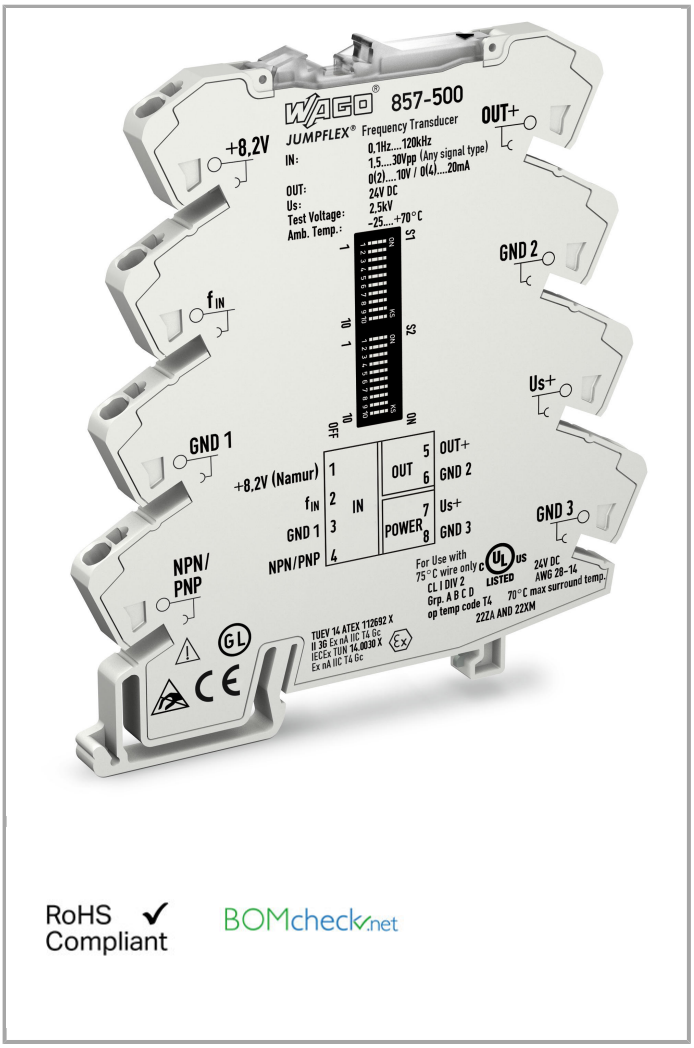
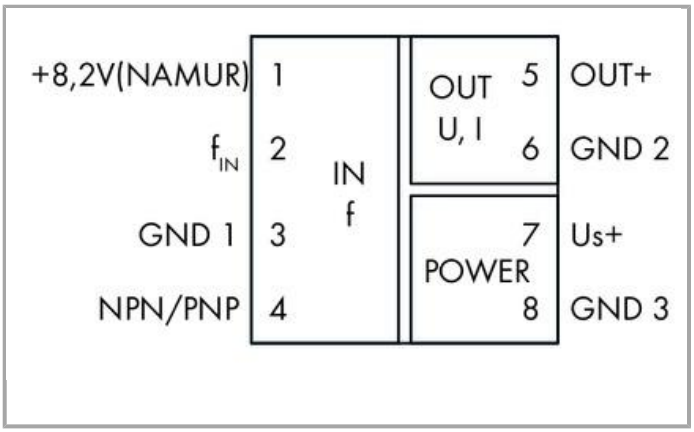
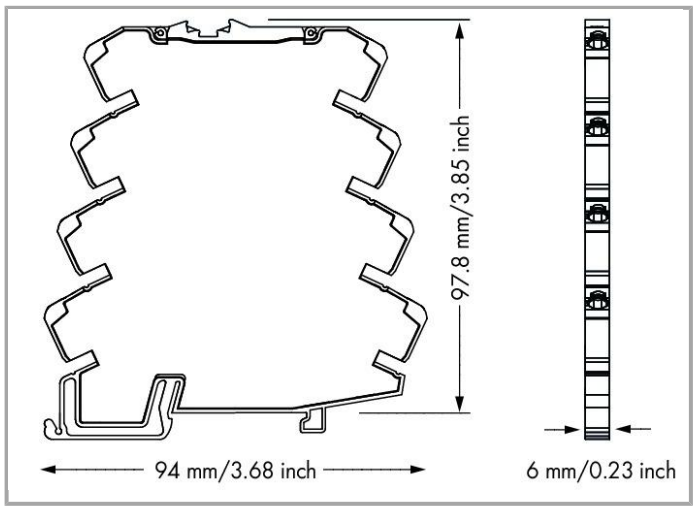
Frequency signal conditioner; Current and voltage output signal; Configuration via software; Supply voltage: 24 VDC; 6 mm module width

www.wago.com/857-500







857-500

DIP Switch Adjustability

● = ON Default

DIP Switch S1

Source Input			Coupling		Operation with Disturbed Frequency Signals for Acceptable Signal Level (applies only to f_{in} input)			
1	2		3		4	5	High	Low
		Frequency generator or NPN/PNP transistor outputs with pull-up or pull-down resistor		AC/DC			> 1.5 V	< 0.4 V
●		NAMUR	●	AC (without DC), see Figure 1	●		> 10 V	< 8 V
	●	NPN/PNP transistor outputs without pull-up or pull-down resistor input Dry Contact				●	> 20 V	<16 V
					●	●	> 1.5 V	< 0.4 V

DIP Switch S1 / DIP Switch S2

Input Start Value					Frequency/Hz	Input End Value					Frequency/Hz
6	7	8	9	10		1	2	3	4	5	
					100						1000
●					0.1	●					0.1
	●				1		●				1
●	●				100	●	●				100
		●			200			●			200
●		●			300	●		●			300
	●	●			400		●	●			400
●	●	●			500	●	●	●			500
			●		600				●		600
●			●		700	●			●		700
	●		●		800		●		●		800
●	●		●		900	●	●		●		900
		●	●		1000			●	●		1000
●		●	●		2000	●		●	●		2000
	●	●	●		3000		●	●	●		3000
●	●	●	●		4000	●	●	●	●		4000
				●	5000					●	5000
●				●	6000	●				●	6000
	●			●	7000		●			●	7000
●	●			●	8000	●	●			●	8000
		●		●	9000			●		●	9000
●		●		●	10000	●		●		●	10000
	●	●		●	20000		●	●		●	20000
●	●	●		●	30000	●	●	●		●	30000
			●	●	40000				●	●	40000
●			●	●	50000	●			●	●	50000
	●		●	●	60000		●		●	●	60000
●	●		●	●	70000	●	●		●	●	70000
		●	●	●	80000			●	●	●	80000
●		●	●	●	90000	●		●	●	●	90000
	●	●	●	●	100000		●	●	●	●	100000
●	●	●	●	●	120000	●	●	●	●	●	120000

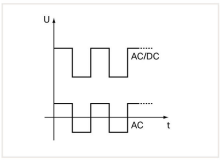
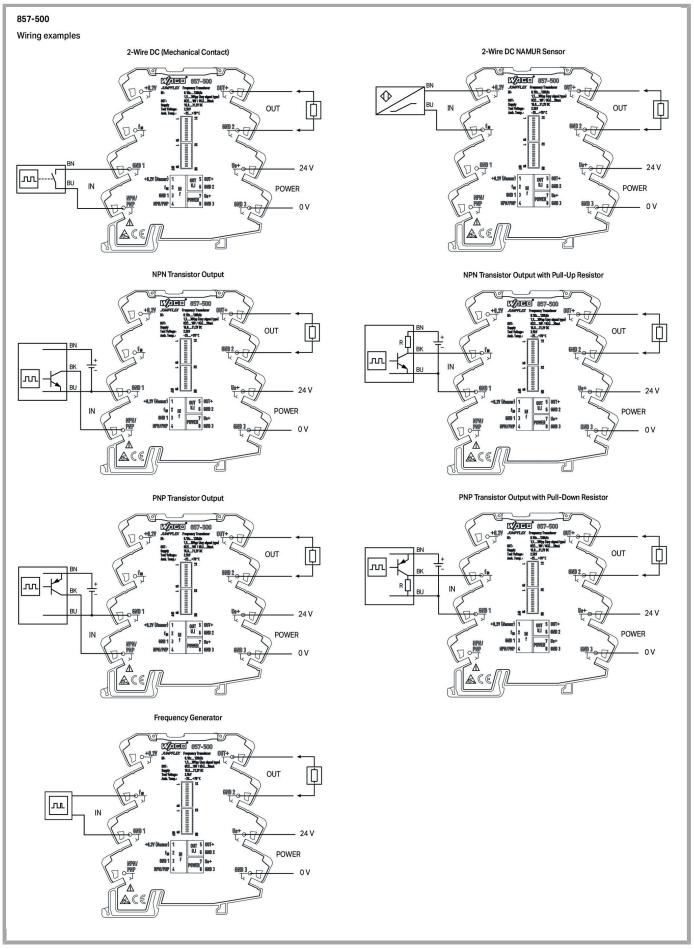


Figure 1: Coupling

DIP Switch S2

Output Signal					9	10	Measurement Range Underflow	Measurement Range Overflow	Only for NAMUR Sensors	
6	7	8							Wire Break	Short Circuit
			0 ... 20 mA	Current			Lower limit of output range* -5 %	Upper limit of output range* +2.5 %	Upper limit of output range* 5 %	Lower limit of output range * -12.5 %
	●		4 ... 20 mA							
		●	0 ... 10 mA		●		Lower limit of output range	Upper limit of output range +2.5 %	Upper limit of output range 5 %	Lower limit of output range
	●	●	2 ... 10 mA							
●			0 ... 10 V	Voltage		●	Lower limit of output range	Upper limit of output range	Upper limit of output range 5 %	Upper limit of output range 5 %
●	●		2 ... 10 V							
●		●	0 ... 5 V		●	●	Lower limit of output range	Upper limit of output range	Ausgangsbereichsanfang	Lower limit of output range
●	●	●	1 ... 5 V							

*acc. to NAMUR NE 43



Item description

Short description:

The Frequency Signal Conditioner detects 0.1 – 120 kHz signals from NAMUR, NPN or PNP sensors and converts them into standard analog signals.

Features:

- PC configuration interface
- Signal acquisition from NAMUR, NPN or PNP sensors
- Calibrated measurement range switching
- Safe 3-way isolation with 2.5 kV test voltage acc. to EN 61140

Data

Technical Data

Configuration

Configuration options	DIP switches Interface configuration software Interface configuration app

Input

Input signal type	Frequency generators NAMUR sensors NPN/PNP transistor outputs Mechanical contact (dry contact)

Input – Sensor type 1

Sensor type 1	frequency generator NPN/PNP transistor outputs with pull-up or pull-down resistor
Frequency measurement range 1	0.1Hz … 120kHz
Pulse length 1	≥ 1µs
Min. measuring span 1	10 Hz
Signal level	1.5 V; 10 V; 20 V (switchable)
Max. input voltage	± 31.2VDC
Signal form	Any
Coupling	AC/DC (adjustable; AC above 10 Hz))
Input resistance	10 kΩ

Input – Sensor type 2

Sensor type 2	NAMUR sensor per DIN EN 50227
Frequency measurement range 2	0.1Hz … 1kHz
Pulse length 2	≥ 500µs
Min. measuring span 2	10 Hz
Sensor supply	8.2VDC
Signal current (0)	≤ 1.2mA
Signal current (1)	≥ 2.1mA
Hysteresis	0.45 mA
Short-circuit current	≤ 14mA
Short-circuit monitoring	≥ 4.7mA
Wire break monitoring	≤ 0.2mA
Input resistance 2	≤ 600Ω

Input – Sensor type 3

Sensor type 3	NPN/PNP transistor output without pull-up or pull-down resistor mechanical contact (dry contact)
Frequency measurement range 3	0.1Hz … 20kHz
Pulse length 3	≥ 25µs
Min. measuring span 3	100 Hz
Open-circuit voltage	5VDC
NPN residual voltage	≤ 1.5V
PNP switching voltage	≥ 7.5V (+ residual voltage U_{CE} sat)

Output

Output signal type	Current Voltage
Output signal voltage	0 … 5 V; 1 … 5 V; 0 … 10 V; 2 … 10 V
Output signal current	0 … 10 mA; 2 … 10 mA; 0 … 20 mA; 4 … 20 mA
Load impedance (output/voltage)	≥ 2kΩ
Load impedance (output/current)	≤ 600Ω

Signal processing

Conversion time	Gate time measurement method (> 400 Hz): < 20 ms; Pulse time measurement method (< 400 Hz): < 200 µs + $T_{Cycle\ duration}$

Measurement error

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

Power supply

Type of power supply	24 VDC
Nominal supply voltage U_S	24 VDC
Supply voltage range	±30 %
Current consumption at supply voltage	40 mA

Safety and protection:

Test voltage (input/output/supply)	2.5 kV AC; 50Hz; 1min
Degree of protection	IP20

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 Inch

Geometrical Data

Width	6 mm / 0.236 inch
Height from upper-edge of DIN-35 rail	97.8 mm / 3.85 inch
Depth	94 mm / 3.701 inch

Mechanical data

Type of mounting	DIN-35 rail

Material Data

Color	light gray
Fire load	0.762 MJ
Weight	36.2 g

Environmental Requirements

Surrounding air (operating) temperature	-25 … 70 °C
Surrounding air (storage) temperature	-40 … 85 °C

Standards and specifications

Conformity marking	CE
EMC immunity to interference	EN 61000-6-2
EMC emission of interference	EN 61000-6-4

Approvals / Certificates

Ex-Approvals

Logo	Approval	Certificate name
	IECEx TUEV Nord Cert GmbH	TÜV_14_ATEX_112692_X
	IECEx TUEV Nord Cert GmbH	IECEX_TUN_14.0030_X

Ship Approvals

Logo	Approval	Certificate name
	BV Bureau Veritas S.A.	40179_A0
	DNV GL Det Norske Veritas, Germanischer Lloyd	TAA00001D1
	PRS Polski Rejetr Statkow	TE/1989/880590/13

UL-Approvals

Logo	Approval	Certificate name
	**UL** UL International Netherlands B.V. (ORDINARY LOCATIONS)	E175199 Sec.4 (ORDINARY LOCATIONS)