

UL MOTOR OVERLOAD PROTECTION

The drive has UL approved electronic motor overload protection that allows the drive to be used without the need for an external overload device provided there is a single motor on a single drive. For multiple motor applications separate overload devices are required in series with each motor. This overload protection satisfies the local requirements for branch circuit overload protection for the entire branch (both the input wiring and output wiring).

SHORT CIRCUIT AND GROUND FAULT PROTECTION

Although the drive also has short circuit and ground fault protection, this protection is limited to the output side of the inverter. Thus, if a motor and/or the motor wiring shorted to ground, the inverter safely shuts down to remove the short from the branch circuit. However, if a short or ground were to occur in the inverter itself (such as a diode bridge failure) there are no devices within the inverter to remove the short from the branch. Therefore, an external device is required in front of the drive to provide short circuit/ground fault protection. This protection is typically one of two types. A circuit breaker or fuses.

CIRCUIT BREAKER AND FUSE SIZING

A circuit breaker should be sized per local codes and can be of the instantaneous trip type (since the overload (I_{2t}) is supplied by the drive). A breaker with a trip rating no greater than 800% of rated input current is allowed in the US.

Fuses should be selected based on local codes as their purpose is to protect the wiring feeding the circuit. The fuses indicated in the manual are semiconductor fuses. These fuses will not protect the drive from failure, but, will remove a failed drive from the branch circuit. The semiconductor fuses have been selected so that the I_{2t} is limited. This means that in the event of a diode bridge failure the fuses will most likely clear prior to the diode rupturing (limiting fire hazard).

SUMMARY

Therefore, in summary, local and national codes take precedence. The fuses listed in the manual are stated only in case one wants to limit catastrophic failure (diode rectifier case rupture) and therefore are deemed optional, at least for the US market.