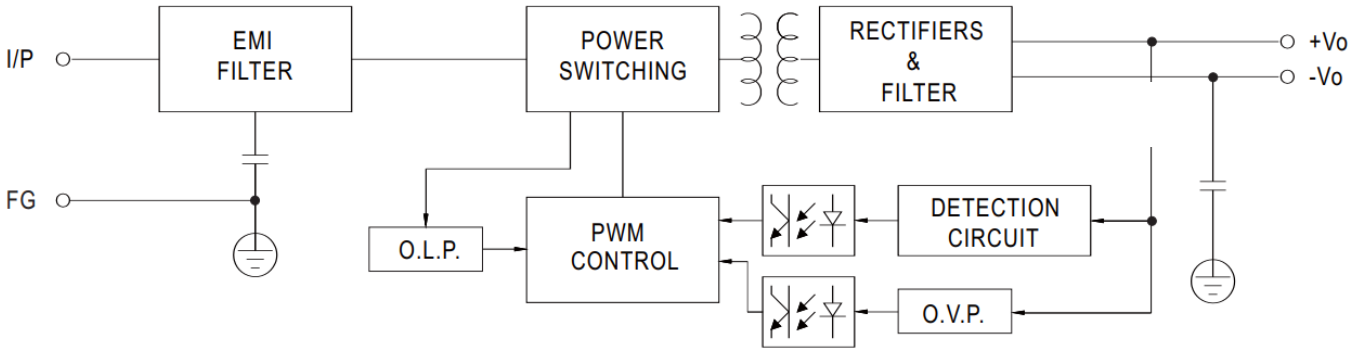
Safety & EMC	Note.6		
Safety Standards	IEC 62368-1, UL 62368-1, EAC TP TC 004, AS/NZS 62368.1 approved; Design refer to UL508		
Withstand Voltage	I/P-O/P:4KVdc I/P-FG:2.5KVdc O/P-FG:2.5KVdc		
Isolation Resistance	I/P-O/P, I/P-FG, O/P-FG:>100M Ohms / 500Vdc / 25℃/ 70% RH		
EMC Emission	**Parameter**	**Standard**	**Test Level / Note**
	Conducted	BS EN/EN55032	Class B
	Radiated	BS EN/EN55032	Class B
	Voltage Flicker	BS EN/EN61000-3-3	-----
	Harmonic Current	-----	-----
EMC Immunity	BS EN/EN55035 , BS EN/EN61000-6-2(BS EN/EN50082-2)		
	Parameter	**Standard**	**Test Level / Note**
	ESD	BS EN/EN61000-4-2	Level 3, 8KV air ; Level 3, 6KV contact; criteria A
	Radiated	BS EN/EN61000-4-3	Level 3, 10V/m ; criteria A
	EFT / Burst	BS EN/EN61000-4-4	Level 3, 2KV ; criteria A
	Surge	BS EN/EN61000-4-5	Level 3, 1KV/Line-Line ;Level 3, 2KV/Line-Line-FG ;criteria A
	Conducted	BS EN/EN61000-4-6	Level 3, 10V ; criteria A
	Magnetic Field	BS EN/EN61000-4-8	Level 4, 30A/m ; criteria A
Railway Standard	Compliance to BS EN/EN45545-2 for fire protection ; Meet BS EN/EN50155 / IEC60571 including IEC61373 for shock & vibration, BS EN/EN50121-3-2 for EMC		
Others			
MTBF	1769.5K hrs min. Telcordia SR-332 (Bellcore) ; 214.5K hrs min. MIL-HDBK-217F (25℃)		
Dimension	32*125.2*102mm (W*H*D)		
Packing	510g; 28pcs/15.3Kg/1.22CUFT		

Note

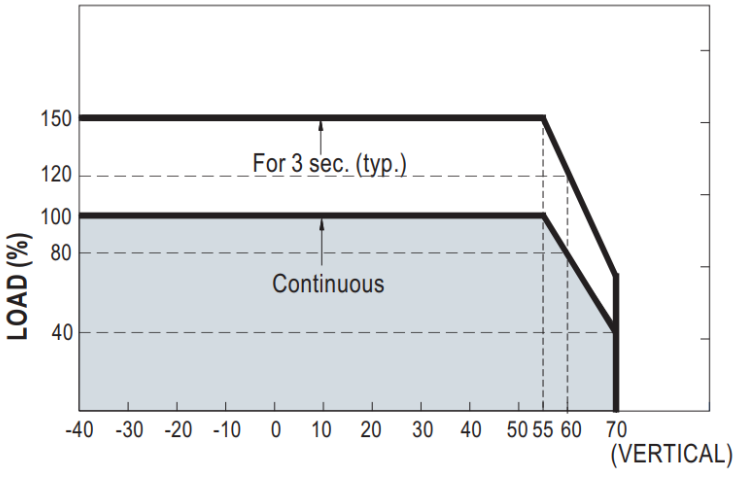
1. All parameters NOT specially mentioned are measured at normal input (C:48Vdc , D:110Vdc) , rated load and 25℃ of ambient temperature.
2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1μf & 47μf parallel capacitor.
3. Tolerance : includes set 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. 3 seconds max., please refer to peak loading curves.
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.
7. The ambient temperature derating of 3.5℃/1000m with fanless models and of 5℃/1000m with fan models for operating altitude higher than 2000m(6500ft).

➢ Block Diagram

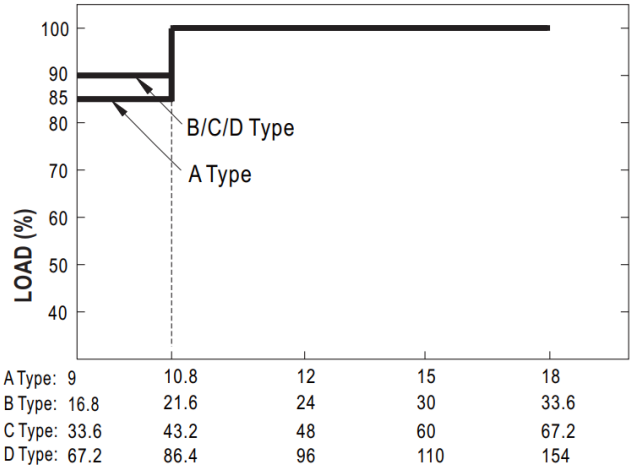
fosc : 65KHz



➢ Derating Curve



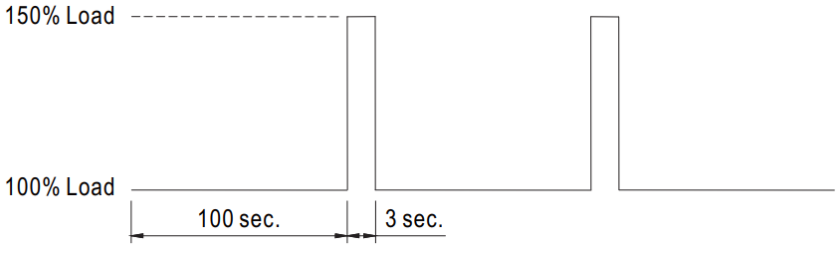
Ambient Temperature (℃)

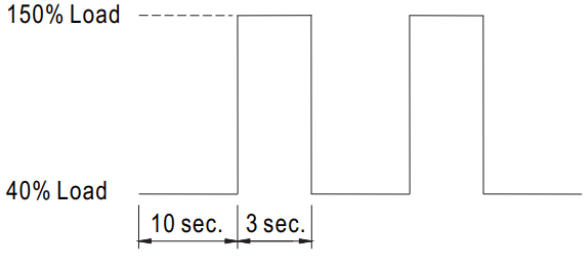


A Type:	9	10.8	12	15	18
B Type:	16.8	21.6	24	30	33.6
C Type:	33.6	43.2	48	60	67.2
D Type:	67.2	86.4	96	110	154

Input Voltage

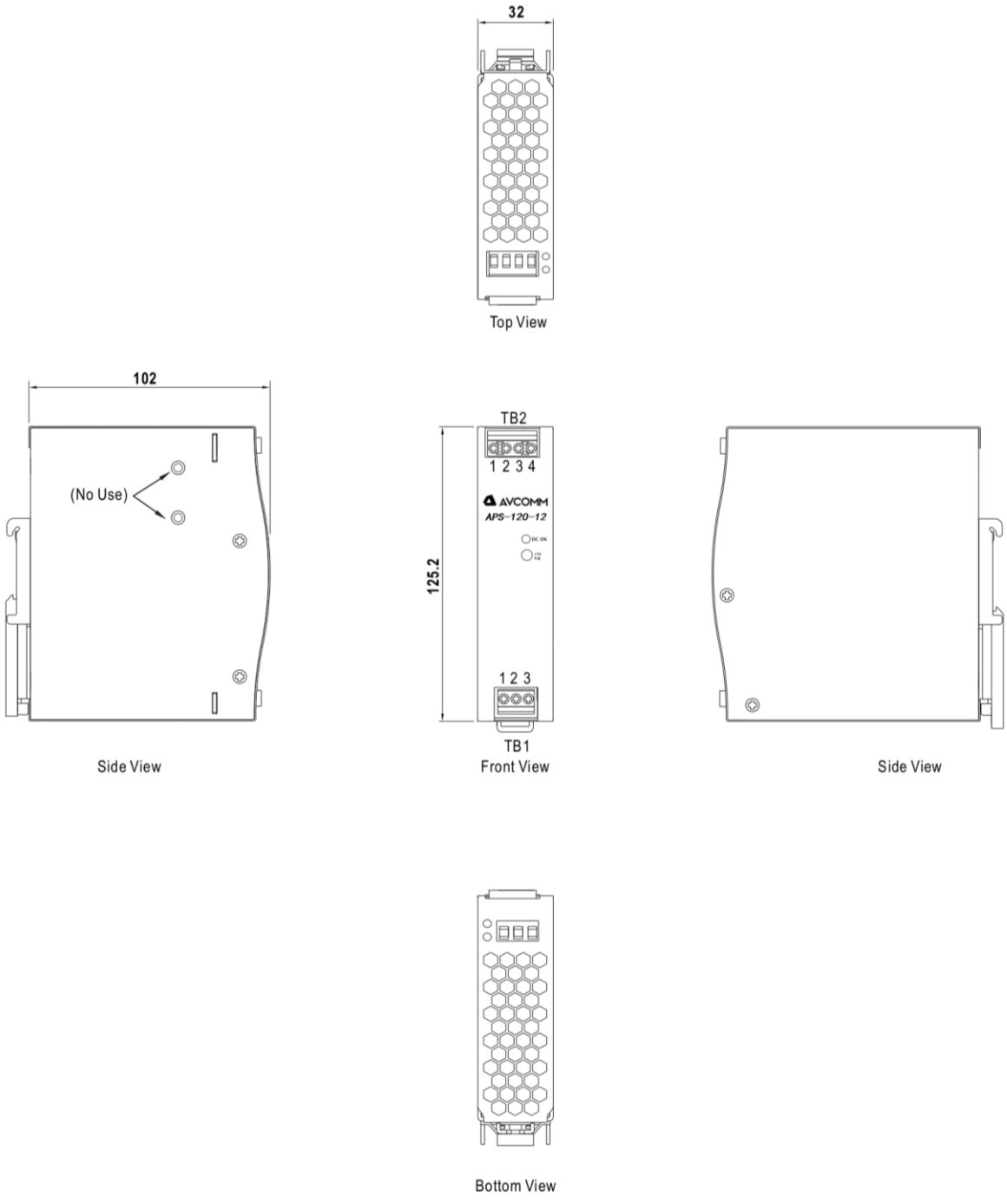
➢ Peak Loading





Installation dimensions

Unit: mm



Terminal Pin No. Assignment (TB2)

Pin No.	Assignment
1,2	DC Output -Vo
3,4	DC Output +Vo

Terminal Pin No. Assignment (TB1)

Pin No.	Assignment
1	FG ⏚
2	DC Input -Vin
3	DC Input +Vin