SANUPS
E11A102B002USP
1kVA

Uninterruptible Power Systems

Technical Specifications

April '17

SANYO DENKI America Inc.

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E11A102B002US
1kVA

1. The System

1.1. This specification describes a single-phase, *Hybrid, solid state Uninterruptible Power Supply herein after referred to as the UPS. The UPS shall operate in conjunction with the existing building electrical system to provide power conditioning and back-up power protection. The system shall consist of a solid-state inverter, rectifier, battery charger, and a 100 % rated, automatic, continuous duty static switch.
*SANYO DENKI combines both line interactive and double conversion UPS technologies in the SANUPS E11A Hybrid UPS, delivering 3 modes of operation for high efficiency and reliability.

2. UPS Requirements and Performance Characteristics

2.1. Rating

2.1.1. The UPS is available in:

	US model
Apparent power	1kVA
Active power @ 0~40 °C	700W

2.2. Input Features

2.2.1. Voltage: 208V,1 phase,2 wire + ground

2.2.2. ON LINE AC input Range:
166.4 to 239.2V (-20% / +15%)

2.2.3. Input Frequency:
50 / 60 Hz Auto-select. 60Hz(Default)

2.2.4. Input Frequency Range
+/- 1,3,5%(User selectable), +/- 3%(Default)
Change mode Economy or Active filter to Double conversion
+/- 8%
Change mode Double conversion to Battery operation

2.2.5. Input Current Values

	Sn (kVA)	Normal AC source (A)	Load (A)
Double Conversion : Min i/p Voltage (167V) and 208V o/p	1	5.3 (6.6)	4.8
On Economy and 191.4/p voltage	1	5.2	5.2

2.2.6. Recommended AC input MCCB: 10A

2.2.7. Inrush Current: 16A for 10msec.

2.2.8. Input Current Total Harmonic Distortion: < 10 %

2.2.9. Power factor: > 0.95

2.3. Output Characteristics

2.3.1. Voltages: 208V Single phase

2.3.2. Voltage Regulation: +/- 2%

2.3.3. Frequency: 50 / 60 Hz (60 Hz by default).

2.3.4. Frequency Regulation
According to the synchronized frequency range that is selected from +/- 1 %,
+/- 3 % or +/- 5 % (factory setting: +/- 3 %).
At UPS free running: +/- 0.5 %

2.3.5. Slew Rate: < 1 Hz / second

2.3.6. Overload detection: Current limited
Overload occurs when output VA or Watts are beyond 105 % of nominal load.

The UPS may stay Double Conversion Mode in overload conditions:
< 800msec. 105 %

If bypass inside voltage (< Rated output voltage +15 %):
After the delay (200msec.), UPS switches to bypass without output break*.
Auto return to Double Conversion Mode without a break (Default) or Continue running in bypass
*If input frequency is out of a synchronized range or constant frequency setting is selected, output break (less
than 20msec.) may occur at switching to bypass.

The UPS may stay Bypass in overload conditions:
< 30 sec.   200 %
< 2 cycles   800 %

If bypass outside voltage:
After the delay (200msec.), Output is shutdown

2.3.7. Short circuit:
UPS is shutdown after 2 cycles at 800 % of nominal load.

2.3.8. Restart after short circuit:
Customer must turn On a MCCB switch.

2.3.9. Crest factor: 2.5:1

2.4. Battery Characteristics

2.4.1.   Cold Start: The units can be started on battery.

2.4.2.   Battery Replacement: Hot Swappable

2.4.3.   Battery Type:
24 V, 34W @ 15 min- rate

2.4.4.   Nominal Battery voltage:
24 V

2.4.5.   Number of Batteries per Module:
2, in series.

2.4.6.   Battery test: manual start or automatic-start periodically (30, 90, 180 days)
It is able to do self battery check with PC interface or LAN interface.
Self battery check is also available from UPS management software or
LAN interface card.

2.4.7.   Battery Leakage Current: 340µA
No leakage current after end of backup time and full shutdown.

2.4.8.   Battery Current Protection
Battery fuse   70A

2.4.9.   Battery protection against overvoltage:
Internal charger will stop if charger voltage exceeds 33 V (2.75 V / Cell).

2.4.10. Pre-alarm level / timings:
1.8 V / Cell

2.4.11. Battery to replace warning:
The UPS has inner timer. The warning alarm sounds two times
when the battery has reached its services life and before half a year.

2.4.12. Battery Supplier: CSB Battery
Part Number: HRL1234WF2FR
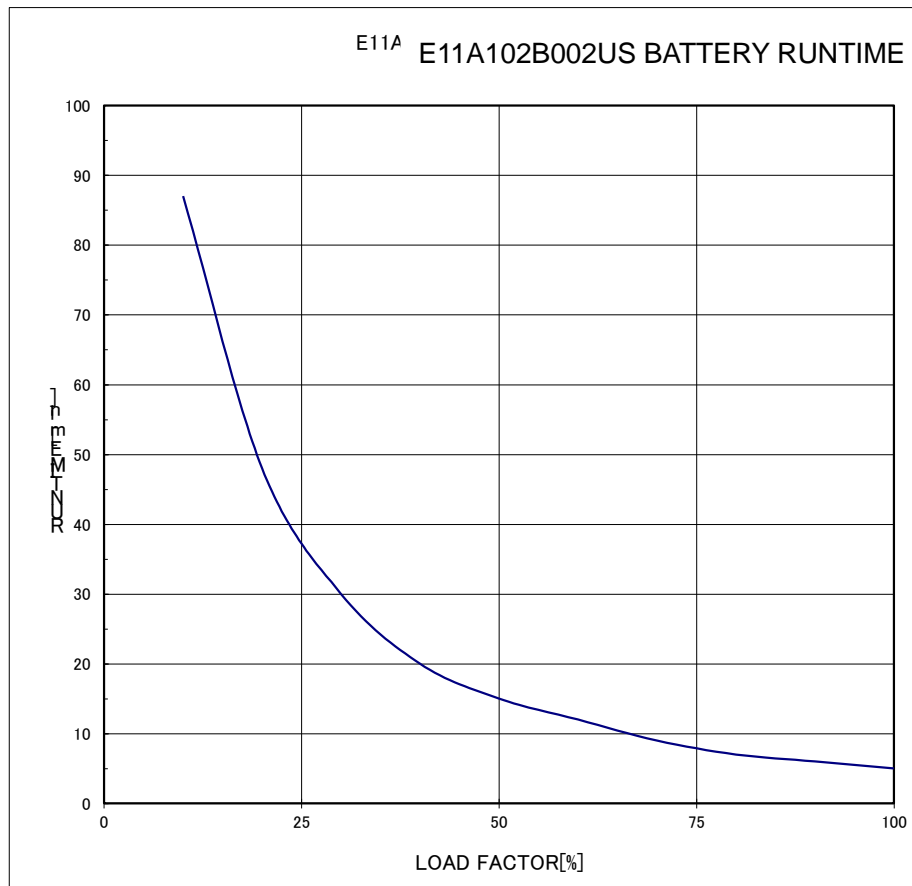
2.4.13. Backup time:

Typical backup times tables:
Backup times (in minutes) with 0.7 output power factor:
Batteries fully charged (at least 20 hours on floating conditions) @ 25 °C.
The battery aging is not taken into account in backup time prediction.
The batteries supplier is not taken into account.

	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Std (min)	87	48	30	20	15	12	9	7	6	5

E11A E11A102B002US BATTERY RUNTIME

2.5. Charger Characteristics

2.5.1. Configuration: There is only one charger.

2.5.2. The charger is powered by the DC bus.

2.5.3. Float:
The floating value is set to 27.3V @ 25 °C.

2.5.4. Nominal charging current: 0.7A

2.5.5. Floating value table vs ambient room temperature:

T (°C)	0	10	20	25	30	40
Voltage / cell	2.31	2.30	2.28	2.275	2.27	2.25
Total voltage	27.8	27.6	27.4	27.3	27.2	27.0

2.5.6. Recharge time: 20hours
(after 100% RCD load discharge then recharge to recover 100% of nominal backup time)

3. Front Panel Information

3.1. MIMIC panel
13LEDs on the top
ALARM (red)
INV.ON STAND BY (green)
BATT. LOW (red)
LOAD LEVEL : 25%,50%,75%,100% (green) / O.L. (red)
BATT.TEST (green)
INPUT (green)
OUTPUT (green)
ECONOMY (green)
DOUBLE CONVERSION (green)
3buttons (INV.ON STAND BY / BATT.TEST / CLEAR)

3.2. INV.ON / STAND BY button.

3.2.1. ON switch
 Push time > 1 second: start the inverter, needs user confirmation if
Commercial power supply is out of tolerances due to 10msec. output
break during transfer from bypass to inverter.
Push times > 1 seconds (Default)*: stop the inverter, needs user
Confirmation if Commercial power supply is out of tolerances due to
10msec. output break during transfer from inverter to bypass.
*Customer can select the time to turn off: 1second (Default) or 3 seconds.

3.2.2. OFF switch
Push time > 1 seconds (Default)*: stop the inverter, needs user confirmation if
Commercial power supply is out of tolerances due to 10msec. output break during
transfer from inverter to bypass.
*Customer can select the time to turn off: 1second (Default) or 3 seconds.

3.3. Battery Test button
The UPS starts a battery test when this button has been pushed.
If the button is pushed again during battery test, the UPS stops a battery test.

3.4. Clear button
Clear the result of battery test. And if the button is pushed during alarm beeping,
The UPS stops alarm beeping.

4. Communication links specification

4.1. RS232 communication (on DB9 connector)

4.2. Optional Card slots: 1 slot is available. Below is a list of optional cards.

4.2.1. LAN interface Card (PRLANIF003-US or PRLANIF011-US) features a web interface, Simple Network Management Protocol (SNMP), Simple Mail Transfer Protocol (SMTP) email notification and keeps log files about UPS operation.

5. LEDs and buzzer

5.1. BUZZER DEFINITION
Definition:

Beep two times in 2 seconds: ** ** ** ** …
As soon as the UPS is on battery it must beep slow.

One beep: *
An inverter is on or off.
Key clicked at a setup menu.

Continuous beeps: *****************…
On battery, when the UPS reaches the pre-alarm threshold it must beep quickly.

Continuous tone: *------------------------------
The buzzer must beep continuously when:
The UPS has a mechanical failure.
The battery is exhausted.

Beep four times in 3 seconds: **** **** **** …
The load devices connected to the output exceed the rated capacity.

Beep seven times in 2 seconds: ******* ******* …
The battery check result was an error.

Beep five times in 2 seconds: ***** ***** ***** …
The battery has reached before half year of its service life.

The battery has reached its service life (The red BATT.LOW indicator blinks).

Customer can change the buzzer parameters:
>   a. All beep
>   b. Only beep when the UPS has mechanical failure
>   c. Key clicks at a setup menu only.
>   d. Both b and c.

Note that: In any case, it is possible to stop the buzzer at any time, until the next buzzer, by pressing CLEAR button.

6. Standards

6.1. Safety:
>   UL Listed (UL1778 4th edition)
>   CE Marking (IEC62040-1: 2008)

6.2. EMC:
>   FCC Part 15 Subpart B. Class-A.
>   EN62040-2: 2006 and EN55022: 2006 Class-A.

6.3. Susceptibility:
>   IEC 61000-4-2 : (ESD):   Contact discharge···level 2.
>   Air discharge···level 3
>   IEC 61000-4-5 : (Surge):   LINE to GROUND···level 3
>   LINE to LINE···level 2

6.4. Transportation:
>   JIS Z 0200 (drop and vibration tests)

6.5. Environment temperature and humidity:
>   1.1.1. Ambient operating temperature:0 to 40 °C (32 to 104 °F)
>   1.1.2. Ambient storage temperature: -15 to 50 °C (5 to 122 °F)
>   1.1.3. Humidity: 20 to 90 %.
>   1.1.4. Altitude: up to 2000 meters (6000 ft.) without derating.

6.6. Audible noise:
>   Max 40 dB A online (buzzer not included)

6.7. MTBF:
>   122,640hours (est.)