AC500 as IoT Gateway
Smart cloud connectivity via MQTT
**MQTT – the lightweight IoT protocol**

Message Queuing Telemetry Transport (MQTT) is a TCP/IP messaging protocol mainly used for lightweight communication to the cloud. It is based on a client/broker architecture which allows easy data distribution across various clients (e.g. devices, web services).

**Event-based communication:** Messages forwarded by broker as soon as they arrive

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**Benefits:**
- Supported by many IoT platforms / applications
- Low bandwidth usage
- Low battery consumption
- Easy integration of many devices

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**How it works**

Clients like controllers communicate with a broker situated in the cloud. They publish data event-based using topics. Other clients like SCADA-systems or monitoring applications can subscribe to these topics and receive messages immediately after publishing.

This event-based communication makes MQTT especially suitable for condition monitoring or messaging applications. Also, resource consumption is kept low as polling by the client is not necessary.

Furthermore, data is submitted with a small header and in simple JavaScript Object Notation (JSON) format. Both can be processed easily and involve small overhead. It enables low-bandwidth communication which keeps costs of data transfer at a minimum.

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**Typically used for:**
- Condition monitoring
- Resource-constraint networks
- Cost-efficient data transfer
Scalable cloud connectivity
Benefits of AC500

Platform-independent
With our generic libraries, the choice of the cloud platform is up to you!

Fieldbus-compatible
Full fieldbus-compatibility of the AC500 makes it easy for you to connect your whole network to the cloud. Thus, there is no need for additional gateways.

Flexible & scalable
All AC500 modules are compatible and can be changed easily or extended. The system can therefore evolve with your cloud!

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Benefits

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<td>Process control with functional safety</td>
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<td>Cost-efficient monitoring through intelligent data handling</td>
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Suitable for

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<td>Simple data transfer in small systems</td>
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<td>Applications with functional safety requirements</td>
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<td>Critical assets requiring permanent protection &amp; monitoring</td>
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AC500 & MQTT

Multiple areas of use

IoT gateway

**Application**
Small applications with simple I/Os and direct data transfer (e.g. energy monitoring of radio towers)

**Benefits**
- Cost-efficient
- Resource-friendly
- Low implementation effort

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IoT data center

**Application**
Critical assets that need permanent protection & monitoring (e.g. vibration monitoring for pumps)

**Benefits**
- Permanent asset protection
- Increased resilience to internet outages
- Cost efficient monitoring
Cost efficient solution
- Scalable & platform-independent cloud connectivity
- Adaptable functionality through interchangeable modules
- Smart data handling on edge-level for cost-efficient cloud-solutions

IoT Controller Advanced Application
Applications with functional safety requirements which need additional functionality (e.g. functional safety control for cranes).

Benefits
- Ensured safety for machines and staff

IoT controller Application
Demanding applications with a larger system architecture and complex data handling (e.g. remote data logging for drives/winches control)

Benefits
- Easy cloud connection of whole system
- Active control of transferred data
- Advanced control functionalities
Security options

Connection of single controller

Security level optimized for remote units
AC500 works as edge-gateway and is directly connected to the cloud. Security is established through TLS encryption.

Benefits:
- No additional gateway required
- Low latency

Application:
Small systems with non-critical data transfer.

Connection of secured network

Security level advanced
Connection of the whole AC500 network to the cloud using a separate gateway. Enhanced security is provided through additional firewall and/or VPN.

Benefits:
- Advanced level of security
- Easy integration of many edge devices

Application:
Large systems with many devices which need higher protection.

For additional information, please visit www.abb.com/plc and refer to our cyber security white paper.
AC500 PLC platform product ranges

Engineering suite
- ABB Automation Builder is the integrated software suite for machine builders and system integrators requiring state-of-the-art productive machine and system automation.
- Combining the tools required for configuring, programming, debugging and maintaining automation projects from one common intuitive interface, Automation Builder addresses the largest single cost element of most of today’s industrial automation projects - software.

Programmable Logic Controllers PLCs
- The AC500-eCo, AC500, AC500-XC and AC500-S scalable PLC ranges provide solutions for small, medium and high-end applications.
- Our AC500 PLC platform offers different performance levels and is the ideal choice for high availability, extreme environments, condition monitoring, motion control or safety solutions.
- Our AC500 PLC platform offers interoperability and compatibility in hardware and software from compact PLCs up to high end and safety PLCs.

Control panels
- CP600-eCo, CP600 and CP600-Pro control panels offer a wide range of features and functionalities for maximum operability.
- ABB control panels are distinguished by their robustness and easy usability, providing all the relevant information from production plants and machines at one single touch.
Additional Information

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