

SOLAHD

Industrial On-Line UPS - 120 V, 700 VA - 3000 VA

S4KC Series



Instruction Manual

1.0 Product Description

The SolaHD S4K2UC Series is a compact, on-line uninterruptible power system (UPS) that continuously conditions and regulates its output voltage. It is designed to supply microcomputers and other sensitive equipment with clean sine wave input power.

Upon generation, AC power is clean and stable. However, during transmission and distribution it is subject to voltage sags, spikes and complete failure that may interrupt computer operations, cause data loss and damage equipment. The S4K2UC protects equipment from these disturbances. The S4K2UC continuously charges its batteries from utility power, enabling it to supply power to connected loads even when utility power fails.

This section describes the UPS, its features, models, appearance, components, operating principles, and operating modes.

1.1 Features

- Intelligent battery management to extend the battery life
- Operation and display panel with LED for monitoring load percentage and battery capacity independently
- Flexible network management with MultiLink™ software
- Fan fault self-inspection and automated diagnostic function
- Intelligent fan operation, automatically changing rotation speed depending on system requirements to decrease power consumption and noise
- Input circuit breaker to ease recovery from overloads
- Safety approval from UL and cUL
- Communication options: USB port, IntelliSlot® port and terminal block communication
- Dry contacts for remote monitoring
- Input power factor greater than 0.99 at 100% load
- Output voltage selection function using the configuration software

1.2 Available Models

Available models of the UPS are shown in Table 1:

Model	Nominal Power Rating
S4K2U700C	700 VA/630 W
S4K2U1000C	1000 VA/900 W
S4K2U1500C	1500 VA/1350 W
S4K2U2000C	2000 VA/1800 W
S4K2U3000C	3000 VA/2700 W

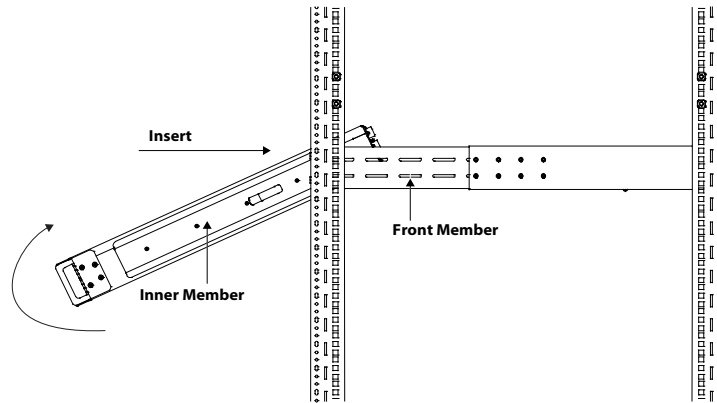


Figure 14: Insert the UPS

10. Through the rack mount handles, use M5 screws provided in this kit to secure the front of the UPS to the rack vertical rails to prevent the UPS from sliding out of position.
11. If optional external battery cabinets are connected to the UPS, they can be placed all on one side of the UPS or stacked beneath the UPS. The installation procedures are the same as those of the UPS.

NOTE: Up to four external battery cabinets can be connected to the UPS. Each cabinet will increase the battery recharge time.

2.5 Cable Connection

The S4K2UC rear panel has an input cable and plug, output receptacles and output cables (S4K2U3000 models only). Refer to “1.3.2 Rear Panel Features” for details. The battery cables are supplied with the battery cabinet.

2.5.1 Connecting Input Plug & Loads

NOTES:

- Ensure that all the loads are turned off.
- Prepare an input power supply that is properly protected by a circuit breaker in accordance with national and local electrical codes. The wall receptacle must be grounded.
- The plug on the power supply cord is intended to serve as the disconnection device. The socket-outlet must be installed near the equipment and must be easily accessible.
- SolaHD recommends installing an upstream circuit breaker of the same series as the S4K2UC’s input circuit breaker. The upstream breaker should be the same or higher capacity than the UPS input circuit breaker. The specification of input circuit breaker on the rear panel of UPS is shown in Table 2.

Model	Rated Circuit Breaker	Model	Rated Circuit Breaker
S4K2U700C	10 A	S4K2U2000C	20 A
S4K2U1000C & S4K2U1500C	15 A	S4K2U3000C	30 A

1. Plug all loads into the output receptacles on the rear panel of the S4K2UC. Distribute loads evenly across all receptacles to prevent overloading individual receptacles.
2. Insert the input plug of the S4K2UC into the input power connection.

9.0 Specifications

Table 11: UPS Specifications					
Parameters	Model				
	S4K2U700C	S4K2U1000C	S4K2U1500C	S4K2U2000C	S4K2U3000C
DIMENSIONS, D x W x H, in. [mm]					
Unit	19.7 x 16.9 x 3.4 [497 x 430 x 85]				23.7 x 16.9 x 3.4 [602 x 430 x 85]
Shipping	25.5 x 23.9 x 10.6 [647 x 607 x 270]				29.4 x 23.4 x 10.6 [747 x 607 x 270]
WEIGHT, lb. [kg]					
Unit	37.0 [16.8]	51.1 [23.2]	51.1 [23.2]	71.4 [32.4]	
Shipping	44.1 [20.0]	57.3 [26.0]	57.3 [26.0]	79.4 [36.0]	
INPUT AC PARAMETERS					
Voltage range (typical)	120 V ac nominal; variable based on output load				
90% to 100% Loading	90 VAC/140 VAC		102 VAC/140 VAC		
70% to 90% Loading	86 VAC/140 VAC		96 VAC/140 VAC		
30% to 70% Loading	77 VAC/140 VAC		84 VAC/140 VAC		
0% to 30% Loading	60 VAC/140 VAC		60 VAC/140 VAC		
Power factor	0.99				
Frequency	40 Hz to 70 Hz; auto sensing				
Input power cord	10 ft. attached with NEMA 5-15P plug			10 ft. attached with NEMA 5-20P plug	10 ft. attached with NEMA L5-30P plug
OUTPUT AC PARAMETERS					
Output receptacles	5-15R x 6		5-20R x 6	L5-30R x 1 + 5-20R x 6	
Voltage	110/115/120 VAC (user-configurable) ±3%				
Waveform	Sine wave				
Utility (VAC) Mode overload	200% for 2 seconds; 150% for 50 seconds with transfer to bypass				
Power factor	0.90				
BATTERY					
Type	Valve-regulated, non-spillable, lead acid				
Qty x V x Rating	4 x 12 V x 5.0 Ah	4 x 12 V x 7.2 Ah	4 x 12 V x 9.0 Ah	6 x 12 V x 9.0 Ah	
Battery mfr./Part number	Panasonic/UP-RW1236; CSB/GP 1272			Panasonic/UP-RW1245; CSB/HR 1234W F2	
Backup time	See Table 14				
Recharge time	3 hours to 90% capacity after full discharge with 100% load until UPS auto shutdown (internal batteries only)				
ENVIRONMENTAL REQUIREMENTS					
Operating temperature	0°C to +40°C [+32°F to +104°F]; see Table 13 for operating temperature parameters				
Storage temperatures	-15°C to +50°C [+5°F to +122°F]				
Relative humidity	0% to 95%, non-condensing				
Operating elevation	Up to 10,000 ft. [3,000 m]				

Table 11: UPS Specifications					
Parameters	Model				
	S4K2U700C	S4K2U1000C	S4K2U1500C	S4K2U2000C	S4K2U3000C
Storage elevation	50,000 ft. [15,000 m] max.				
Audible noise	<43 dBA max. @ 3 ft. [1 m] front & sides; <46 dBA max. @ 3 ft. [1 m] rear	<43 dBA max. @ 3 ft. [1 m] front & sides; <46 dBA max. @ 3 ft. [1 m] rear	<45 dBA max. @ 3 ft. [1 m] front & sides; <46 dBA max. @ 3 ft. [1 m] rear	<48 dBA max. @ 3 ft. [1 m] front & sides; <48 dBA max. @ 3 ft. [1 m] rear	
AGENCY					
Safety	UL1778, cUL Listed				
RFI/EMI	FCC Part 15, Class A				
Surge immunity	IEC62040-2 2 nd Ed.				
Transportation	ISTA Procedure 1A				

Table 12: Battery Cabinet Specifications		
Parameters	Model Number	
	S4K2U48BATC	S4K2U96BATC
Used with UPS models	S4K2U700C, S4K2U1000C, S4K2U1500C, S4K2U2000C	S4K2U3000C
DIMENSIONS, D x W x H, in. [mm]		
Unit	19.7 x 16.9 x 3.4 [497 x 430 x 85]	23.7 x 16.9 x 3.4 [602 x 430 x 85]
Shipping	24.3 x 22.4 x 10.3 [617 x 570 x 262]	28.2 x 22.4 x 10.3 [717 x 570 x 262]
WEIGHT, lb. [kg]		
Unit	70.5 [32.0]	93.5 [42.4]
Shipping	77.2 [35.0]	101.4 [46.0]
BATTERY PARAMETERS		
Type	Valve-regulated, non-spillable, lead acid	
Qty x V x Rating	2 x 4 x 12 V x 9.0 Ah	2 x 6 x 12 V x 9.0 Ah
Battery mfr./Part number	Panasonic/UP-RW1245; CSB/HR 1234W F2	
Backup time	See Table 14	
ENVIRONMENTAL REQUIREMENTS		
Operating temperature	0°C to +40°C [+32°F to +104°F]; see Table 13 for operating temperature parameters	
Storage temperatures	-15°C to +50°C [+19°F to +122°F]; high ambient temperatures will reduce battery life	
Relative humidity	0% to 95%, non-condensing	
Operating elevation	Up to 10,000 ft. [3,000 m]	
Storage elevation	50,000 ft. [15,000 m] max.	
AGENCY		
Safety	UL1778, cUL Listed	
RFI/EMI	FCC Part 15, Class A	
Surge immunity	IEC62040-2 2 nd Ed.	
Transportation	ISTA Procedure 1A	

Ambient temperature	+25°C to +30°C [+77°F to +86°F]	+30°C to +35°C [+86°F to +95°F]	+35°C to +40°C [+95°F to +104°F]
Maximum output power factor derating at maximum load	100% to 93%	93% to 86%	86% to 79%

Number of Batteries/Cabinets	Load % of Capacity	Model Rating				
		700 VA	1000 VA	1500 VA	2000 VA	3000 VA
		Backup Time in Minutes				
Internal battery	10%	105	90	123	92	82
	20%	61	37	52	38	38
	30%	37	30	34	23	23
	40%	32	23	23	16	16
	50%	27	17	18	12	12
	60%	22	14	14	9	9
	70%	18	11	11	7	7
	80%	15	9	9	5	5
	90%	13	8	7	4	4
	100%	11	7	6	3	3
Internal battery + 1 external battery cabinet	10%	426	332	335	303	224
	20%	302	165	162	140	137
	30%	163	137	129	96	95
	40%	144	108	96	66	66
	50%	125	92	72	49	49
	60%	106	74	54	38	41
	70%	94	61	46	33	34
	80%	78	49	38	28	27
	90%	69	40	34	23	23
	100%	60	38	31	20	21
Internal battery + 2 external battery cabinets	10%	480	456	451	431	427
	20%	433	331	318	207	202
	30%	327	222	187	150	149
	40%	265	166	151	124	124
	50%	201	152	131	97	98
	60%	164	137	107	75	76
	70%	153	122	91	61	62
	80%	142	105	74	50	50
	90%	131	95	64	41	45
	100%	120	79	53	38	41
Internal battery + 3 external battery cabinets	10%	480	480	480	455	452
	20%	461	441	426	326	323
	30%	438	336	312	197	196
	40%	344	305	198	155	155
	50%	322	209	160	136	136
	60%	300	167	145	111	112
	70%	213	157	130	96	98
	80%	189	146	111	78	79
	90%	163	135	99	68	70
	100%	155	124	83	56	60
Internal battery + 4 external battery cabinets	10%	480	480	480	480	466
	20%	480	459	446	424	421
	30%	457	435	341	308	307
	40%	441	339	309	192	192
	50%	424	316	204	157	158
	60%	336	221	164	142	143
	70%	318	199	153	126	128
	80%	301	166	141	107	109
	90%	213	158	130	95	97
	100%	197	149	112	79	81
Internal battery + 5 external battery cabinets	10%	480	480	480	480	480
	20%	480	466	458	441	439
	30%	464	446	432	333	332
	40%	451	427	333	225	225
	50%	438	341	306	188	190
	60%	424	322	207	158	159
	70%	343	303	167	145	147
	80%	329	212	158	133	135
	90%	315	193	148	120	122
	100%	300	166	139	104	107
Internal battery + 6 external battery cabinets	10%	480	480	480	480	480
	20%	480	480	467	452	450
	30%	480	458	445	422	421
	40%	462	442	422	319	319
	50%	451	426	327	216	218
	60%	440	342	304	185	188
	70%	428	326	208	159	160
	80%	370	309	184	148	149
	90%	336	221	161	137	139
	100%	324	204	153	126	129

NOTE: Run times in this table are approximate. They are based upon new, fully charged standard battery modules at a temperature of 25°C (77°F) with 100% resistive UPS loading. Run times listed above can vary by +/-5% due to manufacturing variances of the individual batteries.