

KISA

User Manual and Technical Overview

KISA VIS and KISA VIS/NIR



1. Product overview

KISA is a solid-state, polarization-based sensor platform for continuous monitoring of laser wavelength and optical power. It is designed to help users observe temporal behaviour such as drift, fluctuations, warm-up effects, and stability changes in narrow-band light sources.

The device provides real-time wavelength and intensity/power information through dedicated software, enabling users to monitor laser behaviour over time rather than relying only on isolated measurement snapshots.

- Continuous monitoring of wavelength and optical power/intensity.
- High sensitivity to temporal dynamics such as drift and fluctuations.
- Compact, alignment-free sensor design.
- Real-time visualization and raw data logging.
- Fiber-coupled and free-space optical input support within specified operating conditions.
- Solid-state polarimetric architecture with no moving parts.

2. Product variants at a glance

KISA is available as KISA VIS for visible wavelengths and KISA VIS/NIR for visible-to-near-infrared monitoring.

Parameter	KISA VIS	KISA VIS/NIR
Wavelength range	400 - 700 nm	500 - 1100 nm
Dynamic range	96 dB	96 dB
Free spectral range	5 - 10 nm	7 - 15 nm
Wavelength precision	0.3 - 1 pm	1 - 2 pm
Absolute wavelength accuracy	0.2 nm at 532 nm	0.2 nm at 785 nm
Signal-to-noise	20,000 : 1	20,000 : 1
Data rate	1 - 13 Hz	1 - 13 Hz
Size	67 x 32 x 70 mm	67 x 32 x 70 mm
Weight	120 g	120 g

Note: Specifications are based on current product data. Application-specific performance may depend on calibration, optical configuration, source bandwidth, signal level, and operating conditions.

3. Delivery content

The package contains the following items:

- KISA sensor with the optical connector selected when ordering (default FC-PC, other options available)
- Data cable (USB)

4. Measurement principle

KISA uses a polarization-based measurement approach. Wavelength-dependent phase changes inside the compact architecture are converted into measurable signal variations. These variations are evaluated to determine the central wavelength of the optical input.

In parallel, optical power/intensity is derived from the detected signal amplitude. This enables simultaneous wavelength and power/intensity monitoring and supports direct observation of temporal laser dynamics.

5. Software and operation

The KISA software provides real-time visualization and logging of measurement data. It is compatible with Windows 10 and Windows 11.

5.1 Software access and updates

A download link for the KISA software is provided with your device. Customers will be notified by email when updated software versions become available. For assistance accessing the software, contact info@cohersense.de.

5.2 Installation

Install the software in a folder where you have read and write permissions, such as your Desktop or Documents folder. Avoid the Windows Program Files folder, as access permissions may restrict operation.

By default, the installer creates a Coher Sense subfolder in the folder containing the installer, often Downloads. If you select a different installation folder, no additional subfolder is created automatically.

1. Run the installer and select the installation folder.
2. Copy the supplied Device_Description_Values file into the KISA subfolder within the installation folder.
3. Connect the KISA sensor to the computer using the supplied USB cable.
4. Launch CoherSense.exe or use the desktop shortcut created during installation.

5.3 Starting a measurement

1. In the startup window, enter the approximate wavelength of your optical source. An estimate within a few nanometres is sufficient.
2. Click Set Wavelength. The minimum and maximum wavelengths of the measurement range (the free spectral range) are displayed in the corresponding fields.
3. Click Continue to close the startup window and access the main interface.
4. Click Start Data Capture to begin measurement.

5.4 Software interface and signal status

The user interface displays real-time measurement data as time-dependent plots:

- Wavelength — central wavelength of the optical signal.
- Intensity — relative optical power.

These plots enable direct observation of drift, fluctuations, and dynamic behaviour.

The connection status indicates whether an instrument is connected. During the measurement, the signal indicator uses the following colours:

Colour	Signal status
Yellow	Low signal
Green	Good signal
Red	Saturated signal

If the signal is low or saturated, adjust Integration Time (ms) and Reference Current (nA) using the dropdown menus at the top right of the interface.

5.5 Raw data fit

The raw-data display provides visual feedback on the measurement signals and their fit. The fitted curve should pass through the data points marked with ✖, and the second and fourth points should be at the same height.

This check is particularly important for free-space applications, where it helps assess the optical alignment.

5.6 Data logging

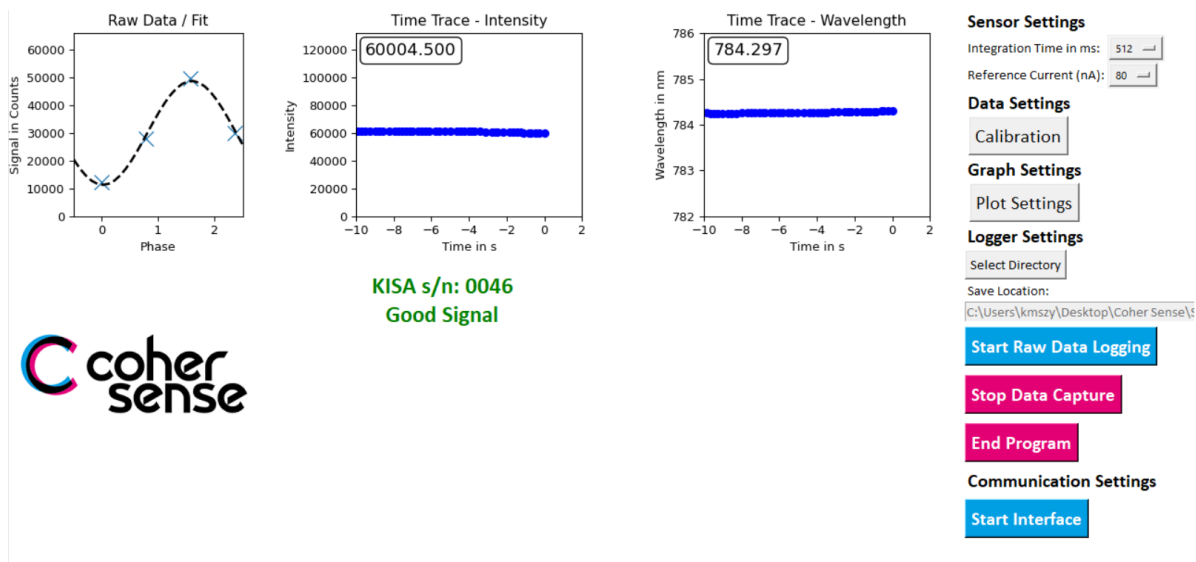
Click Start Raw Data Logging to record measurement data to a CSV file. The relevant columns are:

Column	Content
Time stamp	Time associated with each measurement
Intensity	Measured relative optical power
Wavelength	Measured central wavelength

Any additional columns contain internal measurement data and can be ignored for routine analysis.

5.7 Calibration

Wavelength and power calibration routines are included in the software. Click Calibration and follow the on-screen instructions.



5.8 Controls

Function	Purpose
Start Data Capture	Starts real-time measurement
Start Raw Data Logging	Records measurement data to file
Integration Time (ms)	Adjusts sensitivity and response time
Reference current (nA)	Adjusts signal amplification
Calibration	Enables wavelength and power calibration
Plot Settings	Adjusts display settings, including y-axis range and wavelength units
End Program	Closes the software
Start interface	Creates an adv_log file in .npv or .csv format and updates it with each new data point

6. Compatible light sources

KISA is optimized for narrowband optical sources. The maximum supported spectral bandwidth depends on the wavelength region.

Wavelength range	Maximum supported bandwidth
380 - 500 nm	2 nm
500 - 600 nm	3 nm
600 - 800 nm	4 nm
800 - 1100 nm	6 nm

7. Typical application areas

KISA is intended for laser monitoring tasks where compact size, continuous acquisition and visibility of wavelength/power behaviour over time are valuable.

Application	Description
Laser drift monitoring	Observe wavelength and power behaviour during warm-up, operation, and environmental changes
Laser stability checks	Track whether a laser remains stable for a measurement, experiment, or system test
System diagnostics	Use wavelength and intensity/power traces to identify changes that may affect data quality
Laboratory and industrial integration	Use a compact, alignment-free sensor where larger bench instruments are difficult to scale or integrate

8. Operating conditions

Parameter	Value / note
Temperature	5 °C to 35 °C recommended
Relative humidity	20% to 80%, non-condensing
Environment	Indoor and outdoor use; avoid water, condensation, and contamination
Mechanical design	Solid-state design with no moving parts; robust against vibration and mechanical disturbance
Optical interfaces	Fiber-coupled and free-space optical input supported

9. Compliance & Warranty

The KISA sensor is designed and manufactured in accordance with applicable European standards. The sensor complies with the EMC Directive 2014/30/EU and the RoHS Directive 2011/65/EU.

9.1 Manufacturer's warranty

Coher Sense provides a 24-month manufacturer's warranty from the date of delivery, covering defects in materials and workmanship under normal use in accordance with this manual.

For covered defects, Coher Sense will repair or replace the device at no charge. Damage caused by misuse, unauthorized modifications, or improper handling is excluded. Warranty service is provided on a return-to-manufacturer basis. The customer is responsible for shipping the device to Coher Sense at their own expense.

For warranty assistance, contact info@cohersense.de with the device serial number and a description of the fault. Please contact Coher Sense before returning a device.

10. Contact information



Coher Sense UG
Maria-Goeppert-Str. 1
23562 Lübeck, Germany
+49 170 2090086
info@cohersense.de
www.cohersense.de