



P-DUKE POWER

UFED20W 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 UK
CA

1600
VDC
Isolation
Voltage

4 : 1
Wide
Input
Range

FUSE
Installed

**INRUSH
CURRENT
LIMIT**

Internal
EN55032
Class
Filter **B**

NO
Min. Load
Required

**REMOTE
ON
OFF**

**REVERSE
POLARITY
PROTECTION**

OCP

OVP

SCP

UVP

PART NUMBER STRUCTURE

| UFED20 - | 48 | S | 05 | W - | N | R | EC |
|-------------|-----------------------|------------------------|--|-------------|--|---|--|
| Series Name | Input Voltage (VDC) | Output Quantity | Output Voltage (VDC) | Input Range | Remote Control Options | Conformal Coating Options | Assembly Options |
| | 24:9.5~36 48:18~75 | S:Single D:Dual | 3P3:3.3 05:5 12:12 15:15 05:±5 12:±12 15:±15 | 4:1 | <input type="checkbox"/> :Positive logic N:Negative logic | <input type="checkbox"/> : None R: Conformal Coating | <input type="checkbox"/> : 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 |
| UFED20-24S3P3W | 9.5 ~ 36 | 3.3 | 5500 | 51 | 84 | 18000 |
| UFED20-24S05W | 9.5 ~ 36 | 5 | 4000 | 66 | 87 | 9600 |
| UFED20-24S12W | 9.5 ~ 36 | 12 | 1670 | 25 | 85 | 1650 |
| UFED20-24S15W | 9.5 ~ 36 | 15 | 1330 | 26 | 85 | 1050 |
| UFED20-24D05W | 9.5 ~ 36 | ±5 | ±2000 | 58 | 87 | ±4800 |
| UFED20-24D12W | 9.5 ~ 36 | ±12 | ±833 | 33 | 86 | ±825 |
| UFED20-24D15W | 9.5 ~ 36 | ±15 | ±667 | 34 | 86 | ±525 |
| UFED20-48S3P3W | 18 ~ 75 | 3.3 | 5500 | 36 | 84 | 18000 |
| UFED20-48S05W | 18 ~ 75 | 5 | 4000 | 36 | 87 | 9600 |
| UFED20-48S12W | 18 ~ 75 | 12 | 1670 | 17 | 86 | 1650 |
| UFED20-48S15W | 18 ~ 75 | 15 | 1330 | 17 | 86 | 1050 |
| UFED20-48D05W | 18 ~ 75 | ±5 | ±2000 | 36 | 88 | ±4800 |
| UFED20-48D12W | 18 ~ 75 | ±12 | ±833 | 19 | 87 | ±825 |
| UFED20-48D15W | 18 ~ 75 | ±15 | ±667 | 19 | 87 | ±525 |

| 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 |
| Start up voltage | 24Vin(nom) | | 9.5 | | | VDC |
| | 48Vin(nom) | | 18 | | | |
| Shutdown voltage | 24Vin(nom) | | 7 | 8 | 9 | VDC |
| | 48Vin(nom) | | 14.5 | 16 | 17.5 | |
| 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 DC-DC ON (Standard) | Open or 3 ~ 12VDC | | | mA |
| | | Negative logic DC-DC ON (Option) | Short or 0 ~ 1.2VDC | | | |
| | | DC-DC OFF | Short or 0 ~ 1.2VDC | | | |
| | | DC-DC OFF | Open or 3 ~ 12VDC | | | |
| | | Input current of Ctrl pin | -0.5 | 0.5 | | mA |
| | | Remote off input current | 2.5 | | | mA |

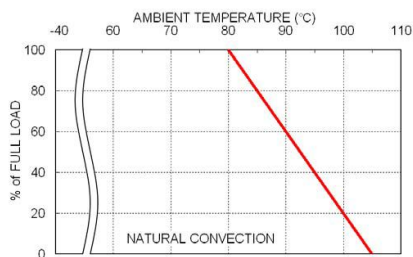
| OUTPUT SPECIFICATIONS | | | | | | |
|----------------------------------|------------------------------------|--------------------------------------|--------------|--------------------------------|--------------|-------|
| Parameter | Conditions | | Min. | Typ. | Max. | Unit |
| Voltage accuracy | | 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 3.3Vout Others Dual All | | 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 | | | 360 | 400 | 440 | kHz |
| Safety approvals | IEC/ EN/ UL62368-1 | | | | UL:E193009 CB:UL(Demko) | |
| Chassis material | | | | | Aluminum | |
| Conformal coating | | | | | Impregnating varnish | |
| Weight | | | | | 89g (3.13oz) | |
| MTBF | MIL-HDBK-217F, Full load | | | | 1.966 x 10 ⁶ hrs | |

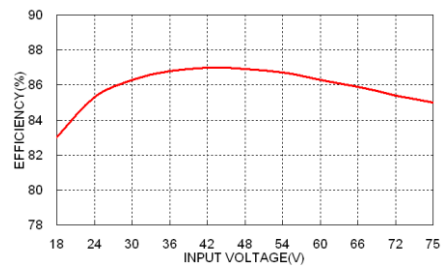
| ENVIRONMENTAL SPECIFICATIONS | | | | | | |
|-------------------------------|------------|--|------|------|------|--|
| Parameter | Conditions | | Min. | Typ. | Max. | Unit |
| Operating ambient temperature | | With derating | -40 | | +105 | °C |
| Storage temperature range | | | -40 | | +105 | °C |
| Thermal shock | | | | | | MIL-STD-810F |
| Vibration | | □□S□□W -□□ □□S□□W -□□EC □□S□□W -□□DR □□S□□W -□□ED | | | | MIL-STD-810F MIL-STD-810F IEC60068-2-6 IEC60068-2-6 |
| Relative humidity | | | | | | 5% to 95% RH |

EMC SPECIFICATIONS

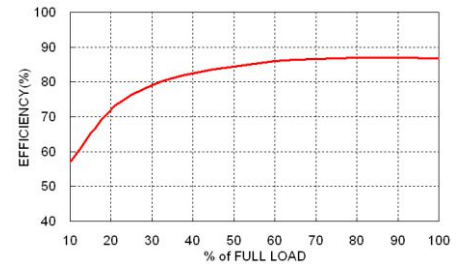
| Parameter | Conditions | | Level |
|--------------------------------|-------------|-------------------------------------|------------------|
| EMI | EN55032 | | Class B |
| EMS | EN55035 | | |
| ESD | EN61000-4-2 | Air \pm 8kV and Contact \pm 6kV | Perf. Criteria A |
| Radiated immunity | EN61000-4-3 | 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


UFED20-48S05W Derating Curve



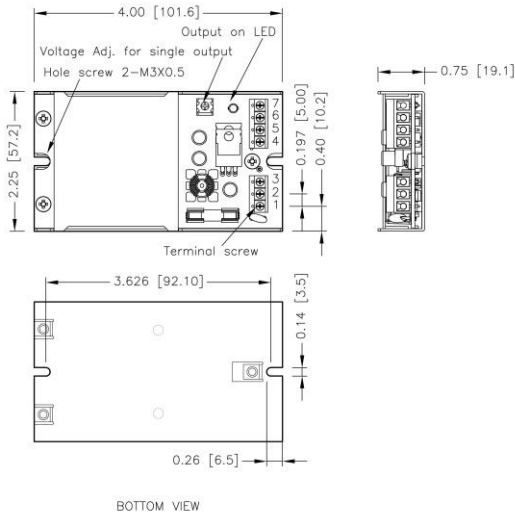
UFED20-48S05W Efficiency vs. Input Voltage



UFED20-48S05W Efficiency vs. Output Load

MECHANICAL DRAWING

CHASSIS MOUNTING TYPE



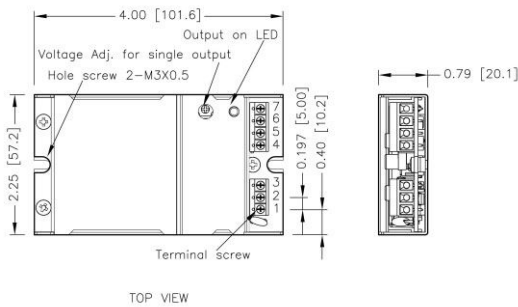
TERMINAL CONNECTION

| 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

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

ENCLOSED MOUNTING TYPE



DIN RAIL MOUNTING TYPE

