



Automation Solutions

Palletizer Application Package FPaKit easy



Highlights

- Predefined off-the-shelf kits
- Different load categories
- Can be implemented straightaway
- Intuitive to operate
- Configuring instead of programming
- Reduced project runtimes
- Effective and reliable palletizing solution

The direct and straight route to the palletizing station

A packaging format that can be quickly changed, ups and downs in picking quantities, lack of time for training, etc.—these issues are all part of everyday life in logistics nowadays.

The Festo application package FPaKit easy can relieve the burden. It smooths and shortens the way to compact, high-performance palletizing solutions. The short packing cycles and extremely short setup times make all the difference.

Flexible and independent

FPaKit easy uses the Festo product catalog for predesigned and preconfigured automation packages (hardware and software). It has differently scaled load categories to suit practical requirements, always with the optimum combination of kinematics and motion.

The software is preinstalled at the factory; all you need to do to get everything up and running in no time is install and wire the hardware, and then go live.

Ready for use in just a few simple steps

The browser-based, all-in-one user interface supports intuitive, modern user guidance. All menus are tailored to the various user groups. Simply parameterize the station, the packaged goods and the procedure, and you're done. Plausibility checks and monitoring provide reliability at all times. Packing stacks and progress are displayed in 3D in the editor, both during creation and operation.

Additional information:

Product page

> www.festo.de



The system at a glance

These automation solution packages FPaKit easy are just what you need if your future palletizing station needs to cover the following technical requirements and/or key features.

Pallet formats

- EPAL, GMA (US format) or similar

Types of packaged goods

- Cuboids in various shapes (e.g., closed boxes, shipping crates or cartons, barrel-shaped objects (upright), plates/panels (stable shape))

Rotation of the packaged goods

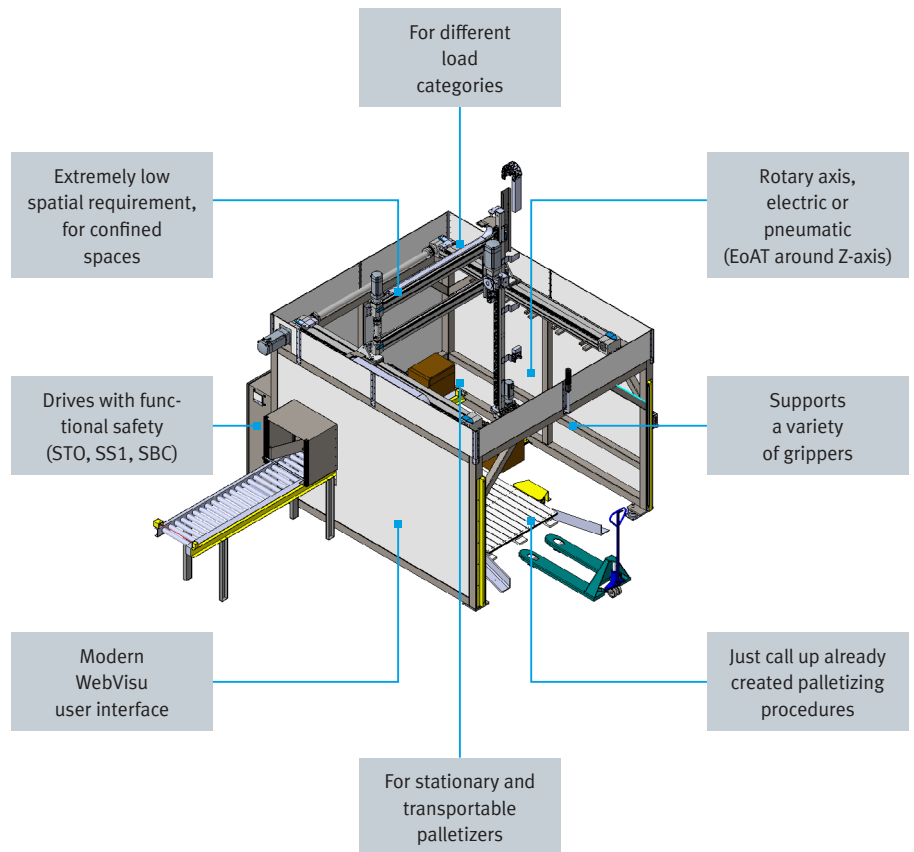
- 0° and 90° (electric or pneumatic), around the Z-axis

Weight of the packaged goods

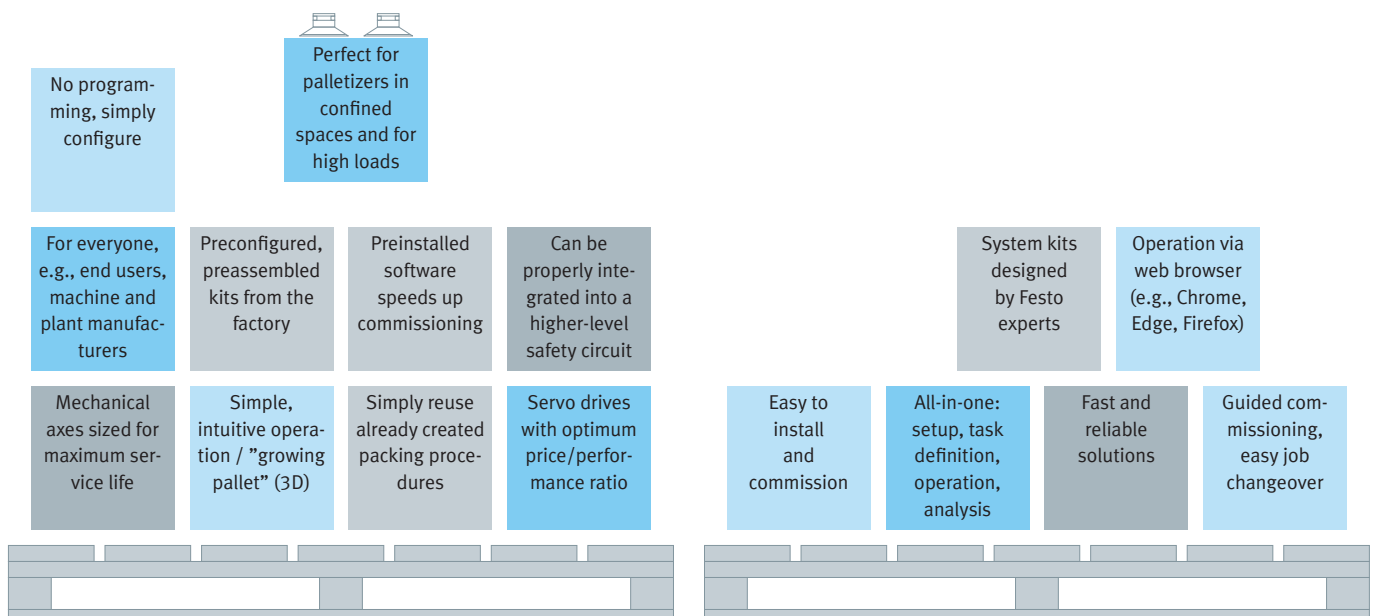
- CS-ready kits: up to just under 40 kg
- Customized kits: project-specific, e.g., <= 50 kg

Stacking cycles

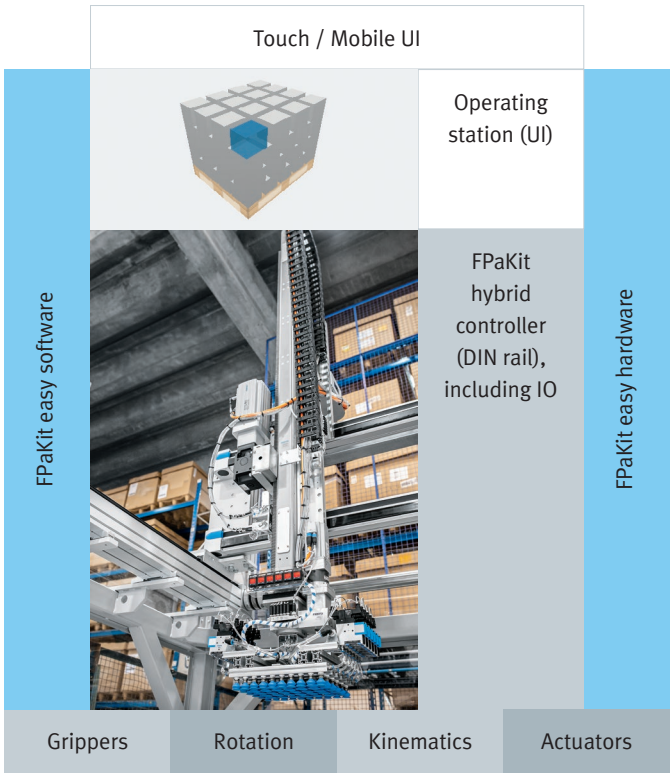
- Typically 4 to 10 units per minute; up to a minimum of 6 seconds per box (depending on, e.g., weight/mass, path, stability of shape, gripper type)



Building on prepared packages



The packages at a glance



The following three load categories are available in different versions within the FPaKit easy range:



- FPaKit easy LW2x**
type CS-ready
- Load category 20 kg
 - Festo catalog, HGO
 - Preset/sized kinematics and actuators



- FPaKit easy LW3x**
type CS-ready
- Load category 30 kg
 - Festo catalog, HGO
 - Preset/sized kinematics and actuators



- FPaKit easy MW4x+**
type Customized
- Load categories 40/50 kg
 - Basis: Festo catalog, HGO
 - Design: project-specific according to specifications

Added value across all machine life phases

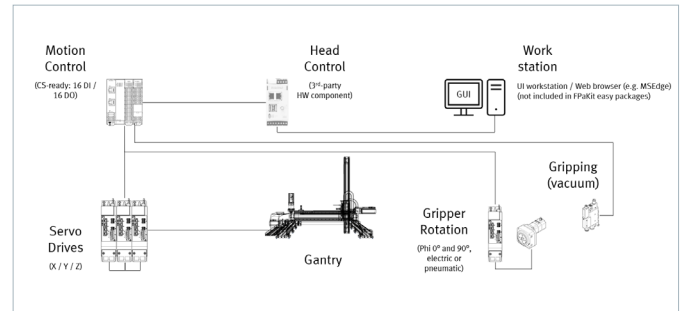
Easy procurement—select a kit that meets your requirements	Fast and trouble-free productive operation	Safe operation without the need for an expert	Time and cost savings, from procurement to operation
Global player at your side throughout the entire life cycle	Local technical application support	Responsive and fast after-sales support	Seamless supply of spare parts worldwide
State-of-the-art technology available worldwide	Tool-based design for optimum solutions	Excellent kit integration for little engineering effort	Short project runtimes, reduced project risks
Functional reliability and quality from a single source	Low-level technical implementation and use	Savings thanks to effective start-up	Very low complexity of the kit saves hassle and provides reliability

Note: HGO = Festo Handling Guide Online



Control technology—System concept and interfaces

All FPaKit easy sets are based on a common hardware concept. Regardless of the load category of the selected palletizer, the user moves within the universally scalable Festo automation world for palletizing applications, such as for logistics and end-of-line. Customer-specific extensions are of course possible. Examples are the connection of system peripherals via IOs, integration into a line via a synchronized control system (host interface), or adaptation to an application-specific gripper (EoAT).



Overview of main components	Package type	
Scope of core functionality	A	B
Gantry/kinematics (X/Y/Z)	✓	✓**
Electric motors, servo drives (X/Y/Z)	✓	✓**
Palletizer head control module (IPC module)	✓*	✓**
CPX-E...M1 PLC (motion control)	✓	✓
CPX-E 16 digital inputs	✓	✓
CPX-E 16 digital outputs	✓	✓
FPaKit easy cables and accessories	✓	✓**
FPaKit easy software user license	✓	✓

Overview of main components	Package type	
Additional functional elements	A	B
Electric rotary gripper unit (phi)	✓	**
Pneumatic gripper rotary unit (phi)	Option	**
Gripper/suction cup components/equipment	✓	**
Electric gripper/functional components/equipment	Option	**
Digital inputs/digital outputs (extension)	**	**
Analog inputs/analog outputs (extension)	**	**
Host interfaces/bus modules (PN, EP, EC, PB)	**	**

A = "CS-ready" / B = "Customized" * Only included with FPaKit easy LW20 and ... LW30. ** Depending on the specifications or scope of delivery and services.

Inputs and outputs—number and function

The basic version of the FPaKit easy automation sets described here are prepared for single-pallet stations (package type CS-ready). The following table describes the corresponding number of inputs and outputs and their functions.

No.	Digital inputs
0	Activate system
1	Start pallet 1
2	Start pallet 2
3	Stop palletizing process (pause)
4	Cancel palletizing process
5	Reset palletizing process
6	Acknowledgement button
7	Switch on feeder
8	Box detected at PickPos
9	Box gripped
10	Safety status (OK/NOK)
11	(Unused)
12	Pallet 1 in position
13	Pallet 2 in position
14	Sensor position 0° (gripper PN)
15	Sensor position 90° (gripper PN)

As the controller CPX-E enables the flexible expansion via modules, additional inputs/outputs (digital, analog) can be integrated for customer-specific configurations (Customized), e.g., for multi-pallet stations, additional functions, peripherals or similar components.

No.	Digital outputs (PNP)
0	System activated
1	Pallet 1 completed
2	Pallet 2 completed
3	Opening/closing the gripper
4	Drop signal
5	System busy (= not idle)
6	Error
7	Start/stop feeder
8	Secure box at PickPos
9	Release box at PickPos
10	Unlock pallet 1
11	Unlock pallet 2
12	Lock pallet 1
13	Lock pallet 2
14	Rotate to position 0° (gripper PN)
15	Rotate to position 90° (gripper PN)

Note: The inputs and outputs marked in gray in the table are optionally available for FPaKit easy sets for 2 pallet solutions (double palletizer) or for sets with pneumatic gripper rotation (both as package type Customized and on request).

Software—Features and functions

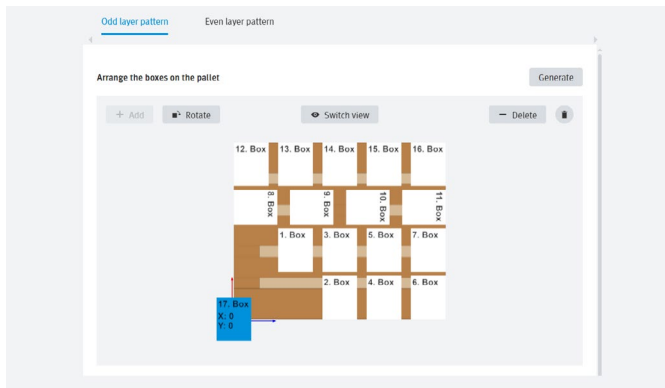
These FPaKit easy solution packages are based on one and the same software and operating concept. The system software is preinstalled and preparameterized at the factory to match the control technology in the package. This means that, once the supplied hardware has been installed, commissioning can be started directly via a web browser.

Since all basic data and parameters for the Festo hardware components are already stored in the FPaKit system software, there is no

need for complex component-oriented basic commissioning of the kit.

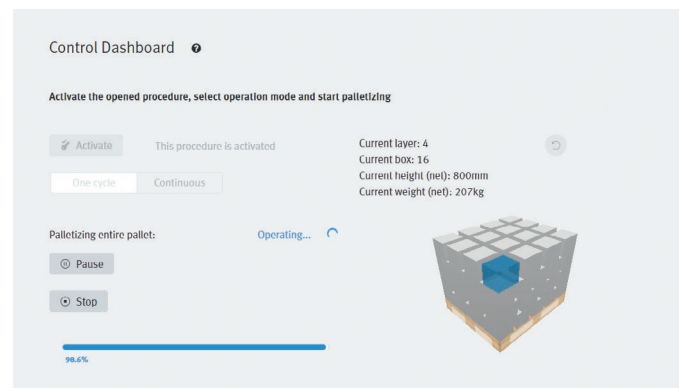
A commissioning engineer only carries out a few final plant-specific system parameterizations and settings via the FPaKit user interface. Once this task has been carried out, you can immediately start defining individual packing procedures.

Defining of the pallet layers



Place objects (boxes) at the required position, e.g., using drag-and-drop

Defining the pallet stack



3D display of the configured pallet load (can be rotated with the mouse and changed in size and perspective)

Software package for a quick start and simple, reliable daily operation

- Software already installed on the hardware—just, assemble, perform the electrical installation and get started.
- All activities and tasks can be carried out using the FPaKit easy web interface.
- Intuitive user interface (web application) for simple operation using a keyboard/mouse/monitor or for touch operation (in preparation).
- No programming knowledge is required to commission FPaKit easy.
- The software monitors and logs statuses and events for the automation package, the palletizing process and operation in general.
- The FPaKit easy software provides prioritized information about processes and prompts operators to intervene or initiate actions as required on the web browser user interface.
- Automatic plausibility and limit value checks during the definition and processing of a packaging order provide additional reliability.

Modern browser-based user interface (UI)

- Guided step-by-step commissioning; configure packing and palletizing procedures with ease.
- The Auto Generate function calculates or creates optimum layer layouts with just one click—just select the appropriate optimization method.
- Users can also reposition their packaged goods (e.g., cartons) on the layer masters manually (using the mouse) or arrange them according to their own wishes.
- Temporary placement aids help prevent overlaps and ensure that packaged goods are placed quickly and easily on the pallet layer masters.
- The definitions made can be immediately checked visually using the 3D view of the pallet (rotatable, zoomable).
- The palletizing process (growing pallet) can be displayed and followed live on the screen.
- Packaging formats or other object or process details can be conveniently changed with just a few clicks.



Kinematics and drive technology—performance types and data, key features

The two load categories LW2 and LW3 of the FPaKit easy series are each available in the CS-ready variant (package type). Ideal for projects where short-term availability plays a decisive role.

Load category MW4+ is only available as a customized package type. This version includes system technology that has been designed or optimized according to customer or application specifications.

The basis is a specification sheet or a technical specification from the customer.

For individual solutions, such as double palletizers, Festo also offers the Customized (package type) version for load categories LW2 and LW3 on request.

FPaKit easy LW2x

Gantry YXCR-3 (Handling Guide Online standard)

- Maximum useful load: 22 kg
- Travel distance up to 1,200 mm
- Servo drive controller AC load voltage: single-phase

Including the following selected axes

- X: 2x EGC-120-TB
- Y: 1x EGC-HD-160-TB
- Z: 1x ELCC-70



View of gantry YXCR-3 (X/Y/Z), (conceptual design)

FPaKit easy LW3x

Gantry YXCR-4 (Handling Guide Online standard)

- Maximum useful load: 32 kg¹⁾
- Travel distance up to 1,200 mm
- Servo drive controller AC load voltage: three-phase

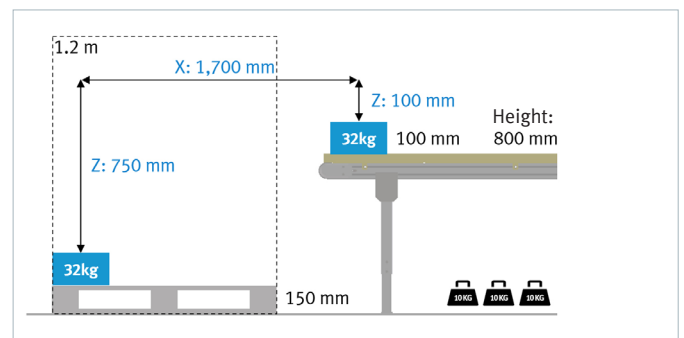
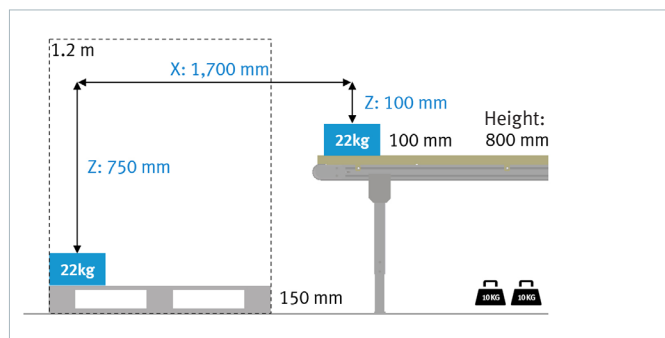
Including the following selected axes

- X: 2x EGC-185-TB
- Y: 1x EGC-HD-220-TB
- Z: 1x ELCC-90



View of gantry YXCR-4 (X/Y/Z), (conceptual design)

¹⁾ Up to 36 kg with Z-stroke of 1 m or up to 32 kg with Z-stroke of 1.2 m; in combination with ELCC-90 and Z-distance payload up to a 200 mm axis in each case.



Key data on the technical design of both CS-ready kits

- Maximum speed: $v = 1$ to 1.5 m/s (depending on movement profile and cycle time)
- Maximum acceleration: $a = 2$ m/s²
- All motors of type EMMT with multiturn encoders (RM)
- Z-axis motor always with a brake, other motors always without a brake
- Gantry mounting interfaces: via adjustment kit



Kinematics and drive technology—FPaKit easy MW4x⁺

Tailor-made in the Customized variant

The load category MW4x⁺ covers customer-specific versions for larger loads. These solution packages also use the drive portfolio from the Festo standard catalog and are based on kinematics from the Handling Guide Online (HGO). Large strokes, special geometries, confined spaces, special dynamic requirements, etc. can be taken into account here.

- Maximum useful load: 40 (50) kg¹⁾
- Travel distance up to 1,700 mm²⁾
- Servo drive controller AC load voltage: three-phase

The following key data is used (technical design)

- All motors of type EMMT with multiturn encoders (RM)
- Z-axis motor always with a brake, other motors always without a brake
- Gantry mounting interfaces: via adjustment kit

Example—Interpretation of a specific application

Reference strokes (working area)

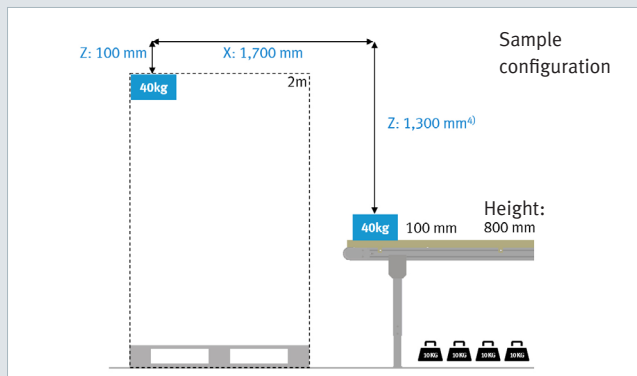
- X: 1,700 mm
- Y: 1,300 mm
- Z: 1,700 mm

Cycle time calculation with $v = 1.5 \text{ m/s}$ and $a = 2 \text{ m/s}^2$

- $t = 2 \times 1.9 \text{ s (X_1700)} + 2 \times 0.45 \text{ s (Z_100)}$
+ $2 \times 1.6 \text{ s (Z_1300)} = 7.9 \text{ s}$

Notes:

- Y-stroke of 1,300 mm moves at the same time as X
- Z-axis sequential



- 1) Optionally higher loads up to 50 kg, with 2x EGC-185-TB-GV and 2x EGC-185-TB and 1x ELCC-110.
- 2) Strokes > 1.7 m optional, in combination with second slide on ELCC (in the form of a customized solution (CS)).
- 3) The HGO module EHMZ-ELCC-90 (mechanical system and accessories) can be used for module strokes of up to 2 m on the Z-axis.
- 4) The maximum travel distance (Z2) on which the case under consideration is based.

Continued example



View of gantry type MW4 (X/Y/Z), (conceptual design)

X-axis

Gantry hardware:

- 2x EGC-120-1700-TB-KF-0H-GV
- EMGA-80-P-G5-EAS-80 (i=5)
- EMMT-AS-100-S-HS-RM
- CMMT-AS-C5-11A-P3-MP-S1 (three-phase)

Key data for technical design:

- $a = 2 \text{ m/s}^2$; $v = 1.5 \text{ m/s}$
- $t = 1.9 \text{ s}$ (with 1,700 mm stroke (single))
- Calculated with 250 kg

Y-axis

Gantry hardware:

- 2 x EGC-120-1300-TB-KF-0H-GK
- EMGA-80-P-G5-EAS-80 (i=5)
- EMMT-AS-80-M-HS-RM
- CMMT-AS-C3-11A-P3-MP-S1 (three-phase)

Key data for technical design:

- $a = 2 \text{ m/s}^2$; $v = 1 \text{ m/s}$
- $t = 1.8 \text{ s}$ (with 1,300 mm stroke (single))
- Calculated with 90 kg

Z-axis³⁾

Gantry hardware:

- ELCC-TB-KF-90-1700-0H-P0-CR
- EMGA-80-A-G5-100A (i=5)
- EMMT-AS-100-S-HS-RMB
- CMMT-AS-C5-11A-P3-MP-S1 (three-phase)

Key data for technical design:

- $a = 2 \text{ m/s}^2$; $v = 1.5 \text{ m/s}$
- $t = 1.6 \text{ s}$ (with 1,300 mm stroke (single))
- $t = 0.45 \text{ s}$ (with 100 mm stroke and $v = 0.45 \text{ m/s}$ (single))
- Calculated with 40 kg



Ordering information and services

	CS-ready				Customized
Load category	20 kg*		30 kg*		40/50 kg
Gantry (kinematics and drives)	Predesigned/dimensioned (C2879736 (HGO))		Predesigned/dimensioned (C2879756 (HGO))		Project-specific according to specifications
Head Control Unit (IPC)	Included	-	Included	-	Project-specific
Software (license)	Included (non-exclusive user license)				
Delivery form (software)	Installed	Digital (file)	Installed	Digital (file)	Project-specific
Order code	FPaKit easy				
	LW20	LW21	LW30	LW31	MW4x*

* Also available the a customized variant with customer-specific adaptations (optional, on request).



Information

- When selecting an FPaKit easy set, we recommend that you consult a Festo technical expert before purchasing and implementing a specific palletizing station or solution.

As part of our general worldwide Festo Support Service, our technical experts will be happy to review your selection and its technical suitability, or the options for the optimum solution for you.

- Additional components and/or functional elements required for a complete individual palletizing system, but not included in an FPaKit easy package, are covered by the customer or user themselves. We're happy to provide you with support.

The direct route to Festo for questions

Via your regular contact person at your Festo country office or via [Country Selection | Festo](#)