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检测
TESTING
CNAS L0685

TEST REPORT

№: JW241499E

Sample Name	Protection Relay
Sample Type	AM5
Client	Acrel Co.,LTD.
Manufacturer	Acrel Co.,LTD.
Test Classification	Type Test
Issued Date	Sep. 25, 2024

Xuchang KETOP Testing Research Institute Co., Ltd.

(National Quality Inspection & Testing Center for

Relay Protection and Automation Equipment)

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№：JW241499E

Sample Name: Protection Relay **Sample Type:** AM5 **Sample Specification:** Power supply circuit: AC220V 50Hz AC circuit: AC100V 5A 50Hz **Sample Quantity:** 2 **Sample №:** YPJW241499-1, YPJW241499-2 **Sample Received Date:** Jun. 17, 2024 **Sample Received Status:** Visual check acceptable, performance to be checked	**Client:** Acrel Co.,LTD. **Address:** No.253 Yulv Road Jiading District, Shanghai, China **Manufacturer:** Acrel Co.,LTD. **Address:** No.253 Yulv Road Jiading District, Shanghai, China **Testing Site:** Xuchang KETOP Testing Research Institute Co., Ltd.

Testing date: Jun. 17, 2024 - Sep. 23, 2024

Testing for:

☑Consignment Test ☐Certification Test ☐Licence Test ☐Supervision Test ☐Other test

Test classification:

☑Type Test ☐Performance Test ☐Others

References:

International standard
IEC 60255-1:2022 Measuring relays and protection equipment - Part 1: Common requirements
IEC 60255-26: 2023 Measuring relays and protection equipment – Part 26: Electromagnetic compatibility requirements
IEC 61000-4-9: 2016 Electromagnetic compatibility (EMC) - Part 4-9: Testing and measurement techniques - Impulse magnetic field immunity test
IEC 61000-4-10: 2016 Electromagnetic compatibility (EMC) - Part 4-10: Testing and measurement techniques - Damped oscillatory magnetic field immunity test
Enterprise standard
Q/310114000129C041-2024 Protection Relay (Assess criteria)

Conclusion:

Based on the test results described in this report, our lab declares that the test items are in conformance with the requirements of references above.

Approved by: 李亚萍 **Issued date:** Sep. 25, 2024

Remark: /

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Test Items Summary

№	Test Items	Standards	Verdict
Electrical Performance & Safety			
1	**Visual inspection**	**IEC 60255-27:2023**	**Pass**
2	**Basic functions**	**IEC 60255-1:2022 Protection Relay**	**/**
2.1	Instantaneous differential protection	/	Pass
2.2	Differential protection with ratio restraining	/	Pass
2.3	Overcurrent protection (3 stages)	/	Pass
2.4	Inverse time overcurrent protection	/	Pass
2.5	Earth fault protection (2 stages)	/	Pass
2.6	Inverse time earth fault protection	/	Pass
2.7	Overload protection	/	Pass
2.8	Overvoltage protection	/	Pass
2.9	Undervoltage protection	/	Pass
2.10	PT supervision	/	Pass
2.11	Residual overvoltage protection	/	Pass
2.12	Underfrequency protection	/	Pass
2.13	Overfrequency protection	/	Pass
2.14	Rate of change of frequency	/	Pass
2.15	Reverse power protection	/	Pass
2.16	Control circuit disconnection alarm	/	Pass
2.17	High temperature alarm	/	Pass
2.18	Overtemperature trip	/	Pass
2.19	Light gas alarm	/	Pass
2.20	Heavy gas trip	/	Pass
2.21	Pressure release	/	Pass
2.22	Transformer door opening	/	Pass
2.23	Non-electrical quantity protection	/	Pass

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№	Test Items	Standards	Verdict
2.24	FC block	/	Pass
2.25	Auto-close with voltage recovery	/	Pass
3	Burden	IEC 60255-1:2022	Pass
4	Insulation resistance	IEC 60255-27:2023	Pass
5	Dielectric withstand	IEC 60255-27:2023	Pass
6	Impulse voltage	IEC 60255-27:2023	Pass
7	Clearance	IEC 60255-27:2023	Pass
8	Creepage distance	IEC 60255-27:2023	Pass
9	Protective bonding resistance	IEC 60255-27:2023	Pass
10	Degrees of protection provided by enclosure	IEC 60529:2013	Pass
11	Operative ranges of auxiliary energizing quantities	IEC 60255-1:2022	Pass
12	Dry heat - operational	IEC 60068-2-2:2007	Pass
13	Cold - operational	IEC 60068-2-1:2007	Pass
14	Dry heat - storage	IEC 60068-2-2:2007	Pass
15	Cold - storage	IEC 60068-2-1:2007	Pass
16	Change of temperature	IEC 60068-2-14:2009	Pass
17	Damp heat, steady state	IEC 60068-2-78:2012	Pass
18	Damp heat, cyclic	IEC 60068-2-30:2005	Pass
19	Vibration response	IEC 60255-21-1:1988	Pass
20	Vibration endurance	IEC 60255-21-1:1988	Pass
21	Shock response	IEC 60255-21-2:1988	Pass
22	Shock withstand	IEC 60255-21-2:1988	Pass
23	Bump	IEC 60255-21-2:1988	Pass
24	Thermal withstand capability	IEC 60255-1:2022	Pass
25	Contact performance	IEC 60255-1:2022	Pass
EMC			
1	Radiated emission test	IEC 60255-26: 2023	Pass
2	Conducted emission test for auxiliary power supply port	IEC 60255-26: 2023	Pass

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№	Test Items	Standards	Verdict
3	Conducted emission test for wired network port	IEC 60255-26: 2023	Pass
4	Radiated electromagnetic field immunity test	IEC 60255-26: 2023	Pass
5	Electrostatic discharge immunity test	IEC 60255-26: 2023	Pass
6	Conducted immunity test	IEC 60255-26: 2023	Pass
7	Electrical fast transient/burst immunity test	IEC 60255-26: 2023	Pass
8	Slow damped oscillatory wave immunity test	IEC 60255-26: 2023	Pass
9	Fast damped oscillatory wave immunity test	IEC 60255-26: 2023	Pass
10	Surge immunity test	IEC 60255-26: 2023	Pass
11	Power frequency immunity test	IEC 60255-26: 2023	Pass
12	Power frequency magnetic field immunity test	IEC 60255-26: 2023	Pass
13	Pulse magnetic field immunity test	IEC 61000-4-9: 2016	Pass
14	Damped oscillatory magnetic field immunity test	IEC 61000-4-10: 2016	Pass
15	Voltage dips on A.C. and D.C. input power port test	IEC 60255-26: 2023	Pass
16	Voltage interruptions on A.C. and D.C. input power port test	IEC 60255-26: 2023	Pass
17	Ripple on D.C. input power port immunity test	IEC 60255-26: 2023	N/A
18	Gradual shut-down/start-up on D.C. input power port test	IEC 60255-26: 2023	N/A

Note: 'N/A' -'not applicable'

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Electrical Performance & Safety Test Report

Sample Name: Protection Relay **Sample Type:** AM5 **Sample Specification:** Power supply circuit: AC220V 50Hz AC circuit: AC100V 5A 50Hz **Sample Quantity**:1 **Sample №**: YPJW241499-1	**Client:** Acrel Co.,LTD. **Manufacturer:** Acrel Co.,LTD. **Testing Site:** Xuchang KETOP Testing Research Institute Co., Ltd.

Testing for:

☑Type Test ☐Performance Test ☐Others

References:

International standard

IEC 60255-1:2022 Measuring relays and protection equipment - Part 1: Common requirements

Enterprise standard

Q/310114000129C041-2024 Protection Relay (Assess criteria)

Conclusion:

Based on the test results described in this report, our lab declares that the test items are in conformance with the requirements of references above.

KETOP TESTING RESEARCH INSTITUTE CO.,LTD. INSPECTION & TESTING

Tested by:刘韶婧 刘韶婧 **Verified by:**杨可标 杨可标 **Audited by:**王伟

Date: Sep. 23, 2024

Remark: /

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Test Items Summary

№	Test Items	Standards	Verdict
1	**Visual inspection**	**IEC 60255-27:2023**	**Pass**
2	**Basic functions**	**IEC 60255-1:2022 Protection Relay**	/
2.1	Instantaneous differential protection	/	Pass
2.2	Differential protection with ratio restraining	/	Pass
2.3	Overcurrent protection (3 stages)	/	Pass
2.4	Inverse time overcurrent protection	/	Pass
2.5	Earth fault protection (2 stages)	/	Pass
2.6	Inverse time earth fault protection	/	Pass
2.7	Overload protection	/	Pass
2.8	Overvoltage protection	/	Pass
2.9	Undervoltage protection	/	Pass
2.10	PT supervision	/	Pass
2.11	Residual overvoltage protection	/	Pass
2.12	Underfrequency protection	/	Pass
2.13	Overfrequency protection	/	Pass
2.14	Rate of change of frequency	/	Pass
2.15	Reverse power protection	/	Pass
2.16	Control circuit disconnection alarm	/	Pass
2.17	High temperature alarm	/	Pass
2.18	Overtemperature trip	/	Pass
2.19	Light gas alarm	/	Pass
2.20	Heavy gas trip	/	Pass
2.21	Pressure release	/	Pass
2.22	Transformer door opening	/	Pass
2.23	Non-electrical quantity protection	/	Pass
2.24	FC block	/	Pass

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№	Test Items	Standards	Verdict
2.25	Auto-close with voltage recovery	/	Pass
3	Burden	IEC 60255-1:2022	Pass
4	Insulation resistance	IEC 60255-27:2023	Pass
5	Dielectric withstand	IEC 60255-27:2023	Pass
6	Impulse voltage	IEC 60255-27:2023	Pass
7	Clearance	IEC 60255-27:2023	Pass
8	Creepage distance	IEC 60255-27:2023	Pass
9	Protective bonding resistance	IEC 60255-27:2023	Pass
10	Degrees of protection provided by enclosure	IEC 60529:2013	Pass
11	Operative ranges of auxiliary energizing quantities	IEC 60255-1:2022	Pass
12	Dry heat - operational	IEC 60068-2-2:2007	Pass
13	Cold - operational	IEC 60068-2-1:2007	Pass
14	Dry heat - storage	IEC 60068-2-2:2007	Pass
15	Cold - storage	IEC 60068-2-1:2007	Pass
16	Change of temperature	IEC 60068-2-14:2009	Pass
17	Damp heat, steady state	IEC 60068-2-78:2012	Pass
18	Damp heat, cyclic	IEC 60068-2-30:2005	Pass
19	Vibration response	IEC 60255-21-1:1988	Pass
20	Vibration endurance	IEC 60255-21-1:1988	Pass
21	Shock response	IEC 60255-21-2:1988	Pass
22	Shock withstand	IEC 60255-21-2:1988	Pass
23	Bump	IEC 60255-21-2:1988	Pass
24	Thermal withstand capability	IEC 60255-1:2022	Pass
25	Contact performance	IEC 60255-1:2022	Pass

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Test Instruments / Equipment

№	Name	Type	Number	Period of validity
1	Multifunctional relay testing equipment	MFTB-3A	K0401-1647	15/04/2024 - 14/04/2025
2	Multifunctional relay testing equipment	MFTB-3A	K0401-314	15/04/2024 - 14/04/2025
3	Multifunctional relay testing equipment	MFTB-3A	K0401-345	15/04/2024 - 14/04/2025
4	Relay protection tester	ZD43EMC	K0401-352	28/12/2023 - 27/12/2024
5	Multifunctional relay testing equipment	MFTB-3A	K0401-502	15/04/2024 - 14/04/2025
6	Electrostatic Discharge tester	PESD 1610	K0701-099	22/01/2024 - 21/01/2025
7	EMI Test Receiver	ESR7	K0701-1156	25/04/2024 - 24/04/2025
8	Log-broadband antenna	HL562E	K0701-1157	07/12/2022 - 06/12/2027
9	AMN	ENV216	K0701-1169	25/04/2024 - 24/04/2025
10	8-WIRE ISN for CAT6	ENY81-CA6	K0701-1173	25/04/2024 - 24/04/2025
11	Magnetic field coil	MS 100N	K0701-1620	19/12/2023 - 18/12/2024
12	Damped oscillatory wave immunity testing system	OCS 500N6.19	K0701-1621	19/12/2023 - 18/12/2024
13	Fast damped oscillatory wave generator	DOW3000	K0701-1719	23/04/2024 - 22/04/2025
14	Capacitive coupling clamp	CN-EFT1000	K0701-1720	24/04/2024 - 23/04/2025
15	RF conducted immunity host	NSG4070C-35	K0701-1809	15/08/2023 - 14/08/2024
16	Attenuator	ATN 6060	K0701-1810	15/08/2023 - 14/08/2024
17	CDN	CDN M016S	K0701-1814	15/08/2023 - 14/08/2024
18	CDN	CDN M516AS	K0701-1816	15/08/2023 - 14/08/2024
19	Automatically calibrating &testing source for EMC	DK-51C3	K0701-2016	24/04/2024 - 23/04/2025
20	Anti-interference testing power supply	DK-51C4	K0701-2192	21/06/2024 - 20/06/2025
21	Harmonic & voltage dips testing system	ECTS2-360F-C	K0701-2207	17/12/2023 - 16/12/2024
22	RF power amplifier and directional coupler	MPA-80-1000-1000	K0701-2348-1/5	24/09/2023 - 23/09/2024
23	RF power amplifier and directional coupler	MPA-1000-3000-400	K0701-2348-2/5	24/09/2023 - 23/09/2024
24	RF power amplifier and directional coupler	MPA-3000-6000-200	K0701-2348-3/5	24/09/2023 - 23/09/2024
25	Transmitting antenna	STLP9129	K0701-2348-4/5	24/09/2023 - 23/09/2024

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26	Generator	ITS6006	K0701-297	17/12/2023 - 16/12/2024
27	Power frequency magnetic field immunity testing system	MAG1000	K0701-783	18/12/2023 - 17/12/2024
28	Fast transient burst testing host	EFT 500N8.1	K0701-784	23/04/2024 - 22/04/2025
29	Capacitive coupling clamp	CCI	K0701-785	23/04/2024 - 22/04/2025
30	Surge testing host	VCS 500N8.5	K0701-787	23/04/2024 - 22/04/2025
31	CDN for signal cable	CNV 504N1.3	K0701-788	23/04/2024 - 22/04/2025
32	Impedance matching network	IMN 2	K0701-789	23/04/2024 - 22/04/2025

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Test software

№	Test Items	Software	Software version
1	Radiated emission test	iec.control automatic control software	10.35.02
2	Conducted emission test for auxiliary power supply port	iec.control automatic control software	10.35.02
3	Conducted emission test for wired network port	iec.control automatic control software	10.35.02
4	Radiated electromagnetic field disturbance test	PW series relay testing device	V2.35
5	Radiated electromagnetic field disturbance test	JS35-RS radiated immunity test	5.0.0
6	Electric fast transient/burst immunity test	iec.control automatic control software	7.1.3
7	Slow damped oscillatory wave immunity test	iec.control automatic control software	8.3.4
8	Surge disturbance test	iec.control automatic control software	7.1.3
9	Pulse magnetic field immunity test	iec.control automatic control software	7.1.3
10	Damped oscillatory magnetic field immunity test	iec.control automatic control software	8.3.4
11	Voltage dips and short interruptions test	EptsGui	V1.0.0.5

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