

## READ WRITE FANUC PARAMETERS

For various items such as cycle time, spindle & axis control or tool life management it is necessary to **read parameter values** from controllers. If you'd like to synchronize devices with each other or simply 'tag' a machine with things like work-order or operation number it is also useful to be able to **write parameter values** that can be read by CNCnetPDM later. For machines equipped with FOCAS-enabled Fanuc controllers you can use the utility programs FanucParamReadGui and FanucParamWriteGui to do so.

Read- & Writeable Parameters include (Fanuc 30i, 31i, 32i Model A):

- Reader/puncher interface
- Power mate CNC
- System configuration
- Axis control/increment system
- Coordinates
- Stored stroke check
- Chuck and tail stock barrier
- Feed rate
- Acceleration/deceleration control
- Servo
- DI/DO
- Display and edit
- Programs
- Pitch error compensation
- Spindle control
- Tool compensation
- Canned cycles
- Rigid tapping
- Scaling/coordinate rotation
- Single directional positioning
- Polar coordinate interpolation
- Normal direction control
- Index table indexing
- Involute interpolation
- Exponential interpolation
- Straightness compensation
- Inclination compensation
- Custom macros
- Skip function
- External data input/output
- Fine torque sensing

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- Graphic display
  - Screen display colors
  - Run hour and parts count display
  - Tool life management
  - Position switch functions
  - Manual operation and automatic operation
  - Manual handle feed, handle interruption and handle feed in tool axial direction
  - Reference position with mechanical stopper
  - Software operator's panel
  - Program restart
  - Rotary table dynamic fixture offset
  - Polygon turning
  - The electric gear box (EGB)
  - Axis control by PMC
  - Multi-path control
  - Interference check between paths
  - Axis re-composition and superimposed control
  - Angular axis control
  - Feed axis synchronous control
  - Sequence number comparison and stop
  - Chopping
  - AI contour control
  - High-speed position switch
  - Maintenance
  - The incorrect operation prevention function
  - Screen display colors
  - Three-dimensional error compensation
  - PMC (PLC)
  - High-speed position switch
  - Malfunction protection
  - Manual handle
  - Display and edit
  - Tool life management
  - Machining condition selection function
  - Parameter of linear scale with absolute address reference position
  - FSSB
  - Periodical secondary pitch compensation
  - AI contour control
  - Cylindrical interpolation
  - Optimal torque acceleration/deceleration
  - Nano smoothing
  - Tool compensation

- 5-Axis machining function

**Important:** If you're using HSSB (High Speed Serial Bus) see notes on HSSB below. In this case run the tool directly on the PC with the HSSB interface card!

If you can access the controller via the network it is highly recommend to use the program on a laptop with a network connection at the shop-floor in front of the machine.

## SETUP

1. Download [fanucparam.zip](#).
2. Extract all contents of fanucparam.zip to a folder on your PC.

## READ PARAMETERS

1. Navigate to the folder with FanucParamReadGui and double click it.
2. In section input parameters enter all information to identify controller, axis parameter, start and end parameter to be queried.
3. If you access your controller via network enter the IP Address or DNS Hostname.
4. Under Port enter the port number configured for the FANUC FOCAS option at the controller, default 8193.
5. Only if you access your controller via HSSB change Method to 1 for 'real' HSSB or 2 for NCGUIDE HSSB.
6. Enter the correct axis number for the parameter to be queried (-1 = all axes, 0 = no axes, 1-n = axis number).
7. Input Start and End number of the parameters that should be read.

After clicking [Query] you should see output similar to the following in the right pane:

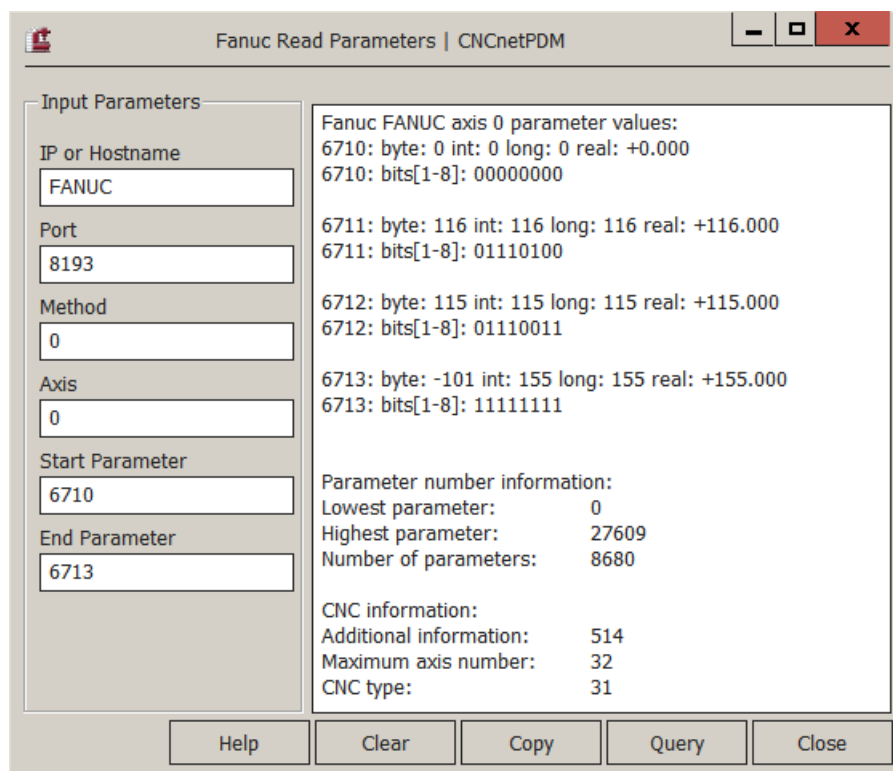


FIG 1: FanucParamReadGui: Read parameters 6710 - 6713

In this example data from address 6710 (Count Up M-Code) to 6713 (Parts required) with no axis (0) was queried via network from a controller with DNS Hostname FANUC. If data can be found at the selected addresses the program outputs 5 values: byte, INT (word), long (dword), real (float) and bits 1-8.

In the above example the program found data at all addresses. In case of an error the program outputs the reason.

Tip: By clicking on [Copy] you can copy the output to the clipboard and simply paste it into a text file.

Notes:

- Parameters with a preceding axis name (1) have to be queried with the respective axis number e.g. X = 1, Z = 2
- Items without preceding characters (2) have to be acquired either with Axis = 0 (no axis) or Axis = -1 (all axes)

## WRITE PARAMETERS

1. Navigate to the folder with FanucParamWriteGui and double click it.
2. In section input parameters enter all information to identify controller, axis parameter, parameter number, new parameter value and select input type.
3. If you access your controller via network enter the IP Address or DNS Hostname.
4. Under Port enter the port number configured for the FANUC FOCAS option at the controller, default 8193.
5. Only if you access your controller via HSSB change Method to 1 for 'real' HSSB or 2 for NCGUIDE HSSB.
6. Enter the correct axis number for the parameter to be written (-1 = all axes, 0 = no axes, 1-n = axis number).
7. Input parameter number and it's new value. If you select Bits you have to enter 8 digits only containing 0 or 1.
8. Select the correct data type for input, Bits (e.g. 01000010), Byte, Word (int), DWord (long) or Real (float).

After clicking [Execute] you can see the result of the writing operation similar to the following in the right pane:

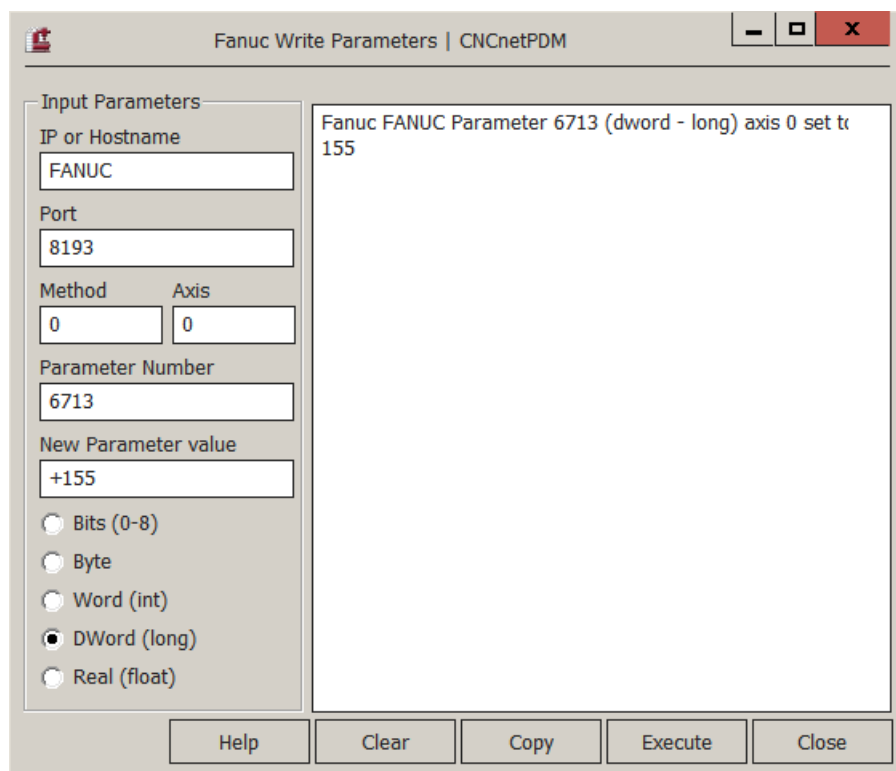


FIG 2: FanucParamWriteGui: Write parameter 6713

In this example parameter 6713 (Parts required) was set to +155 via network on a controller with DNS Hostname FANUC. As this parameter is axis independent axis was set to 0. Input format was set to DWord (long).

If the parameter can be found and the writing operation succeeds FanucParamWrite outputs the new value of the parameter in the right pane. Otherwise FanucParamWrite outputs the reason for the error.

Notes:

- Parameters with a preceding axis name (1) have to be written with the respective axis number e.g. X = 1, Z = 2
- Without preceding characters (2) parameters have to be written either with Axis = 0 (no axis) or Axis = -1 (all axes). Usually Axis = 0 is correct.
- For plain numbers (5) it's best to start with data type DWord (long).
- Use a dot '.' as delimiter for decimal numbers (4).
- For Bits (3) input 8 digits only containing 0 or 1

## UNIVERSAL DRIVER DATA TYPES

To get correct values output by our [Universal Device Driver for Fanuc controllers](#) when reading parameters set 'Output item' in your device INI file as follows:

- For output that shows bits 0-8 (3) use output item 'bdata'
- For output with a decimal point (4) use 'rdata'
- If plain numbers (5) are output use either 'cdata', 'idata' or 'ldata', compare values displayed at the controller with FanucParamReadGui

PARAMETER 00001 N00000

06800	M6T	IGI	SNG	GRS	SIG	LTM	GS2	GS1	06813	TOOL LIFE MAX	GROUP
	0	0	0	0	0	0	0	0			0
06801	M6E				EMD	LUF	TSM		06844		0
	0	0	0	0	0	0	0		06845		0
06802	RMT	TSK	TGN	ARL	GRP	E17	TCO	T99	06846		0
	0	0	0	0	0	0	0	0	06860		0
06803	CTB										0
	0	0	0	0	0	0	0	0			0
06804	LFI				ETE	TCI					0
	0	0	0	0	0	0	0	0			0
06805	TAD	TRU	TRS	LFB		FGL	FCO		06865		0.000
	0	0	0	0	0	0	0	0			0.000
06806							TLD				0
	0	0	0	0	0	0	0	0			0
06810									06866		0.000
	0										0.000
06811	TOOL LIFE COUNT	RESTART	M CODE								0
											0

FIG 3: Fanuc 31i Model B Parameter output A

PARAMETER 00001 N00000

06700						PRT	PCM	06754		98
	0	0	0	0	0	0	0	06755	TMRON ON TIME	0
06710	COUNT UP M-CODE							06756		0
								06757	CYCLE TIME	0
06711	PARTS COUNT							06758		0
										0
06712	PARTS TOTAL									0
										0
06713	PARTS REQUIRED									0
										0
06750	POWER ON TIME									5836
										38128
06751	OPERATING TIME									108
										32528
06752										
06753	CUTTING TIME									

FIG 4: Fanuc 31i Model B Parameter output B

## HSSB

If your machine has a PC that is connected to the controller via HSSB or you use HSSB features of FANUC's NCGUIDE simulation software the setup procedure is slightly different. In both cases do **NOT** use the dll files starting with fwlib (e.g. Fwlib32.dll) included in fanucparam.zip. For HSSB on a real machine use the fwlib dll's that the machine's PC uses (search for them). For NCGUIDE use the following 5 dll's that are installed by NCGUIDE: fwlib0DN.dll, Fwlib32.dll, fwlibNCG.dll, hssb.dll and mcnhssb.dll.