

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 $\pm 23 \text{ mA} / 0 \dots 23 \text{ mA}$.
- Buffered voltage output $\pm 10 \text{ VDC}$.
- Linearization: Linear or square root function.
- 2-point process calibration.
- Programmable trigger levels $-0.05 \dots 6.5 \text{ V}$.
- Programmable sensor supply $5 \dots 17 \text{ V}$.
- NAMUR sensor error detection.
- Advanced configurable input limits for increased safety.
- Digital output: NPN & PNP; $0 \dots 100 \text{ kHz}$ with programmable logic level $5 \dots 24 \text{ V}$.
- 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 $< 0.06\% / \text{span}$.
- Temperature coefficient $0.006\% / ^\circ\text{C}$.
- Response time $< 30 \text{ ms}$.
- 2.3 kVAC, 3-port galvanic isolation.
- NAMUR NE21 and NE43.

Programming

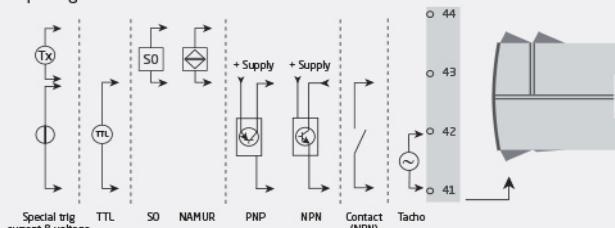
- Configuration, monitoring and diagnostics using the PR 4500 detachable communication interfaces. Product-specific functionality includes communication via Modbus and Bluetooth using our PR Process Supervisor (PPS) application, available for iOS and Android.
- All programming can be password protected.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

Mounting

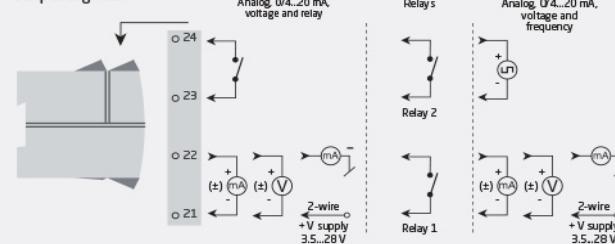
- Units can be mounted side by side, horizontally and vertically, without air gap on a standard DIN rail – even at 60°C ambient temperature.

Applications

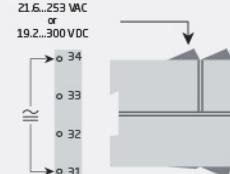
Input signals:



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 ² 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 |
|---|---------|

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 |
| SO, 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 |
| *Isource 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