

General Information

Current Transformer

General:

Current transformers are used for measurement setups of high currents. A high primary current gets transformed to a standardized secondary low current within a given error. The display scales are calibrated according to the primary current of the transformer.

Manufactured according to:

VDE 0414/1-3
IEC 185
IEC/EN 60044/1
VDE, BS, UTE

Nominal current:

Specific nominal primary current (input) and nominal secondary current (output) is printed on the transformer label. Standardized primary current values according DIN 42 600 are 1 - 1,2 - 2 - 2,5 - 3 - 4 - 5 - 6 - 7,5 - 8 – and their decimal multiple.

Standardized secondary current values are either 5 A or 1 A.

Frequency: 50 - 60 Hz, insulation class E

Current limiting factor: FS5. Voltage in series: $0,5 \times \text{series} = \text{max. } 800\text{V}$

Thermal short-term current:

I_{th} is the effective primary current, which the secondary winding can withstand for 1 second.

Dynamic short-term current:

Our current transformers meet the standard $I_{dyn} = 2,5 \times I_{th}$

Continuous overload current: $1,2 I_n$

Operating voltage:

Maximum approved operating voltage $U_m = 800 \text{ V}$

Test voltage: 3 kV, 1min

Accuracy (class):

Current transformers are classified according their precision. Accuracy classes are 0,5 - 1 - 3, which is dependent on the burden in use. Detailed class data information is printed on the transformer label.

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Power requirement:

The self-consumption of cable is calculated by following formula:

$$P = \frac{\rho \times \ell \times I^2}{A}$$

P rating in W
ρ resistivity
 (ρ_{Cu} = 0,0175 Ωmm²/m; ρ_{Al} = 0,0278 Ωmm²/m)
ℓ cable length in m
I current in A
A cable cross-section in mm²

Self-consumption of copper cable:

| Cable cross-section in mm ² | Self-consumption in W per m cable length (please note: forward and return line!) | |
|--|---|-----------------------------|
| | current transformer sec. 5A | current transformer sec. 1A |
| 0,75 | 0,5833 | 0,0233 |
| 1 | 0,4375 | 0,0175 |
| 1,5 | 0,2917 | 0,0117 |
| 2,5 | 0,1750 | 0,0070 |
| 4 | 0,1094 | 0,0044 |
| 6 | 0,0729 | 0,0029 |

Protection current transformers:

For a save function of the protection device it is necessary that the measuring error stays low even at the end of the over current input range. The nominal excess current factor is placed after the protection rating labeling.

For example 5P10.

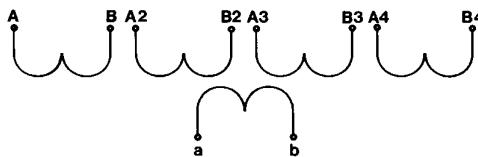
Summation current transformers:

Summation current transformers enable the summation of several synchronous alternating currents with same phase position but different phase shifts.

In connection with main transformers of different ratio all single ratios have to be stated on order.

In connection with main transformers of same ratio it is not necessary to state the ratio on order.

All unused primary circuits of a summation current transformer have to be open. Do not short-circuit!



The connections of all primary coils are marked by the capital letters "A" (P1) and "B" (P2).

The connections of all secondary coils are marked by the same small letters "a" (S1) and "b" (S2).

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Table of Low Voltage Current Transformer Type and Burden (VA)

| Type | TAC5 | | TAC10 | | TAT22 | | | TAC17 | | | TAC22 | | | |
|----------------------|--------------|---|--------------|----|--------------|---|-----|--------------|-----|-----|--------------|---|-----|----|
| <i>cable size:</i> | (wound CT) | | (wound CT) | | Ø 22,5mm | | | Ø 17mm | | | Ø 22mm | | | |
| <i>busbar size:</i> | | | | | 1x20x10mm | | | 1x15x10mm | | | 1x20x10mm | | | |
| <i>catalog page:</i> | 81 | | 82 | | 64 | | | 65 | | | 66 | | | |
| class | 0,5 | 1 | 0,5 | 1 | 0,5 | 1 | 3 | 0,5 | 1 | 3 | 0,5 | 1 | 3 | |
| primary current (A) | burden in VA | | burden in VA | | burden in VA | | | burden in VA | | | burden in VA | | | |
| 5 | 5 | 7 | 10 | 20 | | | | | | | | | | |
| 10 | 5 | 7 | 10 | 20 | | | | | | | | | | |
| 15 | 5 | 7 | 10 | 20 | | | | | | | | | | |
| 20 | 5 | 7 | 10 | 20 | | | | | | | | | | |
| 25 | 5 | 7 | 10 | 20 | | | | | | | | | | |
| 30 | 5 | 7 | 10 | 20 | | | | | | 1,5 | | | | |
| 40 | 5 | 7 | 10 | 20 | | | | | | 3 | | | 1,5 | |
| 50 | 5 | 7 | 10 | 20 | | | | | 1 | 4 | | | 2 | |
| 60 | 5 | 7 | 10 | 20 | | | 1,5 | 1,25 | 5 | | 1 | | 2,5 | |
| 80 | 5 | 7 | 10 | 20 | | | 2,5 | 1 | 2,5 | 6 | | 2 | 4 | |
| 100 | 5 | 7 | 10 | 20 | | | 1,5 | 3 | 1,5 | 4 | 8 | 1 | 3 | 5 |
| 150 | | | 10 | 20 | | | 2 | 5 | 4 | 8 | 15 | 3 | 5 | 8 |
| 200 | | | 10 | 20 | | | | 2 | 7 | 15 | 20 | 5 | 10 | 12 |
| 250 | | | 10 | 20 | | | 1,5 | 3 | | | | 8 | 10 | 15 |
| 300 | | | 10 | 20 | | | 2 | 4 | | | | | | |
| 400 | | | 10 | 20 | 1,5 | 3 | 5 | | | | | | | |
| 500 | | | 10 | 20 | 2 | 4 | 6 | | | | | | | |
| 600 | | | 10 | 20 | 2,5 | 5 | 7 | | | | | | | |


| Type | TAC32 | | | TAC33 | | | TAC40 | | | TAC53 | | | TAT61 | | |
|----------------------|--------------|----|----|--------------|-----|------|--------------|----|----|--------------|----|----|--------------|----|----|
| <i>cable size:</i> | Ø 24mm | | | Ø 24mm | | | Ø 32mm | | | 2x50x10mm | | | 2x60x10mm | | |
| <i>busbar size:</i> | 1x30x10mm | | | 1x30x10mm | | | 1x40x10mm | | | 2x50x10mm | | | 2x60x10mm | | |
| <i>catalog page:</i> | 67 | | | 68 | | | 69 | | | 70 | | | 71 | | |
| class | 0,5 | 1 | 3 | 0,5 | 1 | 5P10 | 0,5 | 1 | 3 | 0,5 | 1 | 3 | 0,5 | 1 | 3 |
| primary current (A) | burden in VA | | | burden in VA | | | burden in VA | | | burden in VA | | | burden in VA | | |
| 60 | | | | 1 | 1,5 | | | | | | | | | | |
| 80 | | | | 2 | 3 | | | | | | | | | | |
| 100 | 1 | 2 | 3 | 3 | 4 | | | | 4 | | | | | | |
| 150 | 2,5 | 3 | 5 | 5 | 7,5 | 1 | 1,5 | 3 | 5 | | | | | | |
| 200 | 3 | 5 | 8 | 7,5 | 10 | 1 | 2 | 4 | 6 | 2 | 4 | 10 | | | |
| 250 | 4 | 7 | 10 | 10 | 12 | 1,5 | 3 | 6 | 9 | 4 | 8 | 12 | | | |
| 300 | 6 | 10 | 12 | 10 | 15 | 2 | 5 | 8 | 12 | 5 | 10 | 15 | | 3 | 6 |
| 400 | 10 | 12 | 12 | 12 | 20 | 2,5 | 10 | 15 | 20 | 6 | 12 | 20 | 2 | 4 | 10 |
| 500 | 12 | 15 | 15 | 15 | 25 | 3 | 12 | 20 | 25 | 10 | 20 | 25 | 4 | 10 | 12 |
| 600 | 12 | 15 | 15 | 20 | 30 | 4 | 15 | 20 | 25 | 15 | 25 | 30 | 6 | 15 | 18 |
| 800 | | | | | | | 18 | 25 | 30 | 20 | 30 | 40 | 8 | 15 | 20 |
| 1000 | | | | | | | 20 | 25 | 30 | 30 | 40 | 50 | 10 | 20 | 30 |
| 1200 | | | | | | | | | | 30 | 40 | 50 | 12 | 25 | 30 |
| 1500 | | | | | | | | | | 30 | 40 | 50 | 20 | 30 | 40 |
| 2000 | | | | | | | | | | 30 | 40 | 50 | 25 | 40 | 50 |

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Table of Low Voltage Current Transformer Type and Burden (VA)

| Type | TAT81 | | | TAT82 | | | TAT84 | | | TAT101 | | | TAT126 | | |
|---------------------|--------------|----|------|--------------|--|--|--------------|----|-----|--------------|----|------|--------------|-----|-----|
| <i>busbar size</i> | 2x80x10mm | | | 2x80x10mm | | | 2x80x10mm | | | 3x100x10mm | | | 2x120x10mm | | |
| <i>catalog page</i> | 72 | | | 72 | | | 73 | | | 74 | | | 75 | | |
| class | 0,5 | 1 | 5P10 | 5P10 | | | 0,5 | 1 | 3 | 0,5 | 1 | 5P10 | 0,5 | 1 | 3 |
| primary current (A) | burden in VA | | | burden in VA | | | burden in VA | | | burden in VA | | | burden in VA | | |
| 200 | | | | | | | 2 | 4 | 8 | | | | | | |
| 250 | | | | | | | 3 | 6 | 10 | | | | | | |
| 300 | | | | | | | 4 | 8 | 15 | | | | | | |
| 400 | 5 | 10 | | 5 | | | 5 | 10 | 20 | 3 | 5 | | 3 | 5 | 10 |
| 500 | 5 | 10 | | 6 | | | 6 | 15 | 30 | 5 | 8 | 2 | 4 | 8 | 15 |
| 600 | 8 | 15 | | 7 | | | 8 | 20 | 40 | 8 | 12 | 4 | 6 | 12 | 20 |
| 800 | 10 | 20 | | 8 | | | 10 | 20 | 40 | 10 | 18 | 6 | 8 | 15 | 20 |
| 1000 | 15 | 30 | | 12 | | | 15 | 25 | 50 | 15 | 25 | 7 | 12 | 20 | 30 |
| 1200 | 20 | 40 | | 13 | | | 20 | 40 | 60 | 20 | 30 | 8 | 15 | 30 | 50 |
| 1500 | 20 | 40 | | 15 | | | 25 | 50 | 80 | 30 | 40 | 8 | 20 | 40 | 60 |
| 2000 | 30 | 50 | | 15 | | | 30 | 60 | 80 | 30 | 40 | 10 | 30 | 60 | 80 |
| 2500 | 40 | 60 | | 15 | | | 40 | 80 | 100 | 35 | 40 | 12 | 40 | 80 | 100 |
| 3000 | | | | | | | | | | 35 | 40 | 15 | 50 | 80 | 120 |
| 4000 | | | | | | | | | | 35 | 40 | 15 | 60 | 100 | 150 |

| Type | TAT127 | | | TAT128 | | | TAT129 | | | TAT165 | | | TAT225 | | |
|---------------------|--------------|-----|------|--------------|-----|------|--------------|-----|------|--------------|-----|------|--------------|-----|------|
| <i>busbar size</i> | 3x120x10mm | | | 4x120x10mm | | | 5x120x10mm | | | 6x160x10mm | | | 6x220x10mm | | |
| <i>catalog page</i> | 76 | | | 77 | | | 78 | | | 79 | | | 80 | | |
| class | 0,5 | 1 | 5P10 | 0,5 | 1 | 5P10 | 0,5 | 1 | 5P10 | 0,5 | 1 | 5P10 | 0,5 | 1 | 5P10 |
| primary current (A) | burden in VA | | | burden in VA | | | burden in VA | | | burden in VA | | | burden in VA | | |
| 800 | 20 | 40 | 8 | | | | | | | | | | | | |
| 1000 | 20 | 40 | 10 | 25 | 50 | 10 | 25 | 50 | 10 | 25 | 50 | 10 | 25 | 50 | 10 |
| 1200 | 25 | 50 | 12 | 30 | 60 | 12 | 30 | 60 | 12 | 30 | 60 | 12 | 30 | 60 | 12 |
| 1500 | 40 | 80 | 15 | 35 | 70 | 15 | 35 | 70 | 15 | 35 | 70 | 15 | 35 | 70 | 15 |
| 2000 | 50 | 100 | 15 | 40 | 80 | 20 | 40 | 80 | 20 | 40 | 80 | 20 | 40 | 80 | 20 |
| 2500 | 60 | 120 | 20 | 50 | 100 | 20 | 50 | 100 | 20 | 50 | 100 | 20 | 50 | 100 | 20 |
| 3000 | 80 | 160 | 25 | 70 | 120 | 25 | 70 | 120 | 25 | 70 | 120 | 25 | 70 | 120 | 25 |
| 4000 | 100 | 200 | 30 | 80 | 150 | 30 | 80 | 150 | 30 | 80 | 150 | 30 | 80 | 150 | 30 |
| 5000 | 120 | 240 | - | 100 | 180 | 20 | 100 | 180 | 15 | 100 | 180 | 15 | 100 | 180 | 15 |
| 6000 | | | | | | | 100 | 180 | 15 | 100 | 180 | 15 | 100 | 180 | 15 |
| 8000 | | | | | | | | | | 100 | 180 | 15 | 100 | 180 | 15 |
| 10000 | | | | | | | | | | | | | 100 | 180 | 15 |

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