

## Universal f/I-f/f converter

### 4225



- Front programmable
- Input: NAMUR, NPN, PNP, Tacho, TTL , S0 & switches
- Output: Programmable bipolar mA / V, frequency or relay
- Universal power supply 21.6...253 VAC / 19.2...300 VDC



#### Functional highlights

- Measures frequencies up to 100 kHz.
- Active and passive current output  $\pm 23$  mA / 0...23 mA.
- Buffered voltage output  $\pm 10$  VDC.
- Linearization: Linear or square root function.
- 2-point process calibration.
- Programmable trigger levels -0.05...6.5 V.
- Programmable sensor supply 5...17 V.
- NAMUR sensor error detection.
- Advanced configurable input limits for increased safety.
- Digital output: NPN & PNP; 0...100 kHz with programmable logic level 5...24 V.
- Output relay with windows, setpoint and latch functionality.
- Simulation of process value during commissioning and maintenance.
- All terminals are over-voltage protected (24 VDC), polarity protected and short-circuit protected.
- Suitable for application in SIL 2 installations and for use in systems up to Performance Level "d" according to ISO-13849.

#### Technical highlights

- Accuracy  $< 0.06\%$  / span.
- Temperature coefficient  $0.006\%$  / °C.
- Response time  $< 30$  ms.
- 2.3 kVAC, 3-port galvanic isolation.
- NAMUR NE21 and NE43.

#### Programming

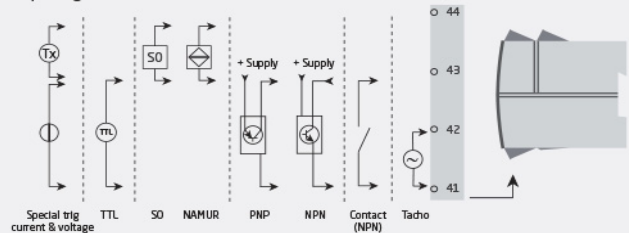
- Configuration, monitoring and diagnostics using the PR 4500 detachable communication interfaces. Product-specific functionality includes communication via Modbus and Bluetooth using our PR Process Supervisor (PPS) application, available for iOS and Android.
- All programming can be password protected.
- Scrolling help text in 7 languages.

#### Mounting

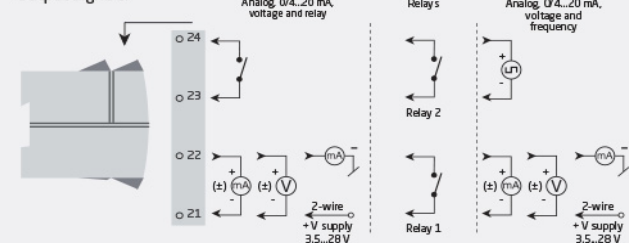
- Units can be mounted side by side, horizontally and vertically, without air gap on a standard DIN rail – even at 60°C ambient temperature.

#### Applications

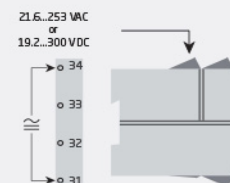
##### Input signals:



##### Output signals:



##### Power connection:



## Order

Type	Output	
4225	1 analog output and 1 relay	: A
	2 relays	: B
	1 analog output and 1 frequency output	: C

## Environmental Conditions

Operating temperature.....	-20°C to +60°C
Storage temperature.....	-20°C to +85°C
Calibration temperature.....	20...28°C
Relative humidity.....	< 95% RH (non-cond.)
Protection degree.....	IP20

## Mechanical specifications

Dimensions (HxWxD).....	109 x 23.5 x 104 mm
Dimensions (HxWxD) w/ PR 4500.....	109 x 23.5 x 131 mm
Weight approx.....	160 / 165 / 150 g (A / B / C)
DIN rail type.....	DIN EN 60715/35 mm
Wire size.....	0.13...2.08 mm <sup>2</sup> AWG 26...14 stranded wire
Screw terminal torque.....	0.5 Nm
Vibration.....	IEC 60068-2-6
2...13.2 Hz.....	±1 mm
13.2...100 Hz.....	±0.7 g

## 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.....	≤ 2.5 W
Max. power dissipation.....	≤ 2.0 W

### Isolation voltage

Test voltage.....	2.3 kVAC
Input to any (working).....	250 VAC (reinforced)
Relay to relay (working).....	< 115 VAC (reinforced)
Relay to analog (working).....	> 115 VAC (basic)
NPN to analog (working).....	Isolated > 50 VDC
Push-Pull / PNP to analog (working).....	Shared ground with analog output

### Response time

Response time (0...90%, 100...10%).....	≤ 30 ms
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### Auxiliary supplies

Sensor supply limitation (terminal 44).....	20 mA, 5...17 V
Programming.....	PR 4500 communication interfaces
Signal dynamics, output.....	18 bit
Signal / noise ratio.....	> 60 dB
Accuracy.....	See manual for details
EMC immunity influence.....	< ±0.5% of span
Extended EMC immunity: NAMUR NE21, A criterion, burst.....	< ±1% of span

## Input specifications

### Frequency input

Frequency range.....	0.001 Hz to 100 kHz
Time range, time function.....	10 µs to 999.9 s
Max. frequency / min. pulse width, with input filter ON.....	75 Hz / 8 ms

### Sensor specifications

NAMUR, trig-level LOW / HIGH.....	≤ 1.2 / ≥ 2.1 mA
Tacho, trig-level LOW / HIGH.....	≤ -50 mV / ≥ +50 mV
NPN / PNP, trig-level LOW / HIGH.....	≤ 4.0 V / ≥ 7.0 V
TTL, trig-level LOW / HIGH.....	≤ 0.8 V / ≥ 2.0 V
S0, trig-level LOW / HIGH.....	≤ 2.2 mA / ≥ 9.0 mA

### Special voltage / current input

User-programmable trig-levels.....	-0.05...6.50 V
User-programmable trig-levels.....	0.0...10.0 mA

## Output specifications

### Current output

Signal range.....	-23...+23 mA (bipolar)
Signal range.....	0...23 mA (unipolar)
Programmable standard ranges.....	0...20, 4...20, S4-20, ±10 mA, ±20 mA
Load (@ current output).....	≤ 600 Ω
Load stability.....	≤ 0.001% of span / 100 Ω
Response time, programmable.....	0.0...60.0 s
Sensor error indication.....	0 / 3.5 / 23 mA / none
Current limit.....	≤ 28 mA

### Buffered voltage output

Signal range.....	± 11.5 V
Programmable standard ranges.....	0...5, 1...5, 0...10, 2...10, ± 5, ± 10 VDC
Load, min.....	> 2 kΩ
Response time, programmable.....	0.0...60.0 s

### Relay output

Relay functions.....	Setpoint, Window, Sensor error, Latch, Power and Off
Hysteresis.....	0...100%
ON and OFF delay.....	0...3600 s
Sensor error reaction.....	Break / Make / Hold
Max. voltage.....	250 VAC / VDC
Max. current.....	2 A
Max. AC power.....	500 VA

### Frequency output

Frequency range.....	0.001 Hz...100 kHz
Prog. pulse time (f ≤ 500 Hz).....	1...1000 ms
Pulse time > 500 Hz.....	Fixed 50%

### NPN / PNP / Push-Pull output

Isink max.....	130 mA
Voltage drop 130 mA.....	< 1.5 VDC
Ext. voltage (terminal 24) max.....	30 VDC
*Isink max.....	30 mA
Vout.....	24 VDC ± 10%
Voltage.....	5...24 VDC

### Observed authority requirements

EMC..... 2014/30/EU & UK SI 2016/1091  
LVD..... 2014/35/EU & UK SI 2016/1101  
RoHS..... 2011/65/EU & UK SI 2012/3032

### Approvals

c UL us, UL 508..... E248256  
SIL..... Hardware assessed for use in  
SIL applications