

# LOGIMAT® VERTICAL LIFT MODULE

A flexible, space-saving solution for  
storing and picking small parts.

**ssi-schaefer.com**



**SSI SCHAEFER**



## RUNNING OUT OF SPACE OR STRUGGLING WITH PICK RATES?

The LOGIMAT® VLM from SSI SCHAEFER is the solution for these challenges and more.

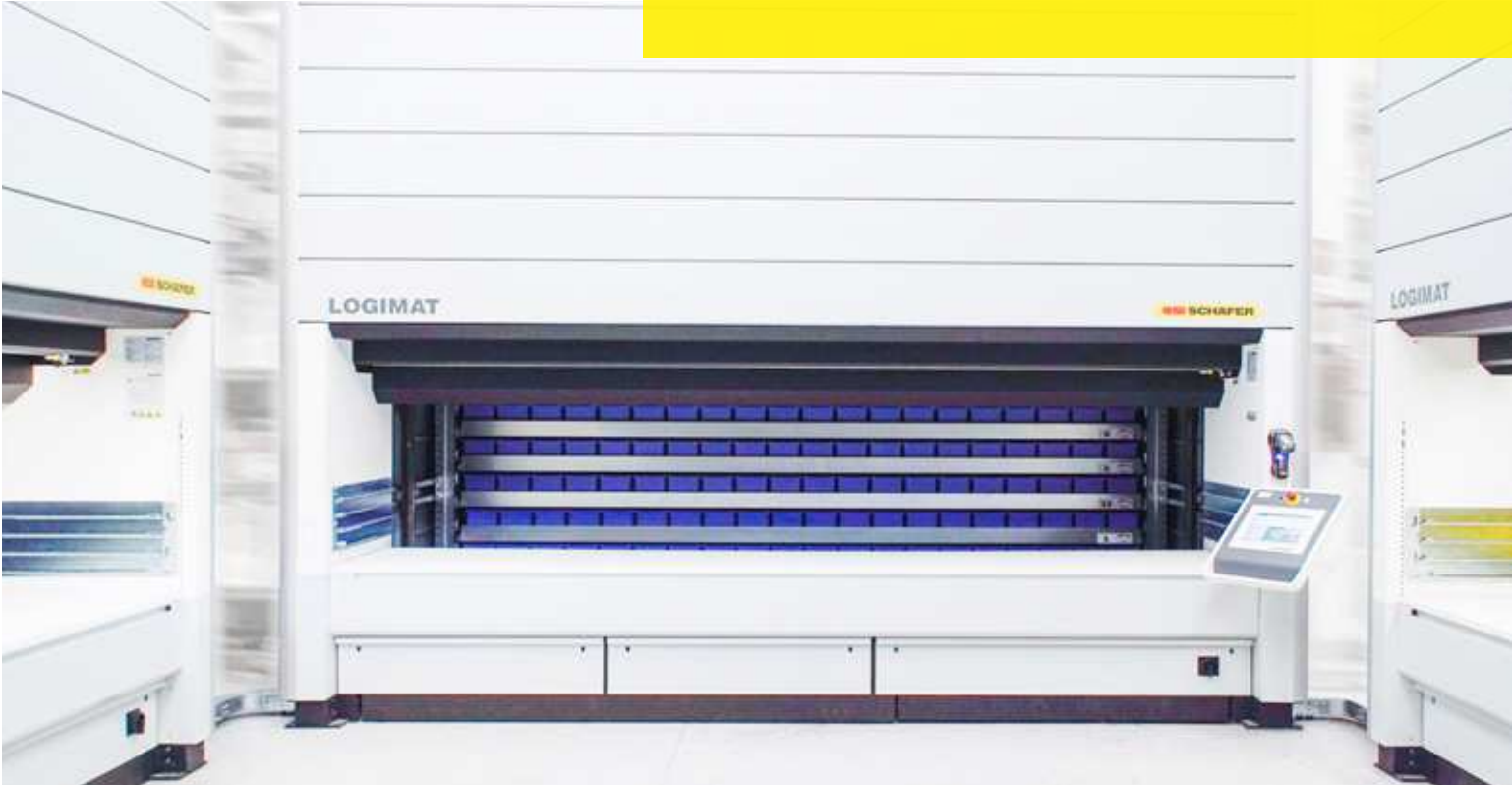
The LOGIMAT Vertical Lift Module is similar to an oversized drawer cabinet with two stacks of trays, one at the front and one at the back. Between the two rows of trays is a lift. This lift climbs the entire height of the vertical storage machine to remove an individual tray from the respective positions and to deliver them to the access opening.

The unit has an opening at the front and allows users to select a specific tray via a user interface. The unit sends the tray down to the opening and enables the user to pick their

item safely and securely. VLMs save an enormous amount of space, which means items take minimal square footage since everything is stored vertically.

Users incorporate VLMs for various applications too—everything from nuts and bolts to high value items or pharmaceuticals. Plus, many VLMs come with options that make picking virtually error-free and provide ergonomic benefits to increase picking speeds.

# LOGIMAT® IS THE ALL-IN-ONE STORING AND PICKING SOLUTION



Autonomous, or integrated with an ERP or WMS, the LOGIMAT provides an array of benefits that increase picking efficiency and accuracy, reducing your cost of order fulfillment.

## LOGIMAT VLM HIGHLIGHTS

- Highly convenient goods-to-person principle
- Compact design has economical and environmental advantages
- Highest storage density for small parts, up to 90% less floor space
- Automated processes and ergonomic design improve performance by over 20%
- Simple user guidance with minimal training requirements for operation
- Increased performance through automated processes and greater ergonomics



# ENGINEERED TO LAST

The LOGIMAT® provides robust features that are easy to use, includes long-lasting OEM mechanical components, options that make work ergonomically safe, and has virtually no downtime for preventive maintenance.

**The LOGIMAT offers numerous standard basic functions and impresses as a high-performance storage and picking system.**

Thanks to its scalability, it's easy to tailor the LOGIMAT to specific customer requirements. To complement the standard design, SSI SCHAEFER offers numerous options that expand the functionality in terms of ergonomics, performance, and flexibility.



## Compact

- Maximum use of storage with minimum footprint
- An easy to read visual display indicating filling capacity
- Defragmentation and relocalization of stored trays
- Stock addition sequence with fixed height for highly concentrated storage
- Stock addition sequence with intelligent height optimization (IHO)
- Storage of trays in 25 mm / 1" increments

## Safe

- Automated monitoring of storage bins ensures that stored inventory is within the permitted vertical and horizontal dimensions
- Vertical shaft monitoring checks for possible tray protrusions before the elevator moves
- Predefined access rights to trays and functions
- Programmable logic controller (PLC)

#### EXCLUSIVELY FROM SSI SCHAEFER

- **Rack and pinion** gear system, which provides a smooth and quiet operation
- **LogiTilt** provides ergonomic retrieval of goods by reducing the reach for trays
- An innovative **tray design** allows for space and weight optimization
- **Touch user interface** with intuitive navigation
- Sorting accessories, such as the **LMB** bin series, are optimized for a tray depth of 800 mm / 31.5"

**The LOGIMAT® Vertical Lift Module features an exclusive rack and pinion gear system that prevents common misalignments due to standard belts and chains, and drastically reduces downtimes and required maintenance. The tray lifter moves up and down on the steel columns, driving trays with engineered precision every time.**



## Robust

- A modular design using standard components
- A low-maintenance system due to high-quality components and a robust design
- Offers a range of options for different requirements
- Features an elevator with a low-maintenance gear drive
- Rack and pinion helical gear design ensures a smooth operation and higher load carrying capacities

## Ergonomic

- A laser pointer provides visual cues indicating the storage position of a specific item, which is also highlighted on the GUI
- The tray tilt option improves picking performance and eliminates employee fatigue
- Up to four operating positions per vertical lift module
- Personalization of tray heights accommodate individual employee reach

# ENGINEERED FOR TOMORROW

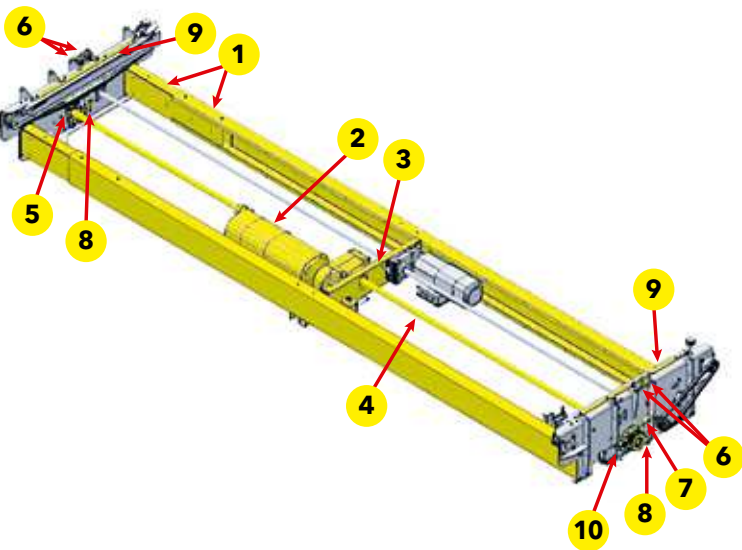
## POWER SUPPLY

Lenze asynchronous motor with 4kW up to 11kW depending on the drive chosen. There are four different drives to choose from:

- Standard
- LogiHeavy
- LogiPower
- LogiFast

### TECHNICAL DATA

Power supply	480V +/- 10% 60Hz, 3L/PE
Electrical protection	25 A - 40 A
Max. power	12kva - 21kva
Control voltage	24 VDC



## ELEVATOR PARTS

The elevator is moved by a flat geared motor, which transfers the force directly to the shaft and pinion onto the gear rack. Two different gear drives are used to form variants for a solid performance every time a user selects a tray.

- |                            |                             |
|----------------------------|-----------------------------|
| 1. Telescopic crossbeams   | 6. Elevator guide mechanism |
| 2. Elevator motor          | 7. Locking pin              |
| 3. Motor carrier           | 8. Front guide roller       |
| 4. Elevator shaft          | 9. Elevator tray guide      |
| 5. Flange-bearing elevator | 10. Elevator lubrication    |

## ELEVATOR DRIVES

TECHNICAL DATA	STANDARD	HEAVY	POWER	FAST
Power Kw (Motor /Frequency Controller)	4.0 / 4.0	4.0 / 4.0	7.0 / 7.0	11.0 / 11.0
Tray Load (Kg)	570	700	320	700
Speed (m/s)	0.3 / 0.6	0.3 / 0.3	0.9 / 1.4	1.0 / 1.4
Performance (sec)	37	52	35	38

The horizontal extractor operates with a motor of 0.8 KW and the frequency converter with 0.75 KW V max. is 0.4 m/s



## ELEVATOR LUBRICATION

The rack and pinion drive is equipped with an automatic lubrication system, which provides preventive maintenance every time the elevator moves.

LOGIMAT

04

SSI SCHÄFER





# STANDARD MEETS INDIVIDUALITY

The LOGIMAT® has several different width and depth model options.



**Minimum height:**  
2,450 mm / 96.5"

**Maximum height:**  
up to 23,850 mm / 78'  
100 mm / 4" increments

**C height of operating opening:**  
1,950 mm / 76.7"  
depending on leveling

**Tray load capacity:**  
up to 700 kg / 1,543 Lbs.

**Machine load capacity:**  
up to 60 tons / 66 U.S. ton in  
standard design (higher load  
capacity available upon request)

Usable tray dimensions (mm)	A width (mm / in) incl. paneling	B depth (mm / in) incl. paneling
1,825 x 625	2,370 / 93.3	2,712 / 106.7
1,825 x 815	2,370 / 93.3	3,092 / 121.7
1,825 x 1,323	2,370 / 93.3	4,616 / 181.7
2,025 x 625	2,570 / 101.1	2,712 / 106.7
2,025 x 815	2,570 / 101.1	3,092 / 121.7
2,025 x 1,323	2,570 / 101.1	4,616 / 181.7
2,425 x 625	2,970 / 116.9	2,712 / 106.7
2,425 x 815	2,970 / 116.9	3,092 / 121.7
2,425 x 1,323	2,970 / 116.9	4,616 / 181.7
2,825 x 625	3,370 / 132.6	2,712 / 106.7
2,825 x 815	3,370 / 132.6	3,092 / 121.7
2,825 x 1,323	3,370 / 132.6	4,616 / 181.7
3,025 x 625	3,570 / 140.5	2,712 / 106.7
3,025 x 815	3,570 / 140.5	3,092 / 121.7
3,025 x 1,323	3,570 / 140.5	4,616 / 181.7
3,225 x 625	3,770 / 148.4	2,712 / 106.7
3,225 x 815	3,770 / 148.4	3,092 / 121.7
3,225 x 1,323	3,770 / 148.4	4,616 / 181.7
3,625 x 625	4,170 / 164.1	2,712 / 106.7
3,625 x 815	4,170 / 164.1	3,092 / 121.7
3,625 x 1,323	4,170 / 164.1	4,616 / 181.7
4,025 x 625	4,570 / 179.9	2,712 / 106.7
4,025 x 815	4,570 / 179.9	3,092 / 121.7
4,025 x 1,323	4,570 / 179.9	4,616 / 181.7

## Standard Panel Colors

RAL 5014 (Pigeon blue)	RAL 9010 (Pure white)	RAL 7024 (Graphite grey)	RAL 7035 (Light grey)

**Other colors available on request.** Color deviations may occur due to monitor or printer settings.



# OUTFIT YOUR LOGIMAT® FOR OPTIMAL USE OF WAREHOUSE SPACE

SSI SCHAEFER offers an extensive range of sorting accessories.

Outfit standard trays with items such as plastic boxes according to application needs. The SSI SCHAEFER Container Catalog provides a comprehensive overview of options. Examples shown here.

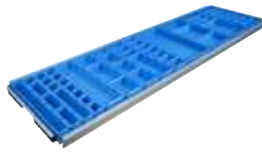
Tray design with frame



Flat smooth tray design with frame



LMB bins are a great way to organize a warehouse or distribution center



Cleverly compartmentalize with the top seller, EUROFIX (EF)



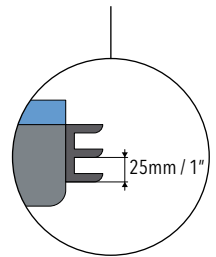
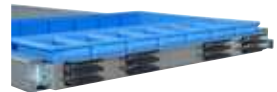
Tray with slats



Organize small parts by using the LMB bin series for vertical lift modules.



Height-adjustable tray in 25 mm / 1" increments



LMB bins partition at a tray depth of 800 mm / 31.5" and compartmentalize by separating walls for easy storage.

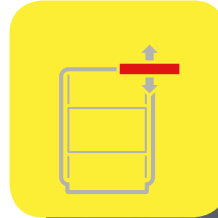
# UNLIMITED POSSIBILITIES

SSI SCHAEFER offers a broad range of options including exclusive features to customize and expand LOGIMAT® capabilities.



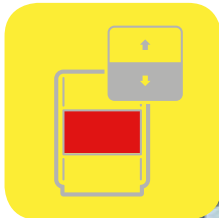
## LOGITILT

The LogiTilt is an incline option that enables the ergonomic removal of goods from the tray. This option reduces the removal depth and includes LogiWork mechanical. The tilt angle is adjustable from 10 to 30 degrees and is adjustable for each individual per tray. The tilt angle is adjustable in 5 degree intervals.



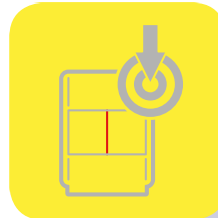
## LOGIWORK

Let LOGIWORK adjust to a specific height for an associate. By adjusting the support and tray brackets, the LOGIMAT tray height can move up to 25mm increments. This feature makes picking easier and more ergonomic for every user.



## LOGIGATE

LogiGate is a hub gate that separates the elevator travel shaft and the access opening. The hub gate consists of two parts. The two pieces connect via a chain, and the lower half of the gate acts as a counterweight. This function halves the cycle times and saves energy.



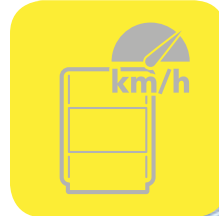
## LOGIPOINTER

Reduce picking errors by utilizing the LogiPointer option for LOGIMAT. An optical indication of the correct storage position is visible via a laser pointer.



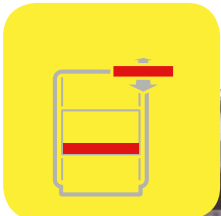
## LOGIDUAL

Parallel, time-delayed tray movements for improved performance. While removing goods from the first tray, the next tray is already moving to the operating opening.



## LOGISPEED

The LogiSpeed option has a standard motor with 9kW output. An output of 16kW is achievable using a frequency converter for the standard drive. A maximum elevator speed of 1.7 m/s is possible by utilizing another gear ratio.



## LOGIPULL

The LogiPull is a manual, full pull out tray function with two foldout tray mounts. These mounts fit onto the racking uprights, but fixation to the floor is not necessary. The access opening and the folding handles fit with the roller tracks, which minimizes the manual force of the tray extension.



## LOGIDRIVE

LogiDrive is an automatic feature where the tray extends outwards towards the individual. The roller tracks allow for a smooth and quiet operation. This ergonomic feature is great for applications that require picking throughout the day.

# SOFTWARE & CONTROLS

From simple applications to complex warehouse management, LOGIMAT® has a technology solution for your application.

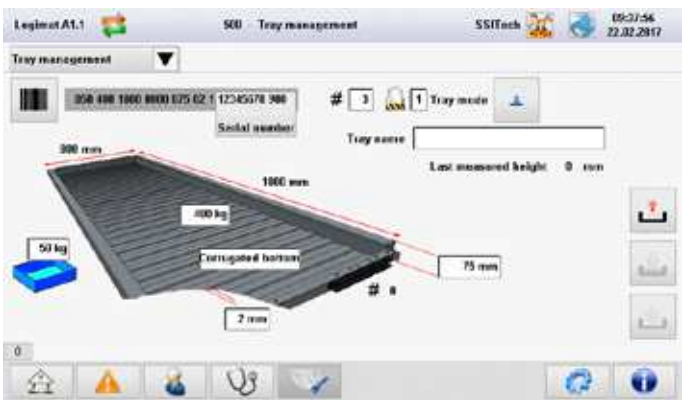
Warehouse operations vary depending on the application. Technical requirements vary as well when deciding how to implement a VLM into an operation process. From the

simplicity of a standard controller (PLC) to a highly technical SAP integration, SSI SCHAEFER offers an array of technical options for the LOGIMAT.

	Basic	Inventory	ERP Connection	ERP Control	SAP	
Order Mgt.			ERP / WMS			WMS
Planning	ERP / WMS	ERP / WMS			SPS EasyConnect	WES
Processing				ERP / WMS	+	WCS
Transport	VNC	WAMAS	WAMAS		SAP Partner	MFS
Control				NGKP2		PLC

## BENEFITS OF LOGIMAT TECHNOLOGY

- Streamlined warehouse processes for picking and replenishment
  - Simple integration into existing processes
  - Virtually error-free picking
  - Easy to scale for a future-proof warehouse
  - Intuitive user interface with touch panel
  - Adds additional security for high-value items
  - Windows 10 operating system



A visual display indicates the device status, while functions are depicted with language. Intuitive icons allow for easy user interaction.



# LOGIMAT® VNC

A plug-and-play storage solution has never been more straightforward.

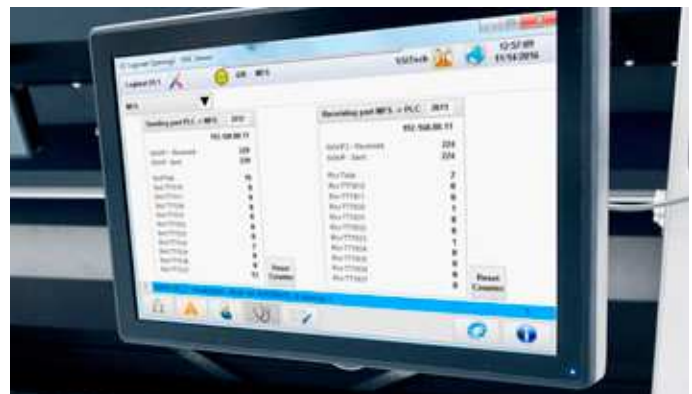
An easy but simple solution comes standard with the LOGIMAT. A programmable logic controller (PLC) allows users to easily access inventory and access trays where picking is made possible via virtual network computing (VNC). The VNC represents the first step in computer-aided warehouse

management. Users access via an easy-to-use interface and communication happens in real-time. The standard PLC controls all drivers via frequency control, prevents overload, monitors stored articles, and ensures reliable operation.



## BASIC FUNCTIONALITY AT A GLANCE

- Basic Tray Request & Delivery
- On-Screen Keyboard
- Simple user-friendly GUI
- Updateable
- Remote Assistance



An intuitive interface for easy picking and storing.

# WAMAS® LOGIMAT®

The software solution for item management with one or multiple VLMs.



Certain applications call for more technology. WAMAS LOGIMAT is an ideal solution for one or more VLMs. Depending on the application, WAMAS LOGIMAT provides article management and can implement barcode scanners for retrieving or storing items while safely securing inventory at a user level.

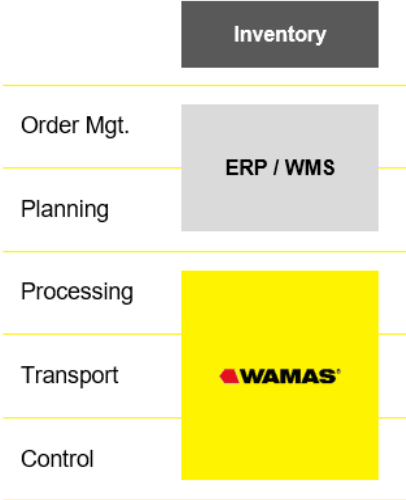
WAMAS LOGIMAT provides warehouse management software (WMS) capabilities. User management, extra security for high-value items, integration of peripheral equipment such as scanners and printers, are just a few of the WAMAS LOGIMAT

features. Storage strategies such as FIFO (First In First Out) and LIFO (Last In First Out) are supported as well as expiration, lot management, and sell-by dates. Plus, WAMAS LOGIMAT is easy to use with simple drag and drop container and tray management tools and includes reporting functions for detailed statistics.

Picking and induction are easy with WAMAS LOGIMAT. Users can simply induct or pick items with Pick by Light or Put to Light options. Plus, article images are supported, which makes picking and stocking virtually error-free.

## BENEFITS OF THE WAMAS® LOGIMAT®

- Tray Management
- Item Management
- Inventory Management
- User Management
- Smart Search
- Easy to Update
- Reporting Features



# WAMAS® LOGIMAT® WITH ORDER HANDLING

The solution for order management processing  
and batch picking.


In addition to WAMAS LOGIMAT features, the order handling software interfaces with third party ERP solutions and enables order processing. For applications that are highly automated, WAMAS LOGIMAT with order handling enables order prioritization for picking with a single or multiple VLMs.

Batch picking and express orders are easily handled through an optimized user interface. Furthermore, users can handoff open orders to other users and print delivery lists upon picking. Additional options include LogiLight control, Put 2 Light and Put 2 Light batch picking.

## BENEFITS OF WAMAS LOGIMAT PLUS

- Dynamic Sub-zoning via User Log-in
- Order Priorization
- Order Tracking
- Order Transfer
- Express Orders
- Batch Picking
- Put-2-Print
- Parallel Picking
- Pick Window Priorization
- Host Integration
- Automatic Order Start



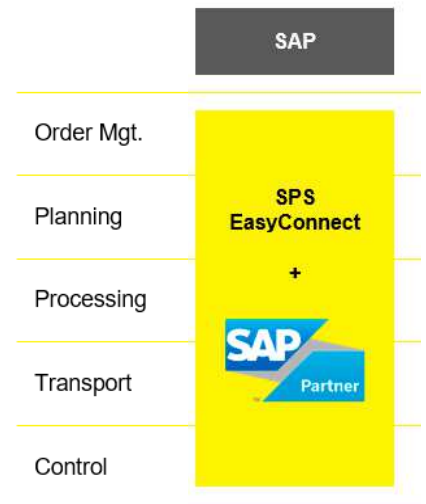
	ERP Connection	ERP Control
Order Mgt.	ERP / WMS	ERP / WMS
Planning		
Processing		
Transport		
Control		NGKP2

# LOGIMAT WITH SPS EASY CONNECT FOR SAP

Introducing SPS EasyConnect – all the great features of a VLM with SAP connectivity.

Need continuous stock reliability with real-time collection and accounting through one easy integrated application? SPS EasyConnect incorporates LOGIMAT® into existing SAP warehouse operations. With SPS EasyConnect from SSI SCHAEFER, the master data management, order management, and inventory management are conveniently managed in one module. Everything is neatly managed in one complete secure infrastructure with real-time visibility.

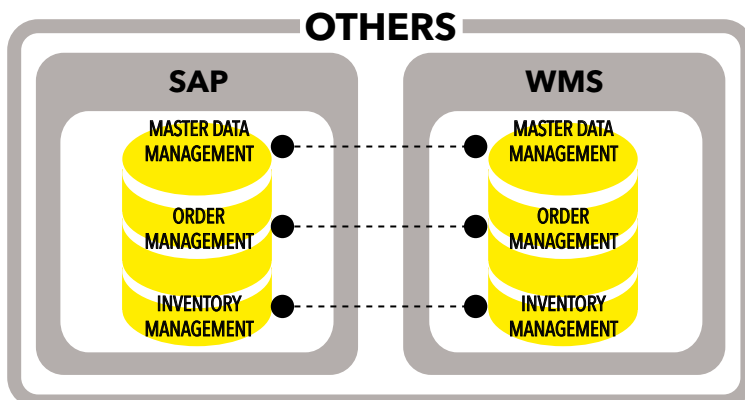
SPS EasyConnect makes it simple to plug-and-play an array of functionality. Consistent user and authorization management, order priority and handling of express orders are examples of typical functionality. However, users can take advantage of more complex features as well. Configurable strategies for redundant and/or random warehousing is available. You'll also find sequencing optimization and dynamic zoning for assembly processes or kitting applications. Everything you need for a fully managed solution with a global reach.



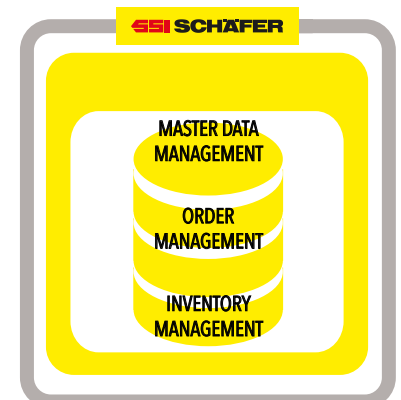
## BENEFITS OF THE LOGIMAT WITH PROCESSING AND SAP EASYCONNECT

- Worldwide leading software system
- No interface risks
- Most commonly used features already included in the standard version
- Comprehensive warehouse management, compatible with the SAP ERP system
- Compatible with new host level S4/HANA
- SSI SCHAEFER provides everything from a single source, which includes the SAP license.
- Consistent user and authorization management
- Order priority and handling of express orders
- Configurable strategies for redundant and random warehousing
- Modular structure of processes and bundling of control functions
- Sequence optimization and horizontal optimization
- Dynamic zoning
- Simple booking of actual quantities and differences via touch
- Variable input manually or by barcode scanning

Get More with Plug-and-Play Functionality



VS



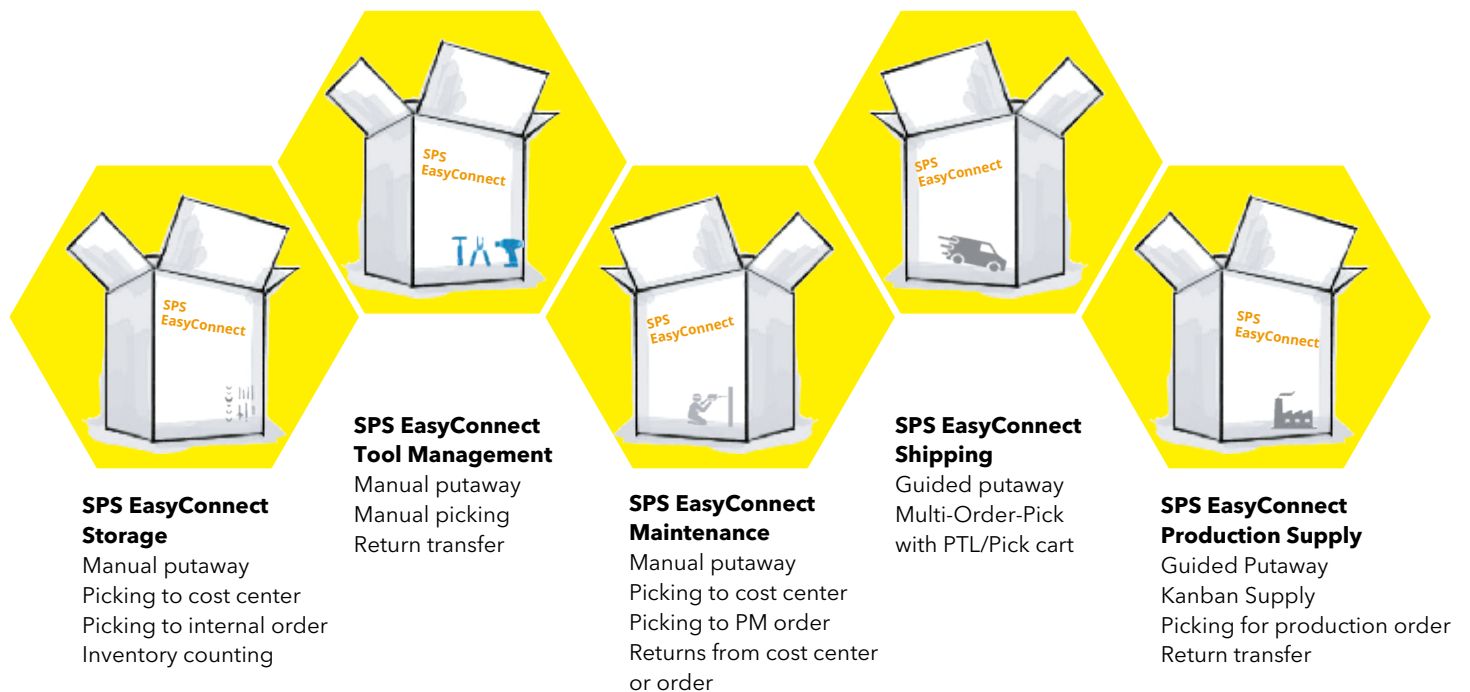




## SPS EASYCONNECT BENEFITS

### SIMPLE MODULAR IMPLEMENTATION

90% of standard processes allow simple plug-and-play



# LOGIMAT® SW FUNCTIONS AND FEATURES

FUNCTIONALITIES	VNC	WAMAS LOGIMAT	WAMAS LOGIMAT with Order Handling	SPS EasyConnect	DRIVER
<b>Tray management</b>					
Basic Tray Request & Delivery	X	X	X	X	
Advanced Tray Request & Delivery		X	X	X	
Graphical Overview of Tray Load		X	X	X	
Tray Editor		X	X	X	
Tray Management		X	X	X	
PLC Weight Control	X	X	X	X	
Software Weight Control		X*	X	X	
Velocity Management		X*	X	X	
<b>User Management</b>					
Unlimited Users & User Groups		X	X	X	
Custom Language per Unit		X	X	X	
Custom Ergonomic Settings per User		X	X	X	
User Based Security Access		X	X	X	
Automatic Sub-Zone via User Log-in		X	X	X	
<b>Item Management</b>					
Item Management		X	X	X	
Item Picture		X	X	X	
Expiration Date		X	X	X	
Batch Lot		X	X	X	
Serial Number		X	X	X	
Data Import & Export		X	X	X	
Smart Search		X	X	X	
<b>Inventory Management</b>					
Location Management		X	X	X	
Create Locations on Touch Client		X	X	X	
Cycle Counting		X	X	X	
Unlimited Bin Size		X	X	X	
Location Sharing		X	X	X	
<b>Order Management</b>					
Picking Orders			X	X	
Replenishment Orders					
Order Storage			X	X	
Order Priorization			X	X	
Order Transfer			X	X	
Automatic Order Start			X	X	
Express Orders			X	X	
LogiLight Control			X*	X	
<b>Storage</b>					
FIFO, LIFO			X	X	

FUNCTIONALITIES	VNC	WAMAS LOGIMAT	WAMAS LOGIMAT with Order Handling	SPS EasyConnect	DRIVER
<b>Picking Strategies</b>					
Pick by Light		X	X	X	
Pick Zones		X	X	X	
Batch-Picking			X	X	
Put 2 Print			X	X	
Put 2 Light			X*	X	
Put 2 Light Batch picking			X*	X	
Parallel picking at several units			X	X	
Dynamic Picking Zones			X	X	
Pick Window Priorization			X*	X	
<b>User Interface</b>					
On-Screen Keyboard	X	X	X	X	
Simple user-friendly HMI	X	X	X	X	
Optimized Graphic User Interface		X	X	X	
Tray Creation		X	X	X	
Item Creation		X	X	X	
Picking & Store Order Creation			X	X	
Delivery List			X	X	
<b>Peripheral Integration</b>					
RFID Card Reader		X*	X	X	
Printer		X	X	X	
Barcode Scanner		X	X	X	
<b>Connectivity</b>			X		
Updatable	X	X	X	X	
Remote Assistance	X	X	X		
Windows 10 Support		X	X		
Windows Server 2012 Support		X	X		
Windows Server 2016 Support		X	X		
Windows Server 2018 Support		X	X		
Oracle DB Support		X	X		
MS SQL Database Support		X	X		
PostgreSQL DB Support		X	X		
Red Hat Linux Support		X	X		
Team Viewer Integration	X	X	X		
Connectivity to ERP or WMS			X		
3th Party Software Control					X
<b>Reporting</b>					
Statistics and Reports		X	X	X	

\*Options

# NUMEROUS APPLICATIONS

The LOGIMAT® solution scales  
as your business grows.



This application depicts the operating opening of the LOGIMAT located on the “main level” of the warehouse, which allows the vertical lift module to be built from the basement and span upwards reaching multiple levels.



### No Limits to Installation Possibilities

With its compact design, the LOGIMAT vertical lift module fits into virtually any space and meets an array of customer requirements. The LOGIMAT accommodates separate storage and retrieval sides, two-sided storage, or retrieval on the floor above, or spanning multiple floors to project through a ceiling, or recessed into the floor.



**The SSI SCHAEFER advantage means higher productivity, reliable technologies, flexible applications, and a single source for all components.**



### Even Greater Efficiency Thanks to Conveying Systems

Integrating the LOGIMAT into ergonomically designed conveying systems is an effective measure for maximizing efficient material flow within a facility. The conveying system connects individual warehouse areas or workstations. This allows employees to focus entirely on picking goods from the LOGIMAT.



Several LOGIMATs can be used for picking and storing items, which allows connectivity of several warehouses.

# SERVICE & MAINTENANCE

## Maximum availability of your Lift Module.

Be it quick troubleshooting, reduced waiting times for spare parts, or integrated workplace lighting for servicing work, SSI SCHAEFER offers a wide range of features to ensure your LOGIMAT® vertical lift module is functioning properly.



### **LOGIREMOTE -**

#### **For fast troubleshooting**

LOGIREMOTE is a support option that enables remote access to your LOGIMAT vertical lift module—regardless of location. This remote access gives the hotline or service technician a direct connection to the lift module control. You benefit from faster troubleshooting and maximum availability of your machine.

Your benefits:

- High availability of the system
- Quick response times in the event of faults
- Flexible support wherever you are

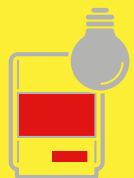


### **LOGISPARE -**

#### **Eliminating long waiting times for spare parts**

The LOGISPARE service is a precautionary service that stocks spare parts. Spare part packages keep your LOGIMAT running smoothly.

- Spare parts in stock
- Reduced waiting time thanks to spare parts packages



### **LOGILIGHT -**

#### **Maximum safety during maintenance work**

The LOGILIGHT service option consists of workplace lighting for servicing work. This includes control cabinet and shaft lighting, which turns on using a light switch in the main control cabinet should servicing work be required. This option not only ensures the safe performance of work inside the machine, but also aids in the conformity assessment and determination of a CE marking on the lift module.

Your benefits:

- Innovative workplace lighting (control cabinet and shaft lighting)
- Safe performance of work inside the LOGIMAT® vertical lift module
- CE marking

## Lowest Cost of Ownership.

---

You can rely on the strength of SSI SCHAEFER, which has made us a market leader. A range of services are offered and include site visits that are performed by specialized SSI SCHAEFER service technicians. Thanks to its robust design and high-quality components, the LOGIMAT is extremely low-maintenance.

With customer-specific service and maintenance packages, as well as innovative spare parts programs, the SSI SCHAEFER customer service and support team ensures optimal availability of your system. Enjoy maximum operational reliability and complete satisfaction.



### OUR SERVICES

- On-site troubleshooting
- Preventative maintenance
- Continuous system monitoring
- Regular inspections and safety checks
- Global spare parts service
- Full documentation and rapid analysis capability
- Targeted training courses and certification
- Individually tailored update programs



# REASONS WHY YOU SHOULD CHOOSE SSI SCHAEFER:

- **Stability:**

As a financially independent family business, SSI SCHAEFER is committed to long-term solutions. You can trust that our team of experts will be there for you tomorrow and in years to come.

- **Quality:**

As a leader in intralogistics, SSI SCHAEFER provides a single-source solution. As an original equipment manufacturer, SSI SCHAEFER guarantees quality and the right solution for your needs.

- **Sustainability:**

Solutions from SSI SCHAEFER are among the most energy efficient on the market. Reusable packaging from SSI SCHAEFER is 100% recyclable and we offer sustainability programs.

- **Efficiency:**

SSI SCHAEFER solutions are scalable and grow with your business. You can always add to your logistics solution to help meet your business needs.

- **Know-how:**

SSI SCHAEFER is always on the cutting edge of automation and fulfillment trends within the market. Our team of experts can answer any question you have regarding material handling.

- **Global Network:**

As an international company, SSI SCHAEFER has local offices worldwide. Our manufacturing facilities are located throughout North America in both the U.S.A, Canada, and Mexico. With over 70 office locations, our team of experts speak your language.

**ssi-schaefer.com**

© 2019 SSI SCHAEFER.  
Release 2.0\_August 2019

**SSI SCHAEFER**