



# Certificate of Compliance

**Certificate:** 70040692

**Master Contract:** 170351

**Project:** 70088677

**Date Issued:** 2016-07-19

**Issued to:** **Bel Fuse Inc.**  
**206 Van Vorst St**  
**Jersey City, New Jersey 07302**  
**USA**  
**Attention: Editha S. Vergara**

*The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.*



**Issued by:** *Maggie Lam*  
Maggie Lam

## PRODUCTS

CLASS - C531111 - POWER SUPPLIES-Component Type(CSA 60950-1-07-2nd Ed)

CLASS - C531191 - POWER SUPPLIES-Component Type(UL 60950-1-2nd Ed)Certified to U.S.Stds

Component type power supplies intended for use with Information Technology and Business Equipment, where the suitability of the combination is to be determined by CSA Group.

DC/DC Converter, Model Q Series represented by YQXXXX-WZ, where:

Y represents letters B, C, D, E, G, or 48

X represents a number 0-9 which represents number of outputs and voltage rating

W represents operating ambient temperature, and

Z represents a letter indicating non-safety critical options.

All model designations may be followed by "G" indicating RoHS compliance. See Electrical Ratings for details.

See next page for Electrical Ratings.



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Typical Model Designation:

Y	Q	X	X	XX	-	W	Z
I	II	III	IV	V	-	VI	VII

I – Input Voltage, V dc:

- B – 14.4 to 36
- C – 33.6 to 75
- D – 43 to 108
- E – 65 to 150
- G – 21.6 to 54
- 48 – 38.4 to 75

II – Model Series: Q

III– No. of Outputs:

- 1 – Single Output
- 2 – Double Output
- 6 – Single Output (long case)
- 7 – Double Output (long case)

IV – Single Output Models:

- 0 – 5.1 V
- 1 – 3.3 V
- 3 – 12 V
- 5 – 15 V
- 6 – 24 V
- 7, 8, 9 – other voltages

V – Double Output Models:

- 01 to 09 – 5.1 V
- 20 to 39 – 12 V
- 40 to 59 – 15 V
- 60 to 79 – 24 V

VI – Operational ambient temperature range Ta:

- 2 – -10°C to 50°C
- 7 – -25°C to 71°C
- 9 – -40°C to 71°C
- 0,-5-6 – not to exceed 80°C or 95°C (custom dependent)

VII- Options Suffix: X = Letters or numbers (customer dependent) denoting non-safety-critical options such as, but not limited to, potentiometer, Output voltage control input, etc.

Note: IV – Single Output Models: Options 7, 8 & 9 are for future use and was not a part of this evaluation.



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Electrical Ratings:

MODEL BQXXXX SERIES – Input Rating: 14.4 – 36 V dc

Model	V dc	Output 1		Output, DC			Output Power, max <sup>1</sup>	
		Inom, A	Imax, A	V dc	Output 2 Inom, A	Imax, A	P1, W	P2, W
BQ1101	3.3	20	25	NA	NA	NA	82	66
BQ1001	5.1	16	20	NA	NA	NA	102	82
BQ2320	12.0	8	10	NA	NA	NA	120	96
or	12.0 <sup>3</sup>	4	5	12.0 <sup>3</sup>	4	5	120	96
BQ2540	15.0	6.6	8	NA	NA	NA	120	99
or	15.0 <sup>3</sup>	3.3	4	15.0 <sup>3</sup>	3.3	4	120	99
BQ2660	24.0	4.4	5.5	NA	NA	NA	132	106
or	24.0 <sup>3</sup>	2.2	2.75	24.0 <sup>3</sup>	2.2	2.75	132	106
BQ2001	5.1 <sup>3</sup>	7.5	8.5	5.1 <sup>3</sup>	7.5	8.5	97	77

MODEL GQXXXX SERIES – Input Rating: 21.6 – 54 V dc

Model	V dc	Output 1		Output, DC			Output Power, max <sup>1</sup>	
		Inom, A	Imax, A	V dc	Output 2 Inom, A	Imax, A	P1, W	P2, W
GQ1101	3.3	20	25	NA	NA	NA	82	66
GQ1001	5.1	16	20	NA	NA	NA	102	82
GQ2320	12.0	8	10	NA	NA	NA	120	96
or	12.0 <sup>3</sup>	4	5	12.0 <sup>3</sup>	4	5	120	96
GQ2540	15.0	6.6	8	NA	NA	NA	120	99
or	15.0 <sup>3</sup>	3.3	4	15.0 <sup>3</sup>	3.3	4	120	99
GQ2660	24.0	4.4	5.5	NA	NA	NA	132	106
or	24.0 <sup>3</sup>	2.2	2.75	24.0 <sup>3</sup>	2.2	2.75	132	106
GQ2001	5.1 <sup>3</sup>	7.5	8.5	5.1 <sup>3</sup>	7.5	8.5	97	77

Notes:

1. The cumulative power of both outputs cannot exceed the total power for the specified ambient temperature.
2. Double-output models with both outputs connected in parallel
3. Two isolated outputs, 2<sup>nd</sup> output is tracking
4. 168 V dc for less than or equal to 2 sec.



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MODEL CQXXXX SERIES – Input Rating: 33.6 – 75 V dc

Model	V dc	Output 1		Output, DC			Output Power, max <sup>1</sup>	
		Inom, A	Imax, A	V dc	Inom, A	Imax, A	P1, W	P2, W
CQ1101	3.3	20	25	NA	NA	NA	82	66
CQ1001	5.1	16	20	NA	NA	NA	102	82
CQ2320	12.0 <sup>2</sup>	8	10	NA	NA	NA	120	96
or	12.0 <sup>3</sup>	4	5	12.0 <sup>3</sup>	4	5	120	96
CQ2540	15.0 <sup>2</sup>	6.6	8	NA	NA	NA	120	99
or	15.0 <sup>3</sup>	3.3	4	15.0 <sup>3</sup>	3.3	4	120	99
CQ2660	24.0 <sup>2</sup>	4.4	5.5	NA	NA	NA	132	106
or	24.0 <sup>3</sup>	2.2	2.75	24.0 <sup>3</sup>	2.2	2.75	132	106
CQ2001	5.1 <sup>3</sup>	7.5	8.5	5.1 <sup>3</sup>	7.5	8.5	97	77

MODEL 48QXXXX SERIES – Input Rating: 38.4 – 75 V dc

Model	V dc	Output 1		Output, DC			Output Power, max	
		Inom, A	Imax, A	V dc	Inom, A	Imax, A	P1, W	P2, W
48Q1001	5.1	16	NA	NA	NA	NA	82	-
48Q2320	12.0 <sup>2</sup>	8	NA	NA	NA	NA	96	-
or	12.0 <sup>3</sup>	4	NA	12.0 <sup>3</sup>	NA	NA	96	-
48Q2540	15.0 <sup>2</sup>	6.6	NA	NA	NA	NA	99	-
or	15.0 <sup>3</sup>	3.3	NA	15.0 <sup>3</sup>	NA	NA	99	-
48Q2660	24.0 <sup>2</sup>	4.4	NA	NA	NA	NA	106	-
or	24.0 <sup>3</sup>	2.2	NA	24.0 <sup>3</sup>	NA	NA	106	-

Notes:

1. The cumulative power of both outputs cannot exceed the total power for the specified ambient temperature.
2. Double-output models with both outputs connected in parallel
3. Two isolated outputs, 2<sup>nd</sup> output is tracking
4. 168 V dc for less than or equal to 2 sec.



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MODEL DQXXXX SERIES – Input Rating: 43 – 108 V dc

Model	V dc	Output 1		Output, DC			Output Power, max	
		Inom, A	Imax, A	V dc	Inom, A	Imax, A	P1, W	P2, W
DQ1101	3.3	20	25	NA	NA	NA	82	66
DQ1001	5.1	16	20	NA	NA	NA	102	82
DQ2320	12.0 <sup>2</sup>	8	10	NA	NA	NA	120	96
or	12.0 <sup>3</sup>	4.5	5	12.0 <sup>3</sup>	4.5	5	120	96
DQ2540	15.0 <sup>2</sup>	6.6	8	NA	NA	NA	120	96
or	15.0 <sup>3</sup>	3.3	4	15.0 <sup>3</sup>	3.3	4	120	96
DQ2660	24.0 <sup>2</sup>	4.4	5.5	NA	NA	NA	132	106
or	24.0 <sup>3</sup>	2.2	2.75	24.0 <sup>3</sup>	2.2	2.75	132	106
DQ2001	5.1 <sup>3</sup>	7.5	8.5	5.1 <sup>3</sup>	7.5	8.5	97	77

MODEL EQXXXX SERIES – Input Rating: 65 – 150<sup>4</sup> V dc

Model	V dc	Output 1		Output, DC			Output Power, max	
		Inom, A	Imax, A	V dc	Inom, A	Imax, A	P1, W	P2, W
EQ1101	3.3	20	25	NA	NA	NA	82	66
EQ1001	5.1	16	20	NA	NA	NA	102	82
EDQ2320	12.0 <sup>2</sup>	8	10	NA	NA	NA	120	96
or	12.0 <sup>3</sup>	4.5	5	12.0 <sup>3</sup>	4.5	5	120	96
EQ2540	15.0 <sup>2</sup>	6.6	8	NA	NA	NA	120	96
or	15.0 <sup>3</sup>	3.3	4	15.0 <sup>3</sup>	3.3	4	120	96
EQ2660	24.0 <sup>2</sup>	4.4	5.5	NA	NA	NA	132	106
or	24.0 <sup>3</sup>	2.2	2.75	24.0 <sup>3</sup>	2.2	2.75	132	106
EQ2001	5.1 <sup>3</sup>	7.5	8.5	5.1 <sup>3</sup>	7.5	8.5	97	77

Notes:

1. The cumulative power of both outputs cannot exceed the total power for the specified ambient temperature.
  2. Double-output models with both outputs connected in parallel
  3. Two isolated outputs, 2<sup>nd</sup> output is tracking
  4. 168 V dc for less than or equal to 2 sec.
- 
- i) P1 – Maximum output power at ambient temperature (Ta) at 50°C or case temperature (Tc) at 80°C.
  - ii) P2 – Maximum output power at ambient temperature (Ta) at 71°C or case temperature (Tc) at 95°C.
  - iii) Operating ambient temperatures are indicated as follows: 2 = -10 to 50°C; 7 = -25 to 71°C; 9 = -40 to 71°C; 0, 5, 6 = any other operating range (custom models).



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### **APPLICABLE REQUIREMENTS**

- |   |  |
|---|--|
| CAN/CSA-C22.2 No 60950-1-07,<br>+Am.1:2011 +Am.2:2014 | – Information Technology Equipment - Safety - Part 1: General Requirements |
| UL 60950-1-2014                                       | – Information Technology Equipment - Safety - Part 1: General Requirements |

### **CONDITIONS OF ACCEPTABILITY**

1. The equipment has been evaluated for use in a Pollution Degree 2 environment.
2. A suitable electrical, fire and mechanical enclosure shall be provided.
3. The power supply shall be properly bonded to the main protective earthing termination in the end product.
4. The manufacturer's recommended maximum ambient operating temperature is 50°C.
5. All secondary output circuits are SELV and are not hazardous energy levels.
6. The terminals and connectors have not been evaluated for field wiring.
7. The maximum working voltage present is 200 V. The electric strength tests in the end product shall be based on this value.
8. These components are for building in:
  - a. Class I (earthed) when input rating marked on the product is greater than 75 V;
  - b. Basic insulated secondary source when the input rating marked on the product is less than 76 V;
  - c. Class III (supplied by SELV) when the input rating of the unit is marked less than 60 V and marked "SELV".
9. Tolerances have not been considered. Testing should be considered if the product is not normally loaded to its rated values.



## *Supplement to Certificate of Compliance*

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**Master Contract:** 170351

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

### **Product Certification History**

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<b>Project</b>	<b>Date</b>	<b>Description</b>
70088677	2016-07-19	Update report 70040692 to correct output current voltage rating of some models, add alternate components and make BQ Series input fuse optional.
70040692	2015-07-27	DC/DC Converter, Model Q Series : (C/US) (transferred from 173688 - 2244748 and upgraded to include Am1 and Am2).

Product	DC/DC Converter
Applicant	Bel Fuse Inc. 206 Van Vorst St. Jersey City, NJ 07302 USA
Manufacturer	Bel Fuse Inc. 206 Van Vorst St. Jersey City, NJ 07302 USA
Factory	Bel Power Solutions, s.r.o. Areal ZTS 924 Dubnica nad Vahom 01841 Slovakia
Ratings	14.4 to 36 VDC
Trade mark	 a bel group
Model / Type Ref.	BQXXXX-WZ
Principal characteristics	Output: Model dependent, see General Product Information for details. The "X" in model name represents a number 0-9 which represents the number of outputs and voltage rating, "W" represents operating ambient temperature, and "Z" represents a letter indicating non-safety critical ptions. All model names may be followed by "G" indicating RoHS Version.
A sample of the product was tested and found to be in conformity with	OFF                      EN 60950-1:2006;A11;A1;A12;A2
Validity	This certificate documents conformity with the standards shown, and also applies as license for use of Nemkos name and certification mark. The certificate and license is valid as long as the applicable conditions are complied with, and provided that any changes to the product are notified to Nemko for acceptance prior to implementation. New standards or amendments to the standards may imply that the product design must be updated and/or that re-testing and re-certification is necessary.
Additional information	Compliance with requirements regarding building-in, protection against electric shock and Electromagnetic Compatibility (EMC) must be checked when the equipment is built-in a completed product or forms a part of a complete system.
Additional model(s)	(5) See page 2

Date of issue 25-07-2016



Juan Z. Kleppenes  
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**Nemko AS**  
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ENTERPRISE NUMBER NO974404532



## Additional model(s)

Product	DC/DC Converter
Pos. No	1
Model / Type Ref.	CQXXXX-WZ
Trade mark (if different from page 1)	
Rating	33.6 to 75 VDC
Principal characteristics	Output: Model dependent, see General Product Information for details. The "X" in model name represents a number 0-9 which represents the number of outputs and voltage rating, "W" represents operating ambient temperature, and "Z" represents a letter indicating non-safety critical ptions. All model names may be followed by "G" indicating RoHS Version.
Product	DC/DC Converter
Pos. No	2
Model / Type Ref.	DQXXXX-WZ
Trade mark (if different from page 1)	
Rating	43 to 108 VDC
Principal characteristics	Output: Model dependent, see General Product Information for details. The "X" in model name represents a number 0-9 which represents the number of outputs and voltage rating, "W" represents operating ambient temperature, and "Z" represents a letter indicating non-safety critical ptions. All model names may be followed by "G" indicating RoHS Version.
Product	DC/DC Converter
Pos. No	3
Model / Type Ref.	EQXXXX-WZ
Trade mark (if different from page 1)	
Rating	65 to 150 VDC
Principal characteristics	Output: Model dependent, see General Product Information for details. The "X" in model name represents a number 0-9 which represents the number of outputs and voltage rating, "W" represents operating ambient temperature, and "Z" represents a letter indicating non-safety critical ptions. All model names may be followed by "G" indicating RoHS Version.
Product	DC/DC Converter
Pos. No	4
Model / Type Ref.	GQXXXX-WZ
Trade mark (if different from page 1)	
Rating	21.6 to 54 VDC
Principal characteristics	Output: Model dependent, see General Product Information for details. The "X" in model name represents a number 0-9 which represents the number of outputs and voltage rating, "W" represents operating ambient temperature, and "Z" represents a letter indicating non-safety critical ptions. All model names may be followed by "G" indicating RoHS Version.

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ENTERPRISE NUMBER NO974404532

Product	DC/DC Converter
Pos. No	5
Model / Type Ref.	48QXXXX-WZ
Trade mark (if different from page 1)	
Rating	38.4 to 75 VDC
Principal characteristics	Output: Model dependent, see General Product Information for details. The "X" in model name represents a number 0-9 which represents the number of outputs and voltage rating, "W" represents operating ambient temperature, and "Z" represents a letter indicating non-safety critical ptions. All model names may be followed by "G" indicating RoHS Version.

Date of issue 25-07-2016



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ENTERPRISE NUMBER NO974404532

**CB TEST CERTIFICATE CERTIFICAT D'ESSAI OC**Product  
Produit

DC/DC Converter

Name and address of the applicant  
Nom et adresse du demandeurBel Fuse Inc.  
206 Van Vorst St.  
Jersey City, NJ 07302  
USAName and address of the manufacturer  
Nom et adresse du fabricantBel Fuse Inc.  
206 Van Vorst St.  
Jersey City, NJ 07302  
USAName and address of the factory  
Nom et adresse de l'usineBel Power Solutions, s.r.o.  
Areal ZTS 924  
Dubnica nad Vahom 01841  
SlovakiaNote: When more than one factory, please report on page 2  
Note: Lorsque il y plus d'une usine, veuillez utiliser la deuxième page Additional information on page 2Ratings and principal characteristics  
Valeurs nominales et caractéristiques principales

14.4 to 36 VDC

Trademark (if any)  
Marque de fabrique (si elle existe)Type of Manufacturer's Testing Laboratories used  
Type de programme du laboratoire d'essais constructeur

BQXXXX-WZ

Model / Type Ref.  
Ref. De type Additional information on page 2

Additional information (if necessary may also be reported on page 2)

Les informations complémentaires (si nécessaire, peuvent être indiqués sur la deuxième page)

A sample of the product was tested and found to be in conformity with

Un échantillon de ce produit a été essayé et a été considéré conforme à la

IEC 60950-1(ed.2);am1;am2

As shown in the Test Report Ref. No. which forms part of this Certificate

313280

Comme indiqué dans le Rapport de tests numéro de référence qui constitue partie de ce Certificat

This CB Test Certificate is issued by the National Certification Body  
Ce Certificat de test OC est établi par l'Organisme National de CertificationGaustadalléen 30  
NO-0373 Oslo, Norway

Date: 25-07-2016

Signature: Juan Z. Kleppenes  
Certification Department

**Additional information(if necessary)****Information complémentaire (si nécessaire)**

Output: Model dependent, see General Product Information for details. The "X" in model name represents a number 0-9 which represents the number of outputs and voltage rating, "W" represents operating ambient temperature, and "Z" represents a letter indicating non-safety critical parts. All model names may be followed by "G" indicating RoHS Version.



Gaustadalléen 30  
NO-0373 Oslo, Norway

**Date:** 25-07-2016

A handwritten signature in blue ink that reads "Juan Z. Kleppenes".

**Signature:** Juan Z. Kleppenes  
Certification Department

**CB TEST CERTIFICATE CERTIFICAT D'ESSAI OC**Product  
Produit

DC/DC Converter

Name and address of the applicant  
Nom et adresse du demandeurBel Fuse Inc.  
206 Van Vorst St.  
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USAName and address of the manufacturer  
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206 Van Vorst St.  
Jersey City, NJ 07302  
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Valeurs nominales et caractéristiques principales

38.4 to 75 VDC

Trademark (if any)  
Marque de fabrique (si elle existe)Type of Manufacturer's Testing Laboratories used  
Type de programme du laboratoire d'essais constructeur

CTF Stage 3

Model / Type Ref.  
Ref. De type

48QXXXX-WZ

Additional information (if necessary may also be reported on page 2)

 Additional information on page 2

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IEC 60950-1(ed.2);am1;am2

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**Additional information(if necessary)****Information complémentaire (si nécessaire)**

Output: Model dependent, see General Product Information for details. The "X" in model name represents a number 0-9 which represents the number of outputs and voltage rating, "W" represents operating ambient temperature, and "Z" represents a letter indicating non-safety critical parts. All model names may be followed by "G" indicating RoHS Version.



Gaustadalléen 30  
NO-0373 Oslo, Norway

**Date:** 25-07-2016

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**CB TEST CERTIFICATE CERTIFICAT D'ESSAI OC**Product  
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SlovakiaNote: When more than one factory, please report on page 2  
Note: Lorsque il y plus d'une usine, veuillez utiliser la deuxième page Additional information on page 2Ratings and principal characteristics  
Valeurs nominales et caractéristiques principales

43 to 108 VDC

Trademark (if any)  
Marque de fabrique (si elle existe)Type of Manufacturer's Testing Laboratories used  
Type de programme du laboratoire d'essais constructeur

CTF Stage 3

Model / Type Ref.  
Ref. De type

DQXXXX-WZ

Additional information (if necessary may also be reported on page 2)

 Additional information on page 2

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A sample of the product was tested and found to be in conformity with

Un échantillon de ce produit a été essayé et a été considéré conforme à la

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**Additional information(if necessary)****Information complémentaire (si nécessaire)**

Output: Model dependent, see General Product Information for details. The "X" in model name represents a number 0-9 which represents the number of outputs and voltage rating, "W" represents operating ambient temperature, and "Z" represents a letter indicating non-safety critical parts. All model names may be followed by "G" indicating RoHS Version.



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Valeurs nominales et caractéristiques principales

33.6 to 75 VDC

Trademark (if any)  
Marque de fabrique (si elle existe)Type of Manufacturer's Testing Laboratories used  
Type de programme du laboratoire d'essais constructeur

CTF Stage 3

Model / Type Ref.  
Ref. De type

CQXXXX-WZ

Additional information (if necessary may also be reported on page 2)

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As shown in the Test Report Ref. No. which forms part of this Certificate

313280

Comme indiqué dans le Rapport de tests numéro de référence qui constitue partie de ce Certificat

This CB Test Certificate is issued by the National Certification Body  
Ce Certificat de test OC est établi par l'Organisme National de CertificationGaustadalléen 30  
NO-0373 Oslo, Norway

Date: 25-07-2016

Signature: Juan Z. Kleppenes  
Certification Department

**Additional information(if necessary)****Information complémentaire (si nécessaire)**

Output: Model dependent, see General Product Information for details. The "X" in model name represents a number 0-9 which represents the number of outputs and voltage rating, "W" represents operating ambient temperature, and "Z" represents a letter indicating non-safety critical parts. All model names may be followed by "G" indicating RoHS Version.



Gaustadalléen 30  
NO-0373 Oslo, Norway

**Date:** 25-07-2016

A handwritten signature in blue ink that reads "Juan Z. Kleppenes".

**Signature:** Juan Z. Kleppenes  
Certification Department

**CB TEST CERTIFICATE CERTIFICAT D'ESSAI OC**Product  
Produit

DC/DC Converter

Name and address of the applicant  
Nom et adresse du demandeurBel Fuse Inc.  
206 Van Vorst St.  
Jersey City, NJ 07302  
USAName and address of the manufacturer  
Nom et adresse du fabricantBel Fuse Inc.  
206 Van Vorst St.  
Jersey City, NJ 07302  
USAName and address of the factory  
Nom et adresse de l'usineBel Power Solutions, s.r.o.  
Areal ZTS 924  
Dubnica nad Vahom 01841  
SlovakiaNote: When more than one factory, please report on page 2  
Note: Lorsque il y a plus d'une usine, veuillez utiliser la deuxième page Additional information on page 2Ratings and principal characteristics  
Valeurs nominales et caractéristiques principales

65 to 150 VDC

Trademark (if any)  
Marque de fabrique (si elle existe)Type of Manufacturer's Testing Laboratories used  
Type de programme du laboratoire d'essais constructeur

CTF Stage 3

Model / Type Ref.  
Ref. De type

EQXXXX-WZ

Additional information (if necessary may also be reported on page 2)

 Additional information on page 2

Les informations complémentaires (si nécessaire, peuvent être indiqués sur la deuxième page)

A sample of the product was tested and found to be in conformity with

Un échantillon de ce produit a été essayé et a été considéré conforme à la

IEC 60950-1(ed.2);am1;am2

As shown in the Test Report Ref. No. which forms part of this Certificate

313280

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NO-0373 Oslo, Norway

Date: 25-07-2016

Signature: Juan Z. Kleppenes  
Certification Department

**Additional information(if necessary)****Information complémentaire (si nécessaire)**

Output: Model dependent, see General Product Information for details. The "X" in model name represents a number 0-9 which represents the number of outputs and voltage rating, "W" represents operating ambient temperature, and "Z" represents a letter indicating non-safety critical parts. All model names may be followed by "G" indicating RoHS Version.



Gaustadalléen 30  
NO-0373 Oslo, Norway

**Date:** 25-07-2016

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**Signature:** Juan Z. Kleppenes  
Certification Department

**CB TEST CERTIFICATE CERTIFICAT D'ESSAI OC**Product  
Produit

DC/DC Converter

Name and address of the applicant  
Nom et adresse du demandeurBel Fuse Inc.  
206 Van Vorst St.  
Jersey City, NJ 07302  
USAName and address of the manufacturer  
Nom et adresse du fabricantBel Fuse Inc.  
206 Van Vorst St.  
Jersey City, NJ 07302  
USAName and address of the factory  
Nom et adresse de l'usineBel Power Solutions, s.r.o.  
Areal ZTS 924  
Dubnica nad Vahom 01841  
SlovakiaNote: When more than one factory, please report on page 2  
Note: Lorsque il y plus d'une usine, veuillez utiliser la deuxième page Additional information on page 2Ratings and principal characteristics  
Valeurs nominales et caractéristiques principales

21.6 to 54 VDC

Trademark (if any)  
Marque de fabrique (si elle existe)Type of Manufacturer's Testing Laboratories used  
Type de programme du laboratoire d'essais constructeur

CTF Stage 3

Model / Type Ref.  
Ref. De type

GQXXXX-WZ

Additional information (if necessary may also be reported on page 2)

 Additional information on page 2

Les informations complémentaires (si nécessaire, peuvent être indiqués sur la deuxième page)

A sample of the product was tested and found to be in conformity with

Un échantillon de ce produit a été essayé et a été considéré conforme à la

IEC 60950-1(ed.2);am1;am2

As shown in the Test Report Ref. No. which forms part of this Certificate

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NO-0373 Oslo, Norway

Date: 25-07-2016

Signature: Juan Z. Kleppenes  
Certification Department

**Additional information(if necessary)****Information complémentaire (si nécessaire)**

Output: Model dependent, see General Product Information for details. The "X" in model name represents a number 0-9 which represents the number of outputs and voltage rating, "W" represents operating ambient temperature, and "Z" represents a letter indicating non-safety critical parts. All model names may be followed by "G" indicating RoHS Version.



Gaustadalléen 30  
NO-0373 Oslo, Norway





**Date:** 25-07-2016

A handwritten signature in blue ink that reads "Juan Z. Kleppenes".

**Signature:** Juan Z. Kleppenes  
Certification Department



<p><b>TEST REPORT</b></p> <p><b>IEC 60950-1</b></p> <p><b>Information technology equipment – Safety –</b></p> <p><b>Part 1: General requirements</b></p>	
<b>Report Number</b> .....	313280
<b>Date of issue</b> .....	25 July 2016
<b>Total number of pages</b> .....	56
<b>Applicant's name</b> .....	Bel Fuse Inc.
<b>Address</b> .....	206 Van Vorst St., Jersey City, NJ 07302
<b>Test specification:</b>	
<b>Standard</b> .....	IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013
<b>Test procedure</b> .....	CB-Scheme
<b>Non-standard test method</b> .....	N/A
<b>Test Report Form No.</b> .....	IEC60950_1F
<b>Test Report Form(s) Originator</b> .....	SGS Fimko Ltd
<b>Master TRF</b> .....	Dated 2014-02
<p><b>Copyright © 2014 IEC System of Conformity Assessment Schemes for Electrotechnical Equipment and Components (IECEE System). All rights reserved.</b></p> <p>This publication may be reproduced in whole or in part for non-commercial purposes as long as the IECEE is acknowledged as copyright owner and source of the material. IECEE takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.</p> <p><b>This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.</b></p>	
<b>General disclaimer:</b>	
<p>The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.</p>	

<b>Test item description</b> ..... : DC/DC Converter		
Trade Mark ..... :  POWER SOLUTIONS & PROTECTION a bel group		
Manufacturer.....: Same as Applicant		
Model/Type reference.....: BQXXXX-WZ CQXXXX-WZ DQXXXX-WZ EQXXXX-WZ GQXXXX-WZ 48QXXXX-WZ		
<p>“X” represents a number 0-9 which represents the number of outputs and voltage rating,  “W” represents operating ambient temperature, and  “Z” represents a letter indicating non-safety critical options.</p> <p>All model names may be followed by “G” indicating RoHS Version.  see General Product Information for details</p>		
Ratings.....: Input: BQXXXX-WZ = 14.4 to 36 Vdc; CQXXXX-WZ = 33.6 to 75 Vdc; DQXXXX-WZ = 43 to 108 Vdc; EQXXXX-WZ = 65 to 150 Vdc; GQXXXX-WZ = 21.6 to 54 Vdc; 48QXXXX-WZ = 38.4 to 75 Vdc; Output: Model dependent, see General Product Information for details		
<b>Testing procedure and testing location:</b>		
<b>CB Testing Laboratory:</b>		Nemko USA Inc.
<b>Testing location/ address</b> .....		2210 Faraday Ave. Suite 150, Carlsbad, CA 92008, USA
<b>Test procedure: CTF-3</b>		Bel Power Solutions s.r.o.
<b>Testing location/ address</b> .....		ArealZTS Dubnica n.Vahom c.924 01841 Dubnica nad Vahom SLOVAKIA
<b>Tested by (name + signature).. :</b>	Editha Vergara	
<b>Approved by (+ signature).....:</b>	Luis Gonzalez	
<b>Supervised by (+ signature) .... :</b>	Jeff Bush	



**Report History:**

Original report

**List of Attachments (including a total number of pages in each attachment):**

- Attachment 1: European Group Differences and National Deviations .....83 pages  
Documented deviations contain individual national documents for several European countries that are included in the European Group Deviations. The European Group Difference: EN60950:2006/A11:2009/A:2010/A12:2011/A2:2013 are considered "Normative". The individual national documents (Denmark, Finland, Germany, Ireland, Norway, Spain, Sweden, Switzerland and United Kingdom) are considered "informative" and included at the manufacturer's request.
- Attachment 2: Miscellaneous Documentation, e.g. Photos, PWB Layout, Schematic etc. ....16 pages  
(Not for publication – Engineering use only)

**Summary of testing**

General	All comments relate to all models, unless specifically stated.
Power supply	The equipment is an enclosed, Class I switch mode power supply with universal DC input and multiple DC voltage outputs for building-in. This report covers multiple models and all comments / tests apply to all models unless otherwise indicated. Testing was conducted on interchangeable models as indicated.
1.5, 3.2.5; Power supply cord set.	A power supply cord set is not provided with the power supply. A power supply cord set, complying with the national regulations of the country in which the product is to be sold, shall be provided with the end-use equipment.
1.7.2; Safety instructions.	Instructions and equipment markings related to safety are to be provided in a language, which is acceptable in the country in which the equipment is to be sold. English language verified.
5.2: Electric Strength test	Increased test voltages for Basic insulation applied to the equipment, based on measured working voltages.

<b>Summary of testing:</b>	
<b>Tests performed (name of test and test clause):</b> 1) Input ..... 1.6.2 2) Durability ..... 1.17.11 3) SELV Reliability ..... 2.2 4) Humidity ..... 2.9.2 5) Working Voltage Measurement ..... 2.10.2 6) Hazardous Voltage Measurement ..... 2.10.2 7) Heating ..... 4.5.1 8) Electric Strength ..... 5.2.2 9) Component Failure ..... 5.3 10) Abnormal Operation ..... 5.3 11) PS Output Overload and Short ..... 5.3	<b>Testing location:</b> <b>(See page 2)</b>

<b>Summary of compliance with National Differences:</b>
<b>List of countries addressed:</b> Austria (AT), Australia (AU), Canada (CA), China (CH), Denmark (DK), Finland (FI), Germany (DE), Ireland (IE), Israel (IS), Korea (KR), Norway (NO), Slovenia (SI), Spain (ES), Sweden (SE), Switzerland (CH), United Kingdom (GB), United States of America (US) <input checked="" type="checkbox"/> The product fulfils the requirements of : EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013

**Copy of marking plate:**

<b>DC-DC Converter</b>		<b>EQ2660-7R</b>	
Input:  65-150 V, 2.8 A Output 1:  24 V, 2.2 A Output 2:  24 V, 2.2 A	B46222300 U00006 V101 L16W0715 Made in Slovakia		
<b>POWER SOLUTIONS &amp; PROTECTION</b> <small>© bel group</small>	<b>MELCHER</b> <i>The Power Partners.</i>	IP30	

The artwork may be only a draft. The use of certification marks on a product must be authorized by the respective NCBS that own these marks. (Additional requirements for markings. See 1.7 NOTE)

<b>Calibration</b>	All instruments used in the tests given in this test report are calibrated and traceable to national or international standards. Further information about traceability will be given on request.
<b>Measurement uncertainty</b>	Measurement uncertainties are calculated for all instruments and instrument set-ups given in this report. Calculations are based on the principles given in the standard EA-4/02 (Dec. 1999), IEC Guide 115:2007, Nemko routine L227 and other relevant internal Nemko-procedures. Further information about measurement uncertainties will be given on request.
<b>Evaluation of results</b>	If not explicitly stated otherwise in the standard, the test is passed if the measured value is equal to or below (above) the limit line, regardless of the measurement uncertainty. If the measured value is above (below) the limit line, the test is not passed - ref IEC Guide 115:2007, and Nemko routine L220. The instrumentation accuracy is within limits agreed by IECCE-CTL (ref. Nemko routine L227).

<b>Test item particulars:</b>	
Equipment mobility .....	<input type="checkbox"/> movable <input type="checkbox"/> hand-held <input type="checkbox"/> transportable <input type="checkbox"/> stationary <input checked="" type="checkbox"/> for building-in <input type="checkbox"/> direct plug-in
Connection to the mains .....	<input type="checkbox"/> pluggable equipment <input type="checkbox"/> type A <input type="checkbox"/> type B <input type="checkbox"/> permanent connection <input type="checkbox"/> detachable power supply cord <input type="checkbox"/> non-detachable power supply cord <input type="checkbox"/> not directly connected to the mains <input checked="" type="checkbox"/> DC Mains
Operating condition .....	<input checked="" type="checkbox"/> continuous <input type="checkbox"/> rated operating / resting time:
Access location .....	<input type="checkbox"/> operator accessible <input type="checkbox"/> restricted access location
Over voltage category (OVC) .....	<input type="checkbox"/> OVC I <input type="checkbox"/> OVC II <input type="checkbox"/> OVC III <input type="checkbox"/> OVC IV <input checked="" type="checkbox"/> other:
Mains supply tolerance (%) or absolute mains supply values .....	0% tolerance. (Tested per the voltage range declared by manufacturer)
Tested for IT power systems .....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
IT testing, phase-phase voltage (V) .....	N/A
Class of equipment .....	<input checked="" type="checkbox"/> Class I <input type="checkbox"/> Class II <input type="checkbox"/> Class III <input type="checkbox"/> Not classified
Considered current rating of protective device as part of the building installation (A) .....	To be evaluated at end use
Pollution degree (PD) .....	<input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3
IP protection class .....	IP 30
Altitude during operation (m) .....	2000 m
Altitude of test laboratory (m) .....	242 m
Mass of equipment (kg) .....	0.47 kg
Temperature, Ambient (°C) .....	95°C maximum, case temperature (Tc)

<b>Possible test case verdicts:</b>	
- test case does not apply to the test object.....	N/A
- test object does meet the requirement.....	P (Pass)
- test object does not meet the requirement.....	F (Fail)

<b>Testing:</b>	
Date of receipt of test item .....	October 2015, <b>July 2016</b>
Date(s) of performance of tests .....	October 2015, <b>July 2016</b>

**General remarks:**

"(see appended table)" refers to a table appended to the report.

"(see Enclosure #)" refers to additional information appended to the report.

The test results presented in this report relate only to the object tested.

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

**Throughout this report a  comma /  point is used as the decimal separator.**

**Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60950-1:**

The application for obtaining a CB Test Certificate includes more than one factory location  **Yes**  
and a declaration from the Manufacturer stating that the sample(s) submitted for  
evaluation is (are) representative of the products from each factory has been provided.....:  **Not applicable**

**When differences exist; they shall be identified in the General product information section.**

**Name and address of factory (ies) .....** :

Bel Power Solutions, s.r.o.  
ArealZTS Dubnica n.Vahom c.924  
01841 Dubnica nad Vahom  
SLOVAKIA

**General product information:**

This test report replaces Nemko test report Ref. No. 293047, with appended CB certificate No. NO89207.

This test report includes revision of output current ratings on some models (noted in bold), addition of alternate component sources to the list of critical components and making fuse F1 and F2 optional for BQXXXX-WZ series. There is no change in construction of the equipment. Therefore, only limited testing was conducted with fuses F1 and F2 by-passed. For BQXXXX-WZ series external fusing is provided in the end-product.

For continuity, the entire report has been reissued, including the additional evaluation highlighted in Bold text.

DC/DC converter model Q Series is provided with aluminium enclosure. The unit is hot swappable and can be use on redundant system.

**TYPICAL MODEL DESIGNATION:**

	<u>B</u>	<u>Q</u>	<u>1</u>	<u>1</u>	<u>01</u>	-	<u>7</u>	<u>X</u>
	I	II	III	IV	V	-	VI	VII
I – Input Voltage, Vdc	B = 14.4 to 36 C = 33.6 to 75 D = 43 to 108 E = 65 to 150 G = 21.6 to 54 48 = 38.4 to 75							
II – Model Series:	Q = Q Series							
III – No. of Outputs:	1 = Single Output 2 = Double Output 6 = Single Output (long case) 7 = Double Output (long case)							
IV – Single Output Models:	0 = 5.1 V 1 = 3.3 V 3 = 12 V 5 = 15 V 6 = 24 V 7, 8, 9 = other voltages							
V – Double Output Models:	01 to 09 = 5.1 V 20 to 39 = 12 V 40 to 59 = 15 V 60 to 79 = 24 V							
VI – Operational ambient temperature range Ta:	2 = -10°C to 50°C 7 = -25°C to 71°C 9 = -40°C to 71°C 0, 5, 6 = other							
VII – Options Suffix:	X = Letters or numbers denoting non-safety-critical options such as, but not limited to, potentiometer, Output voltage control input, etc.							

Note: All model names may be followed by “G” indicating RoHS version.

**ADDITIONAL ELECTRICAL RATINGS:**

**Model BQ, CQ and GQ Series**

Model	Output 1			Output, DC Output 2			Max. Output Power <sup>1</sup>	
	V <sub>dc</sub>	I <sub>nom,A</sub>	I <sub>max,A</sub>	V <sub>dc</sub>	I <sub>nom,A</sub>	I <sub>max,A</sub>	P1, W	P2, W
BQ1101	3.3	20	25	N/A	N/A	N/A	82	66
BQ1001	5.1	16	20	N/A	N/A	N/A	102	82
BQ2320	12.0	8	10	N/A	N/A	N/A	120	96
BQ2540	15.0	6.6	8	N/A	N/A	N/A	120	99
BQ2660	24.0	4.4	5.5	N/A	N/A	N/A	132	106
BQ2001	5.1 <sup>3</sup>	7.5	<b>8.5</b>	5.1 <sup>3</sup>	7.5	<b>8.5</b>	97	77
BQ2320	12.0 <sup>3</sup>	4	<b>5</b>	12.0 <sup>3</sup>	4	<b>5</b>	120	96
BQ2540	15.0 <sup>3</sup>	3.3	<b>4</b>	15.0 <sup>3</sup>	3.3	<b>4</b>	120	99
BQ2660	24.0 <sup>3</sup>	2.2	<b>2.75</b>	24.0 <sup>3</sup>	2.2	<b>2.75</b>	132	106
GQ1101	3.3	20	25	N/A	N/A	N/A	82	66
GQ1001	5.1	16	20	N/A	N/A	N/A	102	82
GQ2320	12.0	8	10	N/A	N/A	N/A	120	96
GQ2540	15.0	6.6	8	N/A	N/A	N/A	120	99
GQ2660	24.0	4.4	5.5	N/A	N/A	N/A	132	106
GQ2001	5.1 <sup>3</sup>	7.5	<b>8.5</b>	5.1 <sup>3</sup>	7.5	<b>8.5</b>	97	77
GQ2320	12.0 <sup>3</sup>	4	<b>5</b>	12.0 <sup>3</sup>	4	<b>5</b>	120	96
GQ2540	15.0 <sup>3</sup>	3.3	<b>4</b>	15.0 <sup>3</sup>	3.3	<b>4</b>	120	99
GQ2660	24.0 <sup>3</sup>	2.2	<b>2.75</b>	24.0 <sup>3</sup>	2.2	<b>2.75</b>	132	106
CQ1101	3.3	20	25	N/A	N/A	N/A	82	66
CQ1001	5.1	16	20	N/A	N/A	N/A	102	82
CQ2320	12.0 <sup>2</sup>	8	10	N/A	N/A	N/A	120	96
CQ2540	15.0 <sup>2</sup>	6.6	8	N/A	N/A	N/A	120	99
CQ2660	24.0 <sup>2</sup>	4.4	5.5	N/A	N/A	N/A	132	106
CQ2001	5.1 <sup>3</sup>	7.5	<b>8.5</b>	5.1 <sup>3</sup>	7.5	<b>8.5</b>	97	77
CQ2320	12.0 <sup>3</sup>	4	<b>5</b>	12.0 <sup>3</sup>	4	<b>5</b>	120	96
CQ2540	15.0 <sup>3</sup>	3.3	<b>4</b>	15.0 <sup>3</sup>	3.3	<b>4</b>	120	99
CQ2660	24.0 <sup>3</sup>	2.2	<b>2.75</b>	24.0 <sup>3</sup>	2.2	<b>2.75</b>	132	106

<sup>1</sup> The cumulated power of both outputs cannot exceed the total power for the specified ambient temperature.

<sup>2</sup> Double-output models with both outputs connected in parallel.

<sup>3</sup> Two isolated outputs, 2<sup>nd</sup> output is tracking.

**Model DQ, EQ and 48Q Series**

Model	Output 1		Output, DC				Max. Output Power <sup>1</sup>	
	V <sub>dc</sub>	I <sub>nom,A</sub>	I <sub>max,A</sub>	V <sub>dc</sub>	I <sub>nom,A</sub>	I <sub>max,A</sub>	P1, W	P2, W
48Q1001	5.1	<b>16</b>	<b>N/A</b>	N/A	N/A	N/A	82	-
48Q2320	12.0 <sup>2</sup>	<b>8</b>	<b>N/A</b>	N/A	N/A	N/A	96	-
48Q2540	15.0 <sup>2</sup>	<b>6.6</b>	<b>N/A</b>	N/A	N/A	N/A	99	-
48Q2660	24.0 <sup>2</sup>	<b>4.4</b>	<b>N/A</b>	N/A	N/A	N/A	106	-
48Q2320	12.0 <sup>3</sup>	4	<b>N/A</b>	12.0 <sup>3</sup>	4	<b>N/A</b>	96	-
48Q2540	15.0 <sup>3</sup>	3.3	<b>N/A</b>	15.0 <sup>3</sup>	3.3	<b>N/A</b>	99	-
48Q2660	24.0 <sup>3</sup>	2.2	<b>N/A</b>	24.0 <sup>3</sup>	2.2	<b>N/A</b>	106	-
DQ1101	3.3	20	25	N/A	N/A	N/A	82	66
DQ1001	5.1	16	20	N/A	N/A	N/A	102	82
DQ2320	12.0 <sup>2</sup>	8	10	N/A	N/A	N/A	120	96
DQ2540	15.0 <sup>2</sup>	6.6	8	N/A	N/A	N/A	120	96
DQ2660	24.0 <sup>2</sup>	4	5.5	N/A	N/A	N/A	132	106
DQ2001	5.1 <sup>3</sup>	7.5	<b>8.5</b>	5.1 <sup>3</sup>	7.5	<b>8.5</b>	97	77
DQ2320	12.0 <sup>3</sup>	4.5	<b>5</b>	12.0 <sup>3</sup>	4.5	<b>5</b>	120	96
DQ2540	15.0 <sup>3</sup>	3.3	<b>4</b>	15.0 <sup>3</sup>	3.3	<b>4</b>	120	99
DQ2660	24.0 <sup>3</sup>	2.2	<b>2.75</b>	24.0 <sup>3</sup>	2.2	<b>2.75</b>	132	106
EQ1101	3.3	20	25	N/A	N/A	N/A	82	66
EQ1001	5.1	16	20	N/A	N/A	N/A	102	82
EQ2320	12.0 <sup>2</sup>	8	10	N/A	N/A	N/A	120	96
EQ2540	15.0 <sup>2</sup>	6.6	8	N/A	N/A	N/A	120	96
EQ2660	24.0 <sup>2</sup>	4	5.5	N/A	N/A	N/A	132	106
EQ2001	5.1 <sup>3</sup>	7.5	<b>8.5</b>	5.1 <sup>3</sup>	7.5	<b>8.5</b>	97	77
EQ2320	12.0 <sup>3</sup>	4.5	<b>5</b>	12.0 <sup>3</sup>	4.5	<b>5</b>	120	96
EQ2540	15.0 <sup>3</sup>	3.3	<b>4</b>	15.0 <sup>3</sup>	3.3	<b>4</b>	120	99
EQ2660	24.0 <sup>3</sup>	2.2	<b>2.75</b>	24.0 <sup>3</sup>	2.2	<b>2.75</b>	132	106

<sup>1</sup> The cumulated power of both outputs cannot exceed the total power for the specified ambient temperature.

<sup>2</sup> Double-output models with both outputs connected in parallel.

<sup>3</sup> Two isolated outputs, 2<sup>nd</sup> output is tracking

Note: i) P1 – Maximum output power at ambient temperature, Ta at 50°C or case temperature, Tc at 80°C.  
 ii) P2 – Maximum output power at ambient temperature, Ta at 71°C or case temperature, Tc at 95°C.  
 iii) Operating ambient temperature are indicated as follows: 2 = -10 to 50°C; 7 = -25 to 71°C; 9 = -40 to 71°C; 0,5,6 = any other operating range (custom models).



**Conditions of Acceptability:**

When installing the equipment, all the requirements of the referenced standards must be met:

The following must be evaluated at end use:

- 1) A reliable protective earth ground connection.
- 2) Accessible energy hazards at output connections.
- 3) Connections to other SELV circuits.
- 4) Disconnect devices.

**Abbreviations used in the report:**

- normal conditions.....	N.C.	- single fault conditions .....	S.F.C
- functional insulation .....	OP	- basic insulation .....	BI
- double insulation .....	DI	- supplementary insulation.....	SI
- between parts of opposite polarity .....	BOP	- reinforced insulation .....	RI

Indicate used abbreviations (if any): .....None