Installation and Operation Instructions

TORNADOXDUO

TornadoX Duo
XT2M-047-LL Installation Guide
Beacon and Speaker/Siren Combination

Product Introduction

Redtronic's TornadoX Duo (TXD) is a combination beacon, siren & speaker system designed for temporary mount applications (primarily magnetic). Any vehicle can instantly become an emergency response vehicle whilst meeting all regulatory standards required for public road use. The TDX is also perfect for users not wanting to make permanent installations to their vehicle.

The TornadoX Duo incorporates the immensely popular low-profile Tornado B47 beacon (with a blue lens as standard) with 2x S20IS digital siren & speakers within a compact and robust enclosure.

As standard the TXD is supplied with a multifunctional cigarette plug. For users requiring enhanced functionality there is also a model which includes a inline LINX4 universal controller.

The TornadoX Duo is likely the most stringently tested product Redtronic offer, mainly due to the German KBA testing and approval which incorporates a brake test to ensure the magnets reliably remain in place in case of a collision or harsh braking. The decibel output of the sirens & speakers have also been tested to the highest KBA standard to optimise the system performance.

The user can programme the desired siren tone from 10 countries and 27 tone variants by following a programming sequence using the inbuilt programming port.

The TXD is designed for the toughest environments and is approved to EMC UNECE R10, UNECE R65, KBA, UTAC and comes with 7 standard flash patterns including ICAO/CAP168 airport pattern. The TornadoX Duo is manufactured in the UK and is endorsed with a 3 year warranty.

Part Numbers

Part Number	Colour	Type	Voltage	Warranty
XT2M-047-BBLL1		Latch-Latch cigarette plug	10-30v	3 Years
XT2M-047-BBLM1		Latch-Momentary cigarette plug	10-30v	3 Years
XT2M-047-BBL41		LINX4 (3 tones)	10-30v	3 Years

Please Note: The TornadoX Duo (TXD) is currently only available with the Tornado B47 beacon blue LED and blue lens. As standard the mounting option is magnetic. For customers requiring alternative led, lens colours, and mounting options it is possible to order spare parts to modify the standard models to your requirements. Single colour models only available. Please contact us for further information.

Flash Patterns

Pattern 1	Quad
Pattern 2	Triple
Pattern 3	Double
Pattern 4	Single
Pattern 5	Quad/Single
Pattern 6	Quad/Triple/Double/Single
Pattern 7	CAP168

Technical Information

Dimensions	295mm x 176mm x 182mm (LxHxD)
Voltage Range	10-30VDC
Number of LEDs	16
Amps / Current Peak Max	4 Amp at 12VDC
Recommended Fuse rating	10 Amps (inbuilt in cigarette plug)
LED Power	3 Watt (per flashing LED)
IP Rating	IP45K (main unit), IP69K (beacon), IP69K (speaker)
Approval R10	Yes
Approval R65 & CLASS	Yes Class II – Blue
Approval CISPR25 & CLASS	N/A
CAP168 / ICAO	Yes
DEKRA Speed Rating	KBA Brake tested
DIM Mode or Auto DIM	Auto Dim as standard
Cruise	No
GATSO	No
Synchronisation	No
Weight (approx.)	3kg
Operating Temperature	-40º to 105º
Lens Material	3mm UV Stable PMMA instead (main unit), PC (beacon), Nylon (Siren)
Mounting	Magnetic
Registered Community Design	N/A
Warranty	3 Years

APPROVALS

Speed / Brake test

The KBA (Kraftfahrt-Bundesamt) is the Federal Motor Transport Authority of Germany. It is a government agency responsible for testing and approval of motor vehicles and road traffic in Germany. The standards imposed by the KBA are regarded some of the most stringent road regulations worldwide. The § 22a of the StVZO is a set of regulations in Germany to approve products for use as aftermarket additions to the vehicle. In 2021 a new regulation was introduced to approve the use of magnetic mount products to vehicles to ensure a magnet was selected with the appropriate strength to meet the strict German test standard as there are many products available in magnetic form that do not meet this requirement and are arguably unsafe for use on vehicles. The TornadoX Duo has been designed in accordance with this standard and meets the specification to ensure stopping at speed will not allow the unit to detach from the vehicle. The 2 x S2OIS integrated within the TDX meets the standard set by KBA for siren tones.

UTAC is a French organisation that specialises in testing, certification, and research in the automotive and transportation industry. The S2OIS integrated within the TDX meets the standard set by UTAC for all French siren tones.

Tone selection

The TornadoX Duo has been designed with an inbuilt microphone connection which enables the user to either connect a Redtronic microphone to the unit to output PA (public address) from the system, or with a dedicated connector (included in kit of parts) the user can reprogramme the country tone on the sirens so that it can provide a total of 27 tone variants. This allows the TDX to be used worldwide with one device fitting all global requirements. The tone programming feature uses a combination of the programming port and the pattern select button in the rear of the unit.

Cable Connections

FUNCTION	WIRE COLOUR	DESCRIPTION
Cigarette plug L-L	N/A Sheath black	Switch 1 activates power to unit (beacon flash) {red led}, Switch 2 activates tone trigger {blue led} – meant for most European tones
Cigarette plug L-M	N/A Sheath black	Switch 1 activates power to unit (beacon flash) {red led}, Switch 2 activates tone trigger {momentary action} – intended for International tones on a loop
Cigarette plug LINX4	N/A Sheath black	Switch 1 activates power to unit (beacon flash) {red led}, Switch 2 activates tone trigger 1, Switch 3 activates tone trigger 2, Switch 4 activates tone
Pattern	Black switch (located on main enclosure)	Changes the flash pattern by momentarily applying to positive. Apply to +ve for 2-3 seconds to revert to quad flash (pattern 1)
Microphone connector	N/A	Plug in Redtronic microphone to activate PA function or use as a programming port for tone selection
Autodim	N/A	Activate night mode via AUTODIM as standard

Installation

The TornadoX Duo requires the use of a cigarette plug and providing a minimum of 6amps to the device to function properly. Plug the cigarette plug into the socket/power supply and use the appropriate switches to activate the light and/or siren.

Flash patterns

Whilst powering the device (with the beacon flashing), the black switch on the rear of the unit should be momentarily pressed to cycle to the next pattern. Repeat this action until you have found an appropriate flash pattern.

Troubleshoot Tip! If the pattern only provides a slow single flash the lamp has accidently been programmed to CAP168/ICAO flash pattern. Undo this by powering the beacon and apply the pattern select button to positive (+ve) for 10 seconds. The flash pattern will noticeably change.

Mounting Installation

STEP 1:

It's important to clean the vehicle roof with a damp cloth before applying the TornadoX-Duo. Make sure the surface area is completely dry before proceeding with the application.

STEP 2

Before using the TornadoX-Duo, make sure to clean it thoroughly and check for any metal parts that may have accumulated on the magnets during storage. This is important to ensure that the magnets do not scratch the vehicle's metal roof.
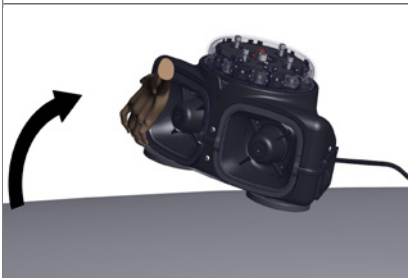
STEP 3

To properly install the TornadoX-Duo, you should position it above the B-pillar and make sure that the speakers are facing the direction of travel. It's important that you attach it as close to the centre of the roof as possible and avoid any grooves. Additionally, make sure that the light output is emitted horizontally and evenly in all directions. Finally, ensure that the magnets are in full contact with the roof to ensure a secure installation.

STEP 4

To use the device, please ensure that the cable is placed in front of the cigarette lighter and is secured in a way that does not hinder the driver. Also, make sure that the plug is firmly seated in the cigarette lighter. You can operate the device using the switches on the plug. While driving, it's important to pay attention to the speed limit and wind pressure from oncoming vehicles.

STEP 5

To remove the unit, tilt it towards you and lift off the roof. It's important to avoid pulling it off.

General information

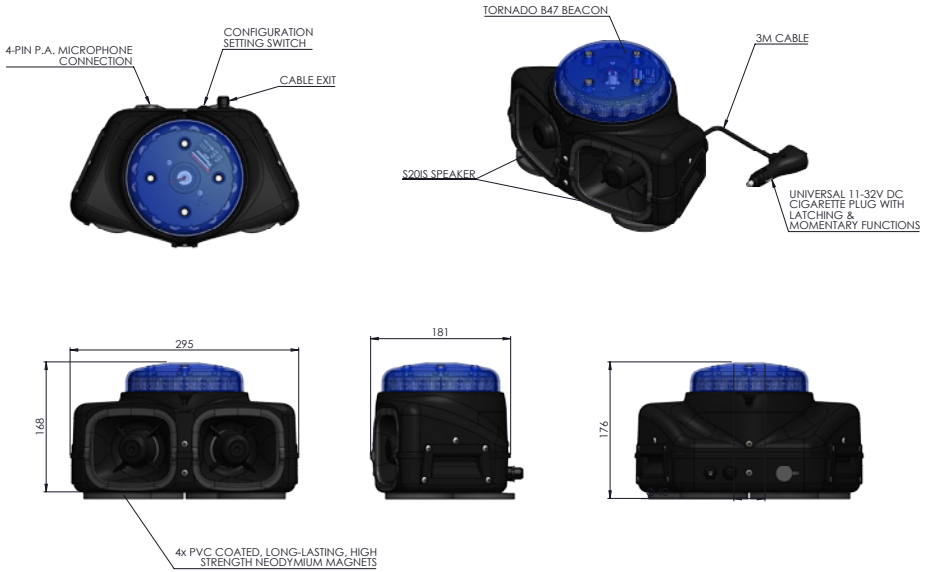*(Please also note the vehicle manufacturer's instructions)*

- ▸ The TornadoX Duo is only suitable for metal roofs (no glass or plastic roofs).
- ▸ The TXD is only suitable for flat roofs with a smooth surface (without grooves).
- ▸ Do not position the TXD on the curvaceous edge areas of the vehicle roofs, on cracks, grooves, seams or on the edges of the sunroof.
- ▸ Clean the magnets and roof surface free of dust and grease with a damp cloth. The base of the magnets are provided with a rubberised coating to ensure they do not cause damage to the mating surface.
- ▸ Only place the TXD on dry roof surfaces; in sub-zero temperatures, remove any ice formation under the magnetic plate prior to use.

Operating manual

- ▸ Clean the vehicle roof, see general information.
- ▸ Clean the TDX and make sure that no metal parts have accumulated on the magnets during storage (avoiding unnecessary scratching of the roof).
- ▸ The positioning takes place above the B-pillar, speakers in the direction of travel (do not attach them too far out and pay attention to grooves etc).
- ▸ The blue light must be able to emit horizontally and evenly in all directions. Make sure that the magnets are in full contact with the vehicle roof surface.
- ▸ Place the cable loosely in front of the cigarette socket and secure it against being accidentally disconnected. The cable must not hinder the driver.
- ▸ Check whether the plug is firmly seated in the cigarette socket. Operation via the switch on the plug.
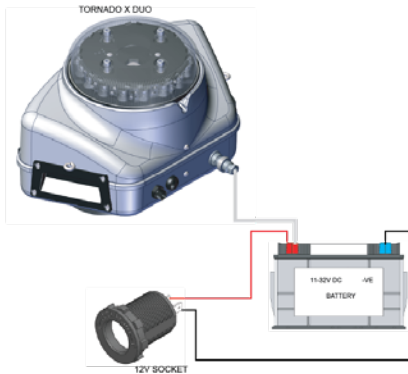- ▸ While driving, pay attention to the permissible speed limit and the wind pressure from oncoming vehicles.

Product Drawings

4-PIN P.A. MICROPHONE
CONNECTION

CONFIGURATION
SETTING SWITCH

CABLE EXIT

TORNADO B47 BEACON

3M CABLE

S20IS SPEAKER

UNIVERSAL 11-32V DC
CIGARETTE PLUG WITH
LATCHING &
MOMENTARY FUNCTIONS

295

168

181

176

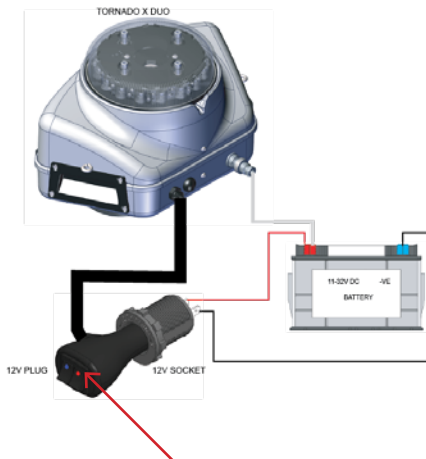4x PVC COATED, LONG-LASTING, HIGH
STRENGTH NEODYMIUM MAGNETS
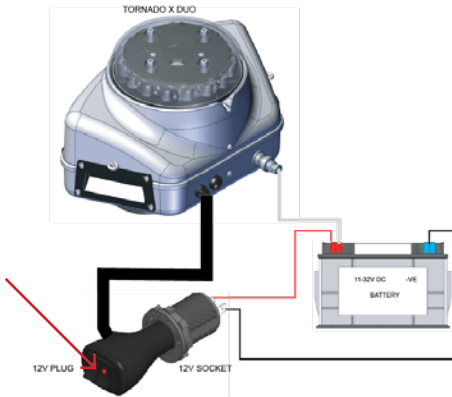
TORNADO X DUO SETUP GUIDE

STEP 1 Connect the white PA wire to power (+ve). This will stop the siren from triggering.
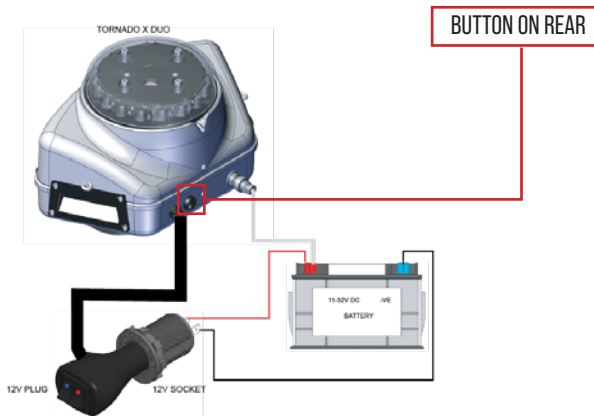

STEP 2 Plug in cig plug and turn on red switch. Beacon will flash and siren will beep 4 times. Siren will now enter standby mode.
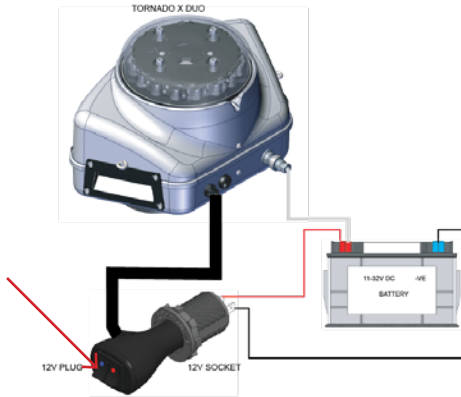
STEP 3   turn on the second switch on the cig plug. Siren will beep 1 time.

STEP 4   Press button on rear of unit for country select

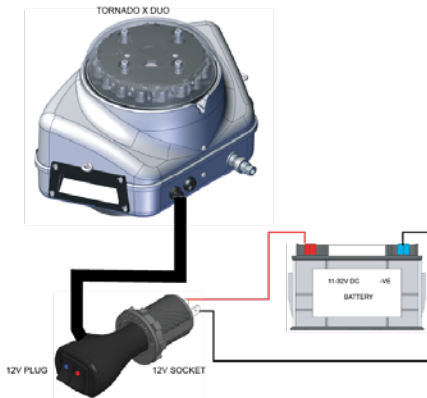(for more detail refer to M013: S200IS siren user manual)

BUTTON ON REAR

STEP 5   Turn off the second switch.

	UK/ INTERNATIONAL	CYPRUS	GERMANY	AUSTRIA	NETHERLANDS	FRANCE	ITALY	FINLAND	NORWAY	BELGIUM
FLAG										
BEEPS	1	2	3	4	5	6	7	8	9	10

STEP 6 Remove white wire from power . The button on rear may have changed the beacon pattern. Press button until correct pattern is selected. The unit is to leave the factory with double flash pattern.

Warranty and Liability

Redtronic warrants that on the date of purchase, this product will conform to Redtronic specifications for this product (which are available from Redtronic upon request). This product benefits from a 3 year warranty from the date of purchase. Please refer to our standard terms & conditions and limited warranty for any further information.

Please Note: As this is a temporary mounted product, the cigarette plug, cable, magnets and enclosure are all at risk of damage through misuse and/or wear and tear and therefore are not included in the overall product warranty. Spare parts can be ordered separately.

Optional Extra Accessories

	SP_EM173L2	SPARE PART SAFETY LANYARD (BALL VERSION) PAIR (1000MM)
	TRDXCB	TornadoX Duo CARRY BAG [35X22X26]

Spare Parts

SP_TB47LENFT_C	SPARE - TORNADO B47 DOME LENS [CLEAR]
SP_TB47LENFT_B	SPARE - TORNADO B47 DOME LENS [BLUE]
SP_TB47LENFT_A	SPARE - TORNADO B47 DOME LENS [AMBER]
S20IS	NEODYMIUM 20W SPEAKER W/INTEGRATED SIREN (MULTI TONE)
SP_EM102RFSS48KG	SPARE - 90MM SUPER STRENGTH MAGNETS [X1]
SP_EM173SC75	SPARE – SUCTION/VACUUM CUP (75MM) WITH HAND PLUNGER
SP_EM173CGD	SPARE - DOUBLE SWITCH CIG PLUG [L/M] - STRAIGHT
SP_EM173CGD4	SPARE - DOUBLE SWITCH CIG PLUG [L/L] - 4.2M STRAIGHT
LINX4-BC	LINX4 UNIVERSAL CONTROLLER (WITH CIG PLUG)
SP_EM60WD-N4	EM60WD MICROPHONE WITH CURLY CORD & 4 PIN CONNECTOR
SP_EM60WD-5MN4	5 METRE EXTENSION LEAD FOR MICROPHONE - 4 PIN XLR CONNECTOR

HOW TO CARE FOR YOUR REDTRONIC POLYCARBONATE PRODUCTS

POLYCARBONATE IS ONE OF THE STRONGEST PLASTICS AVAILABLE, BUT LIKE MOST MATERIALS THEY DO HAVE THEIR WEAKNESSES.

POLYCARBONATE IS WEAK AGAINST CHEMICAL ATTACK:

Cleaning and washing agents are vast in terms of their chemical composition, and so it should not be assumed they are all the same. They frequently include chemicals that damage polycarbonate.

Makrolon is resistant to normal soaps but not to amines, ammonia, a small number of solvent components, and a large number of high-gloss drying aids. Rinsing agents incorporating high-gloss drying aids are also unsuitable for polycarbonate.

In many instances, it is sufficient to clean with warm or hot water to which some weakly acidic, neutral, or weakly alkaline cleaning agent has been added. If you're unsure whether your cleaning agent is suitable, you should contact Redtronic with details of the product for more advice.

Using aggressive cleaning agents generally leads to a great reduction in mechanical stability and strength, but there are also other effects that are not always visible, such as swelling or chemical decomposition of the polymer.

MAKE SURE CLEANING AGENTS ARE FULLY RINSED OFF:

If you choose to use a cleaning agent, it is imperative that it is fully cleaned away and is not left in either droplet or film form. The longer a chemical agent is left in contact with polycarbonate, the increased possibility that it will damage it.

WATER TEMPERATURE IS IMPORTANT:

For completely sealed units, it is not recommended to either immerse the product in water above 60°C or in steam. It is highly likely that using water above a temperature of 60°C will affect the chemical bond and composition of the plastic, resulting in deformation or stress cracking, potentially resulting in total failure. The higher the temperature of the water used will shorten the lifetime of the polycarbonate.

FOR HARD TO REMOVE OIL AND GREASE:

Surfaces soiled with lubricants like oil and grease are best cleaned with suitable solvents at room temperature and with short exposure times. These include: gasoline fractions free of aromatics (e. g. petroleum-ether, ligroin, white spirit), alcohols (ethyl, n-propyl, isopropyl, butyl and isobutyl-alcohol, but not methyl alcohol).

LONG LASTING UV STABILISED PROTECTION:

The more you clean polycarbonate, the more you break down the UV stabilised additive in the material.

HOW YOU CLEAN DEPENDS ON THE IP RATING OF THE PRODUCT:

If your product is issued an IP69K rating, you can jet/pressure wash the product.

However, it's important that the end user is aware of the parameters behind the test. Importantly, the nozzle should be no closer than 150mm, the water flow rate should not exceed 15 litres per minute, and the pressure no more than 100 bar.

If you're unsure of the product's IP rating, you should either check the datasheet, our website or contact us.

HERE'S A BASIC OVERVIEW OF THE TEST:

Test: High pressure steam cleaning
Gem. ISO 20653 (2013-02): IPX9K
Parameters: Distance of the nozzle to the test specimen: **100-150mm**
Water flow rate: **15l / min**
Water pressure: **100 bar**
Water temperature: **80°C**
Speed test table: **5U / min**
Spray angle: **0°, 30°, 60°, 90°**
Number of cycles: **1**
Test conditions: **The candidate is not in electrical operation**