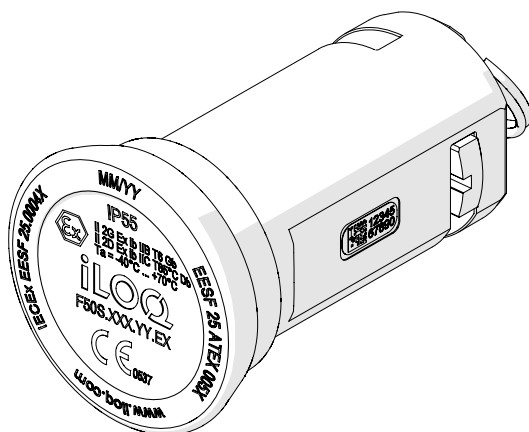




iLOQ S50

F50S.xxx.xx.EX Key Tube Cylinder

User Guide



10/2025
Rev 1.0

Document ID
323024

iLOQ Oy
support.ilq.com







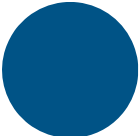


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1. Safety Information

1.1 Signal words and symbols


Sign	Description
	"DANGER" indicates a hazardous situation that, if not avoided, will result in death or serious injury.
	"WARNING" indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
	"CAUTION" indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.
	"NOTICE" indicates a potential situation which, if not avoided, might result in property damage.
	Hazard The black symbol inside a yellow triangle with a black border describes the hazard.
	Prohibition The black symbol inside a red ring with a diagonal red bar describes the action that should not be taken.
	Mandatory action The white symbol inside a blue circle describes the action that must be taken to avoid a hazardous situation.

1.2 Safety symbols used in this manual



Symbols for mandatory action:

	Read the instructions.
	General mandatory action.
	Use all necessary personal protective equipment for the explosive atmosphere.
	

Symbols for prohibited action:

	General prohibited action.
---	----------------------------

Symbols for hazards:

	General hazard.
	Explosion hazard.



2. Overview

The iLOQ F50S.xxx.xx.EX Key Tube Lock Cylinders are battery-free programmable electromechanical key tube lock cylinders for the iLOQ S50 product family in the 5 Series platform. The iLOQ F50S.xxx.xx.EX Key Tube Lock Cylinders are designed for use in explosive atmospheres.

Two different Reader Knob lengths are available, short and long. In the product code (e.g. F50S.2x1.HZ.EX), replace “x” with 1 = short reader or 2 = long reader.

2.1 Intended use

The iLOQ F50S.xxx.xx.EX Key Tube Cylinders are approved for use in Explosion Protection Zone 1 (gas) and Explosion Protection Zone 21 (dust), where an explosive atmosphere is likely to occur in normal operation. The Ex classes of the iLOQ F50S.xxx.xx.EX Key Tube Cylinders are:

- Gas:  II 2G Ex ib IIB T6 Gb
- Dust:  II 2D Ex ib IIIC T85C Db

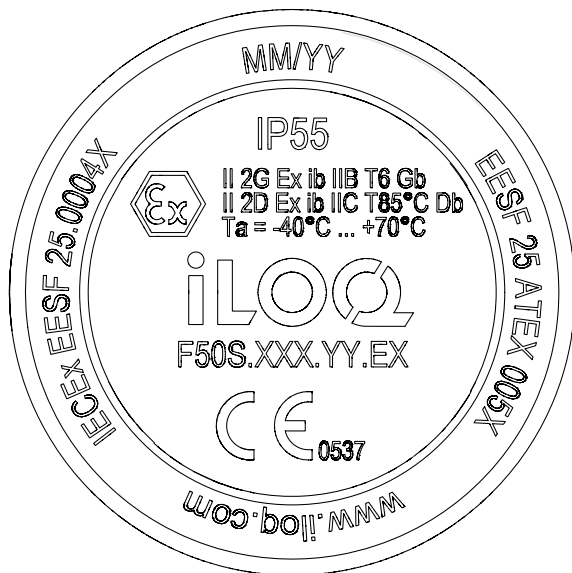
ATEX classification	Gas	Dust
Equipment group	II	II
ATEX category	2	2
Intrinsic safety	ib	ib
Sub-group	IIB	IIIC
Temperature classification	T6	T85C
Equipment protection level	Gb	Db

- ATEX certification number: EESF 25 ATEX 005X
- IECEx certification number: IECEx EESF 25.0004X
- Maximum temperature range for use: -40 °C...+70 °C / -40 °F...+158 °F.
- Ingression protection: Tested according to IP 55, submerging product is not allowed.
- Corrosion resistance: tested according to EN1670:2007, Grade 4, functional test.
- Solar radiation resistance: tested according to
 - Continuous UV radiation, UVA340
 - UV Irradiance: 100 W/m²

- Ambient temperature: +40 °C
- Duration: 750 hours / 31 days
- Approval:
 - Max color change after test Cielab $\Delta E < 10$
 - Max 25% degradation of other material properties (hardness, durability etc.) after test.
- Environmental class: EN16864, Grade 4.

2.2 About this manual

The following images in this user manual are generic. You can recognize the iLOQ F50S.xxx.xx.EX Key Tube Cylinders by the text that indicates the Ex class of the product, and the product code ending in .EX.



This manual applies to the following iLOQ products:

F50S.211.HZ.EX	F50S.411.HZ.EX	F50S.511.HZRD.EX	F50S.321.SD.EX	F50S.521.SD.EX
F50S.221.HZ.EX	F50S.421.HZ.EX	F50S.521.HZRD.EX	F50S.411.SD.EX	
F50S.311.HZ.EX	F50S.511.HZ.EX	F50S.611.SB.EX	F50S.421.SD.EX	
F50S.321.HZ.EX	F50S.521.HZ.EX	F50S.311.SD.EX	F50S.511.SD.EX	

3. Before installation

3.1 Mandatory precautions

- Installation is only allowed to be done by professionals trained in Ex environments.
- Modification of the product is not allowed.
- Repairs of the product are not allowed. Do not use a damaged or malfunctioning product. Replace a damaged or malfunctioning product with a new product.
- Packing materials and printed manuals must be removed, handled and stored outside of the potentially explosive environment.
- The iLOQ F50S.xxx.xx.EX Key Tube Lock Cylinders must be installed and used effortlessly without the use of excessive force. Do not drop the product.
- Due to the integrated spring operated locking bolt the F50S.xxx.xx.EX Key Tube Lock Cylinder is self-locking, use with care.
- If a key is lost, blocklist the key with the iLOQ Manager software and reprogram affected locks.
- Replace the product if signs of vandalism or misuse are found.
- We reserve the right to make modifications or further technical developments without further notice.
- IMPORTANT: After installation, pass these instructions and any maintenance instructions on from the installer to the user. If there are any deviations from the contents in foreign language versions of the documentation, the English original shall apply in case of doubt.
- Read these instructions before installing and using the product.

3.2 Care & maintenance

- Every two years, inspect the key tube cylinder for cracks, discoloration, scratches, signs of burns, delamination and signs of wear.
- Clean the key tube cylinder regularly by wiping it with a damp cloth to avoid buildup of electrostatic discharge (ESD).

3.3 Program the F50S.xxx.xx.EX



Explosion hazard!

Electronic devices can cause explosions in potentially explosive atmospheres, which will result in death or serious injury.

To avoid an explosion when programming the key tube cylinder, program the cylinder outside of the potentially explosive atmosphere.

- Follow the **P55S Programming Key User Guide** to program the F50S.xxx.xx.EX Key Tube Cylinder. The iLOQ P55S Programming Key is not Ex-certified. Before use, program the key tube cylinder outside of the potentially explosive atmosphere.
- Updates to access rights, blocklist and log files during normal operation can be transferred via an Ex-certified mobile phone with valid access rights.

4. Installation



Explosion hazard!

Electronic devices can cause explosions in potentially explosive atmospheres, which will result in death or serious injury.



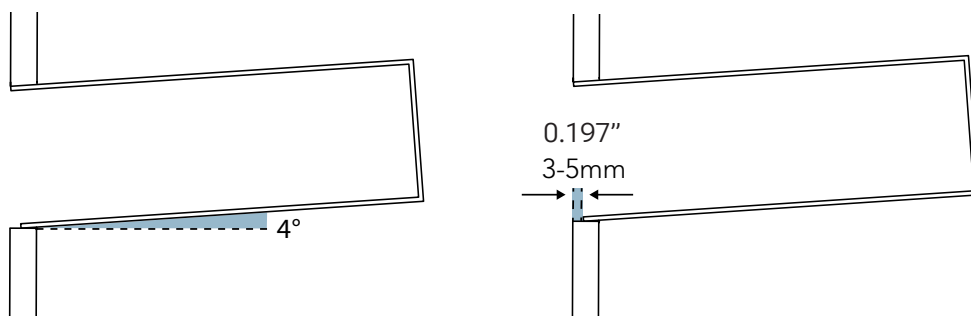
During installation, use only approved tools and follow the safety measures for the correct Explosion Protection Zone.

Use all necessary personal protective equipment for the explosive atmosphere.

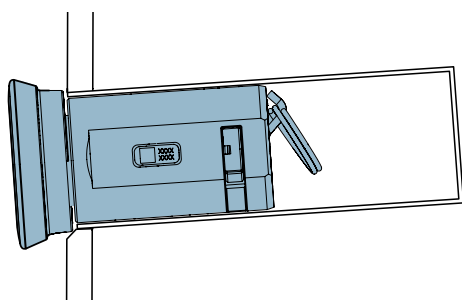
- Before installation, inspect the key tube cylinder for cracks, discoloration, scratches, signs of burns, delamination and signs of wear. Do not install the key tube cylinder if you find flaws or signs of wear.
- Make sure that the installation site has Equipotential (EP) bonding connected to local earthing to avoid possible buildup of electrostatic discharge (ESD), if needed.

To conform with local requirements, use locally approved key tubes (please note: the key tube is not included in delivery).

Mount the key tube according to the tube manufacturer's instructions. To ensure reliable operation of the F50S.xxx.xx.EX Key Tube Lock Cylinder make sure that the tube is at a 4 degree angle to prevent water pooling inside and the key tube is mounted max. 5 mm / 0.197" inside the wall surface.



See the correct positioning of the F50S.xxx.xx.EX Key Tube Lock Cylinder inside the tube from the following image.



4.1 Compatible Key Tubes

The following key tubes are compatible with F50S.xxx.xx.EX Key Tube Lock Cylinder:

Product:	Diameter:	Key Tube:
• F50S.2x1.HZ.EX	• 45 mm / 1.772"	• AssaAbloy 390877-100-055
• F50S.3x1.HZ.EX	• 38 mm / 1.496"	• Kruse 530000, 530010, 530002
• F50S.4x1.HZ.EX	• 65 mm / 2.559"	• AssaAbloy KD209, KD210
• F50S.5x1.HZ.EX	• 38 mm / 1.496"	• AssaAbloy KD201, KD201X, KD205, KD207
• F50.611.SB.EX	• 78 mm / 3.070"	• Assa Mini Safe 9M37

Please verify the compatibility of the key tubes beforehand.

5. After installation

Make sure that you have installed all components necessary for the specific installation. Open and close the F50S.xxx.xx.EX Key Tube Lock Cylinder to test the cylinder functionality after installation.

6. Operating instructions



NOTE! Due to large variety of NFC-enabled phone models and operating system versions, iLOQ cannot guarantee that all NFC-enabled phones will work seamlessly with our locks.



NOTE! Before using the locks, make sure that you know where the NCF antenna of your phone is located so that you know the best position to hold the phone against the knob.



Explosion hazard!

Electronic devices can cause explosions in potentially explosive atmospheres, which will result in death or serious injury.

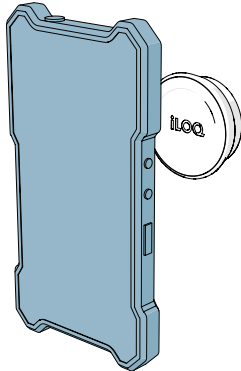
To avoid an explosion caused by your phone, make sure that your phone is certified for use in the correct Explosion Protection Zone.

To open and lock the F50S.xxx.xx.EX key tube cylinder, use **a mobile phone with an NFC capability (certified for use in Explosion Protection Zone 1)**, or an **Ex-certified iLOQ K55S Key Fob** by placing the NFC antenna in the middle of the knob.

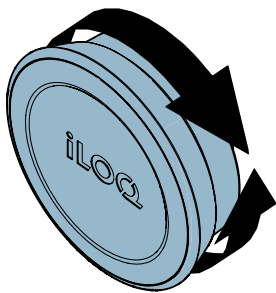
⚠ DANGER! Do not use an iLOQ K55S Key Fob that is not Ex-certified. If Ex-certified iLOQ Key Fobs are not available, use a mobile phone that is certified for use in the intended explosion protection zone.

6.1 Open the key tube

1. Hold a valid key against the lock Reader Knob and wait until the key shows a green light.

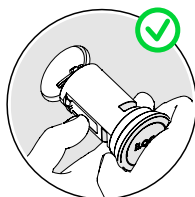
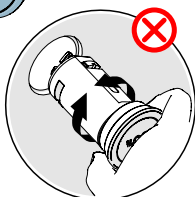
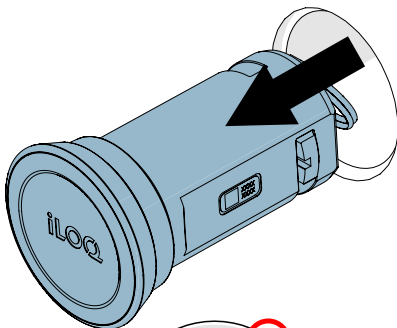


2. Turn the Reader Knob to unlock the F50S.xxx.xx.EX Key Tube Lock Cylinder.



NOTE! After 5 to 15 seconds, the cylinder will automatically be locked. When the cylinder is locked, the iLOQ Reader Knob cannot be rotated.

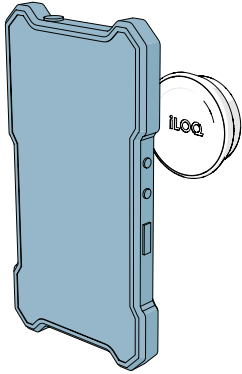
3. Pull out the Key Tube Lock Cylinder with both hands to prevent the lock cylinder from rotating uncontrollably.



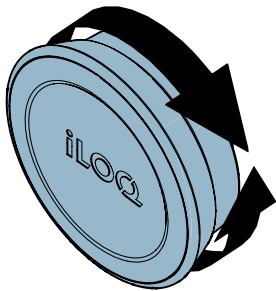
NOTE! Due to the spring operated locking bolt the cylinder is self-locking. Before removing the cylinder completely from the key tube, take hold of the cylinder body with your other hand to prevent it rotating uncontrollably. Turn the Reader Knob to the neutral position in a controlled manner when completely removed.

6.2 Lock the key tube

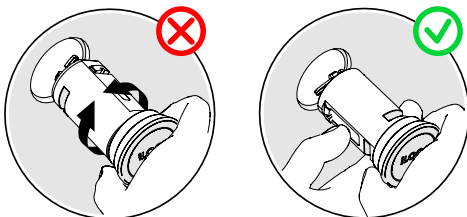
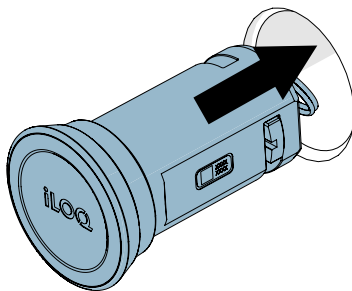
1. Hold a valid key against the lock Reader Knob and wait until the key shows a green light.



2. Turn the Reader Knob to unlock the F50S.xxx.xx.EX Key Tube Lock Cylinder.





3. Insert Key Tube Lock Cylinder into the key tube.







NOTE! After inserting the cylinder completely back into the key tube, turn the knob back to the neutral position with your hand in a controlled manner.

7. Disposal of decommissioned products

If a product is defective, replace it with a new one using the installation instructions. If you are not sure how to replace or discard a certain product, contact the device manufacturer. Contact information can be found at support.ilqq.com.

	<p>Never discard an electrical appliance in household waste. Follow the local laws and regulations for safe and environmentally friendly product disposal.</p>
	<p>Before discarding products, bear in mind that most iLOQ products are reusable. All programmable products can be reset to factory settings, after which they can be reused in another system.</p>

Recycling instructions of decommissioned products are depicted below.

Decommissioned product	Sorting
<p>Decommissioned iLOQ fittings, mounting accessories and thumb turn knobs can be recycled as scrap metal.</p>	
<p>Decommissioned iLOQ products containing electronics and circuit boards, such as iLOQ Lock Cylinders, keys, net bridges, door modules, key and RFID readers, and relay cards, must be recycled at an electrical and electronic equipment collection point.</p>	
<p>iLOQ products containing batteries and accumulators, such as key fobs, programming keys and clock circuits, should be recycled at a regional collection point for batteries and small accumulators.</p>	
<p>Most iLOQ packaging materials are suitable for cardboard and plastic recycling.</p>	

8. Compliance

iLOQ F50S Key Tube cylinders, including following product variants: F50S.211.HZ.EX, F50S.221.HZ.EX, F50S.311.HZ.EX, F50S.321.HZ.EX, F50S.411.HZ.EX, F50S.421.HZ.EX, F50S.511.HZ.EX, F50S.521.HZ.EX, F50S.511.HZRD.EX, F50S.521.HZRD.EX, F50S.611.SB.EX, F50S.311.SD.EX, F50S.321.SD.EX, F50S.411.SD.EX, F50S.421.SD.EX, F50S.511.SD.EX, F50S.521.SD.EX are in conformity with the requirements of the regulations declared in this document.

FCC

Chapter 1, Subpart A, Part 2 of Title 47 of the Code of Federal Regulations

The conformity was assessed in accordance the following standard:

FCC - FCC Rule Part 15

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

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

ISED

Innovation, Science and Economic Development Canada (ISED)

The conformity was assessed in accordance the following standard:

ISED - ICES 003, Issue 7: 2020 - class B

9. Attachments



DECLARATION OF CONFORMITY

We, iLOQ Oy
Elektroniikkatie 10
FI-90590 Oulu
Finland

hereby declare under our sole responsibility that the products with commercial name

**S50 Ex product family iLOQ C50S, iLOQ D50S, iLOQ F50S, iLOQ G50S and iLOQ H50S
with suffix .EX in the end of the product code**

to which this declaration relates are in conformity with the requirements of the following directives:

2014/34/EU Equipment for explosive atmospheres
2014/53/EU Radio Equipment Directive (RED)
2011/65/EU Restriction of the use of certain hazardous substances (RoHS)

The conformity was assessed by using the following harmonized and other EN standards:

EX EN IEC 60079-0:2018
EN 60079-11:2012

Eurofins NB 0537 performed the certification testing and issued the certificates EESF 25 ATEX 005X and IECEx EESF 25.0004X.

Art 3.1(a) Safety IEC 62368-1: 2018
EN IEC 62368-1:2020+A11:2020

Art 3.1(b) EMC EN 301 489-1 v2.2.3
EN 301 489-1 v1.9.2
EN 301 489-3 v2.1.1

Art 3.2 Spectrum EN 300 330 v2.1.1

Art 3.3 Cyber security EN 18031-1
EN 18031-2

RoHS EN IEC 63000:2018

This declaration and the associated documents are held at iLOQ Oy, address above.


Heikki Hiltunen (Sep 2, 2025 21:35:31 GMT+8)

Heikki Hiltunen, CEO

iLOQ Oy • Elektroniikkatie 10, FI-90590 Oulu • Tel. +358 40 3170 200 • info@iloq.com • www.iloq.com

ID #320795



Document ID - 323024

iLOQ S50 (iLOQ F50S.xxx.xx.Ex)

1. **EU-TYPE EXAMINATION CERTIFICATE**
2. **Equipment or Protective System Intended for use in Potentially explosive atmospheres
Directive 2014/34/EU**
3. EU-Type Examination Certificate Number: **EESF 25 ATEX 005X**
4. Product: **Electromechanical Lock**
Certified types: **S50 Ex product family iLOQ C50S, iLOQ D50S, iLOQ F50S, iLOQ G50S and iLOQ H50S**
5. Manufacturer: **iLOQ Oy**
6. Address: **Elektroniikkatie 10, FI-90590 Oulu, Finland**
7. This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
8. Eurofins Electric & Electronics Finland Oy, Notified Body number 0537, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report No. EUFI29-24003495-T1.
9. Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0:2018 IEC 60079-11:2023
10. If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.
11. This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.
12. The marking of the product shall include the following:



II 2G Ex ib IIB T6 Gb
II 2D Ex ib IIIC T85 °C Db

Espoo, 30.6.2025
Eurofins Electric & Electronics Finland Oy



Jenni Hirvelä
Senior Expert



Kari Koskela
Senior Expert

This document is digitally signed.



13. **Schedule**

14. **EU-Type Examination Certificate EESF 25 ATEX 005X**

15. **Description of Product**

The iLOQ S50 is a smart locking system that uses a smartphone's NFC to power and unlock locks without batteries or physical keys. It enables secure, real-time access management through a cloud-based platform, ideal for critical infrastructure and utility services.

16. **Report Number**

EUFI29-24003495-T1

17. **Specific Conditions of Use**

1. The maximum allowed ambient temperature ranges for iLOQ S50 Ex models are:
 - a. C50S.xxx.xx.xx: -40 °C...70 °C
 - b. D50S.xxx.xx: -25 °C...65 °C
 - c. F50S.xxx.xx: -40 °C...70 °C
 - d. G50S.xxx: -35 °C...60 °C
 - e. H50S.xxx.xx.xx: -40 °C...70 °C
2. Installation is only allowed to be done by trained personnel.
3. Repairs of the product are not allowed. Do not use a damaged or malfunctioning product.
4. The iLOQ P55S Programming Key shall not be used in hazardous area. Before programming the padlock shall be in safe area.
5. Make sure that the door has Equipotential Bonding connected to local earthing to avoid possible buildup of electrostatic discharge (ESD) on the door.
6. Use the accessory chain in cases where the padlock could fall and hit metal surfaces, causing sparks, and therefore risk of explosion.
7. The NFC device for operating the lock shall be Ex-certified in accordance with place of installation of the lock. The Equipment protection level of the NFC device shall be at least EPL Gb or EPL Db.

Essential Health and Safety Requirements

The Essential Health and Safety Requirements are covered by the standards listed at item 9.

18. **Drawings and Documents**

Drawings and documents are listed in the confidential report.

19. **Certificate History**

Issue	Date	Report No.	Change
EESF 25 ATEX 005X	30.6.2025	EUFI29-24003495-T1	Prime certificate



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEX Scheme visit www.iecex.com

Certificate No.: **IECEX EESF 25.0004X** Page 1 of 3 [Certificate history:](#)
Status: **Current** Issue No: 0
Date of Issue: 2025-06-30
Applicant: **iLOQ Oy**
Elektroniikkatie 10
Oulu FI-90590
Finland
Equipment: **Electromechanical Lock. S50 Ex product family, types iLOQ C50S, iLOQ D50S, iLOQ F50S, iLOQ G50S and iLOQ H50S**
Optional accessory: N/A
Type of Protection: **Intrinsically Safe**
Marking: Ex ib IIB T6 Gb
Ex ib IIIC T85 °C Db

Approved for issue on behalf of the IECEX
Certification Body:

Jenni Hirvelä

Position:

Senior Expert

Signature:
(for printed version)

Date:
(for printed version)

2025-06-30

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.



Certificate issued by:

Eurofins Electric & Electronics Finland Oy
Kivimiehentie 4
Espoo FI-02150
Finland





IECEx Certificate of Conformity

Certificate No.: **IECEx EESF 25.0004X**

Page 2 of 3

Date of issue: 2025-06-30

Issue No: 0

Manufacturer: **iLOQ Oy**
Elektroniikkatie 10
Oulu FI-90590
Finland

Manufacturing locations: **iLOQ Oy**
Elektroniikkatie 10
Oulu FI-90590
Finland

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

[IEC 60079-0:2017](#) Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

[IEC 60079-11:2023](#) Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:7.0

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

[FI/EESF/ExTR25.0005/00](#)

Quality Assessment Report:

[FI/EESF/QAR24.0001/00](#)



IECEX Certificate of Conformity

Certificate No.: **IECEX EESF 25.0004X**

Page 3 of 3

Date of issue: 2025-06-30

Issue No: 0

EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

Electromechanical Lock. S50 Ex product family, types iLOQ C50S, iLOQ D50S, iLOQ F50S, iLOQ G50S and iLOQ H50S.

The iLOQ S50 is a smart locking system that uses a smartphone's NFC to power and unlock locks without batteries or physical keys. It enables secure, real-time access management through a cloud-based platform, ideal for critical infrastructure and utility services.

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. The maximum allowed ambient temperature ranges for iLOQ S50 Ex models are:

- C50S.xxx.xx.xx: -40 °C...70 °C
- D50S.xxx.xx: -25 °C...65 °C
- F50S.xxx.xx: -40 °C...70 °C
- G50S.xxx: -35 °C...60 °C
- H50S.xxx.xx.xx: -40 °C...70 °C

2. Installation is only allowed to be done by trained personnel.

3. Repairs of the product are not allowed. Do not use a damaged or malfunctioning product.

4. The iLOQ P55S Programming Key shall not be used in hazardous area. Before programming the padlock shall be in safe area.

5. Make sure that the door has Equipotential Bonding connected to local earthing to avoid possible buildup of electrostatic discharge (ESD) on the door.

6. Use the accessory chain in cases where the padlock could fall and hit metal surfaces, causing sparks, and therefore risk of explosion.

7. The NFC device for operating the lock shall be Ex-certified in accordance with place of installation of the lock. The Equipment protection level of the NFC device shall be at least EPL Gb or EPL Db.



iLOQ S50

F50S.xxx.xx.EX Key Tube Cylinder

User Guide

iLOQ

support.ilq.com

Elektroniikkatie 10

90590 Oulu

Finland