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# DPX40/60 Series

## 40-60W Single, Dual and Triple Output Isolated DIN-Rail Mount DC-DC Converters

https://product.tdk.com/en/power/dpx
https://www.emea.lambda.tdk.com/uk/products/dpx




Industrial COMM Broadcast

The DPX DIN rail mount DC-DC converters are an ideal all-in-one-package for generating additional isolated and regulated voltages from a 24Vdc DIN rail bus. Fully protected and with Class B EMC performance, the DPX40/60 series is available with single, dual or triple output models and power levels from 40 to 60W. All commonly requested voltages are covered by the series, and the units will operate from 12V, 24V or 48V nominal DC inputs with 2:1 or 4:1 ranges. These power supplies are convection cooled and operate over a wide temperature range from -40 to +85°C, with appropriate derating at high temperatures. The DPX is also designed to meet MIL-STD-810F shock & vibration standards.

| Features | Benefits |
|---|---|
| • All In One Package | • Easy to Use and Mount |
| • Wide Range Input | • Less Parts to Inventory |
| • 1600Vdc Input to Output Isolation | • Output Voltages Can Be Isolated for Lower Noise |
| • CE and UKCA Marks | • Easier System Compliance |

| DPX- | 40 | -24 | S | 05 | /N |
|---|---|---|---|---|---|
| | 40 40W Output Power<br>60 60W Output Power | -12 9.5 - 18V input<br>-24 18 - 36V input<br>-48 36 - 75V input<br>-24W 9.5 - 36V input<br>-48W 18 - 75V input | S Single Output<br>D Dual Output<br>T Triple Output | Single Output<br>3P3 3.3V Output Voltage<br>05 5V Output Voltage<br>12 12V Output Voltage<br>15 15V Output Voltage<br>Single and Dual Output<br>12 ±12V Output Voltage<br>15 ±15V Output Voltage<br>Triple Output<br>3312 3.3V, ±12V Output Voltage<br>3315 3.3V, ±15V Output Voltage<br>0512 5V, ±12V Output Voltage<br>0515 5V, ±15V Output Voltage | Blank Positive Logic Remote On/Off<br>/N Negative Logic Remote On/Off |

Preferred model
*Not available for 60W models

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## Model Selector

| Model | Input Voltage (V) | Output Voltage (V) | Maximum Load (A) | Ripple & Noise ($mV_{pk-pk}$) | No Load Input Current (mA) | Max Load Input Current (A) | Efficiency (%) | Maximum Load Capacitance (uF) |
|---|---|---|---|---|---|---|---|---|
| **Single Outputs** | | | | | | | | |
| DPX40-24WS3P3 | 9.5 - 36 | 3.3 | 10.0 | 50 | 83 | 1741 | 83 | 25750 |
| DPX40-24WS05 | 9.5 - 36 | 5 | 8.0 | 50 | 103 | 2083 | 84 | 13600 |
| DPX40-24WS12 | 9.5 - 36 | 12 | 3.33 | 75 | 55 | 2083 | 84 | 2360 |
| DPX40-24WS15 | 9.5 - 36 | 15 | 3.67 | 75 | 56 | 2083 | 84 | 1510 |
| DPX40-48WS3P3 | 18 - 75 | 3.3 | 10.0 | 50 | 63 | 859 | 84 | 25750 |
| DPX40-48WS05 | 18 - 75 | 5 | 8.0 | 50 | 68 | 1029 | 86 | 13600 |
| DPX40-48WS12 | 18 - 75 | 12 | 3.33 | 75 | 34 | 1029 | 85 | 2360 |
| DPX40-48WS15 | 18 - 75 | 15 | 2.67 | 75 | 34 | 1029 | 85 | 1510 |
| DPX60-24S3P3 | 18 - 36 | 3.3 | 14.0 | 75 | 103 | 2376 | 85 | 36000 |
| DPX60-24S05 | 18 - 36 | 5 | 12.0 | 75 | 155 | 3049 | 86 | 20400 |
| DPX60-24S12 | 18 - 36 | 12 | 5.0 | 100 | 155 | 3049 | 86 | 3550 |
| DPX60-24S15 | 18 - 36 | 15 | 4.0 | 100 | 155 | 3049 | 86 | 2300 |
| DPX60-48S3P3 | 36 -75 | 3.3 | 14.0 | 75 | 83 | 1188 | 85 | 36000 |
| DPX60-48S05 | 36 -75 | 5 | 12.0 | 75 | 104 | 1524 | 86 | 20400 |
| DPX60-48S12 | 36 -75 | 12 | 5.0 | 100 | 104 | 1524 | 86 | 3550 |
| DPX60-48S15 | 36 -75 | 15 | 4.0 | 100 | 104 | 1524 | 86 | 2300 |
| **Dual Outputs** | | | | | | | | |
| DPX40-24WD12 | 9.5 - 36 | ±12 | ±1.667 | 120 | 65 | 2110 | 83 | ±1200 |
| DPX40-24WD15 | 9.5 - 36 | ±15 | ±1.333 | 150 | 76 | 2110 | 83 | ±750 |
| DPX40-48WD12 | 18 - 75 | ±12 | ±1.667 | 120 | 34 | 1042 | 84 | ±1200 |
| DPX40-48WD15 | 18 - 75 | ±15 | ±1.333 | 150 | 34 | 1042 | 84 | ±750 |
| **Triple Outputs** | | | | | | | | |
| DPX40-12T3312 | 9.5 - 18 | 3.3 / ±12 | 6.0 / ±0.4 | 50 / 75 | 222 | 3223 | 80 | 13000 / ±330 |
| DPX40-12T3315 | 9.5 - 18 | 3.3 / ±15 | 6.0 / ±0.3 | 50 / 75 | 237 | 3158 | 80 | 13000 / ±110 |
| DPX40-12T0512 | 9.5 - 18 | 5 / ±12 | 6.0 / ±0.4 | 50 / 75 | 287 | 4231 | 82 | 6800 / ±330 |
| DPX40-12T0515 | 9.5 - 18 | 5 / ±15 | 6.0 / ±0.3 | 50 / 75 | 287 | 4167 | 82 | 6800 / ±110 |
| DPX40-24T3312 | 18 - 36 | 3.3 / ±12 | 6.0 / ±0.4 | 50 / 75 | 67 | 1571 | 82 | 13000 / ±330 |
| DPX40-24T3315 | 18 - 36 | 3.3 / ±15 | 6.0 / ±0.3 | 50 / 75 | 67 | 1538 | 82 | 13000 / ±110 |
| DPX40-24T0512 | 18 - 36 | 5 / ±12 | 6.0 / ±0.4 | 50 / 75 | 67 | 2063 | 84 | 6800 / ±330 |
| DPX40-24T0515 | 18 - 36 | 5 / ±15 | 6.0 / ±0.3 | 50 / 75 | 77 | 2031 | 84 | 6800 / ±110 |
| DPX40-48T3312 | 36 -75 | 3.3 / ±12 | 6.0 / ±0.4 | 50 / 75 | 42 | 766 | 84 | 13000 / ±330 |
| DPX40-48T3315 | 36 -75 | 3.3 / ±15 | 6.0 / ±0.3 | 50 / 75 | 42 | 750 | 84 | 13000 / ±110 |
| DPX40-48T0512 | 36 -75 | 5 / ±12 | 6.0 / ±0.4 | 50 / 75 | 42 | 1006 | 86 | 6800 / ±330 |
| DPX40-48T0515 | 36 -75 | 5 / ±15 | 6.0 / ±0.3 | 50 / 75 | 47 | 991 | 86 | 6800 / ±110 |

## Specifications

| Model | | DPX40 / DPX60 |
|---|---|---|
| **Input** | | |
| Input Voltage Range | - | See Model Selector Table |
| Input Surge Voltage (100ms maximum) | Vdc | 12V input: 36, 24V input: 50, 48V input: 100 |
| Start-up Time (typ) | ms | Power up: 100, Remote: 20 |
| No Load Input Current | - | See Model Selector Table |
| Efficiency | - | See Model Selector Table |
| Conducted & Radiated EMI | - | EN55032-B |
| Immunity | - | See Immunity Section |
| Safety Certifications and Markings | - | CE and UKCA Marks |

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## Immunity

| Test | Standard | Test Level | Criteria | |
|---|---|---|---|---|
| ESD | EN61000-4-2 | 3 | A / B | Air ± 8kV and Contact ± 6kV (Criteria B for DPX40 Models) |
| Radiated Susceptibility | EN61000-4-3 | 3 | A | 10V/m |
| Electrical Fast Transient Burst (1) | EN61000-4-4 | 3 (±2kV) | A / B | Criteria A for DPX60 Models |
| Surge (1) | EN61000-4-5 | 2 (±1kV) | A / B | Criteria B for DPX40 Models (Narrow Range Input Only) |
| Conducted Susceptibility | EN61000-4-6 | 3 | A | 10Vrms |
| Magnetic Fields | EN61000-4-8 | 5 | A | 100A/m continuous; 1000A/m 1s |

## Specifications

| Model | | DPX40 | DPX60 |
|---|---|---|---|
| **Output** | | | |
| Output Voltage Accuracy | % | Single / Dual / Triple Main Output: ±1<br>Triple Auxiliaries: ±5 | |
| Output Voltage Adjustment | % | ±10 (Single Output Only) | |
| Switching Frequency (typ) | kHz | 300 | |
| Line Regulation | % | LL to HL at full load Main ±1, LL to HL at full load Auxiliary ±5 | |
| Load Regulation (2) | % | LL to HL at full load Main ±2.5, LL to HL at full load Auxiliary ±5 | |
| Cross Regulation (25% to 100%) | % | Triple (main) ±1, Dual / Triple (auxiliaries) ±5 | |
| External Load Capacitance | - | See Model Selector Table | |
| Ripple & Noise (3) | - | See Model Selector Table | |
| Temperature Coefficient | %/°C | ±0.02 | |
| Minimum Load | % | Single Output: 0, Dual & Triple Outputs: 10 | |
| Transient Response (25% step load) | µs | 250 | |
| Overcurrent Protection | % | 150 (Hiccup Mode with Auto-Recovery) | |
| Overvoltage Protection (Zener Diode Clamp) | V | 3.3V: 3.9, 5V: 6.2, 12V: 15, 15V: 18 | 3.3V: 3.7-5.4, 5V: 5.6-7.0, 12V: 13.8-17.5, 15V: 16.8-20.5 |
| Short Circuit Protection | - | Hiccup Mode with Auto-Recovery | |
| Remote On/Off | - | Positive Logic: Open or 3-12V, OFF Short or <1.2V<br>Negative Logic (-N suffix): ON: Short or <1.2V, OFF Open or 3-12V | |
| **Environmental** | | | |
| Operating Temperature | °C | -40 to 85 (Derating at high ambient temperatures is model dependent) | |
| Storage Temperature | °C | -40 to +105 | |
| Humidity (non condensing) | %RH | 5 - 95 (Operating & Storage) | |
| Cooling | - | Convection | |
| Withstand Voltage (For 1 minute) | Vdc | Input to Output: 1,600 | |
| Isolation Resistance | Ω | $10^9$ | |
| Isolation Capacitance | pF | 4000 | |
| Vibration (Operating) | - | MIL-STD-810F | |
| Thermal Shock | - | MIL-STD-810F | |
| **Other** | | | |
| Weight (Typ) | g | 182 | |
| Size (WxHxD) | mm | 24.5 x 57.6 x 125.0 | |
| Size (WxHxD) | Inches | 0.96 x 2.27 x 4.92 | |
| MTBF (4) | Hours | 968,800 | 957,600 |
| Warranty | yrs | 3 | |

Notes
See website for detailed specifications, test methods and installation manual
(1) With an input filter capacitor (Nippon chemi-con KY series, 220µF/100V)
(2) Cross regulation for triple outputs: Main output 100% load, auxiliary 100% , other auxiliary 25% to 100%. Auxiliary outputs (V2 and V3): Main output 100% load, auxiliary 100%, other auxiliary 25% to 100% or main output 25%, auxiliary output 25%, other auxiliary 25% to 100%
(3) Measured with a 20MHz bandwidth oscilloscope
(4) BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40˚C

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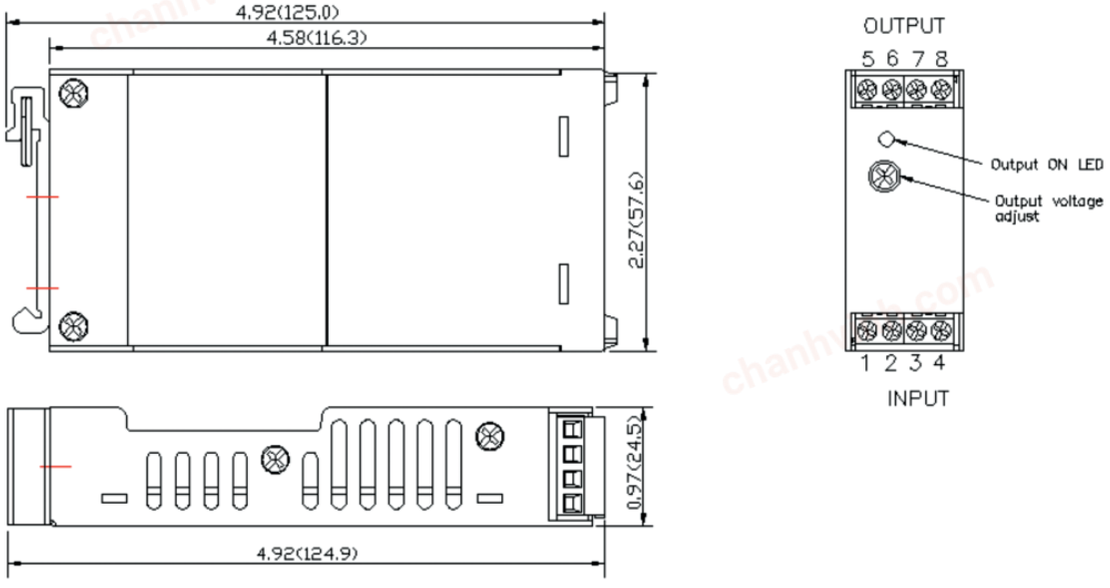
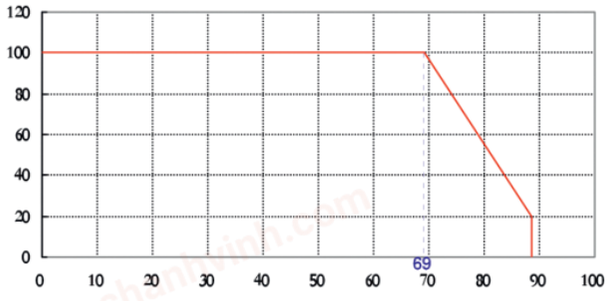
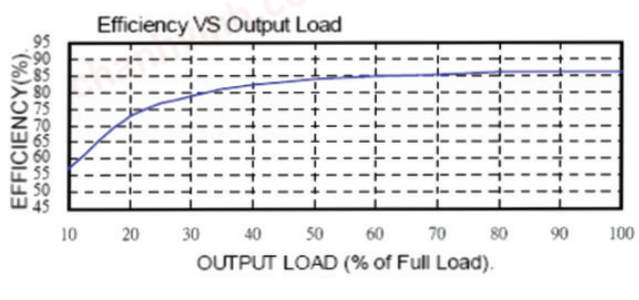
## Outline Drawing DPX40W Series



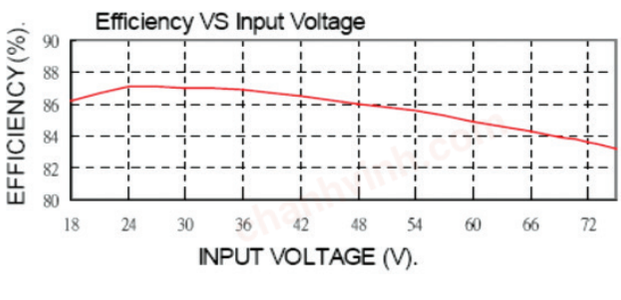

## Derating Curve DPX40-48WS05




## Efficiency / Load Curve DPX40-48WS05




## Efficiency / Input Curve DPX40-48WS05




## Pinout

| PIN | Single | Dual |
|---|---|---|
| 1 | CTRL | CTRL |
| 2 | - Input | - Input |
| 3 | - Input | - Input |
| 4 | + Input | + Input |
| 5 | NC | NC |
| 6 | - Output | - Output |
| 7 | + Output | Common |
| 8 | NC | + Output |

NC: No connection
Screw terminals - wire range from 14 to 18 AWG

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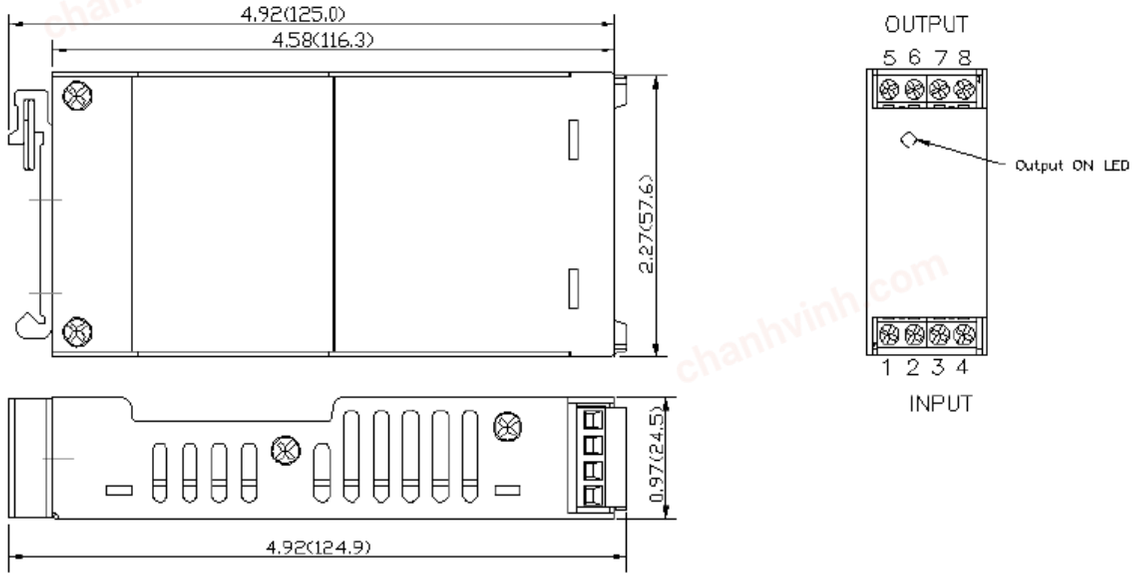
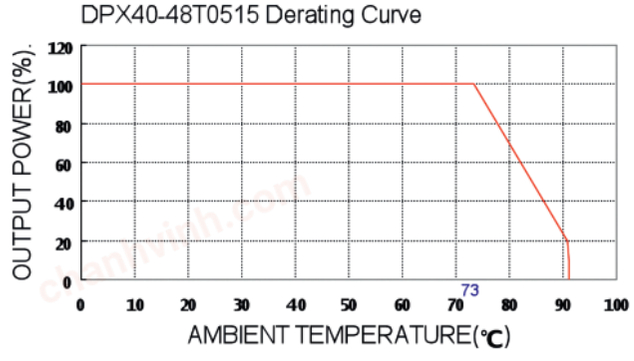
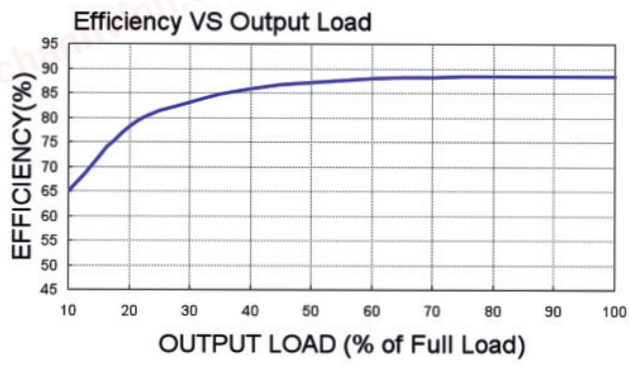
## Outline Drawing DPX40W Triple Output Series



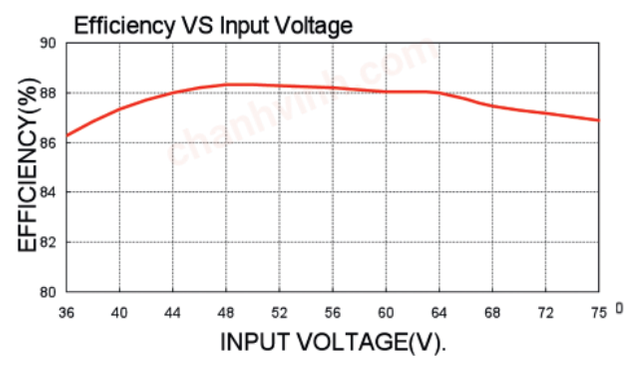

## Derating Curve DPX40-48T0515




## Efficiency / Load Curve DPX40-48T0515




## Efficiency / Input Curve DPX40-48T0515




## Pinout

| PIN | Function |
|---|---|
| 1 | CTRL |
| 2 | - Input |
| 3 | - Input |
| 4 | + Input |
| 5 | + Auxiliary |
| 6 | Common |
| 7 | - Auxiliary |
| 8 | + Output |

Screw terminals - wire range from 14 to 18 AWG

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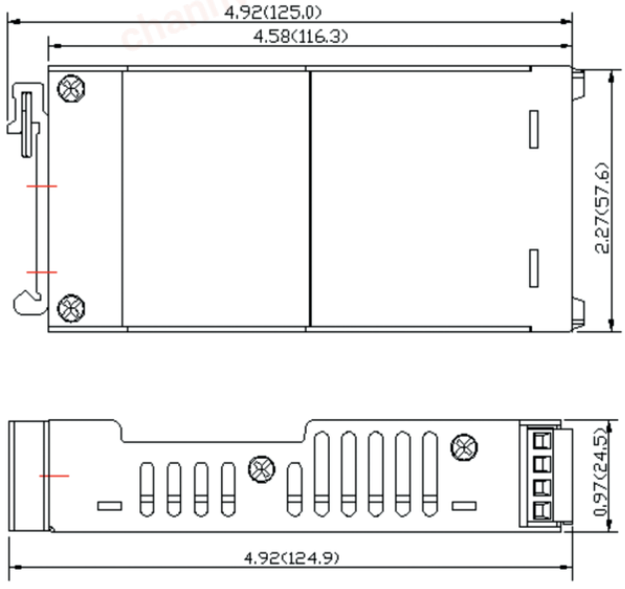
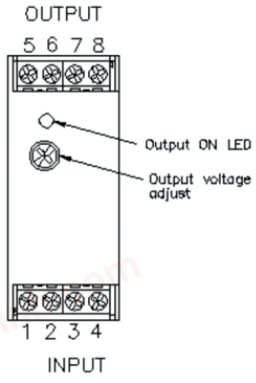
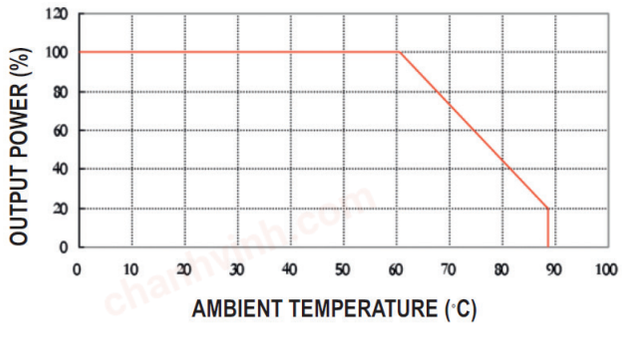
## Outline Drawing DPX60W Series



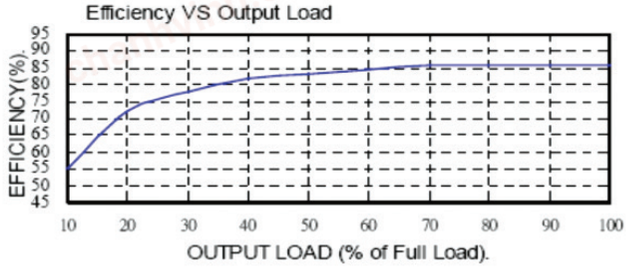




**All dimensions in inches (mm)**
Tolerance: X. XX ± 0.04 (X.X±1.0)
X. XXX± 0.02 (X.XX±0.5)

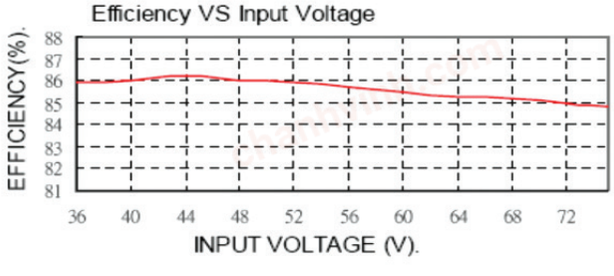
## Derating Curve DPX60-48S05




## Efficiency / Load Curve DPX40-48S05




## Efficiency / Input Curve DPX40-48S05




## Pinout

| PIN | Single |
|---|---|
| 1 | CTRL |
| 2 | - Input |
| 3 | - Input |
| 4 | + Input |
| 5 | NC |
| 6 | - Output |
| 7 | + Output |
| 8 | NC |

NC: No connection
Screw terminals - wire range from 14 to 18 AWG

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