

145 KV CURRENT TRANSFORMER TYPE: IMB 145

CLIENT:
(AS APPLICABLE)

END CUSTOMER:
APTRANSCO

W.O. NO.:
(AS APPLICABLE)

PROJECT:
(AS APPLICABLE)

P.O. NO.:
(AS APPLICABLE)

QTY.:
(AS APPLICABLE)

CT RATIO:
150/1

Drawing approval subject to valid vendor registration

| SR. NO. | REFERENCE OF STD DRGS/ DOCUMENTS | REV. | DESCRIPTION |
|---------|----------------------------------|------|------------------------|
| 1. | 1HYT903320-021 | A | GENERAL ARRANGEMENT |
| 2. | 1HYT903320-022 | A | RATING PLATE |
| 3. | 1HYT903320-023 | B | SECONDARY TERMINAL BOX |

Chief Engineer/Construction

NOTE : DRAWING APPROVAL SUBJECT TO VALID TYPE TEST REPORTS, TO BE CHECKED DURING ACCEPTANCE TESTS.

| | | |
|--------------------------------------------|-------------------------------------------|---------------------------------------------|
| Prepared: SR | Checked: PDS | Approved: SN |
| Without Sep. PL.: <input type="checkbox"/> | SamePL.Same No.: <input type="checkbox"/> | Sep. PL.Other No.: <input type="checkbox"/> |
| Derived by: | Supersedes: | Supersedes by: |
| A 2021-01-11 | | |
| B 2021-01-21 | | |

LIST OF DOCUMENTS FOR IMB 145 TYPE CT

1HYT903320-020

| |
|--------------|
| |
| Scale NTS |
| T.Sh. 1 |
| Sheets 1 |

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Ⓐ New drg. prepared.

Ⓑ Change in sr no. 3

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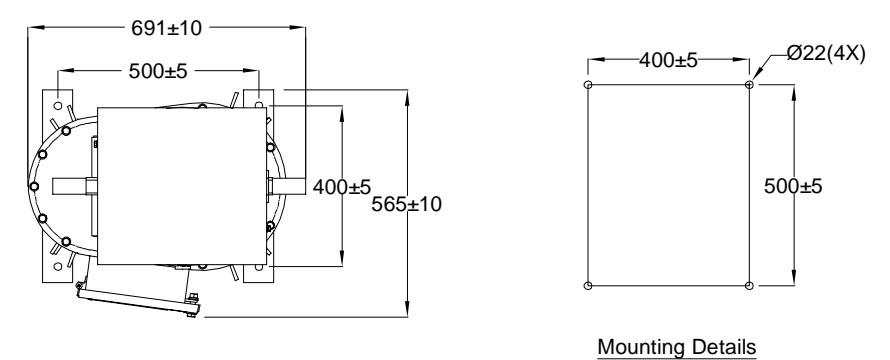
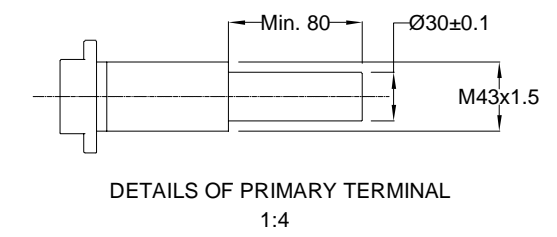
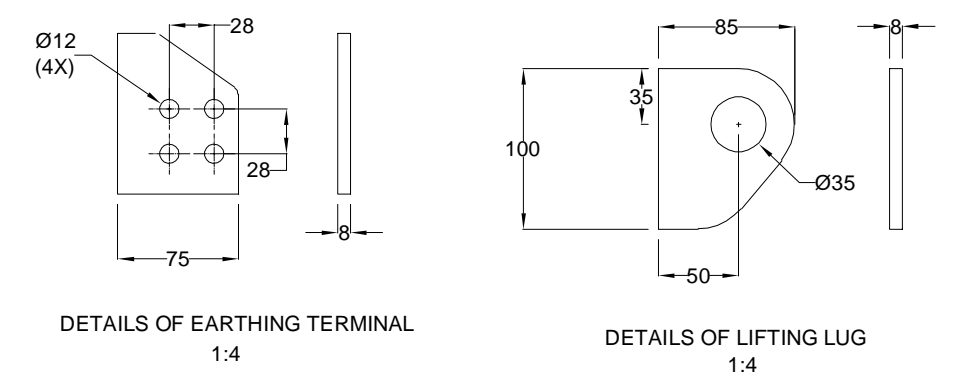
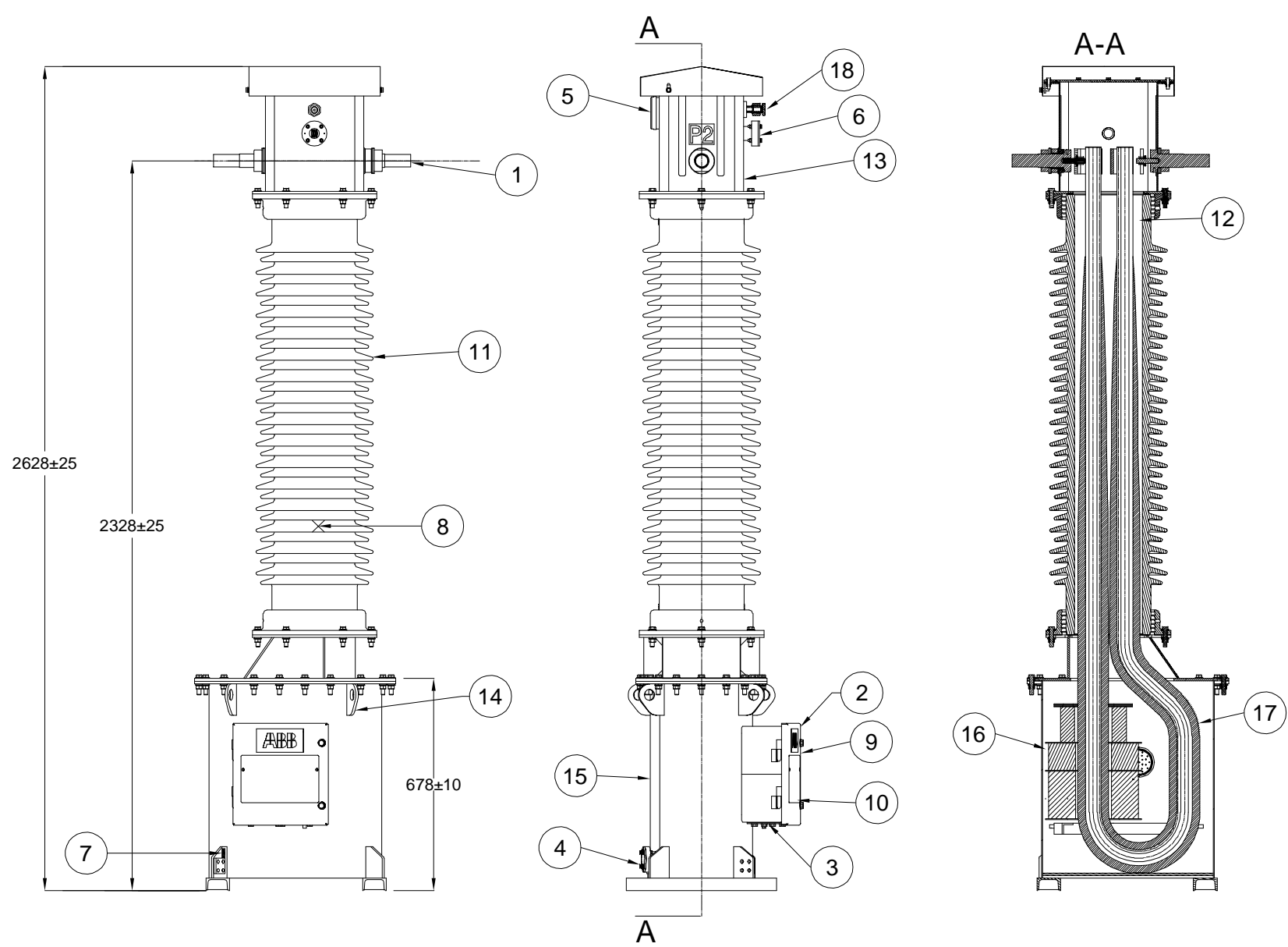


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Revision Details:
A) New drg. prepared.

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TOTAL WEIGHT 550 kg. APPROX
CREEPAGE DISTANCE 3625 mm
ALL FERROUS PARTS EXPOSED TO
ATMOSPHERE ARE HDG.

GENERAL TOLERANCE AS PER ISO:2768-C.

| | | | |
|--------|------------------------------------|--------|--------------------------|
| 18 | PRESSURE RELEASE DEVICE | 1 | S.S/BRASS |
| 17 | PRIMARY WINDING | 1 | PRIMARY CONDUCTOR (ALU.) |
| 16 | CORE STACK | 1 | - |
| 15 | BOTTOM TANK & TANK COVER | 1 | M.S HDG* |
| 14 | LIFTING LUG | 4 | M.S HDG* |
| 13 | TOP CHAMBER | 1 | M.S HDG* |
| 12 | TRANSFORMER OIL | ~75 KG | EHV GRADE IEC 60296 |
| 11 | INSULATOR | 1 | PORCELAIN |
| 10 | RATING PLATE | 1 | ALU. |
| 9 | D3 TERMINAL | 1 | INSIDE TERMINAL BOX |
| 8 | CENTRE OF GRAVITY | - | - |
| 7 | EARTH CLAMP | 2 | S.S WELDED OVER M.S |
| 6 | OIL LEVEL INDICATOR | 1 | TOUGHENED GLASS |
| 5 | OIL & NITROGEN FILLING PLUG | 1 | M.S HDG* |
| 4 | OIL DRAIN PLUG WITH BLANKING PLATE | 1 | M.S HDG* |
| 3 | REMOVABLE GLAND PLATE | 1 | M.S HDG* |
| 2 | SECONDARY TERMINAL BOX | 1 | M.S HDG* |
| 1 | PRIMARY TERMINAL | 2 | ALU. |
| Sr No. | Item Description | Qty. | Material |

*HOT DIP GALVANIZED ON OUTER SURFACE AND PAINTED ON INNER SURFACE
INNER SURFACE PAINTED WITH OIL RESISTIVE PAINT

NOTE : DRAWING APPROVAL SUBJECT TO VALID TYPE TEST REPORTS, TO BE CHECKED DURING ACCEPTANCE TESTS.

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| | | | | | | | | |
|----------|------------|-------------------------------------------------|------------------------------------------------------|--------------|--------------|--------------|----------------|-------------|
| Revision | | OUTDOOR 145 kV CURRENT TRANSFORMER TYPE IMB 145 | GENERAL ARRANGEMENT DRAWING (For CT with Small Tank) | Prepared: SR | Checked: PDS | Approved: SN | file: 3320-021 | Total sh. 1 |
| A | 2021-01-11 | | | ABB APPSIL | | | 1HYT903320-021 | Sh.No. 1 |

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ABB Current transformer APPSIL Production year - YYYY Made in India

| | | | | | |
|-------------------------------|----------------|-------------------------------|----------------|------------------------|--------------|
| Serial number | nnnnnnn | Type | IMB 145 | Frequency | 50 Hz |
| Insulation level | 145/275/650 | Standard | IEC: 61869-1,2 | Temperature range | -5 to +50 °C |
| Rated pri. normal current | 150A | Total mass(Approx) | 550 kg | Total creepage minimum | 3625mm |
| Max continous primary current | 180A | Insulation oil(Approx) | 75 kg | Ith | 31.5/1 kA/s |
| GA Drawing | 1HYT903320-021 | Suitable for Hot line washing | Yes | Idyn | 78.75 kAp |

| | |
|--------|---------|
| RATIO | 150/1 |
| CORE-1 | 1S1-1S2 |
| CORE-2 | - |
| CORE-3 | - |
| CORE-4 | - |
| CORE-5 | - |

AUX. REACTOR CONNECTION DETAIL FOR CORE - ONLY

1.CONNECT SHORTING LINK BETWEEN _____ FOR THE RATIO OF _____ RESPECTIVELY. TAKE OUTPUT FROM _____.

2.DO NOT CONNECT SHORTING LINK FOR THE RATIO OF _____.

| CORE | CORE-1 | CORE-2 | CORE-3 | CORE-4 | CORE-5 |
|------------|--------|--------|--------|--------|--------|
| I A | 150/1 | - | - | - | - |
| Vk V/ B VA | 5 | - | - | - | - |
| CI | 0.2S | - | - | - | - |
| ISF/ALF | <5 | - | - | - | - |
| Io mA | - | - | - | - | - |
| Rct Ω | - | - | - | - | - |

| |
|---------------------------------------------------------------------------------------------------------------------------------------------|
| END CUSTOMER: (AS APPLICABLE) |
| ABB WORKS ORDER NO: (AS APPLICABLE) |
| PROJECT: (AS APPLICABLE) |
| Caution 1)Ensure D3(Tan Delta) Bushing connection with Earth 2)Secondary terminals must be short circuited before burden is disconnected |

Serial number nnnnnnn to be decided when manufactured
 Production year yyyy = Actual year,date & month of Production
 Material: Aluminium 2mm Thk.
 Letter height 3 mm

NOTE : DRAWING APPROVAL SUBJECT TO VALID TYPE TEST REPORTS, TO BE CHECKED DURING ACCEPTANCE TESTS.

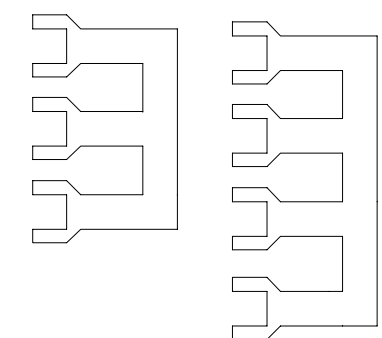
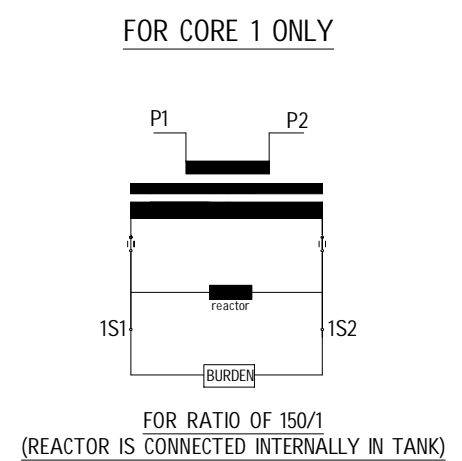
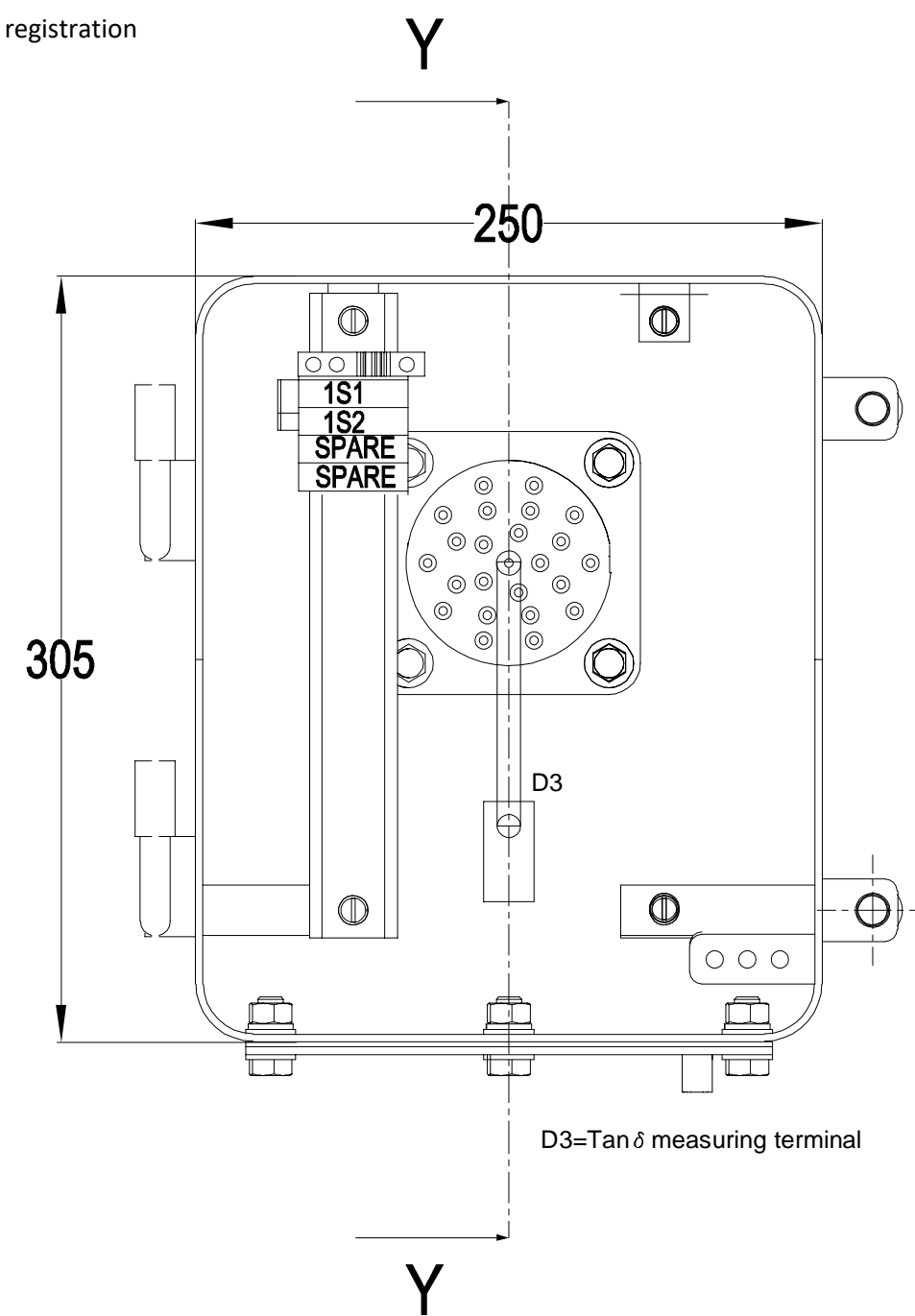
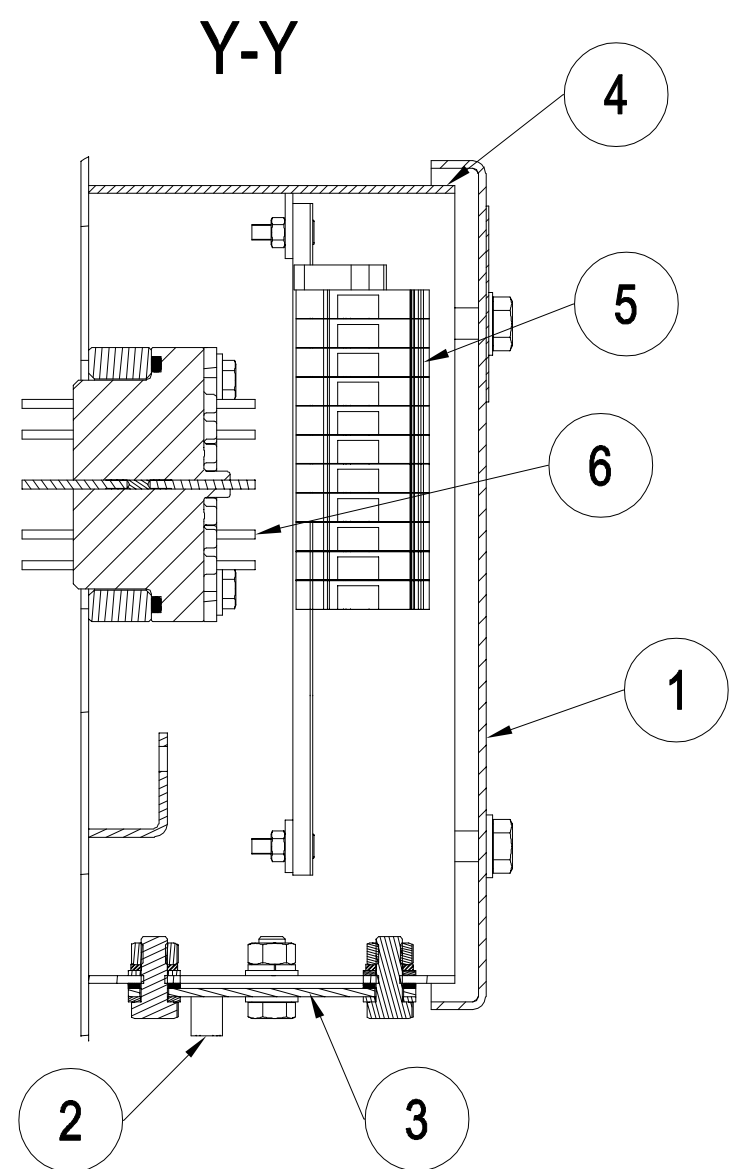
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| | | | | | | | | |
|----------|------------|-------------------------------------------------|---------------------------------|----------------------------|--------------|--------------|-----------------------|-------------|
| Revision | | 145 kV OUTDOOR CURRENT TRANSFORMER TYPE IMB 145 | RATING PLATE 2GHV080292P0004 | Prepared: SR ABB | Checked: PDS | Approved: SN | File: 3320-022 | Total sh. 1 |
| A | 2021-01-11 | | | APPSIL | | | 1HYT903320-022 | Sh.No. 1 |

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Revision Details:
 (A) New drg prepared.

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| | |
|-------|----------------------------------|
| 6 | COPPER WIRE |
| 5 | SERIES TERMINAL STUD TYPE |
| 4 | EPDM GASKET |
| 3 | UNDRILLED GLAND PLATE (3mm Thk.) |
| 2 | DRAIN TUBE |
| 1 | COVER |
| SR NO | ITEM DESCRIPTION |

NOTE : DRAWING APPROVAL SUBJECT TO VALID TYPE TEST REPORTS, TO BE CHECKED DURING ACCEPTANCE TESTS.

- NOTES : -
- 1) DEGREE OF PROTECTION IP 55
 - 2) THE SECONDARY TERMINAL BOX IS HDG.
 - 3) D3 TERMINAL IS FOR THE MEASUREMENT OF POWER FACTOR AND LOSS ANGLE
 - 4) THE BOX IS SUITABLE FOR ACCOMMODATING SECONDARY CABLES OF 1100 V
 - 5) STEEL SHEET 3.15 mm THICK HOT ROLLED
 - 6) ALL DIMENSIONS ARE IN mm. GENERAL TOLERANCE AS PER ISO: 2768-c
 - 7) NO. OF WIRES SHOWN IN THE TERMINAL BLOCK ARE INDICATIVE ONLY

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Revision Details:
B Gland plate thickness added
Reactor detail added

Revision Details:
A New Drawing prepared

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| Revision | |
|----------|------------|
| A | 2020-01-11 |
| B | 2021-01-21 |

CURRENT TRANSFORMER
TYPE : IMB 145 SEC.
TERMINAL BOX : DETAILS

| | | | |
|-------------------|-----------------|--------------|-----------------------|
| DRAWN: SR | CHECKED: PDS | APPRD: SN | file: 3320-023 |
| ABB APPSIL | | | 1HYT903320-023 |

| | |
|-----------|---|
| TOTAL SH. | 1 |
| Sh. NO. | 1 |

Annexure-A

**GUARANTEED TECHNICAL PARTICULARS FOR
CURRENT TRANSFORMERS (145kV CT: 150 / 1 A)**

| | | |
|---------|-------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| 1 | Type of tank/Installation Dead/Live Tank Type | Dead tank, Single phase, Oil Filled, Outdoor Type |
| 2 | Type of mounting | Pedestal Mounting |
| 3 | Manufacturer's Name and address and Country of Manufacture | APPSIL (Formerly - ABB India Ltd) Maneja, Vadodara – 390013 India |
| 4 | Whether Conforming to IEC 61869 standard | Yes |
| 5 a) i) | Primary and Secondary winding made out of | Primary – Aluminum, Secondary – Copper |
| ii) | Primary windings -Design density for short circuit current -Conductivity of metal used - | Aluminum - 42.8 Amp/mm ² (approx.) - As per IEC |
| b) i) | Area of cross section of primary winding | 736 mm ² (approx.) |
| ii) | Area of cross section of secondary winding | Metering : 0.82 mm ² (approx.) |
| c) | Material used for providing secondary terminals | Brass (Primary Terminal will be Al) |
| d) | Material used for providing secondary terminals | Brass |
| e) | Whether Primary is Rigid Bar type in case of live tank | Not applicable |
| 6 | Rated primary voltage (kV rms) | 132 KV / root3 |
| 7 | Rated highest voltage (kV rms) | 145 KV |
| 8 | Rated frequency (Hz) | 50 Hz |
| 9 | Rated primary current (A) | 150 A |
| 10 | Rated secondary current (A) | 1 |
| 11 | Ratio taps (on secondary side only) | On Secondary Side |
| 12 | Type of insulation | Class A |
| 13 | Seismic acceleration (g) | 0.3 g vertical |
| 14 | RIV at 1.1 x Rated voltage (mv) | < 500 micro volts |
| 15 | Tank material and Tank coating | Mild Steel, HDG |
| 16 | Hardware exposed to atmosphere | HDG |
| 17 | Bolts, Nuts and Washers | MS Hot dip galvanized. |
| 18 | Porcelain housing and it make (Single piece only) | Hollow type, IEC/BHEL/ABIL/ADI/Liling/Modern or Equivalent Make |
| 19 | Sealing (Nitrogen gas cushion/Metal bellow) | Nitrogen cushion |
| 20 | Instrument security factor | <5 (For Metering core only) |
| 21 | Whether Tan Delta test tap provided | Yes |
| 22 | Whether secondary terminal plate is of molded epoxy resin type | Yes |
| 23 | Whether primary terminal bushings are of molded Epoxy cast resin/Glass fiber reinforced Polymer | Molded cast resin & Porcelain |
| 24 | Whether all seals are of “O” ring type | Yes “O” ring & Flat gasket |
| 25 | Whether all “O” Rings are fixed in machined grooves with adequate space for compression’ | Yes |
| 26 | Whether the main hollow insulator has the | Yes |

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REPORTS, TO BE CHECKED DURING ACCEPTANCE TESTS.

| | | | | | | |
|--------|-----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|----------|----------|--|--|
| | flanges cemented at both ends | | | | | |
| 27 | Whether "O" Rings are of Nitrile butyl rubber or Viton | Yes (NBR) | | | | |
| 28 | Whether the Short circuit Ampere-turns of the CT being supplied is same as type tested CTs | Yes | | | | |
| 29 | Tan Delta | Shall be less than 0.350% | | | | |
| 30 | Whether ratio selection is achieved only in secondary | Yes | | | | |
| 31 | Whether ratio selection is achieved only in secondary | Yes | | | | |
| 32 | Whether Non return drain valve for oil sampling is arranged for 132kV and above CT/IVT | Bolt Type | | | | |
| 33 | Acceptable limit of temperature | As per IS/IEC | | | | |
| 34 | Partial Discharge Level | < 5 at $U_m \times 1.2/\sqrt{3}$, < 10 at U_m (where U_m is highest system voltage) | | | | |
| 35 | Rated short time withstand current for 1 sec. duration (kA rms) | 31.5 kA | | | | |
| 36 | Rated dynamic withstand current (kAp) | 78.75 kA | | | | |
| 37 | Rated continuous thermal current (pu) where pu = rated current | 120% of rated primary current | | | | |
| 38 | 1.2/50 micro second impulse withstand voltage (kVp) | 650 | | | | |
| 39 | One minute power frequency withstand voltage (kV rms) of primary winding (Dry) | 275 | | | | |
| 40 | One minute power frequency withstand voltage of secondary winding (kV rms) | 3 | | | | |
| 41. a) | Minimum total creepage distance of insulator bushing (mm) | 3625 mm (25mm/kV) Porcelain Insulator | | | | |
| b) | Protected creepage of distance of bushing (mm) | Not Applicable | | | | |
| 42 | Details of Cores | Core-I | Core -II | Core-III | | |
| 42.1 | Current Ratios A/A | 150/1 | | | | |
| 42.2 | Output burden (VA) | 5 | | | | |
| 42.3 | Class of accuracy | 0.2S | | | | |
| 42.4 | Accuracy limit factor / ISF | 5 | | | | |
| 42.5 | Min. knee point voltage (kvp) in volts | - | | | | |
| 42.6 | Secondary resistance corrected to 75 deg.C in ohms | - | | | | |
| 42.7 | Max. Exciting current (mA) at - 20% of knee point voltage - 50% of knee point voltage - 100% of knee point voltage | - - - | | | | |
| 42.8 | Application | Metering | | | | |
| 43 | Weight of oil (Kg.) | 75 Kg (approx.) | | | | |
| 44 | Approximate weight of Copper used (Kgs) | 1.6 Kg. | | | | |
| 45 | Approximate weight of Steel used (Kgs) | 160 kg. | | | | |
| 46 | Total Weight (Kg.) | 550 kG. (approx.) | | | | |
| 47 | Mounting details | 400x500 (Please refer GA enclosed) | | | | |

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4252617/2021/EEMRT-ENE51

| | | |
|----|--------------------------------------------------------|----------------------------------|
| 48 | Overall dimensions | Please refer GA drawing enclosed |
| 49 | Characteristics (whether graphs enclosed): | |
| a) | Ratio and phase angle curves | Yes |
| b) | Magnetization curves | Yes |
| c) | Ratio correction factor curves | NA |
| 50 | Core | |
| a) | Area of cross section (sq.cm.) | NA |
| b) | Flux density at rated primary current and rated burden | As per Standard design practice |
| c) | Grade | Nano Core For Metering Core |

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