ABB Ability™ Smart Master
On premise & cloud-based device verification
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Harness the power of installed base data:
Efficiently, sustainably and cost effectively

What is verification?
Verification is the inspection and testing of a measurement device to establish that it is functioning within a specified permissible measurement error. Verification is typically used to meet regulatory/quality management system requirements. Industrial instrumentation is robust, very reliable and designed to operate for many years with minimal maintenance. In today's competitive environment customers are looking for ways to maximize their profitability, regular product verifications is one way to ensure processes operate continuously at their peak. Verification can also increase calibration intervals, saving money and reducing downtime.

The ABB verification story
Customers in water and other industries have been able to save large sums of money thanks to ABB's innovations in product verification over the last two decades.

1995 CalMaster released
- Worlds first flow verification system
- Step change in regulatory compliance and flow maintenance
- Tests to within 1% of original calibration certificate

2006 CalMaster2 released
- Worlds first battery-powered device verification system

2008 VeriMaster and ScanMaster released
- Flow verification testing without interrupting the measurement
- Testing using revolutionary in-built diagnostics coming from the device itself

2018 ABB Ability™ Verification for measurement devices
- Multi-device verification platform
- Traceable input/output testing

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Introducing ABB Ability™ SmartMaster

ABB Ability SmartMaster is the next generation verification tool suite and a condition monitoring platform for use with a range of ABB devices. Download the software (includes the relevant Verification Definition File (VDF)) to provide the best possible check of measurement accuracy, without stopping your process.

SmartMaster remotely verifies the accuracy and checks the diagnostics status of the device. With the licensed software version, test reports can be generated and stored locally for further analysis. Results can also be compared with historical measurements using the trending function.

Building on ABB's fingerprint philosophy, each device is verification tested before it leaves the factory. The software enables the operator to choose whether to use either the factory fingerprint or to create a new fingerprint based on real site conditions after product commissioning. All verifications performed in the field can then be compared with the fingerprint data and previous tests to ensure device performance has not degraded.

SmartMaster is a solution which verifies device diagnostic data remotely via a developed platform without interrupting ongoing measurement.

Onboarded devices can undergo verification with any of the communication pillars below:
- DCS FIM connectivity
- Cellular connectivity
- Bluetooth connectivity
- Ethernet (OPC UA) connectivity
DCS FIM Connectivity

A typical system with 800XA DSC supported system consists of:
- 800XA DCS with FIM connectivity
- A FIM station from plant network
- A Edge device

The Edge device is an embedded system that contains a microprocessor, storage memory (RAM and ROM), I/O ports, and a system of interconnecting wires. The Field Information Manager connectivity to ABB Ability System 800xA is supported for 800xA 5.1 RevD and 6.0 versions.

The basic part of the FIM connectivity to ABB Ability System 800xA is to connect software. The FIM 800xA Connect is based on an FDI communication server and allows the FIM Client to access ABB Ability System 800xA.

SmartMaster reads the data from FIM and uses it to perform verification. There is no write operation from FIM to the plant network. As this is read-only and one-way operation; has no impact on ongoing measurements and no modification to device configuration is performed.

With secure platform and architecture, Asset Verification is performed without any impact on measurements and without disturbing any ongoing processes at plant.

Cellular Connectivity

A cellular connectivity system consists of Field instruments capable to communicate on FTPS over 4G/3G communication, the FTPS Server deployed on cloud platform/physical machine and the terminal equipment with SmartMaster application. The Network topology of Cellular 4G telemetry system is shown in Figure 2 below:

The FTP over TLS (also called as FTPS) is used for the data exchange between the FTPS Server and the field instrument as well the data exchange between FTPS Server and SmartMaster.

The field instrument and SmartMaster play the role of FTPS Client, they use the FTPS Server as a transfer station for data exchange in a routing/ad-hoc approach.

SmartMaster application reads/write the data on field instrument from FTPS Server and performs Verification.

![Figure 1: ABB DCS FIM connectivity](image1)

![Figure 2: Cellular connectivity verification](image2)
SmartMaster features

**Premium**
- Supports up to 400 assets
- Scheduled Verification
- Accuracy Statement for tested device
- Parameter level trend
- Service Recommendations
- Data storage up to 5 years

**Advanced**
- Supports up to 150 assets
- Licensed Software testing included
- Accuracy Statement for tested device
- Report Generation
- Historical Verification Data (Monthly View)
- Instrument Diagnostic Information
- Cause and Recommended Actions

**Standard**
- Supports 24 devices
- Data storage up to 1 month
- Installation app (Windows 10)
- Device Health Indication – Pass/Fail

Features details

**No of assets:** The onboarded number shown is the number of devices user can add to application, schedule, and perform verification for respective devices.

**Scheduled verification:** Any device can be scheduled for verification with multiple configurable repeated time e.g. daily, weekly and monthly.

**Accuracy Statement:** The particular statement mentions working limits of the parameters and comments on overall verification status. This is available in verification report of the instrument as part of overall status.

**Diagnostic information:** Verification is performed on a set of parameters, sometimes grouped together. All alarm conditions are noted against these verification groups and reported.

**Cause and recommended actions:** Every alarm triggered in device is supported with possible causes and suggestions to remedy these. Verification report details out a Diagnostic Information table which includes this information.

**Historical verification data (monthly view):** This view represents a trend based on number of verification results in a particular month. The trend also allows hovering on a specific date to see data-point details. There is a provision to select a particular month on user interface.

**Installed base mix:** It represents various device types onboarded into SmartMaster application.

**Group devices:** A user created group verification status can be seen briefly. Groups can be expanded to see details and can be collapsed to see a brief view.
**Ease of operation**

The ease of operation of the software is of real benefit to the user, providing a list of verifications and the status of each device. Regardless of which type of device you are testing the results are stored in the same format for ease of use. Certificates can be printed via the software in Adobe® .pdf format.

**Condition monitoring**

A major benefit is that the software can also be used as a diagnostic and condition monitoring tool. It stores all measured values automatically and includes visualization in a graph to enable long-term trend analysis.

**Moving from preventive to predictive maintenance methodology**

Detailed observation can give early warning of a possible system failure, enabling maintenance engineers to anticipate problems and take planned remedial action in advance.

**Software interfaces**

ABB Ability SmartMaster is a versatile software platform that allows the customer to choose how they want to use it. A user-friendly software user interface allows to see graphical contents and an operator level view makes it easier to monitor.

- Local data storage
- Customizable or Annual
- Multi-product testing or single product

**Specification - Software**

Supported Windows OS
- Windows 10

Supported Communication Pillar
- DCS-FIM Connectivity
- Cellular Connectivity

Software Language
- English

The application is compatible with following ABB transmitters.
- FEP 300/500 ProcessMaster/HygienicMaster
- AquaMaster 4 MobileComms – 4G
- FEX 100 WaterMaster
- FET6XX ProcessMaster/HygienicMaster
- LMT100 - Magnetostrictive level transmitters
- LLT100 - Laser Level Transmitter
- LWT300 – Guided Wave Radar transmitter
- TTx300 - Temperature Transmitter
- 266 PdP - Pressure Transmitter
- FCB400 Coriolis Transmitter
- FSV430/FSS430 – Vortex/Swirl Master
- FMT500 - FMT2XX/4XX Sensyflow
- EDP300
Block schematic for SmartMaster

Additional information

Cybersecurity
This product is designed to be connected to a digital communication interface and to communicate information and data via that interface. It is your sole responsibility to provide and continuously ensure a secure connection between the product and your network or any other network (as the case may be).

You shall establish and maintain any appropriate measures (such as but not limited to the application of authentication measures etc.) to protect the product, the network, its system, and the interface against any kind of security breaches, unauthorized access, interference, intrusion, leakage and/or theft of data or information.

Accessories list
- Edge device adaptor
### Ordering information

<table>
<thead>
<tr>
<th>Main Order Number</th>
<th>1 to 3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
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<tbody>
<tr>
<td>SRV500 ABB Ability SmartMaster</td>
<td>SMV</td>
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</table>

#### Types of connection

- ABB DCS FIM: A
- Cellular (4G): B
- *Cellular (NBIOT): C
- *Bluetooth: D
- *Ethernet (OPC UA): E

#### Deployment type

- Cloud only: 0
- On-premise: 1
- Edge + Cloud: 2

#### Number of devices

- Less than 25 (Standard): 0
- Between 26 - 150 (Advanced): 1
- Between 51 - 400 (Premium): 2

#### Reserved

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#### Documentation language

- English: M5

*Communication pillars to be supported in future releases*
## Supported products

<table>
<thead>
<tr>
<th>Measurement type</th>
<th>Device name</th>
<th>Device type</th>
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<tr>
<td>Electromagnetic flow measurement</td>
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<td>WaterMaster</td>
</tr>
<tr>
<td></td>
<td>WaterMaster</td>
<td></td>
</tr>
<tr>
<td>Electromagnetic flow measurement</td>
<td>WaterMaster, ProcessMaster, HygienicMaster FEW510/530; FEP610/630; FEH610/630</td>
<td></td>
</tr>
<tr>
<td>Laser level measurement</td>
<td>LLT Laser</td>
<td>LLT100</td>
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<tr>
<td>Laser level measurement</td>
<td>LMT Magnetostrictive 001A</td>
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<tr>
<td>Laser level measurement</td>
<td>LWT</td>
<td>LWT</td>
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<tr>
<th>Measurement type</th>
<th>Device name</th>
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<tbody>
<tr>
<td>Mass flow measurement</td>
<td>CoriolisMaster</td>
<td>FCx1xx/FCx4xx</td>
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<tr>
<td>Positioner</td>
<td>PositionMaster EDP300</td>
<td>EDP300</td>
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<tr>
<td>Pressure measurement</td>
<td>2600T 266 Pressure</td>
<td>2600T 266 Pressure</td>
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<tr>
<td>Swirl &amp; Vortex flow measurement</td>
<td>VortexMaster, SwirlMaster</td>
<td>FSx430/450 (1A9F/1A43)</td>
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<td>Temperature measurement</td>
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<td>Thermal mass flow measurement</td>
<td>FMT 2xx4xx</td>
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Acknowledgments

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