SIS Programmer Box

Operation Instruction

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08-SISPAXX-B1-EK,07/25/2019

Contents

1. Reading Labels

Thanks for purchasing FineTek's Product. This operation manual describes the product features, working principles, operation and maintenance methods. It makes the user fully understand how to use the product correctly, so as to prevent dangerous situations such as device damage or operator injury.

- Please read this operation manual completely and carefully before using the product.
- Please contact the company if this operation manual can't satisfy your demands.
- The content of the operation manual is updated based on the version upgrade, which will be uploaded to the website for the user to access.
- Please don't disassemble or repair the product on your own, as this will make you disqualified from availing of the warranty service. Please send the product back to the company for repair and calibration, or just contact the company.
- Explanation of warning signs:

Danger→ It indicates that wrong operation will cause death or major disasters.

Note→ It indicates that wrong operation will cause injury and device damage to some extent.

Electric shock→ It warns of possible electric shock.

Fire→ It warns of possible fire.

Prohibited→ It indicates the prohibited wrong behavior.

1.1 Service Network

Company	Address	Telephon	Fax
Taipei Headquarters (Taiwan)	No.16, Tzuchiang St., Tucheng Industrial Park, New Taipei City 23678	+886 2 2269 6789	+886 2 2268 6682
Taichung Sales office (Taiwan)		+886 4 2465 2820	+886 4 2463 9926
Kaohsiung Sales office (Taiwan)		+886 7 333 6968	+886 7 536 8758
Fine automation Co., Ltd. (China)	No. 451, Duhui Road, Zhuanqiao Township, Minhang District, Shanghai City 201109	+86 021 64907260	+86 021 6490 7276
FineTek Pte Ltd. (Singapore Branch)	37 Kaki Bukit Place, Level 4 Singapore 416215	+65 6452 6340	+65 6734 1878
FineTek GmbH (Germany Branch)	Bei den Kämpen 26 21220 Seevetal-Ramelsloh, Germany	+49 (0) 4185 8083 12	+49 (0) 4185 8083 80
FineTek Co., Ltd. (Indonesia Branch)	Ruko Golden 8 Blok H No.38 Gading Serpong, Tangerang Indonesia 15810	+62 (21) 2923 1688	+62 (21) 2923 1988
FineTek Co., Ltd. (Malaysia Branch)	8-05, Plaza Azalea, Persiaran Bandaraya, Seksyen 14, 40000 Shah Alam,	+603 5524 7168	+603 5524 7698

2. Product Features

The SIS Programmer Box is used to transfer sensor data to a PC for reading and editing.Supporting our SIS Impedance Spectroscopy Level Sensor series for debugging purposes, it includes the following functions:

- Reading the current parameter settings of the sensor.
- Changing the parameters of the sensor.
- The current values of the sensor and further verification.

Attention! The hub is not suitable to be permanently connected as an monitoring device.

3. Scope of Application

- SIS Sanitary Intelligent Level Switch parameter setting.
- A multi-purpose, essential modulation kit for industrial level switches.
- Sensor sensitivity adjustment for material replacement.
- Sensor verification for equipment maintenance.

4. Ambient Conditions

- Storage temperature: -40°C ~ 85°C (-40°F ~ 185°F).
- Ambient temperature: -40°C ~ 85°C (-40°F ~ 185°F).
- This product is not waterproof. Moisture intrusion must be prevented when it is being operated.
- Basic configuration: Programmer Box, PC, SIS Sanitary Intelligent Level Switch, cable.

5. Installation

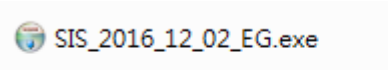
5.1 System Requirements

- Microsoft Windows XP/SP3 or newer is required.
- At least one available USB 2.0 port.
- The Programmer Box software.

5.2 Program Installation

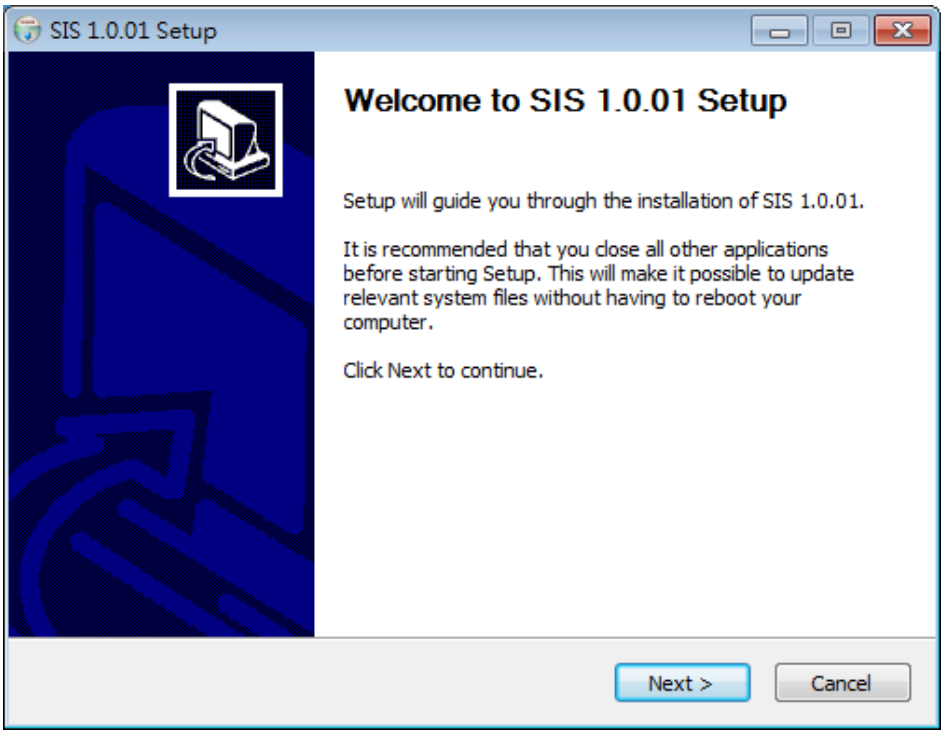
You must have administrator privileges.

1. Insert the CD-ROM or USB into the drive or port to start the installation or download from the website.
2. Click the file "SIS_****_**_**_**.exe" to start the installation as shown below.

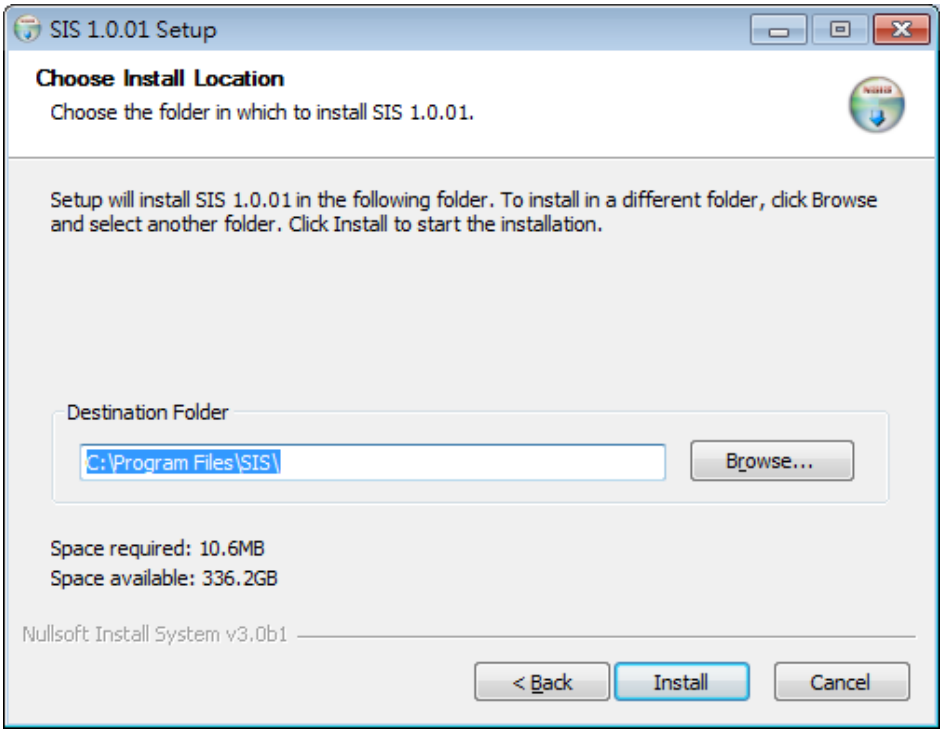


3. Select your language from the drop-down menu and click "OK".

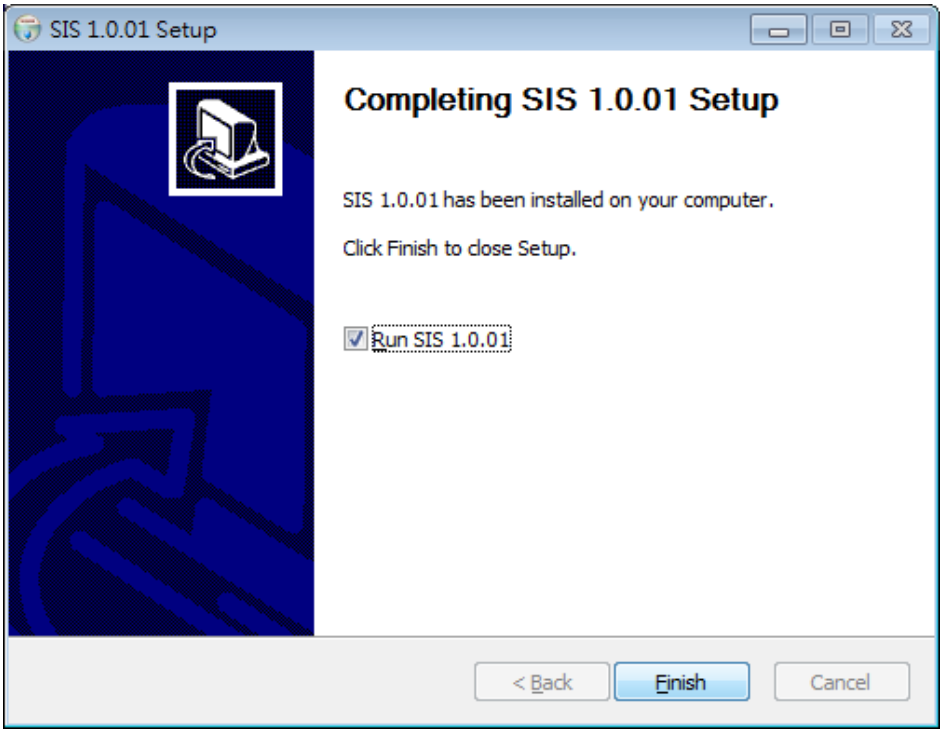
4. When the setup wizard pops up, click "Next".



5. Select the Destination Folder (C:\Program Files\SIS by default) and click "Install".



6. When the installation is complete, click "Finish" to start the program.

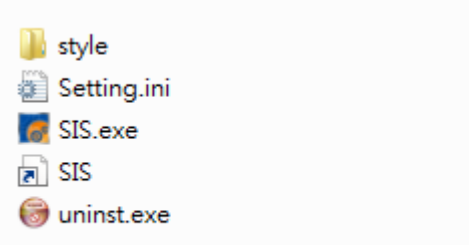


7. Install the driver by inserting the CD-ROM or USB or downloading from the website. You can also use the Windows built-in wizard to find a on-line available driver to complete the installation.

5.3 Uninstall process

To uninstall the program, process as follows:

1. Open the program folder (C:\Program Files\SIS by default), click "uninst.exe" to start the uninstallation (shown as below).

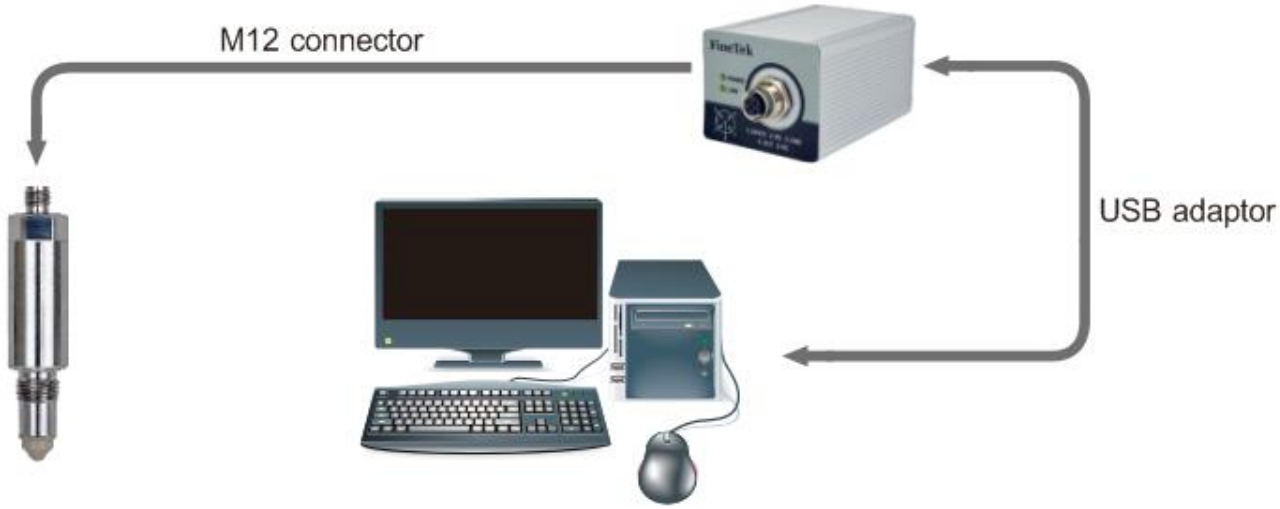


2. Click "Yes (Y)" to uninstall (as shown below).

3. Click "OK" to complete the uninstallation (as shown below).

5.4 Electrical Connection

Connect the sensor and the SIS Programmer Box to the PC as shown below.



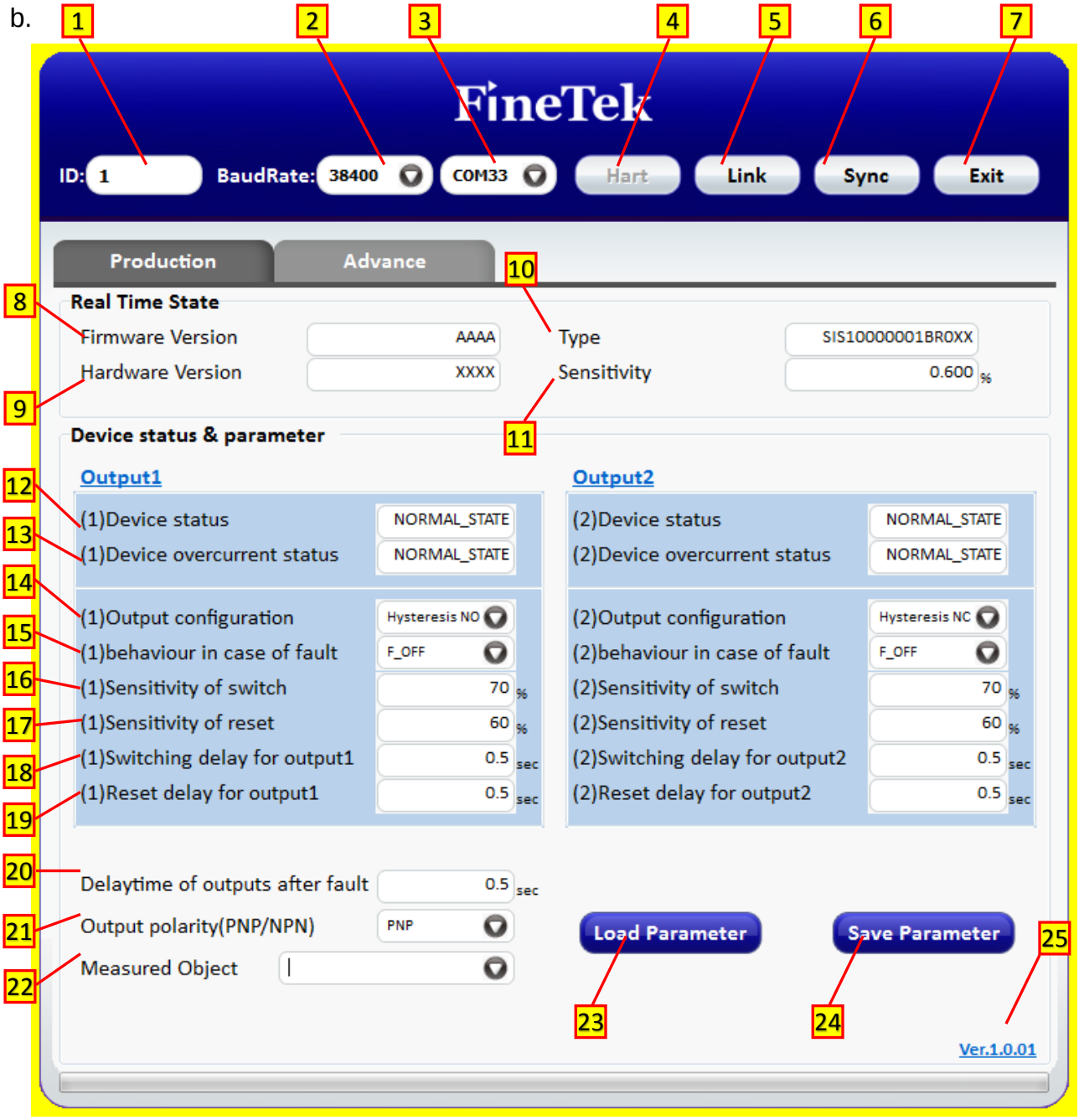
- Connect the sensor to the SIS Programmer Box using the M12 connector (please use the standard connector to ensure stable connection).
- Connect the SIS Programmer Box to the computer using USB connector.

6. Operation

6.1 Buttons

a. Click the Production button to open the settings page (as shown below). The setting functions are listed below.

b.



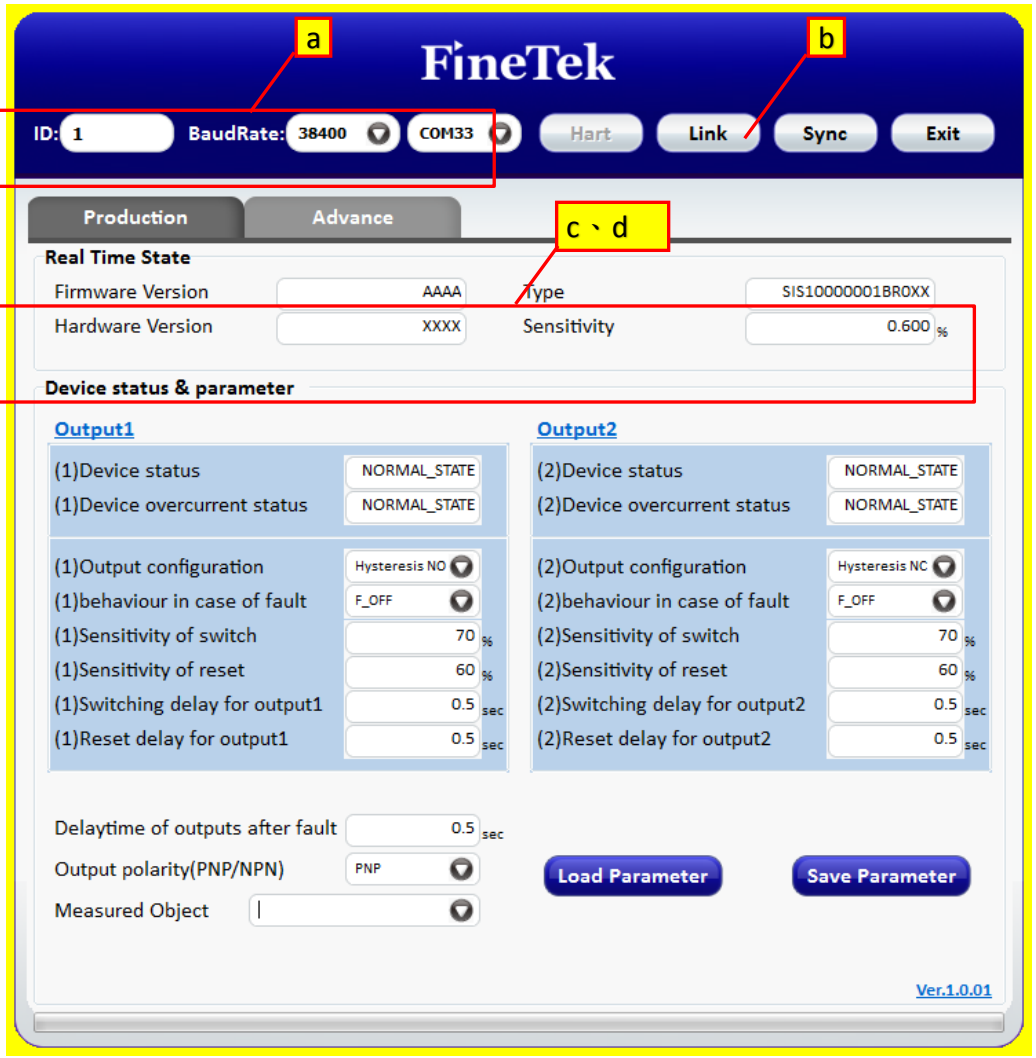
c. The functions are listed below:

Number	Item	Description
1	ID	ID has no function and can be ignored.
2	Communication rate	BaudRate is set to38400 bps.
3	Port	Select the COM port for the connected device.
4	Hart interface	This item has no function and can be ignored.
5	Connection to the sensor	Click "Link/stop" to connect to/disconnect from the sensor.
6	Real-time information	"Stop Sync" means that the parameter information from the sensor is reading every second. "Sync" means that the parameter can be modified. (Synchronizing)
7	Exit	Exit the program.
8	Firmware Version	The firmware version of the sensor.
9	Hardware Version	The hardware version of the sensor.
10	Product Model	The product model of the sensor.
11	Sensitivity	The material sensitivity currently detected by the sensor.
12	Sensor output state (1), (2)	The sensor output state (1) = OUT1, (2) = OUT2. NORMAL_STATE means that the output is reset. ACTIVE_STATE means that the output is active.
13	Overcurrent indication (1), (2)	Indicate whether overcurrent in the control circuit (1) = OUT1, (2) = OUT2. NORMAL_STATE means that the output current is under normal condition. ACTIVE_STATE means that the output current is overloading and the protection mode is active.
14	Output function selection (1), (2)	Select the method for detecting the material output (1) = OUT1, (2) = OUT2. Hysteresis NO: Hysteresis, normally open output. Hysteresis NC: Hysteresis, normally closed output. Window NO: Window, normally open output. Window NC: Window, normally closed output.
15	Fault alarm output (1), (2)	The state response of OUT1 and OUT2 outputs when a fault occurs. OFF: Only the green LED blinks and the output does not

		change. ON: The green LED blinks and the switch output is active at the same time.
16	Start point setting % (1), (2)	Start point setting (1) = OUT1, (2) = OUT2. Between 2% and 98%, the minimum span is 1%.
17	Reset point setting % (1), (2)	Reset point setting (1) = OUT1, (2) = OUT2. Between 2% and 98%, the minimum span is 1%.
18	Start delay setting (1), (2)	Reset delay time (1) = OUT1, (2) = OUT2. The minimum is 0.5 sec, the maximum is 60 sec, the minimum span is 0.1 sec.
19	Reset delay time (1) = OUT1, (2) = OUT2.	The minimum is 0.5 sec, the maximum is 60 sec, the minimum span is 0.1 sec.
20	Fault Delay Time	The delay time setting of OUT1 and OUT2 output states when a fault occurs.
21	Output type (PNP/NPN)	Three-wire crystal output; select PNP or NPN as the switch type.
22	Common Material Selection	Common material selection, built-in sensitivity setting.
23	Load Parameter	Load the previously saved function parameters.
24	Save Parameter	Save the current function parameter settings for future applications.
25	Software version	The current software version of the Programmer Box

6.2 Function Settings

Click the "SIS" program to open the window (as shown below). Click "Exit" to close the program.



a. Configure the communication protocol; location, baud rate, COM port, etc. (for details, see the previous section, Buttons).

b. To connect to the sensor, click the "Link" button to change it into "Stop" in the "Production" page. To disconnect from the sensor, click the "Stop" button to change it into "Link".

c. When the sensor is connected successfully, real-time data such as the firmware version, hardware version, product model, and sensitivity of the sensor are showed in the program.

d. No data is showed if the sensor does not have the appropriate communication protocol or the connection is unsuccessful.

e. The Programmer Box is intended for parameter setting and debugging of the SIS Sanitary Intelligent Level Switch only and not suitable to be permanently connected as the control unit of a monitoring system. We cannot guarantee compatibility if it could be connected to a sensor from other brands.

6.2.1 Parameter Modification

To modify the parameters of the sensor, refer to the following steps in the Production page.

1. Connect to the sensor (click "Link" to change the button into "Stop").
2. Stop syncing (click "Stop Sync" to change the button into "Sync").
3. Select the parameter or setting to be modified.
4. Start syncing (click "Sync" to change the button into "Stop Sync").

6.2.2 Saving and Loading

Refer to the following steps in the "Production" page.

- Save Parameter: Click "Save Parameter" to select the path to be saved and enter the file name. You can save the parameter data in the Production or Advance item to a file.
- Load Parameter: You can copy saved parameter data to the current settings page. Refer to the following steps.

1. Connect to the sensor (click "Link" to change the button into "Stop").
2. Stop syncing (click "Stop Sync" to change the button into "Sync").
3. Load the file (click "Load Parameter" to select the file to be loaded).
4. Start syncing (click "Sync" to change the button into "Stop Sync").

6.2.3 Output Function Selection

- Hysteresis: Output is active when the sensitivity ≧ the "start point" setting, and reset when the sensitivity ≦ the "reset point" setting.
- Window: Output is active when the sensitivity is between the "start point" and "reset point" settings, and reset when ＞ the "start point" or ＜the "reset point" setting.

6.2.4 Output Delay Time Setting

- Start Point Delay Time: This setting does not change any state when material contact is detected by the sensor, and changes the output and LED state after the specified delay time.
- Reset Point Delay Time: This setting does not change any state when material separation is detected by the sensor, and changes the output and LED state after the specified delay time.

6.2.5 Fault Alarm Output Setting

When a fault occurs, output is executed according to the mode specified.

- OFF : The green LED light keeps flashing per second, and the output kept circuit opening.
- ON : The green LED light keeps flashing per second. OUT1 and OUT2 will be switched in ON and OFF by “ but time of switching ON is always 0.5 second.
- When a fault alarm occurs, the following situations are possible:

➢ The detection signal of the sensor is out of range.
➢ The internal parameter settings are incorrect.

6.2.6 Sensitivity Setting

The sensitivity is about 0% to 2% when the sensor is in the air (without contact with any material), and increases depending on the material that it comes in contact with. The minimum is 2%, the maximum is 98%, the minimum span is 1%.

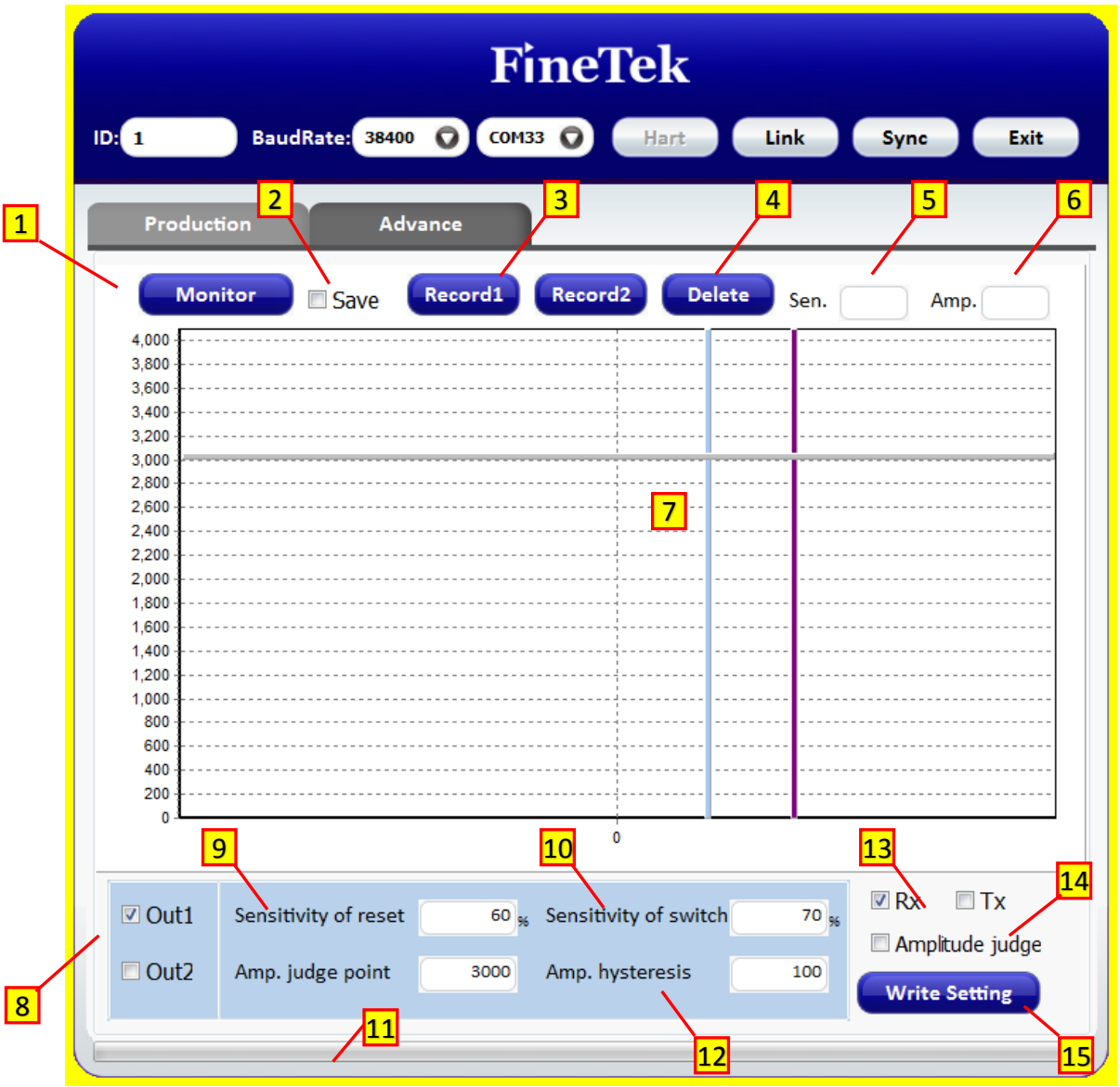
6.2.7 Common Material Selection

Select the sensitivity using the built-in or a saved common material list.

1. Connect to the sensor (click "Link" to change the button into "Stop").
2. Stop syncing (click "Stop Sync" to change the button into "Sync").
3. Click the common material drop-down list. The sensitivity parameter setting will be automatically applied after selection.
4. Start syncing (click "Sync" to change the button into "Stop Sync").

6.3 Advanced Settings

6.3.1 Advanced Setting Buttons



Click the "Advance" button to switch the page (as shown above). The setting functions are listed below:

Number	Item	Description
1	Continuous Monitoring	The connection button used to read the sensor data characteristics. Click to connect and and click again to disconnect.
2	Save	If the box is checked, data will be saved to a file when clicking "Continuous Monitoring" to read the sensor data characteristics.
3	Record 1, Record 2	Click to capture the current characteristic curve.
4	Clear	Click to clear the characteristic curve record 1 and record 2.
5	Sen.	The sensitivity.
6	Amp.	The peak value.
7	Trend chart	Show the characteristic curve of the current device.
8	OUT1、OUT2	Only one of them can be checked. Confirm the output parameters currently being configured.
9	Reset Point Sensitivity	The sensor reset point sensitivity setting (corresponding to the selected OUTx).
10	Start Point Sensitivity	The sensor start point sensitivity setting (corresponding to the selected OUTx).
11	Amplitude Action Point	An advanced setting for special purposes. The peak setting of the amplitude action point. (for details, see the next section).
12	Amplitude Hysteresis Point	An advanced setting for special purposes. The peak setting of the amplitude hysteresis point (for details, see the next section).
13	Rx、Tx	Check to display Rx and Tx graphs on the characteristic curve screen. Rx: Show the material characteristics. Tx: Show the sensor signal characteristics.
14	Amplitude Determination Function	Correspond to the selected OUTx. Check/uncheck to turn on/off this function.
15	Write Parameter Value	When all parameters are set, click this button to write the parameter settings to the sensor.

6.3.2 Operating steps for advanced settings

A. Some material characteristics may be similar in terms of sensor attached and full coverage sensitivity changes. Therefore, material characteristics can also be determined by increasing the amplitude via advanced settings.

B. In general, materials that require the use of advanced settings are mainly for high viscosity characteristics (such as catchup, chocolate syrup) and two-level detection (such as oil/water).

C. To connect to the sensor, click the "Continuous Monitoring" button to change it into " …… " on the advanced setting screen. When the material characteristic curve is obtained, disconnect immediately (click the " …… " button to change it into "Continuous Monitoring").

* Please note that parameter modification and configuration can only be done in disconnected state. To modify, click "Write Parameter Value" to save the parameters to the sensor.

D. Operating steps:

1. Attach some material to the sensor head after the sensor is installed.
2. Click Advance to open the page.
3. Click the "Continuous Monitoring" button. When the material characteristic curve is obtained, click the " …… " button to exit.
4. Click "Record 1" to keep the characteristic curve when the sensor is attached to the material on the screen, and record the amplitude peak (the value in the Amp box in the upper right corner of the screen).
5. Add material so that it fully covers the probe of the sensor.
6. Click "Continuous Monitoring". In addition to the "Record 1" curve, the second material characteristic curve appears on the screen, which is the curve when the material fully covers the probe. Click again to exit.
7. Although the sensitivity is almost identical between the attached and fully covered states, the amplitude peak of the signal is different. The amplitude peak of the fully covered state is higher than that of the attached state.
8. If the amplitude peak of the fully covered state is 3300, the amplitude peak of the attached state is 3000.Check the output port (OUTx) and "Amplitude Determination Function" first, then drag the Y-axis determination line on the screen to 3200 (or enter directly into the "Amplitude Action Point" field), and set "Amplitude Hysteresis Point" to 100.
9. The recommended values in "Common Material Selection" can be used as the sensitivity setting, including water, sugar-containing medium with low water content or oil/powder.
10. Click "Write Parameter Value" in the lower right corner of the screen to write data. A message pops up when succeeded.

7. Simple Troubleshooting

Anomaly	Cause	Solution
No LED is glowed	The USB connector is not plugged in or loosen	Check the USB connection and plug it in properly.
	The cable is damaged	Replace the USB cable.
	The USB port is not sufficiently powered.	Reinsert the USB or change the computer.
Unable to connect to the Programmer Box when LEDs are normal	Invalid driver	Install the USB driver.
	COM port error	Check and select the correct COM port in Device Manager.
Unable to connect to the sensor when LEDs are normal	The M12 connector is damaged	Check and repair the cable and the connector.
	The connector is not plugged in properly.	Check the connectors on both sides and plug them in properly.
All the solutions above did not fix the problem.	The device is damaged and cannot be used.	Contact your local sales representative.