

## NEW FROM ROCKWELL AUTOMATION

### SAFE-SPEED CONTROL SOLUTIONS - DEDICATED OR INTEGRATED OPTIONS

With Safe-Speed Control from Rockwell Automation, both the optional integrated (PowerFlex and Kinetix) or dedicated (MSR57P) platforms allow the flexibility to achieve levels of control you need whether you are looking to upgrade a current application or designing new equipment. The additional benefit the Safe-Speed control technology offers is direct connection of safety inputs devices which removes the need for a separate safety controller for the zone or application controlled. Simply put, safety input devices such as guard locking interlock switches, light curtains, emergency stop devices etc, can be

connected directly to the MSR57P Speed Monitoring Safety Relay, the PowerFlex AC drive, or future releases of Kinetix 6000 Servo Drive. All platforms support the option to cascade the Safe-Speed functionality allowing for multi-axis applications. Each axis requires one speed monitoring device interconnected to subsequent devices. Each device can be configured for specific control. With seamless integration into Rockwell Automation's Integrated Architecture, you now have the ability to safely control speed allowing you to maximise productivity and gain flexibility within a sustainable core control technology.



#### Minotaur MSR57P - Dedicated Safe-Speed Controller

The MSR57P speed monitoring safety relay is a dedicated device for Safe-Speed control and supports numerous input devices such as an E-stop, Safe-Speed selector switch, enabling (grip) switches and guardlocking switches to completely monitor the machine and the controls required to operate it. Speed monitoring is achieved through encoders whether integrated in the motor or retrofitted and supports single or dual encoder applications. Drive Explorer or a HIM device (the same devices required to program standard PowerFlex drives), are used to configure and monitor the status of the MSR57P.

#### PowerFlex 750 Series of AC Drives with optional integrated Safe-Speed Control

Based on the popular PowerFlex family of AC Drives, the new PowerFlex 750 Series offers the proven PowerFlex technology combined with optional Safe-Speed Control. Utilising the core technology of the MSR57P Safe-Speed Controller, the PowerFlex 750 Series can be supplied with integrated Safe-Speed control, offering all the functionality available with the stand alone MSR57P controller, but embedded into the PowerFlex drive saving cabinet space and reducing wiring complexity. The Safe-Speed option allows direct connection of safety input devices such as guard locking interlock switches, light curtains, emergency stop devices direct to the PowerFlex 750 Series drives safety board, reducing complexity and component count even further.



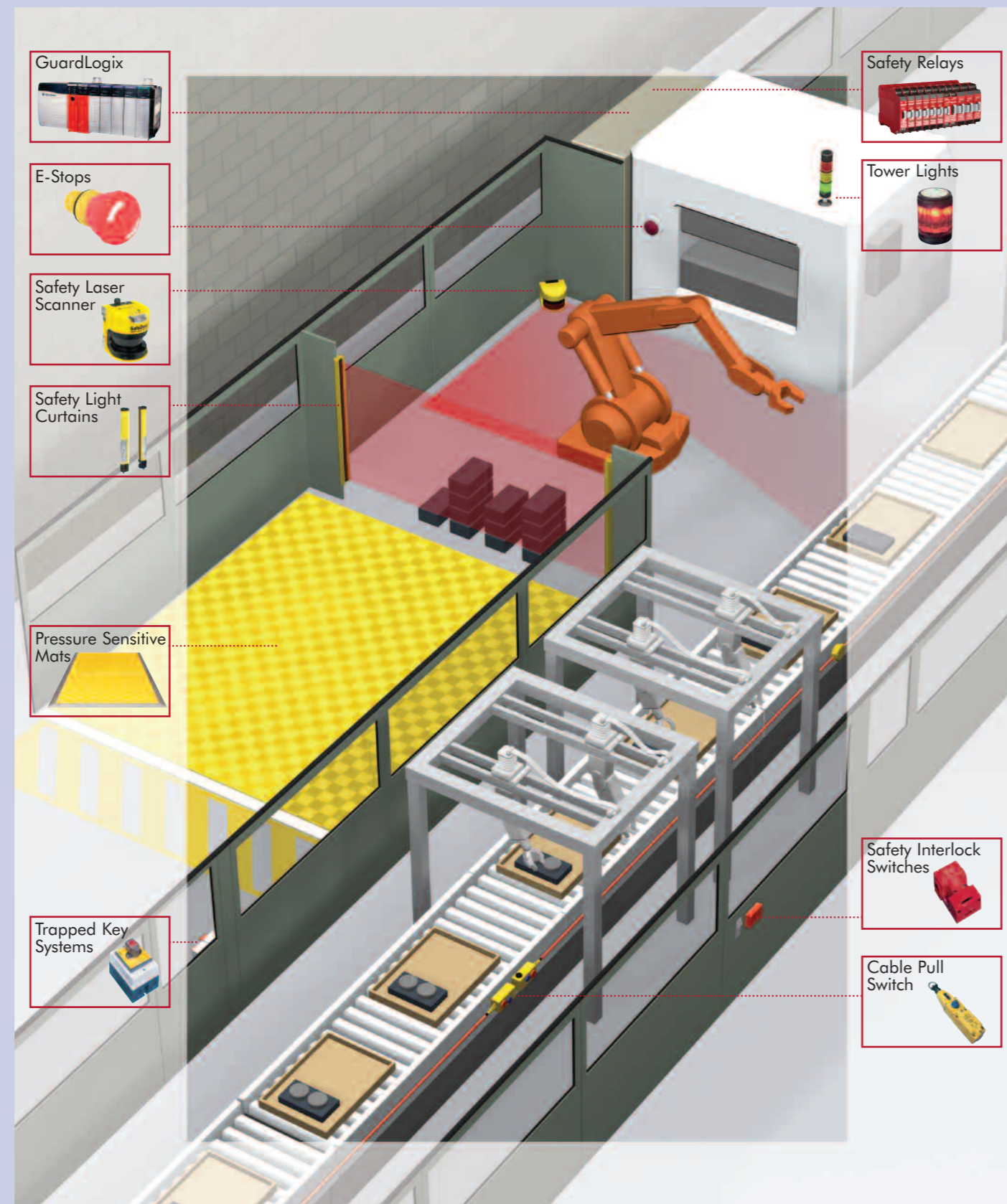
#### Kinetix 6000 Servo Drive with optional integrated Safe-Speed Control

With future releases of the Kinetix 6000 Servo Drive, you will also have the option to utilise the Safe-Speed Control technology within this flexible, dynamic platform. As with the PowerFlex 750 Series of AC Drives, the Kinetix 6000 will adopt as an option board, all the functionality available from the MSR57P Safe-Speed Controller. With the dynamic control offered by Kinetix and the integrated safety functionality, true safe motion control can be achieved without complicating the application. With the addition of direct safety input connectivity to the Kinetix Drive in the same method the PowerFlex 750 Series offers, Safe-Speed control is now a truly integrated option.



## ROCKWELL AUTOMATION SAFETY SOLUTIONS.

### INCREASING MACHINE SAFETY WITHOUT COMPROMISING PRODUCTIVITY



LISTEN.  
THINK.  
SOLVE.<sup>SM</sup>



#### SAFE-SPEED CONTROL

ENABLING PRODUCTIVITY AND FLEXIBILITY  
WITH INTEGRATED SAFETY

#### SAFETY

GET POSITIVE RESULTS FROM YOUR SAFETY INVESTMENT



Achieve your factory floor goals with the peace of mind that comes with an integrated safety system.

We can get your standard and safety products working together to turn your safety capital outlay into an investment with positive returns — one that helps increase your employees' safety and productivity.

How? Our combined experience in machine safety and industrial automation means we understand your factory floor issues and how to implement safety solutions that help meet your goals, using the broadest integrated safety product line available in the world. Products designed and built to global standards for high reliability, stability and quality.

Whatever your safety challenges, we'll help you find the answer by partnering with us.

FOR MORE INFORMATION ON SEAMLESS SAFETY INTEGRATION  
VISIT US AT [WWW.AB.COM/SAFETY](http://WWW.AB.COM/SAFETY)

[www.rockwellautomation.com](http://www.rockwellautomation.com)

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# SAFE-SPEED CONTROL

LISTEN. THINK. SOLVE.™

Kinetix 6000 Servo Drive with optional integrated Safe-Speed control



Dedicated MSR57P Safe-Speed Controller  
• Can be used with almost any drive  
• Ideal for retrofit applications



PowerFlex 750 Series of AC Drives with optional integrated Safe-Speed control



Standardised programming tools for simplified configuration and trouble shooting

## FEATURES

- Supports up to 2 encoders
- Cat. 4 per EN954-1, SIL CL3 per IEC 61508, PLe per EN ISO 13849-1
- Door control and monitoring allows control of guard locking functionality
- Enabling switch supported to allow access under safe conditions
- 6 Safety Outputs and 4 Auxiliary Outputs
- Flexible functionality including:
  - Safe Stop (Stop Category 0, 1 and 2)
  - Safe Limited Speed monitoring
  - Safe Maximum Speed
  - Safe Acceleration and Deceleration
  - Safe Direction

## BENEFITS

- Safe-Speed control: Allows personnel to enter hazardous areas only when Safe-Speed is verified.
- Versatility: Dedicated unit or options to integrate into PowerFlex 750 Series AC Drive and in future releases of Kinetix 6000 Servo Drive
- Encoder inputs: Supports all encoder types (Sin/Cos and TTL), except resolver.
- Diagnostics and LEDs: quickly identify a problem and reduce machine downtime
- TÜV certified: For use in applications up to SIL CL3 / Cat. 4 / PLe
- Easy Configuration: Common programming tools for simplified configuration and trouble shooting
- Flexibility: supports diverse input types such as e-stops, light curtains, interlock switches, guardlocking switches, enabling switches.

## WELCOME TO THE NEXT GENERATION OF SAFE-SPEED CONTROL

The safe control of motion, whether linear, rotary or positioning, is a key concern for many automation users and equipment suppliers. The benefits associated with this type of control are many, such as safe control of potentially hazardous movement, performance enhancements when total power removal is not necessary to carry out tasks and the efficient maintenance of an application while powered up.

The understanding of automation solutions is paramount when endeavouring to safely control motion. With automation and safety experience, Rockwell Automation helps its customers achieve the control they need and as such recognised the need for safe control of motion across different platforms. Subsequently a standard core technology has been developed to give its customers a 3rd party certified Safe-Speed control solution, independent of the product chosen.

This allows its customers to choose a Safe-Speed solution as either a dedicated Safe-Speed controller which can be used with a variety of drives or as an option integrated into Rockwell Automation's Allen-Bradley PowerFlex 750 Series AC Drives. This development allows its customers to achieve the productivity gains they need while maintaining the flexibility of choice.

With Safe-Speed control functionality, you can safely monitor and control the speed of your application allowing operators to perform tasks under safe conditions such as the removal of jams, and perform other similar maintenance work without stopping the application completely. This can help increase operating availability and maintain sustainability of the equipment by removing unnecessary wear due to frequent stop/start procedures which can ultimately help increase productivity.

## SAFE LIMITED SPEED AND SAFE DIRECTION

When cleaning or maintaining an application such as a printing press, rotational power to the machine under a safe condition is helpful. To carry out maintenance, personnel require access to the potential hazardous area.

With Safe-Speed Control from Rockwell Automation the machine can be set to operate in a safe limited speed when an actuator such as an enabling grip switch is used to control the movement. Also the machine can be set to rotate in a safe direction thus removing the pinching hazard of inward moving rollers. This allows the operator to complete tasks such as roller cleaning quicker and safely.



Safe-Speed Control functions configured at setup using standardised approach independent of platform chosen.



Guard door locked. Operator selects access to machine via selector switch. Machine goes into Safe Limited Speed with Safe Direction mode.



Operator uses a 3 position enabling (grip) switch to control the safe limited speed of the motion while carrying out cleaning/maintenance. Gripping or releasing the enabling (grip) switch will initiate a safe stop.

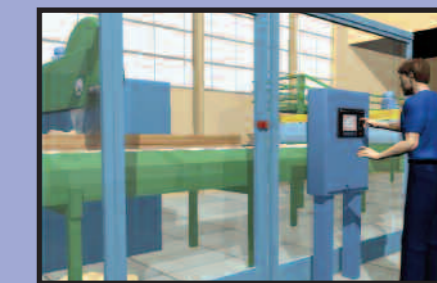
## CAT. 1 STOP AND ZERO SPEED ACCESS

Applications with considerable inertia typically employ a pre-configured time delay with a generous safety margin when allowing operator access into the guarded area. A saw mill application for example may only allow access once the saw blade has stopped. This pre-defined time delay can be lengthy as it does not rely on the stopped motion but instead a pre-defined time set at design/commissioning phase.

With Safe-Speed Control from Rockwell Automation, detection of actual zero speed is monitored allowing instant access to the guarded area at zero speed. The addition of a Category 1 stop also allows end of cycle routine to be completed. This solution allows for reduced waste, less downtime and removal of potential jams if stopped mid cycle.



Safe-Speed Control functions configured at setup using standardised approach independent of platform chosen.



Guard door locked. Operator selects access to machine via Safe-Stop operator. Saw machine goes into Cat. 1 Stop and monitors actual speed of the spinning saw blade.



Once zero speed is detected (saw blade is at standstill), and the machine is in stop mode, the guard door is automatically unlocked to allow operator access.

## CAT. 1 STOP WITH SAFE ACCELERATION/DECELERATION

Applications requiring a controlled acceleration and deceleration have utilised different control techniques each with their unique challenges. Now with Safe-Speed Control from Rockwell Automation, one platform offers you a standardised approach to safely control the acceleration of your application. If the application accelerates too quickly or goes into a runaway condition, Safe-Speed Control will initiate a Stop based on the pre-configured Stop Category. This is ideal for applications such as ski lifts to safely

control speed thus reducing potential swinging of the load or for slowing acceleration from load / unload positions. Also the safe control of potential conveyor or roller runaway conditions can benefit from this function.

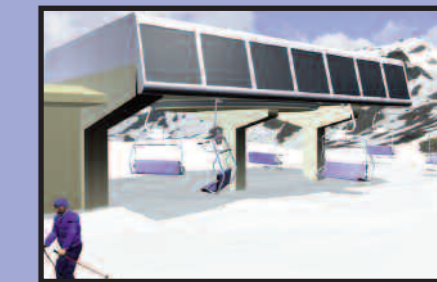


Safe-Speed Control functions configured at setup using standardised approach independent of platform chosen.

Safe Maximum speed can also be configured in this type of application to ensure the ski lift does not exceed a safe limit during normal operation.

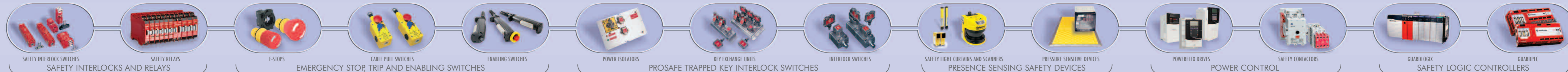


Ski lift passenger approaches dismount area at lift travelling speed. Safe acceleration/ deceleration and safe maximum speed allows travel in between stations to be smooth, constant and below a maximum speed.



The chair enters the station area and safely reduces speed to allow exit of or entry into the chair with minimum chair swing. When leaving the station the chair will accelerate safely back to travel speed of the lift.

A COMPREHENSIVE FAMILY OF SAFETY PRODUCTS FOR COMPLETE SAFETY SOLUTIONS



SAFETY INTERLOCK SWITCHES  
SAFETY INTERLOCKS AND RELAYS

E-STOPS  
EMERGENCY STOP, TRIP AND ENABLING SWITCHES

CABLE PULL SWITCHES  
ENABLING SWITCHES

POWER ISOLATORS  
PROSAFE TRAPPED KEY INTERLOCK SWITCHES

INTERLOCK SWITCHES

SAFETY LIGHT CURTAINS AND SCANNERS  
PRESENCE SENSING SAFETY DEVICES

POWERFLEX DRIVES  
POWER CONTROL

SAFETY CONTACTORS

GUARDLOGIX  
SAFETY LOGIC CONTROLLERS

GUARDPLC