



P-DUKE POWER

UFEC60 Series

Chassis-Mount DC-DC Converter
Up to 60 Watts

3
YEARS
WARRANTY

ROHS
COMPLIANT

REACH
COMPLIANT



Automation



Datacom



IPC



Industry



Measurement



Telecom



Automobile



Boat



Charger



Medical



PV



Railway



1600
VDC
Isolation
Voltage

2 : 1
Input
Range

FUSE
Installed

INRUSH
CURRENT
LIMIT

Internal
EN55032
Class **B**
Filter

NO
Min. Load
Required

REMOTE
ON
OFF

REVERSE
POLARITY
PROTECTION

OCP

OVP

SCP

UVP

PART NUMBER STRUCTURE

UFEC60 -	48	S	05	-	N	R	EC
Series Name	Input Voltage (VDC)	Output Quantity	Output Voltage (VDC)		Remote Control Option	Conformal Coating 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	☐ : None R: Conformal Coating	☐ : None EC: Enclosed Mounting Type DR: Din Rail Mounting Type ED: Enclosed & Din Rail Mounting Type

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

Model Number	Input Range	Output Voltage	Output Current @Full Load	Input Current @ No Load	Efficiency	Maximum Capacitor Load
	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	74	88	885
UFEC60-48S3P3	36 ~ 75	3.3	14	100	87	36000
UFEC60-48S05	36 ~ 75	5	12	92	89	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	43	89	885

INPUT SPECIFICATIONS						
Parameter	Conditions		Min.	Typ.	Max.	Unit
Operating input voltage range	24Vin(nom) 48Vin(nom)		18 36	24 48	36 75	VDC
Input fuse	slow blow	24Vin(nom) 48Vin(nom)		8 4		A
In-rush current				15		A
Start up voltage		24Vin(nom) 48Vin(nom)			18 36	VDC
Shutdown voltage		24Vin(nom) 48Vin(nom)	14.5 31	15 32	17.5 35.5	VDC
Start up time	Constant resistive load	Power up Remote ON/OFF		100 20		ms
Input surge voltage	100ms, max.	24Vin(nom) 48Vin(nom)			50 100	VDC
Remote ON/OFF	Referred to –Vin pin	Positive logic DC-DC ON (Standard) DC-DC OFF Negative logic DC-DC ON (Option) DC-DC OFF Input current of Ctrl pin Remote off input current	-0.5	Open or 3 ~ 12VDC Short or 0 ~ 1.2VDC Short or 0 ~ 1.2VDC Open or 3 ~ 12VDC 4	1	mA mA

OUTPUT SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Voltage accuracy	3.3Vout Others	-1.5 -1.0		+1.5 +1.0	%
Line regulation	Low Line to High Line at Full Load	-0.5		+0.5	%
Load regulation	No Load to Full Load	-2.0 -1.5		+2.0 +1.5	%
Voltage adjustability	24Vout Others	-10 -10		+20 +10	%
Ripple and noise	Measured by 20MHz bandwidth 3.3Vout, 5Vout, 12Vout, 15Vout 24Vout		75 100 130		mVp-p
Temperature coefficient		-0.02		+0.02	%/°C
Transient response recovery time	25% load step change		250		µs
Over voltage protection	3.3Vout 5Vout 12Vout 15Vout 24Vout	3.7 5.6 13.8 16.8 30.0		5.4 7.0 17.5 20.5 33.0	VDC
Output indicator				Green LED	
Over load protection	% of Iout rated; Hiccup mode			150	%
Short circuit protection				Continuous, automatic recovery	

GENERAL SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Isolation voltage	1 minute Input to Output Input (Output) to Chassis	1600 1600			VDC
Isolation resistance	500VDC	1			GΩ
Isolation capacitance				4000	pF
Switching frequency		270	300	330	kHz
Safety meets				IEC/ UL/ EN60950-1	
Chassis material				Aluminum	
Conformal coating				Impregnating varnish	
Weight				122g (4.29oz)	
MTBF	MIL-HDBK-217F, Full load			3.307 x 10 ⁵ hrs	

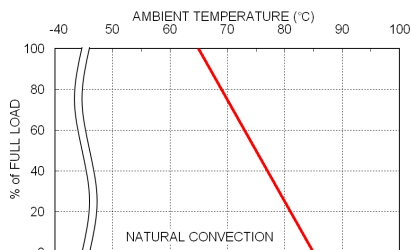
ENVIRONMENTAL SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating ambient temperature	Without derating With derating	-40 +54		+54 +97	°C
Over temperature protection	Case of DC/DC module		+120		°C
Storage temperature range		-40		+105	°C
Thermal shock				MIL-STD-810F	
Vibration	□□S□□ -□ □□S□□ -□IEC □□S□□ -□DR □□S□□ -□ED			EN61373, MIL-STD-810F EN61373, MIL-STD-810F EN61373, IEC60068-2-6 EN61373, IEC60068-2-6	
Relative humidity				5% to 95% RH	

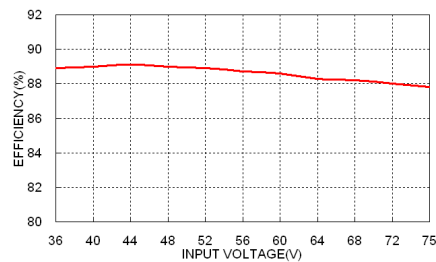
EMC SPECIFICATIONS

Parameter	Conditions		Level
EMI	EN55032		Class B
ESD	EN61000-4-2	Air $\pm 8\text{kV}$ and Contact $\pm 6\text{kV}$	Perf. Criteria A
Radiated immunity	EN61000-4-3	10V/m	Perf. Criteria A
Fast transient	EN61000-4-4	$\pm 2\text{kV}$	Perf. Criteria A
Surge	EN61000-4-5	$\pm 1\text{kV}$	Perf. Criteria A
Conducted immunity	EN61000-4-6	10Vr.m.s	Perf. Criteria A
Power frequency magnetic field	EN61000-4-8	100A/m continuous; 1000A/m 1 second	Perf. Criteria A

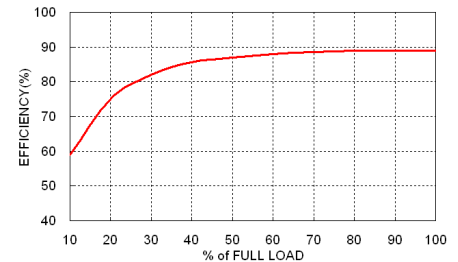
CHARACTERISTIC CURVE



UFEC60-48S05 Derating Curve



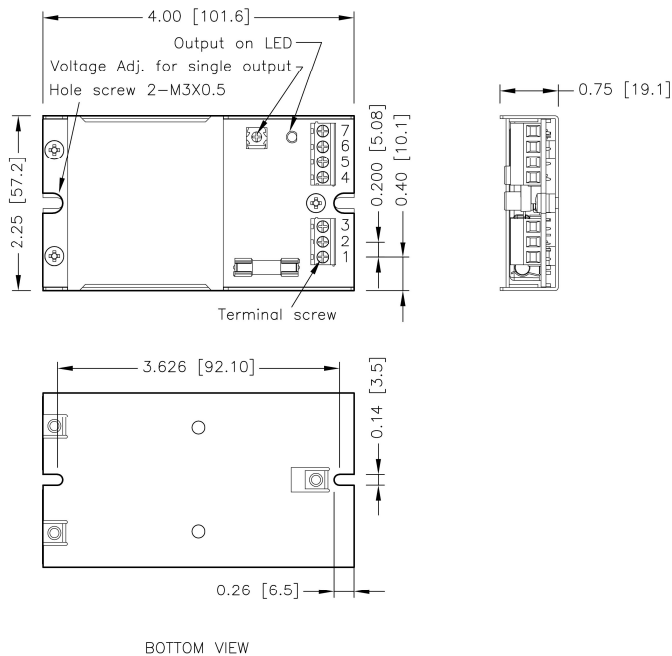
UFEC60-48S05 Efficiency vs. Input Voltage



UFEC60-48S05 Efficiency vs. Output Load

MECHANICAL DRAWING

CHASSIS MOUNTING TYPE



TERMINAL CONNECTION

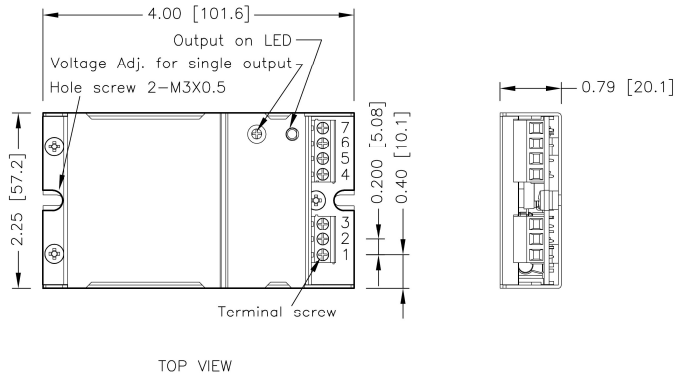
NO.	SINGLE
1	+Vin
2	-Vin
3	Ctrl
4	NC
5	-Vout
6	+Vout
7	NC

※ NC : No Connection

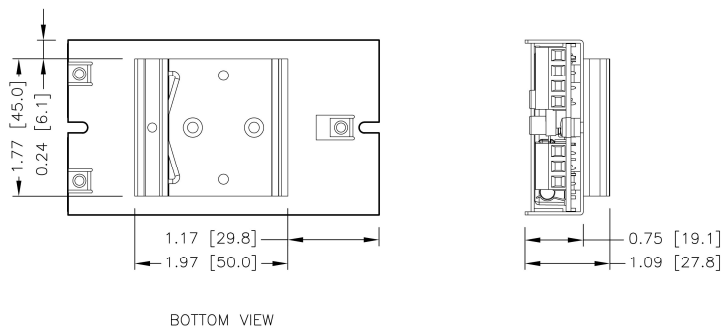
※ Screw terminals – wire range from 14 to 18 AWG

MECHANICAL DRAWING(CONTINUED)

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