



UFEC30W SERIES

CHASSIS-MOUNT DC-DC CONVERTER

4:1 ULTRA WIDE INPUT RANGE
UP TO 30 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 | UVP | 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 | A | mA | % | µF |
| UFEC30-24S3P3W | 10 ~ 40 | 3.3 | 6 | 51 | 86 | 19500 |
| UFEC30-24S05W | 10 ~ 40 | 5 | 6 | 66 | 86 | 10200 |
| UFEC30-24S12W | 10 ~ 40 | 12 | 2.5 | 68 | 86 | 3300 |
| UFEC30-24S15W | 10 ~ 40 | 15 | 2 | 74 | 87 | 1100 |
| UFEC30-24S24W | 10 ~ 40 | 24 | 1.25 | 38 | 83 | 500 |
| UFEC30-24S28W | 10 ~ 40 | 28 | 1 | 44 | 84 | 340 |
| UFEC30-24D12W | 10 ~ 40 | ±12 | ±1.25 | 33 | 83 | ±1000 |
| UFEC30-24D15W | 10 ~ 40 | ±15 | ±1 | 39 | 84 | ±680 |
| UFEC30-48S3P3W | 18 ~ 75 | 3.3 | 6 | 31 | 86 | 19500 |
| UFEC30-48S05W | 18 ~ 75 | 5 | 6 | 31 | 87 | 10200 |
| UFEC30-48S12W | 18 ~ 75 | 12 | 2.5 | 37 | 86 | 3300 |
| UFEC30-48S15W | 18 ~ 75 | 15 | 2 | 47 | 87 | 1100 |
| UFEC30-48S24W | 18 ~ 75 | 24 | 1.25 | 29 | 84 | 500 |
| UFEC30-48S28W | 18 ~ 75 | 28 | 1 | 29 | 85 | 340 |
| UFEC30-48D12W | 18 ~ 75 | ±12 | ±1.25 | 27 | 84 | ±1000 |
| UFEC30-48D15W | 18 ~ 75 | ±15 | ±1 | 27 | 85 | ±680 |

PART NUMBER STRUCTURE

| | | | | | | |
|-----------------|------------------------|-----------------|---|-------------|--|--|
| UFEC30 - | 48 | S | 05 | W - | N | EC |
| Series Name | Input Voltage (VDC) | Output Quantity | Output Voltage (VDC) | Input Range | Remote Control Option | Assembly Option |
| | 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 | □: None EC: Enclosed Mounting Type DR: Din Rail Mounting Type ED: Enclosed & Din Rail Mounting Type |
| | | D: Dual | 12: ±12 15: ±15 | | | |

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 | |
| Input reflected ripple current | Nominal input and Full load | | | 15 | | mAp-p | |
| Start up voltage | 24Vin(nom) | | | | 10 | VDC | |
| | 48Vin(nom) | | | | 18 | | |
| Shutdown voltage | 24Vin(nom) | | | 8 | | VDC | |
| | 48Vin(nom) | | | 16 | | | |
| 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 (Standard) | DC-DC ON | Open or 3 ~ 12VDC | | mA | |
| | | | DC-DC OFF | Short or 0 ~ 1.2VDC | | | |
| | | Negative logic (Option) | DC-DC ON | Short or 0 ~ 1.2VDC | | | |
| | | | 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 | | +1.5 | % |
| | | | Others | | +1.0 | |
| Cross regulation | Asymmetrical load 25%/100% FL | | -5.0 | | +5.0 | % |
| Voltage adjustability | Single output | | 28Vout | | +17 | % |
| | | | Others | | +10 | |
| Ripple and noise | Measured by 20MHz bandwidth | Single | 3.3Vout, 5Vout, 12Vout, 15Vout, 24Vout, 28Vout | | 50 | mVp-p |
| | | | Dual | | 75 | |
| | | | All | | 130 | |
| 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 meets | | | UL60950-1 EN60950-1 IEC60950-1 | | | |
| Chassis material | | | Aluminum | | | |
| Weight | | | 110g (3.87oz) | | | |
| MTBF | MIL-HDBK-217F, Full load | | 8.277 x 10 ⁵ hrs | | | |

ENVIRONMENTAL SPECIFICATIONS

| Parameter | Conditions | Min. | Typ. | Max. | Unit |
|-------------------------------|----------------------|------|------|------|--------------|
| Operating ambient temperature | Without derating | -40 | | +59 | °C |
| | With derating | +59 | | +85 | |
| Over temperature protection | DC/DC Converter Case | | 115 | | °C |
| Storage temperature range | | -40 | | +105 | °C |
| Thermal shock | | | | | MIL-STD-810F |
| Vibration | | | | | MIL-STD-810F |
| Relative humidity | | | | | 5% to 95% RH |

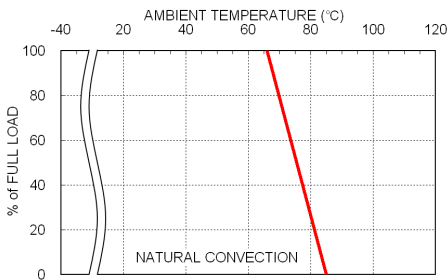
EMC SPECIFICATIONS

| Parameter | Conditions | Level |
|--------------------------------|---|------------------|
| EMI | EN55022 | Class B |
| ESD | EN61000-4-2 Air ± 8kV and Contact ± 6kV | 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 |

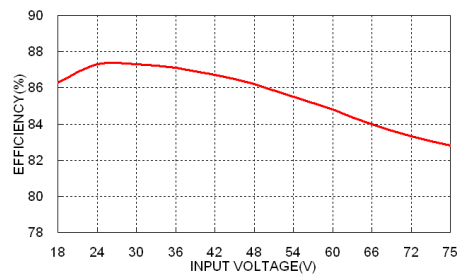
Note:

1. Test by minimum input and constant resistive load.

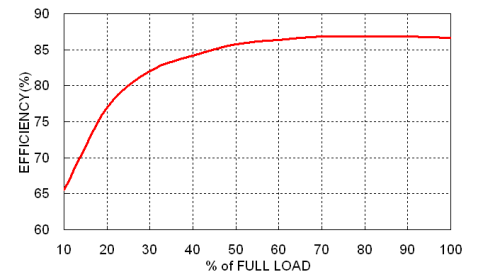
CHARACTERISTIC CURVE



UFEC30-48S05W Derating Curve



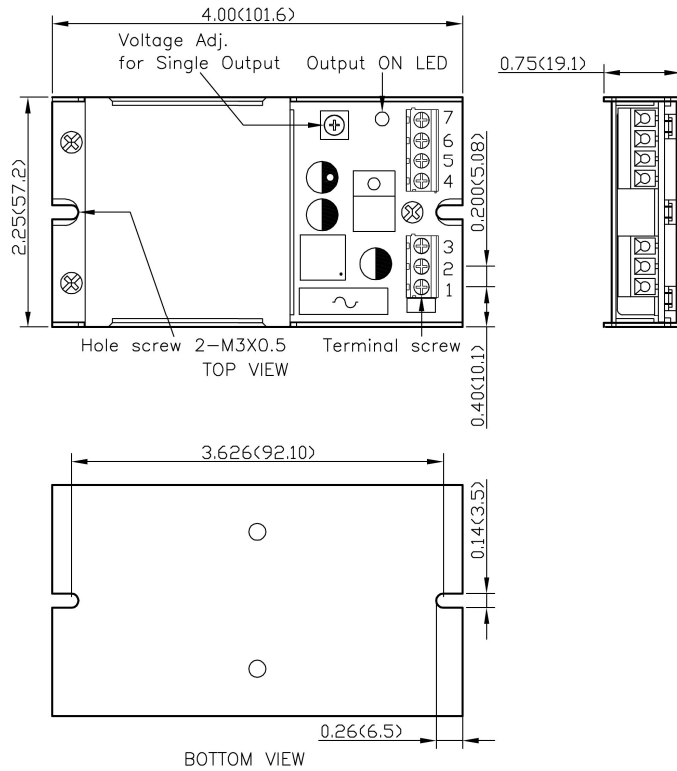
UFEC30-48S05W Efficiency vs. Input Voltage



UFEC30-48S05W Efficiency vs. Output Load

MECHANICAL DRAWING

CHASSIS MOUNTING TYPE



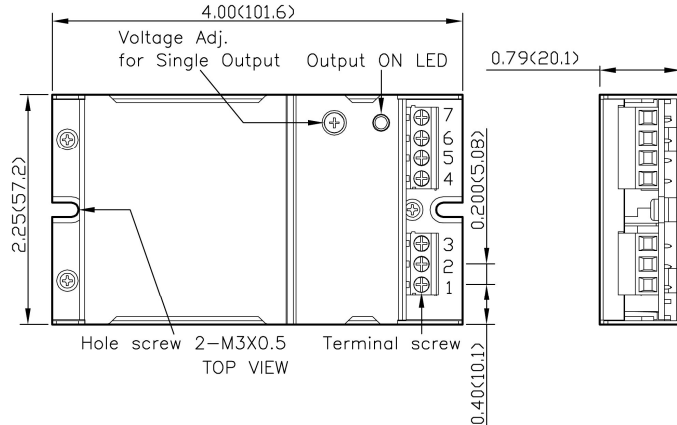
PIN CONNECTION

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

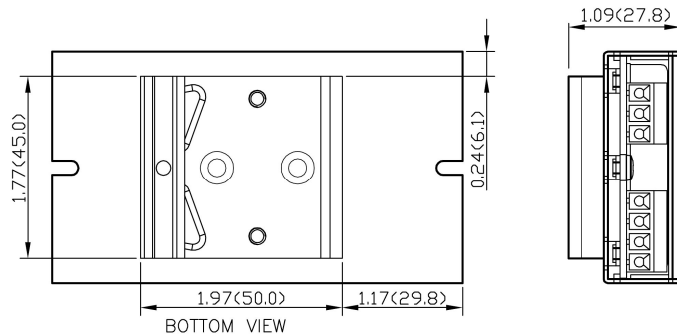
* NC : No Connection

* 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)
4. Tolerance : 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)