

MEDIUM VOLTAGE PRODUCT

# AdvaSense™ sensor solutions for Gas-Insulated Switchgear (RMU) equipped with CELLPACK separable connectors

## Product overview

AdvaSense™ sensors based on advanced measurement principles have been developed as alternative solution to conventional instrument transformers in order to achieve significant reduction in dimensions, increase of safety and to provide greater rating standardization with a wider functionality range.

Due to their compact sizes and optimized designs AdvaSense™ sensors represent ideal solutions for new installations as well as retrofit purposes of existing switchgear. AdvaSense™ sensors provide state of the art solution for current and voltage

measurement also in applications where it is very difficult to use conventional instrument transformers. ABB offers wide range of sensor products suitable for use in secondary Gas-Insulated Switchgear (RMU - Ring Main Units).

### Indoor Current Sensor KECA 80 C85

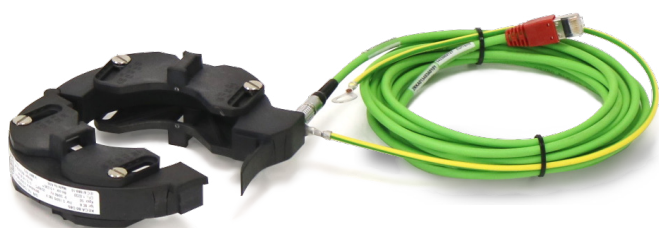
The current sensor (Electronic current transformers according to IEC 60044-8 and low-power passive current transformers according to IEC 61869-10 standards) type KECA 80 C85 is intended for current measurement in gas insulated medium voltage switchgear. The design of the current sensor has been optimized to be easily assembled on the shielded cable connectors and therefore makes the sensor suitable for retrofit purposes.

Ratings	
Rated primary current of application	up to 4 000 A
Rated primary current	80 A
Cable lengths	2.2; 3.4; 3.6 m; 5 m
Inner diameter	85 mm

### Indoor Current Sensor KECA 80 D85 (split core type)

The current sensor (electronic current transformers according to IEC 60044-8 and low-power passive current transformers according to IEC 61869-10 standards) type KECA 80 D85 is intended for current measurement in gas insulated medium voltage switchgear. The current sensor is the split core type equipped with a clamping system which provides easy and fast installation and therefore makes the sensor suitable for retrofit purposes.

Ratings	
Rated primary current of application	up to 4 000 A
Rated primary current	80 A
Cable lengths	5 m
Inner diameter	85 mm





### Indoor Voltage Sensors KEVA C

The voltage sensor (electronic voltage transformers according to IEC 60044-7 and low-power passive voltage transformers according to IEC 61869-11 standards) type KEVA C is intended for voltage measurement in gas insulated medium voltage switchgear. The voltage sensor KEVA C has been designed as easy replacement of originally used insulating plugs in the cable connectors. Voltage sensors KEVA C are compatible with cable connectors from Cellpack. Two variants of secondary output are available, ratio 10 000:1 with one defined primary rating and secondary output  $3.25\sqrt{3}$  V for three defined primary ratings.

Ratings	
Rated primary voltage of application	up to 24 kV
Highest voltage for equipment	up to 24 kV
Rated primary voltage for secondary ratio	10 000:1: $22/\sqrt{3}$ kV
Rated primary voltage for output secondary	$3.25\sqrt{3}$ V: $20/\sqrt{3}$ kV; $15/\sqrt{3}$ kV; $10/\sqrt{3}$ kV
Cable lengths	2.2, 5 m

### Current sensors

Measurement	Sensor type	Supported type of cable connector	Cable	Sensor ordering code	
		Manufacturer		Type	IEC 60044-8
Current sensor	KECA 80 C85	All types of screened separable connectors	2.2 m	1VL5400056V0101	1VL5400056V1101
			3.6 m	1VL5400056V0102	1VL5400056V1102
			3.4 m	1VL5400056V0103	1VL5400056V1103
			5 m	1VL5400056V0104	1VL5400056V1104
Current sensor	KECA 80 D85	All shielded cables and all types of screened separable connectors	5m	1VL5400076V0101	1VL5400076V1101

### Voltage sensors with transformation ratio 1:10 000 and RJ45 termination compatible with IEDs in Tab. 1. group 1

Measurement	Sensor type	Supported type of cable connector	Cable	Sensor ordering code	
		Type		IEC 60044-7	IEC 61869-11
Voltage sensor	KEVA 24 C10	CTS-S 630A 24kV	2.2 m	1VL5400061V0101	1VL5400061V1101
	5 m		1VL5400061V0103	1VL5400061V1103	
	KEVA 24 C10c		2.2 m	1VL5400061V0201	1VL5400061V1201
	5 m		1VL5400061V0203	1VL5400061V1203	
Voltage sensor	KEVA 24 C25	CTS 630A 24kV CTKS 630A 24kV CTKSA 630A 24kV	2.2 m	1VL5400079V0101	1VL5400079V1101
	5 m		1VL5400079V0103	1VL5400079V1103	
	KEVA 24 C25c		2.2 m	1VL5400079V0201	1VL5400079V1201
	5 m		1VL5400079V0203	1VL5400079V1203	

Voltage sensors with 3.25V rated output signal and RJ45 termination compatible with IEDs in Tab. 1. group 2

Sensor type designation	Supported type of cable connector	Ratio	Burden	Secondary cable length	
				2.2 m	5 m
KEVA 24 C10	CTS-S 630A 24kV	20/√3 kV	2 MΩ/50 pF	1VL5400090V1101	1VL5400090V1103
			200 kΩ/350 pF	1VL5400091V1101	1VL5400091V1103
		15/√3 kV	2 MΩ/50 pF	1VL5400092V1101	1VL5400092V1103
			200 kΩ/350 pF	1VL5400093V1101	1VL5400093V1103
		10/√3 kV	2 MΩ/50 pF	1VL5400094V1101	1VL5400094V1103
			200 kΩ/350 pF	1VL5400095V1101	1VL5400095V1103
KEVA 24 C10c		20/√3 kV	2 MΩ/50 pF	1VL5400090V1201	1VL5400090V1203
			200 kΩ/350 pF	1VL5400091V1201	1VL5400091V1203
		15/√3 kV	2 MΩ/50 pF	1VL5400092V1201	1VL5400092V1203
			200 kΩ/350 pF	1VL5400093V1201	1VL5400093V1203
	CTS 630A 24kV CTKS 630A 24kV CTKSA 630A 24kV	10/√3 kV	2 MΩ/50 pF	1VL5400094V1201	1VL5400094V1203
			200 kΩ/350 pF	1VL5400095V1201	1VL5400095V1203
KEVA 24 C25		20/√3 kV	2 MΩ/50 pF	1VL5400120V1101	1VL5400120V1103
			200 kΩ/350 pF	1VL5400121V1101	1VL5400121V1103
		15/√3 kV	2 MΩ/50 pF	1VL5400122V1101	1VL5400122V1103
			200 kΩ/350 pF	1VL5400123V1101	1VL5400123V1103
		10/√3 kV	2 MΩ/50 pF	1VL5400124V1101	1VL5400124V1103
			200 kΩ/350 pF	1VL5400125V1101	1VL5400125V1103
KEVA 24 C25c		20/√3 kV	2 MΩ/50 pF	1VL5400120V1201	1VL5400120V1203
			200 kΩ/350 pF	1VL5400121V1201	1VL5400121V1203
		15/√3 kV	2 MΩ/50 pF	1VL5400122V1201	1VL5400122V1203
			200 kΩ/350 pF	1VL5400123V1201	1VL5400123V1203
		10/√3 kV	2 MΩ/50 pF	1VL5400124V1201	1VL5400124V1203
			200 kΩ/350 pF	1VL5400125V1201	1VL5400125V1203

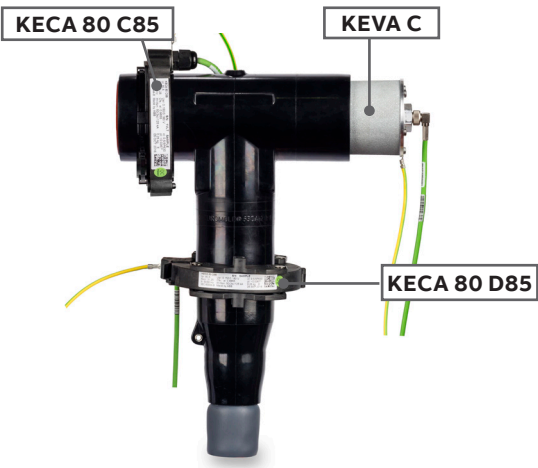
**Note:** Voltage sensors with 3.25V output are IEC 61869-11 only.

Voltage sensors with 3.25V rated output signal and ferrule termination compatible with IEDs in Tab. 1. group 3

Sensor type designation	Supported type of cable connector	Ratio	Burden	Secondary cable length	
				2.2 m	5 m
KEVA 24 C10	CTS-S 630A 24kV	20/√3 kV	2 MΩ/50 pF	1VL5400090V1107	1VL5400090V1105
			200 kΩ/350 pF	1VL5400091V1107	1VL5400091V1105
		15/√3 kV	2 MΩ/50 pF	1VL5400092V1107	1VL5400092V1105
			200 kΩ/350 pF	1VL5400093V1107	1VL5400093V1105
		10/√3 kV	2 MΩ/50 pF	1VL5400094V1107	1VL5400094V1105
			200 kΩ/350 pF	1VL5400095V1107	1VL5400095V1105
KEVA 24 C10c		20/√3 kV	2 MΩ/50 pF	1VL5400090V1207	1VL5400090V1205
			200 kΩ/350 pF	1VL5400091V1207	1VL5400091V1205
		15/√3 kV	2 MΩ/50 pF	1VL5400092V1207	1VL5400092V1205
			200 kΩ/350 pF	1VL5400093V1207	1VL5400093V1205
	CTS 630A 24kV CTKS 630A 24kV CTKSA 630A 24kV	10/√3 kV	2 MΩ/50 pF	1VL5400094V1207	1VL5400094V1205
			200 kΩ/350 pF	1VL5400095V1207	1VL5400095V1205
KEVA 24 C25		20/√3 kV	2 MΩ/50 pF	1VL5400120V1107	1VL5400120V1105
			200 kΩ/350 pF	1VL5400121V1107	1VL5400121V1105
		15/√3 kV	2 MΩ/50 pF	1VL5400122V1107	1VL5400122V1105
			200 kΩ/350 pF	1VL5400123V1107	1VL5400123V1105
		10/√3 kV	2 MΩ/50 pF	1VL5400124V1107	1VL5400124V1105
			200 kΩ/350 pF	1VL5400125V1107	1VL5400125V1105
KEVA 24 C25c		20/√3 kV	2 MΩ/50 pF	1VL5400120V1207	1VL5400120V1205
			200 kΩ/350 pF	1VL5400121V1207	1VL5400121V1205
		15/√3 kV	2 MΩ/50 pF	1VL5400122V1207	1VL5400122V1205
			200 kΩ/350 pF	1VL5400123V1207	1VL5400123V1205
		10/√3 kV	2 MΩ/50 pF	1VL5400124V1207	1VL5400124V1205
			200 kΩ/350 pF	1VL5400125V1207	1VL5400125V1205

01 Assembly of sensors on cable connector

02 Sensor connection to IED (Intelligent Electronic Device)



01

AdvaSense™ Sensor assembly

Current sensor KECA 80 C85 shall be installed on shielded head of cable connector using clamping system.

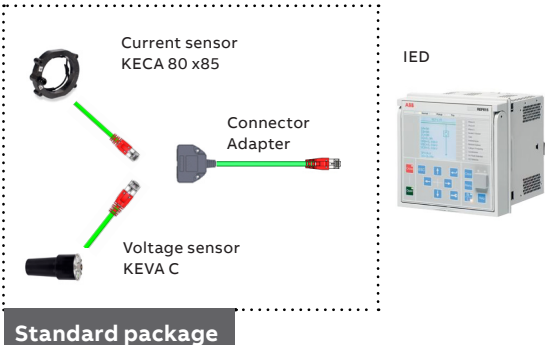
Current sensor KECA 80 D85 shall be installed on shielded cable using clamping system which allows assembly on different diameters of MV cable.

Voltage sensors KEVA C are assembled as easy replacement of originally used insulating plugs in cable connectors.

Group	Compatible IEDs
1	Protection relays: ABB Relion 605, 615, 620, 640 series
	Schweitzer Engineering Laboratories SEL-751
2	Fault passage indicators: ABB RIO600; A-Eberle EOR 3-D compact (U29+C29)
	Protection relays: Siemens SIPROTEC 7SJ81
3	Fault passage indic.: Hortsman ComPass B 2.0
	Fault passage indicators: A-eberle EOR-3D compact (U06); Kries Inspector IKI-50

Tab. 1. Compatible IEDs

**Note:** Required rated burden for Group 2 and 3 is 200 kΩ/ 350 pF



02

Standard package

Standard package for 3-phase application where current and voltage measurements are required consists of:

- 3 pcs of current sensors KECA 80 C85 or KECA 80 D85
- 3 pcs of voltage sensors KEVA C
- 3 pcs of connector adapter AR4 - ordering code for connector adapter AR4 is 1VL5300752R0101p

Product	Catalogue	Instructions for instal., use and maintenance
KECA 80 C85	1VLC000715	1VLM000806
KECA 80 D85	1VLC000722	1VLM000805
KEVA C	1VLC000724	1VLM000809
KEVA C with 3,25 V output	1VLC000730	1VLM000830

Tab. 2. References

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### Sensor compatibility

ABB sensors are compatible with wide range of ABB IEDs. Examples of suitable Fault Passage Indicators and Protection relays for secondary Gas-Insulated Switchgear: RIO600, REF 601, REJ 601, REM 601; REF 615, REM 615, RED 615, REC 615 and REF 620, REM 620, REX 640.

ABB sensors are also compatible with a-eberle EOR-3D Combined Earth Fault and Short Circuit Indicator.

Product	Catalogue	Instructions for installation, use and maintenance
KECA 80 C85	1VLC000715	1VLM000806
KECA 80 D85	1VLC000722	1VLM000805
KEVA C	1VLC000717	1VLM000800

Tab. 2. References

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