



## YJKP - System diagnosis

Description of the diagnosis elements

YJKP

Title .....YJKP - System diagnosis  
Version ..... 1.10  
Document no. .... 100260  
Original .....en  
Author .....Festo  
  
Last saved ..... 05.09.2019

## Copyright Notice

This documentation is the intellectual property of Festo AG & Co. KG, which also has the exclusive copyright. Any modification of the content, duplication or reprinting of this documentation as well as distribution to third parties can only be made with the express consent of Festo AG & Co. KG.

Festo AG & Co KG reserves the right to make modifications to this document in whole or in part. All brand and product names are trademarks or registered trademarks of their respective owners.

## Legal Notice

Hardware, software, operating systems and drivers may only be used for the applications described and only in conjunction with components recommended by Festo AG & Co. KG.

Festo AG & Co. KG does not accept any liability for damages arising from the use of any incorrect or incomplete information contained in this documentation or any information missing therefrom.

Defects resulting from the improper handling of devices and modules are excluded from the warranty.

The data and information specified in this document should not be used for the implementation of safety functions relating to the protection of personnel and machinery.

No liability is accepted for claims for damages arising from a failure or functional defect. In other respects, the regulations with regard to liability from the terms and conditions of delivery, payment and use of software of Festo AG & Co. KG, which can be found at [www.festo.com](http://www.festo.com) and can be supplied on request, shall apply.

All data contained in this document do not represent guaranteed specifications, particularly with regard to functionality, condition or quality, in the legal sense.

The information in this document serves only as basic information for the implementation of a specific, hypothetical application and is in no way intended as a substitute for the operating instructions of the respective manufacturers and the design and testing of the respective application by the user.

The operating instructions for Festo products can be found at [www.festo.com/sp](http://www.festo.com/sp).

Users of this document (application note) must verify that all functions described here also work correctly in the application. By reading this document and adhering to the specifications contained therein, users are also solely responsible for their own application.

# Table of contents

- 1 Components/Software used .....5
- 2 Process diagnosis .....6
- 3 Device diagnosis .....10
  - 3.1 Using WebVisu ..... 10
  - 3.2 Using Host..... 12
- 4 Interface diagnosis..... 14



## 1 Components/Software used

Type/Name	Version Software/Firmware	Date of manufacture
Servo press kit YJKP	general	--
Application software YJKP (GSAY-A4-F0-Z4-1.3.5)	V1.3.5	--
Firmware controller (CECC-X)	V3.4.6	--
Firmware motor controller (CMMP-AS)	V4.0.1501.2.4	--

Table 1.1: 1 Components/Software used

## 2 Process diagnosis

Process diagnosis shows you more details about the performed operations, such as the number of processed parts, successful operations, failed operations.. etc.

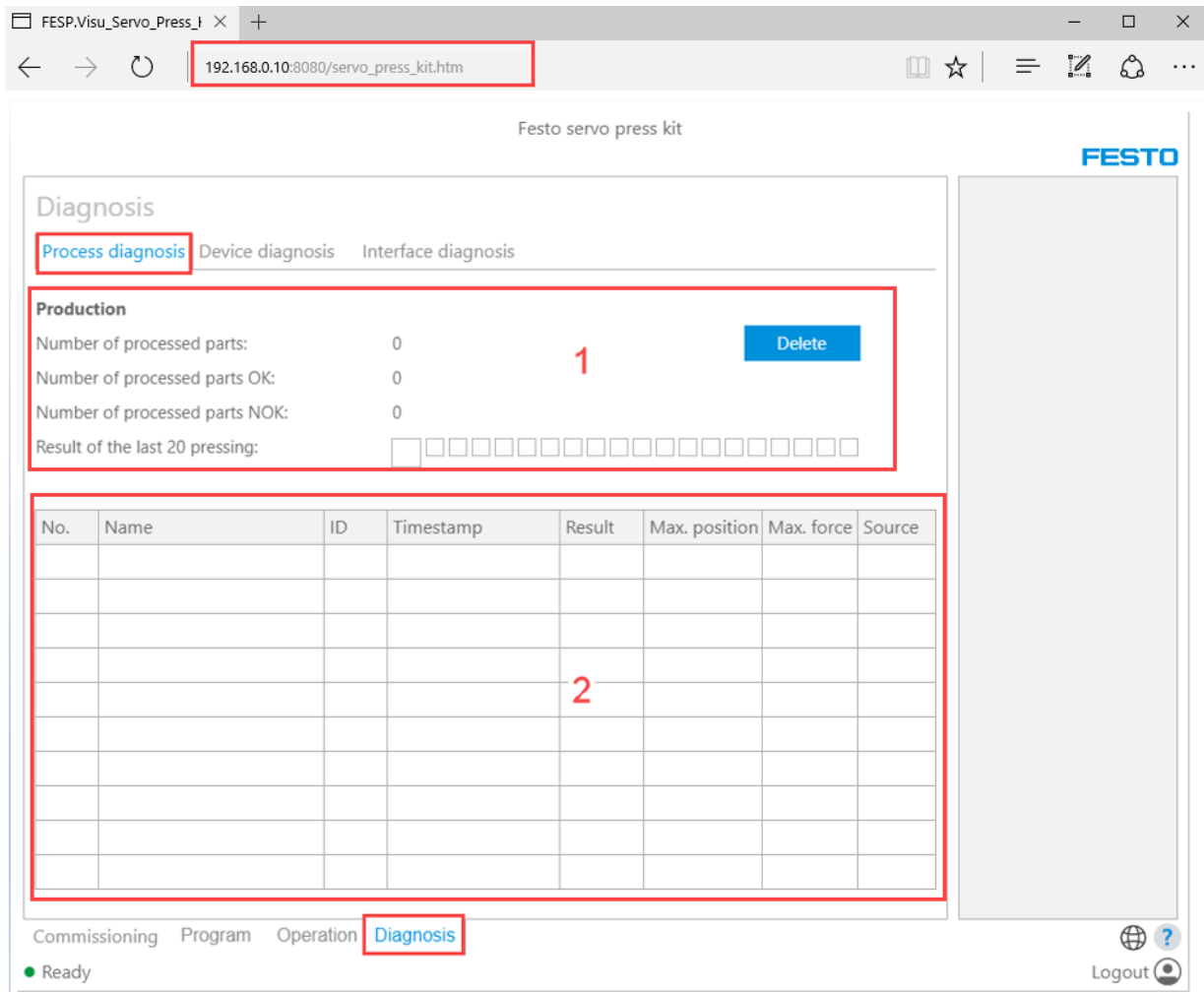
Open a browser and start the WebVisu of the YJKP.

**In Browser:** <IP of the CECC-X>:8080/servo\_press\_kit.htm

The visualization of the servo-press kit is opened with 4 tabs :

- Commissioning / Program : Not active
- Operation / Diagnosis: Active

Go to process diagnosis tab -> process diagnosis



This screen consists of two parts:

1. Production: contains information about the processed parts.
  - a. Number of processed parts: Total number of processed parts.
  - b. Number of processed parts Ok: Number of successfully processed parts.
  - c. Number of processed parts NOK: Number of failed processed parts.
  - d. Result of the last 20 pressing : Status of the last 20 operations.
  - e. Delete : Delete all operation results.

2. Table: contains details about each process:

- a. No: Number of the press process.
- b. Name: The name of the press program.
- c. ID: continuous production counter
- d. Timestamp: Execution time.
- e. Result : Result of the process (OK/NOK).
- f. Max.Position: Maximum position reached in this operation.
- g. Max.Force: Maximum force value reached in this operation.
- h. Source: NOK source in case of an NOK-part.

**Example:**

Suppose that the process diagnosis screen for a press program was as follows:

The screenshot shows a 'Diagnosis' window with three tabs: 'Process diagnosis' (selected), 'Device diagnosis', and 'Interface diagnosis'. Under 'Production', it displays:
 

- Number of processed parts: 5
- Number of processed parts OK: 2
- Number of processed parts NOK: 3
- Result of the last 20 pressing: A row of 20 colored squares (red, green, red, red, and 16 white).

 A blue 'Delete' button is next to the 'Number of processed parts' value. Below this is a table with 8 columns: No., Name, ID, Timestamp, Result, Max. position, Max. force, and Source. The first row (No. 5) is highlighted with a red border. At the bottom, there are tabs for 'Commissioning', 'Program', 'Operation', and 'Diagnosis' (selected).

No.	Name	ID	Timestamp	Result	Max. position	Max. force	Source
5	Test	75459	2018-12-11-15:15:30	NOK	6.95 mm	19.08 N	0x18
4	Test	75458	2018-12-11-15:15:20	OK	28.00 mm	372.23 N	0x0
3	Test	75457	2018-12-11-15:15:01	OK	28.00 mm	371.92 N	0x0
2	Test	75456	2018-12-11-15:14:30	NOK	30.03 mm	368.15 N	0x39
1	Test	75455	2018-12-11-15:11:16	NOK	30.03 mm	366.67 N	0x39

This screen gives these information:

1. Production:
  - a. Number of processed parts: 5
  - b. Number of processed parts Ok : 3
  - c. Number of processed parts NOK : 2
  - d. Overview of the last 20 pressing result in order of their appearance.
  
2. Table (example of the last pressing operation):
  - a. No: Last pressing operation (after a reboot of the system for instance) is number 5
  - b. Name: program name is "Test"
  - c. ID: number 75459 overall pressed part
  - d. Timestamp: 2018-12-11-15:15:30
  - e. Result : NOK
  - f. Max.Position: 6.95 mm
  - g. Max.Force: 19.08 N
  - h. Source: Move the mouse over the code (0x18), a new screen will show up describing the reason for the NOK part. In this case the program was interrupted in step 1 by an external termination (xAbort / X3.5 := false)

**NOK Reason**

Termination of the press process

Step: 1

**→ Note**

If you are using a host control to control the press process, these information are also available.

You will need to use two function block:

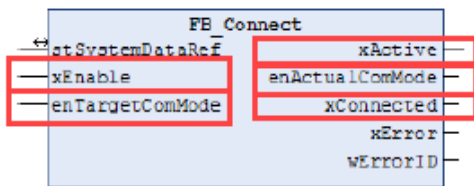
1. FB\_Connect

Required inputs:

- xEnable := true;
- enTargetComMode := 1;

Required outputs:

- xActive := true;
- enActualComMode := 1;
- xConnected := true;



2. FB\_PressControl

Required inputs:

- xEnable := true;

Required outputs:

- xActive := true;
- xResultOk := ; *(True if the process was successful)*
- xResultNok := ; *(True if the process failed)*
- rMaximumPosition := ; *(The greatest position reached in this operation)*
- rMaximumForce := ; *(The greatest force value reached in this operation)*
- wNOK\_Reason := ; *(The reason of the operation failure)*
- xError := ; *(Error occurred during action)*
- wErrorID := ; *(Contains detailed error information in case of an error)*





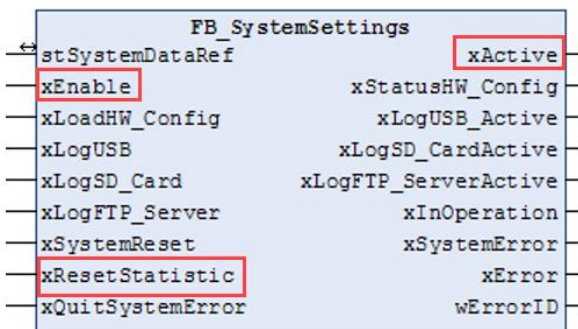
If you like to delete all operation results, use the `FB_SystemSettings`:

Required inputs:

- `xEnable := true;`
- `xResetStatistic:=True;`

Required outputs:

- `xActive := true;`



### 3 Device diagnosis

#### 3.1 Using WebVisu

Device diagnosis provides you information about current system errors.

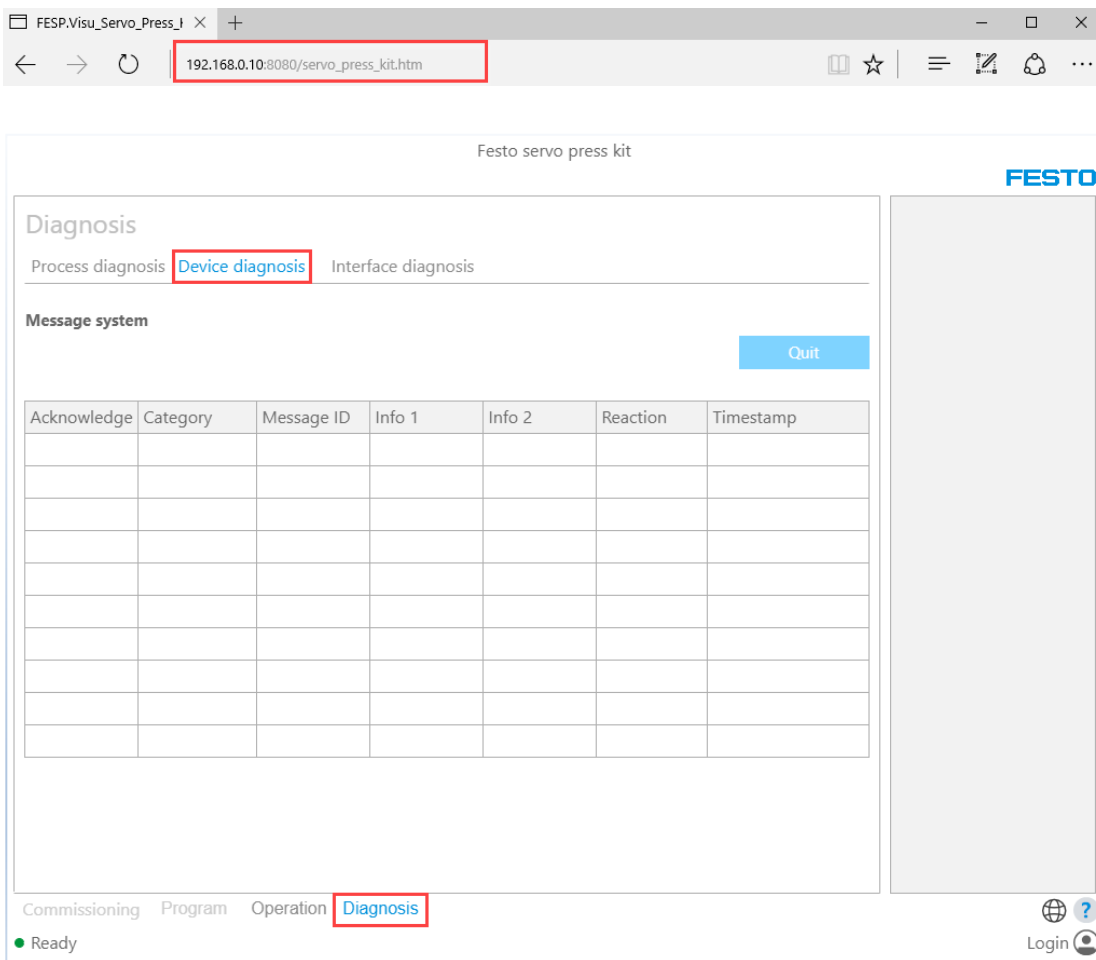
Open a browser and start the WebVisu of the YJKP.

**In Browser:** <IP of the CECC-X>:8080/servo\_press\_kit.htm

The visualization of the servo-press kit is opened with 4 tabs :

- Commissioning / Program : Not active
- Operation / Diagnosis: Active

Go to Diagnosis tab -> Device diagnosis



This screen consists of:

1. Table : contains information about a current error.
2. Quit: quits the system error one by one.

#### Example:

Suppose that the device diagnosis screen for a press program was as follows:

Festo servo press kit

**FESTO**

### Diagnosis

Process diagnosis **Device diagnosis** Interface diagnosis

**Message system** Quit

Acknowledge	Category	Message ID	Info 1	Info 2	Reaction	Timestamp
1	3	5	ff00122	3	2	2018-12-11-16:08:30
1	3	6	ff00131	3	2	2018-12-11-16:08:30

Commissioning Program Operation **Diagnosis**

● Error Move absolute Login ?

As shown, these errors are represented coded.

These messages appear in the order in which they occur, which means that the top message represents the last error. Conversely, the message in the bottom columns is usually the root cause.

If the timestamp, like in this example, is the same, the messages should be read in a common context.

Move the mouse over a one of these codes and a screen with detailed information will show up.

In this example we will get the following screen over the first message:

**Message**

Move absolute

Source: - Motor controller not enabled

Action: - Enable motor controller  
- Acknowledge error

Reaction: 2: Resetting the function block

For the operator it's important to know, which error occurred, why it came up and how to solve it. Here we get already a lot of information:

- Error: Move absolute, so the system tried to execute a movement to an absolute position.
- Source: Error reason. In this example, the motor controller is not enabled.
- Action: How to solve it?
  1. Activate motor controller (**Input X17.4.2** or via a **function block (xEnableSystem)**).
  2. Acknowledge error (**Input X3.4** or via a **function block (xQuitSystemError)**).

The “Reaction” is an internal information and can be ignored by the operator.

All information can be also found in the online help. Here you can focus the collums “Info1” and “Info2”, which define the error message in detail.

ff000122 / 3:

0xFF000122	0x00000003	Move absolute	– Motor controller not released	<ul style="list-style-type: none"> <li>• Enable motor controller</li> <li>• Acknowledge error</li> </ul>
------------	------------	---------------	---------------------------------	--

ff000131 / 3:

0xFF000131	0x00000003	Sequencer	– Error in position mode	<ul style="list-style-type: none"> <li>• Acknowledge error</li> </ul>
------------	------------	-----------	--------------------------	---

With these information we know, that a problem occurred, while the sequencer was executed in a position mode step.

In position mode, the system will either do an absolute or relative movement. In this case it was an absolute positioning. This movement couldn’t be carried out, because the motor controller was not released.

### 3.2 Using Host

If you use a host control to control the press process, two function blocks are required to see the device status. A third one is needed, if you want to get detailed information.

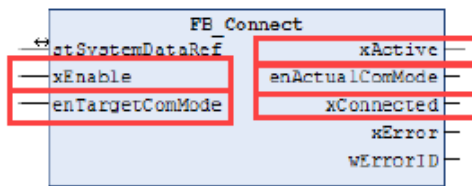
#### 1. FB\_Connect

Required inputs:

- xEnable := true;
- enTargetComMode := 1;

Required outputs:

- xActive := true;
- enActualComMode := 1;
- xConnected := true;



#### 2. FB\_Status / FB\_PressControl / FB\_Manual

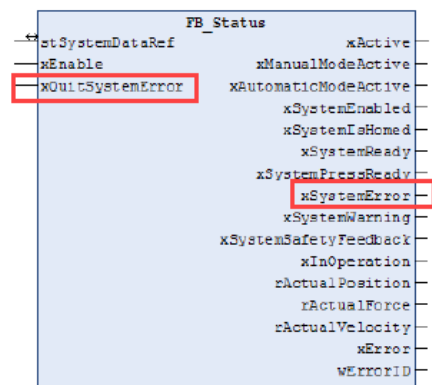
Each of these function blocks has an output, which signals an error and an input to acknowledge it.

Required inputs:

- xEnable := true;
- xQuitSystemError:= ; (*Quit system error command*)

Required outputs:

- xActive := true;
- xSystemError:=; (*true in case a system error*)



### 3. FB\_ReadWriteObject

Detailed information are available in a specific object (0x2200), which can be read with this function block.

Most important subindexes of this object are 0x04 and 0x05, which represent the exact error code.

Message	0x2200	0x00	31	UDINT	4	RO
Message ack	0x2200	0x01	--	BOOL	1	RO
Message id	0x2200	0x02	--	DWORD	4	RO
Message table	0x2200	0x03	--	WORD	2	RO
Message ident additional 01	0x2200	0x04	--	DWORD	4	RO
Message ident additional 02	0x2200	0x05	--	DWORD	4	RO
Message source device	0x2200	0x06	--	UINT	2	RO
Message source system	0x2200	0x07	--	UINT	2	RO
Message reaction	0x2200	0x08	--	UINT	2	RO
Message category	0x2200	0x09	--	UINT	2	RO
Message timestamp	0x2200	0x0A	--	DWORD	4	RO

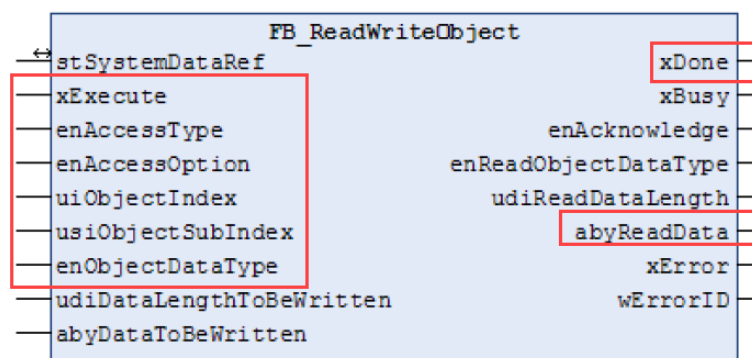
#### Example:

Required inputs:

- enAccessType := 0x00 (read)
- enAccessOption := 0x00 (single)
- uiObjectIndex := 0x2200 (object message)
- usiObjectSubIndex := 0x04 (subindex for additional info 1)
- enObjectDataType := 0x0A (DWORD)
- xExecute := ; true (object is read with rising edge)

Required outputs:

- xDone := true;
- abyReadData := ; (read data)



## 4 Interface diagnosis

Interface diagnosis shows the status of the CECC-X inputs/outputs, and some information about the communication process when using a host controller to control the press process.

Open a browser and start the WebVisu of the YJKP.

**In Browser:** <IP of the CECC-X>:8080/servo\_press\_kit.htm

The visualization of the servo-press kit is opened with 4 tabs :

- Commissioning / Program : Not active
- Operation / Diagnosis: Active

1. Go to Diagnosis -> Interface diagnosis.

The screenshot shows the 'Festo servo press kit' WebVisu interface. The 'Interface diagnosis' tab is selected. The interface is divided into several sections:

- Digital inputs:** A list of 17 inputs with checkboxes. Some are checked, such as X3.2 'Automatic' operating mode, X3.5 'Terminate press process', X17.4.2 'Servo press activation', and X17.5.2 'Activation of step operation'.
- Digital outputs:** A list of 6 outputs with checkboxes. Some are checked, such as X20.1.1 'Servo press ready for operation', X20.4.1 'Press result not OK', and X20.5.1 'Servo press activated'.
- Analog inputs:** Shows 'X19.0.2' with a value of '17.11 mA'.
- CAN:** Shows 'CANopen manager' and 'Node ID' options (1, 2, 3, 4). 'Node ID 1' is selected.
- Variables:** A row of 5 input fields, all containing '0.00'.
- Host:** A table for 'Selected field bus' with 'TCP/IP' selected. It has 'Log (10s)' and 'Save' buttons. Below is a table with 10 rows and 2 columns: 'In' and 'Out'. All values are '0x0'.

At the bottom, there are tabs for 'Commissioning', 'Program', 'Operation', and 'Diagnosis' (which is highlighted). A 'Ready' status indicator is shown on the left, and a 'Login' button is on the right.

This screen consists of:

- **Digital inputs:** Status of the CECC-X digital inputs.
- **Digital outputs:** Status of the CECC-X digital outputs.
- **Analog inputs:** Value of the sensor, that is connected to the X19.0.2 controller analog input.
- **CAN:** ID Node of the Motor controller, that is connected to the controller CECC-X.
- **Variable:** Values of the variables, which can be written over a Host-PLC or within the sequencer using the function "Variable".
- **Host:** If the system is controlled with a Host-PLC, this part will be active. It provides bitwise information about the input and output data on the interface. This communication can be logged for 10s, which is mainly used for debugging purposes for instance in case of communication problems. The log-file is saved on the SD-card.