SIEMENS

SITRANS L

Radar level transmitters SITRANS LR500 series with mA/ HART

Compact Operating Instructions

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7ML571..(LR500 Threaded lens antenna) 7ML573.. (LR500 Flanged encapsulated antenna) 7ML575.. (Polymeric horn antenna) 7ML578..(Flanged lens antenna)

Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

A DANGER

indicates that death or severe personal injury will result if proper precautions are not taken.

🛕 WARNING

indicates that death or severe personal injury may result if proper precautions are not taken.

indicates that minor personal injury can result if proper precautions are not taken.

NOTICE

indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

A WARNING

Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

Trademarks

All names identified by [®] are registered trademarks of Siemens Aktiengesellschaft. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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Getting started

Condition

Before you start, read the following safety information:

- Safety notes (Page 13)
- Basic safety notes: Installing/mounting (Page 19)
- Basic safety notes: Connecting (Page 33)
- Basic safety notes: Commissioning (Page 43)

Read the entire Operating Instructions (<u>www.siemens.com/sitransLR500</u>) to achieve optimum device performance.

Procedure

- 1. **Intalling/mount the device.** Installing/mounting (Page 24)
- 2. **Connect the device.** Connecting (Page 36)
- 3. Power up the device. Activating SITRANS LR500 series (Page 44)
- 4. Configure the device via quick commissioning wizard Quick commissioning (Page 48)

Introduction

2.1 Purpose of this documentation

These instructions are a brief summary of important features, functions and safety information, and contain all information required for safe use of the device. Read the instructions carefully prior to installation and commissioning. In order to use the device correctly, first review its principle of operation.

The instructions are aimed at persons who install and commission the device.

To realize optimum performance from the device, read the complete operating instructions.

2.2 Document history

The following table shows major changes in the documentation compared to the previous edition.

Edition	Remark
03/2024	First edition

2.3 Product compatibility

The following table describes compatibility between manual edition, device revision, engineering system and associated Electronic Device Description (EDD).

Manual edition	Remarks	Device revision	Compatible version of device integration package	
03/2024	First edition	HART FW: 1.00.00 or later HW: 1.00.00 or later Device revision 1 or later	SIMATIC PDM V9.2	EDD: 1.00.00 or later

2.4 Designated use

Use the device in accordance with the information on the nameplate and in the Technical specifications (Page 57).

2.6 Items supplied

2.5 Checking the consignment

- 1. Check the packaging and the delivered items for visible damages.
- 2. Report any claims for damages immediately to the shipping company.
- 3. Retain damaged parts for clarification.
- 4. Check the scope of delivery by comparing your order to the shipping documents for correctness and completeness.

WARNING

Using a damaged or incomplete device

Risk of explosion in hazardous areas.

• Do not use damaged or incomplete devices.

2.6 Items supplied

SITRANS LR500 series radar LR510 threaded lens level transmitter antenna LR530 Flanged encapsulated antenna LR550 polymeric horn antenna With mounting bracket (optional) LR580 flange lens antenna HMI display (optional) Siemens Process Instrumentation documentation disk containing certificates, and manuals for ATEX approved devices

Note

Scope of delivery might vary, depending on version and add-ons. Ensure the scope of delivery and the information on the nameplate correspond to your order and the delivery note.

2.7 Industrial use note

NOTICE

Use in a domestic environment

This Class A Group 2 equipment is intended for use in industrial areas.

In a domestic environment this device may cause radio interference.

2.8 Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial security measures that may be implemented, please visit

https://www.siemens.com/industrialsecurity (https://www.siemens.com/industrialsecurity).

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under

https://www.siemens.com/cert (https://www.siemens.com/cert).

2.11 Notes on warranty

2.9 Security note

NOTICE

Unauthorized product information or software

Use only authorized Siemens websites when accessing any product information or software, including firmware updates, device integration files (EDD, for example), as well as other product documentation. Using unauthorized product information or software could result in a security incident, such as breach of confidentiality, or loss of integrity and availability of the system.

For more information, see Product documentation and support (Page 63).

2.10 Transportation and storage

To guarantee sufficient protection during transport and storage, observe the following:

- Keep the original packaging for subsequent transportation.
- Devices/replacement parts should be returned in their original packaging.
- If the original packaging is no longer available, ensure that all shipments are properly packaged to provide sufficient protection during transport. Siemens cannot assume liability for any costs associated with transportation damages.

NOTICE

Insufficient protection during storage

The packaging only provides limited protection against moisture and infiltration.

Provide additional packaging as necessary.

Special conditions for storage and transportation of the device are listed in Technical specifications (Page 57).

2.11 Notes on warranty

The contents of this manual shall not become part of or modify any prior or existing agreement, commitment or legal relationship. The sales contract contains all obligations on the part of Siemens as well as the complete and solely applicable warranty conditions. Any statements regarding device versions described in the manual do not create new warranties or modify the existing warranty.

The content reflects the technical status at the time of publishing. Siemens reserves the right to make technical changes in the course of further development.

Safety notes

3.1 Preconditions for use

This device left the factory in good working condition. In order to maintain this status and to ensure safe operation of the device, observe these instructions and all the specifications relevant to safety.

Observe the information and symbols on the device. Do not remove any information or symbols from the device. Always keep the information and symbols in a completely legible state.

3.1.1 Warning symbols on the device

Symbol	Explanation
\triangle	Consult operating instructions
	Dispose of in an environmentally safe manner, and according to local regulations.

3.1.2 Laws and directives

Observe the safety rules, provisions and laws applicable in your country during connection, assembly and operation. These include, for example:

- National Electrical Code (NEC NFPA 70) (USA)
- Canadian Electrical Code (CEC Part I) (Canada)

Further provisions for hazardous area applications are for example:

- IEC 60079-14 (international)
- EN 60079-14 (EU and UK)

3.1 Preconditions for use

3.1.3 Conformity with European directives

The product described in this document is in conformity with the relevant harmonization legislation, and its amendments, of the European Union.

Explosive atmospheres direc- tive ATEX 2014/34/EU	Directive of the European Parliament and the Council on the har- monisation of the laws of the Member States relating to equip- ment and protective systems intended for use in potentially ex- plosive atmospheres
Radio equipment directive	Directive of the European Parliament and of the Council on the
RED	harmonisation of the laws of the Member States relating to the
2014/53/EU	making available on the market of radio equipment
Restriction of hazardous sub-	Directive of the European Parliament and the Council on the re-
stances directive RoHS	striction of the use of certain hazardous substances in electrical
2011/65/EU	and electronic equipment

The applicable directives can be found in the EU Declaration of Conformity of the specific device.

3.1.4 Conformity with UK regulations

The UKCA marking on the device symbolizes the conformity with the following UK regulations:

Explosive atmospheres regulation UKEX SI 2016/1107	Equipment and Protective Systems Intended for use in Potentially Explosive Atmospheres Regulations 2016
Radio equipment regulation RER SI 2017/1206	Radio Equipment Regulations 2017
Restrictions of hazardous substances regula- tion RoHS SI 2012/3032	The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equip- ment Regulations 2012

The applicable regulations can be found in the UKCA declaration of conformity of the specific device.

3.1.5 Improper device modifications

WARNING

Improper device modifications

Risk to personnel, system, and environment can result from modifications to the device, particularly in hazardous areas.

• Only carry out modifications that are described in the instructions for the device. Failure to observe this requirement cancels the manufacturer's warranty and the product approvals. Do not operate the device after unauthorized modifications.

3.1.6 Radar frequencies for worldwide use

Country specific settings for the radar signals are determined via the frequency. The operating mode must be set in the operating menu via the respective adjustment tool at the beginning of the setup.

🛕 WARNING

Selecting the frequency for your country group

Operating the device without selecting the frequency for the appropriate country group constitutes a violation of the regulations of the radio approvals of the respective country.

3.2 Requirements for special applications

Due to the large number of possible applications, each detail of the described device versions for each possible scenario during commissioning, operation, maintenance or operation in systems cannot be considered in the instructions. If you need additional information not covered by these instructions, contact your local Siemens office or company representative.

Note

Operation under special ambient conditions

We highly recommend that you contact your Siemens representative or our application department before you operate the device under special ambient conditions as can be encountered in nuclear power plants or when the device is used for research and development purposes.

NOTICE

Protection from the device may become impaired

The equipment is to be used only in the manner outlined in this manual, otherwise protection provided by the device may be impaired.

3.3 Local governing regulations

NOTICE

Installation regulations

Installation shall only be performed by qualified personnel and in accordance with local governing regulations.

3.4 Use in hazardous areas

3.4 Use in hazardous areas

Qualified personnel for hazardous area applications

Persons who install, connect, commission, operate, and service the device in a hazardous area must have the following specific qualifications:

- They are authorized, trained or instructed in operating and maintaining devices and systems according to the safety regulations for electrical circuits, high pressures, aggressive, and hazardous media.
- They are authorized, trained, or instructed in carrying out work on electrical circuits for hazardous systems.
- They are trained or instructed in maintenance and use of appropriate safety equipment according to the pertinent safety regulations.

Use in hazardous area

Risk of explosion.

- Only use equipment that is approved for use in the intended hazardous area and labeled accordingly.
- Do not use devices that have been operated outside the conditions specified for hazardous areas. If you have used the device outside the conditions for hazardous areas, make all Ex markings unrecognizable on the nameplate.

🛕 WARNING

Loss of safety of device with type of protection "Intrinsic safety Ex i"

If the device or its components have already been operated in non-intrinsically safe circuits or the electrical specifications have not been observed, the safety of the device is no longer ensured for use in hazardous areas. There is a risk of explosion.

- Connect the device with type of protection "Intrinsic safety" solely to an intrinsically safe circuit.
- Observe the specifications for the electrical data on the certificate and/or in Technical specifications (Page 57).

🛕 WARNING

Substitution of components

Substitution of components may impair Intrinsic Safety.

Signal wiring

Input/output connections to the transmitter are required to be protected by intrinsic safe barriers at all times.

WARNING

Equipment used in hazardous areas

Equipment used in hazardous areas must be Ex-approved for the region of installation and marked accordingly. It is required that the special conditions for safe use provided in the manual and in the Ex certificate are followed!

Safety notes

3.4 Use in hazardous areas

Installing/mounting

4.1 Basic safety notes

4.1.1 Handling the device

Do not lift a heavy device by the housing

If your device comes with a heavy flange, do not lift it by the housing. Instead, lift the device by the neck of the antenna or the flange itself.

Damage to antenna surface

Take special care of antenna surface to prevent damage. Any damage to the antenna surface, particularly to the tip/lens, could affect performance. (For example, do not sit device on its lens antenna.)

4.1.2 Pressure Equipment Directive (PED) 2014/68/EU

Note

Pressure Equipment Directive (PED) 2014/68/EU

Siemens Level Transmitters with flanged, threaded, or sanitary clamp type process mounts have no pressure-bearing housing of their own. Therefore, they do not come under the Pressure Equipment Directive as pressure or safety accessories (see EU Commission Guideline A-08 and A-20).

! DANGER

Pressure applications

Danger to personnel, system and environment will result from improper disassembly.

• Never attempt to loosen, remove, or disassemble process connection while vessel contents are under pressure.

Wetted parts unsuitable for the process media

Risk of injury or damage to device.

Hot, toxic and corrosive media could be released if the wetted parts are unsuitable for the process medium.

• Ensure that the material of the device parts wetted by the process medium is suitable for the medium. Refer to the information in Process (Page 60).

Note

Material compatibility

Siemens can provide you with support concerning selection of parts wetted by process media. However, you are responsible for the selection of parts. Siemens accepts no liability for faults or failures resulting from incompatible materials.

4.1.3 Unsuitable connecting parts

MARNING

Unsuitable connecting parts

Risk of injury or poisoning.

In case of improper mounting, hot, toxic, and corrosive process media could be released at the connections.

• Ensure that connecting parts (such as flange gaskets and bolts) are suitable for connection and process media.

Exceeded maximum permissible operating pressure

Risk of injury or poisoning.

The maximum permissible operating pressure depends on the device version, pressure limit and temperature rating. The device can be damaged if the operating pressure is exceeded. Hot, toxic and corrosive process media could be released.

Ensure that maximum permissible operating pressure of the device is not exceeded. Refer to the information on the nameplate and/or in Technical specifications (Page 57).

Hot surfaces resulting from hot process media

Risk of burns resulting from surface temperatures above 65 °C (149 °F).

- Take appropriate protective measures, for example contact protection.
- Make sure that protective measures do not cause the maximum permissible ambient temperature to be exceeded. Refer to the information in Technical specifications (Page 57).

External stresses and loads

Damage to device by severe external stresses and loads (e.g. thermal expansion or pipe tension). Process media can be released.

• Prevent severe external stresses and loads from acting on the device.

NOTICE

Installation regulations

Installation shall only be performed by qualified personnel and in accordance with local governing regulations.

4.1.4 Installation location requirements

WARNING

Insufficient air supply

The device may overheat if there is an insufficient supply of air.

- Install the device so that there is sufficient air supply in the room.
- Observe the maximum permissible ambient temperature. Refer to the information in the section Technical specifications (Page 57).

NOTICE

Aggressive atmospheres

Damage to device through penetration of aggressive vapors.

• Ensure that the device is suitable for the application.

4.1.4.1 Direct sunlight

NOTICE

Direct sunlight

Damage to device.

The device can overheat or materials can deteriorate due to UV exposure.

- Protect the device from direct sunlight. Consider use of optional sunshield.
- Make sure that the maximum permissible ambient temperature is not exceeded. Refer to the information in Technical specifications (Page 57).

4.1.5 Proper mounting

Incorrect mounting at Zone 0

Risk of explosion in hazardous areas.

- Ensure sufficient tightness at the process connection.
- Observe the standard IEC/EN 60079-14.

NOTICE

Incorrect mounting

The device can be damaged, destroyed, or its functionality impaired through improper mounting.

- Before installing ensure there is no visible damage to the device.
- Make sure that process connectors are clean, and suitable gaskets and glands are used.
- Mount the device using suitable tools. Refer to the information in Technical specifications (Page 57).

4.1.6 Incorrect disassembly

Incorrect disassembly

The following risks may result from incorrect disassembly:

- Risk through emerging media when connected to the process
- Risk of explosion in hazardous area

In order to disassemble correctly, observe the following:

- Before starting work, make sure that you have switched off all physical variables such as pressure, temperature, electricity etc. or that they have a harmless value.
- If the device contains hazardous media, it must be emptied prior to disassembly. Make sure that no environmentally hazardous media are released.
- Secure the remaining connections so that no damage can result if the process is started unintentionally.

4.2 Proper materials

NOTICE

Proper materials

The user is responsible for the selection of bolting and gasket materials (except for Flanged encapsulated antenna) which will fall within the limits of the process connection and its intended use, where the PTFE gasket is part of the antenna system, and which are suitable for the service conditions.

4.3 Sensor reference point

The measuring range of LR500 series devices begins at the end of the sensor reference point. The reference point is different depending on the sensor version.



¹⁾ When the LR550 is supplied with a flange, the sensor reference point is at the bottom of the flange.

4.4 Nozzle mounting

4.4.1 Nozzle location

Nozzle location

- Avoid central locations on tall, narrow vessels
- Nozzle must be vertical and clear of imperfections

Place the mounting location of the radar sensor where no other equipment or fixtures cross the path of the radar signals. Vessel installations, such as ladders, limit switches, heating spirals, struts, and so forth, can cause false echoes and impair the material echo. Ensure when planning your measuring point that the radar sensor has a " clear view" to the measured product. In case of existing vessel installations, an auto false echo suppression should be carried out during setup when the vessel is empty.

4.4 Nozzle mounting



Beam angle

Note

- Beam width depends on antenna size and is approximate: see below.
- For details on avoiding false echoes, see Auto False Echo Suppression (Page 238).

Beam angle is the width of the cone where, the energy density is half of the peak energy density.

The peak energy density is directly in front of, and in line with, the antenna.

There is a signal transmitted outside the beam angle, therefore false targets may be detected.

Inflowing medium

The instrument should not be mounted too close to the inflowing medium, as the radar signal could be disrupted.





4.4 Nozzle mounting

Silo with filling from top

The optimal mounting position is opposite the filling point. To avoid heavy soiling, the distance to any filter or dust collector should be as far as possible.

Version	Size	Beam angle
LR510	G¾, ¾ NPT	14°
	G1, 1 NPT	10°
	G1½, 1½ NPT (250 °C)	10°
	G1½, 1½ NPT (150/200 °C)	7°
LR550	DN 80, 3"	3°
	DN 100, 4"	
	DN 150, 6"	
	DN 200, 8"	
	DN 250	
LR530	≥ DN 25	10°
	≥ DN 50, 2"	6°
	≥ DN 80, 3"	3°
LR580	DN 80, 3"	3°
	DN 100, 4"	
	DN 150, 6"	

4.4.2 Nozzle mounting

For nozzle mounting, the nozzle should be as short as possible and its end rounded. This reduces false reflections from the nozzle.

With threaded connection, the antenna end should protrude at least 5 mm (0.2 in) out of the nozzle.

If the reflective properties of the medium are good, you can mount the device on nozzles longer than the antenna. The nozzle end should be smooth, burr-free, and rounded, if possible.

When mounting on longer nozzles, we recommend carrying out an auto false echo suppression. Recommended values for nozzles heights are found in the following illustration or the tables. The values come from typical applications. Deviating from the proposed dimensions (using longer nozzles, for example) is possible. However, local conditions must be taken into account.

4.4 Nozzle mounting



LR510 threaded connection

Nozzle diameter "A"		Nozzle height "B"	
40 mm	1 1/2"	≤ 150 m	≤ 5.9"
50 mm	2"	≤ 200 mm	≤ 7.9"
80 mm	3"	≤ 300 mm	≤ 11.8"
100 mm	4"	≤ 400 mm	≤ 15.8"
150 mm	6"	≤ 600 mm	≤ 23.6"

LR530 flanged encapsulated PTFE antenna

Nozzle diameter "A"		Nozzle height "B"	
50 mm	2"	≤ 200 mm	≤ 7.9"
80 mm	3"	≤ 400 mm	≤ 15.8"
100 mm	4"	≤ 500 mm	≤ 19.7"
150 mm	6"	≤ 800 mm	≤ 31.5"

LR550 polymeric horn antenna

Nozzle diameter "A"		Nozzle height "B"	
80 mm	3"	≤ 400 mm	≤15.8"
100 mm	4"	≤ 500 mm	≤19.7"
150 mm	6"	≤ 800 mm	≤31.5"

LR580 lens antenna, aimer flange

Nozzle diameter "A"		Nozzle height "B"	
80 mm	3"	≤ 400 mm	≤15.8"
100 mm	4"	≤ 500 mm	≤ 19.7"
150 mm	6"	≤ 800 mm	≤ 31.5"

4.4.3 Thread sealing

Thread sealing

It may be necessary to use PTFE tape or other appropriate thread sealing compound, and to tighten the process connection beyond hand-tight. (The maximum recommended torque for Threaded versions is 40 N-m (30 ft.lbs.)

Note

G thread types

G thread types are supplied with a Klingersil flat seal.

4.5 LR550 polymeric horn, liquids and solids

LR550 design

LR550 with adapter flange



LR550 with DN80/3" Universal flange



LR550 purging connection with adaptor flange, mounted on a nozzle



4.5.1 Mounting bracket

Mounting bracket

The optional mounting bracket allows simple mounting of the LR550 on a wall or ceiling. Especially in the case of open vessels, this is a simple and effective way to align the sensor to the surface of the bulk solid material.

Ceiling mounting



Wall mounting



Inclined wall mounting



Mounting preparation

The mounting bracket is supplied unassembled (optionally) and must be screwed to the sensor before setup.

Required tools: Allen wrench size 4. There are two different ways of screwing the bracket to the sensor, see following illustration:



Mounting bracket aiming



4.6 Sunshield

4.6 Sunshield

There is an optional sunshield to protect the display, if the device is mounted in direct sunlight.



Connecting

5.1 Basic safety notes

WARNING

Unsuitable cables, cable glands and/or plugs

Risk of explosion in hazardous areas.

- Use only cable glands/plugs that comply with the requirements for the relevant type of protection.
- Tighten the cable glands in accordance with the torques specified in Technical specifications (Page 57).
- Close unused cable inlets for the electrical connections.
- When replacing cable glands, only use cable glands of the same type.
- After installation, check that the cables are seated firmly.

Incorrect conduit system

Risk of explosion in hazardous areas as result of open cable inlet or incorrect conduit system.

• In the case of a conduit system, mount a spark barrier at a defined distance from the device input. Observe national regulations and the requirements stated in the relevant approvals.

5.1.1 Missing PE/ground connection

WARNING

Missing PE/ground connection

Risk of explosion in hazardous area

Depending on the device version, connect the power supply as follows:

• **Connecting terminals**: Connect the terminals according to the terminal connection diagram. First connect the PE/ground conductor.

Improper power supply

Risk of explosion in hazardous areas as result of incorrect power supply.

• Connect the device in accordance with the specified power supply and signal circuits. The relevant specifications can be found in the certificates, in Technical specifications (Page 57) or on the nameplate.

Unprotected cable ends

Risk of explosion through unprotected cable ends in hazardous areas.

• Protect unused cable ends in accordance with IEC/EN 60079-14.

WARNING

Insufficient isolation of intrinsically safe and non-intrinsically safe circuits

Risk of explosion in hazardous areas.

- When connecting intrinsically safe and non-intrinsically safe circuits ensure that isolation is carried out properly in accordance with local regulations for example IEC 60079-14.
- Ensure that you observe the device approvals applicable in your country.

Connecting or disconnecting in explosive environments

Connecting or disconnecting a powered device in explosive environments can lead to an explosion.

- Connect and disconnect in **non**-explosive environments.
 or-
- Remove power to the device before connecting or disconnecting in explosive atmosphere.

Connecting or disconnecting device in energized state

Risk of explosion in hazardous areas.

- Connect or disconnect devices in hazardous areas only in a de-energized state.
- Install a suitable switch-off device.

Exceptions:

• Devices having the type of protection "Intrinsic safety Ex i" may also be connected in energized state in hazardous areas.

Incorrect selection of type of protection

Risk of explosion in areas subject to explosion hazard.

This device is approved for several types of protection.

- 1. Decide in favor of one type of protection.
- 2. Connect the device in accordance with the selected type of protection.
- 3. In order to avoid incorrect use at a later point, make the types of protection that are not used permanently unrecognizable on the nameplate.

NOTICE

Ambient temperature too high

Damage to cable sheath.

• At an ambient temperature \ge 60 °C (140 °F), use heat-resistant cables suitable for an ambient temperature at least 20 °C (36 °F) higher.

NOTICE

Condensation in the device

Damage to device through formation of condensation if the temperature difference between transportation or storage and the mounting location exceeds 20 °C (36 °F).

• Before taking the device into operation, let the device adapt for several hours in the new environment.

5.1.2 Note on electromagnetic compatibility

Note

Electromagnetic compatibility (EMC)

You can use this device in commercial, industrial or business environments.

Metal enclosures ensure improved protection from electromagnetic radiation. This protection can be increased by grounding the enclosure.

5.2 Connecting LR500 series

5.1.3 Improvement of interference immunity

Note

Improvement of interference immunity

- Lay signal cables separate from cables with voltages > 60 V.
- Use cables with twisted wires.
- Keep device and cables at a distance from strong electromagnetic fields.
- Take account of the conditions for communication specified in the Technical specifications (Page 57).

Note

Conduit seals

Use appropriate conduit seals to maintain applicable IP and NEMA ratings.

Note

DC input terminals

The DC input terminals shall be supplied from a source providing electrical isolation between the input and output, in order to meet the applicable safety requirements of IEC 61010-1. For example, SELV source.

Note

All field wiring must have insulation suitable for rated voltages.

5.2 Connecting LR500 series

5.2.1 Wiring instructions

Note

Initial connection when display ordered separately from the device

Only follow the display wiring instructions if the display is ordered separately from the device. The display is connected when ordered at the same time as the device.

- 1. To remove lid from the device, turn by hand in a counter-clockwise direction.
- 2. Strip cable jacket for approximately 70 mm (2.75 inch) from end of cable, and thread wires through gland.



3. Connect wires to terminals as shown below: polarity is identified on terminal block.

- 4. Tighten gland to form a good seal.
- 5. Press socket end of cable from optional display onto four-pin connector plug.
- 6. Set optional HMI into enclosure. Buttons on HMI should sit over terminal block. Replacing the HMI (Page 54)
- 7. Replace device lid. Thread onto enclosure, turning clockwise. Hand tighten until mechanical stop is reached.

Note

Housing can be rotated

Housing can be rotated beyond 360° without damaging the device.

5.2.2 Input supply cable note

Note

Insulation thickness

The input supply cable should have an insulation thickness of at least 0.5 mm.

5.3 Hazardous area installations

5.3.1 Improper power supply

Improper power supply

Risk of explosion in hazardous areas as result of incorrect power supply.

• Connect the device in accordance with the specified power supply and signal circuits. The relevant specifications can be found in the certificates, in Technical specifications (Page 57) or on the nameplate.

5.3.2 Nameplates for hazardous area installations

5.3.2.1 Intrinsically safe

Device nameplate

Note Sample nameplate

_.....

This nameplate is given as an example only.



The ATEX certificate number (CSANe 23ATEX1113X) listed on the nameplate can be downloaded from our website:

Product page (www.siemens.com/sitransLR500)

The UKEX certificate number (CSAE 23UKEX1087X) listed on the nameplate can be downloaded from our website:

Product page (www.siemens.com/sitransLR500)

Go to Support > Approvals/Certificates.

The IECEx certificate number (IECEx CSA 23.0025X) listed on the nameplate can be viewed on the IECEx website:

(https://www.iecex-certs.com/)

Under the "Certificates & Licenses" tab, select "View Certificates & Licenses", then enter the following number: IECEx CSA 23.0025X.

The FM certificate (FM23US0007X) listed on the nameplate can be downloaded from our website:

Product page (www.siemens.com/sitransLR500)

The CSA certificate (CSA23CA80144218) listed on the nameplate can be downloaded from our website:

Product page (www.siemens.com/sitransLR500)

For more information on hazardous area installations, refer to Instructions specific to hazardous area installations (Page 41).

Connection drawing (FM/CSA)

The FM/CSA connection drawing number (A5E52103052A) listed on the device nameplate can be downloaded from our website:

Product page (www.siemens.com/sitransLR500)

Go to Technical Info > Images, graphics, drawings.

5.3.2.2 Dust ignition

Note

Sample nameplate

This nameplate is given as an example only.



The ATEX certificate number (CSANe 23ATEX1114X) listed on the nameplate can be downloaded from our website:

Product page (www.siemens.com/sitransLR500)

The UKEX certificate number (CSAE 23UKEX1088X) listed on the nameplate can be downloaded from our website:

Product page (www.siemens.com/sitransLR500)

Go to **Support > Approvals/Certificates**.

The IECEx certificate (IECEx CSA 23.0026X) listed on the nameplate can be viewed on the IECEx website:

https://www.iecex-certs.com/ (https://www.iecex-certs.com/)

Under the "Certificates & Licenses" tab, select "View Certificates & Licenses", then enter the following number: IECEx CSA 23.0026X.

The FM certificate (FM23US0007X) listed on the nameplate can be downloaded from our website:

Product page (www.siemens.com/sitransLR500)

The CSA certificate (80144219) listed on the nameplate can be downloaded from our website:

Product page (<u>www.siemens.com/sitransLR500</u>)

For more information on hazardous area installations, refer to Hazardous area installations (Page 38).

5.3.3 Further information related to hazardous area installations

- For power demands see Power (Page 57).
- For wiring requirements follow local regulations.
- Use approved cable gland/conduit seal to maintain Type 4X, Type 6, IP66, IP68 ratings.
- For hazardous area approvals, see Certificates and approvals (Page 61).

5.3.4 Instructions specific to hazardous area installations

5.3.4.1 Specific conditions of use (denoted by X after the certificate number)

Specific conditions of use

- Parts of the enclosure may be non-conducting and may generate an ignition-capable level of electrostatic charge under certain extreme conditions. The user should ensure that the equipment is not installed in a location where it may be subjected to external conditions (such as high-pressure steam), which might cause a build-up of electrostatic charge on non-conducting surfaces.
- The enclosure shall be protected from mechanical impact or friction.
- For dust application, apply 3 to 4 turns of PTFE tape to seal conduit entries.

Dust ignition proof / Dust protection by Enclosure Ex 't'

- The equipment shall only be powered by an SELV source; not exceeding 30 Vdc.
- Disconnect power source before opening in the presence of explosive concentration of ignitable gas.
- The supply to the SITRANS LR510, LR530, LR550, LR580 equipment shall be rated for a prospective short-circuit current of not more than 1.5 kA and shall be protected by a suitably rated fuse.

5.3.4.2 Instructions specific to hazardous area installations (Reference ATEX Directive 2014/34/EU, Annex II, 1.0.6 and UK Regulations SI 2016/1107))

The following instructions apply to equipment covered by certificate number CSANe 23ATEX1113X, CSANe 23ATEX1114X, CSAE 23UKEX1087X and CSAE 23UKEX1088X.

- 1. For use and assembly, refer to the main instructions.
- 2. The equipment is certified for use as Category 1GD equipment per CSANe 23ATEX1113X and CSAE 23UKEX1087X; Category 1D equipment per CSANe 23ATEX1114X and CSAE 23UKEX1088X.
- 3. As Category 1GD equipment per CSANe 23ATEX1113X and CSAE 23UKEX1087X, the equipment may be used with flammable gases and vapors with apparatus group IIC, IIB and IIA or with flammable dusts with apparatus group IIIC, IIIB, IIIA with the temperature classes as specified per Temperature. (Page 57)
- 4. As Category 1D equipment per CSANe 23ATEX1114X and CSAE 23UKEX1088X, the equipment has a degree of ingress protection of IP66/68 and may be used with flammable dusts with apparatus group IIIC, IIIB, IIIA with the temperatures as specified per Temperature (Page 57).
- 5. The equipment has not been assessed as a safety related device (as referred to by Directive 2014/34/EU, clause 1.5 and UK Regulation SI 2016/1107).
- 6. Installation and inspection of this equipment shall be carried out by suitably trained personnel in accordance with the applicable code of practice (EN 60079-14 and EN 60079-17 in Europe and the UK).
- 7. The equipment is non-repairable.
- 8. The certificate numbers have an 'X' suffix, which indicates that special conditions for safe use apply. Those installing or inspecting this equipment must have access to the certificates.
- 9. If the equipment is likely to come into contact with aggressive substances, then it is the responsibility of the user to take suitable precautions that prevent it from being adversely affected, thus ensuring that the type of protection is not compromised.
 - Aggressive substances: for example, acidic liquids or gases that may attack metals, or solvents that may affect polymeric materials.
 - Suitable precautions: for example, establishing from the material's data sheet that it is
 resistant to specific chemicals.

Commissioning

6.1 Basic safety notes

! DANGER

Toxic gases and liquids

Danger of poisoning when venting the device: if toxic process media are measured, toxic gases and liquids can be released.

• Before venting ensure that there are no toxic gases or liquids in the device, or take the appropriate safety measures.

Improper commissioning in hazardous areas

Device failure or risk of explosion in hazardous areas.

- Do not commission the device until it has been mounted completely and connected in accordance with the information in Technical specifications (Page 57).
- Before commissioning take the effect on other devices in the system into account.

Commissioning and operation with error message

If an error message displays, correct operation is no longer guaranteed.

- Check the severity of the error.
- Correct the error.
- If the error still exists:
 - Take the device out of operation.
 - Do not restart the device.

The same risk continues to apply when error messages are switched off or disabled.

Hot surfaces

Risk of burns resulting from hot surfaces.

• Take corresponding protective measures, for example by wearing protective gloves.

6.2 Local commissioning

Loss of explosion protection

Risk of explosion in hazardous areas if the device is open or not properly closed.

• Close the device as described in Installing/mounting (Page 19).

🛕 WARNING

Opening device in energized state

Risk of explosion in hazardous areas

- Only open the device in a de-energized state.
- Check prior to commissioning that the cover, cover locks, and cable inlets are assembled in accordance with the directives.

Exception: Devices having the type of protection "Intrinsic safety Ex i" may also be opened in energized state in hazardous areas.

6.2 Local commissioning

SITRANS LR500 series can be quickly commissioned using wizards, and menu driven parameters. The parameters can be modified locally using the device display and buttons, also known as the Human Machine Interface (HMI).



1 Local device buttons

The quick start wizards provide an easy step-by-step procedure to help you configure the device for a simple application. We recommend that you configure your application in the following order:

- First, run the "Quick commissioning wizard" for your application.
- Next, if there are known false echoes present, run the "Auto false echo suppression wizard" (optional) to prevent false echo detection when the vessel is empty or below the false echo level.
- After completing the wizards, configure any custom parameters via the parameter menus.

You can access the quick commissioning wizards:

- Locally via HMI
- From a remote location via mobile IQ, app with AW050 module or SIMATIC PDM EDD

6.2.1 Activating SITRANS LR500 series

Power up the device.

SITRANS LR500 series runs through an initialization routine for approximately 30 seconds or less. Next, the device name and then firmware revision appear. The display goes into **measurement view** (measured process values show as "- - - - " before the first measurement is completed). The "Distance" measurement (displayed in meters) appears first by default. Press values in **measurement view**.

The device is now ready for operation.

6.2.2 Local HMI

Note

Low temperature affects local display

The operating temperature of the display is -40 °C to +80 °C; -40 °C to -25 °C with reduced readability.

6.2 Local commissioning

6.2.2.1 The LCD display



Measurement mode display¹⁾²⁾: Normal operation

PROGRAM mode display

Navigation view

- A visible menu bar indicates the menu list is too long to display all items.
- The depth of the item band on the menu bar indicates the length of the menu list: a deeper band indicates fewer items.
- The position of the item band indicates the approximate position of the current item in the list. A band halfway down the menu bar indicates the current item is halfway down the list.





²⁾ In response to a key press request. For details, see measurement mode.

6.2.3 Programming

From **measurement view**, press be to enter **parameter view** and open the first menu level.

To select a listed option:

- 1. Navigate to the desired parameter.
- 2. Press ► to open edit view. The current selection is highlighted.
- 3. Scroll to a new selection using \blacktriangle and \bigtriangledown .
- 4. Press to accept it. The display returns to **parameter view** and shows the new selection.

To change a numeric value:

- 1. Navigate to the desired parameter.
- 2. When selected, the current value is displayed.
- 3. Press ► to configure it. The "EDIT" symbol flashes.
- 4. Use \blacktriangle and \bigtriangledown to increase or decrease the value. Press and hold button to increase scrolling speed.
- 5. To escape without saving your changes, press
 to return to parameter view.
- 6. Press ► to accept the new value. The display returns to **parameter view** ("EDIT" symbol is no longer flashing) and shows the new selection. Review for accuracy.

6.2 Local commissioning

Button	Name		Function
	UP or DOWN arrow	Selecting parameter set- tings	Scrolls to item
		Alpha-numeric editing	Increases or decreases value. Pressing and hold- ing increases scrolling speed through values.
	RIGHT arrow	Selecting parameters	Accepts the data (writes the parameter setting)
	LEFT arrow	Selecting parameter set- tings	Cancels edit view without changing the parameter setting.

Button functions for editing

6.2.4 Wizards

Note

Complete parameter list

For a complete list of parameters with instructions, and dimension drawings, see the full operating instructions.

6.2.4.1 Quick commissioning wizards

A wizard provides an easy step-by-step procedure that configures the device for a simple application. To configure the device for applications of level, space, distance, or volume, use the "Quick commissioning wizard" via HMI. It is possible to configure custom applications employing more complex vessel shapes via the HMI, but we suggest using a remote engineering system, such as SIMATIC PDM.

Quick commissioning wizards are also available remotely using various software packages:

• SIMATIC PDM

Quick commissioning wizard

This device provides a single quick commissioning wizard that can be used for various applications.

The initial wizard steps are common for all application types. Subsequent wizard parameters will vary depending on the application you choose. For the purpose of documenting, two

6.2 Local commissioning

separate lists follow. These lists include the wizard parameters available to commission each application type (see links below).

- 1. From **measurement view**, press → to enter **parameter view**. The first level menu (Quick start) displays. Press → to enter this menu.
- 2. Press → again to enter "Quick commissioning wizard" (Commission). In the wizard, it is not necessary to press ▼ to navigate to the next step. In each step, you are taken directly to **edit view**.
- 3. Set "Operation", "Material type", and "Application type". Subsequent wizard parameters vary depending on the application you choose. See links below to step you through the wizard appropriate to your application.
- 4. Select "Yes" to confirm all parameter changes as the final step in the quick commissioning wizard, and return to parameter view.
 "DONE" appears on the main line of the display.

Commissioning

6.2 Local commissioning

Service and maintenance

7.1 Basic safety notes

Note

The device is maintenance-free.

7.1.1 Maintenance

The device is maintenance-free. However, a periodic inspection according to pertinent directives and regulations must be carried out.

An inspection can include:

- Ambient conditions
- Seal integrity of the process connections, cable entries, and cover
- Reliability of power supply, lightning protection, and grounds

WARNING

Use of a computer in a hazardous area

If the interface to the computer is used in the hazardous area, there is a risk of explosion.

• Ensure that the atmosphere is explosion-free (hot work permit).

NOTICE

Penetration of moisture into the device

Damage to device.

• Make sure when carrying out cleaning and maintenance work that no moisture penetrates the inside of the device.

7.3 Maintenance and repair work

7.2 Cleaning

Cleaning the enclosure

- Clean the outside of the enclosure with the inscriptions and the display window using a cloth moistened with water or a mild detergent.
- Do not use any aggressive cleansing agents or solvents, e.g. acetone. Plastic parts or the painted surface could be damaged. The inscriptions could become unreadable.

Electrostatic charge

Risk of explosion in hazardous areas if electrostatic charges develop, for example, when cleaning plastic surfaces with a dry cloth.

• Prevent electrostatic charging in hazardous areas.

7.3 Maintenance and repair work

🛕 WARNING

Impermissible repair of explosion protected devices

Risk of explosion in hazardous areas

• Repair must be carried out by Siemens authorized personnel only.

Maintenance during continued operation in a hazardous area

There is a risk of explosion when carrying out repairs and maintenance on the device in a hazardous area.

• Isolate the device from power.

- or -

• Ensure that the atmosphere is explosion-free (hot work permit).

Impermissible accessories and spare parts

Risk of explosion in areas subject to explosion hazard.

- Only use original accessories or original spare parts.
- Observe all relevant installation and safety instructions described in the instructions for the device or enclosed with the accessory or spare part.

7.3.1 Enclosure open

Enclosure open

Risk of explosion in hazardous areas.

To open the device in a hazardous area, isolate the device from power.

Exception: Devices exclusively having Intrinsic safety (Ex i) may be opened in an energized state in hazardous areas.

Improper connection after maintenance

Risk of explosion in areas subject to explosion hazard.

- Connect the device correctly after maintenance.
- Close the device after maintenance work.

Refer to Connecting (Page 33).

Hot, toxic, or corrosive process media

Risk of injury during maintenance work.

When working on the process connection, hot, toxic, or corrosive process media could be released.

- As long as the device is under pressure, do not loosen process connections and do not remove any parts that are pressurized.
- Before opening or removing the device ensure that process media cannot be released.

Hot surfaces

Risk of burns during maintenance work on parts having surface temperatures exceeding 70 $^\circ C$ (158 $^\circ F).$

- Take corresponding protective measures, for example, by wearing protective gloves.
- After carrying out maintenance, remount touch protection measures.

7.4 Replacing the HMI

7.4 Replacing the HMI

7.4.1 Remove existing HMI

To remove HMI for wiring or to replace a damaged display, follow steps below:

- 1. Turn lid by hand in a counter-clockwise direction while lifting to remove it from device.
- 2. Pull up to disconnect HMI cable from connector. The HMI is now free to lift out of enclosure. (Dispose of a damaged HMI according to local regulations.)

7.4.2 Install HMI

Note

Mounting orientation to HMI

The HMI can be rotated to any position. It will snap and hold into 90° intervals for easy viewing after installation.

- 1. Press the female end of cable from replacement display onto male four-pin connector.
- 2. Set replacement HMI into enclosure approximately one quarter turn counter-clockwise from the desired final orientation. Gently turn HMI one quarter turn clockwise to secure the HMI in the enclosure.
- 3. Replace device lid. Thread onto enclosure, turning clockwise. Hand tighten until mechanical stop is reached.

7.5 Return procedure



7.5 Return procedure

To return a product to Siemens, see Returns to Siemens (<u>https://support.industry.siemens.com/cs/ww/en/sc/3098</u>).

Contact your Siemens representative to clarify if a product is repairable, and how to return it. They can also help with quick repair processing, a repair cost estimate, or a repair report/ cause of failure report.

NOTICE

Decontamination

The product may have to be decontaminated before it is returned. Your Siemens contact person will let you know for which products this is required.

7.6 Disposal

7.6 Disposal



Devices described in this manual should be recycled. They may not be disposed of in the municipal waste disposal services according to the Directive 2012/19/EC on waste electronic and electrical equipment (WEEE).

Devices can be returned to the supplier within the EC and UK, or to a locally approved disposal service for eco-friendly recycling. Observe the specific regulations valid in your country.

Further information about devices containing batteries can be found at: Information about battery / product return (WEEE) (<u>https://</u> <u>support.industry.siemens.com/cs/document/109479891/</u>)

Note

Special disposal required

The device includes components that require special disposal.

• Dispose of the device properly and environmentally through a local waste disposal contractor.

Technical specifications

8.1 Power

General	
Supply voltage	30 V DC
Signal range	4 to 20 mA
Startup current	3.6 mA

Ordinary Location, Nonincendive, Dust Ignition Proof, Dust Protection by Enclosure Ex 't'		
Voltage 24 V DC Nom, 30 V DC Max		
Current	4 to 20 mA	

Instrinsically Safe Ex 'i'		
U _i /Vmax	30 V	
l _i /lmax	120 mA	
P _i	0.8 W	
C _i	2.2 nF	
Li	0	

8.2 Temperature

Intrinsically safe

For gas application under the intrinsically safe protection Ex ia (EPL Ga / Category 1G / Class I, Div. 1), below is the ambient temperature de-rating table for various T codes and elevated process temperatures.

T-Code	Ambient Temperature	Process Temperature
Т6	-40 to +65 °C (-40 to +149 °F)	-40 to +65 °C (-40 to +149 °F)
	-40 to +45 °C (-40 to +113 °F)	-40 to +160 °C (-40 to +320 °F)
	-40 to +40 °C (-40 to +104 °F)	-40 to +250 °C (-40 to +482 °F)
T4, T5	-40 to +80 °C (-40 to +176 °F)	-40 to +80 °C (-40 to +176 °F)
	-40 to +65 °C (-40 to +149 °F)	-40 to +160 °C (-40 to +320 °F)
	-40 to +55 °C (-40 to +131 °F)	-40 to +250 °C (-40 to +482 °F)

8.2 Temperature

For dust application under the intrinsically safe protection Ex ia (EPL Da / Category 1D / Class II, Div 1), below is the ambient temperature de-rating table for various elevated process temperatures.

Maximum surface temperature	Ambient Temperature	Process Temperature
T95 ℃	-40 to +80 °C (-40 to +176 °F)	-40 to +80 °C (-40 to +176 °F)
	-40 to +65 °C (-40 to +149 °F)	-40 to +160 °C (-40 to +320 °F)
	-40 to +50 °C (-40 to +122 °F)	-40 to +250 °C (-40 to +482 °F)

Dust ignition proof/ Dust protection by Enclosure Ex 't'

For dust application under the dust ignition protection Ex ta (EPL Da / Category 1D), below is the ambient temperature de-rating table for various elevated process temperatures.

Maximum surface temperature	Ambient Temperature	Process Temperature
T137 °C	-40 to +80 °C (-40 to +176 °F)	-40 to +80 °C (-40 to +176 °F)
	-40 to +65 °C (-40 to +149 °F)	-40 to +160 °C (-40 to +320 °F)
	-40 to +50 °C (-40 to +122 °F)	-40 to +250 °C (-40 to +482 °F)

For dust application under Class II, III - Div 1, below is the ambient temperature de-rating table for various elevated process temperatures.

T-code	Ambient Temperature	Process Temperature
T4	-40 to +80 °C (-40 to +176 °F)	-40 to +80 °C (-40 to +176 °F)
	-40 to +65 °C (-40 to +149 °F)	-40 to +160 °C (-40 to +320 °F)
	-40 to +50 °C (-40 to +122 °F)	-40 to +250 °C (-40 to +482 °F)

Non-incendive

For gas application under Class I, Div 2, below is the ambient temperature de-rating table for various T codes and elevated process temperatures.

T-Code	Ambient Temperature	Process Temperature
T4, T5	-40 to +80 °C (-40 to +176 °F)	-40 to +80 °C (-40 to +176 °F)
	-40 to +75 °C (-40 to +167 °F)	-40 to +160 °C (-40 to +320 °F)
	-40 to +70 °C (-40 to +158 °F)	-40 to +250 °C (-40 to +482 °F)
Т6	-40 to +65 °C (-40 to +149 °F)	-40 to +65 °C (-40 to +149 °F)
	-40 to +60 °C (-40 to +140 °F)	-40 to +150 °C (-40 to +302 °F)
	-40 to +55 °C (-40 to +131 °F)	-40 to +250 °C (-40 to +482 °F)

8.3 Construction

Enclosure	Body material	aluminum with polyurethane powder coat
	Ingress protection	• IP66, TYPE 4X
		IP68 (2 meters, 24 hours), TYPE 6

Materials

LR510 (threaded connection)	Options
Sealing material of the antenna/process connec-	PEEK/FKM
tion	PEEK/FFKM
	Klingersil flat seal for G thread versions
Process connection material	316/316L
	Alloy C22 (2.4602)
LR530 (flanged encapsulated PTFE antenna)	
Sealing material of the antenna/process connec- tion	PTFE/PTFE
Process connection material	316/316L
LR550 (polymeric horn)	
Sealing material of the antenna/process connec-	PP/PP
tion	PP/FKM
	PP/EPDM
Process connection material	Universal, plastic horn antenna PP/PBT
	mounting bracket 300mm / 316/316L
	Flanges: PP-GF30
LR580 (lens antenna)	
Sealing material of the antenna/process connec-	PEEK/FKM
tion	PEEK/FFKM
Process connection material	316/316L

Weight

Instrument (depending on housing, process fitting and antenna): approx. 1.6 to 20 kg (3.5 to 44.1 lbs)

8.4 Operating conditions

8.4.1 Second line of defence (SLOD)

This option is available on the SITRANS LR510, LR530 and LR580 and provides a secondary gas tight feed-through to prevent toxic gases from permeating from the process into the housing.

8.5 Process

8.4.2 Environmental

Location	indoor/outdoor
Altitude	5000 m (16 404 ft) maximum
Ambient, storage and transport temperature	-40 +80 °C (-40 +176 °F)
Relative humidity	Suitable for outdoor (TYPE 4X, TYPE 6, IP66, IP68 enclosure)
Installation category	1
Pollution degree	4
Storage and operation	Storage period: 12 to 18 months (if product is kept clean, dry, and within temperature specifications)
	Safe operation period: 15+ years

8.4.3 Process conditions

For the process conditions, please also note the specifications on the nameplate. The lowest value always applies.

8.5 Process

Process temperature

Version	Material	Seal	Process temperature (measured on the process fitting)
LR510	PEEK	FKM	-40 +150 °C (-40 +302 °F)
Threaded connection			-40 +200 °C (-40 +392 °F)
		FFKM	-15 +150 °C (5 +302 °F)
			-15 +250 °C (5 +482 °F)
LR530	PTFE and PTFE 8 mm	IFE and PTFE PTFE mm	-60 +150 °C (-76 +302 °F)
Flange with encapsula- ted antenna			-196 +200 °C (-320 +392 °F)
LR550	PP	PP	-40 +80 °C (-40 +176 °F)
Polymeric horn antenna	FKM	-40 +80 °C (-40 +176 °F)	
		EPDM	-40 +80 °C (-40 +176 °F)
LR580	PEEK	FKM	-40 +150 °C (-40 +302 °F)
Lens antenna, solids			-40 +200 °C (-40 +392 °F)
		FFKM	-15 +250 °C (-4 +392 °F)

Note

Device dependent

Process temperature is dependent on the device, see nameplate (Page 38) for details.

8.6 Certificates and approvals

8.6 Certificates and approvals

"Intrinsic safety" type of protection		
ATEX, UKEX, IECEx		
CSANe 23ATEX1113X	II 1 G Ex ia IIC T6T4 Ga	
• IECEx CSA 23.0025X	II 1 D Ex ia IIIC T ₂₀₀ 95°C Da	
CSAE 23UKEX1087X		
CSA & FM		
• FM 23US0007X	Class I, II, III, Div 1, Group A, B, C, D, E, F, G T6	
• CSA 23CA80144218	T4	
China		
• Nepsi GYJ23.1297X	Ex ia IIC T6T4 Ga Ex ia IIIC T ₂₀₀ 95°C Da	
Korea		
• 2023-BO-0412	Ex ia IIC T6T4 Ga	
• 2023-BO-0413	Ex ia IIIC T ₂₀₀ 95°C Da	
Japan		
CSAUK 24JPN014X	Ex ia IIC T4 Ga	
CSAUK 24JPN016X	Ex ia IIC T6 Ga	
CSAUK 24JPN017X	Ex ia IIIC T200 95°C Da	
Brazil		
• INMETRO DNV 24.0019X	Ex ia IIC T6T4 Ga	
	Ex ia IIIC T ₂₀₀ 95°C Da	
"Dust Ignition proof" type of protection		
ATEX, UKEX, IECEx		
CSANe 23ATEX1114X	II 1 D Ex ta IIIC T ₂₀₀ 137°C Da	
• IECEx CSA 23.0026X		
CSAE 23UKEX1088X		
CSA & FM		
• FM 23US0007X	Class II, III, Div 1, Group E, F, G, T4	
• CSA 80144219		
China		
• Nepsi GYJ23.1297X	Ex ta IIIC T ₂₀₀ 137°C Da	
Korea		
• KCs 2023-BO-0414	Ex ta IIIC T ₂₀₀ 137°C Da	
Japan		
CSAUK 24JPN018X	Ex ta IIIC T ₂₀₀ 137°C Da	
Brazil		
INMETRO DNV 24.0020X	Ex ta IIIC T ₂₀₀ 137°C Da	
"Nonincendive" type of protection		
FM		

8.7 Communication

•	FM23US0007X	Class I, Div 2, Group A, B, C, D T6T5
Radio		
•	Europe	CE
•	United Kingdom	UKCA
•	USA	LYH-LR500
•	Canada	267AA-LR500
•	Japan	

8.7 Communication

Communication type	• HART 7
	• 4 to 20 mA
Supported engineering system	SIMATIC PDM

Product documentation and support



A.1 Product documentation

Process instrumentation product documentation is available in the following formats:

- Certificates (<u>http://www.siemens.com/processinstrumentation/certificates</u>)
- Downloads (firmware, EDDs, software) (<u>http://www.siemens.com/processinstrumentation/</u> <u>downloads</u>)
- Catalog and catalog sheets (http://www.siemens.com/processinstrumentation/catalogs)
- Manuals (<u>http://www.siemens.com/processinstrumentation/documentation</u>) You have the option to show, open, save, or configure the manual.
 - "Display": Open the manual in HTML5 format
 - "Configure": Register and configure the documentation specific to your plant
 - "Download": Open or save the manual in PDF format
 - "Download as html5, only PC": Open or save the manual in the HTML5 view on your PC

You can also find manuals with the Mobile app at Industry Online Support (<u>https://support.industry.siemens.com/cs/ww/en/sc/2067</u>). Download the app to your mobile device and scan the device QR code.

Product documentation by serial number

Using the PIA Life Cycle Portal, you can access the serial number-specific product information including technical specifications, spare parts, calibration data, or factory certificates.

Entering a serial number

- 1. Open the PIA Life Cycle Portal (https://www.pia-portal.automation.siemens.com).
- 2. Select the desired language.
- 3. Enter the serial number of your device. The product documentation relevant for your device is displayed and can be downloaded.

To display factory certificates, if available, log in to the PIA Life Cycle Portal using your login or register.

Scanning a QR code

- 1. Scan the QR code on your device with a mobile device.
- 2. Click "PIA Portal".

To display factory certificates, if available, log in to the PIA Life Cycle Portal using your login or register.

A.2 Technical support

A.2 Technical support

Technical support

If this documentation does not completely answer your technical questions, you can enter a Support Request (<u>http://www.siemens.com/automation/support-request</u>).

For help creating a support request, view this video here (www.siemens.com/opensr).

Additional information on our technical support can be found at Technical Support (<u>http://</u><u>www.siemens.com/automation/csi/service</u>).

Service & support on the Internet

In addition to our technical support, Siemens offers comprehensive online services at service & support (<u>http://www.siemens.com/automation/serviceandsupport</u>).

Contact

If you have further questions about the device, contact your local Siemens representative, by doing the following:

- 1. Visit Contact at Siemens (http://www.automation.siemens.com/partner).
- 2. Select "All Products and Branches" > "Products & Services" > "Industrial automation".
- 3. Choose either "Process analytics" or "Process instrumentation", depending on your product.
- 4. Select the product category ("Pressure measurement", for example), then select your product.
- 5. Click "Search". The contacts for your product in all regions display.

Contact address for business unit: Siemens AG Digital Industries Process Automation Östliche Rheinbrückenstr. 50 76187 Karlsruhe, Germany

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