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

https://product.tdk.com/en/power/dpx
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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 60 60W Output Power	-12 9.5 - 18V input -24 18 - 36V input -48 36 - 75V input -24W 9.5 - 36V input -48W 18 - 75V input	S Single Output D Dual Output T Triple Output	Single Output 3P3 3.3V Output Voltage 05 5V Output Voltage 12 12V Output Voltage 15 15V Output Voltage Single and Dual Output 12 ±12V Output Voltage 15 ±15V Output Voltage Triple Output 3312 3.3V, ±12V Output Voltage 3315 3.3V, ±15V Output Voltage 0512 5V, ±12V Output Voltage 0515 5V, ±15V Output Voltage	Blank No Remote On/Off -N Negative Logic Remote On/Off -P Positive Logic Remote On/Off*

Preferred model
*Not available for 60W models

Model Selector

Model	Input Voltage (V)	Output Voltage (V)	Maximum Load (mA)	Ripple & Noise (mV_{pk-pk})	No Load Input Current	Max Load Input Current	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

Immunity

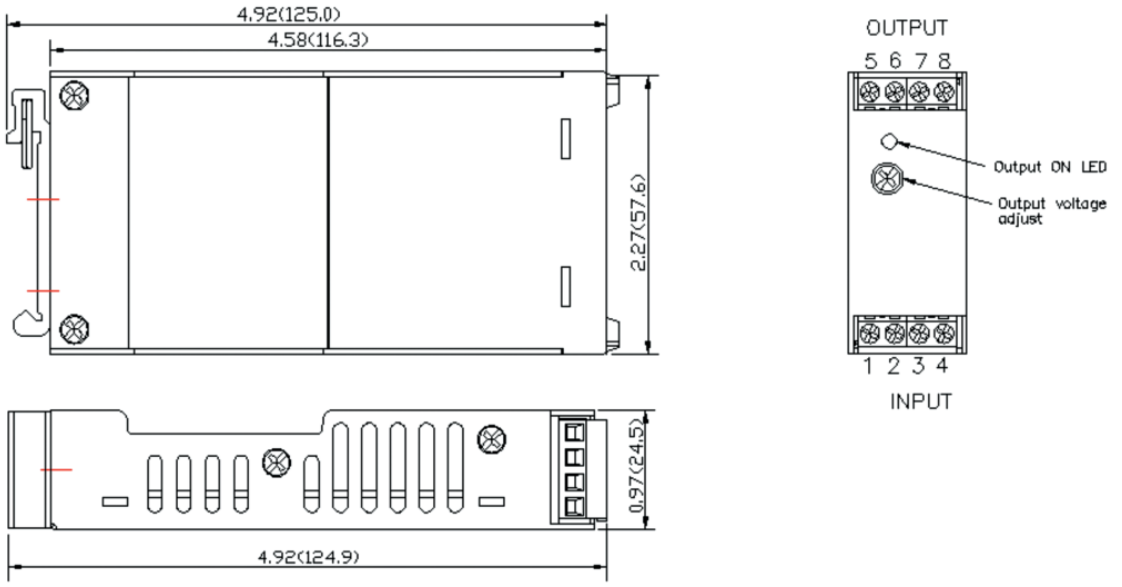
Test	Standard	Test Level	Criteria	
ESD	EN61000-4-2	3	A / B	Air ± 8kV and Contact ± 6kV (Criteria B for DPX40 Models)
Radiated Susceptibility	EN61000-4-3	3	A	10V/m
Electrical Fast Transient Burst (1)	EN61000-4-4	3 (±2kV)	A / B	Criteria A for DPX60 Models
Surge (1)	EN61000-4-5	2 (±1kV)	A / B	Criteria B 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

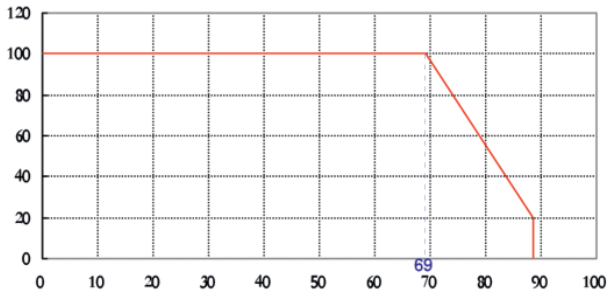
Model		DPX40	DPX60
Output			
Output Voltage Accuracy	%	Single / Dual / Triple Main Output: ±1 Triple Auxiliaries: ±5	
Output Voltage Adjustment	%	±10 (Single Output Only)	
Switching Frequency (typ)	kHz	300	
Line Regulation	%	LL to HL at full load Main ±1, LL to HL at full load Auxillary ±5	
Load Regulation (2)	%	LL to HL at full load Main ±2.5, LL to HL at full load Auxillary ±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 (-P): Open or 3-12V, OFF Short or <1.2V Negative Logic (-N): 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 (LxWxH)	mm	57.6 x 24.5 x 125.0	
Size (LxWxH)	Inches	2.27 x 0.96 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

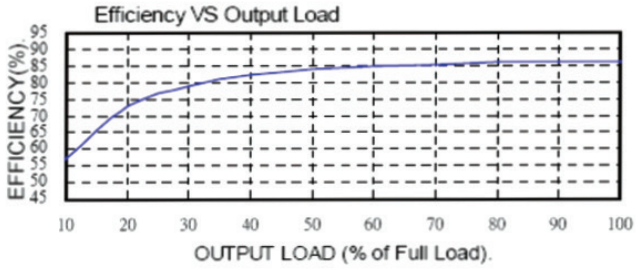
Outline Drawing DPX40W Series



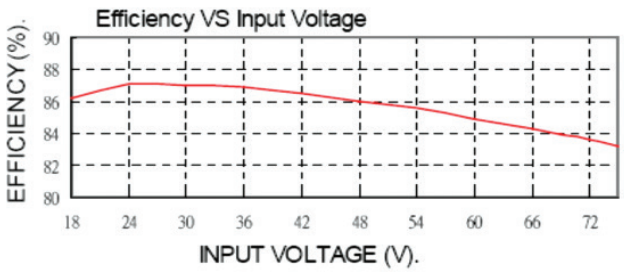
Derating Curve DPX40-48WS05



Efficiency / Load Curve DPX40-48WS05



Efficiency / Input Curve DPX40-48WS05

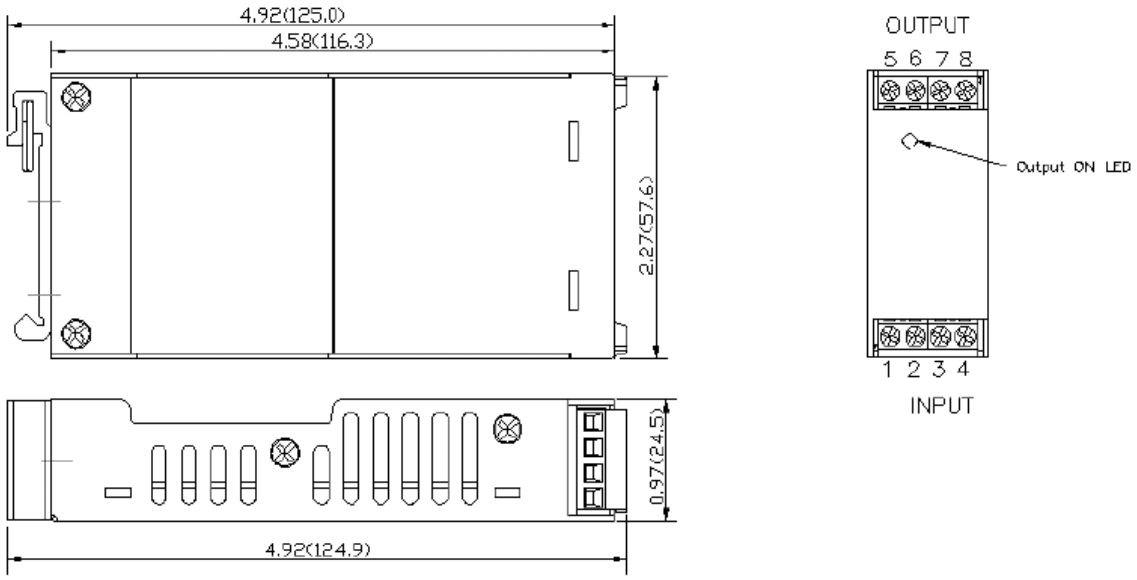


Pinout

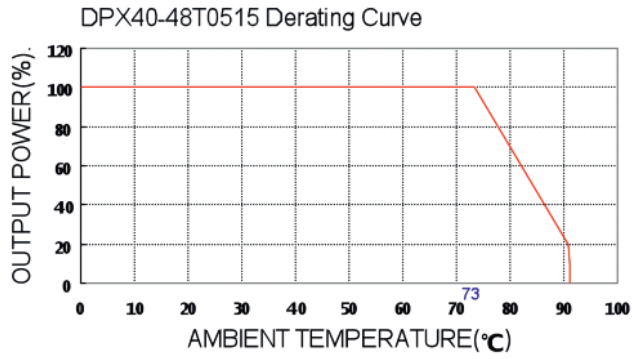
PIN	Single	Dual
1	CTRL	CTRL
2	- Input	- Input
3	- Input	- Input
4	+ Input	+ Input
5	NC	NC
6	- Output	- Output
7	+ Output	Common
8	NC	+ Output

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

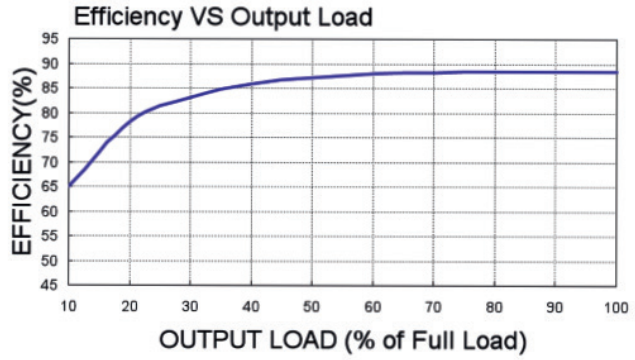
Outline Drawing DPX40W Triple Output Series



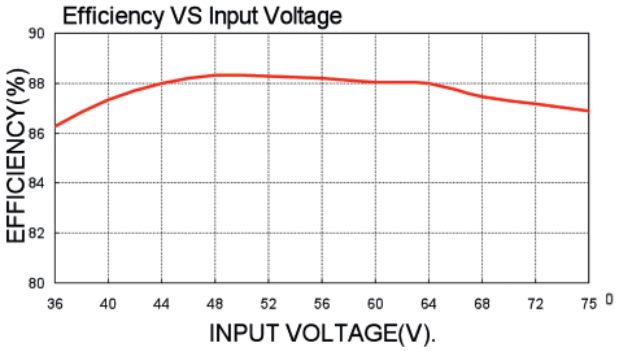
Derating Curve DPX40-48T0515



Efficiency / Load Curve DPX40-48T0515



Efficiency / Input Curve DPX40-48T0515

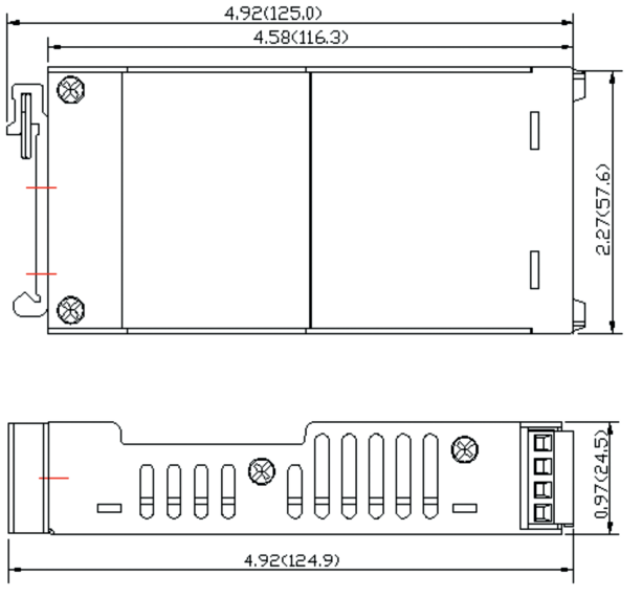


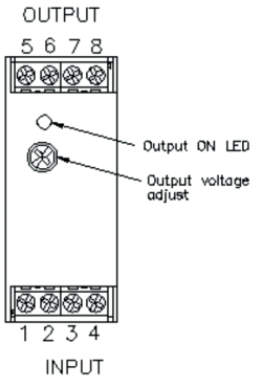
Pinout

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

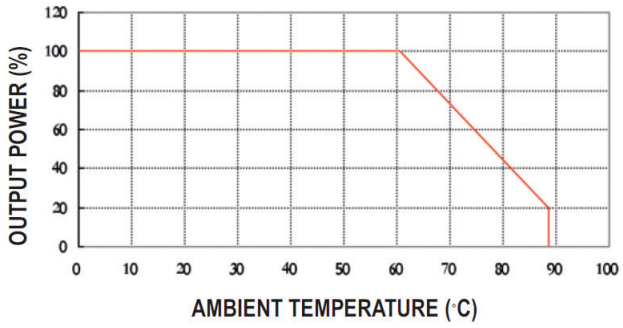
Outline Drawing DPX60W Series



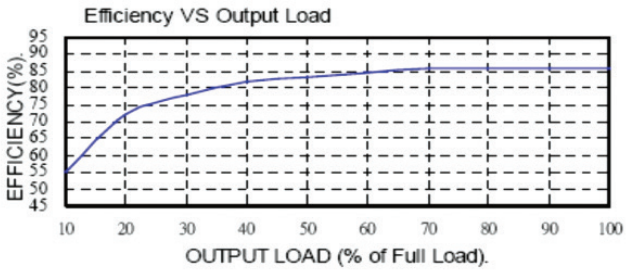


All dimensions in inches (mm)
Tolerance: X. XX ± 0.04 (X.X±1.0)
X. XXX± 0.02 (X.XX±0.5)

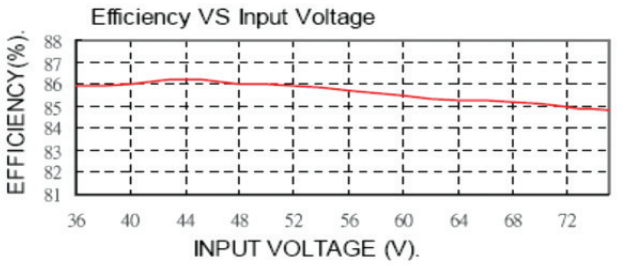
Derating Curve DPX60-48S05



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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