

10-Channel Down-Converter

DRTM-DWC10

HIGHLIGHTS

High resolution multi-channel down converter

Covering wide frequency bands from 300MHz to 6.0GHz

On board LO power monitoring



FEATURES

Rear-Transition Module (RTM)

10 channel high-frequency down-conversion

Short-term AM, PM stability

Supports various intermediate frequencies between 5 MHz and 65 MHz

Switchable front-end attenuators

LO, CLK from front panel or RF-backplane

On board LO power level monitor

On board temperature sensor

On board user I²C support

Options:

- RF-backplane support
- DC-channel input
- Channel isolation enhancement

The DRTM-DWC10 is a ten channel high frequency down-converter RTM module compliant with the MTCA.4 specification. The unit operates in the L-, S-band at input center frequencies from 700 MHz – 4 GHz band. It offers an excellent amplitude and phase short-term stability of typically <0.005% and <10 fs (rms) in the range of 10 Hz to 1 MHz*.

DESY offers the DRTM-DWC10 for licensing to industry. DESY can modify this product to meet special customer requirements.

*Measured at 1.3 GHz, 3 GHz, 3.9 GHz

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10-Channel Down-Converter DRTM-DWC10

TECHNICAL SPECIFICATIONS

ARCHITECTURE

Physical	Dimensions	Double width, Mid-Height with Full-Height option Width: 5.486" (148.5 mm) Depth: 7.110" (180.6 mm)
Standards	MTCA.4	Rear Transition Module (RTM)
	Module management	IPMI Version 2.0, MMC V1.0 compatible
Compatibility	Zone3 classification, Subclasses	Class A1.0, Class A1.0C, Class A1.1CO
	RF-backplane support	Yes
	Compatible AMC products	SIS8300L, SIS8300L2S, DAMC-DS800, AMC520

CHANNELS

Type	RTM Down Converter	Number of communication channels	10
Electrical properties		Frequency range	L-, S-band 700 MHz – 4 GHz, 1.3 GHz, 3.0 GHz, 3.9 GHz (tested)
		Power consumption	<15 W
		Short-term amplitude stability	0.003 % in the range [10 Hz, 1 MHz] at 1.3 GHz
		Short-term phase stability	4 fs (rms) in the range [10 Hz, 1 MHz] at 1.3 GHz
		Noise figure (SSB)	typical 12 dB
		Spectral purity	< -150 dBc/Hz for offset frequencies > 10 kHz
		RF-input attenuation	0 dB ... +31.5 dB in 0.5 dB steps
		Non-linearity	< -55 dBc, <1 % error, nom. input power level
		Channel isolation	< -65 ... -90 dB, optional enhancement possible
		Intermediate spurious	< -80 dB

CONNECTIVITY

Inputs	RF-inputs (CH1...CH8)	Front panel	8 channels
		Connector type	FBM multi-coax, single-ended (FCT-FM8W8, FBM022154MR)
		Impedance / Coupling	50 Ω / AC
		Return loss	< -10 dB
		Maximum input power level	+15 dBm (for 0 dB attenuation)
		Input 1dB compression	+9 dBm (for 0dB attenuation)
	RF-input (CH0)	Front panel	1 channel
		Connector type	SMA, single-ended
		Impedance / Coupling	50 Ω / AC
		Return loss	< -10 dB
		Maximum input power level	+15 dBm (for 0 dB attenuation)
		Input 1dB compression	+9 dBm (for 0 dB attenuation)
	DC-input (CH0)	Front panel	1 channel
		Connector type	SMA, single-ended
		Impedance / Coupling	50 Ω / DC
		Frequency range	DC – 320 MHz (-3 dB bandwidth)
		Return loss	< -15 dB
	RF-input (CH9)	Front / Rear panel	1 input, optional jumpered to RF-backplane
		Connector type	SMA, single-ended
		Impedance / Coupling	50 Ω / AC
		Return loss	< -15 dB
		Maximum input power level	+15 dBm (for 0 dB attenuation)
		Input 1dB compression	+9 dBm (for 0 dB attenuation)
	LO-Input (LO)	Front / Rear panel	1 input, optional jumpered to RF-backplane
		Connector type	SMA type, single-ended
		Impedance / Coupling	50 Ω / AC
		Return loss	< -10 dB
		Maximum input power level	+18 dBm
		Operating power level	+14 dBm, [+12 Bm...+16 dBm]

10-Channel Down-Converter

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TECHNICAL SPECIFICATIONS

CONNECTIVITY

CLK-input		Front / Rear panel	1 input, optional jumpered to RF-backplane
		Connector type	SMA type, single-ended, 50 Ω
		Frequency range	5 MHz ... 130 MHz
		Signal level	1.2 Vpp square signal @ 50 Ω , +7 dBm... +11 dBm
		Throughput	bias the AMC digitizer ADCs low jitter clocks
Outputs	IF-outputs	Zone3	9 channels, AC-Ports
			1 channel, AC-Port or DC-Port
		Type	differential, 100 Ω
		Frequency range	5 MHz ... 65 MHz (tested)
		Power level	+7 dBm, 2V p-p differential, 100 Ω
	CLK-outputs	Throughput	bias the AMC digitizer ADCs inputs
		Zone3	2 channels, RTM_CLK0, RTM_CLK1
		Type	differential, 100 Ω
		Frequency range	5 MHz ... 65 MHz (tested)
		Power level	+3 dBm... +7 dBm at nom. CLK-input power level
Grounding	Zone 3	Compatible to Class A1	DC-Ports 1...9 grounded
			RTM clocks 2,3,4,5 grounded
			DAC outputs 0,1,2,3,4 unused open

OTHER FEATURES

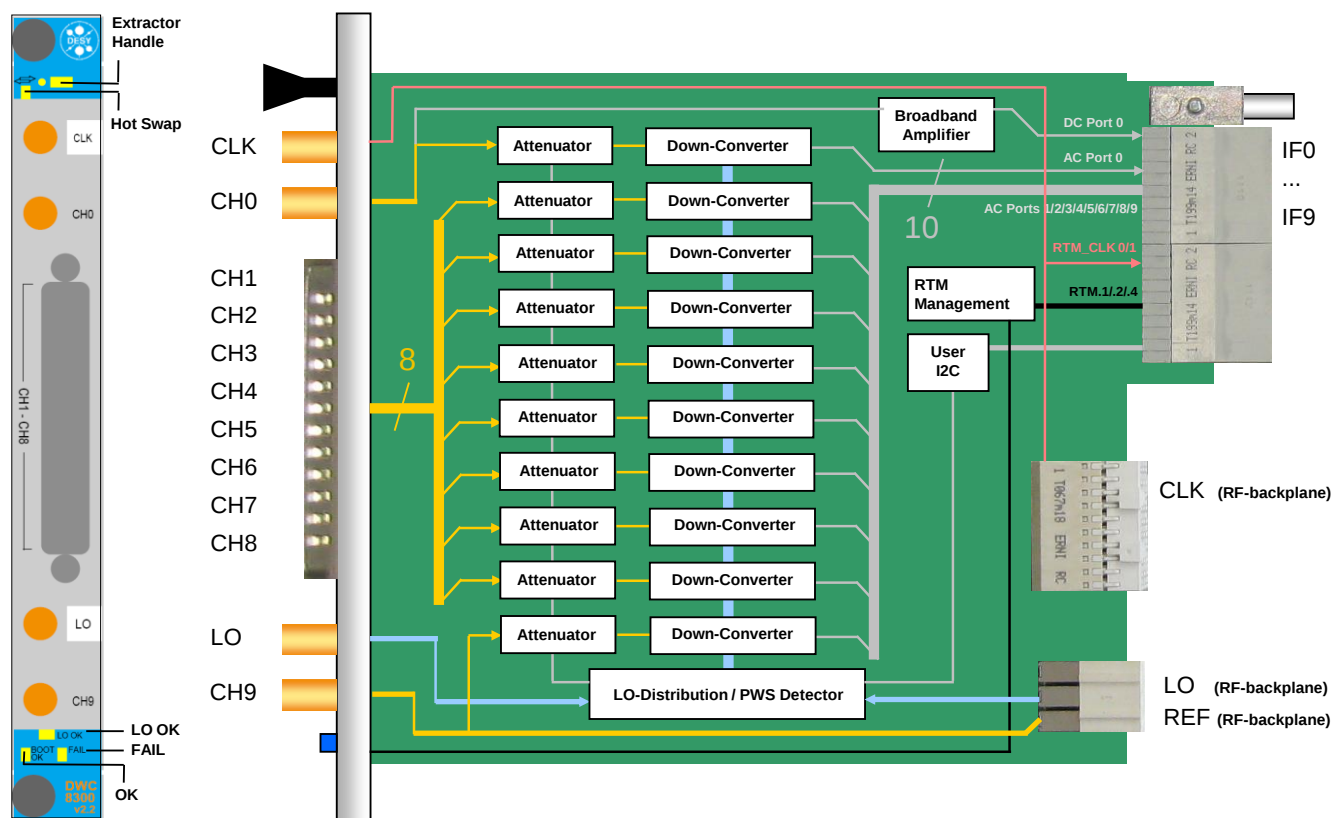
On board		LO-power level monitor	Yes, readout via user I ² C Zone3
		Module temperature sensor	Yes
Interface		LEDs	IPMI management control, LO-power monitor
		Mechanical	Hot swap ejector handle
Environmental		Operating temperature	0 ... 50 °C
		Storage temperature	-40 ... + 90 °C
		Relative humidity	5 ... 90%, non-condensing
		Weight	0.3 kg

OTHER

Licensing to industry	Yes / Deutsches Elektronen-Synchrotron - Notkestr. 85, 22607 Hamburg - Germany - Email: mtca-techlab@desy.de
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DRTM-DWC10

FUNCTIONAL BLOCK DIAGRAM AND FRONT PANEL



OPTIONS

DRTM-DWC10 - A - B - C - DEFG - H - J

A	RF input (CH0...CH9) operating frequency xxxx = (0400...3900) MHz	D	RF input / DC-input (CH0) 0 = AC Port0 used 1 = DC Port0 used	G	CLK-input (CLK) source 0 = Front panel 1 = RF-backplane
B	LO input (LO) local frequency xxxx = (0400...3900) MHz		RF-input (CH9) source E 0 = Front panel 1 = RF-backplane	H	Channel isolation enhancement xx = dB attenuation value
C	IF-output (IF) intermediate frequency xxx = (005...065) MHz		LO-input (LO) source F 0 = Front panel 1 = RF-backplane	J	Conformal Coating 0 = None 1 = Reserved



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