

“MELFA SafePlus” enables robots and humans work together in harmony

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Mitsubishi Electric has developed a new optional Safety Solution “MELFA SafePlus” for its MELFA F Series industrial robots. The new technology limits the speed, range of movement or torque of the robot when safety sensors are activated, allowing operators to work in close proximity to a moving robot.

In today’s flexible production environments, robots and human operators increasingly work side by side. Mitsubishi Electric’s integrated Safety Solution helps manufacturers to boost productivity and lift human-machine collaboration to a new level by allowing the robot to continue operation, within tight constraints, while operators access its work cell.

Three main safety functions are available for the new “MELFA SafePlus” solution for the F Series controllers.

Reduced Speed Control limits the robot’s maximum speed to less than 250mm/s when activated, allowing the robot to carry on working but at a safe speed when operators are present, for example to load or unload material. Two different zones with different limited speeds can be defined, so the robot can adapt its behaviour according to its likely proximity to the operator.

Limited Range Control prevents the robot from entering the part of the work cell accessed by the operator. The system monitors the position of

four points on the robot arm and prevents any one of them from passing a pre-defined plane while the safety system is activated.

Torque Monitoring controls the speed and movement of the robot to keep estimated torque in its joints below a pre-determined level. Actual torque in the joints is continually monitored and the robot is immediately stopped if torque exceeds the pre-set level. This ensures that the robot will stop safely in the event of a collision with an operator and also protect the equipment.

In addition, all F Series robots are equipped with Safe Torque Off and Safe Stop capabilities, ensuring that motor power shuts off and the robot stops when an error occurs. This almost entirely avoids the risk of collisions with peripheral devices and other components.

All new safety functions can be triggered by dual channel safety inputs and can also be easily and safely integrated into a safety system which is controlled by safety PLC. The new Safety Solution for F Series hardware and software is developed and certified to a full range of relevant safety standards, including EN ISO 10218-1 (Industrial robots), EN ISO 13849-1 (Safety of machinery), EN62061 / IEC61508 (Functional Safety) and EN61800-5-2 (Safety function Drive) .

Mitsubishi Electric 6 axis RV-F Series robots are available with working radii from 504 to 1503mm and payload capacities of 2 to 20kg. The product portfolio of Scara RH-F Series robots includes models from 1kg to 20kg with a max. arm reach of 1000mm. Their high speed and ease of integration with vision systems and other equipment predestines them for applications in a broad range of lifting, positioning and assembly applications in industries from automotive through food & beverage and packaging.

“The outstanding speed, accuracy, connectivity, flexibility and cost-effectiveness of the Mitsubishi Electric F series is already increasing the application range of our robots to new tasks and into new industries,” says Oliver Giertz, European Product Manager Servo/Motion Systems and Robots at Mitsubishi Electric Europe’s Factory Automation European Business Group, “expanding on the existing range of safety features, the new optional safety concept “MELFA SafePlus” takes this a step further, allowing our customers to integrate robots and human operators in the same production lines with less space, less cost and higher overall productivity. For example, in an application requiring the worker to manually infeed products to the robot, the downtime can be reduced dramatically because the robot does not need to be stopped and restarted thanks to the “MELFA SafePlus” function.”



Image caption: New embedded safety solution allows Mitsubishi Electric F Series robots to interact with human operators, saving space, boosting productivity and cutting costs.

[Source: Mitsubishi Electric Europe B.V.]

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With over 90 years of experience in providing reliable, high-quality products to both corporate clients and general consumers all over the world, Mitsubishi Electric Corporation is a recognized world leader in the manufacture, marketing and sales of electrical and electronic equipment used in information processing and communications, space development and satellite communications, consumer electronics, industrial technology, as well as in products for the energy sector, water and waste water, transportation and building equipment.

With around 124.000 employees the company recorded consolidated group sales of 39,3 billion US Dollar* in the fiscal year ended March 31, 2014.

Our sales offices, research & development centres and manufacturing plants are located in over 30 countries.

Mitsubishi Electric Europe B.V., Factory Automation European Business Group (FA-EBG) has its European headquarters in Ratingen near Dusseldorf, Germany. It is a part of Mitsubishi Electric Europe B.V., a wholly owned subsidiary of Mitsubishi Electric Corporation, Japan.

The role of FA-EBG is to manage sales, service and support across its network of local branches and distributors throughout the EMEA region.

**Exchange rate 103 Yen = 1 US Dollar, Stand 31.3.2014 (Source: Tokyo Foreign Exchange Market)*

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