

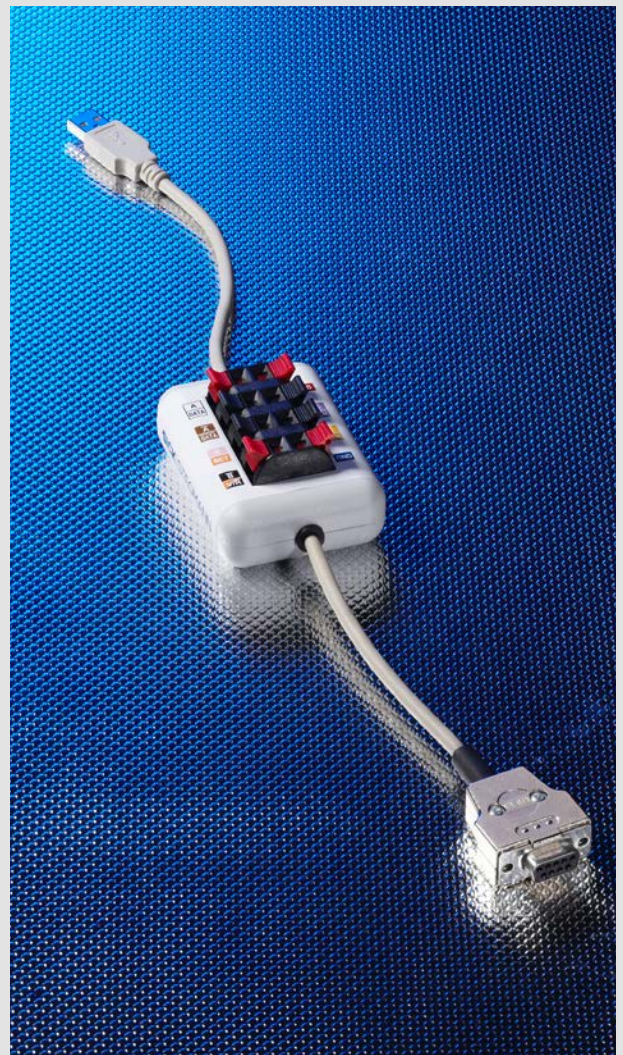
PGT-08-S@SOPAS

Original operating instructions for Programming Tool PGT-08-S@SOPAS

Programming Tool for Encoders

SICK
Sensor Intelligence

en



Described product PGT-08-S@SOPAS

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1 About this document

Read these operating instructions carefully before you commission the PGT-08-S hardware and use the SOPAS software.

1.1 Purpose of this document

These operating instructions provide a description of the commissioning and use of programming tool PGT-08-S hardware and the installation and use of the SOPAS software for programming encoders.

1.2 Target audience

These operating instructions are intended for staff with technical training who carry out programming of programmable encoders from SICK AG. They assume an appropriate level of knowledge for the use of software and electrical engineering in general.

1.3 Information depth

These operating instructions contain information about the PGT-08-S@SOPAS on the following topics:

- Product description
- Commissioning and programming

Technical knowledge is also required which is not provided in this document.

Additional information on the PGT-08-S@SOPAS can be found online at www.sick.com.

1.4 Symbols used

Icon	Meaning
	The symbol indicates a hazardous point where the product can be damaged by improper handling.
	This symbol refers to a hazardous point due to electrical charge which can damage the product.
	This symbol prefixes a note containing important additional information.

1.5 Associated documents

Follow the current assembly instructions and note the current product information for the device you wish to program before starting the task.

1.6 General safety notes



CAUTION

Risk of damage due to incorrect adapter cable!

The programming tool must only be used with the designated adapter cables ([see page 26](#)). Other adapter cables are not permitted. Otherwise, this could result in damage to the programming tool or the encoder.



CAUTION

Risk of damage!

The programming tool must only be used with SICK AG encoders. Using other encoders could damage the programming tool and/or the encoder itself.



CAUTION

Risk of damage due to incorrect adapter cable!

Always use the correct adapter cable or the correct spring terminal block connections. Otherwise, the programming tool and/or encoder will be damaged.



CAUTION

Risk of damage due to electrical charging!

When connecting an encoder, make sure you are grounded. Static charges can damage the programming tool and/or the encoder.



CAUTION

Risk of damage!

The programming tool is supplied with voltage exclusively via the USB interface. Under no circumstances an external voltage supply should be connected! The connection of an external voltage supply damages the programming tool, the encoder and the connected PC.

1.7 PGT-08-S hardware and SOPAS product combination

The combination of the PGT-08-S hardware and SOPAS allows the user to quickly and efficiently prepare programmable SICK AG encoders for use or carry out configurations.

For this purpose, the PGT-08-S hardware is connected to a computer via a USB connection, so that the interface of the encoder concerned can be read out or reprogrammed. Both incremental and absolute encoders can be connected easily via different adapter cables or the spring terminal block.

The SOPAS development environment integrates the programming environment for the PGT-08-S hardware.

A suitable adapter cable is also required for use ([see page 26](#)).

1.7.1 Correct use

Programming tool PGT-08-S@SOPAS is used to program and configure SICK AG encoders.

Correct use also means using a suitable adapter cable or the correct connection to the spring terminal block. The connection diagrams in the appendix of these instructions must be observed in this case ([see page 27](#)). You must also pay attention to the data sheets of the encoders used.

The USB interface of the PGT-08-S hardware is designed solely for direct connection to a computer. USB hubs or extensions should not be used.

The programmable encoders must be connected directly to an adapter cable or the spring terminal block. An extension cable must not be connected in between.

The SOPAS software is designed for use on a Windows® PC. Other operating systems or virtual machines are not supported.

1.7.2 Foreseeable misuse

If the pin assignment on the spring terminal block is not observed or an incorrect adapter cable is used, the connected encoder will be damaged.

Disconnecting the connection to the encoder prematurely can cause data loss and damage to the encoder.

Connecting the programming tool to USB hubs, USB extensions, or other long signal lines may also cause data loss and damage to the encoder.

Installing and using SOPAS on computers that do not meet the specifications given in the appendix ([see page 25](#)) may lead to data loss or malfunctions.

2 Installation

2.1 Installing SOPAS

**Note:**

If you are using SOPAS ET already, information on how to prepare SOPAS ET for use with the PGT-08-S programming tool can be found in "Updating device files" ([see page 8](#)).

**Note:**

During the SOPAS installation, you may see user account control messages and messages from anti-virus programs. Confirm these messages or contact your system administrator if you are uncertain about them.

In many companies, the installation of software products is subject to restrictions. If this is the case, contact your system or network administrator before proceeding with the installation.

1. Open the folder containing the saved SOPAS installation file.
2. Run the SETUP.EXE file.
3. Select the required installation language.
4. Follow the instructions in the installation wizard.

A shortcut is created during the installation.

2.2 Updating device files (SDD)

2.2.1 Updating via the internet

**Note:**

To update the device files (*.SDD), you need an internet connection and the option to download data from www.my-sick.com.

To enable this option, www.my-sick.com must be permitted by your company's firewall. Contact your network administrator about this.

1. Start SOPAS.
 2. Open the DEVICE CATALOG by clicking on the corresponding quick selection tab.
-

**Note:**

If you are already using SOPAS, check whether the SDD files are up to date. If necessary, uninstall the device files for the relevant encoders so that you can replace them for use with PGT-08-S@SOPAS.

More detailed information on uninstalling device files can be found in the online help (F1 key).

3. Click the  button.
 4. Click on INSTALL.
 5. Select FROM SICK.COM.
 6. Follow the instructions in the installation wizard.
-

2.2.2 Updating via data card

1. Download the device file from www.my-sick.com and save it to a data card.
 2. Start SOPAS.
 3. Open the DEVICE CATALOG by clicking on the corresponding quick selection tab.
-

**Note:**

If you are already using SOPAS, check whether the SDD files are up to date. If necessary, uninstall the device files for the relevant encoders so that you can replace them for use with PGT-08-S@SOPAS.

More detailed information on uninstalling device files can be found in the online help (F1 key).

4. Click the  button.
5. Click on INSTALL.
6. Select FROM DISK.
7. Click BROWSE... and navigate to the device file (.sdd) on the data card.
8. Follow the instructions in the installation wizard.

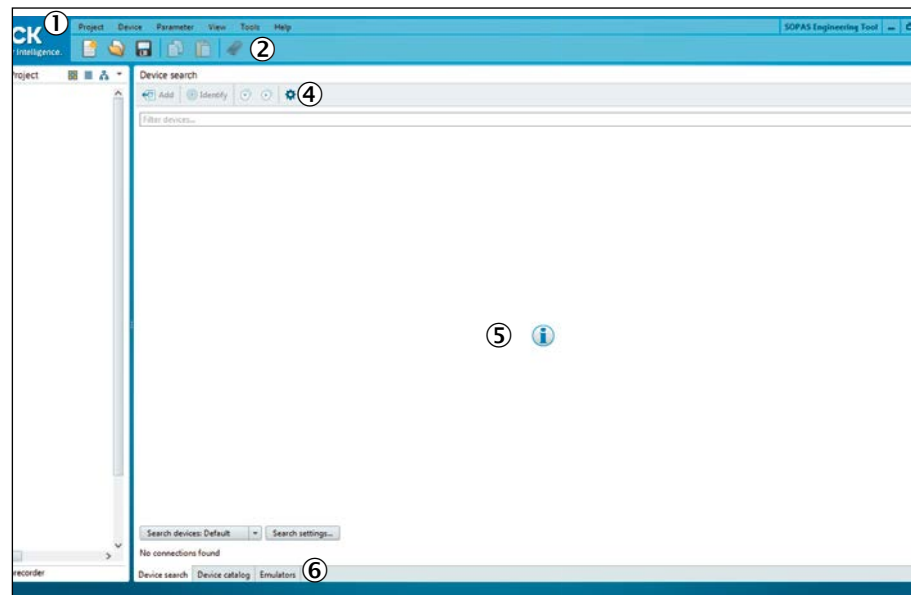
3 Overview of SOPAS

SOPAS is a software platform for configuring and visualizing sensors made by the SICK Group. Encoder programming has been integrated into this proven software platform to increase efficiency and flexibility when managing encoders.

Existing encoder configurations from previous tools can be transferred to the platform quickly and easily.

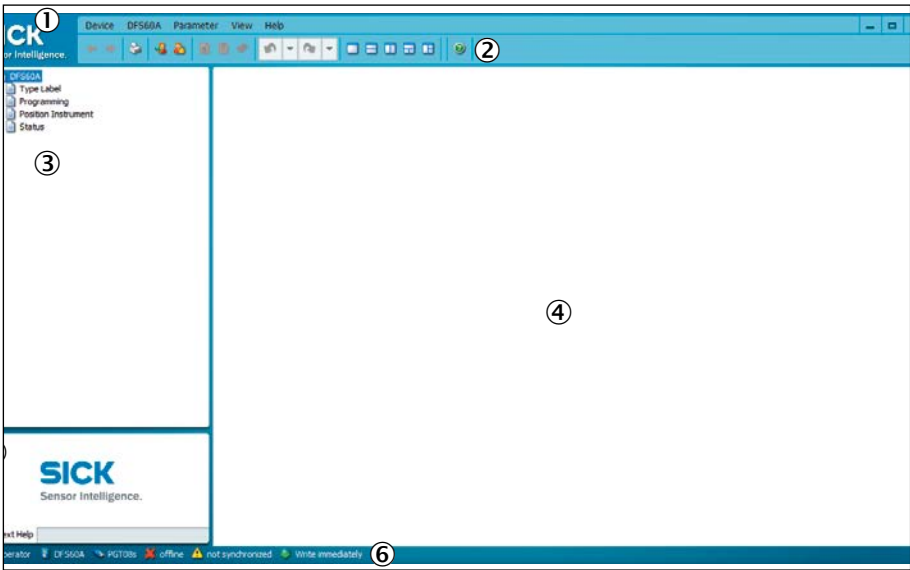
These instructions will mainly refer to the functions required for programming encoders. Additional information on SOPAS and its functions can be found in the online help (F1 key).

3.1 Interface



SOPAS basic view

No	Description
1	Menu bar
2	Icons (quick access toolbar)
3	Project view
4	Configuration toolbar
5	Working area
6	Quick selection tabs



SOPAS device view

No	Description
1	Menu bar
2	Icons (quick access toolbar)
3	Encoder overview
4	Working area
5	Context help
6	Status bar



Note:

A detailed description of the individual areas and functions of SOPAS can be found via the SOPAS help function (F1 key).

3.2 Icons

Icons allow for easy access to important functions in SOPAS. The most important icons are shown here with a brief description.

3.2.1 SOPAS basic view

Icon	Meaning
	Open an existing project
	Create a new project
	Save the project

3.2.2 SOPAS device view

Icon	Meaning
	Print
	Login to device
	Logout from device
	Write all parameters to device
	Read from device
	Save permanent
	Help

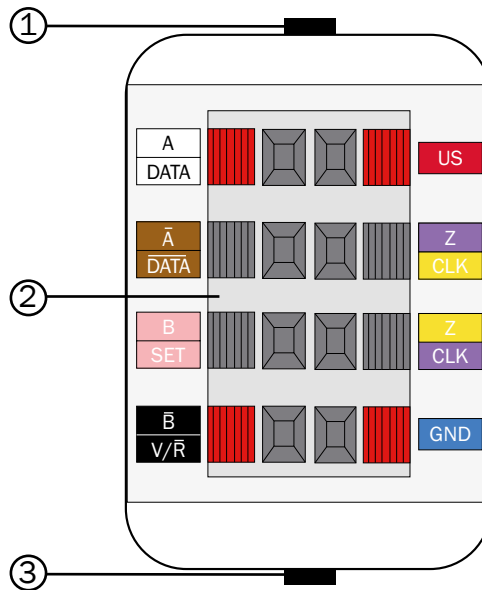
3.3 Creating and managing projects

Projects form the basis for sensor visualization and configuration.

Task	Procedure
Creating a project	Click on the CREATE NEW PROJECT button. SOPAS is always started with an empty project.
Renaming a project	Select PROJECT in the main menu and choose PROJECT PROPERTIES.... Enter a new name for the project.
Protecting a project	Select PROJECT in the main menu and choose PROJECT PROPERTIES.... Enter the password for the project, then enter it again to confirm it.
Saving a project	Click on the SAVE or SAVE AS button.
Opening a project	Click on the OPEN PROJECT button and select a project which has been previously saved.

4 Connecting and programming the encoder

4.1 PGT-08-S hardware



No	Description
1	Cable with USB connection for connecting to PC/laptop
2	Spring terminal block (for encoders with a cable outlet)
3	Cable with SUB-D connection (9-pin) for connecting to encoder-specific programming cables (for encoders with connector)

4.2 Connecting PGT-08-S hardware and encoder/connection to PC



CAUTION

Risk of damage due to incorrect adapter cable!

The programming tool must only be used with the designated adapter cables ([see page 26](#)). Other adapter cables are not permitted. Otherwise, this could result in damage to the programming tool and/or the encoder.

1. Connect the encoder to the associated cable ([see page 26](#)).
2. Connect the cable to the PGT-08-S hardware ([see page 27](#)).
3. Connect the PGT-08-S hardware to your PC using a USB port.



Note:

The USB interface of the PGT-08-S hardware is designed solely for direct connection to a computer. USB hubs or extensions should not be used.

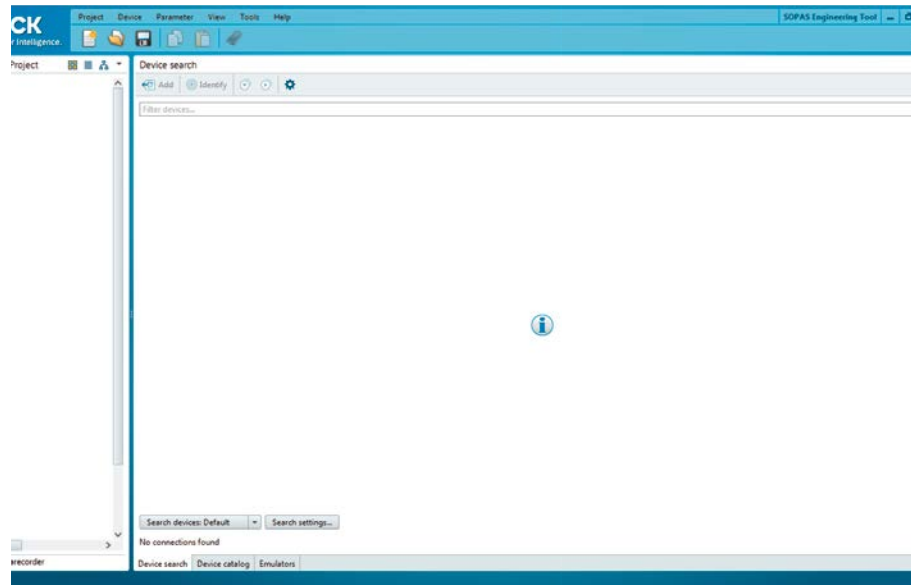


CAUTION**Risk of damage!**

The programming tool is supplied with voltage exclusively via the USB interface. Under no circumstances an external voltage supply should be connected! The connection of an external voltage supply damages the programming tool, the encoder and the connected PC.

4.3 Setting up the encoder

1. Create a new project (see page 11).



2. Connect the PGT-08-S hardware with the connected encoder to the PC.
3. Click the **Search devices: Default** button.



CAUTION

Risk of damage due to incorrect adapter cable!

The programming tool must only be used with the designated adapter cables (see page 26). Other adapter cables are not permitted. Otherwise, this could result in damage to the programming tool and/or the encoder.

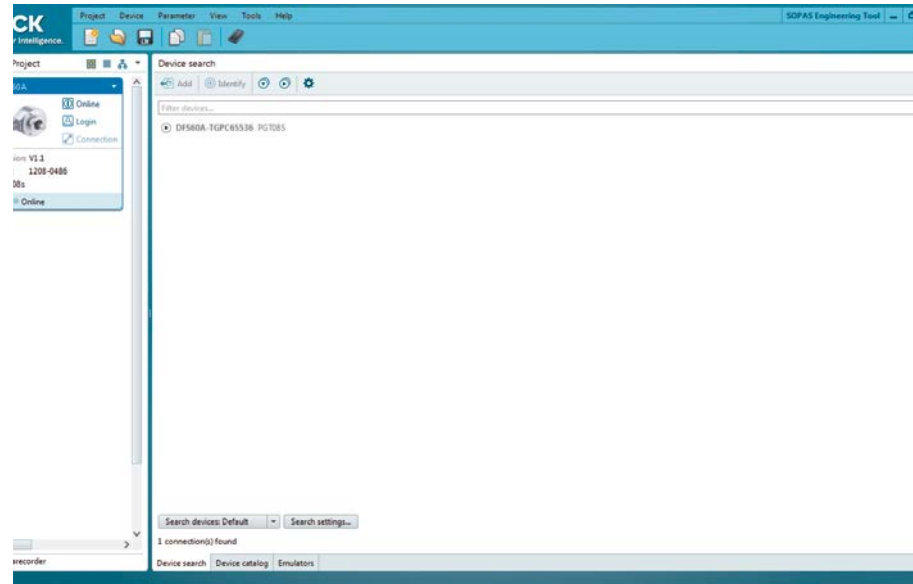
4. Once the encoder is found, confirm that the correct cable is connected.



- Click on CABLE CORRECT if the correct encoder has been detected and the right cable is connected. Otherwise click on CABLE NOT CORRECT to search again.
The encoder is added to the project.

**Note:**

If multiple devices are connected, double-click the desired device in the device list.

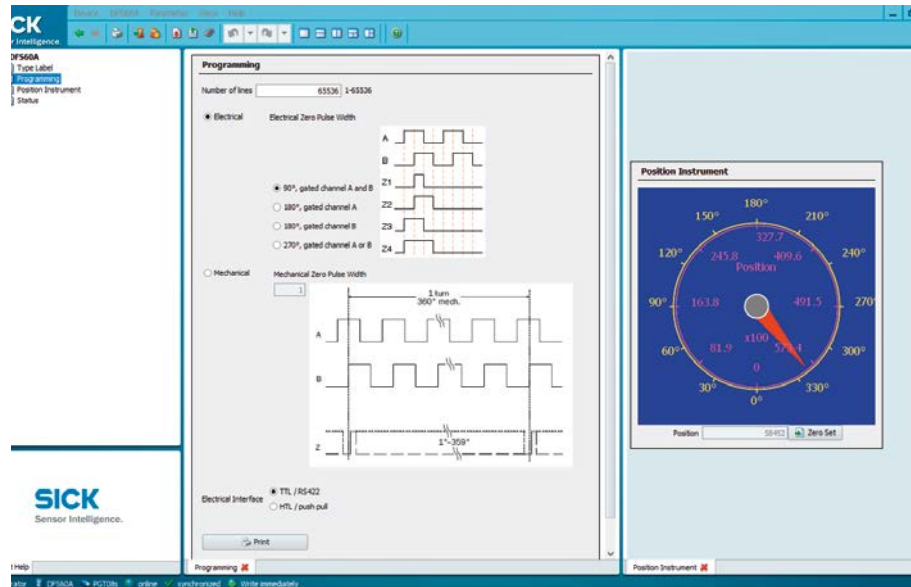
**Note:**

Information on the correct cables can be found in the appendix of these operating instructions ([see page 26](#)).

4.4 Preparing the working area

1. Select the connected encoder in the project view.
2. Double-click the encoder image or click on the triangle symbol and then select OPEN DEVICE WINDOW... to open the available views.
3. Double-click on a view to open it in the working area.

Example:



i

Note:

To switch between the open views, click on the tabs in the working area.

i

Note:

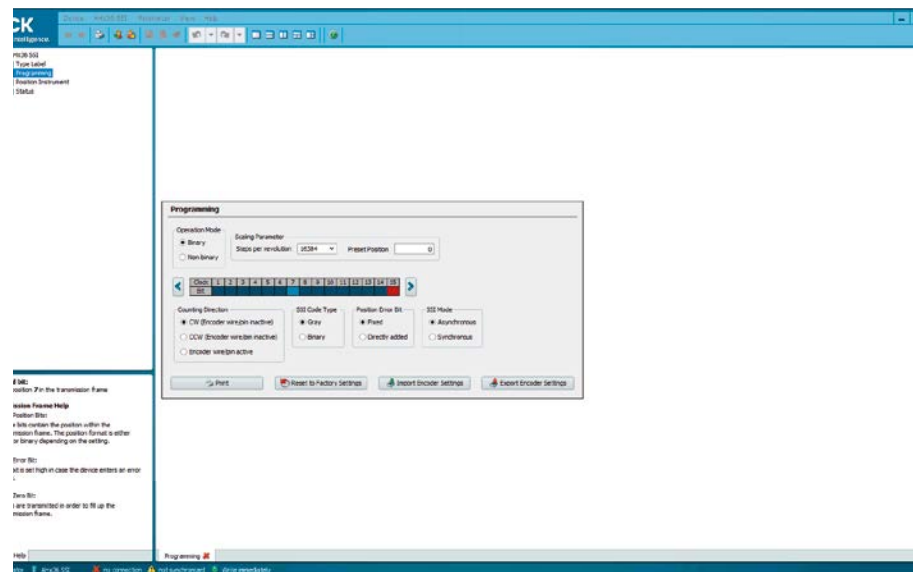
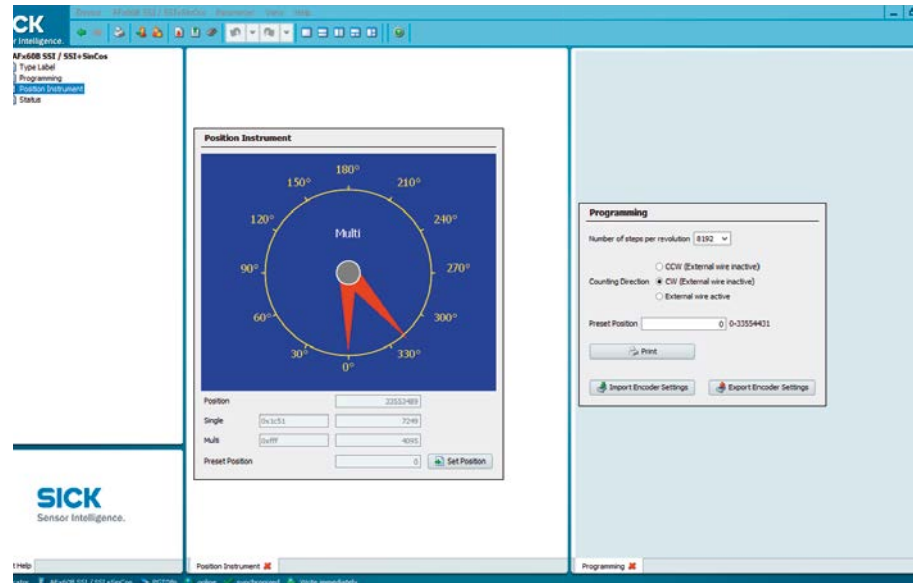
Use a divided view (see online help) to display multiple views next to or above one another. The tabs can be moved to the different parts of the window using drag & drop.

4.5 Programming absolute encoders



Note:

Only encoders with the type codes listed in chapter 5.1 can be programmed (see [page 25](#)).



- Open the PROGRAMMING and POSITION INSTRUMENT views in the working area.

Programmable values and output values are shown in the two views according to the encoder type used.



Note:

A brief explanation of the color values for the individual bits can be found in the SOPAS context help.

You can define the following parameters during programming:

Parameter	AFS60B-xxPxxxxxx AFS60A-xxPxxxxxx	AFM60B-xxRxxxxxx AFM60A-xxRxxxxxx	AFM60B-xxSxxxxxx AFM60A-xxSxxxxxx AFM60B-xxPxxxxxx AFM60A-xxPxxxxxx	AHS36A-xxPxxxxxx	AHM36A-xxPxxxxxx	Description
Operation mode	-	-	-	Binary Non-binary	Binary Non-binary Round Axis	Defines the operating mode and the relevant available scaling parameters.
Steps per revolution	B: 1 to 32768 A: 1 to 262144	B: 1 to 32768 A: 1 to 262144	B: 1 to 32768 A: 1 to 262144	1 to 16384	1 to 16384	Defines the number of steps per revolution.
Number of revolutions	-	4096 fixed, not programmable	4096 fixed, not programmable	-	1 to 4096	Defines the number of revolutions.
Parameters Round Axis function	-	-	-	-	X	Number of revolutions Numerator: Defines the numerator for the number of revolutions. Number of revolutions Denominator: Defines the denominator for the number of revolutions. Total measuring range: Defines the total number of steps possible across the number of revolutions.
Move SSI position bits	-	-	-	X	X	The arrow buttons can be used to move the SSI position bits. This allows different SSI formats to be implemented, such as right-aligned, left-aligned, or tree array. A description of the color values for the individual bits can be found in the SOPAS context help.
Counting direction (CW/CCW/External)	X	X	X	X	X	Defines the direction of rotation according to the shaft. CW = clockwise. CCW = counter-clockwise. External = setting via pin/wire.
SSI-Code Type	-	-	-	Gray Binary	Gray Binary	Defines the SSI code type for outputting the absolute position.

Parameter	AFS60B-xxPxxxxxxxxx AFS60A-xxPxxxxxxxxx	AFM60B-xxRxxxxxxxxx AFM60A-xxRxxxxxxxxx	AFM60B-xxSxxxxxxxxx AFM60A-xxSxxxxxxxxx AFM60B-xxPxxxxxxxxx AFM60A-xxPxxxxxxxxx	AHS36A-xxPxxxxxxxxx	AHM36A-xxPxxxxxxxxx	Description
Position Error Bit	-	-	-	fixed directly added	fixed directly added	Defines the position of the error bit. Choose between fixed or directly added (the error bit is transmitted immediately after the last position bit).
Preset Position	X	X	X	X	X	Assigns the entered preset position to the current shaft position.
SSI Mode	-	-	-	synchronous asynchronous	synchronous asynchronous	Defines whether positions are formed regardless of the master clock (asynchronous) or synchronously to the master clock.
Electrical interface TTL/HTL	-	X	-	-	-	Defines the output interface for the incremental signals.
Reset to factory settings	X	X	X	X	X	Resets all parameters to the factory settings of the encoder.

- After programming, print () a label with the programmed data and stick it onto the encoder.
This means that the settings with which the encoder is being used are visible from the outside.

Standard labels are suitable for printing.



Note:

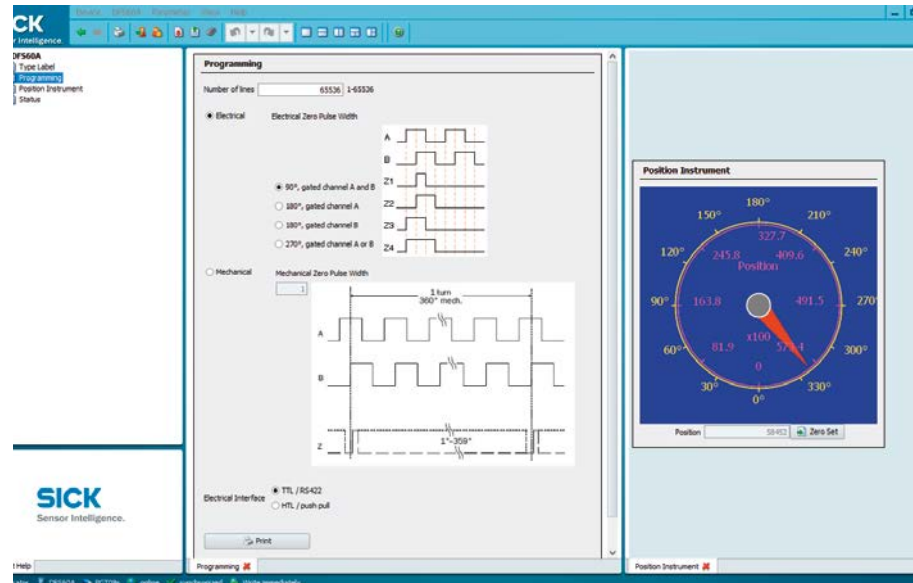
Data entered is written to the encoder immediately and directly as long as this has not been altered in the SOPAS configuration (see online help).

4.6 Programming incremental encoders



Note:

Only encoders with the type codes listed in chapter 5.1 can be programmed (see [page 25](#)).



- Open the PROGRAMMING and POSITION views in the working area.

Programmable values and output values are shown in the two views according to the encoder type used.

You can define the following parameters during programming:

Parameter	DFS60B-xxPxxxxxx DFS60B-xxMxxxxxx DFS60A-xxPxxxxxx DFS60A-xxMxxxxxx	DFV60A-22Pxxxxxx	DFS2xA-xxPxxxxxxxxxx	VFS60A-xxPxxxxxx	Description
Resolution	B: 1 to 10000 A: 1 to 65536	1 to 65536	1 to 65536	1 to 65536	Defines the number of pulses per revolution.
Counting direction (CW/CCW)	X	X	X	X	Enables the signal sequence to be changed between A before B and B before A.
Zero pulse Width electrical/mechanical	X	X	X	X	Defines the duration of the zero pulse in relation to a signal period (electrical) or a revolution (mechanical) of the encoder (type-dependent).
Electrical interface TTL/HTL	X	X	X	X	Defines the output interface for the incremental signals.
Zero set	X	X	X	X	Assigns the value 0 to the current shaft position.
Reset to factory settings	X	X	X	X	Resets all parameters to the factory settings of the encoder.

- After programming, print () a label with the programmed data and stick it onto the encoder.
This means that the settings with which the encoder is being used are visible from the outside.

Standard labels are suitable for printing.



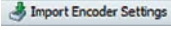
Note:

Data entered is written to the encoder immediately and directly as long as this has not been altered in the SOPAS configuration (see online help).

4.7 Importing/exporting encoder data (.txt)

4.7.1 Importing encoder data

To use data from a programming tool from the PGT-10-P series or older software versions of the programming tool, SOPAS allows txt files to be imported:

1. Open the PROGRAMMING tab.
2. Click the  button.
3. Select the desired file.
4. Click on the IMPORT button.

The file data is transferred to the connected encoder.

4.7.2 Exporting encoder data

To make encoder data available to programming tools from the PGT-10-P series, SOPAS provides the option of creating a txt file.

1. Click the  button.
2. In the dialog box that follows, select the desired file format.
3. Enter a file name.

**Tip:**

Use a meaningful file name in order to quickly find a specific configuration later, e.g., DFS60-A_1000L_EL_180CHANB_HTL.

4. Click on EXPORT.

4.8 Loading/saving encoder data (*.sopas)

4.8.1 Loading encoder data

To import encoder data saved in SOPAS as device data, proceed as follows:

1. Click on DEVICE.
2. Select IMPORT...
3. Select the desired device file.
4. Click on OPEN.

The file data is transferred to the connected encoder.

4.8.2 Saving encoder data

To program multiple encoders with the same values or to switch between multiple sets of programming quickly, SOPAS allows you to save a device configuration.

1. Click on DEVICE.
2. Select EXPORT...
3. In the dialog box that follows, select the desired file format.
4. Click on the BROWSE button.
5. Enter a file name.



Tip:

Use a meaningful file name in order to quickly find a specific configuration later, e.g., DFS60-A_1000L_EL_180CHANB_HTL.

6. Click on SAVE.
7. Click on EXPORT.

4.9 Programming additional encoders

4.9.1 Programming an encoder from the same product family (cloning)

**Note:**

SOPAS does not repeat any security prompts during this procedure. For this reason, ensure that you are using the same encoder type each time.

1. Remove the encoder from the project.
2. Stop the connection once the first encoder has been programmed and a device file has been created ([see page 23](#)).
3. Connect the next encoder to be programmed.
4. Load the saved device file from the previous encoder.
5. Click the  button on the quick access bar. The encoder is programmed directly.
6. Check the newly programmed settings using the relevant tab.
7. Remove the encoder from the project.
8. Stop the connection to the encoder.
9. Repeat steps 2–7 if you wish to program additional encoders from the same product family.

4.9.2 Programming encoders from a different product family

**Note:**

If you want to program a different encoder type or product family, the programmable parameters and, possibly, the connection method will change. It is therefore necessary to treat the next encoder in the same way as the first one.

1. Close the project and stop the connection to the encoder which has already been programmed.
2. Connect the next encoder to be programmed.
Always ensure that you are using the correct cable ([see page 26](#)).
3. Follow the instructions given in "Setting up the encoder" ([see page 14](#)).

5 Appendix

5.1 PGT-08-S@SOPAS technical data

The following encoders can be programmed with PGT-08-S@SOPAS:

Encoder variant	Encoder type	Type code
Incremental	DFS60	DFS60B-xxPxxxxxx DFS60B-xxMxxxxxx DFS60A-xxPxxxxxx DFS60A-xxMxxxxxx
	DFV60	DFV60A-22Pxxxxxx
	DFS2x	DFS2xA-xxPxxxxxxxxx
	VFS60	VFS60A-xxPxxxxxx
Absolute	AFS60	AFS60B-xxPxxxxxx AFS60A-xxPxxxxxx
	AFM60	AFM60B-xxPxxxxxx AFM60A-xxPxxxxxx)
		AFM60B-xxRxxxxxx AFM60A-xxRxxxxxx
		AFM60B-xxSxxxxxx AFM60A-xxSxxxxxx
	AHS36 SSI	AHS36A-xxPxxxxxx
	AHM36 SSI	AHM36A-xxPxxxxxx

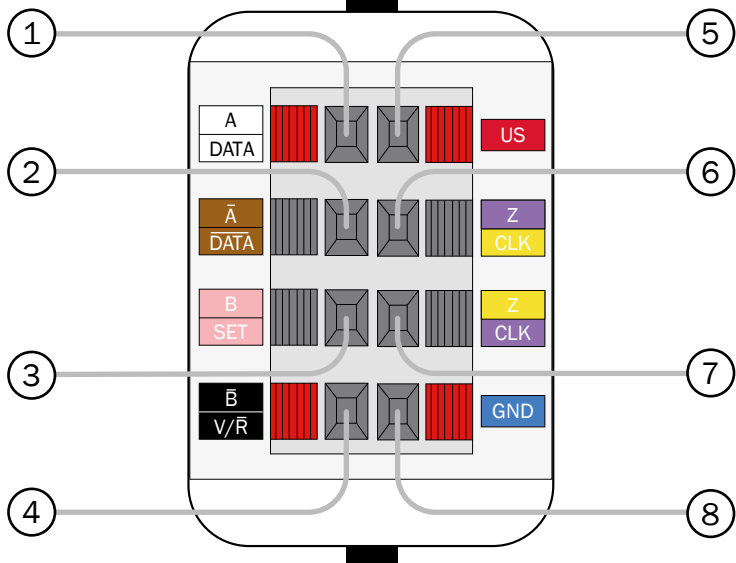
5.2 SOPAS system requirements

Component	Requirement
Processor	Standard Intel Pentium PC or compatible, at least Pentium 1 GHz
Random Access Memory	Min. 1024 MB RAM
Interface	Hardware communication channel such as RS-232 (serial interface), depending on the SICK device
Operating system	Microsoft Windows XP, VISTA, Windows 7 (32/64 bit), Windows 8 (32/64 bit)
Monitor	At least 256 colors; 65,536 colors recommended (16 bit Hi color)
Minimum resolution	1024 px x 768 px
Required disk space	450 MB of free memory on the hard drive

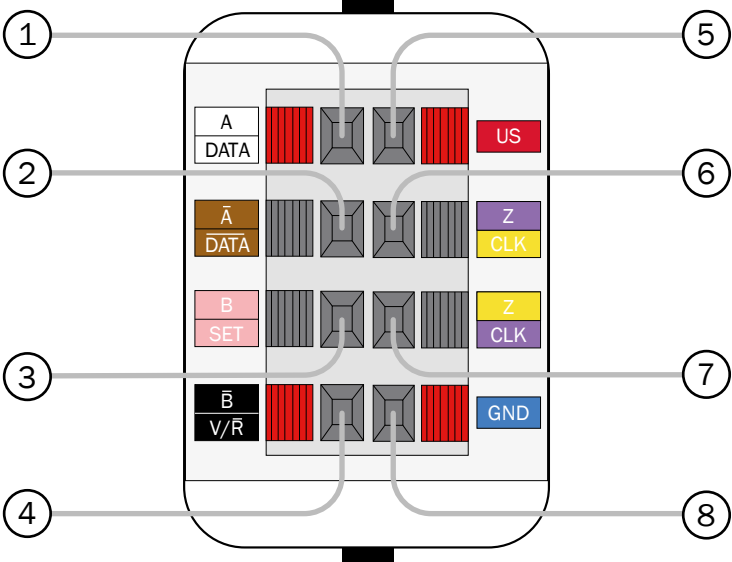
5.3 Accessories

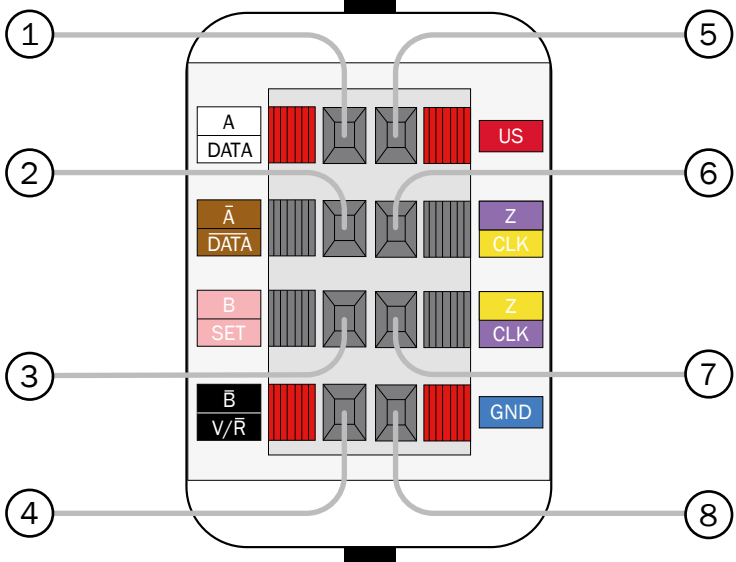
Description	Type	Part no
Adapter cable for absolute SSI – PGT-08-S with male cable connector D-sub 9-pin and female cable connector M12 8-pin, pre-wired (8-wire), 4 x 2 x 0.08 mm ² , shielded, length of cable 0.5 m	DSL-2D08-G0M5AC2	2048439
Adapter cable for absolute SSI – PGT-08-S with male cable connector D-sub 9-pin and female cable connector M23 12-pin, pre-wired (8-wire), 4 x 2 x 0.15 mm ² , shielded, length of cable 0.5 m	DSL-3D08-G0M5AC2	2048440
Adapter cable for absolute SSI + incremental and SSI + sin/cos – PGT-08-S with male cable connector D-sub 9-pin and female cable connector M23 12-pin, pre-wired (8-wire), 4 x 2 x 0.15 mm ² , shielded, length of cable 0.5 m	DSL-3D08-G0M5AC4	2059270
Adapter cable for PGT-08-S and PGT-10-S incremental with male cable connector D-sub 9-pin and female cable connector M12 8-pin, pre-wired (8-wire), 4 x 2 x 0.08 mm ² , shielded, length of cable 0.5 m	DSL-2D08-G0M5AC3	2046579
Adapter cable for PGT-08-S and PGT-10-S incremental with male cable connector D-sub 9-pin and female cable connector M23 12-pin, pre-wired (8-wire), 4 x 2 x 0.08 mm ² , shielded, length of cable 0.5 m	DSL-3D08-G0M5AC3	2046580

5.4 Connection diagrams

Encoder type	Connection type							
DFS60/DFS2x/DFV60/VFS60	DSL-2D08-G0M5AC3 (M12, 8-pin) 							
	DSL-3D08-G0M5AC3 (M23, 12-pin) 							
								
	<table><tr><td>1. White</td><td>5. Red</td></tr><tr><td>2. Brown</td><td>6. Violet</td></tr><tr><td>3. Pink</td><td>7. Yellow</td></tr><tr><td>4. Black</td><td>8. Blue</td></tr></table>	1. White	5. Red	2. Brown	6. Violet	3. Pink	7. Yellow	4. Black
1. White	5. Red							
2. Brown	6. Violet							
3. Pink	7. Yellow							
4. Black	8. Blue							

Encoder type	Connection type								
AFS60/AFM60 SSI	DSL-2D08-G0M5AC2 (M12, 8-pin)								
									
	DSL-3D08-G0M5AC2 (M23, 12-pin)								
									
① ② ③ ④ A DATA Ā DATA B SET B̄ V/R US Z CLK Z CLK GND ⑤ ⑥ ⑦ ⑧									
<table><tr><td>1. White</td><td>5. Red</td></tr><tr><td>2. Brown</td><td>6. Yellow</td></tr><tr><td>3. Pink</td><td>7. Violet</td></tr><tr><td>4. Black</td><td>8. Blue</td></tr></table>		1. White	5. Red	2. Brown	6. Yellow	3. Pink	7. Violet	4. Black	8. Blue
1. White	5. Red								
2. Brown	6. Yellow								
3. Pink	7. Violet								
4. Black	8. Blue								

Encoder type	Connection type								
AFM60 SSI+inc/SSI+ sin/cos	DSL-3D08-G0M5AC4 (M23, 12-pin)   <table><tr><td>1. White</td><td>5. Red</td></tr><tr><td>2. Brown</td><td>6. Yellow</td></tr><tr><td>3. Pink</td><td>7. Violet</td></tr><tr><td>4. Black</td><td>8. Blue</td></tr></table>	1. White	5. Red	2. Brown	6. Yellow	3. Pink	7. Violet	4. Black	8. Blue
1. White	5. Red								
2. Brown	6. Yellow								
3. Pink	7. Violet								
4. Black	8. Blue								

Encoder type	Connection type								
AHS36/AHM36 SSI	DSL-2D08-G0M5AC2 (M12, 8-pin)   <table><tr><td>1. White</td><td>5. Red</td></tr><tr><td>2. Brown</td><td>6. Yellow</td></tr><tr><td>3. Pink</td><td>7. Violet</td></tr><tr><td>4. Black</td><td>8. Blue</td></tr></table>	1. White	5. Red	2. Brown	6. Yellow	3. Pink	7. Violet	4. Black	8. Blue
1. White	5. Red								
2. Brown	6. Yellow								
3. Pink	7. Violet								
4. Black	8. Blue								

5.5 Care and disposal

5.5.1 Care

Clean the housing of the PGT-08-S hardware with a damp microfiber cloth to remove any contamination. Allow the housing to dry completely before you use the programming tool again.

5.5.2 Disposal

Always dispose of unusable devices in accordance with the applicable national waste disposal regulations.

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