OPTEEQ

OPTEEQ SENSOR MODULE

Calibration

Testing

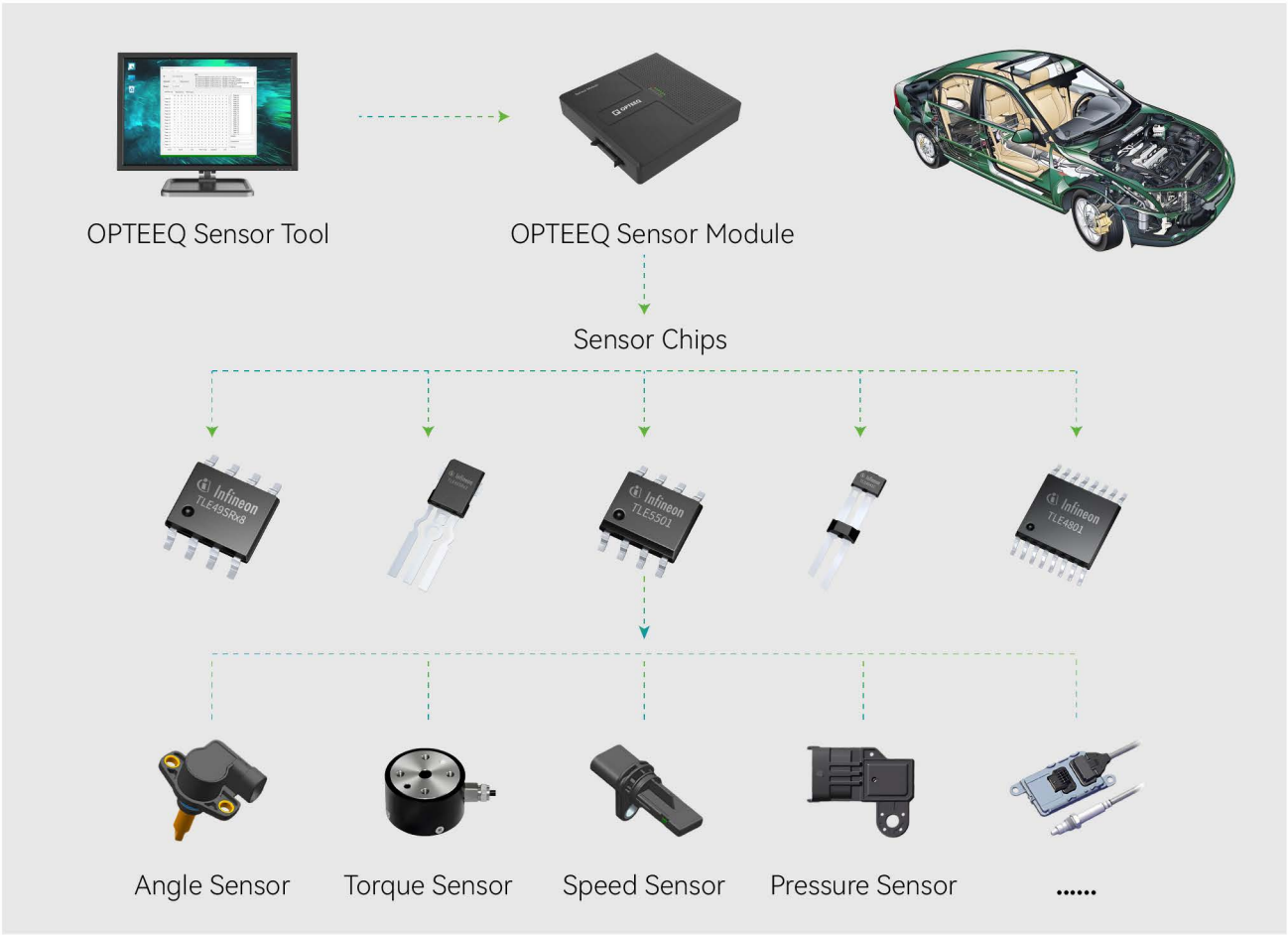
Programming

Overview

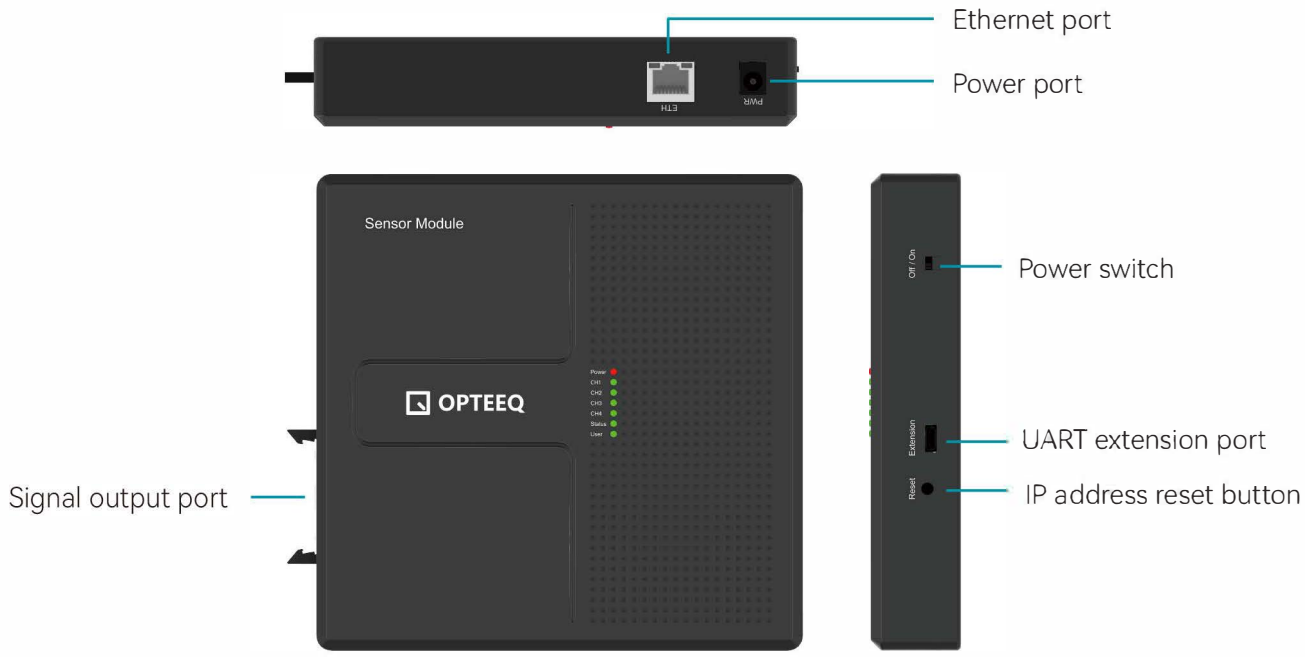
In the context of the transformation of automobile electrification and intelligence, the automotive sensor chip market is growing rapidly. The "three-electric system" of new energy vehicles and high-level autonomous driving have put forward strict requirements for sensor accuracy, environmental tolerance and multimodal integration. Under this trend, efficient and accurate calibration, programming and testing equipment have become the key.

Based on this industry background, OPTEEQ Technologies has carefully launched the **OPTEEQ Sensor Module**, which is an industrial-grade, multi-channel sensor multi-function module/tool designed for the calibration, programming and testing needs of automotive sensor chips. It features a high-performance processor, supports multiple interface protocols, supports multiple chip calibration/programming algorithms, and is compatible with a variety of test equipment. It has the advantages of fast programming speed, high stability, high adaptability, and a compact and convenient appearance. It can meet the calibration, programming and testing needs of various sensor chips.

Application



Appearance



Features

Four channels are independent and can support simultaneous programming and calibration for different chips
100M/1000M adaptive network port
DC power supply with flexible, safe and reliable wiring method
1GB large capacity onboard dynamic memory
Rich dynamic library, available for external expansion and secondary development
Provide Labview, C# and other DEMO
Compact design for integration into a variety of production equipment

Parameters

Model	S02	S03	S05
Size	164.3*161*30.2 mm		
Weight	505 g	505 g	581 g
Maximum Input Power	36 W	36 W	24 W
Quiescent Current	520 ± 5 mA	500 ± 5 mA	450 ± 5 mA
Input Rated Voltage	DC 12 ± 0.5 V		
Ethernet Connector	RJ45		
Signal Output Connector	24 PIN, 2 ROW, PITCH=2.54 mm		
Expansion UART Header	4 PIN, 1 ROW, PITCH=1.5 mm		
Operating Temperature	-40 ~ 85℃		
Storage Temperature	-40 ~ 125℃		
SD card Capacity	Default 32GB		

OPTEEQ Sensor Tool

Operating Equipment Requirements	
CPU	Intel(R) Core(TM) i3 or above
Memory	4G or above
Resolution	1024*768 or above
Operating system	Windows 10/11 （64 bit）

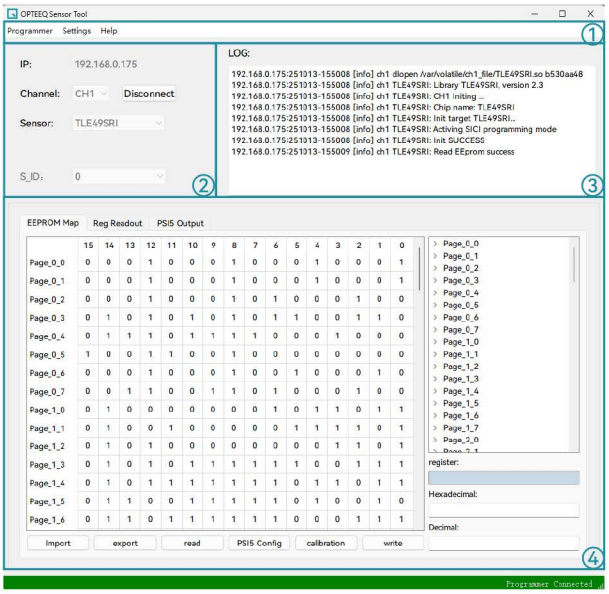
*The Sensor Module requires the use of the software OPTEEQ Sensor Tool. When the Sensor Module is delivered, the USB flash drive that comes with it contains the software for the sensor module. Refer to the "Software Installation" section in the User Manual for installation instructions.

Chip Support List

OPTEEQ Sensor Module currently has 3 sub-models, all of which are powered by DC power and are mainly suitable for sensor programming and calibration scenarios. The specific chips supported by different models are as follows (under continuous development):

Model	Protocol	Manufacturers	Classification	Chips
S02	SICI / PSI5	Infineon	TLE49SRI	TLE49SRI3
S03	SICI / SENT / SPC / PWM/ BIPHASE / MANCHESTER	Infineon	TLE4801S	TLE4801S16
			TLE4801C	TLE4801C16
			TLE49SRS	TLE49SRS3
				TLE49SRS8
			TLE49SRC	TLE49SRC3
				TLE49SRC8
			TLE4998P	TLE4998P3
				TLE4998P4
				TLE4998P8
				TLE4998P8D
			TLE4998C	TLE4998C3
				TLE4998C4
				TLE4998C8
				TLE4998C8D
		TDK	HAR3797	HAR3795
				HAR3796
				HAR3797
		Allegro	A31315-AR	A31315LOLATR-XZ-S-AR-10
				A31315LOLATR-XY-S-AR-10
S05	SICI / SENT / SPC / PWM/ BIPHASE / ANALOG / MANCHESTER / DCDI	Allegro	ACS37610	ACS37610LLUATR-005B5
				ACS37610LLUATR-010B5
				ACS37610LLUATR-020B5
		Infineon	TLE4973	TLE4973-AE35D5-S0001
				TLE4973-AE35S5-S0001

TLE49SRI Operation Interface



Main Interface

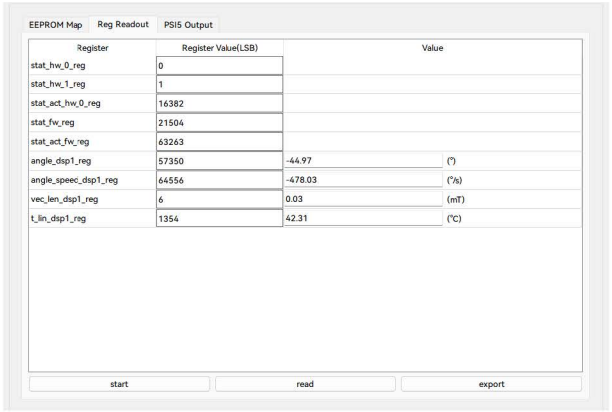
The display content of different partitions on the homepage of the interface varies slightly depending on the target chip model, which is used to adapt to different chips. The interface partition is shown on the left:

① Menu bar: Device configuration, settings, help.
② Device area: Connect the programmer, select the channel, sensor model and S_ID.
③ Log area: Display the device log information.
④ Operation area: Calibrate the sensor data, write and receive PSI5 output signals, etc.

Calibration

Angle base setting: Position the angle at the "0 angle" mechanical position.
The LUT setting includes three setting modes:

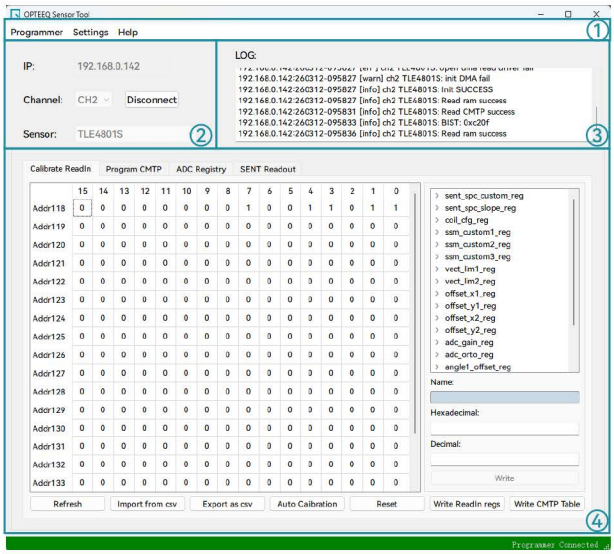
- 32 equidistant points.
- 16 free points.
- No LUT.



Reg Readout

PSI5 Output

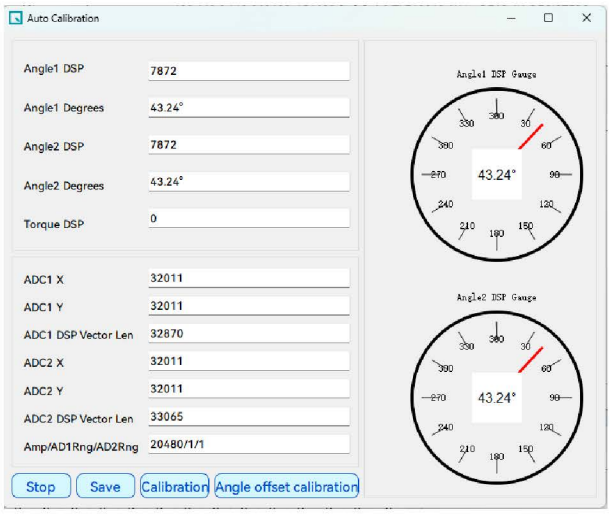
TLE4801S Operation Interface



Main Interface

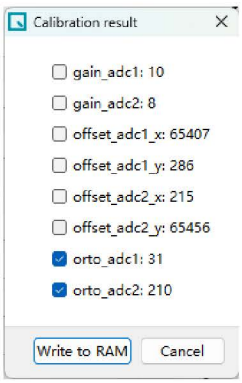
The display content of different partitions on the homepage of the interface varies slightly depending on the target chip model, which is used to adapt to different chips. The interface partition is shown on the left:

① Menu bar: Device configuration, settings, help.
② Device area: Connect the programmer, select the channel, sensor model .
③ Log area: Display the device log information.
④ Operation area: Calibrate the sensor data, write and receive SENT output signals, etc.

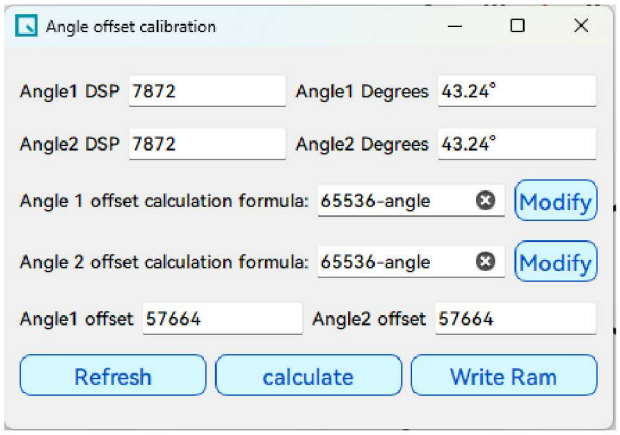


Auto calibration

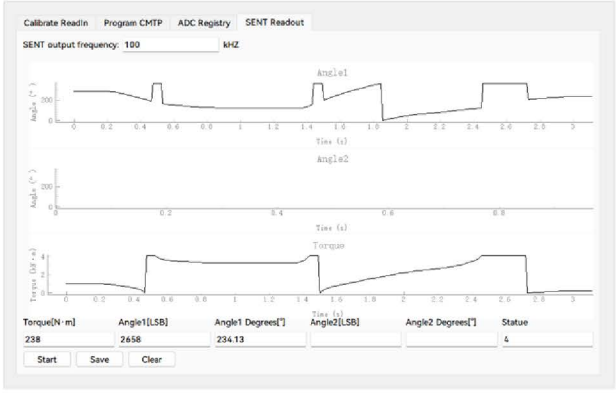
Automatic Calibration can automatically record the angle, torque, and other data to be calibrated for the register. You can save and calibrate according to the recorded data.



Calibration result

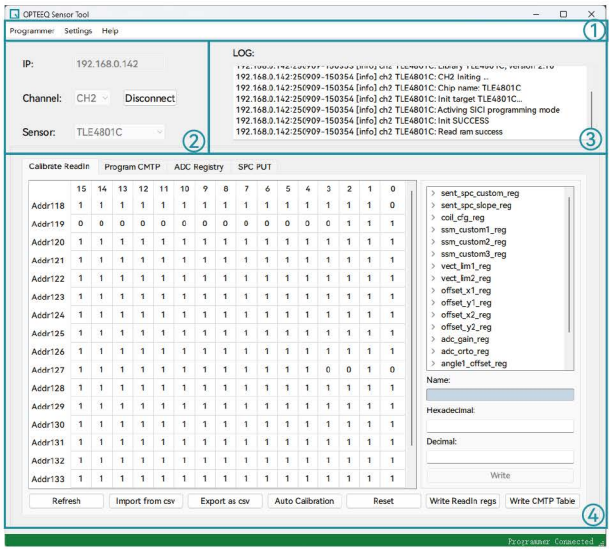


Angle offset calibration



SENT Output

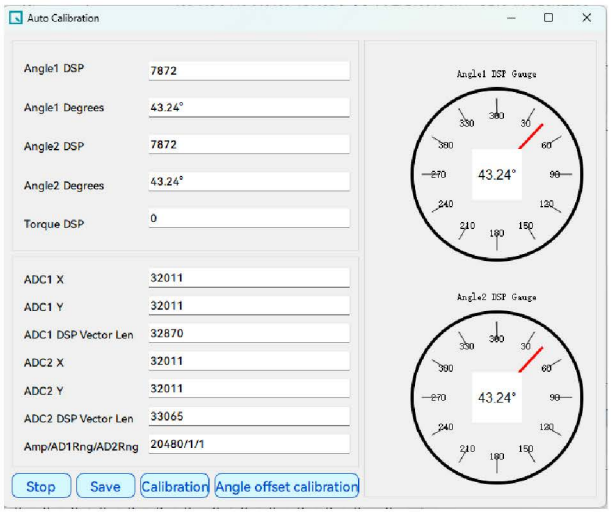
TLE4801C Operation Interface



Main Interface

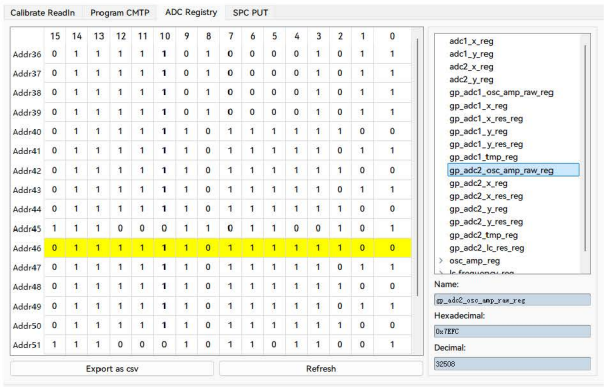
The display content of different partitions on the homepage of the interface varies slightly depending on the target chip model, which is used to adapt to different chips. The interface partition is shown on the left:

① Menu bar: Device configuration, settings, help.
② Device area: Connect the programmer, select the channel, sensor model .
③ Log area: Display the device log information.
④ Operation area: Calibrate the sensor data, write and receive SPC output signals, etc.

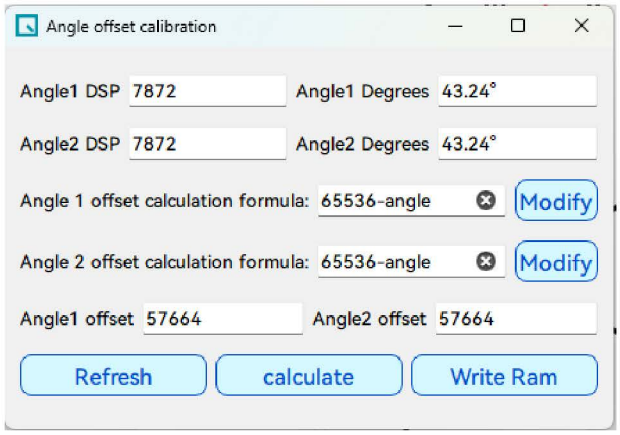


Auto calibration

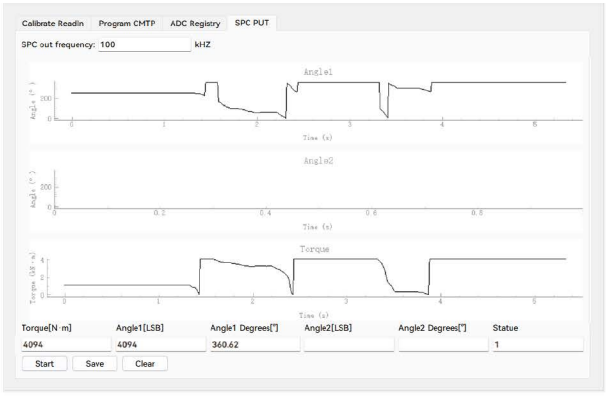
Automatic Calibration can automatically record the angle, torque, and other data to be calibrated for the register. You can save and calibrate according to the recorded data.



ADC Registry

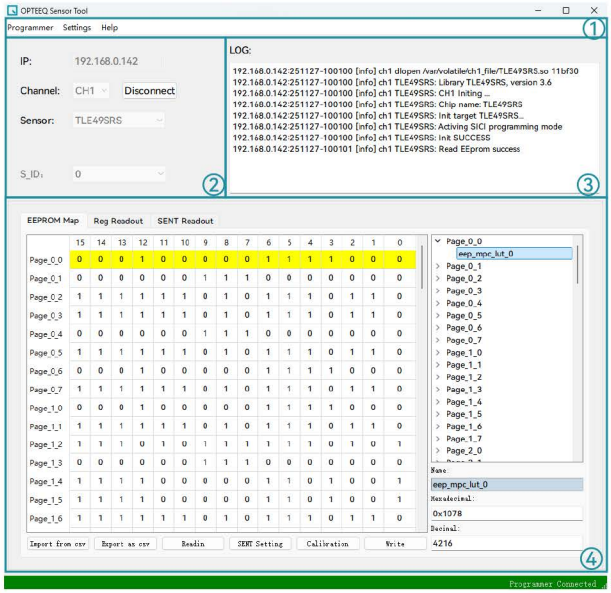


Angle offset calibration



SPC Output

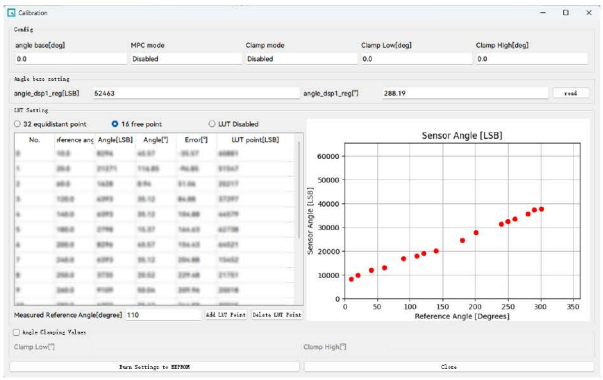
TLE49SRS Operation Interface



Main Interface

The display content of different partitions on the homepage of the interface varies slightly depending on the target chip model, which is used to adapt to different chips. The interface partition is shown on the left:

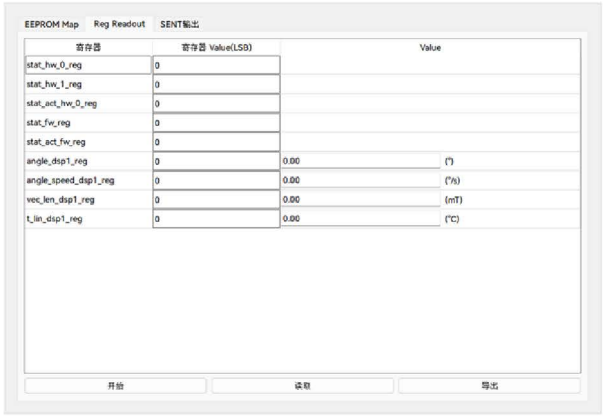
① Menu bar: Device configuration, settings, help.
② Device area: Connect the programmer, select the channel, sensor model and S_ID.
③ Log area: Display the device log information.
④ Operation area: Calibrate the sensor data, write and receive SENT output signals, etc.



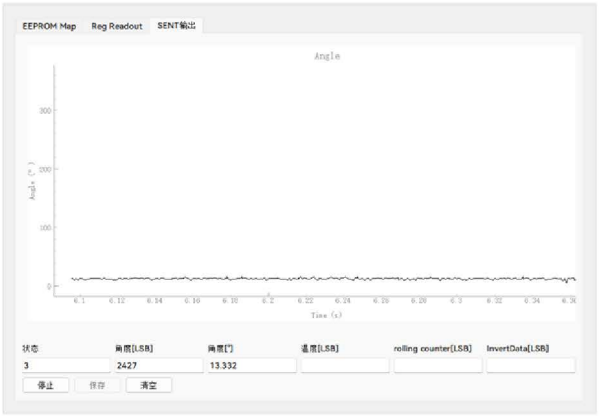
Calibration

Angle base setting: Position the angle at the "0 angle" mechanical position.
The LUT setting includes three setting modes:

- 32 equidistant points.
- 16 free points.
- No LUT.

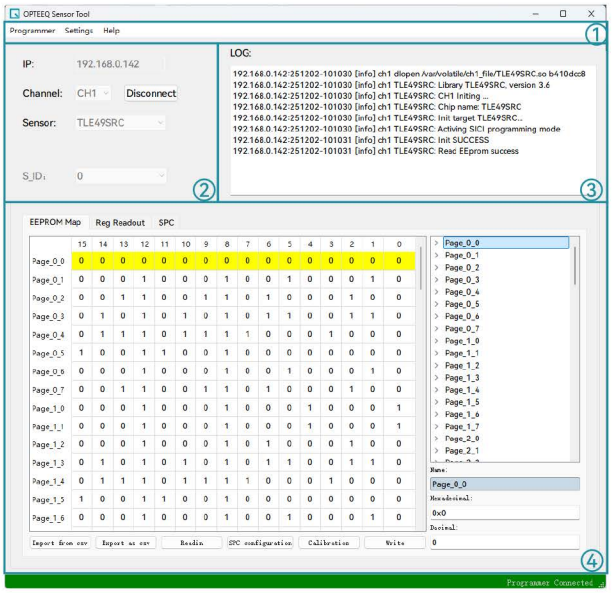


Reg Readout



SENT Output

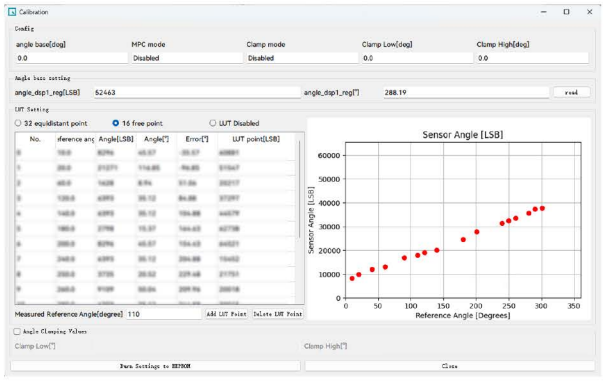
TLE49SRC Operation Interface



Main Interface

The display content of different partitions on the homepage of the interface varies slightly depending on the target chip model, which is used to adapt to different chips. The interface partition is shown on the left:

① Menu bar: Device configuration, settings, help.
② Device area: Connect the programmer, select the channel, sensor model and S_ID.
③ Log area: Display the device log information.
④ Operation area: Calibrate the sensor data, write and receive SPC output signals, etc.

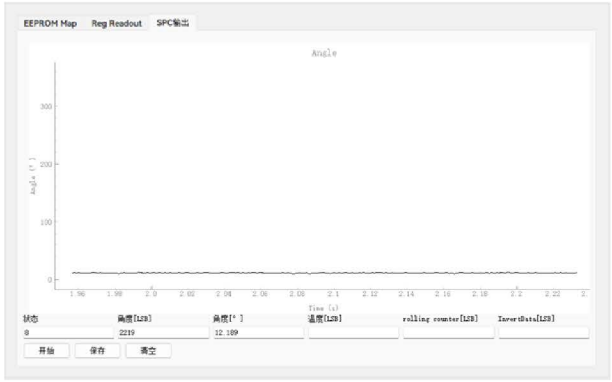


Calibration

Angle base setting: Position the angle at the "0 angle" mechanical position.
The LUT setting includes three setting modes:

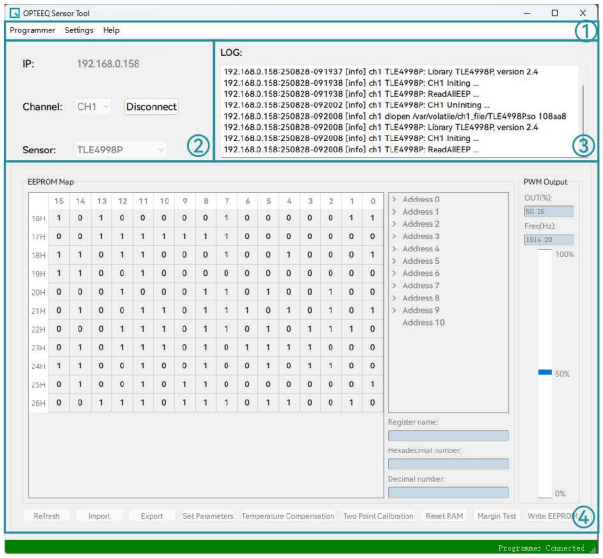
- 32 equidistant points.
- 16 free points.
- No LUT.

Reg Readout



SPC Output

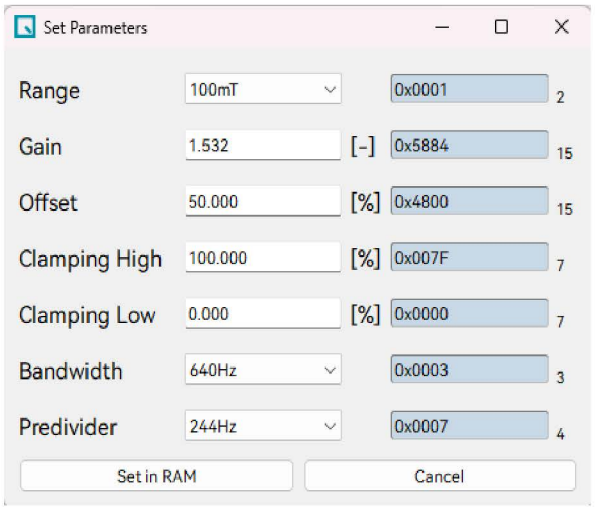
TLE4998P Operation Interface



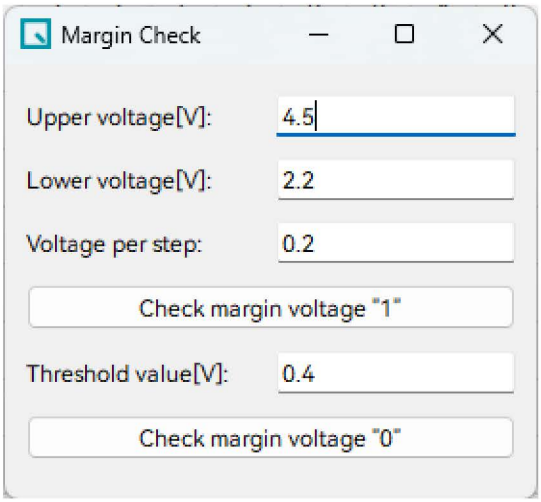
Main Interface

The display content of different partitions on the homepage of the interface varies slightly depending on the target chip model, which is used to adapt to different chips. The interface partition is shown on the left:

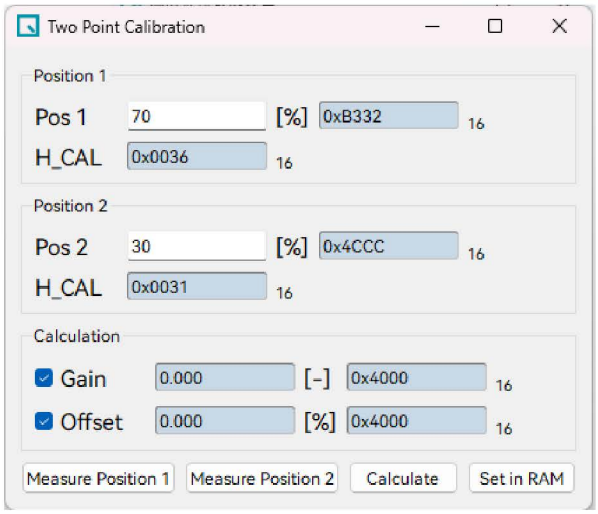
① Menu bar: Device configuration, settings, help.
② Device area: Connect the programmer, select the channel, sensor model .
③ Log area: Display the device log information.
④ Operation area: Calibrate and write the sensor data, Temperature Compensation, Margin Check and other operations.



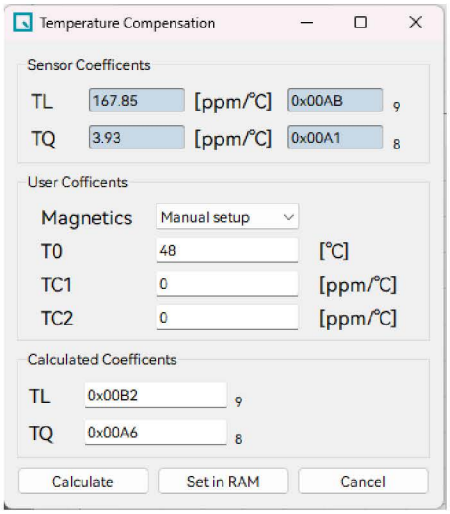
Set Parameters



Margin Check

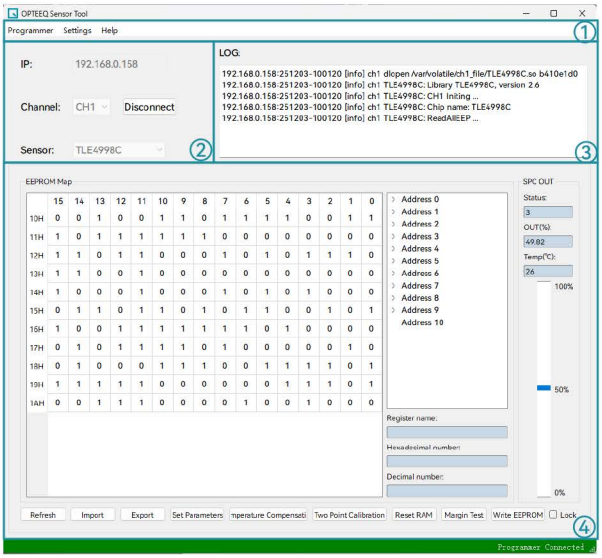


Two Point Calibration



Temperature Compensation

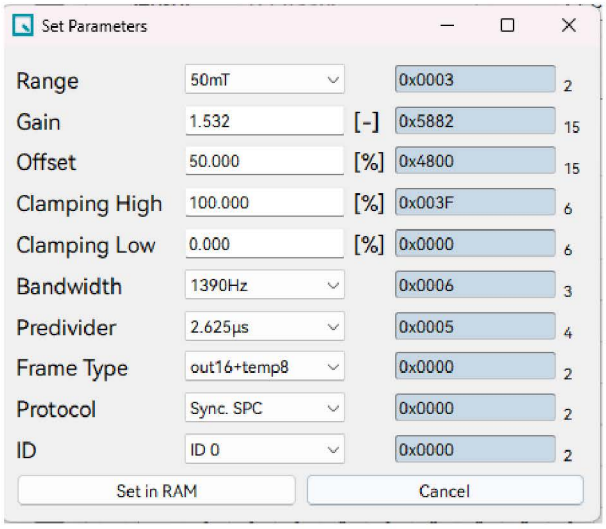
TLE4998C Operation Interface



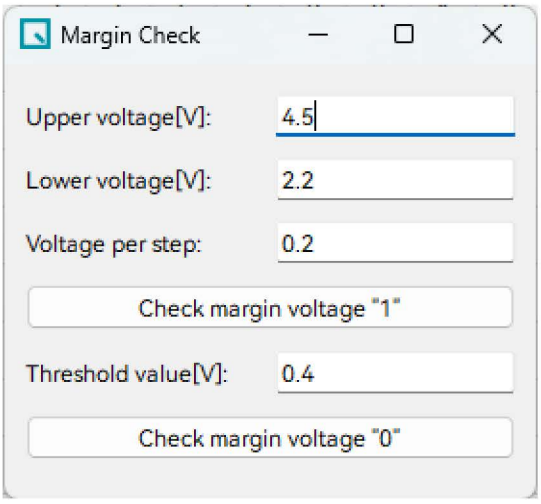
Main Interface

The display content of different partitions on the homepage of the interface varies slightly depending on the target chip model, which is used to adapt to different chips. The interface partition is shown on the left:

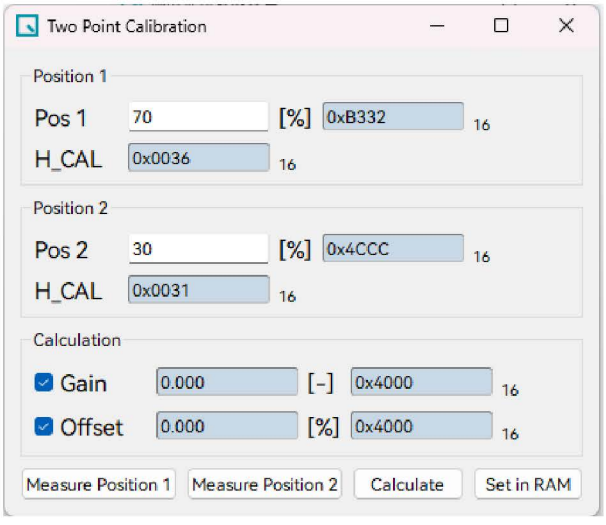
① Menu bar: Device configuration, settings, help.
② Device area: Connect the programmer, select the channel, sensor model .
③ Log area: Display the device log information.
④ Operation area: Calibrate and write the sensor data, Temperature Compensation, Margin Check and other operations.



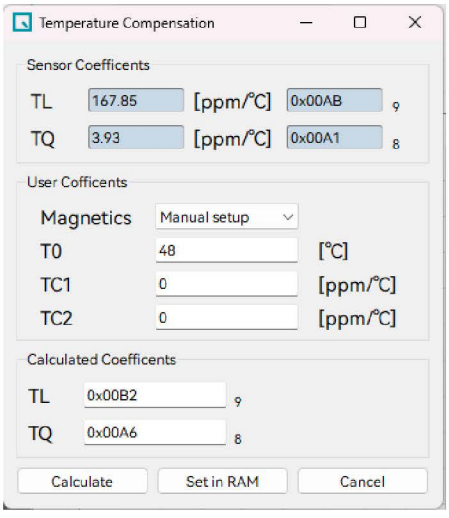
Set Parameters



Margin Check

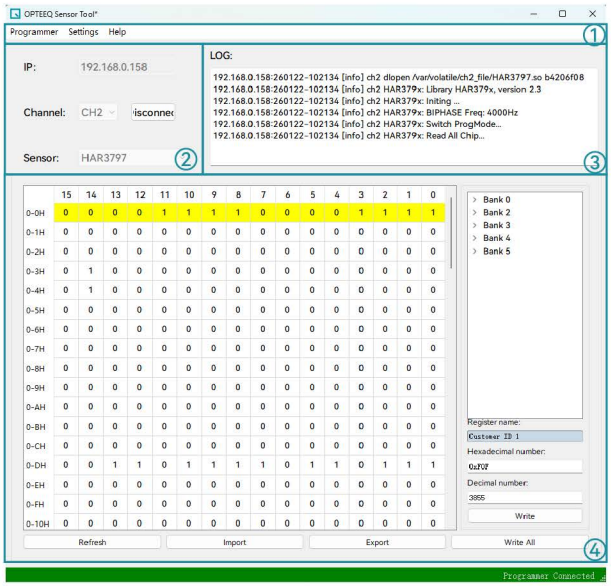


Two Point Calibration



Temperature Compensation

HAR3797 Operation Interface

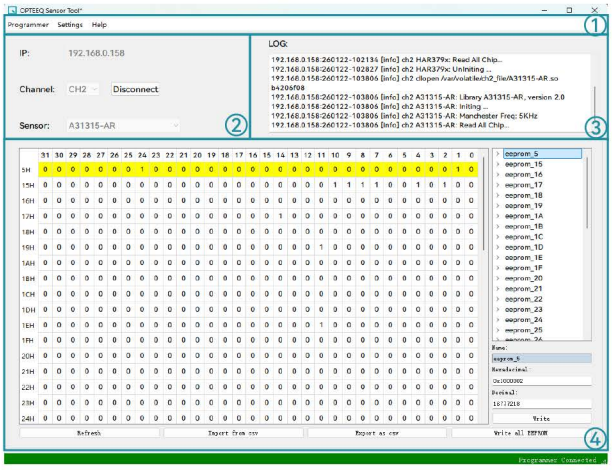


Main Interface

The display content of different partitions on the homepage of the interface varies slightly depending on the target chip model, which is used to adapt to different chips. The interface partition is shown on the left:

① Menu bar: Device configuration, settings, help.
② Device area: Connect the programmer, select the channel, sensor model .
③ Log area: Display the device log information.
④ Operation area: Import, export and write sensor data, etc.

A31315-AR Operation Interface

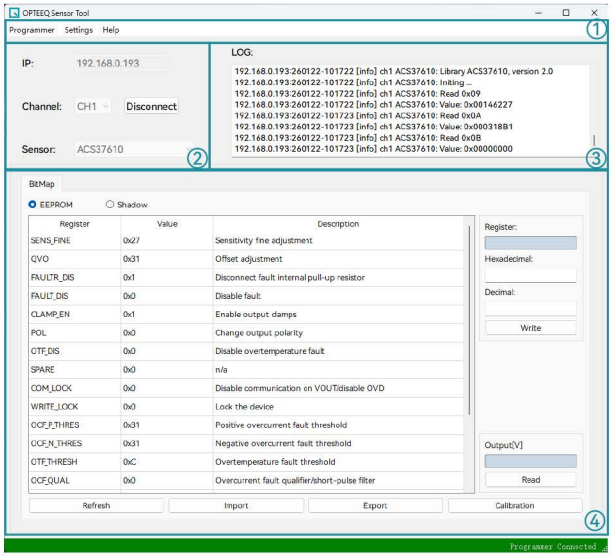


Main Interface

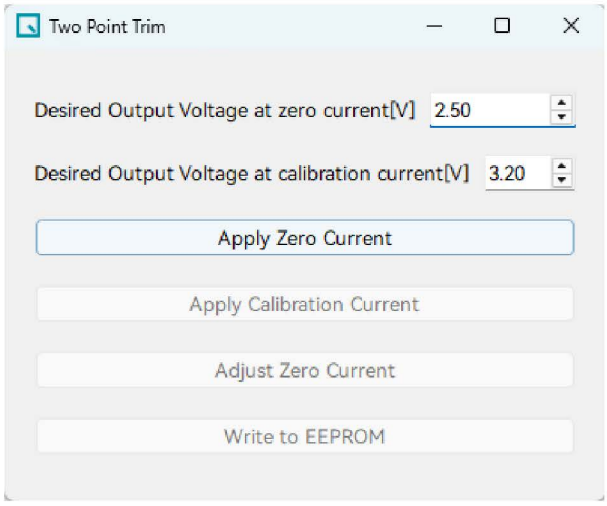
The display content of different partitions on the homepage of the interface varies slightly depending on the target chip model, which is used to adapt to different chips. The interface partition is shown on the left:

① Menu bar: Device configuration, settings, help.
② Device area: Connect the programmer, select the channel, sensor model .
③ Log area: Display the device log information.
④ Operation area: Import, export and write sensor data, etc.

ACS37610 Operation Interface



Main Interface



Calibration

The display content of different partitions on the homepage of the interface varies slightly depending on the target chip model, which is used to adapt to different chips. The interface partition is shown on the left:

① Menu bar: Device configuration, settings, help.
② Device area: Connect the programmer, select the channel, sensor model .
③ Log area: Display the device log information.
④ Operation area: Calibrate the sensor data, write and Read, etc.

OPTEEQ

Contact

OPTEEQ Technologies Co., Ltd

No. 200 Linghu Avenue, Wuxi, China, 214135

Tel: +86 510 8181 3667

E-mail: contact@opteeq.com

Support: support@opteeq.com

www.opteeq.com/en

About Us

OPTEEQ Technologies Co., Ltd. was founded in 2010. It is a high-tech enterprise specializing in the research and development, production and sales of automotive electronic tool chain products. The company is headquartered in Wuxi, China, and its sales and service network covers Asia Pacific, Latin America and Europe.

OPTEEQ Technologies focuses on innovation and is rigorous and pragmatic. We mainly solve the key problems of in-system programming, testing and automated production lines of semiconductor chips and circuit boards for customers in the field of automotive electronics, greatly improving production efficiency and automation level. OPTEEQ Technologies has launched a series of software and hardware tools for the R&D, production and testing of automotive electronic products to help customers obtain the best, fastest and high-quality products and services.

OPTEEQ Technologies is committed to integrating into the global high-end automotive electronics high-end industrial chain system. We have passed the **TÜV Rheinland ISO9001** quality management system certification, and many products are **CE certified**.