

Data Access Unit for IoT

# DeviceGateway<sup>®</sup>



TAKEBISHI  
PRODUCTS  
**CHECK!**



Supports 320 series of devices

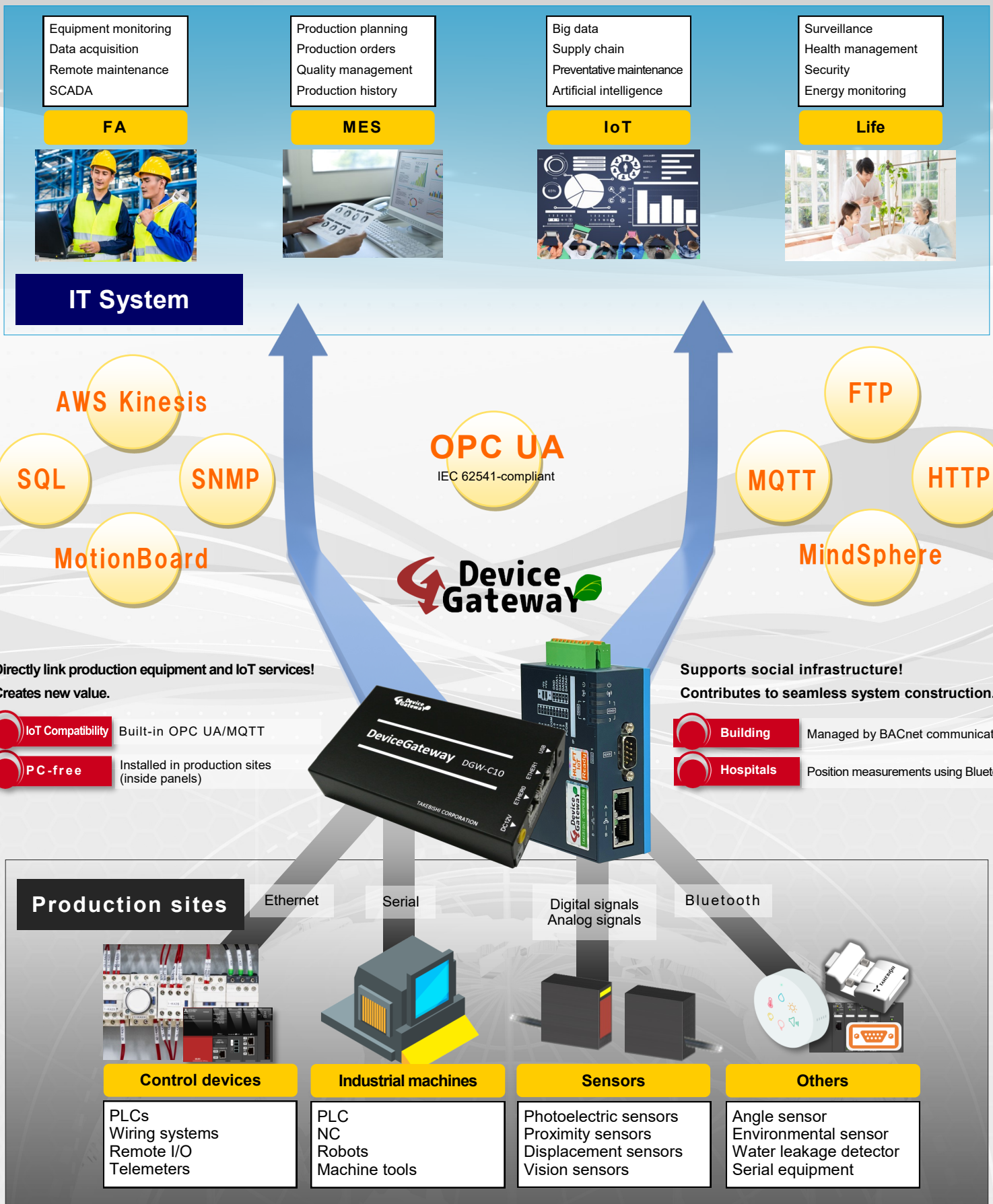
Compatible with Industry 4.0

Compatible with Various Cloud Services

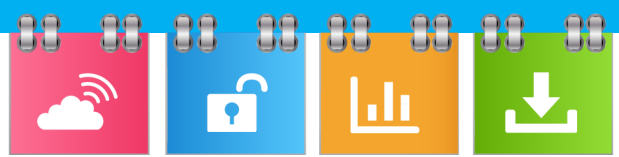
Easy Setup with a Web Browser



# Directly Link Production Equipment and IT Systems

Accesses sensor information and improves production efficiency!









# Line up



<b>MachineTools</b> <ul style="list-style-type: none"> <li>MITSUBISHI</li> <li>YAMAZAKI</li> <li>FANUC</li> <li>SHIBAURA</li> </ul>	<b>Networks</b> <ul style="list-style-type: none"> <li>ANYWIRE</li> <li>HIOKI</li> <li>MG (Formerly M-System)</li> <li>HAKKO</li> <li>IDEC</li> <li>KOYO</li> <li>DELTA</li> <li>MOXA</li> <li>AZBIL</li> <li>RKC</li> <li>CHINO</li> <li>Eurotherm</li> <li>PANASONIC</li> <li>MITSUBISHI</li> <li>YOKOGAWA</li> <li>Silex Technology</li> <li>WAGO</li> <li>MTT</li> <li>OMRON</li> <li>Ablic</li> <li>SIRC</li> <li>CODESYS</li> <li>CONTROL</li> <li>PHOENIX CONTACT</li> </ul>	<b>その他</b> <ul style="list-style-type: none"> <li>Serial interface</li> <li>Bluetooth Beacon</li> <li>DIO/AI</li> </ul>
<b>Robot</b> <ul style="list-style-type: none"> <li>YAMAHA</li> <li>IAI</li> <li>SANYO</li> </ul>	<ul style="list-style-type: none"> <li>EtherNet/IP</li> <li>Modbus</li> <li>SLMP</li> <li>MTConnect</li> <li>BACnet/IP</li> <li>DNP3</li> </ul>	 <p>Find out further Connectivity!</p> 

# Line up

 <p><b>Global model</b></p> <p>DGW-W710</p> <ul style="list-style-type: none"> <li>Safety standards (CE / FCC / UL / CCC (Exemption applied))</li> <li>Equipped with DIO terminal</li> <li>Wide temperature range (-20 to 55)</li> <li>3 serial ports (RS232C x 1, RS485 x 2)</li> </ul>	 <p><b>Compact model</b></p> <p>DGW-C10</p> <ul style="list-style-type: none"> <li>Space saving</li> <li>Wide temperature range (-20 to 60)</li> <li>1 serial port (RS232C)</li> </ul>	 <p><b>I/O equipped, Factory model</b></p> <p>DGW-F20</p> <ul style="list-style-type: none"> <li>8 digital inputs / 8 outputs</li> <li>4 analog inputs</li> <li>Pin terminal power input</li> <li>2 serial ports (RS232C x 1, RS485 x 1)</li> </ul>
 <p><b>LTE equipped model</b></p> <p>DGW-L30</p> <ul style="list-style-type: none"> <li>Japanese multi-carriers support. LTE compatible (3G not possible)</li> <li>Dual antenna</li> <li>1 serial port (RS232C)</li> </ul>	 <p><b>I/O and LTE equipped model</b></p> <p>DGW-R40</p> <ul style="list-style-type: none"> <li>Japanese multi-carriers support. LTE compatible (3G not possible)</li> <li>24 digital inputs / 8 outputs</li> <li>8 analog inputs</li> <li>2 serial ports (RS232C x 1, RS485 x 1)</li> </ul>	 <p><b>Software version, Docker model</b></p> <p>DGW-D20 (H/B)</p> <ul style="list-style-type: none"> <li>Works in Linux environment</li> <li>Docker virtual image included</li> <li>Other application linkage</li> </ul>



# Features

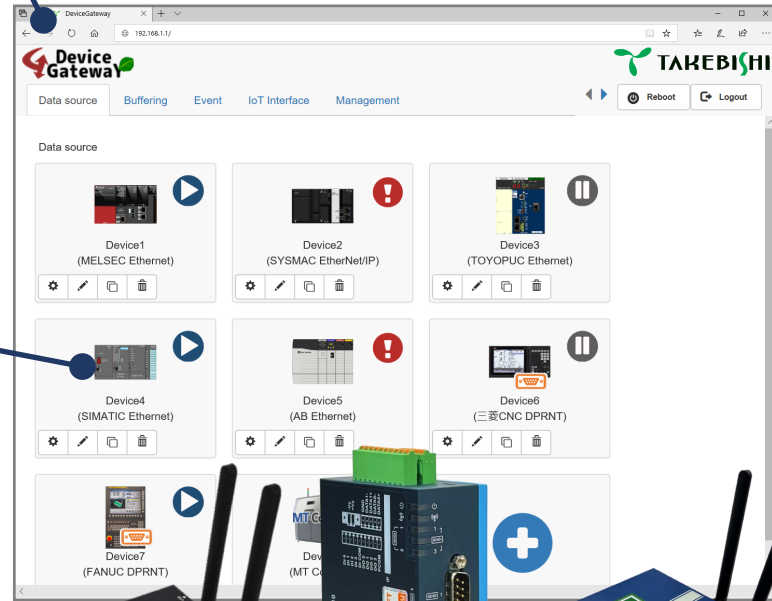
All the functions needed to construct an IoT system.

## Easy setup with browser

Specific application is not required to set up this product.  
Simply enter the IP address from your browser to configure.

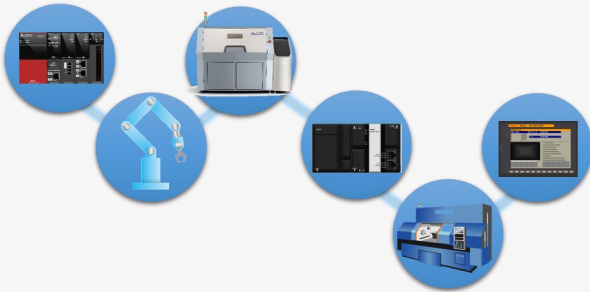


## Data Access Unit for IoT DeviceGateway®



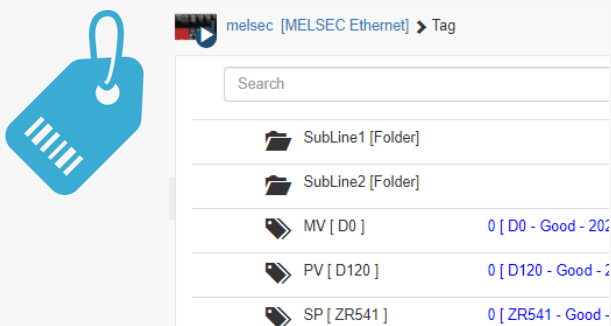
## Supports 320 series devices

Supports many kinds of devices such as PLCs, measuring instruments, processing machines and robot controllers.  
You can register multiple connection settings as data sources.



## Data Management with tags

Data from devices are managed as tags with specified names.  
Tags can be managed in a hierarchical structure (Address Space) using folders.  
You can create tags with various data types, and easily set scale/BCD conversion.

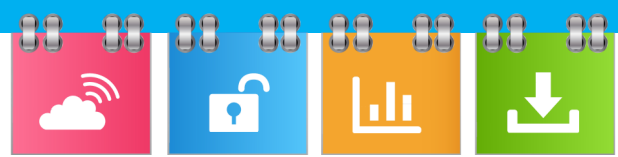


## Partners / Device certification

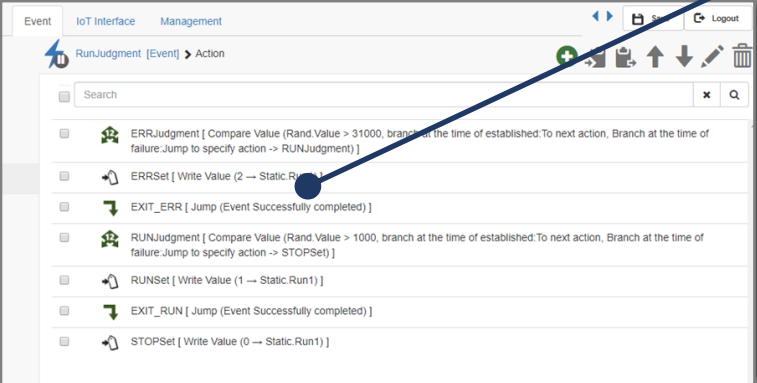
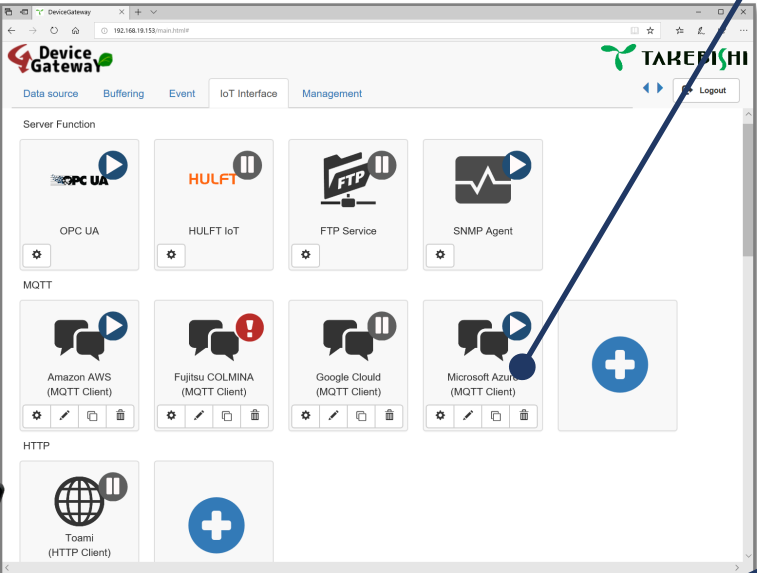
Here are some of our DeviceGateway alliance and Certified device partners who we have joined.







# Flexible cooperation with many IoT services.



## Compatible with various services

- 4.0 Industry 4.0**  
Built-in OPC UA server function
  - IoT** Supported on various applications  
MQTT connections to AWS/Azure/GCP/Alibaba
  - BI** MotionBoard  
Visualization / Analyzation by BI tools
  - FTP**  
Support for server and client
  - SNMP Agent**  
Monitors status by upper layer system. (e.g. Zabbix)
- etc...

## Event driven sequence logic

- Cycle, Time execution**  
Specify event execution interval
  - Alarm detection**  
Monitors the rate of change and deviation of tag data
  - Conditional branch**  
Implements complex processing without programming
  - Message creation**  
Makes JSON automatically with tag definition
  - Feedback to production equipment**  
Writing to tag
- etc...

( As of April 2022 )

Partner Name	Device certification or alliance name
Amazon Web Services	AWS Partner Device Catalog
WingArc1st	Dr.Sum E model
SB Cloud	Alibaba Cloud IoT Platform Certified Device
OGIS-RI	IoT Partner
OKI	AI Edge Partner
OPC Foundation	OPC UA Certified
SAISON INFORMATION SYSTEMS	HULFT Collaboration Partner
SORACOM	SPS Certified Device Partner
NSW	Toami Ready
Fujitsu	COLMINA Ready
Microsoft	Azure Certified for IoT Device(Legacy)
Mitsubishi Electric	e-F@ctory Alliance Partner
YE DIGITAL	MMCloud Ready

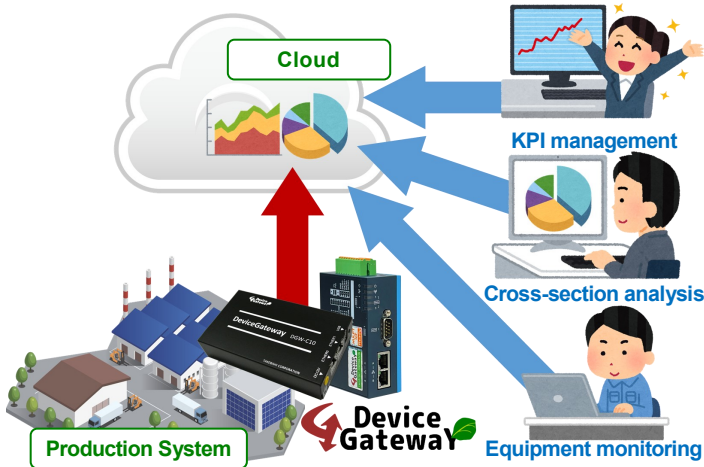
## Convenient management tools

- JP EN** Switching Language  
English and Japanese are available
  - Time Synchronization**  
Synchronizes with NTP Server
  - Updatable firmware**  
New functions are available
- etc...

# Use Cases

## KPI dashboard and Cross-section analysis by BI tool

Implements equipment monitoring remotely or KPI management by using dashboard products. In addition, by BI tool, you can combine collected data as various perspectives and analyze cross-cutting.

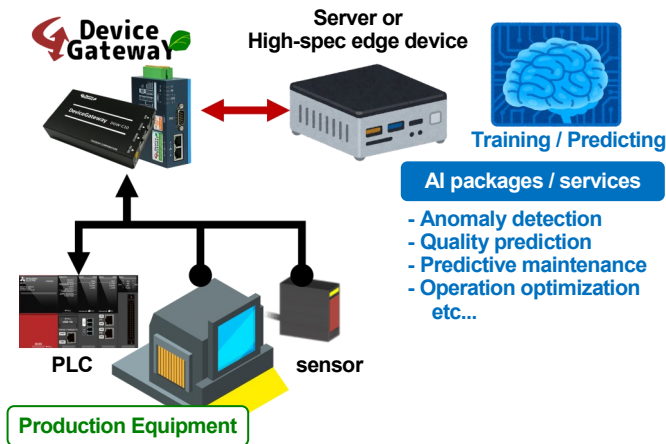


### Dashboard / BI product examples

Makers	Products
Amazon Web Services	Amazon QuickSight AWS IoT SiteWise Amazon Elasticsearch
Alibaba Cloud	Alibaba Cloud DataV
SB Technology	IoT Core Connect
WingArc1st	MotionBoard
SORACOM	SORACOM Lagoon
Hitachi	Lumada Mfl
Fujitsu	COLMINA
Microsoft	Azure Stream Analytics Power BI
YDC	YDC SONAR

## Strengthening of competitiveness by cooperating with AI

By cooperating with AI packages/services, you can add new value into your production line or products and strengthen competitiveness. Realizes gathering data, indicating to predict, sending feedback into controller.

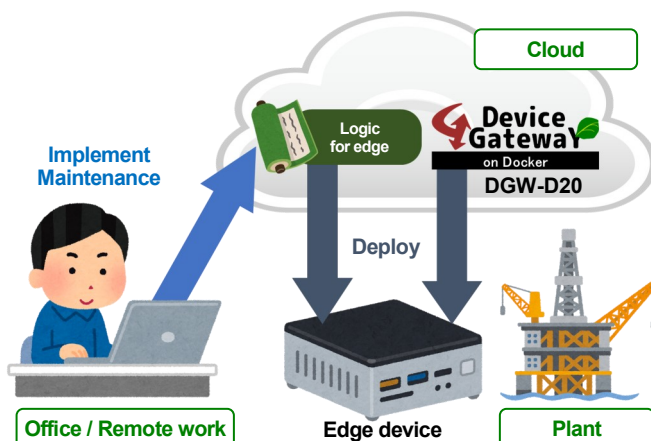


### AI product examples

Makers	Products
Amazon Web Services	Amazon SageMaker
Cross Compass	MANUFACIA
SKYDISC	SkyAI
Brains Technology	Impulse
Microsoft	Azure Machine Learning
RapidMiner	RapidMiner


## Edge development with centralized cloud management

Software version (DGW-D20) runs on the device you chose. Centralized cloud management can be deployed by DeviceGateway and your business logic for the edge device.



### Cloud service examples

Maker	Products
Amazon Web Services	AWS IoT Greengrass
Microsoft	Azure IoT Edge

  
 Get via Azure Marketplace

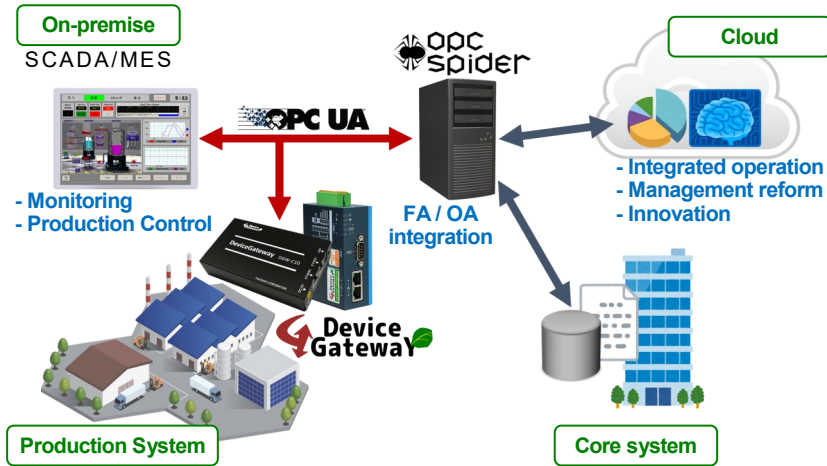
### Edge device examples

Makers	Products
OKI	AI Edge Computer "AE2100"
Makers	Products
OKI	AI Edge Computer "AE2100"
ATmarkTechno	ArmaArmadillo-IoT G4
ADVANTEC	UNO-2271G



## Monitoring / Production control / DX by OPC UA

Realizes monitoring / production control with low cost by using SCADA / MES packages. The ETL tool "OPC Spider®" integrates FA and OA systems without programming by using OPC UA, DB, and various interfaces, and promotes DX.



### OPC Client product examples

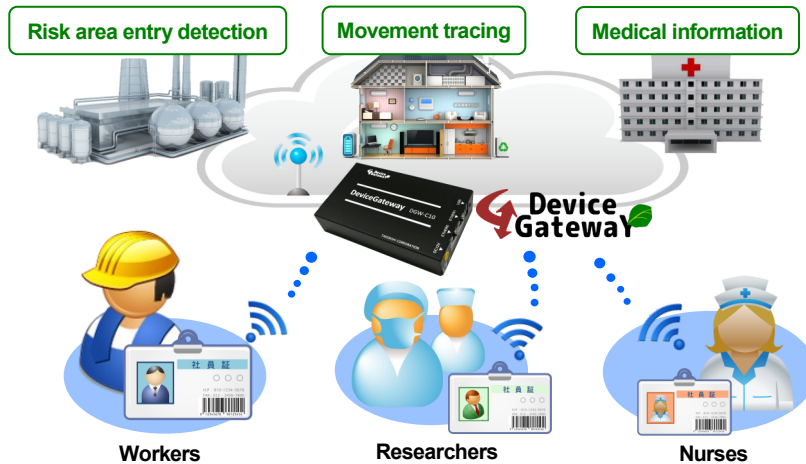
Makers	Products
Mitsubishi Electric (ICONICS)	GENESIS64
Siemens	WinCC
Rockwell	RSView
AVEVA (Wonderware)	InTouch/Historian
Takebishi	DxpLOGGER
Takebishi	OPC Spider

In addition, it has been tested by various OPC Clients at the annual Inter Operability Workshop Testing.



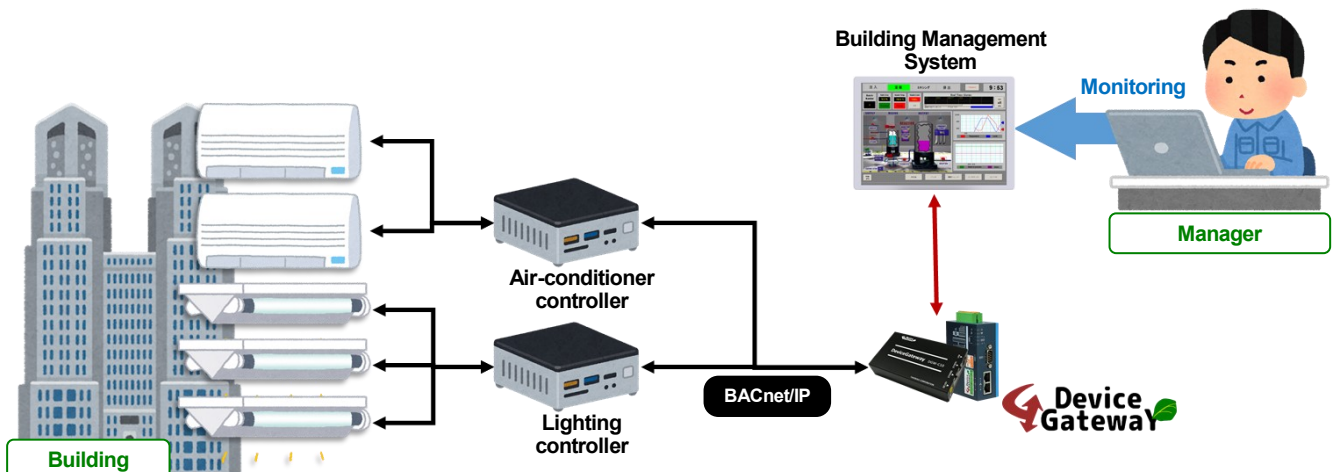
## Detecting invasion and managing the movement by Bluetooth positioning

Captures radio waves from Bluetooth tags and calculates position information based on its strength. Improves safety by detecting entry into unsafe areas and managing the movement of staff.



## Monitors building equipment by BACnet communications

Supports the open protocol "BACnet/IP" for building-automation. Contributes to efficient building management by gathering data from air-conditioner, lighting, and others.



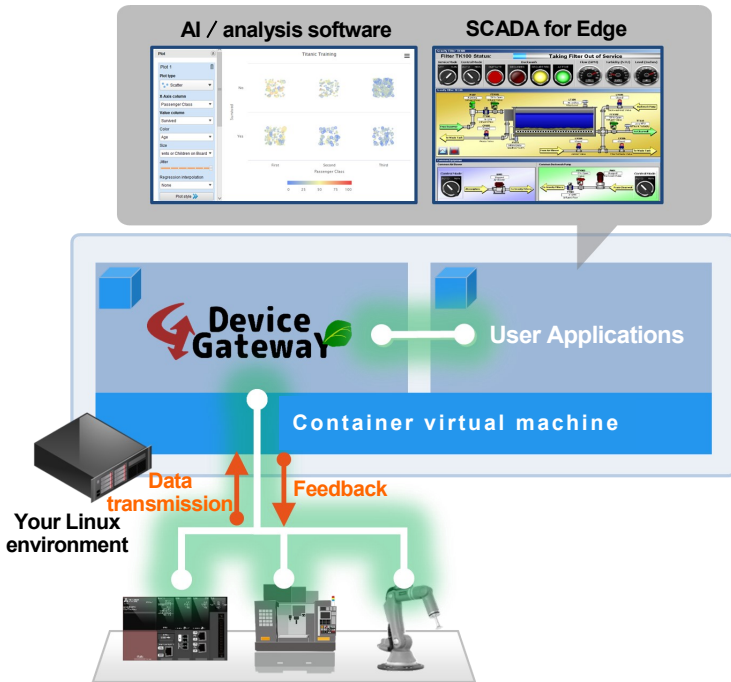


# Use Cases

## DeviceGateway® on Docker

Provided as software and coexists with user application

“DeviceGateway on Docker” (DGW-D20) is a software product as an image for virtualization container . It can coexist with other software packages or applications in Linux environment and link data.



**Operates in a virtual environment**  
The software is provided as a Docker image. You can use it for edge computing.



**Porting not required**  
Simply start by loading a Docker image.

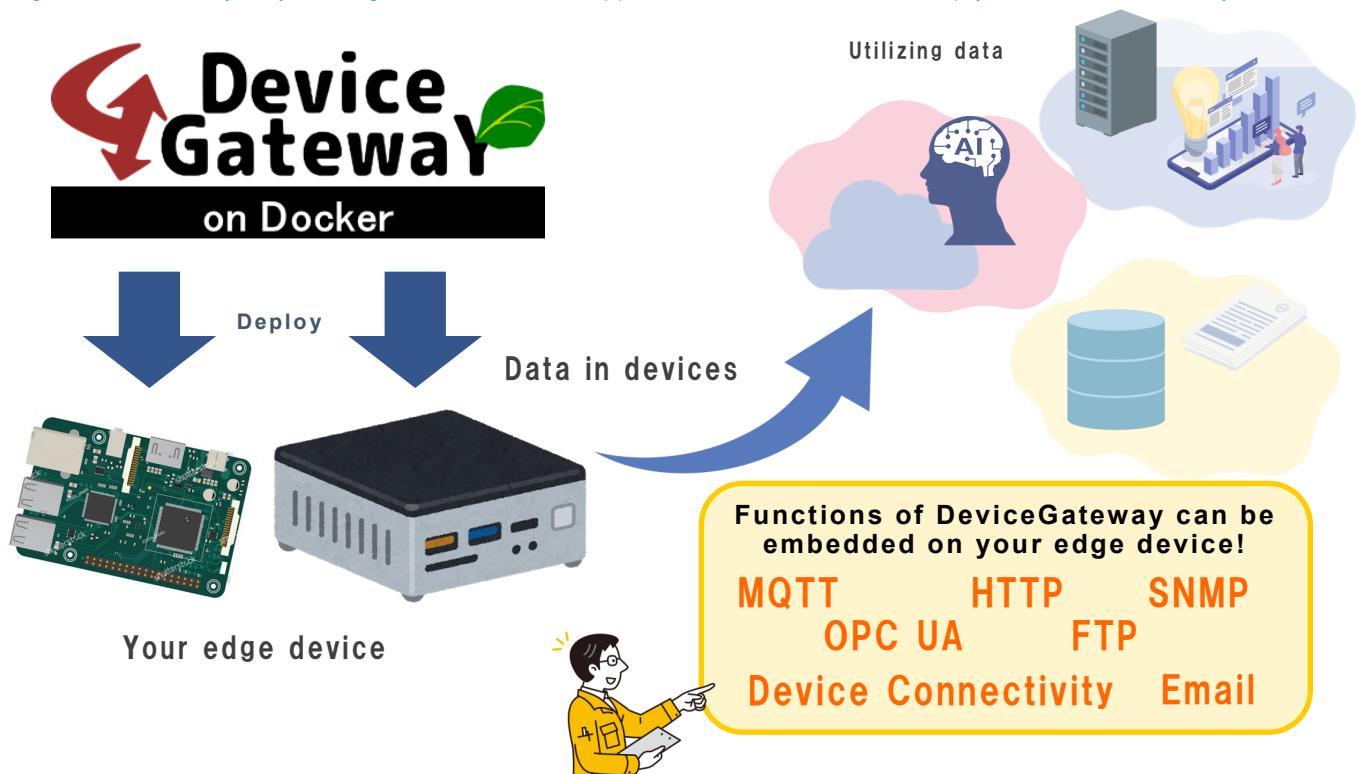
### Recommended operating environ-

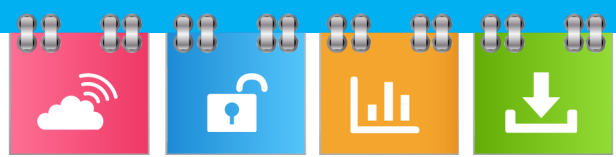
DeviceGateway on Docker	CPU: Intel Core i Series or higher Cortex-A15 1GHz or higher RAM: 512MByte or higher ROM:(x86_64) 100MByte or higher (ARMv7)100MByte or higher *A storage area for Volume Mount and Storage Mount is required separately.
License management server *	Windows 8.1 or later 32bit/64bit Mac OS X 10.11 or later Debian x86 /x64/ armhf/ aarch64 (DEB package) RedHat x86 / x64 (RPM package)

\* When selecting the software license key or in the execution environment where the hardware license key (USB) cannot be accessed from the Docker container, it is necessary to set up the license management server on the host or an external computer.

## Simple and Cost-effective connection to IT system!

We also provide reasonable DeviceGateway software models with a limited number of connections. Embedding DeviceGateway to your edge device, it can support OPC UA and MQTT simply and cost-effectively.



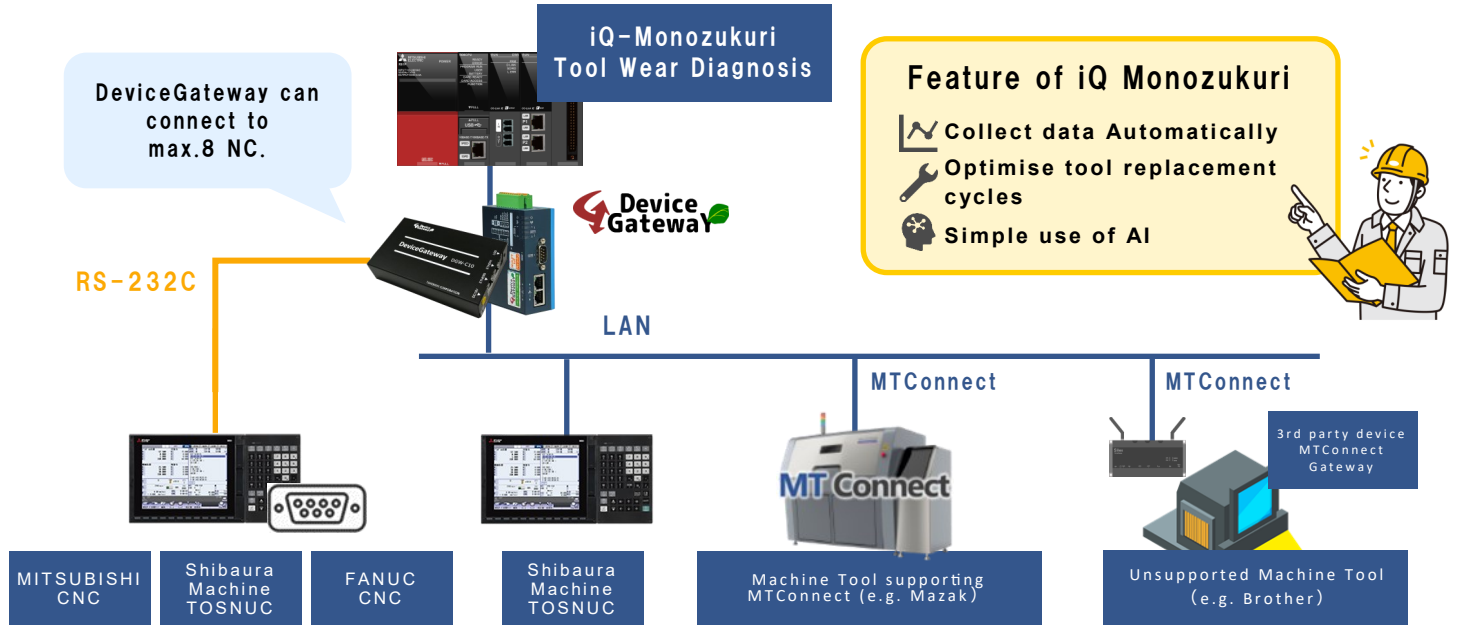


# iQ Monozukuri Tool Wear Diagnosis

Cost saving through prediction of tool deterioration and detection of irregular machinery.

"iQ Monozukuri," a Mitsubishi Electric FA application that informs the user when to replace tools at the proper timing, can link to the machine.

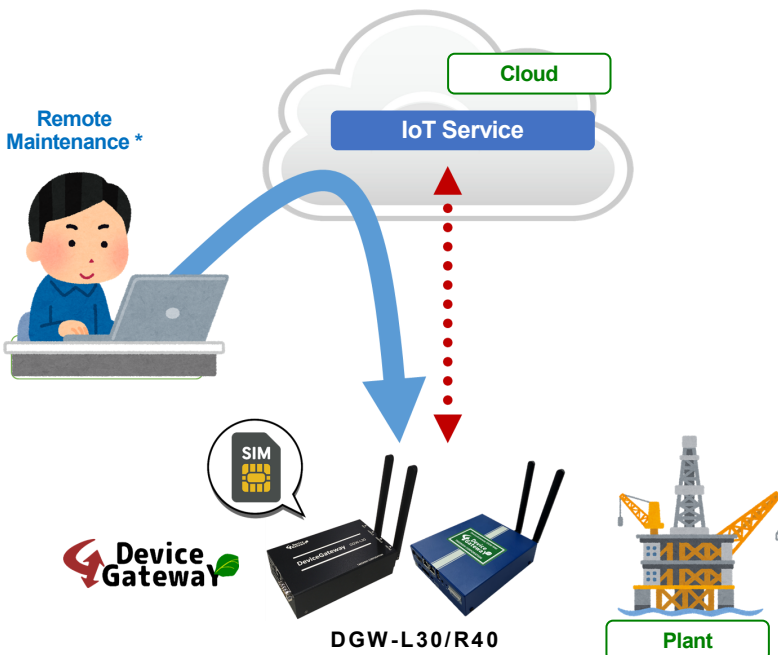
It automates the task of when to replace tools and can help to reduce costs.



# DeviceGateway® LTE model

## Mounted Multiple carrier LTE module

LTE model (DGW-L30 / DGW-R40) has a multiple carrier LTE module, so it is able to connect to the cloud via mobile network. It is useful for embedding into the equipment shipped to the end-user, or in difficult environments for wired network.



### Carrier/MVNO examples

Carrier/MVNO	DGW-L30
Docomo	✓
au	✓
Softbank	✓
SORACOM	✓
NTT-PC	✓






### SORACOM service examples

Services	Description
SORACOM Napter	On demand remote accessing
SORACOM Harvest	Data gathering / storing
SORACOM Lagoon	Dashboard
SORACOM Funnel	Cloud resource adapter

\* Remote accessing on demand via SORACOM Napter is available.

# Functional Specifications

## Hardware Functional Specifications

Model	DGW-W710	DGW-C10	DGW-F20	DGW-L30	DGW-R40	
Exterior						
Ethernet Interfaces	2Ports (10/100/1000BASE-T)	2Ports (10BASE-T/100BASE-TX/1000BASE-T)				
Serial Interfaces	RS-232C/485×1Port (DSUB9) RS-485×2Port (Terminal block)	RS-232C×1Port(DSUB9)	RS-232C×1Port(DSUB9) RS-485×1Port(DSUB9)	RS-232C×1Port(DSUB9)	RS-232C×1Port(DSUB9) RS-485×1Port (Screwless terminal block)	
Bluetooth Interfaces <sup>*1</sup>	-	Bluetooth Beacon, DeviceAdapter (Up to 3 units can be connected)				
Digital Inputs	4ch(voltage/non-voltage input, photo coupler isolated)	-	8ch(voltage/non-voltage input, photo coupler isolated)	-	2ch(voltage input, photo coupler isolated) 24ch (voltage input, photo coupler isolated)	
Digital Outputs	4ch(open collector, photo coupler isolated)	-	4ch(open collector, photo coupler isolated) 4ch(photoMOS relay, photo coupler isolated)	-	1ch(open collector, photo coupler isolated) 8ch(open collector, photo coupler isolated)	
Analog Inputs	-	-	4ch(voltage/current mode, 16-bit resolution)	-	8ch (voltage/current mode, 16-bit resolution)	
SD Card Slot	microSD 1 Slot	1 Slot (SD/SDHC compatible)				
USB <sup>*1</sup>	-	USB 2.0 (Type-A) × 1 port				
Power Supply	Power Supply Input	24VDC 2-pin screw-fastened connector	12VDC DC jack (AC adapter)	12VDC DC jack (AC adapter) or 3-pin screw-fastened connector	12VDC DC jack (AC adapter)	9 to 36VDC 2-pin screw-fastened connector
	Included AC Adapter	-	100 to 240VAC input (50 to 60Hz)/12VDC output			-
	Included AC Cable <sup>*2</sup>	-	Plug A (for Japan) 7A/125V			-
SIM Card Slot <sup>*3</sup>	-	-	-	1slot (Japanese Multi-carrier LTE)		
Antenna Connector	-	-	-	MAIN:SMA/SUB:SMA		
Included Antenna <sup>*4</sup>	-	-	-	Slave Antenna×2		
Maximum Power Consumption	5W (max usage 24VDC)	4.5W (max usage 100VAC)	10.5W (max usage 100VAC)	7.2W (max usage 100VAC)	8.3W (max usage 24VDC)	
Operating Temperature (in Celsius)	-20to+55 *Without condensation	-20to+60 *Without condensation	-20to+50 (100BASE-TX) -20to+40 (1000BASE-T) *Without condensation	-20to+40 *Without condensation	-20to+60 *Without condensation	
External Dimensions (mm) (Excluding protrusions)	W115.58 x D73 x H36	W81 × D137 × H29	W137 × D137 × H40	W81 × D137 × H40.2	W137 x D157 x H42	
Weight	170g	380g	700g	480g	920g	
mounting bracket	DIN rail hardware	DIN rail bracket (optional), wall bracket (optional)				
Standards and Compliance	CE, FCC, UL CCC (Exemption applied)	cCSAus	-	-	-	
Warranty Period <sup>*5</sup>	1 year from the date of purchase					

\*1 When using Bluetooth Beacon or Bluetooth Serial Communication, Bluetooth conversion adapter (recommended product: BLED112 by Silicon Labs) is required. DGW-W710 is not supported.

\*2 Please change to products that comply with local standards.

\*3 When using "nanoSIM", please use the included conversion adapter.

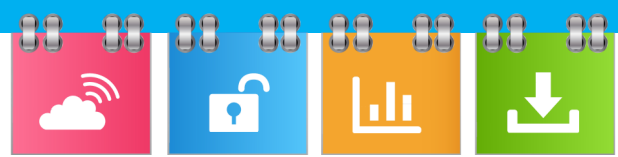
\*4 Please contact us for use of option.

\*5 Please check the Provision matters (<https://www.faweb.net/en/support/document/>) for the warranty details.

## Software Functional Specifications (model)

Model	DGW-W710	DGW-C10	DGW-F20	DGW-L30	DGW-R40	DGW-D20H	DGW-D20	DGW-D20B
Max Connections	8 connections					64 connections	16 connections	1 connection
Max Tags & Points	8,192 points					65,536 points	16,384 points	1,024 points
Max Events	64 events					128 events	64 events	





# Software Functional Specifications (shared)

Item		Description	Item		Description
Data sources	External Interfaces	Ethernet, Serial, Digital I/O, Analog Input etc.	OPC UA Server (Ver. 1.04)	Endpoint URL	opc.tcp://[IP address]:[port number]/
	Device Protocols	SLMP, MODBUS, MTConnect(1.3), BACnet etc.		Profile	Embedded UA Server Profile
	Max Connections	8 connections (DGW-D20 has 16 connections)		Security Policy	None, Basic128Rsa15, Basic256, Basic256Sha256, Aes128Sha256RsaOaep, Aes256Sha256RsaPss
Tag Management	Max Tags & Points	8,192 points (DGW-D20 is 16,384 points)		Security Mode	None, Sign, SignAndEncrypt
	Data Types	(U)Int8/16/32/64, Float, Double, Boolean, String * Arrays are supported for all types except String	User Authentication	Anonymous, User name/password, X.509 user certification	
	Extended Settings	Specify bit position of registers Byte swapping, Read/Write only attributes Specify byte position of word registers	Supported Command	Get, GetNext, GetBulk, Notification(Trap)	
	Simulation	Random, Increment, Sign, Static	MIB	Supplies original objects of this product	
	System Calculation	BCD conversion	Max Trap Targets	2 SNMP Managers	
	Scale Conversion	Linear, Square Root, Power factor	Sending and receiving	Subscribe, Publish	
	Alarms	Rate of change, Deviation, Level, Discrete	Protocol	TCP (WebSocket not supported)	
	Monitor Values	Current values can be monitored from the web browser	Authentication	User name/password, TLS authentication	
	Configuration	Operation	Web browser setup page (HTTP/HTTPS) is provided * Microsoft Internet Explorer 10 or higher	Supported functions	QoS0/1/2, Retain/Will, TLS/SLL
External		Import/Export (CSV/JSON format)	HTTP(S) Client (Ver1.1)	HTTP Authentication	None, Basic authentication, Digest authentication, OAuth2.0 authorization(only ROPC)
Events	Max Events	64 events		HTTP Method	GET, PUT, POST, DELETE, OPTIONS, HEAD, TRACE
	Triggers	Cycle, Time, Changed value, Changed value(Multiple tags), Area changed value, Received MQTT, Tag alarm changed, Area alarm changed, Disk size, Beacon detection, Update beacon data, Pre Recorder,		Proxy Server	Supported (User name/password authentication also supported)
	Actions	Loop start/end, Jump, Sleep, Compare value, Compare text, Calculate, Edit text, Get text, Get CSV element, Get JSON element, Write value, Refresh, Make message Send MQTT, Send HTTP, Send SQL, FTP upload, Send Kinesis, Send E-mail, Send MindSphere Send MotionBoard, Send kintone Buffer historical values, Extract buffered records, Reshape array elements, Write file, Read file, Rename file, Copy file, Move file, Delete file(s), List files, Get file count, Output log message, Restart, Shutdown, Make beacon list	SQL Client	Interface: JDBC 4.2 Database: Microsoft SQL Server2014, Oracle Database 11g, MySQL5.6, PostgreSQL 9 Query: SELECT, UPDATE, INSERT, DELETE Max Columns: 512 columns per query	
Buffering	Max Tags	32 tags ( 4 point per 1 setting, max 8 settings)	FTP Server	User Authentication: User name/password Transfer Mode: Active/Passive	
	Max Data	8,192 records each (converted data accumulated as 1 record)	FTP(S) Client	User Authentication: Anonymous, User name/password Transfer Mode: Active/Passive	
Offline Buffering	Applicable Interfaces	MQTT, HTTP(S), SQL, FTP, AWS Kinesis, SIEMENS MindSphere, WingArc1st MotionBoard	AWS Kinesis Client	Command	PutRecord
	Max Queue Size	8,192 queries		Partition Key	Arbitrary fixed value
Diagnostics	Operation Mode	Enabled (constantly) Enabled (when there is an communications error) Disabled	SIEMENS MindSphere Client	Proxy Server	Supported (User name/password authentication also supported)
	Network Diagnostics	Ping, Traceroute		Command	api/agentmanagement/v3/register, api/agentmanagement/v3/oauth/token, api/mindconnect/v3/exchange
User Accounts	Diagnostics Log	Data Source, Event, IoT Interface etc.	Security Policy	SHARED_SECRET	
	Applicable Target	WebUI, FTP server, OPC UA server	Proxy Server	Supported (User name/password authentication also supported)	
General Functions	Max Users	64 users	Authentication	Login ID, Authentication key	
	Language switching	English, Japanese	Command	POST, Realtime data connection WebAPI(JSON)	
	File Management	Diagnostics log, Certificates, Backup/restore	Supported Data	Status (Text, Number, Boolean)	
	Time Management	Correction of internal clock data (NTP server synchronization) (DGW-D20 is out of scope)	Max Columns	50 Status per query	
	Update	Firmware Update (DGW-D20 is out of scope)	Method	GET, PUT, POST	
Option	Firewall	Access restricted from external functions (DGW-D20 is out of scope)	Authentication	API token	
	DAP Communication	Virtual serial mode / Manual connection mode, Max 3 DAPs	Proxy Server	Supported (User name/password authentication also supported)	
iQ-Monozukuri Tool Wear Diagnosis for Machine Tools Protocol Converter	Water Standard Platform [Japan] (only available on DGW-W710/D20)		Standard Interface	Communication Method: MQTT(receive), HTTP(send) Contents Type: JSON	
			General Standard Interface	OPC UA	
			Machine Tool	8 Machine Tools - Operates as up to 2 converters per one this product. - Supports 4 machines per one convertor.	

\* An SD card is required to use the event function, buffering, offline buffering, diagnostic log function, and other functions.  
\* To use the SQL connection function, a relay service (for Windows or Linux) dedicated to this product must be set up.  
\* To use the DAP Communication, DeviceAdapter is required.  
(DAP Communication makes serial communication wireless by Bluetooth.)

## Supported Devices

Refer to the list of supported devices on following website.

<https://www.faweb.net/en/product/devicegateway/supportlist>



# Hardware Products

Product Name	Model	List Price
DeviceGateway Global model	DGW-W710	discretionary price
DeviceGateway Compact model	DGW-C10	discretionary price
DeviceGateway I/O equipped, Factory model	DGW-F20	-
DeviceGateway LTE equipped model	DGW-L30	-
DeviceGateway I/O and LTE equipped model	DGW-R40	-

# Software Products

Product Name	Protect Type	Model	List Price
DeviceGateway on Docker High spec model (Max Connections:64 connections, Max Tags & Points:65,536 points )	Hardware Key	DGW-D20H-HW-E	discretionary price
	Software Key	DGW-D20H-SW-E	
DeviceGateway on Docker (Max Connections:16 connections, Max Tags & Points:16,384 points )	Hardware Key	DGW-D20-HW-E	discretionary price
	Software Key	DGW-D20-SW-E	
DeviceGateway on Docker Basic model (Max Connections:1 connection, Max Tags & Points:1,024 points )	Hardware Key	DGW-D20B-HW-E	discretionary price
	Software Key	DGW-D20B-SW-E	

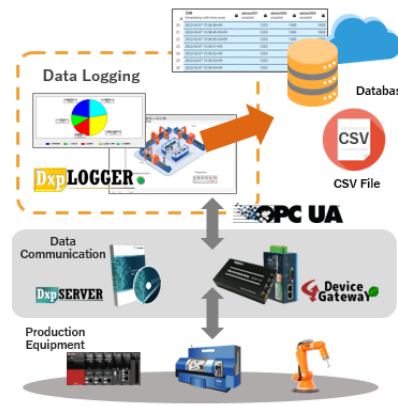
## 関連製品

### DxpLOGGER - OPC UA support data logging software -

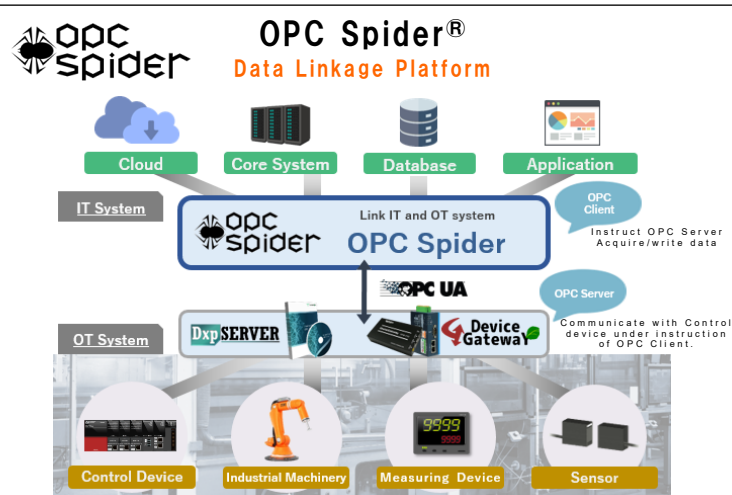
**High performance**  
Collect up to 65,536 data at any timing. (512 x 128 group)

**Connectivity**  
Using with OPC Server product, all data in production equipment can be collected.

**Multifunction**  
Provides a range of functions such as data logging, alarm monitoring, graph and monitoring display.



### OPC Spider® Data Linkage Platform



**TAKEBISHI** TAKEBISHI CORPORATION  
29, Mamedacho, Nishiyogoku, Ukyo-Ku, Kyoto, 615-8501, Japan

### Support Desk

Available: Weekdays  
9:00-12:00 / 13:00-17:00 (Japan local time)

Form : [www.faweb.net/en/support/form/](http://www.faweb.net/en/support/form/)  
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Videos : On YouTube at "Takebishi FAWEB" channel

