

**SMART FLEX EFFECTOR**

**PROCESS OPTIMIZATION THANKS**

**TO SENSITIVE TOUCH FUNCTION**



# INDUSTRY REQUIREMENTS

## THE CHALLENGES



### PROCESS AUTOMATION

Joining processes with low tolerances require time-consuming, manual production work.



### TIME-CONSUMING TEACHING

Frequent (re)teaching of points during the process takes up a great deal of time.



### HIGH-PRECISION PICKING AND PLACING

Incorrect positions/positional inaccuracies of objects can lead to product damage.



### BETTER PROCESS TRANSPARENCY

A lack of process transparency means that quality defects are found at a later stage



## INGENIOUS, PRECISE, AUTOMATED

The Smart Flex Effector is a sensor-based compensation module with independent kinematics in six degrees of freedom. It increases precision, e.g. in handling robots, and opens up completely new areas of application for robots and Cartesian systems. The innovative tactile technology reduces errors and saves time and costs during commissioning and operation in many applications.

## THE INTELLIGENT ALL-ROUNDER

With the Smart Flex Effector, position deviations of the tool in relation to the workpiece are detected using high-resolution position sensors and translated into active correction movements of the manipulator. The intelligent sensor technology provides detailed process feedback and, in conjunction with the compensation kinematics, enables readjustment. In addition, the measured values of the Smart Flex Effector provide information about process quality and can be used for quality monitoring and logging.

## TECHNICAL DATA SMART FLEX EFFECTOR

- Compensation in six degrees of freedom through integrated sensor technology
- Electromechanical locking of the module
- Internal calculation of the Cartesian deviation from the zero point coordinate
- Axial angle equalization  
X/Y +/- 3,4°, Z +/- 6,8°
- Compensation XY +/- 3.0 mm, Z -3.0 mm
- I/O, RS-485 interfaces  
(sensor/actuator cable, 8-pole)
- IP54 protection class
- Maximum handling weight 6 kg

# OUR SMART SOLUTIONS



## PROCESS AUTOMATION

The flexibility of the Smart Flex Effector allows active balancing. Joining processes with very low tolerances can be automated and costs can be reduced.



## QUICKER TEACHING

Thanks to 6D position measuring, the exact coordinates of picking and placing points can be read straight from the controller. This reduces the teaching times.



## MORE PRECISE PICKING/PLACING

During scanning, the Smart Flex Effector can detect abnormalities in six degrees of freedom. Thanks to the sensors, the exact position of the object can be determined. As a result a compensation movement by the robot can take place and damage to objects can be avoided. After picking/placing, the compensation module can be returned to the zero position and locked, thus allowing high travel dynamics.



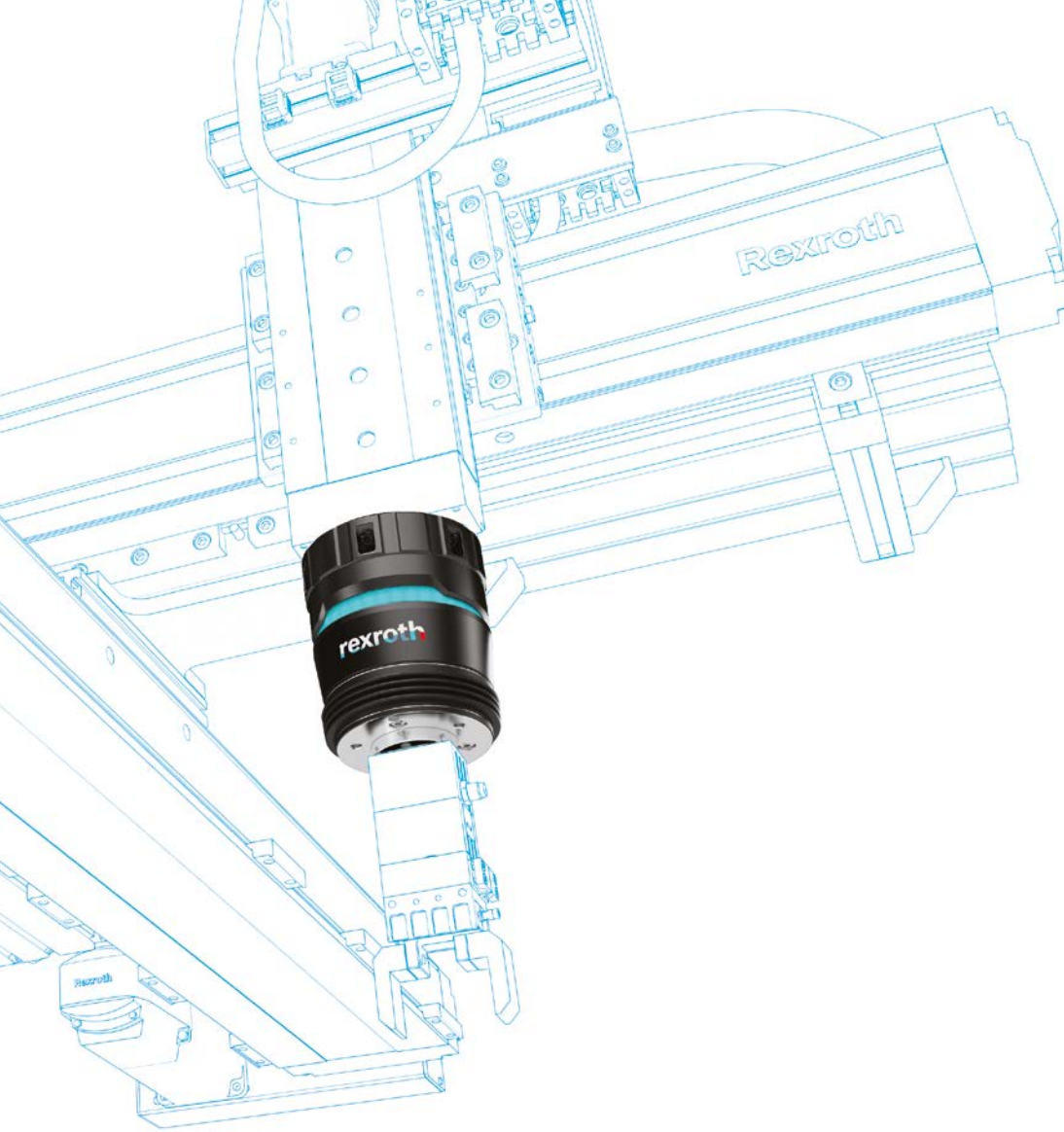
## PROCESS MONITORING

By permanently monitoring position information from the sensor, abnormalities in the process can be recognized, rectified and responded to early on. This results in fewer rejects.



## ALL THE BENEFITS AT A GLANCE

- ▶ All in one – locking, sensor technology with flexibility module in six degrees of freedom
- ▶ Innovative – tactile technology
- ▶ Flexible – universal use thanks to software tools and common interfaces
- ▶ Fast – high travel speeds and cycle times
- ▶ Efficient – reduced downtimes and increased productivity
- ▶ Future-proof – solution can be retrofitted at any time



## **SMART FLEX EFFECTOR – FOR A WIDE RANGE OF APPLICATIONS**

Whether it be in automation or robotics – the new compensation module can be used for handling or joining processes with low tolerances. The Smart Flex Effector is particularly suitable for joining with low tolerances and quality documentation, tool center point detection and for the automated compensation of position drifts both in the rotary axes and in the X, Y and Z direction.



### **ARE YOU READY FOR THE NEXT LEVEL OF ROBOTIC PRECISION?**

Find out more about the Smart Flex Effector:  
[www.boschrexroth-us.com/smartflexeffector](http://www.boschrexroth-us.com/smartflexeffector)

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