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# AUTOSAT

**A semi-automated machine designed for multi-depth pallet storage, ideal for all sectors of industry, suitable for all brands of rack.**



Patented by AUTOMHA in 2002

More than 3,000 satellites installed in over 40 countries

Range of application  $-30^{\circ}\text{C}/+55^{\circ}\text{C}$

AUTOSAT is the semi-automated shuttle created and designed by AUTOMHA for intense multi-depth pallet storage.

The satellite operates in traditional drive-in lanes and guarantees the highest levels of efficiency in situations requiring repeated filling/emptying of shelves.

The satellite is equipped with a special removable Lithium battery and is controlled by a simple multi-function radio controller with a multi-lingual LED display.

By moving autonomously within the lanes, AUTOSAT can be easily moved between various levels and shelves by a standard fork-lift truck as it picks, stows and re-orders the pallets in the storage lanes according to FIFO (first in - first out) or LIFO (last in - last out) mode.

The use of this satellite allows for the use of the entire volume

of the warehouse, cutting handling times for storage and picking manoeuvres in half, and improving safety levels for the personnel present in the warehouse.

AUTOSAT is suitable for the storage of all types of pallet and loading units and can be used in **all industrial sectors**: it guarantees excellent performance in extremely low or high temperatures. ( $-30^{\circ}\text{C}/+55^{\circ}\text{C}$ ).

AUTOSAT is technology which was first patented by AUTOMHA, and is sold in the USA and CANADA under the **PALLET RUNNER** brand

Warehouses equipped with AUTOSAT technology can be managed by the special LOG software, which manages and processes data regarding the **inbound and outbound handling of Loading Units in manual or semi-automated warehouses.**

## FUNCTIONS

### ● STANDARD

**Storage:** the satellite, placed frontally in the "Home" position by a standard elevator/forklift truck, similarly receives the pallet to be stowed in the row. Via the "stow" button on the radio controller, AUTOSAT lifts the pallet and carries it to the first free position within the storage lane. Once the pallet has been stowed, it returns to the starting position.

**Picking:** the satellite, placed frontally by a standard elevator/forklift truck, receives the command to pick merchandise via the "Pick" button on the radio controller. It runs along the rack, stops in below the first available pallet, lifts it and carries it to the "Home" position. The operator can therefore easily collect the pallet with the forklift truck and free the machine.

**Continuous picking:** with a single press of the "Continuous picking" button, the operator sets off an activity consisting of multiple picking missions, without the need to repeatedly press the buttons on the radio controller. This is useful for multiple picking operations in the same lane.

#### **Manual setting of distance between pallets from 20 to 150 MM**

In the case of pallet overflow, the distance between pallets can be managed automatically via radio controller.

### ● MANUAL CONTROL OF AUTOSAT

The satellite's functions are controlled manually via radio controller. Every step of the operation is controlled by separate commands, such as lift, stow, move.

#### **Radio controller suitable for managing up to 4 AUTOSAT simultaneously**

#### **Mission counting capacity**

#### **Automatic maintenance warning**

### ● OPTIONAL

#### **"Compacting push" pallet reorganisation mode**

AUTOSAT automatically reorganises the lane, compacting all of the pallets to fill empty spaces. (function available for FIFO mode, compacting from production)

#### **"Compacting pull" pallet reorganisation mode**

AUTOSAT autonomously reorganises the lane, compacting all of the pallets to fill empty spaces. (function available for FIFO mode, compacting from shipping)

#### **Anti-collision between AUTOSAT units in the same lane**

Required if multiple satellites are used in the same lane. The satellites communicate with each other, avoiding collisions. (function available for FIFO mode)

#### **Stock taking: pallet quantity count**

The satellite, moving along the lane, counts the pallets via the upper sensors. The total number of pallets handled is shown on the radio controller display. Useful for medium and long lanes.

#### **Multipallet: handling of pallets of different sizes in the same channel (FIFO or LIFO)**

Ensures flexible handling within the warehouse and allows for the use of pallets of different sizes within the same lane.

#### **"PLUS" continuous picking**

Allows for rapid picking. The satellite behaves in the same manner as with continuous picking, but each mission is independent of the pallet being collected. If the first pallet made available is not collected, the satellite proceeds with the second picking operation, which will then be queued. In this manner, there are always two pallets ready to be collected.

#### **Partial picking**

Via the AUTOSAT radio controller, it is possible to define the number of pallets to pick in continuous mode.

#### **Continuous storage**

With a single press of the "Continuous storage" button, the operator starts an activity consisting of multiple storage missions. This is useful for multiple storage in the same lane.

#### **Bi-directional operation**

AUTOSAT is capable of operating in FIFO mode, inverting direction via the radio controller.

#### **Controlled pallet storage**

Via the AUTOSAT radio controller and the relative menu, it is possible to define the position for the storage of the first pallet in the lane.

#### **Odometer**

Counts the km travelled.

#### **Camera**

AUTOSAT is equipped with an on-board camera to provide real-time vision of AUTOSAT's movement and immediate diagnosis via Wi-Fi.

#### **QR Code**

Lane identification using a QR code tag.

#### **Inclinometer**

Detects incorrect positioning of the pallet shuttle within the lane.

#### **Distance between pallets of up to 240 MM**

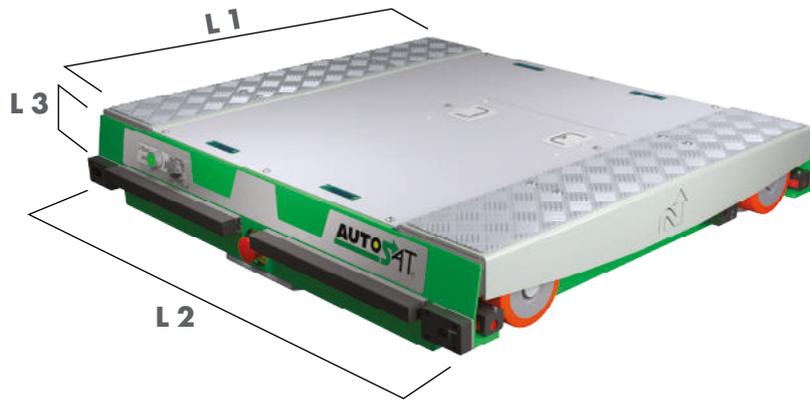
#### **Distance between pallets of up to 350 MM**

#### **Special functions on request**

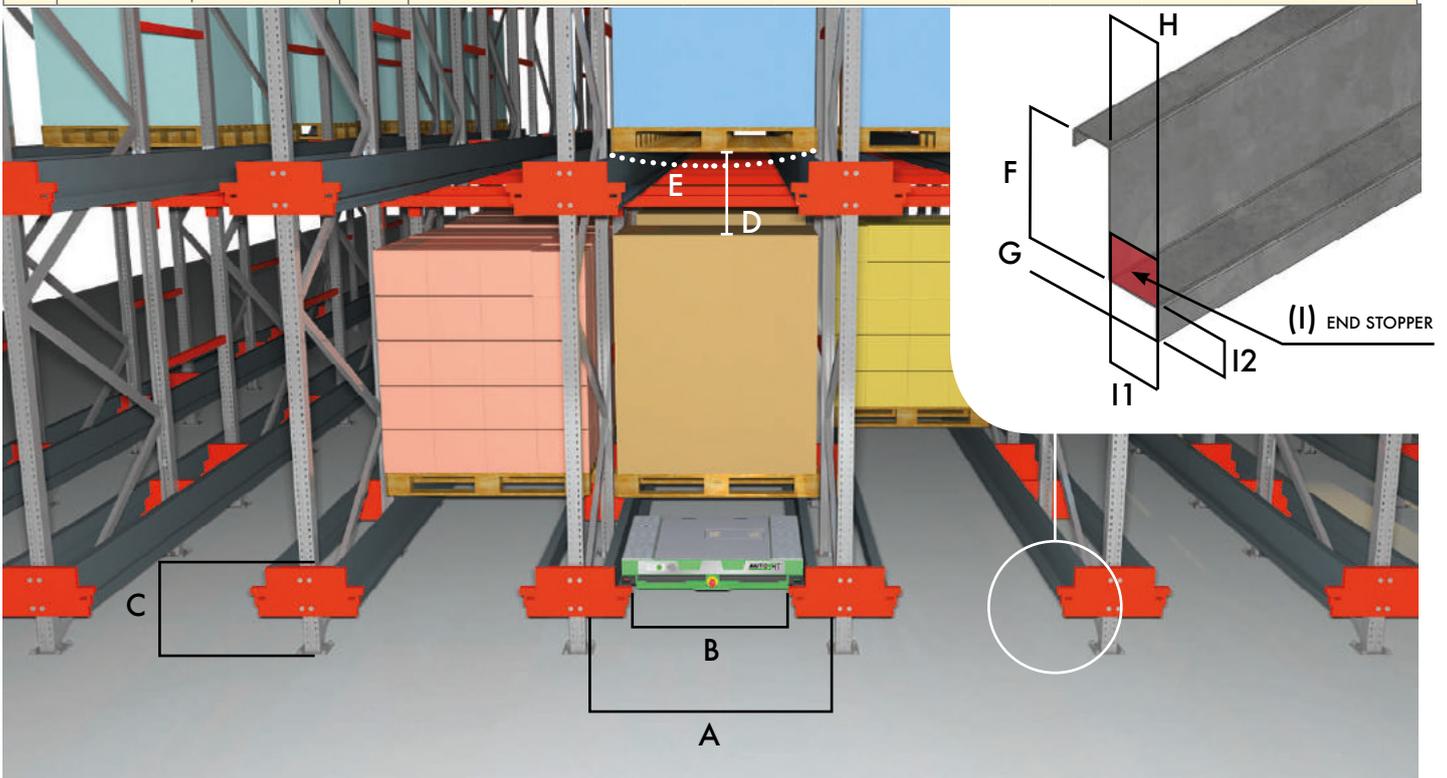
#### **Diagnosis software**

In the case of mission errors, the radio controller displays the problem code to the operator.

	TECHNICAL DATA		AUTOSAT MODELS										
	Data	u.m.	mm	mm	mm	mm	mm	mm	mm	mm	mm	inch	inch
IDENTIFICATION	Model	type	SAT.0812	SAT.1010	SAT.1012	SAT.1111	SAT.1112	SAT.1140	SAT.1165	SAT.1210	SAT.1212	SAT.4840	SAT.4048
	Pallet dimensions (D = depth/ F = forking side)	mm	800(D) x1200(F)	1000(D) x1000(F)	1000(D) x1200(F)	1100(D) x1100(F)	1100(D) x1200(F)	1140(D) x1140(F)	1165(D) x1165(F)	1200(D) x1000(F)	1200(D) x1200(F)	48(D)x40(F)	40(D)x48(F)
	Power supply	type	Lithium Battery										
	Command mode	type	Radiofrequency (Wifi Optional)										
	Load capability	kg	1500 (2000 Optional)										
	Temperature range ST / BZ / HT	°C	BZ -30 / -1   ST > 0 / +55										
DIMENSIONS	L1 total length (ref. technical drawing)	mm	884	1084	1084	1184	1184	1224	1249	1304	1304	1304	1084
	L2 total width (ref. technical drawing)	mm	947	820	947	820	947	947	947	820	947	820	947
	L3 total height (ref. technical drawing)	mm	175										
	Hoisting stroke	mm	45										
	Machine weight	kg	220	230	240	238	245	250	258	250	260	250	240
WHEELS	Idle wheels		Polyurethane										
	Wheel size front / rear	mm	120										
	Number of driving wheels	nr	2										
	Number of idler wheels	nr	2										
PERFORMANCE	Loaded/Unloaded travelling speed	m/min	35/70 (Adjustable)										
	Up speed	s	1,5										
	Down speed	s	1,5										
MOTORS	Travelling motor power	W	600										
	Lifting motor power	W	540										
BATTERY AND BATTERY CHARGER	Battery type		Lithium										
	Battery weight	kg	10										
	Battery dimensions (width, length, height)	mm	175x325x150										
	Battery capacity	Ah	20										
	Battery voltage	V	48										
	Battery lasting from full charge in ambient environment	h	8										
	Battery lasting from full charge in cold store environment	h	6										
	Charging time 100%	h	5										
	Battery charge current	Ah	12										
	Battery life	year	>5										
VARIUS	Type of motor control		DC										
	Noice level to driver	dB(A)	<60										
REMOTE CONTROLLER	Frequency	MHz	433										
	Power supply		Rechargeable Battery										
	Protection		IP65										
	Display		Led										
	Tempertaure range ST / BZ	°C	-30 / +45										
	Languages		ITALIAN/ENGLISH/SPANISH/FRENCH/GERMAN/CZECH/POLISH/RUSSIAN/CHINESE/KOREAN/PORTUGUESE/ARABIC Other languages upon request										



SAT RACKING SYSTEM DIMENSIONS		AUTOSAT											
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	inch	inch
Pallet dimensions (P=depth/F=forking side)	u.m.	800(P) x1200(F)	1000(P) x1000(F)	1000(P) x1200(F)	1100(P) x1100(F)	1100(P) x1200(F)	1140(P) x1140(F)	1165(P) x1165(F)	1200(P) x1200(F)	1200(P) x1000(F)	48(P) x40(F)	40(P) x48(F)	
<b>A</b>	Clearance between upright	mm	1350	1150	1350	1250	1350	1290	1320	1350	1150	1150	1350
<b>B</b>	Clearance between the rails	mm	843	716	843	716	843	843	843	843	716	716	843
<b>C</b>	Minimum height at first level	mm	270										
<b>D</b>	Minimum distance between	mm	300										
<b>E</b>	Pallet in height Max allowed pallet deflection	mm	30										



SAT RAIL DIMENSIONS FOR ALL AUTOSAT MODELS		AUTOSAT (all MODELS)										
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	inch
Pallet dimensions (P=depth/F=forking side)	u.m.	800x1200	1000x1000	1000x1200	1100x1100	1100x1200	1140x1140	1165x1165	1200x1200	1200x1000	48x40	40x48
<b>E</b>	Upper Rail Height	mm	170									
<b>F</b>	Lower Rail Height	mm	45									
<b>G</b>	Rail width	mm	70									
<b>H</b>	End stopper dimensions (I1xI2)	mm	70x60									

# AUTOSAT

## EQUIPMENT

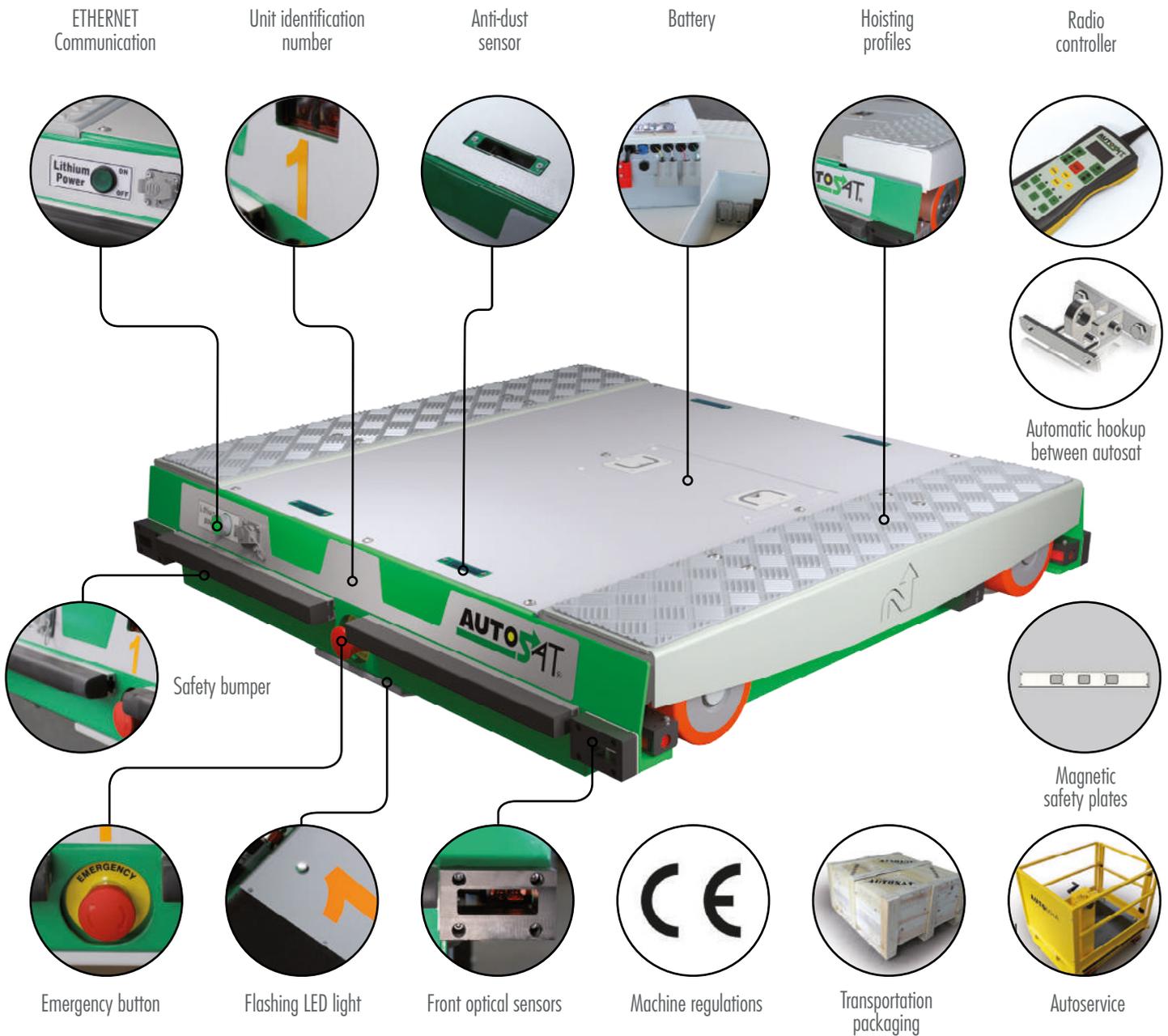
### STANDARD

AUTOSAT  
 On-board Battery  
 Battery charger (220/110 Vdc)  
 Multi-lingual radio controller  
 Battery charger for radio controller  
 (220/110 Vdc)  
 Instruction manual

### OPTIONAL

Increased load capacity (2000 kg)  
 Spare parts  
 Drip protection  
 Transportation  
 Transport  
 Installation & Training  
 Marine transportation protection  
 Forklift locking system (anchoring  
 between shuttle and forklift truck)

Rapid AUTOSAT coupling (emergency  
 system for the retrieval of broken-down units)  
 Magnetic safety plates (increases the  
 stability of the satellite when on the forklift  
 truck)  
 PLS SICK Kit (speed control in the case of  
 obstacles detected in the lane)  
 Autoservice (manual security shuttle to  
 recover broken-down machines or for  
 in-lane maintenance)



## MODELS

# AUTOSAT

### STANDARD

The use of AUTOSAT BZ is permitted in temperatures as low as -30°C without any change in performance. The following measures should, however be adopted:

- Do not move the satellite into areas at ambient temperature; the resulting condensation that would form in the satellite could compromise the functioning of the machine.
- The BZ model is supplied with an external "red box" battery which substitutes the Lithium battery during charging. We recommend that the "red box" is used during the night, when the shuttle is not in use, or for periods of rest of over 2 hours.

### INOX

An innovative model, designed to respond to the specific requirements of the cheese production and food processing sector. Thanks to its 100% stainless steel and washable structure, AUTOSAT Inox is an ideal aid for optimising warehousing time and space, maintaining the hygiene standards required for the food sector. AUTOSAT Inox is also available in the BZ version.



### WI-FI

Semi-automated battery-powered machine fitted with wi-fi communication with PDA and AGV laser-guided shuttle carts.

With AUTOSAT WIFI, an operator to command the machine via radio controller is no longer required, as the satellite operates automatically via wi-fi commands sent by the WMS (warehouse management software). AUTOSAT WIFI is, in any case, supplied with a radio controller and has the same Lithium battery as the other models. AUTOSAT WIFI is also suitable for all industrial sectors.

- Advantages of the PDA
- Advantages of AGV



## ADVANTAGES

### System concept

- Optimising of storage/depositing/picking phases
- Optimisation of space
- Full integration with various warehouse logistics (FIFO-LIFO)
- Efficient organisation of the storage area
- Maximum adaptability with pre-existing drive-in structures

### Safety

- Storage/picking of pallets without the danger of collision thanks to laser targeting
- No risk to racking thanks to warehouse side handling
- Self-locking in the raised position when loaded
- Anti-collision system between satellites in the lane

### Technical advantages

- Powered by removable lithium battery
- Maximum charging time 5 hours

Average battery run time 8 hours

Anti-tipping guides

Laser targeting system for slowing down and positioning at the end of the lane

Guide wheels for easy insertion into the lane

Can be transported with a standard forklift truck

Rapid and silent movement

Real-time machine operational data available via the radio controller

Suitable for refrigerated areas at temperatures as low as -30°C

Significant energy savings with green technology

### Maintenance

Autoservice platform for the recovery of satellites from the lane

Predictive maintenance

Guaranteed worldwide 24-hour, 7-days-a-week assistance

## SECTORS OF APPLICATION

### Food - Beverage - Dairy - Controlled temperature

Refrigerated - Logistics centres - ATEX 