AUTOMATIC PASSENGER COUNTING SYSTEM

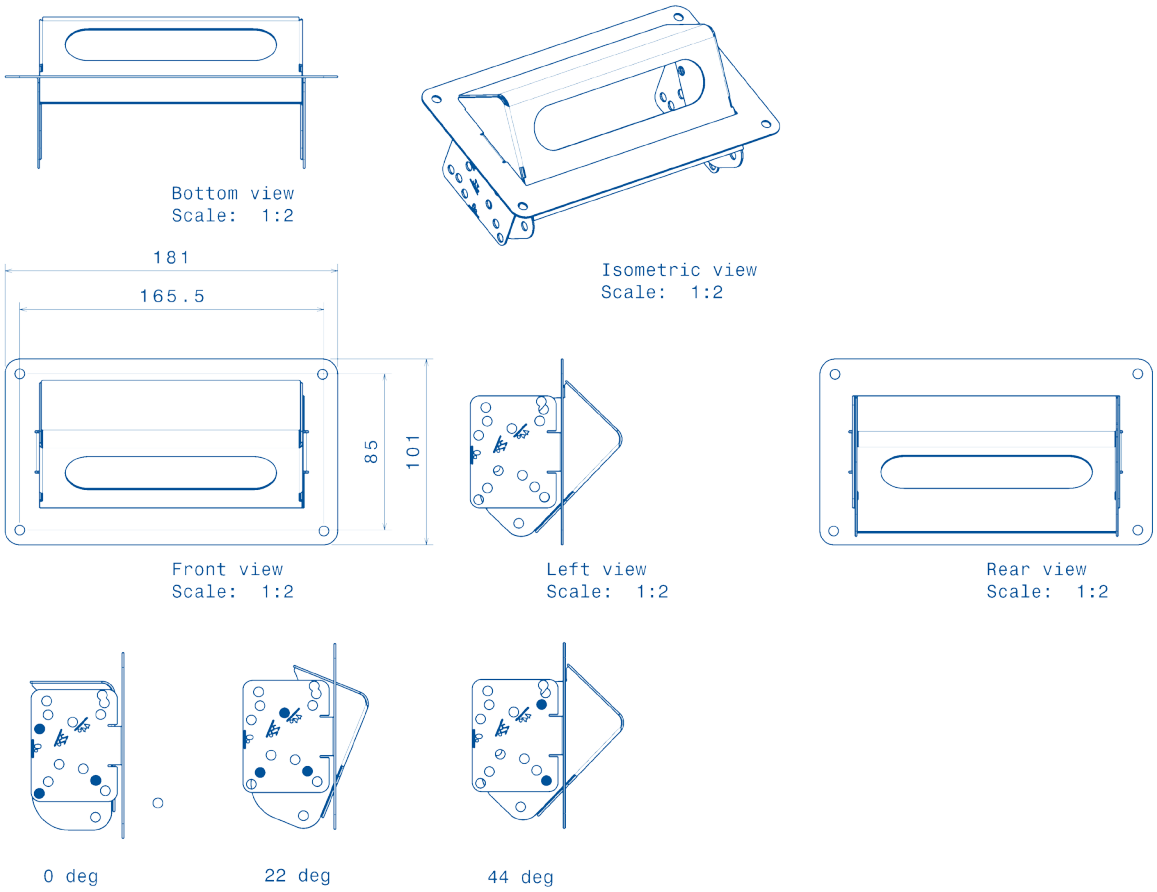
... information about passenger load, embarks and disembarks

THOREB's Automatic Passenger Counting System (APC) provides information about how many passengers board and alight at each stop, the amount of passengers at each journey and other useful values for traffic planners. By using stereo 3D-camera technology and state of the art image processing technology the counting accuracy is 98% even under uncontrolled and difficult conditions.

The passenger load can be related to its different stops and trips and be saved as log-files or sent to a central system in real-time. The integrity of the passengers is guaranteed as only information is saved from the cameras relating counting data – no individuals get identified.

By using THOREB's follow-up reporting tool the passenger load can be shown in real-time or in various reports. The internet application is available from any computer using an ordinary web-browser.

THOREB



APC Units

APC — 98% passenger counting accuracy
Black / white images

APC-PoE — Power over Ethernet (PoE) connector
99% passenger counting accuracy
Recording images in color on the unit itself or with a NAS attached

Complete Backoffice application

The purpose of the Reporting Tool is to be able to assess passenger counting data from vehicles and gather reports about the number of passengers in the public transportation. The reports might be about

- Specific observations of actual measurements in vehicle
- Estimations of passenger numbers if specific measurements are used to draw statistical conclusions. This is a method used when not all vehicles in service are equipped with APC equipment.

The Reporting Tool gathers passenger counting data from vehicles, compiled to counting data files, and combines with traffic information files, matches the data and inserts into a database. From the matched data the reports can be retrieved.

The Back Office Tool includes possibility to handle reports based on

- Vehicles
- Stops
- Lines
- Traffic contracts

THOREB Passagieranzahl pro Fahrzeug/Haltestelle POSTBUS

Hollabrunn 1 Fahrzeug

Tag	Fahrzeug	Linie	Variante	Haltestellenname	Ankunftzeit	Abfahrtzeit	Haltezeit	Einsteigen	Aussteigen
				BD16140					
				105					
04.07.	BD16140	2104	105	Mistelbach Bahnhof	06:09:18	06:10:35	00:01:18	0	0
04.07.	BD16140	2104	105	Ernstbrunn Hauptpl.	06:30:19	06:30:33	00:00:15	3	0
04.07.	BD16140	2104	105	Stockerau Bahnhof	06:55:54	06:56:55	00:01:02	5	3
04.07.	BD16140	2104	105	Tulln Franz-Josef-St	07:14:42	07:15:07	00:00:26	1	2
04.07.	BD16140	2104	105	Kapelln Hauptplatz	07:42:29	07:42:35	00:00:07	1	1
04.07.	BD16140	2104	105	Landhaus Klangturm	07:56:34	07:56:34	00:00:00	0	0
04.07.	BD16140	2104	105	Landhaus Nord	07:57:31	07:57:42	00:00:12	0	4
04.07.	BD16140	2104	105	Daniel-Gran-Straße	08:02:56	08:02:56	00:00:00	0	0
04.07.	BD16140	2104	105	St.Pölten Hbf	08:04:46	08:04:49	00:00:04	0	0
	BD16140					105	Variante Insgesamt	10	10
				104					
04.07.	BD16140	2104	104	Landhaus Nord	14:01:58	14:04:08	00:02:11	0	0
04.07.	BD16140	2104	104	Landhaus Klangturm	14:05:18	14:06:05	00:00:48	0	0
04.07.	BD16140	2104	104	Michelhausen Bahnhof	14:34:13	14:34:13	00:00:00	0	0
04.07.	BD16140	2104	104	Tullnerfeld Bahnhof	14:38:22	14:38:22	00:00:00	0	0
04.07.	BD16140	2104	104	Tulln Franz-Josef-St	14:47:14	14:47:14	00:00:00	0	0
04.07.	BD16140	2104	104	Korneuburg Bahnhof	15:05:04	15:05:07	00:00:04	0	0
04.07.	BD16140	2104	104	Stockerau Bahnhof	15:05:08	15:05:15	00:00:08	0	0
04.07.	BD16140	2104	104	Hollabrunn Bahnhof	15:05:37	15:05:37	00:00:00	0	0
04.07.	BD16140	2104	104	Thomasl Ort	15:36:19	15:36:19	00:00:00	0	0
04.07.	BD16140	2104	104	Kleinsitzendorf Ort	15:37:50	15:37:50	00:00:00	0	0
04.07.	BD16140	2104	104	Mistelbach Bahnhof	15:53:02	15:53:22	00:00:21	0	0
04.07.	BD16140	2104	104	Mistelbach HTL	15:54:27	15:54:27	00:00:00	0	0
	BD16140					104	Variante Insgesamt	0	0

The Reporting Tool, which is a web interface for retrieving of APC result summaries with various search criteria. The Reporting Tool has different pre-defined search criteria and the results from such queries are presented in pre-defined output formats. The combination of search criteria and output format becomes the Report.

Examples of reports:

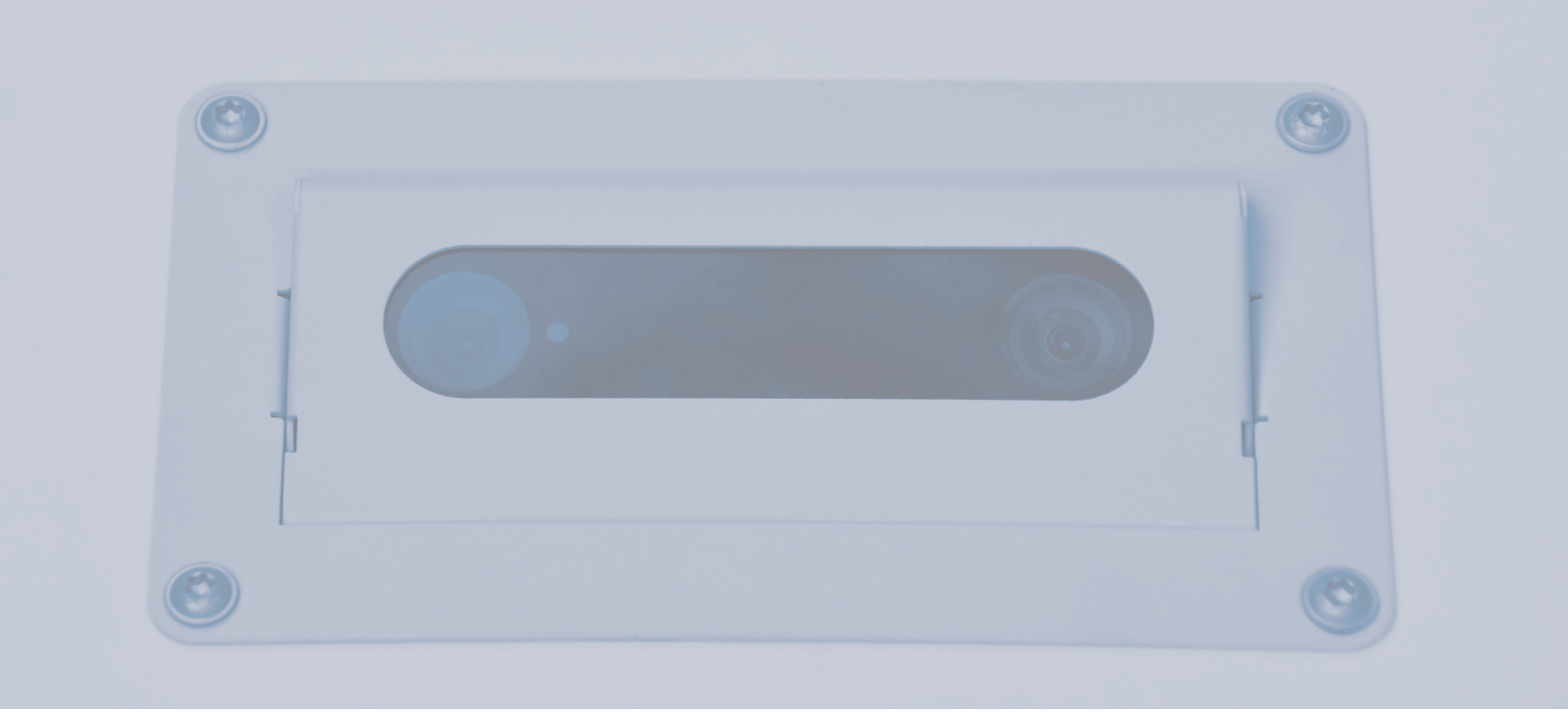
- Embark and disembark
- Embark and disembark – table
- Lines and journeys
- Passenger counting by bus and bus stop
- Passenger counting by bus and date
- Stops summary
- Stops detailed
- Vehicles
- Raw data

The Reporting Tool is also able to assess maintenance reports, the health status messages is included in the APC data file.

The THOREB Backoffice system provides diagnostic data inserted in the APC file. The system present a list of possible health status messages for each counting sensor and divide them into 3 groups:

1. Status OK = counting fully functioning
2. Warning = counting might be impaired, but shall be considered fully function until further notice
3. Not OK = counting is void or invalid due to technical problems

The THOREB tool is able to tag counting data at each stop with the system health statuses as described above. Any counting data is possible to search by health status.



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Advantages

- **Highest passenger counting accuracy on the market**
- **High counting precision even if it's crowded**
- **Vandalism proof**
- **Plug & Play installation**
- **Bi-directional counting**
- **Statistics and automated reports in PDF or Excel format via a follow-up reporting tool**
- **One sensor per door**
- **Flexible mounting area**

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