

TECHNICAL CONSTRUCTION FILE**EN 62477-1:2012+A12:2021****Safety requirements for power electronic converter systems and equipment Part 1: General**

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Test specification:
 Standard..... : EN 62477-1:2012+A12:2021
 Test procedure..... : CE
 Non-standard test method..... : N/A

Test Report Form No...... : EN 62477-1
 Test Report Form(s) Originator..... : Shanghai Global Testing Services Co., Ltd.
 Master TRF..... : 2012

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Test item description.....:	Low-voltage active power filter(APF)
Trade Mark.....:	/
Model/Type reference.....:	YDK-APF
Ratings.....:	400V, 100A, 50Hz, IP20
Copy of marking plate: /	
Possible test case verdicts: - test case does not apply to the test object.....: N/A(N) - test object does meet the requirement.....: P(Pass) - test object does not meet the requirement.....: F(Fail)	
Testing.....: Date of receipt of test item.....: March 12,2022 Date (s) of performance of tests.....: March 12,2022 to March 22,2022	
General remarks: This report is not valid as a CE Test Report unless signed by an approved CE Testing Laboratory and appended to a CE Test Certificate issued. 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. "(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.	

4	Protection against hazards		--
4.1	General		P
	Clause 4 defines the minimum requirements for the design and construction of a PECS, to ensure its safety during installation, normal operating conditions and maintenance for the expected lifetime of the PECS. Consideration is also given to minimising hazards resulting from reasonably foreseeable misuse. Manufacturers and product committees using this standard as a reference document shall clearly specify what is contained in the PECS, covered by and evaluated according to this standard. This shall as a minimum cover the PEC including the load interface and supply interface. Protection against hazards shall be maintained under normal and single fault conditions, as specified in this standard. Components compliant with a relevant IEC product standard which provides similar safety requirements as the requirement of this standard do not require separate evaluation. Components or assemblies of components, for which no relevant product standard exists, shall be tested according to the requirements of this standard. Product committees using this standard as reference should make use of 7.3 from IEC Guide 104:2010. Where the PECS is intended to be used together with specific auxiliary equipment, the safety evaluation and test shall include this auxiliary equipment unless it can be shown that it does not affect the safety of either equipment.		P
4.2	Fault and abnormal conditions		P
4.3	Short circuit and overload protection		P
4.3.1	General		P

	The PECS shall not present a hazard, under short circuit or overload conditions at any port, including phase to phase, phase to earth and phase to neutral. Adequate information shall be provided in the documentation to allow proper selection of external wiring and protective devices (see 6.3.7.6 and 6.3.7.7). Protective systems or devices shall be provided or specified in sufficient quantity and location so as to detect and to interrupt or limit the current flowing in any possible fault current path between conductors or from conductors to earth. Protection against overcurrents shall be provided for all input circuits, and for output circuits that do not comply with the requirements for limited power sources in 4.6.5. If the PECS complies with all normal, abnormal and fault test conditions in this standard without such protection provided, provision or specification of overcurrent protection for input circuits is not necessary for the protection of the PECS. No protection is required against overcurrent to earth in equipment that either • has no connection to earth; or • has double insulation or reinforced insulation between live parts and all parts connected to earth. For pluggable equipment type A, the protective device is provided in the installation and shall not require any specific characteristics other than that required in IEC 60364 or other local installation codes. For pluggable equipment type B or fixed installed equipment, this protection may be provided by devices external to the equipment, in which case the installation instructions shall state the need for the protection to be provided in the installation and shall include the specifications for the required short circuit and/or overload protection (see 6.3.7). If a protective device interrupts the neutral conductor, it shall also simultaneously interrupt all other supply conductors of the same circuit. It is permissible for the protective device to interrupt the neutral conductor after the other supply conductors of the same circuit. Compliance shall be checked by inspection and where necessary, by simulation of single fault conditions (see 4.2) and by the tests of 5.2.4.4 and 5.2.4.5.		P
4.3.2	Specification for input short-circuit withstand strength and output short circuit current ability		P
4.3.3	Short-circuit coordination(backup protection)		P

4.3.4	Protection by several devices		P
4.4	Protection against electric shock		P
4.4.1	General		P
	Protection against electric shock depends on the decisive voltage class from 4.4.2 and insulation requirements from 4.4.2.3, and is to be provided by at least one of the following measures: • basic protection from 4.4.3 and fault protection from 4.4.4; • enhanced protection from 4.4.5 Protection under normal conditions is provided by basic protection, and protection under single fault conditions is provided by fault protection. Enhanced protection provides protection under both conditions. Additional protection can be provided by residual current-operated protective devices (RCD). For further information, see 4.4.8.		P
4.4.2	Decisive voltage class		P
4.4.3	Provision for basic protection		P
4.4.4	Provision for fault protection		P
4.4.5	Enhanced protection		P
4.4.6	Protective measures		P
4.4.7	Insulation		P
4.4.8	Compatibility with residual current-operated protective devices(RCD)		P
4.4.9	Capacitor discharge		P
4.5	Protection against electrical energy hazards		P
4.5.1	Operator access areas		P
4.5.2	Service access areas		P
4.6	Protection against fire and thermal hazards		P
4.6.1	Circuits representing a fire hazard		P
4.6.2	Components representing a fire hazard		P
4.6.3	Fire enclosures		P
4.6.4	Temperature limits		P
4.6.5	Limited power sources		P
4.7	Protection against mechanical hazards		P
4.7.1	General		P
	Failure of any component within the PECS shall not release sufficient energy to lead to a hazard, for example, expulsion of material into an area occupied by personnel.		P

4.7.2	Specific requirements for liquid cooled PECS		P
4.8	Equipment with multiple sources of supply		P
4.9	Protection against environmental stresses		P
4.10	Protection against sonic pressure hazards		P
4.10.1	General		P
	The equipment shall provide protection against the effects of sonic pressure. Compliance tests are carried out if the equipment is likely to cause such hazards.		P
4.10.2	Sonic pressure and sound level		P
4.11	Wiring and connections		P
4.11.1	General		P
	The wiring and connections between parts of the equipment and within each part shall be protected from mechanical damage during installation. The insulation, conductors and routing of all wires of the equipment shall be suitable for the electrical, mechanical, thermal and environmental conditions of use. Conductors which are able to contact each other shall be provided with insulation rated for the DVC requirements of the relevant circuits. The compliance with 4.11.2 to 4.11.8 shall be checked by inspection (see 5.2.1) of the overall construction and datasheets if applicable.		P
4.11.2	Routing		P
4.11.3	Colour coding		P
4.11.4	Splices and connections		P
4.11.5	Accessible connections		P
4.11.6	Interconnections between parts of the PECS		P
4.11.7	Supply connections		P
4.11.8	Terminals		P
4.12	Enclosures		P
4.12.1	General		P

	The following requirements are in addition to enclosure requirements given in other sections relating to specific hazards, for example electric shock hazard in 4.4 and fire hazard in 4.6. Enclosures shall be suitable for use in their intended environments. The manufacturer shall specify the intended environment (see 6.3.3) and the IP rating of the enclosure (see 5.2.2.3 for test). Equipment shall have adequate mechanical strength and shall be so constructed that no hazard occurs when subjected to handling as may be expected. Mechanical strength tests are not required on an internal barrier, screen or the like, provided to meet the requirements of 4.6.3, if the enclosure provides mechanical protection. An enclosure shall be sufficiently complete to contain or deflect parts which, because of failure or for other reasons, might become loose, separated or thrown from a moving part. Compliance shall be checked by the relevant tests of 5.2.2.4 to 5.2.2.7 as specified. If the enclosure complies with the applicable thickness requirement of 4.12.3 or 4.12.4 the test in 5.2.2.4.2 and 5.2.2.4.3 can be waived.		P
4.12.2	Handles and manual controls		P
4.12.3	Cast metal		P
4.12.4	Sheet metal		P
4.12.5	Stability test for enclosure		P
5	Test requirements		--
5.1	General		P
5.1.1	Test objectives and classification		P
5.1.2	Selection for test samples		P
5.1.3	Sequence of tests		P
5.1.4	Earthing conditions		P
5.1.5	General conditions for tests		P
5.1.6	Compliance		P
5.1.7	Test overview		P
5.2	Test specifications		P
5.2.1	Visual inspections (type test, sample test and routine test)	type test	P
5.2.2	Mechanical tests		P
5.2.3	Electrical tests		P
5.2.4	Abnormal operation and simulated faults tests		P
5.2.5	Material tests		P
5.2.6	Environmental tests (type tests)		P

5.2.7	Hydrostatic pressure test (type test and routine test)		P
6	Information and marking requirements		--
6.1	General		P
	The purpose of this Clause 6 is to define the information necessary for the safe selection, installation and commissioning, operation, and maintenance of PECS. It is presented as Table 36, showing where the information shall be provided, followed by explanatory subclauses. The requirements of Clause 6 apply to all PECS, unless otherwise stated. Since any electrical equipment can be installed or operated in such a manner that hazardous conditions can occur, compliance with the design requirements of this standard does not by itself assure a safe installation. However, when equipment complying with those requirements is properly selected and correctly installed and operated, the hazards will be minimized. All information shall be in an appropriate language, and documents shall have identification references. Drawing symbols shall conform to IEC 60417 or IEC 60617 as appropriate. Symbols not shown in IEC 60417 or IEC 60617 shall be identified where used.		P
6.2	Information for selection		P
6.3	Information for installation and commissioning		P
6.3.1	General		P
	Safe and reliable installation is the responsibility of the installer, machine builder, and/or user. The manufacturer of any part of the PECS shall provide information to support this task. This information shall be unambiguous, and may be in diagrammatic form.		P
6.3.2	Mechanical considerations		P
6.3.3	Environment		P
6.3.4	Handling and mounting		P
6.3.5	Enclosure temperature		P
6.3.6	Connections		P
6.3.7	Protection requirements		P
6.3.8	Commissioning		P
6.4	Information for use		P
6.4.1	General		P

	The user's manual shall include all information regarding the safe operation of the PECS. In particular, it shall identify any hazardous materials and risks of electric shock, overheating, explosion, excessive acoustic noise, etc. The manual should also indicate any hazards which can result from reasonably foreseeable misuse of the PECS.		
6.4.2	Adjustment		P
6.4.3	Labels,sign and signals		P
6.5	Information for maintenance		P
6.5.1	General		P
	The PECS shall be marked with the date code, or serial number from which the date of manufacture can be determined. Safety information shall be provided in the installation and maintenance manuals including, as appropriate, the following: • preventive maintenance procedures and schedules; • safety precautions during maintenance; • location of live parts that can be accessible during maintenance (for example, when covers are removed); • adjustment procedures; • sub-assembly and component repair and replacement procedures; • any other relevant information.		P
6.5.2	Capacitor discharge		P
6.5.3	Auto restart/bypass connection		P
6.5.4	Other hazards		P
6.5.5	Equipment with multiple sources of supply		P

--- End of Test Report ---

Type of equipment, model: Low-voltage active power filter(APF),
YDK-APF

Details of:

View:

☒ general

☐ front

☐ rear

☐ right

☐ left

☐ top

☐ bottom



Details of:

View:

☒ general

☐ front

☐ rear

☐ right

☐ left

☐ top

☐ bottom

