



## FBR-100AN / FBR-100 OPC UA Activation: Supported CNC Devices & Collectable Data

Application Notes : AN20210803XC  
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 When it **Absolutely Must** Connect

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## 1. Overview

This document describes CNC devices and collectable data supported by OPC UA Activation of "FBR-100AN (wireless model) / FBR-100 (wired model)" (referred to as "FBR converter" below), which is a protocol converter for CNC machine tools.

## 2. OPC UA Activation Specifications

### [OPC UA]

- OPC UA Activation supports ver.1.0.3.
- OPC UA Activation supports UA Binary for the OPC UA transfer protocol.
- A single FBR converter can be connected to up to three CNC devices.
- OPC UA Activation can connect up to five OPC UA clients at the same time.
- Two data collection methods: "Regular cycle" and "Once at startup".

### [umati]

OPC UA Activation supports umati (universal machine technology interface) ver.1.0.0 and its essential functions for the Industry 4.0 platform for machine tools, as specified in OPC 40501-1 UA for Machine Tools ver.1.0.

### [Security]

- OPC UA Activation supports the self-creation certificate and the export function.
- Up to five OPC UA client certificates can be imported.
- The following security modes are supported.
  - ✓ None/Sign/SignAndEncrypt
  - ✓ Basic128RSA/256/256SHA256
- When the Sign mode is selected, authentication/data signature is available. When SignAndEncrypt mode is selected, data encryption is available.

### 3. Supported CNC Devices

FBR converter OPC UA Activation has been confirmed compatible with the following CNC devices.

Maker	How to connect	Model	FBR converter Monitoring Data
FANUC	LAN	30i-MODEL A, 30i-MODEL B 31i-MODEL A, 31i-MODEL B 31i-MODEL A5, 31i-MODEL B5 32i-MODEL A, 32i-MODEL B 35i-MODEL B 0i-M/T MODEL F, 0i-M/T MODEL D	See "5.2 List of Fanuc's CNC Devices Data Retrieved through FBR Converter".

Note) Supported CNC devices/machines and functions depend on users' FBR100 converter and their Activation (option) types.

Main function	Activation				
	Standard	For Brother Industries	For Muratec	OPC UA	Modbus TCP
Supported CNC device	FANUC CNC	Brother Industries CNC	Muratec machines & dedicated system	FANUC CNC	FANUC CNC
RS-232C/DPRNT communications <sup>1</sup>	Supported	N/A	N/A	N/A	N/A
PATLITE AirGRID® Link	Supported	N/A	N/A	N/A	N/A
Host system communication protocol	MTConnect	MTConnect	MTConnect	OPC UA/umati	Modbus TCP

<sup>1</sup> FBR converter's RS-232C/DPRNT communication functions are compatible with Mitsubishi Electric's CNC M600/M700/M800 series.

## 4. How to Use FBR Converter OPC UA Activation

### 4.1. Enable OPC UA Activation

- This activation function is a paid option and must be purchased separately from the FBR converter main unit.
- Refer to the "Setup Guide" of FBR converter and register the activation key (alphanumeric string) that you purchased.
- After registering the activation key, restart FBR converter to enable the OPC UA setting.

### 4.2. OPC UA Setting

#### [Basic Setting]

- Go to the web setting screen of FBR converter to set OPC UA. Refer to the product PDF manual for details.
- Register the OPC UA communication port number, the IP address and the communication port number of a CNC device, and import OPC UA Collection Information setting file. The setting file can be created using "OPCUA CollectionInformationTool", which can be downloaded from the Silex website.
- Up to three CNC devices to be registered to FBR converter. The same number of OPC UA servers as registered CNC devices will operate in FBR converter.

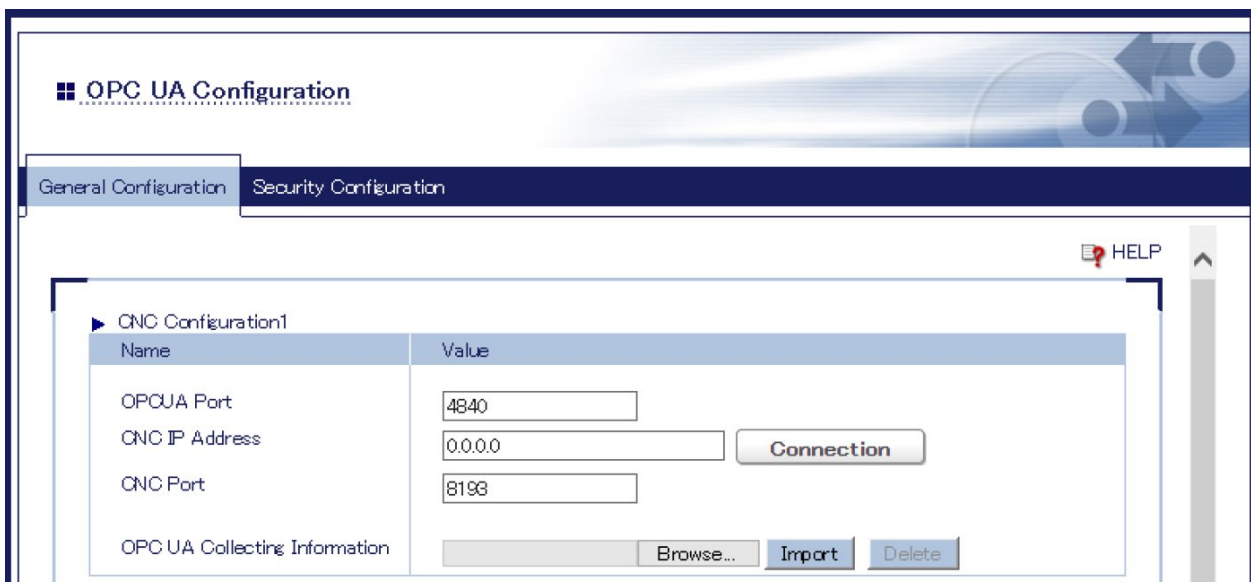


Figure 1 : FBR Converter Web Setting Screen

### [OPC UA Node Setting]

- Go to the setting screen to set Monitoring data (OPC UA Node) to be collected from CNC devices.
- This setting is registered using "OPCUA CollectionInformationTool" that can be downloaded from the Silex website. Refer to "Instruction.xlsx" attached to the tool.

[Create OPC UA Collection Information Sheet]

Enter the information of the target machine tool and click the "Create OPC UA Collectio

Collect CNC Path Number	
SoftwareItem	
Number of MTB Static Registration	
Number of StackLight	
MonitoredElement	
Number of Laser	
Number of EDMGenerator	
Number of Spindle	

Create OPC UA Collection Information Sheet

[Output OPC UA Collection Information File]

Enter the output path and click the "Output OPC UA Collection Information File" button,

Folder path of OPC UA Collection Information File

Output OPC UA Collection Information Fil

Output OPC UA Collection Information File

Figure 2 : OPCUA CollectionInformationTool Screen

### [OPC UA/umati ver.1.0.0 Companion-spec Model Restrictions]

- A write function to CNC devices is not supported.
- A single OPC UA server can't monitor CNC devices with multiple paths/channels. To monitor them, set OPC UA server every path/channel,<sup>2</sup> assign OPC UA communication port number to each and connect them from OPC UA client.

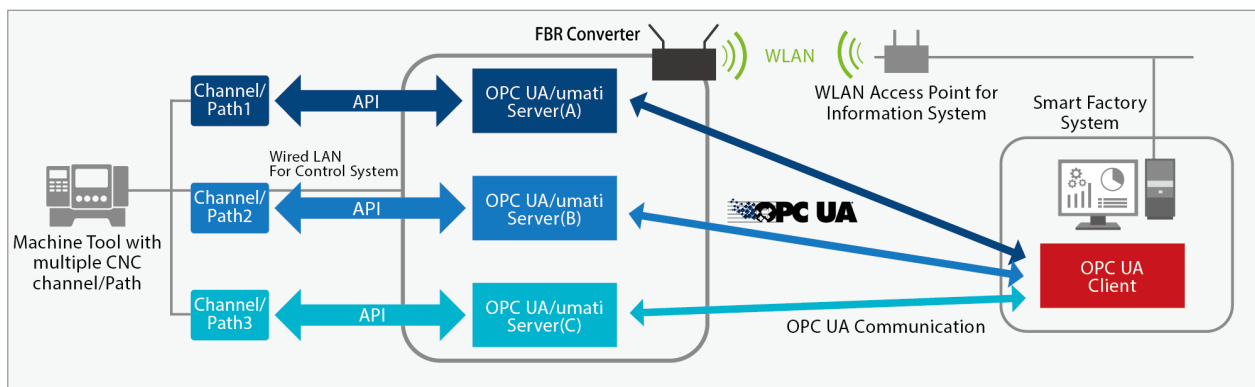


Figure 3 : System Configuration for Multiple CNC Paths/Channels

<sup>2</sup> Import setting files created by using OPCUA CollectionInformationTool for each path/channel.

## 5. Monitoring Data Retrieved through FBR Converter OPC UA Activation

Data in the list can be collected by connecting FBR converter to CNC devices.

### 5.1. List Description

- **OPC UA Node Name/Browse Name**

They are CNC device operation data which are monitored/retrieved through OPC UA. Users are not allowed to add nodes at their discretion.

- **Type**

Node types for umati.

M means a mandatory node for ver.1.0.0. O means an optional node.

- **Collectable data**

Operation data of CNC devices collected at each node

- **Collection method**

The collection method depends on each node according to the data structure of OPC UA and CNC devices' specifications.

Parent node	The parent node in the OPC UA layer data structure, which does not include CNC operation data.
Fixed value	Registered as static information <sup>3</sup> and collected from FBR converter.
PMC (given address)	Registered as the PMC information <sup>3</sup> and collected from CNC devices.
Automatic acquisition from CNC as variable values	Collected as dynamically fluctuating operation data from CNC devices.

- **Collection cycle**

Once at startup	Collect data only once when FBR converter boots up. Basically, nodes with static data are applicable.
1 sec. cycle	Collect data on a 1-second cycle. Basically, nodes with dynamic data are applicable.

<sup>3</sup> Registered using OPCUA CollectionInformationTool.

- **Settings through OPCUA CollectionInformationTool**

Necessary	Nodes that need to be configured using the OPCUA CollectionInformationTool.
Unnecessary	Nodes that do not need to be configured using the OPCUA CollectionInformationTool.

- **Max nodes**

It changes dynamically according to the specifications, the setting of the CNC device and the details specified by the OPCUA CollectionInformationTool.

## 5.2. List of Fanuc's CNC Devices Data Retrieved through FBR Converter

See the **Appendix** in this document.



## 6. Notes for Operation

### ● OPC UA Initial Setting

When the setting file created by using OPCUA CollectionInformationTool is not registered to FBR converter, the first data of CNC device path/channel is automatically collected.

### ● Security Initial Setting

The year of 2031 is the initial value of the validity period of the OPC UA server certificate that FBR converter creates.

The validity period can be set manually in the range of 2022 to 2035.

### ● Time Setting

When the NTP setting of FBR converter is enabled, the OPC UA server starts after the time synchronization. If the synchronization is not completed within 360 seconds, the OPC UA server starts without waiting the completion of the time synchronization.

### ● OPC UA Information Model

- When the OPC UA server can't communicate with a CNC device at startup, the minimum information model is automatically created.
- Nodes without data in OPC UA information model do not collect data, and their values are fixed to the initial value.
- NameSpaceUri is <http://www.silex/FBR-100AN> (fixed).

The following OPC UA information models are automatically created from Manufacturer and Model under OPCUA CollectionInformationTool.

If not specified, Manufacturer is silex, and Model is "FBR-" and the last 6 digits of MAC address.

>ModelUri

- [https://www.\[Manufacturer\]/\[Model\]](https://www.[Manufacturer]/[Model]) Note: Initial value is <https://www.silex/FBR-xxxxxx>

>Machine Tool's BrowseName and DisplayName.

- [Manufacture]-[Model] Note: Initial value is silex-FBR-xxxxxx

### ● OPC UA Server Restart

The OPC UA server automatically restarts in the following cases.

- When the communication between the OPC UA and a CNC device fails at startup of OPC UA server, but it recovers after that.
- When the following CNC device data is different from the setting of FBR converter during CNC data collected.

- 
- Number of CNC paths and channels/Number of PMC paths and channels, Number of main spindles/Name of the main spindle, Number of control axes/Name of control axes, CNC version.

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## Revision History

Ver.	Revision History	Date
AN20210803	Create a new entry	26/Jul/2021
AN20210803XA	Added activation type (Modbus TCP)	01/Sep/2021
AN20210803XB	Corrected some typos in the Appendix.	19/Nov/2021
AN20210803XC	Included FBR-100 wired LAN model.	09/Feb/2022

## Appendix: Collectable CNC Data supported by the FBR-100AN / FBR-100 OPC UA activation

### Facet/Profile Name supported by FBR-100AN / FBR-100 firmware ver.1.4.1 with OPC UA activation

Source: OPC Foundation, OPC UA Online Reference, OPC 40501-1: OPC UA for Machine Tools , Part 1: Machine Monitoring and Job Overview, 14.2.1 Profile list  
<https://reference.opcfoundation.org/v104/MachineTool/v100/docs/14.2.1/>

<a href="#">MachineTool Basic Server Profile</a>	Yes	
<a href="#">MachineTool Basic Secure Server Profile</a>	Yes	*Partly
<a href="#">MachineTool Monitoring Server Facet</a>	Yes	
<a href="#">MachineTool Tools Server Facet</a>	Yes	*Partly(only a few fixed values for umati demo-server)
<a href="#">MachineTool Tool Life Server Facet</a>	No	
<a href="#">MachineTool Production Server Facet</a>	No	
<a href="#">MachineTool Production Plan Server Facet</a>	No	
<a href="#">MachineTool Errors and Alerts Server Facet</a>	Yes	*Partly
<a href="#">MachineTool Prognoses Server Facet</a>	No	

For reference: OPC Foundation Unified Architecture Profile Reporting Visualization Tool  
<https://profiles.opcfoundation.org/v104/reporting/>

Note1: In the column "Type", M means mandatory functions and O means optional ones in OPC UA for Machinery (umati) ver.1.0.0

Note2: The "Parent Node" in the "Collection Method" column is necessary in OPC UA information structure tree. It's not the status/operation information of CNC.

Note3: In the column "Tool Settings", the necessary nodes must be manually set by using "OPCUA CollectionInformationTool" before data collection.

#	Profile/Facet	Node Name / Browse Name	Type	Description	Collection Method	Collection Cycle	Tool Settings	Max. Nodes
1	Basic Server	<a href="#">MillingMachine</a>	M		Parent node	-	Unnecessary	1
2	Basic Server	<a href="#">Identification</a>	M	Static data which uniquely identify a machine tool	Parent node	-	Unnecessary	1
3	Basic Server	<a href="#">Manufacturer</a>	M	Localized name of the manufacturer of a machine	Fixed value	Once at startup	Necessary	1
4	Monitoring	<a href="#">Model</a>	O	Localized name of the model of a machine	Fixed value	Once at startup	Necessary	1
5	Basic Server	<a href="#">ProductCode</a>	O	A string that might include options like the hardware configuration of a model (might be provided by the ERP system of a vendor for order information, etc.)	Fixed value	Once at startup	Necessary	1
6	Basic Server	<a href="#">ProductInstanceUri</a>	M	A globally unique resource identifier provided by the manufacturer of a machine	Fixed value	Once at startup	Necessary	1
7	Basic Server	<a href="#">SerialNumber</a>	M	A string containing a unique production number of the manufacturer of a machine	Fixed value	Once at startup	Necessary	1
8	Basic Server	<a href="#">SoftwareRevision</a>	O	A string representation of the revision level of machine software components	Fixed value	Once at startup	Necessary	1
9	Monitoring	<a href="#">YearOfConstruction</a>	O	The year (Gregorian calendar) in which the manufacturing process of a machine has been completed	Fixed value	Once at startup	Necessary	1
10	Basic Server	<a href="#">Location</a>	O	Used by end users to store the location of a machine in a scheme specific to end users	Fixed value	Once at startup	Necessary	1
11	Monitoring	<a href="#">SoftwareIdentification</a>	O	Information about the specific software in operation in a machine tool.	Fixed value	-	Unnecessary	1
12	Monitoring	<a href="#">&lt;SoftwareItem&gt; (CNC System Software)</a>	M	CNC system software information	Fixed value	-	Unnecessary	40
13	Monitoring	<a href="#">Identifier</a>	M	A unique identifier for CNC system software	Automatically obtained from CNC as variable values	Once at startup	Unnecessary	40
14	Monitoring	<a href="#">Manufacturer</a>	O	The manufacturer of CNC system software	Fixed value (FANUC C)	Once at startup	Unnecessary	40
15	Monitoring	<a href="#">SoftwareRevision</a>	M	The revision of CNC system software	Automatically obtained from CNC as variable values	Once at startup	Unnecessary	40
16	Monitoring	<a href="#">&lt;SoftwareItem&gt; (PMC MTB Ladder Software)</a>	M	CNC PMC ladder software information	Parent node	-	Unnecessary	10
17	Monitoring	<a href="#">Identifier</a>	M	A unique identifier for CNC PMC ladder software	Automatically obtained from CNC as variable values	Once at startup	Unnecessary	10
18	Monitoring	<a href="#">Manufacturer</a>	O	The manufacturer of CNC PMC ladder software	Automatically obtained from CNC as variable values	Once at startup	Unnecessary	10
19	Monitoring	<a href="#">SoftwareRevision</a>	M	The revision of CNC PMC ladder software	Automatically obtained from CNC as variable values	Once at startup	Unnecessary	10
20	Monitoring	<a href="#">&lt;SoftwareItem&gt; (MTB Custom Software [Static Registration])</a>	M	MTB custom software information	Parent node	-	Unnecessary	10
21	Monitoring	<a href="#">Identifier</a>	M	A unique identifier for CNC custom software	Fixed value	Once at startup	Necessary	10
22	Monitoring	<a href="#">Manufacturer</a>	O	The manufacturer of MTB custom software	Fixed value	Once at startup	Necessary	10
23	Monitoring	<a href="#">SoftwareRevision</a>	M	The revision of MTB custom software	Fixed value	Once at startup	Necessary	10

#	Profile/Facet	Node Name / Browse Name	Type	Description	Collection Method	Collection Cycle	Tool Settings	Max. Nodes
24	Basic Server	<a href="#">Monitoring</a>	M	Monitoring information	Parent node	-	Necessary	1
25	Basic Server	MachineTool	M	A machine tool	Parent node	-	Necessary	1
26	Basic Server	<a href="#">FeedOverride</a>	O	Feed override	Parent node	-	Necessary	1
27	Basic Server	<a href="#">EngineeringUnits</a>	M	<a href="#">The definition of engineering units (% or pct)</a>	Fixed value (%)	Once at startup	Unnecessary	1
28	Basic Server	<a href="#">EURange</a>	M	The range of engineering units (low: 0, high: 200, etc.)	Multiple fixed values	Once at startup	Necessary	1
29	Basic Server	<a href="#">IsWarmUp</a>	O	A warmup state	PMC (given address)	1sec. cycle	Necessary	1
30	Basic Server	<a href="#">OperationMode</a>	M	<a href="#">An operation mode state (0: Manual, 1: Automatic, etc.)</a>	PMC (given address)	1sec. cycle	Necessary	1
31	Basic Server	<a href="#">PowerOnDuration</a>	O	Power on duration	Automatically obtained from CNC as variable values	1sec. cycle	Unnecessary	1
32	Basic Server	<a href="#">StackLight</a>	O	Stacklight information	Parent node	-	Necessary	1
33	Basic Server	<a href="#">&lt;OrderedObject&gt; Light1</a>	M	Lamp 1 information	Parent node	-	Necessary	6
34	Basic Server	<a href="#">NumberInList</a>	M	Index information for each lamp (The lowest lamp is 0 at the base of the stacklight.)	Fixed value	Once at startup	Unnecessary	6
35	Basic Server	<a href="#">SignalColor</a>	M	<a href="#">Color Information (0: Off, 1: Red, etc.)</a>	PMC (given address)	1sec. cycle	Necessary	6
36	Basic Server	<a href="#">SignalMode</a>	M	<a href="#">Signal mode information (0: Continuous, 1:Blinking, etc.)</a>	PMC (given address)	1sec. cycle	Necessary	6
37	Basic Server	<a href="#">SignalOn</a>	M	A signal-on state (true or false, etc.)	PMC (given address)	1sec. cycle	Necessary	6
38	Basic Server	<a href="#">StacklightMode</a>	M	<a href="#">How to use stacklights (defined by value)</a>	PMC (given address)	1sec. cycle	Necessary	1
39	Monitoring	<a href="#">&lt;MonitoredElement&gt; Laser</a>	O	Basic monitoring information of a laser device used in the machining process	Parent node	-	Necessary	5
40	Monitoring	<a href="#">ControllerIsOn</a>	M	A laser device controller switch state (true or false, etc.)	PMC (given address)	1sec. cycle	Necessary	5
41	Monitoring	<a href="#">LaserState</a>	M	<a href="#">A laser device state (1: Ready, 2: Active, 3: Error, etc.)</a>	PMC (given address)	1sec. cycle	Necessary	5
42	Monitoring	<a href="#">Name</a>	M	Laser device name	Fixed value	Once at startup	Necessary	5
43	Monitoring	<a href="#">&lt;MonitoredElement&gt; EDMGene</a>	O	Information about EDM Spark Generator	Parent node	-	Necessary	5
44	Monitoring	<a href="#">EDMGeneratorState</a>	M	<a href="#">EDM spark generator state (1: Ready, 2: Active Low Voltage, etc.)</a>	PMC (given address)	1sec. cycle	Necessary	5
45	Monitoring	<a href="#">IsOn</a>	M	EDM spark generator switch state (true or false, etc.)	PMC (given address)	1sec. cycle	Necessary	5
46	Monitoring	<a href="#">Name</a>	M	EDM spark generator name	Fixed value	Once at startup	Necessary	5
47	Monitoring	<a href="#">&lt;MonitoredElement&gt; Spindle</a>	O	Spindle monitoring information	Parent node	-	Necessary	4
48	Monitoring	<a href="#">IsRotating</a>	M	The enabled status of spindle rotation (true or false, etc.)	Automatically obtained from CNC as variable values	1sec. cycle	Unnecessary	4
49	Monitoring	<a href="#">IsUsedAsAxis</a>	O	Use as the axis (True to use as the axis, False to use as the spindle)	PMC (given address)	1sec. cycle	Unnecessary	4
50	Monitoring	<a href="#">Override</a>	O	The current value of spindle override (%)	PMC (given address)	1sec. cycle	Unnecessary	4
51	Monitoring	<a href="#">EngineeringUnits</a>	M	<a href="#">The definition of engineering units (% or pct)</a>	Fixed value (%)	Once at startup	Unnecessary	4
52	Monitoring	<a href="#">EURange</a>	M	The range of engineering units (low: 0, high: 254, etc.)	Multiple fixed values	Once at startup	Necessary	4
53	Monitoring	<a href="#">Name</a>	M	Spindle name	Automatically obtained from CNC as variable values	1sec. cycle	Unnecessary	4
54	Basic Server	<a href="#">&lt;MonitoredElement&gt; Path</a>	O	CNC path/channel monitoring information	Parent node	-	Necessary	1
55	Basic Server	<a href="#">ChannelMode</a>	M	<a href="#">CNC path/channel operation mode</a>	Automatically obtained from CNC as variable values	1sec. cycle	Unnecessary	1
56	Basic Server	<a href="#">ChannelModifiers</a>	O	Additional program modifiers usually used during special operations of a machine tool	Parent node	-	Unnecessary	1
57	Basic Server	<a href="#">DryRun</a>	M	A dry run execution state (true or false)	Automatically obtained from CNC as variable values	1sec. cycle	Unnecessary	1
58	Basic Server	<a href="#">OptionalStop</a>	M	Acceptance of stop execution by a machine command (true or false)	PMC (given address)	1sec. cycle	Necessary	1
59	Basic Server	<a href="#">SingleStep</a>	M	Single-step operation of CNC path/channel (true or false)	Automatically obtained from CNC as variable values	1sec. cycle	Unnecessary	1
60	Basic Server	<a href="#">ChannelState</a>	M	<a href="#">A CNC path/channel state (active, interrupted or reset)</a>	Automatically obtained from CNC as variable values	1sec. cycle	Unnecessary	1
61	Basic Server	<a href="#">FeedOverride</a>	M	The current value of rapid override for CNC path/channel	Automatically obtained from CNC as variable values	1sec. cycle	Unnecessary	1
62	Basic Server	<a href="#">EngineeringUnits</a>	M	<a href="#">The definition of engineering units (% or pct)</a>	Fixed value (%)	Once at startup	Unnecessary	1
63	Basic Server	<a href="#">EURange</a>	M	The range of engineering units (low: 0, high: 254, etc.)	Automatically obtained from CNC as variable values	1sec. cycle	Unnecessary	1
64	Basic Server	<a href="#">RapidOverride</a>	O	The current value of rapid override for CNC path/channel	Automatically obtained from CNC as variable values	1sec. cycle	Unnecessary	1
65	Basic Server	<a href="#">EngineeringUnits</a>	M	<a href="#">The definition of engineering units (% or pct)</a>	Fixed value (%)	Once at startup	Unnecessary	1
66	Basic Server	<a href="#">EURange</a>	M	The range of engineering units (low: 0, high: 100, etc.)	Multiple fixed values	Once at startup	Necessary	1
67	Basic Server	<a href="#">Name</a>	M	CNC path/channel name	Automatically obtained from CNC as variable values	1sec. cycle	Unnecessary	1
68	Basic Server	<a href="#">Production</a>	M	Information of currently running and scheduled jobs	Parent node	-	Unnecessary	1
69	Basic Server	<a href="#">ActiveProgram</a>	M	A program that is currently running on a machine tool	Parent node	-	Unnecessary	1
70	Basic Server	<a href="#">Name</a>	M	Program file name and a file path	Automatically obtained from CNC as variable values	1sec. cycle	Unnecessary	1
71	Basic Server	<a href="#">NumberInList</a>	M	ProductionProgramType instance information	Fixed value(0)	Once at startup	Unnecessary	1

#	Profile/Facet	Node Name / Browse Name	Type	Description	Collection Method	Collection Cycle	Tool Settings	Max. Nodes
72	Production	<a href="#">State</a>	M	Program states and possible transition information between states	Parent node	-	Unnecessary	1
73	Production	<a href="#">CurrentState</a>	M	<a href="#">The current state of a program (Initializing, Running, Ended, etc.)</a>	Fixed value (Convert from the following Number)	1sec. cycle	Unnecessary	1
74	Production	<a href="#">Id</a>	M	ID that uniquely identifies the current program state	Fixed value (Convert from the following Number)	1sec. cycle	Unnecessary	1
75	Production	<a href="#">Number</a>	M	<a href="#">A number that uniquely identifies the current program state</a>	Automatically obtained from CNC as variable values	1sec. cycle	Unnecessary	1
76	Basic Server	<a href="#">Statistics</a>	O	Production statistics	Parent node	-	Unnecessary	1
77	Basic Server	<a href="#">PartsProducedInLifetime</a>	O	Total number of parts produced during the life of a machine tool	Automatically obtained from CNC as variable values	1sec. cycle	Unnecessary	1
78	Basic Server	<a href="#">Equipment</a>	M	Equipment information of a machine tool	Parent node	-	Unnecessary	1
79	Tools	<a href="#">Tools</a>	O	Tool information	Parent node	-	Unnecessary	1
80	Tools	<a href="#">&lt;Tool&gt; (Basic Tool)</a>	O	Tool information (Basic tool)	Parent node	-	Unnecessary	1
81	Tools	<a href="#">ControllIdentifier1</a>	M	Identification for management of tools by the controller	Fixed value (1)	Once at startup	Unnecessary	1
82	Tools	<a href="#">ControllIdentifierInterpretation</a>	M	<a href="#">Custom information when a tool control exists except for ControllIdentifier 1 and 2</a>	Fixed value (0)	Once at startup	Unnecessary	1
83	Tools	<a href="#">Locked</a>	M	A tool lock state (true or false)	Fixed value (false)	Once at startup	Unnecessary	1
84	Tools	<a href="#">ReasonForLocking</a>	M	<a href="#">Reasons of tool lock (0: not given, 1: operator, 2: tool break, 3: tool life, 4: measurement error, 5: other)</a>	Fixed value (0)	Once at startup	Unnecessary	1
85	Tools	<a href="#">Name</a>	O	Tool name (e.g. "T3")	Fixed value (Tool1)	Once at startup	Unnecessary	1
86	E & A	<a href="#">Notifications</a>	M	Messages and alert information of a machine tool	Parent node	-	Unnecessary	1
87	E & A	<a href="#">Messages</a>	O	A node for sending errors, warning, and message events on a machine tool	Parent node	-	Unnecessary	1
88	E & A	<a href="#">CNCAlarm</a>	O	CNC alarm information	Parent node	1sec. cycle	Unnecessary	1
89	E & A	<a href="#">ErrorCode</a>	M	Error code information (CNC error codes with CNC channel/path)	Automatically obtained from CNC as variable values	1sec. cycle	Unnecessary	1
90	E & A	<a href="#">EnabledState</a>	M	<a href="#">Enable state information</a>	Fixed value (Enabled)	1sec. cycle	Unnecessary	1
91	E & A	<a href="#">ActiveState</a>	M	<a href="#">Active state information</a>	Parent node	-	Unnecessary	1
92	E & A	<a href="#">Id</a>	M	The presence of an active state	Fixed value (true)	1sec. cycle	Unnecessary	1
93	E & A	<a href="#">SupressedOrShelved</a>	M	Alarm suppress/shelving	Fixed value (False)	1sec. cycle	Unnecessary	1
94	E & A	<a href="#">AckedState</a>	M	<a href="#">An information response state</a>	Fixed value (Unacknowledged)	1sec. cycle	Unnecessary	1
95	E & A	<a href="#">Id</a>	M	The presence of notification response status	Fixed value (true)	1sec. cycle	Unnecessary	1
96	E & A	<a href="#">ConfirmedState</a>	O	The state of need for confirmation	Fixed value (Confirmed)	1sec. cycle	Unnecessary	1
97	E & A	<a href="#">Id</a>	O	The presence of state requiring confirmation	Fixed value (true)	1sec. cycle	Unnecessary	1
98	E & A	<a href="#">ConditionClassId</a>	M	<a href="#">System condition classification ID</a>	Parent node	-	Unnecessary	1
99	E & A	<a href="#">Namespace</a>	M	The index for a namespace URI	Fixed value (0)	1sec. cycle	Unnecessary	1
100	E & A	<a href="#">IdentifierType</a>	M	The format and data type of the identifier. (NUMERIC, STRING, GUID, OPAQUE)	Fixed value (NUMERIC)	1sec. cycle	Unnecessary	1
101	E & A	<a href="#">Value</a>	M	An identifier for a node in the address space of an OPC UA Server.	Fixed value (11166)	1sec. cycle	Unnecessary	1
102	E & A	<a href="#">ConditionClassName</a>	M	Provides the display name of the subtype of BaseConditionClassType.	Fixed value (SystemConditionClassType)	1sec. cycle	Unnecessary	1
103	E & A	<a href="#">ConditionName</a>	M	Condition name (CNC Alarm + ErrorCode)	Automatically obtained from CNC as variable values	1sec. cycle	Unnecessary	1
104	E & A	<a href="#">Retain</a>	M	Condition information retention flag	Fixed value (true)	1sec. cycle	Unnecessary	1
105	E & A	<a href="#">Quality</a>	M	<a href="#">The quality of the state of process values and resources</a>	Fixed value (GOOD)	1sec. cycle	Unnecessary	1
106	E & A	<a href="#">LastSeverity</a>	M	Latest severity	Fixed value (0)	1sec. cycle	Unnecessary	1
107	E & A	<a href="#">EventId</a>	M	Event ID	Fixed value (server generated unique id)	1sec. cycle	Unnecessary	1
108	E & A	<a href="#">SourceNode</a>	M		Parent node	-	Unnecessary	1
109	E & A	<a href="#">Namespace</a>	M	The index for a namespace URI	Fixed value (9)	1sec. cycle	Unnecessary	1
110	E & A	<a href="#">IdentifierType</a>	M	The format and data type of an identifier.	Fixed value (NUMERIC)	1sec. cycle	Unnecessary	1
111	E & A	<a href="#">Value</a>	M	An identifier for a node in the address space of an OPC UA Server.	Fixed value (5001)	1sec. cycle	Unnecessary	1
112	E & A	<a href="#">SourceName</a>	M	The description of events	Fixed value (Messages)	1sec. cycle	Unnecessary	1
113	E & A	<a href="#">Time</a>	M	Current system time	Fixed value (current system time)	1sec. cycle	Unnecessary	1
114	E & A	<a href="#">ReceiveTime</a>	M	Current system time	Fixed value (current system time)	1sec. cycle	Unnecessary	1
115	E & A	<a href="#">Message</a>	M	Alarm messages (decoded info)	Automatically obtained from CNC as variable values	1sec. cycle	Unnecessary	1
116	E & A	<a href="#">Severity</a>	M	Severity	Automatically obtained from CNC as variable values	1sec. Cycle	Unnecessary	1