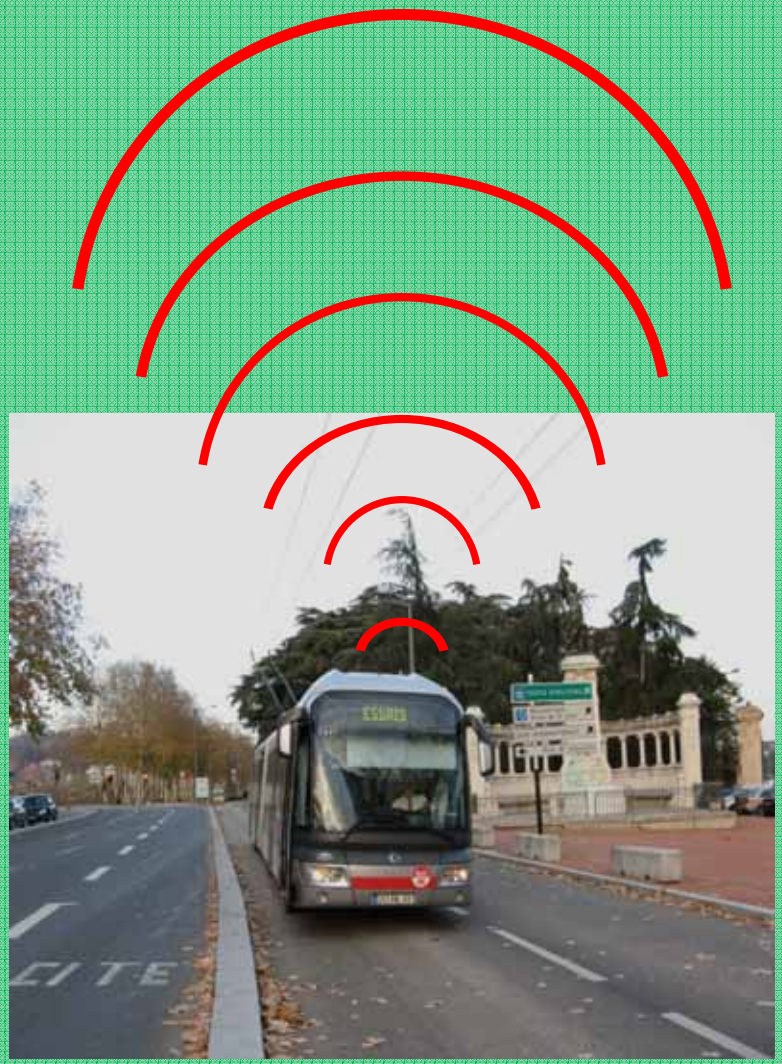
MPK
Lublin
Spółka z o.o.

# Introduction



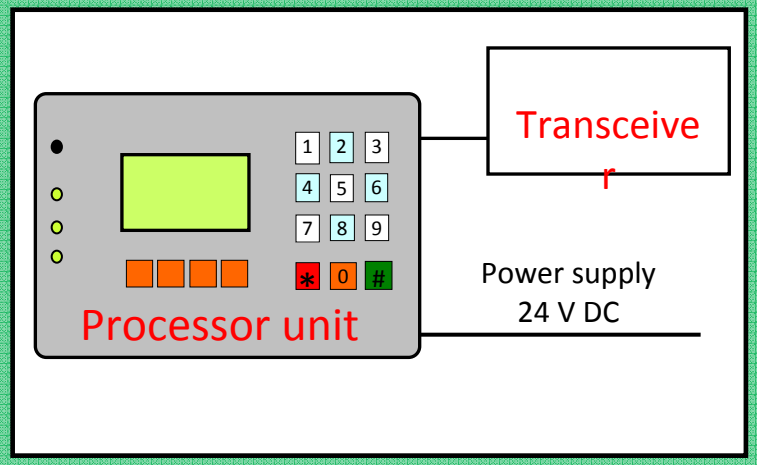
Radio communication is realized through directive antennas on 2.4 GHz frequency. The communication is realized in a vertical direction up or down from the vehicle. Both methods are possible according to the local conditions and customer's requests.

Communication system is characterized by:

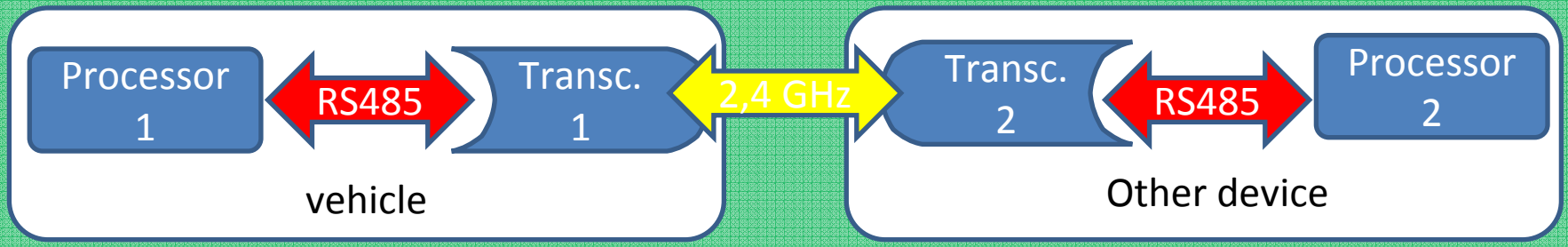
- a high speed transmission of the signal
- a high resistance against disturbance.

•The radio communication system is dedicated for communication between vehicles of municipal transport and devices located on the route.

# Description of the ground devices




The ground part is formed by two devices.
the first one is a transceiver
the second one is a processor unit.




Vehicle permanently transmits a radio signal. The signal contains vehicle identification number, vehicle type, line number, course code and further information according to the client's request.

Vehicle identification number and vehicle type are fixed, adjusted by a service worker. Course is set by the driver. If the terminal is connected to the main board computer, the route setting can be fully automatic.

# Typical purposes of usage for high-speed transmission system

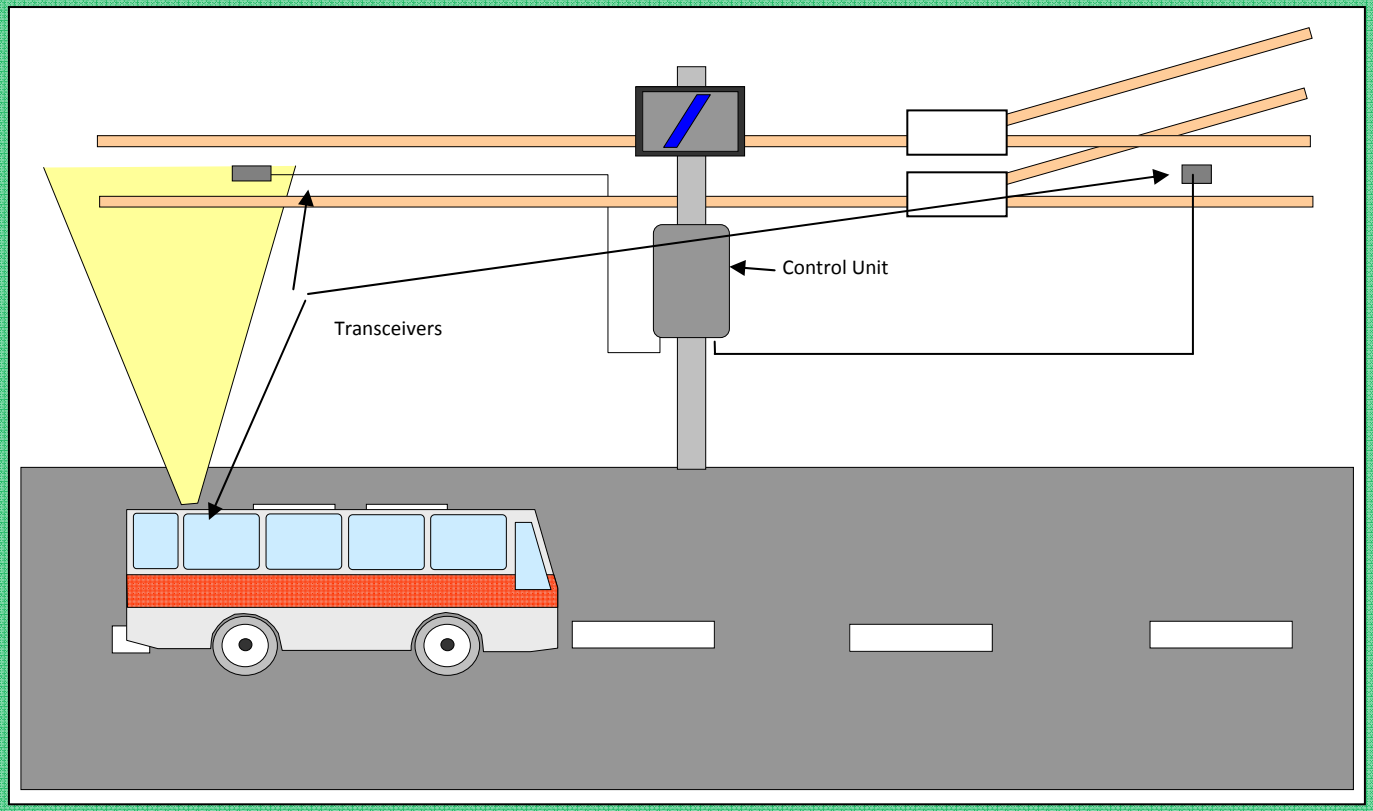
Elektroline

1. Two-way transmission of the signal between a trolleybus and a switch control system; automatic setting of a switch point position and transmission of state or failure announcements.

2. Transmission of the signal from a trolleybus into traffic lights devices; preference of municipal transport vehicles on intersections to other vehicles.

3. Two-way transmission of the signal between trolleybus and vehicle position ground devices ; generates information of the vehicle actual position to the municipal transport dispatching or to the pasangers

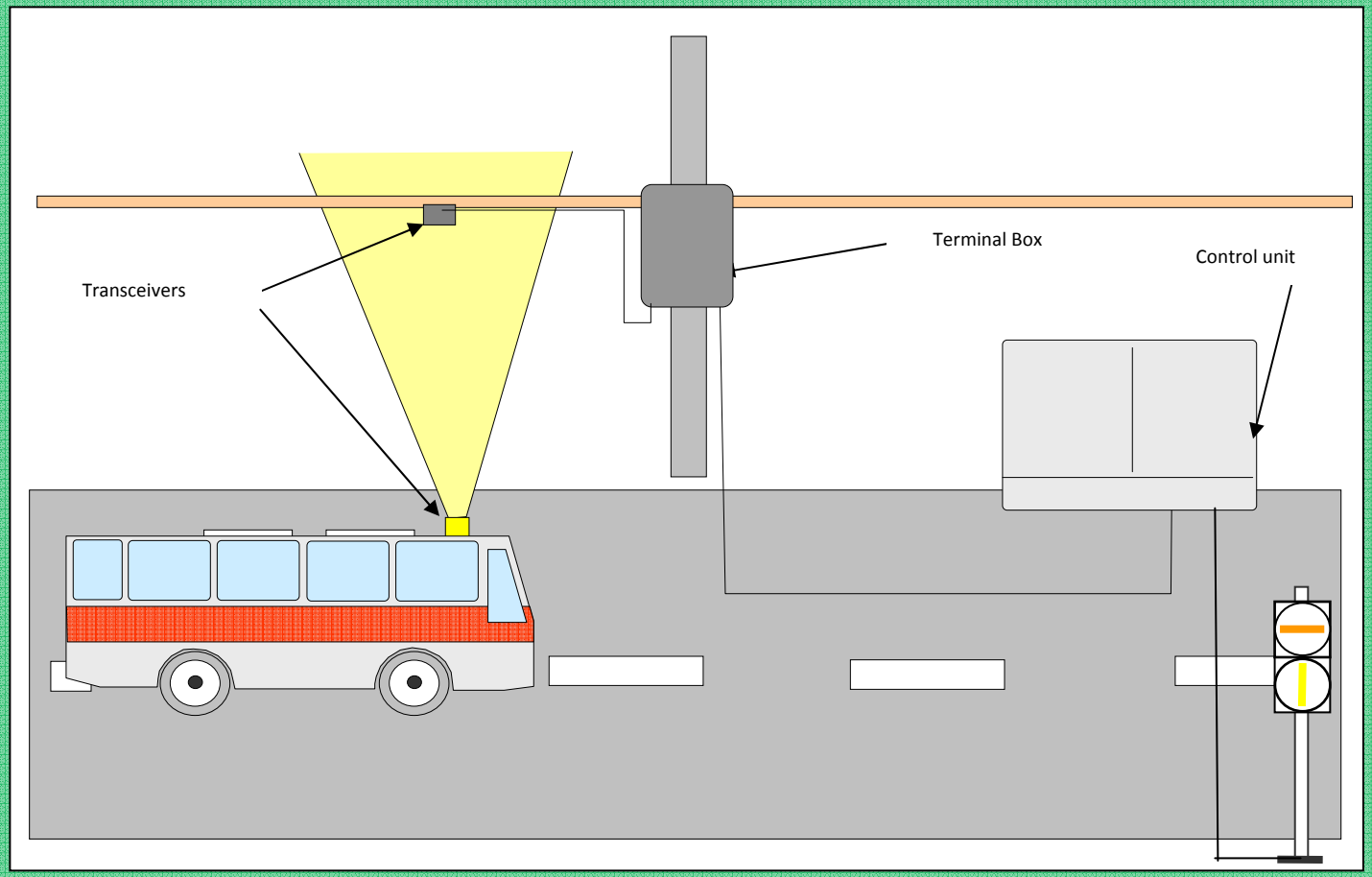
# Tram and trolleybus switch points control system

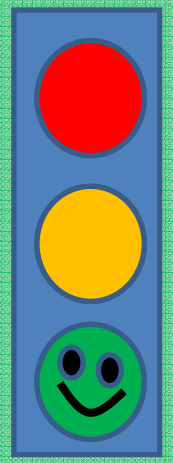



Signal with demand for route setting is transmitted from trolleybus into switch point control systems.

The switch point positioning process is fully automatic..

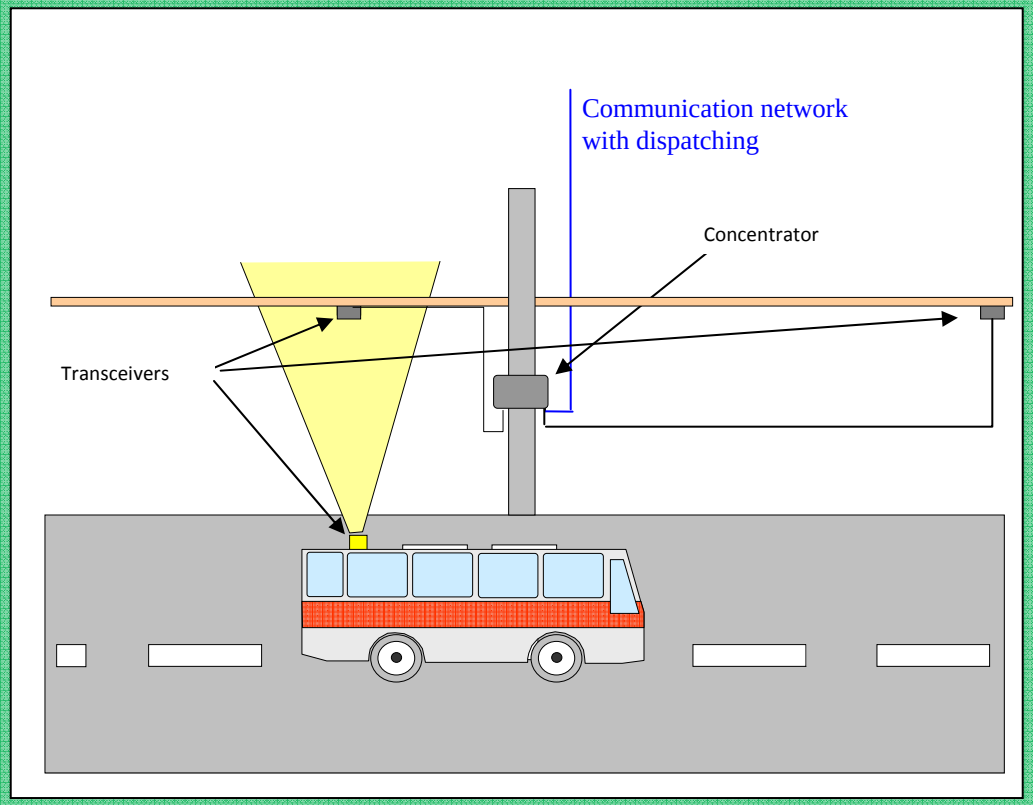
# Preference of municipal transport vehicles



Signal with required direction is transmitted from municipal transport vehicles into traffic lights controller which provides preferential passage of these vehicles through intersection.

# Vehicle position monitoring system




Signal from vehicles is transmitted into devices of monitoring points on the route.

From these points the signal is transmitted through concentrators and telecommunication cables network (or wireless network) to dispatching and might be used also for a pasanger information system

| | | |
|---|---|---|
| 22 | Lublin | 11.30 |
| 23 | Prague | 16.55 |

Because each vehicle transmits a unique identification number and course code, computer in dispatching is able to show actual vehicle position; this fact is compared with time table and the computer informs dispatcher about differences.

# Description of the vehicle part device

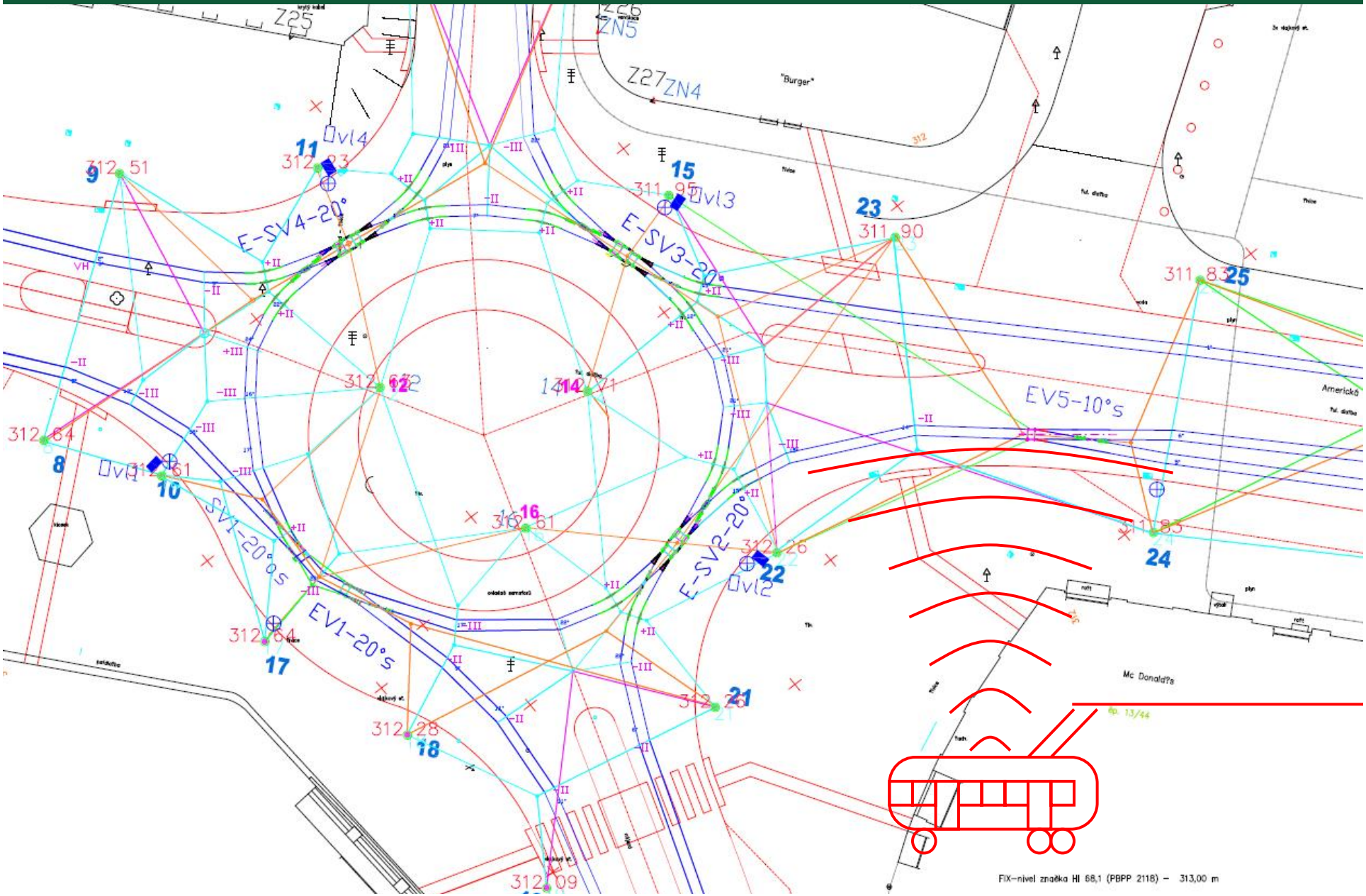
Vehicle terminal is possible to connect with a board computer.

Besides signals transmitted from vehicles into switch point control systems there would be transmitted signals from the switch point control systems into vehicles as well. It would be state or failure announcements.

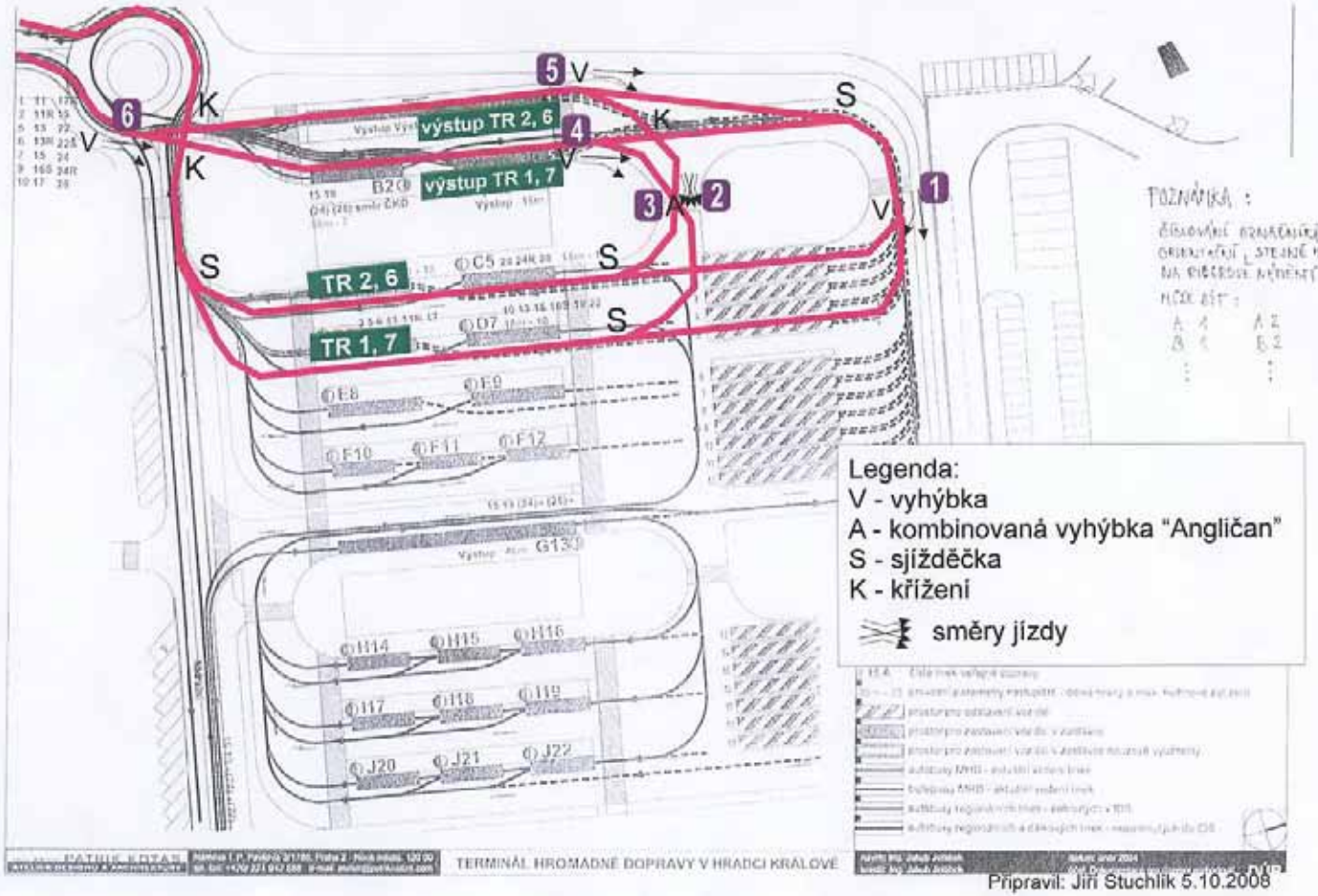
# Transceiver 2,4 GHz

# Processor unit - control box

# Where drivers prefer automatic control system:

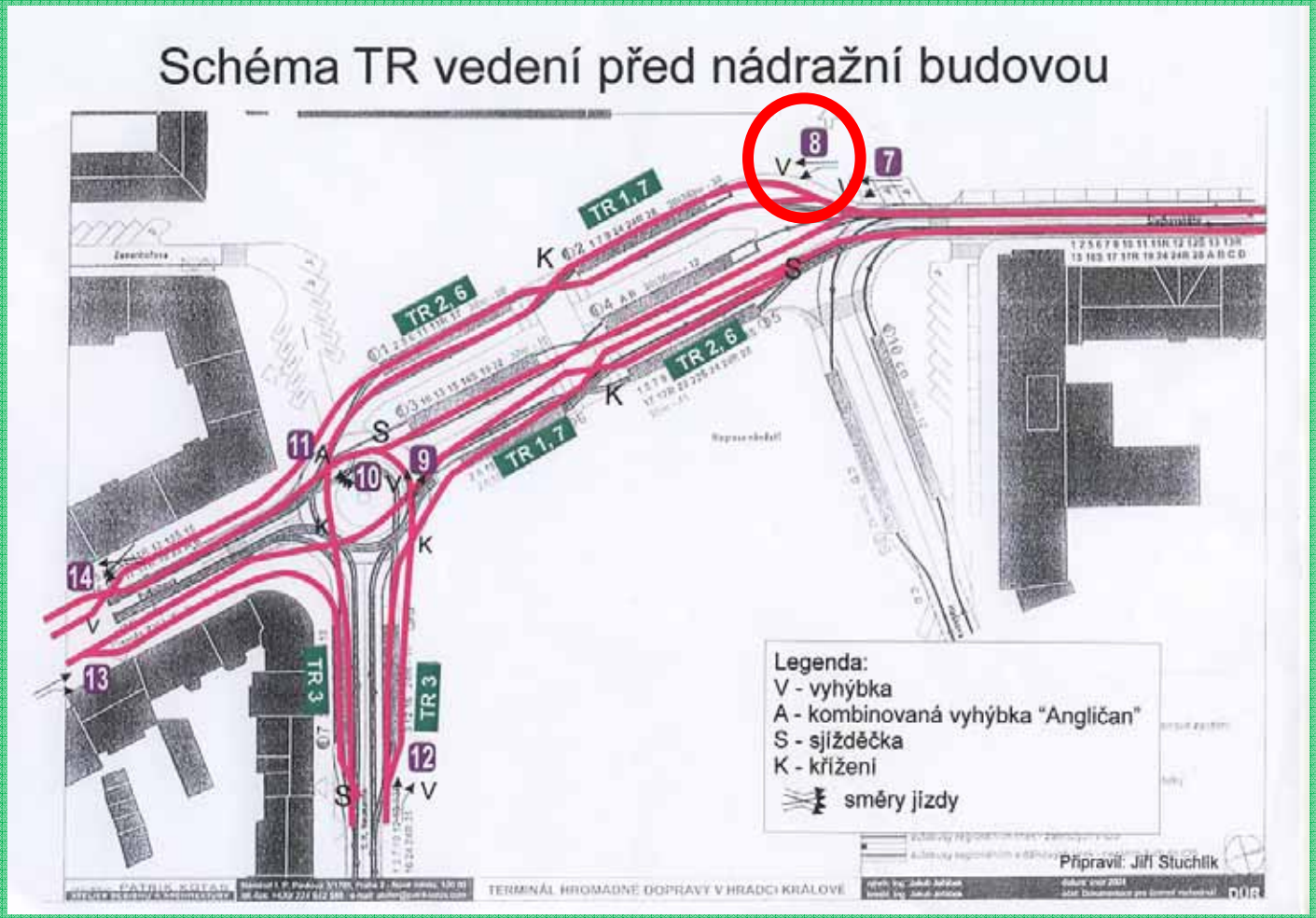


# Schéma TR vedení v Terminálu HD




Připravil: Jiří Stuchlík 5.10.2008

www.elektroline.cz

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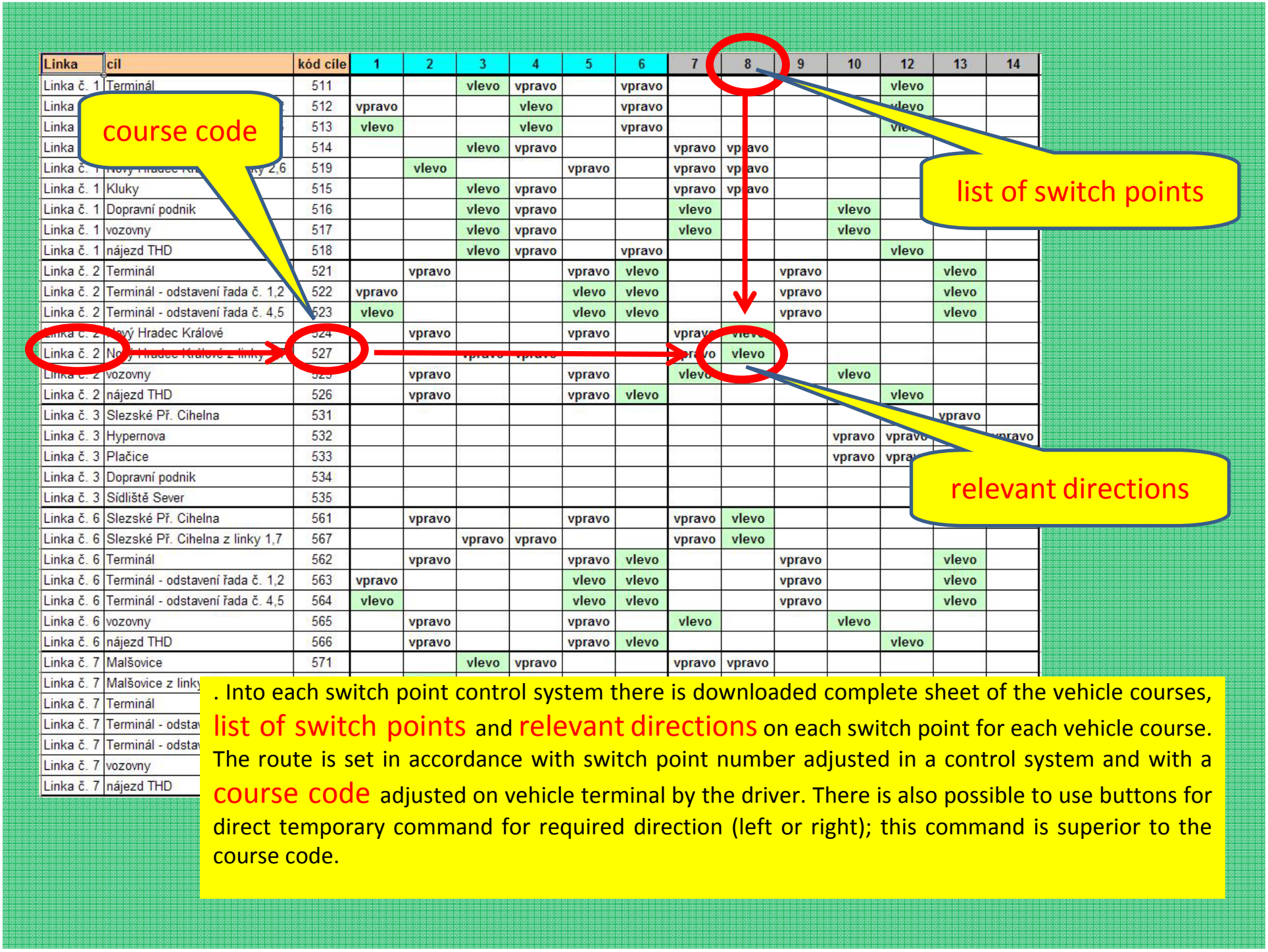


| Linka | cíl | kód cíle | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Linka č. 1 | Terminál | 511 | | | vlevo | vpravo | | vpravo | | | | | vlevo | | |
| Linka | | 512 | vpravo | | | vlevo | | vpravo | | | | | vlevo | | |
| Linka | | 513 | vlevo | | | vlevo | | vpravo | | | | | | | |
| Linka | | 514 | | | vlevo | vpravo | | | vpravo | vpravo | | | | | |
| Linka č. 1 | Nový Hradec Kr. ky 2,6 | 519 | | vlevo | | | vpravo | | vpravo | vpravo | | | | | |
| Linka č. 1 | Kluky | 515 | | | vlevo | vpravo | | | vpravo | vpravo | | | | | |
| Linka č. 1 | Dopravní podnik | 516 | | | vlevo | vpravo | | | vlevo | | | vlevo | | | |
| Linka č. 1 | vozovny | 517 | | | vlevo | vpravo | | | vlevo | | | vlevo | | | |
| Linka č. 1 | nájezd THD | 518 | | | vlevo | vpravo | | vpravo | | | | | vlevo | | |
| Linka č. 2 | Terminál | 521 | | vpravo | | | vpravo | vlevo | | | vpravo | | | vlevo | |
| Linka č. 2 | Terminál - odstavení řada č. 1,2 | 522 | vpravo | | | | vlevo | vlevo | | | vpravo | | | vlevo | |
| Linka č. 2 | Terminál - odstavení řada č. 4,5 | 523 | vlevo | | | | vlevo | vlevo | | | vpravo | | | vlevo | |
| Linka č. 2 | Nový Hradec Králové | 524 | | vpravo | | | vpravo | | vpravo | vlevo | | | | | |
| Linka č. 2 | Nový Hradec Králové z linky | 527 | | | | | | | vpravo | vlevo | | | | | |
| Linka č. 2 | vozovny | 525 | | vpravo | | | vpravo | | vlevo | | | vlevo | | | |
| Linka č. 2 | nájezd THD | 526 | | vpravo | | | vpravo | vlevo | | | | | vlevo | | |
| Linka č. 3 | Slezské Př. Cihelna | 531 | | | | | | | | | | | | vpravo | |
| Linka č. 3 | Hypernova | 532 | | | | | | | | | | vpravo | vpravo | | vpravo |
| Linka č. 3 | Plačice | 533 | | | | | | | | | | vpravo | vpra | | |
| Linka č. 3 | Dopravní podnik | 534 | | | | | | | | | | | | | |
| Linka č. 3 | Sídliště Sever | 535 | | | | | | | | | | | | | |
| Linka č. 6 | Slezské Př. Cihelna | 561 | | vpravo | | | vpravo | | vpravo | vlevo | | | | | |
| Linka č. 6 | Slezské Př. Cihelna z linky 1,7 | 567 | | | vpravo | vpravo | | | vpravo | vlevo | | | | | |
| Linka č. 6 | Terminál | 562 | | vpravo | | | vpravo | vlevo | | | vpravo | | | vlevo | |
| Linka č. 6 | Terminál - odstavení řada č. 1,2 | 563 | vpravo | | | | vlevo | vlevo | | | vpravo | | | vlevo | |
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| Linka č. 7 | Malšovice | 571 | | | vlevo | vpravo | | | vpravo | vpravo | | | | | |
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| Linka č. 7 | Terminál | | | | | | | | | | | | | | |
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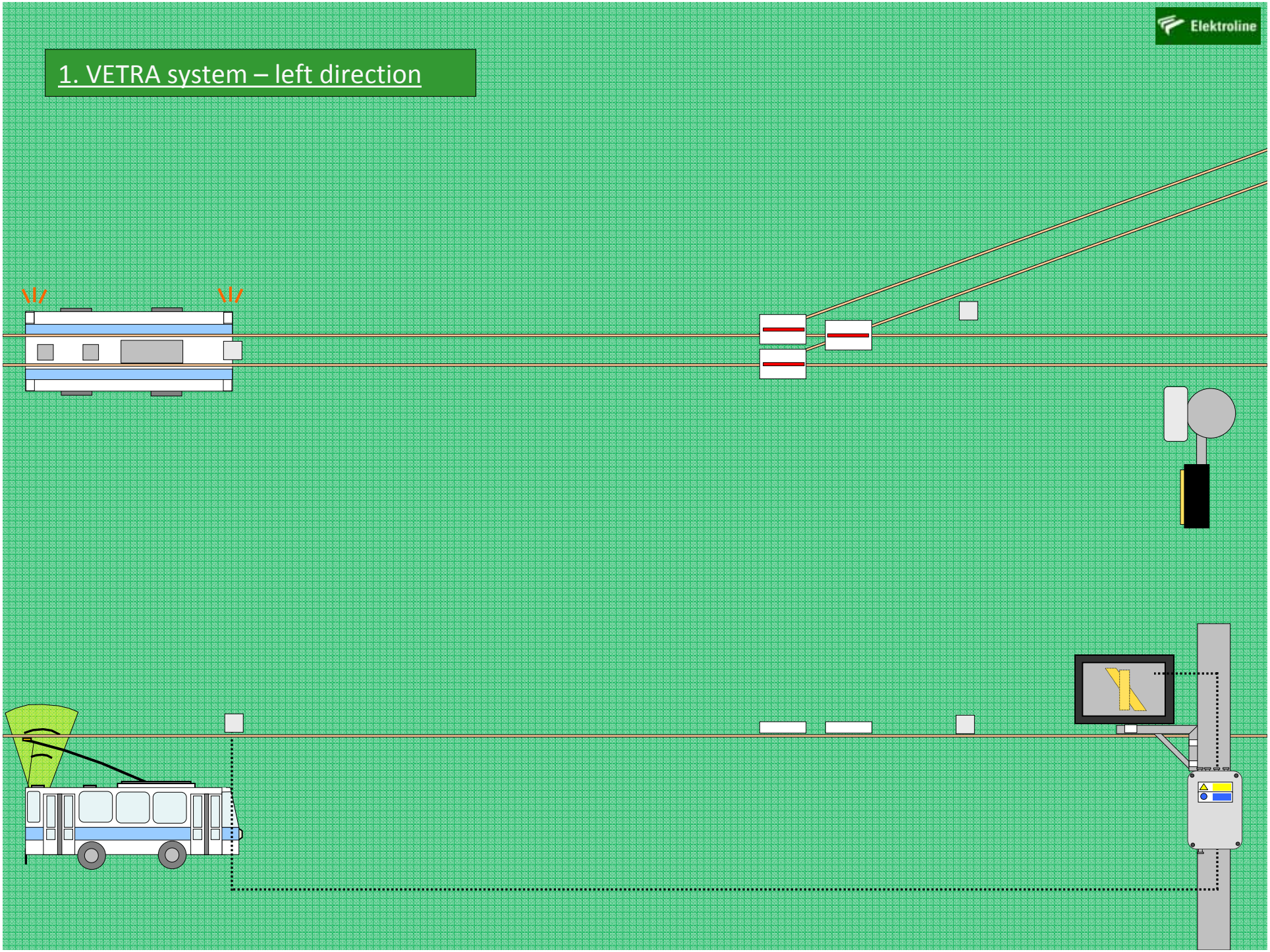
| Linka č. 7 | Terminál - odsta | | | | | | | | | | | | | | |
| Linka č. 7 | vozovny | | | | | | | | | | | | | | |
| Linka č. 7 | nájezd THD | | | | | | | | | | | | | | |

. Into each switch point control system there is downloaded complete sheet of the vehicle courses, list of switch points and relevant directions on each switch point for each vehicle course. The route is set in accordance with switch point number adjusted in a control system and with a course code adjusted on vehicle terminal by the driver. There is also possible to use buttons for direct temporary command for required direction (left or right); this command is superior to the course code.

# 1. VETRA system – left direction



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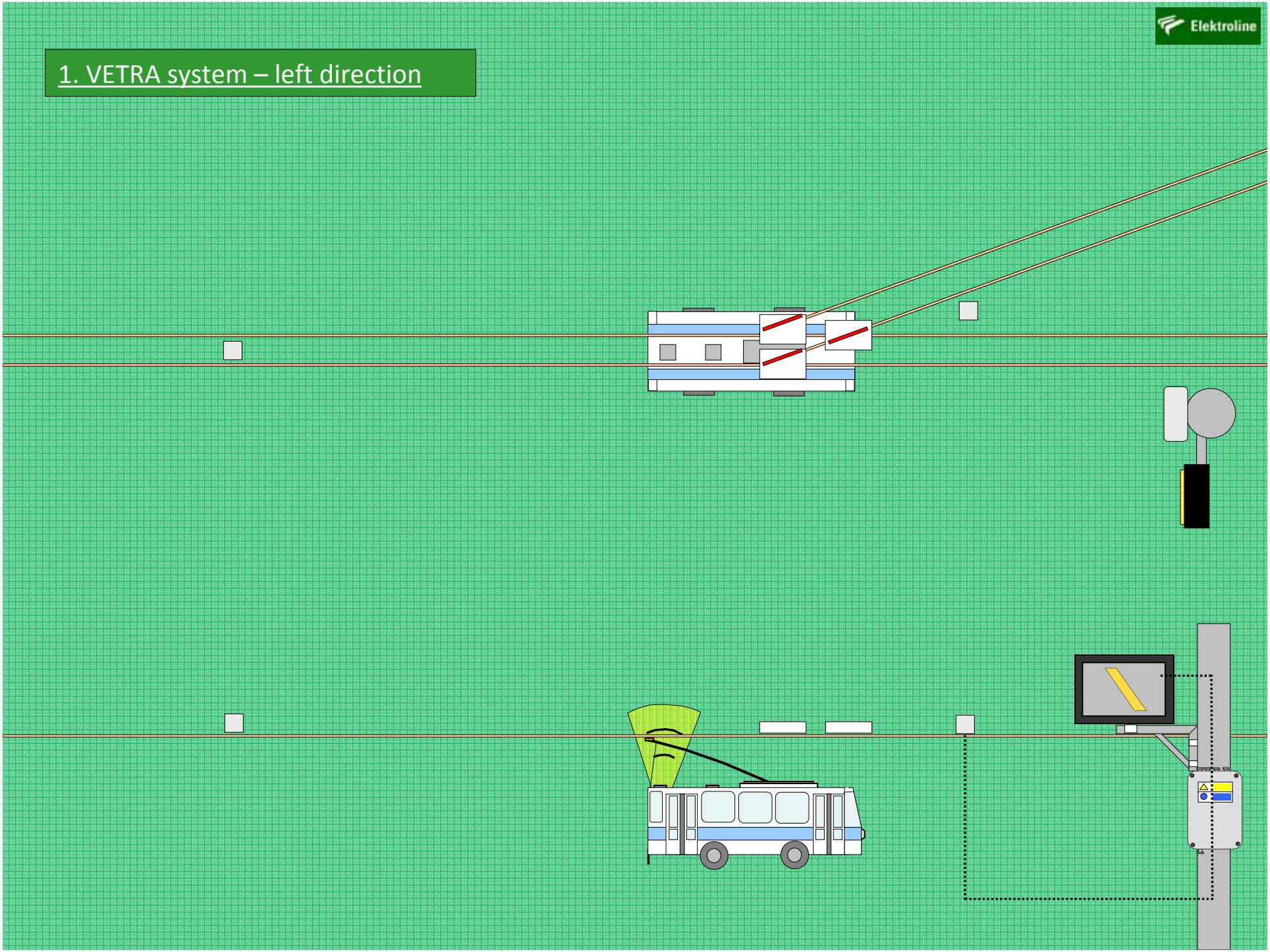
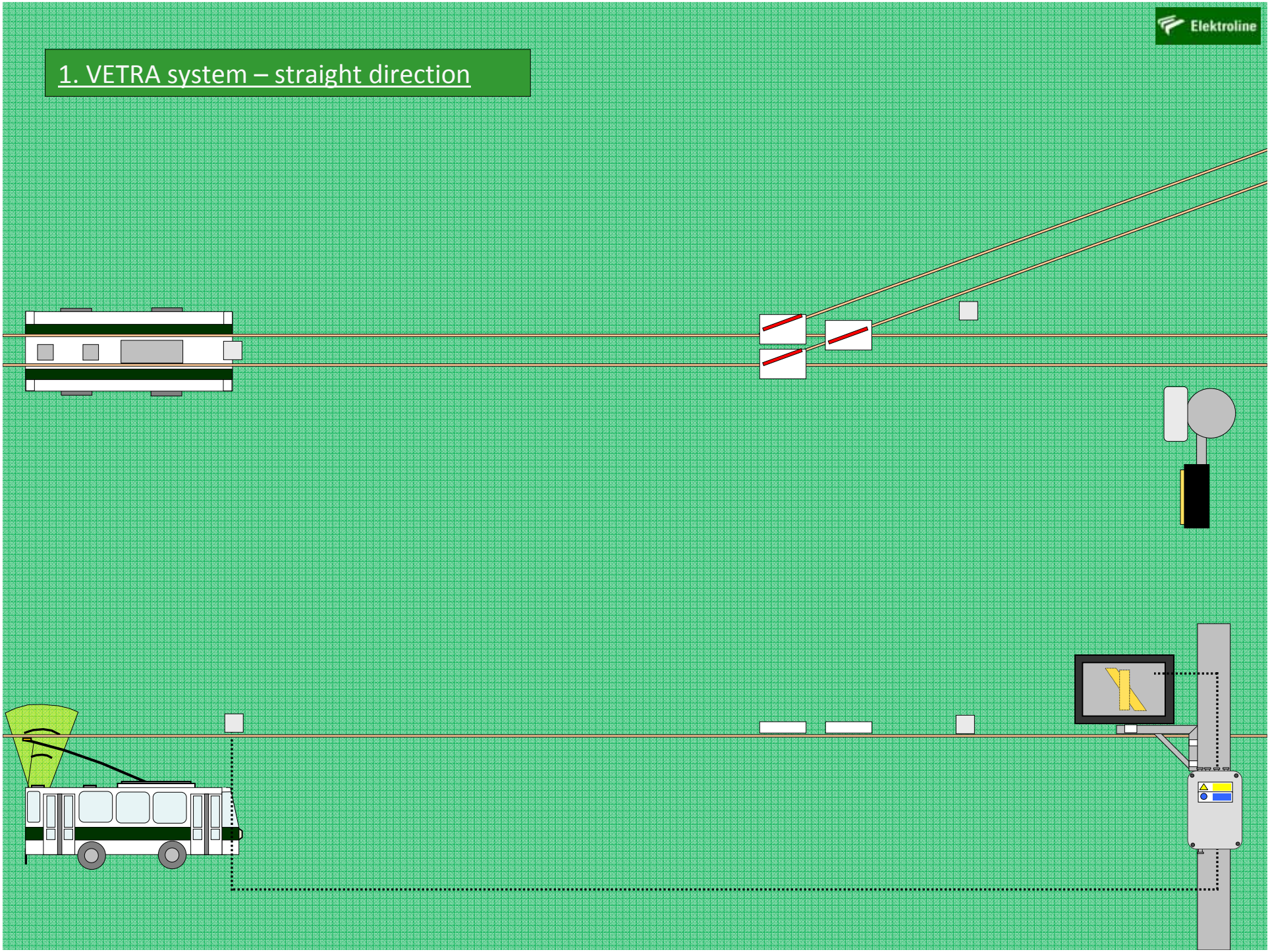


# 1. VETRA system – straight direction



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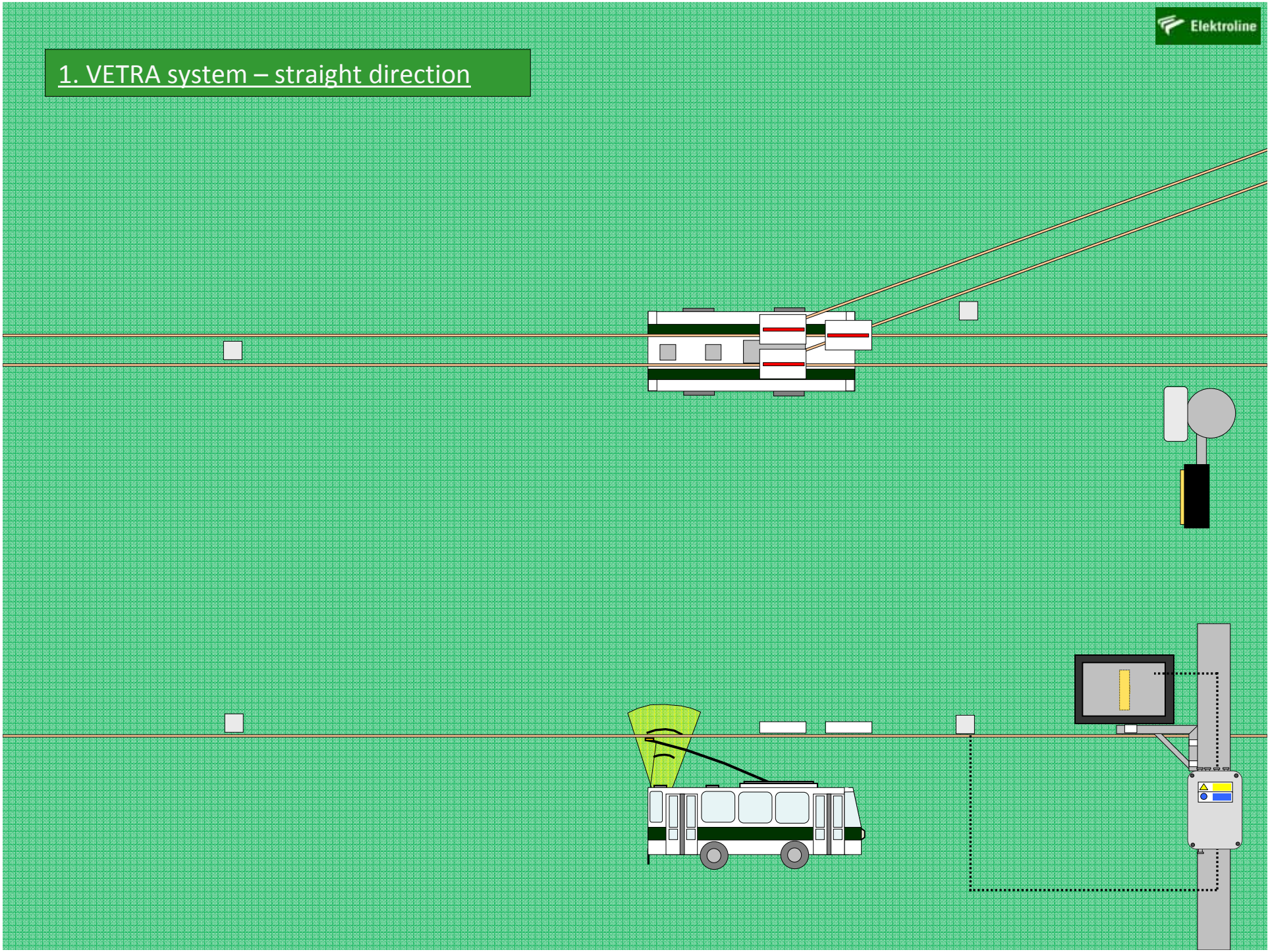
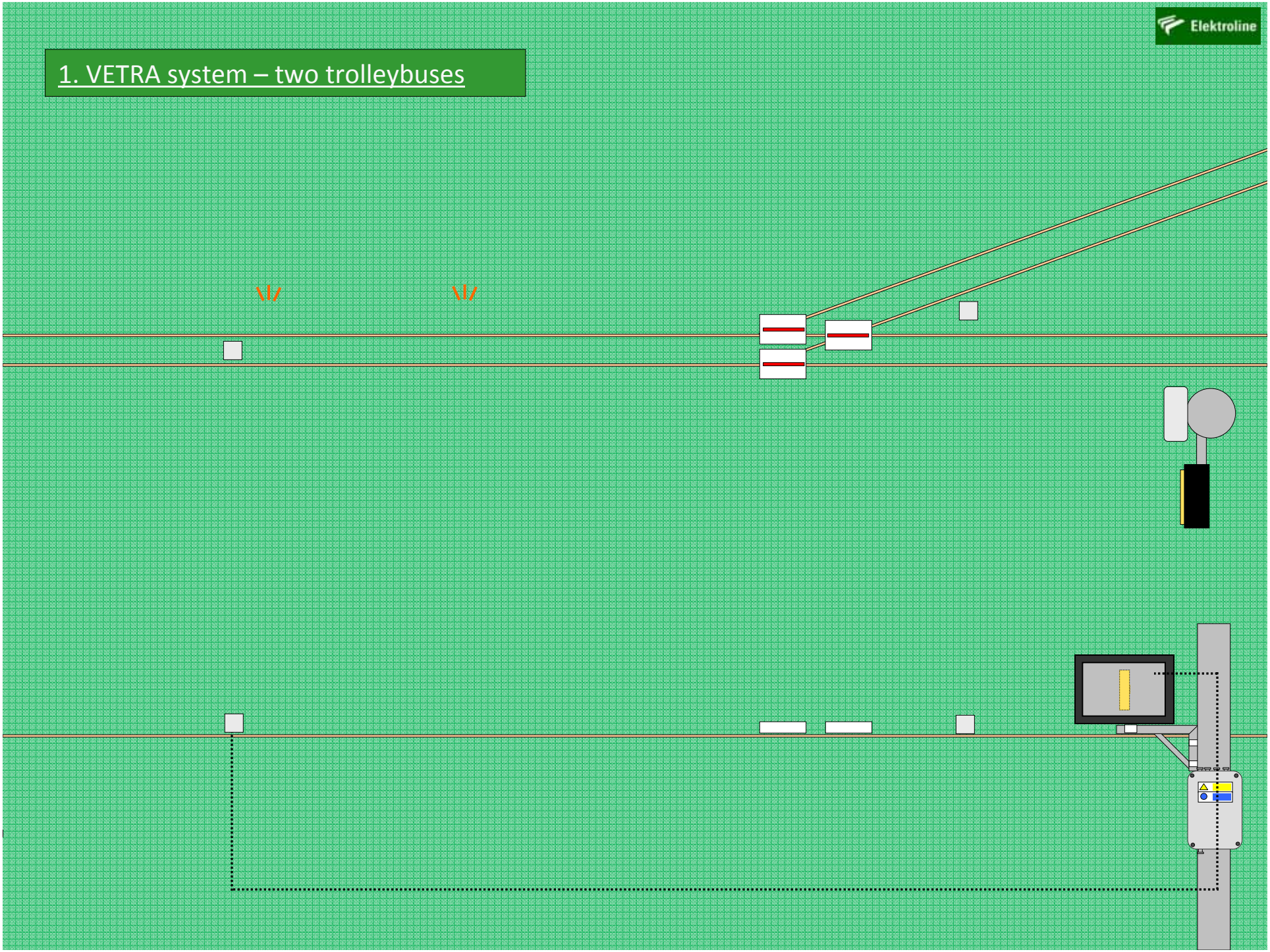


# 1. VETRA system – two trolleybuses



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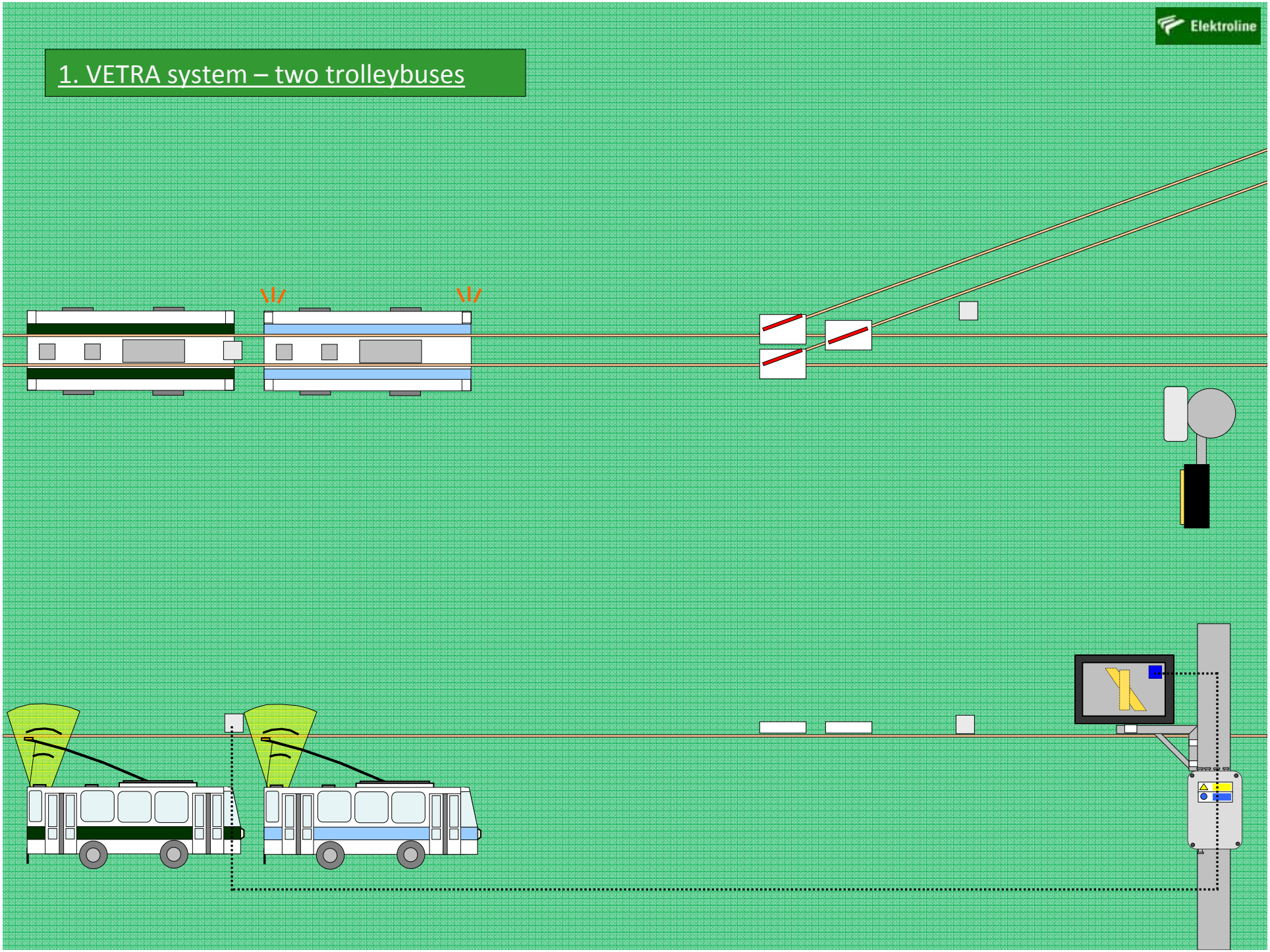

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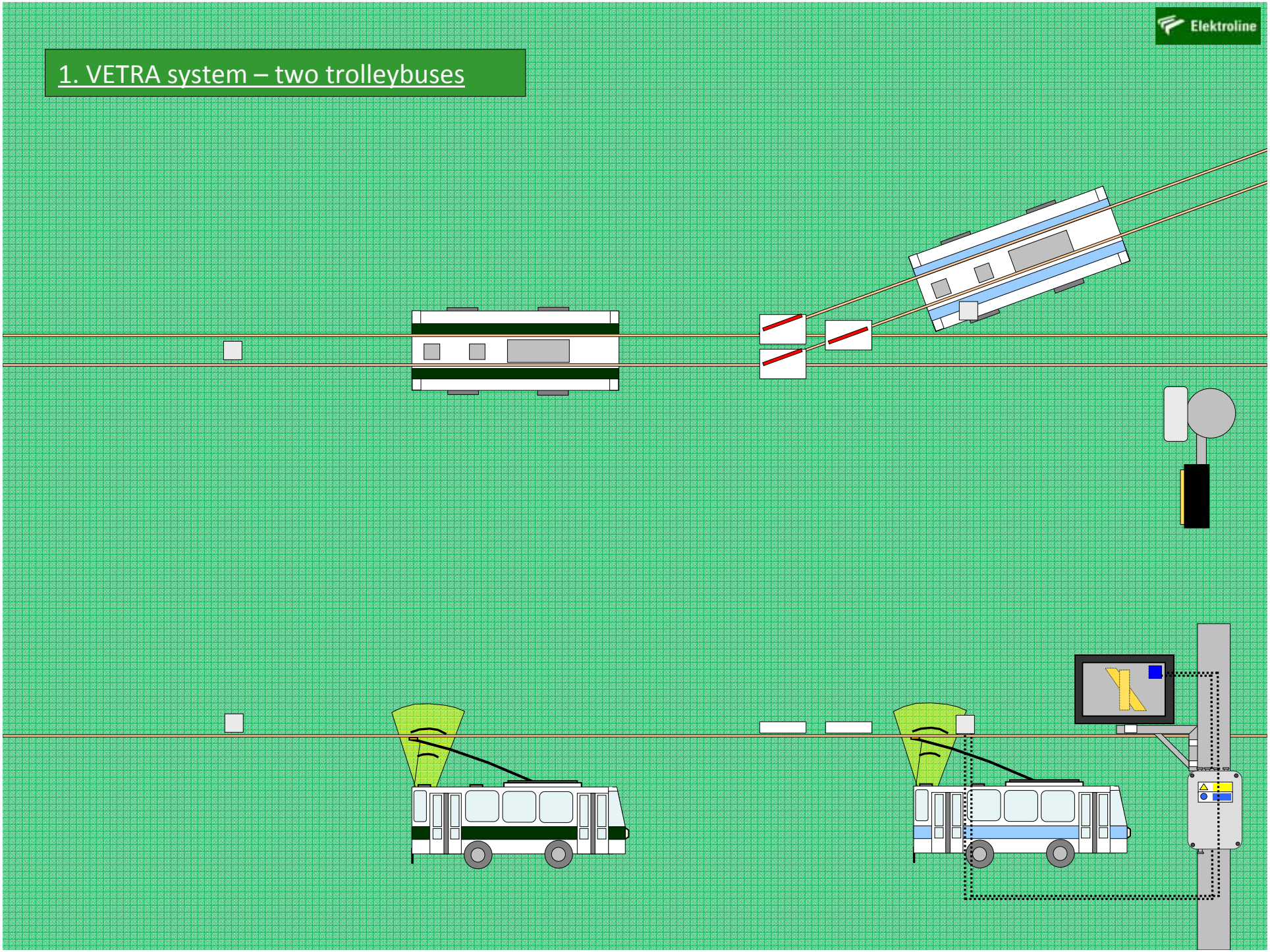

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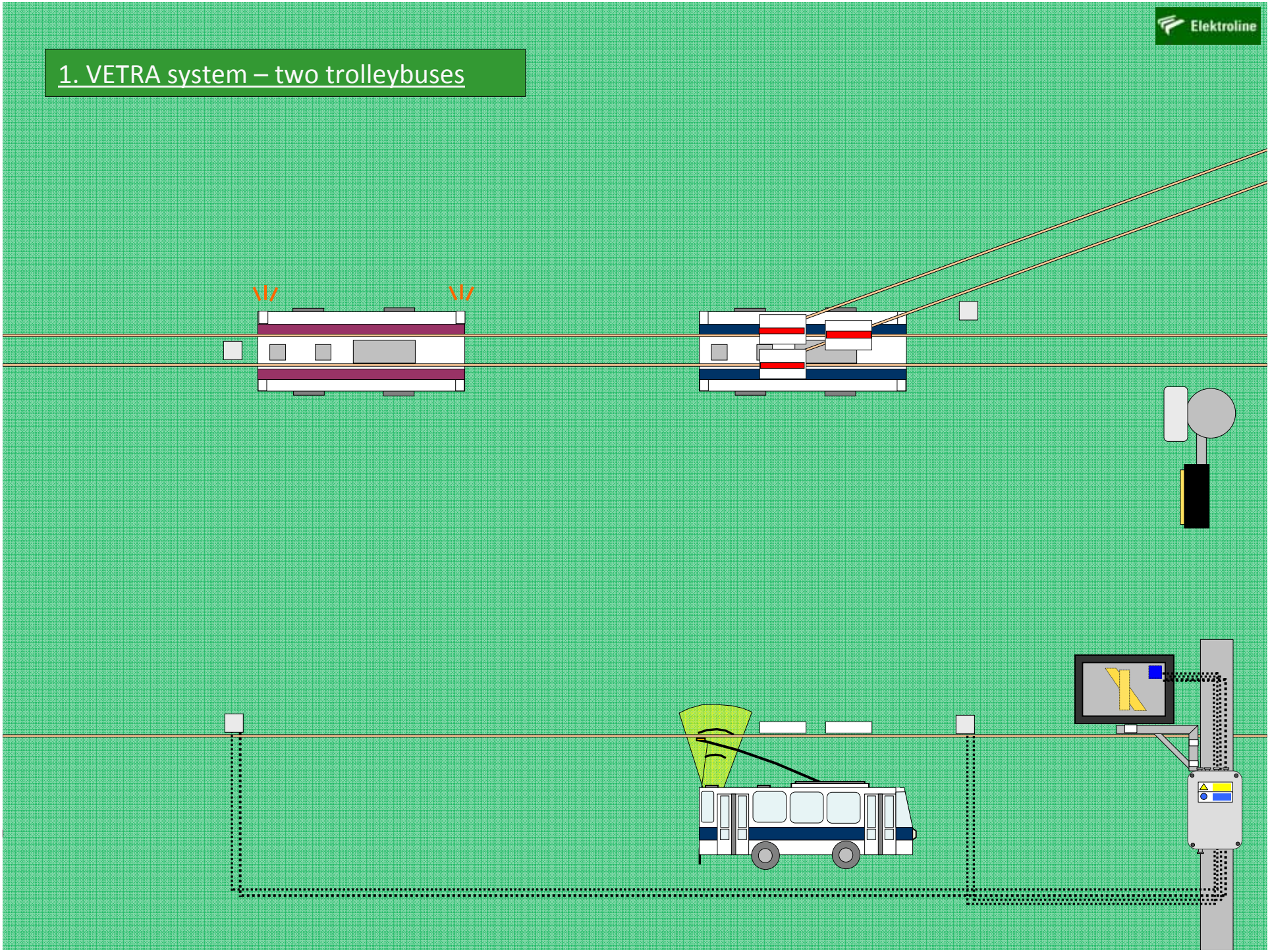
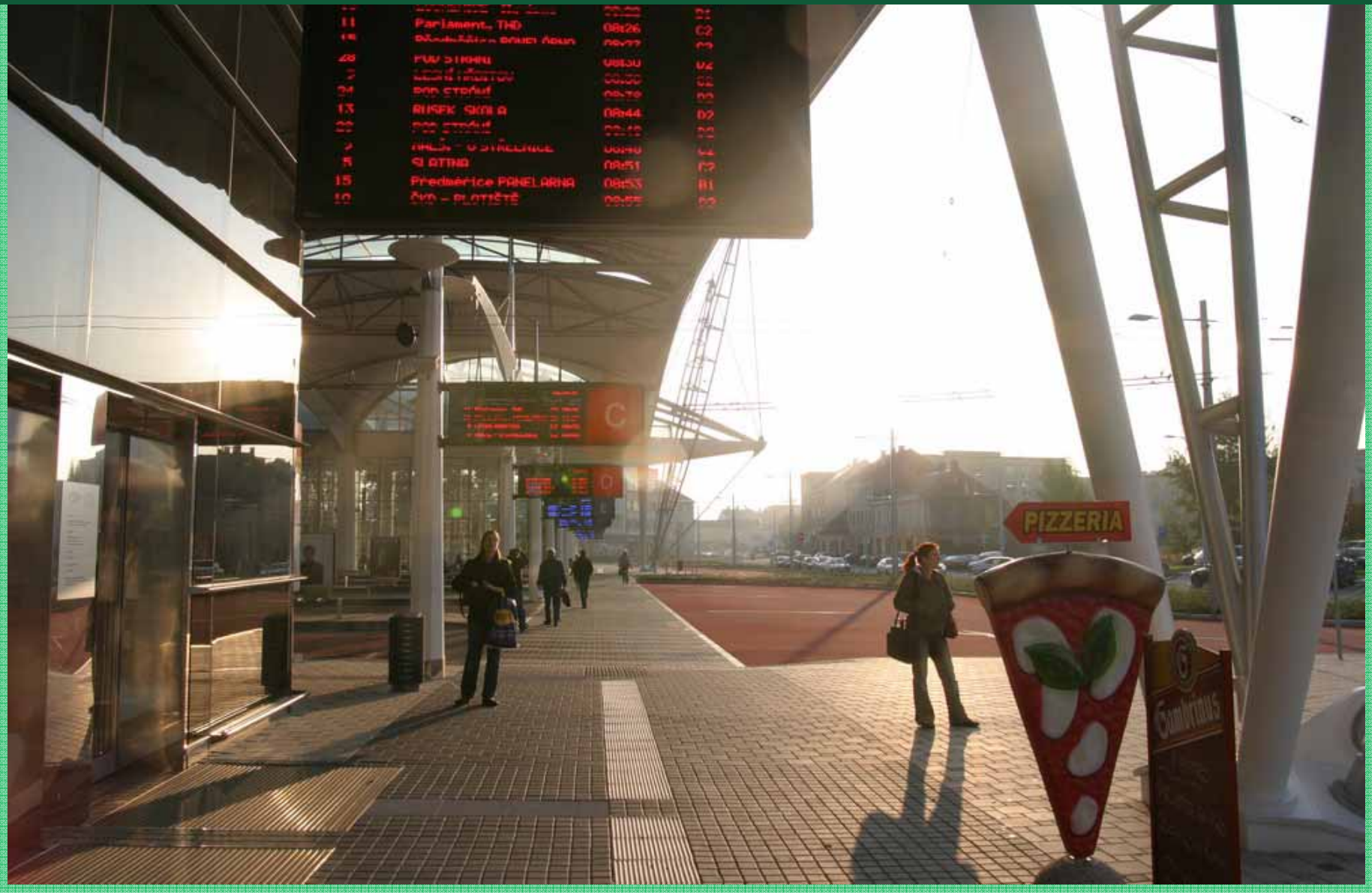
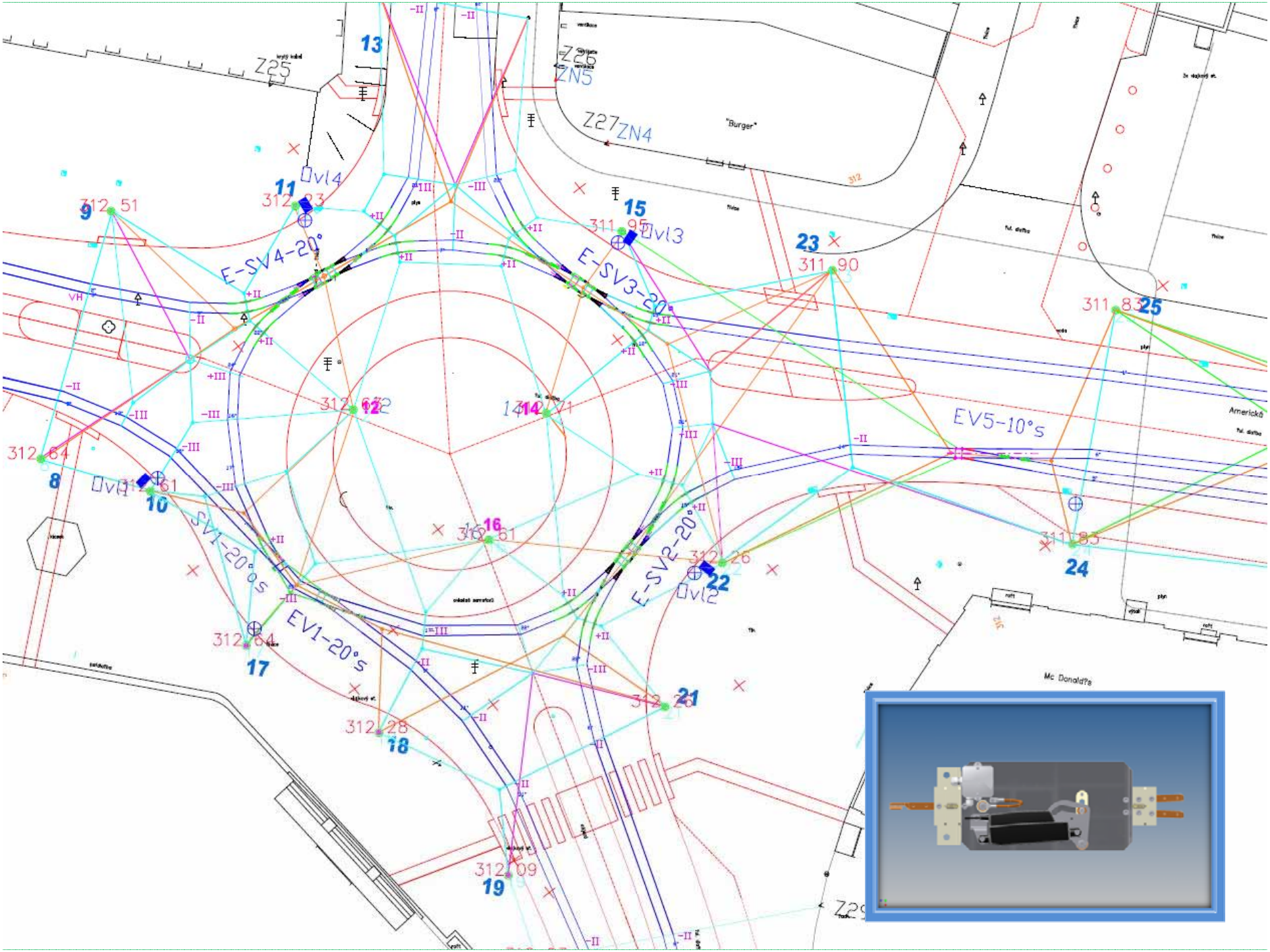


# Trolley bus switch system in Lyon

# Trolley bus switch system in Hradec Kralove

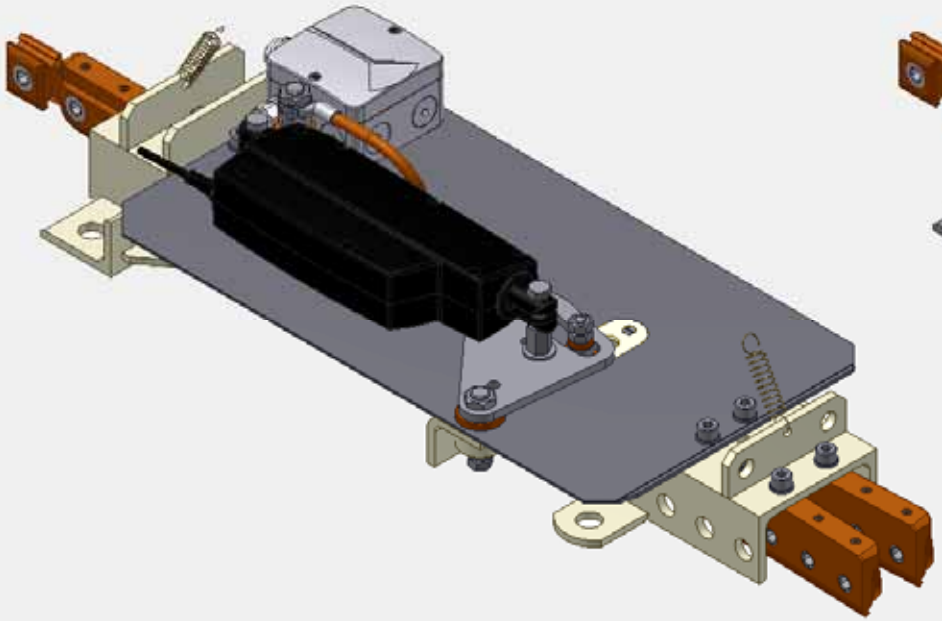
# Passanger information system

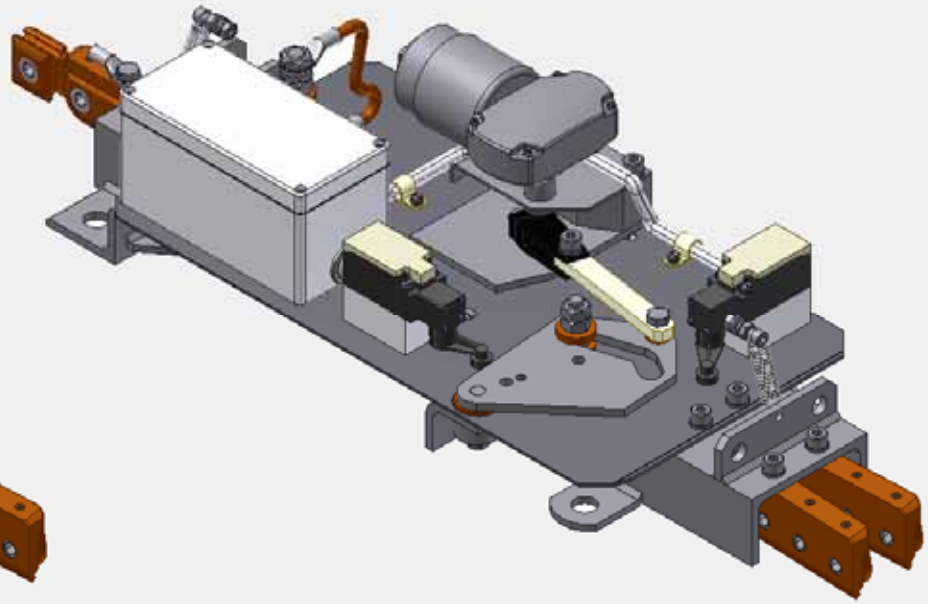




Z25
Z26
ZN5
Z27
ZN4
"Burger"
E-SV4-20°
E-SV3-20°
E-SV2-20°
SV1-20°s
EV1-20°s
EV5-10°s
Americká
Mc Donald?s

# New generation of trolley bus switches





More quick, easy assembly, just 2 wires connection

Thank You……