PGT-08-S@SOPAS
Original Operating Instructions for Programming Tool PGT-08-S@SOPAS

Programming Tool for Encoders
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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 Stegmann GmbH. 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

<table>
<thead>
<tr>
<th>Icon</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="https://example.com/exclamation.png" alt="Exclamation Mark" /></td>
<td>The symbol indicates a hazardous point where the product can be damaged by improper handling.</td>
</tr>
<tr>
<td><img src="https://example.com/lightning.png" alt="Lightning Bolt" /></td>
<td>This symbol refers to a hazardous point due to electrical charge which can damage the product.</td>
</tr>
<tr>
<td><img src="https://example.com/information.png" alt="Information Symbol" /></td>
<td>This symbol prefixes a note containing important additional information.</td>
</tr>
</tbody>
</table>

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 25). 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 Stegmann GmbH 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.

---

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 Stegmann GmbH 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 25).
1.7.1 Correct use

Programming tool PGT-08-S@SOPAS is used to program and configure SICK Stegmann GmbH 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 26). 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 24) 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

<table>
<thead>
<tr>
<th>No</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Menu bar</td>
</tr>
<tr>
<td>2</td>
<td>Icons (quick access toolbar)</td>
</tr>
<tr>
<td>3</td>
<td>Project view</td>
</tr>
<tr>
<td>4</td>
<td>Configuration toolbar</td>
</tr>
<tr>
<td>5</td>
<td>Working area</td>
</tr>
<tr>
<td>6</td>
<td>Quick selection tabs</td>
</tr>
</tbody>
</table>
OVERVIEW OF SOPAS

<table>
<thead>
<tr>
<th>No</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Menu bar</td>
</tr>
<tr>
<td>2</td>
<td>Icons (quick access toolbar)</td>
</tr>
<tr>
<td>3</td>
<td>Encoder overview</td>
</tr>
<tr>
<td>4</td>
<td>Working area</td>
</tr>
<tr>
<td>5</td>
<td>Context help</td>
</tr>
<tr>
<td>6</td>
<td>Status bar</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>Icon</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Folder]</td>
<td>Open an existing project</td>
</tr>
<tr>
<td>![Folder]</td>
<td>Create a new project</td>
</tr>
<tr>
<td>![Folder]</td>
<td>Save the project</td>
</tr>
</tbody>
</table>

### 3.2.2 SOPAS device view

<table>
<thead>
<tr>
<th>Icon</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Printer]</td>
<td>Print</td>
</tr>
<tr>
<td>![Login]</td>
<td>Login to device</td>
</tr>
<tr>
<td>![Logout]</td>
<td>Logout from device</td>
</tr>
<tr>
<td>![Upload]</td>
<td>Write all parameters to device</td>
</tr>
<tr>
<td>![Download]</td>
<td>Read from device</td>
</tr>
<tr>
<td>![Save]</td>
<td>Save permanent</td>
</tr>
<tr>
<td>![Help]</td>
<td>Help</td>
</tr>
</tbody>
</table>

3.3 Creating and managing projects

Projects form the basis for sensor visualization and configuration.

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

4.1 PGT-08-S hardware

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

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 25). 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 25).
2. Connect the cable to the PGT-08-S hardware (see page 26).
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.
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 button.

CAUTION

Risk of damage due to incorrect adapter cable!

The programming tool must only be used with the designated adapter cables (see page 25). 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.
5. 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 25).
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:

![Image of encoder software interface]

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

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 24).

- 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:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>AF60B-xxxx</th>
<th>AF60A-xxxx</th>
<th>AFM60B-xxxx</th>
<th>AFM60A-xxxx</th>
<th>AFM60B-xxxx</th>
<th>AFM60A-xxxx</th>
<th>AHS36A-xxxx</th>
<th>AHM36A-xxxx</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation mode</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>Binary</td>
<td>Non-binary</td>
<td>Binary</td>
<td>Non-binary</td>
<td>Defines the operating mode and the relevant available scaling parameters.</td>
</tr>
<tr>
<td>Steps per revolution</td>
<td>B: 1 to 32768</td>
<td>A: 1 to 262144</td>
<td>B: 1 to 32768</td>
<td>A: 1 to 262144</td>
<td>1 to 16384</td>
<td>1 to 16384</td>
<td>Defines the number of steps per revolution.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of revolutions</td>
<td>–</td>
<td>4096 fixed, not programmable</td>
<td>4096 fixed, not programmable</td>
<td>–</td>
<td>1 to 4096</td>
<td>Defines the number of revolutions.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parameters Round Axis function</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>X</td>
<td>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.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Move SSI position bits</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>X</td>
<td>X</td>
<td>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.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counting direction (CW/CCW/External)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>Defines the direction of rotation according to the shaft. CW = clockwise. CCW = counter-clockwise. External = setting via pin/wire.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SSI-Code Type</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>Gray</td>
<td>Binary</td>
<td>Gray</td>
<td>Binary</td>
<td>Defines the SSI code type for outputting the absolute position.</td>
</tr>
</tbody>
</table>
### CONNECTING AND PROGRAMMING THE ENCODER

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

> 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 24).

- 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:

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

▶ 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.
4. Click on EXPORT.

**Tip:**
Use a meaningful file name in order to quickly find a specific configuration later, e.g., DFS60-A_1000L_EL_180CHANB_HTL.
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 22).
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 25).
3. Follow the instructions given in “Setting up the encoder” (see page 13).
5 Appendix

5.1 PGT-08-S@SOPAS technical data

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

<table>
<thead>
<tr>
<th>Encoder variant</th>
<th>Encoder type</th>
<th>Type code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incremental</td>
<td>DFS60</td>
<td>DFS60B-xxPxxxxxx</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DFS60B-xxMxxxxxx</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DFS60A-xxPxxxxxx</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DFS60A-xxMxxxxxx</td>
</tr>
<tr>
<td></td>
<td>DFV60</td>
<td>DFV60A-22Pxxxxxx</td>
</tr>
<tr>
<td></td>
<td>DFS2x</td>
<td>DFS2xA-xxPxxxxxx</td>
</tr>
<tr>
<td></td>
<td>VFS60</td>
<td>VFS60A-xxPxxxxxx</td>
</tr>
<tr>
<td>Absolute</td>
<td>AFS60</td>
<td>AFS60B-xxPxxxxxx</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AFS60A-xxPxxxxxx</td>
</tr>
<tr>
<td></td>
<td>AFM60</td>
<td>AFM60B-xxPxxxxxx</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AFM60A-xxPxxxxxx</td>
</tr>
<tr>
<td></td>
<td>AFM60</td>
<td>AFM60B-xxRxxxxxx</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AFM60A-xxRxxxxxx</td>
</tr>
<tr>
<td></td>
<td>AFM60</td>
<td>AFM60B-xxSxxxxxx</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AFM60A-xxSxxxxxx</td>
</tr>
<tr>
<td></td>
<td>AHS36 SSI</td>
<td>AHS36A-xxPxxxxxx</td>
</tr>
<tr>
<td></td>
<td>AHM36 SSI</td>
<td>AHM36A-xxPxxxxxx</td>
</tr>
</tbody>
</table>

5.2 SOPAS system requirements

<table>
<thead>
<tr>
<th>Component</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Standard Intel Pentium PC or compatible, at least Pentium 1 GHz</td>
</tr>
<tr>
<td>Random Access Memory</td>
<td>Min. 1.024 MB RAM</td>
</tr>
<tr>
<td>Interface</td>
<td>Hardware communication channel such as RS-232 (serial interface), depending on the SICK device</td>
</tr>
<tr>
<td>Operating system</td>
<td>Microsoft Windows XP, VISTA, Windows 7 (32/64 bit), Windows 8 (32/64 bit)</td>
</tr>
<tr>
<td>Monitor</td>
<td>At least 256 colors; 65,536 colors recommended (16 bit Hi color)</td>
</tr>
<tr>
<td>Minimum resolution</td>
<td>1024 px x 768 px</td>
</tr>
<tr>
<td>Required disk space</td>
<td>450 MB of free memory on the hard drive</td>
</tr>
</tbody>
</table>
### Accessories

<table>
<thead>
<tr>
<th>Description</th>
<th>Model name</th>
<th>Part no</th>
</tr>
</thead>
<tbody>
<tr>
<td>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 mm², screened, length of cable 0.5 m</td>
<td>DSL-2D08-G0M5AC2</td>
<td>2048439</td>
</tr>
<tr>
<td>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 mm², screened, length of cable 0.5 m</td>
<td>DSL-3D08-G0M5AC2</td>
<td>2048440</td>
</tr>
<tr>
<td>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 mm², screened, length of cable 0.5 m</td>
<td>DSL-3D08-G0M5AC4</td>
<td>2059270</td>
</tr>
<tr>
<td>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 mm², screened, length of cable 0.5 m</td>
<td>DSL-2D08-G0M5AC3</td>
<td>2046579</td>
</tr>
<tr>
<td>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 mm², screened, length of cable 0.5 m</td>
<td>DSL-3D08-G0M5AC3</td>
<td>2046580</td>
</tr>
</tbody>
</table>
### 5.4 Connection diagrams

<table>
<thead>
<tr>
<th>Encoder type</th>
<th>Connection type</th>
</tr>
</thead>
<tbody>
<tr>
<td>DFS60/DFS2x/DFV60/VFS60</td>
<td>DSL-2D08-G0M5AC3 (M12, 8-pin)</td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Encoder Connection Diagram" /></td>
</tr>
<tr>
<td></td>
<td>DSL-3D08-G0M5AC3 (M23, 12-pin)</td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Encoder Connection Diagram" /></td>
</tr>
</tbody>
</table>

**Diagram Labels:**
- **1.** White
- **2.** Brown
- **3.** Pink
- **4.** Black
- **5.** Red
- **6.** Violet
- **7.** Yellow
- **8.** Blue
<table>
<thead>
<tr>
<th>Encoder type</th>
<th>Connection type</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFS60/AFM60 SSI</td>
<td>DSL-2D08-G0M5AC2 (M12, 8-pin)</td>
</tr>
<tr>
<td></td>
<td>DSL-3D08-G0M5AC2 (M23, 12-pin)</td>
</tr>
</tbody>
</table>

![Diagram of connection types](image)

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

![Diagram of encoder type connections]

1. White 5. Red
2. Brown 6. Yellow
3. Pink 7. Violet
4. Black 8. Blue
<table>
<thead>
<tr>
<th>Encoder type</th>
<th>Connection type</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHS36/AHM36 SSI</td>
<td>DSL2D08-G0M5AC2 (M12, 8-pin)</td>
</tr>
</tbody>
</table>

1. White  
2. Brown  
3. Pink  
4. Black  
5. Red  
6. Yellow  
7. Violet  
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.
Australia
Phone +61 (0)3 9457 0600
1800 33 48 02 – toll-free
E-mail sales@sick.com.au
Belgium/Luxembourg
Phone +32 (0)2 466 55 66
E-mail info@sick.be
Brazil
Phone +55 (0)11 3215-4900
E-mail marketing@sick.com.br
Canada
Phone +1 (0)905 771 14 44
E-mail information@sick.com
Czech Republic
Phone +420 (0)2 57 91 18 50
E-mail sick@sick.cz
China
Phone +86 (0)4000 121 000
E-mail info.china@sick.net.cn
Denmark
Phone +45 (0)45 82 64 00
E-mail sick@sick.dk
Germany
Phone +49 (0)211 5301 301
E-mail info@sick.de
Spain
Phone +34 (0)93 480 31 00
E-mail info@sick.es
France
Phone +33 (0)1 64 62 35 00
E-mail info@sick.fr
UK
Phone +44 (0)1727 831121
E-mail info@sick.co.uk
India
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E-mail info@sick-india.com
Israel
Phone +972 (0)4 6801000
E-mail info@sick-sensors.com
Italy
Phone +39 (0)2 27 43 41
E-mail info@sick.it
Japan
Phone +81 (0)3 5309 2112
E-mail support@sick.jp
Hungary
Phone +36 (0)1 371 2680
E-mail office@sick.hu
Netherlands
Phone +31 (0)30 229 25 44
E-mail info@sick.nl
Norway
Phone +47 (0)67 81 50 00
E-mail sick@sick.no
Austria
Phone +43 (0)22 36 62 28 80
E-mail office@sick.at
Poland
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E-mail info@sick.pl
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E-mail info@sick.ch
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E-mail info@sickkorea.net
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E-mail sales@sick.com.tw
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E-mail info@sick.com.tr
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Phone +971 (0)4 8865 878
E-mail info@sick.ae
USA/Mexico
Phone +1 (0)952 941 6780
1 800-325-7425 – toll-free
E-mail info@sickusa.com

More representatives and agencies at www.sick.com