POWER MATE TECHNOLOGY CO., LTD.

UFEC60 SERIES

CHASSIS-MOUNT DC-DC CONVERTER

2:1 WIDE INPUT RANGE
UP TO 60 Watts

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
- CE MARKED
- COMPLIANT TO RoHS II & REACH

APPLICATIONS

- 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

TECHNICAL SPECIFICATION All specifications are typical at nominal input, full load and 25℃ otherwise noted

Model Number	Input Range	Output Voltage	Output Current @Full Load	Input Current @ No Load	Efficiency	Maximum Capacitor Load (1)
	VDC	VDC	A	mA	%	μF
UFEC60-24S3P3	18 ~ 36	3.3	14	102	87	36000
UFEC60-24S05	18 ~ 36	5	12	132	88	20400
UFEC60-24S12	18 ~ 36	12	5	57	89	3550
UFEC60-24S15	18 ~ 36	15	4	72	89	2300
UFEC60-24S24	18 ~ 36	24	2.5	85	88	885
UFEC60-48S3P3	36 ~ 75	3.3	14	100	87	36000
UFEC60-48S05	36 ~ 75	5	12	92	88	20400
UFEC60-48S12	36 ~ 75	12	5	35	89	3550
UFEC60-48S15	36 ~ 75	15	4	40	89	2300
UFEC60-48S24	36 ~ 75	24	2.5	60	88	885

PART NUMBER STRUCTURE

UFEC60 - 48 S 05 - N EC

Series Name	Input Voltage (VDC)	Output Quantity	Output Voltage (VDC)	Remote Control Option	Assembly Option
	24: 18~36 **48:** 36~75	**S:** Single	**3P3:** 3.3 **05:** 5 **12:** 12 **15:** 15 **24:** 24	□: Positive logic **N:** Negative logic	□: No Assembly Option **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)	18	24	36	VDC
		48Vin(nom)	36	48	75	
Input fuse (slow blow)		24Vin(nom)		8		A
		48Vin(nom)		4		
In-rush current				15		A
Input reflected ripple current	Nominal input and Full load			15		mAp-p
Start up voltage		24Vin(nom)			17.5	VDC
		48Vin(nom)			34.5	
Shutdown voltage		24Vin(nom)		15		VDC
		48Vin(nom)		32		
Start up time	Constant resistive load	Power up		100		ms
		Remote ON/OFF		20		
Input surge voltage	100ms, max.	24Vin(nom)			50	VDC
		48Vin(nom)			100	
Remote ON/OFF	Referred to –Vin pin	Positive logic (Standard) DC-DC ON		Open or 3 ~ 12VDC		
		Positive logic (Standard) DC-DC OFF		Short or 0 ~ 1.2VDC		
		Negative logic (Option) DC-DC ON		Short or 0 ~ 1.2VDC		
		Negative logic (Option) DC-DC OFF		Open or 3 ~ 12VDC		
		Input current of Ctrl pin	-0.5		1.0	mA
		Remote off input current		4		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		-0.2		+0.2	%
Load regulation	No Load to Full Load	3.3Vout	-2.0		+2.0	%
		Others	-1.5		+1.5	
Voltage adjustability	Single output	24Vout	-10		+20	%
		Others	-10		+10	
Ripple and noise	Measured by 20MHz bandwidth	3.3Vout, 5Vout		75		mVp-p
		12Vout, 15Vout		100		
		24Vout		130		
Temperature coefficient			-0.02		+0.02	%/℃
Transient response recovery time	25% load step change			250		μs
Over voltage protection	Zener diode clamp	3.3Vout	3.7		5.4	VDC
		5Vout	5.6		7.0	
		12Vout	13.8		17.5	
		15Vout	16.8		20.5	
		24Vout	30.0		33.0	
Output indicator				Green LED		
Over load protection	% of Iout rated				150	%
Short circuit protection				Continuous, automatics 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			270	300	330	kHz
Safety meets						UL60950-1 EN60950-1 IEC60950-1
Chassis material						Aluminum
Weight						122g (4.29oz)
MTBF	MIL-HDBK-217F, Full load					3.307 x 10^5 hrs

ENVIRONMENTAL SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating ambient temperature	Without derating	-40		+54	℃
	With derating	+54		+85	
Over temperature protection	DC/DC Converter Case		120		℃
Storage temperature range		-40		+105	℃
Thermal shock				MIL-STD-810F	
Vibration				MIL-STD-810F	
Relative humidity				5% to 95% RH	

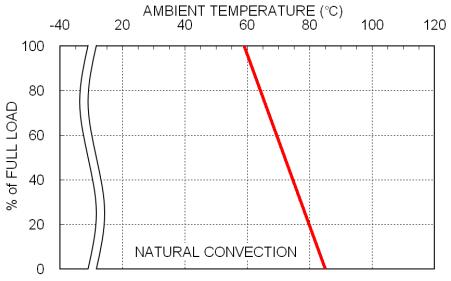
EMC SPECIFICATIONS

Parameter	Conditions		Level
EMI	EN55022		Class B
ESD	EN61000-4-2	Air ± 8kV and Contact ± 6kV	Perf. Criteria A
Radiated immunity	EN61000-4-3	10V/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	10Vr.m.s	Perf. Criteria A

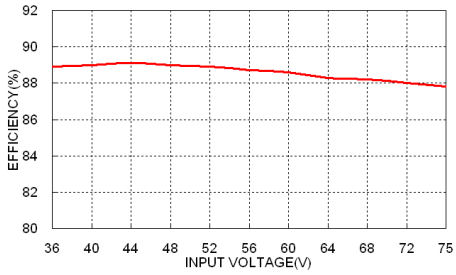
Note:

1. Test by minimum input and constant resistive load.

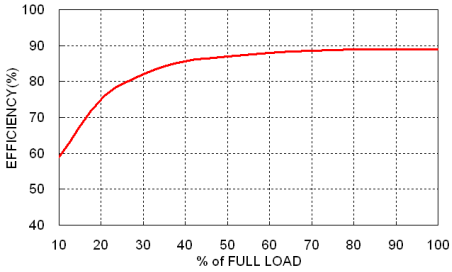
CHARACTERISTIC CURVE



UFEC60-48S05 Derating Curve



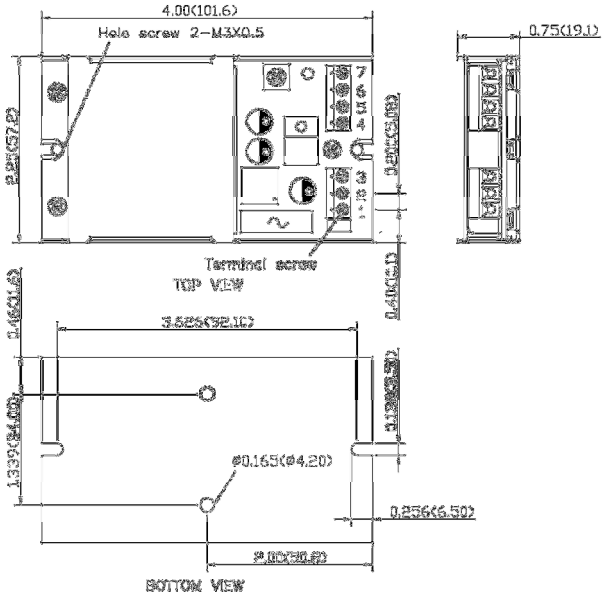
UFEC60-48S05 Efficiency vs. Input Voltage



UFEC60-48S05 Efficiency vs. Output Load

MECHANICAL DRAWING

CHASSIS MOUNTING TYPE

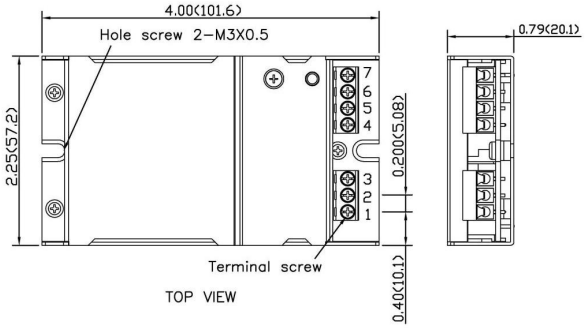


PIN CONNECTION

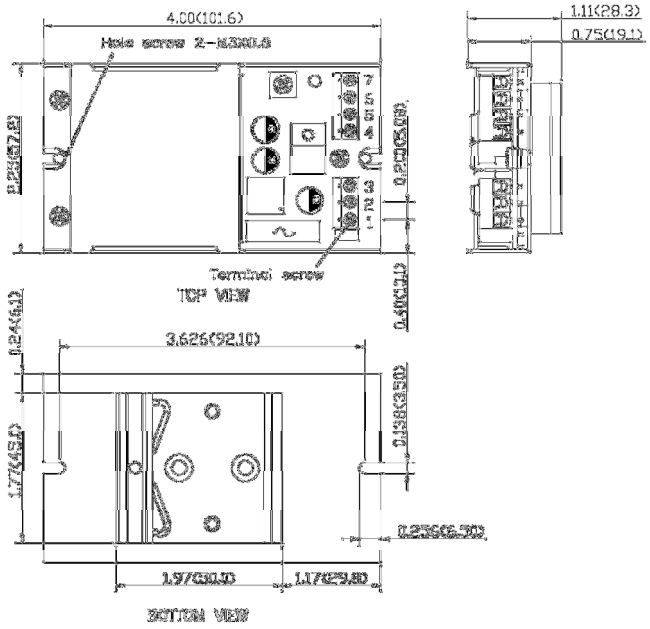
PIN	SINGLE
1	+Vin
2	-Vin
3	Ctrl
4	NC
5	-Vout
6	+Vout
7	NC

* 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)
   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)