

# Frequency displays / tachometers

**LED frequency displays**    **Measuring range 1/min or 1/sec HRA-measurement (AC+DC)**    **Codix 542**



The Codix 542 is a voltage powered frequency display / tachometer, with 6-digit LED display for NPN, PNP input signals. The display in 1/min or 1/sec is freely scalable for fast and slow count pulses – with fast HRA measurement system (High Rate Accuracy).



|                          |                           |                   |                       |                            |                             |                           |                               |                            |
|--------------------------|---------------------------|-------------------|-----------------------|----------------------------|-----------------------------|---------------------------|-------------------------------|----------------------------|
| <b>DC</b><br>10 ... 30 V | <b>AC</b><br>10 ... 240 V | <br>-20°... +65°C | <br>IP65              | <br>Plug-in screw terminal | <br>Menu-driven programming | <br>Operation with gloves | <br>1/sec - 1/min             | <br>HRA                    |
| Supply voltage           |                           | Temperature range | High protection level |                            |                             |                           | Frequency display/ Tachometer | Frequency display with HRA |

### Powerful

- Very bright LED display, 14 mm high.
- Fast count input – input frequency max. 60 kHz.
- Robust housing – IP65 protected.
- Very accurate precise frequency measurement principle (HRA - High Rate Accuracy System)  
Frequencies up to 38 Hz are calculated using time-interval (period duration) measurement. Frequencies > 38 Hz are calculated using a special time base (gate time) measurement. A very high accuracy of < 0.1 % is achieved, even with very short gate times. The resulting measurement is available after a max. of 50 ms.

### User-friendly and universal

- Large keys – can also be operated when wearing gloves.
- Simple uniform menu-driven programming and operation. Possible to enter the programming also during operation with a confirmation prompt.
- Programmable decimal point, can be set from 0.0 to 0.000 (this determines the resolution).
- As an alternative to the HTL inputs, devices with a 4 ... 30 V DC input level are available.
- Individually programmable scaling – multiplication and division factor (0.0001 to 99.9999), to display corresponding engineering units, e.g. frequency in Hz and speed in RPM.
- Programmable delay until 0 is displayed.
- Display in 1/min or 1/sec.
- AC or DC supply voltage with sensor supply voltage.
- Optional output for zero-speed monitoring.

### Order code

6.542 . 01 X . X X 0

**a** Output

- 1 = Optocoupler output
- 2 = No output <sup>1)</sup>

**b** Supply voltage

- 0 = 100 ... 240 V AC, ±10 % <sup>1)</sup>
- 3 = 10 ... 30 V DC <sup>1)</sup>

**c** Input switching level

- 0 = Standard level (HTL) <sup>1)</sup>
- A = 4 ... 30 V DC level

*Delivery specification*

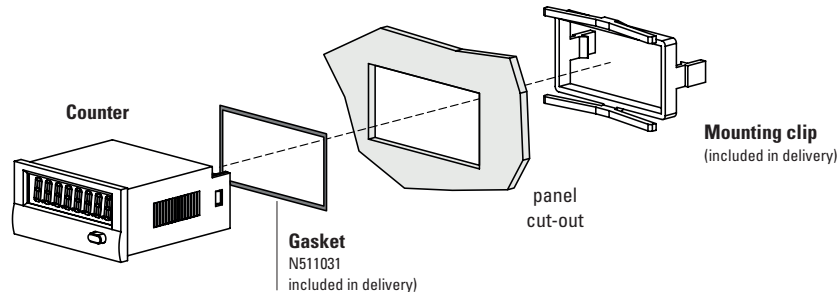
- Digital display
- Mounting clip
- Gasket
- Instruction manual, multilingual


1) Stock types

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## Accessories / Mounting examples



|  | Type / size  | Description  | Order no.                        |
|--|--|--|----------------------------------|
| <b>Gasket counter</b>                    |  | 96 x 49 mm [3.78 x 1.93"]                              | <b>N511031</b>                   |
| <b>Mounting frame</b>                    |  <b>cut-out 92 x 45 mm [3.62 x 1.77"]</b> | for snap-on mounting on 35 mm [1.38"] top-hat DIN rail | grey <b>G300005</b>              |
| <b>Screw terminal (Replacement part)</b> |  | 1 ... 7, pitch 3.81<br>1 ... 2, pitch 5.08             | <b>N100387</b><br><b>N100133</b> |

incl. in delivery

## Technical data

### General technical data

|                              |  |
|------------------------------|--|
| <b>Display</b>               | 6 digit, red 7 segment LED display; 14 mm [0.55"] high |
| <b>Data backup</b>           | EEPROM   |
| <b>Operating temperature</b> | -20 °C ... +65 °C [-4 °F ... +149 °F] (non-condensing) |
| <b>Storage temperature</b>   | -25 °C ... +70 °C [-13 °F ... +158 °F]                 |
| <b>Relative humidity</b>     | < 85 % (non-condensing)                                |
| <b>Altitude</b>              | up to 2000 m [6562']                                   |

### Electrical characteristics

|                            |   |
|----------------------------|---|
| <b>Supply voltage</b>      | 10 ... 30 V DC, with reverse polarity protection<br>100 ... 240 V AC, ±10 % |
| <b>Current consumption</b> | max. 50 mA, 8 VA  |
| <b>EMC standards</b>       | EN 55011 class B,<br>EN 61000-6-2, EN 61000-6-3                             |
| <b>Device safety</b>       | designed to protection class 2<br>application area pollution level 2        |
| <b>UL approval</b>         | file E128604  |

### Mechanical characteristics

|                   |  |
|-------------------|--|
| <b>Housing</b>    | front panel mount 96 x 48 mm [3.74 x 1.89"] acc. to DIN 43700; RAL 7021, dark grey |
| <b>Protection</b> | IP65 (front side)  |
| <b>Weight</b>     | approx. 150 g [5.29 oz]  |

### Inputs

|   |   |
|---|---|
| <b>Polarity of inputs</b>                           | programmable, NPN or PNP for all inputs   |
| <b>Input resistance</b>                             | approx. 5 kΩ  |
| <b>Counting frequency <sup>1)</sup></b>             | max. 60 kHz, can be damped to 30 Hz   |
| <b>Measurement principle / Accuracy</b>             | Gate and/or time interval (period duration) measurement, with high accuracy < 0.1 % (HRA) |
| <b>Input switching level standard version (HTL)</b> |   |
| DC supply voltage                                   | LOW 0 ... 0.2 x U <sub>B</sub> [V DC]<br>HIGH 0.6 x U <sub>B</sub> ... 30 V DC            |
| AC supply voltage                                   | LOW 0 ... 4 V DC<br>HIGH 12 ... 30 V DC   |
| <b>Input switching level at 4 ... 30 V DC</b>       |   |
| LOW   | 0 ... 2 V DC  |
| HIGH  | 4 ... 30 V DC   |

### Outputs

|  |                      |
|--|----------------------|
| <b>Sensors supply voltage (AC version)</b> | 24 V DC ±15 %/100 mA |
| <b>Output power optocoupler</b>            | max. 30 V DC, 10 mA  |

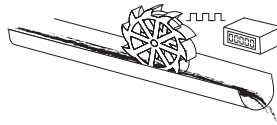
1) Please refer to the manual

# Frequency displays / tachometers

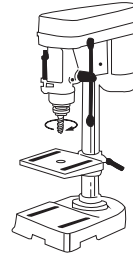
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## Applications for speed and frequency displays

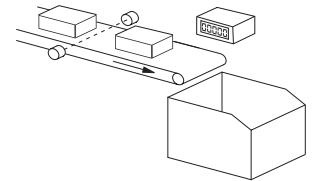
- Rotary speed applications, e.g. OEM equipment or retrofitting to drilling machines
- OEM equipment for flow rate measuring, e.g. current flow rate; production data such as volume/time
- Speed applications on motors, turbines, machines; feed-rate measurement
- Recording of production rates
- Frequency measurement



Mass flow rate

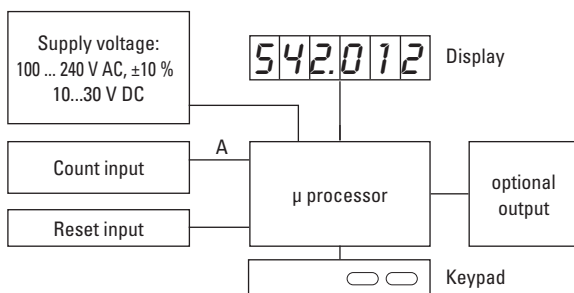


Drilling machine head, rotary speed

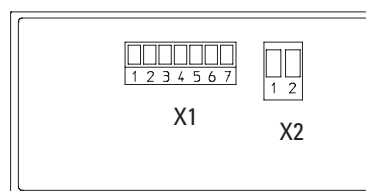


Production rate

## Block diagram



## Terminal assignment



### Connection X1

| PIN | AC version         | DC version |
|-----|--------------------|------------|
| 1   | Optocoupler-output | Collector  |
| 2   | Optocoupler-output | Emitter    |
| 3   | n.c.               |            |
| 4   | n.c.               |            |
| 5   | INP A              |            |
| 6   | GND out            | n.c.       |
| 7   | +24 V out          | n.c.       |

### Connection X2

| PIN | AC version              | DC version   |
|-----|-------------------------|--------------|
| 1   | 100 ... 240 V AC, ±10 % | 0VDC (GND)   |
| 2   | 100 ... 240 V AC, ±10 % | 10...30 V DC |

## Dimensions

Dimensions in mm [inch]

