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# NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA



# GB/T 30030-2023

Replacing GB/T 30030-2013

## Automated guided vehicles - Vocabulary

自动导引车 术语

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## Foreword

This Document was drafted as per the rules specified in GB/T 1.1-2020 Directives for Standardization - Part

1.Rules for the Structure and Drafting of Standardizing Documents. This Document replaced GB/T 30030-2013 Automated Guided Vehicle (AGV) - Vocabulary. Compared with GB/T 30030-2013, the major technical changes of this Document are as follows besides the structural adjustments and editorial modifications.

a) Delete 18 terms including "vehicle control system", "upper control system", "guidance", "fixed path guidance", "free path guidance", "coordinate guidance", "GPS navigation", "secondary positioning", "laser navigation sensor", "positioning mark", "reflective tape", "standby point", "online charging", "offline charging", "safety sign", "safe area", "slow driving distance", and "parking distance" (see 2.3, 2.4, 2.6, 2.7, 2.8, 3.4, 3.8, 7.6, 9.8, 10.2, 10.5, 11.5, 11.11, 11.12, 12.1, 12.2, 12.3, and

12.4 of the 2013 Edition);

b) Delete the terms related to transfer mode (see Clause 6 of the 2013 Edition);

c) Add the terms related to drive structure (see 3.2.2, 3.2.3, and

3.2.4 of this Edition);

d) Add 23 terms including "path planning", "assisted positioning", "common zone", "hazardous zone", "restricted zone", "detection section", "warning field", "protective field",

"navigation 2D code", "navigation magnetic spot", "magnetic spot navigation", "radio station navigation", "2D code navigation", "RFID navigation", "system effective operation rate", "maximum speed", "repeatability", "rated load", "monitor system", "auto charging", "manual charging", "contactless charging", and "battery exchange" (see 3.1.5, 3.1.7, 3.2.12, 3.2.13, 3.2.14, 3.2.15, 3.2.16, 3.2.17, 3.3.2, 3.3.3, 3.3.8, 3.3.14, 3.3.15, 3.3.16, 3.4.2, 3.4.4, 3.4.8, 3.4.9, 3.6.2, 3.7.1, 3.7.2, 3.7.3, and

3.7.4 of this Edition);

e) Change the term "guidance" to "navigation" (see

3.3 of this Edition;

2.6 of the 2013 Edition);

f) Change the Chinese term, English equivalent and definition of "guide line" and "attitude accuracy" (see 3.3.5,

3.4.7 of this Edition;10.4,



## 1 Scope

China's national vocabulary standard for automated guided vehicles. It defines the general terms, the structural components, the navigation terms, the performance parameters, the movement directions, the upper control system and the energy supply modes, with an index. A vocabulary standard for AGVs has to be revised more often than most, because the technology under it has changed faster than the words describing it. The 2023 revision deletes eighteen terms that the 2013 edition defined, and the list of deletions is a history of the field: vehicle control system, upper control system, guidance, fixed path guidance, free path guidance, coordinate guidance, GPS navigation, secondary positioning, laser navigation sensor, positioning mark, reflective tape, standby point, online charging, offline charging, safety sign, safe area, slow driving distance and parking distance. Several of those describe an approach that has been superseded. Fixed path guidance - following a wire buried in the floor or a magnetic tape stuck to it - was how AGVs worked for decades and is now a minority case; the terms distinguishing it from free path guidance mattered when the choice was live. Reflective tape and positioning marks belong to laser triangulation navigation, which natural feature navigation and simultaneous localisation and mapping have largely replaced. Online and offline charging described a distinction that opportunity charging made irrelevant. Deleting a term from a vocabulary is a stronger statement than adding one: it says the concept is no longer needed to describe the field. What the revision keeps and restructures is the vocabulary of a vehicle that navigates by understanding its surroundings rather than by following a line. Issued and in force since 23 May 2023, it replaces GB/T 30030-2013.

This Document defines common terms for automated guided vehicles and their systems.

This Document applies to product development, design, manufacturing and application of automated guided vehicles.

## 2 Normative References

There are no normative references in this Document.

### 3.1 General terms

3.1.1 Automated guided vehicle Equipment with material handling or operation capabilities, characterized by wheeled (including tracked) movement, and autonomous movement along a preset route based on environmental markers or external guidance signals.

3.1.2 Automated guided vehicle system A system that consists of an automated guided vehicle (3.1.1), an upper control system, a navigation system, a communication system, and a charging and power supply system, etc. NOTE. See Figure 1. A device for the manual operation of the automated guided vehicle (3.1.1).

3.1.9 Driving assembly A device that provides driving and steering power for the automated guided vehicle (3.1.1).

3.1.10 Steer-driving assembly A structure that uses an independent steering device to achieve the steering of the driving assembly (3.1.9).

3.1.11 Differential-driving assembly A structure that uses the speed difference between different drive wheels (3.2.10) to achieve the steering of the drive assembly (3.1.9).

3.1.12 Driving motor A motor that powers the drive wheels.

3.1.13 Steering motor A motor that provides steering power.

### 3.2 Structural components

3.2.1 Chassis A basic structural part of the automated guided vehicle (3.1.1).

3.2.2 Assembly driving A structure that uses only a driving assembly (3.1.9) to achieve the driving and steering of the automated guided vehicle (3.1.1).

3.2.3 Un-assembly driving A structure that uses only driving wheel (3.2.10) to achieve the driving and steering of the automated guided vehicle (3.1.1). NOTE. Mecanum wheel is included.

3.2.4 Hybrid driving A structure in which a driving assembly and a non-driving assembly simultaneously drive the automated guided vehicle (3.1.1).

3.2.5 Sole-wheel driving A mode of using a single wheel to provide driving force.

3.2.6 Dual-wheel driving A mode of using two wheels to provide driving force.

3.2.7 Multi-wheel driving A mode of using three or more wheels to provide driving force.

3.2.8 Individual steering A mode of achieving the steering function by an independent steering device.

3.2.9 Differential steering A mode of using two or more driving devices without individual steering devices to achieve the steering function by utilizing the speed difference between different driving wheels (3.2.10).

3.2.10 Driving wheel A wheel that provides driving force for the automated guided vehicle (3.1.1).

3.2.11 Driven wheel; caster Non-powered running wheels on the automated guided vehicle (3.1.1).

3.2.12 Common zone An area where automated guided vehicle (3.1.1) is allowed to be used together with other moving objects.

3.2.13 Hazardous zone An area within the operating range of the automated guided vehicle (3.1.1) that may pose a safety risk to human beings.

3.2.14 Restricted zone An area within the operating range of the automated guided vehicle (3.1.1) to which access by unauthorized persons is restricted.



### 3.4 Performance parameters

3.4.1 System capacity The maximum number of tasks that the automated guided vehicle system (3.1.2) can accomplish per unit time.

3.4.2 System effective operation rate The Ratio of the automated guided vehicle system (3.1.2) between the sum of trouble-free working time and the total working time. 1 - turning motion; 2 - pivot motion. Figure 4 - Schematic diagram of movement mode

3.5.7 Pivot The automatic guided vehicle (3.1.1) performs a rotational movement with the chassis (3.2.1) movement reference point as the rotation center. NOTE. See Figure 4.

### 3.6 Upper control system

3.6.1 Dispatching system A control system that conducts monitoring and controlling, task dispatching, and traffic management of the automated guided vehicles (3.1.1).

3.6.2 Monitor system A general term for software and relevant components used to monitor and control the operation (operation status, task information, traffic conditions, etc.) of an automated guided vehicle system (3.1.2).

3.6.3 Map A data map that designs and plans the driving path according to the actual operating environment of the automated guided vehicle (3.1.1). NOTE. The map contains elements such as point (3.6.6), segment (3.6.7), and station (3.6.8).