

120W - 960W DIN Rail Mount Three Phase Power Supplies

<https://product.tdk.com/en/power/dr3>

<https://www.emea.lambda.tdk.com/uk/products/dr3-3-phase-series>



Industrial



Test



Semi-Fab



The DRB120-3, DRB240-3, DRB480-3 and DRB960-3 series supports the growing trend for mid range 3-phase input DIN power supplies for industrial and process control applications. The series offers an excellent balance between functionality and price, combining reliability and compact dimensions with energy saving efficiencies of up to 96.3%. Conservatively rated electrolytic capacitor temperatures offer improved field life-times of typically 10 years. Now available in four power levels, 120, 240, 480 and 960W, the series provides a choice of 12V, 24V, 48 or 72V outputs. All models have boost (peak) power ratings to handle capacitive loading. A low energy inrush current level avoids nuisance tripping of circuit breakers. Units can be connected in parallel to provide more power or for redundant applications. A DC Good relay, remote on/off and a choice of models with either screw or push-in wire terminals for automated and robotic wiring.

Features	Benefits
• 50% Boost (peak) Power Ratings for up to 600 Seconds	• Supports Capacitive and Inductive Loading
• High Efficiency up to 96.3%	• Lowers Operating Costs and Improves Thermal Performance
• Narrow Case Widths	• Occupies Less Space on the DIN rail
• Curve B Radiated and Conducted EMI	• Reduced Electrical Noise in the System
• Long E-Capacitor Life (typically 10 Years)	• Improved Field Life
• Low Off-Load Power Consumption	• Saves Energy

Model Selector

Model	Output Voltage (V)	Adjustment Range (V)	Maximum Current (A)	Maximum Peak Current (A) ⁽¹⁾	Maximum Power (W)	Maximum Peak Power (W) ⁽¹⁾	Terminal Type	Efficiency (%) (400/500Vac) ⁽²⁾
DRB120-12-3-A0	12	11.4 - 15	10	14.5 for 600s	120	174	Screw	89.4 / 89.1
DRB120-12-3-A1	12	11.4 - 15	10	14.5 for 600s	120	174	Push-in	89.4 / 89.1
DRB120-24-3-A0	24	22.5 - 29	5	7.5 for 600s	120	180	Screw	91.3 / 91.2
DRB120-24-3-A1	24	22.5 - 29	5	7.5 for 600s	120	180	Push-in	91.3 / 91.2
DRB240-24-3-A0	24	22.5 - 29	10	15 for 60s	240	360	Screw	93.1 / 93.2
DRB240-24-3-A1	24	22.5 - 29	10	15 for 60s	240	360	Push-in	93.1 / 93.2
DRB480-24-3-A0	24	22.5 - 29	20	30 for 7s	480	720	Screw	95.1 / 94.9
DRB480-24-3-A1	24	22.5 - 29	20	30 for 7s	480	720	Push-in	95.1 / 94.9
DRB240-48-3-A0	48	45 - 56	5	7.5 for 60s	480	360	Screw	93.8 / 94.0
DRB240-48-3-A1	48	45 - 56	5	7.5 for 60s	480	360	Push-in	93.8 / 94.0
DRB480-48-3-A0	48	45 - 56	10	15 for 7s	480	720	Screw	95.3 / 95.1
DRB480-48-3-A1	48	45 - 56	10	15 for 7s	480	720	Push-in	95.3 / 95.1
DRB480-72-3-A0	72	70 - 85	6.7	10 for 5s	480	720	Screw	95.8 / 95.6
DRB480-72-3-A1	72	70 - 85	6.7	10 for 5s	480	720	Push-in	95.8 / 95.6
DRB960-24-3-A0	24	22.5 - 29	40	60 for 5s	960	1440	Screw	95.2 / 95.1
DRB960-24-3-A1	24	22.5 - 29	40	60 for 5s	960	1440	Push-in	95.2 / 95.1
DRB960-48-3-A0	48	45 - 56	20	30 for 5s	960	1440	Screw	95.9 / 95.8
DRB960-48-3-A1	48	45 - 56	20	30 for 5s	960	1440	Push-in	95.9 / 95.8
DRB960-72-3-A0	72	70 - 85	13.3	20 for 5s	960	1440	Screw	96.3 / 96.2
DRB960-72-3-A1	72	70 - 85	13.3	20 for 5s	960	1440	Push-in	96.3 / 96.2

Related Products

Type	Part Number(s)	Description
Redundancy module	DRM40	20 to 40A DIN rail Redundancy module
Buffer DIN rail modules	DBM20	20A DIN rail Buffer (hold-up) modules
Low power DIN rail power supplies	DRB15, 30, 50, 100	15 to 100W AC-DC single phase DIN rail power supplies
Mid power DIN rail power supplies	DRB120, 240, 480	120 to 480W AC-DC single phase DIN rail power supplies
Mid to high power premium DIN rail power supplies	DRF120, 240, 480, 960	120 to 960W AC-DC single phase DIN rail power supplies
DIN rail mount filters	RTMN	6A to 60A 500Vac three phase 2 stage filters with pulse attenuation

Specifications					
Model		DRB120-12-3-Ax DRB120-24-3-Ax	DRB240-24-3-Ax DRB240-48-3-Ax	DRB480-24-3-Ax DRB480-48-3-Ax DRB480-72-3-Ax	DRB960-24-3-Ax DRB960-48-3-Ax DRB960-72-3-Ax
Input					
Input Voltage Range	V	3-phase 350 – 575 Vac, 450-810 Vdc			
Nominal Input Voltage Range	V	3-phase 400-500 Vac (Note safety certified 3-phase for 350-550 Vac and 530-675 Vdc)			
Input Frequency	Hz	47 - 63			
Input Current (Per Phase Max)	A	0.5	0.8	1.2	2.2
Inrush Current (Typical Cold Start 400 / 500Vac)	A	25 / 30	25 / 30	17 / 22A	17 / 20
Dropped Phase Output Power ⁽¹⁾	W	120	240	240	480
Leakage Current (575Vac, 60Hz)	mA	<1			
Touch Current (575Vac, 60Hz)	uA	<50			
Power Factor (Typ. 400/500Vac)	-	0.5	0.6	0.92	0.94
Harmonic Compliance	-	Meets EN61000-3-2 Class A			
No Load Power Consumption (max in standby) ⁽¹⁾	W	1.7 / 2.1	1.6 / 2.0 1.9 / 2.3	1.6 / 1.9	2.0 / 2.3
Hold Up Time (minimum) at 400 / 500Vac	ms	20 / 40	20 / 40	24	20
Efficiency	-	See model selector table			
Average Efficiency (400 / 500Vac) ⁽³⁾	%	87.7 / 89.8 89.4 / 88.5	92.3 / 91.9 92.8 / 92.3	91.4 / 93.7 94.2 / 93.8 94.5 / 94.1	94.7 / 94.3 95.2 / 94.7 95.5 / 95.0
Conducted & Radiated EMI	-	EN55011-B, CISPR11-B			
Immunity	-	See immunity table			
Safety Certifications and Markings	-	IEC/EN/UL/CSA 61010-1, 61010-2-201, 62368-1, CE Mark and UKCA Mark Designed to meet: IEC 60950-1, EN 60204-1, IEC/EN 62477-1, 61204-7, 61558-2-16			

Immunity				
Test	Standard	Test Level	Criteria	
ESD	EN61000-4-2	See immunity report	A	4kV contact 8kV air discharge
Radiated Susceptibility	EN61000-4-3	See immunity report	A	10V/m: 80MHz to 1GHz 3V/m 1.4GHz to 2GHz 1V/m 2GHz to 2.7GHz
Electrical Fast Transient Burst	EN61000-4-4	See immunity report	A	Input 4kV 5kHz Output 2kV 5kHz Signal contact 2kV 5kHz
Surge	EN61000-4-5	See immunity report	A	Input symmetrical (L-L) 2kV Input asymmetrical (L-PE) 4kV Output symmetrical (L-L) 0.5kV Output asymmetrical (L-PE) 1kV
Conducted Susceptibility	EN61000-4-6	10V	A	150kHz to 80MHz
Magnetic Fields	EN61000-4-8	30A/m	A	50Hz, 60s each axis (x, y, z)
Voltage Dips and Input Interruptions	EN61000-4-11 EN61000-4-34	500ms	A	400Vac at 70%, 50Hz
		200ms	A	400Vac at 40%, 50Hz
		20ms	A	400Vac at 0%, 50Hz
		5000ms	C	400Vac at 0%, 50Hz

Specifications					
Model		DRB120-12-3-Ax DRB120-24-3-Ax	DRB240-24-3-Ax DRB240-48-3-Ax	DRB480-24-3-Ax DRB480-48-3-Ax DRB480-72-3-Ax	DRB960-24-3-Ax DRB960-48-3-Ax DRB960-72-3-Ax
Output					
Output Voltage Tolerance	%	±3 maximum			
Switching Frequency (Output Converter)	kHz	50 to 135. (Variable with input line and output load)		TBA	
Line Regulation	%	0.06		0.05	0.01
Load Regulation (Not in parallel mode)	%	1.2	0.6	0.4	0.65
		0.6	0.2	0.2	0.2
				0.15	0.1
Load Regulation (In parallel mode)	%	3.8	3.1	2.9	3.05
		3.0	2.8	2.9	2.7
				2.7	2.5
Ripple & Noise (+25 to 70°C ambient)	mV	10	10	30	50
			20	40	40
				50	25
Ripple & Noise (-25 to <+25°C ambient)	mV	20	40	150	65
		30	80	120	120
				150	150
Minimum Load	-	No minimum load required			
Maximum Load Capacitance	uF	10,000	10,000	20,000	20,000
		5,000	5,000	10,000 6,600	20,000 13,300
Overcurrent Protection (Constant current & hiccup)	%	>142	>142	>145	>147
				>148	>150
				>142	>152
Overvoltage Protection (Auto Recovery)	V	<18.4	<32.7	<32.9	<32.9
		<32.7	<59.2	<59.3	<58.2
				<91.5	<91.5
Overtemperature Protection	-	Yes. Auto recovery			
Remote Sense	-	None			
Remote On/Off	-	Closed contact or <4V enables output			
DC Good	-	Closed contact relay when output voltage is >95%			
Indicators	-	Green LED indicates DC is OK			
Parallel Operation	-	Front panel DIP switch to enable parallel droop mode current sharing. Refer to technical datasheet when paralleling.			
Environmental					
Operating Temperature Nominal (-40°C start-up ⁽⁴⁾)	°C	-25 to +55 full load, up to 70 with derating (see derating below)			
Operating Temperature Derating Above 55°C	W/°C	2	2.4	12	16
		0.8	2.6	9.6 8	16 6.24
Storage Temperature	°C	-40 to +85			
Humidity (Non condensing)	%RH	95 (Operating & Storage)			
Cooling	-	Convection			
Altitude	m	3,000 nominal, (6,000 maximum no UL certification)			
Withstand Voltage (For 1 minute)	Vac	Input to Output 3,510, Input to GND 2,210, Output to GND and signals 1,390			
Vibration (Non operating)	-	IEC 60068-2-6: 2g / 10 to 500Hz, 1 hour/direction X,Y,Z on DIN rail			
Shock (Non operating)	-	IEC 60068-2-27, 30g / 11ms ±5ms, 3 x each axis on DIN rail			

Specifications

Model		DRB120-12-3-Ax		DRB240-24-3-Ax		DRB480-24-3-Ax		DRB960-24-3-Ax		
		DRB120-24-3-Ax		DRB240-48-3-Ax		DRB480-48-3-Ax		DRB960-48-3-Ax		
						DRB480-72-3-Ax		DRB960-72-3-Ax		
Other										
Weight (Typ)		g	660		780		1050		1750	
Size (WxHxD)		mm	55 x 129 x 138.2				65 x 129 x 159.3		100 x 129 x 171.9	
Size (WxHxD)		Inches	2.17 x 5.08 x 5.44				2.56 x 5.08 x 6.27		3.94 x 5.08 x 6.77	
Case Material		-	Aluminum							
DIN Rail Type		-	TS-35/7.5 or TS35/15							
MTBF - Telcordia SR-332 issue 4*		Hours	1,100,000		1,100,000		880,000		760,000	
Warranty		Years	3							

Notes

See website for detailed specifications, test methods and installation manual

(1) See Technical datasheet for conditions

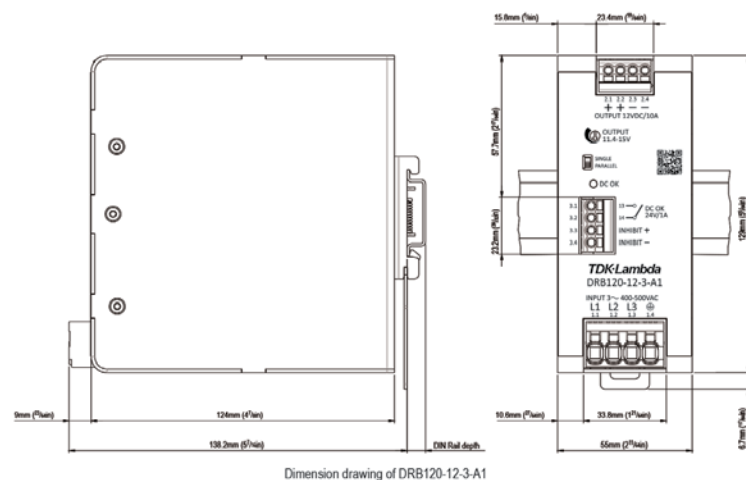
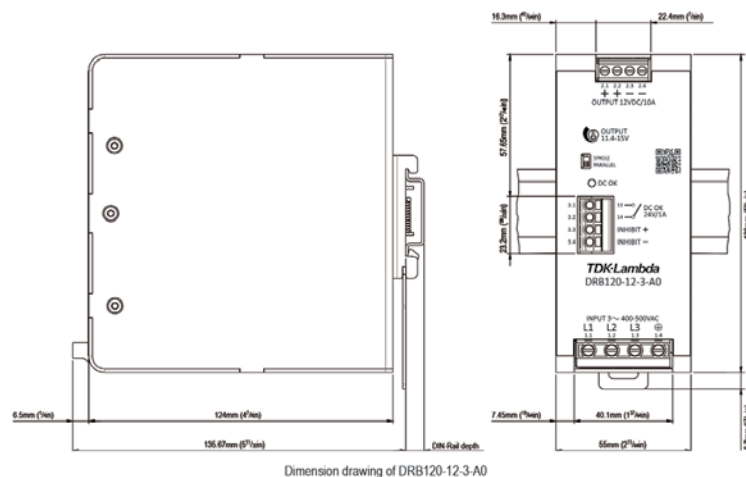
(2) Minimum at 100% load

(3) Average efficiency under 25%, 50%, 75% and 100% load conditions, according to eco-design requirements of EU commission regulation 2019/1782.

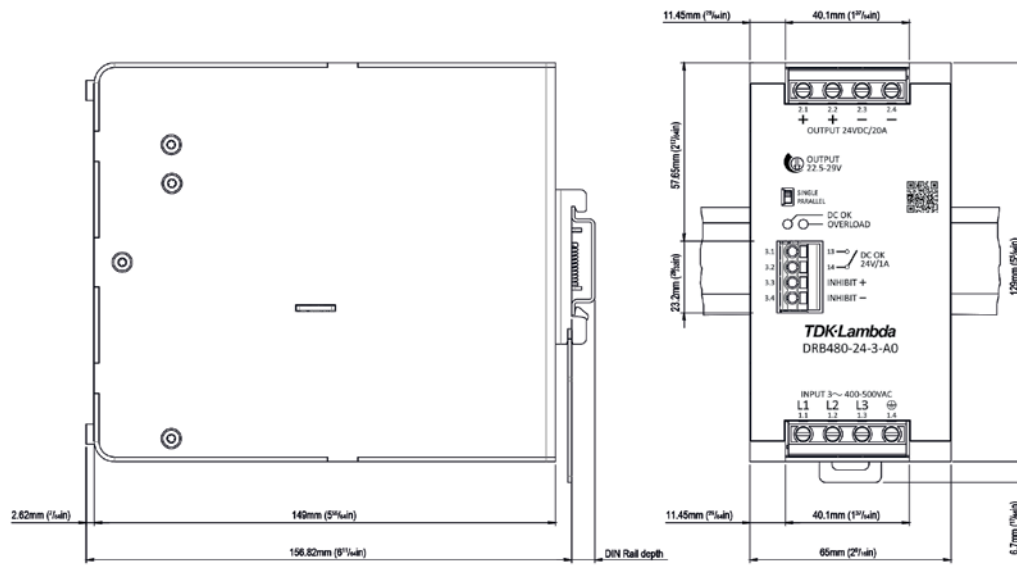
(4) Contact factory for -40°C start up test reports.

*25°C ambient, full load.

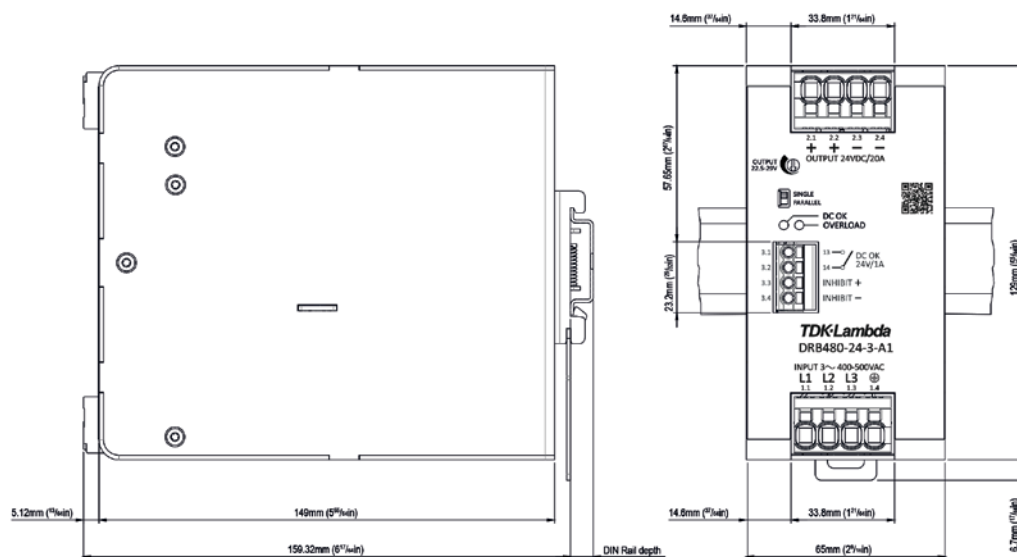
Outline Drawing DRB120/240-3



Outline Drawing DRB480-3

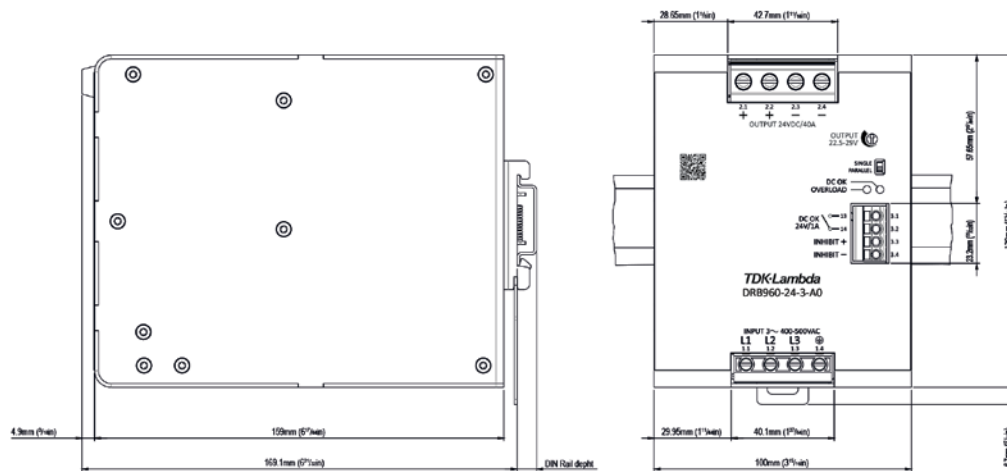


Dimension drawing of DRB480-24-3-A0

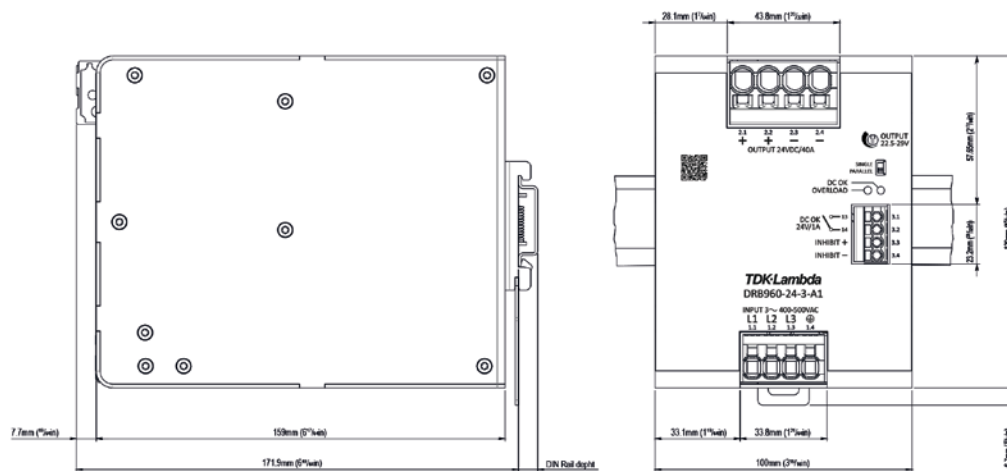


Dimension drawing of DRB480-24-3-A1

Outline DRB960-3



Dimension drawing of DRB960-24-3-A0



Dimension drawing of DRB960-24-3-A1