

Protocol Converter for CNC Machine Tools FBR-100AN OPC UA Activation Program

Supports Universal Communication Interface *umati* for Machine Tools



Outline

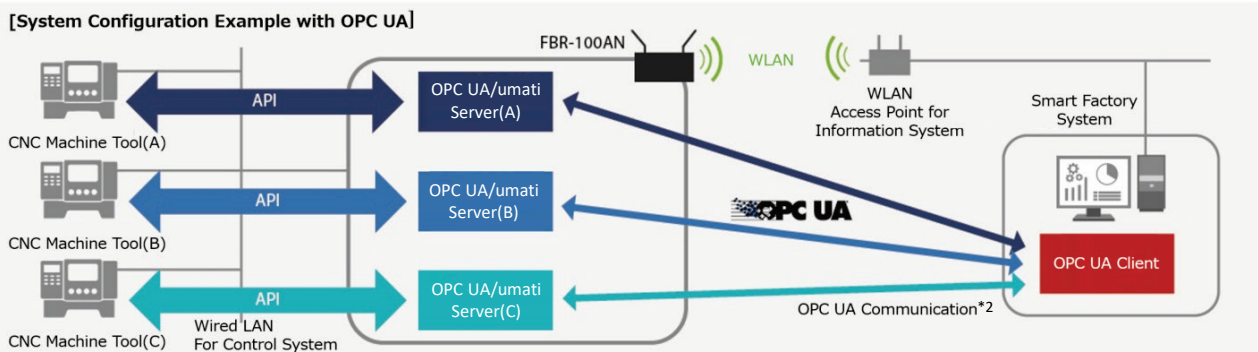
This is an optional program that enables FBR-100AN, a protocol converter for CNC devices, to support the Industry 4.0 platform *umati* (universal machine technology interface) for machine tools. Using this activation program, FBR-100AN can establish OPC UA communications for existing machine tools and provide IoT functions leveraging the universal data-exchange interface *umati**1 for machine tools. FBR-100AN and this new program allows factory users and machine tool makers to easily connect their machine tools directly to OPC UA-based systems and devices.

*1: Support OPC 40501-1 UA for Machine Tools ver.1.0 specification which specifies *umati* interface and its essential functions.
Plan to support OPC 40501-1 CTT test tool to be provided by the OPC Foundation in the future.

Features

● FBR-100AN Simple Connection to CNC machine tools

The OPC UA function of FBR-100AN can support up to 3 CNC machine tools. The OPC UA/*umati* client software in a host system of Smart Factory can collect the operation data of CNC machine tools when it access the OPC UA server running inside FBR-100AN. The FBR-100AN is equipped with multiple wired LAN interfaces and wireless LAN communication functions to establish separated secure networks for the control/information systems in a factory.

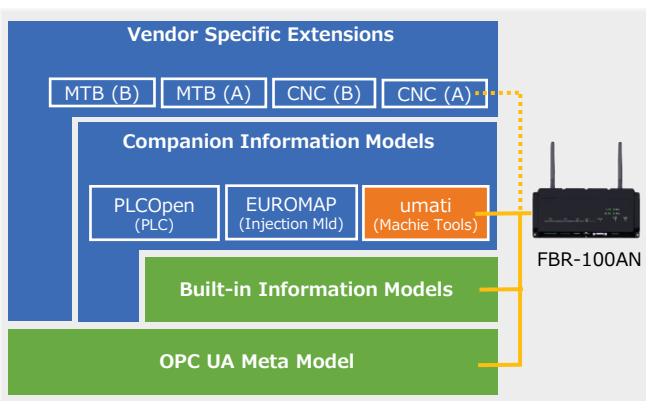


*2: To read out data of multiple CNC machine tools from an OPC UA client, specify the port number assigned to each OPC UA server operating inside FBR-100AN for communication.

● OPC UA Information Model supported by FBR-100AN

OPC UA specifications include companion-spec models defined for specific industries and makers' own information models. FBR-100AN supports the information model *umati* for machine tools and FANUC CNC devices*3.

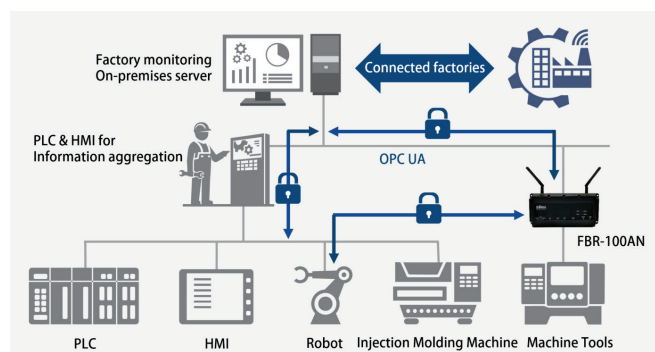
*3: For customization requests, please contact our sales representative.



● Advantage of FBR-100AN & OPC UA Communication

- Retrofittable OPC UA/*umati* communication function to existing machine tools
- Multi-vendor unified PC-to-Machine-to-Device communication
- Industry 4.0 standard making implementation simple for overseas (Europe, China, etc.)
- Protected read/write access to data by default*4

*4: The write function is not yet supported (as of March 2021). The write specification is not defined for *umati* ver.1.0.0 companion specifications.



FBR-100AN Product Specifications

Wired LAN	RJ-45 x 2 ports (MAC address x2) 10Base-T/100Base-TX/1000Base-T (Auto-recognition)
Wireless LAN	IEEE 802.11a/b/g/n, 2Tx2R (External antenna)
Device Interfaces	D-Sub9 male x 1 port (RS-232C/422A/485 **, Switchable) Digital input: 3 bits
Switch	PUSH switch x1 (For factory reset) DIP switch: 4 bits (For device settings)
LED	Two-color LED x 4
Operating Environment	Temperature: -20 to +50°C * Humidity: 20 to 90%RH(No condensation)
Storage Condition	Temperature: -20 to +55°C Humidity: 20 to 90%RH (No condensation)
Power Supply	Power supply: AC adapter (Sold separately) and 12-24VDC Power consumption: 24V/0.28A, 12V/0.54A
Dimensions	230 x 105 x 36 mm (Excluding antennas)
Weight	450 g (Excluding antennas)
Package Contents	Main unit, Standard pole antennas, Setup guide, Simplified Declaration of Conformity, GPL inquiry sheet
Regulatory Compliance *3	[EMC] Japan: VCCI Class-A US: FCC Part15 Subpart B Class-A Canada: ICES-003 Issue 6 Class-A EU: EN55032 Class-A, EN301489-17 [Radio cert] Certified in Japan, US, Canada, and EU [RoHS] Compliant with EU RoHS Directive
Warranty	5 years
System	CPU: NXP i.MX6 SoloX RAM: 256MB Embedded storage: eMMC 2 GB (Pseudo SLC: 1.2 GB available to the user)
Enclosure	Plastic case
Dust/Waterproof	Compliant with IP53 (including protective caps/connectors for wall mounting)
Shock Resistant	Sinusoidal: 1.0G (XY direction) 10 to 500 Hz
Antistatic, Noise	Antistatic: Contact discharge ±4 kV, Air discharge ±8 kV Noise immunity: Power line ±2 kV, Signal line ±1 kV
Corrosive Gas Resistance	40±2°C / 80±5%RH / 15 ppm (H2S hydrogen sulfide gas) / 96H
Security	Open/Shared /WEP WPA-PSK/EAP (AUTO) WPA2-PSK/EAP (AES/AUTO) IEEE 802.1X Authentication (EAP-TLS/TLS/FAST,PEAP/LEAP, Wireless LAN only)

*1: To use RS-485, a communication program is additionally needed.

*2: Able to operate at a temperature of max. 55°C when a sizeable amount of data (dozens Mbps) is not consecutively sent or received over the wireless LAN.

*3: For wireless LAN, the region code setting must be changed for overseas use. The edit software will be prepared per maker of machine tools to rewrite the setting. Please contact silex for the license conditions.

Accessories / License / Software

Item	Name	Contents
AC adapter (Sold separately)	WB-18D12RU-ECAA	AC adapter and power code unit supporting JP, US, and EU
Antenna (Sold separately)	Dust/Waterproof antenna	IP67 supported antenna x 1, Cable (2.9m) x 1
License (Sold separately)	Activation for Brother Industries' CNC devices *4	Activation key to enable connection with Brother Industries' CNC devices
License (Sold separately)	Activation for Murata Machinery's machine tools *4	Activation key to monitor Murata Machinery's original system
License (Sold separately)	Activation for OPC UA *4	Activation key to enable OPC UA Communication
Software (Sold separately)	Development kit	Development environment, DVD including documentation

*4: Required per main unit.

OPC UA Specifications

OPC UA4MT	OPC UA Server	ver. 1.0.3
	Number of OPC UA client	Up to 5 simultaneous connections
	OPC UA transfer protocol	UA Binary
OPC UA	Data Acquisition Method	Query/Polling/Upon startup
	Self-Signed Server Certificates	Supported
	Exporting Server Certificate	Supported
umati	Importing Client Certificate	Up to 5
	Security Mode	None/Sign/SignAndEncrypt Basic128RSA/256/256SHA256
	Authentication and Data Signature	Supported (with sign mode)
Supported CNC Data Collection	Data Encryption	Supported (with SignAndEncrypt mode)
	Version	OPC 40501-1 UA for Machine Tools ver.1.0
	Read/Write	Read Only *5
Interface	Ethernet/LAN	Supported
	RS-232C/DPRNT	Not Supported *5
	Supported CNC	The Following FANUC CNC 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
Data Collection	Number of CNC Devices	Up to 3
	CNC Data	Supported *6
	PMC Data	Supported *6 (with setting tool)

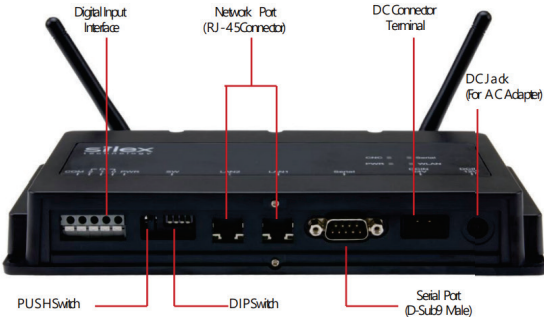
*5: Specification when OPC UA activation is released.

*6: There is a difference in the information that can be collected from the FANUC CNC device between the standard specification (without activation) and when OPC UA activation is applied. Please check the product page on silex website for details.

FBR-100AN Activation Comparison

Features	Standard (without activation)	Brother Activation	Muratec Activation	OPC UA Activation
Supported Machines	FANUC	BROTHER	Muratec Lathe Machine & Loader	FANUC
RS-232C/DPRNT	Yes	N/A	N/A	N/A
Patlite AirGRID® Support	Yes	N/A	N/A	N/A
IoT Comm.	MTConnect	MTConnect	MTConnect	OPC UA

External Interfaces



Any questions about the product?
Contact our customer support team!

<https://www.silextechnology.com/support/contact-silex-support>

silex technology is a registered trademark of silex technology, Inc. Other product or brand names may be registered trademarks or trademarks of their respective owners. Technical information and specifications are subject to change without notice. ©2021 silex technology, Inc. All rights reserved.

silex global sales & support locations



US Office
silex technology america, Inc.
+1-657-218-5199
www.silextechnology.com
sales@silexamerica.com

Europe Office
silex technology europe, GmbH
+49-2154-88967-0
Germany toll free 0800-7453938
www.silextechnology.com
contact@silexeurope.com

China
silex technology beijing, Inc.
+86-10-8497-1430
www.silex.com.cn
contact@silex.com.cn

Corporate Headquarters
silex technology, Inc.
+81-774-98-3781
www.silex.jp
support@silex.jp



PN:141-xxxx-xxxx
REV A.20210611