

# UFEC15W SERIES

DC-DC CONVERTER

4:1 ULTRA WIDE INPUT RANGE  
UP TO 15 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
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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
UFEC15-24S3P3W	9.5 ~ 36	3.3	4500	51	85	14700
UFEC15-24S05W	9.5 ~ 36	5	3000	66	86	7200
UFEC15-24S5P1W	9.5 ~ 36	5.1	3000	66	86	7200
UFEC15-24S12W	9.5 ~ 36	12	1250	25	86	1250
UFEC15-24S15W	9.5 ~ 36	15	1000	26	86	800
UFEC15-24D05W	9.5 ~ 36	±5	±1500	56	86	±3600
UFEC15-24D12W	9.5 ~ 36	±12	±625	33	87	±625
UFEC15-24D15W	9.5 ~ 36	±15	±500	34	87	±400
UFEC15-48S3P3W	18 ~ 75	3.3	4500	36	85	14700
UFEC15-48S05W	18 ~ 75	5	3000	36	87	7200
UFEC15-48S5P1W	18 ~ 75	5.1	3000	36	87	7200
UFEC15-48S12W	18 ~ 75	12	1250	17	86	1250
UFEC15-48S15W	18 ~ 75	15	1000	17	86	800
UFEC15-48D05W	18 ~ 75	±5	±1500	36	87	±3600
UFEC15-48D12W	18 ~ 75	±12	±625	19	87	±625
UFEC15-48D15W	18 ~ 75	±15	±500	19	87	±400

## PART NUMBER STRUCTURE

UFEC15 -	48	S	05	W	-	P	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	S: Single	3P3: 3.3 05: 5 5P1 5.1 12: 12 15: 15	4:1	P: Positive logic N: Negative logic	□: None EC: Enclosed Mounting Type DR: Din Rail Mounting Type ED: Enclosed & Din Rail Mounting Type	
		D: Dual	05: ±5 12: ±12 15: ±15				

**INPUT SPECIFICATIONS**

Parameter	Conditions		Min.	Typ.	Max.	Unit
Operating input voltage range	24Vin(nom)		9.5	24	36	VDC
	48Vin(nom)		18	48	75	
Input fuse (slow blow)	24Vin(nom)			6		A
	48Vin(nom)			4		
In-rush current				15		A
Input reflected ripple current	Nominal input and Full load			10		mAp-p
Start up voltage	24Vin(nom)				9.5	VDC
	48Vin(nom)				18	
Shutdown voltage	24Vin(nom)			7.5		VDC
	48Vin(nom)			15		
Start up time	Constant resistive load	Power up		100		ms
Input surge voltage	100ms, max.	24Vin(nom)			50	VDC
		48Vin(nom)			100	
Remote ON/OFF (Option)	Referred to -Vin pin	Positive logic	DC-DC ON	Open or 3 ~ 12VDC		mA
			DC-DC OFF	Short or 0 ~ 1.2VDC		
		Negative logic	DC-DC ON	Short or 0 ~ 1.2VDC		
			DC-DC OFF	Open or 3 ~ 12VDC		
		Input current of Ctrl pin	-0.5		0.5	
		Remote off input current		2.5		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	Single	-0.2		+0.2	%
		Dual	-0.5		+0.5	
Load regulation	No Load to Full Load	3.3Vout	-1.5		+1.5	%
		Others	-1.0		+1.0	
Cross regulation	Asymmetrical load 25%/100% FL		-5.0		+5.0	%
Ripple and noise	Measured by 20MHz bandwidth	Single	3.3Vout, 5Vout, 5.1Vout		50	mVp-p
			12Vout, 15Vout		75	
		Dual	All		75	
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, 5.1Vout		6.2		
		12Vout		15		
		15Vout		18		
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			360	400	440	kHz
Safety meets			UL60950-1 EN60950-1 IEC60950-1			
Chassis material			Aluminum			
Weight			89g (3.13oz)			
MTBF	MIL-HDBK-217F, Full load		2.544 x 10 <sup>6</sup> hrs			

## ENVIRONMENTAL SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating ambient temperature	Without derating	-40		+83	°C
	With derating	+83		+93	
Storage temperature range		-40		+105	°C
Thermal shock					MIL-STD-810F
Vibration					MIL-STD-810F
Relative humidity					5% to 95% RH

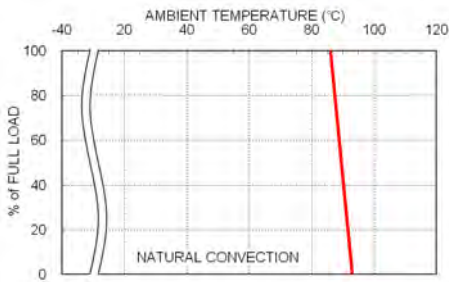
## EMC SPECIFICATIONS

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 ± 0.5kV	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

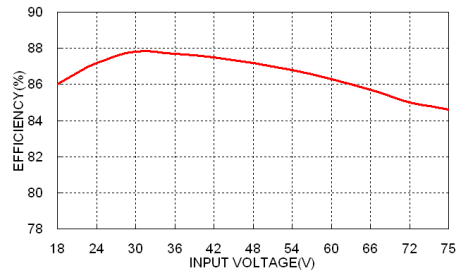
### Note:

1. Test by minimum input and constant resistive load.

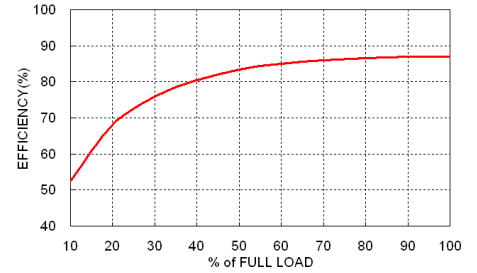
## CHARACTERISTIC CURVE



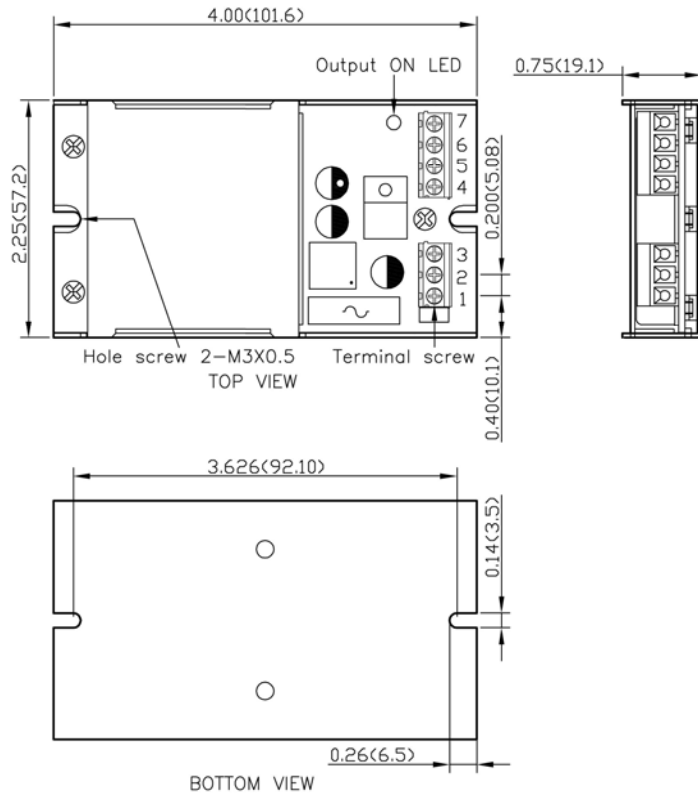
UFEC15-48S05W Derating Curve



UFEC15-48S05W Efficiency vs. Input Voltage



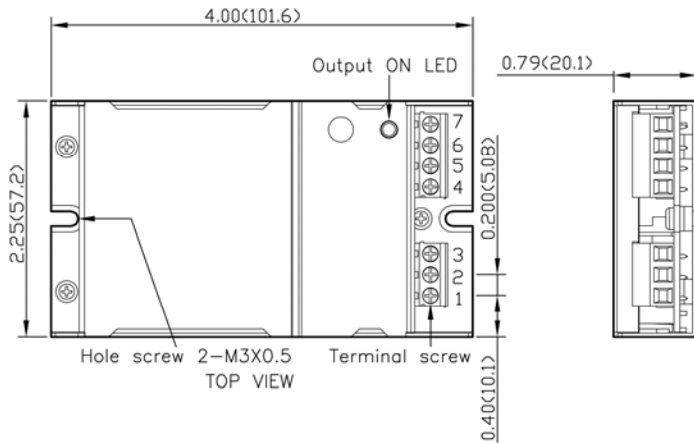
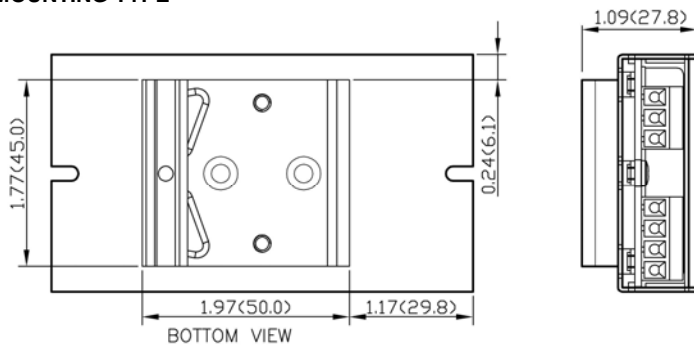
UFEC15-48S05W Efficiency vs. Output Load

**MECHANICAL DRAWING**
**CHASSIS MOUNTING TYPE**

**PIN CONNECTION**

PIN	SINGLE	DUAL
1	+Vin	+Vin
2	-Vin	-Vin
3	Ctrl(Optional)	Ctrl(Optional)
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)
3. Hole screw locked torque :  
MAX 5.0kgf – cm (0.49N – m)
4. Terminal screw locked torque :  
MAX 2.5kgf – cm (0.25N – m)