ENGLISH

User manual

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1. PRELIMINARY AND SAFETY

CAUTION

For your own safety as well as that of the apparatus you are recommended to follow the procedures described in this instruction manual and carefully read all the notes preceded by the symbol ⚠. No compliance with the CAUTIONs and/or Instructions may damage the apparatus, its components, or injure the operator.

- Read this instruction manual and the instrument's one before starting use.
- Any instruction preceded by the caution symbol must be observed in order to avoid accidents or damages.
- This product must be used only by qualified personnel practicing applicable safety precautions, wear protective clothing and gloves as required.
- Do not effect any measurement under conditions beyond the limits specified in this manual.
- Always connect unit to display device before installing the flexible measuring heads.
- Do not install the clamp around cables where the current flowing is greater than the maximum measurable current (Overrange).

CAUTION

- Hazardous potentials may exist in the vicinity of the desired current measurements. Use locally approved safety procedures when working near hazardous potentials
- **It is recommended not to install the clamp around a live bus that is at a hazardous potential**. If installation is not possible when the bus is inactive or power is turned off, always use appropriate gloves and/or equipment approved for working around hazardous potentials when installing the HTFLEX33D in the vicinity of these potentials.

The HTFLEX33D transducers and interconnection cables use double insulation to protect the operator from possible hazardous potentials of the bus. The current probes are rated for Installation Category III, Pollution Degree 2. The maximum voltage to earth rating for the transducer and cable is $1000V_{AC}$.

The following symbols are used:

Caution: Refer to the instruction manual. Incorrect use may damage the apparatus or its components.

Do not apply around or remove from HAZARDOUS LIVE conductors.

Double insulated meter.

1.1. During use

Carefully read the following recommendations and instructions:

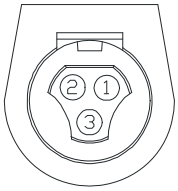
- Always de-energize circuit under test before installing flexible measuring heads. Always inspect the connecting cable and the flexible measuring heads for damage before using this product.
- Do not use the clamp on non-insulated conductors whose potential to earth exceeds 1000V AC
- Do not use the clamp outdoor
- Do not expose the clamp to water splashes.
- Keep the clamp gap perfectly clean
- Should the clamp be unintentionally used without load (not connected to the measuring instrument), take the clamp off the cable, wait 1 minute before connecting the clamp to the measuring instrument, then clamp the cable again
- Do not use the HTFLEX33D if is or seems damaged

2. INSTRUMENT DESCRIPTION

2.1. Introduction

HTFLEX33D is an innovative current transducer based on the Rogowsky's principle that combines easy use with measurement accuracy.

The HTFLEX33D current probe is similar in purpose to a CT or current transformer. The output is an analogue voltage proportional to the AC current in the conductor. The output signal is isolated form the hazardous conductor potentials and is exact replica of the current waveform in the conductor. The output signal is available via a 3 pin connector (see Fig. 1).



Pin 1	+ Output
Pin 2	- Output
Pin 3	Shield

Fig. 1: Internal connectors scheme

2.2. Transducer's functions

The current probe HTFLEX33D, lightweight and flexibility, is a versatile current probe that may be wrapped around most conductors. The transducer has a preset bend that allows the transducer to be more easily maneuvered around the conductors (see Fig. 2). It's application versatility and isolation rating clearly distinguishes the HTFLEX33D transducers from other current measuring methods. The measuring transducers are constructed from non-ferrous materials, minimizing any circuit loading due to magnetic influence.

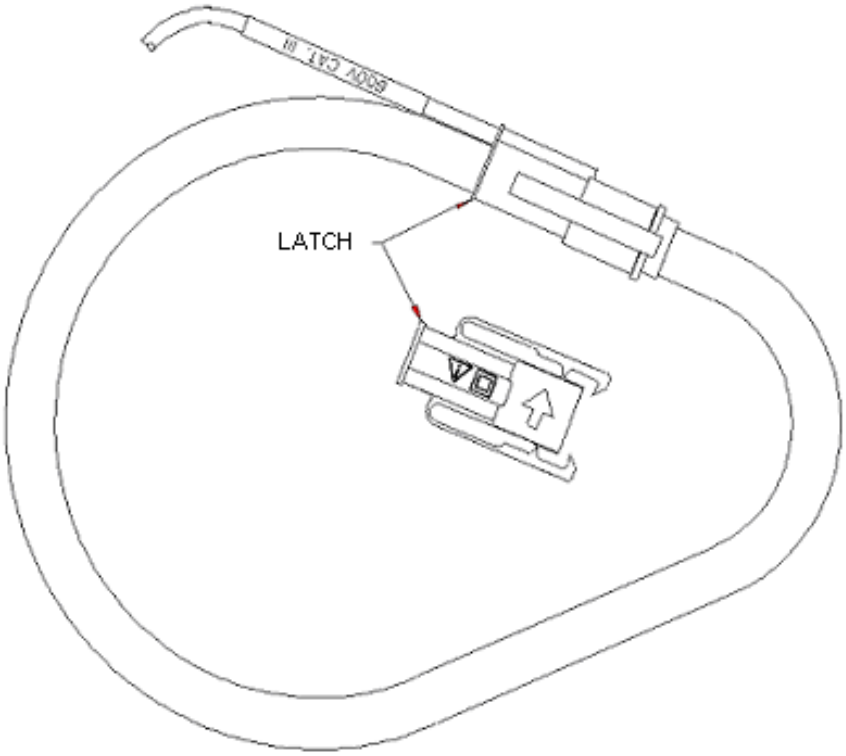


Fig. 2: Measurement transducer

The frequency response of the current probes is rather wide compared to conventional CTs. This allows the user to monitor a much wider range of line harmonic components than conventional CTs allow.

The HTFLEX33D transducer was designed to be very flexible, larger in aperture and smaller in cross section than many conventional CTs. This allows measurements in tight places as never before possible.

3. INSTALLATION

- The current probe was designed to allow the operator to connect this measurement device around a conductors without disconnecting it as many CTs presently require. Even though the current probes output is AC, there are instances where the user will want to orient the transducer so that proper polarity will exist at the output terminals. This is done by installing the transducers around the conductors with the molded-in arrow on the latch (see Fig. 2) pointing in the direction of conventional current flow. Conventional current flow is defined as current flowing from the positive to the negative potential
- When a three phase plant is under test, the correspondence between volt probe of measuring instrument connected and clamp measuring the same phase must be respected. Please refer to phase labels (I1, I2, I3) present on flexible clamps and interconnection cables
- The current probes must be installed with the interconnection cable on the outside of the loop when the latch is engaged. The polarity arrow, the double insulation, and the CAUTION symbols will all be on the outside of the loop. It should also be noted that the current probes would produce twice the output voltage if you wrap the transducers around the conductors twice
- There is minimal shock hazard using a HTFLEX33D current probes. Each transducer has been Hi-Pot tested to several thousand volts with no voltage breakdown. This particular characteristic allows high-current measurement (with a wide frequency bandwidth) of conductors at less than 1000VAC potential to earth.

CAUTION

- Hazardous potentials may exist in the vicinity of the desired current measurements. Use locally approved safety procedures when working near hazardous potentials
- **It is recommended not to install the clamp around a live bus that is at a hazardous potential**. If installation is not possible when the bus is inactive or power is turned off, always use appropriate gloves and/or equipment approved for working around hazardous potentials when installing the HTFLEX33D in the vicinity of these potentials.

4. MAINTENANCE

CAUTION

- Remove the detergent with clean water, then wipe dry with a clean cloth. The use of solvents as cleaners are not recommended unless thoroughly tested and found harmless to all surface and parts. Do not submerge the HTFLEX33D transducers or the electronics package into water or other fluids
- Preventive maintenance primarily consists of cleaning the transducers and cable to prevent surface contamination. Use a mild detergent and water to clean the transducers and cables. Remove the detergent with clean water, then wipe dry with a clean cloth

5. END OF LIFE

CAUTION: the symbol on the instrument indicates that the appliance and its accessories must be collected separately and correctly disposed of

6. TECHNICAL SPECIFICATIONS

6.1. Reference standards

Safety:	IEC/EN61010-1; IEC/EN61010-2-031 IEC/EN61010-2-032
Insulation:	double insulation
Pollution degree:	2
Max height of use:	2000m (6562ft)
Measurement category:	CAT III 1000VACrms Phase - Earth

6.2. Technical features

Current ranges:	Max 3000A ACrms
Output signal (@1000 Arms, 50Hz):	85mVAC
Accuracy (@ +25°C, 50Hz):	±0.5%rdg
Linearity:	±0.2%rdg (from 10% to 100% of range)
Internal resistance of probe:	157Ω ± 15Ω
Load impedance:	399.2kΩ
Frequency Range (-3dB):	10Hz ÷ 20kHz
Phase Error (45 - 65 Hz):	±1°
Position Sensitivity:	±2%rdg
Temperature Coefficient:	± 0.05%rdg per °C
Working voltage:	1000V DC/ACrms

6.3. Mechanical features

Output connection:	2 m cable with 3 way Hypertac connector
Length of flexible clamp:	610mm (24in)
Maximum conductor diameter:	174mm (7in)
Weight:	215g (8 ounces)
Material:	TPE, Polypropylene, UL94-VO rated
Mechanical protection:	IP65

6.4. Environment conditions

Working temperature:	–20°C ÷ 80°C (–4°F ÷ 176°F)
Storage temperature:	–40°C ÷ 90°C (–40°F ÷ 194°F)
Working and storage humidity:	15% ÷ 85%RH without condense

This instrument complies with the prescriptions of the European directive on low voltage 2006/95/EEC (LVD) and EMC directive 2004/108/EEC

7. SERVICE

7.1. Warranty conditions

This instrument is guaranteed against any defect in material and manufacturing in compliance with the general sales terms and conditions. Throughout the period of guarantee all defective parts may be replaced and the manufacturer reserves the right to repair or replace the product.

If the instrument is to be returned to the after-sales service or to a dealer transportation costs are on the customer's behalf. Shipment shall be however agreed upon.

A report must always be enclosed to a rejected product stating the reasons of its return. To ship the instrument use only the original packaging material; any damage that may be due to no-original packing shall be charged to the customer.

The manufacturer declines any responsibility for damages caused to persons and/or objects.

Warranty is not applied in the following cases:

- Any repair that might be necessary as a consequence of a misuse of the instrument or of its use with no compatible devices.
- Any repair that might be necessary as a consequence of improper packaging.
- Any repair that might be necessary as a consequence of service actions carried out by unauthorized personnel.
- Any modification of the instrument carried out without the authorization of the manufacturer.
- Use not provided for in the instrument's specifications or in the instruction manual

All our products are patented and their trade marks registered. The manufacturer reserves the right to modify the product specifications and prices if this is aimed at technological improvements

7.2. Service

If the instrument does not operate properly, before contacting the after-sales service check cables as well as test leads and replace them if necessary. Should the instrument still operate improperly check that the operation procedure is correct and conforms to the instructions given in this manual. If the instrument is to be returned to the after-sales service or to a dealer transportation costs are on the customer's behalf. Shipment shall be however agreed upon. A report must always be enclosed to a rejected product stating the reasons of its return. To ship the instrument use only the original packaging material; any damage that may be due to no-original packing shall be charged to the customer.