

File E194341
Project 99ME33731

Issued: May 12, 1999
Revised: October 28, 2005

REPORT

on

COMPONENT - POWER SUPPLIES,
INFORMATION TECHNOLOGY EQUIPMENT,
INCLUDING ELECTRICAL BUSINESS EQUIPMENT

SynQor Corp.
Boxborough , MA

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DESCRIPTION

PRODUCT COVERED:

USR/CNR - Product Type: DC to DC Converters

Models - PQ048015HN30, PQ048020HN30, PQ048025HN30, PQ048033HN30,
PQ048033SFC30N, PQ048050HN30, PQ048120HN12, PQ048150HN10.

Model Number Equivalents:

The following model numbers are functionally equivalent and interchangeable with the Model numbers listed above.

The second character of any Model Number listed as "Q" can be replaced with a "G", or the number can be suffixed with a "-G". Either of these modifications are indication of Self Certification RoHS conformity.

ELECTRICAL RATING:

Model	Input			Output, dc		Recommended Fusing
	V	A	Hz	V	A	
PQ048015HN30	36-75	2.0	DC	1.5	30	4
PQ048020HN30	36-75	2.5	DC	2.0	30	4
PQ048025HN30	36-75	3.0	DC	2.5	30	5
PQ048033HN30	36-75	4.0	DC	3.3	30	5
PQ48033SFC30	36-75	4.0	DC	3.3	30	5
PQ048050HN30	36-75	6.0	DC	5.0	30	10
PQ048120HN12	36-75	6.0	DC	12.0	12.5	10
PQ048150HN10	36-75	6.0	DC	15.0	10	10

ENGINEERING CONSIDERATIONS (NOT FOR UL REPRESENTATIVE'S USE):

Use - For use only in (or with) complete equipment where the acceptability of the combination is determined by Underwriters Laboratories Inc.

Special Considerations - The following items are considerations that were used when evaluating this product.

USR/CNR indicates investigation to the U.S. and Canadian (Bi-National) Standard for Safety of Information Technology Equipment, Including Electrical Business Equipment CAN/CSA C22.2 No. 950-95 UL 1950, Third Edition, [x] including revisions through revision date March 1, 1998, which are based on the Fourth Amendment to IEC 950, Second Edition.

Model Differences:

Model PQ48033SFC30 is identical to Model PQ048033HN30, except for the addition of a heatsink.

Conditions of Acceptability - When installed in the end-product, consideration shall be given to the following:

1. This component has been judged on the basis of the required spacings in the Standard for Safety of Information Technology Equipment, Including Electrical Business Equipment, CAN/CSA C22.2 No. 950-95 * UL 1950, Third Edition, including revisions through revision date March 1, 1998, which are based on the Fourth Amendment to IEC 950, Second Edition.
2. All secondary output circuits are SELV and are not hazardous energy levels.
3. The terminals and connectors are suitable for factory wiring only.
4. A suitable Electrical and Fire enclosure shall be provided in the end product.
5. The products were tested using a 20 A fast-blow external fuse in the ungrounded (hot) side of the line.
6. **The source to this power supply is intended to be supplied from an isolated source, such as a battery or a source, which meets the requirements for TNV-2, for the required Functional Insulation.**
7. These components have been evaluated for basic insulation from input to output and from input to chassis and for use in pollution degree 2 environments.
8. The maximum working voltage present is 75 V pk. The electric strength tests in the end product shall be based upon this value.
9. Testing was performed with external force air cooling using a fan with 300 lfm adjacent to the primary input of the unit. The direction of air flow was from primary to secondary. Temperature tests may be required as part of end product testing.
10. As applicable for units containing a Baseplate/Heatsink, the Baseplate/Heatsink temperature cannot exceed a maximum of 100°C.

File E194341
Project 99ME45016

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REPORT

on

COMPONENT - POWER SUPPLIES, INFORMATION TECHNOLOGY EQUIPMENT
INCLUDING ELECTRICAL BUSINESS EQUIPMENT

SynQor
Boxborough , MA

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DESCRIPTION

PRODUCT COVERED:

USR/CNR: Component Power Supply, Series PQ48XHYZA, where:

PQ = Identifies the "Power Qor" product line

48 = Nominal DC Voltage Input

X = (3 digits) specifies the output voltage in tenths of volts
(i.e. 015 = 1.5 V)

H = (1 letter) specifies half-brick sized unit

Y = (1 to 6 letters) specifies the product configuration (heatsink,
baseplate, series, etc.)

Z = (2 digits) specifies the rated output current in amperes (40 A maximum)

A = (0 to 6 letters) specifies additional information such as input enable
logic, pin length, etc.

Model Numbers Equivalents:

The following model numbers are functionally equivalent and interchangeable
with the model numbers listed above.

The second character of any Model Number listed as "Q" can be replaced with
a "G", or the Model Number can be suffixed with a "-G". Either of these modifications
are indication of Self Certification of RoHS conformity.

ELECTRICAL RATINGS:

INPUT:

<u>Series</u>	<u>Volts (V dc)</u>
PQ48XHYZA	36 - 75

<u>Current</u>
5 A Max.

OUTPUT:

<u>Volts (V dc max.)</u>
15

<u>Current</u>
40 A

The maximum power output of this series is 150 Watts. The output power is
calculated by the following formula which uses the information listed above.

Power Output = $(X/10) * Z$: For example, if X = 033 (a 3.3 V dc output) and
Z = 40A, then $(33/10) * 40 = 132$ Watts.

ENGINEERING CONSIDERATIONS (NOT FOR UL REPRESENTATIVE USE):

Use - For use only in (or with) Applicant's Information Technology Equipment, where the acceptability of the combination is determined by Underwriters Laboratories, Inc.

Special Considerations - The following items are considerations that were used when evaluating this product.

USR/CNR indicates investigation to the U.S. and Canadian (Bi-National) Standard for Safety of Information Technology Equipment, Including Electrical Business Equipment, CSA C22.2 No. 950-95 * UL 1950, Third Edition.

CONDITIONS OF ACCEPTABILITY:

1. These components have been judged on the basis of the required spacings in the Standard for Safety of Information Technology Equipment, CAN/CSA 22.2 No. 950-95 * UL 1950, Third Edition, including revisions through revision date March 1, 1998, which are based on the Fourth Amendment to IEC 950, Second Edition.
2. All secondary output circuits are SELV and cannot produce hazardous energy levels.
3. The terminals and connectors are suitable for factory wiring only.
4. A suitable Electrical and Fire enclosure shall be provided as part of the end product.
5. The products were tested using a 20 A fast-blow external fuse in the ungrounded (hot) side of the line.
6. These components have been evaluated for basic insulation from input to output and from input to chassis and for use in pollution degree 2 environments.
7. The maximum working voltage present is 75 V. The electric strength tests in the end product shall be based upon this value.
8. **The source to this power supply is intended to be supplied from an isolated source, such as a battery or a source, which meets the requirements for TNV-2, for the required Functional Insulation.**
9. Testing was performed with external force air cooling using a fan with 400 lfm adjacent to the primary input of the unit. The direction of air flow was from primary to secondary. Temperature tests may be required as part of end product testing.
10. As applicable for units containing a Baseplate/Heatsink, the Baseplate/Heatsink temperature cannot exceed a maximum of 100°C.

File E194341
Project 99ME48013

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Revised: October 28, 2005

REPORT

on

COMPONENT - POWER SUPPLIES, INFORMATION TECHNOLOGY EQUIPMENT
INCLUDING ELECTRICAL BUSINESS EQUIPMENT

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DESCRIPTION

PRODUCT COVERED:

USR/CNR: Component Power Supply, Model Series PQ48XQYZA, PQ50XQYZA, PQ60XQYZA, PQ60XQEZA, BQ50XQYZA, BQ51XQYZA, **BQ55XQYZA, and SQ60XQYZA** where:

PQ = Identifies the "Power Qor" product line: Single output

BQ = Identifies the "Bus Qor" product line: Single output

SQ = Identifies the "Bus Qor" product line: Single output

48 = Nominal 48 VDC Input

50 = Range of 42 - 53 VDC Input

51 = Range of 42 - 55 VDC Input

55 = Range of 36 - 55 VDC Input

60 = Nominal 48 VDC Input with 100 V transient operation;

X = (3 digits) specifies the output voltage in tenths of volts (i.e. 033 = 3.3 V)

Q = (1 letter) specifies quarter-brick sized unit

Y = (2 characters) specifies the product series and configuration where first character, allowed values are: K = Kilo, M = Mega, P = Peta, G = Giga, T = Tera, N = Normal; second character, any character allowed, A = open frame, B = base plate, L = Low Profile, M = Low Profile with Baseplate, etc.

E = (2 characters) specifies the product series and configuration where first character, allowed values are: E = Exa; second character, any character allowed, A = open frame, B = base plate, L = Low Profile, M = Low Profile with Baseplate, etc.

Z = (2 digits) specifies the rated output current in amperes (40 A maximum)

A = (0 to 6 letters) specifies additional information such as input enable logic, pin length, pin configuration, etc.

Model Number Equivalentents:

The following Model Numbers are functionally equivalent and interchangeable with the Model Numbers listed above.

The second character of any Model number listed as "Q" can be replaced with a "G", or the Model Number can be suffixed with a "-G". Either of these modifications are indication of Self certification of RoHS conformity.

Model Numbers with specific alternate identifiers:

BQ50120QTA20NNS	= BQ50120QTA20NNE
BQ50120QTA20NRS	= BQ501202HP20NRS
BQ50120QTA20NRS	= BQ50120RHP20NRS
BQ50120QTA20NRS	= BQ50120QTA20NRE
PQ48015QGA25NRS	= PQ48015BHP25NRS
PQ48018QGA25NNS	= PQ48018JHP25NNS
PQ48018QGA25NRS	= PQ480186HP25NRS
PQ48018QNA25PKS	= CQ0030200
PQ48025QGA25NKS	= CQ0021000

PQ48033QGA25NKS	= CQ0021300
PQ48033QGA25NNS	= PQ48033HHP25NNS
PQ48033QGB25NKS	= CQ0021400
PQ48033QGB25NNS	= CQ0021500
PQ48033QNA25PKS	= CQ0030100
PQ48050QGA20NKS	= CQ0021600
PQ48050QGB20NKS	= CQ0021700
PQ48050QGB20NNS	= CQ0021800
PQ48050QNA20NNS	= PQ48050CHP20NNS
PQ48060QGA17NNS	= CQ0021900
PQ48120QGA08NRS	= PQ481205HP08NRS
PQ48150QGA07NKS	= CQ0022300
PQ50033QPB60xxS	= CQ0026200
PQ60012QPA60NKS	= CQ0022400
PQ60012QTA40NKS	= CQ0022500
PQ60012QTA40NNS	= PQ60012KHP40NNS
PQ60015QTA40NRS	= PQ60015QHP40NRS
PQ60025QTA40NKS	= CQ0023600
PQ60033QGA25NKS	= CQ0024100
PQ60033QPA45NNS	= CQ0024200
PQ60033QTA35NKS	= CQ0024300
PQ60033QTA35NNS	= CQ0024400
PQ60050QML15NNS	= CQ0024800
PQ60050QTA30NKS	= CQ0024900
PQ60050QTB30NKS	= CQ0025000
PQ60120QGA08NRS	= PQ60120SHP08NRS
PQ60120QTA12NKS	= CQ0025500
PQ60120QTB12NKS	= CQ0025600
PQ65180QGA06NNS	= CQ0025900

ELECTRICAL RATINGS:

Series	INPUT		OUTPUT	
	Volts (Vdc)	Current	Volts (Vdc, max.)	Current (Max.)
PQ48XQYZA	35 - 75	5.0 A Max.	15.0	40 A
PQ50XQYZA	42 to 53	5.4 A Max	3.3	60 A
PQ60XQYZA	35 - 75	5.7 A Max.	48.0	60 A
PQ60XQEZA	35 - 75	10.0 A Max.	12.0	25 A
BQ50XQYZA	42 - 53	7.5 A Max.		50 A
			13.75	
BQ55XQYZA	36 to 55	7.5 A Max.	13.75	27 A
BQ51XQYZA	42 to 55	9.5 A Max.	11.0	43 A
BQ55XQYZA	35 to 55	9.5 A Max.	11.0	43 A
SQ60XQYZA	36 - 75	12.0 A Max.	12.6	28 A

The maximum power outputs of the PQ48XQYZA, PQ50XQYZA, and PQ60XQYZA Series are 198 Watts.

The maximum power output of the PQ60XQEZA Series is 300 Watts.

The maximum power outputs of the BQ50XQYZA and BQ55XQYZA Series are 373 Watts.

The maximum power outputs of the BQ51XQYZA and BQ55XQYZA are 473 Watts.

The maximum power output of the SQ60120QPA28 is 336 Watts.

The output power, which uses the information listed above, is calculated by the following formula:

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.

ENGINEERING CONSIDERATIONS (NOT FOR UL REPRESENTATIVE USE):

Use - For use only in (or with) Applicant's Information Technology Equipment, where the acceptability of the combination is determined by Underwriters Laboratories, Inc.

Special Considerations - The following items are considerations that were used when evaluating this product.

USR/CNR indicates investigation to the U.S. and Canadian (Bi-National) Standard for Safety of Information Technology Equipment, Including Electrical Business Equipment, UL 60950-1/CSA C22.2 No. 60950-1:2003.

CONDITIONS OF ACCEPTABILITY:

1. These components have been judged on the basis of the required spacings in the Standard for Safety of Information Technology Equipment, UL 60950-1/CSA C22.2 No. 60950-1:2003.
- *2. All secondary output circuits are SELV, however, only Models **BQ50XQYAZA**, **BQ55XQYAZA**, and **SQ60120QPA28** may produce hazardous energy levels.
3. The terminals and connectors are suitable for factory wiring only.
4. A suitable Electrical and Fire enclosure shall be provided as part of the end product.
5. The products **except for model SQ60120QPA28** were tested using a 20 A fast-blow external fuse in the ungrounded (hot) side of the line.
- 5A. **Model SQ60120QPA28 was tested using a 15A fast-blow external fuse in the ungrounded input lead.**
6. These components have been evaluated for basic insulation from input to output and from input to chassis and for use in pollution degree 2 environments.
7. The maximum working voltage present is 144 V peak, 33.05 Vrms. The electric strength tests in the end product shall be based upon this value.
8. Testing was performed with external forced air-cooling using a fan with 400 lfm adjacent to the primary input of the unit. The direction of air flow was from primary to secondary. Temperature tests may be required as part of end product testing.
- 8A. **Testing of model SQ60120QPA28 was performed with external forced air cooling of 300 LFM with a 36V input and 500 LFM with a 75V input. The direction of airflow was from pin 3 to pin 1. Temperature testing may be required as part of the end product testing.**
9. The source to this power supply is intended to be supplied from an isolated source, such as a battery or a source, which meets the requirements for TNV-2, for the required Functional Insulation.
10. The maximum input voltage for models PQ60XQYZA and PQ48XQYZA was 75 V dc. The maximum input voltage for the BQ50XQYZA was 52 V dc maximum. The maximum input voltage the BQ55XQYZA was 55 V dc maximum.
11. As applicable for units containing a Baseplate/Heatsink, the Baseplate/Heatsink temperature cannot exceed a maximum of 100 °C.

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Project 00ME11297

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REPORT

on

COMPONENT - POWER SUPPLIES, INFORMATION TECHNOLOGY EQUIPMENT
INCLUDING ELECTRICAL BUSINESS EQUIPMENT

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DESCRIPTION

PRODUCT COVERED:

USR/CNR: Component Power Supply, Series Models PQ48XHYZA, PQ48033SSC50NYS, PQ55XHYZA, PQ60XHYZA, PQ55XHEZA, BQ60XHYZA and IQ24XHYZA.

PQ = Identifies the "Power Qor" product line
BQ = Identifies the "Bus Qor" product line: Single output
IQ = Identifies the "Industrial Qor" product line

24 = Nominal 24 VDC Input, Input range is 18 to 36 VDC
48 = Nominal 48 VDC Input or
55 = Nominal 48 VDC Input, Input Range is 38 to 55 VDC
60 = Nominal 48 VDC Input with 100 V transient operation;

X = (3 digits) specifies the output voltage in tenths of volts
(i.e. 015 = 1.5 V)

H = (1 letter) specifies half-brick sized unit

Y = (2 characters) specifies the product series and configuration where
first character, allowed values are : K = Kilo, M = Mega, G = Giga,
T = Tera, P = Peta, E = Exa, Z = Zeta, N = Normal; second character,
any character allowed, A = open frame, B = base plate, **C = Encased** etc.

E = (2 characters) specifies the product series and configuration where
first character, allowed values are : E = Exa ; second character, any
character allowed, A - open frame, B = base plate, etc.

Z = (2 digits) specifies the rated output current in amperes (60 A
maximum)

A = (0 to 6 letters) specifies additional information such as input
enable logic, pin length, etc.

Model Number Equivalents:

The following Model Numbers are functionally equivalent and interchangeable
with the Model Numbers listed above.

The second character of any Model Number listed as "Q" can be replaced with
a "G", or the Model Number can be suffixed with a "-G". Either of these modifications
are indication of Self Certification of RoHS conformity.

Model Numbers with alternate specific identifiers:

BQ60120HEA30NKS	= CQ0020100
PQ48015HKA20NRS	= PQ480158HP20NRS
PQ48015HMA30NRS	= PQ480157HP30NRS
PQ48015HTA60NNS	= PQ48015EHP60NNS
PQ48018HGA30NRS	= PQ48018AHP40NRS
PQ48018HGA40NNS	= PQ48018DHP40NNS
PQ48018HTA60NRS	= PQ480184HP60NRS
PQ48025HTA60NNS	= PQ48025IHP60NNS
PQ48033HMA30NRS	= PQ480339HP30NRS
PQ48033HTA50NNS	= CQ0021100
PQ48033HTA50NRF	= PQ480333HP50NRF
PQ48033HTA50NRS	= PQ48033F1050NRS

PQ48033HTB50NKS	= CQ0021200
PQ48050HGA30NRF	= PQ480501HP30NRF
PQ48120HGA12NKS	= CQ0022000
PQ48120HTA14NNS	= PQ48120GHP14NNS
PQ48150HTA11NNS	= CQ0022100
PQ48150HTB11NNS	= CQ0022200
PQ60018HPB80NKH	= CQ0022800
PQ60018HPB80NNS	= CQ0022900
PQ60025HPB80NKS	= CQ0023400
PQ60025HPB80NNS	= CQ0023500
PQ60050HPA45NKS	= CQ0024700
PQ60120HPB20NK7	= CQ0025300
PQ60120HPB20NNS	= CQ0025400
PQ60260HTB10NNS	= CQ0025700
PQ60525HTA04NKS	= CQ0025800

ELECTRICAL RATINGS:

Model/Series	<u>INPUT</u>		<u>OUTPUT</u>		
	Volts (V dc)	Current (A)	Volts (V dc) max	Current (A) Max	Power (W)
PQ48XHYZA	35 - 75	6 Max.	26	60	165
PQ48033SSC50A	35 - 75	6 Max.	3.3	50	165
PQ55XHYZA	38 - 55	18.0	55.6	11.5	600
PQ60XHYZA	35 - 75	20.0 Max.	52.5	100	600
BQ60XHYZA	35 - 75	11.5 Max.	12	30	360
IQ24XHYZA	18 - 36	33.0 Max	50.0	18.0	504

The maximum power output of this series is 600 Watts. The output power is calculated by the following formula which uses the information listed above.

Power Output = (X/10) Z: For example, if X = 015 (a 1.5 Vdc output) and Z = 60A, then (15/10) 60 = 90 Watts.

ENGINEERING CONSIDERATIONS (NOT FOR UL REPRESENTATIVE USE):

Use - For use only in (or with) Applicant's Information Technology Equipment, where the acceptability of the combination is determined by Underwriters Laboratories, Inc.

Special Considerations - The following items are considerations that were used when evaluating this product.

USR/CNR indicates investigation to the U.S. and Canadian (Bi-National) Standard for Safety of Information Technology Equipment, Including Electrical Business Equipment, CSA C22.2 No. 60950-1-03 UL 60950-1, First Edition.

CONDITIONS OF ACCEPTABILITY:

1. These components have been judged on the basis of the required spacings in the Standard for Safety of Information Technology Equipment, CAN/CSA 22.2 No. 60950-1 * UL 60950-1, First Edition.
2. All secondary output circuits are SELV and cannot produce hazardous energy levels.
3. The terminals and connectors are suitable for factory wiring only.
4. A suitable Electrical and Fire enclosure shall be provided as part of the end product.
5. The products were tested using a 20 A fast-blow external fuse in the ungrounded (hot) side of the line. Models PQ55530HZA and PQ60120HZA50 were tested with 30 A fast-blow fuse. **Model IQ2428HZA18 and IQ24500HZA10 were tested with a 40A fast-blow fuse.**
6. These components have been evaluated for basic insulation from input to output and from input to chassis and for use in pollution degree 2 environments.
7. The maximum working voltage present is 75 V pk. The electric strength **tests in the end product shall be based upon this value. The maximum working voltage present in model PQ60525HYZA was 135 Vpk, 72 Vrms. The electric strength testing should be based on the maximum working voltage of the end product.**
8. Testing was performed with external forced air cooling using a fan with 400 lfm adjacent to the primary input of the unit. The direction of air flow was from primary to secondary. Temperature tests may be required as part of end product testing. Testing on model PQ60525HYZA was conducted with 300 LFM, model PQ55530HZA was conducted with 600LFM and PQ60120HZA50 was conducted with 1300LFM of airflow across the sample from output to input. **Testing on model IQ24280HZA18 and IQ24500HZA10 was conducted with 800LFM of air flow across the sample from input to output.**
9. The source to this power supply is intended to be supplied from an isolated source, such as a battery or a source, which meets the requirements for TNV-2, for the required Functional Insulation.
10. As applicable for units containing a Baseplate/Heatsink, the Baseplate/**Heatsink temperature cannot exceed a maximum of 100°C.**
11. Spacings - Input to output spacings were evaluated for basic insulation based on Working Voltage Measurement Test results.

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Project 01ME03539

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Revised: March 10, 2005

REPORT

on

COMPONENT - POWER SUPPLIES, INFORMATION TECHNOLOGY EQUIPMENT
INCLUDING ELECTRICAL BUSINESS EQUIPMENT

SynQor
Boxborough, MA

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DESCRIPTION

PRODUCT COVERED:

USR/CNR: Component Power Supply, Series PQ24XQYZA, where:

@ PQ = Identifies the "Power Qor" product line

24, 30 or 40 = Nominal DC Voltage Input

X = (3 digits) specifies the output voltage in tenths of volts
(i.e. 015 = 1.5 V)

Q = (1 letter) specifies quarter-brick sized unit

@ Y = (1 to 6 letters) specifies the product configuration (heatsink, baseplate, series, etc.); the first letter describes the following types:

N = Normal

T = Tetra

G = Giga

M = Mega

K = Kilo

Z = (2 digits) specifies the rated output current in amperes (25 A maximum)

A = (0 to 6 letters) specifies additional information such as input enable logic, pin length, etc.

Model Number Equivalents:

The following Model Numbers are functionally equivalent and interchangeable with the Model Numbers listed above.

The second character of any Model Number listed as "Q" can be replaced with a "G", or the Model Number can be suffixed with a "-G". Either of these modifications are indication of Self Certification RoHS conformity.

Model Numbers with alternate specific identifiers:

PQ24050QGA20NNS = CQ0020800

PQ24150QGA07NNS = CQ0020900

ELECTRICAL RATINGS:

Series	INPUT		OUTPUT	
	Volts (Vdc)	Current	Volts (Vdc max.)	Current (Max.)
PQ24XQYZA	18 - 36	8 A Max.	15	25 A
PQ30XQYZA	18 - 60	7.5 A Max.	15	30 A
PQ40XQYZA	18 - 75	7.5 A Max.	15	25 A

The maximum power output of this series is 100 Watts. The output power is calculated by the following formula, which uses the information listed above.

@Power Output = (X/10) @ Z: For example, if X = 033 (a 3.3 Vdc output) and Z = 25A, then (33/10) @ 25 = 82.5 Watts.

ENGINEERING CONSIDERATIONS (NOT FOR UL REPRESENTATIVE USE):

Use - For use only in (or with) Applicant's Information Technology Equipment, where the acceptability of the combination is determined by Underwriters Laboratories, Inc.

Special Considerations - The following items are considerations that were used when evaluating this product.

USR/CNR indicates investigation to the U.S. and Canadian (Bi-National) Standard for Safety of Information Technology Equipment, Including Electrical Business Equipment, UL 60950-1/CSA C22.2 No. 60950-1:2003.

These products are DC-DC Converter switching type power supplies incorporating semiconductor components in the primary circuit. They are provided with input and output terminals for connection to the end use equipment.

CONDITIONS OF ACCEPTABILITY:

1. These components have been judged on the basis of the required spacings in the Standard for Safety of Information Technology Equipment, UL 60950-1/CSA C22.2 No. 60950-1:2003, which is based on IEC 60950-1.
2. All secondary output circuits are SELV and cannot produce hazardous energy levels.
3. The source to this power supply is intended to be supplied from an isolated source, such as a battery or a source, which meets the requirements for TNV-2, for the required Functional Insulation.
4. The terminals and connectors are suitable for factory wiring only.
5. A suitable Electrical and Fire enclosure shall be provided as part of the end product.
6. The products were tested using a 20 A fast-blow external fuse in the ungrounded (hot) side of the line.
7. These components have been evaluated for basic insulation from input to output and from input to chassis and for use in pollution degree 2 environments.
8. The maximum working voltage present is 50 V pk. The electric strength tests in the end product shall be based upon this value.
9. **Testing was performed with external forced air cooling using a fan with 300 lfm adjacent to the primary input of the unit. The direction of air flow was from primary to secondary. Temperature tests may be required as part of end product testing.**
10. As applicable for units containing a Baseplate/Heatsink, the Baseplate/Heatsink temperature cannot exceed a maximum of 100°C.

CONSTRUCTION DETAILS

Printed Wiring Boards - R/C ZMPV2, see Section General. The general appearance of the foil patterns shall not change from those items detailed in Ills. 2-11.

Spacings - Input to output spacings were evaluated for basic insulation based on Working Voltage Measurement Test results.

Marking - Includes Recognized Company's name and model designation. Optional electrical ratings may be provided. All markings are silk-screened or provided on R/C PGDQ2 Marking and Labeling Systems.

Soldered Connections - All components are surface mounted to the printed wiring board.

Tolerances - Unless specified otherwise, all indicated dimensions are nominal.

File E194341
Project 01ME06145

Issued: April 12, 2001
Revised: October 28, 2005
REPORT
on

COMPONENT - POWER SUPPLIES, INFORMATION TECHNOLOGY EQUIPMENT
INCLUDING ELECTRICAL BUSINESS EQUIPMENT

SynQor
Boxborough , MA

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DESCRIPTION

PRODUCT COVERED:

USR/CNR: Component Power Supply, Model DQ6XQYZA Series, where:

DQ = Indicates "Dual-Power Qor" product line

6 = DC Input (35-75 VDC range) with 100 V transient operation

X = (4 digits) specifies the two output voltages in tenths of volts
(ie. 5033 = 5.0 and 3.3 V)

Q = (1 letter) second "Q" specifies quarter-brick sized unit

Y = (2 characters) specifies the product series and configuration
where first character, allowed values are: K = Kilo, M = Mega,
G = Giga, T = Tera, N = Normal; second character, any character
allowed, A = open frame, B = base plate, etc.

Z = (2 digits) specifies the total (combined) rated output power in
tens of watts (09 = 90 Watts), 100 Watts maximum

A = (0 to 6 letters) specifies additional information such as input
enable logic, pin length, options, etc.

Model Number Equivalents:

The following Model Numbers are functionally equivalent and interchangeable with the Model Numbers listed above.

The second character of any Model Number listed as "Q" can be replaced with a "G", or the Model Number can be suffixed with a "-G". Either of these modifications are indication of Self certification RoHS conformity.

Model Numbers with alternate specific identifiers:

DQ61212QMA06NKS	= CQ0020200
DQ61212QMB06NKM	= CQ0020300
DQ61212QMB06NKS	= CQ0020400
DQ65033QMA06NKS	= CQ0020500
DQ65033QMA06NNS	= DQ65033FHP06NNS
DQ65033QMB06NNS	= DQ65033Q1N06NNS

ELECTRICAL RATINGS:

Model	INPUT		OUTPUT	
	Volts (V dc)	Current	Volts (V dc max.)	Current (Max)
DQ6XQYZA Series	35 - 75	2.5 A Max	15.0 15.0	18.2 A 15 A

The maximum power output of this model is 100 Watts.

ENGINEERING CONSIDERATIONS (NOT FOR UL REPRESENTATIVE USE):

Use - For use only in (or with) Applicant's Information Technology Equipment, where the acceptability of the combination is determined by Underwriters Laboratories, Inc.

Special Considerations - The following items are considerations that were used when evaluating this product.

USR/CNR indicates investigation to the U.S. and Canadian (Bi-National) Standard for Safety of Information Technology Equipment, Including Electrical Business Equipment, CSA C22.2 No. 60950-00 * UL 60950, Third Edition.

These products are DC-DC Converter switching type power supplies incorporating semiconductor components in the primary circuit. They are provided with input and output terminals for connection to the end use equipment.

CONDITIONS OF ACCEPTABILITY:

1. These components have been judged on the basis of the required spacings in the Standard for Safety of Information Technology Equipment, CAN/CSA 22.2 No. 60950-00 * UL 60950, which is based on IEC 60950, Third Edition.
2. All secondary output circuits are SELV and cannot produce hazardous energy levels.
3. **The source to this power supply is intended to be supplied from an isolated source, such as a battery or a source, which meets the requirements for TNV-2, for the required Functional Insulation.**
4. The terminals and connectors are suitable for factory wiring only.
5. A suitable Electrical and Fire enclosure shall be provided as part of the end product.
6. The products were tested using a 20 A fast-blow external fuse in the ungrounded (hot) side of the line.
7. These components have been evaluated for basic insulation from input to output and from input to chassis and for use in pollution degree 2 environments.
8. The maximum working voltage present is 88 V pk. The electric strength tests in the end product shall be based upon this value.
9. Testing was performed with external forced air cooling using a fan with 300 lfm adjacent to the primary input of the unit. The direction of air flow was from primary to secondary. Temperature tests may be required as part of end product testing.
10. As applicable for units containing a Baseplate/Heatsink, the Baseplate/Heatsink temperature cannot exceed a maximum of 100°C.

File E194341
Project 02ME17159

Issued: September 5, 2002
Revised: October 28, 2005

REPORT
on

COMPONENT - POWER SUPPLIES, INFORMATION TECHNOLOGY EQUIPMENT
INCLUDING ELECTRICAL BUSINESS EQUIPMENT

SynQor
Boxborough , MA

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DESCRIPTION

PRODUCT COVERED:

USR/CNR: Component Power Supply, Series Models PQ60XEYZA, BQ55XEYZA

PQ = Identifies the "Power Qor" product line

BQ = Identifies the "Bus Qor" product line

60 = Nominal 48 VDC Input with **35-75 VDC range with**
100 V transient operation;

55 = Nominal 48 VDC Input with 35-55 VDC range

30 = Nominal 48 VDC Input with 18-60 VDC range

X = (3 digits) specifies the output voltage in tenths of volts
(i.e. 015 = 1.5 V)

E = (1 letter) specifies eighth-brick sized unit

Y = (2 characters) specifies the product series and configuration where first
character, allowed values are : K = Kilo, M = Mega, G = Giga, P = Peta, T
= Tera; second character, any character allowed, A = open frame, B = base
plate, L = Low Profile, M = Low profile with Baseplate, etc.

Z = (2 digits) specifies the rated output current in amperes (27 Amps Maximum).

A = (0 to 6 letters) specifies additional information such as input
enable logic, pin length, etc.

Model Number Equivalents:

The following Model Numbers are functionally equivalent and interchangeable
with the Model Numbers listed above.

The second character of any Model Number listed as "Q" can be replaced with
a "G", or the Model Number can be suffixed with a "-G". Either of these modifications
are indication of Self Certification RoHS conformity.

Model Numbers with alternate specific identifiers:

PQ60015EGL20NRS	= PQ60015NHP20NRS
PQ60015EML15NKS	= CQ0022600
PQ60018EML15NKS	= CQ0022700
PQ60018EML15NRS	= PQ60018PHP15NRS
PQ60025EGL25NKS	= CQ0023000
PQ60025EML15NKS	= CQ0023100
PQ60025EML15NNS	= CQ0023200
PQ60025EMM15NNS	= CQ0023300
PQ60033EGL20NKS	= CQ0023700
PQ60033EML15NKS	= CQ0023800
PQ60033EML15NNS	= CQ0023900
PQ60033EML15NNS	= PQ60033LHP15NNS
PQ60033EMM15NNS	= CQ0024000

PQ60050EML10NKS	=	CQ0024500
PQ60050EML10NNS	=	CQ0024600
PQ60120EML04NKS	=	CQ0025100
PQ60120EMM04NNS	=	CQ0025200

ELECTRICAL RATINGS:

Model/Series	Volts (Vdc)	INPUT		OUTPUT	
		Current(A)	Volts (Vdc) max	Current(A)	Power (W)
PQ60XEYZA	35 - 75	3.0 Max.	24.0	45 Max.	100
BQ55XEYZA	35 - 55	5.8 Max.	11.0	27	297
PQ30XEYZA	18 - 60	4.5 Max.	3.3	20	66

The output power is calculated by the following formula which uses the information listed above.

Power Output = (X/10) Z: For example, if X = 150 (a 15 Vdc output) and Z = 15A, then (15/10) 15 = 22.5 Watts.

ENGINEERING CONSIDERATIONS (NOT FOR UL REPRESENTATIVE USE):

Use - For use only in (or with) Applicant's Information Technology Equipment, where the acceptability of the combination is determined by Underwriters Laboratories, Inc.

Special Considerations - The following items are considerations that were used when evaluating this product.

USR/CNR indicates investigation to the U.S. and Canadian (Bi-National) Standard for Safety of Information Technology Equipment, Including Electrical Business Equipment, UL 60950-1/CSA C22.2 No. 60950-1:2003.

CONDITIONS OF ACCEPTABILITY:

1. These components have been judged on the basis of the required spacings in the Standard for Safety of Information Technology Equipment, UL 60950-1/CSA C22.2 No. 60950-1:2003.
2. All secondary output circuits are SELV and cannot produce hazardous energy levels.
3. The terminals and connectors are suitable for factory wiring only.
4. A suitable Electrical and Fire enclosure shall be provided as part of the end product.
5. The products were tested using a 20 A fast-blow external fuse in the ungrounded (hot) side of the line.

6. These components have been evaluated for basic insulation from input to output and from input to chassis and for use in pollution degree 2 environments.
7. The maximum working voltage present is 75 V pk. The electric strength tests in the end product shall be based upon this value.
- *8. Testing was performed with external forced air cooling using a fan with 100 **lfm for the BQ55XEYZA Series, 300 lfm for PQ60XEYZA Series and 400 lfm for PQ30XEYZA Series**, placed approximately 8" from the primary input of the unit. The direction of air flow was from primary to secondary. Temperature tests may be required as part of end product testing.
9. The source to this power supply is intended to be supplied from an isolated source, such as a battery or a source, which meets the requirements for TNV-2, for the required Functional Insulation.
10. As applicable for units containing a Baseplate/Heatsink, the Baseplate/Heatsink temperature cannot exceed a maximum of 100 °C.

CONSTRUCTION DETAILS

Printed Wiring Boards - R/C ZMPV2, see Section General. The general appearance of the foil patterns shall not change from those items detailed in Ill. 2.

Spacings - Input to output spacings were evaluated for basic insulation based on Working Voltage Measurement Test results.

Marking - Includes Recognized Company's name and model designation. Optional electrical ratings may be provided. All markings are silk-screened or provided on R/C PGDQ2 Marking and Labeling Systems.

Soldered Connections - All components are surface mounted to the printed wiring board.

Tolerances - Unless specified otherwise, all indicated dimensions are nominal.

These products are DC-DC Converter switching type power supplies incorporating semiconductor components in the primary circuit. They are provided with input and output terminals for connection to the end use equipment.

File E194341
Project 03ME12283

September 17, 2003
Revised: 2005-04-11

REPORT

on

COMPONENT - POWER SUPPLIES, INFORMATION TECHNOLOGY EQUIPMENT
INCLUDING ELECTRICAL BUSINESS EQUIPMENT

SynQor
Boxborough, MA

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DESCRIPTION

PRODUCT COVERED:

USR/CNR: Component Power Supply, Series Models NQ03XYZA, NQ04XYZA, NQ05XYZA, NQ10XYZA, NQ12XYZA, **NQ15XYZA**, and NQ16XYZA.

NQ = Identifies the non-isolated "NIQor" product line

03 = Nominal 3.3 VDC Input +/- 10%

04 = Nominal 3.0 to 5.5 VDC Input

05 = Nominal 5.0 VDC Input +/- 10%

10 = Nominal 10.2 to 13.2 VDC

12 = Nominal 12 VDC Input +/- 10%

15 = Nominal 6.0 to 15.0 VDC Input

16 = Nominal 12Vdc input +33/-50 %

X = (3 digits) specifies the output voltage in tenths of volts (i.e. 015 = 1.5 V) . Note - W05 = Wide Range, 0.75-5.0V output.

Y = (3 characters) where the first character allowed values are: H = horizontal mount, V = vertical mount or S = surface mount; second character represents the product series and configuration with allowed values: K = Kilo, M = Mega, G = Giga, T = Tera; third character, any character allowed, A = open frame, B = base plate, etc.

Z = (2 digits) specifies the rated output current in amperes (30 A maximum)

A = (0 to 6 letters) specifies additional information such as input enable logic, option set, etc.

Model Number Equivalents:

The following Model Numbers are functionally equivalent and interchangeable with the Model Numbers listed above.

The second character of any Model Number as listed as "Q" can be replaced with a "G", or the Model Number can be suffixed with a "-G". Either of these modifications are indication of Shelf Certification of RoHS conformity.

Model Numbers with alternate specific identifiers:

NQ12T50SMA16PSS = CQ0020700

NQ04033VMA15ORN = CQ0020600

ELECTRICAL RATINGS:

Model/Series	INPUT		OUTPUT		
	Volts (Vdc)	Current(A)	Volts (Vdc) max.	Current(A) max.	Power (W) max.
NQ03XYZA	3.0 - 3.6	16 Max.	2.5	20	50
NQ04XYZA	3.0 - 5.5	16 Max.	3.3	20	66
NQ05XYZA	4.5 - 5.5	16 Max.	3.3	20	66
NQ12XYZA	9.6 - 14.4	10.5 Max	5.0	16	80

ELECTRICAL RATINGS:

Model/Series	INPUT		OUTPUT		
	Volts (Vdc)	Current(A)	Volts (Vdc) max.	Current(A) max.	Power (W) max.
NQ03XYZA	3.0 - 3.6	16 Max.	2.5	20	50
NQ04XYZA	3.0 - 5.5	16 Max.	3.3	20	66
NQ05XYZA	4.5 - 5.5	16 Max.	3.3	20	66
NQ12XYZA	9.6 - 14.4	10.5 Max	5.0	16	80
NQ15XYZA	6.0 - 15.0	28 Max	5.0	30	150
NQ16XYZA	6.0 - 16.0	14.0 Max	5.0	16	80

NQ10XYZA

10.2 - 13.2

3.8 Max

5.0

7

35

The maximum power output of this series is **150 Watts**. The output power is calculated.

ENGINEERING CONSIDERATIONS (NOT FOR UL REPRESENTATIVE USE):

Use - For use only in (or with) Applicant's Information Technology Equipment, where the acceptability of the combination is determined by Underwriters Laboratories, Inc.

Special Considerations - The following items are considerations that were used when evaluating this product.

USR/CNR indicates investigation to the U.S. and Canadian (Bi-National) Standard for Safety of Information Technology Equipment, Including Electrical Business Equipment, CSA C22.2 No. 60950-1-03 , UL 60950-1, First Edition.

CONDITIONS OF ACCEPTABILITY:

1. These components have been judged on the basis of the required spacings in the Standard for Safety of Information Technology Equipment, CAN/CSA 22.2 No. 60950-1-03, UL 60950-1, First Edition .
2. All secondary output circuits are SELV and cannot produce hazardous energy levels.
3. The terminals and connectors are suitable for factory wiring only.
4. A suitable Electrical and Fire enclosure shall be provided as part of the end product.
5. These components have been evaluated for Functional insulation from input to output and from input to chassis and for use in pollution degree 2 environments.
6. Testing was performed with 300 lfm external forced air cooling at the primary input of the unit. The direction of air flow was from primary to secondary. Temperature tests may be required as part of end product testing.
7. Deleted.
8. As applicable for units containing a Baseplate/Heatsink, the Baseplate/Heatsink temperature cannot exceed a maximum of 100 °C.

- *9. The NQ03XYZA, NQ04XYZA, NQ05XYZA, NQ10XYZA, NQ16XYZA model series were tested with an external 20 A Listed fuse employed at input. The NQ12XYZA model series was tested with an external 15 A Listed fuse employed at input. **The NQ15XYZA model series was tested with an external 30 A listed fuse employed at the input.** Model series NQ10XYZA was evaluated based on similarity to NQ12XYZA model series.

CONSTRUCTION DETAILS

Printed Wiring Boards - R/C ZMPV2, see Section General. The general appearance of the foil patterns shall not change from those items detailed in Ills. 1, 2, and 3.

Spacings - Input to output spacings were evaluated for basic insulation based on Working Voltage Measurement Test results.

Marking - Includes Recognized Company's name and model designation. Optional electrical ratings may be provided. All markings are silk-screened or provided on R/C PGDQ2 Marking and Labeling Systems.

Soldered Connections - All components are surface mounted to the printed wiring board.

Tolerances - Unless specified otherwise, all indicated dimensions are nominal.

These products are DC-DC Converter switching type power supplies incorporating semiconductor components in the primary circuit. They are provided with input and output terminals for connection to the end use equipment.

File E194341
Project 06ME05167

April 28, 2006

REPORT
on

COMPONENT - POWER SUPPLIES, INFORMATION TECHNOLOGY EQUIPMENT
INCLUDING ELECTRICAL BUSINESS EQUIPMENT

SYNQOR L L C
Boxborough , MA

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DESCRIPTION

PRODUCT COVERED:

USR/CNR: Component Power Supply, Series Models PQ60XSYZA,

PQ = Identifies the "Power Qor" product line

60 = Nominal 48 VDC Input with 100 V transient operation;

X = (3 digits) specifies the output voltage in tenths of volts
(i.e. 015 = 1.5 V)

S = (1 letter) specifies Sixteenth-brick sized unit

Y = (2 characters) specifies the product series and configuration where first character, allowed values are : K = Kilo, M = Mega, G = Giga, P = Peta, T = Tera; second character, any character allowed, A = open frame, B = base plate, L = Low Profile, M = Low profile with Baseplate, etc.

Z = (2 digits) specifies the rated output current in amperes (20 Amps Maximum).

A = (0 to 6 letters) specifies additional information such as input enable logic, pin length, etc.

Model Number Equivalents:

The following Model Numbers are functionally equivalent and interchangeable with the Model Numbers listed above.

The second character of any Model Number listed as "Q" can be replaced with a "G", or the Model Number can be suffixed with a "-G". Either of these modifications are indication of Self Certification RoHS conformity.

ELECTRICAL RATINGS:

Model/Series	Volts (Vdc)	INPUT		OUTPUT		Power (W)
		Current(A)	Volts (Vdc) max	Current(A)	Max.	
*						
PQ60012SGL25xyz-G	35 - 75	2.1 max	1.2	25	30	
PQ60015SGL25xyz-G	35 - 75	2.1 max	1.5	25	37.5	
PQ60018SGL25xyz-G	35 - 75	2.1 max	1.8	25	45	
PQ60025SGL20xyz-G	35 - 75	2.1 max	2.5	20	50	
PQ60033SGL20xyz-G	35 - 75	2.1 max	3.3	20	66	
PQ60050SGL12xyz-G	35 - 75	2.1 max	5.0	12	60	

* The output power is calculated.

ENGINEERING CONSIDERATIONS (NOT FOR UL REPRESENTATIVE USE):

Use - For use only in (or with) Applicant's Information Technology Equipment, where the acceptability of the combination is determined by Underwriters Laboratories, Inc.

Special Considerations - The following items are considerations that were used when evaluating this product.

USR/CNR indicates investigation to the U.S. and Canadian (Bi-National) Standard for Safety of Information Technology Equipment, Including Electrical Business Equipment, UL 60950-1/CSA C22.2 No. 60950-1:2003.

CONDITIONS OF ACCEPTABILITY:

1. These components have been judged on the basis of the required spacings in the Standard for Safety of Information Technology Equipment, UL 60950-1/CSA C22.2 No. 60950-1:2003.
2. All secondary output circuits are SELV and cannot produce hazardous energy levels.
3. The terminals and connectors are suitable for factory wiring only.
4. A suitable Electrical and Fire enclosure shall be provided as part of the end product.
5. The products were tested using a 20 A fast-blow external fuse in the ungrounded (hot) side of the line.

6. These components have been evaluated for basic insulation from input to output and from input to chassis and for use in pollution degree 2 environments.
7. The maximum working voltage present is 75 V pk. The electric strength tests in the end product shall be based upon this value.
8. Testing was performed with external forced air cooling using a fan with 300 lfm placed approximately 8" from the primary input of the unit. The direction of air flow was from primary to secondary. Temperature tests may be required as part of end product testing.
9. The source to this power supply is intended to be supplied from an isolated source, such as a battery or a source, which meets the requirements for TNV-2, for the required Reinforced Insulation.
10. As applicable for units containing a Baseplate/Heatsink, the Baseplate/Heatsink temperature cannot exceed a maximum of 100 °C.

CONSTRUCTION DETAILS

Printed Wiring Boards - R/C ZMPV2, see Section General. The general appearance of the foil patterns shall not change from those items detailed in Ill. 1.

Spacings - Input to output spacings were evaluated for basic insulation based on Working Voltage Measurement Test results.

Marking - Includes Recognized Company's name and model designation. Optional electrical ratings may be provided. All markings are silk-screened or provided on R/C PGDQ2 Marking and Labeling Systems.

Soldered Connections - All components are surface mounted to the printed wiring board.

Tolerances - Unless specified otherwise, all indicated dimensions are nominal.

These products are DC-DC Converter switching type power supplies incorporating semiconductor components in the primary circuit. They are provided with input and output terminals for connection to the end use equipment.