MULTI

LA FAULT DETECTOR

SURGE ARRESTER LEAKER

Model : ALCL-40

ϕ 37 | AC 30mA | DATA HOLD | AUTO POWER OFF | RMS

Application:

Quick Health Check of Metal-Oxide Surge Arrester by Measuring 3rd Harmonic. Leakage current Tester as per IEC 60099-5.

Specially designed for Distribution and Railway Metal Oxide surge arrester at height.

Model ALCL-40

GENERAL

This model ALCL-40/40H mainly measures very small leakage current and its 3rd Harmonic current of grounding line connected with Arrester, etc. The CT which is applied to this model is hardly affected by external magnetic field and therefore, model ALCL-40 can measure leakage current very accurately in high magnetic and electric field.

SPECIFICATIONS

CT Sensor

CT	:	φ37mm
Opening/closing of the jaw	:	Spring operation
Withstanding voltage	:	AC2200V, 1 minute between the core of CT and CT outer case

Measuring and Display Unit

Measuring function	:	Leakage current, Harmonic current(Fundamental and third harmonics)
Measuring method	:	CT clamp sensor
Measuring range	:	0-300μA/3mA/30mA(3range manual)
Input frequency	:	45-60Hz
AC conversion	:	AC coupled true rms responding
A/D conversion	:	Dual slope integration mode
Display	:	LCD 3200 count max
Sampling rate	:	2 times/sec
Over indication	:	"OL" mark on LCD
Low battery Indication	:	"B" mark on LCD
Data hold function	:	"DH" mark on LCD
Auto power off	:	Approx.10 minutes later after power on
Power supply	:	9V Alkaline battery 6LR61 × 1
Power consumption	:	Approx. 20mW
Limitation of circuit voltage	:	Less than 500V AC
Operating Temperature	:	0～40℃, less than 80%RH, w/o condensation
Storage Temperature	:	-10～60℃, less than 70%RH, w/o condensation
Dimensions and Weight	:	Unit:/95(W)x160(H)x34(D) mm, 260gs CT:/135(W)x166(H)x61(D) mm, 1000gs

AC Accuracy

Accuracy (23℃±5℃, less than 80%RH)

Range	Resolution	Accuracy(45～65Hz)	Max.Applicable Current
300μA	100nA(0.1μA)	1.2%±8digit	40A rms
3mA	1μA(0.001mA)		
30mA	10μA(0.01mA)		

Harmonic Current Measurement (Fundamental and third harmonics)

Measuring method	:	PLL method
Minimum fundamental input	:	More than 3% of full scale in each range
Accuracy	:	(1%±5digit)±(Basic accuracy of ACA) -(Error by neighboring harmonics) * Accuracy specified: More than 4% harmonics are necessary against fundamental harmonics
Accessories	:	Soft case: 1 Instruction manual: 1

THE MOST PRECISE LEAKAGE CURRENT CLAMP TESTER IN THE WORLD

Generally, it is said that the metal oxide surge arresters in high voltage lines should be replaced within 15 years after the start of use under the normal conditions:

Of course, the duration of arresters would be shortened by various causes like as direct surge attack, internal abnormal voltage, vibration & shock to outer pole component, etc. and the regular & adequate inspections are required in order to avoid serious accidents in high voltage distribution networks.

In European standard IEC60099-5 Section 6 “Diagnostic indicators of metal-oxide surge arresters”, the following inspection methods are introduced:

*Fault Indicators *Disconnectors *Surge Counters *Monitoring Spark Gaps *Temperature Measurements
*Insulation Resistance Measurements *Leakage Current Measurements (Capacitive, Resistive, Harmonics, etc.)

Among various methods, the leakage current measurements (except for resistive) are only effective, as others are mostly unreliable under the very severe field conditions and some are impracticable due to impossibility of power line off for inspections.
ALCL-40H/ALCL-40L are adapted to "B1" method of IEC60099-5 Section 6.

ACTUAL MEASURING FIELDS


Transformer Substation

Railway Station




Power Line

The most important factor for measuring leakage current is how to detect the real & accurate values (less than 1mA) free from influences of strong magnetic & electric fields in the actual measuring places as above.

Models ALCL-40H/ALCL-40L have quite unique & sophisticated CT which enables to measure very low range current with minimum resolution of 0.1μA, defending such outer electric noises.

For example, the comparison list for ordinary & ALCL CT is as followings:

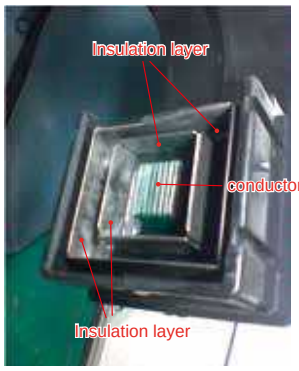
Range	ALCL-40/-40L	Ordinary Model
Accuracy	1.2%	±5%±10%
Minimum Resolution	0.1μA	10μA
Influence of Outer Magnetic Fields	Less than 10μA (400A turn/15cm)	Less than 1mA (20A turn/5cm)

CT CORE STRUCTURE COMPARISON

Ordinary

Plane clamp head is easily to be come dirty. Magnetic can not coherent with single isolation layer easily.

ALCL-40



Clamp head coherent mutually. Magnetic line is easily to be Conducted.
Double-deck isolation & insulation will not be interfered easily.

The operation of such field measuring instruments must be rather simple and easier. so that the inspection & maintenance can be made more frequently and the measured data compared correctly, which will lead to find out the problems of surge arresters adequately.

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