

Contents

What happens if the worker puts his hand between the gripper fingers?	2
What happens if the wrong workpiece or no workpiece is to be gripped?	2
Does the gripper have an "aura" or environmental sensor system? How does the gripper detect a collision with the housing or the gripper fingers?	2
What happens in case of an emergency stop?	2
What happens if the gripper crashes with a workpiece between the fingers?	2
What happens if the workpiece gets pulled out of the gripper by a human?	2
Is there a restart of the system after a minor collision? Is there a "step-by-step" safety concept?	2
Which safety functions are integrated in the gripper? Are there further topics which have been improved concerning the safety?	2
How is the further planning compared to the JL1?	3
Is the Co-act EGL-C the successor of the JL1?	3
Does the gripper have to be referenced or initialized?	3
Which Cobots can the Co-act EGL-C be connected to?	3
Which fingers can be used on the Co-act EGL-C and what must be considered?	3
Can I control the LED light band?	3
Which mechanical / communication interfaces are available?	3
Where is the application area of the gripper? Can it also be used in machine tools?	3
Will there be a time limitation of the gripping force maintenance (also depending on the ambient temperature)?	3
Will there be a URCap plugin?	4
Is a communication via PROFINET sufficient or should, for example, the workpiece diameter be communicated via PROFISAFE?	4
Would it be conceivable for the gripper to recognize via the applied gripping force that it grips an elastic workpiece by increasing the gripping force over a relatively long distance and can thus distinguish it from a "solid" workpiece?	4
What happens if the gripper is positioned in such a way that the fingers move vertically?	4
Why do we recommend a workpiece weight of 2.25kg at 450N even though market competitors do it differently?	4
Further questions?	4

What happens if the worker puts his hand between the gripper fingers?

During the commissioning the workpieces are to be taught to the gripper. If the gripper is in the gripping process and is blocked by a worker's hand, this is detected by the integrated path measurement and the gripper will be stopped. Since the full gripping force is only applied shortly before contact with the workpiece, the operator only feels a much lower force on his hand. The basis for the limit values is the body model from ISO/TS 15066.

What happens if the wrong workpiece or no workpiece is to be gripped?

If the dimensions of the workpiece do not correspond to those of the taught workpiece, an error occurs. The gripper reports the error to the higher-level control system and enters a safe state.

Does the gripper have an "aura" or environmental sensor system? How does the gripper detect a collision with the housing or the gripper fingers?

The gripper has no aura or environmental sensors. These features are still in a pre-development stage. The environment or collision detection must be ensured by the higher-level kinematics, for example the robot.

What happens in case of an emergency stop?

The emergency stop is basically a function of the overall application or overall machine in which the gripper is installed. Therefore, the combination of the overall function with the gripper is customer-specific. If an emergency stop was activated, the gripper should be transferred to a safe state. The gripper is prepared for this. As soon as the safety clearance is taken away from the gripper via the safe digital signals, the gripper either stops the movement of the jaws and switches off the power supply or – in case the workpiece is gripped – applies the brake and then switches off the power supply without losing the workpiece.

What happens if the gripper crashes with a workpiece between the fingers?

If the crash is detected, either by the gripper or by the higher kinematics, the system should be transferred to a safe state. The gripper does this on its own after removal of the safety clearance. When the workpiece is gripped, the gripping force is safely maintained by the integrated brake and the gripper will be de-energized.

What happens if the workpiece gets pulled out of the gripper by a human?

If a human applies a higher force than the applied gripping force, this case is conceivable. However, the removal is detected by the gripper, either by the loss of gripping force or by a movement of the jaws (e.g. lever movement). If such a change is detected, the gripper transfers to a safe state.

Is there a restart of the system after a minor collision? Is there a "step-by-step" safety concept?

An automatic restart is provided depending on the intensity of the intervention in the gripper. However, this only affects an intervention in the fingers. A collision of the gripper's housing with an obstacle is not detected.

Which safety functions are integrated in the gripper? Are there further topics which have been improved concerning the safety?

The Co-act EGL-C has the overall safety function "Safe gripping". This consists of many individual safety or monitoring functions that have been ideally combined for the "gripping" application. This enables the gripper to safely monitor its speed, position and gripping force. As soon as a workpiece is gripped the gripper can hold it securely even in the event of a power failure.

How is the further planning compared to the JL1?

The Co-act EGL-C offers many possibilities for further development due to its structure. For example, the connection of a camera system or a force-torque sensor is conceivable in the long term.

Is the Co-act EGL-C the successor of the JL1?

The JL1 is a technology carrier for a wide range of future functions. There will be no direct successor to the JL1. However, the gripping strategy and the light band have been adapted from the JL1 to the Co-act EGL-C. Further functions of the JL1 are being researched and evaluated for further products or product variants.

Does the gripper have to be referenced or initialized?

Referencing or initializing the gripper is always necessary for safety reasons and cannot be bypassed.

Which Cobots can the Co-act EGL-C be connected to?

The Co-act EGL-C can be connected to many Cobots if they provide the mechanical and electrical requirements. Depending on the equipment of the Cobot, additional adapter plates or converters may be necessary. The instructions in the manual must also be considered. The Co-act EGL-C will also be available, preconfigured for a selection of Cobots so that a complete Plug&Work between gripper and Cobot is possible.

Which fingers can be used on the Co-act EGL-C and what must be considered?

The fingers are usually supplied by the customer and are adapted to the workpiece. However, the fingers should be suitable for MRK, instructions for this can already be found in the Co-act EGL-C operating manual. In order to ensure the force measurement of the Co-act EGL-C, the fingers should be as rigid as possible in the direction of the workpiece.

Can I control the LED light band?

Controlling the light band by the customer is currently not intended. The LED light band in traffic light colors is controlled by the gripper and shows the current operating status.

Which mechanical / communication interfaces are available?

The PROFINET communication interface is currently planned for the introduction of the gripper. Step by step, compatibility with other systems is to be extended by EtherCAT and EthernetIP interfaces. The ModbusTCP interface is also in the pipeline.

Where is the application area of the gripper? Can it also be used in machine tools?

Based on the torque load and the gripping force, the gripper could be used in the area of the machine tool.

Will there be a time limitation of the gripping force maintenance (also depending on the ambient temperature)?

Excerpt from our operating instructions, paragraph Intended use:

"(...) The product is intended exclusively for gripping and holding workpieces or objects safely for a limited period of time. (...)"

Our products are not designed to grip a workpiece and hold it for several hours. During the development and design process of the product, the application is always being considered. The workpiece is usually held for a few seconds up to a maximum of a few minutes. If the system is shut down, the gripper must be emptied quickly.

Will there be a URCap plugin?

Within the framework of the development project, plug-ins or start-up aids are to be provided for all robots. This also includes an URCap plugin that simplifies the installation of the gripper on the Universal Robots robot.

Is a communication via PROFINET sufficient or should, for example, the workpiece diameter be communicated via PROFISAFE?

Safe communication is solely ensured by safe digital signals. Only commands that are not safety-relevant are transmitted via the PROFINET communication.

The workpieces are taught during the start-up and must be checked and tested for safety reasons.

The implementation of the protocol PROFISAFE is the next stage of development and will be released in the long term.

Would it be conceivable for the gripper to recognize via the applied gripping force that it grips an elastic workpiece by increasing the gripping force over a relatively long distance and can thus distinguish it from a "solid" workpiece?

This case is indeed conceivable but requires an extremely high computing power and a corresponding high reaction speed of the gripper. In the first release this will not be possible.

What happens if the gripper is positioned in such a way that the fingers move vertically?

This is made possible by teaching the workpieces in the respective position.

Why do we recommend a workpiece weight of 2.25kg at 450N even though market competitors do it differently?

SCHUNK always indicates the recommended workpiece weight in frictional connection with a safety factor of 2 and a friction factor of 0.1 (steel on steel). Especially new market competitors calculate differently and assume a different safety or friction factor. In order to be comparable, we provide a communication as follows:

"(...) can safely handle up to 2.25 kg with gripping forces of up to 450 N with force grip. Up to 8 kg are possible in form grip. (...)“

Further questions?

We are looking forward to your additional questions and can be submitted via the SalesToolBox (FAQ area) or by e-mail (benedikt.janssen@de.schunk.com).