

# UFED20 SERIES

CHASSIS-MOUNT DC-DC CONVERTER

2:1 WIDE INPUT RANGE  
UP TO 20 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	OCP	SCP	OVP	FUSE INCLUDED	INRUSH LIMIT	REVERSE POLARITY PROTECTION
-------------------	----------------	-----	-----	-----	---------------	--------------	-----------------------------

## 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
UFED20-12S3P3	9.5 ~ 18	3.3	5000	117	84	13000
UFED20-12S05	9.5 ~ 18	5	4000	78	86	6800
UFED20-12S12	9.5 ~ 18	12	1670	96	85	2200
UFED20-12S15	9.5 ~ 18	15	1330	43	85	755
UFED20-12D12	9.5 ~ 18	±12	±833	51	85	±680
UFED20-12D15	9.5 ~ 18	±15	±667	58	85	±450
UFED20-24S3P3	18 ~ 36	3.3	5000	31	85	13000
UFED20-24S05	18 ~ 36	5	4000	36	88	6800
UFED20-24S12	18 ~ 36	12	1670	58	86	2200
UFED20-24S15	18 ~ 36	15	1330	44	86	755
UFED20-24D12	18 ~ 36	±12	±833	33	86	±680
UFED20-24D15	18 ~ 36	±15	±667	34	87	±450
UFED20-48S3P3	36 ~ 75	3.3	5000	16	86	13000
UFED20-48S05	36 ~ 75	5	4000	21	88	6800
UFED20-48S12	36 ~ 75	12	1670	37	87	2200
UFED20-48S15	36 ~ 75	15	1330	52	86	755
UFED20-48D12	36 ~ 75	±12	±833	22	87	±680
UFED20-48D15	36 ~ 75	±15	±667	22	87	±450

## PART NUMBER STRUCTURE

UFED20 -	48	S	05	-	N	EC
Series Name	Input Voltage (VDC)	Output Quantity	Output Voltage (VDC)		Remote Control Option	Assembly Option
	12: 9.5-18 24: 18-36 48: 36-75	S: Single  D: Dual	3P3: 3.3 05: 5 12: 12 15: 15 12: ±12 15: ±15		<input type="checkbox"/> : Positive logic N: Negative logic	<input type="checkbox"/> : 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	12Vin(nom)		9.5	12	18	VDC
	24Vin(nom)		18	24	36	
	48Vin(nom)		36	48	75	
Input fuse (slow blow)	12Vin(nom)			6		A
	24Vin(nom)			6		
	48Vin(nom)			4		
In-rush current				15		A
Input reflected ripple current	Nominal input and Full load			10		mAp-p
Start up time	Constant resistive load	Power up		100		ms
		Remote ON/OFF		10		
Input surge voltage	100ms, max.	12Vin(nom)			36	VDC
		24Vin(nom)			50	
		48Vin(nom)			100	
Remote ON/OFF	Referred 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		
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	Dual	-5.0		+5.0	%
Voltage adjustability	Single output		-10		+10	%
Ripple and noise	Measured by 20MHz bandwidth	Single	3.3Vout,	60		mVp-p
			5Vout, 12Vout, 15Vout	75		
		Dual	All	100		
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		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			450	500	550	kHz
Safety meets						UL60950-1 EN60950-1 IEC60950-1
Chassis material						Aluminum
Weight						89g (3.13oz)
MTBF	MIL-HDBK-217F, Full load					2.073 x 10 <sup>6</sup> hrs

## ENVIRONMENTAL SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating ambient temperature	Without derating	-40		+70	°C
	With derating	+70		+88	
Storage temperature range		-40		+105	°C
Thermal shock					MIL-STD-810F
Vibration					MIL-STD-810F
Relative humidity					5% to 95% RH

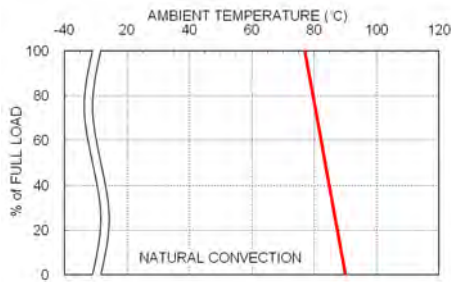
## EMC SPECIFICATIONS

Parameter	Conditions	Level
EMI	EN55022	Class B
ESD	EN61000-4-2	Air ± 8kV and Contact ± 6kV
Radiated immunity	EN61000-4-3	10V/m
Fast transient	EN61000-4-4	± 2kV
Surge	EN61000-4-5	± 0.5kV
Conducted immunity	EN61000-4-6	10Vr.m.s
Power frequency magnetic field	EN61000-4-8	100A/m continuous; 1000A/m 1 second

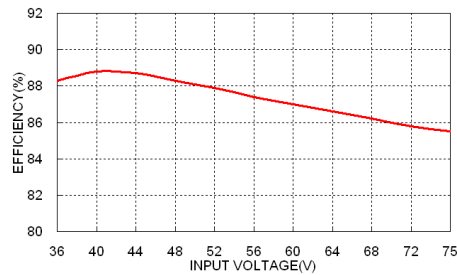
### Note:

1. Test by minimum input and constant resistive load.

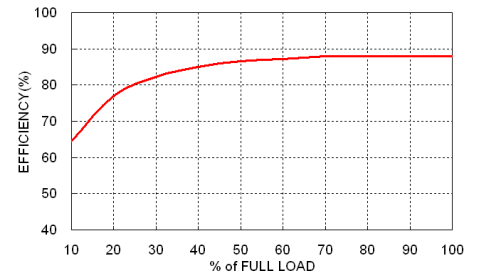
## CHARACTERISTIC CURVE



UFED20-48S05 Derating Curve



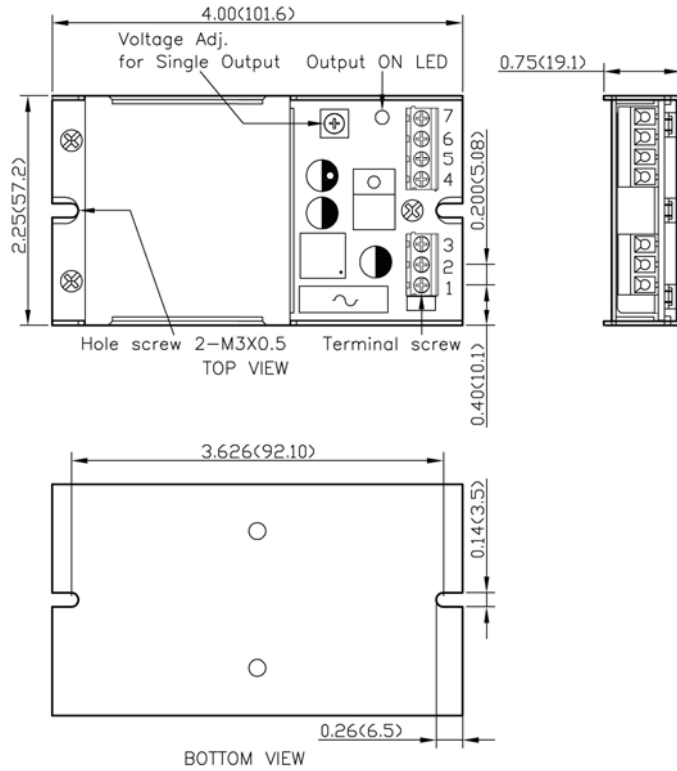
UFED20-48S05 Efficiency vs. Input Voltage



UFED20-48S05 Efficiency vs. Output Load

## MECHANICAL DRAWING

### CHASSIS MOUNTING TYPE



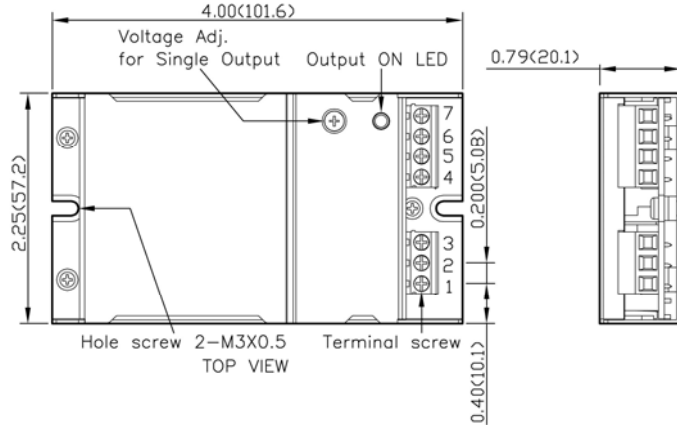
### PIN CONNECTION

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

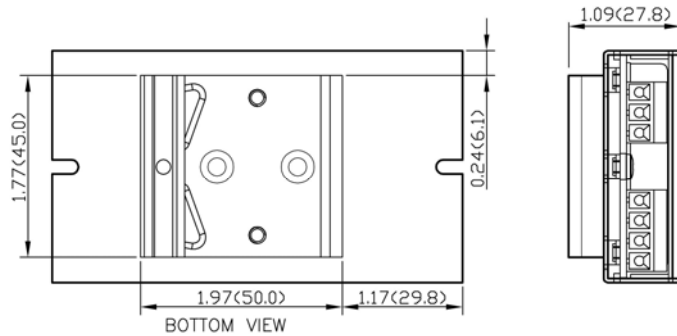
\* NC : No Connection

\* 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)  
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)