



**ESITAS**  
Instrument Transformers

# M.V. VOLTAGE TRANSFORMERS



### Voltage Transformers

An instrument transformer in which the secondary voltage, in normal conditions of use, is substantially proportional to the primary voltage and differs in phase from it by an angle which is approximately zero for an appropriate direction of the connections.

It isolates the primary side rated voltage from the connected instruments and protection circuits and convert the primary voltage into a measurable secondary voltage, which is true in magnitude and phase.

#### Primary Winding

The winding to which the voltage to be transformed is applied.

#### Secondary Winding

The winding, which supplies the voltage circuits of measuring instruments, meters, relays or similar apparatus.

#### Rated Primary Voltage

The value of the primary voltage, which appears in the designation of the transformer and on which its performance is based.

#### Rated Secondary Voltage

The value of the secondary voltage, which appears in the designation of the transformer and on which its performance is based.

#### Rated Transformation Ratio

The ratio of the rated primary to the rated secondary voltage.

#### Voltage Error (Ratio Error)

The error which a transformer introduces into the measurement of a voltage and which arises when the actual transformation ratio is not equal to the transformation ratio.

The voltage error, expressed in per cent, is given by the formula:

$$\text{Voltage Error \%} = \frac{K_n U_s - U_p}{U_p} \times 100$$

Where

$K_n$  is the rated transformation ratio;

$U_p$  is the actual primary voltage;

$U_s$  is the actual secondary voltage when  $U_p$  is applied under the conditions of measurement.

#### Accuracy Class

A designation assigned to a voltage transformer, the errors of which remain within specified limits under prescribed conditions of use.

#### Burden

The admittance of the secondary circuit expressed in siemens and power factor (lagging or leading)

#### Rated Burden

The value of the burden on which the accuracy requirements are based on.

#### Rated Output

The value of apparent power (in voltamperes at a specified power - factor), which the transformer is intended to supply to the secondary circuit at the rated secondary voltage and with rated burden, connected to it.

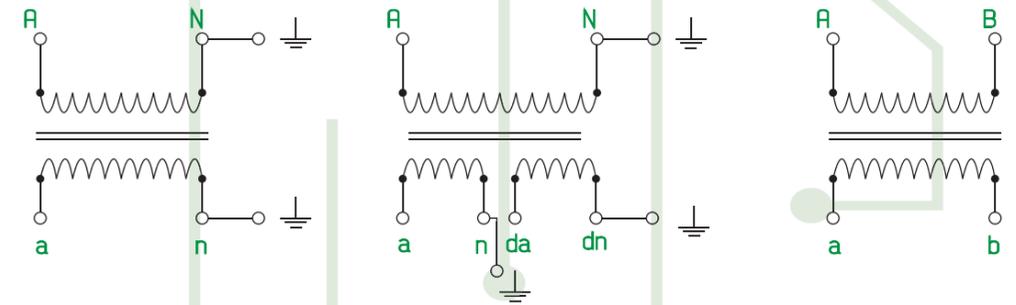
#### Rated Insulation Level

The combination of voltage values which characterizes the isolation of a transformer with regard to its capability to withstand dielectric stresses.

### Rated Voltage Factor

The multiplying factor to be applied to the rated primary voltage to determine the maximum voltage at which a transformer must comply with the relevant thermal requirements for a specified time and with the relevant accuracy requirements.

### CONNECTION DIAGRAMS



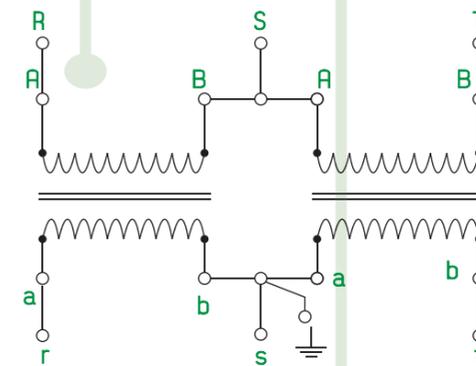
Single Pole insulated voltage transformer (e.g. 11000/√3: 100/√3V)

Single Pole insulated voltage transformer with an open delta winding (e.g. 11000/√3: 100/√3V - 100/3V)

Double pole insulated voltage transformer (e.g. 11000: 100V)

It can be required for multi secondary winding and changeable ratios.

### V-Connection of Two Double Pole Insulated Voltage Transformers



### Safety Operation Conditions for Voltage Transformers

-When the Secondary terminals are connected to the measuring or protection devices, one of the terminals should be earthed for safety as seen in Diagram-1.

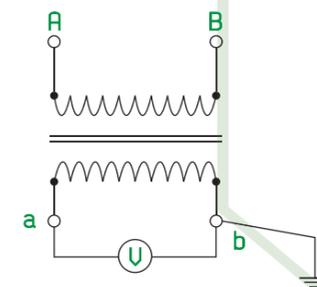
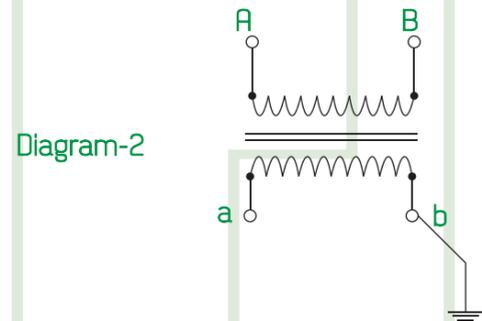
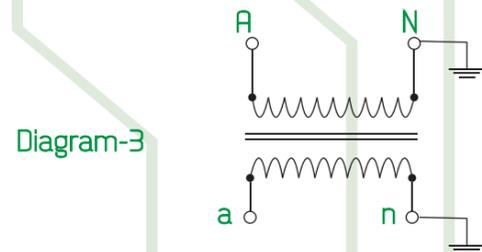


Diagram-1

- The base plate must be earthed
- The secondary circuits must not be short-circuited during operation. Otherwise the voltage transformers will be thermally destroyed.
- If any of the secondary windings of a voltage transformer will not be used, then it must be left open with one of the terminals connected to the earth as seen in Diagram-2.

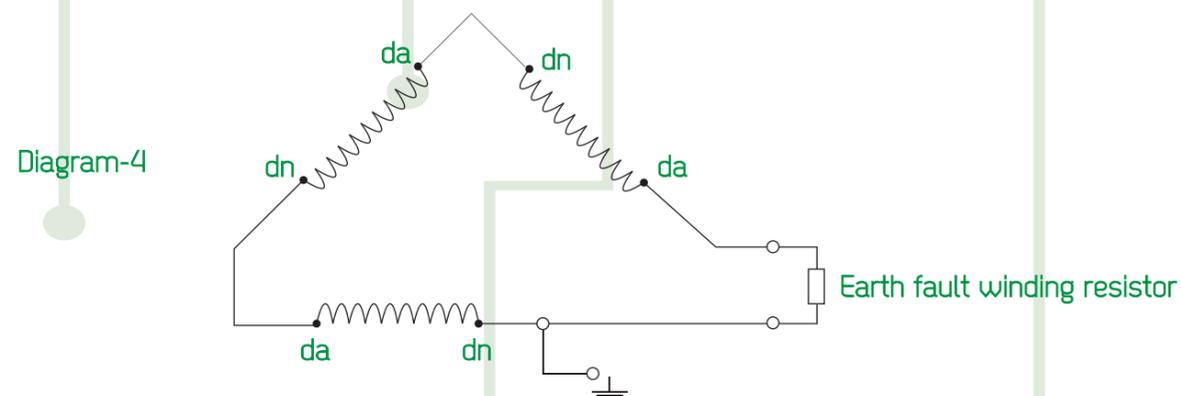


- For the single phase transformers, the neutral terminal of the primary "N" must be earthed in the earthed (neutral) systems as seen in Diagram-3.



**Other Important Points and Notes**

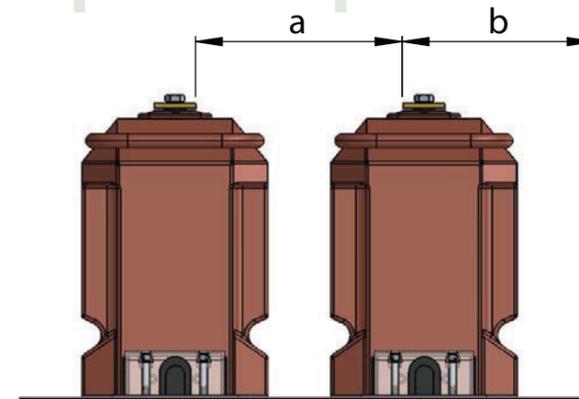
When using single pole insulated inductive voltage transformers it is very important to understand that, when a circuit is being closed or during the decaying period of an earth fault ferroresonance may occur. Ferroresonance can lead to the overheating and thermal destruction of the voltage transformer or high levels of voltages may be induced. In general, ferroresonance can be eliminated by the use of an appropriate resistor placed as a burden in open-delta circuit formed by three voltage transformers open-delta windings. The open-delta circuit must always be earthed only at one point as seen in Diagram-4. The open-delta connection can also be used for earth-fault monitoring with appropriate devices.



As the number of cable systems is increasing in the energy distribution systems, the protection of voltage transformers have become very important for the uninterrupted operation of the system without any failure and/or down time. For that reason, ESITAS is always recommending the use of open-delta windings in single phase inductive voltage transformers.

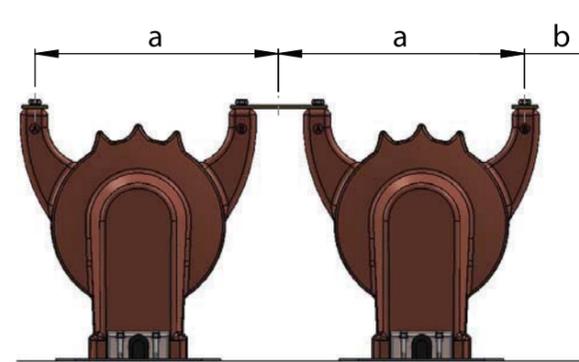
**M.V. VOLTAGE TRANSFORMERS CONNECTION CLEARANCES**

SINGLE PHASE VOLTAGE TRANSFORMERS



| INSULATION LEVEL | a minimum | b minimum |
|------------------|-----------|-----------|
| 12kV             | 100mm     | 110mm     |
| 24kV             | 190mm     | 210mm     |
| 36kV             | 305mm     | 325mm     |

PHASE TO PHASE VOLTAGE TRANSFORMERS



| INSULATION LEVEL | a minimum | b minimum |
|------------------|-----------|-----------|
| 12kV             | 185mm     | 120mm     |
| 24kV             | 240mm     | 220mm     |
| 36kV             | 340mm     | 325mm     |



**INDOOR SINGLE PHASE SUPPORT TYPE CAST RESIN INSULATED VOLTAGE TRANSFORMERS**

(Um=3,6kV.....24kV BLOCK TYPES)

**Types:**  
VTB 10-S  
VTB 10-K  
VTB 20  
VTB 20-K

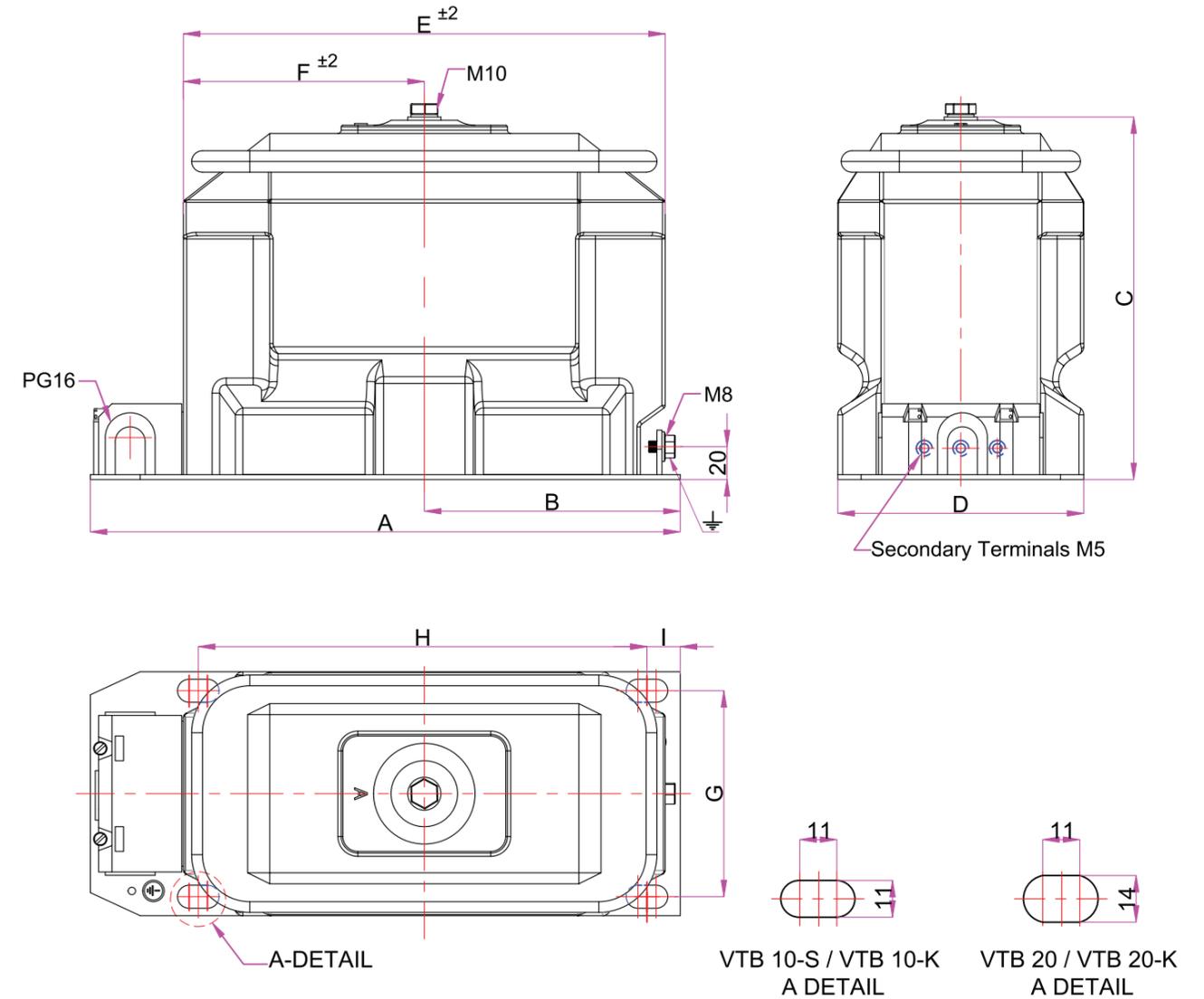
**Technical Data**

| Types                                                   | VTB 10-S                               | VTB 10-K | VTB 20 | VTB 20-K |       |       |
|---------------------------------------------------------|----------------------------------------|----------|--------|----------|-------|-------|
| Operating voltage, Um (kV)                              | 3,6                                    | 7,2      | 12     | 17,5     | 17,5  | 24**  |
| Rated power-frequency withstand voltage (1 minute) (kV) | 10                                     | 20       | 28     | 38       | 38    | 50    |
| Rated impulse test voltage (1.2/50 μs) full wave (kV)   | 40                                     | 60       | 75     | 95       | 95    | 125   |
| Rated frequency (Hz)                                    | 50-60                                  |          |        |          |       |       |
| Rated primary voltage (max.) (kV)                       | 12/√3                                  |          |        | 24/√3    |       |       |
| Secondary voltage (V)                                   | 100/√3                                 | 110/√3   | 120/√3 | 100/3    | 110/3 | 120/3 |
| Rated burden (max.) in class 0,2 (VA)                   | 30                                     |          |        | 50       |       |       |
| Rated burden (max.) in class 0,5 (VA)                   | 100                                    |          |        | 120      |       |       |
| Rated burden (max.) in class 1 (VA)                     | 200                                    |          |        | 250      |       |       |
| Rated burden for protection purpose in class 3P (VA)    | 100                                    |          |        |          |       |       |
| Rated voltage factor (30 sec. or 8h) (Un)               | 1,9                                    |          |        |          |       |       |
| Insulation class                                        | E                                      |          |        |          |       |       |
| Ambient temperature (°C)                                | -25.....+40*                           |          |        |          |       |       |
| Altitude (m)                                            | 1000                                   |          |        |          |       |       |
| Standard                                                | According to the customer requirements |          |        |          |       |       |
| Weight (approx.) (kg)                                   | 27                                     |          |        | 37       |       |       |

\* It can be produced according to customer's specified ambient temperature. Please contact with ESITAS for feasibility.  
\*\* For more kV, please contact with ESITAS for feasibility.

**INDOOR SINGLE PHASE SUPPORT TYPE CAST RESIN INSULATED VOLTAGE TRANSFORMERS TECHNICAL DRAWING**

(Um=3,6kV.....24kV BLOCK TYPES)



| Types    | A   | B   | C   | D   | E   | F   | G   | H   | I  |
|----------|-----|-----|-----|-----|-----|-----|-----|-----|----|
| VTB 10-S | 355 | 155 | 220 | 148 | 290 | 145 | 125 | 270 | 20 |
| VTB 10-K | 355 | 155 | 220 | 148 | 290 | 145 | 125 | 270 | 20 |
| VTB 20   | 355 | 155 | 280 | 178 | 290 | 145 | 150 | 280 | 20 |
| VTB 20-K | 355 | 155 | 280 | 178 | 290 | 145 | 150 | 280 | 20 |

| TIGHTENING TORQUE (Nm)  | min. | max. |
|-------------------------|------|------|
| M5 (Secondary Terminal) | 2,5  | 3,5  |
| M8 (Ground Terminal)    | 15   | 20   |
| M10 (Primary Terminal)  | 30   | 40   |

- All dimensions are in mm.  
- Tolerances are according to DIN 7168-g when not specified.  
- Esitas reserves the right to change the specifications and the dimensions of the goods. Please ask for updated information.  
- Customer designed products are also available.



**INDOOR SINGLE PHASE SUPPORT TYPE CAST RESIN INSULATED VOLTAGE TRANSFORMERS**

(Um=36kV Block Types)

Types:  
VTB 30-K

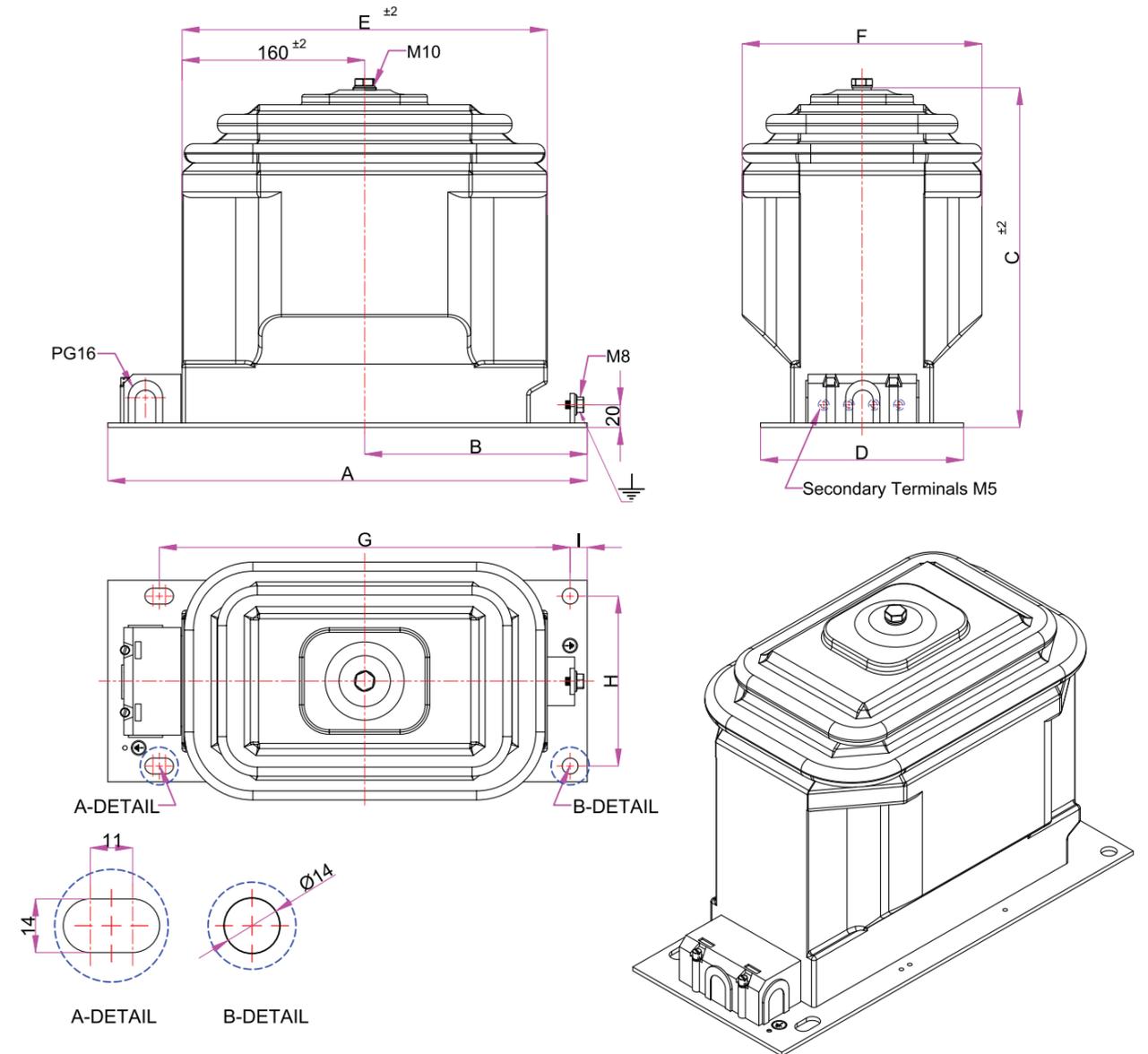
**Technical Data**

| Types                                                   | VTB 30-K                               |       |        |       |        |       |
|---------------------------------------------------------|----------------------------------------|-------|--------|-------|--------|-------|
| Operating voltage, Um (kV)                              | 36**                                   |       |        |       |        |       |
| Rated power-frequency withstand voltage (1 minute) (kV) | 70                                     |       |        |       |        |       |
| Rated impulse test voltage (1.2/50 μs) full wave (kV)   | 170                                    |       |        |       |        |       |
| Rated frequency (Hz)                                    | 50-60                                  |       |        |       |        |       |
| Rated primary voltage (max.) (kV)                       | 36/√3                                  |       |        |       |        |       |
| Secondary voltage (V)                                   | 100/√3                                 | 100/3 | 110/√3 | 110/3 | 120/√3 | 120/3 |
| Rated burden (max.) in class 0,2 (VA)                   | 50                                     |       |        |       |        |       |
| Rated burden (max.) in class 0,5 (VA)                   | 120                                    |       |        |       |        |       |
| Rated burden (max.) in class 1 (VA)                     | 250                                    |       |        |       |        |       |
| Rated burden for protection purpose in class 3P (VA)    | 100                                    |       |        |       |        |       |
| Rated voltage factor (30 sec. or 8h) (Un)               | 1,9                                    |       |        |       |        |       |
| Insulation class                                        | E                                      |       |        |       |        |       |
| Ambient temperature (°C)                                | -25.....+40*                           |       |        |       |        |       |
| Altitude (m)                                            | 1000                                   |       |        |       |        |       |
| Standard                                                | According to the customer requirements |       |        |       |        |       |
| Weight (approx.) (kg)                                   | 46                                     |       |        |       |        |       |

\* It can be produced according to customer's specified ambient temperature. Please contact with ESITAS for feasibility.  
\*\* For more kV, please contact with ESITAS for feasibility.

**INDOOR SINGLE PHASE SUPPORT TYPE CAST RESIN INSULATED VOLTAGE TRANSFORMERS TECHNICAL DRAWING**

(Um=36kV Block Types)



| Types    | A   | B   | C   | D   | E   | F   | G   | H   | I  |
|----------|-----|-----|-----|-----|-----|-----|-----|-----|----|
| VTB 30-K | 420 | 195 | 300 | 178 | 320 | 210 | 360 | 150 | 15 |

| TIGHTENING TORQUE (Nm)  | min. | max. |
|-------------------------|------|------|
| M5 (Secondary Terminal) | 2,5  | 3,5  |
| M8 (Ground Terminal)    | 15   | 20   |
| M10 (Primary Terminal)  | 30   | 40   |

- All dimensions are in mm.  
- Tolerances are according to DIN 7168-g when not specified.  
- Esitas reserves the right to change the specifications and the dimensions of the goods. Please ask for updated information.  
- Customer designed products are also available.



**INDOOR SINGLE PHASE SUPPORT TYPE CAST RESIN INSULATED VOLTAGE TRANSFORMERS**

(Um=17.5kV ..... 36kV)

**Types:**  
 VT 20-B  
 VTB 30  
 VTB 30-1  
 VTB 30-200

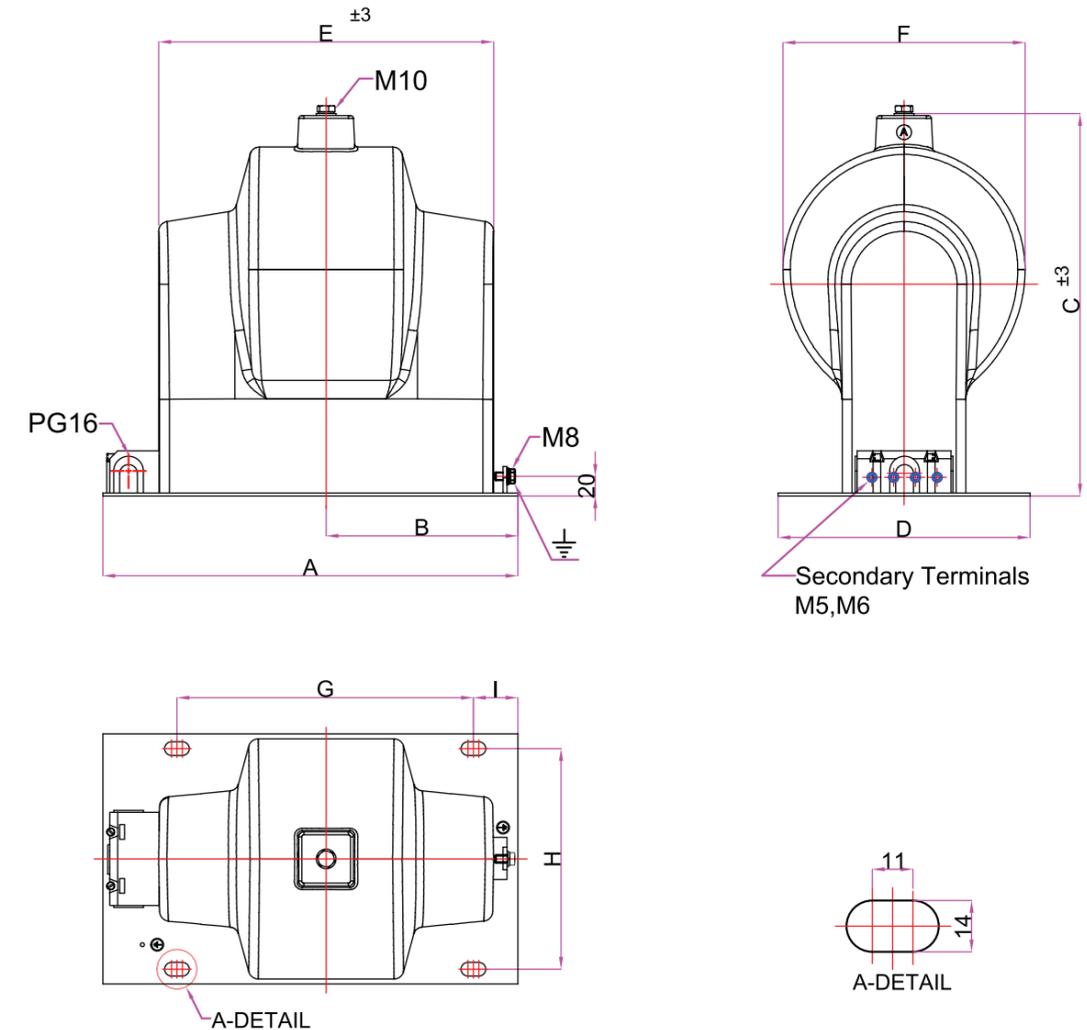
**Technical Data**

| Types                                                   | VT 20-B                                | VTB 30                      | VTB 30-1 | VTB 30-200 |
|---------------------------------------------------------|----------------------------------------|-----------------------------|----------|------------|
| Operating voltage, Um (kV)                              | 17,5 24                                | 36                          | 36**     |            |
| Rated power-frequency withstand voltage (1 minute) (kV) | 38 50                                  | 70                          | 70       |            |
| Rated impulse test voltage (1.2/50 μs) full wave (kV)   | 95 125                                 | 170                         | 200      |            |
| Rated frequency (Hz)                                    |                                        | 50-60                       |          |            |
| Rated primary voltage (max.) (kV)                       | 17,5/√3 24/√3                          | 36/√3                       |          |            |
| Secondary voltage (V)                                   | 100/√3 110/√3 120/√3                   | & Suitable for 220V winding |          |            |
| Rated burden (max.) in class 0,2 (VA)                   |                                        | 50                          |          |            |
| Rated burden (max.) in class 0,5 (VA)                   |                                        | 150                         |          |            |
| Rated burden (max.) in class 1 (VA)                     |                                        | 300                         |          |            |
| Rated burden for protection purpose in class 3P (VA)    |                                        | 100                         |          |            |
| Rated burden for 220V winding (VA)                      |                                        | 800                         |          |            |
| Rated voltage factor (30 sec. or 8h) (Un)               |                                        | 1,9                         |          |            |
| Insulation class                                        |                                        | E                           |          |            |
| Ambient temperature (°C)                                |                                        | -25.....+40*                |          |            |
| Altitude (m)                                            |                                        | 1000                        |          |            |
| Standard                                                | According to the customer requirements |                             |          |            |
| Weight (approx.) (kg)                                   | 45                                     | 50-60                       |          | 62         |

\* It can be produced according to customer's specified ambient temperature. Please contact with ESITAS for feasibility.  
 \*\* For more kV, please contact with ESITAS for feasibility.

**INDOOR SINGLE PHASE SUPPORT TYPE CAST RESIN INSULATED VOLTAGE TRANSFORMERS TECHNICAL DRAWING**

(Um=17.5kV ..... 36kV)



| Types      | A   | B   | C   | D   | E   | F   | G   | H   | I  |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|----|
| VTB 30     | 420 | 195 | 390 | 255 | 338 | -   | 300 | 225 | 45 |
| VTB 30-1   | 420 | 195 | 390 | 255 | 338 | -   | 300 | 225 | 45 |
| VT 20-B    | 440 | 205 | 300 | 200 | 360 | 215 | 270 | 170 | 70 |
| VTB 30-200 | 420 | 195 | 445 | 255 | -   | -   | 300 | 225 | 45 |

| TIGHTENING TORQUE (Nm)  | min. | max. |
|-------------------------|------|------|
| M5 (Secondary Terminal) | 2.5  | 3.5  |
| M8 (Ground Terminal)    | 15   | 20   |
| M10 (Primary Terminal)  | 30   | 40   |

- All dimensions are in mm.  
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**INDOOR SINGLE PHASE CAST RESIN INSULATED SPECIAL TYPE VOLTAGE TRANSFORMERS**

(Um=3,6kV.....17,5kV)

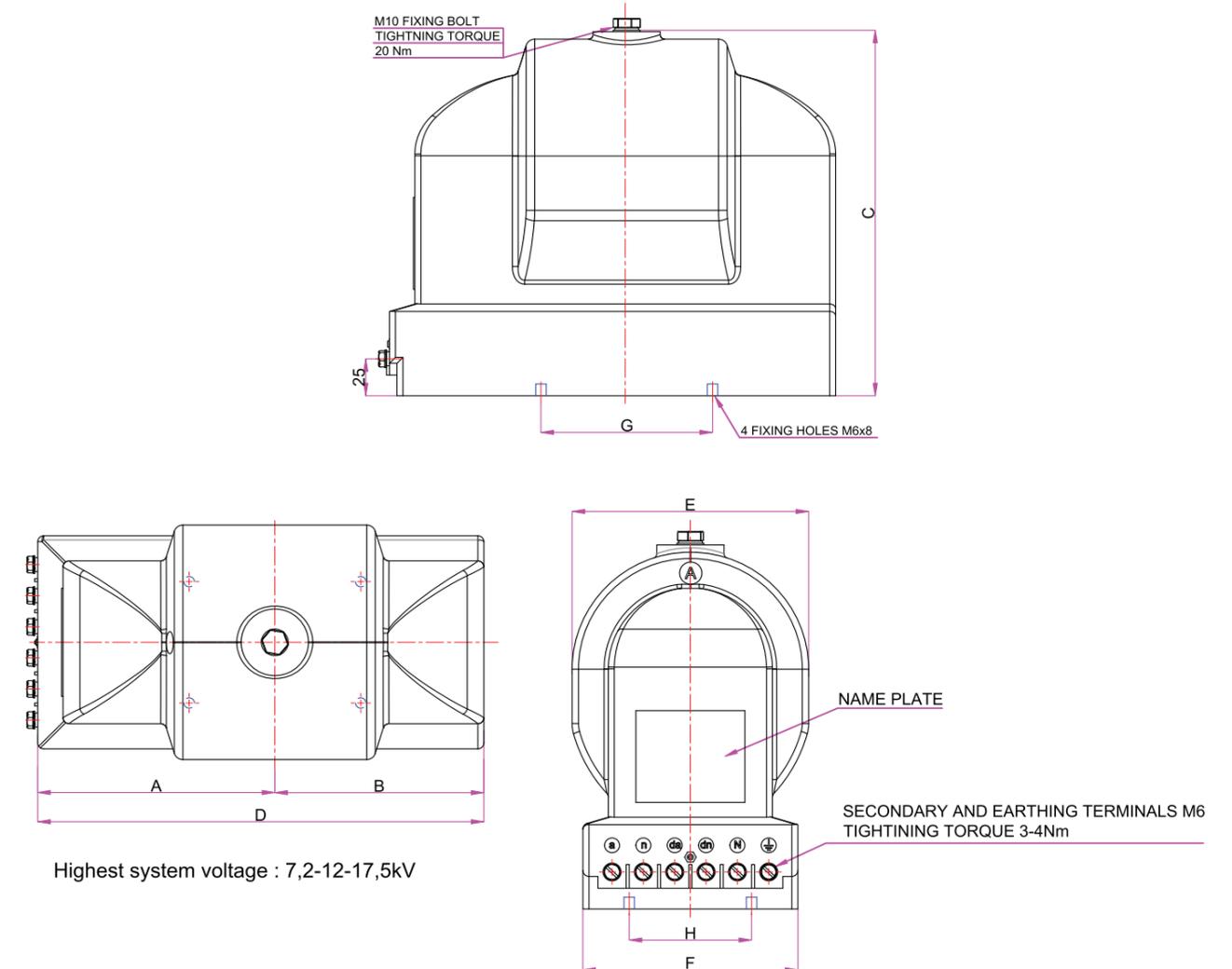
Types:  
ES 17 V3

| Technical Data                                          |                                        |        |        |       |       |       |
|---------------------------------------------------------|----------------------------------------|--------|--------|-------|-------|-------|
| Types                                                   | ES 17 V3                               |        |        |       |       |       |
| Operating voltage, Um (kV)                              | 3,6                                    | 7,2    | 12     | 17,5  |       |       |
| Rated power-frequency withstand voltage (1 minute) (kV) | 10                                     | 20     | 28     | 38    |       |       |
| Rated impulse test voltage (1.2/50 μs) full wave (kV)   | 40                                     | 60     | 75     | 95    |       |       |
| Rated frequency (Hz)                                    | 50-60                                  |        |        |       |       |       |
| Rated primary voltage (max.) (kV)                       | 3,6/√3                                 | 7,2/√3 | 12/√3  | 17/√3 |       |       |
| Secondary voltage (V)                                   | 100/√3                                 | 110/√3 | 120/√3 | 100/3 | 110/3 | 120/3 |
| Rated burden (max.) in class 0,2 (VA)                   | 30                                     |        |        | 20    |       |       |
| Rated burden (max.) in class 0,5 (VA)                   | 100                                    |        |        | 60    |       |       |
| Rated burden (max.) in class 1 (VA)                     | 200                                    |        |        | 120   |       |       |
| Rated burden for protection purpose in class 3P (VA)    | 100                                    |        |        |       |       |       |
| Rated voltage factor (30 sec. or 8h) (Un)               | 1,9                                    |        |        |       |       |       |
| Insulation class                                        | E                                      |        |        |       |       |       |
| Ambient temperature (°C)                                | -25 ..... +40*                         |        |        |       |       |       |
| Altitude (m)                                            | 1000                                   |        |        |       |       |       |
| Standard                                                | According to the customer requirements |        |        |       |       |       |
| Weight (approx.) (kg)                                   | 22                                     |        |        |       |       |       |

\* It can be produced according to customer's specified ambient temperature. Please contact with ESITAS for feasibility.

**INDOOR SINGLE PHASE CAST RESIN INSULATED SPECIAL TYPE VOLTAGE TRANSFORMERS TECHNICAL DRAWING**

(Um=3,6kV.....17,5kV)



| Types    | A   | B   | C   | D   | E   | F   | G   | H  |
|----------|-----|-----|-----|-----|-----|-----|-----|----|
| ES 17 V3 | 158 | 139 | 455 | 297 | 158 | 144 | 115 | 82 |

- All dimensions are in mm.  
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- Customer designed products are also available.



**INDOOR SINGLE PHASE CAST RESIN INSULATED SPECIAL TYPE VOLTAGE TRANSFORMERS**

(Um=7,2kV..... 24kV)

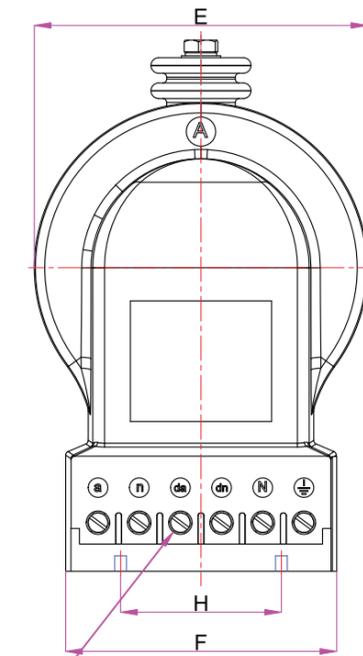
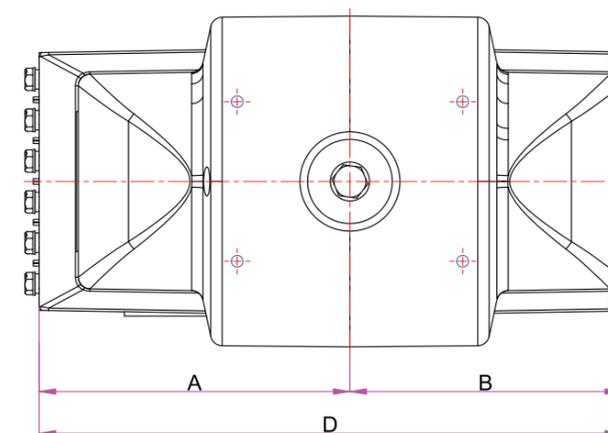
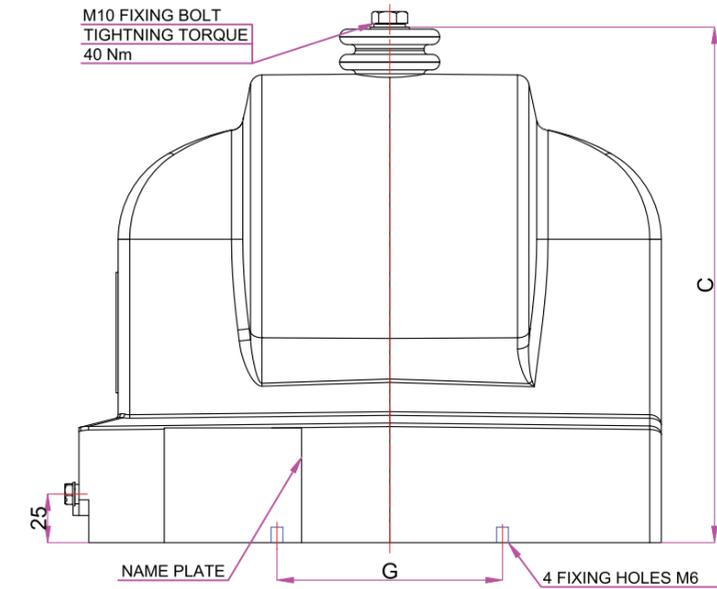
Types:  
ES 24 V2-B

| Technical Data                                          | Produced only in Indonesia Factory     |        |         |       |       |       |
|---------------------------------------------------------|----------------------------------------|--------|---------|-------|-------|-------|
| Types                                                   | ES 24 V2-B                             |        |         |       |       |       |
| Operating voltage, Um (kV)                              | 7,2                                    | 12     | 17,5    | 24    |       |       |
| Rated power-frequency withstand voltage (1 minute) (kV) | 20                                     | 28     | 38      | 50    |       |       |
| Rated impulse test voltage (1.2/50 μs) full wave (kV)   | 60                                     | 75     | 95      | 125   |       |       |
| Rated frequency (Hz)                                    | 50-60                                  |        |         |       |       |       |
| Rated primary voltage (max.) (kV)                       | 7,2/√3                                 | 12/√3  | 17,5/√3 | 24/√3 |       |       |
| Secondary voltage (V)                                   | 100/√3                                 | 110/√3 | 120/√3  | 100/3 | 110/3 | 120/3 |
| Rated burden (max.) in class 0,2 (VA)                   | 30                                     |        |         |       |       |       |
| Rated burden (max.) in class 0,5 (VA)                   | 75                                     |        |         |       |       |       |
| Rated burden (max.) in class 1 (VA)                     | 150                                    |        |         |       |       |       |
| Rated burden for protection purpose in class 3P (VA)    | 100                                    |        |         |       |       |       |
| Rated voltage factor (30 sec. or 8h) (Un)               | 1,9                                    |        |         |       |       |       |
| Insulation class                                        | E                                      |        |         |       |       |       |
| Ambient temperature (°C)                                | -25 ..... +40*                         |        |         |       |       |       |
| Altitude (m)                                            | 1000                                   |        |         |       |       |       |
| Standard                                                | According to the customer requirements |        |         |       |       |       |
| Weight (approx.) (kg)                                   | 26                                     |        |         |       |       |       |

\* It can be produced according to customer's specified ambient temperature. Please contact with ESITAS for feasibility.

**INDOOR SINGLE PHASE CAST RESIN INSULATED SPECIAL TYPE VOLTAGE TRANSFORMERS TECHNICAL DRAWING**

(Um=7,2kV..... 24kV)



| Types      | A     | B     | C   | D   | E   | F   | G   | H  |
|------------|-------|-------|-----|-----|-----|-----|-----|----|
| ES 24 V2-B | 158,5 | 138,5 | 265 | 297 | 170 | 138 | 115 | 82 |

- All dimensions are in mm.  
 - Tolerances are according to DIN 7168-g when not specified.  
 - Esitas reserves the right to change the specifications and the dimensions of the goods. Please ask for updated information.  
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INDOOR SINGLE PHASE CAST RESIN INSULATED SPECIAL TYPE VOLTAGE TRANSFORMERS TECHNICAL DRAWING

(Um=24kV)



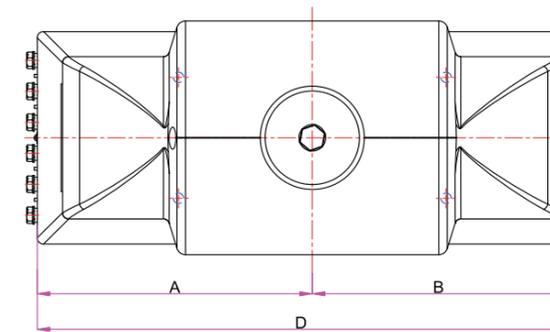
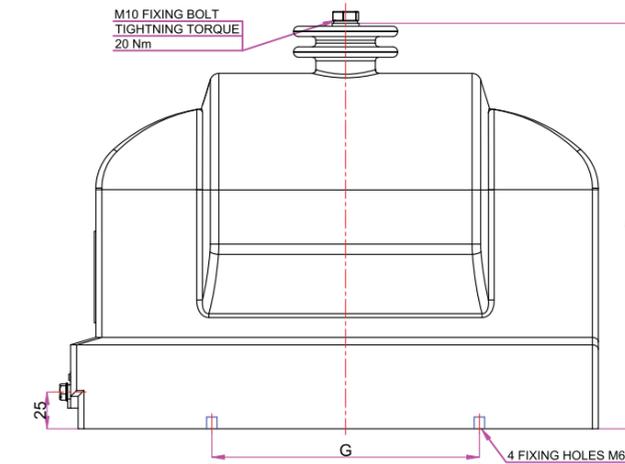
INDOOR SINGLE PHASE CAST RESIN INSULATED SPECIAL TYPE VOLTAGE TRANSFORMERS

(Um=24kV)

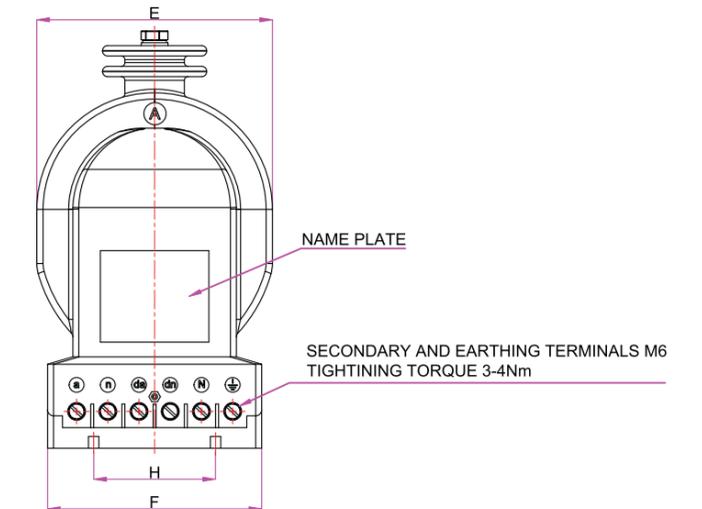
Types:  
ES 24 V1

| Technical Data                                          |                                                       |
|---------------------------------------------------------|-------------------------------------------------------|
| Types                                                   | ES 24 V1                                              |
| Operating voltage, Um (kV)                              | 24                                                    |
| Rated power-frequency withstand voltage (1 minute) (kV) | 50                                                    |
| Rated impulse test voltage (1.2/50 μs) full wave (kV)   | 125                                                   |
| Rated frequency (Hz)                                    | 50-60                                                 |
| Rated primary voltage (max.) (kV)                       | 24/√3                                                 |
| Secondary voltage (V)                                   | 100/√3    110/√3    120/√3    100/3    110/3    120/3 |
| Rated burden (max.) in class 0,2 (VA)                   | 30                                                    |
| Rated burden (max.) in class 0,5 (VA)                   | 100                                                   |
| Rated burden (max.) in class 1 (VA)                     | 200                                                   |
| Rated burden for protection purpose in class 3P (VA)    | 100                                                   |
| Rated voltage factor (30 sec. or 8h) (Un)               | 1,9                                                   |
| Insulation class                                        | E                                                     |
| Ambient temperature (°C)                                | -25 ..... +40*                                        |
| Altitude (m)                                            | 1000                                                  |
| Standard                                                | According to the customer requirements                |
| Weight (approx.) (kg)                                   | 30                                                    |

\* It can be produced according to customer's specified ambient temperature. Please contact with ESITAS for feasibility.



Highest system voltage : 24kV



| Types    | A   | B   | C   | D   | E   | F   | G   | H  |
|----------|-----|-----|-----|-----|-----|-----|-----|----|
| ES 24 V1 | 185 | 170 | 275 | 355 | 158 | 144 | 180 | 82 |

- All dimensions are in mm.  
 - Tolerances are according to DIN 7168-g when not specified.  
 - Esitas reserves the right to change the specifications and the dimensions of the goods. Please ask for updated information.  
 - Customer designed products are also available.



**INDOOR SINGLE PHASE CAST RESIN INSULATED NARROW TYPE VOLTAGE TRANSFORMERS**

(Um=7,2kV.....24kV)

Types:  
VTU-24

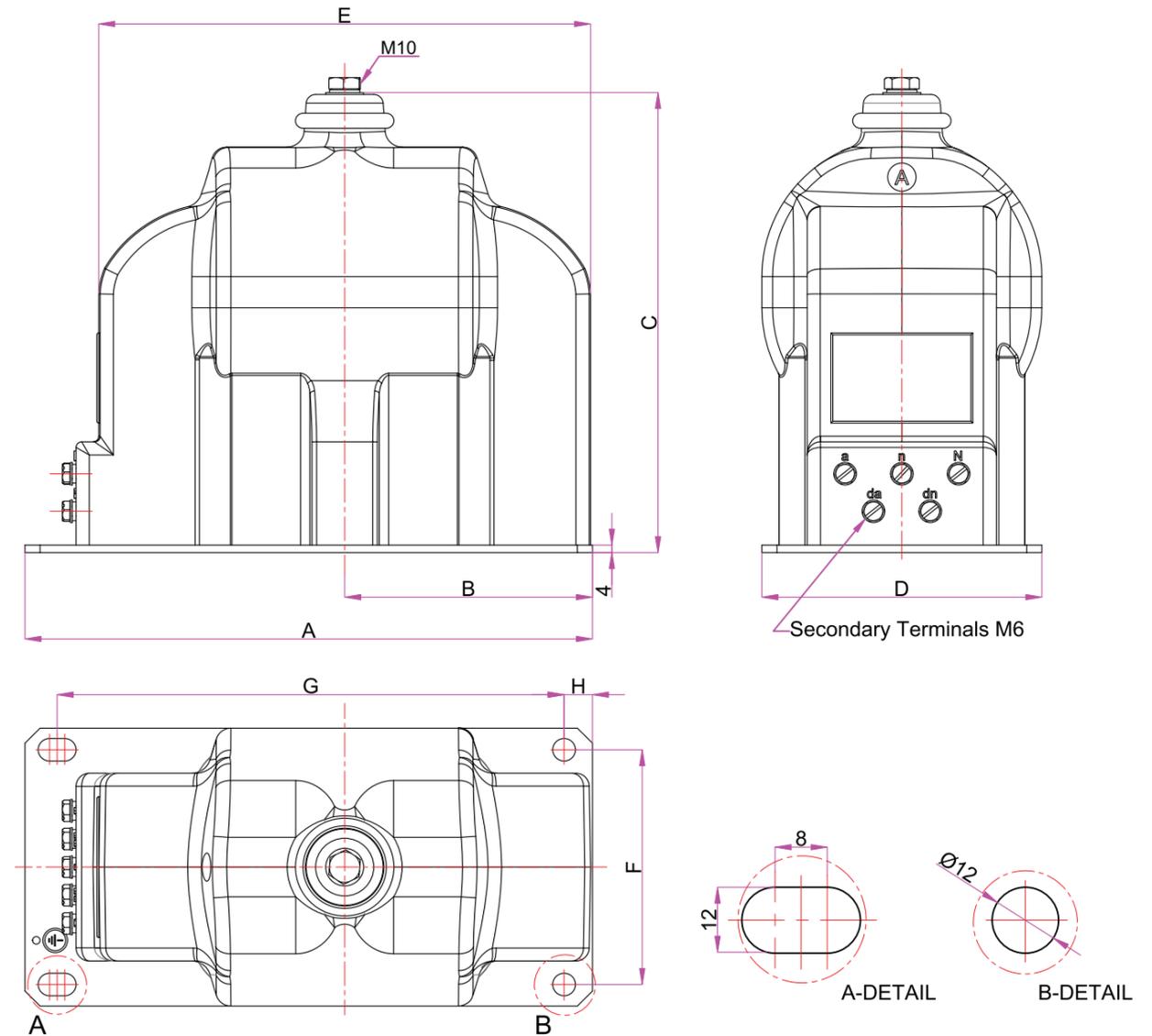
**Technical Data**

| Types                                                   | VTU-24                                 |        |         |       |       |       |
|---------------------------------------------------------|----------------------------------------|--------|---------|-------|-------|-------|
| Operating voltage, Um (kV)                              | 7,2                                    | 12     | 17,5    | 24    |       |       |
| Rated power-frequency withstand voltage (1 minute) (kV) | 20                                     | 28     | 38      | 50    |       |       |
| Rated impulse test voltage (1.2/50 μs) full wave (kV)   | 60                                     | 75     | 95      | 125   |       |       |
| Rated frequency (Hz)                                    | 50-60                                  |        |         |       |       |       |
| Rated primary voltage (max.) (kV)                       | 7,2/√3                                 | 12/√3  | 17,5/√3 | 24/√3 |       |       |
| Secondary voltage (V)                                   | 100/√3                                 | 110/√3 | 120/√3  | 100/3 | 110/3 | 120/3 |
| Rated burden (max.) in class 0,2 (VA)                   | 30                                     |        |         |       |       |       |
| Rated burden (max.) in class 0,5 (VA)                   | 75                                     |        |         |       |       |       |
| Rated burden (max.) in class 1 (VA)                     | 150                                    |        |         |       |       |       |
| Rated burden for protection purpose in class 3P (VA)    | 100                                    |        |         |       |       |       |
| Rated voltage factor (30 sec. or 8h) (Un)               | 1,9                                    |        |         |       |       |       |
| Insulation class                                        | E                                      |        |         |       |       |       |
| Ambient temperature (°C)                                | -25 ..... +40*                         |        |         |       |       |       |
| Altitude (m)                                            | 1000                                   |        |         |       |       |       |
| Standard                                                | According to the customer requirements |        |         |       |       |       |
| Weight (approx.) (kg)                                   | 28                                     |        |         |       |       |       |

\* It can be produced according to customer's specified ambient temperature. Please contact with ESITAS for feasibility.

**INDOOR SINGLE PHASE CAST RESIN INSULATED NARROW TYPE VOLTAGE TRANSFORMERS TECHNICAL DRAWING**

(Um=7,2kV.....24kV)



| Types  | A   | B   | C   | D   | E   | F   | G   | H  |
|--------|-----|-----|-----|-----|-----|-----|-----|----|
| VTU-24 | 300 | 131 | 241 | 148 | 260 | 125 | 268 | 15 |

| TIGHTENING TORQUE (Nm)  | min. | max. |
|-------------------------|------|------|
| M6 (Secondary Terminal) | 3    | 4    |

- All dimensions are in mm.  
 - Tolerances are according to DIN 7168-g when not specified.  
 - Esitas reserves the right to change the specifications and the dimensions of the goods. Please ask for updated information.  
 - Customer designed products are also available.



**INDOOR PHASE TO PHASE SUPPORT TYPE CAST RESIN INSULATED VOLTAGE TRANSFORMERS**

(Um=3,6kV.....24kV BLOCK TYPES)

Types:  
2VTB 10  
2VTB 20

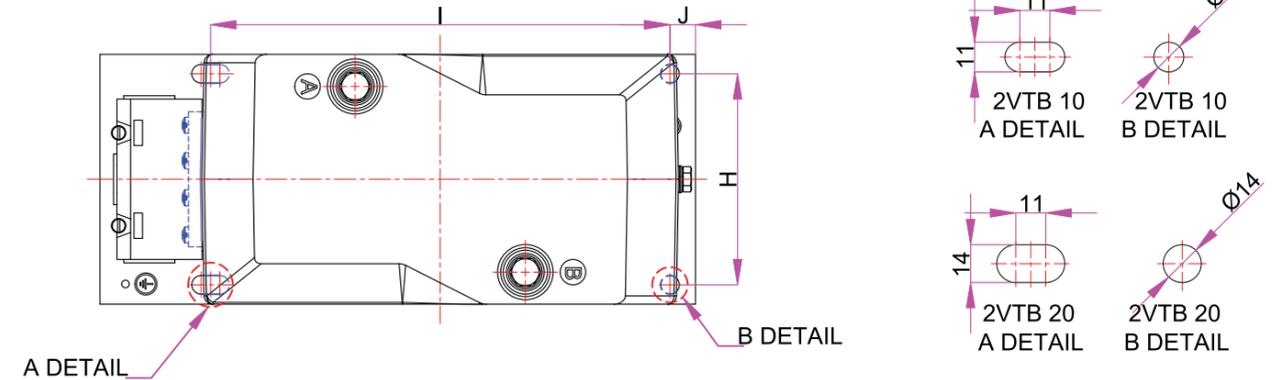
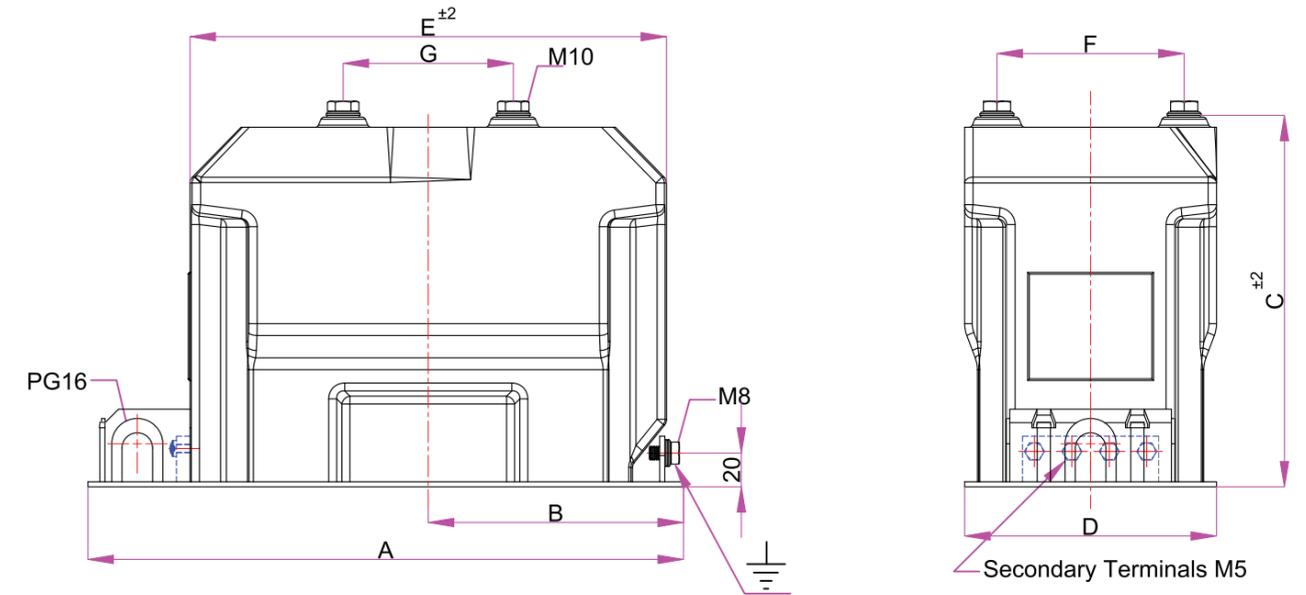
**Technical Data**

| Types                                                   | 2VTB 10                                |     |     | 2VTB 20 |     |
|---------------------------------------------------------|----------------------------------------|-----|-----|---------|-----|
| Operating voltage, Um (kV)                              | 3,6                                    | 7,2 | 12  | 17,5    | 24  |
| Rated power-frequency withstand voltage (1 minute) (kV) | 10                                     | 20  | 28  | 38      | 50  |
| Rated impulse test voltage (1.2/50 μs) full wave (kV)   | 40                                     | 60  | 75  | 95      | 125 |
| Rated frequency (Hz)                                    | 50-60                                  |     |     |         |     |
| Rated primary voltage (max.) (kV)                       | 12                                     |     |     | 24      |     |
| Secondary voltage (V)                                   | 100                                    | 110 | 120 |         |     |
| Rated burden (max.) in class 0,2 (VA)                   | 15                                     |     |     |         |     |
| Rated burden (max.) in class 0,5 (VA)                   | 60                                     |     |     |         |     |
| Rated burden (max.) in class 1 (VA)                     | 100                                    |     |     |         |     |
| Rated voltage factor (Cont.) (Un)                       | 1,2                                    |     |     |         |     |
| Insulation class                                        | E                                      |     |     |         |     |
| Ambient temperature (°C)                                | -25.....+40*                           |     |     |         |     |
| Altitude (m)                                            | 1000                                   |     |     |         |     |
| Standard                                                | According to the customer requirements |     |     |         |     |
| Weight (approx.) (kg)                                   | 28                                     |     |     | 37      |     |

\* It can be produced according to customer's specified ambient temperature. Please contact with ESITAS for feasibility.

**INDOOR PHASE TO PHASE SUPPORT TYPE CAST RESIN INSULATED VOLTAGE TRANSFORMERS TECHNICAL DRAWING**

(Um=3,6kV.....24kV BLOCK TYPES)



| Types   | A   | B   | C   | D   | E   | F   | G   | H   | I   | J  |
|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| 2VTB 10 | 350 | 150 | 220 | 148 | 280 | 110 | 100 | 125 | 270 | 15 |
| 2VTB 20 | 355 | 155 | 280 | 178 | 290 | 130 | 165 | 150 | 280 | 15 |

| TIGHTENING TORQUE (Nm)  | min. | max. |
|-------------------------|------|------|
| M5 (Secondary Terminal) | 2,5  | 3,5  |
| M8 (Ground Terminal)    | 15   | 20   |
| M10 (Primary Terminal)  | 30   | 40   |

- All dimensions are in mm.  
- Tolerances are according to DIN 7168-g when not specified.  
- Esitas reserves the right to change the specifications and the dimensions of the goods. Please ask for updated information.  
- Customer designed products are also available.



**INDOOR PHASE TO PHASE SUPPORT TYPE CAST RESIN INSULATED VOLTAGE TRANSFORMERS**

(Um=17.5kV ..... 36kV LARGE TYPES)

**Types:**  
2VT 20-B  
2VTB 30  
2VT 40-200

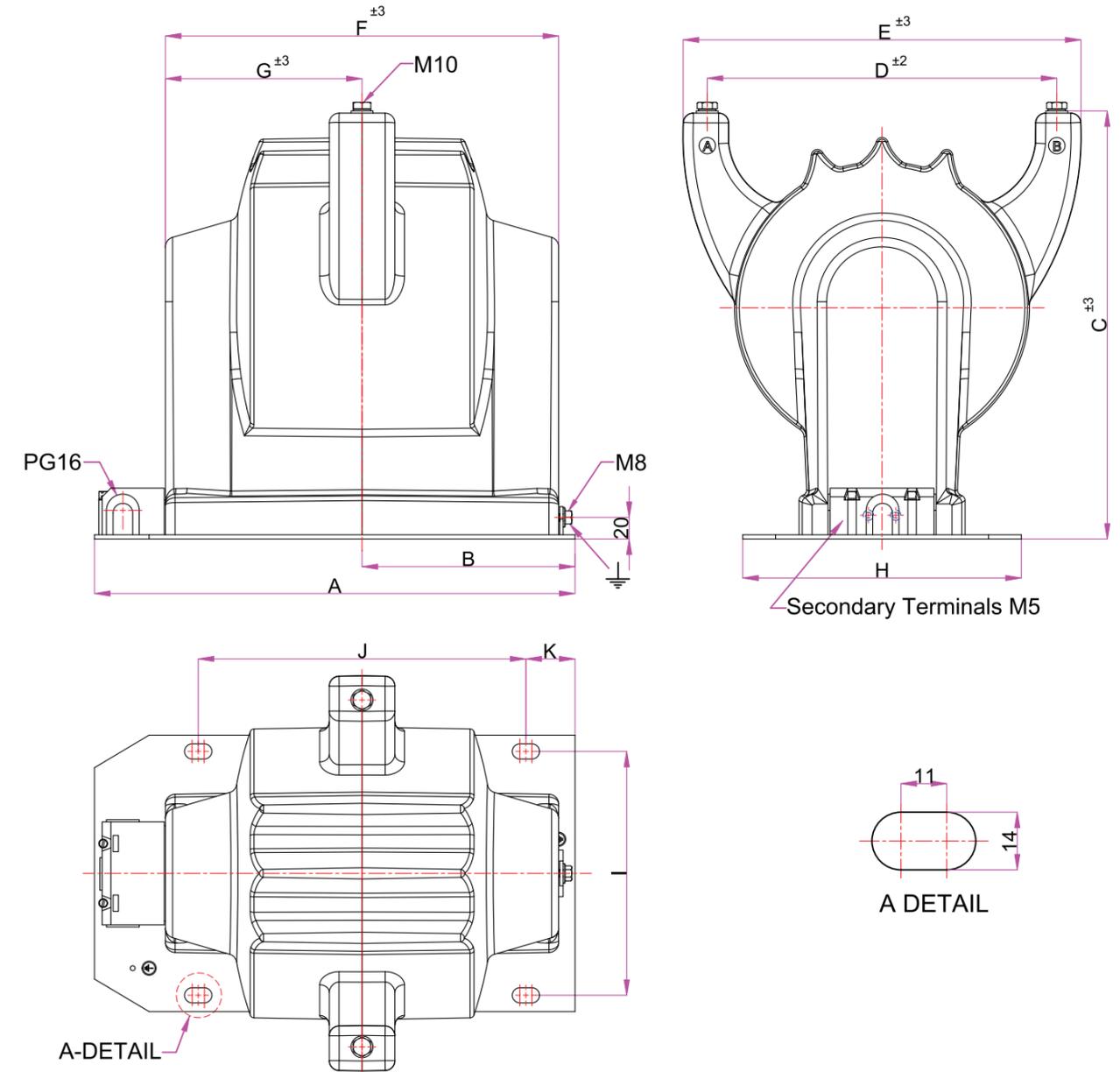
**Technical Data**

| Types                                                   | 2VT 20-B                                    | 2VTB 30 | 2VT 40-200 |
|---------------------------------------------------------|---------------------------------------------|---------|------------|
| Operating voltage, Um (kV)                              | 17,5 24                                     | 36      | 36         |
| Rated power-frequency withstand voltage (1 minute) (kV) | 38 50                                       | 70      | 70         |
| Rated impulse test voltage (1.2/50 μs) full wave (kV)   | 95 125                                      | 170     | 200        |
| Rated frequency (Hz)                                    | 50-60                                       |         |            |
| Rated primary voltage (max.) (kV)                       | 24                                          | 36      | 36         |
| Secondary voltage (V)                                   | 100 - 110 - 120 & Suitable for 220V winding |         |            |
| Rated burden (max.) in class 0,2 (VA)                   | 30                                          |         |            |
| Rated burden (max.) in class 0,5 (VA)                   | 120                                         |         |            |
| Rated burden (max.) in class 1 (VA)                     | 200                                         |         |            |
| Rated burden for 220V winding (VA)                      | 800                                         |         |            |
| Rated voltage factor (Cont.) (Un)                       | 1,2                                         |         |            |
| Insulation class                                        | E                                           |         |            |
| Ambient temperature (°C)                                | -25 ..... +40*                              |         |            |
| Altitude (m)                                            | 1000                                        |         |            |
| Standard                                                | According to the customer requirements      |         |            |
| Weight (approx.) (kg)                                   | 48                                          | 65      | 73         |

\* It can be produced according to customer's specified ambient temperature. Please contact with ESITAS for feasibility.

**INDOOR PHASE TO PHASE SUPPORT TYPE CAST RESIN INSULATED VOLTAGE TRANSFORMERS TECHNICAL DRAWING**

(Um=17.5kV ..... 36kV LARGE TYPES)



| Types      | A   | B   | C   | D   | E   | F   | G   | H   | I   | J   | K  |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| 2VT 20-B   | 440 | 205 | 300 | 210 | 250 | 360 | 180 | 200 | 170 | 270 | 70 |
| 2VTB 30    | 440 | 195 | 395 | 320 | 363 | 360 | 180 | 255 | 225 | 300 | 45 |
| 2VT 40-200 | 480 | 220 | 445 | 350 | 390 | 370 | 185 | 255 | 225 | 300 | 70 |

| TIGHTENING TORQUE (Nm)  | min. | max. |
|-------------------------|------|------|
| M5 (Secondary Terminal) | 2,5  | 3,5  |
| M8 (Ground Terminal)    | 15   | 20   |
| M10 (Primary Terminal)  | 30   | 40   |

- All dimensions are in mm.  
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**INDOOR SINGLE PHASE CAST RESIN INSULATED BUILT IN FUSE WITHDRAWABLE TYPE VOLTAGE TRANSFORMERS**

(Um=3,6kV.....36kV BLOCK TYPES)

**Types:**

- VTB 10-KF1
- VTB 20-KF1
- VTB 30-KF1

**Technical Data**

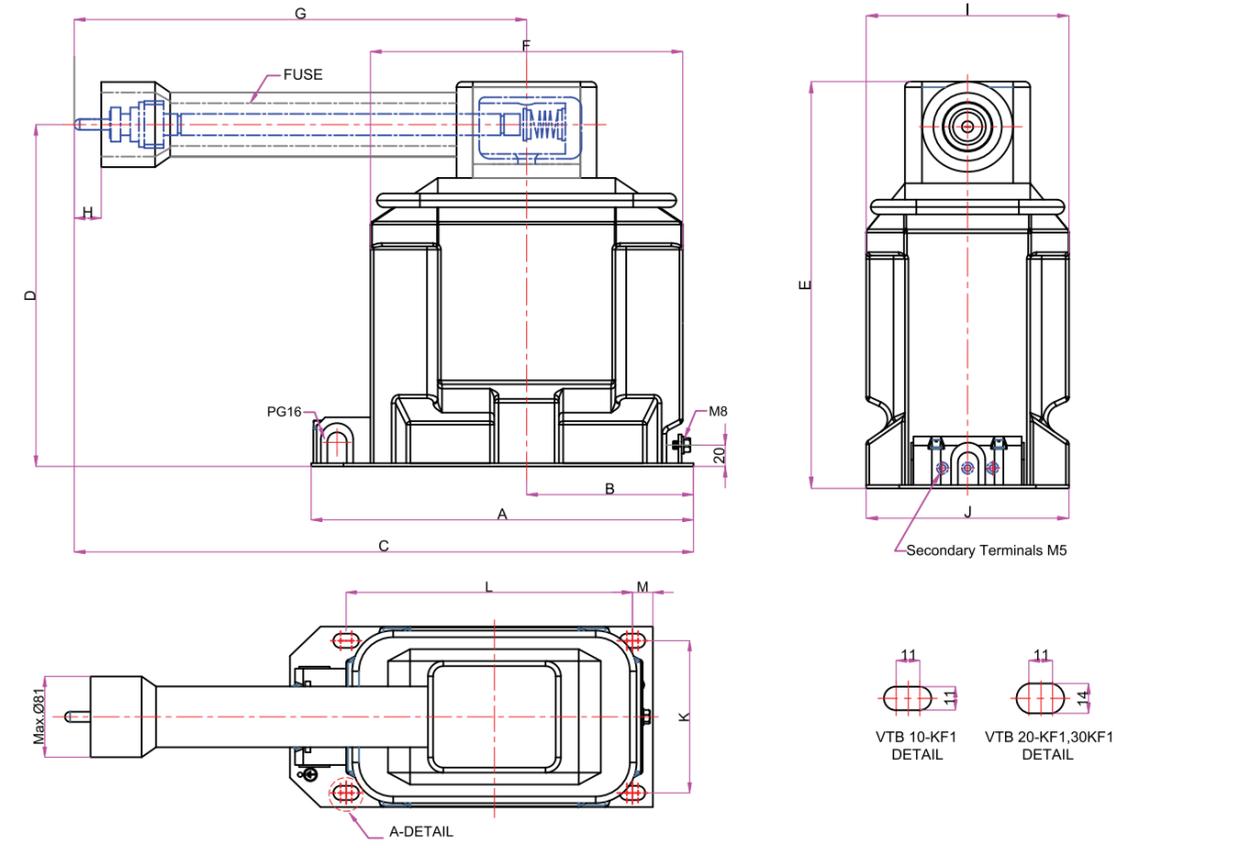
| Types                                                   | VTB 10-KF1                             |        |        |       | VTB 20-KF1 |       | VTB 30-KF1 |  |
|---------------------------------------------------------|----------------------------------------|--------|--------|-------|------------|-------|------------|--|
| Operating voltage, Um (kV)                              | 3,6                                    | 7,2    | 12     | 17,5  | 17,5       | 24**  | 36**       |  |
| Rated power-frequency withstand voltage (1 minute) (kV) | 10                                     | 20     | 28     | 38    | 38         | 50    | 70         |  |
| Rated impulse test voltage (1.2/50 μs) full wave (kV)   | 40                                     | 60     | 75     | 95    | 95         | 125   | 170        |  |
| Rated frequency (Hz)                                    | 50-60                                  |        |        |       |            |       |            |  |
| Rated primary voltage (max.) (kV)                       | 12/√3                                  |        |        |       | 24/√3      |       | 36/√3      |  |
| Secondary voltage (V)                                   | 100/√3                                 | 110/√3 | 120/√3 | 100/3 | 110/3      | 120/3 |            |  |
| Rated burden (max.) in class 0,2 (VA)                   | 30                                     |        |        |       | 50         |       | 50         |  |
| Rated burden (max.) in class 0,5 (VA)                   | 100                                    |        |        |       | 120        |       | 120        |  |
| Rated burden (max.) in class 1 (VA)                     | 200                                    |        |        |       | 250        |       | 250        |  |
| Rated burden for protection purpose in class 3P (VA)    | 100                                    |        |        |       |            |       |            |  |
| Rated voltage factor (30 sec. or 8 h) (Un)              | 1,9                                    |        |        |       |            |       |            |  |
| Insulation class                                        | E                                      |        |        |       |            |       |            |  |
| Ambient temperature (°C)                                | -25 ..... +40*                         |        |        |       |            |       |            |  |
| Altitude (m)                                            | 1000                                   |        |        |       |            |       |            |  |
| Standard                                                | According to the customer requirements |        |        |       |            |       |            |  |
| Weight (approx.) (kg)                                   | 30                                     |        |        |       | 40         |       | 55         |  |

\* It can be produced according to customer's specified ambient temperature. Please contact with ESITAS for feasibility.

\*\* For more kV, please contact with ESITAS for feasibility.

**INDOOR SINGLE PHASE CAST RESIN INSULATED BUILT IN FUSE WITHDRAWABLE TYPE VOLTAGE TRANSFORMERS TECHNICAL DRAWING**

(Um=3,6kV.....36kV BLOCK TYPES)



| TIGHTENING TORQUE (Nm)  | min. | max. |
|-------------------------|------|------|
| M5 (Secondary Terminal) | 2,5  | 3,5  |
| M8 (Ground Terminal)    | 15   | 20   |

| Types      | A   | B   | C   | D   | E     | F   | G   | H  | I   | J   | K   | L   | M  |
|------------|-----|-----|-----|-----|-------|-----|-----|----|-----|-----|-----|-----|----|
| VTB 10-KF1 | 355 | 155 | 492 | 260 | 299   | 290 | 336 | 25 | 148 | 148 | 125 | 270 | 20 |
| VTB 20-KF1 | 355 | 155 | 575 | 318 | 361   | 290 | 420 | 25 | 178 | 178 | 150 | 280 | 20 |
| VTB 30-KF1 | 395 | 175 | 688 | 364 | 421,5 | 320 | 513 | 75 | 210 | 210 | 180 | 300 | 15 |

Protection Fuses For Voltage Transformer



| NO | V.T. Types        | Rated Currents (A) | Rated Voltage (Un) | ØA | B (mm) |
|----|-------------------|--------------------|--------------------|----|--------|
| 1  | VTB 10-KF1 or KF2 | 0,63 Amper         | 7,2 kV             | 20 | 190    |
| 2  |                   | 1 Amper            |                    |    |        |
| 3  |                   | 2 Amper            |                    |    |        |
| 4  | VTB 20-KF1 or KF2 | 3,15 Amper         | 12 kV              | 20 | 254    |
| 5  |                   | 0,63 Amper         |                    |    |        |
| 6  |                   | 1 Amper            |                    |    |        |
| 7  | VTB 30-KF1 or KF2 | 2 Amper            | 25,5 kV            | 36 | 400    |
| 8  |                   | 3,15 Amper         |                    |    |        |
| 9  |                   | 0,63 Amper         |                    |    |        |
| 10 | VTB 10-KF1 or KF2 | 1 Amper            | 15,5 kV            | 20 | 340    |
| 11 |                   | 2 Amper            |                    |    |        |
| 12 | VTB 20-KF1 or KF2 | 3,15 Amper         | 25,5 kV            | 36 | 400    |
| 13 |                   | 0,5 Amper          |                    |    |        |
| 14 | VTB 30-KF1 or KF2 | 1 Amper            | 36 kV              | 36 | 400    |
| 15 |                   | 2 Amper            |                    |    |        |
| 16 | VTB 30-KF1 or KF2 | 1 Amper            | 36 kV              | 36 | 400    |
| 17 |                   | 2 Amper            |                    |    |        |

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 - Customer designed products are also available.



**INDOOR SINGLE PHASE CAST RESIN INSULATED BUILT IN FUSE WITHDRAWABLE TYPE VOLTAGE TRANSFORMERS**

(Um=3,6kV.....36kV BLOCK TYPES)

**Types:**

- VTB 10-KF2
- VTB 10-KFA2
- VTB 20-KF2
- VTB 30-KF2

**Technical Data**

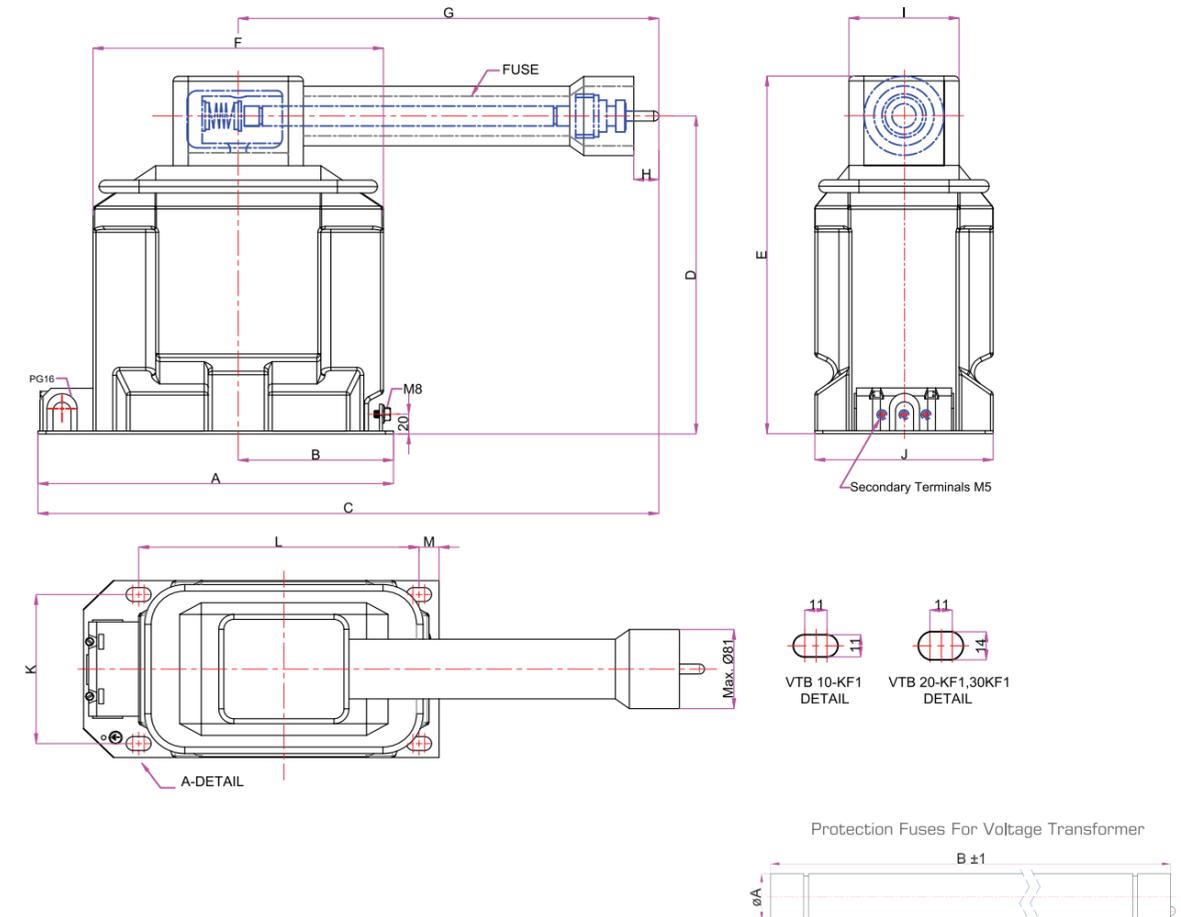
| Types                                                   | VTB 10-KF2 / KFA2                      |        |        |       | VTB 20-KF2 |       | VTB 30-KF2 |  |
|---------------------------------------------------------|----------------------------------------|--------|--------|-------|------------|-------|------------|--|
| Operating voltage, Um (kV)                              | 3,6                                    | 7,2    | 12     | 17,5  | 17,5       | 24**  | 36**       |  |
| Rated power-frequency withstand voltage (1 minute) (kV) | 10                                     | 20     | 28     | 38    | 38         | 50    | 70         |  |
| Rated impulse test voltage (1.2/50 μs) full wave (kV)   | 40                                     | 60     | 75     | 95    | 95         | 125   | 170        |  |
| Rated frequency (Hz)                                    | 50-60                                  |        |        |       |            |       |            |  |
| Rated primary voltage (max.) (kV)                       | 12/√3                                  |        |        |       | 24/√3      |       | 36/√3      |  |
| Secondary voltage (V)                                   | 100/√3                                 | 110/√3 | 120/√3 | 100/3 | 110/3      | 120/3 |            |  |
| Rated burden (max.) in class 0,2 (VA)                   | 30                                     |        |        |       | 50         |       | 50         |  |
| Rated burden (max.) in class 0,5 (VA)                   | 100                                    |        |        |       | 120        |       | 120        |  |
| Rated burden (max.) in class 1 (VA)                     | 200                                    |        |        |       | 250        |       | 250        |  |
| Rated burden for protection purpose in class 3P (VA)    | 100                                    |        |        |       |            |       |            |  |
| Rated voltage factor (30 sec. or 8 h) (Un)              | 1,9                                    |        |        |       |            |       |            |  |
| Insulation class                                        | E                                      |        |        |       |            |       |            |  |
| Ambient temperature (°C)                                | -25 ..... +40*                         |        |        |       |            |       |            |  |
| Altitude (m)                                            | 1000                                   |        |        |       |            |       |            |  |
| Standard                                                | According to the customer requirements |        |        |       |            |       |            |  |
| Weight (approx.) (kg)                                   | 30                                     |        |        |       | 40         |       | 55         |  |

\* It can be produced according to customer's specified ambient temperature. Please contact with ESITAS for feasibility.

\*\* For more kV, please contact with ESITAS for feasibility.

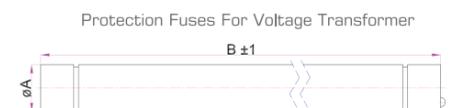
**INDOOR SINGLE PHASE CAST RESIN INSULATED BUILT IN FUSE WITHDRAWABLE TYPE VOLTAGE TRANSFORMERS TECHNICAL DRAWING**

(Um=3,6kV.....36kV BLOCK TYPES)



| TIGHTENING TORQUE (Nm)  | min. | max. |
|-------------------------|------|------|
| M5 (Secondary Terminal) | 2,5  | 3,5  |
| M8 (Ground Terminal)    | 15   | 20   |

| Types       | A   | B   | C   | D   | E     | F   | G   | H  | I   | J   | K   | L   | M  |
|-------------|-----|-----|-----|-----|-------|-----|-----|----|-----|-----|-----|-----|----|
| VTB 10-KFA2 | 350 | 160 | 520 | 285 | 315   | -   | -   | 25 | -   | 160 | 120 | 270 | -  |
| VTB 10-KF2  | 355 | 155 | 536 | 260 | 299   | 290 | 336 | 25 | 148 | 148 | 125 | 270 | 20 |
| VTB 20-KF2  | 355 | 155 | 575 | 318 | 361   | 290 | 420 | 25 | 178 | 178 | 150 | 280 | 20 |
| VTB 30-KF2  | 395 | 175 | 733 | 364 | 421,5 | 320 | 513 | 75 | 210 | 210 | 180 | 300 | 15 |



| NO | V.T. Types        | Rated Currents (A) | Rated Voltage (Un) | ØA | B (mm) |
|----|-------------------|--------------------|--------------------|----|--------|
| 1  |                   | 0,63 Amper         |                    |    |        |
| 2  | VTB 10-KF1 or KF2 | 1 Amper            | 7,2 kV             | 20 | 190    |
| 3  | VTB 20-KF1 or KF2 | 2 Amper            |                    |    |        |
| 4  |                   | 3,15 Amper         |                    |    |        |
| 5  |                   | 0,63 Amper         | 12 kV              | 20 | 254    |
| 6  | VTB 10-KF1 or KF2 | 1 Amper            |                    |    |        |
| 7  | VTB 20-KF1 or KF2 | 2 Amper            |                    |    |        |
| 8  |                   | 3,15 Amper         | 15,5 kV            | 20 | 340    |
| 9  |                   | 0,63 Amper         |                    |    |        |
| 10 | VTB 10-KF1 or KF2 | 1 Amper            |                    |    |        |
| 11 | VTB 20-KF1 or KF2 | 2 Amper            | 25,5 kV            | 36 | 400    |
| 12 |                   | 3,15 Amper         |                    |    |        |
| 13 |                   | 0,5 Amper          |                    |    |        |
| 14 | VTB 20-KF1 or KF2 | 1 Amper            | 36 kV              | 36 | 400    |
| 15 | VTB 30-KF1 or KF2 | 2 Amper            |                    |    |        |
| 16 | VTB 30-KF1 or KF2 | 1 Amper            |                    |    |        |
| 17 |                   | 2 Amper            |                    |    |        |

- All dimensions are in mm.  
 - Tolerances are according to DIN 7168-g when not specified.  
 - Esitas reserves the right to change the specifications and the dimensions of the goods. Please ask for updated information.  
 - Customer designed products are also available.



**INDOOR SINGLE PHASE CAST RESIN INSULATED WITH STRIKER PIN SIGNALLING BUILT IN FUSE WITHDRAWABLE TYPE VOLTAGE TRANSFORMERS**

(Um=3,6kV.....24kV BLOCK TYPES)

**Types:**  
VTB 10-KFP  
VTB 20-KFP

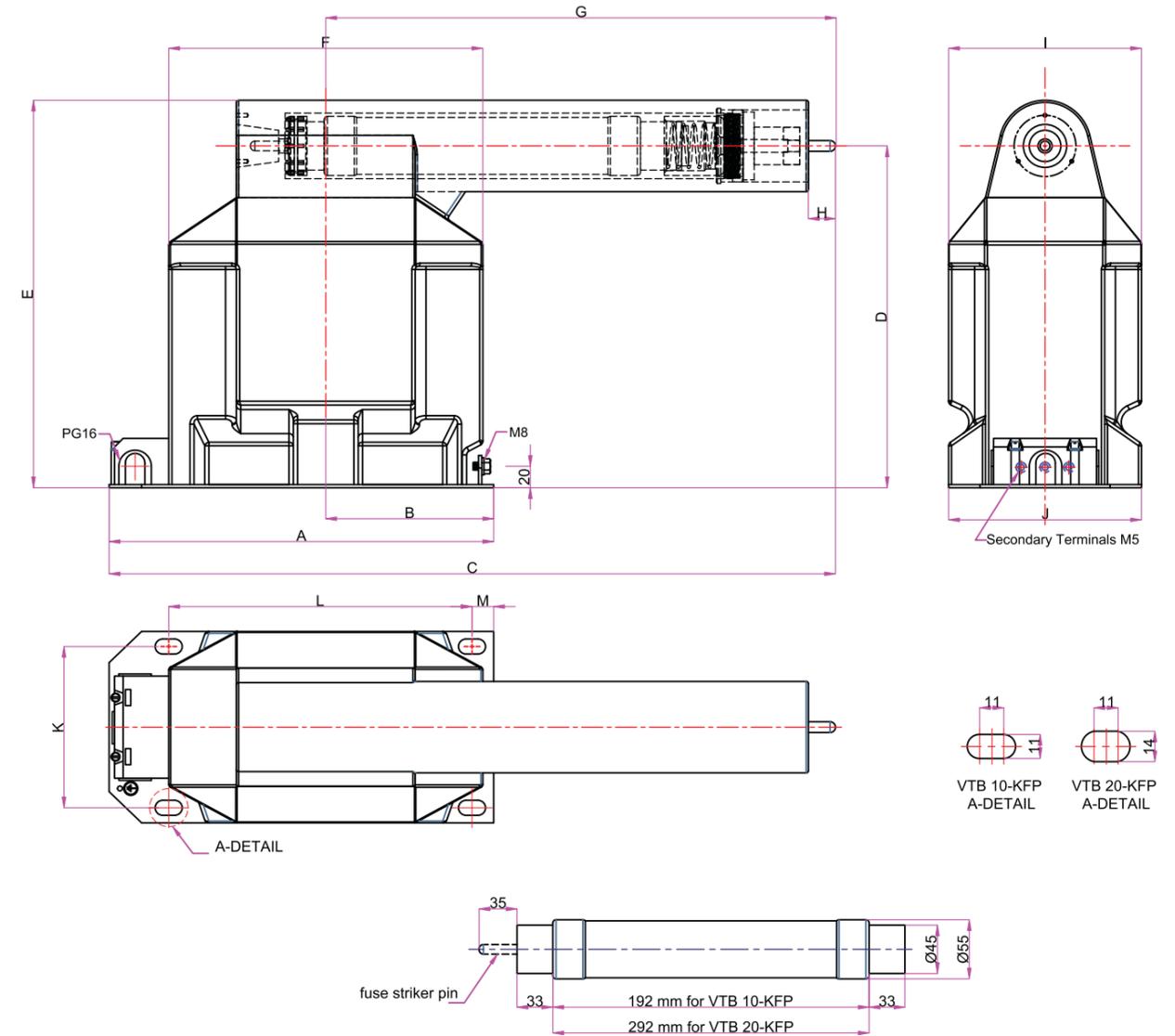
**Technical Data**

| Types                                                   | VTB 10-KFP                             |        |        | VTB 20-KFP |       |       |
|---------------------------------------------------------|----------------------------------------|--------|--------|------------|-------|-------|
| Operating voltage, Um (kV)                              | 3,6                                    | 7,2    | 12     | 17,5       | 24    |       |
| Rated power-frequency withstand voltage (1 minute) (kV) | 10                                     | 20     | 28     | 38         | 50    |       |
| Rated impulse test voltage (1.2/50 μs) full wave (kV)   | 40                                     | 60     | 75     | 95         | 125   |       |
| Rated frequency (Hz)                                    | 50-60                                  |        |        |            |       |       |
| Rated primary voltage (max.) (kV)                       | 12/√3                                  |        |        | 24/√3      |       |       |
| Secondary voltage (V)                                   | 100/√3                                 | 110/√3 | 120/√3 | 100/3      | 110/3 | 120/3 |
| Rated burden (max.) in class 0,2 (VA)                   | 30                                     |        |        | 50         |       |       |
| Rated burden (max.) in class 0,5 (VA)                   | 100                                    |        |        | 120        |       |       |
| Rated burden (max.) in class 1 (VA)                     | 200                                    |        |        | 250        |       |       |
| Rated burden for protection purpose in class 3P (VA)    | 100                                    |        |        |            |       |       |
| Rated voltage factor (30 sec. or 8 h) (Un)              | 1,9                                    |        |        |            |       |       |
| Insulation class                                        | E                                      |        |        |            |       |       |
| Ambient temperature (°C)                                | -25 ..... +40*                         |        |        |            |       |       |
| Altitude (m)                                            | 1000                                   |        |        |            |       |       |
| Standard                                                | According to the customer requirements |        |        |            |       |       |
| Weight (approx.) (kg)                                   | 32                                     |        |        | 42         |       |       |

\* It can be produced according to customer's specified ambient temperature. Please contact with ESITAS for feasibility.

**INDOOR SINGLE PHASE CAST RESIN INSULATED WITH STRIKER PIN SIGNALLING BUILT IN FUSE WITHDRAWABLE TYPE V.T.'S TECHNICAL DRAWING**

(Um=3,6kV .....24kV BLOCK TYPES)



| Types      | A   | B   | C   | D   | E   | F   | G   | H  | I   | J   | K   | L   | M  | TIGHTENING TORQUE (Nm)  | min. | max. |
|------------|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|----|-------------------------|------|------|
| VTB 10-KFP | 355 | 155 | 560 | 260 | 302 | 290 | 360 | 25 | 148 | 148 | 125 | 270 | 20 | M5 (Secondary Terminal) | 2,5  | 3,5  |
| VTB 20-KFP | 355 | 155 | 671 | 318 | 361 | 290 | 471 | 25 | 178 | 178 | 150 | 270 | 20 | M8 (Ground Terminal)    | 15   | 20   |

- All dimensions are in mm.  
- Tolerances are according to DIN 7168-g when not specified.  
- Esitas reserves the right to change the specifications and the dimensions of the goods. Please ask for updated information.  
- Customer designed products are also available.



**INDOOR SINGLE PHASE CAST RESIN INSULATED BUILT IN FUSE WITHDRAWABLE SPECIAL TYPE VOLTAGE TRANSFORMERS**

(Um=3,6kV.....24kV BLOCK TYPES)

Types:  
ES 12 VR-F  
ES 24 V2-F

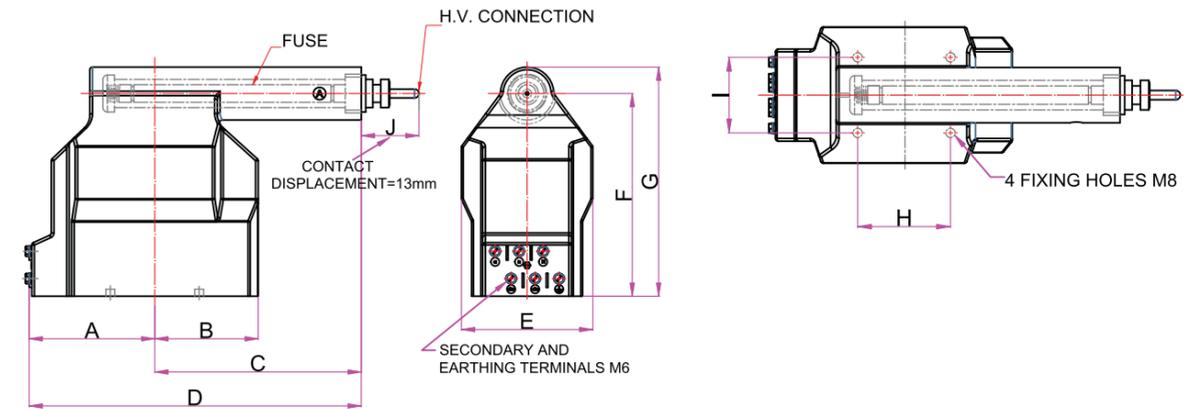
| Technical Data                                          |                                        | Produced only in Indonesia Factory |        |            |             |  |
|---------------------------------------------------------|----------------------------------------|------------------------------------|--------|------------|-------------|--|
| Types                                                   | ES 12 VR-F                             |                                    |        | ES 24 V2-F |             |  |
| Operating voltage, Um (kV)                              | 3,6                                    | 7,2                                | 12     | 17,5       | 24          |  |
| Rated power-frequency withstand voltage (1 minute) (kV) | 10                                     | 20                                 | 28     | 38         | 50          |  |
| Rated impulse test voltage (1.2/50 μs) full wave (kV)   | 40                                     | 60                                 | 75     | 95         | 125         |  |
| Rated frequency (Hz)                                    | 50-60                                  |                                    |        |            |             |  |
| Rated primary voltage (max.) (kV)                       | 12/√3                                  |                                    |        | 24/√3      |             |  |
| Secondary voltage (V)                                   | 100/√3                                 | 110/√3                             | 120/√3 | 100/3      | 110/3 120/3 |  |
| Rated burden (max.) in class 0,2 (VA)                   | 20                                     |                                    |        |            |             |  |
| Rated burden (max.) in class 0,5 (VA)                   | 60                                     |                                    |        |            |             |  |
| Rated burden (max.) in class 1 (VA)                     | 120                                    |                                    |        |            |             |  |
| Rated burden for protection purpose in class 3P (VA)    | 60                                     |                                    |        |            |             |  |
| Rated voltage factor (30 sec. or 8h) (Un)               | 1,9                                    |                                    |        |            |             |  |
| Insulation class                                        | E                                      |                                    |        |            |             |  |
| Ambient temperature (°C)                                | -25 ..... +40*                         |                                    |        |            |             |  |
| Altitude (m)                                            | 1000                                   |                                    |        |            |             |  |
| Standard                                                | According to the customer requirements |                                    |        |            |             |  |
| Weight (approx.) (kg)                                   | 21                                     |                                    |        | 29         |             |  |

\* It can be produced according to customer's specified ambient temperature. Please contact with ESITAS for feasibility.

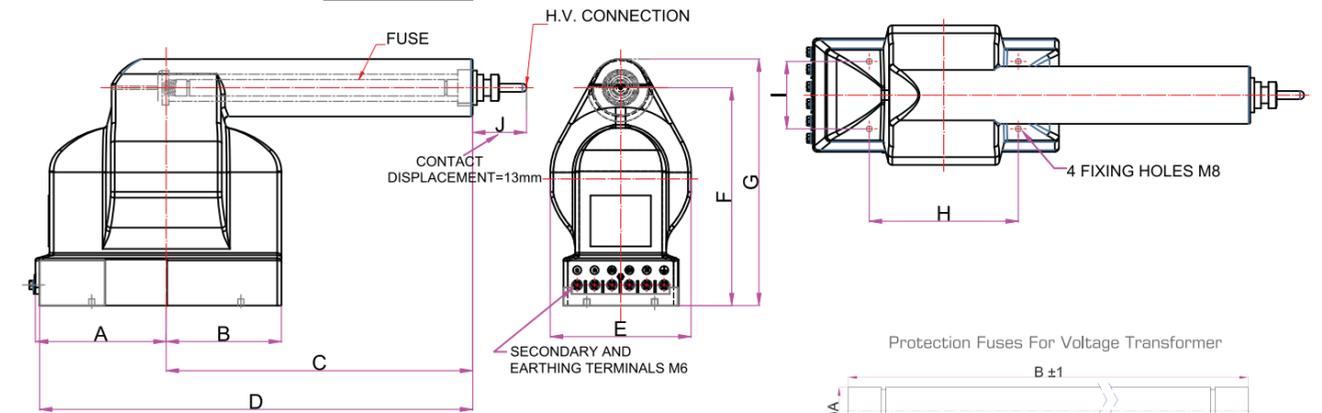
**INDOOR SINGLE PHASE CAST RESIN INSULATED BUILT IN FUSE WITHDRAWABLE SPECIAL TYPE VOLTAGE TRANSFORMERS TECHNICAL DRAWING**

(Um=3,6kV.....24kV BLOCK TYPES)

**ES 12 VR-F**

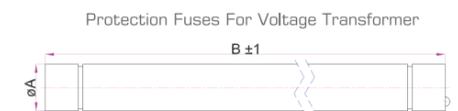


**ES 24 V2-F**



| TIGHTENING TORQUE (Nm)  | min. | max. |
|-------------------------|------|------|
| M6 (Secondary Terminal) | 3    | 4    |

| Types      | A     | B     | C     | D   | E   | F   | G   | H   | I  | J  |
|------------|-------|-------|-------|-----|-----|-----|-----|-----|----|----|
| ES 12 VR-F | 141,5 | 116,5 | 232,5 | 374 | 148 | 230 | 260 | 100 | 82 | 65 |
| ES 24 V2-F | 158   | 139   | 370   | 528 | 170 | 265 | 300 | 180 | 82 | 65 |



| NO | V.T. Types | Rated Currents (A) | Rated Voltage (Um) | Ø A | B (mm) |
|----|------------|--------------------|--------------------|-----|--------|
| 1  |            | 0,63 Amper         |                    |     |        |
| 2  | ES 12 VR-F | 1 Amper            | 7,2 kV             | 20  | 190    |
| 3  | ES 24 V2-F | 2 Amper            |                    |     |        |
| 4  |            | 3,15 Amper         |                    |     |        |
| 5  |            | 0,63 Amper         | 12 kV              | 20  | 254    |
| 6  | ES 12 VR-F | 1 Amper            |                    |     |        |
| 7  | ES 24 V2-F | 2 Amper            |                    |     |        |
| 8  |            | 3,15 Amper         | 15,5 - 17,5 kV     | 20  | 254    |
| 9  |            | 0,63 Amper         |                    |     |        |
| 10 | ES 12 VR-F | 1 Amper            |                    |     |        |
| 11 | ES 24 V2-F | 2 Amper            | 24-25,5 kV         | 340 |        |
| 12 |            | 3,15 Amper         |                    |     |        |
| 13 |            | 0,5 Amper          |                    |     |        |
| 14 | ES 24 V2-F | 1 Amper            |                    |     |        |
| 15 |            | 2 Amper            |                    |     |        |

- All dimensions are in mm.  
- Tolerances are according to DIN 7168-g when not specified.  
- Esitas reserves the right to change the specifications and the dimensions of the goods. Please ask for updated information.  
- Customer designed products are also available.



**INDOOR SINGLE PHASE CAST RESIN INSULATED BUILT IN FUSE FIXED TYPE VOLTAGE TRANSFORMERS**

(Um=3,6kV.....24kV)

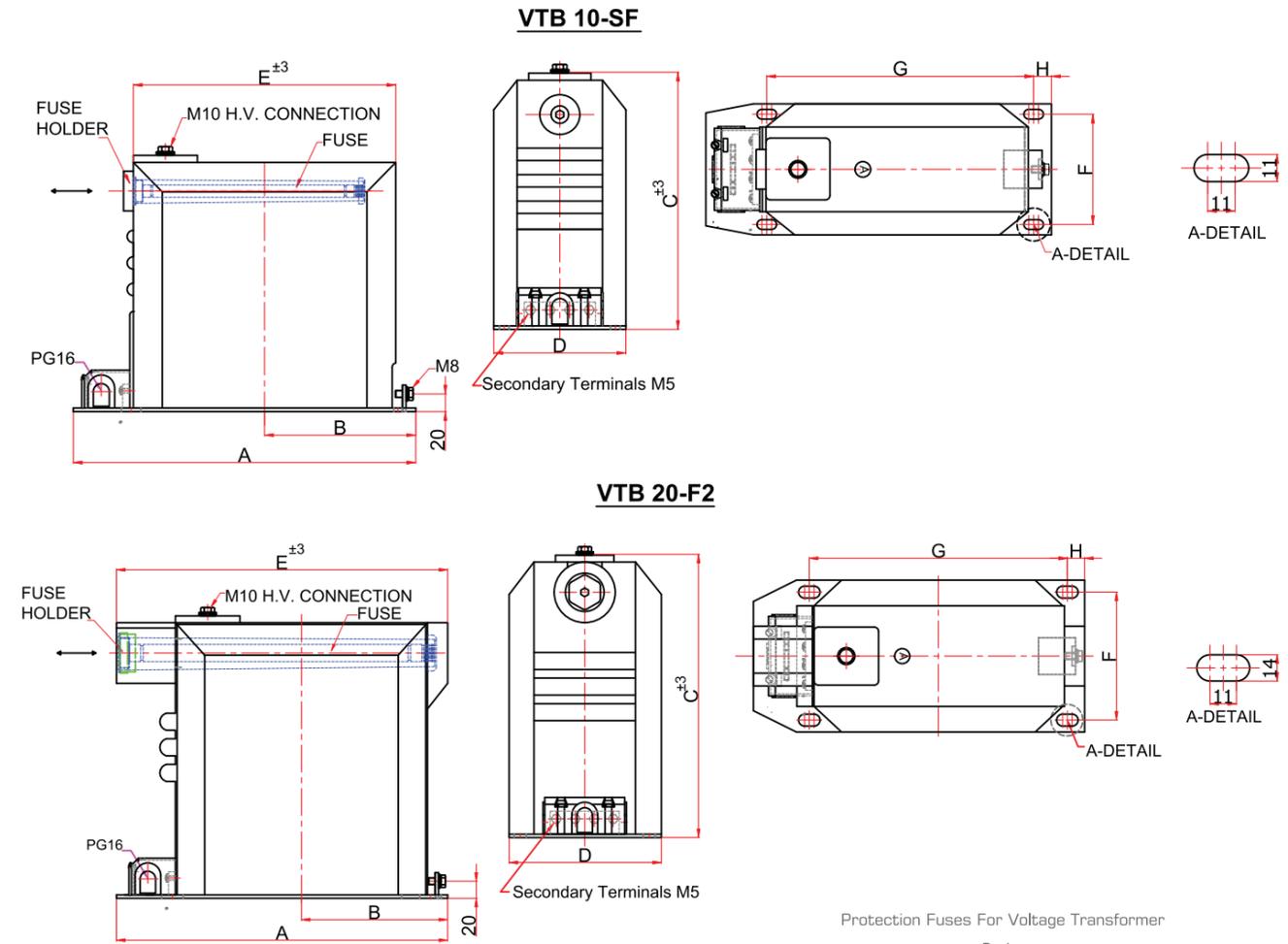
Types:  
VTB 10-SF  
VTB 20-F2

| Technical Data                                          | Produced only in Indonesia Factory     |        |        |           |       |       |
|---------------------------------------------------------|----------------------------------------|--------|--------|-----------|-------|-------|
| Types                                                   | VTB 10-SF                              |        |        | VTB 20-F2 |       |       |
| Operating voltage, Um (kV)                              | 3,6                                    | 7,2    | 12     | 17,5      | 24    |       |
| Rated power-frequency withstand voltage (1 minute) (kV) | 10                                     | 20     | 28     | 38        | 50    |       |
| Rated impulse test voltage (1.2/50 μs) full wave (kV)   | 40                                     | 60     | 75     | 95        | 125   |       |
| Rated frequency (Hz)                                    | 50-60                                  |        |        |           |       |       |
| Rated primary voltage (max.) (kV)                       | 12/√3                                  |        |        | 24/√3     |       |       |
| Secondary voltage (V)                                   | 100/√3                                 | 110/√3 | 120/√3 | 100/3     | 110/3 | 120/3 |
| Rated burden (max.) in class 0,2 (VA)                   | 30                                     |        |        | 60        | 50    |       |
| Rated burden (max.) in class 0,5 (VA)                   | 100                                    |        |        | 180       | 120   |       |
| Rated burden (max.) in class 1 (VA)                     | 200                                    |        |        | 300       | 250   |       |
| Rated burden for protection purpose in class 3P (VA)    | 100                                    |        |        |           |       |       |
| Rated voltage factor (30 sec. or 8h) (Un)               | 1,9                                    |        |        |           |       |       |
| Insulation class                                        | E                                      |        |        |           |       |       |
| Ambient temperature (°C)                                | -25 ..... +40*                         |        |        |           |       |       |
| Altitude (m)                                            | 1000                                   |        |        |           |       |       |
| Standard                                                | According to the customer requirements |        |        |           |       |       |
| Weight (approx.) (kg)                                   | 34                                     |        |        | 45        |       |       |

\* It can be produced according to customer's specified ambient temperature. Please contact with ESITAS for feasibility.

**INDOOR SINGLE PHASE CAST RESIN INSULATED BUILT IN FUSE FIXED TYPE VOLTAGE TRANSFORMERS TECHNICAL DRAWING**

(Um=3,6kV.....24kV)



| TIGHTENING TORQUE (Nm)  | min. | max. |
|-------------------------|------|------|
| M5 (Secondary Terminal) | 2,5  | 3,5  |
| M8 (Ground Terminal)    | 15   | 20   |
| M10 (Primary Terminal)  | 30   | 40   |

| Types     | A   | B   | C   | D   | E   | F   | G   | H  |
|-----------|-----|-----|-----|-----|-----|-----|-----|----|
| VTB 10-SF | 385 | 170 | 290 | 148 | 291 | 125 | 300 | 20 |
| VTB 20-F2 | 385 | 170 | 365 | 178 | 385 | 150 | 300 | 20 |

Protection Fuses For Voltage Transformer

| NO | V.T. Types | Rated Currents (A) | Rated Voltage (Un) | φA | B (mm) |
|----|------------|--------------------|--------------------|----|--------|
| 1  |            | 0,63 Amper         |                    |    |        |
| 2  | VTB 10-SF  | 1 Amper            | 7,2 kV             | 20 | 190    |
| 3  | VTB 20-F2  | 2 Amper            |                    |    |        |
| 4  |            | 3,15 Amper         | 12 kV              | 20 | 254    |
| 5  |            | 0,63 Amper         |                    |    |        |
| 6  | VTB 10-SF  | 1 Amper            |                    |    |        |
| 7  | VTB 20-F2  | 2 Amper            | 15,5- 17,5 kV      | 20 | 340    |
| 8  |            | 3,15 Amper         |                    |    |        |
| 9  |            | 0,63 Amper         |                    |    |        |
| 10 | VTB 10-SF  | 1 Amper            | 24-25,5 kV         | 20 | 340    |
| 11 | VTB 20-F2  | 2 Amper            |                    |    |        |
| 12 |            | 3,15 Amper         |                    |    |        |
| 13 |            | 0,5 Amper          |                    |    |        |
| 14 | VTB 20-F2  | 1 Amper            | 24-25,5 kV         | 20 | 340    |
| 15 |            | 2 Amper            |                    |    |        |

- All dimensions are in mm.  
- Tolerances are according to DIN 7168-g when not specified.  
- Esitas reserves the right to change the specifications and the dimensions of the goods. Please ask for updated information.  
- Customer designed products are also available.



**INDOOR SINGLE PHASE CAST RESIN INSULATED BUILT IN FUSE WITHDRAWABLE TYPE VOLTAGE TRANSFORMERS**

(Um=36 kV)

Types:  
VTB 30-F1  
VTB 30-F1B

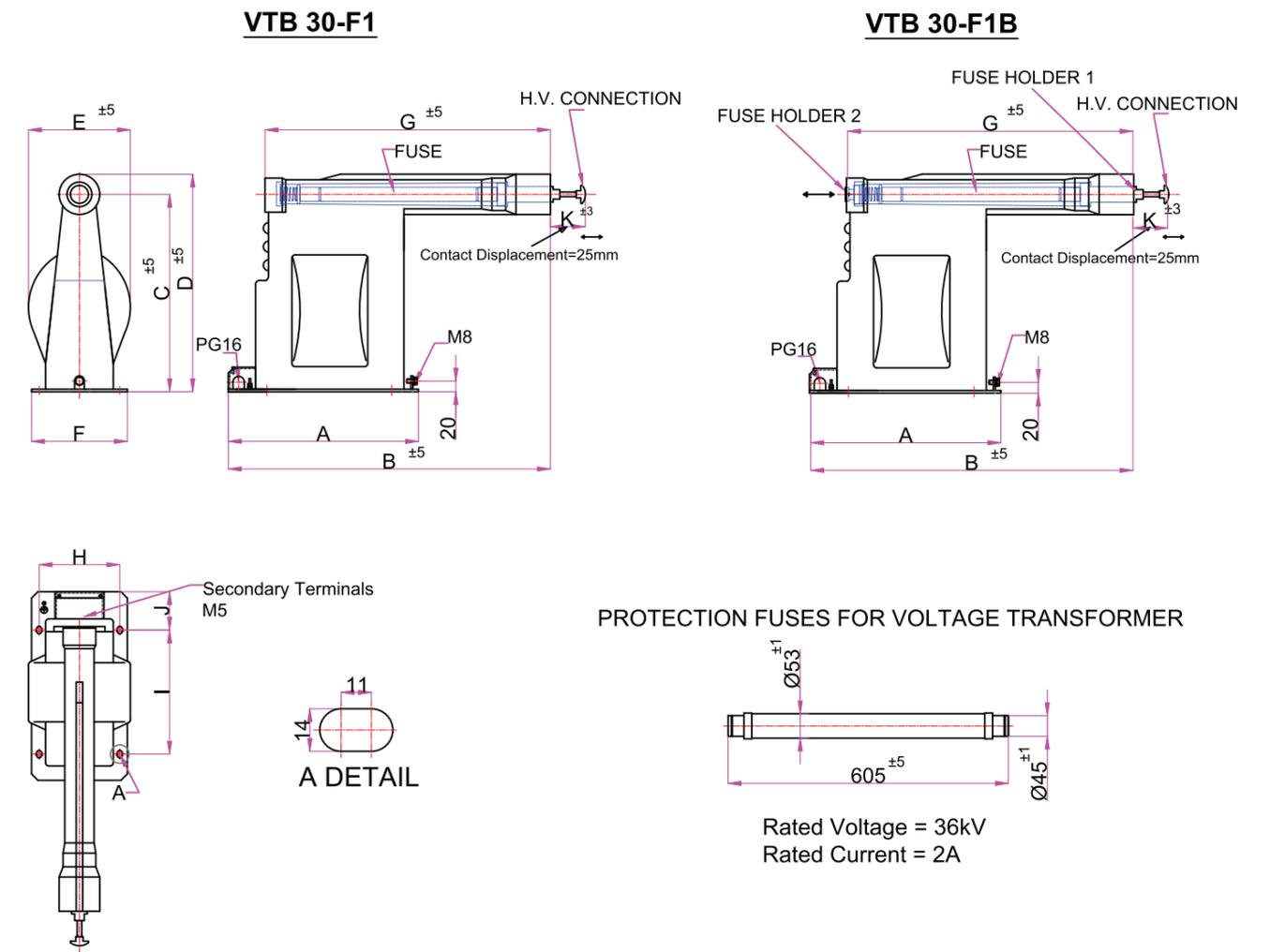
**Technical Data**

| Types                                                   | VTB 30-F1                              |        |        | VTB 30-F1B |       |       |
|---------------------------------------------------------|----------------------------------------|--------|--------|------------|-------|-------|
| Operating voltage, Um (kV)                              | 36**                                   |        |        |            |       |       |
| Rated power-frequency withstand voltage (1 minute) (kV) | 70                                     |        |        |            |       |       |
| Rated impulse test voltage (1.2/50 μs) full wave (kV)   | 170                                    |        |        |            |       |       |
| Rated frequency (Hz)                                    | 50-60                                  |        |        |            |       |       |
| Rated primary voltage (max.) (kV)                       | 36/√3                                  |        |        |            |       |       |
| Secondary voltage (V)                                   | 100/√3                                 | 110/√3 | 120/√3 | 100/3      | 110/3 | 120/3 |
| Rated burden (max.) in class 0,2 (VA)                   | 30                                     |        |        |            |       |       |
| Rated burden (max.) in class 0,5 (VA)                   | 150                                    |        |        |            |       |       |
| Rated burden (max.) in class 1 (VA)                     | 250                                    |        |        |            |       |       |
| Rated burden for protection purpose in class 3P (VA)    | 100                                    |        |        |            |       |       |
| Rated voltage factor (30 sec. or 8h) (Un)               | 1,9                                    |        |        |            |       |       |
| Insulation class                                        | E                                      |        |        |            |       |       |
| Ambient temperature (°C)                                | -25 ..... +40*                         |        |        |            |       |       |
| Altitude (m)                                            | 1000                                   |        |        |            |       |       |
| Standard                                                | According to the customer requirements |        |        |            |       |       |
| Weight (approx.) (kg)                                   | 70                                     |        |        |            |       |       |

\* It can be produced according to customer's specified ambient temperature. Please contact with ESITAS for feasibility.  
\*\* For more kV, please contact with ESITAS for feasibility.

**INDOOR SINGLE PHASE CAST RESIN INSULATED BUILT IN FUSE WITHDRAWABLE TYPE VOLTAGE TRANSFORMERS TECHNICAL DRAWING**

(Um=36kV)



| Types      | A   | B   | C   | D   | E   | F   | G   | H   | I   | J  | K  |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|
| VTB 30-F1  | 450 | 890 | 455 | 510 | 240 | 220 | 805 | 190 | 240 | 90 | 75 |
| VTB 30-F1B | 450 | 890 | 455 | 510 | 240 | 220 | 805 | 190 | 240 | 90 | 75 |

| TIGHTENING TORQUE (Nm)  | min. | max. |
|-------------------------|------|------|
| M5 (Secondary Terminal) | 2,5  | 3,5  |
| M8 (Ground Terminal)    | 15   | 20   |

- All dimensions are in mm.  
- Esitas reserves the right to change the specifications and the dimensions of the goods. Please ask for updated information.  
- Customer designed products are also available.



**OUTDOOR DRY TYPE SINGLE PHASE CAST RESIN INSULATED VOLTAGE TRANSFORMERS**  
(Um=3,6kV.....36kV)

Types:  
VTH 20  
VTH 30



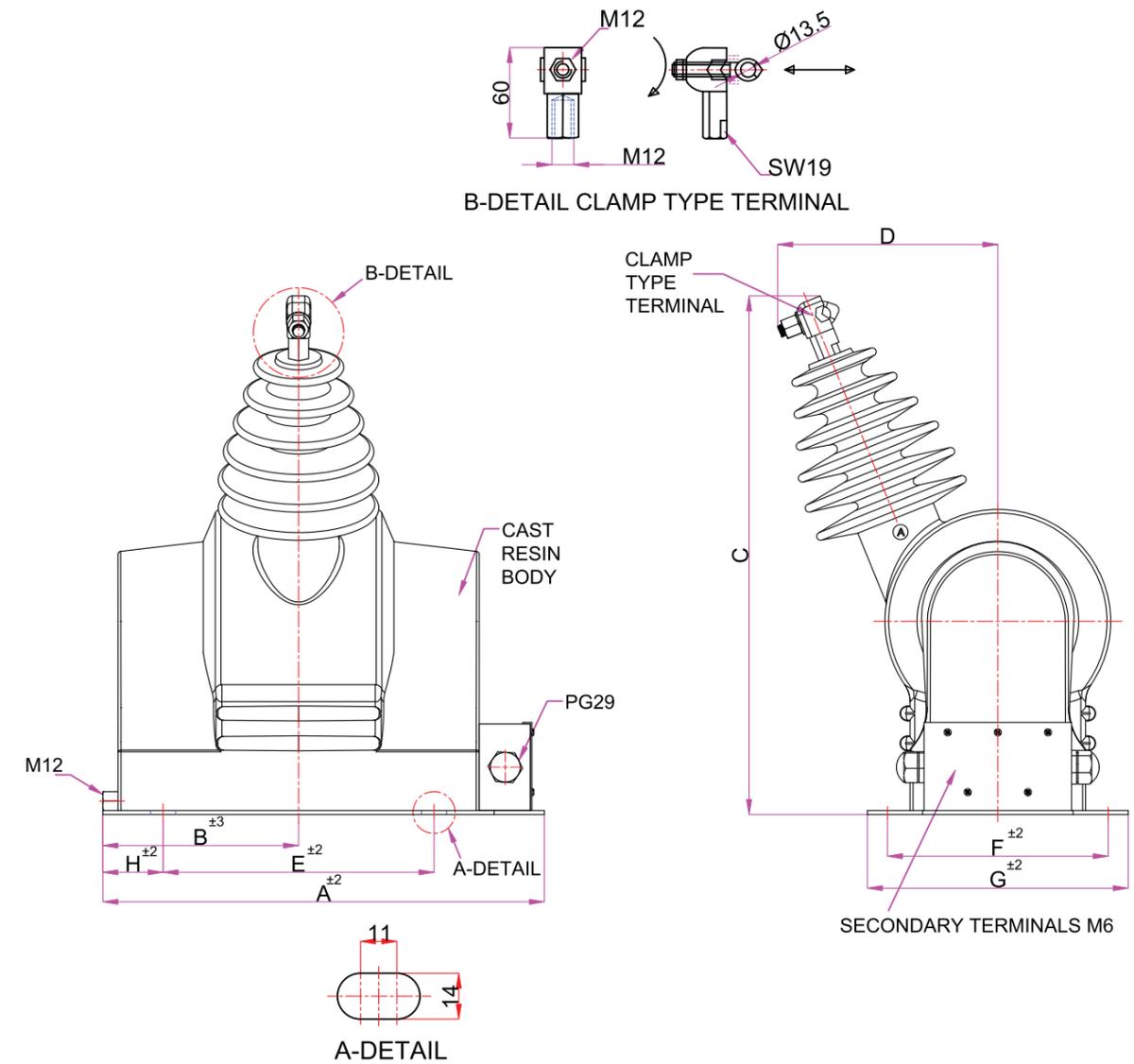
Clamp type terminal for high voltage connection.

| Technical Data                                          |                                        |        |        |                              |     |        |  |
|---------------------------------------------------------|----------------------------------------|--------|--------|------------------------------|-----|--------|--|
| Types                                                   | VTH 20                                 |        |        |                              |     | VTH 30 |  |
| Operating voltage, Um (kV)                              | 3,6                                    | 7,2    | 12     | 17,5                         | 24* | 36*    |  |
| Rated power-frequency withstand voltage (1 minute) (kV) | 10                                     | 20     | 28     | 38                           | 50  | 70     |  |
| Rated impulse test voltage (1.2/50 μs) full wave (kV)   | 40                                     | 60     | 75     | 95                           | 125 | 170    |  |
| Rated frequency (Hz)                                    | 50-60                                  |        |        |                              |     |        |  |
| Rated primary voltage (max.) (kV)                       | 24/√3                                  |        |        |                              |     | 36/√3  |  |
| Secondary voltage (V)                                   | 100/√3                                 | 110/√3 | 120/√3 | & suitable for 220V winding. |     |        |  |
| Rated burden (max.) in class 0,2 (VA)                   | 40                                     |        |        |                              |     | 50     |  |
| Rated burden (max.) in class 0,5 (VA)                   | 120                                    |        |        |                              |     | 150    |  |
| Rated burden (max.) in class 1 (VA)                     | 250                                    |        |        |                              |     | 250    |  |
| Rated burden for protection purpose in class 3P (VA)    | 100                                    |        |        |                              |     |        |  |
| Rated burden for 220V winding (VA)                      | 800                                    |        |        |                              |     |        |  |
| Rated voltage factor (30sec. or 8h) (Un)                | 1,9                                    |        |        |                              |     |        |  |
| Short time load (mechanical) (N)                        | 3750                                   |        |        |                              |     |        |  |
| Insulation Class                                        | E                                      |        |        |                              |     |        |  |
| Min. creepage distance (mm)                             | 820                                    |        |        |                              |     | 1220   |  |
| Altitude (m)                                            | According to the customer requirements |        |        |                              |     |        |  |
| Standard                                                | According to the customer requirements |        |        |                              |     |        |  |
| Weight (approx.) (kg)                                   | 50                                     |        |        |                              |     | 65     |  |

\* For more kV, please contact with ESITAS for feasibility.

**OUTDOOR DRY TYPE SINGLE PHASE CAST RESIN INSULATED VOLTAGE TRANSFORMERS TECHNICAL DRAWING**

(Um=3,6kV.....36kV)



| Types  | A   | B   | C                 | D                 | E   | F   | G   | H  |
|--------|-----|-----|-------------------|-------------------|-----|-----|-----|----|
| VTH 20 | 440 | 195 | 535 <sup>±5</sup> | 235 <sup>±5</sup> | 270 | 220 | 260 | 60 |
| VTH 30 | 450 | 200 | max.625           | max.295           | 270 | 190 | 220 | 70 |

| TIGHTENING TORQUE (Nm)        | min. | max. |
|-------------------------------|------|------|
| M6 (Secondary Terminal)       | 3    | 5    |
| M12 (Primary&Ground Terminal) | 60   | 70   |

- All dimensions are in mm.  
- Esitas reserves the right to change the specifications and the dimensions of the goods. Please ask for updated information.  
- Customer designed products are also available.



**OUTDOOR DRY TYPE SINGLE PHASE CAST RESIN INSULATED VOLTAGE TRANSFORMERS**

(Um=3,6kV.....36kV)

Types:  
VTH 20-N  
VTH 30-N



Clamp type terminal for high voltage connection.

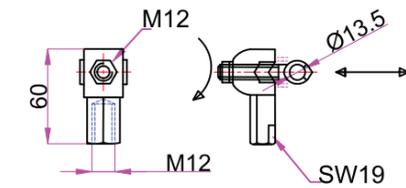
**Technical Data**

| Types                                                   | VTH 20-N                               |        |        |                              |     | VTH 30-N |
|---------------------------------------------------------|----------------------------------------|--------|--------|------------------------------|-----|----------|
| Operating voltage, Um (kV)                              | 3,6                                    | 7,2    | 12     | 17,5                         | 24* | 36*      |
| Rated power-frequency withstand voltage (1 minute) (kV) | 10                                     | 20     | 28     | 38                           | 50  | 70       |
| Rated impulse test voltage (1.2/50 μs) full wave (kV)   | 40                                     | 60     | 75     | 95                           | 125 | 170      |
| Rated frequency (Hz)                                    | 50-60                                  |        |        |                              |     |          |
| Rated primary voltage (max.) (kV)                       | 24/√3                                  |        |        |                              |     | 36/√3    |
| Secondary voltage (V)                                   | 100/√3                                 | 110/√3 | 120/√3 | & suitable for 220V winding. |     |          |
| Rated burden (max.) in class 0,2 (VA)                   | 40                                     |        |        |                              |     | 50       |
| Rated burden (max.) in class 0,5 (VA)                   | 120                                    |        |        |                              |     | 150      |
| Rated burden (max.) in class 1 (VA)                     | 250                                    |        |        |                              |     | 250      |
| Rated burden for protection purpose in class 3P (VA)    | 100                                    |        |        |                              |     |          |
| Rated burden for 220V winding (VA)                      | 800                                    |        |        |                              |     |          |
| Rated voltage factor (30sec. or 8h) (Un)                | 1,9                                    |        |        |                              |     |          |
| Short time load (mechanical) (N)                        | 3750                                   |        |        |                              |     |          |
| Insulation Class                                        | E                                      |        |        |                              |     |          |
| Min. creepage distance (mm)                             | 820                                    |        |        |                              |     | 1220     |
| Altitude (m)                                            | According to the customer requirements |        |        |                              |     |          |
| Standard                                                | According to the customer requirements |        |        |                              |     |          |
| Weight (approx.) (kg)                                   | 55                                     |        |        |                              |     | 65       |

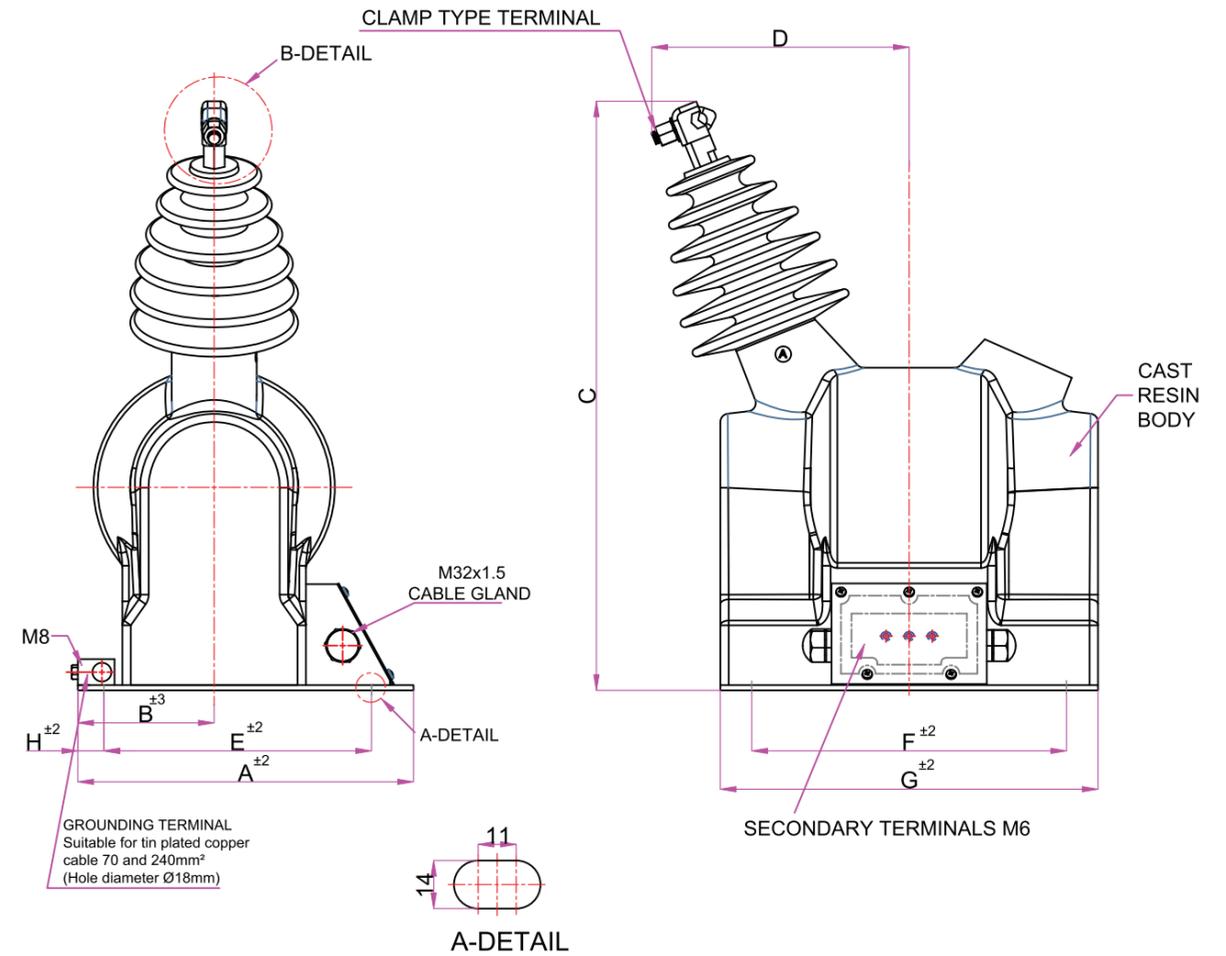
\* For more kV, please contact with ESITAS for feasibility.

**OUTDOOR DRY TYPE SINGLE PHASE CAST RESIN INSULATED VOLTAGE TRANSFORMERS TECHNICAL DRAWING**

(Um=3,6kV.....36kV)



B-DETAIL CLAMP TYPE TERMINAL



| Types    | A   | B   | C       | D       | E   | F   | G   | H  |
|----------|-----|-----|---------|---------|-----|-----|-----|----|
| VTH 20-N | 320 | 130 | max.585 | max.255 | 255 | 300 | 360 | 20 |
| VTH 30-N | 315 | 135 | max.660 | max.275 | 255 | 300 | 360 | 30 |

| TIGHTENING TORQUE (Nm)  | min. | max. |
|-------------------------|------|------|
| M6 (Secondary Terminal) | 3    | 5    |

- All dimensions are in mm.  
- Esitas reserves the right to change the specifications and the dimensions of the goods. Please ask for updated information.  
- Customer designed products are also available.



**OUTDOOR DRY TYPE SINGLE PHASE CAST RESIN INSULATED VOLTAGE TRANSFORMERS**

(Um=52kV)

Types:  
VTH 52-N



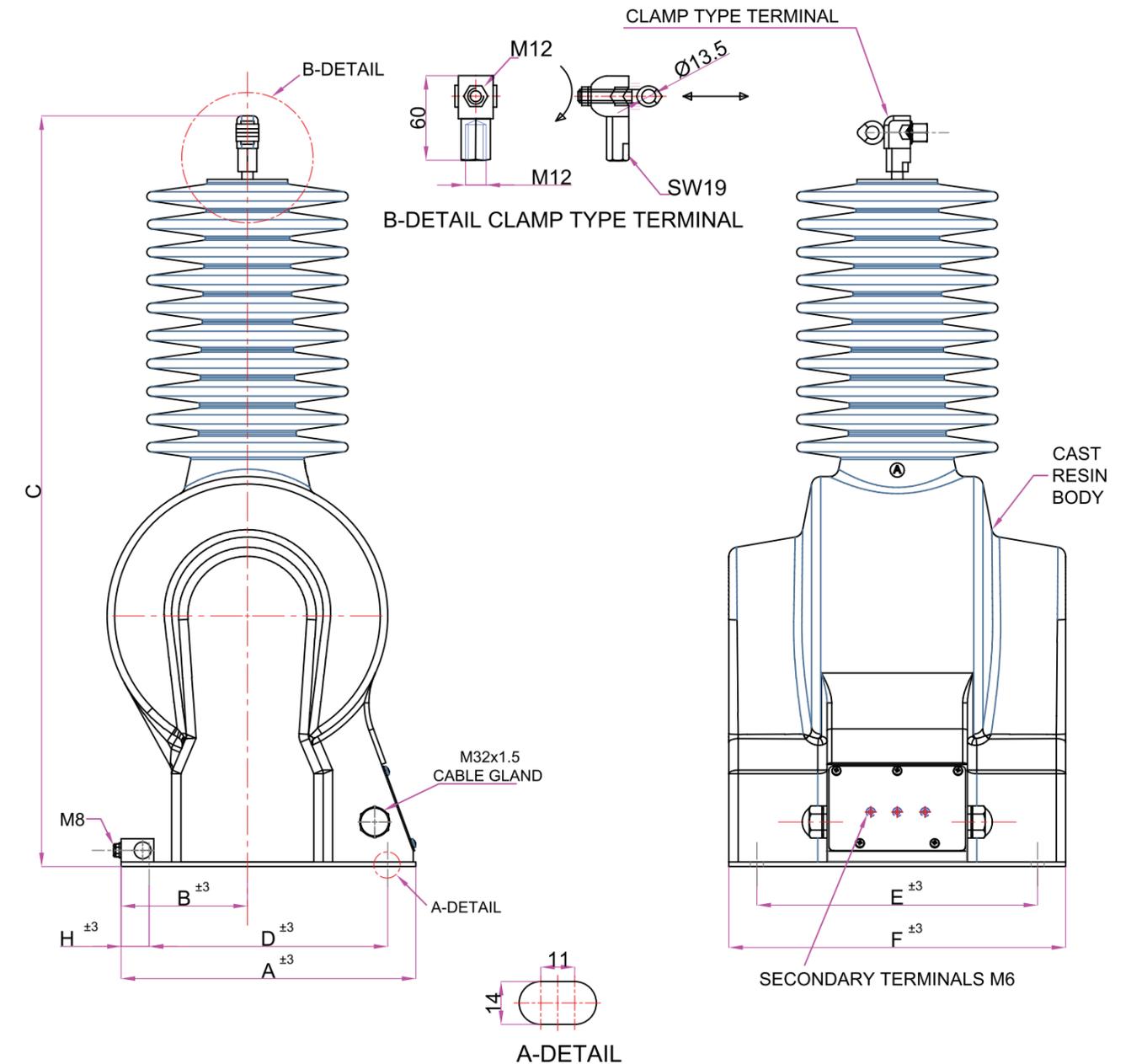
Clamp type terminal for high voltage connection.

**Technical Data**

| Types                                                   | VTH 52-N                               |        |        |                              |
|---------------------------------------------------------|----------------------------------------|--------|--------|------------------------------|
| Operating voltage, Um (kV)                              | 52                                     |        |        |                              |
| Rated power-frequency withstand voltage (1 minute) (kV) | 95                                     |        |        |                              |
| Rated impulse test voltage (1.2/50 μs) full wave (kV)   | 250                                    |        |        |                              |
| Rated frequency (Hz)                                    | 50-60                                  |        |        |                              |
| Rated primary voltage (max.) (kV)                       | 46/√3                                  |        |        |                              |
| Secondary voltage (V)                                   | 100/√3                                 | 110/√3 | 120/√3 | & suitable for 220V winding. |
| Rated burden (max.) in class 0,2 (VA)                   | 50                                     |        |        |                              |
| Rated burden (max.) in class 0,5 (VA)                   | 150                                    |        |        |                              |
| Rated burden (max.) in class 1 (VA)                     | 250                                    |        |        |                              |
| Rated burden for protection purpose in class 3P (VA)    | 100                                    |        |        |                              |
| Rated burden for 220V winding (VA)                      | 800                                    |        |        |                              |
| Rated voltage factor (30sec. or 8h) (Un)                | 1,9                                    |        |        |                              |
| Short time load (mechanical) (N)                        | 3750                                   |        |        |                              |
| Insulation Class                                        | E                                      |        |        |                              |
| Min. creepage distance (mm)                             | 1650                                   |        |        |                              |
| Altitude (m)                                            | According to the customer requirements |        |        |                              |
| Standard                                                | According to the customer requirements |        |        |                              |
| Weight (approx.) (kg)                                   | 90                                     |        |        |                              |

**OUTDOOR DRY TYPE SINGLE PHASE CAST RESIN INSULATED VOLTAGE TRANSFORMERS TECHNICAL DRAWING**

(Um=52kV)



| Types    | A   | B   | C       | D   | E   | F   | G  | TIGHTENING TORQUE (Nm)  | min. | max. |
|----------|-----|-----|---------|-----|-----|-----|----|-------------------------|------|------|
| VTH 20-N | 315 | 135 | max.820 | 255 | 300 | 360 | 30 | M6 (Secondary Terminal) | 3    | 5    |

- All dimensions are in mm.  
- Esitas reserves the right to change the specifications and the dimensions of the goods. Please ask for updated information.  
- Customer designed products are also available.



**OUTDOOR DRY TYPE PHASE TO PHASE CAST RESIN INSULATED VOLTAGE TRANSFORMERS**

(Um=3,6kV.....36kV)

Types:  
2VTH 20  
2VTH 30

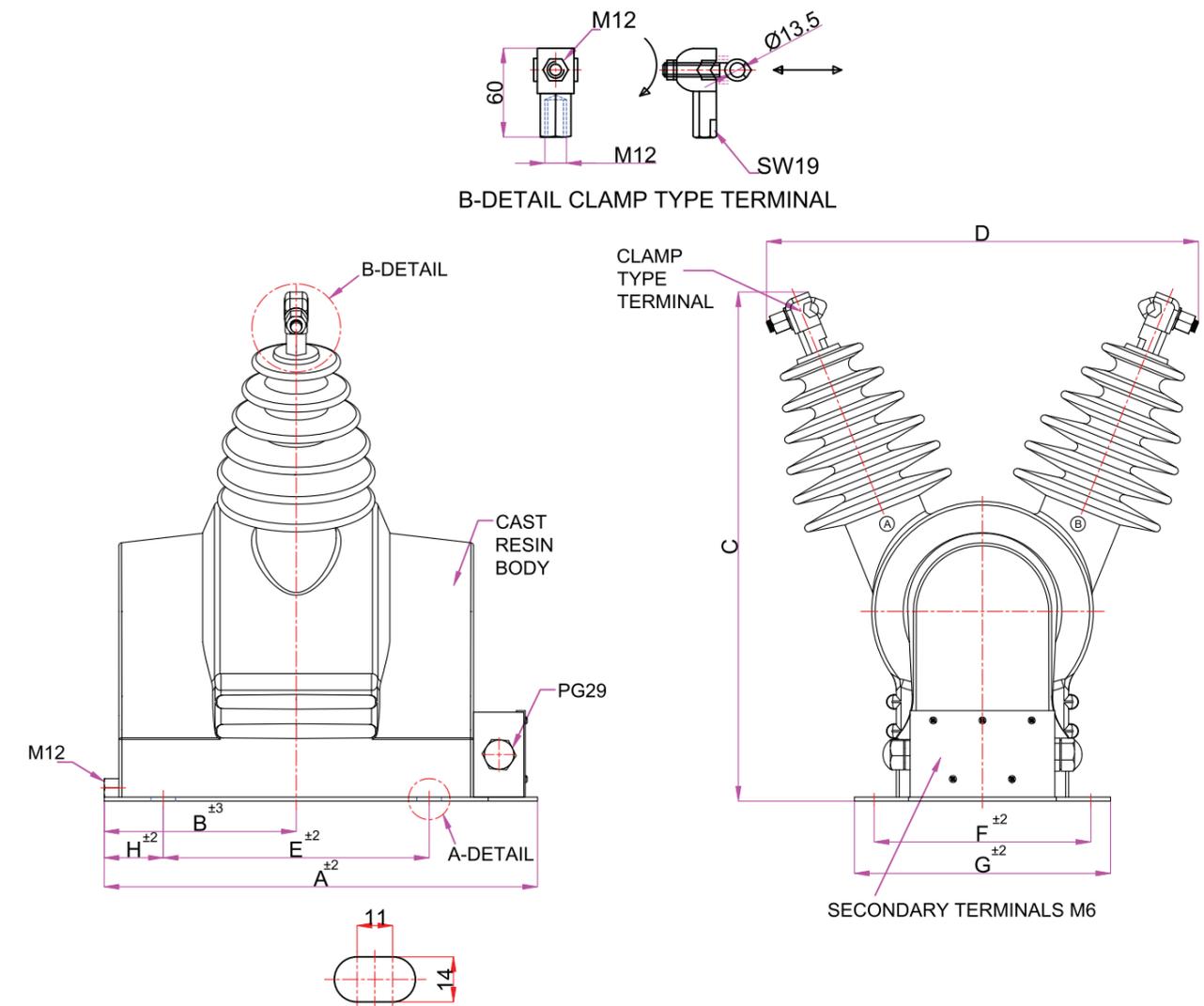


Clamp type terminal for high voltage connection.

| Technical Data                                          |                                            | Produced only in Indonesia Factory |    |      |     |         |
|---------------------------------------------------------|--------------------------------------------|------------------------------------|----|------|-----|---------|
| Types                                                   | 2VTH 20                                    |                                    |    |      |     | 2VTH 30 |
| Operating voltage, Um (kV)                              | 3,6                                        | 7,2                                | 12 | 17,5 | 24  | 36      |
| Rated power-frequency withstand voltage (1 minute) (kV) | 10                                         | 20                                 | 28 | 38   | 50  | 70      |
| Rated impulse test voltage (1.2/50 μs) full wave (kV)   | 40                                         | 60                                 | 75 | 95   | 125 | 170     |
| Rated frequency (Hz)                                    | 50-60                                      |                                    |    |      |     |         |
| Rated primary voltage (max.) (kV)                       | 24                                         |                                    |    |      |     | 36      |
| Secondary voltage (V)                                   | 100, 110, 120 & suitable for 220V winding. |                                    |    |      |     |         |
| Rated burden (max.) in class 0,2 (VA)                   | 30                                         |                                    |    |      |     | 40      |
| Rated burden (max.) in class 0,5 (VA)                   | 100                                        |                                    |    |      |     | 120     |
| Rated burden (max.) in class 1 (VA)                     | 200                                        |                                    |    |      |     | 200     |
| Rated burden for 220V winding (VA)                      | 800                                        |                                    |    |      |     |         |
| Rated voltage factor (30sec. or 8h) (Un)                | 1,2                                        |                                    |    |      |     |         |
| Short time load (mechanical) (N)                        | 3750                                       |                                    |    |      |     |         |
| Min. creepage distance (mm)                             | 820                                        |                                    |    |      |     | 1220    |
| Altitude (m)                                            | According to the customer requirements     |                                    |    |      |     |         |
| Standard                                                | According to the customer requirements     |                                    |    |      |     |         |
| Weight (approx.) (kg)                                   | 60                                         |                                    |    |      |     | 70      |

**OUTDOOR DRY TYPE PHASE TO PHASE CAST RESIN INSULATED VOLTAGE TRANSFORMERS TECHNICAL DRAWING**

(Um=3,6kV.....36kV)



| Types   | A   | B   | C                 | D                 | E   | F   | G   | H  |
|---------|-----|-----|-------------------|-------------------|-----|-----|-----|----|
| 2VTH 20 | 440 | 195 | 535 <sup>±5</sup> | 460 <sup>±5</sup> | 270 | 20  | 260 | 60 |
| 2VTH 30 | 450 | 200 | max.625           | max.580           | 270 | 190 | 220 | 70 |

| TIGHTENING TORQUE (Nm)            | min. | max. |
|-----------------------------------|------|------|
| M6 (Secondary Terminal)           | 3    | 5    |
| M12 (Primary and Ground Terminal) | 60   | 70   |

- All dimensions are in mm.  
- Esitas reserves the right to change the specifications and the dimensions of the goods. Please ask for updated information.  
- Customer designed products are also available.



**OUTDOOR DRY TYPE PHASE TO PHASE CAST RESIN INSULATED VOLTAGE TRANSFORMERS**

(Um=3,6kV.....36kV)

**Types:**  
2VTH 20-N  
2VTH 30-N



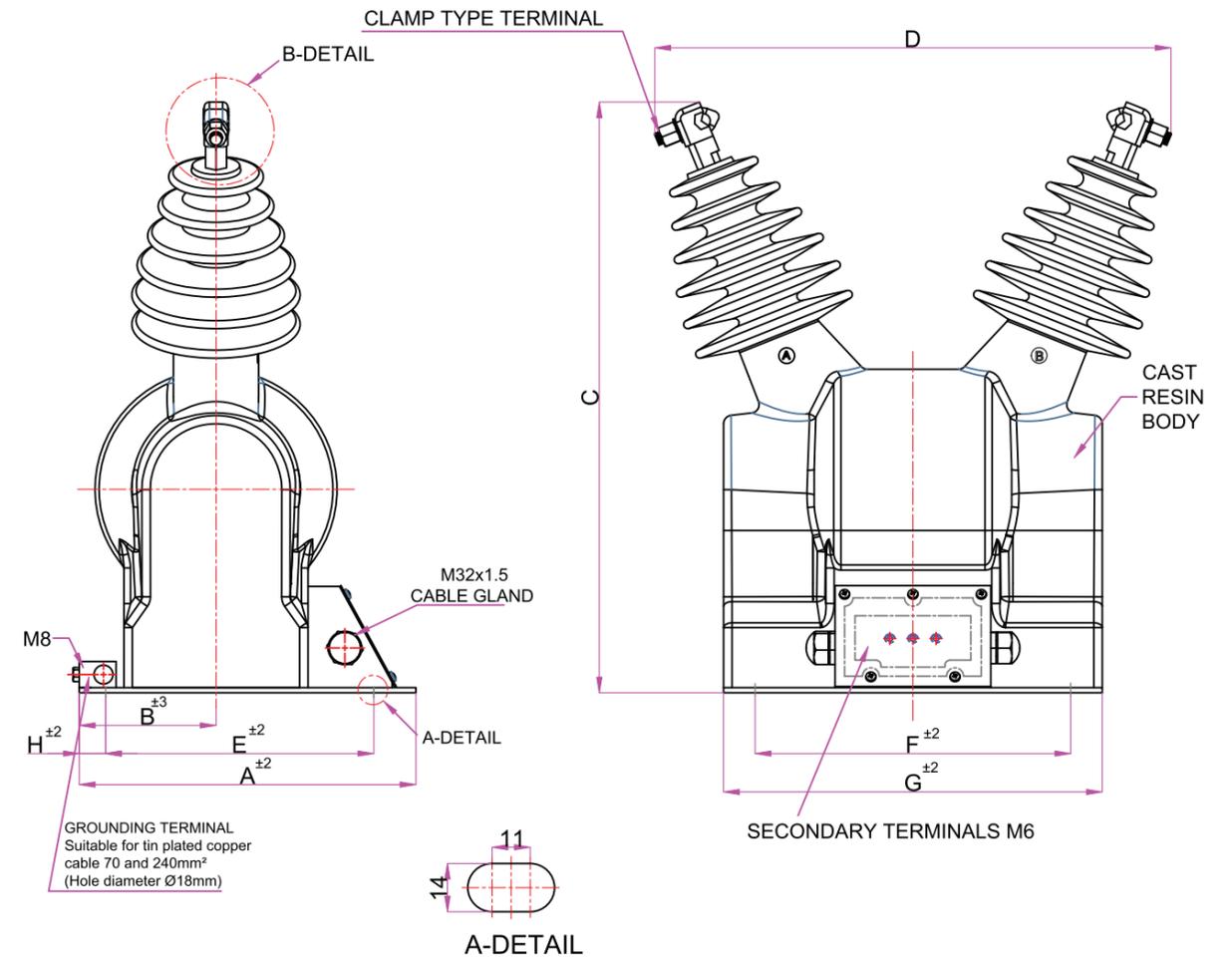
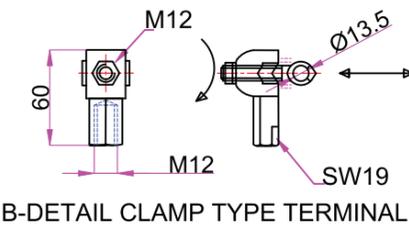
Clamp type terminal for high voltage connection.

**Technical Data**

| Types                                                   | 2VTH 20-N                                  |     |    |      |     | 2VTH 30-N |
|---------------------------------------------------------|--------------------------------------------|-----|----|------|-----|-----------|
| Operating voltage, Um (kV)                              | 3,6                                        | 7,2 | 12 | 17,5 | 24  | 36        |
| Rated power-frequency withstand voltage (1 minute) (kV) | 10                                         | 20  | 28 | 38   | 50  | 70        |
| Rated impulse test voltage (1.2/50 μs) full wave (kV)   | 40                                         | 60  | 75 | 95   | 125 | 170       |
| Rated frequency (Hz)                                    | 50-60                                      |     |    |      |     |           |
| Rated primary voltage (max.) (kV)                       | 24                                         |     |    |      |     | 36        |
| Secondary voltage (V)                                   | 100, 110, 120 & suitable for 220V winding. |     |    |      |     |           |
| Rated burden (max.) in class 0,2 (VA)                   | 30                                         |     |    |      |     | 40        |
| Rated burden (max.) in class 0,5 (VA)                   | 100                                        |     |    |      |     | 120       |
| Rated burden (max.) in class 1 (VA)                     | 200                                        |     |    |      |     | 200       |
| Rated burden for 220V winding (VA)                      | 800                                        |     |    |      |     |           |
| Rated voltage factor (30sec. or 8h) (Un)                | 1,2                                        |     |    |      |     |           |
| Short time load (mechanical) (N)                        | 3750                                       |     |    |      |     |           |
| Insulation Class                                        | E                                          |     |    |      |     |           |
| Min. creepage distance (mm)                             | 820                                        |     |    |      |     | 1220      |
| Altitude (m)                                            | According to the customer requirements     |     |    |      |     |           |
| Standard                                                | According to the customer requirements     |     |    |      |     |           |
| Weight (approx.) (kg)                                   | 67                                         |     |    |      |     | 86        |

**OUTDOOR DRY TYPE PHASE TO PHASE CAST RESIN INSULATED VOLTAGE TRANSFORMERS TECHNICAL DRAWING**

(Um=3,6kV.....36kV)



| Types     | A   | B   | C       | D       | E   | F   | G   | H  |
|-----------|-----|-----|---------|---------|-----|-----|-----|----|
| 2VTH 20-N | 320 | 130 | max.585 | max.510 | 255 | 300 | 360 | 20 |
| 2VTH 30-N | 315 | 135 | max.660 | max.550 | 255 | 300 | 360 | 30 |

| TIGHTENING TORQUE (Nm)  | min. | max. |
|-------------------------|------|------|
| M6 (Secondary Terminal) | 3    | 5    |

- All dimensions are in mm.  
- Esitas reserves the right to change the specifications and the dimensions of the goods. Please ask for updated information.  
- Customer designed products are also available.



**INDOOR SINGLE PHASE METAL HOUSING BUSHING TYPE VOLTAGE TRANSFORMERS**

(Um=12kV ..... 36kV)

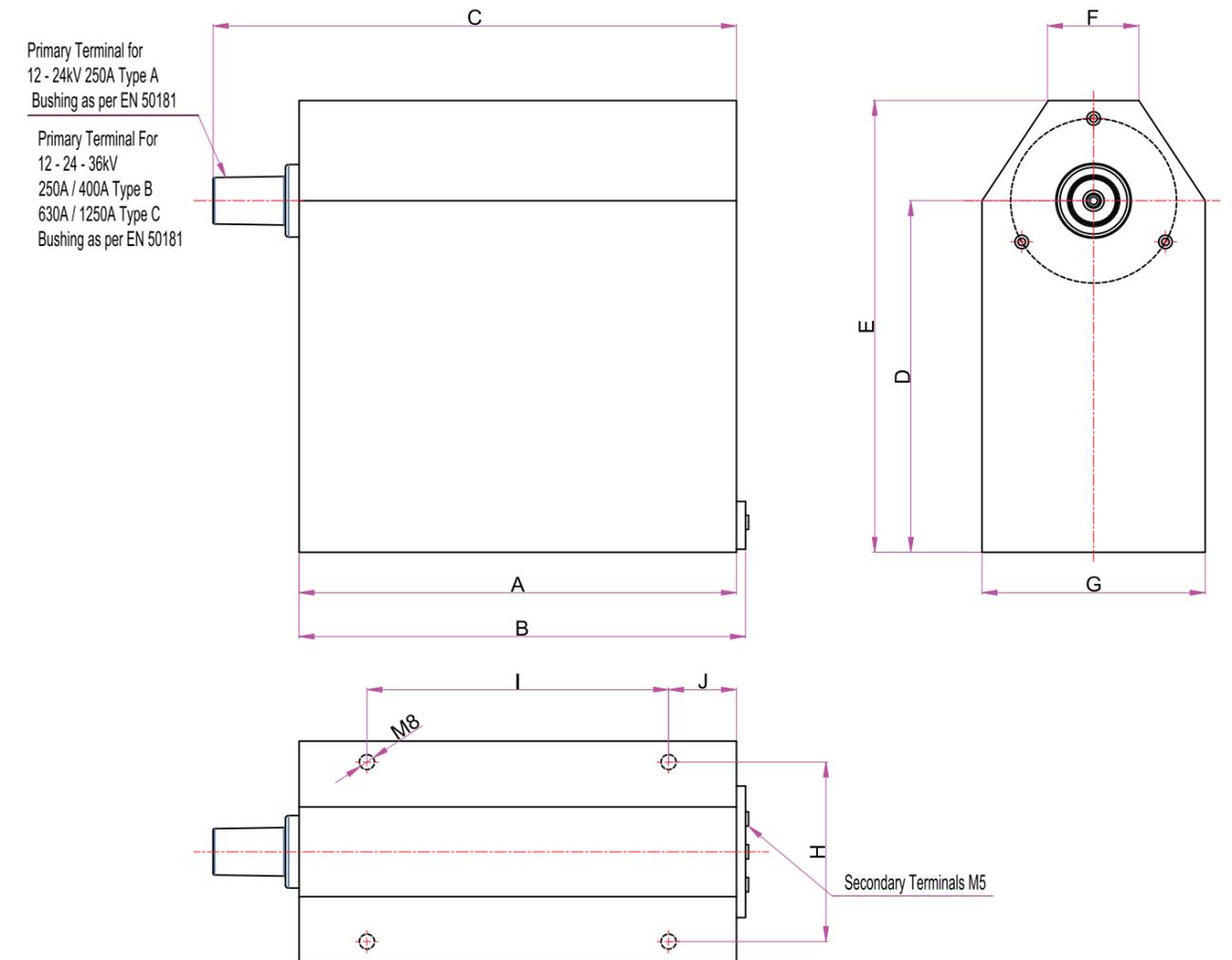
Types:  
MVT 10B  
MVT 30B

| Technical Data                                          |                                        |        |        |         |       |            |
|---------------------------------------------------------|----------------------------------------|--------|--------|---------|-------|------------|
| Types                                                   | MVT 10B                                |        |        | MVT 30B |       |            |
| Operating voltage, Um (kV)                              | 12                                     |        |        | 17,5    | 24    | 36         |
| Rated power-frequency withstand voltage (1 minute) (kV) | 28                                     |        |        | 38      | 50    | 70         |
| Rated impulse test voltage (1.2/50 μs) full wave (kV)   | 75                                     |        |        | 95      | 125   | 170        |
| Rated frequency (Hz)                                    | 50-60                                  |        |        |         |       |            |
| Rated primary voltage (max.) (kV)                       | 12/√3                                  |        |        | 36/√3   |       |            |
| Secondary voltage (V)                                   | 100/√3                                 | 110/√3 | 120/√3 | 100/3   | 110/3 | 120/3      |
| Rated burden (max.) in class 0,2 (VA)                   | 10                                     |        |        | 10      | 10    | 10         |
| Rated burden (max.) in class 0,5 (VA)                   | 30                                     |        |        | 30      | 30    | 30         |
| Rated burden (max.) in class 1 (VA)                     | 60                                     |        |        | 60      | 60    | 60         |
| Rated burden for 220V winding (VA)                      | 50(1th 2A)                             |        |        | 50      | 50    | 50(1th 4A) |
| Rated voltage factor (30sec. or 8h) (Un)                | 1,9                                    |        |        |         |       |            |
| Insulation Class                                        | E                                      |        |        |         |       |            |
| Min. creepage distance (mm)                             | -25.....+40*                           |        |        |         |       |            |
| Altitude (m)                                            | 1000                                   |        |        |         |       |            |
| Standard                                                | According to the customer requirements |        |        |         |       |            |
| Weight (approx.) (kg)                                   | 30                                     |        |        | 45      |       |            |

\* It can be produced according to customer's specified ambient temperature. Please contact with ESITAS for feasibility.

**INDOOR SINGLE PHASE METAL HOUSING BUSHING TYPE VOLTAGE TRANSFORMERS TECHNICAL DRAWING**

(Um=12kV ..... 36kV)



| Types   | A   | B   | C   | D   | E     | F  | G   | H   | I   | J  |
|---------|-----|-----|-----|-----|-------|----|-----|-----|-----|----|
| MVT 10B | 290 | 296 | 347 | 235 | 302   | 60 | 148 | 120 | 200 | 45 |
| MVT 30B | 370 | 376 | 482 | -   | 306,5 | 95 | 185 | 150 | 250 | 60 |

| TIGHTENING TORQUE (Nm)  | min. | max. |
|-------------------------|------|------|
| M5 (Secondary Terminal) | 2.5  | 3.5  |

- All dimensions are in mm.  
- Esitas reserves the right to change the specifications and the dimensions of the goods. Please ask for updated information.  
- Customer designed products are also available.



**INDOOR SINGLE PHASE METALISED BUSHING TYPE VOLTAGE TRANSFORMERS**

(Um=12kV ..... 36kV)

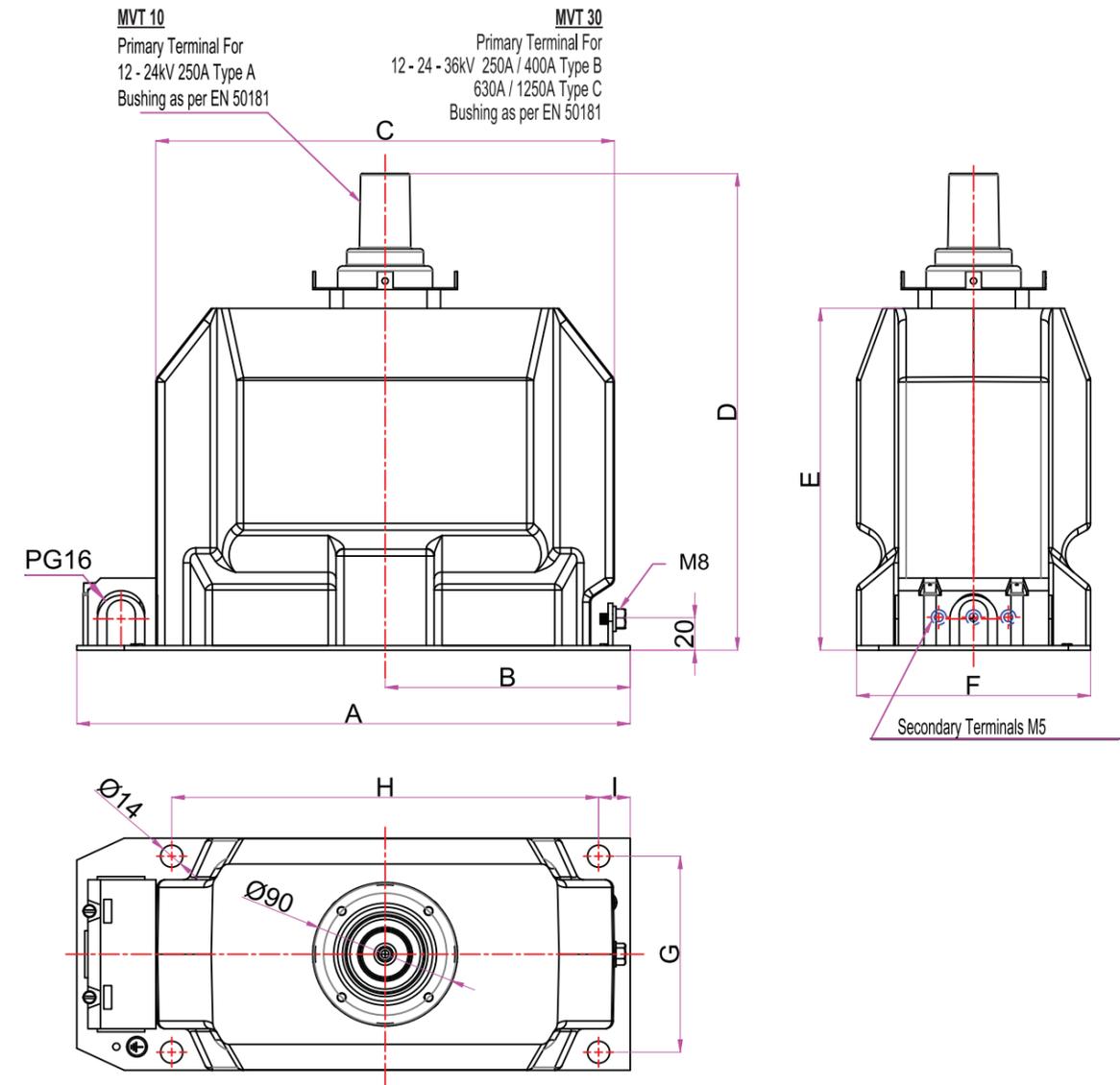
Types:  
MVT 10  
MVT 30

| Technical Data                                          |                                        |        |        |        |       |             |
|---------------------------------------------------------|----------------------------------------|--------|--------|--------|-------|-------------|
| Types                                                   | MVT 10                                 |        |        | MVT 30 |       |             |
| Operating voltage, Um (kV)                              | 12                                     |        |        | 17,5   | 24    | 36          |
| Rated power-frequency withstand voltage (1 minute) (kV) | 28                                     |        |        | 38     | 50    | 70          |
| Rated impulse test voltage (1.2/50 µs) full wave (kV)   | 75                                     |        |        | 95     | 125   | 170         |
| Rated frequency (Hz)                                    | 50-60                                  |        |        |        |       |             |
| Rated primary voltage (max.) (kV)                       | 12/√3                                  |        |        | 36/√3  |       |             |
| Secondary voltage (V)                                   | 100/√3                                 | 110/√3 | 120/√3 | 100/3  | 110/3 | 120/3       |
| Rated burden (max.) in class 0,2 (VA)                   | 10                                     |        |        | 10     | 10    | 10          |
| Rated burden (max.) in class 0,5 (VA)                   | 30                                     |        |        | 30     | 30    | 30          |
| Rated burden (max.) in class 1 (VA)                     | 60                                     |        |        | 60     | 60    | 60          |
| Rated burden for 220V winding (VA)                      | 50 (1th 2A)                            |        |        | 50     | 50    | 50 (1th 4A) |
| Rated voltage factor (30sec. or 8h) (Un)                | 1,9                                    |        |        |        |       |             |
| Insulation Class                                        | E                                      |        |        |        |       |             |
| Min. creepage distance (mm)                             | -25.....+40*                           |        |        |        |       |             |
| Altitude (m)                                            | 1000                                   |        |        |        |       |             |
| Standard                                                | According to the customer requirements |        |        |        |       |             |
| Weight (approx.) (kg)                                   | 30                                     |        |        | 45     |       |             |

\* It can be produced according to customer's specified ambient temperature. Please contact with ESITAS for feasibility.

**INDOOR SINGLE PHASE METALISED BUSHING TYPE VOLTAGE TRANSFORMERS TECHNICAL DRAWING**

(Um=12kV ..... 36kV)



| Types  | A   | B   | C   | D   | E   | F   | G   | H   | I  |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|----|
| MVT 10 | 350 | 155 | 290 | 304 | 218 | 148 | 125 | 270 | 20 |
| MVT 30 | 430 | 195 | 370 | 429 | 290 | 185 | 150 | 300 | 45 |

| TIGHTENING TORQUE (Nm)  | min. | max. |
|-------------------------|------|------|
| M5 (Secondary Terminal) | 2.5  | 3.5  |
| M8 (Ground Terminal)    | 15   | 20   |

- All dimensions are in mm.  
- Esitas reserves the right to change the specifications and the dimensions of the goods. Please ask for updated information.  
- Customer designed products are also available.



**OUTDOOR DRY TYPE SINGLE PHASE CAST RESIN INSULATED VOLTAGE TRANSFORMERS**

(Um=72,5kV)

Types:  
VTH 72-N

**Technical Data**

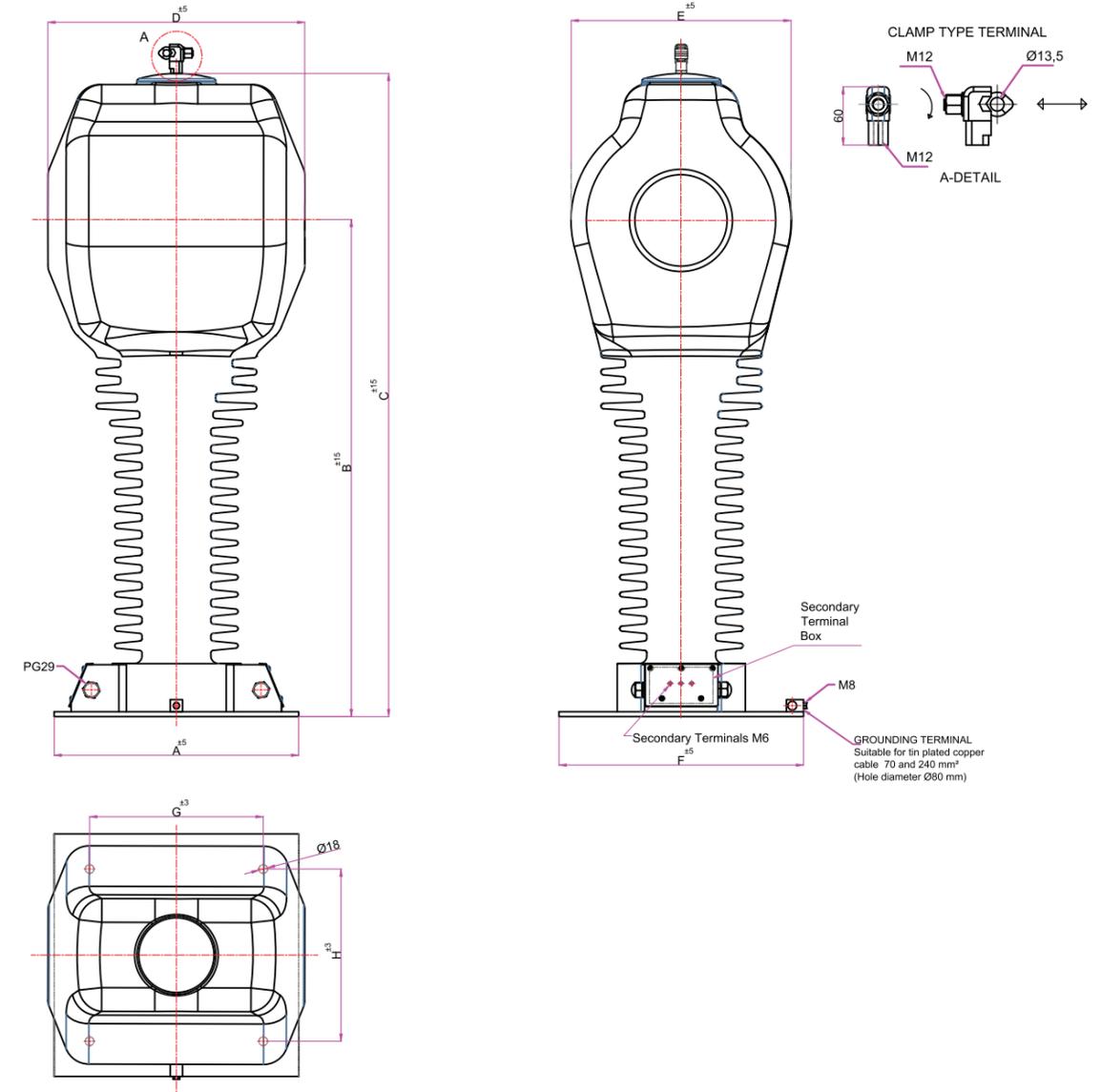
| Types                                                   | VTH 72-N                               |        |        |
|---------------------------------------------------------|----------------------------------------|--------|--------|
| Operating voltage, Um (kV)                              | 72,5                                   |        |        |
| Rated power-frequency withstand voltage (1 minute) (kV) | 140                                    |        |        |
| Rated impulse test voltage (1.2/50 μs) full wave (kV)   | 325                                    |        |        |
| Rated frequency (Hz)                                    | 50-60                                  |        |        |
| Rated primary voltage (max.) (kV)                       | 66/√3                                  |        |        |
| Secondary voltage (V)                                   | 100/√3                                 | 110/√3 | 120/√3 |
| Rated burden (max.) in class 0,2 (VA)                   | 50                                     |        |        |
| Rated burden (max.) in class 0,5 (VA)                   | 150                                    |        |        |
| Rated burden (max.) in class 1 (VA)                     | 300                                    |        |        |
| Rated burden for protection purpose in class 3p (VA)    | 100                                    |        |        |
| Rated voltage factor (30sec. or 8h) (Un)                | 1,9                                    |        |        |
| Insulation Class                                        | E                                      |        |        |
| Min. creepage distance (mm)                             | 2500                                   |        |        |
| Altitude (m)                                            | According to the customer requirements |        |        |
| Standard                                                | According to the customer requirements |        |        |
| Weight (approx.) (kg)                                   | 300                                    |        |        |

\* For more cores please contact with ESITAS for feasibility.

**OUTDOOR DRY TYPE SINGLE PHASE CAST RESIN INSULATED VOLTAGE TRANSFORMERS TECHNICAL DRAWING**

(Um= 72,5kV)

**VTH 72-N**



| Types    | A   | B    | C    | D   | E   | F   | G   | H   |
|----------|-----|------|------|-----|-----|-----|-----|-----|
| VTH 72-N | 500 | 1025 | 1325 | 525 | 450 | 500 | 355 | 355 |

| TIGHTENING TORQUE (Nm)            | min. | max. |
|-----------------------------------|------|------|
| M6 (Secondary Terminal)           | 3    | 5    |
| M12 (Primary and Ground Terminal) | 60   | 70   |

- All dimensions are in mm.  
- Esitas reserves the right to change the specifications and the dimensions of the goods. Please ask for updated information.  
- Customer designed products are also available.