Traffic Management

Using ADEC TDC Traffic Detectors

Agenda

- About Us
- Traffic Management using TDC3
- Features of the TDC3 Traffic Detectors
- TDC3 Classification Capabilities
- Planning the Installation, Mounting
- Wiring
- References

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 9000 certified since 2010

Reasons For Measuring Traffic (1/2)

Increased operational performance on inter-urban arteries

- Traffic management substantially increases roadway capacity
  - Prevents / delays stop-go-traffic when traffic volume increases
- Traffic detectors are input and thus key component for any traffic management solution

Reasons For Measuring Traffic (2/2)

Valuable information about road usage

- Statistical information about road usage
  - For effectively allocating road construction and repair funds
  - For up-to-date traffic modeling

Traffic Management System

What components does a traffic management system consist of?

- Network of evenly distributed measurement points along highways and on/off ramps (“sensor network”)
- Variable message signs (“VMS”) at key locations
- Traffic management center (“TMC”) with algorithms to determine speed-limits and routing information for each key location

How does Traffic Management work?

Adding traffic management to highways yields the highest return

- Controls flow of traffic by
  - measuring traffic volume and speed via sensor network in real-time
  - calculating optimized speed limits to prevent, or at least delay, capacity-killing stop & go traffic when volume rises
  - updating speed limits or suggested routes to motorists via variable message signs

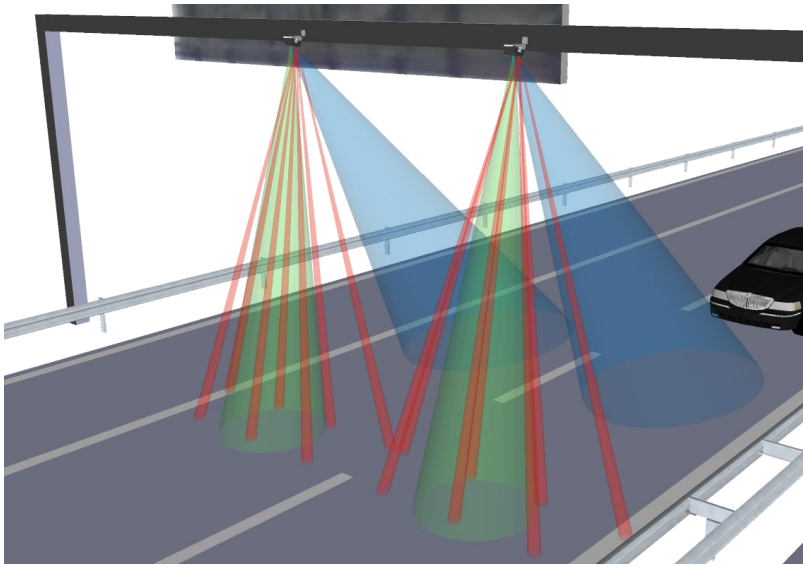
Traffic Detectors

For traffic management, inter-urban sensor network

- TDC3 means three sensors in one device
  - Mounted above the center of the lane
  - For each vehicle: Speed, length, occupancy & time-gap
  - Vehicle class, such as
    - Car, truck, van, bus etc.
  - Serial interface for data transmission

Three Sensing Technologies

Working together for superior detection performance

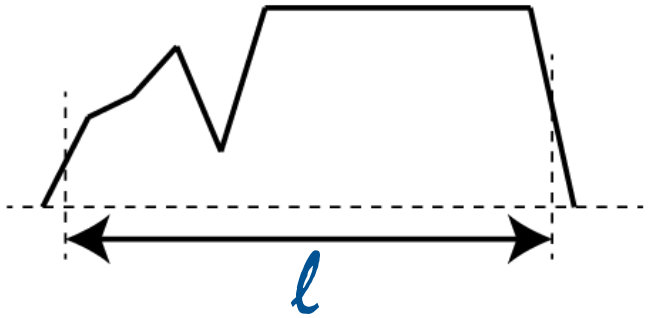


- Doppler radar
  - Vehicle speed
- Ultrasound
  - Vehicle height profile
- PIR motion sensor curtain
  - Vehicle width & lane position
- Combined: speed, length, vehicle class

Vehicle Classification

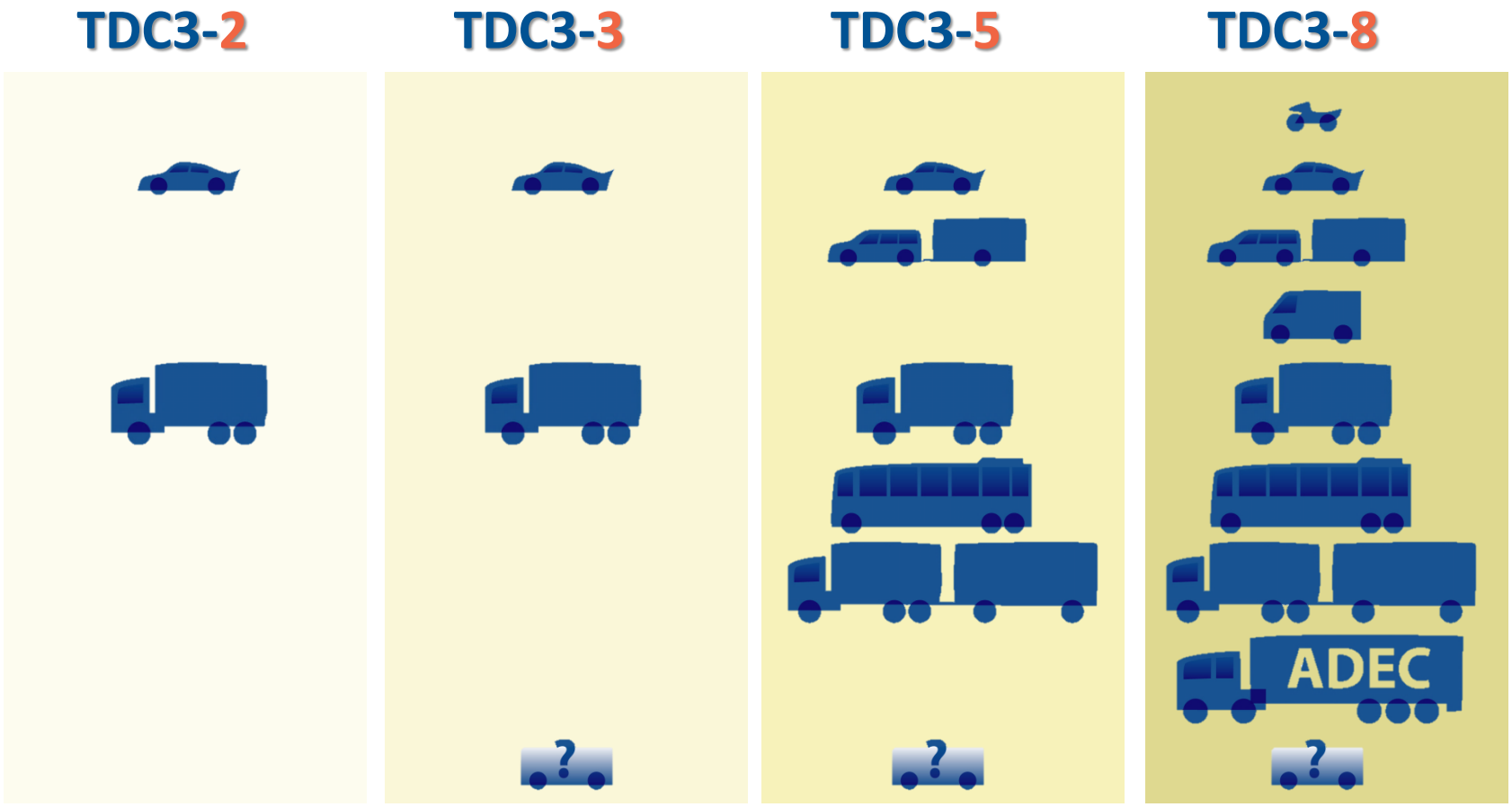
Assigns each vehicle to standardized vehicle class

- Common classification into 2, 2+1, 5+1 or 8+1 vehicle classes (+1 for “unknown”)
  - Based on standardized German TLS classes
  - Custom classification available for classes that have distinguishable height profile

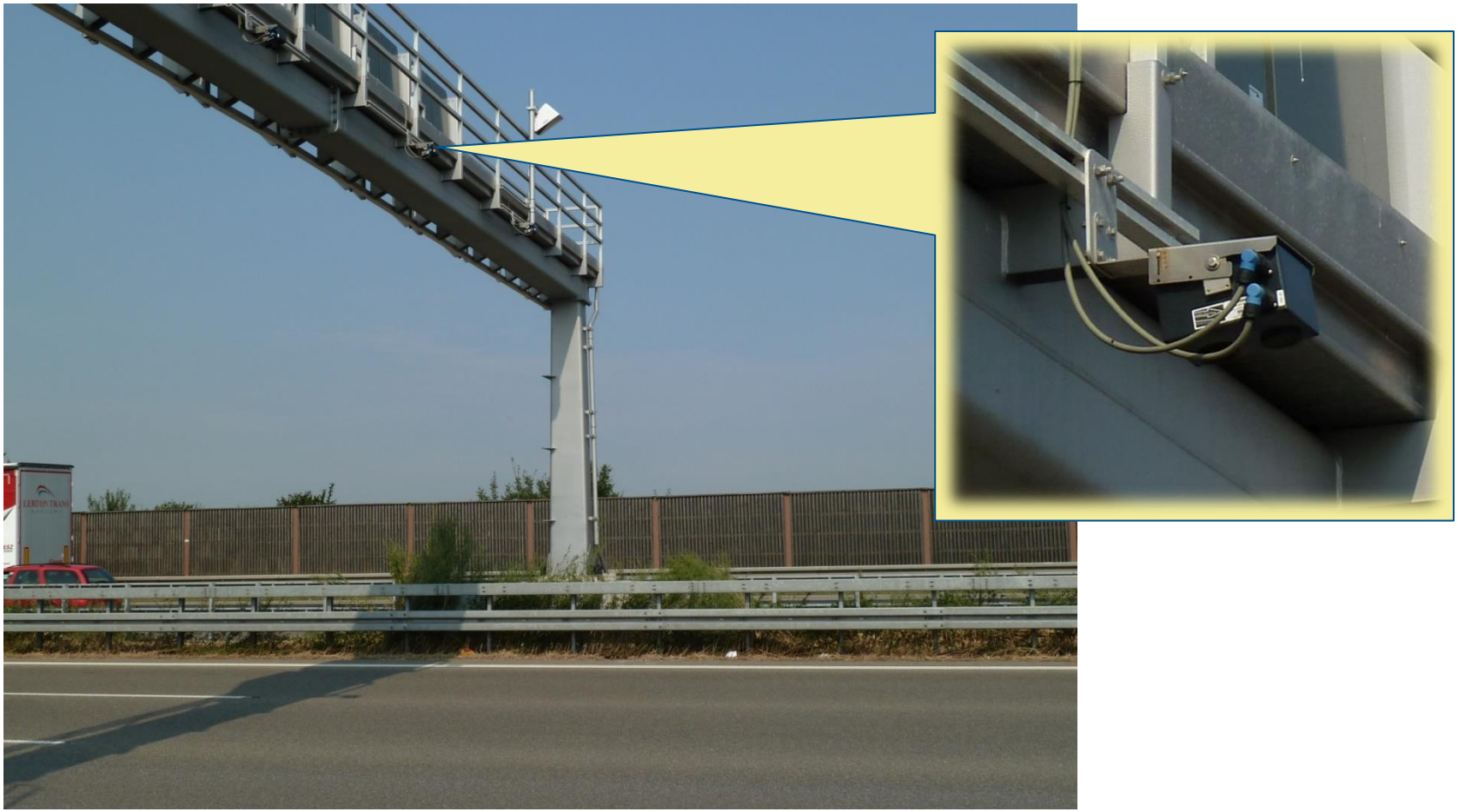


Model Designation for Classification

Every vehicle is assigned to any of the available vehicle classes



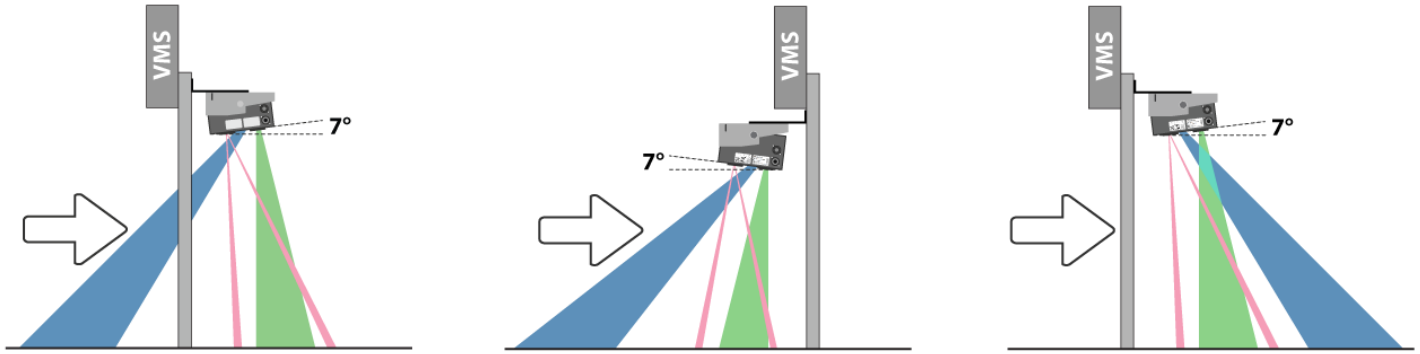
Mounting



Mounting Options

Options to accommodate mounting constraints

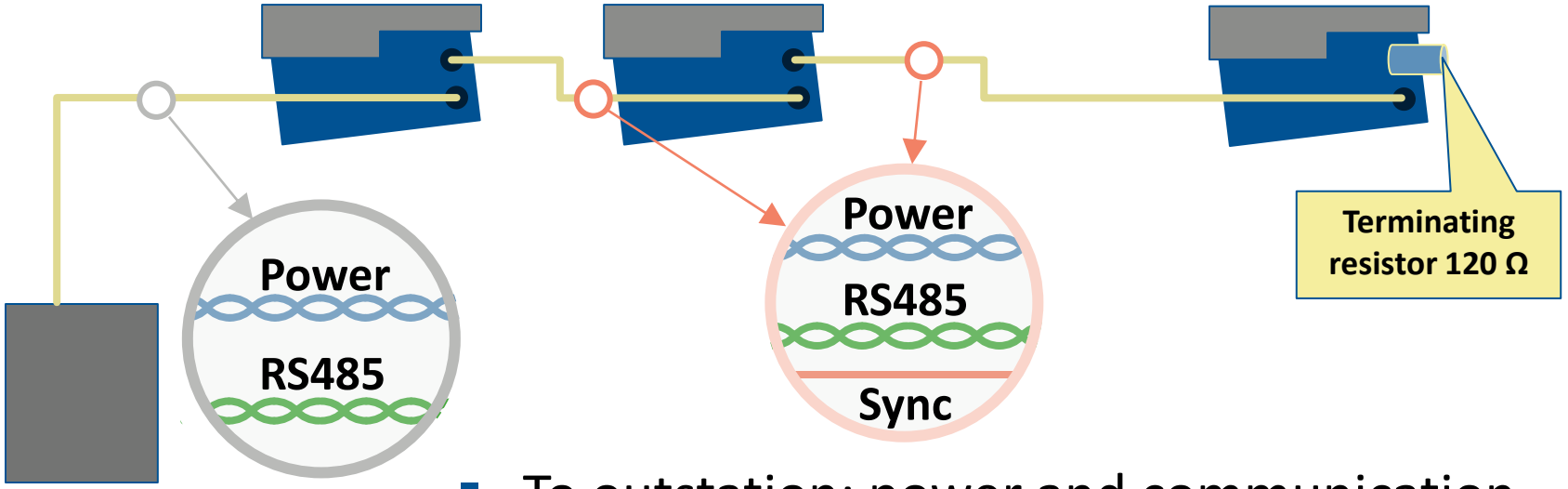
- All systems (radar, ultrasound and PIR) must have unobstructed view onto lane
  - Different detector hardware models to accommodate mounting constraints



TDC3-x-F-B **TDC3-x-F-F** **TDC3-x-B-B**

Wiring

Devices fit with male and female device connectors



Outstation

- **Traffic Data Collector**
- **BS2**
- **RS485 – TCP/IP Interface**
- **…**

- To outstation: power and communication
- Between detectors: extra SYNC(hronization)
- Last detector on bus: apply 120Ω terminating resistor (TDC-C-TR)

Comparison

	TDC3	Inductive loops	Front-Radar	Side-Radar	Video
Vehicle speed	✓✓	✓✓	✓	✓	✓
Vehicle count / volume	✓✓	✓✓	✓	✓	✓
Classification by length	✓	✓	✓	✓	✓
Classification up to 8+1 classes	✓	✓✓			
Queue detection	✓	✓			✓
Wrong-way driver detection	✓	✓	✓		
Works inside tunnels	✓✓	✓✓			✓
Non-intrusive technology	✓✓		✓✓	✓✓	✓✓
Maintenance-free longevity	✓✓		✓✓	✓✓	

Installations

Short excerpt from installations worldwide

Country / Region	Project
Austria	A1/A10, A14, A2/A9, VBA Linz, A01/A21 and since 2017 nationwide
Azerbaijan	TDC3, 77 pcs
Brazil	TDC3, 139 pcs
Estonia	TDC3, >200 pcs, with custom classification
Germany	A5 (Zeppelinheim), BAB 1, A81, A3, A7, A8, A9 Nürnberg-München, Aubing, A14 Halle, A40/43, Emstunnel, A73, Stellingen, Schnelsen (Hamburg)
Netherlands	TDC3 in high-accuracy classification stations (CSC)
Italy	Catania, Monza-Meda, Lombardy, A32
Mexico	TDC3, 24 pcs
Poland	Urban, inter-urban, custom classification
Switzerland	VBA SO/AG, Bern-Thun, Zug, Zurich Ring Nord, Effretikon, Basel
Taiwan	Sohuo Highway
Slovenia	A1, Ring Ljublijana

Thank you!

If you have any questions, please contact us at:

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