

EtherCAT Master module

MC

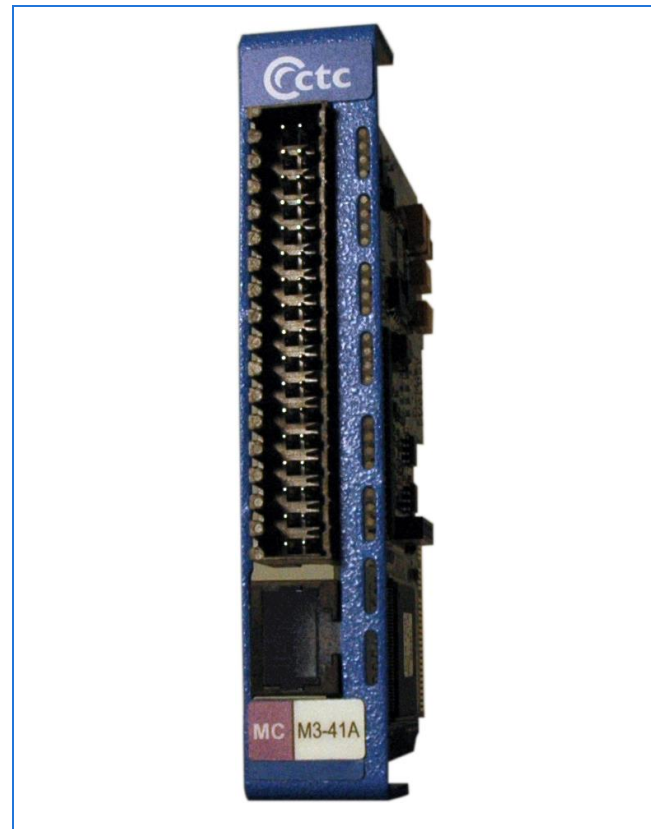
M3-41A

- ▶ Advanced floating point position loop
 - ▶ Up to 16 axes per network
 - ▶ Virtual axis/master support
 - ▶ Up to 2000 I/O points using remote I/O
 - ▶ 1 mS updates on all axes
 - ▶ Any axis can track/gear/cam off any other
 - ▶ Registration Capability
 - ▶ Commands: linear, S-curve, Cam, Spline, Gear, Move on a gear, Segmented moves
 - ▶ Syncs master to slaves - provides simultaneous motions
- ▶ EtherCAT motion modes:
 - Cyclic Sync Position
 - Interpolated Position
 - Profile Position
 - Profile Velocity
 - ▶ Network auto configuration
 - ▶ Support for absolute encoding
 - ▶ Link software counters to any input
 - ▶ Link PWM outputs to any output

5300

General specifications

Axes per network	1-16
Axis type	Servo and Stepper
Digital inputs per network	Up to 1000
Digital outputs per network	Up to 1000
Analog inputs per network	Up to 256
Analog outputs per network	Up to 256
Connection type	RJ-45
Drives supported	ABB MicroFlex e150™ AMC DigiFlex® Performance™ Copley Accelnet and Xenus Emerson Unidrive SP/Digitax ST Servo Drive IAI America Intelligent Actuators Kollmorgen AKD LinMot USA Sanyo Denki SANMOTION R Servo Drive Yaskawa Sigma-5
I/O blocks supported	Beckhoff SMC Valve Stacks and I/O Numatics Turck I/O Turck RFID WAGO



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5300

Minimum hardware revision	B
Minimum firmware revision	1.55
Minimum operating system revision	5009069_84
Documentation number: 950-534101-000	

Performance specifications

Parameter	Value
Position range	64-bit
Position resolution	±1 count
Velocity resolution	±1 count/sec
Accel decel resolution	±1 count/sec
Synchronization	Simultaneous
Loop update rate	1 mS*

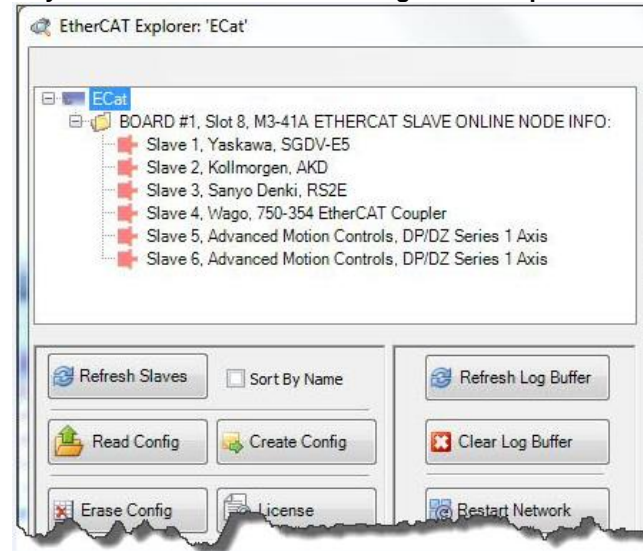
*May be set to 500 ns up to four (4) axes

Electrical specifications

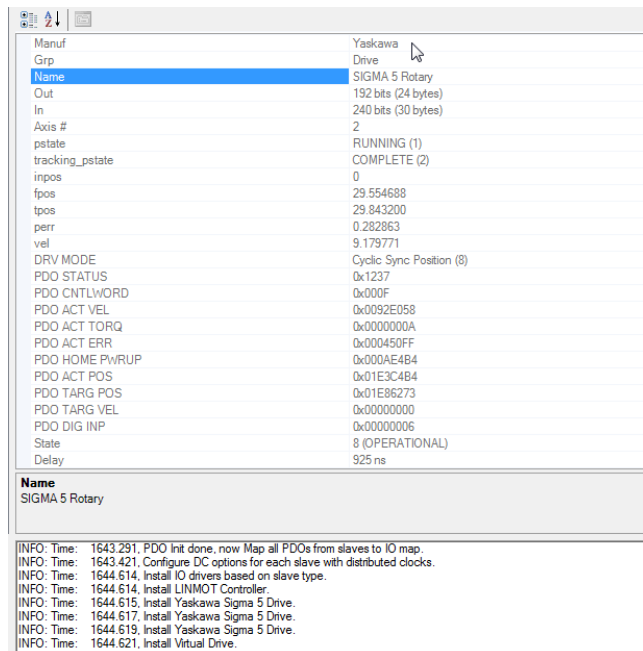
Parameter	Value
Max encoder input voltage	6 VDC
Encoder Turn ON/OFF threshold	±200 mV
Encoder termination resistor	100Ω (10%)
Input type	VDC sourcing
Registration Input response	<1 μsec
Input Turn ON threshold	0.53 * VS
Input Turn OFF threshold	0.32 * VS
Max voltage	VS
Max ON current	2.6 mA DC
Input resistance to VDC RTN	12 KΩ (+/-5%)
Output current: per channel	±0.5 A
Output voltage: V _{OL} (sinking) @ 100 mA V _{OL} (sinking) @ 0.5 A V _{OH} (sourcing) @ 100 mA V _{OH} (sourcing) @ 0.5 A	0.4 VDC 2 VDC VS – 0.4 VDC VS – 2 VDC
Output overload protection	Non-Protected

Additional features

The 5300 controller auto configures EtherCAT devices on your network. No manual configuration required.



Log Buffer

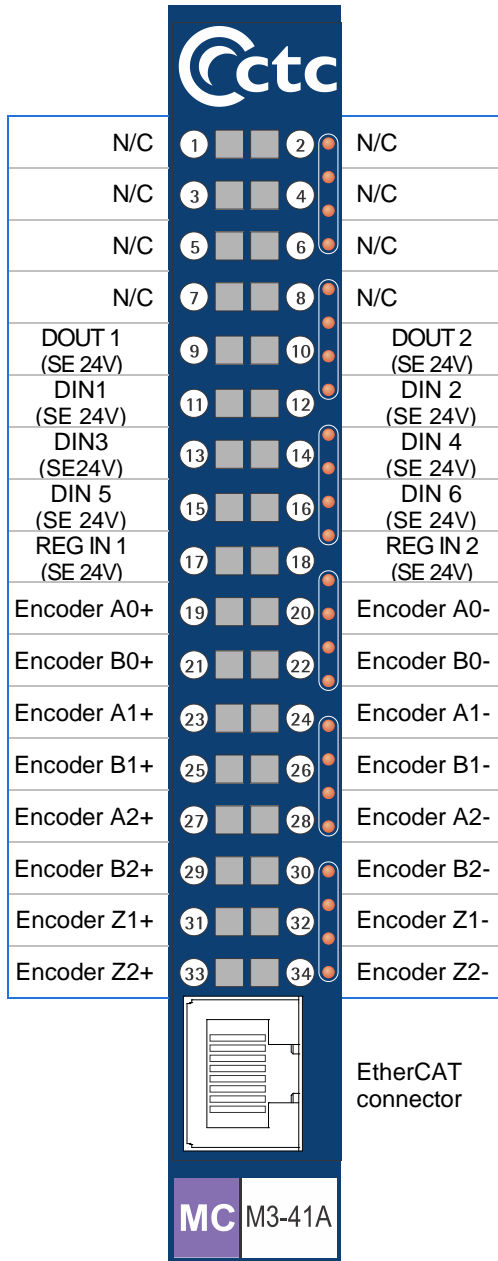


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Terminal block connections



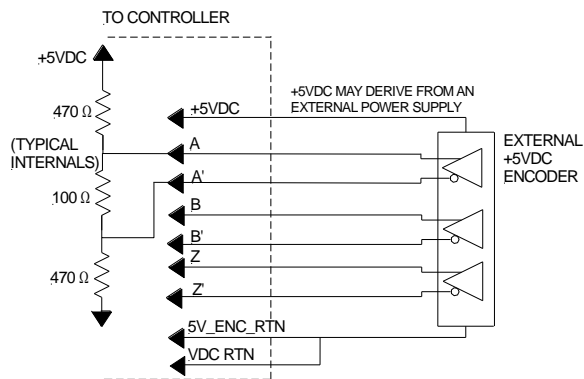
Special I/O Functions

- **Three encoder inputs.** May be used as a master to any EtherCAT axis or as a general encoder
- **Six digital inputs**
- **Two digital outputs**
- **Two registration inputs**
- **Software counters**
- **PWM outputs**
- **Up to 16 RFID channels**

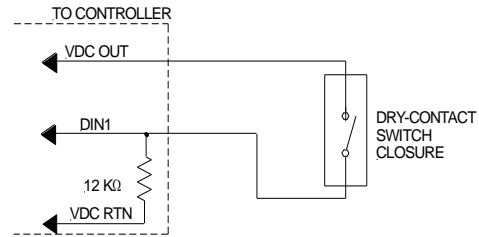
For more information refer to the [CTC EtherCAT Applications Guide](#)

Application Information

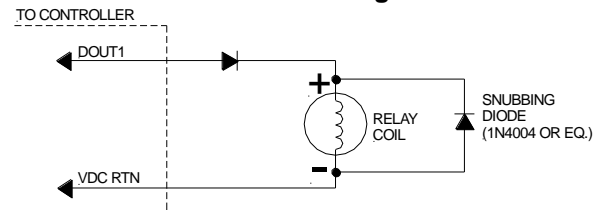
Differential Encoder/Counter Application



All Single-ended Inputs Application



Digital Output Applications Sourcing



Notes

1. Shields must be terminated on the controller side of the cable.
2. VS refers to the voltage supply of the controller. VDC OUT = VS(DC voltage supplied to controller's power supply).
3. If an external 5V power supply is used for the encoder, the external power supply's VDC RTN must be tied to 5V_ENC_RTN.
4. For single-ended counter or encoder input signals, tie A', B', and Z' to 5V_ENC_RTN.
5. Insertion and/or removal of I/O modules should be done with all power removed. Failure to do so may lead to damaged electronics and/or incorrect I/O states.
6. Incorrect I/O connections may lead to damaged electronics and/or incorrect I/O states.
7. The information and illustrations contained herein are the property of Control Technology Corporation and are subject to change without notice. Data based on VS = 24 VDC @ 25°C unless otherwise noted. For additional information and/or updates, visit www.ctc-control.com. Copyright ©2013 Control Technology Corporation. All Rights Reserved.