

MR-J3-BSafety/MR-J3-D05

Servo and Motion Control

Safe At Any Speed

Protecting machinery, systems and workers



Sophisticated motion control combined with comprehensive safety features



EN ISO13849-1 and ISO 61508 machine and functional safety compliance



Compatible with all MR-J3 motors and options



Connect safety devices directly

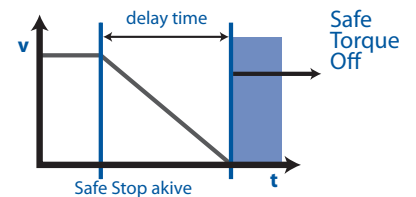
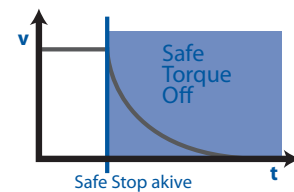
Safe and familiar



Maintain machine performance while meeting required safety standards

Comprehensive safety functions

Together, these devices offer a comprehensive motion safety solution. Implement safety functions using just the amplifier, or with both units, depending on system requirements. The MR-J3-BSafety amplifier by itself offers a Safe Torque Off (STO) function according to EN 60204-1 that prevents an unexpected re-start. Since STO allows the motor to coast to a halt, if a controlled stop is required, the MR-J3-D05 provides a Safe Stop 1 (SS1) function according to EN 60204-1. An Emergency Off (EMG Off) and Emergency Stop 1 (EMG Stop 1) are also provided by the D05. Hence system designers can select an economical solution that provides only the functions they need.



Maintain safe control of motor behaviour even in emergency situations

The safe choice for motion

Mitsubishi's MR-J3 family has become the leading choice for motion applications world wide. Industry leading performance, the SSCNET III motion network, and patented technology like vibration suppression has led to a significant global installed base. Mitsubishi now takes this success one step further by adding safety functions to the MR-J3 line up with the MR-J3-BSafety amplifier and MR-J3-D05 safety option card.

Standards compliance

The MR-J3 motion safety solution is fully certified by third party accreditation organizations. It complies with both EN 13849-1 for machine safety and ISO 61508 for functional safety. Hence specifying this solution in a motion system assists engineering staff to meet the requirements of mandatory certifications such as the EU Machinery Directive (2006/42/EC).



Insure machine compliance with required standards

Simplified system design

As well as providing a safety function, the MR-J3-D05 also simplifies the connection of essential safety devices. Two safety inputs are provided for the direct connection of emergency stops, restarts, door open switches, etc. In addition, the D05 card can also control up to two axes, further reducing system complexity and cost. When a D05 unit is required, it is designed to fit neatly alongside the MR-J3-BSafety amplifier, minimizing the amount of additional panel space required. Finally, since the D05 functions as a safety relay, there is no need to use a separate external safety relay for additional savings.



Reduce wiring and cost with direct safety inputs

Compatibility

While this solution allows a safe motion system to be designed, it does not do this at the expense of existing technology. The MR-J3 safety solution was created with the aim of maintaining compatibility with the existing MR-J3 line up. Hence the full motor series can be used for safety applications. This gives the choice of 1 or 2 phase 230V and 3 phase 400 V models up to 55 kW. Additionally, existing option devices such as EMC filters and regenerative resistors are also compatible. Finally, the standard MR-J3-B cabling and connectors (including SSCNET III) are also used with the safety devices.

The MR-J3 safety solution is also compatible with other Mitsubishi safety devices. The System Q safety relay can be used with the MR-J3-BSafety amplifier if the MR-J3-D05 is not required. In addition to safe control of servo motors, the MR-J3-D05 can also provide an STO function for the FR-D700 inverter family.



Integrate with other parts of the Mitsubishi safety solution

Maintain productivity

There's no need to be safe but limit machine productivity. The STO and SS1 functions stop the motor, but maintain power to the amplifier. This means that once a safe restart of the machine can take place, it is not necessary to wait for the power off and restart cycle of the amplifier. Hence production can be up and running faster. A further benefit is that this causes less stress on the power components of the amplifier, providing an extended service life.

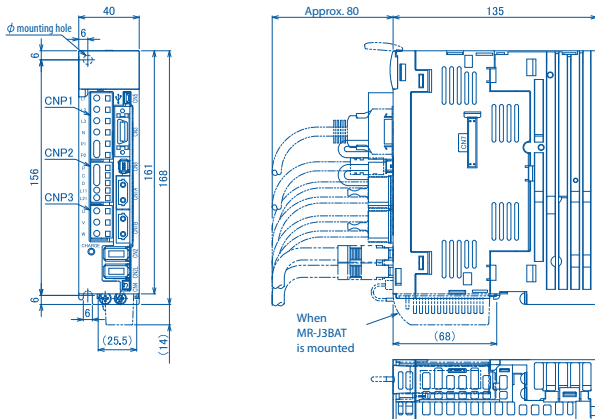
Technical Specifications ///

Servo Amplifier MR-J3-□S4	10BSafety	20BSafety	40BSafety	60BSafety	70BSafety	100BSafety	200BSafety	350BSafety	500BSafety	700BSafety
Main circuit power supply	1 phase or 3 phase 200–230 V AC (S type) 3 phase 380–480 V AC (only for S4 type)					1 phase or 3 phase 200–230 V AC (S type) 3 phase 380–480 V AC (only for S4 type)				
Control circuit power supply	1 phase 230–230 V AC									
Interface power supply	24 V DC ± 10 % (required current capacity: 200 mA, including CN8 connector signals)									
Control system	Sine-wave PWM control/current control system									
Safety functions according to EN IEC 61800-5-2	Safe Torque Off (STO) Safe Stop 1 (SS1), safety option card MR-J3-D05 required									
Response time	20 ms or less for Safe Torque Off (STO)									
Safety Standards	EN ISO 13849-1 PL d / EN 61508 SIL 2 / EN 62061 SIL CL 2									

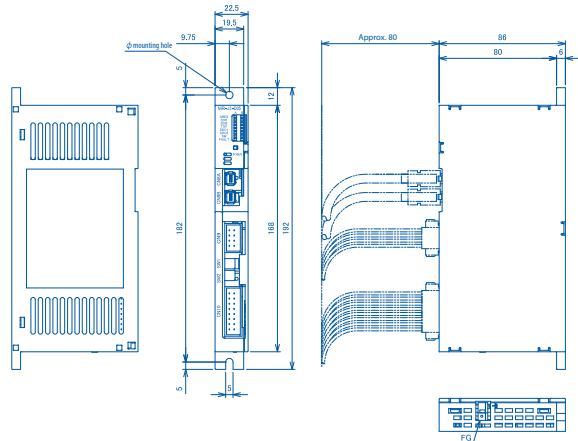
	MR-J3-D05
Control circuit power supply	24 V DC, 500 mA
Connectable Axis	2 axes, indepently controlled
Shut-off input (Safety devices)	4 points (2 points x 2 axis), source/sink logic compatible
Shut-off release input (restart devices)	2 points (1 points x 2 axis), source/sink logic compatible
Safety functions	Safe Torque Off (STO) according to EN IEC 61800-5-2, Safe Stop 1 (SS1) according to EN IEC 61800-5-2 EMG STOP, EMG OFF according to EN IEC 60204-1
Response time	20 ms or less for Safe Torque Off (STO)
Safety Standards	EN ISO 13849-1 PL d / EN 61508 SIL 2 / EN 62061 SIL CL 2
Delay time setting	0 s, 1.4 s, 2.8 s, 9.8 s, 30.8 s, ± 2 % (additional for axis A: 5.6 s)

Dimensions

MR-J3-10BSafety / MR-J3-20BSafety



Safety option card MR-J3-D05



All dimensions in mm

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