SCHAEFFLER

OPTIME Ecosystem: Smart Lubrication

OPTIME-LW-C1

User Manual

Contents

1 About the manual

This manual is part of the product and contains important information. Read the manual thoroughly prior to use and follow the instructions precisely.

The original language of the manual is German. All other languages are translations from the original language.

1.1 Symbols

The warning and hazard symbols are defined in accordance with ANSI Z535.6-2011.

1 Warning and hazard symbols

Signs and descriptions	
⚠WARNING	In case of non-compliance, death or serious injury may occur.
⚠CAUTION	In case of non-compliance, minor or moderate injury may occur.
NOTICE	In case of non-compliance, damage or malfunctions in the product or the adjacent construction may occur.

1.2 Signs

The warning, prohibition and mandatory signs are defined in accordance with DIN EN ISO 7010 or DIN 4844-2.

2 Warning, prohibition and mandatory signs

Signs and descriptions	
	General warning
	Wear safety gloves
	Wear eye protection
	General mandatory sign

1.3 Availability

A current version of this manual is available at:
https://www.schaeffler.de/std/1F8B

Keep the manual in a safe place for immediate reference.

1.4 Legal guidelines

The information in this manual reflects the status at the time of publication.

Unauthorised modifications to or improper use of the product are not permitted. Schaeffler accepts no liability in these cases.

Apps and functions may not be available in all countries and regions. The availability of apps and functions may change.

Further information, in particular on the OPTIME Mobile App and the OPTIME Dashboard, is available in the OPTIME Online Help in the OPTIME Dashboard. The Online Help is continuously updated.

1.4.1 Advice on third party products and services

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When redistributing in binary form, the above copyright notice, this list of conditions and the following disclaimer must be included in the documentation or other materials provided with the distribution.

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The original language of the licence texts is English. All other languages have been translated from the original English text.

1.4.3 Regulatory notices

For Brazil, China, Canada, Mexico, Taiwan and the USA, regulatory notices are available in the respective translations of this manual.

Canada

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

1. This device may not interference, and
2. this device must accept any interference, including interference that may cause undesired operation of the device.

United States

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the 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.

1.5 Images

The images in this manual may be schematic representations and may differ from the delivered device.

2 General safety regulations

This chapter provides an overview of all the important safety regulations.

Any person charged with working on the system must read this user manual and observe the guidelines.

2.1 Principles

The OPTIME Ecosystem complies with the state of the art and recognised safety regulations. Nevertheless, disregarding the safety instructions can endanger the life and health of the user or third parties and cause extensive property damage.

2.2 Marking

Each device in the system bears the following markings on the nameplate:

- serial number
- manufacturer information
- valid certification markings for countries and regions

2.3 Intended use

The OPTIME Ecosystem is approved for use in indoor and outdoor industrial environments. The system may only be used in accordance with the technical data. Unauthorised structural modifications to the system are not permitted. Schaeffler assumes no liability for any damage to machinery or injury to persons arising from such actions.

The OPTIME-LW-C1 lubricator may only be operated with a CONCEPT1 cartridge or, when used with the OPTIME C1 cartridge adapter, with approved cartridges from other manufacturers. The device may only be operated with original battery packs or with alternatives approved by Schaeffler.

The OPTIME-LW-C1 lubricator is hereinafter also referred to as the OPTIME C1 lubricator.

Intended use also includes the following:

- compliance with all instructions in the user manual
- compliance with all relevant specifications on occupational safety and accident prevention throughout the entire product life cycle of the system
- possession of the required specialist training and authorisation from your company to carry out the necessary work on the system

2.4 Usage not for the intended purpose

The OPTIME Ecosystem with OPTIME-LW-C1 lubricator does not provide machine protection and must not be as a component of safety systems.

The OPTIME Ecosystem is not classified as a safety component in accordance with Machinery Directive 2006/42/EG or Directive (EU) 2023/1230.

2.5 Warranty

The manufacturer provides warranty in relation to operational safety, reliability and performance only under the following conditions:

- The product may only be mounted and connected by authorized technical personnel.
- The system must be used in accordance with the information in the technical data sheets. The limit values indicated in the technical data must not be exceeded under any circumstances.
- Modifications and repairs to the system may only be performed by the manufacturer.

2.6 Qualified personnel

Obligations of the operator:

- Ensure that only qualified and authorised personnel perform the activities described in this manual.
- Ensure that personal protective equipment is used.

Qualified personnel must:

- Ensure adequate product knowledge, e.g. through training on proper handling and use of the product
- be fully familiar with the contents of this manual, particularly all safety instructions
- be aware of any relevant country-specific regulations

2.7 Work on electrical devices

Work on the electrical assemblies may only be carried out by a trained electrician.

Damaged components of the system must not be repaired. Any necessary repair work must be carried out by Schaeffler.

A defective connection cable must be replaced immediately by a qualified electrician.

Wiring, opening and closing of electrical connections may only be performed when the system is disconnected from the power supply and in a voltage-free state.

2.8 Protective equipment

For certain work on the product, suitable personal protective equipment must be worn. The necessary protective equipment depends primarily on the lubricant and adhesive used:

- Refer to the relevant safety instructions on the lubricant cartridge or to the safety data sheet of the lubricant used.
- Follow both the instructions and the safety data sheet for the adhesive.

Possible items of personal protective equipment include:

3 Required personal protective equipment

Personal protective equipment	Mandatory signs in accordance with DIN EN ISO 7010
Protective gloves	
Safety shoes	
Eye protection	

2.9 Safety regulations

This section summarises the most important safety regulations for working with the OPTIME Ecosystem and the OPTIME-LW-C1 lubricator.

2.9.1 Safety during installation

Only qualified personnel may commission the system.

Before installation, the components must be checked for external damage. If any damage or other defects are found, the system must not be commissioned.

Connecting the gateway with a protective contact plug is not permitted and may result in a fatal electric shock. The gateway may only be connected to the mains supply using a permanent connection. A suitable and easily accessible facility must be provided to disconnect the unit from all mains supply lines.

Proper functioning of the lubrication system can only be guaranteed if approved lubricants and the original range of ARCALUB accessories are used, and the specified mounting and operating instructions are observed. The manufacturer accepts no liability for any consequential damage if these instructions are not observed.

2.9.2 Handling batteries

Explosion, fire burns and the release of toxic gases may occur if the battery packs overheat. Discharging the battery pack reduces its service life and may result in premature device failure, potentially causing consequential damage to the application.

Heating can be caused by external factors, such as fire, or by chemical processes occurring internally, such as a short circuit. Dropping the battery pack can cause internal damage to individual pack cells, and the resulting short circuit may lead to premature discharge.

Dispose of dropped battery packs immediately. Dropped battery packs must not be used. Used battery packs must not be reused or recharged, but must be recycled. Battery packs must not be opened, short-circuited or thrown into fire.

Batteries must not be damaged, opened, thrown into fire, recharged or short-circuited. Defective batteries must not be transported by air freight. The device must be deactivated when not in use.

The lubrication process can no longer be carried out correctly with damaged, used or depleted batteries or battery packs. Use only approved battery types as battery cells. Only use battery cells of the same type in the battery holder. Do not use discharged or partially discharged battery cells together with new battery cells. Only use new, originally packed batteries or battery packs.

Do not open the battery pack packaging until immediately before inserting it into the device. Do not place the poles of the battery pack or of the loaded battery holder on conductive surfaces after unpacking.

2.9.3 Handling the backup battery in Gateway 2

The OPTIME Gateway 2 contains a replaceable backup battery, which is not hazardous provided it remains enclosed in the housing.

Never expose the batteries to excessive mechanical, thermal or electrical loads, as this may activate the safety valves and cause the battery container to rupture. Avoid temperatures of ≥ +70 °C. Dispose of the battery in accordance with statutory provisions.

2.9.4 Handling the pressurised lubrication system

If lubricant escapes in an uncontrolled manner, components may be damaged. For example, uncontrolled leakage can occur if the operating pressure is too high or if the lubricator is prefilled using unsuitable tools. Uncontrolled leakage of lubricant can contaminate or damage components of the lubrication system and adjacent construction. Components of the lubrication system and adjacent construction can become contaminated. The lubricator must not be exposed to excessive pressure. Use appropriate tools for commissioning. Clean contaminated components immediately.

The lubrication system operates under pressure. The lines and lubricator must be depressurised prior to dismantling or for maintenance work. To depressurise the lubricator, release the drive unit from the cartridge.

A CONCEPT1 cartridge must not be removed under pressure if it is not yet completely empty. The gas pressure of the cartridge may otherwise expel the remaining grease or oil uncontrollably from the container, contaminate the OPTIME C1 lubricator, and impair its function.

Ensure that the installation can withstand the maximum system pressure. The OPTIME C1 lubricator may only be prefilled before being mounted on the adjacent construction. When prefilling, the pressure must not exceed 2 bar.

The OPTIME C1 lubricator may only be operated with a CONCEPT1 cartridge or, when used with the CONCEPT1 cartridge adapter, with approved cartridges from other manufacturers.

2.9.5 Working on the lubricator

The outer surface of a machine can reach high temperatures that can cause injuries in the event of direct contact. The machine must be shut down and allowed to cool before installing, maintaining, mounting, dismounting or replacing a lubricator. Measure the surface temperature of the machine using suitable measuring devices.

Rotating parts or parts with linear motion in machines or systems can cause serious injury. Do not work on moving parts. The machine must be shut down and secured against restart before installing, maintaining, mounting, dismounting or replacing a lubricator.

Failure to follow these instructions may result in serious injury.

2.9.6 Ambient conditions

The lubricator may be damaged or destroyed by harmful ambient conditions such as heat, high pressure, moisture, impacts, vibrations, contaminants or dust. The mechanics and electronics can be damaged by the ingress of liquids.

Ensure a mounting position for the lubricator that protects it from moisture, impacts, contaminants, dust and temperatures > +55 °C. The lubricator must not be exposed to heat sources such as direct sunlight.

2.9.7 Lubricants and lubricant cartridges

The use of unsuitable lubricants may result in malfunctions. Unsuitable lubricants may also damage the cartridge, the lubricator or the adjacent construction.

- Only use lubricants that have been approved by Schaeffler for use in CONCEPT1 lubricators.
- With greases, ensure good stability of the base oil against bleeding and a low consistency grade (≤ NLGI 2).
- If external lubricants are used, observe the necessary marking of safety instructions.

Warranty claims or other claims by the customer against Schaeffler, in connection with failure or malfunction of the lubrication system are excluded in the following cases:

- The customer has filled the CONCEPT1 cartridges themselves and the filling operation was not carried out correctly.
- Lubricants have been used that were not approved by Schaeffler for the cartridges

In case of doubt, consult Schaeffler.

Further important safety-related information regarding the use of the CONCEPT1 cartridge and the CONCEPT1 lubricator must be observed:

BA 69 | Lubricators | CONCEPT1 |
https://www.schaeffler.de/std/1F4C

2.9.8 Cleaning

If contaminants enter the lubricator, the piston pump may be damaged. Only clean or cleaned lubricant cartridges may be used in order to prevent damage from contamination.

Clean the device with a brush and cloth. Compressed air can damage the seals and force contaminants into the lubricator. Do not use compressed air for cleaning.

The use of high pressure or steam jets to clean the lubricator is not permitted.

2.9.9 Safe handling of information interfaces

This product has the following information interfaces:

- GSM, UMTS, LTE
- Wirepas Mesh network
- WLAN
- Ethernet

The product can be connected to other devices, components or internal and external networks such as the Internet via each information interface. Devices such as data carriers that are connected via information interfaces may contain malware or execute harmful functions undetected. The use of such information interfaces can damage this product or potentially your company's infrastructure, e.g. the IT infrastructure. In addition, the use of such interfaces may compromise your company's data security.

Before using our product and its information interfaces, please familiarise yourself with the following points:

- the safety precautions offered by the product and its information interfaces
- the security provisions of your company, e.g. in relation to IT security

Before commissioning, please clarify with your relevant points of contact whether, and which, security measures are to be taken when using the product and its associated information interfaces.

2.9.10 Protection against unauthorised use

Data encryption and secure login with individual login data are the tools used to protect against unauthorised use of the OPTIME Mobile App and the OPTIME Dashboard. Software users (users) must log in with a user name and password, and use a secure password. The password should be changed at regular intervals.

The user is responsible for keeping their login data secure.

3 Scope of delivery

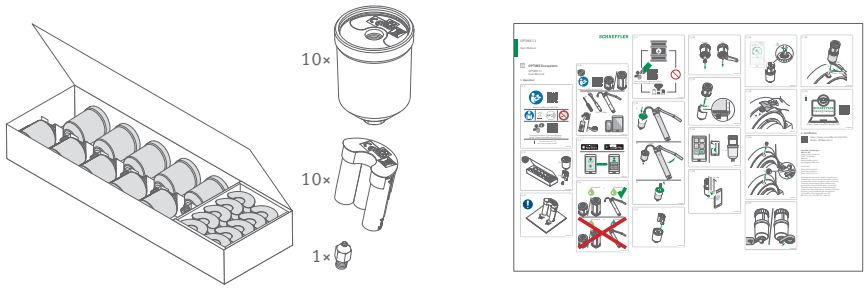
3.1 Lubricator OPTIME C1

The type designation of the OPTIME C1 lubricator is OPTIME-LW-C1.

Scope of delivery OPTIME-LW-C1:

- 10 lubricators OPTIME-LW-C1
- 10 battery packs OPTIME-LW-C1.BATTERY
- 1 filling nipple OPTIME-LW-C1.NIPPLE-PREFILL-R1/4
- 1 quick reference guide BA 70-01, OPTIME C1

1 Scope of delivery of the OPTIME-LW-C1 lubricator



The enclosed quick reference guide contains the link to this user manual BA 70, which always provides the latest version:
https://www.schaeffler.de/std/1F8B

3.2 Lubricant cartridge CONCEPT1

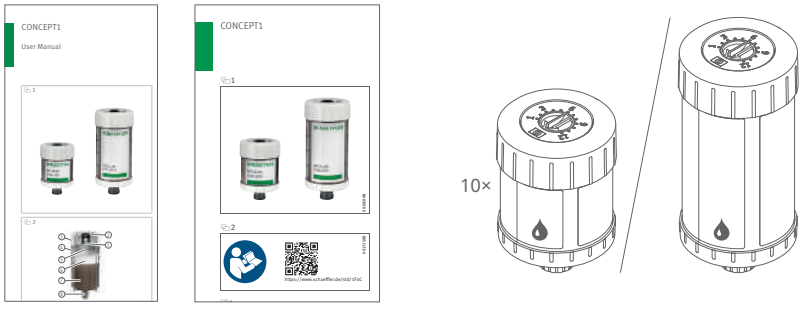
Lubricant cartridges are available prefilled with Arcanol lubricants from Schaeffler.

Schaeffler can also supply CONCEPT1 cartridges filled with third-party grease by agreement.

Scope of delivery CONCEPT1:

- 10 lubricant cartridges CONCEPT1: 60 cm^3 or 125 cm^3, prefilled or unfilled
- 1 user manual BA 69-01, CONCEPT1
- 1 set of safety instructions BA 72, CONCEPT1

2 Scope of delivery of the CONCEPT1 lubricant cartridge



Only in the context of the OPTIME Ecosystem is CONCEPT1 referred to as a cartridge. Outside the OPTIME Ecosystem, the CONCEPT1 cartridge functions as a standalone lubricator.

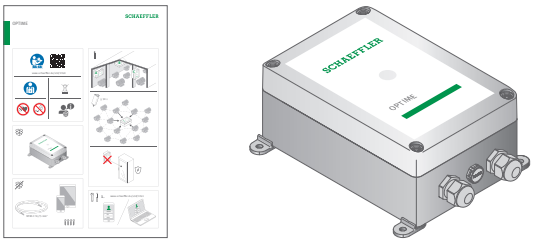
3.3 OPTIME Gateway

3.3.1 OPTIME Gateway (2019)

Scope of delivery of the OPTIME Gateway (2019):

- 1 OPTIME Gateway (2019)
- 1 built-in LTE stick (depending on the region)
- 1 quick reference guide BA 68-02, OPTIME Gateway (2019)

3 Scope of delivery of the OPTIME Gateway (2019)



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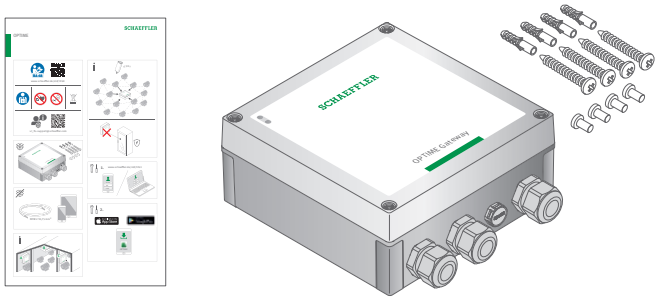
3.3.2 OPTIME Gateway 2 (2023)

Scope of delivery of the OPTIME Gateway 2 (2023):

- 1 OPTIME Gateway 2 (2023)
- 1 built-in global LTE modem
- 4 screws
- 4 dowels
- 4 blind plugs
- 1 quick reference guide BA 68-06, OPTIME Gateway 2 (2023)

4 Scope of delivery of the OPTIME Gateway 2 (2023)



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3.3.3 OPTIME Ex-Gateway

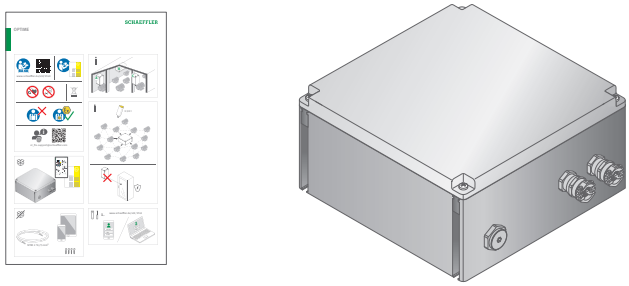
Scope of delivery of the OPTIME Ex-Gateway (2019):

- 1 OPTIME Ex-Gateway (2019)
- 1 built-in LTE stick (depending on the region)
- 1 quick reference guide BA 68-07, OPTIME Ex-Gateway (2019)
- 1 manual OPTIME Ex-Gateway housing with type approval

Scope of delivery of the OPTIME Ex-Gateway 2 (2023):

- 1 OPTIME Ex-Gateway 2 (2023)
- 1 built-in global LTE modem
- 1 quick reference guide BA 68-08, OPTIME Ex-Gateway (2023)
- 1 manual OPTIME Ex-Gateway (2023) housing with type approval

5 Scope of delivery of the OPTIME Ex-Gateway



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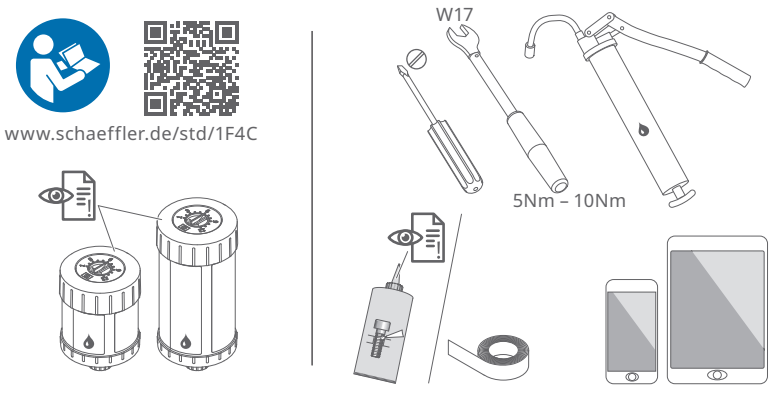
3.4 Required accessories

To ensure the system is ready to use, the following devices and accessories must be provided in addition to the gateway and lubricators:

- mobile phone or tablet (each with LTE and NFC technology) with installed OPTIME Mobile App
- connection cable to supply power to the gateway
  - max. wire diameter 1,5 mm
  - use wire ferrules with multi-wire cables
  - outside diameter of power cable between 7 mm and 13 mm
- mounting material for the gateway if required
- lever grease gun
- torque wrench
- screwdriver
- as an alternative to the CONCEPT1 lubricant cartridge: approved third-party cartridges ➤43|⊞10, possibly with cartridge adapter OPTIME-LW-C1.ADAPTER
- if required, accessories for the lubricator, see TPI 252:
  - lubricant lines, fittings: e.g. screw-in connecting pieces, screw-in reducing nipples
  - device holders: e.g. mounting brackets, magnetic feet
  - etc.
- depending on the type of installation, a suitable sealing adhesive or sealing tape (e.g. PTFE) for sealing the lubrication systems at the lubrication point

6 Required accessories and tools for the lubricators



LOCTITE 243, or a product with comparable properties, is suitable as a sealing adhesive for sealing the lubricators to the lubrication point.

Follow both the instructions and the safety data sheet for the adhesive.

Follow the instructions carefully, particularly regarding substrate preparation, permissible operating temperatures and curing times.

Accessories for lubricators, further information

TPI 252 | Lubricators |
https://www.schaeffler.de/std/1D4E

3.5 Check for transport damage

1. Check the product immediately upon delivery for any damage during transit.
2. Report any damage during transit promptly as a complaint to the carrier.

3.6 Check for defects

1. Check the product immediately upon delivery for any visible defects.
2. Report any defects promptly to the distributor of the product.
3. Do not put damaged products into operation.

4 Product description

4.1 Structure of the OPTIME Ecosystem

This user manual provides general information on smart lubrication. Details on the sensors can be found in BA 68.

The overall system consists of several components designed for smart automatic lubrication, condition monitoring and predictive maintenance.

Components of the OPTIME Ecosystem:

- OPTIME Gateway
- smart lubricators OPTIME C1
- OPTIME sensors
  - for further information on this product, please refer to BA 68
- condition monitoring of electric motors OPTIME E-CM
- Dashboard in the OPTIME Cloud
- optional software components
  - OPTIME API as the interface to external systems
  - OPTIME ExpertViewer (diagnostic tool for specialists)
  - Ask the OPTIME Expert to receive technical support from Schaeffler's condition monitoring experts
  - tailored service packages available for every operating phase
  - OPTIME Basic and Advanced Live Training available in national languages through the Schaeffler Training Campus.
- OPTIME Mobile App

7 OPTIME Ecosystem

1	Lubricators	2	Sensors
3	Gateway	4	Dashboard
5	Mobile App	6	Condition monitoring for electric motors

The sensors and lubricators of the OPTIME Ecosystem automatically form a mesh network that transmits data directly or via other smart lubricators and sensors to the gateway.

Within the network, the sensors transmit raw vibration data as well as key performance indicators (KPI) via the gateway to the OPTIME Cloud.

The smart lubricators transmit fill levels and status information via the gateway to the OPTIME Cloud.

In the cloud, the data are analysed and the analysis results are sent to the OPTIME Dashboard and the OPTIME Mobile App. Directly after commissioning on the machine, the sensor starts to collect information and, depending on its operating mode, to define the threshold values specific to that machine.

The mesh network organises itself automatically when OPTIME lubricators, sensors or gateways are added or removed. Existing OPTIME installations can subsequently be expanded, depending on the situation, to up to 50 devices (lubricators or sensors) per gateway. The use of multiple gateways within the same network is possible.

The sensors and lubricators transmit the data to the gateway via a dedicated network. If mobile communication technology is used for further communication, which is the default setting, no connection to the local IT infrastructure is required. Alternatively, WLAN or Ethernet can also be selected for communication.

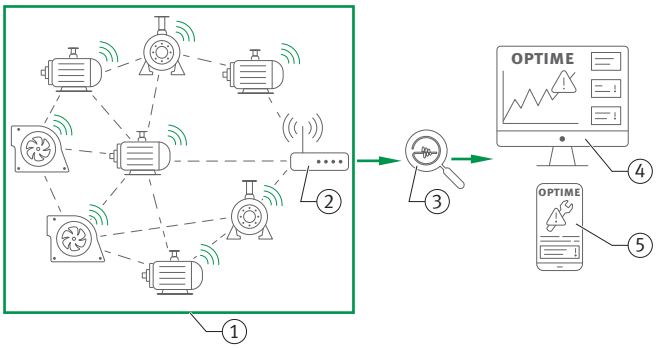
Further information

BA 68 | OPTIME Ecosystem: Condition monitoring |
https://www.schaeffler.de/std/1F40

4.1.1 Communication interfaces and data transfer

Mesh technology was selected because condition monitoring and smart automatic lubrication of machines in large industrial plants must cover large distances and reach machines that are difficult to access. The actively managed mesh network can establish contact with smart lubricators or sensors at distances of up to 100 m in line-of-sight conditions, ensuring reliable communication while at the same time optimising device battery life.

8 Communication between OPTIME system components



1	Mesh network	2	OPTIME Gateway
3	OPTIME Cloud	4	OPTIME Dashboard
5	OPTIME Mobile App		

The standard version of the gateway already has an integrated SIM card for use exclusively in conjunction with the OPTIME Ecosystem. If the provided mobile network connection is not used, alternative options for connecting to the OPTIME Cloud include using a separate SIM card, connecting via WLAN or connecting via a network cable.

4.2 Planning

Schaeffler recommends that the system structure, i.e. the assignment of lubricators or sensors to machines and systems, be planned before starting the installation process. An existing system structure simplifies the installation process, as only the relevant machine needs to be selected when installing the lubricators and sensors.

The system is created directly in the dashboard using the Hierarchy Assistant menu. The Hierarchy Assistant allows for easy, user-friendly creation and adjustment of existing system structures. More complex system structures can be imported in the form of an Excel table. An appropriate template is available on request.

4.2.1 Logging in to the OPTIME Mobile App and OPTIME Dashboard

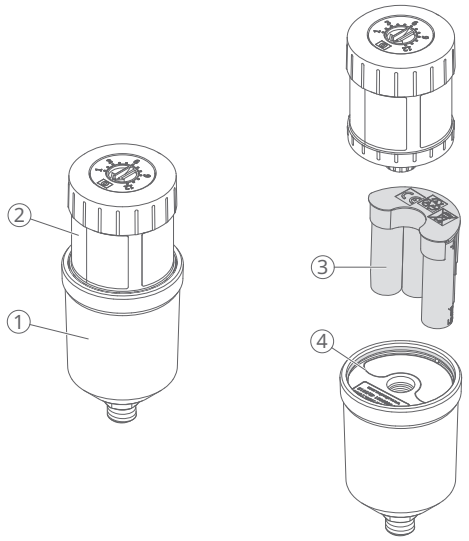
Each customer receives an administrator account when purchasing the system and the associated services. This administrator can create additional users. The number of possible users is unlimited. All created users receive their login data by e-mail.

4.3 Lubricator OPTIME C1

The OPTIME C1 operates automatically and electromechanically and is compatible with CONCEPT1 lubricant cartridges. When used with the OPTIME C1 cartridge adapter, the lubricator can also be operated with cartridges from other manufacturers that are listed in the table of approved third-party cartridges ➤43|⊞10.

The lubricator is screwed directly onto the lubrication point or connected to a lubricant line. The lubricators are also suitable for outdoor use.

9 OPTIME C1 lubricator with CONCEPT1 lubricant cartridge



1	Lubricator	2	Lubricant cartridge
3	Battery pack	4	O-ring seal

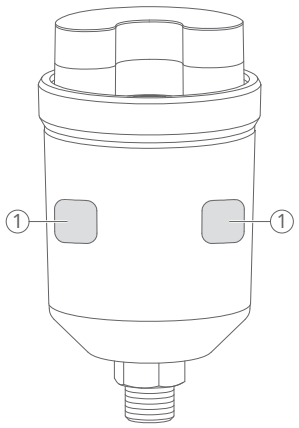
A CONCEPT1 or an approved third-party cartridge supplies the lubricator with lubricant. The cartridge can be set to a runtime of between 1 month and 12 months.

The device can be configured and monitored using the OPTIME Mobile App. The control logic displays the current operating state via the app or the OPTIME Dashboard. A replaceable battery pack or a battery holder with approved batteries supplies the lubricator with power. The lubricator can be reused multiple times. The lubricator is protected against excessive pressure from the application by an integrated non-return valve.

LED indicators on the lubricator

The lubricator is equipped with 2 LED indicators. Both LEDs display the same signal. Depending on the installation situation, it is possible that one of the two LEDs is obscured. In this case, the signal can be read from the other LED.

10 LED indicators on the lubricator



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1	LED indicator

4 LED indicators of operating states

LED 1, LED 2	Meaning	Action
Flashing red ≈ 30 s	Device start sequence	No action required
Flashing green 30 min	Normal operating state	No action required Note: After 30 min, energy mode becomes active and deactivates the LED indicator until the operating state changes.
Flashing red > 30 s	Deviation from normal operating state. Warning or alarm active	▸ Check the operating state in the app or dashboard and resolve the cause of the fault.
Flashing red, rapid 30 s	LED indication immediately after inserting the battery pack: partially discharged battery pack inserted. Cartridge may not be emptied with this battery pack.	▸ Dispose of the partially discharged battery pack properly. ▸ Use a new, originally packaged battery pack.
Flashing blue	Device has no connection to the mesh network. Connection is being established.	▸ If this occurs regularly or permanently, check the wireless connection to other network nodes or to the gateway.

4.3.1 Lubricant cartridge CONCEPT1

A CONCEPT1 lubricant cartridge supplies the lubricator with lubricant. Instead of the CONCEPT1 cartridge, approved lubricant cartridges from third-party providers may be used, as listed in the table of approved third-party cartridges ➤43|10.

Only in the context of the OPTIME Ecosystem is CONCEPT1 referred to as a cartridge. Outside the OPTIME Ecosystem, the CONCEPT1 cartridge functions as a standalone lubricator.

CONCEPT1 cartridges are available either empty or prefilled. The prefilled cartridges contain high-performance Arcanol lubricants from Schaeffler.

Schaeffler can also supply CONCEPT1 cartridges filled with third-party lubricants by agreement.

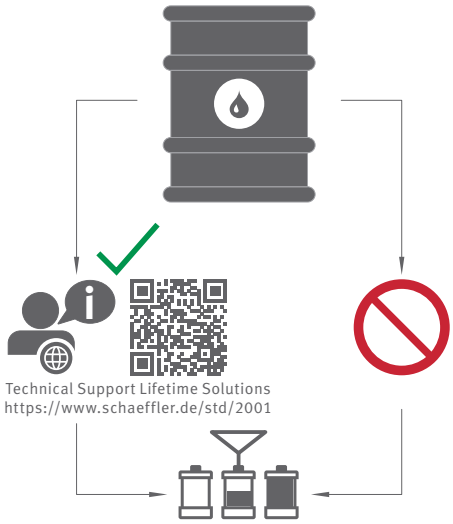
Malfunctions can occur if unsuitable lubricants (greases or oils) are used.

If the customer fills CONCEPT1 cartridges themselves, the following instructions must be observed:

- Only use lubricants that have been approved by Schaeffler for use in CONCEPT1 lubricators.
- With greases, ensure good stability of the base oil against bleeding and a low consistency grade (≤ NLGI 2).
- If external lubricants are used, observe the necessary marking of safety instructions.

In case of doubt, consult Schaeffler.

11 Support for lubricants



Further information on the use of the CONCEPT1 cartridge or CONCEPT1 lubricator:

BA 69 | Lubricators | CONCEPT1 |
https://www.schaeffler.de/std/1F4C

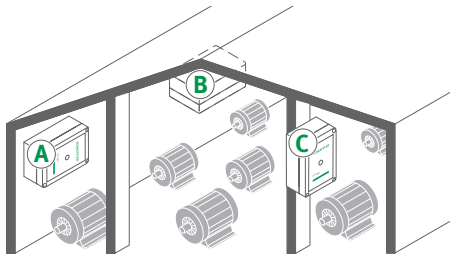
4.4 OPTIME Gateways

All versions of the gateway are equipped with a robust protective housing, suitable for wall or ceiling mounting. As a result of their protection rating and UV resistance, all gateway versions are also suitable for outdoor use.

Positioning the gateway

Schaeffler recommends placing the gateway centrally in the area of the installed sensors and lubricators. Ideally, there should be line of sight between the gateway and 5 to 6 sensors or lubricators, which can then act as repeaters for the other devices. For optimum coverage, it may be beneficial to install the gateway above device level. Schaeffler recommends installing and activating the gateway before installing the sensors and lubricators.

12 OPTIME Gateway in the system, suitable mounting locations



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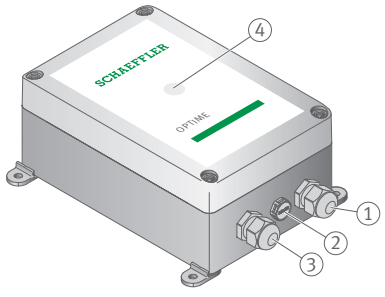
When choosing the mounting location, note that reinforced concrete or larger metallic objects may block signal transmission in this area. This also means that a gateway must not be installed in a metal switch cabinet.

If a mobile network connection is to be used for transmission, check LTE reception at the mounting location in advance using a mobile phone.

4.4.1 OPTIME Gateway (2019)

The gateway has 2 cable glands through which the power supply cable and, optionally, the network cable are routed. If the network cable is not used, a plug seals the cable gland. The plug is already fitted on delivery.

13 Connections and indicators: OPTIME Gateway (2019)



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1	Power supply input	2	Pressure compensation valve
3	Network connection input	4	LED for indicating operating status

The pressure compensator valve must not be removed.

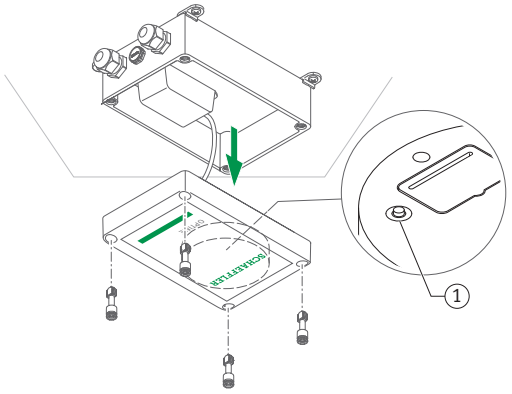
The gateway is equipped with 1 LED, which indicates various operating states.

5 LED indicators

LED	Function
Lights up green	The gateway is connected to the internet.
Lights up blue	The gateway is trying to connect to the internet. Please note that if conditions are unfavourable, it can take 15 min to establish a connection to the internet.
Flashing blue	The gateway is in configuration mode.
Lights up red	An error has occurred. Further information on configuring the gateway can be found in the web interface.

Observe the LED indicator on the connected LTE stick. If the LTE stick is connected to the internet, its LED indicator lights up turquoise or blue.

14 Button for gateway configuration



1	Push button

Pressing the push button starts configuration mode on the gateway ➤54|7.

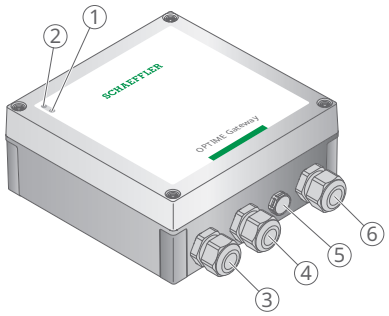
4.4.2 OPTIME Gateway 2 (2023)

The gateway has 3 cable glands through which the power supply cable and, optionally, the network cable or cables for external antennas are routed. The two cable glands for the network cable and external antennas are supplied sealed with plugs.

Antennas with SMA connectors, a maximum cable length of 3 m and local LTE certification are suitable for use with the gateway.

For detailed enquiries regarding alternative antennas, please contact our experts.

15 Connections and indicators: OPTIME Gateway 2 (2023)



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1	LED 1	2	LED 2
3	Network connection or external LTE antenna	4	Network connection or external LTE antenna
5	Pressure compensation valve	6	Power supply input

The pressure compensator valve must not be removed.

The gateway is equipped with 2 LEDs that indicate various operating states.

2 operating states can be read from the LED indicators:

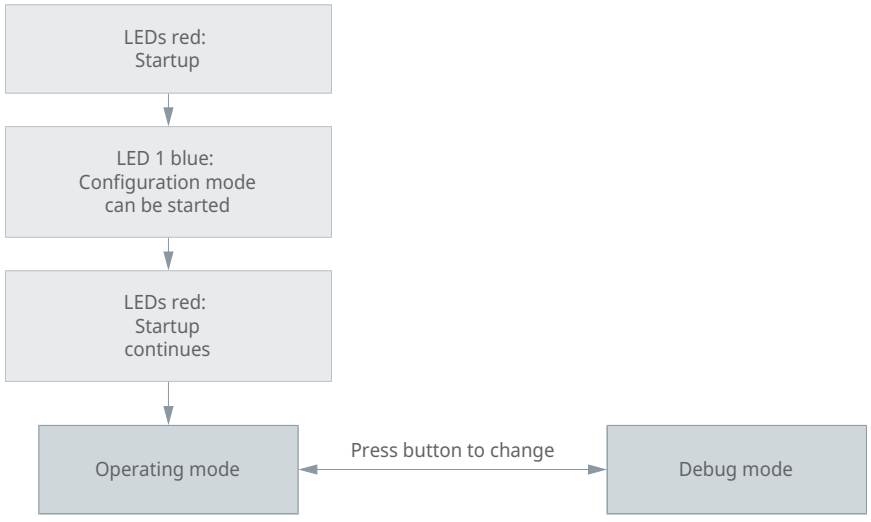
- operating mode
- debug mode

Blue LED 1 also indicates the time window during which configuration of the gateway can be started. Configuration can only be started during commissioning by pressing the push button [BTN] located inside the housing ➤28 | 17.

A reset can be performed by pressing the push button for > 5 s.

The gateway itself has only 1 main operating mode. After start-up in normal operation, the gateway transmits data between the mesh network and the OPTIME Cloud. Data transmission takes place regardless of whether the LED indicators are in operating mode or debug mode, or whether the configuration interface was accessed during the start-up phase.

16 LED operating states and status display



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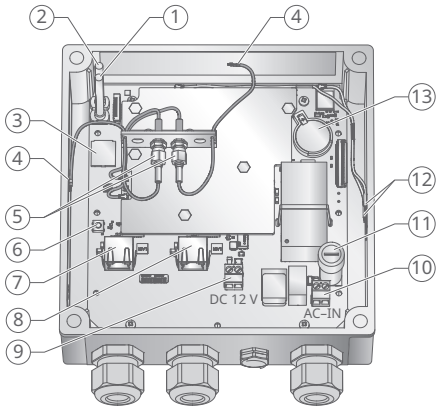
17 OPTIME Gateway 2 (2023) with open cover



1	LED 1	2	LED 2
3	SIM card slot	4	LTE antennas
5	SMA connectors LTE	6	Push button [BTN]
7	LAN 2 (inactive)	8	LAN 1
9	12 V DC voltage	10	Standard supply (mains voltage)
11	Fuse	12	Combined antenna (Bluetooth, WLAN)
13	Backup battery		

4.4.2.1 Operating mode

When the LED indicators are in operating mode, the LEDs display the connection status.

6 LED indicators in operating mode

LED 1	LED 2	Function
	Lights up green	A connection has been established between the OPTIME Gateway and the OPTIME Cloud.
Lights up green		The OPTIME Gateway is connected to the internet.
	Lights up red	No connection between the OPTIME Gateway and the OPTIME Cloud
Lights up red		No connection to the internet

4.4.2.2 Debug mode

- To check the quality of the internet connection, press the push button during operation ➤28|17.

» The LED indicators display the quality of the connection.

7 LED indicators in debug mode

LED 1	LED 2	Function
	Flashing green	Good internet connection
	Flashing yellow	Poor internet connection
	Flashing red	No internet connection
Flashing pink		4G internet connection
Flashing blue		3G internet connection
Flashing yellow		2G internet connection

4.4.2.3 Status display for gateway configuration

Access to the configuration interface is only possible immediately after switching on the gateway.

After the gateway is switched on, both LED indicators light up red. While LED 1 lights up blue for 5 s, access to the configuration interface can be activated by pressing the push button on the gateway ➤56|7.2.

The gateway continues the start-up process and switches to operating mode, regardless of whether you access the configuration interface or not.

When you start configuration mode in the gateway, the LED indicators display the status of the gateway, which acts as a WLAN access point.

8 LED indicators for configuration mode

LED 1	LED 2	Function
Lights up blue		Configuration mode in the gateway can be started by pressing the push button.
Flashing green		Indicates that the gateway is providing a WLAN access point.

4.4.3 OPTIME Ex-Gateway

The Ex variants of the OPTIME Gateway are technically identical to the standard variants. The components are installed in type-tested housings and are delivered with country-specific or region-specific certification.

Please note that, in the case of Ex variants, the QR code for provisioning the gateway is located inside the housing.

5 Transport and storage

The device packaging offers only limited protection against damage during transport.

The lubricators contain replaceable battery packs with alkaline batteries, which are not subject to transport restrictions under special regulation A123 IATA-DGR.

⚠ WARNING

Risk of fire and explosion due to improper handling of batteries

Improper handling of batteries may cause heat generation, which can result in batteries catching fire or exploding.

- Do not damage or open batteries.
- Do not throw batteries into fire.
- Do not recharge batteries.
- Do not short-circuit batteries.
- Do not send defective batteries by air freight.
- Deactivate the device when not in use.

NOTICE

Damaged electronics and plastic parts due to improper handling

Improper handling may cause severe shocks that can damage or destroy the electronics and plastic parts of the gateway and lubricators.

- Avoid dropping the device.
- Avoid severe impacts.

✓ Observe the safety regulations for transport and storage.

✓ Wear the required protective equipment.

1. Transport the device carefully, avoiding drops and heavy impacts.
2. Store the device under the recommended environmental conditions to protect the batteries.

6 Commissioning

6.1 Registering in the OPTIME Dashboard

Configuring gateways and lubricators requires registration in the OPTIME Cloud so that gateways and lubricators are automatically assigned to your company. Once registration is complete, you can configure the components of your system, i.e. gateway and lubricators, for your system structure, either in the OPTIME Dashboard or in the OPTIME Mobile App.

1. Register in the OPTIME Cloud.
2. Configure the system components in the OPTIME Dashboard or in the OPTIME Mobile App for the system structure.

6.2 Installing the OPTIME Mobile App

Before installing the system components, you will need to install the app on your mobile phone or tablet. The app is available free of charge from the App Store (iOS) and Google Play. You will need login data to be able to log in to the app.

18 Downloading the app

1. Download the OPTIME Mobile App from the App Store (iOS) or Google Play.
2. Install the app.
3. Log in to the app.

6.3 OPTIME Gateway

When installed for the first time, the gateway forms the core of the mesh network. The OPTIME Gateway must be the first component added to the customer's system structure. Mounting is then carried out at the desired location and the electrical installation is completed.

6.3.1 Replacing the SIM card in the gateway

The SIM card is usually preinstalled in the gateway at the factory.

In the case of OPTIME Gateway (2019), the SIM card is inserted in the LTE stick. In the case of OPTIME Gateway 2, the SIM card slot is located on the circuit board ➤28|17.

When a new SIM card is inserted, the Access Point Name (NPN) may need to be changed.

In the case of OPTIME Gateway (2019):

1. Replace the SIM card in the LTE stick.
2. Access the LTE stick's user interface and set the APN.

In the case of OPTIME Gateway 2 (2023):

3. Replace the SIM card in the slot on the circuit board.
4. Set the APN.

6.3.2 Adding the gateway to the system structure

To add the gateway to the customer's system structure, follow the step-by-step guidance in the app.

1. Open the OPTIME Mobile App.
2. Tap the [Login] button.
3. Enter your login data.
4. Go to the menu symbol and tap on the [Provision gateway] button.

19 Registering the gateway

5. Follow the instructions in the app to scan the QR code of the gateway. The QR code is located on the side of the device, on the product data sticker featuring the Schaeffler or Treon logo.

In the Ex variants of the OPTIME Gateway, the QR code is located inside the housing.

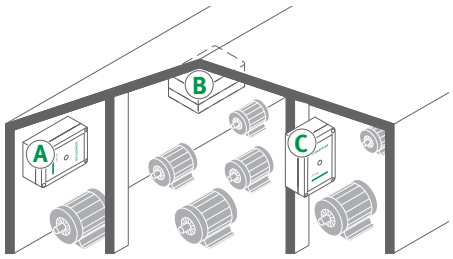
6.3.3 Selecting the mounting location for the gateway

▸ Select the mounting location in accordance with the following instructions.

Instructions:

- Schaeffler recommends observing these criteria for positioning:
  - Place the gateway centrally within the overall system, in the area of the installed lubricators.
  - Position the gateway so that line of sight exists to 5 or 6 lubricators. These devices usually serve as repeaters for the other devices in the mesh network.
  - The best coverage in the mesh network is achieved by mounting the gateway above several lubricators distributed within an area.
  - Do not install the gateway at the end of a chain of several lubricators arranged in series, in order to avoid reduced battery runtime of the last lubricator in the row.
- The gateway must only be mounted on a fixed structure, such as a wall or ceiling.
- Reinforced concrete or larger metallic objects can significantly impede signal transmission in this area. The OPTIME Gateway must not be installed in a metal switch cabinet. Choose a mounting location that will allow stable data transmission.
- If a mobile network connection is used for transmission, check LTE reception at the mounting location in advance using a mobile phone.
- The gateway may only be opened in environments with a pollution level of 1 or 2.

20 Mounting location of the OPTIME gateway



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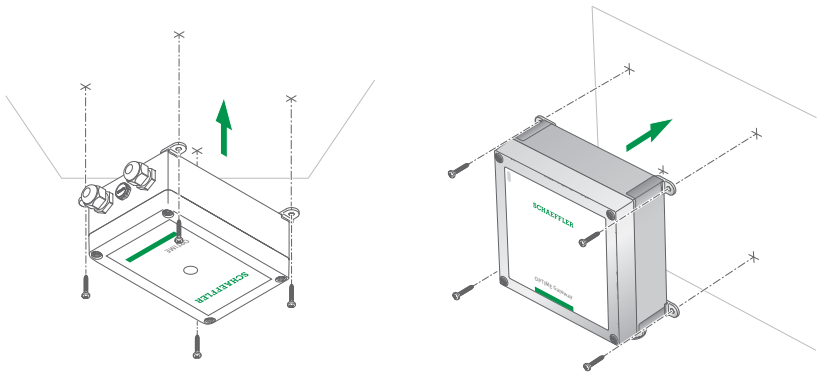
6.3.4 Installing the gateway

Suitable fixing material must be selected to match the surface quality of the substrate. The scope of delivery of the OPTIME Gateway 2 already includes screws and dowels for mounting on concrete.

✓ Suitable fixing materials are available.

1. Secure the OPTIME Gateway at the mounting location using preinstalled brackets.
2. Continue with the instructions under *Connecting the gateway electrically* ➤34|6.3.5.

21 Attaching the OPTIME gateway



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6.3.5 Connecting the gateway electrically

For the electrical connection the customer has to provide a sufficiently long connection cable with the appropriate specifications.

⚠ WARNING

Danger to life from electric shock

Failure to adhere to the safety regulations can result in a life-threatening electric shock.

- Ensure that all electrical connections are carried out exclusively by a qualified electrician.

⚠ WARNING

Danger to life from electric shock

A defective connection cable can result in a fatal electric shock.

- Arrange for any defective connection cables to be replaced immediately by a qualified electrician.

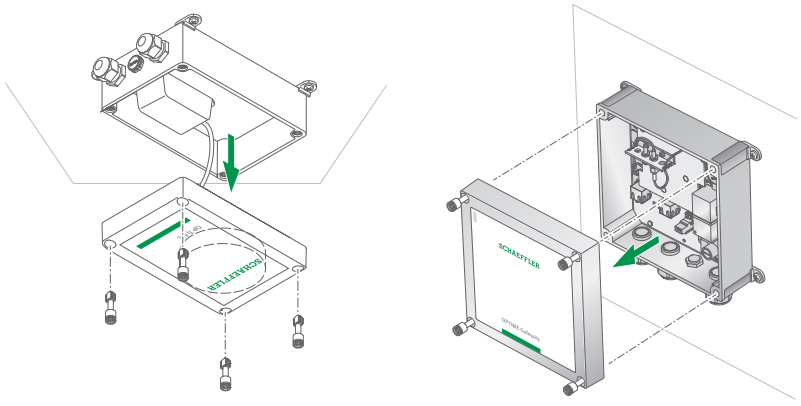
⚠ WARNING

Danger to life from electric shock

Connecting the device with a protective contact plug is not permitted and may result in a fatal electric shock.

- Only connect the device to the mains power supply using a permanent connection.
- A suitable and easily accessible facility must be provided to disconnect the unit from all mains supply lines.

22 Open cover



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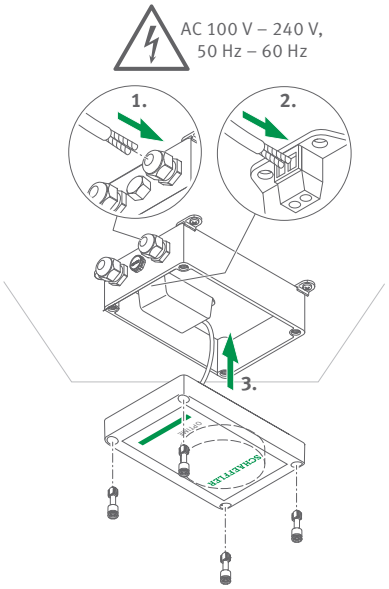
23 Connecting the OPTIME Gateway (2019) electrically



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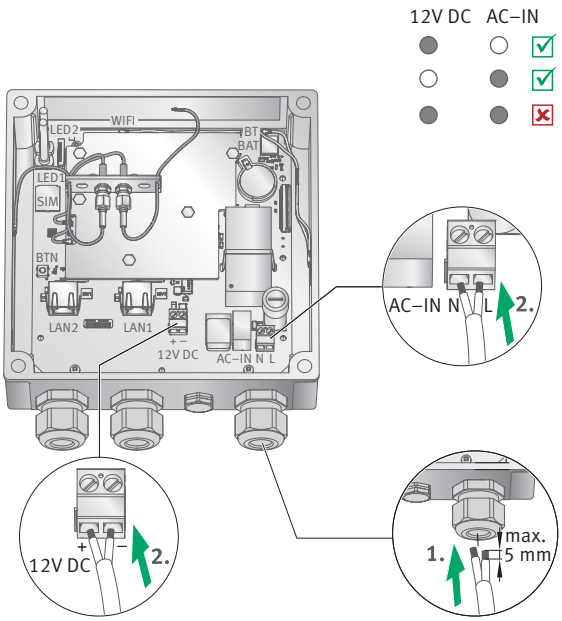
24 Connecting the OPTIME Gateway 2 (2023) electrically



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For OPTIME Gateway 2 (2023) only: The mains input (AC-IN) and the alternative input (12V DC) for DC 12 V must not be used simultaneously. L (line) and N (neutral) for AC-IN must be connected as marked on the printed circuit board ➤28|17. Use only cables with a cross-section of ≤ 1,5 mm² or ≤ 16 AWG and an outside diameter between 7 mm and 13 mm. Strip the cable by max. 5 mm only. A ferrule must be used when using a flexible cable.

For OPTIME Gateway 2 (2023) only: Network connection LAN1 is disabled by default. LAN1 can be enabled via the OPTIME Gateway configuration interface.

The LAN2 connection is not currently available for use.

The screws in the connection terminal (AC-IN and DC 12 V) require a tightening torque of 0,5 Nm. The screws in the housing cover are tightened to 1,2 Nm. The tightening torque for the cable gland is 3 Nm.

If the mobile network connection of the OPTIME Gateway is used (default setting), the OPTIME Gateway automatically connects to the OPTIME Cloud. Establishing the connection may take several minutes.

To connect the OPTIME Gateway via Ethernet, the communication link to the OPTIME Gateway can optionally be established using a network cable and a LAN socket on the router. For this communication connection, the OPTIME Gateway configuration must be adjusted accordingly.

When the LED on the OPTIME Gateway (2019) lights up green, the connection to the internet has been established successfully. The OPTIME Gateway appears in the customer area within the OPTIME Cloud.

Connectivity is confirmed by 2 LEDs on the OPTIME Gateway 2. When a connection to the OPTIME Cloud is established, both LEDs light up green.

If the mobile network connection via the installed SIM card is not used, other options are available:

- SIM card provided by the customer
- connection via WLAN
- connection via network cable

OPTIME Gateway 2 (2023): once fully commissioned, insert the plugs provided to close off access to the cover screws.

6.4 Mounting the OPTIME C1 lubricator

NOTICE

Risk of damage to the housing, electronics or mechanics of the lubricator and consequential damage to machines due to improper mounting

Improper mounting of the lubricator may damage the lubricator or the machine.

- The lubricator may only be installed by qualified personnel.

Carry out the steps in the following sections in the specified order.

6.4.1 Selecting the mounting location for lubricators

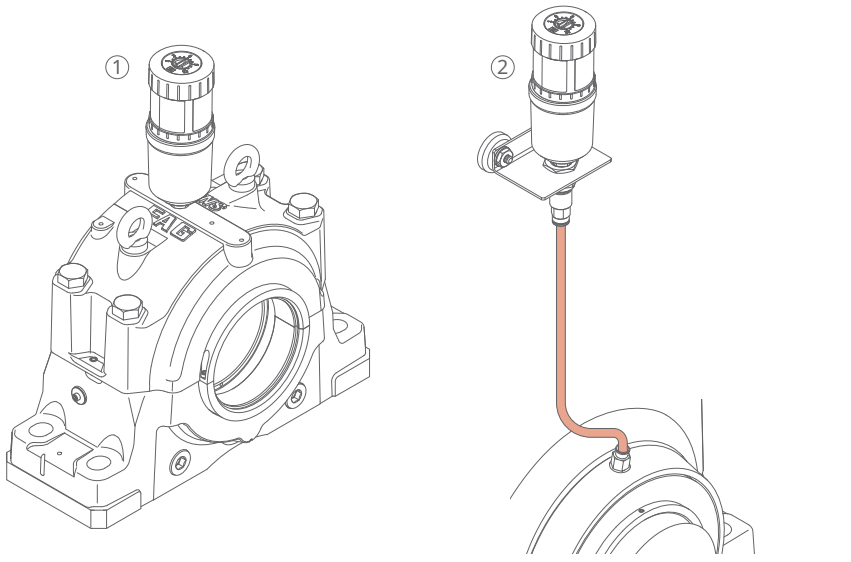
Direct and indirect mounting

The OPTIME lubrication system is suitable for industrial machines that operate continuously and require regular supply of a lubricant in a specified quantity per unit of time. The lubricators can be mounted directly or indirectly.

Direct mounting: The lubricator is preferably screwed directly onto the lubrication point provided for this purpose by the machine manufacturer.

Indirect mounting: If there is a lack of space, accessibility is poor (e.g. for cartridge replacement) or high heat or strong vibrations prevent direct mounting on the machine, the lubricator is attached indirectly, i.e. at some distance from the lubrication point. Indirect mounting requires a suitable device holder for attachment, a hose and appropriate hose connector parts for connecting the lubricator to the lubrication point.

25 Mounting location on the machine



1	Direct mounting	2	Indirect mounting

Selecting the mounting location and mounting method

NOTICE

Risk of damage due to impaired lubrication

Improper mounting of the lubricators may impair lubrication and subsequently damage the machines in the system.

- To ensure optimum condition lubrication, consult a lubrication to select the mounting location and mounting method.

NOTICE

Product damage and malfunctions due to unsuitable ambient conditions

Unsuitable ambient conditions can lead to a loss of function and may even cause damage to the lubricator.

- Select a mounting position that protects the system from moisture, impacts, vibrations, contaminants and dust.
- Protect the lubricator from temperatures > +55 °C and from heat sources such as direct sunlight.

Schaeffler can offer you a service ideally tailored to your needs.

- Observe the following instructions when selecting the mounting location.

Instructions:

- Take into account the back pressure at the lubrication point itself and keep it to a minimum.
- To enable proper signal transmission:
  - The lubricator must not be shielded on several sides by metallic parts, such as a metal housing or switch cabinet.
  - Do not cover the lubricator.
- The lubricator can be installed in any orientation.
- Mount the lubricator in an easily accessible location.
- The mounting location must not be exposed to increased vibrations, such as the natural vibration of thin-walled housing covers or cooling fins.
- If unfavourable environmental influences such as strong vibrations, heat or cold occur directly at the lubrication point, the lubricator must be installed at an adequate distance from the lubrication point using a lubricant line (indirect mounting):
  - Keep the lubricant line as short as possible, since the back pressure on the lubricator increases with line length.
  - for information on the maximum permissible length L_{max} of the lubricant line: see TPI 252
  - recommended inside diameter of a hose line: 6 mm to 8 mm
  - Sub-distributors (splitters, progressive distributors) are not permitted.

The OPTIME Mobile App provides support during setup and guides the fitter step by step.

Further information

TPI 252 | Lubricators |
https://www.schaeffler.de/std/1D4E

6.4.2 Prefilling the lubricator

NOTICE

Risk of damage due to egress of lubricant

Uncontrolled leakage of lubricant can contaminate or damage components of the lubrication system and adjacent construction.

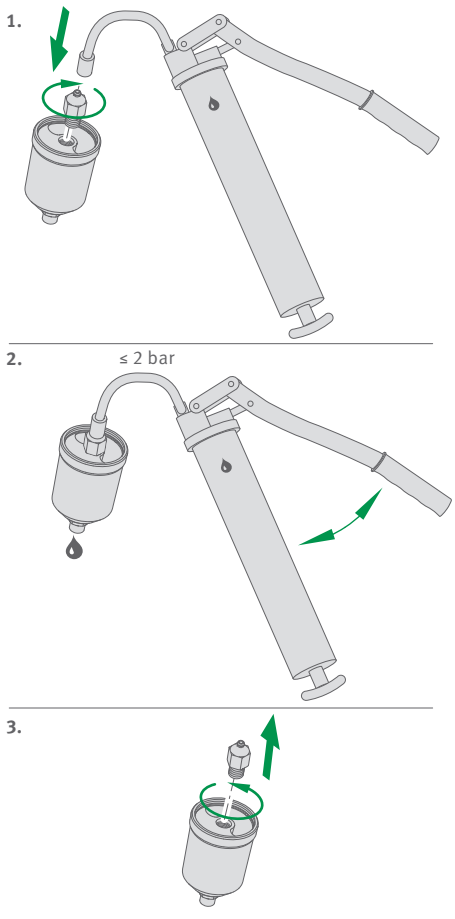
- Fill the device with lubricant using the designated tools only. Observe the maximum tightening torque.
- Do not apply lubricant to components that are not intended for this purpose.

- ✓ Wear the required protective equipment.
- ✓ The lubricator is not yet mounted on the lubrication point.
- ✓ When cartridges are filled with lubricant: The suitability of the lubricant for use in OPTIME C1 and CONCEPT1 has been clarified with Schaeffler technical support.
- ✓ A lever grease gun or a comparable suitable tool is prepared and filled with the same lubricant as that used in the application.

1. Screw the supplied filling nipple OPTIME-LW-C1.NIPPLE-PREFILL-R1/4 hand-tight into the lubricator.
2. Place the lever grease gun or a comparable suitable tool onto the filling nipple.
3. Pump until lubricant emerges at the outlet of the lubricator. Ensure that the pressure does not exceed 2 bar. Continuously monitor the pressure, e.g. using a manometer.
4. Remove the filling nipple from the lubricator.

» The lubricator is prefilled.

26 Prefilling the lubricator



6.4.3 Inserting the battery pack or loaded battery holder

Power for the lubricator is provided by the OPTIME-LW-C1.BATTERY **battery pack**.

Optional: The OPTIME-LW-C1.ADAPTER-BATTERY **battery holder** may be used instead of the battery pack. This is available as an accessory. The battery holder may only be fitted with suitable batteries (battery cells) approved by Schaeffler.

9 Approved battery types

Manufacturer	Battery type	Size	Nominal voltage
Duracell	Optimum	LR6 (AA Mignon)	1,5 V
Energizer	Max Plus		
GP Batteries	Super Alkaline		
Maxell	Super Alkaline		
Nanfu	Excell Plus, Excell Ultra		
Panasonic	Evolta, Evolta Neo		
Philips	Premium Alkaline, Ultra Alkaline		
Varta	Alkaline INDUSTRIAL PRO, Longlife Max Power		

The user is responsible for any failures or device malfunctions caused by unsuitable or non-approved battery cells. The use of non-approved battery cells will render the warranty invalid.

Safety instructions

⚠ WARNING

Risk of burns and chemical burns from poisonous gases

A short circuit may cause the battery packs to overheat severely, releasing toxic gases. Burn injuries and health hazards are possible.

- Do not use batteries or battery packs if they have been dropped.
- Dispose of batteries or battery packs immediately if they have been dropped.
- Only use new, originally packaged battery packs or new, originally packaged battery cells.
- Do not open the battery pack packaging until immediately before inserting it into the device.
- Do not place the poles of the battery pack or of the loaded battery holder on conductive surfaces after unpacking.

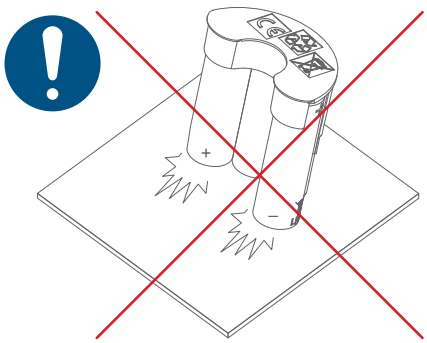
⚠ WARNING

Risk of fire and explosion due to improper handling of batteries

Improper handling of batteries may cause heat generation, which can result in batteries catching fire or exploding.

- Do not damage or open batteries.
- Do not throw batteries into fire.
- Do not recharge batteries.
- Do not short-circuit batteries.
- Do not send defective batteries by air freight.
- Deactivate the device when not in use.

27 Do not place the battery pack or loaded battery holder on conductive surfaces



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NOTICE

Risk of damage or reduced service life due to short circuit

A short circuit may damage individual cells of the battery pack or loaded battery holder, causing them to discharge. Possible consequences include reduced service life, premature device failure and potential consequential damage to the application.

- Do not use batteries or battery packs if they have been dropped.
- Dispose of batteries or battery packs immediately if they have been dropped.
- Only use new, originally packaged battery packs or new, originally packaged battery cells.
- Do not open the battery pack packaging until immediately before inserting it into the device.
- Do not place the poles of the battery pack or of the loaded battery holder on conductive surfaces after unpacking.

Procedure

When using the battery holder:

NOTICE

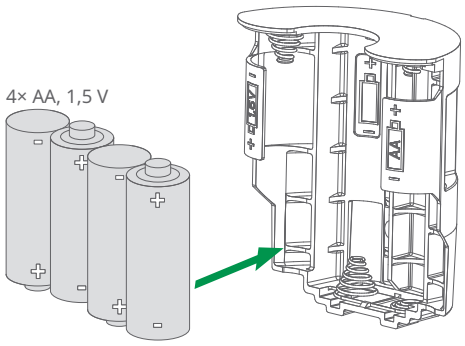
Risk of device failure or reduced service life due to unsuitable battery cells

The use of unsuitable battery cells in the battery holder may cause the lubricator to fail prematurely. Possible consequences include reduced service life, premature device failure and potential consequential damage to the application.

- Use only approved battery types as battery cells.
- Use only battery cells from the same manufacturer and of the same type in the battery holder.
- Do not use discharged or partially discharged battery cells together with new battery cells.
- Use only new, originally packaged batteries.

1. Unpack 4 new, approved battery cells from the same manufacturer and of the same type.
2. Insert the 4 new battery cells into the battery holder. Ensure correct polarity in accordance with the markings.
3. Do not place the loaded battery holder on conductive surfaces.

28 Inserting battery cells into the battery holder



4. When using the battery pack: Remove the battery pack from its packaging. Do not place the battery pack on conductive surfaces.
5. Insert the battery pack or loaded battery holder into the recess in the lubricator.

29 Inserting the battery pack or loaded battery holder into the lubricator

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6. When using a CONCEPT1 lubricant cartridge: continue with the instructions under *Screwing in the CONCEPT1 lubricant cartridge*.
7. When using a third-party cartridge: continue with the instructions under *Screwing in a third-party cartridge*.

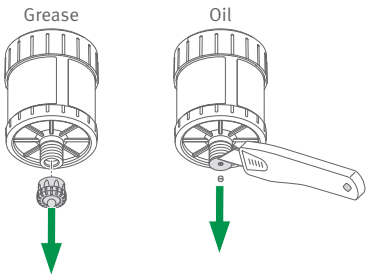
6.4.4 Screwing in the CONCEPT1 lubricant cartridge

✓ The lubricator is prefilled.

✓ The battery pack is inserted.

1. For cartridges filled with grease (Grease): remove the black protective cap from the thread.
2. For cartridges filled with oil (Oil): Cut the nipple off the throttle element with a sharp knife.

30 Opening the seal



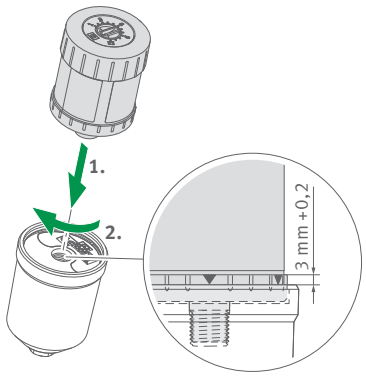
001A9009

3. Screw the CONCEPT1 cartridge into the OPTIME C1 lubricator until the tips of the triangular markings on the cartridge are flush with the upper edge of the lubricator.

For older cartridges without triangular markings, pay attention to the gap between the lubricator and the cartridge funnel:

4. Ensure that a distance of 3 mm +0,2/0 mm is maintained between the upper edge of the lubricator and the upper edge of the cartridge funnel.
5. Continue with the instructions under *Activating the lubricator* ➤44|6.4.6.

31 Screwing the cartridge into the lubricator



Further information

Important safety-related information on using the CONCEPT1 cartridge:

BA 69 | Lubricators | CONCEPT1 |
https://www.schaeffler.de/std/1F4C

6.4.5 Screwing in a third-party cartridge

Instead of the CONCEPT1 cartridge, approved lubricant cartridges from third-party providers may be used:

- Dimensionally compatible third-party cartridges can be screwed directly into the lubricator. A cartridge adapter is not required for dimensionally compatible third-party cartridges.
- Approved third-party cartridges that are not dimensionally compatible can be used together with the OPTIME-LW-C1.ADAPTER cartridge adapter.
- The approved third-party cartridges feature an R $^{1}/_{4}$" threaded connector.

10 **Approved third-party cartridges** (60 cm^3, 125 cm^3)

Cartridge provider	Product designation	Cartridge adapter required
perma	FLEX, FLEX PLUS, NOVA	✓
SKF	SKF SYSTEM 24 LAGD	✓
NTN	READY BOOSTER, SMART BOOSTER	✓
Klüber	Klübermatic FLEX, Klübermatic NOVA	✓
simatec	simalube (including 250 cm^3)	–

Screwing in the third-party cartridge directly

✓ The lubricator is prefilled.

✓ The battery pack is inserted.

1. Screw the approved third-party cartridge into the OPTIME C1 lubricator.
2. Ensure that the upper edge of the funnel is flush with the upper edge of the OPTIME C1 lubricator.
3. Manually select the cartridge size and lubricant in the app.

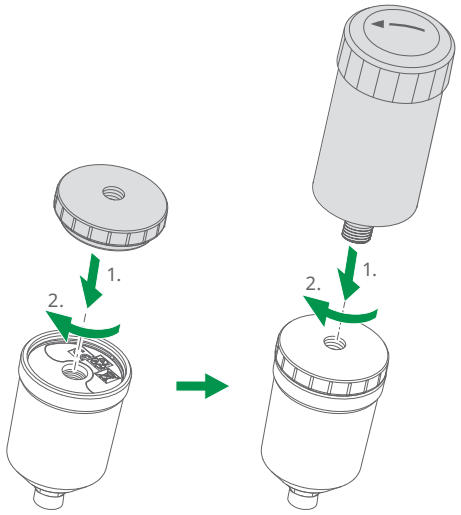
Screwing in a third-party cartridge with a cartridge adapter

✓ The lubricator is prefilled.

✓ The battery pack is inserted.

1. Screw the cartridge adapter all the way into the lubricator.
2. Screw the approved third-party cartridge all the way into the cartridge adapter.
3. Manually select the cartridge size and lubricant in the app.

32 Screwing in a third-party cartridge with a cartridge adapter



4. Continue with the instructions under *Activating the lubricator* ➤44|6.4.6.

6.4.6 Activating the lubricator

Activate the lubricator before mounting to rule out any possible defect in advance.

✓ An NFC-enabled mobile phone or tablet is available.

✓ The OPTIME Mobile App is installed on the mobile phone or tablet.

1. Open the OPTIME Mobile App.
2. Tap the [Login] button.
3. Enter your login data.
4. Go to the [Menu] symbol and tap the [Provision lubricators] button.
5. Follow the instructions in the app to activate the lubricator via NFC.
   The NFC receiver is located on the side of the lubricator under the NFC logo.
6. When using the NFC function, observe the following instructions (applies to both mobile phones and tablets).

Instructions:

- Distance between the NFC chip of the mobile phone and the NFC symbol on the lubricator: ≤ 10 mm
- If the position of the NFC chip in the mobile phone is unknown: contact the mobile phone provider.
- Hold the lubricator and the mobile phone steady.
- When the mobile phone confirms successful NFC use, do not move the devices for ≥ 3 s.

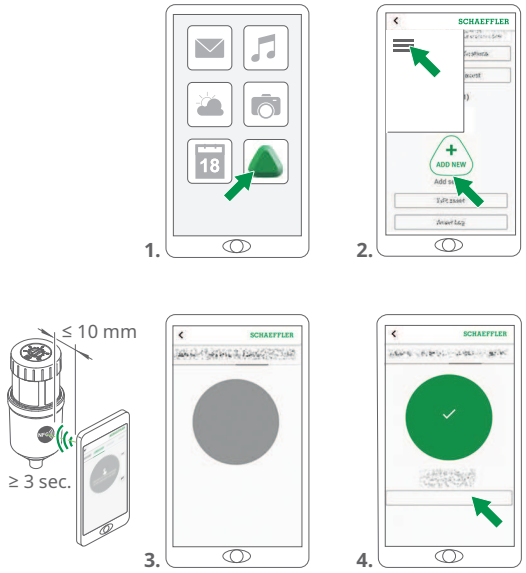
Activation in 2 steps: In the first step, the network parameters are transferred to the lubricator. In the second step, the lubrication parameters are written to the lubricator.

7. When the app prompts the user for final confirmation: save the settings.

› The mobile device acknowledges each separate NFC contact, depending on the device settings, e.g. by vibration.

› The lubricator is now activated in the system.

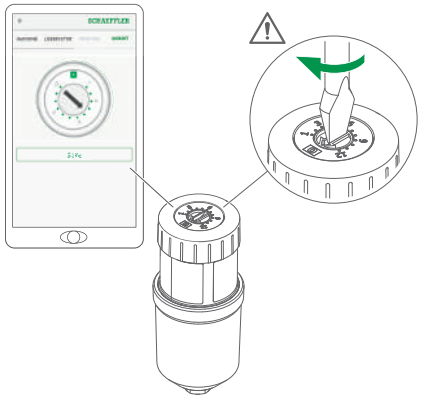
33 Activating the lubricator



001C43BB

8. Activate the cartridge in accordance with the instructions in the app.

34 Activating the cartridge



001A9044

For more information on provisioning lubricators, refer to the Online Help in the OPTIME Dashboard.

9. Continue with the instructions under *Preparing the lubrication point* ➤46|6.4.7.

6.4.7 Preparing the lubrication point

⚠ WARNING

Risk of injury from moving parts and hot surfaces

Moving machine parts may cause injury on contact. If the machine is too hot when mounting the lubricator, there is a risk of burns on contact.

- Switch off the machine before mounting the lubricators and secure it against restart.
- Allow the machine to cool down and measure the surface temperature of the machine using suitable devices.

⚠ CAUTION

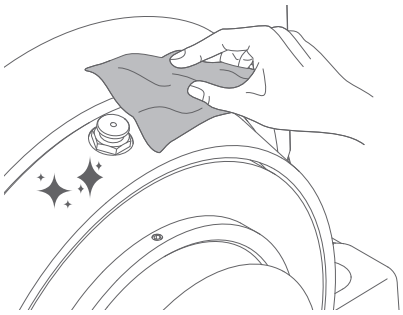
Risk of injury from adhesive

Improper handling of adhesive may cause injury. Direct skin contact with the adhesive can lead to injuries.

- Use suitable protective gloves.
- Follow the adhesive instructions and the safety data sheet.

1. Clean the machine surface at the lubrication point, e.g. using a cloth or other suitable tools, to remove any contamination.

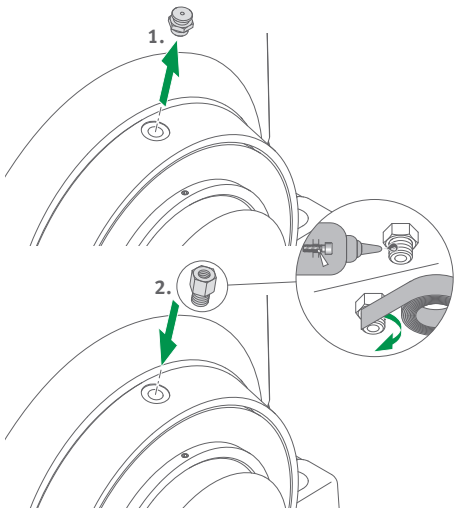
35 Cleaning the surface



001A6C57

2. Remove the existing lubrication nipple.
3. Check whether a screw-in reducing nipple is required: see TPI 252, *Screw-in reducing nipples*.
4. If a screw-in reducing nipple is required: screw in the reducing nipple, sealing the threaded connection with suitable sealing tape, e.g. PTFE, or sealing adhesive, e.g. LOCTITE 243.
5. If screw-in connecting pieces are required: seal the connecting pieces in the same way during mounting using suitable sealing tape, e.g. PTFE, or sealing adhesive, e.g. LOCTITE 243.

36 Removing the lubrication nipple, screwing in the reducing nipple



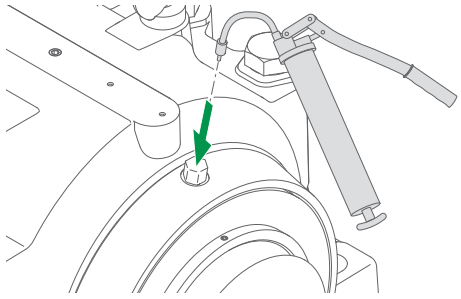
001A6C67

Prefilling the lubrication point

✓ A lever grease gun or a comparable suitable tool is prepared and filled with the same lubricant as that used in the application.

6. Screw the supplied filling nipple OPTIME-LW-C1.NIPPLE-PREFILL-R1/4 hand-tight into the lubrication point.
7. Place the lever grease gun or a comparable suitable tool onto the filling nipple.
8. Prefill the lubrication point with lubricant. Pump until the connecting pieces are also filled with grease.

37 Prefilling the lubrication point



00197309

9. Remove the filling nipple.

› The lubrication point is prefilled.

10. For direct mounting: Continue with the instructions under *Mounting the lubricator directly*.
11. For indirect mounting: Continue with the instructions under *Mounting the lubricator indirectly*.

6.4.8 Mounting the lubricator directly

Direct mounting on the machine means that no flexible accessories are used for lubricant delivery. For direct mounting, only the following accessories may be used, see also TPI 252:

- screw-in connecting pieces, i.e. elbow fittings or short metallic extensions
- screw-in reducing nipples

⚠ WARNING

Risk of injury from moving parts and hot surfaces

Moving machine parts may cause injury on contact. If the machine is too hot when mounting the lubricator, there is a risk of burns on contact.

- Switch off the machine before mounting the lubricators and secure it against restart.
- Allow the machine to cool down and measure the surface temperature of the machine using suitable devices.

⚠ CAUTION

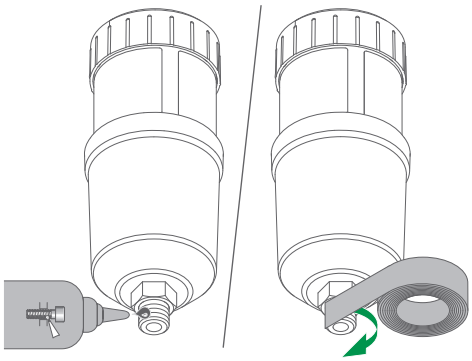
Risk of injury from adhesive

Improper handling of adhesive may cause injury. Direct skin contact with the adhesive can lead to injuries.

- Use suitable protective gloves.
- Follow the adhesive instructions and the safety data sheet.

1. Seal the threaded connection of the lubricator with suitable sealing tape, PTFE, or sealing adhesive, e.g. LOCTITE 243.

38 Sealing the thread

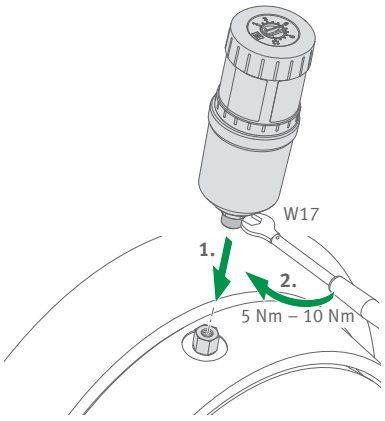


2. Screw the lubricator into the lubrication point. Required tightening torque: 5 Nm to 10 Nm

» Mounting of the lubricator is complete.

» Commissioning is complete.

39 Screwing the lubricator onto the lubrication point



6.4.9 Mounting the lubricator indirectly

Indirect mounting means installing the lubricator at a suitable distance and connecting it to the lubrication point using appropriate connecting pieces and a flexible lubricant line.

Indirect mounting is preferred if the lubrication point is located in an area where ≥ 1 of the following criteria apply:

- ambient temperature outside the permissible operating temperature of the lubricator: < −10 °C or > +55 °C
- strong oscillations or vibrations at the application or machine
- lack of space
- difficult to access, e.g. not accessible due to a safety barrier

Refer to TPI 252 for further information on system design for lubricators. A wide range of accessories is available for indirect mounting. Accessories and details on system design:

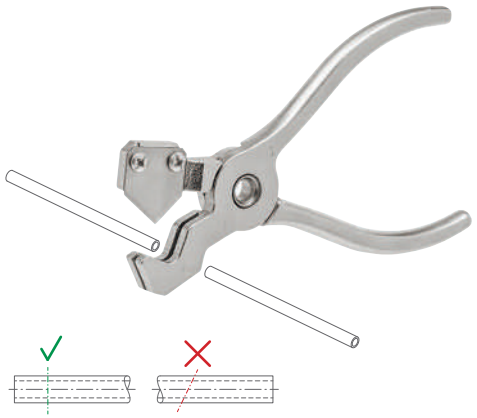
TPI 252 | Lubricators |
https://www.schaeffler.de/std/1D4E

The following instructions illustrate the steps for **typical indirect mounting**. The required accessories and mounting steps may vary depending on local conditions. In case of questions or uncertainty, consult a lubrication expert from Schaeffler.

Preparing the lubricant line

1. Determine the maximum length of the lubricant line L_{max}.
   For calculation basis, see TPI 252, *System design*. Do not exceed L_{max}. Keep the lubricant line as short as possible to minimise back pressure from the application.
2. Cut the lubricant line ARCALUB-C1.HOSE-8X6-PA12-5M to length using the hose cutter ARCALUB-X.HOSE-CUTTOOL. Cut at a right angle.

40 Cutting the lubricant line to length, cutting at a right angle



Preassembling the device holder

⚠ CAUTION

Risk of injury from adhesive

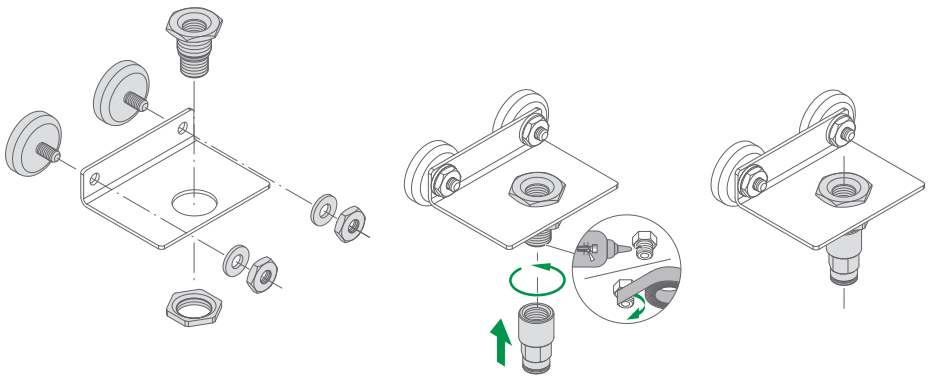
Improper handling of adhesive may cause injury. Direct skin contact with the adhesive can lead to injuries.

- ▸ Use suitable protective gloves.
- ▸ Follow the adhesive instructions and the safety data sheet.

3. Insert 2 magnetic feet ARCALUB-C1.CLAMP-MAGNET into the angle bracket ARCALUB-C1.FIXING-ANGLE and fasten using the supplied washers and nuts.
4. Insert the fixing screw ARCALUB-C1.FIXINGSCREW-G1/2-R1/4 into the bore and lock using the supplied nut.
5. Seal the connection thread on the fixing screw with suitable sealing tape, e.g. PTFE, or sealing adhesive, e.g. LOCTITE 243.
6. Screw in hose connector part ARCALUB-C1.TUBEFIT-G1/4I-SAT148G securely.

» The device holder is preassembled.

41 Preassembling the device holder



Connecting components and prefilling the lubricant line

⚠ CAUTION

Risk of injury from adhesive

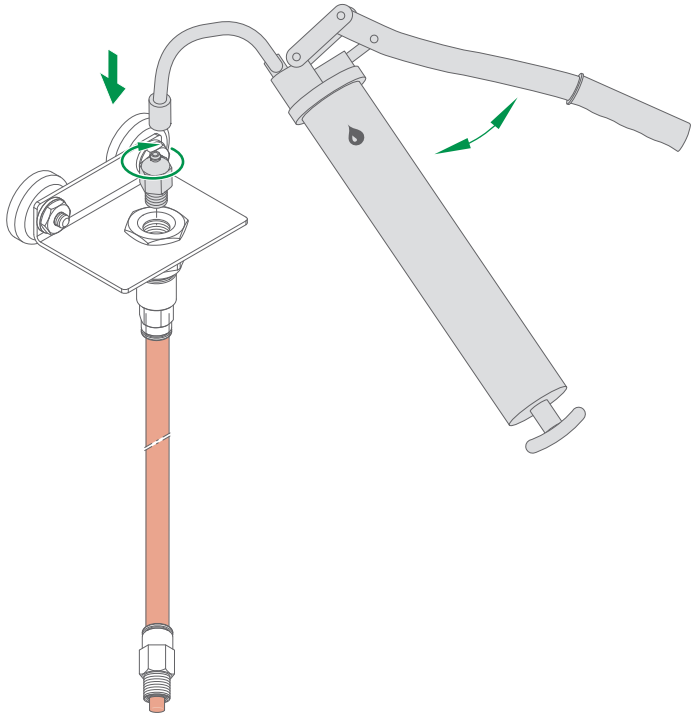
Improper handling of adhesive may cause injury. Direct skin contact with the adhesive can lead to injuries.

- Use suitable protective gloves.
- Follow the adhesive instructions and the safety data sheet.

✓ A lever grease gun or a comparable suitable tool is prepared and filled with the same lubricant as that used in the application.

7. Connect the lubricant line to the preassembled device holder using the hose connector part.
8. Connect the lubricant line to the other hose connector part, which is screwed into the lubrication point of the application, e.g. hose connector part ARCALUB-C1.TUBEFIT-G1/4I-SAT148G.
9. Seal the threaded connection of the connector piece to the lubrication point with suitable sealing tape, e.g. PTFE, or sealing adhesive, e.g. LOCTITE 243.
10. Screw the supplied filling nipple OPTIME-LW-C1.NIPPLE-PREFILL-R1/4 hand-tight into the premounted assembly.
11. Place the lever grease gun or a comparable suitable tool onto the filling nipple.
12. Pump until lubricant emerges from the outlet side.
13. Remove the filling nipple.

42 Prefilling the lubricant line



001C4C7C

WARNING

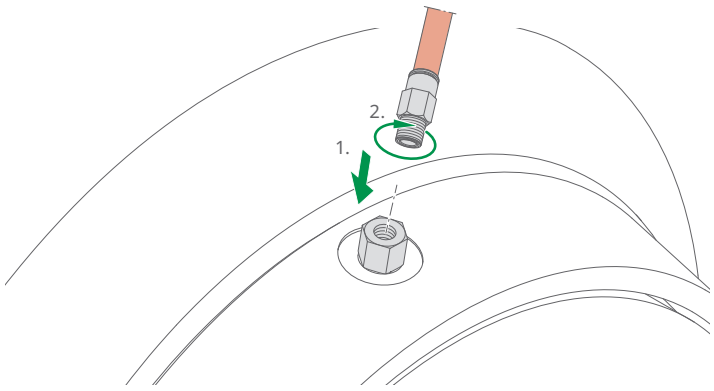
Risk of injury from moving parts and hot surfaces

Moving machine parts may cause injury on contact. If the machine is too hot when mounting the lubricator, there is a risk of burns on contact.

- Switch off the machine before mounting the lubricators and secure it against restart.
- Allow the machine to cool down and measure the surface temperature of the machine using suitable devices.

14. Connect the outlet end to the prepared lubrication point.

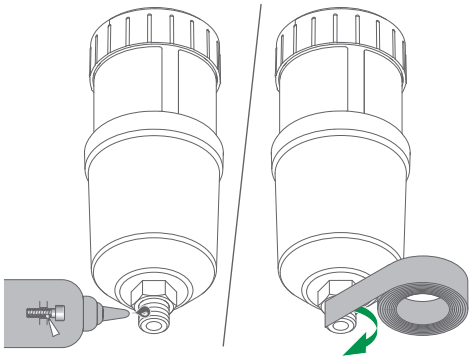
43 Connecting the lubricant line to the lubrication point



001C4C7C

15. Seal the threaded connection of the lubricator with suitable sealing tape, PTFE, or sealing adhesive, e.g. LOCTITE 243.

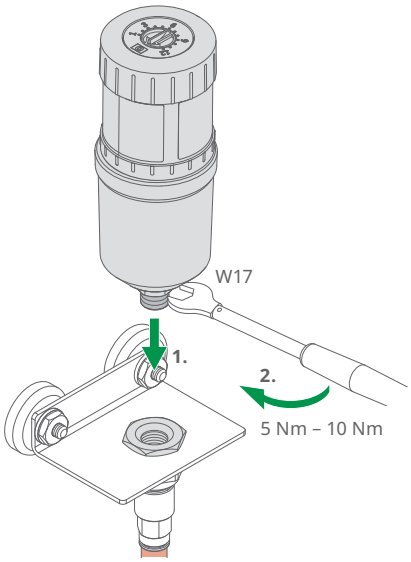
44 Sealing the thread



001AA0D6

16. Screw the lubricator into the device holder. Required tightening torque: 5 Nm to 10 Nm

45 Screwing the lubricator into the device holder



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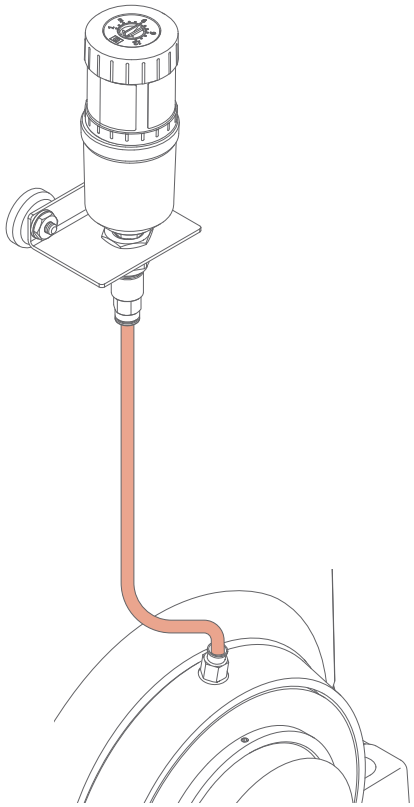
17. Attach the assembly in the desired mounting position.

» Mounting of the lubricator is complete.

» Commissioning is complete.

46 Lubricator mounted indirectly



001C4C7A

7 Configuring the OPTIME Gateway

Various interfaces are available for communication between the OPTIME gateway and the OPTIME cloud.

In most cases, it is not necessary to change the default settings of the gateway. Certain installations may require adjustment of some default settings. Only qualified personnel may change these settings.

Configurable settings include:

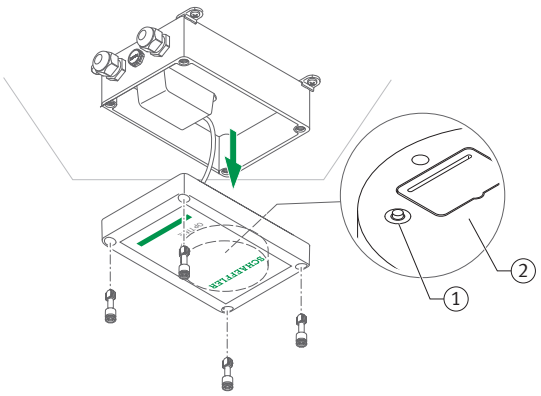
- WLAN
- Ethernet

7.1 Configuring the OPTIME Gateway (2019)

For the OPTIME Gateway (2019), the mobile network connection is established via the built-in LTE stick. As a result, the corresponding SIM settings can only be accessed via the LTE stick's user interface. The LTE sticks used differ depending on the country or region. For assistance with configuration, contact our support team.

To access the gateway configurator user interface via a browser, proceed as follows:

47 Buttons on the OPTIME Gateway



1	Push button	2	Nameplate with WLAN password

1. Press the push button on the OPTIME Gateway until the status LED flashes blue.

› The OPTIME Gateway is now in [Configuration] mode.

› The OPTIME Gateway becomes a WLAN access point. The name of the WLAN access point is "OPTIME serial number", where "serial number" is the serial number of the OPTIME Gateway. The serial number is located on the label on the side of the OPTIME Gateway.

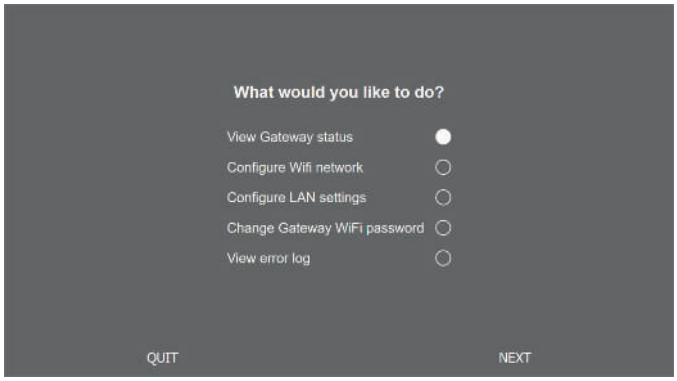
2. Establish a WLAN connection between your computer or mobile device and the WLAN access point. The WLAN password is on the nameplate.
3. Open the browser and enter the IP address 192.168.0.1. If the preset IP address does not work, determine the TCP/IP values for the OPTIME Gateway. This can happen if the device was already connected to another network.

» The drop-down menu will open, displaying the setting options.

7.1.1 Settings

The menu items [View Gateway status] and [View error log] are not relevant for normal operation of the OPTIME Gateway. Qualified personnel can use the information available there if the OPTIME Gateway is not functioning correctly.

48 Drop-down menu for OPTIME Gateway configuration

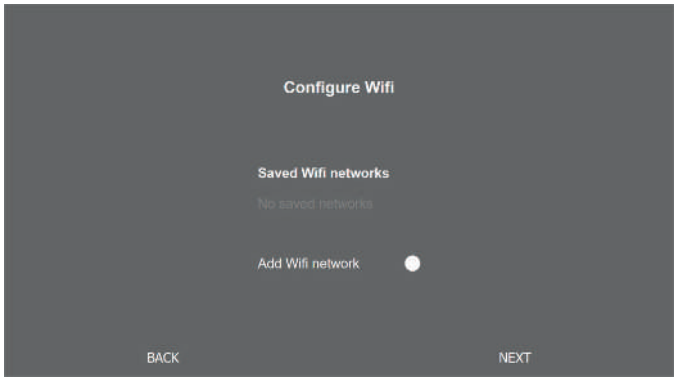


001A9BBF

7.1.1.1 Configure WLAN

The WLAN settings for the OPTIME Gateway can be adjusted under the menu item [Configure WiFi network]. Either a known network can be selected or a new network can be added. If necessary, the WLAN password can be changed under a further menu item [Change Gateway WiFi password].

49 Settings for operation in WLAN network

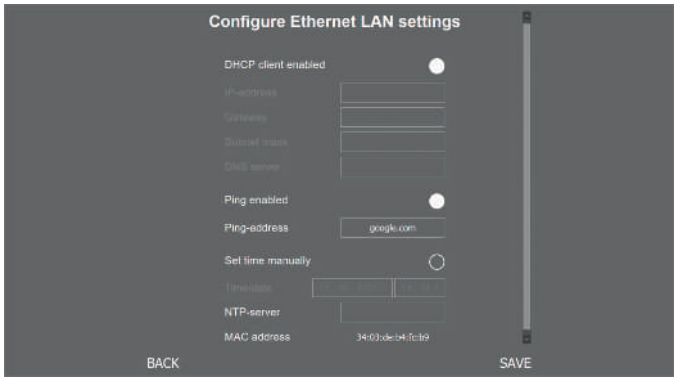


001A9BCF

7.1.1.2 Ethernet configuration

If the OPTIME Gateway is connected to a local network via the RJ45 socket on the device, the necessary settings can be adjusted under the menu item [Configure LAN settings].

50 Settings for operation in the Ethernet



001A9BDF

7.2 Configuring the OPTIME Gateway 2 (2023)

In most cases, it is not necessary to change the default settings of the gateway. Certain installations may require adjustment of some default settings. Only qualified personnel may change these settings.

The gateway can only be switched to configuration mode directly after being switched on. If the gateway is already in operation, you will need to restart the gateway for this purpose.

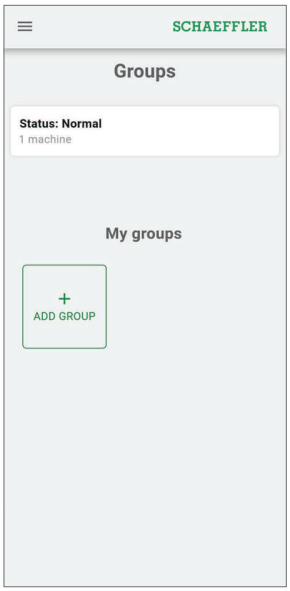
You can use the browser on a mobile device, e.g. mobile phone, tablet or on a computer to connect via WLAN (Wi-Fi) and make the necessary changes.

7.2.1 Accessing the configuration page

Before you start, you will need a Wi-Fi password.

1. To obtain the Wi-Fi password, start the OPTIME Mobile App on your mobile device and log in.
2. On the start page, select the [Menu] symbol in the upper-left corner.

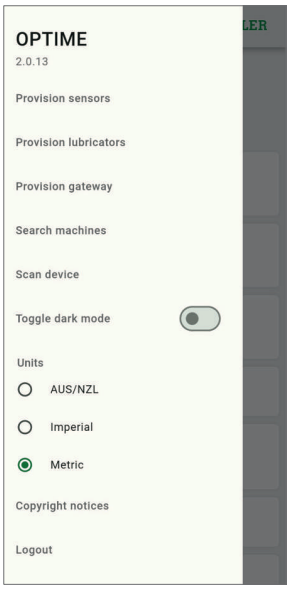
51 Start page



001AFA58

3. Select [Scan device] from the menu.

52 Menu

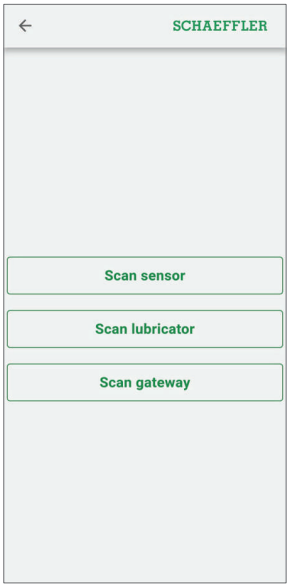


001AFA7B

4. Select [Scan gateway].

› The QR code scanner opens.

53 Selecting device for scanning

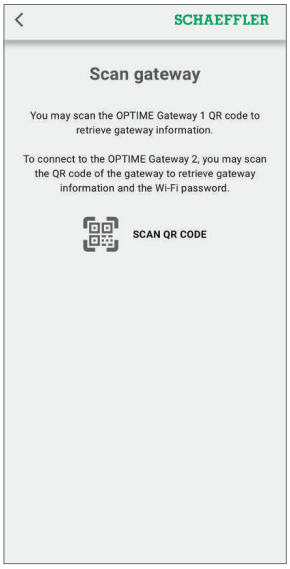


001B4006

5. Select [Scan QR code].

› The camera opens.

54 Scanning the QR code

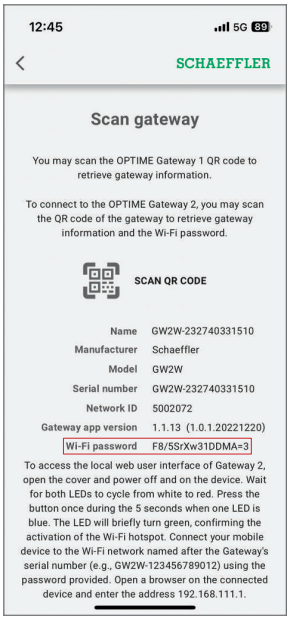


001AFA9F

6. Scan the QR code on the nameplate of OPTIME Gateway 2.

» The Wi-Fi password and other information about OPTIME Gateway 2 are displayed.

55 OPTIME Gateway 2 information



001AFAA0

7. Copy the WiFi password.

Accessing the configuration UI

To access the gateway configuration user interface (UI) via a browser on a mobile device or computer, proceed as follows:

8. Switch on OPTIME Gateway 2.

› Both LEDs light up red.

9. Wait until LED 1 lights up blue for approx. 5 s, then press the [BTN] push button on OPTIME Gateway 2 to enable access to the configuration UI ➤28|17.

› LED 1 lights up green to confirm that the [BTN] push button has been pressed.

› The OPTIME Gateway 2 enters [Configuration] mode and provides a WLAN access point.

10. Select the WLAN access point from the WLAN list on your computer or mobile device to establish a Wi-Fi connection between your computer or mobile device and the WLAN access point. The name of the WLAN access point is “GW2W-serial number”, where “serial number” is the OPTIME Gateway 2 serial number, e.g. “GW2W-232740331510”.
11. Enter the Wi-Fi password.
12. Open the browser and enter the IP address http://192.168.111.1.

» The start page of the OPTIME Gateway 2 configuration opens.

Some Android phones will automatically switch to mobile data when you connect to the configuration page via the WLAN access point. Should this happen, disable mobile data before accessing the OPTIME Gateway 2 configuration.

If you use a Windows PC to access the OPTIME Gateway 2 configuration page, select the WLAN access point from the WLAN list and press [Connect].

The connection is terminated after 10 min of inactivity or by pressing the [Exit] symbol.

The hotspot is deactivated when you exit the configuration page. To reactivate the hotspot, reboot and repeat the procedure as described above.

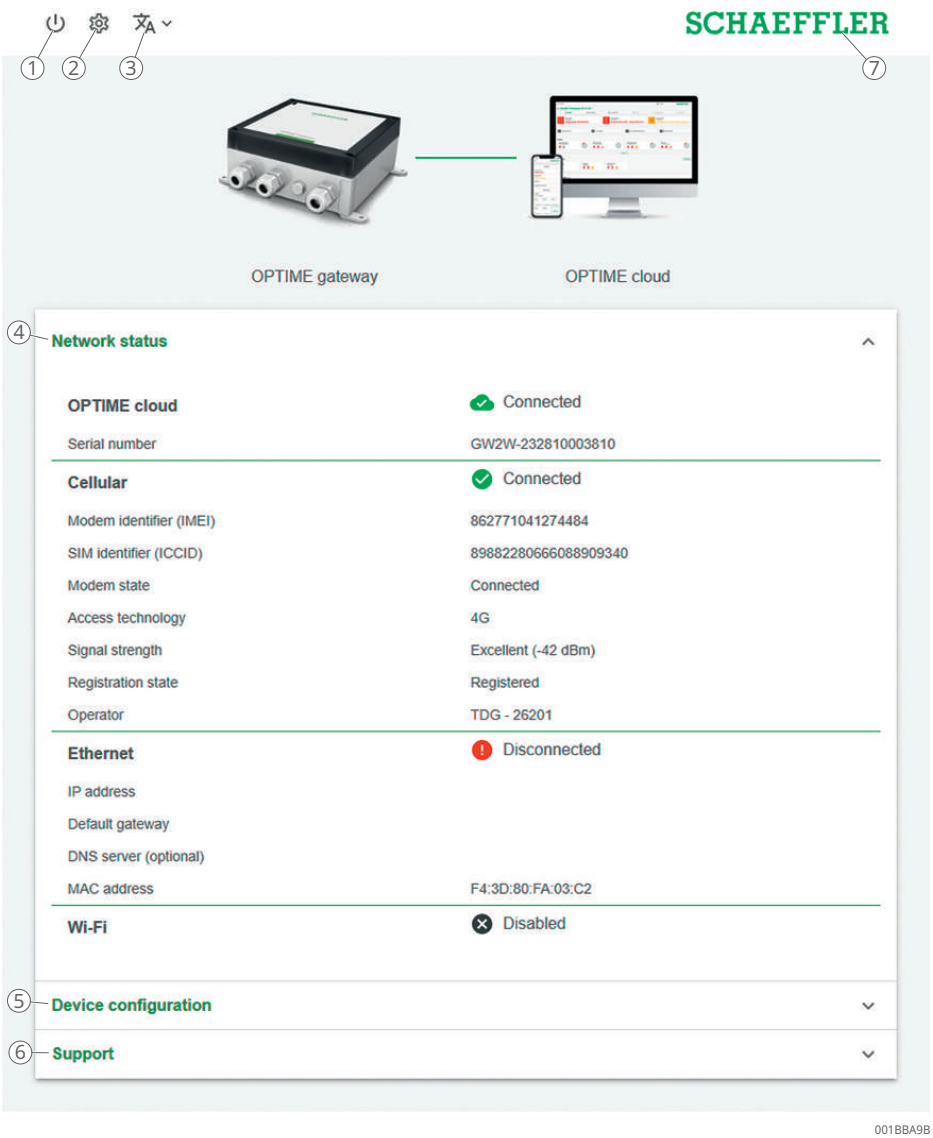
7.2.2 Settings

The start page of the OPTIME Gateway 2 configuration displays the following information:

- [Network status] and current settings
- Device configuration data
- [Support]

You can only view the network status and settings on the start page. To change the configuration, press the [Settings] symbol at the top of the page.

56 Configuration start page



1	[Exit]	2	[Settings]
3	[Change language]	4	[Network status]
5	[Device configuration]	6	[Support]
7	[Back]		

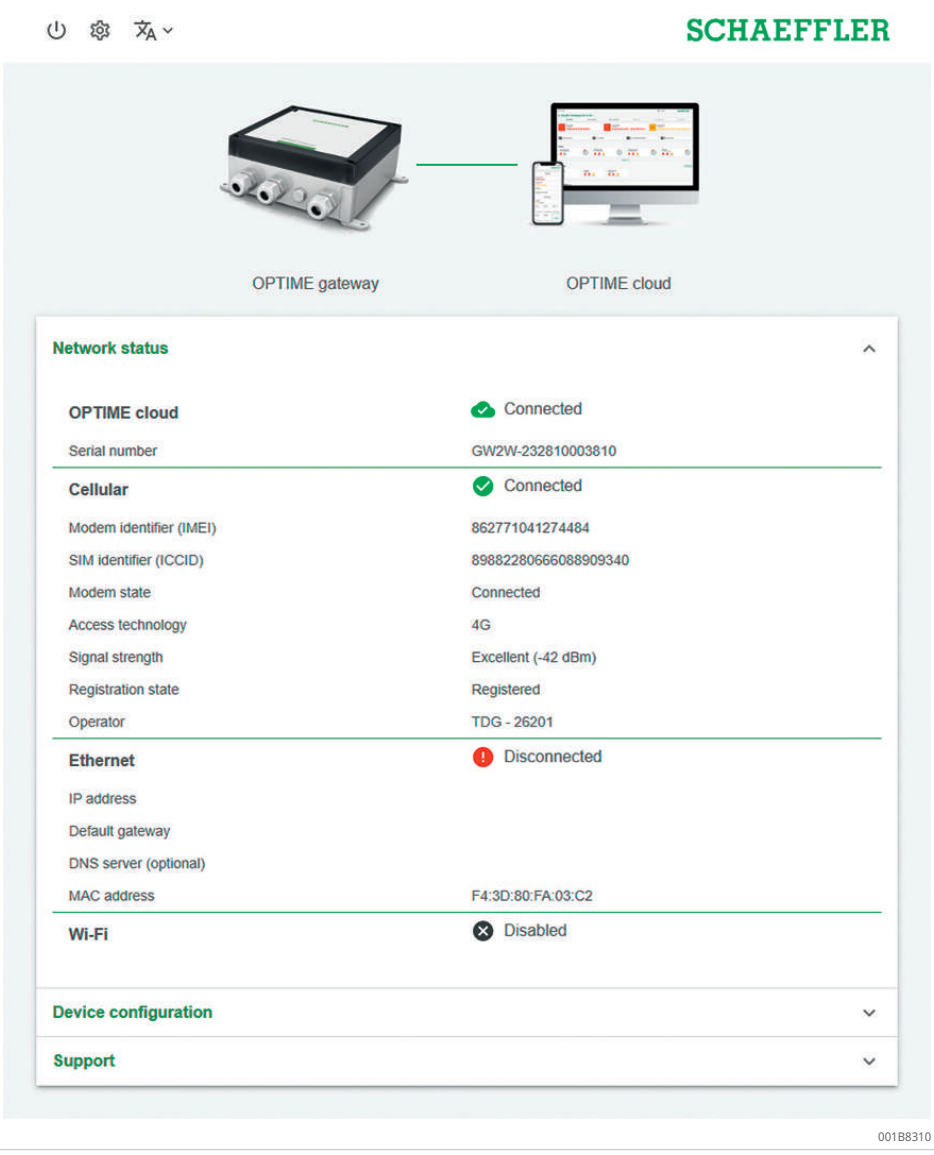
11 Configuration start page

No.	Field	Description
1	[Exit]	Exits the configuration. The WLAN access point will no longer be accessible until the next restart.
2	[Settings]	Click the [Settings] symbol to access the OPTIME Gateway 2 settings.
3	[Change language]	Select the language for the user interface.
4	[Network status]	Displays the current network connection status
5	[Device configuration]	Displays the current OPTIME Gateway 2 settings
6	[Support]	Download version information, log files and view licence information.
7	[Back]	Click the Schaeffler logo to return to the status page.

7.2.2.1 [Network status]

The [Network status] section displays the status of the communication interface between the OPTIME Gateway 2 and the OPTIME Cloud.

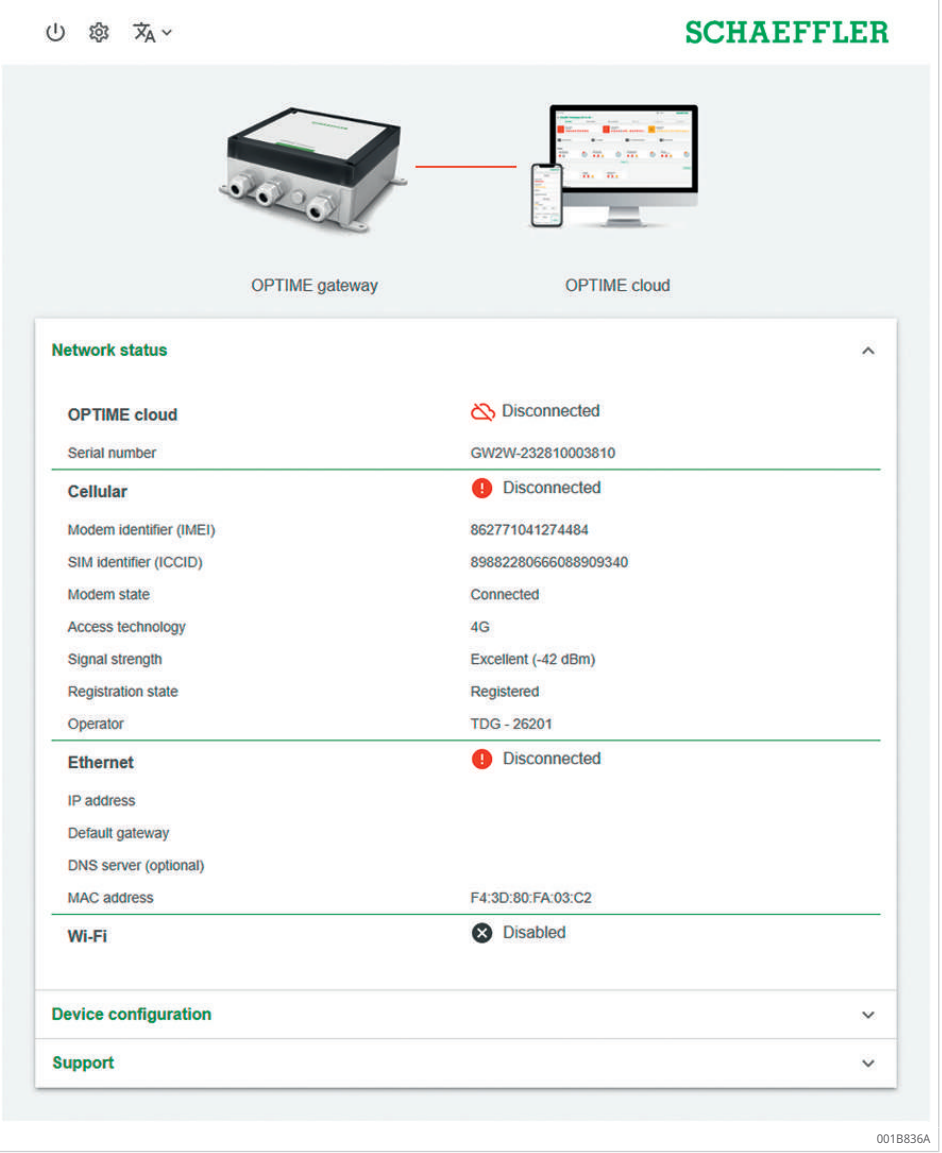
57 Network status



The connection status is indicated by the line between the OPTIME Gateway 2 and the OPTIME Cloud images at the top of the page and the first line of the network status:

- green line: connected
- red line: disconnected

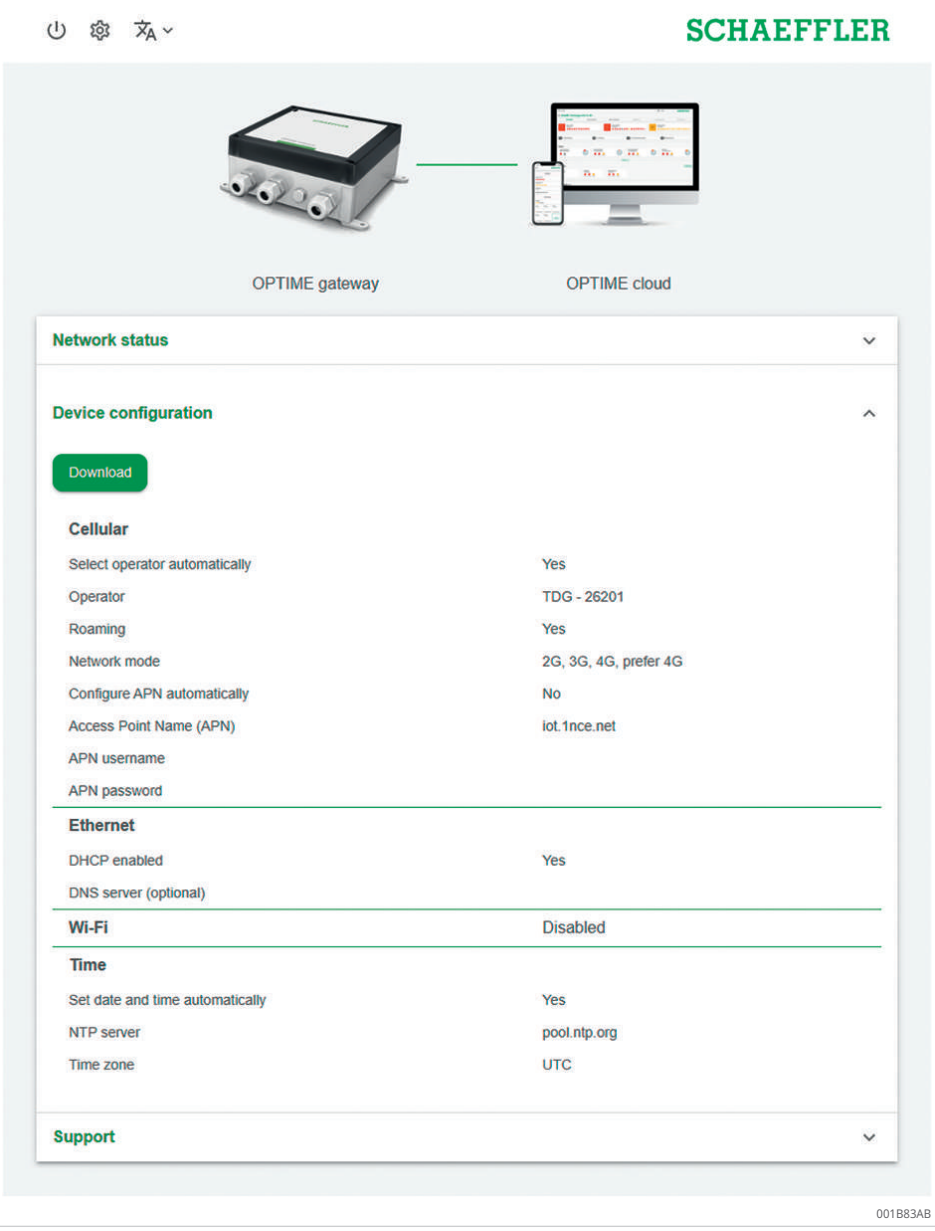
58 Network status, connection status: disconnected



7.2.2.2 [Device configuration]

The [Device configuration] section displays the current OPTIME Gateway 2 settings.

59 Device configuration data



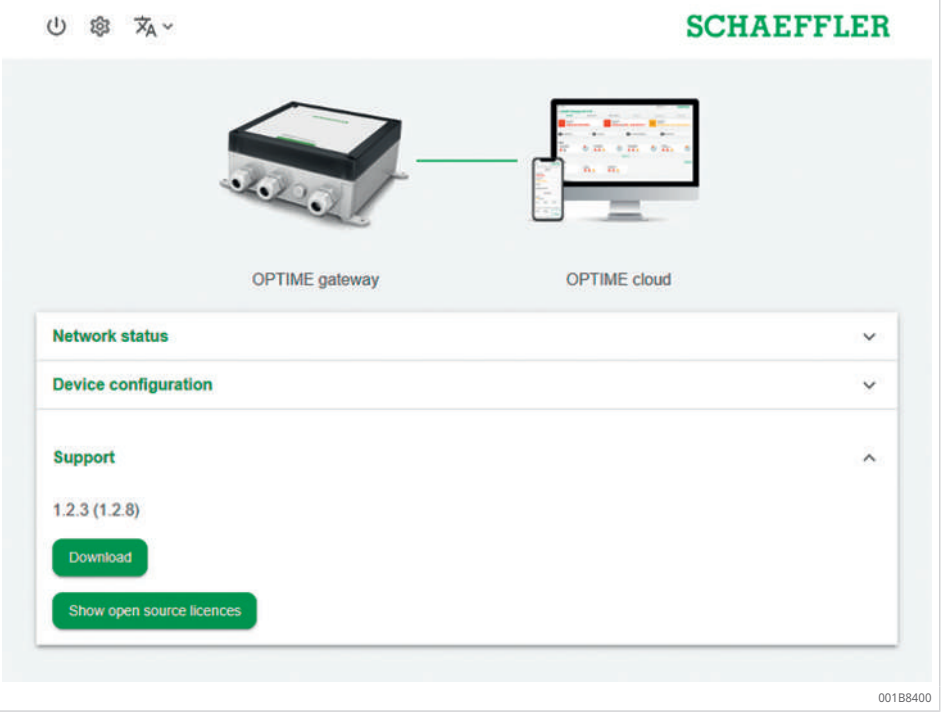
To download the OPTIME Gateway 2 configuration data in .txt format, press [Download].

7.2.2.3 [Support]

In the [Support] section, you can perform the following actions:

- view version information
- download log files, to send to the Schaeffler support team for example
- view licence information

60 Support



1. Click on [Download] to download a .zip file that contains the encrypted log files.
2. Click on [Show open source licences] to view the licence information in .html format.

Please note that this page also displays the firmware version installed on the device.

7.2.2.4 Configuring the OPTIME Gateway 2 settings

In most cases, it is not necessary to change the default settings of the gateway. Certain installations may require adjustment of some default settings. Only qualified personnel may change these settings.

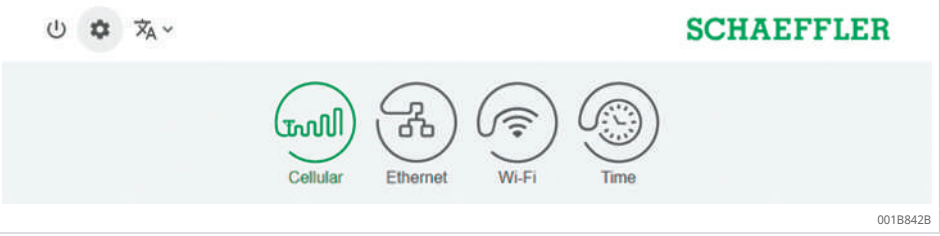
The OPTIME Gateway 2 settings are accessed as follows:

1. Click the [Settings] symbol in the configuration interface.
2. Select the settings that need to be changed.

The following settings can be changed:

- [Cellular]
- [Ethernet]
- [Wi-Fi]
- [Time]

61 Symbols for OPTIME Gateway 2 settings



12 OPTIME Gateway 2 settings

Designation	Description
[Cellular]	Opens the settings for the mobile network (SIM)
[Ethernet]	Opens the Ethernet settings. If the OPTIME Gateway 2 is connected to a local network via the RJ45 port provided on the device, the necessary settings can be configured here.
[Wi-Fi]	Opens the Wi-Fi settings for the OPTIME Gateway 2. Select a known network or add a new network.
[Time]	Opens the date and time settings

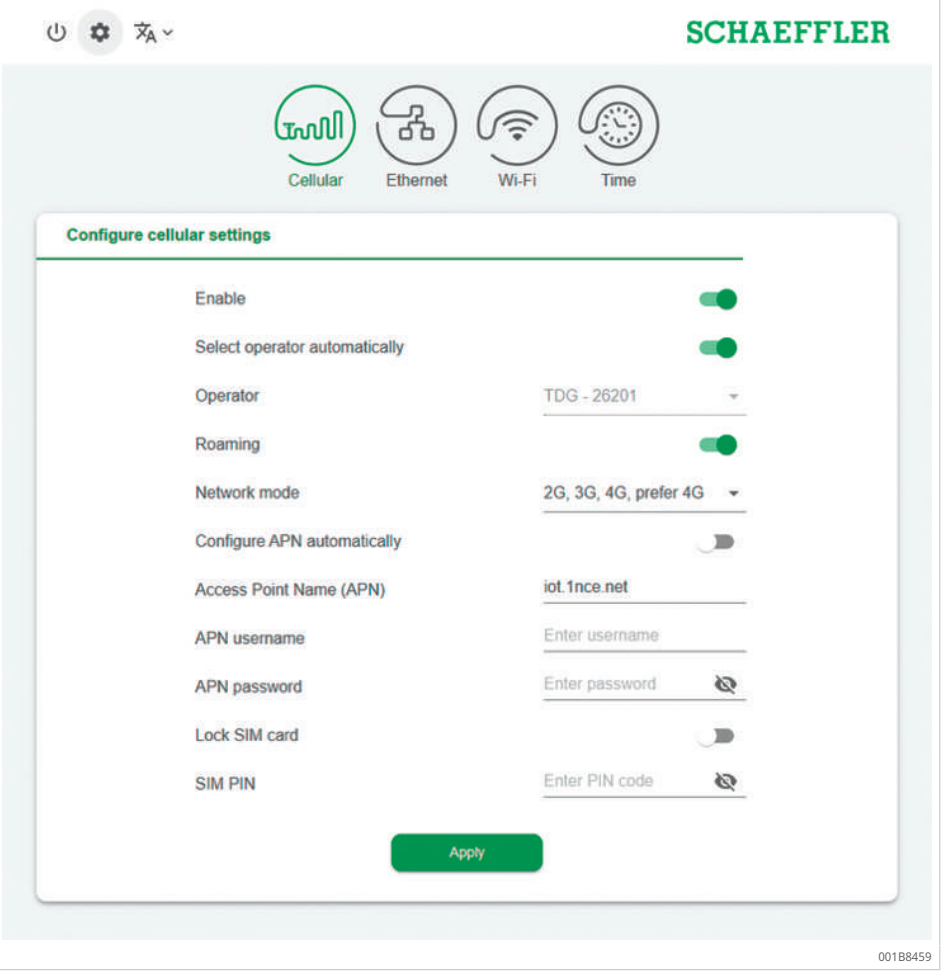
3. Click on the [Settings] symbol again to return to the start page from the settings.

Configuring the mobile network settings (SIM)

The mobile connection network is used as standard in the OPTIME Gateway 2.

In most cases, there is no need to change the mobile network settings. A SIM card is supplied with the OPTIME Gateway 2 which does not need to be replaced. Mobile network settings may only be changed by qualified personnel.

62 Configure mobile settings



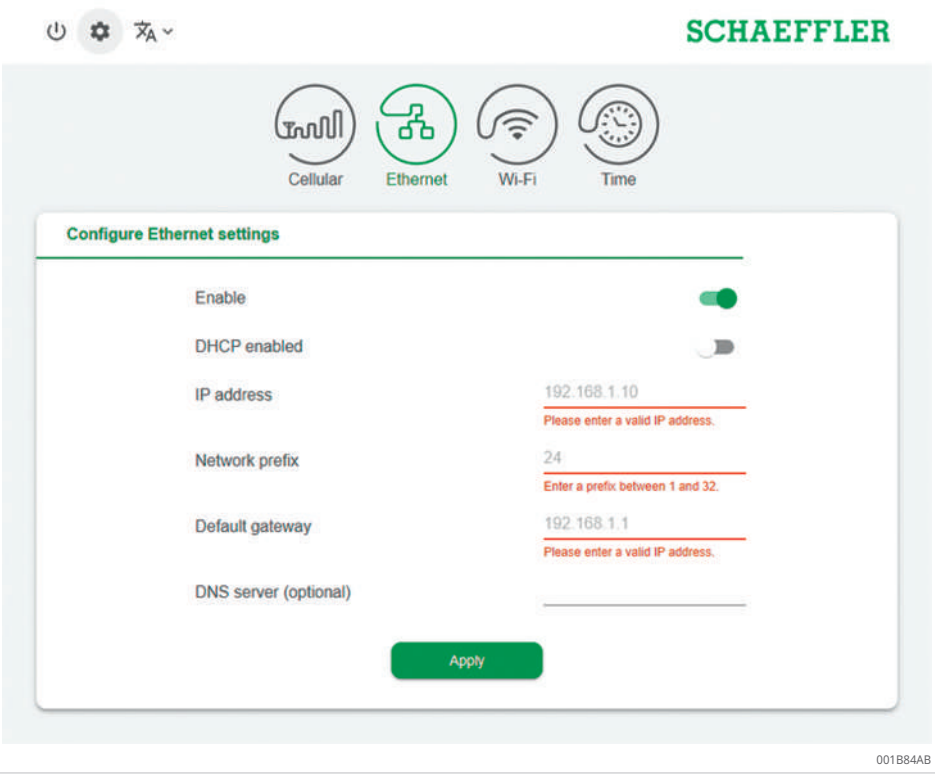
To change the mobile network settings, follow these instructions:

4. Click on the [Cellular] symbol to access the mobile settings.
5. If the SIM card is locked, enter the SIM pin to access the mobile settings. In the default setting, the SIM card is not locked.
6. To add a specific provider, disable the [Select operator automatically] selection and select the operator manually from the [Operator] list.
7. To avoid roaming charges abroad, disable the [Roaming] selection.
8. To manually select the Access Point Name (APN) of your network provider, disable the [Configure APN automatically] selection. This option may be required if using your own SIM card.
9. Write the new APN on the line that opens.
10. Click on [Apply] to save the changes to the configuration.

Configuring the Ethernet settings

Configure the Ethernet settings (LAN1; LAN2 is currently not available) if you want to use the wired company network.

63 Ethernet settings (LAN)

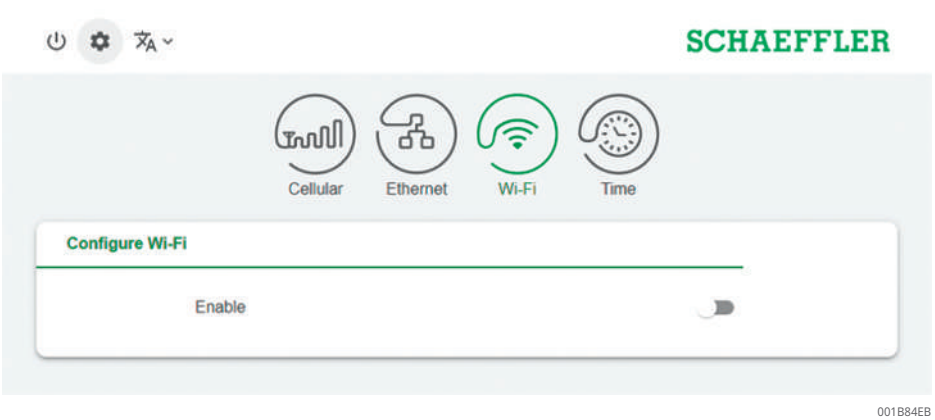


11. Click the [Ethernet] symbol to access the Ethernet settings.
12. Schaeffler recommends leaving DHCP enabled. If DHCP is disabled, enter the network IP address, network prefix and the gateway IP address.
13. If necessary, enter the DNS server address.
14. Click on [Apply] to save the changes to the configuration.

Configuring the Wi-Fi settings

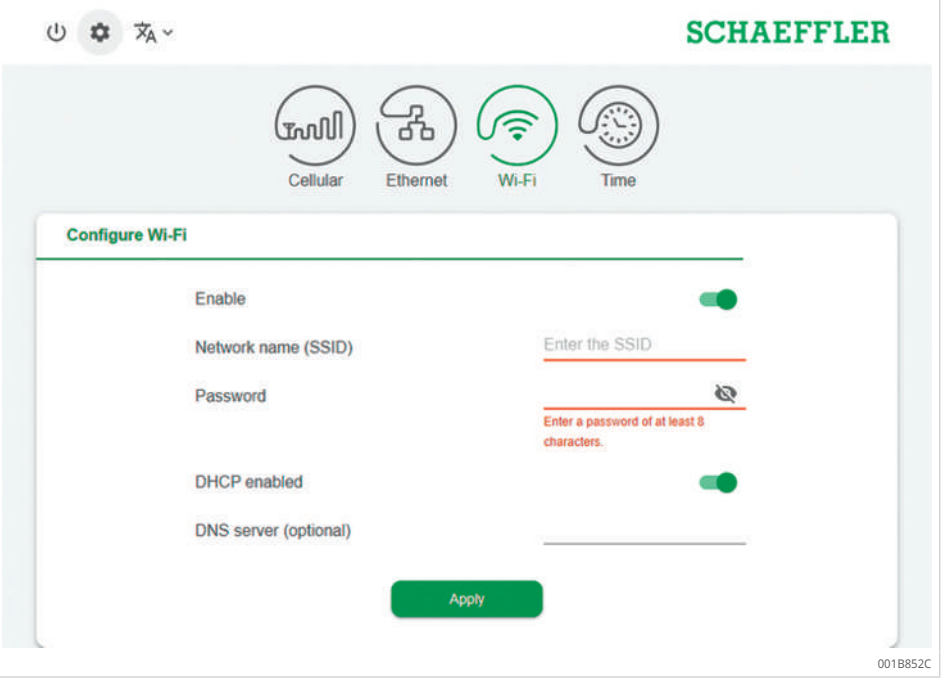
15. To connect via WLAN, click on the [Wi-Fi] symbol to activate Wi-Fi configuration mode.

64 Configure WiFi



16. Enable WiFi settings.

65 WiFi settings



17. Change the WiFi settings as required.

13 Wi-Fi settings

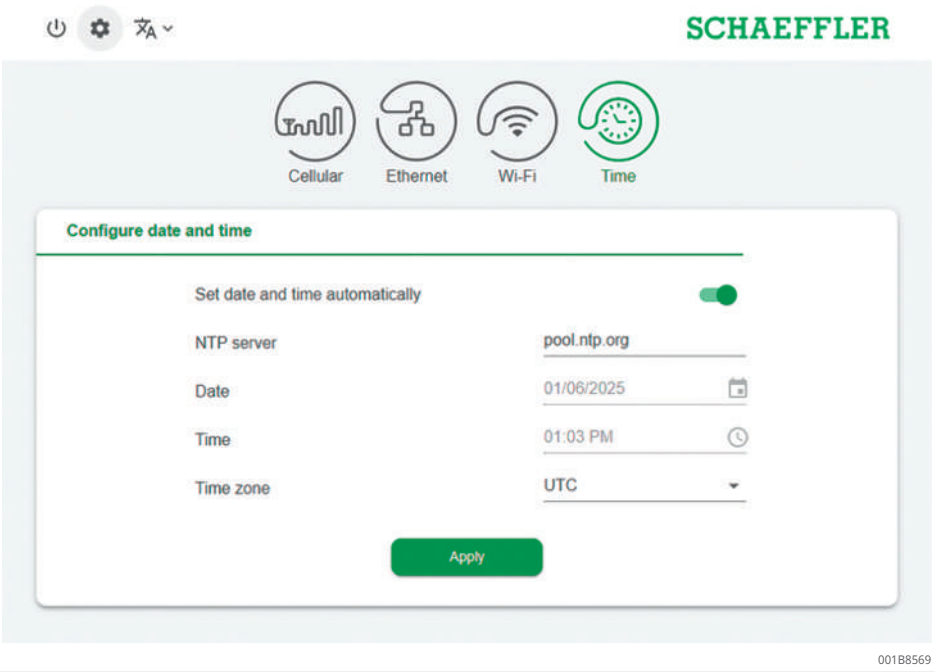
Designation	Description
[Network name (SSID)]	Enter the name of the network.
[Password]	Enter the password for the selected network.
[DHCP enabled]	Schaeffler recommends leaving DHCP enabled. If DHCP is disabled, enter the network IP address, network prefix and the gateway IP address.
[DNS server (optional)]	Enter the DNS server address if necessary.

18. Click on [Apply] to save the changes to the configuration.

Configuring the date and time

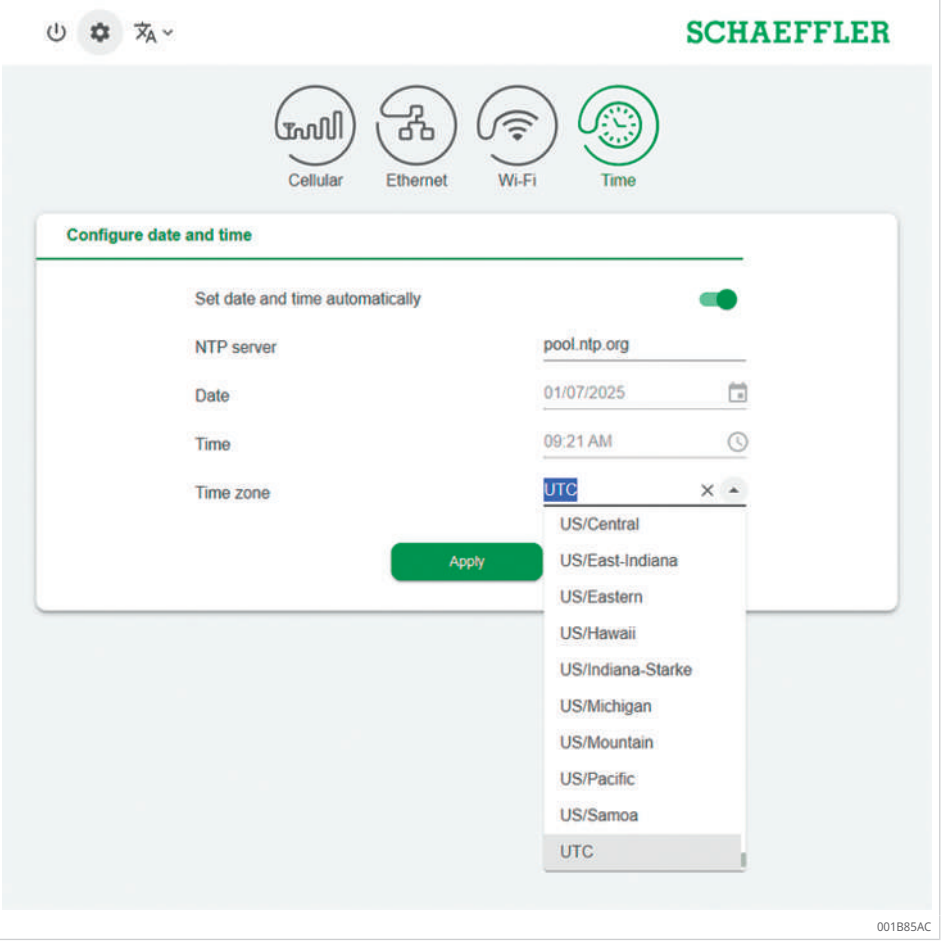
19. Click on the [Time] symbol to configure the date and time.

66 Configure date and time



20. Click on [Set date and time automatically] to enable or disable automatic setting of the date and time.
21. To change the Network Time Protocol, enter the name of the server in the [NTP server] field.
22. Select the time zone from the [Time zone] list. To narrow down the selection, start typing the name of the time zone.

67 Time zone selection



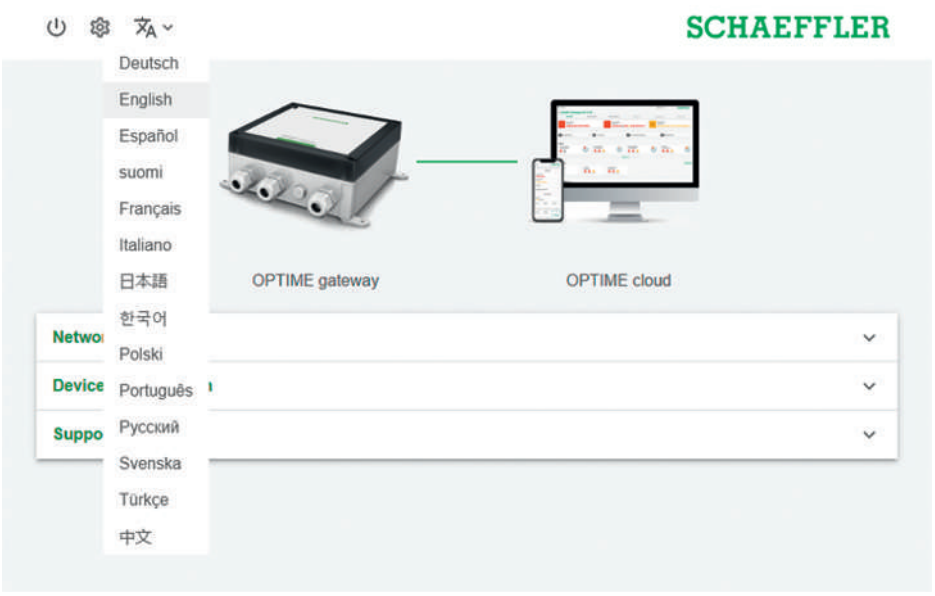
23. Click on [Apply] to save the changes to the configuration.

Changing the user interface language

24. Click on the [Change language] symbol and select the language from the list.

» The user interface language changes immediately.

68 Language selection



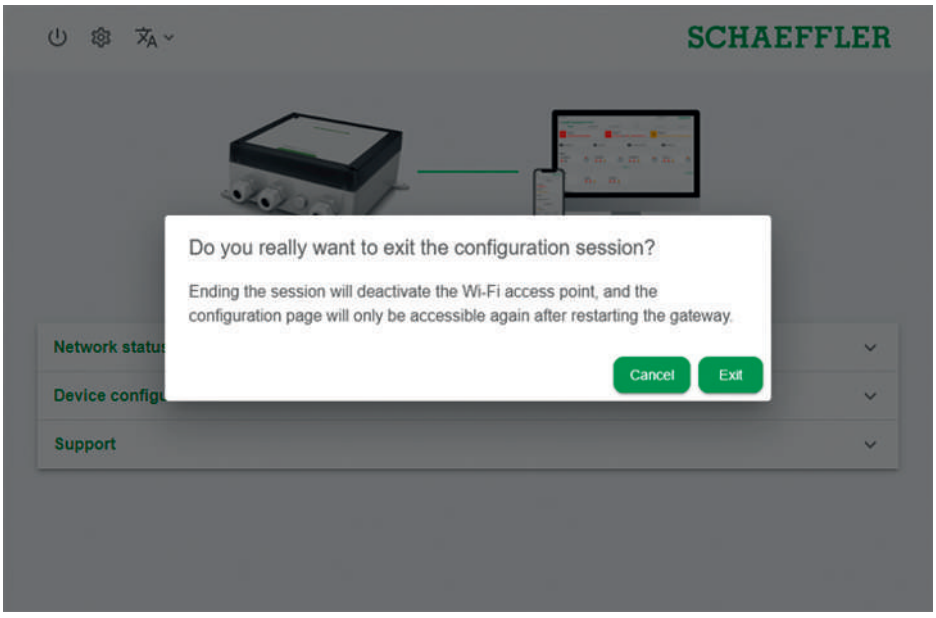
Terminating the configuration session

The connection terminates automatically after 10 min of inactivity.

Alternatively, you can terminate the session manually:

25. Click the [Exit] symbol.
26. Confirm.

69 Terminate the configuration session



After ending the configuration session, restart the gateway to put it back into configuration mode and to reactivate the WLAN access point.

8 Using the OPTIME Mobile App

The OPTIME Mobile App is an integral part of the OPTIME Ecosystem and provides easy access to condition monitoring and lubricator data. The app is used to create and manage the environment for condition monitoring and lubricators, to obtain current status data and to respond to changes in status data.

The app enables wireless access to the data of all devices on site within the OPTIME Ecosystem, providing information about the status of lubricators, the status of machines, and their latest operating values. The app is also used to commission and configure lubricators and sensors. The menu navigation guides the user through the process of adding, configuring and managing new lubricators and sensors.

As with all software, the app is continuously improved. For the latest information and further details about the app, refer to the Online Help in the OPTIME Dashboard ➤86|9.3.

8.1 Logging in and logging out

To log in to the OPTIME Mobile App as a user, you will need login data. Each customer receives an administrator account when purchasing the OPTIME Ecosystem. The administrator can create additional users. All created users receive their login data by e-mail.

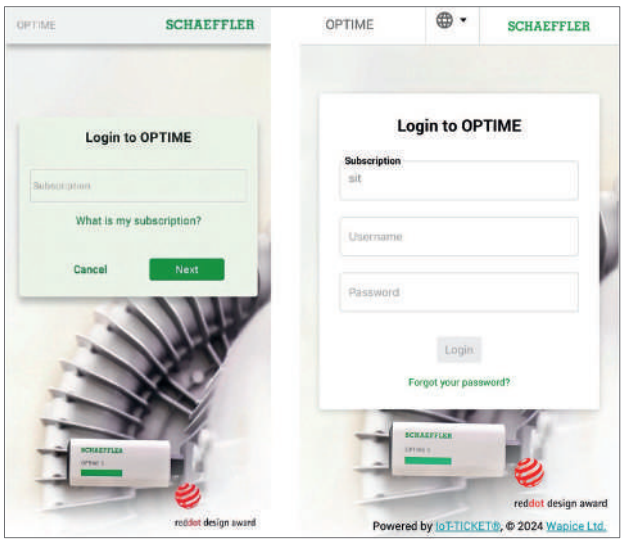
The customer administrator receives their login data by registering in the OPTIME Dashboard.

Logging in

To log in:

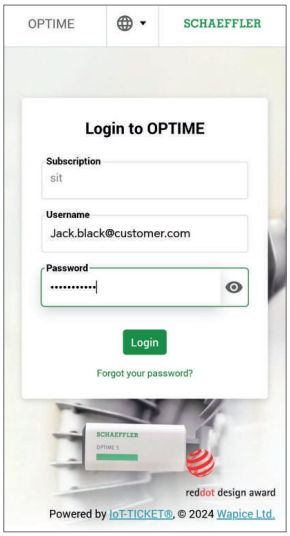
1. Start the app.

70 Logging in to the OPTIME Mobile App



001B69E2

71 Logging in to the OPTIME Mobile App



001B4026

2. Enter the login data.
3. Tap the [Login] button.

» After you have logged in successfully, the start screen will appear.

Logging out

To log out:

1. Go to the [Menu] symbol and tap on the [Logout] button.

8.2 General navigation

The various screens contain central navigation elements and settings for using the app.

The following areas of the app allow targeted monitoring of the machines in the system:

- group
- machine
- sensor
- lubricators

8.2.1 User roles

The OPTIME Mobile App has the same structure for all users. Permissions may vary depending on the user role.

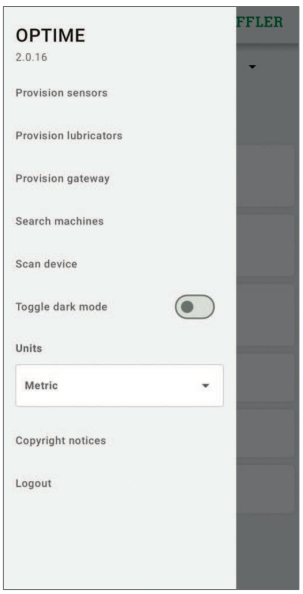
8.2.2 Languages

The language of the OPTIME Mobile App depends on the language of the operating system used on the mobile device.

8.2.3 Buttons

The drop-down menu, which can be accessed via the [Menu] symbol, and the main buttons are used for navigation.

72 Direct access via navigation elements



001AD5D5

14 Symbol [Menu]

Button, symbol	Description
[Provision sensors]	Direct access for installing and configuring a sensor
[Provision lubricators]	Direct access for installing and configuring a lubricator
[Provision gateway]	Direct access for installing and configuring an OPTIME Gateway
[Search machines]	Direct access to the machine search function with various filtering options
[Scan device]	Direct access to the scan function for reading sensor, lubricator or OPTIME Gateway settings
[Toggle dark mode]	Enables or disables dark mode, which displays the OPTIME Mobile App in a dimmed layout.
[Units]	Direct access to the unit system, which can be switched between [Metric], [Imperial] and [AUS/NZL] (for Australia and New Zealand)
[Copyright notices]	Direct access to copyright information
[Logout]	Logs the user out

15 Navigation elements

Button, symbol	Description
	Returns to the previous screen
	Closes the screen
	Adds the selection to [Favourites]
	Confirms the update after the screen was swiped down, for example at group, machine or sensor level.

8.2.4 Search function and filters

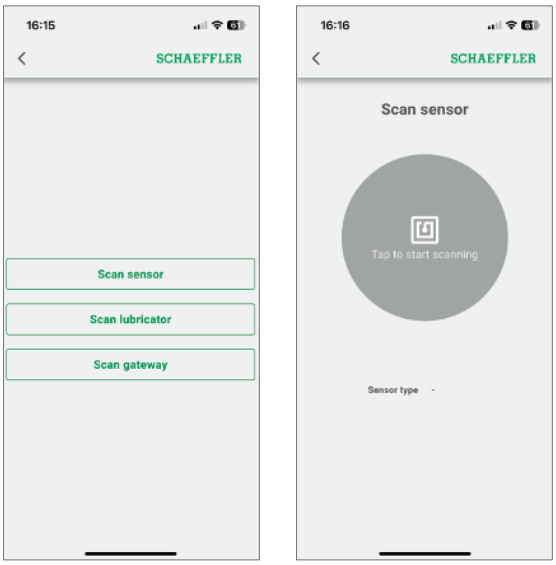
The search function can be used in various areas of the OPTIME Mobile App to narrow down search results for systems, machines or sensors according to specific criteria.

Filters can be set based on a search term, machine criticality or machine type. The [Clear search filters] button resets the filters.

8.2.5 [Scan device]

The [Scan device] button starts the scanning process to read device settings for sensors, lubricators and OPTIME Gateways.

73 [Scan device]



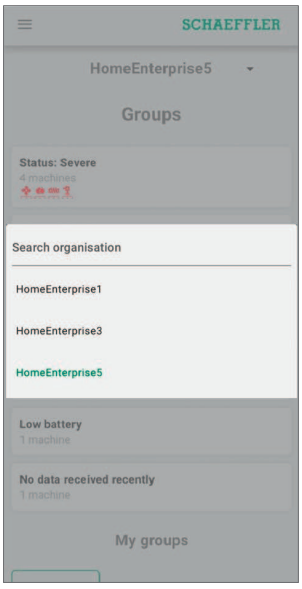
001B6EE8

8.3 Organisation selector

If the user has access to more than one organisation (company), the first organisation in the list is displayed. The user can change the organisation to be displayed by selecting a different organisation from the list.

The organisation selector is located at the top of the display under the menu bar.

74 Organisation selector



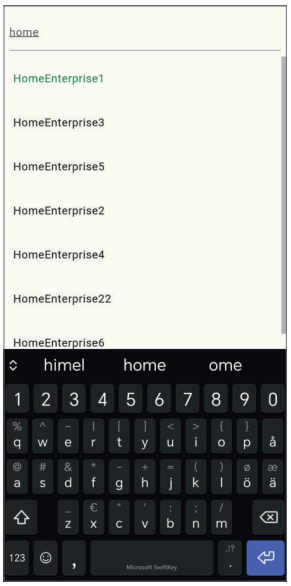
001B6A4E

The down arrow enables the user to open a dialogue to select a different organisation.

To scroll through a long list, the user can swipe up and down.

The [Search organisation] field at the top of the list can be used to search for the required organisation. Selecting a row in the list displays that organisation, and the OPTIME Mobile App view along with the provisioning and scanning options in the menu are updated to match the respective organisation's data.

75 Organisation selector, search function



001AD5B8

8.4 Group management

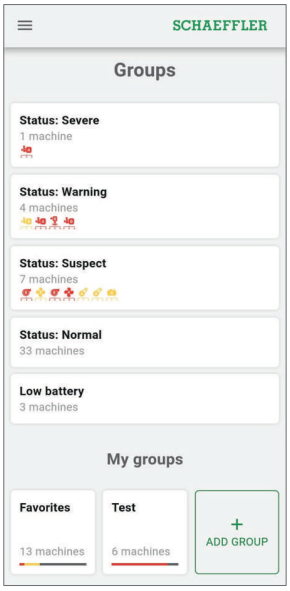
The start screen for group management is displayed immediately after login.

Alarm-based groups are preset:

- alarm status based on the alarm level
- status of the lubricators
- battery status
- data reception status

The fields for alarm-based groups take up the whole width of the screen, while the fields for user-defined groups are square.

76 Start screen for group management



001B4096

16 Start screen for group management with group fields

Input	Group field	Description
[Groups] Alarm status	Status: [Normal] or [Suspect]	A grey symbol indicates a normal or suspect status, i.e. no alarm or a low alarm level. no immediate response required
	Status: [Warning]	A yellow symbol indicates a pre-alarm, i.e. a high alarm level. Inspect the asset and schedule repairs for the next regular servicing interval.
	Status: [Severe]	A red symbol indicates a main alarm, i.e. the highest alarm level. Inspect the asset, and depending on the result, schedule a repair as soon as possible.
[Groups] All lubricators	Status: All	displays the status of all lubricators
[Groups] battery status	[Battery low]	displays the battery status
[Groups] Data reception status	[No data received recently]	indicates that the sensor is offline and has not transmitted any data in the last 24 h
[Groups] Filtered groups	[Learning mode]	Displays the groups compiled on the basis of search filters
[My groups]	[Favourites]: Other user-defined groups, e.g. [Pumps]	displays user-defined groups

A machine may belong to a group of machines in a normal state and still show a red symbol. This may indicate that the machine previously had alarms that resulted in a critical alarm state. Check and acknowledge the machine status.

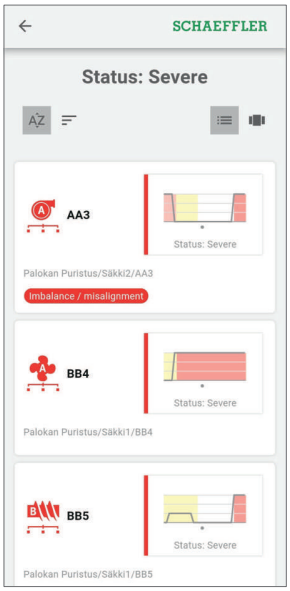
8.4.1 Group details

When the user clicks on a group, the detailed view provides an easy overview of a group of relevant machines.

Here, for example, the colour of the machine symbol indicates an active main alarm, while the [Imbalance/misalignment] field beneath it suggests that imbalance or misalignment is the likely cause.

The machine can belong to a certain group if the machine status matches. Machine statuses are updated with a delay after recovery and alarm acknowledgement, once the data confirm the change in machine status.

77 Machine status



001AD4E0

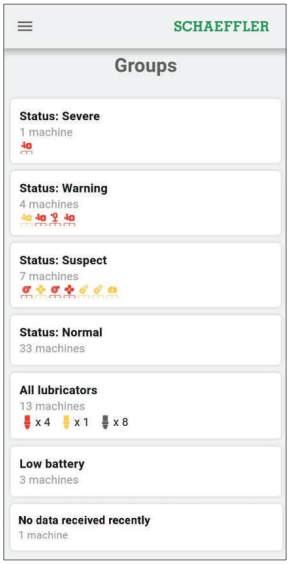
8.4.2 [All lubricators] group

The [All lubricators] group is a special quick-access list for operators running lubricators with the OPTIME Ecosystem. This view enables lubrication experts to quickly check the state of the lubricators.

In the main group view, the [All lubricators] button displays the following:

- number of lubricators with critical alarms (red)
- number of lubricators with pre-alarms and warnings (yellow)
- number of lubricators in normal state (grey)

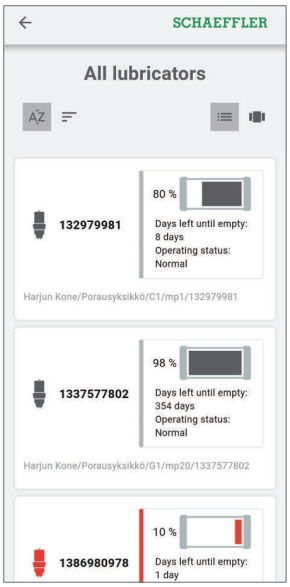
78 [Groups]



001AD4F0

The group details for the [All lubricators] view are optimised for the easy display of lubricator data. In this view, lubricators can be sorted by name or by criticality (standard).

79 [All lubricators]



001AD500

8.4.3 Manage favourites

Each machine can be added to the [Favourites] group.

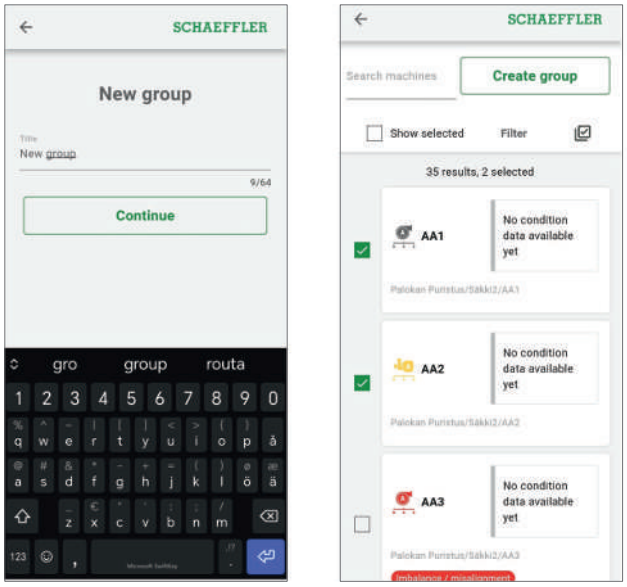
1. Open machine management.
2. Add the machine to the [Favourites] group.

8.4.4 Add new group

Updated details on adding new groups can be found in the Online Help in the OPTIME Dashboard ➤86|9.3.

- Tap [Add group].

80 Adding a new group



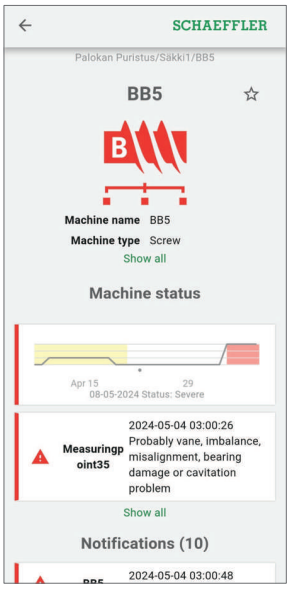
001B40E6

8.5 Machine view

The machine view displays a machine and the following related information:

- machine details
- machine status diagram with alarm colours highlighted
- list of active and inactive alarm notifications
- measurement points and lubrication points connected to the machine

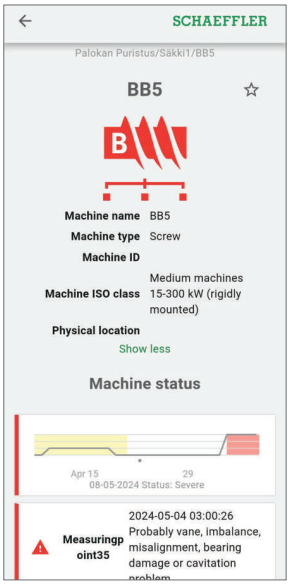
81 Machine view



001AD565

Inactive alarms whose alarm conditions are no longer met appear greyed out when the user clicks [Show all] in the list. Inactive alarms are hidden as standard in the app to shorten the list. Less important information can be hidden with [Show less]. The same applies to machine details.

82 Expanded machine overview

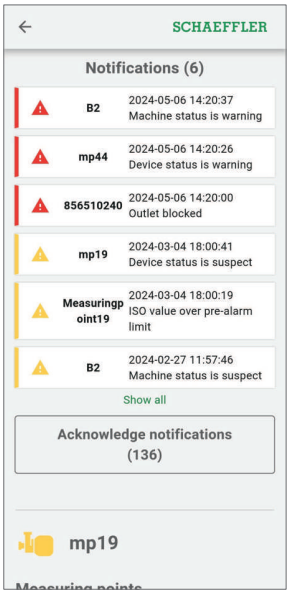


001AD568

The user can acknowledge alarms at machine level using the [Acknowledge notifications] button.

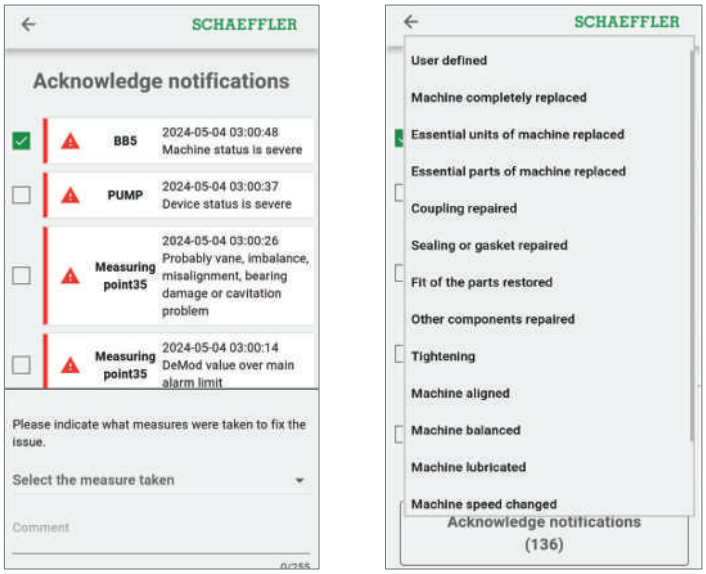
This function is used after the inspection or repair of machines where the OPTIME Ecosystem has triggered an alarm. Acknowledge alarms that are no longer relevant.

83 [Notifications]



001AD56A

84 [Acknowledge notifications]



For more information on the machine view, refer to the Online Help in the OPTIME Dashboard ➤86|9.3.

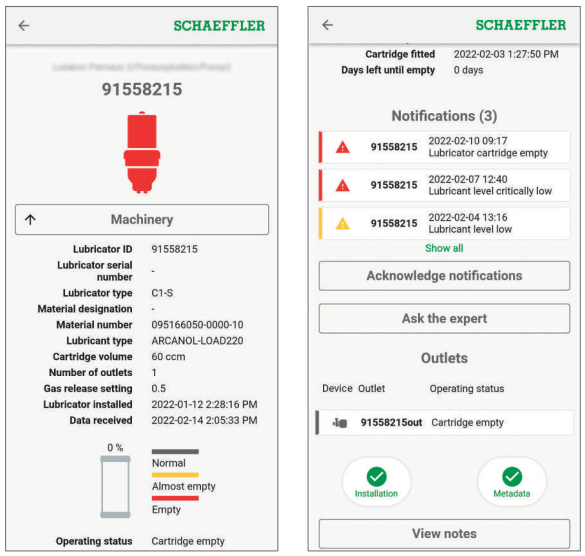
8.6 Lubricator management

Lubricator management displays active alarm notifications, overall status information, the remaining lubricant quantity, and the lubricant runtime for a specific lubricator.

The following functions are available to the user in lubricator management:

- view and acknowledge alarm notifications
- view status information
- view cartridge information
- edit names of the lubricator and lubrication outlet
- change dispensing settings
- replace lubricant cartridge
- replace lubricator
- deactivate lubricator
- display notes

85 Managing lubricators



00199EAB

8.7 Sensor management

The sensors are part of the measurement point view. When a sensor is selected, the measurement point view displays active alarm notifications, KPIs and raw data relating to the sensor.

The following functions are available to the user in the measurement point view:

- Installation options
  - [Edit monitoring settings]
  - [Replace sensor]
  - [Trigger learning mode]
  - [Deactivate measuring point]
- Data
  - [Get latest KPIs]
  - [Get latest raw data]
- Metadata
  - [Edit metadata], including sensor and bearing information
- View annotations

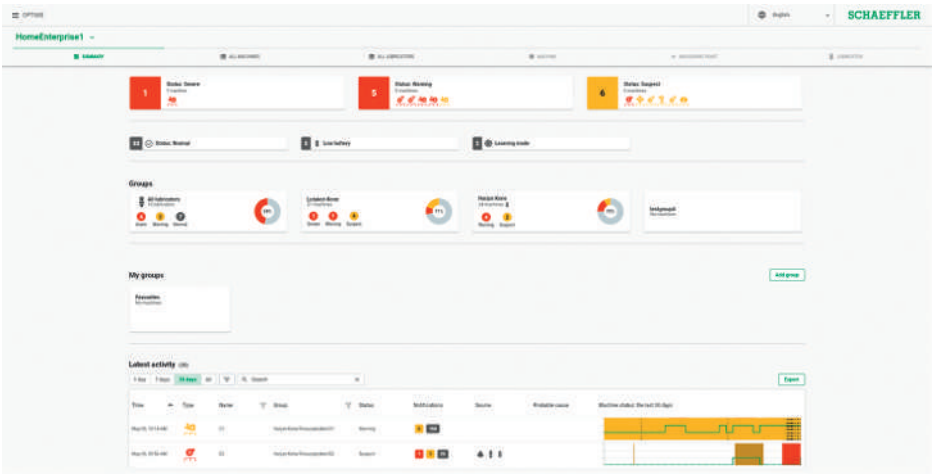
Further information on the measurement point view, along with sensor information and measurement point management, can be found in the OPTIME Dashboard ➤86|9.3.

9 Using the OPTIME Dashboard

The OPTIME Dashboard is the central user interface for use in control rooms, where lubricators, KPIs and alarm notifications for system condition monitoring can be controlled.

The OPTIME Dashboard supports users and administrators in actively monitoring lubricators and machine status. The dashboard displays alarm notifications based on learned KPI thresholds and highlights potential defects in machines in a control room-style environment. Users can view and create system log entries for machines and acknowledge alarm notifications. KPI data and raw data from the OPTIME sensors can be analysed in the dashboard.

86 OPTIME dashboard



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In management mode, administrators can add, edit and delete users and profiles, as well as send notifications to users. At corporate and mesh network level, administrators can also manage process areas, departmental structures, machine structures (systems) and mesh networks (devices).

The following functions can be performed from the OPTIME Dashboard:

- active monitoring of machines and their KPIs
- active monitoring of lubricators
- display of alarm notifications based on learned KPI thresholds as indicators of potential machine defects
- acknowledgement of alarm notifications
- display and creation of machine log entries
- display of lubricator operating states
- display of sensor KPI data and raw data
- communication with experts for the analysis of potential machine defects

Additional functions are available to administrators only:

- User management:
  - add, edit and delete users and profiles
  - send notifications to users
- System management:
  - Add, move and delete OPTIME gateways, lubricators and sensors.
  - Add dedicated lubricants for use with self-filled cartridges.
  - Adjust advance warning times for critical cartridge fill levels.

Reliable alarm notifications are only displayed after completion of the learning phase during which each sensor is “trained” to establish and respond to threshold values.

9.1 System requirements

Schaeffler recommends the following for using the OPTIME Dashboard:

- Windows 10/11, current macOS, or a current Linux workstation or Linux laptop
- high-resolution screen
- fast internet connection
- Latest Google Chrome, Firefox, Opera, Microsoft Edge or Safari browser. Not recommended: Microsoft Internet Explorer 11

9.2 Registration, login and logout

The administrator account is created automatically as part of the order process. The administrator is responsible for managing additional users. All new users created by the administrator will receive their login data by e-mail.

9.2.1 Logging in

To log in:

1. Visit the OPTIME Dashboard: use the link provided in the e-mail you received when you activated your account.
2. Enter the following in the login dialogue: subscription, username, password.
3. Click [Login].

87 Login

NOTICE

Unauthorised use of the OPTIME system

Unauthorised use can result in serious material damage to connected and surrounding systems and equipment

- ▸ Assign a new, secure password when logging in for the first time.
- ▸ Memorise your username and password; do not write them down.
- › You will need the username and password to log in to both the OPTIME Mobile App and the OPTIME.

9.2.2 Logging out

To finish a session, you will need to log out again:

1. Click on the menu at the top left of the OPTIME dashboard
2. Click on the [Logout]button.

9.3 OPTIME Online Help

Comprehensive explanations on the content and operation of the OPTIME Dashboard are available in the Online Help. The Online Help includes detailed descriptions of the dashboard functions as well as information about the OPTIME Mobile App, the API, training opportunities and support topics. We also keep you informed about our current releases and updates. The Online Help is available in English only.

Accessing the Online Help:

- ▸ Log in to the OPTIME Dashboard.
- » The Online Help can be accessed from the menu at the top left of the OPTIME Dashboard start page.

10 Operation

10.1 Editing dispensing settings

During initial commissioning, the lubricator is configured with the dispensing settings via the OPTIME Mobile App. If the required amount of lubricant per time unit changes during operation, the lubricant quantity can be adjusted afterwards.

Boundary conditions for adjusting the dispensing setting:

- Permissible adjustment of the lubricant quantity: ±30 % based on the dispensing settings that were configured during initial commissioning or a cartridge replacement and set on the cartridge's gas-generation unit.
  Adjustments outside this range are not possible.
- The lubricant quantity can be adjusted remotely via the mesh network.
- The lubricant quantity can only be adjusted via NFC when the operator is in close proximity to the device.

Procedure

1. In the app, navigate to the lubricator management screen for the relevant machine.
2. Select the lubricator.
3. At the bottom of the app page, tap the [Installation] button.
4. Tap the [Edit dispense settings] button.
5. Enter the required dispensing settings, taking the boundary conditions into account. Settings outside the permissible range cannot be transferred.
6. Tap the appropriate button to transfer the new settings to the lubricator: [Write new cartridge settings via NFC] or [Write new cartridge settings via mesh network]

› The mobile device acknowledges each separate NFC contact, depending on the device settings, e.g. by vibration.

» Editing of the dispensing settings is complete.

10.2 Replacing the lubricant cartridge

The OPTIME C1 lubricator can be reused multiple times. A depleted CONCEPT1 lubricant cartridge can be replaced with a new one or refilled up to 2 times. After more than 2 refills, proper function of the lubricant cartridge is no longer guaranteed.

Information on refilling the CONCEPT1 cartridge:

BA 69 | Lubricators | CONCEPT1 |
https://www.schaeffler.de/std/1F4C

If a third-party cartridge is used:

1. Follow the user manual for the third-party cartridge and comply with the guidelines regarding possible refilling and disposal.

System messages for depletion

A cartridge must be replaced or refilled as soon as it is completely depleted. The system notifies the user in 3 stages about the upcoming replacement.

17 System messages for cartridge depletion

Stage	Advance warning time, fill level	System message
1	14 days before complete depletion	[Lubricant level low]
2	7 days before complete depletion	[Lubricant level critically low]
3	Cartridge is empty	[Cartridge empty]

The administrator can adjust the advance warning times in the dashboard as required.

The early warnings are intended to ensure timely availability of spare parts such as battery packs and lubricant cartridges. Once a cartridge is empty, the app and dashboard notify the user.

The user then initiates the process by physically replacing the depleted lubricant cartridge.

Removing the cartridge and checking components

NOTICE

Risk of damage from lubricant escaping under overpressure

Uncontrolled leakage of lubricant can contaminate or damage components of the lubrication system and adjacent construction.

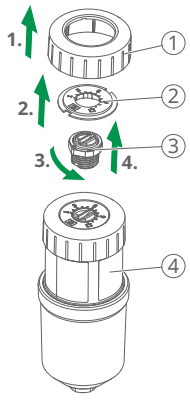
- To depressurise the lubrication system, detach the drive unit.

✓ The lubricator, cartridge and adjacent construction must be cleaned in accordance with the instructions ➤95|12.1.

2. Release the drive unit: Detach the cover, scale disc and gas-generation unit from the lubricant cartridge.

› A brief hissing sound may occur as gas escapes when loosening the gas-generation unit.

88 Releasing the drive unit



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1	Cover	2	Scale disc
3	Gas-generation unit	4	Cartridge housing

3. Unscrew the cartridge from the lubricator.
4. Remove the battery pack.
5. Check the housing and seal of the lubricator.
6. If the housing is cracked or exhibits other forms of damage: Dispose of the OPTIME C1 lubricator and replace it with a new one, see instructions under *Replacing the lubricator* ➤90|10.3.
7. If the seal is contaminated: Clean and re-oil the seal.
8. If the seal is damaged: Replace the seal.

Inserting a new battery pack or loaded battery holder

✓ A new, originally packaged, undamaged OPTIME-LW-C1.BATTERY battery pack is available.
Alternatively: An OPTIME-LW-C1.ADAPTER-BATTERY battery holder and new, approved batteries from the same manufacturer and of the same type are available.

9. Insert the new battery pack or loaded battery holder: Follow the instructions under *Inserting a battery pack or loaded battery holder* and observe the safety instructions ➤39|6.4.3.
10. Continue with the instructions under *Inserting a new cartridge* ➤89|.

Inserting a new cartridge

Instructions:

- During cartridge replacement, the dispensing settings can be adjusted within the limits of the gas-generation unit.
- It is possible to switch a different cartridge size.
- To prevent mixing incompatible lubricants, changing the lubricant is not permitted. To change the lubricant, the device must be deactivated and re-provisioned.

Procedure:

11. Screw the new or refilled cartridge into the OPTIME C1 lubricator in accordance with the instructions:
Screwing in the CONCEPT1 lubricant cartridge ➤42|6.4.4.
Screwing in a third-party carriage ➤43|6.4.5.
12. In the app, select the lubricator with the low fill level.
13. At the bottom of the app page, tap the [Installation] button.
14. Tap the [Replace lubricant cartridge] button.
15. Follow the instructions in the app to perform the cartridge replacement via NFC.
The NFC receiver is located on the side of the lubricator under the NFC logo.
16. When using the NFC function, observe the following instructions (applies to both mobile phones and tablets).

Instructions:

- Distance between the NFC chip of the mobile phone and the NFC symbol on the lubricator: ≤ 10 mm
- If the position of the NFC chip in the mobile phone is unknown: contact the mobile phone provider.
- Hold the lubricator and the mobile phone steady.
- When the mobile phone confirms successful NFC use, do not move the devices for ≥ 3 s.

17. When the app prompts the user for final confirmation: save the settings.

› The mobile device acknowledges each separate NFC contact, depending on the device settings, e.g. by vibration.

» The cartridge is replaced and activated in the system.

10.3 Replacing the lubricator

In the event of a defect, the user may replace the lubricator with a new one.

1. In the app, navigate to the lubricator management screen for the relevant lubricator.
2. At the bottom of the app page, tap the [Installation] button.
3. Tap the [Replace lubricator] button.
4. Follow the instructions in the app to activate the new lubricator via NFC. The NFC receiver is located on the side of the lubricator under the NFC logo.

› The mobile device acknowledges each separate NFC contact, depending on the device settings, e.g. by vibration.

5. When using the NFC function, observe the following instructions (applies to both mobile phones and tablets).

Instructions:

- Distance between the NFC chip of the mobile phone and the NFC symbol on the lubricator: ≤ 10 mm
- If the position of the NFC chip in the mobile phone is unknown: contact the mobile phone provider.
- Hold the lubricator and the mobile phone steady.
- When the mobile phone confirms successful NFC use, do not move the devices for ≥ 3 s.

6. When the app prompts the user for final confirmation: save the settings.

» The lubricator for this lubrication point has been replaced. The new lubricator continues the supply of lubricant.

10.4 Deactivating the lubricator

1. In the app, navigate to the lubricator management screen for the relevant lubricator.
2. At the bottom of the app page, tap the [Installation] button.
3. Tap the [Deactivate lubricator] button.
4. If lubricant remains in the cartridge, depressurise the cartridge by removing the drive unit:
   Detach the cover, scale disc and gas-generation unit from the lubricant cartridge ➤88|88.

› A brief hissing sound may occur as gas escapes when loosening the gas-generation unit.

5. Unscrew the cartridge from the lubricator.
6. Remove the battery pack.

» The lubricator is deactivated and no longer transmits data to the system.

If the lubricator is not dismantled and the battery pack is not removed, the lubricator continues to operate at the previously set pumping interval, but ceases to transmit any data to the system. The app and dashboard no longer display error messages, since no data are received or processed from the device.

10.5 Moving the lubricator

To move a lubricator to a different lubrication point:

1. Deactivate the lubricator ➤91|10.4.
2. Commission the lubricator again at the new lubrication point.

11 Troubleshooting

The Online Help in the OPTIME Dashboard provides a list of Frequently Asked Questions (FAQ) which can assist with troubleshooting.

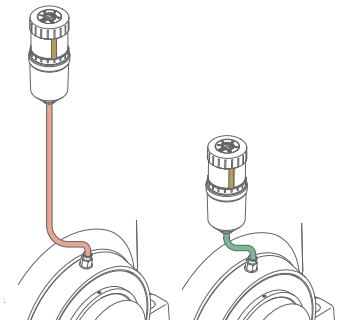
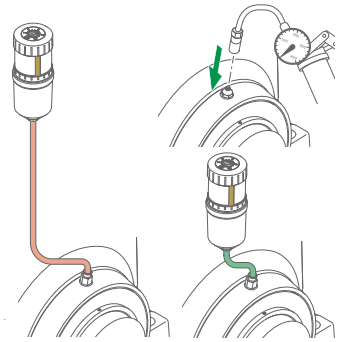
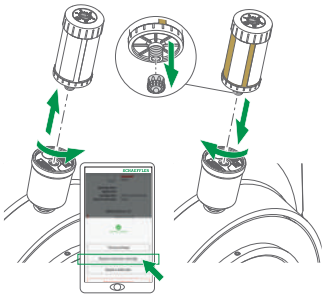
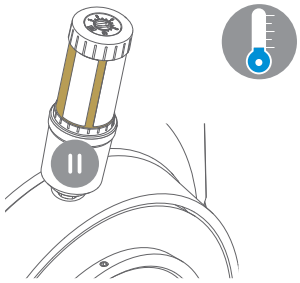
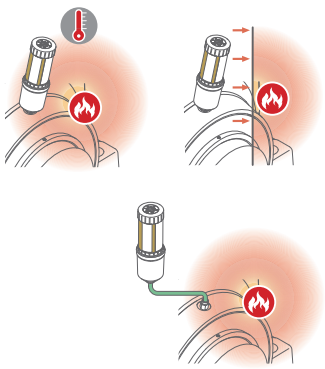
11.1 Operating states of the lubricator

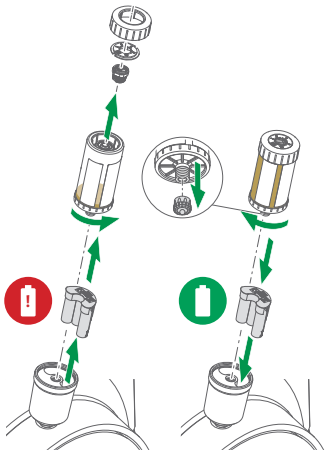
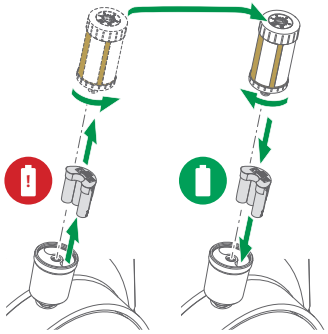
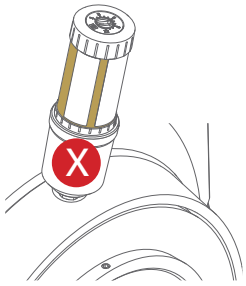
The OPTIME C1 lubricator can detect and display various operating states. Operating states can be displayed by the LEDs on the device, in the app or on the dashboard. The user can then take the necessary measures to restore normal operation.

18 LED indicators of operating states

LED 1, LED 2	Meaning	Action
Flashing red ≈ 30 s	Device start sequence	No action required
Flashing green 30 min	Normal operating state	No action required Note: After 30 min, energy mode becomes active and deactivates the LED indicator until the operating state changes.
Flashing red > 30 s	Deviation from normal operating state. Warning or alarm active	▸ Check the operating state in the app or dashboard and resolve the cause of the fault.
Flashing red, rapid 30 s	LED indication immediately after inserting the battery pack: partially discharged battery pack inserted. Cartridge may not be emptied with this battery pack.	▸ Dispose of the partially discharged battery pack properly. ▸ Use a new, originally packaged battery pack.
Flashing blue	Device has no connection to the mesh network. Connection is being established.	▸ If this occurs regularly or permanently, check the wireless connection to other network nodes or to the gateway.

19 Operating state messages in the app or dashboard

Message	Recommended action	
[Back pressure too high]	▸ Reduce the length of the lubricant line or increase its diameter to lower the back pressure.	
[Outlet blocked]	▸ Check whether flushing the lubrication point reduces back pressure. ▸ Check whether the lubricator can be mounted closer to the lubrication point to reduce back pressure. ▸ Check whether increasing the diameter of the lubricant line reduces back pressure. ▸ If the high back pressure cannot be reduced: ensure lubrication by other means.	
[Cartridge empty]	▸ Replace the empty cartridge with a full cartridge.	
[Ambient temperature too low]	If this fault occurs regularly or persists over a longer period: ▸ Protect the device against low temperatures using suitable protective measures, or ensure lubrication by other means.	
[Ambient temperature too high]	▸ Protect the device against excessive temperatures using suitable protective measures or by mounting it indirectly.	

Message	Recommended action	
[Battery low] [Operating voltage low]	▸ Replace the cartridge. Before removing the cartridge from the lubricator, release the pressure by removing the gas-generation unit. To do this, follow the instructions under *Replacing the lubricant cartridge* ➤87|10.2. ▸ Replace the battery pack on site with a new one.	
[Battery empty]	An old battery pack was used during cartridge replacement. ▸ Replace the battery pack on site with a new one.	
[Motor failure] [Out of order]	▸ Contact the OPTIME service provider or Schaeffler technical support.	www.schaeffler.de/en/technical-support 

12 Maintenance

The OPTIME Gateway and the OPTIME C1 lubricator are maintenance-free.

Each time the CONCEPT1 lubricant cartridge is replaced or refilled, carry out the following:

1. Check and clean the housing and seal of the OPTIME C1 lubricator ➤95|12.1.
2. If the housing is cracked or exhibits other forms of damage: Dispose of the OPTIME C1 lubricator and replace it with a new one.
3. For cartridge replacement, follow the instructions under *Replacing the lubricant cartridge* ➤87|10.2.

12.1 Cleaning

NOTICE

Damage from compressed air, steam or cleaning agents

Compressed air, steam or cleaning agents can damage seals and introduce contaminants into the lubricator. Possible consequences include malfunctions or damage to the lubricator, contamination of the lubricant or clogging of the lubricant lines.

- Do not use compressed air for cleaning.
- Do not clean the lubricator with a high-pressure or steam jet.
- Do not treat the lubricator with cleaning agents.
- Clean the lubricator with a damp cloth and brush.

- Check the housing and seal of the lubricator and clean them with a damp cloth and brush.

13 Decommissioning

Lubricators and gateways cannot be repaired.

The lubricators must be deactivated for decommissioning ➤91|10.4.

⚠ WARNING

Fire and explosion hazard due to improper handling

Improper handling of the lubricator batteries may cause heat generation, which can result in the batteries catching fire or exploding.

- Deactivate the lubricator before sending it for proper disposal.
- Deactivate the lubricator during transport and storage.
- Lubricators may only be returned after prior consultation with Schaeffler.
- Do not damage or open batteries.
- Do not throw batteries into fire.
- Do not recharge batteries.
- Do not short-circuit batteries.
- Do not send defective batteries by air freight.

14 Disposal

Devices with used batteries can be returned directly to Schaeffler or an authorised local sales partner.

Observe the locally applicable regulations for disposal.

For disposal of the CONCEPT1 lubricant cartridge, follow the instructions in BA 69:

BA 69 | Lubricators | CONCEPT1 |
https://www.schaeffler.de/std/1F4C

15 Technical data

15.1 Technical data for OPTIME C1 lubricator

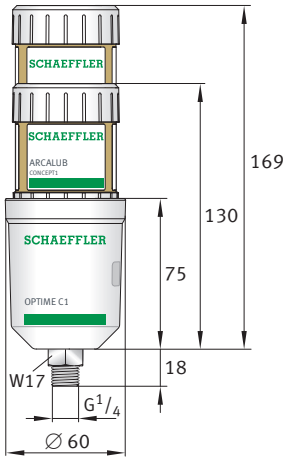
Nameplate: The serial number and several other details are printed on the lubricator.

The following table applies to the OPTIME C1 lubricator in combination with the CONCEPT1 lubricant cartridge.

20 Technical data

Feature		Value
OPTIME C1 lubricator		
Type designation		OPTIME-LW-C1
Dimensions		60 mm × 93 mm × 60 mm
Drive system		Electromechanical
Mass		≈ 0,25 kg
Installation position		As required
Housing material		PET
Threaded connector		G $^{1}/_{4}$"
Protection class		IP68 (in conjunction with CONCEPT1)
Metering volume per lubrication interval		≈ 0,5 cm³
Metering volume per day (dependent on size and setting of CONCEPT1)		0,17 cm³ ... 8,3 cm³
Battery power supply	Operating pressure	≤ 10 bar
	Operating voltage	6 V, 2,3 Ah
	Operating temperature	−10 °C ... +55 °C
Commissioning		NFC (Near Field Communication)
Wirepas Mesh (ISM band)		2,4 GHz
Line-of-sight range		100 m
CONCEPT1 lubricant cartridge		
Dimensions	60 cm³	80 mm × 52 mm × 52 mm
	125 cm³	120 mm × 52 mm × 52 mm
Mass (unfilled)	60 cm³	≈ 65 g
	125 cm³	≈ 80 g
Mass (filled)	60 cm³	≈ 115 g
	125 cm³	≈ 190 g
Housing material		PET
Grease lubricant	Volume	60 cm³ or 125 cm³
	Lubricant class	≤ NLGI 2
Oil lubricant	Volume	60 cm³ or 125 cm³
	Lubricant	> 68 cSt at +40 °C
Dispensing time (steplessly adjustable)		1 month ... 12 months
Other characteristics		
Storage	Location	Protect from sunlight, store in a dry place.
	Temperature	+20 °C ±5 °C
	Humidity	≤ 65 %
Certificates		
CE (EU Directive 2014/53/EU), ANATEL, FCC, IC, ICASA, IFETEL, KC, NBTC, NCC, NTC, RCM, SIRIM, SRRC, TDRA		Current certifications: https://www.schaeffler.de/std/1FC3

89 Dimensions of OPTIME C1 lubricator with CONCEPT1 cartridge (60 cm³ and 125 cm³)



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15.2 Technical data for OPTIME Gateway

The nameplate complete with serial number (S/N) is located on the side of the housing. The serial number is also encrypted in the applied QR code.

21 Technical data: OPTIME Gateway (2019), OPTIME Ex-Gateway (2019)

Name		Value	Unit
OPTIME Gateway, type designation:		OPTIME-GATEWAY-T-..	
OPTIME Ex-Gateway, type designation:		OPTIME-GATEWAY-T2-..-EX-..	
Wirepas Mesh (ISM band)		2,4	GHz
LTE, UMTS, GSM (via the built-in LTE stick)		✓	
WLAN		2,4	GHz
Ethernet RJ45		✓	
SIM card format		Micro-SIM (3FF [1])	
Power consumption		30	VA
Power supply AC		100 ... 240	V
Frequency		50/60	Hz
Protection class		IP66 IP66, NEMA 4X (Ex)	
Operating temperature		–20 ... +50 –20 ... +55 (Ex)	°C
Storage	Temperature	–40 ... +85	°C
	Humidity	20 ... 90	%
Length	without cable glands	180 271 (Ex)	mm
	with cable glands	210 307 (Ex)	mm
Width		130 271 (Ex)	mm
Height		81 135 (Ex)	mm
Mass		≈ 1,2 ≈ 2,5 (Ex)	kg
Certificates			
CE (EU Directive 2014/53/EU), ANATEL, ANRT, COC, CRC, FCC, IC, ICASA, IFETEL, IMDA, KC, MIC, MOC, NBTC, NCC, NTC, RCM, SDPPI, SIRIM, SRRC, SUBTEL, TDRA, WPC		Current certifications: https://www.schaeffler.de/std/1F8A	
Ex version: ATEX/IECEx Zone 2/21, CCC, QPS, ECAS Ex, INMETRO, KCs, MASC, PESO Further details can be found on the device label			

✓ available

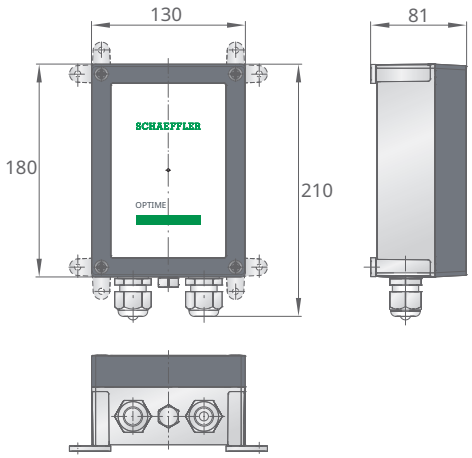
[1] dependent on the LTE stick used

22 Technical data: OPTIME Gateway 2 (2023), OPTIME Ex-Gateway 2 (2023)

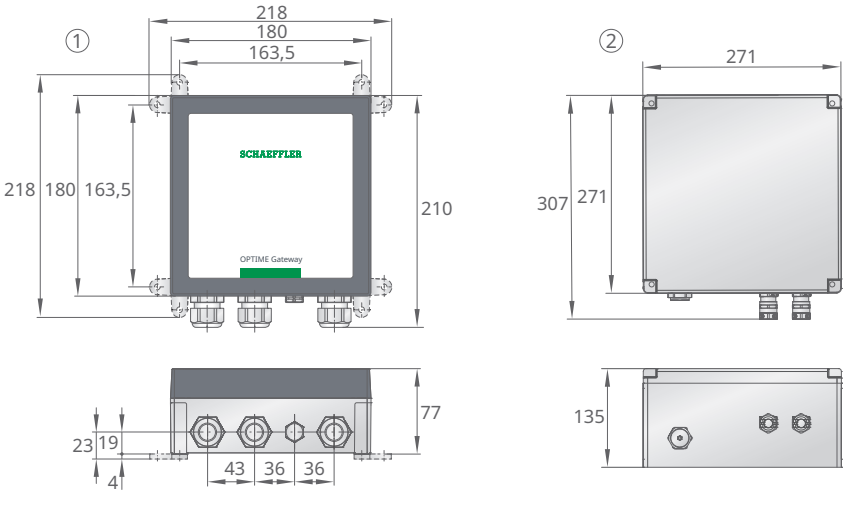
Name		Value	Unit
OPTIME Gateway 2, type designation:		OPTIME-GATEWAY-V2-..	
OPTIME Ex-Gateway 2, type designation:		OPTIME-GATEWAY-V2-..-EX-..	
Wirepas Mesh (ISM band)		2,4	GHz
LTE, UMTS, GSM		✓	
WLAN		2,4	GHz
Ethernet RJ45		✓	
SIM card format		Micro-SIM (3FF)	
Protection class		⧈	
Power consumption		20	VA
Power supply AC		100 ... 240 (±10 %)	V
Frequency		50/60	Hz
Power supply DC		12 (±10 %)	V
Fuse		T 1,25 A H 250 V	
Backup battery for RTC		CR2032, lithium 3,0 V	
Protection class		IP66, NEMA 4X	
Max. elevation		5000	m
Operating temperature		–20 ... +70 –20 ... +55 (Ex)	°C
Storage	Temperature	–40 ... +70	°C
	Humidity	20 ... 90	%
Length	without cable glands	180 271 (Ex)	mm
	with cable glands	210 307 (Ex)	mm
Width		180 271 (Ex)	mm
Height		77 135 (Ex)	mm
Mass		≈ 0,9 ≈ 2,5 (Ex)	kg
Certificates			
CE (EU Directive 2014/53/EU), ANATEL, ANRT, COC, CRC, FCC, IC, ICASA, IFETEL, IMDA, KC, MOC, NBTC, NCC, RCM, SDPPI, SIRIM, SUBTEL, TDRA, WPC		Current certifications: https://www.schaeffler.de/std/1F8A	
Ex version: ATEX/IECEx Zone 2/21, CCC, QPS, ECAS Ex, INMETRO, KCs, MASC, PESO Further details can be found on the device label			

✓ available

90 Dimensions OPTIME Gateway (2019)



91 Dimensions OPTIME Gateway 2 (2023), OPTIME Ex-Gateway (2019), OPTIME Ex-Gateway 2 (2023)



1	OPTIME Gateway 2	2	OPTIME Ex-Gateway, OPTIME Ex-Gateway 2

15.3 Declarations of Conformity

Schaeffler Technologies AG & Co. KG hereby declares that the radio equipment type of the products specified below complies with Directive 2014/53/EU. The full text of the EU Declarations of Conformity is available at the following internet addresses:

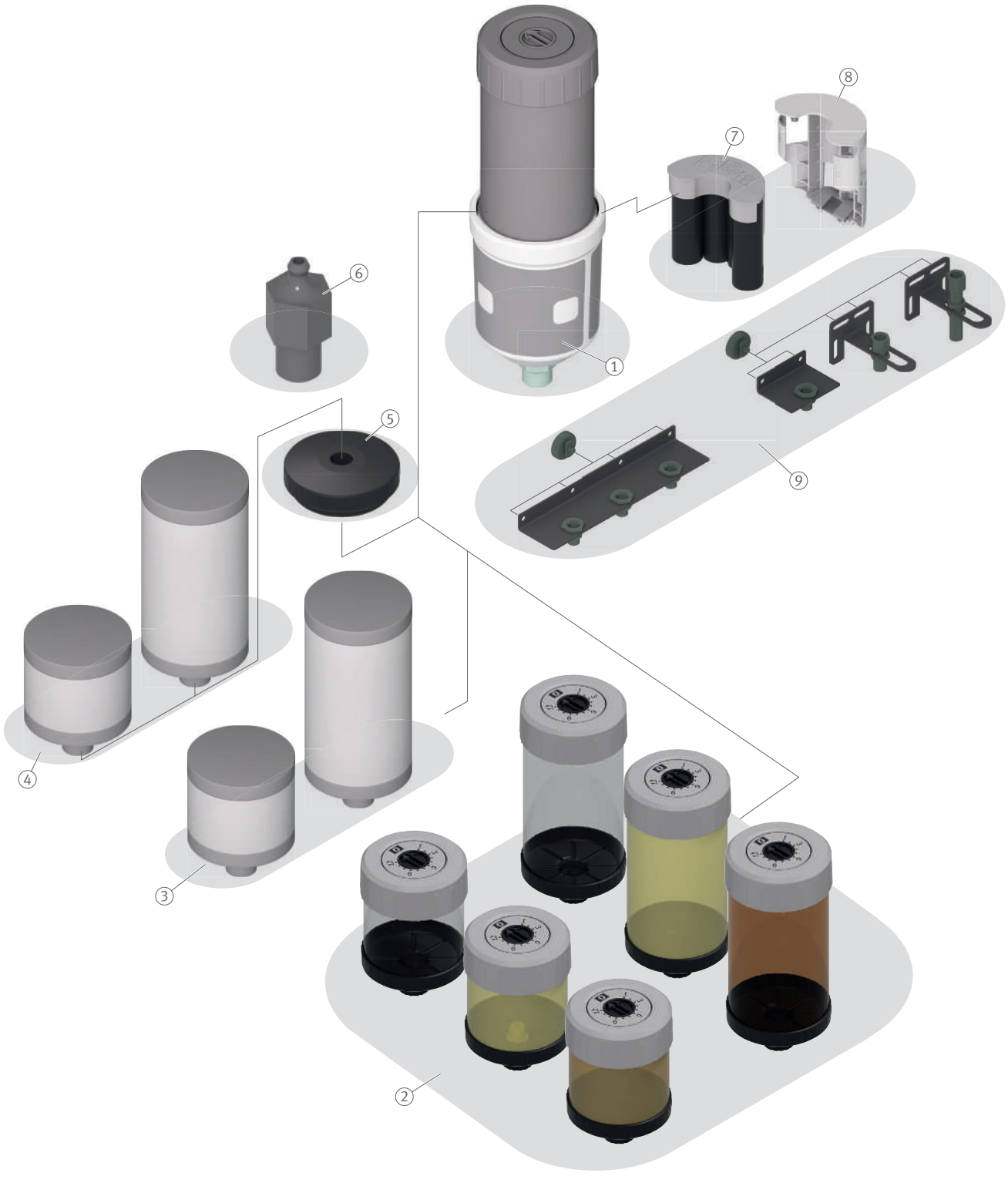
OPTIME C1 | OPTIME-LW-C1 |
https://www.schaeffler.de/std/2210

OPTIME gateway | Treon Gateway in protective enclosure |
https://www.schaeffler.de/std/2212

OPTIME gateway 2 |
https://www.schaeffler.de/std/2211

16 Replacement parts and accessories for the lubricator

92 Spare parts and accessories for OPTIME C1

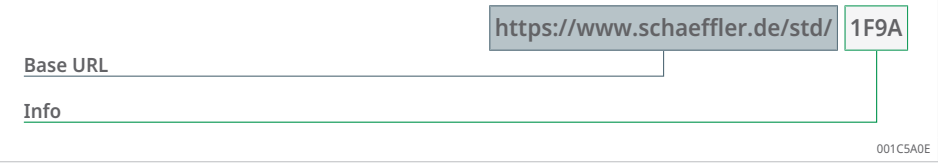


1	OPTIME C1 [▸ 105]	2	CONCEPT1 lubricant cartridge [▸ 105]
3	Approved third-party cartridge for direct installation [▸ 43]	4	Approved third-party cartridge using cartridge adapter [▸ 43]
5	Cartridge adapter [▸ 106]	6	Filling nipple for initial filling [▸ 106]
7	Battery pack [▸ 106]	8	Battery holder [▸ 106]
9	Device holder [▸ 106]		

Retrieve product information online

Further information on a product is available by clicking on the embedded link or by inserting the info text together with the base URL into your browser.

93 Short link structure



OPTIME C1 lubricator

23 Device variants

Type	Ordering number	Ordering designation	Info
OPTIME C1 Region 1 [1)]	300040903-0000	OPTIME-LW-C1-R1	2102
OPTIME C1 Region 3 [2)]	300042426-0000	OPTIME-LW-C1-R3	2103

1) EU, Israel, Republic of Macedonia, Norway, Saudi Arabia, Switzerland, Turkey, Great Britain, Australia, India, Indonesia, Japan, Malaysia, New Zealand, Philippines, Singapore, Thailand, Vietnam, Canada, Colombia, Peru, USA

2) EU, Israel, Republic of Macedonia, Norway, Morocco, Serbia, Saudi Arabia, United Arab Emirates, South Africa, Switzerland, Turkey, Great Britain, Australia, China, India, Indonesia, South Korea, Taiwan, Japan, Malaysia, New Zealand, Philippines, Singapore, Thailand, Vietnam, Canada, Brazil, Colombia, Peru, Mexico, Chile, USA

CONCEPT1 lubricant cartridge

24 CONCEPT1, prefilled with Arcanol grease, fill volume 60 cm^3

Lubricant	Ordering number	Ordering designation	Info
Arcanol FOOD2	095249290-0000	ARCALUB-C1-60-FOOD2	2080
Arcanol LOAD220	095249273-0000	ARCALUB-C1-60-LOAD220	2081
Arcanol LOAD400	095249249-0000	ARCALUB-C1-60-LOAD400	2082
Arcanol MULTI2	095249230-0000	ARCALUB-C1-60-MULTI2	2083
Arcanol MULTITOP	095249222-0000	ARCALUB-C1-60-MULTITOP	2084
Arcanol TEMP110	095249214-0000	ARCALUB-C1-60-TEMP110	2085

25 CONCEPT1, prefilled with Arcanol grease, fill volume 125 cm^3

Lubricant	Ordering number	Ordering designation	Info
Arcanol FOOD2	095248897-0000	ARCALUB-C1-125-FOOD2	2086
Arcanol LOAD150	095731784-0000	ARCALUB-C1-125-LOAD150	2087
Arcanol LOAD220	095248870-0000	ARCALUB-C1-125-LOAD220	2088
Arcanol LOAD400	095248854-0000	ARCALUB-C1-125-LOAD400	2089
Arcanol LOAD460	095248838-0000	ARCALUB-C1-125-LOAD460	208A
Arcanol MULTI2	095248820-0000	ARCALUB-C1-125-MULTI2	208B
Arcanol MULTITOP	095248811-0000	ARCALUB-C1-125-MULTITOP	208C
Arcanol TEMP110	095248200-0000	ARCALUB-C1-125-TEMP110	208D

26 CONCEPT1, prefilled with Arcanol oil, fill volume 60 cm^3

Lubricant	Ordering number	Ordering designation	Info
Arcanol CHAIN-OIL	096040432-0000	ARCALUB-C1-60-CHAIN-OIL	208E

27 CONCEPT1, prefilled with Arcanol oil, fill volume 125 cm^3

Lubricant	Ordering number	Ordering designation	Info
Arcanol CHAIN-OIL	095248900-0000	ARCALUB-C1-125-CHAIN-OIL	208F
Arcanol FOOD-OIL	095248889-0000	ARCALUB-C1-125-FOOD-OIL	2090

28 CONCEPT1, unfilled

Lubricant	V	Ordering number	Ordering designation	Code
	cm^3			
–	60	095166050-0000	ARCALUB-C1-60-REFILLABLE	2091
–	125	095166076-0000	ARCALUB-C1-125-REFILLABLE	2092

Filling accessories are available for the filling operation.

Before using customer-specific lubricants, please arrange for Schaeffler to check their suitability.

Cartridge adapter

29 Cartridge adapter

Description	Ordering number	Ordering designation	Info
Cartridge adapter	301271968-0000	OPTIME-LW-C1.ADAPTER	2104

Battery pack, battery holder and filling nipple

30 Battery pack, battery holder and filling nipple

Description	Ordering number	Ordering designation	Info
Battery pack	096687606-0000	OPTIME-LW-C1.BATTERY	2105
Filling nipple	096691611-0000	OPTIME-LW-C1.NIPPLE-PREFILL-R1/4	2106
Battery holder	304665592-0000	OPTIME-LW-C1.ADAPTER-BATTERY	21F5

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Additional accessories

- lubricant lines, fittings: e.g. screw-in connecting pieces, screw-in reducing nipples
- device holders: e.g. angle brackets, magnetic feet
- battery holders
- tools: e.g. hose cutter
- lever grease guns
- refilling accessories for CONCEPT1
- lubricants, etc.

Detailed information on replacement parts and accessories is provided in TPI 252.

Further information

TPI 252 | Lubricators |
https://www.schaeffler.de/std/1D4E

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