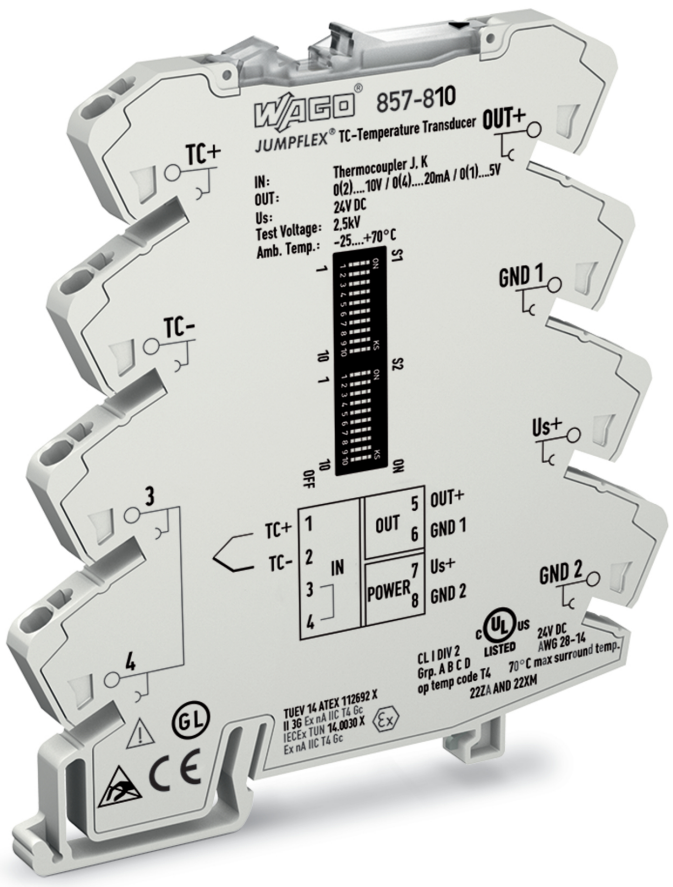
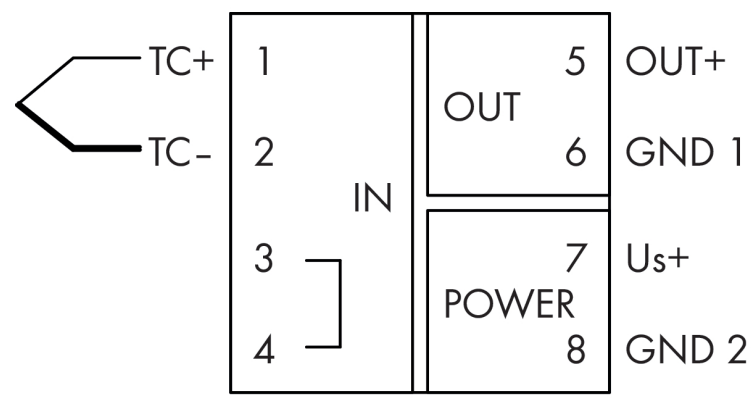
# Data Sheet | Item Number: 857-810

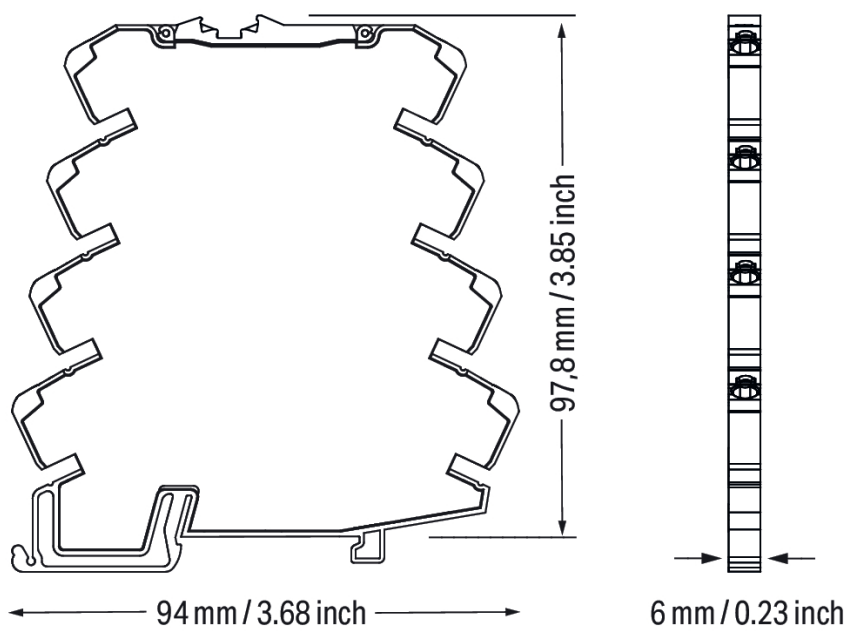
Temperature signal conditioner for thermocouples; Current and voltage output signal; Configuration via DIP switch; Supply voltage: 24 VDC; 6 mm module width; light gray

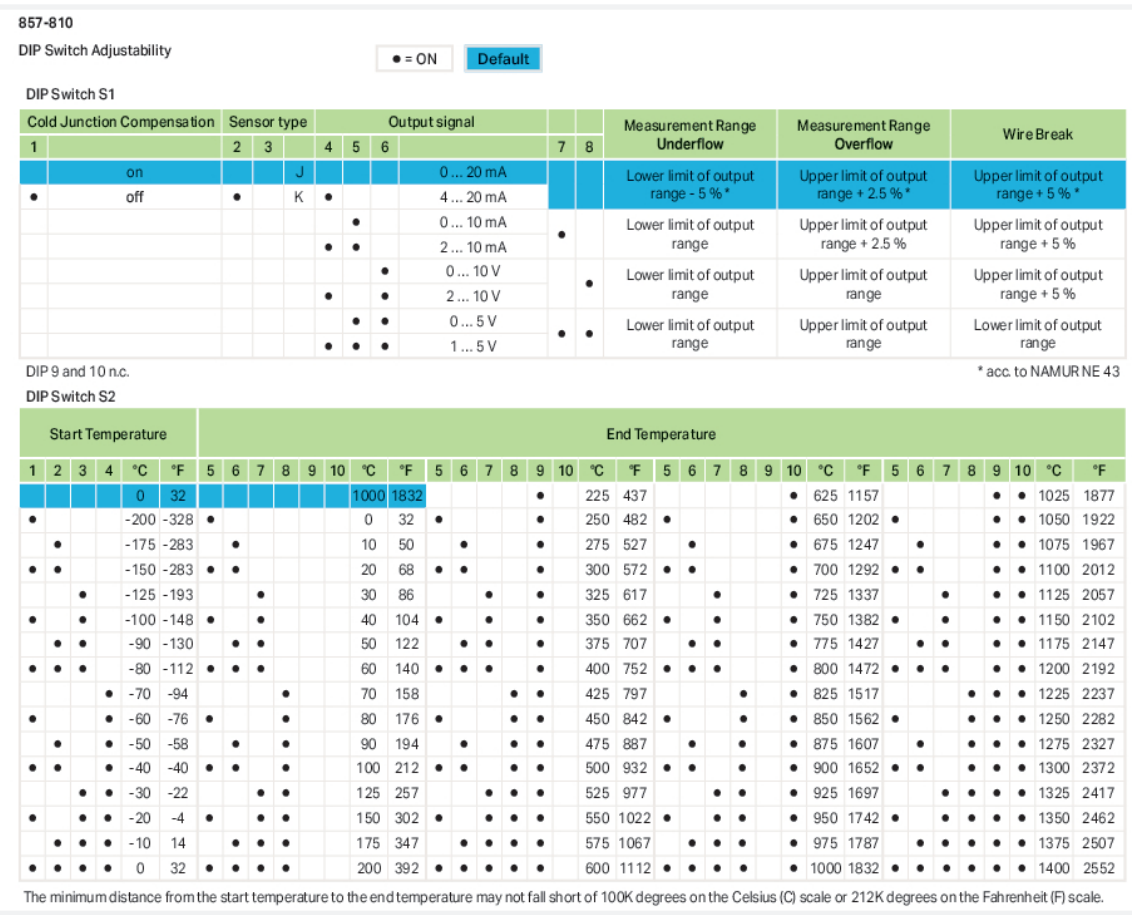
https://www.wago.com/857-810




Color: light gray



857-810

DIP Switch Adjustability

• = ON | Default

DIP Switch S1

| 1 | Cold Junction Compensation | 2 | 3 | Sensor type | 4 | 5 | 6 | Output signal | 7 | 8 | Measurement Range Underflow | Measurement Range Overflow | Wire Break |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | on | | | J | | | | 0 ... 20 mA | | | Lower limit of output range - 5 % * | Upper limit of output range + 2.5 % * | Upper limit of output range + 5 % * |
| • | off | • | | K | • | | | 4 ... 20 mA | | | | | |
| | | | | | | • | | 0 ... 10 mA | • | | Lower limit of output range | Upper limit of output range + 2.5 % | Upper limit of output range + 5 % |
| | | | | | • | • | | 2 ... 10 mA | | | | | |
| | | | | | | | • | 0 ... 10 V | | • | Lower limit of output range | Upper limit of output range | Upper limit of output range + 5 % |
| | | | | | • | | • | 2 ... 10 V | | | | | |
| | | | | | | • | • | 0 ... 5 V | • | • | Lower limit of output range | Upper limit of output range | Lower limit of output range |
| | | | | | • | • | • | 1 ... 5 V | | | | | |

DIP 9 and 10 n.c.

* acc. to NAMUR NE 43

DIP Switch S2

| Start Temperature | | | | | | End Temperature | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | °C | °F | 5 | 6 | 7 | 8 | 9 | 10 | °C | °F | 5 | 6 | 7 | 8 | 9 | 10 | °C | °F | 5 | 6 | 7 | 8 | 9 | 10 | °C | °F | 5 | 6 | 7 | 8 | 9 | 10 | °C | °F |
| | | | | 0 | 32 | | | | | | | 1000 | 1832 | | | | | • | | 225 | 437 | | | | | | • | 625 | 1157 | | | | | • | • | 1025 | 1877 |
| • | | | | -200 | -328 | • | | | | | | 0 | 32 | • | | | | • | | 250 | 482 | • | | | | | • | 650 | 1202 | • | | | | • | • | 1050 | 1922 |
| | • | | | -175 | -283 | | • | | | | | 10 | 50 | | • | | | • | | 275 | 527 | | • | | | | • | 675 | 1247 | | • | | | • | • | 1075 | 1967 |
| • | • | | | -150 | -283 | • | • | | | | | 20 | 68 | • | • | | | • | | 300 | 572 | • | • | | | | • | 700 | 1292 | • | • | | | • | • | 1100 | 2012 |
| | | • | | -125 | -193 | | | • | | | | 30 | 86 | | | • | | • | | 325 | 617 | | | • | | | • | 725 | 1337 | | | • | | • | • | 1125 | 2057 |
| • | | • | | -100 | -148 | • | | • | | | | 40 | 104 | • | | • | | • | | 350 | 662 | • | | • | | | • | 750 | 1382 | • | | • | | • | • | 1150 | 2102 |
| | • | • | | -90 | -130 | | • | • | | | | 50 | 122 | | • | • | | • | | 375 | 707 | | • | • | | | • | 775 | 1427 | | • | • | | • | • | 1175 | 2147 |
| • | • | • | | -80 | -112 | • | • | • | | | | 60 | 140 | • | • | • | | • | | 400 | 752 | • | • | • | | | • | 800 | 1472 | • | • | • | | • | • | 1200 | 2192 |
| | | | • | -70 | -94 | | | | • | | | 70 | 158 | | | | • | • | | 425 | 797 | | | | • | | • | 825 | 1517 | | | | • | • | • | 1225 | 2237 |
| • | | | • | -60 | -76 | • | | | • | | | 80 | 176 | • | | | • | • | | 450 | 842 | • | | | • | | • | 850 | 1562 | • | | | • | • | • | 1250 | 2282 |
| | • | | • | -50 | -58 | | • | | • | | | 90 | 194 | | • | | • | • | | 475 | 887 | | • | | • | | • | 875 | 1607 | | • | | • | • | • | 1275 | 2327 |
| • | • | | • | -40 | -40 | • | • | | • | | | 100 | 212 | • | • | | • | • | | 500 | 932 | • | • | | • | | • | 900 | 1652 | • | • | | • | • | • | 1300 | 2372 |
| | | • | • | -30 | -22 | | | • | • | | | 125 | 257 | | | • | • | • | | 525 | 977 | | | • | • | | • | 925 | 1697 | | | • | • | • | • | 1325 | 2417 |
| • | | • | • | -20 | -4 | • | | • | • | | | 150 | 302 | • | | • | • | • | | 550 | 1022 | • | | • | • | | • | 950 | 1742 | • | | • | • | • | • | 1350 | 2462 |
| | • | • | • | -10 | 14 | | • | • | • | | | 175 | 347 | | • | • | • | • | | 575 | 1067 | | • | • | • | | • | 975 | 1787 | | • | • | • | • | • | 1375 | 2507 |
| • | • | • | • | 0 | 32 | • | • | • | • | | | 200 | 392 | • | • | • | • | • | | 600 | 1112 | • | • | • | • | | • | 1000 | 1832 | • | • | • | • | • | • | 1400 | 2552 |

The minimum distance from the start temperature to the end temperature may not fall short of 100K degrees on the Celsius (C) scale or 212K degrees on the Fahrenheit (F) scale.

**Short description:**

This temperature signal conditioner records signals from thermocouples (type J, K) and converts the temperature signal into a standard analog signal at the output.

**Features:**

- For type J and K thermocouples
- Cold junction compensation (On/Off)
- Calibrated measurement range switching
- Detects a sensor wire break
- Detects measurement range underflow/overflow
- Clipping capability: Limitation of the standard analog signal to the upper-range values
- 3-way electrical isolation with 2.5 kV test voltage

## Technical data

### Configuration

| | |
|---|---|
| Configuration options | DIP switch |

### Input

| | |
|---|---|
| Input signal type | TC sensors |



Continued on next page

## Input (TC sensors)

| | |
|---|---|
| Sensor types (TC) | Type J<br>Type K |
| Temperature measurement range (TC) | -200 … 1200 °C (Type J)<br>-200 … 1350 °C (Type K) |
| Measurement span (TC) min. | 100 K |
| Cold junction compensation | ON/OFF (default: ON) |
| Cold junction error | 3 K (typ. 2 K ) |

## Output (analog)

| | |
|---|---|
| Output signal type | Current<br>Voltage |
| Output signal (voltage) | 0 … 5 V<br>1 … 5 V<br>0 … 10 V<br>2 … 10 V |
| Output signal (current) | 0 … 10 mA<br>2 … 10 mA<br>0 … 20 mA<br>4 … 20 mA |
| Load impedance (voltage output) | ≥ 2 kΩ |
| Load impedance (current output) | ≤ 600 Ω |

## Signal Processing

| | |
|---|---|
| Step response (typ.) | 60 ms (cold junction compensation off)<br>120 ms (cold junction compensation on) |

## Measurement Error

| | |
|---|---|
| Transmission error (typ.) | ≤ 0.1% at max. measurement span (type J, K) |
| Transmission error for the set measurement range | ≤ (150 K/set measurement range [K]) % |
| Temperature coefficient | ≤ 0.04 %/K |

## Power Supply

| | |
|---|---|
| Power supply type | 24 VDC |
| Nominal supply voltage $U_S$ | 24 VDC |
| Supply voltage range | ±30 % |
| Current consumption at nominal supply voltage | ≤ 40 mA |

## Safety and protection

| | |
|---|---|
| Protection type | IP20 |

## Test voltage

| | |
|---|---|
| Test voltage (input/output/supply) | 2.5 kVAC; 50 Hz; 1 min |

## Connection Data

| | |
|---|---|
| Connection technology | Push-in CAGE CLAMP® |
| Solid conductor | 0.08 … 2.5 mm² / 28 … 14 AWG |
| Fine-stranded conductor | 0.34 … 2.5 mm² / 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 |


Continued on next page

## Mechanical data

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

## Material data

| | |
|---|---|
| Color | light gray |
| Insulation material (main housing) | Polyamide (PA66) |
| Flammability class per UL94 | V0 |
| Fire load | 0.488 MJ |
| Weight | 35.5 g |

## Environmental requirements

| | |
|---|---|
| Ambient temperature (operation) | -25 … +70 °C |
| Ambient temperature (storage) | -40 … +85 °C |
| 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 | DNV |

## Commercial data

| | |
|---|---|
| Product Group | 6 (INTERFACE ELECTRONIC) |
| PU (SPU) | 1 pcs |
| Packaging type | Bag |
| Country of origin | DE |
| GTIN | 4045454470135 |
| Customs tariff number | 85437090300 |

## Product Classification

| | |
|---|---|
| UNSPSC | 41111970 |
| eCl@ss 10.0 | 27-21-01-29 |
| eCl@ss 9.0 | 27-20-02-06 |
| ETIM 9.0 | EC002919 |
| ETIM 10.0 | EC002919 |
| ECCN | NO US CLASSIFICATION |

## Environmental Product Compliance

| | |
|---|---|
| CAS-No. | 1303-86-2<br>1317-36-8<br>7439-92-1<br>75980-60-8<br>79-94-7 |
| REACH Candidate List Substance | 2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol<br>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) | 694a8dfe-c43e-47d6-ad52-996c633f9655 |


Continued on next page

## Environmental Product Compliance

| | |
|---|---|
| SCIP notification number (Belgium) | 296545de-031d-4d5e-a5a5-dfddc192cdf7 |
| SCIP notification number (Bulgaria) | c1b7b523-92f8-47da-850c-8c4c882c490d |
| SCIP notification number (Czech Republic) | e269576b-40b6-4b8e-a730-b20f6c4642ba |
| SCIP notification number (Denmark) | adf6ed2d-abff-4125-bf6c-c121e8fca395 |
| SCIP notification number (Finland) | 5021c540-639b-4fdb-88aa-4c5ba154c53e |
| SCIP notification number (France) | ca2c2545-875b-4634-b7a2-589c69c41520 |
| SCIP notification number (Germany) | ba87344e-9f0c-4f92-8d9b-a3c90deeb4cc |
| SCIP notification number (Hungary) | 62c2d5b3-a430-476c-810d-c2bfb1e4d555 |
| SCIP notification number (Italy) | 7dccf9c7-af48-427e-8cf4-62ec1cfc9737 |
| SCIP notification number (Netherlands) | 9d300dab-2d6b-4501-8a24-bc26ad68f589 |
| SCIP notification number (Poland) | 0dd42d60-44a1-435a-b52e-47b29f5d6be4 |
| SCIP notification number (Romania) | 64b5849a-efc7-4fa8-9d9c-d6e400e9cc32 |
| SCIP notification number (Sweden) | be28f513-6c89-4361-b6f3-1dba6122eca2 |

## Approvals / Certificates

### General approvals

| Approval | Standard | Certificate Name |
|---|---|---|
| EAC<br>GZO Almaty Standart | TP TC 020/2011 | EAC CoC 03081 |

### Declarations of conformity and manufacturer's declarations

| Approval | Standard | Certificate Name |
|---|---|---|
| EU-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_C0 |
| DNV<br>DNV Germany GmbH | DNV-CG-0339,Aug.2021 | TAA00001D1 |

### Approvals for hazardous areas

| Approval | Standard | Certificate Name |
|---|---|---|
| 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 857-810

 Continued on next page

## Documentation

### Bid Text

| | | | |
|---|---|---|---|
| 857-810 | 19.02.2019 | xml<br>5.73 KB | |
| 857-810 | 20.02.2019 | docx<br>17.11 KB | |

### Instruction Leaflet

| | | | |
|---|---|---|---|
| CCC Ex (Additional information) | 26.04.2023 | pdf<br>140.99 KB | |
| Messumformer und Trennverstärker | | pdf<br>2348.53 KB | |

## CAD/CAE-Data

### CAD data

2D/3D Models 857-810

### CAE data

EPLAN Data Portal
857-810

WSCAD Universe
857-810

ZUKEN Portal 857-810

# 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


Continued on next page

### 1.1.3.1 Jumper



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


Continued on next page

### 1.1.4.2 Marking strip



Item No.: 2009-110
Marking strips; for Smart Printer; 50 m on roll; 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 and through module



Item No.: 857-979
Supply and through module

### 1.1.7 Tool

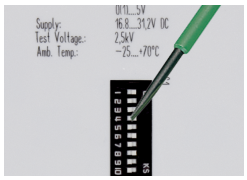
### 1.1.7.1 Operating tool



Item No.: 210-720
Operating tool; Blade: 3.5 x 0.5 mm; with a partially insulated shaft; multicoloured

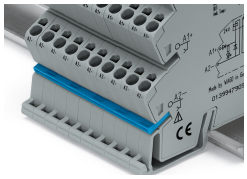
## Installation Notes

### Configuring




Configuration via DIP switch

## Commoning



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