

# And who counts your passengers?



## Automatic passenger counting with DEROVIS AFZ

Accurate passenger numbers are fundamental to realistic calculation of productivity and accounting in public transport organisations. Operational planning too is easier and more efficient if you know how many passengers travel when and on what routes.

Until now counting passengers was either a manual operation or outrageously expensive. And this is where our solution comes in. We not only make automatic passenger counting more exact, but also up to 50 percent cheaper than systems currently available.

It works like this: the control unit we have developed collects the counting data from up to four counting units, links it with the relevant journey data and makes it available via a special interface. The data can be called up in real time via WLAN or 3G and evaluated centrally with a special software package.

The counting units we use are very capable too. They work with a smart 3D camera system and achieve an absolute precision of 98 percent or more. Significantly more accurate than the usual laser or infrared counters you find in the market.

The Derovis control unit comes either as a stand-alone device or in combination with a video system. Both variants are based on the new Derovis Hydra<sup>IP</sup> system range. Now if you want you can amalgamate passenger counting, video surveillance, data transmission and other functions all in a single system.

**The future of passenger counting is called Hydra<sup>IP</sup>. From Derovis.**

## Accuracy and efficiency: DEROVIS AFZ



DEROVIS AFZ is available as a counting system (control unit plus counting units plus software) or as a combined counting and video system (Hydra<sup>IP</sup> MR 3080-8).

One counting unit is required for each carriage door. It works with a stereo camera which views the entrance area from above. It recognises adults, wheelchair-users and children above a certain size, and it reliably differentiates between passengers and objects they bring with them.



Up to four counting units can be connected directly to the counting system control unit via Ethernet cable. If more counting units are used it is straightforward matter to connect them via an external switch.



The control unit has an interface giving access to the ready-loaded evaluation software. Data transmission is effected either manually (using a USB stick) or via an optional communication unit (WLAN or 3G).

### Advantages

DEROVIS AFZ is the most powerful and efficient solution on the market at the moment.

An overview of its advantages:

- Excellent value for money: high precision at an attractive price.
- The new hardware range of Hydra<sup>IP</sup> is available as a counting system on its own or in combination with video recording.
- Optional real time transmission of counting data via WLAN and 3G mobile wireless (GPRS, UMTS, HSUPA).\*
- Scalable: can be expanded to include an almost limitless number of counting units.
- Absolute counting accuracy of over 98 percent, minimum counting accuracy: 97 percent.\*\*
- video recording provides unequivocal proof of quality.\*\*\*
- Cost reduction: manual counting no longer required in vehicles or at fixed points.
- Reliable results even in difficult situations such as crowds.
- Automatic data pre-processing, software for offline evaluation included.
- Interface providing access to analysis software such as PLANFAHRT.
- Numerical data analysis including statistics, route checking, vehicle loading and much more.
- Full integration in existing vehicle systems, the transmission of system status and fault reports.

\* Communication available from Q3/2010

\*\* When compliant with specified installation conditions.

\*\*\* When the vehicle is fitted with a video recording system.

### Potential applications

- Mobile: in public service vehicles such as busses, trams, trains and ships
- Stationary: in stations and at bus or tram stops

## Tested counting accuracy

To establish the quality of the counting system a field test was carried out in co-operation with a local transport operator in Berlin. In a pilot project 18,000 people went through both our automatic counting system and a parallel manual count. A comparison of the results proved that the automatic system worked with an absolute numerical accuracy of more than 98 percent.



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From Derovis.

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