

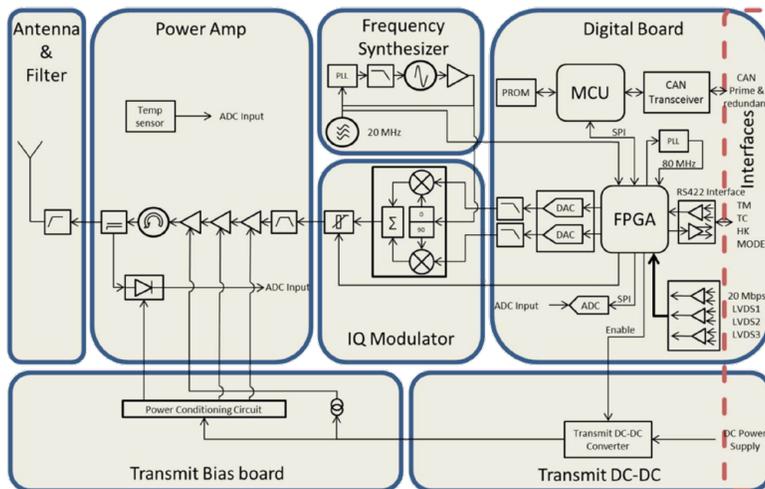
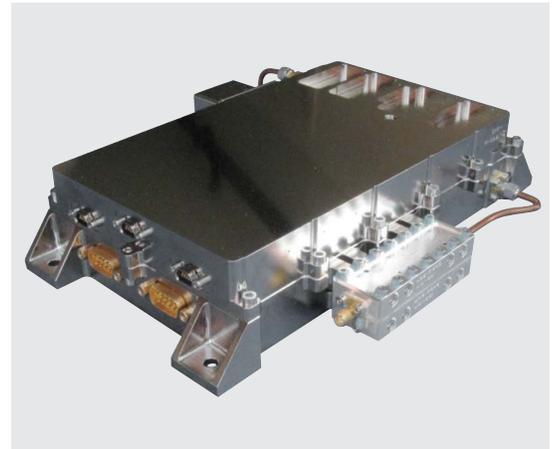
## C-Band Downlink

### CDL-MS02

Honeywell introduces a new family of High Speed Downlink (HSDL) products to the space market. With the well-established brand recognized by equipment supplied on over 900 satellites, Honeywell has developed an innovative transmitter with flexible coding modulation and output power. The C-band downlink module is aimed to address mission requirements of smallsat LEO missions.

Successful heritage is already established following the launch of the eV1 spacecraft in August 2012. More units have been delivered for the M3M mission and integrated to the spacecraft.

The CDL-MS02 module is an integrated High-Speed Downlink (HSDL) transmitter that provides up to a 40 Mbps downlink to ground infrastructure. The unit comprises a radio transmitter with a high efficiency GaN SSPA, a power distribution unit providing accurate regulation and delivery of power across the system, and digital baseband. The digital baseband is based on a Software Design Radio (SDR) implementation on an FPGA and is designed to allow for fast customization to accommodate customer requirements.



CDL-MS02 Block Diagram

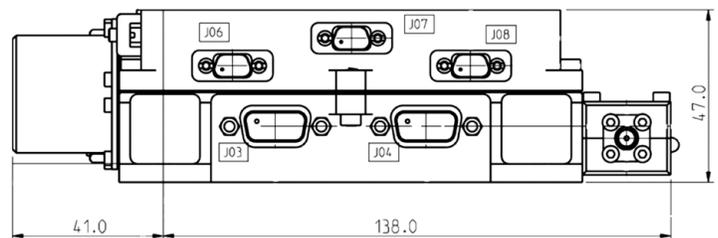
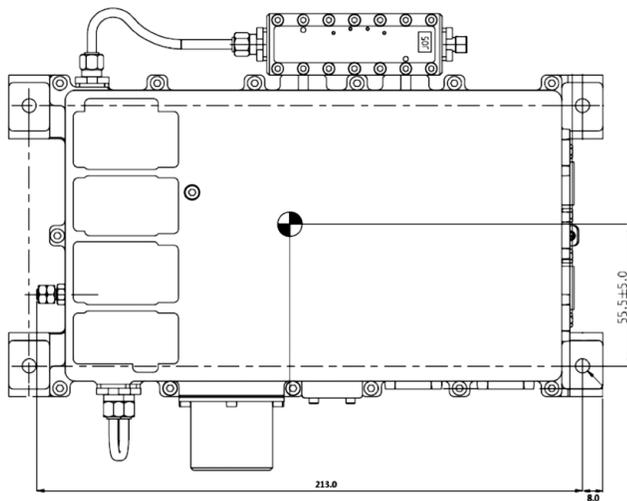
The CDL-MS02 is designed with specific attention to power, mass and size in order to address the limited space and reduced battery capacity of small satellites. It is designed to match Honeywell's space AIS range of receivers and is optimized to meet the downlink capacity which is required by the Space-AIS receivers when operated in spectrum capture mode.

#### Main features:

- Low mass and low volume unit
- Up to 40 Mbps data rate
- Up to 5W variable output power
- OQPSK/QPSK modulation schemes
- Programmable output frequency
- Selectable convolutional coding
- Selectable V35 scrambling
- Telemetry/Telecommand via RS-422 or CAN bus
- Three LVDS synchronous data ports with auto detection
- Low power consumption
- High efficiency GaN amplifier-based design

# Specifications

GENERAL	
MASS	1500g
VOLUME	179 x 232 x 47 mm (including filter)
DC POWER CONSUMPTION	Less than 35 W
SUPPLY VOLTAGE	28V ±6 V
DATA/CONTROL INTERFACES	2 x RS-422, 3 x LVDS, 2 x CAN bus (flexible arrangement)
OPERATING TEMPERATURE RANGE	-20°C to +60°C
SURVIVAL TEMPERATURE RANGE	-35°C to +80°C
COLD START	-20°C
C-BAND TRANSMITTER	
TX FREQUENCY RANGE	5100 to 5300 MHz
OUTPUT POWER RANGE	Up to 5W (+37 dBm)
PASSBAND	27.0 MHz (99% power bandwidth)
EVM	Better than 10%
AMPLITUDE ERROR	0.6 dBpp
AMPLITUDE IMBALANCE	±0.2 dB
PHASE ERROR	±1.65°
PHASE IMBALANCE	±2°
CENTRE FREQUENCY STABILITY	±25 ppm
TM MODULATION FORMAT(S)	QPSK, OQPSK
MAX DATA RATE	Up to 40Mbps



## For more information

To find out more about our offering, visit [aerospace.honeywell.com/en/product-listing/space](http://aerospace.honeywell.com/en/product-listing/space) or contact us at [aero.marketing@honeywell.com](mailto:aero.marketing@honeywell.com)

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