

# Handling technology

Module for YASKAWA robots

THE KNOW-HOW FACTORY





# **THE KNOW-HOW FACTORY**

# ZIMMER GROUP COMMITTED TO OUR CUSTOMERS

WE HAVE SUCCEEDED FOR YEARS BY OFFERING OUR CUSTOMERS INNOVATIVE AND INDIVIDUALIZED SOLUTIONS. ZIMMER HAS GROWN CONTINUOUSLY AND TODAY WE HAVE REACHED A NEW MILESTONE: THE ESTABLISHMENT OF THE KNOW-HOW FACTORY. IS THERE A SECRET TO OUR SUCCESS?

**Foundation.** Excellent products and services have always been the foundation of our company's growth. Zimmer is a source of ingenious solutions and important technical innovations. This is why customers with high expectations for technology frequently find their way to us. When things get tricky, Zimmer Group is in its best form.

**Style.** We have an interdisciplinary approach to everything we do, resulting in refined process solutions in six technology fields. This applies not just to development but to production. Zimmer Group serves all industries and stands ready to resolve even the most unique and highly individualized problems. Worldwide.

**Motivation.** Customer orientation is perhaps the most important factor of our success. We are a service provider in the complete sense of the word. With Zimmer Group, our customers have a single, centralized contact for all of their needs. We approach each customer's situation with a high level of competence and a broad range of possible solutions.



# HMI – HUMAN MACHINE INTERFACE EASY TO INTEGRATE – EASY TO USE

# **SIMPLE OPERATION**

Operating Industrie 4.0 components from Zimmer Group is just as easy and flexible as installing them. What originally applied primarily for industrial control systems is now also available for robots.

In doing so, operation is integrated completely into the robot control system. As a result, the Zimmer Group components can now be configured manually using the robot control panel directly and integrated into the robot program sequence. An external PLC control system is not required to do this. The Yaskawa specialists oriented themselves toward the already familiar Zimmer HMI to create a uniform, intuitive user interface for the user.

The user can control the complete IO-Link gripper portfolio from the Zimmer Group using this tailor-made complete system and can use pneumatic, electrical, servo-electric as well as digital Zimmer Group components with the innovative MOTOMAN robots from YASKAWA.

### **BECAUSE SIMPLE IS SIMPLY BETTER**

This integration makes it possible for the user to enable maximum levels of flexibility and straightforward adaptation, storage and restoring device parameters during the creation of new application-specific profiles.

Furthermore, the Zimmer HMI supports condition monitoring or predictive maintenance of the components. This makes it possible for any user to implement and commission Zimmer Group components within a few minutes. This simplifies the interaction of robots and handling of components considerably.

# CONFIGURATION

#### Graphic component selection

Easiest assignment of a Zimmer gripper to the robot







### **MANUAL OPERATION**

#### Generating the gripper process parameters

such as gripping forces, gripper positions, gripping speed, etc.



### **AUTOMATIC MODE ROBOT**

### Use of function blocks

such as Open gripper / Close gripper, etc. for easy operation

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# HUMAN – ROBOT DIFFERENT FORMS OF INTERACTION

# **CONVENTIONAL COMPONENTS**

#### Automation cell



- Separated workspaces
- ► Workpiece handling in a secure area
- All gripping systems can be used
- Decoupled work
- No contact necessary
- Maximum speed

### Coexistence



- Detection of presence
- Workpiece handling in a secure area
- All gripping systems can be used
- Separated workspaces
- Decoupled work
- No contact necessary
- Reduced speed

### **HRC COMPONENTS**

#### Cooperation



- Zones of action
- Workpiece handling in a secure area
- Gripper with special HRC geometry
- Secure holding of the workpiece even if the power supply fails
- Shared workspaces
- Coupled work
- No contact necessary
- Reduced speed

### Collaboration



- Shared workspaces
- Workpiece handling in a unsecure area
- Gripper with special HRC geometry and reliable gripping force limiter
- Gripping force limited to a max. of 140 N as per ISO/TS 15066
- Secure holding of the workpiece even if the power supply fails
- Coupled work
- Contact is necessary
- Reduced speed

# HMI CONFIGURATION PACKAGE EASY-TO-USE PACKAGE





# HUMAN-ROBOT COLLABORATION EASY TO INTEGRATE – EASY TO HANDLE

# WHAT IS HUMAN-ROBOT COLLABORATION?

The demographic development in industrial countries will lead to comprehensive changes in the working world in coming years. In the future, people will collaborate more and more with robots or have their work supported by robots. For this vision of a collaborative working world to become reality, however, we need more than just a new kind of safe robot with overload limiters, comprehensive sensors and fast-reacting control systems. The tool at the end of the robot also has to satisfy comprehensive requirements with respect to occupational safety, work environment, use of equipment, approval and acceptance, etc. The directives concerning specification of the safety-related requirements for robots, ISO 10218 and their technical specification ISO/TS 15066, currently describe the forms of collaboration. Even though these regulations are currently valid, they are being revisited by both DIN and CEN in the context of collaborative use of robots. That's why a product developed for this purpose should go beyond the current requirements. The HRC gripper series from Zimmer Group have been designed in accordance with recommendations from BG/DGUV (German occupational insurance association/German Social Accident Insurance).

### **HRC FROM THE EXPERTS**

As a pioneer and one of the world's leading manufacturers of HRC grippers, Zimmer Group develops components specifically for this work environment to reduce the physical load on the employees, mitigate against monotonous work steps, prevent accidents and increase the efficiency of workflows through human-robot collaboration.



# **EASY TO INTEGRATE**

Naturally, however, not only the world's best HRC grippers are available for YASKAWA robots, but also a comprehensive system module specially matched to your model. This provides a broad selection of grippers and handling components with corresponding accessories, so that you don't have to worry about compatibility and integration. Of course, this system module also includes HRC and Industrie 4.0 components that are compatible with your robot. These open up numerous advantages for you: easy to install, easy to configure, easy to operate, advanced diagnostics and preventive maintenance as well as the ability to make replacements while operation is in progress.

### **EASY TO HANDLE**

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

HRC grippers and conventional grippers offer the user practical, pre-programmed movement profiles, which can be adjusted to the individual requirements of the gripping application with just a few mouse clicks. This ensures that complete implementation and commissioning are possible for any user within just a few minutes.





# HRC COMPONENTS THE SERIES AT A GLANCE



		2-JAW PARAL	LEL GRIPPERS		
	COOPERATIVE			COLLABORATIVE	
	ELECTRIC			ELECTRIC	
HRC-01-072797 © IO-Link	Stroke per jaw: Gripping force: Weight: IP class: Maintenance free (max.):	60mm 950N 1.8kg 40 5 million cycles	HRC-01-072794 IO-Link	Stroke per jaw: Gripping force (max.): Weight: IP class: Maintenance free (max.):	60 mm < 140 N 2.0 kg 40 5 million cycles

STO safety functions + mechanical self-locking mechanism in the event of a power drop

STO safety functions + mechanical self-locking mechanism in the event of a power drop + safety gripper jaws prevent 140N from being exceeded

HRC-03-080663 © IO-Link Stroke per jaw: Gripping force (max.): Weight: IP class: Maintenance free (max.): 10 mm < 140 N 0.68 kg 40 10 million cycles

Mechanical self-locking mechanism in the event of a power drop

#### NEUMATICALLY INTELLIGEN

HRC-04-080644 IO-Link

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Stroke per jaw: Gripping force (max.): Weight: IP class: Maintenance free (max.): 6 mm < 140 N 0.76 kg 40 10 million cycles

Gripping force safety device in case of pressure failure via integrated spring

	2-JAW	ANGULAR GRIPPER	S
	С	OLLABORATIVE	
	PNEUMA	TICALLY INTELLIGE	NT
HRC-05-080 @ 10-Link	0659	Stroke per jaw: Gripping force (max.): Weight: IP class: Maintenance free (max.):	37.5° < 140 N 0.82 kg 40 10 million cycles

Gripping force safety device in case of pressure failure via integrated spring

# **CONVENTIONAL COMPONENTS** END OF ARM – CONFIGURATION LEVELS

### ROBOT FLANGE

For mechanical connection to the follow-on tools. The energy supply for the components installed on the robot flange is arranged internally or externally, depending on the robot type. Control signals as well as pneumatic, electric and hydraulic media can be passed through this.

#### ROBOT FLANGE ADAPTER PLATE – MULTI-FUNCTION LEVEL

Adapter plate between specific robot flange and ISO partial mounting circle.

### MULTI-FUNCTION LEVEL

Multi-function components with ISO partial mounting circle for changing, compensating, protecting and executing. Energy elements for signal transmission and media transfer are also available for the tool changers.



### MULTI-FUNCTION LEVEL ADAPTER PLATE – AUTOMATION COMPONENT

Adapter plate between ISO partial mounting circle and automation component.

### ► AUTOMATION COMPONENTS

Various versions of automation components.





# CONVENTIONAL COMPONENTS COMBINATION OPTIONS



Standard combination options. Further combinations available on request.

	PAR	2-JAW ALLEL GRIP	PERS			3-J/ CENTRIC (			2-JAW ANGULAR GRIPPERS
Pneumatic	Pneumatic IL	Electric	Electric IL � IO-Link	Electric Positionable TO-Link	Pneumatic	Pneumatic IL	Electric	Electric IL	Pneumatic
 >		GEP2010IO	GEP2010IL	GEH6040IL GEH6060IL					
 GPP5004 GPP5006	GPP5006IL	GEP5006	GEP5006IL		GPD5004 GPD5006	GPD5006IL	GED5006	GED5006IL	
 >		GEP2013IO GEP2016IO	GEP2013IL GEP2016IL						
>				GEH6040IL GEH6060IL GEH6140IL GEH6180IL					
 > GPP5008 GPP5010	GPP5008IL GPP5010IL	GEP5008 GEP5010	GEP5008IL GEP5010IL	GEH6040IL GEH6060IL					GPW5008
 >		GEP2010IO GEP2013IO GEP2016IO	GEP2010IL GEP2013IL GEP2016IL						
 >				GEH6140IL GEH6180IL	GPD5008 GPD5010	GPD5008IL GPD5010IL	GED5008 GED5010	GED5008IL GED5010IL	
 GPP5010 GPP5013	GPP5010IL GPP5013IL	GEP5010	GEP5010IL		GPD5010	GPD5010IL	GED5010	GED5010IL	GPW5013
 > GPP5016	GPP5016IL			GEH6140IL GEH6180IL	GPD5013	GPD5013IL			
 > GPP5025	GPP5025IL				GPD5016	GPD5016IL			GPW5025
>					GPD5025	GPD5025IL			



# **CONVENTIONAL COMPONENTS** THE SERIES AT A GLANCE

		2-JAW PARAL	LEL GRIPPERS		
	PNEUMATIC			ELECTRIC	
GPP1000	Number of installation sizes: Stroke per jaw: Gripping force: Weight: IP class: Maintenance free (max.):	1 4 mm - 16 mm 100 N 0.16 kg - 0.20 kg 30 2 million cycles	GEP2000 To-Link	Number of installation sizes: Stroke per jaw: Gripping force: Weight: IP class: Maintenance free (max.):	3 10mm - 16mm 50N - 500N 0.31kg - 0.9kg 40 10 million cycles
GPP5000	Number of installation sizes: Stroke per jaw: Gripping force: Weight: IP class: Maintenance free (max.):	11 2mm - 45mm 140N - 26950N 0.08kg - 50kg 64/67 30 million cycles	GEP5000 IO-Link	Number of installation sizes: Stroke per jaw: Gripping force: Weight: IP class: Maintenance free (max.):	3 6 mm - 10 mm 540 N - 1520 N 0.79 kg - 1.66 kg 64 30 million cycles
PNE	UMATICALLY INTELLIG	ENT			
GPP5000IL IO-Link	Number of installation sizes: Stroke per jaw: Gripping force: Weight: IP class: Maintenance free (max.):	3 3 mm - 10 mm 330 N - 2890 N 0.45 kg - 1.45 kg 64 30 million cycles			
	2-JAW PA	RALLEL GRIPP	PERS WITH LONG	STROKE	
	ELECTRIC				
GEH6000IL IO-Link	Number of installation sizes: Stroke per jaw: Gripping force: Weight: IP class: Maintenance free (max.):	2 up to 80 mm 100 N - 2400 N 0.7 kg - 2.6 kg 54 5 million cycles			
		<b>3-JAW CONCEI</b>	NTRIC GRIPPERS		
	PNEUMATIC			ELECTRIC	
GPD5000	Number of installation sizes: Stroke per jaw: Gripping force: Weight: IP class: Maintenance free (max.):	11 2mm - 45mm 310N - 72500N 0.14kg - 99.9kg 64/67 30 million cycles	GED5000 To-Link	Number of installation sizes: Stroke per jaw: Gripping force: Weight: IP class: Maintenance free (max.):	3 6 mm - 10 mm 540 N - 1520 N 1.09 kg - 2.33 kg 64 30 million cycles
PNE	UMATICALLY INTELLIG	ENT			
GPD5000IL ≥ IO-Link	Number of installation sizes: Stroke per jaw: Gripping force: Weight: IP class: Maintenance free (max.):	3 3 mm - 10 mm 740 N - 7160 N 0.75 kg - 2.5 kg 64 30 million cycles			
		2-JAW ANGU	LAR GRIPPERS		
	PNEUMATIC				
GPW5000	Number of installation sizes: Stroke per jaw: Gripping force: Weight: IP class:	3 +15°/-2° 1450N - 14500N 0.9 kg - 12.1 kg 64			

# CONVENTIONAL COMPONENTS CONNECTION VIA MCS



# MCS - MODULAR CONSTRUCTION SYSTEM

The modular construction system (MCS) can be used to create a workpiece-specific solution without increased engineering efforts. This is made possible by the harmonized individual components.

The product portfolio includes profiles, compensation modules, suction cup mounts as well as gripper fingers that guarantee a secure grip on the workpiece during motion.

For a complete overview of all the MCS components, refer to our "Handling technology 3" catalog or visit us online at **www.zimmer-group.com**.



# **CONVENTIONAL COMPONENTS** THE SERIES AT A GLANCE

			LEL GRIPPER		
		PNEU	JMATIC		
GPP1000	Number of installation sizes: Stroke per jaw: Gripping force: Weight: IP class: Maintenance free (max.):	1 4 mm - 16 mm 100 N 0.16 kg - 0.20 kg 30 2 million cycles	MGP800	Number of installation sizes: Stroke per jaw: Gripping force: Weight: IP class: Maintenance free (max.):	8 1 mm - 12 mm 6 N - 400 N 0.008 kg - 0.46 kg 40 10 million cycles
	2-JAW PAI	RALLEL GRIPP		NG STROKE	
		PNEL	JMATIC		
GH6000	Number of installation sizes: Stroke per jaw: Gripping force: Weight: IP class: Maintenance free (max.):	5 20 mm - 200 mm 120 N - 3400 N 0.3 kg - 22.7 kg 40 10 million cycles			
		2-JAW ANGU	LAR GRIPPER	S	
			JMATIC		
GZ1000	Number of installation sizes: Stroke per jaw: Gripping force: Weight: IP class: Maintenance free (max.):	3 8°- 11° 62N - 315N 0.015 kg - 0.125 kg 30 10 million cycles	MGW800	Number of installation sizes: Stroke per jaw: Gripping force: Weight: IP class: Maintenance free (max.):	8 37.5° 5N - 325N 0.01 kg - 0.45 kg 30 10 million cycles
	G	<b>RIPPERS FOR</b>	SPECIAL TAS	SKS	
	INTERNAL GRIPPER			MAGNETIC GRIPPER	
LG1000	Total stroke in Ø: Gripping diameter (min.): Gripping diameter (max.): Slip force (max.): Weight:	2.5 mm - 3.5 mm 8 mm - 15 mm 10.5 mm - 18.5 mm 53 N - 58 N 0.028 kg - 0.041 kg	нм1000	Adhesive force (max.): Weight:	27 N - 450 N 0.06 kg - 2.2 kg
	CUTTING TONGS				
zк1000	Stroke per jaw: Gripping moment in closing: Weight:	4.25 °- 13 ° 14 Nm - 400 Nm 0.08 kg - 0.67 kg			

# **MODULAR CONSTRUCTION SYSTEM (MCS)** CONNECTION EXAMPLES



# CONNECTION EXAMPLE GPP1000 SERIES

YASKAWA ROBOTS GP7/GP8/GP12
Adapter plate APR000007
1 Adapter plate APR000002
2 MCS Profile*
3 Adapter plate APR000006
4 Series GPP1000

\* See the Handling technology 3 catalog



\* See the Handling technology 3 catalog

# CONNECTION EXAMPLE MGP800 and MGW800 SERIES

YASKAWA ROBOTS GP7/GP8/GP12

Adapter plate APR000007

- 1 Adapter plate APR000002
- 2 MCS Profile\*
- 3 MCS Clamp SO-23120022\*
- 4 Adapter plate APR000004/APR000005
- 5 Series MGP800 and MGW800



\* See the Handling technology 3 catalog

# CONNECTION EXAMPLE GEH6000IL/GH6000 SERIES

YA	SKAWA ROBOTS GP7/GP8/GP12
Ad	apter plate APR000007
1	Adapter plate APR000002
2	MCS Profile*
3	MCS Cross clamp*
4	MCS Profile*

5 Series GEH6000IL/GH6000

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