2-JAW PARALLEL GRIPPERS
SERIES GEP2000

► PRODUCT ADVANTAGES

IO-Link

"The electric compact one"

► **Largest stroke in small installation space**

Do you require a large stroke, due to the fact that you are operating either a form fit gripper or a large range of parts but the installation space and the load capacity of your application is limited? Then this gripper is perfect for you!

► **The simplest activation**

It is your choice whether you want to control the gripper by means of I/O ports—like a valve—or if you prefer the version with IO-Link. Both have this in common: they are easy to integrate into your control system.

► **Positionability via IO-Link**

Gives you the ability to position the gripper jaws of the IL-03 variant. This means the stroke can be adjusted to the workpiece very flexibly. As a result, you save time and avoid interference contours in the process.

► SERIES CHARACTERISTICS

Installation size	Variants			
GEP20XX	IL-00	IL-03	IO-00	IO-05
IO-Link	●	●		
Digital I/O			●	●
Positionable		●		
10 million maintenance-free cycles (max.)	●	●	●	●
Magnetic field sensor			●	
Integrated sensing	●	●		●
Gripping force adjustable	●	●	●	●
Self locking mechanism	●	●	●	●
IP40	●	●	●	●

► BENEFITS IN DETAIL
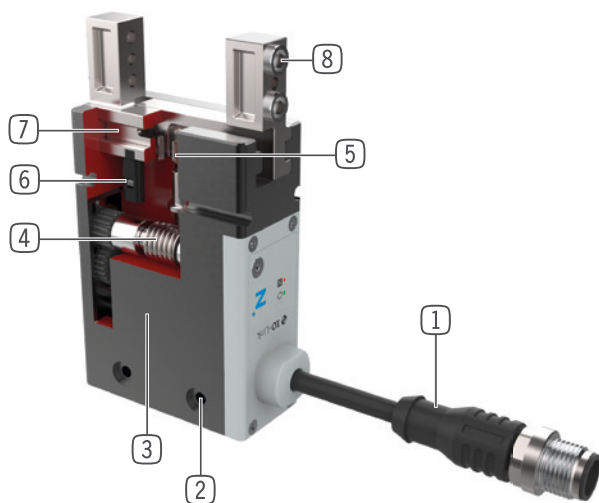
1 **Control**
   - Via I/O ports (IO) or via IO-Link (IL)

2 **Mounting and positioning**
   - mounting possible from several sides for versatile positioning

3 **BLDC motor**
   - wear-resistant brushless DC motor

4 **Helical worm gear**
   - self locking mechanism in case of power drop

5 **Synchronization**
   - via rack and pinion

6 **Position sensing**
   - Permanent magnet for direct query of jaw movement via magnetic field sensors

7 **Gripper jaw**
   - individual gripper finger mounting

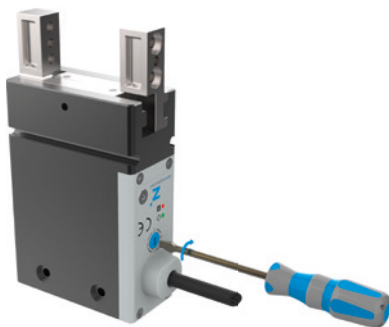8 **Removable centering sleeves**
   - quick and economical positioning of the gripper fingers

► TECHNICAL DATA

Installation size	Stroke per jaw [mm]	Gripping force [N]	Weight [kg]	IP class
GEP2006	6	40 - 145	0.18	IP40
GEP2010	10	50 - 200	0.31	IP40
GEP2013	13	90 - 360	0.54	IP40
GEP2016	16	125 - 500	0.9	IP40

► FURTHER INFORMATION

Adjustable gripping force

► Four-level gripping force adjustment via rotary switch for digital gripper control

► For the IO-Link variant, gripping force can be conveniently adjusted using the control system

Operating safety

► Mechanical self-locking mechanism, which means that in the event of a power failure, the workpiece is held securely

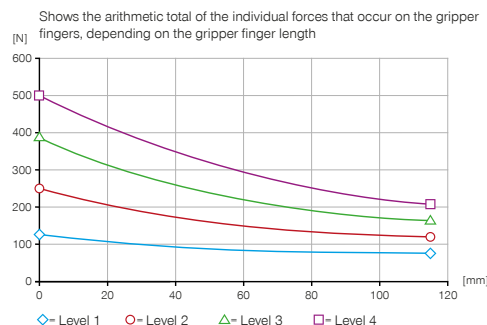► Gripper can be mechanically opened by means of an Allen key

2-JAW PARALLEL GRIPPERS
INSTALLATION SIZE GEP2016

▶ PRODUCT SPECIFICATIONS

▶ **Gripping force diagram**

Shows the arithmetic total of the individual forces that occur on the gripper fingers, depending on the gripper finger length

◇– Level 1   ○– Level 2   △– Level 3   □– Level 4

▶ **Forces and moments**

Displays static forces and moments that can also have an effect, besides the gripping force.

Mr [Nm]	28
Mx [Nm]	28
My [Nm]	20
Fa [N]	450

▶ TECHNICAL DATA

	▶ Technical data		
Order no.	**GEP2016IL-00-A**	**GEP2016IO-00-A**	**GEP2016IO-05-A**
Control	IO-Link	I/O	I/O
Integrated position sensing	Using process data	No	Analog 0 to 10 V
Stroke per jaw [mm]	16	16	16
Gripping force safety device	mechanical	mechanical	mechanical
Control time [s]	0.055	0.055	0.055
Dead weight of mounted gripper finger max. [kg]	0.21	0.21	0.21
Length of the gripper fingers max. [mm]	120	120	120
Repetition accuracy +/- [mm]	0.02	0.02	0.02
Operating temperature [°C]	5 ... +60	5 ... +60	5 ... +60
Voltage [V]	24	24	24
Current consumption max. [A]	2	2	2
Minimum positioning path per jaw [mm]	0.5	0.5	0.5
Protection to IEC 60529	IP40	IP40	IP40
Weight [kg]	0.9	0.9	0.9

▶ TECHNICAL DATA OF THE FORCE LEVELS

	▶ Level 1		
Order no.	**GEP2016IL-00-A**	**GEP2016IO-00-A**	**GEP2016IO-05-A**
Gripping force [N]	125	125	125
Closing time / Opening time [s]	0.44 / 0.44	0.44 / 0.44	0.44 / 0.44

	▶ Level 2		
Order no.	**GEP2016IL-00-A**	**GEP2016IO-00-A**	**GEP2016IO-05-A**
Gripping force [N]	250	250	250
Closing time / Opening time [s]	0.39 / 0.39	0.39 / 0.39	0.39 / 0.39

	▶ Level 3		
Order no.	**GEP2016IL-00-A**	**GEP2016IO-00-A**	**GEP2016IO-05-A**
Gripping force [N]	375	375	375
Closing time / Opening time [s]	0.35 / 0.35	0.35 / 0.35	0.35 / 0.35

	▶ Level 4		
Order no.	**GEP2016IL-00-A**	**GEP2016IO-00-A**	**GEP2016IO-05-A**
Gripping force [N]	500	500	500
Closing time / Opening time [s]	0.3 / 0.3	0.3 / 0.3	0.3 / 0.3

① Gripper attachment
② Energy supply IO-Link (M12, 5-pole)
③ Fixing for gripper finger
⑥ Integrated slot for magnetic field sensor
㊹ Energy supply (M8, 4-pole)
㊺ Energy supply (M8, 5-pole)
㊻ Force level setting
㊼ Gripper mounting clamp
㊽ Emergency release

GEP2016IL-00-A
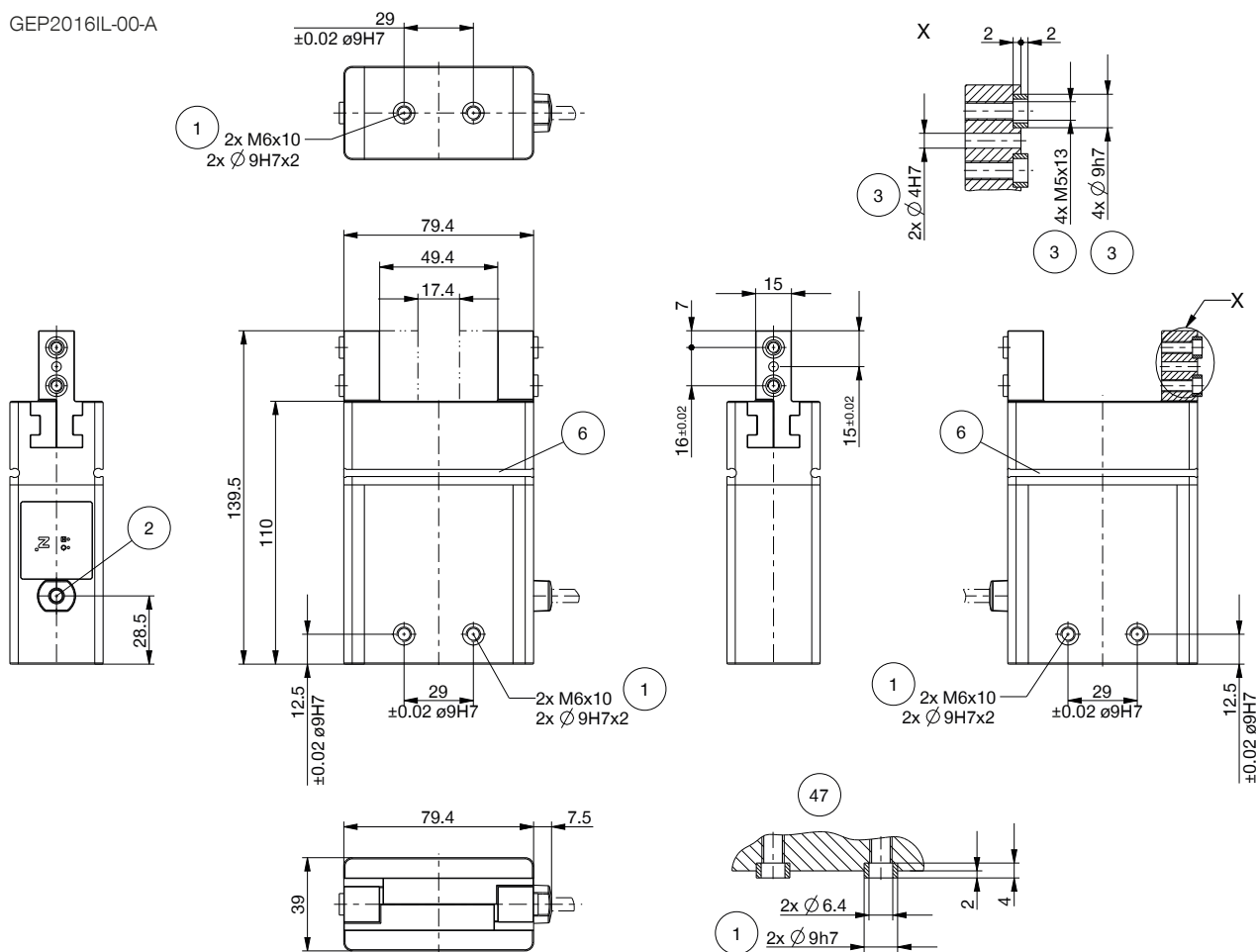
29 ±0.02 ø9H7

① 2x M6x10
2x Ø 9H7x2

X
2   2

③ 2x Ø 4H7

4x M5x13
4x Ø 9h7

③   ③

79.4
49.4
17.4

⑥

139.5
110

② 28.5

12.5 ±0.02 ø9H7
29 ±0.02 ø9H7
2x M6x10
2x Ø 9H7x2 ①

7
15

16±0.02
15±0.02

⑥

X

① 2x M6x10
2x Ø 9H7x2
29 ±0.02 ø9H7

12.5 ±0.02 ø9H7

79.4   7.5
39

㊼

① 2x Ø 6.4
2x Ø 9h7

2
4

GEP2016IL-00-A	GEP2016IO-00-A	GEP2016IO-05-A

M12 ② ② | M8 ㊹ ㊻ ㊹ | M8 ㊺ ㊻ ㊺

-300   -300   -300
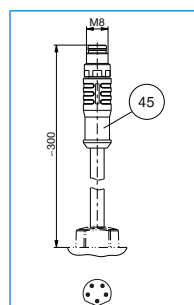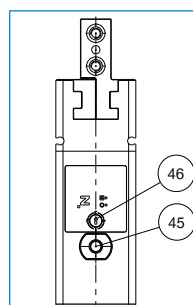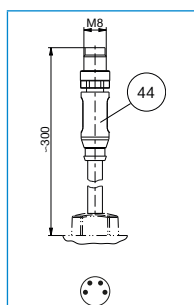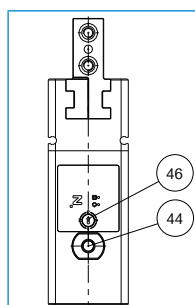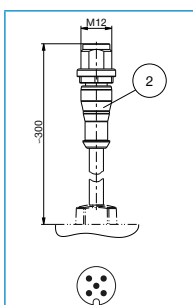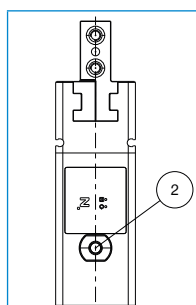
► ACCESORIES

► INCLUDED IN DELIVERY

6 [piece]
Centering Disc

343453

► YOU CAN FIND CONFIGURATION EXAMPLES ON THE FOLLOWING PAGES

► RECOMMENDED ACCESSORY GEP2016IL-00-A

CONNECTIONS / OTHER
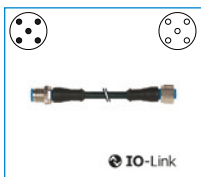
KAG500IL
Plug-in connector straight 5 m - plug, socket M12

AP2016
Adapter plate

► RECOMMENDED ACCESSORY GEP2016IO-00-A

SENSORS

MFS01-S-KHC-P1-PNP
Magnetic field sensor angled, cable 0.3 m - M8 connector

MFS02-S-KHC-P1-PNP
Magnetic field sensor straight, cable 0.3 m - M8 connector

MFS01-S-KHC-P2-PNP
2-point sensor angled, cable 0.3 m - M8 connector

MFS02-S-KHC-P2-PNP
2-point sensor straight, cable 0.3 m - M8 connector

CONNECTIONS / OTHER
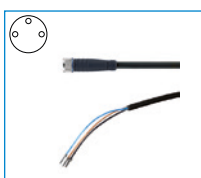
KAG500
Plug-in connector Straight Cable 5m - Socket M8 (female)
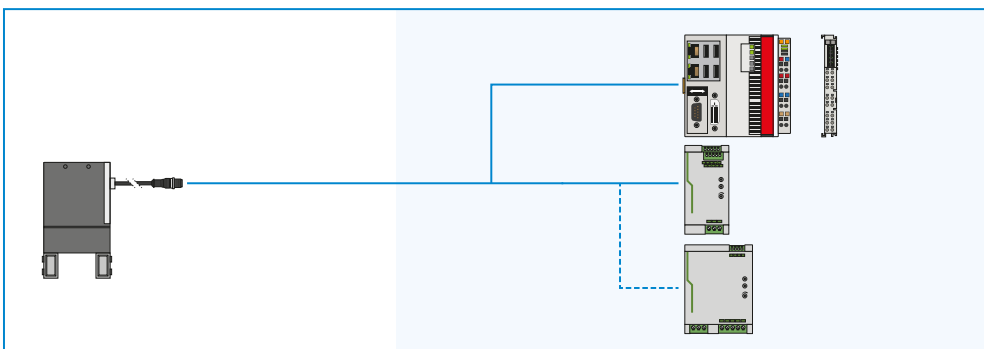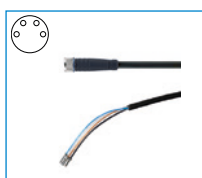
KAG500B4
Plug-in connector Straight Cable 5m - Socket M8 (female)

S8-G-3
Plug-in connector customizable Straight - Connector M8

S8-G-4
Plug-in connector customizable Straight - Connector M8

AP2016
Adapter plate

► RECOMMENDED ACCESSORY GEP2016IO-05-A

CONNECTIONS / OTHER
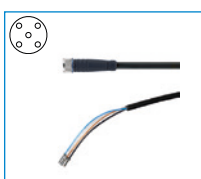
KAG500B5
Plug-in connector Straight Cable 5m - Socket M8 (female)

AP2016
Adapter plate

 SENSORS

1-point magnetic field sensors – MFS

For non-contact sensing of the piston position

The sensor is clamped in the C-groove of the gripper and detects the magnet attached to the gripper jaws. The MFS02 is available in versions with 5 m cables with exposed leads and 0,3 m cable with connector.
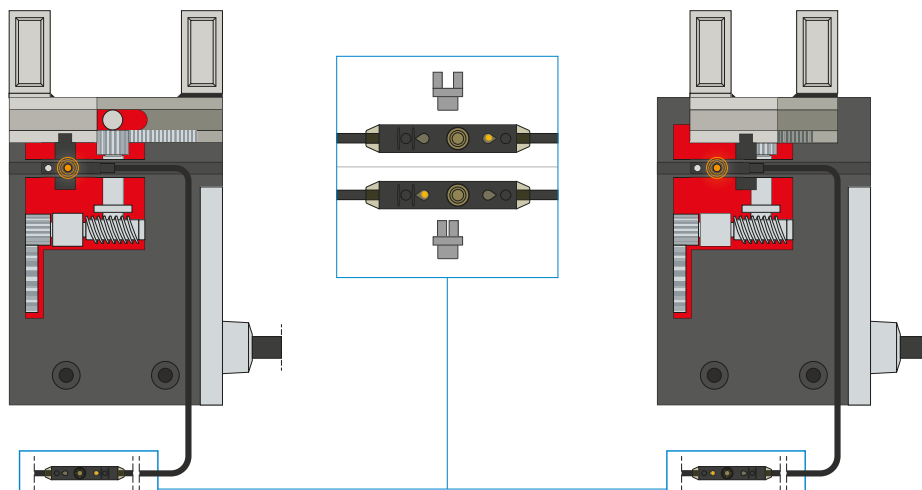
2-point magnetic field sensors – MFS

With two freely programmable switching points

Using the programming unit integrated in the cable, two switch points can be freely defined for this sensor. To do so, the sensor is clamped in the C-groove, the gripper approaches position one and the position is taught in using the teach button. Afterwards, the second position is approached with the gripper and programmed. To ensure use in a wide variety of space conditions, the sensors are available in two variants. While the horizontal MFS02, with straight cable outlet, disappears into the C-groove of the gripper almost completely, the vertical MFS01 is taller, but has a cable outlet that is offset at an angle of 90°. The sensors are available in versions with 5 m cables with exposed leads and 0,3 m cable with connector.

Plug-in connectors

For extending and fabricating the connection lines

Cables with a length of 5 m with exposed leads are available. Depending on the specific needs, the cables can be shortened or fabricated with connectors in sizes M8 and M12. A 5 m long cable with connector / socket is available for the IO-Link connection.
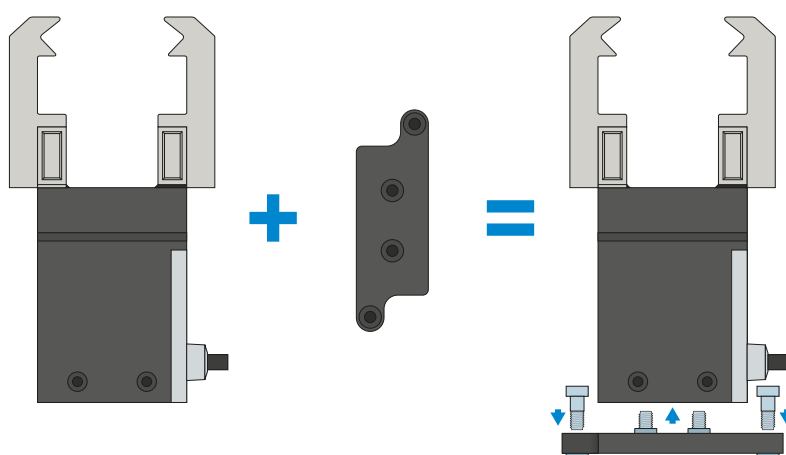
Adapter plate

Additional screw connection option

By attaching the optional adapter plate, the gripper can also be screwed on vertically (from above) if the fastening options integrated into the gripper housing cannot be used for space reasons.

CONNECTIONS / OTHER
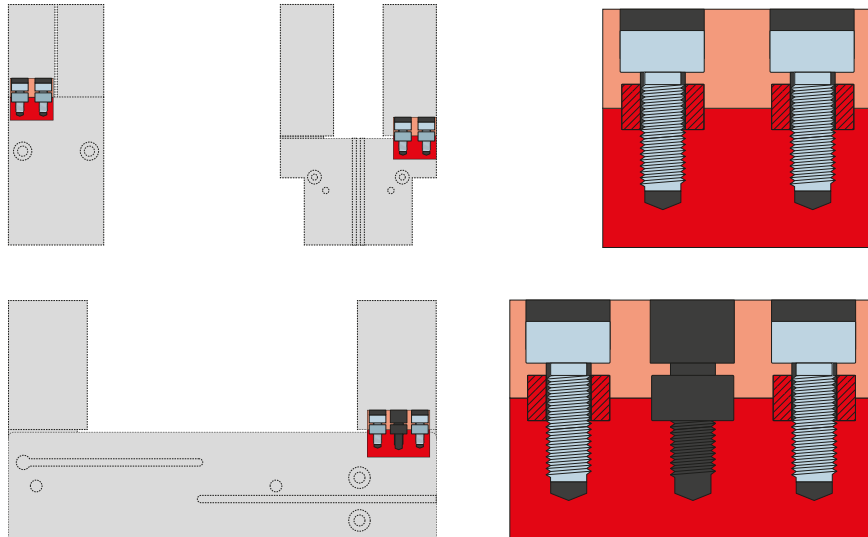
Centering sleeves

For defined position measurement of the gripper fingers

The centering sleeves are inserted into the fits of the gripper jaws to define the position of the gripper fingers. The centering sleeves are comparable to a pin connection.

CONTROL
GEP2000 SERIES

1 ▶ **IO-LINK CONTROL — GEP2000IL**
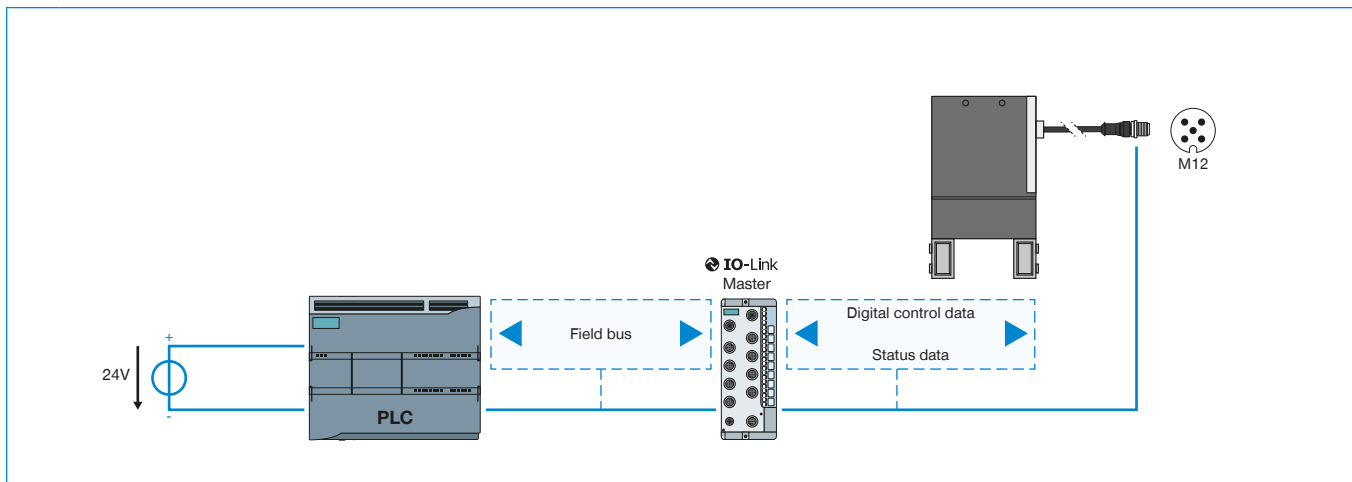
24V

PLC

Field bus

◉ IO-Link
Master

Digital control data

Status data

M12

2 ▶ **DIGITAL CONTROL — GEP2000IO-00**

24V

PLC

Digital sensor feedback

Digital control data

M8

M8

3 ▶ **DIGITAL CONTROL + INTEGRATED ANALOG SENSING — GEP2000IO-05**

24V

PLC

AI

10 V

0 V

Path

M8
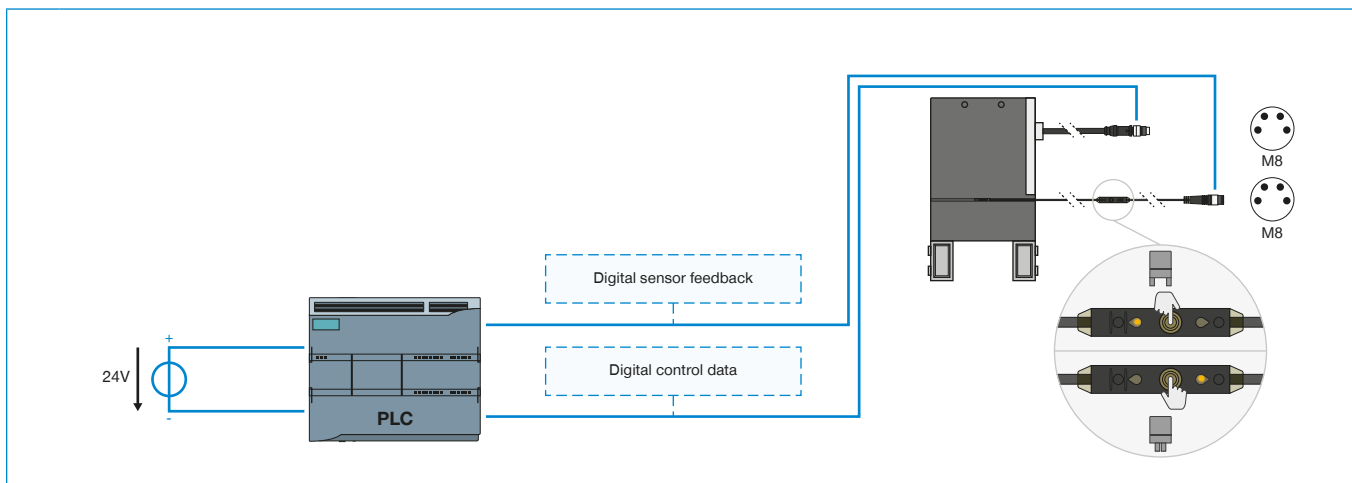
Digital control data

Analog sensor data
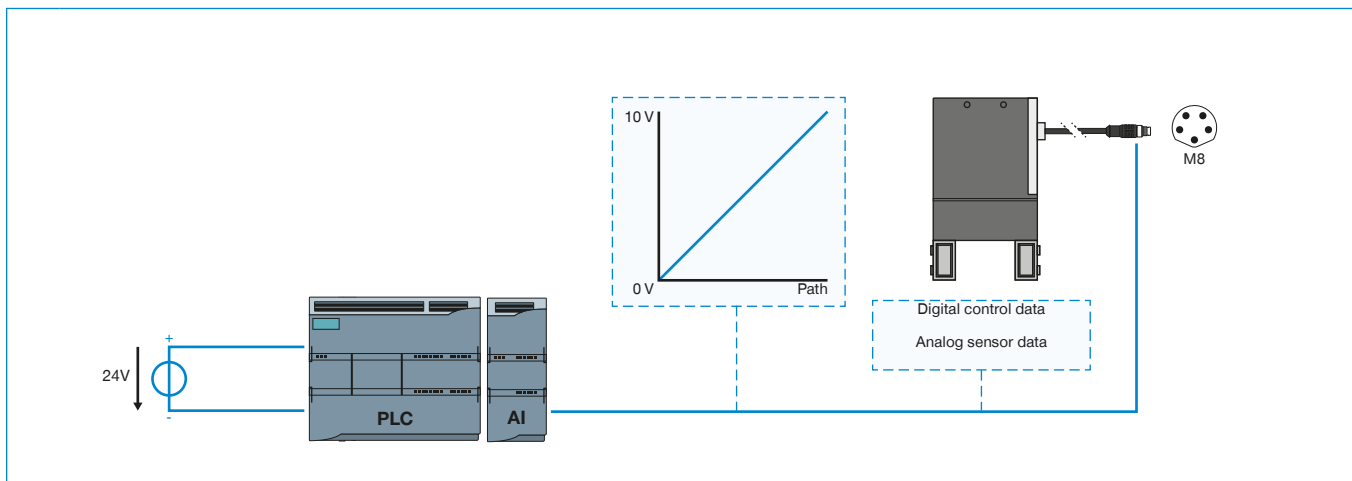
1 **▶ IO-LINK CONTROL — GEP2000IL**

- ▶ Single-cable solution—control system data, status/sensor data and power supply over a single cable
- ▶ Bi-directional data transmission
- ▶ Gripping force and gripping speed can be configured using software
- ▶ 32 workpieces data sets can be programmed
- ▶ Parts detection in range of +/- 0.05 mm with freely teachable area
- ▶ Status data such as temperature and cycle number can be read out
- ▶ Can be integrated into ZIMMER HMI
- ▶ Positionable (only variant IL-03)

2 **▶ DIGITAL CONTROL — GEP2000IO-00**

- ▶ Single-cable solution—control system data and power supply over a single cable
- ▶ Gripper commissioning by means of digital signals
- ▶ Optional digital gripper position feedback via external sensors
- ▶ Gripping force adjustment in four levels to the object being gripped, using rotary switch
- ▶ Can be integrated into ZIMMER HMI

3 **▶ DIGITAL CONTROL + INTEGRATED ANALOG SENSING — GEP2000IO-05**

- ▶ Single-cable solution—control system data, sensor data and power supply over a single cable
- ▶ Gripper activation by means of digital signals
- ▶ Integrated analog feedback of the gripper position
- ▶ Gripping force adjustment in four levels to the object being gripped, using rotary switch
- ▶ Can be integrated into ZIMMER HMI

SECURED CONFIGURATION EXAMPLES
GEP2000 SERIES

▶ GEP2000IL (IO-LINK) WIRING TO CONTROL CABINET (BECKHOFF)

M12

IO-Link connection cable
5 m M12-connecting cable 5x0.34
(max. cable length 10 m)
Order No. CSTE00829

IO-Link

Control system
Beckhoff

IO-Link
master clamp
Beckhoff
4xIO-Link

TERMINAL STRIP

Power

1-2 grippers*
24V 5A power supply unit with boost
Phoenix Contact
Order No. 2866750

3-4 grippers*
24V 10A power supply unit with boost
Phoenix Contact
Order No. 2866763

*Depending on max. power consumption of the actuator

▶ GEP2000IL (IO-LINK) WIRING TO CONTROL CABINET (SIEMENS)

M12

IO-Link connection cable
5 m M12-connecting cable 5x0.34
(max. cable length 10 m)
Order No. CSTE00829

IO-Link

Control system
e.g. Siemens ET200SP

IO-Link
master clamp
Siemens
CM 4xIO-Link

TERMINAL STRIP

Power

1-2 grippers*
24V 5A power supply unit with boost
Phoenix Contact
Order No. 2866750

3-4 grippers*
24V 10A power supply unit with boost
Phoenix Contact
Order No. 2866763

*Depending on max. power consumption of the actuator

▶ GEP2000IL (IO-LINK) WIRING TO IO-LINK MASTER IP67 (BECKHOFF)

M12

IO-Link connection cable
5 m M12-connecting cable 5x0.34
(max. cable length 10 m)
Order No. KAG500IL

IO-Link master
Port class B
Beckhoff

Field bus
EtherCAT

24V master supply

Control system
Beckhoff

1-2 grippers
24V 5A power supply unit with boost
Phoenix Contact
Order No. 2866750

3-4 grippers
24V 10A power supply unit with boost
Phoenix Contact
Order No. 2866763
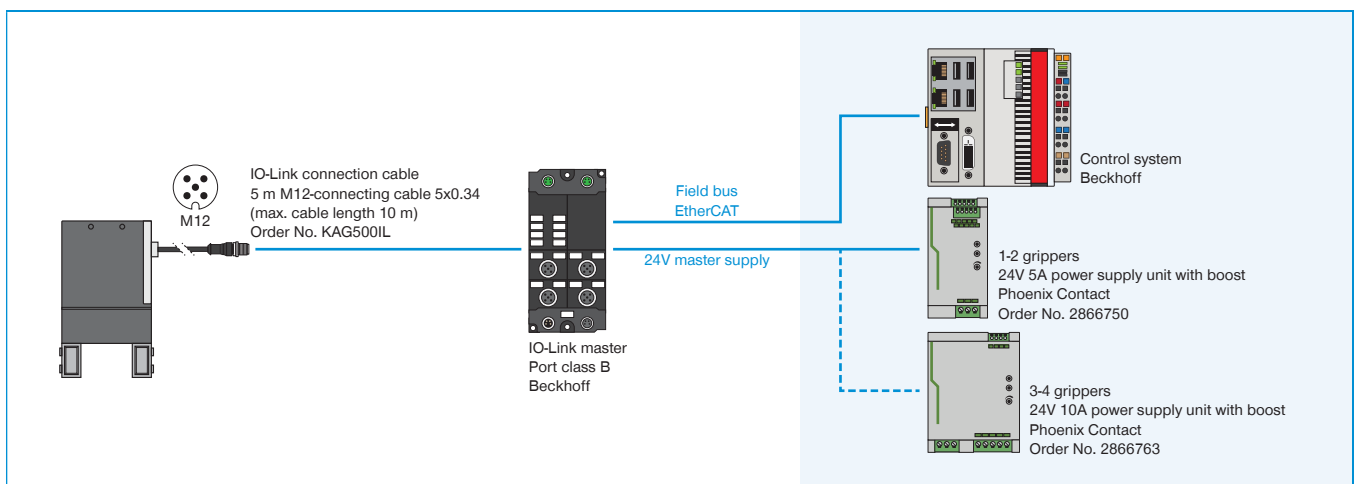
► GEP2000IL (IO-LINK) WIRING TO IO-LINK MASTER IP67 (SIEMENS)

M12

IO-Link connection cable
5 m M12-connecting cable 5x0.34
(max. cable length 10 m)
Order No. KAG500IL

Field bus
PROFINET

24V master supply

IO-Link master
Port class B
Siemens

Control system
e.g. Siemens S7 1200

1-2 grippers
24V 5A power supply unit with boost
Phoenix Contact
Order No. 2866750

3-4 grippers
24V 10A power supply unit with boost
Phoenix Contact
Order No. 2866763

► GEP2000IO-00 (DIGITAL IO) WIRING TO CONTROL CABINET

M8

Connecting cable
5 m M8-connecting cable 4x0.34
(max. cable length 10 m)
Order No. KAG500B4

Sensor
(optional)

M8

DIO

TERMINAL STRIP

Power

Control system
Beckhoff / Siemens

1-2 grippers
24V 5A power supply unit with boost
Phoenix Contact
Order No. 2866750

3-4 grippers
24V 10A power supply unit with boost
Phoenix Contact
Order No. 2866763
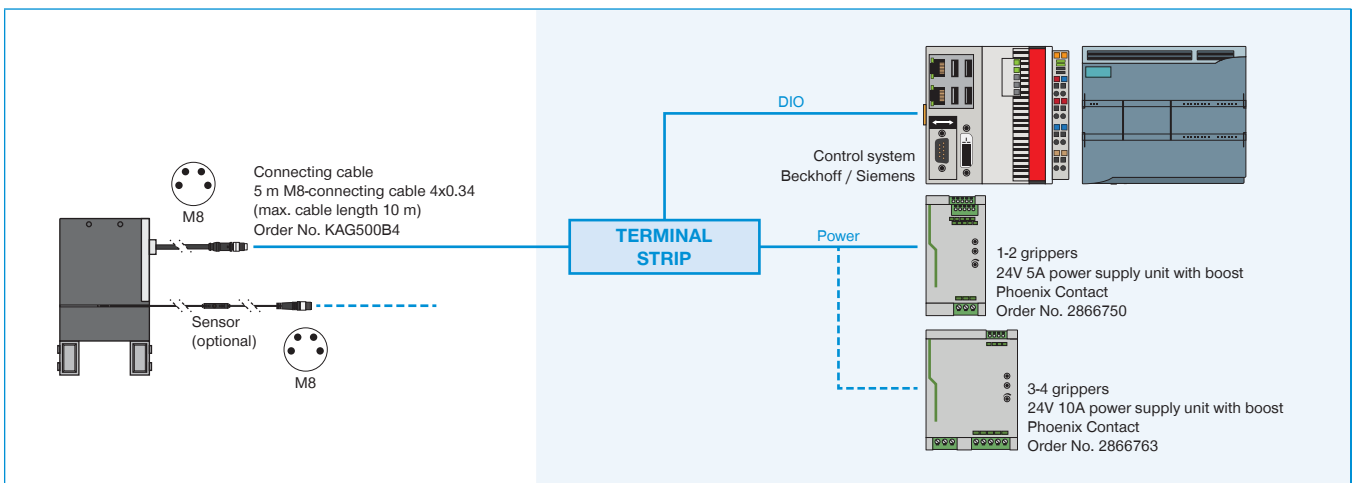
► GEP2000IO-05 (DIGITAL IO / ANALOG) WIRING TO CONTROL CABINET

M8

Connecting cable
5 m M8 connecting cable 5x0.34
(max. cable length 10 m)
Order No. KAG500B5

DIO / analog

TERMINAL STRIP

Power

Control system
Beckhoff / Siemens

1-2 grippers
24V 5A power supply unit with boost
Phoenix Contact
Order No. 2866750

3-4 grippers
24V 10A power supply unit with boost
Phoenix Contact
Order No. 2866763

IO-LINK MEETS DIGITAL I/O
SMART COMMUNICATION MODULE

IO-Link meets digital I/O

The Smart Communication Module (SCM) is a master gateway that is suitable for all IO-Link components. With its two channels, the SCM can control two devices and on a functional level, offers the direct implementation of IO-Link to digital I/O. The module thus makes it possible to integrate IO-Link devices into a digital infrastructure and utilize almost the full extended range of functions of the IO-Link device.
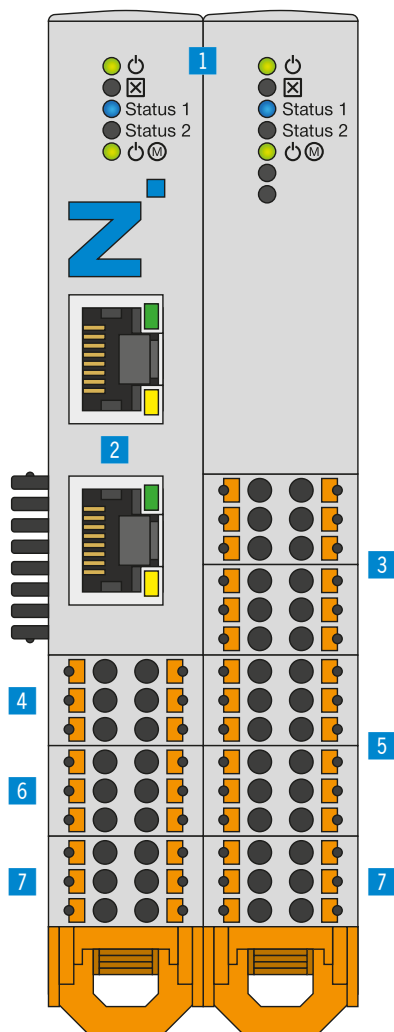
► PRODUCT ADVANTAGES

- ► Translates IO-Link to digital inputs and outputs (digital I/O) and from digital I/O to IO-Link

- ► Easy control of intelligent IO-Link grippers via 24 V digital I/O

- ► Configuration and training take place using the corresponding intuitive guideZ software

- ► Ready-to-connect cable set for the corresponding controller type

- ► Can be used with one or two grippers depending on the flexibility required

- ► Depending on the required flexibility, up to 15 different workpieces can be used for one gripper. Alternatively, two grippers can be used.

► BENEFITS IN DETAIL

1 Status
- Status display of SCM and IO-Link device

2 Ethernet RJ45
- Temporary connection for gripper configuration

3 Digital input
- Digital inputs for controlling the gripper actuators

4 IO-Link / Device 1
- Gripper module 1 connection

5 Digital output
- Digital outputs for monitoring the gripper sensors

6 IO-Link / Device 2
- Gripper module 2 connection

7 Power supply
- Voltage supply SCM and gripper

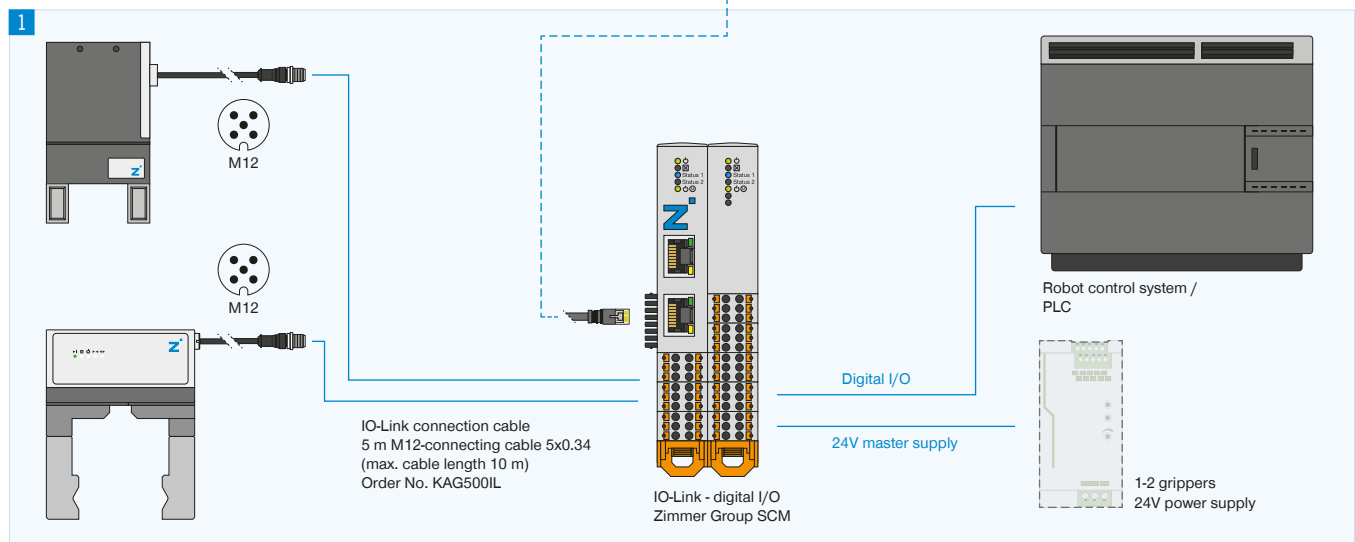| ► Technical Data	
Order no.	**SCM-C-00-00-A**
Control	Digital I/O
IO logic	PNP
Number of grippers, max.	2
Number of pins (control system input)	12
Number of pins (control system output)	12
Configuration for interface	Ethernet RJ45
Mounting options	35 mm top-hat rail
Voltage [V]	24
Load supply peak current [A]	10
Logic supply peak current [A]	1
Operating temperature [°C]	5 ... +50
Protection to IEC 60529	IP20
Weight [kg]	0.26

TOPOLOGY
CONNECTION

Configuration and operation

Up to two Zimmer IO-Link devices can be connected to one Smart Communication Module. The digital inputs and outputs are wired directly to the robot controller or PLC. Simple digital control enables bidirectional communication. To configure the gripper parameters, a temporary network connection is established to a commercially available PC.

As soon as the parameters have been configured intuitively, this connection is no longer necessary. Next, the handling unit is automatically controlled directly via robot controller or PLC.

2

guideZ
expertZ
monitorZ

Temporary
Ethernet connection

1

M12

M12

IO-Link connection cable
5 m M12-connecting cable 5x0.34
(max. cable length 10 m)
Order No. KAG500IL

IO-Link - digital I/O
Zimmer Group SCM

Robot control system /
PLC

Digital I/O

24V master supply

1-2 grippers
24V power supply

1 Connection

► IO-Link gripper

► Digital I/Os on the robot control system/PLC

► Power supply

2 Configuration

Temporary network connection via PC for use of the guideZ, expertZ and monitorZ software

► FURTHER INFORMATION IS AVAILABLE ONLINE

All information just a click away at: www.zimmer-group.com. Find data, illustrations, 3D models and operating instructions for your installation size using the order number for your desired product. Quick, clear and always up-to-date.