

iDAQ-784

4-ch, 32-bit Encoder Counter/Timer iDAQ module



Features

- 4x 32-bit encoder/counter
- Support encoder modes: Quadrature (X1, X2, X4), Two-pulse (CW/CCW), Pulse-direction (Signed Pulse)
- Programmable trigger output (preload FIFO) for position comparison
- Compare output as trigger or conversion clock to iDAQ modules via iDAQ chassis
- Built-in digital filter
- Buffered acquisition synchronized with other iDAQ modules

Introduction

The iDAQ-784 is a 4-ch encoder & counter iDAQ module. It includes four 32-bit encoder counters with programmable trigger output (preload FIFO) for position comparison which is suitable for motor control and position monitoring applications. It also provides general counter functions such as frequency measurement, pulse width measurement, pulse output, and PWM output. All channels are protected by 2,500 VDC isolation circuit.

Specifications

Encoder/Counter ⁽¹⁾

- **Channels** 4
- **Resolution** 32 bits
- **Max. Input Frequency** 10 MHz
- **Max. Output Frequency** 10 MHz
- **Digital Filter** 1.28 μ s ~ 1.31 ms
- **Supported Functions** Event Counter, Position Measurement, Position Compare, Pulse Width Measurement, One Shot, Timer/Pulse, Pulse Width Modulation

Electric Properties

Properties / Pin		CLK (A)	AUX (B)	GATE (Z)	SC/K	OUT
Direction		Input			Input	Output
Voltage Range	Compatibility	-12 V ~ 12 V			5V TTL	5V TTL
	Single End	High: 2.8V min. Low: 0.8V max. (Positive to GND)			High: 2.8V min. Low: 0.8V max.	High: 4V min. Low: 0.4V max.
	Differential	High: 0.5V min.			—	—
Driving Capability		—			—	8mA @ High -8mA @ Low
Input Common-mode Voltage Range		-15 V ~ 15 V			—	—
Input Protection Voltage		-25 V ~ 25 V			—	—
Isolation Protection		2500 V _{DC}			—	—
Pull-up/down resistor		Pull-up 10 k Ω			—	—
Debounce Filter		40 ns ~ 84 ms, software configurable			—	—
Minimum Width		100 ns			—	—
Counter Functions	Frequency Measurement			✓		
	Event Counter	✓		✓		
	Position Measurement	✓	✓	✓	✓	
	Position Compare	✓	✓	✓	✓	✓
	Pulse Width Measurement			✓		
	One Shot	✓		✓		✓
	Timer/Pulse			✓		✓
	Pulse Width Modulation			✓		✓

Buffered counter ⁽²⁾

- **Internal data buffer(FIFO) size**
For measurement functions 1,024 samples for each counter
For output functions 1,024 samples for each counter
- **Sample clock rate** 200 kHz max.
- **Sample clock source** From chassis (all channels share the same clock signal) or external (each channel uses independent clock signal)

Pin Assignment ^(*)

CLK0+/A0+	37	19	CLK1+/A1+
CLK0-/A0-	36	18	CLK1-/A1-
AUX0+/B0+	35	17	GND
AUX0-/B0-	34	16	AUX1+/B1+
GATE0+/Z0+	33	15	AUX1-/B1-
GATE0-/Z0-	32	14	GATE1+/Z1+
GND	31	13	GATE1-/Z1-
SC/K0	30	12	SC/K1
OUT0	29	11	OUT1
CLK2+/A2+	28	10	GND
CLK2-/A2-	27	9	CLK3+/A3+
GND	26	8	CLK3-/A3-
AUX2+/B2+	25	7	AUX3+/B3+
AUX2-/B2-	24	6	AUX3-/B3-
GATE2+/Z2+	23	5	GATE3+/Z3+
GATE2-/Z2-	22	4	GATE3-/Z3-
SC/K2	21	3	GND
OUT2	20	2	SC/K3
		1	OUT3

Trigger

- **Number of triggers** 2 max., selectable via software
- **Trigger action** Start, delay to start, stop delay to stop
- **Trigger delay range** 0 ~ 16,777,215 samples
- **Sample number** 0 ~ 16,777,215 samples

Power Consumption

- **Typical**
- **Maximum**

Physical

- **Form factor** iDAQ Module
- **Dimension** 100 x 80 x 25 mm (3.94 x 3.15 x 0.98 in.)
- **Weight** 175 g
- **I/O connector** 37-pin D-SUB

Environmental

- **Operating temperature** -40 ~ 70 °C (-40 ~ 158 °F)
- **Storage temperature** -40 °C to 85 °C (-40 °F to 185 °F)
- **Operating humidity** Up to 90% RH, non-condensing
- **Vibration** 5Grms, random vibration
- **Shock** 30G
- **Certification** EMC: CE, FCC

Ordering Information

- **IDAQ-784-A** 4-ch, 32-bit Encoder Counter/Timer iDAQ module

Accessories

- **ADAM-3937-AE** DB-37 Wiring Terminal, DIN-rail Mount
- **PCL-10137-1E** DB-37 Shielded Cable, 1m
- **PCL-10137-2E** DB-37 Shielded Cable, 2m
- **PCL-10137-3E** DB-62 Shielded Cable, 3m

⁽¹⁾ For detail specification for each counter function, please refer to the User Manual

⁽²⁾ This function will be implemented in the later upcoming driver release.