

Steps for Horner Automation HMI OCS Series.

Helpful YouTube Videos for CANopen:

<https://www.youtube.com/watch?v=MITYDL4YX84>

EDS File Loading:

Download the PACHP or Easy drive EDS file from our website or feel free to contact us.

Save the corresponding EDS file in the CScape EDS file directory.

Windows (C:) > Program Files (x86) > CScape > EDS > CANOPEN > EDS

Name	Date modified
C04COS.EDS	10/25/2016 8:01 PM
C04COSR.EDS	10/25/2016 8:01 PM
C04pcos.eds	10/25/2016 8:01 PM
C30COS.EDS	10/25/2016 8:01 PM
C50COS.EDS	10/25/2016 8:01 PM
C60COS.EDS	10/25/2016 8:01 PM
C80cos.eds	10/25/2016 8:01 PM
CDHD_drive.eds	10/25/2016 8:01 PM
COMCACOS.EDS	10/25/2016 8:01 PM
COMCOS.EDS	10/25/2016 8:01 PM
Ec1cos.eds	10/25/2016 8:02 PM
HORNCOS.EDS	10/25/2016 8:02 PM
P30COS.EDS	10/25/2016 8:02 PM
PAC-AK_v1.40.eds	11/9/2022 8:53 AM
Pmccos.eds	10/25/2016 8:02 PM
STANDARD.EDS	10/25/2016 8:02 PM

CANopen Firmware Update:

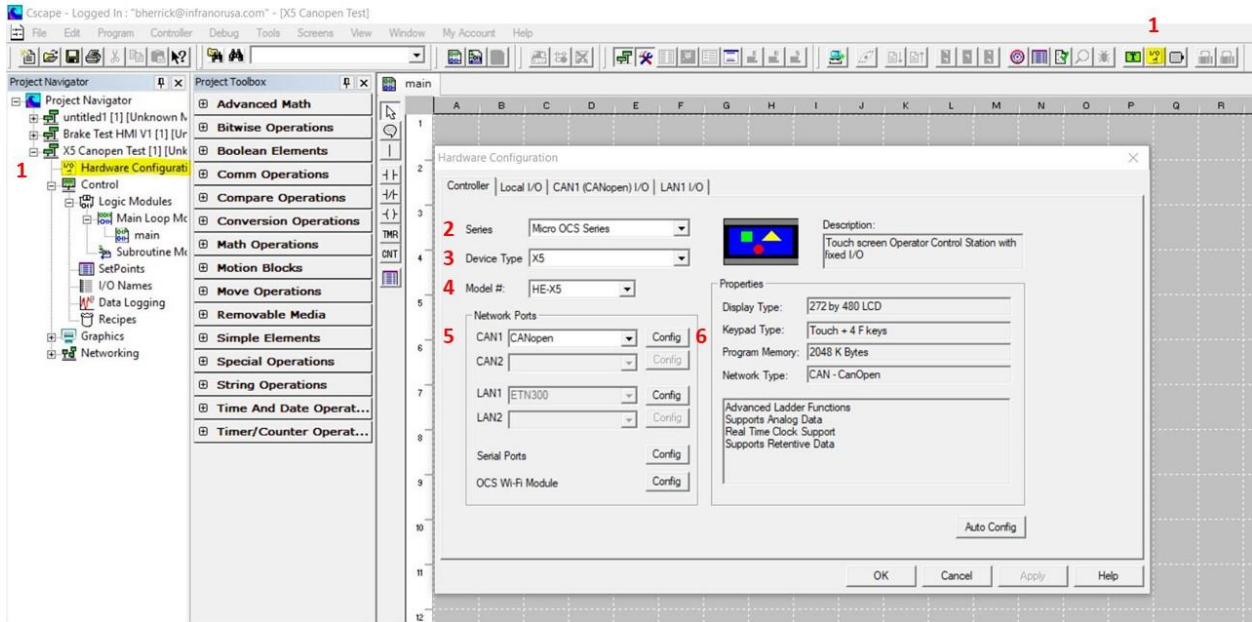
If the model of HMI needs a separate firmware to run CANopen then please visit

<https://hornerautomation.com/> to download this firmware and go through the process before moving forward.

CANopen Configuration:

In the CScape Software we will configure the hardware for the specific HMI unit being used.

- Double click the "Hardware Configuration" tab in the tree menu under the current project. (Step 1)
- A window will appear. Double check that the right HMI Series, Device Type and Model # are selected. (Step 2-4)
- Change the CAN port to 'CANopen'. For HMI units with two configurable CAN ports, use CAN port 2 for CANopen communication. (Step 5)
- Click "Configure" next to the CAN port that has "CANopen" selected. This will bring up another window. (Step 6)



Master Configuration:

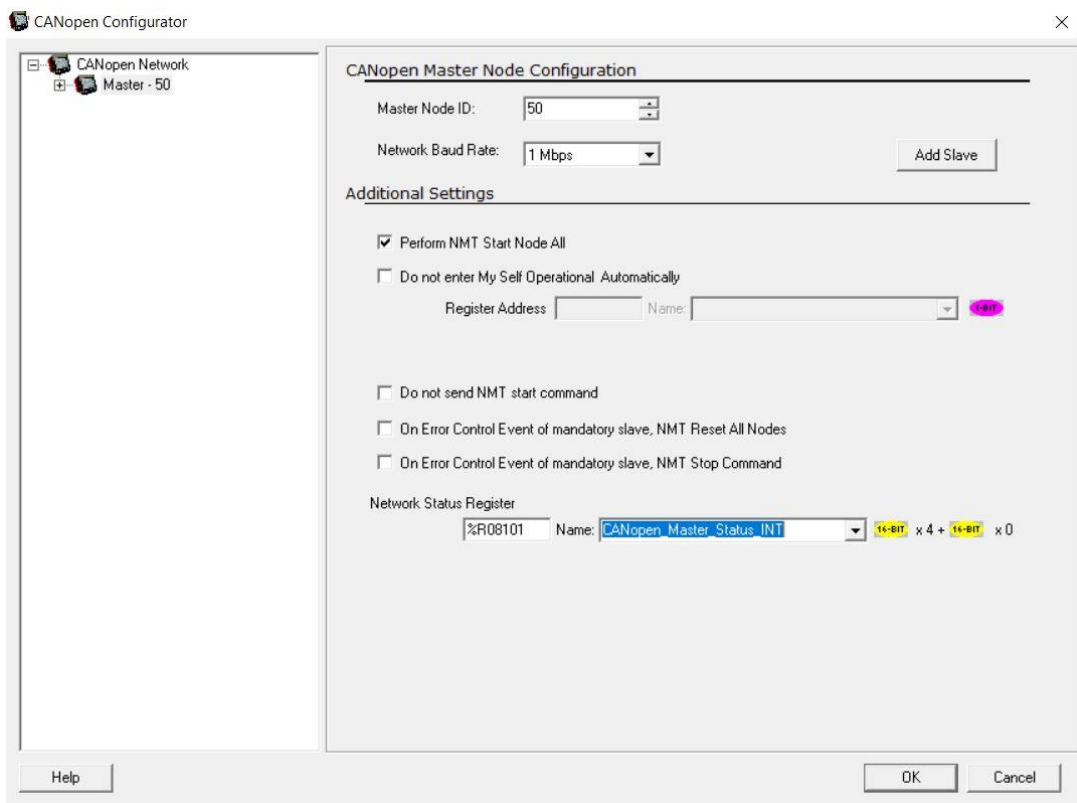
Master Node ID: Can be any number up to 127 as long as it is not used by a Slave

Default Pac and Easy Node ID = 1 (Dipswitch Selectable)

Default PAC and Easy Network Speed = 1 Mb/s

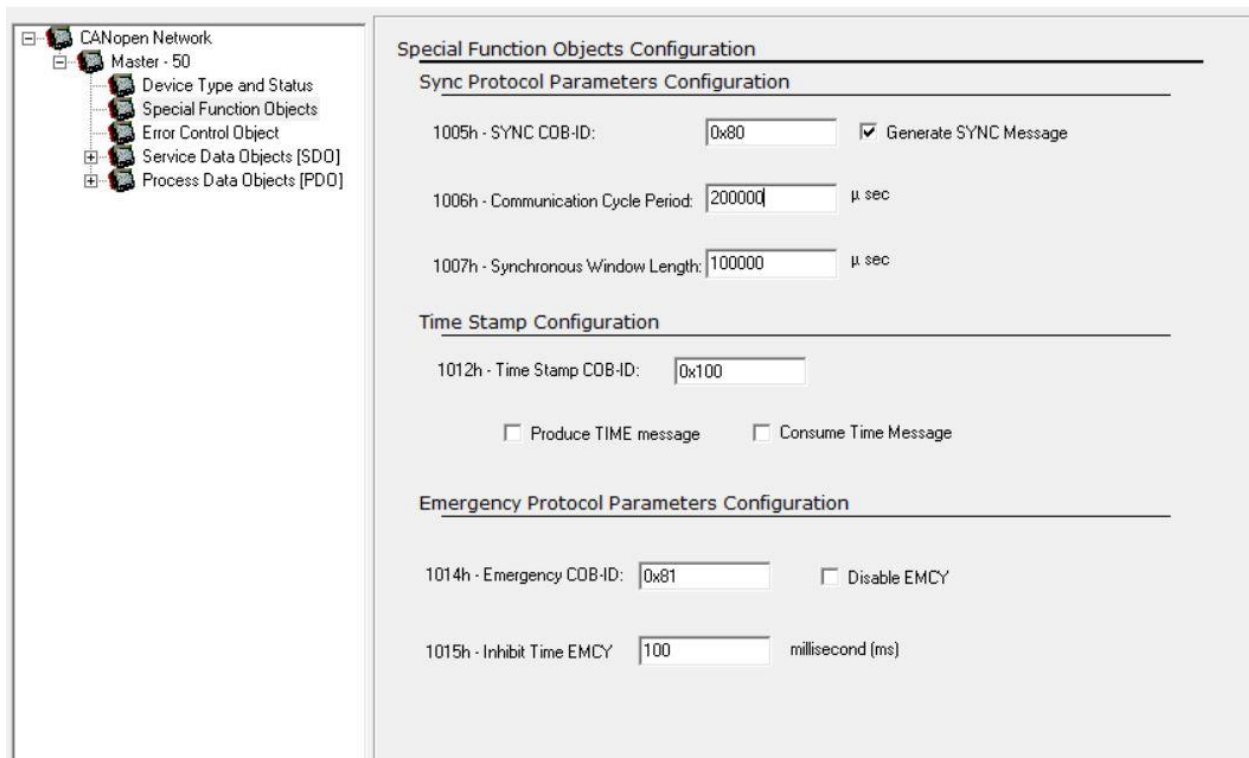
Make sure “Perform NMT Start Node All” is checked

Add a register for the Network Status Register.



Next Go to the tree menu within the CANopen configuration window and select “special Function Objects”. Make sure the “Generate Sync Message” is checked.

Default Cycle period for the PAC and Easy Drive are 10,000 microseconds. This is the smallest value.

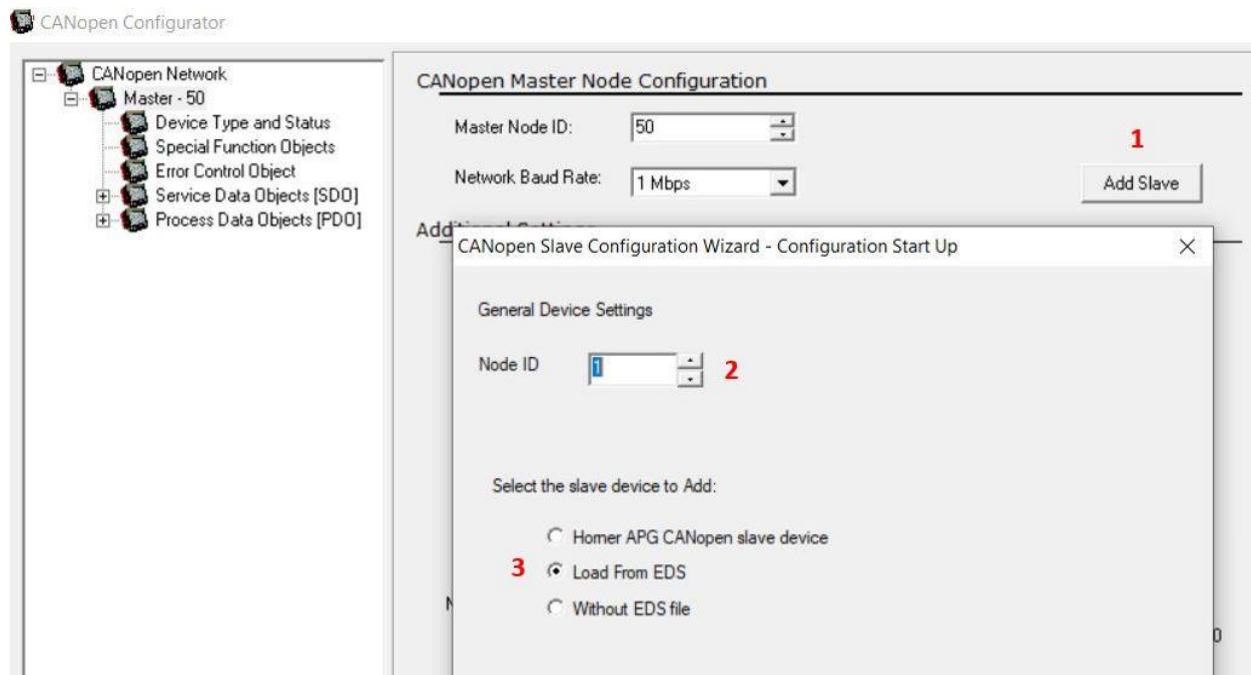


Adding a Slave:

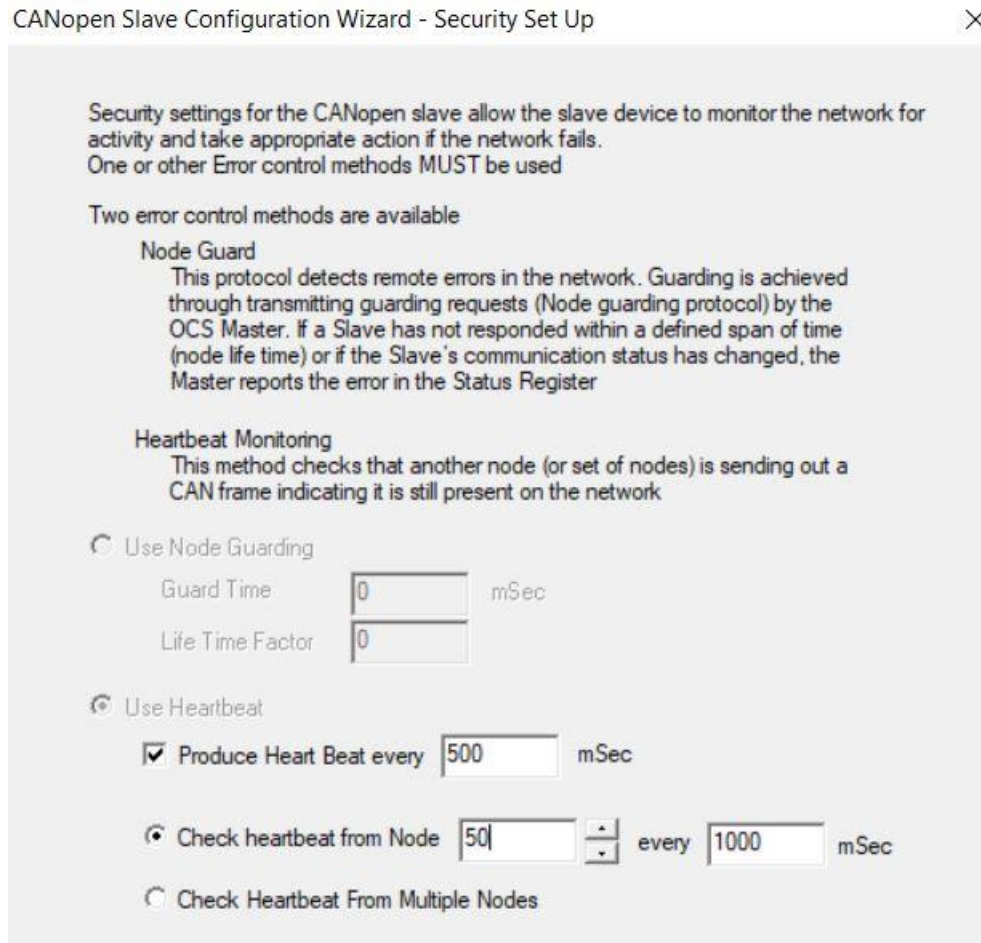
-Click the “Add Slave” Button on the main Master screen (step 1)

-Add the Slave node for that Slave. These Node numbers cannot be repeated. (Step 2)

-Load the Slave device’s EDS file from the directory that we saved it to earlier. (Step 3)



- On the next page uncheck all boxes for “Sync Default Settings”, “Timestamp”, and “Emergency”.
- Setup the Slave Heartbeat protocol on the following page. Use the Master Node Number entered in the previous pages. You want to consume Heartbeats at a slower pace than producing them.



-Use the SDO Server Access with Default COB Ids on the following page.

- The PAC and easy drives can Transmit and Receive up to 4 PDOs. You may not need all of them for your specific application. You can use the PAC and Easy User Manual to see the available objects and data sizes. Avoid using Global Data Registers. Click “Finish”

- On the next window select “Infranor”, the “Drive Type” and the EDS file that was saved into the CScape EDS directory. Click Ok.

A CANopen devices PDOs allow broadcast style peer-to-peer data to be sent out or picked up from the network. Each PDO may contain up to 8 bytes of data.

The CANopen specification defines default COB ids for up to 4 Transmit PDOs per node. If more than 4 transmit PDOs are required for a node, unused COB IDs from other nodes may be utilised.

Enable Transmit PDOs

Transmit Mode:

Number of Transmit PDOs:

Use default COB IDs for PDOs (0x181,0x281,0x381,0x481)

Map Transmit PDOs to Global Network Data Registers

TxPDO1 = %AQG01 - %AQG04
 TxPDO2 = %AQG05 - %AQG08,
 TxPDO3 = %AQG09 - %AQG12,
 TxPDO4 = %AQG13 - %AQG16.

The TxPDO COBIDs and data mapping for the TxPDOs must be configured in "Transmit PDO Objects"

A CANopen devices PDOs allow broadcast style peer-to-peer data to be sent out or picked up from the network. Each PDO may contain up to 8 bytes of data.

A devices Rx PDOs allow data sent as TxPDOs by other nodes to be mapped in to local registers.

Since the COB IDs involved are allocated to the transmitting device the number of RxPDOs is not restricted by the available COB IDs

Enable Receive PDOs

Map Receive PDOs to Global Network Data Registers

RxPDO1 = %AIG01 - %AIG04
 RxPDO2 = %AIG05 - %AIG08,
 RxPDO3 = %AIG09 - %AIG12,
 RxPDO4 = %AIG13 - %AIG16.

The TxPDO data sources for the RxPDOs must be configured in "Receive PDO Objects"

- On the Slave Node Bootup Sequence click both the "Configure Error Control Protocol" and "Configuration of Slave PDOs and SDOs" boxes.

- Click on the Master tab in the Menu Tree. Go to "Error Control Object" and make sure the Slave's Heartbeat time is slower then the Producer's heartbeat.

Slave PDO and SDO Setup

-Go to the Slave tab in the menu tree. Then open the "Transmit PDO Object". Here you will find the 4 PDOs that we setup in the wizard. We will now need to link PAC or Easy Objects to each PDO depending on the application.

- You can assign objects to each PDO by highlighting the PDO that you want to assign and clicking "Add Entry" in the Transmit PDO section. Use the EDS file to find the object that you are looking for. Make sure to change the object size to its correct EDS size before adding the object to the PDO. (Unsigned verse signed and 16 vs 32 bit).

-Each PDO can hold up to 8 Bytes (64 bits) .

- Once your transmit PDOs from the PAC drive are set up we will need to tell the Horner HMI that it will need to receive these PDOs so that we can save information in the registers. Go to the Master "Receive PDO Object" in the menu tree. Then click "Add Entry" and add the corresponding slave PDOs. Make sure to then "Enable" each PDO that is now in the list by double clicking each PDO.

-Highlight the first PDO and click the “Add Entry” that is below the “Receive PDO Mapping Parameters” section. This will let us assign this PDO to a register so that we can store and use the information in our logic. For Register descriptions and availability please refer to the Horner Manual. Make sure to change the data type to the same value listed in the slave Transmit PDO (Unsigned vs Signed and 16 vs 32 bit).

-Transmit PDOs from the Master to the Slave are set up in a similar fashion but in reverse.

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