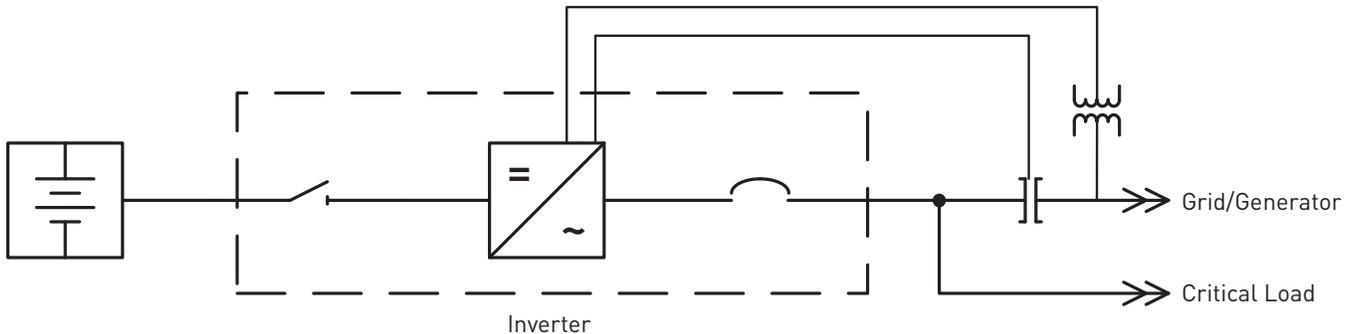




DYNAMIC TRANSFER APPLICATION NOTE FOR MPS SERIES



The purpose of this application note is to provide an overview of the requirements for the implementation of Dynamower's proprietary Dynamic Transfer function. It includes defining the equipment the purchaser needs to supply. The above notional diagram provides a simplified view of a system utilizing Dynamic Transfer. The dotted line box provides a visual indication of the scope of Dynamower's supply for this function.

In order to utilize Dynamic Transfer the customer must supply a rated contactor and 3 grid side PTs. The contactor is controlled through a dry contact from the inverter as a means to disconnect from the grid and provide isolation during intentional islanding operation. The contactor is to have 1 Normally Open and 1 Normally Closed auxiliary contact for the inverter to monitor.

During islanded operation the inverter monitors the output of the PTs to determine the stability and status of the grid/generator. The PTs are to be installed line to line on the grid side. The secondary (inverter side) voltage of the PT is to be three isolated 12VAC signals, a controls power transformer can be used in place of a PT.



Transitioning from Grid Tied (PQ) to Islanding Mode(UF)

The transition from PQ to UF mode can be done seamlessly upon command to the inverter through the Modbus TCP or automatically based upon grid voltage or grid frequency trip tables and anti-islanding protection.



Transitioning from Islanding Mode (UF) to Grid Tied (PQ)

Transfer from UF mode to PQ mode can be upon command through Modbus TCP or automatic. If it is automatic the inverter will wait to see that the grid voltage is stable and within bonds for the grid timer duration, synchronize its output and then close the grid contactor and transition back to PQ mode. If it is on command the inverter will first wait to confirm that the grid is stable and synchronize its output before transitioning.

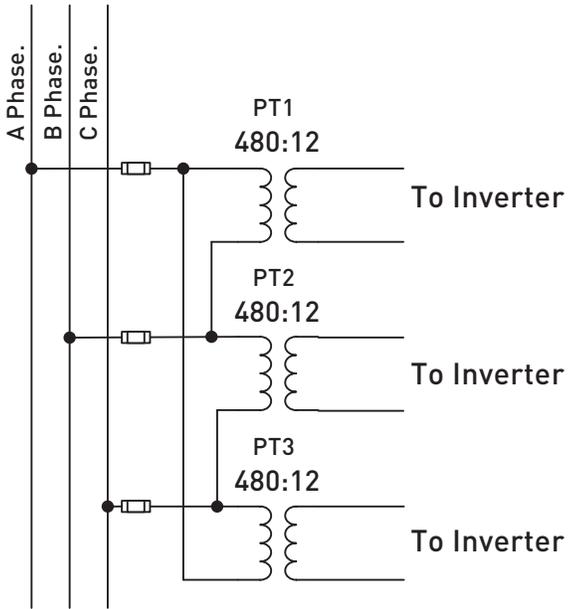


Figure 1: Wiring Harness (left) is a wiring diagram showing the required connections of the PTs to the grid and the secondary PTs to the inverter. One PT is needed per phase and they are to be wired in a delta fashion. The PTs are provided by the customer and should be wired and protected in accordance with local requirements.

In order to utilize Dynamic Transfer the customer must provide a motorized means for disconnecting from the grid, this is most commonly done with a contactor. The MPS series of inverters provides $120V_{DC}$ output to control the islanding contactor and can be connected directly to the contactor coil. The MPS series of energy storage inverters have internal boosting/isolation transformers with a wye grid connection available. During Grid Tied mode of operation the neutral of the MPS transformer must be floating. During Islanded mode of operating the neutral of the MPS transformer must be grounded. In the depiction of the

contactor connections there are three normally open connection for the three grid phases, one normally closed connection for the neutral connection to ground, and an auxiliary output for the MPS to monitor the status of the contactor. If you cannot source a contactor of those configuration it is permissible to use two reverser acting contactors, one for the grid phases and the other for neutral. **Special attention should be paid to the sizing of the neutral contact based upon line to neutral loading of the microgrid.**

