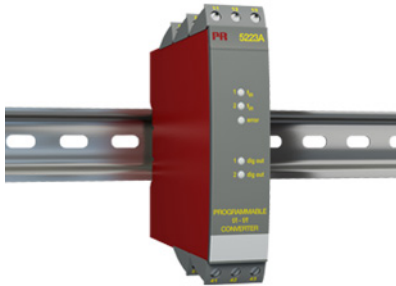# Programmable f/I-f/f converter

5223A

– Pulse calculator
– Frequency generator
– Galvanic isolation
– Analog current and voltage output
– PNP / NPN output, optional relays
– Universal supply

Advanced features

• The 5223 transmitter can be configured with a standard PC and the Loop Link communications unit, or delivered fully configured.
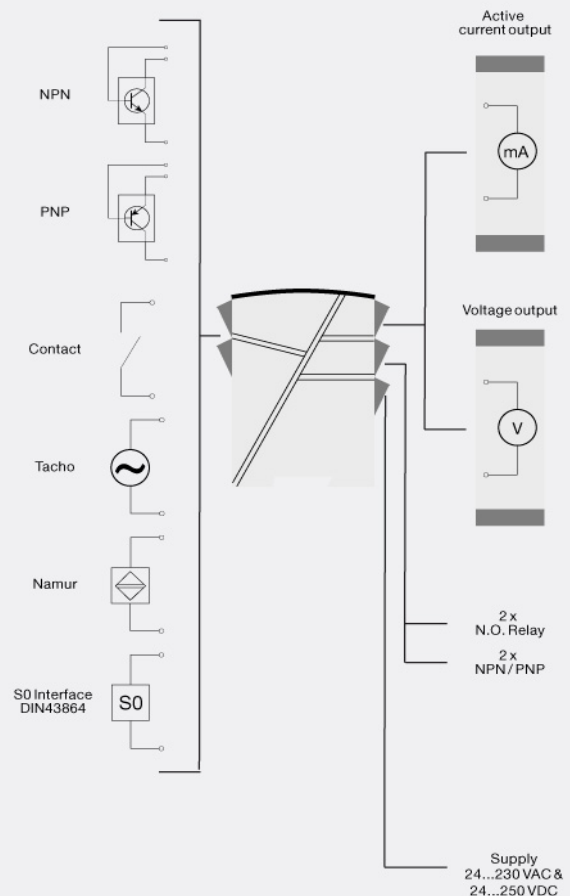
Application

• The f/I function performs frequency to current and voltage conversion.
• The f/f function can be used for pulse division or multiplication and as a buffer collecting fast pulse trains.
• A scale factor may be entered in all functions. Using both digital inputs, pulse addition or subtraction are possible.
• The frequency generator function is used as e.g. a time base or clock generator.
• Input and supply polarity reversal protection.
• Current and voltage output signals galvanically separated from the supply and the inputs.
• Programmable digital outputs including NPN, PNP or relay options.

Technical characteristics

• 5 front LEDs, indicating f1 and f2 active inputs (not NPN), Dig.out.1 and 2 active outputs, and a programmable error signal.
• Analog current output can be configured to any current within 0...20 mA range.
• Voltage output range is selectable between 0...10 VDC and 0...1 VDC by use of internal jumpers.
• Programming can be performed with or without a power supply.

Connections

Environmental Conditions

Specifications range	-20°C to +60°C
Calibration temperature	20...28°C
Relative humidity	< 95% RH (non-cond.)
Protection degree	IP20

Mechanical specifications

Dimensions (HxWxD)	109 x 23.5 x 130 mm
Weight approx	240 g
DIN rail type	DIN 46277
Wire size	1 x 2.5 mm^2 stranded wire
Screw terminal torque	0.5 Nm

Common specifications

Supply voltage, universal	21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Fuse	400 mA SB / 250 VAC
Max. power consumption	3.5 W
Internal consumption	3 W
Isolation voltage, test / working	3.75 kVAC / 250 VAC
Power-up delay	0...999 s
Warm-up time	1 min.
Communications interface	Loop Link
Signal / noise ratio	Min. 60 dB
Response time, analog	< 60 ms + period
Response time, digital output	< 50 ms + period
Signal dynamics, output	16 bit
Effect of supply voltage change	< 0.005% of span / VDC
Auxiliary voltage: NAMUR supply	8.3 VDC ±0.5 VDC / 8 mA
S0 supply	17 VDC / 20 mA
NPN / PNP supply	17 VDC / 20 mA
Special supply (programmable)	5...17 VDC / 20 mA
Temperature coefficient	< ±0.01% of span / °C
Linearity error	< 0.1% of span
EMC immunity influence	< ±0.5%

Input specifications

Max. offset	90% of selected max. frequency
Measurement range	0...20 kHz
Min. measurement range	0.001 Hz
Max. frequency, with input filter ON	50 Hz
Min. period time with input filter ON	20 ms
Input types	NAMUR acc. to DIN 19234
Input types	Tacho
Input types	NPN / PNP
Input types	2-phase encoder
Input types	TTL
Input types	S0 acc. to DIN 43864

Output specifications

Max. offset	50% of selected max. value
Current output: Signal range	0...20 mA
Min. signal range	5 mA
Updating time	20 ms
Load (max.)	20 mA/600 Ω/12 VDC
Load stability, current output	≤0.01% of span / 100 Ω
Current limit	< 23 mA
Voltage output through internal shunt	See manual for details
Voltage output: signal range	0...10 VDC
Voltage output, min. signal range	250 mV
Load (min.)	500 kΩ
Other output types	Active outputs (NPN / PNP)
Other output types	f/f converter output
Other output types	Frequency generator
Relay output: Max. switching frequency	20 Hz
Max. voltage	250 VRMS
Max. current	2 AAC
Max. AC power	100 VA
Max. load at 24 VDC	1 A
*of span	= of the presently selected range

Approvals

EMC	EN 61326-1
LVD 2006/95/EC	EN 61010-1
PELV/SELV	IEC 364-4-41 and EN 60742
ATEX 2004/108/EC	KEMA 04ATEX1001
EAC TR-CU 020/2011	EN 61326-1
EAC Ex TR-CU 012/2011	RU C-DK.GB08.V.00410