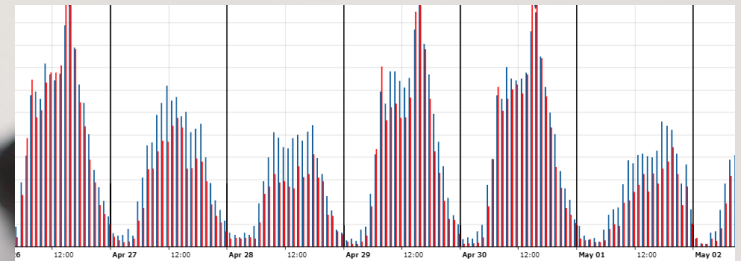
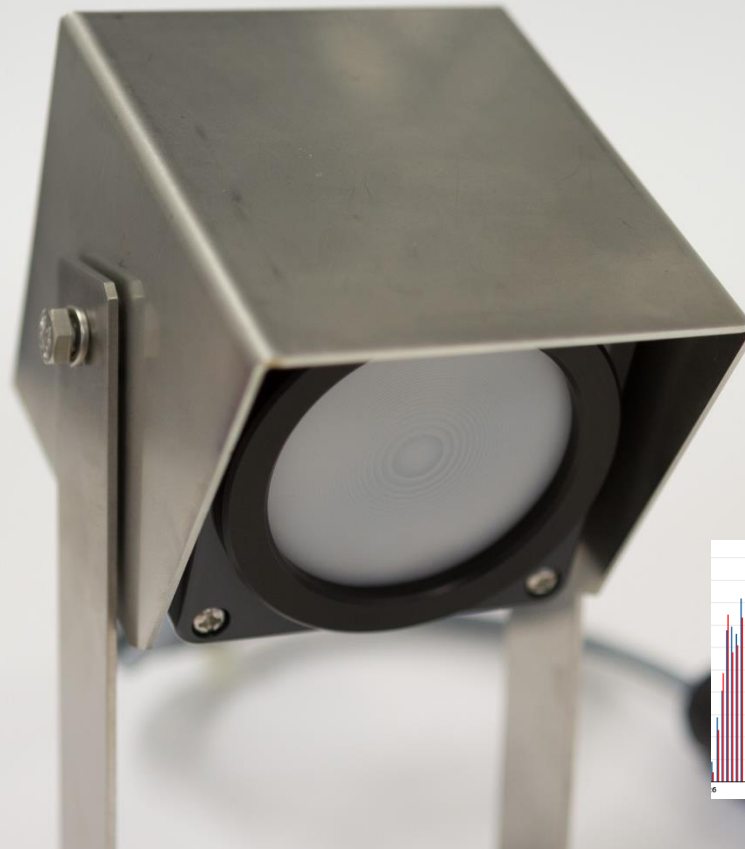


Traffic Data Collection

Cloud-integrated and solar-powered



Agenda

- About Us
- BS2: ADEC IoT Gateway
- BS2: Mounting & Installation
- ADEC Cloud Access via Browser
- TDC1-PIR: 5-Channel PIR Traffic Detector
- TDC1-PIR: Installation & Commissioning

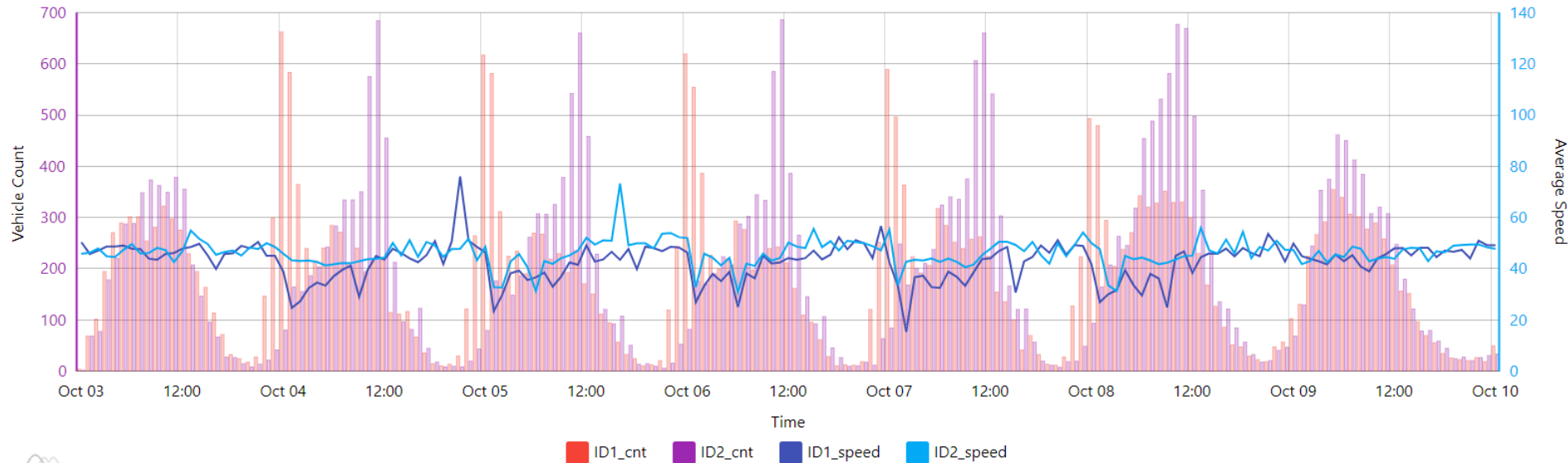
About Us



- ADEC founded in 2009
- ADEC designs and manufacturers
 - Single-lane traffic detectors
 - IoT-Gateways
 - Cloud-based queue zone management
- ADEC is
 - Privately held, owner-managed
 - ISO 9001 certified since 2010

ADEC Traffic-Data Collection

Sample web-browser view of volume and speed on 2 lanes



Last chart update: Sun Oct 10 2021 00:54:30 GMT-0400, Aggregation interval: 1 Hours

- Cloud integrated
- Solar powered

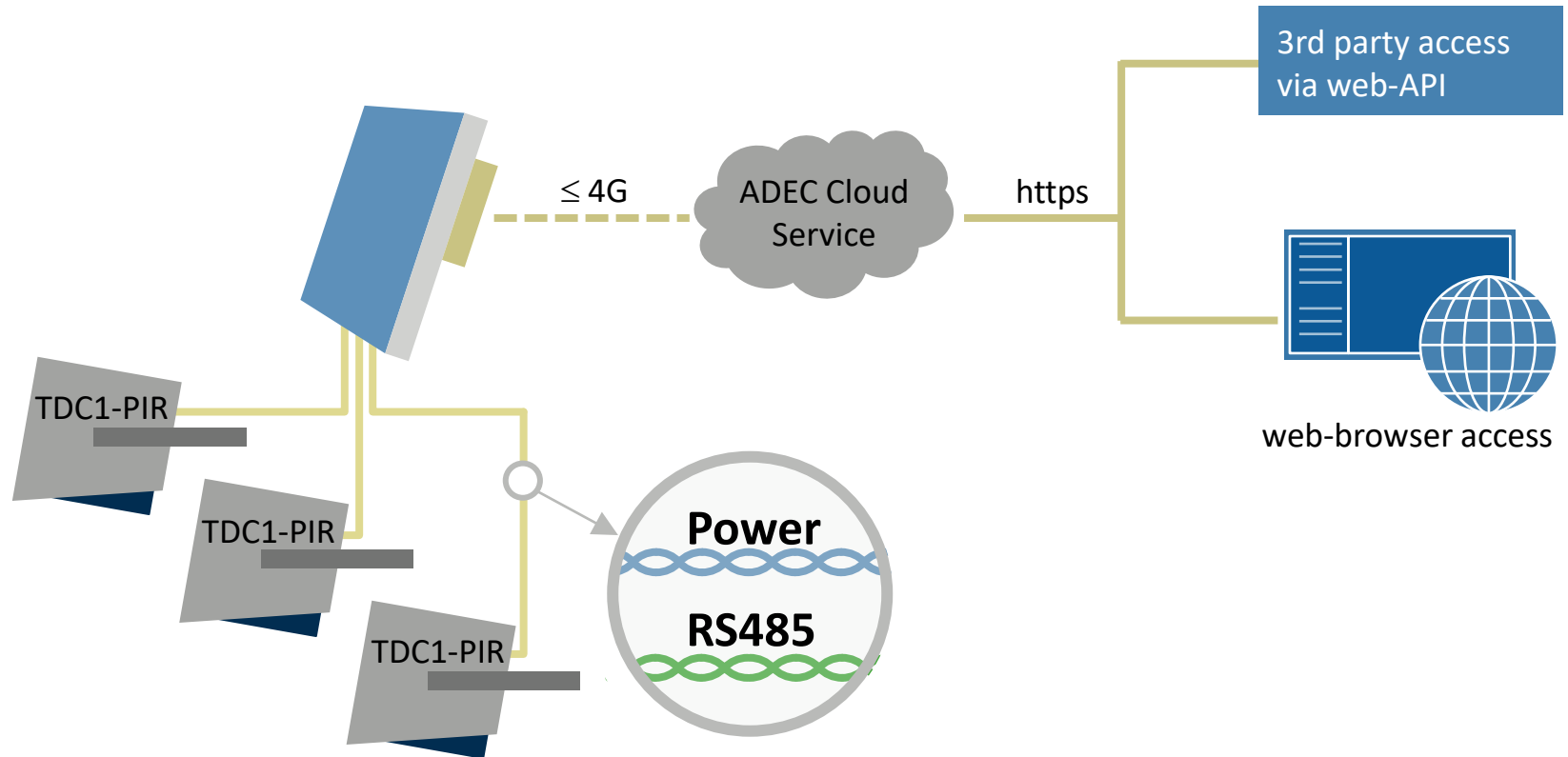
Key Features

ADEC traffic-data collection

- Autonomous
- Cloud integrated via built-in modem
- Low cost operation (Western Europe), other areas check GSM data contract charge (typically <100MB per month per Base Station)
- Leverages low-power TDC1-PIR

Working Principle

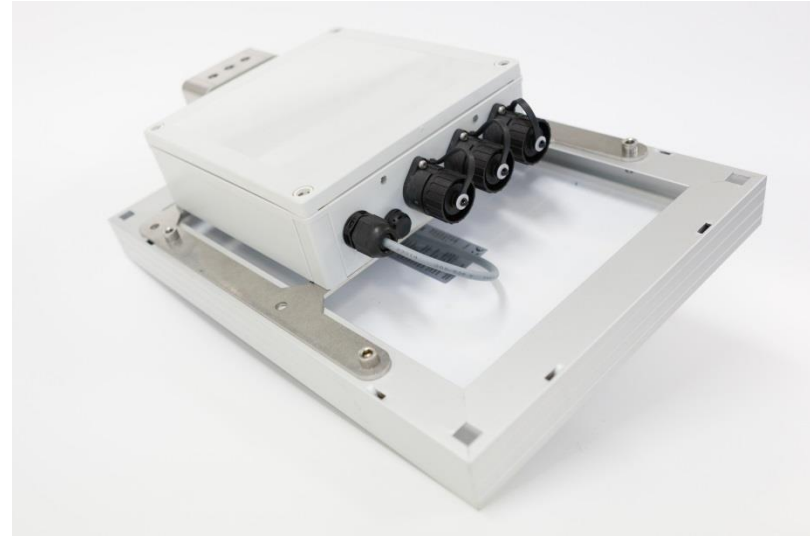
Traffic data collection – solution overview



BS2-TS

Product Details

- Traffic Data Collection
- Manages up to 3 TDC1 detectors
- Forwards traffic data to ADEC cloud



BS2-TS Technical Specification

Electrical

- Capacity: 10Ah*
- Solar Panel: 10W/30W Polycrystalline
- Communication: RS485, half-duplex
- Mobile Network: 2G-4G

*for up to 5 days autonomous operation with 3 TDC1s

BS2-TS Technical Specification

Mechanical

- Dim. (10 W): 100×260×360mm (4×10.2×14.2")
30 W: 100×360×560mm (4×14.2×22.1")
- Housing: IP 64 weather-proof, plastic
- Weight: app. 3.4kg (7.5lbs) incl. panel & bracket (30W: 5.2 kg / 11.5 lbs)

Environment

- Operating Temp. -20° to +55°C (-4° to 130°F)
- Humidity: max. 95% (non condensing)

Typical Applications

ADEC traffic-data collection



- Temporary or permanent traffic data collection
- For both urbane and inter-urbane applications
- Feeding traffic models using real time data
- Single vehicle details available through web browser
- Data storage virtually unlimited using the ADEC cloud service

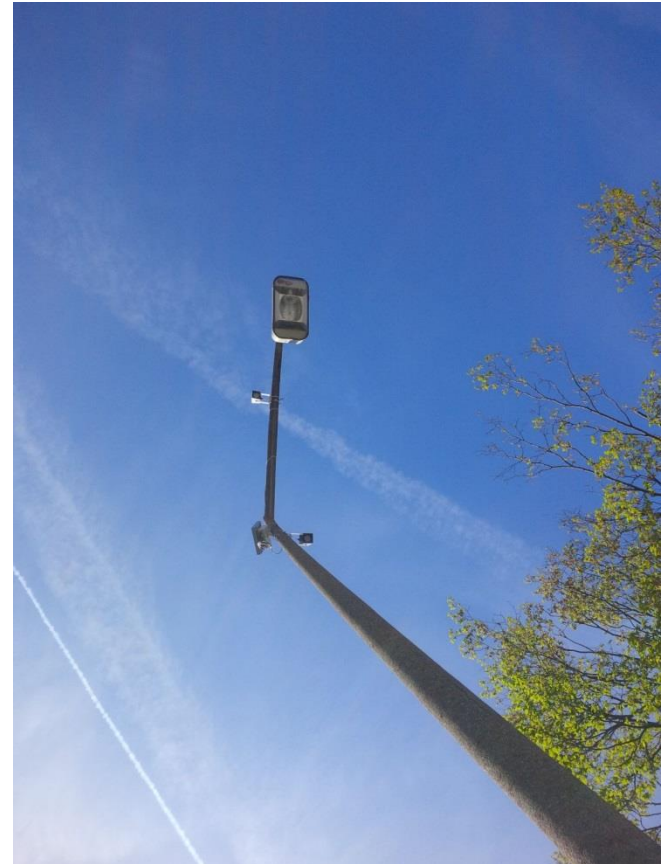
Installation

Temporary traffic-data collection



Installation

Temporary traffic-data collection



Installation

Temporary traffic-data collection



Device Overview (Map)

Cloud access and integration, web-browser view

ADEC Technologies

DevicesApplicationsMapLogs

service.stch@swarco.com

>>Map

Filter

clear

UID 1b	Connected 1b	Battery 1b	Name 1b	Application 1b	Location
0xfffb5e	Offline	70%	42 Standort 5.3 3072-001a	Det. 1.273	
0xfffb4a	Offline	100%	Test	double click to add application name...	
0xfffb44	Online	100%	2 Standort 1.1 3053-003b	Det. 2.283	
0xfffb3b	Online	100%	22 Standort 2.10 3322-010b	Det. 2.273	
0xfffb3e	Online	100%	4 Standort 1.1 3053-003d	Det. 2.303	
0xfffb53	Online	100%	5 Standort 1.1 3053-003e	Det. 2.313	
0xfffb4f	Online	100%	3 Standort 1.1 3053-003c	Det. 2.293	
0xfffb4e	-	0%	40 Standort 5.1 3000-034b	Det. 1.283	
0xfffb56	Offline	70%	7 Standort 2.1a 3322-004a	Det. 1.273	
0xfffb24	Offline	19%	19 Standort 2.6 3302-006b	Det. 1.283	
0xfffb25	-	0%	double click to add name...	AU-202108132	
0xfffb50	Online	100%	1 Standort 1.1 3053-003a	Det. 2.273	
	Online		27 Standort 4.7 Det. 1.272	Det. 1.272	

alllowweakgoodZoom allMap styleDefault

MapSatellite

Keyboard shortcutsMap data ©2021Terms of Use

Device Overview (List)

Cloud access and integration, web-browser view


















ADEC Technologies Devices Applications Map Logs

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Gateway Devices

Filter ... clear Online Offline

☐ show integrations

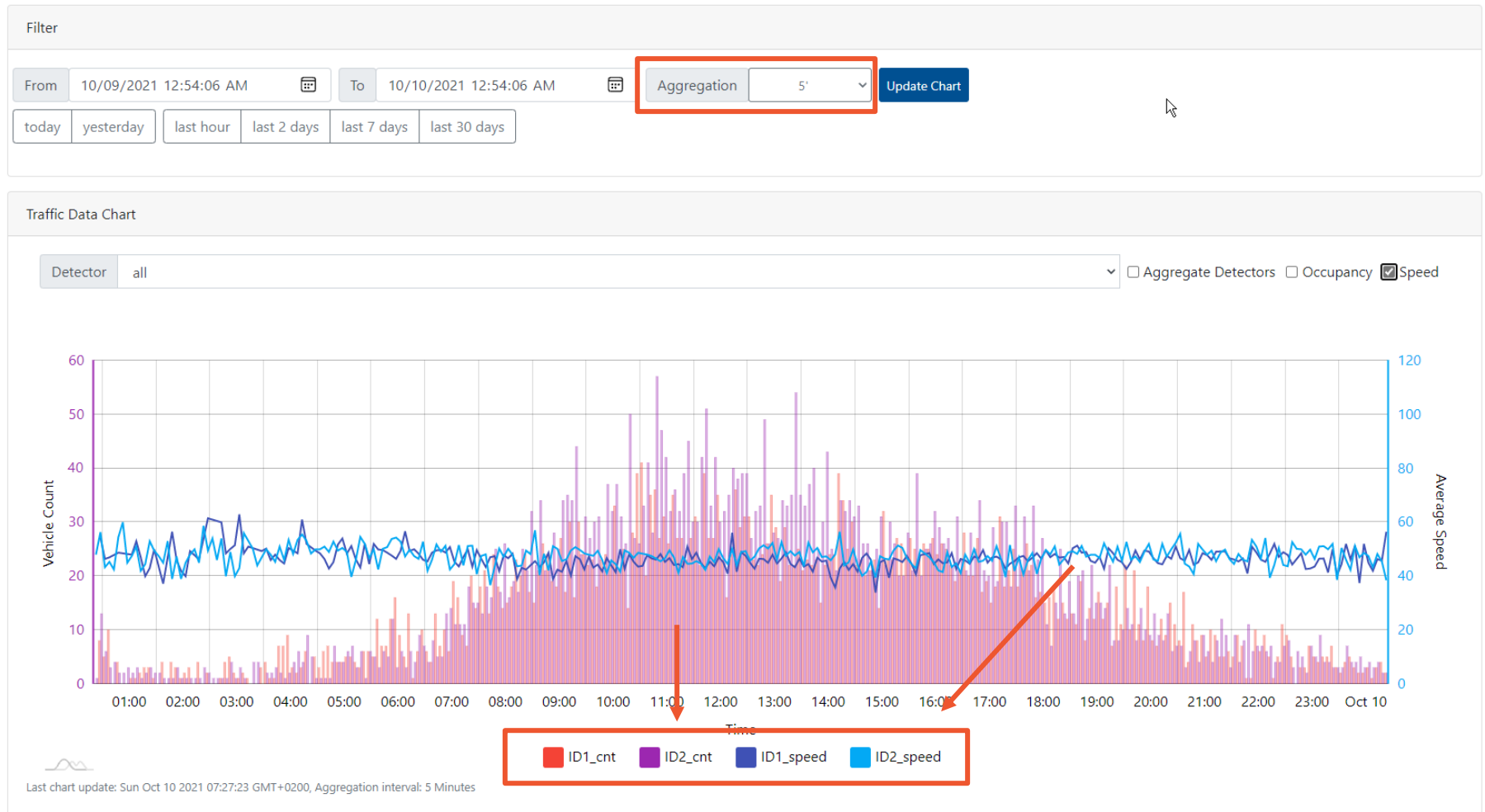
UID 1%	Connected 1%	Name 1%	Application 1%	Battery 1%	Signal 1%	Battery 1%	Detector 1%	Mode 1%	Last Heartbeat 1%	FW 1%
0xfffb5e	Offline	42 Standort 5.3 3072-001a	Det. 1.273	 70%	-	4988V	6.9V	SV	4 days	BS2-T-S 1V30 R004 CID0 BK4561
0xfffb4a	Offline	Test	double click to add application name...	 100%	-79dBm	5.6V	11.8V	SV	6 months	BS2-T-B 1V30 R000 CID0 BK4550
0xfffb44	Online	2 Standort 1.1 3053-003b	Det. 2.283	 100%	-65dBm	5.9V	7V	SV	47 seconds	BS2-T-B 1V30 R003 CID0 BK4610
0xfffb3b	Online	22 Standort 2.10 3322-010b	Det. 2.273	 100%	-51dBm	5.9V	6.8V	SV	48 seconds	BS2-T-W 1V30 R003 CID0 BK4609
0xfffb3e	Online	4 Standort 1.1 3053-003d	Det. 2.303	 100%	-65dBm	5.9V	6.8V	SV	47 seconds	BS2-T-B 1V30 R003 CID0 BK4610
0xfffb53	Online	5 Standort 1.1 3053-003e	Det. 2.313	 100%	-65dBm	5.8V	6.9V	SV	49 seconds	BS2-T-B 1V30 R003 CID0 BK4610
0xfffb4f	Online	3 Standort 1.1 3053-003c	Det. 2.293	 100%	-59dBm	5.8V	6.9V	SV	46 seconds	BS2-T-B 1V30 R003 CID0 BK4610
0xfffb4e	-	40 Standort 5.1 3000-034b	Det. 1.283	 0%	-	0V	0V	SV	n/a	n/a
0xfffb56	Offline	7 Standort 2.1a 3302-004a	Det. 1.273	 70%	-	4970V	6.9V	SV	4 days	BS2-T-S 1V20 R004 CID0 BK4561
0xfffb24	Offline	19 Standort 2.6 3302-006b	Det. 1.283	 19%	-69dBm	5.2V	0.8V	SV	3 days	BS2-T-S 1V30 R003 CID0 BK4610
0xfffb25	-	double click to add name...	AU-202108132	 0%	-	0V	0V	SV	n/a	n/a
0xfffb50	Online	1 Standort 1.1 3053-003a	Det. 2.273	 100%	-75dBm	5.7V	6.9V	SV	47 seconds	BS2-T-B 1V30 R003 CID0 BK4610
0xfffb66	Online	37 Standort 4.7 Det. 1.273	Det. 1.273	 95%	-51dBm	5.2V	6.8V	SV	48 seconds	BS2-T-S 1V30 R003 CID0 BK4610
0xfffb23	Offline	45 Standort 5.4 3072-003	Det. 1.273	 10%	-71dBm	5.1V	6.8V	SV	3 days	BS2-T-S 1V30 R003 CID0 BK4610
0xfffb5c	Offline	35 Standort 4.3 3063-008c	Det. 1.293	 18%	-71dBm	4V	0.8V	SV	2 weeks	BS2-T-S 1V30 R003 CID0 BK4610
0xfffb3f	-	50 Standort 5.5a 2000-030c	Det. 2.283	 100%	-	0V	6.9V	SV	n/a	BS2-T-B 1V20 R004 CID0 BK4561
0xfffb28	Offline	47 Standort 5.4 3072-003c	Det. 1.293	 14%	-69dBm	5.1V	0.9V	SV	3 days	BS2-T-S 1V30 R003 CID0 BK4610

Version 0.8.7928.17282, © 2021

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Traffic Chart

Cloud access and integration, web-browser view



Traffic Data Export

Cloud access and integration, CSV data export

AutoSave

Off

Kanton St. Gallen_VZ184, Kriessern Zoll_20211010-044303.csv

Search

FileHomeInsertDrawPage LayoutFormulasDataReviewViewHelp

Z9

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
5	To:	2021-10-10T05:43:03Z												
6	Interval	-1 Original												
7														
8	Device ID:	0xffffb6a												
9	Entity type:	gatewayBs2												
10	Device:	BS2-T-S												
11	FW info:	BS2-T-S 1\ 10mE-D16B-LEDC												
12	Name:	VZ184	Kriessern Zoll											
13	Applicatio	Kanton St. Gallen												
14	CIK:	baaea0a5dcd8485bbc7ab6107ec86477b05201f6												
15	Modem in-		IMEI:	-										
16	Coordinat	47.358018683864735,9.612216921611534												
17	Timezone	Europe/Zurich												
18														
19	Nr. of nod	2												
20														
21	Single-vehicle data													
22	=====													
23	Date	Time	Detector	Detector	Speed[km	Length[m	Occupanc	Gap[s]	Class	Lifetime counter[#]				
24	10.10.2021	7:40:48		1 A->CH	54	3.7	0.25	85.76	1	22548				
25	10.10.2021	7:39:22		1 A->CH	46	4.1	0.32	114.38	1	22547				
26	10.10.2021	7:38:57		2 CH->A	53	3.7	0.25	77.63	1	28127				
27	10.10.2021	7:37:39		2 CH->A	54	3.9	0.26	85.47	1	28126				
28	10.10.2021	7:37:28		1 A->CH	46	3.5	0.27	25.88	1	22546				
29	10.10.2021	7:37:01		1 A->CH	39	4.3	0.4	1.62	1	22545				
30	10.10.2021	7:36:59		1 A->CH	44	4	0.33	16.3	1	22544				

Detector Settings

Via web-browser

- Configure detector settings via browser

ADEC Technologies

» Attached Nodes

Traffic data configuration

Select device

TDC1

Select operating mode

single-vehicle

Select datafields

☒ V ☒ L ☒ O ☒ G ☒ CL ☒ LTC ☒ DS

ADEC Technologies

» Attached Nodes

Traffic data configuration

Select device

TDC1

Select operating mode

single-vehicle

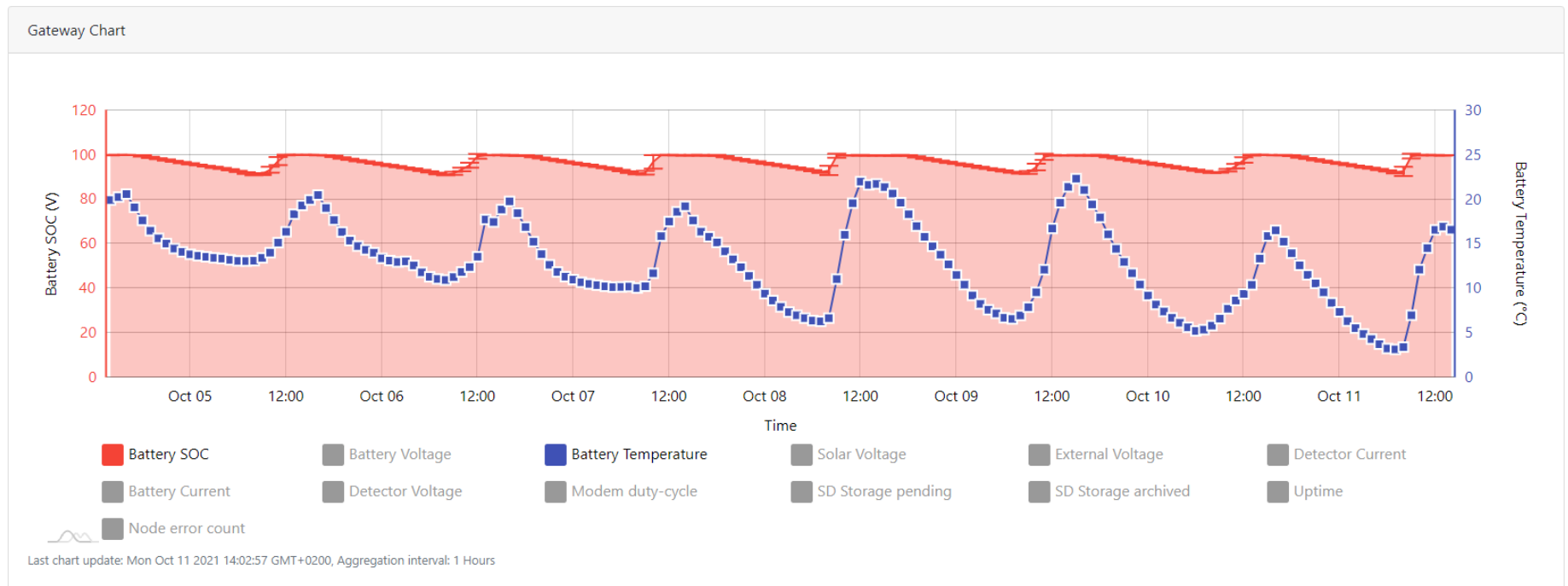
Select operating mode

single-vehicle

aggregated intervals

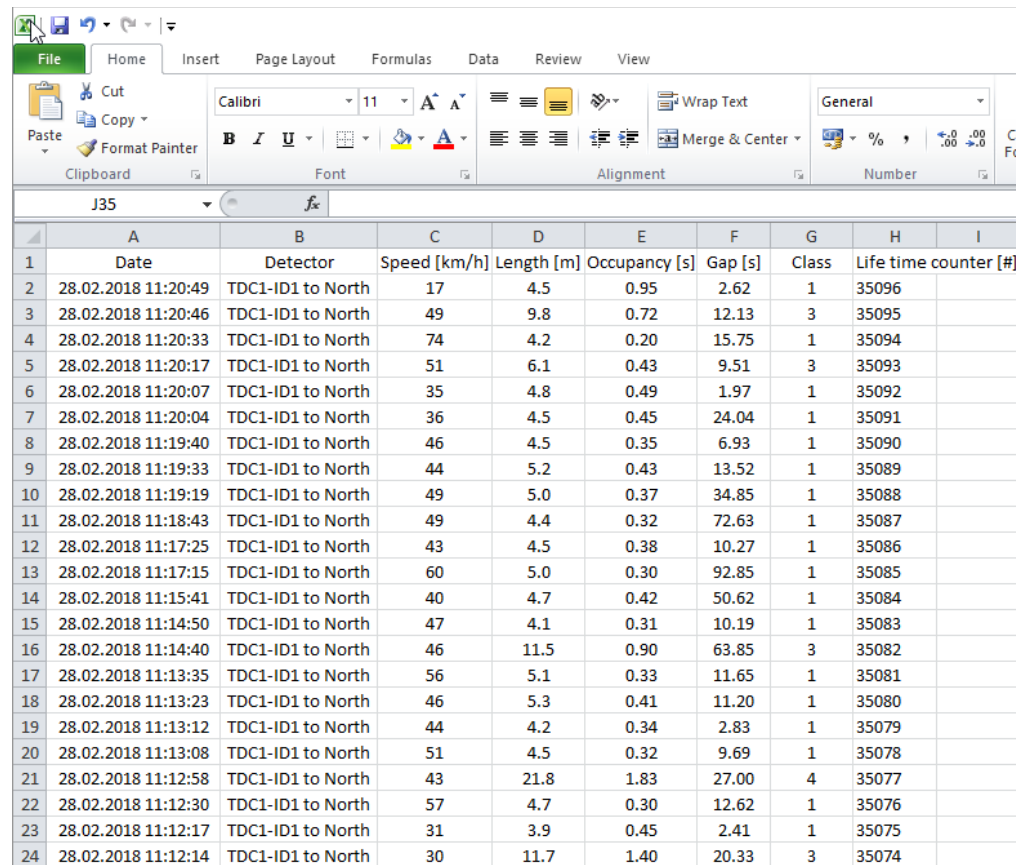
Base Station / IoT Gateway Status

Battery charge level and temperature log



Cloud Data Export

Easily exports into CSV files



	A	B	C	D	E	F	G	H	I
1	Date	Detector	Speed [km/h]	Length [m]	Occupancy [s]	Gap [s]	Class	Life time counter [#]	
2	28.02.2018 11:20:49	TDC1-ID1 to North	17	4.5	0.95	2.62	1	35096	
3	28.02.2018 11:20:46	TDC1-ID1 to North	49	9.8	0.72	12.13	3	35095	
4	28.02.2018 11:20:33	TDC1-ID1 to North	74	4.2	0.20	15.75	1	35094	
5	28.02.2018 11:20:17	TDC1-ID1 to North	51	6.1	0.43	9.51	3	35093	
6	28.02.2018 11:20:07	TDC1-ID1 to North	35	4.8	0.49	1.97	1	35092	
7	28.02.2018 11:20:04	TDC1-ID1 to North	36	4.5	0.45	24.04	1	35091	
8	28.02.2018 11:19:40	TDC1-ID1 to North	46	4.5	0.35	6.93	1	35090	
9	28.02.2018 11:19:33	TDC1-ID1 to North	44	5.2	0.43	13.52	1	35089	
10	28.02.2018 11:19:19	TDC1-ID1 to North	49	5.0	0.37	34.85	1	35088	
11	28.02.2018 11:18:43	TDC1-ID1 to North	49	4.4	0.32	72.63	1	35087	
12	28.02.2018 11:17:25	TDC1-ID1 to North	43	4.5	0.38	10.27	1	35086	
13	28.02.2018 11:17:15	TDC1-ID1 to North	60	5.0	0.30	92.85	1	35085	
14	28.02.2018 11:15:41	TDC1-ID1 to North	40	4.7	0.42	50.62	1	35084	
15	28.02.2018 11:14:50	TDC1-ID1 to North	47	4.1	0.31	10.19	1	35083	
16	28.02.2018 11:14:40	TDC1-ID1 to North	46	11.5	0.90	63.85	3	35082	
17	28.02.2018 11:13:35	TDC1-ID1 to North	56	5.1	0.33	11.65	1	35081	
18	28.02.2018 11:13:23	TDC1-ID1 to North	46	5.3	0.41	11.20	1	35080	
19	28.02.2018 11:13:12	TDC1-ID1 to North	44	4.2	0.34	2.83	1	35079	
20	28.02.2018 11:13:08	TDC1-ID1 to North	51	4.5	0.32	9.69	1	35078	
21	28.02.2018 11:12:58	TDC1-ID1 to North	43	21.8	1.83	27.00	4	35077	
22	28.02.2018 11:12:30	TDC1-ID1 to North	57	4.7	0.30	12.62	1	35076	
23	28.02.2018 11:12:17	TDC1-ID1 to North	31	3.9	0.45	2.41	1	35075	
24	28.02.2018 11:12:14	TDC1-ID1 to North	30	11.7	1.40	20.33	3	35074	

TDC1 Detector for ITS Applications

Highest performance at minimal power consumption

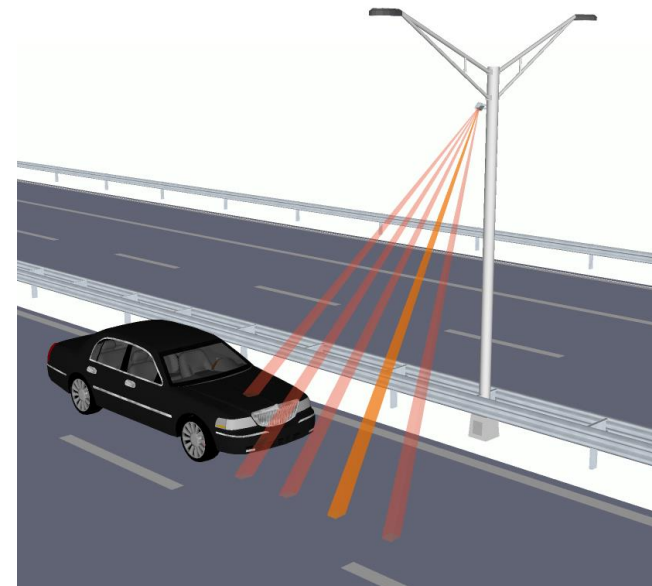
Preferred choice for:

- Counting
- Speed
- Vehicle length
- Solar or battery powered installations



TDC1 Detector for ITS Applications

- Multi-Channel Passive-Infrared Detector
 - Car breaks sequentially through detection zones
 - Speed, length & occupancy calculated through delays and strengths of signals



TDC1 Detector for ITS Applications

- Acquires speed and length of each vehicle
- Allows custom length based classification
- High accuracy:
 - Individual vehicle speed $\pm 5\%$ / ± 5 km/h
 - Counting: $\pm 3\%$
- Ultra-low power consumption <60 mW

TDC1 Detector for ITS Applications

- Vehicle classification: by length
- Num. of vehicle classes: up to 3
- Wrong-way driver detection: yes
- Traffic jam/queue detection: yes
- Mounting: overhead,
side ($>45^\circ$)

TDC1 Vehicle Classes

Built-in classification bins 1, 3 and 4

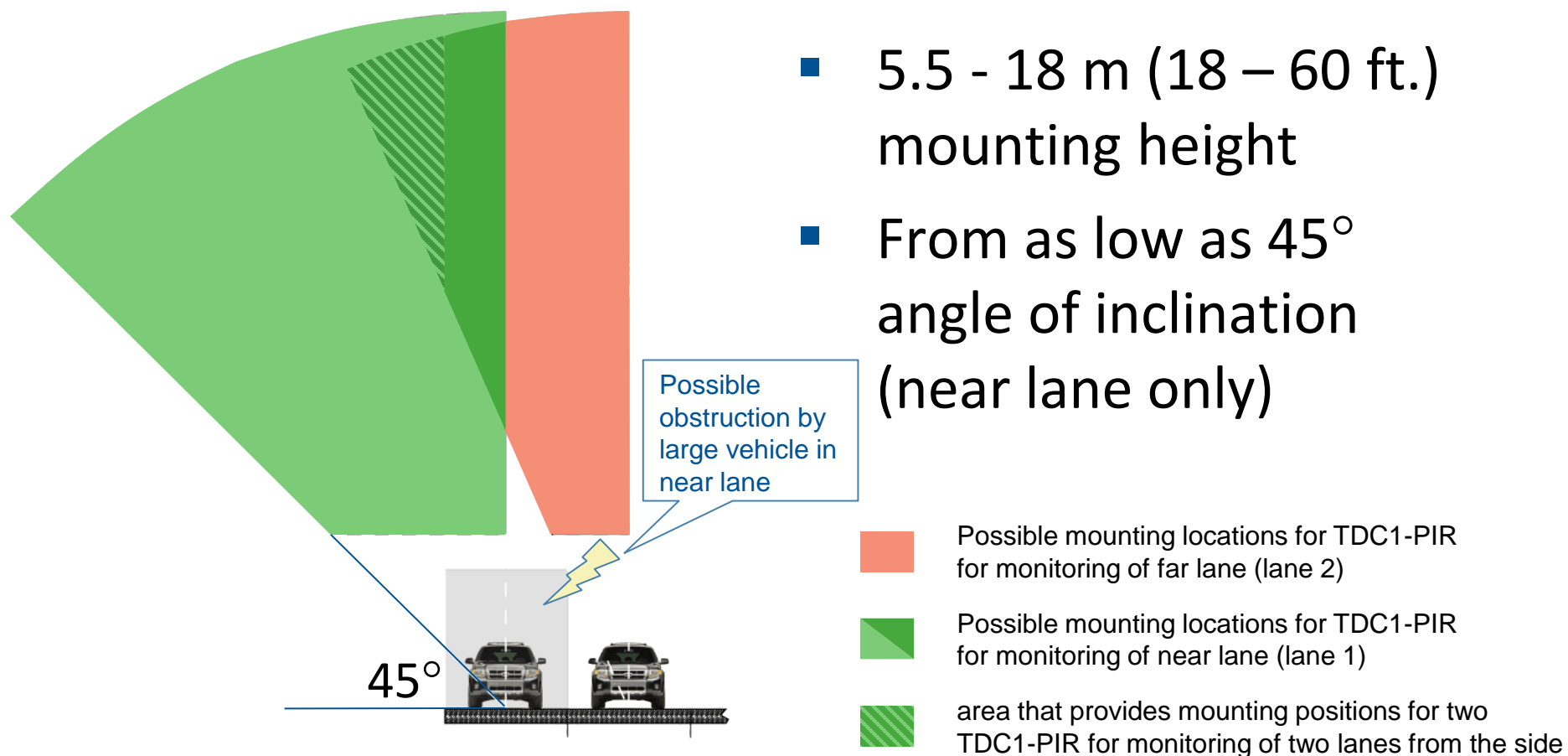
Class 1: length < 5.6 m (~18 ft.)

Class 3: $5.6 < \text{length} < 12.2$ m (18 – 40 ft.)

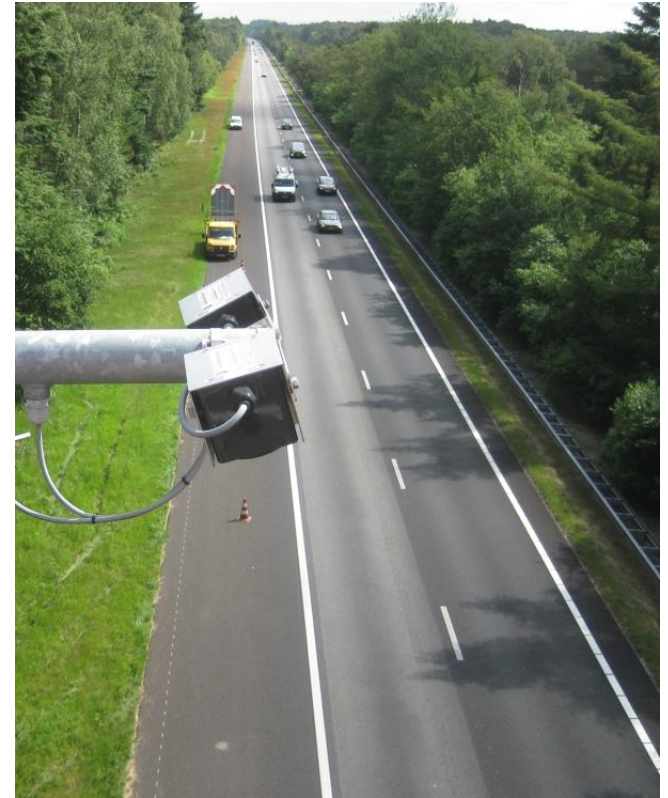
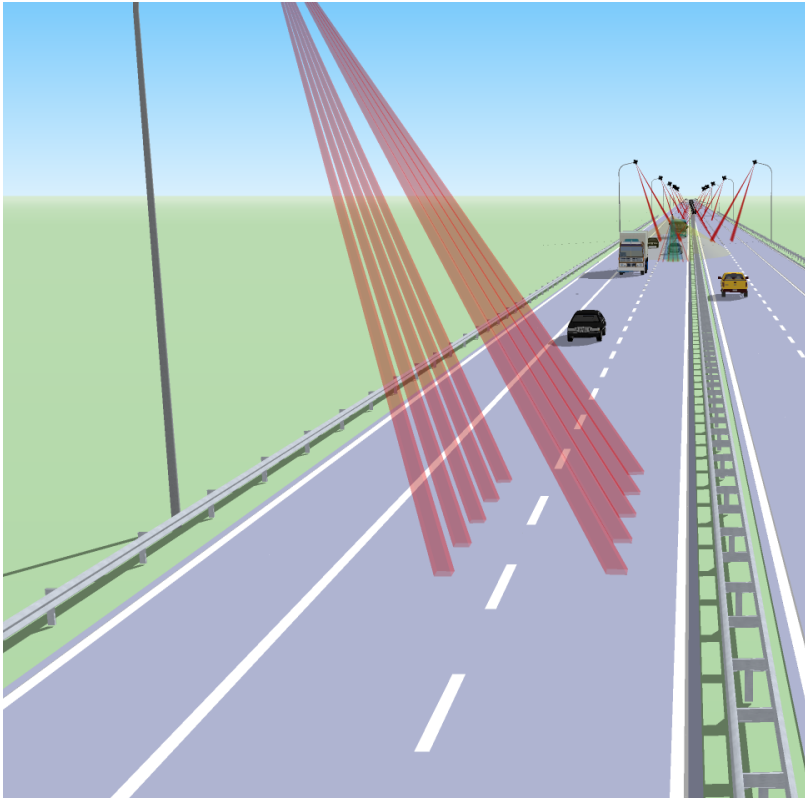
Class 4: length > 12.2 m (40 ft.)

Note: detector outputs vehicle length as well.
Threshold lengths can be changed. Class numbers are arbitrary

Wide Mounting Range TDC1



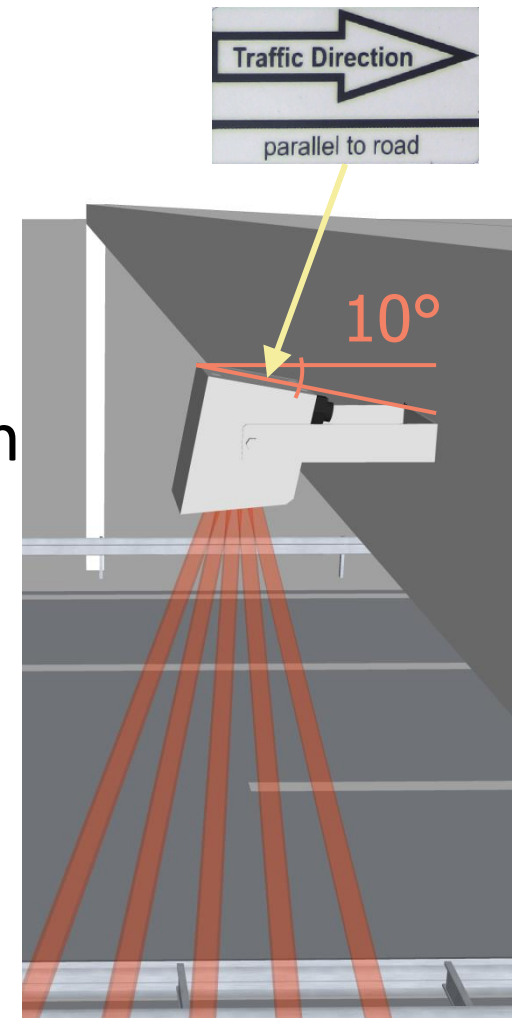
TDC1 Two-Lane Setup



TDC1 – Overhead Mount

Proper alignment is key for accurate traffic data

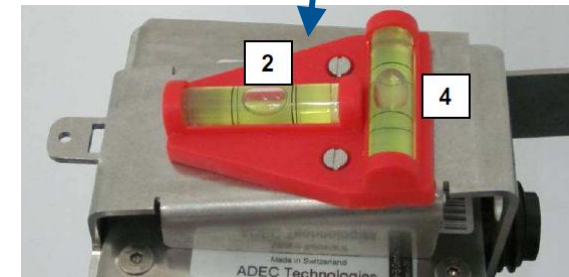
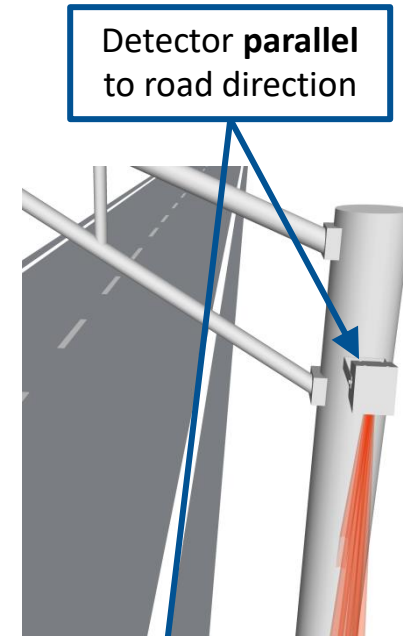
- Stable mounting point above middle of lane
- Verify alignment and traffic direction using label “parallel to road”
- Tilt the detector 10° to the lane
 - Accessory TDC-AH with build-in level
- View of the detector onto the lane is not obstructed



TDC1 – Side-Mount

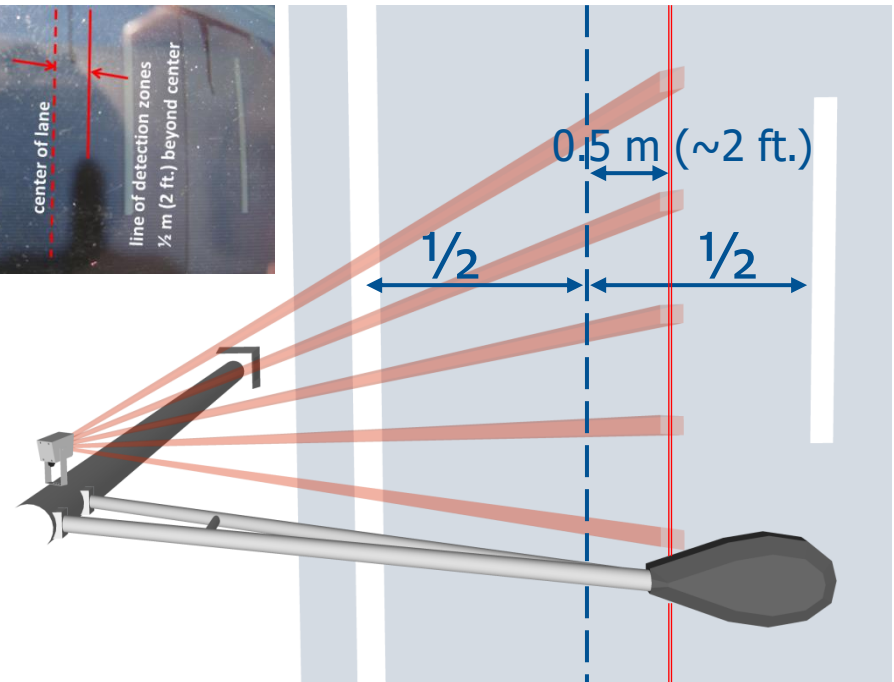
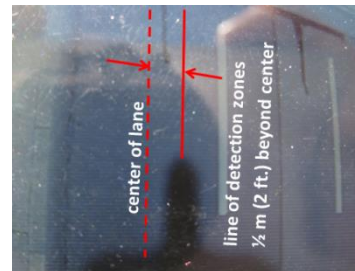
Follow when mounting on street light or pole

- Mount detector on pole on side of road
- Verify “traffic direction” using label
- Align detector to lane using "parallel to road" – line on label
- Lift front of detector until top of housing is 10° to the road surface, for roads with no slope, the bubble level must be precisely levelled





TDC1 – Side-Mount

- Turn the detector until it aims about 0.5 m (2 ft.) beyond the middle of the lane
- Verify the detector is still aligned in direction of the lane: Vehicles must pass through all detection zones!



TDC1 Commissioning

- Commissioning via Internet browser

ADEC Technologies [Devices](#) [Applications](#) [Map](#) [Logs](#) vip-sg@bluewin.ch  

>>

0xffffb6a - Configuration

Attached Nodes

Add

ID	Name	Height	Offset	
1	A->CH	95 dm ✓	1 dm ✓	
<input type="text" value="2"/>	<input type="text" value="CH->A"/>	<input type="text" value="95"/> dm	<input type="text" value="60"/> dm	<input checked="" type="checkbox"/> <input type="checkbox"/>

Last update: Sun Oct 10 2021 07:49:04 GMT+0200

Refresh

What is needed?

1-2-3 Ready to collect and review traffic data!

- BS2-T(S) base station
- Up to 3 TDC1-PIR per base station
- GSM SIM card with data contract
- ADECLOUD account storage/service or direct upload to client server possible

Thank you!

If you have any questions please contact us at:

- sales@adec-technologies.ch
- Phone +41-55-214-2400
- www.adec-technologies.ch