

# AXL SE RS485

**Axioline Smart Elements, communication module,  
serial data transmission, interface: 1 (RS-485)**



Data sheet  
108701\_en\_04

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## 1 Description

You can integrate Axioline Smart Elements into systems with the Smart Element interface.  
This Smart Element is used to operate standard I/O devices with a serial interface on a bus system.

### Features

- One serial input and output channel in RS-485 format
- Data is transmitted in transparent mode
- Transmission speed can be set up to 230,400 bps
- Number of data bits, stop bits and parity can be set
- Device rating plate stored



This data sheet is only valid in association with the UM EN AXL SE SYS INST user manual.



Make sure you always use the latest documentation.  
It can be downloaded at: [phoenixcontact.net/product/1088128](https://phoenixcontact.net/product/1088128)

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### 3 Ordering data

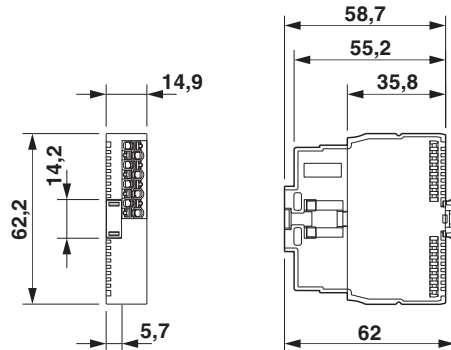
Description	Type	Item no.	Pcs./Pkt.
Axioline Smart Elements, Communication module, interface: RS-485, degree of protection: IP20	AXL SE RS485	1088128	1
Documentation	Type	Item no.	Pcs./Pkt.
User manual, English, Axioline Smart Elements	UM EN AXL SE SYS INST	-	-
User manual, English, Axioline F: System and installation	UM EN AXL F SYS INST	-	-
User manual, English, Axioline F: Diagnostic registers, and error messages	UM EN AXL F SYS DIAG	-	-
Application note, English, Transmitting and receiving data with devices featuring a serial interface	AH EN RS-232/RS-485/RS-UNI	-	-

#### Additional ordering data

For additional ordering data (accessories), go to: [www.phoenixcontact.net/product/1088128](http://www.phoenixcontact.net/product/1088128)

### 4 Technical data

#### Dimensions (nominal sizes in mm)



Width	14.9 mm
Height	62.2 mm
Depth	62 mm

#### General data

Color	traffic grey A RAL 7042
Weight	33 g
Ambient temperature (operation)	-25 °C ... 60 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	5 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	5 % ... 95 % (non-condensing)

**General data**

Air pressure (operation)	70 kPa ... 106 kPa (up to 3000 m above sea level)
Air pressure (storage/transport)	70 kPa ... 106 kPa (up to 3000 m above sea level)
Degree of protection	IP20
Protection class	III (IEC 61140, EN 61140, VDE 0140-1)
Overvoltage category	II (IEC 60664-1, EN 60664-1)
Degree of pollution	2 (IEC 60664-1, EN 60664-1)
Mounting type	Smart Element slot
Mounting position	See the system in which the Smart Element is used.



Do not use the Smart Element in an atmosphere that contains corrosive gas.

**Connection data: I/O**

Connection method	Push-in connection
Conductor cross section, rigid	0.25 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross section, flexible	0.25 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross section [AWG]	24 ... 16
Conductor cross section flexible, with ferrule with plastic sleeve	0.25 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross section flexible, with ferrule without plastic sleeve	0.25 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Stripping length	8 mm



Please observe the information provided on conductor cross sections in the "Axioline Smart Elements" user manual.

**Interface: Smart Element interface**

Number of interfaces	1
Connection method	Card edge connector
Start time until ready to operate	< 500 ms

**Interface: RS-485**

Number of interfaces	1
Connection method	Push-in connection
Note on the connection method	Use shielded cables.
Transmission speed	1200 bps ... 230,400 bps (can be parameterized)
Transmission physics	Copper
Protocols supported	Transparent
Input buffer	4 kByte
Output buffer	1 kByte
Data bits	7 or 8
Stop bits	1 or 2
Parity	Even, odd or no parity

**Interface: RS-485**

Termination resistor	120 $\Omega$ (active, integrated)
Idle time	30 $\mu$ s (between sending and receiving data)
Process data update	540 $\mu$ s

**Communications power supply of the Smart Elements ( $U_{SE}$ )**

Supply voltage	using card edge connectors
Current draw	See documentation for the system in which the Smart Element is used.

**I/O supply ( $U_P$ )**

Nominal supply voltage	24 V DC (using card edge connectors)
Supply voltage range	19.2 V DC ... 30 V DC (including all tolerances, including ripple)
Current consumption	min. 6 mA (without connected peripherals) typ. 10 mA max. 18 mA
Power consumption	min. 144 mW max. 530 mW
Surge protection	See the system in which the Smart Element is used.
Reverse polarity protection	Polarity protection diode
Protection	See the system in which the Smart Element is used.

**Input and output address area**

Input address area	20 Byte
Output address area	20 Byte

**Configuration and parameter data in a PROFIBUS system**

Required parameter data	10 Byte
Required configuration data	7 Byte

**Electrical isolation/isolation of the voltage areas**

Test section	Test voltage
Communications supply / 24 V supply (I/O)	500 V AC, 50 Hz, 1 min.
Logic supply / RS-485 interface	500 V AC, 50 Hz, 1 min.
Communications supply / functional ground	500 V AC, 50 Hz, 1 min.
24 V supply (I/O) / RS-485 interface	500 V AC, 50 Hz, 1 min.
24 V supply (I/O) / functional ground	500 V AC, 50 Hz, 1 min.
RS-485 interface / functional ground	500 V AC, 50 Hz, 1 min.

**Mechanical tests**

Vibration resistance in accordance with EN 60068-2-6/IEC 60068-2-6	5g
Shock in accordance with EN 60068-2-27/IEC 60068-2-27	30g
Continuous shock in accordance with EN 60068-2-27/IEC 60068-2-27	10g

**Conformance with EMC Directive 2014/30/EU****Immunity test in accordance with EN 61000-6-2/IEC 61000-6-2**

Electrostatic discharge (ESD) EN 61000-4-2/IEC 61000-4-2	Criterion B, 6 kV contact discharge, 8 kV air discharge
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Electromagnetic fields EN 61000-4-3/IEC 61000-4-3	Criterion A, Field intensity: 10 V/m
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Fast transients (burst) EN 61000-4-4/IEC 61000-4-4	Criterion B, 2 kV
---	-------------------

Transient overvoltage (surge) EN 61000-4-5/IEC 61000-4-5	Criterion B, shielded I/O cables: $\pm 1$ kV asymmetrical
---	---

Conducted interference EN 61000-4-6/IEC 61000-4-6	Criterion A, Test voltage 10 V
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<b>Noise emission test in accordance with EN 61000-6-4/IEC 61000-6-4</b>	Class A
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**Approvals**

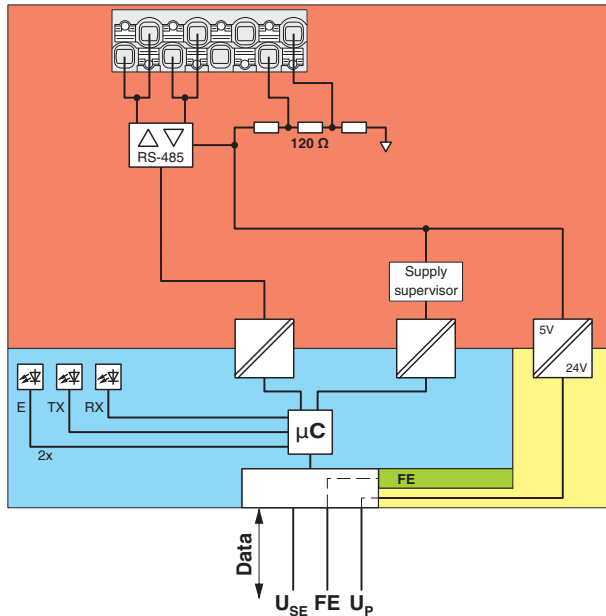
For the current approvals, go to:	<a href="http://www.phoenixcontact.net/product/1088128">www.phoenixcontact.net/product/1088128</a>
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**Manufacturer's declarations**




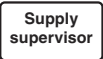


For the current manufacturer's declarations, go to:	<a href="http://www.phoenixcontact.net/product/1088128">www.phoenixcontact.net/product/1088128</a>
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## 5 Internal circuit diagram

Figure 1 Internal wiring of the terminal points



Key:

Data	Data transmission
$U_{SE}$	Communications power supply of the Smart Element
FE	Functional ground
$U_P$	I/O supply of the Smart Element
	Microcontroller
	Electrical isolation for data or power supply
	LED
	Monitoring the supply voltage
	RS-485 interface active
	Electrically isolated areas

## 6 For your safety

### 6.1 Intended use

Use Smart Elements exclusively in accordance with the specifications in the data sheet and the "Axiline Smart Elements" user manual.  
Please also refer to the documentation for the system in which the Smart Elements are used.

### 6.2 Qualification of users

The use of products described in this data sheet is oriented exclusively to electrically skilled persons or persons instructed by them. The users must be familiar with the relevant safety concepts of automation technology as well as applicable standards and other regulations.

### 6.3 Disconnecting or plugging in a Smart Element



#### **NOTE: Damage to contacts or malfunction**

Before performing work on a Smart Element, disconnect the power to the Smart Element.

This means:

- Disconnect the connected I/O devices from the power.
- Switch off the I/O supply voltage  $U_{PI}$
- Switch off the communications power  $U_{SE}$ .  
For the system in which the Smart Element is used, this means the following: Switch off the voltage that generates the  $U_{SE}$ .

### 6.4 Strain relief



#### **NOTE: damage to the contacts**

Physical overloads can result in damage to the terminal points.

- Relieve strain in the connected cables.

### 6.5 Locking a Smart Element

Make sure that each Smart Element is locked in its slot. This is only ensured if the unlocking mechanism has been pushed into the guide as far as it will go.

See "Axiline Smart Elements" user manual.

### 6.6 Applications with UL approval



#### **CAUTION!**

- The external circuits intended to be connected to this device shall be galvanically separated from the mains supply or hazardous live voltage by reinforced or double insulation and meet the requirements of SELV/PELV (Class III) circuits of UL/CSA/IEC 61010-1, UL/CSA/IEC 61010-2-201.
- The device has to be installed in the final safety enclosure, which has adequate rigidity according to UL 61010-1, UL 61010-2-201 and meets the requirements with respect to spread of fire.



Information:

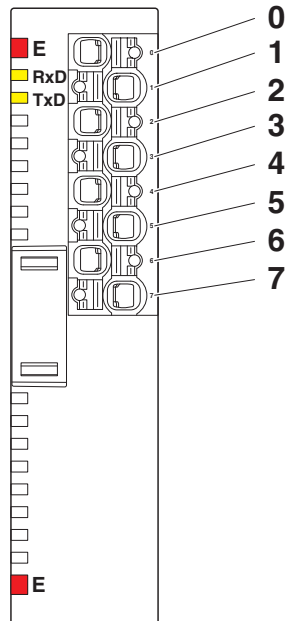
To install the device in accordance with UL/CSA/IEC standard, the following notes must be observed.

- If the equipment is not used in specified manner, the protection provided by the equipment may be impaired.
- Minimum temperature rating of the cables to be connected to the field wiring terminals:  
85 °C, AWG 24 ... 16
- Use copper conductors only.



## 7 Terminal point assignment as well as diagnostics and status indicators

Figure 2 Terminal point assignment as well as diagnostics and status indicators



### 7.1 Terminal point assignment

Terminal point	Signal	Description	
0	RxD+, TxD+	Receive/transmit data	positive
1	RxD+, TxD+	Receive/transmit data	positive
2	RxD-, TxD-	Receive/transmit data	negative
3	RxD-, TxD-	Receive/transmit data	negative
4	-	Not used	
5	-	Not used	
6	R+	Termination resistor	Positive pole
7	R-	Termination resistor	Negative pole



Terminal points 0 and 1 are bridged internally in the device, as are terminal points 2 and 3.

### 7.2 Local diagnostics and status indicators

Designation	Color	Description
E	Red	Error
		Off No error
		Flashing (0.5 Hz) Error in Smart Element Replace the Smart Element.
		Flashing (4 Hz) Communication error Check whether the Smart Element has been plugged in correctly.
RxD	Yellow	On I/O error Check the connected components and wiring. Remove the error.
		Off
TxD	Yellow	Receiving data
		On The Smart Element is receiving data from the connected device.
		Off The Smart Element is not receiving any data.
		Transmit data
		On The Smart Element is transmitting data to the connected device.
		Off The Smart Element is not transmitting any data.

See also “Diagnostic state (0018<sub>hex</sub>: DiagState)” section, “Possible error codes” table.

## 8 Connection examples

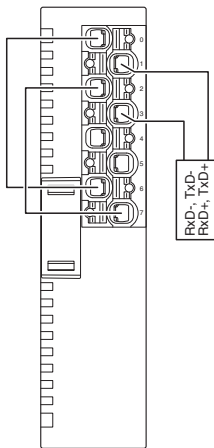
Special feature	Notes
Smart Element as the network end point	Termination resistor required
Smart Element in the middle of a network	Termination resistor not required

### 8.1 Smart Element as the network end point



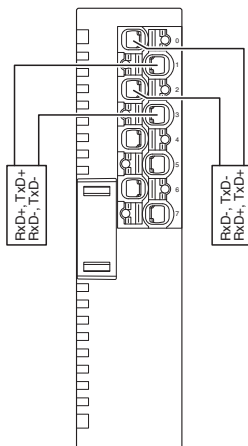
Fit a termination resistor to the RS-485 network at each endpoint.

Figure 3 Smart Element as the network end point



### 8.2 Smart Element in the middle of a network

Figure 4 Smart Element in the middle of a network



## 9 Connection notes



Observe the connection instructions of the manufacturer of the device to be connected.

### Termination resistor

Fit the receive signals of the RS-485 network with a termination resistor at the relevant end point.

If you use the integrated termination resistor, the polarization of the data cable will also be active.

### Shielding

For installation in a control cabinet: Connect the cable shield to the functional ground at a suitable point immediately after entry into the control cabinet. Route the cable in the control cabinet in a shielded manner.

If a closed control cabinet is not available, connect the shield to a shield bus.

Connect the shielding in accordance with the specifications for the system in which you are using the Smart Element.

Within an Axioline F station, the AXL SHIELD SET Axioline shield connection set is available for optimal connection directly in front of the module, see user manual UM EN AXL F SYS INST.

In general, you can use Phoenix Contact products for shielding, see [www.phoenixcontact.net/webcode/#0845](http://www.phoenixcontact.net/webcode/#0845).

### Strain relief

Do not use the shield contact as a strain relief. Carry out the shielding and the strain relief separately.

## 10 RS-485 serial interface

With RS-485, you can create a network with several devices using an existing network consisting of two signal lines.

Use a twisted-pair, common shielded data cable to connect the devices. Fit a termination resistor to the data cable at both end points of the RS-485 network. For this, you can use the integrated termination resistor in the Smart Element via connections R+ and R-.

If you use the integrated termination resistor, the data cable will also be polarized. This will generate a defined cable idle level.

The Smart Element supports only half duplex transmission. Make sure that data is not sent simultaneously by several devices.

## 11 Data storage and transmission

The Smart Element stores the received serial data in an intermediate buffer. The data is then requested at the serial interface by the higher-level system or the device. The serial data traffic is generated in accordance with the transparent protocol.

Receive memory	Transmit memory
4096 bytes	1023 bytes

If the transparent protocol is used, serial data is transmitted in the same format it is received from the serial interface or from the bus side.

The transmit FIFO (first-in, first-out memory) can store 1023 bytes (1 kB) and the receive FIFO can store 4096 bytes (4 kB). If the Smart Element receives another character after the 4095th, the error pattern is stored in the receive FIFO. All other subsequent characters are ignored.

The error pattern contains the character that is written to the FIFO if a character was received with errors (e.g., in the event of a parity error) or the receive memory is full.

The error pattern character is 24<sub>hex</sub>.

## 12 Process data

The process data is mapped in Motorola format (Big Endian).

The Smart Element has ten words of process data each in the input direction and output direction. These are made up of 3 bytes of frame data and a maximum of 17 bytes of user data.

### Assignment of the ten process data words

This assignment applies for the commands "Transmit characters", "Store characters temporarily", and "Read characters".

Word	0		1		2		...	9	
Byte (Motorola format)	0	1	2	3	4	5	...	18	19
Byte (Intel format)	1	0	3	2	5	4	...	19	18
OUT	K/P	0	L	D	D	D	...	D	D
Signal	See "Control word"		OUT01	OUT02	OUT03	OUT04	...	OUT17	OUT18
IN	K/P	S	L	D	D	D	...	D	D
Signal	See "Status word"		IN01	IN02	IN03	IN04	...	IN17	IN18

K/P	Command/parameter
S	Status bits
L (OUT)	Length: number of characters to be written
L (IN)	Length: number of characters read
D	Data



The byte representation in Motorola format, also called Big Endian (high order byte at starting address), corresponds to INTERBUS standard representation. All byte representations in the data sheet have this format. The byte representation in Intel format is also called Little Endian (low order byte at starting address).

The command is used to determine the function. The actually transmitted data depends on the command.

## 13 Process data word 0

### 13.1 Control word

Word	0															
Signal	Control word															
	Control word high byte								Control word low byte							
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Assignment	0	Command			OUT parameter				0							

#### Commands

Code (bin)	Code (hex)	Command
000	0	Read number of characters received and fill level of the receive buffer
001	1	Transmit characters
010	2	Store characters temporarily
011	3	OUT parameter = 0 <sub>hex</sub> : Read characters
		OUT parameter = E <sub>hex</sub> : Read counters
100	4	Reserved
101	5	Toggling command 1: Transmit characters
110	6	Toggling command 2: Store characters temporarily
111	7	Toggling command 3: Read characters

#### Command toggling

Command toggling is used to execute a command on a terminal again. In this way, a second command code is available for the same function.

This applies for the following commands:

- Transmit characters
- Store characters temporarily
- Read characters
- Read counters

Here, bit 14 is used for toggling. If, for example, you wish to transmit character strings in sequence, use command code 001<sub>bin</sub> for the first transmission and then use 101<sub>bin</sub> and 001<sub>bin</sub> alternately.

## 13.2 Status word

Word	0															
Signal	Status word															
Signal	Status word high byte								Status word low byte							
Bit	15	14	13	12	11	10	9	8	7	6	6	4	3	2	1	0
Assignment	St	Command			IN parameter				Status bits							

Bit	Meaning	Signal
St	Error bit	Error

Reasons for an error bit set:

- Invalid parameter for the specified command
- Failure of I/O supply voltage  $U_p$

### Status bits

Bit	Signal	Meaning
7	-	Reserved
6	Tx_buf_not_empty	Transmit buffer not empty
		0 Empty
		1 Not empty, transmission in progress
5	Tx_buf_full	Transmit buffer full
		0 Not full
		1 Full
		Space remaining in the transmit buffer $\leq 30$ characters
4	Rx_buf_full	Receive buffer full
		0 Not full
		1 Full
		Space remaining in receive buffer $\leq 15$ characters
3 ... 1	-	Reserved
0	Rx_buf_not_empty	Receive buffer not empty
		0 Empty
		1 Not empty, characters to be retrieved are still available

## 14 Commands



The application note AH DE RS-232/RS-485/RS-UNI describes an example of which sequences are required to send or receive data using a device with a serial interface. See: "Ordering data, documentation."

### 14.1 “Read number of characters received and fill level of the receive buffer” command

The command result is the number of characters that have been received but not yet read.

The number is a 16-bit value and is mapped to word 1.

This command can be used to first reach a minimum number of characters before transmitting the "Read characters" command.

The fill level of the receive buffer is specified in byte 4 as the command result.

#### Process data assignment for the “Read number of characters received and fill level of the receive buffer” command

Word	0		1		2		...	9	
Byte	0	1	2	3	4	5	...	18	19
OUT	00 <sub>hex</sub>	xx	xx	xx	xx	xx	...	xx	xx
IN	00 <sub>hex</sub>	Status bits	Number of characters received		Fill level	xx	...	xx	xx

Fill level	
Value (hex)	Number of kbytes free
00	4
01	< 3
02	< 2
03	< 1
Other values are not permitted.	

### 14.2 “Transmit characters” command

The transmit data located in the process data is stored in the transmit memory. From there the data is transmitted directly via the interface.

A maximum of 17 characters can be entered.

Specify the number of characters to be transmitted in the third byte.

#### Process data assignment for the “Transmit characters” command with 17 characters (Z1 - Z17)

Word	0		1		2		...	9	
Byte	0	1	2	3	4	5	...	18	19
OUT	10 <sub>hex</sub>	xx	17 <sub>dez</sub>	Z1	Z2	Z3	...	Z16	Z17
IN	10 <sub>hex</sub>	Status bits	xx	xx	xx	xx	...	xx	xx

Reasons for an error bit set:

- Byte 2 (number of characters to be transmitted)  
= 0 or > maximum user data length (17 characters)
- Not enough space in the intermediate buffer

### 14.3 "Store characters temporarily" command

If more than 17 characters are to be transmitted, the transmit data located in the process data is stored in an intermediate buffer which can store up to 340 characters. No characters are transmitted. The "Transmit characters" command is used to transmit temporarily stored data. In this way, blocks of up to 340 characters can be transmitted without a break. They are divided over 20 telegrams with 17 characters each, for example.

#### Process data assignment for the "Store characters temporarily" command with 17 characters (Z1 - Z17)

Word	0		1		2		...	9	
Byte	0	1	2	3	4	5	...	18	19
OUT	20 <sub>hex</sub>	xx	17 <sub>dez</sub>	Z1	Z2	Z3	...	Z16	Z17
IN	20 <sub>hex</sub>	Status bits	xx	xx	xx	xx	...	xx	xx

Reasons for an error bit set:

- Byte 2 (number of characters to be transmitted)  
= 0 or > maximum user data length (17 characters)
- Not enough space in the intermediate buffer

### 14.4 "Read characters" command

A maximum of 17 characters can be read.

#### Process data assignment for the "Read characters" command with 17 characters (Z1 - Z17)

Word	0		1		2		...	9	
Byte	0	1	2	3	4	5	...	18	19
OUT	30 <sub>hex</sub>	xx	xx	xx	xx	xx	...	xx	xx
IN	30 <sub>hex</sub>	Status bits	11 <sub>hex</sub>	Z1	Z2	Z3	...	Z16	Z17

### 14.5 "Read counters" command

This command can be used to read several counters. The counters are used for interface diagnostics.

#### Process data assignment for the "Read counters" command

Word	0		1		2		3		4		5		6	
Byte	0	1	2	3	4	5	6	7	8	9	10	11	12	13
OUT	3E <sub>hex</sub>	00 <sub>hex</sub>	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx
IN	3E <sub>hex</sub>	Status bits	Number of valid characters received		Number of invalid characters received (parity, overrun or framing errors)		Number of characters transmitted		Reserved					



## 15 Parameter, diagnostics and information (PDI)

Parameter and diagnostic data as well as other information are transmitted as objects via the PDI channel.

For more detailed information on all possible standard objects for AxioLine Smart Elements, please refer to the UM EN AXL SE SYS INST user manual.

The standard objects necessary for operation are described in the following section.

The following applies for the tables below:

Abbreviation	Meaning
A	Number of elements
L	Length of the elements in bytes
R	Read
W	Write

## 16 Standard objects

Index (hex)	Object name	Data type	A	L	Rights	Meaning/contents	Startup parameters	
<b>Device type</b>								
0037	DeviceType	Octet string	1	8	R	Device type 0000 0814 0000 1C01 <sub>hex</sub>	No	
<b>Diagnostics objects</b>								
0018	DiagState	Record	11	74	R	Diagnostic state	No	*
0019	ResetDiag	UINT8	1	1	R/W	Handling diagnostic messages	No	*
<b>Objects for process data management</b>								
0025	PDIN	Octet string	1	20	R	Input process data The structure corresponds to the representation in the "Process data" section.	No	
0026	PDOUT	Octet string	1	20	R	OUT process data The structure corresponds to the representation in the "Process data" section.	No	
<b>Objects for device management</b>								
002D	ResetParam	UINT8	1	1	R/W	Reset parameterization	No	*

The objects identified with \* in the last column are described in more detail in the following sections.

The description of the other objects is to be found in the user manual UM EN AXL F SYS INST.

### 16.1 Diagnostics state (0018<sub>hex</sub>: DiagState)

This object is used for a structured message of an error.

A detailed description of the object is provided in user manual UM EN AXL F SYS INST.

Possible error codes

Subindex	02	03	04	08	0B		
Error	Priority	Channel	Error code	Function group	Text	E LED	Corrective
	hex	hex	hex				
No error	00	00	0000	General	Status OK	○	
I/O supply voltage (U <sub>P</sub> ) is not present.	01	FF	3130	General	Supply missing (U <sub>P</sub> )	●	Check the supply voltage.
Error in the Smart Element firmware	01	FF	6100	General	Firmware error, update required	●	Replace the Smart Element.
Problem communicating with the Smart Element	01	FF	6130	General	Smart Element missing	☀	Check whether the Smart Element has been plugged in correctly. If the error is still present, replace the Smart Element.
Error in the parameter memory	01	FF	6320	General	Parameter error, repeat parameterization	●	Error in the parameter memory. Parameterize the Smart Element.
Transmit buffer full	02	FF	8152	RS485	Tx buffer full	○	Check the parameters.
Receive buffer full	02	FF	815A	RS485	Rx buffer full	○	Read out the buffer.

Key

Priority	00 <sub>hex</sub>	No error
	01 <sub>hex</sub>	Error
	02 <sub>hex</sub>	Warning
Channel	00 <sub>hex</sub>	No error
	FF <sub>hex</sub>	Entire device

LED	○	Off
	●	On
	☀	Flashing (4 Hz)

## 16.2 Handling diagnostic messages (0019<sub>hex</sub>: ResetDiag)

You can use this object to specify how the Smart Element should handle diagnostic messages.

Handling diagnostic messages	
Value (hex)	Meaning
00	Permit all diagnostic messages
02	Delete and acknowledge all diagnostic messages that are still pending
06	Delete and acknowledge all diagnostic messages and do not permit new diagnostic messages
Other	Reserved

## 16.3 Reset parameterization (002D<sub>hex</sub>: ResetParam)

Use this object to reset all parameters to the factory default settings (default values) as listed in the “Application objects” section.

To reset the parameters, value 01<sub>hex</sub> must be transferred during write access.

## 17 Application objects

Index (hex)	Object name	Data type	A	L	Rights	Meaning	Startup parameters
0502	UART_Baudrate	UINT32	1	4	R/W	Baud rate	Yes
0503	UART_Databits	UINT8	1	1	R/W	Number of data bits	Yes
0504	UART_Parity	UINT8	1	1	R/W	Parity	Yes
0505	UART_Stopbits	UINT8	1	1	R/W	Number of stop bits	Yes

Startup parameters are stored permanently in the Flash memory.

### Parameter value ranges and presets

The values displayed in bold are pre-settings.

Baud rate (bps)
1200
2400
4800
<b>9600</b>
15625
19200
38400
57600
115200
230400
Other values are not permitted.

Value (hex)	Number of data bits
07	7
<b>08</b>	<b>8</b>
Other values are not permitted.	

Value (hex)	Parity
00	None
01	Odd
<b>02</b>	<b>Even</b>
Other values are not permitted.	

Value (hex)	Number of stop bits
<b>01</b>	<b>1</b>
02	2
Other values are not permitted.	

## 18 Device descriptions

The device is described in the device description files.

The device descriptions for controllers from Phoenix Contact are included in PC Worx and PLCnext Engineer, as well as in the corresponding service packs.

The device description files for other systems are available for download at [www.phoenixcontact.net/products](http://www.phoenixcontact.net/products) in the download area of the bus coupler installed.