

# Split-Core Current Transformer Installation Guide

## JPS Series



**DANGER** : Hazardous Voltages Hazard of Electric shock, Explosion or Arc Flash

The JPS series PQRCT current transformers measure AC line current in circuits up to 600 Vac and nominal currents up to 1600 amps. Ideal for use in High Performance Power Quality Metering (IEC 61000-4-30 A ED3). They support both Power Quality measuring and Revenue Grade metering. The JPS series may be field-installed inside distribution and control equipment such as switchboards and panelboards, or used in equipment designed for MV / LV substations, power quality meters, energy meters, branch circuit meters, PV monitoring, motor quality diagnostics, traction and data center use, etc.

### 1. Precautions

- PQRCT is a power quality revenue-grade current transformer (CT) and can only be used for measuring electrical alternating currents.
- The PQRCT is suitable only for mounting on insulated primary conductors in a weather protected and dry location.
- PQRCT must be handled with care. A damage caused from the careless handling is not be covered by warranty.
- PQRCT is designed to meet operating environments for industrial standard IP20.
- Be careful to install the product with the correct polarity.
- Do not install the product if an application exceed the specifications of the product.
- Recommended to use the terminals specified by J&D.
- Install in accordance with ANSI/NFPA 70, "National Electrical Code" (NEC).
- Follow all local electrical codes. Only qualified personnel of licensed electricians should install the current transformer (CT).
- Line voltages of 120 Vac to 600 Vac can be lethal. Do not install CTs where they block ventilation openings.
- Do not install CTs in the area of breaker arc venting.
- The current transformer cannot measure direct current (DC), and excessive DC will degrade AC measuring accuracy.
- Electrical codes prohibit installation of CTs in equipment where they exceed 75% of the wiring space of any cross-sectional area.
- The PQRCT lead wires are considered Class 1 wiring (as defined by the NEC) and must be installed accordingly.
- They are not suitable for Class 2 wiring methods and should not be connected to Class 2 equipment.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
- Do not install the CT where it may be exposed to: temperatures below -40°C or above 80°C (-40°F to 176°F), excessive moisture, dust, salt spray, or other contamination.

After removing the pollutions, it is recommended to use WD-40 or CRC5-56 on the core surfaces.

The PQRCT may be damaged if dropped or subjected to impact. This can result in reduced accuracy.

### 2. Pre-Installation Checklist

- Protection circuit is built inside of the product for user safety.
- An additional external protection circuit could be impacted on the feature.
- The product is designed for measuring sinusoidal 50/60Hz of primary current.
- Be aware that it is possible to occur the significant error if it is used to measure non-sinusoidal.
- The CT's rated current should match or exceed the maximum current of the measured circuit. Ensure that the fuse or circuit breaker's rating does not exceed the CT's maximum continuous current rating.
- Use Split-core CT with proper diameter to the conductor, otherwise it may cause the ratio error and the phase shift.
- Check whether the secondary leads is connected correctly or not. If the connection is not correct, the secondary output could be lower than the expected one.
- For highest accuracy, try to separate the CTs installed on different phases by 1.0 inch (25 mm) to minimize magnetic interference.
- It is preferable to install the CT and meter or monitoring device close to each other. However, you may extend the CT wires by 300 feet (100 m) or more by using shielded twisted-pair cabling and by running the CT wires away from high current and line voltage conductors.

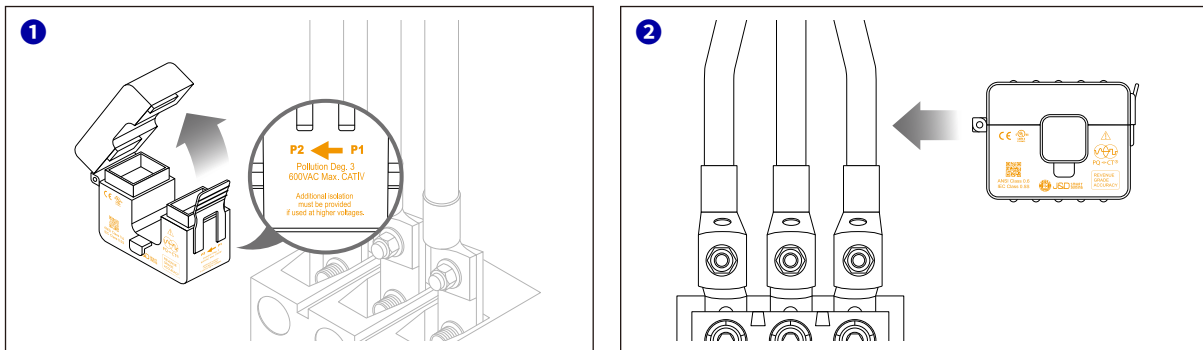
### 3. Connecting the Current Transformer

**WARNING:**

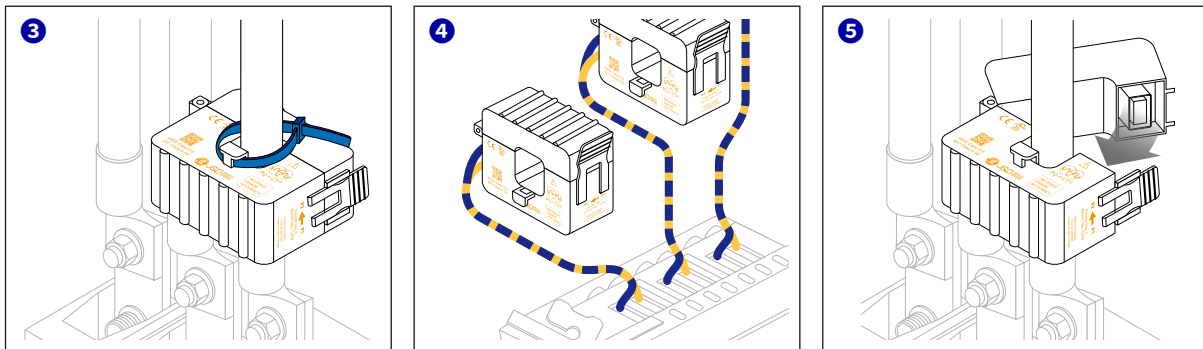
Make sure that safe and proper working conditions exist prior to installing the CTs. Open/disconnect the circuit from the power distribution system before installing or servicing current transformers to reduce the risk of electric shock.

No special tools are required to install the PQR-CT, JPS series. In order to connect the CTs to the meter correctly, follow these steps:

- 1) Find the correct direction of the current flow. P1 should face the source of current.  
Note: If the CT is mounted backwards, the measured power will be negative. (Picture 1)
- 2) Make sure all contact surfaces are clean. Debris will increase the magnetic gap, decreasing accuracy.  
Place the CT around the conductor and close the CT. (Picture 2)



- 3) Use cable ties to ensure the PQ-CT does not move from its position around the conductor. (Picture 3)
- 4) Connect the secondary leads to the meter. The secondary current from PQ-CT should flow to the meter through S1. (Picture 4)
- 5) Close PQ-CT after verifying the installation. You will hear a 'click' sound if the CT has been closed properly.



**Note :**

1. If the Yellow and Brown wires are reversed, the measured power will be negative.  
Be careful to match the CT to the voltage phases being measured.  
Make sure the Ø A CT is measuring the current on the Ø A conductor, and the same for phases B and C. Use colored tape or labels to identify the wires.
2. Before closing Split-core CT, please re-check the connection of CT and the meter.  
It is possible to damage the meter by the instantaneous overvoltage from the secondary leads. Even though overvoltage protection circuit is built in Split-core CT inside, however, it recommends to close CT after connecting it to the meter for safety.
3. To measure precisely, it is recommendable to use as secondary leads of AWG18 twisted wire with a short distance from a meter as possible as you can.

**Optional Leads**

- Standard length of the leads is 2M, but it may be changeable upon the customer's requests.
- The leads connections will be protected with a terminal cover secured by the label.



## 4. Specifications

Model	JPSXXX-XXX-XX	
	JPSXXX-XXX-V	JPSXXX-XXX-A
Rated Amps		
JPS10	5, 15, 20, 30, 50, 70, 100	30, 50, 70, 100
JPS20	5, 15, 20, 30, 50, 70, 100, 125, 150, 200, 250	30, 50, 70, 100, 125, 150, 200, 250
JPS33	250, 300, 400, 500, 600	250, 300, 400, 500, 600
JPS52	400, 500, 600, 800, 1000, 1200, 1600	400, 500, 600, 800, 1000, 1200, 1600
Input Current	AC current, sine wave, 50/60Hz (specify)	
Output Voltage	100, 250 333, 500mV AC	-
Output Current	-	40, 50, 80, 100mA AC

- **Ratings**

**Overvoltage and Measurement Category :** 600 Vac, CAT IV (service entrance) for pollution degree 2 / 250 Vac, CAT III for pollution degree 3

**Line Frequency :** 50 to 60 Hz

**Bandwidth :** 40Hz to 400Hz standard

**Construction :** Molded cases 120°C UL recognized plastic

**Secondary (Output) Voltage at Rated Amps :** 0.33333 Vac

**Optional :** 1.000 Vac (add "Opt 1V" to the model number), 100 mA or 1 A output. Contact sales for details

- **Environmental**

**Operating Temperature :** -40°C to +80°C (-40°F to 176°F)

**Altitude :** up to 3000 m (9840 feet)

**Operating Humidity :** 5 to 95% relative humidity (RH)

**Pollution Degree :** 2 (controlled environment) for CAT IV, 600 Vac / 3 (harsh environment) for CAT III, 250 Vac

**Indoor Use :** Suitable for indoor use.

**Outdoor Use :** Suitable for outdoor use when mounted in a NEMA 3R or 4 (IP 66) rated enclosure, provided the ambient temperature will not exceed 75°C (167°F).

- **Electrical Accuracy**

**For detailed accuracy specifications, see the datasheet.**

**Type :** Voltage output, integral burden resistor

**Protection :** output clamped at 6 Vac by zener diode

**Lead Wire :** 2.4 m (8 feet), 18 AWG (Shielded cable option available)

**Option I :** up to 30 m (100 feet)

**UL Listing :** UL 2808, X0BA, UL file number E495004

**cUL Listing :** CAN/CSA C22.1 No. 61010-1, X0BA7, E344623

**CE :** IEEE/ANSI C57.13, Class 0.3/0.6 accuracy, IEC 61869-2 Class 0.2S/0.5S accuracy

- **Mechanical**

**Outside Dimensions :** 61 mm x 48 mm x 23.7 mm

**Conductor Opening :** 10 mm x 10 mm

**Weight :** 13.9 oz (395 gm)

