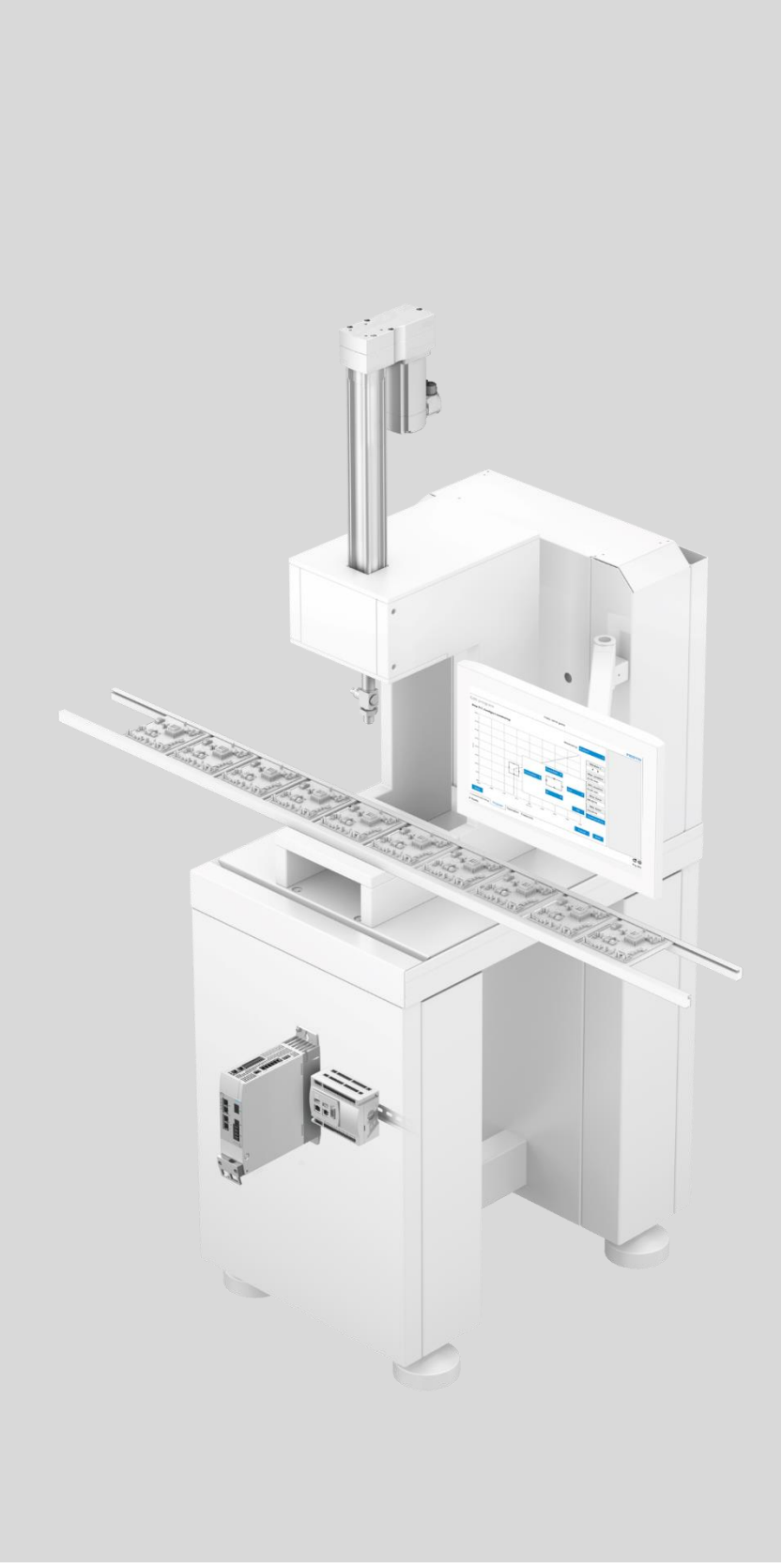
# Servo press kit

# YJKP



FESTO

**Description**

WebHelp

de 2023-04d

EtherCAT®, EtherNet/IP®, MODBUS®, OPC UA® are registered trademarks of the respective brand owner in certain countries.

# Table of Contents


**1 About this document 1**
1.1 Referenced documents 1
1.1.1 Range of application and certifications 1
1.1.2 Further information 1
1.2 Version information 1
1.3 Service 1

**2 Safety 2**
2.1 Designated use 2
2.2 Foreseeable misuse 2
2.3 Qualification of personnel 2

**3 System overview 3**
3.1 Components of the servo press kit 3

**4 User software (WebVisu) 4**
4.1 Commissioning 6
4.1.1 Configure hardware 6
4.1.2 Homing 7
4.1.3 Adjust force sensor 8
4.1.4 Logging 9
4.1.5 System settings 11
4.2 Program 12
4.2.1 Configure sequence 13
4.2.2 Trace/load reference curves 18
4.2.3 Configure monitoring operation 20
4.2.4 Save program 22
4.3 Operation 23
4.3.2 Single-step mode 25
4.3.3 Termination of the press process 25
4.4 Diagnosis 26
4.4.1 Process diagnosis 26
4.4.2 Device diagnosis 27
4.4.3 Interface diagnosis 28
4.5 Moving and jogging 29
4.5.1 Tare 30

**5 Appendix 31**
5.1 Evaluation methods 31
5.1.1 Windowing 32
5.1.2 Threshold 33
5.1.3 Envelope 34
5.2 Variables 35
5.3 Inputs and outputs 36
5.4 Legend for messages 37
5.5 Basic units 51

# 1 About this document

## 1.1 Referenced documents



All available documents for the product ➔ www.festo.com/pk.

The complete documentation for the servo press kit comprises the following documents:

| Document | Contents |
|---|---|
| Servo press kit YJKP | Instructions: Assembly, installation, commissioning and interfaces |
| Controller CECC-X-M1 | Description: Configuration and parameterisation with CODESYS<br>Brief description: Interfaces |
| Motor controller CMMT | Description: Operating modes, functions, interfaces<br>Instructions: Assembly, installation and commissioning |
| Servo motor EMMT | Operating instructions: Assembly, installation, commissioning and interfaces |
| Electric cylinder ESBF-BS | Operating instructions: Installation and commissioning |
| Sensor SKDA | Operating instructions: Range of application and conditions of use |
| Axial kit EAMM-A | Assembly instructions |
| Parallel kit EAMM-U | |
| Motor cable NEBM | |
| Encoder cable NEBM | |
| Connecting cable NEBU, NEBC | |

Table: Documentation for the servo press kit

### 1.1.1 Range of application and certifications



The range of application and certifications of the individual kit components are described in separate documents ➔ Referenced documents.

### 1.1.2 Further information

- Accessories ➔ www.festo.com/catalogue
- Spare parts ➔ www.festo.com/spareparts
- Sample applications in application notes ➔ www.festo.com/sp

## 1.2 Version information

This online Help refers to the following versions:

- Controller (press controller) CECC-X-M1-YS-L3 or CECC-X-M1-YS-L4 (Advanced version) ➔ Firmware version 3.8.14
- User software (WebVisu) GSAY (Advanced version) ➔ Software version 2.1.3
- Motor controller CMMT ➔ Firmware version 32.0.9.9

## 1.3 Service

Contact your regional Festo contact partner if you have any technical questions ➔ www.festo.com.

# 2 Safety

## 2.1 Designated use

The user software described in this documentation is used for configuring and visualising a joining process. It is also used to display and evaluate trace data from the most recent joining operations.

The user software runs on the press controller CECC-X-M1-YS and can be displayed and operated on any platform using a web browser.

## 2.2 Foreseeable misuse

– Violation of the system limits through incorrect parameterisation of the press process functions.

## 2.3 Qualification of personnel

Only qualified personnel may carry out installation, commissioning, servicing and removal of the product.

The personnel must be familiar with the installation of mechatronic systems.

# 3 System overview

## 3.1 Components of the servo press kit

| Component | Type |
|---|---|
| Press controller | CECC-X-M1-YS-L3<br>CECC-X-M1-YS-L4 (advanced version) |
| Motor controller | CMMT |
| Servo motor | EMMT |
| Electric cylinder | ESBF-BS |
| Axial kit | EAMM-A |
| Parallel kit | EAMM-U |
| Sensor | SKDA |
| Motor cable | NEBM |
| Encoder cable | NEBM |
| Connecting cable | NEBU, NEBC |
| Memory card | microSD card to industry standard, 32 GB |

Table: Components of the servo press kit

# 4 User software (WebVisu)

The user software for configuring and parameterising press programs is implemented on the press controller CECC-X-M1-YS as a web application (WebVisu). The corresponding user interface can be displayed and operated using a web browser on a personal computer/tablet.

**Prerequisites**

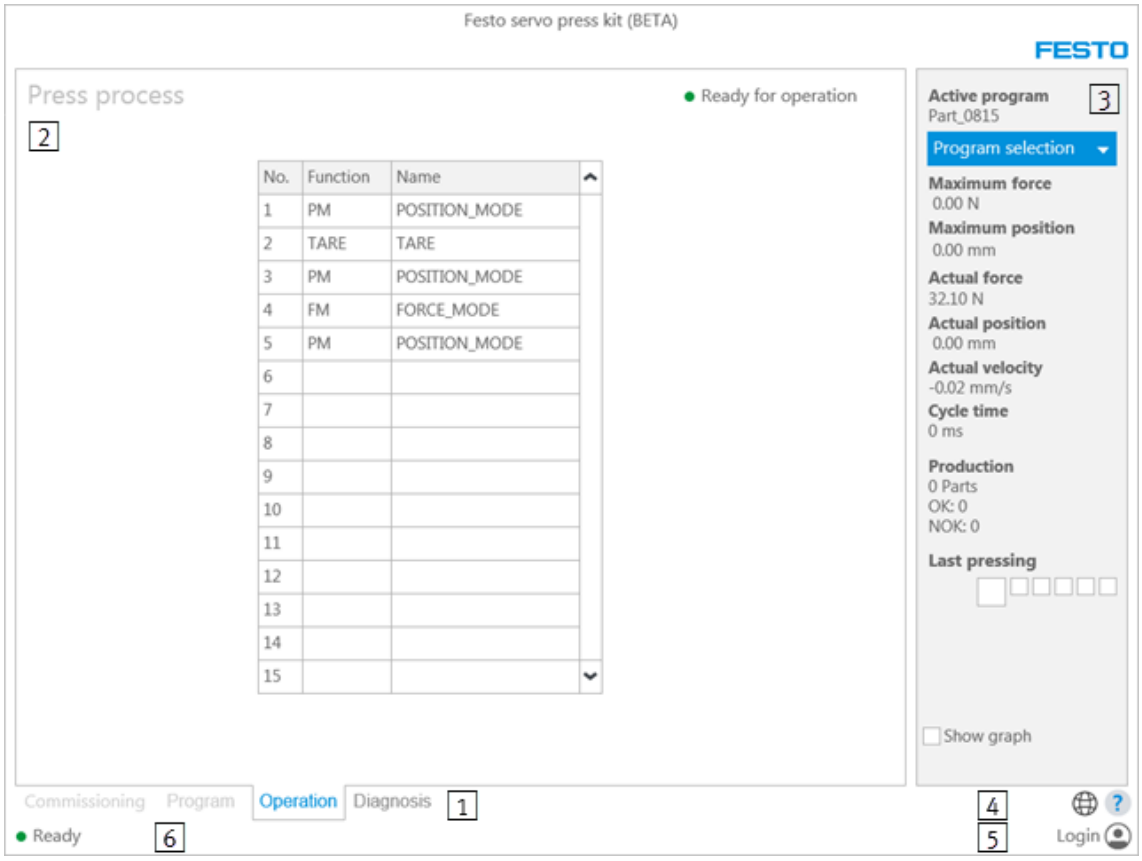
– PC, CECC-X-M1-YS and CMMT are connected via a switch
– Screen resolution ≥ 1024 x 768 pixels
– Up-to-date web browser with Java script and support for HTML5 Canvas, e.g. Firefox, Chrome, IE ≥ version 11

**Procedure**

- Enter the IP address of the CECC-X-M1-YS in the address line of the web browser:
  http://<IP address>:8080/servo_press_kit.htm

Example: http://192.168.4.2:8080/servo_press_kit.htm

Use the Festo Field Device Tool (FFT ➔ www.festo.com/sp) to set the IP address on the CECC-X-M1-YS.




1 Tabs for selecting the program areas "Commissioning", "Program", "Operation" or "Diagnosis" after logging in as an authorised user (➔ System settings).

**Note**
Only the tabs "Operation" and "Diagnosis" can be used without logging in.

2 Main window for configuring the program, sequence, reference curves and monitoring operations for the servo press kit.

3 Side window (grey) with buttons and information appropriate to the contents of the main window
– for showing the current status of the servo press kit
– for direct actuation of the servo press kit ➔ Moving and jogging
– for selecting, creating or executing programs
– for configuring monitoring operations ➔ Configuring a monitoring operation
– for showing the reference curve and/or record

4 Symbols
- for setting the user language
- for calling the online Help in the web browser (confirm the pop-up message if necessary)

5 Button
- for logging in as an authorised user (enables access to the "Commissioning" and "Program" tabs)
- for logging out

**Information**
Use the user "Admin" and password "ServoPressKit" to log in (factory setting).

**Note**
Automatic logout after 10 minutes without user intervention.

6 Footer
- Operating status of the servo press kit
- Error or warning message

Detailed information on messages:
- Mouse over the footer for messages in plain text.
- Click the footer to open the Device diagnosis dialog.

Figure: User software dialog window

Disabled (unavailable) buttons are shown greyed out.

**Note**
When entering floating-point numbers with a maximum of 2 decimal places: use a point (.), not a comma (,).

- Click the tab "Commissioning" for the initial settings.

**Operating states of the servo press kit**

| LED display | Operating status | Explanation |
|---|---|---|
| Green | Ready for operation | Properties of the servo press kit:<br>– Software in idle state<br>– Hardware configuration valid<br>– Axis homed<br>– No error<br>– No warning |
| Orange | Warning | Example:<br>– Jogging to software limit<br>– Value too high |
| Red | Error | Example:<br>– No SD card |
| | Not ready for operation | Examples:<br>– Initialisation<br>– Hardware configuration not valid<br>– Axis not homed |

Table: Operating states of the servo press kit

## 4.1 Commissioning

The Commissioning tab is used for basic configuration of the system. In addition, buttons and input fields for direct actuation of the servo press kit are available (➔ Moving and jogging and Taring).

The following functions are supported:

– Configure hardware: Dialog for selecting the system components
– Homing: Note on homing
– Adjust force sensor: Dialog for adjusting the force sensor using an external force sensor
– Logging: Dialog for selecting the storage options for log files
– System settings: Dialog for general user software settings (WebVisu)

Successful completion of commissioning actions is indicated in WebVisu by green LEDs.

### 4.1.1 Configure hardware

This button opens a dialog for selecting the components used in the servo press kit.

- Click all the drop-down lists one after the other to proceed with the configuration

1. Select the size as a function of the pressing force.
   The associated force sensor and the motor controller are automatically set.
2. Select the appropriately equipped motor:
   M = multi-turn encoder, S = single-turn encoder, B = holding brake
3. Select the electric cylinder:
   Stroke = 100, 200, 300, 400
4. Select the attachment position of the motor:
   Axial, parallel
5. Click the "Load" button to use the modified configuration.
   Click the "Cancel" button to discard the modifications and close the dialog.

The configuration is accepted following a successful plausibility check and transferred from the press controller to the motor controller.

Successful completion of configuration is indicated in WebVisu by a green LED.

The configuration is saved in the press controller and on the motor controller and is available after a restart.

The hardware configuration is invalid:

– if the components were not appropriately selected
– if an error occurs when loading the configuration ➔ Legend for messages

**Note**

The force sensor must be readjusted after a component in the servo press kit is replaced.

**System limits**

The following system limits are defined for the respective components as a function of the configuration:

– Maximum force
– Maximum position
– Minimum and maximum distance
– Maximum velocity
– Minimum and maximum force offset
– Minimum and maximum values for monitoring operations

### 4.1.2 Homing

Homing is used to move the electric cylinder to a defined axis zero point.

**Prerequisites**

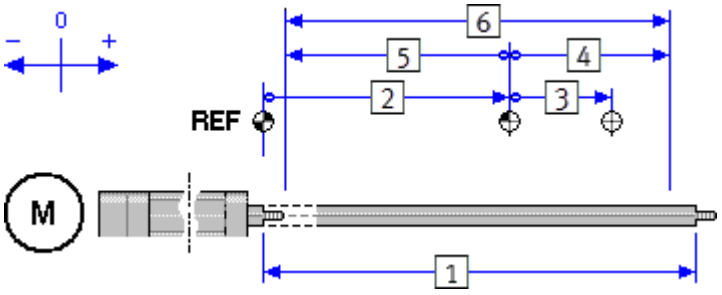
- When WebVisu has control priority:
  - none
- When WebVisu-IO has control priority:
  - "Manual" operating mode is active: Input X3.1 = TRUE
  - "Automatic" operating mode is **not** active: Input X3.2 = FALSE
  - Press process is **not** terminated: Input X3.5 = TRUE
  - Motor controller is released: Output X20.5.1 = TRUE
- When the host has control priority:
  - "Manual" operating mode is active: Control word bit 0 = TRUE
  - "Automatic" operating mode is **not** active: Control word bit 1 = FALSE
  - Press process is **not** terminated: Control word bit 4 = TRUE
  - Motor controller is released: Status word bit 9 = TRUE

**Starting homing**

- When WebVisu has control priority: Click the button "Start homing"
- When WebVisu-IO has control priority: Rising edge at the input X3.3
- When the host has control priority: Rising edge at the control word bit 2

**Terminating homing (press process)**

- When WebVisu has control priority: Click the button "Abort"
- When WebVisu has control priority: Input X3.5 = FALSE
- When the host has control priority: Control word bit 4 = FALSE




| | | |
|---|---|---|
| 1 | Working stroke | 100 mm, 200 mm, 300 mm or 400 mm ➔ Hardware configuration |
| 2 | Axis zero point | 3 mm |
| 3 | Project zero point | Defined position in the sequence |
| 4 | Positive software limit | Defined by system limit |
| 5 | Negative software limit | Defined by system limit |
| 6 | Usable stroke | Operating range between the software limits |

Figure: System of units of the servo press kit

The parameters of the motor controller selected in the hardware configuration are used during homing.

1. The electric cylinder retracts to the negative limit at a velocity of 5 mm/s.
2. The electric cylinder advances slowly by 3 mm = axis zero point.
   - When using a multi-turn encoder, this axis zero point will be saved after the first homing travel is executed.
   - When using a single-turn encoder, homing must be repeated each time the press controller is restarted.

Successful completion of homing is indicated in WebVisu by a green LED.

### 4.1.3 Adjust force sensor

This dialog can be used to compare the characteristic of the force sensor with reference values or reset them to factory settings.

- Adjust the force sensor at regular intervals.

**Prerequisites**

– When WebVisu has control priority:
  – none
– When WebVisu-IO has control priority:
  – "Manual" operating mode is active: Input X3.1 = TRUE
  – "Automatic" operating mode is not active: Input X3.2 = FALSE
  – Motor controller is released: Output X20.5.1 = TRUE
– When the host has control priority:
  – "Manual" operating mode is active: Control word bit 0 = TRUE
  – "Automatic" operating mode is **not** active: Control word bit 1 = FALSE
  – Motor controller is released: Status word bit 9 = TRUE

This is the only way of positioning the electric cylinder to the required position for measuring the reference force (➔ Moving and jogging).

**Performing the adjustment**

The following steps are performed for both the minimum and maximum force setting.

1. Position the electric cylinder and in this way set the pressing force.
2. Enter the measured value of the external force sensor in the text field.
3. Accept the measured value and thus the current value of the force sensor with "Next".
4. Optionally, enter known values directly in the input fields:
   Force and current values for "Minimum force" and for "Maximum Force".
5. "Save" the adjustment.

### 4.1.4 Logging

Press processes and curve data can be written to log files.

The following storage locations are available for this.

| Storage location | Target directory | Log file |
|---|---|---|
| USB | /servo_press | – PressResults.log<br>– PressResults_<timestamp>.logarchive |
| | /servo_press/log | – <press process name> _<serial number>_<MAC address>_<timestamp>_<result>.log |
| SD card | /servo_press | – PressResults.log<br>– PressResults_<timestamp>.logarchive |
| | /servo_press/log | – <press process name> _<serial number>_<MAC address>_<timestamp>_<result>.log |
| FTP server | URL and IP address | – <press process name> _<serial number>_<MAC address>_<timestamp>_<result>.log |
| SMB share | URL | – <press process name> _<serial number>_<MAC address>_<timestamp>_<result>.log |
| The serial number is only added to the name of the log file under the following conditions:<br>– Host has control priority<br>– The serial number is written via host in the object 0x2102 | | |

Table: Storage locations for logging

1. Enable the storage locations by clicking the button.
2. For FTP server or SMB share, enter the appropriate network address (URL).
   For FTP server, additionally enter the IP address of the network storage.

| Storage location | URL | IP address |
|---|---|---|
| FTP server | – ftp://<user name>:<password>@<server name>:<port number>/<directory>/<br>– ftp://pressuser:presspass@pressserv/Data/<br>– ftp://pressuser:presspass@192.168.0.99/Data/^ | 192.168.0.99 |
| SMB share | – user=<user name>,password=<password>,noserverino,nounix //<IP address>/<directory><br>– user=pressuser,password=presspass,noserverino,nounix //192.168.0.77/<directory> | – |

3. Click the "Save" button to use the modified selection.
   Click the "Cancel" button to discard the modifications and close the dialog.
4. When using SMB share:
   Perform a restart of the press controller so that the address will be associated during initialisation.



All enabled storage locations (green LED) will be used. The disabled storage locations (red LED) will not be used.
The settings are retained in the event of a restart.



The data from the most recent press process can be read out by the higher-order controller if the "Host" has control priority.



The log files can also be read out via the OPC UA protocol (only in the advanced version).

### Contents of the log files

| Log file | Contents | Storage volume |
|---|---|---|
| PressResults.log<br>PressResults_<timestamp>. logarchive | – Process data (e.g. minimum and maximum value within a window in the evaluation method "Windowing")<br>– Variables<br>– Program (with the sequence of the press process and evaluation method) | Max. 1,000 press processes per file[1)] |
| <press process name> _<serial number>_ <MAC address>_ <timestamp>_ <result>.log | – Process data (e.g. minimum and maximum value within a window in the evaluation method "Windowing")<br>– Variables<br>– Program (with the sequence of the press process and evaluation method)<br>– Curve data: All position and force values of steps in the sequences enabled for the recording | 1 press process per file<br>With USB or SD card: Max. 1,000 files per directory[2)] |
| 1) The log file is archived in the same directory with a modified name after 1,000 press processes: PressResults_<timestamp>.logarchive. The log file "PressResults.log" is then "emptied" and is available to save the next press processes.<br>2) The directory is renamed: /servo_press/log_<timestamp> are a new target directory is created after 1,000 press processes. | | |
| The serial number is only added to the name of the log file under the following conditions:<br>– Host has control priority<br>– The serial number is written via host in the object 0x2102 | | |



A detailed description of the log file is provided in an application note ➔ www.festo.com/sp.

### 4.1.5 System settings

| Feature | Button | Explanation |
|---|---|---|
| Control highness | Sets control priority for the servo press kit.<br>**Information:** This setting can only be changed in WebVisuApp. | |
| | – WebVisu | Browser-based user software. |
| | – WebVisu-IO | Browser-based user software with control signals via digital inputs and outputs. |
| | – Host | Higher-order controller ➔ application note ➔ www.festo.com/sp<br>**Note:** Certain WebVisuApp commands cannot be executed when the host has control priority. |
| Fieldbus | – EtherNet/IP<br>– Modbus TCP<br>– OPC UA[1)]<br>– PROFINET IO<br>– TCP/IP | Selects the network or fieldbus connection to the higher-level controller. |
| Program selection | – WebVisu<br>– Digital inputs | Presetting for selection of the press program.<br>**Information:** The press program currently required can be enabled on the press controller via the digital inputs X17.0.2, X17.1.2, X17.2.2, X17.3.2. |
| System reset | | Restarts the press controller and motor controller. |
| System time | – Update system time | Enters the date and time in a dialog window. |
| User management | – Change password | Changes the password for logging in with advanced operator rights and therefore for enabling the tabs "Commissioning" and "Program". |
| | • Use the user "Admin" and password "ServoPressKit" to log in (factory setting).<br>Conditions for a new password:<br>– 5 ≤ number of characters ≤ 20<br>– Letters (uppercase and lowercase)<br>– Digits 0 ... 9 | |
| Force limitation | – Activate<br>– Enter a value | Setting of limit values for manual Moving and jogging. |
| Position limitation | | |
| Velocity limitation | | |
| Software version | | Displays the user software (WebVisuApp) version. |
| Press controller version | | Displays the firmware version of the respective press controller. |
| Motor controller version | | Displays the firmware version of the respective motor controller. |
| 1) Only in the advanced version | | |

Table: System settings

1. Select settings by clicking them with the mouse.
2. Click the "Save" button to use the modified selection.
   Click the "Cancel" button to discard the modifications and close the dialog.

The system settings are saved in the press controller and are retained after a restart.

## 4.2 Program

**Program selection**

The program selection is used to organise programs for controlling and evaluating press processes.
Up to 20 different programs can be managed in one table.

A program consists of the following parts:

– Press process
– Reference curves (optional)
– Monitoring operations (optional)

Configuring a monitoring operation for a press process requires at least one reference curve and at least one evaluation method.

**Managing a program**

1. Click a cell in the table to select it.
   Selected cells are shown in blue.
2. Use the buttons in the (grey) side window in the dialog.

| Button | Explanation |
|---|---|
| "New program" | Opens a dialog for naming the new program.<br>1. Enter name. Note conventions ➔ **Info**<br>2. Confirm new entries with "OK".<br>The new program can be created. The blank sequence for a new press process is displayed. |
| "Edit program" | First a dialog containing the name of the selected program opens.<br>• Change the entries if necessary and confirm with "OK".<br>The new program can be edited. The sequence of the existing press process is displayed. |
| "Copy program" | The selected program is copied and pasted to the first free table cell. |
| "Delete program" | The program selected in the table is deleted. The subsequent programs in the table each move up 1 line.<br>**Important! No** safety prompt is displayed when deleting a program. |

Table: Program management buttons

Use only the following characters and digits for program names:
– Letters (uppercase and lowercase): A ... Z, a ... z
– Digits: 0 ... 9
– Underscore: _

**Editing a program**

Creating a new program or editing an existing program is always done in 4 steps.

Step 1/4: Create press process (configure the sequence)

Step 2/4: Record/loading reference curves

Step 3/4: Configure monitoring operation

Step 4/4: Save program

### 4.2.1 Configure sequence

(program processing - step 1/4)

A press process consists of a sequence of individual steps called "functions". The functions are compiled into a sequence and control the electric cylinder of the servo press kit. The functions are processed in their order in the sequence when a press process is executed.

A sequence can contain a maximum of 100 steps.

A maximum of five records can be enabled in a sequence (only in press operations with the functions "Position mode", "Force mode", "Force control" or "Digital signal mode").

- Use this dialog to configure the blue steps of the press process.



Examples of press process are provided in an application note ➔ www.festo.com/sp.

| Button | Explanation |
|---|---|
| "Insert step" | 1. Select a step within the sequence. The selection is highlighted in blue.<br>2. Add a new step to the sequence using the button. The new step is highlighted in blue.<br>3. Select a function for the new step. (default setting: "Position mode")<br>4. Set the appropriate parameter options for the function.<br>5. If necessary, click and rename the function in the "Name" column. |
| "Delete step" | 1. Select a step within the sequence. The selection is highlighted in blue.<br>2. Delete the function from the sequence using the "Delete step" button.<br>The following steps move up one step. |
| "Copy step" | 1. Select a step within the sequence. The selection is highlighted in blue.<br>2. Copy the function to the clipboard using the "Copy step" button. |
| "Insert copied step" | 1. Select a step within the sequence. The selection is highlighted in blue.<br>2. Add the function to the sequence from the clipboard using the "Insert copied step" button.<br>The copied step is inserted above the highlighted step. |
| "Configure failure reaction" | ● Select an error reaction for the entire press process.<br>This reaction is triggered at the runtime of the press process if limits are exceeded or other errors occurred. |
| "Control settings" | 1. Opens the "Control settings" dialog window for the highlighted step "Force control".<br>2. Enter the control variables for gain Kv, proportional component Kp and integral component Ki.<br>3. Confirm your entries with "OK" or reset with "Default parameters".<br>These control parameters are exclusively used for the selected step. |
| "Velocity switch" | 1. Opens the "Velocity switch" dialog window for the highlighted step "Force control".<br>2. Enter the intermediate position and approach velocity to the intermediate position.<br>3. Enable velocity switching.<br>4. Confirm the entries with "OK".<br>Velocity switching is exclusively used for the selected step.<br>**Note:** If the mass ratios are incorrectly dimensioned, the braking distance from the intermediate position to the press position may not be sufficient to decelerate the electric cylinder to the press velocity. |
| "Limits" | 1. Opens the "Limits" dialog window for the highlighted step "Force control".<br>2. Define the following limits:<br>– Maximum position (absolute)<br>– Maximum pressing force<br>– Force tolerance for the holding time<br>– Time limit for the step<br>3. Confirm the entries with "OK".<br>These limits are exclusively used for the selected step. |
| "Next" | The "Programs" tab skips to the second step of program processing: "Record/loading reference curves". |
| "Save" | Saves the entire press program including the created and/or modified sequence. |
| "Cancel" | Unsaved changes to the program will be discarded.<br>The "Programs" tab returns to "Program selection". |

Table: Buttons

### Selecting and parameterising the function

1. Select a step within the sequence. The selection is highlighted in blue.
2. Select a function for the step using the drop-down list to the right of the sequence.

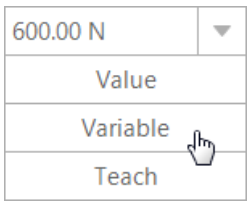
<table>
<tr><th>Function</th><th>Explanation</th></tr>
<tr><td>Position mode</td><td>Positions the electric cylinder until a specified target position is reached (e.g. travel to initial position, feed travel during rapid traverse).<br>The step is terminated if the set maximum force is reached prematurely (➔ Termination of the press process).</td></tr>
<tr><td>Force mode</td><td rowspan="2">Positions the electric cylinder until a specified target force is reached.<br>The step is terminated if the set maximum position is reached prematurely (➔ Termination of the press process).</td></tr>
<tr><td>Advanced force mode[1)]</td></tr>
<tr><td>Force control[1)]</td><td>Regulates the electric cylinder to a specified target force.<br>The step is terminated if one of the defined limits is exceeded (➔ Termination of the press process).</td></tr>
<tr><td>Digital signal mode</td><td>Positions the electric cylinder until a TRUE signal is reached at the selected input (DI1...DI16).<br>The step is terminated if the set maximum position is reached prematurely (➔ Termination of the press process).</td></tr>
<tr><td>Delay time</td><td>Pauses the press process for a specific length of time.</td></tr>
<tr><td>Tare</td><td>Compensates the force sensor<br>The force sensor characteristic can be offset by a specific force offset.</td></tr>
<tr><td>Read input</td><td>Reads a digital input signal (DI1 .... DI16) as a step enabling criterion for the press process (TRUE/FALSE).<br>– 8 inputs directly at the press controller CECC-X-M1-YS (X2.0 ... X2.7)<br>– 8 virtual inputs via the host interface of the higher-order controller (digital inputs bit 0 ... bit 7)<br>The press process is stopped until the expected input signal is registered.</td></tr>
<tr><td>Set output</td><td>Outputs an output signal (DO1 .... DO12), e.g. as a step enabling signal. The output used remains set (TRUE) until it is reset in a subsequent step.<br>– 4 outputs directly at the press controller CECC-X-M1-YS (X4.0 ... X4.3)<br>– 8 virtual outputs via the host interface of the higher-order controller (digital outputs bit 0 ... bit 7)<br>Note: All outputs are reset (FALSE) when a press process starts.</td></tr>
<tr><td>Variable</td><td>Defines one of 100 variables in total.</td></tr>
<tr><td>Jump[1)]</td><td>Selects a jump destination within the press process if a test value satisfies a specific condition.
<table>
<tr><th>Test value</th><th>Condition</th><th>Compare value</th><th>Jump destination</th></tr>
<tr><td>– Current position<br>– Current force<br>– Variable</td><td>< ≤ ≥ > = ≠</td><td>– Entered value<br>– Variable</td><td rowspan="2">– Step number (1 … 100)<br>– Following step<br>– End of the press process</td></tr>
<tr><td>– Input<br>– Output</td><td>=</td><td>– Input<br>– Output<br>– TRUE<br>– FALSE</td></tr>
</table>
</td></tr>
<tr><td colspan="2">1) Only in the advanced version</td></tr>
</table>

Table: Functions for the sequence

3. Set the required options (e.g. values, limits, variables) for the highlighted step as a function of the selected function.

| Option | Explanation |
|---|---|
| Record | Enables recording during the press operation:<br>– Recording force and position in combination with the functions "Position mode", "Force mode", "Advanced force mode" and "Digital signal mode"<br>– Recording force, position and time in combination with the function "Force control"<br>**Note:** A maximum of 5 records can be enabled per press process. |
| Positioning method: Absolute | Positioning takes place referred to the axis zero point of the electric cylinder (distance 3 mm from the mechanically retracted status) |
| Positioning method: Relative | Positioning takes place referred to the last position of the electric cylinder |
| Target position | Parameter for the "Position mode" function. |
| Target distance | |
| Target force | Parameter for the "Force mode", "Advanced force mode" and "Force control" functions. |
| Force start brake | Force to start deceleration of the electric cylinder. |
| Maximum position | Limit for moving the electric cylinder with a specified force. |
| Maximum distance | |
| Maximum force | Limit for moving the electric cylinder to a specified position. |
| Velocity | Sets the press velocity.<br>**Note:** It is possible that the specified velocity will not be reached with small distances. |
| Delay time | Sets the pause time that interrupts the press process at runtime during this step. |
| Tare | Enables the "Tare" function at the runtime of the press process. |
| Offset | Offsets the characteristic of the force sensor for synchronisation with externally recorded measured values.<br>**Note:** Make sure that the system limits are not exceeded when using a force offset. |
| Input | Selects a digital input signal (DI1 … DI16) for the following functions:<br>– "Read input" with differentiation between TRUE and FALSE<br>– "Digital signal mode" with detection of TRUE as a step enabling condition |
| Output | Selects a digital output signal (DO1 … DO12) for the "Set output" function with the default value TRUE/FALSE. |
| Variable | Selects a variable (1 … 100) for the "Variable" function and assigns it a value.<br>**Note:** All variables are set to 0 when a program is loading. |
| Name | Text field for a suitable name for the highlighted step. Only the following characters and digits are permitted:<br>– Letters (uppercase and lowercase): A ... Z, a ... z<br>– Digits: 0 ... 9<br>– Underscore: _<br>– Space |
| Force tolerance | Maximum deviation of the regulated pressing force in per cent. |
| Time limit | Maximum duration of the highlighted step. |
| Control settings | Factors for gain Kv, proportional component Kp and integral component Ki. |
| Jump destination | Step number within the sequence for the subsequent course of the press process. |

Table: Options for functions in the sequence




For a number of functions, parameterisation is performed using the arrow by either:

- entering a value directly
- using a variable whose value was previously defined within the sequence or by a higher-order controller
- teaching the current position or force value ➔ Moving and jogging
- comparing current position or force values, variables or inputs (only in the advanced version in combination with the Jump function)

**Note**

When entering floating-point numbers with a maximum of 2 decimal places: use a point (.), not a comma (,).

**Configuring the error reaction**

Selection of an action when an error occurs. The following reactions are possible:

– Error reaction active: The electric cylinder is moved to a specified position
– Error reaction **not** active: The electric cylinder is stopped at the current position

The following errors can occur in functions.

| Function | Possible errors |
|---|---|
| Position mode | – When the maximum pressing force is reached before the specified position is reached |
| Force mode | – When the maximum position is reached before the specified pressing force is reached |
| Advanced force mode[1)] | |
| Force control[1)] | – When the maximum position is reached before the specified pressing force is reached<br>– When the pressing force is exceeded during force control<br>– When the tolerance for the pressing force deviation is exceeded during the holding time<br>– When the time limit for the current step is exceeded |
| Digital signal mode | – When a maximum position is reached before a TRUE signal is received at the selected input (DI1...DI16) |
| 1) Only in the advanced version | |

Table: Error modes for sequence functions

- After configuration is complete, skip to the second step of program processing "Recording/loading reference curves" using the "Next" button.

**Example: "Position mode" function**

1. Select the "Position mode" function.
2. Select the positioning method (absolute/relative).
3. Input/select/teach the target position or target distance.
4. Input/select the velocity (press velocity).
5. Define the limits for the error case: Enter/select/teach the maximum pressing force.
6. Check the "Record" option if you want this press operation to be monitored.

**Example: "Force mode" function**

1. Select the "Force mode" function.
2. Enter/select/teach the target force.
3. Enter/select the velocity (maximum press velocity).
4. Define the limits for the error case: Enter/select/teach the maximum position or distance.
5. Check the "Record" option if you want this press operation to be monitored.

**Example: "Force control" function**

1. Select the "Force control" function.
2. Enter/select/teach the target force.
3. Enter/select the holding time.
4. Enter/select the velocity (press velocity).
5. Enter the control parameters (Kv, Kp, Ki).
6. Enter/select the intermediate position and the velocity to the intermediate position for velocity switching.
7. Define limits for the error case:
   – Maximum position (absolute)
   – Maximum pressing force
   – Force tolerance for the holding time
   – Time limit for the step
8. Check the "Record" option if you want this press operation to be monitored.

**Example: "Digital signal mode" function**

1. Select the "Digital signal mode" function.
2. Select one input (DI1 ... DI16) for detection of TRUE.
3. Select the positioning method (absolute/relative).
4. Enter/select the velocity (press velocity).
5. Define the limit for the error case: Enter/select/teach the maximum position or distance.
6. Check the "Record" option if you want this press operation to be monitored.

**Example: "Tare" function**

1. Select the "Tare" function.
2. Enable the "Tare" option.
3. Enter/select/teach the force offset.

**Note**
Violation of system limits
Make sure that the maximum force of the electric cylinder is not exceeded when using an offset.

The tare function is reset when a press process starts.
Only the tare function configured as a function in the sequence will be used.

**Example: "Variable" function**

1. Select the "Variable" function.
2. Select the variable (1 ... 100).
3. Enter the value for the variable.

Modified variables are displayed in the Interface diagnosis dialog during the course of a press process.

### 4.2.2 Trace/load reference curves

(program processing - step 2/4)

The press processes are evaluated using the force-distance or force-time characteristics of the electric cylinder. This is done using monitoring operations configured for reference curves. The reference curves are recorded using a standard part.

- Use this dialog to rerecord reference curves or to load existing reference curves.

Reference curves can only be recorded if the press process sequence contains at least one function with the "Record" option enabled (➔ Configure sequence).

**Note**
Homing cannot be performed during this program processing step.

**Prerequisites for the recording**

– When WebVisu has control priority:
  – none
– When WebVisu-IO has control priority:
  – "Manual" operating mode is active: Input X3.1 = TRUE
  – "Automatic" operating mode is **not** active: Input X3.2 = FALSE
  – Press process is **not** terminated: Input X3.5 = TRUE
  – Motor controller is released: Output X20.5.1 = TRUE
– When the host has control priority:
  – "Manual" operating mode is active: Control word bit 0 = TRUE
  – "Automatic" operating mode is **not** active: Control word bit 1 = FALSE
  – Press process is **not** terminated: Control word bit 4 = TRUE
  – Motor controller is released: Status word bit 9 = TRUE

**Performing the recording**

**Warning**
Uncontrolled movements of the actuators
Injury due to moving parts, damage to the machine and system
- Make sure that the basic configuration is consistent with all the components used in your system.

Start recording:

1. Insert the standard part.
2. Start record reference curve
   – When WebVisu has control priority: Click the button "Start record reference curve".
   – When WebVisu-IO has control priority: Rising edge at the input X3.0
   – When the host has control priority: Rising edge at the control word bit 3

The press process belonging to the program is executed. The step currently being executed in the sequence is highlighted to identify it. A characteristic is recorded for each function in the sequence with recording enabled.

A sequence that does not have recording enabled does not need an evaluation method.

**Note**
When host has control priority the recording of the reference curve can also be started as long as the WebVisuApp is displaying the main registers of the program area.

**Cancelling the recording if necessary**

– When WebVisu has control priority: Click the button "Abort".
– When WebVisu-IO has control priority: Input X3.5 = FALSE
– When the host has control priority: Control word bit 4 = FALSE

**Load**

- Click the "Load reference curve" button.

Existing reference curves can only be loaded if the program sequence was not changed.

**Display**

The reference curves are displayed in the main window after they are recorded or loaded.

Information about the reference curves can be found in the side window:

– Maximum force of the reference curve
– Maximum position of the reference curve
– Current force of the electric cylinder
– Current position of the electric cylinder
– Current velocity of the electric cylinder
– Cycle time of the reference curve
– Result of the most recent press operation

If the most recent press operation produces the result "not OK", the cause of the incorrect press operation can be displayed in clear text.

- Mouse over the result "not OK" to display the cause.

| Button | Explanation |
|---|---|
| "Load reference curve(s)" | The most recently saved reference curves for the current program are loaded and are available for monitoring operations.<br>• Click the arrows under "Record 1...5" to alternately display the available reference curves. |
| "Show optional records" | Further records can be shown. |
| "Distance [mm]" "time [ms]" 1) | Dimension setting for the X-axis of the displayed characteristics. |
| "Next" | Continue after recording or loading reference curves:<br>The "Program" tab skips to the third step of program processing: "Configure monitoring operation". The monitoring operations are visualised in the reference curves. |
| | Continue without using reference curves:<br>The "Program" tab skips directly to the fourth step of program processing: "Save program". |
| "Save" | Saves the entire press program including the recorded and loaded reference curves. |
| "Back" | The "Program" tab skips to the first step of program processing: "Configure sequence". |
| "Cancel" | Unsaved changes to the program will be discarded.<br>The "Program" tab returns to "Program selection". |
| 1) Only in the advanced version in combination with record with force control | |

Table: Buttons for reference curves (main window)

### 4.2.3 Configure monitoring operation

(program processing - step 3/4)

Monitoring operations are used to compare the recorded characteristics of a press process with specific regions of the associated reference curves. Monitoring operations can, therefore, only be configured if reference curves were recorded in the second step of program processing ➔ Recording/loading reference curves.

The following evaluation methods are available for monitoring the press operations:

1. Windowing
2. Threshold
3. Envelope

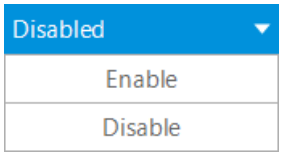
All three evaluation methods are shown one after the other in the main window.
Up to five monitoring operations per reference curve can be configured for each method.
Further explanations ➔ Appendix ➔ Evaluation methods.



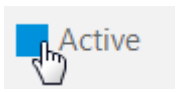

Figure: Side window with buttons for all evaluation methods

**Using monitoring operations**

Monitoring operations for the press operation are selected using the following controls.




- Generally "enable" or "disable" an evaluation method.



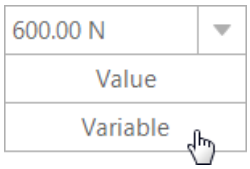

- Set an individual monitoring operation to "active" (blue) or not "active" (white).

**Parameterising an individual monitoring operation**

A monitoring operation is parameterised using the buttons shown for the respective evaluation method in the side window ➔ User software (WebVisuApp).

| Buttons in the side window | Explanation |
|---|---|
| Record 1...5 | Displays the selected reference curve.<br>• Use the arrow keys to switch between the recorded reference curves (max. 5). |
| Window 1...5<br>Value 1...5<br>Envelope 1...5 | Displays the selected monitoring operation.<br>• Use the arrow keys to switch between the usable monitoring operations (max. 5). |
| Min. force<br>Max. force<br>Min. position or min. time<br>Max. position or min. time | Settings for the "Windowing" evaluation method.<br>1. Parameterise values to insert a monitoring window appropriately in the diagram.<br>2. Parameterising criteria ➔ "Configuration" button. |
| Force<br>Position or time | Selection for the "Threshold" evaluation method.<br>• Click an option to parameterise the threshold for force and position or time. |
| Force<br>Min. position or min. time<br>Max. position or min. time | Settings for the "Threshold" evaluation method.<br>1. Parameterise values to insert a force threshold for a distance tolerance or for a time tolerance in the diagram.<br>2. Parameterising criteria ➔ "Configuration" button. |
| Position or time<br>Min. force<br>Max. force | Settings for the "Threshold" evaluation method.<br>1. Parameterise values to insert a position threshold or a time threshold for a force tolerance in the diagram.<br>2. Parameterising criteria ➔ "Configuration" button. |
| Number of points | Settings for the "Envelope" evaluation method.<br>• Enter a value to define the number of points for the upper and lower envelope (min. 2, max. 5). |
| Point 1...5 upper side<br>Point 1...5 lower side | Settings for the points in the upper and lower envelope.<br>1. Use the arrow keys to switch between the points.<br>2. Parameterise a force value and a position value or time value for each point in the envelopes.<br>**Note:** Make sure that the position values of the points increase with the numbering.<br>**Example:** The position value of point 3 on the envelope must be greater than the position value of point 2. |
| Configuration Wndowing | In – Must cross window in this direction, other direction is not allowed.<br>Out – Must cross window in this direction, other direction is not allowed.<br>Forbidden – Not allowed to cross window.<br>Don't Care – Can cross window in both directions. |
| Configuration Threshold | Up – Must cross threshold in this direction, other direction is not allowed.<br>Down – Must cross threshold in this direction, other direction is not allowed.<br>Left – Must cross threshold in this direction, other direction is not allowed.<br>Right – Must cross threshold in this direction, other direction is not allowed.<br>Up / Down – Must cross threshold in one of both directions.<br>Up / Down allowed – Must cross threshold in this direction (Up) first, afterwards other direction is allowed.<br>Down / Up allowed – Must cross threshold in this direction (Down) first, afterwards other direction is allowed. |

Table: Buttons for configuring monitoring operations (side window)




The criteria for force, position and velocity can be parameterised by:

- entering a value directly
- using a variable whose value was previously defined within the sequence or by a higher-order controller

| Buttons in the main window | Explanation |
|---|---|
| "Next" | The "Program" tab skips to the next evaluation method or to the fourth step of program processing: "Save program". |
| "Back" | The "Program" tab skips to the previous evaluation method or to the second step of program processing: "Record/loading reference curves". |
| "Save" | Saves the entire press program including the created and/or modified monitoring operations. |
| "Cancel" | Unsaved changes to the program will be discarded.<br>The "Program" tab returns to the program selection. |

Table: Buttons in the main window

### 4.2.4 Save program

(program processing - step 4/4)

| Buttons in the main window | Explanation |
|---|---|
| "Save" | Saves the program including the sequence, reference curve and configured monitoring operations.<br>The "Program" tab returns to the program selection. |
| "Back" | The "Program" tab skips to the step:<br>– "Configure monitoring operation" (if there are reference curves)<br>– "Trace/load reference curves" (if there are no reference curves) |
| "Cancel" | Unsaved changes to the program will be discarded.<br>The "Program" tab returns to the program selection. |

## 4.3 Operation

**Warning**
Uncontrolled movements of the actuators
Injury due to moving parts, damage to the machine and system
- Make sure that the basic configuration is consistent with all the components used in your system.

This dialog is used to execute press processes while the system is running. The main window either shows the sequence of the active program or the characteristics of the most recent press process. The operating status or error messages are shown in the footer.

- For detailed information, mouse over the message.

**Prerequisites**

– A program with press process, reference curves and associated monitoring operations has been configured.
– When WebVisu has control priority:
  – none
– When WebVisu-IO has control priority:
  – "Automatic" operating mode is active: Input X3.2 = TRUE
  – "Manual" operating mode is **not** active: Input X3.1 = FALSE
  – Press process is **not** terminated: Input X3.5 = TRUE
  – Motor controller is released: Output X20.5.1 = TRUE
– When the host has control priority:
  – "Automatic" operating mode is active: Control word bit 1 = TRUE
  – "Manual" operating mode is **not** active: Control word bit 0 = FALSE
  – Press process is **not** terminated: Control word bit 4 = TRUE
  – Motor controller is released: Status word bit 9 = TRUE

The most recently selected program is selected after the press controller is restarted.

**Executing a press operation**

1. Select a program (side window) or have it selected by the higher-order controller.
2. Start the press process
   – When WebVisu has control priority: Click the button "Start press process".
   – When WebVisu-IO has control priority: Rising edge at the input X3.0
   – When the host has control priority: Rising edge at the control word bit 3

The press process is processed.
The force and position values are recorded if recording was enabled for a press operation.
Evaluation of the recorded characteristics is executed.
The logging data is stored in selected storage locations (➔ Logging).
The press process is terminated with the evaluation result OK or not OK.

No live assessment of the evaluation methods.
When the position values are identical, the force value is calculated using sliding averaging.

### Evaluating a press operation

The result of the most recent press process is displayed in the main window between the press processes.

Information about the associated program and the selected record is provided in the side window ➔ arrow keys:

- Name of the active program
- Maximum force of the most recent press operation
- Maximum position of the most recent press operation
- Current force of the electric cylinder
- Current position of the electric cylinder
- Current velocity of the electric cylinder
- Cycle time of the most recent press operation

In addition, the evaluation results of the most recent six press operations are displayed in the "Last pressings" pane.

Green square = press process OK

Red square = press process not OK

For "not OK" results, the cause of the incorrect press operation can be displayed by mousing over the "not OK" results.

### Comparing press operations

1. Check the "Show record" option to show the record for the most recent press operation.
2. Check the "Show reference curve" option to show the associated reference curves for the most recent press operation.
3. Click the arrows < > to switch between the records or the associated reference curves of the most recent press operation.
4. Click the "Show optional records" button to show further records.

| Buttons/options | Explanation |
|---|---|
| "Program selection" | Selects a program for operating the servo press kit. |
| Arrow keys | Selects a record from the most recent press operation. |
| "Show reference curve" | Shows the reference curve belonging to the selected record from the most recent press operation (yellow characteristic). |
| "Show record" | Shows the record from the most recent press operation selected using the arrow keys (blue characteristic). |
| "Distance [mm]" "time [ms]" 1) | Dimension setting for the X-axis of the displayed record. |
| "Show optional records" 1) | Opens a dialog window for selecting records from further press operations. |
| "Show last 4 records" | Shows the records from the four most recent press operations of the current press program. |
| "Custom selection" | Selects one to four records from any press operations that can be selected from an SD card or USB memory. |
| "SD-Card" | Enables the storage location for selecting the record of a press process. |
| "USB" | |
| "Select record no. #" | Selects the target directory and file for showing a record in the respective colour shown. |
| 1) Only in the advanced version in combination with records with force control | |

Table: Buttons/options

### 4.3.2 Single-step mode

**Prerequisites**

- When WebVisu has control priority:
  - none
- When WebVisu-IO has control priority:
  - "Automatic" operating mode is active: Input X3.2 = TRUE
  - "Manual" operating mode is **not** active: Input X3.1 = FALSE
  - Press process is **not** terminated: Input X3.5 = TRUE
  - Motor controller is released: Output X20.5.1 = TRUE
- When the host has control priority:
  - "Automatic" operating mode is active: Control word bit 1 = TRUE
  - "Manual" operating mode is **not** active: Control word bit 0 = FALSE
  - Press process is **not** terminated: Control word bit 4 = TRUE
  - Motor controller is released: Status word bit 9 = TRUE

**Switching to single-step mode**

- When WebVisu has control priority: Click the button "Step mode".
- When WebVisu-IO has control priority: Input X17.5.2 = TRUE
- When the host has control priority: Control word bit 18 = TRUE

**Procedure**

- When WebVisu has control priority: Click the button "Start press process".
  Wait for feedback "Step completed".
- When WebVisu-IO has control priority: Start the single step via the button at the input X3.0 = TRUE
  Wait for feedback for "Step completed": Output X20.6.1 = TRUE
- When the host has control priority: Start the single step via control word bit 3 = TRUE
  Wait for feedback for "Step completed": Status word bit 6 = TRUE

### 4.3.3 Termination of the press process

Execution of a press process is terminated under the following conditions:

- When an error occurs: Termination with configured error reaction ➔ Configure sequence
- When a manual termination is performed

A manual termination takes place:

- When WebVisu has control priority: Click the button "Abort".
- When WebVisu-IO has control priority: Input X3.5 = FALSE
- When the host has control priority: Control word bit 4 = FALSE

## 4.4 Diagnosis

### 4.4.1 Process diagnosis

Following the press process, the recordings are analysed using the evaluation methods. The limits parameterised in the functions are evaluated at the same time.

This dialog provides the overall result of the evaluation expressed as a statistic as well as detailed results for the individual press operations in a parts list.

**Statistics**

- Number of processed parts
- Number of OK parts
- Number of not OK parts
- Visual representation of the 20 most recently processed parts with colour-coded results from the evaluation



| Result | Explanation |
|---|---|
| OK | The press process was **not** terminated and all active monitoring operations returned positive evaluation results. |
| Not OK | The press process was terminated and at least one active monitoring operation returned a negative evaluation result. |

Table: Process evaluation

Clearing the statistics and parts list:

- Click the "Clear" button.

**Parts list**

| Column | Explanation |
|---|---|
| No. | Sequential number of the press process |
| Name | Name of the program |
| Serial number | Service life counter |
| Timestamp | Date and time of the press process |
| Result | Result of the press process (OK or not OK) |
| Max. position | Maximum electric cylinder position achieved during the whole press process |
| Max. force | Maximum force sensor value achieved during the whole press process |
| Cause | Information about why the press process was terminated (only with result = not OK)<br>– Digits 1...3 contain the step number of the press process being carried out (example: 010 = step 10)<br>– The fourth digit contains the actual reason why the press process was terminated ➔ Table: Reasons why the press process was terminated<br>– Tip: To see messages in clear text, mouse over the table cell or over the symbols for the most recent 20 pressing operations. |

Table: Structure of the "Parts list" table

| 4th digit | Cause |
|---|---|
| 1 | Termination by the "Position mode" step |
| 2 | Termination by the "Force mode" step |
| 3 | Termination by the "Digital signal mode" step |
| 5 | Not OK evaluation using "Windowing" |
| 6 | Not OK evaluation using "Threshold" |
| 7 | Not OK evaluation using "Envelope" |
| 8 | Termination of the press process |
| 9 | Termination by the "Force control" step |
| A | Termination by the "Advanced force mode" step |
| B | Press process was terminated through error |

Table: Reasons why the press process was terminated

### 4.4.2 Device diagnosis

This dialog provides a table with coded messages about the servo press kit.

| Column | Explanation |
|---|---|
| Confirmation | Note about whether the message needs to be confirmed (acknowledgement expected) |
| Category | Differentiates between an error and a warning |
| Message ID | Classifies the message |
| Info 1 | Most important information about the message |
| Info 2 | Additional information about the message |
| Response | System response to acknowledgement of the message |
| Timestamp | Date and time of the message |

Table: Structure of the device diagnosis table

- For detailed information, mouse over the highlighted table row.

**Acknowledging messages**

Selected messages are acknowledged:

– When WebVisu has control priority: Click the button "Quit".

All messages are acknowledged:

– When WebVisu-IO has control priority: Rising edge at the input X3.4

– When the host has control priority: Rising edge at the control word bit 6

After the message(s) is (are) acknowledged, the system will attempt to delete the errors/warnings. The message will be shown again if the cause was not eliminated.

Messages from the "Warning" category are displayed for 2 seconds. These messages can be acknowledged while they are on the screen. Warnings are then automatically deleted.



Information on the message coding ➔ Legend for messages.

### 4.4.3 Interface diagnosis

This dialog shows the current value of the following signals.

| Interface | Explanation/comment |
|---|---|
| X2.0 … X2.7 | Step enabling condition via input 1 … 8 |
| X3.0 | Digital input for "Start press process" |
| X3.1 | Digital input for "Manual" operating mode |
| X3.2 | Digital input for "Automatic" operating mode |
| X3.3 | Digital input for "Start homing" |
| X3.4 | Digital input for "Acknowledge error" |
| X3.5 | Digital input for "Terminate press process" **Important:** Input is "low-active" |
| X17.0.2 | Digital input for program selection bit 0 |
| X17.1.2 | Digital input for program selection bit 1 |
| X17.2.2 | Digital input for program selection bit 2 |
| X17.3.2 | Digital input for program selection bit 3 |
| X17.4.2 | Digital input for "Enable servo press kit" |
| X17.5.2 | Step mode of the press program |
| X4.0 … X4.3 | Step enabling condition to output 1 … 4 |
| X20.1.1 | Digital output for "Error" |
| X20.2.1 | Digital output for "Homing requirement" |
| X20.3.1 | Digital output for "Press result OK" |
| X20.4.1 | Digital output for "Press result not OK" |
| X20.5.1 | Digital output for "Motor controller is released" [1)] |
| X20.6.1 | Program step completed |
| X19.0.2 | Analogue input for "Force value" [mA] |
| EtherCAT Master | Status EtherCAT communication |
| CMMT | Status CMMT communication |
| Host | Selected fieldbus and protocol with inputs and outputs (In/Out)<br>Buttons<br>• Record the fieldbus protocol communication for 10 seconds using "Log".<br>• Write the recently recorded communication to a log file on a memory card using "Save" (➔ /servo_press/Logging_Host.loghost).<br>**Note:** "Save" will overwrite an existing log file. |
| Variables 1 … 100 | Shows the current values of the displayed variables |
| 1) Only if servo press kit is enabled ➔ Rising edge at input X17.4.2 (when WebVisu-IO has control priority) or rising edge at Control Word Bit 7 (when Host has control priority) or click the button "Release" (when WebVisu has control priority). | |

## 4.5 Moving and jogging

**Warning**
Uncontrolled movements of the actuators
Injury due to moving parts, damage to the machine and system
- Make sure that the basic configuration is consistent with all the components used in your system.

The (grey) side window for moving the electric cylinder appears:
– on the "Commissioning" tab
– on the "Program" tab - step 1/4: Configure sequence
– on the "Program" tab - step 2/4: Configure monitoring operation

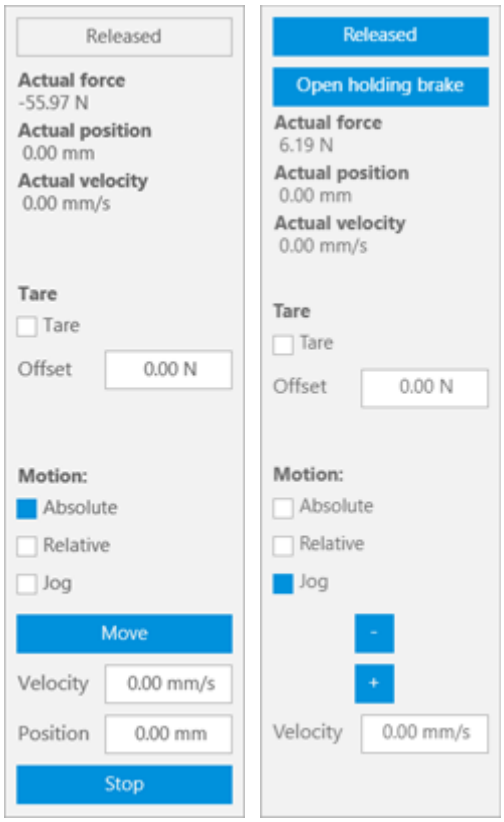



Figure: Side window with buttons for making the electric cylinder move or jog

The side window contains buttons for enabling and directly actuating the electric cylinder and for making settings for the force sensor (➔ Taring) as well as information about the status of the electric cylinder:
– Actual force
– Actual position
– Actual velocity

**Purpose**
– Approaching exact positions
– Moving over specified distances
– Teaching positions
– Testing movement velocities

**Prerequisites**

– When WebVisu has control priority:
  – Click the button "Release". The name of the button changes to "Released".
– When WebVisu-IO has control priority:
  – "Manual" operating mode is active: Input X3.1 = TRUE
  – "Automatic" operating mode is **not** active: Input X3.2 = FALSE
  – Press process is **not** terminated: Input X3.5 = TRUE
  – Motor controller is released: Output X20.5.1 = TRUE

**Operation of the electric cylinder**

| Button | Explanation |
|---|---|
| Release/Released | Only when WebVisu has control priority: Release motor controller or end the release of the motor controller. |
| Open/Close holding brake | Only when WebVisu has control priority: Open holding brake or close holding brake. |
| + | The electric cylinder advances for as long as the button is pressed (until the software limit) |
| - | The electric cylinder retracts for as long as the button is pressed (until the software limit) |
| Motion: "Absolute" | Positioning takes place referred to the axis zero point of the electric cylinder (axis zero point = distance 3 mm from the mechanically retracted status) |
| Motion: "Relative" | Positioning takes place referred to the last position of the electric cylinder<br>+ Positive distance: the electric cylinder advances<br>– Negative distance: the electric cylinder retracts |
| "Move" | Starts positioning if the following prerequisites are met:<br>– Velocity > 0 mm/s<br>– Absolute position ≥ 0 mm or relative position <> 0 mm |
| "Stop" | Interrupts a movement by the electric cylinder. |
| "Velocity" | Entry of the maximum velocity for movement and jogging of the electric cylinder (for moving and jogging: enter value > 0). |
| "Position" | Entry of an absolute target position for the electric cylinder's next movement. |
| "Distance" | Entry of a relative distance for the electric cylinder's next movement. |

Table: Buttons for moving and taring the electric cylinder

### 4.5.1 Tare

The force value of the force sensor can be changed by checking the "Tare" option.

- Move the electric cylinder to the press position ➔ Moving and jogging.

The following tare functions are possible:

– Compensating the force sensor
– Offsetting the force sensor characteristic by a specific force offset

Taring disabled and force offset = 0 ➔ uninfluenced force value.

**Note**

Violation of system limits

- Make sure that the maximum force of the electric cylinder is not exceeded when using an offset.

# 5 Appendix

## 5.1 Evaluation methods

Several monitoring operations can be configured for a maximum of 5 press operations of the electric cylinder as a way of evaluating the press processes. The monitoring operations are created on the basis of reference curves in the associated diagram.

The following evaluation methods are available:

- Windowing
- Threshold
- Envelope

These evaluation methods are used to assess the quality of the press process. The press operation is successful as long as the characteristics of the recordings pass through allowed areas and avoid forbidden areas.

### 5.1.1 Windowing

With this evaluation method, windows are defined within the diagram whose limits are simultaneously determined by a force tolerance and a distance or time tolerance. Up to 5 monitoring windows can be defined per recorded reference curve.

A press operation is successful if the characteristic satisfies all the following conditions:

– The characteristic crosses window limits in the specified arrow direction (in, out)
– The characteristic does **not** cross blocked window limits (× = prohibited)
– The characteristic was not defined (does not matter)

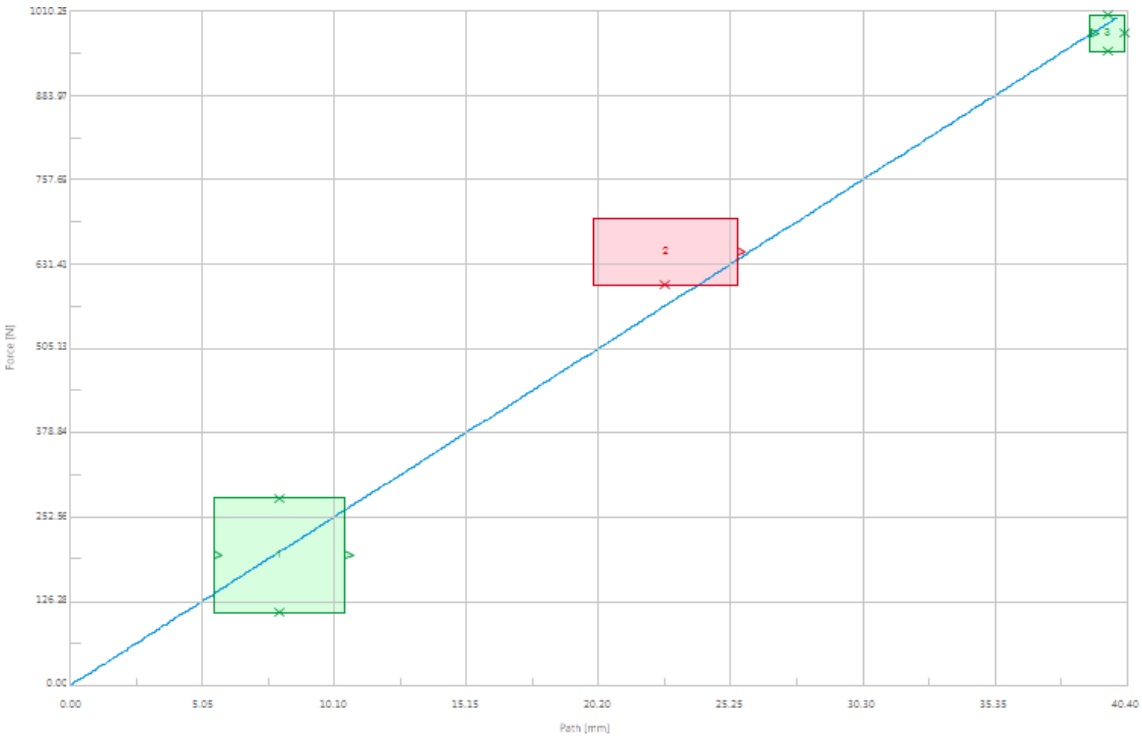



Figure: "Windowing" evaluation method

**Defining a "Windowing" monitoring operation**

1. Enable the "Windowing" evaluation method.
2. Select the record (1...5).
3. Select the window number (1...5).
4. Set the monitoring window to active.
5. Set the window limits. Enter values for minimum position, maximum position, minimum force and maximum force or select an appropriate variable in each case.
6. Optionally click "Configuration" and define directions for the progression of the characteristic across window limits.
7. Select the next "Windowing" monitoring operation ->continue with 4.
   or change to the next evaluation method with "Next".

**Note**

The noise made by the force sensor can influence the evaluation.

The measured force values are evaluated using a hysteresis to avoid inaccurate evaluation (not OK) due to normal noise.

### 5.1.2 Threshold

With this evaluation method, thresholds within the characteristic are defined whose limits are determined by a force tolerance, a distance tolerance or a time tolerance. Five thresholds can be defined per recorded reference curve.

– Force threshold: Force tolerance at the specified position:
  The measured force must be within the specified tolerance range at a specific cylinder position.
– Position threshold: Position tolerance for specified force:
  The distance of the electric cylinder must be within the specified tolerance range at a specific force sensor value.
– Time threshold: Time tolerance for specified force:
  A specific value of the force sensor must be within a specified time period.

A press operation is successful if the progression of the characteristic is above all thresholds in the specified direction.

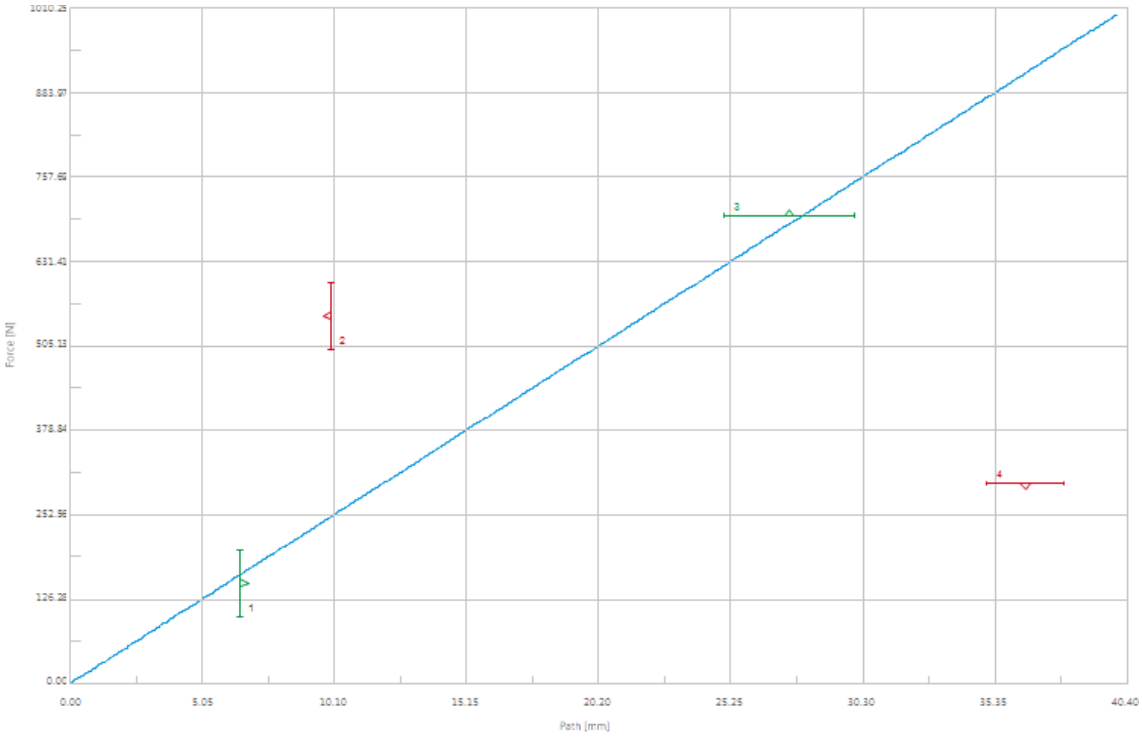



Figure: "Threshold" evaluation method

**Defining a "Threshold" monitoring operation**

1. Enable the "Threshold" evaluation method.
2. Select the record (1...5).
3. Select the threshold (1...5).
4. Set the threshold to active.
5. Select the variable to be monitored (force, position or time).
6. Set the threshold limits.
   – Force value for tolerance between minimum and maximum position
   – Force value for tolerance within a time period
   – Position value for tolerance between minimum and maximum force
7. Optionally click "Configuration" and define a direction for the progression of the characteristic above the threshold.
8. Select the next "Threshold" monitoring operation ->continue with 4.
   or change to the next evaluation method with "Next".

**Note**

The noise made by the force sensor can influence the evaluation.

The measured force values are evaluated using a hysteresis to avoid inaccurate evaluation (not OK) due to normal noise.

### 5.1.3 Envelope

This evaluation method assesses the progression of a press operation. Up to 5 envelopes for the upper side and lower side of the characteristic can be defined for each recorded reference curve. Each envelope consists of 2 to 5 points. The force and position values or the force and time values for the upper side and lower side can be parameterised independently of each other.

A press operation is successful if the progression of the characteristic is within the upper side and lower side of all the envelopes.

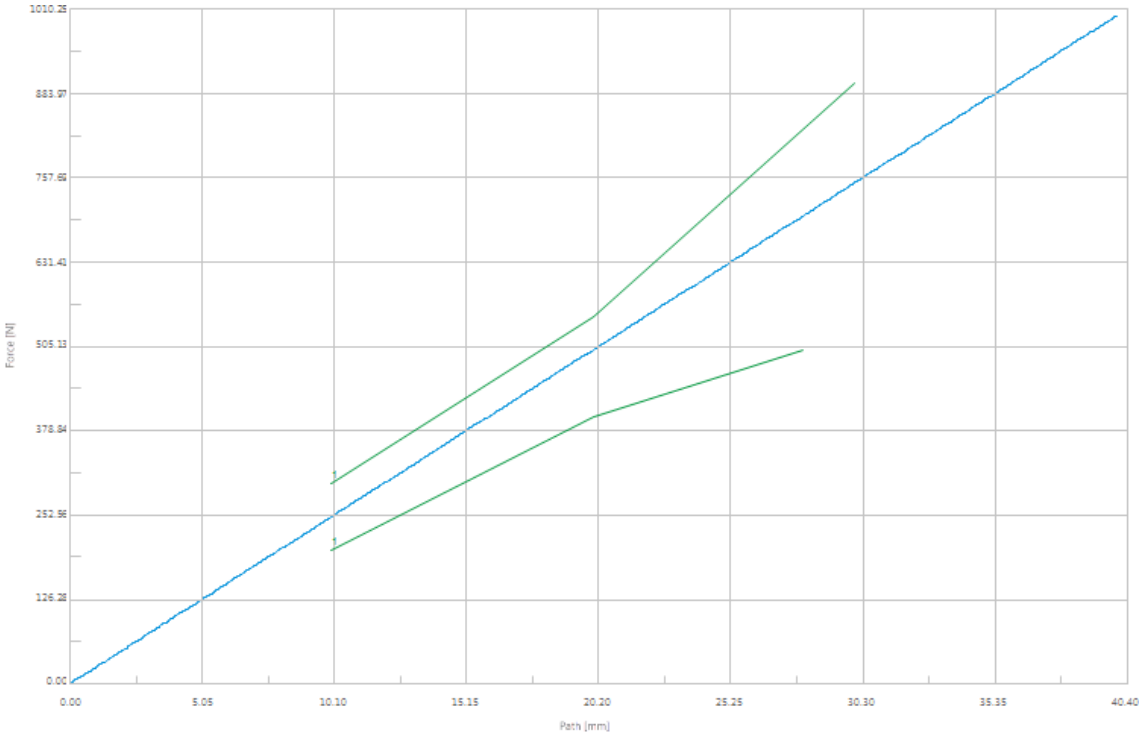



Figure: "Envelope" evaluation method

**Defining an "envelope" monitoring operation**

1. Enable the "Envelope" evaluation method.
2. Select the record (1...5).
3. Select the envelope (1...5).
4. Set the envelope to active.
5. Set the number of points for the envelope.
6. Select the envelope point for the upper side of the envelope and set the associated pair of values (force/position or force/time).
7. Select the envelope point for the lower side of the envelope and set the associated pair of values (force/position or force/time).
8. Select the next "Envelope" monitoring operation ➔ continue with 4. or complete configuration of the evaluation method with "Next".

**Note**

- Make sure that the position values or time values of the points increase with the numbering.

Example: The position value of point 3 on the envelope must be greater than the position value of point 2.

## 5.2 Variables

The user software provides 100 variables that can be used for sequence functions and in evaluation methods. These variables are useful if e.g. a saved numerical value is required repeatedly.

The option also exists to create just one sequence if the press process for several workpieces is the same, but different velocities or positions are required. The values that change are used as variables in the sequence. The variables can then be specified by the higher-order controller to suit the workpiece before the press process is executed.

However, the variables only save the pure numerical values. The saved value with a basic unit only becomes the physical variable once used in a function or in an evaluation method.

All variables are set to 0 when a program is loading.

**Note**

Variables can contain the wrong numerical values.

Only use variables in the appropriate functions and in the appropriate evaluation method.

Variables can be modified by a higher-order controller via the host interface before a press process begins. See application note (➔ www.festo.com/sp).

100 variables (floating-point numbers) are available.

## 5.3 Inputs and outputs

Inputs and outputs can be read in as a step enabling criterion and output as a step-up signal respectively for controlling the press process. The inputs and outputs are available for functions when configuring the sequence.

The following inputs and outputs are defined:

| Input for function | Input used |
|---|---|
| DI1 | X2.0 on the CECC-X-M1-YS |
| DI2 | X2.1 on the CECC-X-M1-YS |
| DI3 | X2.2 on the CECC-X-M1-YS |
| DI4 | X2.3 on the CECC-X-M1-YS |
| DI5 | X2.4 on the CECC-X-M1-YS |
| DI6 | X2.5 on the CECC-X-M1-YS |
| DI7 | X2.6 on the CECC-X-M1-YS |
| DI8 | X2.7 on the CECC-X-M1-YS |
| DI9 | Host interface digital inputs bit 0 |
| DI10 | Host interface digital inputs bit 1 |
| DI11 | Host interface digital inputs bit 2 |
| DI12 | Host interface digital inputs bit 3 |
| DI13 | Host interface digital inputs bit 4 |
| DI14 | Host interface digital inputs bit 5 |
| DI15 | Host interface digital inputs bit 6 |
| DI16 | Host interface digital inputs bit 7 |

Table: Input mapping for sequence

| Output for function | Output used |
|---|---|
| DO1 | X4.0 on the CECC-X-M1-YS |
| DO2 | X4.1 on the CECC-X-M1-YS |
| DO3 | X4.2 on the CECC-X-M1-YS |
| DO4 | X4.3 on the CECC-X-M1-YS |
| DO5 | Host interface digital outputs bit 0 |
| DO6 | Host interface digital outputs bit 1 |
| DO7 | Host interface digital outputs bit 2 |
| DO8 | Host interface digital outputs bit 3 |
| DO9 | Host interface digital outputs bit 4 |
| DO10 | Host interface digital outputs bit 5 |
| DO11 | Host interface digital outputs bit 6 |
| DO12 | Host interface digital outputs bit 7 |

Table: Output mapping for sequence



**Note**

All outputs are reset each time a press process starts.

## 5.4 Legend for messages

| Confirmation | Explanation |
|---|---|
| 0 | No confirmation is expected (acknowledgement expected). |
| 1 | Confirmation is expected (acknowledgement expected). |

Table: Message confirmation

| Category | Explanation |
|---|---|
| 2 | Warning |
| 3 | Error |

Table: Message category

| Message ID | Explanation |
|---|---|
| 0x0 | No error/no error information available |
| 0x1 | Impermissible/unknown status of state machine |
| 0x2 | Impermissible input value for function block or function |
| 0x3 | Input value at function block or function has an impermissible value range |
| 0x5 | Requested resource is not available (e.g. file not found) |
| 0x6 | Drive fault/hardware fault |
| 0xFFFF | Other fault |

Table: Message ID

| Info 1 | Info 2 | Message | Cause | Action | Response |
|---|---|---|---|---|---|
| 0xFF000101 | Status | Main state machine | Invalid status | • Acknowledge error | 1: Resetting the software |
| 0xFF000102 | Status | In operation state machine | Invalid status | • Acknowledge error | 1: Resetting the software |
| 0xFF000103 | Status | Init state machine | Invalid status | • Acknowledge error | 1: Resetting the software |
| 0xFF000104 | 0x00000000 | Creation of servo press directory | No SD-Card available<br>SD-Card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000105 | 0x00000001 | Listing of servo press directory | Main finite state machine<br>➔ Invalid status | • Acknowledge error | 1: Resetting the software |
| 0xFF000105 | 0x00000002 | Listing of servo press directory | Operation finite state machine<br>➔ Invalid status | • Acknowledge error | 1: Resetting the software |
| 0xFF000105 | 0x00000003 | Listing of servo press directory | Error while opening the directory<br>No SD-Card available<br>SD-Card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000105 | 0x00000004 | Listing of servo press directory | Error while listing the directory<br>No SD-Card available<br>SD-Card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000105 | 0x00000005 | Listing of servo press directory | Error while closing the directory<br>No SD-Card available<br>SD-Card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000106 | 0x00000001 | Search for hardware configuration | Main finite state machine<br>➔ Invalid status | • Acknowledge error | 1: Resetting the software |
| 0xFF000106 | 0x00000002 | Search for hardware configuration | Operation finite state machine<br>➔ Invalid status | • Acknowledge error | 1: Resetting the software |
| 0xFF000107 | Quantity | Multiple hardware configuration available | Several Hardware configurations stored | • Delete hardware configurations<br>• Acknowledge error | 1: Resetting the software |

| Info 1 | Info 2 | Message | Cause | Action | Response |
|---|---|---|---|---|---|
| 0xFF000108 | 0x00000001 | Load hardware configuration | Main finite state machine<br>➔ Invalid status | • Acknowledge error | 1: Resetting the software |
| 0xFF000108 | 0x00000002 | Load hardware configuration | Operation finite state machine<br>➔ Invalid status | • Acknowledge error | 1: Resetting the software |
| 0xFF000108 | 0x00000003 | Load hardware configuration | Invalid mode | • Acknowledge error | 1: Resetting the software |
| 0xFF000108 | 0x00000004 | Load hardware configuration | Error reading the file size<br>No SD-Card available<br>SD-Card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000108 | 0x00000005 | Load hardware configuration | No hardware configuration read<br>➔ File size = zero<br>No SD-Card available<br>SD-Card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000108 | 0x00000006 | Load hardware configuration | Error reading the Hardware configuration<br>No SD-Card available<br>SD-Card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000108 | 0x00000007 | Load hardware configuration | Invalid hardware configuration | • Acknowledge error | 1: Resetting the software |
| 0xFF000108 | 0x00000008 | Load hardware configuration | Error resetting the motor controller<br>No EtherCAT bus communication | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000108 | 0x0000000C | Load hardware configuration | Invalid serial number of the motor controller | • Replace motor controller<br>• Reload Hardware configuration<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000108 | 0x0000000D | Load hardware configuration | Error reading the serial number of the motor controller<br>No EtherCAT bus communication | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000108 | 0x00000010 | Load hardware configuration | Error reading the Firmware Version of the motor controller<br>No EtherCAT bus communication | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000109 | 0x00000001 | Search for logging configuration | Main finite state machine<br>➔ Invalid status | • Acknowledge error | 1: Resetting the software |
| 0xFF000109 | 0x00000002 | Search for logging configuration | Operation finite state machine<br>➔ Invalid status | • Acknowledge error | 1: Resetting the software |
| 0xFF00010A | Quantity | Multiple logging configuration available | Several memory configurations stored | • Delete memory configurations<br>• Acknowledge error | 1: Resetting the software |
| 0xFF00010B | 0x00000001 | Load logging configuration | Main finite state machine<br>➔ Invalid status | • Acknowledge error | 1: Resetting the software |
| 0xFF00010B | 0x00000002 | Load logging configuration | Operation finite state machine<br>➔ Invalid status | • Acknowledge error | 1: Resetting the software |
| 0xFF00010B | 0x00000003 | Load logging configuration | Invalid mode | • Acknowledge error | 1: Resetting the software |
| 0xFF00010B | 0x00000004 | Load logging configuration | Error reading the file size<br>No SD-Card available<br>SD-Card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF00010B | 0x00000005 | Load logging configuration | No memory configuration read<br>➔ File size = zero<br>No SD-Card available<br>SD-Card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF00010B | 0x00000006 | Load logging configuration | Error reading the memory configuration<br>No SD-Card available<br>SD-Card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |

| Info 1 | Info 2 | Message | Cause | Action | Response |
|---|---|---|---|---|---|
| 0xFF00010C | 0x00000001 | Search for system configuration | Main finite state machine<br>➔ Invalid status | • Acknowledge error | 1: Resetting the software |
| 0xFF00010C | 0x00000002 | Search for system configuration | Operation finite state machine<br>➔ Invalid status | • Acknowledge error | 1: Resetting the software |
| 0xFF00010D | Quantity | Multiple system configuration available | Several System configurations stored | • Delete System configurations<br>Acknowledge error | 1: Resetting the software |
| 0xFF00010E | 0x00000001 | Load system configuration | Main finite state machine<br>➔ Invalid status | • Acknowledge error | 1: Resetting the software |
| 0xFF00010E | 0x00000002 | Load system configuration | Operation finite state machine<br>➔ Invalid status | • Acknowledge error | 1: Resetting the software |
| 0xFF00010E | 0x00000003 | Load system configuration | Invalid mode | • Acknowledge error | 1: Resetting the software |
| 0xFF00010E | 0x00000004 | Load system configuration | Error reading the file size<br>No SD-Card available<br>SD-Card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF00010E | 0x00000005 | Load system configuration | No system configuration read<br>➔ File size = zero<br>No SD-Card available<br>SD-Card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF00010E | 0x00000006 | Load system configuration | Error reading the System configuration<br>No SD-Card available<br>SD-Card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF00010F | 0x00000000 | Creation of program directory | No SD-Card available<br>SD-Card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000110 | 0x00000001 | Listing of program directory | Main finite state machine<br>➔ Invalid status | • Acknowledge error | 1: Resetting the software |
| 0xFF000110 | 0x00000002 | Listing of program directory | Operation finite state machine<br>➔ Invalid status | • Acknowledge error | 1: Resetting the software |
| 0xFF000110 | 0x00000003 | Listing of program directory | Error while opening the directory<br>No SD-Card available<br>SD-Card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000110 | 0x00000004 | Listing of program directory | Error while listing the directory<br>No SD-Card available<br>SD-Card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000110 | 0x00000005 | Listing of program directory | Error while closing the directory<br>No SD-Card available<br>SD-Card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000111 | 0x00000001 | Listing of programs | Main finite state machine<br>➔ Invalid status | • Acknowledge error | 1: Resetting the software |
| 0xFF000111 | 0x00000002 | Listing of programs | Operation finite state machine<br>➔ Invalid status | • Acknowledge error | 1: Resetting the software |
| 0xFF000111 | 0x00000003 | Listing of programs | Invalid mode | • Acknowledge error | 1: Resetting the software |
| 0xFF000111 | 0x00000004 | Listing of programs | Several programs with the same name stored | • Delete programs with the same name<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000111 | 0x00000005 | Listing of programs | List the programs | • Acknowledge error | 1: Resetting the software |
| 0xFF000111 | 0x00000006 | Listing of programs | Read the program name | • Acknowledge error | 1: Resetting the software |
| 0xFF000112 | 0x00000001 | Load program | Main finite state machine<br>➔ Invalid status | • Acknowledge error | 1: Resetting the software |
| 0xFF000112 | 0x00000002 | Load program | Operation finite state machine<br>➔ Invalid status | • Acknowledge error | 1: Resetting the software |

| Info 1 | Info 2 | Message | Cause | Action | Response |
|---|---|---|---|---|---|
| 0xFF000112 | 0x00000003 | Load program | Invalid mode | • Acknowledge error | 1: Resetting the software |
| 0xFF000112 | 0x00000007 | Load program | Error reading the file size<br>No SD-Card available<br>SD-Card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000112 | 0x00000008 | Load program | No program read ➔ File size = zero<br>No SD-Card available<br>SD-Card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000112 | 0x00000009 | Load program | Error reading the program<br>No SD-Card available<br>SD-Card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000113 | 0x00000001 | Load object directory | Main finite state machine ➔ Invalid status | • Acknowledge error | 1: Resetting the software |
| 0xFF000113 | 0x00000002 | Load object directory | Operation finite state machine ➔ Invalid status | • Acknowledge error | 1: Resetting the software |
| 0xFF000113 | 0x00000003 | Load object directory | Invalid mode | • Acknowledge error | 1: Resetting the software |
| 0xFF000113 | 0x00000004 | Load object directory | Error reading the file size<br>No SD-Card available<br>SD-Card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000113 | 0x00000005 | Load object directory | No object directory read ➔ File size = zero<br>No SD-Card available<br>SD-Card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000113 | 0x00000006 | Load object directory | Error reading the object directory<br>No SD-Card available<br>SD-Card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000114 | 0x00000001 | Read firmware version of controller | Error reading the file size | • Acknowledge error | 1: Resetting the software |
| 0xFF000114 | 0x00000002 | Read firmware version of controller | No firmware design read ➔ File size = zero | • Acknowledge error | 1: Resetting the software |
| 0xFF000114 | 0x00000003 | Read firmware version of controller | Error reading the Firmware Version | • Acknowledge error | 1: Resetting the software |
| 0xFF000115 | 0x00000001 | Read analog force value | Main finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000115 | 0x00000002 | Read analog force value | Operation finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000115 | 0x00000003 | Read analog force value | Wire break | • Check sensor cable<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000115 | 0x00000004 | Read analog force value | Positive limit value reached | • Check sensor<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000115 | 0x00000005 | Read analog force value | Negative limit value reached | • Check sensor<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000116 | 0x00000001 | Tare force value | Main finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000116 | 0x00000002 | Tare force value | Operation finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000117 | 0x00000001 | Calc moving average of force value | Main finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000117 | 0x00000002 | Calc moving average of force value | Operation finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000117 | 0x00000003 | Calc moving average of force value | Input value too small | • Acknowledge error | 2: Resetting the function block |

| Info 1 | Info 2 | Message | Cause | Action | Response |
|---|---|---|---|---|---|
| 0xFF000117 | 0x00000004 | Calc moving average of force value | Input value too large | • Acknowledge error | 2: Resetting the function block |
| 0xFF00011C | Error code | Fault motor controller | Error in the motor controller | • Check Error code in the instructions of the motor controller and resolve it in accordance with the instructions. Acknowledgment of the Error is made through the Software.<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000121 | 0x00000001 | Jogging | Main finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000121 | 0x00000002 | Jogging | Operation finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000121 | 0x00000003 | Jogging | Motor controller not released | • Enable motor controller<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000121 | 0x00000004 | Jogging | Pos. and neg. jogging at the same time | • Activate either Pos. or neg. jogging<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000121 | 0x00000005 | Jogging | Speed = 0 mm/s | • Speed = 0 mm/s<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000121 | 0x00000006 | Jogging | Following error | • Acknowledge error | 2: Resetting the function block |
| 0xFF000122 | 0x00000001 | Move absolute | Main finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000122 | 0x00000002 | Move absolute | Operation finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000122 | 0x00000003 | Move absolute | Motor controller not released | • Enable motor controller<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000122 | 0x00000004 | Move absolute | Speed = 0 mm/s | • Speed = 0 mm/s<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000122 | 0x00000005 | Move absolute | Position outside neg. software limit | • Enter Position within Pos. Software limit<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000122 | 0x00000006 | Move absolute | Position outside pos. software limit | • Input position inside pos. software limit<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000122 | 0x00000007 | Move absolute | Following error | • Acknowledge error | 2: Resetting the function block |
| 0xFF000123 | 0x00000001 | Move relative | Main finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000123 | 0x00000002 | Move relative | Operation finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000123 | 0x00000003 | Move relative | Motor controller not released | • Enable motor controller<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000123 | 0x00000004 | Move relative | Speed = 0 mm/s | • Speed = 0 mm/s<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000123 | 0x00000005 | Move relative | Position outside neg. software limit | • Enter Position within neg. Software limit<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000123 | 0x00000006 | Move relative | Position outside pos. software limit | • Enter Position within Pos. Software limit<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000123 | 0x00000007 | Move relative | Following error | • Acknowledge error | 2: Resetting the function block |
| 0xFF000124 | 0x00000000 | Mode selection | Manual and automatic Operation active | • Activate Manual or automatic mode<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000125 | 0x00000001 | Login | Main finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |

| Info 1 | Info 2 | Message | Cause | Action | Response |
|---|---|---|---|---|---|
| 0xFF000125 | 0x00000002 | Login | Operation finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000125 | 0x00000003 | Login | Invalid mode | • Acknowledge error | 2: Resetting the function block |
| 0xFF000125 | 0x00000004 | Login | Error reading the file size<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000125 | 0x00000005 | Login | No user administration read<br>➔ File size = zero<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000125 | 0x00000006 | Login | Error reading the user administration<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000126 | 0x00000001 | Change password | Main finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000126 | 0x00000002 | Change password | Operation finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000126 | 0x00000003 | Change password | Invalid mode | • Acknowledge error | 2: Resetting the function block |
| 0xFF000126 | 0x00000004 | Change password | Error reading the file size<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000126 | 0x00000005 | Change password | No user administration read<br>➔ File size = zero<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000126 | 0x00000006 | Change password | Error reading the user administration<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000126 | 0x00000007 | Change password | Repetition of the new password incorrect | • Acknowledge error | 2: Resetting the function block |
| 0xFF000126 | 0x00000008 | Change password | New password too short | • Acknowledge error | 2: Resetting the function block |
| 0xFF000126 | 0x00000009 | Change password | New password too long | • Acknowledge error | 2: Resetting the function block |
| 0xFF000126 | 0x0000000A | Change password | Password contains invalid characters | • Acknowledge error | 2: Resetting the function block |
| 0xFF000126 | 0x0000000B | Change password | Incorrect password | • Acknowledge error | 2: Resetting the function block |
| 0xFF000126 | 0x0000000C | Change password | Error saving the password<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000127 | 0x00000001 | Load hardware configuration | Main finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000127 | 0x00000002 | Load hardware configuration | Operation finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000127 | 0x00000003 | Load hardware configuration | Invalid mode | • Acknowledge error | 2: Resetting the function block |
| 0xFF000127 | 0x00000011 | Load hardware configuration | Set the hardware configuration<br>No EtherCAT bus communication | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x00000012 | Load hardware configuration | Resetting the motor controller during reboot<br>No EtherCAT bus communication | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x00000013 | Load hardware configuration | Time out of motor controller feedback after reset<br>No EtherCAT bus communication | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |

| Info 1 | Info 2 | Message | Cause | Action | Response |
|---|---|---|---|---|---|
| 0xFF000127 | 0x0000001C | Load hardware configuration | Setting the motor controller configuration via EtherCAT<br>No EtherCAT bus communication | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x0000001D | Load hardware configuration | Time out after downloading motor controller configuration<br>No EtherCAT bus communication | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x00000029 | Load hardware configuration | Setting parameter velocity controller amplification gain<br>No EtherCAT bus communication | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x0000002A | Load hardware configuration | Setting parameter velocity controller integration constant<br>No EtherCAT bus communication | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x0000002B | Load hardware configuration | Setting parameter position controller amplification gain<br>No EtherCAT bus communication | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x0000002C | Load hardware configuration | Setting parameter working stroke<br>No EtherCAT bus communication | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x0000002D | Load hardware configuration | Setting parameter software limit position<br>No EtherCAT bus communication | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x0000002E | Load hardware configuration | Setting parameter maximum movement stroke during the identification<br>No EtherCAT bus communication | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x0000002F | Load hardware configuration | Setting parameter movement stroke during validation movement | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x00000030 | Load hardware configuration | Setting parameter reversing the direction of rotation<br>No EtherCAT bus communication | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x00000033 | Load hardware configuration | Saving the motor controller parameters<br>No EtherCAT bus communication | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x00000034 | Load hardware configuration | Resetting the motor controller after saving<br>No EtherCAT bus communication | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x00000038 | Load hardware configuration | Reading out the motor controller serial number<br>No EtherCAT bus communication | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x0000003B | Load hardware configuration | Reading out the motor controller firmware version<br>No EtherCAT bus communication | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x0000003C | Load hardware configuration | Saving the hardware configuration<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x0000003D | Load hardware configuration | Error reading the file size<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |

| Info 1 | Info 2 | Message | Cause | Action | Response |
|---|---|---|---|---|---|
| 0xFF000127 | 0x0000003E | Load hardware configuration | No YJKPflex configuration read<br>➔ File size = zero<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x0000003F | Load hardware configuration | Error reading the YJKPflex configuration<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x00000040 | Load hardware configuration | No valid license | • Download YJKPflex license | 1: Resetting the software |
| 0xFF000127 | 0x00000041 | Load hardware configuration | Saving the system parameter<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x00000042 | Load hardware configuration | Error reading the file size<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x00000043 | Load hardware configuration | No system parameter read<br>➔ File size = zero<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x00000044 | Load hardware configuration | Error reading the system parameter<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x00000045 | Load hardware configuration | Database ID of axis<br>No EtherCAT bus communication | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x00000046 | Load hardware configuration | Order code axis<br>No EtherCAT bus communication | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x00000047 | Load hardware configuration | Limit value velocity limit positive direction of movement<br>No EtherCAT bus communication | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x00000048 | Load hardware configuration | Limit value velocity limit negative direction of movement<br>No EtherCAT bus communication | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x00000049 | Load hardware configuration | Upper limit value acceleration limitation<br>No EtherCAT bus communication | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x0000004A | Load hardware configuration | Upper limit value deceleration limitation<br>No EtherCAT bus communication | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x0000004B | Load hardware configuration | Referencing method<br>No EtherCAT bus communication | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x0000004C | Load hardware configuration | Lower limit value active current (closed loop controller)<br>No EtherCAT bus communication | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x0000004D | Load hardware configuration | Upper limit value active current (closed loop controller)<br>No EtherCAT bus communication | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000127 | 0x0000004E | Load hardware configuration | Limit value total current (closed loop controller)<br>No EtherCAT bus communication | • Check EtherCAT bus cable and connection<br>• Acknowledge error | 1: Resetting the software |

| Info 1 | Info 2 | Message | Cause | Action | Response |
|---|---|---|---|---|---|
| 0xFF000128 | 0x00000001 | Save system configuration | Main finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000128 | 0x00000002 | Save system configuration | Operation finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000128 | 0x00000003 | Save system configuration | Invalid mode | • Acknowledge error | 2: Resetting the function block |
| 0xFF000128 | 0x00000007 | Save system configuration | Error saving the System configuration<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF00012A | 0x00000001 | Homing | Main finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF00012A | 0x00000002 | Homing | Operation finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF00012A | 0x00000003 | Homing | Motor controller not released | • Enable motor controller<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF00012A | 0x00000004 | Homing | Homing error | • Acknowledge error | 2: Resetting the function block |
| 0xFF00012C | 0x00000001 | Set save homing | Main finite state machine ➔ Invalid status | • Acknowledge fault | 2: Resetting the function block |
| 0xFF00012C | 0x00000002 | Set save homing | Operation finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF00012D | 0x00000001 | Save homing | Main finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF00012D | 0x00000002 | Save homing | Operation finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF00012E | 0x00000001 | Reset save homing | Main finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF00012E | 0x00000002 | Reset save homing | Operation finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF00012F | 0x00000001 | Save logging configuration | Main finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF00012F | 0x00000002 | Save logging configuration | Operation finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF00012F | 0x00000003 | Save logging configuration | Invalid mode | • Acknowledge error | 2: Resetting the function block |
| 0xFF00012F | 0x00000007 | Save logging configuration | Error saving the memory configuration<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000131 | 0x00000001 | Sequencer | Main finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000131 | 0x00000002 | Sequencer | Operation finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000131 | 0x00000003 | Sequencer | Error in position mode | • Acknowledge error | 2: Resetting the function block |
| 0xFF000131 | 0x00000004 | Sequencer | Error in force mode | • Acknowledge error | 2: Resetting the function block |
| 0xFF000131 | 0x00000005 | Sequencer | Error in digital signal mode | • Acknowledge error | 2: Resetting the function block |
| 0xFF000131 | 0x00000006 | Sequencer | Variable outside valid range | • Acknowledge error | 2: Resetting the function block |
| 0xFF000131 | 0x00000007 | Sequencer | Error in force control | • Acknowledge error | 2: Resetting the function block |
| 0xFF000131 | 0x00000008 | Sequencer | Error in advanced force mode | • Acknowledge error | 2: Resetting the function block |
| 0xFF000131 | 0x00000009 | Sequencer | No valid license | • Get advanced license<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000132 | 0x00000001 | Part evaluation | Main finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000132 | 0x00000002 | Part evaluation | Operation finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |

| Info 1 | Info 2 | Message | Cause | Action | Response |
|---|---|---|---|---|---|
| 0xFF000133 | 0x00000001 | Statistic | Main finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000133 | 0x00000002 | Statistic | Operation finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000133 | 0x00000003 | Statistic | Invalid mode | • Acknowledge error | 2: Resetting the function block |
| 0xFF000134 | 0x00000001 | Save on USB | Main finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000134 | 0x00000002 | Save on USB | Operation finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000134 | 0x00000003 | Save on USB | Invalid mode | • Acknowledge error | 2: Resetting the function block |
| 0xFF000134 | 0x00000008 | Save on USB | Error saving onto USB<br>No USB Stick available<br>USB Stick defective | • Plug in USB Stick<br>• Replace USB Stick<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000134 | 0x00000011 | Save on USB | Error saving onto USB<br>No USB Stick available<br>USB Stick defective | • Plug in USB Stick<br>• Replace USB Stick<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000134 | 0x00000013 | Save on USB | Error saving onto USB<br>No USB Stick available<br>USB Stick defective | • Plug in USB Stick<br>• Replace USB Stick<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000135 | 0x00000001 | Save on SD-Card | Main finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000135 | 0x00000002 | Save on SD-Card | Operation finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000135 | 0x00000003 | Save on SD-Card | Invalid mode | • Acknowledge error | 2: Resetting the function block |
| 0xFF000135 | 0x00000009 | Save on SD-Card | Error saving onto SD card<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000135 | 0x00000012 | Save on SD-Card | Error saving onto SD card<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000135 | 0x00000014 | Save on SD-Card | Error saving onto SD card<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000137 | 0x00000001 | Save program | Main finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000137 | 0x00000002 | Save program | Operation finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000137 | 0x00000003 | Save program | Invalid mode | • Acknowledge error | 2: Resetting the function block |
| 0xFF000137 | 0x0000000A | Save program | Error saving the program<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000138 | 0x00000001 | Delete program | Main finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000138 | 0x00000002 | Delete program | Operation finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000138 | 0x00000003 | Delete program | Invalid mode | • Acknowledge error | 2: Resetting the function block |
| 0xFF000138 | 0x0000000B | Delete program | Error deleting the program<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000138 | 0x0000000C | Delete program | Error renaming the program<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000139 | 0x00000001 | Copy program | Main finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |

| Info 1 | Info 2 | Message | Cause | Action | Response |
|---|---|---|---|---|---|
| 0xFF000139 | 0x00000002 | Copy program | Operation finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000139 | 0x00000003 | Copy program | Invalid mode | • Acknowledge error | 2: Resetting the function block |
| 0xFF000139 | 0x0000000D | Copy program | Error copying the program<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF00013A | 0x00000001 | Load program | Main finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF00013A | 0x00000002 | Load program | Operation finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF00013A | 0x00000003 | Load program | Invalid mode | • Acknowledge error | 2: Resetting the function block |
| 0xFF00013A | 0x00000007 | Load program | Error reading the file size<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF00013A | 0x00000008 | Load program | No program read ➔ File size = zero<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF00013A | 0x00000009 | Load program | Error reading the program<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF00013B | 0x00000001 | Listing of program directory | Main finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF00013B | 0x00000002 | Listing of program directory | Operation finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF00013B | 0x00000003 | Listing of program directory | Error while opening the directory<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF00013B | 0x00000004 | Listing of program directory | Error while listing the directory<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF00013B | 0x00000005 | Listing of program directory | Error while closing the directory<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF00013C | 0x00000001 | Listing of programs | Main finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF00013C | 0x00000002 | Listing of programs | Operation finite state machine ➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF00013C | 0x00000003 | Listing of programs | Invalid mode | • Acknowledge error | 2: Resetting the function block |
| 0xFF00013C | 0x00000004 | Listing of programs | Several programs with the same name stored | • Delete programs with same name<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF00013C | 0x00000005 | Listing of programs | List the programs | • Acknowledge error | 2: Resetting the function block |
| 0xFF00013C | 0x00000006 | Listing of programs | Read the program name | • Acknowledge error | 2: Resetting the function block |
| 0xFF00013D | 0x00000001 | Search for logging internal | Main finite state machine ➔ Invalid status | • Acknowledge error | 1: Resetting the software |
| 0xFF00013D | 0x00000002 | Search for logging internal | Operation finite state machine ➔ Invalid status | • Acknowledge error | 1: Resetting the software |
| 0xFF00013E | Quantity | Multiple internal logging files present | Several internal memory files stored | • Erase internal memory files<br>• Acknowledge error | 1: Resetting the software |
| 0xFF00013F | 0x00000001 | Load logging internal | Main finite state machine ➔ Invalid status | • Acknowledge error | 1: Resetting the software |

| Info 1 | Info 2 | Message | Cause | Action | Response |
|---|---|---|---|---|---|
| 0xFF00013F | 0x00000002 | Load logging internal | Operation finite state machine<br>➔ Invalid status | • Acknowledge error | 1: Resetting the software |
| 0xFF00013F | 0x00000003 | Load logging internal | Invalid mode | • Acknowledge error | 1: Resetting the software |
| 0xFF00013F | 0x0000000A | Load logging internal | Error reading the file size<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF00013F | 0x0000000B | Load logging internal | No internal memory file read<br>➔ File size = zero<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF00013F | 0x0000000C | Load logging internal | Error reading the internal memory file<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000140 | 0x00000001 | Save logging internal | Error reading the internal memory file | • Acknowledge error | 2: Resetting the function block |
| 0xFF000140 | 0x00000002 | Save logging internal | Operation finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000140 | 0x00000003 | Save logging internal | Invalid mode | • Acknowledge error | 2: Resetting the function block |
| 0xFF000140 | 0x0000000D | Save logging internal | Error saving onto SD card<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000141 | 0x00000001 | Save archive on USB | Main finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000141 | 0x00000002 | Save archive on USB | Operation finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000141 | 0x00000003 | Save archive on USB | Invalid mode | • Acknowledge error | 2: Resetting the function block |
| 0xFF000141 | 0x0000000E | Save archive on USB | Error saving archive onto USB<br>No USB Stick available<br>USB Stick defective | • Plug in USB Stick<br>• Replace USB Stick<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000141 | 0x0000000F | Save archive on USB | Deleting the current press results<br>No USB Stick available<br>USB Stick defective | • Plug in USB Stick<br>• Replace USB Stick<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000141 | 0x00000013 | Save archive on USB | Error saving archive onto USB<br>No USB Stick available<br>USB Stick defective | • Plug in USB Stick<br>• Replace USB Stick<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000141 | 0x00000014 | Save archive on USB | Deleting the current press results<br>No USB Stick available<br>USB Stick defective | • Plug in USB Stick<br>• Replace USB Stick<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000142 | 0x00000001 | Save archive on SD-Card | Main finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000142 | 0x00000002 | Save archive on SD-Card | Operation finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000142 | 0x00000003 | Save archive on SD-Card | Invalid mode | • Acknowledge error | 2: Resetting the function block |
| 0xFF000142 | 0x0000000E | Save archive on SD-Card | Error saving archive onto SD card<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000142 | 0x0000000F | Save archive on SD-Card | Deleting the current press results<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000142 | 0x00000013 | Save archive on SD-Card | Error saving archive onto SD card<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |

| Info 1 | Info 2 | Message | Cause | Action | Response |
|---|---|---|---|---|---|
| 0xFF000142 | 0x00000014 | Save archive on SD-Card | Deleting the current press results<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000143 | 0x00000001 | Save host logging | Main finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000143 | 0x00000002 | Save host logging | Operation finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000143 | 0x00000003 | Save host logging | Invalid mode | • Acknowledge error | 2: Resetting the function block |
| 0xFF000143 | 0x00000010 | Save host logging | Error saving host log file<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000145 | 0x00000000 | Homing - wrong mode | Wrong mode | • Change mode<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000146 | 0x00000000 | Homing disable motor controller wrong mode | Wrong mode | • Change mode<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000147 | 0x00000000 | Move absolute wrong mode | Wrong mode | • Change mode<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000148 | 0x00000000 | Move relative wrong mode | Wrong mode | • Change mode<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000149 | 0x00000000 | Jogging wrong mode | Wrong mode | • Change mode<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF00014C | 0x00000000 | Sequencer wrong mode | Wrong mode | • Change mode<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF00014D | 0x00000001 | Save on SD-Card (FTP file) | Main finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF00014D | 0x00000002 | Save on SD-Card (FTP file) | Operation finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF00014D | 0x00000003 | Save on SD-Card (FTP file) | Invalid mode | • Acknowledge error | 2: Resetting the function block |
| 0xFF00014D | 0x00000015 | Save on SD-Card (FTP file) | Error saving onto SD card<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF00014E | 0x00000000 | Save on FTP-Server | Error saving onto FTP-Server | • Check FTP-Server settings<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF00014F | 0x00000001 | License check | Main finite state machine<br>➔ Invalid status | • Acknowledge error | 1: Resetting the software |
| 0xFF00014F | 0x00000002 | License check | Operation finite state machine<br>➔ Invalid status | • Acknowledge error | 1: Resetting the software |
| 0xFF000150 | 0x00000002 | No valid license | No valid license | • Get license<br>• Acknowledge error | 1: Resetting the software |
| 0xFF000151 | 0x00000001 | Save on SMB-Share | Main finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000151 | 0x00000002 | Save on SMB-Share | Operation finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000151 | 0x00000003 | Save on SMB-Share | Invalid mode | • Acknowledge error | 2: Resetting the function block |
| 0xFF000151 | 0x00000016 | Save on SMB-Share | Error saving onto SMB-Share | • Check if SMB-Share is active and configured<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000152 | 0x00000000 | Connect to SMB-Share | Error connect to SMB-Share<br>SMB-Share not available | • Check if SMB-Share is active and configured<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000153 | 0x00000001 | Load optional curve | Main finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000153 | 0x00000002 | Load optional curve | Operation finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |

| Info 1 | Info 2 | Message | Cause | Action | Response |
|---|---|---|---|---|---|
| 0xFF000153 | 0x00000003 | Load optional curve | Invalid mode | • Acknowledge error | 2: Resetting the function block |
| 0xFF000153 | 0x00000017 | Load optional curve | Error reading the file size<br>No SD-Card/USB Stick available<br>SD-Card/USB Stick defective | • Plug in SD card/USB Stick<br>• Replace SD card/USB Stick<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000153 | 0x00000018 | Load optional curve | No memory configuration read<br>➔ File size = zero<br>No SD-Card/USB Stick available<br>SD-Card/USB Stick defective | • Plug in SD card/USB Stick<br>• Replace SD card/USB Stick<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000153 | 0x00000019 | Load optional curve | Error reading the optional curve<br>No SD-Card/USB Stick available<br>SD-Card/USB Stick defective | • Plug in SD card/USB Stick<br>• Replace SD card/USB Stick<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000154 | 0x00000001 | Save on SD-Card (Internal curve file) | Main finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000154 | 0x00000002 | Save on SD-Card (Internal curve file) | Operation finite state machine<br>➔ Invalid status | • Acknowledge error | 2: Resetting the function block |
| 0xFF000154 | 0x00000003 | Save on SD-Card (Internal curve file) | Invalid mode | • Acknowledge error | 2: Resetting the function block |
| 0xFF000154 | 0x0000001A | Save on SD-Card (Internal curve file) | Error saving onto SD card<br>SD card not available<br>SD card defective | • Plug in SD card<br>• Replace SD card<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF000155 | Error code | Save offset of encoder | Error in the motor controller | • Check error code in the instructions of the motor controller and resolve it in accordance with the instructions. Acknowledgment of the error via the software.<br>• Acknowledge error | 2: Resetting the function block |
| 0xFF010101 | 0x00000000 | System in operation | System in operation | • Acknowledge warning | 2: Resetting the function block |
| 0xFF010102 | 0x00000000 | Wrong password | Incorrect password | • Acknowledge warning | 2: Resetting the function block |
| 0xFF010103 | 0x00000000 | Not in manual mode | Not in Manual Operation | • Acknowledge warning | 2: Resetting the function block |
| 0xFF010104 | 0x00000000 | Too many records selected | Too many recordings inserted | • Acknowledge warning | 2: Resetting the function block |
| 0xFF010105 | 0x00000000 | Program name already exists | Program name already exists | • Change program name<br>• Acknowledge warning | 2: Resetting the function block |
| 0xFF010106 | 0x00000000 | Invalid characters present in the name | Invalid characters used | • Use valid characters (a-z, A-Z, 0-9 and _)<br>• Acknowledge warning | 2: Resetting the function block |
| 0xFF010107 | 0x00000000 | Limits manual movement | Limits manual movement | • Acknowledge warning | 2: Resetting the function block |
| 0xFF010108 | 0x00000000 | System limits exceeded (Host) | System limits exceeded (Host) | • Acknowledge warning | 2: Resetting the function block |

Table: Message code

| Response | Explanation |
|---|---|
| 0 | No response |
| 1 | Reset software |
| 2 | Reset function block |
| 3 | Reset function block and motor controller fault |

Table: Response to message

| Device-related cause | Explanation |
|---|---|
| 0 | No device |
| 1 | Servo press |

Table: Device-related cause for message

| System-related cause | Explanation |
|---|---|
| 0 | No system |
| 1 | System 1 |

Table: System-related cause for message

| Timestamp | Explanation |
|---|---|
| <Timestamp> | Timestamp when message occurred |

Table: Timestamp for message

## 5.5 Basic units

| Basic units | Physical variable |
|---|---|
| N (Newton) | Force |
| mm (millimetre) | Position/distance |
| mm/s (millimetres per second) | Velocity |
| ms (milliseconds) | Time |

Table: Basic units