

# Combined instrument transformers

Outdoor operation  
Oil-paper insulated

EJOF (24–170) kV



# General description

**Combined instrument transformers type EJOE are used in high voltage networks within the 24 -170 kV range. They transform high voltage and high current into standardised values for meters, measuring and protection devices.**

The inner construction of a combined instrument transformer is similar to the construction of the current and voltage transformer. The current transformer is located in the head and the voltage transformer in the bottom housing of the combined instrument transformer. The fine graded bushings are inside the insulator.

The high voltage insulation is based on oil-paper technology. High-grade, PCB-free mineral oil is used.

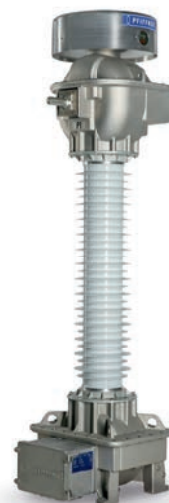
The expansion bellows made from stainless steel is located above the head housing of the combined instrument transformer. This unit acts as volume compensation for the oil in case of temperature variations. The oil level is indicated by a mechanical system in the window of the bellows cover.

All metal housings and flanges are made from a special aluminium alloy. These parts can be colour coated on request.

All combined instrument transformers have either a high-quality porcelain or a high-grade silicone composite insulator. Different creepage distances are available according to the different pollution classes, as specified in the standards.

The hermetic sealed housing protects the oil-paper insulation against atmospheric influences.

The generously sized terminal box has a cover which can be opened sideways. This allows easy connection of the secondary cables. The terminal box has a flange without holes by default. Cable glands, circuit diagram and individual safety instructions can be preinstalled on request.



## Advantages of combined instrument transformers

- Reduced transport costs with one unit instead of two
- Less space needed with just one footprint
- Lower material costs due to a reduced number of supports and fewer primary connections
- Lower installation effort as only one unit has to be installed instead of two





# Highlights



## Easy primary changeover

- A clear and easy primary changeover with a ratio of 1:2 or 1:2:4 is available.
- The primary changeover is adjusted with one metal plate at one side of the head only.
- No need to dismount or move the primary connections during adjustment.



## Excellent protection against moisture

- The inner side of the instrument transformer is protected against moisture by means of special sealing rings.
- All housings are designed with a drain-age area to protect the sealing surfaces of the housings against rain. This significantly reduces crevice corrosion.
- The housing elements are connected with special stainless steel screws. They are designed in such a way that no humidity can enter the screw hole.



## Installation-friendly terminal box

- The generously sized terminal box with a cover that can be opened sideways, is secured with captive screws. It can accommodate terminal blocks, fuses, surge arrestors, additional auxiliary contacts, spark gaps and sealable covers.
- By default, all terminal boxes have a flange without holes. Cable glands can be preinstalled on request.
- An additional terminal box can be supplied on request.

# Design

Bellows cover with oil level indicator

Expansion bellows

Lifting lugs

Housing with drainage area

CT part with iron cores, secondary windings and high voltage insulation

Primary connection

Primary changeover

Porcelain or silicone composite insulator

Bushings

## Possible options

VT part with secondary windings

VT part with primary winding and high voltage insulation

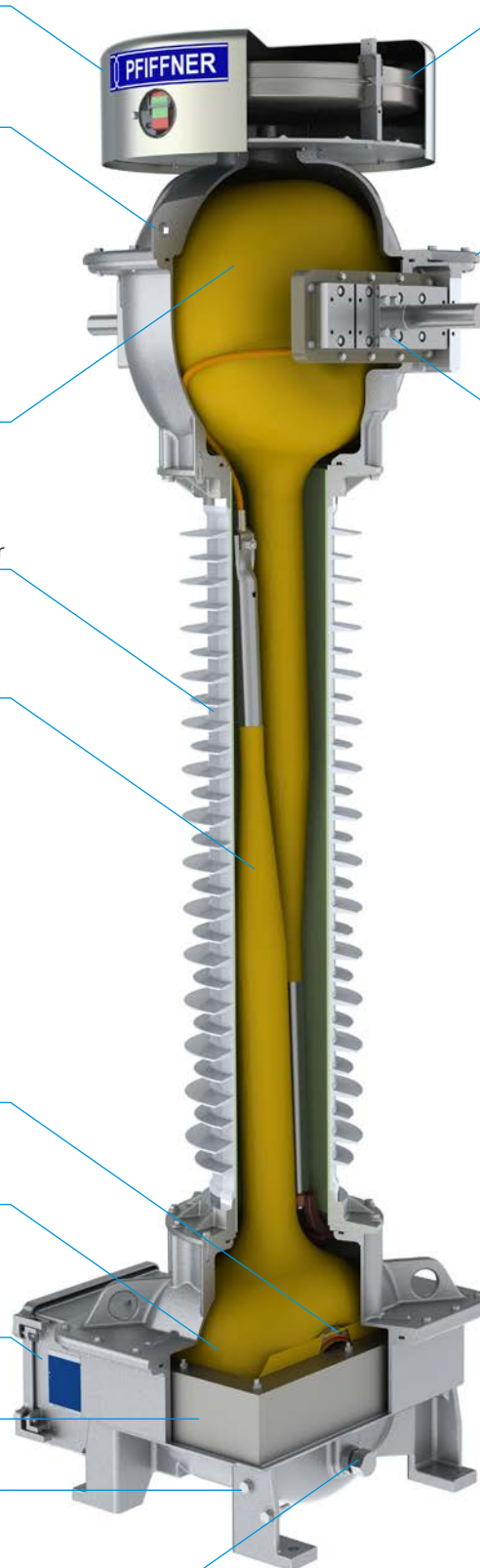
Terminal box with rating plate

Iron core of VT

Main earth connection

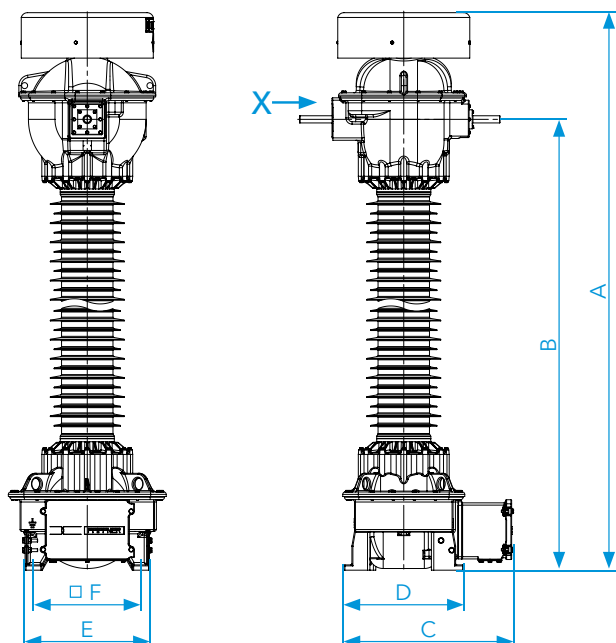
Oil drain valve

- Colour coated housings and flanges
- Fuses or miniature circuit breakers (MCBs) with or without auxiliary contacts in the terminal box
- Surge arrestors and spark gaps in the terminal box
- Pressure monitoring with auxiliary contacts
- Heater in the terminal box
- Sealable cover on terminals for billing purposes
- Additional terminal box
- Tan  $\delta$  terminal for capacitance and di-electric dissipation factor measurement
- Sealable oil drain valve

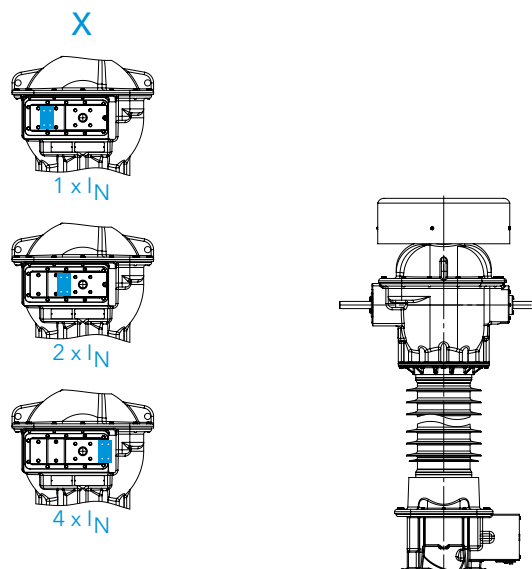


# Technical data

123-170 kV



24-72 kV



Type EJOJ		24	36	72	123	145	170
Standard		IEC/IEEE					
Highest voltage for equipment	kV	24	36	72.5	123	145	170
Rated power-frequency withstand voltage	kV	50	70	140	230	275	325
Rated lightning impulse withstand voltage	kV	125	170	325	550	650	750
Frequency	Hz	16.7/50/60					
Primary rated current	A	1-5000					
Secondary rated current	A	1/5					
Rated short-time thermal current [I <sub>th</sub> ]	kA/1s	≤ 63					
Rated dynamic current [I <sub>dyn</sub> ]	kA	≤ 160					
Accuracy class CT part		0.1-3; 0.2S; 0.5S; P; PR; PX; PXR; TPX; TPY; TPZ					
Accuracy class VT part		0.1-3; 3P; 6P					
Rated thermal limiting output VT part	VA	≤ 1500			≤ 3000		
Max. simultaneous burden (cl. 0.2)	VA	200			300		
Max. number of CT cores		7					
Max. number of VT windings		5					

Type EJOJ			24	36	72	123	145	170
Height of unit*	A	mm	1591	1591	1791	2484	2659	2959
Height to primary terminal*	B	mm	1145	1145	1345	2038	2203	2503
Depth of unit including terminal box	C	mm	526	526	526	710	710	730
Depth of unit base	D	mm	360	360	360	500	500	500
Width of unit base	E	mm	360	360	360	520	520	520
Distance between screw holes at base	F	mm	310	310	310	450	450	450
Min. creepage distance*		mm	1040	1040	1900	3080	3770	4394
Approximate weight*		kg	295	295	470	500	515	550

\* with standard composite silicone insulator, creepage distance 25 mm/kV

# Global presence

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MANUFACTURER OF INSTRUMENT TRANSFORMERS SINCE 1927

HIGH VOLTAGE

MEDIUM VOLTAGE

LOW VOLTAGE