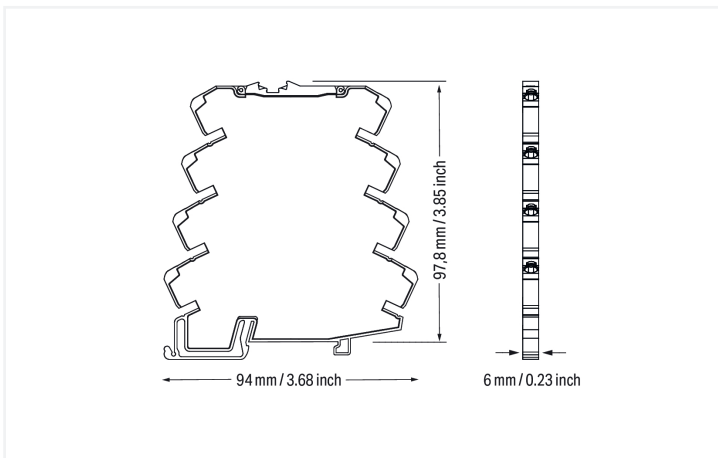
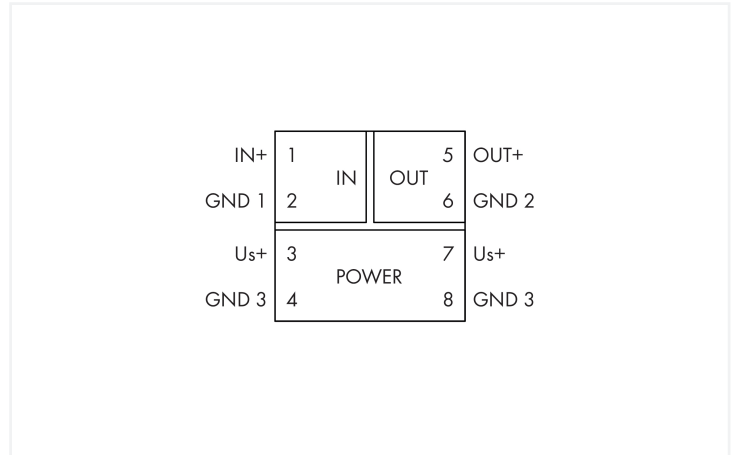
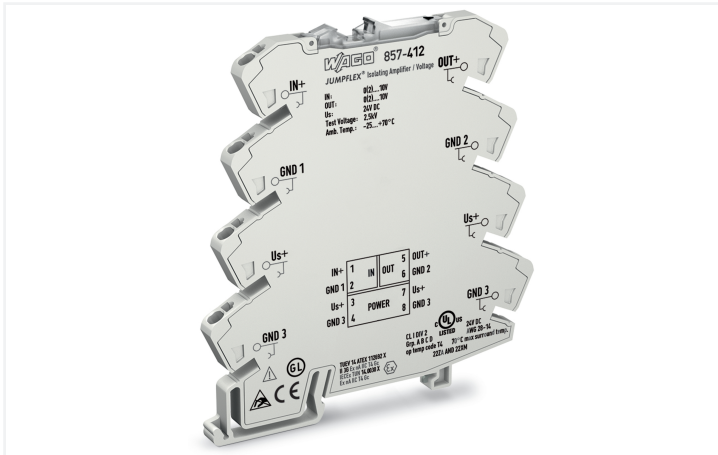


# Data Sheet | Item Number: 857-412

Isolation amplifier; Voltage input signal; Voltage output signal; Supply voltage: 24 VDC; 6 mm module width; 2,50 mm<sup>2</sup>

<https://www.wago.com/857-412>



## Short description:

This pre-configured signal conditioner converts, amplifies, filters and electrically isolates analog standard signals.

## Features:

- Input/output: current or voltage signal
- 3-way electrical isolation with 3 kV test voltage

## Notes

### Safety Information

Input and output must be safely isolated from any hazardous live parts!

### Note

The 3 (Us+), 7 (Us+), 4 (GND 3) and 8 (GND 3) connections are internally commoned. Current carrying capacity between 3/4 and 7/8 connections: 1 A (max.)

### Use shielded signal cables!

Only use shielded signal cables for analog input and output signals. This ensures the device maintains its specified accuracy and immunity to interference, even when external disturbances affect the signal cable.

## Technical data

### Configuration

|                       |                |
|-----------------------|----------------|
| Configuration options | Pre-configured |
|-----------------------|----------------|

### Input

|                                  |                          |
|----------------------------------|--------------------------|
| Input signal type                | Voltage                  |
| Input signal (voltage)           | 0 ... 10 V<br>2 ... 10 V |
| Input resistance (voltage input) | ≥ 100 kΩ                 |
| Input voltage (max.)             | 30 V                     |

### Output (analog)

|                                 |                          |
|---------------------------------|--------------------------|
| Output signal type              | Voltage                  |
| Output signal (voltage)         | 0 ... 10 V<br>2 ... 10 V |
| Load impedance (voltage output) | ≥ 2 kΩ                   |

### Signal Processing

|                      |        |
|----------------------|--------|
| Limit frequency      | 100 Hz |
| Step response (typ.) | 3.5 ms |

### Measurement Error

|                           |                              |
|---------------------------|------------------------------|
| Transmission error (typ.) | ≤ 0.1 % of upper-range value |
| Temperature coefficient   | ≤ 0.01 %/K                   |

### Power Supply

|   |               |
|---|---------------|
| Power supply type                             | 24 VDC (SELV) |
| Nominal supply voltage $U_S$                  | 24 VDC        |
| Supply voltage range                          | ±30 %         |
| Current consumption at nominal supply voltage | ≤ 20 mA       |

### Operating Data

|                     |         |
|---------------------|---------|
| Current consumption | ≤ 25 mA |
|---------------------|---------|

## Safety and protection

|                 |       |
|-----------------|-------|
| Rated Voltage   | 300 V |
| Protection type | IP20  |

### Test voltage

|                                    |                      |
|------------------------------------|----------------------|
| Test voltage (input/output/supply) | 3 kVAC; 50 Hz; 1 min |
|------------------------------------|----------------------|

### Insulation coordination

|   |  |
|---|--|
| Overvoltage category                        | II                                     |
| Pollution degree                            | 2                                      |
| Insulation type (input IN 2.1/relay output) | Functional insulation                  |
| Insulation type (adjacent devices)          | Reinforced insulation (safe isolation) |

## Connection Data

|                         |  |
|-------------------------|--|
| Connection technology   | Push-in CAGE CLAMP®                          |
| Solid conductor         | 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG |
| Fine-stranded conductor | 0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG |
| Strip length            | 9 ... 10 mm / 0.35 ... 0.39 inches           |

### Physical data

|                                   |                       |
|-----------------------------------|-----------------------|
| Width                             | 6 mm / 0.236 inches   |
| Height                            | 94 mm / 3.701 inches  |
| Depth from upper-edge of DIN-rail | 97.8 mm / 3.85 inches |

### Mechanical data

|               |             |
|---------------|-------------|
| Mounting type | DIN-35 rail |
|---------------|-------------|

### Material data

|                                    |                  |
|------------------------------------|------------------|
| Insulation material (main housing) | Polyamide (PA66) |
| Flammability class per UL94        | V0               |
| Fire load                          | 0.363 MJ         |
| Weight                             | 35.6 g           |

### Environmental requirements

|                                       |  |
|---------------------------------------|--|
| Ambient temperature (operation)       | -25 ... +70 °C                             |
| Ambient temperature (storage)         | -40 ... +85 °C                             |
| Processing temperature                | -25 ... +50 °C                             |
| Temperature range of connection cable | $\geq (T_{\text{ambient}} + 25 \text{ K})$ |
| Relative humidity                     | 5 ... 95 % (no condensation permissible)   |
| Operating altitude (max.)             | 2000 m                                     |

### Standards and Specifications

|                              |                      |
|------------------------------|----------------------|
| Conformity marking           | CE                   |
| EMC immunity to interference | EN 61000-6-2         |
| EMC emission of interference | EN 61000-6-4         |
| Standards/specifications     | EN 61010-1<br>UL 508 |

### Commercial data

|                       |                          |
|-----------------------|--------------------------|
| Product Group         | 6 (INTERFACE ELECTRONIC) |
| PU (SPU)              | 1 pcs                    |
| Packaging type        | Bag                      |
| Country of origin     | DE                       |
| GTIN                  | 4045454471309            |
| Customs tariff number | 85437090300              |

### Product Classification

|             |                      |
|-------------|----------------------|
| UNSPSC      | 39121008             |
| eCl@ss 10.0 | 27-21-01-20          |
| eCl@ss 9.0  | 27-21-01-20          |
| ETIM 9.0    | EC002653             |
| ETIM 10.0   | EC002653             |
| ECCN        | NO US CLASSIFICATION |

**Environmental Product Compliance**

|   |   |
|---|---|
| CAS-No.                                   | 1303-86-2<br>1317-36-8<br>7439-92-1<br>75980-60-8   |
| REACH Candidate List Substance            | Diboron trioxide<br>Lead<br>Lead monoxide<br>Phosphine oxide, diphenyl(2,4,6-trimethylbenzoyl)- |
| RoHS Compliance Status                    | Compliant,With Exemption  |
| RoHS Exemption                            | 6(c)<br>7(a)<br>7(c)-I<br>7(c)-II   |
| SCIP notification number (Austria)        | ea9905d9-dd39-4427-a795-254278c09f8e  |
| SCIP notification number (Belgium)        | 4b738452-4977-4af9-9aaf-ef41e3bb2eea  |
| SCIP notification number (Bulgaria)       | c5dfb54e-8cf7-4efd-82a7-9175592951b9  |
| SCIP notification number (Czech Republic) | e3c5e78e-87f0-4022-ba04-4797129ddc12  |
| SCIP notification number (Denmark)        | fce12377-0557-4b21-9439-99554bc995fa  |
| SCIP notification number (Finland)        | 2be5d354-f861-4897-880e-58acb5aecdd10   |
| SCIP notification number (France)         | 0fd92282-b633-4c27-ac35-47f0b79265ca  |
| SCIP notification number (Germany)        | fcc600bd-eef5-4520-ad8b-694dd42b04cf  |
| SCIP notification number (Hungary)        | 5f74e66d-8252-41fa-b0b4-546399855ebf  |
| SCIP notification number (Italy)          | b767196c-afdb-4720-8608-c3c3c8d3b71c  |
| SCIP notification number (Netherlands)    | add308f0-0cb3-4e25-8f3d-e06ae5cf3b15  |
| SCIP notification number (Poland)         | c154edb9-f830-4428-94e1-1e15b1c436e7  |
| SCIP notification number (Romania)        | 8fecf5a4-2498-4570-8fb7-0d76a1ba7b18  |
| SCIP notification number (Sweden)         | 77c83d89-058b-4c02-921c-1e7ba56819ca  |

**Approvals / Certificates**

**General approvals**



| Approval  | Standard       | Certificate Name |
|---|----------------|------------------|
| EAC<br>GZO Almaty Standart                                | TP TC 020/2011 | EAC CoC 03081    |
| UL<br>Underwriters Laboratories Inc. (ORDINARY LOCATIONS) | UL 508         | E175199 Sec.4    |

**Declarations of conformity and manufacturer's declarations**

| Approval   | Standard | Certificate Name |
|--|----------|------------------|
| EU-Declaration of Conformity<br>WAGO GmbH & Co. KG | -        | -                |
| UK-Declaration of Conformity<br>WAGO GmbH & Co. KG | -        | -                |

**Approvals for marine applications**



| Approval                  | Standard                        | Certificate Name |
|---------------------------|---------------------------------|------------------|
| BV<br>Bureau Veritas S.A. | Rules for class. of Steel Ships | 40179_B0         |
| DNV<br>DNV Germany GmbH   | DNV-CG-0339,Aug.2021            | TAA00001D1       |

**Approvals for hazardous areas**



| Approval   | Standard          | Certificate Name                          |
|--|-------------------|---|
| ATEX<br>TUEV Nord Cert GmbH                                | EN 60079-0        | TUEV14ATEX112692X (II 3G Ex ec IIC T4 Gc) |
| CCC<br>CNEX  | CNCA-C23-01       | 2020312310000210 (Ex ec IIC T4 Gc)        |
| IECEx<br>TUEV Nord Cert GmbH                               | -                 | IECEX TUN14.0030X                         |
| UKEx<br>WAGO GmbH & Co. KG                                 | EN 60079-0        | WAGO22UKEX004X                            |
| UL<br>Underwriters Laboratories Inc. (HAZARDOUS LOCATIONS) | ANSI/ISA 12.12.01 | E198726                                   |

**Downloads**

**Environmental Product Compliance**

**Compliance Search**

Environmental Product Compliance 857-412



**Documentation**

**Bid Text**

|         |            |                  |  |
|---------|------------|------------------|--|
| 857-412 | 18.07.2019 | xml<br>5.28 KB   |  |
| 857-412 | 18.07.2019 | docx<br>18.19 KB |  |
| 857-412 | 18.07.2019 | pdf<br>72.47 KB  |  |

**Instruction Leaflet**

|                                  |                       |                   |  |
|----------------------------------|-----------------------|-------------------|--|
| CCC Ex (Additional information)  | 26.04.2023            | pdf<br>140.99 KB  |  |
| Messumformer und Trennverstärker | V 1.2.1<br>21.01.2020 | pdf<br>1589.43 KB |  |

**CAD/CAE-Data**

**CAD data**

2D/3D Models 857-412



**CAE data**

EPLAN Data Portal 857-412



WSCAD Universe 857-412



ZUKEN Portal 857-412



**1 Compatible Products**

**1.1 Optional Accessories**

**1.1.1 Installation**

**1.1.1.1 Mounting accessories**



**Item No.: 249-117**

Screwless end stop; 10 mm wide; for DIN-rail 35 x 15 and 35 x 7.5; gray

**Item No.: 249-197**

Screwless end stop; 14 mm wide; for DIN-rail 35 x 15 and 35 x 7.5; gray

**Item No.: 249-116**

Screwless end stop; 6 mm wide; for DIN-rail 35 x 15 and 35 x 7.5; gray

**1.1.2 Interface module**

**1.1.2.1 Interface adapters**



**Item No.: 857-980**

Interface adapter; 16-pole; analog

1.1.3 Jumper

1.1.3.1 Jumper



[Item No.: 281-482](#)

Jumper; 2-way; insulated; gray



[Item No.: 859-410/000-006](#)

Jumper; for jumper slot; 10-way; insulated; blue



[Item No.: 859-410](#)

Jumper; for jumper slot; 10-way; insulated; light gray



[Item No.: 859-410/000-005](#)

Jumper; for jumper slot; 10-way; insulated; red



[Item No.: 859-410/000-029](#)

Jumper; for jumper slot; 10-way; insulated; yellow



[Item No.: 859-402/000-006](#)

Jumper; for jumper slot; 2-way; insulated; blue



[Item No.: 859-402](#)

Jumper; for jumper slot; 2-way; insulated; light gray



[Item No.: 859-402/000-005](#)

Jumper; for jumper slot; 2-way; insulated; red



[Item No.: 859-402/000-029](#)

Jumper; for jumper slot; 2-way; insulated; yellow



[Item No.: 859-403/000-006](#)

Jumper; for jumper slot; 3-way; insulated; blue



[Item No.: 859-403](#)

Jumper; for jumper slot; 3-way; insulated; light gray



[Item No.: 859-403/000-005](#)

Jumper; for jumper slot; 3-way; insulated; red



[Item No.: 859-403/000-029](#)

Jumper; for jumper slot; 3-way; insulated; yellow



[Item No.: 859-404/000-006](#)

Jumper; for jumper slot; 4-way; insulated; blue



[Item No.: 859-404](#)

Jumper; for jumper slot; 4-way; insulated; light gray



[Item No.: 859-404/000-005](#)

Jumper; for jumper slot; 4-way; insulated; red



[Item No.: 859-404/000-029](#)

Jumper; for jumper slot; 4-way; insulated; yellow



[Item No.: 859-405/000-006](#)

Jumper; for jumper slot; 5-way; insulated; blue



[Item No.: 859-405](#)

Jumper; for jumper slot; 5-way; insulated; light gray



[Item No.: 859-405/000-005](#)

Jumper; for jumper slot; 5-way; insulated; red



[Item No.: 859-405/000-029](#)

Jumper; for jumper slot; 5-way; insulated; yellow



[Item No.: 859-406/000-006](#)

Jumper; for jumper slot; 6-way; insulated; blue



[Item No.: 859-406](#)

Jumper; for jumper slot; 6-way; insulated; light gray



[Item No.: 859-406/000-005](#)

Jumper; for jumper slot; 6-way; insulated; red



[Item No.: 859-406/000-029](#)

Jumper; for jumper slot; 6-way; insulated; yellow



[Item No.: 859-407/000-006](#)

Jumper; for jumper slot; 7-way; insulated; blue



[Item No.: 859-407](#)

Jumper; for jumper slot; 7-way; insulated; light gray



[Item No.: 859-407/000-005](#)

Jumper; for jumper slot; 7-way; insulated; red



[Item No.: 859-407/000-029](#)

Jumper; for jumper slot; 7-way; insulated; yellow



[Item No.: 859-408/000-006](#)

Jumper; for jumper slot; 8-way; insulated; blue



[Item No.: 859-408](#)

Jumper; for jumper slot; 8-way; insulated; light gray



[Item No.: 859-408/000-005](#)

Jumper; for jumper slot; 8-way; insulated; red



[Item No.: 859-408/000-029](#)

Jumper; for jumper slot; 8-way; insulated; yellow



[Item No.: 859-409/000-006](#)

Jumper; for jumper slot; 9-way; insulated; blue



[Item No.: 859-409](#)

Jumper; for jumper slot; 9-way; insulated; light gray



[Item No.: 859-409/000-005](#)

Jumper; for jumper slot; 9-way; insulated; red



[Item No.: 859-409/000-029](#)

Jumper; for jumper slot; 9-way; insulated; yellow

### 1.1.4 Marking

#### 1.1.4.1 Marker

**Item No.: 793-5501**

WMB marking card; as card; for terminal block width 5 - 17.5 mm; stretchable 5 - 5.2 mm; plain; snap-on type; white

**Item No.: 793-502**

WMB marking card; as card; MARKED; 1 ... 10 (10x); not stretchable; Horizontal marking; snap-on type; white

**Item No.: 793-566**

WMB marking card; as card; MARKED; 1 ... 50 (2x); not stretchable; Horizontal marking; snap-on type; white

**Item No.: 793-503**

WMB marking card; as card; MARKED; 11 ... 20 (10x); not stretchable; Horizontal marking; snap-on type; white

**Item No.: 793-504**

WMB marking card; as card; MARKED; 21 ... 30 (10x); not stretchable; Horizontal marking; snap-on type; white

**Item No.: 793-505**

WMB marking card; as card; MARKED; 31 ... 40 (10x); not stretchable; Horizontal marking; snap-on type; white

**Item No.: 793-506**

WMB marking card; as card; MARKED; 41 ... 50 (10x); not stretchable; Horizontal marking; snap-on type; white

**Item No.: 793-501**

WMB marking card; as card; not stretchable; plain; snap-on type; white

**Item No.: 2009-115**

WMB-Inline; for Smart Printer; 1500 pieces on roll; stretchable 5 - 5.2 mm; plain; snap-on type; white

#### 1.1.4.2 Marking strip

**Item No.: 2009-110**

Marking strips; for Smart Printer; on reel; not stretchable; plain; snap-on type; white

### 1.1.5 Power supply

#### 1.1.5.1 Power Supply

**Item No.: 787-2852**

Switched-mode power supply; 1-phase; 24 VDC output voltage; 1 A output current

### 1.1.6 Terminal blocks

#### 1.1.6.1 Supply module

**Item No.: 857-979**

Supply and through module

#### 1.1.6.2 Through terminal block

**Item No.: 857-979**

Supply and through module

## 1.1.7 Tool

### 1.1.7.1 Operating tool

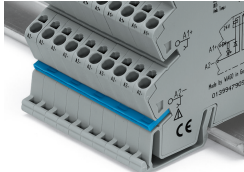


**Item No.: 210-720**

Operating tool; Blade: 3.5 x 0.5 mm; with a partially insulated shaft; multicoloured

## Installation Notes

### Commoning



Commoning, not discrete wiring – Same outline allows use of a single in-line, push-in jumper.