

Personnel Protection System GM-107cpu





Personnel Protection System GM-107cpu

Advantages:

- Personal injury prevention
- Mixed operation of forklift / personnel possible
- No expensive alterations in the stores
- Adherence to regulations



Area of operation

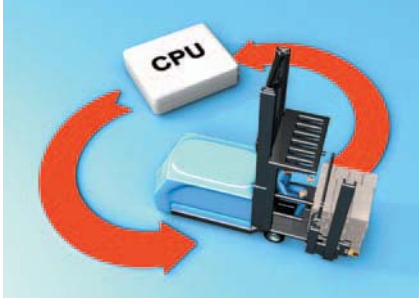
Mobile Personnel Protection GM-107 was developed for all guide driven (guideline driven) forklifts in narrow aisles in positive temperature areas in order to meet legal and trade association regulations covering accident protection in narrow aisle stores.

GM-107cpu is built to the Safety Regulations category 2 and 3 of EN 954-1 (PL d to EN ISO 13849). It is EG sample-tested and certified. Consequently it can be used not only **in stores areas with controlled operation** (where either persons or a vehicle are in a narrow aisle) but also **in a genuine mixed operation** (when at the same time, persons and a forklift are in a narrow aisle).



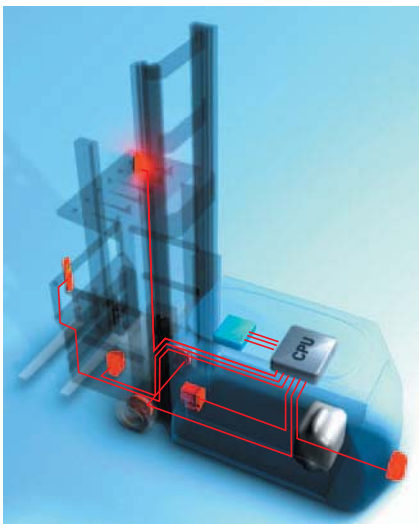
Safety at work

System



Mobile Personnel Protection System GM-107cpu consists of two laser scanners (Type Sick S 3000), a central micro-processor controlled electronic system, fitting consoles, connection and control leads, together with all necessary signal transmitters.

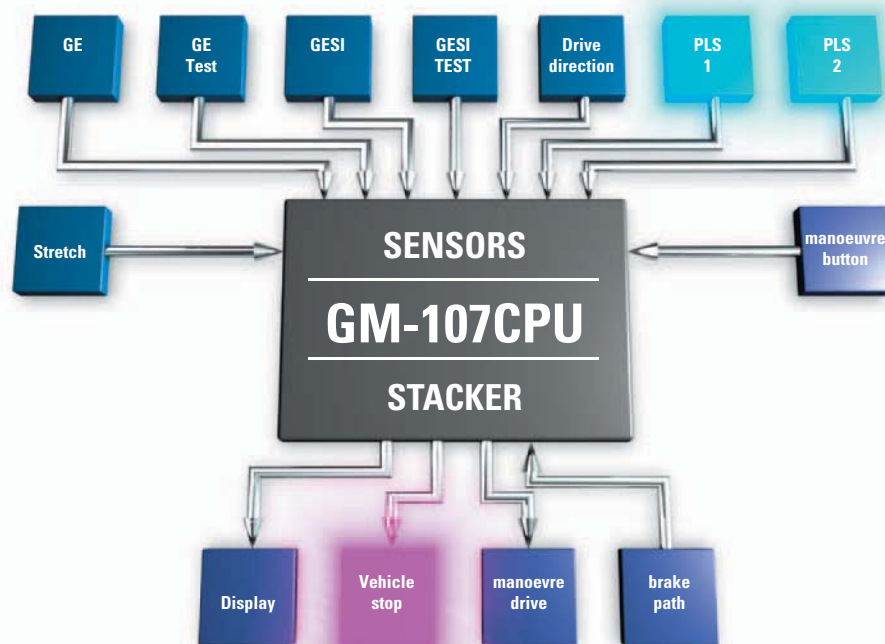
The heart of the mobile Personnel Protection System, the central control unit is based on modern microprocessor technology. It is flexible and can be programmed with many single functions (also subsequently) and can be installed in any vehicle. It has a Canbus-Interface over which also the newest forklifts can be simply and easily served.



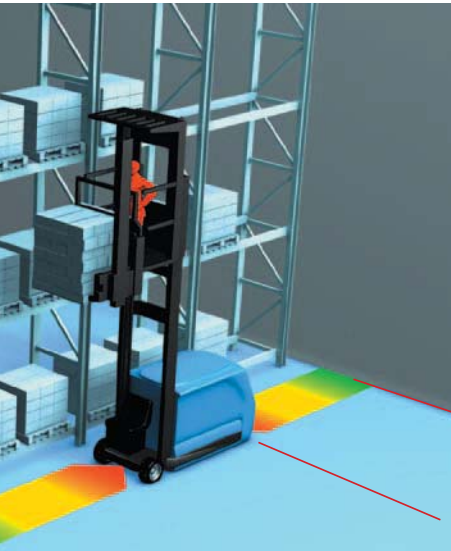
Vehicle equipment

A laser scanner is installed both in direction drive and in direction lift. By means of these, the vehicle is monitored parallel to the floor at a height of ca. 20-30 cm. The laser scanners are connected with the control electronics GM-107cpu which controls the Personnel Protection System and takes over communication with the vehicle electronics.

Via the vehicle interface, (and/or additional activators and components) the person protection unit is supplied with the corresponding switch signals. All switch signals are carried out redundant to Safety Category 2 or 3!



Function GM-107cpu **Basic**



Vehicle commissioning

The Personnel Protection System goes into operation automatically with the commissioning of the vehicle. An **automatically running self-test** guarantees safe function

Aisle entry

The Personnel Protection System is activated on each aisle entry. As of now, no person can approach the vehicle unnoticed without releasing an alarm.

Safety check

The Personnel Protection System is checked for safe activation after every aisle entry! In the event of a fault the vehicle is automatically stopped.

Pallet space approach

Within the narrow aisle, the programmed danger area in front of and behind the vehicle is permanently monitored in the drive direction.

Danger or alarm situation

If a person or an obstacle comes into the danger area, the vehicle is automatically stopped. This alarm stop cannot be influenced by the driver!

Alarm re-set

The alarm stop will normally be released if there is no longer an obstacle in the area under surveillance. Without time delay and operating time, the driver can continue his journey. On request a release requirement can be installed.

Manoeuvring under alarm

During an alarm, the driver can activate a manoeuvring button (confirm button) on the driver's console and thereby allow travel under his own responsibility for 10 secs. at creep speed.

Taking pallets in and out

When the vehicle is at stand-still, no alarm is passed on to the vehicle. This ensures comfortable and time-saving operation of the vehicle!

Aisle exit

When leaving the aisle the personnel protection system is automatically de-activated again. Outside the narrow aisle there is normally no surveillance!

Function signs

With vehicles fitted ex-works with an interface, function signs are normally via a display on the vehicle. When vehicle are subsequently equipped, the function display is via an additional optical and acoustic signal.



Optional functions

Automatic creep drive in the case of covered laser scanner

Due to the fitting position of the laser scanner on a forklift in direction of goods take-up (except 4-way vehicles and special models) the load/cabin is to be raised ca. 30 cm in this direction so that the laser scanner can „look in“ to the drive path. If the laser scanner is covered, then in the direction load take-up, only creep speed drive is possible. This unmonitored situation is shown optically and acoustically by an additionally installed flashing light.

Aisle end safety enforced braking to 2.5 km/h at aisle end

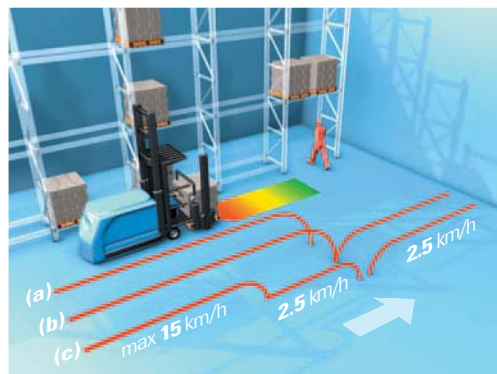
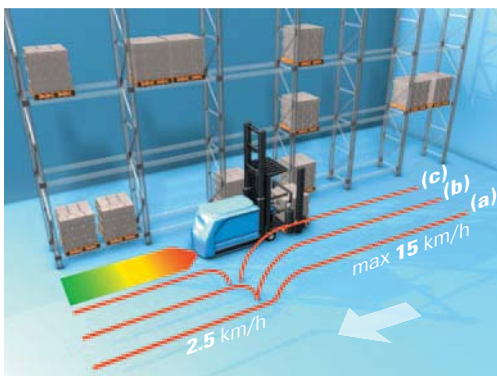
With Personnel Protection GM-107cpu it is ensured that the forklift can only leave the narrow aisle at creep speed in accordance with DIN 15185-2 and BGV D 27. This aisle end safety can be offered in three different versions:

- Comfortable **braking of the forklift down to creep speed** with subsequent travel at creep speed.
- Braking of the forklift to a stop** with subsequent travel at creep speed.
- Braking of the forklift to a stop** with release responsibility of the driver to carry on at creep speed.

Complete stop at aisle end

With Personnel Protection System GM-107cpu, travel to aisle end up to a dead-end can be made safe. An automatically controlled complete stop at the aisle end can be offered in three versions:

- With a **simple complete stop** the forklift is braked to stationary and thereby can not drive into the wall.
- With an **extended complete stop** the forklift is also braked down to a complete stop at the aisle end. In this case, the driver now has the possibility to interrupt the complete stop via a release button in the driver's console or via a foot button and can continue to drive at creep speed.
- With the **safety complete stop** the vehicle is braked to a complete stop 1 m before the rescue path. In this way the driver can leave the vehicle in the event of fire and before the end of the racking can reach the drive path and then the rescue path. Continued travel is only possible if the load take-up is raised at least 2 m high. In this respect a rescue path opening in the racking line must be taken into account so that the rescue path is not blocked.





„Comfort drive to aisle end“

(Switch-out monitoring at aisle end)

On special request, monitoring up to the aisle end can be switched out after previous control of no obstacles present up to the aisle end so that the protection field is not monitored in the change-over aisle. This additional feature indeed increases comfort – but clearly reduces safety at the aisle end. Travel continues just at creep speed but without any surveillance!

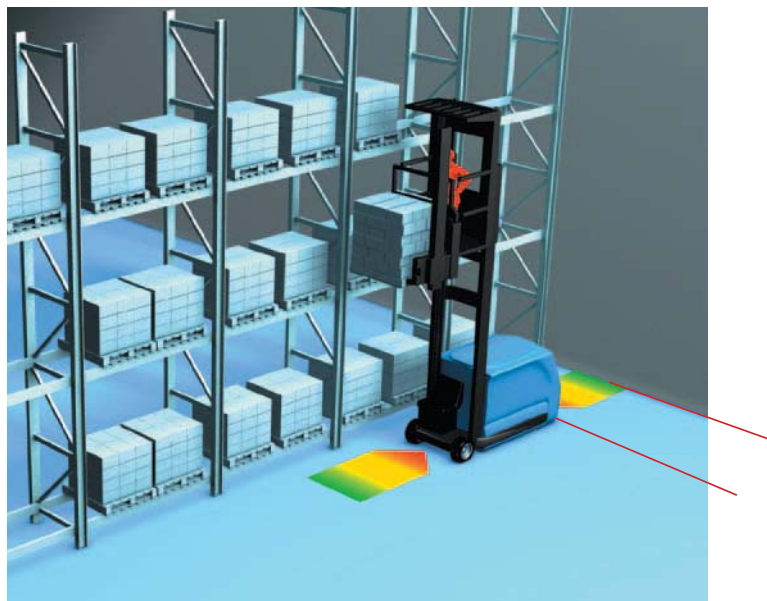
In contrast, much safer is a permanent, active surveillance up to the point when the vehicle leaves the narrow aisle. This brings about the additional function with:

GM-107cpu Plus

Speed dependent surveillance

By this additional function danger surveillance is carried out in front of and behind the vehicle dependent on speed! This means that at a high speed, surveillance is carried out with a long protection field (since the vehicle has a long stop path) and at low speed surveillance is carried out with only a short protection field (since the vehicle has a relatively short stop path)

This optional unit enables particularly safe use of the Personnel Protection System at aisle end. In this way the situation is safely monitored when the vehicle is working at aisle end. A person walking into the aisle is protected!



Accessories

	<p>Traffic sign VZ-107 Traffic paths must be correctly signed. We offer many traffic signs and can also manufacture special signs for you, right up to electrical light boards.</p>	<p>Regulation to BGV D 27; DIN EN 528</p>
	<p>Tripod for traffic sign ST-107 With this practical tripod a traffic sign can be set up simply and when needed at the required place on a temporary basis.</p>	<p>Recommended</p>
	<p>Chain for traffic sign KE-107 Using this chain, a traffic sign can simply be hung at the narrow aisle entry when needed so that entry is effectively blocked.</p>	<p>Recommended</p>
	<p>Climb-through safety DSS-107 Three ropes fitted over each other on spring fittings over up to three rack fields simply prevent climbing through within the racking.</p>	<p>Regulation to BGV D 27; DIN EN 528</p>
	<p>Cross aisle safety QGS-107 With full surface surveillance of a cross aisle a person or an obstacle present in the cross aisle is recognised and protected. Optionally, just an optical/sound alarm can be made or also an approaching vehicle can be stopped automatically.</p>	<p>Regulation to DIN EN 528, BGV D 27</p>
	<p>Exit safety RAD-107 The racking end is monitored with sensors and thereby driving out of a vehicle from the racking can be shown optically or accoustically on the front of the racking. In this way cross traffic in a change-over aisle is warned in time of a vehicle driving out.</p>	<p>Recommended</p>
	<p>Authorisation control Vehicle use by each and every driver is established by authorisation control and can be subsequently evaluated. Authorisation control is more than a pure operational hours counter. It supports information management and vehicle data for every operator.</p>	<p>Recommended, practical, helpful and useful</p>
	<p>Camera unit CCD-107 The specified free sight of a driver is very often considerably limited by pallets or also by the vehicle mast. A camera unit enables correct operation of a forklift. Only by means of a camera can the non-monitored area beneath the load lift be seen.</p>	<p>Regulation to BGV D 27; DIN EN 528</p>

Technical data

Dimensions (W x H x D)	
Control unit:	280 x 180 x 95 mm
Laser scanner:	155 x 185 x 160 mm
Housing material:	Control unit: Alu pressure cast Laser scanner: Alu pressure cast
Supply voltage:	16 to 110 V DC with potential separation (function area)
Current consumption:	< 55W typically 75W max.
Protection type:	IP 54
Input fuse:	8 AT/250V
Climate:	IEC 68-2
Operating temperature:	nom. -10 °C bis + 50 °C, optional freezer stores -40 °C
Humidity operation:	5 - 95 % relative humidity
Interface:	potential-free relay contacts as exits potential separated exits
Mechanical strength:	
Frequency area:	10 - 150 Hz
Amplitude:	0,35 mm ± 0,05 mm, 20 shocks p. A. in 3 axes
Long term shock:	10g, 16 ms, 1000 ± 10 shock p. A. in 3 axes
Unit class:	Class II
Alarm contact time:	16 ms maximum
Output specification:	Control circuits: Ölflex-110/05, 0,75 mm ² Supply circuits: Ölflex-110/05, 1,0 mm ² Sensor circuits: UNITRONIC-LiYCY, 0,25 mm ²
Safety category:	3 to EN 61496-1 or PL d to EN ISO 13849-1
Appendix II:	Norms, guidelines 1. Recommendations for testing person protection systems on forklift vehicles for narrow aisles in high rack stores (BIA,BG) 2. Check-list for person protection in narrow aisles. 3. Regulatory requirements for simultaneous operation of pedestrians and vehicles in a narrow aisle
Norms:	DIN 15185-2, EN 954-1, EN 60204-6.2.1 and 6.3.2, EN 61496-1 and prEN61496-3, BGV D 27, EN 981, EN 842, EN 457, ISO 11429, EN 1175-1, EN 50178, DIN 40839, DIN ISO 13849-1