

AGU | IEC

# AGU

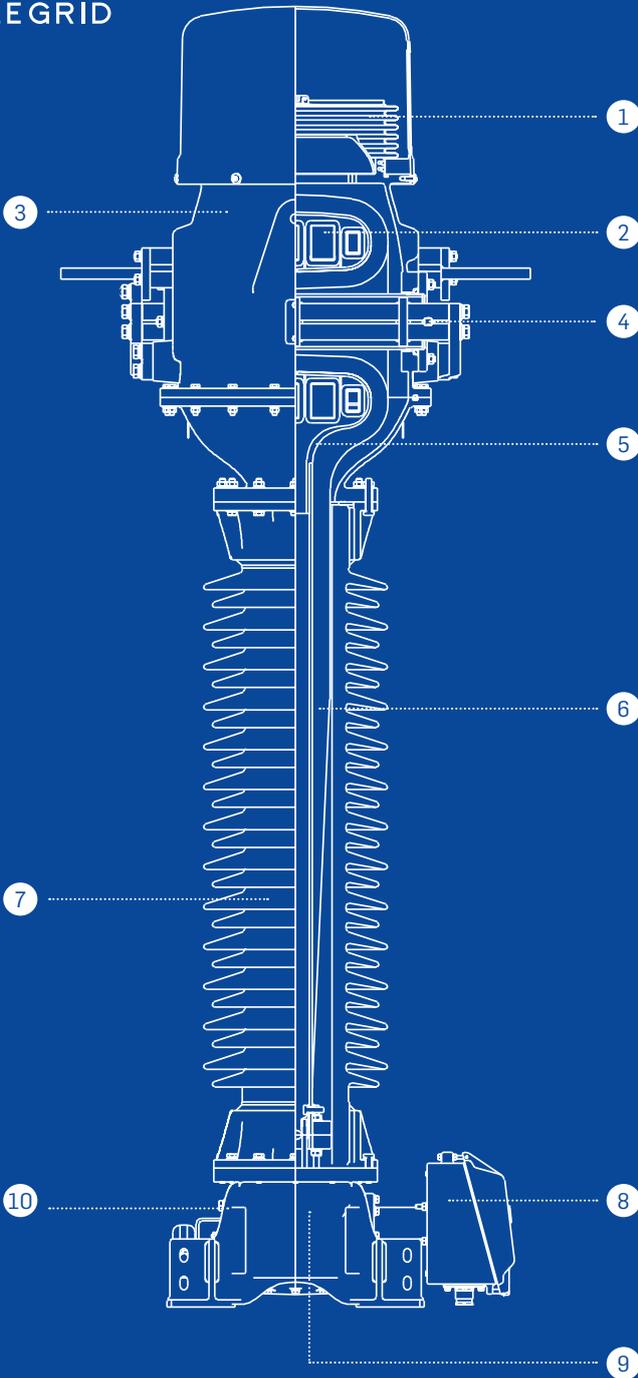
**CURRENT  
TRANSFORMERS  
72.5 TO 800 kV**

**G** CABLEGRID®

**KONČAR**  
INSTRUMENT TRANSFORMERS



TAILOR - MADE  
DESIGN



- 1. STAINLESS STEEL BELLOWS / OIL LEVEL INDICATOR
- 2. CORES WITH SECONDARY WINDINGS
- 3. TRANSFORMER HEAD
- 4. PRIMARY WINDING
- 5. CORE ENCLOSURE

- 6. MAIN INSULATION
- 7. INSULATOR
- 8. SECONDARY TERMINAL BOX
- 9. BASE ASSEMBLY
- 10. OIL SAMPLING VALVE



## DESIGN

### Primary Winding

The active part of the top-core current transformer comprises wound toroidal cores and an aluminium or copper primary winding, with paper insulation in between.

The advantage of the top-core design lies in having the primary winding uniformly and symmetrically spread around the cores. Therefore, local saturation is avoided, and minimal leakage reactance is ensured. Additionally, the top-core design results in minimal primary winding losses.

Variable transformation ratios are achieved through reconnection on either the primary (HV) and/or secondary (LV) side. Reconnection on both sides is also possible.

### Cores and Secondary Windings

The transformer can accommodate up to 10 cores of various sizes and materials.

Depending on their application and the required accuracy, cores can be made of cold-rolled grain-oriented magnetic steel, soft magnetic materials or nanocrystalline alloys. An adequate material selection also allows the transformer accuracy to be maintained over an extended current range, even exceeding the requirements specified in current international standards.

High-grade enamelled wire is uniformly wound around the core to achieve minimum leakage reactance, which in turn enables an accurate software computation of CT response in transient network conditions.

The cores and the secondary winding reside inside an aluminium cast enclosure, which is designed to safely lead the fault current to the ground without the danger of an arc occurring within the external insulator.

### Paper-Oil Insulation

The high-voltage primary side is insulated from the low-voltage secondary side with oil-impregnated paper of high dielectric strength.

Conductive capacitive screens are inserted between layers of paper insulation to adequately distribute the high-frequency overvoltages. The paper insulation is dried in high vacuum and impregnated with high-grade inhibited or uninhibited, degassed and dried (moisture content of no more than 2 ppm) mineral transformer oil.

The paper-oil insulation is closed in and hermetically sealed from ambient air with stainless steel bellows, which also compensate for thermal oil expansion and serve as both an expansion mechanism and an oil level indicator.

All these features ensure excellent and long-lasting dielectric properties of the transformer's main insulation system.

We guarantee the oil used in our transformers does not contain polychlorinated biphenyls and terphenyls (PCB & PCT).

### Insulator

As per request, external insulation can be either porcelain or composite. Porcelain insulators are made of the highest quality C130 aluminous porcelain, while the composite insulators are composed of a glass-fibre reinforced resin tube and silicone rubber sheds.

The insulator creepage distance is based on the ambient air pollution and is to be quoted in the inquiry.





## Enclosure

The transformer enclosure consists of the base assembly, insulator, head, bellows and bellows cover.

The active part of the transformer is located inside the aluminium cast head, which is designed to achieve minimal oil volume.

The transformer base is made of either cast aluminium or high-quality steel, which is hot dip galvanized and additionally painted for long-lasting corrosion resistance. It contains the secondary terminal box, oil sampling and filling valve, lifting lugs, earthing terminals and an optional oil overpressure indicator. Several levels of corrosion protection can be specified, depending on environmental conditions at the installation site.

The size and type of the earthing terminals are to be defined in the inquiry. The standard connection is bolt type (M12 x 35) or a stranded copper conductor clamp.

Every transformer is subjected to a rigorous vacuum sealing test to ensure a perfect hermetical sealing of the entire enclosure.

The AGU current transformers have been seismically tested and they meet all the requirements of the latest version of the IEEE 693 Standard.

## Terminals

The high-voltage primary terminal can be made of aluminium or galvanic corrosion-protected electrolytic copper. Standard secondary terminals are stainless-steel threaded bolts (size M8).

Other terminal types, materials and dimensions are available on request.

Secondary terminals, along with protective devices and other additional accessories, reside in the secondary terminal box. Cable glands or plates provide entry to the box and are designed according to customer specification and preference.

## KEY VALUES

### EXPERIENCE

More than 70 years of experience in the design, manufacture, testing and delivery of instrument transformers

### PRESENCE

Over 100 countries across all continents

### EXPERTISE

We are not only manufacturers, but also engineers and researchers. Turn to us for advice, recommendations and guidance.

### TAILOR-MADE DESIGN

We cater to any customer requirement. Your units are being built just for you.

### LONGEVITY

Our insulation system design philosophy, rigorous internal testing criteria and advanced quality control allow us to declare a 50-year service life of our units.

### SERVICE

Continuous after-sales services are always available for any questions or doubts you may have, both technical and commercial.



## APPLICATION

Current instrument transformers are used to step-down current to the specified values and provide standardized current levels in a variety of power monitoring, measurement and relaying applications, while insulating the measurement and protection equipment from high system voltage.

### PERFORMANCE

- Um: 72.5 to 800 kV
- In: up to 6000 A
- Top-core design
- Short circuit: up to 100 kA (Idyn: 250 kA peak)
- Secondary cores: up to 10
- All revenue metering, relaying and transient performance accuracy classes available
- Extended accuracy range available

### MAIN FEATURES

- Primary and/or secondary transformation ratio selection. Single, Dual or Multi ratio options available
- Low leakage reactance and minimal primary winding losses
- High-quality paper-oil insulation
- Partial discharge free on power-frequency withstand voltage
- Hermetically sealed with a stainless-steel bellows oil expansion system
- Standard ambient temperatures from -35°C to +40°C (extended temperature ranges upon request)
- High-quality porcelain or composite (silicone shed) insulator, depending on customer preference
- High level of seismic performance according to the latest revision of the IEEE 693 standard. Conformance to any national or regional standard also possible
- Minimum oil design and PCB free – environment friendly
- Advanced corrosion protection for maritime, industrial or other demanding installation locations
- Maintenance free

### Included Accessories:

- Terminal for dielectric dissipation factor (tgδ) measurement
- Oil level indicator
- Transport shock indicators (standard for  $U_m \geq 362$  kV, optional for other voltage levels)
- Bolt or connector for transformer earthing
- Oil sampling valve
- Provisions for lifting

### Optional Accessories:

- Surge arresters on primary or secondary windings
- Revenue metering secondary terminals can be sealed separately
- Capacitive tap for voltage reading or insulation monitoring
- Internal overpressure indicator
- Terminal box heaters



P: 1300 780 831 E: [info@cablegrid.com.au](mailto:info@cablegrid.com.au) W: [www.cablegrid.com.au](http://www.cablegrid.com.au)

### Quality assurance

Končar current transformers are designed in compliance with IEC, ANSI/IEEE, GOST, AS, IS, CAN/CSA, JIS or any other relevant standard. Product quality is assured through a certified quality standard, the ISO 9001, covering all aspects of design, production and testing. Končar – Instrument transformers Inc. is ISO 14001 and ISO 45001 certified, ensuring compliance with environmental and occupational health standards. Our testing facilities are accredited according to the ISO/IEC 17020 and 17025 standards, with results traceable to any ILAC signatory worldwide.



# STANDARD CHARACTERISTICS AND DIMENSIONS

Our units are custom made according to customer specification and preference. The table below contains indicative values referring to our standard units with porcelain insulators. Any dimension or characteristic listed can vary depending on electrical, mechanical and environmental parameters specified in the customers' inquiry. The values are susceptible to change in the course of technical development.

TYPE	NOMINAL SYSTEM VOLTAGE [kV]	MAXIMUM SYSTEM VOLTAGE [kV]	BIL [kV]	TYPICAL CORE CHARACTERISTICS		DIMENSIONS [inch]				WEIGHT [lb]	OIL VOLUME [gal]
				METERING	RELAYING	TRANSFORMER HEIGHT	HEIGHT OF THE PRIMARY TERMINAL	BASE MOUNTING	CREEPAGE DISTANCE		
AGU-72,5	69	72.5	350	Up to 0.15B-1.8 <sup>1</sup>	Up to C800	81	63	□ 16	72	615	16
AGU-123	115	123	550			91	75	□ 16	121	705	18
AGU-145	138	145	650			104	87	□ 16	143	770	22
AGU-170	161	170	750			112	93	□ 21	167	925	25
AGU-245	230	245	1050			146	120	□ 21	241	1325	55
AGU-362	345	362	1300			213	181	□ 26	413	2865	110
AGU-525	500	550	1800			236	201	□ 26	541	3195	135
AGU-765	765	800	2100			287	244	□ 30	787	6285	200

<sup>1</sup> A standard core entails a continuous accuracy performance from 1 to 200% of nominal current. Extended range units are available upon request. The requested range of current for which the accuracy performance is maintained should be specified in the inquiry



P: 1300 780 831 E: info@cablegrid.com.au W: www.cablegrid.com.au

## TRANSFORM EVERYDAY

KONČAR - INSTRUMENT TRANSFORMERS INC.  
 JOSIPA MOKROVIĆA 10, P.O. BOX 202  
 HR-10090 ZAGREB, CROATIA

TEL: +385 1 379 4112 • FAX: +385 1 379 4040  
 E MAIL: INFO@KONCAR-MJT.HR  
 WEB: KONCAR-MJT.HR