

## TECH NOTE – BMX60 EtherCAT Beckhoff

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Status: HBK: Public



EtherCAT® 

## Contents

|                                     |          |
|-------------------------------------|----------|
| <b>1. Description</b>               | <b>3</b> |
| <b>2. Setup</b>                     | <b>3</b> |
| <b>3. BMX60 Configuration</b>       | <b>3</b> |
| <b>4. TwinCAT</b>                   | <b>4</b> |
| 4.1. Create a new project           | 4        |
| 4.2. Add the devices to the project | 5        |
| 4.3. Reading data using PDOs        | 10       |

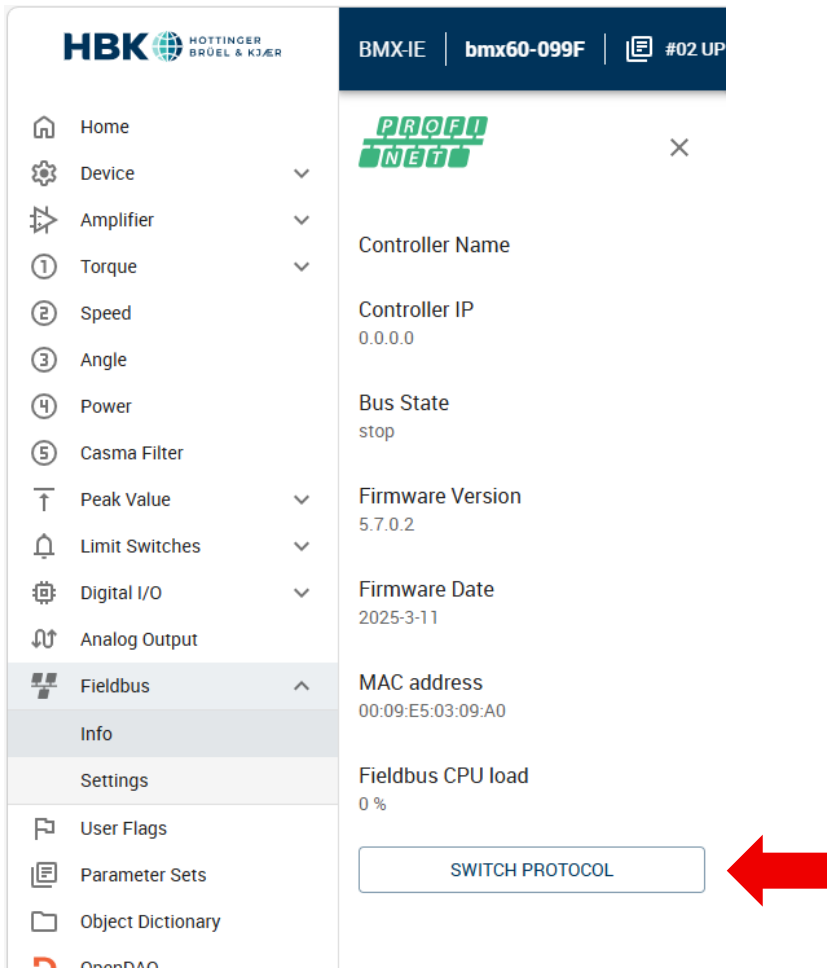
## 1. Description

This document explains how to establish a connection to the **BMX60** via EtherCAT. It guides you through the configuration process required to integrate the device into your system and communicate with it using EtherCAT. In addition, the document provides a simple example of how to interact with the BMX60, including reading from and writing to objects.

## 2. Setup

## 3. BMX60 Configuration

Configure the BMX60 on its web interface. You can access it by typing the IP-address of the device or via network on file explorer. Change the fieldbus protocol to EtherCAT.



The screenshot displays the HBK BMX60 web interface. The top navigation bar shows 'BMX-IE | bmx60-099F | #02 UP'. The left sidebar contains a menu with icons and labels for various system components. The main panel is titled 'PROFINET' with a close button. Below this, several configuration parameters are listed: Controller Name, Controller IP (0.0.0.0), Bus State (stop), Firmware Version (5.7.0.2), Firmware Date (2025-3-11), MAC address (00:09:E5:03:09:A0), and Fieldbus CPU load (0 %). A 'SWITCH PROTOCOL' button is located at the bottom of the main panel, with a red arrow pointing to it from the right.


HOTTINGER  
BRÜEL & KJÆR

BMX-IE

bmx60-099F

#02 UP

Home

Device

Amplifier

① Torque

② Speed

③ Angle

④ Power

⑤ Casma Filter

↑ Peak Value

Limit Switches



×

The modification of the fieldbus protocol requires a device restart for it to take effect. The device will be restarted after the transition.



SWITCH TO ETHERCAT

DISABLE THE FIELDBUS

## 4. TwinCAT

Now, we are going to use TwinCAT.

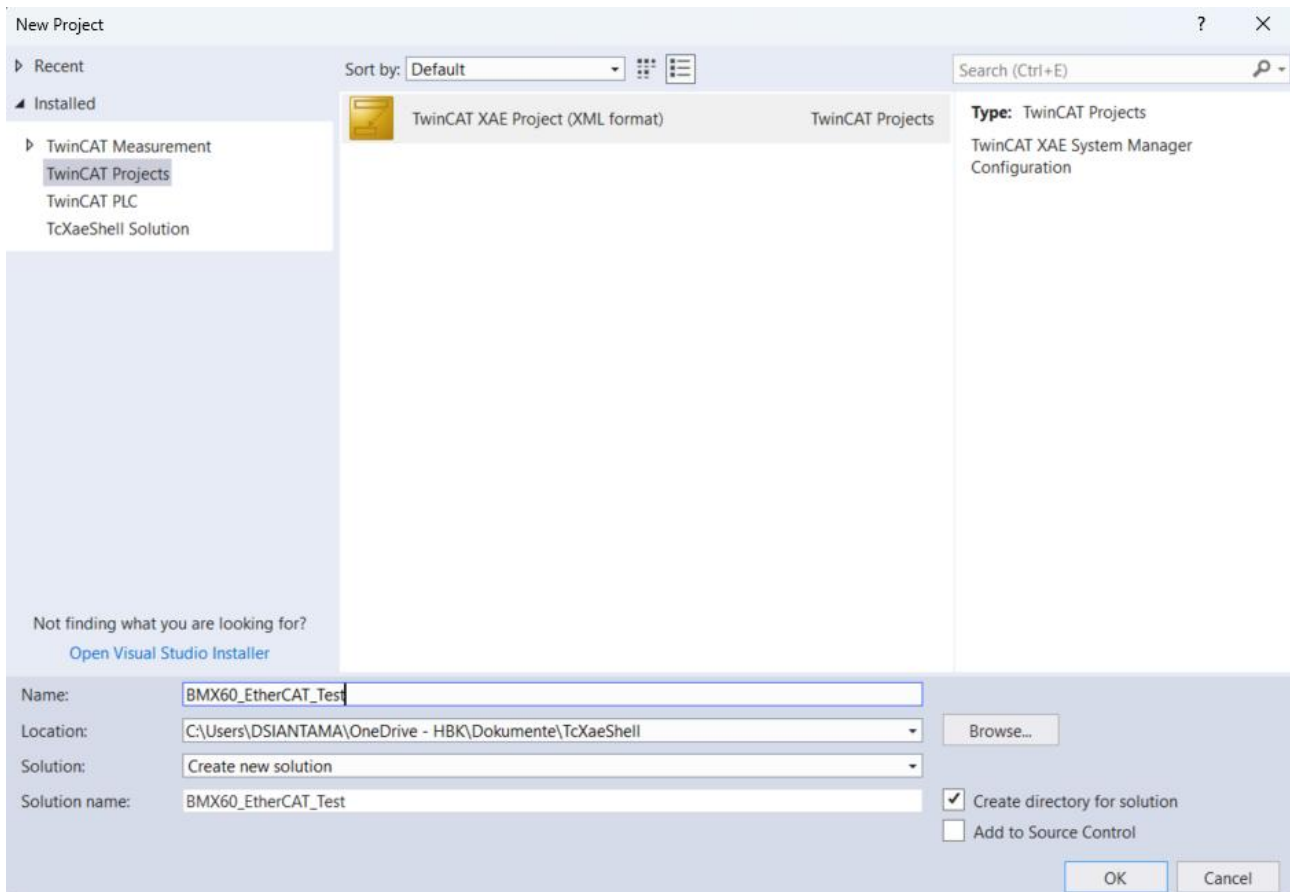
### 4.1. Create a new project

Start TwinCAT and create a new project. Type the project name and save it.

UNRESTRICTED

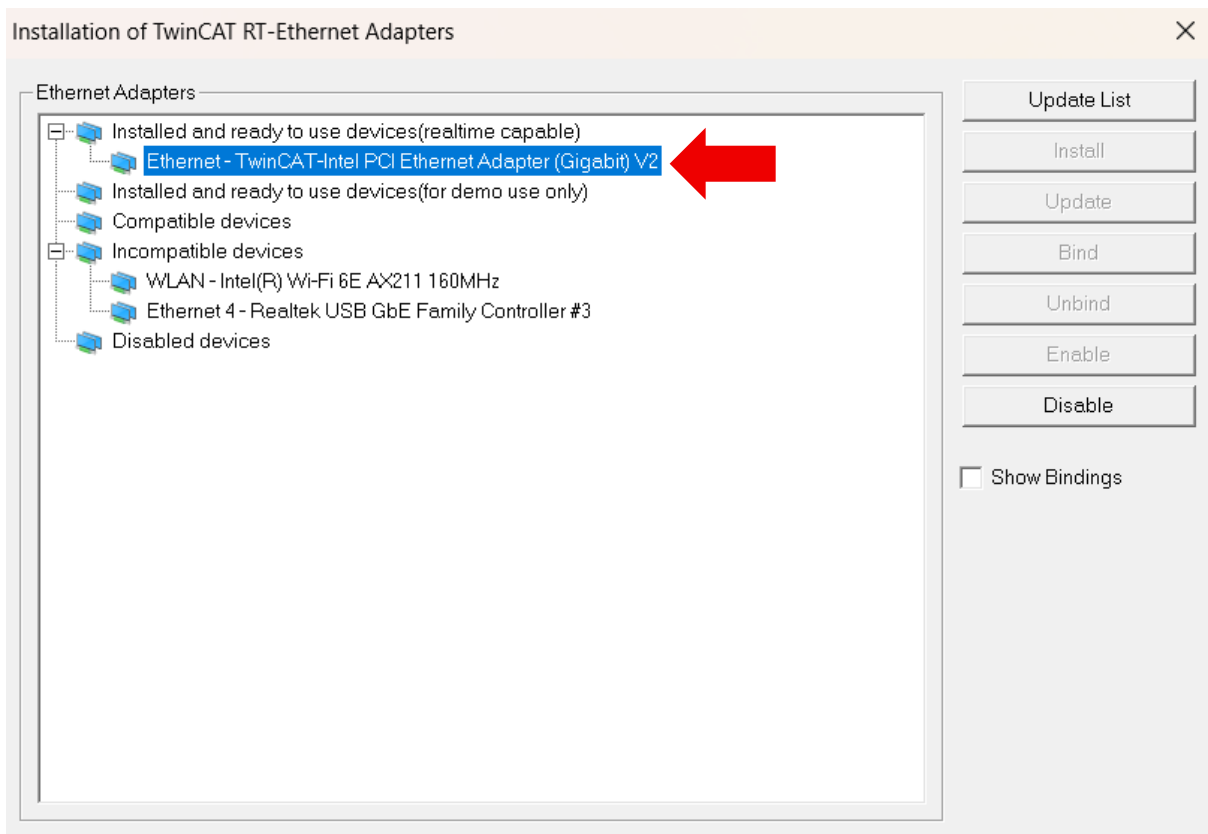
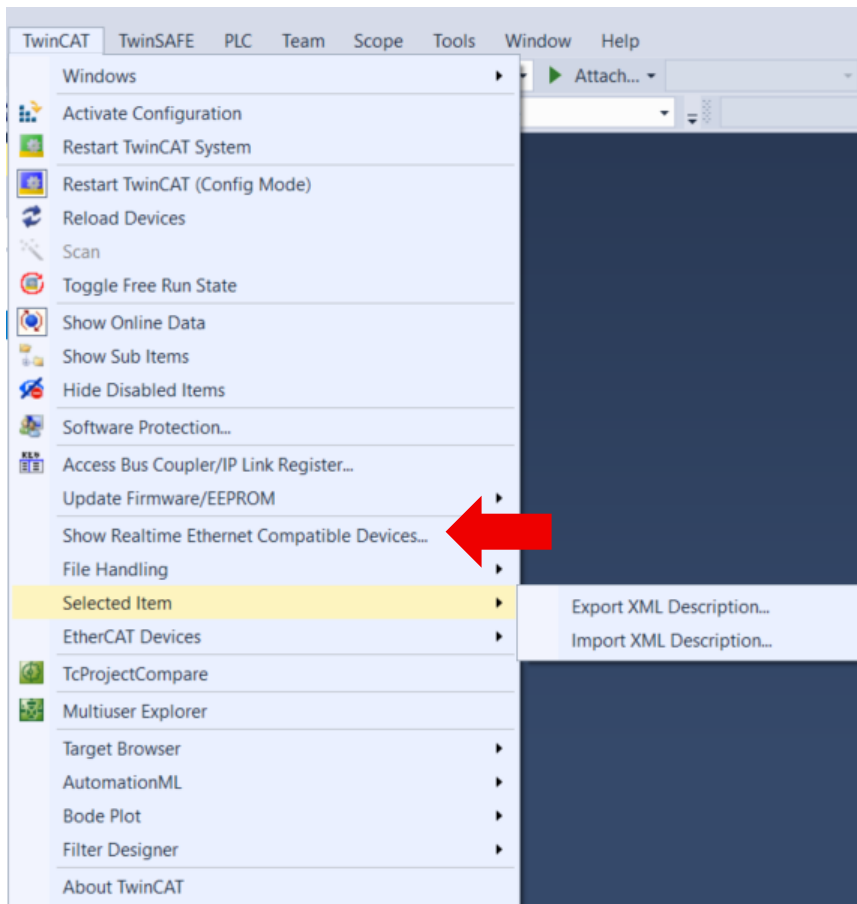
Page 4 of 13

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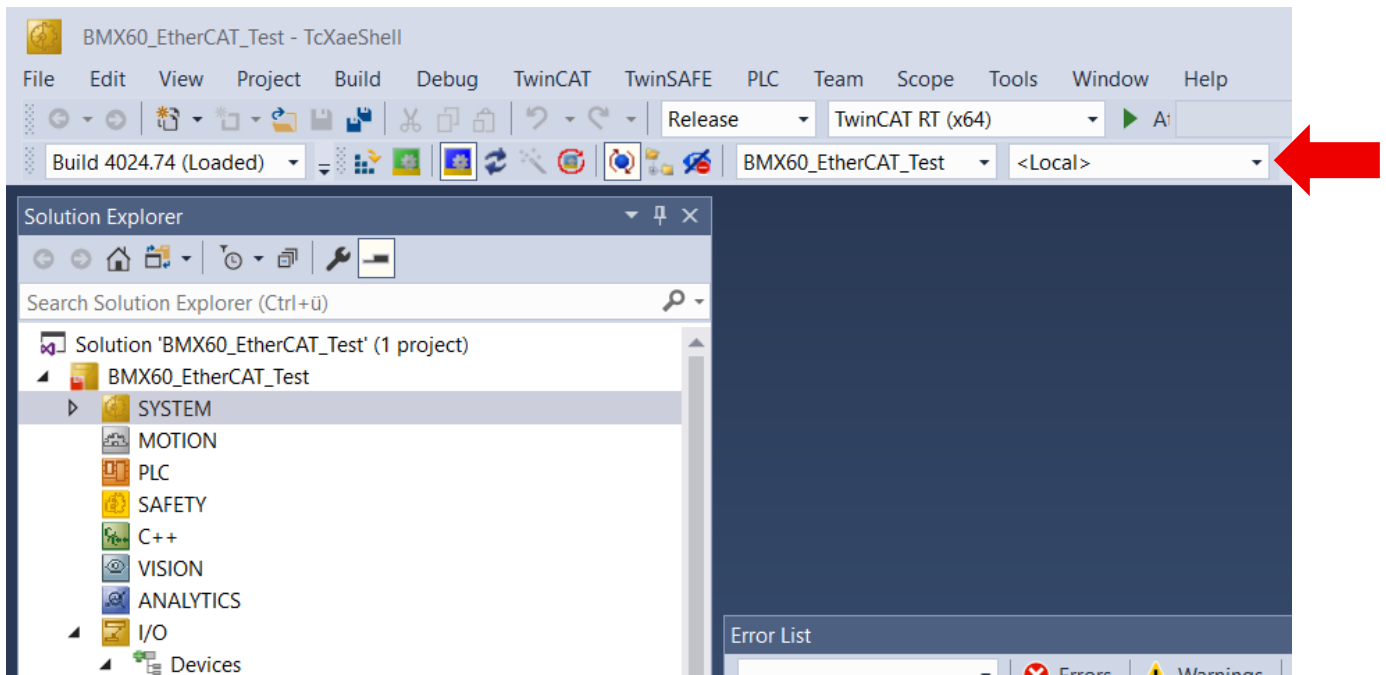


## 4.2. Add the devices to the project

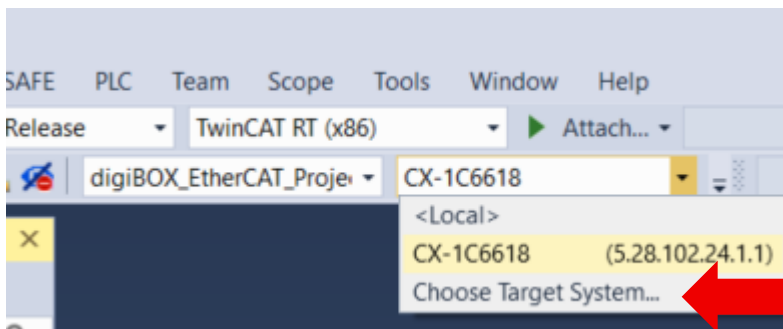
Start by scanning for realtime ethernet compatible devices and select the suitable adapter for EtherCAT. Usually it will state TwinCAT on the adapter's name.

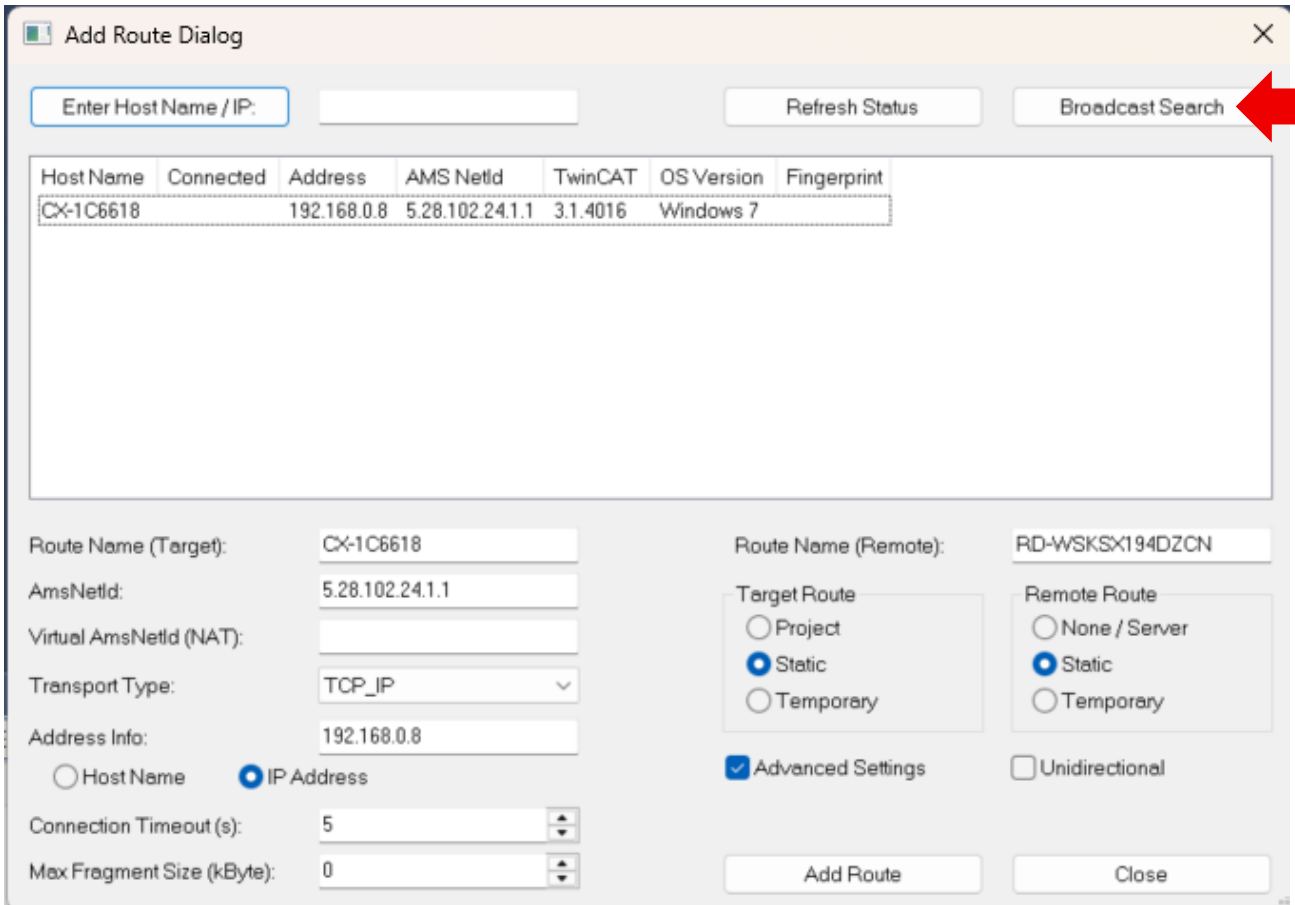


Now, we need to add a route to the EtherCAT master (Beckhoff PLC). Click on the drop-down menu here.



Click on “choose target system”. Use the broadcast search to look for the master.





**Add Route Dialog**

Enter Host Name / IP:  Refresh Status Broadcast Search

| Host Name | Connected | Address     | AMS NetId      | TwinCAT  | OS Version | Fingerprint |
|-----------|-----------|-------------|----------------|----------|------------|-------------|
| CX-1C6618 |           | 192.168.0.8 | 5.28.102.241.1 | 3.1.4016 | Windows 7  |             |

Route Name (Target):

AmsNetId:

Virtual AmsNetId (NAT):

Transport Type:

Address Info:

☐ Host Name ☒ IP Address

Connection Timeout (s):

Max Fragment Size (kByte):

Route Name (Remote):

Target Route

☐ Project

☒ Static

☐ Temporary

☒ Advanced Settings

Remote Route

☐ None / Server

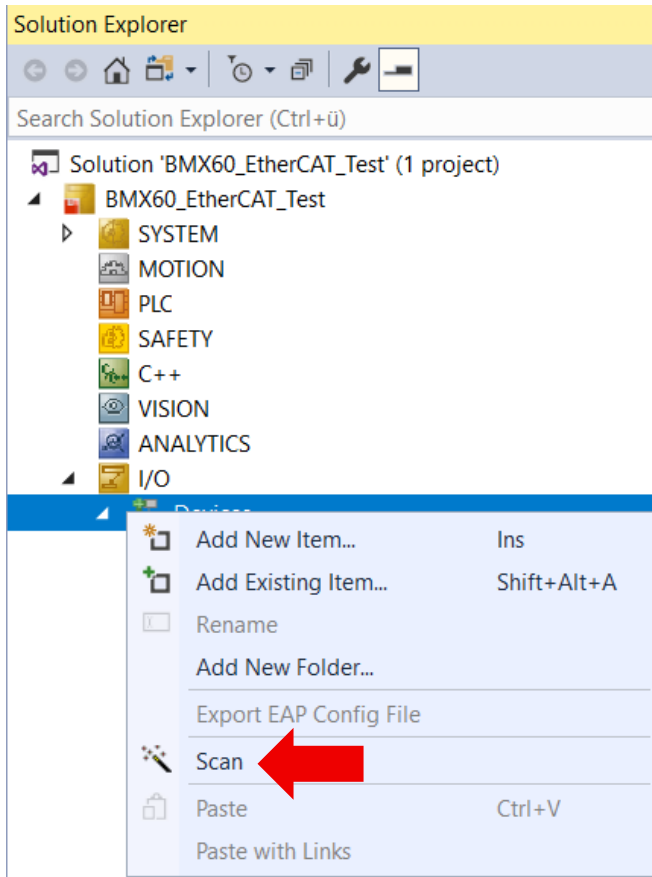
☒ Static

☐ Temporary

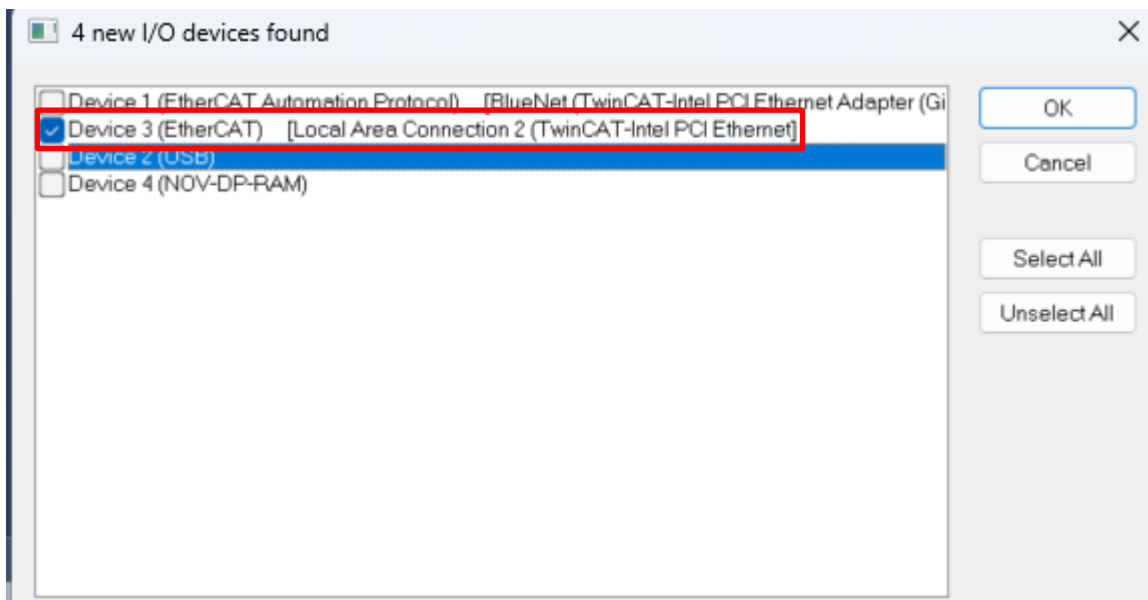
☐ Unidirectional

Add Route Close

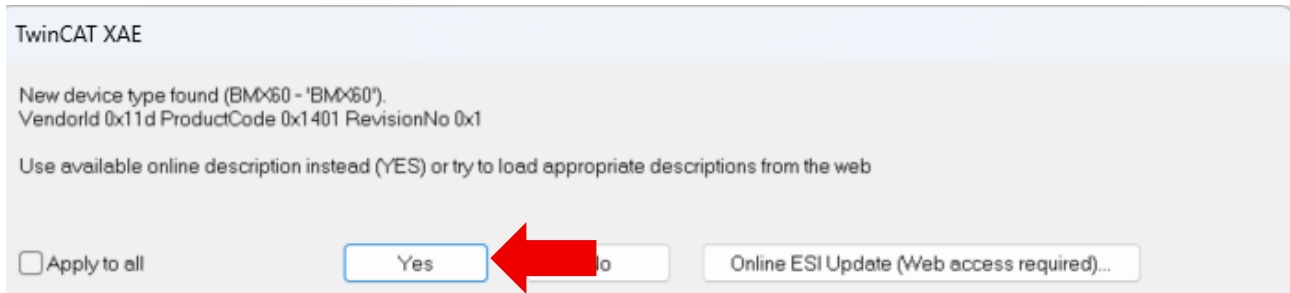
Select the master and click on “add route”. After that, make sure you use the master as your route. Scan for devices and choose to add the EtherCAT device that is using the TwinCAT adapter.



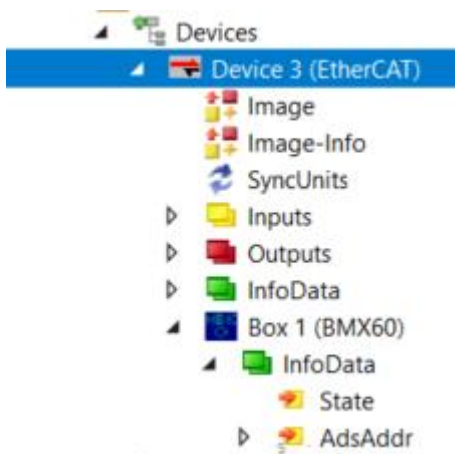
**Note: EtherCAT Automation Protocol and EtherCAT are not the same.** We are not using EtherCAT Automation Protocol here. The fieldbus here is device 3.



After you click ok, a new window asking about the BMX60 will open. Click yes.

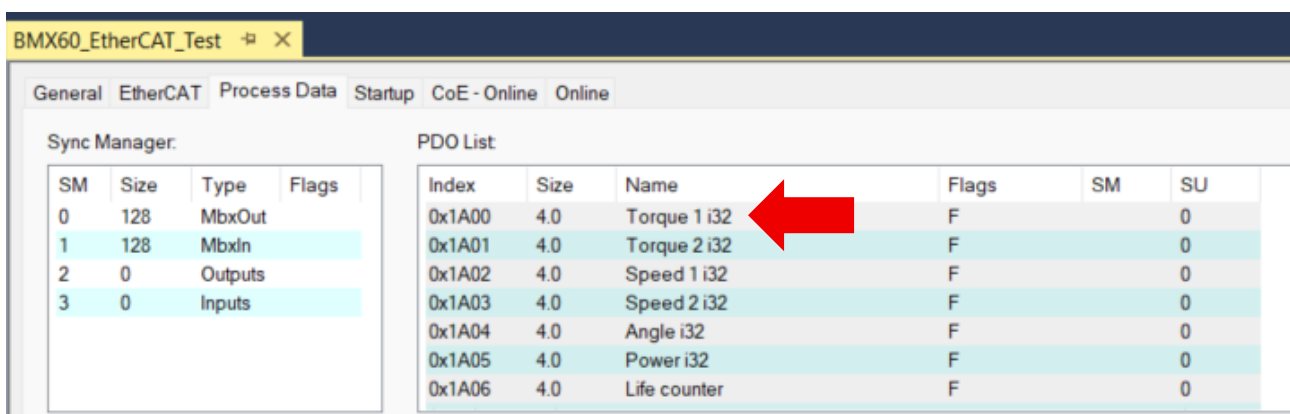


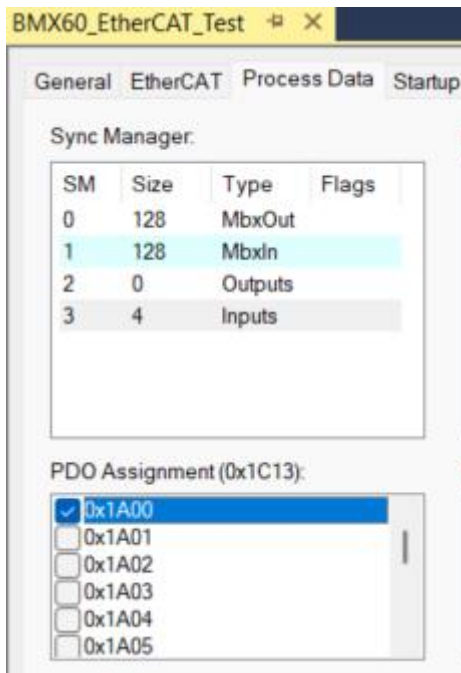
After that, the EtherCAT device and the BMX60 will appear under Devices.



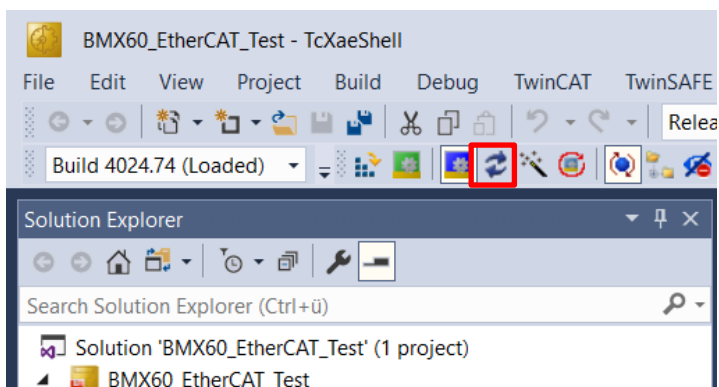
### 4.3. Reading data using PDOs

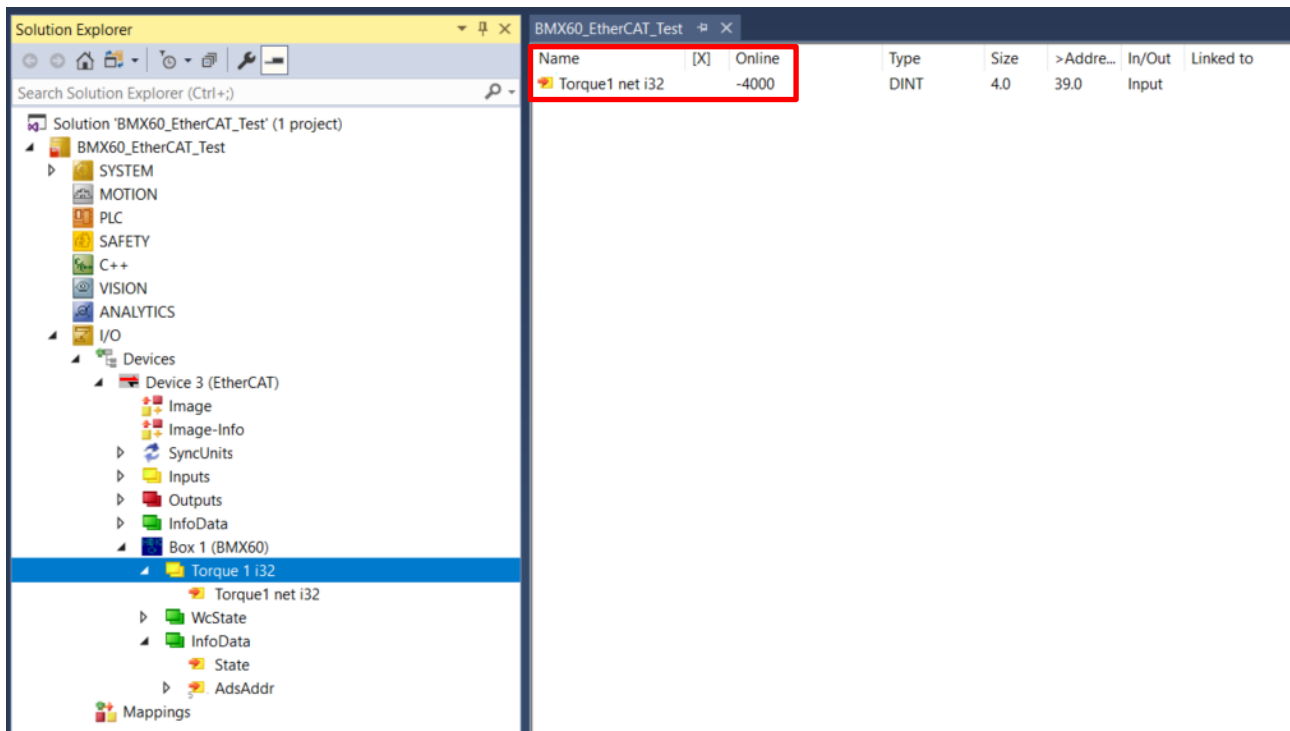
You can access the BMX60 channels directly in TwinCAT using PDOs. To do this, double-click on the Box 1 (BMX60) and navigate to the Process Data tab. Here, you will find a list of all available PDOs. In this example, we will read the torque from channel 1. First, identify the corresponding index number, which is 0x1A00 in this case. Then, go to the Inputs section and locate the same index number to access the data.





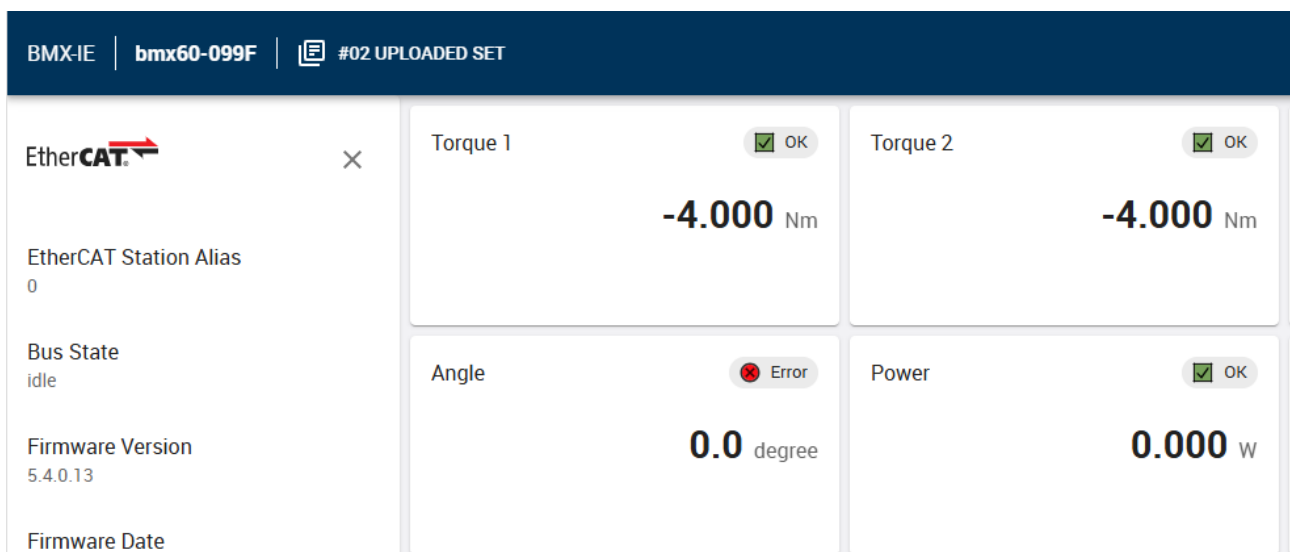
Then, it will show under BMX60. Reload the device and do a Free Run. You can then see the value when you double click on Torque 1 i32.





| Name            | [X] | Online | Type | Size | >Addr... | In/Out | Linked to |
|-----------------|-----|--------|------|------|----------|--------|-----------|
| Torque1 net i32 |     | -4000  | DINT | 4.0  | 39.0     | Input  |           |

The value here is the same as on the web interface of BMX60.



| Parameter | Value      | Status |
|-----------|------------|--------|
| EtherCAT  |            | OK     |
| Torque 1  | -4.000 Nm  | OK     |
| Torque 2  | -4.000 Nm  | OK     |
| Bus State | idle       |        |
| Angle     | 0.0 degree | Error  |
| Power     | 0.000 W    | OK     |

## **Disclaimer**

These examples are for illustrative purposes only. They cannot be used as the basis for any warranty or liability claims.