How to check for Ethernet machine data acquisition protocols on your machine

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JobPack®
REAL-TIME SCHEDULING & ANALYTICS

About this guide

This guide has been put together by the JobPack engineering team to help you identify the Ethernet Machine Data Acquisition Protocol availability on your machine's controller. There may be a charge from your machine tool vendor for the supply of appropriate license options, e.g. MTConnect or Siemens AccessMyMachine.
This guide should be used in conjunction with our machine checklist, which we would ask you to complete as fully as possible to enable us to identify the most appropriate software or hardware solution for connecting your machines for DNC and or Monitoring. If you have any questions or need any help to complete the machine checklist, please contact your JobPack account manager.

The guide is split into four sections, each covering the four common connections that we carry out but please speak to us if you don't see a control listed that you will require.

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FANUC

Method: Collection of data from controls is using FANUC's FOCAS protocol.

FOCAS is available on all Fanuc i-Series controls, although on older versions it tended to be an option.

Control	Ethernet
All non 'i' controls e.g. 15A, 16B, 18C	No
0i-A/B/C	Optional - Uncommon
0i-D	Yes
15i-A	Optional *
15i-B	Yes
16i-A	Optional *
16i-B	Yes
18i-A	Optional *
18i-B	Yes
21i-A	Optional *
21i-B	Optional *
30i	Yes
31i	Yes
32i	Yes
300I	Yes
310I	Yes
320I	Yes

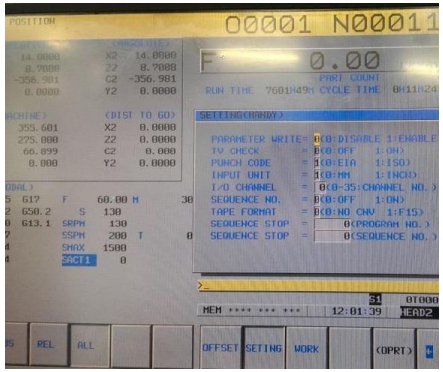
* To check if Ethernet is present you need to check on the control if there is embedded Ethernet.

NOTE: Forget non 'i' controls i.e. 16A/B/C

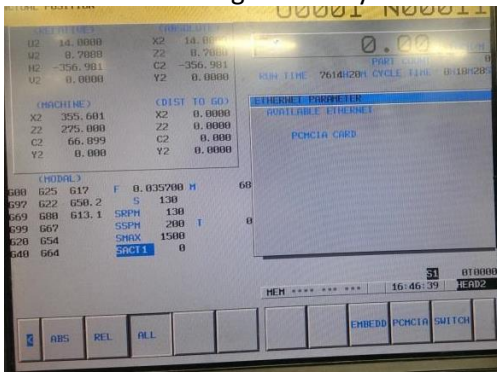
How to Identify if FOCAS is installed

1. Press the [SYSTEM] hard key.
2. Press [>] approximately 5 times until you see "ETHPRM"
3. Press {ETHPRM} soft key, followed by {OPRT}
4. This will display the Ethernet connections available.
5. Select a connection (normally EMBEDD or BOARD)
6. Press the [DOWN] hard key. (page 2)
7. This should display **FOCAS** / ETHERNET

Enter **SETTINGS**



Press **SYSTEM>>** Right soft key 5+ times

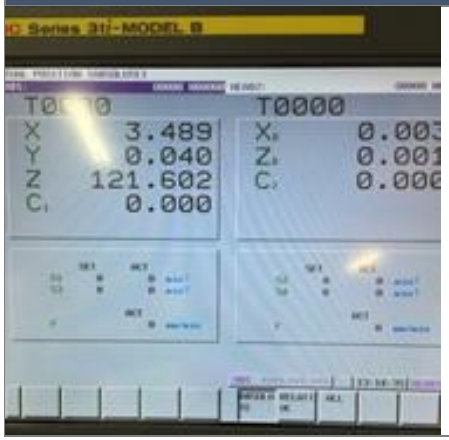


Fanuc 31i Model B

FOCAS Information and Setting

Follow the next 5 steps to set a Fanuc 31i Model B for FOCAS Monitoring.

1. From the normal position page. You must be in **MDI** mode.



2. Press **SYSTEM** hard key.

3. Press **RIGHT** screen scroll soft button until **EMBED PORT** soft key is shown.

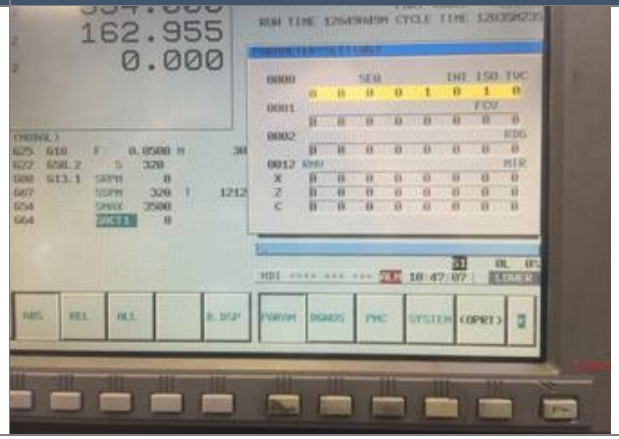
4. Press **EMBED PORT** soft key.

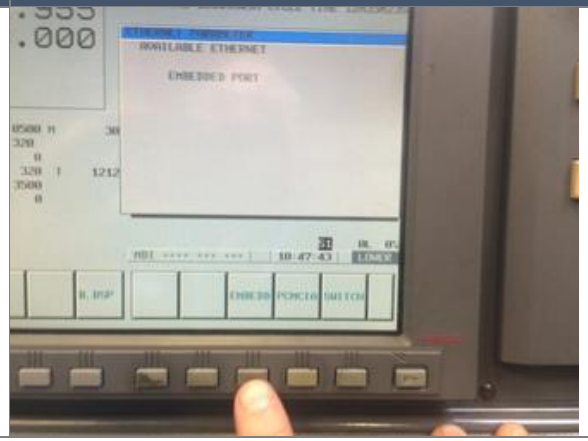
5. You should now see the **FOCAS2** button

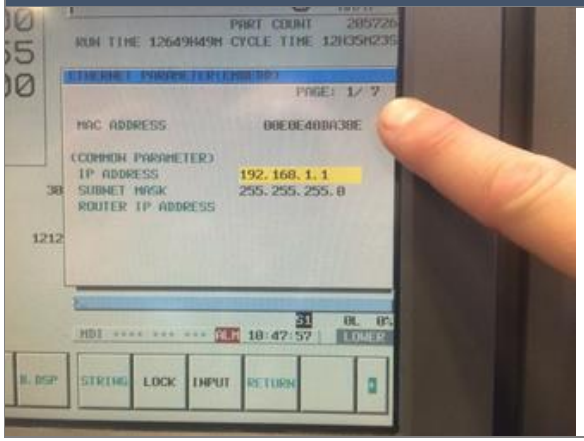
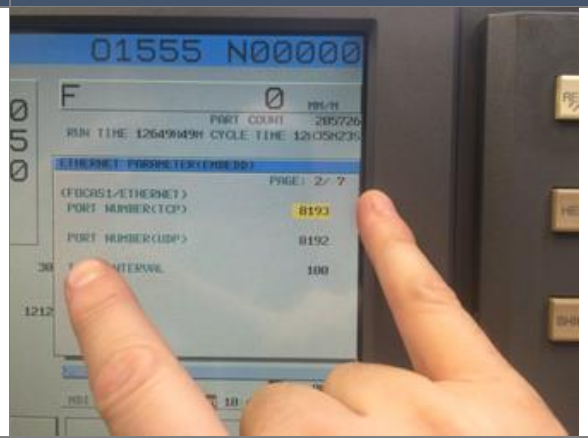
Fanuc 18i Model A

FOCAS Information and Setting

Follow the next 9 steps to set a Fanuc 18i Model A for FOCAS Monitoring.

1. Press SYSTEM hard key	2. Screen shows Param – Diag etc	3. Press RIGHT arrow screen key until ETHPRM is displayed
		

4. Press ETHPRM screen key	5. Press (OPRT) screen key	6. Press EMBEDD screen key
		

7. Screen shows page 1/7. This is the machine's Ethernet IP address.	8. Press PAGE DOWN hard key.	9. You should now see the FOCAS1/ETHERNET page 2/7
		

Fanuc FOCAS FS0iD

Fanuc FOCAS FS0iD setup video: https://www.youtube.com/watch?v=XQ1HViyy6Nc

Mazak

Method: Collection of data from Mazak machines is by using Mazak's Cyber Factory (Fusion) software on the machine for older Mazaks or via MTConnect on new models.

Note: Mazak has withdrawn the support for Fusion Client and an upgrade to the control may be required to support MTConnect and is a chargeable option supplied by Mazak.

Control	Ethernet
Fusion 604M, 640T, 640 MT	Ethernet Optional*
Fusion Pro	Ethernet Optional*
Matrix	Yes
Matrix II	Yes
Smart	Additional Option from Mazak
Smooth G/Smooth X	Additional Option from Mazak

*To validate whether Ethernet is present look in Windows settings (just like any PC).

If no Ethernet is present, then a 16bit PCMCIA card can be obtained from Mazak.
NOTE: An E-Tower is a very good indication that an Ethernet port is present.

MAZAK - Fusion Client (CPC Cyber Monitor)

Some Fusion controls are already equipped with the necessary software and simply need configuring, others require the software known as CPC Cyber Monitor to be installed.

How to Identify if Mazak Fusion is installed

On the control, navigate to C:\CPCU2\fmcnc and run FusionClient.EXE. This will launch the application and place an icon in the System Tray thus:

This indicates that the CPC Cyber Monitor (Fusion) is installed.

MAZAK - MTConnect

MT Connect is not installed by default and must be purchased.

How to Identify if MTConnect is installed

To determine if MT Connect has been purchased and installed on the Mazak machine the following tests can be made.

1. Using the IP address configured on the control
2. Open a web page with the address http://<IP Address>:5000/
3. If a formatted XML file is presented, then MTConnect agent is installed on the control

Or

1. Using the IP address configured on the control
2. Open a web page with the address http://<IP Address>:7878/
3. If a pipe delimited data streams out, then MTConnect adapter is installed on the control

Siemens

Method: Collection of data from Siemens controls is by using OPC DA (Classic) for older controls or OPC UA for new models.

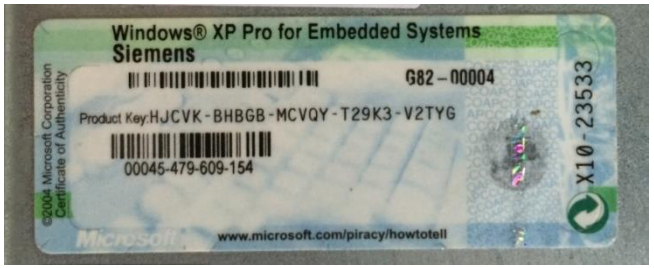
There are two main types of Siemens control **HMI Advanced** and **HMI Operate**.

Controllers that use OPC Classic which is most likely the case if your controller has a Microsoft Windows OS and does NOT run Sinumerik Operate >= Version 4.5.

How to identify Siemens Advanced or Operate

Siemens Advanced and Operate are two different types of Siemens 840D. SINUMERIK HMI-Advanced and Operate (HMI sl) have been installed on PCU50s.

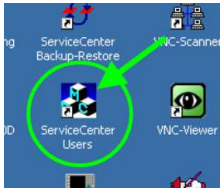
(PCU50 – This is a Windows PC that runs the HMI. It will have a Windows label on it.)



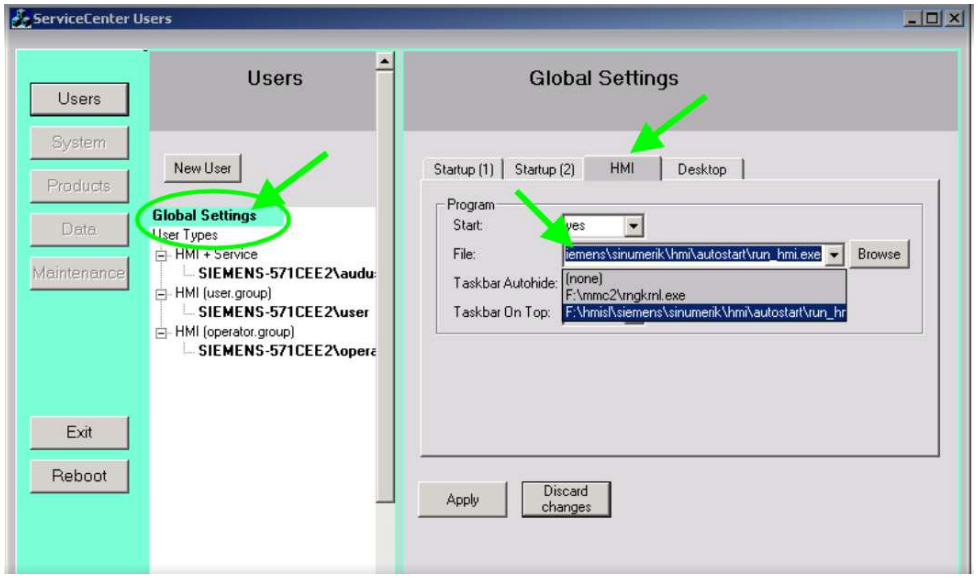
Note: If the control is running Windows XP it is highly likely to have a PCU50

How to determine which software is started upon runup?

1. Start-up PCU in service mode
   - When the SINUMERIK screen is displayed during start-up and the version number is in the bottom right, press “3”.
2. Login as the **AUDUSER**
3. Start "ServiceCenter Users"



4. Under the Global Settings:



5. HMI tab
6. Check the File path
7. **For HMI-Advanced:**
   F:\mmc2\rngkrnl.exe
   For SINUMERIK Operate (HMI sl):
   F:\hmisl\siemens\sinumerik\hmi\autostart\run_hmi.exe

Siemens - HMI Advanced

Control	PCU50
840D	Optional - In back of control
840D Powerline	Optional - In back of control
840D SL (Solutionline)	Optional - In back of control or in electrical cabinet
840Di	Yes
828	No

Siemens - HMI Operate

How to Identify if your Siemens HMI Operate has the Access MyMachine license

To confirm the option "Access MyMachine /OPC UA 6FC5800-0AP67-0YB0" is licensed and activated, press [**Startup** -> **Licenses**].

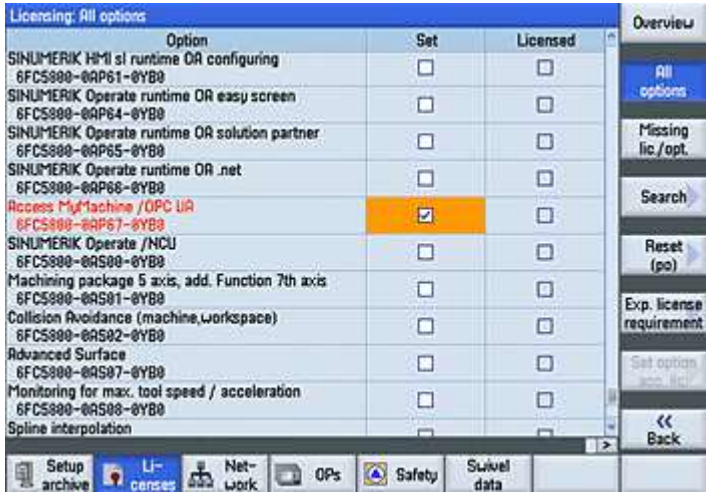


FIG 1: Activate License

Once selected, the control needs to be restarted. The control will now check for the licensed option. If the option was not purchased, the control will error saying "Licensable option enabled but not licensed"

> *If you get the* **"Licensable option enabled but not licensed"** *message, you will need to untick this option and restart the control to clear it.*

Heidenhain

The following controls can have Option 18 StateMonitor:

Control	As of software version
iTNC 530	34049x-03
TNC 640	34059x-01
TNC 620	34056x-01
TNC 320	340551-03
TNC 128	771841-01
CNC PILOT 620	688945-01
CNC PILOT 640	68894x-01
MANUAL Plus 620	548328-05

*Option 18 is an optional extra

The **SIK** (**System Identification Key**) contains the NC software license for enabling control loops and software options. The SIK number provides the control with a unique identification. Before you proceed, open the SIK menu of your control to check whether option 18 is enabled.

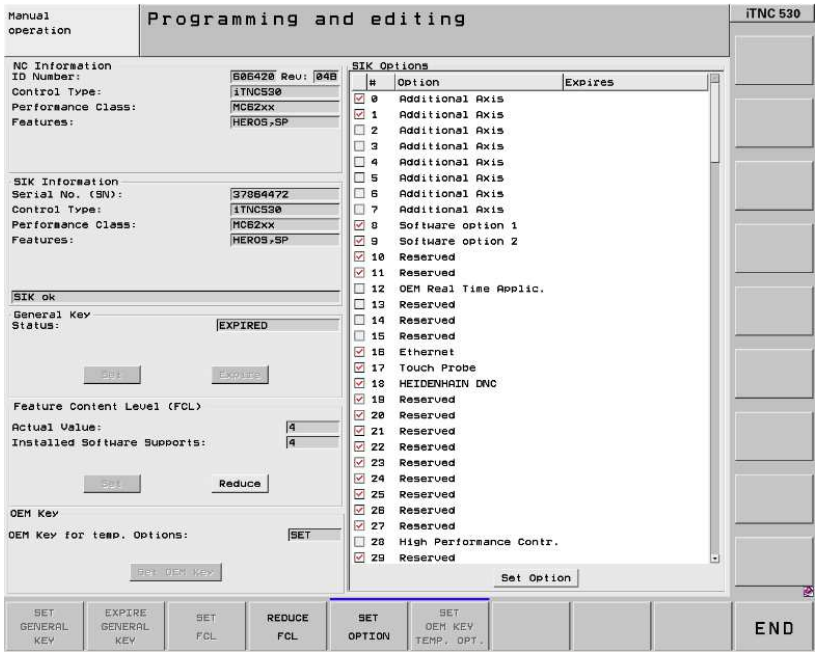
iTNC 530

Select the **Programming and Editing** operating mode

Press the **MOD** key

Enter the code number **SIK**

Press the **ENT** key
The TNC displays the SIK menu on the screen.



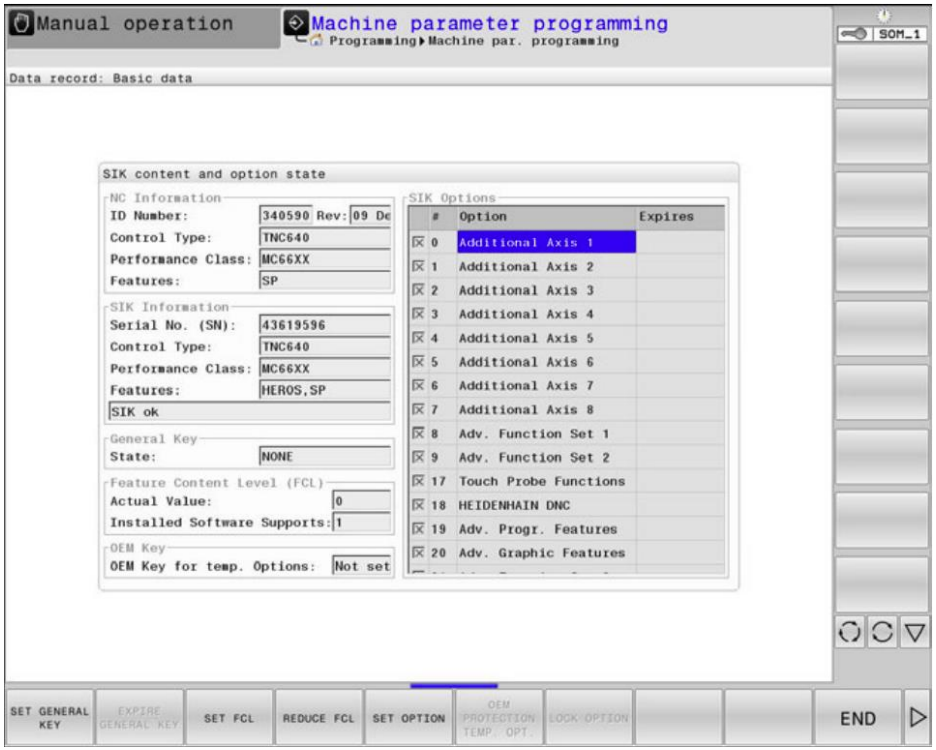
If there is a check mark next to option 18, the HEIDENHAIN DNC interface is enabled on your control. If there is no check mark next to option 18, you must enable option 18.

Select the **Programming and Editing** operating mode

Press the **MOD** key

Enter the code number **SIK**

Press the **ENT** key
The TNC displays the SIK menu on the screen.



If there is a check mark next to option 18, the HEIDENHAIN DNC interface is enabled on your control. If there is no check mark next to option 18, you must enable option 18.