



Inverter Selection

The inverter is a commercial item not manufactured by TCD Systems. TCD Systems has presently selected the Mitsubishi FR-S500 series inverter if an inverter is ordered with a system. However, most sales are control cards only and the customer purchases locally available inverters and does the wiring in plant.

Virtually all inverters now meet minimum requirements to operate with the Synphase system. If selecting a new brand of inverter, confirm its adaptability using the following list.

- **Input Power Is Compatible:**
The inverter must be able to use the incoming 3-phase power available in the factory. This is typically between 230 VAC 50 Hz and 500 VAC 60 Hz. In some cases, low line voltage may cause the inverter to “under voltage trip”. This condition is especially probable if the mains voltage is constantly near the low end of the inverter’s acceptable range. A simple and inexpensive fix is to insert 2 low power single-phase boost transformers wired for 5% or 10%.
- **Voltage Output Power Must Match The Motor:**
The inverter must have an output capable of driving the motor to which it is attached. The inverter’s Volts/Hertz adjustments can be used to match any motor type.
- **Amount of Output Power (HorsePower):**
A synchronous motor will consume much higher currents than the same HP induction motor. Select an inverter based on current ratings instead of HP ratings if using a synchronous motor. If the motor is driving an oscillating load (like a cam) it is possible that a mains voltage dip occurring at the same time as heaviest torque requirement may cause the inverter to “low voltage trip”. Select an inverter 1 size larger than the motor requirement because the greater capacitance on its DC buss will help ride through this situation. It will also allow the inverter to be used in hotter environments, as the ripple current in the DC buss capacitor bank will be reduced by ½.
- **0-10 Volt Input Signal Compatible:**
The inverter must be capable of accepting a speed reference command of 0-10 volts to control output between 0-90 hertz. The input resolution must be 8 bits (½ %) or better. 12 bits is recommended. Acceleration / Deceleration Rates = 2 sec. or less (0.5 sec. is desirable).
- **Start / Stop Switches:**
Is the selected inverter capable of utilizing the start/stop switches selected for your factory? Most inverters are.
- **Heritage Systems:**
For older Synphase systems, the inverter must have a dry contact output that will switch from open to short when the inverter is running. Newer Synphase cards without the terminals for this connection do not require this option.