AXL F DI16/1 DO8/2-2A 2H

**Axioline F, digital I/O module,
digital inputs: 16, 24 V DC,
digital outputs: 8, 24 V DC, 2 A**



Data sheet
106380_en_01

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1 Description

The module is designed for use within an Axioline F station. It is used to acquire and output digital signals.
The filter times of the inputs can be adjusted to increase noise immunity.
Filter times of 100 µs enable the user to implement a counter function with a maximum input frequency of 5 kHz in the application.
The outputs are protected against short circuit and overload.

Features

- 16 digital inputs in accordance with EN 61131-2 type 1 and type 3
- 24 V DC, 2.4 mA
- Connection of sensors in 1-conductor technology
- Filter times can be adjusted in three increments: < 100 µs, 1000 µs or 3000 µs
- Maximum input frequency: 5 kHz
- 8 digital outputs
- 24 V DC, 2 A
- Connection of actuators in 2-conductor technology
- Minimum update time of < 100 µs
- Device rating plate stored

Valid as of hardware revision 02, firmware revision 1.00.

The deviating behavior of the modules with an earlier hardware revision is documented in the corresponding points.

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

Make sure you always use the latest documentation.
It can be downloaded at: phoenixcontact.net/product/2702291

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3 Ordering data

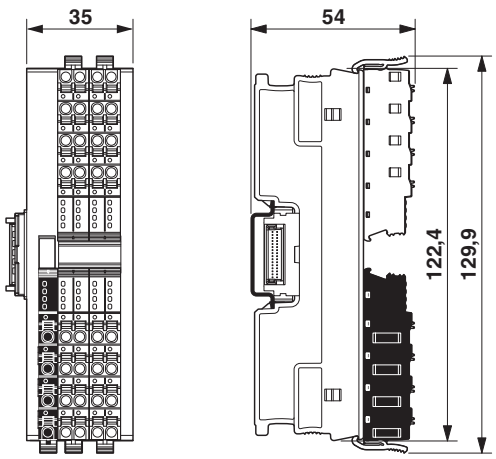
Description	Type	Item no.	Pcs./Pkt.
Axioline F, Digital I/O module, Digital inputs: 16, 24 V DC, connection technology: 1-conductor, Digital outputs: 8, 24 V DC, 2 A, connection technology: 2-conductor, transmission speed in the local bus: 100 Mbps, degree of protection: IP20, including bus base module and Axioline F connectors	AXL F DI16/1 DO8/2-2A 2H	2702291	1

Accessories	Type	Item no.	Pcs./Pkt.
Axioline F bus base module for housing type H (Replacement item)	AXL F BS H	2700992	5
Zack marker strip for Axioline F (device labeling), in 2 x 20.3 mm pitch, unprinted, 25-section, for individual labeling with B-STIFT 0.8, X-PEN, or CMS-P1-PLOTTER (Marking)	ZB 20,3 AXL UNPRINTED	0829579	25
Zack Marker strip, flat, Strip, white, unlabeled, can be labeled with: PLOTMARK, CMS-P1-PLOTTER, mounting type: snapped, for terminal block width: 10.15 mm, lettering field size: 4 x 10, 15 x 5 mm, 1 x 5.8 x 5 mm, Number of individual labels: 50 (Marking)	ZBF 10/5,8 AXL UNPRINTED	0829580	50

Documentation	Type	Item no.	Pcs./Pkt.
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	-	-

4 Technical data

Dimensions (nominal sizes in mm)	



Width	35 mm
Height	129.9 mm
Depth	54 mm
Note on dimensions	The depth applies when a TH 35-7.5 DIN rail is used (in accordance with EN 60715).

General data	
Color	traffic grey A RAL 7042
Weight	159 g (with connectors and bus base module)
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)
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	DIN rail mounting
Mounting position	any (no temperature derating)

Connection data: Axioline F connectors (digital inputs)	
Connection method	Push-in connection
Conductor cross section, rigid	0.2 mm² ... 1.5 mm²
Conductor cross section, flexible	0.2 mm² ... 1.5 mm²
Conductor cross section [AWG]	24 ... 16
Stripping length	8 mm

Please observe the information provided on conductor cross sections in the “Axioline F: system and installation” user manual.

Connection data: Axioline F connectors (supply and digital outputs)	
Connection method	Push-in connection
Conductor cross section, rigid	0.5 mm² ... 1.5 mm²
Conductor cross section, flexible	0.5 mm² ... 1.5 mm²
Conductor cross section [AWG]	20 ... 16
Stripping length	8 mm

Please observe the information provided on conductor cross sections in the “Axioline F: system and installation” user manual.

Interface: Axioline F local bus	
Number of interfaces	2
Connection method	Bus base module
Transmission speed	100 Mbps

Axioline F local bus supply (U_{Bus})	
Supply voltage	5 V DC (via bus base module)
Current consumption	max. 120 mA (up to HW 01) max. 60 mA (from HW 02)
Power consumption	max. 600 mW (up to HW 01) max. 300 mW (from HW 02)

Supply for digital input and output modules (U_{IO})	
Supply voltage	24 V DC
Supply voltage range	19.2 V DC ... 30 V DC (including all tolerances, including ripple)
Current consumption	typ. 10 mA (without connected peripherals) max. 16 A (Provide external protection; if the total current of 8 A is exceeded, connect the supply at the power connector parallel via both terminal points.)
Power consumption	typ. 216 mW (without connected peripherals) max. 480 W (of which 6.4 W internal losses)
Surge protection	electronic (35 V, 0.5 s)
Reverse polarity protection	parallel diode; with external 5 A fuse (only for commissioning)

Supply for digital input and output modules (U_{IO})	
Protection	max. 16 A (polarity reversal protection up to 5 A)

NOTE: Damage to the electronics

Provide external protection for the module to ensure reverse polarity protection. If you use a fuse, the power supply unit must be capable of supplying four times the nominal current of the fuse. This ensures that the fuse trips reliably in the event of a fault.

When using the module for the first time, protect it with a 5 A fuse. When all modules in the system are correctly connected, the 5 A fuse can be replaced with a 16 A fuse. After that, you can load the module up to 16 A.

Loads over 16 A are not permitted.

Digital inputs	
Number of inputs	16
Connection method	Push-in connection
Connection technology	1-conductor
Description of the input	EN 61131-2 types 1 and 3
Nominal input voltage	24 V DC
Nominal input current	2.4 mA
Current flow	linear until nominal current is reached, then constantly approx. 2.4 mA
Input voltage range "0" signal	-3 V DC ... 5 V DC
Input voltage range "1" signal	11 V DC ... 30 V DC
Input filter time	3000 µs (Default), 1000 µs, < 100 µs
Process data update	< 150 µs
Polarity reversal protection of the inputs	parallel diode (30 V, 5 s)

Digital outputs	
Number of outputs	8
Connection method	Push-in connection
Connection technology	2-conductor
Nominal output voltage	24 V DC
Output current per channel	max. 2 A
Output current of the device	max. 16 A (Provide external protection; if the total current of 8 A is exceeded, connect the supply at the power connector parallel via both terminal points.)
Nominal load, ohmic	max. 48 W (12 Ω, at nominal load)
Nominal load, inductive	max. 48 VA (1.2 H, 12 Ω, at nominal load)
Nominal load, lamp	max. 48 W (at nominal voltage)
Load min.	10 kΩ
Energy consumption	see diagram
Limitation of the voltage induced on circuit interruption	-25.8 V ... -15 V
Output voltage when switched off	max. 1 V
Output current when switched off	max. 300 µA
Signal delay	max. 150 µs (when switched on) max. 150 µs (when switched off, with at least 50 mA load current)

Digital outputs	
Switching frequency	max. 3000 per second (with at least 50 mA load current) max. 1 per second (with inductive load) max. 4 per second (with nominal lamp load)

The specified switching frequency is limited by the device hardware. The switching frequency that can actually be achieved depends on the update time of the overall system, including the cycle times of the controller, network, etc.

Short-circuit protection, overload protection of the outputs	electronic
Behavior with overload	Shutdown with automatic restart
Behavior with inductive overload	Output can be destroyed
Reverse voltage resistance to short pulses	limited protection up to 0.5 A for 1 s

NOTE: Damage to the electronics

In the event of an incorrectly applied external voltage (reverse voltage) at one of the outputs, the channel that has been exposed to the reverse voltage can be destroyed and further outputs may unintentionally be set.

Overcurrent shut-down	as of 2.1 A
Output current with ground connection interrupt when switched off	< 1 mA
Process data update	< 100 µs

Input and output address area	
Input address area	2 Byte
Output address area	2 Byte

Configuration and parameter data in a PROFIBUS system	
Required parameter data	3 Byte
Required configuration data	7 Byte

Electrical isolation/isolation of the voltage areas	
Test section	**Test voltage**
5 V supply of the local bus (U_{Bus}) / 24 V supply (I/Os)	500 V AC, 50 Hz, 1 min.
5 V supply of the local bus (U_{Bus}) / functional ground	500 V AC, 50 Hz, 1 min.
24 V supply (I/O) / 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
Electromagnetic fields EN 61000-4-3/IEC 61000-4-3	Criterion A, Field intensity: 10 V/m
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, DC supply lines: ±0.5 kV/±1.0 kV (symmetrical/ asymmetrical)
Conducted interference EN 61000-4-6/IEC 61000-4-6	Criterion A, Test voltage 10 V
Noise emission test in accordance with EN 61000-6-3/IEC 61000-6-3	Class B

Approvals	
For the current approvals, go to:	www.phoenixcontact.net/product/2702291

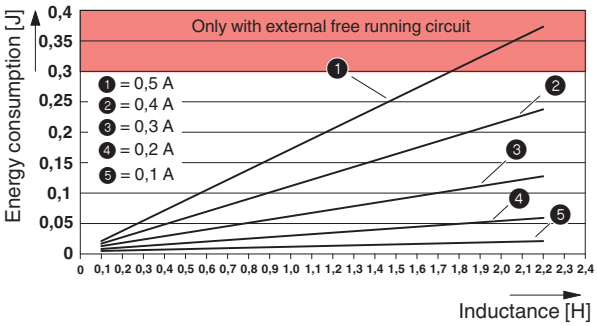
Manufacturer's declarations	
For the current manufacturer’s declarations, go to:	www.phoenixcontact.net/product/2702291

5 Maximum outputs power consumption when inductive loads are switched off

NOTE: Damage to the electronics

Restrict freewheeling voltage to a maximum of -17 V when using an external freewheeling circuit! The external freewheeling circuit does not function in the case of higher negative voltages.

Figure 1 Maximum outputs power consumption when inductive loads are switched off



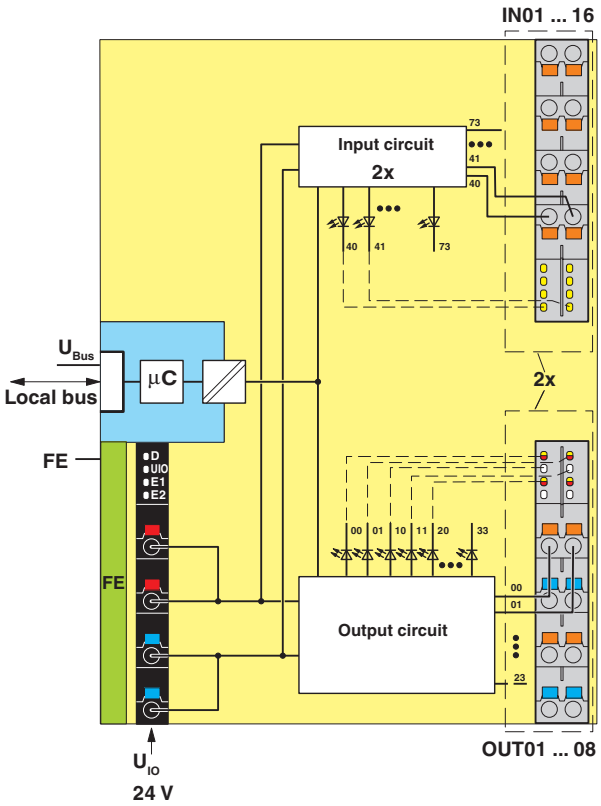
The specifications in the diagram refer to a maximum switching frequency of 1 Hz.

The diagram shows the maximum amount of energy that may be fed back into the outputs for each switch-off procedure when switching off an inductive load without external freewheeling circuit.

The current data refers to the ohmic DC voltage component of the inductive load.

6 Internal circuit diagram

Figure 2 Internal wiring of the terminal points



Key:

Local bus	Axioline F local bus (hereinafter referred to as local bus)
FE	Functional ground
µC	Microcontroller
	Electrical isolation
Input circuit	Input circuit
Output circuit	Output configuration
	LED
	Electrically isolated areas

7 For your safety

7.1 Intended use

Use the Axioline F modules exclusively in accordance with the specifications in the accompanying data sheet and the “Axioline F: System and Installation” user manual.

7.2 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.

7.3 Electrical safety

WARNING: loss of electrical safety

If used incorrectly, device safety may be impaired.

The instructions given in this data sheet as well as the UM EN AXL F SYS INST user manual must be observed during installation, startup, and operation.

7.4 Installation

Only install the Axioline F modules in a control cabinet or junction box.

The enclosure must meet the requirements regarding the protection against spread of fire according to the following standards:

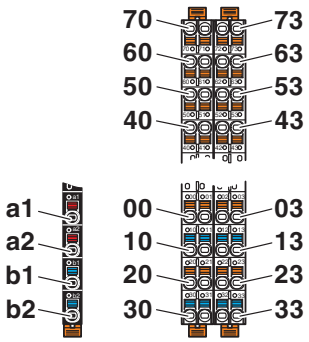
– EN 61010-1/IEC 61010-1
– UL 61010-1 (for applications with UL approval)

8 UL note

– Use copper conductors only.

9 Terminal point assignment

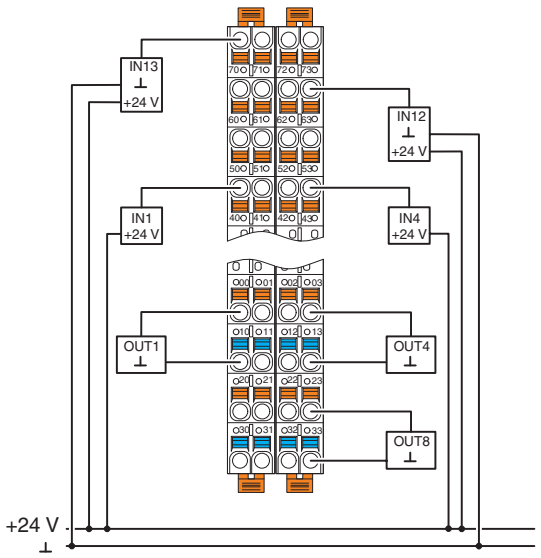
Figure 3 Terminal point assignment



Terminal point	Color	Assignment	
Supply voltage input			
a1, a2	Red	24 V DC (U_{IO})	Supply for digital input and output modules (bridged internally)
b1, b2	Blue	GND	Reference potential of the supply voltage (bridged internally)
Digital outputs			
00 ... 03	Orange	OUT01 ... OUT04	Digital outputs 1 ... 4
10 ... 13	Blue	GND	Reference potential for all outputs
20 ... 23	Orange	OUT05 ... OUT08	Digital outputs 5 ... 8
30 ... 33	Blue	GND	Reference potential for all outputs
Digital inputs			
40 ... 43	Orange	IN01 ... IN04	Digital inputs 1 ... 4
50 ... 53	Orange	IN05 ... IN08	Digital inputs 5 ... 8
60 ... 63	Orange	IN09 ... IN12	Digital inputs 9 ... 12
70 ... 73	Orange	IN13 ... IN16	Digital inputs 13 ... 16

10 Connection example

Figure 4 Connection of sensors in 1-conductor technology and actuators in 2-conductor technology

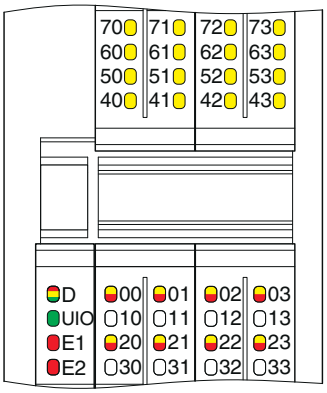


Ensure that GND of the sensors and GND for U_{IO} have the same potential.

11 Local diagnostic and status indicators

As of hardware revision 02

Figure 5 Local diagnostic and status indicators

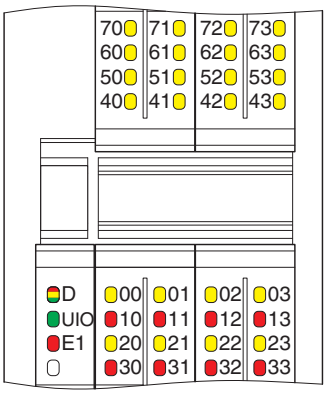


Designation	Color	Meaning	State	Description
D	Red/ yellow/ green	Diagnostics of local bus communication		
		Run	Green on	The device is ready for operation, communication within the station is OK. All data is valid. An error has not occurred.
		Active	Flashing green	The device is ready to operate, communication within the station is OK. The data is **not** valid. The controller or higher-level network is not delivering valid data. There is no error on the module.
		Device application not active	Flashing green/yellow	The device is ready for operation, communication within the station is OK. Output data **cannot** be outputted and/or input data **cannot** be read. There is a fault on the periphery side of the module..
		Ready	Yellow on	The device is ready for operation but did not detect a valid cycle after power-up.
		Connected	Flashing yellow	The device is not (yet) part of the active configuration.
		Reset	Red on	The device is ready for operation but has lost the connection to the bus head.
		Not connected	Flashing red	The device is ready for operation but there is no connection to the previously existing device.
		Power down	Off	Device is in (power) reset.
UIO	Green	$U_{input/output}$	On	Supply for digital input and output modules is present.
			Off	Supply for digital input and output modules is not present.
E1	Red	I/O error	On	I/O error present.
			Off	No I/O error.
E2	Red	Channel error	On	Channel error present.
			Off	Channel error not present.

Designation	Color	Meaning	State	Description
00 ... 03, 20 ... 23	Red/ yellow	Diagnostics/status of the output	Red on	Short-circuit/overload of the output.
			Yellow on	Output is set.
			Off	No error, output is not set.
40 ... 43, 50 ... 53, 60 ... 63, 70 ...73	Yellow	Status of the inputs	On	Input is set.
			Off	Input is not set.

Deviating behavior up to hardware revision 01

Figure 6 Local diagnostic and status indicators



Designation	Color	Meaning	State	Description
E1	Red	I/O error	On	Short-circuit/overload of an output
			Off	No I/O error.
00 ... 03, 20 ... 23	Yellow	Status of the outputs	On	Output is set.
			Off	Output is not set.
10 ... 13, 30 ... 33	Red	Output diagnostics	On	Short-circuit/overload of the output.
			Off	No short-circuit/overload of the output.
40 ... 43, 50 ... 53, 60 ... 63, 70 ...73	Yellow	Status of the inputs	On	Input is set.
			Off	Input is not set.

12 Process data

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

OUT process data

Byte	0							
Bit	7	6	5	4	3	2	1	0
Signal	OUT 08	OUT 07	OUT 06	OUT 05	OUT 04	OUT 03	OUT 02	OUT 01
Terminal point	23	22	21	20	03	02	01	00

Byte	1							
Bit	7	6	5	4	3	2	1	0
	Not used							

IN process data

Byte	0							
Bit	7	6	5	4	3	2	1	0
Signal	IN08	IN07	IN06	IN05	IN04	IN03	IN02	IN01
Terminal point	53	52	51	50	43	42	41	40

Byte	1							
Bit	7	6	5	4	3	2	1	0
Signal	IN16	IN15	IN14	IN13	IN12	IN11	IN10	IN09
Terminal point	73	72	71	70	63	62	61	60

13 Parameter, diagnostics and information (PDI)

Parameter and diagnostic data as well as other information is transmitted as objects via the PDI channel of the Axioline F station.

The standard and application objects stored in the module are described in the following section.

The following applies to all tables below:

You will find an explanation of the data types in the user manual UM EN AXL F SYS INST.

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

Each visible string is terminated with a null terminator (00_{hex}). The length of a visible-string-type element is therefore at least one byte larger than the number of user data items.
If the number of user data items plus null terminator is smaller than the specified length of the element, the visible string will be populated with a null character (00_{hex}).

You will find detailed information on the PDI objects in the user manual
UM EN AXL F SYS INST.

14 Standard objects

14.1 Objects for identification (device rating plate)

As of hardware revision 02

Index (hex)	Object name	Data type	A	L	Rights	Meaning	Contents
Manufacturer							
0001	VendorName	Visible String	1	32	R	Vendor name	Phoenix Contact
0002	VendorID	Visible String	1	7	R	Vendor ID	00A045
0003	VendorText	Visible String	1	58	R	Vendor text	Components and systems for industrial automation
0012	VendorURL	Visible String	1	58	R	Vendor URL	www.phoenixcontact.com
Module - general							
0004	DeviceFamily	Visible String	1	19	R	Device family	I/O digital IN-OUT
0006	ProductFamily	Visible String	1	32	R	Product family	AXL F
000E	CommProfile	Visible String	1	4	R	Communication profile	633
000F	DeviceProfile	Visible String	1	5	R	Device profile	0010
0011	ProfileVersion	Record of Visible Strings	2	11; 21	R	Profile version	2011-12-07; Basic - Profile V2.0
0017	Language	Record of Visible Strings	2	6; 8	R	Language	en-us; English
Module - special							
0005	Capabilities	Visible String	1	8	R	Capabilities	Nothing
0007	ProductName	Visible String	1	32	R	Product name	AXL F DI16/1 DO8/2-2A 2H
0008	SerialNo	Visible String	1	22	R	Serial number	e. g., 1234512345
0009	ProductText	Visible String	1	58	R	Product text	16 digital inputs, adjustable filter, 8 digital outputs
000A	OrderNumber	Visible String	1	32	R	Item No.	2702291
000B	HardwareVersion	Record of Visible Strings	2	11; 11	R	Hardware version	e. g., 2011-02-04; 00
000C	FirmwareVersion	Record of Visible Strings	2	11; 11	R	Firmware version	e.g., 2017-12-31; 1.00
000D	PChVersion	Record of Visible Strings	2	11; 6	R	PDI version	2010-01-08; V1.00
0037	DeviceType	Octet string	1	8	R	Device type	00 C0 00 02 00 00 0D 05_{hex}
003A	VersionCount	Array of UINT16	4	4 * 2	R	Version counter	e.g., 0007 0001 0001 0001_{hex}
Use of the device							
0014	Location	Visible String	1	58	R/W	Location	Can be completed by the user.
0015	EquipmentIdent	Visible String	1	58	R/W	Equipment identifier	Can be completed by the user.
0016	ApplDeviceAddr	UINT16	1	2	R/W	Application-specific device address	Can be completed by the user.

Deviating behavior up to hardware revision 01

Index (hex)	Object name	Data type	A	L	Rights	Meaning	Contents
Manufacturer							
0001	VendorName	Visible String	1	16	R	Vendor name	Phoenix Contact
0003	VendorText	Visible String	1	49	R	Vendor text	Components and systems for industrial automation
0012	VendorURL	Visible String	1	23	R	Vendor URL	www.phoenixcontact.com
Module - general							
0006	ProductFamily	Visible String	1	6	R	Product family	AXL F
0011	ProfileVersion	Record of Visible Strings	2	11; 20	R	Profile version	2011-12-07; Basis - Profil V2.0
Module - special							
0007	ProductName	Visible String	1	25	R	Product name	AXL F DI16/1 DO8/2-2A 2H
0008	SerialNo	Visible String	1	11	R	Serial number	e. g., 1234512345
0009	ProductText	Visible String	1	53	R	Product text	16 digital inputs, adj. filter, 8 digital outputs, 2A
000A	OrderNumber	Visible String	1	8	R	Item No.	2702291
000B	HardwareVersion	Record of Visible Strings	2	11; 3	R	Hardware version	e. g., 2011-02-04; 00
000C	FirmwareVersion	Record of Visible Strings	2	11; 3	R	Firmware version	0000-00-00; --
003A	VersionCount	Array of UINT16	4	4 * 2	R	Version counter	e.g., 0007 0001 0000 0000_{hex}

14.2 Miscellaneous standard objects

Index (hex)	Object name	Data type	A	L	Rights	Meaning/contents	
Diagnostics objects							
0018	DiagState	Record	6	58	R	Diagnostic state	*
Objects for process data management							
0025	PDIN	Octet string	1	2	R	Input process data The structure corresponds to the representation in the "Process data" section.	
0026	PDOUT	Octet string	1	1	R	OUT process data The structure corresponds to the representation in the “Process data” section.	
003B	PDIN_Descr	Array of Records	3	8; 2; 2	R	Description of the IN process data	
003C	PDOUT_Descr	Array of Records	3	8; 2; 2	R	Description of the output process data	

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.

The objects $003B_{hex}$ and $003C_{hex}$ are only applicable to tools.

14.3 Diagnostics state (0018_{hex}: DiagState)

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

As of hardware revision 02

0018_{hex}: Diagnostics state (read)					
Subindex	**Data type**	**Length in bytes**	**Meaning**	**Contents**	
0	Record	58	Diagnostic state	Complete diagnostics information	
1	UINT16	2	Error number	0 ... 65535_{dec}	
2	UINT8	1	Priority	00_{hex}	No error
				01_{hex}	Error
				02_{hex}	Warning
				81_{hex}	Error removed
				82_{hex}	Warning eliminated
3	UINT8	1	Channel/group/module	00_{hex}	No error
				01_{hex}	Channel 1 (OUT01)
				...	...
				08_{hex}	Channel 8 (OUT08)
				FF_{hex}	Entire device
4	UINT16	2	Error code	See table below	
5	UINT8	1	More follows	00_{hex}	
6	Visible String	51	Text	See table below	

The message with priority 81_{hex} or 82_{hex} is a one-off, internal message to the bus coupler. The bus coupler transfers this error message to the error mechanisms of the higher-level system.

Once the cause of the fault has been removed, the message is automatically reset.

Error and status of the local diagnostics and status indicators

Subindex	2	3	4	6					
Error	Priority	Channel/ group/ module	Error code	Text	LED				
	hex	hex	hex		D	UIO	E1	E2	xx
No error	00	00	0000	Status OK	◐	●	○	○	○
Short-circuit/overload of an output	02	##	2344	Overload / short circuit DO##, terminal point $$	◐	●	○	◑	◑
Failure of the supply for digital input and output modules (U_{IO})	01	FF	3400	Missing I/O supply UIO, terminal point a1/a2, b1/b2	☼	○	○	○	○

##	Channel number	xx LED	Diagnostics of the output
$$	Terminal point number	xx	00 ... 03, 20 ... 23
○	Off	◐	Green on
●	On	◑	Red on
		☼	Flashing green/yellow

Deviating behavior up to hardware revision 01

0018_{hex}: Diagnostics state (read)					
Subindex	**Data type**	**Length in bytes**	**Meaning**	**Contents**	
0	Record	8	Diagnostic state	Complete diagnostics information	
1	UINT16	2	Error number	0 ... 65535_{dec}	
2	UINT8	1	Priority	00_{hex}	No error
				01_{hex}	Error
				02_{hex}	Warning
				81_{hex}	Error removed
				82_{hex}	Warning eliminated
3	UINT8	1	Channel/group/module	00_{hex}	No error
				FF_{hex}	Entire device
4	UINT16	2	Error code	See table below	
5	UINT8	1	More follows	00_{hex}	
6	Visible String	1	Text	00_{hex}	

Error and status of the local diagnostics and status indicators

Subindex	**2**	**3**	**4**				
Error	**Priority**	**Channel/ group/ module**	**Error code**	**LED**			
	hex	**hex**	**hex**	**D**	**UIO**	**E1**	**xx**
No error	00	00	0000	◐	●	○	○
Short-circuit/overload of an output	02	00	2344	◐	●	◑	◑
Failure of the supply for digital input and output modules (U_{IO})	01	FF	3400	☼	○	○	○

The message with priority 81_{hex} or 82_{hex} is a one-off, internal message to the bus coupler. The bus coupler transfers this error message to the error mechanisms of the higher-level system.

Once the cause of the fault has been removed, the message is automatically reset.

xx LED	Diagnostics of the output
xx	10 ... 13, 30 ... 33
○	Off
●	On
◐	Green on
◑	Red on
☼	Flashing green/yellow

15 Application objects

In the case of valid parameters, the parameterization is stored in the module permanently.

Index (hex)	Object name	Data type	A	L	Rights	Meaning/contents
FF8D	PD Output Substitute Configuration	UINT8	1	1	R/W	Substitute value behavior
FF8F	Input_Filter	UINT8	1	1	R/W	Filter time

15.1 Substitute value behavior ($FF8D_{hex}$: PD Output Substitute Configuration)

With this object, you parameterize the behavior of the module so that an application reset can be detected if necessary.

$FF8D_{hex}$: Substitute value behavior (read, write)				
Subindex	**Data type**	**Length in bytes**	**Contents**	
0	UINT8	1	00_{hex} (Default)	Set outputs to 0
			01_{hex}	Hold last value

15.2 Filter time ($FF8F_{hex}$: Input_Filter)

You parameterize the filter time of the module with this object.

$FF8F_{hex}$: Input_Filter (read, write)				
Subindex	**Data type**	**Length in bytes**	**Contents**	
0	UINT8	1	00_{hex} (Default)	3000 µs
			01_{hex}	1000 µs
			02_{hex}	< 100 µs

16 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 in the download area of the bus coupler installed.