

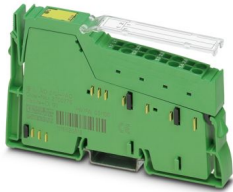
# IB IL AO 2/UI-XC-PAC - Analog module



2701389

<https://www.phoenixcontact.com/us/products/2701389>

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The figure shows the standard item

Inline, Analog output terminal, Analog outputs: 2, 0 V ... 10 V, -10 V ... 10 V, 0 mA ... 20 mA, 4 mA ... 20 mA, -20 mA ... 20 mA, connection technology: 2-conductor, transmission speed in the local bus: 500 kbps, Extreme conditions version, degree of protection: IP20, including Inline connector and labeling field

## Product description

The terminal is designed for use within an Inline station. It is used to output analog current and voltage signals. Thanks to special engineering measures and tests, the terminal can be used under extreme ambient conditions.

## Your advantages

- 2 analog output channels
- Connection of actuators in 2-conductor technology
- Current ranges: 0 mA ... 20 mA, 4 mA ... 20 mA,  $\pm 20$  mA
- Voltage ranges: 0 V ... 10 V,  $\pm 10$  V
- Can be used under extreme ambient conditions
- Extended temperature range of -40 °C ... +70 °C (see "Tested successfully: use under extreme ambient conditions" in the data sheet)
- Coated PCBs



## Commercial data

|                        |         |
|------------------------|---------|
| Item number            | 2701389 |
| Packing unit           | 1 pc    |
| Minimum order quantity | 1 pc    |
| Sales key              | DR01    |
| Product key            | DRI142  |

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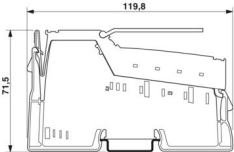
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|                                      |               |
|--------------------------------------|---------------|
| GTIN                                 | 4046356743693 |
| Weight per piece (including packing) | 90.7 g        |
| Weight per piece (excluding packing) | 66 g          |
| Customs tariff number                | 85389091      |
| Country of origin                    | DE            |

## Technical data

### Dimensions

|                     |                                                                                    |
|---------------------|------------------------------------------------------------------------------------|
| Dimensional drawing |  |
| Width               | 12.2 mm                                                                            |
| Height              | 119.8 mm                                                                           |
| Depth               | 71.5 mm                                                                            |
| Note on dimensions  | Housing dimensions                                                                 |

### Notes

|                     |                         |
|---------------------|-------------------------|
| Note on application |                         |
| Note on application | Only for industrial use |

### Mounting

|               |                   |
|---------------|-------------------|
| Mounting type | DIN rail mounting |
|---------------|-------------------|

### Material specifications

|                 |                  |
|-----------------|------------------|
| Color (Housing) | green (RAL 6021) |
|-----------------|------------------|

### Interfaces

|                      |                    |
|----------------------|--------------------|
| Inline local bus     |                    |
| Number of interfaces | 2                  |
| Connection method    | Inline data jumper |
| Transmission speed   | 500 kbps           |
| Transmission physics | Copper             |

### System properties

|                         |        |
|-------------------------|--------|
| Programming data        |        |
| Length code (hex)       | 04     |
| ID code (dec.)          | 91     |
| Length code (dec)       | 04     |
| Process data channel    | 64 bit |
| Input address area      | 8 Byte |
| Output address area     | 8 Byte |
| Parameter channel (PCP) | 0 Byte |
| Register length (bus)   | 64 bit |

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## Fieldbus data telegram

|                             |         |
|-----------------------------|---------|
| Required parameter data     | 10 Byte |
| Required configuration data | 5 Byte  |

## Output data

### Analog:

|                                          |                                                                                                                                                                                                                                          |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Output name                              | Analog outputs                                                                                                                                                                                                                           |
| Connection technology                    | 2-conductor                                                                                                                                                                                                                              |
| Note regarding the connection technology | shielded                                                                                                                                                                                                                                 |
| Number of outputs                        | 2                                                                                                                                                                                                                                        |
| D/A conversion time                      | typ. 10 µs                                                                                                                                                                                                                               |
| D/A converter resolution                 | 12 bit                                                                                                                                                                                                                                   |
| Protective circuit                       | Short-circuit and overload protection; Electronic<br>Transient protection; Suppressor diode                                                                                                                                              |
| Data formats                             | IB IL, S7-compatible                                                                                                                                                                                                                     |
| Representation of output values          | 12 bits (11 bits + sign bit)                                                                                                                                                                                                             |
| Process data update                      | bus-synchronous                                                                                                                                                                                                                          |
| Current output signal                    | 0 mA ... 20 mA<br>4 mA ... 20 mA<br>-20 mA ... 20 mA                                                                                                                                                                                     |
| Load/output load current output          | ≤ 450 Ω                                                                                                                                                                                                                                  |
| Voltage output signal                    | 0 V ... 10 V<br>-10 V ... 10 V                                                                                                                                                                                                           |
| Load/output load voltage output          | > 1 kΩ                                                                                                                                                                                                                                   |
| Permissible cable length                 | max. 250 m (The specifications refer to nominal operation after complying with installation instructions. The specifications refer to the following reference cable type: Shielded power station cable: LiYCY; 2 x 2 x 0,5 mm²; VDE0812) |
| Tolerance, relative                      | typ. 0.1 % (of output range final value)                                                                                                                                                                                                 |

## Product properties

|                      |                                                                                                                                                                                                                                                                                                                                     |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product type         | I/O component                                                                                                                                                                                                                                                                                                                       |
| Product family       | Inline                                                                                                                                                                                                                                                                                                                              |
| Type                 | modular                                                                                                                                                                                                                                                                                                                             |
| Scope of supply      | including Inline connector and labeling field                                                                                                                                                                                                                                                                                       |
| Special properties   | Extreme conditions version                                                                                                                                                                                                                                                                                                          |
| Diagnostics messages | Failure of the internal I/O supply I/O error message sent to the bus coupler<br>I/O supply failure Message in the diagnostic code (in the IB IL format)<br>Short circuit/overload of the outputs Message in the diagnostic code (in the IB IL format)<br>Configuration invalid Message in the diagnostic code (in the IB IL format) |

## Insulation characteristics

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

## Electrical properties

### Potentials: Communications power ( $U_L$ )

|                |                               |
|----------------|-------------------------------|
| Supply voltage | 7.5 V DC (via voltage jumper) |
| Current draw   | max. 65 mA<br>typ. 55 mA      |

### Potentials: Supply of analog modules ( $U_{ANA}$ )

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Supply voltage       | 24 V DC (via voltage jumper)                                                                                                                                                                                                                                                                                                                                                                                                     |
| Supply voltage range | 19.2 V DC ... 30 V DC (including all tolerances, including ripple)                                                                                                                                                                                                                                                                                                                                                               |
| Current draw         | max. 75 mA (Nominal current load ( $I_{OUT1/2} = 20 \text{ mA}$ , $R_L = 0 \Omega$ ))<br>max. 30 mA (No-load)<br>typ. 38 mA (Nominal voltage load ( $U_{OUT1/2} = 10 \text{ V}$ , $R_L = 1 \text{ k}\Omega$ ))<br>max. 45 mA (Nominal voltage load ( $U_{OUT1/2} = 10 \text{ V}$ , $R_L = 1 \text{ k}\Omega$ ))<br>typ. 65 mA (Nominal current load ( $I_{OUT1/2} = 20 \text{ mA}$ , $R_L = 0 \Omega$ ))<br>typ. 24 mA (No-load) |

### Electrical isolation/isolation of the voltage ranges

|                                                                         |                        |
|-------------------------------------------------------------------------|------------------------|
| Test voltage: 7.5 V supply (bus logics)/24 V analog supply (analog I/O) | 500 V AC, 50 Hz, 1 min |
| Test voltage: 7.5 V supply (bus logic)/functional ground                | 500 V AC, 50 Hz, 1 min |
| Test voltage: 24 V analog supply (analog I/O)/functional ground         | 500 V AC, 50 Hz, 1 min |

## Connection data

### Connection technology

|                 |                  |
|-----------------|------------------|
| Connection name | Inline connector |
|-----------------|------------------|

### Inline connector

|                                   |                                              |
|-----------------------------------|----------------------------------------------|
| Connection method                 | Spring-cage connection                       |
| Conductor cross-section, rigid    | 0.08 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> |
| Conductor cross-section, flexible | 0.08 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> |
| Conductor cross-section AWG       | 28 ... 16                                    |
| Stripping length                  | 8 mm                                         |

## Environmental and real-life conditions

### Ambient conditions

|                                         |                                                                                                                                                        |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ambient temperature (operation)         | -25 °C ... 55 °C (Standard)<br>-40 °C ... 70 °C (Extended, see section "Tested successfully: use under extreme ambient conditions" in the data sheet.) |
| 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                                                                                                                                       |

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|                                          |                                |
|------------------------------------------|--------------------------------|
| Permissible humidity (operation)         | 10 % ... 95 % (non-condensing) |
| Permissible humidity (storage/transport) | 10 % ... 95 % (non-condensing) |

## Standards and regulations

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

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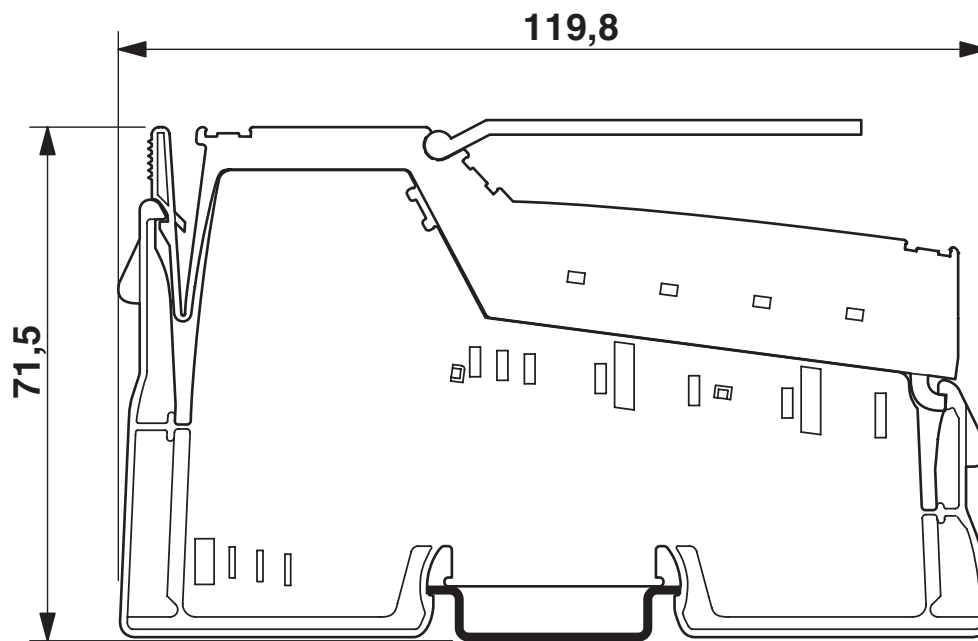


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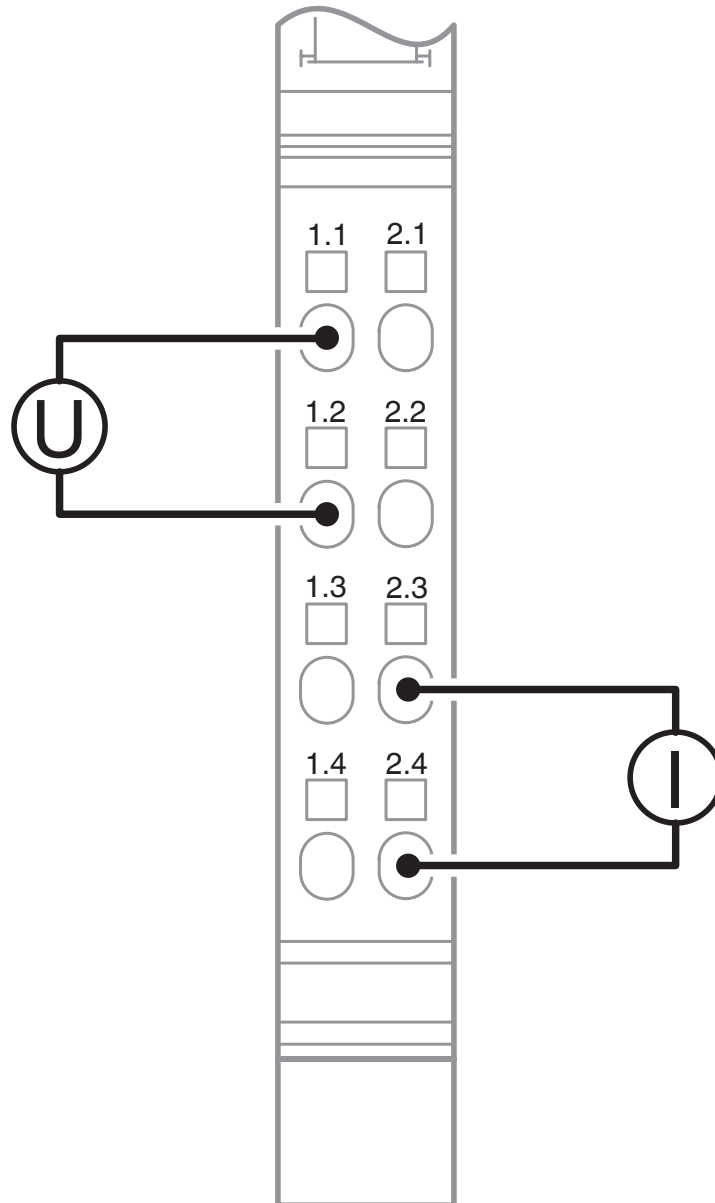
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## Drawings

Dimensional drawing



Connection diagram



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## Approvals

 To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2701389>



**cULus Listed**

Approval ID: E140324

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 27242601 |
| ECLASS-15.0 | 27242601 |

### ETIM

|          |          |
|----------|----------|
| ETIM 9.0 | EC001596 |
|----------|----------|

### UNSPSC

|             |          |
|-------------|----------|
| UNSPSC 21.0 | 32151600 |
|-------------|----------|

## 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                                | b3d385b1-50ff-4804-99db-9d596cd06707 |