



P-DUKE POWER

DFEC30W Series

Din Rail DC-DC Converter
Up to 30 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

| DFEC30 - | 48 | S | 05 | W - | N |
|-------------|----------------------|-----------------|---|-------------|--------------------------------------|
| Series Name | Input Voltage (VDC) | Output Quantity | Output Voltage (VDC) | Input Range | Remote Control Options |
| | 24:10-40 48:18-75 | S:Single | 3P3:3.3 05:5 12:12 15:15 24:24 28:28 | 4:1 | □:Positive logic N:Negative logic |
| | | D: Dual | 12:±12 15:±15 | | |

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 | A | mA | % | μF |
| DFEC30-24S3P3W | 10 ~ 40 | 3.3 | 6 | 52 | 85 | 19500 |
| DFEC30-24S05W | 10 ~ 40 | 5 | 6 | 67 | 85 | 10200 |
| DFEC30-24S12W | 10 ~ 40 | 12 | 2.5 | 69 | 85 | 3300 |
| DFEC30-24S15W | 10 ~ 40 | 15 | 2 | 75 | 86 | 1100 |
| DFEC30-24S24W | 10 ~ 40 | 24 | 1.25 | 39 | 82 | 500 |
| DFEC30-24S28W | 10 ~ 40 | 28 | 1 | 45 | 83 | 340 |
| DFEC30-24D12W | 10 ~ 40 | ±12 | ±1.25 | 34 | 82 | ±1000 |
| DFEC30-24D15W | 10 ~ 40 | ±15 | ±1 | 40 | 83 | ±680 |
| DFEC30-48S3P3W | 18 ~ 75 | 3.3 | 6 | 32 | 85 | 19500 |
| DFEC30-48S05W | 18 ~ 75 | 5 | 6 | 32 | 86 | 10200 |
| DFEC30-48S12W | 18 ~ 75 | 12 | 2.5 | 38 | 85 | 3300 |
| DFEC30-48S15W | 18 ~ 75 | 15 | 2 | 48 | 86 | 1100 |
| DFEC30-48S24W | 18 ~ 75 | 24 | 1.25 | 30 | 83 | 500 |
| DFEC30-48S28W | 18 ~ 75 | 28 | 1 | 30 | 84 | 340 |
| DFEC30-48D12W | 18 ~ 75 | ±12 | ±1.25 | 28 | 83 | ±1000 |
| DFEC30-48D15W | 18 ~ 75 | ±15 | ±1 | 28 | 84 | ±680 |

| INPUT SPECIFICATIONS | | | | | | |
|-------------------------------|-------------------------|------------------------------------|---------------------|------|------|------|
| Parameter | Conditions | | Min. | Typ. | Max. | Unit |
| Operating input voltage range | 24Vin(nom) | | 10 | 24 | 40 | 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) | | 10 | | | VDC |
| | 48Vin(nom) | | 18 | | | |
| Shutdown voltage | 24Vin(nom) | | 7 | 8 | 9.5 | VDC |
| | 48Vin(nom) | | 15 | 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 | | | mA |
| | | DC-DC OFF | Open or 3 ~ 12VDC | | | |
| | | Input current of Ctrl pin | -0.5 | 0.5 | | |
| | | Remote off input current | 3 | | | |

| 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 | | -0.5 | | +0.5 | % |
| Load regulation | No Load to Full Load | | 3.3Vout | | +2.0 | % |
| | | | Others | | -1.0 | |
| Cross regulation | Asymmetrical load 25%/100% FL | | Dual | | +5.0 | % |
| Voltage adjustability | Single output | | 28Vout | | +17 | % |
| | | | Others | | -3 | |
| Ripple and noise | Measured by 20MHz bandwidth | Single | 3.3Vout, 5Vout | | 50 | mVp-p |
| | | | 12Vout, 15Vout | | 75 | |
| | | Dual | 24Vout, 28Vout | | 130 | |
| | | | 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 | |
| | | | 24Vout | | 30 | |
| | | | 28Vout | | 36 | |
| Output indicator | | | Green LED | | | |
| Over load protection | % of Iout rated | | | 150 | | % |
| Short circuit protection | | | Continuous, automatic recovery | | | |

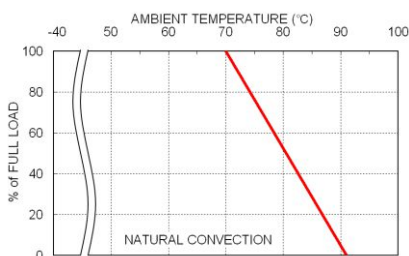
| GENERAL SPECIFICATIONS | | | | | | |
|------------------------|--------------------------|---------------------------|------|------|-----------------------------|------|
| Parameter | Conditions | | Min. | Typ. | Max. | Unit |
| Isolation voltage | 1 minute | Input to Output | 1600 | | | VDC |
| | | Input (Output) to Chassis | 1600 | | | |
| Isolation resistance | 500VDC | | 1 | | | GΩ |
| Isolation capacitance | | | | | 4000 | pF |
| Switching frequency | | | 270 | 300 | 330 | kHz |
| Safety approvals | IEC/ EN/ UL62368-1 | | | | UL:E193009 CB:UL(Demko) | |
| Chassis material | | | | | Aluminum | |
| Weight | | | | | 170g (5.98oz) | |
| MTBF | MIL-HDBK-217F, Full load | | | | 8.412 x 10 ⁵ hrs | |

| ENVIRONMENTAL SPECIFICATIONS | | | | | | |
|-------------------------------|------------------|--|------|------|------|--------------|
| Parameter | Conditions | | Min. | Typ. | Max. | Unit |
| Operating ambient temperature | Without derating | | -40 | | +63 | °C |
| | With derating | | +63 | | +94 | |
| Storage temperature range | | | -40 | | +105 | °C |
| Thermal shock | | | | | | MIL-STD-810F |
| Vibration | | | | | | IEC60068-2-6 |
| Relative humidity | | | | | | 5% to 95% RH |

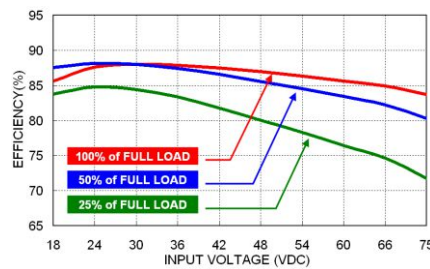
EMC SPECIFICATIONS

| Parameter | Conditions | Level |
|--------------------------------|---|------------------|
| EMI | EN55032 | Class B |
| EMS | EN55035 | |
| ESD | EN61000-4-2 Air ± 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 ± 1kV | 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 |

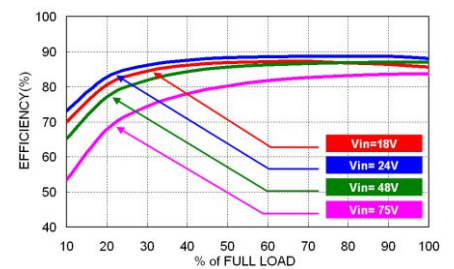
CHARACTERISTIC CURVE



DFEC30-48S05W Derating Curve

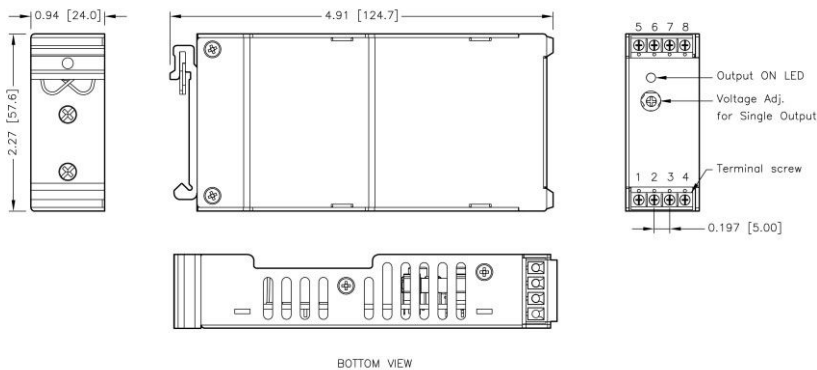


DFEC30-48S05W Efficiency vs. Input Voltage



DFEC30-48S05W Efficiency vs. Output Load

MECHANICAL DRAWING



TERMINAL CONNECTION

| NO. | SINGLE | DUAL |
|-----|--------|--------|
| 1 | Ctrl | Ctrl |
| 2 | -Vin | -Vin |
| 3 | -Vin | -Vin |
| 4 | +Vin | +Vin |
| 5 | NC | NC |
| 6 | -Vout | -Vout |
| 7 | +Vout | Common |
| 8 | 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. Clamp screw locked torque:
MAX 5.0kgf-cm/0.49N-m
4. Terminal screw locked torque:
MAX 2.5kgf-cm/0.25N-m