

# CURRENT MEASUREMENT TRANSDUCER **DC-CT-1000I**

Precise current measurement - all the benefits of a zero-flux current transducer with lower power consumption and in a smaller form factor



V23-1

 **DEWESoft®**  
**7 YEAR WARRANTY**

# DC-CT-1000I

## INTRODUCTION

This current transducer is designed for precise current measurement applications. DC-CT technology represents a Platiše Flux Sensor (PFS) which is used in a closed-loop configuration to offer all the benefits of a zero-flux current transducer but with lower power consumption and in a smaller form factor. Making it your device of choice for all types of current measurement.

## OPERATION

The DC-CT transducer can be seen as an AC current transformer, where primary and secondary windings are coupled by a common high permeability core. Just as with other closed-loop techniques our technology continuously measures residual magnetic flux in the core resulting from the difference between the primary and secondary currents. The detected difference drives the feedback control mechanism that adjusts the current in the compensation winding to achieve the optimal zero-flux balance in the core.

DC-CT current sensing technology is suitable for accurate current measurements in the widest sense of the word. The device offers a wide measurement range, high bandwidth, excellent linearity, very high accuracy, very low temperature drift, and lower power consumption as compared to the other zero-flux type current transducers. Lower power consumption also enables a more compact form factor.

## APPLICATIONS

DC-CT current transducers are suited for all types of current measurement applications where precise, high-bandwidth, and low angular shift sensors are needed. This includes:

- **All types of e-mobility measurements:** from quiescent DC currents, to analysis of higher harmonics of the PWM switching frequency which can extend into the MHz range
- **Power quality measurements:** renewable energy sources or battery storage systems
- **High-power applications:** such as railway systems, and power transmission and distribution grids
- **Other applications:** such as a feedback element in precision power supplies or calibration units

Technology	Type	Isolated	Current Range	AC Bandwidth	Linearity	Accuracy	Temperature Drift	Power Consumption
DC-CT	DC/AC	Yes	High	High	Excellent	Very High	Very Low	Medium
Flux-Gate	DC/AC	Yes	High	High	Excellent	Excellent	Low	High
Hall	DC/AC	Yes	High	Medium	Medium	Medium	High	Low / Medium
Shunt	DC/AC	No	Medium	Medium	Good	High	Medium	High
Rogowsky	AC	Yes	High	High	Good	Medium	Low	Low
CT	AC	Yes	High	Medium	Medium	Medium	Low	Low

\*Comparison of DC-CT versus other current sensor technologies



# KEY FEATURES

## BENEFITS

### ACCURATE MEASUREMENTS - ANYWHERE

A truly accurate sensor that delivers excellent performance across different ambient conditions. It performs equally well at different temperatures, in magnetically harsh environments, and across whole measurement range.

### STABLE MEASUREMENTS - TEMPERATURE INDEPENDENT

As compared to the Hall effect sensors that are very temperature sensitive due to the air gap that is needed to insert the sensor. The DC-CT sensor is temperature independent.

### WIDE AND FLAT BANDWIDTH - FOR HIGH-SPEED SIGNALS

Be it high-speed transients or higher harmonics of the PWM switching frequency on the emerging GanFET inverters - you can be confident that you will be able to accurately measure the phenomena. This is ensured by a high permeability core that couples the primary and secondary sensor winding.

### SMALL SIZE - EASY TO FIT

DC-CT current sensors deliver up to 1000 amperes of continuous measurement range in one of the smallest form-factors on the market.

### LOW POWER CONSUMPTION - SIMPLE SETUP

A single Sirius MCT52 power supply will easily power four DC-CT sensors without any limitations.

### HIGH ACCURACY

High accuracy of current measurements in the whole measurement range up to 1000 A.

### SUPERB IMMUNITY

Single gapless core enables immunity to external magnetic fields with highest possible sensitivity.

### TEDS SUPPORT

Both the sensor itself and the burden resistor have built-in TEDS compatibility, which makes it plug and play. Connecting the current transducer to the DAQ device will initiate automatic sensor recognition and settings will be configured automatically.

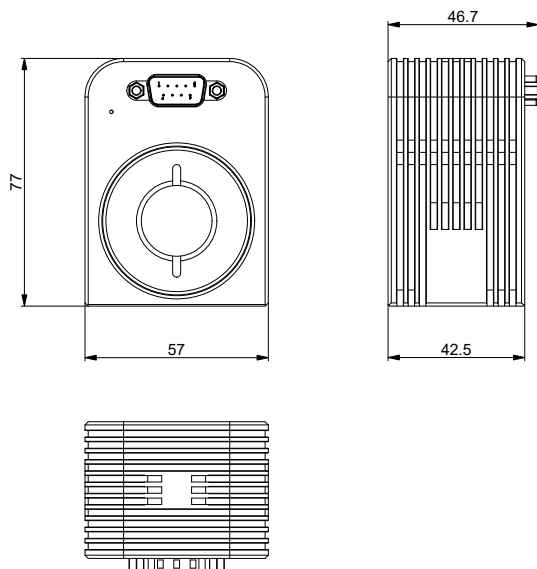
### ISOLATION

Galvanic isolation between primary and secondary compliant with IEC 61010-1 CAT II 1000 V.

### LOW OFFSET

A compact and gapless core design enables very low magnetic remanence and thus overall very low offset current.





## SCOPE OF SUPPLY

- DC-CT-1000I
- DSI-MCTS-DC-CT-1000I-0.3m
- D9m-D9f-5m-MCTS

SW MODULES	HARDWARE	APPLICATIONS
DEWESOFT-X-PROF DEWESOFT-OPT-POWER	SIRIUSi-XHS-4xHV-4xLV SIRIUSi-XHS-8xLV SIRIUSi-HS-4xHV-4xLV SIRIUSi-PWR-MCTS2	E-mobility Grid power analysis Power quality analysis

CATEGORY		DATA
Type	Zero-Flux	
Primary Current Range DC	1000 A	
Primary Current Range AC rms	707 A	
Conversion ratio	1:1680	
Overload Ability Short Time (100 ms)	10 kApk	
Max.burden resistor (100% of Ip)	1 Ohm (max. 5 Ohm)	
Temperature influence (typ.)	3 ppm/K	
Nominal secondary current	~595.2 mA at 1000 A	
Bandwidth ( -3 dB) (typ.)	DC ... 500 kHz	
Linearity	<100 ppm	
Max. offset including hysteresis	100 mA	
Accuracy	Amplitude	Phase Error
DC (100% of Ip)	0.02 %	-
to 100 Hz	0.1 %	0.02
100 Hz - 1 kHz	0.1 %	0.07
1 kHz - 10 kHz	0.1 %	1.3
10 kHz - 20 kHz	0.15 %	1.5
20 kHz - 50 kHz	0.75 %	4.8
50 kHz - 100 kHz	1.3 %	6.3
Noise (ppm rms)		
0 - 100 Hz	0.2	
0 - 1000 Hz	2.2	
0 - 10000 Hz	2.5	
0 - 100000 Hz	4	
Rated isolation voltage RMS, single isolation CAT III, pollution deg. 2, IEC 61010-1 standards, EN 50178 standards	1000 V	
Test voltage 50 / 60 Hz, 1 min	4400 V	
Inner diameter	22 mm	
Dimensions	77 x 57 x 46.7 mm	
Supply voltage (±5 %)	±15 V	
Power consumption (100% of Ip)	typ. 5 W	
Power consumption (Idle mode)	typ. 0.5 W	
Operating humidity	20 % to 80 % (not condensing)	
Operating temperature	-40 °C to +85 °C	
DEWESoft® Shunt	1 Ω	
PWR-MCTS2 needed	Yes	
Compatible amplifiers	SIRIUS LV / HS-LV / XHS-LV , SIRIUS, STG / HS-STG, SIRIUS STGM, DEWE 43	
Cable length	5 m - MCTS to Transducer 0.3 m - Amplifier to MCTS	



### LEARN MORE:

<https://dewesoft.com/products/current-transducers>

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