PERFORMANCE MADE SMARTER

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

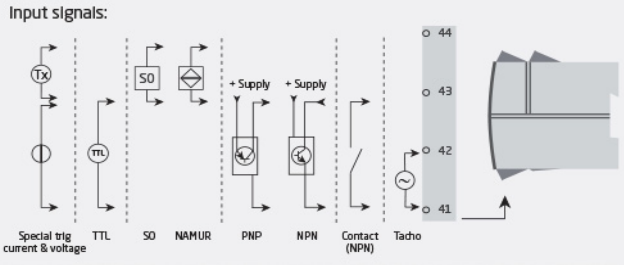
Functional highlights
- Measures frequencies up to 100 kHz.
- Active and passive current output ±23 mA / 0...23 mA.
- Buffered voltage output ±10 VDC.
- Linearization: Linear or square root function.
- 2-point process calibration.
- Programmable trigger levels -0.05…6.5 V.
- Programmable sensor supply 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.

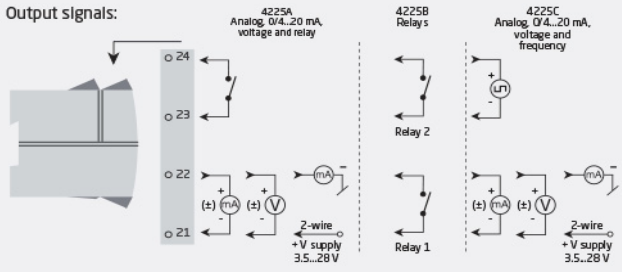
Technical highlights
- Accuracy < 0.06% / span.
- Temperature coefficient 0.006% / °C.
- Response time < 30 ms.
- 2.3 kVAC, 3-port galvanic isolation.
- NAMUR NE21 and NE43.

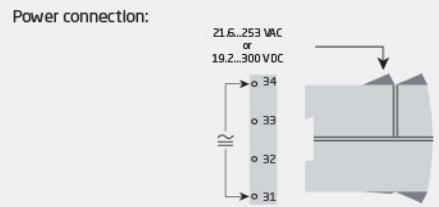
Programming
- Configuration, monitoring and diagnostics using the PR 4500 detachable communication interfaces. Product-specific functionality includes communication via Modbus and Bluetooth using our PR Process Supervisor (PPS) application, available for iOS and Android.
- All programming can be password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







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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
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
*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