DISTRIBUSENSE® SENSORS

KECA 80 D85, UL Certified

Indoor split-core current sensor

The KECA 80 D85 is used for current measurement in low or medium voltage equipment, including, but not limited to, switchgear.

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01 Rogowski coil principle

Sensor principles

Electronic current transformers (sensors) offer an alternative method for current measurement to protect and monitor medium voltage power systems. Sensors are significantly smaller, offer improved safety, and provide greater rating standardization over a wider range than conventional instrument transformers. They can only be fully utilized in combination with versatile electronic relays and meters compatible with the sensor outputs.

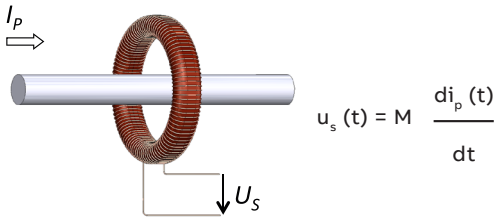
Application

The KECA 80 D85 is used for current measurement in low or medium voltage equipment, including, but not limited to, switchgear. In medium voltage apparatus, the current sensor is installed over a bushing insulator, insulated and shielded cable, insulated and shielded cable connector, or any type of insulated and shielded conductor. This split-core sensor is equipped with a clamping system designed for easy and fast installation without disconnecting the conductor, making the sensor also suitable for retrofit purposes.

KECA sensors are designed for indoor use only and must be installed in a humidity-controlled environment. They are not IP rated for outdoor use. For more information, please refer to Instructions for Installation, Use, and Maintenance.

Rogowski coil technology

Current measurement in this sensor is based on the Rogowski coil principle. A Rogowski coil is a toroidal coil placed around the primary conductor in the same way as the secondary winding in a current transformer. This results in a voltage output equal to a scaled derivative of the primary current.



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Benefits

- Linear response over a wide dynamic range due to the lack of a ferromagnetic core and influence by the width of hysteresis curve
- Current sensing for both metering (0.5) and protection purposes (5P) is achieved using a single secondary winding with a dual rating
- Lightweight and easy to install

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02 Sensor characteristics
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03 IED and sensor
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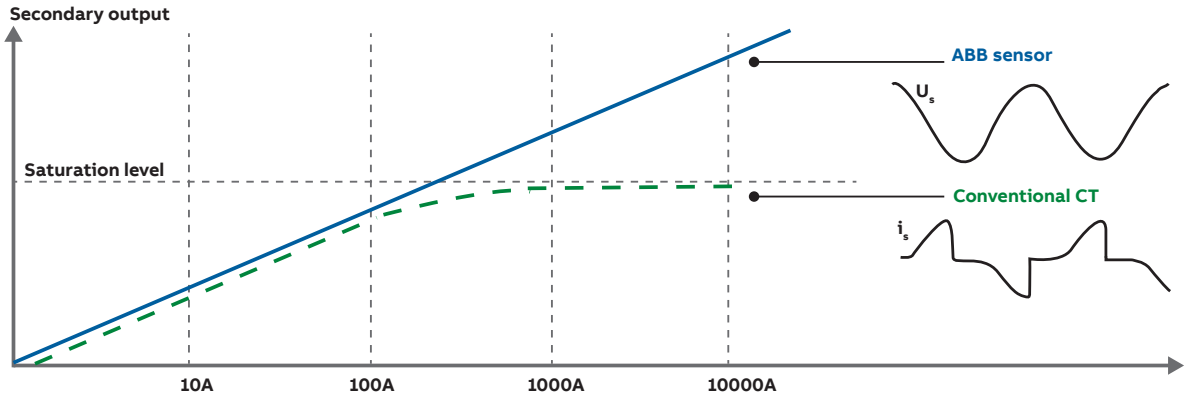
04 Combined accuracy class



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- Low power for improved safety
- Low energy consumption
- Amplitude and phase errors are constant and independent from primary current and can easily be corrected by IED correction factors
- Split-core design can be installed without disconnecting the conductor

Intelligent electronic devices (IED)
Protection and control IEDs incorporate the functions of traditional relays, with additional functions. The IED must be able to operate at a sensor's low output signal level, and the signal from the Rogowski coil must be integrated. Modern IEDs (such as ABB's 601, 615, 620, and 640 series relays) are designed for sensor use and are also equipped with built-in integrators for Rogowski coil inputs.

Modern digital apparatus (microprocessor-based relays) combine protection and measurement functions. They fully support current sensing realized by the single sensor with dual accuracy class designation (e.g.: current sensing with combined accuracy class 0.5/5P).

The IED's impedance should match the rated burden of the sensor (10 MOhm). To achieve the correct function of the protection and control IED, the selected rated current, as well as the rated transformation ratio, must be properly set in the IED. To ensure accurate measurement and proper performance, the sensor and IED must be compatible. Due to the wide variety of relays and controllers offered in the market today, contact the factory or your ABB sales representative to ensure sensor compatibility.

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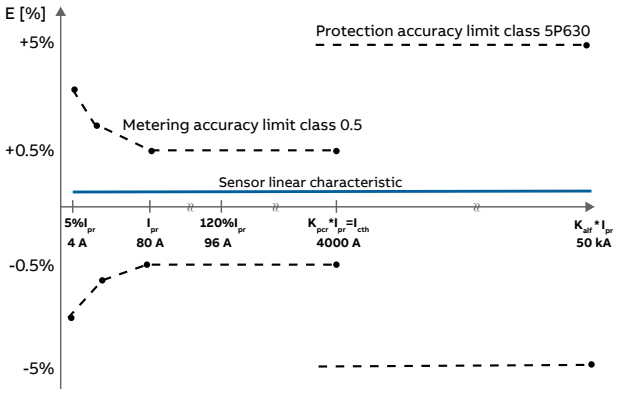
IEC 60044-8 current measurement range for KECA 80 D85 with accuracy class 0.5/5P

- Metering accuracy: IEC 0.5 class from 4 A - 4000 A
  - IEC 0.5 class for continuous current measurement from 5% of the rated primary current (I_{pr}) to the rated continuous thermal current (I_{cth})
- Protection accuracy: IEC class 5P from 4000 A - 50 kA
  - IEC class 5P from the rated continuous thermal current (I_{cth}) to 50 kA

Use in applications at higher currents is possible; contact your ABB sales representative for more information. The graph below describes the tested accuracy limits.



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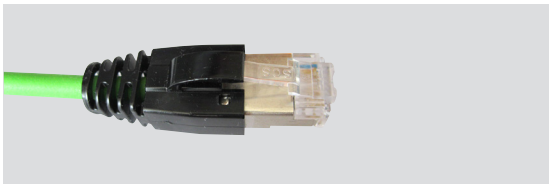
05 RJ45 connector

Correction factors
Values of the correction factors (Cfs) for the amplitude (al) and phase error (pl) of a current sensor are stated on the sensor label. (For more information, please refer to Instructions for Installation, Use, and Maintenance.) These should be uploaded without any modification into the IED before the sensors are placed into operation. To achieve required accuracy classes, it is recommended to use both correction factors: amplitude correction factor and phase error correction factor.

Secondary cables
The KECA 80 D85 is equipped with cables and RJ45 cable connectors for connection to the IED. The sensor accuracy classes are verified up to the RJ45 connector and therefore consider the influence of the secondary cable. These cables are intended to connect directly to the IED and neither burden calculation nor secondary wiring is required. Every sensor is accuracy tested when equipped with its own cable and connector.



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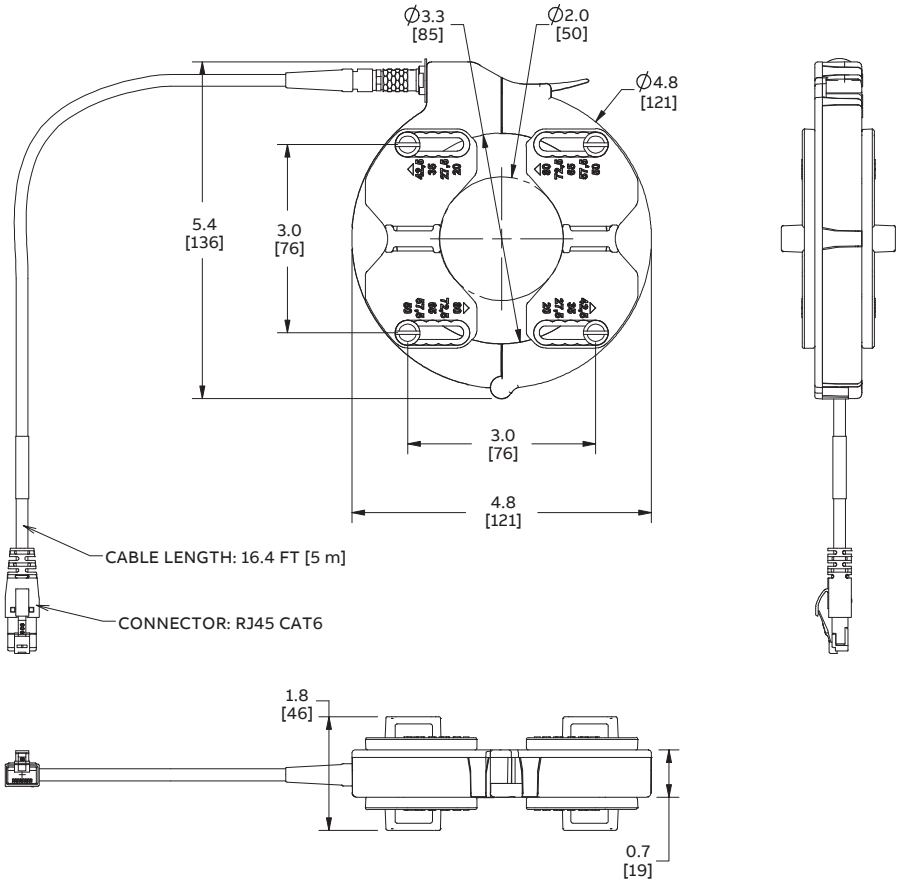
Standards
The KECA 80 D85 current sensor complies with the IEC 60044-8 (2002-07): Instrument transformers, Part 8: Electronic Current Transformers

Certification
UL Certified, file #501098.

Dimensions (inches [mm])



Highest voltage for equipment and test voltages

Voltage rating	Value
Highest voltage for equipment, U_m	0.72 kV

Current sensor, rated values

Characteristic		Value
Rated primary current of application		up to 4000 A
Rated primary current, I_{pr}		80 A
Rated transformation ratio, K_{ra}		80 A/0.180 V at 60 Hz
		80 A/0.150 V at 50 Hz
		3 mV/Hz
Rated secondary output, U_{sr}		i.e. 180 mV at 60 Hz or 150 mV at 50 Hz
Rated continuous thermal current (rating factor), I_{cth}		4000 A
Rated short-time thermal current, I_{th}		85 kA/3s
Rated dynamic current, I_{dyn}		230 kA
Rated frequency, f_r		60/50 Hz
Rated extended primary current factor, K_{pcr}		50
Accuracy limit factor, K_{alf}		630
Accuracy class		0.5/5P
Rated burden (input impedance), R_{br}		10 MΩ
Weight		0.55 lbs. (0.25 kg)
Temperature category	Operation	- 25°C/+80°C
	Transport and storage	- 40°C/+80°C
Cable connector		RJ45 (CAT-6)

Selection guide

Sensor	Style number
KECA 80 D85 (5 meter cable)	1VL5400076V0201

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