

# Extended process data (EPD) manual

The FESTO logo is displayed in a bold, black, sans-serif font.

**Studio 5000 library  
for the use of the  
extended process  
data (EPD) with a  
Rockwell PLC.**

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# 1 Important information

## 1.1 Version overview

Processed by	Date	Comment
chmm	2020-02-27	Manual created

## 1 Important information

### 1.2 Intended Use

This library is intended for convenient use of the extended process data (EPD) of Festo servo drives with a Rockwell controller in the Studio 5000 development environment. The Add-On Instruction (AOI) can be used for cyclic reading and writing of device parameters. This library is intended for control and parameterisation of the following motor controllers:

- Servo drive CMMT-AS
- Servo drive CMMT-ST

Observe the "Safety Instructions" and the intended use of the devices, modules and assemblies. When connecting additional, commercially available components such as sensors and actuators, the specified limit values for pressure, temperature, electrical data, torques, etc. must be observed.

### 1.3 Safety Instructions

When commissioning and programming positioning systems, you must observe the safety regulations in the manuals and operating instructions for the components used. The user must ensure that nobody has access to the sphere of influence of the connected actuators. The possible hazard area must be secured by suitable measures such as barriers or warnings.

### 1.4 Target Group

This description is intended exclusively for technicians trained in control and automation technology, who have experience in installing, commissioning, programming and diagnosing positioning systems and the relevant fieldbuses.

### 1.5 Service

Please consult your local Festo service or use the contact form on the following Internet page if you have any technical problems.

[www.festo.com/contact](http://www.festo.com/contact)

## 2 Introduction

### 2.1 Additional telegram 910 (extended process data, EPD)

The manufacturer-specific additional telegram 910 is available for transmitting additional process data. The additional telegram can be selected during the process data configuration with the configuration software of the servo drive (Festo Automation Suite) and is active after loading the process data configuration. The extended process data in the additional telegram can also be parameterised in the Festo Automation Suite. (see Figure 1).

The screenshot shows the Festo Automation Suite interface for configuring the 'Extended process data' (EPD) telegram. The top bar indicates the device is 'CMMT-AS-C2-3A-EP-S1' and is 'Disconnected'. The left sidebar shows the 'Fieldbus' section is expanded, with 'Extended process data' selected. The main area displays the configuration for the EPD telegram, including status checkboxes, a table of sent data parameters, and a table of received data parameters.

ID	Parameter	Type	Byte position
0	P1.7118.0.0 Current nominal current	FLOAT32	0
1	P1.841.0.0 Move to axis zero point after homing	BOOL	4
2	P1.4628.0.0 Software limit positions active	BOOL	5
3	P1.11280040.0.0 Error number	UINT16	6
4	P0.480.0.0 Actual value DC link voltage	FLOAT32	8

ID	Parameter	Type	Byte position
0	P1.11280701.0.0 Base value velocity (user unit)	FLOAT32	0
1	P1.11280702.0.0 Base value acceleration	FLOAT32	4
2	P1.11280703.0.0 Base value deceleration	FLOAT32	8

Figure 1: Automation Suite

The additional telegram 910 enables the cyclic transmission of additional parameters. All device parameters of the servo drive can be transferred. The additional telegram 910 has a fixed length of 32 bytes for each transmission direction in which up to 8 parameters can be transmitted. Parameters with the access right "read/write" can be sent and received by the servo drive (setpoint value). Parameters with the "read" access right can only be sent by the servo drive (actual value).

## 2 Introduction

### 2.2 Importing an Add-On Instruction (AOI)

The Add-On Instruction (AOI) can be imported into the project by right-clicking on "Add-On Instruction" and then left-clicking on "Import Add-On Instruction". If the AOI uses "User-Defined Data Types", they are automatically added when the AOI is imported.

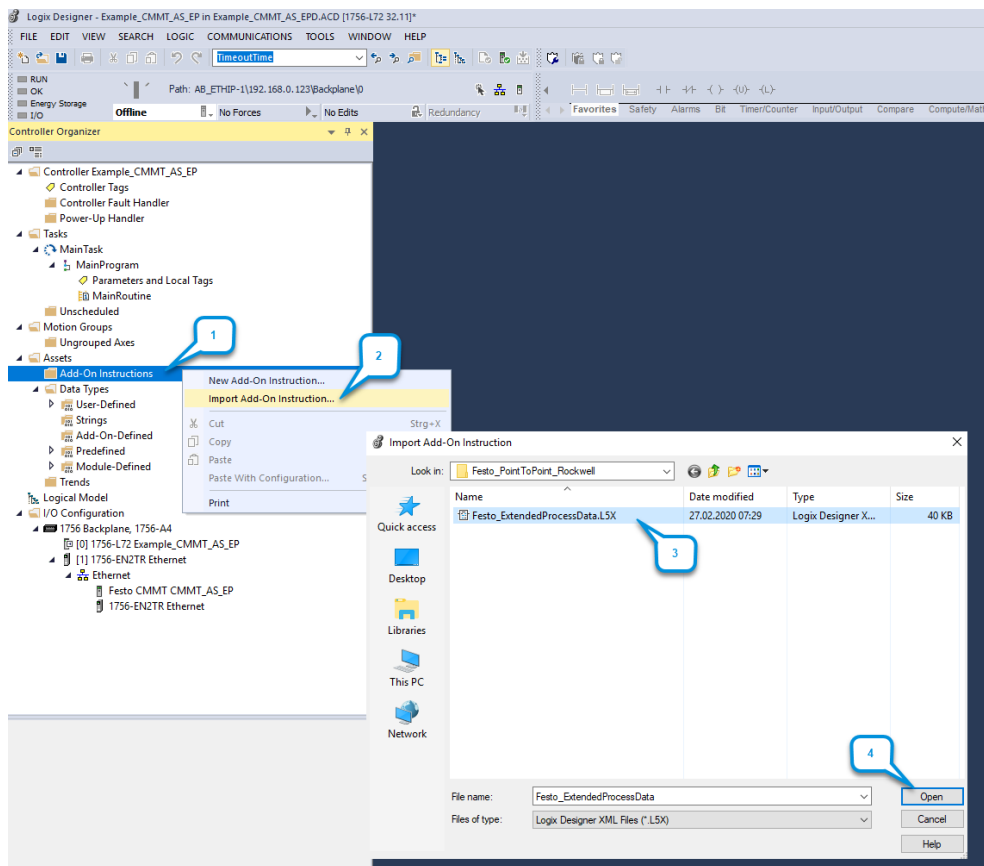


Figure 2: Import of an Add-On Instruction (AOI)

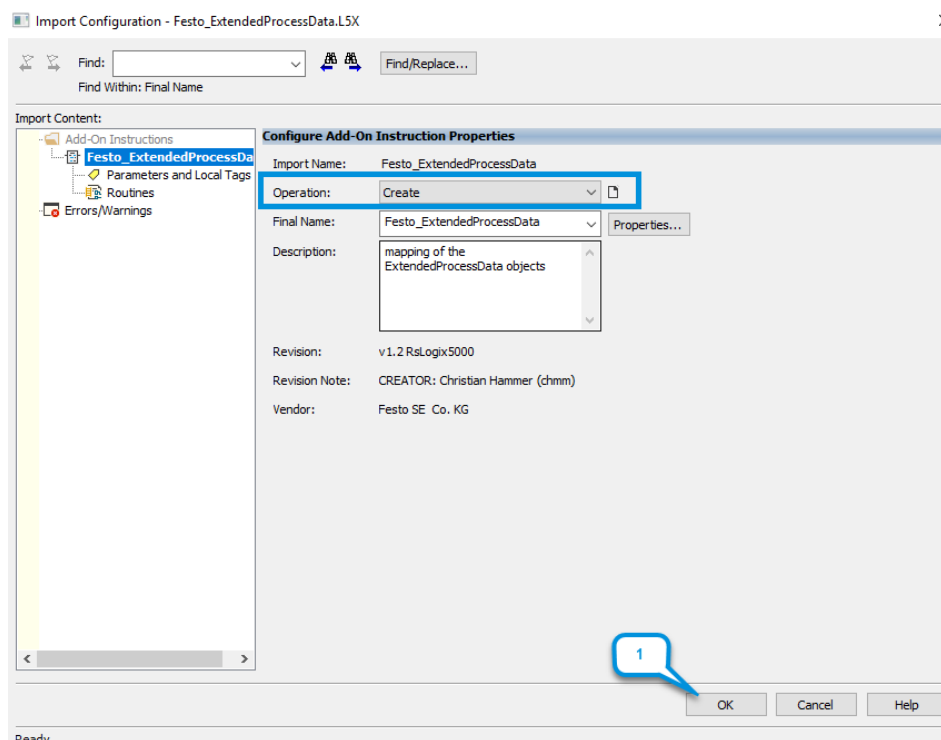


Figure 3: Configuration of an AOI during import

Extended process data (EPD)

### 3 Add-On Instruction (AOI)

#### 3.1 Festo\_ExtendedProcessData

This function block reads and writes up to 8 device parameters with a total length up to 32 bytes each. The EPD objects are read by the servo drive and are ready for use in the "In\_EPD\_Object0" to "In\_EPD\_Object7" output variables. The values of the EPD objects of the actuator for writing must be linked to the "Out\_EPD\_Object0" to "Out\_EPD\_Object7" input variables of the function block.



##### Note

The EPD Add-On Instruction must be called cyclically with a separate instance for every servo drive integrated in the user program (every axis). Simultaneous use of multiple instances of the same device is not permitted.



##### Note

This Add-On Instruction (AOI) has been designed to support as many Rockwell controllers as possible. Therefore, 64-bit data types have not been used. This Add-On Instruction (AOI) only supports parameters with a maximum length of 32 bits (4 bytes).

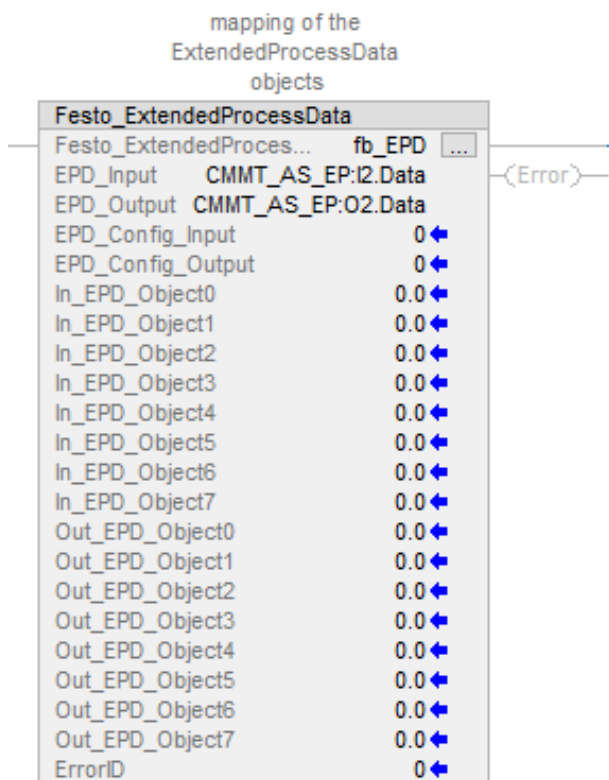


Figure 4: Festo\_ExtendedProcessData

VAR_INPUT		
EPD_Input	ARRAY[0..32] OF SINT	EPD input data from the servo drive (Input must be linked to the controller tag of the closed-loop controller)
EPD_Config_Input	DINT	Configuration of the EPD input data (see chapter 3. 2 – Configuration of the EPD input and EPD output data)
EPD_Config_Output	DINT	Configuration of the EPD output data (see chapter 3. 2 – Configuration of the EPD input and EPD output data)
Out_EPDP_Object0	REAL	EPD output object 0 (output data to actuator controller)
Out_EPDP_Object1	REAL	EPD output object 1 (output data to actuator controller)
Out_EPDP_Object2	REAL	EPD output object 2 (output data to actuator controller)
Out_EPDP_Object3	REAL	EPD output object 3 (output data to actuator controller)
Out_EPDP_Object4	REAL	EPD output object 4 (output data to actuator controller)
Out_EPDP_Object5	REAL	EPD output object 5 (output data to actuator controller)
Out_EPDP_Object6	REAL	EPD output object 6 (output data to actuator controller)
Out_EPDP_Object7	REAL	EPD output object 7 (output data to actuator controller)
VAR_OUTPUT		
EPD_Output	ARRAY[0..32] OF SINT	EPD output data to the servo drive (Output must be linked to the controller tag of the closed-loop controller)
In_EPDP_Object0	REAL	EPD input object 0 (input data from the actuator controller)
In_EPDP_Object1	REAL	EPD input object 1 (input data from the actuator controller)
In_EPDP_Object2	REAL	EPD input object 2 (input data from the actuator controller)
In_EPDP_Object3	REAL	EPD input object 3 (input data from the actuator controller)
In_EPDP_Object4	REAL	EPD input object 4 (input data from the actuator controller)
In_EPDP_Object5	REAL	EPD input object 5 (input data from the actuator controller)
In_EPDP_Object6	REAL	EPD input object 6 (input data from the actuator controller)
In_EPDP_Object7	REAL	EPD input object 7 (input data from the actuator controller)
Error	BOOL	A malfunction has occurred during the processing <ul style="list-style-type: none"> <li>• TRUE = malfunction active (see ErrorID output)</li> <li>• FALSE = no malfunction</li> </ul>
ErrorID	WORD	Error number (see chapter 4 – Diagnostics)

### 3. 2 Configuration of the EPD input and EPD output data

A length must be specified in order to inform the EPD function block of the correct data length of the individual parameters. This is done via "EPD\_Config\_Input" and "EPD\_Config\_Output" input variables based on numerical input. Every number in this case represents a data type. The configuration must be read from left to right. The first number on the left position represents the size of the first parameter (object 0) in the Festo Automation Suite (see chapter 5- Application example). The following table shows the allocation between number and data type.

Configuration of the EPD input and EPD output data		
0	Not permissible	-
1	SINT	1 byte
2	USINT	1 byte
3	INT	2 bytes
4	UINT	2 bytes
5	DINT	4 bytes
6	Not permissible	-
7	Not permissible	-
8	Not permissible	-
9	REAL	4 bytes



## 4 Diagnostics

The following table shows the possible error numbers and the associated error description.

ID (dec)	ID (hex)	Description
<b>General errors</b>		
10	0x0A	"EPD_Config_Input" input variable is too long (more than 8 digits)
11	0x0B	"EPD_Config_Output" input variable is too long (more than 8 digits)
20	0x14	Number "0" is not permitted in "EPD_Config_Input" input variable
21	0x15	Number "0" is not permitted in "EPD_Config_Output" input variable
30	0x1E	Specify unsupported data type in "EPD_Config_Output" input variable
31	0x1F	Specify unsupported data type in "EPD_Config_Output" input variable
40	0x28	Specify unknown data type in "EPD_Config_Input" input variable
41	0x29	Specify unknown data type in "EPD_Config_Output" input variable

# 5 Application example

The following diagrams show the configuration of the EPD in the Festo Automation Suite and the application of the function block in Rockwell Studio 5000.

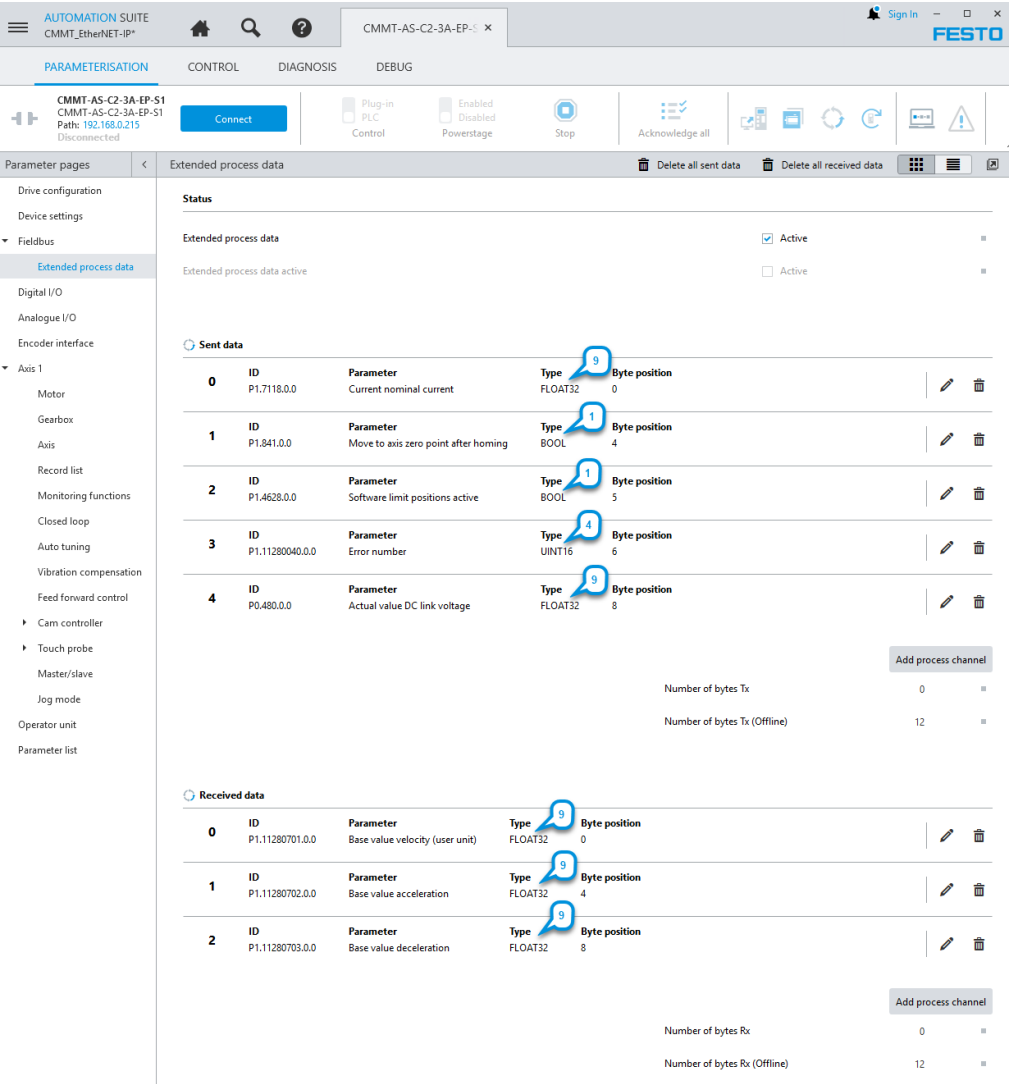


Figure 5: EPD configuration in the Festo Automation Suite

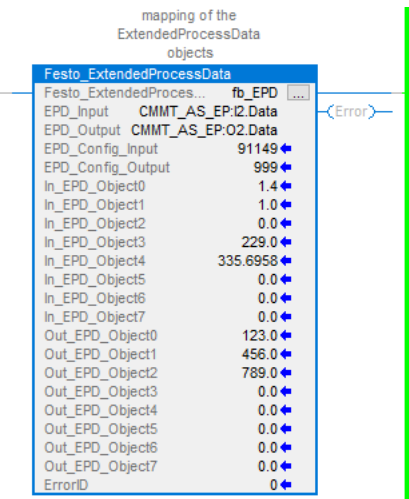


Figure 6: Festo\_ExtendedProcessData in Rockwell Studio 5000

Extended process data (EPD)

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