

# PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

## **SITRANS LR 80 GHz smart radar level transmitters SITRANS LR110 and SITRANS LR150**

Manufactured by:

### **Siemens AG**

D-76181  
Karlsruhe  
Germany

has been assessed by CSA Group  
and for the conditions stated on this certificate complies with:

**Performance Standards and Test Procedures for Continuous Water Monitoring Equipment, Part 3: Performance standards and test procedures for water flowmeters, Environment Agency, version 4, March 2020**

The combined performance characteristics ( $U_c$ , the expanded uncertainty) are as follows:

SITRANS LR110 analogue 4 to 20 mA is **0.173% (Class 1)**  
SITRANS LR110 digital HART values is **0.056% (Class 1)**  
SITRANS LR150 analogue 4 to 20 mA is **0.170% (Class 1)**  
SITRANS LR150 digital HART values is **0.044% (Class 1)**

Certification Range:

0 to 5m

Project No.: 80056644  
Certificate No: Sira MC220405/00  
Initial Certification: 15 June 2022  
This Certificate issued: 15 June 2022  
Renewal Date: 20 April 2026



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MCERTS is operated on behalf of the Environment Agency by

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*The MCERTS certificate consists of this document in its entirety.*

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## Certificate Contents

Approved Site Application.....	2
Basis of Certification .....	2
Product Certified.....	3
Certified Performance .....	4
Description.....	7
General Notes .....	7

## Approved Site Application

*Any potential user should ensure, in consultation with the manufacturer, that the monitoring system is suitable for the intended application. For general guidance on monitoring techniques refer to the Environment Agency Monitoring Technical Guidance Notes available at [www.mcerts.net](http://www.mcerts.net)*

The product is suitable for use, where it is appropriate, for regulated applications such as abstraction, effluent discharge, ultraviolet disinfection and industrial processing.

## Basis of Certification

This certification is based on the following test report(s) and on CSA Group's assessment and ongoing surveillance of the product and the manufacturing process:

Laboratory Testing - CSA Group Evaluation Report, dated 23 March 2021, ref. 80056644.

Field Test - WRc Ref: UC 14792/17297-0, November 2020, version 3

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## Product Certified

The SITRANS 80 GHz radar level measuring system consists of the following parts:

The transmitter (also as standalone), with the following variants:

- SITRANS LR110 - axial cable entry
- SITRANS LR150 - with or without display module with transparent or closed lid

The certificate applies to all instruments fitted with software versions, detailed as follows:

SITRANS LR110 - firmware version 1.2.1 onwards (serial number JNB/N7130000066 onwards)

SITRANS LR150 - firmware version 1.2.1 onwards (serial number JNB/N5110000040 onwards)

**Note:**

The certification range of all the SITRANS radar level sensors is 0 to 5.0 metres. However, the manufacturer recommends a minimum distance of 0.25m from the radar reference plane for optimum accuracy.

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### Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: SITRANS LR110 -40°C to +80°C  
 SITRANS LR150 -40°C to +70°C  
 Instrument IP rating: SITRANS LR110 IP66/IP68 (IEC 60529)  
 SITRANS LR150 IP66/IP67 (IEC 60529)

The instruments meet MCERTS **Class 1** requirements for the combined performance characteristic as specified in Table 7 of the MCERTS performance standard. Details of individual performance characteristics are summarised below:

Results are expressed as error % of certification range, unless otherwise stated.

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Protection against unauthorised access	6-digit protection code					Clause 3.1.2
Units of measurement	Units include metres <sup>3</sup> and litres					Clause 3.1.6 and 3.1.7
Indicating device and/or analogue or digital output signal	All radar transmitters have analogue output of flow rate. The SITRANS LR150 has an option for integral display.					Clause 3.1.3
Resolution	1mm (0.02%)					Clause 3.1.14 ≤1mm, class 1
<b>Combined performance characteristic (U<sub>c</sub>)</b>					Note 1	
<b>SITRANS LR110 (4-20mA)</b>	<b>0.173</b>					Clause 6.4, table 7 <b>0.2%, class 1</b>
<b>SITRANS LR110 (digital HART)</b>	<b>0.056</b>					
<b>SITRANS LR150 (4-20mA)</b>	<b>0.170</b>					
<b>SITRANS LR150 (digital HART)</b>	<b>0.044</b>					
Warm-up time					<15 secs	Clause 6.1.2 To be reported
Loss of power SITRANS LR110 SITRANS LR150					No changes No changes	Clause 6.3.1 To be reported
Mean error SITRANS LR110 SITRANS LR150	0.017 0.006					Clause 6.3.2 +/-0.1%, class 1
Repeatability SITRANS LR110 SITRANS LR150	0.021 0.007					Clause 6.3.2 0.05%, class 1

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Supply voltage SITRANS LR110 SITRANS LR150	0.012 0.003					Clause 6.3.3 0.025%, class 1
Output impedance (10 Ω to 545 Ω) SITRANS LR110 SITRANS LR150	0.003 0.010					Clause 6.3.4 0.025%, class 1
Ambient air temperature (-40°C to +80°C, -20°C to +60°C, *note 2) SITRANS LR110 SITRANS LR150	0.141 0.143					Clause 6.3.6 0.025%, class 1
Relative humidity (>95%) SITRANS LR110 SITRANS LR150	0.006 0.012					Clause 6.3.6 0.025%, class 1
Accuracy of computation	0.025					Clause 6.3.11 0.025%, class 1
User defined stage-discharge equation	0.020					Clause 6.3.12 0.025%, class 1
Response time SITRANS LR110  SITRANS LR150					increase 6.05s decrease 6.54s increase 4.94s decrease 4.74s	Clause 6.3.19 <30 seconds
Error under field conditions SITRANS LR110          SITRANS LR150					Max error 0.25% Min error 0.001% Mean error 0.04% Proportion of errors ≤0.2% = 100% Proportion of errors ≤0.5% = 100%  Max error 0.27% Min error 0.001% Mean error 0.05% Proportion of errors ≤0.5% = 100% Proportion of errors ≤1.5% = 100%	Clause 7.3          Class 1          Class 1

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Up time SITRANS LR110 SITRANS LR150					100% 100%	Clause 7.4 >95%
Maintenance SITRANS LR110 SITRANS LR150					None None	Clause 7.5 to be reported

Note 1 - The test results contributing to the determined  $U_c$  values are detailed in the CSA Group Evaluation Report (ref. 80056644).

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## Description

### **Radar level sensors**

The **SITRANS LR110** and **SITRANS LR150** are smart, compact, 80 GHz, non-contact radar level transmitters that can be applied on MCERTS open channel flow applications providing flow rate measurement as stand-alone devices when used with an appropriate structure. The 80 GHz **SITRANS** provides measurement data without sunshades or separate ambient temperature measurement. These **SITRANS** radars can be used in a wide range of level applications across the water and wastewater industry.

The **SITRANS** sensors provide a multi-variable HART 7 digital signal allowing flow rate, level, measurement reliability and temperature to be read by a suitable HART data logger or remote telemetry unit. They can provide an analogue 4 to 20mA signal proportional to flow rate.

The **SITRANS** radar can be set-up remotely via secure Bluetooth communications using the SITRANS mobile IQ App on a mobile device or using DTM frame application on a laptop/PC. In addition, laptop/PC set-up can be achieved by connecting via the signal cable using HART communications.

The **SITRANS LR110** smart radar sensor has an integral signal cable and ingress protection IP66/IP68. The **SITRANS LR110** and **SITRANS LR150** have a cable gland connection IP66/IP67. The **SITRANS LR150** has the option of an integral display.

## General Notes

1. This certificate is based upon the equipment tested. The Manufacturer is responsible for ensuring that on-going production complies with the standard(s) and performance criteria defined in this Certificate. The Manufacturer is required to maintain an approved quality management system controlling the manufacture of the certified product. Both the product and the quality management system shall be subject to regular surveillance according to 'Regulations Applicable to the Holders of CSA Certificates'. The design of the product certified is defined in the CSA Design Schedule V00 for certificate No. Sira MC220405/00.
2. If the certified product is found not to comply, CSA Group should be notified immediately at the address shown on this certificate.
3. The certification marks that can be applied to the product or used in publicity material are defined in 'Regulations Applicable to the Holders of CSA Certificates'.
4. This document remains the property of CSA Group and shall be returned when requested by CSA Group.

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