CSA INTERNATIONAL

Certificate of Compliance

Certificate: 1185387 **Master Contract:** 163661

Project: 1834172 **Date Issued:** 2006/10/05

Issued to: **Astec International Limited**

2 Wing Yip St
16th & 17th Flr Lu Plaza
Kwun Tong, Kowloon
Hong Kong
Attention: Mr. Gordhan Hingorani

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US'

C US

Issued by: Jim Saunders, P. Eng.

Authorized by: Akbar Lalani, Product Group Manager

PRODUCTS

CLASS 5311 07 - POWER SUPPLIES - Component Type - (CSA 60950-1-03)
CLASS 5311 87 - POWER SUPPLIES - Component Type - Certified to US Stds. - (CSA 60950-1-03/UL 60950-1, First Edition, NRTL Program)

Component Power Supply, Model MP6 (followed by up to 17 alpha numeric characters indicating outputs - see Model Configuration Supplement, page 3), rated 100-240V, 10A, 50/60/400Hz or 200-240V, 10A, 50/60/400Hz.

Notes:

The 'C' and 'US' indicators adjacent to the CSA Mark signify that the product has been evaluated to the applicable CSA and ANSI/UL Standards, for use in Canada and the U.S., respectively. This 'US' indicator includes products eligible to bear the 'NRTL' indicator. NRTL, i.e. National Recognized Testing Laboratory, is a designation granted by the U.S. Occupational Safety and Health Administration (OSHA) to laboratories which have been recognized to perform certification to U.S. Standards.

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1. The MP6 is Certified as a component for use in other electrical equipment where the suitability of each combination is to be determined.

2. Maximum continuous output power is 600W at 50C maximum and 300W at 70C maximum. With rear air exhaust option, maximum continuous output power is 600W at 40C. Total loading of dual output modules not to exceed 144W and total loading of triple output modules not to exceed 36W.

3. Output classification level may be 1, 3, 5 or 6 depending on model configuration.

4. The MP6 Series power supplies consist of a front end AC/DC converter and chassis (Model 73-560-0001) and DC/DC converter modules which are CSA approved and listed under the CB scheme.Each MP6 Series model has 5 slots for the DC/DC converter modules. (4 slots when optional secondary montior module is provided). There are single, dual and triple output DC/DC converter modules, some of which occupy more than 1 slot. The MP6 Series may be configured with various combinations of the following modules:

APPLICABLE REQUIREMENTS

CAN/CSA-C22.2 No. 60950-1-03 - Information Technology Equipment - Safety - Part 1: General Requirements (Bi-national Standard, with UL 60950-1)

ANSI/UL Std No. 60950-1 -2002 - Information Technology Equipment - Safety - Part 1: General Requirements

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MVP Series 400 to 600 Watts
Installation Instructions

Technical Description & Application Notes

Model Configuration Supplement

Module 1 | Module 2 option | Module 3 option | Module 4 option | Module 5 option

MP6 - _ - _ - _ - _ - _

Use "-" for standard remote sense
Use "J" when using remote sense with or-ing diode (redundance)

* Output Voltage Code

Module code or output voltage code

Output Parallel Codes: 5 4 3 2 1
0=no parallel
1=1&2
2=2&3
3=3&4
4=4&5
5=3 & 4 & 5

Option Code:
0 = no options
1 = rear air exhaust
3 = global enable
5 = option package (options 1 & 3)
M = low leakage
N = low leakage + option 1
P = low leakage + option 3
R = low leakage + option 5

* The code may be 1 or 2 digit

Examples:

Case Size: 4 = 400W, 6 = 600W
Module 2: 12V, 17A
Module 4: 12V, 1A / 12V, 1A / 5V, 2A
No options

M P 6 - 2 F - 1 L - 4 L E - L L E - 0 0

Module 1: 5.2V, 60A
Module 3: 12V, 16A / 5V, 10A
No paralleling

- V M E -
*VME/DC OK timing and system DC OK module (Always in last slot)
Consult Factory

Output Voltage Code

1. Example: 5V, 60A; Module Code - 2 E

Output Voltage Code

2. Example: 5V, 10A; 12V, 4A* Module Code - 4 E L (always)

**No Module Code required

**Output Voltage Code

3. Example: 12V, 1A; 28V, 0.5A; 5V, 2A* L P E

Single Output 3-digit Code Selection Chart

Voltage Code	Voltage ±10%	Module Code 1 Takes up 1 Slot Current Max. (A)	Module Code 2 Takes up 2 Slot Current Max. (A)	Module Code 3 Takes up 3 Slot Current Max. (A)
A	2 V	35	60	120
B	2.2 V	35	60	120
C	3 V	35	60	120
D	3.3 V	35	60	120
E	5 V	35	60	120
F	5.2 V	35	60	115
G	5.5 V	34	58	109
H	6.0 V	23	42	78
I	8.0 V	20	36	68
J	10 V	18	32	60
K	11 V	17	31	54.5
L	12 V	17	30	59
M	14 V	14	21	40.5
N	15 V	14	20	39
O	18 V	11	19	35.3
P	20 V	10.5	18	30
Q	24 V	8.8	16	23.9
R	28 V	8.7	11	21.4
S	30 V	8.6	11	20
T	33 V	6.2	10.9	18.2
U	36 V	5.8	10	16.6
V	42 V	4.2	7.5	12.5
W	48 V	4.0	7.5	12.5
X	54 V	3.7	6.0	11
Y	60 V	3.5	6.0	10

Dual Output 3-digit Code Selection Chart

Voltage Code	Voltage ±10%	Takes up 1 slot Current Max. (A) V1	V2
A	2 V	-	10
B	2.2 V	-	10
C	3 V	-	10
D	3.3 V	-	10
E	5 V	10	10
F	5.2 V	-	10
G	5.5 V	-	10
H	6.0 V	-	10
I	8.0 V	10	4
J	10 V	10	4
K	11 V	10	4
L	12 V	10	4
M	14 V	9	4
N	15 V	5	4
O	18 V	-	-
P	20 V	-	-
Q	24 V	4	2
R	28 V	3	2

* Note: Total loading not to exceed 144 watts.

Triple Output 3-digit Code Selection Chart

Voltage Code	Voltage ±10%	Takes up 1 slot Current Max. (A) V1	V2	V3
A	2 V	-	-	2
B	2.2 V	-	-	2
C	3 V	-	-	2
D	3.3 V	-	-	2
E	5 V	-	-	2
F	5.2 V	-	-	2
G	5.5 V	-	-	2
H	6.0 V	-	-	2
I	8.0 V	1	1	1
J	10 V	1	1	1
K	11 V	1	1	1
L	12 V	1	1	1
M	14 V	1	1	1
N	15 V	1	1	1
O	18 V	1	1	1
P	20 V	-	0.5	0.5
Q	24 V	-	0.5	0.5
R	28 V	-	0.5	0.5

* Note: Total loading not to exceed 36 watts.

Voltage Code	Voltage Range	SINGLE OUTPUT MODULE MAXIMUM (A) 1	2	3	DUAL OUTPUT MODULE MAXIMUM (A) V1	V2	TRIPLE OUTPUT MODULE MAXIMUM (A) V1	V2	V3
	2.4 - 2.7	35	60	120	-	10	-	-	2
*Z	3.6 - 4.5	35	60	120	-	10	-	-	2
	6.6 - 7.2	20	36	68	10	4	-	-	1
	8.5 - 9.6	18	32	60	10	4	-	-	1

ASTEC

* One Z will represent one voltage range only within the module.

CSA INTERNATIONAL

Supplement to Certificate of Compliance

Certificate: 1185387 **Master Contract:** 163661

The products listed, including the latest revision described below, are eligible to be marked in accordance with the referenced Certificate.

Product Certification History

Project	Date	Description
1834172	2006/10/05	Correction of report to add missing 200-240V rating
1821012	2006/08/22	Addition of conformal coating and factory, All American
1793393	2006/07/05	Upgrade Certification to 60950-1.

History

1185387 P/N 73-713.	2001/03/21	Originally issued as LR 53982-120. Update to add optional secondary monitor module
-168	98/03/12	To cover alternate construction.
-120	98/01/16	Original Certification.

CSA INTERNATIONAL

Descriptive Report and Test Results

MASTER CONTRACT: 163661
REPORT: 1185387
PROJECT: 1834172

Edition 1: January 16, 1998; Application No LR 53982-120 - Etobicoke
Issued by J. Kwong, P. Eng.

Edition 3: March 21, 2001; Project 1185387 - Toronto
Issued by Steve Siu, P. Eng.; Reviewed by Anthony Lee, P. Eng.

Edition 6: October 5, 2006; Project 1834172 – Toronto
Issued by Jim Saunders, P. Eng.

Contents: Certificate of Compliance - Pages 1 to 3
Supplement to Certificate of Compliance - Page 1
Description and Tests - Pages - 1 to 4
Evaluation Document CSA CB Report 163661-1020142 (-1821012) Only the pages listed on page 2 are provide in the Inspector's copy.

PRODUCTS

CLASS 5311 07 - POWER SUPPLIES - Component Type (CSA 60950-1-03)
CLASS 5311 87 - POWER SUPPLIES - Component Type - Certified to US Stds (CSA 60950-1-03/UL 60950-1, First Edition, NRTL Program) - Certified to U.S . Standards

Component Power Supply, Model MP6 (followed by up to 17 alpha numeric characters), rated 100-240V, 10A, 50/60/400Hz or 200-240V, 10A, 50/60/400Hz (for output ratings and levels see manufacturer's data sheet – see page 4)

Notes:

1. The MP6 is Certified as a component for use in other electrical equipment where the suitability of each combination is to be determined.
2. Maximum continuous output power is 600W at 50°C maximum and 300W at 70°C maximum. With rear air exhaust option, maximum continuous output power is 600W at 40°C. Total loading of dual output modules not to exceed 144W and total loading of triple output modules not to exceed 36W.
3. Output classification level may be 1, 3, 5 or 6 depending on model configuration.
4. The MP6 Series power supplies consist of a front end AC/DC converter and chassis (Model 73-560-0001) and DC/DC converter modules which are CSA approved and listed under the CB scheme.Each MP6 Series model has 5 slots for the DC/DC converter modules. (4 slots when optional secondary montior module is provided). There are single, dual and triple output DC/DC converter modules, some of which occupy more than 1 slot. The MP6 Series may be configured with various combinations of the following modules:
   Single output 210 watt module, (width =1 slot) - 73-551-Series
   Single output 360 watt module, (width =2 slot) - 73-552-Series

This report shall not be reproduced, except in full, without the approval of CSA International.

Single output 600 watt module, (width =3 slot) - 73-553-Series
Dual output 144 watt module, (width =1 slot) - 73-554-Series
Triple output 36 watt module, (width =1 slot) - 73-550-Series
See the MP6 model configuration sheet for further details.

APPLICABLE REQUIREMENTS

CAN/CSA-C22.2 No. 60950-1-03	-	Information Technology Equipment - Safety - Part 1: General Requirements (Bi-national Standard, with UL 60950-1)
ANSI/UL Std No. 60950-1 -2002	-	Information Technology Equipment - Safety - Part 1: General Requirements

CSA 60950-1-03/UL 60950-1, 1st Edition DESIGN MANUAL Rev. 1(ISSUED WITH REPORT 1467153) IS AN INTEGRAL PART OF THIS REPORT

MARKINGS

Per CSA 950(234)/UL 1950 Design Manual.

ALTERATIONS

Markings as above appear on each unit.

FACTORY TESTS

Per Design Manual.

DESCRIPTION

Conditions of Acceptability: Refer to Page 8 of attached CSA Evaluation Document. (Ref. No. CB 163661-1020142 (-1821012))

For Detailed Engineering Consideration: Refer to the attached CSA Evaluation Document. (Ref. No. CB 163661-1020142 (-1821012))

For CSA Field Inspection: Refer to the following sections of the attached CSA Evaluation Document. (Ref. No. CB 163661-1020142 (-1821012))

- List of Safety Critical Components ..... Page 33
- Photos ..... Attachment 1
- MP4 - Series Block Diagram ..... Attachment 2
- Installation and Operating Instructions ..... Attachment 3
- MVP Series - Modular Power Supply Description ..... Attachment 4
- Label Drawing ..... Page 10
- Complete Component List, on File at CSA under subject Report Reference number.

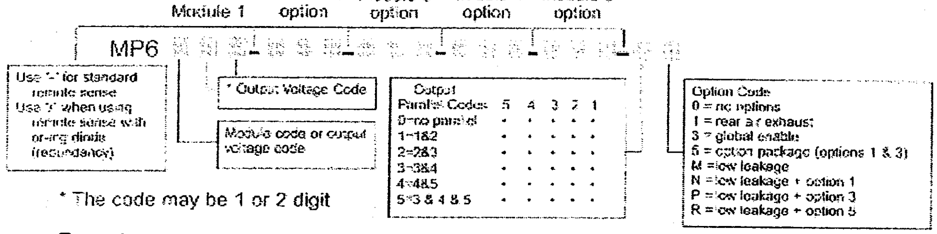
TESTS

Refer to the attached CSA Evaluation Document. (Ref. No. CB 163661-1020142 (-1821012))

MVPSeries400to600Watts
InstallationInstructions

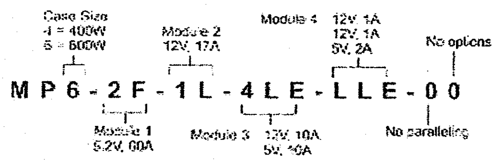
TechnicalDescription&ApplicationNotes

ModelConfigurationSupplement



* The code may be 1 or 2 digit

Examples:



-VME-
VME/DC OK timing and system DC OK module
(Always in last slot)
ConsultFactory

Output Voltage Code

1. Example: 5V, 60A: Module Code - 2 E

Single Output 3-digit Code Selection Chart

Voltage Code	Voltage ±10%	Module Code 1: Takes up 1 Slot Current Max. (A)	Module Code 2: Takes up 2 Slot Current Max. (A)	Module Code 3: Takes up 3 Slot Current Max. (A)
A	2 V	35	60	120
B	2.2 V	35	60	120
C	3 V	35	60	120
D	3.3 V	35	60	120
E	5 V	35	60	120
F	5.2 V	55	60	115
G	5.5 V	34	58	109
H	6.0 V	23	42	78
I	8.0 V	20	36	66
J	10 V	18	32	60
K	11 V	17	31	54.5
L	12 V	17	30	50
M	14 V	14	21	40.5
N	15 V	14	20	38
O	18 V	11	19	33.3
P	20 V	10.5	18	30
Q	24 V	8.5	15	23.5
R	28 V	6.7	11	21.4
S	30 V	6.5	11	20
T	33 V	6.2	10.9	18.2
U	36 V	5.8	10	16.6
V	42 V	4.2	7.5	12.5
W	48 V	4.0	7.5	12.5
X	54 V	3.7	6.0	11
Y	60 V	3.5	6.0	10

Output Voltage Code

2. Example: 5V, 10A; Module Code - 4 E L
12V, 4A* (always)

Dual Output 3-digit Code Selection Chart

Voltage Code	Voltage ±10%	Takes up 1 slot Current Max. (A) V1	V2
A	2 V	-	10
B	2.2 V	-	10
C	3 V	-	10
D	3.3 V	-	10
E	5 V	10	10
F	5.2 V	-	10
G	5.5 V	-	10
H	6.0 V	-	10
I	8.0 V	10	4
J	10 V	10	4
K	11 V	10	4
L	12 V	10	4
M	14 V	9	4
N	15 V	8	4
O	18 V	-	-
P	20 V	-	-
Q	24 V	4	2
R	28 V	3	2

* **Note: Total loading not to exceed 144 watts.**

**No Module Code required

**Output Voltage Code

3. Example: 12V, 1A; 20V, 0.5A; 5V, 2A* — L P E

Triple Output 3-digit Code Selection Chart

Voltage Code	Voltage ±10%	Takes up 1 slot Current Max. (A) V1	V2	V3
A	2 V	-	-	2
B	2.2 V	-	-	2
C	3 V	-	-	2
D	3.3 V	-	-	2
E	5 V	-	-	2
F	5.2 V	-	-	2
G	5.5 V	-	-	2
H	6.0 V	-	-	2
I	8.0 V	1	1	1
J	10 V	1	1	1
K	11 V	1	1	1
L	12 V	1	1	1
M	14 V	1	1	1
N	15 V	1	1	1
O	18 V	1	1	1
P	20 V	-	0.5	0.5
Q	24 V	-	0.5	0.5
R	28 V	-	0.5	0.5

* **Note: Total loading not to exceed 36 watts.**

Voltage Code	Voltage Range	SINGLE OUTPUT MODULE MAXIMUM (A) 1	2	3	DUAL OUTPUT MODULE MAXIMUM (A) V1	V2	TRIPLE OUTPUT MODULE MAXIMUM (A) V1	V2	V3
*Z	2.4 - 2.7	35	60	120	-	10	-	-	2
	3.6 - 4.5	35	60	120	-	10	-	-	2
	6.6 - 7.2	20	36	68	10	4	-	-	1
	8.5 - 9.0	18	32	60	10	4	-	-	1

* One Z will represent one voltage range only within the module.