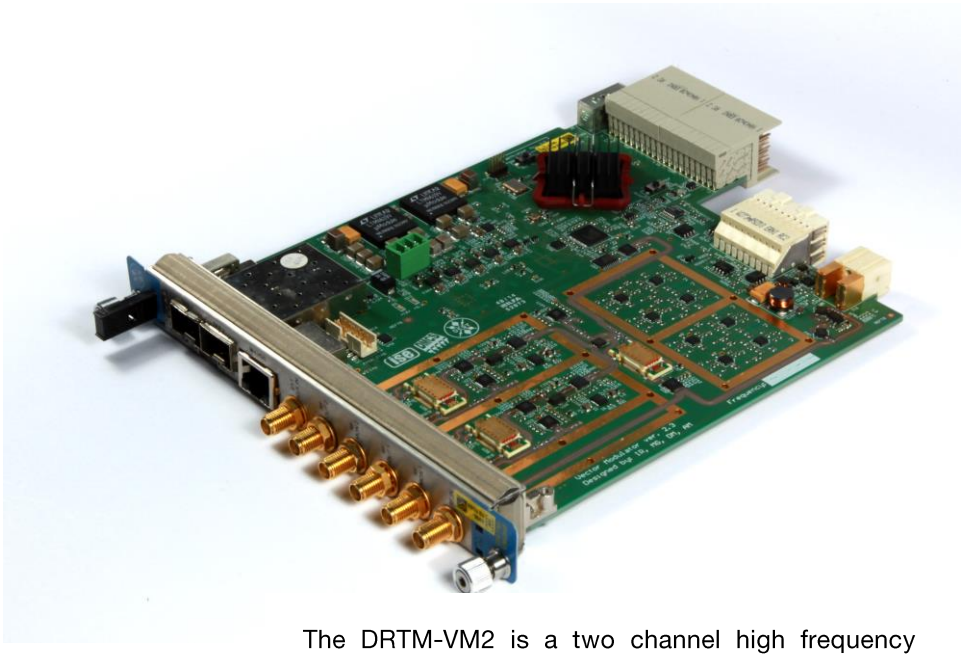
2 Channel Vector Modulator

DRTM-VM2HF

HIGHLIGHTS

- Covering wide frequency bands from 1.5 to 6.0 GHz
- Higlyh stable vector modulation
- Output power up to 8 dBm



FEATURES

Rear-Transition Module (RTM)

- Double width per MicroTCA.4
- Class D1.1 compatible
- 2 channel high-frequency vector modulation at 1.5 - 6 GHz
- Non linearity error <-55dBc (0.2%)
- Short-term PM stability < 60 fs (rms) [10 Hz, 10 MHz]
- Modulation Bandwidth DC – 50 MHz
- Calibration capability
- 16 bit resolution on each I and Q channel
- Programmable attenuators
- Reference and clock from front panel or RF-backplane
- On board input and output power level monitoring
- High-speed Low Latency connection to AMC module and SFP+ cage (10 GBPS)
- Module Management and Diagnostics
- RoHS compliant
- Options: RF-backplane support

The DRTM-VM2 is a two channel high frequency vector modulator RTM module compliant to the MTCA.4 specification. The unit operates at input center frequencies of 1.5 to 6 GHz. It offers an excellent phase short-term stability of <60 fs (rms) in the range of 10 Hz to 10 MHz.

The DRTM-VM2HF allows vector modulation of the carrier signal with 16-bit resolution in two independent channels. Modulation signal bandwidth ranges up to 50 MHz. Output signal power can be adjusted with software programmable attenuators for an accurate full-scale operation. The unit supports reference and clock input signals externally from the front panel as well as from an RF-backplane.

The module offers an on board input and output power level monitors. Data is provided externally using low-latency multi gigabit transceivers (MGTs) via Zone 3 connector. Additional debug connector is available on the front panel.

DESY offers the DRTM-VM2 for licensing to industry. DESY can modify this product to meet special customer requirements.

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MicroTCA TECHNOLOGY LAB
A HELMHOLTZ INNOVATION LAB

DESY.

TECHNICAL SPECIFICATIONS

ARCHITECTURE

Physical		Dimensions	Width: 148.5 mm [5.486 inch]
			Depth: 180.6 mm [7.110 inch]
Standards		MicroTCA.4	Double mid-size Rear-Transition-Module (RTM)
		Module management	IPMI Version 2.0
Compatibility		Zone3 classification	Class D1.2
		RF-backplane support	Yes
		Compatible AMC products	DAMC-TCK7

CONFIGURATION

Type	RTM Vector Modulator	Number of channels	2
		Frequency range	1.5 … 6 GHz
Electrical properties		Short-term phase stability	< 60 fs (rms) in the range [10 Hz, 1 MHz]
		Spectral purity	< -155 dBc / Hz for offset frequencies > 1 MHz
		Nonlinearity errors	< -55 dBc, 0.2% at nom. power level
		Channel isolation	< -80 dB
		Channel crosstalk	< -70 dB
		Modulation bandwidth (SSB)	50 MHz
		I/Q signals resolution	16 bit
		Maximum sampling rate	160 MSPS
		Power consumption	25 W

CONNECTIVITY

Inputs	Reference input	Font / Rear panel	1 input, switchable with RF-backplane
		Connector type	SMA type, single-ended, 50 Ω
		Impedance / Coupling	50 Ω / AC
		VSWR	2.5 max
		Maximum input power level	+15 dBm
		Frequency range	Variant dependent
	Clock input	Font / Rear panel	1 input, switchable with RF-backplane
		Connector type	SMA type, single-ended, 50 Ω
		Impedance / Coupling	50 Ω / AC
		VSWR	2.5 max
		Maximum input power level	+5 dBm
		Frequency range	10 - 250 MHz
Outputs	RF outputs	Font panel	2 channels
		Type	SMA type, single-ended, 50 Ω
		Impedance / Coupling	50 Ω / AC
		VSWR	2.0 max
		Maximum output power level	+8 dBm
		RF-output attenuation	0 dB … 15.5 dB in 0.25 dB steps
Digital connectivity	RJ-45 connector	Font / Rear panel	Front (x1)
		Signal standard	MLVDS
		Signal count	4
	SFP+	Count	2
		Interface Access	Via Zone3 connector
		Tested at	8 Gbps

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TECHNICAL SPECIFICATIONS

FPGA

Device		Type	XC6SLX45T-3
		Speed grade	-3
Configuration		JTAG interface	Yes (on board and via Zone3 connector)
		Platform Flash Device	Yes
		Configuration Interface Type	Parallel
		Memory Size	32 Mbit
JTAG connector		Type	14 pin, 2 rows, 2mm pitch
		Platform Cable USB Compatible	Yes

OTHER FEATURES

On board	RF-chain	Power diagnostics	At outputs (before onboard end switch)
		Power diagnostics readout	via FPGA
		Output gate drive	via FPGA and external signal
		Attenuator settings	via FPGA
IPMI Interface		LEDs	IPMI management control
		Mechnical	Hot swap ejector handle
Environmental		Operating temperature	0 ... +50 °C
		Storage temperature	-40 ... +90 °C
		Relative humidity	5 ... 90 %, non-condensing
		Weight	0.3 kg

OTHER

Compliance	RoHS
Licensing to industry	Yes / Deutsches Elektronen-Synchrotron - Notkestr. 85, 22607 Hamburg - Germany Email: mtca-techlab@desy.de

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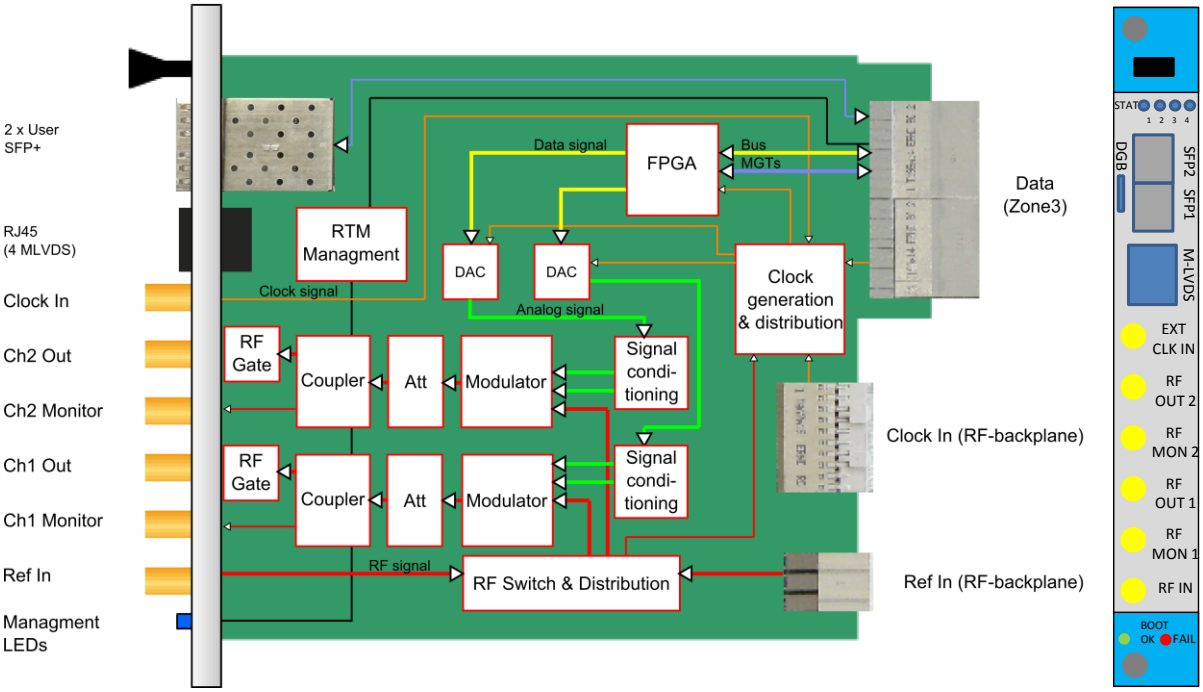
FUNCTIONAL BLOCK DIAGRAM



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