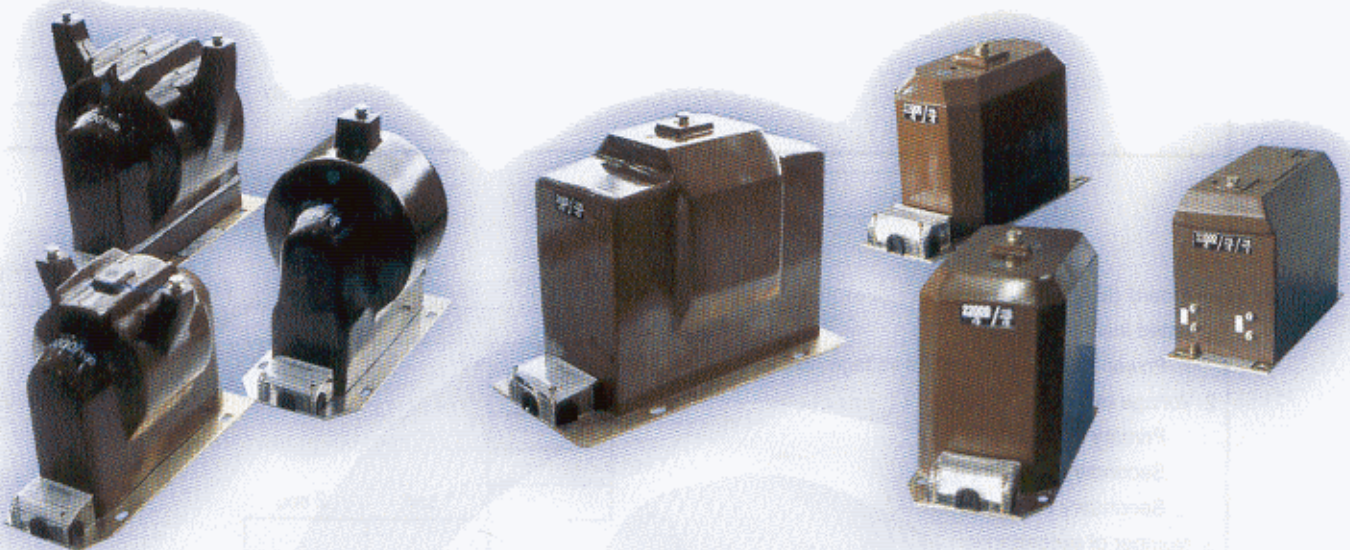
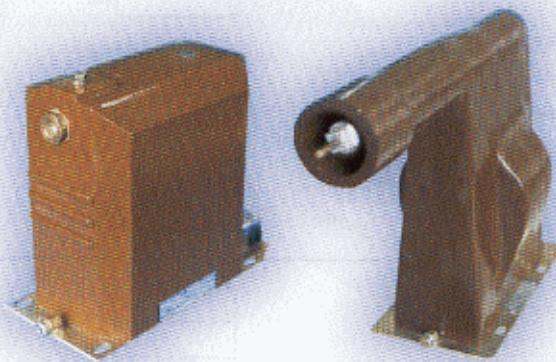


**M.V. VOLTAGE TRANSFORMERS 3.6 kV...36kV**  
**Cast Resin, Indoor or Outdoor Type**

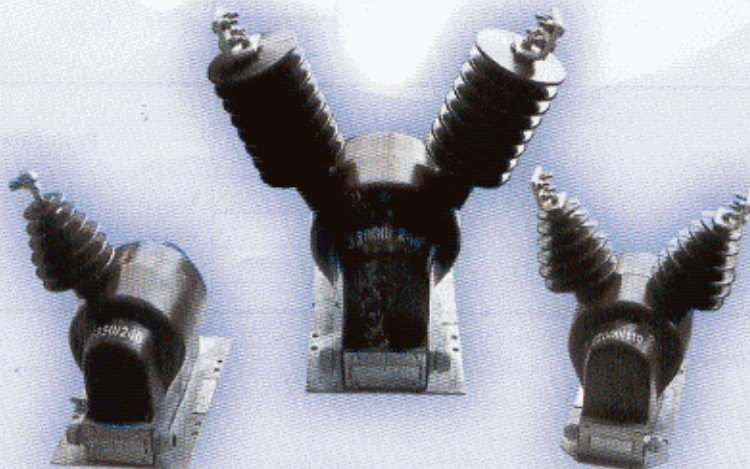


**VT-10...20, 2VT-10...20**  
**VTB-30, 2VTB-30**

**VTB-10...20**

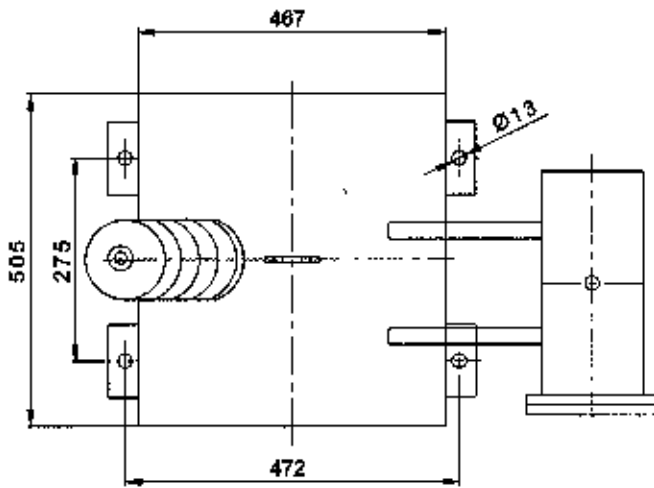
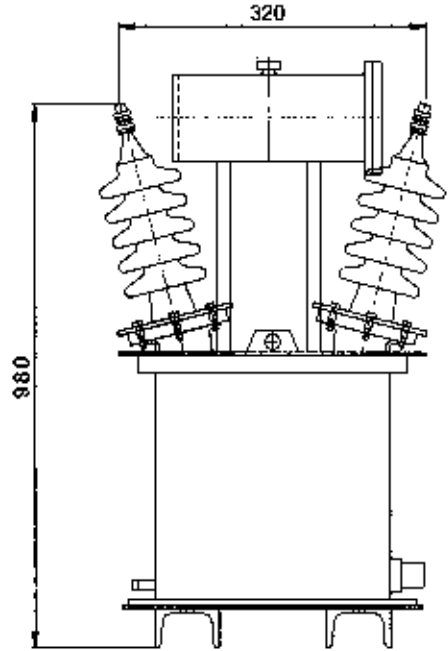
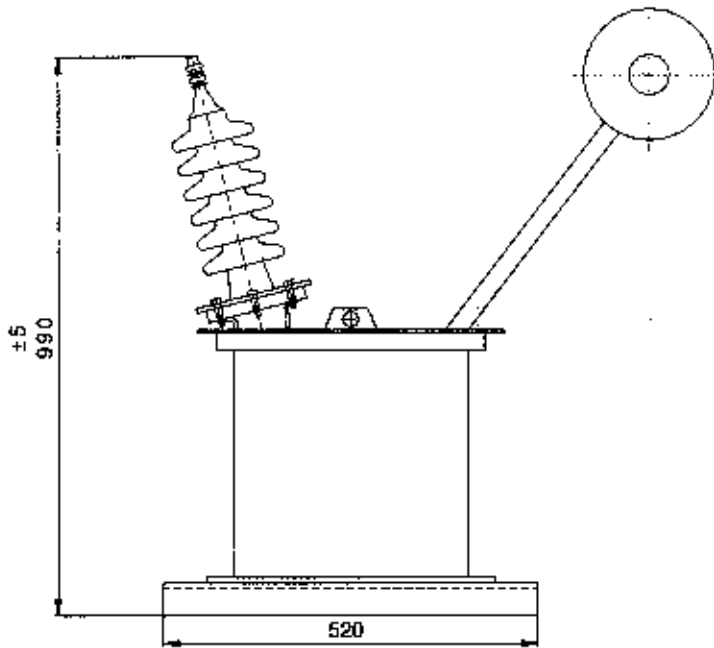


**BUILT - IN FUSE TRANSFORMERS VTB10...30 - F**

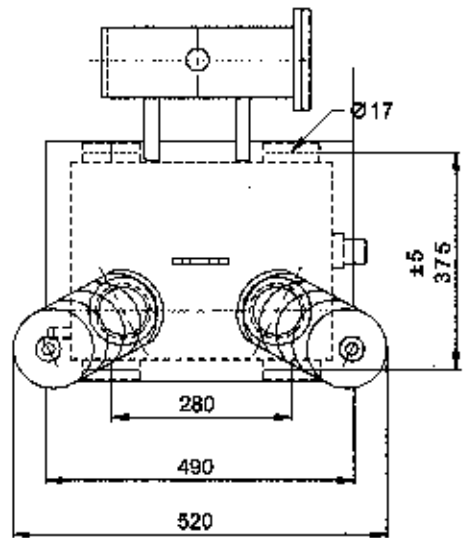


**VTH-20...30, 2VTH-20...30**

**VTY-30, 2VTY-30**  
**M.V. VOLTAGE TRANSFORMERS up to 36kV**  
 Outdoor type oil - immersed



VTY-30



2 VTY-30

| Type    | Rated primary voltage  | Burden/Class          | Rated secondary voltage    |
|---------|------------------------|-----------------------|----------------------------|
| VTY-30  | 30000/√3..<br>36000/√3 | 0.5-30VA              | 100/√3 or 110/√3 or 120/√3 |
|         |                        | 0.5-60VA<br>0.5-100VA |                            |
| 2VTY-30 | 30000...<br>36000      | 1-30VA                | 100 or 110 or 120          |
|         |                        | 1-60VA                |                            |
|         |                        | 1-100VA<br>1-200VA    |                            |

Creepage distance: 900mm

Other designs and combinations for 12 kV, 15 kV, 24 kV are also available upon request.

Rated frequency : 50 or 60 Hz  
 Insulation level : 36/70/170kV  
 Voltage factor : 1.9X U<sub>n</sub> (30sec), 1.9X U<sub>n</sub> (8h) and 1.2X U<sub>n</sub> Continuous  
 Reference standards : IEC 60044-2 (IEC 186), TS718, also BS, ANSI, AS standards upon request.

## 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 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

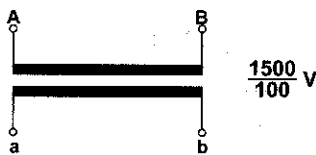
High voltage is converted to low voltage by voltage transformer through secondary terminals. Unlike current transformers, the secondary terminals must never be short-circuited. One secondary terminal (one only) is to be grounded for each secondary winding.

## TERMINALS

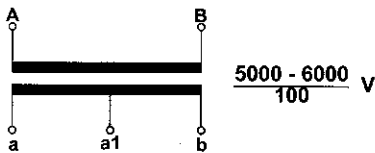
Terminal designations of voltage transformers.

| Two-pole non-reconnectable | Several separate windings   | With tappings     | Single-pole non-reconnectable | Reconnectable secondary (series or parallel) | Several separate            | With tappings      | With earth-fault detection winding |
|----------------------------|-----------------------------|-------------------|-------------------------------|--|-----------------------------|--------------------|------------------------------------|
| Primary terminals          |                             |                   |                               |  |                             |                    |                                    |
| A and B                    | A and B                     | A and B           | A and N                       | A and N                                      | A and N                     | A and N            | A and N                            |
| Secondary terminals        |                             |                   |                               |  |                             |                    |                                    |
| a and b                    | 1a, 2a, ... and 1b, 2b, ... | 1a, 2a, ... and b | a and n                       | a1, a2 and n1, n2                            | 1a, 2a, ... and 1n, 2n, ... | 1a, a2, ... and 1n | a, da and n, dn                    |

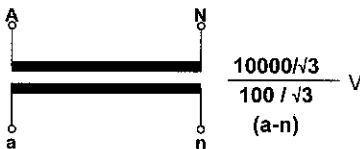
### General terminal & core designs



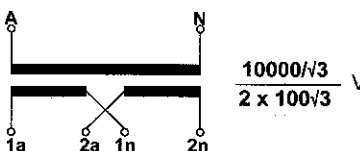
\* Phase-to-phase transformer with fully insulated terminals and a single secondary.



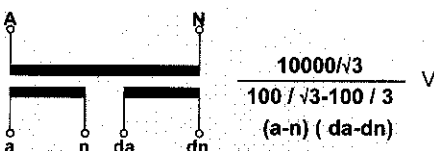
\* Phase-to-phase transformer with multi-tap primary.



\* Single-phase transformer



\* Single-phase transformer with two secondaries



\* Single-phase transformer with one residual voltage winding.

# INQUIRY / ORDER FORM FOR VOLTAGE TRANSFORMER

From : .....

Date : .....

Name : .....

Dept : .....

Customer Ref. No. : .....

Quantity

## TYPE

Standard (IEC, ANSI, BS etc.)

Frequency  Hz

|   |   |   |   |
|---|---|---|---|
| 1. Rated insulation level               | <input style="width: 100%;" type="text"/> | <input style="width: 100%;" type="text"/> | <input style="width: 100%;" type="text"/> |
| Power frequency withstand voltage / BIL |   | kV  |   |
| 2. Voltage rating                       | <input style="width: 100%;" type="text"/> |   |   |
| Primary voltage                         | <input style="width: 100%;" type="text"/> |   |   |
| Secondary voltage (1)                   | <input style="width: 100%;" type="text"/> |   |   |
| Secondary voltage (2)                   | <input style="width: 100%;" type="text"/> | 1 sec                                     | 2 sec                                     |
| 3. Number of secondaries                | <input style="width: 100%;" type="text"/> |   | <input style="width: 100%;" type="text"/> |
| 4. Over voltage factor                  | <input style="width: 100%;" type="text"/> | (continuous)                              |   |
| 5. Rated system voltage                 | <input style="width: 100%;" type="text"/> | kV  |   |
| 6. Highest system voltage               | <input style="width: 100%;" type="text"/> | kV  |   |
| 7. Connection of primary winding        |   |   |   |
| Line-to-line (Phase-to-phase)           | <input style="width: 100%;" type="text"/> |   |   |
| Line-to-earth (Phase-to-earth)          | <input style="width: 100%;" type="text"/> |   |   |
| 8. Service conditions                   |   |   |   |
| Indoor                                  | <input style="width: 100%;" type="text"/> |   |   |
| Outdoor                                 | <input style="width: 100%;" type="text"/> |   |   |

Rating plate(s) for device

Routine test (All in English)

|                                 |   |  |  |
|---------------------------------|---|--|--|
| <b>1<sup>st</sup> SECONDARY</b> | Measurement <input style="width: 100%;" type="text"/> | Protection <input style="width: 100%;" type="text"/> |  |
| Rated secondary voltage         | <input style="width: 100%;" type="text"/> V           | <input style="width: 100%;" type="text"/> V          |  |
| Rated output                    | <input style="width: 100%;" type="text"/> VA          | <input style="width: 100%;" type="text"/> VA         |  |
| Accuracy class                  | <input style="width: 100%;" type="text"/>             | <input style="width: 100%;" type="text"/>            |  |

|                                 |   |  |  |
|---------------------------------|---|--|--|
| <b>2<sup>nd</sup> SECONDARY</b> | Measurement <input style="width: 100%;" type="text"/> | Protection <input style="width: 100%;" type="text"/> |  |
| Rated secondary voltage         | <input style="width: 100%;" type="text"/> V           | <input style="width: 100%;" type="text"/> V          |  |
| Rated output                    | <input style="width: 100%;" type="text"/> VA          | <input style="width: 100%;" type="text"/> VA         |  |
| Accuracy class                  | <input style="width: 100%;" type="text"/>             | <input style="width: 100%;" type="text"/>            |  |

SPECIAL REQUIREMENTS / NOTES .....

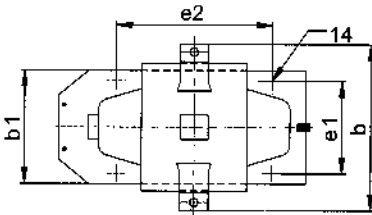
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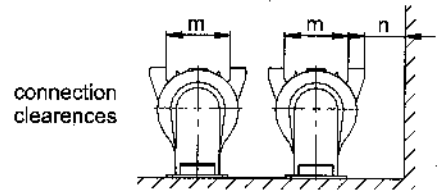
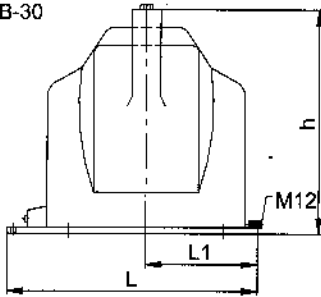
# VT-10...20, 2VT-10...20, VTB-30, 2VTB-30 M.V. VOLTAGE TRANSFORMERS $U_n=3.6..... 36kV$

Indoor type cast resin insulated

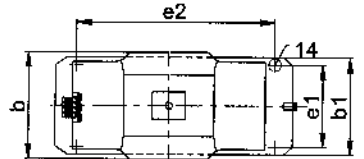
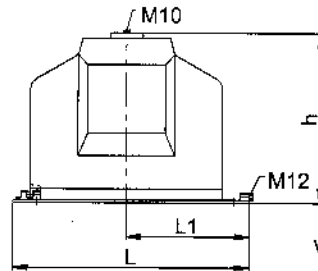
| Type   | VT-10                                 | VT-20       | VTB-30<br>VTB30-K | 2VT-10                        | 2VT-20<br>2VT20-B | 2VTB-30<br>2VTB-30-2 |
|--|---------------------------------------|-------------|-------------------|-------------------------------|-------------------|----------------------|
| Connection   | Phase - to - earth connection         |             |                   | Phase - to - phase connection |                   |                      |
| Operating voltage kV                                   | 7.2 12                                | 17.5 24     | 36                | 7.2 12                        | 17.5 24           | 36                   |
| Rated power frequency withstand voltage (1minutes) kV  | 22 28                                 | 38 50       | 70                | 22 28                         | 38 50             | 70                   |
| Impulse test voltage (1.2/50µs) kV                     | 60 75                                 | 95 125      | 170               | 60 75                         | 95 125            | 170                  |
| Primary voltage kV                                     | 6.6/√3 12/√3                          | 15/√3 24/√3 | 36/√3             | 6.6 12                        | 15 24             | 36                   |
| Rated frequency Hz                                     | 50 or 60 other frequencies on request |             |                   |                               |                   |                      |
| Secondary voltage V                                    | 100/√3                                | 110/√3      | 120/√3            | 100                           | 110               | 120                  |
| Residuary voltage V                                    | 100/3                                 | 110/3       | 120/3             |                               |                   |                      |
| Secondary thermal burden current (measuring winding) A | 4 4                                   | 6 6         | 8                 | 4                             | 5 5               | 6                    |
| Rated voltage factor                                   | 1.9 x $U_n$ (8 Hours)                 |             |                   | 1.2 x $U_n$ Continuous        |                   |                      |
| Rated long duration current 8h (earth fault winding) A | 6                                     | 6           | 8                 |                               |                   |                      |
| Short time load (mechanical) N                         | 3750                                  | 3750        | 3750              | 3750                          | 3750              | 3750                 |
| Weight (approx) kg                                     | 36                                    | 42          | 50                | 38                            | 44                | 55                   |



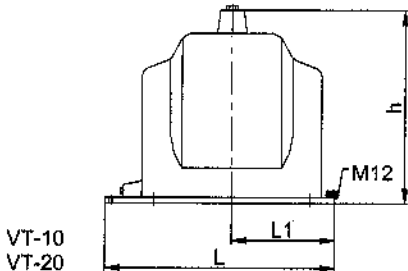
2VT-10...20  
2VTB-30



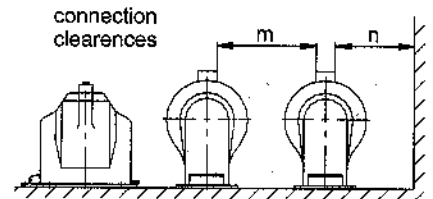
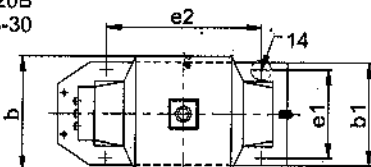
| Type     | b   | b1  | e1  | e2  | d  | h ±5 | L1  | L   | m   | n   |
|----------|-----|-----|-----|-----|----|------|-----|-----|-----|-----|
| 2VT-10   | 180 | 170 | 140 | 260 | 14 | 255  | 190 | 400 | 115 | 115 |
| 2VT-20   | 250 | 170 | 140 | 260 | 14 | 300  | 190 | 410 | 190 | 200 |
| 2VT 20-B | 250 | 200 | 170 | 270 | 14 | 300  | 205 | 440 | 190 | 200 |
| 2VTB-30  | 365 | 200 | 170 | 270 | 14 | 395  | 200 | 450 | 295 | 315 |
| 2VTB30-2 | 363 | 200 | 170 | 270 | 14 | 385  | 200 | 440 | 295 | 315 |



VTB30-K



VT-10  
VT-20  
VT-20B  
VTB-30



| Type    | b   | b1  | e1  | e2  | d  | h ±5 | L1  | L   | m   | n   |
|---------|-----|-----|-----|-----|----|------|-----|-----|-----|-----|
| VT-10   | 180 | 170 | 140 | 260 | 14 | 255  | 190 | 400 | 90  | 120 |
| VT-20   | 250 | 170 | 140 | 260 | 14 | 300  | 190 | 410 | 200 | 220 |
| VT-20B  | 250 | 200 | 170 | 270 | 14 | 300  | 205 | 440 | 200 | 220 |
| VTB-30  | 250 | 200 | 170 | 270 | 14 | 300  | 205 | 440 | 295 | 315 |
| VTB30-K | 205 | 178 | 150 | 360 | 14 | 300  | 195 | 420 | 295 | 315 |

**VT-10...20, 2VT10...20, VTB30, 2VTB30**  
**M.V. VOLTAGE TRANSFORMERS  $U_n=3.6..... 36kV$**

Indoor type cast resin insulated

Single pole VT10, VT20, VTB30, VTB30-K  
Voltage Transformers

| Type              | $U_n$ | Ratio  | Secondary Voltage V | Accuracy Class | Rated Output VA |
|-------------------|-------|--|---------------------|----------------|-----------------|
| VT-10             | 12kV  | 3000/√3<br>3300/√3<br>6000/√3<br>6300/√3                 | 100/√3              | 0.2            | 10...20         |
|                   |       |  |                     | 0.5            | 15...60         |
|                   |       |  |                     | 1              | 30...120        |
| VT-20<br>VT-20B   | 24kV  | 10000/√3<br>11000/√3<br>15000/√3<br>20000/√3<br>24000/√3 | 100/√3              | 0.2            | 10...20         |
|                   |       |  |                     | 0.5            | 15...60         |
|                   |       |  |                     | 1              | 30...120        |
|                   |       |  |                     | 1              | 30...120        |
| VTB-30<br>VTB30-K | 36kV  | 30000/√3<br>31500/√3<br>33000/√3<br>34500/√3<br>36000/√3 | 100/√3              | 0.2            | 10...20         |
|                   |       |  |                     | 0.5            | 15...60         |
|                   |       |  |                     | 1              | 30...120        |
|                   |       |  |                     | 1              | 30...120        |

For secondary of 110/√3 V or 120/√3 V, the same table is used for rated output and accuracy class

| $U_m$           | Type                                 | Secondary thermal current         |                                       |
|-----------------|--------------------------------------|-----------------------------------|---------------------------------------|
|                 |                                      | Limit current measurement winding | Long duration current (da-dn winding) |
| 12 kV           | 2VT-10<br>VT-10                      | 4A<br>4A                          | 6A<br>...                             |
| 17.5 kV<br>24kV | VT-20<br>VT-20B<br>2VT-20<br>2VT20-B | 6A<br>5A                          | 6A<br>...                             |
| 36kV            | VTB-30<br>VTB30-K<br>2VTB30-2        | 8A<br>6A                          | 8A<br>...                             |

Double pole 2VT-10...20, 2VTB-20...30  
Voltage Transformers

| Type                | $U_n$ | Ratio                                     | Secondary Voltage V | Accuracy Class | Rated Output VA |
|---------------------|-------|---|---------------------|----------------|-----------------|
| 2VT10               | 12kV  | 3000<br>3300<br>6000<br>6300              | 100                 | 0.2            | 10...20         |
|                     |       |   |                     | 0.5            | 15...60         |
|                     |       |   |                     | 1              | 30...120        |
|                     |       |   |                     | 1              | 30...120        |
| 2VT20<br>2VT20-B    | 24kV  | 10000<br>11000<br>15000<br>20000<br>24000 | 100                 | 0.2            | 10...20         |
|                     |       |   |                     | 0.5            | 15...60         |
|                     |       |   |                     | 1              | 30...120        |
|                     |       |   |                     | 1              | 30...120        |
| 2VTB-30<br>2VTB30-2 | 36kV  | 30000<br>31500<br>33000<br>34500<br>36000 | 100                 | 0.2            | 10...20         |
|                     |       |   |                     | 0.5            | 15...60         |
|                     |       |   |                     | 1              | 30...120        |
|                     |       |   |                     | 1              | 30...120        |

For secondary of 110 V or 120 V, the same table is used for rated output and accuracy class

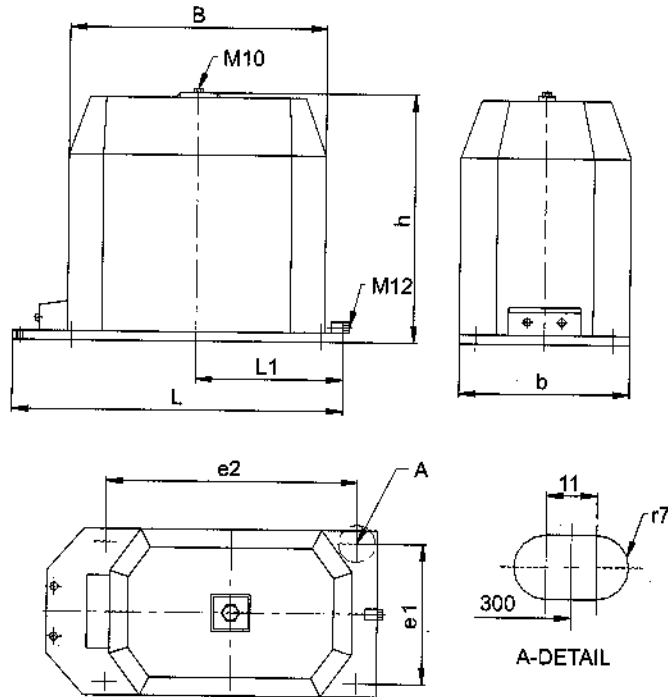
**2VT-10, 2VT-20, 2VT20-B, 2VTB-30, 2VTB30-2**  
**M.V. VOLTAGE TRANSFORMERS  $U_n=3.6..... 36kV$**

Indoor type cast resin insulated

| Type                | Ratio                                | I.Winding      |          | Secondary V | II.Winding |             |          |
|---------------------|--------------------------------------|----------------|----------|-------------|------------|-------------|----------|
|                     |                                      | Accuracy Class | Rated VA |             | Rated VA   | Secondary V | Accuracy |
| 2VT-10              | 3000 or 3300/100                     | 0.2            | 10...    | 100         | 800        | 220         | 3        |
|                     |                                      | 0.5            | 15...30  |             |            |             |          |
|                     |                                      | 1              | 30...60  |             |            |             |          |
|                     | 6000 or 6300/100                     | 0.2            | 10...15  |             |            |             |          |
|                     |                                      | 0.5            | 15...45  |             |            |             |          |
|                     |                                      | 0.2            | 30...90  |             |            |             |          |
| 2VT-20, 2VT20-B     | 10000 or 11000/100                   | 0.5            | 10...15  | 110         | 800        | 220         | 3        |
|                     |                                      | 1              | 15...60  |             |            |             |          |
|                     |                                      | 0.2            | 30...90  |             |            |             |          |
|                     | 15000/100                            | 0.5            | 10...15  |             |            |             |          |
|                     |                                      | 1              | 15...60  |             |            |             |          |
|                     |                                      | 1              | 30...90  |             |            |             |          |
|                     | 20000/100                            | 0.5            | 10...15  |             |            |             |          |
|                     |                                      | 0.2            | 15...60  |             |            |             |          |
|                     |                                      | 0.2            | 30...90  |             |            |             |          |
| 2VTB-30<br>2VTB30-2 | 30000 or 33000 or 34500 or 36000/100 | 0.5            | 15...20  | 120         | 800        | 220         | 3        |
|                     |                                      | 0.2            | 30...60  |             |            |             |          |
|                     |                                      | 0.5            | 30...90  |             |            |             |          |

**VTB10-S, VTB-20**  
**M.V. VOLTAGE TRANSFORMERS  $U_n: 3.6...24kV$**   
 Indoor type cast resin insulated

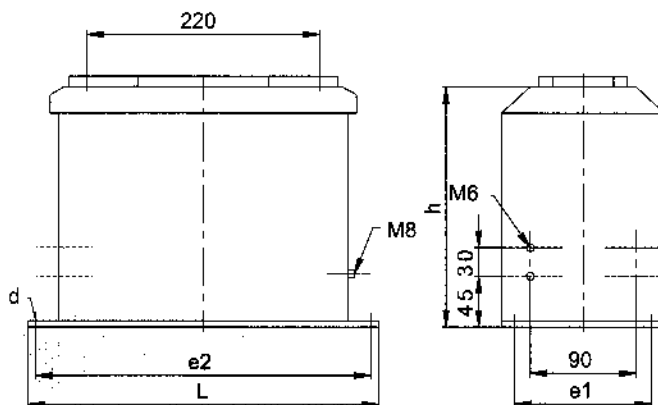
| Type                | VTB 10-S                      | VTB 20                 |
|---------------------|-------------------------------|------------------------|
| Standard            | IEC 60044-2 (IEC 186)         |                        |
| Connection          | Phase - to - earth connection |                        |
| Maximum voltage kV  | 12kV                          | 24kV                   |
| Insulation level kV | 12/28/75kV                    | 24/50/125kV            |
| Primary voltage V   | 11000/√3V                     | 22000/√3V              |
| Secondary voltage V | 100/√3 or 110/√3V             | 100/√3 or 110/√3V      |
| Residuary voltage V | 100/3 V or 110/3 V            | 100/3 V or 110/3 V     |
| Over voltage factor | 1.9 (30s or 8 Hours)          | 1.9 (30s veya 8 Hours) |
| Frequency           | 50 or 60 Hz                   | 50 or 60 Hz            |
| Insulation class    | E (max. temperature rise)     |                        |
| Weight (approx)     | 30                            | 42                     |



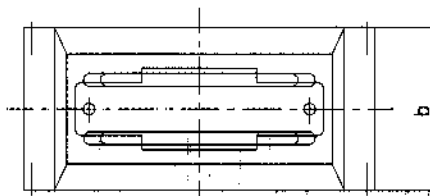
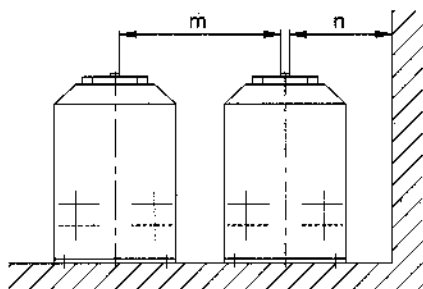
| Type     | b   | B   | e1  | e2  | h ±5 | L1  | L   | m   | n   |
|----------|-----|-----|-----|-----|------|-----|-----|-----|-----|
| VTB 10-S | 148 | 290 | 120 | 300 | 235  | 170 | 385 | 85  | 90  |
| VTB-20   | 178 | 295 | 150 | 300 | 275  | 170 | 385 | 190 | 225 |

# 1/2VTB10, 1/2VTB10-C, 1/2VTB10-K M.V. VOLTAGE TRANSFORMERS $U_n: 3.6...12kV$

Indoor type cast resin insulated



- \* Single & double phase full insulation or grounding type.
- \* For metering and protective application.



| Type       | b   | e1  | e2  | d  | h ±5 | L   | m  | n  |
|------------|-----|-----|-----|----|------|-----|----|----|
| 1/2VTB-10  | 150 | 120 | 310 | 12 | 232  | 340 | 85 | 90 |
| 1/2VTB10-K | 162 | 130 | 310 | 12 | 232  | 340 | 85 | 90 |
| 1/2VTB10-C | 162 | 130 | 325 | 12 | 250  | 355 | 85 | 90 |

| Type                | 1/2VTB 10-K, 1/2VTB 10-C, 1/2VTB 10 |                              |
|---------------------|-------------------------------------|------------------------------|
| Standard            | IEC60044-2(IEC-186)/BS3941          |                              |
| Connection          | Line - to - line connection         | Line - to - earth connection |
| Maximum voltage     | 12kV                                | 12kV                         |
| Insulation level    | 12/28/75kV                          | 12/28/75 kV                  |
| Primary voltage     | 11000                               | 11000/√3 V                   |
| Secondary voltage   | 100 or 110 V                        | 100/√3 or 110/√3 V           |
| Residuary voltage   | ...                                 | 100/3 or 110/3 V             |
| Over voltage factor | 1,2 $U_n$ (Continuous)              | 1,9 $U_n$ (30s or 8 Hours)   |
| Frequency           | 50 or 60Hz                          | 50 or 60Hz                   |
| Insulation class    | E (max. temperature rise)           |                              |

| Accuracy class, rated output |           |                          |           |                          |           |                          |           |
|------------------------------|-----------|--------------------------|-----------|--------------------------|-----------|--------------------------|-----------|
| Accuracy class               |           | Rated Output             |           |                          |           |                          |           |
| Secondary                    | Residuary | 1/2VTB10-K<br>1/2VTB10-C | 1/2VTB-10 | 1/2VTB10-K<br>1/2VTB10-C | 1/2VTB-10 | 1/2VTB10-K<br>1/2VTB10-C | 1/2VTB-10 |
| 0.5                          | ...       | 150VA                    | 100VA     | 100VA                    | 75VA      | ...                      | ...       |
| 1.0                          | ...       | 300VA                    | 200VA     | 200VA                    | 150VA     | ...                      | ...       |
| 3.0                          | ...       | 900VA                    | 600VA     | 600VA                    | 450VA     | ...                      | ...       |
| 1.0                          | 3P        | ...                      | ...       | ...                      | ...       | 200/200VA                | 100-50VA  |
| 1.0                          | 5P        | ...                      | ...       | ...                      | ...       | 200/500VA                | 100-100VA |

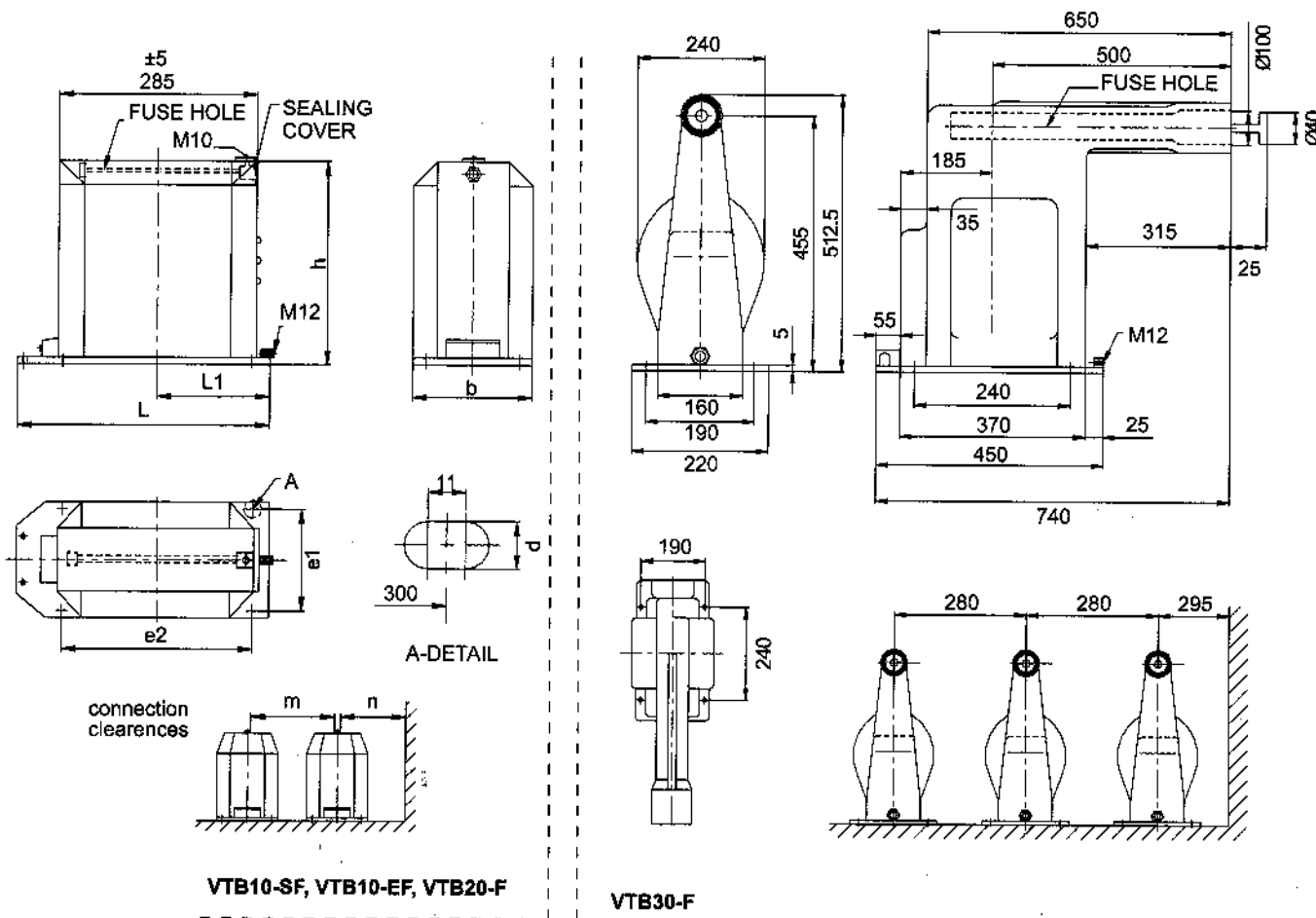


# VTB10-SF, VTB10-EF, VTB20-F, VTB30-F

## M.V. BUILT IN FUSE TRANSFORMER $U_n: 3.6...36kV$

Indoor type cast resin insulated

| Type                | VTB 10-SF                    | VTB 10-EF      | VTB20-F            | VTB30-F                   |
|---------------------|------------------------------|----------------|--------------------|---------------------------|
| Standard            | IEC 60044-2 (IEC 186)        |                |                    |                           |
| Connection          | Line - to - earth Connection |                |                    |                           |
| Maximum voltage     | 12kV                         | 12kV           | 24kV               | 36kV                      |
| Insulation level    | 12/28/75kV                   | 12/28/75kV     | 24/50/125 or 150kV | 36/70/170 or 200 kV       |
| Primary voltage     | 11000/√3V                    | 11000/√3V      | 22000/√3V          | 34500/√3V                 |
| Secondary voltage   | 100/√3 110/√3V               | 100/√3 110/√3V | 100/√3 110/√3V     | 100/√3 or 110/√3V         |
| Residuary voltage   | 100/√3 110/√3V               | 100/√3 110/√3V | 100/√3 110/√3V     | 100/√3 or 110/√3V         |
| Over voltage factor | 1.9 (30s or 8 Hours)         |                |                    | 1.9 (30s or 8 Hours)      |
| Frequency           | 50 or 60 Hz                  |                |                    | 50 or 60Hz                |
| Insulation class    | E (max. temperature rise)    |                |                    | E (max. temperature rise) |
| Rated output        | 60VA                         | 100VA          | 100VA, 200VA       | 60 VA, 100VA              |
| Weight(approx)      | 37                           | 46             | 55                 | 75kg                      |

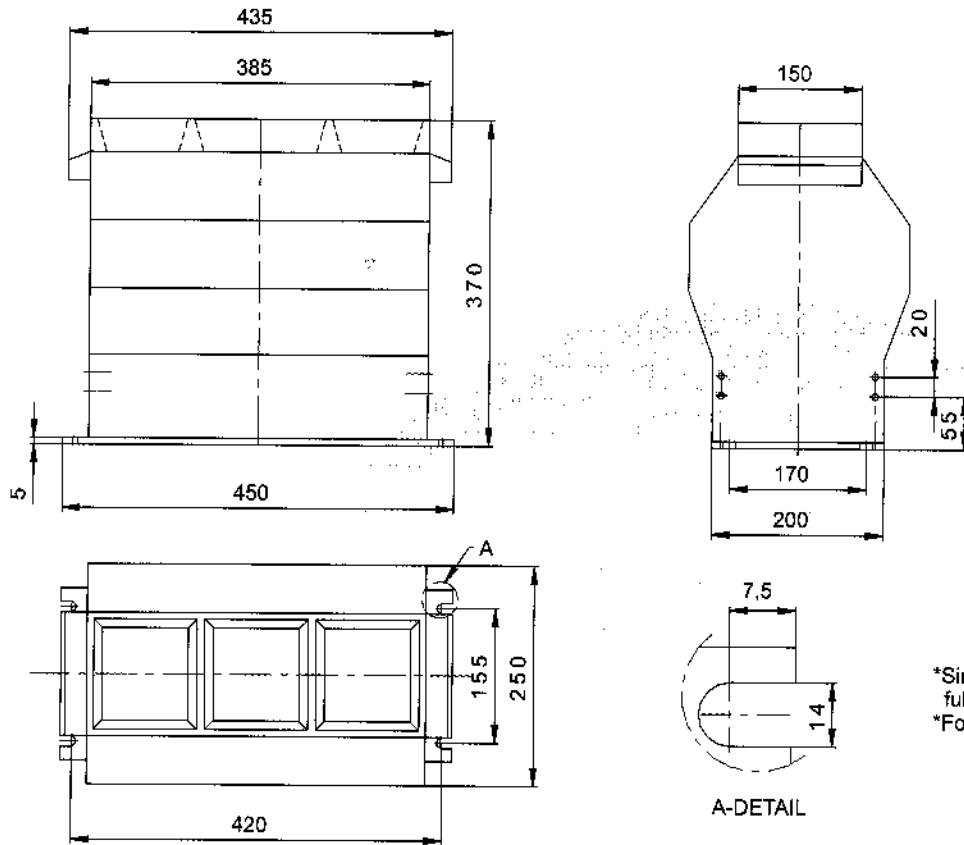


| Type     | b   | e1  | e2  | d  | h $\pm 5$ | L1  | L   | m   | n   |
|----------|-----|-----|-----|----|-----------|-----|-----|-----|-----|
| VTB10-SF | 148 | 125 | 300 | 14 | 296       | 170 | 385 | 85  | 90  |
| VTB10-EF | 162 | 132 | 300 | 14 | 285       | 170 | 385 | 85  | 90  |
| VTB20-F  | 178 | 150 | 300 | 14 | 322       | 170 | 385 | 190 | 225 |

# VTR-30

## M.V. VOLTAGE TRANSFORMERS $U_n=36kV$

Indoor type cast resin insulated



\*Single & double phase,  
full insulation or grounding type.  
\*For metering and protective application

A-DETAIL

| Type                | VTR-30                       |                            |
|---------------------|------------------------------|----------------------------|
| Standard            | IEC80044-2 (IEC-186)/BS 3941 |                            |
| Connection          | Line - to - line             | Line - to - earth          |
| Maximum voltage     | 36 kV                        | 360 kV                     |
| Insulation level    | 36/70/170 or 200k V          | 36/70/170 or 200 kV        |
| Primary voltage     | 33000                        | 33000/ $\sqrt{3}$ V        |
| Secondary voltage   | 110                          | 111/3 or 110 $\sqrt{3}$ V  |
| Residuary voltage   | ...                          | 100/3 or 110/ $\sqrt{3}$ V |
| Over voltage factor | 1.2 (continuous)             | 1.9 (30s)                  |
| Frequency           | 50 or 60 Hz                  |                            |
| Insulation class    | E (max. temperature rise)    |                            |
| Weight              | 65 kg                        |                            |

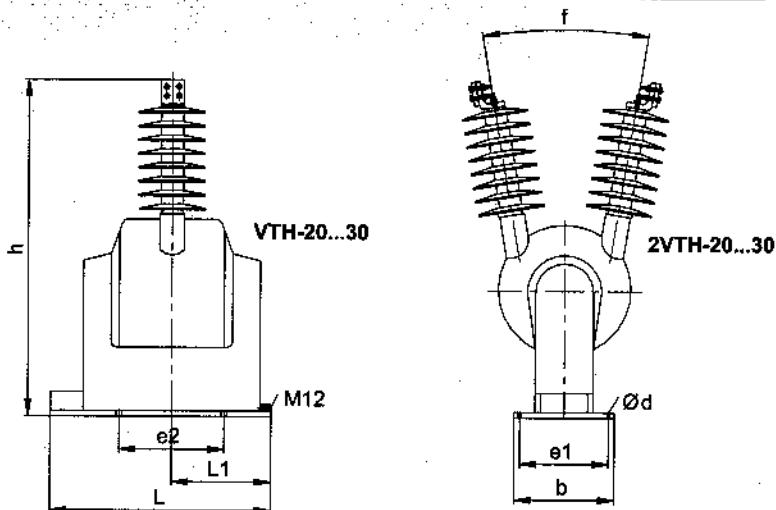
| Accuracy class, rated output |     |           |        |                      |                |                                    |
|------------------------------|-----|-----------|--------|----------------------|----------------|------------------------------------|
| Accuracy class               |     |           |        | Full insulation type | Grounding type | Grounding type<br>(With residuary) |
| Secondary                    |     | Residuary |        |                      |                |                                    |
| IEC                          | IEC | IEC       | IEC/BS |                      |                |                                    |
| ...                          | 0.2 | ...       | ...    | 50 VA                | 25 VA          | ...                                |
| ...                          | 0.5 | ...       | ...    | 150 VA               | 100 VA         | ...                                |
| 1P                           | 1.0 | ...       | ...    | 300 VA               | 200 VA         | ...                                |
| 3P                           | 3.0 | ...       | ...    | 1000 VA              | 600 VA         | ...                                |
| 1P                           | 1.0 | 3G        | 3P     | ...                  | ...            | 200/200 VA                         |
| 1P                           | 1.0 | 5G        | 5P     | ...                  | ...            | 200/500 VA                         |

# VTH-20...30, 2VTH-20...30 M.V. VOLTAGE TRANSFORMERS $U_n=3.6\text{.....}36\text{kV}$

Outdoor type cast resin insulated

| Type  | VTH-20                        |  |   |                | VTH-30         |                | 2VTH-20                       |  |                       |   | 2VTH-30 |      |      |     |
|---|-------------------------------|--|---|----------------|----------------|----------------|-------------------------------|--|-----------------------|---|---------|------|------|-----|
| Connection  | Phase - to - earth connection |  |   |                |                |                | Phase - to - phase connection |  |                       |   |         |      |      |     |
| Operating voltage (max.)                                  | kV                            |  | 7.2   | 12             | 17.5           | 24             | 36                            |  | 7.2                   |   | 12      | 17.5 | 24   | 36  |
| Rated power frequency withstand voltage (1minutes)        | kV                            |  | 22  | 28             | 38             | 50             | 70                            |  | 22                    |   | 28      | 38   | 50   | 70  |
| Impulse test voltage (1,2/50 $\mu$ s)                     | kV                            |  | 60  | 75             | 95             | 125            | 170                           |  | 60                    |   | 75      | 95   | 125  | 170 |
| Primary voltage   | kV                            |  | 6.6/ $\sqrt{3}$                                       | 11/ $\sqrt{3}$ | 15/ $\sqrt{3}$ | 24/ $\sqrt{3}$ | 36/ $\sqrt{3}$                |  | 6.3                   |   | 11      | 15   | 20   | 36  |
| Secondary voltage   | V                             |  | 100/ $\sqrt{3}$ or 110/ $\sqrt{3}$ or 120/ $\sqrt{3}$ |                |                |                |                               |  | 100 or 120            |   |         |      |      |     |
| Residuary voltage   | V                             |  | 100/3 or 120/3  |                |                |                |                               |  |                       |   |         |      |      |     |
| Rated frequency   | Hz                            |  | 50 or 60 other frequencies on request                 |                |                |                |                               |  |                       |   |         |      |      |     |
| Secondary thermal burden current 8h (earth fault winding) | A                             |  | 4   | 4              | 6              | 6              | 8                             |  | 4                     | 4 | 5       | 5    | 8    |     |
| Rated voltage factor                                      |                               |  | 1.9x $U_n$ (8 Hours)                                  |                |                |                |                               |  | 1.2x $U_n$ Continuous |   |         |      |      |     |
| Rated long duration current 8h (earth winding)            | A                             |  | 6   |                | 6              |                | 8                             |  |                       |   |         |      |      |     |
| Short time load (Mechanical)                              | N                             |  | 3750  |                | 3750           |                | 3750                          |  | 3750                  |   | 3750    |      | 3750 |     |
| Weight (approx)   | kg                            |  | 45  |                | 55             |                | 65                            |  | 50                    |   | 60      |      | 70   |     |

| $U_n$  | Type    | Secondary thermal current         |                                       |
|--------|---------|-----------------------------------|---------------------------------------|
|        |         | Limit current measurement winding | Long duration current (da-dh winding) |
| 12kV   | VTH-20  | 4A                                | 6A                                    |
| 17.5kV | 2VTH-20 | 4A                                | ...                                   |
| 24kV   |         |                                   |                                       |
| 36kV   | VTH-30  | 4A                                | 8A                                    |
|        | 2VTH-30 | 4A                                | ...                                   |



| Type    | b   | e1  | e2  | L   | L1  | h $\pm 5$ | $\text{Ød}$ | f   | Creepage Distance (mm) |
|---------|-----|-----|-----|-----|-----|-----------|-------------|-----|------------------------|
| VTH-20  | 220 | 190 | 270 | 440 | 215 | 455       | 14          | -   | 780                    |
| VTH-30  | 200 | 175 | 270 | 450 | 200 | 610       | 14          | -   | 780                    |
| 2VTH-20 | 220 | 190 | 270 | 440 | 215 | 455       | 14          | 390 | 780                    |
| 2VTH-30 | 275 | 170 | 270 | 450 | 200 | 610       | 14          | 461 | 1320                   |

Single pole VTH-20...30 Voltage Transformers

| Type   | $U_n$                           | Ratio             | Secondary Voltage V | Accuracy Class | Rated Output VA |
|--------|---------------------------------|-------------------|---------------------|----------------|-----------------|
| VTH-20 | 7.2kV<br>17.5kV<br>12kV<br>24kV | 3000/ $\sqrt{3}$  | 100/ $\sqrt{3}$     | 0.2            | 10...20         |
|        |                                 | 3300/ $\sqrt{3}$  |                     |                |                 |
|        |                                 | 6000/ $\sqrt{3}$  |                     | 0.5            | 15...60         |
|        |                                 | 6300/ $\sqrt{3}$  |                     |                |                 |
|        |                                 | 10000/ $\sqrt{3}$ |                     | 1              | 30...120        |
|        |                                 | 11000/ $\sqrt{3}$ |                     |                |                 |
| VTH-30 | 36kV                            | 15000/ $\sqrt{3}$ | 100/ $\sqrt{3}$     | 0.2            | 10...20         |
|        |                                 | 20000/ $\sqrt{3}$ |                     |                |                 |
|        |                                 | 24000/ $\sqrt{3}$ |                     | 0.5            | 15...60         |
|        |                                 | 30000/ $\sqrt{3}$ |                     |                |                 |
| VTH-30 | 36kV                            | 31500/ $\sqrt{3}$ | 100/ $\sqrt{3}$     | 0.2            | 10...20         |
|        |                                 | 33000/ $\sqrt{3}$ |                     |                |                 |
|        |                                 | 34500/ $\sqrt{3}$ |                     | 0.5            | 15...60         |
|        |                                 | 36000/ $\sqrt{3}$ |                     |                |                 |
| VTH-30 | 36kV                            | 30000/ $\sqrt{3}$ | 100/ $\sqrt{3}$     | 0.2            | 10...20         |
|        |                                 | 31500/ $\sqrt{3}$ |                     |                |                 |
|        |                                 | 33000/ $\sqrt{3}$ |                     | 0.5            | 15...60         |
|        |                                 | 34500/ $\sqrt{3}$ |                     |                |                 |
| VTH-30 | 36kV                            | 36000/ $\sqrt{3}$ | 100/ $\sqrt{3}$     | 0.2            | 10...20         |
|        |                                 | 31500/ $\sqrt{3}$ |                     |                |                 |
|        |                                 | 33000/ $\sqrt{3}$ |                     | 0.5            | 15...60         |
|        |                                 | 34500/ $\sqrt{3}$ |                     |                |                 |
| VTH-30 | 36kV                            | 36000/ $\sqrt{3}$ | 100/ $\sqrt{3}$     | 0.2            | 10...20         |
|        |                                 | 31500/ $\sqrt{3}$ |                     |                |                 |
|        |                                 | 33000/ $\sqrt{3}$ |                     | 0.5            | 15...60         |
|        |                                 | 34500/ $\sqrt{3}$ |                     |                |                 |

Double pole 2VTH-20...30 Voltage Transformers

| Type    | $U_n$                           | Ratio | Secondary Voltage V | Accuracy Class | Rated Output VA |
|---------|---------------------------------|-------|---------------------|----------------|-----------------|
| 2VTH-20 | 7.2kV<br>17.5kV<br>12kV<br>24kV | 3000  | 100                 | 0.2            | 10...20         |
|         |                                 | 3300  |                     |                |                 |
|         |                                 | 6000  |                     | 0.5            | 15...60         |
|         |                                 | 6300  |                     |                |                 |
|         |                                 | 10000 |                     | 1              | 30...120        |
|         |                                 | 11000 |                     |                |                 |
| 2VTH-30 | 36kV                            | 15000 | 100                 | 0.2            | 10...20         |
|         |                                 | 20000 |                     |                |                 |
|         |                                 | 24000 |                     | 0.5            | 15...60         |
|         |                                 | 30000 |                     |                |                 |
| 2VTH-30 | 36kV                            | 30000 | 100                 | 0.2            | 10...20         |
|         |                                 | 31500 |                     |                |                 |
|         |                                 | 33000 |                     | 0.5            | 15...60         |
|         |                                 | 34500 |                     |                |                 |
| 2VTH-30 | 36kV                            | 36000 | 100                 | 0.2            | 10...20         |
|         |                                 | 31500 |                     |                |                 |
|         |                                 | 33000 |                     | 0.5            | 15...60         |
|         |                                 | 34500 |                     |                |                 |