



# VISUALCOUNTER TRANSIT-TOF

PASSENGER COUNTING  
IN PUBLIC TRANSPORT



*VISUALCOUNTER.TRANSIT-TOF system provides bidirectional counting of passengers on public transport, and allow you to register and analyse passenger flow data by stop and door in a reliable and accurate way (>98% efficient)*

#### LATEST GENERATION OF TOF (TIME OF FLIGHT) TECHNOLOGY

Innovative time of flight technology that creates a 3D image with maximum resolution and accuracy based on active IR illumination infrared to detect passengers and special objects (bicycles, wheelchairs, babycars,...)

#### MAXIMUM RELIABILITY WITH AI ALGORITHMS

Designed with Artificial Intelligence algorithms based on neural networks that are highly reliable in any situation and scenario (light changes, weather and passenger flow density)

#### DISCRETE DESIGN ADAPTED TO THE VEHICLE

Installed on the doors, in a non-intrusive and discrete way, with different housings, anchorages and trim tailored to each client

#### VARIETY OF COMMUNICATION INTERFACES

RS-485 serial or TCP/IP Ethernet communications

#### POWER OPTIONS

9-36 VDC or PoE (IEEE 802.3af) power

#### EASY INTEGRATION WITH EXTERNAL SYSTEMS/SENSORS

Optocoupled digital I/O that allows easy integration with other systems

#### EASY INSTALLATION AND MINIMUM MAINTENANCE

A single device per door. Easy plug&play installation without complex configurations or settings to maintain

#### AUTOMOTIVE AND RAILWAY APPROVALS

Approved by official laboratories for their installation in automotive and railway vehicles



### OPTIMISATION OF PUBLIC TRANSPORT OPERATIONS



Flow management of passengers in different vehicles, doors, routes and stops



Public transport service optimisation (routes, transit frequency)



Optimisation of vehicle use (number and size)



Passenger occupation management of the vehicle over its entire journey

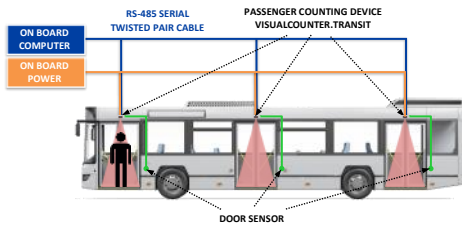


Improvement in fraud management and optimisation of the inspection personnel

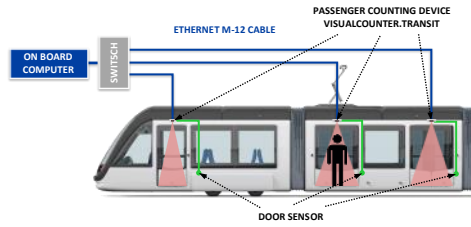


Measurement of advertising value of stops, posters and in-vehicle video channels

# CONNECTION DIAGRAM



SERIAL RS-485 COMMUNICATIONS

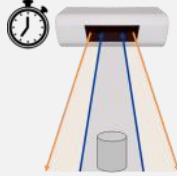


ETHERNET COMMUNICATIONS



## 1. Time of Flight Technology

Time of Flight (TOF) technology allows the estimation of the distances of objects by calculating the time between when an infrared light beam is emitted and when the reflection of the ray is received



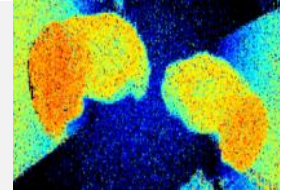
## 2. Obtaining 3D images

Through the use of Time of Flight (TOF) sensors with the highest resolution we can obtain native 3D images of the surroundings, with precise information about the distance of each object from the sensor



## 3. Image processing

The 3D images are processed using the latest AI algorithms based on neural networks to determine with the highest accuracy the number of passengers who enter and leave through a door



# TECHNICAL SPECIFICATIONS

<b>Model / Technology</b>	VC.TRANSIT-TOF / Time of Flight
<b>Voltage / Power consumption</b>	<ul style="list-style-type: none"> <li>9-36 VDC (9W max.)</li> <li>PoE (Power Over Ethernet) - IEEE 802.3af compatible</li> </ul>
<b>Communications</b>	<ul style="list-style-type: none"> <li>RS-485 Serial</li> <li>TCP/IP Ethernet (IPv4, HTTP, HTTPS, 802.1x, DNS, TCP, UDP, DHCP, SSH)</li> </ul>
<b>Connectors</b>	<ul style="list-style-type: none"> <li>18 pin connector: <i>Serial RS-485 communications — I/O (door sensor) — DC Power</i></li> <li>M12 D-Coded connector: <i>Ethernet TCP/IP PoE communications</i></li> </ul>
<b>Illumination requirements</b>	0 LUX (complete darkness)
<b>Internal clock / Memory / Resolution / I-O</b>	Available / Up to 10k stop events / > 10k pixels / 1 input— 1 output optocoupled
<b>Object classification</b>	Persons (adults/kids) / wheelchairs / babycarts / bicycles
<b>Working height/width ranges</b>	1700 mm - 2500 mm / Door width up to 1600 mm
<b>Dimensions / Weight</b>	310 g / 142 mm x 54 mm x 32 mm (standard housing)
<b>Housing and protection</b>	Aluminum housing / IP code: IP55
<b>MTBF</b>	> 300.000 h
<b>Environmental parameters</b>	<ul style="list-style-type: none"> <li>ROHS</li> <li>Range of ambient operating temperature -25°C / +70°C</li> <li>Range of ambient storage temperature -40°C / +70°C</li> <li>Relative humidity 5% / 95%</li> </ul>
<b>Design standards</b>	<ul style="list-style-type: none"> <li>Safety of Information Technology Equipment - EN 62368-1:2014 + AC:2015 + A11:2017</li> <li>EMC Directives - IEC/EN 55022 &amp; CISPR 22 ed 6 (2008) &amp; IEC/EN 61000-4-2/3/4/6/8</li> <li>Automotive EMC Standards - According ECE ONU R10: ISO 11452-2 &amp; ISO 7637-2 &amp; CISPR 25 Ed.2 (2002) + A1 (2004)</li> <li>Railway Application Standards - EN 50155:2017</li> <li>Railway EMC Standards: EN 50121-3-2:2015 / EN 50155:2017</li> <li>Railway Shocks and vibrations - EN 61373 / EN 50155:2007 + AC:2010 + AC:2012</li> <li>Automotive Shocks and vibrations - EN 60721-3-5</li> <li>Railway Environmental Tests - EN 60068-2-1/2/30/11</li> <li>Railway Fire behavior test of materials and components: EN 45545-2:2013</li> <li>Burning behavior of materials in motor vehicles - According ECE ONU R118</li> </ul>

# VISUALCOUNTER AROUND THE WORLD

- More than 40.000 counting devices installed
- Present in 80 countries on all five continents
- Reference customers in each market niche
- Solutions tailored to each country and sector
- Developing, manufacturing and marketing own counting people solutions



**VISUALCOUNTER**

C/ Julián Camarillo 53, Pl 3, Of 4  
28037 - Madrid (Spain)



info@visualcounter.com.es

(+34) 91 375 06 95

