Industrie 4.0

Gripper series with IO-Link
- GEH6000IL
- GEP5000IL
- GED5000IL

THE KNOW-HOW FACTORY

IO-Link

www.zimmer-group.com

ZIMMER group

INDUSTRIE 4.0

The world in which we live is changing. It is likely to be changing faster than we are able to observe in the snapshot of time. In the mechanical engineering and automation field, this shift, truly a new industrial revolution, is described with the buzzword „Industrie 4.0." This ensures the merging of the fields of typical engineering sciences and IT, the networking of components, machines and entire factory complexes are referred to within one overarching term. Ultimately, this outlines a more comprehensive solution approach for future challenges in the production environment of tomorrow. Zimmer Group views this shift in production from different perspectives. First, the technological shift described here is evident worldwide and its effects on production and the flow of goods are visible. However, topics such as human-machine interaction as well as qualifications and the demographic trends in the work environment should also be included in a comprehensive view. This holistic approach to Industrie 4.0 enables Zimmer Group to open up its full potential of market opportunities to its customers which provides this optimal networking of components, machines and people in the production environment and also during the production process.

IO-Link is the first standardized IO-technology worldwide for communication from the control system to the lowest level of automation. This IO-Link standard serves as a point-to-point connection independent of the fieldbus and works with an unshielded industrial cable as a universal interface, the mechanical engineering and automation USB, as it were.

With IO-Link, the user can focus on the central function of the devices, create and save parameters in centralized form for the devices as needed and automatically restore the previous default settings after exchanging the device. The device setting data can either be entered manually or taught via pairing. Once the setting parameters have been chosen for the connected sensors and actuators, they can be saved centrally and duplicated very easily for similar devices. Thus performing individual parameterization or repeatedly setting a large number of similar devices becomes unnecessary. This leads to substantial time savings during commissioning. Actuators and sensors can be exchanged during ongoing operation and initialized if necessary. The process ensures maximum machine availability, time savings and cost-efficiency, since the setting data can be transmitted quickly and accurately to the new devices. IO-Link also offers numerous options for extended diagnostics and predictive maintenance. Reliable, high-quality diagnostics of all systems and processes from the lowest level of the sensors and actuators to the highest host system is possible at any time. Analog values can be transmitted over a distance of up to 20 m without loss. In combination with the active data recording, this makes it possible to created data series, which can be used for extended diagnostics. This enables demand-oriented maintenance. Components can be replaced preventively as soon as signs of wear are noticed, long before failure occurs. IO-Link is easy to install and integrate. Moreover, it reduces and standardizes wiring effort. A standardized connection over an unshielded 5-wire cable is sufficient for producing a point-to-point connection. Previous investments are protected to a great extent as a result of maintaining tried-and-tested cabling structures and the compatibility with conventional wiring.

IO-LINK
THE INTERFACE FOR INDUSTRIE 4.0

▶ COMPONENTS

In the future, production systems and machines will build upon autonomously acting and intelligent mechatronic components and assemblies. More and more functions will be integrated directly into the assemblies and data processing will increasingly take place decentrally in the component. This data will network, organize and configure itself in order to apply functions from the higher-level control level. The Zimmer Industrie 4.0 components communicate via IO-Link, which ensures the connection is made easily using an M12 plug that carries the signal and power.

THE FOLLOWING FEATURES CHARACTERIZE INDUSTRIE 4.0 COMPATIBLE COMPONENTS:

▶ Simple installation:

- The connection via a plug / M12, which carries the signal and power, ensures the installation is sped up and sources of errors are excluded
- Components are registered to the higher level process control system, transmit information about their capabilities and are subsequently scheduled into the production process
- High level of flexibility during the parameterization process through option to either edit parameter sets or „teach“ them

▶ Easy to operate

- Creating, storing and restoring device parameters

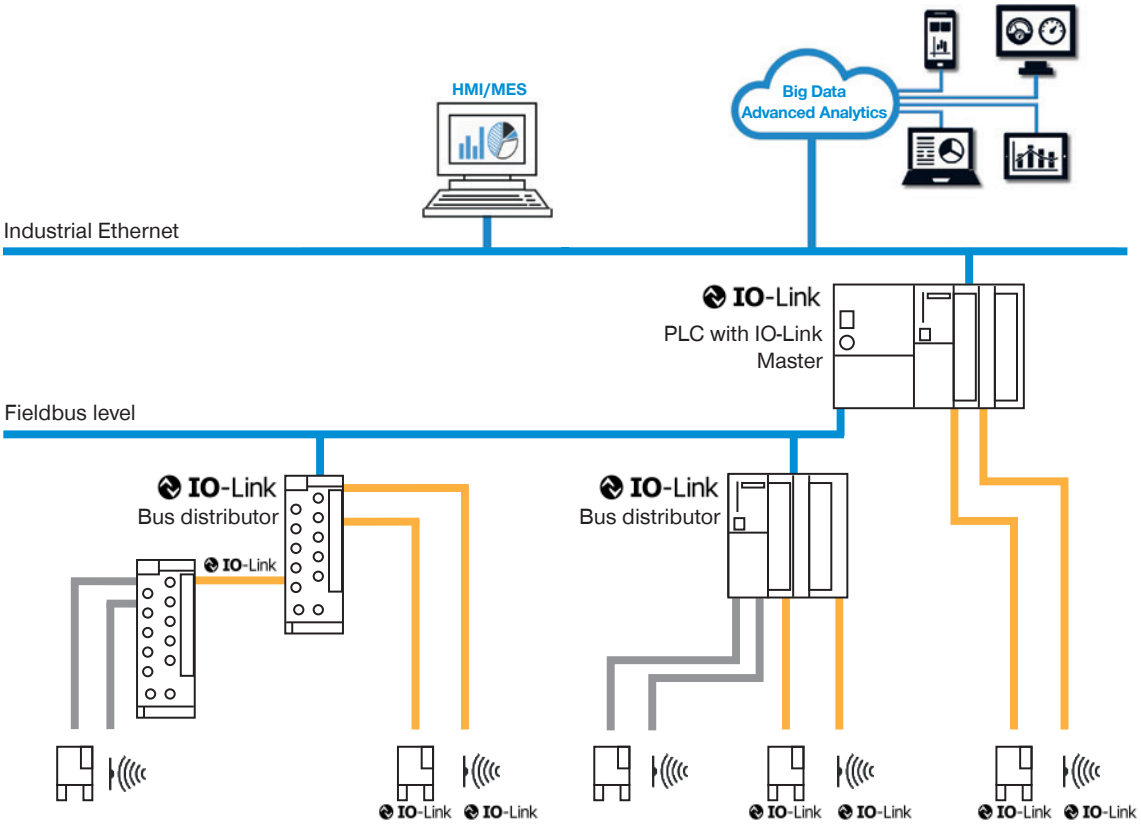
▶ Extended diagnostics and preventive maintenance

- High-quality system and process diagnostics from the sensor/actuator level to the host system. Analog value transmission without loss up to 20 m
- Option of active data recording
- Short changeover times thanks to central parameter and recipe management, including for field devices
- Reduced standstill times thanks to system-wide diagnostics all the way to the components and fast troubleshooting - thanks to predictive maintenance of the IO-Link components

▶ Can be replaced during ongoing operation

- Interchangeability/initialization during ongoing operation possible
- Highest possible machine availability thanks to very fast and accurate interchangeability

▶ SYSTEM ARCHITECTURE OF THE IO-LINK PRODUCTS



2-JAW PARALLEL GRIPPERS
SERIES GEP5000IL

▶ PRODUCT ADVANTAGES

IO-Link

“ALL in ONE”

- **Approximately the same gripping force as a comparable pneumatic gripper**
- **Mechanical self limitation in case of power drop**
- **Same connection drill patterns as a comparable pneumatic gripper**
- **Plug and play – single-cable solution, supports incredibly easy control using IO-Link**
- **Integrated ACM control module - option of configuring gripping force, travel time and switching points**
- **Protected from corrosion and sealed in accordance with IP64**
- **Brushless DC motor – up to 30 million cycles without maintenance**

▶ TECHNICAL DETAILS

30 million maintenance-free cycles (max.)

Integrated sensing

IP64

Corrosion resistance

Mechanical self limitation

Purged air

▶ **Technical Data**

Order no.	GEP5006IL	GEP5008IL	GEP5010IL
Drive	BLDC-Motor	BLDC-Motor	BLDC-Motor
Stroke per jaw [mm]	6	8	10
Gripping force min. [N]	540	800	1200
Gripping force max. [N]	960	1450	1900
Self limitation	mechanical	mechanical	mechanical
Control time [s]	0,035	0,035	0,035
Weight per jaw max. [kg]	0,4	0,7	1,3
Length of the gripper fingers max. [mm]*	100	125	160
Repetition accuracy +/- [mm]	0,01	0,01	0,01
Voltage [V]	24	24	24
Current consumption max. [A]	5	5	5
Operating temperature min. [°C]	5	5	5
Operating temperature max. [°C]	50	50	50
Protection to IEC 60529	IP64	IP64	IP64
Weight [kg]	0,79	1,16	1,66
AP class	5	5	5

*Depending on speed level selected

3-JAW CONCENTRIC GRIPPERS
SERIE GED5000IL

▶ PRODUCT ADVANTAGES

IO-Link

“ALL in ONE”

- **Approximately the same gripping force as a comparable pneumatic gripper**
- **Mechanical self limitation in case of power drop**
- **Same connection drill patterns as a comparable pneumatic gripper**
- **Plug and play – single-cable solution, supports incredibly easy control using IO-Link**
- **Integrated ACM control module - option of configuring gripping force, travel time and switching points**
- **Protected from corrosion and sealed in accordance with IP64**
- **Brushless DC motor – up to 30 million cycles without maintenance**

▶ TECHNICAL DETAILS

30 million maintenance-free cycles (max.)

Integrated sensing

IP64

Corrosion resistance

Mechanical self limitation

Purged air

▶ **Technical Data**

Order no.	GED5006IL	GED5008IL	GED5010IL
Drive	BLDC-Motor	BLDC-Motor	BLDC-Motor
Stroke per jaw [mm]	6	8	10
Gripping force min. [N]	540	800	1200
Gripping force max. [N]	960	1450	1600
Self limitation	mechanical	mechanical	mechanical
Control time [s]	0,035	0,035	0,035
Weight per jaw max. [kg]	0,4	0,7	1,3
Length of the gripper fingers max. [mm]*	100	125	160
Repetition accuracy +/- [mm]	0,01	0,01	0,01
Voltage [V]	24	24	24
Current consumption max. [A]	5	5	5
Operating temperature min. [°C]	5	5	5
Operating temperature max. [°C]	50	50	50
Protection to IEC 60529	IP64	IP64	IP64
Weight [kg]	1,09	1,66	2,33
AP class	5	5	5

*Depending on speed level selected

2-JAW PARALLEL GRIPPERS
SERIES GEH6000IL

▶ PRODUCT ADVANTAGES

IO-Link

“Highest performance”

- **Very high power density**
- **Mechanical self limitation in case of power drop**
- **Plug and play – single-cable solution, supports incredibly easy control using IO-Link**
- **Integrated ACM control module - option of configuring gripping force, travel time and switching points**
- **Positionable, brushless DC servo motor**
- **All usual driving profiles are pre-programmed**

▶ TECHNICAL DETAILS

5 Mio

5 million maintenance-free cycles (max.)

Integrated sensing

IP 40 / IP 54

IP40 / IP54

Mechanical self limitation

▶ **Technical Data**

Order no.	GEH6060IL	GEH6140IL	GEH6180IL
Drive	BLDC-Motor	BLDC-Motor	BLDC-Motor
Stroke per jaw, adjustable [mm]	60	40	80
Nominal gripping force [N]*	1000	1800	1800
Gripping force min. [N]	60	100	100
Gripping force max. [N]**	1250	2400	2400
Self limitation	mechanical	mechanical	mechanical
Weight per jaw max [kg]	0,3	1	1
Length of the gripper fingers max. [mm]	100	160	160
Max. movement speed per gripper finger [mm/s]	60	50	50
Repetition accuracy +/- [mm]	0,05	0,05	0,05
Operating temperature min. [°C]	5	5	5
Operating temperature max. [°C]	+50	+50	+50
Protection to IEC 60529	IP40	IP54	IP54
Weight [kg]	0,9	1,9	2,6
AP class	3	3	3

*Max. peak current ≤ 5 A

**Max. peak current ≤ 7.5 A

EASY INDUSTRIE 4.0
IO-LINK COMPONENTS OF ZIMMER GROUP

► Easy to install, easy to configure.

Integrating the gripper into the application environment is extremely easy.
- In the first step, screw on the gripper
- In the second step, wire the gripper with its own plug / M12, this will carry the signal as well as the power.
- In the third step, the higher-level process control system identifies the gripper as a device.
- In the fourth step, either the parameters programmed from the process control system are automatically transmitted into the gripper or the data is applied to the higher-level process control system in the case of a gripper that was taught previously outside of the machine..

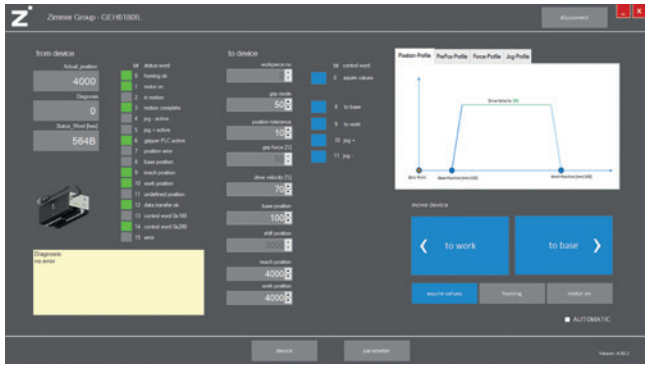
The gripper is now ready for production.

► Easy to operate

Operating Industrie 4.0 components from the Zimmer Group is just as easy and flexible as the installation.
The components are operated either using the central control system or, as is the case for most components, using the integrated control panel or via an app.

The app offers users the maximum level of flexibility when creating, storing and restoring device parameters and also provides assistance during diagnostics/preventive maintenance.

Furthermore, the GEH6000IL gripper series offers the user preprogrammed driving profiles with a practical orientation, which can be adjusted with just a few mouse clicks to the individual requirements of the gripping application. This ensures complete implementation and commissioning are possible for any user within just a few minutes.



► Extended diagnostics and preventive maintenance

Zimmer Group Industrie 4.0 components allow high-quality system and process diagnosis from the sensor to the actuator to the control level. Analog value transmission without loss up to 20 m, the option of actively recording data, extremely short changeover times thanks to central parameter and recipe management, even for field devices.
This reduces standstill times significantly as a result of the system-wide diagnostics option all the way to the fieldbus level and fast troubleshooting thanks to predictive maintenance of the IO-Link components.

► Can be replaced during ongoing operation

The components enable extremely fast and seamless interchangeability / initialization during the ongoing operation of the system and therefore guarantee the highest level of machine available.