

## Programmable f/I-f/f converter

### 5223B

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



#### 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.
- ATEX units have input for mechanical contact and NAMUR inductive proximity sensor.

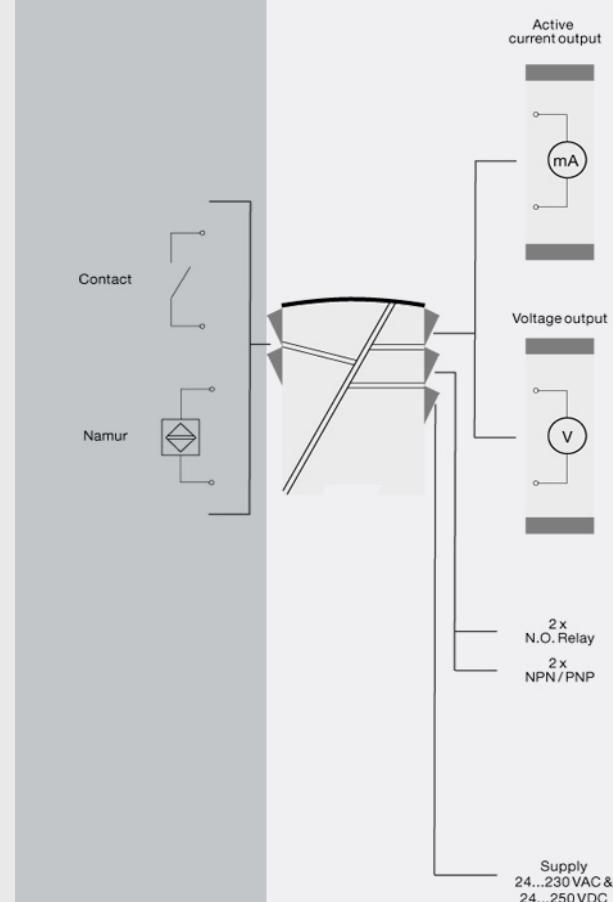
#### Technical characteristics

- 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.
- Input range:  
Frequency: 0...20,000 Hz  
Sensor types: NAMUR, contact
- Output range:  
Current and voltage output: 0...20 mA / 0...10 V  
Relay outputs: 0...20 Hz  
NPN and PNP output as f/f: 0...1000 Hz  
NPN and PNP output as generator: 0...20,000 Hz

#### Note

- Not suitable for new installations requiring certification to the latest ATEX standards - see ATEX certificate KEMA 04ATEX1001 for details.

#### Applications



**Order:**

Type	Output
5223B	Analog + NPN / PNP : 1
	Analog + relay output : 2

**Environmental Conditions**

Operating temperature..... -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<sup>2</sup> stranded wire  
 Screw terminal torque..... 0.5 Nm

**Common specifications**

**Supply**  
 Supply voltage, universal..... 21.6...253 VAC, 50...60 Hz or  
 19.2...300 VDC  
 Fuse..... 400 mA SB / 250 VAC  
 Max. required power..... 3.5 W  
 Internal power dissipation..... 3 W  
**Isolation voltage**  
 Isolation voltage, test / working..... 3.75 kVAC / 250 VAC  
 PELV/SELV..... IEC 61140  
 Power-up delay..... 0...999 s  
 Warm-up time..... 1 min.  
 Programming..... Loop Link  
 Signal / noise ratio..... Min. 60 dB  
 Response time, analog..... < 60 ms + period  
 Response time, digital output..... < 50 ms + period  
 Effect of supply voltage change..... < 0.005% of span / VDC  
 Temperature coefficient..... < ±0.01% of span / °C  
 Linearity error..... < 0.1% of span  
 NAMUR supply I.S. / Ex..... 8.9 VDC ±0.5 VDC / 8 mA  
 EMC immunity influence..... < ±0.5%

**Input specifications**

**Common input specifications**  
 Max. offset..... 90% of selected max. frequency  
 Measurement range..... 0...20 kHz  
 Min. measurement range..... 0.001 Hz  
 Min. pulse length..... 25 µs  
 Input types..... NAMUR acc. to DIN 19234

**Output specifications**

**Common output specifications**  
 Updating time..... 20 ms  
**Current output**  
 Signal range..... 0...20 mA  
 Min. signal range..... 5 mA  
 Load (@ current output)..... ≤ 600 Ω  
 Load stability..... ≤ 0.01% of span / 100 Ω  
 Current limit..... < 23 mA  
**Voltage output**  
 Signal range..... 0...10 VDC  
 Min. signal range..... 250 mV  
 Load (@ voltage output)..... ≥ 500 kΩ  
**Relay output**  
 Max. switching frequency..... 20 Hz  
 Max. voltage..... 250 VRMS  
 Max. current..... 2 AAC  
 Max. AC power..... 100 VA (I.S. version 5223B)  
 Max. load at 24 VDC..... 1 A  
 Other output types..... Active outputs (NPN / PNP)  
 Other output types..... f/f converter output  
 Other output types..... Frequency generator  
 of span..... = of the presently selected range

**Observed authority requirements**

EMC..... 2014/30/EU  
 LVD..... 2014/35/EU  
 EAC..... TR-CU 020/2011

**Approvals**

ATEX..... KEMA 04ATEX1001  
 EAC Ex..... RU C-DK.GB08.V.00410