

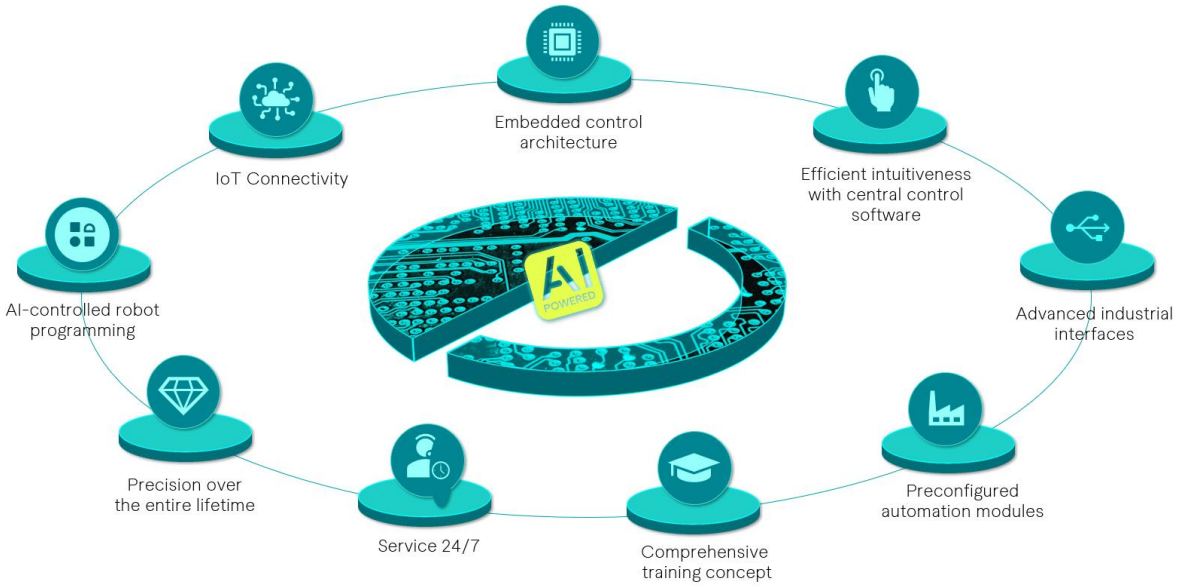
fruitcore robotics - The Digital Robot Platform

Product specification

Version 2024.2.3

I. fruitcore robotics - The Digital Robot Platform

In addition to intelligent industrial robots, fruitcore robotics' Digital Robot Platform also includes central control software, preconfigured automation modules and supporting services. This allows you to automate numerous industrial applications (e.g. camera-supported quality inspections, machine loading and unloading, dosing and gluing processes, packaging processes and Pick & Place processes) much more easily than before.



With the coordinated hardware and software modules of the Digital Robot Platform, we enable you to easily automate your application - from project planning to ongoing operation: Economical. Flexible. Efficient.

The coordinated range of services provides you with additional support. It includes free feasibility studies, non-binding test phases, comprehensive training concepts (live and on demand) and a comprehensive after-sales offer including 24/7 service and support.

You benefit from:

- **Maximum cost-effectiveness** thanks to minimal purchase and maintenance costs with a long service life. The usual ROI is less than 6 months.
- **Maximum flexibility** thanks to the fastest and simplest set-up as well as the most user-friendly programming with and without coding. You can reprogram processes in just a few minutes.
- **Maximum efficiency** thanks to the simplest and fastest project planning with a patented modular system. Your effort is less than 15 % compared to standard market integrations.

In this product specification you will find detailed information on the scope of performance of all products from fruitcore robotics.

II. Product range from fruitcore robotics

The fruitcore robotics product range is made up as follows:

Product group	Description
Digital Robots	Four robot models including controller, control panel and software, which are ideal for a wide range of industrial applications.
Software	The software portfolio includes the expandable robot operating software *horstOS*, the desktop simulation environment *horstOS Simulation* and the IIoT platform *horstCOSMOS*
Component Kits	Seamlessly integrable robot accessories and ready for immediate use thanks to mechanical adapters, plug-in components and defined interfaces as well as various platform concepts.
Solution Kits	Automation modules with CE certification and completed risk assessment, specially tailored to production scenarios.
Care Services	With our care packages, you receive software updates and an extended warranty on the entire robot system as well as technical support from our qualified robot experts.
Training Services	In addition to our e-learning platform *Academy,* we offer a wide range of training courses to deepen your knowledge of the Digital Robot Platform.

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1 Digital Robots

Our 6-axis robots for use in harsh industrial environments with reaches of 600 to 1500 mm and maximum payloads of 3 - 15 kg.



With a Digital Robot you get:

- Industrial robot *HORST*
- Compact control unit *Control*
- *IIoT surfstick* for using the Digital Services
- Ergonomic *Panel G1*
- Central control software *horstOS* incl. *Digital Robot Features*
- Access to the IIoT platform *horstCOSMOS*
- 6-year warranty on the robot drive train

Your advantages with Digital Robots:

- **Best performance with unique drive technology**
  Digital Robots rely on proven industrial planetary gearboxes combined with patented coupling gearboxes and optimized by machine learning for outstanding performance.
- **Guaranteed durability with high precision**
  Maintenance-free and low-wear gearboxes with > 50,000 h service life guarantee high process reliability with consistent precision over the entire service life.
- **Shortest set-up & programming times**
  Central control software, from project setup including component management, to graphical robot programming and customizable process control, makes programming experts superfluous in day-to-day business.

1.1 Digital Robot HORST600 - Highest efficiency in the smallest space (VE500661) / (VE500679)



Maximum flexibility for automation solutions in the tightest of spaces, even under changing conditions.

Includes:

- Industrial robot HORST600
- Ergonomic control device *Panel*
- *IIoT-Surfstick* for using the Digital Services
- Central control software *horstOS* incl. *Digital Robot Features*
- Access to the IIoT platform *horstCOSMOS*
- 6-year warranty on the robot drivetrain

Industrial Robot HORST600 includes:

- Robot kinematics HORST600
  - Reach: 584 mm
  - Load capacity: 3 kg
  - Repeat accuracy: +/-0.05 mm
  - Weight: approx. 30 kg
- Control unit *Control* & *Accessories*
- Textual robot programming with JavaScript
- External robot control via XML-RPC

1.2 Digital Robot HORST1000 - Productivity redefined (VE500662) / (VE500680)



Optimum load capacity for placement tasks with high loads or more complex and heavy gripping systems.

Includes:

- Industrial robot HORST1000
- Ergonomic control device *Panel*
- *IIoT-Surfstick* for using the Digital Services
- Central control software *horstOS* incl. *Digital Robot Features*
- Access to the IIoT platform *horstCOSMOS*
- 6-year warranty on the robot drivetrain

Industrial Robot HORST1000 includes:

- Robot kinematics HORST1000
  - Reach: 1018 mm
  - Load capacity: 8 kg
  - Repeat accuracy: +/-0.05 mm
  - • Weight: approx. 70 kg
- Control unit *Control* & *Accessories*
- Textual robot programming with JavaScript
- External robot control via XML-RPC

1.3 Digital Robot HORST1000 G2 - The strongest robot in its class (VE500722) / (VE500723)



The strongest robot in its class. Benefit from a uniquely high load capacity combined with high robot dynamics for maximum flexibility and efficiency when loading and unloading machine tools.

Includes:

- Industrial robot HORST1000 G2
- Ergonomic control device *Panel*
- *IIoT-Surfstick* for using the Digital Services
- Central control software *horstOS* incl. *Digital Robot Features*
- Access to the IIoT platform *horstCOSMOS*
- 6-year warranty on the robot drivetrain

Industrial Robot HORST1000 G2 includes:

- Robot kinematics HORST1000 G2
  - Reach: 1141 mm
  - Load capacity: 16 kg
  - Repeat accuracy: +/-0.05 mm
  - Weight: approx. 105 kg
- Control unit *Control* & *Accessories*
- Textual robot programming with JavaScript
- External robot control via XML-RPC

1.4 Digital Robot HORST1400 - Optimum performance with an appropriate investment (VE500663) / (VE500681)



Long reach for automation systems with large workspace requirements or large trays for long autonomy times.

Includes:

- Industrial robot HORST1400
- Ergonomic control device *Panel*
- *IIoT-Surfstick* for using the Digital Services
- Central control software *horstOS* incl. *Digital Robot Features*
- Access to the IIoT platform *horstCOSMOS*
- 6-year warranty on the robot drivetrain

Industrial Robot HORST1400 includes:

- Robot kinematics HORST1400
  - Reach: 1425 mm
  - Load capacity: 12 kg
  - Repeat accuracy: +/-0.10 mm
  - Weight: approx. 150 kg
- Control unit *Control* & *Accessories*
- Textual robot programming with JavaScript
- External robot control via XML-RPC

1.5 Digital Robot HORST1500 - Maximum efficiency for your competitive advantage (VE500664) / (VE500682)



Maximum efficiency when loading machine tools and handling pallets and pallet cages. Very suitable for tasks with more complex and heavy gripping systems.

Includes:

- Industrial robot HORST1500
- Ergonomic control device *Panel*
- *IIoT-Surfstick* for using the Digital Services
- Central control software *horstOS* incl. *Digital Robot Features*
- Access to the IIoT platform *horstCOSMOS*
- 6-year warranty on the robot drivetrain

Industrial Robot HORST1500 includes:

- Robot kinematics HORST1500
  - Reach: 1485 mm
  - Load capacity: 15 kg
  - Repeat accuracy: +/-0.05 mm
  - Weight: approx. 99 kg
- Control unit *Control* & *Accessories*
- Textual robot programming with JavaScript
- External robot control via XML-RPC

1.6 All components of the Digital Robot

In addition to the robot kinematics, the following components and software are part of a Digital Robot.

1.6.1 Control - The powerful control unit of the Digital Robot



With Control, entire applications can be implemented without an additional external controller (PLC).

Performance data:

- Dimensions: 313 x 174 x 446 mm
- Weight: approx. 10 kg
- USB ports: 2x USB 3.0 port
- Digital I/Os
  - 20 digital inputs (expandable to 28)
  - 18 digital outputs (expandable to 30)
- Dual-channel safety interfaces
  - Emergency and safety stop according to with DIN EN ISO 10218-1; PL d
  - 4 configurable safe inputs
  - 6 configurable safe outputs
- Ethernet interface for TCP/IP communication

Additional interfaces (Profinet, Modbus, XML-RPC) can be added with Advanced Interfaces.

1.6.2 Accessories of the robot system



The following accessories are part of the robot system as standard:

- Assembly instructions
- Declaration of incorporation for partly completed machinery
- Cable between robot and control cabinet (3.0 m long)
- Cable between control panel and control cabinet (5.0 m long)
- Mains cable for the Control power supply (1.8 m long)
- 4 mounting screws for mounting the robot (DIN 912 M8x40)
- 4 x M8 nuts and washers for mounting the robot
- Tensioning strap for securing the Control control unit

1.6.3 IIoT Surfstick - Simple and secure use of digital services from fruitcore robotics



The IIoT surfstick is part of every robot system and ensures a secure internet connection for using the IIoT services, AI features and remote support from fruitcore robotics. The stick simply needs to be plugged into Control and automatically establishes an internet connection without the robot system having to be connected to the company network.

There are no running costs when using the IIoT-Surfstick. The IIoT-Surfstick can be used throughout Europe (including Switzerland) without incurring any additional costs.

1.6.4 Panel (VH500592)



Performance data:

- Dimensions: 340 x 245 x 85 mm
- Protection class: IP20
- Screen size: 13.3''
- Screen resolution: 1920 x 1080 (Full HD)
- 2 USB ports for connecting a mouse and keyboard
- Control panel bracket for mounting on the system included

In addition to the panel, you will receive a mount that allows the panel to be placed on a table for programming or attached to the system.

1.6.5 Panel G2 (VH500675) / (VH500677)





Thanks to its innovative concept with adjustable handles and low weight, the new panel offers the best ergonomics, even when programming on the robot for long periods of time. The bright 13.3'' display with high 2.5K resolution (2560x1600px), outstanding contrast and vivid colours provides a unique user experience. The panel also impresses with its high robustness thanks to IP protection class IP54 and optimised cable routing.

Performance data:

- Dimensions: 330 x 255 x 95 mm
- Protection class: IP54
- Screen size: 13.3''
- Screen resoluition: 2560 x 1600 (2.5 K)
- 2 USB-Ports for connectiong mouse and keyboard
- Control panel bracket for mounting on the system included

In addition to the panel, you will also receive a bracket with which the panel can be attached to the system.

1.6.5.1 Protective film for Panel G2 (VH500678)



Optionally available for Panel G2.

Performance data:

- Custom-made for the Panel G2
- Matte surface for protection against reflections under strong light exposure
- Special protection against scratches
- No impairment of touchscreen behavior

The protective film is included with the panel and must be applied independently.

1.6.6 Operating system software horstOS incl. Digital Robot Features (VD500683)

horstOS
Digital Robot Features

The Digital Robot Features include core functionalities of the robot control software horstOS and are part of every Digital Robot.

For details on the scope of services, please refer to the sections Software of the Digital Robots (horstOS) and Digital Robot Features.

1.6.7 Access to the IIoT platform horstCOSMOS (VD500276)

horst COSMOS

When you purchase a Digital Robot, you gain access to the horstCOSMOS IIoT platform.

Details on the scope of services can be found in the horstCOSMOS section.

2 Software of the Digital Robot (horstOS)

This section describes the software offering in detail.

The digital robots from fruitcore robotics are characterised by their innovative & intuitive software. You save time and therefore money thanks to the simplicity from set-up to operation.

horstOS guides the user systematically through the pre-configuration, programming, and operation of the automation application.

horstOS is divided into the following main areas:

1. Project Setup
2. Program Generation
3. Process Control
4. AI Copilot



These areas are described in detail on the following pages.



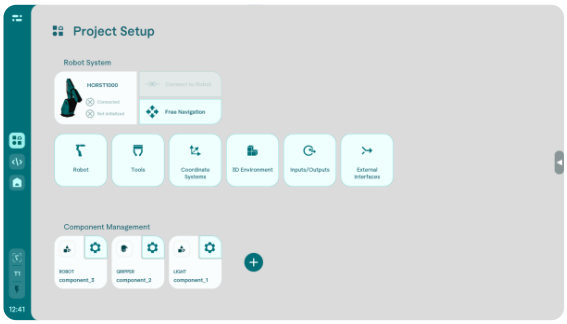
All release notes for past software releases and upcoming releases are listed on the fruitcore robotics website (Link).

horstOS - Project Setup

Scope of services:
In the "Project Setup" area, users can seamlessly integrate and centrally manage all components relevant to an overall system, such as grippers, camera systems and safety systems, thanks to standardised interfaces. Components can be added with a single click and are possible for all components that have a web app or a digital interface - regardless of the manufacturer. If status information needs to be queried, settings checked or changes made for one of the connected components, this can be easily implemented via the robot panel with horstOS as the central user interface.

Your advantages:

- **Fastest integration**
  Simple addition and management of components thanks to predefined standards and auto-complete.
- **Manufacturer-independent software implementation**
  Any web services and software tools as well as component and machine interfaces can be seamlessly implemented in horstOS.



Component management is included in the Additional Feature „Advanced Automation Features“.

horstOS – Program Generation

Scope of services:
After setting up the "Project Setup", the robot programme sequence is programmed in the "Programme Generation" area. The following functions are available:

- Graphical & textual robot programming (textual with JavaScript (horstSCRIPT))
- Robot simulation on the control panel
- Free movement of the robot with a digital twin and
- Integration of 3D objects and management of 3D worlds
- Extended safety functions for secure implementation of the application
- Recording of data for analysing application processes
- Position-dependent acceleration (up to 30 % cycle time optimisation)

Your advantages

- **Extremely simple programming**
  The graphical user interface makes it child's play to implement entire applications without the use of textual code
- **Interaction of graphical & textual programming**
  Experts use textual programming to quickly create complex programmes. By using graphical elements, programmes can be designed to be user-friendly, customisable and comprehensible.
- **Simple simulation & realistic feasibility analyses**
  Carrying out simulations and feasibility studies in a realistic 3D world provides clarity about the feasibility of a project and uncovers potential obstacles to realisation at an early stage.



The full scope of performance of the programme generation is included in the „Advanced Graphical Features“.

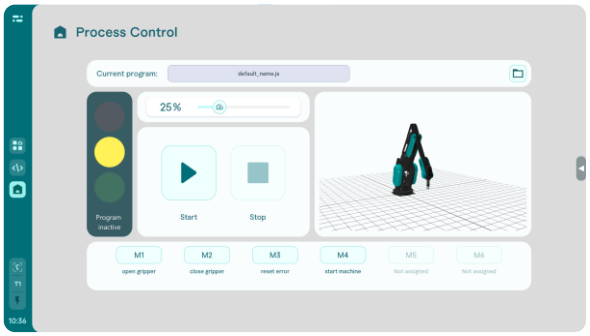
horstOS – Process Control

Scope of services:

The "Process Control" area makes it possible to customise operation and process monitoring to the user's personal requirements and specific processes. Widgets can be used to display relevant process data, show the status of the connected components and make frequently adjusted parameters accessible. This gives users full control over their automation process.

Your advantages:

- **Simple customizability**
  The configuration of the user interface can be ideally customised to the process.
- **Most efficient process control**
  Fastest operating and set-up times thanks to intuitive access to all components involved in the process - always accessible via a single point of control..
- **Error-free operation thanks to clear design**
  The optimised user interface minimises errors, simplifies operation and thus reduces the amount of training required to operate the application.



Process Control is included in the Additional Feature „Advanced Automation Features“.

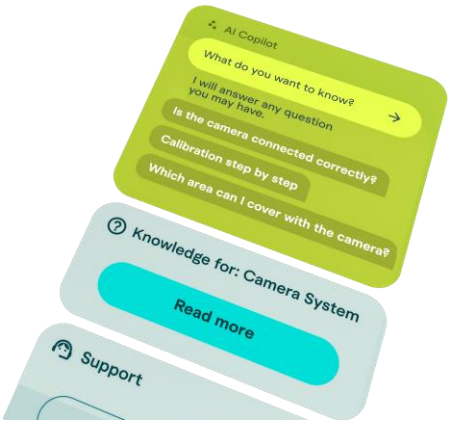
horstOS – AI Copilot

Scope of services:

Access to the "AI-Copilot", which answers questions about HORST and programming in horstOS in real time and in an easy-to-understand way.

Your advantages:

- **Maximum time & cost efficiency in support**
  Questions & assistance without support calls - with the AI Copilot you receive context-sensitive answers in real time.
- **High availability & security**
  Early error detection & correction suggestions help to quickly rectify errors.
- **Most efficient programming**
  Optimisation and correction of programs or creation of functions, program modules and program templates.

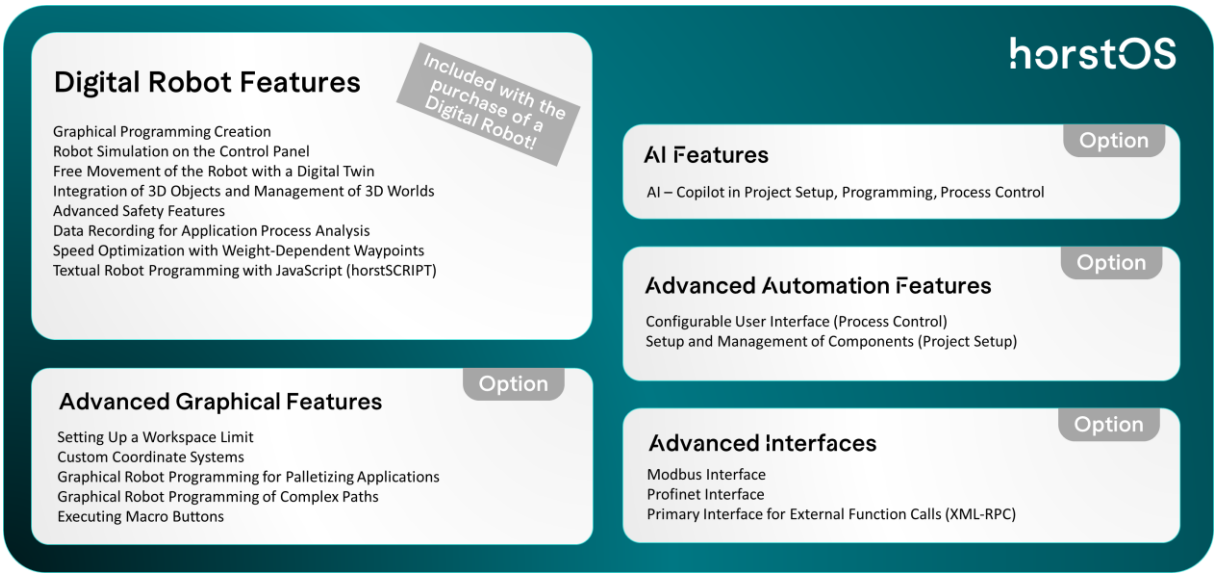


- **Your personal trainer**
  Further training through sparring with the AI Copilot, just like with a trainer, application or service technician.

The AI Copilot is included in the Additional Feature „AI Features“.

2.1 Software Packages

The software consists of the following components:



2.1.1 Digital Robot Features

horstOS Digital Robot Features	The Digital Robot Features are always included with the purchase of a Digital Robot. They provide the foundation for implementing industrial automation processes with HORST. **Scope of Services:** • **Graphical Creation of Programs** Enables intuitive robot programming through visual blocks, without requiring in-depth programming knowledge. • **Program Simulation on the Control Panel** Provides a real-time preview of robot movements to avoid errors and optimize workflows directly on the robot. • **Free Movement of the Robot with a Digital Twin** Allows precise control and planning of movement sequences in a virtual environment. • **Integration of 3D Objects and Management of 3D Worlds** Supports realistic modeling and planning of processes in complex work environments. • **Advanced Safety Features** Ensures the secure implementation of robot applications with HORST. • **Data Recording for Application Process Analysis** Enables detailed monitoring and optimization of workflows through data analysis. • **Speed Optimization with Weight-Dependent Waypoints** Enhances efficiency by situationally adjusting speed based on the robot's load. • **Textual Robot Programming with JavaScript (horstSCRIPT)** Provides flexible and expandable programming options for advanced users. • **Position-Dependent Acceleration** Improves efficiency by dynamically adjusting movement speed based on position.

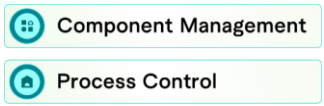
2.1.2 Additional feature: Advanced interfaces for maximum connectivity (VD500479 / VD500476)

The additional feature "Advanced Interfaces" gives you access to further industry interfaces

Scope of services:

- **Profinet** - real-time capable communication
  Powerful interface with simple integration of devices and systems.
- **Modbus** - cost-efficient implementation
  Simple & open communication protocol for broad device compatibility.
- **XML-RPC** - Cross-platform communication
  The primary interface of the Digital Robot enables standardized XML messaging and simple remote procedure calls via the web.

2.1.3 Additional Feature: Advanced Automation Features (VD500660)



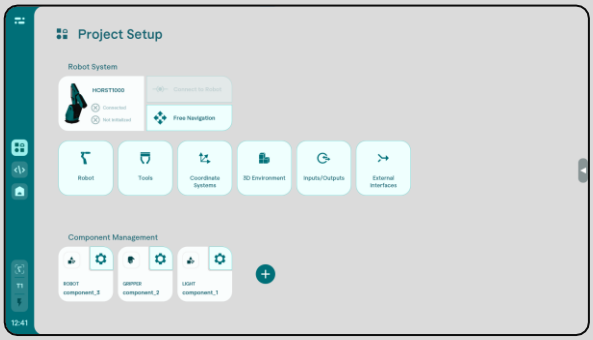
The additional feature "Advanced Automation Features" gives you access to extended options for setting up and controlling your application without a higher-level controller (PLC).

Scope of services:

- **Component Management**
  Setup and management of components in Project Setup
- **Process Control**
  Customised design of the process control screens

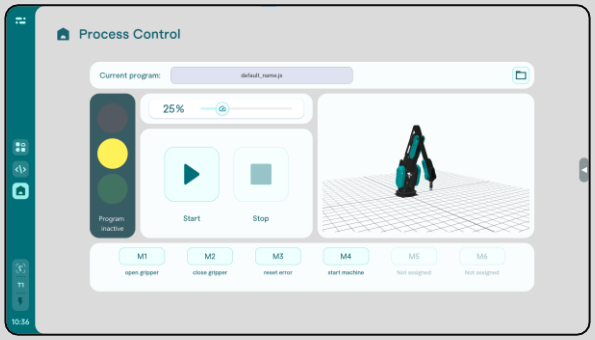
Advantages of centralised component management

- **Simple creation of components**
  Quick step-by-step setup and configuration of connected components
- **Single point of control**
  Direct access to the component interface. Enormous time savings through setup, operation and making adjustments from a central point.



Advantages of customised process control

- **Simple operation and a good overview**
  By customising the process control, the operator can be provided with exactly the functions they need during operation. This minimises errors caused by incorrect operation
- **Flexible set-up**
  The most important functions (e.g. release door or open gripper) can be made directly accessible in the Process Control.



2.1.4 Additional Feature: Advanced Graphical Features for the fastest and easiest robot programming (VD500478)



The additional feature "Advanced Graphical Features" gives you access to further functionalities in the "Program Generation"

Scope of services:

- Graphical programming of palletizing applications
- Graphical robot programming with complex paths
- Setting up a workspace limitation
- User-defined coordinate systems

The Advanced Graphical Features are described in more detail below.

Advantages of graphical programming of palletizing applications

- **Programming without expert know-how**

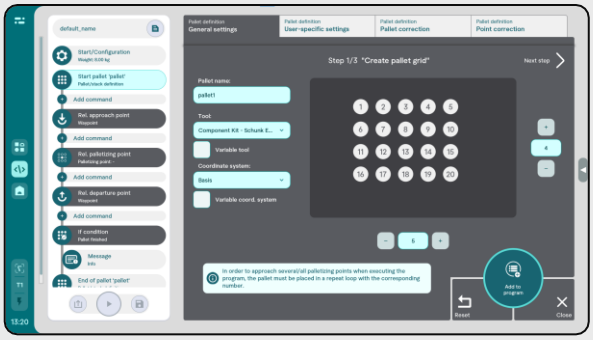
  The input screen guides you step by step through the programming of pallet and tray patterns.

- **Increasing efficiency and minimizing errors**

  Thanks to the visualization, the risk of incorrect programming can be significantly reduced. Reprogramming and adaptation of pallet patterns is possible in just a few minutes

- **Flexibility for your application**

  Extensive options for customizing your pallet (e.g. point corrections or the omission of individual points) enable you to cover even complex applications with the palletizing tool



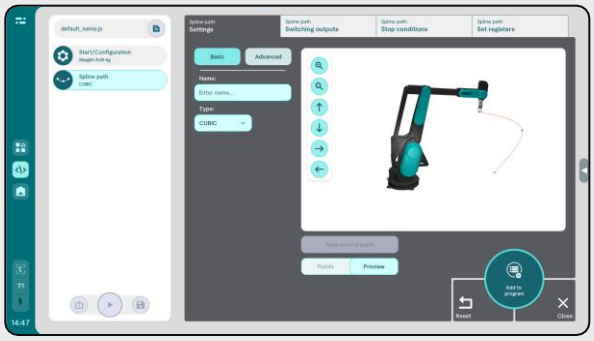
Advantages of graphical programming of complex paths

- **Programming without expert know-how**

  The input screen guides you step by step through the programming of complex paths, i.e. circles, splines and polygons.

- **Flexibility in operation**

  Regardless of whether you need to make adjustments regularly or only occasionally: In graphical programming, this is possible at any time with little effort, even if you do not regularly deal with robot programming.



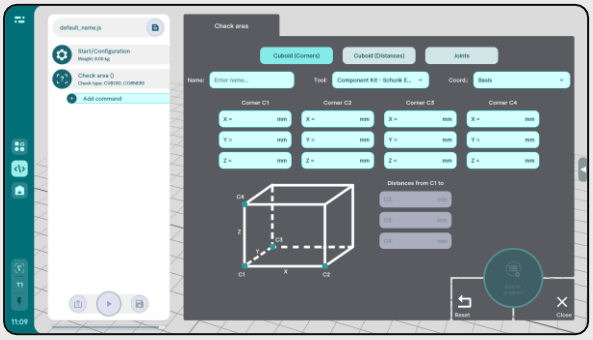
Advantages of setting up a workspace limitation ("Check area" function)

- **Carrying out basic positioning runs**

  When creating home position movements, the feature can be used to ensure a safe movement to a home position depending on the robot position. This is typically useful when switching the robot systems on or off.

- **Safe operation of the robot**

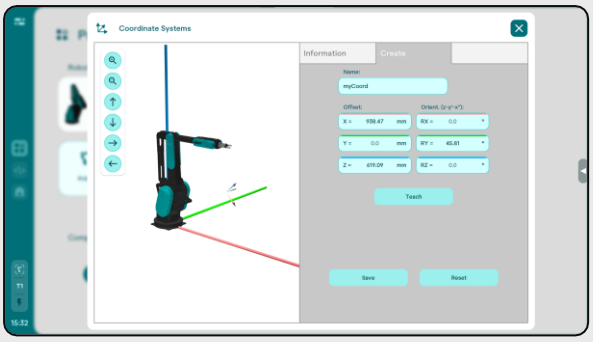
  The "Check area" function can be used to ensure an automated start of the robot within the safety area (e.g. in the horstCUBE) when the is just little space.



Advantages of using user-defined coordinate systems

- **Extended programming options**

  With this feature, it is possible to create your own reference coordinate systems in addition to the basic and TCP coordinate systems. This allows a robot to be placed directly in reference to an already defined environment and align itself freely with the objects present there. This function also enables precise movements within inclined planes.



- **Faster customization of programs**

  During programming, these user-defined coordinate systems can be used as a flexible reference for entire motion sequences. If the environment changes (e.g. the workpiece carrier is moved), it is sufficient to adapt the reference coordinate system accordingly. It is not necessary to change the motion sequence. Especially when environments change frequently, this allows a high degree of flexibility and time savings to be achieved.

- **Faster programming of frequently repeated movements**

  By defining an offset in the coordinate system, the same movement sequences can also be repeated at different positions. For complex processes, such as welding or gluing, which have to be carried out at several positions, this saves an enormous amount of time during programming.

2.1.5 AI Features (VD500659)



Access to the "AI Copilot," which provides real-time, easily understandable answers to questions about HORST and programming in horstOS.

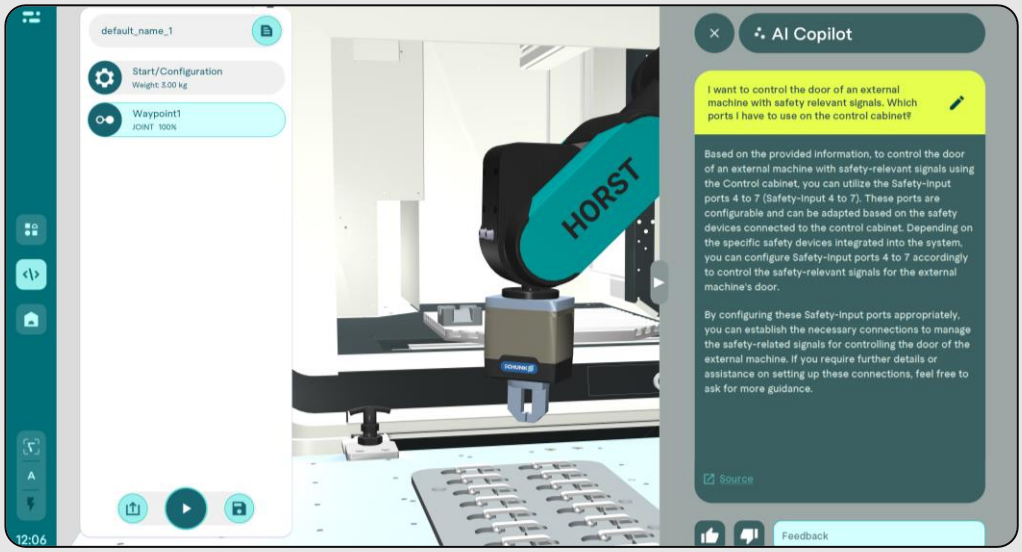
Scope of Services:

- AI Support
- AI Programming
- AI Error Handling

The functions of the AI Copilot are described in detail below.

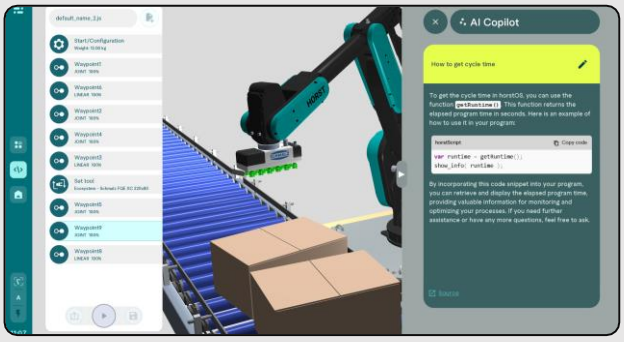
AI Support

- **Highest Time & Cost Efficiency in Support**
  Get answers and assistance without support calls—the AI Copilot provides context-sensitive responses in real time.



AI Programming

- **High Availability & Security**
  Achieve efficient programming through AI-generated functions, program modules, and templates. It also includes optimization and correction of programs, syntax analysis, and suggestions for improvements.



AI Error Handling

- **Highest Time & Cost Efficiency in Support**
  The AI Copilot analyzes project setups, program logic, and hardware configurations when problems arise, offers actionable recommendations and solutions, and processes error messages for direct analysis.



2.2 IIoT Platform horstCOSMOS - Full transparency and maximum process reliability (VD500276)

Product scope

When you purchase a Digital Robot, you gain access to the horstCOSMOS IIoT platform. On horstCOSMOS, you can view your robot's performance data at any time, keep an eye on the services you have booked and access comprehensive documentation relating to the robot. Your horstCOSMOS account also gives you access to the Academy e-learning platform (details on the Academy).

Your advantages:

- **High process reliability**
  Perform predictive maintenance to maximize robot availability. Regular program backups provide additional security.
- **Fast responsiveness**
  With the online service system, you can always keep an eye on the progress of your service request. Thanks to remote support, many service cases can be resolved without an on-site appointment.
- **Good transparency**
  The central overview of the robot fleet and the services booked makes it easy for you to keep track of everything.
- **Central knowledge base**
  On horstCOSMOS you have access to all information about the use of HORST - this includes 3D models, instructions, application examples and much more.

2.3 Robot software updates for the latest features and increased performance (VD500484)



Product scope

- The Additional Robot Service "Software Updates" entitles you to update the robot operating software *horstOS* of a robot including all additional features to the current version.
- The costs for updates are always calculated per year from the date of delivery or from the last update.
  (Example: If a robot was delivered in 05.2023 and is to be updated in 07.2025, three years are calculated. The robot is then entitled to updates for one year, which means that all new software versions released during this period may be installed until 06.2026)

Your advantages

- **Always up to date**
  Continuously reduce the set-up effort for your robot application thanks to the latest features
- **Increased robot performance**
  Benefit from shorter cycle times thanks to continuous optimization in robot path planning

If you take out a Care or Care Plus service contract for your robot system, regular software updates are automatically included.

The same applies if you purchase Additional Features in the subscription model.

2.4 horstOS Simulation - Licenses for the desktop version for pre-commissioning and program optimization away from the robot (VD500666)



Product scope

- Licenses for the use of the *horstOS* operator software as a Windows desktop version.
- The license allows you to use *horstOS Simulation* on several computers in your company (up to 3 at the same time).

Your advantages:

- **Convenient program creation**
  You can pre-program the program structure of your application on the PC in a quiet working environment and then transfer it 1 to 1 to the robot. The waypoints can then be fine-tuned on the real system and the robot is immediately ready for use
- **Simple program sharing**
  Programs created on the desktop can be easily transferred to the robot via the Internet
- **Flexibility in operation**
  While the robot is working productively, you can optimize the program or program a new job on the PC
- **Safety in implementation**
  Feasibility studies or cycle time analyses for new processes or components can be carried out independently of the physical robot system

3 Component Kits

Component Kits are seamlessly integrated robot accessories and are ready for immediate use thanks to mechanical adapters, plug-in components and defined interfaces.



Your advantages with Component Kits:

- **Maximum efficiency in project planning**
  With our Component Kits, we offer you a selection of peripheral devices that can be seamlessly integrated into our Digial Robot HORST. Thanks to mechanical and electronic adapters as well as pre-programmed software modules, functioning with HORST is guaranteed.
- **Maximum productivity during commissioning**
  Thanks to our Component Kits, you can get your robot accessories up and running quickly. We supply everything you need to use the component and, with our tested systems, save you the hassle of searching for the necessary additional components.
- **Expertise without loss of know-how**
  Our Component Kits give you access to the expertise of our application engineers - without having to become a robotics expert yourself. This makes it easier for you to implement your automation solutions and minimizes the risk of errors.



Robot Bases

Various robot bases for efficient automation projects with HORST. Mobile or modular with application-specific accessories.



Gripping Systems

Various gripping systems for your specific application. All gripping systems include the appropriate accessories for immediate commissioning.



Material Feeding

In the area of material handling, we offer tested, well-coordinated components for the feeding and separation of parts.



Safety Technology

For safe operation according to ISO 10218-2, we offer flexibly selectable safety devices with safety scanners.



Robot Guidance

Professional robot guidance systems with high-resolution cameras enable precise and autonomous capturing of object position data.

3.1 Robot platforms - Mobile robot base

With its mobile robot base, the HORST industrial robot is multifunctional and therefore particularly flexible in use.

Equipment:

- Safety technology (emergency stop)
- Four rubberized, lockable swivel castors for quick and easy positioning
- Mounted support feet and enclosed mounting kit for precise anchoring in the floor
- Internal switch cabinet mounting incl. cable glands for HORST
- Lockable door with key at the front

Your advantages:

- High flexibility in the set-up
- Easy to handle during operation
- Professional and safe thanks to retrofittable safety technology



Locking kits enable repeatable positioning of the MRB for precise applications.

3.1.1 Mobile robot base S for flexible implementation of your application (VE500640)



Technical data:

- Permitted for HORST600 & HORST1000
- Dimensions (LxWxH): 1000 x 600 x 929 mm
- Empty weight: 90 kg
- Load capacity: 300 kg
- Color: Black/White

3.1.2 Mobile robot base M for flexible implementation of your application (VE500641)



Technical data:

- Permitted for all robot models
- When using HORST1400 and HORST1500, the MRB must be firmly anchored to the floor
- Dimensions (LxWxH): 1200 x 800 x 929 mm
- Empty weight: 115 kg
- Load capacity: 280 kg
- Color: Black/White

3.1.3 Mobile robot base L for flexible implementation of your application (VE500642)



Technical data:

- Permitted for all robot models
- When using HORST1400 and HORST1500, the MRB must be firmly anchored to the floor
- Dimensions (LxWxH): 1496 x 998 x 929 mm
- Empty weight: 157 kg
- Load capacity: 240 kg
- Color: Black/White

3.2 Robot platforms - Mobile robot base with safety fence

Equipment:

- Fully assembled safety technology (safety fence, door interlock and emergency stop) and control panel
- Four rubberized, lockable swivel castors for quick and easy positioning
- Mounted support feet and enclosed mounting kit for precise anchoring in the floor
- Internal switch cabinet mounting incl. cable glands for HORST
- Lockable door with key at the front

Your advantages:

High flexibility in the set-up

- Efficient project planning of robot applications and fast commissioning on site
- Easy to handle during operation thanks to integrated safety technology

> Locking kits enable repeatable positioning of the MRB for precise applications.

3.2.1 Mobile robot base S with safety fence for the safe and flexible implementation of your application (VE500643)



Technical data:

- Permitted for HORST600 & HORST1000
- Dimensions (LxWxH): 1000 x 640 x 1940 mm
- Empty weight: 141 kg
- Load capacity: 250 kg
- Color: Black/White

3.2.2 Mobile robot base M with safety fence for the safe and flexible implementation of your application (VE500644)



Technical data:

- Permitted for HORST600 & HORST1000
- Dimensions (LxWxH): 1240 x 840 x 1940 mm
- Empty weight: 176 kg
- Load capacity: 220 kg
- Color: Black/White

3.2.3 Mobile robot base L with safety fence for the safe and flexible implementation of your application (VE500645)



Technical data:

- Permitted for HORST600 & HORST1000
- Dimensions (LxWxH): 1500 x 1103 x 2054 mm
- Unladen weight: 235 kg
- Load capacity: 220 kg
- Color: Black/White

3.3 Modular robot platform horstCUBE - for the safe and flexible implementation of your application with versatile options for process integration

horstCUBE offers you maximum efficiency and simplicity when planning small and large automation projects. The modular, expandable robot platform with safety technology, operating console, configurable side panels and height-adjustable base plate can be individually configured for your application.



Scope of services:

1. horstCUBE with safety interlock
2. Control panel with emergency stop, 3 configurable buttons, 230 V main switch & key selector switch
3. Stainless steel base plate with 50 mm x 50 mm hole pattern
4. Control cabinet with wired safety technology and space for additional peripheral controls

horstCUBE standard configuration (variant 1) - Design of the side and rear panels with Plexiglas	
Dimensions (LxWxH in mm)	1220 x 900 x 2060
Control cabinet dimensions (LxWxH in mm)	380 x 350 x 600
Base plate with hole pattern (LxW in mm)	1167 x 710
Empty weight (variant 1)	300 kg
Load capacity (variant 1)	500 kg

VE500435 - Variant 1	VE500436 - Variant 2	VE500437 - Variant 3	VE500438 - Variant 4
			
Design of the side and rear panels: Open (transparent Plexiglas panels) **Control panel available:** Yes	**Design of the side and rear panels: Open** (transparent Plexiglas panels) **Control panel available:** No	**Design of the side and rear panels: Closed** **Control panel available:** Yes	**Design of the side and rear panels: Closed** **Control panel available:** No

Your advantages:

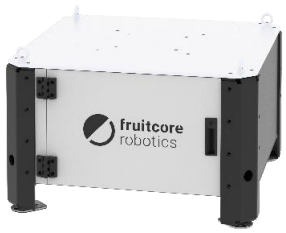
- **Safe implementation of applications**
  Thanks to the stable design, protected working area and integrated safety interlock, you can implement your applications quickly and easily.
- **Adaptability for your application**
  The support plate with 50 mm x 50 mm hole pattern can be mounted at any height. This allows free positioning of the robot and, on request, overhead mounting with an additional support plate.
- **Expandability thanks to modularity**
  You can easily combine several *horstCUBEs* to create a larger safety area or to map several production processes in series.

3.4 Robot base with versatile expansion options (VE500670)

Increase your productivity and efficiency with our robot base for larger robots and higher payloads. Easy handling with a pallet truck means you can transport your robots effortlessly and put them into operation quickly. We also offer a wide range of optional accessories for machine loading and palletizing on Euro pallets. Discover the advantages of our robot base now and optimize your production processes in a simple and effective way.

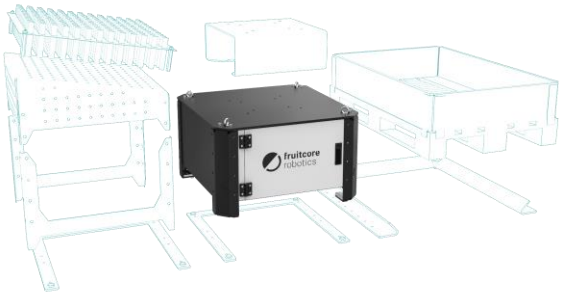
Your advantages with the robot base

- **Efficient integration**
  The robot base enables the seamless integration of larger robots with higher payloads, saving customers time and effort during project planning.
- **Versatile accessories**
  With optional accessories for machine loading and palletizing on Euro pallets, the robot base offers a flexible solution for a wide range of applications.
- **Convenient transportation**
  The optional positioning unit ensures precise and repeatable positioning of the tray holders for machine loading
- **Precise positioning**
  The optional positioning unit ensures precise and repeatable positioning of the tray holders for machine loading

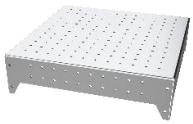
	**Technical data:** • Permitted for HORST600 & HORST1000 & HORST1500 • External dimensions (LxWxH): 792 x 792 x 482 mm • Internal dimensions (LxWxH): 764 x 764 x 362 mm • Empty weight: 160 kg • Load capacity: 1000 kg • Color: Black/White

3.5 Robot base accessories

The robot base can be flexibly extended with immediately compatible accessories for your application.



3.5.1 Flat tray holder (VH500689)

	**Technical data:** • Dimensions (L x W in mm): 730 x 730 • 50 x 50 mm grid • Can be attached directly to the robot base • Can be extended with feet if required

3.5.2 Inclined tray holder (VH500690)

	**Technical data:** • 20° beveled for better centering of the components via gravity • Dimensions (L x W in mm): 730 x 730 • 50 x 50 mm grid • Can be attached directly to the robot base • Can be extended with feet if required

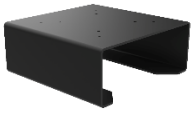
3.5.3 Flat tray holder with legs (VH500691)

	**Technical data:** • Dimensions (L x W x H in mm): 730 x 730 x 488.7 • Legs provide additional stability for heavy components and allow the tray holder to be positioned above the centering station

3.5.4 Inclined tray holder with legs (VH500692)

	**Technical data:** • Dimensions (L x W x H in mm): 730 x 730 x 605.6 (Low side height 488.7) • Legs provide additional stability for heavy components and allow the tray holder to be positioned above the centering station

3.5.5 Height extension module for robot base (VH500694)

	**Technical data:** • 200 mm high extension module to raise the position of the robot • Depending on the machine dimensions, necessary to be able to intervene optimally with the robot

3.5.6 Positioning unit (VH500693)

	**Technical data:** • Positioning unit for robot base or tray holder with feet • The centering station is firmly anchored in the floor so that the robot base or tray holder can be removed with the pallet truck and then repositioned precisely

3.6 Modular robot fence

The *modular robot fence* can be assembled to suit your requirements and space conditions.
All modules can be combined with each other as required.

The height of all robot fence elements is 2.70 m.



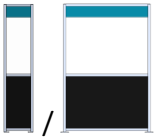
3.6.1 Robot fence base element

	**Technical data:** • The base element is mandatory in every configuration of the robot fence • Includes the safety control cabinet, to which Control and all safety components (door interlock and signal light) can be connected plug & play

3.6.2 Robot fence door element

	**Technical data:** • In addition to the door, the door element contains the safety components flexlock guard locking + actuator + connection cable to the safety switch cabinet • One or two doors can be used

3.6.3 Robot fence short element & Robot fence long element

	**Technical data:** • Short element with a length of 0.50 m • Long element with a length of 1.50 m

3.6.4 Signal tower traffic light (VH500695)

	**Technical data:** • The signal light can be mounted directly on the robot fence • The signal light can be connected directly to the safety switch cabinet of the base unit using a pre-assembled connection cable

3.6.5 Robot fence connection sets

-	**Connecting elements to arrange the elements of the robot fence as required** • Safety fence connection set 90° • Safety fence connection set 180° • Safety fence connection set other angle

3.6.6 Robot Fence Accessory Set Diagonal Braces

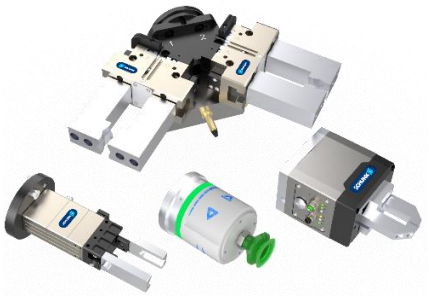
-	**Technical Data:** • Diagonal braces for additional reinforcement of the robot fence as needed

3.7 Gripping systems

Our integrated gripping systems offer you an unbeatable advantage as a Component Kit: they are all ready for immediate use with HORST.

Your advantages with our ready-to-use gripping systems:

- **Fast start**
  All gripping system *Component Kits* include the appropriate accessories for installation and immediate commissioning, including instructions
- **Simple commissioning**
  All gripping systems are already integrated as 3D models in our software to ensure smooth and error-free commissioning in your process
- **Professionally validated selection**
  The gripping systems on offer have been carefully validated by our application technology department and the overall package has been tailored to your needs.



The gripping systems offered as Component Kits allow a wide range of applications with HORST.

If you cannot find a suitable gripper for your application, you will find many other compatible grippers here.

3.7.1 Component Kit Electric vacuum suction pad directly compatible with HORST (Schmalz) (VH500110)



Product scope

- Electric vacuum suction pad "ECBPMi"
- Adapter incl. screws for mounting on HORST
- Gripper to robot connection cable
- Assembly instructions for installation and setup
- Standard suction cups for the vacuum generator

Technical data

- Maximum part weight: 1.0 kg
- Suction capacity: 1.6 l/min
- Evacuation rate: 60 %
- Gripper weight: 230 g

3.7.2 Component Kit Electric 2-jaw parallel gripper directly compatible with HORST (SCHUNK) (VH500167)



Product scope

- Electric 2-jaw parallel gripper EGP 40-N-N-B
- Adapter incl. screws for mounting on HORST
- Gripper to robot connection cable
- Assembly instructions for installation and setup
- Standard jaw set for the gripper

Technical data

- Maximum part weight: 0.7 kg (recommended)
- Stroke per jaw: 6 mm
- Gripping force max.: 140 N
- Dimensions: 40 x 26 x 90 mm
- Gripper weight: 320 g
- Part is actively held by the gripper (motor) the whole time (motor pushes when part moves in the gripper)
- Gripper cable to the robot can be replaced (can be screwed on both sides)

3.7.3 Component Kit Electric 2-jaw parallel gripper directly compatible with HORST (Zimmer) (VH500101)



Product scope

- Electric 2-jaw parallel gripper GEP2010
- Adapter incl. screws for mounting on HORST
- Gripper to robot connection cable
- Assembly instructions for installation and setup
- Standard jaw set for the gripper

Technical data

- Maximum part weight: 0.7 kg (recommended)
- Stroke per jaw: 10 mm
- Gripping force max.: 200 N
- Dimensions: 54 x 26 x 100 mm
- Gripper weight: 310 g
- Gripper moves to position and locks gripper jaws as long as the part is gripped and the robot is moving
- Gripper cable to the robot cannot be replaced (fixed to the gripper)

3.7.4 Component Kit Flexible Electric Small Parts Gripper EGK-25 for Grasping Components with Variable Stroke (SCHUNK) (VH500700)



Product Scope

- Flexible Electric Small Parts Gripper EGK-25
- Adapter including screws for mounting to HORST
- Connection cables from gripper to robot (network cable and power supply)
- Assembly instructions for installation and setup
- Standard jaw sets for the gripper (3D printed)
- Adapter kit for mounting the jaw sets

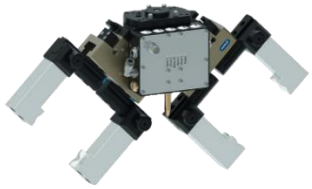
Technical Data

- Stroke per jaw: 26.5 mm
- Maximum gripping force: 50 N
- Opening / Closing time:
  - Gripper: 0.37 s (at 50 % stroke)
  - plus communication time: ~0.30 s
- Gripper weight: 0.62 kg

Your advantages

- The gripper can handle various components, including those with complex, variable contours
  >> Adjustable gripping force up to 50 N
  >> Flexibly adjustable stroke
- The gripper can detect whether a component has been grasped

3.7.5 Component Kit Pneumatic double gripper with blow-off unit directly compatible with HORST - size 64 (SCHUNK) (VH500529)



Product scope

- Pneumatic double gripper MTB DG-JGP-P 64-1 with blow-off unit
- Adapter incl. screws for mounting on HORST
- Gripper to robot connection cable
- Assembly instructions for installation and setup
- Standard jaw sets for the grippers
- Spiral hose and cable ties for mounting the external energy chain

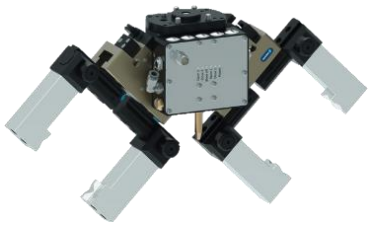
Technical data

- Maximum part weight: 1.75 kg per gripper (recommended)
- Stroke per jaw: 6 mm
- Gripping force max.: 350 N
- Opening / closing time: 0.05 s
- Operating pressure: 2.5-7 bar
- Gripper weight: 1.62 kg

Your advantages

- Efficient Processing and Low Cycle Time: Extraction of the finished part, removal of the clamping fixture, and insertion of the new part in a single process step.

3.7.6 Component Kit Pneumatic double gripper with blow-off unit directly compatible with HORST - size 80 (SCHUNK) (VH500697)



Product scope

- Pneumatic double gripper MTB DG-JGP-P 80-1 with blow-off unit
- Adapter incl. screws for mounting on HORST
- Gripper to robot connection cable
- Assembly instructions for installation and setup
- Standard jaw sets for the grippers
- Spiral hose and cable ties for mounting the external energy chain

Technical data

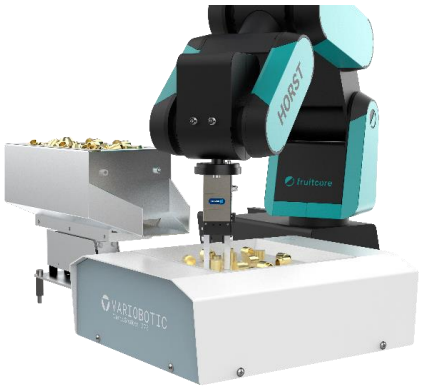
- Maximum part weight: 2.75 kg per gripper (recommended)
- Stroke per jaw: 6 mm
- Gripping force max.: 550 N
- Opening / closing time: 0.07 s
- Operating pressure: 2.5-7 bar
- Gripper weight: 2.40 kg

Your advantages

- Efficient Processing and Low Cycle Time: Removal of the finished part, release of the clamping fixture, and insertion of the new part in a single process step.

3.8 Material feeding

The *Component Kit Part Separation* includes all the accessories you need to reliably feed and separate components.



Your advantages:

- You receive all components for feeding and separating the parts from a single source
- The components are pre-wired as part of the Component Kit and can be placed anywhere in the horstCUBE or on the Mobile robot base
- The software interface of the Component Kit can be easily integrated into horstOS, allowing for quick access from the panel at any time (see horstOS - Project Setup)

3.8.1 Component Kit Part Separation (VarioShaker 270, Basotec Bunker 5L & Wired Control Cabinet) (VH500493)



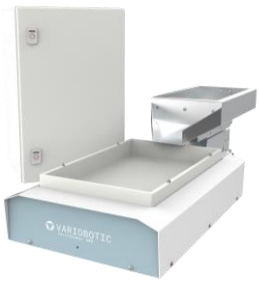
Product scope:

- VarioShaker 270 (additional selection of the required vibrating bowl required!)
- VarioShaker 270 power supply unit
- Basotec Bunker 5 L incl. phase cut-off regulator
- Control cabinet (hardware) & connection cables required for wiring all components + connection to the robot
- Control cabinet construction - wiring of all components and installation of all controllers and power supply units in the control cabinet
- Adapter incl. screws for mounting VarioShaker and Basotec bunker in horstCUBE or mobile robot base

Technical Data

- Part Size: 5 – 50 mm
- Part Weight: 5 – 200 g

3.8.2 Component Kit Part Separation (VarioShaker 540, Basotec bunker 10L & wired control cabinet) (VH500524)



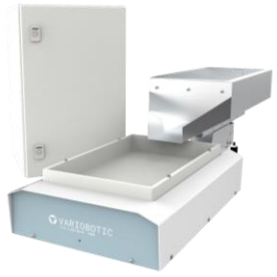
Product scope:

- VarioShaker 540 (additional selection of the required vibrating bowl required!)
- VarioShaker 540 power supply unit
- Basotec bunker 10L incl. phase cut regulator
- Control cabinet (hardware) & connection cables required for wiring all components + connection to the robot
- Control cabinet construction - wiring of all components and installation of all controllers and power supply units in the control cabinet
- Adapter incl. screws for mounting VarioShaker and Basotec bunker in horstCUBE or mobile robot base

Technical Data

- Part Size: 20 – 100 mm
- Part Weight: 5 – 200 g

3.8.3 Component Kit Part Separation (VarioShaker 540, Basotec Bunker 25L & wired control cabinet) (VH500571)



Product scope:

- VarioShaker 540 (additional selection of the required vibrating bowl required!)
- VarioShaker 540 power supply unit
- Basotec Bunker 25L incl. phase cut-off controller
- Control cabinet (hardware) & connection cables required for wiring all components + connection to the robot
- Control cabinet construction - wiring of all components and installation of all controllers and power supply units in the control cabinet
- Adapter incl. screws for mounting VarioShaker and Basotec bunker in horstCUBE or mobile robot base

Technical Data

- Part Size: 20 – 100 mm
- Part Weight: 5 – 200 g

3.8.4 Component Kit Part Separation Flexibowl 500 (VH500698)



Product scope:

- FlexiBowl® 500E C/CC can feed and separate objects of any geometry, surface and material properties. The system can be adapted and expanded as required and can separate parts from 1-50 mm and up to 100 g.
- 10 litre bunker for parts supply
- Adapter incl. screws for mounting Flexibowl and bunker in horstCUBE
- The FlexiBowl 500 can also be mounted on the MRB using the included adapter plate. A separate adapter plate is required for the bunker.
- Network cable from FlexiBowl to Robot Control (TCP-IP communication)
- Cable from bunker to Robot Control (digital communication)
- Required cables for power supply

Technical Data

- Part Size: 5 – 50 mm
- Part Weight: 5 – 100 g

Your advantages

- The Component Kit is designed for use in horstCUBE. The bunker can be positioned so that it protrudes from the horstCUBE so that components can be easily filled without having to open the horstCUBE

3.9 Security technology

The Component Kits Safety Scanners include all the accessories you need to implement applications with HORST quickly and safely.



Your advantages:

Safe Implementation of Applications with Quick Accessibility

The *Component Kit Safety Scanner microSCAN 3 CORE IO* allows for secure application with HORST without the need for separating protective devices.

Fast Installation & Quick Startup On-Site

The safety scanner can be rapidly mounted and connected thanks to pre-configured cables and designated mounting positions. The included manual facilitates quick configuration and setup based on local conditions.

3.9.1 Component Kit Safety Scanner nanoSCAN3 PRO IO for Safe Robot Operation Without Separating Protective Devices (SICK) (VH500701)



Product Scope

- Safety Scanner SICK nanoSCAN3 PRO IO
- Adapter including screws for mounting on the MRB
- Connection cable from safety scanner to HORST control unit "Control"
- Assembly instructions for mechanical mounting and electrical wiring
- Configuration and setup guide

Technical Data

- Protective field range: 3.0 m
- Compatible with HORST600
- Safe Reduced Speed: **yes**
- Protection Area (Stop) Radius from the robot origin (with 20 cm tool)
  - HORST600: 2.63 m

Your advantages

- **Utilization of the "Safe Reduced Speed" Function**
  The robot slows down when approaching an object without coming to a complete stop, thereby reducing the required protection area
- **Optimized for Use with HORST600 on an MRB**
  The nanoSCAN3 Pro IO is the ideal choice for applications implemented with HORST600 on an MRB

3.9.2 Component Kit microSCAN3 CORE IO safety scanner for safe robot operation without guards (SICK) (VH500056)



Product scope

- Safety scanner SICK microSCAN3 CORE IO
- Adapter incl. screws for mounting on the MRB
- Safety scanner connection cable - HORST "Control" switch cabinet
- Installation instructions for mechanical installation and electrical wiring
- Configuration and setup instructions

Technical data

- Protective field range: 5.5 m
- Compatible with HORST600, HORST1000, HORST, HORST1500
- Safely reduced speed: **no**
- Protected area (stop) Radius from the origin of the robot (with 20 cm tool)
  - HORST600: 2.95 m HORST1000: 4.19 m
  - HORST1400: 4.84 m HORST1500: 4.57 m

Your advantages

- **Compatible with All Robot Systems**
  The microSCAN3 CORE IO is compatible with all HORST robot systems. If "safe reduced speed" is not required, it is the right choice. (In this case, the safety area is larger compared to when "safe reduced speed" is used.)

3.9.3 Component Kit microSCAN3 PRO IO safety scanner for safe robot operation without guards (SICK) (VH500398)



Product scope

- Safety scanner SICK microSCAN3 CORE IO
- Adapter incl. screws for mounting on the MRB
- Safety scanner connection cable - HORST "Control" switch cabinet
- Installation instructions for mechanical installation and electrical wiring
- Configuration and setup instructions

Technical data

- Protective field range: 5.5 m
- Compatible with HORST600, HORST1000, HORST, HORST1500
- Safely reduced speed: **yes**
- Protected area (stop) Radius from the origin of the robot (with 20cm tool)
  - HORST600: 2.63 m
  - HORST1000: 3.23 m
  - HORST1400: 3.64 m
  - HORST1500: 3.61 m

Your advantages

- **Utilization of the "Safe Reduced Speed" Function**
  The robot slows down when approaching an object without coming to a complete stop, which reduces the size of the required safety area.
- **Compatible with All Robot Systems**
  The microSCAN3 PRO IO is compatible with all HORST robot systems.

3.10 Robot guidance systems

The *Component Kits for Robot Guidance* include all the accessories you need to implement localization tasks with HORST easily and reliably.

Your advantages

- **Perfectly Aligned**
  The camera is configured according to the requirements for part separation in the horstCUBE and can also be used in the mobile robot base with a safety fence.
- **Fast Installation**
  The camera can be quickly mounted and integrated with HORST thanks to pre-configured cables and designated mounting positions in the horstCUBE. Software modules simplify programming.
- **Easy Setup & Operation**
  The camera setup is managed through a web interface, which is fully integrated into horstOS and accessible from the panel at any time.

The robot guidance systems offered as Component Kits allow a wide range of applications to be implemented with HORST.

If there is no suitable robot guidance system for your application, you will find many other systems here whose interaction with HORST has already been tested.

3.10.1 Component Kit 2D Robot Guidance System (SICK) (VH500489)



Product scope

- SICK PLOC 2D 632-C camera
- Lens Focal length: 16 mm
- Integrated lighting (white)
- Calibration plate A4
- Camera connection cable - "Control" switch cabinet
- Ethernet cable for data transmission
- Instructions for installation, electrical wiring and configuration

Technical data

- Protection class IP65
- Resolution: approx. 1.600 px x 1.200 px (1.9 Mpixel)
- Sensor format 1/1.8”
- Work surface at 800 mm mounting height: approx. 345 x 270 mm *(standard horstCUBE)*
- Release at 800 mm mounting height: approx. 0.20 mm/px *(standard case horstCUBE)*
- Different application possibilities through apps: localization, quality control

Your advantages

- New parts can be taught in very easily and quickly
- Part recognition with the 2D robot guidance system works best with transmitted light (from the shaker) if the contour of the parts can be clearly recognized in it
- Ideally suited when parts have a preferred direction or are symmetrical and their position is therefore irrelevant for detection
- Short calculation time after image acquisition
- The software interface of the 2D robot guidance system can be easily integrated into horstOS and thus quickly called up from the panel at any time (see horstOS - Project Setup)

3.10.2 Component Kit 2D Grasping Kit for part localization (Schunk) (VH500699)





Product Scope

- SCHUNK 2D Grasping Kit Camera System
  - Area Camera: Basler ace 2 R (a2A1920-51gcBAS)
  - Lens Focal Length: 12 mm
- SCHUNK Vision Controller (SVC)
- SCHUNK AI Software
  - The AI software initially creates a component model based on a training dataset (multiple images of the part).
  - During operation, this component model is continuously refined.
  - The software interface of the 2D Grasping Kit can be easily integrated into horstOS and accessed quickly from the panel at any time (see horstOS - Project Setup)

Technical Data

- Area Camera: Basler ace 2 R (a2A1920-51gcBAS)
  - Protection Class: IP30
  - Resolution: Approximately 1.920 px x 1.200 px (2.3 Mpixel)
  - Sensor Format: 1/2.3“
  - Working Area at 800 mm Mounting Height: Approximately 435 x 272 mm *(standard horstCUBE setup)*
  - Resolution at 800 mm Mounting Height: Approximately 0.225 mm/px *(standard horstCUBE setup)*

Your advantages

- Easy training of parts without prior knowledge in programming image processing systems
- Detection of shape-unstable, reflective, or variable workpieces (e.g., parts in bags) thanks to adaptive AI software
- Detection of workpieces under changing lighting conditions thanks to adaptive AI software

3.11

3.11 Component Kit EUROMAP67 interface - Pre-assembled cable set for the communication of HORST with an injection molding machine incl. configuration instructions and sample program (VE500197)



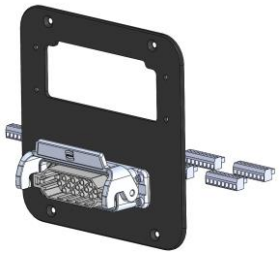
Product scope

- Pre-assembled cable set for direct robot-side connection to the control cabinet Control
- Machine-side connection via a standardized EUROMAP67 connector
- Instructions for configuring and setting up the interface in printed and digital form (on USB stick)
- Robot reference program for an exemplary injection molding process (on USB stick)

Your advantages

- **Fast commissioning**
  Ready-to-connect interface cable for communication between HORST and injection molding machines via the EUROMAP67 standard
- **Tested solution**
  The function of the interface cable was tested with HORST and various injection molding machines

3.12 Conversion Kit Harting Connector for Control (VH500696)





Product Scope

- Kit consisting of Harting connector (male), cables, and customized plate
- The Control unit is retrofitted using this kit so that the machine interface cable can be directly connected via a Harting connector.
- The following inputs and outputs are standard on the Harting connector:
  - 10x digital input
  - 10x digital output
  - 2x TA, 2x TB (OSSD test signals)
  - 2x safe input
  - 1x safe output
  - 1x safe potential-free output
  - 1x 24V & GND
  - 4x spare (not wired)

Your advantages

- **Quick Commissioning**
  Interface cable for communication between HORST and the machine tool can be plug & play connected to Control.
- **Flexible Operation**
  The cable can be easily disconnected or replaced at any time.

4 Solution Kits

Automation modules with CE certification and completed risk assessment, specially tailored to production scenarios.



Your advantages with Solution Kits:

- **Pre-assembled and pre-configured**
  The *Solution Kits* from fruitcore robotics are delivered fully assembled mechanically and electrically *
- **Safe operation in accordance with ISO 10218-2**
  You receive your automation module including a completed risk assessment and CE certification *
- **Up to 85 % less project planning effort**
  Access predefined programs, interfaces and plug-in control solutions.

* CE-compliant delivery is not possible for Solution Kit Machine Tending II, as the robot fence must be installed on site.

Solution Kits available as standard:



Pick and Place

The best basic equipment for a safe, flexible, quick and easy introduction into robot-supported automation solutions. Perfectly suited for use in training and educational institutions.



Part Separation I

Part separation for separating parts that can be easily recognized in transmitted light based on their outer contour. Best cycle time and fast teach-in of new parts in less than 15 minutes.



Part Separation II

Separating complex, dimensionally unstable parts is no problem with this setup. Thanks to the AI software and flexible gripper, different parts can be easily recognized and gripped from a bulk material.



Part Separation III

The Solution Kit for 3D pick & place tasks makes it possible to precisely locate undefined, tilted and layered parts, grip them accurately with the vacuum gripper and processing them flexibly.



Machine Tending I

The mobile automation module for machine loading with maximum flexibility. The Solution Kit can be flexibly positioned on machine tools using a positioning kit.



Machine Tending II

The modular Solution Kit can be configured as required and enables maximum autonomy times thanks to flexible parts provision. Short machine intervention times can be achieved thanks to the double gripper.

4.1 Solution Kit Pick & Place - The quick start to your automation project

Scope of services:

Our *Pick & Place Solution Kit* offers you maximum flexibility and customizability. The Solution Kit arrives pre-assembled and CE-certified - guaranteeing smooth commissioning and a quick start to the automation of your process.

With this package you get:

1. Mobile robot base (MRB) S, M or L with safety fence and safety interlock (details)
2. Digital Robot HORST600 or Digital Robot HORST1000 (Details)
3. Electric 2-jaw parallel gripper (details)
4. Operating console of the MRB with safety fence
5. Operating panel "Panel" (part of the Digital Robot)
6. Control system “Control” (part of the Digital Robot)

\+ Advanced Graphical Features & Advanced Interfaces (Details)

\+ Assembly and CE certification by fruitcore robotics (mechanical assembly and wiring of all components as well as ensuring delivery as a CE-compliant Solution Kit. No process integration on site included) (VD500513) (Details)



The Pick & Place Solution Kit is available in two versions:

- Solution Kit Pick & Place HORST600 (VE500646)
- Solution Kit Pick & Place HORST1000 (VE500647)

Your advantages:

- **Quick start thanks to pre-assembled unit**
  The Solution Kit is delivered to you fully assembled and can therefore be easily put into operation on site. The pre-assembly includes the installation of the robot, the assembly of the gripper and the wiring of the safety interlock and control system.
- **Lowest project costs**
  With the *Pick & Place Solution Kit,* you can start your automation project with calculable costs and remain flexible even with changing requirements.
- **Simplest handling**
  The *Pick & Place Solution Kit is* a perfectly coordinated automation module consisting of a robot, platform, safety technology and gripper system - all from a single source.
- **High flexibility and customizability**
  The protective fence on the mobile robot base can be easily modified so that you can simply attach the Solution Kit directly to your machine.

4.2 Solution Kit Part Separation I - The solution for quick and easy separation of bulk goods (VE500648) / (VE500649)

Scope of services:

The *Solution Kit Part Separation I* for separating components that can be easily recognized in transmitted light based on their outer contour enables the best cycle times and fast teach-in of new components in under 15 minutes. The automation module is delivered to you fully assembled and CE-certified.

With this package you get:

1. horstCUBE robot platform with safety interlock (Details)
2. Digital Robot HORST600 (Details)
3. Camera SICK PLOC2D (Details)
4. Feeding and separation with the Component Kit Part Separation with VarioShaker and Basotec Bunker (details)
5. Electric 2-jaw parallel gripper (Details)
6. Operating panel "Panel" (part of the Digital Robot)
7. Operating console of the horstCUBE
8. Control system “Control” (part of the Digital Robot)
9. Switch cabinets for peripherals (part of the horstCUBE)



\+ Advanced Graphical Features, Advanced Interfaces & Advanced Automation Features (Details)

\+ Assembly and CE certification by fruitcore robotics (VD500509 & VD500510) (**Details**)
(mechanical assembly and wiring of all components as well as ensuring delivery as a CE-compliant Solution Kit. Configuration of hopper, component separator and camera. Software-side pre-commissioning and program creation for locating and gripping a component to be defined with the standard gripper jaws included in the gripper kit. No process integration on site included)

The Solution Kit Part Separation I is available in two versions:

- Solution Kit Part Separation I HORST600 (VE500648)
- Solution Kit Part Separation I HORST1000 (VE500649)

Your advantages:

- **Lowest risk**
  We would be happy to advise you on the use of the Solution Kit in your project. We carry out free feasibility studies in advance on a fully assembled setup.
- **Quick setup of the application**
  PLOC 2D offers intuitive software that allows you to set up new components in no time at all, even without prior knowledge. Setup is carried out centrally via the panel.
- **Cost control and predictability**
  With the Solution Kit Part *Separation,* you can start your automation project with calculable costs. Thanks to standardization, the Solution Kit Part Separation is available with short delivery times.
- **Quick start thanks to pre-assembled unit without external control (PLC)**
  The Solution Kit is delivered to you fully assembled mechanically and electrically. The complete process sequence is pre-configured on the software side and can be customized by you in just a few steps.

Specification of the application	
Component specification	5 - 50 mm / 5 - 200 g
Setting up new parts	Quick setup of a new component thanks to central programming.
Part variance	The setup is ideal for separating components that can be clearly identified by their outer contour
Parts provision	Parts can be filled into the vibration hopper as bulk material. The hopper size can be selected depending on the required autonomy time
Dimensions / Weight	1120 x 900 x 2060 mm / approx. 400 kg

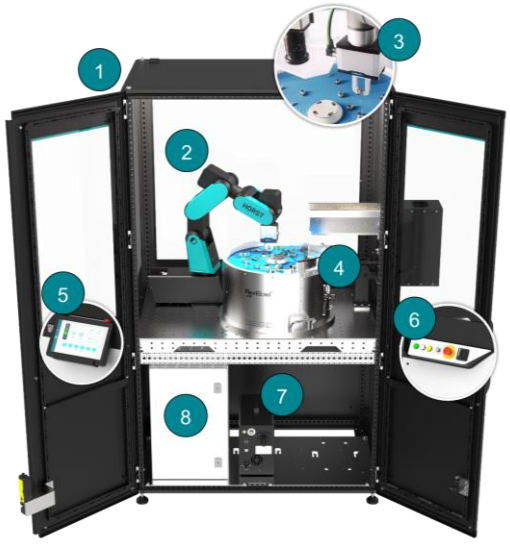
4.3 Solution Kit Part Separation II - The flexible and powerful solution for handling complex separation tasks (VE500651)

Scope of services:

The *Solution Kit Part Separation II* offers you a flexible and powerful solution for handling complex separation tasks from a single source. Thanks to AI software, the SCHUNK 2D Grasping Kit used allows complex parts to be precisely localized and their storage direction to be detected, even in changing light conditions. Different parts can also be gripped variably with the EGK gripper. Flexible components such as chain links or dimensionally unstable parts such as bags can also be separated and picked with the setup.

With this package you get:

1. horstCUBE robot platform with safety interlock (Details)
2. Digital Robot HORST600 (Details)
3. SCHUNK 2D Grasping Kit consisting of camera, flexible 2-jaw parallel gripper and industrial PC
4. Flexibowl 500 with 10L vibration hopper (Details)
5. Operating panel "Panel" (part of the Digital Robot)
6. Operating console of the horstCUBE
7. Control system “Control” (part of the Digital Robot)
8. Switch cabinet for peripherals (part of the horstCUBE)



\+ Advanced Graphical Features, Advanced Interfaces & Advanced Automation Features (Details)

\+ Assembly and CE certification by fruitcore robotics (VD500509 & VD500510) (Details)
(mechanical assembly and wiring of all components as well as ensuring delivery as a CE-compliant Solution Kit. Configuration of hopper, component separator and camera. Software-side pre-commissioning and program creation for locating and gripping a component to be defined with the standard gripper jaws included in the gripper kit. No process integration on site included)

Your advantages:

- **Lowest risk**
  We would be happy to advise you on the use of the Solution Kit in your project. We carry out free feasibility studies in advance on a fully assembled setup.
- **Reliable part recognition**
  Even complex parts with variable surfaces can be taught in quickly without prior knowledge. The AI software from SCHUNK reliably recognizes the parts in the process, even under changing light conditions.
- **Cost control and predictability**
  With the Solution Kit Part *Separation,* you can start your automation project with calculable costs. Thanks to standardization, the Solution Kit Part *Separation is* available with short delivery times.
- **Quick start thanks to pre-assembled unit without external control (PLC)**
  The Solution Kit is delivered to you fully assembled mechanically and electrically. The complete process sequence is pre-configured on the software side without a PLC and can be customized by you in just a few steps.

Specification of the application	
Component specification	5 - 50 mm / 5 - 100 g
Setting up new parts	Low effort for training the AI (plus model calculation by the AI)
Part variance	Separating, recognizing and gripping different parts from a bulk material. Even dimensionally unstable parts and parts with reflective surfaces can be separated
Parts provision	Parts can be filled into the vibration hopper as bulk material from outside the horstCUBE
Dimensions / Weight	1510 x 900 x 2060 mm (incl. protruding vibration hopper) / approx. 400 kg

4.4 Solution Kit Part Separation III - The solution for 3D Pick & Place tasks for locating and gripping undefined, tilted and layered parts

Scope of services:

The *Part Separation III Solution Kit* for 3D Pick & Place tasks makes it possible to precisely locate undefined, tilted and layered parts and to grip them accurately with the electric vacuum gripper. The automation module is delivered to you fully assembled and CE-certified. Thanks to the modularity of horstCUBE, a conveyor belt for feeding parts can easily be integrated into the setup. The Solution Kit offers you the ideal solution for providing components in an organized and sorted manner so that they can be flexibly processed in downstream processes such as machine processing, laser marking or quality control.

With this package you receive:

1. horstCUBE robot platform with safety interlock (Details)
2. Digital Robot HORST600 (Details)
3. Ensenso 3D camera
4. Electric 2-jaw parallel gripper (details) or electric vacuum suction pad (details)
5. Operating panel "Panel" (part of the Digital Robot)
6. Operating console of the horstCUBE
7. Control system “Control” (part of the Digital Robot)
8. Switch cabinet for peripherals (part of the horstCUBE)
9. Individual parts output (optional)



\+ Advanced Graphical Features, Advanced Interfaces & Advanced Automation Features (Details)

\+ Assembly and CE certification by fruitcore robotics (VD500509 & VD500510) (Details)
(mechanical assembly and wiring of all components as well as ensuring delivery as a CE-compliant Solution Kit. Configuration of the camera. Software-based pre-commissioning and program creation for locating and gripping a component to be defined with the standard gripper jaws included in the gripper kit. No process integration on site included)

Your advantages:

- **Flexible and easy to integrate**
  The system enables your components to be reliably recognized as 3D objects in any position and gripped in a defined manner. Components can therefore simply be fed in unsorted, for example via a conveyor belt.
- **Simple setup via CAD models**
  Your parts can be loaded as a CAD model and then recognized by the Mikado Find algorithm. The parts can be gripped directly with the robot using the integrated Mikado Find interface.
- **Cost control and predictability**
  With the Solution Kit Part *Separation,* you can start your automation project with calculable costs. Thanks to standardization, the Solution Kit Part Separation is available with short delivery times.

Specification of the application	
Component specification	Part size up to 200 mm / part weight up to 1 kg
Setting up new parts	Little effort required for the complete setup of a new component
Part variance	Parts can be provided roughly pre-separated via a conveyor belt or stacked in a blister or box. It is not necessary to separate the components using a shaker
Parts provision	The setup is ideal for separating components of different geometries and sizes, even with challenging surfaces
Dimensions / Weight	1120 x 900 x 2060 mm / approx. 350 kg

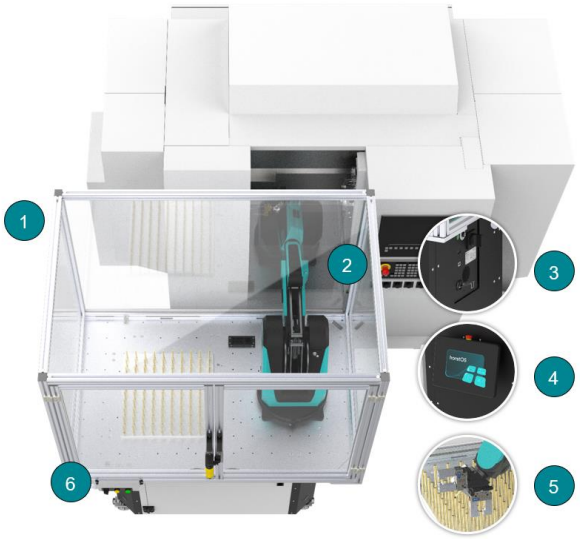
4.5 Solution Kit Machine Tending I - The solution for flexible loading of machine tools (VE500650)

Scope of services:

With this complete package, we offer a solution that allows you to increase productivity when loading your production machine in the shortest possible time while remaining fully flexible. The pre-assembled, CE-certified *Solution Kit Machine Tending I* can be used on all standard production machines and ensures efficient operation thanks to short loading times.

With this package you receive:

1. Mobile robot base L (MRB) with safety fence and safety interlock (details)
2. Digital Robot HORST1000 (Details)
3. Control system “Control” (part of the Digital Robot)
4. Operating panel "Panel" (part of the Digital Robot)
5. Double gripper with blow-off unit (Details)
6. Operating console



\+ Advanced Graphical Features, Advanced Interfaces & Advanced Automation Features (Details)

\+ Assembly and CE certification by fruitcore robotics (mechanical assembly and wiring of all components as well as ensuring delivery as a CE-compliant Solution Kit. Software pre-setup (pre-naming of gripper I/O, global functions for gripper opening & closing, teach-in of sensors, upload of an easily modifiable program template for Machine Tending applications, pre-configuration of axis restrictions to prevent collision with safety fence and over-twisting of gripper cables. No process integration on site included) (VD500533 & VD500534) (Details)

\+ **Optional**: Machine Tending Services for installation and setup, automation of the machine door and design of clamping devices (Details)

Your advantages:

- **Low project outlay**
  With plug-in interfaces for all common machine tools and predefined programs, the Solution Kit is ready for immediate use.
- **High flexibility**
  Thanks to the mobile robot platform, the Solution Kit can be easily removed from the machine to make it accessible when required. It can be quickly repositioned thanks to the locking device.
- **Simple and centralized operation without external control (PLC)**
  The Solution Kit is programmed and controlled centrally via the horstOS control software. You do not need an external controller (PLC).
- **Maximum efficiency**
  The short placement time, including blowing off the finished part and the collet, guarantees you the shortest possible machine downtime and therefore maximum output.

Specification of the application	
Tradable part weight	Max. 3 kg with double gripper
Range in machine	Up to 700 mm depending on screw-on position
Assembly time	Depending on the process and machine, approx. 12 s can be realized for removal, blowing off and insertion
Recommended tray size	500 x 500 mm - square 600 x 400 mm - rectangular
Autonomy time	Without additional feeder: approx. 60 min for 100 parts, 12 s placement time and 20 s machine processing time
Compatible machines	Emco, Hurco, Haas, Trumpf, Foba and many more (also special machines)
Dimensions	1500 x 1103 x 2054 mm / approx. 312 kg

4.6 Solution Kit Machine Tending II - The solution for efficient loading of machine tools with maximum autonomy (VE500665)

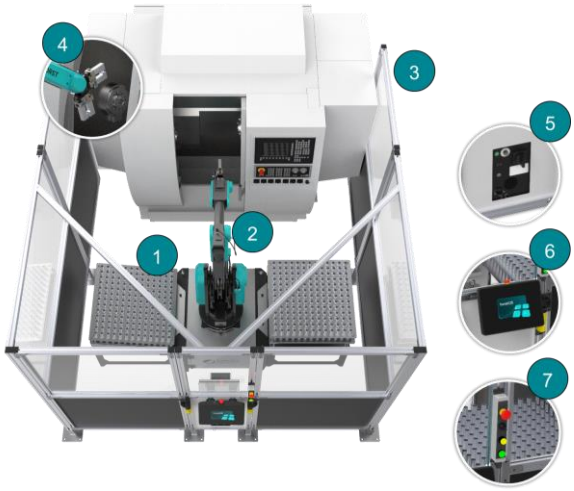
Scope of services:

The modular Machine Tending Solution Kit enables you to automate the loading and unloading of machine tools with minimum effort and maximum efficiency. The Solution Kit consists of several standardized Component Kits, which can be individually combined for your application. This enables maximum flexibility in project planning at the lowest possible cost.

> The Solution Kit Machine Tending II offers many configuration options. The defined standard configuration is shown here.
>
> We would be happy to support you in configuring the Machine Tending Solution Kit for your application.

The configuration shown consists of:

1. Robot base (details) incl.
   a. 2x part holders Eben incl. table legs
   b. 3x centering stations for robot base and part holders
2. Digital Robot HORST1500 (details) incl. control system "Control" (5) & operating panel "Panel" (6)
3. Modular robot fence (details) consisting of
   a. Safety fence basic element incl. operating console (5)
   b. 2x safety fence door elements
   c. 2x protective fence long elements
   d. 2x protective fence short elements
   e. Necessary connecting elements
   f. Signal light
4. Double gripper with blow-off unit (Details)



\+ Advanced Graphical Features, Advanced Interfaces & Advanced Automation Features (Details)

\+ **Optional**: Machine Tending Services for installation and setup, automation of the machine door and design of clamping devices (Details)

Your advantages:

- **Significantly reduced project outlay**
  All Component Kits are always compatible. Thanks to the plug-in interface to the machine, you are ready to go immediately with the Solution Kit - much faster than with a special solution.
- **High autonomy**
  Design parts provisioning according to your individual requirements and maximize the autonomy time of your machine loading. This allows you to achieve maximum output.
- **Simple and centralized operation without external control (PLC)**
  The Solution Kit is programmed and controlled centrally via the horstOS control software. You do not need an external controller (PLC).

Specification of the application	
Tradable part weight	Max. 4.5 kg with double gripper
Range in machine	Up to 1100 mm depending on screw-on position
Assembly time	Depending on the process and machine, approx. 12 s can be realized for removal, blowing off and insertion
Recommended tray size	Standard size of the tray holder 672 x 672 mm
Autonomy time	Individually definable via the selection of parts provision via 1 to 3 tray holders or via directly dockable pallets
Compatible machines	Emco, Hurco, Haas, Trumpf, Foba and many more (also special machines)
Combinable Component Kits	Robot base, tray holder, feet, positioning unit, SCHUNK double gripper with blow-off unit, robot fence (base element, door element with safety interlock, long/short element) & machine interface

5 Educational offer for schools and universities

Our educational offer revolutionizes the classroom and makes the study of robotics and automation exciting and hands-on.

In addition to the option of a hardware-bound “Solution Kit Education” (VE500653) combined with horstOS Simulation and Academy licenses, there is also the fully digital “Digital Education Package” (VD500712).



Overarching learning objectives:

- Commissioning, setting up and safe operation of robot systems
- Creation of own programs based on practice applications
- Integration of external sensors and control of external components

Your advantages:

- **Shortest training period for teachers**
  As a teacher, you receive specially tailored online training and a comprehensive collection of prepared training documents, including a 200-page teaching script on the subject of robotics.
- **Flexible lesson design**
  We provide your class or learning group with licenses to use our horstOS Simulation software. You will also receive access to our Academy Plus e-learning platform.
- **Mobile use and high flexibility**
  The Education Package with the Digital Robot HORST and the mobile robot base fits through all standard doors. Power is supplied via a standard household 230 volt socket - you do not need high voltage current.
- **Introduction to future technologies**
  Lead your students into the future with the world's first practical integration of ChatGPT in industrial robotics. Our AI co-pilot offers an unparalleled opportunity to engage with cutting-edge technology and prepares your students for the technological advances of tomorrow. *

* The AI features can be deactivated both on the robot and in the simulation if required.

5.1 Solution Kit Education - The perfect educational package for a practical and varied introduction to robotics (VE500653)

Our robotics learning platform is revolutionizing the classroom and making the study of robotics and automation exciting and practical. It is ideal for training companies, schools, universities or technical colleges to teach pupils and trainees about robotics in a practical way. With the package consisting of the HORST digital robot and the matching learning platform, you can quickly and easily give students a decisive knowledge advantage.

With this package you receive:

1. Mobile robot base (MRB) S, M or L with safety fence and safety interlock (details)
2. Digital Robot HORST600 or Digital Robot HORST1000 (Details)
3. Electric 2-jaw parallel gripper (Details)
4. Training for teachers (Details)
   The coordinated training program to prepare for the use of the robot system in the educational environment
5. Training script (Details)
   200 pages, will be provided digitally
6. Component Kit Education (Details)
   Practice application “Marble run”





+ Full software scope on the robot with activation of the Advanced Graphical Features, Advanced Interfaces & Advanced Automation Features (**De**tails)
+ Assembly and CE certification by fruitcore robotics
  (mechanical assembly and wiring of all components as well as ensuring delivery as a CE-compliant Solution Kit. Assembly of the marble run training application)

> We recommend combining the Solution Kit Education with the “Software licenses for educational institutions” (**Details**).
>
> This allows your pupils and students to carry out exercises themselves in the simulation and learn content independently via the Academy.

5.2 Digital Education Package (VD500712)

Our digital education package gives you access to the most modern learning platform for robotics and automation - without the need for a physical robot. Ideal for schools, universities and training companies, it enables pupils and trainees to acquire practical knowledge in robotics.

With this package you receive:

1. Software licenses for educational institutions (term 5 years) (Details)
2. Training for teachers (Details)
   The coordinated training program to prepare for the use of the robot system in the educational environment
3. Training script (Details)
   200 pages, will be provided digitally



&



5.3 Educational offer - scope of services of the individual items

5.3.1 Software licenses for educational institutions (VD500711)



Product scope

- 25 licenses for the use of *horstOS Simulation* (term 5 years)
- 25 licenses for the use of the e-learning platform *Academy plus* (term 5 years)
- 3D data of the learning environment in the robot operating software *horstOS*

Your advantages

- **Flexible lesson planning**
  The 25 accesses to the Academy Plus enable students to deepen their robotics knowledge on their own. They also receive 25 licenses for our programming software to create robot programs in simulation.

5.3.2 Component Kit Education Package (VE500350)



Product scope

- "Marble run" training application consisting of marble plate, steel balls & assembly accessories

Your advantages

- **Hands-on learning experience**
  Our practice application with a marble run board and marbles makes it possible to learn how to program the robot in a fun way. The script contains a variety of exercises that can be implemented using the hardware setup provided.

5.3.3 Training script (VD500710)

-

Product scope

- Comprehensive, teaching-related script for targeted use by teachers (200 pages, provided digitally)

Your advantages

- **Perfectly coordinated teaching content**
  Our 200-page script on robotics theory provides a good basis for designing teaching units. It not only covers general robotics concepts, but also goes into detail about the HORST.

5.3.4 Training for teachers

➔ **See chapter Training: Training for teachers**

Option *

As an educational institution, you can use the **AI Copilot** free of charge - an innovative chatbot that supports students with questions, problem solving and programming.



AI Copilot

Interactive learning:

- The AI Copilot guides your students through every phase of the learning process. Whether programming or theoretical questions - the AI Copilot provides the right answers and ensures a deep understanding of the subject matter.

Promoting creativity and problem-solving skills:

- With the AI Copilot, students can develop creative projects and independently find solutions to complex problems. This not only promotes technical knowledge, but also important soft skills such as creativity.

Relief for teachers:

- The AI Copilot not only supports students, but also takes the pressure off teachers. With detailed explanations and immediate help with questions, it allows teachers to focus on individual support and creating an inspiring learning environment.

Take your educational institution to the next level with the **world's first implementation of ChatGPT in robotics**!

Experience how our robotics learning platform and AI Copilot can enrich your classroom. Inspire your students with the fascinating world of robotics and automation and prepare them optimally for the future.

Lead your students into the future with the world's first practical integration of ChatGPT in industrial robotics. Our AI co-pilot provides an unparalleled opportunity to engage with cutting-edge technology and prepares your students for the technological advances of tomorrow.

* The AI features can be disabled on the robot as well as in the simulation if required.

6 Care Services

6.1 Care service contract for short response times, support if required and warranty on the robot's drive train (VD500485)



Product scope

- *See table (List of services for the care and care plus service packages) on the next page*

Your advantages

- **Short response times** thanks to prioritized processing of your requests via ticket system or by telephone
- **Maximum safety** thanks to predictive maintenance condition monitoring, and replacement of wear parts if required
- **Support** for queries about setting up the robot system
- **Always up-to-date** thanks to regular software updates

6.2 Care Plus service contract for short response times, support if required and warranty on the complete robot system (VD500486)



Product scope

- *See table (List of services for the care and care plus service packages) on the next page*

Your advantages

- **Short response times** thanks to prioritized processing of your requests via ticket system or by telephone
- **Maximum safety** thanks to predictive maintenance condition monitoring, up to 6 years warranty on the complete robot system and replacement of wearing parts if required
- **Support** for queries about setting up the robot system
- **Always up-to-date** thanks to regular software updates

Care Plus includes the warranty for the complete robot system.

The system check to be ordered separately is described here.

List of services for the care an care plus service packages

Module	Performance	*Without Care package*	Care (VD500485)	Care Plus (VD500486)	Scope of services
Predictive maintenance module	Permanent system monitoring	✗	✓	✓	Permanent monitoring of the robot system by fruitcore robotics based on the data on horstCOSMOS (permanent internet connection required). Fruitcore robotics contacts the customer if there is an urgent need for action.
	Regular system check	✗	✓	✓	A system check is carried out according to the information from the status monitoring in horstCOSMOS (permanent or temporary Internet connection required). If a system check is necessary, this is initially carried out via a remote connection and on site only if necessary. The customer shall bear any additional costs for travel, board and lodging.
	Replacement of wearing parts based on condition monitoring	✗	✓	✓	The need to replace wearing parts results from permanent system monitoring (permanent internet connection required) or regular system checks. Wearing parts can be replaced by the customer under instruction and with the prior approval of fruitcore robotics, otherwise by a partner or an employee of fruitcore robotics. Wear parts are belts and external cables. Costs for wear parts are included. Plus travel, board and lodging.
Service module Support in case of service	Contact us via our online service system	✓	✓	✓	You can use the online service system to create service requests and keep an eye on the status of your service requests.
	Service hotline	✗	✓	✓	If service is required, our robot experts can be reached via a service telephone number on weekdays from 8 a.m. to 5 p.m.
	Guaranteed response time	✗	4 hours on weekdays, from 8 a.m. to 5 p.m.	4 hours on weekdays from 8 a.m. to 5 p.m.	Guaranteed response time of maximum 4 hours on weekdays from 8 a.m. to 5 p.m.
Support module Technical advice	Support in the event of a problem or error	**120€** / h	✓	✓	Systematic troubleshooting and support in the event of a problem or error.
	Assistance via remote connection	**120€** / h	✓	✓	A robotics expert from fruitcore robotics connects live to the robot system (permanent or temporary internet connection required).
	Technical consulting and program optimization	**120€** / h	✓ To the extent of 2h/year	✓ To the extent of 4h/year	Assistance... - with queries about setting up the robot system - with programming with horstOS - with optimizing programs and cycle times
	Priority processing of support requests	✗	✓	✓	When prioritizing the existing requests, it is taken into account whether a Care or Care Plus service contract is active for the robot system.
Update module Software updates	Updates to the entire robot software	✗	✓	✓	You will receive regular updates during the term. The updates relate to the complete horstOS software including the booked additional features. The updates are made available via the IIoT platform horstCOSMOS. You can decide whether you want to update or not. We accept no liability for any changes that are required to your program as a result of an update.
Warranty module	Warranty extension and extension for engines and gearboxes	✓	✓	✓	The warranty extension and renewal includes, at our discretion, the replacement or repair of the motors (without brakes) & planetary gears contained in the robot kinematics. At the discretion of fruitcore robotics, refurbished components can be used for this purpose. The warranty services also include the expenses for assembly, transportation and other costs for the repair or replacement of the defective component. The customer must make the robot accessible in order for the warranty services to be carried out. Damage caused by the customer is excluded from the warranty.
	Provision and delivery of spare parts for engines and gearboxes	✗	✓	✓	
Extended warranty module	Warranty extension and renewal for the complete robot system	✗	✗	✓	The warranty extension and renewal includes, at our discretion, the replacement or repair of the original components + Panel & Control contained in the robot kinematics; at fruitcore robotics' discretion, refurbished components can be used for this purpose. The warranty services also include the expenses for assembly, transportation and other costs for the repair or replacement of the defective component. The customer must make the robot accessible for the performance of warranty services. Damage caused by the customer is excluded from the warranty.
	Provision and delivery of spare parts	✗	✗	✓	
	Dispatch of spare parts within one working day of notification of need	✗	✗	✓ weekdays, from 8 a.m. to 5 p.m.	Spare parts are dispatched within one working day of notification of need, provided the notification of need is received on a working day between 8 a.m. and 5 p.m. In order to be able to clarify all technical details, spare parts are always dispatched on the next working day after the notification is received. (The day of the demand report is "day 0", the spare parts are dispatched on "day 1" after all technical details have been clarified. If the demand report is not received on a working day, the next following working day is "day 0")

7 Training Services

Achieve maximum learning success with our perfectly coordinated training services



Your advantages:

- **Targeted knowledge building**
  Our training concept offers suitable content for every level of knowledge. Learn the basics and deepen your knowledge individually**.**
- **Maximum flexibility**
  Whether on site, via remote training or via the e-learning platform - choose the format that best suits your requirements.
- **Individual contents**
  We are happy to adapt training content to specific projects and problems.

The training program consists of basic training courses, in-depth training courses and specific training courses. The training content builds on each other, which is why we recommend that every user works through the basic training content first. Specific training courses should be selected to suit the respective project or application. We will be happy to advise you on the selection of suitable training content.

Basic training courses

- **Academy:** Basic content for commissioning the robot system (e-learning platform) (Details)
- **Academy Plus:** Basic content for setting up applications and programming the robot system (e-learning platform) (Details)
- **Basic training:** Corresponds to the scope of Academy & Academy Plus in terms of content and provides basic knowledge for using the robot (details)

In-depth training

- **In-depth training day:** General in-depth training based on practical examples of Pick & Place & Machine Tending applications and path programming (details)
- **Part separation training:** Training on all components of part separation and consideration of the interaction of camera, shaker & bunker with HORST and horstCUBE (Details)

Specific additional training

- **Training Interfaces Camera (TCP/IP)** (Details)
- **Training Interfaces PLC (Profinet)** (Details)
- **Textual programming training** (Details)
- **Training Special** (Details)
- **Safety training** (Details)
- **Maintenance training** (Details)
- **Training teachers / trainers** (Details)
- **Individual training** (Details)

7.1 Academy Plus - e-learning platform with constantly new content for learning the basics of setting up and programming HORST (VD500487)



Scope of the Academy Plus

Over 3 hours of extensive video tutorials
Extensive content from setting up the robot system to looking at advanced program features
Three accesses per company can be used simultaneously
Easily visible learning progress
Central platform for bundling learning materials
Certificate at the end of the course and after passing the final test

Your advantages

Quick learning success
The didactically structured lessons ensure that robot knowledge is taught in an easy-to-understand and varied way.

Maximum independence and flexibility
The Academy enables learners to access the training content anytime and anywhere. This allows them to customize their learning environment and determine their own learning pace.

Always up to date
The content of the Academy is continuously updated and developed. This enables learners to familiarize themselves with the latest information and developments at all times.

Academy and Academy Plus

When you purchase a Digital Robot HORST, you automatically receive access to the Academy e-learning platform (link). There you can access the basic content, which includes 30 minutes of video material on the following topics:

- Structure of the HORST industrial robot
- Safety for industrial robots
- Commissioning the robot system
- Control cabinet interfaces
- Main control Control

Access to Academy Plus must be purchased separately and allows access to 3 hours of video material on the following topics:

- Manual control of the robot
- Structure of the main menu horstOS
- Setting options horstOS
- Programming with horstOS
- Explanation of all program actions
- Creation of waypoints
- Communication with external devices via inputs and outputs
- Use of if-conditions, variables and functions

7.2 Training courses

In addition to our Academy, we offer online and classroom training.

Your advantages:

- **Targeted knowledge building**
  Our training concept offers suitable content for every level of knowledge. Learn the basics and deepen your knowledge individually**.**
- **Practical training content**
  Benefit from application-oriented training and get to know the robot software directly in your field of application using specific examples.
- **Interaction & personal exchange**
  The in-depth classroom training sessions offer the opportunity to ask our robot experts questions at any time and benefit from the experience of other participants.

7.2.1 Basic training HORST and horstOS to learn the basics of setting up and programming HORST (VD500088)

- **Duration:** 3 hours - **Number of participants**: up to 3 participants - **Type of training:** Classroom or remote training	**Course content**: • Structure of the robot system • Commissioning • Safety for industrial robots • Control and interfaces • Manual control of the robot • Introduction to graphical programming • Specific program functions e.g. palletizing applications, basic position movements ➔ This training course prepares you and your employees for the use of the robot system. The content of the basic training corresponds to the scope of Academy & Academy Plus

7.2.2 Training day to deepen your knowledge in robot programming for the optimization of motion sequences as presence group training in Constance (VD500549)

- **Duration:** 8 hours - **Type of training**: Classroom training (group training with up to 8 participants) - **Prerequisite:** Basic training (Academy or basic training)	**Course content**: • Advanced graphical programming • Simulation with horstOS on the PC • Creation of a Pick & Place application • Carrying out palletizing • Program optimization (cycle time) • Textual programming horstOS • Path programming • Interface and communication options • Introduction to safety control • Application examples • Access to further resources ➔ Deepen your knowledge of robot programming and learn how to use the robot more efficiently and optimize motion sequences.

7.2.3 Part Separation training - How to set up a separation process with the Part Separation Solution Kit (VD500550)

- **Duration**: 6 hours - **Number of participants**: up to 3 participants - **Type of training:** Classroom or remote training - **Prerequisite:** Basic training (Academy or basic training and training day recommended for in-depth training)	**Course content**: • Basics of graphical programming horstOS • Introduction to textual programming • Presentation Part Separation • Camera setup • Furnishing Shaker & Bunker • Installation HORST & horstOS ➔ Deepen your knowledge of the efficient use of part separation.

7.2.4 Additional training course Interfaces camera - Examination of the communication structure via TCP/IP, the configuration in horstOS and the programming of a sample program (VD500519)

- **Duration:** 2 hours - **Number of participants**: up to 3 participants - **Type of training:** Classroom or remote training - **Prerequisite:** Basic training (Academy or basic training)	**Course content**: • Overview of HORST interfaces • Presentation of the TCP/IP interface • Configurations in horstOS • Camera setup • Establishing communication via TCP/IP • Integration of camera coordinates in horstOS • Presentation and programming of a sample program ➔ Deepen your knowledge with specific training on camera interfaces (TCP/IP)

7.2.5 Additional training course on PLC interfaces (Profinet) - Presentation of all relevant HORST functionalities for communication via Profinet (VD500236)

- **Duration**: 2 hours - **Number of participants**: up to 3 participants - **Type of training:** Classroom or remote training - **Prerequisite:** Basic training (Academy or basic training)	**Course content**: • Overview of HORST interfaces • Introduction to PLC communication with Profinet • Presentation of all functionalities • Configurations in horstOS • Communication structure • Writing and reading registers via horstOS • Presentation and programming of sample programs ➔ Deepen your knowledge with specific training on PLC interfaces (Profinet)

7.2.6 Additional training course Textual programming - Examination of the versatile possibilities of HORST textual programming in JavaScript (VD500235)

- **Duration**: 2 hours - **Number of participants**: up to 3 participants - **Type of training:** Classroom or remote training - **Prerequisite:** Basic training (Academy or basic training)	**Course content**: • Advanced graphical programming • Presentation of textual functions • Introduction to textual programming with horstOS • Textual actions in horstOS • Operators and functions in JavaScript • Variable waypoints in the textual • Creation of textual example programs ➔ Deepen your knowledge with a specific training course on textual programming.

7.2.7 Additional training Special - Project-specific programming training tailored to individual requirements and needs (VD500237)

- **Duration:** 3 hours - **Number of participants**: up to 3 participants - **Type of training:** Classroom or remote training - **Prerequisite:** Basic training (Academy or basic training)	**Course content**: • Project-specific programming training • Project-specific setup in horstOS (CAD-based) • Creation of a project-specific training program • Contents by arrangement based on training offer ➔ Deepen your knowledge with a specific training course tailored to your needs.

7.2.8 Additional safety training - Considering the safe implementation of automation projects with HORST (VD500426)

- **Duration:** 2 hours - **Number of participants**: up to 3 participants - **Type of training:** Classroom or remote training - **Prerequisite:** Basic training (Academy or basic training)	**Course content**: • Basics of safety technology and robot CE • Safety control Control • Overview of safety inputs and outputs • Security configurations • Fault diagnosis • Application examples (safety scanners etc.) ➔ Deepen your knowledge with specific training on safety topics

7.2.9 Maintenance training (VD500552)

- **Duration:** 6 hours - **Number of participants**: up to 3 participants - **Type of training:** Classroom training - **Prerequisite:** Basic training (Academy or basic training and in-depth training day (recommended))	**Course content**: • Robot system design • Limits of the robot system • Software horstOS - Service & support functions • Procedure in the event of an error (process) • Basic measures for error analysis • Measures & tools for service calls • Case studies Differentiation between service case & fault • Repair, maintenance & servicing • Procedure & communication for service cases ➔ Deepen your knowledge with specific training on maintenance

7.2.10 Teacher/trainer training - Education Package - The coordinated training package to prepare for the use of the robot system in an educational environment (VD500092)

- **Duration:** 3 hours - **Number of participants**: up to 3 participants - **Type of training:** Classroom or remote training - **Prerequisite:** Basic training (Academy)	**Course contents**: • Advanced graphical programming • Deepening the topics from E-Learning Academy Plus • Assembly and commissioning of the robot system • Manual control and programming with horstOS • Introduction Teaching materials and lecture notes • Instruction in exercises • Creation of graphical learning programs with horstOS ➔ This training course provides you and your teaching staff with basic preparation for the use of the robot system and its application in teaching or training. ➔ Perfect start for educational institutions ➔ Shortest training period for teachers ➔ Flexible lesson design after a short training phase ➔ Fast learning success and efficiency through possible remote training

7.2.11 Individual training (VD500553)

- **Duration**: Individual (by arrangement) - **Quantity**: Individual (by arrangement) - **Type of training:** Classroom or remote training	**Course content:** • Project-specific programming training • Project-specific setup in horstOS (CAD-based) • Creation of a project-specific training program • Contents by arrangement based on training offer ➔ Deepen your knowledge with an individual training course, the content of which is tailored to your needs ➔ Flexible training planning as required ➔ Application-oriented specialization ➔ Fast learning success and efficiency through possible remote training

7.2.12 Combination package Training Day + Academy Plus (VD500551)

The combination package includes **access to the Academy Plus for one year** (details) and **participation in the in-depth training day for one person** (details)	**Course content:** • Access to Academy Plus for one year (Details) • Participation in the in-depth training day for one person (details) ➔ Learn the basics of robot programming on your own in the Academy Plus and deepen your knowledge during the training day

8 Range of services

8.1 Support

	Article	Description / Scope of services
VD500574	Support commissioning (on site)	Individual service: On-site commissioning support from our robot experts (plus travel to and from the site, accommodation costs/expenses/logistics if applicable)
VD500575	Support commissioning (remote)	Individual service: Remote commissioning support from our robot experts (price per hour)

8.2 System check (VD500576)

	Article	Description / Scope of services
VD500576	System check robot system	On-site inspection of the robot system if it is not covered by a Care or Care Plus contract or if a Care Plus contract is to be extended after 3 years. A successful system check is a prerequisite for subsequent entry into a Care Plus contract or for extending a Care Plus contract after 3 years.

8.3 Kit Services

The Kit Services enable you to use your solution with HORST immediately and without major commissioning effort.

	Article	Description / Scope of services
VD500587	Assembly & cabling of the robot with platform	- Assembly of the robot on the mobile robot base and wiring of the safety technology (safety fence/door interlock/operator console) - Delivered as an incomplete machine (without CE marking). As no gripper is fitted to the robot on delivery, it is not a complete machine.
VD500513	Assembly and cabling Solution Kit Pick & Place (& Solution Kit Education)	- Assembly of the robot on the mobile robot base and wiring of the safety technology (safety fence/door interlock/operator console) - Assembly & wiring of the gripper on the robot - Delivered as a CE-compliant, complete machine with CE marking and enclosed declaration of conformity
VD500509	Assembly and cabling Solution Kit Part Separation	- Assembly of the robot on the mobile robot base and wiring of the safety technology (safety fence/door interlock/operator console) - Assembly & wiring of the gripper on the robot - Assembly & wiring of the hopper - Assembly & wiring of the component separator - Assembly & wiring of the camera - Delivered as a CE-compliant, complete machine with CE marking and enclosed declaration of conformity

VD500510	Setup and configuration of all Part Separation components	- Setting up communication between all components - Configuration of hopper, component separator and camera - Integration of all components into the robot program - Pre-commissioning and program creation for separating a component defined by the customer - Testing to ensure the correct functioning of the entire setup and program sequence ➔ The part separation is set up so that this part can be gripped and moved with the standard gripper jaws included in the gripper kit
VD500533	Configuration, assembly & cabling - Solution Kit Machine Tending I	- Support from our sales and application engineering departments right from the quotation stage in order to find the optimum solution for you. This also includes simulation in our horstOS software - Assembly of the robot on the mobile robot base and wiring of the safety technology (safety fence/door interlock/operator console) - Assembly of the double gripper incl. blow-off unit & attachment of the external energy chain to the robot - Wiring of machine interface with robot control cabinet “Control”
VD500534	Pre-setup, programming, documentation and delivery as a CE-compliant product - Solution Kit Machine Tending I	- Software preconfiguration (e.g. pre-naming of gripper I/O, global functions for gripper opening & closing, teach-in of sensors) - Easily modifiable program template for machine tending application - Ensure operational safety by pre-configuring axis restrictions to prevent collision with safety fence and over-twisting of gripper cables - Delivered as a CE-compliant, complete machine with CE marking and enclosed declaration of conformity
VD500512	Wiring Component Kit safety scanner nanoScan3 PRO IO, microSCAN3 CORE IO or PRO IO to the MRB	- The service can only be performed if the customer purchases a Digital Robot, a Mobile Robot Base and a Component Kit microSCAN3 CORE IO or PRO IO safety scanner - The control cabinet of the robot system is installed in the MRB - The safety laser scanner is also pre-wired - The scanner is enclosed and must be installed on site by the customer by screwing it to the MRB and plugging in the pre-laid cables in accordance with our instructions (the laser scanner cannot be installed on delivery, otherwise safe transportation of the exposed scanner cannot be guaranteed) - The robot system is supplied individually (without control as this is already installed in the MRB) and can be freely positioned on the MRB by the customer - The final setup according to the local conditions is carried out on site by the customer. **The CE approval must be carried out on site.**

8.4 Machine Tending Services

	Article	Description / Scope of services
VH500714	Automatic door opener for machine tools (individual project engineering)	As part of individual project planning, an automatic door opener is designed together with a fruitcore robotics automation partner to suit your machine tool. This means that the Machine Tending Solution Kit can also be retrofitted to machine tools without an automatic door.
VH500715	Clamping systems (individual project engineering)	As part of individual project planning, fruitcore robotics works with an automation partner to design suitable clamping devices for the provision and processing of your workpieces.

8.4.1 Standard Assembly Solution Kit Machine Tending II on site (VD500724)

The mounting position applies to the standard configuration of the Solution Kit Machine Tending II, which is described in the ***Solution Kit Machine Tending II*** chapter of this product specification.

Additional expenses, e.g. due to deviations from the standard configuration of the Solution Kit Machine Tending II, will be invoiced additionally.

Requirements for the provision of the service

In order for the installation of the Solution Kit Machine Tending II to take place on site, the customer must ensure that the points described below are met. If the requirements are not met, additional costs may be incurred for fruitcore robotics employees as a result.

- All components must have already been delivered
- The components must be ready at the installation site or nearby so that they can be transported quickly to the installation site
- There must be sufficient space at the installation site for the safety fence to be erected. A free space of at least 1 m in width should be kept free around the planned installation area
- The ceiling height must allow the safety fence to be set up (height 2.70 m)
- The floor must be level and without a slope
- The floor must be solid and suitable for anchoring the robot base and safety fence using dowels
- Suitable lifting equipment (crane, forklift or electric pallet truck) must be available for moving all parts and positioning the robot
- A compressed air connection must be available for commissioning the Component Kit double gripper
- A mains connection (230 V) must be available

Scope of services

The service includes the assembly of the various elements of the Solution Kit Machine Tending II on site

- Assembly of the robot fence
  - Positioning the modules
  - Installing the modules
  - Anchoring the modules in the ground
  - Final assembly of the base element
  - Installing the safety components
  - Wiring the safety technology (guard locking, operating console, signal light) with Control
- Placing the Robot Base
  - Positioning and anchoring the positioning unit for the robot base in the floor (if the positioning unit is not part of the superstructure, the robot base is anchored directly in the floor)
  - Positioning and anchoring the positioning unit(s) for tray holder(s) with legs in the floor (if the positioning units are not part of the superstructure, the tray holders can be anchored directly in the floor)
- Mounting of the robot
  - Unpacking the robot and placing the robot on the robot base
  - Mounting and wiring the robot

- Mounting of the gripper
    - Mounting the jaws on the gripper and mounting the gripper on the robot flange
    - Attaching the external energy chain (signal line and pneumatic line) to the robot
    - Electrical wiring of the gripper
    - Commissioning the gripper via horstOS and setting up the 3D model in the software

Exclusion of benefits

Not part of this assembly position:

- Modification of robot fence elements for connection to the machine tool (modifications such as cutting or bending fence elements)
- Assembly of customer trays or devices for tray mounting on the tray holders
- The individual program creation for the machine assembly is not part of this item (if required, individual project planning at cost)
- Creating the individual interface to the machine tool is not part of this item (if required, individual project planning at cost)
- CE approval of the finished assembly on site is not part of this item (if required, individual project planning at cost)

9 Individual items & accessories

9.1 Color matching

	Article	Description / Scope of services
VD500062	Color matching of the petrol-colored robot covers or the white MRB sheets in your desired color	Customer-specific color matching (RAL XXXX) of the robot covers or mobile robot base. For robots, all turquoise covers are finished in the desired color. For the MRB, all white covers.
VD500570	Color matching of the upper panels of the horstCUBE in your desired color	Customer-specific color adaptation (RAL XXXX) of the front panels of the horstCUBE (turquoise panels at the top)

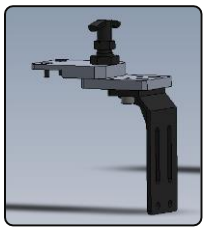
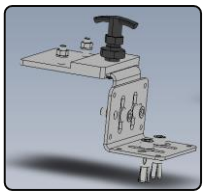
9.2 Cables

	Article	Description / Scope of services
PP007220	Umbilical cord – 6 m, 2.5 mm²	Umbilical cord (control to robot) in 6 m length.
PP008464	Umbilical cord – 10 m, 2.5 mm²	Umbilical cord (control to robot) in 10 m length.
VH500637	Power cable with UK plug	(3-pin, type G, BS 1363)
VE500530	Cable machine interface open cable end	Cable from the Solution Kit Machine Tending to the machine tool. The open cable end can be assembled for any machine tool.
VE500531	Cable control - machine interface	Cable from Control or from the coupling on the MRB. Necessary accessories for setting up the Solution Kit Machine Tending I

9.3 Adapter

	Article	Description / Scope of services
VH500001	Adapter for ISO flange 9409-1- TK50	ISO flange adapter for all HORST models
VE500180	Adapter for Schunk EGP 40-N-N-B	Adapter for mounting the Schunk EGP 40-N-N-B on all HORST models. Part of the Component Kit.
VE500389	Adapter to room GEP2010IO-00-B	Adapter for mounting Zimmer GEP2010IO-00-B on all HORST models. Part of the Component Kit.

9.4 Locking kits

	Article	Description / Scope of services
VE500194	Machine locking kit for MRB S/M/L for repeatable positioning of the MRB on the machine	The kit allows repeatable positioning of the mobile robot base using two flange plates, which are mounted directly on the machine or the wall. (Please note: Depending on the geometry of the machine tool, it may not be possible to attach the flange plates of the locking kit properly. In this case, the floor locking kit (VE500532) must be used) 
VE500532	Floor locking kit for MRB S/M/L for repeatable positioning of the MRB on the machine	The kit allows the mobile robot base to be positioned with repeatable accuracy using two brackets anchored in the floor. This allows the application on the MRB to be quickly locked in front of a machine tool again and again. 

9.5 VarioShaker vibrating bowls

Vibratory bowls are required to operate the Component Kit Part Separation VarioShaker & Basotec Bunker.

Depending on the nature of the component, a smooth vibrating tray or a vibrating tray with a pyramid structure can be used. We will be happy to advise you on choosing the right vibrating formwork.

	Article	Description / Scope of services
VH500490	Vibrating bowl magnet 270 smooth	Vibratory bowl for VarioShaker 270 - smooth versions
VH500491	Vibrating bowl magnet 270 structure pyramid	Vibratory bowl for VarioShaker 270 - Pyramid structure versions
VH500465	Vibratory bowl magnet 540 Smooth	Vibration bowl for VarioShaker 540 - smooth versions
PP008876	Vibrating bowl magnet 540 structure pyramid	Vibratory bowl for VarioShaker 540 - Pyramid structure versions

10 Change Log

Changes to Version	Section	Overview of Changes
2024.2.3	1.3	- Digital Robot HORST1000 G2 added to the document
	3.1	- Mobile Robot Base - Note: When using HORST1400 and HORST1500, the MRB must be firmly anchored to the floor
	5	- Educational offer for schools, colleges and universities newly described - Digital Education Package added
	8.3	- Detailed description of the Kit Services, which are part of the Solution Kits
	8.4	- Detailed description of the Machine Tending Services - Automatic door opener for machine tools (individual project engineering) (VH500714) - Clamping Systems (individual project engineering) (VH500715) - Standard Assembly Solution Kit Machine Tending II on site (VD500724)
2024.2.2	1.1, 1.2, 1.3, 1.4	- Industrial robots described separately as part of the Digital Robots - New article numbers added for Digital Robot with new Panel G2
	1.5.2	- Robot system accessories newly added to the document
	1.5.4	- Panel article number added (VH500592)
	1.5.5	- Panel G2 (VH500675) added
	1.5.5.1	- Protective film for Panel G2 (VH500678) added
	1.5.6	- “Operating system software horstOS” renamed to “Central control software horstOS including Digital Robot Features” - Article number added (VD500683)
	1.5.7	- horstCOSMOS assigned article number (VD500276)
	2	- Digital Robot software (horstOS) -> Illustration with software overview removed from this section - Software illustrations updated
	2.1	- Software packages: New illustration with software overview inserted
	2.1.1	- Digital Robot Features newly added
	2.1.2	- Advanced Interfaces: “Subscription” option including associated article number removed
	2.1.3	- “PLC Features” renamed to “Advanced Automation Features” (VD500660) - Change applied throughout the entire document
	2.1.4	- Advanced Graphical Features: “Subscription” option including associated article number removed - Illustrations updated
	2.1.5	- Description of AI Features expanded and new illustrations added
	2.2	- horstCOSMOS article number added (VD500276)
	3.3	- horstCUBE load capacity updated. 300 kg (old) -> 500 kg (new)
	3.4	- Robot base – Article number added (VE500670)
	3.5	- Robot base accessories – Descriptions specified and article numbers added
	3.6	- Robot fence – Illustrations updated and descriptions specified
	3.7.4	- “Component Kit Flexible Electric Small Parts Gripper EGK-25 for gripping components with variable stroke (SCHUNK)” (VH500700) newly added
	3.7.6	- “Component Kit Pneumatic Double Gripper with Exhaust Unit directly compatible with HORST - Size 80 (SCHUNK)” (VH500697)
	3.8	- Technical specifications of the Component Kits Part Separation expanded
	3.8.4	- “Component Kit Part Separation Flexibowl 500” (VH500698) newly added
	3.9	- More precise specification and differentiation of safety laser scanners
	3.9.1	- “Component Kit Safety Scanner nanoSCAN3 PRO IO for safe robot operation without separating protective device (SICK)” (VH500701) newly added
	3.10.1	- “Component Kit 2D Robot Guidance System (SICK)” (VH500489) – More precise specification and differentiation
	3.10.2	- “Component Kit 2D Grasping Kit for Parts Localization (Schunk)” (VH500699) newly added
	3.13	- “Conversion Kit Harting Connector for Control” (VH500696) newly added
	6.2.2	- Training type “Group Training” on the training day (VD500549) specified in more detail
	8.4.	- Locking kits: Illustrations added