



## DATA SHEET IN 500-S



For more information, please visit: [www.dewesoft.com](http://www.dewesoft.com)

## Product Overview

Zero-flux current transducers are not simple transformers, they have sophisticated constructions and integrated electronics. They have two windings which are operated in saturation to measure the DC current, a primary winding for the AC current and a secondary winding for compensation. This kind of current measurement is very precise because of the zero-flux compensation.

This is a very important point because when the magnetic core of the transformer stays magnetized with the residual magnetic flux, it destroys the accuracy of the measurement. In these transducers, the parasitic magnetic flux is perfectly compensated. Therefore, zero-flux current transducers are used for measuring currents with high precision, but they are not suitable for simple and fast measurements such as iron-core clamps or Rogowski coils. Zero-flux transducers are used to measure currents with the highest accuracy for both AC and DC and have high bandwidth capabilities (up to 1 MHz). They are very linear and have low phase and offset errors.

These types of transducers measure current flows with galvanic isolation. They reduce the high currents to a much lower value. The conductor with the measured current must be guided through the loop of the sensor (meaning the circuit must be broken to install the transducer) because current transducers function on the principle of a transformer, where a high current is transformed to a low current which can then be measured with the DAQ.

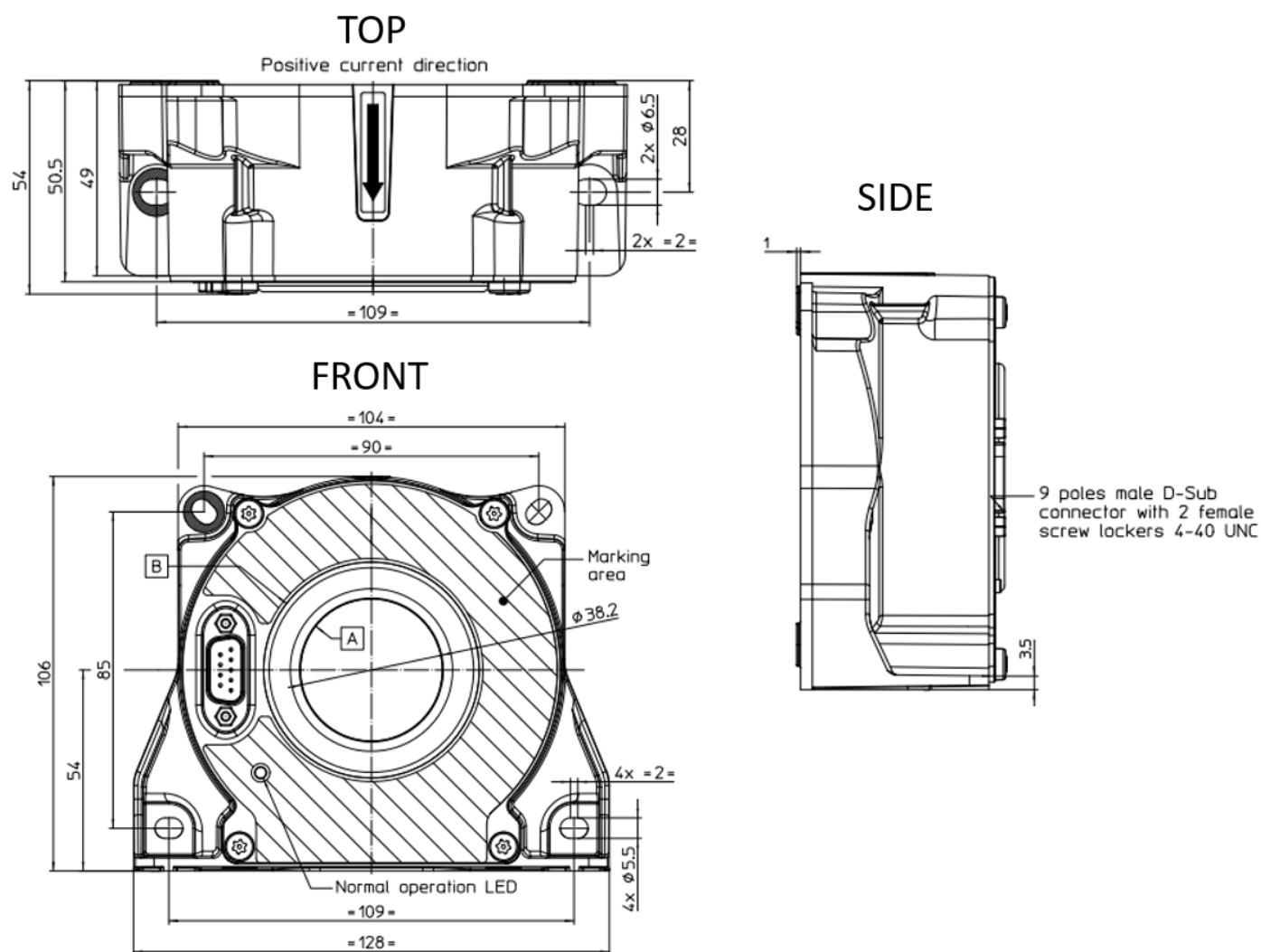


### Working principle:

In the transducer a magnetic flux is produced by the flow of the primary current, this current is counteracted by the secondary current that produces a secondary magnetic flux that counteracts the primary magnetic flux from a secondary winding. The secondary current flows over a burden resistor which induces a voltage over the terminals. This voltage is then measured as it is proportional to the current that is flowing in the conductor.



## Dimensions



All dimensions are in [mm]



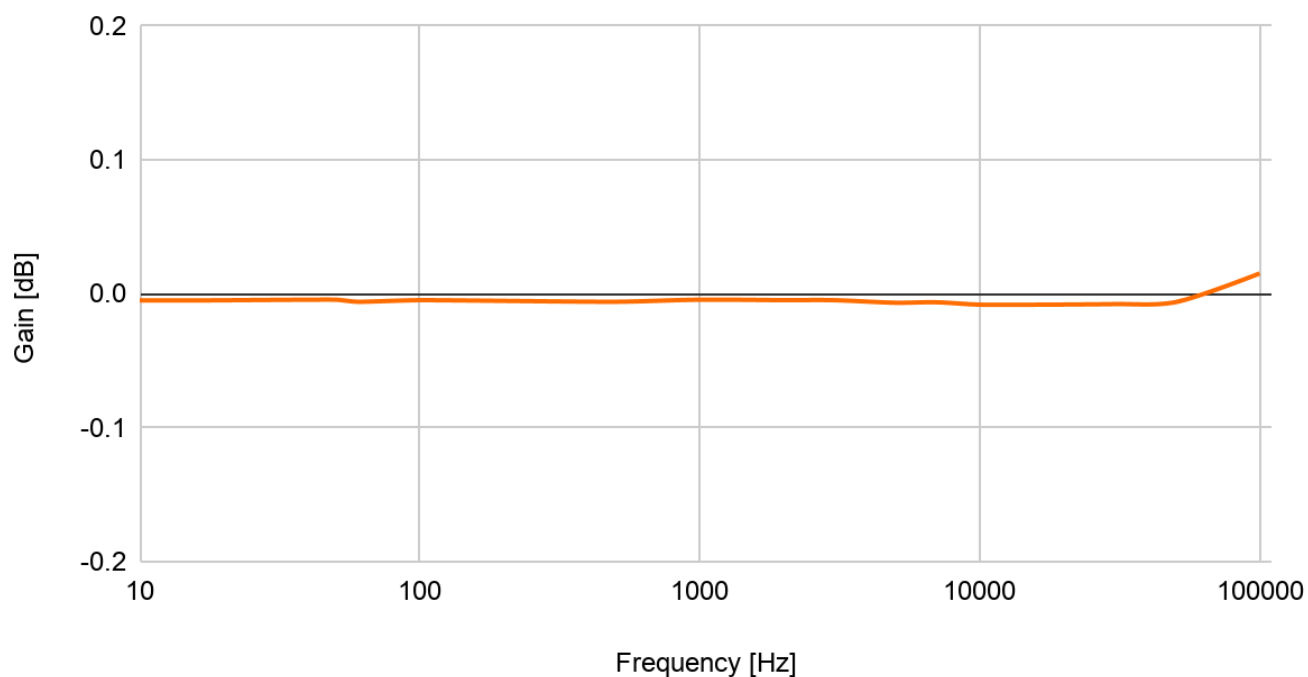
## Specifications

| IN 500-S   |                 |   |  |
|--|-----------------|---|--|
| Type   | Zero-Flux       | Angular Accuracy  | < 0.01 °   |
| Primary Current Range<br>DC and RMS Sinus          | 500 A           | Rated isolation voltage<br>RMS,<br>single isolation CAT III,<br>pollution deg. 2,<br>IEC 61010-1 standards,<br>EN 50178 standards | 1000 V   |
| Conversion ratio                                   | 1:750           | Test voltage 50 / 60<br>Hz,<br>1 min  | 4.2 kV   |
| Overload Ability<br>Short Time (100 ms)            | 5000 Apk        | Inner diameter  | 38 mm  |
| Max. burden resistor<br>(100 % of I <sub>p</sub> ) | 2.5 Ω           | Dimensions  | 128 x 106 x 54   |
| di/dt<br>(accurately followed)                     | 100 A/μs        | Supply voltage (±5 %)   | ±15 V  |
| Temperature influence                              | < 0.2 ppm/K     | Operating humidity  | 20 % to 80 %<br>(not condensing)   |
| Output Ratio                                       | 666 mA at 500 A | Operating temperature   | - 40 °C to + 85 °C   |
| Bandwidth<br>(0.5 % of I <sub>p</sub> )            | DC ... 520 kHz  | DEWESoft® Shunt   | 1 Ω  |
| Linearity  | < 0.003 %       | PWR-MCTS2 needed  | Yes  |
| Offset   | < 0.001 %       | Compatible Amplifiers   | SIRIUS LV / HS-LV /<br>XHS-LV<br>SIRIUS STG / HS-STG<br>SIRIUS STGM<br>DEWE 43 |
| Frequency Influence                                | 0.01 %/kHz      | Cable length  | 5 m - MCTS to<br>Transducer<br>0.3 m - Amplifier to<br>MCTS                    |

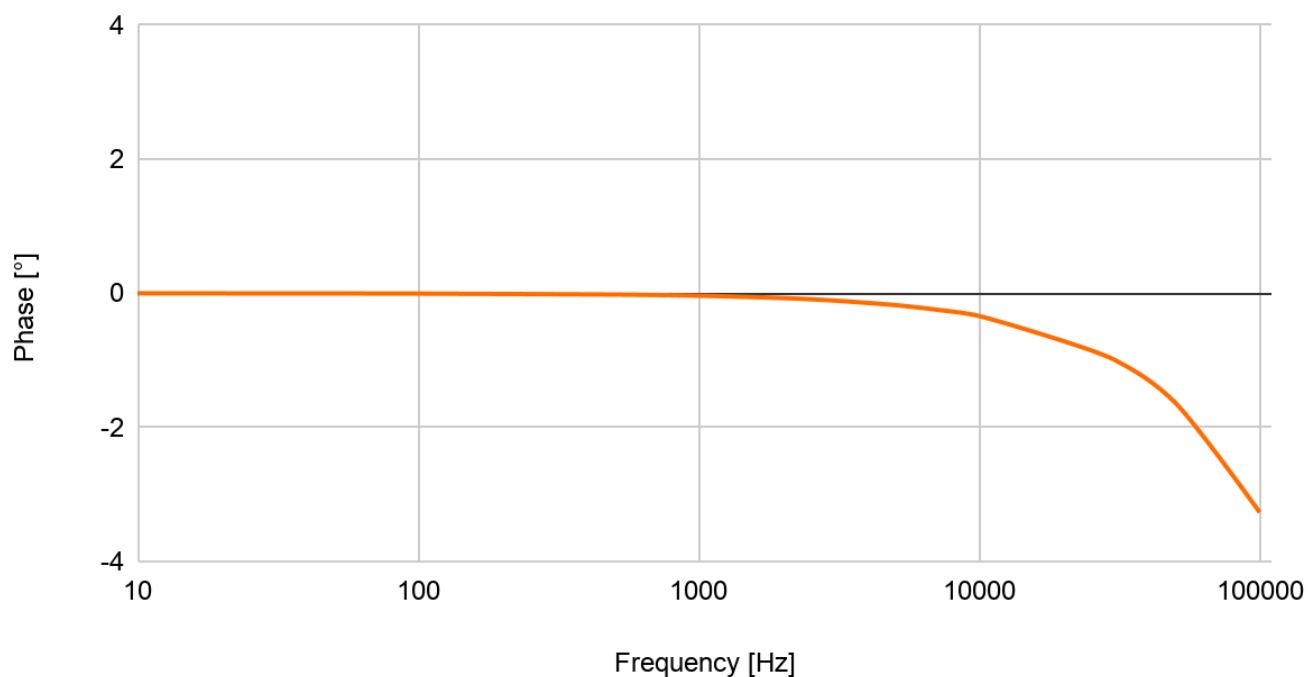


## Amplitude and Phase Characteristics

### Amplitude Characteristics



### Phase Characteristics





## Document version history

Revision Number: 1

Last modified: 13 August 2021

| Version | Date<br>[yyyy.mm] | Notes                     |
|---------|-------------------|---------------------------|
| V21-1   | 2021-08           | Initial document creation |