



ECAT-2093

EtherCAT Three-Channel Incremental Encoder Counter

Features

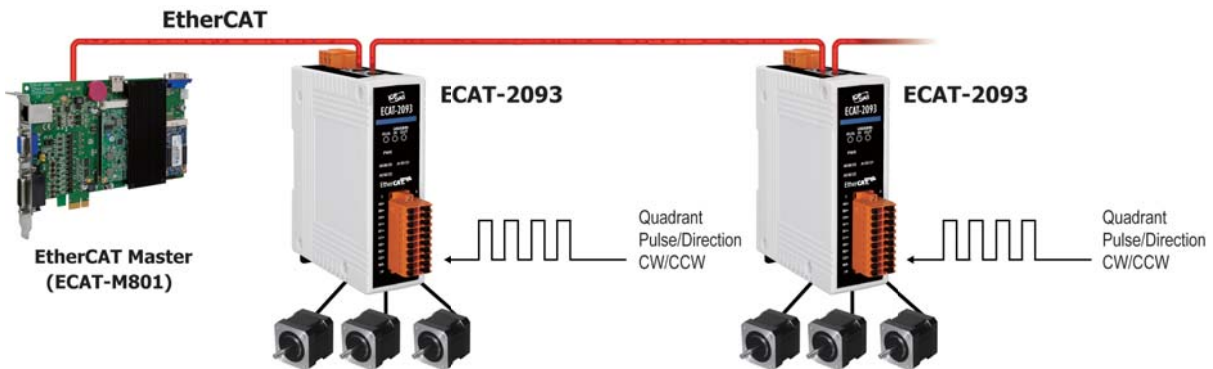
- EtherCAT slave
- Three channels, 32-bit incremental encoder counters
- Encoder counting mode: CW/CCW , Pulse/Direction, A/B Phase
- Maximum counting rate: 4 MHz
- Encoder Input: A, B, Z differential or single-ended signals
- Index latch counter value
- Digital input filter
- Input level: 5V, 12V/24V with internal resistor
- Polarity setting by software for active high or active low encoder input
- A/B/Z signal isolation voltage: 2500V optical isolation
- LED indicators for EtherCAT and encoder status
- EtherCAT:
 - 2 x RJ-45 bus interface
 - Distance between stations up to 100 m (100BASE-TX)
 - Support daisy chain connection
 - EtherCAT conformance test tool verified
 - Supports Free-Run, SM synchron and Distributed Clock (DC) operation modes



Introduction

The EtherCAT slave ECAT-2093 is an incremental encoder counter which provides three independent high-speed counter channels. It reads the pulse train generated by an incremental encoder and can be used in positioning feedback applications. Each channel has two counter inputs. The inputs can either be single-ended or differential signals. Three counting modes are supported: clockwise/counterclockwise, pulse/direction and quadrant counting mode. The hardware index latch function allows the latching of encoder position. Low pass filter functions for filtering out electrical noises are provided.

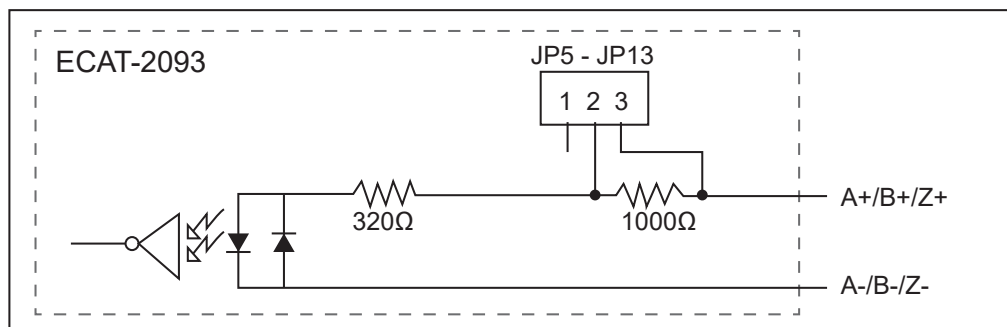
Applications



Digital Input Channel

The ECAT-2093 can accept encoder input from either differential or single-ended signals.

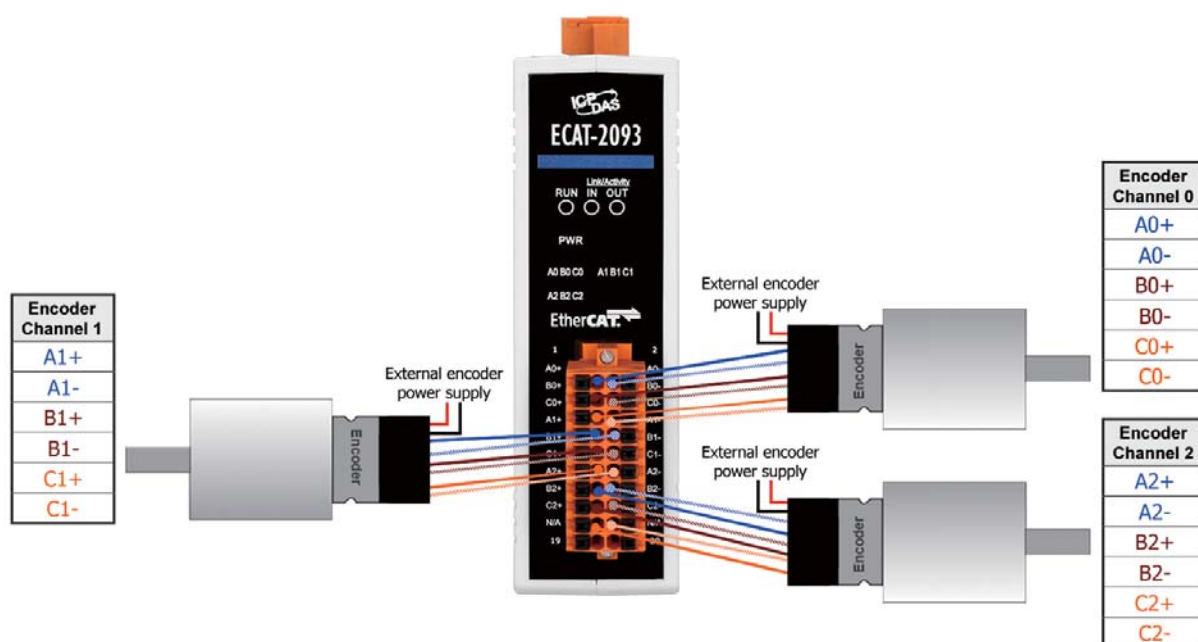
By default it is set to support differential encoder signals as they are preferred due to their excellent noise immunity. For single-ended encoder connection the ECAT-2093 provides an internal 1k Ohm resistor for each signal input. The internal resistor can be selected via jumper setting.



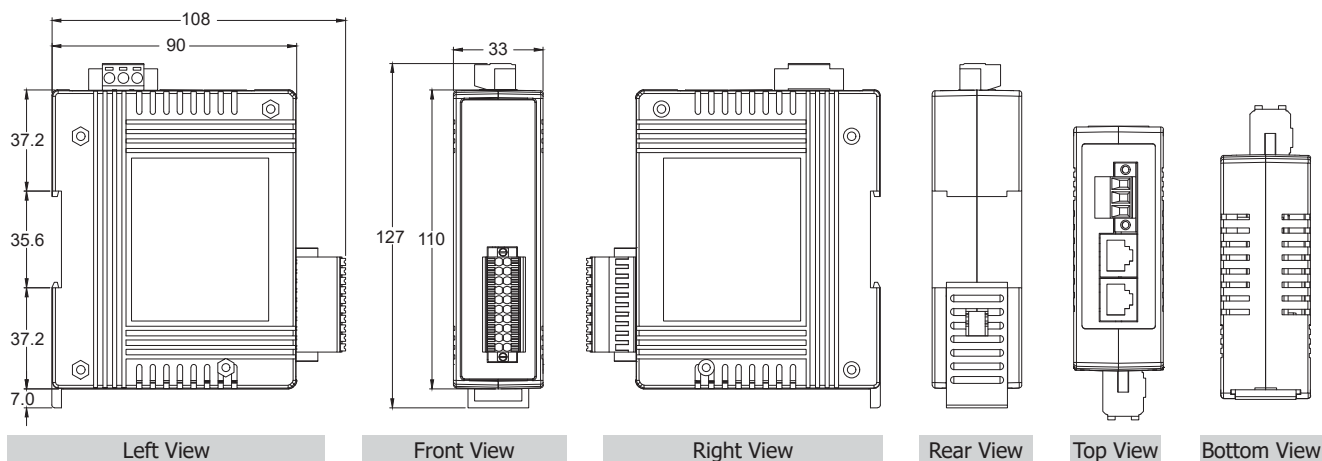
Hardware Specifications

Encoder	
No. of Axes	3, differential or single-ended
Resolution	32 Bit
Mode	CW/CCW, Pulse/Direction, A/B Phase
Max. Input Pulse Frequency	4 MHz
Input level	5V (default)
	12V/24V with internal resistor (set by jumper)
Photo-isolation	2500 VDC
LED Indicators	
Diagnostic LED	Power, EtherCAT status, signal status of each encoder input
Communication Interface	
Connector	2 x RJ-45
Protocol	EtherCAT
Distance Between Stations	Max. 100 m (100BASE-TX)
Data Transfer Medium	Ethernet/EtherCAT cable (Min. CAT5), shielded
Power	
Input Voltage Range	20 VDC ~ 30 VDC
Power Consumption	Maximum 4.5W
EMS Protection	
ESD (IEC 61000-4-2)	4 KV Contact for each channel
EFT (IEC 61000-4-4)	Signal: 1 KV Class A; Power: 1 KV Class A
Surge (IEC 61000-4-5)	1 KV Class A
Mechanical	
Installation	DIN-Rail
Dimensions (W × L × H)	33 mm × 127 mm × 108 mm
Casing	Plastic
Environment	
Operating Temperature	-25 ~ +70°C
Storage Temperature	-30 ~ +80°C
Relative Humidity	10 ~ 90% RH, Non-condensing

Wire Connections



Dimensions (Units: mm)



Connection Interfaces



Name	Signal
F.G	Frame ground
GND	Power supply: Ground 0V (from negative power contact)
+Vs	Power supply: +24 VDC (from positive power contact)
IN	EtherCAT signal input
OUT	EtherCAT signal output



Name	Signal	Signal Description	
A0+	Input	Encoder input A0+	Encoder Channel 0
A0-	Input	Encoder input A0-	
B0+	Input	Encoder input B0+	
B0-	Input	Encoder input B0-	
Z0+	Input	Encoder input C0+	
Z0-	Input	Encoder input C0-	
A1+	Input	Encoder input A1+	Encoder Channel 1
A1-	Input	Encoder input A1-	
B1+	Input	Encoder input B1+	
B1-	Input	Encoder input B1-	
Z1+	Input	Encoder input C1+	
Z1-	Input	Encoder input C1-	
A2+	Input	Encoder input A2+	Encoder Channel 2
A2-	Input	Encoder input A2-	
B2+	Input	Encoder input B2+	
B2-	Input	Encoder input B2-	
Z2+	Input	Encoder input C2+	
Z2-	Input	Encoder input C2-	

Ordering Information

ECAT-2093 CR	EtherCAT three-channel incremental encoder counter (RoHS)
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