



# P-DUKE POWER

## UFED20 Series

Chassis-Mount DC-DC Converter  
Up to 20 Watts

**3**  
YEARS  
WARRANTY

ROHS  
COMPLIANT

REACH  
COMPLIANT



Automation



Datacom



IPC



Industry



Measurement



Telecom



Automobile



Boat



Charger



Medical



PV



Railway

CB CE

**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**

### PART NUMBER STRUCTURE

UFED20 -	48	S	05	-	N	R	EC
Series Name	Input Voltage (VDC)	Output Quantity	Output Voltage (VDC)		Remote Control Option	Conformal Coating 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		□: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	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

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
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	
		(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	0.5	mA
		Remote off input current			2.5	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	Single Dual	-0.2 -0.5		+0.2 +0.5	%
Load regulation	No Load to Full Load	3.3Vout Others	-1.5 -1.0		+1.5 +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 Dual		60 75 100		mVp-p
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 5Vout 12Vout 15Vout		3.9 6.2 15 18		VDC
Output indicator			Green LED			
Over load protection	% of Iout rated			150		%
Short circuit protection			Continuous, automatic recovery			

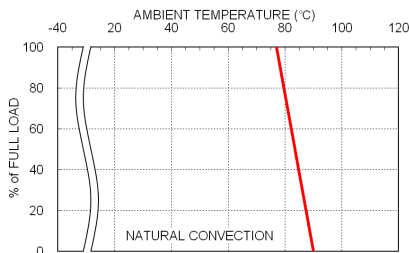
GENERAL SPECIFICATIONS						
Parameter	Conditions		Min.	Typ.	Max.	Unit
Isolation voltage	1 minute	Input to Output Input (Output) to Chassis	1600 1600			VDC
Isolation resistance	500VDC		1			GΩ
Isolation capacitance					4000	pF
Switching frequency			450	500	550	kHz
Safety approvals	IEC/ UL/ EN60950-1				UL:E193009 CB:UL(Demko)	
Chassis material					Aluminum	
Conformal coating					Impregnating varnish	
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 With derating	-40 +70		+70 +89	°C
Storage temperature range			-40		+105	°C
Thermal shock					MIL-STD-810F	
Vibration		□□S□□ -□□□ □□S□□ -□□EC □□S□□ -□□DR □□S□□ -□□ED			MIL-STD-810F MIL-STD-810F IEC60068-2-6 IEC60068-2-6	
Relative humidity					5% to 95% RH	

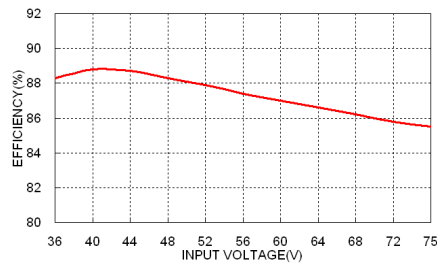
## EMC SPECIFICATIONS

Parameter	Conditions	Level
EMI	EN55032	Class B
ESD	EN61000-4-2 Air $\pm$ 8kV and Contact $\pm$ 6kV	Perf. Criteria A
Radiated immunity	EN61000-4-3 10V/m	Perf. Criteria A
Fast transient	EN61000-4-4 $\pm$ 2kV	Perf. Criteria A
Surge	EN61000-4-5 $\pm$ 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

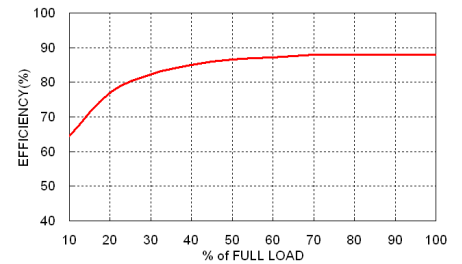
## CHARACTERISTIC CURVE



UFED20-48S05 Derating Curve



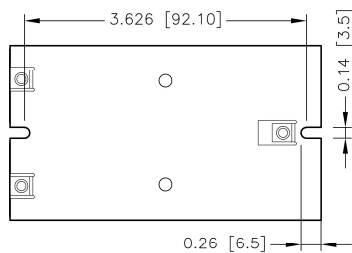
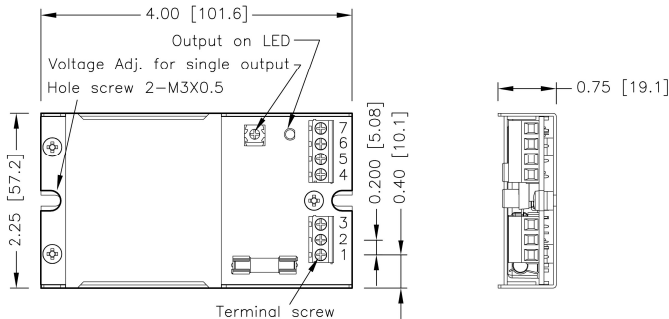
UFED20-48S05 Efficiency vs. Input Voltage



UFED20-48S05 Efficiency vs. Output Load

## MECHANICAL DRAWING

### CHASSIS MOUNTING TYPE



BOTTOM VIEW

### TERMINAL CONNECTION

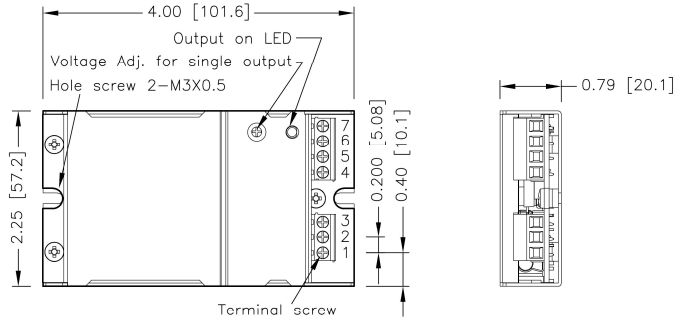
NO.	SINGLE	DUAL
1	+Vin	+Vin
2	-Vin	-Vin
3	Ctrl	Ctrl
4	NC	NC
5	-Vout	-Vout
6	+Vout	Common
7	NC	+Vout

※ NC : No Connection

※ Screw terminals – wire range from 14 to 18 AWG

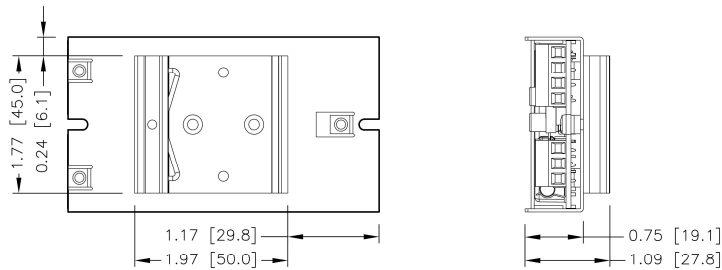
**MECHANICAL DRAWING(CONTINUED)**

**ENCLOSED MOUNTING TYPE**



TOP VIEW

**DIN RAIL MOUNTING TYPE**



BOTTOM VIEW

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