

FLIPPER – TS Series / Overview

Multi Band to L- Band Tactical Converter



HTS - 100



VTS - 300



MTS - 400



ATS - 500

Flipper™

Flipper by Commcrete is a very small form factor satellite communication module. It turns any line of site tactical radio of all bands (Military and Commercial VHF, Military and Commercial UHF, including the 700/800 & 900MHz bands) to a tactical satellite radio. Small, Rugged, Agile & Multi Band Flexibility make Flipper the right solution for rescuers and first responders. Whether you're Law Enforcement, Firefighter or Military, adding Flipper to your radio, immediately connects you to the network regardless of geographic boundaries. The size of Flipper combined with a small omni directional antenna, makes it the ultimate Comms On The Move (COTM) product for various scenarios.

TACSAT over GEO satellites

Flipper complies with Inmarsat's L-TAC service, making it invincible in size and performance. Therefore, the integration of Flipper and Customer Radio excels in every parameter, both for Voice & Data.

Safety Statement

General

This safety statement and is provided for Flipper End Users. These safety notes should be used in conjunction with regional regulations.

The Flipper consists of RF module and antenna attached to it.

- The RF module is a sophisticated frequency converter that enables conventional LOS PTT commercial or military radios of all bands to operate over satellite L-band frequencies.
- The antenna transmits and receives in accordance with Inmarsat L-Band frequencies.

Flipper can be powered by a variety of power sources in range of 6-14V (Handheld Version), or 9-36V (Mobile Version).

Hazards

There is no real potential to RF burn damage. The output power of the Flipper (4W max, 3.5W nominal), the omnidirectional radiation pattern of the antenna and the PTT mode of the transmitted signals assure free use of the Flipper system as a whole.

Do not operate the Flipper when it is visually damaged.

Do not modify or use non-proprietary equipment with the Flipper.

Standards

Flipper is designed in compliance with the CE & FCC standards:

- EN 55032, EN 55035, EN 301489-1, 301489-3, 301489-17 – EMC / EMI
 - EN 62209-1528 – Radio (RF Exposure)
 - EN 62368-1 – Safety
 - IEC 65029 – IP Rating
- Flipper, a commercial product, is not designed in particular for Mil-Spec. Yet, it complies with some of the following sections of Mil-Std 461F (EMC) & Mil-Std 810G (Environmental):
- CE102 Conducted Emissions, Power leads, 10kHz-10MHz
 - RE102 Radiated Emissions, Electric Field, 10KHz - 18GHz
 - CS114 Conducted Susceptibility, Bulk Cable Injection, 10kHz-200MHz
 - RS103 Radiated Susceptibility, Electric Field, 2MHz- 18GHz
 - 501.5 High Temperature, Procedures I & II, A2 – Basic Hot
 - 502.5 Low Temperature, Procedures I & II, C1 – Basic Cold
 - 507.5 Humidity, Procedure I, B3
 - 514.6 Vibration, Procedure I, Category 4
 - 516.6 Shock, Procedure I, Functional Shock

Temperature range and IP Rating:

- Storage: -25°C - +70°C
- Operation: -25°C - +60°C
- IP67 (water and particle ingress)

FLIPPER – TS Series / Flipper Specifications

HTS-100 is designed for **Comms-On-The-Walk** for any soldier or first responder using it on body during a mission. Rugged yet small, lightweight and needs no pointing to satellite. Best performance omnidirectional antenna optimizing directivity and gain for men on tactical missions.

VTS-300 is designed for **Comms-On-The-Move** for any vehicle on mission using tactical radios for communication. Rugged design for platform, including a mountable Flipper and antenna.

Compensation of RF loss is considered so the distance between the Flipper and the antenna is not limited (up to 14m of RG-58 coaxial cable or 55m of LMR-400 coaxial cable).

VTS-301 is designed for headquarters by maximizing its performance in the satellite network. It allows long distances between the user desk and the antenna. It also allows better antenna gain thus better link margin to the satellite both in transmission and reception.

MTS-400 is a similar version of the VTS-300 customized for maritime conditions.

ATS-500 is an evolved versions of the VTS-300 customized for Aeronautical severe conditions (outdoor passive antenna with a supportive under deck amplifier).

Handheld Flipper HTS-100	Passive Antenna	Mobile Flipper VTS-300, MTS-400, ATS-500	Active Antenna
Radio Frequencies 50-950 MHz (Each band is user defined)	Frequency L-Band	Radio Frequencies 50-950 MHz (Each band is user defined)	Frequency L-Band
DC Power 6-14 Volts		DC Power 9-36 Volts (Protected up to 48V)	
RF Input 0.5-5 Watts	Power Passive (none)	RF Input 0.5-5 Watts (Protected up to 60W)	Power Active – Powered by Flipper over coax cable
RF Output 4 Watts (max)	Mounting Side Mount Gooseneck	RF Output 1-4 Watts (max)	Mounting Bottom Mount Screws / Magnet
Environmental -25°C - +60°C Operation IP67	Environmental -25°C - +70°C (-60°C - +70°C for ATS-510) IP67	Environmental -25°C - +70°C Operation IP67	Environmental -25°C - +70°C IP67
Physical 60mm X 90mm X 14mm 130 grams	Physical Ø65mm 100 grams	Physical 150mm X 145mm X 40mm 700 grams	Physical Ø100mm 260 grams
Interfaces Radio port: SMA Antenna port: TNC DC port: Fischer Push-Pull	Interfaces Antenna port: TNC	Interfaces Radio port: TNC Antenna port: N-Type DC port: Amphenol	Interfaces Antenna port: TNC
Compliance: CE, FCC		Compliance: CE, FCC	

Flipper Bands

Flipper Frequency Bands	
Low VHF:	50-88 MHz
Commercial VHF:	136-174 MHz
Military UHF:	225-400 MHz
Commercial UHF:	400-512 MHz
High UHF:	700-930 MHz

Flipper Models

Flipper Models	
HTS-100	Handheld
VTS-300	Vehicle
MTS-400	Maritime
ATS-500	Aeronautical
VTS-301	Headquarters

* Basic Flipper is Single Band. Dual / Multi Band is optional by customer's demand.

* All Flippers support all waveforms: FM, P25, TETRA, DMR, NXDN, 16K CVSD etc.

FLIPPER – TS Series / Flipper Options

Part Number	Description
KIT-HTS-100	Handheld Flipper Kit
HTS-100	Flipper Handheld Module
HTS-102	Flipper Handheld 24cm Gooseneck
HTS-111	Flipper Handheld Antenna (for Gooseneck)
HTS-120	Flipper Handheld - Power Cable Pass Through for PRC-148 / PRC-152 12V Battery
VRF-ST010	Flipper Handheld - RG-58 RF Cable, SMA to TNC, 1m

Part Number	Description
KIT-VTS-300	Vehicle Flipper Kit
VTS-300	Flipper Vehicle Module
VTS-310	Flipper Vehicle Antenna (active)
VTS-333	Flipper Vehicle Antenna Mount Plate
VTS-322	Flipper Mobile - 12V Power Cable Pigtail, 2m
VRF-TT010	Flipper Mobile - RG-58 RF Cable, TNC to TNC, 1m
VRF-NT050	Flipper Mobile - RG-58 RF Cable, N-Type to TNC, 5m

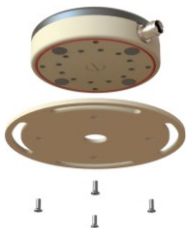
Part Number	Description
KIT-VTS-301	Headquarters Flipper Kit
VTS-301	Flipper Headquarters Module
VRE-301	Flipper Headquarters Bias Tee
VRE-302	Flipper Headquarters - AC/DC 12V Power Adapter
VRF-TT010	Flipper Mobile - RG-58 RF Cable, TNC to TNC, 1m
VRF-NT500	Flipper Mobile - RG-58 RF Cable, N-Type to TNC, 50m
VRE-303	Flipper Headquarters Directional Antenna

Part Number	Description
KIT-MTS-400	Maritime Flipper Kit
MTS-400	Flipper Maritime Module
MTS-410	Flipper Maritime Antenna (active)
MTS-444	Flipper Maritime Antenna Mount Plate
VTS-322	Flipper Mobile - 12V Power Cable Pigtail, 2m
VRF-TT010	Flipper Mobile - RG-58 RF Cable, TNC to TNC, 1m
VRF-NT200	Flipper Mobile - RG-58 RF Cable, N-Type to TNC, 20m

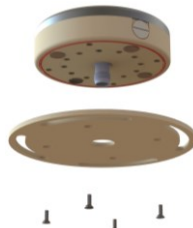
Part Number	Description
KIT-ATS-500	Aeronautical Flipper Kit
ATS-500	Flipper Aeronautical Module
ATS-502	Flipper Aeronautical Front End
ATS-510	Flipper Aeronautical Antenna (passive)
ATS-555	Flipper Aeronautical Antenna Mount Plate
VTS-322	Flipper Mobile - 12V Power Cable Pigtail, 2m
VRF-TT010	Flipper Mobile - RG-58 RF Cable, TNC to TNC, 1m
VRF-NT005	Flipper Mobile - RG-58 RF Cable, N-Type to TNC, 0.5m

Flipper Active Antenna Mount Options

Option A:
Side RF connector



Option B:
Bottom RF connector



Antenna Mount Plate PN: VTS-333 / MTS-444 / ATS-555

Flipper Antenna Models

HTS Flipper

Passive Antenna
for side mount
Ø65mm



Passive Antenna
for gooseneck
Ø65mm

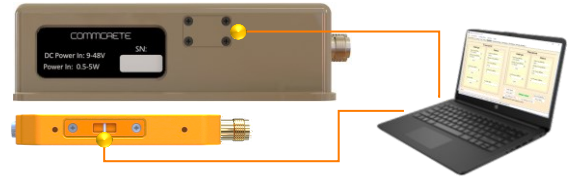


VTS / MTS / ATS Flipper

Active Antenna
Ø100mm



Flipper Configuration (USB Port)



Flipper Power Options

Option A:

Pass Through power cable
for PRC-148 / PRC-152 12V
Battery

PN: HTS-120

Option B:

Power Cable for PRC-148
/ PRC-152 12V Battery

PN: HTS-122



Basic Operation Concept



FLIPPER – TS Series / Flipper Parts & Accessories

Part Number	Description	Part Number	Description
KIT-HTS-100	HTS-100 - Handheld Flipper Kit	VTS-321	Flipper Mobile - Car Lighter 12V Power Cable
KIT-VTS-300	VTS-300 Vehicle Flipper Kit	VTS-322	Flipper Mobile - 12V Power Cable Pigtail, 2m
KIT-VTS-301	VTS-301 Headquarters Flipper Kit	VRF-ST001	Flipper Handheld - RG-58 RF Cable, SMA to TNC, 0.1m
KIT-MTS-400	MTS-400 Maritime Flipper Kit	VRF-ST005	Flipper Handheld - RG-58 RF Cable, SMA to TNC, 0.5m
KIT-ATS-500	ATS-500 Aeronautical Flipper Kit	VRF-ST010	Flipper Handheld - RG-58 RF Cable, SMA to TNC, 1m
FMI-100	1 Year Flipper Insurance	VRF-ST020	Flipper Handheld - RG-58 RF Cable, SMA to TNC, 2m
FPC-100	Flipper PC Programming Software	VRF-ST030	Flipper Handheld - RG-58 RF Cable, SMA to TNC, 3m
HTS-100	Flipper Handheld	VRF-TT005	Flipper Mobile - RG-58 RF Cable, TNC to TNC, 0.5m
HTS-101	Flipper Handheld - Side Mount	VRF-TT010	Flipper Mobile - RG-58 RF Cable, TNC to TNC, 1m
HTS-102	Flipper Handheld - 24cm Gooseneck	VRF-TT030	Flipper Mobile - RG-58 RF Cable, TNC to TNC, 3m
HTS-103	Flipper Handheld - Pouch for vest	VRF-TT050	Flipper Mobile - RG-58 RF Cable, TNC to TNC, 5m
HTS-110	Flipper Handheld - Antenna (Side Mount)	VRF-TT100	Flipper Mobile - RG-58 RF Cable, TNC to TNC, 10m
HTS-111	Flipper Handheld - Antenna (Gooseneck) Flipper Handheld - Power Cable Pass Through for	VRF-TT200	Flipper Mobile - RG-58 RF Cable, TNC to TNC, 20m
HTS-120	PRC-148 Battery Flipper Handheld - Power Cable Pass Through for	VRF-NT005	Flipper Mobile - RG-58 RF Cable, N-Type to TNC, 0.5m
HTS-121	PRC-148 Battery Current Sense	VRF-NT010	Flipper Mobile - RG-58 RF Cable, N-Type to TNC, 1m
HTS-122	Flipper Handheld - Power Cable for PRC-148 Battery Flipper Handheld - Power Cable for PRC-710 Battery	VRF-NT030	Flipper Mobile - RG-58 RF Cable, N-Type to TNC, 3m
HTS-123	(TLI-718) Flipper Handheld - Power Cable for Net Warrior	VRF-NT050	Flipper Mobile - RG-58 RF Cable, N-Type to TNC, 5m
HTS-124	Distribution Hub	VRF-NT100	Flipper Mobile - RG-58 RF Cable, N-Type to TNC, 10m
VTS-300	Flipper Vehicle	VRF-NT200	Flipper Mobile - RG-58 RF Cable, N-Type to TNC, 20m
VTS-301	Flipper Headquarters	VRF-NT500	Flipper Mobile - RG-58 RF Cable, N-Type to TNC, 50m
VRE-301	Flipper Headquarters Bias Tee	MTS-400	Flipper Maritime
VRE-302	Flipper Headquarters - AC/DC 12V Power Adapter	MTS-410	Flipper Maritime - Antenna (active)
VRE-303	Flipper Headquarters Directional Antenna	MTS-444	Flipper Maritime - Antenna Mount Plate
VTS-310	Flipper Vehicle - Antenna (active)	ATS-500	Flipper Aeronautical
VTS-333	Flipper Vehicle - Antenna Mount Plate Flipper Mobile - AC/DC Power Adapter (Amphenol	ATS-502	Flipper Aeronautical - Under Deck / Front End
VTS-320	DC Connector)	ATS-510	Flipper Aeronautical - Antenna (passive)
		ATS-555	Flipper Aeronautical - Antenna Mount Plate

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Check for the latest version of this brochure at www.commcrete.com

Shaked 11, Hevel Modi'in 7319900, Israel

✉ info@commcrete.co.il

