

ASTA TYPE CERTIFICATE

VERIFICATION OF TEST

Project No: G104034308LCS001 **Certificate No:** ASTA-TYPE-0001613

Applicant: Schneider Electric Industries SAS, 35 rue Joseph Monier, 92500 Rueil Malmaison – France

Apparatus: 50 kVAR to 400 kVAR, 400 V / 800 V / 8 kV ($U_N / U_i / U_{imp}$), 50/60 Hz, IP 31, active cooling, Low Voltage Capacitor Bank comprising three-phase main and distribution busbars, one incoming MCCB or direct connection, two to five outgoing fused contactor or MCCB contactor circuits and a protective conductor. 240 V / 4 kV (U_i / U_{imp}) for the auxiliary and control circuits. The Capacitor Bank is suitable for indoor use and has a metallic enclosure.

Manufactured By: Schneider Electric Industries SAS, 35 rue Joseph Monier, 92500 Rueil Malmaison – France

Test Report No: 201901413_001

Designation: VarSet Capacitor Bank: F2P/F3P/F5P
PowerLogic™ PFC Capacitor Bank: F2P/F3P/F5P

The apparatus which is representative of the designation, supplied drawings and photographs has been evaluated in accordance with:

IEC 61921: Edition 2.0 2017-06

| Clause | Clause |
|---|---|
| 7.2: Strength of material and parts | 7.9: Dielectric properties |
| 7.3: Degree of protection of enclosures | 7.10: Temperature-rise limits |
| 7.4: Clearances and creepage distances | 7.11: Short-circuit withstand strength |
| 7.5: Protection against electric shock and integrity of protective circuits | 7.12: Electromagnetic compatibility (EMC) |
| | 7.13: Mechanical Operation |

The results are shown in the record of tests attached hereto. The values obtained and the general performance is considered to comply with the above Standard(s) and to justify the ratings assigned by the manufacturer as stated on the ratings page(s) of this Certificate. This Certificate applies only to the apparatus tested. Responsibility for conformity of any apparatus having the same or other designations rests with the Manufacturer.



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R W Hayward

Certification Engineer
R W Hayward

C P Stephens

Certification Officer
C P Stephens

10th February 2022

Date

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Intertek Testing & Certification Ltd., Centre Court, Meridian Business Park, Leicester, LE19 1WD,
United Kingdom. Email: asta@intertek.com

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Verification of a Capacitor Bank

VarSet Type F5P 400 KVAR

| IEC 61921 Clause | Characteristic Verified | IEC 61439-1 Clause | Verified Tests and Ratings |
|------------------|--|--------------------|---|
| 7.2 | Strength of material and parts | 10.2 | - |
| | Resistance to corrosion | 10.2.2.1 | Severity test A for metallic indoor enclosure: Verified |
| | Properties of insulating materials | 10.2.3 | - |
| | Thermal stability | 10.2.3.1 | Verified |
| | Resistance to abnormal heat and fire due to internal electric effects | 10.2.3.2 | Verified |
| | Resistance to ultra-violet (UV) radiation | 10.2.4 | Not applicable to assemblies for indoor use |
| | Lifting | 10.2.5 | Verified |
| | Mechanical impact | 10.2.6 | Verified (IK10 on metallic enclosure) |
| | Marking | 10.2.7 | Verified |
| | Mechanical operation | 10.2.8 | Verified |
| 7.3 | Degree of protection of enclosures | 10.3 | External enclosure: IP31 |
| 7.4 | Clearances | 10.4 | Verified for $U_{imp} = 8 \text{ kV}$ for the main circuit $U_{imp} = 4 \text{ kV}$ for the auxiliary circuit |
| 7.4 | Creepage distances | 10.4 | Material Group: IIIa Pollution degree: 3 Verified for: $U_i = 800 \text{ V}$ for the main circuit $U_i = 240 \text{ V}$ for the auxiliary circuit |
| 7.5 | Protection against electric shock and integrity of protective circuits | 10.5 | Verified |
| | Effective earth continuity between the exposed conductive parts of the assembly and the protective circuit | 10.5.2 | Verified |

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VarSet Type F5P 400 KVAR

| IEC 61921 Clause | Characteristic Verified | IEC 61439-1 Clause | Verified Tests and Ratings |
|------------------|--|--------------------|---|
| 7.5 | Short-circuit withstand strength of the protective circuit 1b x 50mm x 10 mm bare copper bar 800 A Incoming MCCB unit QS01 Outgoing circuits: 250 A MCCB unit QS1 | 10.5.3 | $I_{CW} = 39 \text{ kA rms for 0.5 second,}$ $I_{pk} = 81.9 \text{ kA peak}$ $I_{CC} = 39 \text{ kA rms at 230 V, pf} = 0.25$ $I_{CC} = 39 \text{ kA rms at 230 V, pf} = 0.25$ |
| 7.6 | Incorporation of switching devices and components | 10.6 | Verified by Manufacturer's declaration |
| 7.7 | Internal electrical circuits and connections | 10.7 | Verified by Manufacturer's declaration |
| 7.8 | Terminals for external conductors | 10.8 | Verified by Manufacturer's declaration |
| 7.9 | Dielectric Properties | 10.9 | Rated voltages: $U_e = 400 \text{ V a.c., 50Hz / 60Hz}$ 800 V / 8 kV (U_i / U_{imp}) for the main circuit 240 V / 4 kV (U_i / U_{imp}) for the auxiliary circuit |
| | Power-frequency withstand voltage | 10.9.2 | Verified |
| | Impulse withstand voltage | 10.9.3 | Verified |
| | Testing of enclosures made of insulating material | 10.9.4 | Not applicable for metallic enclosures |
| | External operating handles of insulating material | 10.9.5 | Verified |
| 7.10 | Temperature rise | 10.10 | |
| | Verification of the complete assembly | 10.10.2.3.5 | |
| | The rated current of the assembly is based upon a mean/maximum ambient temperature of: | | 35 °C / 40 °C |
| | Rated current of the assembly | | $I_{nA} = 577 \text{ A}$ |
| | Test current multiplication factor | | 1.19 |
| | Incoming 800 A MCCB (QS01) circuit and main busbar | | $I_{nC} = 577 \text{ A}$ |

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VarSet Type F5P 400 KVAR

| IEC 61921 Clause | Characteristic Verified | IEC 61439-1 Clause | Verified Tests and Ratings |
|------------------|---|--------------------|---|
| 7.11 | Short-circuit withstand strength | 10.11 | |
| | Outgoing circuits Three-phase: QS2 MCCB contactor unit KM3 QS4 Fused contactor unit KM5 QS1 Fused contactor unit KM2 and reactor L2 | 10.11.5.3.2 | $I_{CC} = 65 \text{ kA rms at } 400 \text{ V, pf} = 0.2$ |
| | QS3 Fused contactor unit KM4 | 10.11.4 | $I_{CC} = 65 \text{ kA rms at } 400 \text{ V, pf} = 0.2$ |
| | Incoming circuit and main busbars Three-phase: Linergy 1600 A busbar Incoming 800 A QS01 MCCB unit and its connection phase busbars | 10.11.5.3.3 | $I_{CW} = 65 \text{ kA rms for } 1 \text{ second}$ $I_{pk} = 143 \text{ kA}$ $I_{CC} = 65 \text{ kA rms at } 400 \text{ V, pf} = 0.2$ |
| | Connections to the supply side of outgoing units | 10.11.5.3.4 | Conditions for no testing verified |
| | Neutral busbar circuit | 10.11.5.3.5 | No Neutral Circuit |
| 7.12 | Electromagnetic compatibility (EMC) | 10.12 | Conditions for no testing (J.9.4.2): Verified |
| 7.13 | Mechanical Operation | 10.13 | Verified |

In accordance with Annex C of IEC 61921, this certificate also covers the certification of the following types of Capacitor Banks as detailed in Test Report 2021901413_001 included in this certificate:

| Type | KVAR | Description |
|------|------------|---|
| F2P | 50 to 200 | 400 V / 800 V / 8 kV ($U_N / U_i / U_{imp}$), 50/60 Hz, IP 31, active cooling |
| F3P | 225 to 300 | 400 V / 800 V / 8 kV ($U_N / U_i / U_{imp}$), 50/60 Hz, IP 31, active cooling |
| F5P | 325 to 400 | 400 V / 800 V / 8 kV ($U_N / U_i / U_{imp}$), 50/60 Hz, IP 31, active cooling |

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Certificate Contents:

The following documents are attached to and form part of this certificate:

| Documents: | Number of pages |
|---|-----------------|
| Test report no: 2021901413_001 17 th December 2021 | 84 |
| Drawings: | 26 |

Certificate Revision Amendment Table

| Certificate Number | Issue Date | Amendment |
|--------------------|---------------|---------------|
| ASTA-TYPE-0001613 | As front page | Initial issue |