כנס החשמל באילת 2024

סנסורים חכמים בלוחות מתח גבוה

מיכאל וונדט – מנהל מוצר מתח גבוה

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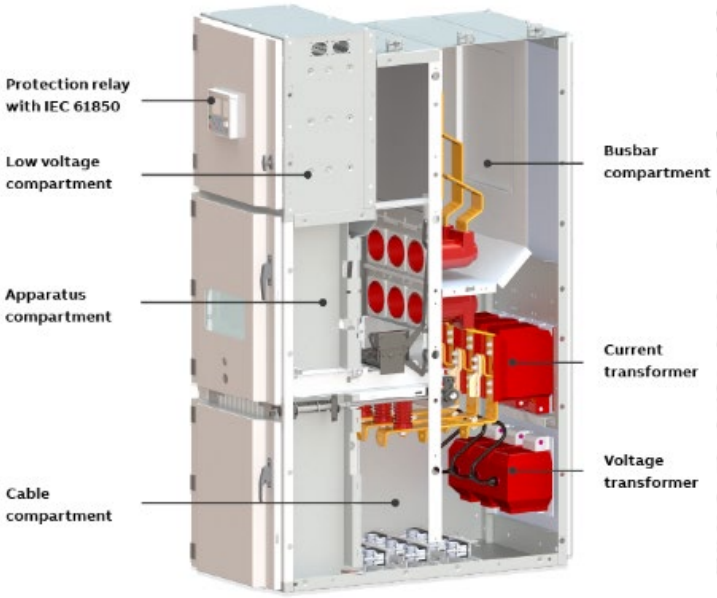
נושאי המצגת

- מה הם הסנסורים למתח גבוה של ABB?
- מה היתרונות בשימוש בסנסורים?
- איך הסנסורים ישנו את האופן שבו אנו מודדים?
- איך הסנסורים רלוונטים לעבודה או למתקן שלי?

UniGear ZS1\ZS2

Primary AIS

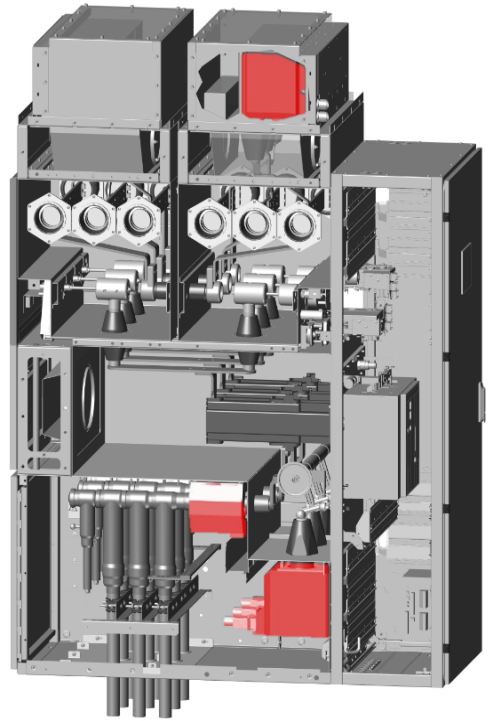
Voltage Range 12-36kV
Extensible
Available as digital solution
Versatile configuration
Safe and reliable
Suitable for all kinds of applications



ZX0.2\ZX1\ZX2

Primary GIS

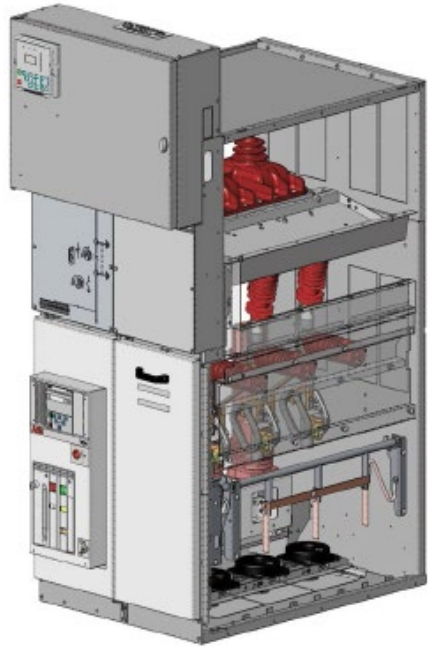
Voltage Range 6-36kV
Wide range of solutions
Available is SBB and DBB
Available as digital solution
Long service life
Maintenance free



UniSec

Secondary AIS

Voltage Range 6-24kV
Compact
Flexible design
Available as digital solution
PM partition available
Withdrawable solutions

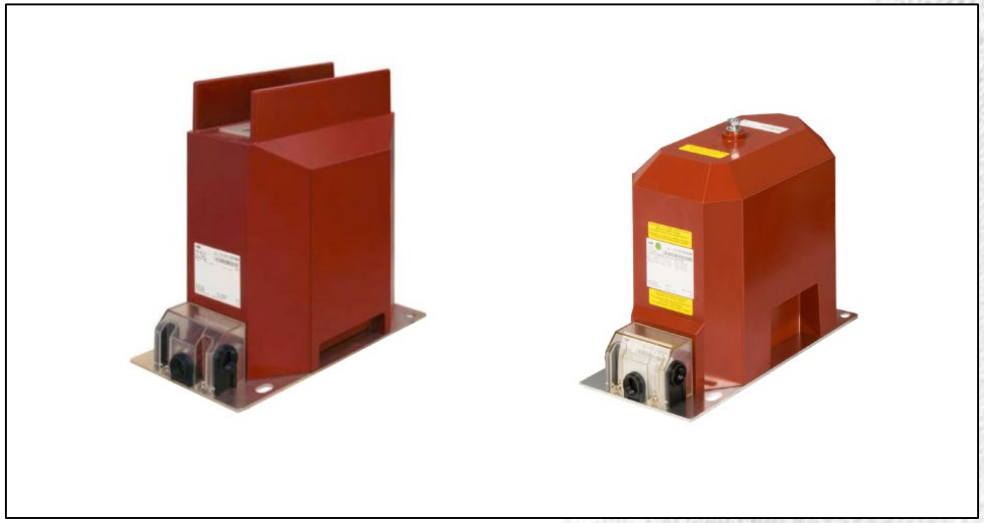


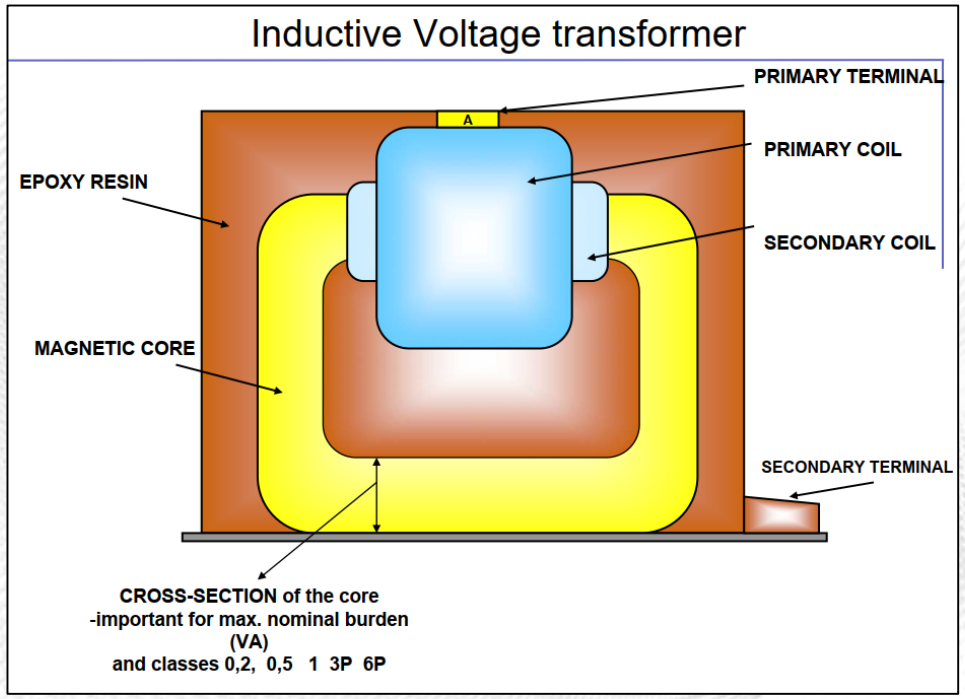
SafeRing\SafePlus

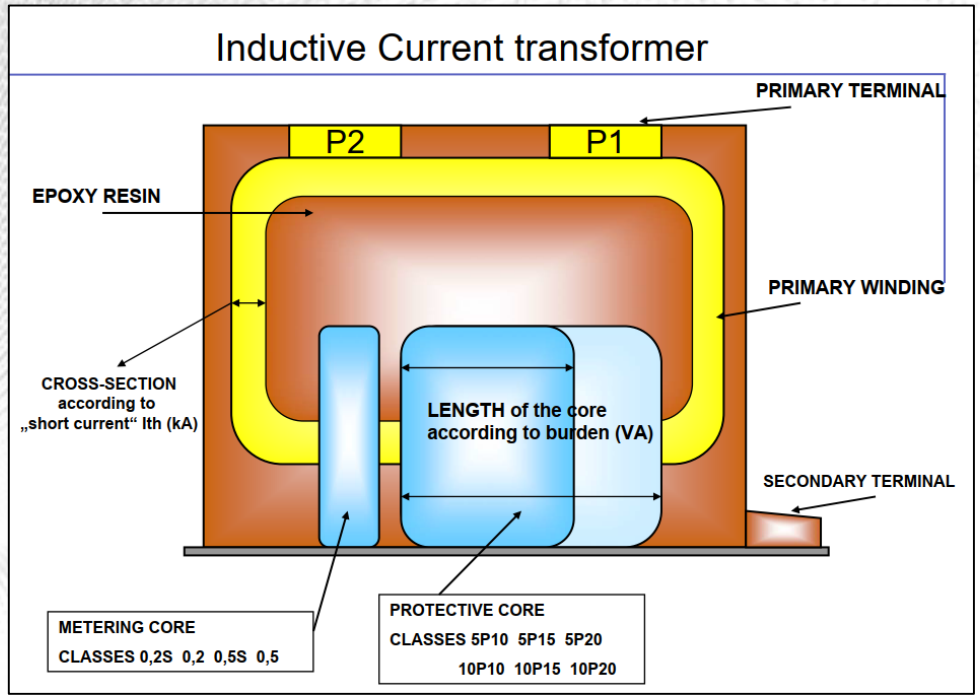
Secondary GIS

Voltage Range 6-36kV
Compact
Extensible
Available as digital solution
Withdrawable solutions
Maintenance free

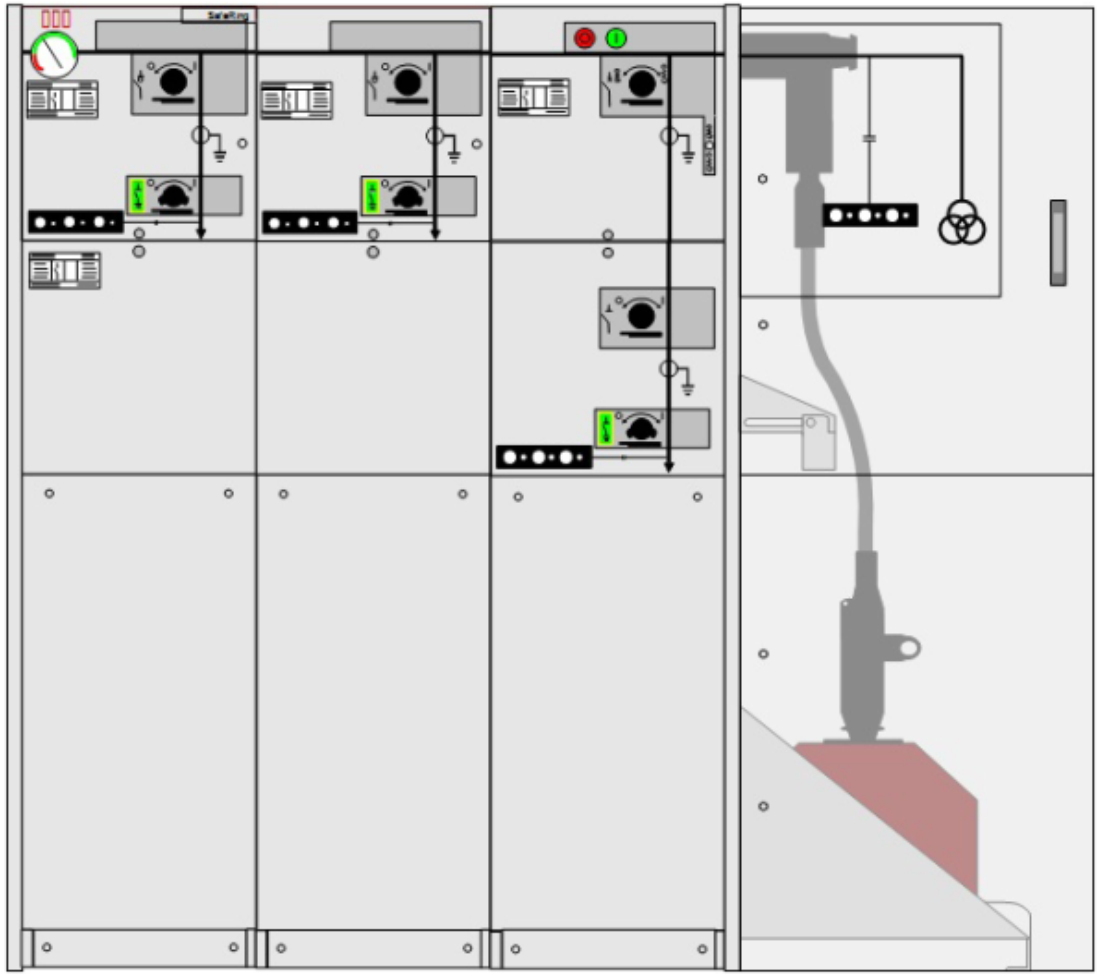
Conventional CTs & VTs



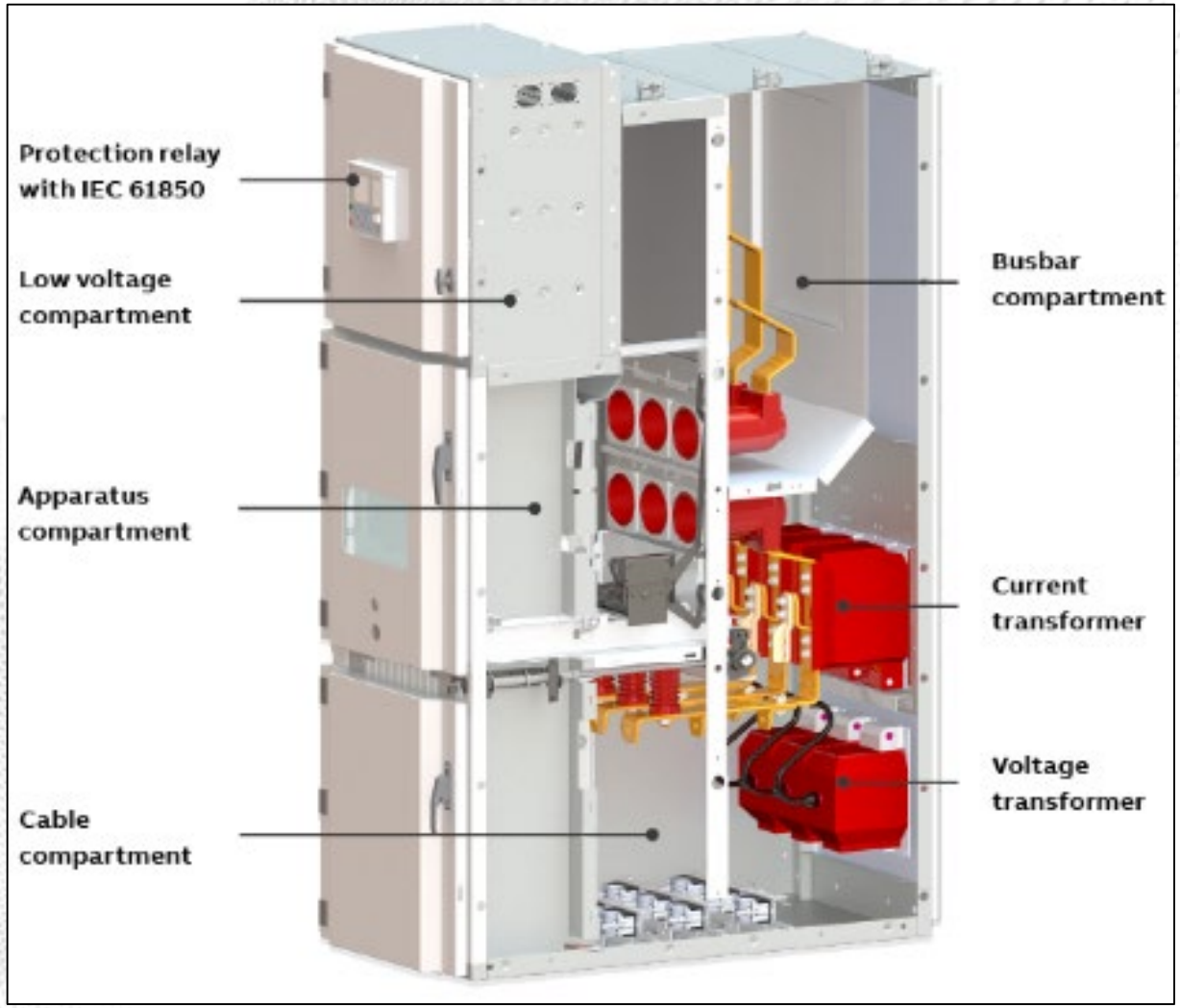




SafeRing (secondary)



UniGear ZS1 (primary)



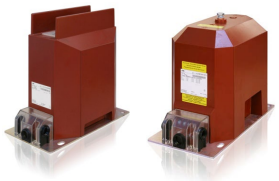
Introduction

What is a MV Indoor Sensor?

- Sensors transfer high current and voltages to low-power signal used by electronic devices.
- Successors to conventional instrument transformers with similar accuracy
- Significant reduction in dimensions and CO2 emission
- Increase of safety
- Greater rating standardization with a wider functionality range.

Oil insulation

Epoxy resin insulation



Epoxy resin insulation

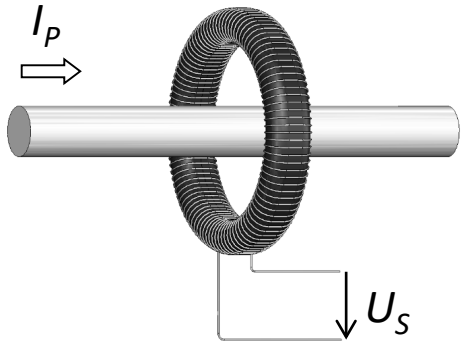
MV Sensors

AdvaSense™ MV Sensors

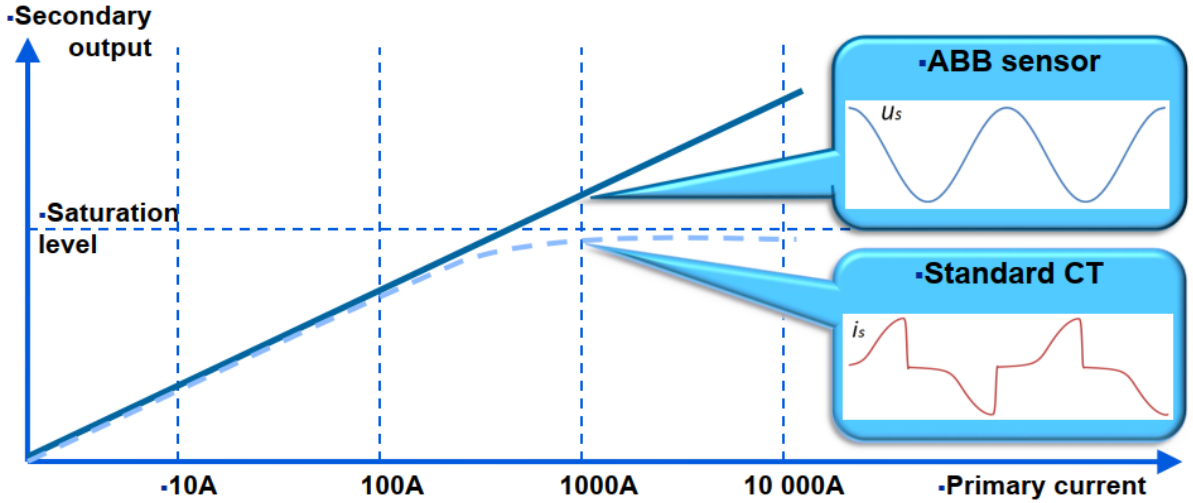
Current sensor principles

Rogowski coil

- ABB Rogowski coil
  - Us=150 mV for 50 Hz
- Combined accuracy class up to 0.2s/5P1060
- Complies with IEC 60044-8, IEC 61869-10 standards
- Pure passive element

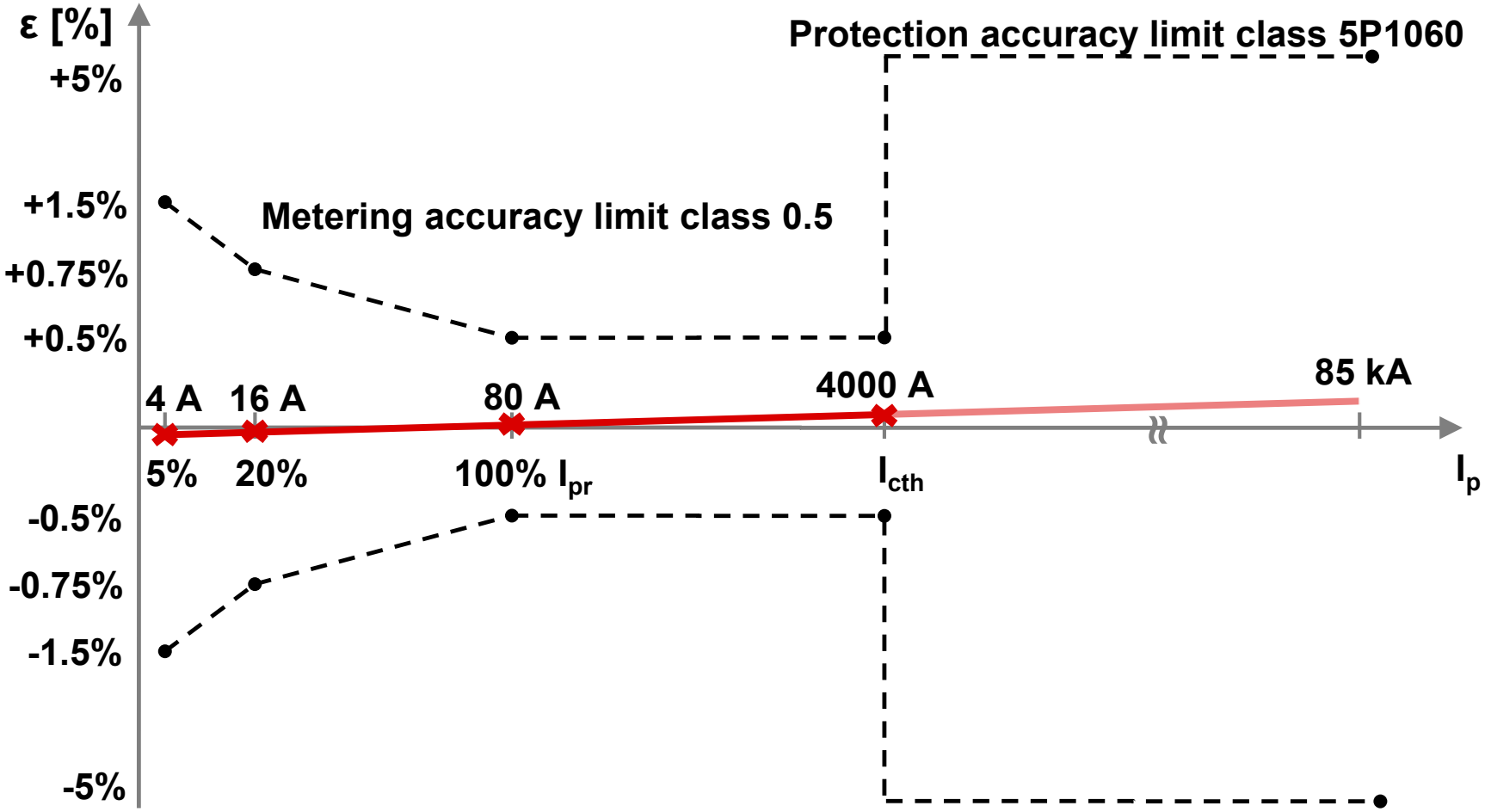


Linear characteristic = No saturation



AdvaSense™ MV Sensors

Current sensor principle – Combined accuracy class 0.5/5P1060



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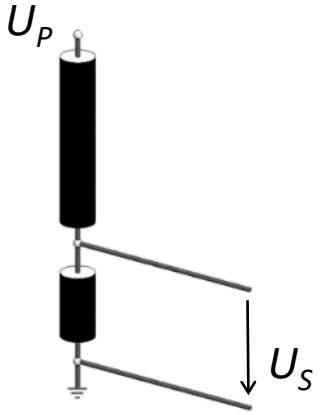
Voltage sensor principles

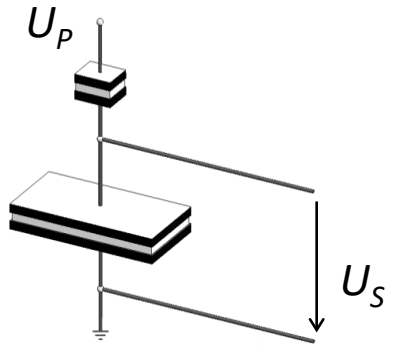
Resistive voltage divider

- Secondary output:
  - 1:10,000 transformation ratio (ABB and 3rd party IEDs)
  - 3.25V secondary output (3rd party IEDs)
- Combined accuracy class 0.5/3P
- Complies with IEC 60044-7, IEC 61869-11 standards
- Pure passive element



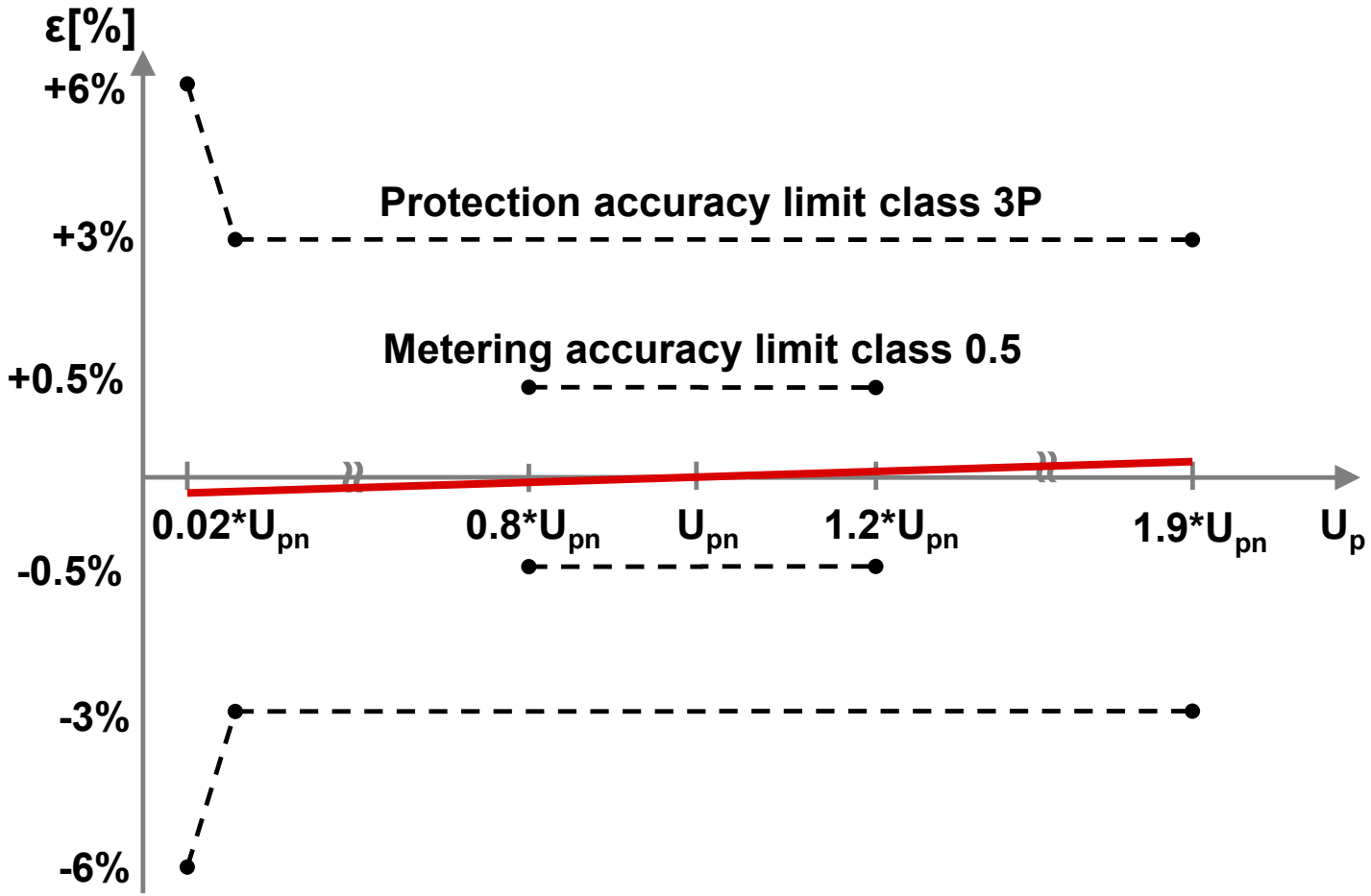
Capacitive voltage divider

- Secondary output:
  - 1:10,000 transformation ratio (ABB and 3rd party IEDs)
- Combined accuracy class 0.5/3P
- Complies with IEC 60044-7, IEC 61869-11 standards
- Pure passive element



AdvaSense™ MV Sensors

Voltage sensor principle – Combined accuracy class 0.5/3P

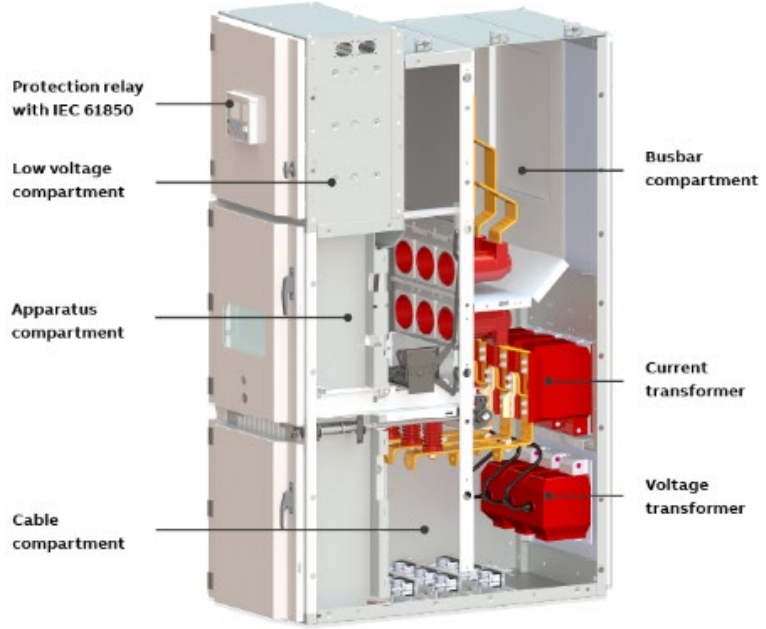


MV Sensors

Applications

AdvaSense™ MV Sensors

Current and Voltage sensor for Air-insulated Switchgear Unigear Digital ZS1



AdvaSense™ MV Sensors

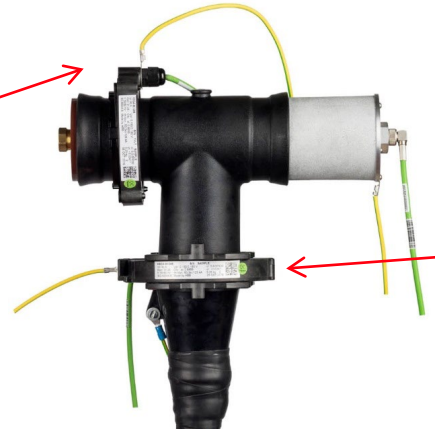
Current sensor for Gas-insulated Switchgear

KECA 80 C85

- Ring type sensor for GIS applications
- Suitable for new installations
- Rated primary current of application:
  up to 4000 A

KECA 80 D85

- Split core Ring type sensor for GIS and AIS applications
- Suitable for retrofit purposes as well as new installations
- Rated primary current of application:
  up to 4000 A



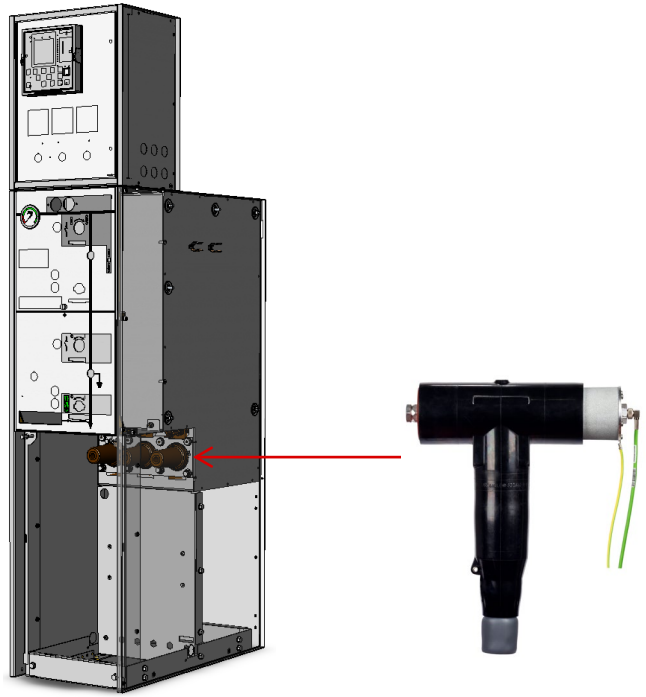
Not only for GIS, but for all insulated and shielded cables

AdvaSense™ MV Sensors

Voltage sensor for Gas-insulated Switchgear

KEVA C

- Plug type sensors
- Suitable for retrofit purposes as well as new installations
- Rated primary voltage of application:
  up to 36 kV (40.5 kV)
- Two product variants – with and without metal coating (conductive surface)



Partnership with Nexans and Cellpack = proofed design according to IEC and HD CENELEC standards

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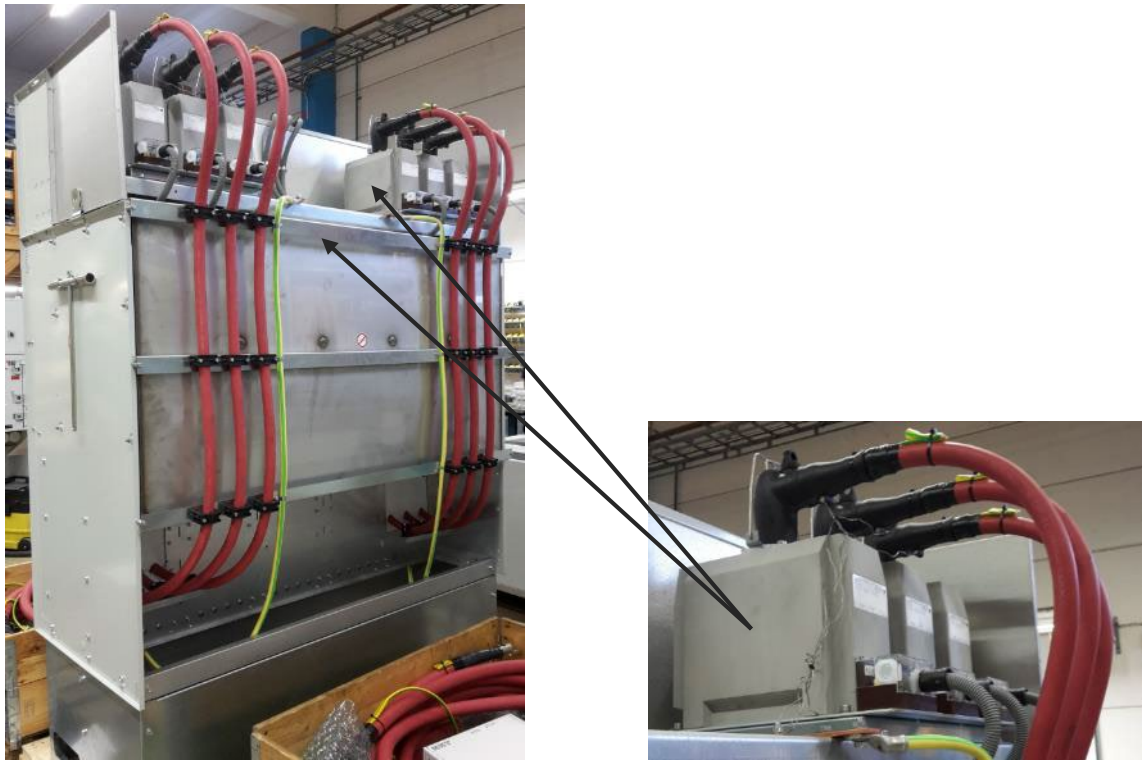
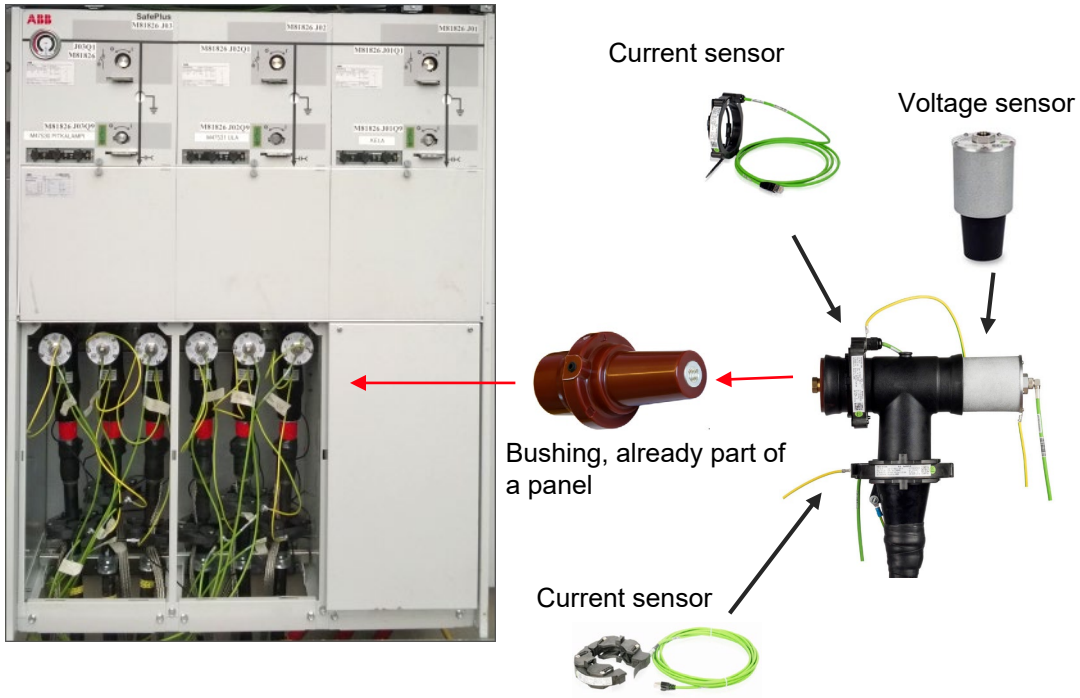
Time – cost – space saving solution in practice

Traditional solution based on Instrument Transformers



Innovative solution based on Sensors



AdvaSense™ MV Sensors

Product overview

Current sensors

KECA 80 C85

KECA 80 D85

KECA 80 Cxxx

KECA 250 B1

KEVCR 24 xC2

Voltage sensors

KEVA B

KEVA C

Combined sensors

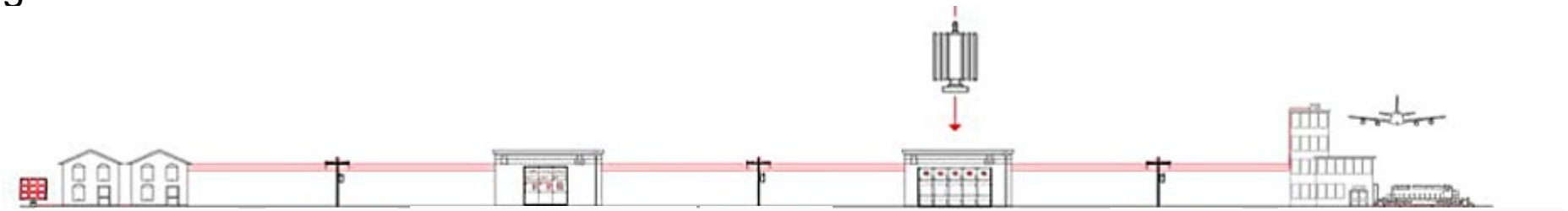
KEVCD

R

KEVCY

MV Sensors

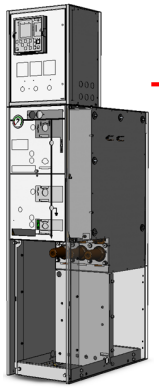
Full package solution



Secondary distribution

Primary distribution

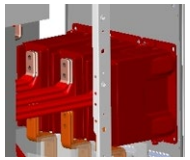
Example of instalations:



On cable connectors

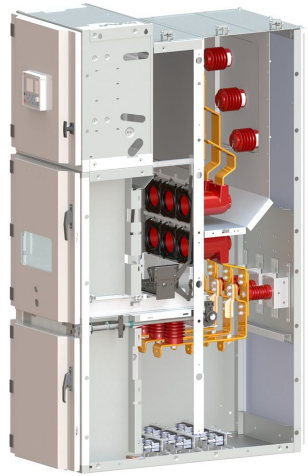
As bushings

Around cables



On busbars

As post insulator



Protection relays

Fault passage indicators

And many others…

MV Sensors

Compatibility with protection relays

AdvaSense™ MV Sensors

Relay compatibility

ABB sensors are fully compatible with Relion IED family

RIO600

605 series

615 series

620 series

640 series

Complete solutions from basic range up to hi-end applications

MV Sensors

Plug and play solution

KEVCD and REF615

KECA B and REF601

MV Sensors

Compatibility with energy meters

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Energy meters compatibility

Statistical energy meter Satec PM 174/PM 175

- Statistical energy meter and power quality analyzer
- Fully compatible with the wide range of ABB sensors
- Voltage, current or combisensors compatible

KECA 80 Cxxx

KEVA B

SATEC PM175

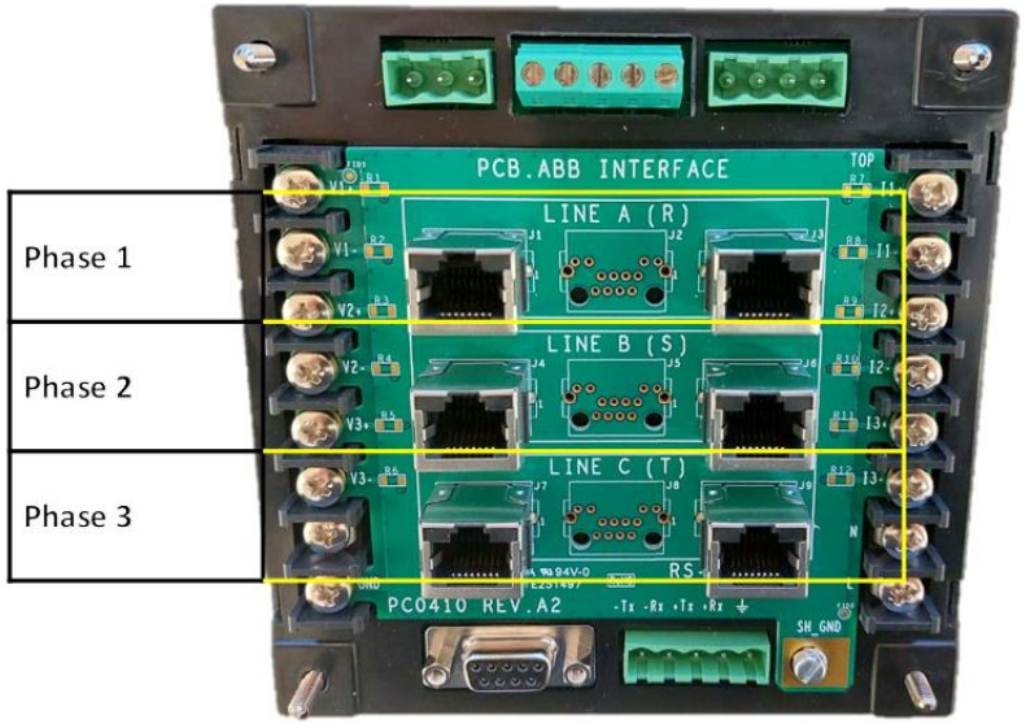
KEVCD A

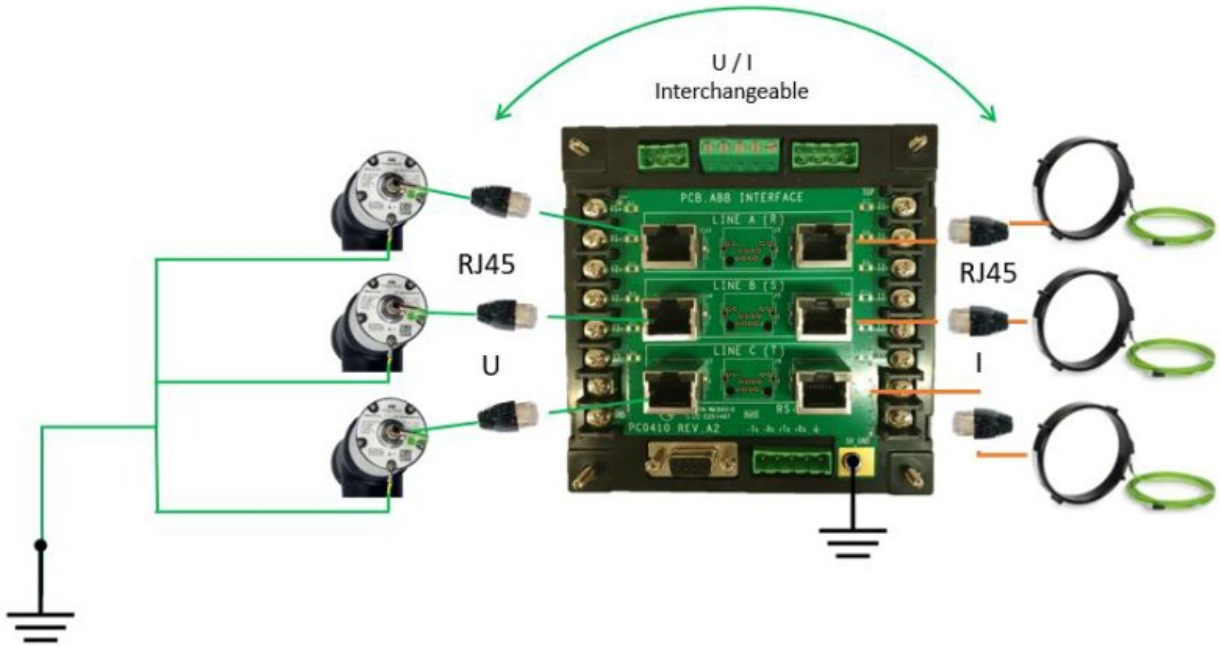
KEVA C

AdvaSense™ MV Sensors

Energy meters compatibility

Statistical energy meter Satec PM 174/PM 175





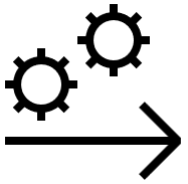
MV Sensors

Benefits & features

AdvaSense™ MV Sensors

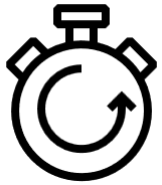
Fast and easy design process allows quick delivery time

Optimized design process



- Standardized products
- Wide range of parameters cover one design
- Zero engineering
- Faster and simplified project documentation
- Flexible for last-minute changes

Quick delivery time



- Products in stock
- Quick dispatch
- No clarification delays due to feasibility verification as with conventional Instrument transformers

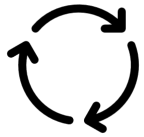
AdvaSense™ MV Sensors

Fast and easy design process allows quick delivery time

Space saving solution

- Reduce the overall footprint of the switchgear room
- Saving of the transportation costs
- Reduction in overal weigth of panel

Sustainable solution



- Decrease of energy consumption during the production processes
- Reduction of the CO2 emission during the logistics process
- Self-energy consumption during the operation reduced by 99%

AdvaSense™ MV Sensors

Increased flexibility together with improved safety and reliability

Flexibility

Flexibility towards varying load flows

Possibility to connect different equipment/load

Upgrade of switchgear parameters without additional costs

Safety and reliability

Ferroresonance free (no inductance to couple with line capacitance)

Low voltage signals

No need to use VT fuses (less violent failure mode)

Secondary can be left open or short-circuited

Easy and reliable connection to protection relays

Increased safety for personnel during testing/ operation

AdvaSense™ MV Sensors

Minimized costs during the whole life cycle

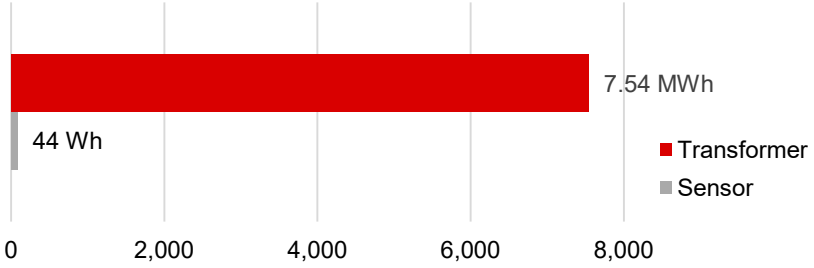
Minimized costs

Saves time and money during planning and execution

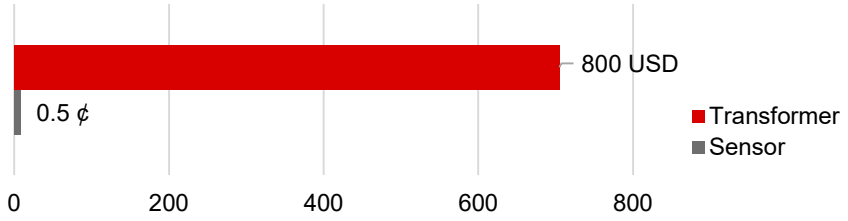
Easy and fast installation and assembling process

Reduces operating costs

Energy consumption in 30 years



Cost of energy consumption in 30 years




ABB