

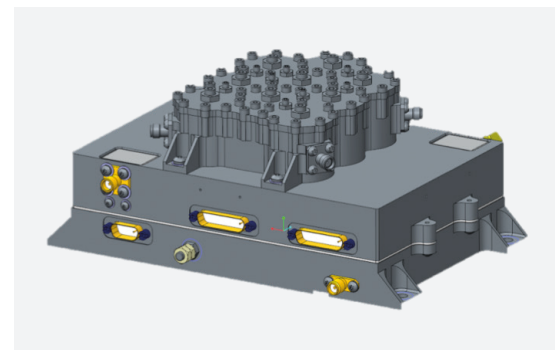
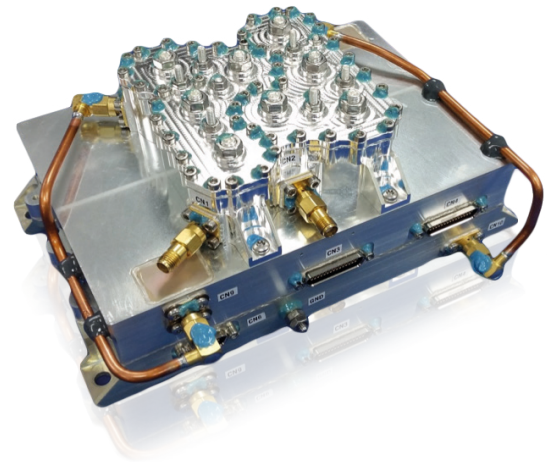
S-Band TT&C Transceiver

STC-MS03

Honeywell introduces to the space market, our first TT&C transceiver qualified to fly on an ESA S-Class mission (CHEOPS). During many years of supplying equipment on numerous missions, Honeywell has developed an innovative, flight-qualified, digital TT&C Transponder, incorporating software defined radio techniques and utilising our well-known excellence in RF engineering.

Main Features

- In-flight configurable modulation, RF power output and data-rate
- Highly adaptable Software Defined Radio (SDR) architecture
- FPGA based design for fast customisation
- ITAR free equipment
- Low mass and low volume unit
- Independent BPSK and PM demodulators
- Supports BPSK (32k to 1024 Kbps), QPSK, OQPSK (up to 6.25 Mbps)
- Flexible RF frequencies and Tx power
- High efficiency GaN amplifier based design
- Fully space qualified equipment with flight heritage and multiple flight units integrated on numerous missions, both commercial and institutional (ESA)
- Established reliability for the most critical communications link to the ground infrastructure

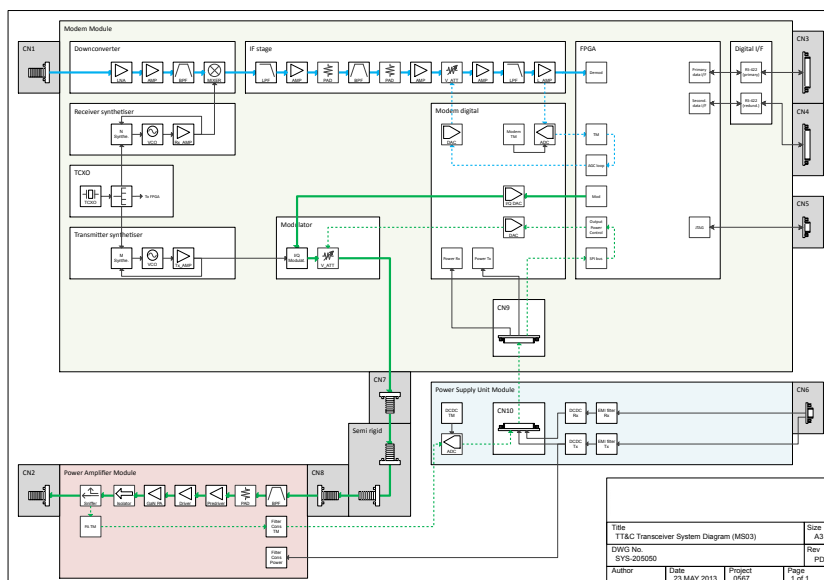


^ TT&C with optional diplexer/filter attached

S-Band TT&C Transceiver

The STC-MS03 is an integrated Telemetry, Tracking and Command (TT&C) transceiver which provides two-way radio communication between a spacecraft and ground infrastructure. It is based on a Software Design Radio (SDR) implemented on an FPGA and is designed to allow for fast customisation to accommodate customer requirements.

The critical role of the TT&C function, make it particularly difficult to miniaturise without compromising system reliability. The STC-MS03 is designed with specific attention to power and size in order to address the limited space and reduced battery capacity of small satellites. An extensive qualification campaign has been completed to establish full characterisation of performance in the operation environment.



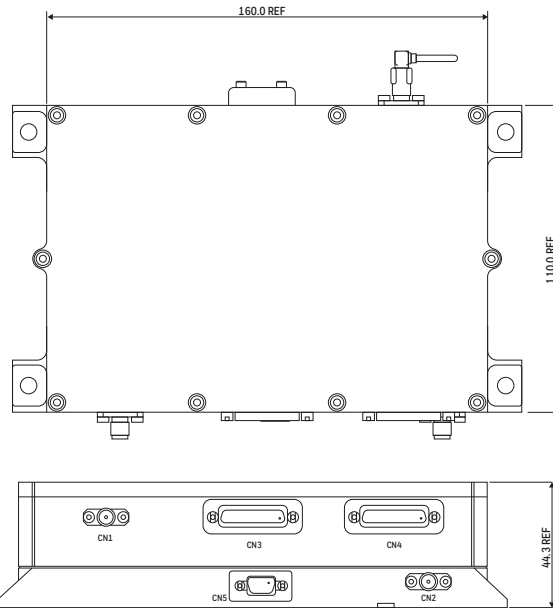
STC-MS03 S-Band TT&C Transceiver Technical Specifications

GENERAL	
EXPECTED LIFE	7 years
MASS	1 kg (without diplexer or 1.25Kg with diplexer)
VOLUME	160 x 110 x 44mm
DC POWER CONSUMPTION	18 W typical (Total at 34.4 dBm output power)
SUPPLY VOLTAGE	28V ±6 V
DATA INTERFACES	Dual RS-422
OPERATING TEMPERATURE RANGE	-20°C to +60°C
RADIATION TOLERANCE	10 KRad

S-BAND RECEIVER	
Rx FREQUENCY RANGE	2025 to 2120 MHz
MODULATION FORMAT / DATA RATES	PCM (NRZ-L)/PSK/PM 8kHz (0.5,1,2 Kbps) & 16kHz SC (1,2,4 Kbps), PCM (NRZ-L)/BPSK (8 to 1024 kbps)
MODULATION INDEX TC	0.2 to 1.5 rad
RECEIVER NOISE AND IMPLEMENTATION LOSS	2 dB typical
RECEIVER POWER CONSUMPTION	< 4 W
INPUT POWER RANGE	-135 to -40 dBm
CARRIER ACQUISITION THRESHOLD	-120 dBm
CARRIER ACQUISITION SWEEP RATE	±32 kHz/s
CARRIER TRACKING RANGE	±150 kHz

S-BAND TRANSMITTER	
Tx FREQUENCY RANGE	2200 to 2290 MHz
Tx POWER CONSUMPTION	Less than 14W at 34.4 dBm RF-out
OUTPUT POWER RANGE	0.2 to 3.16W (23 to 35 dBm)
TM MODULATION FORMATS	QPSK, OQPSK, BPSK
DATA MODULATION FORMATS	BPSK, (O)QPSK SRRC filter, NRZ/BPSK/PCM, SP-L
DATA RATE	32 to 1024 kbps BPSK 1024 to 6250 kbps QPSK/OQPSK
ENCODING	Convolutional 1/2, NRZ-M, NRZ-L, PCM

DIMENSIONS	
LENGTH	6.29" (160 mm)
WIDTH	4.33" (110 mm)
HEIGHT	1.74" (44.3 mm)



Dimensions in mm

Optional peripherals that can be supplied include:

- Rx and Tx filters for separate Rx and Tx antennas
- Diplexer for sharing Rx/Tx Antenna
- Hybrids
- Switch
- RF Harness

For more information

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