

TA4000C

Single-Axis, CiA402-compliant EtherCAT Drive

This CiA402-compliant single-axis drive controller provides reliable performance through the EtherCAT communication protocol. It implements Field Oriented Control for improved torque stability and efficiency across operating speeds. Features include a 36V boost capability for extended operational range and support for custom firmware development. Designed for mission-critical applications where consistent performance and network integration are essential requirements.



ENVIRONMENTAL

Max. Altitude, ft (M)	6,560 (2,000)
Temperature (ambient), °C	Normal operation: 5 to +40
	Maximum: +60
	Storage: -40 to +70
Heat Dissipation	No heatsink required
Airflow	Internal fan, heat activated
Humidity, %	Operating: max 80, up to 31°C, non-condensing
	Storage: 10 to 90, non-condensing
MTBF (Telcordia SR-332)	1,500,000 hours @ 60°C

Features

- EtherCAT communications with CAN over EtherCAT(CoE) implementation
 - CoE—Supports the CiA 402 Device Profile
- FOC Current Control
- Configurable Current, Voltage, Acceleration, Velocity and Position Limits
- Programmable Gain Settings
- Full featured Servo Position Loop including Acceleration and Velocity Feed-forward
- Compact size, high power density
- Built-in Mechanical Brake operation circuit
- Configurable Regeneration output (requires external shunt resistor)

ELECTRICAL

DC Input	24VDC ±10 Volts
	15A peak Absolute max
	10A continuous Absolute max
	4.5A (108W) nominal draw under normal operation
	External fuse (recommended)—6A

MECHANICAL

Single-Axis	Length, in (cm)	5.28 (13.41)
	Width, in (cm)	2.25 (5.72)
	Height, in (cm)	7.15 (18.16)
	Weight, oz (kg)	Controller: 2 lbs, 5 ozs (1.05)

CONNECTIONS			
Single-Axis	Connector J1—DC Power	2-Pin D-Sub Combo, 30A	CONEC—302W2CPXX57N40X
	Connector J2—Motor Phase, Brake, Regen	9-Pin D-Sub Combo	CONEC—3009W4SCT56N40X
	Connector J3—Motor Encoder	15-Pin HD D-Sub Socket	HARTING—09561525613
	Connector J4/5—EtherCAT In/Out	Ethernet RJ45	Pulse—JDX-0Z10-NL
	Connector J6—Digital I/O	15-Pin HD D-Sub Plug	HARTING—09561627813

Approvals & Compliances



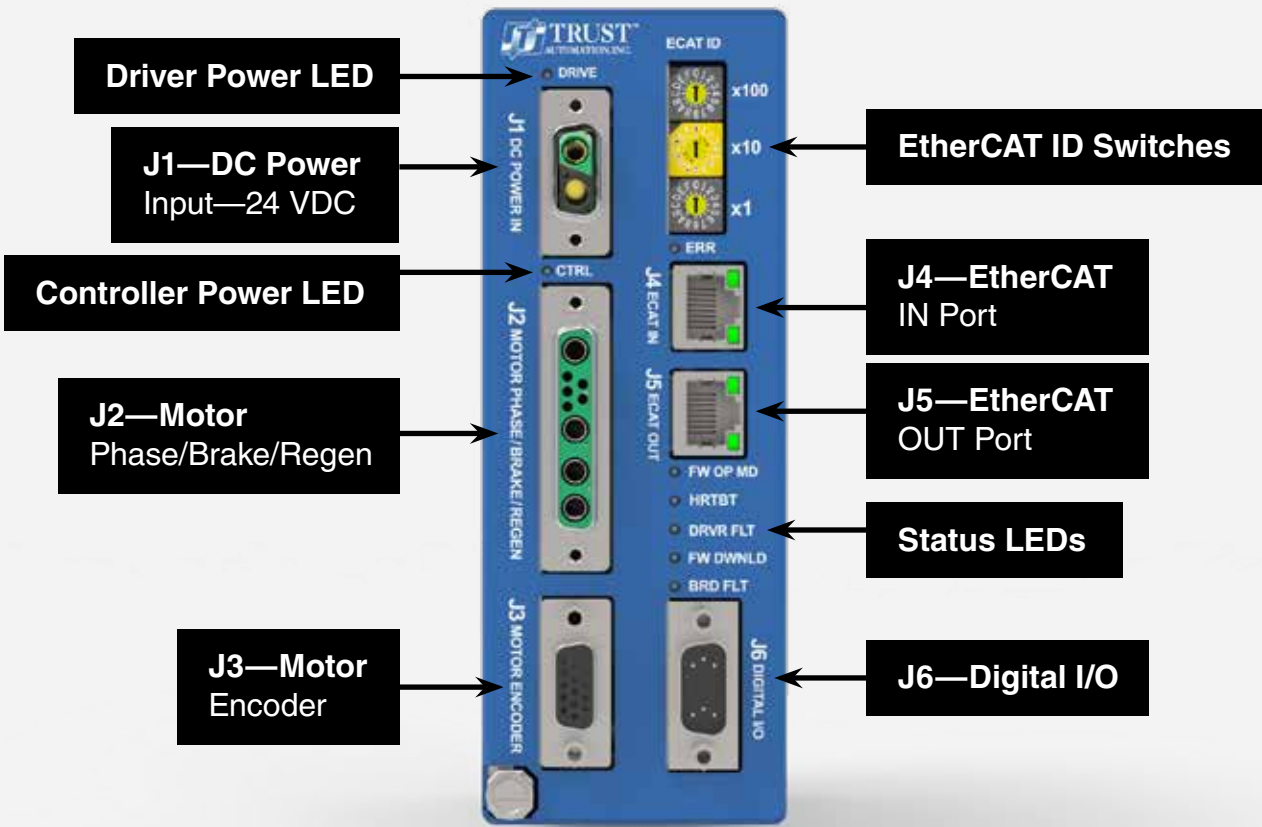
Compliant with Directive 2014/30/EU (EMC) IEC 61800-3.



The RoHS II Directive 2011/65/EU restricts the use of certain substances including lead, mercury, cadmium, hexavalent chromium and halogenated flame retardant PBB and PBDE in electronic equipment.

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Comm Port Connector Descriptions & Pinouts



CONNECTOR J1—DC POWER		
Pin	Function	Description
A2	+VDC	Driver/Controller 24VDC Power Input
A1	RTN	Drive Ground

CONNECTOR J2—MOTOR PHASE, BRAKE, REGEN		
Pin	Function	Description
A2	U	Motor Phase U
A1	V	Motor Phase V
A3	W	Motor Phase W
A4	Chasis GND	Frame
1	Regen Output	Regen Clamp output to Regen Power Resistor
2	DC Bus	Bus Power (for Regen Resistor)
3	Brake+	Motor Brake+
4	Brake-	Motor Brake-
5	NC	Not Connected

CONNECTOR J3—MOTOR ENCODER		
Pin	Function	Description
1	A+	Encoder A+
2	B+	Encoder B+
3	I+	Index+
4	Hall C+	Hall Sensor C+
5	GND	Ground
6	A-	Encoder A-
7	B-	Encoder B-
8	I-	Index-
9	Hall C-	Hall Sensor C-
10	NC	Not Connected
11	Hall A+	Hall Sensor A+
12	Hall A-	Hall Sensor A-
13	Hall B+/SE-	Hall Sensor B+ or Serial Data+
14	Hall B-/SE-	Hall Sensor B- or Serial Data-
15	+5V	Encoder Supply
Shell	Chassis Ground	Cable Shield

CONNECTOR J4—ETHERCAT IN		
Pin	Function	Description
1	TXP	Transmit Positive
2	TXN	Transmit Negative
3	RXP	Receive Positive
4	TXCT	Transmit Center Tap
5	TXCT	Transmit Center Tap
6	RXN	Receive Negative
7	RXCT	Receive Center Tap
8	RXCT	Receive Center Tap
Shell	Chassis GND	Shielded Cable (STP) Connection

CONNECTOR J5—ETHERCAT OUT		
Pin	Function	Description
1	TXP	Transmit Positive
2	TXN	Transmit Negative
3	RXP	Receive Positive
4	TXCT	Transmit Center Tap
5	TXCT	Transmit Center Tap
6	RXN	Receive Negative
7	RXCT	Receive Center Tap
8	RXCT	Receive Center Tap
Shell	Chassis GND	Shielded Cable (STP) Connection

CONNECTOR J6—DIGITAL I/O		
Pin	Function	Description
1	Enable Input+	Driver Enable+
6	Enable Input-	Driver Enable-
2	Home Input+	Home Sensor+
7	Home Input-	Home Sensor-
3	CW Limit Input+	CW Limit Sensor+
8	CW Limit Input-	CW Limit Sensor-
4	CCW Limit Input+	CCW Limit Sensor+
9	CCW Limit Input-	CCW Limit Sensor-
5	GND	Digital Ground
10	NC	Not Connected
11	GP_Output1+	General Purpose Output #1+
12	GP_Output1-	General Purpose Output #1-
13	GP_Output2+	General Purpose Output #2+
14	GP_Output2-	General Purpose Output #2-
15	+VDC	Input Supply Voltage
Shell	Chassis GND	Cable Shield

Digital I/O Note 1: All inputs are optically isolated, 5-24VDC
Digital I/O Note 2: All GP_Outputs are optically isolated, 40VDC max, open collector

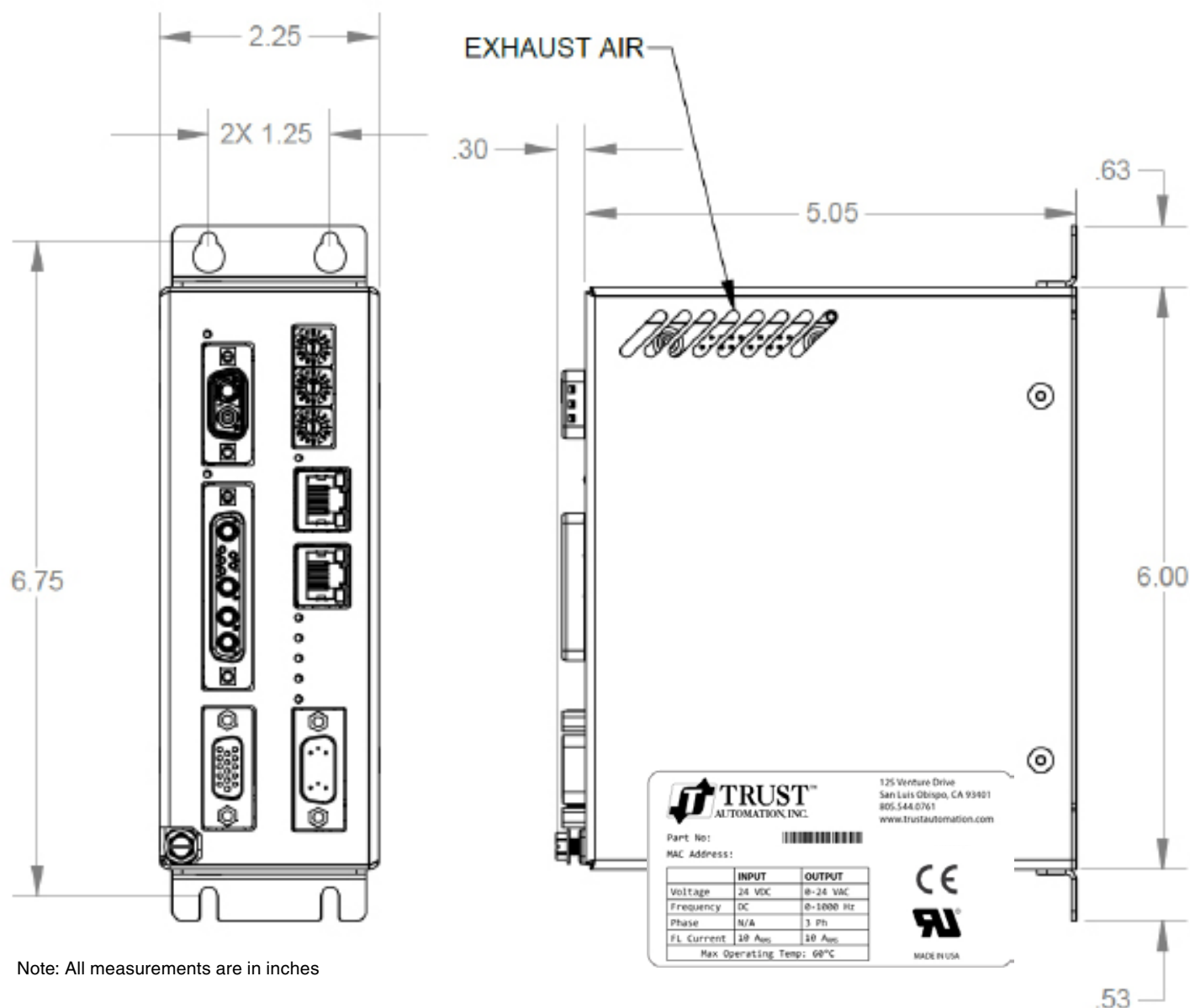
STATUS LEDS CALL OUT		
Label	Color	Description
FW OP MD	Green	EtherCAT Operation
HRTBT	Green	System Operation
DRVR FLT	Red	Controller/Driver Fault
FW DWNLD	Green	System Firmware Download
BRD FLT	Red	Board Fault (non-recoverable)
DRIVE	Green	Driver Power
CTRL	Green	Controller Power



SW1, SW2, SW3—ETHERCAT ID SWITCHES			
Label	Function	Description	Default Value
SW1	X1 ID	The ID number times 1	9
SW2	X10 ID	The ID number times 10	5
SW3	X100 ID	The ID number times 100	0

ETHERCAT COMMUNICATION STATUS LEDS		
Label	Color	Description
ERR	Red	EtherCAT Errors
L/A (J4)	Yellow	Input Link/Activity State
RUN	Green	AL Status
L/A (J5)	Yellow	Output Link/Activity State

Mechanical Drawing



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