## **APPLICATION NOTE**



## CHIP CONVEYOR MOTOR CONTROL IN MACHINE TOOLS

## **Background**

A chip conveyor system is very common on CNC machine tools; it can be part of the machine or it can be offered as an accessory. The main function of a chip conveyor system is to remove the cutting excess material, which can be metal or plastic, from the machine tool. A chip conveyor is commonly driven using a small to medium size three-phase motor, and the conveyor control system is generally mounted next to the motor in the conveyor. Reliability is a prime concern on these systems, since repair downtime could be very costly, so this should be considered when designing the control system

for a chip conveyor. It also needs to have capacity for reversing, in case chips get stuck.

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conveyor mechanical
parts

## Solution

Control of start/stop and forward/reverse of the conveyor motor can be achieved using electromechanical contactors, but this has several disadvantages: it requires 2 contactors plus an interlock system, and there is also a reliability issue since the life expectancy of an EMR solution is much lower (typically lower than 100K cycles)

Solid State Relays and Contactors are a great solution for this application, being more compact than the equivalent EMR solution and having higher reliability. For a simple control system, a basic reversing contactor like a **Solicon DRC**, can be used to provide start/ stop and forward/reverse control.

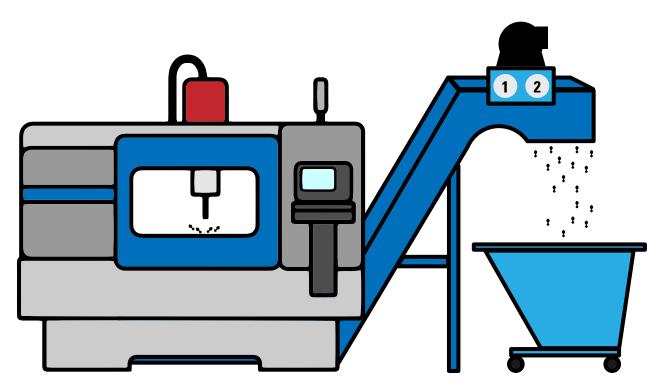
For a more complete control solution a Hybrid Motor Starter, such as the **DRMS**, would be an excellent option. This device combines EMR and solid state switching technology on an integrated solution in a slimmer 22.5mm package. In addition to having standard start/stop and reversing control, using a Motor Starter we can add other features such as overload detection (there is no need to add an external overload relay) and soft start/stop function, which can help to reduce current surges and extend the life of the motor and the conveyor mechanical parts.





Reference on Diagram	Product		Features	Function	Brand
1		DRC Series	<ul> <li>Solid state contactor</li> <li>Reversing of 3-phase motors up to 5HP (3.7kW)</li> <li>Available with auxiliary contacts</li> <li>Built-in overvoltage protection</li> </ul>	Conveyor Start/Stop with Fwd/Rev	Crydom
2		DRMS Series	<ul> <li>Hybrid relay technology</li> <li>Reversing of 3-phase motors up to 4kW</li> <li>Soft start/stop capability</li> <li>Overload protection</li> </ul>	Conveyor Start/Stop with Fwd/Rev and Overload Protection	Crydom





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