

Electric Motor Controllers

Starting Methods Explained



Direct on line,	MP300
Starting current:	6 -7 x FLC, reducing after 50% of motor full speed.
Method:	Single contactor, hence low cost and reliable with rapid starting speed.
Comment:	Preferred starting method in Europe up to 100hp
Star / Delta	MP430, open transition star-delta
Starting current:	2 to 3 x FLC while in star, jumping to 6 times briefly.
Method:	Three contactor reduced voltage (58%) start system
Transition Current:	Can be 2x locked rotor current (12 to 16 times FLA)
Comment:	Preferred starting method in Europe above 100hp
Star / Delta	MP435, closed transition star-delta
Starting current:	2-3 x FLC while in star, jumping to 6 times briefly.
Method:	Four contactor and power resistor system
Comment:	Only used to avoid transition current on MP430 type
Autotransformer	MP450
Start current:	With 65% tap, 3.5 x FLC reducing after 60% of motor full speed
Method:	Three contactors and power transformer
Comment:	Can be used when higher starting torques are required, compared to star-delta.
Primary Resistor	MP400
Start current:	3.5 – 4.5 x FLC reducing after 70% of motor full speed.
Method:	Two contactors & power resistors to limit starting current
Comment:	Smooth starting for light loads. For a given starting current, much less starting torque is available, compared to MP430 or MP450. Resistors chosen so that the motor see 50% of voltage at start up.
Electronic Soft Start	MP700
Starting current:	3 to 4 times FLC
Method:	Two contactors with soft start module. Once up to speed the soft starter is out of circuit.
Comment:	Designed to reduce mechanical stress at start up and stopping Current limit is factory set to 500% of FLC.
Variable Frequency Drive	MP800
Starting current, VFD mode	Selectable, factory set to 1.3 times FLC
Comment:	Must have a by-pass system for when VFD fails, typically soft start or direct on line. Designed to vary motor speed to maintain a set pressure with varying suction pressure.

NOTE:

ALL controllers require direct on line emergency start, 6 to 7 times FLC.

FLC=Full load current, LRC= Locked rotor current.

Values shown are for guidance only, based on experiences with European electric motors.

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