

With the release of TMflow 2.16 software, OMRON TM S-Series Collaborative Robots offer higher performance, greater precision and the ability to design and program automated processes offline.

Listening to the needs of our customers and industry in general, the new release of TMflow 2.16 includes key improvements to increase production speed and precision, as well as simplifying the process of expanding automation in production facilities.

Key features:

- TMSimulator for designing and testing robot operations offline, without needing a robot for proof-of-concept
- Improved Positioning Accuracy of OMRON Landmark
- Use up to three OMRON Landmarks to create a vision base
- Continue process execution after an error stop
- Automatic Acceleration Configuration Tool
- Scrip Commands to Support Path Offset

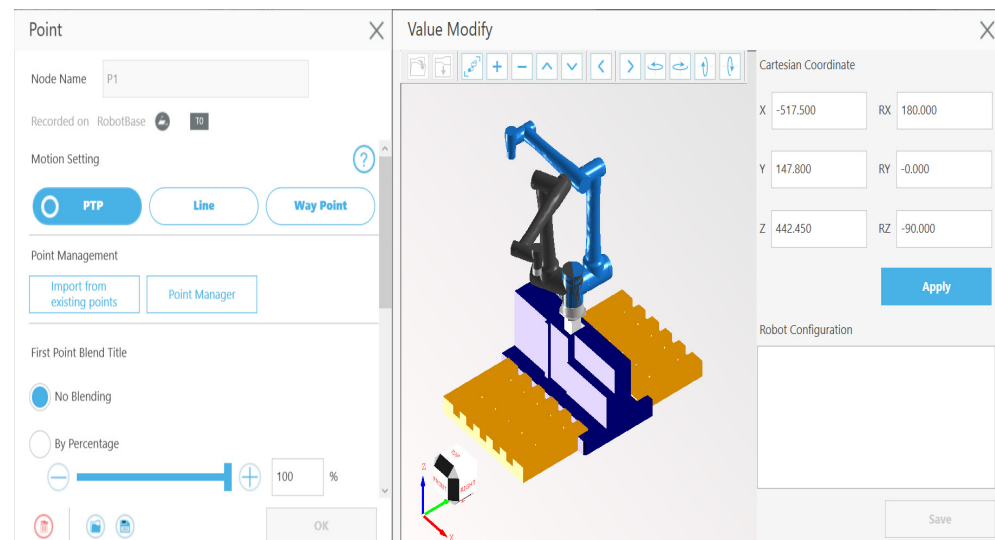
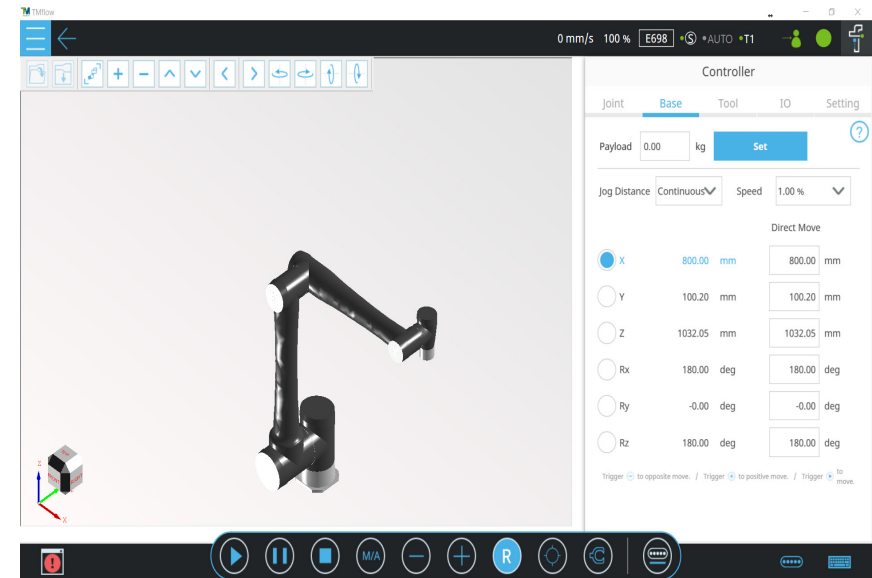
OMRON TMSimulator

Previous versions of TMflow (version 1.8X and earlier) included an offline editor which allowed users to to develop and edit programs, however it was not capable of running projects to verify operations. The new OMRON TMSimulator lets users develop, edit and run programs offline to test/verify proper operation. By building programs offline, new processes can be developed without taking a robot out of production.

Users can select one of five S Series robot models to build graphic simulations and visual verification of proper operation. This version of TMSimulator works with the following S Series models (HW5.0): TM55-X, TM75-X, TM125-X, TM145-X, and TM255-X. There is no visual component offered in TMSimulator, however programs can be transferred to TMflow and visual elements can be added there.

The onscreen display includes a virtual robot stick so users can control the robot just as they would control a physical robot. In addition to the standard robot control buttons, the virtual robot stick has buttons for RESET, Point, and Gripper.

The TMSimulator can test Listen Node and Network Node communications. Modbus, Ethernet Slave, and serial configurations can also be tested. The TMSimulator also has options for DI and AI Signal Control Box Input Control.



Improved Accuracy with OMRON Landmark

The Landmark feature is now even more useful than before, with improved accuracy and precision. In TMflow 2.16, a single Landmark positioning task provides up to 2-3x improvement in positioning accuracy compared to version 1.88. The maximum positioning accuracy error of Landmark varies based on different working distances. This improved positioning accuracy allows for larger working distances.

Continued Program Execution Following an Error Stop

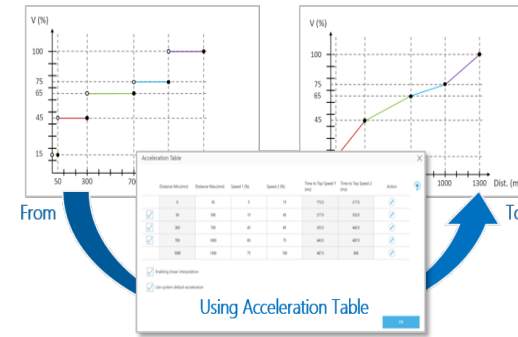
If the process is interrupted due to a fault or if the ESTOP button is pressed, the program can now resume operations from the point of the error. Once the error is addressed and reset, the operator can press PLAY to bring the robot to the point where the error occurred. Pressing PLAY again will resume the operation from that point.

Automatic Acceleration Configuration Tool

With the Automatic Acceleration Configuration Tool, users do not need to measure and adjust speed settings for each node individually. TMflow will automatically calculate and set values for the speed and the time to top speed of the motion node based on distances between points. This eliminates the need for trial-and-error testing of speed and acceleration parameters. This tool does not account for payload to calculate speed and acceleration.

Create a Vision Base with up to Three Landmarks

Using three Landmarks instead of just one can improve visual positioning accuracy by three to six times. When the built-in vision system captures the three TM Landmarks, it obtains positioning information for six degrees of freedom (X, Y, Z, RX, RY, and RZ), thereby creating a vision base.



Single Landmark System

	10 cm	20 cm	30 cm
1 Landmark			
TMflow 1.88	0.24 mm	0.53 mm	1.00 mm
TMflow 2.14, 2.16	0.10 mm	0.20 mm	0.33 mm
	Positioning Accuracy 2x Up!	Positioning Accuracy 2x Up!	Positioning Accuracy 3x Up!

TMF 2.XX Single Landmark Accuracy Improvement

Triple Landmark System

	20 cm	30 cm	40 cm
1 Landmark			
Maximum positioning accuracy error	0.69 mm	1.1 mm	2.2 mm
3 Landmark			
Maximum positioning accuracy error	0.25 mm	0.26 mm	0.34 mm
	Positioning Accuracy 3x Up!	Positioning Accuracy 4x Up!	Positioning Accuracy 6x Up!

Capture OMRON Landmark at various distances. The maximum position accuracy error of OMRON Landmark is within a 30 cm working distance

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