

UFED40W SERIES

DC-DC CONVERTER

4:1 ULTRA WIDE INPUT RANGE
UP TO 40Watts



FEATURES

- NO MINIMUM LOAD REQUIRED
- 1600VDC INPUT TO OUTPUT ISOLATION
- APPLICATION OF CHASSIS-MOUNT DC/DC CONVERTERS
- SCREW TERMINALS FOR INPUT AND OUTPUT CONNECTIONS
- INTERNAL INPUT FUSE PROTECTION
- INTERNAL OUTPUT LED INDICATOR
- MEET EN55022 CLASS B
- SAFETY MEETS UL60950-1, EN60950-1, & IEC60950-1
- COMPLIANCE TO EN50155 AND EN45545-2 RAILWAY STANDARD
- CE MARKED
- COMPLIANT TO RoHS II & REACH

APPLICATIONS

- RAILWAY SYSTEM
- WIRELESS NETWORK
- TELECOM/DATACOM
- INDUSTRY CONTROL SYSTEM
- MEASUREMENT EQUIPMENT
- SEMICONDUCTOR EQUIPMENT

1600VDC ISOLATION	REMOTE CONTROL	UVP	OCP SCP	OVP	FUSE INCLUDED	INRUSH LIMIT	REVERSE POLARITY PROTECTION	LOW STANDBY POWER
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TECHNICAL SPECIFICATION

All specifications are typical at nominal input, full load and 25°C otherwise noted

Model Number	Input Range	Output Voltage	Output Current @Full Load	Input Current @ No Load	Efficiency	Maximum Capacitor Load (1)
	VDC	VDC	mA	mA	%	µF
UFED40-24S3P3W	9.5 ~ 36	3.3	10000	19	89	26600
UFED40-24S05W	9.5 ~ 36	5	8000	19	90	20000
UFED40-24S12W	9.5 ~ 36	12	3333	19	91	3900
UFED40-24S15W	9.5 ~ 36	15	2666	19	91	2600
UFED40-24S24W	9.5 ~ 36	24	1666	19	90	1300
UFED40-24D12W	9.5 ~ 36	±12	±1666	19	89	± 2600
UFED40-24D15W	9.5 ~ 36	±15	±1333	19	89	± 1600
UFED40-24D24W	9.5 ~ 36	±24	±833	19	90	±650
UFED40-48S3P3W	18 ~ 75	3.3	10000	14	89	26600
UFED40-48S05W	18 ~ 75	5	8000	14	90	20000
UFED40-48S12W	18 ~ 75	12	3333	14	91	3900
UFED40-48S15W	18 ~ 75	15	2666	14	91	2600
UFED40-48S24W	18 ~ 75	24	1666	14	90	1300
UFED40-48D12W	18 ~ 75	±12	±1666	14	89	± 2600
UFED40-48D15W	18 ~ 75	±15	±1333	14	89	± 1600
UFED40-48D24W	18 ~ 75	±24	±833	14	90	±650
UFED40-110S3P3W	43 ~ 160	3.3	10000	10	87	26600
UFED40-110S05W	43 ~ 160	5	8000	10	88	20000
UFED40-110S12W	43 ~ 160	12	3333	10	89.5	3900
UFED40-110S15W	43 ~ 160	15	2666	10	90	2600
UFED40-110S24W	43 ~ 160	24	1666	10	89	1300
UFED40-110D12W	43 ~ 160	±12	±1666	10	88	± 2600
UFED40-110D15W	43 ~ 160	±15	±1333	10	88	± 1600
UFED40-110D24W	43 ~ 160	±24	±833	10	90	±650

PART NUMBER STRUCTURE

UFED40 -	48	S	05	W -	N	EC
Series Name	Input Voltage (VDC)	Output Quantity	Output Voltage (VDC)	Input Range	Remote Control Option	Assembly Option
	24: 9.5~36 48: 18~75 110: 43~160	S: Single D: Dual	3P3: 3.3 05: 5 12: 12 15: 15 24: 24 12: ±12 15: ±15 24: ±24	4:1	□: Positive logic N: Negative logic	□: None EC: Enclosed Mounting Type DR: Din Rail Mounting Type ED: Enclosed & Din Rail Mounting Type

INPUT SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit	
Operating input voltage range	24Vin(nom)		9.5	24	36	VDC	
	48Vin(nom)		18	48	75		
	110Vin(nom)		43	110	160		
Input fuse (slow blow)	24Vin(nom)		8			A	
	48Vin(nom)		4				
	110Vin(nom)		2				
In-rush current			15			A	
Start-up voltage	24Vin(nom)		9.5			VDC	
	48Vin(nom)		18				
	110Vin(nom)		43				
Shutdown voltage	24Vin(nom)		8			VDC	
	48Vin(nom)		16				
	110Vin(nom)		40				
Start up time	Constant resistive load	Power up	100			ms	
		Remote ON/OFF	60				
Input surge voltage	1 second, max.	24Vin(nom)	50			VDC	
		48Vin(nom)	100				
		110Vin(nom)	170				
Remote ON/OFF	Referenced to -Vin pin	Positive logic	DC-DC ON	Open or 3 ~ 12VDC			mA
		(Standard)	DC-DC OFF	Short or 0 ~ 1.2VDC			
		Negative logic	DC-DC ON	Short or 0 ~ 1.2VDC			
		(Option)	DC-DC OFF	Open or 3 ~ 12VDC			
		Input current of CTRL pin	-0.5	1			
Remote off input current			5			mA	

OUTPUT SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Voltage accuracy	3.3Vout		-1.5		+1.5	%
	Others		-1.0		+1.0	
Line regulation	Low Line to High Line at Full Load		-0.5		+0.5	%
Load regulation	No Load to Full Load	3.3Vout, 5Vout	-1.5		+1.5	%
		Others	-1.0		+1.0	
Cross regulation	Asymmetrical load 25%/100% FL	Dual	-5.0		+5.0	%
Voltage adjustability	Single output	3.3Vout, 5Vout, 12Vout	-10		+10	%
		15Vout, 24Vout	-10		+20	
Ripple and noise	Measured by 20MHz bandwidth	3.3Vout, 5Vout	75			mVp-p
		12Vout, 15Vout	100			
		24Vout	150			
Temperature coefficient			-0.02		+0.02	%/°C
Transient response recovery time	25% load step change		250			µs
Over voltage protection	Zener diode clamp	3.3Vout	3.9			VDC
		5Vout	6.2			
		12Vout	15			
		15Vout	20			
		24Vout	30			
Output indicator			Green LED			
Over load protection	% of Iout rated		150			%
Short circuit protection			Continuous, automatic recovery			

GENERAL SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Isolation voltage	1 minute	Input to Output	1600			VDC
		Input (Output) to Chassis	1600			
Isolation resistance	500VDC		1			GΩ
Isolation capacitance			4000			pF
Switching frequency			225	250	275	kHz
Safety meets			UL60950-1 EN60950-1 IEC60950-1 EN50155			
Chassis material			Aluminum			
Weight			110g (3.88oz)			
MTBF	MIL-HDBK-217F, Full load		1.944 x 10 ⁶			hrs

ENVIRONMENTAL SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating ambient temperature	without derating with derating	-40 +63		+63 +96	°C
Over temperature protection	Case of DC/DC module		+115		°C
Storage temperature range		-40		+105	°C
Thermal shock					MIL-STD-810F
Shock					EN61373, MIL-STD-810F
Vibration					EN61373, MIL-STD-810F
Relative humidity					5% to 95% RH

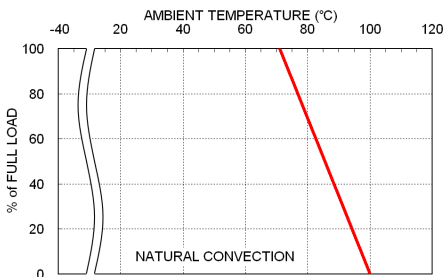
EMC SPECIFICATIONS

Parameter	Conditions	Level
EMI	EN55022	Class B
ESD	EN61000-4-2 Air ± 8kV and Contact ± 6kV	Perf. Criteria A
Radiated immunity	EN61000-4-3 20 V/m	Perf. Criteria A
Fast transient	EN61000-4-4 ± 2kV	Perf. Criteria A
Surge	EN61000-4-5 ± 1kV	Perf. Criteria A
Conducted immunity	EN61000-4-6 10 Vr.m.s	Perf. Criteria A
Power frequency magnetic field	EN61000-4-8 100A/m continuous; 1000A/m 1 second	Perf. Criteria A

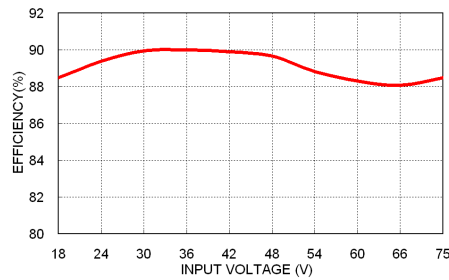
Note:

1. Test by minimum input and constant resistive load.

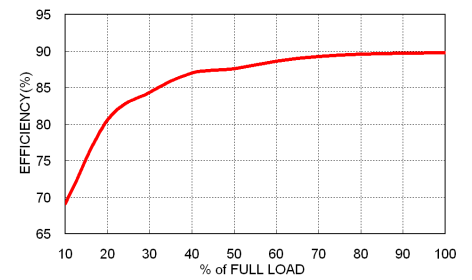
CHARACTERISTIC CURVE



UFED40-48S05W Derating Curve



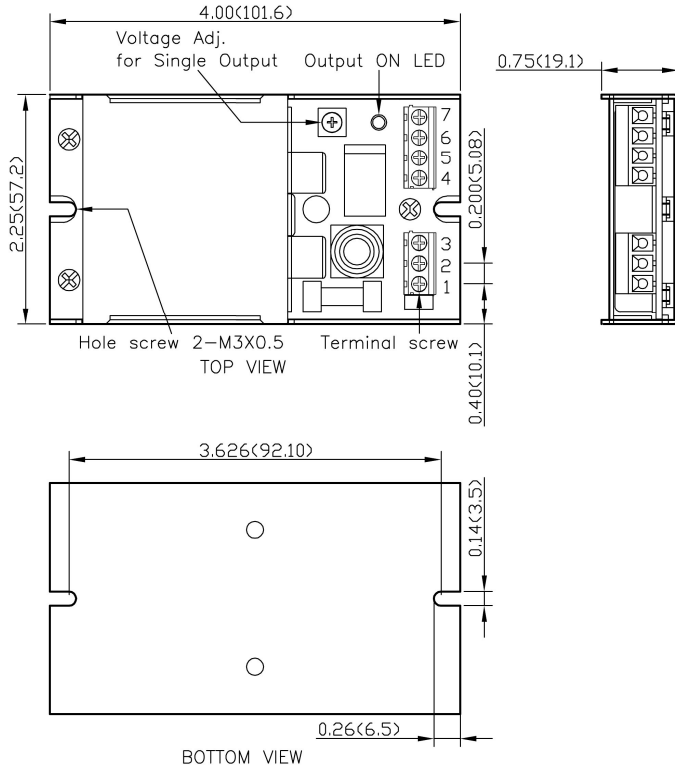
UFED40-48S05W Efficiency vs. Input Voltage



UFED40-48S05W Efficiency vs. Output Load

MECHANICAL DRAWING

CHASSIS MOUNTING TYPE

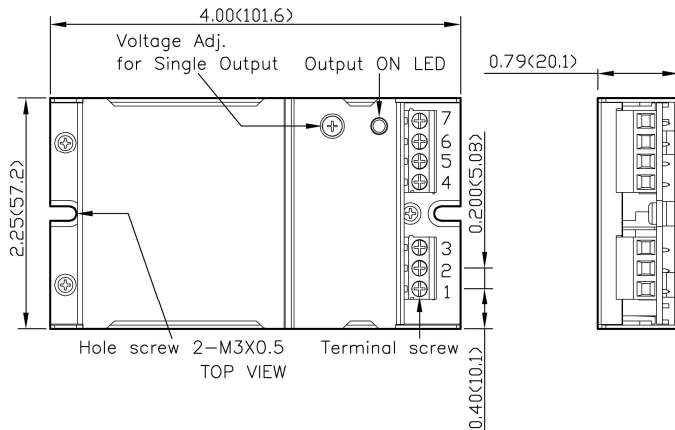


PIN CONNECTION

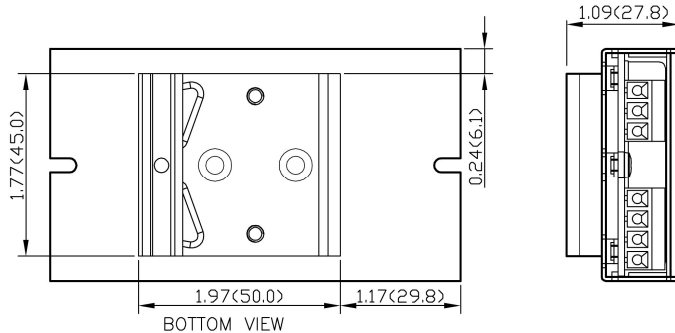
PIN	SINGLE	DUAL
1	+Vin	+Vin
2	-Vin	-Vin
3	Ctrl	Ctrl
4	NC	NC
5	-Vout	-Vout
6	+Vout	Common
7	NC	+Vout

- ※ NC : No Connection
- ※ Screw terminals – wire range from 14 to 18 AWG

ENCLOSED MOUNTING TYPE



DIN RAIL MOUNTING TYPE



1. All dimensions in Inch (mm)
2. Tolerance : X.XX±0.02 (X.X±0.5)
4. Tolerance : X.XXX±0.01 (X.XX±0.25)
3. Hole screw locked torque :
 MAX 5.0kgf – cm (0.49N – m)
4. Terminal screw locked torque :
 MAX 2.5kgf – cm (0.25N – m)