**OPERATING TEMPERATURE**
-25°C ~ +50°C

**ACCURACY**
Measuring 0.5; 1.0; 3.0 (special accuracy upon request)
Protection SP: 10P

**SECURITY FACTOR**
FS<5

**MAXIMUM SYSTEM VOLTAGE**
720V AC

**TEST VOLTAGE**
3kV AC (1 min.)

**FREQUENCY**
50/60Hz

**RATED SHORT-TIME THERMAL CURRENT**
1.5 x In
1.5 x In for cable sizes or primary bus-bar for other case

**RATED DYNAMIC CURRENT**
1.5 x In

**CONTINUOUS OVERLOAD**
1.2 x In

**OPERATING TEMPERATURE**
-25°C ~ +50°C

**BURDEN**
Ranging from 1.5-50VA

**RATED SECONDARY CURRENT**
%fA (%/A upon request)

**RATED PRIMARY CURRENT**
Ranging up to 6000A

**INSULATION**
Class B for Coating type CT
Class A for Taping type CT

**CASING**
Non-flammable, polycarbonate self extinguishing ABS/PC

**TERMINAL MARKS**
Primary P1 & P2(K & L)
Secondary S1 & S2(K & L)

**SELECTION OF THE CURRENT TRANSFORMER**
To select the Current Transformer correctly, the following points should be clarified:
- The application (for measuring or protection)
- The features of the wording environment (indoor or outdoor, operating temperature, air humidity etc...)
- Operating voltage and frequency
- The range of the primary current(maximum and minimum of the current to be measured)
- Dimension of the cable or bus bar
- Data of the overload
- Short circuit current
- Specification of the measuring device associated with the Current Transformer (accuracy, rated current, consumption etc...)
- The diameter and length of the cable: the cable which is used to connect the Current Transformer and associated measuring device

**POWER LOSSES OF THE CT**
In the practical application, the power generated by the primary current should be equal or bigger than the power requirement of the associated measuring device plus the consumption of the connecting line.

**ERROR LIMITS. ACCURACY CLASSES OF MEASURING CT**

**ACCUURACY OF A CURRENT TRANSFORMER**
The percentage of error, produced in a transformer, is established by IEC60044-1. In measurement transformers: 25 % and 100 % of nominal power, in protection transformers: 100 % of nominal power.
LOW VOLTAGE CURRENT TRANSFORMER

• ERROR LIMITS, ACCURACY CLASSES OF PROTECTION CT

<table>
<thead>
<tr>
<th>Accuracy Classes</th>
<th>% Error for 1I1</th>
<th>Phase Difference at 1I1</th>
<th>Composite Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>5P</td>
<td>±1</td>
<td>±60</td>
<td>±1.8</td>
</tr>
<tr>
<td>10P</td>
<td>±3</td>
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</tr>
</tbody>
</table>

• SATURATED CONDITION OF CT

The current transformer is saturated if the primary current, passing through the CT, is greater than the nominal rating of the CT. The linearity of CT, between the primary and secondary sides decreases, so error increases. The saturation of the CT is inversely proportional to the load (Fig. 1). The difference between measuring and protection current transformers is their behavior when an overload occurs on the primary side. Measuring CT is saturated when there is a primary current overload. In order to protect the equipment, on the secondary side, protection CT will not saturate until there is a very high current on the primary side. A Class 5P15 protection transformer indicates that it has an accuracy rating of 1% that it does not become saturated until the primary current reaches 15 times the nominal current rating of the CT. In measuring transformers, the SAFETY FACTOR “FS” parameter indicates the excessive amperage on the primary side current in relation to the current sent to the measuring device on the secondary side.

![Composite Error Diagram](image)

- **A**: Rated Current Zone.
- **B**: Overcurrent zone for protection CT.
- **C**: Max. Overcurrent zone for measuring CT.

- **APPLICATION NOTE**

If the primary current is too small, to keep the same accuracy and output, we can add primary winding, but the rated turns ratio should be the same. For example, if the primary current is 50A, we can use 100/5A Current Transformer with the primary current be turned twice which help to keep the same rated turns ratio (1:50 = 2:100).

- **KIND REMINDER:**

Improper selection, installation or operation can cause danger to personal security! Do not open the secondary circuit when the current is available in the primary circuit. Or it will cause high voltage which is dangerous to personal security! Resistance of current transformer is very low, so that secondary winding of current transformer can be operated as a short circuit, when required in test operation. Otherwise, this condition causes high voltage and can be dangerous during usage. When selecting a current transformer, it is important to consider the power absorbed by the cables connected between the CT secondary terminals and the measuring instrument. The resultant cable burden should be added to the equipment burden, and the total should not exceed the available VA of the CT. P1 (A) must face the supply feeder, and P2 (L) must face the load. It is also important to ensure that secondary connections are made in accordance with instrument diagrams. The secondary terminals of the CT must NOT be open-circuited on load as dangerously high voltages may be present under these conditions. It is recommended that one side of the secondary windings is earthed.

LOW VOLTAGE CURRENT TRANSFORMER

- **CONSTRUCTION**

CT consists of primary winding, secondary winding, magnetic core and insulated body. The high-grade silicon steel core is annealed, varnished then insulated with polycarbonate core caps. The secondary winding is toroidally wound by high precision semi-automatic machinery. For the tape wound ring type current transformer, the PES coated windings are then covered with depththane paper, varnished and double-lapped with VPS tapes. For the encapsulated type current transformer, the windings are enclosed in a compact and heat resistant split cap.

![Construction Diagram](image)

- **Iron Core annealed and varnished**
- **Polycarbonate core split cap**
- **The Secondary winding (100% copper)**
- **A**: Permalloys Core
- **B**: Silicon Core

![Diagram Description](image)

- **Improper selection, installation or operation can cause danger to personal security!**
- **Do not open the secondary circuit when the current is available in the primary circuit. Or it will cause high voltage which is dangerous to personal security!**
- **Resistance of current transformer is very low, so that secondary winding of current transformer can be operated as a short circuit, when required in test operation. Otherwise, this condition causes high voltage and can be dangerous during usage.**

When selecting a current transformer, it is important to consider the power absorbed by the cables connected between the CT secondary terminals and the measuring instrument. The resultant cable burden should be added to the equipment burden, and the total should not exceed the available VA of the CT. P1 (A) must face the supply feeder, and P2 (L) must face the load. It is also important to ensure that secondary connections are made in accordance with instrument diagrams. The secondary terminals of the CT must NOT be open-circuited on load as dangerously high voltages may be present under these conditions. It is recommended that one side of the secondary windings is earthed.
**FEATURE**

- Built-in Hinged Sealable Terminal Cover
  - (Metallic sealable screw for option)
- Casing Self-extinguishing Class VO
- Panel Mounting (through plastic fixing kit)

**MSQ Series**

<table>
<thead>
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<th>Ratio (A)</th>
<th>Burden(VA)</th>
<th>Case Qty (Pcs)</th>
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<tbody>
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<tr>
<td>ATO-CT-1000</td>
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<td>36</td>
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<td>ATO-CT-3000</td>
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Note: Class/VA rating must be mentioned when ordering.
### ATO Current Transformer

**ATO CT-2500**

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**ATO CT-3000**

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**Note:** Class/VA rating must be mentioned when ordering.

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**Website:** www.ato.com