SmartMotor™ Success Checklist

Follow these easy rules to assure success in using the Animatics SmartMotor™ to maximize your system's reliability. Please take a minute to see that your system design and implementation pass the test. Keep this page handy to document your settings and send it along with any motors returned for inspection or repair.

1. Power supply selection is very important.

☐ Provide for a means to keep the SmartMotor's voltage below 48 VDC by…

○ operating at 48 VDC or less as nominal or,
○ using a shunt near the motor or,
○ adding a shunt to a switching power supply or,
○ operating at 48 VDC or less and adding a shunt for a vertical application.

NOTE: Drive Power and Control Power are Separate Inputs. Control power is rated to a maximum range of 18 to 32VDC. Drive Power is from 18 to 48VDC max.

2. Proper electrical interfacing is essential.

☐ Refrain from creating any ground loops with the communications by…

○ isolating the ground prong of the host PC for a single motor application or,
○ isolating the motor's power supply for a single motor application or,
○ using a communication isolation product to protect each axis or,
○ operating only smaller motors at low power, like short SM23s or smaller.
○ this does not apply when employing no serial communications at all.

☐ Refrain from creating any ground loops with the SmartMotor's I/O by…

○ using the main or 5V power at the motor to operate any sensors or,
○ using an opto-coupler to interface to the inputs or outputs or,
○ using an I/O isolation product or,
○ operating only smaller motors at low power, like short SM23s or smaller.
○ this does not apply when employing no I/O connections at all.

3. Properly sizing an Animatics SmartMotor™ for the application is critical.

☐ Determine that the motor selected has the torque to handle the friction.

☐ Determine that the motor selected has the torque to support any vertical component of the load.

☐ Determine that the motor selected has the torque to accelerate the load.

☐ Determine that the motor's rotor inertia is properly matched to the load.

4. Considering the thermal environment for the SmartMotor is important.

☐ Consider the ambient temperature and avoid applications above 70°C ambient.

☐ Maximize the heat sinking capability of the motor's mount to any extent possible.

5. Proper mechanical and environmental implementation is needed.

☐ Assure motor shaft loading is within axial and radial limits.

☐ Be certain that the motor does not get exposed to fluids or excessive moisture.

☐ Insure relative humidity is <30% and non condensing.

⚠ **Noise Filtering may be necessary**

Ports 0, 1, 2, 3, and 6 are all classified as high speed input.

1. Ports 0 and 1: Ports 0 and 1 may be configured as Phase A and B encoder input or Step and Direction input. To ensure proper operation when following external encoders, it is strongly advised to use Line Driver encoders or encoders with true push-pull drive capability. This allows up to 1.5MHz input frequency. Open Collector output encoders will not work above 20KHz or so typically due the inability to drive input capacitance well enough.

2. Ports 2 and 3: Both Ports 2 and 3 default as Over Travel Limit inputs. They can be triggered by a negative edge transition as fast as 5 microseconds allowing optimum fail safe detection of over-travel. However, as a result, in noisy systems, it may require capacitive filtering to prevent false triggers from static or other induced noise.

3. Port 6: Port 6 defaults as the "sync" or synchronous trigger input. This means any time it goes low, the processor issues a "G" command. The purpose of this is to allow pre-condition setup of motion profiles and then via hardware input the user may synchronize multiple motor/axis starts at the exact same time. However, similar to the Over Travel limit inputs, Port 6 can detect input pulses down to 5 microseconds. To ensure no false triggers, some system installs may require capacitive filtering to avoid false triggers. In all cases above, typical filtering is via 10 to 100 picofarad ceramic capacitors tied from the input pin to ground. This is only a recommendation; system characteristic may vary depending on surrounding equipment.

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