

# GIGABIT MODULATOR

FLEXIBLE GIGABIT MODULATOR



VERSION 2019-04



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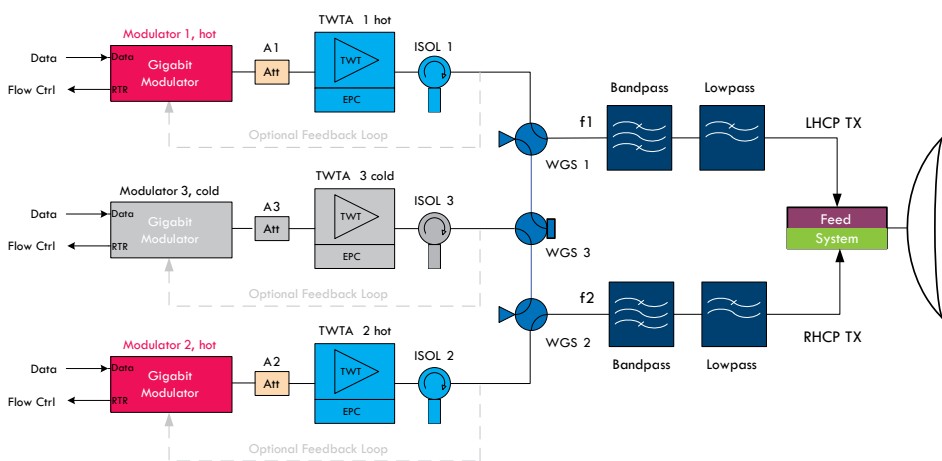
# APPLICATIONS OF FLEXIBLE GIGABIT MODULATOR

The Gigabit Modulator is ideally suited for advanced data downlink subsystems in X-Band and Ka-Band employed onboard Earth Observation Satellites and Scientific Missions.

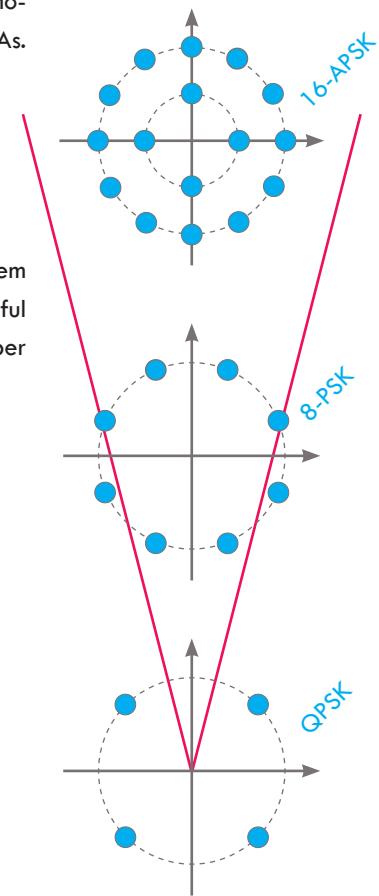
The Gigabit Modulator offers the following benefits:

- Increased throughput by variable or adaptive coding / modulation
- Very high channel data rate (1.2 Gbps in X-Band, 2 Gbps in Ka-Band)
- Integrated predistorter for power amplifier linearization allows utilization of high order modulation schemes at optimized amplifier back-off in combination with both TWTAs & SSPAs.
- Very flexible design in terms of
  1. High order modulation and coding scheme (27 different schemes)
  2. Data Rate & Symbol Rate which are adaptable in a large range
  3. Output frequency (5 MHz step size either in X- or Ka-Band)

The block diagram below shows an example for a next generation X-Band Downlink Subsystem with a data rate up to 2.4 Gbps (1.2 Gbps per channel) with 64-APSK modulation and powerful SCCC coding. A comparable architecture in Ka-Band allows to transmit up to 4 Gbps (2 Gbps per channel) with 32-APSK modulation.



Data Downlink Subsystem architecture with two active channels and dual polarization antenna



Bandwidth efficiency

## TECHNICAL FEATURES

Encoding & Modulation	SCCC with QPSK, 8PSK, 16-APSK, 32-APSK, 64-APSK according to CCSDS 131.2.B.1
Roll-Off	0.2, 0.25, 0.3, 0.35
Output Symbol Rate	10 ... 500 MBaud (in X-Band max. 250 MBaud due to bandwidth constraints)
Carrier Frequency Range	Dual Band Design: X-Band: 8.025 ... 8.4 GHz Ka-Band: 25.5 ... 27 GHz
Power Consumption	30 W
Mass	2.5 kg
Lifetime	15 years
User Data Interface	WizardLink with max 2 Gbps
TM/TC interface	BSD for mode TM & TC Dedicated interfaces for ON/OFF TM & TC
Bus Voltage	21 ... 38 V (Options: 50 V, 100 V)