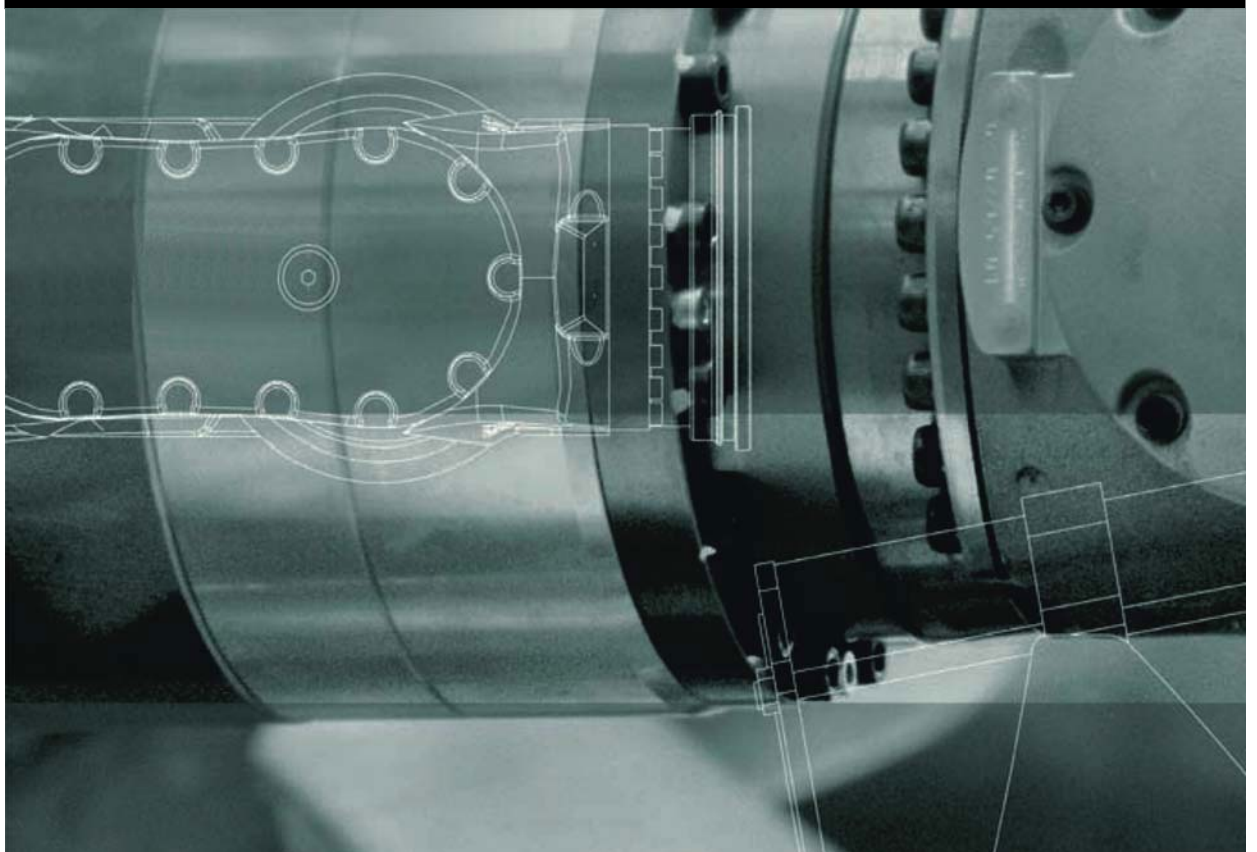# KUKA

KUKA System Technology

KUKA Roboter GmbH

KUKA.GlueTech 4.0

For KUKA System Software 8.2

Issued: 02.11.2011

Version: KST GlueTech 4.0 V1 en

Contents

KUKA

1 Introduction

1.1 Target group

This documentation is aimed at users with the following knowledge and skills:

- Advanced KRL programming skills
- Advanced knowledge of the robot controller system
- Advanced knowledge of the dispensing controller systems
- Knowledge of field bus interfaces

> **i** For optimal use of our products, we recommend that our customers take part in a course of training at KUKA College. Information about the training program can be found at www.kuka.com or can be obtained directly from our subsidiaries.

1.2 Industrial robot documentation

The industrial robot documentation consists of the following parts:

- Documentation for the manipulator
- Documentation for the robot controller
- Operating and programming instructions for the KUKA System Software
- Documentation relating to options and accessories
- Parts catalog on storage medium

Each of these sets of instructions is a separate document.

1.3 Representation of warnings and notes

Safety   These warnings are relevant to safety and **must** be observed.

> **⚠ DANGER** These warnings mean that it is certain or highly probable that death or severe physical injury **will** occur, if no precautions are taken.

> **⚠ WARNING** These warnings mean that death or severe physical injury **may** occur, if no precautions are taken.

> **⚠ CAUTION** These warnings mean that minor physical injuries **may** occur, if no precautions are taken.

> **NOTICE** These warnings mean that damage to property **may** occur, if no precautions are taken.

> **⚠** These warnings contain references to safety-relevant information or general safety measures. These warnings do not refer to individual hazards or individual precautionary measures.

Hints   These hints serve to make your work easier or contain references to further information.

> **i** Tip to make your work easier or reference to further information.

1.4 Terms used

Term	Description
Seam data set	Data set with settings for speed and analog voltage for each seam.
Exact positioning	Programmed position of the robot without approximate positioning. The robot stops at the position.
Handshaking	Handshaking is a method used to check 2 devices during data transmission by means of direct acknowledgement signals.
Calibration routine	The KUKA.GlueTech calibration routine sets various configuration values on a defined linear path.
Seam number	The seam number uniquely specifies the seam.
Switching point	The switching point defines the switching position of the nozzle.
Switching times	The programmable switching times compensate for the delay time of the nozzle.
Purging	Function for emptying the system (dispenser) and subsequent refilling.
Purge position	Defined position for emptying the nozzle.
Motion parameters	Programmable parameters and machine data adapted specifically for the application of adhesives or similar substances.

2 Product description

2.1 Overview of KUKA.GlueTech

KUKA.GlueTech is an add-on technology package with the following functions:

Functions
- Staggered control of up to 3 dispensing controllers
- Staggered control of up to 4 nozzles per dispensing controller
- KRL commands for the creation of dispensing applications (inline forms)
- Configuration of up to 20 different seam data sets
- Calibration routine
- Diverse settings (I/Os, PLC, etc.)

> **i** GlueTech can only be used for controlling an ASC 5000 (SCA Schucker). KUKA Roboter GmbH must be consulted if a different dispensing controller is to be used (>>> 11 "KUKA Service" Page 65).
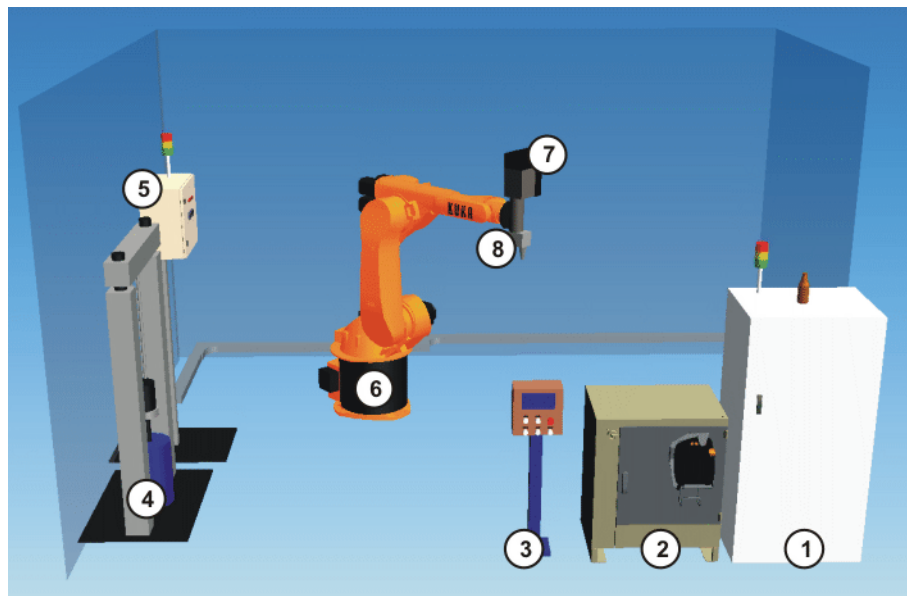
Fig. 2-1: Example of an adhesive bonding cell

1	Dispensing controller	5	Pump controller
2	Robot controller	6	Robot
3	PLC	7	Dispenser
4	Drum pump	8	Nozzle

Areas of application
- Application of adhesive beads
- Application of one-component / two-component adhesives
- Bead shaping (electrical / pneumatic)
- Thin-jet flatstream sealing
- Extruded application of sound-insulating material

Configuration software
The following software is required for configuring the drivers and I/Os:
- WorkVisual 2.1

Communication
The robot controller communicates with the dispensing controller via a field bus. There are different field bus cards for the robot controller. The field buses Interbus, PROFIBUS or PROFINET can be used.

> ℹ️ Further information about Interbus, PROFIBUS or PROFINET can be found in the documentation for these field bus systems.

2.2 Functional principle

Description   KUKA.GlueTech can regulate the following parameters of the dispensing controller (depending on the settings) proportional to the path velocity (TCP), but also independently of the velocity:

- Delivery rate of the material
- Delivery rate of the air spray

The parameters are regulated via the analog voltage of the outputs. The outputs are configured via the field bus of the robot controller.
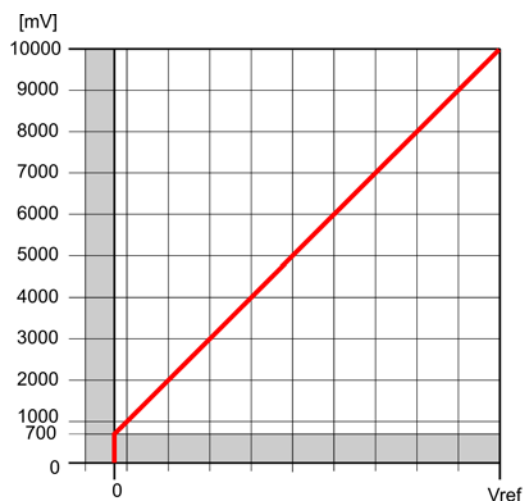
Fig. 2-2: Diagram: Analog voltage / speed

2.3 Switching points and delay times

Description   In the dispensing process, time delays and changes in the dispensing velocity occur at the switching points (Glue On, Glue Switch, Glue Off) between the robot controller and the dispensing controller. This influences the material flow and the air supply. For this reason, the switching points must be adapted accordingly.
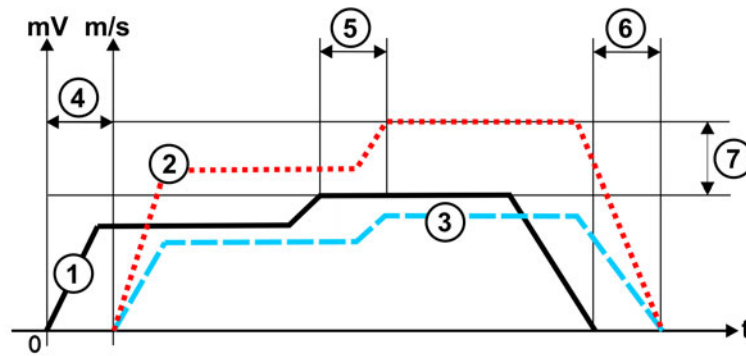
Fig. 2-3: Diagram: Delay times / offset

1	Material flow	5	Delay time
2	Air supply	6	Delay time
3	Robot motion	7	Offset
4	Delay time		

Example

The following diagram shows a dispensing process with a straight seam. The angle of the nozzle to the workpiece should be between 70° and 90°, depending on the application. The start point of the robot is P1. At the switching point On (Glue On LIN), the nozzle is switched on. The material flow begins after a delay.

At the switching point Off (Glue Off LIN), the nozzle is switched off. This material flow stops after a delay.
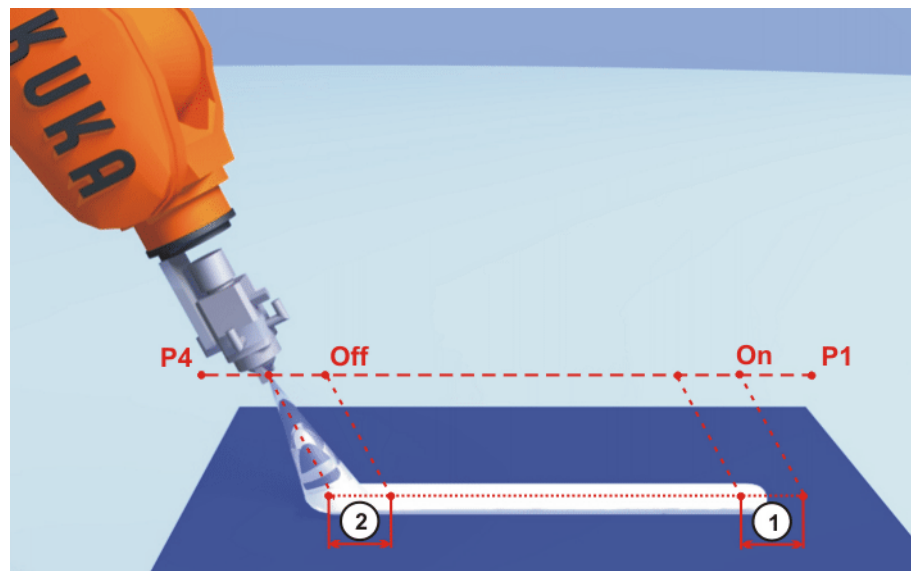
Fig. 2-4: Switching points and delay times during the dispensing process

1, 2	Delay time

KUKA

3 Safety

This documentation contains safety instructions which refer specifically to the software described here.

The fundamental safety information for the industrial robot can be found in the "Safety" chapter of the Operating and Programming Instructions for System Integrators or the Operating and Programming Instructions for End Users.

> ⚠ The "Safety" chapter in the operating and programming instructions must be observed. Death to persons, severe physical injuries or considerable damage to property may otherwise result.

4 Installation

4.1 System requirements

Hardware
- KR C4
- ASC 5000 dispensing controller
- KUKA field bus cards (Interbus, PROFIBUS or PROFINET)
- Specific components for the application:
  - Nozzle
  - Dispensing system (E, P, H dispenser)
  - 2-component applications, etc.

Software
- KUKA System Software 8.2.11 or higher
- Timers 13 ... 16 can be freely assigned by the user
  (The timers are used after installation by the dispensing controller.)

4.2 Installing or updating GlueTech

> **i** It is advisable to archive all relevant data before updating a software package.

Precondition
- Software on KUKA.USBData stick
- No program is selected.
- T1 or T2 operating mode
- "Expert" user group

> **NOTICE** Use only a KUKA.USB data stick: if a different USB stick is used, data may be lost or changed.

Procedure
1. Plug in USB stick.
2. Select **Start-up** > **Install additional software** in the main menu.
3. Press **New software**. If a software package that is on the USB stick is not displayed, press **Refresh**.
4. Mark the **GlueTech** entry and press **Install**. Reply to the request for confirmation with **Yes**. The files are copied onto the hard drive.
5. Repeat step 4 if another software package is to be installed from this stick.
6. Remove USB stick.
7. It may be necessary to reboot the controller, depending on the additional software. In this case, a corresponding prompt is displayed. Confirm with **OK** and reboot the robot controller. Installation is resumed and completed.

LOG file A LOG file is created under C:\KRC\ROBOTER\LOG.

4.3 Uninstalling GlueTech

> **i** It is advisable to archive all relevant data before uninstalling a software package.

Precondition
- Expert user group

Procedure
1. Select **Start-up** > **Install additional software** in the main menu. All additional programs installed are displayed.

2. Mark the **GlueTech** entry and press **Uninstall**. Reply to the request for confirmation with **Yes**. Uninstallation is prepared.

3. Reboot the robot controller. Uninstallation is resumed and completed.

LOG file   A LOG file is created under C:\KRC\ROBOTER\LOG.

5 Operation

5.1 Menus

The following menus and commands are specific to this technology package:

Main menu:

- **Configuration**
  - **Status keys**
    - **GlueTech**
  - **GlueTech**
- **Start-up**
  - **GlueTech**
    - **Select calibration routine**

Menu sequence **Commands** > **GlueTech**

- **Dispensing instruction**
  - **Init system**
  - **Set program number**
  - **Set motion parameter**
  - **Dispense complete**
  - **Reload doser**
  - **Error check**
- **Gluing motion**
  - **GLUE ON LIN**
  - **GLUE SWITCH LIN**
  - **GLUE OFF LIN**
  - **GLUE ON CIRC**
  - **GLUE SWITCH CIRC**
  - **GLUE OFF CIRC**
  - **GLUE ON PTP**
  - **GLUE OFF PTP**
- **Gluing spline motion**
  - **GLUE ON SPL**
  - **GLUE SWITCH SPL**
  - **GLUE OFF SPL**
  - **GLUE ON SLIN**
  - **GLUE SWITCH SLIN**
  - **GLUE OFF SLIN**
  - **GLUE ON SCIRC**
  - **GLUE SWITCH SCIRC**
  - **GLUE OFF SCIRC**
- **Purge instruction**
  - **Purge gun**
  - **Monitoring purge gun**
  - **Enable purge**

5.2 Status keys

Procedure   Displaying the status keys:

■ In the main menu, select **Configuration** > **Status keys** > **GlueTech**.

Description

Status key	Description
	Select dispensing controller 1, 2 or 3.
	Select nozzle 1, 2, 3 or 4.
	Select dispenser 1 or 2.
	Purge dispensing controller.
	Clear nozzle.
	Fill dispenser.
	Execute program with material.
	Execute program without material.
	Execute program with material. **Note**: The status key is only displayed in EXT mode. The numbers refer to the number of the configured dispensing controllers.
	Execute program without material. **Note**: The status key is only displayed in EXT mode. The numbers refer to the number of the configured dispensing controllers.
	Execute program without material. **Note**: The status key is only displayed in T1 mode. In the T1 mode, the program is always executed without material.
	Acknowledge dispensing controller messages.
	Toggle status key bar.

6 Configuration

6.1 Overview

Precondition
- The dispensing controller has been installed and prepared.
- The field bus between the robot controller and the dispensing controller has been configured.
- The tool and base have been calibrated.

Overview

Step	Description
1	Configure the basic settings for GlueTech. (>>> 6.2 "Carrying out settings" Page 17)
2	Configure the inputs and outputs. (>>> 6.3 "Configuring outputs" Page 19) (>>> 6.4 "Configuring inputs" Page 19)
3	Configure the delay times. (>>> 6.5 "Manually configuring delay times" Page 20)
4	Configure the seam data sets. (>>> 6.6 "Configuring seam data sets" Page 21)
5	Calibrate GlueTech. (>>> 6.7 "Calibration routine" Page 22)

> **i** Further settings and system responses can be configured via the system variables.

6.2 Carrying out settings

Precondition
- The dispensing controller and nozzle have been prepared.

Procedure
1. In the main menu, select **Configuration** > **GlueTech**.
2. Select the **Settings** tab.
3. Make the desired settings.
4. Close the window. Respond to the request for confirmation asking whether the changes should be saved by pressing **Yes**.

Description

Fig. 6-1: "Settings" tab

Parameter	Description
Number of dispense equipments	Select the number of dispensing controllers. ■ **1 … 3**
Application type	Select the dispensing type. ■ **1K**: 1-component adhesive ■ **2K**: 2-component adhesive
Bead shaping	Activate / deactivate bead shaping. ■ **NO**: Deactivate bead shaping ■ **AIR**: Activate air shaping ■ **ELECTRIC**: Activate motor shaping
With Doser	Select the number of dispensers. ■ **0 … 2**
Error handling	■ **ALL**: All errors are acknowledged simultaneously. ■ **SINGLE**: Errors are acknowledged individually. ■ **PLC**: Errors are acknowledged by the PLC.
Program number mirroring by dispense controller	■ **YES**: The program number is mirrored. ■ **NO**: The program number is not mirrored.
Bitwidth programnumber	Select the program number length in bits. ■ Default: 8 bits
Transmit single fault to PLC	■ **YES**: Set output to PLC in the event of a single fault. ■ **NO**: Set no output in the event of a single fault.

Parameter	Description
Measurement cycle active	■ **YES**: The dispensing controller supports the output "Measurement cycle active". ■ **NO**: The output is not supported.
Invert Input Material-flow	■ **YES**: The input "Material flow" is inverted. ■ **NO**: The input "Material flow" is not inverted.
Peltierelement available	■ **YES**: The dispensing controller is equipped with a Peltier element. ■ **NO**: The dispensing controller is not equipped with a Peltier element.

6.3 Configuring outputs

Precondition
■ The field bus connection between the robot controller and the dispensing controller has been configured.

■ The dispensing controller and nozzle have been prepared.

Procedure
1. In the main menu, select **Configuration** > **GlueTech**.
2. Select the **Output** tab.
3. Configure the outputs.
4. Close the window. Respond to the request for confirmation asking whether the changes should be saved by pressing **Yes**.
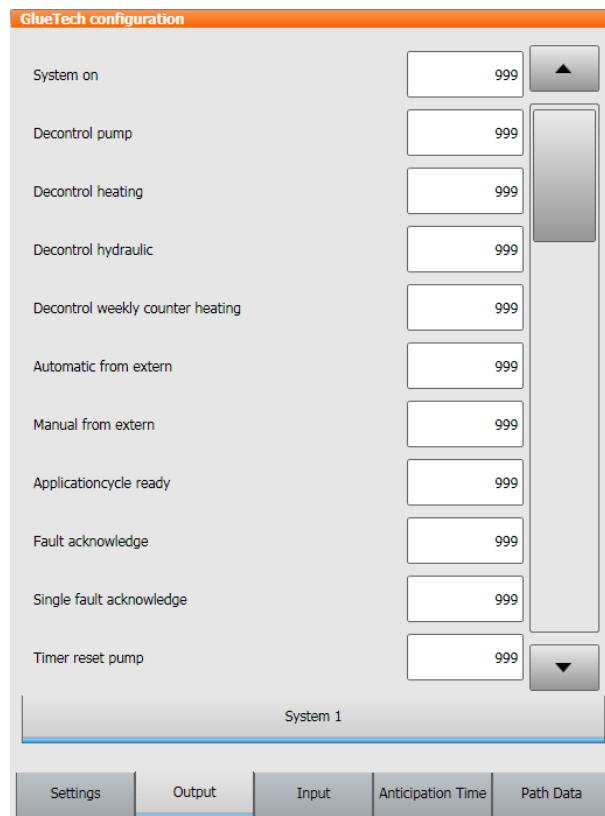
Fig. 6-2: "Output" tab

6.4 Configuring inputs

Precondition
■ The field bus connection between the robot controller and the dispensing controller has been configured.

■ The dispensing controller and nozzle have been prepared.

Procedure	1. In the main menu, select **Configuration** > **GlueTech**. 2. Select the **Input** tab. 3. Configure the inputs. 4. Close the window. Respond to the request for confirmation asking whether the changes should be saved by pressing **Yes**.

Description

GlueTech configuration

Ready for application	1026
Decontrol for extern	1026
Application is ok	1026
Doser 1 reached prepressure	1026
Doser 2 reached prepressure	1026
Toggle Bit	1026
Doser 1 full	1026
Doser 2 full	1026
Doser 1 reached empty limit	1026
Doser 2 reached empty limit	1026
Application cycle is ready	1026

System 1

| Settings | Output | Input | Anticipation Time | Path Data |
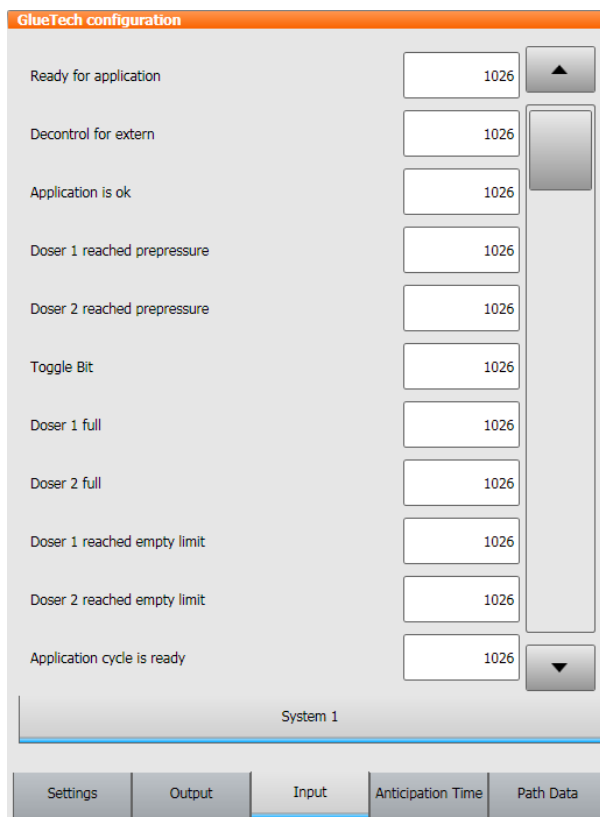
Fig. 6-3: "Input" tab

> ℹ️ If the outputs of the dispensing controller are not present during the setup, the inputs of the robot controller can be bypassed using input 1025 (TRUE). This input should be used if signals are not supported by the dispensing controller.

> ℹ️ If 2 or 3 dispensing controllers are specified in the settings, these are also displayed on the **Input** tab.
> (>>> 6.2 "Carrying out settings" Page 17)

6.5 Manually configuring delay times

Precondition	■ The dispensing controller and nozzle have been prepared.
Procedure	1. In the main menu, select **Configuration** > **GlueTech**. 2. Select the **Anticipation Time** tab. 3. Configure the delay times. 4. Close the window. Respond to the request for confirmation asking whether the changes should be saved by pressing **Yes**.

Description

Fig. 6-4: "Anticipation Time" tab

> ℹ️ The delay times can also be determined automatically using the calibration routine (>>> 6.7 "Calibration routine" Page 22).

6.6 Configuring seam data sets

Precondition ■ The dispensing controller and nozzle have been prepared.

Procedure

1. In the main menu, select **Configuration** > **GlueTech**.
2. Select the **Path Data** tab.
3. Configure the seam data sets.
4. Close the window. Respond to the request for confirmation asking whether the changes should be saved by pressing **Yes**.

Description

Fig. 6-5: "Path Data" tab

Parameter	Description
Id	Data set number **1 … 20**
Prepressure	Prepressure of the material **0 … 100%**
Factor	Dynamic setpoint for the material/air **0 … 100%**
Offset	Static setpoint for the material/air **0 … 100%**
AnalogType	Reference speed for analog output ■ **TCP_SPEED**: Current speed (dynamic) ■ **TCP_INDEPENDENT**: Independent of the speed (static)
Comment	Comment

6.7 Calibration routine

Description

The KUKA.GlueTech calibration routine verifies various configuration values using a defined linear path. These can then be optimized and adapted. The program interacts with the user via dialogs.

The following configuration values are verified:

■ The TCP is tested at a reference point by means of reorientation (visual check).

■ The switching times of the nozzle are tested and can be manually corrected.

■ The delay times of the material flow are tested and can be manually corrected.

■ The delay times of the air flow are tested and can be manually corrected.

■ The reaction times after a jump in the analog output are tested and can be manually corrected.

■ The values of the following machine data are checked:

  ■ Path acceleration $ACC_MA.CP < 10

  ■ Swivel acceleration $ACC_MA.ORI1 < 1000

  ■ Rotational acceleration $ACC_MA.ORI2 < 1000

  ■ Reduction factor for path and orientation acceleration $RED_ACC_CPC > 3
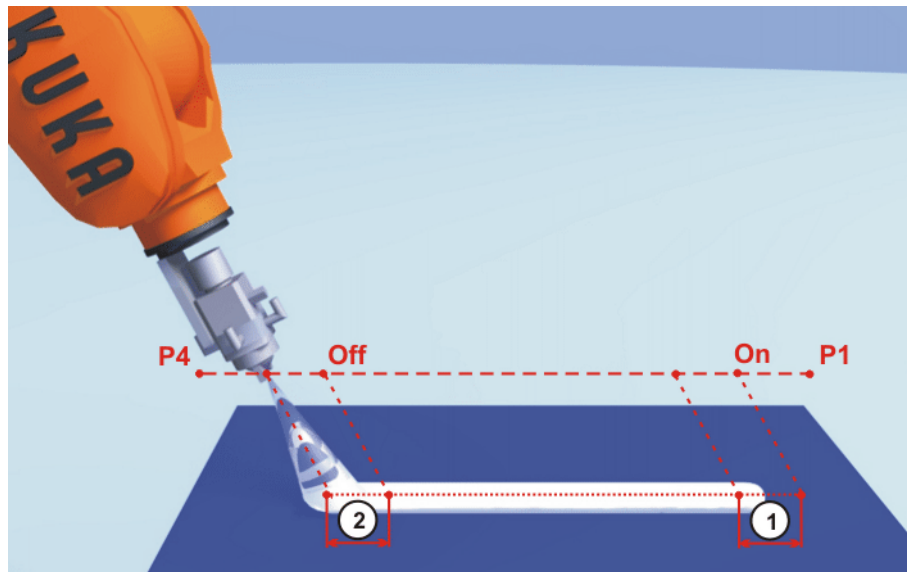
Fig. 6-6: Switching points and delay times during the dispensing process

1, 2   Delay time

Program

```
DEF CALIBRATE_EQUIPMENT( )

Do not edit - press START button

System program to install dispense equipment

---- Local Subroutines ----
    LIN StartPath  Vel= 0.8 m/s CalDat Tool[1] Base[0]
    LIN EndPath  Vel= 0.8 m/s CalDat Tool[1] Base[0]

END
```

⚠ **DANGER** The robot moves at the programmed velocity in T2 mode with 100% program override. Risk of injury and damage to property! Make sure that the robot cannot collide and that no persons are in the motion range of the robot.

Procedure

1. Teach the points StartPath and EndPath specified in the program at a distance of at least 400 mm in the calibration routine (Calibrate_Equipment.src).

   The calibration routine moves to the points in T2 mode with 10% program override.

2. Mark the switching points with a pen.

3. Click on **OK**. The calibration routine executes the path with 100% program override.

4. Check the switching points and correct them manually if necessary.

5. Save the data on the "Anticipation Time" tab (>>> 6.5 "Manually configuring delay times" Page 20).

6.7.1 Defining the path velocity

Precondition
- The field bus connection between the robot controller and the dispensing controller has been configured.
- The dispensing controller and nozzle have been prepared.
- The tool has been calibrated.
- The settings have been made (>>> 6.2 "Carrying out settings" Page 17).

Procedure
1. In the main menu, select **Start-up** > **GlueTech** > **Select calibration routine**. The program Calibrate_equipment is selected.
2. Press the Start key.
3. A query is displayed asking whether the default velocity should be used for the calibration process.
   - Click on **Yes** to initialize the path velocity at 0.4 m/s.
   - Click on **No** to select a different velocity.

6.7.2 Testing the TCP

Precondition
- The field bus connection between the robot controller and the dispensing controller has been configured.
- The dispensing controller and nozzle have been prepared.
- The tool has been calibrated.
- A reference position has been defined during tool calibration.
- The settings have been made (>>> 6.2 "Carrying out settings" Page 17).

Procedure
1. In the main menu, select **Start-up** > **GlueTech** > **Select calibration routine**. The program Calibrate_equipment is selected.
2. Start the program with the Start key.
3. Follow the program dialog.
4. Press the Start key twice.

Result
- Tool correct: the tool orients about the TCP and the position remains the same.
- Tool incorrect: the tool orients about the TCP but the position changes.

6.7.3 Determining the switching times of the nozzle (Gun On/Off)

Precondition
- The field bus connection between the robot controller and the dispensing controller has been configured.
- The dispensing controller and nozzle have been prepared.
- The tool has been calibrated.
- The settings have been made (>>> 6.2 "Carrying out settings" Page 17).

Tools required
- Pen for marking the switching points.

⚠ **DANGER** The robot moves at the programmed velocity in T2 mode with 100% program override. Risk of injury and damage to property! Make sure that the robot cannot collide and that no persons are in the motion range of the robot.

Procedure

1. In the main menu, select **Start-up** > **GlueTech** > **Select calibration routine**. The program Calibrate_equipment is selected.
2. Start the program with the Start key.
3. Follow the program dialog.
4. Press the Start key twice.

6.7.4 Determining the material / air flow (Eq. Delay)

Precondition

- The field bus connection between the robot controller and the dispensing controller has been configured.
- The dispensing controller and nozzle have been prepared.
- The tool has been calibrated.
- The settings have been made (>>> 6.2 "Carrying out settings" Page 17).

Tools required

- Pen for marking the switching points.

⚠ **DANGER** The robot moves at the programmed velocity in T2 mode with 100% program override. Risk of injury and damage to property! Make sure that the robot cannot collide and that no persons are in the motion range of the robot.

Procedure

1. In the main menu, select **Start-up** > **GlueTech** > **Select calibration routine**. The program Calibrate_equipment is selected.
2. Start the program with the Start key.
3. Follow the program dialog.
4. Press the Start key twice.

6.7.5 Determining the reaction time after a jump in the analog output (Ana. Switch)

Precondition

- The field bus connection between the robot controller and the dispensing controller has been configured.
- The dispensing controller and nozzle have been prepared.
- The tool has been calibrated.
- The settings have been made (>>> 6.2 "Carrying out settings" Page 17).

Tools required

- Pen for marking the switching points.

⚠ **DANGER** The robot moves at the programmed velocity in T2 mode with 100% program override. Risk of injury and damage to property! Make sure that the robot cannot collide and that no persons are in the motion range of the robot.

Procedure

1. In the main menu, select **Start-up** > **GlueTech** > **Select calibration routine**. The program Calibrate_equipment is selected.
2. Start the program with the Start key.
3. Follow the program dialog.
4. Press the Start key twice.

6.7.6 Verifying and determining all configuration values (All)

Precondition
- The field bus connection between the robot controller and the dispensing controller has been configured.
- The dispensing controller and nozzle have been prepared.
- The tool has been calibrated.
- A reference position has been defined during tool calibration.
- The settings have been made (>>> 6.2 "Carrying out settings" Page 17).

Tools required
- Pen for marking the switching points.

> **⚠ DANGER** The robot moves at the programmed velocity in T2 mode with 100% program override. Risk of injury and damage to property! Make sure that the robot cannot collide and that no persons are in the motion range of the robot.

Procedure
1. In the main menu, select **Start-up** > **GlueTech** > **Select calibration routine**. The program Calibrate_equipment is selected.
2. Start the program with the Start key.
3. Follow the program dialog.
4. Press the Start key twice.

7 Programming

7.1 Overview of GlueTech motion commands

Command	Description
GLUE ON LIN	LIN motion - open nozzle (>>> 7.1.1 "Inline form "GLUE ON LIN"" Page 27)
GLUE SWITCH LIN	LIN motion - switch parameters (>>> 7.1.2 "Inline form "GLUE SWITCH LIN"" Page 28)
GLUE OFF LIN	LIN motion - close nozzle (>>> 7.1.3 "Inline form "GLUE OFF LIN"" Page 29)
GLUE ON CIRC	CIRC motion - open nozzle (>>> 7.1.4 "Inline form "GLUE ON CIRC"" Page 30)
GLUE SWITCH CIRC	CIRC motion - switch parameters (>>> 7.1.5 "Inline form "GLUE SWITCH CIRC"" Page 31)
GLUE OFF CIRC	CIRC motion - close nozzle (>>> 7.1.6 "Inline form "GLUE OFF CIRC"" Page 32)
GLUE ON PTP	PTP motion - open nozzle (>>> 7.1.7 "Inline form "GLUE ON PTP"" Page 33)
GLUE OFF PTP	PTP motion - close nozzle (>>> 7.1.8 "Inline form "GLUE OFF PTP"" Page 34)

7.1.1 Inline form "GLUE ON LIN"

Description The command executes a LIN motion and opens the nozzle at the end point.

> **NOTICE** When programming motions, it must be ensured that the energy supply system is not wound up or damaged during program execution.

Precondition
- Program is selected or open.
- Operating mode T1

Procedure
1. Select the menu sequence **Commands** > **GlueTech** > **Gluing motion** > **GLUE ON LIN**.
2. Set the parameters in the inline form.
3. Press **Cmd OK**.
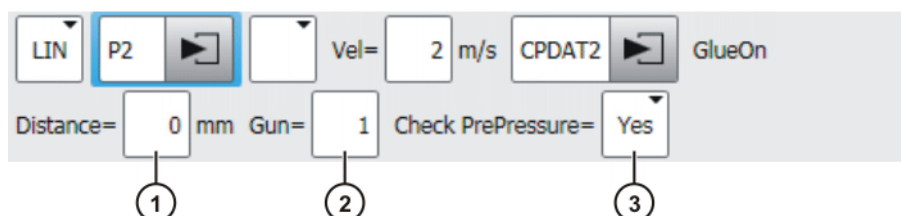
Fig. 7-1: Inline form "GLUE ON LIN"

Item	Description
1	Offset of the switch-on point. ■ **-200 … 200 mm**
2	Nozzle number ■ **1 … 4**
3	■ **Yes**: Before the nozzle is opened, a check is carried out to see if the dispenser has reached prepressure. ■ **No**: No check.

Buttons   The following buttons are available:

Button	Description
Cancel command	Closes the inline form without saving.
Switch instruction	■ **Only movement**: Opens the inline form for a LIN motion. ■ **Glue Switch**: Opens the inline form for switching the seam data set. ■ **Glue Off**: Opens the inline form for closing the nozzle.
Touch Up	Teaches a point.
Cmd OK	Closes the inline form and saves the settings.

7.1.2 Inline form "GLUE SWITCH LIN"

Description   The command executes a LIN motion and switches the seam data set at the end point.

> **NOTICE**   When programming motions, it must be ensured that the energy supply system is not wound up or damaged during program execution.

Precondition
■ Program is selected or open.
■ Operating mode T1

Procedure
1. Select the menu sequence **Commands** > **GlueTech** > **Gluing motion** > **GLUE SWITCH LIN**.
2. Set the parameters in the inline form.
3. Press **Cmd OK**.

Fig. 7-2: Inline form "GLUE SWITCH LIN"

Item	Description
1	Select the seam data set. ■ **1 … 20**
2	Offset of the switching point. ■ **-200 … 200 mm**
3	Select parameter board of dispensing controller. ■ **0 … 255**

Buttons   The following buttons are available:

Button	Description
Cancel command	Closes the inline form without saving.
Switch instruction	■ **Only movement**: Opens the inline form for a LIN motion. ■ **Glue On**: Opens the inline form for opening the nozzle. ■ **Glue Off**: Opens the inline form for closing the nozzle.
Touch Up	Teaches a point.
Cmd OK	Closes the inline form and saves the settings.

7.1.3   Inline form "GLUE OFF LIN"

Description   The command executes a LIN motion and closes the nozzle at the end point.

> **NOTICE**   When programming motions, it must be ensured that the energy supply system is not wound up or damaged during program execution.

Precondition   ■ Program is selected or open.
                     ■ Operating mode T1

Procedure   1. Select the menu sequence **Commands** > **GlueTech** > **Gluing motion** > **GLUE OFF LIN**.
                     2. Set the parameters in the inline form.
                     3. Press **Cmd OK**.
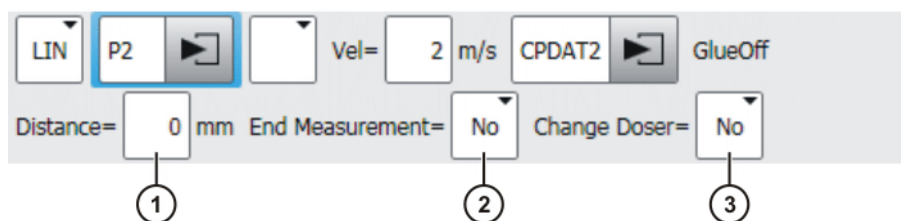
Fig. 7-3: Inline form "GLUE OFF LIN"

Item	Description
1	Offset of the switch-off point. ■ **-200 … 200 mm**

Item	Description
2	■ **Yes**: End measurement of material application. ■ **No**: Do not end measurement of material application.
3	■ **Yes**: Change dispenser. ■ **No**: Do not change dispenser.

Buttons The following buttons are available:

Button	Description
Cancel command	Closes the inline form without saving.
Switch instruction	■ **Only movement**: Opens the inline form for a LIN motion. ■ **Glue On**: Opens the inline form for opening the nozzle. ■ **Glue Switch**: Opens the inline form for switching the seam data set.
Touch Up	Teaches a point.
Cmd OK	Closes the inline form and saves the settings.

7.1.4 Inline form "GLUE ON CIRC"

Description The command executes a CIRC motion and opens the nozzle at the end point.

NOTICE	When programming motions, it must be ensured that the energy supply system is not wound up or damaged during program execution.

Precondition
■ Program is selected or open.
■ Operating mode T1

Procedure
1. Select the menu sequence **Commands** > **GlueTech** > **Gluing motion** > **GLUE ON CIRC**.
2. Set the parameters in the inline form.
3. Press **Cmd OK**.
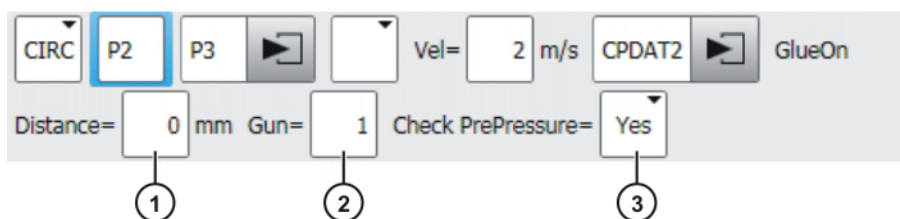
Fig. 7-4: Inline form "GLUE ON CIRC"

Item	Description
1	Offset of the switch-on point. ■ **-200 … 200 mm**

Item	Description
2	Nozzle number ■ **1 … 4**
3	■ **Yes**: Before the nozzle is opened, a check is carried out to see if the dispenser has reached prepressure. ■ **No**: No check.

Buttons   The following buttons are available:

Button	Description
Cancel command	Closes the inline form without saving.
Switch instruction	■ **Only movement**: Opens the inline form for a CIRC motion. ■ **Glue Switch**: Opens the inline form for switching the seam data set. ■ **Glue Off**: Opens the inline form for closing the nozzle.
Teach Aux	Teaches an auxiliary point.
Teach End	Teaches an end point.
Cmd OK	Closes the inline form and saves the settings.

7.1.5   Inline form "GLUE SWITCH CIRC"

Description   The command executes a CIRC motion and switches the seam data set at the end point.

> **NOTICE** When programming motions, it must be ensured that the energy supply system is not wound up or damaged during program execution.

Precondition   ■ Program is selected or open.
                     ■ Operating mode T1

Procedure   1. Select the menu sequence **Commands** > **GlueTech** > **Gluing motion** > **GLUE SWITCH CIRC**.
                     2. Set the parameters in the inline form.
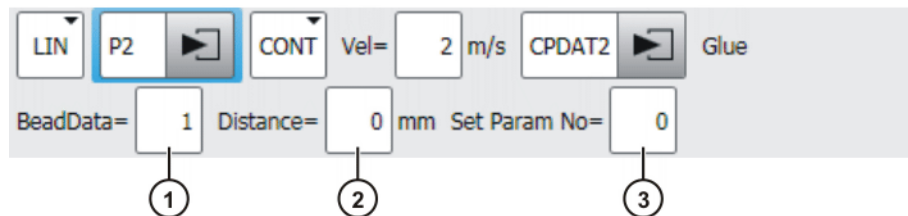   3. Press **Cmd OK**.
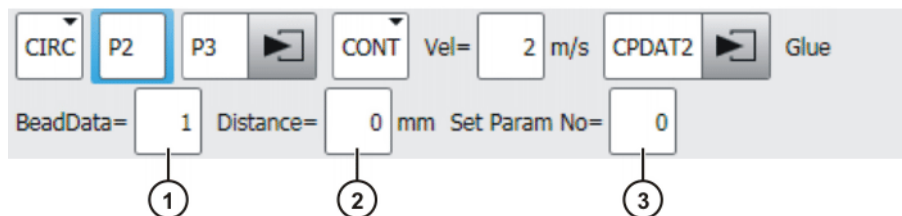
Fig. 7-5: Inline form "GLUE SWITCH CIRC"

Item	Description
1	Select the seam data set. ■ **1 … 20**
2	Offset of the switching point. ■ **-200 … 200 mm**
3	Select parameter board of dispensing controller. ■ **0 … 255**

Buttons   The following buttons are available:

Button	Description
Cancel command	Closes the inline form without saving.
Switch instruction	■ **Only movement**: Opens the inline form for a CIRC motion. ■ **Glue On**: Opens the inline form for opening the nozzle. ■ **Glue Off**: Opens the inline form for closing the nozzle.
Teach Aux	Teaches an auxiliary point.
Teach End	Teaches an end point.
Cmd OK	Closes the inline form and saves the settings.

7.1.6   Inline form "GLUE OFF CIRC"

Description   The command executes a CIRC motion and closes the nozzle at the end point.

> **NOTICE**   When programming motions, it must be ensured that the energy supply system is not wound up or damaged during program execution.

Precondition
- Program is selected or open.
- Operating mode T1

Procedure
1. Select the menu sequence **Commands** > **GlueTech** > **Gluing motion** > **GLUE OFF CIRC**.
2. Set the parameters in the inline form.
3. Press **Cmd OK**.
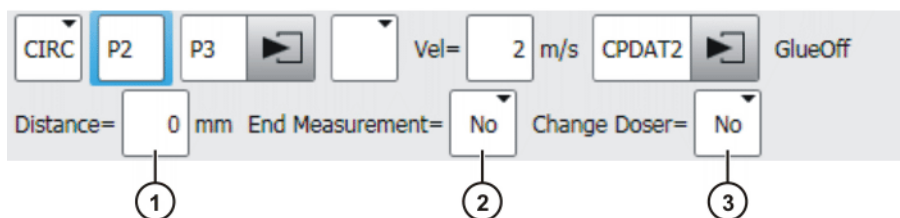
Fig. 7-6: Inline form "GLUE OFF CIRC"

Item	Description
1	Offset of the switch-off point. ■ **-200 … 200 mm**
2	■ **Yes**: End measurement of material application. ■ **No**: Do not end measurement of material application.
3	■ **Yes**: Change dispenser. ■ **No**: Do not change dispenser.

Buttons   The following buttons are available:

Button	Description
Cancel command	Closes the inline form without saving.
Switch instruction	■ **Only movement**: Opens the inline form for a CIRC motion. ■ **Glue On**: Opens the inline form for opening the nozzle. ■ **Glue Switch**: Opens the inline form for switching the seam data set.
Teach Aux	Teaches an auxiliary point.
Teach End	Teaches an end point.
Cmd OK	Closes the inline form and saves the settings.

7.1.7 Inline form "GLUE ON PTP"

Description   The command executes a PTP motion and opens the nozzle at the end point. The seam data sets are not taken into account in this command. The command can be used to compensate for tolerances on the component.

> **NOTICE** When programming motions, it must be ensured that the energy supply system is not wound up or damaged during program execution.

Precondition   ■ Program is selected or open.
                    ■ Operating mode T1

Procedure   1. Select the menu sequence **Commands** > **GlueTech** > **Gluing motion** > **GLUE ON PTP**.
                    2. Set the parameters in the inline form.
   3. Press **Cmd OK**.
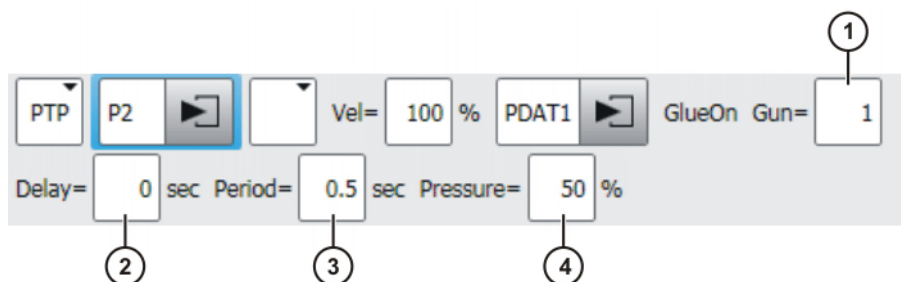
Fig. 7-7: Inline form "GLUE ON PTP"

Item	Description
1	Nozzle number ■ **1 … 4**
2	Switch-on point delay ■ **-0.1 … 1.0 s**
3	Time setpoint for opening the nozzle. The parameter is not taken into account with approximate positioning. ■ **0.1 … 5.0 s**
4	Pressure ■ **0 … 100 %** Default value: 50 %

Buttons   The following buttons are available:

Button	Description
Cancel command	Closes the inline form without saving.
Touch Up	Teaches a point.
Cmd OK	Closes the inline form and saves the settings.

7.1.8   Inline form "GLUE OFF PTP"

Description   The command executes a PTP motion and closes the nozzle at the end point.

> **NOTICE** When programming motions, it must be ensured that the energy supply system is not wound up or damaged during program execution.

Precondition   ■ Program is selected or open.
                     ■ Operating mode T1

Procedure   1. Select the menu sequence **Commands** > **GlueTech** > **Gluing motion** > **GLUE OFF PTP**.
                     2. Set the parameters in the inline form.
   3. Press **Cmd OK**.
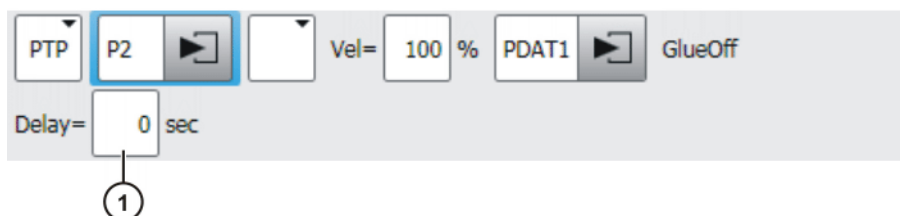
Fig. 7-8: Inline form "GLUE OFF PTP"

Item	Description
1	Switch-off point delay. ■ **-1.0 … 1.0 s**

Buttons   The following buttons are available:

Button	Description
Cancel command	Closes the inline form without saving.
Touch Up	Teaches a point.
Cmd OK	Closes the inline form and saves the settings.

7.2 Overview of GlueTech Spline motion commands

Command	Description
GLUE ON SPL	SPL motion - open nozzle (>>> 7.2.1 "Inline form "GLUE ON SPL"" Page 35)
GLUE SWITCH SPL	SPL motion - switch parameters (>>> 7.2.2 "Inline form "GLUE SWITCH SPL"" Page 36)
GLUE OFF SPL	SPL motion - close nozzle (>>> 7.2.3 "Inline form "GLUE OFF SPL"" Page 37)
GLUE ON SLIN	SLIN motion - open nozzle (>>> 7.2.4 "Inline form "GLUE ON SLIN"" Page 39)
GLUE SWITCH SLIN	SLIN motion - switch parameters (>>> 7.2.5 "Inline form "GLUE SWITCH SLIN"" Page 39)
GLUE OFF SLIN	SLIN motion - close nozzle (>>> 7.2.6 "Inline form "GLUE OFF SLIN"" Page 40)
GLUE ON SCIRC	SCIRC motion - open nozzle (>>> 7.2.7 "Inline form "GLUE ON SCIRC"" Page 41)
GLUE SWITCH SCIRC	SCIRC motion - switch parameters (>>> 7.2.8 "Inline form "GLUE SWITCH SCIRC"" Page 42)
GLUE OFF SCIRC	SCIRC motion - close nozzle (>>> 7.2.9 "Inline form "GLUE OFF SCIRC"" Page 43)

7.2.1 Inline form "GLUE ON SPL"

Description The command executes an SPL motion and opens the nozzle at the end point.

> **NOTICE** When programming motions, it must be ensured that the energy supply system is not wound up or damaged during program execution.

Precondition
- A program is selected.
- Operating mode T1
- The spline block fold is open.

Procedure
1. Move the TCP to the end point.
2. Position the cursor in the line after which the segment is to be inserted in the spline block.
3. Select the menu sequence **Commands** > **GlueTech** > **Gluing spline motion** > **GLUE ON SPL**.
4. Set the parameters in the inline form.
5. Press **Cmd OK**.
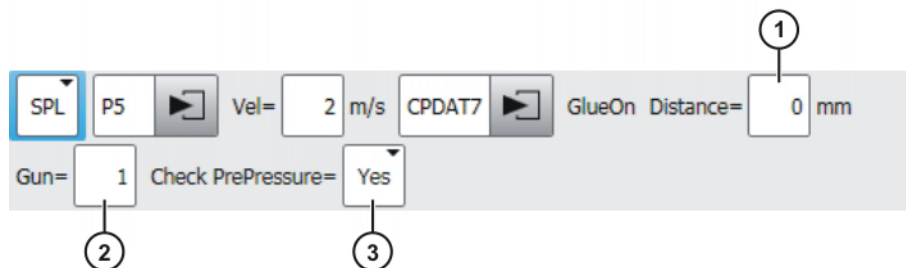
Fig. 7-9: Inline form "GLUE ON SPL"

Item	Description
1	Offset of the switch-on point. ■ **-200 … 200 mm**
2	Nozzle number ■ **1 … 4**
3	■ **Yes**: Before the nozzle is opened, a check is carried out to see if the dispenser has reached prepressure. ■ **No**: No check.

Buttons　　　The following buttons are available:

Button	Description
Cancel command	Closes the inline form without saving.
Switch parameter	■ **Velocity**: Shows and hides the "Velocity" box. ■ **Motion parameter**: Shows and hides the "Motion parameter" box.
Switch instruction	■ **Only movement**: Opens the inline form for an SPL motion. ■ **Glue Switch**: Opens the inline form for switching the seam data set. ■ **Glue Off**: Opens the inline form for closing the nozzle.
Touch Up	Teaches a point.
Cmd OK	Closes the inline form and saves the settings.

7.2.2　Inline form "GLUE SWITCH SPL"

Description　　　The command executes an SPL motion and switches the seam data set at the end point.

> **NOTICE**　When programming motions, it must be ensured that the energy supply system is not wound up or damaged during program execution.

Precondition
■ A program is selected.
■ Operating mode T1
■ The spline block fold is open.

Procedure   1. Move the TCP to the end point.

2. Position the cursor in the line after which the segment is to be inserted in the spline block.

3. Select the menu sequence **Commands** > **GlueTech** > **Gluing spline motion** > **GLUE SWITCH SPL**.

4. Set the parameters in the inline form.

5. Press **Cmd OK**.
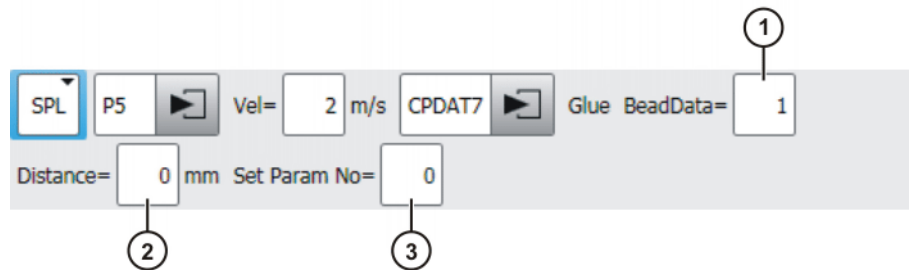
Fig. 7-10: Inline form "GLUE SWITCH SPL"

Item	Description
1	Select the seam data set. ■ **1 … 20**
2	Offset of the switching point. ■ **-200 … 200 mm**
3	Select parameter board of dispensing controller. ■ **0 … 255**

Buttons   The following buttons are available:

Button	Description
Cancel command	Closes the inline form without saving.
Switch parameter	■ **Velocity**: Shows and hides the "Velocity" box. ■ **Motion parameter**: Shows and hides the "Motion parameter" box.
Switch instruction	■ **Only movement**: Opens the inline form for an SPL motion. ■ **Glue On**: Opens the inline form for opening the nozzle. ■ **Glue Off**: Opens the inline form for closing the nozzle.
Touch Up	Teaches a point.
Cmd OK	Closes the inline form and saves the settings.

7.2.3   Inline form "GLUE OFF SPL"

Description   The command executes an SPL motion and closes the nozzle at the end point.

> **NOTICE**   When programming motions, it must be ensured that the energy supply system is not wound up or damaged during program execution.

Precondition
- A program is selected.
- Operating mode T1
- The spline block fold is open.

Procedure
1. Move the TCP to the end point.
2. Position the cursor in the line after which the segment is to be inserted in the spline block.
3. Select the menu sequence **Commands** > **GlueTech** > **Gluing spline motion** > **GLUE OFF SPL**.
4. Set the parameters in the inline form.
5. Press **Cmd OK**.
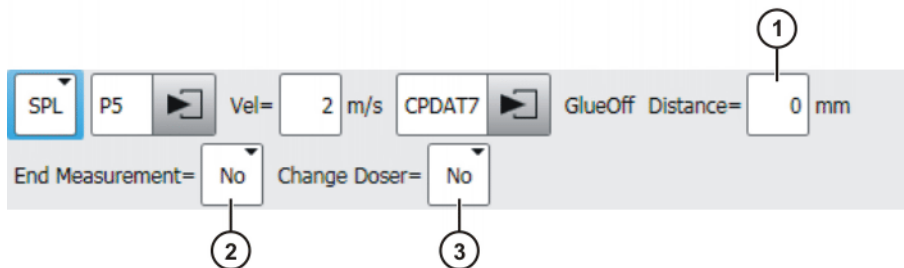
Fig. 7-11: Inline form "GLUE OFF SPL"

Item	Description
1	Offset of the switch-off point. - **-200 … 200 mm**
2	- **Yes**: End measurement of material application. - **No**: Do not end measurement of material application.
3	- **Yes**: Change dispenser. - **No**: Do not change dispenser.

Buttons

The following buttons are available:

Button	Description
Cancel command	Closes the inline form without saving.
Switch parameter	- **Velocity**: Shows and hides the "Velocity" box. - **Motion parameter**: Shows and hides the "Motion parameter" box.
Switch instruction	- **Only movement**: Opens the inline form for an SPL motion. - **Glue On**: Opens the inline form for opening the nozzle. - **Glue Switch**: Opens the inline form for switching the seam data set.
Touch Up	Teaches a point.
Cmd OK	Closes the inline form and saves the settings.

7.2.4 Inline form "GLUE ON SLIN"

Description   The command executes an SLIN motion and opens the nozzle at the end point.

> **NOTICE**   When programming motions, it must be ensured that the energy supply system is not wound up or damaged during program execution.

Precondition
- Program is selected or open.
- Operating mode T1

Procedure
1. Select the menu sequence **Commands** > **GlueTech** > **Gluing spline motion** > **GLUE ON SLIN**.
2. Set the parameters in the inline form.
3. Press **Cmd OK**.

Fig. 7-12: Inline form "GLUE ON SLIN"

Item	Description
1	Offset of the switch-on point. ■ **-200 … 200 mm**
2	Nozzle number ■ **1 … 4**
3	■ **Yes**: Before the nozzle is opened, a check is carried out to see if the dispenser has reached prepressure. ■ **No**: No check.

Buttons   The following buttons are available:

Button	Description
Cancel command	Closes the inline form without saving.
Switch instruction	■ **Only movement**: Opens the inline form for an SLIN motion. ■ **Glue Switch**: Opens the inline form for switching the seam data set. ■ **Glue Off**: Opens the inline form for closing the nozzle.
Touch Up	Teaches a point.
Cmd OK	Closes the inline form and saves the settings.

7.2.5 Inline form "GLUE SWITCH SLIN"

Description   The command executes an SLIN motion and switches the seam data set at the end point.

> **NOTICE** When programming motions, it must be ensured that the energy supply system is not wound up or damaged during program execution.

Precondition
- Program is selected or open.
- Operating mode T1

Procedure
1. Select the menu sequence **Commands** > **GlueTech** > **Gluing spline motion** > **GLUE SWITCH SLIN**.
2. Set the parameters in the inline form.
3. Press **Cmd OK**.

Fig. 7-13: Inline form "GLUE SWITCH SLIN"

Item	Description
1	Select the seam data set. ■ **1 … 20**
2	Offset of the switching point. ■ **-200 … 200 mm**
3	Select parameter board of dispensing controller. ■ **0 … 255**

Buttons   The following buttons are available:

Button	Description
Cancel command	Closes the inline form without saving.
Switch instruction	■ **Only movement**: Opens the inline form for an SLIN motion. ■ **Glue On**: Opens the inline form for opening the nozzle. ■ **Glue Off**: Opens the inline form for closing the nozzle.
Touch Up	Teaches a point.
Cmd OK	Closes the inline form and saves the settings.

7.2.6 Inline form "GLUE OFF SLIN"

Description   The command executes an SLIN motion and closes the nozzle at the end point.

> **NOTICE** When programming motions, it must be ensured that the energy supply system is not wound up or damaged during program execution.

Precondition ■ Program is selected or open.

■ Operating mode T1

Procedure 1. Select the menu sequence **Commands** > **GlueTech** > **Gluing spline motion** > **GLUE OFF SLIN**.

2. Set the parameters in the inline form.

3. Press **Cmd OK**.
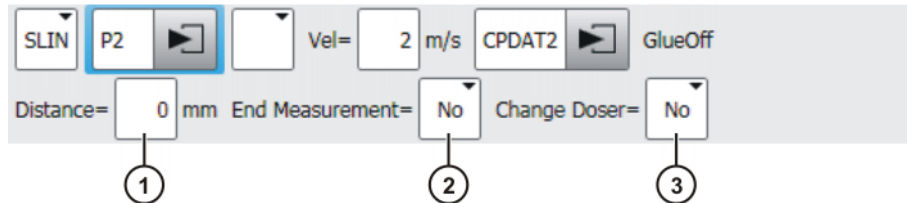
Fig. 7-14: Inline form "GLUE OFF SLIN"

Item	Description
1	Offset of the switch-off point. ■ **-200 … 200 mm**
2	■ **Yes**: End measurement of material application. ■ **No**: Do not end measurement of material application.
3	■ **Yes**: Change dispenser. ■ **No**: Do not change dispenser.

Buttons The following buttons are available:

Button	Description
Cancel command	Closes the inline form without saving.
Switch instruction	■ **Only movement**: Opens the inline form for an SLIN motion. ■ **Glue On**: Opens the inline form for opening the nozzle. ■ **Glue Switch**: Opens the inline form for switching the seam data set.
Touch Up	Teaches a point.
Cmd OK	Closes the inline form and saves the settings.

7.2.7 Inline form "GLUE ON SCIRC"

Description The command executes an SCIRC motion and opens the nozzle at the end point.

> **NOTICE** When programming motions, it must be ensured that the energy supply system is not wound up or damaged during program execution.

Precondition ■ Program is selected or open.

■ Operating mode T1

Procedure 1. Select the menu sequence **Commands** > **GlueTech** > **Gluing spline motion** > **GLUE ON SCIRC**.
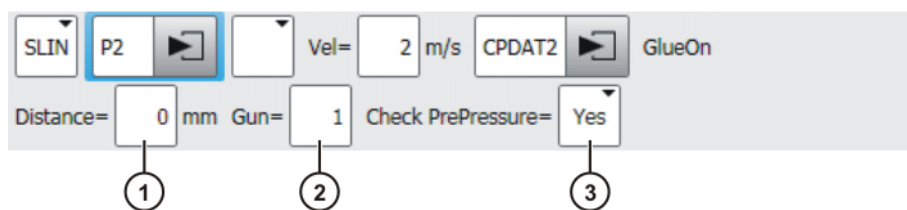
2. Set the parameters in the inline form.

3. Press **Cmd OK**.
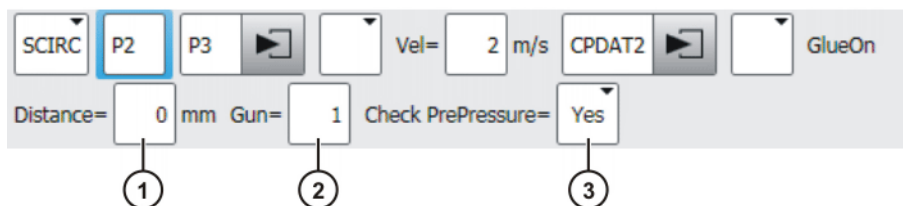
Fig. 7-15: Inline form "GLUE ON SCIRC"

Item	Description
1	Offset of the switch-on point.
	■ **-200 … 200 mm**
2	Nozzle number
	■ **1 … 4**
3	■ **Yes**: Before the nozzle is opened, a check is carried out to see if the dispenser has reached prepressure.
	■ **No**: No check.

Buttons   The following buttons are available:

Button	Description
Cancel command	Closes the inline form without saving.
Switch instruction	■ **Only movement**: Opens the inline form for an SCIRC motion.
	■ **Glue Switch**: Opens the inline form for switching the seam data set.
	■ **Glue Off**: Opens the inline form for closing the nozzle.
Teach Aux	Teaches an auxiliary point.
Teach End	Teaches an end point.
Cmd OK	Closes the inline form and saves the settings.

7.2.8 Inline form "GLUE SWITCH SCIRC"

Description   The command executes an SCIRC motion and switches the seam data set at the end point.

> **NOTICE** When programming motions, it must be ensured that the energy supply system is not wound up or damaged during program execution.

Precondition
- Program is selected or open.
- Operating mode T1

Procedure
1. Select the menu sequence **Commands** > **GlueTech** > **Gluing spline motion** > **GLUE SWITCH SCIRC**.
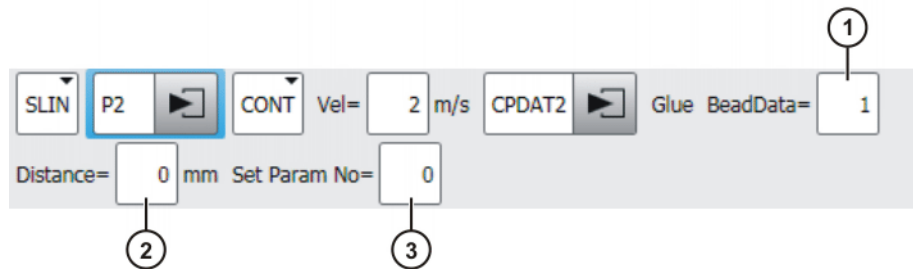2. Set the parameters in the inline form.
3. Press **Cmd OK**.
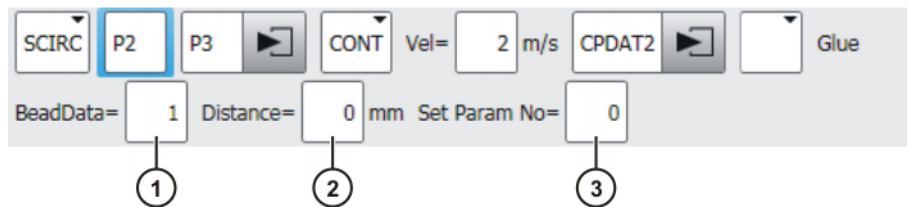
Fig. 7-16: Inline form "GLUE SWITCH SCIRC"

Item	Description
1	Select the seam data set. ■ **1 … 20**
2	Offset of the switching point. ■ **-200 … 200 mm**
3	Select parameter board of dispensing controller. ■ **0 … 255**

Buttons   The following buttons are available:

Button	Description
Cancel command	Closes the inline form without saving.
Switch instruction	■ **Only movement**: Opens the inline form for an SCIRC motion. ■ **Glue On**: Opens the inline form for opening the nozzle. ■ **Glue Off**: Opens the inline form for closing the nozzle.
Teach Aux	Teaches an auxiliary point.
Teach End	Teaches an end point.
Cmd OK	Closes the inline form and saves the settings.

7.2.9 Inline form "GLUE OFF SCIRC"

Description   The command executes an SCIRC motion and closes the nozzle at the end point.

> **NOTICE** When programming motions, it must be ensured that the energy supply system is not wound up or damaged during program execution.

Precondition   ■ Program is selected or open.

■ Operating mode T1

Procedure   1. Select the menu sequence **Commands** > **GlueTech** > **Gluing spline motion** > **GLUE OFF SCIRC**.

2. Set the parameters in the inline form.

3. Press **Cmd OK**.
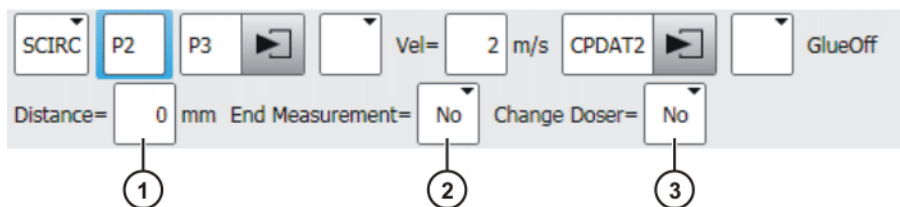
Fig. 7-17: Inline form "GLUE OFF SCIRC"

Item	Description
1	Offset of the switch-off point. ■ **-200 … 200 mm**
2	■ **Yes**: End measurement of material application. ■ **No**: Do not end measurement of material application.
3	■ **Yes**: Change dispenser. ■ **No**: Do not change dispenser.

Buttons   The following buttons are available:

Button	Description
Cancel command	Closes the inline form without saving.
Switch instruction	■ **Only movement**: Opens the inline form for an SCIRC motion. ■ **Glue On**: Opens the inline form for opening the nozzle. ■ **Glue Switch**: Opens the inline form for switching the seam data set.
Teach Aux	Teaches an auxiliary point.
Teach End	Teaches an end point.
Cmd OK	Closes the inline form and saves the settings.

7.3 Overview of GlueTech dispensing instructions

Command	Description
Init system	Initializes the dispensing controller. (>>> 7.3.1 "Inline form "Init system"" Page 45)
Set program number	Sends the program number to the dispensing controller. (>>> 7.3.2 "Inline form "Set program number"" Page 46)
Set motion parameter	Specific motion parameters are set. (>>> 7.3.3 "Inline form "Set motion parameter"" Page 47)
Dispense complete	Communication between robot controller and dispensing controller is reset. (>>> 7.3.4 "Inline form "Dispense complete"" Page 48)
Reload doser	Dispenser is filled. (>>> 7.3.5 "Inline form "Reload doser"" Page 49)
Error check	A check is made to establish whether any errors have occurred during the application. (>>> 7.3.6 "Inline form "Error check"" Page 50)

7.3.1 Inline form "Init system"

Description   The command initializes the communication between the robot controller and the dispensing controller and contains the following functions:

- The prepressure, factor, offset and delay for the analog output are calculated from the seam data.
- The analog output is started.
- The program number for the dispensing controller is sent.
- The handshake for the program number is checked.

  Precondition: the option "Program number mirroring" is configured.
- The output "Start" is set, causing the dispensing controller to be brought up to prepressure.
- The input "Ready" is polled.
- The input "Doser full" is polled. If the signal is not set, the dispenser is filled.

  Precondition: the option "With doser" is configured.
- The purge timer or "Purge" input is polled, then the program "Move to Purge" is started.

Procedure   1. Select the menu sequence **Commands** > **GlueTech** > **Dispensing instruction** > **Init system**.
2. Set the parameters in the inline form.
3. Press **Cmd OK**.
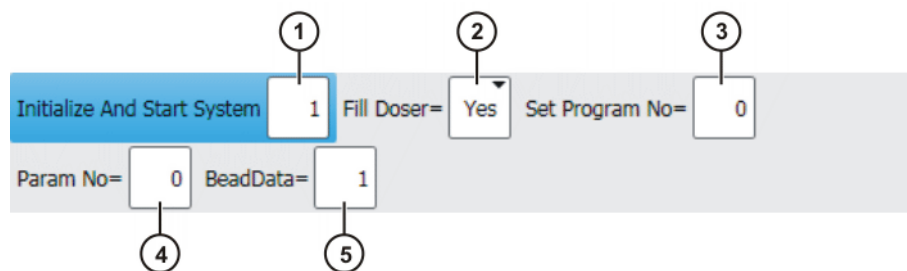
Fig. 7-18: Inline form "Init system"

Item	Description
1	Select a dispensing controller. ■ **1 … 3**
2	■ **Yes**: The dispenser is filled during initialization. ■ **No**: The dispenser is not filled.
3	Select the program number of the dispensing controller. ■ **0 … 255**
4	Select the parameter board of the dispensing controller. ■ **0 … 255**
5	Select the seam data set. ■ **1 … 20**

Buttons   The following buttons are available:

Button	Description
Cancel command	Closes the inline form without saving.
Dispensing instruction	■ **Init system**: Opens the inline form "Init system". ■ **Set program number**: Opens the inline form "Set program number". ■ **Set motion parameter**: Opens the inline form "Set motion parameter". ■ **Dispense complete**: Opens the inline form "Dispense complete". ■ **Reload doser**: Opens the inline form "Reload doser". ■ **Error check**: Opens the inline form "Error check".
Purge instruction	■ **Purge gun**: Opens the inline form "Purge gun". ■ **Monitoring purge gun**: Opens the inline form "Monitoring purge gun". ■ **Enable purge**: Opens the inline form "Enable purge".
Cmd OK	Closes the inline form and saves the settings.

7.3.2 Inline form "Set program number"

Description The command contains the following functions:

■ Set the program number for the dispensing controller.
■ Wait for the dispensing controller to mirror the set program number correctly.

Precondition ■ The option "Program number mirroring" has been configured.

Procedure
1. Select the menu sequence **Commands** > **GlueTech** > **Dispensing instruction** > **Set program number**.
2. Set the parameters in the inline form.
3. Press **Cmd OK**.
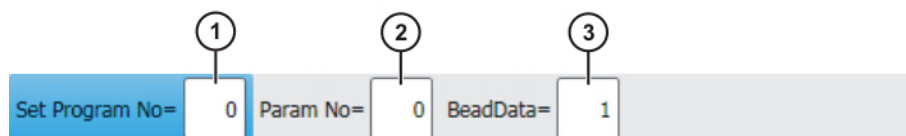
Fig. 7-19: Inline form "Set program number"

Item	Description
1	Select the program number of the dispensing controller. ■ **1 … 255**

Item	Description
2	Select the parameter board of the dispensing controller. ■ **1 … 255**
3	Select the seam data set. ■ **1 … 20**

Buttons The following buttons are available:

Button	Description
Cancel command	Closes the inline form without saving.
Dispensing instruction	■ **Init system**: Opens the inline form "Init system". ■ **Set program number**: Opens the inline form "Set program number". ■ **Set motion parameter**: Opens the inline form "Set motion parameter". ■ **Dispense complete**: Opens the inline form "Dispense complete". ■ **Reload doser**: Opens the inline form "Reload doser". ■ **Error check**: Opens the inline form "Error check".
Purge instruction	■ **Purge gun**: Opens the inline form "Purge gun". ■ **Monitoring purge gun**: Opens the inline form "Monitoring purge gun". ■ **Enable purge**: Opens the inline form "Enable purge".
Cmd OK	Closes the inline form and saves the settings.

7.3.3 Inline form "Set motion parameter"

Description The command increases the following parameters:

■ Swivel velocity

■ Rotational velocity

■ CP acceleration

■ Swivel acceleration

■ Rotational acceleration

> **NOTICE** The braking ramps are very steep with this command; this can damage the mechanical parts of the robot in the long term. Reset the command before an exact positioning point.

> ⚠ Depending on the programmed path and the parameters set, the command can lead to acceleration errors. Correct the path or parameters.

Procedure

1. Select the menu sequence **Commands** > **GlueTech** > **Dispensing in-struction** > **Set motion parameter**.
2. Set the parameters in the inline form.
3. Press **Cmd OK**.
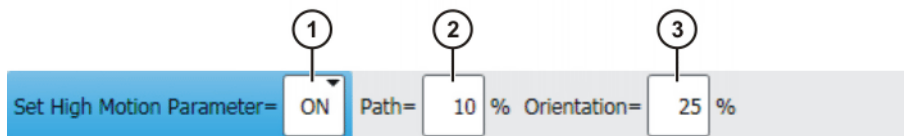
Fig. 7-20: Inline form "Set motion parameters"

Item	Description
1	■ **ON**: Activate motion parameters. ■ **OFF**: Deactivate motion parameters.
2	Increase path acceleration. ■ **0 … 100 %**
3	Increase the swivel and rotational velocity and the swivel and rota-tional acceleration. ■ **0 … 100 %**

Buttons

The following buttons are available:

Button	Description
Cancel command	Closes the inline form without sav-ing.
Dispensing instruction	■ **Init system**: Opens the inline form "Init system". ■ **Set program number**: Opens the inline form "Set program number". ■ **Set motion parameter**: Opens the inline form "Set motion pa-rameter". ■ **Dispense complete**: Opens the inline form "Dispense com-plete". ■ **Reload doser**: Opens the inline form "Reload doser". ■ **Error check**: Opens the inline form "Error check".
Purge instruction	■ **Purge gun**: Opens the inline form "Purge gun". ■ **Monitoring purge gun**: Opens the inline form "Monitoring purge gun". ■ **Enable purge**: Opens the inline form "Enable purge".
Cmd OK	Closes the inline form and saves the settings.

7.3.4 Inline form "Dispense complete"

Description

The command resets the communication between the robot controller and the dispensing controller.

	The command contains trigger instructions and must therefore be placed before a motion command.

Procedure

1. Select the menu sequence **Commands** > **GlueTech** > **Dispensing instruction** > **Dispense complete**.
2. Set the parameters in the inline form.
3. Press **Cmd OK**.

Process Complete

Fig. 7-21: Inline form "Dispense complete"

Buttons

The following buttons are available:

Button	Description
Cancel command	Closes the inline form without saving.
Dispensing instruction	■ **Init system**: Opens the inline form "Init system". ■ **Set program number**: Opens the inline form "Set program number". ■ **Set motion parameter**: Opens the inline form "Set motion parameter". ■ **Dispense complete**: Opens the inline form "Dispense complete". ■ **Reload doser**: Opens the inline form "Reload doser". ■ **Error check**: Opens the inline form "Error check".
Purge instruction	■ **Purge gun**: Opens the inline form "Purge gun". ■ **Monitoring purge gun**: Opens the inline form "Monitoring purge gun". ■ **Enable purge**: Opens the inline form "Enable purge".
Cmd OK	Closes the inline form and saves the settings.

7.3.5 Inline form "Reload doser"

Description

The command is used for filling the dispenser.

	The command contains trigger instructions and must therefore be placed before a motion command.

Procedure

1. Select the menu sequence **Commands** > **GlueTech** > **Dispensing instruction** > **Reload doser**.
2. Set the parameters in the inline form.
3. Press **Cmd OK**.

Fig. 7-22: Inline form "Reload doser"

Item	Description
1	Termination condition for the filling operation. ■ **TIME**: Termination after the programmed time has elapsed. ■ **FULL**: Termination when the input "Doser full" is detected.
2	Time after which the filling operation is terminated. Only active if **TIME** was selected.
3	■ **TRUE**: Waits until the dispenser is full. ■ **FALSE**: Does not wait.

Buttons The following buttons are available:

Button	Description
Cancel command	Closes the inline form without saving.
Dispensing instruction	■ **Init system**: Opens the inline form "Init system". ■ **Set program number**: Opens the inline form "Set program number". ■ **Set motion parameter**: Opens the inline form "Set motion parameter". ■ **Dispense complete**: Opens the inline form "Dispense complete". ■ **Reload doser**: Opens the inline form "Reload doser". ■ **Error check**: Opens the inline form "Error check".
Purge instruction	■ **Purge gun**: Opens the inline form "Purge gun". ■ **Monitoring purge gun**: Opens the inline form "Monitoring purge gun". ■ **Enable purge**: Opens the inline form "Enable purge".
Cmd OK	Closes the inline form and saves the settings.

7.3.6 Inline form "Error check"

Description This command checks whether any errors have occurred during the application.

It checks whether the following inputs are set:

■ Fault application
■ Error material threshold high

- Error material threshold low
- Error mixture above tolerance
- Error mixture below tolerance

A message is generated if one of these inputs is set.

The following output is set:

- Fault to PLC (only if the option has been configured)

Procedure
1. Select the menu sequence **Commands** > **GlueTech** > **Dispensing in-struction** > **Error check**.
2. Set the parameters in the inline form.
3. Press **Cmd OK**.
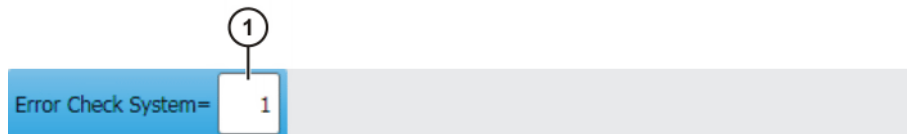
Fig. 7-23: Inline form "Error check"

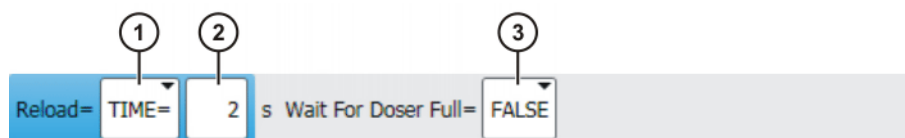| Item	Description
1	Select a dispensing controller. - **1 … 3**

Buttons
The following buttons are available:

Button	Description
Cancel command	Closes the inline form without saving.
Dispensing instruction	- **Init system**: Opens the inline form "Init system". - **Set program number**: Opens the inline form "Set program number". - **Set motion parameter**: Opens the inline form "Set motion parameter". - **Dispense complete**: Opens the inline form "Dispense complete". - **Reload doser**: Opens the inline form "Reload doser". - **Error check**: Opens the inline form "Error check".
Purge instruction	- **Purge gun**: Opens the inline form "Purge gun". - **Monitoring purge gun**: Opens the inline form "Monitoring purge gun". - **Enable purge**: Opens the inline form "Enable purge".
Cmd OK	Closes the inline form and saves the settings.

7.4 Overview of GlueTech purge instructions

Command	Description
Purge gun	Nozzle is purged. (>>> 7.4.1 "Inline form "Purge gun"" Page 52)
Monitoring purge gun	Purging of nozzle is monitored. (>>> 7.4.2 "Inline form "Monitoring purge gun"" Page 53)
Enable purge	The enable signal for purging of the nozzle is set. (>>> 7.4.3 "Inline form "Enable purge"" Page 54)

7.4.1 Inline form "Purge gun"

Description   The command purges the nozzle.

Procedure   1. Select the menu sequence **Commands** > **GlueTech** > **Purge instruction** > **Purge gun**.
2. Set the parameters in the inline form.
3. Press **Cmd OK**.
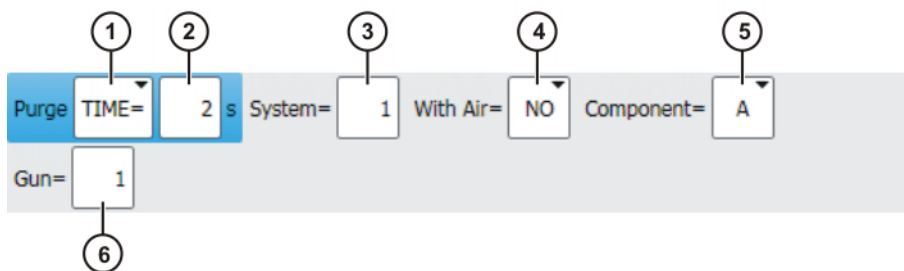
Fig. 7-24: Inline form "Purge gun"

Item	Description
1	Defines the procedure for purging. ■ **COMPLETE**: Purging is ended when the input "Purge passed" is set. ■ **TIME**: Purging is terminated after the programmed time has elapsed.
2	Time after which the purging operation is terminated. Only active if **TIME** was selected. ■ **0 … 10 s**
3	Select a dispensing controller. ■ **1 … 3**
4	■ **YES**: Activate clearing. ■ **NO**: Deactivate clearing.
5	Select adhesive components. ■ **A** ■ **B** ■ **A+B** **Note**: If a different material is used instead of an adhesive, select the component **A**.
6	Select the nozzle. ■ **1 … 4**

Buttons   The following buttons are available:

Button	Description
Cancel command	Closes the inline form without saving.
Dispensing instruction	■ **Init system**: Opens the inline form "Init system". ■ **Set program number**: Opens the inline form "Set program number". ■ **Set motion parameter**: Opens the inline form "Set motion parameter". ■ **Dispense complete**: Opens the inline form "Dispense complete". ■ **Reload doser**: Opens the inline form "Reload doser". ■ **Error check**: Opens the inline form "Error check".
Purge instruction	■ **Purge gun**: Opens the inline form "Purge gun". ■ **Monitoring purge gun**: Opens the inline form "Monitoring purge gun". ■ **Enable purge**: Opens the inline form "Enable purge".
Cmd OK	Closes the inline form and saves the settings.

7.4.2 Inline form "Monitoring purge gun"

Description   The command starts monitoring of the time between 2 purge operations. Monitoring is restarted every time the command is called. When the specified time has elapsed, the purge routine is called automatically.

Procedure   1. Select the menu sequence **Commands** > **GlueTech** > **Purge instruction** > **Monitoring purge gun**.
2. Set the parameters in the inline form.
3. Press **Cmd OK**.
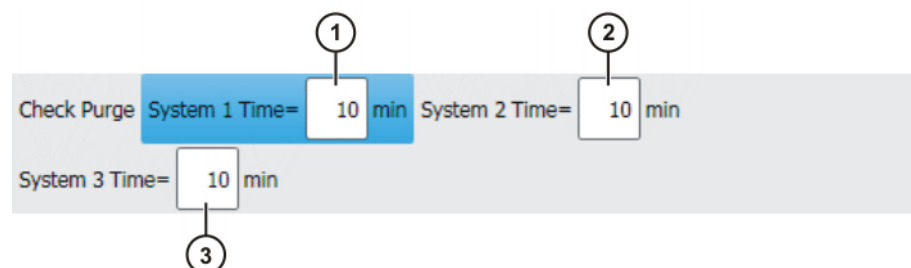
Fig. 7-25: Inline form "Monitoring purge gun"

Item	Description
1	Maximum time without material flow between 2 purge operations for dispensing controller 1. ■ **0 … 10 min**
2	Maximum time without material flow between 2 purge operations for dispensing controller 2. ■ **0 … 10 min**
3	Maximum time without material flow between 2 purge operations for dispensing controller 3. ■ **0 … 10 min**

Buttons The following buttons are available:

Button	Description
Cancel command	Closes the inline form without saving.
Dispensing instruction	■ **Init system**: Opens the inline form "Init system". ■ **Set program number**: Opens the inline form "Set program number". ■ **Set motion parameter**: Opens the inline form "Set motion parameter". ■ **Dispense complete**: Opens the inline form "Dispense complete". ■ **Reload doser**: Opens the inline form "Reload doser". ■ **Error check**: Opens the inline form "Error check".
Purge instruction	■ **Purge gun**: Opens the inline form "Purge gun". ■ **Monitoring purge gun**: Opens the inline form "Monitoring purge gun". ■ **Enable purge**: Opens the inline form "Enable purge".
Cmd OK	Closes the inline form and saves the settings.

7.4.3 Inline form "Enable purge"

Description The command sets the enable signal for purging once the robot has reached the purge position.

Procedure
1. Select the menu sequence **Commands** > **GlueTech** > **Purge instruction** > **Enable purge**.
2. Set the parameters in the inline form.
3. Press **Cmd OK**.
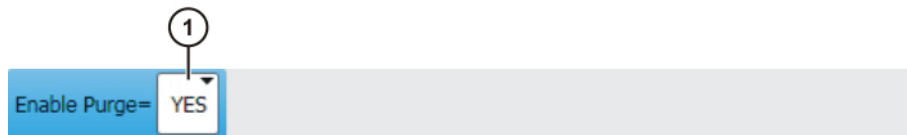
Fig. 7-26: Inline form "Enable purge"

Item	Description
1	■ **YES**: Activate Enable purge. ■ **NO**: Deactivate Enable purge.

Buttons

The following buttons are available:

Button	Description
Cancel command	Closes the inline form without saving.
Dispensing instruction	■ **Init system**: Opens the inline form "Init system". ■ **Set program number**: Opens the inline form "Set program number". ■ **Set motion parameter**: Opens the inline form "Set motion parameter". ■ **Dispense complete**: Opens the inline form "Dispense complete". ■ **Reload doser**: Opens the inline form "Reload doser". ■ **Error check**: Opens the inline form "Error check".
Purge instruction	■ **Purge gun**: Opens the inline form "Purge gun". ■ **Monitoring purge gun**: Opens the inline form "Monitoring purge gun". ■ **Enable purge**: Opens the inline form "Enable purge".
Cmd OK	Closes the inline form and saves the settings.

7.5 Teaching the purge position (MoveToPurge)

Description

The MoveToPurge program is used to move the robot to the purge position. The program is called by the input 'diSLxPurgeRequest' or after the timer 'iTimerSystemx'. In the program, the path to the purge position must be taught for each dispensing controller and the command "Purge gun" must be entered. The program consists of:

■ SRC file

■ DAT file

The program is called via the inline form **Init system** ().

Program

```
DEF  MoveToPurge()
...
  CASE 1 ; system number 1
  ;Teach here the movement to purge position for system number 1

  ;Program here the purge command

  ;Teach here the movement to home position for system number 1

  CASE 2 ; system number 2
  ;Teach here the movement to purge position for system number 2

  ;Program here the purge command

  ;Teach here the movement to home position for system number 2

  CASE 3 ; system number 3
  ;Teach here the movement to purge position for system number 3

  ;Program here the purge command

  ;Teach here the movement to home position for system number 3

  DEFAULT
  ENDSWITCH
...
```

8 Example programs

8.1 Example program for dispensing

Program

```
1  DEF GLUEING()
2  INI
3  Initialize And Start System 1 Fill Doser=Yes
   Set Program No=2 Param No=1 BeadData=1
4  Check Purge System 1 Time=10 min System 2 Time=10 min
   System 3 Time=10 min
5  PTP HOME Vel= 100 % DEFAULT
6  PTP P1 CONT Vel=100 % PDAT1 Tool[1] Base[0]
7  Set High Motion Parameter=ON Path=10 % Orientation=25 %
8  LIN P3 CONT Vel=0.5 m/s CPDAT2 Tool[1] Base[0]
9  LIN P4 CONT Vel=0.5 m/s CPDAT3 GlueOn Distance=-10 mm
   Gun=1 Check PrePressure=Yes Tool[1] Base[0]
10 LIN P5 CONT Vel=0.5 m/s CPDAT4 Tool[1] Base[0]
11 LIN P6 CONT Vel=0.5 m/s CPDAT5 Tool[1] Base[0]
12 LIN P7 CONT Vel=0.5 m/s CPDAT6 Tool[1] Base[0]
13 LIN P8 CONT Vel=0.5 m/s CPDAT7 GlueOff Distance=-5 mm
   End Measurement=Yes Change Doser=No Tool[1] Base[0]
14 LIN P9 CONT Vel=0.5 m/s CPDAT8 Tool[1] Base[0]
15 Set High Motion Parameter=OFF
16 PTP P10 CONT Vel=100 % PDAT2 Tool[1] Base[0]
17 Process Complete
18 PTP HOME Vel= 100 % DEFAULT
19 Error Check System=1
20 END
```

Description

Line	Description
3	Init system (>>> 7.3.1 "Inline form "Init system"" Page 45)
4	Monitoring purge gun (>>> 7.4.2 "Inline form "Monitoring purge gun"" Page 53)
7	Set motion parameter (>>> 7.3.3 "Inline form "Set motion parameter"" Page 47)
9	LIN with Open nozzle (>>> 7.1.1 "Inline form "GLUE ON LIN"" Page 27)
13	LIN with Close nozzle (>>> 7.1.3 "Inline form "GLUE OFF LIN"" Page 29)
15	Reset motion parameter (>>> 7.3.3 "Inline form "Set motion parameter"" Page 47)
17	Terminate dispensing process (>>> 7.3.4 "Inline form "Dispense complete"" Page 48)
19	Error check (>>> 7.3.6 "Inline form "Error check"" Page 50)

8.2 Example program for dispensing with spline motion

Program

```
1  DEF GlueingSpline()
2  INI
3  Initialize And Start System 1 Fill Doser=Yes
   Set Program No=2 Param No=1 BeadData=1
4  Check Purge System 1 Time=10 min System 2 Time=10 min
   System 3 Time 10=min
5  PTP HOME Vel= 100 % DEFAULT
6  PTP P1 Vel=100 % PDAT1 Tool[1] Base[0]
7  SPLINE S1 Vel=0.5 m/s CPDAT1 Tool[1] Base[0]
8  SPL P2 GlueOn Distance=-10 mm Gun=1 Check PrePressure=Yes
9  SPL P3
10 SPL P4
11 SPL P5
12 SPL P6 GlueOff Distance=-5 mm End Measurement=Yes Change Doser=No
13 PTP P7 Vel=100 % PDAT2 Tool[1] Base[0]
14 PTP P8 CONT Vel=100 % PDAT3 Tool[1] Base[0]
15 Process Complete
16 PTP HOME  Vel= 100 % DEFAULT
17 Error Check System=1
18 END
```

Description

Line	Description
3	Init system (>>> 7.3.1 "Inline form "Init system"" Page 45)
4	Monitoring purge gun (>>> 7.4.2 "Inline form "Monitoring purge gun"" Page 53)
7	Spline block
8	SPL with Open nozzle (>>> 7.1.1 "Inline form "GLUE ON LIN"" Page 27)
12	SPL with Close nozzle (>>> 7.1.3 "Inline form "GLUE OFF LIN"" Page 29)
15	Terminate dispensing process (>>> 7.3.4 "Inline form "Dispense complete"" Page 48)
17	Error check (>>> 7.3.6 "Inline form "Error check"" Page 50)

9 System variables

9.1 I/O interface variables

Description   The signals listed refer to the first dispensing controller. The first number in the signal names refers to the number of the dispensing controller (1, 2, 3). The signals of the second and third dispensing controllers are therefore not listed.

- ao: analog output
- ai: analog input
- do: digital output
- di: digital input

Signal name	Meaning	I/O
aoSL1MatFlow	Setpoint for material	$ANOUT[1]
aoSL1BeadShp	Setpoint for air spray	$ANOUT[2]
aoSLPrePressure	Default value for pre-pressure	$ANOUT[3]
doSL1SystemOn	System on	$OUT[999]
doSL1EnablePump	Enable pump	$OUT[999]
doSL1EnableHeating	Enable heating	$OUT[999]
doSL1EnableHydraulic	Enable hydraulic system	$OUT[999]
doSL1EnableTimeHeating	Enable heating timer	$OUT[999]
doSL1AutoExternal	Automatic external control	$OUT[999]
doSL1HandExternal	Manual external control	$OUT[999]
doSL1FinishMeasure	End application cycle	$OUT[999]
doSL1FaultAckn	Collective fault acknowledgement	$OUT[999]
doSL1SingleFaultAckn	Individual fault acknowledgement	$OUT[999]
doSL1HeatingUnitReset	Reset heating timer	$OUT[999]
doSL1HydraulicReset	Reset hydraulic timer	$OUT[999]
doSL1PumpReset	Reset pump timer	$OUT[999]
doSL1CirculationReset	Reset circulation timer	$OUT[999]
doSL1WithoutMaterial	Enable material flow	$OUT[999]
doSL1StartSys	Start application cycle	$OUT[999]
doSL1Gun1On	Open nozzle 1	$OUT[999]
doSL1PistSelect1	Open nozzle 2	$OUT[999]
doSL1PistSelect2	Open nozzle 3	$OUT[999]
doSL1PistSelect3	Open nozzle 4	$OUT[999]
doSL1ReloadMeter	Fill doser	$OUT[999]
doSL1CirculationOn	Circulation on	$OUT[999]
doSL1DoserChange	Change dispenser	$OUT[999]
doSL1AirOn	Start swirl/E swirl	$OUT[999]
doSL1Purge	Purge	$OUT[999]
doSL1PurgeA	Purge component A	$OUT[999]
doSL1PurgeB	Purge component B	$OUT[999]
doSL1PrePurge	Pre-purge to pre-pressure acquisition	$OUT[999]

Signal name	Meaning	I/O
doSL1TriggerPrePressure	Trigger to pre-pressure acquisition	$OUT[999]
doSL1PurgeEnable	Decontrol purging	$OUT[999]
doSL1EnableDocking	Enable filling station	$OUT[999]
doSL1EnableReference	Enable reference run	$OUT[999]
doSL1EnableMixerChange	Enable mixer change	$OUT[999]
doSL1OneComonentAppl	Single-component operation	$OUT[999]
doSL1SwirlLineMove	E swirl characteristic run	$OUT[999]
doSL1SwirlCoolingAir	E swirl cooling air	$OUT[999]
doSL1PressDischarge	Depressurize	$OUT[999]
doSL1ProgNo	Program number bit 0	$OUT[999] TO $OUT[999]
doSL1ParamNo	Parameter number set bit 0	$OUT[999] TO $OUT[999]
doSL1FaultToPLC	Fault to PLC	$OUT[999]
doSL1ErrorNoToPLC	Fault number to PLC bit 0	$OUT[999] TO $OUT[999]
doSL1ReturnValueToPLC	Return value to PLC bit 0	$OUT[999] TO $OUT[999]
doSL1ReturnValueValid	Valid return value to PLC	$OUT[999]
diSL1PrePressOk	Ready for application of material	$IN[1026]
diSL1Ready	Enable external control	$IN[1026]
diSL1DispOk	Material application OK	$IN[1026]
diSL1Doser1PrePressOk	Dispenser 1 has reached pre-pressure	$IN[1026]
diSL1Doser2PrePressOk	Dispenser 2 has reached pre-pressure	$IN[1026]
diSL1ToggleBit	Toggle bit (system live)	$IN[1026]
diSL1Doser1Full	Dispenser 1 full	$IN[1026]
diSL1Doser2Full	Dispenser 2 full	$IN[1026]
diSL1Doser1EmptyLimit	Dispenser 1 has reached empty limit	$IN[1026]
diSL1Doser2EmptyLimit	Dispenser 2 has reached empty limit	$IN[1026]
diSL1MeasurePassed	Application cycle ended	$IN[1026]
diSL1DoserSingleMode	Dispenser in standalone mode	$IN[1026]
diSL1DoserChangeAckn	Dispenser changed	$IN[1026]
diSL1ReloadRequest	Fill dispenser request	$IN[1026]
diSL1PurgeRequest	Purge request	$IN[1026]
diSL1PrePurgeRequest	Pre-pressure acquisition request	$IN[1026]
diSL1PumpIsON	Pump ready	$IN[1026]
diSL1HeatingStartPhase	Heating in warm-up phase	$IN[1026]
diSL1HeatingIsOn	Heating temperature reached	$IN[1026]

KUKA

Signal name	Meaning	I/O
diSL1HeatingTimerActive	Heating timer active	$IN[1026]
diSL1HydraulicIsStartPhase	Hydraulic system in start-up phase	$IN[1026]
diSL1HydraulicIsOn	Hydraulic working pressure reached	$IN[1026]
diSL1MaterialEnabled	Material flow enabled	$IN[1026]
diSL1Barrel1RestAmount	Barrel 1 amount remaining < 10%	$IN[1026]
diSL1Barrel2RestAmount	Barrel 2 amount remaining < 10%	$IN[1026]
diSL1Barrel3RestAmount	Barrel 3 amount remaining < 10%	$IN[1026]
diSL1Barrel4RestAmount	Barrel 4 amount remaining < 10%	$IN[1026]
diSL1BarrelEmpty	Barrel empty	$IN[1026]
diSL1BarrelChangeActive	Barrel change active	$IN[1026]
diSL1ReferenceRequest	Reference run request	$IN[1026]
diSL1LeaveFillingStation	Enable leave filling station	$IN[1026]
diSL1PurgeActive	Purge active / 2-component purge	$IN[1026]
diSL1PurgeAActive	Purge active, component A	$IN[1026]
diSL1PurgeBActive	Purge active, component B	$IN[1026]
diSL1AInMixer	Component 1 in mixer	$IN[1026]
diSL1BInMixer	Component 2 in mixer	$IN[1026]
diSL1ABInMixer	Components 1 and 2 in mixer	$IN[1026]
diSL1PurgePassed	Purge ready	$IN[1026]
diSL1Handshake	Handshake	$IN[1026]
diSL1OneComponentActive	Single-component operation active	$IN[1026]
diSL1MixerChangeRequest	Mixer change request	$IN[1026]
diSL1MixerChangeAckn	Mixer change ended	$IN[1026]
diSL1CirculationRequest	Circulation request	$IN[1026]
diSL1CirculationActive	Circulation active	$IN[1026]
diSL1SwirlReady	E swirl motor ready	$IN[1026]
diSL1SwirlSpeedOk	E swirl speed OK	$IN[1026]
diSL1MixtureUndefined	Fault: two-component mixture undefined	$IN[1026]
diSL1FaultServo	Servo fault	$IN[1026]
diSL1FaultApplication	Fault application	$IN[1026]
diSL1FaultPump	Pump fault	$IN[1026]
diSL1FaultHeating	Heating fault	$IN[1026]
diSL1FaultHydraulic	Hydraulic fault	$IN[1026]
diSL1FaultFillingStation	Filling station fault	$IN[1026]
diSL1MatHigh	Material upper limit fault	$IN[1026]
diSL1MatLow	Error material threshold high	$IN[1026]

Signal name	Meaning	I/O
diSL1MixtureHigh	Error mixture above toler-ance	$IN[1026]
diSL1MixtureLow	Error mixture below toler-ance	$IN[1026]
diSL1SystemNo	System bit	$IN[1026] TO $IN[1026]
diSL1DoserNo	Dispenser no.	$IN[1026]
diSL1Fault	Fault that cannot be acknowledged	$IN[1026]
diSL1Warning	Warning message	$IN[1026]
diSL1AccumulationError	Accumulation error	$IN[1026]
diSL1ErrorNo	Error bit	$IN[1026] TO $IN[1026]
diSL1ProgReceived	Program acknowledge-ment bit	$IN[1026] TO $IN[1026]
diSL1ParamReceived	Parameter set acknowl-edgement bit	$IN[1026] TO $IN[1026]
diSL1MaterialReturnValue	Material quantity return value	$IN[1026] TO $IN[1026]
diSL1DryByPLC	With/without material from extern	$IN[1026]
diSL1PressDischargeReq	Pressure discharge request	$IN[1026]
diSL1QuitByPLC	Error handling (fault acknowledgement by PLC)	$IN[1026]
diSL1ReturnValueAckn	Material return value acknowledgement	$IN[1026]
diSL1MeasurementActive	Measurement cycle active	$IN[1026]

10   Messages

%1 is a placeholder which is substituted in the message by the number of the dispensing system.

Message	Cause	Remedy
Dispensing system %1 not ready	Input "Decontrol for extern" is not set or incorrectly configured.	Check configuration (input number, I/O range).
		If the configuration is correct: Check the dispensing system.
No signal PREPRESSURE OK by dispensing system %1	Input "Reached prepressure" is not set or incorrectly configured.	Check configuration (input number, I/O range).
		Check configuration (input number, I/O range).
Fault controller dispensing system %1	The following inputs are set or incorrectly configured: ■ Fault application ■ Material upper limit fault ■ Error material threshold high ■ Error mixture above tolerance ■ Error mixture below tolerance	Check configuration (input number, I/O range).
		If the configuration is correct: Acknowledge error on the dispensing controller.
Doser dispensing system %1 will be filled	The dispenser is being filled because there is not enough dispensing material left for the whole path.	Wait until the dispenser is full before the path is executed.
Dispensing system %1: error material threshold high	Input "Error material threshold high" is not set or incorrectly configured.	Check configuration (input number, I/O range).
		If the configuration is correct: Acknowledge error on the dispensing controller.
Dispensing system %1: error material threshold low	Input "Error material threshold low" is not set or incorrectly configured.	Check configuration (input number, I/O range).
		If the configuration is correct: Acknowledge error on the dispensing controller.
Variable MATERIALFACTOR is still initialized with the default value zero	The component is still initialized with the default value 0.	Initialize the component with the desired value.
Variable AIRFACTOR is still initialized with the default value zero	The component is still initialized with the default value 0.	Initialize the component with the desired value.
Periphery system %1 not ready	The following inputs are not set: ■ Pump ready ■ Heating temperature reached ■ Hydraulic working pressure reached	Check configuration (input number, I/O range).
		If the configuration is correct: Check the dispensing system.

Message	Cause	Remedy
Dispensing system %1: error mixture above tolerance	Input "Error mixture above tolerance" is not set or incorrectly configured.	Check configuration (input number, I/O range).
		If the configuration is correct: Acknowledge error on the dispensing controller.
Dispensing system %1: error mixture below tolerance	Input "Error mixture below tolerance" is not set or incorrectly configured.	Check configuration (input number, I/O range).
		If the configuration is correct: Acknowledge error on the dispensing controller.
Submit interpreter stopped or deselected	The submit interpreter is not active.	Start/select the submit interpreter.
Group fault controller dispensing system %1	Input "Accumulation error" is set.	Check configuration (input number, I/O range).
		If the configuration is correct: Acknowledge error on the dispensing controller.
Dispensing system %1: E-Swirl motor not ready or rotation speed not OK	Input "E-Swirl motor ready" is not set.	Check configuration (input number, I/O range).
		If the configuration is correct: Check the dispensing system.
Where the gluing process should be continued?	The nozzle was closed during the application due to a fault.	Answer the dialog: ■ **GlueOn**: Continue on the next seam. ■ **BCO**: Continue on the same path as soon as the nozzle is back in position.
You have GlueOn selected. Gun will be opened at the beginning of the next seam	The message "Where the gluing process should be continued" was answered with GlueOn.	-
You have BCO selected. Gun will be opened reaching BCO	The message "Where the gluing process should be continued" was answered with SAK.	-

11 KUKA Service

11.1 Requesting support

Introduction   The KUKA Roboter GmbH documentation offers information on operation and provides assistance with troubleshooting. For further assistance, please contact your local KUKA subsidiary.

Information   The following information is required for processing a support request:

- Model and serial number of the robot
- Model and serial number of the controller
- Model and serial number of the linear unit (if applicable)
- Version of the KUKA System Software
- Optional software or modifications
- Archive of the software
  For KUKA System Software V8: instead of a conventional archive, generate the special data package for fault analysis (via **KrcDiag**).
- Application used
- Any external axes used
- Description of the problem, duration and frequency of the fault

11.2 KUKA Customer Support

Availability   KUKA Customer Support is available in many countries. Please do not hesitate to contact us if you have any questions.

Argentina   Ruben Costantini S.A. (Agency)
Luis Angel Huergo 13 20
Parque Industrial
2400 San Francisco (CBA)
Argentina
Tel. +54 3564 421033
Fax +54 3564 428877
ventas@costantini-sa.com

Australia   Headland Machinery Pty. Ltd.
Victoria (Head Office & Showroom)
95 Highbury Road
Burwood
Victoria 31 25
Australia
Tel. +61 3 9244-3500
Fax +61 3 9244-3501
vic@headland.com.au
www.headland.com.au

Belgium   KUKA Automatisering + Robots N.V.
                 Centrum Zuid 1031
                 3530 Houthalen
                 Belgium
                 Tel. +32 11 516160
                 Fax +32 11 526794
                 info@kuka.be
                 www.kuka.be

Brazil   KUKA Roboter do Brasil Ltda.
                 Avenida Franz Liszt, 80
                 Parque Novo Mundo
                 Jd. Guançã
                 CEP 02151 900 São Paulo
                 SP Brazil
                 Tel. +55 11 69844900
                 Fax +55 11 62017883
                 info@kuka-roboter.com.br

Chile   Robotec S.A. (Agency)
                 Santiago de Chile
                 Chile
                 Tel. +56 2 331-5951
                 Fax +56 2 331-5952
                 robotec@robotec.cl
                 www.robotec.cl

China   KUKA Automation Equipment (Shanghai) Co., Ltd.
                 Songjiang Industrial Zone
                 No. 388 Minshen Road
                 201612 Shanghai
                 China
                 Tel. +86 21 6787-1808
                 Fax +86 21 6787-1805
                 info@kuka-sha.com.cn
                 www.kuka.cn

Germany   KUKA Roboter GmbH
                 Zugspitzstr. 140
                 86165 Augsburg
                 Germany
                 Tel. +49 821 797-4000
                 Fax +49 821 797-1616
                 info@kuka-roboter.de
                 www.kuka-roboter.de

KUKA

France	KUKA Automatisme + Robotique SAS
	Techvallée
	6, Avenue du Parc
	91140 Villebon S/Yvette
	France
	Tel. +33 1 6931660-0
	Fax +33 1 6931660-1
	commercial@kuka.fr
	www.kuka.fr
India	KUKA Robotics India Pvt. Ltd.
	Office Number-7, German Centre,
	Level 12, Building No. - 9B
	DLF Cyber City Phase III
	122 002 Gurgaon
	Haryana
	India
	Tel. +91 124 4635774
	Fax +91 124 4635773
	info@kuka.in
	www.kuka.in
Italy	KUKA Roboter Italia S.p.A.
	Via Pavia 9/a - int.6
	10098 Rivoli (TO)
	Italy
	Tel. +39 011 959-5013
	Fax +39 011 959-5141
	kuka@kuka.it
	www.kuka.it
Japan	KUKA Robotics Japan K.K.
	Daiba Garden City Building 1F
	2-3-5 Daiba, Minato-ku
	Tokyo
	135-0091
	Japan
	Tel. +81 3 6380-7311
	Fax +81 3 6380-7312
	info@kuka.co.jp
Korea	KUKA Robotics Korea Co. Ltd.
	RIT Center 306, Gyeonggi Technopark
	1271-11 Sa 3-dong, Sangnok-gu
	Ansan City, Gyeonggi Do
	426-901
	Korea
	Tel. +82 31 501-1451
	Fax +82 31 501-1461
	info@kukakorea.com

Malaysia	KUKA Robot Automation Sdn Bhd
	South East Asia Regional Office
	No. 24, Jalan TPP 1/10
	Taman Industri Puchong
	47100 Puchong
	Selangor
	Malaysia
	Tel. +60 3 8061-0613 or -0614
	Fax +60 3 8061-7386
	info@kuka.com.my
Mexico	KUKA de Mexico S. de R.L. de C.V.
	Rio San Joaquin #339, Local 5
	Colonia Pensil Sur
	C.P. 11490 Mexico D.F.
	Mexico
	Tel. +52 55 5203-8407
	Fax +52 55 5203-8148
	info@kuka.com.mx
Norway	KUKA Sveiseanlegg + Roboter
	Bryggeveien 9
	2821 Gjövik
	Norway
	Tel. +47 61 133422
	Fax +47 61 186200
	geir.ulsrud@kuka.no
Austria	KUKA Roboter Austria GmbH
	Vertriebsbüro Österreich
	Regensburger Strasse 9/1
	4020 Linz
	Austria
	Tel. +43 732 784752
	Fax +43 732 793880
	office@kuka-roboter.at
	www.kuka-roboter.at
Poland	KUKA Roboter Austria GmbH
	Spółka z ograniczoną odpowiedzialnością
	Oddział w Polsce
	Ul. Porcelanowa 10
	40-246 Katowice
	Poland
	Tel. +48 327 30 32 13 or -14
	Fax +48 327 30 32 26
	ServicePL@kuka-roboter.de

Portugal	KUKA Sistemas de Automatización S.A.
	Rua do Alto da Guerra n° 50
	Armazém 04
	2910 011 Setúbal
	Portugal
	Tel. +351 265 729780
	Fax +351 265 729782
	kuka@mail.telepac.pt

Russia	OOO KUKA Robotics Rus
	Webnaja ul. 8A
	107143 Moskau
	Russia
	Tel. +7 495 781-31-20
	Fax +7 495 781-31-19
	kuka-robotics.ru

Sweden	KUKA Svetsanläggningar + Robotar AB
	A. Odhners gata 15
	421 30 Västra Frölunda
	Sweden
	Tel. +46 31 7266-200
	Fax +46 31 7266-201
	info@kuka.se

Switzerland	KUKA Roboter Schweiz AG
	Industriestr. 9
	5432 Neuenhof
	Switzerland
	Tel. +41 44 74490-90
	Fax +41 44 74490-91
	info@kuka-roboter.ch
	www.kuka-roboter.ch

Spain	KUKA Robots IBÉRICA, S.A.
	Pol. Industrial
	Torrent de la Pastera
	Carrer del Bages s/n
	08800 Vilanova i la Geltrú (Barcelona)
	Spain
	Tel. +34 93 8142-353
	Fax +34 93 8142-950
	Comercial@kuka-e.com
	www.kuka-e.com

South Africa	Jendamark Automation LTD (Agency)
	76a York Road
	North End
	6000 Port Elizabeth
	South Africa
	Tel. +27 41 391 4700
	Fax +27 41 373 3869
	www.jendamark.co.za
Taiwan	KUKA Robot Automation Taiwan Co., Ltd.
	No. 249 Pujong Road
	Jungli City, Taoyuan County 320
	Taiwan, R. O. C.
	Tel. +886 3 4331988
	Fax +886 3 4331948
	info@kuka.com.tw
	www.kuka.com.tw
Thailand	KUKA Robot Automation (M)SdnBhd
	Thailand Office
	c/o Maccall System Co. Ltd.
	49/9-10 Soi Kingkaew 30 Kingkaew Road
	Tt. Rachatheva, A. Bangpli
	Samutprakarn
	10540 Thailand
	Tel. +66 2 7502737
	Fax +66 2 6612355
	atika@ji-net.com
	www.kuka-roboter.de
Czech Republic	KUKA Roboter Austria GmbH
	Organisation Tschechien und Slowakei
	Sezemická 2757/2
	193 00 Praha
	Horní Počernice
	Czech Republic
	Tel. +420 22 62 12 27 2
	Fax +420 22 62 12 27 0
	support@kuka.cz
Hungary	KUKA Robotics Hungaria Kft.
	Fö út 140
	2335 Taksony
	Hungary
	Tel. +36 24 501609
	Fax +36 24 477031
	info@kuka-robotics.hu

KUKA

USA   KUKA Robotics Corp.
                        22500 Key Drive
                        Clinton Township
                        48036
                        Michigan
                        USA
                        Tel. +1 866 8735852
                        Fax +1 586 5692087
                        info@kukarobotics.com
                        www.kukarobotics.com

UK   KUKA Automation + Robotics
                        Hereward Rise
                        Halesowen
                        B62 8AN
                        UK
                        Tel. +44 121 585-0800
                        Fax +44 121 585-0900
                        sales@kuka.co.uk

Index