



INSTALLATION AND OPERATING INSTRUCTIONS

robot-specific

GEP2006IO-12-B-01
GEP2010IO-12-B-01
GEP2013IO-12-B-01
GEP2016IO-12-B-01
GEP2006IO-12-B-02

DDOC01113-01

THE KNOW-HOW FACTORY

Glossary

| Term | Explanation |
|--------------------------|--|
| ActualPosition | Value of the current jaw position [1/100 mm] |
| BasePosition | Outer jaw position Depending on the application, this can be the base position or the work position. |
| ControlWord | Activation of the product Only one bit is permitted to be active in the ControlWord. The value 0 is also permitted. |
| DeviceMode | Used to select gripping profiles as well as the additional help modes in the product. |
| Diagnosis | If an error occurs, outputs a diagnostic code that can be compared with the error list. |
| GND | Ground/earth |
| GripForce | Setting the gripping force |
| PositionTolerance | Tolerance range for TeachPosition The value of the parameter acts in both directions. |
| ShiftPosition | ShiftPosition is a switching position between pre-positioning and gripper movement. |
| StatusWord | Summary of binary states of the product that can be returned as information to the control system. |
| Teach | Adoption of the ActualPosition as the TeachPosition |
| TeachPosition | Taught-in workpiece position |
| Travel path | Path on which the gripper jaws travel. |
| WorkpieceNo | Number of the selected workpiece recipe |
| WorkPosition | Inner jaw position Depending on the application, this can be the standby position or the work position. |
| Workpiece loss detection | Function which, in case of a workpiece loss, causes the jaws to move to the end position. |

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1 Supporting documents

NOTICE



Read through the installation and operating instructions before installing or working with the product.

The installation and operating instructions contain important notes for your personal safety. They must be read and understood by all persons who work with or handle the product during any phase of the product lifetime.



The documents listed below are available for download on our website www.zimmer-group.com.

- Installation and operating instructions
 - Catalogs, drawings, CAD data, performance data
 - Information on accessories
 - Technical data sheets
 - General Terms and Conditions, including warranty information.
- ⇒ Only those documents currently available on the website are valid.

INFORMATION



- ▶ The Declaration of Incorporation and Conformity can be found in the installation and operating instructions DDOC01113.
- ▶ The RoHS and REACH Declaration can be found in the installation and operating instructions DDOC01113.
- ▶ More information about the products can be found in the installation and operating instructions of the DDOC01113.
- ▶ Please contact Customer Service if you have any questions.

In these installation and operating instructions, "product" refers to the product designation on the title page!

1.1 Notices and graphics in the installation and operating instructions

DANGER



This notice warns of an imminent danger to the life and health of people. Ignoring these notices can lead to serious injury or even death.

- ▶ You absolutely must comply with the described measures for avoiding these dangers!
- ⇒ The warning symbols are assigned according to the type of danger.

WARNING



This notice warns of a situation that is potentially hazardous to personal health. Ignoring these notices can cause serious injury or damage to health.

- ▶ You absolutely must comply with the described measures for avoiding these dangers!
- ⇒ The warning symbols are assigned according to the type of danger.

CAUTION



This notice warns of a situation that is potentially hazardous to persons. Ignoring these notices can cause minor, reversible injuries.

- ▶ You absolutely must comply with the described measures for avoiding these dangers!
- ⇒ The warning symbols are assigned according to the type of danger.

NOTICE



This notice warns of possible material and environmental damage. Ignoring these notices can result in damage to the product or the environment.

- ▶ You absolutely must comply with the described measures for avoiding these dangers!
- ⇒ The warning symbols are assigned according to the type of danger.

INFORMATION



This category contains useful tips for handling the product efficiently. Failure to observe these tips will not result in damage to the product. This information does not include any information relevant to health or workplace safety.

2 Safety notices

CAUTION



Risk of injury and material damage in case of non-compliance

The product is state-of-the-art.

The following are examples of situations in which the product may cause a hazard:

- The product is not properly installed, used or maintained.
- The product is not used for its designated purpose.
- The locally applicable regulations, laws, directives or guidelines are not observed.
- ▶ The product may only be used in accordance with these installation and operating instructions and the product's technical data. Any changes or additions to the intended use of the product, as well as modifications to the product, such as those in the following examples, require the written permission of the manufacturer:
 - Use of the product under extreme conditions, such as aggressive fluids or abrasive dusts
 - Additional drilled holes or threads
- ⇒ Zimmer Group GmbH shall accept no liability for any damage caused by improper use. The operator bears sole responsibility.
- ▶ Make sure that the power supply is disconnected before you mount, adjust, modify, maintain or repair the product.
- ▶ Whenever work is carried out on the product, make sure that the product cannot be actuated by mistake.
- ▶ Perform maintenance tasks, renovation work or attachment work outside of the machine's danger zone when possible.
- ▶ Do not reach into the operational range of the product.
- ▶ Always adhere to the required maintenance intervals.
- ▶ When using the product under extreme conditions, adjust the maintenance interval according to the degree of contamination.
- ▶ Check the completeness and tightening torques of all mounting screws.

CAUTION



Notes and handling regulations for electrostatically sensitive components

Electrostatically sensitive components are individual components, integrated circuits or assemblies that can be damaged by electrostatic fields or electrostatic discharge.

- ▶ When handling electrostatic components, make sure that persons, the work area and packaging are all fully grounded.
- ▶ Touch electronic components only in appropriately identified areas with conductive flooring and only if:
 - You are grounded by means of special bracelets.
 - You wear shoes that are suitable and approved for the discharge of electrostatic charges.
- ▶ Do not bring electronic assemblies into contact with plastics and parts of clothing that have plastic content.
- ▶ Store electronic assemblies on conductive underlays only.
- ▶ Do not install electronic assemblies in the vicinity of data back-up devices or monitors (monitor distance > 100 mm).
- ▶ Perform measurements on electronic assemblies only if:
 - The measuring instrument is grounded (e.g. via a ground conductor).
 - The measuring head is momentarily discharged before measuring with a floating measuring instrument.

3 Proper use

NOTICE



Material damage and malfunction in case of non-compliance

The product is only to be used in its original state with its original accessories, with no unauthorized changes and within the stipulated parameter limits and operating conditions.

Any other or secondary use is deemed improper.

- ▶ Operate the product only in compliance with the associated installation and operating instructions.
 - ▶ Operate the product only when it is in a technical condition that corresponds to the guaranteed parameters and operating conditions.
- ⇒ Zimmer Group GmbH shall accept no liability for any damage caused by improper use. The operator bears sole responsibility.

- The product is designed exclusively for electric operation using a 24 V DC power supply.
- The product must always be mounted on materials that dissipate heat.
- The product is intended for industrial use.
- The product is to be used as intended in enclosed rooms for temporary gripping, handling and holding.
- The product is not suitable for clamping workpieces during a machining process.
- Direct contact with perishable goods/food is not permitted.
- The product is not suited for use in a potentially explosive atmosphere.

4 Personnel qualification

WARNING



Inadequate qualification can cause injury and material damage

If inadequately qualified personnel perform work on the product, this can cause serious injuries and significant material damage.

- ▶ All work on the product must be performed by qualified personnel.
- ▶ Before working with the product, read the document in its entirety and make sure that you have understood everything.
- ▶ Observe country-specific accident prevention regulations and the general safety notices.

The following qualifications are a prerequisite for performing various work on the product.

4.1 Electricians

Electricians are able to perform work on electrical systems, can recognize and avoid possible dangers and know the relevant standards and provisions due to their technical training, knowledge and experience.

4.2 Specialists

Specialists are able to perform the assigned work, can recognize and avoid possible dangers and know the relevant standards and provisions due to their technical training, knowledge and experience.

4.3 Instructed personnel

Instructed personnel have been trained by the operating company on the tasks and possible dangers of improper behavior.

4.4 Service personnel

Service personnel are able to perform the assigned work and can recognize and avoid possible dangers due to their technical training, knowledge and experience.

4.5 Additional qualifications

Persons who work with the product must be familiar with the valid safety regulations and laws as well as the standards, guidelines and laws listed in this document.

Personnel who work with the product must have facility-issued authorization to commission, program, configure, operate, maintain and also decommission this product.

4.6 Installing the product

INFORMATION



- ▶ More information can be found in the installation and operating instructions of the DDOC01113.
- ▶ Please contact Customer Service if you have any questions.

4.7 Installing the energy supply

NOTICE

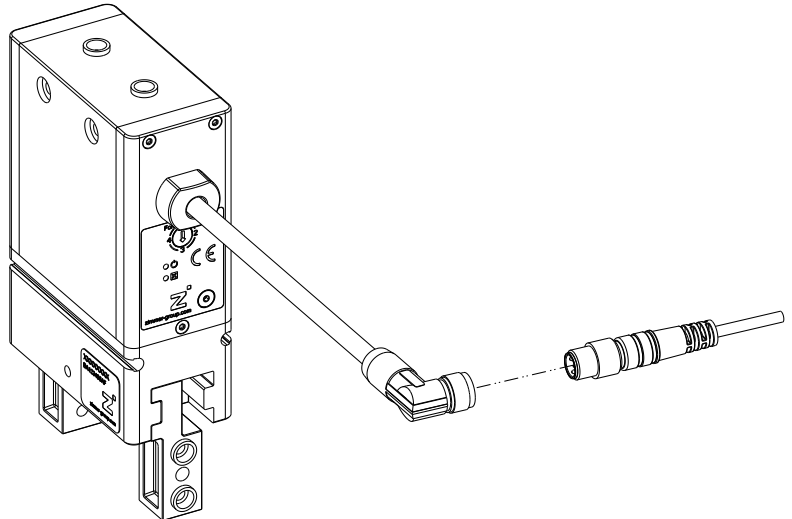


Material damage and malfunction in case of non-compliance

The cable mounted on the product can be subjected to a torsional angle of +50°.

- ▶ Do not route the cable so that it is strained.
- ▶ You must meet the minimum bending radius of 10x the outer diameter.
- ▶ Secure free-hanging cables to prevent excessive motion loads or pinching.
- ▶ The contacts of the energy supply must be dry, clean and undamaged at all times.

- ▶ Connect the power supply cable to the control system of the product.



4.8 Pin assignment

CAUTION

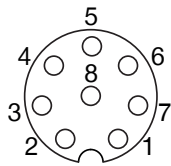


Risk of injury and material damage in case of non-compliance

Incorrect pin assignment can lead to malfunction or destruction of the product.

- Be absolutely certain to ensure correct pin assignment.

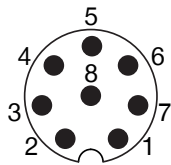
4.8.1 Pin assignment GEP20xxIO-12-B-01

| Pin | Color | Function | Explanation | Socket, M8 |
|-----|-------|-----------------|---|---|
| 1 | White | Analog output | Jaw position 0–10 V DC |  |
| 2 | - | - | - | |
| 3 | - | - | - | |
| 4 | - | - | - | |
| 5 | Gray | PWR | 24 V DC supply voltage | |
| 6 | Pink | Digital input 1 | Inward move command: Jaws move inward | |
| 7 | Blue | Digital input 2 | Outward move command: Jaws move outward | |
| 8 | Red | GND | 0 V DC supply voltage | |

The product inputs are designed for PNP outputs of the control system with a supply voltage of 24 V DC.

- Reconnect the voltage supply.
- A voltage supply between pin 5 and pin 8 is necessary for operation.

4.8.2 Pin assignment GEP2006IO-12-B-02

| Pin | Color | Function | Explanation | Plug, M8 |
|-----|-------|-----------------|---|---|
| 1 | - | - | - |  |
| 2 | - | - | - | |
| 3 | - | - | - | |
| 4 | - | - | - | |
| 5 | Gray | PWR | 24 V DC supply voltage | |
| 6 | Pink | Digital input 1 | Inward move command: Jaws move inward | |
| 7 | Blue | Digital input 2 | Outward move command: Jaws move outward | |
| 8 | Red | GND | 0 V DC supply voltage | |

The product inputs are designed for PNP outputs of the control system with a supply voltage of 24 V DC.

- Reconnect the voltage supply.
- A voltage supply between pin 5 and pin 8 is necessary for operation.

5 Commissioning

CAUTION



Reduction of the gripping force can cause injury and material damage

When flexible components are gripped, the gripping force of the product is reduced.

Reduced gripping force can cause injuries or material damage because the components can no longer be securely gripped and transported.

- ▶ Do not stand or walk underneath suspended loads.

NOTICE



Malfunction in case of non-compliance

- ▶ Note the correct setting of the gripping force and the selection of the gripper finger length to prevent the gripper jaws from tensioning.

WARNING



Suspended loads can cause injury

Falling loads can cause severe injuries.

- ▶ Always keep an adequate safety distance from suspended loads.
- ▶ Do not stand or walk underneath suspended loads.

A movement in the desired direction occurs when the corresponding signal is at a high level. After a high level is detected, the gripper movement occurs until the gripping process ends.

- ▶ Reset the corresponding signal after the movement is complete. The signal must be reset before a signal is emitted in the opposite direction.
- ▶ Observe a break time of 10 ms between the reset of the signal and the next command.

The current jaw position is scaled from 0 V DC (external) to 10 V DC (internal) and is issued via the analog output.

