

**Busbar Trunking Laboratory attestation
of conformity to standards
IEC 60439-2 and EN 60439-2**

TELEMECANIQUE

**Busbar trunking system
and tap-off unit**

Type : KN

Busbar Trunking Laboratory attestation of conformity to IEC 60439-2 and EN 60439-2

Revision sheet

Section N°	Page	Revision	Date	Description of the modification
00 to 10	All	A	15/05/98	First issue

Busbar Trunking Laboratory attestation of conformity to IEC 60439-2 and EN 60439-2

Type tests

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Type test : Verification of temperature-rise limits

The test enabled verification that the temperature-rise limits of 30K on the metallic enclosures, 40K on the insulating enclosures, 70K on the terminals for external conductors and 75K on the busbar trunking conductors are respected.

* T.R. = Test Report

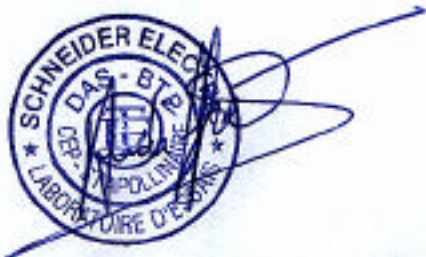
*C.C. = Certificate of Conformity

Ref produit	Document*	Ref document	Emetteur	Résultat
KNA 04 EA ...	CC	63/351 573 A1	LCIE	A
KNA 06 EA ...	CC	63/351 573 B1	LCIE	A
KNA 10 EA ...	CC	63/351 573 C1	LCIE	A
KNA 10 EF 4	CC	15 143	ASEFA	A
KNA 01 CD 2	TR	KNA 038	TE	A
KNA 01 CF .	CC	63/351 573 D1	LCIE	A
KNA 01 CG .	CC	16 162	ASEFA	A
KNA 02 CD .	CC	16 164	ASEFA	A
KNA 01 CP 31	CC	19.97	ASEFA	A
KNA 01 CP 32	CC	19.98	ASEFA	A
KNA 02 CG .	CC	16 161	ASEFA	A
KNA 02 CF .	CC	63/351 573 I	LCIE	A
KNA 02 SD .	CC	16 165	ASEFA	A
KNA 02 CM .	CC	63/351 573 G1	LCIE	A
KNA 03 SG .	CC	16 163	ASEFA	A
KNA 03 SM .	CC	63/ 351 573 H1	LCIE	A
KNA 03 SF .	CC	63/351 573 F1	LCIE	A
KNA 03 SJ .	CC	16 232	ASEFA	A

A = results in accordance with IEC 60439-2 and EN 60439-2 § 8.2.1.

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Type test : **Verification of dielectric properties**

The test enabled verification that under an A.C. test voltage of U test, defined according to insulation voltage Ui, applied for 1 minute, there is no puncture or flashover.

* T.R. = Test Report

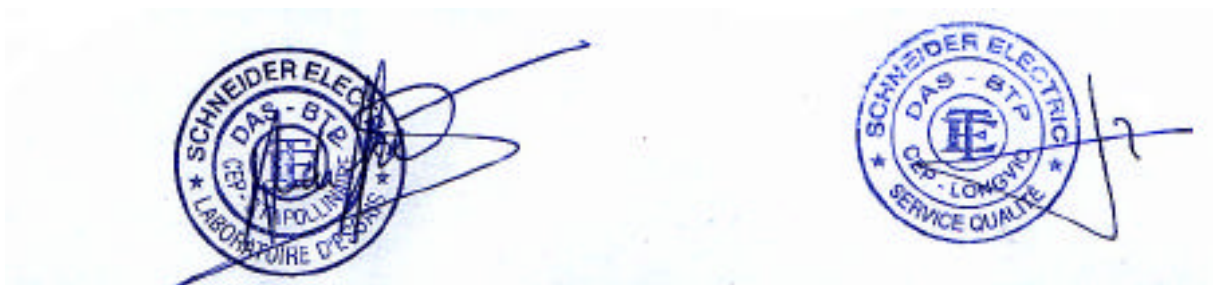
*C.C. = Certificate of Conformity

Product ref.	Ui V	U test V	* Document	Document ref.	Issued by	Result
KNA 04 EA ...	500	2500	CC	63/351 573 A2	LCIE	A
KNA 06 EA ...	500	2500	CC	63/351 573 B2	LCIE	A
KNA 10 EA ...	500	2500	CC	63/351 573 C2	LCIE	A
KNA 01 CF .	500	2500	CC	63/351 573 D2	LCIE	A
KNA 01 CP .	500	2500	TR	KN 046	TE	A
KNA 02 CF .	500	2500	CC	63/351 573 E2	LCIE	A
KNA 02 CM .	500	2500	CC	63/351 573 G2	LCIE	A
KNA 03 SM .	500	2500	CC	63/351 573 H2	LCIE	A
KNA 03 SF .	500	2500	CC	63/351 573 F2	LCIE	A

A = results in accordance with IEC 60439-2 and EN 60439-2 § 8.2.2.

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Type test : Verification of short-circuit withstand strength

The test enabled verification that the mechanical and dielectric properties and the degree of protection are respected and that the deformation of the bars and the enclosure did not compromise inserting the tap-off unit after the test. The withstand strength of the busbar trunking is verified at rated peak withstand current I_{pk} and at the thermal stress I_t . The withstand strength of the tap-off units is verified at rated conditional short-circuit current I_{cc} and at rated operational voltage U_e .

* T.R. = Test Report

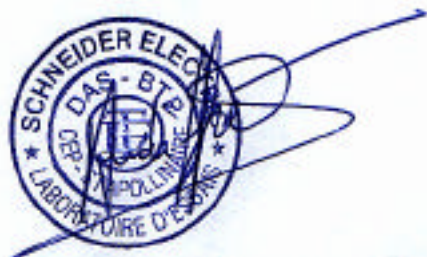
*C.C. = Certificate of Conformity

Product ref.	I_{pk} kA	I_t A_s.10 ⁶	I_{cc} kA	U_e V	* Document	Document ref.	Issued by	Result
KNA 04 EA ...	6	0.29			CC	15 149	ASEFA	A
KNA 06 EA ...	11	1.8			CC	15 150	ASEFA	A
KNA 10 EA ...	14	8			CC	15 151	ASEFA	A
KNA 10 EF 4	14	8			CC	15 152	ASEFA	A
KNA 01 CF .			8	380	CC	15 153	ASEFA	A
KNA 02 CF .			10	380	CC	15 154	ASEFA	A
KNA 02 CM .			10	380	CC	15 156	ASEFA	A
KNA 03 SM .			10	380	CC	15 157	ASEFA	A
KNA 03 SF .			10	380	CC	15 155	ASEFA	A

A = results in accordance with IEC 60439-2 and EN 60439-2 § 8.2.3.

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Type test : **Verification of the effectiveness of the protective circuit**

The test enabled the verification that the electrical resistance R_{PE} of the protective circuit junctions at the join of busbar as at outlet by tap off unit is sufficiently low.

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*C.C. = Certificate of Conformity

Product ref	R_{PE} mΩ	* Document	Document ref.	Issued by	Result
KNA 04 EA ...	< 100	CC	63/351 573 A4	LCIE	A
KNA 06 EA ...	< 100	CC	63/351 573 B4	LCIE	A
KNA 10 EA ...	< 100	CC	63/351 573 C4	LCIE	A
KNA 01 CF .	< 100	CC	63/351 573 D4	LCIE	A
KNA 01 CP .	< 100	TR	KN 046	TE	A
KNA 02 CF .	< 100	CC	63/351 573 E4	LCIE	A
KNA 02 CM .	< 100	CC	63/351 573 G4	LCIE	A
KNA 03 SM .	< 100	CC	63/351 573 H4	LCIE	A
KNA 03 SF .	< 100	CC	63/351 573 F4	LCIE	A

A = results in accordance with IEC 60439-2 and EN 60439-2 § 8.2.4.

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Type test : Verification of clearance distances

The test enabled verification that the busbars stand the impulse voltage of 6kV.

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*C.C. = Certificate of Conformity

Product ref.	Document*	Document ref	Issued by	Result
KNA 04 ED 430	TR	EL 384	TE	A
KNA 06 ED 430	TR	EL 384	TE	A
KNA 10 ED 430	TR	EL 384	TE	A

A = results in accordance with IEC 60439-2 and EN 60439-2 § 8.2.5.

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Type test : Verification of mechanical operation

The test enabled verification that after 50 insertion and removal operations, the tap-off units perfectly fulfil their function without modification in the force required.

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*C.C. = Certificate of Conformity

Product ref.	Document*	Document ref.	Issued by	Result
KNA 01 CF .	CC	63/351 573 D5	LCIE	A
KNA 01 CD .	TR	ME 372	TE	A
KNA 02 CD .	TR	ME 372	TE	A
KNA 01 CP .	TR	ME 372	TE	A
KNA 02 CG .	TR	ME 372	TE	A
KNA 02 CF .	CC	63/351 573 E5	LCIE	A
KNA 02 CM .	CC	63/351 573 G5	LCIE	A
KNA 03 SM .	CC	63 351 573 H5	LCIE	A
KNA 03 SF .	CC	63/351 573 F5	LCIE	A
KNA 03 SG .	TR	ME 373	TE	A

A = results in accordance with IEC 60439-2 and EN 60439-2 § 8.2.6.

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Type test : Verification of degree of protection

The test enabled verification that the declared degree of protection IPXX is respected.

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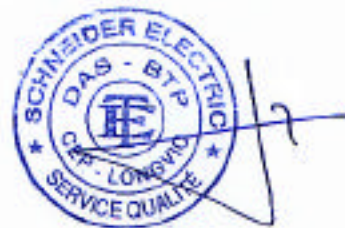
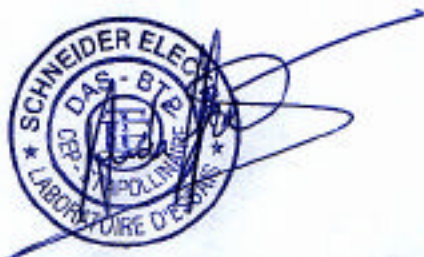
*C.C. = Certificate of Conformity

Product ref.	IP	Document*	Document ref.	Issued by	Result
KNA 04 EA ...	41	CC	63/351573 A5	LCIE	A
KNA 04 EA ...	54	CC	63/351573 A5	LCIE	A
KNA 06 EA ...	41	CC	63/351573 B5	LCIE	A
KNA 06 EA ...	54	CC	63/351573 B5	LCIE	A
KNA 10 EA ...	41	CC	63/351573 C5	LCIE	A
KNA 10 EA ...	54	CC	63/351573 C5	LCIE	A
KNA 06 AB .	41	CC	63/351573 A5 ou B5	LCIE	A
KNA 06 AB .	54	CC	63/351573 A5 ou B5	LCIE	A
KNA 10 AB .	41	CC	63/351573 C5	LCIE	A
KNA 10 AB .	54	CC	63/351573 C5	LCIE	A
KNA 01 CF .	41	CC	63/351573 D6	LCIE	A
KNA 01 CF .	54	CC	63/351573 D6	LCIE	A
KNA 02 CF .	41	CC	63/351573 E6	LCIE	A
KNA 02 CF .	54	CC	63/351573 E6	LCIE	A
KNA 02 CM.	41	CC	63/351573 G6	LCIE	A
KNA 02 CM.	54	CC	63/351573 G6	LCIE	A
KNA 03 SM .	41	CC	63/351573 H6	LCIE	A
KNA 03 SM .	54	CC	63/351573 H6	LCIE	A
KNA 03 SF .	41	CC	63/351573 F6	LCIE	A
KNA 03 SF .	54	CC	63/351573 F6	LCIE	A

A = results in accordance with IEC 60439-2 , EN 60439-2 § 8.2.7 and IEC 529.

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Type test : Verification of resistance and reactance

The test enabled measurement of :

1. The ohmic resistance per metre length of phase R_{20} at 20°C and R_1 when thermal equilibrium is reached at rated current with an ambient temperature of 35°C.
2. The reactance per metre length of a phase at 50 Hz X when thermal equilibrium is reached at rated current.

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*C.C. = Certificate of Conformity

Product ref.	R_{20} mΩ/m	R_1 mΩ/m	X mΩ/m	* Document	Document ref.	Issued by	Result
KNA 04 EA ...	4.80	5.55	0.2	CC	63/351573A6	LCIE	A
KNA 06 EA ...	1.92	2.24	0.2	CC	63/351573B6	LCIE	A
KNA 10 EA ...	0.80	0.94	0.2	CC	63/351573C6	LCIE	A

A = results in accordance with IEC 60439-2 and EN 60439-2 § 8.2.8. and appendix F.

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Type test : Verification of structural strength

The test enabled verification that, with normal mechanical loads M and a distance D between supports, the degree of protection has not been altered, that the clearance distances are not reduced below 4 mm and that after the test the correct operation of the busbar trunking system has not been compromised.

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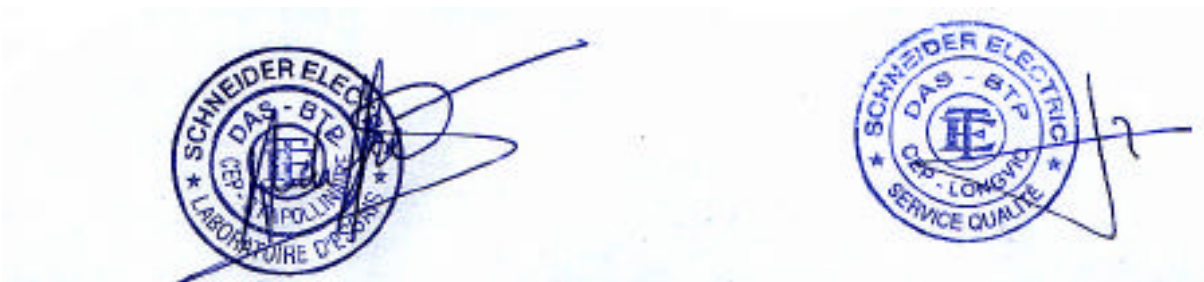
*C.C. = Certificate of Conformity

Product ref.	M kg	D m	* Document	Document ref.	Issued by	Result
KNA 04 EA ...	8	2.8	CC	63/351 573 A7	LCIE	A
KNA 06 EA ...	9	2.8	RE	ME 0358	TE	A
KNA 10 EA ...	9	2.8	RE	ME 0358	TE	A

A = results in accordance with IEC 60439-2 and EN 60439-2 § 8.2.9.1.
 B = results in accordance with NF C 63-411.

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Type test : **Verification of impedance under fault condition**

The test enabled to measure, at rated current, the fault loop impedance between L1 and PE the enclosure protective circuit, at 20°C.

* T.R. = Test Report

*C.C. = Certificate of Conformity

Product ref.	Zb mΩ/m	* Document	Document ref	Issued by	Result
KNA 04 EA ...	5.60	TR	EL 529	TE	A
KNA 06 EA ...	3.20	TR	EL 529	TE	A
KNA 10 EA ...	2.30	TR	EL 529	TE	A

A = results in accordance with IEC 60439-2 and EN 60439-2 appendix F.
B = results in accordance with NF C 63-411.

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