Example 11. Displaying the physical units of a pressure sensor on the RD control panel.

Purpose:

This configuration is intended for control by the signal from a pressure sensor with a measuring range of 0 to 16 bar and a 4–20 mA output signal. The sensor signal is fed to the analog input (AI) of the frequency inverter (RD) and controls the output frequency in the range 0–50 Hz (4 mA = 0 Hz = 0 bar, 20 mA = 50 Hz = 16 bar). The two-line control panel simultaneously displays the scaled pressure value in the range 0–16 (line 1) and the input current value as a percentage of 4–20 mA (line 2).

Wiring diagrams:

Wiring diagram of the pressure sensor to RD05

(built-in power supply is used)

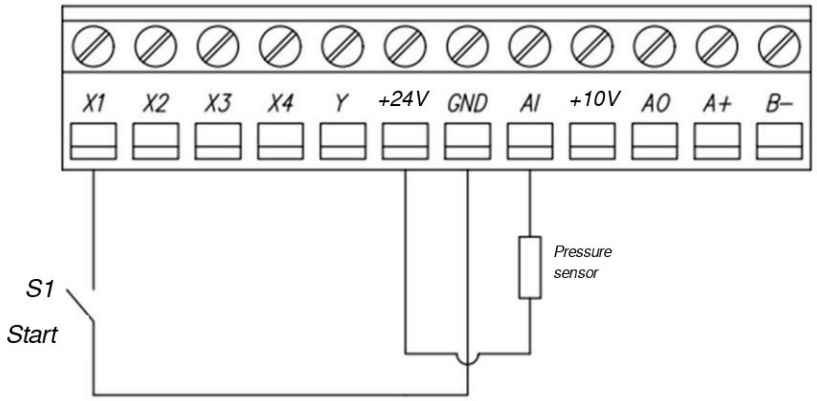


Figure 1. Wiring diagram of the pressure sensor to the RD (built-in power supply is used)

Wiring diagram of the pressure sensor to RD05

(external power supply is used)

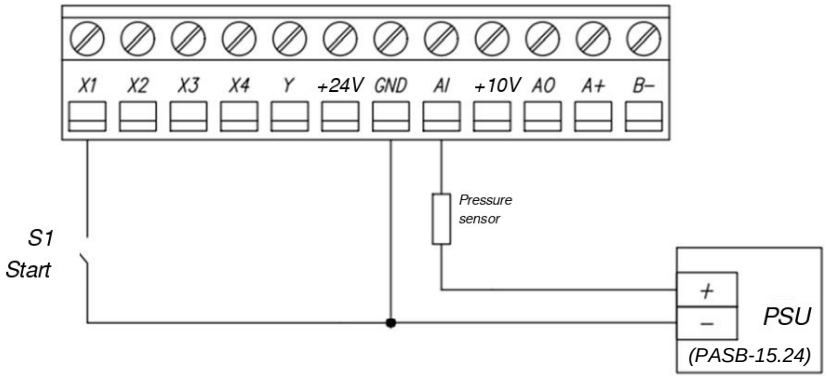


Figure 2. Wiring diagram of the pressure sensor to the RD (external power supply is used)

Parameter list:

№	Code	Name	Value	Note
1	F01.01	Start signal source	1	Start and stop mode via digital input
2	F01.02	Frequency reference source	8	Closed-loop process PID controller with feedback (FB)
3	F01.10	Maximum output frequency	50	Rated nameplate speed, Hz
4	F01.13	Lower frequency limit setting	0	Lower limit of motor speed when the sensor value of 4 mA is received
5	F01.22	Acceleration time	5	Motor acceleration time
6	F01.23	Deceleration time	5	Motor deceleration time
7	F02.00–F02.06	Rated motor parameters		According to the motor nameplate
8	F05.00	Terminal X1 function selection	1	Forward start
9	F05.20	Control mode selection	0	Two-wire system 1
10	F05.22	Operating signal selection for terminals X1–X4	0000	Activation on contact closure
11	F05.41	AI input signal type	1	Current signal 0…20 mA
12	F05.50	Lower limit of analog input signal	20	Limits the lower value of the analog signal to 4 mA
13	F07.00	Start mode	2	Start with speed tracking (flying start)
14	F11.11	Cyclic display of parameter 1 on line 1 of the control panel	0x0005	Displays the value of parameter C00.05
15	F11.15	Cyclic display of parameter 1 on line 2 of the control panel	0x0016	Displays the value of parameter C00.16
16	F11.21	Speed display coefficient	16 / F02.04 ∗ 100%	Converts the speed value into the actual sensor value
17	F13.00	PID setpoint source selection	0	Control panel (parameter F13.01)
18	F13.01	PID setpoint	50	Setpoint in % relative to the value of the analog input signal
19	F13.03	PID controller feedback source	2	Feedback from the pressure sensor
20	F13.07	PID controller settings	0000	PID controller logic settings
21	F13.11	Proportional term	1	Tune based on overshoot
22	F13.12	Integral time	8	Tune based on overshoot
23	F13.13	Derivative term	0.5	Tune based on overshoot

Notes:

1. This example is intended **only for displaying** the actual value, not for setting values;
2. When the value in the range 0–16 is displayed, the “rpm” LED will be active;
3. If there is no two-line remote panel, the value in the range 0–16 will be displayed on the main control panel;
4. When a two-line remote panel is used, the value in hertz can be displayed on the main control panel by pressing the “Select” button on the main panel.