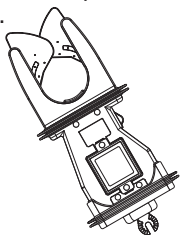


# Arrester(metal oxide surge arrester) Leakage Current Clamp Tester ALCL-80X

## English Manual (ver. 1.30)

Thank you very much for purchasing ALCL-80X. Before using, read this instruction manual carefully and use it correctly. In order to refer the instruction manual anytime, keep it always at a safe and available place.



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Webpage; www.multimic.com/e



## Warranty Sheet

In a case of failures, due to manufacturing defects, contact the shop/ distributor where you purchased product or directly inform us. The warranty period of this product is one year from the date of purchase.

<b>Warranty</b>	
[User Information]	
Street Address:	
Full Name:	
Model :ALCL-80X	
Serial number :	
Warranty period:15month after shipment by factory	
Distributor/ shop name:	
<ul style="list-style-type: none"> <li>This warranty sheet is required for after-sales service.</li> </ul>	
<b>Note</b>	<ul style="list-style-type: none"> <li>This warranty sheet is not to be reissued. For your convenience, fill in above information and keep it with the end user of the instrument.</li> </ul>
<b>Warranty policy</b>	
1. In cases of a malfunction occurs during normal use, within the warranty period, it is to be repaired free of charge, based on the warranty provisions.	
2. The warranty sheet is not to be reissued.	
3. Even during the warranty period, under the following circumstances, items are not to be repaired free of charge.	
A) Failure due to improper handling	
B) Failure due to handling and use, outside design specifications	
C) Failure due to modifications or repairs other than our company or those commissioned by our company	
D) Other failures not considered to be manufacturing defects	

## For Safe Use

In order to use this instrument safely, follow this instruction manual strictly and attention to following cautions and warnings described below.



Warning

In cases of misused, it causes serious injury to the body or danger to the life of the end-user. Need to pay extra attention when used.



Cautions

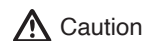
If it is misused, it causes damage to the instrument. Or it disturbs the function of the instrument as specified.



Warning

- High voltage equipment around the surge arrester is extremely dangerous. There is a risk of electric shock if used incorrectly.
- Never use on power high voltage lines. It may cause a serious accident.
- Before using, be sure to follow insulation distances specified by each electric power company. Connect to an insulating rod with a necessary length. Never use this unit alone in order to avoid accidents.
- Secure firmly with a screw which is strong enough to support weight of the unit and the insulating rod, in order to prevent it from falling off. If dropped, the shock may cause damage to workers or surrounding facility.
- Never hit the ground after use. It may cause malfunction.
- Check whether the surrounding environment is safe before use.
- Even while operating a smartphone or a display, ensure the safety of the unit connected to the insulation rod. If the unit falls from the top of the insulation rod, it may lead to an unexpected accident.
- Be sure to clamp on the surge arrester secondary grounding wire. Very dangerous for safety when clamped on the primary side. Also, be careful not to touch the primary side, as it may damage the instrument.
- Never use it under conditions where the surge arrester is damaged. It may lead to a big accident.
- Do not use without the rubber and the battery both covers and protects the ZCT part. Also, if found any problems with ALCL-80X or the hotstick, discontinue use.
- Due to safety reasons, do not use under abnormal condition, such as rain, lightning, eruption, storm, earthquake or tsunami.
- Please do not use for load current measurement.
- If it is difficult to clamp the surge arrester on the secondary side, do not try to clamp the instrument forcibly as it may lead to an accident.
- Do not use for any purpose other than measuring electrical currents.
- Because the ZCT are very sensitive and are vulnerable to stress from all directions, Do not bend or twist when detach and insert.

- Do not force the CTs to close and apply strong stress or roughly use.
- Please contact each manufacturer for safety management values for surge arresters.



Caution

- If the unit becomes dirty, use a soft cloth with moistened water or a neutral detergent in a small amount and wipe lightly. Do not use abrasive or machine solvents. At the cover parts, it may cause deterioration of physical property.
- Do not use if water gets inside or its surface is wet.
- Do not wash by immersing it in water or in similar liquid.
- Do not dry it in a microwave oven or in similar heaters.
- Do not expose to direct sunlight for a long time.
- ZCT is a precision structure and should be handled with care.
- It is NOT dustproof or waterproof structure. Do not use or store in environment with harmful smoke or gas containing salts, sulfur, ammonia components or in ultraviolet light, etc. It may cause malfunction.
- Some kinds of oil may deteriorates physical property of the cover part, and it may cause malfunction. Wipe oil away lightly with a soft cloth, moistened with water or a neutral detergent, a small amount.
- Refrain from storing it in an environment that has mold etc.
- Do not store it in an environment that exceeds the specified operating temperature and humidity.
- Do not roast this unit with a firearm such as a lighter
- Cannot be used underwater.
- Do not give a strong shock to ZCT.
- Do not use as a lightning rod.
- Do not use as a hammer etc.
- Before measurement, be sure to pair with a display or a smartphone. Without the pairing, it does not show the reading values.
- Insulation condition is secured by an insulating rod. However, depending on the environment, it is recommended to wear insulation gloves. Perform the work, according to each operation rule.

The symbol marks are shown below:



Warning

In order to protect the human-body and the unit, refer to the instruction manual and pay close attention.



Cautions

In order to avoid accidents or malfunction caused by incorrect use, refer to the instruction manual.



The symbol indicates that the Bluetooth wireless technologies are employed.

Trademarks (TM, (R) mark, etc. are not specified in this manual.)  
 • Bluetooth is a trademark of Bluetooth SIG, Inc.  
 Multi Measuring Instruments Co., Ltd. uses it under a license agreement with the company.  
 • Android and Google Play are trademarks of Google LLC  
 • The iOS trademark is used under a license agreement with Cisco Systems, Inc.USA.

## Specification

### Electrical Specificaiton

Measuring part	Specification			
Measurement	AC Harmonics current AC RMS leakage current			
Measurable harmonics	MDU series:Fundamental/3rd Multi-Tracer:Fundamental to 49th			
A/D converting method	Dual slope integration mode			
Sampling rate	1-time/ less than second			
Measuring frequency	45~65Hz(Fundamental)			
Influence of Magnetization	Effect of about 300μA in a magnetic field of 400A/m (depending on measurement conditions)			
AC leakage current RMS measurement	Conversion	RMS Detection Method		
	Crest Factor	<3 (0~50% of range)	<2 (50~100% of range)	
Harmonic current measurement	Measuring method	PLL method		
	Min. fundamental current input	More than 3% of 1mA range		
Max. input current	AC40A rms			
Range	Resolution	RMS measurement	Harmonics current	Range switch
1000μA	0.1μA	±1.2%rdg ±8dgt	±2%rdg ±5dgt	Auto range
10mA	0.001mA			
100mA	0.01mA			
1000mA	0.1mA			

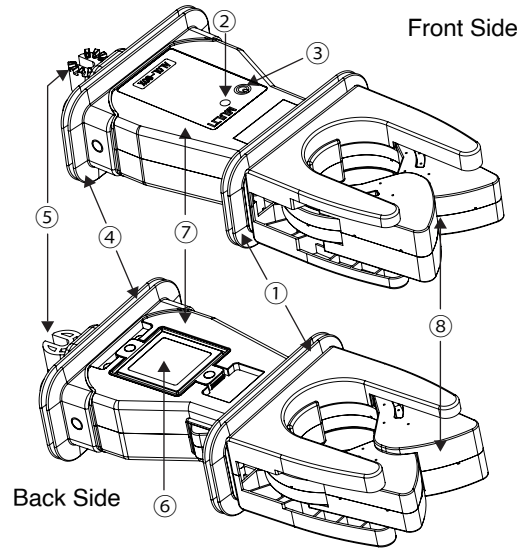
### General Specification

Contents	Specification
Insulation Resistance	100MΩ with DC 1kV voltage (Between the CT~ hotstick grip)
Withstanding Voltage	AC 23kV/5min (Between the CT~ hotstick grip)
Applicable Circuit Voltage	Use on the grounding wire of the secondary side of the insulated surge arrester. The safety specification depends on the insulation performance of the hot stick connected.
Operating Temperature and Humidity Range	0~40°C, 80%RH max (without condensation) with alkali battery
Measurement of temperature	Reference value displayed at "Multi-Tracer"
CT-shape	Split clamp type circular ZCT
CT inside Diameter	φ68mm
Standard	IP11(IEC 60529:1989+AMD1:1999+AMD2:2013) ETSI EN 300 328 V2.2.2 / EN 62479:2010 EN IEC 62311:2020 / EN IEC 61326-1:2021 EN 61000-4-2:2009 / EN IEC 61000-4-3:2020 EN 61010-1:2010/A1:2019 / EN 61010-2:032:2012
Battery	LR6*4pcs
Operation	Power ON/ OFF (other function is at a paired unit)
Low Battery Indication	light up of LED on the main-body
Weight	1550g(with batteries inside)
Size	400*168*86mm

## Accessory

Contents	Specification
Included items	Instruction Manual
	M-tracer Instruction Manual
	Carrying case
Optional item	Display unit(MDU series)
Excluded items	Smartphone
	Insulation rods

## Name of parts and function



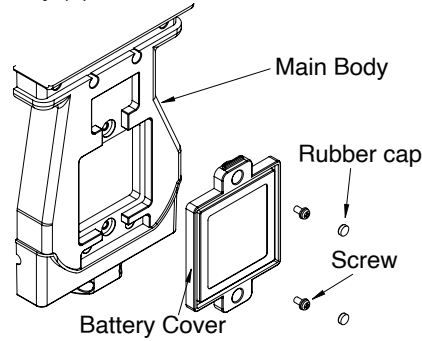
Name of parts	Function
① Upper Protection Cover	Protects the body from impact when dropped
② LED light(Red)	To display Power On/ Off (or to show the low battery condition)
③ Power Button	To power On/ Off
④ Bottom Protection Cover	Protects the body from impact when dropped
⑤ Connection Joint	To connect with an insulation rod
⑥ Battery Cover	Open when to replace batteries
⑦ Main Body	To store CT and PCB
⑧ ZCT	Equipped with a high-precision ZCT that opens and closes during measurement

## Handling Instruction

### Replacing Batteries

- Be sure to power-off and take off the battery-cover on the back-side and place batteries in right directions.

- Place the battery-cover and secure the cover with screws by (+) screw driver.



## Warning

### Possible electrical shock

- If opening the battery-cover, return to the original position.
- Do not apply to conductors with the battery cover open.
- Low Battery Indication; when low battery, the red LED on the main-body starts lighting.

## Measurements

<1> Press the Power switch to turn on the power.  
 <2> Pair with the display unit(MDU series or Multi-Tracer). When completed, the blinking speed will increase.  
 <3> In case of using the display unit (MDU series), when it pairs successfully, Bluetooth® is displayed on the LCD. For more details, see the instruction manual of MDU series. In case of using Multi-Tracer, in prior, ALCL-80X needs to be registered. After it is registered, the function of selecting measuring points on a map, records of measured values and measuring points is available. The records are on Multi-Tracer or on a server (Basically our server).  
 If the recording and storage functions are not required, it is available to choose only measurement mode. For Multi-Tracer, it may take some time to register a device. Before using, it will be smooth if you complete your unit registration in prior.

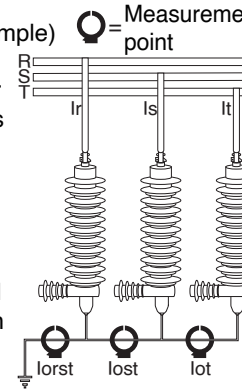
<4> Clamps the secondary side grounding wire of the undamaged surge arrester into the CT part of ALCL-80X.  
 <5> Operate MDU series or Multi-Tracer, select start /stop measurement or switch measurement results and display to check each measured value of RMS leakage current/fundamental and 3rd harmonics current. As an example, on Multi-Tracer, the measured value display part of each phase is served as a start /stop button. In addition, on Multi-Tracer, understand that it is not to distinguish which phase of the surge arrester secondary side is a previously measured value. On MDU series, it is also not possible to distinguish

between the same because it has no recording function (MDU-200X records on internal memory).  
 <6> On the MDU-200X, pressing the RECORD switch once will hold the data, pressing it again will hold the MAX (PEAK), and pressing it again will cancel all holds. To record on the internal memory by pressing the RECORD switch under the each hold conditions. Hold function on Multi-Tracer are MAX only.  
 <7> After the measurement work, move the instrument away from the surge arrester secondary side, check the surrounding safety, and press power button of the instrument to power off. When the connection target is unpaired, the power is normally turned off.

## Caution

- When an overcurrent exceeding the measurement range is applied to the CT, it may cause damages to the instrument.
- This instrument is a precision mechanical equipment. When handling, be careful not to apply shock, vibration or excessive stress.

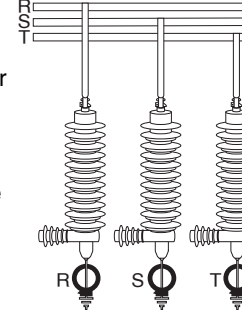
- Measuring Method(example)  
 When the secondary side of the surge arrester of the distribution line is wired with a crossover and current value can be measured only with the crossover wire.



The calculation method is described as a hint in Multi-Tracer.

When measuring on the secondary side of the testing surge arrester at the substations or distribution lines.

When clamping, be sure to connect it to the hot-stick that matches the specified voltage.



## Bluetooth® function

This unit requires Bluetooth communication. For the dedicated application "Multi-Tracer" in order to display, record or storage measurements, in prior, download and install Multi-Tracer at APP Store or at Google play.

In order to download Multi-Tracer, because it requires each ID, obtain necessary ID in advance. For communication costs related to the download, it is not our responsibility. Proceed the download as it is necessary. For obtaining necessary ID, communicate with customer-center of a dedicated mobile -phone company. In addition, we are not responsible for any problems or costs related to downloading. Proceed download and install based on responsibility of its user.

## Caution

- This product has a low power data communication system based on the Radio Law. (Built-in equipment; EYSHCN: 001-A10745)
- The communication range varies depends on the surrounding environment such as other radio waves and devices.
- This product uses communication frequencies of the 2.4 GHz band. If another wireless devices are using similar communication frequencies near this product, it may disturb wireless communication of both devices. Radio-wave interference may occur. In this case, stop other wireless devices or change the place where this product is used to avoid radio-wave interference.
- Multi-Tracer™ is free of charge. However, the internet connection fee is on user's payment for downloading or using the apps.
- The Bluetooth communication function may not works on all mobile terminals. Multi-Tracer™ may not work on all mobile devices. Use of devices with radio-communication requires approval in the country of use, and use of the instrument in a country or a region may be subject to penalty as a violation of related laws.

## After Sales Service

In the unlikely event of failure, please contact your distributor or our agent at where you have purchased. If you contact a distributor or agent which are different from the one you have purchased, it may be difficult to provide our after-sales service. Please be noted.

When you are sending the item for repair, put it in a dedicated packaging box enclosed for this delivery, wrap it sufficiently not to be opened or damaged easily, along with the warranty card including information clearly describing the address, name, and details of the failure, and return to designated retailer/agent where you have purchased the item.