

Overview of product index

- 1 Assembly and handling technology
- 2 Robotics
- 3 Machine vision
- 4 Positioning systems
- 5 Drive technology
- 6 Sensor technology

- 7 Control systems technology
- 8 Safety technology
- 9 Supply technology
- 10 Software
- 11 Services and service providers
- 12 Research and technology

Product index

- | | | |
|--|--|---|
| <ul style="list-style-type: none"> 1 Assembly and handling technology 1.1 Assembly stations and systems 1.1.1 Assembly stations and systems, linear transfer 1.1.2 Assembly stations and systems, rotary transfer 1.1.3 Assembly systems (continuous motion) 1.1.4 Modular assembly platforms 1.1.5 Assembly stations, manually fed 1.1.6 Assembly systems for pliable parts 1.2 Assembly systems for specific fields of application 1.2.1 Assembly systems for medical/pharmaceutical applications 1.2.2 Assembly systems for food industry applications 1.2.3 Assembly systems for explosive areas 1.2.4 Assembly systems for ESD areas 1.2.5 Assembly systems for electrical engineering and electronics 1.2.6 Assembly systems for clean-rooms 1.2.7 Assembly systems for micro technology 1.2.8 Packaging machines 1.2.9 Systems for the production of springs 1.3 Equipment for storage 1.3.1 Storage boxes 1.3.2 Hoppers 1.3.3 Magazines 1.3.4 Pallet systems and palletizing units 1.4 Equipment for organizing, sorting and feeding 1.4.1 Separating equipment 1.4.2 Disentangling equipment (separators) 1.4.3 Sorting equipment 1.4.4 Vibrating feeders, rotary 1.4.5 Vibrating feeders, linear | <ul style="list-style-type: none"> 1.4.6 Step feeders 1.4.7 Hopper elevators (Steep feeders) 1.4.8 Centrifugal feeders 1.4.9 Flexible feeding systems 1.5 Equipment for linking and transport 1.5.1 Chain conveyors 1.5.2 Belt conveyors 1.5.3 Magnetic monorail systems (linear motors) 1.5.4 Roller conveyors 1.5.5 Rotary indexing tables 1.5.6 Belt feed unit 1.5.7 Workpiece carrier systems 1.5.8 Elevators 1.5.9 Lifting and tilting units 1.5.10 Vacuum lifting devices 1.6 Components for linking and transportation equipment 1.6.1 Chains 1.6.2 Belts 1.6.3 Rollers/wheels 1.6.4 Workpiece carriers 1.6.5 Drives 1.6.6 Conveyor section profiles 1.6.7 Slide rails 1.6.8 Lateral guides 1.6.9 Leg sets 1.6.10 Return unit stations 1.6.11 Curves 1.6.12 Dividers 1.6.13 Backstops 1.6.14 Workpiece carriers orientation 1.6.15 Lift transverse units 1.6.16 Transportation controls 1.6.17 Identification and data-storage systems 1.7 Equipment for fastening and joining 1.7.1 Screw driving units, manually operated 1.7.2 Screw driving units, automatically operated 1.7.3 Screw driving units, stationary 1.7.4 Rivetting units | <ul style="list-style-type: none"> 1.7.5 Presses, manual 1.7.6 Presses, electrical 1.7.7 Presses, pneumatic 1.7.8 Presses, hydropneumatic 1.7.9 Presses, hydraulic 1.7.10 Punching units 1.7.11 Welding units 1.7.12 Soldering units 1.7.13 Gluing, dispensing and sealing units 1.7.14 Tox/Clinching units 1.8 Equipment for marking 1.8.1 Printing systems 1.8.2 Embossing and engraving systems 1.8.3 Laser marking systems 1.8.4 Labeling systems 1.9 Test systems 1.9.1 Test equipment for materials, components and structures 1.9.2 Test equipment for functional and durability testing 1.9.3 Test equipment for electronics 1.9.4 Weighing devices 1.9.5 Measuring devices 1.10 Basis and construction elements 1.10.1 Levelling elements 1.10.2 Profiles 1.10.3 Connections 1.10.4 Joints 1.10.5 Surface elements 1.11 Manual workplace systems 1.11.1 Manual handling manipulators 1.11.2 Assembly cells 1.11.3 Individual assembly work places 1.11.4 Assembly tools 1.12 Workplace equipment 1.12.1 Assembly tables 1.12.2 Work table accessories 1.12.3 Supply of materials 1.12.4 On-hand information 1.12.5 Lights 1.12.6 Chairs 1.13 Packaging units |
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Product index (Continuation)

2 Robotics

- 2.1 Industrial robots, listed by type of construction
 - 2.1.1 Linear robots, gantry robots
 - 2.1.2 Horizontally articulated robots (SCARA-robots)
 - 2.1.3 Vertically articulated robots
 - 2.1.4 Articulated robots
 - 2.1.5 Parallel link robots (e.g. linapods, tripods, hexapods)
- 2.1.6 Industrial robots, special design
- 2.1.7 Micro robots
- 2.2 Components for robot systems
 - 2.2.1 Jigs and fixtures
 - 2.2.2 Tool changing systems
 - 2.2.3 Robot measurement systems
 - 2.2.4 Peripherals for painting and coating
 - 2.2.5 Peripherals for sealing and gluing
 - 2.2.6 Peripherals for spot welding
 - 2.2.7 Peripherals for arc welding
 - 2.2.8 Peripherals for processing applications
 - 2.2.9 Peripherals for cutting
 - 2.2.10 Peripherals for laser applications
 - 2.2.11 Peripherals for clean-rooms
- 2.3 Industrial robots for specific fields of application
 - 2.3.1 Industrial robots for painting and coating
 - 2.3.2 Industrial robots for sealing and gluing
 - 2.3.3 Industrial robots for spot welding
 - 2.3.4 Industrial robots for arc welding
 - 2.3.5 Industrial robots for processing
 - 2.3.6 Industrial robots for cutting
 - 2.3.7 Industrial robots for laser applications
 - 2.3.8 Industrial robots for assembling
 - 2.3.9 Industrial robots for measuring and testing
 - 2.3.10 Industrial robots for commissioning and palettising

- 2.3.11 Industrial robots for loading/unloading presses
- 2.3.12 Industrial robots for loading/unloading die cast machines
- 2.3.13 Industrial robots for loading/unloading injection moulding machines
- 2.3.14 Industrial robots for loading/unloading machine tools
- 2.3.15 Industrial robots for electrical engineering and electronics
- 2.3.16 Industrial robots for food industry applications
- 2.3.17 Industrial robots for clean-rooms
- 2.3.18 Industrial robots for micro technology applications
- 2.3.19 Industrial robots for use in hostile environments
- 2.3.20 Industrial robots for research and training
- 2.4 Service Robots for professional use
 - 2.4.1 Field robotics
 - 2.4.2 Cleaning robots
 - 2.4.3 Inspection systems
 - 2.4.4 Construction and demolition robots
 - 2.4.5 Logistic systems
 - 2.4.6 Medical robotics
 - 2.4.7 Service robots for defence, rescue and security applications
 - 2.4.8 Underwater systems
 - 2.4.9 Mobile platforms
 - 2.4.10 Laboratory robots
 - 2.4.11 Public relation robots
 - 2.4.12 Humanoid robots
- 2.5 Service Robots for personal use
 - 2.5.1 Service robots for domestic tasks
 - 2.5.2 Entertainment and leisure robots
 - 2.5.3 Handicap assistance
 - 2.5.4 Service robots for personal transportation
 - 2.5.5 Service robots for home security and surveillance

3 Machine vision

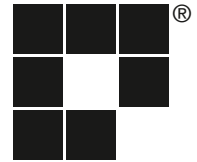
- 3.1 Measuring systems for machine vision
- 3.2 Components for machine vision
 - 3.2.1 Image capture hardware
 - 3.2.2 Optics and illuminations
 - 3.2.3 Image sensors
 - 3.2.4 Optical sensors
 - 3.2.5 Cameras
 - 3.2.6 High speed cameras
 - 3.2.7 Infra-red cameras
 - 3.2.8 Processors and computer components
 - 3.2.9 Intelligent cameras
 - 3.2.10 Smart cameras
- 3.3 Machine vision systems for specific fields of application
 - 3.3.1 Measuring and comparing 2D and 3D
 - 3.3.2 Security systems
 - 3.3.3 Recognition of the shape and the position
 - 3.3.4 Identification systems and components
 - 3.3.5 Surface inspection and texture analysis
 - 3.3.6 X-ray inspection
 - 3.3.7 Completeness check
 - 3.3.8 Colour inspection
 - 3.3.9 Quality inspection
 - 3.3.10 Optical code reading for 1D-codes/bar-codes and 2D-codes
 - 3.3.11 Optical character recognition (OCR)

4 Positioning systems

- 4.1 Modules
 - 4.1.1 Rotation modules, swivel units
 - 4.1.2 Linear modules
- 4.2 Grippers
 - 4.2.1 Grippers, electrical
 - 4.2.2 Grippers, pneumatic
 - 4.2.3 Grippers, hydraulic
 - 4.2.4 2-finger parallel grippers
 - 4.2.5 3-finger centric grippers
 - 4.2.6 Suction grippers
 - 4.2.7 Foil gripper systems
 - 4.2.8 Needle grippers
 - 4.2.9 Adhesion grippers
 - 4.2.10 Revolving grippers
 - 4.2.11 Micro-grippers
 - 4.2.12 Carbon grippers

Product index (Continuation)

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|----------|---|----------|---|--------|--|
| 4.3 | Clamping devices | 5.5.2 | Linear axes, electric driven with toothed belt drives | 6.3.2 | Multiple limit switches |
| 4.3.1 | Clamping devices, manual | 5.5.3 | Linear axes, electric driven with leadscrew drives | 6.4 | Linear displacement transducers |
| 4.3.2 | Clamping devices, pneumatic | 5.5.4 | Linear axes, electric driven with gear rack drives | 6.4.1 | Optical linear displacement transducers |
| 4.3.3 | Clamping devices, electrical | 5.5.5 | Linear axes, electric driven with linear motors | 6.4.2 | Inductive linear displacement transducers |
| 4.3.4 | Clamping devices, hydraulic | 5.6 | Gears | 6.4.3 | Magnetostrictive linear displacement transducers |
| 4.4 | Stop devices | 5.6.1 | Spur gear units | 6.4.4 | Potentiometric linear displacement transducers |
| 4.4.1 | Stop devices, mechanical | 5.6.2 | Bevel gear units | 6.4.5 | Magnetic linear displacement transducers |
| 4.4.2 | Stop devices, electrical | 5.6.3 | Worm gear units | 6.4.6 | LVDT |
| 4.4.3 | Stop devices, pneumatic | 5.6.4 | Planetary gear units | 6.5 | Sensors for distance and thickness |
| 4.4.4 | Stop devices, hydraulic | 5.6.5 | Variable speed drives | 6.5.1 | Distance and thickness sensors, optical |
| 4.4.5 | Stop devices, magnetic | 5.6.6 | Precision gear units | 6.5.2 | Distance and thickness sensors, inductive |
| 4.5 | Positioning systems, pneumatic | 5.7 | Industrial motors, motor controls, motor protection devices | 6.5.3 | Multi-layer measuring sensors |
| 4.6 | Feed units, pneumatic | 5.7.1 | 3-phase Motors | 6.5.4 | Distance and thickness sensors, ultrasonic |
| 4.7 | Stroke feed units, pneumatic | 5.7.2 | Direct current motors | 6.5.5 | Distance and thickness sensors, capacitive |
| 4.8 | micro-positioning systems | 5.7.3 | Energy-saving motors | 6.5.6 | Distance and thickness sensors, magnetic |
| 5 | Drive technology | 5.7.4 | Geared electric motors | 6.6 | Force torque sensors |
| 5.1 | Bearings | 5.7.5 | Servo drives | 6.7 | Optoelectronic sensors |
| 5.1.1 | Ball bearings | 5.7.6 | Stepping motors | 6.7.1 | Throughbeam photoelectric sensors |
| 5.1.2 | Roller bearings | 5.7.7 | Frequency converters | 6.7.2 | Retro-reflective photoelectric sensors |
| 5.1.3 | Needle roller bearings | 5.7.8 | Servo-drive control units | 6.7.3 | Diffuse reflection light scanner |
| 5.1.4 | Plain bearings | 5.7.9 | Motor protection devices | 6.7.4 | Diffuse reflection light scanner with background suppression |
| 5.1.5 | Air bearings (radial) | 5.7.10 | Micro motors | 6.7.5 | Fiber sensors |
| 5.1.6 | Magnetic bearings | 5.8 | Special drives | 6.7.6 | Mark sensors |
| 5.2 | Linear guides | 5.8.1 | Pneumatic motors | 6.7.7 | Color sensors |
| 5.2.1 | Sliding guides | 5.8.2 | Cylinders, electromechanical | 6.7.8 | Luminescence scanner |
| 5.2.2 | Cam roller guides | 5.8.3 | Cylinders, pneumatic | 6.7.9 | Photoelectric fork sensors |
| 5.2.3 | Linear ball bearing guides | 5.8.4 | Pressure transformers, pneumatic | 6.7.10 | Light-grills |
| 5.2.4 | Profiled rail guides | 5.8.5 | Air-oil actuators, pneumatic | 6.7.11 | Optical windows |
| 5.2.5 | Cage rail guides | 5.8.6 | Lifting columns, electromechanical | 6.8 | Ultrasonic sensors |
| 5.2.6 | Telescopic rail guides | 5.8.7 | Lifting elements, electromechanical | 6.8.1 | Ultrasonic through beam barrier |
| 5.2.7 | Air bearings (axial) | 5.8.8 | Chain guides, electromechanical | 6.8.2 | Ultrasonic reflection barrier |
| 5.3 | Linear motion drive elements and systems | 5.8.9 | Linear lifting magnets | 6.8.3 | Ultrasonic sensors |
| 5.3.1 | Acme screw drives | 5.8.10 | Linear interlocking magnets | 6.9 | Micro-sensors |
| 5.3.2 | Ball screw drives | 5.8.11 | Swing drives, electromechanical | 6.10 | Pneumatic measuring apparatus |
| 5.3.3 | Roller screw drives | 5.8.12 | Accessories for electromechanical actuators | 6.11 | Pressure switches, pneumatic |
| 5.3.4 | Gear rack drives | 5.9 | Multiple systems | 6.12 | Accessories |
| 5.3.5 | Toothed belt drives | 6 | Sensor technology | | |
| 5.3.6 | Linear motors | 6.1 | Proximity switches | | |
| 5.3.7 | Chain drives | 6.1.1 | Proximity switches, inductive | | |
| 5.3.8 | Accessories for linear motion drives elements | 6.1.2 | Proximity switches, capacitive | | |
| 5.4 | Numeric controlled rotation axes | 6.1.3 | Cylinder position switches | | |
| 5.4.1 | Rotation axes, pneumatically driven | 6.2 | Rotary encoders | | |
| 5.4.2 | Rotation axes, electric driven | 6.2.1 | Rotary encoders, absolute | | |
| 5.4.3 | Rotation axes, electric driven with gear | 6.2.2 | Rotary encoders, incremental | | |
| 5.4.4 | Rotation axes, electric driven without gear | 6.3 | Mechanical limit switches | | |
| 5.5 | Numeric controlled linear axes | 6.3.1 | Single limit switches | | |
| 5.5.1 | Linear axes, pneumatic driven | | | | |



Product index (Continuation)

7 Control systems technology

- 7.1 Controls, electronic
- 7.2 Controls, mechanical (cam-controlled)
- 7.3 Controls, pneumatic
- 7.4 CNC-control systems
- 7.5 Freely programmable controls (FPCs)
- 7.6 Industrial PCs
- 7.7 Monitors
- 7.8 BUS systems
- 7.9 Bus terminals
- 7.10 Components for fieldbus systems
- 7.11 Valve islands
- 7.12 Servo controller
- 7.13 Hand-held programmers and operator terminals
- 7.14 CPU-cards
- 7.15 Power supply units
- 7.16 Display and operating equipment
- 7.17 Electrical components for controls

8 Safety technology

- 8.1 Safety and monitoring systems
- 8.2 Components for safety and monitoring systems
- 8.3 Guards
- 8.4 Doors and gates
- 8.5 Anti-collision systems
- 8.6 Overload protection equipment
- 8.7 Shock absorbers
- 8.8 Bellows

9 Supply technology

- 9.1 Cable and hose carrier systems
- 9.2 Cable protection systems
- 9.3 Cable and tube bushings
- 9.4 Electrical power supply
- 9.4.1 Wiring systems, complete
- 9.4.2 Cable and wires
- 9.4.3 Cord sets
- 9.4.4 Cable clips
- 9.4.5 Connectors
- 9.4.6 Connection material, without soldering
- 9.5 Compressed air supply
- 9.5.1 Maintenance units for compressed air
- 9.5.2 Filters for compressed air
- 9.5.3 Pressure regulators

- 9.5.4 Lubrications for compressed air
- 9.5.5 Compressed air dryer
- 9.5.6 Tube lines for compressed air
- 9.5.7 Hose lines for compressed air
- 9.5.8 Screwed connections and connections for compressed air
- 9.5.9 Silencers for compressed air
- 9.5.10 Sealing devices for compressed air
- 9.5.11 Accessories for compressed air
- 9.6 Ventilation technology and extraction systems
- 9.7 Components for ventilation technology and extraction systems
- 9.8 Vacuum technology
- 9.9 Hydraulic supply

10 Software

- 10.1 Software for robotics, assembly and handling technology
- 10.1.1 Software for simulation
- 10.1.2 Software for robots and plant control systems
- 10.1.3 Software for process-controlled programming and visualisation
- 10.1.4 Software for numerical control systems
- 10.1.5 Software for field bus systems
- 10.1.6 Software for process control systems
- 10.1.7 Software for remote diagnosis
- 10.1.8 Programming tools
- 10.1.9 Software for quality inspection and documentation
- 10.2 Software for machine vision
- 10.2.1 Machine vision software, general
- 10.2.2 Software tools
- 10.2.3 Fuzzy logic software

11 Services and service providers

- 11.1 Services
- 11.1.1 General contractors, system integrators
- 11.1.2 Engineering, consultancy, planning
- 11.1.3 Feasibility studies
- 11.1.4 Simulations
- 11.1.5 CAD/CAM services

- 11.1.6 Optimisation of existing systems
- 11.1.7 Integration in new/existing IT-environments
- 11.1.8 Programming
- 11.1.9 Robot calibrations
- 11.1.10 Trainings
- 11.1.11 Maintenance
- 11.1.12 Mechanical, electrical, services, etc
- 11.1.13 Teleservice
- 11.1.14 Certifications, safety inspections
- 11.1.15 Services for research and innovation
- 11.2 Service providers
- 11.2.1 Management consultancies
- 11.2.2 Banks and financial institutions
- 11.2.3 Insurance institutions
- 11.2.4 Trade associations and organizations
- 11.2.5 Standards committees
- 11.2.6 Official agencies and authorities
- 11.2.7 Universities and universities of applied sciences
- 11.2.8 Training institutions
- 11.2.9 Publishers and publications

12 Research and technology

- 12.1 Research in the field of industrial automation
- 12.2 Research in the field of robotics
- 12.3 Research in the field of machine and plant construction
- 12.4 Research in the field of transport and traffic
- 12.5 Research in the field of electrical engineering
- 12.6 Research in the field of information transmission and communication
- 12.7 Research in the field of micro technologies
- 12.8 Research in the field of nanotechnology
- 12.9 Research in the field of optical technologies
- 12.10 Research in the field of medical technology
- 12.11 Energy and environmental research
- 12.12 Material research
- 12.13 Physics research
- 12.14 Composites technology