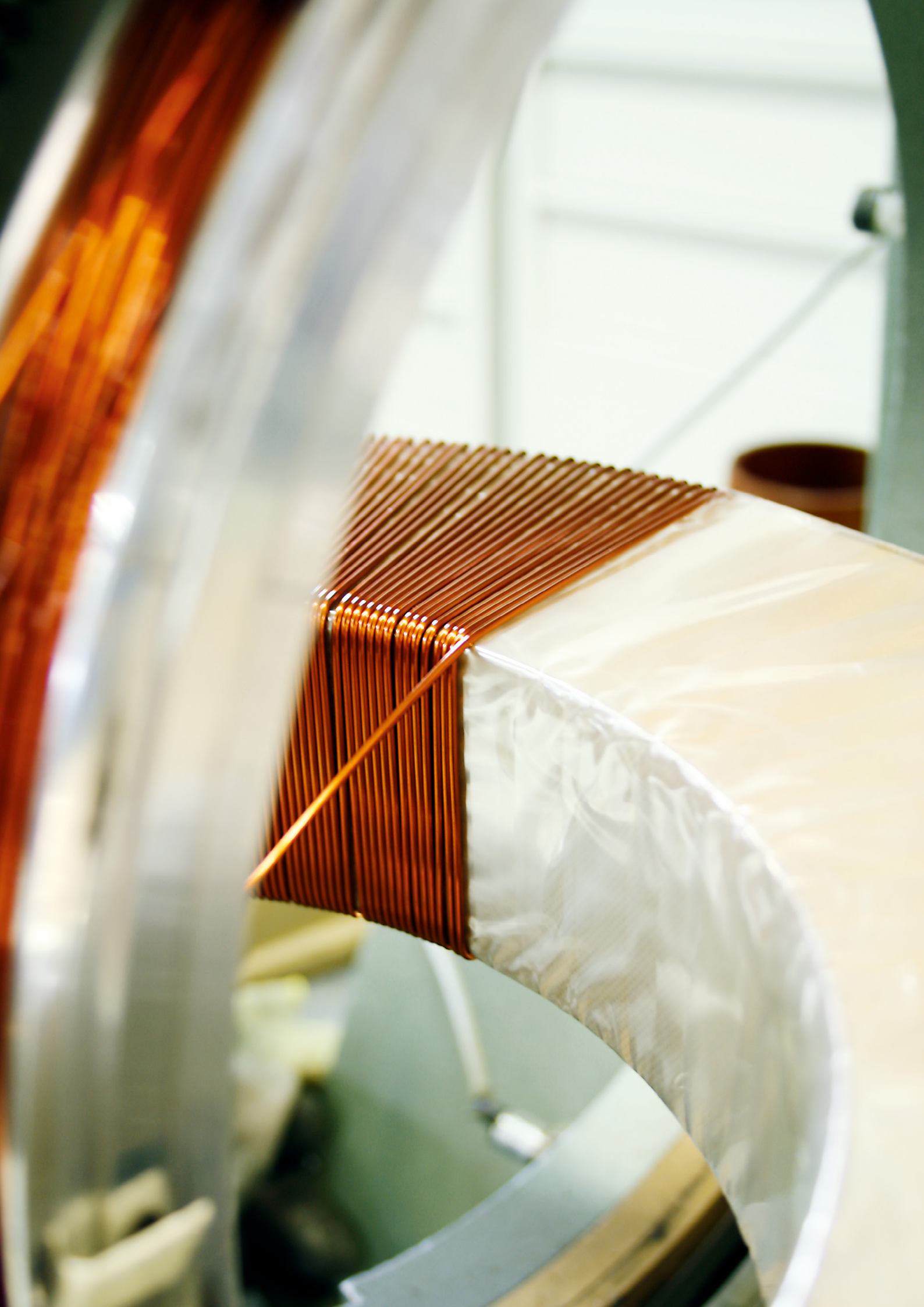
Product Overview

PFIFFNER

Current and voltage – our passion



Swiss quality combined with global experience

PFIFFNER is a values-driven Swiss company with:

- Over 95 years of experience and an enormous amount of know-how
- Long-lasting partnerships with customers and suppliers
- A high level of vertical integration to control all key processes in-house
- Swiss quality - from development right through to delivery

Total customer satisfaction is our goal. With many years of experience and technical expertise, we can provide the right solutions to meet all our customers' needs. We offer a various instrument transformers for voltage levels up to 550 kV. Thanks to our strong presence in international markets and close contact with customers and local authorities, we fully understand the importance of local factors, enabling us to develop optimally customised products.

Qualified and motivated employees, who ensure efficient production and the ongoing development of our products, are the basis of our success. We guarantee up-to-date knowledge and high-quality products by constantly training and developing our employees.

As an independent Swiss company, we are a reliable and authentic partner for customers like you.

PFIFFNER – the symbol of unique quality

HIGH VOLTAGE

Our wide range of products insulated with oil-paper or SF_6 offers our customers an optimal choice of high-quality instrument transformers with a long lifetime.

Our voltage and current transformers are hermetically sealed. All products have a high level of safety against explosion hazards and meet the latest international standards. They all have aluminium castings and are available with silicone composite (LSR/HTV) or oil-paper insulated transformers with porcelain (C130) insulators if requested. All instrument transformers are available with various creepage and arcing distances. Because of our very close cooperation with our customers, we achieve optimized solutions used worldwide.

As a result of continuous development in our R&D department, we can offer products with the latest and state-of-the-art design.

MEDIUM VOLTAGE

This range of products covers standardized resin cast current and voltage transformers in block design up to 72 kV and cable current transformers. All products meet the specifications for various indoor and outdoor applications in power stations and power distribution systems.

Depending on their particular application, cable current transformers are cast in resin, installed in polycarbonate/ABS shells or mounted on boards or aluminium tubes.

Our production and test facilities are constructed for manufacturing and testing current transformers (also current transformer cascades) for a rated current of up to 50 kA. Current transformers can be designed for measurement as well as for complex transient protection. We can offer different types of current transformers are ring-core or split-core versions for indoor or outdoor applications.

LOW VOLTAGE

Instrument transformers for low-voltage applications are produced according to national and international standards. The current and voltage transformers can be calibrated for different countries and delivered with the corresponding certificate. We also offer specially designed and custom-built solutions for your specific applications.

Current transformers

Outdoor operation

JOF T (24–72 kV)

- Oil-paper insulated
- Simple primary winding changeover
- Robust design
- Earthquake-resistant
- Low centre of gravity

JOF (24–170 kV)

- Oil-paper insulated
- Simple primary winding changeover
- Explosion-tested casing
- Fine-graded bushing
- Generously-sized terminal box

JOF (245-550 kV)

- Oil-paper insulated
- Simple primary winding changeover
- Explosion-tested casing
- Fine-graded bushing
- Generously-sized terminal box

JGF (245–550 kV)

- SF6-gas insulated
- Primary winding changeover
- Pressure release by using a metal burst-disc
- Only silicone insulators are available
- Fine-graded foil bushing

The high voltage CTs consist of two head types in different sizes and one hairpin type with Viton membrane. All oil-filled head types have stainless steel expansion bellows for oil-volume compensation. The CTs can be produced with flat or round primary connectors.

Inductive voltage transformers

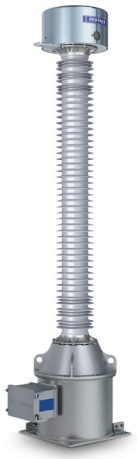
Outdoor operation

EOF (24–72 kV)

- Oil-paper insulated
- Robust design
- Earthquake-resistant
- Very low centre of gravity

EOF (123–170 kV)

- Oil-paper insulated
- Fine-graded bushing
- Oil level indicator
- Generously-sized terminal box



EOF (245 kV)

- Oil-paper insulated
- Fine-graded bushing
- Oil level indicator
- Generously-sized terminal box

EGF (245–550 kV)

- SF6-gas insulated
- Pressure release by using a metal burst-disc
- Gas density control
- Only silicone insulators are available
- Fine-graded foil bushing

Our VTs are working at low induction. With an open delta winding and damping unit, risk of ferroresonance can be minimized if requested. The secondary terminal box can be equipped with fuses to protect the secondary wiring and equipment.

Capacitive voltage transformers

Outdoor operation

ECF (72–300 kV)

- Upgradable for the transmission of high-frequency signals
- No on-site adjustment is necessary
- Increased security against relaxation oscillation

ECF (362–550 kV)

- Upgradable for the transmission of high-frequency signals
- No on-site adjustment is necessary
- Increased security against relaxation oscillation
- Multi-level primary capacity

All CVTs are ferro-resonance free and are not damaged by line discharge. Optionally all CVTs can be equipped with line trap connections, PLC accessories and expansion bellows indication. The secondary terminal box can be equipped with fuses.

Resistive capacitive voltage divider

Indoor and outdoor operation

ROF (72.5-550 kV)

- Oil insulated (mineral or bio-based)
- Protection and measurement in high voltage transmission and distribution (AC)
- Suitable for power quality measurement
- Highest accuracy from DC up to 30 kHz

RGF (72.5-550 kV)

- Gas insulated for AIS
- Protection and measurement in high voltage transmission (AC/DC)
- Suitable for power quality measurement
- Highest accuracy from DC up to 30 kHz

RGK (72.5-550 kV)

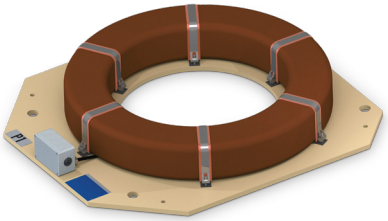
- Gas Insulated GIS Systems
- Protection and measurement in High Voltage Transmission (AC/DC)
- Suitable for measurement of Power quality
- Highest accuracy from DC up to 30 kHz

All CVTs are ferro-resonance free and are not damaged by line discharge. Optionally all CVTs can be equipped with line trap connections, PLC accessories and expansion bellows indication. The secondary terminal box can be equipped with fuses.

Applications of the Zero-Flux current transformer

JGF

AKA



JK-GCT

JK-GIS

GIS

Zero-Flux Current Transformer

AC and DC applications - with the zero-flux current transformer - in any enclosure

- It can be used for AC and DC applications
- As high current, cable, outdoor, and GIS current transformers up to 336 kV_{dc} and 550 kV_{ac}
- Primary sensor in proven inductive design combined with robust electronic unit
- Standard: IEC 61869-14
- Digital (IEC 61869-9; IEC 61850-9-2 LE & 1024kS/s UDP) and analog interfaces
- Flexible distance between the transducer and electronic unit

Technical data

Accuracy up to	0.1%
Bandwidth up to	100 kHz
Scalability up to	DC 20,000 A
DC supply	110 V_{dc}... 350 V_{dc}
AC supply	100 V_{ac}... 265 V_{ac}
Temperature range	-40°C... +50°C

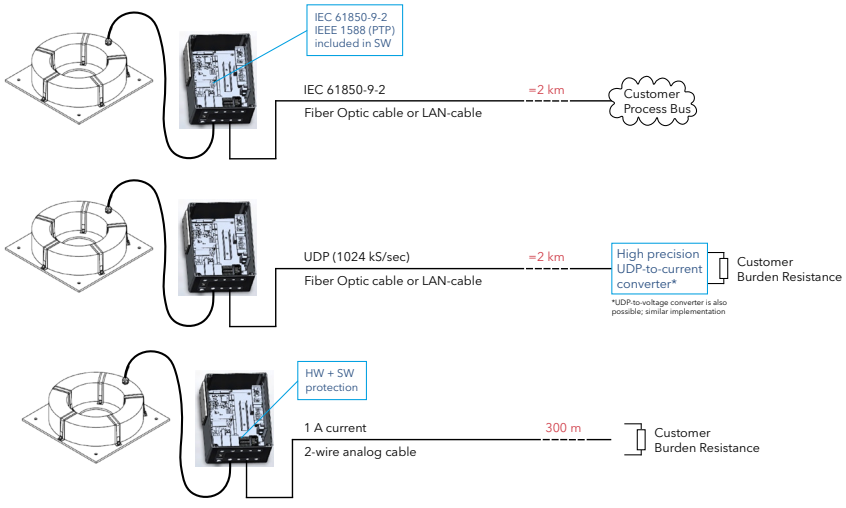
Communication interface

Variants

- 2x Fiber Optic 100Mbps (Standard: 2 km; up to 20 km)
- 1x Lan & 1x Fiber Optic
- 2x LAN
- 3x relay outputs COM, NO, NC for protection and monitoring

Receiver

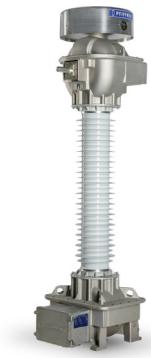
- IEC 61850-9-2
- Digital-to-analog conversion: 0...5V, 0...10V, +/-5V, +/-10V 0...20mA, 4...20mA, 100mA, 1A
- Direct connection load




PFIFFNER

Combined instrument transformers

Outdoor operation



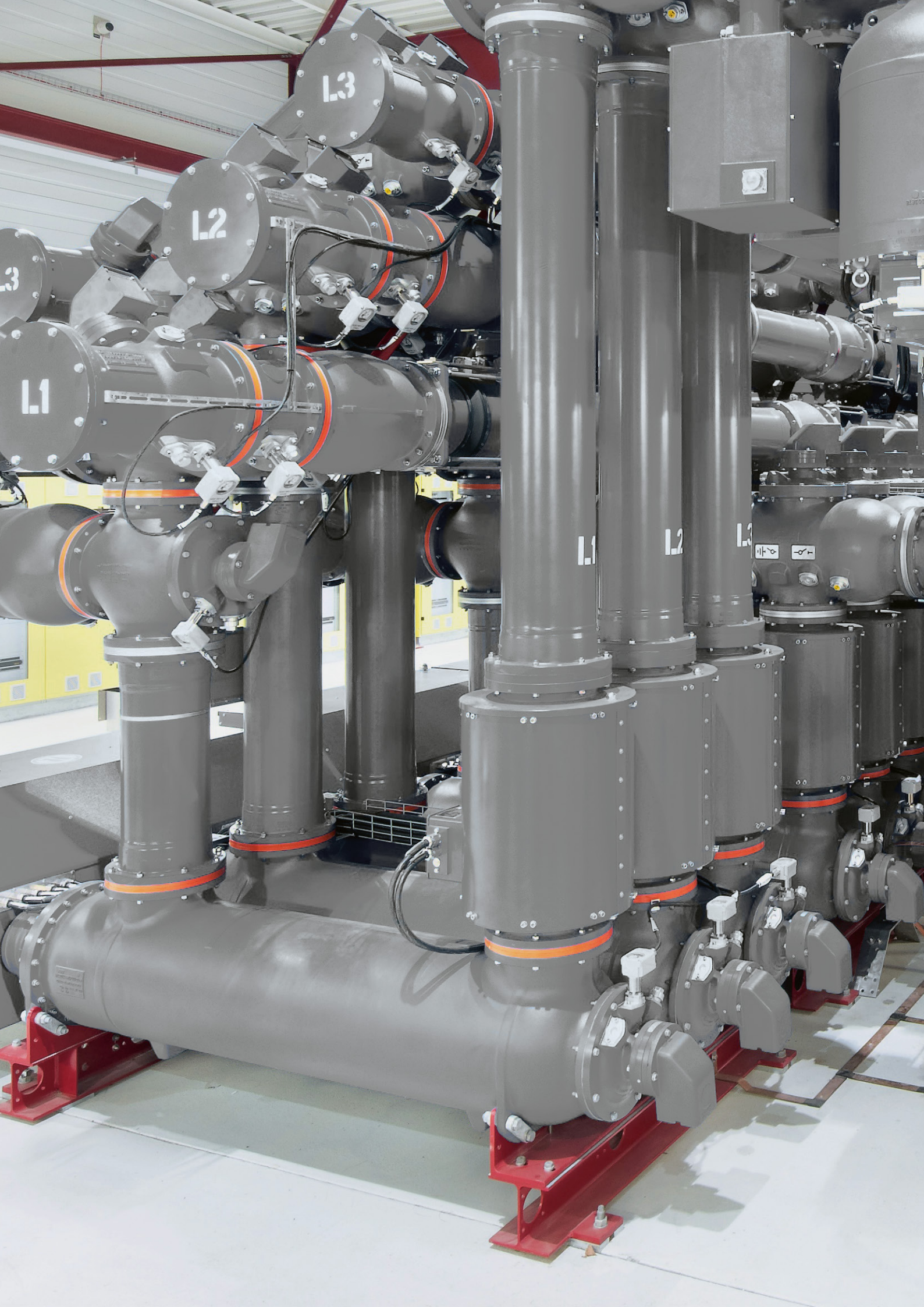
EJOF (24–170 kV)

- Oil-paper insulated
- Guaranteed accuracy over entire service life
- Explosion-tested casing
- Fine-graded bushing
- Low space requirements for installation

EJGF (245–550 kV)

- SF6-gas insulated
- Guaranteed accuracy over entire service life
- Pressure release by using a metal burst-disc
- Protection against thermal overload
- Only silicone insulators are available

The combined transformers include all advantages of the current and voltage transformers but with a smaller footprint. Up to 170 kV with a oil-paper and above with SF6-gas insulation. Primary terminals are available in flat and round design.

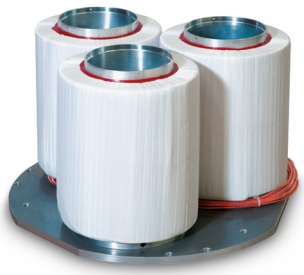

L3
L2
L1
L1
L2
L3

GIS current transformers

Indoor and outdoor operation

JK GIS

- Single-phase current transformer
- Free choice of mounting position
- Mounted outside encapsulation
- Primary current up to 5,000 A



JK GIS

- Three-phase current transformer
- Free choice of mounting position
- Mounted inside the encapsulation
- Primary current up to 4,000 A

JKO

- Ring core current transformer
- Free choice of mounting position
- Mounted inside or outside encapsulation
- Primary current up to 5,000 A
- Installation by customer

GIS current transformers can be manufactured according to IEC, IEEE, GOST and other standards. All CTs are designed and built based on specific customer requirements. The design is optimized to minimize the impact of external magnetic fields.

GIS voltage transformers

Indoor and outdoor operation

EGK (245–420 kV)

- Single-phase voltage transformer
- Free choice of mounting position
- Can be adapted to various GIS systems
- Compact design
- Gas loss < 0.1% per annum
- Including IID (internal isolating device)

EGK (72–170 kV)

- Three-phase voltage transformer
- Free choice of mounting position
- Variable terminal box position
- Various burst-protection versions
- Gas loss < 0.1% per annum

GIS voltage transformers can be manufactured according to IEC, IEEE, GOST and other standards. A maximum of 5 secondary windings with accuracy up to class 0.1 are possible. Partial discharge is less than 1pC under test-voltage conditions.

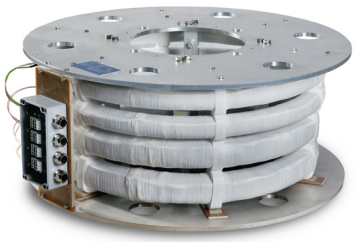

P1
P1
P1
P1

High current transformers

Indoor operation

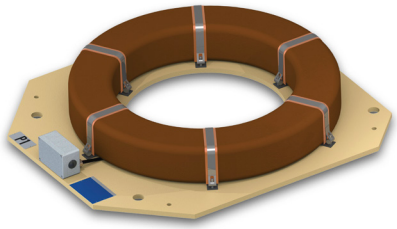
AKA

- Mounted in isolated-phase bus (IPB)
- Air-insulated installation
- Resin casted windings
- Primary current up to 50,000 A
- Available Ex-protected for Zone 2



ALG

- Mounted on insulated generator bushings
- Compact multiple-core construction
- Primary current up to 50,000 A
- Available Ex-protected for Zone 2

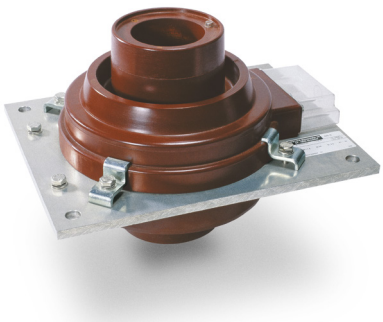


JK-GCT

- Mounted on insulated generator bushings
- Board mounted single-core
- Primary current up to 50,000 A

JKQ

- Mounted-in generator switches
- Air-insulated installation
- Max. 3 cores on supporting tube
- Primary current up to 50,000 A



AKQ (12–36) kV

- Mounted on a non-insulated conductor
- Cast resin insulated
- Multiple-core, with mounting plate
- Primary current up to 15,000 A

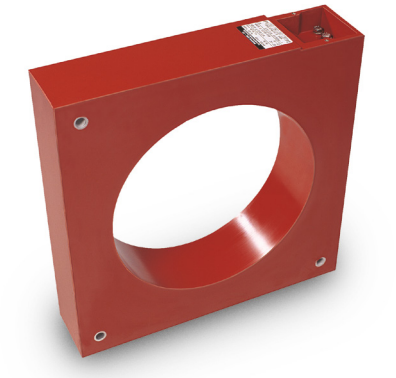
JKO

- Custom-built ring core
- Hole diameters up to 1,200 mm
- Long junction wire available
- Primary current up to 50,000 A


L1
L2
L3

Cable current transformers

Indoor and outdoor operation



JK

- For indoor application
- Hole diameters up to 300 mm
- Various sizes available
- Primary current up to 5,000 A

JKS/JKS-S

- Split-core CT
- For indoor application
- Hole diameters up to 220 mm
- Various sizes available (modular)
- Primary current up to 5,000 A

JKF

- For outdoor application
- Hole diameters up to 700 mm
- Various sizes available
- Primary current up to 15,000 A

JK-G/JKS-G

- Ring-core or split-core CT
- For outdoor application
- Hole diameters up to 225 mm
- Various sizes available
- Primary current up to 3,000 A

Support type CTs and VTs

Indoor operation

VD (12–72 kV)

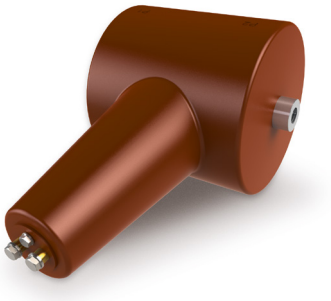
- Single-pole voltage transformer
- Small design
- Free choice of mounting position
- Up to 4 secondary windings
- Up to 1,500 VA thermal limiting power

WD (12–36 kV)

- Double-pole voltage transformer
- Small design
- Free choice of mounting position
- Up to 3 secondary windings
- Up to 1,500 VA thermal limiting power

BD (12–72 kV)

- Current transformer
- Small design
- Free choice of mounting position
- Up to 5 cores
- Primary current up to 2,000 A



AKP (12–36 kV)

- Custom-built current transformer
- Substitute for primary relays in medium-voltage cells
- Cast in resin
- Primary current up to 800 A

The resin cast medium voltage indoor CTs and VTs are typically used to fit in standard MV cabinets. However, special requirements as high burden for VTs or capacitive tap for CTs can be offered.
If required, measuring calibration for different countries is available.

TSC

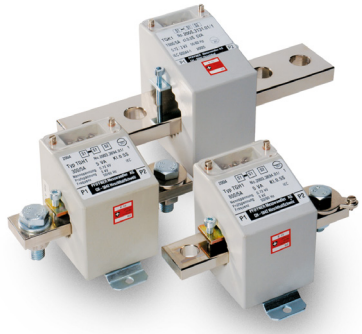
- Economical current transformer in polycarbonate/ABS shell
- Busbar fixation integrated
- Sealable secondary terminals
- Primary current up to 2,000 A

TSC-PQ

- For power quality measurements
- For frequencies from 50 Hz - 25 kHz
- Ring-core CT in polycarbonate shell design

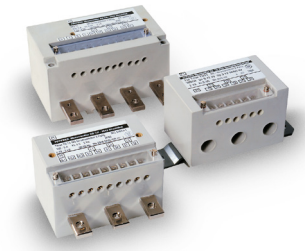
Current and voltage transformers

Indoor operation



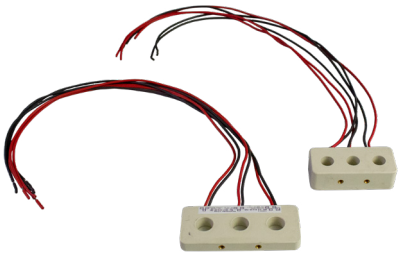
TGH/TGK

- Multi-range current transformer
- Polyurethane cast resin design
- For highest mechanical and physical demands
- Large measuring range up to accuracy class 0.2 S



TMAX/MG/TEMBREAK

- For use in compact low-voltage circuit breakers 100–630 A
- Compact three-phase block CTs with voltage taps and neutral conductor feed-through
- Simple and quick installation



VARIO

- For use in compact low-voltage circuit breakers 100–630 A
- Compact three-phase block CTs with voltage taps and neutral conductor feed-through
- Simple and quick installation

TGC/TGE/TGF

- Ring and busbar current transformer
- Ratio and inner dimension according to customer specification
- On request with mounting plate and primary busbar
- Primary current up to 5,000 A

TKB

- Summation current transformer with 2–5 inputs
- Summation with identical or different ratios

ELP

- Voltage transformer
- Single-pole compact version resin cast in polyurethane
- Primary and secondary windings can be provided with taps
- Class 0.2 also possible


PFIFFNER
P1
PFIFFNER

Swiss quality made by PFIFFNER

Each instrument transformer is subject to extensive routine tests during and at the end of the manufacturing process to comply with the given specification.

PFIFFNER can carry out power frequency withstand tests up to a test voltage of 700 kV, incl. partial discharge measurement. In addition, lightning impulses that withstand test voltages up to 1,550 kV are possible.

Routine, type and various special tests such as temperature rise, mechanical, BIL, SIL, chopped wave, ferro-resonance, RIV and wet tests can be performed in our fully equipped laboratories.

Our laboratories are accredited according to the standard ISO/IEC 17025 as Testing Laboratories by the Swiss Accreditation Service (SAS), a member of ILAC (International Laboratory Accreditation Cooperation). The laboratories are also authorized by the Swiss Federal Office of Metrology METAS to perform Swiss Verifications on instrument transformers as a legal metrological procedure.

PFIFFNER is accredited according to ISO 9001-2008 and ISO 14001-2004. As an additional internal rule to protect resources and the environment, we work according to OHSAS 18001.

PFIFFNER is an accredited member of ILAC – the International Laboratory Accreditation Cooperation – and is an active member of the international IEC Committee TC33 and TC38.

Global presence

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PFIFFNER

Current and voltage – our passion

HV HIGH VOLTAGE
MV MEDIUM VOLTAGE
LV LOW VOLTAGE