

ECAT-2092T

Two-Channel Incremental Encoder Counter with Latch and Compare Function

Features

- EtherCAT SubDevice
- Two 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, C differential or single-ended signals
- Two digital input for counter latching
- Two digital output for position compare signal trigger: single, auto-increment and array compare
- Up to 200 compare values per encoder channel are supported for the array compare mode
- Encoder 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/C signal isolation voltage: 2500V optical isolation

Introduction

The EtherCAT SubDevice ECAT-2092T is an incremental encoder counter which provides two 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 (A, B) and one index inputs (C). The inputs can either be single-ended or diff erential signals. Three counting modes are supported: clockwise/counterclockwise, pulse/direction and quadrant counting mode. Each 32-bit counter and the trigger level (falling/rising edge) can be configured and set by software.

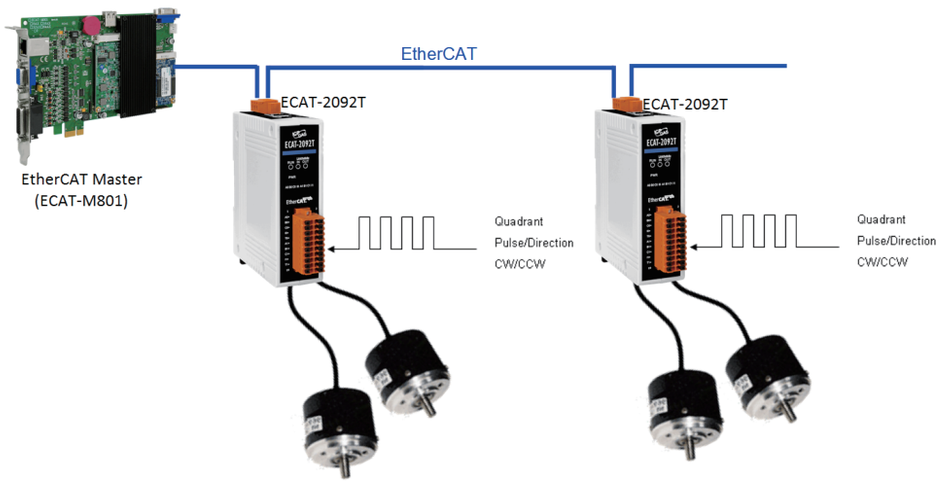
In addition to the encoder inputs A, B and C, a latch input I for each encoder channel allows the latching and clearing of each encoder counter. Encoder position are latched at rising and falling input signal and are recorded in two separate register.

The ECAT-2092T supports position compare: Each encoder channel is equipped with one 32-bit compare register which compares the counter position with the compare position and generates an output signal when the counter reaches or passes the compare position. The compare function supports single, auto incremental and array position compare. The pulse width of the compare output can be set.

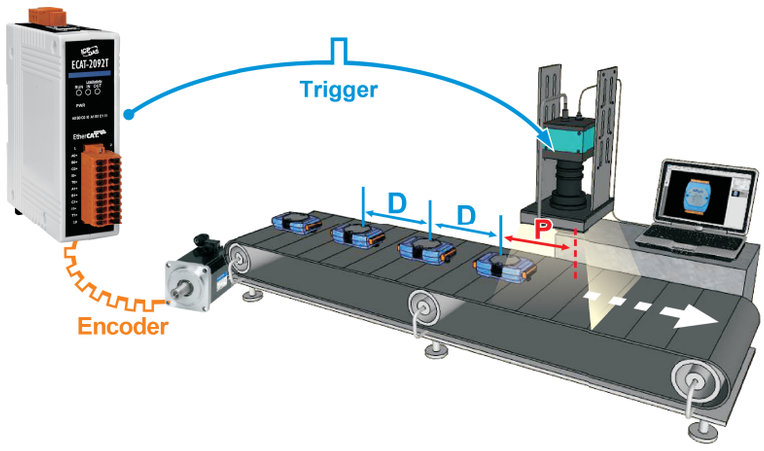
Each channel has got an adjustable input signal filter for filtering out electrical noises.

Applications

- Position measurement
- Image capture
- Automated optical inspection
- Line-scan vision inspection
- Data acquisition



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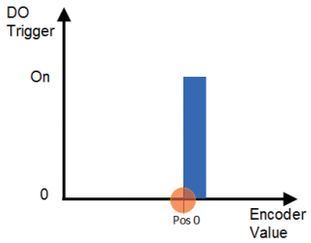


Hardware Specifications

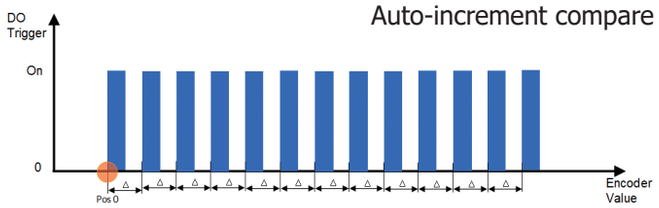
Model		ECAT-2092T
Encoder Input		
No. of Axes		2x encoder counter (A, B, C), differential or single-ended
Resolution		32 Bit
Mode		A/B Phase, CW/CCW, Pulse/Dir
Max. Input Pulse Frequency		4 MHz
Programmable Digital Filter		1 ~ 250 μs
Input Level	5V (default)	Logic high: 4 V ~ 5 V, Logic low: 0 V ~ 2 V
	12V (set by jumper)	Logic high: 5 V ~ 12 V, Logic low: 0 V ~ 2 V
	24V (set by jumper)	Logic high: 5 V ~ 24 V, Logic low: 0 V ~ 2 V
Photo-isolation		2500 V_{DC}
External Latch Input		
Channels		2
Input Level	5V (default)	Logic high: 4 V ~ 5 V, Logic low: 0 V ~ 2 V
	12V (set by jumper)	Logic high: 5 V ~ 12 V, Logic low: 0 V ~ 2 V
	24V (set by jumper)	Logic high: 5 V ~ 24 V, Logic low: 0 V ~ 2 V
Compare Trigger Output		
Type		Open Collector
Sink/Source (NPN/PNP)		Sink (NPN)
Channels		2
Trigger Pulse Width		2 ~ 32,767 μs
Load Voltage		5 ~ 48 V
Max. Load Current		100 mA
Mode		Single position compare, Auto-increment compare, Position array compare
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 V_{DC} ~ 30 V_{DC}
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

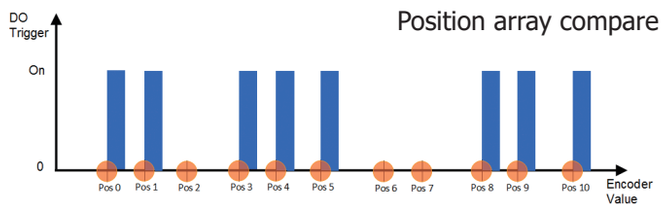
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Mechanical	
Installation	DIN-Rail
Dimensions (L x W x H)	110 mm x 90 mm x 33 mm (without connectors)
Case material	UL 94V-0 housing
Environment	
Operating Temperature	-25°C ~ 75°C
Storage Temperature	-30°C ~ 80°C
Relative Humidity	10 ~ 90%, No condensation



Single position compare

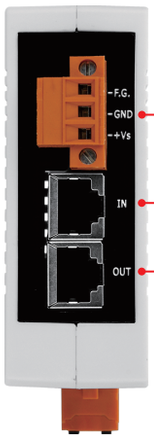




Connection Interfaces



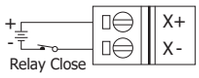
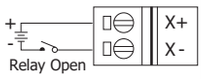
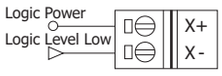
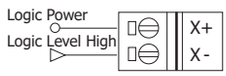
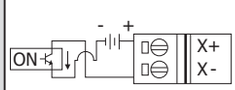
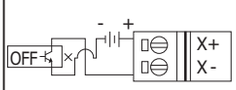
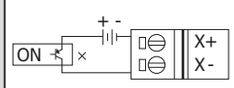
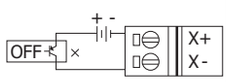
Name	Signal	Signal Description	
A0+	Input	Encoder input A0+	Encoder Channel 0
A0−	Input	Encoder input A0−	
B0+	Input	Encoder input B0+	
B0−	Input	Encoder input B0−	
C0+	Input	Encoder input C0+	
C0−	Input	Encoder input C0−	
I0+	Input	Encoder input I0+	
I0−	Input	Encoder input I0−	
T0+	Output	Compare trigger DO0	
T0−		External ground for DO0	
A1+	Input	Encoder input A1+	Encoder Channel 1
A1−	Input	Encoder input A1−	
B1+	Input	Encoder input B1+	
B1−	Input	Encoder input B1−	
C1+	Input	Encoder input C1+	
C1−	Input	Encoder input C1−	
I1+	Input	Encoder input I1+	
I1−	Input	Encoder input I1−	
T1+	Output	Compare trigger DO1	
T1−		External ground for DO1	



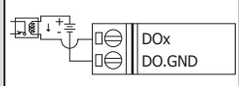
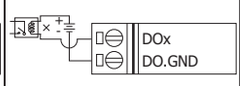
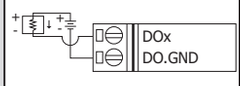
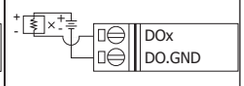
Name	Signal
F.G.	Frame ground
GND	Power supply: Ground 0V (from negative power contact)
+Vs	Power supply: +24 VDC (from positive power contact)
IN	EtherCAT signal input
OUT	EtherCAT signal output

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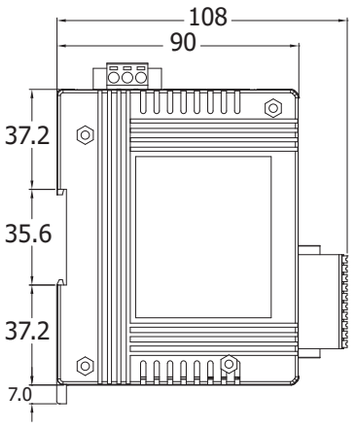
Digital Input Wiring

Input Type	ON State Readback as 1	OFF State Readback as 0
Relay Contact	Relay ON	Relay OFF
		
TTL/ CMOS Logic	Voltage > 4 V	Voltage < 0.8 V
		
NPN Output	Open Collector ON	Open Collector ON
		
PNP Output	Open Collector ON	Open Collector ON
		

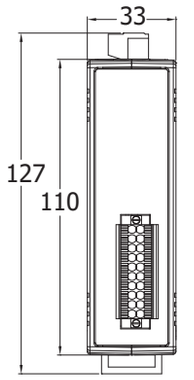
Compare Trigger Output Wiring

Input Type	ON State Readback as 1	OFF State Readback as 0
Drive Relay	Relay ON	Relay OFF
		
Resistance Load		

Dimensions (Units: mm)

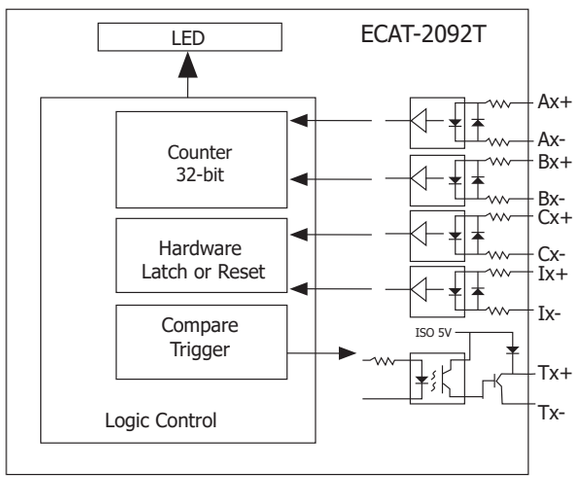


Left View



Front View

Internal I/O Structure



Ordering Information

ECAT-2092T CR	EtherCAT two-channel incremental encoder counter with compare trigger output (RoHS)

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