

# SFRA Measurement Cables

Quick Reference Card



## Introduction

The SFRA measurement cables comply with FRA measurement requirements according to IEC 60076-18. Two cable kits are available: **SFRA Classic Plus** and **IEC 1**.

## SFRA Classic Plus

This is the default cable shipped with the M5400 in the 18 m (60 ft) length, with classic 3.6 m (12 ft) fixed-length ground connection.

It provides ring-style reference ground connection for:

- Shorted lead testing
- IEC 60076-18 FRA Method 1 (shortest braid) grounding technique with optional braid kit



**SFRA Classic Plus**

## IEC 1 with Braid Kit

Use this kit if you test only by the IEC 60076-18 Method 1 technique (shortest braid). The braid kit allows you to test on bushings up to 800 kV level.



**IEC 1 Cable**



**Braid Kit**

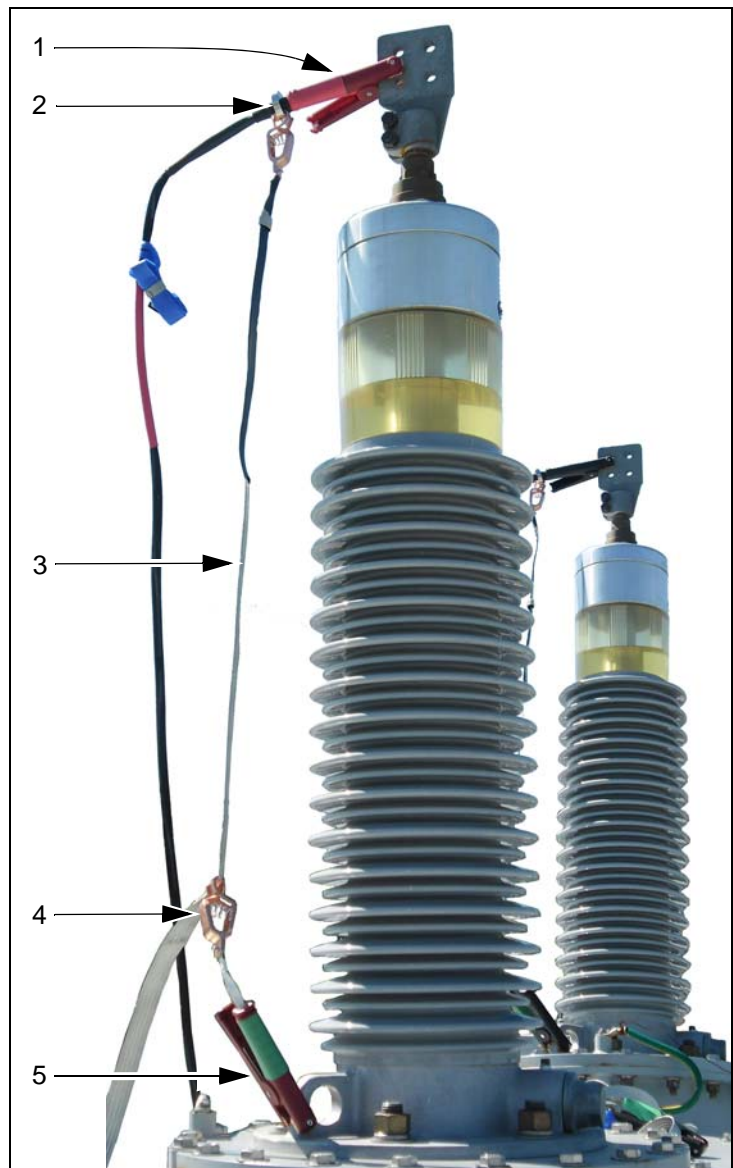
## Sample IEC Method 1 Connections

The photo to the right illustrates typical IEC Method 1 connections to transformer bushings:

- 1—Lead connection
- 2—Cable shield ring connection
- 3—Ground extension braid
- 4—Shortest braid connection
- 5—Bushing-flange-ground clamp

To set up IEC Method 1 connections:

1. Confirm that you have a good measurement cable and cable connection. To do this, run the shorted lead test that is appropriate for your cable type. The shorted lead tests are given on [page 3](#).
2. Referring to the photo at the right, attach the **Red** (input and reference) lead (1) to the center conductor of the bushing.
3. Connect the ground extension braid (3) to the cable shield ring (2).
4. Run the ground extension braid down the full length of the bushing.
5. Connect the ground extension braid to the bushing flange by using the bushing-flange-ground clamp (5).
6. Pull the ground extension braid (3) taut and attach (4) the shortest braid clamp.



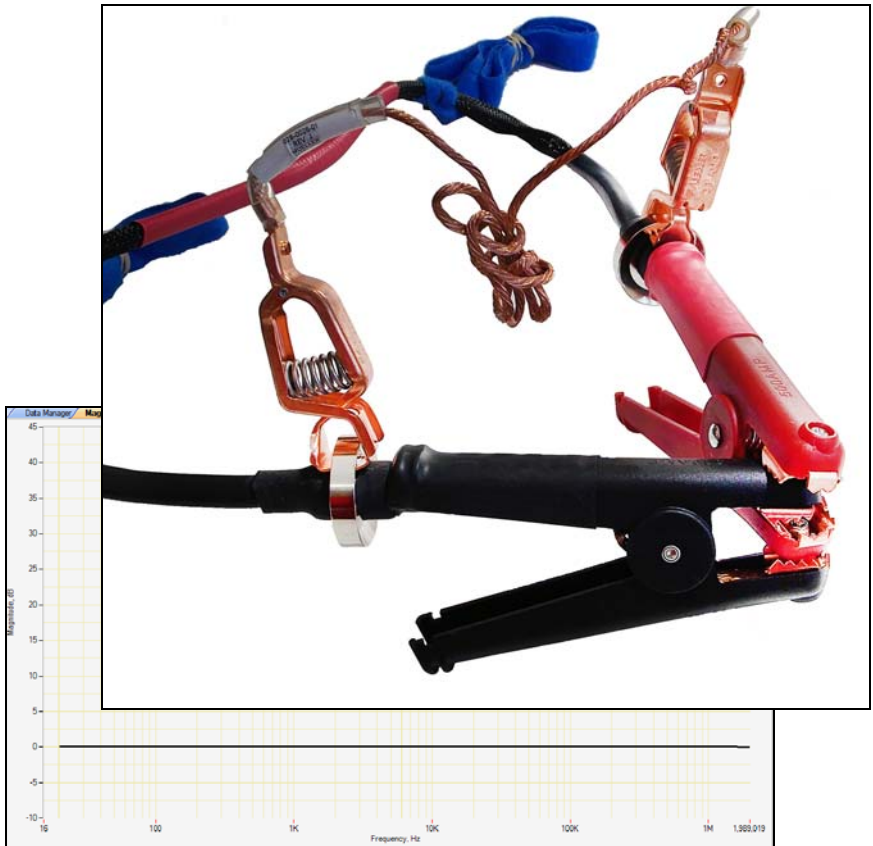
Follow this procedure a second time to connect the **Black** (measurement) lead.

This procedure fulfills the Method 1 test setup requirement per IEC Standard 60076-18 for Power Transformers – Measurement of Frequency Response.

## Shorted Lead Test Procedure with Expected Test Results

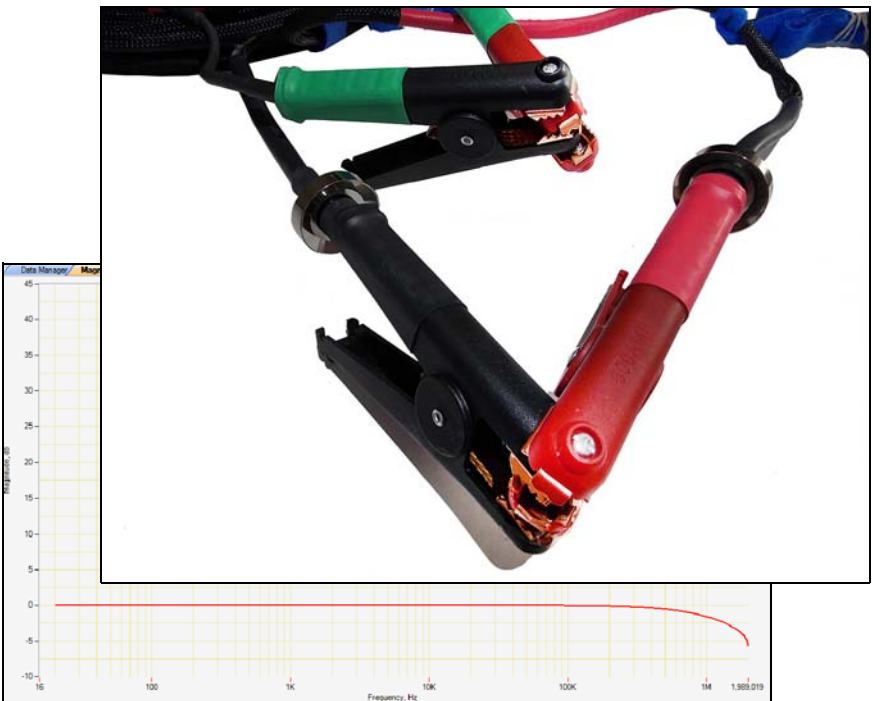
### New Ring-Style Cable Shield Connection

1. Short the **Red** and **Black** leads by connecting the clamps to one another.
2. Connect the ground reference rings on **Red** and **Black** leads using Doble jumper as shown in photo.
3. Observe expected flat line test response on the 0 dB (Y axis) from 20 Hz to 2 MHz (X axis).



### Classic Fixed-Length Shield Connection

1. Short the **Red** and **Black** leads by connecting the clamps to one another.
2. Connect the **Green** ground reference clamps as shown in photo.
3. Observe expected line test response on the 0 dB (Y axis) from 20 Hz to 2 MHz (X axis), noting a roll-off.



## SFRA Classic Plus Part Numbers

18 m (60 ft)	Kit with 2 cables	030-2036-01
30 m (98.4 ft)	Kit with 2 cables	030-2036-02
	Braid Kit	030-1945-01

## IEC 1 Part Numbers

18 m (60 ft)	Kit with 2 cables and braid kit	030-2037-01
30 m (98.4 ft)	Kit with 2 cables and braid kit	030-2037-02

## Questions?

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### Limitation in Liability

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