Detect Ground Faults with Zero Sequence Current Transformers

Zero sequence current transformers, also known as core balance current transformers (CBCT), detect the presence of zero sequence currents during short circuit fault conditions such as the occurrence of a single line to ground fault that causes unbalanced currents in three-phase systems.

During the normal operation of a three-phase system, the vector sum of the three-phase currents ($I_a + I_b + I_c$) equals zero, therefore, no magnetic flux is generated by the three phases and no zero sequence current is detected by the ground fault relay.

During abnormal operations, the occurrence of a single phase to ground fault causes current imbalances in the three phases and with the vector sum of the phase currents not equal to zero, magnetic flux is generated in the core of the zero sequence current transformer and causes current flow to be detected by the ground fault relay.

Model 143-500

The model 143-500 relay class current transformer is our most popular current transformer for zero sequence ground fault protection applications. Note, the 143-750, 75:5A and the 143-101, 100:5A can also be used for zero sequence current applications depending on the magnitude of the current to be sensed.

- 50:5A current ratio
- C20 relay class
- Window opening size: 7.31” ID
- 600v, 50-400Hz
- Indoor application
- Optional mounting bracket
- Estimated weight = 60 lbs

Flex-Core maintains adequate quantities in stock and available for immediate shipment. Large quantity orders are shipped by freight in a skid to avoid any damages during shipment. For single order quantity it also recommended to ship freight but can be shipped in a fully protected box if next day delivery is required.

Model 593-500

For applications requiring a larger window opening than is available on the Model 143-500 CT, Flex-Core can provide you with model 593-500 which offers a 8.06” x 22.06” window to allow for a larger number of cables. Note that due to the large window opening, the model 593-500 has a much larger core and is heavier than the model 143-500.

- 0:5A current ratio
- C10 relay class
- Large window opening size of 8.06” x 22.06”
- 600v, 50-400Hz
- Indoor application
- Mounting holes at the corners
- Estimated weight = 150 lbs

Flex-Core maintains adequate quantities in stock and available for immediate shipment. Typically shipped on a skid for freight shipment.
Model 114-500

For cable sizes requiring a smaller window opening, Flex-Core stocks the 114-500 which is small and much lighter in weight.

- 50:5A current ratio
- C10 relay class
- Window opening of 3.25” ID
- 600v, 50-400Hz
- Indoor application
- Mounting holes at the corners and optional mounting bracket
- Estimated weight = 22 lbs

Flex-Core maintains adequate quantities in stock and available for immediate shipment.

Model FCR50/5-RZ & FCR100/5-RZ

The model FCR is a split-core relay class current transformer. In applications, where the removal and reconnection of the cables are not practical, such as is the case with medium voltage applications, split-core current transformers are an ideal solution.

Features:

- 50:5A current ratio, C10 relay class
- 100:5A current ratio, C20 relay class
- Window opening of 2.5” min. x 6.5” min.
- 600v, 50-400Hz
- Indoor application
- Estimated weight = 55 lbs

Manufacturing lead time is 2-3 weeks ARO. For large quantity order, please ask Flex-Core.

Note that all zero sequence current transformers listed above are rated at 600v but can be used on higher voltages with fully insulated cables. When a low voltage window type CT is intended for use in a higher voltage application, it is the purchaser's responsibility to ensure the operating conditions are met and the necessary precautions are taken.

Please consult with Flex-Core for IEC rated zero sequence current transformers and custom models with larger window openings.