Technical sheet

/ PHANTOM

True Phase Identification System (GPS)

Field Units:
Display Unit and
Measurement Module

Reference Unit

/ Function

PHANTOM is a unique device designed to display phase angle of any point of a network compared to a Reference Unit. It works on Low Voltage, High Voltage, overhead lines, substations and cabinets. The network stays live, in its normal operating diagram. The accuracy of the measure is provided by the GPS synchronization.

The device consist of:

- A “Reference Unit” connected to the «point zéro» of the operating area giving an absolute reference to whole area and allowing cross checking with surrounding or remote operating areas.
- One or many “Fields Units” consisting in a Display Unit and Measurement Module.

Guarantee the definition of the true phase for following operations:

- Transformer replacement
- Transition between overhead lines and underground cables
- Closing loops or connecting isolated operating areas
- Phase Marking for speeding up network commissioning after disaster
- Geo located phase mapping
- Smart power meter
- Tele measure sensors

Benefits:

- Planning of distribution networks and control of their development
- Reduction or delay of investment (balancing HVE/LV transformers instead of replacement)
- Reduction of operational costs : operation programmed and carried out with full knowledge of the phase configuration (correct connection guaranteed)
- A reduction of customer power and better service
- Greater safety of installation and persons
- Bringing up to standard and setting up of visual identification on electric installations

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PHANTOM has integrated new features to face the news operating needs:

- Display of the phase shift with phase index as they are used for transformers, for example: YY ➔ 0,4,8 or DY11 ➔11,3,7). Other types of displays are available.
- Compliant with new capacitive test points **(VDIS)**.
- Possibility of accurate measure without GPS link for 60 minutes using the **Holdover mode**.
- Possibility of accurate **differed measure** when the cloud connection is not locally available.
- Possibility of accurate measure without contact for high voltage. This could help the use on overhead lines when regulation prevent from touching live high voltage lines.
- Hook probe, Y probe, low voltage probe and VPIS probe are available for various applications.

/ Use

- The Field Unit allows the user to positively identify the phases on any area of an overhead or underground network, no matter the physical distance separating it from the Reference Unit.
- **FREEDOM, HANDS FREE:** The PHANTOM wireless Display Unit can be strapped on the arm of the operator so that the readings are always in sight without obstructing the view for maneuvers with the hotstick. Acquired data saving is done at a touch of a button.
- **HIGH PERFORMANCE:** Phase measurements are quickly taken in real time as the wireless phase display module is fast and responsive. Live measurements are made by comparing readings from the reference Unit installed on a known phase A. The PHANTOM time reference relies on precise GPS satellite signal for flawless accuracy. Considering fleet deployment? No problem; a limitless number of Field Units can synchronize measurements with a single Reference Unit!
- **UNDERGROUND PHASING:** Using the PHANTOM in underground facilities or inside concrete buildings is easily achieved even in case of cellular and/or GPS network loss. The measurements are normally taken, and the results will show up when the PHANTOM is back to communication link.

/ Technical specifications

- **PHANTOM Reference Unit :**
- Two reference inputs (CAT-III 600V, CAT-IV 300V)
- Automatic switching of the reference inputs
- Ethernet port
- Power input (85VAC to 264VAC)
- External GPS connection interface
- 50/60Hz

- **PHANTOM Measurement Module :**
- 4 AA Batteries
- Autonomy: 30 hours of continuous phasing
- CAT-III 1000V / CAT-IV 600V low voltage phasing direct contact
- Up to 72 kV medium voltage direct contact using hotstick
- Non-contact up to 800kV
- Connectible to all universal hotstick
- Capacitive test port input
- Switchgear half rectified voltage indicator port measurements
- IP-67 rating
- 50/60Hz

- **PHANTOM Display Unit :**
- Colour touch screen
- Local phase compensation
- Digital results (numbers & graphs)
- Saving and export capabilities
- IP-68 rugged device
- Connectivity to the server using WIFI, 4G or HotSpot
- Wireless connection (Bluetooth) to the Measurement Module up to 30 meters

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Advantages

- True phasing for all applications at any voltage
- Live true phasing
- Phasing resolution of ± 1°
- GPS satellite network synchronization
- Fast setup, ready to operate in seconds
- No network de-energisation required
- All-day battery life
- Encrypted and robust communication technology
- 60 minutes underground time-delayed phase identification mode
- Capability to phase without connection to server using the defered mode
- Cloud based deployment

Reference	Description
PHANTOM-MM	PHANTOM Measurement Module and Display Unit
PHANTOM-MR	PHANTOM Reference Unit