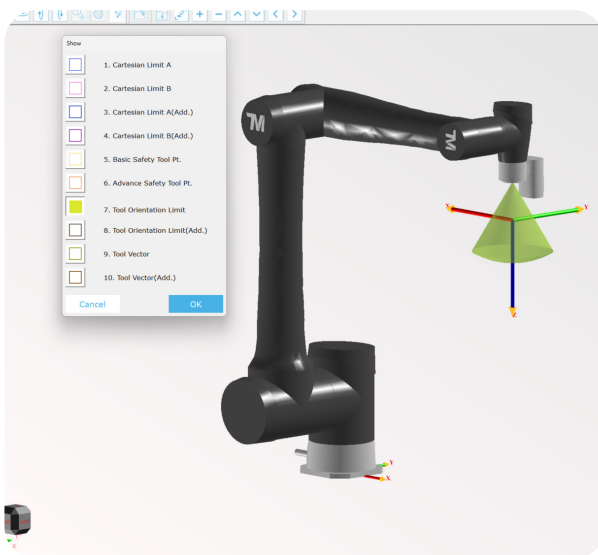*Now Available*

TMflow 2.22
Collaborative Robot Software

OMRON's highly versatile programming software for collaborative robots is more capable and easier to use than ever before.
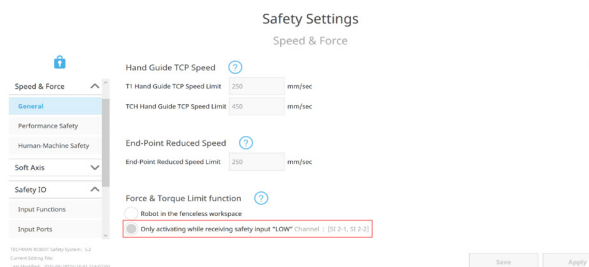
Safety Improvements

Safety Tool Orientation Limit

Users can set constraints on their desired tool orientation range using the Tool Orientation Limit (SF31) function in the soft axis safety settings. This safety feature continuously monitors a user-specified safety tool vector within a user-configurable restriction cone. If the safety tool vector exceeds the bounds of this restriction cone, a Category 2 Stop will be initiated, ensuring operational safety.

User-Connected Freebot Input

A new safety function has been added, SF32-User Connected Freebot Input, which allows for users to hand guide the robot from an external device such as a customer end effector with its own Freebot button attached.
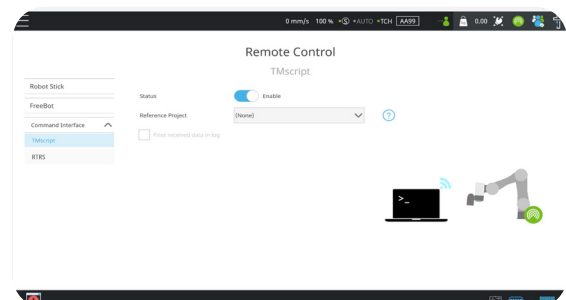
Mute Force & Torque Limits via Safety Input

Provides a means for users to mute the force and torque limit function through a safety input. Users can determine the areas or conditions in which the robot should monitor force and torque limits, ensuring alignment with the integration scenario and proper risk assessment.

Remote Controls Improvements

Remote Control via TMscript

Users can now enable complete remote control from an external device through TMscript. This feature functions similarly to the Listen node, but it is managed through the remote control settings of TMflow. Furthermore, both TMscript and RTRS have been incorporated into the Remote Control/Command Interface page, providing comprehensive tools for remote operation.
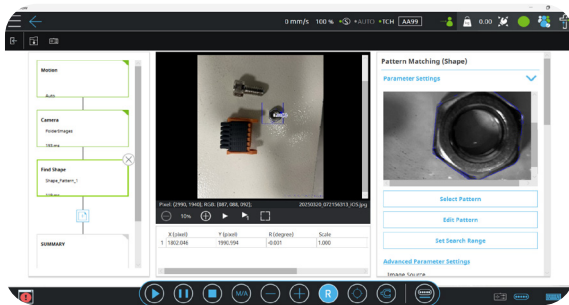
Real-Time Remote Server

Users can now remotely exchange robot data and control robot motion in real-time. The Real-Time Remote Server (RTRS) has been integrated into the real-time operating system, enabling it to efficiently process both data exchange and motion commands. Users can configure the RTRS in TMflow to allow up to three connections to external devices from data exchange and up to one external device for complete motion control.

Simulation and Vision Improvements

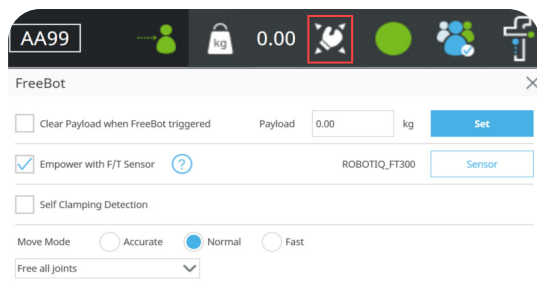## Vision Operations in TMflow Simulator

Users can now edit and run inspection vision nodes directly within the TMflow Simulator. For image sources, users have the flexibility to use a real camera or to use images stored in a local drive. This allows for comprehensive development and testing of vision applications without requiring a physical robot.

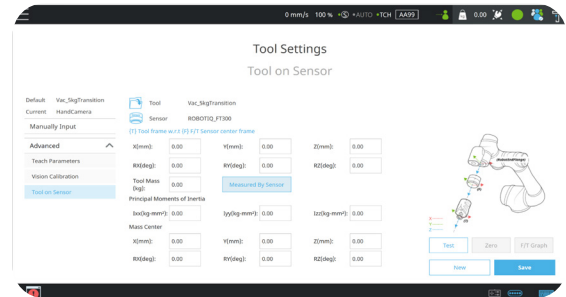### *Force Torque (F/T) Sensor Improvements*

Force Sensor Hand-Guide Function

Users can now empower hand-guiding by using feedback from a force sensor installed on the robot's end flange. When this setting is activated and a force sensor is selected, the robot will automatically apply force compensation during hand-guide mode, providing a more intuitive and responsive FreeBot experience.
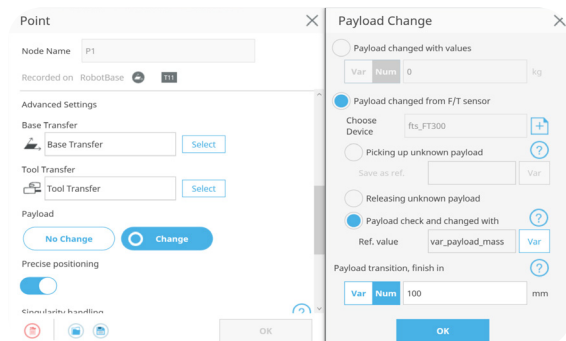

Tool Measured by F/T Sensor

Robots that are equipped with an F/T sensor can now automatically calculate the tool's mass properties based on feedback from the sensor. This will allow customers to have a rough estimate for tools with an unknown weight and mass center frame.

Payload Diagnosis by Force Sensor

In the Payload settings of motion nodes, users can now verify whether the payload matches the user's expected value. Specifically, the system now includes a function to verify whether the payload measured by the F/T sensor matches the user-defined expected payload after the payload transition distance. This function is designed to assist users in confirming the successful pickup or release of a workpiece.

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