UNIVERSAL I/f CONVERTER

- **Input for RTD, TC, Ohm, potentiometer, mA and V**
- **Frequency output NPN, PNP and TTL**
- **Generates frequencies from 0.001...25000 Hz**
- **2-wire supply > 16 V**
- **Universal AC or DC supply**

Advanced features:

- Programmable via detachable display front (4501), process calibration, signal simulation, password protection, error diagnostics and selection of help text in several languages.

Application:

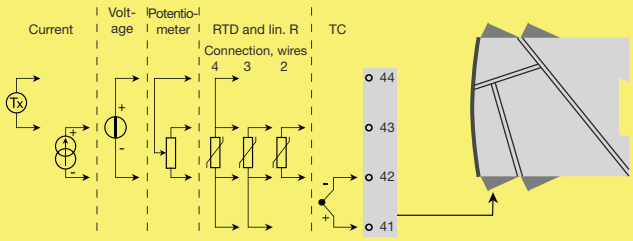
- Linearised, electronic temperature measurement with RTD or TC sensor.
- Conversion of linear resistance variation to a frequency signal, e.g. from solenoids and butterfly valves or linear movements with attached potentiometer.
- Power supply and signal isolator for 2-wire transmitters.
- Process control by way of a frequency signal transmitted to e.g. a PLC or a process computer.
- Galvanic separation and conversion of analogue signals to frequency signals.

Technical characteristics:

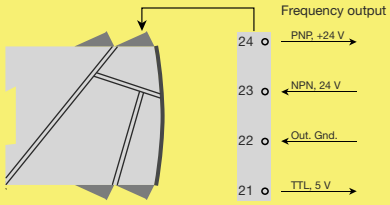
- When 4222 is used in combination with the 4501 display / programming front, all operational parameters can be modified to suit any application. As the 4222 is designed with electronic hardware switches, it is not necessary to open the module for setting of DIP switches.
- A green front LED indicates normal operation.
- Continuous check of vital stored data for safety reasons.
- 3-port 2.3 kVAC galvanic isolation.

Applications

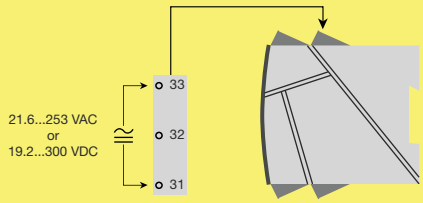
Input signals:



Output signals:



Supply:



PR electronics
DS CERTIFIED QUALITY SYSTEM AND ENVIRONMENTAL MANAGEMENT SYSTEM DS/EN ISO 9001 DS/EN ISO 14001
Lerbakken 10 · DK-8410 Rønde
Tlf. 8637 2677 · Fax 8637 3085
www.prelectronics.dk

Order codes:

4222 = Universal I/f converter
4501 = Display / programming front

PR 4501 Display / programming front

Application:

- Communications interface for modification of operational parameters in 4222.
- Can be moved from one 4222 module to another and download the configuration of the first converter to subsequent converters.
- Fixed display for readout of process data and status.

Technical characteristics:

- LCD display with 4 lines; line 1 (H = 5.57 mm) shows input signal, line 2 (H = 3.33 mm) shows units. Line 3 alternates between digital output value and scaling (kHz, Hz, mHz, P/m, P/h, P/d) or shows TAG no. Line 4 shows tendency readout for the input signal and communication status.
- Programming access can be blocked by assigning a password. The password is saved in the converter in order to ensure a high degree of protection against unauthorised modifications to the configuration.

Mounting / installation:

- Click 4501 onto the front of 4222.

Electrical specifications:

Specifications range ..... -20°C to +60°C

Common specifications:

Supply voltage, universal ..... 21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Max. consumption ..... ≤ 2.5 W
Fuse ..... 400 mA SB / 250 VAC
Isolation voltage, test / operation ..... 2.3 kVAC / 250 VAC
Communications interface ..... Programming front 4501
Signal / noise ratio ..... Min. 60 dB (0...100 kHz)
Response time (0...90%, 100...10%), programmable:
Temperature input ..... 1...60 s
mA / V input ..... 0.4...60 s
Calibration temperature ..... 20...28°C
Accuracy, the greater of the general and basic values:

General values		
Input type	Absolute accuracy	Temperature coefficient
All	≤ ±0.1% of span	≤ ±0.01% of span / °C

Basic values		
Input type	Basic accuracy	Temperature coefficient
mA	≤ ±4 µA	≤ ±0.4 µA/°C
Volt	≤ ±20 µV	≤ ±2 µV/°C
Pt100	≤ ±0.2°C	≤ ±0.01°C/°C
Linear resistance	≤ ±0.1 Ω	≤ ±0.01 Ω/°C
Potentiometer	≤ ±0.1 Ω	≤ ±0.01 Ω/°C
TC type: E, J, K, L, N, T,	≤ ±1°C	≤ ±0.05°C/°C
TC type: B, R, S, W3, W5, LR	≤ ±2°C	≤ ±0.2°C/°C

EMC immunity influence ..... < ±0.5% of span
Extended EMC immunity:
NAMUR NE 21, A criterion, burst ..... < ±1% of span

Auxiliary supplies:
2-wire supply (terminal 44...43) ..... 25...16 VDC / 0...20 mA
Max. wire size ..... 1 x 2.5 mm² stranded wire
Screw terminal torque ..... 0.5 Nm
Relative humidity ..... < 95% RH (non-cond.)
Dimen., without display front (HxBxD) . 109 x 23.5 x 104 mm
Dimensions, w. display front (HxBxD). 109 x 23.5 x 116 mm
Tightness (enclosure / terminals) ..... IP50 / IP20
Weight ..... 155 g / 170 g with 4501

RTD, linear resistance and potentiometer input:

Input type	Min. value	Max. value	Standard
Pt100	-200°C	+850°C	IEC60751
Ni100	-60°C	+250°C	DIN 43760
Lin. resistance	0 Ω	10000 Ω	-
Potentiometer	10 Ω	100 kΩ	-

Cable resistance p. wire (max.), RTD .... 50 Ω
Sensor current, RTD ..... Nom. 0.2 mA
Sensor error detection, RTD ..... Yes
Short circuit detection, RTD ..... < 15 Ω

TC input:

Type	Min. value	Max. value	Standard
B	+400°C	+1820°C	IEC 60584-1
E	-100°C	+1000°C	IEC 60584-1
J	-100°C	+1200°C	IEC 60584-1
K	-180°C	+1372°C	IEC 60584-1
L	-200°C	+900°C	DIN 43710
N	-180°C	+1300°C	IEC 60584-1
R	-50°C	+1760°C	IEC 60584-1
S	-50°C	+1760°C	IEC 60584-1
T	-200°C	+400°C	IEC 60584-1
U	-200°C	+600°C	DIN 43710
W3	0°C	+2300°C	ASTM E988-90
W5	0°C	+2300°C	ASTM E988-90
LR	-200°C	+800°C	GOST 3044-84

Cold junction compensation (CJC):
via internally mounted sensor ..... < ±1.0 °C
Sensor error detection, all TC types.. Yes
Sensor error current, when detecting. Nom. 2 µA
else ..... 0 µA

Current input:

Measurement range ..... -1...25 mA
Programmable measurement ranges . 0...20 and 4...20 mA
Input resistance ..... Nom. 20 Ω + PTC 50 Ω

Voltage input:

Measurement range ..... -20 mV...12 VDC
Programmable measurement ranges . 0/0.2...1, 0/0.5...2.5, 0/1...5, 0/2...10 V
Input resistance ..... Nom. 10 MΩ

Frequency output:

Frequency range ..... 0...25000 Hz
Min. frequency (span) ..... 0.001 Hz

PNP output:

I_{out} max. ..... 30 mA
V_{out} ..... 24 VDC ± 10%
C_{out} ..... 10 nF
R_{out} typ. ..... 20 Ω
Electromechanical counter ..... 24 V / 135 mA / 20 ms

NPN output:

I_{sink} max. ..... 150 mA
I_{sink} max. peak ..... 300 mA
External voltage (terminal 23) max. ... 55 VDC
C_{out} ..... 10 nF
R_{out} typ. ..... 10 Ω

TTL output:

$I_{sink/source}$ max. ..... 15 mA
$I_{sink/source}$ peak ..... 100 mA
V_{out} ..... 5 V ±5%
C_{out} ..... 10 nF
R_{out} typ. ..... 55 Ω

Sensor error detection:

Programmable ..... 0...26250 Hz

Observed authority requirements: **Standard:**
EMC 2004/108/EC
Emission and immunity ..... EN 61326
LVD 73/23/EEC ..... EN 61010-1
UL, Standard for Safety ..... UL 508

of span = of the currently selected measurement range