

2 Channel Vector Modulator

DRTM-VM2LF

HIGHLIGHTS

Covering wide frequency bands from 100 MHz to 1.5 GHz

Highly 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 100 MHz – 1.5 GHz

Non linearity error <-55 dBc (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-VM2LF is a two channel low frequency vector modulator RTM module compliant to the MTCA.4 specification. The unit operates at input center frequencies of 100 MHz to 1.5 GHz. It offers an excellent phase short-term stability of <60 fs (rms) in the range of 10 Hz to 10 MHz.

The DRTM-VM2LF 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-VM2LF for licensing to industry. DESY can modify this product to meet special customer requirements.

DESY

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microTCA
TECHNOLOGY LAB
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2 Channel Vector Modulator DRTM-VM2LF

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	100 MHz - 1.5 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
	Type	14 pin, 2 rows, 2mm pitch
JTAG connector	Platform Cable USB Compatible	Yes

OTHER FEATURES

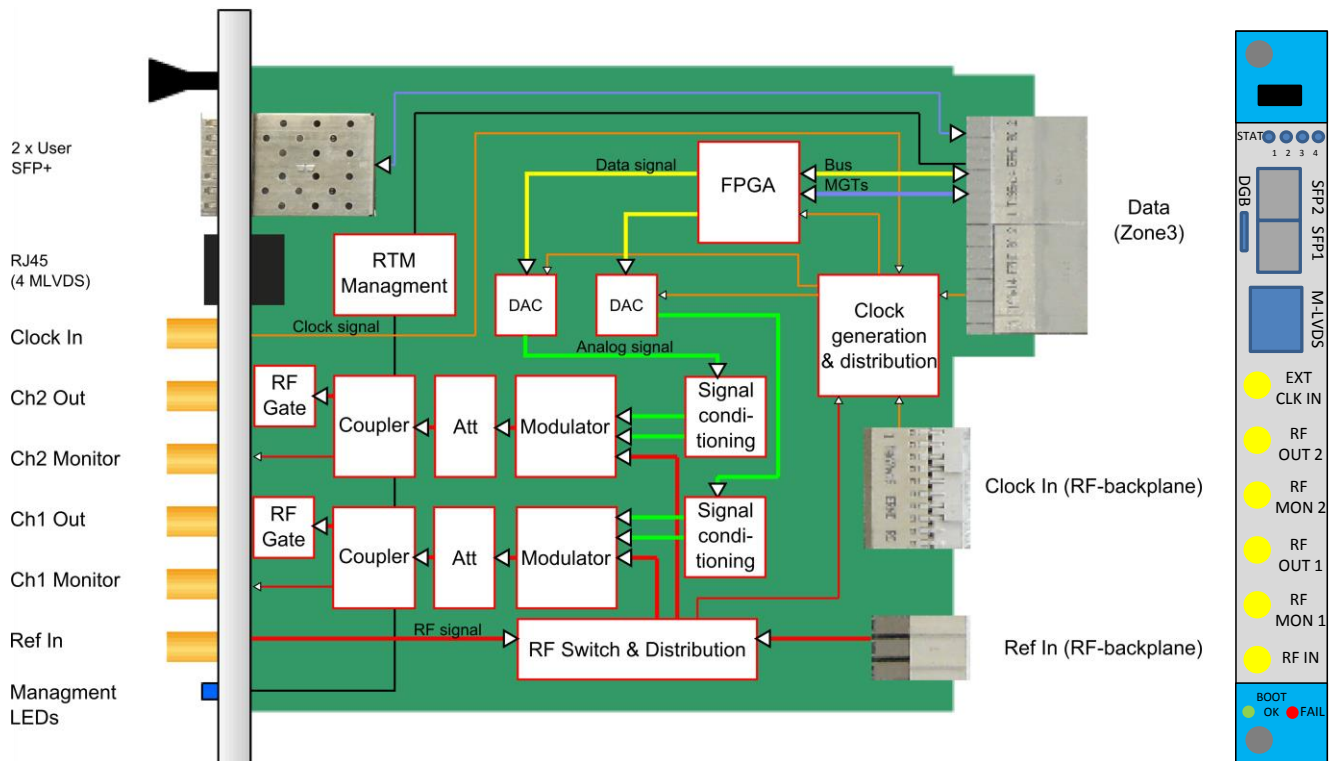
On board	RF-chain	Power diagnostics	At outputs (before onboard end switch)
		Power diagnostics readout	via FPGA
		Output gate drive	via FPGA and external signal
		Attenuator settings	via FPGA
IPMI Interface		LEDs	IPMI management control
		Mechanical	Hot swap ejector handle
Environmental		Operating temperature	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 AND FRONT PANEL



DOWNLOAD
FULL
DATASHEET

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