

Notes On The Application; Motors - Toshiba TOSVERT VF-AS1 Instruction Manual

The new generation high-performance inverter

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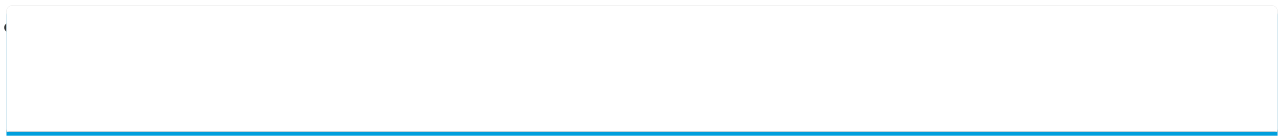
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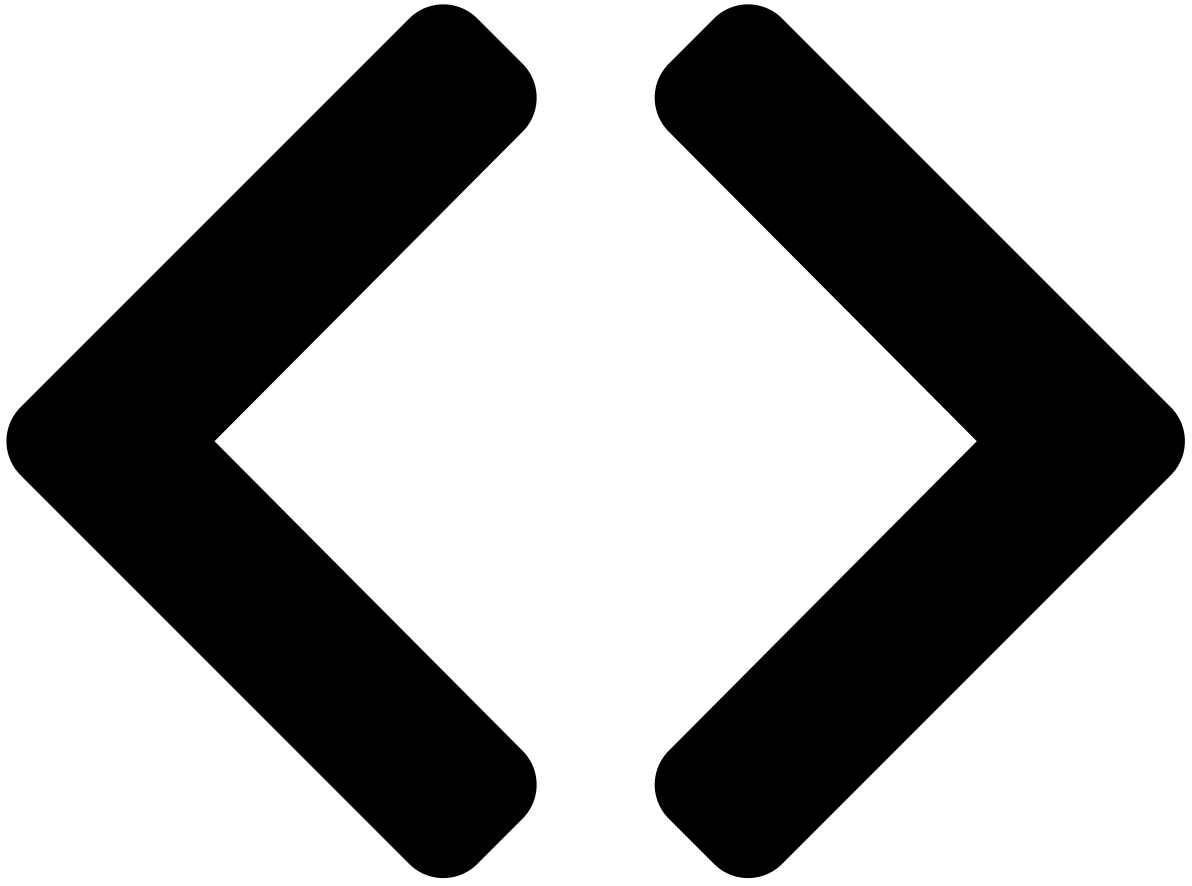


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Bookmarks



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Notes on the application

1.4.1 Motors

Keep the following in mind when using the VF-AS1 to drive a motor.

Mandatory



Comparisons with commercial power operation

The VF-AS1 Inverter employs the sinusoidal PWM system to supply the motor. This is why compared to operation with a commercial power there will be a slight increase in motor temperature, noise and vibration. The main supply voltage and current will also be distorted due to harmonic distortion while increase the line current.

Operation in the low-speed area

When running continuously at low speed in conjunction with a general purpose motor, there may be a decline in that

motor's cooling effect. If this happens, operate with the output decreased from rated load.

To carry out low speed operation continuously at the rated torque, we recommend to use a inverter rated motor or a forced cooled motor designed for use with an inverter. When operating in conjunction with a inverter rated motor you must change the inverter's motor overload protection level to VF motor use ().

Adjusting the overload protection level

The VF-AS1 Inverter protects against overloads with its electronic thermal overload detection circuits. The electronic thermal's reference current of the inverter must be adjusted in line with the rated current of the motor being used in combination.

High-speed operation at and above 50Hz/60Hz (rated frequency)

Operating at frequencies greater than 50Hz/60Hz will increase noise and vibration. There is also a possibility that such operation will exceed the motor's mechanical strength under these conditions and the bearing limits. You should verify with the motor's manufacturer operating.



Method of lubricating load mechanisms

Operating an oil-lubricated reduction gear and gear motor in the low-speed areas will worsen the lubricating effect. Check with the manufacturer to find out about operable speed range.

Low loads and low inertia loads

The motor may demonstrate instability such as abnormal vibrations or overcurrent trips at light loads of 50% or under of the rated load, or when the load's moment of inertia is extremely small. If that happens reduce the carrier frequency.

Occurrence of instability

Unstable phenomena may occur under the load and motor combinations shown below.

- Combined with a motor that exceeds applicable motor ratings recommended for the inverter
- Combined with special motors

To deal with the above lower the settings of inverter carrier frequency. (In vector control mode, do not lower it below 2.0kHz.)

- Combined with couplings between load devices and motors with high backlash

In this case, set the S-pattern acceleration/deceleration function and adjust the response time inertial moment setting during vector control or switch to V/f control (=).

- Combined with loads that have sharp fluctuations in rotation such as piston movements

In this case, adjust the response time inertial moment setting during vector control or switch to V/f control.

If it is operated in vector control mode (For torque control mode), only a motor whose capacity is same as inverter standard or 1 ranking lower should applied.

Use an inverter that conforms to the specifications of power supply and three-phase induction motor being used. If the inverter being used does not conform to those specifications, not only will the three-phase induction motor not rotate correctly, but it may cause serious accidents through overheating and fire.

Warning

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