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POWERBOX Automotive Line ENA30W Series 30W 4:1 Single and Dual Output DC/DC Converter

Features

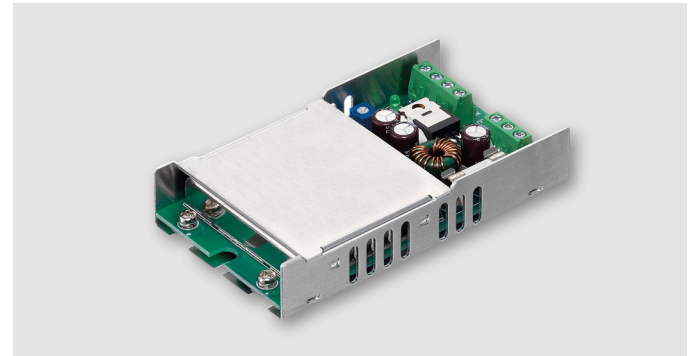
No minimum load required
1600VDC input to output isolation
Application of chassis-mount DC/DC converter
Screw terminals for input and output connections
Internal output LED indicator
Undervoltage, over current, short circuit, and over voltage protection
Reverse polarity protection
Fuse included
Meet EN55022 Class B
Safety meets UL60950-1, EN60950-1 and IEC60950-1
CE marked
Compliant to RoHS II and REACH

Input

Voltage range	24Vin(nom)	10~40VDC
	48Vin(nom)	18~75VDC
Input fuse (slow blow)	24Vin(nom)	6A typ
	48Vin(nom)	4A typ
Inrush current	15A typ.	
Reflected ripple current	Nominal input, full load	15mA p-p typ
Start-up voltage	24Vin(nom)	10VDC max
	48Vin(nom)	18VDC max
Shutdown voltage	24Vin(nom)	8VDC typ
	48Vin(nom)	16VDC typ
Start up time	Power up	100ms typ
	Remote On/Off	20ms typ
	Constant resistive load.	
Input surge voltage	24Vin(nom)	50VDC, 100ms max
	48Vin(nom)	100VDC, 100ms max
Remote ON/OFF (option)	Referred to -Vin pin	
	Positive logic (standard)	
	DC-DC ON Open or 3~12V	
	DC-DC OFF Short or 0~1.2V	
	Negative logic (option)	
	DC-DC ON Short or 0~1.2V	
DC-DC OFF Open or 3~12V		
Input current of Ctrl pin ± 0.5 mA.		
Remote off input current 3mA typ.		

Output

Voltage accuracy	3.3Vout	$\pm 1.5\%$
	Others	$\pm 1.0\%$
Line regulation	LL to HL at full load	$\pm 0.5\%$
Load regulation	3.3Vout	$\pm 1.5\%$
	Others	$\pm 1.0\%$
Cross regulation	Dual	$\pm 5.0\%$
	Assymetrical load 25%/100% FL.	
Voltage adjustability	Single output 28Vout	-3 +17%
	Others	$\pm 10\%$
Ripple and noise	Single 3.3Vout, 5Vout	50mV p-p typ



	12Vout, 15Vout	75mV p-p typ
	24Vout, 28Vout	130mV p-p typ
	Dual all	100mV p-p typ
	Measured by 20MHz bandwidth.	
Temperature coefficient	$\pm 0.02\%/^{\circ}\text{C}$.	
Transient response	250 μs typ, 25% load step change.	
Over voltage protection	3.3Vout	3.9VDC typ
	5Vout	6.2VDC typ
	12Vout	15VDC typ
	15Vout	18VDC typ
	24Vout	30VDC typ
	28Vout	36VDC typ
	Zener diode clamp.	
Output indicator	Green LED.	
Overload protection	150% of Iout rated; hiccup.	
Short circuit protection	Continuous, automatic recovery.	

Environmental

Operating ambient temp.	-40 $^{\circ}\text{C}$ ~ +59 $^{\circ}\text{C}$ without derating.	
	+59 $^{\circ}\text{C}$ ~ +85 $^{\circ}\text{C}$ with derating.	
Over temp. protection	DC/DC converter case 115 $^{\circ}\text{C}$.	
Storage temperature	-40 $^{\circ}\text{C}$ to +105 $^{\circ}\text{C}$.	
Thermal shock	MIL-STD-810F.	
Vibration	MIL-STD-810F.	
Relative humidity	5-95% RH.	

General

Isolation voltage	Input to output 1 minute	1600VDC min
	Input (output) to case 1 minute	1600VDC min
Isolation resistance	500VDC	1G Ω
Isolation capacitance	4000pF, max.	
Switching frequency	300KHz typ.	
Chassis material	Aluminum.	
Weight	110g.	
MTBF	MIL-STD-217F, full load	8.277 x 10 ⁵ hrs

Standards

Safety approvals	UL60950-1, EN60950-1, IEC60950-1.	
EMI	EN55022 Class B.	
ESD	EN61000-4-2, air ± 8 KV, contact ± 6 KV, Criteria A.	
Radiated immunity	EN61000-4-3, 10V/m, Criteria A.	
Fast transient	EN61000-4-4, ± 2 KV, Criteria A.	
Surge	EN61000-4-5, ± 1 KV, Criteria A.	
Conducted immunity	EN61000-4-6, 10 Vr.m.s., Criteria A.	

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Model Number	Input Range	Output Voltage	Output Current @Full Load	Input Current @No Load	Efficiency	Max Capacitor Load ¹⁾
ENA30-24S3P3W	10 ~ 40 VDC	3.3 VDC	6 A	51 mA	86%	19500 μ F
ENA30-24S05W	10 ~ 40 VDC	5 VDC	6 A	66 mA	86%	10200 μ F
ENA30-24S12W	10 ~ 40 VDC	12 VDC	2.5 A	68 mA	86%	3300 μ F
ENA30-24S15W	10 ~ 40 VDC	15 VDC	2 A	74 mA	87%	1100 μ F
ENA30-24S24W	10 ~ 40 VDC	24 VDC	1.25 A	38 mA	83%	500 μ F
ENA30-24S28W	10 ~ 40 VDC	28 VDC	1 A	44 mA	84%	340 μ F
ENA30-24D12W	10 ~ 40 VDC	\pm 12 VDC	\pm 1.25 A	33 mA	83%	\pm 1000 μ F
ENA30-24D15W	10 ~ 40 VDC	\pm 15 VDC	\pm 1 A	39 mA	84%	\pm 680 μ F
ENA30-48S3P3W	18 ~ 75 VDC	3.3 VDC	6 A	31 mA	86%	19500 μ F
ENA30-48S05W	18 ~ 75 VDC	5 VDC	6 A	31 mA	87%	10200 μ F
ENA30-48S12W	18 ~ 75 VDC	12 VDC	2.5 A	37 mA	86%	3300 μ F
ENA30-48S15W	18 ~ 75 VDC	15 VDC	2 A	47 mA	87%	1100 μ F
ENA30-48S24W	18 ~ 75 VDC	24 VDC	1.25 A	29 mA	84%	500 μ F
ENA30-48S28W	18 ~ 75 VDC	28 VDC	1 A	29 mA	85%	340 μ F
ENA30-48D12W	18 ~ 75 VDC	\pm 12 VDC	\pm 1.25 A	27 mA	84%	\pm 1000 μ F
ENA30-48D15W	18 ~ 75 VDC	\pm 15 VDC	\pm 1 A	27 mA	85%	\pm 680 μ F

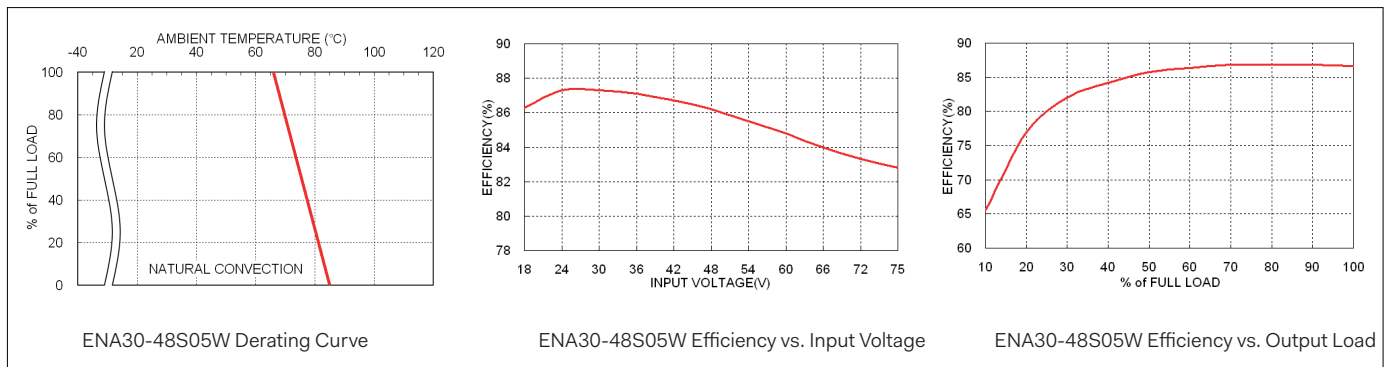
Note:

1. Test by minimum input and constant resistive load.

Part Number Structure

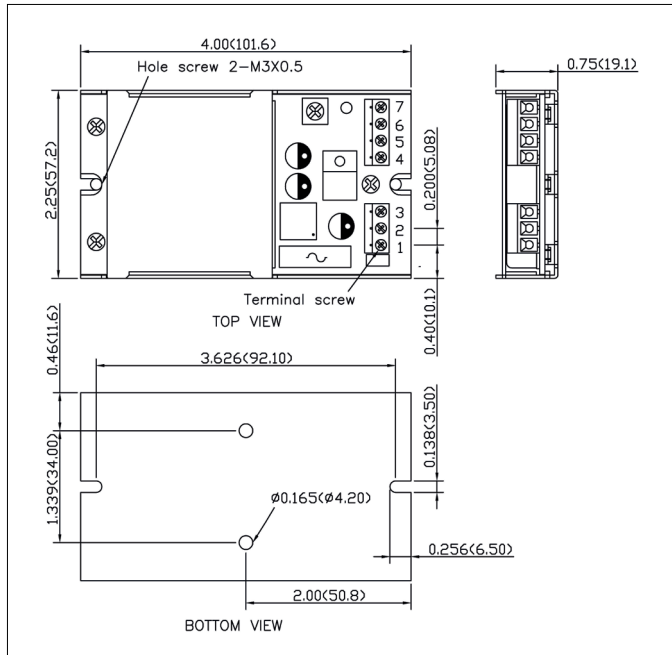
ENA30 - 48	S	05	W	-	N	EC
Series Name	Input Voltage	Output Quantity	Output Voltage	Input Range	Remote Control Option	Assembly Option
	24: 10-40VDC 48: 18-75VDC	S: Single	3P3: 3.3VDC 12: 12VDC 15: 15VDC 24: 24VDC 28: 28VDC	4:1	<input type="checkbox"/> : Positive logic <input type="checkbox"/> : Negative logic	<input type="checkbox"/> : No Assembly option EC: Enclosed Mounting Type DR: Din Rail Mounting Type ED: Enclosed & Din Rail Mounting Type
		D: Dual	12: \pm 12VDC 15: \pm 15VDC			

Derating Curve

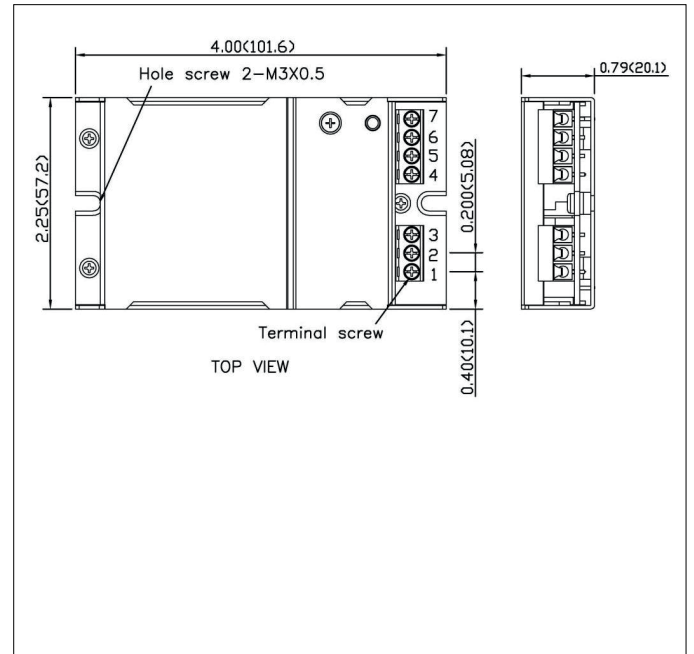


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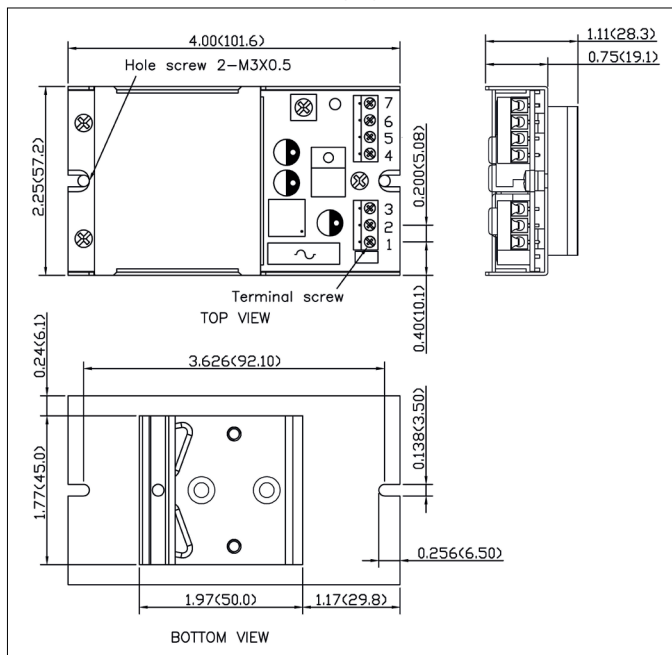
Mechanical Chassis Mounting Type



Mechanical Enclosed Mounting Type



Mechanical Din Rail Mounting Type



Pin Connection

Pin	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	Ctrl	Ctrl
4	NC	NC
5	-Vout	-Vout
6	+Vout	Common
7	NC	+Vout

* NC: No Connection

* Screw terminals – wire range from 14 to 18 AWG

1. All dimensions in Inch (mm)
2. Tolerance : X.XX±0.02 (X.X±0.5)
3. Hole screw locked torque : MAX 5.0kgf-cm (0.49N-m)
4. Terminal screw locked torque : MAX 2.5kgf-cm (0.25N-m)

Specifications are subject to change without notice.