MEDIUM VOLTAGE PRODUCTS

AdvaSense™ current sensors KECA 80 C104; KECA 80 C165

Instructions for installation, use and maintenance

Table of Content

AdvaSense™ Current Sensors KECA 80 C104 and KECA 80 C165

Instructions for installation, use and maintenance

This installation, use and maintenance guide is valid for KECA 80 C104 and KECA 80 C165 current sensors (electronic instrument transformers) operating in indoor conditions.

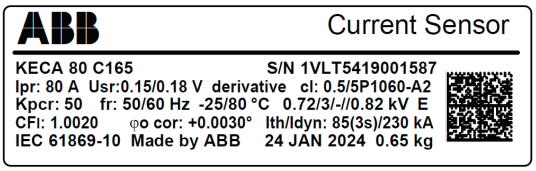
01 Example of rating plate (label)

1. Operating Conditions

The sensor shall be mounted in dry, indoor conditions without excess ingress of dust and corrosive gases. The sensor shall be protected against unusually heavy deposits of dust or similar pollution, as well as against direct sunshine. The sensor is designed for standard ambient temperature between -25°C and +80°C (storage and transportation temperature between -40°C and +80°C). The altitude for mounting should be lower than 1000 m above sea level. The sensor may also be used at higher altitudes when agreed upon with the manufacturer.
The current sensors type KECA 80 Cxxx are intended for use in current measurement in medium voltage switchgear (factory installation).
The case of sensor is made from plastic, the internal parts are shielded and this shielding is earthed. The primary conductor must be insulated for the application voltage. The insulation of primary conductor determines the highest permissible system voltage.

2. Technical Details

For sensor dimensions see separate dimension drawings. Rated values for each individual sensor are mentioned on the rating plate glued to the sensor. Values mentioned on the rating plate shall not be exceeded.



01

KECA 80 C165	Sensor type code
S/N	Serial number
Ipr	Rated primary current in A
Usr	Rated secondary voltage in V corresponding to a given rated frequency in Hz.
cl	Rated accuracy class
Kpcr	Rated extended primary current factor
Cfs	Correction factors used for current sensor. Correction factors are measured and calculated separately for each sensor. Amplitude correction factor (aI) is a number by which the output signal of the sensor shall be multiplied in order to have minimum amplitude error. Phase error correction factor (pI) is a number by which the output signal of the sensor shall be increased or decreased (depending on the sign) in order to have minimum phase error.
fr	Rated frequency in Hz
Ith/Idyn	Rated short-time (3s) thermal current in kA and rated dynamic current in kA (peak).
IEC 61869-10	IEC – standards referred to
24 Jan 2024	Date of manufacturing

Tab. 1. Labels abbreviation definitions

—
02 Example of data stored in 2D Bar Code
—
03 Example of Amplitude (aI) and Phase error (pI) correction factors setting for current sensor into REF615
—
04 Installation of current sensor KECA 80 C165 over an switchgear spout
—
05 Application of sealing neutral silicone to the current sensor KECA 80 C165

POSITION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
DATA	K	E	C	A		8	0		C	1	6	5					S	/	N
POSITION	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
DATA		1	V	L	T	5	4	1	9	0	0	1	5	8	7			2	4
POSITION	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57
DATA		M	A	Y		2	0	1	9			C	F	I	:		1	.	0
POSITION	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	
DATA	0	2	0		F	o	c	o	r	:		+	0	.	0	0	3	0	

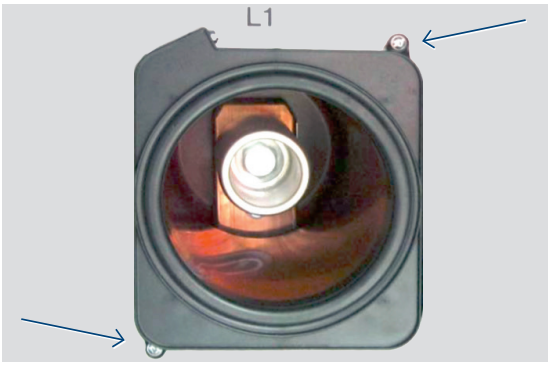
—
02

Group/Parameter Name	IED Value	PC Value	Unit	Min	Max
Current(3LCT) 1					
Current (3LCT)					
Primary current		80,0	A	1,0	6000,0
Amplitude Corr A		1,0078		0,9000	1,1000
Amplitude Corr B		1,0078		0,9000	1,1000
Amplitude Corr C		1,0078		0,9000	1,1000
Normal current		80	A	39	4000
Rated secondary Val		3,000	mV/Hz	1,000	50,000
Angle Corr A		0,2100	deg	-20,0000	20,0000
Angle Corr B		0,2100	deg	-20,0000	20,0000
Angle Corr C		0,2100	deg	-20,0000	20,0000

—
03

3. Instructions for Installation

Mounting
Sensor is fixed with two screws, see Fig. 4. A neutral silicone shall be applied into the inner sensor groove before mounting the sensor, see Fig. 5. Amount of silicone should be approximately 4 mm. Place the sensor in the center of the measuring area, push the sensor by using a flat mounting fixture covering whole sensor to the surface until there will be no gap between sensor and sheetmetal surface. After this positioning use 2 mounting holders for fixation of sensor position, see blue arrows on Fig. 4. Sensor can be additionally slightly rotated to achieve optimal position after fixation, see Fig. 4 and then the screws shall be tightened by 3-4 Nm.



—
04

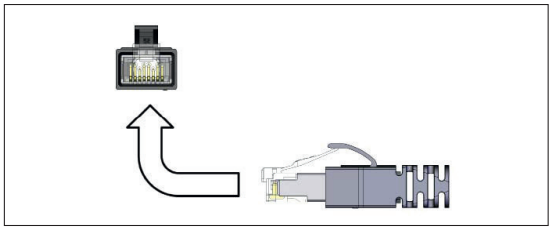
—
05

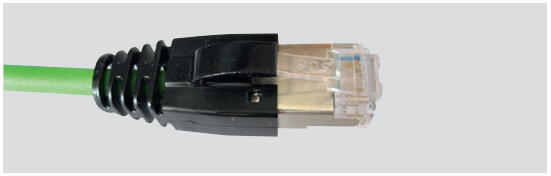
Secondary connections
The secondary cable is a special shielded cable designed to give maximum EMI shielding. The cable is separable part of each sensor and cannot be changed or withdrawn due to the guarantee of accuracy and performance of the sensor. The cable shall be connected directly (or via a connector adapter if needed) to Intelligent Electronic Device (e.g. protection relay). The electrical shielding of cable is connected to connector shielding and shall be earthed on IED side. The cable shall be fixed close to metal wall or inserted inside of metal cable tray far from power cables! The maximal bending radius for the cable is 7.5x cable diameter. The cable cannot be moved if the temperature is below 0°C. If cable, connector or connector grommet is damaged please contact the manufacturer for instructions.

—
06 Connector RJ45 (IEC 60044-8)
—
07 Connector RJ45 (IEC 61869-10)
—
08 KECA 80 Cxxx sensor plug connector pin's assignment according to IEC 60044-8
—
09
KECA 80 Cxxx sensor plug connector pin's assignment according to IEC 61689-10
—
10
LEMO/ODU connector

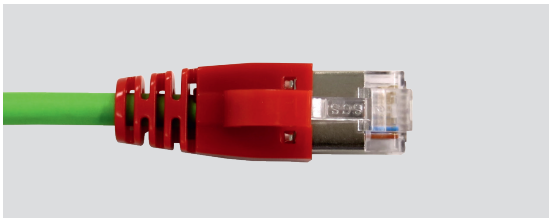
Connection to the IED

The sensor cable is terminated by shielded RJ-45 plug connector that shall be connected to the inputs of the IED. .





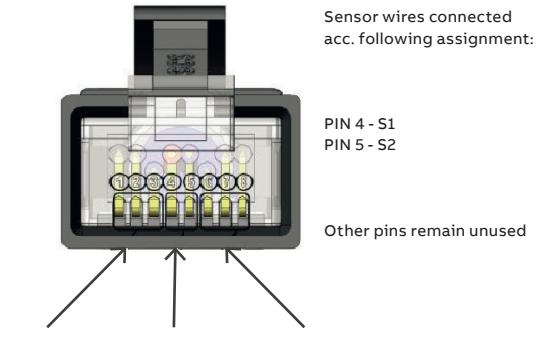
—
06



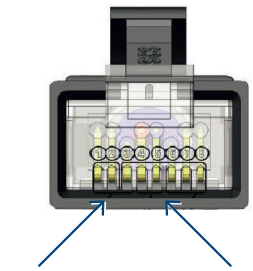
—
07

Note: It is recommended to use a cable tie to fasten long sensor cables approximately 10 cm from the RJ-45 socket.

The sensor plug connector pin's assignment is shown on Fig. 8/Fig.9. (Front view).



—
08

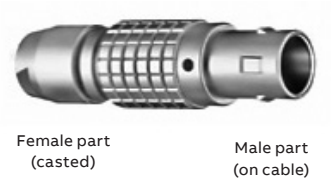


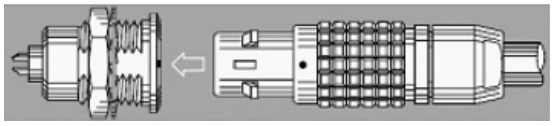
—
09

A cable not connected to the IED can be left open or short-circuited without any harm for the sensor. Even during a primary short-circuit the voltage in the secondary circuit of the current sensor will be below 100 V. Nevertheless it is a good safety practice to earth cables not connected to the IED. RJ-45 plug connector has 8 contacts and locking latch coupling. The sensor connector plug shall be inserted properly with the IED matting receptacle before completing the coupling with the bayonet lock. Take care and do not use excessive force to plug-in and plug-out these connectors. The used RJ-45-type connectors (EIA/TIA 568A Standard) are screened and designed to guarantee low resistance shielding; they are particularly adapted to applications where electromagnetic compatibility (EMC) is important. The connectors are robust but it is necessary to be careful during their assembly – do not use force!

Connection to the sensor

The connection between cable and sensor is provided by LEMO/ODU push-pull type connector, see Fig.10.





—
10

4. Instructions for Use

The current sensors are used:
- To convert large currents in the primary circuit of the network to the appropriate signal for the secondary equipment (e.g. IEDs)
- To insulate primary and secondary circuits from each other
- To protect secondary equipment from harmful effects or large currents during abnormal situations in the network

The use of a sensor for other purposes than those described above is forbidden.

Routine test report
The routine test report includes following tests:
- Verification of terminal marking
- Power-frequency withstand test on secondary circuits (see Note 1)
- Test for accuracy

Correction factors are measured separately for each sensor during routine testing and are marked on the rating plate. The use of correction factors is required condition in order to achieve the declared accuracy class.

Note 1: The maximum power-frequency test voltage for current sensor secondary terminals (connector) is 0.5 kV. Test voltage can be connected between short-circuits signal wires and the earth.

5. Instructions for Maintenance

Excessive dust or other kinds of pollution must be brushed off the sensor. Polluted sensors can be cleaned with spirit, petrol or toluene. Otherwise, during normal use the sensors do not need any additional maintenance.

6. Transport and Storage

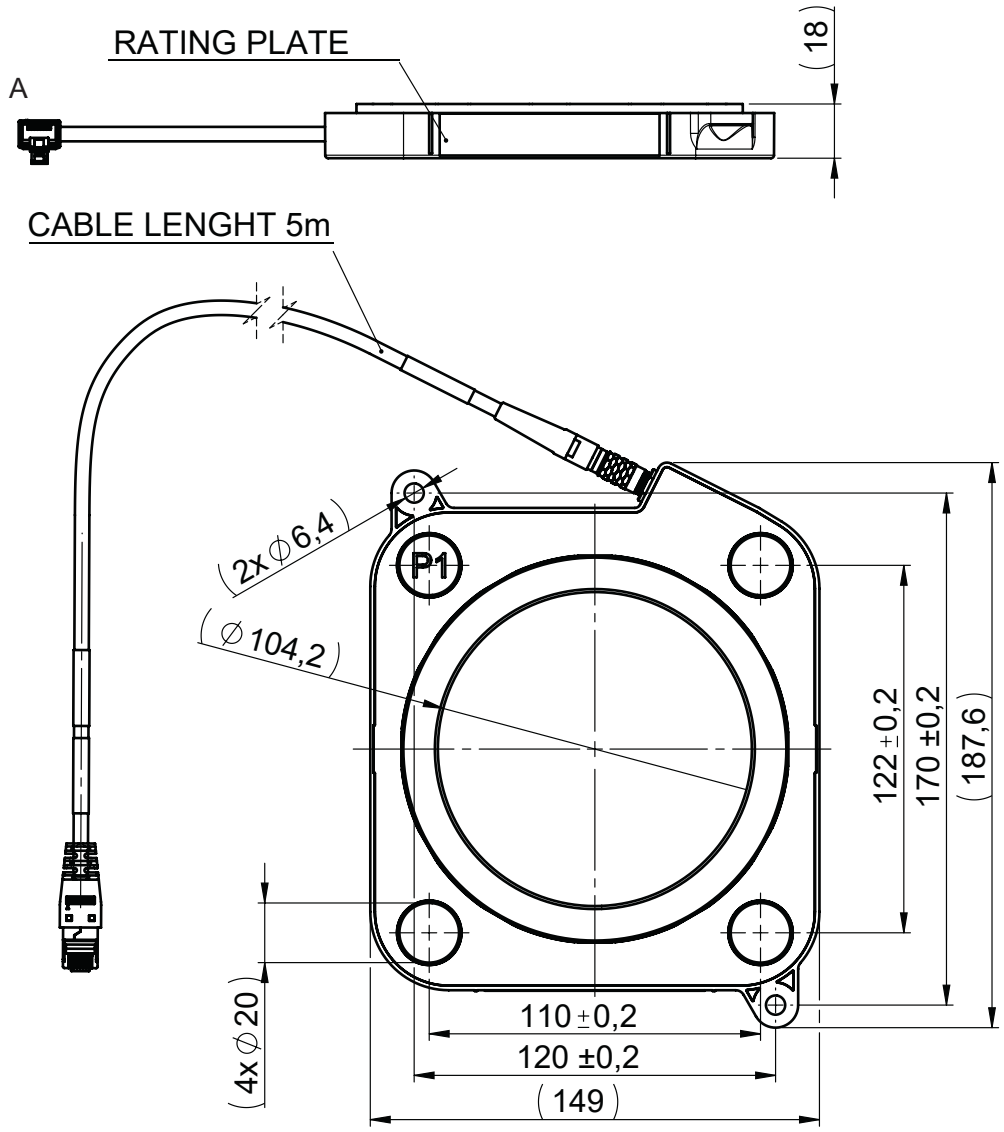
The permissible transport and storage temperature for sensors is from -40 to +80°C. During transport and storage the sensors must be protected against direct sunshine. The sensors are delivered packed into wooden boxes or transport pallets.

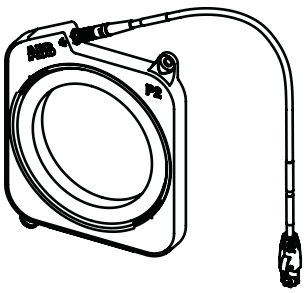
7. Recommended Procedure for Disposal of the Sensor

The sensor does not contain environmentally hazardous materials. For disposal of the product after it has been taken out of use, local regulations, if there are any, should be followed.

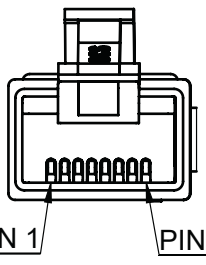
Dimensional Drawing

KECA 80 C104



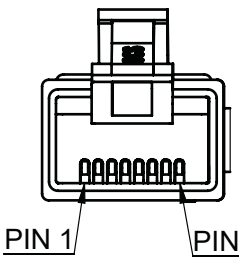


CONNECTOR RJ45 CAT6
IEC 60044-8



PIN 4 - COIL START (S1)
PIN 5 - COIL END (S2)

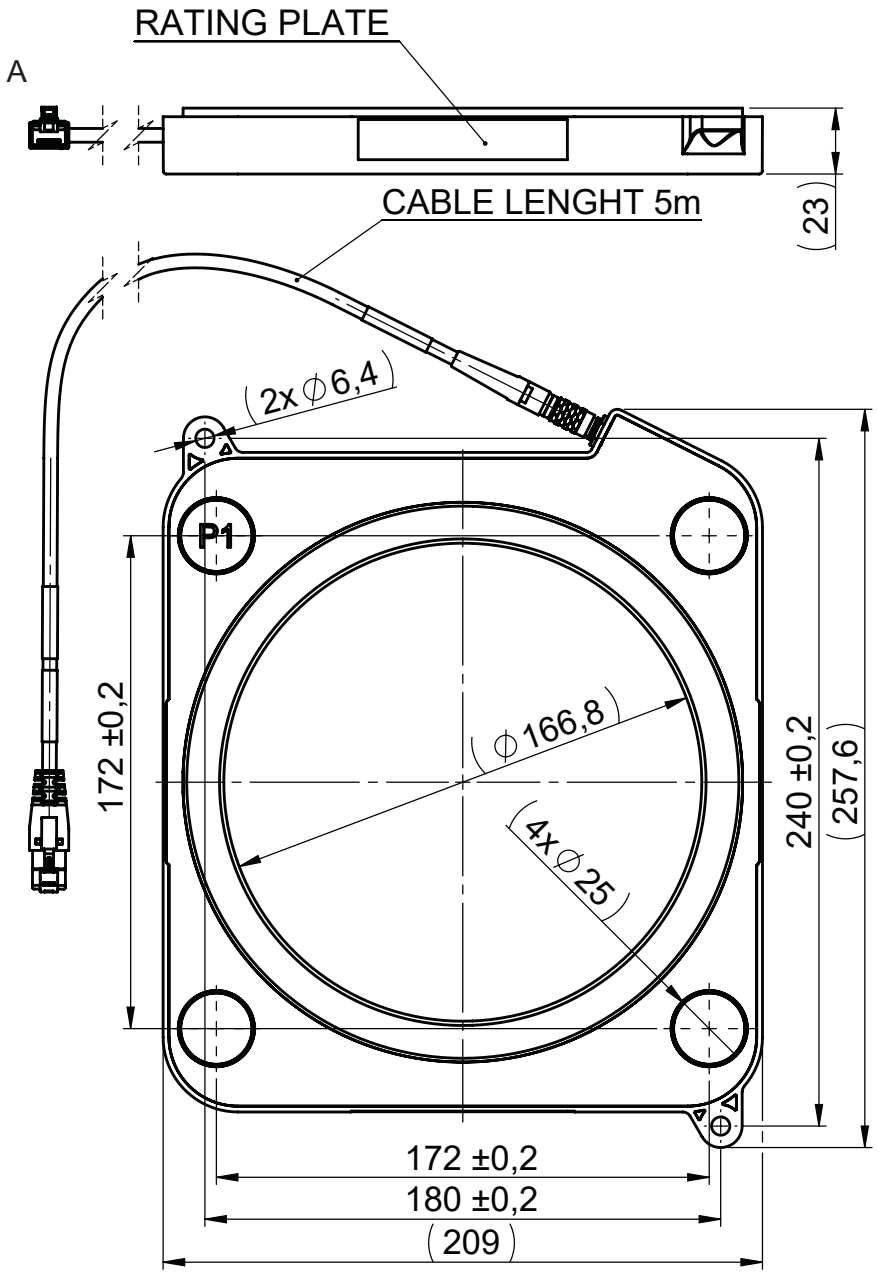
CONNECTOR RJ45 CAT6
IEC 61689-10



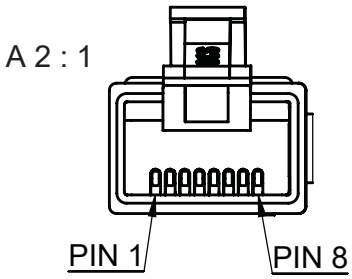
PIN 1 - COIL START (S1)
PIN 2 - COIL END (S2)

Dimensional Drawing

KECA 80 C165

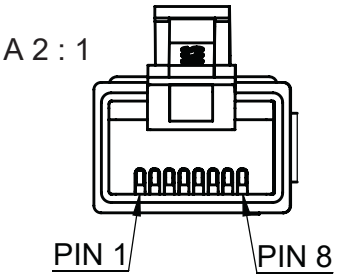


CONNECTOR RJ45 CAT6
IEC 60044-8



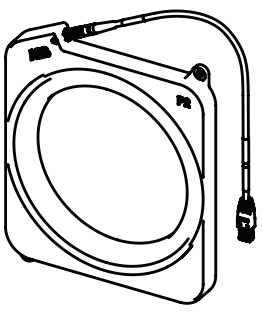
PIN 4 - COIL START (S1)
PIN 5 - COIL END (S2)

CONNECTOR RJ45 CAT6
IEC 61689-10



PIN 1 - COIL START (S1)
PIN 2 - COIL END (S2)

3D VIEW



CONTACT US

ABB s.r.o.
ELDS Brno
Videnska 117, 619 00 Brno,
Czech Republic
Tel.: +420 547 152 021
+420 547 152 854
Fax: +420 547 152 626
E-mail: kontakt@cz.abb.com

www.abb.com

NOTE

We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

1VLM000810 Rev.2, en 2023.10.20