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**ELECTRICITE DU CAMBODGE**

**TECHNICAL SPECIFICATION**

**EDC-DTS-MV020**

**MV Outdoor and Indoor Voltage  
Transformers and Current Transformers  
for Metering**

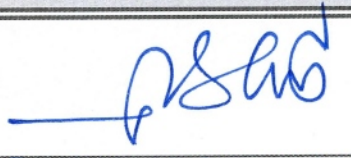
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EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current  
Transformers for Metering



**ELECTRICITE DU CAMBODGE**

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EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current  
Transformers for Metering

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# MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering

## 1 Scope

This specification covers the design, manufacturing, supply, delivery, testing and performance requirement of MV outdoor and MV indoor voltage transformers and current transformers for metering. This equipment is intended to be used on 22 kV and 35 kV networks of Electricité du Cambodge only for metering of energy purpose.

The life expectancy of this equipment shall not be less than 25 years.

## 2 Standards

IEC International Electro-technical Commission

- IEC 60038 : IEC standard voltages
- IEC 60455 : Resin based reactive compounds used for electrical insulation – All Parts
- IEC 60529 : Degree of protection provided by enclosures (IP code)
- IEC TS 60815: Selection and dimensioning of high-voltage insulators intended for use in polluted conditions
- IEC 61869-1 : Instrument transformers - Part 1: General requirements
- IEC 61869-2 : Instrument transformers - Part 2: Additional requirements for current transformers
- IEC 61869-3 : Instrument transformers – Part 3: Additional requirements for inductive voltage transformers
- IEC 62262 : Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts

ISO Standards

- ISO 2063 : Metallic coating-protection of iron and steel against corrosion
- ISO 1461 : Hot dip galvanized coatings on fabricated iron and steel articles Specifications and test methods
- ISO 9001 : Quality management systems – Requirements
- ISO/IEC 17025 : General requirements for the competence of testing and calibration laboratories



The Supplier may propose alternative standards, provided it is demonstrated that they give an equivalent degree of quality as the referenced standard. Acceptability of any alternative standard is at the discretion of the Purchaser.

### 3 Definitions

The definition of the relevant IEC standards applies to this technical specification.

## 4 Testing and inspection

### 4.1 General Notes for Test

Voltage and current transformers may be inspected at the manufacturer's factory by EDC's representatives.

The inspection and routine tests shall be carried out in accordance with the provisions of the relevant IEC or national recommendations.

Instrument transformers shall be subjected to all tests as specified below.

### 4.2 Type Tests

All type tests required by the IEC 61869-(parts 1, 2 and 3) IEC standards shall be mandatorily carried out.

#### 4.2.1.1 Test reports

Type test reports shall be carried out by internationally recognized electrical testing laboratories.

**Full copies of type test reports shall be submitted within the bid** of the manufacturer/supplier. Type test reports older than 15 years will not be accepted.

If type tests reports or test certificates issued by a world reputable utility or testing centre are not supplied within the offer, this one will be rejected.

If the manufacturer is certified by EDC, it is not necessary to submit type test reports for the considered equipment.

Nevertheless, in case the testing laboratory is not internationally recognized, the testing laboratory shall be mandatorily accredited ISO/IEC 17025 by an international or national accreditation body specialized in testing laboratories accreditation/acceptance. In that case, the testing laboratory shall prove mandatorily its capability/capacity to carry out all type tests mentioned in the type tests reports by supplying: Full description of all tests the laboratory can carry out, list of testing equipment with full characteristics, drawing of testing rooms with location of testing equipment, ...etc., supported by pictures and copy of the ISO/IEC 17025 accreditation certificate.

Acceptability of any accredited testing laboratory is at the discretion of the EDC.

### 4.3 Routine tests

The Routine tests carried out by the manufacturer shall be backed by test reports signed by the factory's quality control department.

### 4.4 Inspection

Voltage and current transformers shall be subject to inspection by a representative of EDC at the place of manufacture and routine tests carried out on samples picked at random in their presence.

At reception in EDC warehouse, the equipment will be verified and routine tested by EDC staff.





## 5 Quality Management

Design, development and production of the proposed equipment shall be ISO 9001 certified. The ISO 9001 certificate shall be submitted within the bid.

Part of the equipment can be assembled in Cambodia, in that case the assembling shall be done under quality supervision of the manufacturer and the assembly workshop shall mandatorily implement a quality process satisfactory to EDC and/or Local Authorities.

## 6 Ambient conditions

The voltage and current transformers shall be suitable to operate in the ambient conditions described here after:

Altitude	Sea level to 1,000 meters
Climate	Tropical
Annual Rainfall	1,300 mm.140 days
Monsoon Period	June to November
Ambient Air Temperatures:	
Average	27.5°C
Minimum	13.3°C
Maximum	40.5°C
Relative Air Humidity	65-100%
Solar Emissivity	0.8
Solar absorption	0.8
Wind Velocity:	
Average	37 km/h (10.3 m/s)
Maximum	72 km/h (20 m/s)

## 7 System voltage

EDC MV distribution grid comprises two voltage level but 3 distribution systems:

### 7.1 35kV system with artificial neutral grounded through impedance and resistor distribution system (3 phases - 3 wires)

Rated system voltage	38 kV (or 40.5 kV)
Operating Voltage	20.2/35 kV
Frequency	50 Hz



## 7.2 35kV system with isolated neutral (3 phases - 3 wires)

Rated system voltage	38 kV (or 40.5 kV)
Operating Voltage	20.2/35 kV
Frequency	50 Hz

## 7.3 22 kV system with artificial neutral grounded through impedance and resistor distribution system (3 phases - 3 wires)

Rated system voltage	24 kV
Operating voltage	12.7/22 kV
Frequency	50Hz

# 8 Voltage transformers (VT)

## 8.1 General

The voltage transformers of dry type shall be strictly conformed to the requirement of IEC 61869- 1, and IEC 61869- 3.

They shall include a primary winding, a magnetic core and one secondary winding.

Windings and magnetic core are enclosed in an **epoxy resin moulded block**. The surface of epoxy shall be smooth without defect or bubbles as far as possible.

VT containing oils shall not be accepted.

The epoxy resin enclosure shall be not flammable, self-extinguishable, and shock proof.

All metallic parts with exception of live parts shall be protected against corrosion or made of stainless steel or aluminum.

## 8.2 Indoor voltage transformers

The VT shall be of moulded block type (IEC, DIN or equivalent) epoxy resin. The surface of epoxy shall be smooth without defect or bubbles as far as possible.

Parts carrying voltage shall be made of copper. Outside parts shall be of good quality tinned cooper or copper alloy. Primary connections shall be of flat type with bolt for bars or lugs connection.

The base plate shall be flat and made of aluminum or stainless steel with a thickness of about 5 mm. Hot dip galvanized steel base is also accepted. This base shall be fitted with four holes for fixing the VT. Those holes shall be adjustable. Additionally, an earthing connection using stainless steel M8 bolt shall be done on this base.

The secondary terminals shall be housed under a plastic transparent cover. This cover shall be sealable.

The secondary terminal shall accept copper conductors from 2.5 mm<sup>2</sup> to 6 mm<sup>2</sup>.



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**8.2.1 Characteristics**

**8.2.1.1 35kV Indoor Voltage transformer**

	Required
Rated Primary Max Voltage (Um)	38 or 40.5 kV
System Nominal Voltage	20.2/35 kV
Frequency	50 Hz
Rated primary voltage	35000/ $\sqrt{3}$ V
Rated secondary voltage	100/ $\sqrt{3}$ or 110/ $\sqrt{3}$ V
Accuracy class	0.5
Rated primary power frequency withstand voltage	$\geq 70$ kV rms
Rated secondary power frequency withstand voltage	3 kV rms
Rated impulse withstand voltage (1.2/50 $\mu$ s)	$\geq 170$ kV
Insulation Class	E
Partial discharge level at 1.2Um/ $\sqrt{3}$	20 pC
Rated power factor (Continuous)	1.2
Rated output (Burden range II)	25 VA
IP (IEC 60529)	$\geq 20$
IK (IEC 62262)	$\geq 7$

**8.2.1.2 22kV Indoor Voltage transformer**

	Required
Rated Primary Max Voltage (Um)	24 kV
System Nominal Voltage	12.7/22 kV
Frequency	50 Hz
Rated primary voltage	22000/ $\sqrt{3}$ V
Rated secondary voltage	100/ $\sqrt{3}$ or 110/ $\sqrt{3}$ V
Accuracy class	0.5
Rated primary power frequency withstand voltage	$\geq 50$ kV rms
Rated secondary power frequency withstand voltage	3 kV rms
Rated impulse withstand voltage (1.2/50 $\mu$ s)	$\geq 125$ kV
Insulation class	E
Partial discharge level at 1.2Um/ $\sqrt{3}$	20 pC
Rated power factor (Continuous)	1.2
Rated output (Burden range II)	25 VA
IP (IEC 60529)	$\geq 20$
IK (IEC 62262)	$\geq 7$





### 8.2.2 Outdoor voltage transformers

The VT shall be of moulded block type epoxy resin. The surface of epoxy shall be smooth without defect or bubbles as far as possible.

For **outdoor VT**, this epoxy resin could be coated with silicon for maintaining hydrophobicity during the lifespan of the voltage transformer. Before applying the silicon coating, the epoxy resin shall be sand blasted (or equivalent) for better silicon adhesion.

Parts carrying voltage shall be made of copper. Outside parts shall be of good quality tinned copper or copper alloy. Primary connections shall be of flat type with bolt for bars or lugs connection.

The base plate shall be flat and made of aluminum or stainless steel with a thickness of about 5 mm. Hot dip galvanized steel base is also accepted. This base shall be fitted with for holes for fixing the VT. Those holes shall be adjustable. Additionally, an earthing connection using stainless steel M8 bolt shall be done on this base.

The secondary terminals shall be housed inside a waterproof metallic or plastic box.

The secondary terminal shall accept copper conductors from 2.5 mm<sup>2</sup> to 6 mm<sup>2</sup>.

#### 8.2.2.1 35kV outdoor Voltage transformer

	Required
Rated Primary Max Voltage (Um)	38 or 40.5 kV
System Nominal Voltage	20.2/35 kV
Frequency	50 Hz
Rated primary voltage	35000/√3 V
Rated secondary voltage	100/√3 or 110/√3 V
Accuracy class	0.5
Rated primary power frequency withstand voltage	≥ 70 kV rms
Rated secondary power frequency withstand voltage	3 kV rms
Rated impulse withstand voltage (1.2/50μs)	≥ 170 kV
Partial discharge level at 1.2Um/√3	20 pC
Insulation class	E
Rated power factor (Continuous)	1.2
Rated output (Burden range II)	25 VA
Creepage distance (pollution level III: 25mm/kV)	≥ 950 mm
IP (IEC 60529)	≥ 44
IK (IEC 62262)	≥ 8

#### 8.2.2.2 22kV outdoor Voltage transformer

	Required
Rated Primary Max Voltage (Um)	24 kV
System Nominal Voltage	12.7/22 kV
Frequency	50 Hz



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Rated primary voltage	22000/ $\sqrt{3}$ V
Rated secondary voltage	100/ $\sqrt{3}$ or 110/ $\sqrt{3}$ V
Accuracy class	0.5
Rated primary power frequency withstand voltage	$\geq 50$ kV rms
Rated secondary power frequency withstand voltage	3 kV rms
Rated impulse withstand voltage (1.2/50 $\mu$ s)	$\geq 125$ kV
Partial discharge level at 1.2Um/ $\sqrt{3}$	20 pC
Insulation class	E
Rated power factor (Continuous)	1.2
Rated output (Burden range II)	25 VA
Creepage distance (pollution level III: 25mm/kV)	$\geq 600$ mm
IP (IEC 60529)	$\geq 44$
IK (IEC 62262)	$\geq 8$

### 8.2.3 Marking

The marking shall be strictly conform to the requirement of IEC 61869- 1, and IEC 61869- 3.

#### 8.2.3.1 Terminals Marking

Terminals	Marking
Primary	A and N
Secondary	a and n

The marking of primary may be embossed or engraved on the VT body.

The marking of secondary shall be embossed or engraved near the terminals under the transparent cover for indoor VT or in the connection box for outdoor VT.

For indoor voltage transformers only, indelible laminated stickers are accepted also for marking.

#### 8.2.3.2 Marking Plate

Each VT shall include a plate made of stainless steel or aluminum. The marking shall be embossed or engraved and shall bear the following information as per requirement of IEC 61869- 1 and IEC 61869- 3:

- Manufacturer name or logo
- The date of manufacture and a serial number or a type designation but preferably both
- Standard
- Frequency
- Highest voltage
- Rated insulation level
- the rated primary and secondary voltage
- rated output and the corresponding accuracy class (e.g., 25 VA Class 0.5)
- rated voltage factor and corresponding rated time
- Weight

For indoor voltage transformers only, indelible laminated stickers are accepted also for marking plate.





#### 8.2.4 Packing

VT shall be packed in crates or pallets suitable for vertical/ horizontal transport as the case may be and the packing shall be suitable to withstand handling during the transport and outdoor storage during transit. The supplier shall be responsible for any damage to VT during transit, due to improper and inadequate packing.

The easily damageable material shall be carefully packed and marked with the appropriate caution symbols.

### 9 Current transformers (CT)

#### 9.1 General

The current transformers of dry type shall be strictly conformed to the requirement of IEC 61869- 1, and IEC 61869-2.

They shall include a primary winding and one secondary winding.

Windings shall be enclosed in an **epoxy resin moulded block**. The surface of epoxy shall be smooth without defect or bubbles.

The epoxy resin enclosure shall be not flammable, self-extinguishable, and shock proof.

All metallic parts with exception of live parts shall be protected against corrosion or made of stainless steel or aluminum.

#### 9.2 Indoor current transformers

The CT shall be of moulded block type (IEC, DIN or equivalent) epoxy resin. The surface of epoxy shall be smooth without defect or bubbles.

Parts carrying current shall be made of copper. Outside parts shall be of good quality tinned cooper or copper alloy. Primary connections shall be of flat type with bolt for bars or lugs connection.

The base plate shall be flat and made of aluminum or stainless steel with a thickness of about 5 mm. this base shall be fitted with for holes for fixing the CT. Those holes shall be adjustable. Additionally, an earthing connection using stainless steel M8 bolt shall be done on this base.

The secondary terminals shall be housed under a plastic transparent cover. This cover shall be sealable.

The secondary terminal shall accept copper conductors from 2.5 mm<sup>2</sup> to 6 mm<sup>2</sup>.

#### 9.2.1 Characteristics

##### 9.2.1.1 35kV indoor Current transformer

Rated Primary Max Voltage (Um)	38 or 40.5 kV
System Nominal Voltage	20.2/35 kV
Frequency	50 Hz
Rated primary current	10, 15, 20, 25, 30, 40, 50, 75, 100, 150, 200, 250 and 300 A
Rated secondary current	5A
Accuracy class	0.5





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Rated primary power frequency withstand voltage	≥ 70 kV rms
Rated secondary power frequency withstand voltage	3 kV rms
Rated impulse withstand voltage (1.2/50μs)	≥ 170 kV
Rated continuous thermal current	120%
Rated Short-time thermal current (I <sub>th</sub> )	200I <sub>n</sub> (kA)
Rated Dynamic current (I <sub>dyn</sub> ) 1 second.	2.5 I <sub>th</sub>
Partial discharge level at 1.2U <sub>m</sub> /√3	20 pC
Rated output	15 VA
IP (IEC 60529)	≥ 20
IK (IEC 62262)	≥ 7

**9.2.1.2 22kV Indoor Current transformer**

	Required
Rated Primary Max Voltage (U <sub>m</sub> )	24 kV
System Nominal Voltage	12.7/22 kV
Frequency	50 Hz
Rated primary current	10, 15, 20, 25, 30, 40, 50, 75, 100, 150, 200, 250 and 300 A
Rated secondary current	5A
Accuracy class	0.5
Rated primary power frequency withstand voltage	≥ 50 kV rms
Rated secondary power frequency withstand voltage	3 kV rms
Rated impulse withstand voltage (1.2/50μs)	≥ 125 kV
Rated continuous thermal current	120%
Rated Short-time thermal current (I <sub>th</sub> )	200I <sub>n</sub> (kA)
Rated Dynamic current (I <sub>dyn</sub> ) 1 second.	2.5 I <sub>th</sub>
Partial discharge level at 1.2U <sub>m</sub> /√3	20 pC
Rated output	15 VA
IP (IEC 60529)	≥ 20
IK (IEC 62262)	≥ 7

**9.2.2 Outdoor Current transformers**

The CT shall be of moulded block type epoxy resin. The surface of epoxy shall be smooth without defect or bubbles.

For **outdoor CT**, this epoxy resin can be coated with silicon for maintaining hydrophobicity during the lifespan of the current transformer. Before applying the silicon coating, the epoxy resin shall be sand blasted (or equivalent) for better silicon adhesion.



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Parts carrying current shall be made of copper. Outside parts shall be of good quality tinned copper or copper alloy. Primary connections shall be of flat type with bolt for bars or lugs connection.

The base plate shall be flat and made of aluminum or stainless steel with a thickness of 5 mm. this base shall be fitted with for holes for fixing the CT. Those holes shall be adjustable. Additionally, an earthing connection using stainless steel M8 bolt shall be done on this base.

The secondary terminals shall be housed inside a waterproof metallic or plastic box.

The secondary terminal shall accept copper conductors from 2.5 mm<sup>2</sup> to 6 mm<sup>2</sup>.

### 9.2.2.1 35kV outdoor Current transformer

Rated Primary Max Voltage (Um)	38 or 40.5 kV
System Nominal Voltage	20.2/35 kV
Frequency	50 Hz
Rated primary current	10, 15, 20, 25, 30, 40, 50, 75, 100, 150, 200, 250 and 300 A
Rated secondary current	5A
Accuracy class	0.5
Rated primary power frequency withstand voltage	≥ 70 kV rms
Rated secondary power frequency withstand voltage	3 kV rms
Rated impulse withstand voltage (1.2/50μs)	≥ 170 kV
Rated continuous thermal current	120%
Rated Short-time thermal current (Ith)	200In (kA)
Rated Dynamic current (Idyn) 1 second.	2.5 Ith
Partial discharge level at 1.2Um/V3	20 pC
Rated output	15 VA
Creepage distance (pollution level III: 25mm/kV)	≥ 950 mm
IP (IEC 60529)	≥ 44
IK (IEC 62262)	≥ 8

### 9.2.2.2 22kV outdoor Current transformer

	Required
Rated Primary Max Voltage (Um)	24 kV
System Nominal Voltage	12.7/22 kV
Frequency	50 Hz
Rated primary current	10, 15, 20, 25, 30, 40, 50, 75, 100, 150, 200, 250 and 300 A
Rated secondary current	5A





**EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering**

Accuracy class	0.5
Rated primary power frequency withstand voltage	$\geq 50$ kV rms
Rated secondary power frequency withstand voltage	3 kV rms
Rated impulse withstand voltage (1.2/50 $\mu$ s)	$\geq 125$ kV
Rated continuous thermal current	120%
Rated Short-time thermal current (I <sub>th</sub> )	200I <sub>n</sub> (kA)
Rated Dynamic current (I <sub>dyn</sub> ) 1 second.	2.5 I <sub>th</sub>
Partial discharge level at 1.2U <sub>m</sub> /√3	20 pC
Rated output	15 VA
IP (IEC 60529)	$\geq 20$
IK (IEC 62262)	$\geq 7$
Creepage distance (pollution level III: 25mm/kV)	$\geq 600$ mm
IP (IEC 60529)	$\geq 44$
IK (IEC 62262)	$\geq 8$

### 9.2.3 Marking

The marking shall be strictly conformed to the requirement of IEC 61869- 1, and IEC 61869- 2.

#### 9.2.3.1 Terminals Marking

Terminals	Marking
Primary	P1 and P2
Secondary	s1 and s2

The marking of primary may be embossed or engraved on the CT body.

The marking of secondary shall be embossed or engraved near the terminals under the transparent cover for indoor CT or in the connection box for outdoor CT.

For indoor current transformers only, indelible laminated stickers are accepted also for marking.

#### 9.2.3.2 Marking Plate

Each CT shall include a plate made of stainless steel or aluminum. The marking shall be embossed or engraved and shall bear the following information as per requirement of IEC 61869- 1 and IEC 61869- 2:

- Manufacturer name or logo
- The date of manufacture and a serial number or a type designation but preferably both
- Standard
- Frequency
- Highest voltage
- Rated insulation level
- the rated primary and secondary currents (e.g. 100/5 A)
- The rated short time withstand thermal current (I<sub>th</sub>)
- rated output and the corresponding accuracy class (e.g. 15 VA Cl. 0.5)

For indoor current transformers only, indelible laminated stickers are accepted also for marking plate.





#### 9.2.4 Packing and delivery

CT shall be packed in crates or pallets suitable for vertical/ horizontal transport as the case may be and the packing shall be suitable to withstand handling during the transport and outdoor storage during transit. The supplier shall be responsible for any damage to CT during transit, due to improper and inadequate packing.

The easily damageable material shall be carefully packed and marked with the appropriate caution symbols.

## 10 Technical data sheets



EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering

No.	Description	Unit	Requirements	Supplier's Offer
<b>10.1 Indoor 35kV voltage transformers</b>				
1	Manufacturer Country		to be specified	
2	Manufacturer		to be specified	
3	Manufacturer's Reference of offered product		to be specified	
4	Equipment country of origin		to be specified	
5	Applicable Standards		IEC 61869- 1 and IEC 61869- 3 or equivalent to be mentioned	
6	Type tests reports according the requirement of IEC 61869- 1 and IEC 61869- 3		To be provided with bid	
7	Technical documents (drawings, catalogue, etc..)		To be provided with bid	
8	Outdoor VT of epoxy resin block type		Mandatory	
9	The epoxy resin enclosure is not flammable, self-extinguishable, and shock proof.		Mandatory	
9a	The surface is smooth without defect and bubble.		Yes	
10	All metallic parts with exception of live parts are protected against corrosion or made of stainless steel or aluminum.		Yes	
11	Parts carrying voltage are made of copper.		Yes	
11a	Outside part carrying voltage are tinned		Yes	
12	Primary connections are of flat type with copper or stainless steel bolts for bars or lugs connection.		Yes	
13	The base plate is flat and made of aluminum, stainless steel or		Yes	



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	hot dip galvanized steel with a thickness of about 5 mm.			
14	This base is fitted with four adjustable holes for fixing the		Yes	
15	Earthing connection using stainless steel M8 bolt is done on this base.		Yes	
16	The secondary terminals are housed under transparent sealable cover.		Yes	
17	The secondary terminals shall be suitable for copper conductors from 2.5 mm <sup>2</sup> to 6 mm <sup>2</sup> .		Yes	
<b>Electrical characteristics</b>				
18	Rated Primary Max Voltage (Um)	kV	38 or 40.5	
19	System Nominal Voltage	kV	20.2/35	
20	Frequency	Hz	50	
21	Rated primary voltage	V	35000/√3	
22	Rated secondary voltage	V	100/√3 □ 110/√3 □	
22	Accuracy class		0.5	
23	Rated primary power frequency withstand voltage	kV	≥ 70	
24	Rated secondary power frequency withstand voltage	kV rms	3	
25	Rated impulse withstand voltage (1.2/50μs)	kV	≥ 170	
26	Partial discharge level at 1.2Um/√3	pC	20	
27	Rated power factor (Continuous)		1.2	
28	Rated output (Burden range II)	VA	25	
29	IP (IEC 60529)		≥ 20	





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30	IK (IEC 62262)		$\geq 7$	
<b>Physical characteristics</b>				
31	Ambient temperature	°C	40.5	
32	Relative Air Humidity	%	$\geq 95$	
33	Length (L)	mm	To be mentioned	
34	Width (W)	mm	To be mentioned	
35	Height (H)	mm	To be mentioned	
36	Weight	kg	To be mentioned	
37	Flat primary connection by copper or stainless steel bolts suitable for bi metallic lugs or bars		Yes	
38	Bolt diameter of primary terminals	mm	To be mentioned	
39	Bolt diameter of secondary terminals	mm	To be mentioned	
<b>Marking</b>				
40	Primary marking		A and N	
41	Secondary marking		a and n	
42	Secondary marking embossed, engraved or laminated sticker near the terminals under the transparent cover		To be mentioned	
43	Each VT includes a name plate made of stainless steel, aluminum or laminated sticker		To be mentioned	
44	The marking is embossed or engraved or on laminated sticker and shall bear the following information as per requirement of IEC 61869- 1 and IEC 61869- 3:		Yes, to be mentioned	
45	<ul style="list-style-type: none"> <li>• Manufacturer name or logo</li> <li>• The date of manufacture and a serial number or a type designation but preferably both</li> <li>• Standard</li> </ul>		Mandatory as per IEC	



EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering

	<ul style="list-style-type: none"> <li>Frequency</li> <li>Highest voltage</li> <li>Rated insulation level</li> <li>the rated primary and secondary voltage</li> <li>rated output and the corresponding accuracy class (e.g., 25 VA Class 0.5)</li> <li>rated voltage factor and corresponding rated time</li> <li>Weight</li> </ul>			
<b>Packing</b>				
46	VT shall be packed in crates or pallets suitable for vertical/horizontal transport		Yes	
47	The packing shall be suitable to withstand handling during the transport and outdoor storage during transit.		Mandatory	
47	The easily damageable material shall be carefully packed and marked with the appropriate caution symbols.		Mandatory	
The offer shall include all drawings and dimensions as well as all technical catalogues. If not, the offer shall be rejected.				
<b>If the required type tests are missing, the offer shall be rejected</b>				
Supplier's offer column must be properly filled with the right figures. "Compliant, Yes, ", etc.... "are not accepted.				
Deviation from the technical specification:				
The bidder shall list point after point and explain here in after all deviation from the requested technical specification.				
1/				
2/				
3/				
<b>Full technical information shall be supplied within the bid. If not, the offer shall not be considered</b>  Bidder signature:				



EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering

No.	Description	Unit	Requirements	Supplier's Offer
<b>10.2 Outdoor 35kV voltage transformers</b>				
1	Manufacturer Country		to be specified	
2	Manufacturer		to be specified	
3	Manufacturer's Reference of offered product		to be specified	
4	Product country of origin		to be specified	
5	Applicable Standards		IEC 61869- 1 and IEC 61869- 3 or equivalent to be mentioned	
6	Type tests reports according the requirement of IEC 61869- 1 and IEC 61869- 3		To be provided with bid	
7	Technical documents (drawings, catalogue, etc..)		To be provided with bid	
8	Outdoor VT of epoxy resin block type		Mandatory	
9	The epoxy resin enclosure is not flammable, self-extinguishable, and shock proof.		Mandatory	
9a	The surface is smooth without defect and bubble.		Mandatory	
10	All metallic parts with exception of live parts shall be protected against corrosion or made of stainless steel or aluminum.		Yes	
11	Parts carrying voltage are made of copper.		Yes	
11a	Outside part carrying voltage are tinned copper or copper alloy		Yes	
12	Primary connections are of flat type with copper or stainless steel bolts for bars or lugs connection.		Yes	





EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering

13	The base plate is flat and made of aluminum, stainless steel or hot dip galvanized steel with a thickness of about 5 mm.		To be mentioned	
14	this base is fitted with four adjustable holes for fixing the		Yes	
15	Earthing connection using stainless steel M8 bolt is done on this base.		Yes	
16	The secondary terminals are housed under a metallic or plastic waterproof box		Yes To be described	
17	The secondary terminals shall be suitable for copper conductors from 2.5 mm <sup>2</sup> to 6 mm <sup>2</sup> .		Yes	
<b>Electrical characteristics</b>				
18	Rated Primary Max Voltage (Um)	kV	38 or 40.5	
19	System Nominal Voltage	kV	20.2/35	
20	Frequency	Hz	50	
21	Rated primary voltage	V	35000/ $\sqrt{3}$	
22	Rated secondary voltage	V	100/ $\sqrt{3}$ □ 110/ $\sqrt{3}$ □	
22	Accuracy class		0.5	
23	Rated primary power frequency withstand voltage	kV	≥ 70	
24	Rated secondary power frequency withstand voltage	kV rms	3	
25	Rated impulse withstand voltage(1.2/50μs)	kV	≥ 170	
26	Partial discharge level at 1.2Um/ $\sqrt{3}$	pC	20	
27	Rated power factor (Continuous)		1.2	
28	Rated output (Burden range II)	VA	25	
29	IP (IEC 60529)		≥ 44	



EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering

30	IK (IEC 62262)		$\geq 8$	
30a	Creepage distance (pollution level III: 25mm/kV)	mm	$\geq 950$	
<b>Physical characteristics</b>				
31	Ambient temperature	°C	40.5	
32	Relative Air Humidity	%	$\geq 95$	
33	Length (L)	mm	To be mentioned	
34	Width (W)	mm	To be mentioned	
35	Height (H)	mm	To be mentioned	
36	Weight	kg	To be mentioned	
37	Flat primary connection by bolts suitable for bi metallic lugs		Yes	
38	Bolt diameter of primary terminals	mm	To be mentioned (max M12)	
39	Bolt diameter of secondary terminals	mm	To be mentioned	
<b>Marking</b>				
40	Primary marking		A and N	
41	Secondary marking		a and n	
42	Secondary marking embossed or engraved near the terminals under the transparent cover		Mandatory	
43	Each VT includes a name plate made of stainless steel or aluminum.		Mandatory	
44	The marking is embossed or engraved and shall bear the following information as per requirement of IEC 61869- 1 and IEC 61869- 3:		Mandatory	
45	<ul style="list-style-type: none"> <li>• Manufacturer name or logo</li> <li>• The date of manufacture and a serial number or a type designation but preferably both</li> <li>• Standard</li> </ul>		Mandatory as per IEC	



**EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering**

	<ul style="list-style-type: none"> <li>• Frequency</li> <li>• Highest voltage</li> <li>• Rated insulation level</li> <li>• the rated primary and secondary voltage</li> <li>• rated output and the corresponding accuracy class (e.g. 25 VA Class 0.5)</li> <li>• rated voltage factor and corresponding rated time</li> <li>• Weight</li> </ul>			
<b>Packing</b>				
46	VT shall be packed in crates or pallets suitable for vertical/horizontal transport		Yes	
47	The packing shall be suitable to withstand handling during the transport and outdoor storage during transit.		Mandatory	
47	The easily damageable material shall be carefully packed and marked with the appropriate caution symbols.		Mandatory	
The offer shall include all drawings and dimensions as well as all technical catalogues. If not, the offer shall be rejected.				
<b>If the required type tests are missing, the offer shall be rejected</b>				
Supplier's offer column must be properly filled with the right figures. "Compliant, Yes, ", "√", etc.... "are not accepted.				
<p align="center"><b>Deviation from the technical specification:</b></p> <p>The bidder shall list point after point and explain here in after all deviation from the requested technical specification.</p> <p>1/</p> <p>2/</p> <p>3/</p> <p align="center"><b>Full technical information shall be supplied within the bid. If not, the offer shall not be considered</b></p> <p align="center">Bidder signature:</p>				





EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering

No.	Description	Unit	Requirements	Supplier's Offer
<b>10.3 Indoor 22kV voltage transformers</b>				
1	Manufacturer Country		to be specified	
2	Manufacturer		to be specified	
3	Manufacturer's Reference of offered product		to be specified	
4	Equipment country of origin		to be specified	
5	Applicable Standards		IEC 61869- 1 and IEC 61869- 3 or equivalent to be mentioned	
6	Type tests reports according the requirement of IEC 61869- 1 and IEC 61869- 3		To be provided with bid	
7	Technical documents (drawings, catalogue, etc..)		To be provided with bid	
8	Indoor VT of epoxy resin block type		Mandatory	
9	The epoxy resin enclosure is not flammable, self-extinguishable, and shock proof.		Mandatory	
9a	The surface is smooth without defect and bubble.		Mandatory	
10	All metallic parts with exception of live parts shall be protected against corrosion or made of stainless steel or aluminum.		Yes	
11	Parts carrying voltage are made of copper.		Yes	
11a	Outside part carrying voltage are tinned copper or copper alloy		Yes	
12	Primary connections are of flat type with copper or stainless steel bolt for bars or lugs connection.		Yes	
13	The base plate is flat and made of aluminum, stainless steel or		To be mentioned	



EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering

	hot dip galvanized steel with a thickness of about 5 mm.			
14	this base is fitted with four adjustable holes for fixing the		Yes	
15	Earthing connection using stainless steel M8 bolt is done on this base.		Yes	
16	The secondary terminals are housed under a plastic transparent cover.		Yes	
16a	The secondary terminals shall be suitable for copper conductors from 2.5 mm <sup>2</sup> to 6 mm <sup>2</sup> .		Yes	
17	This cover is sealable.		Mandatory	
<b>Electrical characteristics</b>				
18	Rated Primary Max Voltage (Um)	kV	24	
19	System Nominal Voltage	kV	12.7/22	
20	Frequency	Hz	50	
21	Rated primary voltage	V	22000/√3	
22	Rated secondary voltage	V	100/√3 □ 110/√3 □	
22	Accuracy class		0.5	
23	Rated primary power frequency withstand voltage	kV	≥ 50	
24	Rated secondary power frequency withstand voltage	kV rms	3	
25	Rated impulse withstand voltage (1.2/50μs)	kV	≥ 125	
26	Partial discharge level at 1.2Um/√3	pC	20	
27	Rated power factor (Continuous)		1.2	
28	Rated output (Burden range II)	VA	25	
29	IP (IEC 60529)		≥ 20	



EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering

30	IK (IEC 62262)		$\geq 7$	
<b>Physical characteristics</b>				
31	Ambient temperature	°C	40.5	
32	Relative Air Humidity	%	$\geq 95$	
33	Length (L)	mm	Approx. $\leq 380$	
34	Width (W)	mm	Approx. $\leq 220$	
35	Height (H)	mm	Approx. $\leq 330$	
36	Weight	kg	To be mentioned	
37	Flat primary connection by bolts suitable for bar or lugs		Yes	
38	Bolt diameter of primary terminals	mm	To be mentioned	
39	Bolt diameter of secondary terminals	mm	To be mentioned	
<b>Marking</b>				
40	Primary marking		A and N	
41	Secondary marking		a and n	
42	Secondary marking embossed, engraved or on a laminated sticker near the terminals under the transparent cover		Mandatory	
43	Each VT includes a name plate made of stainless steel, aluminum or on a laminated sticker		Mandatory	
44	The marking plate is embossed or engraved or on a laminated sticker and bears the following information as per requirement of IEC 61869- 1 and IEC 61869- 3:		Mandatory	
45	<ul style="list-style-type: none"> <li>• Manufacturer name or logo</li> <li>• The date of manufacture and a serial number or a type designation but preferably both</li> <li>• Standard</li> <li>• Frequency</li> </ul>		Mandatory as per IEC	





EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering

	<ul style="list-style-type: none"> <li>Highest voltage</li> <li>Rated insulation level</li> <li>the rated primary and secondary voltage</li> <li>rated output and the corresponding accuracy class (e.g. 25 VA Class 0.5)</li> <li>rated voltage factor and corresponding rated time</li> <li>Weight</li> </ul>			
<b>Packing</b>				
46	VT shall be packed in crates or pallets suitable for vertical/ horizontal transport		Yes	
47	The packing shall be suitable to withstand handling during the transport and outdoor storage during transit.		Mandatory	
47	The easily damageable material shall be carefully packed and marked with the appropriate caution symbols.		Mandatory	
The offer shall include all drawings and dimensions as well as all technical catalogues. If not, the offer shall be rejected.				
<b>If the required type tests are missing, the offer shall be rejected</b>				
Supplier's offer column must be properly filled with the right figures. "Compliant, Yes, ", etc.... "are not accepted.				
Deviation from the technical specification:				
The bidder shall list point after point and explain here in after all deviation from the requested technical specification.				
1/				
2/				
3/				
Full technical information shall be supplied within the bid. If not, the offer shall not be considered				
Bidder signature:				



EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering

No.	Description	Unit	Requirements	Supplier's Offer
<b>10.4 Outdoor 22kV voltage transformers</b>				
1	Manufacturer Country		to be specified	
2	Manufacturer		to be specified	
3	Manufacturer's Reference of offered product		to be specified	
4	Product country of origin		to be specified	
5	Applicable Standards		IEC 61869- 1 and IEC 61869- 3 or equivalent to be mentioned	
6	Type tests reports according the requirement of IEC 61869- 1 and IEC 61869- 3		To be provided with bid	
7	Technical documents (drawings, catalogue, etc..)		To be provided with bid	
8	Outdoor VT of epoxy resin block type		Mandatory	
9	The epoxy resin enclosure is not flammable, self-extinguishable, and shock proof.		Mandatory	
9a	The surface is smooth without defect and bubble.		Mandatory	
10	All metallic parts with exception of live parts shall be protected against corrosion or made of stainless steel or aluminum.		Yes	
11	Parts carrying voltage are made of copper.		Yes	
11a	Outside parts are tinned copper or copper alloy		Yes	
12	Primary connections are of flat type with copper or stainless steel bolts for bars or lugs connection.		Yes	
13	The base plate is flat and made of aluminum, stainless steel or		Yes	



EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering

	hot dip galvanized steel with a thickness of about 5 mm.			
14	this base is fitted with four adjustable holes for fixing the		Yes	
15	Earthing connection using stainless steel M8 bolt is done on this base.		Yes	
16	The secondary terminals are housed inside a waterproof metallic or plastic box		Yes	
17	The secondary terminals shall be suitable for copper conductors from 2.5 mm <sup>2</sup> to 6 mm <sup>2</sup> .		Yes	
<b>Electrical characteristics</b>				
18	Rated Primary Max Voltage (Um)	kV	24	
19	System Nominal Voltage	kV	12.7/22	
20	Frequency	Hz	50	
21	Rated primary voltage	V	22000/√3	
22	Rated secondary voltage	V	100/√3 □ 110/√3 □	
22	Accuracy class		0.5	
23	Rated primary power frequency withstand voltage	kV	≥ 50	
24	Rated secondary power frequency withstand voltage	kV rms	3	
25	Rated impulse withstand voltage (1.2/50μs)	kV	≥ 125	
26	Partial discharge level at 1.2Um/√3	pC	20	
27	Rated power factor (Continuous)		1.2	
28	Rated output (Burden range II)	VA	25	
29	IP (IEC 60529)		≥ 44	





EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering

30	IK (IEC 62262)		$\geq 8$	
30a	Creepage distance (pollution level III: 25mm/kV)	mm	$\geq 600$	
<b>Physical characteristics</b>				
31	Ambient temperature	°C	40.5	
32	Relative Air Humidity	%	$\geq 95$	
33	Length (L)	mm	To be mentioned	
34	Width (W)	mm	To be mentioned	
35	Height (H)	mm	To be mentioned	
36	Weight	kg	To be mentioned	
37	Flat primary connection by bolts suitable for bi metallic lugs		Yes	
38	Bolt diameter of primary terminals	mm	To be mentioned (Max M12)	
39	Bolt diameter of secondary terminals	mm	To be mentioned	
<b>Marking</b>				
40	Primary marking		A and N	
41	Secondary marking		a and n	
42	Secondary marking embossed or engraved near the terminals under the transparent cover		Mandatory	
43	Each VT includes a name plate made of stainless steel or aluminum.		Mandatory	
44	The marking is embossed or engraved and shall bear the following information as per requirement of IEC 61869- 1 and IEC 61869- 3:		Mandatory	
45	<ul style="list-style-type: none"> <li>• Manufacturer name or logo</li> <li>• The date of manufacture and a serial number or a type designation but preferably both</li> <li>• Standard</li> </ul>		Mandatory as per IEC	



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	<ul style="list-style-type: none"> <li>Frequency</li> <li>Highest voltage</li> <li>Rated insulation level</li> <li>the rated primary and secondary voltage</li> <li>rated output and the corresponding accuracy class (e.g., 25 VA Class 0.5)</li> <li>rated voltage factor and corresponding rated time</li> <li>Weight</li> </ul>			
<b>Packing</b>				
46	VT shall be packed in crates or pallets suitable for vertical/horizontal transport		Yes	
47	The packing shall be suitable to withstand handling during the transport and outdoor storage during transit.		Mandatory	
47	The easily damageable material shall be carefully packed and marked with the appropriate caution symbols.		Mandatory	
The offer shall include all drawings and dimensions as well as all technical catalogues. If not, the offer shall be rejected.				
<b>If the required type tests are missing, the offer shall be rejected</b>				
Supplier's offer column must be properly filled with the right figures. "Compliant, Yes, "✓", etc.... "are not accepted.				
Deviation from the technical specification:				
The bidder shall list point after point and explain here in after all deviation from the requested technical specification.				
1/				
3/				
<b>Full technical information shall be supplied within the bid. If not, the offer shall not be considered</b>				
Bidder signature:				



EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering

No.	Description	Unit	Requirements	Supplier's Offer
<b>10.5 Indoor 35kV current transformers</b>				
1	Manufacturer Country		to be specified	
2	Manufacturer		to be specified	
3	Manufacturer's Reference of offered product		to be specified	
4	Product country of origin		to be specified	
5	Applicable Standards		IEC 61869- 1 and IEC 61869- 2 or equivalent to be mentioned	
6	Type tests reports according the requirement of IEC 61869- 1 and IEC 61869- 2		To be provided with bid	
7	Technical documents (drawings, catalogue, etc..)		To be provided with bid	
8	Outdoor CT of epoxy resin block type		Mandatory	
9	The epoxy resin enclosure is not flammable, self-extinguishable, and shock proof.		Mandatory	
9a	The surface is smooth without defect and bubble.		Mandatory	
10	All metallic parts with exception of live parts shall be protected against corrosion or made of stainless steel or aluminum.		Yes	
11	Parts carrying voltage are made of copper.		Yes	
11a	Outside parts are tinned		Yes	
12	Primary connections are of flat type with copper or stainless steel bolts for bars or lugs connection.		Yes	
13	The base plate is flat and made of aluminum, stainless steel or		To be mentioned	





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	hot dip galvanized steel with a thickness of about 5 mm.			
14	this base is fitted with four adjustable holes for fixing the		Yes	
15	Earthing connection using stainless steel M8 bolt is done on this base.		Yes	
16	The secondary terminals are housed under a transparent plastic cover		Yes	
16a	The secondary terminals shall be suitable for copper conductors from 2.5 mm <sup>2</sup> to 6 mm <sup>2</sup> .		Yes	
17	This cover is sealable		Yes	
<b>Electrical characteristics</b>				
18	Rated Primary Max Voltage (Um)	kV	38 or 40.5	
19	System Nominal Voltage	kV	20.2/35	
20	Frequency	Hz	50	
21	Rated primary current	A	<div style="display: flex; justify-content: space-between;"> <div> 10 <input type="checkbox"/> 15 <input type="checkbox"/> 20 <input type="checkbox"/> 25 <input type="checkbox"/> 30 <input type="checkbox"/> 40 <input type="checkbox"/> </div> <div> 50 <input type="checkbox"/> 75 <input type="checkbox"/> 100 <input type="checkbox"/> 150 <input type="checkbox"/> 200 <input type="checkbox"/> 250 <input type="checkbox"/> 300 <input type="checkbox"/> </div> </div>	
22	Rated secondary current	A	5	
22	Accuracy class		0.5	
23	Rated primary power frequency withstand voltage	kV	≥ 70	



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24	Rated secondary power frequency withstand voltage	kV rms	3	
25	Rated impulse withstand voltage (1.2/50μs)	kV	≥ 170	
26	Partial discharge level at 1.2Um/√3	pC	20	
27	Rated continuous thermal current	%	120	
27 a	Rated Short-time thermal current (Ith)	kA	200In (kA) To be mentioned	
27 b	Rated Dynamic current (Idyn) 1 second.		2.5 Ith	
28	Rated output	VA	15	
29	IP (IEC 60529)		≥ 44	
30	IK (IEC 62262)		≥ 8	
<b>Physical characteristics</b>				
31	Ambient temperature	°C	40.5	
32	Relative Air Humidity	%	≥ 95	
33	Length (L)	mm	To be mentioned	
34	Width (W)	mm	To be mentioned	
35	Height (H)	mm	To be mentioned	
36	Weight	kg	To be mentioned	
37	Flat primary connection by bolts suitable for bi metallic lugs		Yes	
38	Bolt diameter of primary terminals	mm	To be mentioned	
39	Bolt diameter of secondary terminals	mm	To be mentioned	
<b>Marking</b>				
40	Primary marking		P1 and P2	
41	Secondary marking		s1 and s2	
42	Secondary marking embossed, engraved or on a laminated		To be mentioned	



Handwritten signatures and initials in blue ink.

EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering

	sticker near the terminals under the transparent cover			
43	Each CT includes a name plate made of stainless steel, aluminum or on a laminated sticker		To be mentioned	
44	The marking plate is embossed, engraved or on a laminated sticker and bears the following information as per requirement of IEC 61869-1 and IEC 61869-2:		To be mentioned	
45	<ul style="list-style-type: none"> <li>• Manufacturer name or logo</li> <li>• The date of manufacture and a serial number or a type designation but preferably both</li> <li>• Standard</li> <li>• Frequency</li> <li>• Highest voltage</li> <li>• Rated insulation level</li> <li>• the rated primary and secondary currents (e.g., 100/5 A)</li> <li>• The rated short time withstand thermal current (I<sub>th</sub>)</li> <li>• rated output and the corresponding accuracy class (e.g., 15 VA Cl. 0.5)</li> <li>• Weight</li> </ul>		Mandatory as per IEC	
<b>Packing</b>				
46	CT shall be packed in crates or pallets suitable for vertical/ horizontal transport		Yes	
47	The packing shall be suitable to withstand handling during the transport and outdoor storage during transit.		Mandatory	
47	The easily damageable material shall be carefully packed and marked with the appropriate caution symbols.		Mandatory	





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The offer shall include all drawings and dimensions as well as all technical catalogues. If not, the offer shall be rejected.

**If the required type tests are missing, the offer shall be rejected**

Supplier's offer column must be properly filled with the right figures. "Compliant, Yes, ", etc.... "are not accepted.

**Deviation from the technical specification:**

The bidder shall list point after point and explain here in after all deviation from the requested technical specification.

1/

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**Full technical information shall be supplied within the bid. If not, the offer shall not be considered**

Bidder signature:



EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering

No.	Description	Unit	Requirements	Supplier's Offer
<b>10.6 Outdoor 35kV current transformers</b>				
1	Manufacturer Country		to be specified	
2	Manufacturer		to be specified	
3	Manufacturer's Reference of offered product		to be specified	
4	Product country of origin		to be specified	
5	Applicable Standards		IEC 61869- 1 and IEC 61869- 2 or equivalent to be mentioned	
6	Type tests reports according the requirement of IEC 61869- 1 and IEC 61869- 2		To be provided with bid	
7	Technical documents (drawings, catalogue, etc..)		To be provided with bid	
8	Outdoor CT of epoxy resin block type		Mandatory	
9	The epoxy resin enclosure is not flammable, self-extinguishable, and shock proof.		Mandatory	
9a	The surface is smooth without defect and bubble.		Mandatory	
10	All metallic parts with exception of live parts shall be protected against corrosion or made of stainless steel or aluminum.		Yes	
11	Parts carrying voltage are made of copper.		Yes	
11a	Outside parts are tinned copper or copper alloy		Yes	
12	Primary connections are of flat type with copper or stainless steel bolts for bars or lugs connection.		Yes	
13	The base plate is flat and made of aluminum, stainless steel or		To be mentioned	



EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering

	hot dip galvanized steel with a thickness of about 5 mm.			
14	this base is fitted with four adjustable holes for fixing the		Yes	
15	Earthing connection using stainless steel M8 bolt is done on this base.		Yes	
16	The secondary terminals are housed inside a waterproof metallic or plastic box		Yes	
17	The secondary terminals shall be suitable for copper conductors from 2.5 mm <sup>2</sup> to 6 mm <sup>2</sup> .		Yes	
<b>Electrical characteristics</b>				
18	Rated Primary Max Voltage (Um)	kV	38 or 40.5	
19	System Nominal Voltage	kV	20.2/35	
20	Frequency	Hz	50	
21	Rated primary current	A	<div>10 <input type="checkbox"/></div> <div>15 <input type="checkbox"/></div> <div>20 <input type="checkbox"/></div> <div>25 <input type="checkbox"/></div> <div>30 <input type="checkbox"/></div> <div>35 <input type="checkbox"/></div> <div>40 <input type="checkbox"/></div> <div>50 <input type="checkbox"/></div> <div>75 <input type="checkbox"/></div> <div>100 <input type="checkbox"/></div> <div>150 <input type="checkbox"/></div> <div>200 <input type="checkbox"/></div> <div>250 <input type="checkbox"/></div> <div>300 <input type="checkbox"/></div>	
22	Rated secondary current	A	5	
22	Accuracy class		0.5	
23	Rated primary power frequency withstand voltage	kV	≥ 70	
24	Rated secondary power frequency withstand voltage	kV rms	3	





EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering

25	Rated impulse withstand voltage (1.2/50μs)	kV	≥ 170	
26	Partial discharge level at 1.2Um/√3	pC	20	
27	Rated continuous thermal current	%	120	
27a	Rated Short-time thermal current (Ith)	kA	200In (kA) To be mentioned	
27b	Rated Dynamic current (Idyn) 1 second.		2.5 Ith	
28	Rated output	VA	15	
29	IP (IEC 60529)		≥ 44	
30	IK (IEC 62262)		≥ 8	
30a	Creepage distance (pollution level III: 25mm/kV)	mm	≥ 950	
<b>Physical characteristics</b>				
31	Ambient temperature	°C	40.5	
32	Relative Air Humidity	%	≥ 95	
33	Length (L)	mm	To be mentioned	
34	Width (W)	mm	To be mentioned	
35	Height (H)	mm	To be mentioned	
36	Weight	kg	To be mentioned	
37	Flat primary connection by bolts suitable for bi metallic lugs		Yes	
38	Bolt diameter of primary terminals	mm	To be mentioned (max M12)	
39	Bolt diameter of secondary terminals	mm	To be mentioned	
<b>Marking</b>				
40	Primary marking		P1 and P2	
41	Secondary marking		s1 and s2	



EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering

42	Secondary marking embossed or engraved near the terminals under the transparent cover		Mandatory	
43	Each CT includes a name plate made of stainless steel or aluminum.		Mandatory	
44	The marking is embossed or engraved and shall bear the following information as per requirement of IEC 61869- 1 and IEC 61869-2:		Mandatory	
45	<ul style="list-style-type: none"> <li>• Manufacturer name or logo</li> <li>• The date of manufacture and a serial number or a type designation but preferably both</li> <li>• Standard</li> <li>• Frequency</li> <li>• Highest voltage</li> <li>• Rated insulation level</li> <li>• the rated primary and secondary currents (e.g. 100/5 A)</li> <li>• The rated short time withstand thermal current (Ith)</li> <li>• rated output and the corresponding accuracy class (e.g. 15 VA Cl. 0.5)</li> <li>• Weight</li> </ul>		Mandatory as per IEC	
<b>Packing</b>				
46	CT shall be packed in crates or pallets suitable for vertical/ horizontal transport		Yes	
47	The packing shall be suitable to withstand handling during the transport and outdoor storage during transit.		Mandatory	
47	The easily damageable material shall be carefully packed and marked with the appropriate caution symbols.		Mandatory	



EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering

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Deviation from the technical specification:

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Bidder signature:





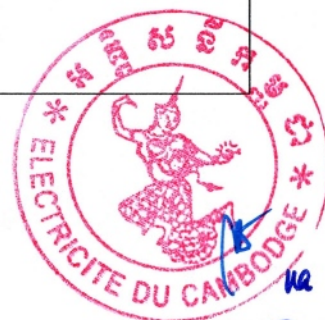
EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering

No.	Description	Unit	Requirements	Supplier's Offer
<b>10.7 Indoor 22 kV current transformers</b>				
1	Manufacturer Country		to be specified	
2	Manufacturer		to be specified	
3	Manufacturer's Reference of offered product		to be specified	
4	Product country of origin		to be specified	
5	Applicable Standards		IEC 61869- 1 and IEC 61869- 2 or equivalent to be mentioned	
6	Type tests reports according the requirement of IEC 61869- 1 and IEC 61869- 2		To be provided with bid	
7	Technical documents (drawings, catalogue, etc..)		To be provided with bid	
8	Indoor CT of epoxy resin block type		Mandatory	
9	The epoxy resin enclosure is not flammable, self-extinguishable, and shock proof.		Mandatory	
9a	Surface is smooth without defect or bubble		Mandatory	
10	All metallic parts with exception of live parts shall be protected against corrosion or made of stainless steel or aluminum.		Yes	
11	Parts carrying voltage are made of copper.		Yes	
11a	Outside parts are tinned copper or copper alloy		To be mentioned	
12	Primary connections are of flat type with copper or stainless steel bolts for bars or lugs connection.		Yes	
13	The base plate is flat and made of aluminum, stainless steel or		To be mentioned	



EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering

	hot dip galvanized steel with a thickness of about 5 mm.			
14	this base is fitted with four adjustable holes for fixing the		Yes	
15	Earthing connection using stainless steel M8 bolt is done on this base.		Yes	
16	The secondary terminals are housed under a plastic transparent cover.		Yes	
16a	The secondary terminals shall be suitable for copper conductors from 2.5 mm <sup>2</sup> to 6 mm <sup>2</sup> .		Yes	
17	This cover is sealable.		Mandatory	
<b>Electrical characteristics</b>				
18	Rated Primary Max Voltage (Um)	kV	24	
19	System Nominal Voltage	kV	12.7/22	
20	Frequency	Hz	50	
21	Rated primary current	A	<div> <div>10 <input type="checkbox"/></div> <div>15 <input type="checkbox"/></div> <div>20 <input type="checkbox"/></div> <div>25 <input type="checkbox"/></div> <div>30 <input type="checkbox"/></div> <div>40 <input type="checkbox"/></div> </div> <div> <div>50 <input type="checkbox"/></div> <div>75 <input type="checkbox"/></div> <div>100 <input type="checkbox"/></div> <div>150 <input type="checkbox"/></div> <div>200 <input type="checkbox"/></div> <div>250 <input type="checkbox"/></div> <div>300 <input type="checkbox"/></div> </div>	
22	Rated secondary current	A	5	
22	Accuracy class		0.5	
23	Rated primary power frequency withstand voltage	kV	≥ 50	



EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering

24	Rated secondary power frequency withstand voltage	kV rms	3	
25	Rated impulse withstand voltage (1.2/50μs)	kV	≥ 125	
26	Partial discharge level at 1.2Um/V3	pC	20	
27	Rated continuous thermal current	%	120	
27a	Rated Short-time thermal current (Ith)	kA	200In (kA) To be mentioned	
27b	Rated Dynamic current (Idyn) 1 second.		2.5 Ith	
28	Rated output	VA	15	
29	IP (IEC 60529)		≥ 20	
30	IK (IEC 62262)		≥ 7	
<b>Physical characteristics</b>				
31	Ambient temperature	°C	40	
32	Relative Air Humidity	%	≥ 95	
33	Length (L)	mm	To be mentioned	
34	Width (W)	mm	To be mentioned	
35	Height (H)	mm	To be mentioned	
36	Weight	kg	To be mentioned	
37	Flat primary connection by bolts suitable for bi metallic lugs or bars		Yes	
38	Bolt diameter of primary terminals	mm	To be mentioned	
39	Bolt diameter of secondary terminals	mm	To be mentioned	
<b>Marking</b>				
40	Primary marking		P1 and P2	
41	Secondary marking		s1 and s2	
42	Secondary marking embossed, engraved or on a laminated		To be mentioned	





EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering

	sticker near the terminals under the transparent cover			
43	Each CT includes a name plate made of stainless steel, aluminum or laminated sticker		To be mentioned	
44	The marking is embossed, engraved or on a laminated sticker and shall bear the following information as per requirement of IEC 61869- 1 and IEC 61869-2:		Mandatory	
45	<ul style="list-style-type: none"> <li>• Manufacturer name or logo</li> <li>• The date of manufacture and a serial number or a type designation but preferably both</li> <li>• Standard</li> <li>• Frequency</li> <li>• Highest voltage</li> <li>• Rated insulation level</li> <li>• the rated primary and secondary currents (e.g., 100/5 A)</li> <li>• The rated short time withstand thermal current (I<sub>th</sub>)</li> <li>• rated output and the corresponding accuracy class (e.g., 15 VA Cl. 0.5)</li> <li>• Weight</li> </ul>		Mandatory as per IEC	
<b>Packing</b>				
46	CT shall be packed in crates or pallets suitable for vertical/ horizontal transport		Yes	
47	The packing shall be suitable to withstand handling during the transport and outdoor storage during transit.		Mandatory	
47	The easily damageable material shall be carefully packed and marked with the appropriate caution symbols.		Mandatory	



EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current  
Transformers for Metering

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EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering

No.	Description	Unit	Requirements	Supplier's Offer
<b>10.8 Outdoor 22 kV current transformers</b>				
1	Manufacturer Country		to be specified	
2	Manufacturer		to be specified	
3	Manufacturer's Reference of offered product		to be specified	
4	Product country of origin		to be specified	
5	Applicable Standards		IEC 61869- 1 and IEC 61869- 2 or equivalent to be mentioned	
6	Type tests reports according the requirement of IEC 61869- 1 and IEC 61869- 2		To be provided with bid	
7	Technical documents (drawings, catalogue, etc..)		To be provided with bid	
8	Outdoor CT of epoxy resin block type		Mandatory	
9	The epoxy resin enclosure is not flammable, self-extinguishable, and shock proof.		Mandatory	
9a	The surface is smooth without defect or bubble		Mandatory	
10	All metallic parts with exception of live parts shall be protected against corrosion or made of stainless steel or aluminum.		Yes	
11	Parts carrying voltage are made of copper.		Yes	
11a	Outside parts are tinned copper or copper alloy			
12	Primary connections are of flat type with copper or stainless steel bolts for bars or lugs connection.		Yes	
13	The base plate is flat and made of aluminum, stainless steel or		Yes	





EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering

	hot dip galvanized steel with a thickness of about 5 mm.			
14	this base is fitted with four adjustable holes for fixing the		Yes	
15	Earthing connection using stainless steel M8 bolt is done on this base.		Yes	
16	The secondary terminals are housed inside a waterproof metallic or plastic box		Yes	
17	The secondary terminals shall be suitable for copper conductors from 2.5 mm <sup>2</sup> to 6 mm <sup>2</sup> .		Yes	
<b>Electrical characteristics</b>				
18	Rated Primary Max Voltage (Um)	kV	24	
19	System Nominal Voltage	kV	12.7/22	
20	Frequency	Hz	50	
21	Rated primary current	A	<div> <div>10 <input type="checkbox"/></div> <div>15 <input type="checkbox"/></div> <div>20 <input type="checkbox"/></div> <div>25 <input type="checkbox"/></div> <div>30 <input type="checkbox"/></div> <div>40 <input type="checkbox"/></div> </div> <div> <div>50 <input type="checkbox"/></div> <div>75 <input type="checkbox"/></div> <div>100 <input type="checkbox"/></div> <div>150 <input type="checkbox"/></div> <div>200 <input type="checkbox"/></div> <div>250 <input type="checkbox"/></div> <div>300 <input type="checkbox"/></div> </div>	
22	Rated secondary current	A	5	
22	Accuracy class		0.5	
23	Rated primary power frequency withstand voltage	kV	≥ 50	
24	Rated secondary power frequency withstand voltage	kV rms	3	



EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering

25	Rated impulse withstand voltage (1.2/50μs)	kV	≥ 125	
26	Partial discharge level at 1.2Um/V3	pC	20	
27	Rated continuous thermal current	%	120	
27a	Rated Short-time thermal current (Ith)	kA	200In (kA) To be mentioned	
27b	Rated Dynamic current (Idyn) 1 second.		2.5 Ith	
28	Rated output	VA	15	
29	IP (IEC 60529)		≥ 44	
30	IK (IEC 62262)		≥ 8	
30a	Creepage distance (pollution level III: 25mm/kV)	mm	≥ 600	
<b>Physical characteristics</b>				
31	Ambient temperature	°C	40	
32	Relative Air Humidity	%	≥ 95	
33	Length (L)	mm	To be mentioned	
34	Width (W)	mm	To be mentioned	
35	Height (H)	mm	To be mentioned	
36	Weight	kg	To be mentioned	
37	Flat primary connection by bolts suitable for bi metallic lugs		Yes	
38	Bolt diameter of primary terminals	mm	To be mentioned (max M12)	
39	Bolt diameter of secondary terminals	mm	To be mentioned	
<b>Marking</b>				
40	Primary marking		P1 and P2	
41	Secondary marking		s1 and s2	



EDC-DTS-MV020- MV Outdoor and Indoor Voltage Transformers and Current Transformers for Metering

42	Secondary marking embossed or engraved near the terminals under the transparent cover		Mandatory	
43	Each CT includes a name plate made of stainless steel or aluminum.		Mandatory	
44	The marking is embossed or engraved and shall bear the following information as per requirement of IEC 61869- 1 and IEC 61869-2:		Mandatory	
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<b>Packing</b>				
46	CT shall be packed in crates or pallets suitable for vertical/ horizontal transport		Yes	
47	The packing shall be suitable to withstand handling during the transport and outdoor storage during transit.		Mandatory	
47	The easily damageable material shall be carefully packed and marked with the appropriate caution symbols.		Mandatory	





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