xylem

Let's Solve Water

optimyze® Gateway 2000

xylem

Let's Solve Water

Table of Contents

1 Introduction and Safety

1.1 Introduction

Purpose of the manual

The purpose of this manual is to provide the necessary information for working with the unit. Read this manual carefully before starting work.

Read and keep the manual

Save this manual for future reference, and keep it readily available at the location of the unit.

Intended use

WARNING:

Operating, installing, or maintaining the unit in any way that is not covered in this manual could cause death, serious personal injury, or damage to the equipment and the surroundings. This includes any modification to the equipment or use of parts not provided by Xylem. If there is a question regarding the intended use of the equipment, please contact a Xylem representative before proceeding.

1.2 Safety terminology and symbols

About safety messages

It is extremely important that you read, understand, and follow the safety messages and regulations carefully before handling the product. They are published to help prevent these hazards:

- Personal accidents and health problems
- Damage to the product and its surroundings
- Product malfunction

Hazard levels

Hazard level	Indication
DANGER:	A hazardous situation which, if not avoided, will result in death or serious injury
WARNING:	A hazardous situation which, if not avoided, could result in death or serious injury
CAUTION:	A hazardous situation which, if not avoided, could result in minor or moderate injury
NOTICE:	Notices are used when there is a risk of equipment damage or decreased performance, but not personal injury.

Special symbols

Some hazard categories have specific symbols, as shown in the following table.

Electrical hazard		Magnetic fields hazard	
	Electrical Hazard:		CAUTION:

1.3 User safety

All regulations, codes, and health and safety directives must be observed.

The site

- Observe lockout and tagout procedures before starting work on the product, such as transportation, installation, maintenance, or service.
- Pay attention to the risks presented by gas and vapors in the work area.
- Always be aware of the area surrounding the equipment, and any hazards posed by the site or nearby equipment.

Qualified personnel

This product must be installed, operated, and maintained by qualified personnel only.

Protective equipment and safety devices

- Use personal protective equipment as needed. Examples of personal protective equipment include, but are not limited to, hard hats, safety goggles, protective gloves and shoes, and breathing equipment.
- Make sure that all safety features on the product are functioning and in use at all times when the unit is being operated.

1.4 Protecting the environment

Emissions and waste disposal

All packaging must be disposed of in an environmentally sound manner according to local regulations.

WEEE (EU/EEA) INFORMATION FOR USERS pursuant to art. 14 of the Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE). The crossed bin symbol on the appliance or on its packaging indicates that the product at the end of its useful life must be collected separately and not disposed of together with other mixed urban waste. Appropriate separate collection for the subsequent start-up of the disused equipment for recycling, treatment and environmentally compatible disposal helps to avoid possible negative effects on the environment and on health and favours the re-use and / or recycling of the materials of which the equipment is composed. WEEE from users other than private households[1]: the separate collection of this equipment at the end of its life is organized and managed by the producer[2]. The user who wants to get rid of this equipment can then contact the producer and follow the system that it has adopted to allow the separate collection of equipment at the end of life or select an organization independently authorized to manage waste.

1 Classification according to product type, use and current local laws

2 Producer of EEE as per Directive 2012/19/EU

WEEE (UK) INFORMATION TO USERS pursuant to art. 44 of the The Waste Electrical and Electronic Equipment Regulations 2013 (S. I. 2013 No. 3113). The crossed bin symbol on the appliance or on its packaging indicates that the product at the end of its useful life must be collected separately and not disposed of together with other mixed urban 15 waste. Appropriate separate collection for the subsequent start-up of the disused equipment for recycling, treatment and environmentally compatible disposal helps to avoid possible negative effects on the environment and on health and favours the re-use and / or recycling of the materials of which the equipment is composed. WEEE from users other than private households[1]: the separate collection of this equipment at the end of its life is organized and managed by the producer[2]. The user who wants to get rid of this equipment can then contact the producer and follow the system that it has adopted to allow the separate collection of equipment at the end of life or select an organization independently authorized to manage waste.

1 Classification according to product type, use and current local laws

2 Producer of EEE as per WEEE Regulations 2013

1.5 Spare parts

CAUTION:

Only use the manufacturer's original spare parts to replace any worn or faulty components. The use of unsuitable spare parts may cause malfunctions, damage, and injuries as well as void the warranty.

2 Transportation and Storage

2.1 Examine the delivery

2.1.1 Examine the package

1. Examine the package for damaged or missing items upon delivery.
2. Record any damaged or missing items on the receipt and freight bill.
3. If anything is out of order, then file a claim with the shipping company.
4. If the product has been picked up at a distributor, make a claim directly to the distributor.

2.1.2 Examine the unit

1. Remove packing materials from the product.

   Dispose of all packing materials in accordance with local regulations.
2. To determine whether any parts have been damaged or are missing, examine the product.
3. If there is any issue, then contact a sales representative.

2.2 Storage guidelines

Storage location

The product must be stored in a covered and dry location free from heat, dirt, and vibrations.

NOTICE:

Protect the product against humidity, heat sources, and mechanical damage.

NOTICE:

Do not place heavy weights on the packed product.

3 Product Description

3.1 Usage

The **optimyze**® [1] Gateway provides remote connectivity for optimyze condition monitoring sensors. Once set up and paired, the Gateway will automatically connect to the sensors every 24 hours to collect asset health data. The data will then be securely sent to the xylem cloud over low-power LTE-M or NB-IoT, allowing users to access the latest information about their assets without physically being within Bluetooth® range.

3.2 Features

- Cellular connectivity: The optimyze Gateway gathers data from optimyze sensors through Bluetooth and then sends it over LTE-M or NB-IoT cellular networks to the cloud.
- Suitable for deployment around the world:
  - FCC, ISED, CE, UKCA
- Compact Form Factor: 110.3 mm (4.4 in) x 99.2 mm (3.9 in) x 35.4 mm (1.4 in)
- Visual status indication:
  - LED: Clear indication of optimyze Gateway status. See *Button locations* on page 9 for different status information.

3.3 Compatibility

Developed for exclusive use with optimyze sensors.

3.4 Parts

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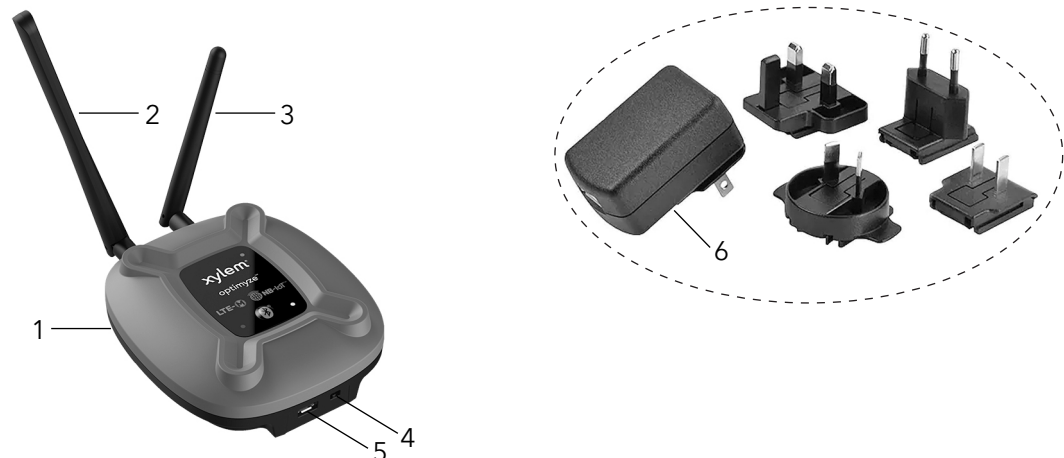
[1] Xylem and optimyze® are trademarks of Xylem, Inc. or one of its subsidiaries. The use by Laird Connectivity LLC is under licence. The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by Laird Connectivity LLC, Aanderaa Data Instruments AS and Xylem Inc. is under license. All other trademarks or registered trademarks are property of their respective owners.
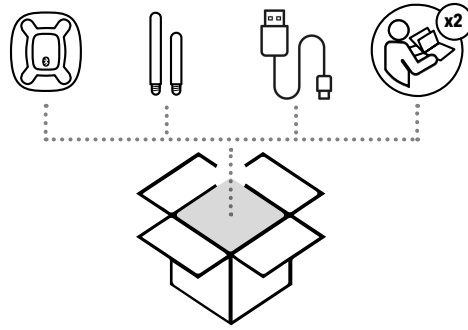
1. optimyze Gateway
2. Antenna, Bluetooth (longer antenna)
3. Antenna, Dipole, Cellular (shorter antenna)
4. Power Switch
5. USB Power Connector (Micro USB Connector)
6. AC-DC Power Supply, with regional adaptor for US, UK, Australia and Europe. (sold separately)

4 User Interface

4.1 Button locations
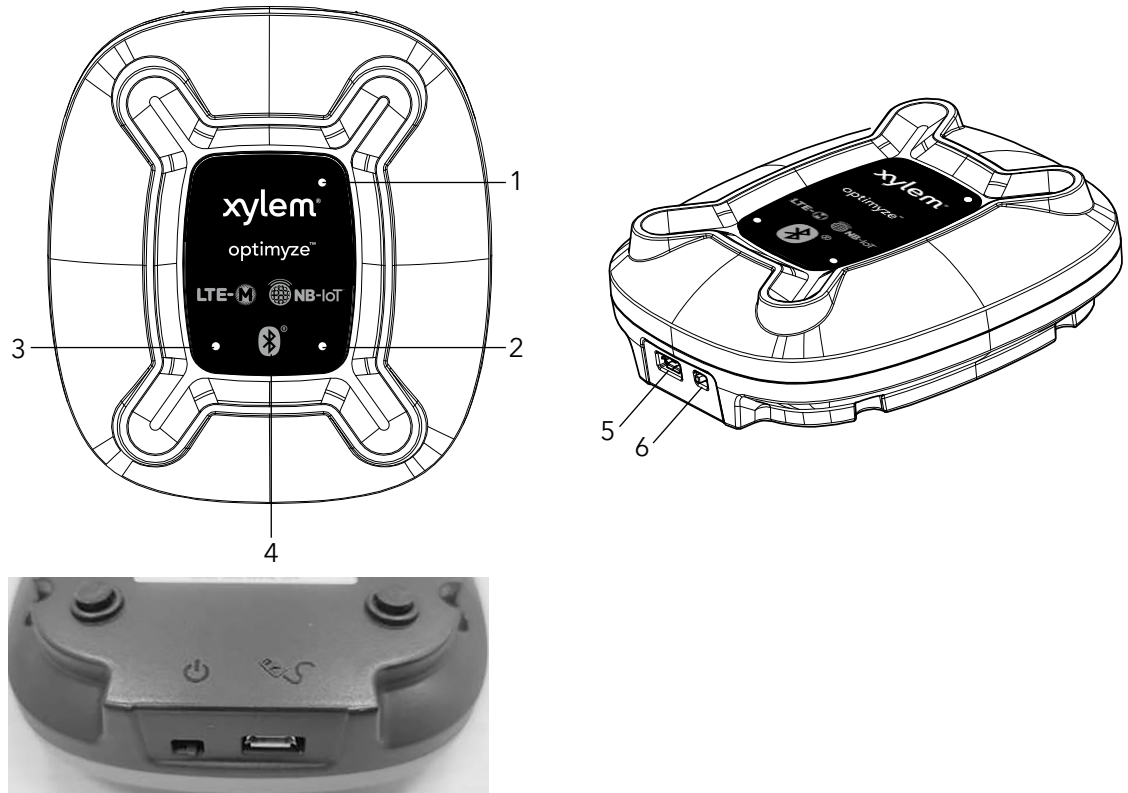
1. Red LED
2. Green LED
3. Blue LED
4. Bluetooth Button
5. USB Power Connector
6. Power Switch

4.2 LEDs

The LEDs are used to show different status information of the optimyze Gateway:

- Bluetooth status
- Cellular status and RAT (Radio Access Technology) modes.
- Xylem Cloud server connection status

The LED statuses are shown below:

LED color	LED	Description
Blue	5-second single blink	Normal mode
	1-second blink	Pairing mode
	On	Connected over Bluetooth to optimyze sensor
	Triple blink	Successful new Bluetooth pairing with an optimyze sensor
	Double blink	Successfully unpaired with all devices

LED color	LED	Description
Green	On	Connected to xylem cloud
	Off	Not connected to xylem cloud
	Double blink (once every min):	device is connected to LTE-M. *
	Triple blink (once every min):	device is connected to NB-IoT.
Red	3-second blink	Searching for network
	On	Network connected
	Off	Not connected to network

* Note: For further details on network selection/ restrictions, refer to Section 6.4.

4.3 Buttons

Bluetooth button:

- Single press: Enter and refresh pairing mode.
- Hold 5 seconds: Change network selection.
- Hold 30 seconds: Unpair all sensors.

5 Installation

5.1 Precautions

Before starting work, make sure that the safety instructions in the chapter *Introduction and Safety* on page 3 have been read and understood.

WARNING:

All work must be performed by qualified personnel trained in the proper application, installation, and maintenance of the equipment.

5.2 Mounting options

Location

The Gateways are intended to be positioned in clean, protected, and dry indoor environments.

Procedure

- The rear enclosure includes two key hole slots that accept screw heads to hang the unit on a vertical surface. The screw head diameter can be no larger than 7 mm with a maximum thread diameter of 3.75 mm and a head height of 3.2 mm.
- When the screw is installed in the mounting surface, the space between screw head and mounting surface shall be no less than 5 mm to account for the thickness of plastic and rubber feet.
- Space the mounting screws 44.45 mm (1.75 in) apart.
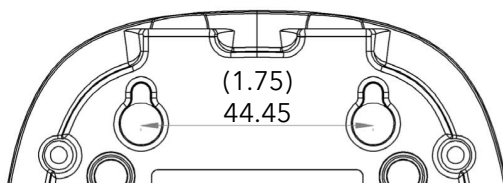
External Antenna positioning

For optimal performance, external antennas should be positioned vertically, tip pointing up, perpendicular to the ground regardless of mounting surface orientation.

Precaution

To avoid damage, be sure to use appropriate anchors and screws when mounting on vertical surfaces.

6 Operation

6.1 Configure and install the optimyze sensors

Follow the optimyze Quick Start Guide to configure optimyze sensors before setting up Gateway.

6.2 Set up optimyze Gateway

1. Connect the antennas in the packaging to appropriate inserts. The longer antenna will fit the left insert (from top view) and the shorter antenna will fit the right insert (from top view).
2. Connect Gateway to power supply.
3. Turn on Gateway with the Power switch.
4. To pair with an optimyze sensor:
   a) Put the first optimyze sensor in configuration mode by positioning the magnet supplied with the sensor over the Bluetooth symbol until the LED blinks pink.
   b) When the sensor is in configuration mode, press Bluetooth button on the optimyze Gateway. Blue LED starts blinking with a one second interval indicating the pairing mode is active. Pairing mode is active for 90 seconds.
   c) When the sensor enters pairing mode, Gateway will automatically scan for optimyze sensors and try to connect. A succesful pairing is indicated by a (quick) blue LED triple blink on the Gateway.
   d) Gateway will initiate a short connection with the optimyze sensor (indicated by a solid blue LED on optimyze Gateway and blinking blue LED on optimyze sensor) before it re-enters pairing mode.
   e) After the Gateway leaves pairing mode, to connect another sensor, repeat steps (a) through (d).
   f) Once paired, the Gateway connects to the optimyze sensors every 24 hours.
5. The Gateway will connect to the cellular network and xylem cloud without any required intervention. (Based on region and radio environment, time to connect may vary from a few minutes to hours). Once it successfully connects, the red and green LED will enter a solid state. Gateway will connect to optimyze sensors every 24 hours and send data up to the cloud (which will be visible via your mobile application).

6.2.1 Number of sensors

- For LTE-M networks, the Gateway will support 6 sensors (with a default sampling frequency of 30 min).
- For NB-IoT, the Gateway will support 2 sensors (with a default sampling frequency of 30 min).

Note: This may vary if regional networks have any further restrictions or based on the radio environment of the Gateway's placement.

6.3 Unpairing

If the button is pressed and held for 30 or more seconds, upon release the Gateway will delete all BLE pairing information. A successful unpairing will be indicated with a double-blink of the blue LED.

6.4 Network Selection

optimyze Gateway can support both LTE-M and NB-IoT and has auto-network selection enabled by default (it will connect to appropriate network based on region's network support and radio environment*).

If a user must specify the network for any reason (please verify which network the Gateway supports in your region before doing so), user must hold the Bluetooth button for 5 seconds and observe the green LED indication to confirm that the network selection has been successful.

The default (recommended) setting for the Gateway is "auto-network selection mode". To change networks manually:

1. Hold bluetooth button for 5 seconds

   Device will enter manual selection mode: LTE-M

   Indication for success: green LED will double blink.

2. Hold bluetooth button again for 5 seconds

   Device will enter manual selection mode: NB-IoT

   Indication for success: green LED will triple blink.

3. Hold Bluetooth button again for 5 seconds. Device will return to auto-network selection mode.

   Indication for success: green LED will blink once.

*Note: Due to a greater bandwidth, devices connected to LTE-M will support greater number of devices.

7 Troubleshooting

7.1 Symptoms and remedies

Symptom	Cause	Remedy
No LEDs visible	No power or power switch is "off"	1. Connect to USB power supply 2. Turn power switch on.
Device has been turned on and the red LED has been blinking for a long time.	Not successfully connecting to network	1. Check if antennas are correctly connected. 2. Move the Gateway to a different location and check if it changes. If it is successful in the new location, the original location may not be suitable for the Gateway because of lacking network coverage.
optimyze sensor is in configuration mode and Gateway is in pairing mode but they are not pairing.	• optimyze sensor may not be in pairing range. • 6 sensors may already be paired to the Gateway.	1. Move Gateway closer to sensors. 2. If pairing is still unsuccessful, unpair and re-pair all sensors.
Pairing was unsuccessful.		1. Verify that the optimyze sensor has been configured with the optimyze mobile app 2. Repeat pairing process
Sensor was paired with Gateway previously but Gateway does not connect to sensor anymore.	• Repeated connection errors with sensor. • optimyze sensor may not be in range.	1. Bring Gateway closer to optimyze sensors. 2. Repeat pairing process.

8 Technical Specification

8.1 Dimensions

110.mm (4.4 in) x 99.2 mm (3.9 in) x 35.4 mm (1.4 in)

8.2 Conformity

Regulatory:
- FCC (US)
- ISED (Canada)
- CE (Europe)
- UKCA (United Kingdom)

Industry:
- PTCRB
- GCF

8.3 Environmental requirements

Gateway

Feature	Value
Operating location	Indoor use
Operating environment	Non-hazardous, non-corrosive
Operating temperature	-40°C to +80°C (-40°F to +176°F)
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Operating humidity	10% to 95% non-condensing
Storage humidity	5% to 95% non-condensing

Power supply

Feature	Value
Operating location	Indoor use
Operating environment	Non-hazardous, non-corrosive
Operating temperature	0°C to +40°C (+32°F to +104°F)
Storage temperature	-20°C to +60°C (-4°F to +140°F)
Operating humidity	20- 85%, non-condensing
Storage humidity	5- 95%, non-condensing

8.4 Power Input

Input voltage of 5 V and 1.2 A (standard USB power).

AC line power requirements
- Voltage input: 90 VAC ~ 264 VAC

8.5 Wireless communication

Feature	Value
Bluetooth	Bluetooth Low Energy Secure Connections 4.2

Feature	Value
Cellular	• Multi-Band cellular operation for world-wide operation • Supports LTE-M and NB-IoT
Bluetooth connection range (without interference)	30 meters (100 feet)

8.6 European Union (Directive 2014/53/EU) and Great Britain (S. I. 2017/1206)

Feature	Value
Frequency band(s)	2.4 GHz ISM Band
Maximum radio-frequency power transmitted	RF 3.29 mW (5.17 dBm)

8.7 Physical properties

Feature	Value
Weight for Gateway boxed kit (without power supply)	0.518 lbs (0.24 kg)
Weight for Power Supply (supplied separately)	0.300 lbs (0.14 kg)

8.8 Part numbers

Part	Part number
optimyze Gateway w/USB cable	P2007065
Power supply (supplied separately)	P2007067

9 Product Warranty

9 Commercial warranty

Warranty. For goods sold to commercial buyers, Seller warrants the goods sold to Buyer hereunder (with the exception of membranes, seals, gaskets, elastomer materials, coatings and other "wear parts" or consumables all of which are not warranted except as otherwise provided in the quotation or sales form) will be (i) be built in accordance with the specifications referred to in the quotation or sales form, if such specifications are expressly made a part of this Agreement, and (ii) free from defects in material and workmanship for a period of twelve (12) months from the date of installation or eighteen (18) months from the date of shipment (which date of shipment shall not be greater than thirty (30) days sixty (60) days after receipt of notice that the goods are ready to ship), whichever shall occur first, unless a longer period is specified in the product documentation (the "Warranty").

Except as otherwise required by law, Seller shall, at its option and at no cost to Buyer, either repair or replace any product which fails to conform with the Warranty provided Buyer gives written notice to Seller of any defects in material or workmanship within ten (10) days of the date when any defects or non-conformance are first manifest. Under either repair or replacement option, Seller shall not be obligated to remove or pay for the removal of the defective product or install or pay for the installation of the replaced or repaired product and Buyer shall be responsible for all other costs, including, but not limited to, service costs, shipping fees and expenses. Seller shall have sole discretion as to the method or means of repair or replacement. Buyer's failure to comply with Seller's repair or replacement directions shall terminate Seller's obligations under this Warranty and render the Warranty void. Any parts repaired or replaced under the Warranty are warranted only for the balance of the warranty period on the parts that were repaired or replaced. Seller shall have no warranty obligations to Buyer with respect to any product or parts of a product that have been: (a) repaired by third parties other than Seller or without Seller's written approval; (b) subject to misuse, misapplication, neglect, alteration, accident, or physical damage; (c) used in a manner contrary to Seller's instructions for installation, operation and maintenance; (d) damaged from ordinary wear and tear, corrosion, or chemical attack; (e) damaged due to abnormal conditions, vibration, failure to properly prime, or operation without flow; (f) damaged due to a defective power supply or improper electrical protection; or (g) damaged resulting from the use of accessory equipment not sold or approved by Seller. In any case of products not manufactured by Seller, there is no warranty from Seller; however, Seller will extend to Buyer any warranty received from Seller's supplier of such products.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ANY AND ALL OTHER EXPRESS OR IMPLIED WARRANTIES, GUARANTEES, CONDITIONS OR TERMS OF WHATEVER NATURE RELATING TO THE GOODS PROVIDED HEREUNDER, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY EXPRESSLY DISCLAIMED AND EXCLUDED. EXCEPT AS OTHERWISE REQUIRED BY LAW, BUYER'S EXCLUSIVE REMEDY AND SELLER'S AGGREGATE LIABILITY FOR BREACH OF ANY OF THE FOREGOING WARRANTIES ARE LIMITED TO REPAIRING OR REPLACING THE PRODUCT AND SHALL IN ALL CASES BE LIMITED TO THE AMOUNT PAID BY THE BUYER FOR THE DEFECTIVE PRODUCT. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY OTHER FORM OF DAMAGES, WHETHER DIRECT, INDIRECT, LIQUIDATED, INCIDENTAL, CONSEQUENTIAL, PUNITIVE, EXEMPLARY OR SPECIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOSS OF PROFIT, LOSS OF ANTICIPATED SAVINGS OR REVENUE, LOSS OF INCOME, LOSS OF BUSINESS, LOSS OF PRODUCTION, LOSS OF OPPORTUNITY OR LOSS OF REPUTATION.

10 Cybersecurity

Xylem values system security and resilience. Defending against cybersecurity threats is a shared responsibility. Xylem builds products that are secure by design. Our customers have a responsibility to understand the risks inherent in their processes and take steps to operate and maintain their solutions securely. This section reviews security features and provides guidance to help securely operate this product. For details and updates on Xylem product cybersecurity visit *https://www.xylem.com/en-us/about-xylem/cybersecurity/*.

10.1 Xylem Product Cybersecurity

Xylem performs appropriate due care in building security and resilience into products. Xylem performs the following security activities for defense-in-depth:

- security engineers perform **threat modeling** to identify **testable controls**
- code is scanned for flaws with **static analysis** tools and hardened
- product components are analyzed and hardened
- security controls are verified through **automated and manual tests**
- Xylem maintains relationships with customers, integrators, and the cybersecurity research community and the **Product Security Incident Response Team (PSIRT)** coordinates the collection, analysis, remediation, and responsible disclosure of vulnerability and remediation information to keep products secure
- cloud connections, data flows, and cloud infrastructure are continuously monitored by the **Product Security Operations Center (PSOC)**
- Product security is **governed through a three lines of defense** model that includes: product developers, product security engineers, and audit staff

10.2 Security Recommendations for End-User

optimyze Gateway has been tailored for very specific condition monitoring applications, as such most security hardening is already in place. The following guidance provides recommendation for customers for hardening the operating environment, secure operations, account management, and disposal. In the table below: *Safeguards* describe the security guidance, *Security Context & Rationale* provide overview of security features and value of the security safeguard, and *References* provide additional resources for further investigation for implementing the recommended safeguards.

Safeguard	Security Context & Rationale	References
Restrict physical access • Ensure physical access to assets is limited. Include physical isolation to protect the environment and equipment therein. • Ensure strict control over physical access in and out of the facility.	Each of the communication ports have been hardened to restrict access and ensure integrity of device operations. For example, data transit to the cloud is encrypted and the device is provisioned before shipping. BLE pairing requires proximity and the magnetic key on the optimyze sensor. Command line connection requires authentication. This safeguard supports the ability to further limit exposure associated with physical threats to the device itself.	ATT&CK for ICS: M0801 NIST SP 800-53 Rev5: AC-3, PE-3 ISA/IEC 62443-3-3: SR 2.1

Safeguard	Security Context & Rationale	References
Each account should be tied to an individual. Organizations should control individual accounts through policy.	Mobile application requires registration and authentication and security events are logged. This safeguard ensures all activities are traceable and non-repudiable.	ATT&CK for ICS: M0801 NIST SP 800-53 Rev5: AC-3(7) ISA/IEC 62443-3-3: SR 1.1
Ensure Magnet Key is removed after putting the optimyze sensor in Configuration Mode so that the device does not re-enter Configuration Mode unexpectedly and enable alternative access to your data.	Protections, such as the magnet key, are put in place to make pairing deliberate and to require physical proximity to the device. This safeguard provides additional checks and ensures no fingerprinting of BLE devices takes place.	NIST SP 800-53 Rev5: AC-18 ISA/IEC 62443-4-2: CR 4.1, NDR 1.6
Ensure Bluetooth signal cannot be received outside the organization-controlled boundaries by employing emission security and purposefully positioning the device.	Multiple BLE pairing mechanisms are available to ensure availability of data. This safeguard reduces the likelihood of capturing or intercepting signals.	ATT&CK for ICS: M0806 NIST SP 800-53 Rev5: AC-18, SC-40 ISA/IEC 62443-3-3: SR 5.2
Implement specific inventory, logging and monitoring of hardware and report security-related incidents associated with optimyze devices to Xylem. These might include unexpected operations, confirmed tampering, or theft of the device.	Devices are hardened and Xylem provides PSIRT to help customers investigate potential security incidents. This safeguard supports the ability to track assets and recognize potential security events.	ATT&CK for ICS: M0947 NIST SP 800-53 Rev5: SM-8 ISA/IEC 62443-3-3: SR 1.11, SR 2.8, SR 3.4
Maintain updated firmware and software on all devices and apps.	Device firmware integrity is maintained by cryptographically signing at the source and then verifying the authenticity and integrity at runtime. It builds on modern tools provided by our partners. Sometime vulnerabilities are discovered, and we work with our partners to deploy updates to security and resilience. This safeguard mitigates exploitation risks and ensures security patching.	ATT&CK for ICS ID: M0951 NIST SP 800-53 Rev5: MA-3(6) ISA/IEC 62443-3-3: SR 3.1.3, SR 7.1
Ensure cybersecurity policies, awareness, and training to the operators, administrators and other personnel.	While the system has been hardened in many ways, this safeguard prevents Social Engineering attacks and promotes awareness related to cybersecurity.	NIST SP 800-53 Rev5: AT-2 ISA/IEC 62443-2-4: SP.01
Before device disposal clear all paired connections and disable accounts.	No data is persistent on the Gateway device, but BLE bonding is enabled for continuous gathering of sensor data. This safeguard ensures that no one can connect to your sensors using already-paired devices.	ATT&CK for ICS ID: M0942 NIST SP 800-53 Rev5: SR-12 ISA/IEC 62443-3-3: SR 4.2

For additional information see references:

1. ATT&CK for ICS available online: *https://collaborate.mitre.org/attackics/index.php/Mitigations*
2. NIST SP 800-53 Rev 5 available online: *https://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-53r5.pdf*
3. ISA/IEC 62443 standards available for purchase from ISA, IEC, or ANSI.

11 Certifications, conformity

The Gateway hosts the Pinnacle 100 module which holds current certifications in the following countries:

Features	Regulatory ID
USA (FCC)	SQG-PINNACLE1
Canada (ISED)	3147A-PINNACLE1

The Gateway bears the following conformity markings:

Countries	Reference
European Union and European Economic Area	CE
Great Britain	UKCA

11.1 For U.S.

The following FCC and ISED regulatory information applies to the Pinnacle 100 module which is hosted by the Gateway.

Federal Communication Commission (FCC) Radiation Exposure Statement

This EUT complies with SAR for general population/uncontrolled exposure limits in FCC Part 1.1307, Part. 1310 and FCC KDB 447498 – RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices.

This transceiver must not be co-located or operating in conjunction with any other antenna, transmitter, or external amplifiers. Further testing/evaluation of the end product will be required if the OEM's device violates any of these requirements.

The Pinnacle™ 100 is fully approved for mobile and portable applications.

CAUTION: Any changes or modifications not expressly approved by Xylem Inc. could void the user's authority to operate the equipment.

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

Applicable FCC rules to module – FCC Part 24/27; FCC Part 15.247

11.2 For Canada

The following regulatory information apply to the Pinnacle 100 module which is hosted by the Gateway.

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

*   This device may not cause interference
*   This device must accept any interference, including interference that may cause undesired operation of the device

Radiation Exposure Statement

This equipment complies with Canada radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

ISED ICES-003 Issue 7 Compliance Declaration

This device was originally tested to the requirements of ICES-003 Issue 6, Information Technology Equipment (Including Digital Apparatus) — Limits and Methods of Measurement; and evaluated to the updates published in ICES-003, Issue 7, Information Technology Equipment (Including Digital Apparatus). Based on this evaluation, this product continues to observe compliance to the requirements set forth by The Innovation, Science and Economic Development Canada (ISED), and complies with the updates published in ICES-003, Issue 7, Information Technology Equipment (Including Digital Apparatus).

11.3 For European Union and European Economic Area

CE marking indicates the conformity with the following relevant Union harmonization legislation: • Directive 2014/53/EU of 16 April 2014 and subsequent amendments (radio equipment). • Directive 2011/65/EU of 8 June 2011 and subsequent amendments including directive (EU) 2015/863 (restriction of the use of certain hazardous substances in electrical and electronic equipment). EU declarations of conformity available at the following internet address: *documentation/regulatory-information-mg100*. Product made by Laird Connectivity LLC (50 South Main Street, Suite 1100, Akron, Ohio 44308, USA) for Xylem Inc. (8200 Austin Avenue, Morton Grove, IL 60053 USA). EU/EEA importer: Lowara S.r.l. (Via dott. Vittorio Lombardi 14, 36075 Montecchio Maggiore VI – Italy)

11.4 For Great Britain (England, Scotland and Wales)

UKCA marking indicates the conformity with the following relevant UK legislative acts: • S.I. 2017/1206 - The Radio Equipment Regulations 2017 and subsequent amendments. • S.I. 2012/3032 - The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 and subsequent amendments. UK declarations of conformity available at the following internet address: *documentation/regulatory-information-*

mg100. Product made by Laird Connectivity LLC (50 South Main Street, Suite 1100, Akron, Ohio 44308, USA) for Xylem Inc. (8200 Austin Avenue, Morton Grove, IL 60053 USA). GB importer: Xylem Water Solutions UK Ltd (Private Road No.1 - Colwick Industrial Estate - Nottingham NG4 2AN Nottinghamshire – England)

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

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