

# AXL F DI16/1 DO8/2-2A 2H - Digital module



2702291

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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

## Product 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  $\mu$ s 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.

## Your advantages

- 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  $\mu$ s, 1000  $\mu$ s or 3000  $\mu$ s
- 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  $\mu$ s
- Device rating plate stored

## Commercial data

Item number	2702291
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DR02
Product key	DRI233
GTIN	4055626071848
Weight per piece (including packing)	203.2 g
Weight per piece (excluding packing)	111 g
Customs tariff number	85389091
Country of origin	DE

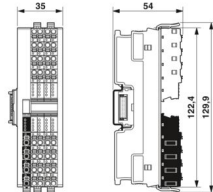
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## Technical data

### Dimensions

Dimensional drawing	
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).

### Notes

#### Note on application

Note on application	Only for industrial use
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### Material specifications

Color (Housing)	gray (RAL 7042)
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### Interfaces

#### Axioline F local bus

Number of interfaces	2
Connection method	Bus base module
Transmission speed	100 Mbps

### System properties

#### Programming data (LocalbusSlave)

Input address area	2 Byte
Output address area	2 Byte

#### Fieldbus data telegram (PROFIBUS)

Required parameter data	3 Byte
Required configuration data	7 Byte

### Input data

#### Digital:

Input name	Digital inputs
Description of the input	EN 61131-2 types 1 and 3
Number of inputs	16

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Connection method	Push-in connection
Connection technology	1-conductor
Input voltage range "0" signal	-3 V DC ... 5 V DC
Input voltage range "1" signal	11 V DC ... 30 V DC
Nominal input voltage $U_{IN}$	24 V DC
Nominal input current at $U_{IN}$	2.4 mA
Current flow	linear until nominal current is reached, then constantly approx. 2.4 mA
Input filter time	3000 $\mu$ s (Default)
	1000 $\mu$ s
	< 100 $\mu$ s
Process data update	< 150 $\mu$ s
Protective circuit	Polarity reversal protection of the inputs; parallel diode (30 V, 5 s)

## Output data

Digital:

Output name	Digital outputs
Connection method	Push-in connection
Connection technology	2-conductor
Number of outputs	8
Protective circuit	Short-circuit protection, overload protection of the outputs; electronic
Output voltage	24 V DC
Limitation of the voltage induced on circuit interruption	-25.8 V ... -15 V
Max. current carrying capacity per output	max. 2 A
Maximum output current per module	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 output voltage	24 V DC
Load min.	10 k $\Omega$
Output voltage when switched off	max. 1 V
Output current when switched off	max. 300 $\mu$ A
Nominal load, inductive	max. 48 VA (1.2 H, 12 $\Omega$ , at nominal load)
Nominal load, lamp	max. 48 W (at nominal voltage)
Nominal load, ohmic	max. 48 W (12 $\Omega$ , at nominal load)
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)
Reverse voltage resistance to short pulses	limited protection up to 0.5 A for 1 s
Behavior with overload	Shutdown with automatic restart
Behavior with inductive overload	Output can be destroyed
Signal delay	max. 150 $\mu$ s (when switched on)
	max. 150 $\mu$ s (when switched off, with at least 50 mA load current)
Overcurrent shut-down	as of 2.1 A
Output current with ground connection interrupt when switched	< 1 mA

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off
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## Product properties

Product type	I/O component
Product family	Axioline F
Type	block modular
Mounting position	any (no temperature derating)
Scope of supply	including bus base module and Axioline F connectors

## Insulation characteristics

Overvoltage category	II (IEC 60664-1, EN 60664-1)
Pollution degree	2 (IEC 60664-1, EN 60664-1)

## Electrical properties

Maximum power dissipation for nominal condition	7.95 W
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### Potentials: Axioline F local bus supply ( $U_{BUS}$ )

Supply voltage	5 V DC (via bus base module)
Current draw	max. 120 mA (up to HW 01) max. 60 mA (from HW 02)

### Potentials: 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 draw	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.)
Current consumption	typ. 10 mA (without connected peripherals)
Protective circuit	Surge protection; electronic (35 V, 0.5 s) Reverse polarity protection; parallel diode; with external 5 A fuse (only for commissioning)
Protection	max. 16 A (polarity reversal protection up to 5 A)

### Electrical isolation/isolation of the voltage ranges

Test voltage: 5 V supply of the local bus ( $U_{BUS}$ ) / 24 V supply (I/Os)	500 V AC, 50 Hz, 1 min
Test voltage: 5 V supply of the local bus ( $U_{BUS}$ ) / functional ground	500 V AC, 50 Hz, 1 min
Test voltage: 24 V supply (I/O) / functional ground	500 V AC, 50 Hz, 1 min

## Connection data

### Connection technology

Connection name	Axioline F connectors (digital inputs)
Note on the connection method	Please observe the information provided on conductor cross-sections in the "Axioline F: system and installation" user manual.

### Axioline F connectors (digital inputs)

Connection method	Push-in connection
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Note on the connection method	Please observe the information provided on conductor cross-sections in the "Axioline F: system and installation" user manual.
Conductor cross-section, rigid	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross-section, flexible	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross-section AWG	24 ... 16
Stripping length	8 mm

## Axioline F connectors (supply and digital outputs)

Connection method	Push-in connection
Note on the connection method	Please observe the information provided on conductor cross-sections in the "Axioline F: system and installation" user manual.
Conductor cross-section, rigid	0.5 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross-section, flexible	0.5 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross-section AWG	20 ... 16
Stripping length	8 mm

## Environmental and real-life conditions

### Ambient conditions

Ambient temperature (operation)	-25 °C ... 60 °C
Degree of protection	IP20
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)
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	5 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	5 % ... 95 % (non-condensing)

### Mechanical test

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

## Standards and regulations

Protection class	III (IEC 61140, EN 61140, VDE 0140-1)
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## Mounting

Mounting type	DIN rail mounting
Mounting position	any (no temperature derating)

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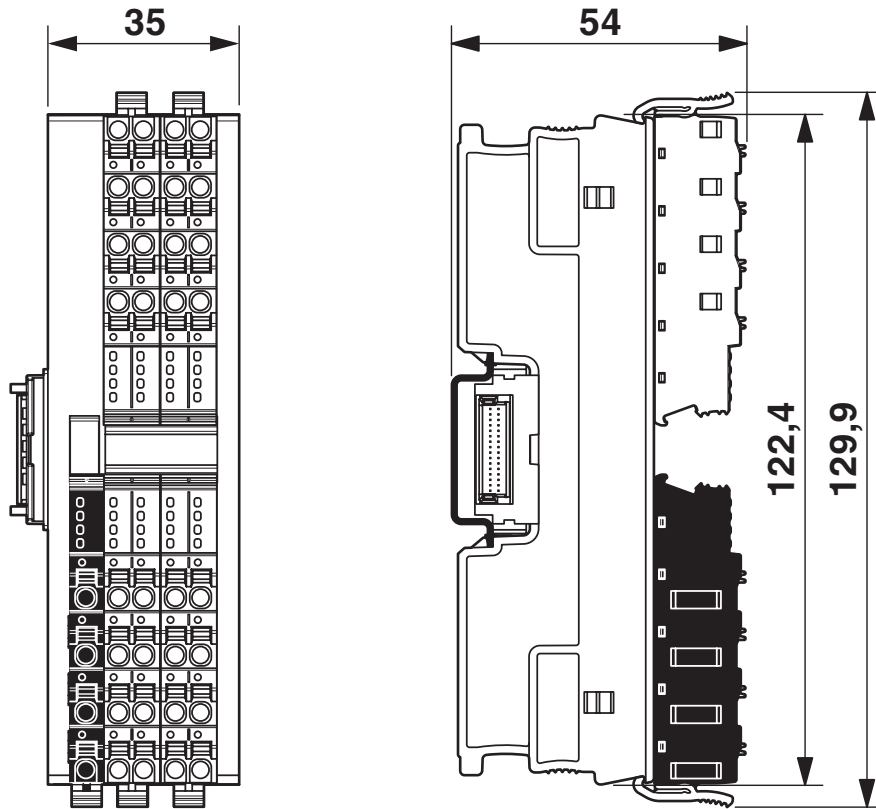


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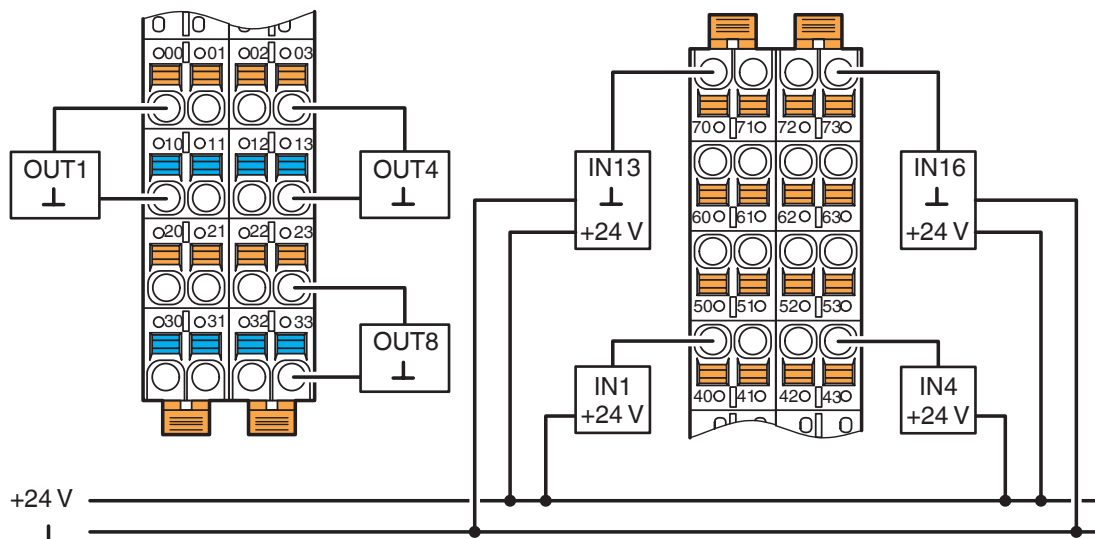
## Drawings

Dimensional drawing



Dimensions

Connection diagram



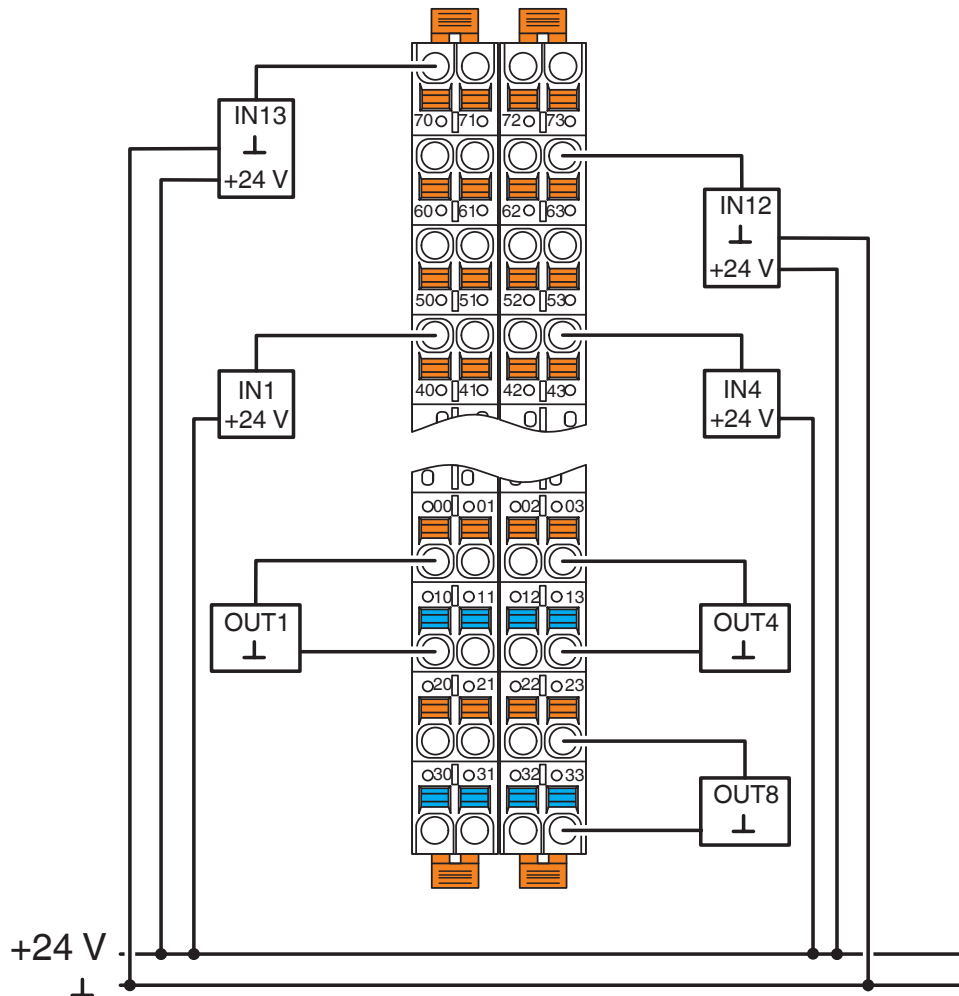
Connection example

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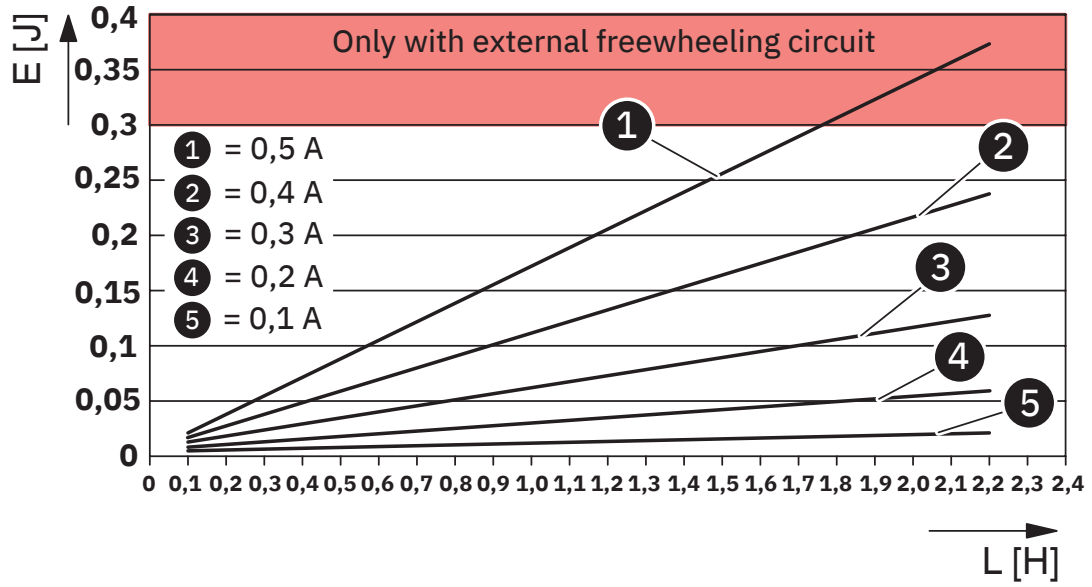
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Connection diagram



Example of connection of sensors and actuators

Diagram



Maximum outputs power consumption when inductive loads are switched off

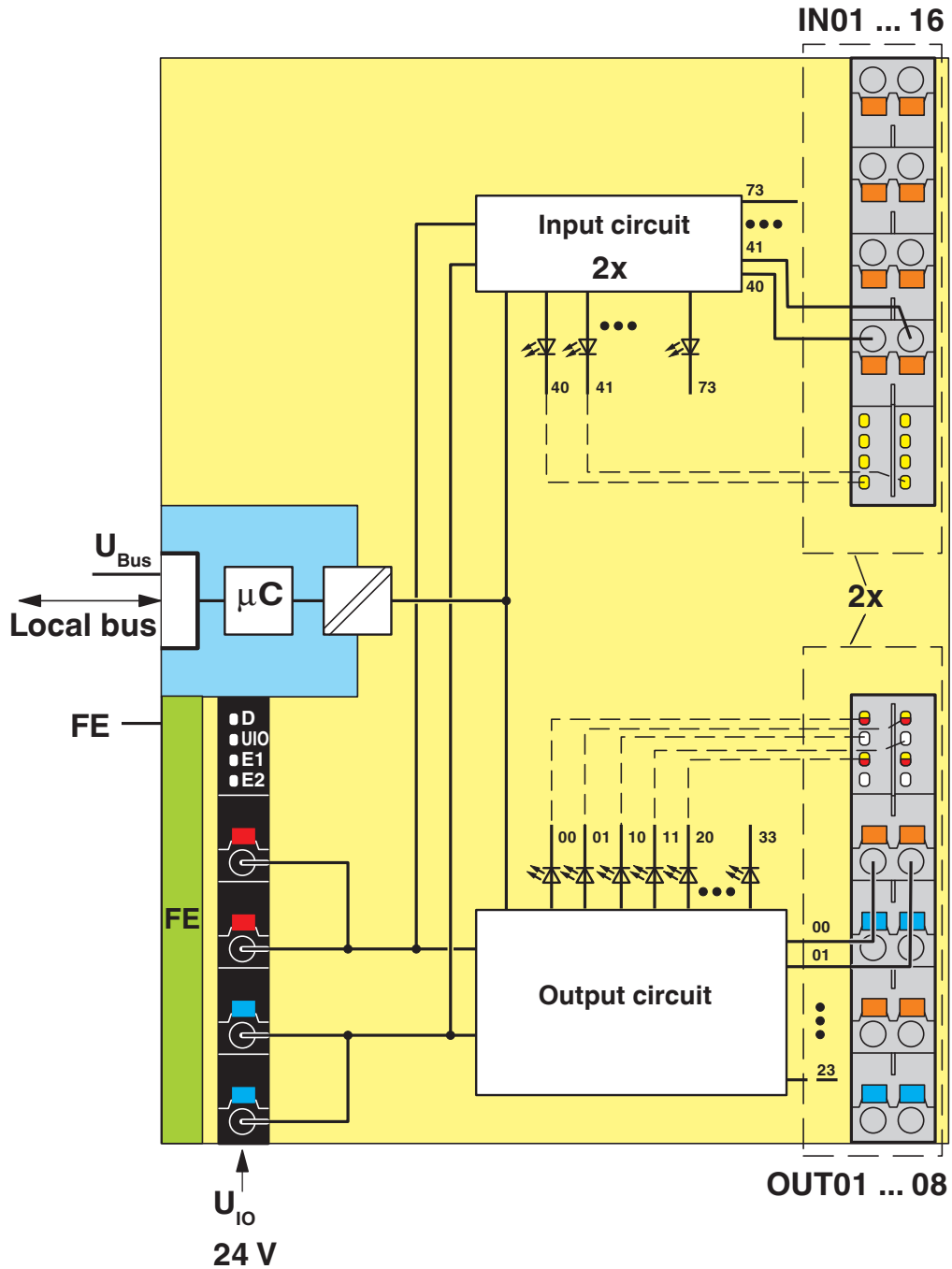
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Block diagram



Internal wiring of the terminal points

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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2702291>



**cULus Listed**

Approval ID: E238705

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## Classifications

### ECLASS

ECLASS-13.0	27242604
ECLASS-15.0	27242604

### ETIM

ETIM 10.0	EC001599
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### UNSPSC

UNSPSC 21.0	32151600
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## Environmental product compliance

### EU RoHS

Fulfills EU RoHS substance requirements	Yes
Exemption	7(a), 7(c)-I

### China RoHS

Environment friendly use period (EFUP)	EFUP-50
	An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required.

### EU REACH SVHC

REACH candidate substance (CAS No.)	Lead(CAS: 7439-92-1)
SCIP	e34c6e3f-b0ea-4932-8aae-7f82c1188017

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