TYPE TEST CERTIFICATE OF COMPLETE TYPE TESTS

Certificate No.
1595-24
Revision 0

Test object	Ethernet Switch SEL-27 series type 92QF consisting of 2 models
Designation	SEL-2741, SEL-2731
Manufacturer	Schweitzer Engineering Laboratories Inc. 2350 NE Hopkins Ct 99163-5600 Pullman, United States (location as declared by the manufacturer)
Production location	Schweitzer Engineering Laboratories Inc. 2350 NE Hopkins Ct 99163-5600 Pullman, United States (location as declared by the manufacturer)
Client	Schweitzer Engineering Laboratories Inc. 2350 NE Hopkins Ct 99163-5600 Pullman, United States
Date(s) of tests	January 15 2024 to April 10, 2024
Tested by	KEMA B.V. ("KEMA Labs"), Klingelbeekseweg 195, Arnhem, The Netherlands

The test object, constructed in accordance with the description, drawings and photographs incorporated in the documents forming part of this Certificate, has been subjected to the series of proving tests in accordance with

IEC 61850-3: 2013

This Certificate is based on the report(s) listed in the report list in this Certificate.

The values obtained and the general performance are considered to comply with the above standard(s) and to justify the ratings assigned by the manufacturer as listed in chapter 1.

This Certificate applies only to the individual object tested. KEMA Labs makes no representations or warranties with respect to any device other than the object tested. It is the responsibility of the applicable device manufacturer to ensure that any other devices or units having the same name and descriptions as the test object are identical.

This Certificate comprises 7 pages in total.

Issued by KEMA B.V.

Alessandro Bertani
Services & Smart Technologies Director

Arnhem, May 1, 2024

INFORMATION SHEET

The type of documents presented below can be issued by test laboratories which are part of KEMA Labs.
Details of these and all other types of certificates and reports issued by KEMA Labs are given on the website, which can be accessed through the QR code on the front sheet. The title on the front sheet of the document indicates which type of document is under review. All documents comprise a record of the (type) tests carried out. Mandatory requirements for items 1, 2, 3, 4 and 5 are that the object tested is clearly identified and verified by technical description, drawings and/or additional specifications. The condition of the object after testing is assessed and recorded, if applicable.

1 Certificate
A Certificate is issued when the object tested has fulfilled the requirements of (the named (sub)clauses of) a recognized standard. The relevant ratings assigned by the manufacturer are endorsed by KEMA Labs. All relevant test results and observations are given in the records of proving tests (items 3, 4, 5 and 6) which form the basis of a Certificate and are referred to in this Certificate.

2 Calibration Certificate
A Calibration Certificate is issued when a calibration program has been successfully executed. The calibration program refers to an accredited calibration procedure that is according to recognized standards, manufacturer's specifications or validated internal methods.

3 Type Test Report
A Type Test Report is issued for products in the segments of low voltage, railway applications, automotive, metering and protection & substation automation when the object tested has successfully passed the requested type tests (of the named (sub)clauses) in accordance with a recognized standard. The tests required in these (sub)clauses could cover a complete or partial set of type tests.
The sentence on the front sheet of a Type Test Report will state that the tests have been carried out in accordance with …… The object has complied with the relevant requirements of the standard and justify the relevant ratings assigned by the manufacturer as listed in chapter 1.

4 Design Verification Report
A Design Verification Report is issued when the object tested has successfully passed the requested design verification tests of the named (sub)clauses in accordance with IEC 61439. The tests series required in these (sub)clauses could cover a complete or selected set of design verification tests.
The sentence on the front sheet of a Design Verification Report will state that the tests have been carried out in accordance with IEC 61439. The object has complied with the relevant requirements of the standard and justify the relevant ratings assigned by the manufacturer as listed in chapter 1.

5 Report of Performance or Type Test Report
A Report of Performance or Type Test Report is issued for products in the segments of MV and HV transmission and distribution when the object tested has successfully passed the requested (type) tests of the named (sub)clauses in accordance with a recognized standard. The tests required in these (sub)clauses could cover a complete or partial set of (type) tests.
The sentence on the front sheet of a Report of Performance or Type Test Report will state that the tests have been carried out in accordance with …… The object has complied with the relevant requirements of the standard.
However, a Report of Performance or Type Test Report does not confirm any assigned rating.

6 Test Report
A Test Report is issued in all other cases.

7 Identification of official test documents
The official test documents of KEMA Labs are issued in digital form through .pdf files. Only integral reproduction of this document is permitted without written permission from KEMA Labs. A sealed and bound version of the test document may be available for the convenience of the client and has the status 'for information only'. The copyright must be respected.
Items 1 and 2 are identified by a gold watermark and a gold seal with red ribbon on its front sheet. Items 3, 4 and 5 are identified by a silver watermark and a silver seal with green ribbon on its front sheet. Item 6 is identified by a blue watermark on its front sheet.

8 Disclaimers
No certificate or other report issued by KEMA Labs for the purpose of confirming the performance of a test object in relation to the testing requirements of a national or international standard, or in relation to any other testing specification, shall constitute a warranty as to the adequacy or quality of the design or construction of the test object. No other document issued by KEMA Labs for the purpose of reporting, explaining or describing any engineering or consulting services performed by KEMA Labs shall constitute a warranty as to the adequacy or quality of the design or construction of any apparatus or system that is the subject of the document. Information provided by the client or manufacturer can affect the validity of results. KEMA Labs is not responsible for the consequences in such cases.

REVISION OVERVIEW

The edition with the highest revision number always replaces the earlier issued editions.

Rev. No.	Date of issue	Page no. and changes
0	May 1, 2024	First issue

REPORT LIST

This Certificate is issued based on the following reports.

Report number	Revision
1534-24	0

1 IDENTIFICATION OF THE OBJECT TESTED

1.1 Ratings/characteristics assigned by the manufacturer

Information below has been provided by the manufacturer/derived from the technical data.

Rated auxiliary voltage		
• Power supply A	120 - 240 Vac	
	125 - 250 Vdc	
• Power supply B	24 -48 Vdc	
Output contact continuous current	2 A	
Number of ethernet ports	1	Maintenance port (front)
	12(0)	Mixed copper/optical model (all optical model)
Number of optical ports	12(24)	Mixed copper/optical model (all optical model)
Maximum operating temperature	+ 85 °C	
Minimum operating temperature	- 40 °C	
Maximum storage temperature	+ 85 °C	
Minimum storage temperature	- 40 °C	

Classification

IP-class	IP2X	Front[1], rear
	IP3X	Front
	IP4X	Left side, right side, top and bottom
Mechanical class	1	
EMC emission class	A	
Reliability class	2	
EMC immunity location	G	Power stations and medium voltage (MV)
	H	HV substations

Connections

Local	a.c. and d.c. power supply ports, binary IO ports, copper Ethernet ports, optical Ethernet ports
In field	a.c. and d.c. power supply ports, binary IO ports, copper Ethernet ports, optical Ethernet ports
To HV equipment	a.c. and d.c. power supply ports, binary IO ports, optical Ethernet ports
Telecommunication	a.c. and d.c. power supply ports, binary IO ports, optical Ethernet ports

Over voltage category	II
Pollution degree	2
Insulation type	Basic/functional

Note

[1] IP2X on Ethernet port (ETH F)

1.2 Description of the object tested

The test samples are selected and provided to KEMA Labs by the manufacturer.

Manufacturer	Schweitzer Engineering Laboratories Inc. 2350 NE Hopkins Ct 99163-5600 Pullman, United States
Object	Ethernet Switch SEL-27 series type 92QF consisting of 2 models
Type	Model SEL-2731 and SEL-2741
Firmware version	SEL-2741S-X140-V5-Z001001-D230822
Settings	Unless otherwise specified, the default settings of the manufacturer were used.

2 PHOTOGRPAHS

SEL-2741, Mixed model 50% copper / 50% optical, Front-side.

SEL-2741, Mixed model 50% copper / 50% optical, back-side.

SEL-2741, Full optical model, front-side.

SEL-2741, Full optical model, back-side.

SEL-2731, Mixed model 50% copper / 50% optical, Front-side.

SEL-2731, Mixed model 50% copper / 50% optical, back-side.

END OF DOCUMENT

The laboratories of KEMA Labs are:

- CESI S.p.A., Milan, Italy.
- FGH Engineering & Test GmbH, Mannheim, Germany.
- IPH Institut “Prüffeld für elektrische Hochleistungstechnik” GmbH, Berlin, Germany.
- KEMA B.V., Arnhem, The Netherlands.
- KEMA Labs, Zkušebnictví, a.s., Prague, the Czech Republic.
- KEMA-Powertest, LLC, Chalfont, United States.