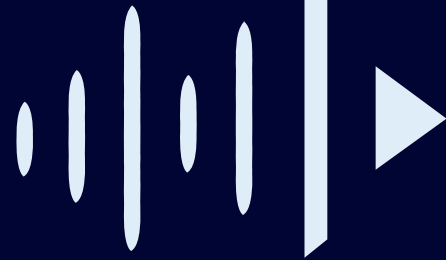


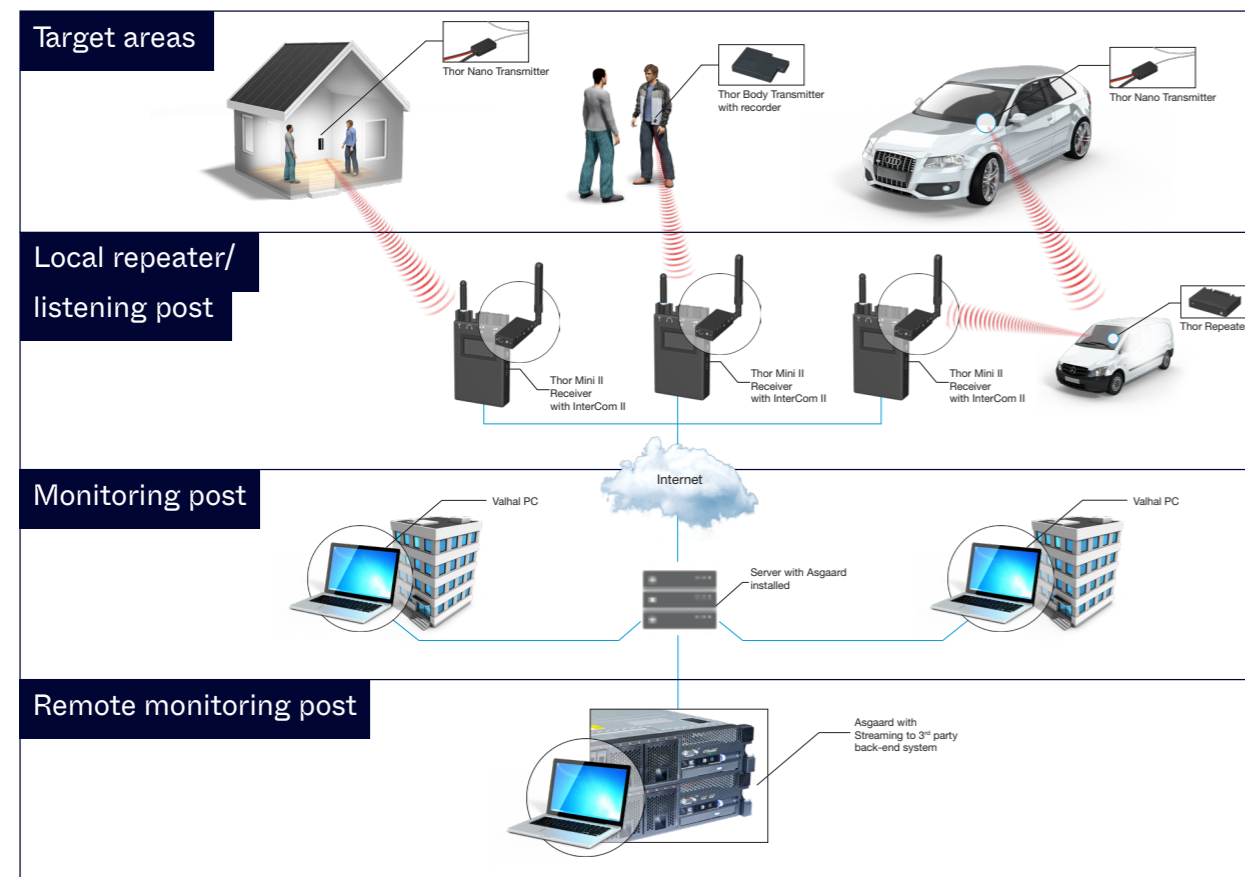


Thor Wireless Digital Audio Surveillance System.

Spectronic



Overview



Thor - in brief

The Thor system is a full-featured, easy-to-use, portable digital audio listening and recording system for use in surveillance operations.

High audio quality

The Thor system is characterized by its outstanding high audio quality. The audio quality is designed for high intelligibility of speech and thus the audio sampling frequency and audio frequency response is 2.5 times higher than in most digital voice transmitters / recorders.

The wide dynamic range of the system means that a fixed gain can be used in most situations. For extreme conditions the system has automatic gain control (AGC).

Operational security

The audio signal is digitally encrypted with 56-bit DES, 128-bit AES, or 256-bit AES to prevent 3rd party interception. Furthermore, the receivers, the transmitters and the RF repeater incorporate an adjustable RF output power to help reduce the possibility of detection.

For higher operational security and performance, the receiver has a built-in remote control for controlling various transmitter settings and functions.

Simple to use

The Thor system is very easy to use for both novice and advanced users. The intuitive controls of the receivers allow a new user to monitor and record stereo audio in high quality within seconds. For the advanced user, the wide range of options allow flexible and sophisticated system configuration.

Various repeater options

The Thor system can be paired with an RF repeater for long distance monitoring. To overcome the range limitations of an RF repeater, the Thor system can also be used together with the InterCom II to provide over-the-horizon streaming, monitoring and recording to anywhere in the world.

Features

- Multi-location surveillance solution
 - body worn / stationary / concealed transmitters
- Compact and small size transmitters – easy concealment
- Various repeater options – long-range surveillance
- Encrypted communication – no 3rd party interception
- High-quality stereo audio – outstanding intelligible speech
- Built-in remote control – higher operational security
- Receivers with built-in recorder – saving evidence right away
- Remote start / stop of transmitter recorder
 - saving memory and power

Applications



Body worn digital audio surveillance



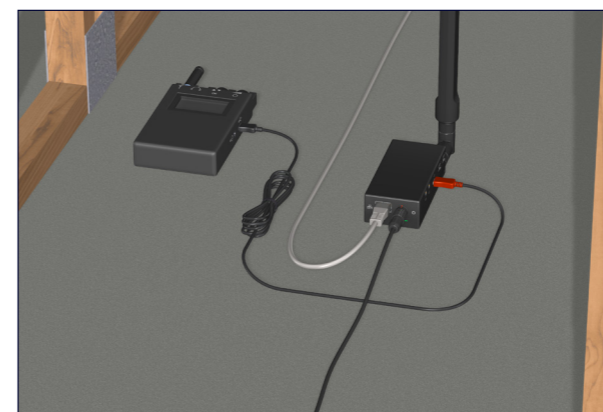
Fixed, long term installations, e.g. rooms and cars



Pull pin design for hasty operations



Long range in conjunction with Thor repeater



Over-the-horizon streaming, monitoring, and recording via InterCom II

Thor receivers

Thor Mini II Receiver

The small and compact Thor Mini II Receiver has built-in remote control of up to 10 transmitters and up to 2 RF repeaters. It comes in two versions: as a stand-alone receiver or as a receiver with built-in 64GB recorder.

The receiver is easy to operate for both novice and advanced users. All receiver functions can be controlled via the two push/scroll wheels or via the intuitive Valhal configuration software.

The receiver can be used in two ways: In a standard point-to-point setup with receiver and a transmitter or in a repeater setup with the Thor Repeater as a link between the receiver and transmitter. To overcome range limitations with RF, the InterCom II can be used as a repeater link for streaming and monitoring the audio over 4G/3G, WiFi, or Ethernet.



Thor Mini TRACK II Receiver

The Thor Mini TRACK II has the same features as the Thor Mini II but comes with a built-in recorder with 64 GB memory. This allows for up to 220 hours of uncompressed, stereo audio recordings without a monitoring team, and provides a backup document in case of transmission failure.

Each recording is time stamped and a digital watermark is made of all the audio data. This means that all recordings have their own unique watermark and are tamper proof.



Thor RACK Receiver

The Thor Rack receiver consists of 1,2 or 3 Thor Mini II Receivers integrated into a 19-inch rack mount designed for permanent installation into surveillance vans or similar conveyance. The display and interface of the respective receivers have been optimized for use in a rack mount.

The Thor Rack receiver can also be combined with a INCA receiver. In addition to this, the Thor Rack receiver also comes in a TRACK version.



RF repeaters

Thor Repeater

Providing a range of up to 4.4 km / 2.72 miles (rural areas), the Thor Repeater is a powerful solution used to extend the operating range between a Thor Receiver and a Thor Transmitter. It can also be used to decrease transmitter power and thereby extend transmitter battery life.

The Repeater has a simple design looking much like an antenna amplifier for commercial usage, making it easy to install and hard to spot as being covert surveillance equipment.



IP repeaters

InterCom II

To overcome the range limitations of RF repeaters, the InterCom II can be used together with the Thor Mini II Receiver as an IP bridge. This allows for live streaming and monitoring of audio from the installed Thor transmitters via 4G/3G, WiFi, or Ethernet from anywhere in the world.



Thor transmitters

Thor Nano Transmitter

Our smallest available Thor transmitter making it very easy to hide in fixed installations or use for concealments. The transmitter has two external microphones and can deliver up to 100 mW output power providing a range up to 1.36 km / 0.85 miles*.

The transmitter is powered by the Thor Nano battery set or the AC-DC Converter 6 VDC / 400 mA (115 VAC - 230 VAC).



Thor Nano Bubblegum Transmitter

A “drop and walk” version of the Thor Nano Transmitter with built-in microphones and rechargeable Lithium-Ion battery providing an operating time up to 3 hours. Simply remove the pin at the top, and the transmitter starts to transmit.

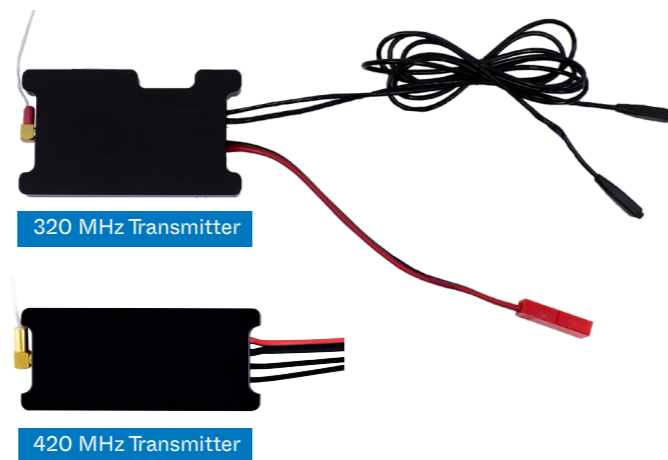


Thor Standard Transmitter

The Standard transmitter has two external microphones and can deliver up to 500 mW output power providing a range up to 1.8 km / 1.11 miles*. In contrast to the Nano transmitters, it has a removeable antenna allowing the use of larger and more powerful antennas for increased range/penetration (via antenna adaptor).

Available in two frequencies: 320 MHz and 420 MHz. The transmitters share the same features, the only differences being size and supply voltage range.

The 420 MHz transmitter is powered by either the battery compartment (with LEMO socket) or by the AC-DC Converter 6 VDC / 400 mA (115 VAC - 230 VAC). The 320 MHz transmitter is powered by a 2500 mAh lithium battery.



*Rural area with standard antennas.

Thor transmitters

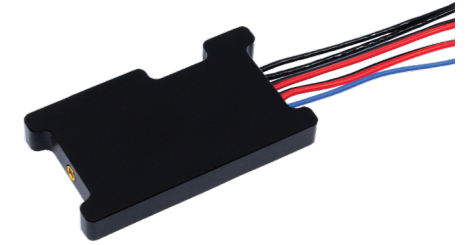
Thor Store & Forward Transmitter

This reliable and versatile transmitter has two external microphones and can deliver up to 500 mW output power, providing a range up to 1.8 km / 1.11 miles*. In addition, it can record audio on site for later retrieval from up to 900 meters / 0.56 miles away.

The system is designed for autonomous operation for extended periods of time, making it ideal for unattended operations and vehicle installations. The transmitter has a built-in 64GB encrypted memory providing up to 160 days of high quality audio recordings.

To minimize power consumption, avoid detection and reduce the amount of recordings that need to be processed; four triggers can be used separately or in combination.

When operating as a store and forward device the transmitter emits no RF, uses little power and has a small thermal footprint making it difficult to detect. In this mode recordings can be retrieved Ad Hoc from the Thor Mini II Receiver or on a schedule through InterCom II.



Thor Body Transmitter

The Thor Body Transmitter is suitable for bodyworn operation as well as extended (stationary, long-term) operation with an external power supply.

The transmitter is normally powered with four 1.5 V lithium AAA-cell batteries. However, the Tx power adapter can also be used to power the device in stationary, long-term operations.



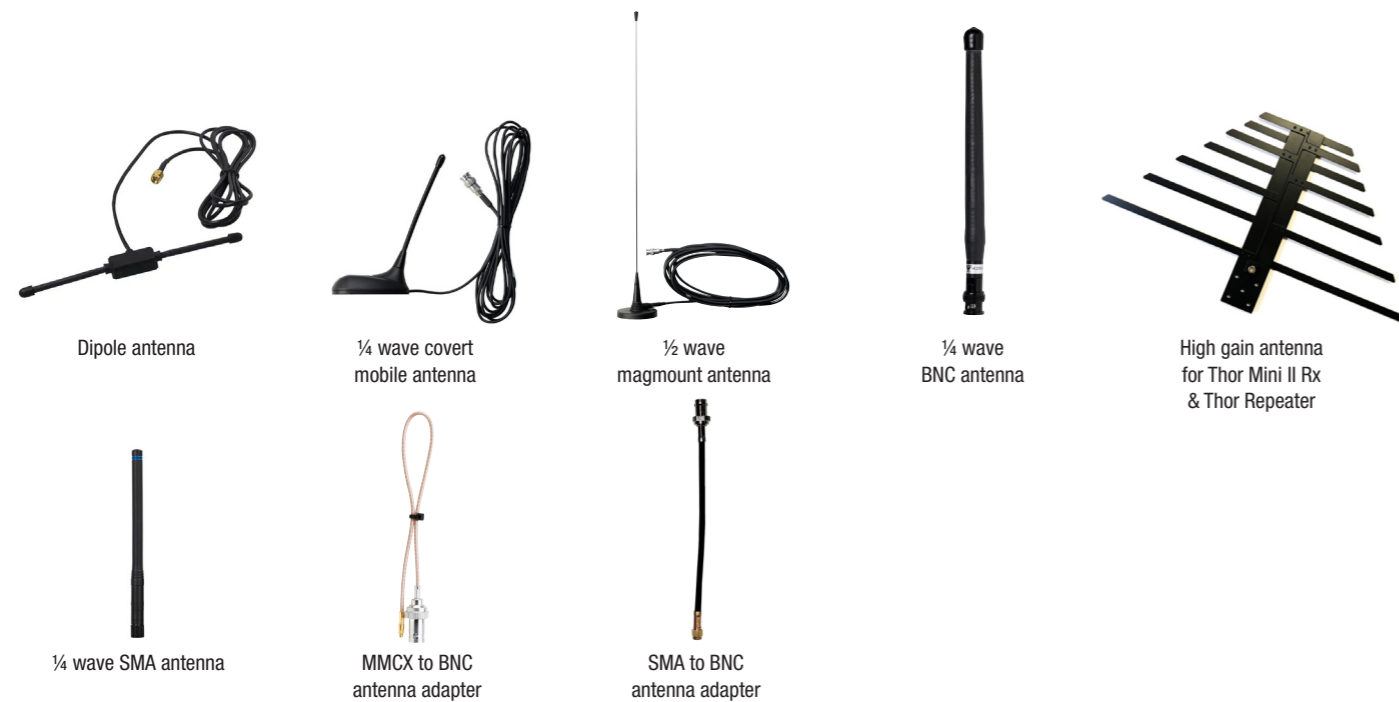
Thor Body Transmitter with recorder

The Thor Body Transmitter with 16GB recorder has all the same features as the Thor Body Transmitter. The built-in recorder allows for up to 56 hours of audio recordings without a monitoring team, and provides a backup file in case of transmission failure.



Antennas

We are offering an extensive range of antennas from the small mobile Dipole Antenna and up to the powerful High Gain Antenna (Yagi), which both can be used on the Thor standard- and body transmitters with a MMCX to BNC adaptor, the Thor Repeater, and the Thor Mini II Receiver with a SMA to BNC adaptor, to maximize the transmission range.



Power supplies

Battery Compartment

For use with the Thor Standard Transmitter.

2 x 3 V lithium (CR 123A)



D-cell Battery Pack

For use with the Thor Repeater, the Thor Body Transmitter / Thor Body Transmitter with Recorder (requires a Thor TX power adaptor), and Thor Store & Forward Transmitter.

8 x 1.5 V alkaline D-cell batteries



11.1 V Lithium-Ion Rechargeable Battery Pack

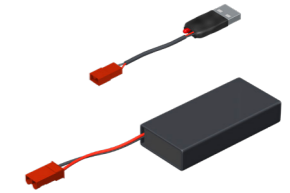
For use with the Thor Body Transmitter (requires a Thor TX Power Adaptor) and Thor Store & Forward Transmitter.



Power supplies

Thor Nano Battery set

For use with Thor Nano Transmitter. The Battery Set consists of a 420 mAh 3.7 V lithium ion battery and a charger.



Thor TX Power Adapter

For extended operation, users can replace the 4 x AAA batteries with the Thor Body Tx power adaptor. It works with both the Thor Body Transmitter and Thor Body Transmitter with Recorder.



AC-DC Converter - 5 VDC / 500 mA

AC-DC Converter for long-term surveillance installations by connection to 115-230 VAC mains lines.

Delivering 2.5 W of power, the AD-DC Converter can be used with the Thor Nano Transmitter, Thor Standard Transmitter, and Thor Store & Forward Transmitter.



AC-DC Converter - 6 VDC / 400 mA

AC-DC Converter for long-term surveillance installations by connection to 115-230 VAC mains lines.

Delivering 2.4 W of power, the AD-DC Converter can be used with the Thor Nano Transmitter, Thor Standard Transmitter, and Thor Store & Forward Transmitter.



AC-DC Converter - 12 VDC / 250 mA

AC-DC Converter for long-term surveillance installations by connection to 115-230 VAC mains lines.

Delivering 3 W of power, the AD-DC Converter can be used with the Thor Nano Transmitter, Thor Standard Transmitter, Thor Body Transmitters (requires a Thor TX Power Adaptor), and Thor Store & Forward Transmitter.



Thor Mini II Receiver System

System	Supported operating system	Microsoft® Windows 7, 8.1, and 10 or greater (32-bit / 64-bit)
	RF frequency	420 MHz band (detailed frequency info available upon request) 320 MHz band (detailed frequency info available upon request) Custom frequencies can be offered on a project basis and comes at an extra cost. Please contact your Sales Account Manager
	RF modulation	GFSK
	Duplex protocol (remote control)	Time division duplexing (TDD)
	RF channels	10
	Repeater RF channels	2
	Audio sample frequency	19.5 kHz
	Audio bandwidth, - 3dB (ref = 1 kHz)	65 - 8200 Hz
	Dynamic range	Minimum 80 dB
	Audio channel encryption	56-bit DES, 128-bit AES, or 256-bit AES encryption (depending on national legislation)
	Audio delay (from Tx to Rx)	Maximum 500 ms
	A/D converter resolution	16-bit
	Signal noise ratio (SNR)	85 dB
	Operating temperature	-10° C to 55° C 14° F to 131° F
	Humidity	Max. 90% humidity (RH)
Maximum number of Tx operated by 1 Rx	10	
Number of Tx's in repeater setup	2	

Thor Mini II Receiver

Hardware	External supply connector	micro-USB	
	Antenna connector	SMA female	
	Rx sensitivity (2.4% BER)	-111 dBm typical / -110 dBm minimum	
	Frequency stability	± 10 ppm	
	Maximum RF output for remote control, typical 50 Ω load, ± 2 dB	External supply	1000 mW
		2 AA Lithium batteries (3.6 V - 2.65 V)	1000 mW
		2 AA Lithium batteries (2.2 V - 2.65 V)	30 mW
			30 mW 100 mW 250 mW 500 mW 1000 mW
	RF output power, typical 50 Ω load		
	Spurious and harmonics	<-80 dBc non-harmonic, <-57 harmonic	
	Internal batteries	2 AA Lithium 1.5 V batteries (L91)	
	Battery run time	13 hours, typical	
	External supply voltage	4.4 VDC - 5.5 VDC	
	Headphone connector	3.5 mm stereo jack	
	Line-Out connector	3.5 mm stereo jack	
	Line-Out level	820 mW RMS	
	Headphone output level	60 mV RMS	
	Total Ham. Distortion (THD)	line-out @ 1 kHz	0.1%
		headphone out @ 1 kHz	0.04%
	USB connector	micro-USB	
	PC interface	USB 2.0	
	Dimensions (L x W X H)	63 mm x 108 mm x 21 mm 2.48 in x 4.2 in x 0.83 in	
Weight	165 g / 5.82 oz		

Thor Mini II Receiver with Integrated Recorder

Recorder	Recorder memory	64 GB
	Min. recording time (no compression)	220h
	Operating time during recording	10 hours, typical
	Real-Time-Clock (RTC) drift	30s per month, maximum
	Watermark on recording	AES encrypted, SHA-2 watermark

Thor Transmitters

	Thor Nano, 420 & 320 MHz		Thor Standard, 420 MHz	Thor Standard, 320 MHz
	Thor Nano Transmitter	Thor Nano Bubblegum Transmitter	Thor Standard Transmitter	
Remote Control	Yes			
Supply voltage range	3.2 VDC - 15 VDC	N/A	3.5 VDC - 15 VDC	5.0 VDC - 15 V DC
Intelligent battery handling for UPS and vehicles	N/A			
Antenna connector	Integrated		MMCX	
RF output level, typical 50 Ω load, ± 2 dB	10 mW 100 mW		1 mW 3 mW 10 mW 30 mW 100 mW 200 mW 300 mW 500 mW	30 mW 100 mW 250 mW 350 mW 500 mW
Current consumption (RF output), typical	100 mW @ 6 V 110 mA RMS	100 mW @ 3V battery 190 mA RMS	500 mW @ 6 V battery 310 mA RMS 10 mW @ 6 V battery 100 mA RMS	500 mW @ 6 V battery 310 mA RMS
Current consumption (sleep mode)	3 mA RMS maximum	N/A	3 mA RMS maximum	
Operation time, typical (RF output 500 mW)	N/A		Supply dependent	
Operation time, typical (RF output 10 mW)	N/A	2h 45m	Supply dependent	
Range, live audio typical (rural area with standard antennas)	1.36 km / 0.85 miles	1.36 km / 0.85 miles	1.8 km / 1.11 miles	
Range Store & Forward, typical (rural area with standard antenna)	N/A			
Store & Forward maximum transfer rate	N/A			
Maximum recording time (no compression, stereo)	N/A			
Recorder memory	N/A			
Audio bandwidth (-3 dB (ref = 1 kHz))	300 - 8300 Hz			
Audio sample frequency	19.5 kHz			
Dynamic range	96 dB			
Integrated batteries	N/A	420 mAh Li-Ion (3h charge time)	N/A	
Audio gain	Automatic gain control (AGC) Fixed dB levels (0, 10, 20, 30, 40)			
Dimensions	19.2 x 11.5 x 4.1 mm 0.76 x 0.45 x 0.16 in	60 x 20 x 10 mm 2.4 x 0.78 x 0.39 in	23 x 53.5 x 7.1 mm 0.9 x 2.1 x 0.28 in	58 x 33 x 7 mm 2.3 x 1.3 x 0.3 in
Weight	9 g / 0.32 oz	14 g / 0.49 oz	37 g / 1.3 oz	58 g / 2.05 oz

Thor Transmitters

	Thor Store&Forward, 420 & 320 MHz	Thor Body, 420 MHz	
	Thor Store & Forward Transmitter	Thor Body Transmitter	Thor Body Transmitter with Recorder
Remote control	Yes		
Supply voltage range	5.0 VDC - 15 V DC	N/A	
Intelligent battery handling for UPS and vehicles	Yes	No	
Antenna connector	MMCX		
RF output level, typical 50 Ω load, ± 2 dB	30 mW 100 mW 250 mW 350 mW 500 mW	1 mW 3 mW 10 mW 30 mW 100 mW 200 mW 300 mW 500 mW	
Current consumption (RF output), typical	500 mW @ 6 V battery 310 mA RMS	500 mW @ 6 V battery 310 mA RMS 10 mW @ 6 V battery 100 mA RMS	500 mW @ 6 V battery 410 mA RMS 10 mW @ 6 V battery 140 mA RMS
Current consumption (sleep mode)	3 mA RMS maximum		
Operation time, typical (RF output 500 mW)	Supply dependent	2.5h 4 AAA Lithium batteries (L91)	
Operation time, typical (RF output 10 mW)	Supply dependent	8.5h 4 AAA Lithium batteries (L91)	
Range, live audio typical (rural area with standard antennas)	1.8 km / 1.11 miles		
Range Store & Forward, typical (rural area with standard antenna)	0.9 km / 0.56 miles	N/A	
Store & Forward maximum transfer rate	730 kbit/s / 10 minutes of stereo audio downloaded in 1 minute (30 seconds for mono)		
Maximum recording time (no compression, stereo)	1900 hours	N/A	56h
Recorder memory	64 GB	N/A	16 GB
Audio bandwidth (-3 dB (ref = 1 kHz))	300 - 8300 Hz		
Audio sample frequency	19.5 kHz		
Dynamic range	96 dB		
Integrated batteries			
External microphone connector	N/A	LEMO 4-pin socket	
Audio gain	Automatic gain control (AGC) Fixed dB levels (0, 10, 20, 30, 40)		
Dimensions	58 x 33 x 7 mm 2.3 x 1.3 x 0.3 in	52.75 x 76.7 x 12 mm 2 x 3 x 0.5 in	52.75 x 80 x 12 mm 2 x 3 x 0.5 in
Weight	58 g / 2.05 oz	47 g / 1.66 oz	90 g / 3.17 oz

Thor rack receiver

		Thor Rack Receiver
Hardware	Power supply	100 VAC - 250 VAC or 9 VDC - 36 VDC
	Antenna connectors	SMA female
	Headphone connectors	3.5 mm stereo socket
	Line-In / Line-Out connectors	3.5 mm stereo socket
	USB connector	USB-B
	Display type	OLED, yellow and black monochrome
	Display resolution	128 x 64 px
	PC interface	USB 2.0
	Valhal software	Version 1.3.0 or greater
	Dimensions (L x W x H)	482.6 mm x 160 mm x 44.5 mm [1 UI] 19 in x 6.3 in x 1.75 in [1 UI]
	Weight	2450 g / 86 oz

Thor repeater

Hardware	Repeater channels	2	
	RF output levels	100 mW 1 W 3 W	
	Supply voltage	9 VDC -18 VDC	
	Power consumption	5 W RMS @ 1 W output power 11 W RMS @ 3 W output power	
	Range @3W with ½ Wave Antenna on Repeater and standard 1/4 Wave Antenna on Thor Mini II Rx	Urban	Up to 1.1 km / 0.65 miles
		Sub-urban	Up to 1.7 km / 1.1 miles
		Rural	Up to 4.4 km / 2.72 miles
	Interfaces	Antennas: BNC Power: 2-pole LEMO USB: Micro-USB	
	Operating temperature	-5° C to 55° C 23° F to 131° F	
	Dimensions	121 mm x 89 mm x 27 mm 4.76 in x 3.50 in x 1.06 in	
Weight	425 g / 15 oz		

Body TX Power Adaptor

Hardware	Input voltage range	4 VDC - 48 VDC
	Output voltage	8 V
	Output load current	700 mA
	Dimensions	40 mm x 43.2 mm x 9.15 mm 1.7 in x 1.7 in x 0.36 in
	Weight	25 g / 0.88 oz

Thor

Wireless digital audio surveillance system



About Spectronic Denmark A/S

A world leading provider of high-quality covert audio and video surveillance solutions, our products are exclusively used by law enforcement, intelligence and military operations to combat terrorism and crime.

Our mission is to deliver reliable products to those people who risk their lives in their efforts to make our everyday more secure.

For over 30 years, we have dealt professionally with governments and government approved agencies worldwide. Today we're considered as one of the industry leading manufacturers of covert audio and video surveillance equipment.

We are part of DTC (Domo Tactical Communications) which engineers and manufactures high performance surveillance, communications and broadcast systems, enabling our customers to securely monitor, communicate and share information in complex and demanding environments. Our passion for innovation keeps us one step ahead in rapidly changing and increasingly challenging environments, whether on the battlefield, the streets of our cities or the world's largest sporting events.

For further information on our range of surveillance solutions contact your Sales Account Manager or email spectronic.sales@domotactical.com

Spectronic – Randers
Haraldsvej 64B
DK-8960
Randers SØ
Denmark

T: +45 8791 8100

DTC – Herndon
(Headquarters)
2303 Dulles Station Blvd
Suite 205
Herndon, VA 20171

T: +1 727-471-6921

DTC – Dubai
305-306
Tower BB1 Mazaya
Business Avenue
Jumeirah Lake Towers, UAE

T: +971 0 44 53 72 01

DTC – Singapore
21 Media Circle
Infinite Studios #05-06
Singapore
138562

T: +65 6339 0508

DTC – Solent
Fusion 2, 1100 Parkway
Solent Business Park
Whiteley, Hampshire
PO15 7AB, UK

T: +44 (0) 1489 566 750