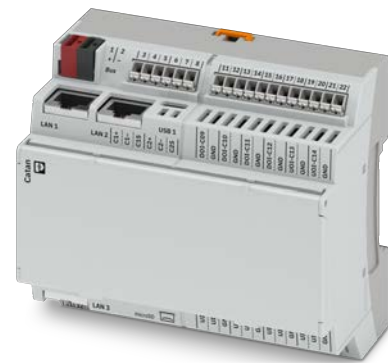


Catan – The new product family for building automation

Basic knowledge to get you started quickly





Application note

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1 Description

Catan is the new product family for building automation from Phoenix Contact. The Catan C1 EN controller is the central component of the product family and uses Emalytics and the Niagara framework as the software. Due to the software basis of the Niagara framework, there are many similarities with the procedures for software installation and startup with the ILC 2050 BI controller, which has been successful for years. The focus of this application note is therefore on the differences between the two platforms and the new features of Catan C1 EN.

-  The descriptions require in-depth knowledge of how to use the Niagara Framework.
-  Programming the Catan controller requires the installation of Emalytics 1.11 or higher (Niagara 4.14+).

Further documentation:

Data sheets for the products in [E-shop](#) contain notes on installation.

The documentation of the driver for the use of the I/Os is available via the Workbench help function (emalytics-CatanIo).



-
-  Make sure you always use the latest documentation. It can be downloaded at phoenixcontact.net/product/1371432.
 -  This document is valid for the products listed in Section [“Ordering data”](#) on page 3.

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2 Ordering data

Scope of this application note

Description	Type	Item No.	Pcs./Pkt.
Catan – Controller for building and room automation	CATAN C1 EN	1371432	1
Extension module for Catan controller	CATAN DOR6 UI8	1371364	1
Touch display for local priority operation and configuration of Catan controller and Catan extension modules	CATAN CONTROL PANEL	1371366	1

3 Enter network settings in the Emalytics Niagara Workbench

- 1 Connect the controller to the local network of your PC via the connections LAN 1 or LAN 2.
- 2 Start up the controller via the Emalytics Niagara Workbench. To do this, open a connection to the Niagara platform. The following factory settings apply:
 - IP address: 192.168.1.1
 - Subnetwork: 255.255.255.0
 - User: phoenix
 - Password: catan
- 3 After the first logon, you will be prompted to assign a passphrase for controller encryption.
- 4 Then create a new user with a new password.
- 5 Edit the IP settings in the area “Platform/TCP/IP Configuration”.

 **Store your access details securely. There is no way to reset the password.**

If the password is lost, the device must be reset to the factory default settings (17 „Reset to default settings“).


4 Enter network settings in the web interface

The controller has web-based management (WBM) for the most important basic settings. To access the WBM via LAN, use the same access details as described in section 3 „Enter network settings in the Emalytics Niagara Workbench“.

Enter the following URL in your browser:


<https://192.168.1.1:8443>

Alternatively, you can also open the WBM via a USB connection. To do this, connect the USB 1 connection of the controller to a USB port on your PC. This causes a network adapter to be automatically installed under Windows 11 (USB NCM host device).

 With Windows 10, the network adapter must be installed manually. For instructions on how to do this, refer to “Appendix” on page 11).

Enter the following URL in your browser:

<https://169.254.252.10:8443>

 In both access versions, it is necessary to accept the warning about an invalid certificate in the browser.

Then edit the IP settings in the “Network/LAN” area.

5 Default gateway

Please note that only one (1) default gateway can be active for the device, although the configuration can be made separately for each interface, LAN (en0) and WAN (en1). If both are configured, the default gateway for the interface LAN (en0) has priority. If you use the setting from the interface WAN (en1), the entry for LAN (en0) must be deleted. This also applies if the default gateway is to be obtained via DHCP for WAN (en1).

6 Configuring the integrated Ethernet switch via the web interface

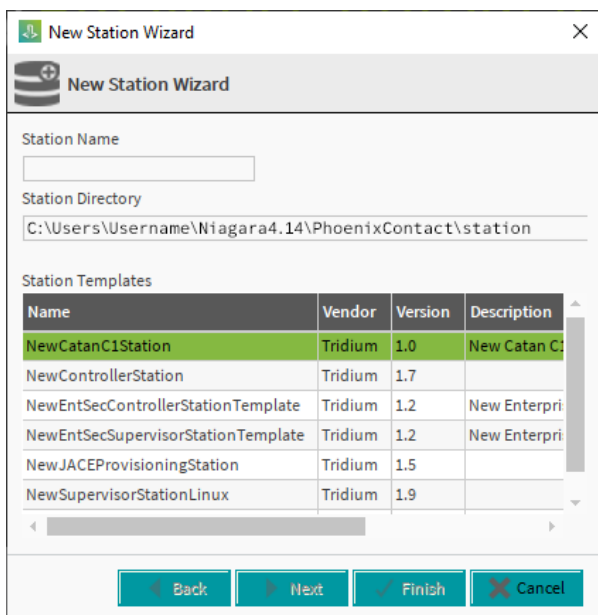
The WBM of the device enables you to perform extended network configuration. This includes, among other things, the assignment of the LAN 1, LAN 2, and LAN 3 interfaces to the primary network interface (LAN or en0) or to a secondary network interface (WAN or en1). In the default settings, LAN 1 and LAN 2 are assigned to the primary interface and LAN 3 to the secondary interface.

- 1 Connect the controller via one of the two access versions described under 4 „Enter network settings in the web interface“ and log into the WBM.
- 2 Configure the assignment of the LAN connections of the controller to the desired network interface in the “Network/Switch” area.

7 Using the I/Os of the controller and the extension modules with the Catan I/O driver

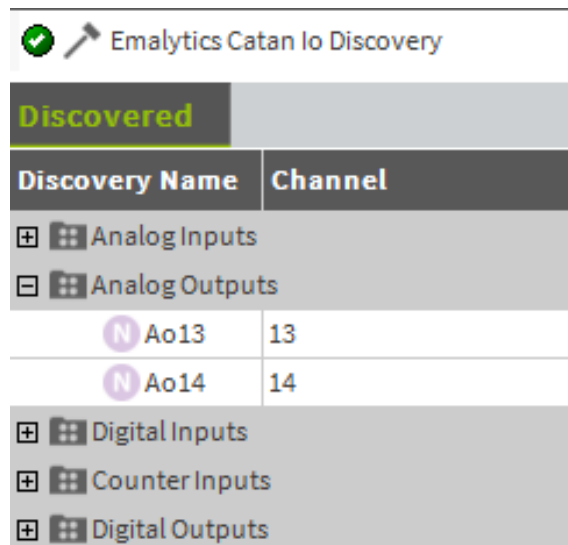
- 1 Create a new station for the controller with the “New Station Wizard” and select “NewCatanC1Station” as the template. This automatically installs the required “emalyticsCatanIo” driver and creates the “emalytics-CatanIoNetwork” in the “Config/Drivers” area.

Figure 1 Station creation



- 2 The I/O devices and I/O data points are created in the same way as for many other Niagara drivers via the function “Search (Discover)” and then dragging to the “Database” panel.
- 3 The assignment of a data point to the I/O connection of a device is determined by the channel number of the data point (Channel), which is located on the connection designation of the device housing. Use the option “To Discover: All Offline” to view the data points of all I/O connections.

Figure 2 Assignment of data points



- 4 For detailed information on further startup and parameters, please refer to the online help of the driver.
- 5 To change the signal type of an I/O connection, delete the data point and create a new data point of the desired new type. You can do this to turn an analog input into a digital input, for example.

8 Configuration data of the I/O connections

The signal type of each I/O connection and all the configuration data are stored directly on the I/O module. When a data point is created and the configuration data is changed, the data is automatically written to the module.

You can read the configuration data of an already configured module by selecting the option “To Discover: Configured Online”.

9 Writing the configuration data for the I/O connections after offline engineering

The I/O connections can also be configured offline by manually creating I/O modules and I/O data points in the station. During later startup, the configuration data must be transferred to the modules.





- 1 Use the function “*Search (Discover)*” in the “Emalytics-CatanIoNetwork” to find the extension modules.
- 2 Select a found module in the upper panel and an offline module created in the station in the bottom panel.
- 3 Press the “Assign (match)” button.
- 4 Then press the “Write Config” button to transfer the I/O configuration to the module.

10 Hardware settings for the serial interfaces.

Both the COM1 and COM2 RS-485 interfaces can be configured only via Niagara. The connections are designated C1 and C2 in the housing printing.

The corresponding setting values for activating termination and for feeding in a bias voltage can be found in the Property Sheet of the controller in the “Config/Drivers/Emalytics-CatanIoNetwork/Local Device” area

Figure 3 COM interface settings

 Com1 Termination	<input checked="" type="radio"/> true
 Com1 Biasing	<input type="radio"/> false
 Com2 Termination	<input type="radio"/> false
 Com2 Biasing	<input type="radio"/> false




11 Local override operation with the Catan Control Panel

You can use the Catan Control Panel, referred to below as the display, to manually overwrite the values of the I/O data points. This is possible for both inputs and outputs.


Figure 4 Catan Control Panel



To enable local override operation, enter the required PIN via the connected display. The default setting for the PIN is “42”.

-  If you change the PIN, this change only applies to the module connected to the display.
-  The manual overwriting of the data points is reset as soon as the display is removed.
-  The display only shows the data points that were previously configured in the Niagara station.

Local override operation is automatically disabled after 15 minutes without operator input.

-  Use the “Override / Lock Manual Override” function to lock the override operation immediately and prevent unauthorized use.

Configuring markings on the display

In addition to the physical values, the display also displays marking texts. These texts are configured via the *Proxy Extensions* of the components in Niagara.

The following options are available:

- Device designation (Dev Name), top left on the display
- Channel designation (Io Name)
- Unit of measurement (Unit) for numerical data points
- Text display of the state of Boolean data points (False Text, True Text)

The unit of measurement and text display can be adopted from the facet of the data point by an action of the proxy extension.

12 Use of the KNX TP interface

The built-in KNX TP connection enables the integration of KNX TP devices into the Niagara station. An external KNX power supply unit is required for this.

Communication with the KNX devices takes place via the IP tunneling protocol using the Niagara KNXnetIP driver. The IP tunnel to the integrated TP connection can only be accessed from the Niagara station and not from the LAN. To program the KNX TP devices from the ETS, an external TP interface must therefore be temporarily inserted into the TP line (a USB or IP interface).

The following steps are required for setup:

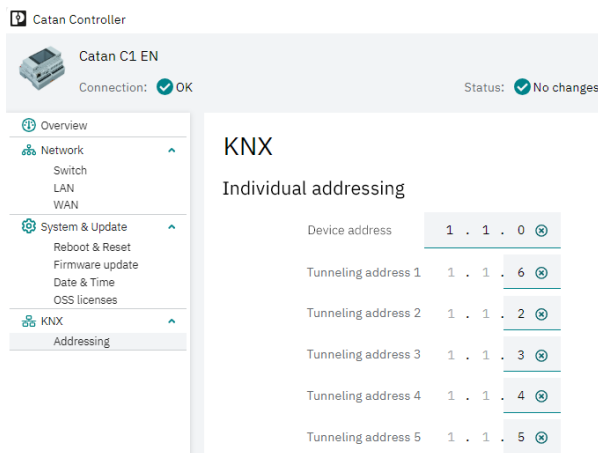
12.1 Programming KNX devices

- 1 Create an ETS project with the desired devices in a TP line. Assign the individual device addresses and create the group addresses that are to be used as data points in Niagara later. The Catan controller occupies any six (6) device addresses in the TP line, which must remain free when devices are inserted in the TP line.
- 2 Program the KNX devices with the ETS via an external TP interface.
- 3 Export the KNX project for later loading into Niagara.

12.2 Setting the physical KNX device addresses of the Catan controller

- 1 Open the web interface of the device
- 2 In the “KNX / Addressing” area, assign the individual address of the device and the tunnel connections. The six addresses to be assigned here must not have been assigned in the ETS.

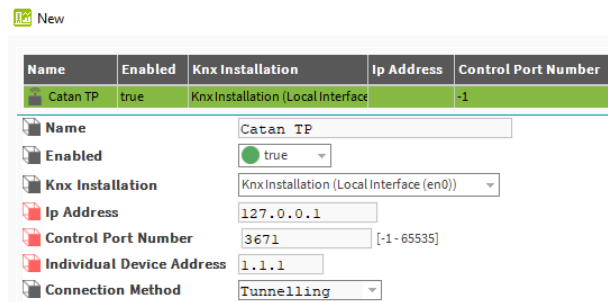
Figure 5 Catan C1 EN web interface: KNX settings



12.3 Creating the IP gateway in Niagara

- 1 Install the KNXnetIP driver with the software manager
- 2 Manually add the “KnxNetwork” via the “New” button in the “Config/Drivers” area
- 3 On the KnxNetwork property sheet, in the “Local Interfaces/Local Interface” area, select the value “en0” in the “Adapter ID” field.
- 4 Add a “KnxDevice” manually to the KnxNetwork. To do this, press the “New” button in the KNX Device Manager and enter the parameters as shown. The “Individual Device Address” must correspond to the individual address that was assigned via the WBM in the preceding step.

Figure 6 Creating the IP gateway in Niagara

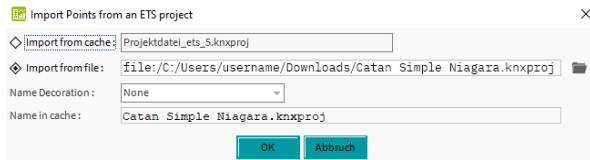


After a short waiting time, the status of the KnxDevice changes to {ok}.

12.4 Creating the data points in Niagara

- 1 Switch to the “KNX Point Manager” of the KnxDevice you just created and click “Search (Discover)”.
- 2 Select the exported KNX project using the file browser.

Figure 7 Creating the data points in Niagara



The group addresses from the ETS project are displayed in the upper panel and can be dragged into the database.

Figure 8 Importing the group addresses

✓ Ets Project File Import

Group Name	Group Addresses	KNX ID	Data Value Type ID
Main 0			
Sub 0			
MDT BK Temp	0/0/11	P-0458-0_GA-1	DPST-9-1
Receive time	0/0/42	P-0458-0_GA-2	DPST-10-1
Receive time Fields			
Receive date	0/0/43	P-0458-0_GA-3	DPST-11-1
Receive date Fields			
MDT BK Text1	0/0/32	P-0458-0_GA-4	DPST-16-0
Tasten 12	0/0/2	P-0458-0_GA-6	DPST-1-1
Tasten 12 Status	0/0/3	P-0458-0_GA-7	DPST-1-11
MDT Sollwert	0/0/81	P-0458-0_GA-9	DPST-9-2
MDT Status aktueller Sollwert	0/0/82	P-0458-0_GA-10	DPST-9-1

Figure 9 Firmware update

Name	Typ	Exts	Status	Address	Serial Number	Firmware	Display Firmware	Dev Name
Local Device	Emalytics Catan Io Local Device	⊕	{ok}	50	2037289503	1.2.2.0	1.3.3.0	Uwes C1
Catan REL6 UI8 195	Emalytics Catan Io Dor6 UI8	⊕	{ok}	49		1.2.1.0 > 1.3.0.0	1.3.2.0 > 1.3.3.0	Catan REL6 UI8 49

14 Module identification

To identify a device, you can trigger module identification via “Identify” in the Device Manager of the “emalyticsCatanIoNetwork”. In this case, the “Status” and “Power” LEDs on the device flash green at a rate of 1 s on, 1 s off. At the same time, the audible signal generator outputs a defined sequence of tones and thus enables the device to be located. A message is displayed on the plugged-in display. You can stop module identification with “Stop Identify”.

13 Firmware update of the I/O modules

Firmware updates are transferred to the connected extension modules and installed via the Emalytics Niagara Workbench. This also concerns the I/O module (local device) integrated in the controller. The firmware updates are part of the “emalyticsCatanIo” driver and are provided by updates to the driver.

Firmware updates for the Catan Control Panel are automatically transferred to the extension modules selected for the update. However, the installation must be triggered directly on the display (using the setup button/gear icon). The display firmware is transferred to the display from the module below.

Proceed as follows to install the update:

- 1 Open the station on the controller and navigate to the “Config/Drivers/EmalyticsCatanIoNetwork” area. You can tell if there is an update available by the fact that the “Firmware” and “Display Firmware” columns show the current version and the newer version available after the “>” separator.
- 2 In the “Database” panel, select the desired modules for the update (Figure 9).
- 3 Select the “Update Firmware” button at the bottom of the panel.
- 4 If necessary, install the firmware update for the connected Catan Control Panels via the relevant display.

15 Diagnostic functions of the LED indicators on the Catan C1 EN controller

Designation				
Power		Status		
Color	Status	Color	Status	Description
Operating states				
Green	On	Green	Flashing with 2 s period	Normal operation, the Niagara station is running. The duty cycle indicates the CPU load.
			200 ms on	CPU load <10%
			1000 ms on	CPU load 10% ... 50%
			1800 ms on	CPU load 50% ... 100%
		Orange	Flashing with 2 s period	The controller is ready for operation, no active Niagara station. The duty cycle indicates the state of the operating system.
			200 ms on	The Niagara platform is not ready for operation.
			1000 ms on	The Niagara platform is ready for operation.
	Flashing 1 s on, 1 s off	Green	Flashing 1 s on, 1 s off	Module identification
	On	Off		The operating system is started.
Orange	On	Off		The I/O module is started.
Update signaling				
Green	On	Orange	Flashing at 10 Hz	Operating system is updated.
Orange				I/O module is being updated.
I/O module error				
Orange	On	Orange	On	The I/O module cannot be activated. The device must be returned for repair.
	Short on followed by off		Short on followed by off	An error occurred when starting the I/O module. Follow the instructions for resetting the firmware.
	On	Red	On	An undervoltage of the supply voltage is present. The module function has been stopped. The module automatically restarts when the supply voltage returns.
Red	On	Red	On	An unknown error has occurred in the I/O module. The I/Os are not ready for operation. Switch the device off for 10 s and then back on.

16 Diagnostic functions of the LED indicators on the Catan DOR6 UI8 extension module

Designation				
Power		Status		
Color	Status	Color	Status	Description
Operating states				
Green	On	Green	On	Normal operation
		Red	On	The controller of the I/O module is faulty – the I/O module is in fail-safe mode.
	Flashing 1 s on, 1 s off	Green	Flashing 1 s on, 1 s off	Module identification
Update signaling				
Orange	On	Orange	Flashing at 10 Hz	I/O module is being updated.
I/O module error				
Orange	On	Orange	On	The I/O module cannot be activated. The device must be returned for repair.
	Short on followed by off		Short on followed by off	An error occurred when starting the I/O module. Follow the instructions for resetting the firmware.
	On	Red	On	An undervoltage of the supply voltage is present. The module function has been stopped. The module automatically restarts when the supply voltage returns.
Red	On	Red	On	An unknown error has occurred in the I/O module. The I/Os are not ready for operation. Switch the device off for 10 s and then back on.

17 Reset to default settings

17.1 Catan C1 EN controller

- 1 Disconnect the supply voltage.
- 2 Press the button using a suitable screwdriver and re-connect the supply voltage.
- 3 Keep the button pressed after the power and status LEDs have started to light up orange.
- 4 Release the button as soon as the status LED goes out. This starts the reset process.
- 5 Wait for approximately 80 seconds until the status LED flashes orange at regular 2-second intervals. This indicates that the reset process has been completed.

17.2 Catan extension module

To reset an extension module, follow the same steps as on the controller. In step 5, the module shows a steady green light on both LEDs after just a few seconds.

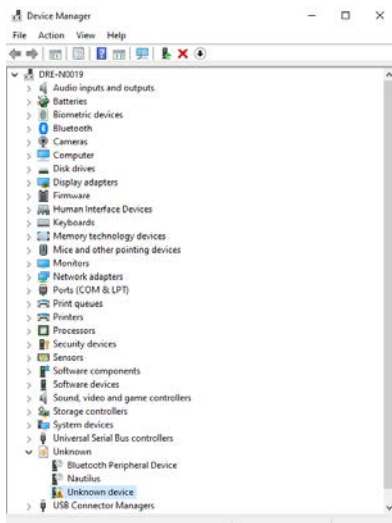
Alternatively, you can reset an extension module with the “Reset To Factory Default” action of the module in Niagara.

18 Appendix

Manual installation of the USB NCM network adapter on Windows 10

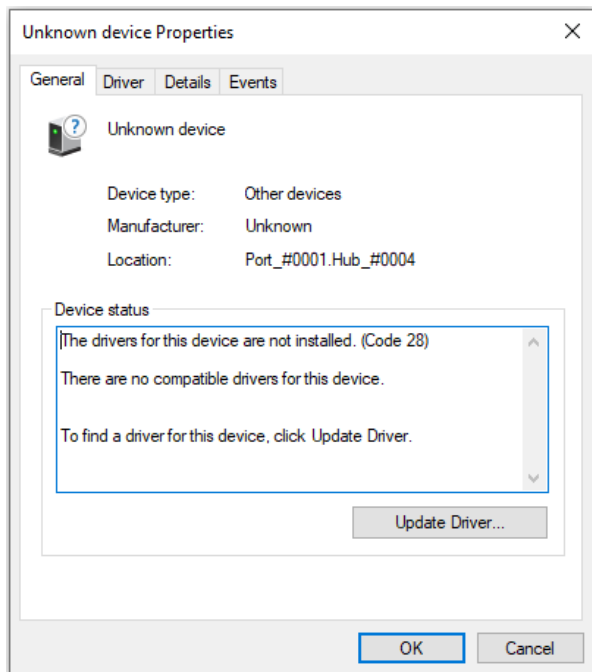
When the USB 1 connection is connected to a PC with Windows 10, the controller is detected as an *“Unknown device”*.

1 Catan C1 EN controller is found as *“Unknown device”*

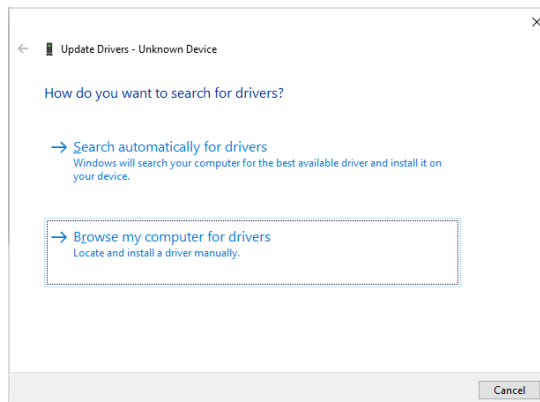


The driver must be installed manually with the following steps.

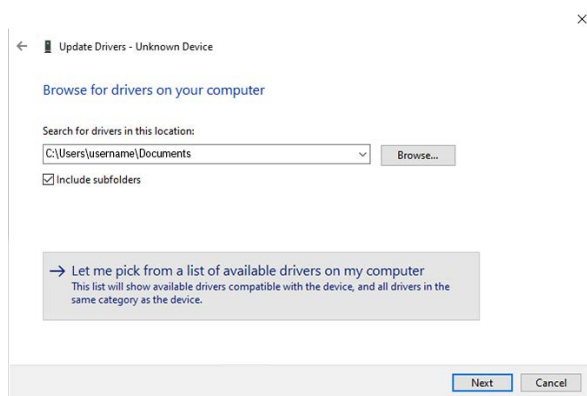
2 Right-click the device and select *“Update driver”*.



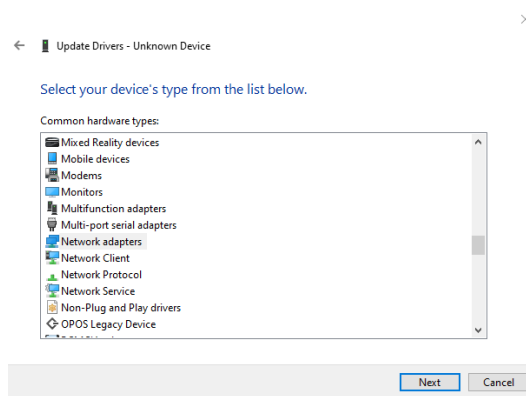
3 Select the option *“Search for drivers on my computer”*



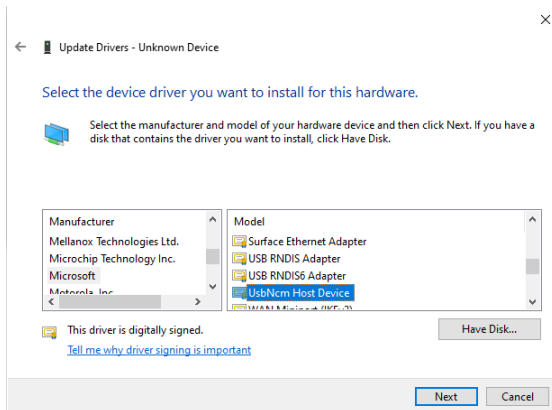
4 Select the option *“Select from a list of available drivers on my computer”*



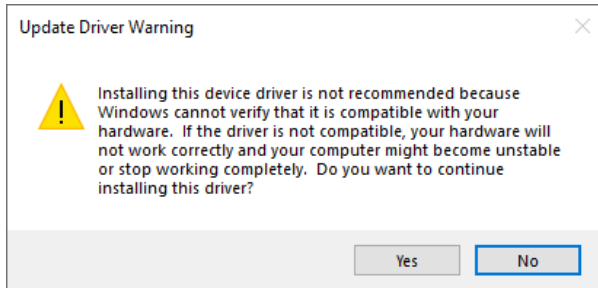
5 Select the *“Network adapter”* type.



- 6 Navigate to the manufacturer “Microsoft” and select “UsbNcm Host Device” as the model.



- 7 Accept the warning and click “Yes”



- 8 The driver has been installed and the controller appears in the network status of the PC as an Ethernet adapter

