

RTM Four-channel Piezo Driver

DRTM-PZT4

HIGHLIGHTS

Precision object positioning

Rapid motion control

Laser mirror steering

Cavity frequency tuner

Synchronization of pulsed lasers

Fiber link stabilization



FEATURES

Rear-Transition Module (RTM)

Supports 4-channel Piezo Drivers and Piezo Sensors

SSBW ~ 50 kHz, $C_L = 0.1 \mu\text{F}$, $V_o = 5 V_{pp}$

Digital monitoring of output voltage and output current

Remotely switchable actuator and sensor functionality

Unipolar: 0..+100 V and bipolar: ± 100 V piezo power supplies

Interlock signal support

The 4-channel Piezo Driver is a general-purpose Rear Transition Module (RTM) board compliant to the MTCA.4 standard.

The module supports simultaneous driving and sensing of four piezo elements that can be used as actuators and sensors. The actuator and sensor functionality can be exchanged remotely using relay-switches. The driving signal is grounded whenever interlock signal is active. Small signal bandwidth of the piezo driver is in range of 50 kHz when driving pure capacitive loads in the order of $0.1 \mu\text{F}$ with an output voltage signal level of $5 V_{pp}$. The piezoelectric elements can be powered using unipolar or bipolar power supply provided internally or externally.

DRTM-PZT4 module offers sampling rate of driving and sensing circuits up to 200 kSPS per channel. The most critical circuits are monitored using general-purpose ADCs and temperature sensors.

The rear transition management is compliant to the latest RTM Class recommendation D1.0

DESY offers the DRTM-PZT4 for licensing to industry. DESY can modify this product to meet special customer requirements.

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RTM 4-channel Piezo Driver DRTM-PZT4

TECHNICAL SPECIFICATIONS

ARCHITECTURE

Physical	Dimensions	Double width, Mid-Size Width: 148.5mm Depth: 180.6mm
Standards	MTCA.4	Rear-Transition-Module (RTM)
Compatibility	Zone 3 compatibility	Class D1.0, D1.1, D1.2
	Compatible AMC products	DAMC-FMC20, DAMC-FMC25, DAMC-FMC27, DAMC-DAMC02, DAMC-TCK7

CONFIGURATION

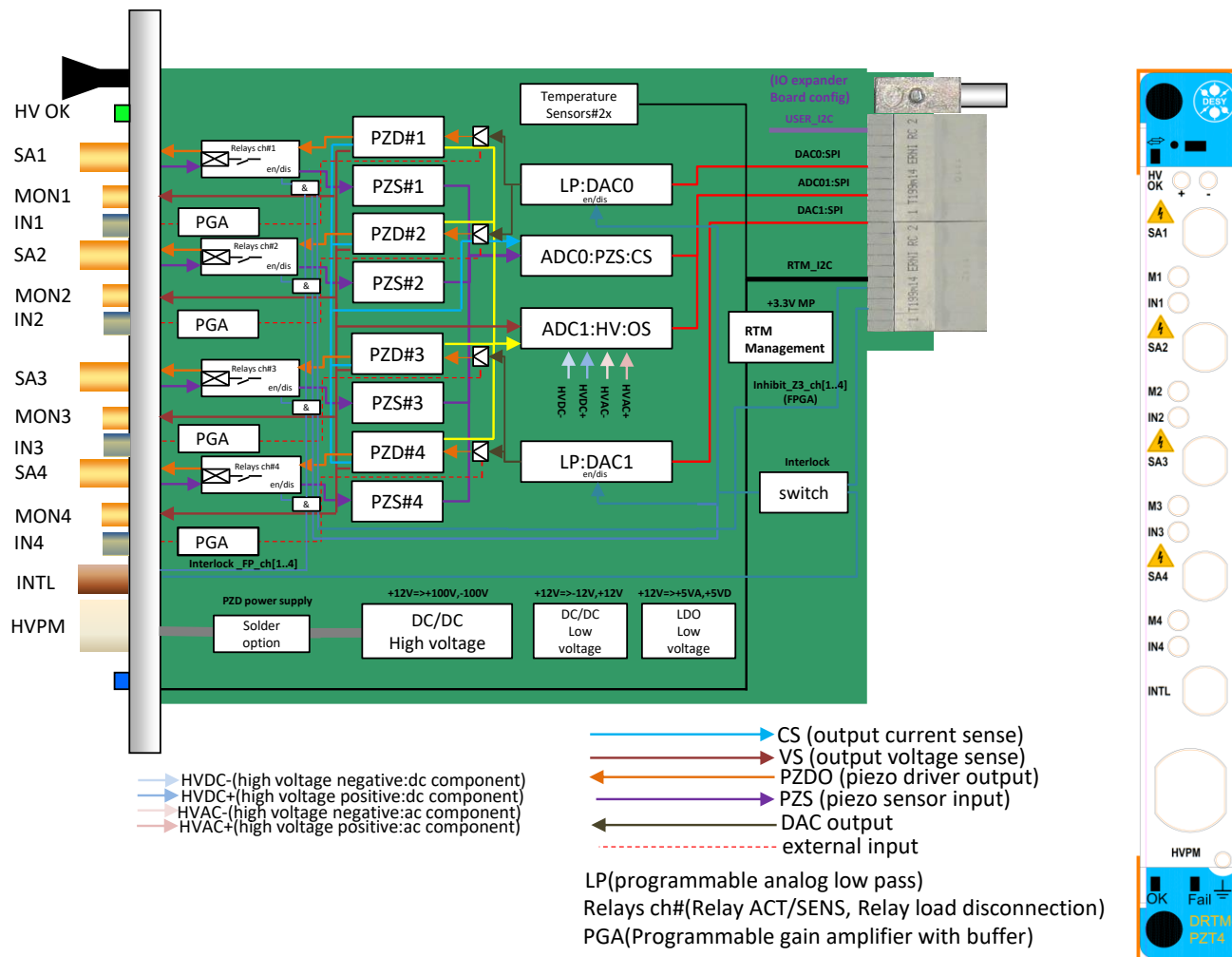
Type	RTM Piezo Driver	Number of channels	4
Electrical properties		Power consumption	<30 W

CONNECTIVITY

Inputs	Piezo sensor inputs (S1...S4)	Front panel	4 channels
		Connector type	Fisher connector (DBPC 102 Series 130 Coding), 4(7)-pin, differential, PCB-mounted, right angle
		Input impedance	2.4 kΩ
		Input voltage range	2 V _{pp}
		Input bandwidth (3dB)	DC ÷ 100 kHz
		Channel crosstalk	XT < -60 dB
	Piezo driver inputs (IN1...IN4)	Front panel	4 channels
		Connector type	MMCX, 1-pin, single-ended, PCB-mounted
		Input voltage range	±1 V
		Input impedance	1 kΩ
	Interlock input (INTL)	Channel crosstalk	XT < -60 dB
		Rear Panel	1 channel
	High voltage input (HVPM)	Connector type	Fisher (DBPC 102 Series 230 coding), 7-pin, single-ended, PCB-mounted, right angle
		Electrical standard	RS422/TTL
		Rear panel	3-pin + first finger PE
		Connector type	M12 power connector (male type)
		Rated Current	12A
Outputs	Piezo driver output (A1...A4)	Contact Voltage	600V
		Rear Panel	4 channels
		Connector type	Fisher connector (DBPC 102 Series 130 Coding), 4(7)-pin, differential, PCB mounted, right angle
		Output load (Rload)	Capacitance, 30 nF ÷ 6 μF
		Output voltage range	±80 V (bipolar); 0..80 V (unipolar)
		Output bandwidth (3 dB)	DC ÷ 300 Hz (V _o = 140 V _{pp} @ 6 μF): cavity tuner DC ÷ 20 kHz (V _o = 0.5 V _{pp} @ 1 μF): laser DC ÷ 50 kHz (V _o = 5 V _{pp} @ 100 nF): link
		DAC resolution	18-bit
		Channel crosstalk	XT < -60 dB between any channels
		Current slew rate protection	TBD
		Overcurrent protection	I _{max} < 0.5 A
		Overvoltage protection	U _{min} = -100 V; U _{max} = +100 V (clamping level for bipolar) U _{min} = 0 V; U _{max} = +100 V (clamping level for unipolar)
	Piezo driver output and current fb monitor (M1...M4)	Rear panel	4 channels
		Connector type	MMCX, 1-pin, single-ended, PCB-mounted
		Output voltage range	±8 V
Grounding	Zone 3	Compatible to Class D1.[0..2]	DC-Ports 1ab, 1cd, 1ef grounded

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FUNCTIONAL BLOCK DIAGRAM



OPTIONS

DRTM-PZT4 - A

High voltage power supply option

A

00 = Internal bipolar

01 = Internal unipolar

11 = External bipolar or unipolar