Ref. Certif. No.

NO136369

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

CB TEST CERTIFICATE

Product	DC-DC Converter
Name and address of the applicant	Bel Fuse Inc. 300 Executive Drive, Suite 300 West Orange NJ 07052 United States of America
Name and address of the manufacturer	Bel Fuse Inc. 300 Executive Drive, Suite 300 West Orange NJ 07052 United States of America
Name and address of the factory	Bel Power Solutions, s.r.o. Areal ZTS 924 Dubnica nad Vahom 01841 Slovakia
Note: When more than one factory, please report on page 2	☐ Additional Factories on Page 2
Ratings and Principal characteristics	Input: 10A (max, model dependent) BQXXXX-WZ = 14.4 to 36Vdc; CQXXXX-WZ = 33.6 to 75Vdc; DQXXXX-WZ = 43 to 108Vdc; EQXXXX-WZ = 65 to 150Vdc; GQXXXX-WZ = 21.6 to 54Vdc; 48QXXXX = 38.4 to 75Vdc
Trademark /Brand (if any)	bel POWER SOLUTIONS & PROTECTION a bel group or bel
Customer's Testing Facility (CTF) Stage used	
Model/Type Ref.	BQXXXX-WZ, CQXXXX-WZ, DQXXXX-WZ, EQXXXX-WZ, GQXXXX-WZ, 48QXXXX
Additional information (if necessary may also be reported on Page 2)	☑ Additional Information on Page 2
A sample of the product was tested and found to be in conformity with	IEC 62368-1:2023
As shown in the Test Report Ref. No. which forms part of this Certificate	REP119324

This CB Test Certificate is issued by the National Certification Body

Nemko

Philip Pedersen vei 11,
NO-1366 Lysaker, Norway

Date: 2025-10-20

Jiyea Gim

Signature: Jiyea Gim
Certification Department

Additional Information

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

'W' represents a number 0, 2, 5, 6, 7 and 9 for operating ambient temperature, and

'Z' represents a letter X (where X = letters or numbers) indicating non-safety critical options

All model names may be followed by 'G' indicating RoHS Version.

Output ratings: Model dependent, see General Product Information for details

Nemko

Philip Pedersen vei 11,
NO-1366 Lysaker, Norway

Date: 2025-10-20

Signature: Jiyea Gim
Jiyea Gim
Certification Department

Test Report issued under the responsibility of:

Nemko
www.nemko.com

TEST REPORT
IEC 62368-1
Audio/video, information and communication technology equipment
Part 1: Safety requirements

Report Number. ..... :	**REP119324**
Date of issue ..... :	**2025 October 14**
Total number of pages ..... :	**81**
Name of CB Testing Laboratory preparing the Report ..... :	Nemko USA Inc. 2210 Faraday Ave. Suite 150, Carlsbad, CA 92008, USA
Applicant's name ..... :	Bel Fuse Inc.
Address ..... :	300 Executive Drive, Suite 300, West Orange, NJ 07052, USA
Test specification:	
Standard ..... :	IEC 62368-1:2023
Test procedure ..... :	CB Scheme
Non-standard test method ..... :	N/A
TRF template used ..... :	IECEE OD-2020-F1:2024, Ed.1.7
Test Report Form No. ..... :	IEC62368_1F
Test Report Form(s) Originator .... :	UL Solutions (US)
Master TRF ..... :	Dated 2025-06-13

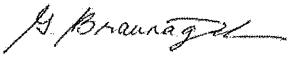
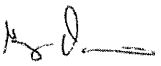
If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

This report is not valid as a CB Test Report unless signed by an approved IECEE Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

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 NCB. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test item description ..... :	DC-DC Converter
Trademark(s) ..... :	bel POWER SOLUTIONS & PROTECTION a bel group or bel
Manufacturer ..... :	Same as Applicant
Model/Type reference ..... :	BQXXXX-WZ CQXXXX-WZ DQXXXX-WZ EQXXXX-WZ GQXXXX-WZ 48QXXXX; "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. All model names may be followed by "G" indicating RoHS Version. see General Product Information for details
Ratings ..... :	Input: 10A (max, model dependent) 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 = 38.4 to 75 Vdc; Output: Model dependent, see General Product Information for details

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
☒ **CB Testing Laboratory:**	Nemko USA Inc.	
Testing location/ address.....:	2210 Faraday Ave. Suite 150, Carlsbad, CA 92008, USA	
Tested by (name, function, signature).....:	Gladys Braunagel (Project Handler)	
Approved by (name, function, signature)...:	George Daverin (Verificator)	
☐ **Testing procedure: CTF Stage 1:**		
Testing location/ address.....:		
Tested by (name, function, signature).....:		
Approved by (name, function, signature)...:		
☐ **Testing procedure: CTF Stage 2:**		
Testing location/ address.....:		
Tested by (name + signature).....:		
Witnessed by (name, function, signature) .:		
Approved by (name, function, signature)...:		
☐ **Testing procedure: CTF Stage 3:**		
☐ **Testing procedure: CTF Stage 4:**		
Testing location/ address.....:		
Tested by (name, function, signature).....:		
Witnessed by (name, function, signature) .:		
Approved by (name, function, signature)...:		
Supervised by (name, function, signature) :		

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

Attachment 1: European Group Differences and National Differences (26 pages)

Attachment 2: National Differences: Canada and US (12 pages)

Attachment 3: National Differences: Switzerland (2 pages)

Attachment 4: National Differences: Japan (6 pages)

Attachment 5: Photos (5 pages)

Attachment 6: Miscellaneous Documentation, e.g. Installation Instructions, PWB layout, Schematic etc. (14 pages) (Not for publication – Engineering use only)

Attachment 7: PWB Thermal cycling tests (51 pages) (Not for publication – Engineering use only)

Summary of testing:

This Test Report covers an upgrade from IEC 62368-1:2018 (Third Edition) to IEC 62368-1: 2023 (Fourth Edition). Replaced Nemko test report Ref. No. 393153, with appended CB Certificate Ref. No. NO113860.

Also, change applicant and manufacturer address, add alternate Bel trademark and add alternate source of components. See table 4.1.2 for details. No additional testing deemed necessary.

The equipment is a component, switch mode power supply without PFC with DC input (ES3/PS3) and DC voltage output (ES1/PS3) for building-in.

Intended location: The equipment is to be installed in the end product where the suitability of installation is to be evaluated in the end product.

Safety Instructions: Instructions shall be supplied in a language suitable for the country into which the product is to be sold.

Maximum operating temperatures: Equipment for building-in. Heating test was conducted monitoring the internal components temperature. Accessibility to high component temperature must be considered on end system equipment.

PCBs used for this equipment have been separately evaluated and determined to comply with requirements for Printed Boards per G.13.4.

Equipment markings: Identification marking (trade-mark and model name) are marked on the equipment. However, the durability test was not considered because the equipment is a component level product for building-in. Therefore, the marked surface is not to be located in an external area where it is likely to be cleaned with cleaning solution, rubbed, etc.

The unit tested is a prototype with all possible options and worst case of the models when necessary. The following tests have been performed with acceptable results.

Tests performed (name of test, test clause and date test performed October 2015, July 2016):	**Testing location: (CBTL, SPTL, CTF, Subcontractor)**
Original Testing per IEC 60950-1: 1) Input Test 1.6.2 2) Durability Test 1.17.11 3) Energy hazards-d.c. mains supplies 2.1.1.5 4) SELV Reliability Test 2.2 5) Earthing test, earth trace test(UL PAG) 2.6 6) Humidity Test 2.9.2 7) Working Voltage Measurement 2.10.2 8) Hazardous Voltage Measurement 2.10.2 9) Hot swap Test 4.3.5 10) Heating Test 4.5.1 11)Ball pressure test 4.5.5 12) Electric Strength Test 5.2.2 13) Component Failure Test 5.3 14) Abnormal Operation Test 5.3 15) PS Output Overload and Short Test 5.3 Updated tables in this Report: 5.2 Classification of electrical energy sources 5.4.1.8 Determination of working Voltage measurement 5.4.2, 5.4.3 Minimum clearances/creepage distances 5.4.4.2 Minimum distance through insulation 5.4.4.9 Solid insulation at frequencies .30 kHz 5.4.8 Humidity 5.4.9 Electric Strength tests 5.5.2.2 Stored discharge on capacitors 5.6.6 Resistance of protective conductors and terminations 5.7.4 Unearthed accessible parts 5.7.5 Earthed accessible conductive part 6.2.2 Power source circuit classifications 6.2.3.1 Determination of Arcing PIS 6.2.3.2 Determination of resistive PIS 8.2 Mechanical energy source classifications 5.4.1.4, 9.3, B.1.5, B.2.6 – Temperature measurements B.2.5 Input test B.3, B.4 Abnormal operating and fault condition tests T- Steady force test	See page 2

Summary of compliance with National Differences

The list of countries recognizing the CB Scheme is actively updated on the iecee.org website.

- IECEE Member countries that are also CENELEC members

  Compliance with Group Differences evaluated ☒ **yes** ☐ **No** ☐ N/A

- IECEE Member countries with published National Differences which were evaluated:

  Canada (CA); United States of America (US); Japan (JP), Switzerland (CH)

- IECEE Member countries that did not publish any National Differences:

  All CENELEC members

To support compliance with published National Differences, attach a compilation of relevant ND and/or GD TRFs to the CB Test Report

Use of uncertainty of measurement for decisions on conformity (decision rule) :

☒ No decision rule is specified by the IEC standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty ("simple acceptance" decision rule, previously known as "accuracy method").

Information on uncertainty of measurement:

The uncertainties of measurement are calculated by the laboratory based on application of criteria given by OD-5014 for test equipment and application of test methods, decision sheets and operational procedures of IECEE.

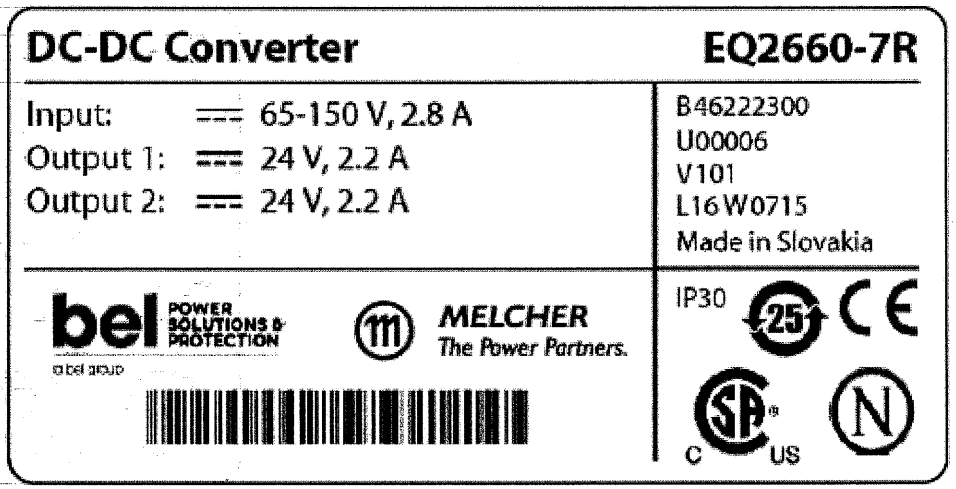
IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECEE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer.

Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

Representative marking label.



Trademark **bel** will be located in the same location as the attached draft label.

Test item particulars:	
Product group	built-in component
Classification of use by	Instructed person / Skilled person
Supply connection	not mains connected: ES3
Supply tolerance	None
Supply connection – type	mating connector provided, equipment for building-in, further evaluated at end use equipment
Considered current rating of protective device	20 A; Location: equipment
Equipment mobility	for building-in
Overvoltage category (OVC)	DC powered
Class of equipment	Class I
Special installation location	N/A
Pollution degree (PD)	PD 2
Manufacturer's specified T_{ma}	71°C
IP protection class	IPX2
Power systems	not AC mains
Altitude during operation (m)	2000 m
Altitude of test laboratory (m)	300 m
Mass of equipment (kg)	Approximately 0.47 kg

Possible test case verdicts:	
- 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)
Testing.....:	
Date of receipt of test item .....:	October 2015, July 2016 (From Nemko Report 313280); May 2020 (From Report 393153)
Date (s) of performance of tests.....:	October 2015, July 2016 (From Nemko Report 313280); August 2020 (From Report 393153)

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

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

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location 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 ..... :	☐ **Yes** ☒ **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 Areal ZTS 924 01841 Dubnica nad Vahom SLOVAKIA

General product information and other remarks:

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: B (I) Q (II) 1 (III) 1 (IV) 01 (V) - 7 (VI) X (VII)

Variable definitions:

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 (max)
- 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.

All model names may be followed by "G" indicating RoHS version.

ADDITIONAL ELECTRICAL RATINGS:

Model BQ, CQ and GQ Series

Model	Output, DC Output 1			Output 2			Max. Output Power [1]	
	Vdc	Inom,A	Imax,A	Vdc	Inom,A	Imax,A	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[3]	7.5	8.5	5.1[3]	7.5	8.5	97	77
BQ2320	12.0[3]	4	5	12.0[3]	4	5	120	96
BQ2540	15.0[3]	3.3	4	15.0[3]	3.3	4	120	99
BQ2660	24.0[3]	2.2	2.75	24.0[3]	2.2	2.75	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[3]	7.5	8.5	5.1[3]	7.5	8.5	97	77
GQ2320	12.0[3]	4	5	12.0[3]	4	5	120	96
GQ2540	15.0[3]	3.3	4	15.0[3]	3.3	4	120	99
GQ2660	24.0[3]	2.2	2.75	24.0[3]	2.2	2.75	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[2]	8	10	N/A	N/A	N/A	120	96
CQ2540	15.0[2]	6.6	8	N/A	N/A	N/A	120	99
CQ2660	24.0[2]	4.4	5.5	N/A	N/A	N/A	132	106
CQ2001	5.1[3]	7.5	8.5	5.1[3]	7.5	8.5	97	77
CQ2320	12.0[3]	4	5	12.0[3]	4	5	120	96
CQ2540	15.0[3]	3.3	4	15.0[3]	3.3	4	120	99
CQ2660	24.0[3]	2.2	2.75	24.0[3]	2.2	2.75	132	106

1 The cumulated power of both outputs can not exceed the total power for the specified ambient temperature.
2 Double-output models with bothr outputs connected in parallel.
3 Two isolated outputs, 2nd output is tracking.
4 168 Vdc for equal or less than 2 sec.

Model DQ, EQ and 48Q Series

Model	Output, DC Output 1			Output 2			Max. Output Power [1]	
	Vdc	Inom,A	Imax,A	Vdc	Inom,A	Imax,A	P1, W	P2, W
48Q1001	5.1	16	N/A	N/A	N/A	N/A	82	-
48Q2320	12.0[2]	8	N/A	N/A	N/A	N/A	96	-
48Q2540	15.0[2]	6.6	N/A	N/A	N/A	N/A	99	-
48Q2660	24.0[2]	4.4	N/A	N/A	N/A	N/A	106	-
48Q2320	12.0[3]	4	N/A	12.0[3]	4	N/A	96	-
48Q2540	15.0[3]	3.3	N/A	15.0[3]	3.3	N/A	99	-
48Q2660	24.0[3]	2.2	N/A	24.0[3]	2.2	N/A	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[2]	8	10	N/A	N/A	N/A	120	96
DQ2540	15.0[2]	6.6	8	N/A	N/A	N/A	120	96
DQ2660	24.0[2]	4	5.5	N/A	N/A	N/A	132	106
DQ2001	5.1[3]	7.5	8.5	5.1[3]	7.5	8.5	97	77
DQ2320	12.0[3]	4.5	5	12.0[3]	4.5	5	120	96
DQ2540	15.0[3]	3.3	4	15.0[3]	3.3	4	120	99
DQ2660	24.0[3]	2.2	2.75	24.0[3]	2.2	2.75	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[2]	8	10	N/A	N/A	N/A	120	96
EQ2540	15.0[2]	6.6	8	N/A	N/A	N/A	120	96
EQ2660	24.0[2]	4	5.5	N/A	N/A	N/A	132	106
EQ2001	5.1[3]	7.5	8.5	5.1[3]	7.5	8.5	97	77
EQ2320	12.0[3]	4.5	5	12.0[3]	4.5	5	120	96
EQ2540	15.0[3]	3.3	4	15.0[3]	3.3	4	120	99
EQ2660	24.0[3]	2.2	2.75	24.0[3]	2.2	2.75	132	106

[1] The cumulated power of both outputs cannot exceed the total power for the specified ambient temperature.
[2] Double-output models with bothr outputs connected in parallel.
[3] Two isolated outputs, 2nd output is tracking
[4] 168 Vdc for equal or less than 2 sec.

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 ES1 and PS1 circuits.
4) Disconnect devices