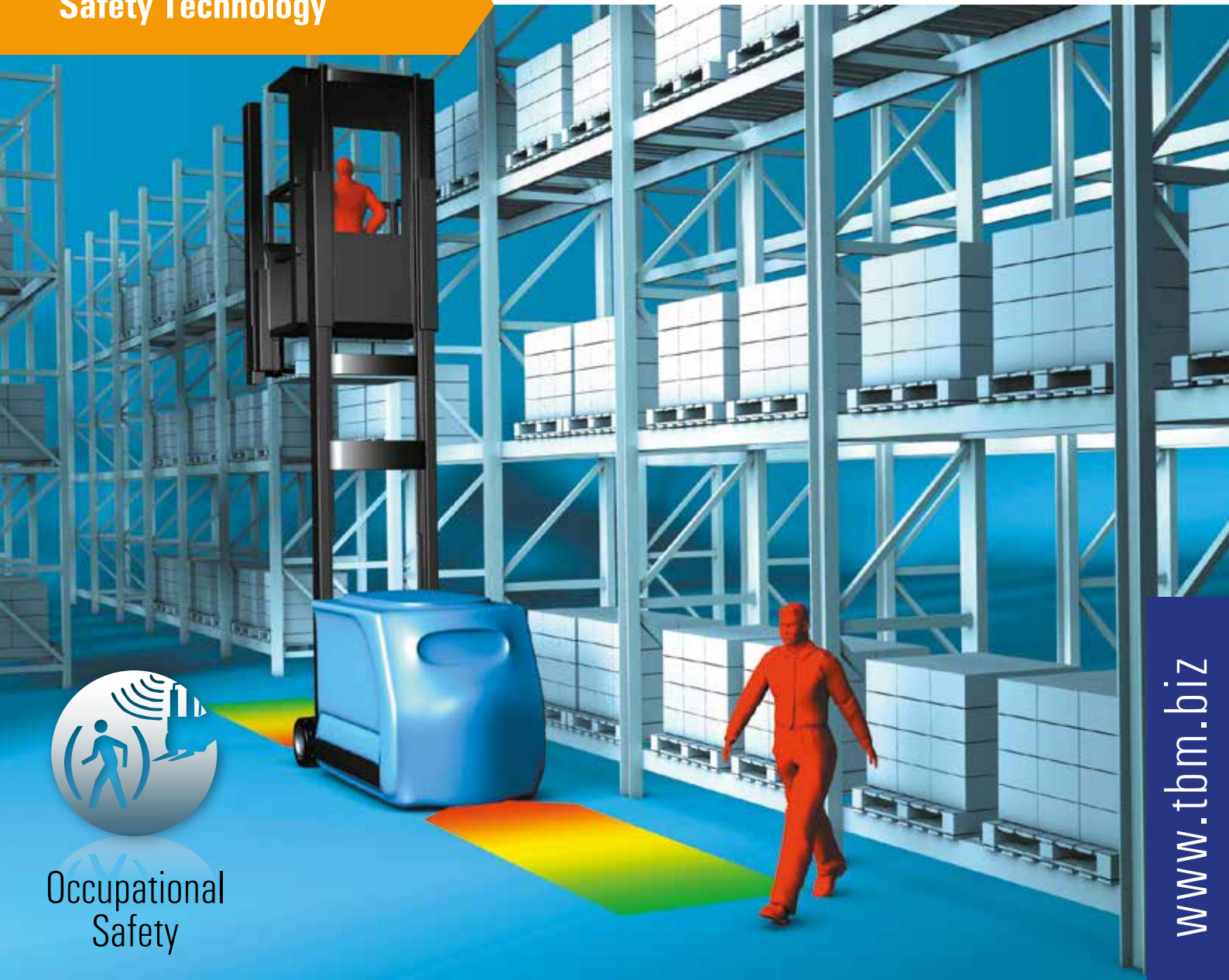


Mobile Personnel Protection

GM-107cpu

Safety Technology



Occupational
Safety

Mobile Personnel Protection GM-107cpu

Regulation-compliant safety

A number of regulations must be observed for the use of industrial trucks in narrow aisles. The Machinery Directive 2006/42/EC specifies the general protection level for machines. EN 13849 describes the safety functions for specific dangers, while DIN 15 185-2 defines the safety requirements and functions for the use of industrial trucks in narrow aisles.

The personnel protection system GM-107cpu complies with all these regulations. As a safety device, it naturally has the **type approval according to PL d.**

To ensure that the personnel protection system GM-107cpu always complies with the state of the art, it is revised and updated periodically approx. every three years.



We never compromise on safety and our responsibility.

Quality and reliability

With many years of experience, the engineers of tbm relentlessly focus on the development and improvement of the personnel protection system. In doing so, we continuously enhance the functionality and safety that we owe our customers. In addition, TÜV Süd inspects our production facilities on a regular basis to monitor the manufacturing process and the quality standard.

We regard quality management as a practised culture and not as a compulsory exercise.



Vision Zero, comfort and economic efficiency

VISION ZERO.
ZERO ACCIDENTS – HEALTHY WORK!

For three decades, the personnel protection system GM-107cpu has defined the Vision Zero. Thousands of industrial trucks without accidents are convincing proof of this.

The constantly increasing comfort with simultaneously ever-increasing economic efficiency are the result of an unremitting quality improvement. The personnel protection system GM-107cpu is a permanent success story – made in Germany.

Mobile Personnel Protection is the brand for the safe protection of industrial trucks in narrow aisles.

All renowned industrial truck manufacturers equip their industrial trucks with the personnel protection system GM-107cpu ex factory. Where adequately prepared (interface), retrofitting is also possible.

The Mobile Personnel Protection GM-107cpu is the standard for almost all industrial trucks.

Basic functions

The personnel protection system GM-107cpu monitors the driving range of the truck within the narrow aisle across the entire aisle width and over a length of approx. 1.3 to 1.5 times the braking distance.

The monitoring function is provided by laser scanners installed in each of the load and drive directions, always monitoring in driving direction. When the vehicle stands still, both directions are monitored to ensure that any person approaching the truck will be detected.

Should the protection field be violated, the truck will be decelerated automatically until it comes to a full stop. In this state, the driver can operate a manoeuvring button – integrated as standard on new vehicles – and then drive towards the object at creep speed (2.5 km/h) for a limited time. In opposite direction, it is always possible to drive away quickly.



The personnel protection system is activated and tested by safety features each time it enters the aisle.

These safety functions are controlled by the central evaluation electronics.

The personnel protection system GM-107cpu also checks the braking distance of the vehicle and will trigger an alarm in case wear is detected.

Optional functions

The personnel protection system GM-107cpu can be equipped with numerous additional optional functions.

- **Aisle end protection**

This function reduces the vehicle speed when driving out of the aisle to 2.5 km/h. Three different versions are available.

- **Full stop at the end of a cul-de-sac**

This function stops the vehicle in due time before it reaches the wall at the cul-de-sac and escape route. This is made possible by precise distance measurement. Three versions are available.

- **Escape route function**

This function ensures unobstructed access to the escape route at the end of a cul-de-sac at all times.

It stops the vehicle before the escape route when the load is lowered and only permits travel to continue when the load is raised >2.0 m.



- **Monitoring of the pallet depot**

where the provision of pallets extends the narrow aisle.

- **Collision protection outside the narrow aisle**

This function provides collision protection outside the narrow aisle. When the truck leaves the narrow aisle, a brief warning field is activated that will decelerate the truck in case there is a threat of a collision.

- **Rack collision protection**

This sophisticated technical feature allows the personnel protection system to monitor the aisle detection on the side of the vehicle as well and stop the vehicle if the vehicle has failed to receive any aisle detection. This safely prevents the vehicle from colliding with the rack.

- **Automatic crawl speed when scanner is blocked**

This function automatically initiates crawl speed (2.5 km/h) before the load obstructs the view of the laser scanner. This function is only installed on special request as it impairs the safety.

Mobile Personnel Protection GM-107cpu/HP

New technology – More comfort and safety

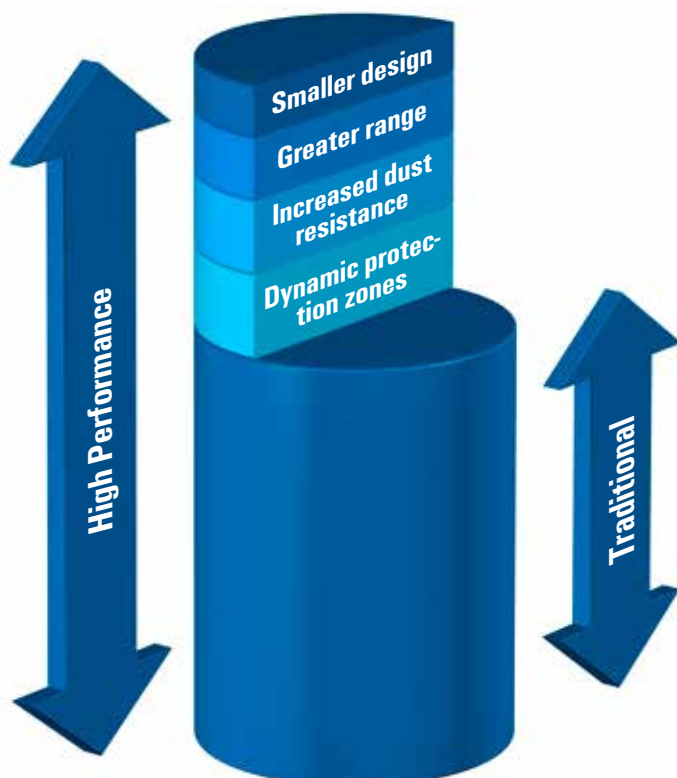
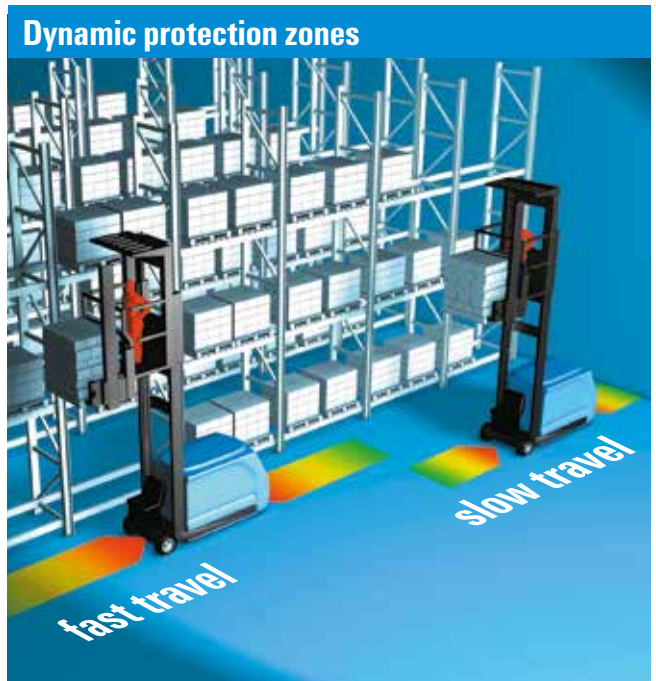
HP stands for high performance with significantly higher comfort and greater safety during rack operation in the narrow aisle.

This is possible thanks to the use of a new laser technology. For mobile personnel protection, this means:

- Integrated dynamic protection zones
- Enhanced dust resistance
- Greater range
- Smaller design

Thanks to these characteristics, the mobile personnel protection system adapts travel movements optimally – **depending on the speed**. The **warehouse turnover is increased** and **economic efficiency enhanced**. The greater range supports the performance and speed of modern vehicles. You can drive faster.

With the GM-107cpu/HP, mobile personnel protection becomes a fully integrated component of an efficient industrial truck.



The plus in performance ...

has a noticeable effect on daily operation:

- Less interferences due to soiling of the laser scanners
- Less travel interruptions and time expenditure for cleaning
- Faster stock turnover thanks to more fluent travel

The Mobile Personnel Protection GM-107cpu/HP is the new standard in mobile personnel protection.

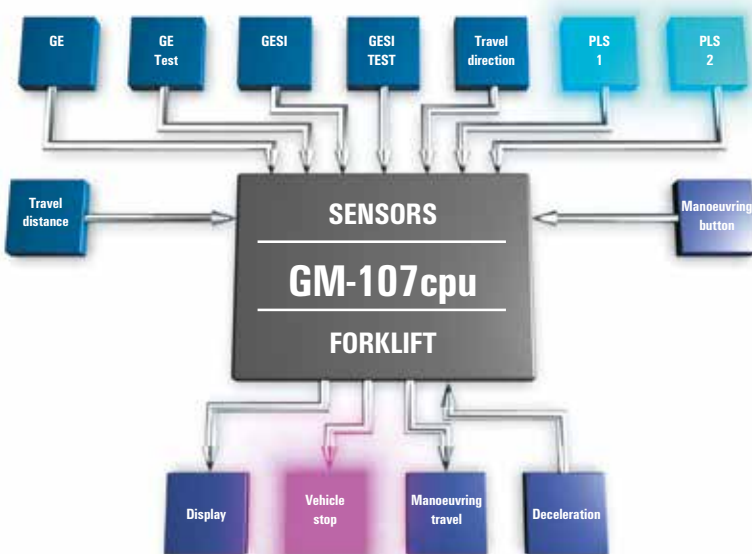
Dynamic protection zones

are **integrated** in the personnel protection system. They are the plus for greater safety and more efficiency. Accordingly, the comfort travel to the end of the aisle is automatically **included**. Without any additional module and without manual deactivation.

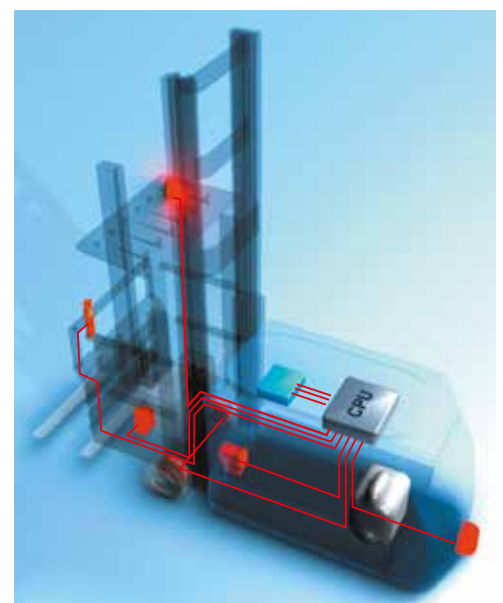
Performance characteristics

- **Active safety**
during every travel movement within the narrow aisle.
Permanent and safe to the last metre of the narrow aisle (until the vehicle physically exits the aisle).
Adapted to the speed of the vehicle.
- **Comfortable drive out of the aisle**
The dynamic, speed-dependent protection zones monitor not only the transfer aisle. Any persons present in the transfer aisle will not have any negative impact on the vehicle in the narrow aisle.
- **No early deactivation**
for uninterrupted picking at the end of the aisle.
Safe monitoring until the vehicle physically exits the aisle.
- **Collision protection in the transfer aisle (outside the narrow aisle)**
can be implemented upon request at no extra cost.
Depending on the speed, the protection zone also provides collision protection outside the narrow aisle.
- **32 adjustable protection zones**
plus 32 definable warning zones are available for speed-dependent and customized monitoring.
- **8.4 m protection zone range**
permits a higher vehicle speed in the narrow aisle.
- **Asymmetric protection zones**
provide protection across the entire aisle width in wide aisles with two lanes.
- **High dust resistance**
reduces the cleaning effort and increases operational readiness.
- **Optional dash-cam**
integrated in the laser scanner, records danger situations 5 sec. before an alarm is triggered thus ensuring optimal diagnostics and malfunction analysis.

The personnel protection system GM-107cpu/HP is the new dimension in mobile personnel protection



Microprocessor controlled evaluation of the safety components according to PL d.



Vehicle-specific integration of the safety components

Mobile Personnel Protection GM-107cpu/V3

Traditional technology – Tried-and-tested in thousands of applications

The traditional technology is backed by 15 years of experience. An all-time favourite among personnel protection devices, just like the “VW beetle”. It is the most commonly used personnel protection system. This is why we keep it in our program.

Committed to a tradition of quality!

Performance characteristics

- **Tried-and-tested technology**
The system has been successfully used for many years to ensure a high routine among many trained service technicians. Its long service life has been proven in thousands of applications. This is a success characteristic that no innovation can beat.
- **Proven reliability**
With a safe protection zone with 7 m range and a 15 m long warning zone. Ranges that are adequate for many traditional logistics firms.

Fixed protection zones



- **Service**
By numerous trained service technicians of many dealers and forklift truck services

Special applications ...

... require specific devices!

The traditional technology is used in particular in specialist and challenging areas. The benefits and strengths of the traditional technology play a vital role in this regard. Content long-term customers confirm the excellent performance.

Mobile Personnel Protection GM-107cpu/TK



Use in deep-freeze warehouses

The use in deep-freeze warehouses up to -30 °C places particularly high demands on the technology and the components.

It requires heated laser scanners, temperature-control and components with an extended temperature range.

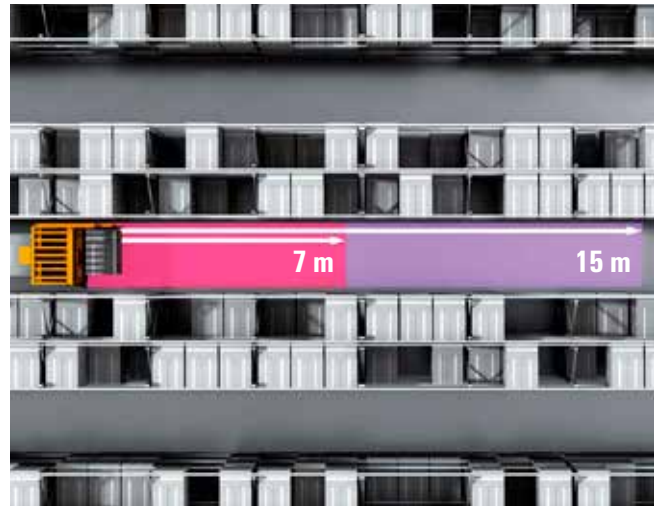
A specialist device with that deep-freeze vehicles have been equipped for many years.

Mobile Personnel Protection GM-107cpu/AK

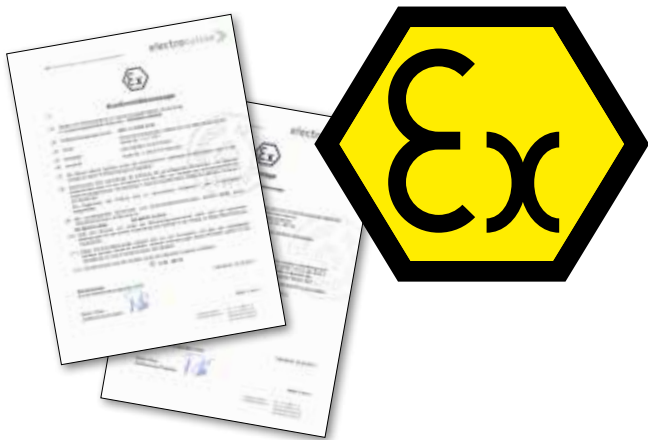
Collision protection in narrow aisles when multiple vehicles are used in a single aisle

When multiple vehicles are used in a single narrow aisle, a safe protection zone with a range of up to 15 m is required for collision protection. This is achieved by the mobile personnel protection GM-17cpu/AK with special laser scanners. It fulfils the special requirements and regulations.

Safety that offers productive benefits.



Mobile Personnel Protection GM-107cpu/EX3G



Use in ex protection zones

Explosion protection is a special category. The mobile personnel protection GM-107cpu/EX3G has been approved for zone 2; T4 in the individual exception procedure.

Experience, competence and a high level of customized design permit mobile safety in logistics even for this area.

Efficiency and safety

The mobile personnel protection GM-107cpu is the efficient safety system for industrial trucks in narrow-aisle warehouses – and that in all areas and for many years. This also includes our known strengths:

Service

Fast, competent and reliable

Advice

with many years of experience, solution- and customer-focussed

Training

for dealers, technicians and vehicle manufacturers

Mobile personnel protection is more than just reliable technology!

Technical specifications

	Control unit	Laser scanner
Dimensions (WxHxD):	280 x 180 x 95 mm	155 x 185 x 160 mm
Housing material:	Aluminium die-cast	Aluminium die-cast
Supply voltage:	16 to 110 V DC with electrical isolation (operating range)	
Power consumption:	< 55 W typical, 75 W max.	
Enclosure:	IP 54	
Input fuse:	8 AT / 250V	
Climatic conditions:	IEC 68-2	
Operating temperature:	-10 °C to + 50 °C, optionally cold store suitable -30 °C	
Humidity in operation:	5 - 95 % humidity	
Interface:	Floating relay contacts as outputs and electrically isolated Inputs	
Mechanical strength:		
Frequency range:	10 - 150 Hz	
Amplitude:	0.35 mm ± 0.05 mm, 20 shocks p. a. in 3 axes	
Bump:	10 g, 16 ms, 1000 ± 10 shocks p. a. in 3 axes	
Device class:	Class II	
Alarm response time:	16 ms maximum	
Performance specifications:	Control lines: Ölflex-110/05, 0.75 mm ² Supply lines: Ölflex-110/05, 1.0 mm ² Sensor lines: UNITRONIC-LiYCY, 0.25 mm ²	
Safety category:	3 acc. to EN 61496-1 or PL d acc. to EN 13849-1	
Annex II: Standards, directives	<ol style="list-style-type: none"> 1. Recommendations for the testing of personnel protection systems on material-handling industrial trucks used in narrow aisles of high-bay warehouses (BIA, BG) 2. Checklist for personnel protection in narrow aisles 3. Requirements for the intended simultaneous presence of pedestrians and industrial trucks in a narrow aisle. 	
Standards:	Machinery Directive 2006/42/EC, DIN ISO EN 13849-1, EMC Directive 2004/108/EC, Low Voltage Directive 2006/95/EC DIN 15185-2, EN 954-1, EN 60204-6.2.1 and 6.3.2, DIN EN 12895	

tbm awards



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