2.4GHz Telemetry Radios

(RLRTM24xxx)

The RLRTM24 radios are designed for use with the VBOX product range and have a maximum range of 2400m.

Each module is supplied with a magnetic mounting antenna and contains a high power radio modem capable of transmitting and receiving RS232 serial data. It can be connected to a VBOX or Base Station with just one cable.

The 2.4G Hz radios can be used with a Base Station to provide DGPS corrections to a VBOX.

2.4G Hz radios can be used to provide the link between two or more VBOX units at a range of 600 m, which is used for ADAS testing where measurement of vehicle separation is required.

It can also be used to transmit VBOX serial data from a remote unit to a laptop PC at a maximum rate of 20 Hz.

All 2.4G Hz radios are available with a transmission power of 10 mW, 50 mW or 125 mW. Please establish which output power is permitted in your county.

Transmission Range

	125mW	50mW	10mW
Permitted in countries like:	USA, Canada, Russia, China	Japan	EU
Difficult Environment (e. g. buildings, reinforced concrete)	200 m (600 feet)	120 m (400 feet)	120 m (400 feet)
Open environment with antennas ground level (e.g. vehicle roofs)	500 m (1600 feet)	400 m (1300 feet)	400 m (1300 feet)
In view with Base Station antenna at height (e.g. building roof)	3000 m (10,000 feet)	2400 m (8000 feet)	2400 m (8000 feet)

Note: Obstacles such as walls and trees can greatly affect the range

Physical

Module Dimensions	95 mm x 60 mm x 33 mm
Operating Temperature	-20°C to +60°C
Storage Temperature	-40°C to +85°C

Specifications

Input Voltage	8 – 30 V DC
Input Current - Receiving	<200 mA
Input Current - Transmitting	<200 mA
Radio Transmission Power	10 mW, 50 mW or 125 mW
Base Station Duty Cycle	< 10%
Carrier Frequency	2.4 GHz
Radio Data Rate	500 kbit/s
RS232 Data Rate	115,200 bit/s (configurable)
Approvals 10mW versions	CE-approved for European use
50mW versions	FCC/IC-approved for USA/Canada Approved for Japan R 204-320035
125mW versions	FCC/IC-approved for USA/Canada

2.4 GHz Radio Overview

VBOX to PC Telemetry Radios

A VBOX telemetry pair of radios (RLRTM24VBT) allows a VBOX to communicate with a laptop running VBOX Tools. Communication can be bi-directional so the laptop will be able to change the VBOX setup as well as receive live data.

VBOX Tools

SERIAL DATA

RLRTM24VBT   RLRTM24VBT

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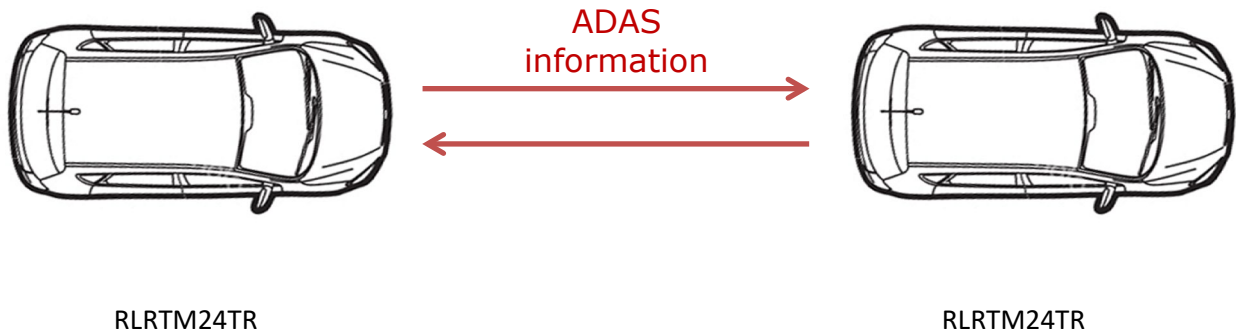www.vboxautomotive.co.uk

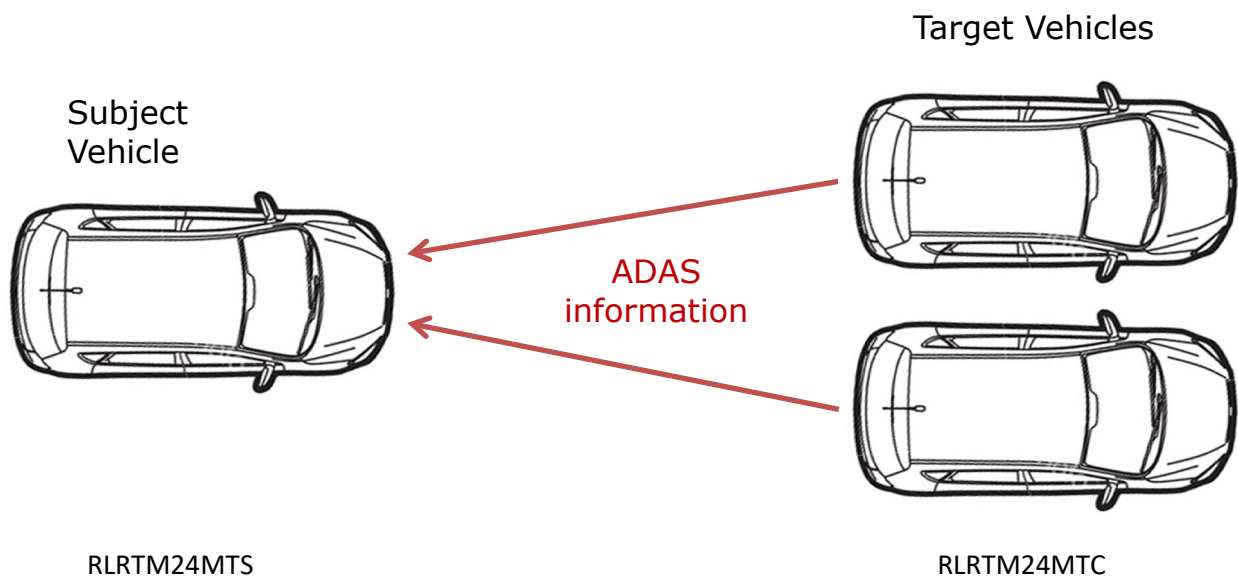25/02/2019

ADAS Telemetry Radios

ADAS Single Target

Single Target radios (RLRTM24TR) can be used to transmit data from a target vehicle to a subject vehicle and vice versa, so both vehicles can calculate separation data live.

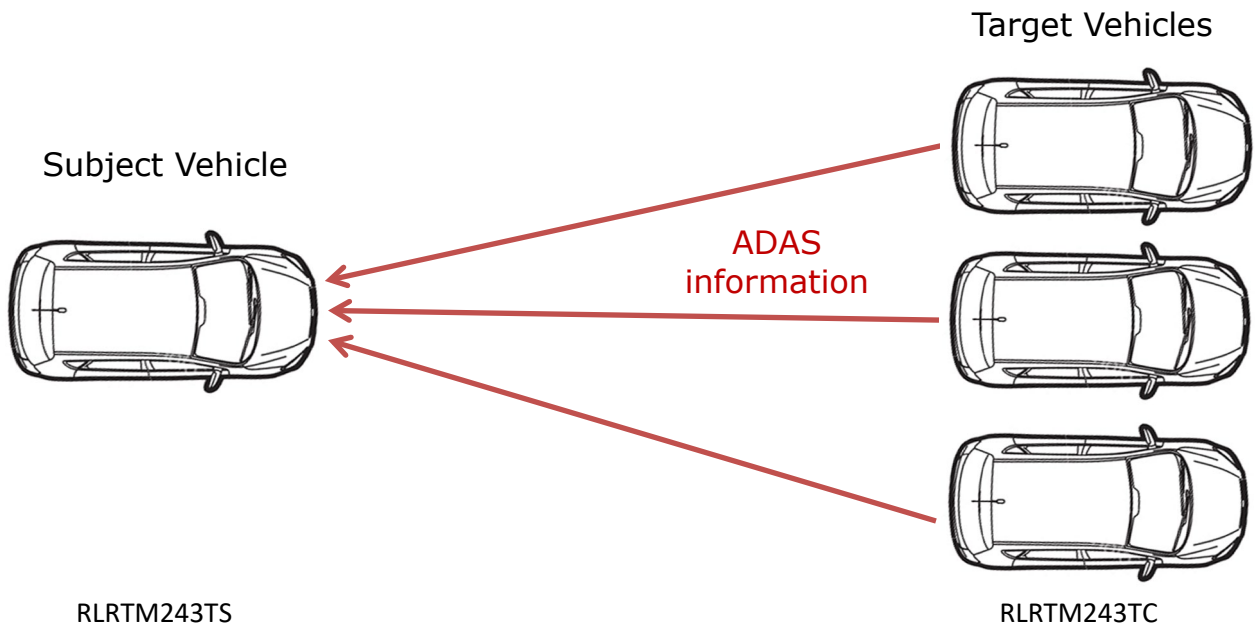RLRTM24TR   RLRTM24TR

ADAS Multiple Target

Multiple Target radios (RLRTM24MTS/C for two targets and RLRTM243TS/C for three targets) enable the simultaneous calculation of parameters from two or three target vehicles. The data flows only in one direction but allows two/three target vehicles to transmit their data to one subject vehicle, which then can calculate separation data live.

Target Vehicles

Subject
Vehicle

ADAS
information

RLRTM24MTS   RLRTM24MTC

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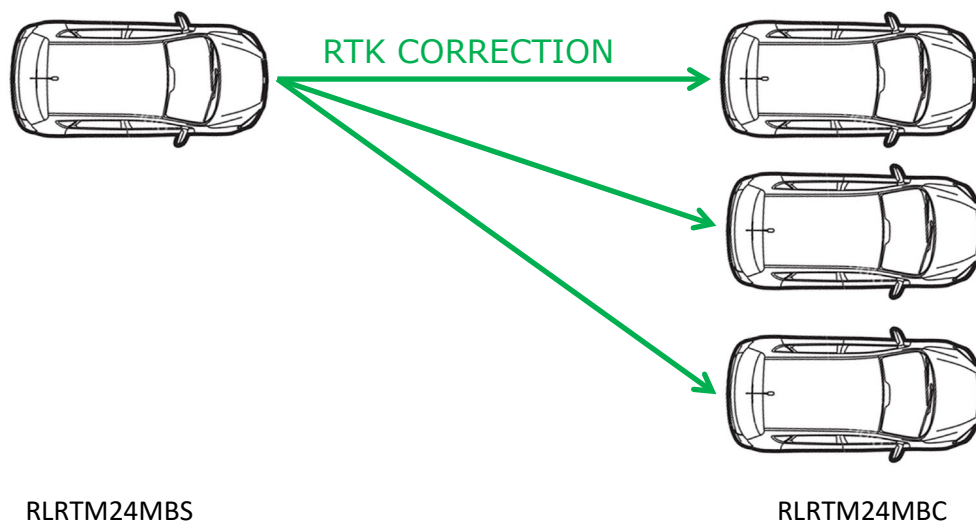Target Vehicles

Subject Vehicle

ADAS information

RLRTM243TS

RLRTM243TC

DGNSS Telemetry Radios

Moving Base

Moving Base radios are used to transmit and receive corrections from VBOX 3i RTK units within a Moving Base setup. A Moving Base radio is programmed as 'server' when transmitting (vehicle equipped with the Moving Base VBOX) or 'client' when receiving RTK correction messages. There is no limit to the number of receivers (RLRTM24MBC) that can get corrections from a transmitter (RLRTM24MBS).

RTK CORRECTION

RLRTM24MBS

RLRTM24MBC

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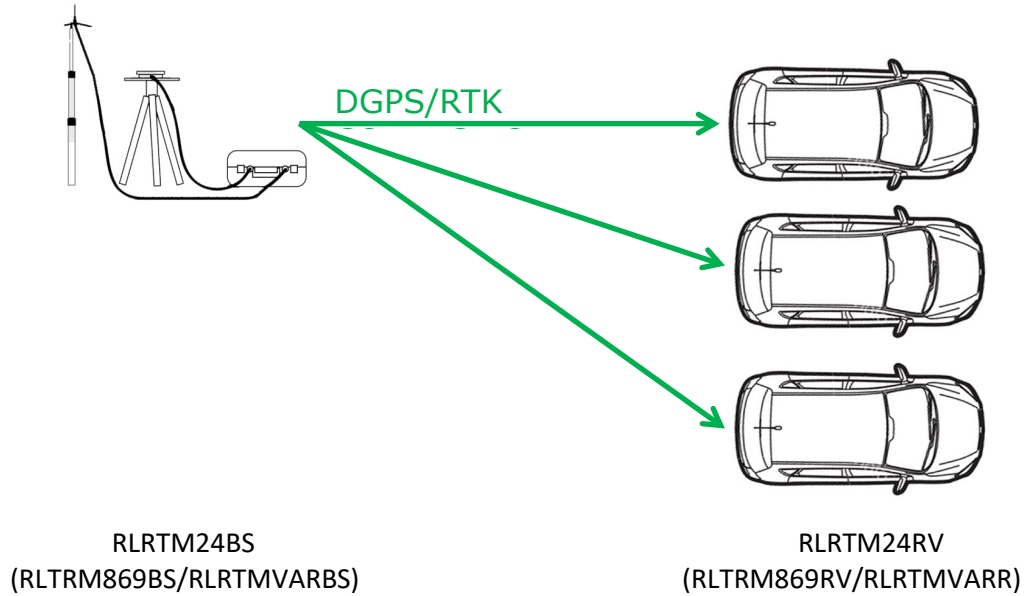www.vboxautomotive.co.uk

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DGNSS Base Station RTK

RLRTM24BS/RV radio modules are for use with a static DGNSS Base Station. These transmit a much longer correction message at a much lower rate than the Moving Base setup. There is no limit to the number of receiving radios (RLRTM24RV) that can get corrections from a transmitting radio.
Please note that we have different Base Station Radio options depending on country (RLRTMVAR, RLRTM869).

DGPS/RTK

RLRTM24BS
(RLTRM869BS/RLRTMVARBS)

RLRTM24RV
(RLTRM869RV/RLRTMVARR)

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2.4GHz Telemetry Radios

(RLRTM24xxx)

Package Contents

VBOX to PC Telemetry Radios
RLRTM24MVBT - 10mW Transmit Power

Description	Product Code
VBOX Telemetry Radio Module x2	RTM24E-V2
Magnetic Mount Radio Antenna – 2m cable	RLACS218
5 Way Lemo to 5 Way Lemo Cable – 2m	RLCAB005
Serial PC Cable for Radio	RLCAB032
Base Station mast mount radio option for greater range	RLACS153
5m Telescopic mast for Base Station radio antenna	RLACS143
2.4GHz Mast Antenna 5DBI Gain NTYPE	PA0545LMR400
6m PC to Mast Mount Radio cable	RLCAB108
Mains charger (specify country)	RLVBACS020

RLRTM24MVBTJP – 50mW / RLRTM24MVBTU – 125mW

Description	Product Code
VBOX Telemetry Radio Module x2	RTM24 / RTM24U
Antenna for Radio System	MOTOMAG24
VBOX to VBOX cable (5 Way Lemo to 5 Way Lemo) – 30 cm	RLCAB006
Serial PC Cable for Radio	RLCAB032
Base Station Mast Mount radio option for greater range	RLACS153
5m Telescopic mast for Base Station radio antenna	RLACS143
2.4GHz Mast Antenna 5DBI Gain NTYPE	PA0545LMR400
6m PC to Mast Mount Radio cable	RLCAB108
Mains charger (specify country)	RLVBACS020

ADAS Single Target
Bi-directional Telemetry Radios

RLRTM24TR – 10mW / RLRTM24TRU – 50mW / RLRTM24TRJP – 125mW

Description	Product Code
ADAS Telemetry Radio x 2	RTM24E-V2 / RTM24U / RTM24
Serial PC Cable for Radio x 1	RLCAB032
Antenna for Radio System x 2	MOTOMAG24
5 Way Lemo to 5 Way Lemo – 30cm x 2	RLCAB006

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2.4GHz Telemetry Radios

(RLRTM24xxx)

ADAS Multiple Target

Server Radios

RLRTM24MTS / RLRTM243TS - 10mW Transmit Power

Description	Product Code
VBOX ADAS Radio for Multiple Target (Subject vehicle)	RTM24E-V2
Magnetic Mount Radio Antenna – 2m cable	RLACS218
5 Way Lemo to 5 Way Lemo Cable – 2m	RLCAB005
Serial PC Cable for Radio	RLCAB032

RLRTM24MTSJP/ RLRTM243TSJP – 50mW; RLRTM24MTSU/ RLRTM243TSU – 125mW

Description	Product Code
VBOX ADAS Radio for Multiple Target (Subject vehicle)	RTM24U-V2
Serial PC Cable for Radio	RLCAB032
Antenna for Radio System	MOTOMAG24
5 Way Lemo to 5 Way Lemo Cable – 30cm	RLCAB006

Client Radios

RLRTM24MTC / RLRTM243TC - 10mW

Description	Product Code
VBOX ADAS Radio for Multiple Target (Target vehicles)	RTM24E-V2
Magnetic Mount Radio Antenna – 2m cable	RLACS218
5 Way Lemo to 5 Way Lemo Cable – 2m	RLCAB005

RLRTM24MTCJP/ RLRTM243TCJP – 50mW; RLRTM24MTCU/ RLRTM243TCU – 125mW

Description	Product Code
VBOX ADAS Radio for Multiple Target (Target vehicles)	RTM24U-V2
Antenna for Radio System	MOTOMAG24
5 Way Lemo to 5 Way Lemo Cable – 30cm	RLCAB006

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2.4GHz Telemetry Radios

(RLRTM24xxx)

DGNSS Telemetry Base Station RTK

Server Radios

RLRTM24BSJP – 50mW / RLRTM24BSU – 125mW

Description	Product Code
Base Station Transmit Radio Module	RTM24 / RTM24U
Base Station Mast Antenna 5DBI Gain NTYPE	PA0545LMR400
Base Station Mast Mount Radio for greater range	RLACS153-24

Client Radios

RLRTM24RVJP – 50mW / RLRTM24RVU – 125mW

Description	Product Code
VBOX Transmit & Receive Radio Module	RTM24 / RTM24U
Antenna for Radio System	MOTOMAG24
5 Way Lemo to 5 Way Lemo – 30cm	RLCAB006
Serial PC Cable for Radio	RLCAB032

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DGNSS Telemetry Moving Base

Server Radios
RLRTM24MBS – 10mW

Description	Product Code
VBOX ADAS Server Radio for Moving Base (Transmit)	RTM24E-V2
Elevated Feed Radio Mag Mount Antenna	RLACS207
Serial PC Cable for Radio	RLCAB032
5 Way Lemo to 5 Way Lemo – 300mm	RLCAB006

RLRTM24MBSJP – 50mW / RLRTM24MBSU – 125mW

Description	Product Code
VBOX ADAS Server Radio for Moving Base (Transmit)	RTM24 / RTM24U
Elevated Feed Radio Mag Mount Antenna	RLACS207
Serial PC Cable for Radio	RLCAB032
5 Way Lemo to 5 Way Lemo – 300mm	RLCAB006

Client Radios
RLRTM24MBC – 10mW

Description	Product Code
VBOX ADAS Client Radio for Moving Base (Receive)	RTM24E-V2
Magnetic Mount Radio Antenna – 2m cable	RLACS218
5 Way Lemo to 5 Way Lemo Cable – 2m	RLCAB005

RLRTM24MBCJP – 50mW / RLRTM24MBCU – 125mW

Description	Product Code
VBOX ADAS Client Radio for Moving Base (Receive)	RTM24 / RTM24U
Antenna for Radio System	MOTOMAG24
5 Way Lemo to 5 Way Lemo – 300mm	RLCAB006