It is important to read these instructions in their entirety before installing the ABB Ability™ Smart Sensor for pumps.

ATTENTION
The Smart Sensor should be installed by technically qualified personnel. Failure to install the sensor in compliance with applicable codes and regulations and according to the manufacturer’s recommendations may result in electrical shock, fire hazard, unsatisfactory performance or equipment failure, and may void the sensor warranty.

WARNING
Only qualified individuals who are familiar with appropriate national codes, local codes and sound practices should install, repair or modify electric motors and/or related accessories. Installation should conform to appropriate codes and practices. Failure to follow these instructions could result in serious personal injury, death and/or property damage.

WARNING
Electrical live circuit hazard. Do not touch electrically live parts or equipment. Disconnect, lock out and tag out the motor’s power supply before installing or servicing the sensor.

CAUTION
Surface temperature hazard. The external surface of an electric motor or the driven pump may reach temperatures which can cause discomfort, burns or injury to individuals who come into contact with the hot surface. For safety reasons the equipment should be switched off and allowed to cool before attempting to install the sensor. Equipment surface temperatures should only be measured with suitable instruments and not estimated by hand touch or direct skin contact. Failure to observe this precaution could result in bodily injury.

CAUTION
Do not replace batteries! Incorrect use of batteries voids the certifications of the Smart Sensor, such as safety certifications and IP rating. Dispose of used sensors according to instructions.
Quick start guide

- **Step 1:** Install the ABB Ability™ Smart Sensor Platform App
  - The Smart Sensor Platform App can be found in App Store (Apple) and Google Play Store (Android).
  - Note: In some countries these stores may not be accessible. For more information see www.abb.com/smartsensor.

- **Step 2:** Register in the ABB Ability™ Smart Sensor Platform App
  - Follow the sign-up link in the app
  - Alternatively, sign up on the web portal at https://smartsensor.abb.com
  - Skip this step if you are already registered

- **Step 3:** Log in to the ABB Ability™ Smart Sensor Platform App
  - Follow the instructions on the screen

- **Step 4:** Install the ABB Ability™ Smart Sensor
  - Verify that you have the right components and install the sensor according to the instructions described in this manual.

- **Step 5:** Activate the sensor with the ABB Ability™ Smart Sensor Platform App
  - Follow the instructions on the screen.

- **Step 6:** Add the pump in the ABB Ability™ Smart Sensor Platform App

- **Step 7:** Activate the sensor’s subscription
  - Manually with the ABB Ability™ Smart Sensor Platform App
  - Automatic renewals on ABB Ability Marketplace™

- **Step 8:** Take first measurements and check the asset condition
  - Select the asset and navigate to “Load Measurements”

- **Step 9:** For more detailed instructions, visit www.abb.com/smartsensor

Installation instruction

Please follow the following instructions for the installation of ABB Ability™ Smart Sensors on pumps.

**Mounting position on pumps**

1. The sensor must be located on the pump housing above the drive-end bearing of the pump, closest to the motor coupling.
2. For best Bluetooth® communication, mount the sensor with a clear line of sight to any communication devices to be used: your smartphone or a Bluetooth® gateway.
3. The mounting orientation must be such that the A-axis on the sensor housing is parallel to the rotating shaft. If this is not physically possible, the T-axis must be parallel to the rotating shaft.

**Supported pumps**

- **Pump type:** Single-stage, overhung centrifugal pump
- **Impeller type:** Single-channel or vortex
- **Fluid type:** Water or wastewater
- **Min. recommended no. of impeller blades:** \( b_{\text{MIN}} = 3 \)
- **Speed control:** fixed / direct-online (DOL) or variable-speed
- **Maximum blade-pass frequency (BPF):** 6000 RPM
  - Rotating speed \( \omega \)
  - No. of blades \( b \)
    \[
    \text{BPF} = \omega \times b < 6000 \text{ RPM}
    \]
- **Power / size:** shaft height from 150 mm to 450 mm

**Items needed**

The ABB Ability™ Smart Sensor kit includes:

- **1** Loctite™ 3463 mounting putty (1 tube)
- **2** Receiving mount
- **3** Mounting bracket
- **4** Phillips head screws (2 qty) M4-0.7 x 10 mm
- **5** Tapered hex Drive Flat Head Screw (1 qty) 1/4” x 5/8” (UNF 28)
- **6** ABB Ability™ Smart Sensor for pumps
Additional items needed, but not included in the kit:
- Degreasing agent
- Clean shop rag
- Rubber gloves
- Mechanical abrasive pad (e.g. sandpaper)
- Allen wrench (4 mm or 5/32")
- Small Phillips head screw driver
- Leveling tool
- Cutting tool
- Loctite™ Blue Threadlocker

Safety and technical information on Loctite™ 3463 adhesive putty: http://www.henkel.com

WARNING
Direct skin exposure to solvents and/or threadlocker could cause discomfort or injury, including, but not limited to, burning or skin irritation. Use appropriate protective gloves and goggles when following these instructions.

Installation steps

Use the receiving mount included in the kit.

Step 1
Use solvent (i.e. paint thinner or acetone) to remove debris and oils from mounting surface.

**CAUTION:** REVIEW AND FOLLOW ALL MANUFACTURER’S INSTRUCTIONS AND SAFETY PRECAUTIONS WHEN USING SOLVENTS.

Step 2
Use sandpaper or similar abrasive material to remove paint from mounting surface. Repeat step 1.

Step 3
Remove putty from tube and cut out between 1/4 and 1/3 of the putty for installation of receiving mount.

**CAUTION:** REVIEW AND FOLLOW ALL MANUFACTURER’S INSTRUCTIONS AND SAFETY PRECAUTIONS WHEN USING ADHESIVE PUTTY.

Step 4
Squeeze, knead, twist and roll putty until it has a uniform, homogeneous color according to manufacturer’s instructions. This should take 5–10 minutes.
Step 5  
Firmly apply putty to the clean housing surface or, alternatively, wrap the putty around the end of the receiving mount before attaching to the surface. The putty should be approx. 1.25 inch (3 cm) wide.

Step 6  
Immediately after applying putty, insert receiving mount into center of putty, pressing firmly. Form any excess putty around the sides of the mounting piece.

**CAUTION: ALLOW SUFFICIENT TIME FOR PUTTY TO HARDEN BEFORE PROCEEDING. CURING TIME DEPENDS ON SURFACE AND AMBIENT TEMPERATURES. TYPICAL CURING TIME IS 10 MINUTES, BUT THIS CAN TAKE LONGER IN COLD ENVIRONMENTS.**

Step 7  
Secure bracket to receiving mount using the hex head screw. Apply Loctite™ or equivalent threadlocker to the screw threads, ensuring that the screw head is locked 1 mm above chamfer for the best heat and vibration transmission.

**CAUTION: REVIEW AND FOLLOW ALL MANUFACTURER’S INSTRUCTIONS AND SAFETY PRECAUTIONS WHEN USING THREADLOCKER.**

Step 8  
Use a level to verify the alignment. The axial direction (white line) must be parallel to the pump shaft. The tangential axis (red line) should be at a right angle to the axial line, on a plane tangential to the housing. The radial direction (black line) points towards the center line of the shaft. If this is not possible, the T-axis must be parallel to the rotating shaft.

Step 9  
Use two Phillips head screws to securely fasten the ABB Ability™ Smart Sensor to mounting bracket.

**NOTE: After commissioning, the sensor has a two-month trial period with full functionality. After the trial period, the usage can be continued by activating a subscription acquired from a local ABB sales unit or from ABB Ability Marketplace™. Please check with your local ABB partner if the ABB Ability Marketplace™ is available in your region.**

Next step  
Digitally connect Smart Sensor using the ABB Ability™ Smart Sensor Platform app. Log on using your ABB credentials and follow the prompts to connect.