

Meters 124.1 for Speed, Ratio, Difference Versions C / D 124.100 for display only

Application Characteristics

- 2 measuring channels. Display selection by key.
- Facility to compute ratio, difference, sum of both channels.
- Reading all process variables which are transmitted as a series of pulses or as AC-voltage. Compatible with all our speed sensors, and many other transmitters for speed and flow.
- Preferred in power plants, with paper and textile machines, or test installations, for their high accuracy and their facility to read ratio and difference, in comparison with their second input. Also, as part of larger systems, for remote display.

For applications requiring further facilities, we recommend our extended versions (see separate sheets):

with setpoint alarms and analog output: series 124.112

with PROFIBUS communication: series 124.1S4

with Ex-proof enclosure: series D124Ex9

Measuring Principle

2 measuring channels, M and B, operate in parallel. Both use the advantageous frequency measuring principle, distinguished by pulse distance evaluation, automatically extended over a programmable period of time. The ideal combination of tracking speed and average, as appropriate for the application.

The unit precisely regards the relationship between the process quantity (speed) and the transmitted frequency, by digital (scaling), individually for both channels. Thus, any required reading can be established.

Measuring accuracy $\pm 0.01\% \pm 1$ in last significant digit.

Minimum time extension for every measuring period programmable 30 millisecc up to 10 seconds.

Composite Quantities

With the measured results from both channels M and B, the unit continuously computes their ratio, difference, and sum. Thereby, a total of 6 different quantities is held at the user's disposal:

Variable M

Variable B

Ratio $M \div B$

Difference $M - B$

Sum $M + B$

Percentage difference $(M - B) \div B$.

Any two of these can be selected to be alternatively displayed, switched by key or external control. LED lights indicate the actually valid display selection.

Sensor Signal Inputs

Both channels M and B provide two input paths, accepting all our sensors. Both are isolated from power supply, and have common zero.

The high level path responds with on/off $>7/<4$ volts. Max. signal 150 v. Impedance 100 k. Frequency 0-100 kHz.

The high sensitivity path responds to > 50 millivolts_{RMS}, max 35 v DC may be superimposed. Max. signal 100 v.

Impedance 50 k. Frequency 1-50 kHz.

Sensor supply 12 volts/60 ma (common to both channels), and 2x8 volts via 1k for 2leads NAMUR types.



Design

Two design versions are available, with identical functional characteristics.

Panel mount version (C):

Front frame 96x48 mm, protection grade IP50. Plastics enclosure, depth 125 mm, mounting by supplied brackets. Panel thickness up to 10 mm, opening 92x45 mm. Weight approx. 200 grams. Rear side terminals for wire up to 2.5 mm², protection grade IP20.

Snap-on-track version (D):

For DIN rail 35 mm. Plastics enclosure, protection grade IP50. Length 100 mm, width 75 mm, height 111 mm. Weight approx. 200 grams. Terminals for wire gage up to 2.5 mm², protection grade IP20.

Display

5 digit (resp. 4 digits and minus sign), with bright red figures, 14 mm high. Decimals and blank zeroes can be programmed. The display update sequence may be increased beyond the minimum measuring period, for easier readability.

During the programming phase, the display reads the step number and its corresponding parameter.

HOLD function

An external control signal, if active, holds the display at the most recent measurement.

MAX/MIN memory

Maximum and minimum measurements are memorized to be called to the display by keys. Another key initiates a new memorizing period, cancelling previous values.

Data Interface (Option)

RS232 (for PROFIBUS see version 124.1S4)

Transmitting measurements on demand.

No configuration of parameters via Interface.

Power Supply Options

18...40 volts AC/DC (suffix U1 to model No)

85..265 volts AC/DC (suffix U2 to model No)

Power consumption approx 5 VA.

Operating Conditions

Ambient temperature 0°C ... +50 °C (30 ...95 °F)

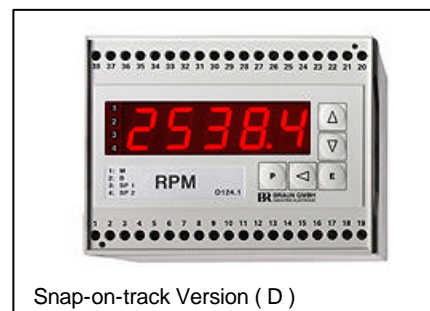
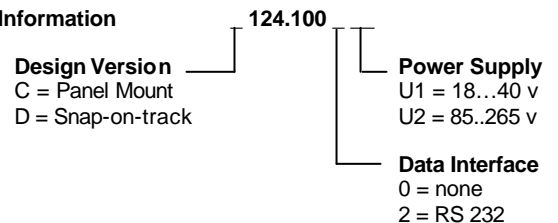
Humidity max 70%, without condensation.

Insulation Category I

Complying Standards EMI according EN 610000-6.2, ...-6.4

Safety EN 61010-1

Ordering Information



Meters 124.1 for Speed, Ratio, Difference

Versions 124.112 equipped with analog output, alarm contacts, display

Application Characteristics

- 2 speed measuring channels with additional facility to compute their ratio, difference, sum with high accuracy.
- Each programmable for conversion into analog signal, controlling the setpoint alarms, and display.
- Reading all process variables which are transmitted as a series of pulses or as AC-voltage. Compatible with all our speed sensors, and many other transmitters for speed and flow.
- Specifically preferred within automotive and motor testing installations, with paper and textile machines for monitoring stretch and shrinkage, and with flow systems to determine the ratio between streams.
- For applications within hazardous areas we recommend our versions with Ex-proof enclosure, series D124Ex9.

Measuring Principle

2 measuring channels, M and B, operate in parallel. Both use the advantageous frequency measuring principle, distinguished by pulse distance evaluation, automatically extended over a programmable period of time. The ideal combination of tracking speed and average, as appropriate for the application. The unit precisely regards the relationship between the process quantity (speed) and the transmitted frequency, by digital (scaling), individually for both channels. Thus, any required reading can be established.

Measuring accuracy $\pm 0.01\% \pm 1$ in last significant digit.
Minimum time extension for every measuring period programmable 30 millisecond up to 10 seconds.

Composite Quantities

With the measured results from both channels M and B, the unit continuously computes their ratio, difference, and sum. Thereby, a total of 6 different quantities is held at the user's disposal:

Variable M

Variable B

Ratio $M \div B$

Difference $M - B$

Sum $M + B$

Percentage difference $(M - B) \div B$.

Any one of them may individually be assigned to analog conversion, to (jointly both) setpoint alarms and to display.

Sensor Signal Inputs

Both channels M and B provide two input paths, accepting all our sensors. Both are isolated from power supply, and have common zero.

The high level path responds with on/off $>7/ <4$ volts. Max. signal 150 v. Impedance 100 k. Frequency 0-100 kHz.

The high sensitivity path responds to > 50 millivolts_{RMS}, max 35 v DC may be superimposed. Max. signal 100 v.

Impedance 50 k. Frequency 1-50 kHz.

Sensor supply 12 volts/60 ma (common to both channels), and 2x8 volts via 1k for 2leads NAMUR types.

Analog Output

Isolated circuit, convertible to full scale 20 ma (max load 500 Ω) or 10 volts (max load 3 ma). Live zero programmable. Assigned alternatively by program to any one of the 6 listed quantities. Resolution 12 bit (1: 4096). Linearity error $< 0.1\%$ of full scale. Tracking delay = measuring period.

Setpoint Alarms

2 alarms with SPDT relay contacts. Assigned (jointly) per program to any of the 6 listed quantities. Response characteristics individually programmable: setpoint, hysteresis bandwidth and location, condition at no power and during starter period. Response delay approx. 5 millisecond + measuring period. Each handling max 250 v/2 amp AC resp. 100 watts DC under overload protection.

Display

5 digit (resp. 4 digit and minus sign), with bright red figures. Versions C and D have 14 mm height, version E uses 8 mm. Decimals and blank zeroes can be programmed. The display update sequence may be increased beyond the minimum measuring period for easier readability.

During the programming phase, the display reads the step number and its corresponding parameter.

HOLD function

An external control signal, if active, holds the display at the most recent measurement. But it does not freeze the measurement nor the outputs.

MAX/MIN memory

Maximum and minimum measurements are memorized to be recalled to the display by keys. Another key initiates a new memorizing period, cancelling previous values.

Data Interface (Option)

RS232 (for PROFIBUS see version 124.1S4).

Transmitting measurements subsequent to demand.

No configuration of parameters via Interface.

Power Supply Options

18...40 volts AC/DC (suffix U1 to model No)

85...265 volts AC/DC (suffix U2 to model No)

Power consumption approx 5 VA.

Operating Conditions

Ambient temperature 0°C ... +50 °C (30 ...95 °F)

Optionally, the snap-on-track version (D) is available with extended temperature range -25 ... + 65 °C (suffix M to model No).

Humidity max 70%, without condensation.

Insulation Category I

Compatibility to Standards

EMI according to EN 610000-6.2, EN 610000.-6.4,

Safety according to EN 61010-1

Design

Various design versions are available, with identical functional characteristics.

Panel mount version (C):

Front frame 96x48 mm, protection grade IP50. Plastics enclosure, depth 125 mm, mounting by supplied brackets. Panel thickness up to 10 mm, opening 92x45 mm. Weight approx. 200 grams. Rear side terminals for wire up to 2.5 mm², protection grade IP20.

Snap-on-track version (D):

For DIN rail 35 mm. Plastics enclosure, protection grade IP50. Length 100 mm, width 75 mm, height 111 mm. Weight approx. 200 grams. Terminals for wire gage up to 2.5 mm², protection grade IP20.

Optionally, version (D) is available placed in a outdoor mounting enclosure grade IP65 (~ NEMA4) with cable conduits (suffix G).

19-inch module (E):

For rack height 3HE (132 mm). Front width 8TE (44 mm). Weight approx. 100 grams. Rear side connector according to DIN 41612, size F, lines b + z. Plug-in socket as extra available.

Ordering Key

