



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 UK CA

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 Options | Conformal Coating Options | Assembly Options |
| | 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 |
| Remote off input current | | | | 2.5 | mA | |

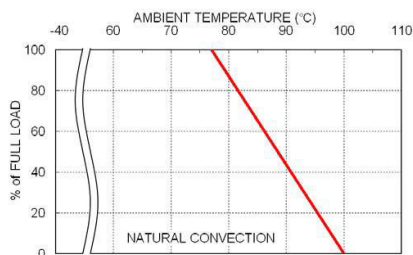
| OUTPUT SPECIFICATIONS | | | | | | |
|----------------------------------|------------------------------------|--------------------------------------|--------------------------------|------------------------|--------------|-------|
| Parameter | Conditions | | Min. | Typ. | Max. | Unit |
| Voltage accuracy | | 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/ 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 | | | | 2.073 x 10 ⁶ hrs | |

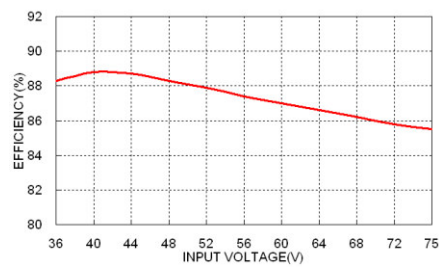
| ENVIRONMENTAL SPECIFICATIONS | | | | | | |
|-------------------------------|------------|--|------|------|------|--|
| Parameter | Conditions | | Min. | Typ. | Max. | Unit |
| Operating ambient temperature | | With derating | -40 | | +100 | °C |
| Storage temperature range | | | -40 | | +105 | °C |
| 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

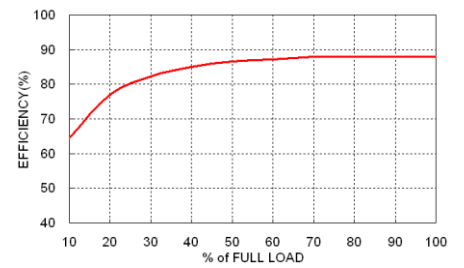
| Parameter | Conditions | | Level |
|--------------------------------|-------------|-------------------------------------|------------------|
| EMI | EN55032 | | Class B |
| EMS | EN55035 | | |
| ESD | EN61000-4-2 | Air $\pm 8kV$ and Contact $\pm 6kV$ | Perf. Criteria A |
| Radiated immunity | EN61000-4-3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


UFED20-48S05 Derating Curve



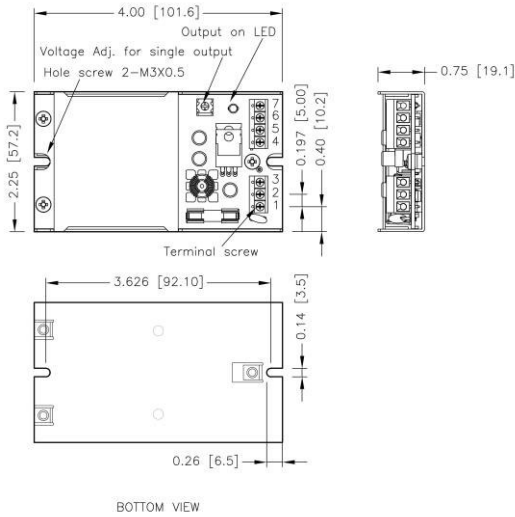
UFED20-48S05 Efficiency vs. Input Voltage



UFED20-48S05 Efficiency vs. Output Load

MECHANICAL DRAWING

CHASSIS MOUNTING TYPE



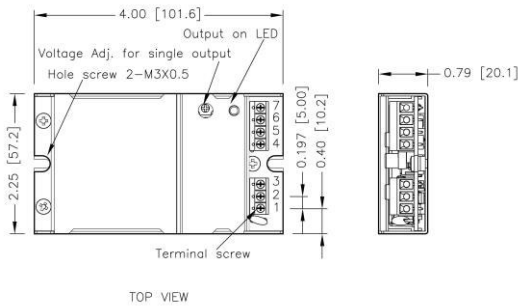
TERMINAL CONNECTION

| 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

- All dimensions in Inch [mm]
- Tolerance : X.XX±0.02 [X.X±0.5]
X.XXX±0.01 [X.XX±0.25]
- Hole screw locked torque :
MAX 5.0kgf-cm/0.49N-m
- Terminal screw locked torque :
MAX 2.5kgf-cm/0.25N-m

ENCLOSED MOUNTING TYPE



DIN RAIL MOUNTING TYPE

