What 3-Phase applications is the ACM100 compatible with?

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The ACM100 is designed to measure 3-Phase "WYE" configurations. However, it can be used to measure many parameters of 3-phase Delta configurations in the following manner:

Configure the ACM100 for a circuit type of "3-Phase Y (Ph. A, B, C)"

Use the following instructions when you are connecting the ACM100 to a three-phase delta circuit connected via three hot wires. You will need to install three current transducers and three user-supplied voltage sense cables. The ACM100 comes with a single current transducer so you will need to purchase two optional current transducers for monitoring this type of system.

Step 1: De-energize the AC Source.

Step 2: The Current Transducer has black and white wires. Install the first Current Transducer as follows:

a. Connect the black wire to pin 7 (I_{A+}) on the ACM100

b. Connect the white wire to pin 8 (I_{A-}) on the ACM100

c. Disconnect the Phase A hot wire from the AC power source and place it through the hole in the Current Transducer such that the arrow on the Current Transducer points *towards* the AC power source. Then, reattach the Phase A hot wire to the AC power source.

Step 3: Install the second Current Transducer as follows:

a. Connect the black wire to pin 9 (I_{B+}) on the ACM100

b. Connect the white wire to pin 10 (I_{B-}) on the ACM100

c. Disconnect the Phase B hot wire from the AC power source and place it through the hole in the Current Transducer such that the arrow on the Current Transducer points *towards* the AC power source. Then, reattach the Phase B hot wire to the AC power source.

Step 4: Install the third Current Transducer as follows:

a. Connect the black wire to pin 11 (I_{C+}) on the ACM100

b. Connect the white wire to pin 12 (I_{C-}) on the ACM100

c. Disconnect the Phase C hot wire from the AC power source and place it through the hole in the Current Transducer such that the arrow on the Current Transducer points *towards* the AC power source. Then, reattach the Phase C hot wire to the AC power source.

Step 5: You must supply a cable for connecting the voltage sense pins on the ACM100 to the AC source. For the purposes of these instructions, we will assume that the cable has one black conductor and one white conductor. Install the voltage sense cable as follows:

a. Connect the black wire from one end of the Voltage Sense cable to pin 1 (V_{ALine}) on the ACM100

b. Connect the black wire from the other end of the Voltage Sense cable to a fuse appropriately sized for the black wire (18 gauge wire minimum and 3 amp fuse or less).

c. Connect the other end of the fuse to the AC source hot wire (the fuse should be placed within 6 inches of the connection to the hot wire).

Step 6: Install the second Voltage Sense cable as follows:

a. Connect the black wire from one end of the second Voltage Sense cable to pin 2 (V_{BLine}) on the ACM100

b. Connect the black wire from the other end of the second Voltage Sense cable to a fuse appropriately sized for the black wire (18 gauge wire minimum and 3 amp fuse or less).

c. Connect the other end of the fuse to the AC source hot wire (the fuse should be placed within 6 inches of the connection to the hot wire).

Step 7: Install the third Voltage Sense cable as follows:

a. Connect the black wire from one end of the second Voltage Sense cable to pin 3 (V_{CLine}) on the ACM100

b. Connect the black wire from the other end of the second Voltage Sense cable to a fuse appropriately sized for the black wire (18 gauge wire minimum and 3 amp fuse or less).

c. Connect the other end of the fuse to the AC source hot wire (the fuse should be placed within 6 inches of the connection to the hot wire).

Step 8: Connect the neutral terminals as follows:

a. Connect a white wire between pin 4 ($V_{ANeutral}$), pin 5 ($V_{BNeutral}$), and pin 6 ($V_{CNeutral}$) on the ACM100. This creates a “floating neutral” signal that will enable measurements to be made without a true neutral connection.

Within the Delta configuration, current can be different to each respective load. The ACM100 measures the Current and Voltage to calculate respective AC Power. Since the Voltage Current can very at each point on a Delta transformer, no two points can be the same thus, affecting the accuracy of the power calculation.

Parameters

The following parameters are accurate for a delta configuration and can be displayed:

- Average Current
- Average Frequency
- Average L-L Voltage
- Total Real Power
- Total Reactive Power
- Total Apparent Power
- Total Power Factor
- Total kWH Export
- Total kWH Import
- Phase A Current
- Phase A Frequency
- Phase AB L-L Voltage
- Phase B Current
- Phase B Frequency
- Phase BC L-L Voltage
- Phase C Current
- Phase C Frequency
- Phase CA L-L Voltage

The following parameters are accurate (to the false neutral on terminals 4, 5, and 6), but not really useful for a delta configuration:

- Average L-N Voltage
- Phase A L-N Voltage
- Phase B L-N Voltage
- Phase C L-N Voltage

The following parameters cannot be measured accurately for a delta configuration and should not be displayed:

- Phase A Real Power
- Phase A Reactive Power
- Phase A Apparent Power
- Phase A Power Factor
- Phase B Real Power
- Phase B Reactive Power
- Phase B Apparent Power
- Phase B Power Factor
- Phase C Real Power
- Phase C Reactive Power
- Phase C Apparent Power
- Phase C Power Factor

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