

Ratings, Characteristics, and Functions

Item	Power rating		30 W		60 W		
	Rated output voltage		5 V		12 V		
	Indication monitor		None		None		
Efficiency *	115 VAC input		78% typ.		85% typ.		
	230 VAC input		77% typ.		86% typ.		
Input conditions	Voltage range *		Single-phase, 85 to 264 VAC, 90 to 350 VDC, 265 to 300 VAC (1 second)				
	Frequency *		50/60 Hz (47 to 450 Hz)				
	Input current *	115 VAC input		0.53 A typ.		0.99 A typ.	
		230 VAC input		0.32 A typ.		0.61 A typ.	
	Power factor		---				
	Leakage current *	115 VAC input		0.5 mA max.			
230 VAC input		1 mA max.					
Inrush current *	115 VAC input		16 A typ.				
	230 VAC input		32 A typ.				
Output characteristics	Rated output current		5 A		4.5 A		
	Rated output power		25 W		54 W		
	Maximum boost current		6 A		5.4 A		
	Voltage adjustment range *		4.5 to 5.8V (with V. ADJ)		10.8 to 14 V (with V. ADJ)		
	Ripple noise voltage *	100 to 240 VAC input		130 mVp-p max. at 20 MHz of bandwidth		120 mVp-p max. at 20 MHz of bandwidth	
						110 mVp-p max. at 20 MHz of bandwidth	
	Input variation influence *		0.5% max.				
	Load variation influence *		1.5% max.				
	Temperature variation influence	100 to 240 VAC input		0.05%/°C max.			
Start up time *	115 VAC input		1000 ms max.		1000 ms max.		
	230 VAC input		1000 ms max.		1000 ms max.		
Hold time *	115 VAC input		45 ms typ.		20 ms typ.		
	230 VAC input		240 ms typ.		120 ms typ.		
Additional functions	Overload protection		Yes, automatic reset, intermittent operation type, Refer to <i>Overload Protection</i> on page 8 for details.				
	Overvoltage protection		Yes, 130% or higher of rated output voltage, power shut off (shut off the input voltage and turn on the input again), Refer to <i>Overvoltage Protection</i> on page 8 for details.				
	Series operation		Yes (For up to two Power Supplies; external diodes required.)				
	Parallel operation		Yes (For up to two Power Supplies), Refer to <i>Parallel Operation</i> on page 22 for details.				
	Output indicator		Yes (LED: Green)				
	Alarm indicator		Yes (LED: Red)				
	Indication monitor	Measurement and display details		Refer to <i>Communication and Indication Items</i> on page 7 for details.			
		Main display		None			
Ethernet communication	Measurement and display details		Refer to <i>Communication and Indication Items</i> on page 7 for details.				
	Communication protocol		EtherNet/IP, Modbus TCP				
	Physical layer		100BASE-TX				
Communication specifications		Refer to <i>Communication Specifications</i> on page 8 for details.					
Insulation	Withstand voltage		3.0 kVAC for 1 min. (between all input terminals and output terminals, all EtherNet/IP ports), current cutoff 20 mA				
			2.0 kVAC for 1 min. (between all input terminals and PE terminals), current cutoff 20 mA				
			1.0 kVAC for 1 min. (between all output terminals and PE terminals), current cutoff 30 mA				
			0.5 kVAC for 1 min. (between all output terminals and all EtherNet/IP ports), current cutoff 30 mA				
Insulation resistance		100 M Ω min. (between all output terminals and all input terminals/PE terminals) at 500 VDC					
		100 M Ω min. (between all EtherNet/IP ports and all input terminals) at 500 VDC					
Environment	Ambient operating temperature *		-40 to 70°C (Derating is required according to the temperature. Refer to <i>Engineering Data</i>) (with no condensation or icing)				
	Storage temperature		-40 to 85°C (with no condensation or icing)				
	Ambient operating humidity		95% max. (Storage humidity: 95% max.)				
	Vibration resistance		10 to 55 Hz, maximum 5 G, 0.42 mm half amplitude for 2 h each in X, Y, and Z directions				
	Shock resistance		150 m/s ² , 3 times each in \pm X, \pm Y, \pm Z directions				
Reliability	MTBF *		160,000 hrs typ.				
	Life expectancy *		10 years min.				
Construction	Weight		250 g max.		250 g max.		
	Cooling fan		No				
	Degree of protection		IP20 by EN/IEC 60529				

* Refer to *Definitions of the Terms Under Ratings, Characteristics, and Functions* on page 6.

Item	Power rating Rated output voltage Indication monitor	90 W		120 W		
		24 V		24 V		
		Included	None	Included	None	
Efficiency *	115 VAC input	86% typ.	87% typ.	90% typ.	90% typ.	
	230 VAC input	87% typ.	88% typ.	92% typ.	92% typ.	
Input conditions	Voltage range *	Single-phase, 85 to 264 VAC, 90 to 350 VDC, 265 to 300 VAC (1 second)				
	Frequency *	50/60 Hz (47 to 450 Hz)		50/60 Hz (47 to 63 Hz)		
	Input current *	115 VAC input	1.7 A typ.	1.7 A typ.	1.2 A typ.	1.2 A typ.
		230 VAC input	1.0 A typ.	1.0 A typ.	0.63 A typ.	0.63 A typ.
	Power factor	---			0.9 min.	
	Leakage current *	115 VAC input	0.5 mA max.			
230 VAC input		1 mA max.				
Inrush current *	115 VAC input	16 A typ.				
	230 VAC input	32 A typ.				
Output characteristics	Rated output current	3.75 A		5 A		
	Rated output power	90 W		120 W		
	Maximum boost current	---		6 A		
	Voltage adjustment range *	23.0 to 24.1 V		21.6 to 28 V (with V. ADJ)		
	Ripple noise voltage * 100 to 240 VAC input	300 mVp-p max. at 20 MHz of bandwidth		150 mVp-p max. at 20 MHz of bandwidth		
	Input variation influence *	0.5% max.				
	Load variation influence *	1.5% max.				
	Temperature variation influence 100 to 240 VAC input	0.05%/°C max.				
		Start up time *	115 VAC input	1000 ms max.		1000 ms max.
	230 VAC input		1000 ms max.		1000 ms max.	
Hold time *	115 VAC input	25 ms typ.		35 ms typ.		
	230 VAC input	130 ms typ.		35 ms typ.		
Additional functions	Overload protection	Yes, automatic reset, intermittent operation type, Refer to <i>Overload Protection</i> on page 8 for details.				
	Overvoltage protection	Yes, 110% or higher of rated output voltage (90 W), 130% or higher of rated output voltage (120 W), power shut off (shut off the input voltage and turn on the input again, Refer to <i>Overvoltage Protection</i> on page 8 for details.				
	Series operation	Yes (For up to two Power Supplies, external diodes are required.)				
	Parallel operation	Yes (For up to two Power Supplies), Refer to <i>Parallel Operation</i> on page 22 for details.				
	Output indicator	Yes (LED: Green)				
	Alarm indicator	Yes (LED: Red)				
	Indication monitor	Measurement and display details	Refer to <i>Communication and Indication Items</i> on page 7 for details.			
		Main display	7-segment LED (White)	None	7-segment LED (White)	None
Ethernet communication	Measurement and display details	Refer to <i>Communication and Indication Items</i> on page 7 for details.				
	Communication protocol	Ethernet/IP, Modbus TCP				
	Physical layer	100BASE-TX				
Communication specifications	Refer to <i>Communication Specifications</i> on page 8 for details.					
Insulation	Withstand voltage	3.0 kVAC for 1 min. (between all input terminals and output terminals, all EtherNet/IP ports), current cutoff 20 mA				
		2.0 kVAC for 1 min. (between all input terminals and PE terminals), current cutoff 20 mA				
		1.0 kVAC for 1 min. (between all output terminals and PE terminals), current cutoff 30 mA				
		0.5 kVAC for 1 min. (between all output terminals and all EtherNet/IP ports), current cutoff 30 mA				
Insulation resistance	100 MΩ min. (between all output terminals and all input terminals/PE terminals) at 500 VDC					
	100 MΩ min. (between all EtherNet/IP ports and all input terminals) at 500 VDC					
Environment	Ambient operating temperature *	-40 to 70°C (Derating is required according to the temperature. Refer to <i>Engineering Data</i>) (with no condensation or icing)				
	Storage temperature	-40 to 85°C (with no condensation or icing)				
	Ambient operating humidity	95% max. (Storage humidity: 95% max.)				
	Vibration resistance	10 to 55 Hz, maximum 5 G, 0.42 mm half amplitude for 2 h each in X, Y, and Z directions				
	Shock resistance	150 m/s ² , 3 times each in ±X, ±Y, ±Z directions				
Reliability	MTBF *	110,000 hrs typ.	150,000 hrs typ.	110,000 hrs typ.	140,000 hrs typ.	
	Life expectancy *	10 years min.				
Construction	Weight	350 g max.		400 g max.		
	Cooling fan	No				
	Degree of protection	IP20 by EN/IEC 60529				

* Refer to *Definitions of the Terms Under Ratings, Characteristics, and Functions* on page 6.