REGIN PDTX…-C Differential Pressure Transmitter with Communication Instruction Manual

REGIN PDTX…-C Differential Pressure Transmitter with Communication Instruction Manual

Note! More information about the product configuration can be found in the variable list, which is available for download from www.regincontrols.com

Caution! Read and understand the instruction before using the product.

⚠ **Caution!** Ensure that the installation complies with local safety regulations.

⚠ **Caution!** Before installation or maintenance, the power supply should first be disconnected. Installation or maintenance of this unit should only be carried out by qualified personnel. The manufacturer is not responsible for any eventual damage or injury caused by inadequate skills during installation, or through removal of or deactivation of any security devices.

Contents

Function

Presigo PDTX…-C is a range of pressure transmitters equipped with one or two pressure sensors, two universal inputs, two universal outputs and an RS485 port for Modbus communication. It operates as a Modbus slave. This range of pressure transmitters is especially well suited as distributed I/O modules for air handling unit controllers. They are designed for easy installation together with Regin's Corrigo or EXOcompact controllers.

Technical data

Supply voltage	24 V AC/DC (21…27 V AC/DC)
Protection class	IP54
Power consumption	< 4 VA
Ambient humidity	0…95 % RH (non-condensing)
Ambient temperature	-25…+50 °C
Working range, pressure	0…1250 / 0…2500 / 0…7500 Pa (factory setting) 0…12 / 0…25 / 0…75 mbar0…127 / 0…254 / 0…764 mmH2O0…5 / 0…10 / 0…30 inH2O
Working range, flow	0…65000 m3/h (factory setting) 0…31000 l/s0…65000 Ft3/min
Cable glands	2 x M20 (cable diameter 5…12 mm)1 x M16 (cable diameter 3.5…10 mm)
Max overvoltage	±18 V, on any terminal (not G and G0)
Electronic damping	0 s (0…120 s)
Accessories, included	Two pressure outlets (straight) and 2 m plastic tube. Art. no.: ANS-20
Dimensions, external (WxHxD)	167 x (~130) x 46 mm

Pressure data

Media	Air, non-combustible and non-aggressive gases
Annual deviation	±2 Pa (1250 Pa)±4 Pa (2500 Pa)±20 Pa (7500 Pa)
K-factor	5 (5…700)

Universal Input, UI1 and UI2

Universal inputs (UI)	2
Configuration	AI (AI / DI), see specifications below

Configured as AI:

Analogue inputs (AI)	0…10 V (0…10 V / PT1000 / Ni1000-01)
Accuracy	± 1 % (0…10 V)± 0.5 K (PT1000/Ni1000-01)
Measuring range, temperature	-40…+60 °C

Configured as DI:

Digital input (DI)	Potential-free contacts on / off (on = closed)
Output current	0.5 mA (max 2.5 V)

Universal Output, UO1 and UO2

Universal outputs (UO)	2
Configuration	AO (AO / DO), see specifications below

Configured as AO:

Analogue outputs (AO)	0…10 V
Load impedance, 0…10 V	Min. 10 kΩ
Accuracy	± 1 %

Configured as DO:

Configuration	Mosfet outputs, 24 V AC or DC, 2 A continuous
Power output	Max. 2A (total UO1 + UO2)

Communication port data

Communication ports	1
Port type	RS485
Supported protocols	Modbus
Port isolation	Non-isolated
Cable length	Max 100 m

Models

Article	Number of sensors	Max overload pressure (kPa)	Measuring range, pressure (Pa)
PDTX12-C	1	25	0…1250
PDTX25-C	1	50	0…2500
PDTX75-C	1	120	0…7500
PDTX12-2-C	2	25 / 25	0…1250 (sensor 1) / 0…1250 (sensor 2)
PDTX25-2-C	2	50 / 50	0…2500 (sensor 1) / 0…2500 (sensor 2)
PDTX12S25-C	2	25 / 50	0…1250 (sensor 1) / 0…2500 (sensor 2)
PDTX12S75-C	2	25 / 120	0…1250 (sensor 1) / 0…7500 (sensor 2)

Installation

The transmitter comes with one cable gland mounted and two loose. If more than one cable is used, the other cable glands must be assembled to the housing. Screw in the cable gland until the plastic knockout in the housing snaps. Make sure to remove the plastic knockout completely. Secure the cable gland. See **Figure 1.**

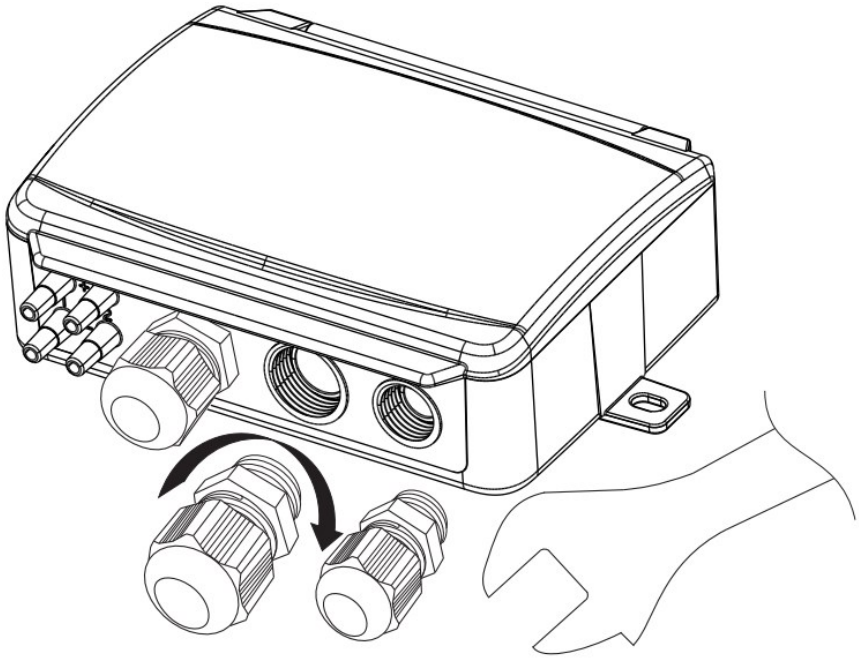
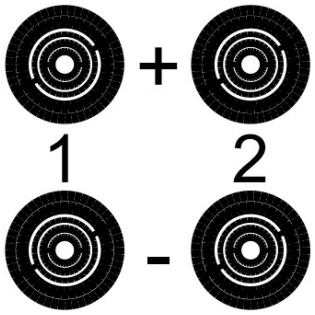


Figure 1 Installing the cable glands

1. Mount the transmitter horizontally or vertically on a stable, vibration-free surface. If the unit is installed in a

humid environment, install it vertically with the cable gland edge of the unit pointing down to allow moisture to escape.

2. Refer to the graphics below for wiring. Connect the communication cable to terminals 3(A) and 4(B). Use the leftmost cable gland for supply voltage and communication.
3. Power up the unit. Set the desired communication settings in the menu (see Settings). Note that the transmitter uses the default Modbus address = 1.
4. Refer to the Presigo PDTX…-C variable list for information on how to access transmitter data.
5. Let the unit warm up for 10 minutes, then perform a zero-set calibration by pressing the push-button (see Handling).
6. Connect plastic tubes from the ventilation duct to the pressure inlets.

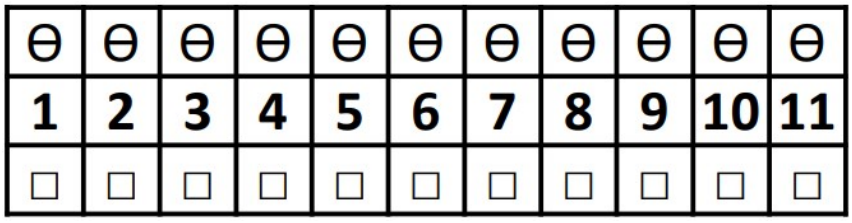


The two leftmost inlets are connected to sensor 1 and the other two to sensor 2. The inlet marked with '+' should be used to connect the tube with the highest pressure and the inlet marked with '-' to the one with the lowest pressure.

Note! A straight cut off nipple must be used for mounting in the ventilatio duct.

For optimal measuring results, measuring points with turbulent air flow should be avoided. Preferably, measuring should be performed at a distance of 2 duct diameters before bends and branching and at 6 duct diameters after bends and branching

Wiring



Terminal	Name	Description
1	24 V (G) +	Power supply 24 V AC/DC (Positive)
2	24 V (G0) –	Power supply 24 V AC/DC (Negative/ Ground)
3	RS485 – A	Communication A (-)
4	RS485 – B	Communication B (+)
5	UO1	Universal output 1
6	24 V (G) +	Internally connected to Terminal 1
7	GND	Internally connected to Terminal 2
8	UO2	Universal output 2
9	UI1	Universal input 1
10	GND	Internally connected to Terminal 2
11	UI2	Universal input 2

Use a shielded, twisted pair cable for RS485 communication. At high risks of interference, a 120 Ω terminating resistor should be mounted at each end of the communications circuit.

Wiring examples

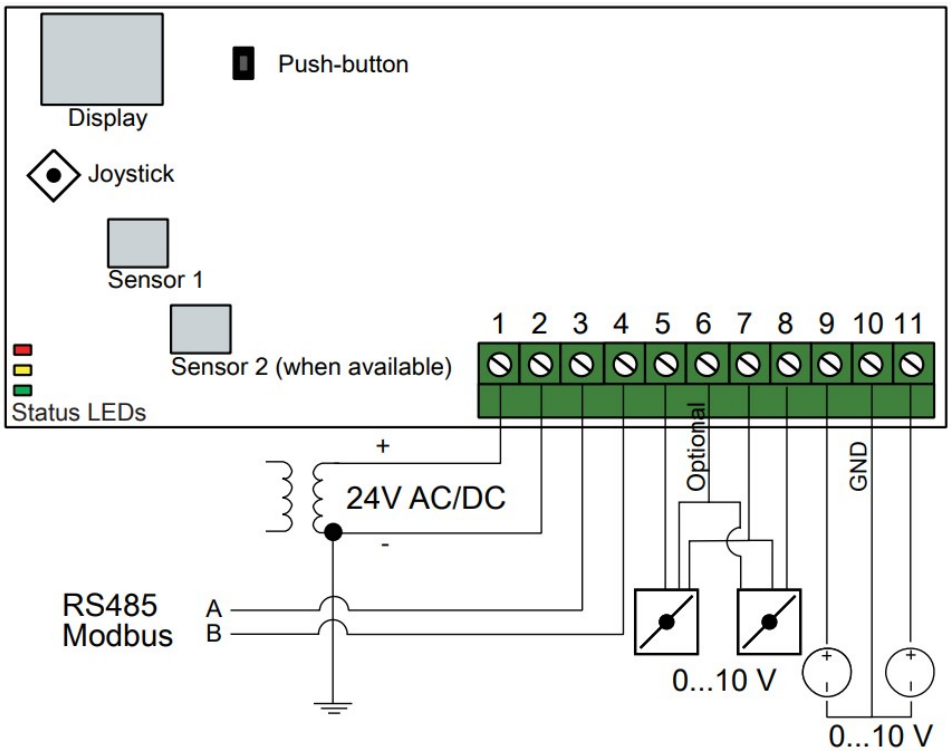


Figure 2 UIx as 0…10 V input and UOx as 0…10 V output

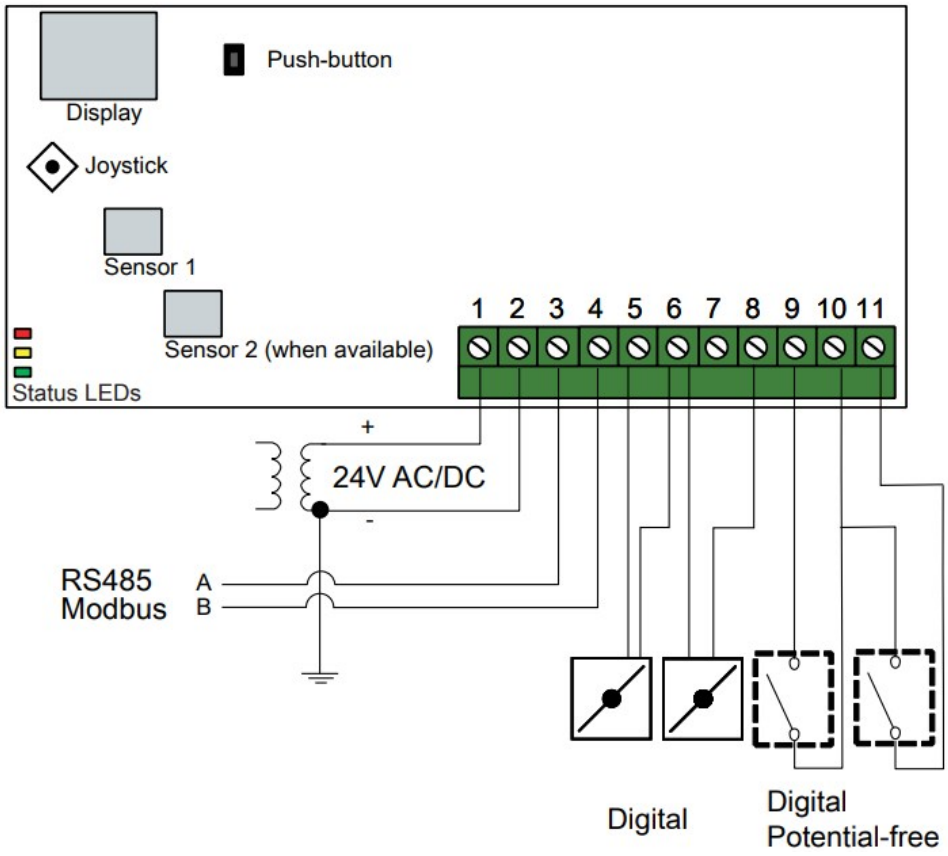


Figure 3 UIx as digital input and UOx as digital output

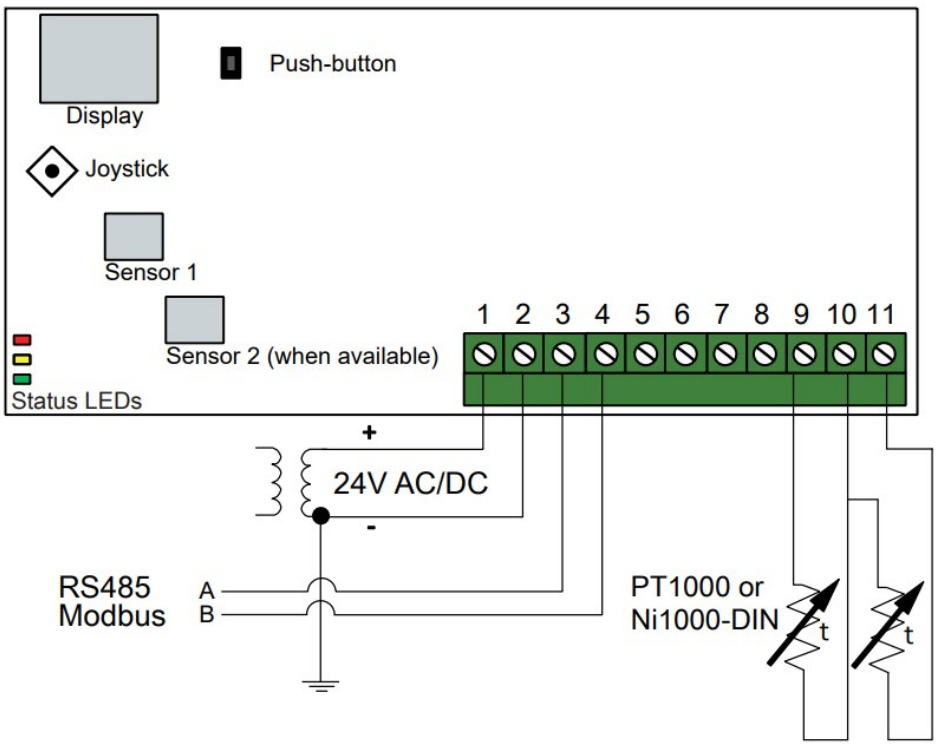


Figure 4 UIx as temperature input

Settings

Communication settings can be viewed and changed either via the menu system or through Modbus

communication. All other settings are accessed and modified via Modbus. The joystick is used to manoeuvre within the menu system (see Table 1). Pressing the joystick briefly results in entering the viewing mode. When in viewing mode all configured universal inputs and outputs, including pressure and flow sensor values, can be viewed. To enter the settings mode, press the joystick for at least 5 s when the display is inactive.

Table 1 Navigate the menu system

Joystick movements	**Action**
○ (push in)	Accept/selectLong press for settings mode (> 5 s) Short press for viewi ng mode
↑	Select next
↓	Select previous
←	Back / cancel

Getting started

How to view and modify settings in the menu system:

1. Enter into viewing or setting mode by pressing and releasing the joystick (long or short press) when the display is inactive
2. Navigate through the different sub menus by moving the joystick up or down
3. Select a sub menu by pressing and releasing the joystick
4. If in setting mode, select a value to modify by pressing and releasing the joystick
5. Change the value by moving the joystick up or down
6. Confirm the setting by pressing and releasing the joystick, or move the joystick left to discard the changes
7. Move the joystick left to return to the previous menu

Note! The last configuration entered into the transmitter is always valid, regardless of whether it was performed using the menu system or via Modbus.

Viewing mode menu

Sub menu	Description
P.#	Pressure valueP.1 = sensor 1 / P.2 = sensor 2
F.#	Flow valueF.1 = sensor 1 / F.2 = sensor 2
d.#	UI: Value in digital moded.1 = UI1 / d.2 = UI2
u.#	UI: Value in 0-10 V modeu.1 = UI1 / u.2 = UI2
t.#	UI: Value in temperature mode (°C)t.1 = UI1 / t.2 = UI2
L.#	UO: Value in digital modeL.1 = UO1 / L.2 = UO2
U.#	UO: Value in 0-10 V modeU.1 = UO1 / U.2 = UO2

Two digits can be shown at a time in the display. Therefore, several subsequent views are used to display a longer value. Example: A pressure value of 2350 Pa on sensor 1 is shown with three views, i.e. 1) P.1 2) 23 3) 50. The measuring unit for the displayed value is set via Modbus

Note! The K-factor has to be set via Modbus to be able to view correct flow values. Information regarding flow calculation is found in the variable list.

Settings mode menu

Settings related to the communication can be changed in the settings mode menu via the display

Sub menu	Description
.A	Modbus address (1-247), given as hexa- decimal numbers (1-F7)
.b	Modbus baud rate (see ***Table 2***)
.C	Modbus settings (see ***Table 3***)

Table 2 Settings in the sub menu .b

Modbus baud rate	Description
12	1200 bps
24	2400 bps
96	9600 bps (factory setting)
19	19200 bps
38	38400 bps
57	57600 bps

Table 3 Settings in the sub menu .C

Modbus settings	Description
n1	8 bytes, 1 stop bit, no parity (factory setting)
n2	8 bytes, 2 stop bits, no parity
E1	8 bytes, 1 stop bit, even parity
E2	8 bytes, 2 stop bits, even parity
o1	8 bytes, 1 stop bit, odd parity
o2	8 bytes, 2 stop bits, odd parity

When the transmitter is connected to Regin's Corrigo controller, it is configured as an expansion unit. When configuring the unit for Regin's freely programmable products the addressing can be set via Modbus. See the Corrigo manual and the PDTX…-C variable list for more information.

Note! All documentation can be downloaded from **www.regincontrols.com**

Handling

Three LEDs are available to show different states.

LEDs	Description
Yellow	RS485 data transmission indication
Red	Global device status. Is activated when an error is present (see the vari able list for more details).
Green	1 Hz flash rate: Normal operation5 Hz flash rate: Zero-set calibration is preformed 25 Hz flash rate: Factory reset is performed

Push-button

Action	Description
Quick press	Zero-set pressure calibrationThe green LED will be flashing when the zero-set operation has been made.
Long press (> 10 s)	Reset to factory default settingsThe green LEDs will be flashing during t he opera- tion. The unit will then reset and restart.

Zero-set pressure calibration

A short press on the push-button will zero-set calibrate the available pressure sensors.

Note! Be sure to disconnect the pressure tubes before doing this. Let the unit warm up for 10 minutes before attempting zero-set.

Factory reset

A long press on the push-button, more than 10 seconds, will perform a factory restore of user defined settings. Table 4 displays some of the settings that will be restored.

Table 4 Factory settings

Description	Factory setting
Working range, pressure	0…1250 / 0…2500 / 0…7500 Pa
Working range, flow	0…65000 m3/h
UI	0…10 V
UO	0…10 V
Modbus address	1
Modbus setting	8 bytes, 1 stop bit, no parity
Modbus baud rate	9600 bps
K-factor	5

Note! All changes made with Modbus will be reset when a factory reset is made.

CE This product carries the CE-mark. More information is available at **www.regincontrols.com.**

Documentation
All documentation can be downloaded from www.regincontrols.com

Contact
AB Regin, Box 116, 428 22 Kållered, Sweden
Tel: +46 31 720 02 00, Fax: +46 31 720 02 50
www.regincontrols.com, **info@regincontrols.com**

Documents / Resources

	**REGIN PDTX...-C Differential Pressure Transmitter with Communication** [pdf] Instruction Manual PDTX...-C Differential Pressure Transmitter with Communication, PDTX...-C, Differential Pressure Transmitter with Communication, Pressure Transmitter with Communication