



Automotive Line – ENA40W Series

40 W 4:1 SINGLE & DUAL OUTPUT DC/DC CONVERTER

Specifications

INPUT

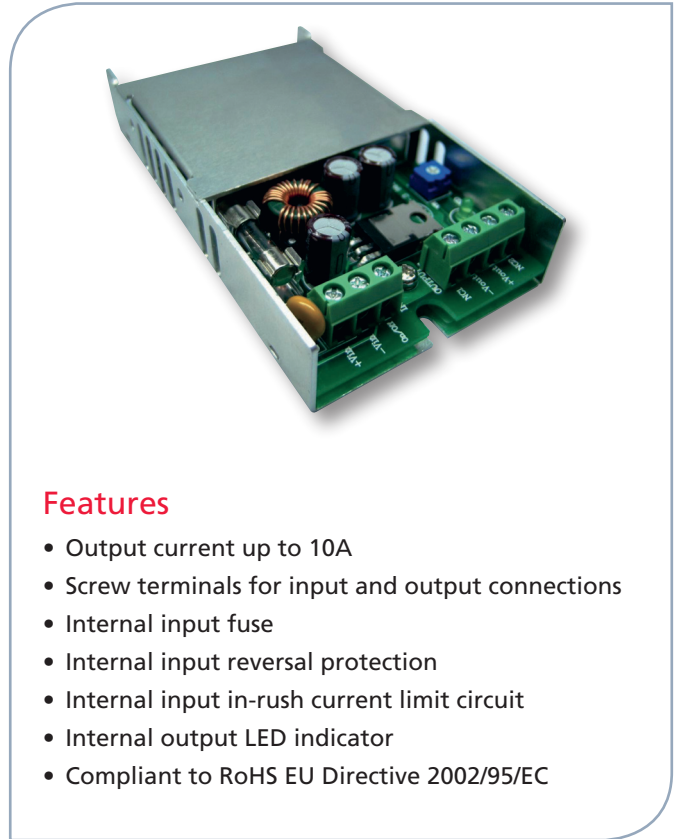
Voltage range	24V nominal input	9.5-36VDC
	48V nominal input	18-75VDC
Input surge voltage	24V input	50VDC
	48V input	100VDC
100mS max	24V input	8A
	48V input	4A
Input fuse (fast acting)	15A typ.	
Inrush current	15mA p-p.	
Reflected ripple current	Power up 100mS typ.	
Start up time	Remote on/off 20mS typ.	
	Nominal Vin and constant resistive load.	
Start-up voltage	24V input	9.5VDC
	48V input	18VDC
Shutdown voltage	24V input	8VDC
	48V input	16VDC
Remote ON/OFF ⁶	Positive logic (standard):	
	DC/DC ON: Open or $3V < V_r < 12V$	
	DC/DC OFF: Short or $0V < V_r < 1.2V$	
	Negative logic (option):	
	DC/DC ON: Short or $0V < V_r < 1.2V$	
	DC/DC OFF: Open or $3V < V_r < 12V$	
Input current of remote control pin		
Nominal Vin -0.5mA-+0.5mA.		
Remote off state input current:		
24 Vin: 10mA. 48Vin: 5mA.		

OUTPUT

Power	40W max.	
Voltage accuracy	Single/dual $\pm 1\%$. Single (3.3Vo) $\pm 1.5\%$.	
Minimum load ⁷	See table.	
Voltage adjustability ⁸	Single output $\pm 10\%$.	
Line regulation	Single/dual $\pm 0.5\%$. LL to HL at full load.	
Load regulation ⁹	Single/dual $\pm 1\%$. Min load to full load.	
Cross regulation (dual)	$\pm 5\%$, asymmetrical load 25%/100% FL.	
Ripple and noise	20 MHz bandwidth, see table.	
Temperature coefficient	$\pm 0.02\%/^{\circ}\text{C}$ max.	
Transient response	250 μS , recovery time 25% load step change.	
Overvoltage protection (zener diode clamp)	3.3V output	3.9V
	5V output	6.2V
	12V output	15V
	15V output	18V
Output indicator	Green LED.	
Overload protection	150% max, % of FL at nominal input.	
Short circuit protection	Hiccup, automatics recovery.	

ENVIRONMENTAL

Operating temperature	-40°C to +50°C (without derating).	
	+50°C to +85°C (with derating)	
Storage temperature	-40°C to +105°C.	
Over temp protection	110°C typ.	
Thermal shock	MIL-STD-810F.	
Vibration	MIL-STD-810F	
Relative humidity	5-95% RH.	



Features

- Output current up to 10A
- Screw terminals for input and output connections
- Internal input fuse
- Internal input reversal protection
- Internal input in-rush current limit circuit
- Internal output LED indicator
- Compliant to RoHS EU Directive 2002/95/EC

GENERAL

Efficiency	See table.
Isolation voltage	1600VDC min, input to output.
	1600VDC min, input (output) to case.
Isolation resistance	10 ⁹ ohms, min.
Isolation capacitance	4500pF, max.
Switching frequency	300KHz typ.
Chassis material	Aluminum.
Dimensions	101.6 x 57.15 x 19.05 mm.
Weight	122g.
MTBF ¹	Bellcore TR-NWT-000332: 9.668 x 10 ⁶ hrs. MIL-STD-217F: 1.511 x 10 ⁶ hrs.

STANDARDS

Safety standards	IEC60950-1, UL60950-1, EN60950-1.
EMC	
EMI	EN55022 Class B.
ESD	EN61000-4-2 Criteria A, air $\pm 8\text{kV}$, contact $\pm 6\text{kV}$.
Radiated immunity	EN61000-4-3 Criteria A, 10V/m.
Fast transient	EN61000-4-4 Criteria A, 2kV.
Surge	En61000-4-5 Criteria A, 1kV.
Conducted immunity	EN61000-4-6 Criteria A, 10 Vr.m.s.

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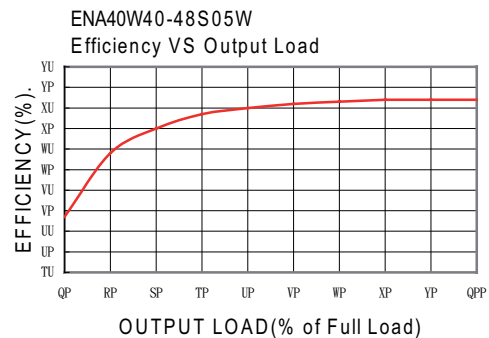
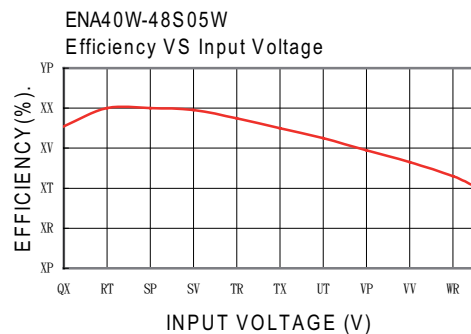
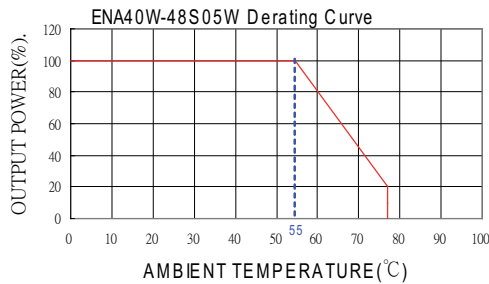
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MODEL NUMBER	INPUT RANGE	OUTPUT VOLTAGE	OUTPUT CURRENT		OUTPUT ⁴ RIPPLE&NOISE	INPUT CURRENT		EFFICIENCY ⁴	CAPACITOR ⁵ LOAD MAX
			MIN LOAD	FULL LOAD		NO LOAD ³	FULL LOAD ²		
ENA40-24S3P3W	9.5 – 36 VDC	3.3 VDC	0mA	10000mA	50mVp-p	81mA	1719mA	84	25750µF
ENA40-24S05W	9.5 – 36 VDC	5 VDC	0mA	8000mA	50mVp-p	101mA	2058mA	85	13600µF
ENA40-24S12W	9.5 – 36 VDC	12 VDC	50mA	3333mA	75mVp-p	53mA	2058mA	85	2360µF
ENA40-24S15W	9.5 – 36 VDC	15 VDC	50mA	2666mA	75mVp-p	54mA	2058mA	85	1510µF
ENA40-24D12W	9.5 – 36 VDC	± 12 VDC	±65 mA	± 1667mA	120mVp-p	63mA	2084mA	84	± 1200µF
ENA40-24D15W	9.5 – 36 VDC	± 15 VDC	±50 mA	± 1333mA	150mVp-p	74mA	2084mA	84	± 750µF
ENA40-48S3P3W	18 – 75 VDC	3.3 VDC	0mA	10000mA	50mVp-p	61mA	848mA	85	25750µF
ENA40-48S05W	18 – 75 VDC	5 VDC	0mA	8000mA	50mVp-p	66mA	1004mA	87	13600µF
ENA40-48S12W	18 – 75 VDC	12 VDC	50mA	3333mA	75mVp-p	32mA	1016mA	86	2360µF
ENA40-48S15W	18 – 75 VDC	15 VDC	50mA	2666mA	75mVp-p	32mA	1016mA	86	1510µF
ENA40-48D12W	18 – 75 VDC	± 12 VDC	±65 mA	± 1667mA	120mVp-p	32mA	1029mA	85	± 1200µF
ENA40-48D15W	18 – 75 VDC	± 15 VDC	±60 mA	± 1333mA	150mVp-p	32mA	1029mA	85	± 750µF

Notes:

- BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C. MIL-HDBK-217F Notice2 @Ta=25 °C, Full load(Ground, Benign, controlled environment).
- Maximum value at nominal input voltage and full load.
- Typical value at nominal input voltage and no load.
- Typical value at nominal input voltage and full load.
- Test by minimum Vin and constant resistive load.
- The ON/OFF control pin voltage is referenced to -Vin To order negative logic ON/OFF control add the suffix-N (Ex:ENA40-48S05W-N)
- The output requires minimum loading on the output to maintain specified regulation. Operation in no-load condition will not damage these devices, however they may not meet all listed specification.
- Single output installs a potentiometer to adjust the output voltage.
- Load regulation for dual output: Min load to 100% load balanced on all outputs
- Screw terminals – wire range from 14 AWG to 18 AWG

Derating Curve

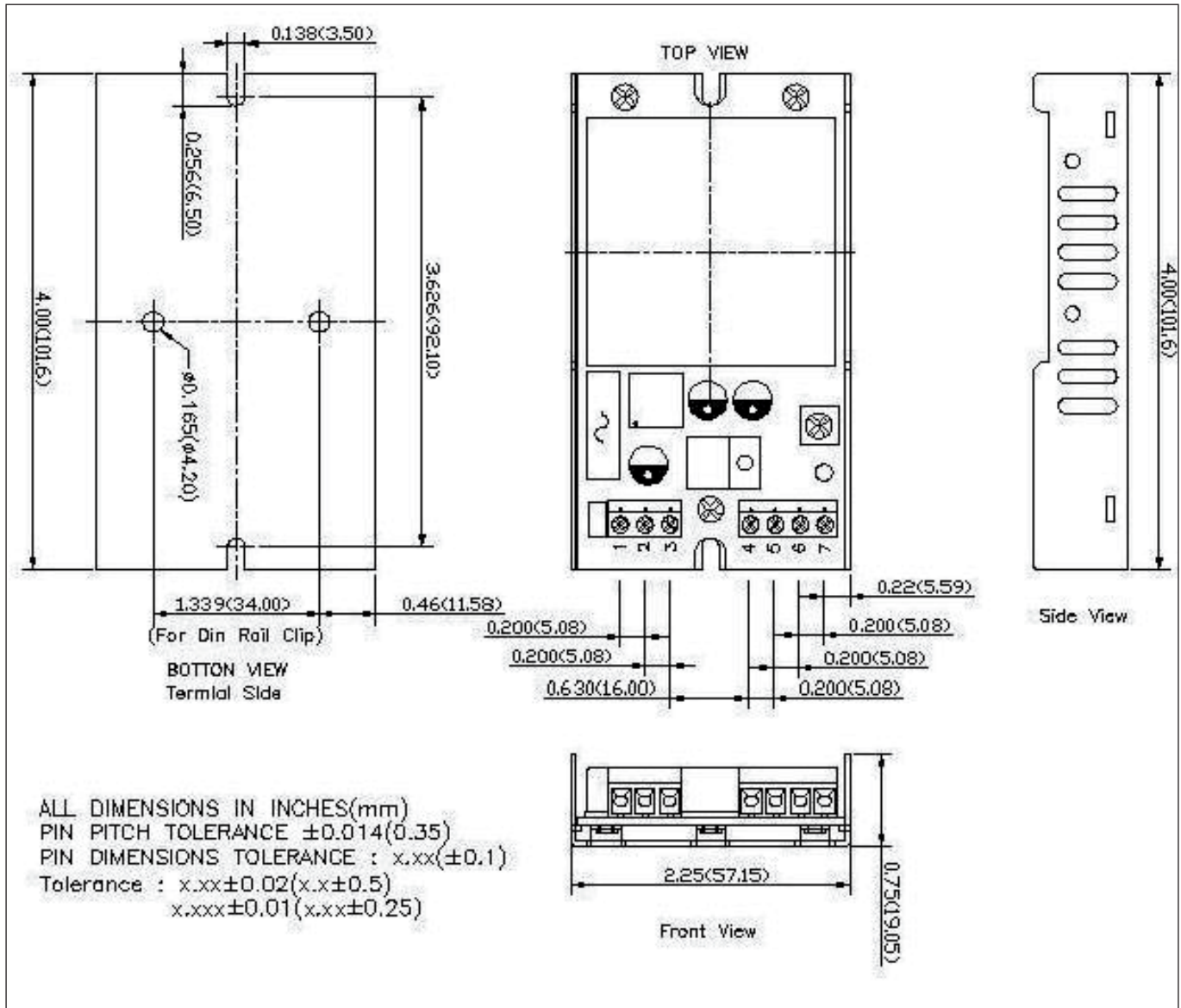




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Mechanical



PRODUCT OPTIONS TABLE	
OPTION	SUFFIX
With Heat Sink(Standard)	--
Din Rail Mounting Type	-DR
Negative remote ON/OFF logic	-N

PIN CONNECTION		
PIN	SINGLE	DUAL
1	+INPUT	+INPUT
2	-INPUT	-INPUT
3	CTRL	CTRL
4	NC	NC
5	-OUTPUT	-OUTPUT
6	+OUTPUT	COMMON
7	NC	+OUTPUT