

Test Report

TEST OBJECT	15.5 kV Soild Recloser
DESIGNATION	EPR-1 3 Poles 15.5 kV 630 A 16 kA
APPLICANT	Entec Electric & Electronic Co., Ltd. 225-38, Choerubaek-ro, Bongdam-eup, Hwaseong-si, Gyeonggi-do, Republic of Korea
MANUFACTURER	Entec Electric & Electronic Co., Ltd. 225-38, Choerubaek-ro, Bongdam-eup, Hwaseong-si, Gyeonggi-do, Republic of Korea
DATE OF TESTS	2019-04-16 ~ 2019-05-13
ISSUED NUMBER	19TC201520

The test object, constructed complying with the description, drawings and photographs incorporated in this Test Report, has been subjected to the performance tests in accordance with

IEC 62271-111: 2012 6.111.2, 6.111.3

The results are shown in the record of Performance Tests. The values obtained and the general performance are considered to comply with the above Standard and to justify the ratings as listed on page No. 4.

This Test Report applies only to the test object. The responsibility for conformity of any apparatus having the same designations with that tested rests with the Manufacturer.

This Test Report comprises 18sheets in total.

COPYRIGHT : Only integral reproduction of this 'Test Report' is permitted without written permission from KERI. Electronic copies are information only. The sealed version of this 'Test Report' is the only valid version.

Prepared by



Kim, Young-sung

Approved by



(Technical manager)

Ahn, Sang-pil

Date of issue

2019-07-30

President



[DF-CA-21/09/17]



Summary of tests

Standard IEC 62271-111: 2012

Test Item(s)		Comment
6.111.2	Oscillatory and fast transient surge tests	Pass
6.111.3	Simulated surge arrester operation test	Pass



Contents

Ratings	4
Identification of test object	5
List of drawing(s)	6
General	7
Test results	8
Drawing(s)	-
Information sheet	18

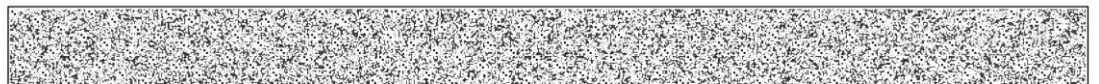
ELECTROCON SRL



Ratings

15.5 kV Solid Recloser

Manufacturer	Entec Electric & Electronic Co.,
Designation of controller	EVRC2A-NT
Serial No. of controller	R19030011
Rated voltage of controller	AC 220 V
Rated frequency of controller	50 Hz/60 Hz



Identification of test object

Assigned by manufacturer

15.5 kV Solid Recloser

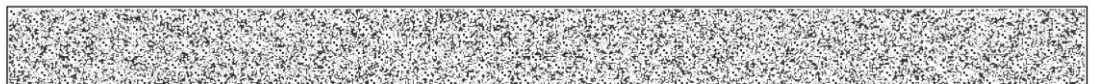
Manufacturer	Entec Electric & Electronic Co., Ltd.
Designation	EPR-1
Serial No.	R19030011
Number of poles	3 Poles
Rated voltage	15.5 kV
Rated breaking current	16 kA
Rated duration of short circuit	3 s
Rated power frequency withstand voltage	50 kV
Rated impulse withstand voltage	110 kV



List of drawing(s)

N.A.

ELECTROCON SRL



General

Tested by :

Kim, Jung-yoon
Kim, Young-sung

KERI
KERI

Witnessed by :

Song, Won-ho

Entec Electric & Electronic Co., Ltd.

Measurement uncertainty

N.A.

The others

The tests were carried out on the test objects submitted by the applicant.

ELECTROCON SRL



Test results

	Test item	Location	Page
1	Oscillatory and fast transient surge tests	KERI-C2	9
2	Simulated surge arrester operation test	KERI-C2	12

KERI-C2 : KERI High Voltage Evaluation Division(Ansan)



1. Oscillatory and fast transient surge tests

Test Date 2019-04-16

Test condition

Test method	Oscillatory wave test
Climatic condition	21.8 °C, 44.7 % R.H.
Voltage rise time	75 ns \pm 15 ns
Voltage oscillation frequency	1 MHz \pm 0.1 MHz
Repetition rate	400 / s \pm 40 / s
Polarity	Positive, negative
EUT setting	Aux. power : rated voltage supplied
Performance criteria	Temporary loss of function is permitted, but it shall be self-recoverable

Test results

Test port	Test mode	Test voltage kV	Test results
Aux. power	Common	2.5	Good
	Differential	2.5	Good
Voltage(phase)	Common	2.5	Good
	Differential	2.5	Good
Current(phase)	Common	2.5	Good
	Differential	2.5	Good
DI	Common	2.5	Good
	Differential	2.5	Good
DO	Common	2.5	Good
	Differential	2.5	Good



Test condition

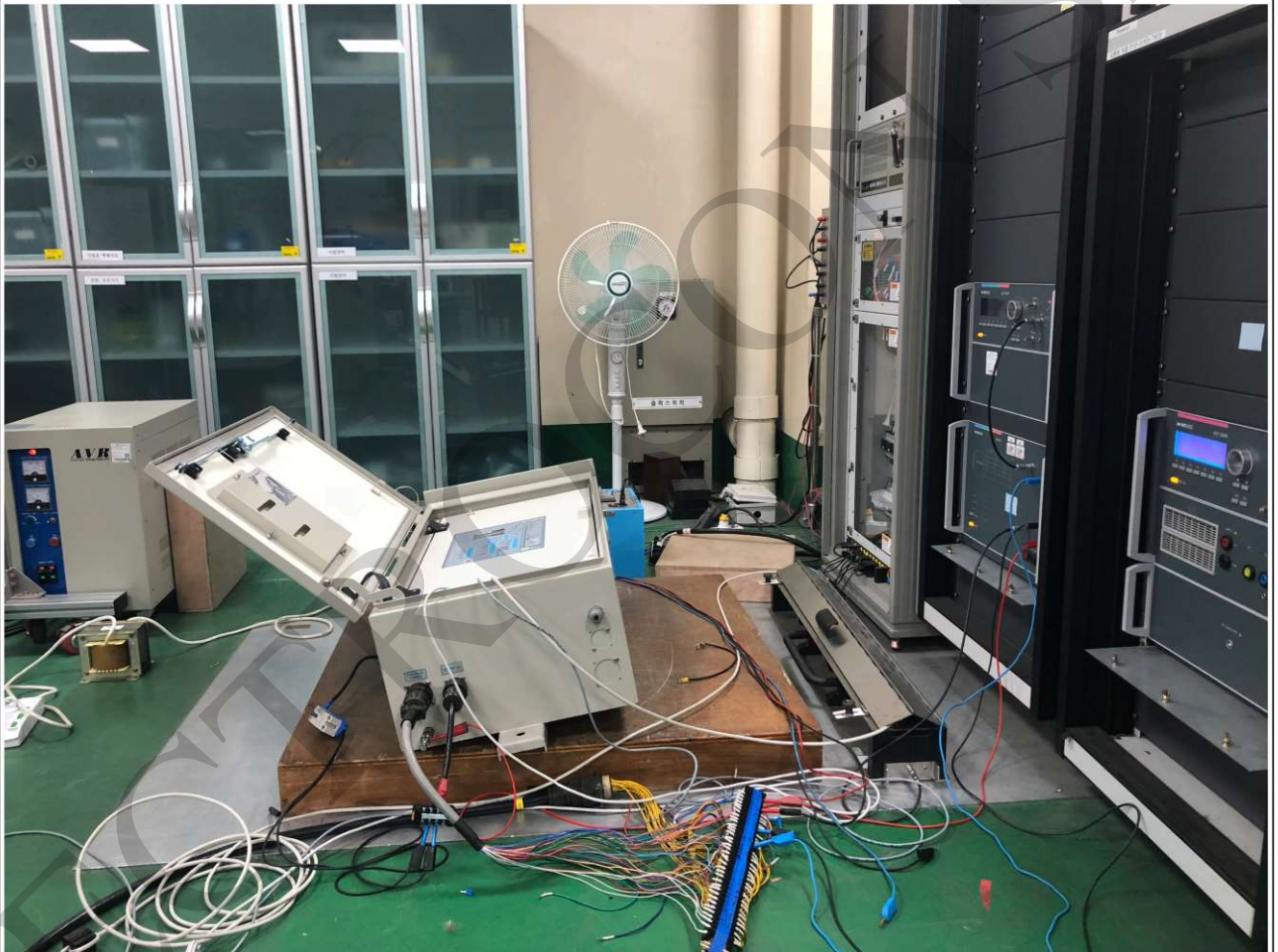
Test method	Fast transient wave test
Climatic condition	21.9 °C, 44.8 % R.H.
Voltage rise time	5 ns \pm 1.5 ns
Duration time to 50 % peak voltage	50 ns \pm 15 ns
Burst duration	30 ms \pm 6 ms
Burst period	300 ms \pm 60 ms
Repetition rate	2.5 kHz \pm 0.5 kHz
Polarity	Positive, negative
Test duration	1 min, each polarity
Relation to power supply	Asynchronous
EUT setting	Aux. power : rated voltage supplied
Performance criteria	Temporary loss of function is permitted, but it shall be self-recoverable

Test results

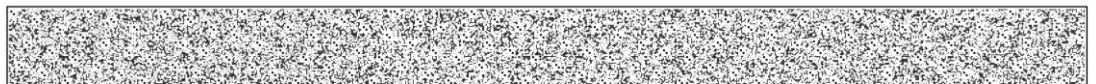
Test port	Test mode	Test voltage kV	Test results
Aux. power	Common	4	Good
	Differential	4	Good
Voltage(phase)	Common	4	Good
	Differential	4	Good
Current(phase)	Common	4	Good
	Differential	4	Good
DI	Common	4	Good
	Differential	4	Good
DO	Common	4	Good
	Differential	4	Good
Communication (Ethernet)	Common	4	Good
Communication (RS-485)	Common	4	Good
Communication (RS-232C)	Common	4	Good



Photos



Oscillatory and fast transient surge tests



2. Simulated surge arrester operation test

Test Date 2019-05-10 ~ 2019-05-13

Test condition

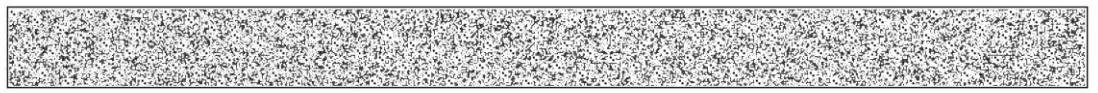
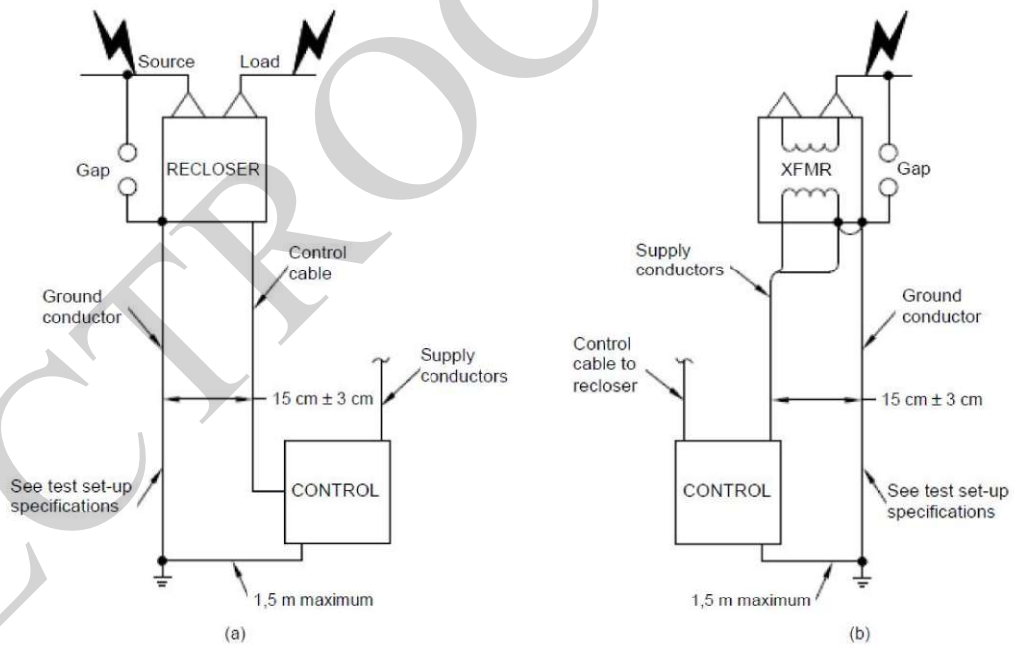
Test voltage	88 kV
Rise-time of flashover voltage	1.2 us
Rod-gap surge current	6 000 A
Atmospheric conditions	23.4 °C 48.2 % R.H., 1 020.1 hPa (10 May 2019)
	23.5 °C 52.8 % R.H., 1 021.4 hPa (13 May 2019)

Test requirements

A, B, C : Source side bushing terminal a, b, c : Load side bushing terminal

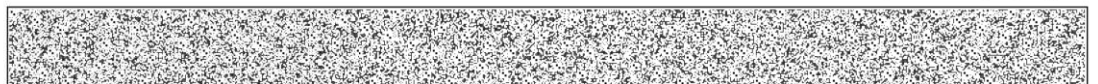
During the application of surges, the control shall neither close the recloser from an open position nor open(trip) the recloser from a closed position. No change of state shall occur.

Test circuit



Test results

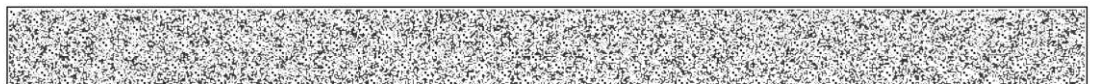
Test circuit	Switching device	Surge application	Number of surges	Test results
(a)	Open	A	5 shots at each polarity	Good
		B		Good
		C		Good
	Closed	A	5 shots at each polarity	Good
		B		Good
		C		Good
	Closed	a	5 shots at each polarity	Good
		b		Good
		c		Good
(b)	Open	Supply	15 shots at each polarity	Good
	Closed	Supply		Good



Attachment



Test object(main body)



Attachment



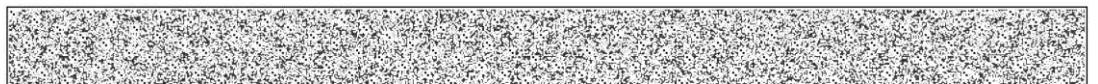
nameplate(main body)



Attachment



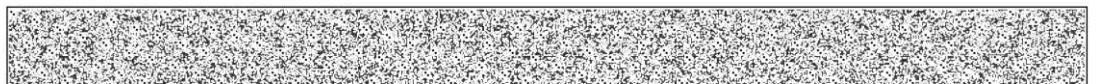
Test object(controller)



Attachment



nameplate(controller)



INFORMATION SHEET

KERI(Korea Electrotechnology Research Institute) issues Test Certificate, Test Report, and Record of Test Results as below.

1 Test Certificate

A Certificate contains records of the highest quality of Type Tests carried out at KERI premises strictly in accordance with IEC, and/or regional standards and national standards that are identical to IEC standards. The test object has fulfilled the requirements of the standards and the relevant ratings assigned by the applicant are endorsed by KERI.

2 Type Test Report

A Type Test Report contains records of a complete series of Type Tests carried out strictly by applying standards recognized by KERI. The test object has fulfilled the requirements of the standards and the relevant ratings assigned by the applicant are endorsed by KERI.

3 Test Report

A Test Report contains records of one or more tests that are carried out according to recognized standards. But these tests are not fulfilled requirements of complete Type Tests. The test results do not guarantee ratings of the test object.

4 Record of Test Results

A Record of Test Results is a record of the results performed in accordance with the specifications or instructions presented by the applicant in the case that the number of tests, test procedures and/or test parameters do not fulfil the recognized standards.

- KERI is a member of STL(Short-circuit Testing Liaison) and the accredited testing laboratory under Clause 2 of Article 2 in “Guidelines on certified testing criteria and methods for electrical equipment” (Public Notice, Ministry of Trade, Industry and Energy, KOREA).
- The authenticity of the test results can be identified and confirmed directly by using the 2D barcode printed at the bottom of the report. For further information, please visit KERI website(www.keri.re.kr) or contact KERI customer support department(Changwon: +82-55-280-2410, Ansan: +82-31-8040-4492).

End.

[DF-CA-21/27/09]

