JUMPFLEX®

The Standard for Signal Conditioners

Contents

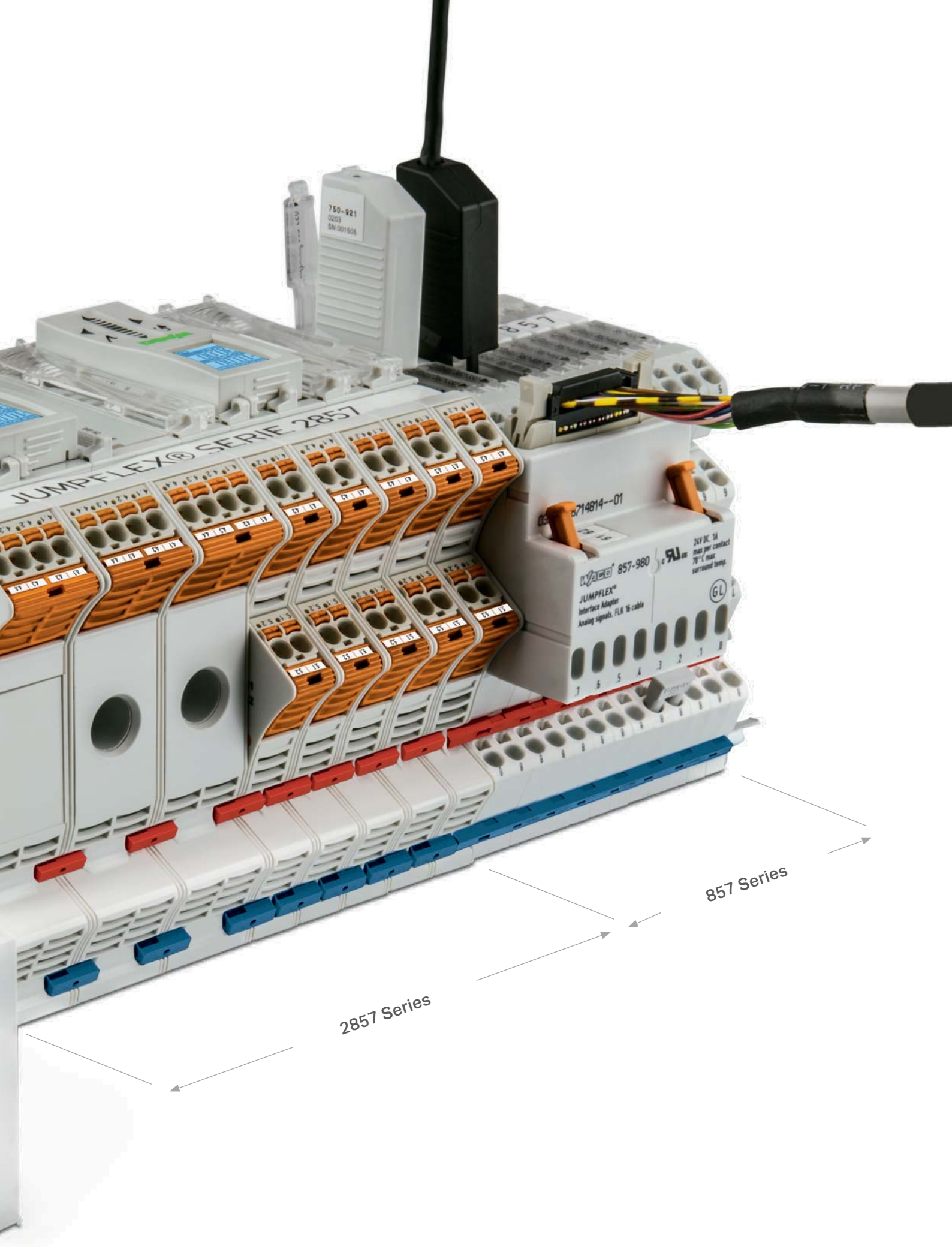
JUMPFLEX®

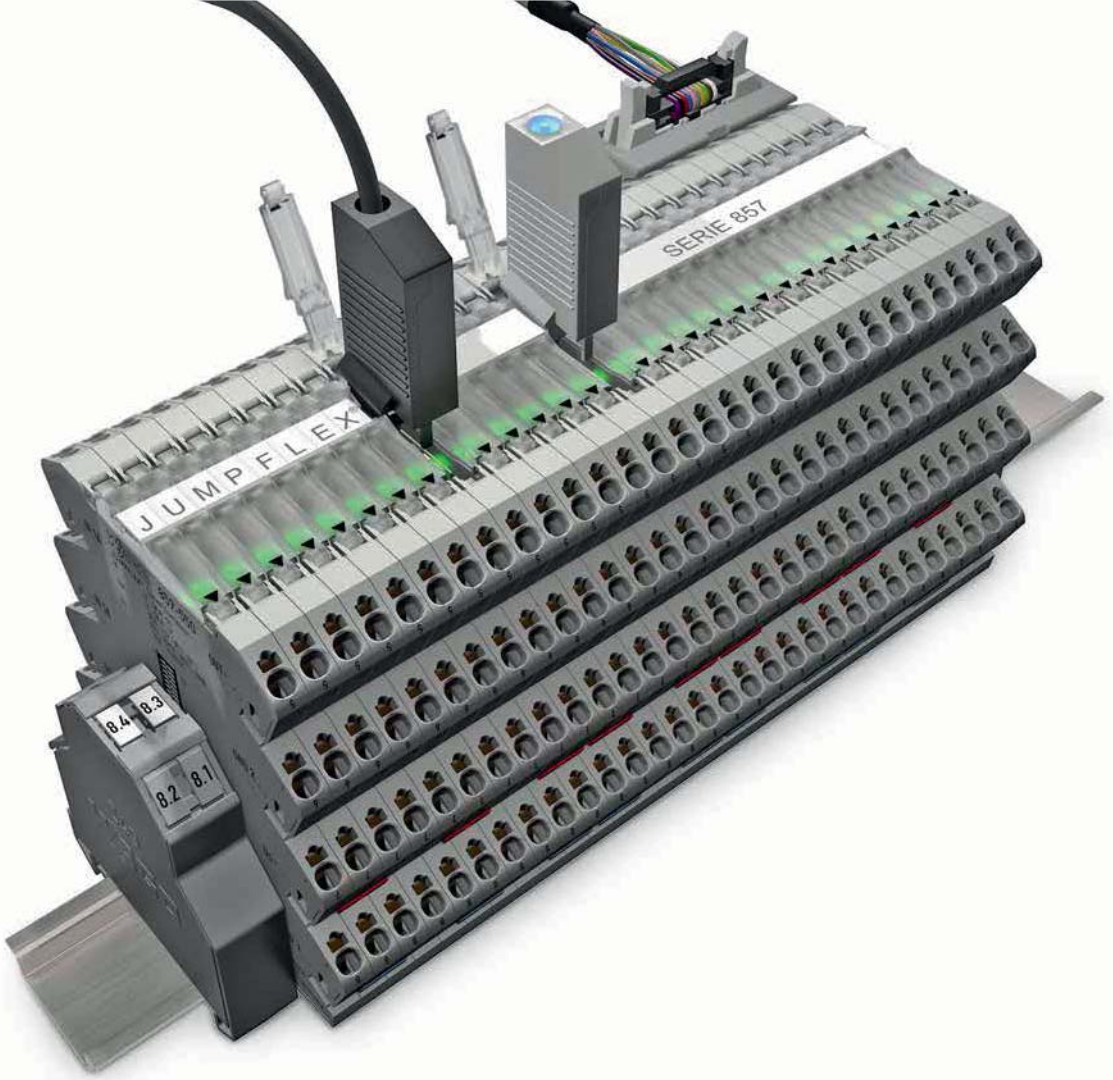
857 and 2857 Series

A Variety of Combinations

The development of the *JUMPFLEX®* Signal Conditioner and Isolation Amplifier was driven by customers' needs for greater flexibility during system planning while maintaining uniformity in the cabinet.

The advantage rests in the palm of your hand: There is no need to wire each individual component thanks to push-in jumpers, which saves time and effort. Tightly integrating the desirable mechanical and electrical characteristics of the *JUMPFLEX®* Signal Conditioner and Isolation Amplifier has led to a series of unique features that continues to set the standard for signal conditioners.


JUMPFLEX® SERIE 2857
857-980
JUMPFLEX®
Interface Adapter
Analog signals, FLK 16 cable
857 Series
2857 Series



JUMPFLEX® SIGNAL CONDITIONERS AND ISOLATION AMPLIFIERS

857 Series

The Right Signal is Crucial!

Housed in a 6 mm-wide package, the *JUMPFLEX*® Signal Conditioners feature eight Push-in CAGE CLAMP® connections and a common profile. These features play a key role in forming the basis for a successful overall solution. Additional benefits include: "safe isolation," extended operating temperature range and calibrated, configurable signals. Combined with excellent technical specifications, these features lead to a line of advanced signal conditioning solutions that maximize panel space while reducing signal wiring and downtime.

Directly Connect – Save Time!

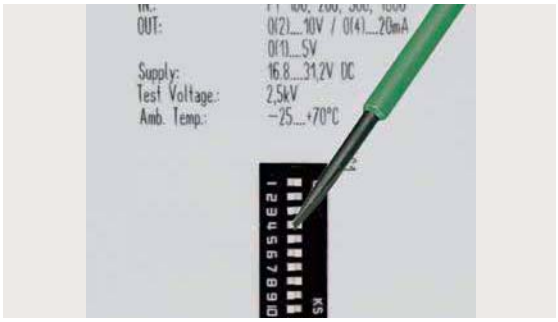
Simple, push-in termination of solid and ferruled conductors – no operating tool needed.

PUSH-IN CAGE CLAMP®

Vibration-Proof – Fast – Maintenance-Free
Push-In CAGE CLAMP® termination for all conductor types

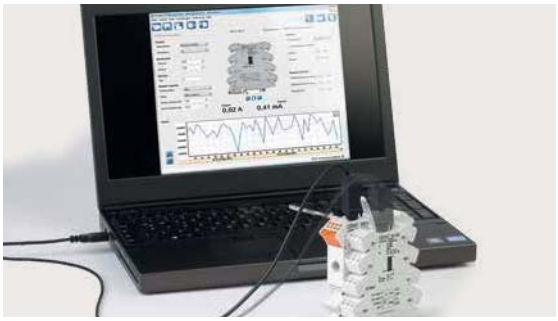
2,5 kV

Maximum Safety!
All devices provide "safe isolation" with 2.5 kV test voltage according to DIN EN 61010-1.



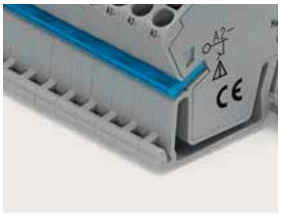
Configuration via DIP switch

Configuration via *JUMPFLEX*®-ToGo Smartphone App



Configuration via PC software

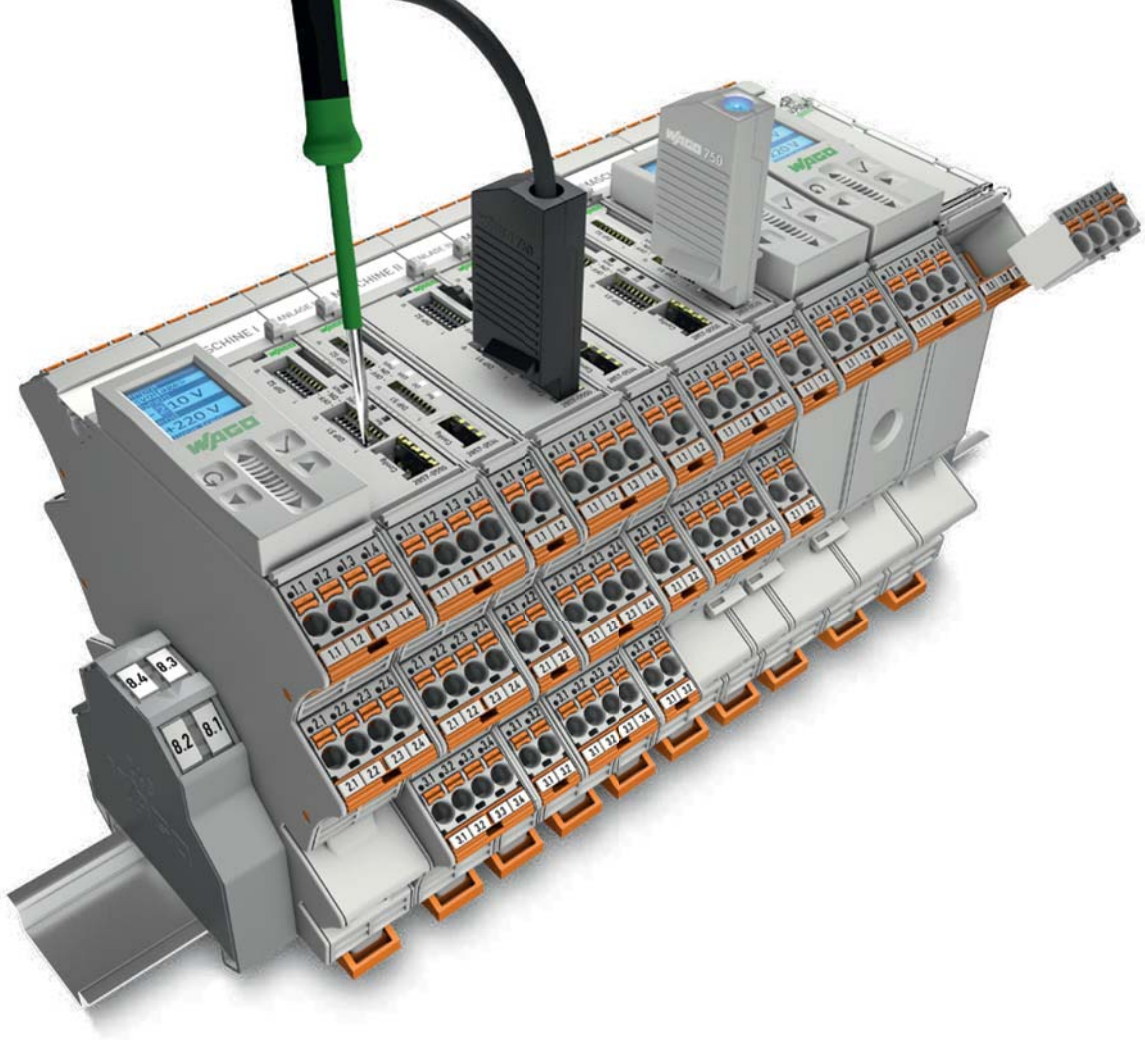
Configuration via push/slide switch



Industry's Most Compact
"True" 6.0 mm (0.23 in.) width maximizes panel space

For Extreme Applications
Extended temperature range of –25°C to +70°C to support more applications

Commoning, Not Discrete Wiring
Same profile allows the use of a single in-line, push-in jumper



JUMPFLEX® SIGNAL CONDITIONERS AND ISOLATION AMPLIFIERS

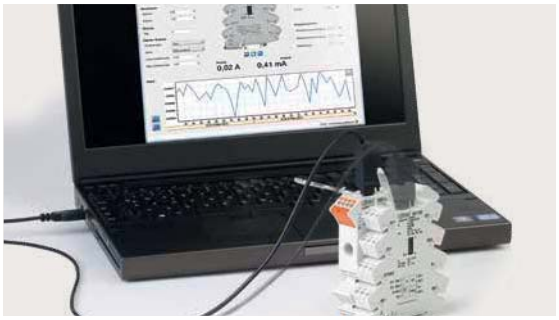
2857 Series

The Right Signal is Crucial!

The success of the 857 Series *JUMPFLEX*® Signal Conditioners and Isolation Amplifiers shaped the design of the new 2857 Series. As in the past, the focus remains on usability, convenience and absolute reliability. However, the 2857 Series takes flexibility to new levels by providing several convenient configuration options. In addition to DIP switches, PC configuration software and a smartphone configuration app, there is also a newly developed touch panel display. Every aspect has been engineered for maximum flexibility – exactly what you'd expect from WAGO.

4 kV

Maximum Safety!
All devices provide "safe isolation" with 4 kV test voltage according to DIN EN 61010-1.



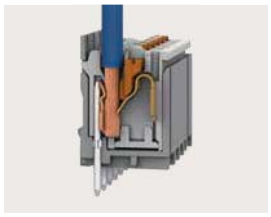
Configuration
via PC software

Configuration via
JUMPFLEX®-ToGo
Smartphone App

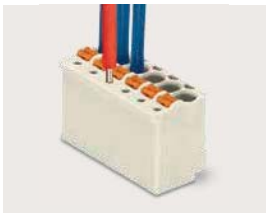
Configuration
via DIP switch

Configuration
via capacitive touch panel

Pluggable Connection Technology

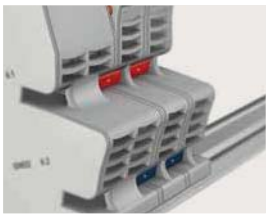


***picoMAX*® Pluggable Connectors**



Integrated Test Ports (735-500 Test Pin)

For Extreme Applications
Extended temperature range of –40°C to +70°C to support more applications



Commoning, Not Discrete Wiring
Same profile allows the use of a single in-line, push-in jumper

Lock-Out Seal Option

JUMPFLEX® – KEY FEATURES

Effectively Protected

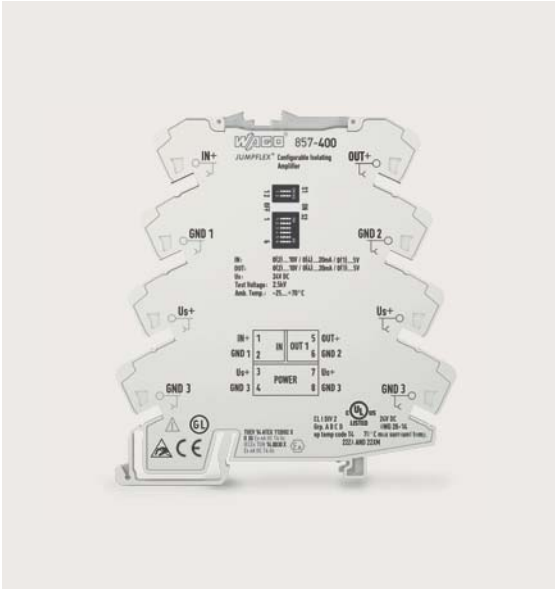
The input circuit is effectively protected against overcurrent.

- Bipolar Isolation Amplifier, 857-409
- Universal Isolation Amplifiers, 857-402 and 2857-401

Requirement:
Input circuit protection against overcurrent

Solution:
Use an auto-reset fuse that resets once over-current is removed

Always Accurate



No recalibration necessary after switching between measurement ranges.

- All Isolation Amplifiers, 857-4xx
- All 857-xxx Series Signal Conditioners are configurable via DIP switch

Requirement:
Always precise and constant signal values – even after signal range change

Solution:
Laser-trimmed resistors for each DIP switch setting to avoid recalibration

Ideally Adjusted

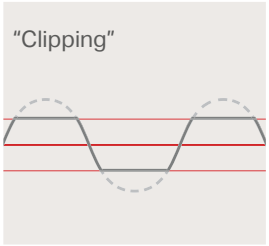
The Perfect Solution for Any Application

- 857-401 Software-Configurable Isolation Amplifier (with configurable digital output (DO)
- 857-402 Universal Isolation Amplifier, all 2857 Series devices and all 857-8xx Signal Conditioners

Maximum Safety

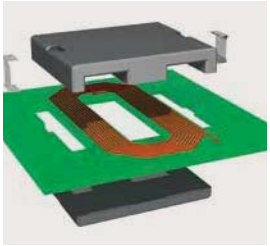
All Devices Provide "Safe Isolation"
with 2.5 kV test voltage acc. DIN EN 61010-1 (857)
with 4 kV test voltage acc. DIN EN 61010-1 (2857)

- *JUMPFLEX*® – The entire 857 and 2857 Series lines (all signal conditioners and isolation amplifiers)



Requirement:
Achieve definable end values for standard analog signals

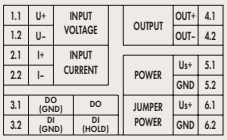
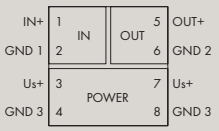
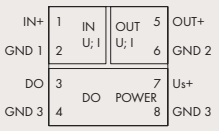
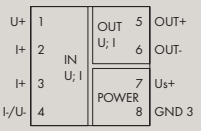
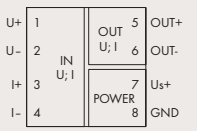
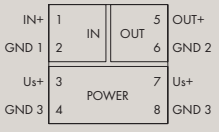
Solution:
Integrate a clipping function to limit the analog standard signal to the upper range values



Requirement:
Guarantee safe electrical isolation of all circuits (input, output and power supply) without additional costs

Solution:
Provide multilayer PCB windings with a ferrite core

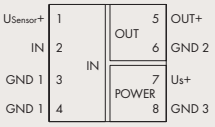
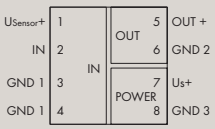
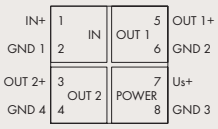
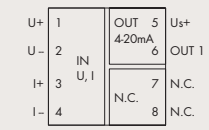
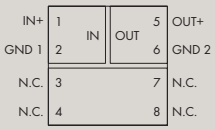
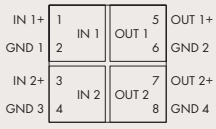
TECHNICAL DETAILS

	Description	Item No.	Image	Circuit Diagram	Input		
Isolation Amplifiers	**Isolation Amplifiers**				A	V	
	Universal Isolation Amplifier	2857-401			0 ... 1 mA 0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA 0 ... 100 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V 0 ... 220 V	±1 mA ±10 mA ± 20 mA ±100 mA ±1 V ± 10 V ± 30 V ± 100 V ± 200 V
	Isolation Amplifier, Configurable, with Zero/Span Adjustment	857-400			0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V	
	Isolation Amplifier, Configurable with Digital Output	857-401			0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V	± 20 mA ± 10 V
	Universal Isolation Amplifier	857-402			0 ... 0.3 mA to 0 ... 100 mA	0 ... 60 mV to 0 ... 200 V	± 0.3 mA to ± 100 mA ± 60 mV to ± 200 V
	Bipolar Isolation Amplifier	857-409			0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V	±10 mA ± 20 mA ±5 V ± 10 V
	Isolation Amplifiers, Pre-Configured	857-411			0(4) ... 20 mA		
		857-412				0(2) ... 10 V	
		857-413				0 ... 10 V	
		857-414				0 ... 10 V	
		857-415			0 ... 20 mA		
		857-416			4 ... 20 mA		

See page 45 for an explanation of the symbols used.

Output			Special Functions				Configuration					Power
												
0 … 10 mA 2 … 10 mA 0 … 20 mA 4 … 20 mA	0 … 5 V 1 … 5 V 0 … 10 V 2 … 10 V	±10 mA ± 20 mA ±5 V ± 10 V	x	x		x	x		x	x	x	24 VDC
0 … 20 mA 4 … 20 mA	0 … 5 V 1 … 5 V 0 … 10 V 2 … 10 V				x		x					24 VDC
0 … 10 mA 2 … 10 mA 0 … 20 mA 4 … 20 mA	0 … 5 V 1 … 5 V 0 … 10 V 2 … 10 V		x	x			x		x	x		24 VDC
0 … 20 mA 4 … 20 mA	0 … 5 V 1 … 5 V 0 … 10 V 2 … 10 V	±10 mA ± 20 mA ±5 V ± 10 V		x	x		x	x				24 VDC
0 … 10 mA 2 … 10 mA 0 … 20 mA 4 … 20 mA	0 … 5 V 1 … 5 V 0 … 10 V 2 … 10 V	±10 mA ± 20 mA ±5 V ± 10 V			x		x					24 VDC
0(4) … 20 mA												24 VDC
	0(2) … 10 V											
0 … 20 mA												
4 … 20 mA												
	0 … 10 V											
	0 … 10 V											

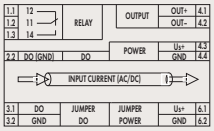
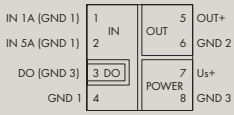
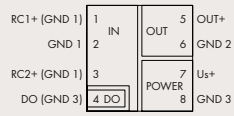
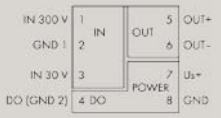
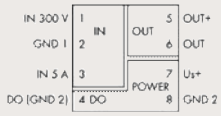
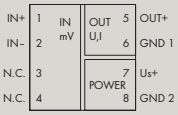
TECHNICAL DETAILS

	Description	Item No.	Image	Circuit Diagram	Input		
	Isolation Amplifiers				A	V	
Repeater Power Supplies	**Repeater Power Supply**	857-420			0 ... 20 mA 4 ... 20 mA		
	Repeater Power Supply, HART	857-421			4 ... 20 mA		
Signal Splitters	**Signal Splitter with Current Output**	857-423			0 ... 20 mA 4 ... 20 mA	0–5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V	
	Signal Splitter with Voltage and Current Output	857-424			0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V	
Passive Isolators	**Loop-powered isolation amplifier**	857-450			0 ... 5 mA 0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 1 V 0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V	± 5 mA ± 10 mA ± 20 mA ± 1 V, ± 5 V ± 10 V ± 20 V
	Passive Isolator, 1-Channel	857-451			0(4) ... 20 mA		
	Passive Isolator, 2-Channel	857-452			2 x 0(4) ... 20 mA		

See page 45 for an explanation of the symbols used.

Output			Special Functions				Configuration					Power
												
0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V						x					24 VDC
4 ... 20 mA												24 VDC
2 x 0(4) ... 20 mA							x					24 VDC
2 x 0 ... 20 mA 4 ... 20 mA	2 x 0 ... 10 V 2 ... 10 V						x					24 VDC
4 ... 20 mA					x		x					Power via output
0(4) ... 20 mA												Power via input
2 x 0(4) ... 20 mA												Power via input

TECHNICAL DETAILS

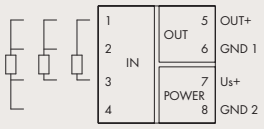
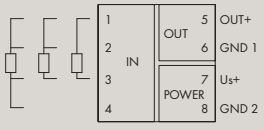
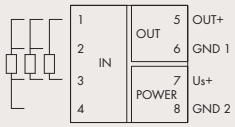
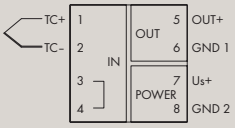
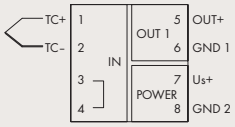
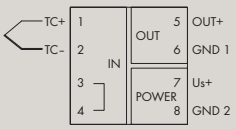
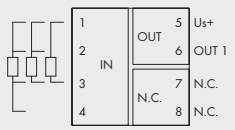
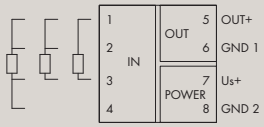
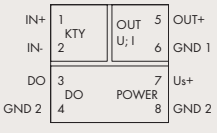
	Description	Item No.	Image	Circuit Diagram	Input		
Current and Voltage Signal Conditioners	Current and Voltage Signal Conditioners						
	Through-Hole Current Signal Conditioner	2857-550			AC/DC 100 A		
	Current Signal Conditioner	857-550			1 A AC/DC 5 A AC/DC		
	Rogowski Coil Current Signal Conditioner	857-552			Rogowski coils 500 AAC 2000 AAC 4000 AAC		
	Voltage Signal Conditioner	857-560			300 VAC/DC		
	Power Signal Conditioner	857-569			300 VAC/DC (5 A)		
	Millivolt Signal Conditioner	857-819				0 … 200 mV 0 … 1000 mV	± 100 mV

See page 45 for an explanation of the symbols used.

Output			Special Functions				Configuration					Power
A	V		DO		ZERO SPAN	S						
0 … 10 mA 2 … 10 mA 0 … 20 mA 4 … 20 mA	0 … 5 V 1 … 5 V 0 … 10 V 2 … 10 V	±10 mA ± 20 mA ±5 V ± 10 V	x	x	x	x	x		x	x	x	24 VDC
0 … 10 mA 2 … 10 mA 0 … 20 mA 4 … 20 mA	0 … 5 V 1 … 5 V 0 … 10 V 2 … 10 V		x	x			x		x	x		24 VDC
0 … 10 mA 2 … 10 mA 0 … 20 mA 4 … 20 mA	0 … 5 V 1 … 5 V 0 … 10 V 2 … 10 V		x	x			x		x	x		24 VDC
0 … 10 mA 2 … 10 mA 0 … 20 mA 4 … 20 mA	0 … 5 V 1 … 5 V 0 … 10 V 2 … 10 V		x	x			x		x	x		24 VDC
0 … 10 mA 2 … 10 mA 0 … 20 mA 4 … 20 mA	0 … 5 V 1 … 5 V 0 … 10 V 2 … 10 V		x	x			x		x	x		24 VDC
0 … 10 mA 2 … 10 mA 0 … 20 mA 4 … 20 mA	0 … 5 V 1 … 5 V 0 … 10 V 2 … 10 V			x			x		x	x		24 VDC

TECHNICAL DETAILS

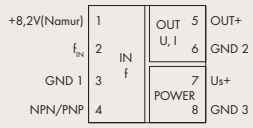
Temperature Signal Conditioners

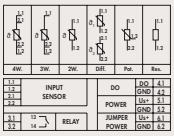
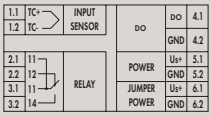
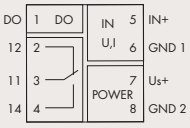
Description	Item No.	Image	Circuit Diagram	Input		
Temperature Signal Conditioners						
Temperature Signal Conditioner for Pt Sensors and Resistance Sensors	857-800			Pt100 Pt200 Pt500 Pt1000	0 ... 1 kΩ 0 ... 4.5 kΩ	2 conductors 3 conductors 4 conductors
Temperature Signal Conditioner for Pt Sensors and Resistance Sensors	857-801			Pt100 Pt200 Pt500 Pt1000	0 ... 1 kΩ 0 ... 4.5 kΩ	2 conductors 3 conductors 4 conductors
Temperature Signal Conditioner for Pt46 and Cu53 Sensors	857-808			Pt46 Cu53		2 conductors 3 conductors 4 conductors
Temperature Signal Conditioner for Thermocouples	857-810			Type J, K		
Temperature Signal Conditioner for Thermocouples	857-811			Type J, K, E, R, N, S, T, B, S		
Temperature Signal Conditioner for Thermocouples	857-812			Type K, S, B, R		
Loop-Powered RTD Temperature Signal Conditioner	857-815			Pt100 Pt200 Pt500 Pt1000	0 ... 1 kΩ 0 ... 4.5 kΩ	2 conductors 3 conductors 4 conductors
Temperature Signal Conditioner for Ni Sensors	857-818			Ni100 Ni120 Ni200 Ni500 Ni1000		2 conductors 3 conductors 4 conductors
Temperature Signal Conditioner for KTY Sensors	857-820			KTY sensors		2 conductors

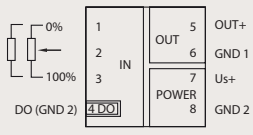
See page 45 for an explanation of the symbols used.

Output			Special Functions				Configuration					Power
												
0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V			x			x					24 VDC
0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V			x			x		x	x		24 VDC
0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V						x					24 VDC
0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V			x			x					24 VDC
0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V			x			x		x	x		24 VDC
0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V						x					24 VDC
0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V						x					Power via output
0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V			x			x					24 VDC
0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V		x	x			x					24 VDC

TECHNICAL DETAILS

	Description	Item No.	Image	Circuit Diagram	Input
Frequency Signal Conditioner	Frequency Signal Conditioner				
	Frequency Signal Conditioner	857-500			Frequency signals, NAMUR, NPN, or PNP sensors: 0.1 … 120 kHz

	Description	Item No.	Image	Circuit Diagram	Input			
Threshold Value Switches	Threshold Value Switches				A	V		
	RTD Threshold Value Switch	2857-533						2 conductors 3 conductors 4 conductors
	Thermocouple Threshold Value Switch	2857-534						
	Analog Threshold Value Switch	857-531			0 … 10 mA 2 … 10 mA 0 … 20 mA 4 … 20 mA	0 … 5 V 1 … 5 V 0 … 10 V 2 … 10 V 0 … 15 V 0 … 30 V	±10 mA ± 20 mA ±5 V ± 10 V	

	Description	Item No.	Image	Circuit Diagram	Input		
Potentiometer Signal Conditioner	Potentiometer Signal Conditioner					Ω	
	Potentiometer Signal Conditioner	857-809			Potentio-meter 0 … 100 kΩ	10 … 100 kΩ	

See page 45 for an explanation of the symbols used.

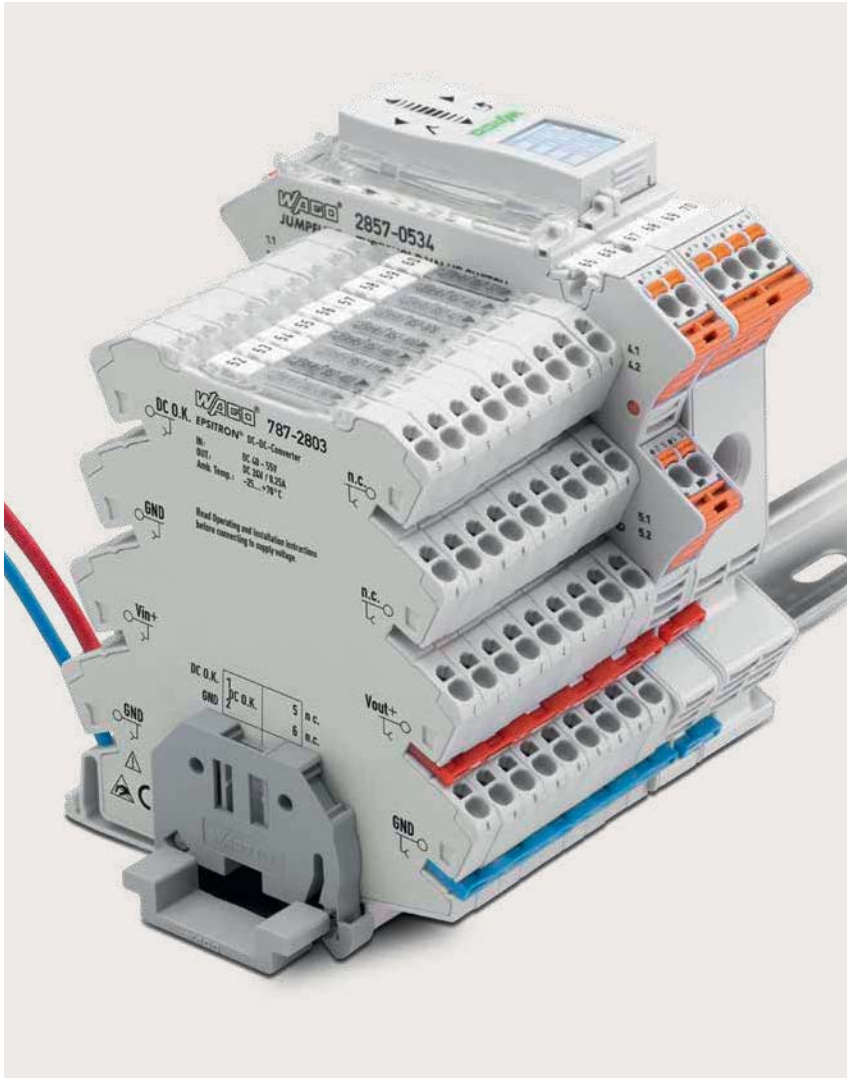
Output			Special Functions				Configuration					Power
												
0 … 10 mA 2 … 10 mA 0 … 20 mA 4 … 20 mA	0 … 5 V 1 … 5 V 0 … 10 V 2 … 10 V			x			x		x	x		24 VDC

			Special Functions					Configuration					Power
													
Potentio-meter 0 … 100 kΩ	0 … 100 kΩ	Pt100 Pt200 Pt500 Pt1000 Pt5000 Pt10,000 Pt10 … 20,000	250 VAC 6 A		x		x	x		x	x	x	24 VDC
		Type J, K, E, N, R, S, T, B, C		250 VAC 6 A	x		x	x		x	x	x	24 VDC
				250 VAC 6 A	x			x	x	x	x		24 VDC

Output			Special Functions				Configuration					Power
												
0 … 10 mA 2 … 10 mA 0 … 20 mA 4 … 20 mA	0 … 5 V 1 … 5 V 0 … 10 V 2 … 10 V		x	x			x	x	x	x		24 VDC

EPSITRON® – DC/DC CONVERTER

In a 6 mm Housing



The DC/DC Converter in a 6 mm housing is ideal for applications in which only one power supply can be installed in the control cabinet, yet an additional voltage is needed for smaller devices.

This is particularly applicable if 857 Series Relays or *JUMPFLEX*® Signal Conditioners need to be supplied, but only one 48 V power supply is available in the control cabinet.

- Saves control cabinet space
- Can be commoned to the 857 and 2857 Series
- Eliminates the need for an extra power supply
- Ready for global use in many industries thanks to both UL* and GL* approvals

*pending

Item No.	U IN	U OUT	I OUT
787-2801	24 VDC	5 VDC	0.5 A
787-2802	24 VDC	10 VDC	0.5 A
787-2803	48 VDC	24 VDC	0.5 A
787-2805	24 VDC	12 VDC	0.5 A
787-2810 (configurable)	24 VDC	5/10/12 VDC	0.5 A

JUMPFLEX® POWERED BY *EPSITRON*®

The *JUMPFLEX*® Housing with a Built-In Power Supply

787-2852

The switched-mode power supply in 22.5-mm wide 2857 Series housing shares a common profile with the 2857 and 857 Series *JUMPFLEX*® Signal Conditioners. This allows for easy and fast commoning of the supply voltage.

Integrated redundancy diodes ensure a fail-safe power supply via parallel connection of two power supplies.

- Pluggable *picoMAX*® connection technology
- Integrated redundancy diodes
- 24 VDC output voltage/1 A output current
- Same profile as all *JUMPFLEX*® Signal Conditioners
- DC OK message as active signal output (24 VDC, 20 mA)

JUMPFLEX® CONFIGURATION

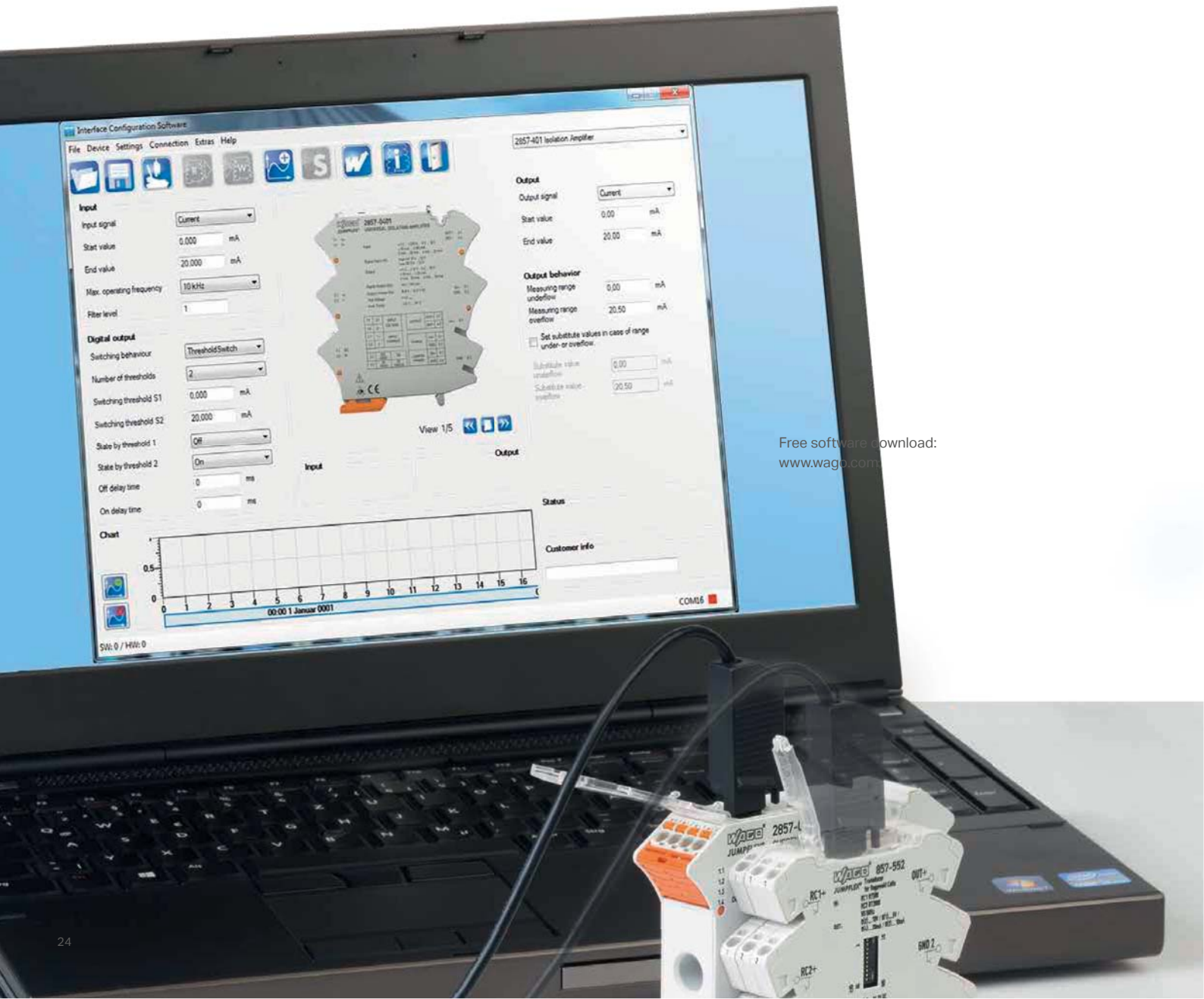
Interface Configuration Software

Configure all signal conditioners with the user-friendly interface configuration software.

The software features:

- Simulation of input and output parameters (2857 Series)
- Automatic module detection
- Configuration and visualization of process values
- Parameterizing the digital switch output (threshold functionality)
- Communication via 750-923 WAGO USB Service Cable or WAGO 750-921 *Bluetooth*® Adapter

Free software download:
www.wago.com



JUMPFLEX®-ToGo Configuration App

(Android smartphone)

The free *JUMPFLEX*®-ToGo App brings the power of PC-based configuration software to your smart-phone or tablet with Android compatibility.

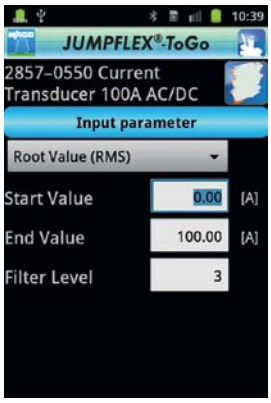
The app features:

- Configuration of input and output parameters with a stroke of the finger
- Simple display of configuration data and current measurement values
- Communication via WAGO *Bluetooth*® Adapter

Free download from Google Play

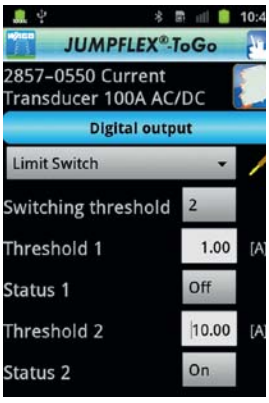
Bluetooth® Adapter 750-921

Device Information

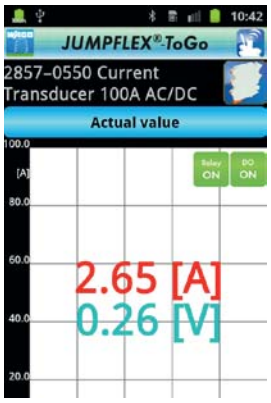


Input Parameter

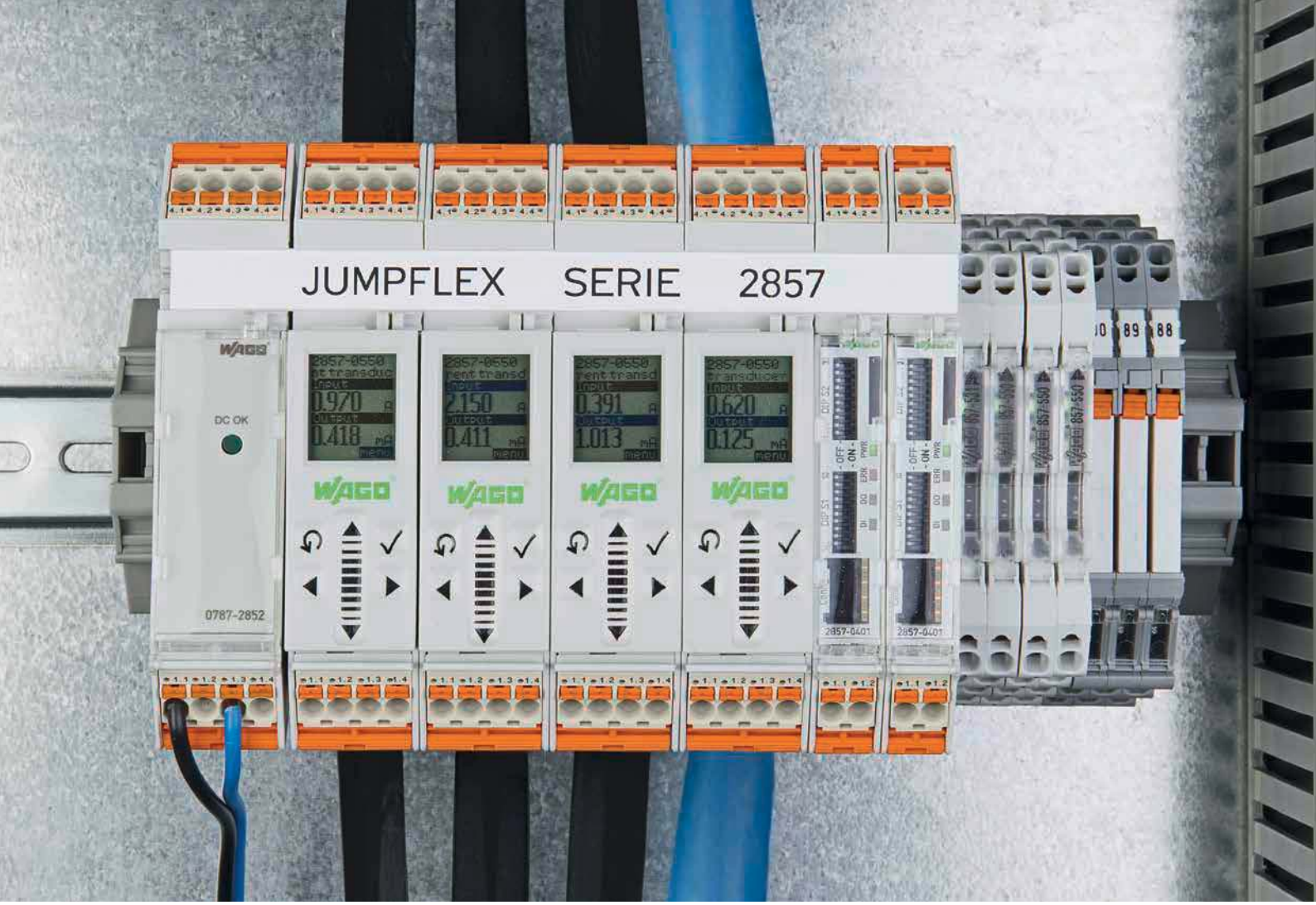
Output Parameter



Digital Output



Actual Value



The configuration option that fits in your pocket

JUMPFLEX® CONFIGURATION

Configuration Display for 2857 Series

Flexibility at its Finest!

The removable display can be quickly and easily attached to the housing.
This unique feature carries an innovative capacitive touch panel for intuitively configuring devices. The multicolor display changes between orange, red, green or white depending on the present status.

Integrated capabilities, such as the copy function, can transmit stored configuration data from one device to another of the same type. Passwords for protecting configured data may be assigned to prevent unauthorized access or changes.

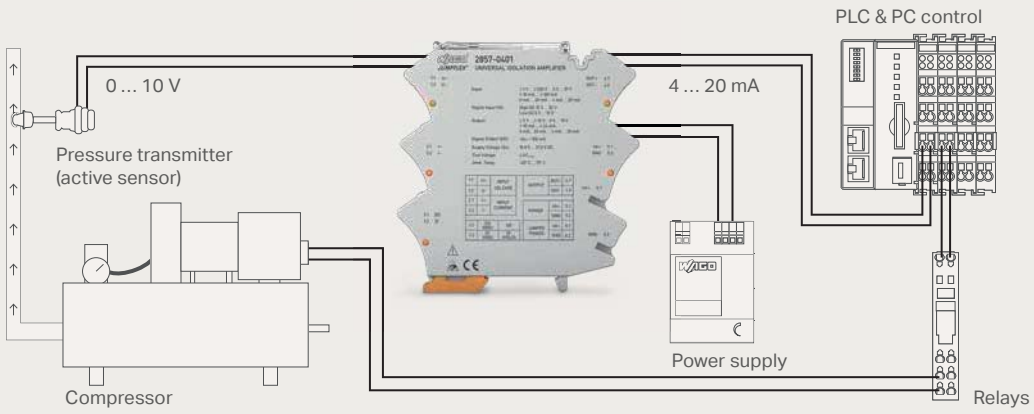
Configuration Display
(2857-900)

Suitable for 12.5 and 22.5 mm wide housings

- Can be easily plugged into signal conditioners
- Touch functionality via control panel
- Automatic module detection
- Configuration and visualization of process values
- Copy configuration data from device to device

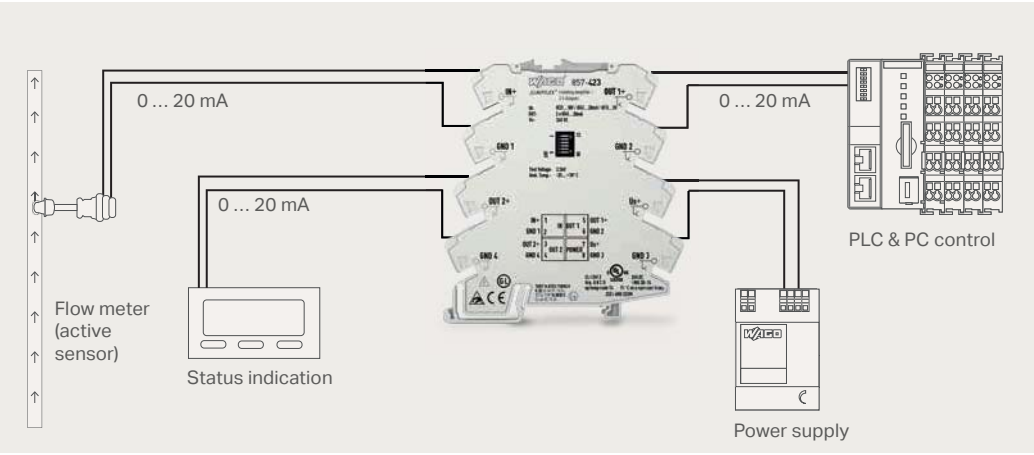
APPLICATION EXAMPLES

Isolation Amplifier with a Power Supply



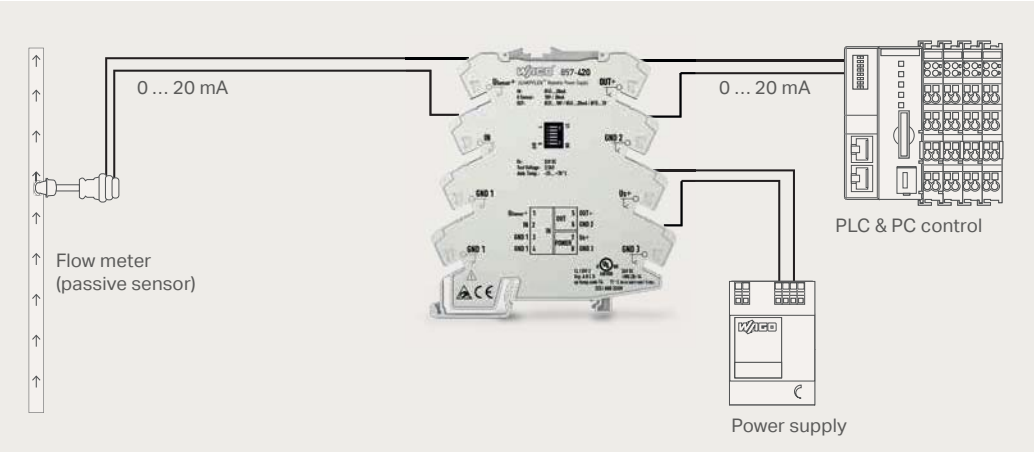
Universal Isolation Amplifier, 2857-401

Pressure monitoring



Signal Splitter, 857-423

Flow measurement

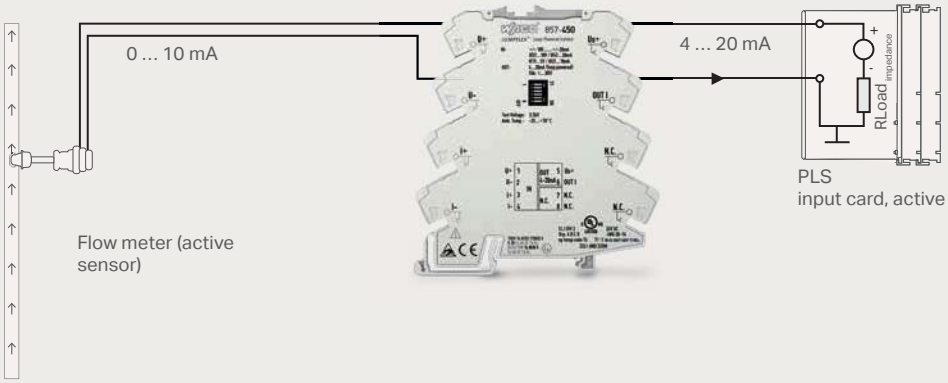


Repeater Power Supply, 857-420

Flow measurement

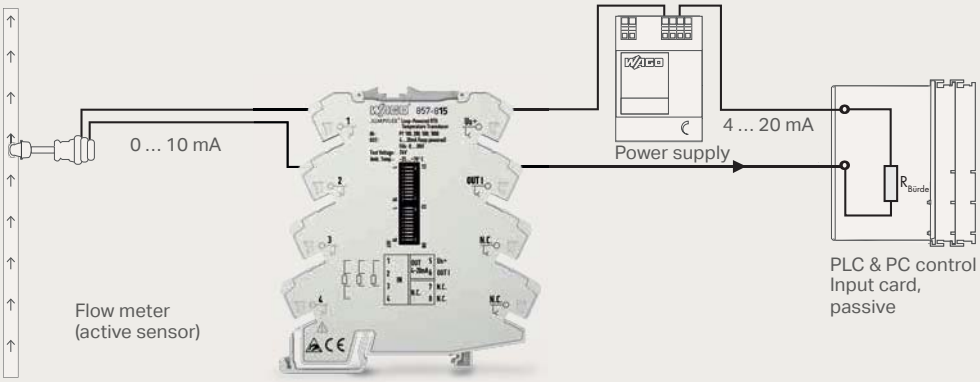
APPLICATION EXAMPLES

Isolation Amplifier without a Power Supply



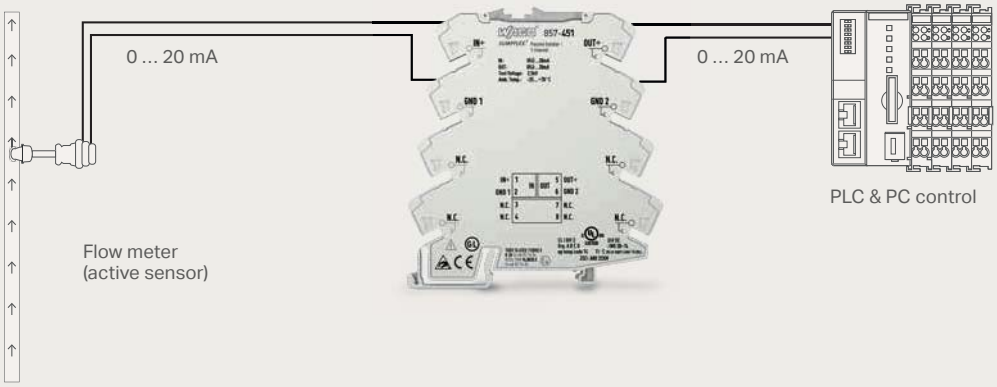
Loop-Powered Isolation Amplifier, 857-450

Flow measurement



Loop-Powered Temperature Signal Conditioner, 857-815

Temperature measurement

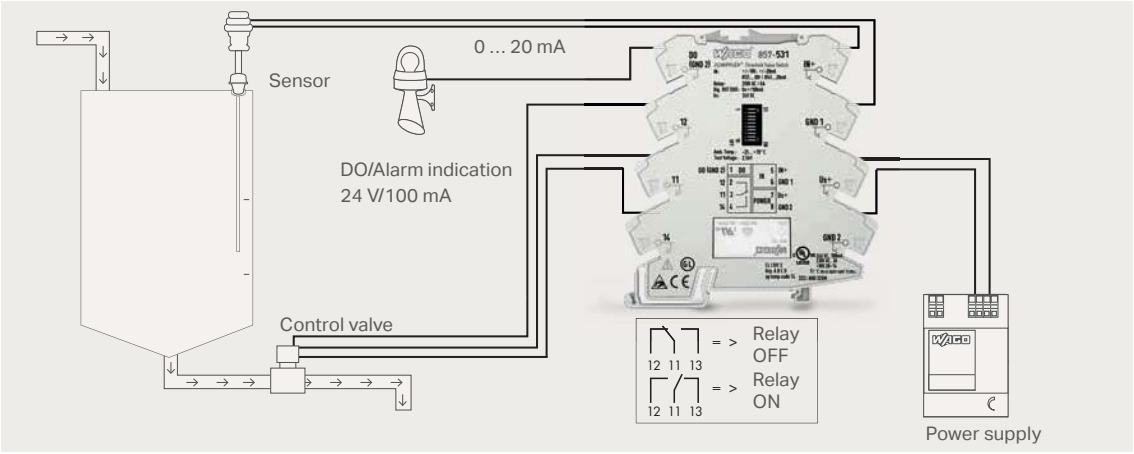


Passive Isolator, 857-451

Flow measurement

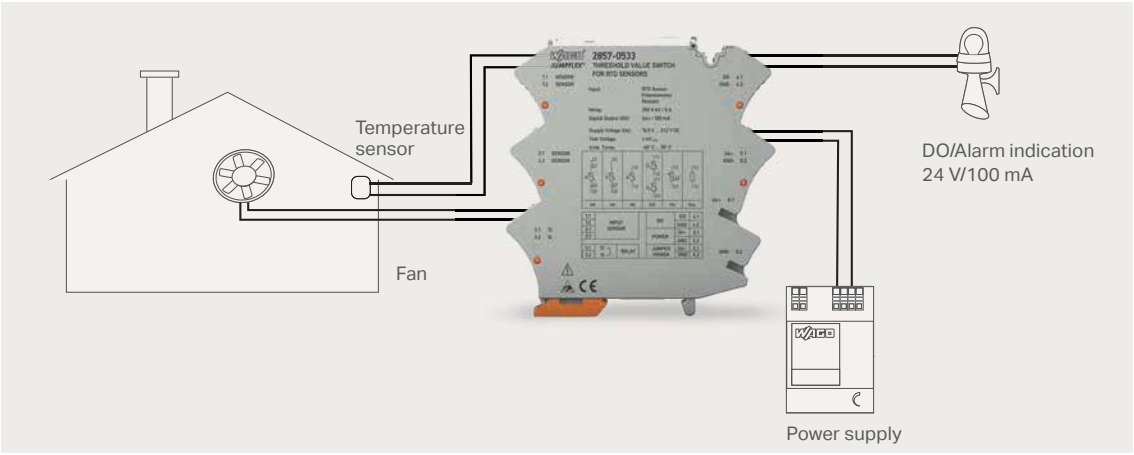
APPLICATION EXAMPLES

Threshold Value Switches



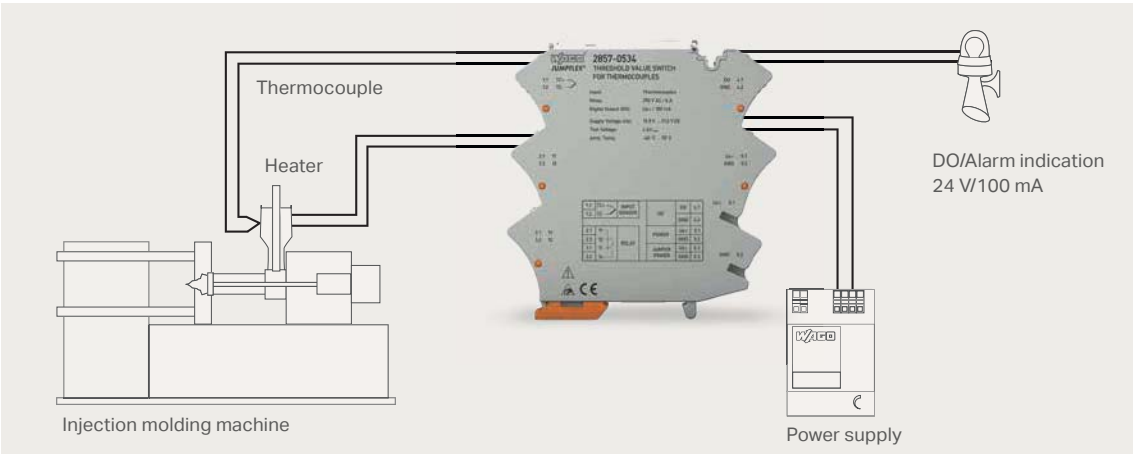
Analog Threshold Value Switch, 857-531

Level monitoring



Resistance Threshold Value Switch, 2857-533

Temperature monitoring with threshold value functionality

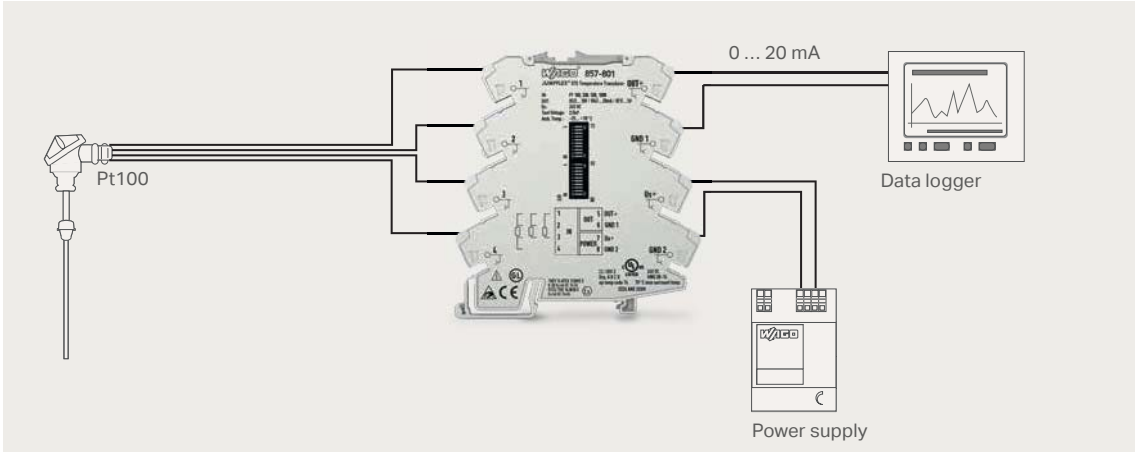


Thermocouple Threshold Value Switch, 2857-534

Temperature monitoring with threshold value functionality

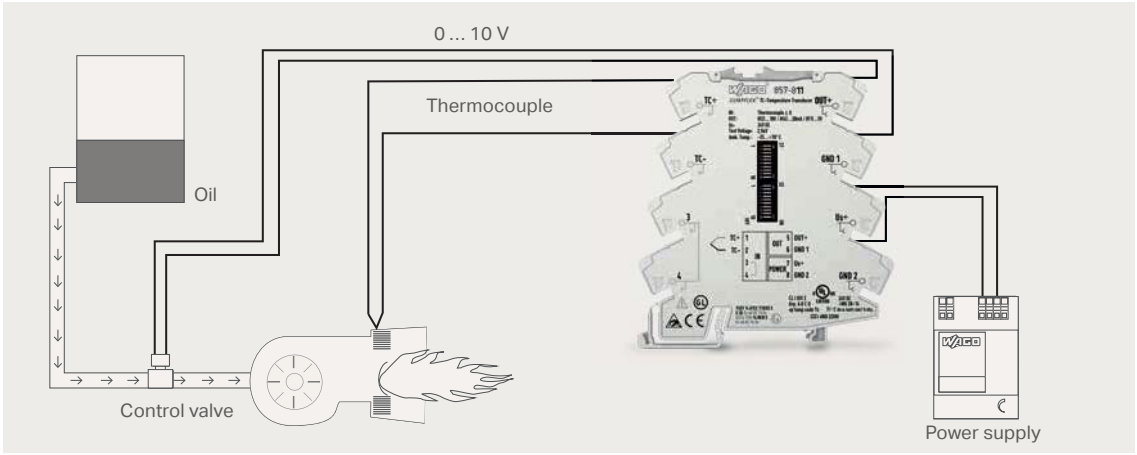
APPLICATION EXAMPLES

Temperature Signal Conditioner



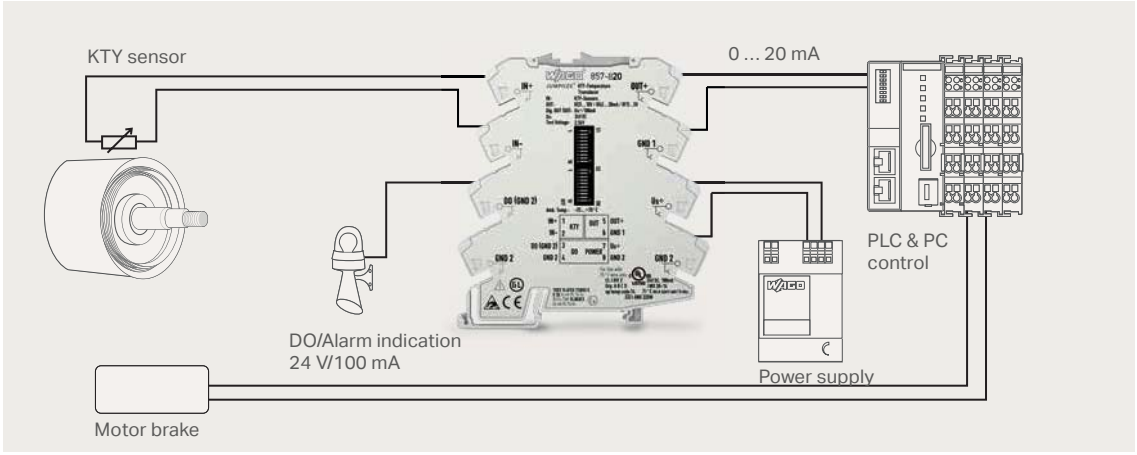
Temperature Signal Conditioner for Pt and Resistance Sensors, 857-801

Temperature monitoring via Pt sensor



Temperature Signal Conditioner for Thermocouples, 857-811

Temperature monitoring via TC sensor

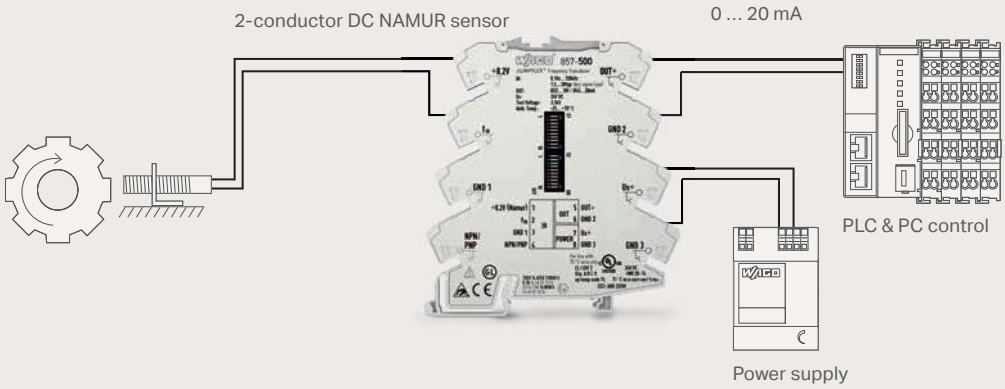


Temperature Signal Conditioner, for KTY Sensors, 857-820

Temperature monitoring via KTY sensor

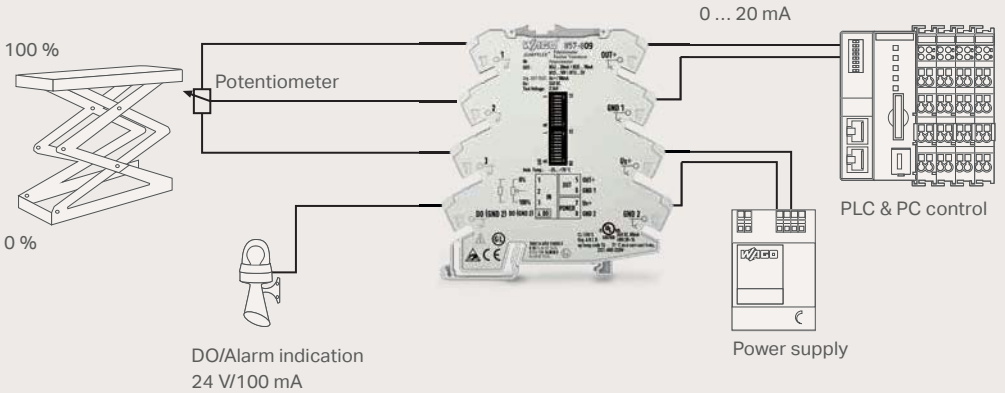
APPLICATION EXAMPLES

Special Functions / Power Signal Conditioner



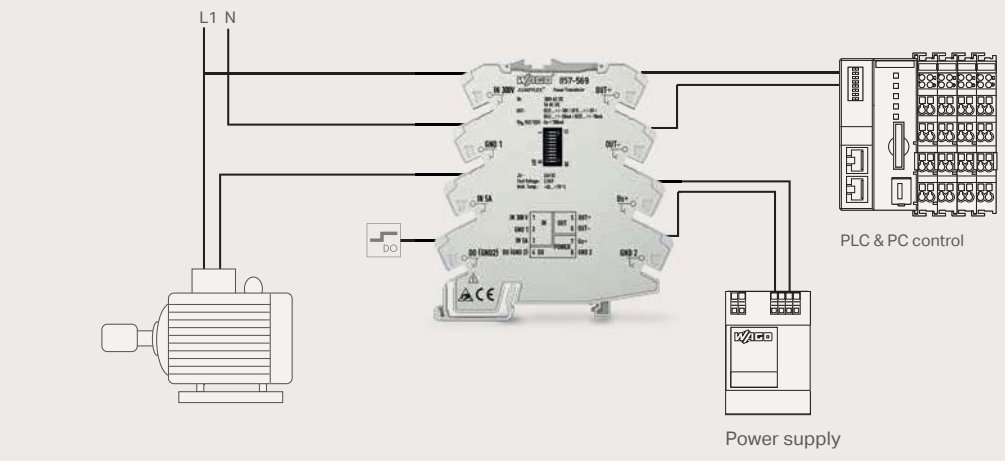
Frequency Signal Conditioner, 857-500

Speed measurement with NAMUR indicator



Potentiometer Signal Conditioner, 857-809

Resistance measurement via potentiometer

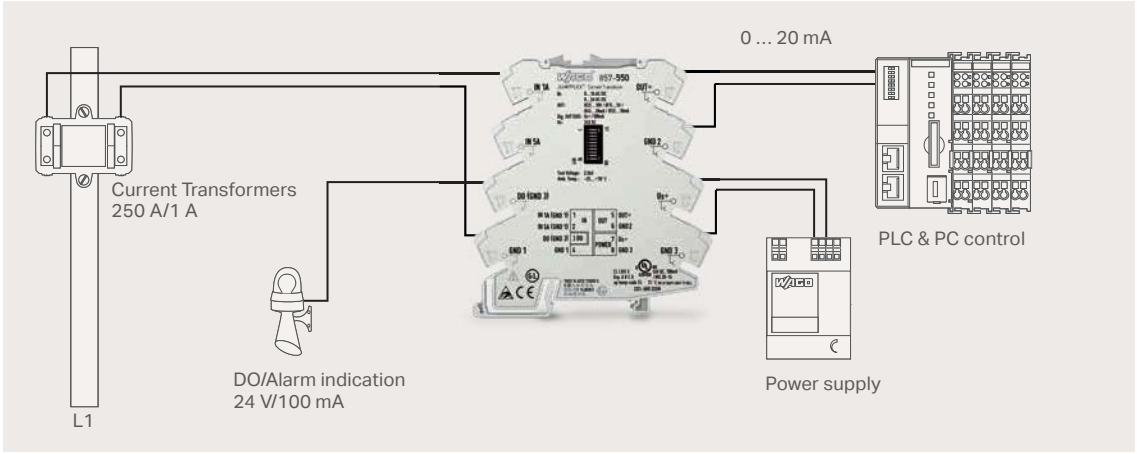


Power Signal Conditioner, 857-569

Single phase power measurement

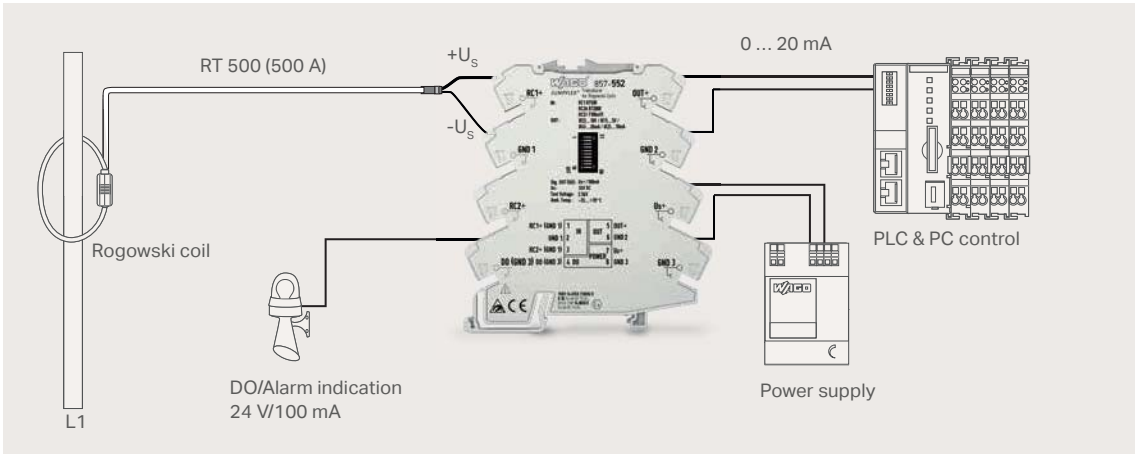
APPLICATION EXAMPLES

Current Signal Conditioners



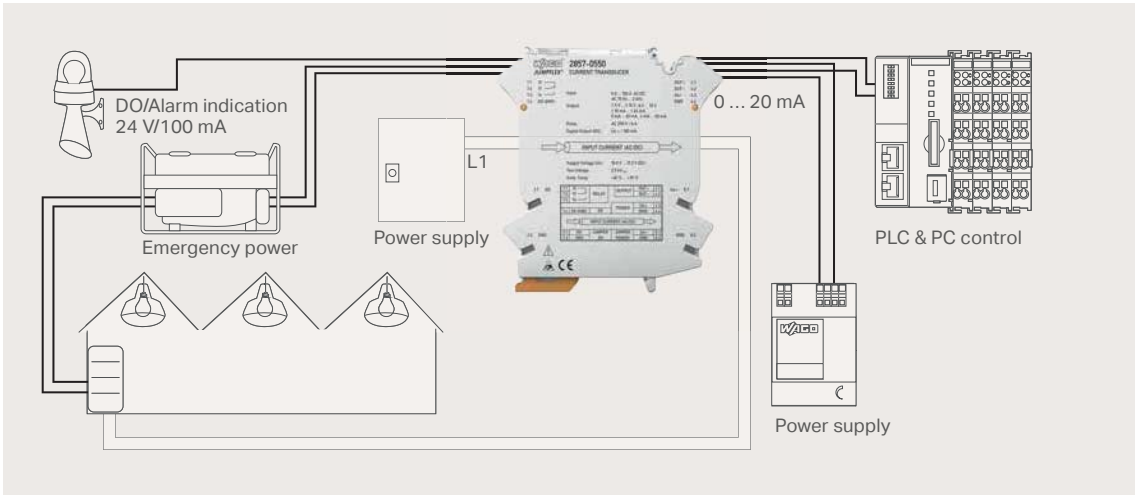
Current Signal Conditioner, 857-550

Current measurement via plug-in current transformer



Rogowski Signal Conditioner, 857-552

Current measurement via Rogowski Coil



Current Signal Conditioner, 2857-550

Light monitoring

JUMPFLEX® Approvals

857 and 2857 Series

c UL us LISTED	cULus	E175199, UL 508
c UL us LISTED	cULus	E198726, ANSI/ISA 12.12.01
	BV (Bureau Veritas)	40179/A0 BV
DNV	DNV (Det Norske Veritas)	A-13346
GL	GL (German Lloyd)	44627-07 HH
	NKK (Nippon Kaiji Kyokai)	TA12716M
	Polski Rejestr Statkow	TE/1989/880590/13
	ATEX	TÜV 14 ATEX 112692X, II 3 G Ex nA IIC T4 Gc
	IECEx	IECEx TUN 14.0030X, Ex nA IIC T4 Gc

Item No.	Item Description	Ex	PRS	NKK	GL	DNV	BV	UL
Isolation Amplifiers								
2857-401	Universal Isolation Amplifier	■	■	■	■	■	■	■
857-400	Isolation Amplifier, Configurable with Zero/Span Adjustment	■	■	■	■	■	■	■
857-401	Isolation Amplifier, Configurable with Digital Output		■		■		■	■
857-402	Universal Isolation Amplifier	■	■					■
857-409	Bipolar Isolation Amplifier	■	■	■		■	■	■
857-411	Isolation Amplifier, Pre-Configured	■	■	■	■	■	■	■
857-412	Isolation Amplifier, Pre-Configured	■	■	■	■	■	■	■
857-413	Isolation Amplifier, Pre-Configured	■	■	■	■	■	■	■
857-414	Isolation Amplifier, Pre-Configured	■	■	■	■	■	■	■
857-415	Isolation Amplifier, Pre-Configured	■	■	■	■	■	■	■
857-416	Isolation Amplifier, Pre-Configured	■	■	■	■	■	■	■
Isolation Amplifiers								
857-420	Repeater Power Supply							■
857-421	Repeater Power Supply, HART							■
857-423	Signal Splitter	■	■	■	■	■	■	■
857-424	Signal Splitter, (I,/U)							
857-450	Loop-Powered Isolation Amplifier	■	■					■
857-451	Passive Isolator, 1 Channel	■	■	■	■	■	■	■
857-452	Passive Isolator, 2-Channel	■	■	■	■	■	■	■
Current and Voltage Signal Conditioners								
2857-0550	Through-Hole Current Signal Conditioner							
857-550	Current Signal Conditioner	■	■	■	■	■	■	■
857-552	Rogowski Current Signal Conditioner	■	■					
857-560	Voltage Signal Conditioner							
857-569	Power Signal Conditioner							
857-819	Millivolt Signal Conditioner	■	■	■	■	■	■	■

	cULus	E175199, UL 508
	cULus	E198726, ANSI/ISA 12.12.01
	BV (Bureau Veritas)	40179/A0 BV
	DNV (Det Norske Veritas)	A-13346
	GL (German Lloyd)	44627-07 HH
	NKK (Nippon Kaiji Kyokai)	TA12716M
	Polski Rejestr Statkow	TE/1989/880590/13
	ATEX	TÜV 14 ATEX 112692X, II 3 G Ex nA IIC T4 Gc
	IECEx	IECEx TUN 14.0030X, Ex nA IIC T4 Gc

Item No.	Item Description	Ex	Shipping Approvals					UL
			PRS	NKK	GL	DNV	BV	
Temperature Signal Conditioners								
857-800	Temperature Signal Conditioner for Pt and Resistance Sensors	■	■	■	■	■	■	■
857-801	Temperature Signal Conditioner for Pt and Resistance Sensors	■	■	■	■	■	■	■
857-810	Temperature Signal Conditioner for Thermocouples	■	■	■	■	■	■	■
857-811	Temperature Signal Conditioner for Thermocouples	■	■	■	■	■	■	■
857-812	Temperature Signal Conditioner for Thermocouples							■
857-808	Temperature Signal Conditioner PT46 & Cu53	■	■	■		■		■
857-815	Loop-Powered RTD Temperature Signal Conditioner							
857-818	Temperature Signal Conditioner for Ni Sensors	■	■	■		■		■
857-820	Temperature Signal Conditioner for KTY Sensors	■	■	■		■		■
Threshold Value Switches								
2857-533	RTD Threshold Value Switch							
2857-534	Thermocouple Threshold Value Switch							
857-531	Analog Threshold Value Switch		■	■	■	■	■	■
Special Functions								
857-500	Frequency Signal Conditioner	■	■	■		■		■
857-809	Potentiometer Signal Conditioner		■		■		■	■
Accessories								
857-979	Supply and Through Module	■	■	■		■		■
857-980	Interface Adapter for System Wiring		■	■	■	■	■	■

JUMPFLEX® ACCESSORIES

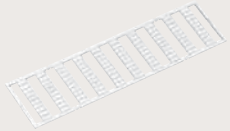
Software	Description	Item No.
	**Interface Configuration Software** Configuration and display tool for PC	Free download: www.wago.com
	***JUMPFLEX***®**-ToGo Smartphone App** Configuration and display tool for smartphones (Android)	Download from “Google Play Store”
	**WAGO USB Service Cable** Connects a PC (notebook) to the service interface of the 857 Series signal conditioner	**750-923** (2.5 m long) **750-923/000-001** (5 m long)
	**WAGO *Bluetooth*® Adapter** Connects a PC (notebook) to the service interface of the 857 Series signal conditioner	**750-921**

Push-In Type Jumper Bars			
	**Push-In Type Jumper Bars,** light gray, insulated, 18 A	2-way 3-way 4-way 5-way 6-way 7-way 8-way 9-way 10-way	**859-402** **859-403** **859-404** **859-405** **859-406** **859-407** **859-408** **859-409** **859-410**
	Item no. suffixes for colored, push-in type jumper bars	yellow red blue	**... /000-029** **... /000-005** **... /000-006**
	**Comb-Style Jumper Bar**	2-way	**281-482**

Current Transformers, Rogowski Coils and Power Supplies		
	**Current Transformers** Primary current: 50 ... 2500 A Secondary current: 1 A and 5 A (other values upon request or at www.wago.com)	**855 Series**
	**Rogowski Coils** Primary current up to 4000 A	**855 Series**
	***JUMPFLEX***® **Powered by *EPSITRON***® The *JUMPFLEX*® Housing with a Built-In Power Supply	**787-2852**

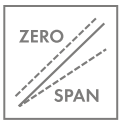
Wiring	Description	Item No.
	**Interface Adapter for System Wiring**	**857-980**
	**Supply and Through Module**	**857-979**
	**WAGO Interface Cable,** 16-pole/free end, 2 m long	**706-100/1602-200**

Relays		
	**Relay with 1 Changeover Contact** 24 VDC / 250 V / 6 A	**857-304**

Marking		
	**WMB Multi Marking System** **TOPJOB® S Marking System**	**793 Series** **2009-110**

Other Accessories		
	**Operating Tool with a Partially Insulated Shaft,** type 2, 3.5 x 0.5 mm blade	**210-720**
	**End Stops**	**249-116** (6 mm wide) **249-117** (10 mm wide) **249-197** (14 mm wide)
	**Test Pin**	**735-500**

JUMPFLEX® GLOSSARY

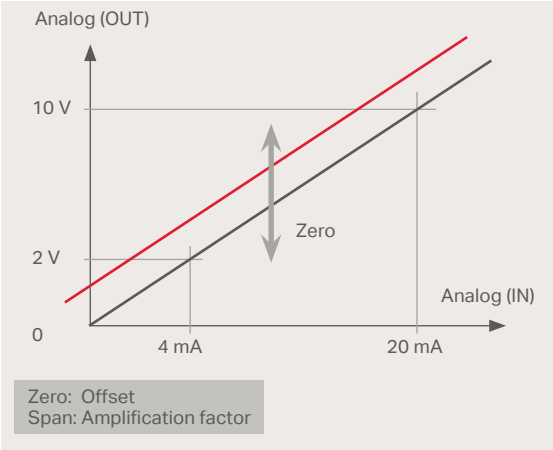


Zero/Span Adjustment

Error or signal offsets that may arise from sensor tolerances can be readily fine-tuned via front-mount potentiometers on the isolation amplifier. Measurement range compensation can be performed at the zero/span potentiometers to correct such deviations, ensuring downstream devices, e.g., a PLC, can continue receiving correct values.

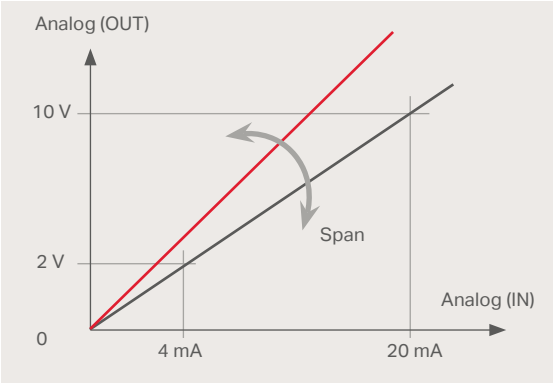
The following devices have an integrated zero/span adjustment:

- 857-400
- 857-409
- 857-402 (via push/slide switch)
- 857-450



Zero adjustment

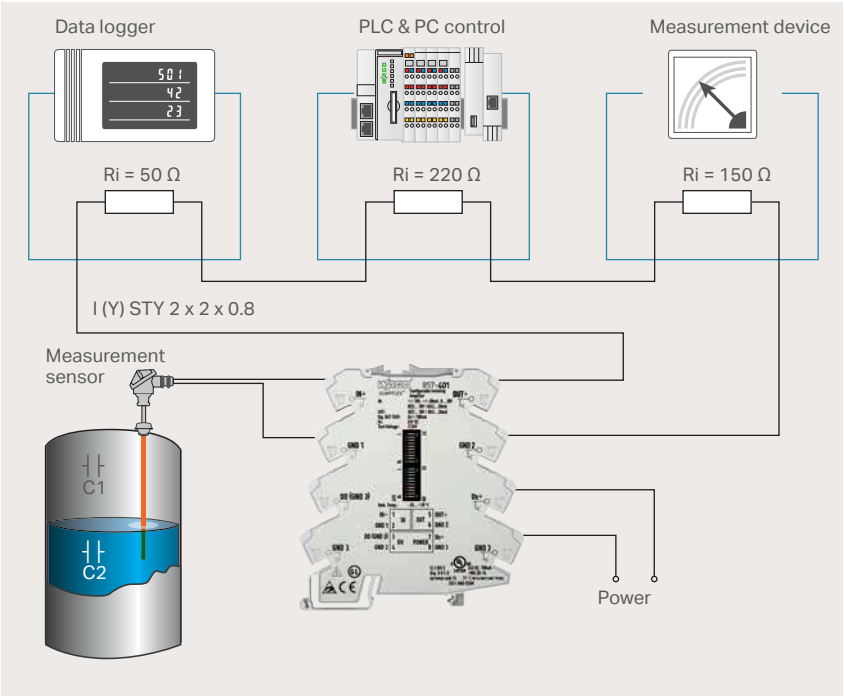
Zero-Span Potentiometer



Span adjustment

Example: A sensor, connected to the input of the isolation amplifier, delivers a maximum analog signal of 9.7 V. Using the zero/span potentiometers, the signal can be readjusted to 10 V.

Wiring



Calculating the cable length between sensor and control room

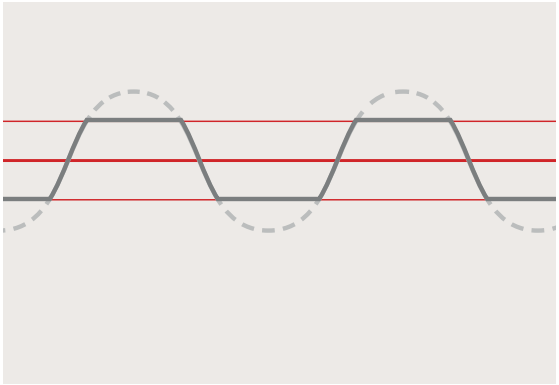
R_{wire} = max. $R_{load} - R_{input}$
R_{wire} = 600 Ω (-50 Ω +220 Ω +150 Ω)
R_{wire} = 180 Ω
L_{loop} = R_{wire} / $R_{per\ meter}$
L_{loop} = 180 Ω/ (0.036 Ω/m)= 5,000 m

Example:
Isolation Amplifier's load impedance (857-401)
Load impedance ≤ 600 Ω (I output)

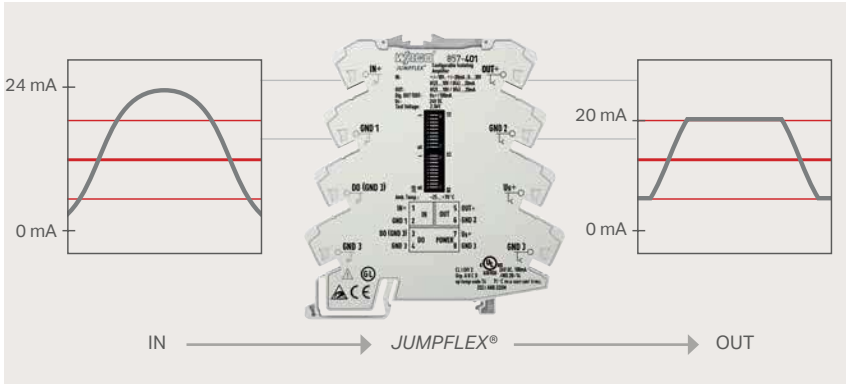
Specific electrical resistance of copper = 0.0178 Ω/m

Clipping Mode

"Clipping Mode" means limiting the analog standard signal to the upper range values. For example, if the standard 4 ... 20 mA signal has been configured and Clipping Mode is activated, the output signal "freezes" at 4 mA (lower) and at 20 mA (upper) – even if the input signal exceeds one of these limits. This function is advantageous, for example, when the downstream control system cannot process negative signals, or when ensuring that the analog signal absolutely does not exceed 20 mA at the output.



"Clipping"



The DIP switch, configuration software or smartphone configuration app can be used to quickly switch Clipping Mode on/off.

JUMPFLEX® GLOSSARY

Simulation Mode – 2857 Series

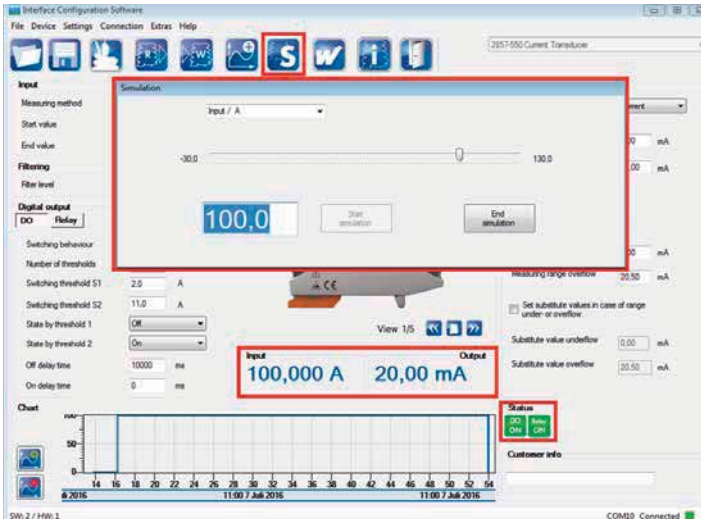
The 2857 Series *JUMPFLEX*® devices have a simulation mode. This allows the input/output response to be simulated simply and quickly with the interface configuration software or the configuration display.

In the example, 100 A is simulated at the input of a Current Signal Conditioner (2857-0550). When the analog output is preconfigured to 0 … 20 mA it reacts providing 20 mA on the output side. The same function is available with threshold value switches, which allow simulation of the temperature on the input side switching the relay or digital output (DO) on the output side.

This results in the advantage that system parts can be preinstalled and tested without signals or sensors being present on the input side.

The following devices support the simulation mode:

- 2857-401
- 2857-533
- 2857-533
- 2857-534

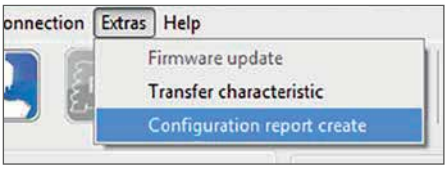


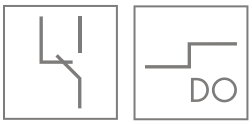
"Copy and Save" Configurations – 857 and 2857 Series

The interface configuration software allows all device settings to be saved as files and transferred or copied to other devices with the same functions. With the configuration display also allows the saved data to be loaded on the display and then transferred or copied to other devices with the same functions.

This saves time during configuration!

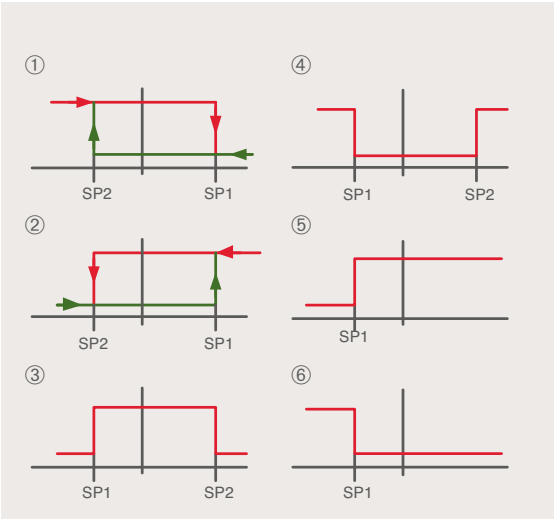
Configuration Report – 857 and 2857 Series
All information such as hardware and software status, input, output, relays or DO can be provided for system documentation with the “Configuration Report” setting.



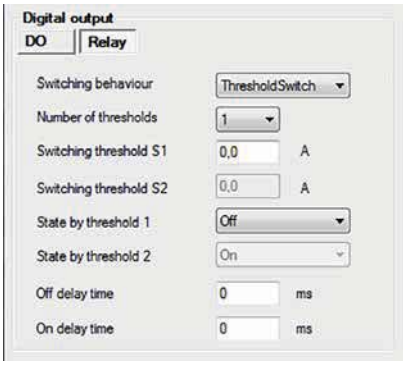


Relay/Digital Switching Output (DO)

The switching output (relay or DO) signals switching thresholds that can be set relative to the transducer’s input signal. Several configuration options are available (see figure). These switching thresholds, for example, can also be configured as a hysteresis to achieve simple 2-point control.



Switching output configuration options



Pull-in/drop-out delay
2 switching thresholds in threshold switching mode
(for DO and relay)

In order to increase the DO’s switching current, expand the DO with a relay. For example, a relay (857-359) can be snapped onto the rail next to it because the 857 and 2857 Series Modules share a common profile. This output can be increased simply and quickly to a switching current of 6 A by simply jumping with an adjacent jumper (859-402).

JUMPFLEX® GLOSSARY

Isolation Technology Basics

Disconnecting, Amplifying, Filtering, Converting
In industrial applications, there are several requirements for safe and economical signal matching that demand appropriate solutions. This is precisely where the strengths of isolation amplifiers and transducers lie – they have a long and successful history of serving all branches of industry, including factory automation and process technology.

Solution		Issue
Isolating		Potential differences Ground loops
Amplifying/ Processing		High loads Long cable runs
Filtering		Interferences
Converting		Various signals PT, TC, KTY, NI → Analog

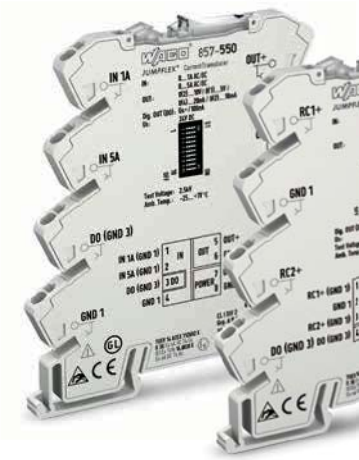
Electrical Isolation
An isolation amplifier's main task is electrically isolating the supply, input and output signals. *JUMPFLEX*® family isolation amplifiers can be used to completely isolate these signals and prevent measurement errors that would otherwise arise due to equalizing currents triggered by potential differences such as ground current loops.

Amplifying Signals
Signal amplification by *JUMPFLEX*® family isolation amplifiers simplifies the transmission of weak process signals over long lines, enabling the use of these signals for applications that require greater signal power.

Converting Signals
Depending on which type of signal a controller must process, *JUMPFLEX*® family isolation amplifiers can convert the measured signal accordingly, e.g., from 0 … 10 V or Pt100, into a conditioned current signal of 4 … 20 mA. This significantly reduces the susceptibility of faults in voltage measurement values by converting them into current signals that are extremely immune to interference.

Filtering Signals
Process-related sources of interference that plague process measurements, such as capacitive and inductive coupling, are safely filtered out by *JUMPFLEX*® family isolation amplifiers.

JUMPFLEX® Signal Conditioners and Isolation Amplifiers



JUMPFLEX® – 857 Series

JUMPFLEX® – 2857 Series

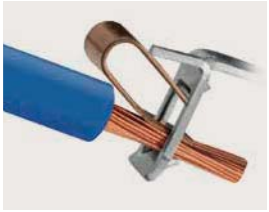
WAGO Termination Technology

Directly connect – save time!
Simple, push-in termination of solid and ferruled conductors – no operating tool needed.

PUSH-IN CAGE CLAMP®

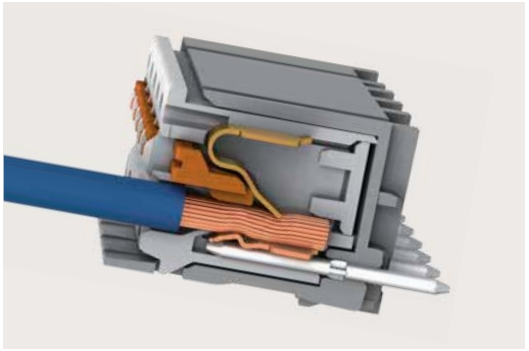
Vibration-Proof – Fast – Maintenance-Free
Push-In CAGE CLAMP® termination for all conductor types

Solid



fine-stranded

ferruled



picoMAX® Pluggable Connector

857 Series

2857 Series

Isolation Amplifiers

Isolation Amplifiers with a Power Supply

Isolation Amplifiers, Pre-Configured
- Pre-configured isolation amplifiers convert, amplify, filter and electrically isolate standard analog signals, e.g., 0 … 10 V into 0 … 20 mA.

Isolation Amplifiers, Configurable
- For signal conditioners, and particularly two-wire signal conditioners, the measured signal is often in the 4 … 20 mA range as a current value. For the analog input card of a PLC, however, input voltages in the ranges of 0 … 10 V or 0 … 5 V are required.
- Configurable isolation amplifiers support various standard signals at the input and output; the devices also convert, amplify, filter and electrically isolate analog standard signals. DIP switches accessible from the side can be used to configure both the input and output signals. Switching the measurement ranges is done in a calibrated way.

Universal Isolation Amplifier
- In addition to the configurable isolation amplifiers, the universal isolation amplifiers can also be configured via PC configuration software or smartphone app. The configuration software also offers adjustment options, such as special input and output signal combinations with intermediate values or inversion of the analog output. An error message can be signaled via digital switching output.

Bipolar Isolation Amplifier
- Bipolar measurement signals often require processing, e.g., when motor currents are measured in both directions of rotation. Bipolar signals are also processed for recording distances or for better resolution of measurement signals.

Repeater Power Supplies
- The repeater power supply energizes transmitters.
- Two-wire transmitters regulate their own current consumption proportional to the measured value; the 4 … 20 mA connection provides auxiliary power for the transmitter and the magnitude of the current is the same as the output measured value.
- Three-wire transmitters usually have an active current output for the measured value and additional connections for the supply voltage (auxiliary power).

Signal Splitters
- The signal splitter divides a standard signal into two signals. The measured signal can be supplied to different downstream devices without interference.
- Example: A signal conditioner supplies 4 … 20 mA input current.
- Output 1 is configured to 4 … 20 mA and transmits the measured value to a controller.
- Output 2 is configured to 0 … 20 mA and regulates a controller.

Isolation Amplifiers without a Power Supply

Passive Isolators
- The required power is obtained from an input signal (4 … 20 mA) with a passive isolator. Because no extra supply is required, no additional wiring or auxiliary power is needed.

Loop-Powered Isolation Amplifier
- The required power is obtained from an output signal (4 … 20 mA) via the loop-powered isolation amplifier. Because no extra supply is required, no additional wiring or auxiliary power is needed.

JUMPFLEX® SIGNS AND SYMBOLS

Signal Conditioners and Isolation Amplifiers


Isolation amplifier


Temperature signal conditioner


Threshold value switch


Frequency signal conditioner


Potentiometer signal conditioner


Resistance signal conditioner


Current signal conditioner


Voltage signal conditioner

Special Functions

Zero/span adjustment


Clipping capability

Digital output (DO)


Relay,
1 changeover contact


Relay,
1 make contact

Configuration


DIP Switches


Interface configuration software


Interface configuration app


Configuration display for interface modules


Push/slide switch


Save


Simulation

General


Temperature sensors


Connection technology


Supply voltage

Input signals


Frequencies


Potentiometers


Resistors


Current


Voltage


Bipolar signals (current and voltage)

Output signals


Current


Voltage


Bipolar signals (current and voltage)

WE INNOVATE!

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