

# ***SEFRAM 82***

**CONTRÔLEUR D'ORDRE ET DE PRESENCE DE PHASE  
PHASE ROTATION TESTER**

## **Notice d'utilisation User's Manual**

**Sefram**



## FRANÇAIS

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## ENGLISH

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## 1. Introduction

Remarque

Cet instrument a été conçu et testé selon les prescriptions de la norme internationale IEC Publication 348, Safety Requirements for Electronic Measuring Apparatus, IEC-1010 (EN61010).

Suivre scrupuleusement les prescriptions de sécurité lors de l'utilisation.

**ATTENTION**

**Lire les prescriptions de sécurité avant toute utilisation**

## 2. Prescriptions de sécurité

- Lire ces prescriptions avant toute utilisation de l'appareil.
- N'utiliser l'appareil que dans les limites spécifiées. En dehors des limites, l'appareil pourrait être endommagé et la sécurité de l'utilisateur non garantie.
- Avant toute utilisation, vérifier le bon état des cordons de mesure (absence de craquelure). Dans le cas contraire, remplacer les cordons.
- Toujours utiliser des fusibles de caractéristiques identiques à celles spécifiées, en particulier la tension de service et le pouvoir de coupure.
- Conditions d'utilisation:
  - (1). Utilisation à l'intérieur
  - (2). Catégorie d'installation : 600V - CAT III
  - (3). Degré de pollution : 2.
  - (4). Altitude d'utilisation : 2000 mètres maximum
  - (5). Humidité relative : 80% Max.
  - (6). Température d'utilisation : 0°C ~ +55 °C.
  - (7). Température de stockage : -20°C ~ +70°C.
- Les symboles suivant sont utilisés sur l'appareil :



Double isolement



Danger ! Risque de choc électrique



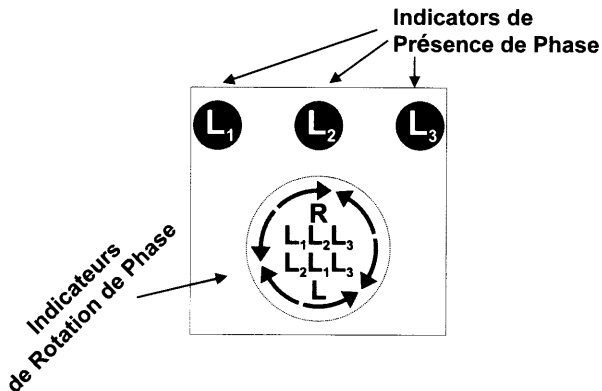
Attention ! Se référer au manuel

### **3. Caractéristiques**

- L'appareil inclus le test de présence de phase et le sens de rotation des phases
- Cet appareil est l'outil idéal pour l'installation de dispositifs électrique ou électrotechnique.
- Autonome, il ne nécessite pas d'alimentation
- Conforme à la norme IEC 1010
- Livré avec kit de connexion de sécurité.
- Protection : par fusibles internes (2 fusibles F500mA / 250V HPC - 5 x 20mm)

#### 4. Utilisation

- L'indication de présence et de rotation se fait par un afficheur LCD à fort contraste. Dans la partie haute, on trouve les indications de présence, dans la partie centrale, on trouve l'indication du sens de rotation.



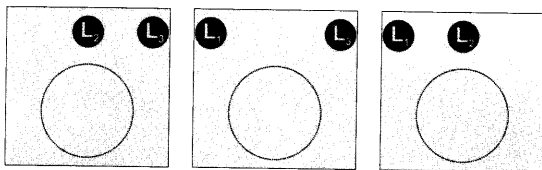
• **Utilisation en testeur de présence de phase:**

- (1). Brancher les cordons sur les entrées R(L1) –S(L2)–T(L3)  
En respectant les couleurs
- (2). Brancher au dispositif à contrôler (source d'énergie)
- (3). S'assurer que les afficheurs LCD de présence de phase sont tous allumés. Sinon, il y a rupture ou absence sur une ou plusieurs phases.

Si « L1 » est éteint      ⇒      La phase connectée au cordon « R » est absente

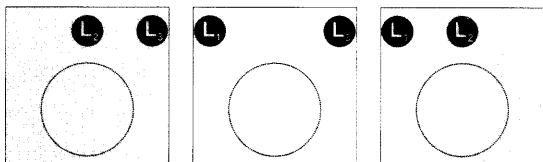
Si « L2 » est éteint      ⇒      La phase connectée au cordon « S » est absente

Si « L3 » est éteint      ⇒      La phase connectée au cordon « T » est absente

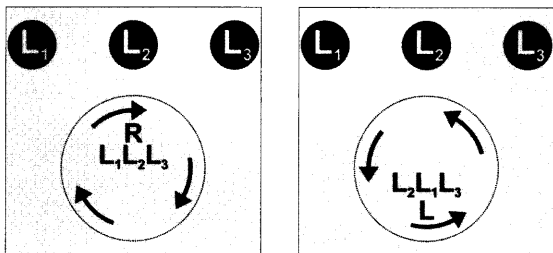


(4). **Vérification de l'ordre des phases**

Pour qu'il y ait une indication de sens de rotation des phases, il faut que les 3 phases soient présentes. S'il manque une seule des 3 phases, l'afficheur LCD central restera éteint. Il faut alors revoir les branchements ou le dispositif à tester.



Lorsqu'il y a présence des 3 phases, le sens de rotation est indiqué sur le LCD central (L indique le sens anti horaire, tandis que R indique le sens horaire).





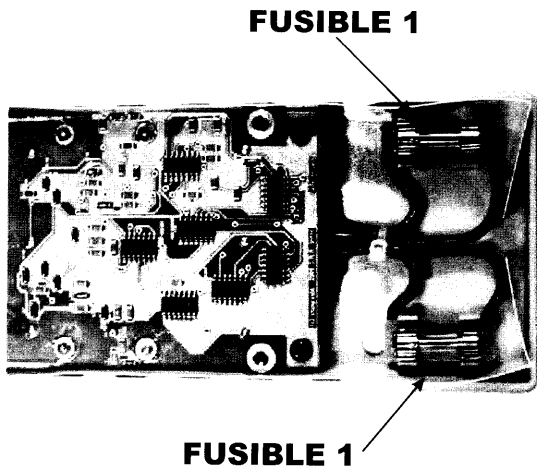
## 5. Spécifications

<b>Tension d'entrée:</b>	40V AC à 700V AC max.
<b>Afficheur :</b>	de type LCD
<b>Fréquence:</b>	15 à 400 Hz.
<b>Circuit de mesure:</b>	électronique (pas de dispositif mécanique)
<b>Alimentation:</b>	autonome, courant drainé < 3mA
<b>Sécurité:</b>	IEC-1010 Cat III. - 600V
<b>Dimensions:</b>	150(L) x 72(l) x 34(H) mm.
<b>Masse:</b>	160g environ
<b>Accessoires:</b>	Cordons avec pinces crocodile (Rouge, blanc et bleu), Housse de transport, manuel d'utilisation
<b>Protection :</b>	Par 2 fusibles F500mA / 250V - internes

## 6. Maintenance

### • Remplacement des fusibles

- (1). Débrancher les cordons de test. Dévisser le fond le boîtier et remplacer le ou les fusibles par un modèle F500mA / 250V HPC
- (2). Revisser le fond de boîtier.



- Nettoyage:

### **ATTENTION**

**Afin d'éviter tout risque de choc électrique, ne jamais exposer le boîtier à l'eau lors de l'utilisation**

Nettoyer périodiquement le boîtier à l'aide d'un chiffon doux et humide. Ne pas utiliser de solvant

## **SAFETY RULES**

**CAUTION**



**RISK OF ELECTRIC SHOCK**

This tester has been designed with your safety in mind. However, no design can completely protect against incorrect use. Electrical circuits can be dangerous and/or lethal when lack of caution or poor safety practices are used.

Do not carry out field measurements on either the power system grounding, during periods of forecast lightning activity, in areas that encompass the station being measured or of the power network connected to the station being measured. In the event that lightning occurs, stop all testing and isolate any temporarily installed test spikes.

Preparations for testing of power system grounding can leave personnel vulnerable to exposure caused by faults at or fed from the system under test, transferred potentials from remote test grounds, and inadvertent line energisations.

While the probability of the occurrence of one of these events is low, personnel safety will, nevertheless, be enhanced by the following:

When working near high tension systems rubber gloves and shoes should be worn.

Work on clean, dry crushed rock or an insulating blanket.

Avoid bare hand to hand contact between the tester and extended test leads.

When using the tester with test leads, ensure that they are safe and properly authorized

Disconnect the tester from any external circuit when checking or changing the Fuses.

**CAUTION**



**READ THE MANUAL**

Follow the instructions in the Manual for every measurement. Read and understand the general instructions before attempting to use this tester

## **SAFETY CHECK**

Before using the tester check the condition of the test leads and the fuses. This is done by using a proving unit.

The test leads must be free of cracks or any damages and must be insulated as when they were new.

Fuse replacement is described later in this user's manual..

When changing the fuses by removing the cover to access the internal circuitry, always disconnect the test leads.

When replacing the fuse use only the type specified, HBC fuse, and insert correctly into the fuse holder.

Always double check the lead connections before making measurements. This instruments has 2 internal fuses. For increased safety, use fused test leads (optional).

## **DON'T TOUCH**

Don't touch exposed wiring, connections or other "Live" parts of an electrical circuit. If in doubt, check the circuit first for voltage before touching it.

Do not use cracked of broken test leads.

**THIS INSTRUMENT SHOULD ONLY BE USED BY A  
COMPETENT, SUITABLY TRAINED PERSON.**

**REMEMBER**

**SAFETY IS NO ACCIDENT**



**CAUTION RISK OF ELECTRIC SHOCK**



**CAUTION READ THE MANUAL**

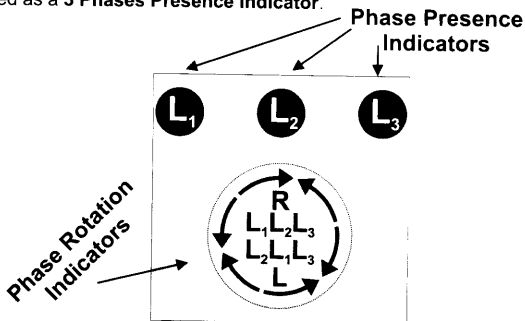
## GENERAL DESCRIPTION

This Test Instrument is a **3 Phases Presence and Rotation Indicator** which display the results on a large "high contrast" Liquid Crystal Display.

**It does not need any battery** as it derives its power from the system under test.

It can be utilized on a **3 Phase Powered System** (the supply side) without having to worry about damage to the tester. Furthermore, it has **internal fuses**, so non fused test leads can be utilized.

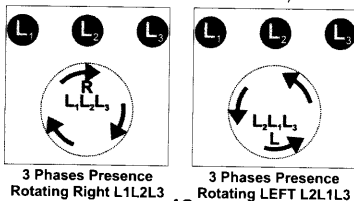
When utilized on a 3 Phase Powered System, the instrument is then utilized as a **3 Phases Presence Indicator**.



When utilized on a 3 Phase Powered System, the instrument is **also** utilized as a **3 Phases Rotation Indicator**.

When utilized on a 3 Phases Powered System, this instrument is a rotary field indication instrument which display all three phases by showing up its corresponding LCD Phase Presence Indicators (L<sub>1</sub>, L<sub>2</sub> and L<sub>3</sub>).

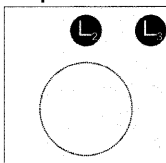
It display the rotation (clockwise or anti-clockwise) on the LCD.



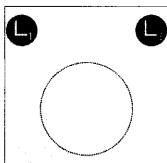
This instrument represents the quickest and Easiest way for verifying the presence and rotation of a 3 Phase System.

You can, before connecting Supply to Load, and from the supply side;

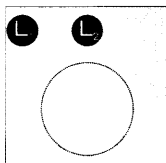
**Quickly and easily verify the presence of the three Phases on a 3 Phases Power System. The LCD will indicate the presence of each respective Phase with it's Phase presence indicators.**



L1 Missing  
No Rotation Indication

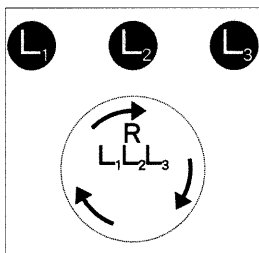


L2 Missing  
No Rotation Rotation Indication

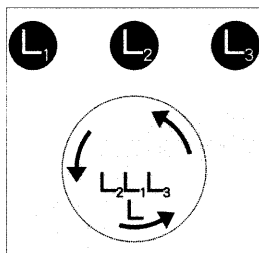


L3 Missing  
No Rotation Rotation Indication

**You can confirm the Phase Rotation on a Powered 3 Phase System.**



3 Phases Presence OK  
Rotating Right L1L2L3



3 Phases Presence OK  
Rotating LEFT L2L1L3

The corresponding **Arrows** and **L<sub>1</sub>, L<sub>2</sub> and L<sub>3</sub>** will clearly indicate the rotation of the phases.

## **BRIEF PRODUCT DESCRIPTION**

This 3 Phases Presence and Rotation Indicator has 3 test leads which connects to the 4 mm female sockets on the tester, on the one side.

These Test leads are color coded.

L1 = Red which connects to L1 on the tester.

L2 = White which connects to L2 on the tester.

L3 = Blue which connects to L3 on the tester.

On the other side of the test leads are the probes, also color coded.

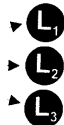
The tester has three individuals LCD Phase presence Indicators

LCD for Individual Phase Presence Indication = L1

LCD for Individual Phase Presence Indication = L2

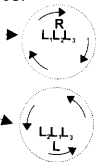
LCD for Individual Phase Presence Indication = L3

Please note that any of these LCD Indicators will only start To light up if more than 80Vac is present between any 2 phases.



The LCD to display clockwise rotary direction.

The LCD to display counter clockwise.



## **OPERATING INSTRUCTIONS**

### **Determination of the rotary field direction and phase presence**

On a 3 Phase System, the sequence of the 3 phases determine the rotation of a 3 phase motor connected to that system.

The correct 3 Phase Sequence L<sub>1</sub>, L<sub>2</sub>, L<sub>3</sub> results in a clockwise rotation of the connected motor.

Connect the Test Leads to the sockets of the Instrument, respecting the correct color. Red to L<sub>1</sub>, White to L<sub>2</sub>, Blue to L<sub>3</sub>.

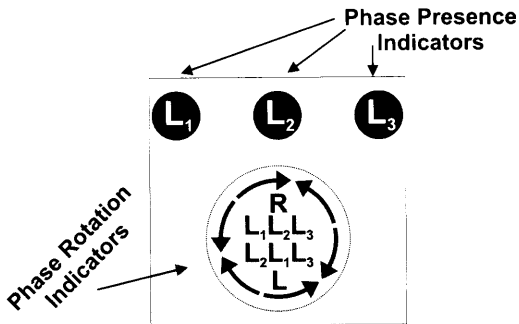
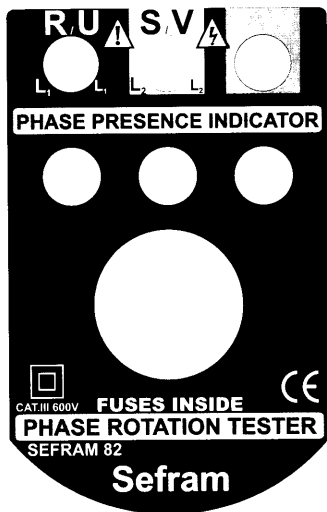
Clip the test probes to the Powered three mains phases, L<sub>1</sub>, L<sub>2</sub>, L<sub>3</sub>

When connecting to a voltage superior to 40V AC, the corresponding LCD Indicator will show, indicating the presence of the voltage on it's corresponding lead (L<sub>1</sub>, L<sub>2</sub>, L<sub>3</sub> LCD).

If the LCD (Right arrows) L<sub>1</sub>-L<sub>2</sub>-L<sub>3</sub> is illuminated, clockwise rotary field is present.

If the LCD(Left arrows) L<sub>3</sub>-L<sub>2</sub>-L<sub>1</sub> is illuminated, a counter clockwise rotary field is present.

## FRONT PANEL and LCD LAYOUT





## **PRINCIPLE OF HOW IT WORK**

As this instrument takes its power from the circuit under test, it has a power supply circuit which derives its power from the system. That supply circuit regulates a +5V for the circuitry. This is why you need a minimum of 40Vac before this instrument is operational.

The first circuit is the 3 Phase presence indicator, which is shown by the individual Phase Presence LCD Indicators and the second circuit is the three phase sequence indicator by LCD indication.

3 Phase Presence Indication circuit:

The voltage measured between phases is utilized to trigger the corresponding Phase Presence LCD indication. Once that voltage is high enough, its presence is shown on the LCD Indicator.

3 Phase sequence indicator circuit:

The sequence of these measured voltages are fed into a digital circuit which compares which phase sequence to indicate and indicate it on the LCD.

An oscillator clock the LCD to increase its life duration.

## **PREPARATION FOR USE**

### **Fuses:**

In doubt, check the fuses using a ohm meter.  
Please note that this instrument will not indicate anything, should the fuses be blown.

### **Test Leads:**

Check the test leads for defects or cracks. Replace if cracked or damaged. Only replace with the same type

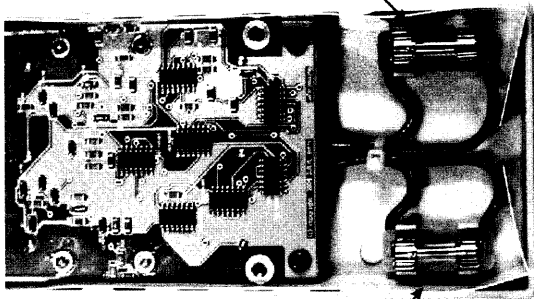
### **Cleaning:**

Use a damp cloth to clean the case. Do not use chemicals

## **FUSES REPLACEMENT**

Unscrew the back cover and replace the faulty fuse(s) with the same type, then screw the cover back into place correctly  
Once you open the case, you will see the fuse as on the photo below.

**FUSE 1**



**FUSE 2**

## **SPECIFICATIONS**

### **ELECTRICAL**

#### **Determination of the Phase Presence**

Nominal Voltage for Phase Presence Indication (the voltage required for the LCD L<sub>1</sub>, L<sub>2</sub>, L<sub>3</sub> indicators to come on)... From 40Vac to 700Vac.  
Frequency Range ..... From 15Hz to 400Hz.

#### **Determination of the Phases Rotary Field Direction:**

Direction Indication by LCD Display (the voltage required to have the LCD Direction Arrows to indicate and the L<sub>1</sub>L<sub>2</sub>L<sub>3</sub> or L<sub>3</sub>L<sub>2</sub>L<sub>1</sub> indicators to show) ..... From 40 to 700Vac.  
Frequency Range ..... From 15Hz to 400Hz.

#### **Protection**

OverLoad..... 600V (between all terminals)  
Over Voltage ..... Class III - 600V towards ground.  
Fuses..... 2 X 500mA, 5 X 20mm, HBC,250V Fast Blow

#### **General**

Current Consumption ..... Max 3 mA.

#### **MECHANICAL**

Size..... 72 x 150 x 33.8 (mm)  
Material..... Polycarbonate /A BS  
Weight (less carrying case)..... 158.5g  
Display..... Liquid Crystal Display

#### **ENVIRONMENTAL**

Operating temperature Range:..... 0 °C to + 55 °C  
not in full sun!!!!  
Storage Temperature:..... -20 °C to + 70 °C

#### **CLEANING**

Clean the instrument case with an anti-static cleaner and wipe with dry cloth.

#### **Pouch**

Vinyl.

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