



**TELEFUNKEN**  
RACOMS

**Train Communication**

Communication for mobile and stationary application

**TRainCom<sup>®</sup> TN**

TrafficNet

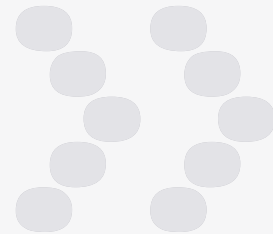


**WE KEEP IN TOUCH**

TRainCom<sup>®</sup> Solutions are available for High Speed Train, Mass Transit, Maglev, Railway and Metro.

# SYSTEM FEATURES

TRainCom® TN



## TRainCom® TN wireless radio network

The TRainCom® TN wireless radio network is primarily intended for mobile users or applications, requiring a wireless data communication link with a broadband character. Its rugged hardware design combined with its improved networking features enables an easy setup of radio communication networks in urban or rural areas. It can be installed in all kind of mobile vehicles (trains, trams, cars, buses, etc.), as well as a fixed mounted device on buildings or antenna masts.

Depending on the operational requirements of an application, the software of the TRainCom® TN transceiver units can be optimised for various tasks and complemented by other standardised network components to adapt on specific demands.

## Features

- › Rugged outdoor housing and enhanced temperature range
- › Two independent wireless networks available (WLAN + WLAN, or WLAN + GSM/UMTS)
- › High data rates of up to 54 Mbps
- › WEP/WPA II encryption and access management for network protection
- › WDS (wireless distribution system) point-to-point and point-to-multipoint bridge
- › Over-the-air SW upgrade function
- › Usage of various antenna types and high gain antennae to increase coverage area
- › Antenna diversity to increase radio performance
- › VPN (virtual private network)
- › Wide range of wired interfaces like RS232/422/485, USB, Ethernet LAN
- › Optical Interfaces
- › Component diagnosis based on SNMP
- › Data traffic management control
- › Embedded GPS function

## Characteristics

All TRainCom® TN transceiver units are designed to withstand in a tough outdoor environment. The housing is made of a very solid aluminium die-cast rated IP 67, with all connectors protected against immersion of dust and water. For the radio network, it provides 2 N-type antenna connectors to increase spatial diversity using 2 antennas. For a second radio network (optional) it also provides another N-type antenna connector.

By using directed antennas rather than omnidirectional ones, it can influence the radio propagation pattern of the network component and enhance the radio coverage, accordingly.

## Accessories

- › Mast mounting adapter
- › Wall/vehicle mounting adapter
- › Ethernet cable (with M12 and RJ-45 connector)
- › USB cable (with M12 connector)
- › RS-232/422/485 serial cable
- › Antenna cable with N-connectors
- › GPS antenna
- › Power supply cable
- › Switching connection box



FEATURES

## System configuration

For setting up a TrafficNet area network an initial system configuration has to be done. This system configuration is also comprising a suitable radio planning and frequency allocation of the wireless network components and configuration of all network parts.

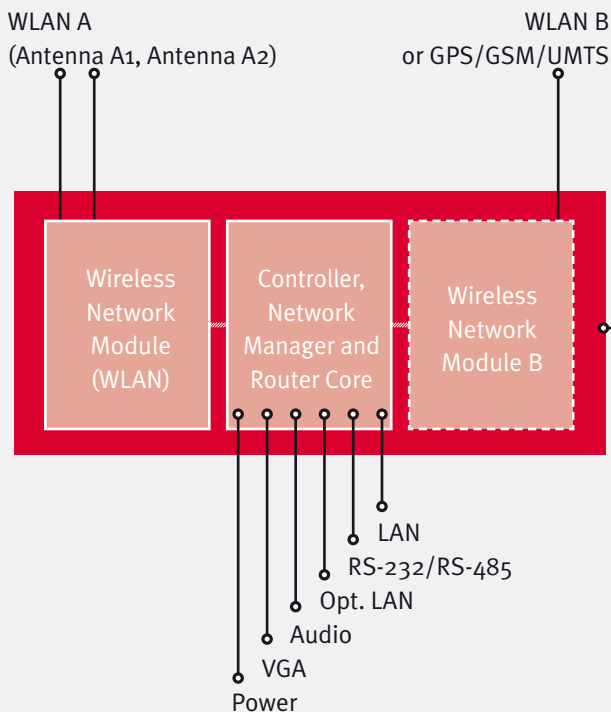
Depending on its embedded software, a TrafficNet transceiver unit can be used either as a mobile network client and radio interface, or as a fixed access point or network node of a wireless or wired backbone network.

## Mobile and stationary options

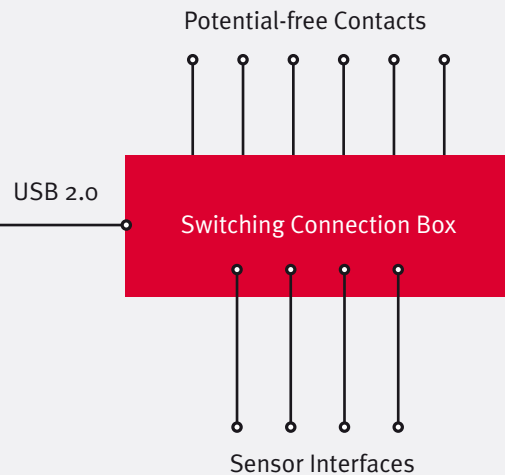
The TN radio devices are designed and tested to withstand the hard conditions of mobile applications in a rail environment. Nevertheless they can also be used as stationary devices to complement an overall system concept.

Together with the separate switching connection box they offer multiple options for discrete potential-free contacts and sensor interfaces to be used for various remote control applications.

### TRAINCOM® TN RADIO DEVICE



### BOX FOR OPTIONAL INTERFACES



# APPLICATIONS

TRainCom® TN system solutions - flexible and modular offering standard interfaces

## Hot spot areas

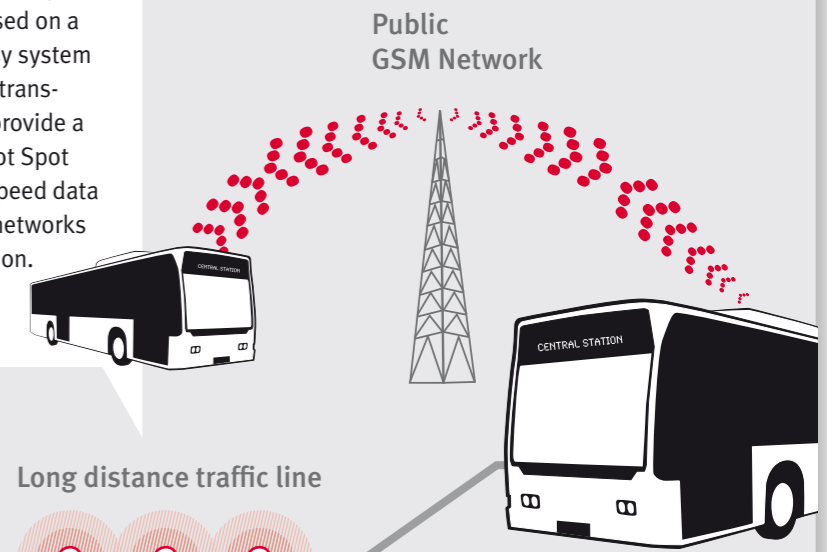
For setting up an outdoor hot spot area, a TrafficNet transceiver unit with a single WiFi 802.11x wireless 2.4/5 GHz network module can be used. In combination with its Ethernet LAN interface it enables to built a large scale network of such hot spots connected by a dedicated WAN network.

## Connection of subsystems

The Ethernet LAN interface can be used to inter-connect multiple TrafficNet transceiver units forming an extended network of wireless radio devices. But also, it can be used to connect IP-based wired accessories (e.g. cameras for surveillance, smoke or other alarm detectors) to this network. Additional Interfaces such as USB 2.0, RS-232, RS-422 or RS-485 can be used to connect further devices in mobile and stationary applications. For stationary applications a separate switching connection box can provide discrete potential-free contacts and sensor interfaces for all kind of remote control applications.

## Mixed network applications

Public transportation applications for large geographical area, require communication solutions based on a mixture of public and private networks for easy system setup and economic aspects. Here, TrafficNet transceiver units with a hybrid network capability provide a solution taking advantage of both. Within a Hot Spot coverage area, WLAN will be used for a high speed data connectivity, whereas in remote areas public networks with GSM/UMTS will be used for communication.



Hot spot area

Long distance traffic line

## Wireless routing networks

While there is a lack of a dedicated WAN to inter-connect the TrafficNet transceiver units forming the network or wireless radio components, TrafficNet transceiver units with a second independent radio module can be used for a wireless backhaul.

Wireless backhaul

Operation Control Center







Traffic line

## Public transportation networks

The usage of TrafficNet transceiver units will enable to create a wide area radio network coverage for high speed data connectivity. Various transceiver configurations with wired and wireless network access supporting an easy network installation for both, urban and rural areas with limited infrastructure available.

Public transportation vehicles can use identical Traffic-Net transceiver units onboard due to its versatile and rugged design. In combination with an embedded GPS functionality, also vehicle tracking can be done.

### LEGEND

-  TRainCom® TN Radio Device
-  LAN/Backbone Network
-  Traffic line
-  Hotspot-Area
-  IP-based wired accessories
-  Wireless Radio Link



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