

COVER PAGE FOR TEST REPORT

Product Category:	Power Supplies for Information Technology Equipment Including Electrical Business Equipment
Product Category CCN:	QQGQ2, QQGQ8
Test Procedure:	Component Recognition
Product:	DC-DC CONVERTER
Model/Type Reference:	InQor Model Series IQ12XQYZA, IQ18XQYZA, IQ24XQYZA, IQ28XQYZA, IQ36XQYZA, IQ48XQYZA, IQ70XQYZA, IQ72XQYZA, and IQ1BXQYZA.
Rating(s):	See Additional Information. Input voltage: Model Series IQ12XQYZA 12 = 9-22 Vdc, Output 105 Watts max Model Series IQ18XQYZA 18 = 9-36 Vdc, Output 105 Watts max Model Series IQ24XQYZA 24 = 18-36 Vdc, Output 120 Watts max Model Series IQ28XQYZA 28 = 16-50 Vdc, Output 105 Watts max Model Series IQ36XQYZA 36 = 18-75 Vdc, Output 120 Watts max Model Series IQ48XQYZA 48 = 35-75 Vdc, Output 150 Watts max Model Series IQ70XQYZA 70 = 34-135 Vdc, Output 132 Watts max Model Series IQ72XQYZA 72 = 42-110 Vdc, Output 150 Watts max Model Series IQ1BXQYZA 1B = 66-160 Vdc, Output 150 Watts max See Aditonal Information.
Standards:	UL 60950-1, 1st Edition, 2006-07-07 (Information Technology Equipment - Safety - Part 1: General Requirements) CSA C22.2 No. 60950-1-03, 1st Edition, 2006-07 (Information Technology Equipment - Safety - Part 1: General Requirements)
Applicant Name and Address:	SYNQOR L L C 155 SWANSON RD BOXBOROUGH MA 01719 UNITED STATES

Issue Date: 2007-10-30
Amendment 1 2008-03-10

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Report Reference #

E194341-A9-UL-1

This Report includes the following parts, in addition to this cover page:

1. Specific Technical Criteria
2. Enclosures

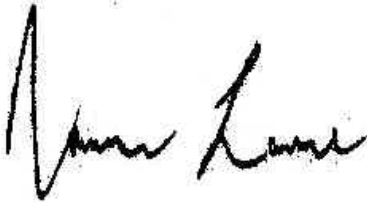
This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of Underwriters Laboratories Inc. ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

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Test Report By:



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SPECIFIC TECHNICAL CRITERIA

UL 60950-1, First Edition Information technology equipment - Safety- Part 1: General Requirements	
Report Reference No	E194341-A9-UL-1
Compiled by	Norman Lowe
Reviewed by	David Keen
Date of issue	2007-10-30
Standards	UL 60950-1, 1st Edition, 2006-07-07 (Information Technology Equipment - Safety - Part 1: General Requirements) CSA C22.2 No. 60950-1-03, 1st Edition, 2006-07 (Information Technology Equipment - Safety - Part 1: General Requirements)
Test procedure	Component Recognition
Non-standard test method	N/A
Test item description	DC-DC CONVERTER
Trademark	None
Model and/or type reference	InQor Model Series IQ12XQYZA, IQ18XQYZA, IQ24XQYZA, IQ28XQYZA, IQ36XQYZA, IQ48XQYZA, IQ70XQYZA, IQ72XQYZA, and IQ1BXQYZA.
	See Additional Information.
Rating(s)	Input voltage: Model Series IQ12XQYZA 12 = 9-22 Vdc, Output 105 Watts max Model Series IQ18XQYZA 18 = 9-36 Vdc, Output 105 Watts max Model Series IQ24XQYZA 24 = 18-36 Vdc, Output 120 Watts max Model Series IQ28XQYZA 28 = 16-50 Vdc, Output 105 Watts max Model Series IQ36XQYZA 36 = 18-75 Vdc, Output 120 Watts max Model Series IQ48XQYZA 48 = 35-75 Vdc, Output 150 Watts max Model Series IQ70XQYZA 70 = 34-135 Vdc, Output 132 Watts max

Model Series IQ72XQYZA
72 = 42-110 Vdc, Output 150 Watts max

Model Series IQ1BXQYZA
1B = 66-160 Vdc, Output 150 Watts max

See Additional Information.

Particulars: test item vs. test requirements

Equipment mobility: for building-in
Operating condition: continuous
Mains supply tolerance (%): No direct connection
Tested for IT power systems: No
IT testing, phase-phase voltage (V): N/A
Class of equipment: Hazardous voltage secondary to ELV or SELV to SELV
Mass of equipment (kg): .042
Protection against ingress of water: IP X0

Possible test case verdicts:

- test case does not apply to the test object: N / A
- test object does meet the requirement: Pass
- test object does not meet the requirement: Fail (acceptable only if a corresponding, less stringent national requirement is "Pass")

General remarks:

- "(see Enclosure #)" refers to additional information appended to the Test Report
- "(see appended table)" refers to a table appended to the Test Report
- Throughout the Test Report a point is used as the decimal separator

GENERAL PRODUCT INFORMATION:	
CA1.0	Report Summary
CA1.1	N/A
CB1.0	Product Description
CB1.1	The InQor series is a DC to DC converter which uses a quarter brick foot print. The InQor is provided with a SELV or ELV output which is separated for the input by basic insulation. The InQor quarter brick converter is a board mountable, isolated, fixed switching frequency DC/DC converter.
CC1.0	Model Differences
CC1.1	<p>The difference between InQor Model Series, IQ12XQYZA, IQ18XQYZA, IQ24XQYZA, IQ36XQYZA, IQ48XQYZA, IQ70XQYZA, IQ72XQYZA, and IQ1BXQYZA are different Input Voltage and Output Voltage and Current configurations.</p> <p>Each series has 9 separate voltage outputs (ref. X digit above). The three digit indicators are as follows: 018, 033, 050, 070, 120, 150, 240, 300, & 480.</p> <p>The maximum power outputs of the IQ12, IQ18 & IQ28 Series is 105 Watts. Maximum power output for the IQ24 & IQ36 Series is 120 Watts. Maximum power output for the IQ70 Series is 132 Watts. Maximum power output for the IQ48, IQ72 & IQ1B Series is 150 Watts. The output power is calculated by the following formula, which uses the information listed above.</p> <p>Power Output = (X/10) * Z: For example, if X = 050 (a 5.0 Vdc output) and Z = 20 (20 Amp maximum output) then (050/10) * 20 = 100 Watts.</p>
CD1.0	Additional Information
CD1.1	<p>IQ = Identifies the "Industrial Qor" product line: Single output.</p> <p>12 = Nominal 12 VDC Input, Range 9-22 VDC Input 18 = Nominal 18 VDC Input, Range 9-36 VDC Input 24 = Nominal 24 VDC Input, Range 18-36 VDC Input 28 = Nominal 28 VDC Input, Range 16-50 VDC Input 36 = Nominal 36 VDC Input, Range 18-75 VDC Input 48 = Nominal 48 VDC Input, Range 35-75 VDC Input 70 = Nominal 70 VDC Input, Range 34-135 VDC Input 72 = Nominal 72 VDC Input, Range 42-110 VDC Input 1B = Nominal 110 VDC Input, Range 66-160VDC Input</p> <p>X = (3 digits) specifies the output voltage in tenths of volts (i.e. 033 = 3.3 V)</p> <p>Q = (1 letter) specifies quarter-brick sized unit</p> <p>Y = (2 characters) specifies the product series and configuration where first character, allowed values are: T = Tera; second character, any character allowed, A = open frame, B = base plate, L =</p>

	<p>Low Profile, M = Low Profile with Baseplate, etc.</p> <p>Z = (2 digits) specifies the rated output current in amperes.</p> <p>A = (0 to 6 letters) specifies additional information such as input enable logic, pin length, pin configuration, etc.</p>
CE1.0	Technical Considerations
CE1.2	The product was submitted and tested for use at the maximum ambient temperature (T _{ma}) permitted by the manufacturer's specification of: 25°C
CE1.7	The product was investigated to the following additional standards: EN 60950-1:2001 (which includes all European national differences, including those specified in this test report).
CF1.0	Engineering Conditions of Acceptability
CF1.1	<p>For use only in or with complete equipment where the acceptability of the combination is determined by Underwriters Laboratories Inc.</p> <p>When installed in an end-product, consideration must be given to the following:</p>
CF1.2	The following Production-Line tests are conducted for this product: Electric Strength
CF1.4	The following secondary output circuits are ELV: Input voltages greater than 60 Vdc are considered to be an unearthed hazardous voltage secondary circuit and the outputs are an ELV circuit.
CF1.5	The following secondary output circuits are SELV: Output voltage are considered to be SELV circuits if the input voltage is less than 60 Vdc and separated from primary circuits by reinforced insulation.
CF1.7	The following secondary output circuits are at non-hazardous energy levels: All Outputs.
CF1.11	The power supply terminals and/or connectors are: Suitable for factory wiring only
CF1.13	The investigated Pollution Degree is: 2
CF1.15	Proper bonding to the end-product main protective earthing termination is: Required
CF1.19	The following end-product enclosures are required: Mechanical, Fire, Electrical
CF2.0	The abnormal testing was performed with an external 30A AGC (fast) for 12 V and 18 V input voltage units. An external 20 A AGC (fast) for 24 V, 28 V and 36 V input voltage units. An external 7 A AGC (fast) for 72 V input voltage units. An external 5 A AGC (fast) for 110 V input voltage units. Recommended external fuse for the IQ48XQYZA series is 15 A AGC (fast) and 10 A AGC (fast) for the IQ70XQYZA series. If higher value fuses are used additional testing may be required.
CF2.1	The input circuits are separated for the output circuit and the basic plate by basic insulation based on 160 V working voltage.
CF2.2	All normal heating test was performed with 300 LFM of cooling. Except IQ1B480QTA03 which requires 550 LFM with an input voltage of 66 Vdc, 600 LFM with input voltage of 110 Vdc, and 700 LFM with an input voltage of 160 Vdc. Recommended Air Cooling Rate for IQ48XQYZA and IQ70XQYZA Series is 400 LFM.