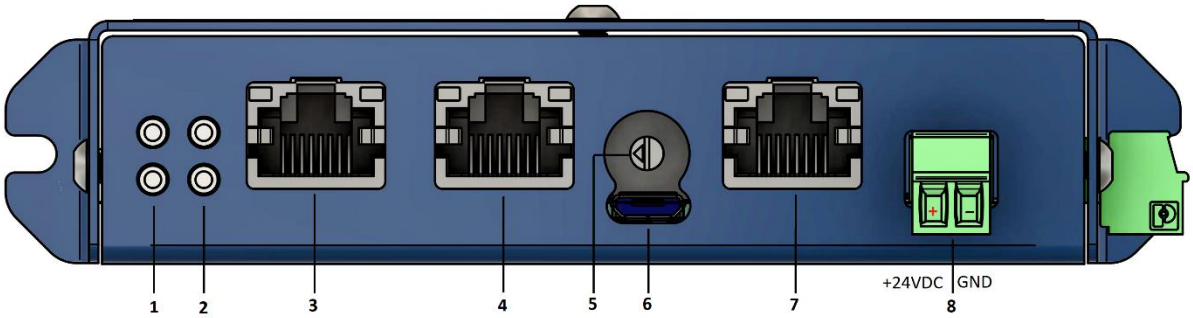
EHTHERFOX

Quickstart Guide

V1.0.0

sales@granitedevices.com

Setup



Item	Description	Connector
1	Ethercat LEDs	
2	EtherFox status LEDs	
3	Ethercat Port 0	X1
4	Ethercat Port 1	X2
5	Rotary switch	
6	Micro USB connector (Enabled only when Rotary is set to 0)	X3
7	Simplemotion bus port	X4
8	Power supply connector (24VDC)	X5

Connect Ethercat

Connect Ehernet cable from Ethercat Master to Etherfox Ethercat Port 0 –connector (X1).

Ethercat master is typically PC or PLC with Ethercat master software.

Connect Simplemotion

Connect Simplemotion cable from Etherfox bus port (X4) to slave drive Simple motion port.

Connect Power Supply

Do not connect the cable when power supply is ON.

Connect 24VDC power supply to Etherfox X5 connector.

Configure drives using USB-connector

1. Connect USB cable between EtherFox USB port (X3) and PC USB host port
2. Select position 0 form rotary switch
3. Power up the device and drives
4. Start Granity software and select USB-COM port
5. Configure drives using Granity (https://granitedevices.com/wiki/Granity)
6. Exit Granity
7. Select rotary position that indicates the number of drives connected to Simplemotion bus
8. Disconnect USB cable

Configuring Etherfox with Twincat 3

Twincat installation can be read from Beckhoff information system documentation and is not described in this document.

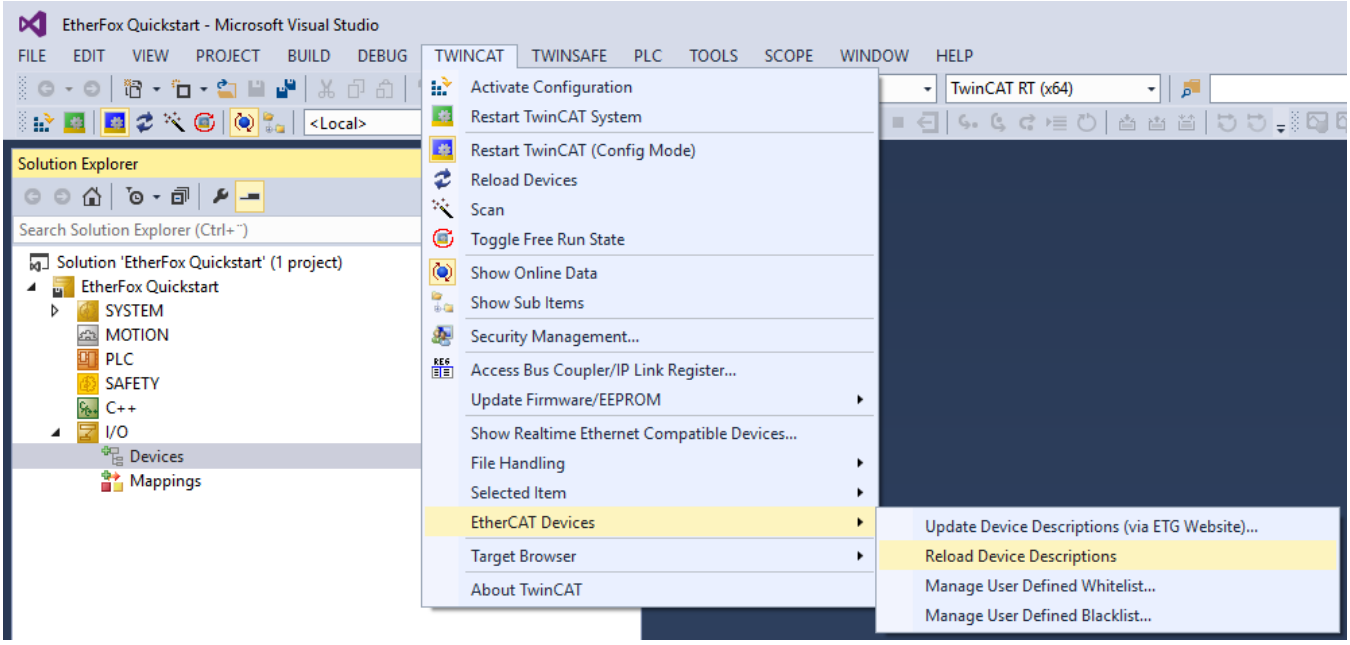
Copy description file

Copy EtherFOX.xml description file to Twincat installation directory*.

This PC › Local Disk (C:) › TwinCAT › 3.1 › Config › Io › EtherCAT

**Installation directory may vary depending on installation settings*

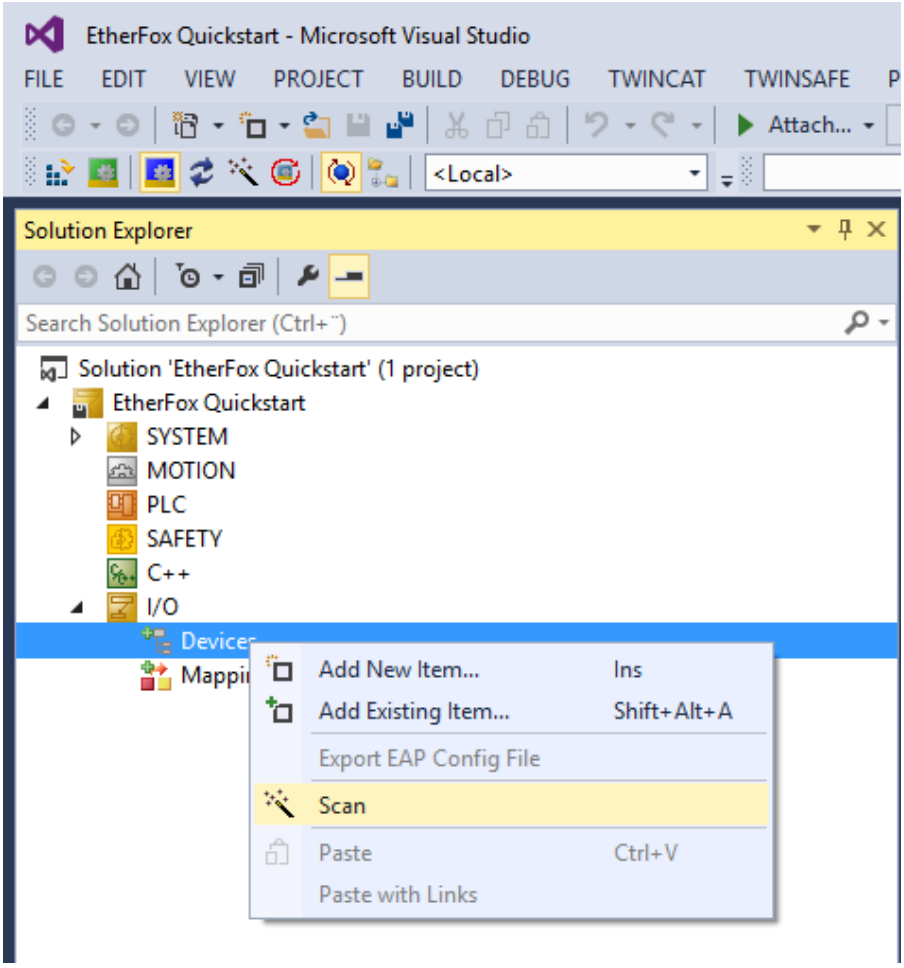
Reload Device Descriptions from using TWINCAT dropdown menu from Twincat.



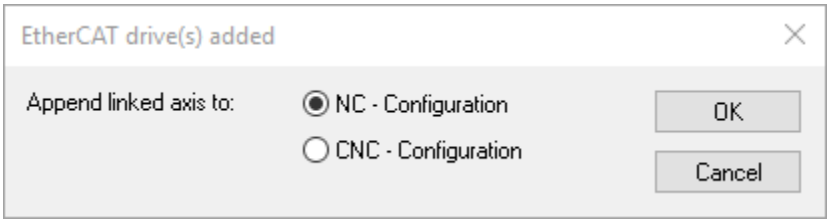
Create a Project

Create new project.

Scan devices.

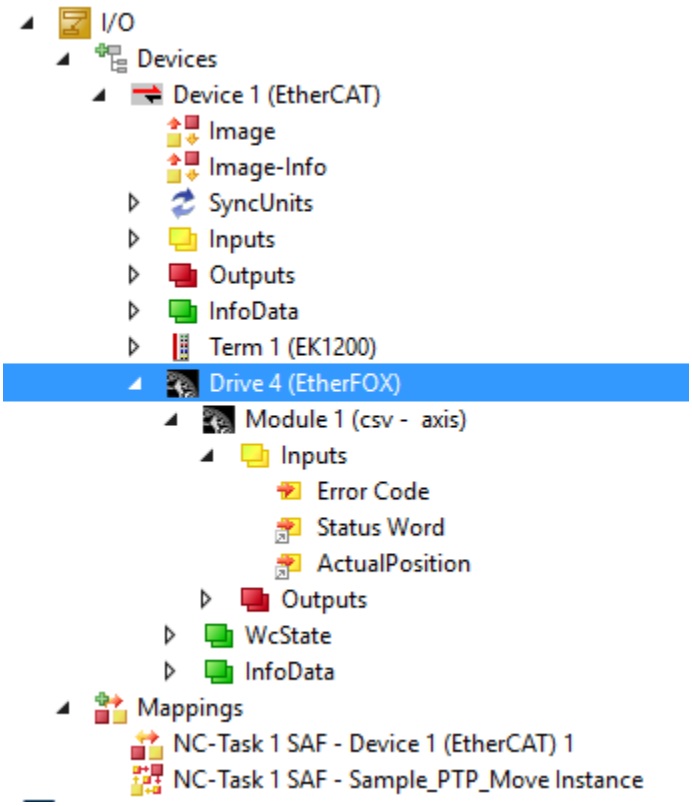


Append NC- configuration to Twincat Project.

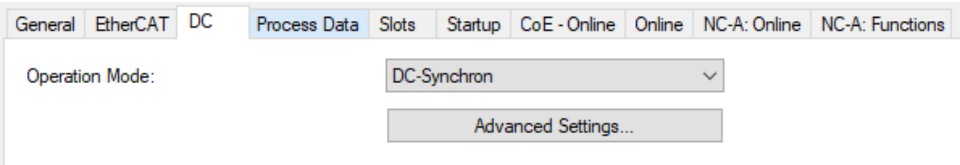


Select Operation mode

Set drive operation mode from Drive settings

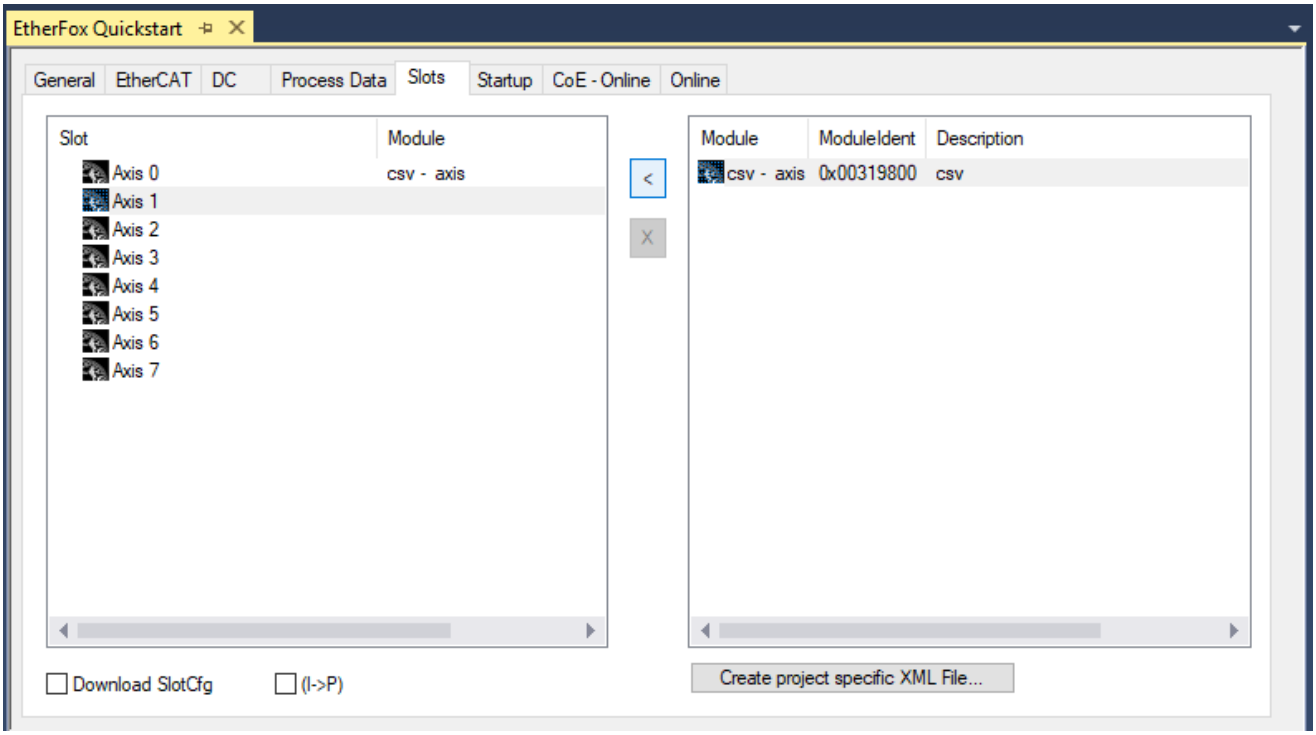


Set operation mode value from DC page to DC-Synchron



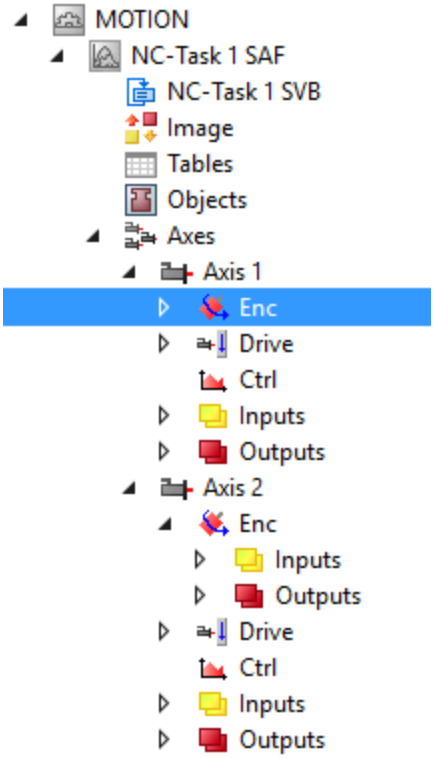
Configuring number of drives

Set number of drives from Slots page. Select axis from slot and select csv – axis from right panel. Use middle buttons to select module to a slot.



Configure Encoder settings

Select Encoder settings from Axis menu.



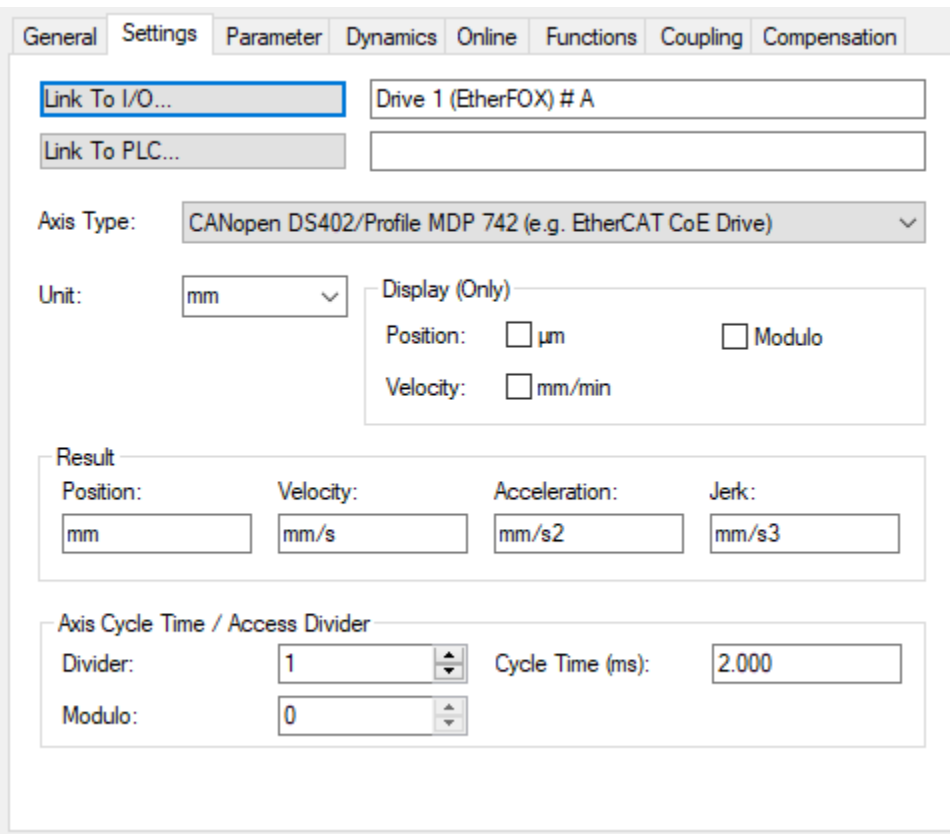
Set following values to Encoder parameters:

Encoder Scaling Factor value	0.0140625
Encoder Mask (maximum encoder value)	0x3FFFFFFF
Encoder Sub Mask (absolute range maximum value)	0x00006400

Parameter	Offline Value
Encoder Evaluation:	
Invert Encoder Counting Direction	FALSE
Scaling Factor Numerator	0.0140625
Scaling Factor Denominator (default: 1.0)	1.0
Position Bias	0.0
Modulo Factor (e.g. 360.0°)	360.0
Tolerance Window for Modulo Start	0.0
Encoder Mask (maximum encoder value)	0x3FFFFFFF
Encoder Sub Mask (absolute range maximum value)	0x00006400
Reference System	'INCREMENTAL'
Limit Switches:	
Soft Position Limit Minimum Monitoring	FALSE
Minimum Position	0.0
Soft Position Limit Maximum Monitoring	FALSE
Maximum Position	0.0
Filter:	
Homing:	
Other Settings:	

Axis Type should be CANopen DS402.

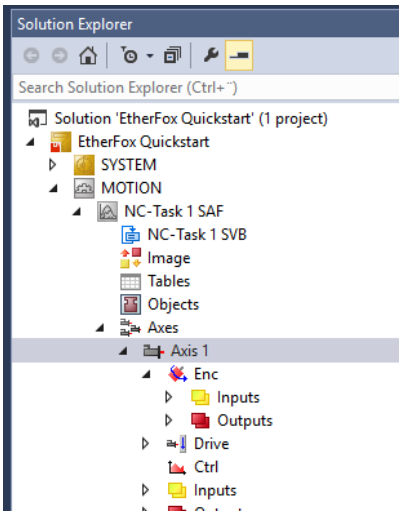
Link to PLC is appended only if a PLC item is appended to project and is not necessary for testing



Configure Axis parameters

Configure axis limits and motion parameters to match your drive configuration values.

Set limit values to less or equal to drive configuration parameters to avoid drive faults.

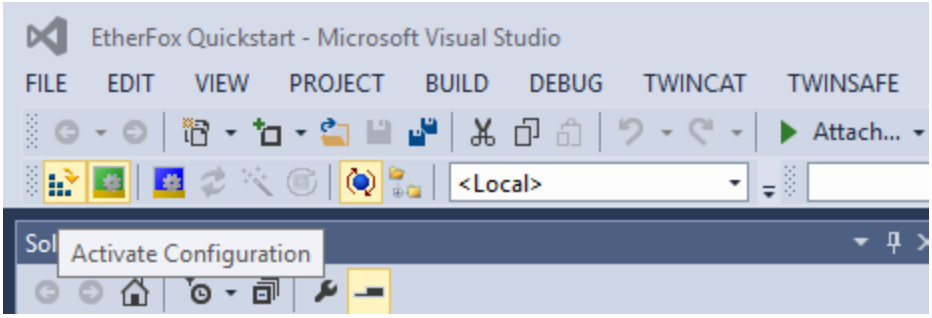


General | Settings | Parameter | Dynamics | Online | Functions | Coupling | Compensation

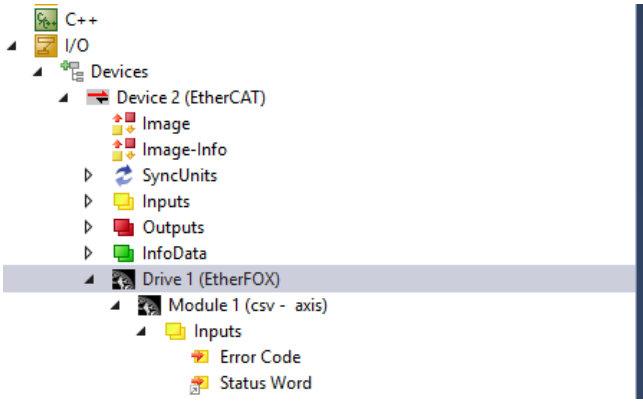
	Parameter	Offline Value
-	Maximum Dynamics:	
	Reference Velocity	500.0
	Maximum Velocity	400.0
	Maximum Acceleration	10000.0
	Maximum Deceleration	10000.0
-	Default Dynamics:	
	Default Acceleration	1000.0
	Default Deceleration	1000.0
	Default Jerk	1150.0
-	Manual Motion and Homing:	
	Homing Velocity (towards plc cam)	30.0
	Homing Velocity (off plc cam)	30.0
	Manual Velocity (Fast)	400.0
	Manual Velocity (Slow)	100.0
	Jog Increment (Forward)	5.0
	Jog Increment (Backward)	5.0
+	Fast Axis Stop:	
+	Limit Switches:	
+	Monitoring:	
+	Setpoint Generator:	
+	NCI Parameter:	
+	Other Settings:	

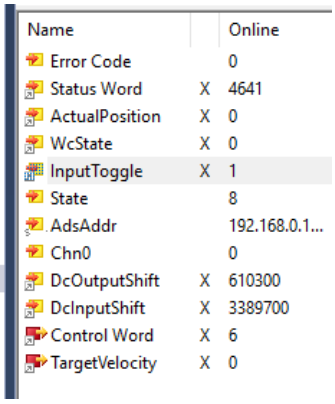
Activate current configuration

Activate current configuration and set Run mode

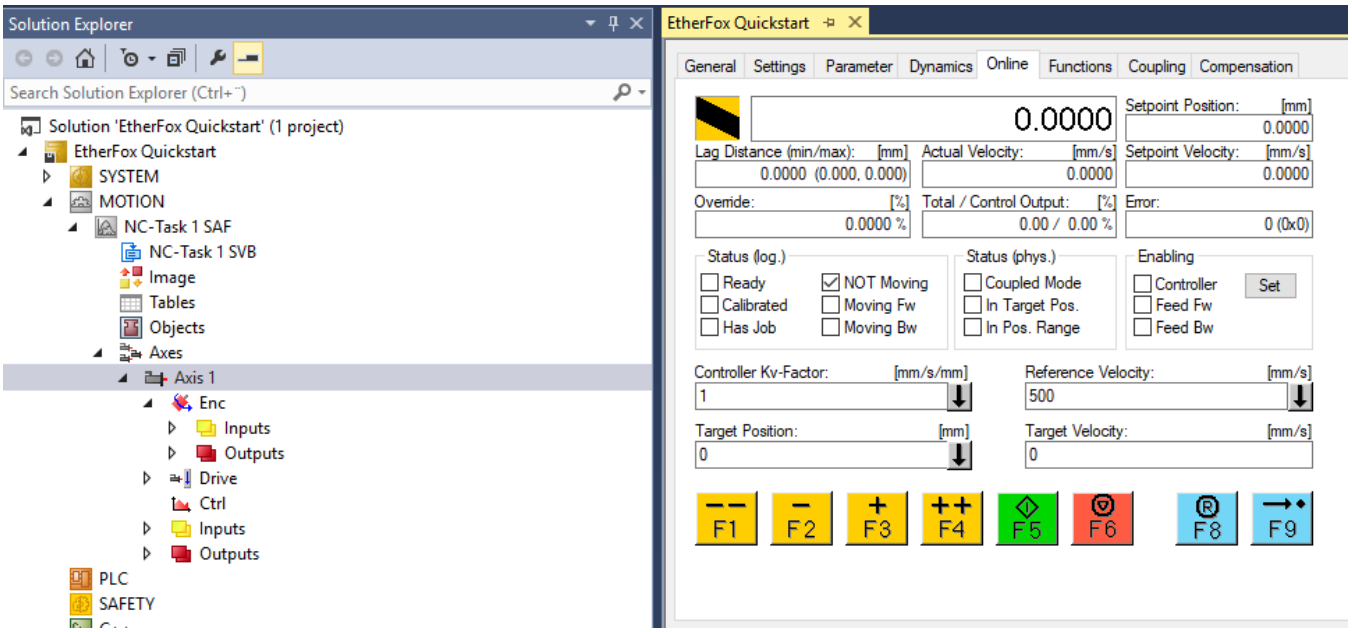


Check that InputToggle variable chages states between 0 and 1.



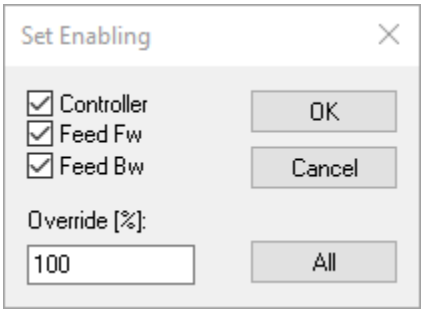


Select Axis menu item from MOTION and select Online page

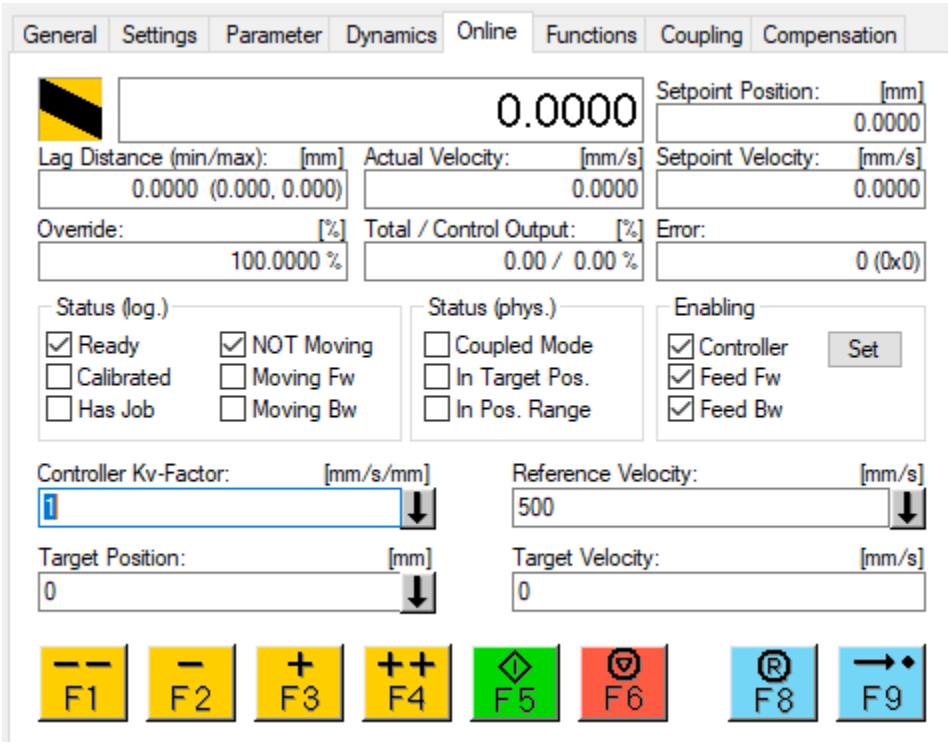


Make sure that motor can run safely before enabling drive. Make sure that there nothing connected to Axis on test phase.

Axis torque can be enabled using Enable sections Set - button.

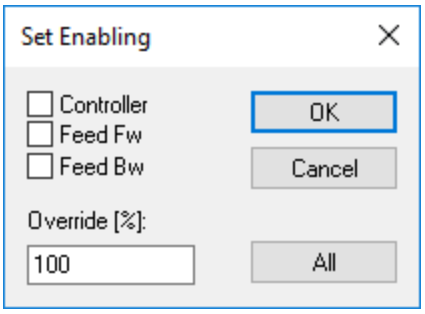


Axis status should be Ready and Not moving.



Use F1 / F2 buttons to Jog axis.

Disable controller after test session.



Drive Inputs

Actual Position

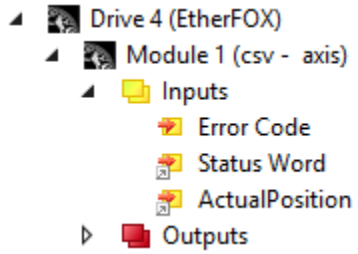
CiA402 Specific actual position.

Status Word

CiA402 Specific status word bits. No vendor specific values.

Error Codes - 0x603

Drive and Etherfox error codes can be read from Error Code input.



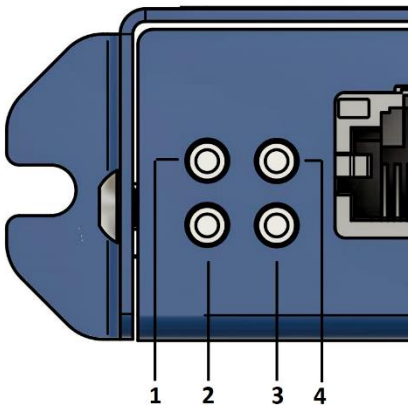
Etherfox bridge error codes listed below:

Error Code (HEX)	Description
0xEC01	Invalid gain or division value in drive configuration parameters
0xEC02	Invalid drive configuration mode, use supported drive mode (Velocity)
0xEC03	Simplemotion bus read/write error
0xEC04	Drive does not support Ethercat feature set
0xEC05	System init failure
0xEC06	Communication error
0xEC07	Drive fault stop
0xEC08	Drive STO active
0xEC09	Drive in permanent stop mode
0xEC0A	Drive status bits indicate error
0xEC0B	Servo ready status invalid from fast update response
0xEC0C	Cia402 CSP mode not supported use CSV mode
0xEC0D	SM Sync not supported, use DC-sync

If drive fault is active, drive specific error codes are shown directly on error code input.

Drive specific error codes are listed on the following web page:
https://granitedevices.com/wiki/Fault_location

Troubleshooting



LED 1	LED 2	LED 3	LED 4	Descption
		Blink	Blink	When LED1 & LED2 blinks at startup constantly the number of drives found does not mismatch the drives configured with rotary switch. Please check drive count with Granity tool and select correct drive count with rotary switch