

iselROBOTIK

RO *successful with
wafer handling components*

Wafer Handling Components

FOR SEMICONDUCTOR INDUSTRY





EFFICIENT & ECONOMICAL WAFER HANDLERS

Your added value in the
semiconductor industry

- customer specific
- high production depth made in Germany
- ISO 1 Clean room certification for wafer handlers
- free training for new customers
- throughput analysis



Thomas Völlinger
Division manager

+49 (0) 6659 981-756
Thomas.Voellinger@isel.com



Andreas Möller
Technical sales

+49 (0) 6659 981-755
Andreas.Moeller@isel.com



Melanie Schulz
Technical sales

+49 (0) 6659 981-737
Melanie.Schulz@isel.com



Michael Raschke
Service

+49 (0) 6659 981-754
Robotik.Service@isel.com



Hendrik Heß
Service

+49 (0) 6659 981-762
Robotik.Service@isel.com



Marek Fladung
Service

+49 (0) 6659 981-721
Robotik.Service@isel.com

IWH - 2-link heavy duty arm series 1	8
IWH - 3-link heavy duty arm series 1	10
IWH - 2-link heavy duty arm series 3	12
IWH - super heavy duty dual arm SHD	14
Controller - Advanced	16
End Effectors - IEE Series	18
Accessories	20
Linear Track - ILD Series	22
Logosol Prealigner - LPA Series	24

This catalogue contains a variety of robotic products offered by isel robotik. Our products are specifically designed and engineered to address the unique needs and requirements of the semiconductor, flat panel display, nanotechnology and related industries.

If you have special applications or product requirements please contact us. With several thousand systems in field and many years of experience, we look forward to receiving your inquiries.



isel Germany is part of the stocklisted company Aalberts since february 2022. Since the inception in 1975, Aalberts is where technology matters and real progress can be made - humanly, financially and environmentally.

Greatness is made of shared knowledge

Just like isel Germany, all Aalberts companies stand their ground in the engineering and technology world. As the world is changing rapidly and innovation cycles are reduced dramatically, the open and pragmatic internal culture at Aalberts helps us to exchange fresh thinking and to embrace new technologies.



INNOVATIVE TECHNOLOGY

The ADVANCED controller has a defined path speed, so that speed and acceleration focus on the tool centre point (TCP) and not on individual axes.



Robotic Industries Association



Bauart geprüft
Sicherheit
Regelmäßige
Produktions-
überwachung

www.tuv.com
ID 111216703

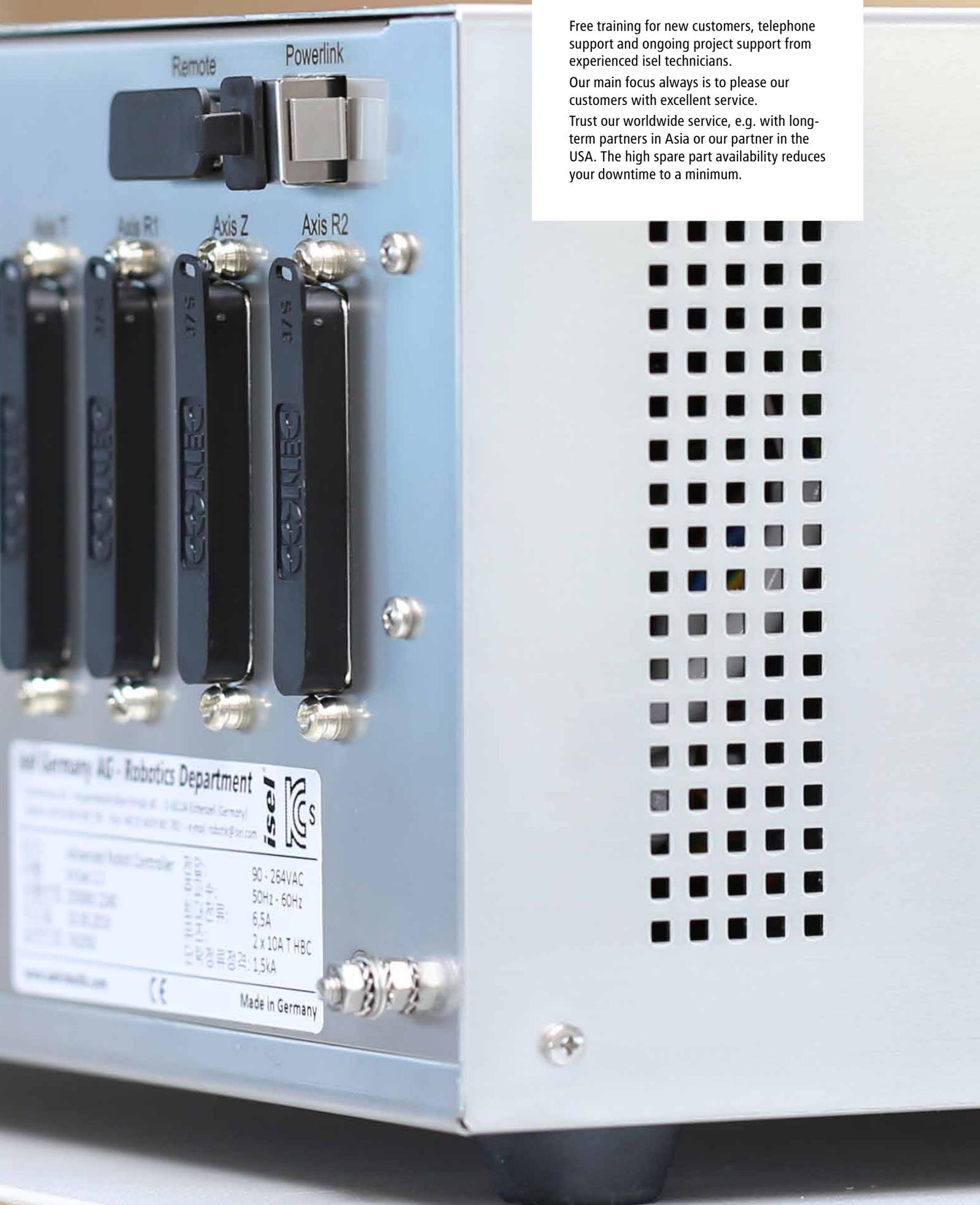


FIRST CLASS SERVICE

Free training for new customers, telephone support and ongoing project support from experienced isel technicians.

Our main focus always is to please our customers with excellent service.

Trust our worldwide service, e.g. with long-term partners in Asia or our partner in the USA. The high spare part availability reduces your downtime to a minimum.



isel Germany AG - Robotics Department
www.isel.com
90 - 264VAC
50Hz - 60Hz
6,5A
2 x 10A T HBC
1,5kA
Made in Germany

CUSTOMERSPECIFIC SOLUTIONS

You will get the perfect handling system for your production. On request, we can tailor your handling robots individually from isel components to provide high-performance automation solutions that are optimally aligned to your production requirements and with significantly short production times. If the standard cannot meet the requirements, we offer you individual solutions.



Innovative robot technology for Wafer Handling

Robust and longlasting all-in-one solutions, customer specific manufacturing, comprehensive project support. isel Germany AG is your perfect partner for wafer handling components for semiconductor industry.

WAFER HANDLING ROBOT | IWH

WITH 2-LINK HEAVY DUTY ARM AND BODY SERIES 1

Characteristics

- excellent structural rigidity and precision
- maximum reliability
- top mounted (TA) or bottom mounted (BA) versions available
- customized solutions
- absolute or incremental encoder
- seamless integration with Prealigner, linear track and other peripheral components
- ISO 1 clean-room environment compatible
- MTBF: >70,000 operating hours



Specifications

Repeatability	T	$\pm 0.02^\circ$
	R	± 0.02 mm
	Z	± 0.02 mm
Working range	Z	10", 13", 17", 21"
	radial	10", 12", 14", 16", 20"
	theta	500°
Payload		up to 3 kg*
Maximum speed	T	360°/s
	R	1,000 mm/s
	Z	450 mm/s
Power supply		115 – 230 VAC 50 – 60 Hz 550 VA (ADVANCED)
Main interface		RS-232 [DB9], Ethernet [RJ-45]
Weight		approx. 25 – 32 kg

* depending on arm configuration

IWH TA10S10HD

WAFER HANDLING ROBOT | IWH

WITH 3-LINK HEAVY DUTY ARM AND BODY SERIES 1

Characteristics

- excellent structural rigidity and precision
- maximum reliability
- top mounted (TA) or bottom mounted (BA) versions available
- customized solutions
- absolute or incremental encoder
- seamless integration with Prealigner, linear track and other peripheral components
- ISO 1 clean-room environment compatible
- MTBF: >70,000 operating hours



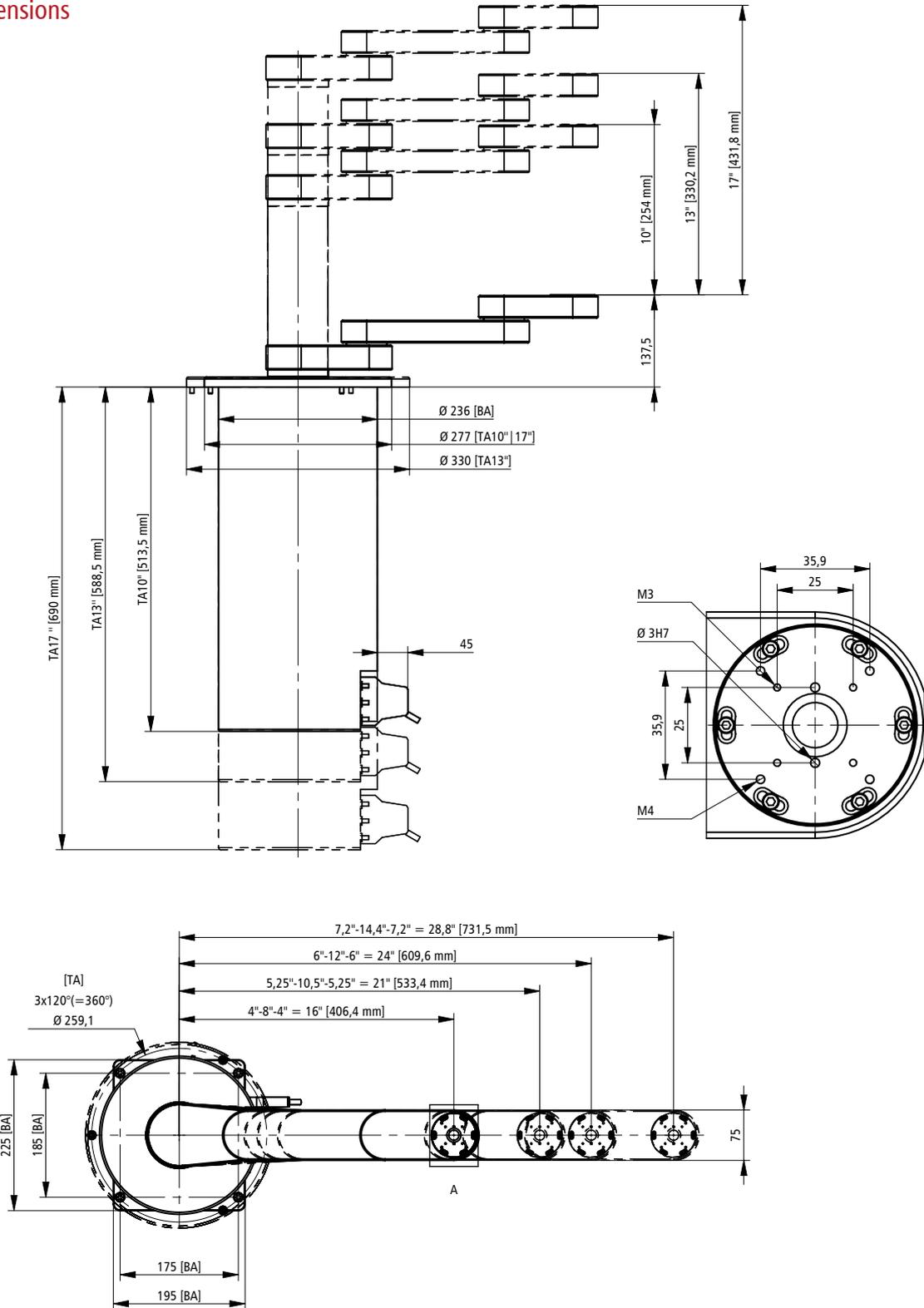
Specifications

Repeatability	T	$\pm 0.02^\circ$
	R	± 0.02 mm
	Z	± 0.02 mm
Working range	Z	10", 13", 17"
	radial	16", 21", 24", 28"
	theta	500°
Payload		up to 3 kg*
Maximum speed	T	360°/s
	R	1,000 mm/s
	Z	450 mm/s
Power supply		115 – 230 VAC 50 – 60 Hz 550 VA (ADVANCED)
Main interface		RS-232 [DB9], Ethernet [RJ-45]
Weight		approx. 25 – 32 kg

* depending on arm configuration

IWH TA10S16

Dimensions



WAFER HANDLING ROBOT | IWH

WITH 2-LINK DUAL ARM AND BODY SERIES 3

Characteristics

- excellent structural rigidity
- wafer handling up to 300mm
- maximum reliability and precision
- seamless integration with Prealigner, linear track and other peripheral components
- very smooth running
- backlash free Harmonic Drive® gears
- absolute or incremental encoder
- exact vacuum value can be displayed via controller software
- fully integrated software adjustable vacuum sensors
- ISO 1 clean-room environment compatible
- MTBF: >70,000 operating hours

Optional: 2 flip modules iFM-300-3
available with high performance motors

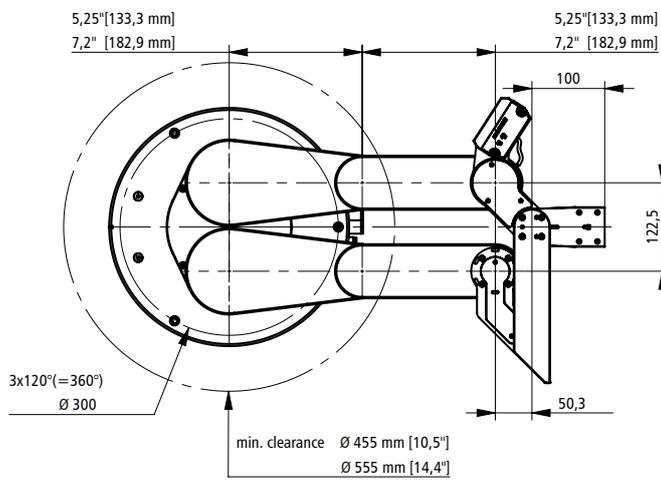
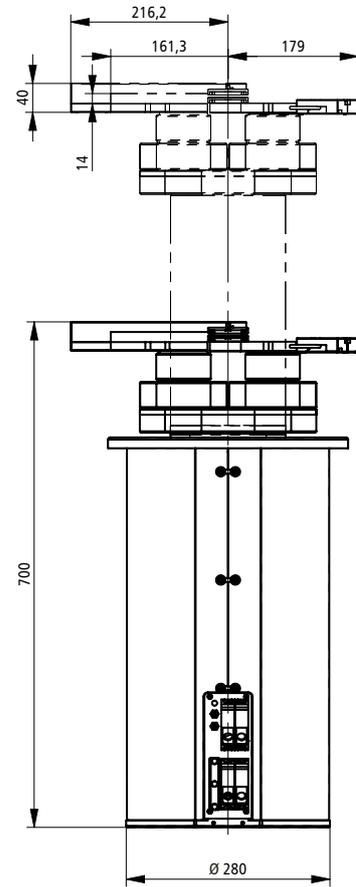
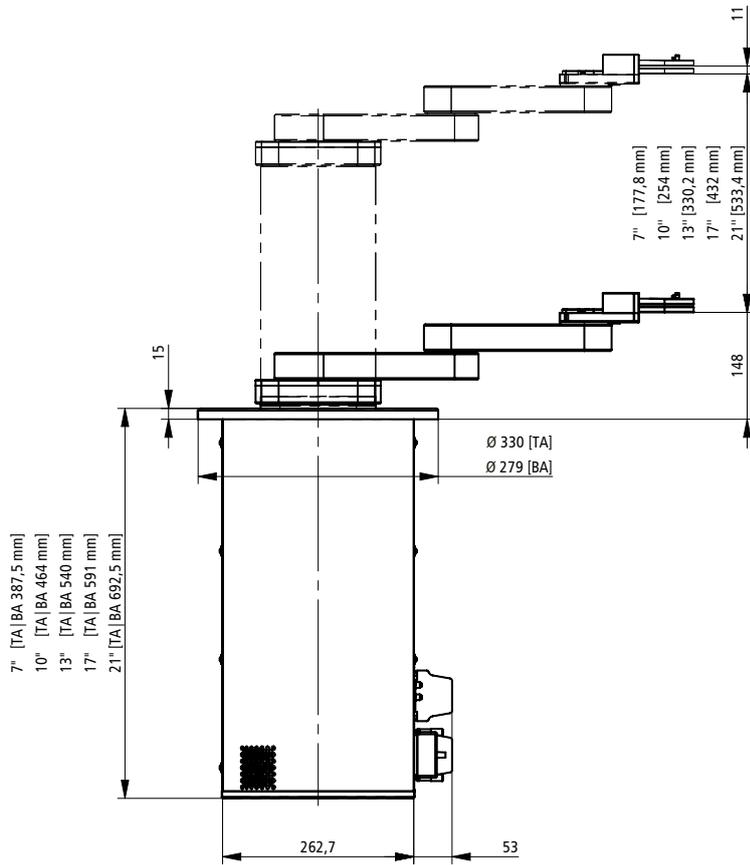


Specifications

Repeatability	T	$\pm 0.02^\circ$
	R	± 0.02 mm
	Z	± 0.02 mm
Working range	Z	7", 10", 13", 15", 17", 21"
	radial	10", 14"
	theta	500°
Payload	up to 1.25 kg (per arm)*	
Maximum speed	T	360°/s
	R	1,100 mm/s
	Z	425 mm/s
Power supply	115 – 230 VAC 50 – 60 Hz 550 VA (ADVANCED)	
Main interface	RS-232 [DB9], Ethernet [RJ-45]	
Weight	approx. 25 – 40 kg	

*depending on arm configuration

Dimensions



WAFER HANDLING ROBOT | IWH

WITH SHD SUPER HEAVY DUTY DUAL ARM AND SHD BODY

Characteristics

- excellent structural rigidity
- proven for panel handling
- maximum reliability and precision
- seamless integration with Prealigner, linear track and other peripheral components
- very smooth running
- backlash free Harmonic Drive® gears
- absolute or incremental encoder
- fully integrated software adjustable vacuum sensors (ADVANCED controller)
- ISO 1 clean-room environment compatible
- MTBF: >70,000 operating hours



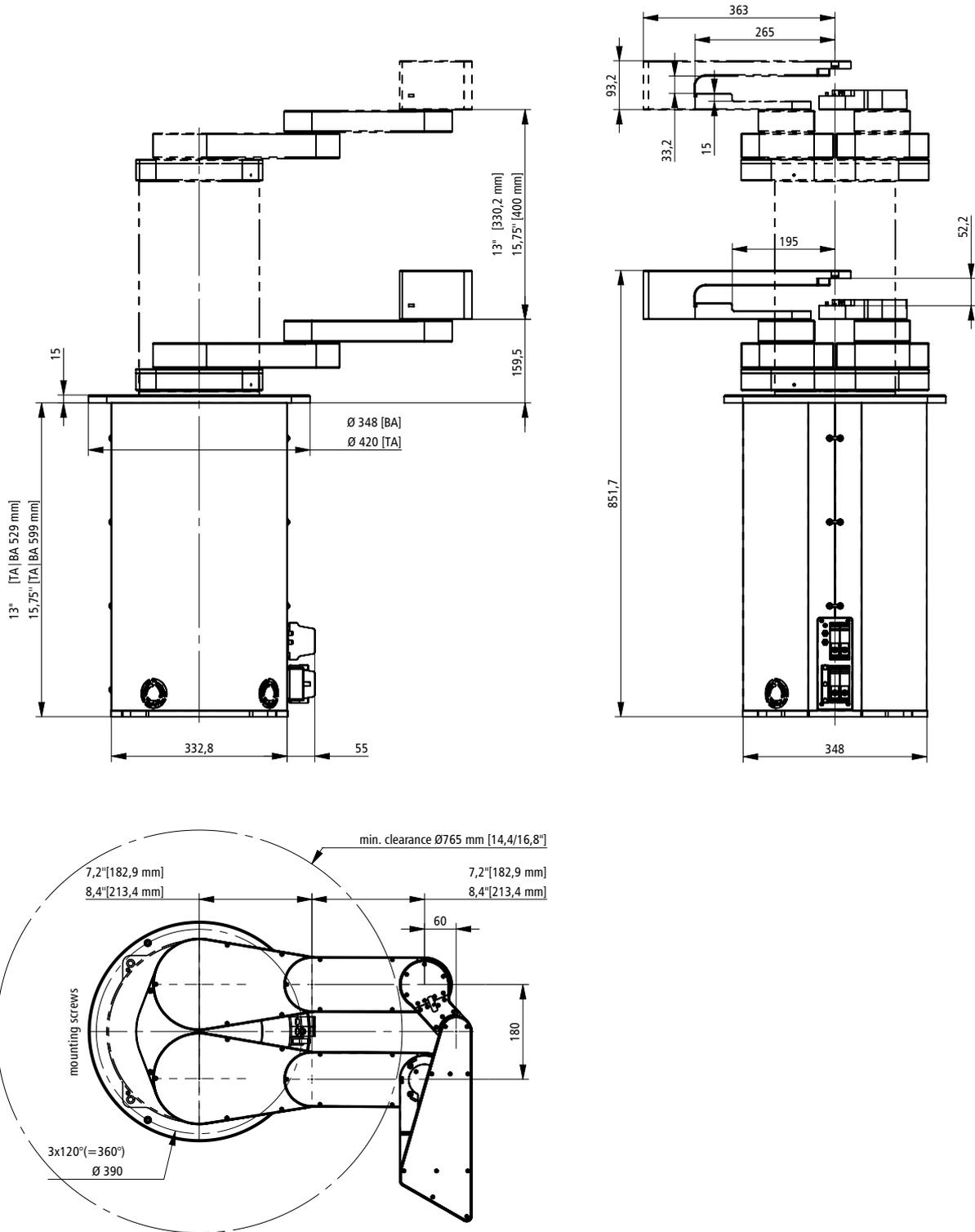
IWH SHD dual arm robot

Specifications

Repeatability	T	$\pm 0.02^\circ$
	R	± 0.02 mm
	Z	± 0.02 mm
Working range	Z	13", 15"
	radial	14", 16"
	theta	500°
Payload	up to 5 kg (per arm)*	
Maximum speed	T	180°/s
	R	800 mm/s
	Z	300 mm/s
Power supply	115 – 230 VAC 50 – 60 Hz 800 VA	
Main interface	RS-232 [DB9], Ethernet [RJ-45]	
Weight	approx. 60 kg	

*depending on arm configuration

Dimensions



CONTROLLER | „ADVANCED“

The ADVANCED controller is based on a continuous path control with integrated safety PLC which incorporates state-of-the-art technology. The innovative path control guarantees a constant and maximum speed on the TCP which ensures additional safety during substrate handling. The controller runs on Powerlink real time bus system which improves performance even further.

The supported high voltage technology enables very dynamic behavior when using an additional linear motor axis. isel ADVANCED controllers complies with current international standards for industrial robots. The operating interface integrated into the controller can be visualized on any PC with VNC viewer. It provides an innovative and intuitive GUI for setting up and managing the ADVANCED robot system. The ADVANCED robot controller is made by isel.



ADVANCED controller front

Characteristics

- innovative graphical user interface
- powerful control electronics „State of the Art“
- integrated safety control according to DIN EN ISO 10218-1
- Resolver or EnDat-2.2 encoder
- 19" rack 4HU/RU or desk version
- interface: Ethernet, RS232
- dimensions: 392 x 169 x 415 mm
- weight: 10 kg
- optional: teach pendant
- third party certified by TÜV for
 - ISO 10218-1 (Robot safety)
 - USA compliance
 - Korea compliance



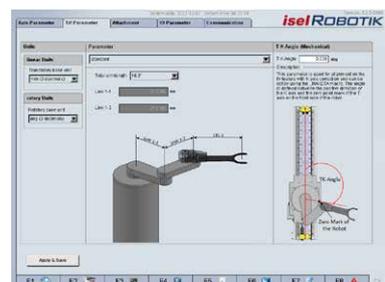
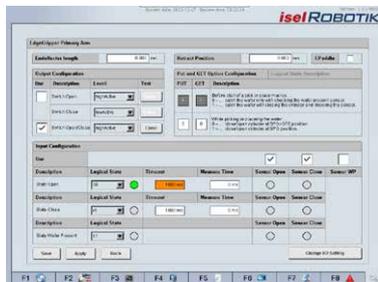
ADVANCED controller back



Bauart geprüft
Sicherheit
Regelmäßige
Produktions-
überwachung

www.tuv.com
ID 1111216703

Graphical User Interface (GUI)



Teach pendant for ADVANCED controller

- optimal support when setting up an isel wafer handler with ADVANCED controller
- GUI on a 6,5" VGA colour display
- ergonomic multi-grip for fatigue-free work
- hand wheel for jogging operation
- enable switch and stop button for safe manual operation (complies with EN ISO 13850)

END EFFECTORS | IEE SERIES

ISEL END EFFECTORS

... are optionally available with many different contact materials such as PTFE (SafeCoat), PEEK, VITON, KALREZ. Additionally, we offer many special designs for your individual wafers and substrates. We will create the solution to your customized endeffector requirements.



Paddle 4-8" EE



Horse-Shoe 8-12" EE



Extended 4-8"



Extended Horse-Shoe



Ceramic EE



Double EE



Friction EE



Exclusion Zone EE



Characteristics

- for all wafer sizes
- high rigidity
- good cost/performance ratio
- PTFE SafeCoat (Standard) for each of our robots
- High-resistance dissipative coating available

Options

- different wafer mapping sensors
- several surface coatings
- special designs: pocket - friction wafer - edge grip - exclusion zone vacuum

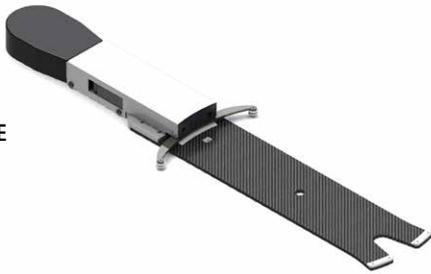
Warp / Bow Wafer



Through Beam EE



Edge Grip EE



Frame EE



Customized 4"



Customized EE



Panel EE



Panel EE

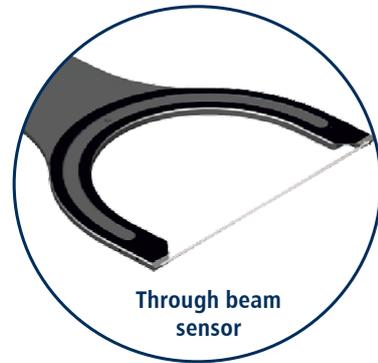


ACCESSORIES

WAFER MAPPING SENSORS

Through Beam Sensor

- optional to reflective Sensor
- integrated in endeffector
- or as separate unit
- more suitable for thin wafer mapping



PD45

- laser (class 2) light source
- measuring distance 200 mm or 300 mm
- small laser dot and housing



PD45

Cyberoptics

- light source: 2 x 850 nm diode lasers
- optimum detecting range: 38 mm (1.5")
- Maximum detecting range: 40 mm (1.6")
- Laser class 1
- PNP



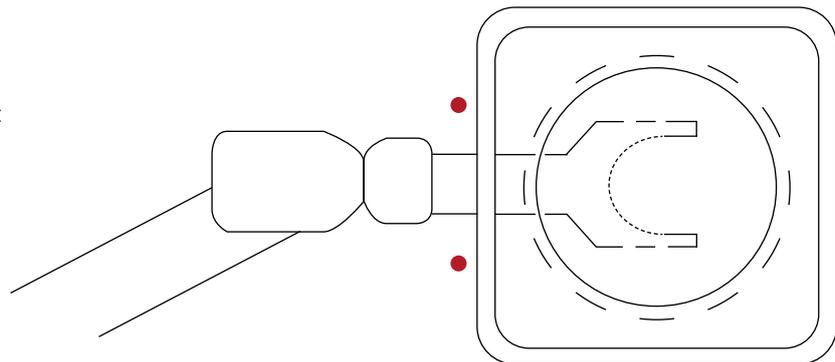
Flip Module IFM-300-3

- precise wafer flipping by adjustable mechanical stops
- universal endeffector adapter
- adjustable hard stop damping
- adjustable flip speed
- option: lateral mapping sensor
- TAP to EE 100 mm



ALIGNMENT on the fly

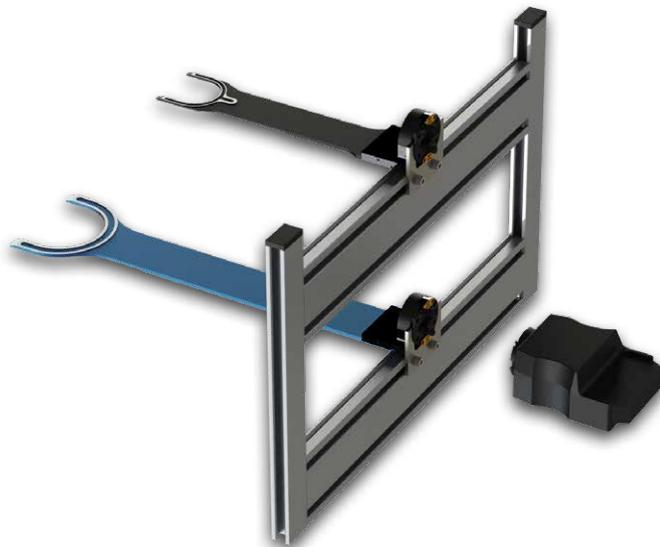
- wafer centering without Prealigner
- offset centering during PUT movement
- no alignment station necessary
- time efficient wafer centering



● = laser sensors

END EFFECTOR CHANGER (ADVANCED controller only)

- full automatic endeffector changing system
- software endeffector management
- for all endeffector types



LINEAR TRACK | ILD SERIES

In order to increase the robot's radius of action, the handling system can simply be expanded by adding a further axis that is fully integrated into the system. Depending on the application, it can be mounted below the wafer handler or with the wafer handler mounted on the side. Due to the use of linear motors, the linear axes are very dynamic, low-maintenance and smooth-running. They achieve high acceleration values and speeds, approach positions very precisely and work practically wear-free due to the omission of mechanical connecting links.

Due to the segment design, lengths of up to 32 meters with absolute encoders can be realized.



side mounted

bottom mounted

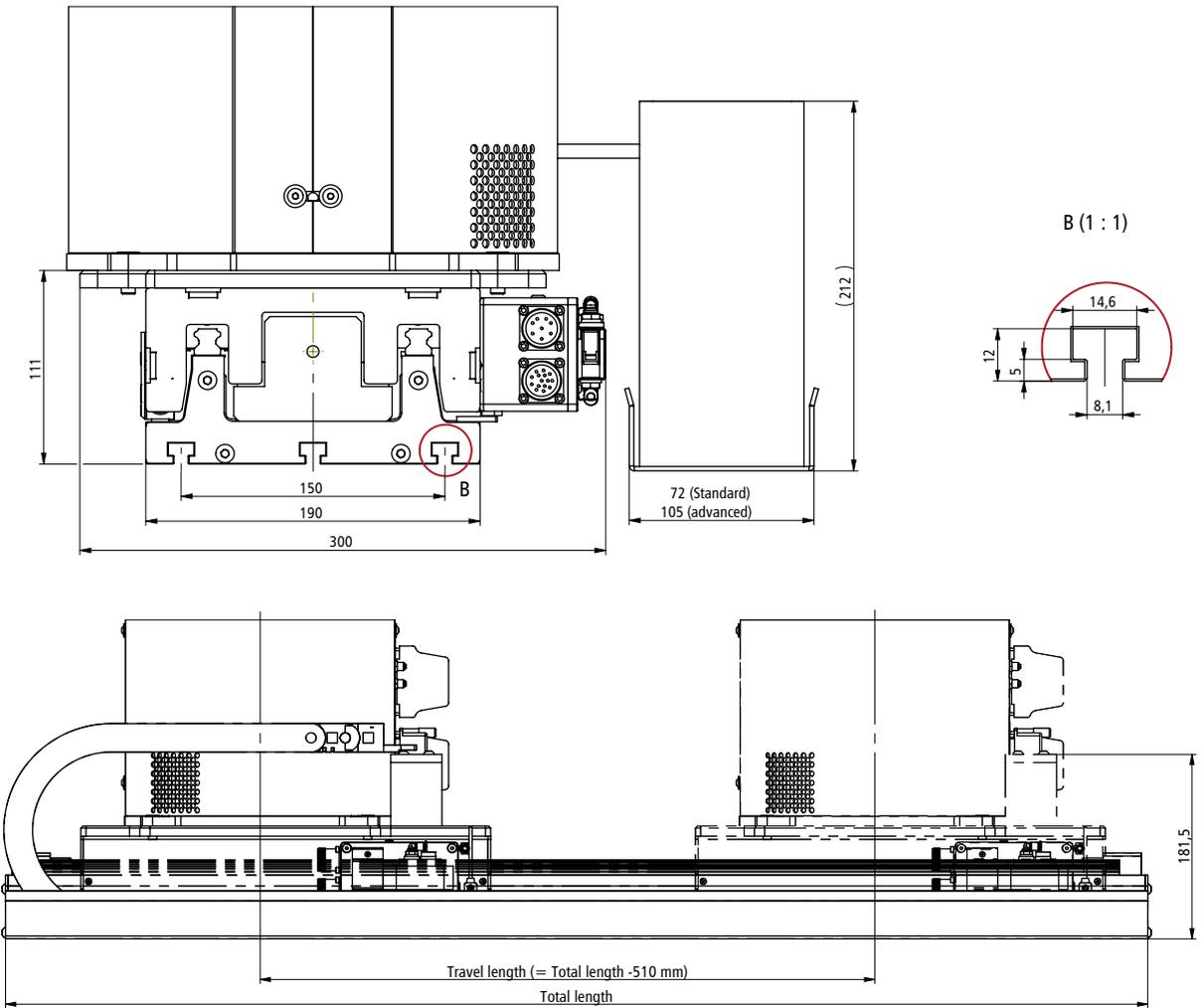
Characteristics

- speed up to 4,5m/s
- acceleration up to 10 m/s²
- total length up to 32 m
- repeatability +/- 0.01 mm
- option: top or side mounting
- fully integrated into the robot system
- direct drive motor
- low-maintenance
- MTBF: >70,000 operating hours

Specifications

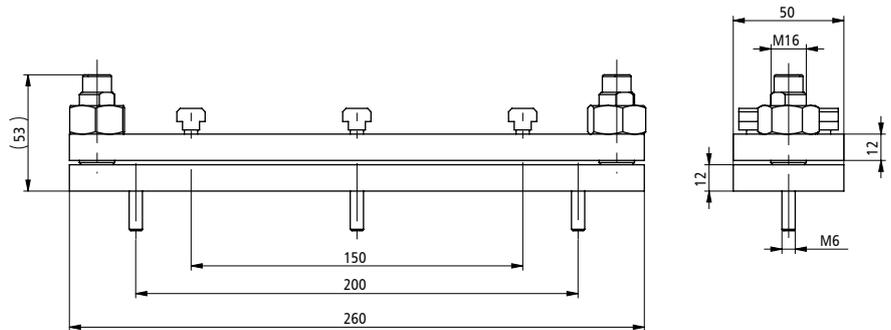
Repeatability	±0.01 mm
Motor	direct drive
Maximum speed	4.5 m/s
Maximum length	32 m
Maximum acceleration	10 m/s ²

Dimensions



ASSEMBLE SET for aligning the axes

(consisting of two adapter plates, four nuts, two leveling bolts and mounting material)



PREALIGNERS | LPA SERIES

The LPA series Prealigners from Logosol are an innovative, high-precision, class 1 clean room solution with integrated scan electronics. These Logosol Prealigners make it possible to align objects from 45 mm to 480 mm, regardless of their degree of transparency. They centre wafers, masks and other substrates, detect notches, flats or other marks and align the object exactly and independently.

The Logosol Prealigners are proprietary products of Logosol Inc. USA www.logosolinc.com.

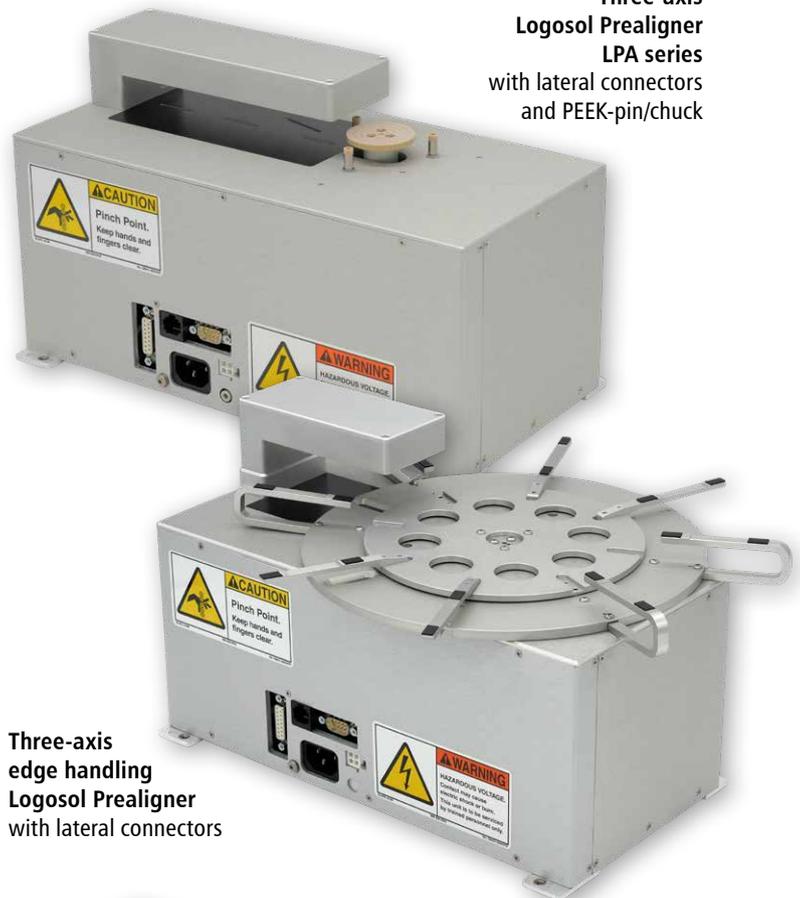
Three-axis Logosol Prealigners

- innovative all-in-one design
- alignment times < 3.5 seconds
- repeatability: linear 0.025 mm, circular 0.02°
- contactless measurement using LED and CCD sensor
- integrated scanning electronics
- standalone capability
- chuck or pin load and change to another wafer size without rebuild
- transparent, semi-transparent, holed and opaque wafers can be aligned
- SEMI, flat and notch wafer specifications
- for wafer sizes from 2" to 18"
- connection fields available from the side and from below
- option: external (notch sensor)
- option: dual layer for bonded wafer

Single axis Logosol Prealigners

- alignment times < 2.5 seconds
- contactless measurement using LED and CCD sensor
- integrated scanning electronics
- chuck load
- change to another wafer size without rebuild
- transparent, semi-transparent, holed and opaque wafers can be aligned
- All, flat and notch wafer specifications
- for wafer sizes from 3" to 12"
- connection panel available at the side and from below

**Three-axis
Logosol Prealigner
LPA series**
with lateral connectors
and PEEK-pin/chuck



**Three-axis
edge handling
Logosol Prealigner**
with lateral connectors

**Single-axis
Logosol Prealigner
LPA series**
with bottom
connectors
configuration



The information on this page is the sole property of Logosol, Inc. www.logosolinc.com

Characteristics **LOGOSOL**

Specifications		PREALIGNER MODEL												Edge Handling Type
		Standalone						Embedded						
		26-3	38-3	58-3	312-3	812-3	1218-3	25-1E	38-1E	58-1E	312-1E	812-1E	1218-1E	
Wafer Diameter	2"	✓						✓						
	3"	✓	✓		✓			✓	✓		✓			
	100mm	✓	✓		✓			✓	✓		✓			4EH, 45EH
	125mm	✓	✓	✓	✓			✓	✓	✓	✓			5EH, 45EH, 56EH
	150mm	✓	✓	✓	✓				✓	✓	✓			6EH, 56EH
	200mm		✓	✓	✓	✓			✓	✓	✓	✓		8EH, 8ET
	300mm				✓	✓	✓				✓	✓	✓	12ET
	450mm						✓						✓	
Square Substrates		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	N/A
Angular Accuracy (3 Sigma)	10000 CPR Encoder	0.04°					N/A	0.06°					N/A	0.04°
	24000 CPR Encoder	0.02°						0.04°						0.02°
Centering Accuracy (3 Sigma)		25um						50um						25um
Max Initial Offset		10mm	12mm					9mm	10mm					1.7mm to 2.0mm
Body Dimensions	W	173mm						95mm						173mm
	L	267mm			317mm		404mm		266mm			328mm	267mm or 317mm	
	H	190mm						191mm						190mm to 206mm
Weight		5.0kg to 5.7kg						3.4kg to 3.8kg						5.3kg to 6.0kg
Servo Axes		Three						One						Three
Handling		Vacuum Chuck and Pins						Vacuum Chuck						Edge Handling
Facilities Required		100-240VAC, 50/60Hz; 48VA or 24 DC/2A, Vacuum 12" Hg for vacuum retention												
Host Interface		RS 232, Ethernet												
Flat/Notch Compatibility		Semi Standards Compliant												
Wafer Opacity		Transparent, Semi-Transparent												
Cleanliness		Class 1												
MTBF		More than 70000 hours												

The information on this page is the sole property of Logosol, Inc. www.logosolinc.com

Quality assurance

The quality assurance system for our products includes all areas which contribute to the attainment of quality objectives. It is based on statutory requirements, customer requirements and the internal quality requirements of isel Germany AG.

The quality assurance system ensures the production processes are controllable and that only products that meet the respective specifications are forwarded to the next working stage. We hold DIN ISO 9001:2015 certification.



References

Subsequently you'll find a selection of companies that participated in a successful co-operation with us and that successfully use our products:



isel ROBOTIK

●■● *successful with
wafer handling components*



Plant in Eiterfeld
36132 Eiterfeld, Hesse
Total area: approx. 52,000 m²



Plant in Eichenzell
36124 Eichenzell, Hesse
Total area: approx. 30,000 m²

iselROBOTIK

•• successful with
wafer handling components

isel Germany GmbH

Robotic Department

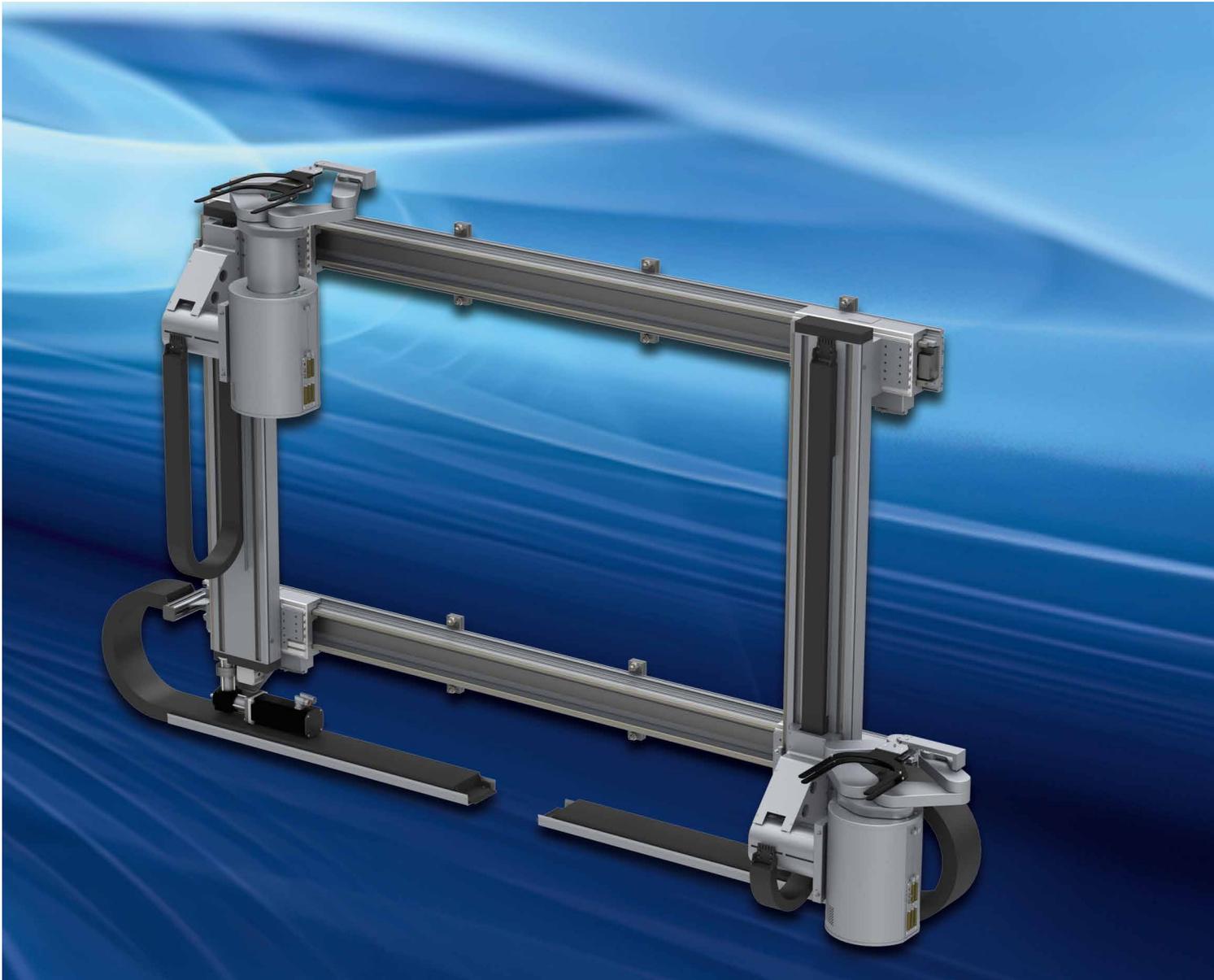
Bürgermeister-Ebert-Straße 40

D-36124 Eichenzell

Tel: +49 (0) 66 59/981 - 700

E-Mail: robotik.vertrieb@isel.com

www.iselrobotik.com



Bauart geprüft
Sicherheit
Regelmäßige
Produktions-
überwachung

www.tuv.com
ID 1111216703

•• **ria**
Robotic Industries Association

