xylem
Let's Solve Water

Application Guide /
White Paper

optimyze®

CONDITION MONITORING SOLUTIONS TO OPTIMIZE YOUR BOTTOM LINE

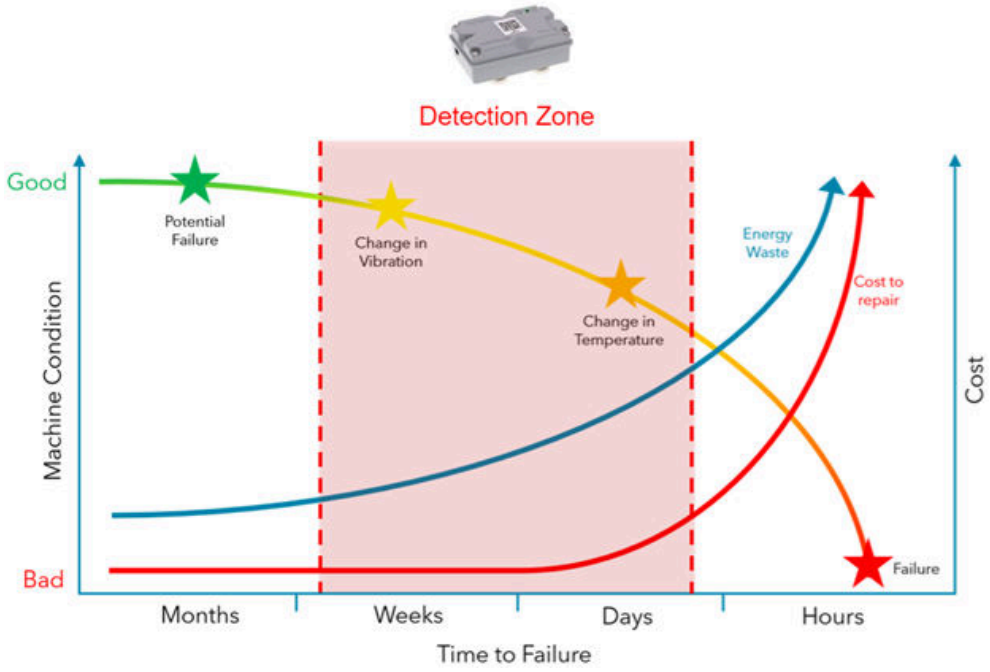
XYL-optGD-14009

optimyze Condition Monitoring Solutions

Introduction to Condition Monitoring

Corrective maintenance can cost ten times as much as a predictive maintenance strategy. Predictive maintenance is an approach where operators carry out maintenance before catastrophic machine failure occurs; when a condition is detected.

The optimyze condition monitor is a cost effective and easily deployable wireless device that can detect potential failure of a machine by sensing changes in vibration and temperature (as seen in the detection zone to the right). It's not only a condition monitor but a total health guidance and predictive maintenance solution. The chart to the right displays high cost to repair and energy waste at failure, but within the detection zone a significant savings in these are to be had.



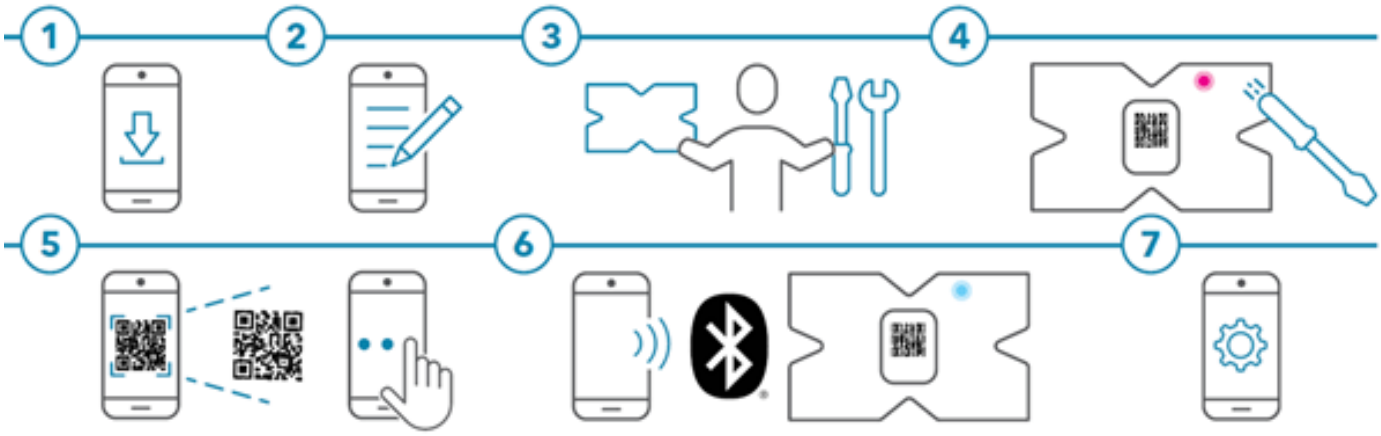
Pump Category	Standard	Pump Type	Vibration Velocity (mm/s) and LED Color		
			LED	Power Rating 00kW	Power Rating >200 kW
1	ISO10816-7	Category 1 - critical	Green	s 4.0	s 5.0
			Yellow	Between 4.0 and 6.6	Between 5.0 and 7.6
2	ISO10816-7	Category 2 - general	Red	> 6.6	> 7.6
			Green	s 5.1	s 6.1
			Yellow	Between 5.1 and 8.5	Between 6.1and 9.5
3	ANSI/HI9.6.4	End suction, vertical inline, split case, and horizontal multistage	Red	> 8.5	> 9.5
			Green	s 4.9	s 6.2
			Red	> 4.9	> 6.2
4	ANSI/HI9.6.4	Vertical turbine and vertical multistage	Green	s 4.3	s 5.6
			Red	> 4.3	>5.6

optimyze sets a baseline for your machine using either ISO or ANSI/HI vibration standards and historical data trends. Once the normal condition is established, optimyze then gives health guidance and predictive maintenance advice. The natural steady state properties of your machine vary based on the machine type, so a few additional parameters are inputted when setting up optimyze. Below is a chart displaying the vibration velocity (mm/s) thresholds based on the vibration standard and additional parameters (power rating, and pump type). The resultant asset health is based on a traffic light warning system; the green LED color would be considered in the "normal" or acceptable range and so on.

Getting Started

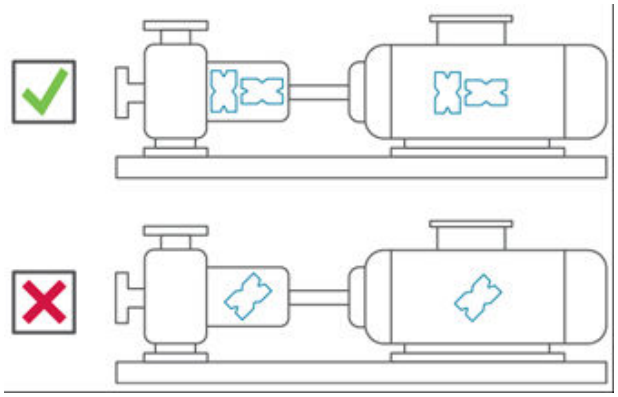
optimyze sensors use Bluetooth® wireless technology to communicate vibration and temperature data to a smart device, then automatically share with other local users through a cloud. This enables condition-based maintenance strategies for pumps, motors, and other key assets. Early identification of potential failures reduces the cost of repair.

Follow the quick start guide to download the mobile app, and pair your smart device to the **optimyze** sensor (see part numbers below) in the mobile app via Bluetooth.

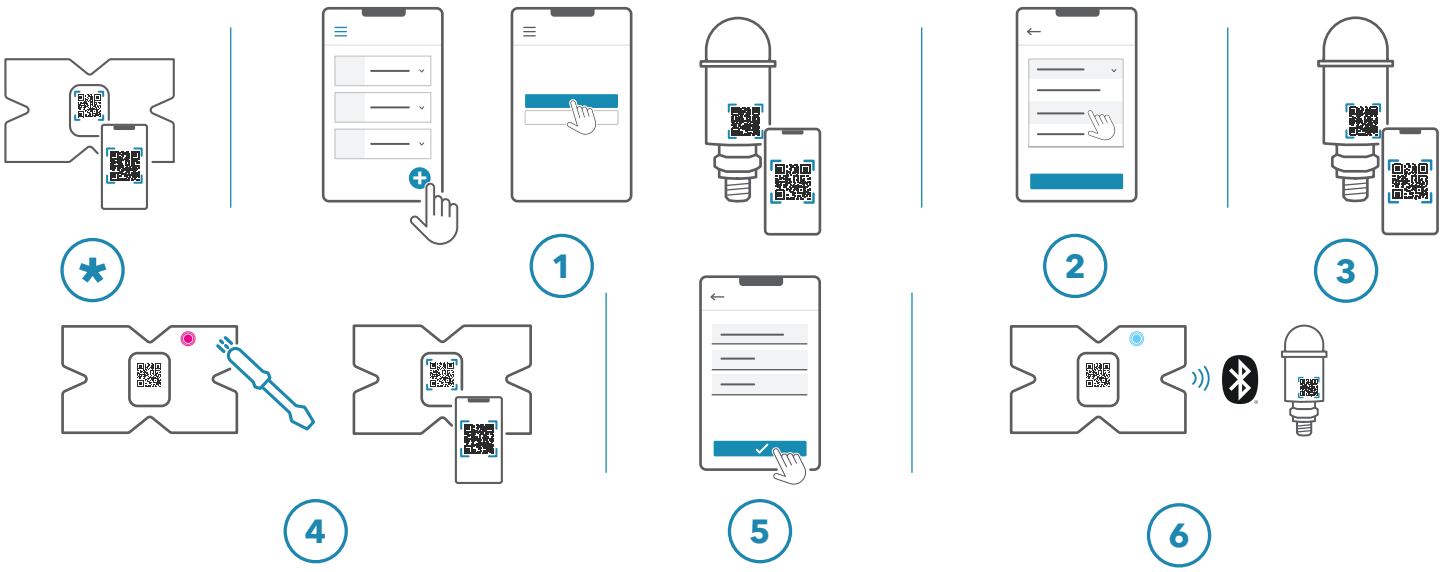


All users who want to view data from the optimyze sensor(s) must follow steps 1-7 to pair their own smart device to the sensor(s) in the mobile app via Bluetooth.

Install **optimyze** sensor near the asset bearings.
To ensure orientation of sensor is correct, see figure.



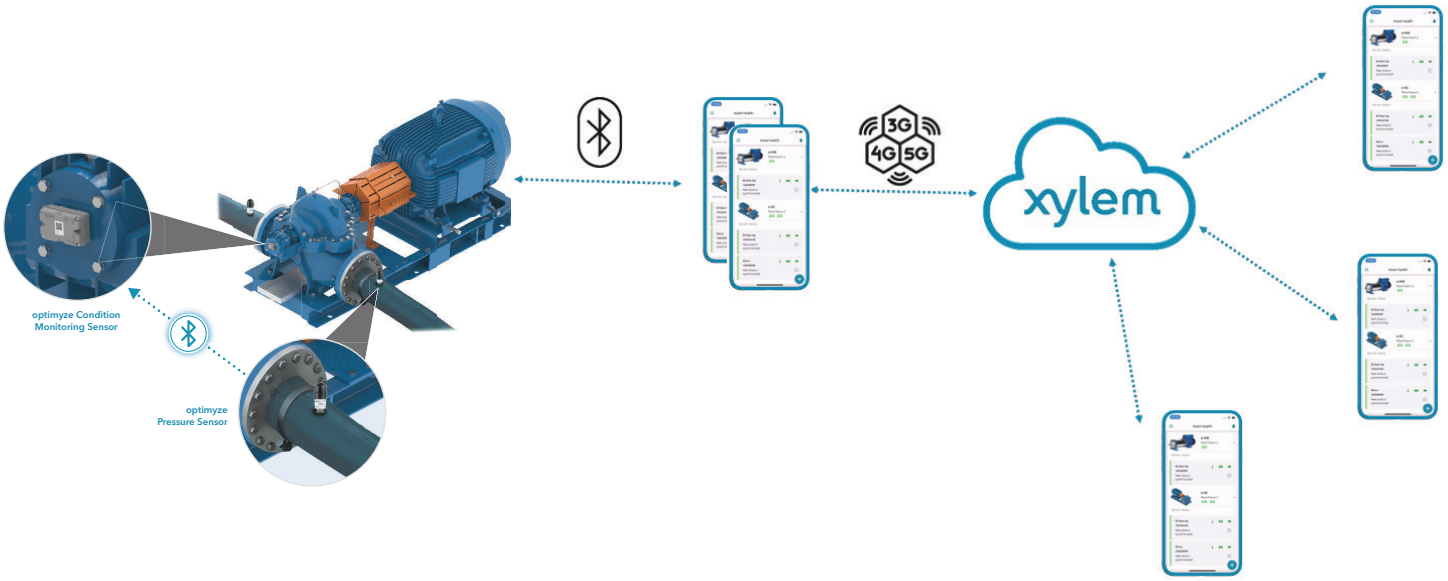
Pairing Xylem's optimyze pressure sensors to a condition monitor sensor is only one additional step in the setup process. Follow the quick start guide for the pressure sensor after configuring the optimyze sensor in the mobile app.

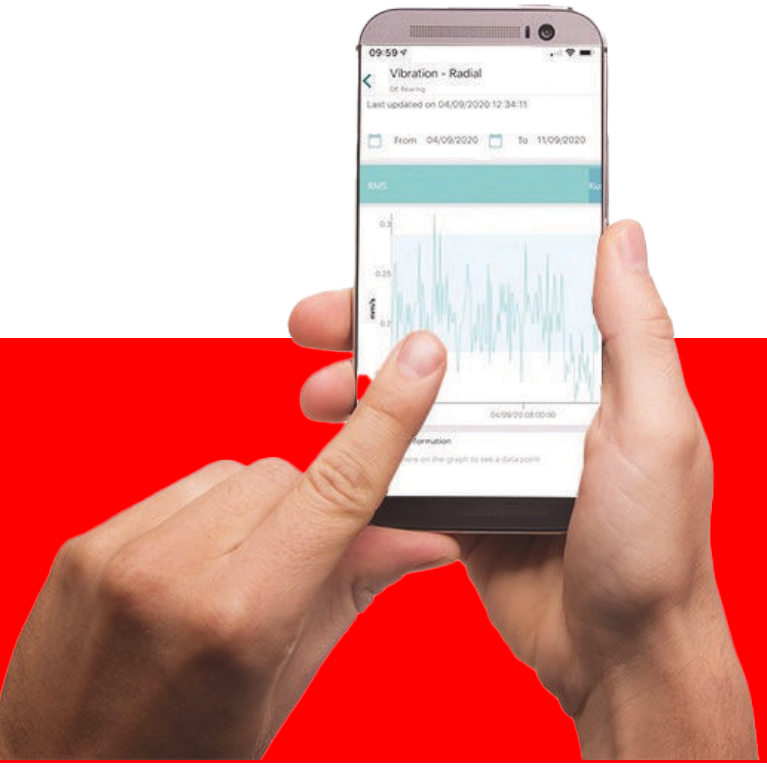


Solutions for the way you work

What happens after install?

New data is collected at a customizable sampling frequency, chosen when the sensor is registered in the mobile app. New data is stored in the sensor until a user goes into Bluetooth range of the sensor (re-connecting with their smart device). If the option to sync to the cloud is enabled in the mobile app, then new data uploads to the cloud where it is stored and shared with all users connected to the sensor(s) via the mobile app.

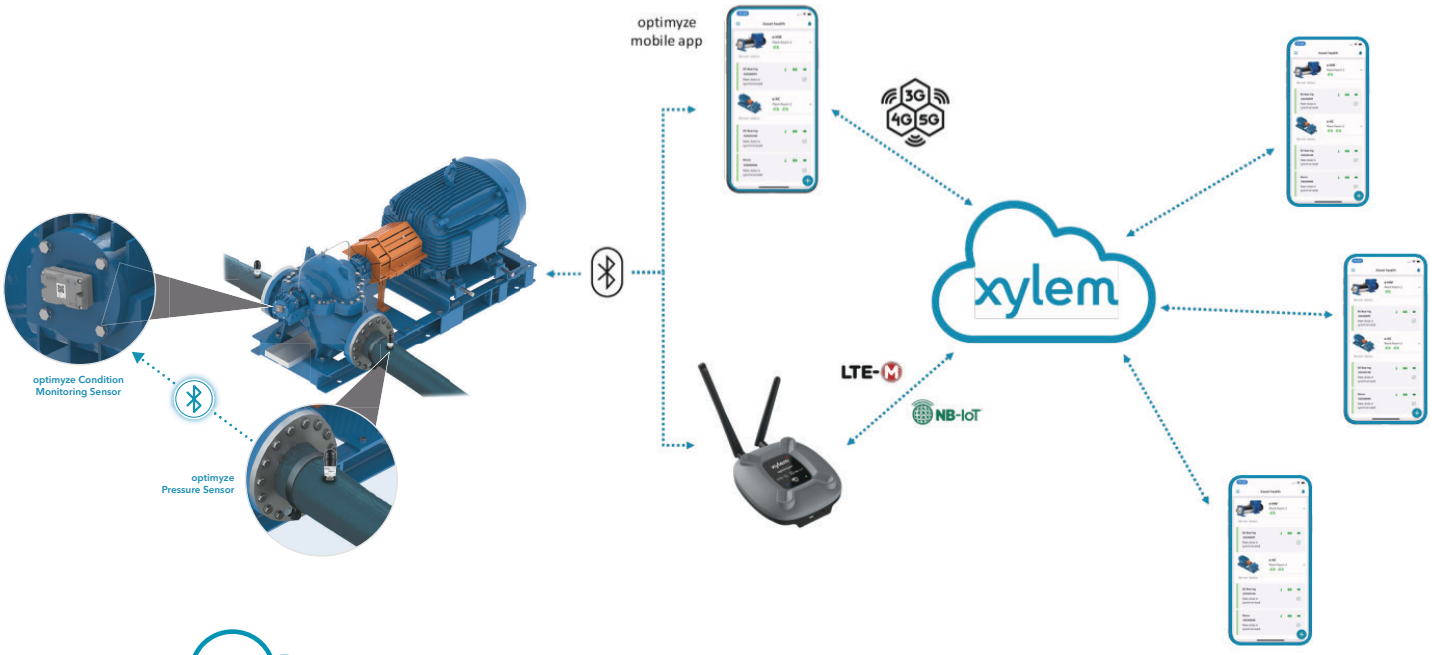


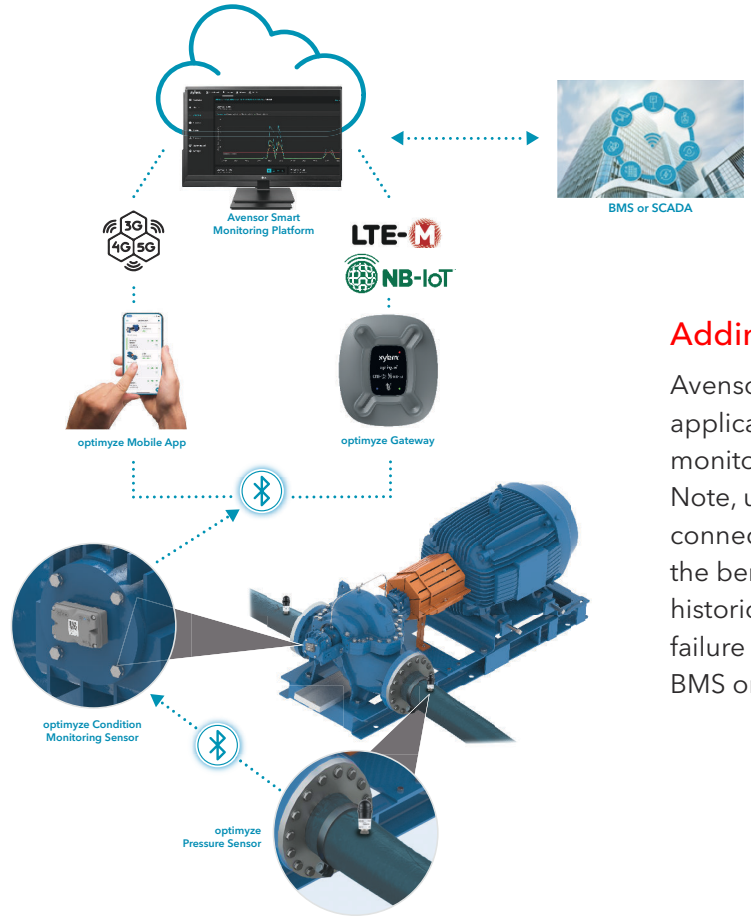


In addition to retrieving data stored in the sensor, any user who has connected to the sensor, and is within Bluetooth range, can force read data from the sensor taking a live data sample.

Adding a Gateway Device

With the separate purchase of a Gateway, users can access data from anywhere stored on the cloud without retrieving data with their mobile device. The Gateway pulls new data from the optimyze sensors via Bluetooth connection, then pushes the data to the cloud using a cellular network.





Adding Avensor

Avensor, Xylem's IoT platform is a mobile or web-based application that retrieves data from the cloud and offers smart monitoring solutions for users with access anytime, anywhere. Note, users accessing data through Avensor do not need to connect their smart device to the sensor(s). Avensor amplifies the benefits of the optimyze mobile app but also collecting historical data to analyze trends and generate alerts preventing failure and equipment downtime. Avensor is compatible with BMS or SCADA systems.

Features & Part Numbers

Features Available with Avensor

Station and Device Management

The user can manage information about the stations and devices:

- View connectivity status for connected devices.
- Change station or device names.
- Enter location.
- Enable or disable alarm monitoring.

Data Management and Analytics

- Shows live data & stores it.
- Displays trend graphs for analysis of data.
- Option to download data for further analysis outside the application.

Alarm Management

Avensor shows alarm notifications from connected devices.

- There are individual alarms for each device and station in the system.
- All alarms have a default priority level for each device. It is possible to change the priority level of each alarm in the system.
- Create a call list to notify users when there is an alarm.
- There are several options to acknowledge an alarm (web, mobile, SMS).
- All alarms are recorded in the alarm log.

More About the **optimyze** App

- Easy access to documents such as operating manuals, parts lists, and technical brochures for Xylem-specific equipment
- Dashboard – view a list or map of all assets & their status
- Within each asset:
  - o View list of parameters
    - ■ Temperature
    - ■ Vibration (three axis)
    - ■ Battery
  - o Plotted charts for each parameter
    - ■ Vibration trends
    - ■ FFT
    - ■ Kurtosis
  - o Force read button to gather real time data
  - o Customizable reports for each asset
  - o Create reminders for each asset
    - ■ Ex. Check pump seal every quarter
  - o Create maintenance logs for each asset
    - ■ Ex. Pump seal checked, no action needed

Learn more about optimyze®
Condition Monitoring Solutions

Part Numbers

optimyze sensor	P2007024
optimyze optional power supply	P2007066
optimyze battery replacement kit	P2007030
optimyze optional flat plate mounting kit	P2007031
optimyze Gateway	P2007065

optimyze Gateway power supply	P2007067
optimyze pressure sensor 0-100 psi	P2004731
optimyze pressure sensor 0-250 psi	P2004753
optimyze pressure sensor 0-500 psi	P2004754
optimyze pressure sensor battery	P2004732

Frequently Asked Questions

What type of data is collected by the optimyze sensor?

- Vibration (three axis)
- RMS, Kurtosis & FFT (Fast Fourier Transform)
- Temperature

Does the Gateway connect to existing SCADA systems?

No, with the use of the Avensor platform and the Gateway, connection to existing SCADA systems is simple.

How does the cellular network work for the Gateway?

There is an annual fee to maintain the service. The first year is free with the purchase of the Gateway then Xylem will charge the customer the following year. There is no third party involved.

Can the sensor be submerged?

No, NEMA 4/IP 56 rated.

What is the optimyze sensor sampling frequency?

The default sample is 1 sample per 30 minutes but can be adjusted anywhere from every 10 seconds to 12 hours.

What is the battery life?

Typically 3-5 years depending on the sampling frequency chosen. For example, a sampling frequency of every 1 sec will drain the battery faster than a sampling frequency of 24 hrs. The battery is replaceable. There is an optional power supply.

What is the range for Gateway and sensor(s)?

It is recommended to use up to 6 sensors per gateway within 100 feet. You can use multiple Gateways in the same facility.

What is the range limit for the pressure sensors?

Optimyze sensor must be within 100 feet of pressure sensor to pair and operate.

Can I opt out of using the cloud to store data?

Yes, data can be uploaded to the app from a sensor via Bluetooth connection but will not be shared with other devices. Syncing data across all devices can only be done if cloud storage is enabled.

Are there other mounting options?

Yes, the magnets can be mounted on a flat or curved surface (minimum diameter must be 180 mm (7 in)). There is also a fixed mounting bracket available to purchase.

Can a sensor be moved to a different piece of equipment?

Yes, data can be erased off the sensor or you can choose to keep all stored data on the sensor and just put it on a different piece of equipment.

When pairing sensors to a Gateway, can I connect all the sensors at once?

Yes, however the pairing mode times out after a few seconds so you may miss the window to connect all sensors if trying to connect many. It may be easier to connect one sensor at a time.

How do I update the software on the optimyze sensor?

Through the app, the sensor will need to be in pairing mode to complete an update.

What if I can't connect to the sensor to download data for an extended period of time?

It's recommended to use the Gateway for unlimited access to cloud storage however; new data can be stored in the **optimyze** sensor for about one year at the standard sampling rate. The oldest data would be erased to make room for new data.

How many smartphones can be connected?

Unlimited.

Xylem |'zīləm|

1) The tissue in plants that brings water upward from the roots;
2) a leading global water technology company.

We're a global team unified in a common purpose: creating advanced technology solutions to the world's water challenges. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. Our products and services move, treat, analyze, monitor and return water to the environment, in public utility, industrial, residential and commercial building services settings. Xylem also provides a leading portfolio of smart metering, network technologies and advanced analytics solutions for water, electric and gas utilities. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise with a strong focus on developing comprehensive, sustainable solutions.

For more information on how Xylem can help you, go to www.xylem.com

Learn more about optimyze® Condition Monitoring Solutions

Xylem Product Cybersecurity

Xylem values your system security and the availability of your critical services. For more information on Xylem cybersecurity practices or to contact the cybersecurity team please visit xylem.com/security.

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Xylem Inc.
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