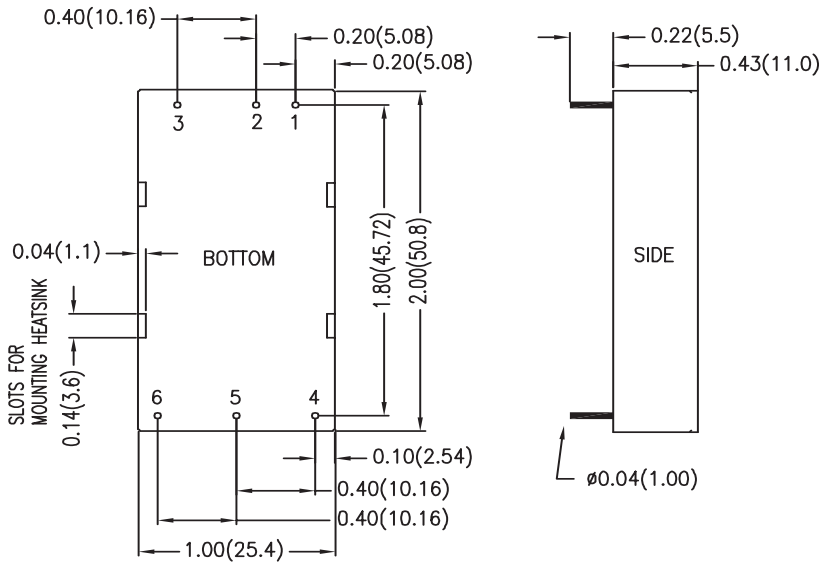
CONTECH
Division of Calex Mfg.

50 Watt TML
Single and Dual Series

RoHS Compliant

- Efficiency up to 92%
- 1500VDC Isolation
- MTBF > 227,000 Hours
- 2:1 Input
- Over Voltage Protection
- Short Circuit Protection
- Six Sided Shielding
- Remote On/Off Control
- RoHS Compliant

Model Number	Voltage			Current			Over Voltage Protection	Input Overvoltage (1000ms)	Efficiency	Capacitive Load
	Input		Output	Input		Output				
	Nom. (VDC)	Range (VDC)	(VDC)	@ No Load (mA)	@ Max Load (mA)	Max (mA)	Typ (mA)	Max (VDC)	@ Max Load (%, Typ)	Max (Dual each output)
TML33H12S3	12	9-18	3.3	85	3090	10000	3.9	25	89	25800µF
TML50H12S5	12	9-18	5	110	4630	10000	6.2	25	90	17000µF
TML50H12S12	12	9-18	12	160	4580	4170	15	25	91	2900µF
TML50H12S15	12	9-18	15	160	4580	3330	18	25	91	1900µF
TML50H12S24	12	9-18	24	250	4570	2080	30	25	91	750µF
TML33H24S3	24	18-36	3.3	50	1550	10000	3.9	50	89	25800µF
TML50H24S5	24	18-36	5	70	2260	10000	6.2	50	92	17000µF
TML50H24S12	24	18-36	12	85	2260	4170	15	50	92	2900µF
TML50H24S15	24	18-36	15	85	2260	3330	18	50	92	1900µF
TML50H24S24	24	18-36	24	110	2290	2080	30	50	91	7500µF
TML33H48S3	48	36-75	3.3	35	770	10000	3.9	100	89	25800µF
TML50H48S5	48	36-75	5	45	1130	10000	6.2	100	92	17000µF
TML50H48S12	48	36-75	12	50	1130	4170	15	100	92	2900µF
TML50H48S15	48	36-75	15	50	1130	3330	18	100	92	1900µF
TML50H48S24	48	36-75	24	60	1150	2080	30	100	91	750µF



Dimensions are inches (mm) unless noted

Tolerance:	Inches	Millimeters
	X.XX ±0.01	X.X ±0.25
	X.XXX ±0.005	X.XX ±0.13
Pin	±0.002	±0.05

Pin Connections	
Pin	**Single**
1	+Vin
2	-Vin
3	Remote On/Off
4	+ Vout
5	-Vout
6	Trim

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Site Web : www.es-france.com

See Model Selection Table for Model Specific Parameters

Input Parameters		Min	Typ	Max	Units
Start Voltage	12 Vin 24 Vin 48 Vin			9 18 36	VDC
Under Voltage Shutdown	12Vin 24 Vin 48 Vin		8.3 16.5 33		VDC
Switching Frequency	24Vo Models Other Models		285 320		kHz
Input Filter		LC Filter			
Output Parameters		**Min**	**Typ**	**Max**	**Units**
Output Voltage Accuracy at 50% Load and Nominal Vin				±1.0	%
Load Regulation Min. Load to Full Load				±0.5	%
Line Regulation Vin=Min. to Max.				±0.5	%
Ripple & Noise (20MHz) 3.3V & 5 V Models			100		mV P-P
Ripple & Noise (20 MHz) 12V, 15V & 24V Models			150		mV P-P
Over Power Protection Current Limitation of Iout max.			150		%
Transient Recovery Time 25% Load Step Change			250		µs
Temperature Coefficient				±0.02	% / ºC
Short Circuit Protection		Hiccup Automatic Recovery			
General Specifications		**Min**	**Typ**	**Max**	**Units**
Isolation Voltage, 60 seconds		1500			VDC
Isolation Resistance 500VDC		1000			Mohms
Isolation Capacitance, 100kHz, 1V				2200	pF
Operating Temperature (Ambient) Single 3.3V 12S5 24S5, 24S12, 24S15, 48S5, 48S12, 48S15 12S12, 12S15, 12S24, 24S24 48S24		-40		 +56 +38 +53 +53 +46 +46	ºC
Operating Temperature (Case)				+105	ºC
Storage Temperature		-50		+125	ºC
Thermal Impedance Natural Convection Natural Convection with heatsink		 12.1 9.8			ºC/W
Humidity				95	%
MTBF MIL-HDBK-217F @25ºC, Ground Benign		227			K Hours
Cooling		Free-Air Convection			
Case Size		2.0 x 1.0 x 0.43 inches 50.8 x 25.4 x 11.0 mm			
Case Material		Six Sided Shielding Metal Case (UL94V-0)			
Weight		30g			

Remote On/Off Control	Min	Typ	Max	Units
DC/DC On	3.5V - 12V or Open Circuit			
DC/DC Off	0V - 1.2V or Short Circuit			
Control Input Current (on) Vctrl = 5.0V		0.5		mA
Control Input Current (off) Vctrl = 0 V		-0.5		mA
Control Common	Referenced to Negative Input			
Standby Input Current Nominal Vin		2.5		mA
Output Voltage Trim	**Min**	**Typ**	**Max**	**Units**
Trim Up / Down Range % of nominal output voltage 24Vo Models Other Models	 +20/-10 ±10			%

Input Fuse Selection Table	
12V Input	10000 mA Slow-Blow
24V Input	5000 mA Slow-Blow
48V Input	2500 mA Slow-Blow

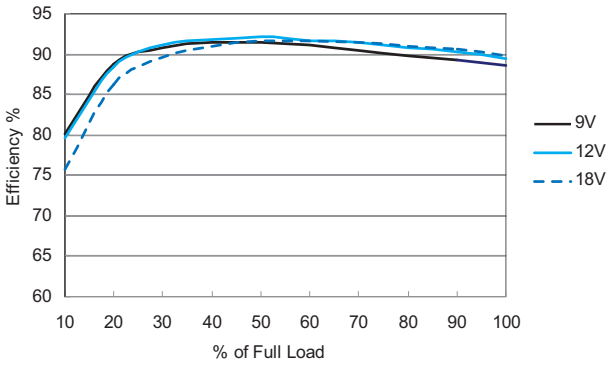
External fusing should be used for system protection due to a catastrophic failure. See ConTech website for Fusing Application Notes to determine the correct fuse.

Notes:

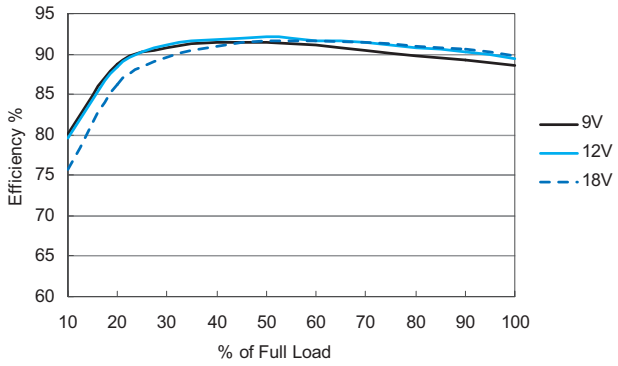
1. Specifications typical at Ta=+25ºC, resistive load, nominal input voltage, full rated output current unless otherwise noted.
2. Transient recovery time is measured to within 1% error band for a step change in output load 75% to 100%.
3. ConTech power converters require a minimum output loading to maintain specified regulation. Operation under no-load conditions will not damage these modules; however, they may not meet all specifications listed.
4. The series has a limitation of a maximum connected capacitance at the output. The power module may be operated in current limiting mode during start-up, affecting the ramp-up and the startup time.
5. Ripple & Noise measurement bandwidth is 20MHz, measured with a 4.7 µF M/C and a 220 µF T/C.
6. Water washability - ConTech DC/DC converters are designed to withstand most solder/wash processes. Careful attention should be used when assessing the applicability in your specific manufacturing process. Converters are not hermetically sealed.
7. See ConTech website for Definition of Terms, Application Notes, and Test Setups and Parameters. www.ConTech-us.com/appnotes.html
8. Specifications subject to change without notice.
9. See ConTech website www.ConTech-us.com/pdf/rohs.pdf for RoHS Statement.

Efficiency Curves

12 Volt Input @ 25ºC



TML33H12S3



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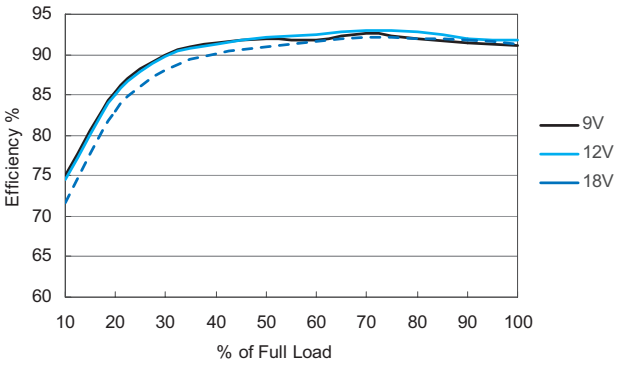

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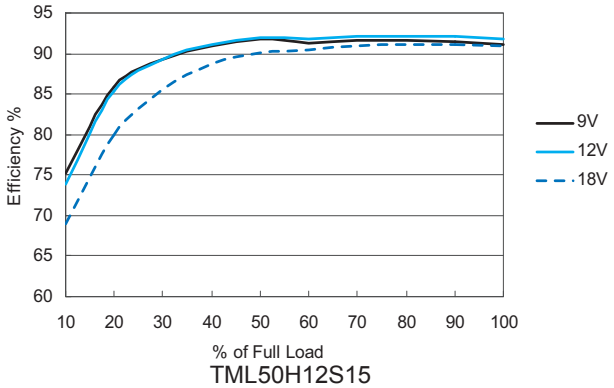

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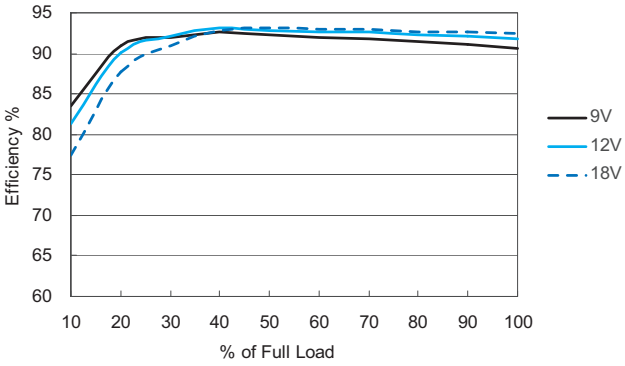

TML50H12S24

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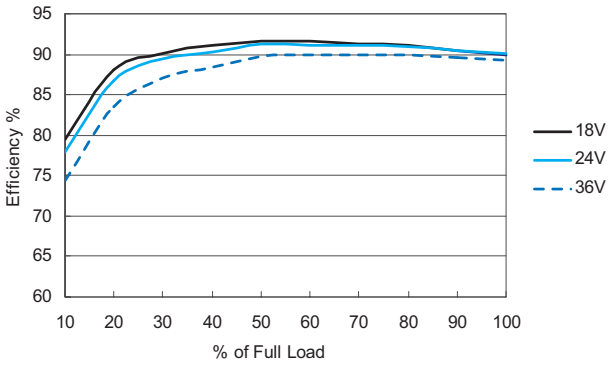
Efficiency Curves

24 Volt Input @ 25ºC



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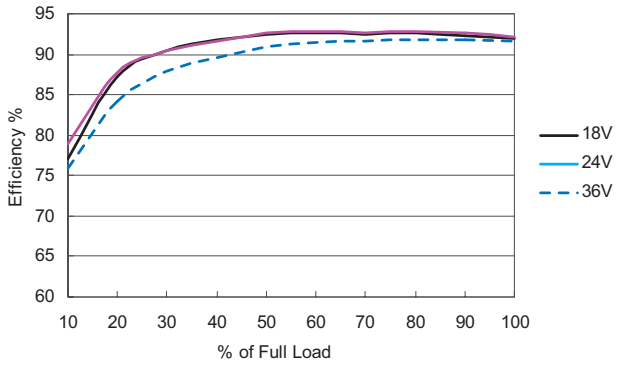

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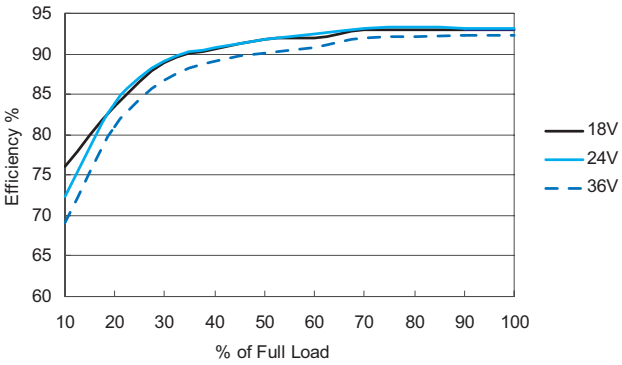

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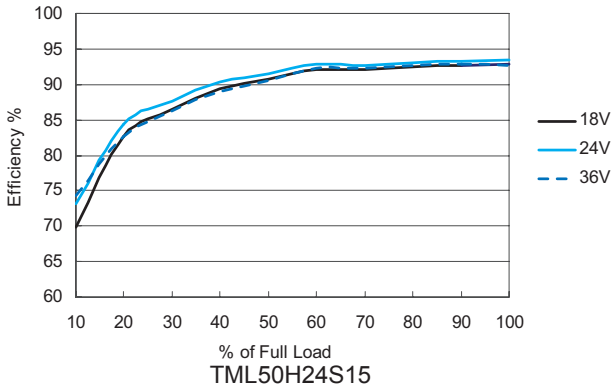

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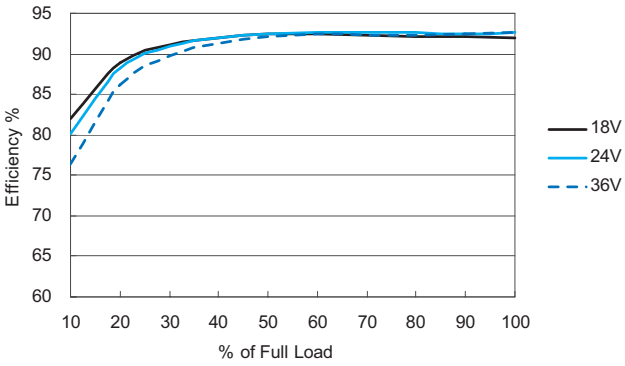

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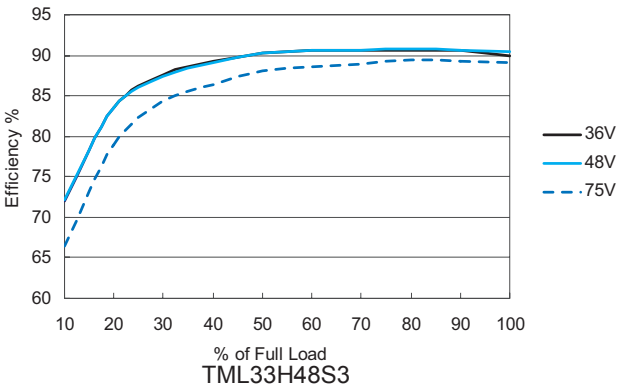
Efficiency Curves

48 Volt Input @ 25ºC



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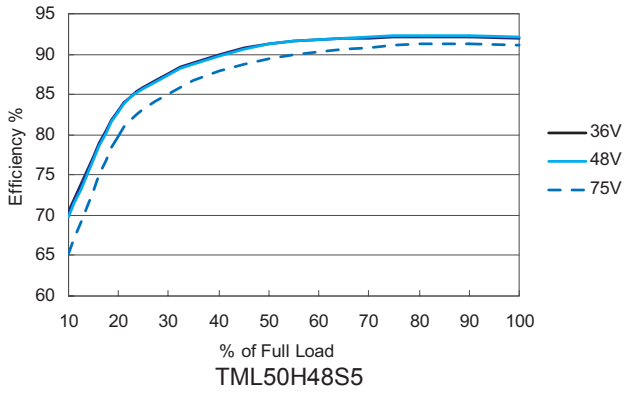

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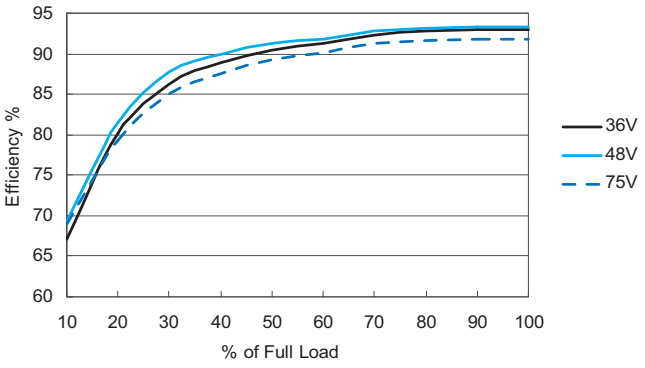

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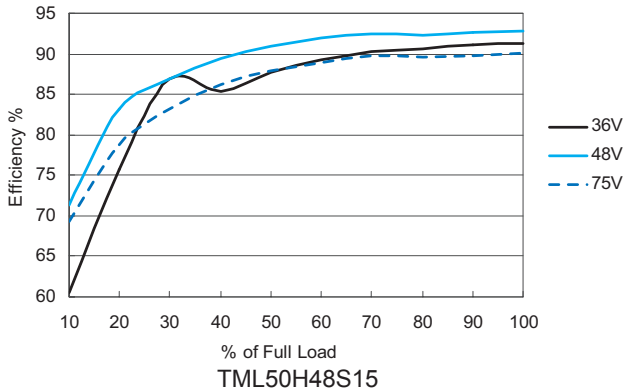

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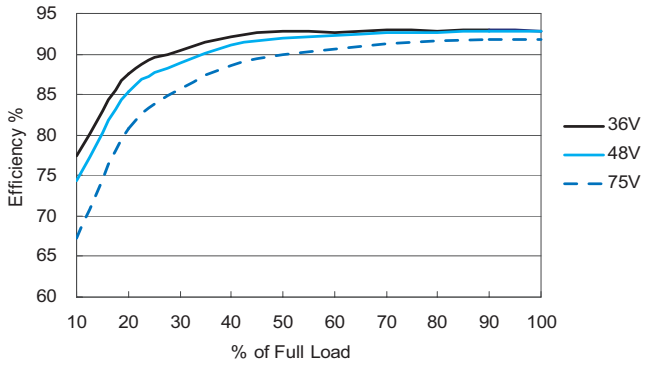

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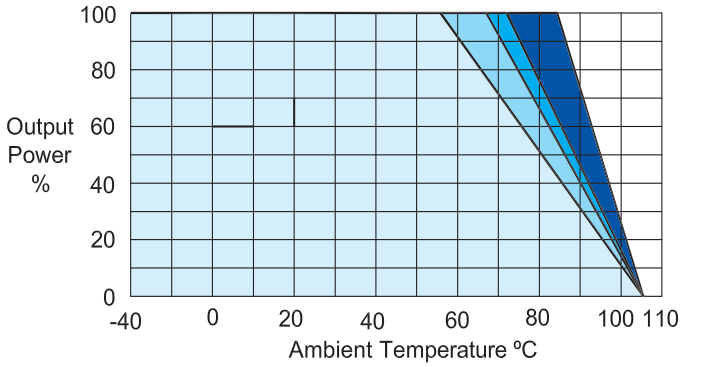
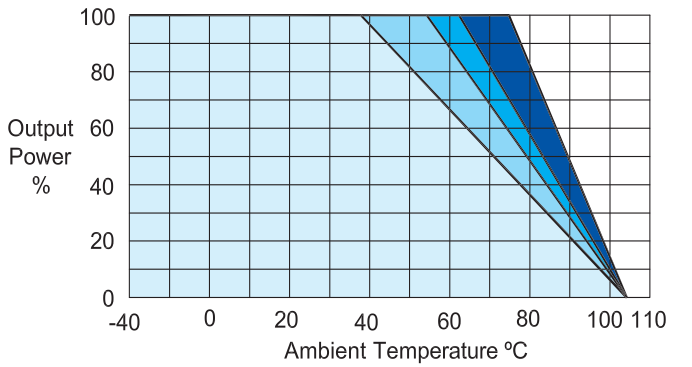
Derating Curves

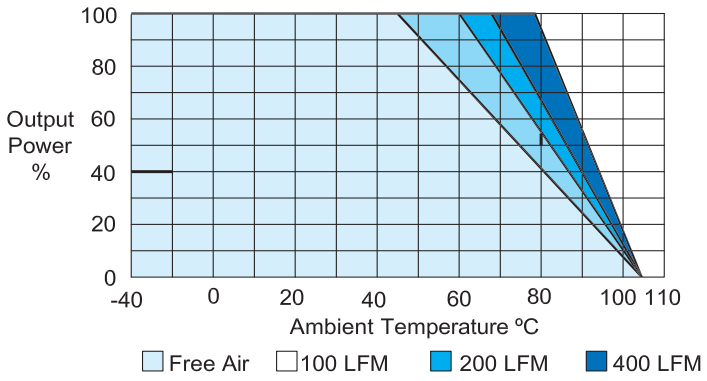
To avoid exceeding the maximum temperature rating of the components inside the power module, the case temperature must be kept below 105ºC.



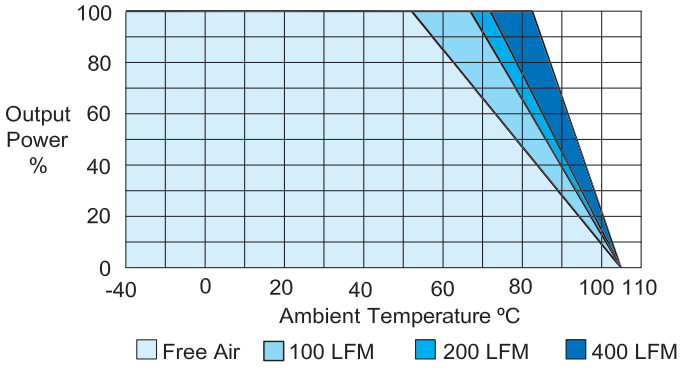
Models XX12S3, XX24S3 & XX48S3



Models XX12S5



Models XX12S12, XX12S15, XX12S24, XX24S24 & XX48S24



Models XX24S5, XX24S12, XX24S15, XX48S5. XX48S12 & XX48S15