komfovent®

VAV
FUNCTIONS

INSTALLATION MANUAL | EN

EN

CONTENT

INTRODUCTION

Variable Air Volume (hereafter called as „VAV“) control mode is when air handling unit operates depending on changeable ventilation demands in separate premises. By those demands controlled ventilation system ensures ventilation only where is needed, therefore such air volume control mode signally reduces unit's exploitation costs, prolongs unit's life time, filters are less polluted.

After unit have been installed and commissioned it must be appropriately prepared according to hereunder description clauses to ensure correct VAV mode operation.

1. PRESSURE SENSORS INSTALLATION

For VAV function operation two duct pressure sensors are needed (they are supplied together with the air handling unit if VAV function is ordered) to be additionally installed with the unit: one on air supply duct, another on exhaust. Pressure sensors installation requirements:

- sensors must be installed on the straight duct part with recommended minimum distance of two diagonals for rectangular duct cross-section or two diameters of the circular duct correspondingly;
- it is recommended to install sensor vertically with air pipes directed downwards;
- sensor is screwed directly to the duct (refer to figure 1).

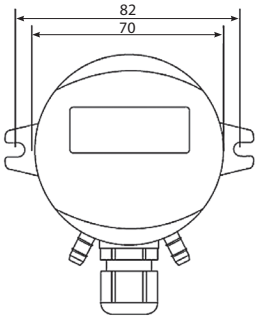


Fig. 1. Pressure sensor dimensions

2. PIPES CONNECTION

After pressure sensors have been installed in the specified place, air pipes by which air pressure is supplied to the sensors must be connected. To each sensor one air pipe must be connected in such a way: one pipe end directly to the sensor (see figure 2.), another pipe end is passed through the gasket of drilled hole in the duct and inserted inside the duct.

To the sensor which is installed on supply air duct, pipe is connected to the place marked by "+" sign, another connection marked by "-"sign remains opened. To the sensor intended for the exhaust air, pipe is connected conversely, i.e. to "-"sign, and sensor connection marked by "+" is left opened.

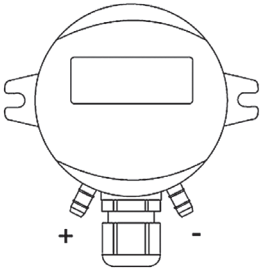


Fig. 2. Pressure sensor pipes connection

It is recommended to keep the length of pipes connecting sensors with ducts as short as possible.

3. ELECTRICAL CONNECTION TO THE AHU

When pressure sensors are mounted, they must be connected to the automation of the AHU. If pressure maintenance is needed in both airflows, two pressure sensors must be connected. Depending on the type of automation, electrical connections must be performed strictly according diagrams 3a or 3b.

VAV function can also run with only one pressure sensor. In that case, pressure will be maintained in the airflow, where pressure sensor is connected and the fan of other airflow will follow in parallel (master-slave configuration). Pressure sensor is connected only to these automation terminals, which corresponds to the airflow where sensor is installed.

For sensor connection it is recommended to use 3×0,5mm² shielded cable.

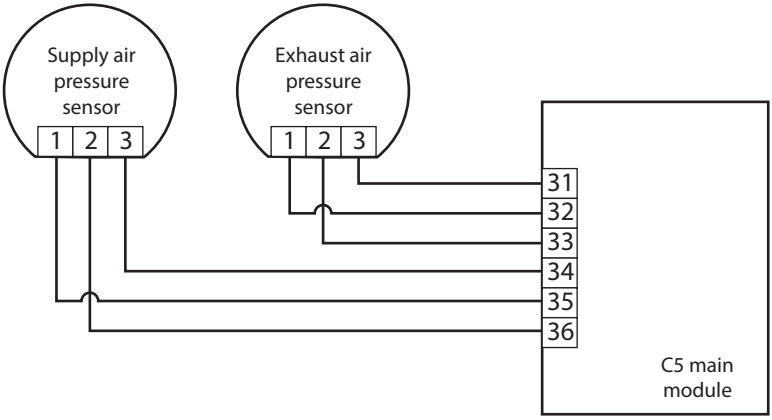


Fig. 3a. Pressure sensor connection diagram for C5 automation

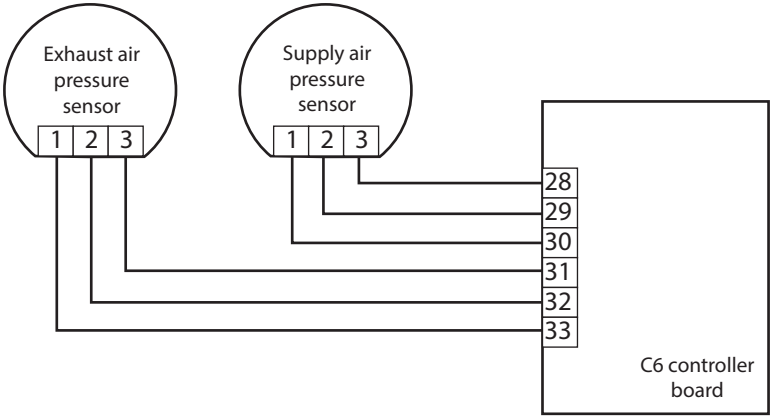
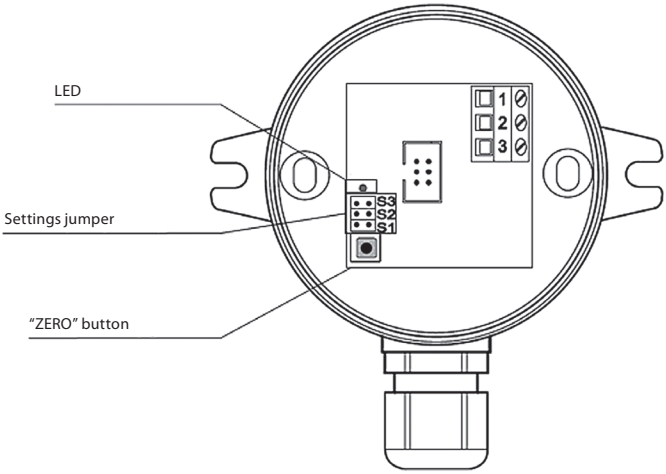


Fig. 3b. Pressure sensor connection diagram for C6 automation

4. PRESSURE SENSORS SETTINGS

To ensure correct VAV mode operation after sensors installation such settings must be done:

1. After electric power has been supplied to the not switched on unit it is recommended to set each sensor to initial (zero) position. To do that „ZERO" button located inside the sensor must be pressed for about 8s (AHU must be stopped at the moment of initialization).



Pic. 4. Pressure sensors settings

2. Set jumpers located inside the sensor to required pressure range.

Pressure ranges:

Pa	0…100	0…200	0…300	0…500	0…1000	0…1500	0…2000	0…2500
S3	▭	▭	▭	▭	■	■	■	■
S2	▭	■	▭	■	▭	▭	■	■
S1	■	▭	▭	■	▭	■	▭	■

3. Set constant air volume control mode („CAV").

4. Switch on the air handling unit.

5. When the operating unit air flow will reach nominal value (100%), voltage (DC) between 2 and 3 contacts of pressure sensors (see Pic.4) must be measured by digital multimeter. The voltage must be in range of 3..9V (recommended – 6V). If voltage is out of range other pressure range must be chosen with jumpers.

⚠ Sensor pressure range can be also set without referring to the descriptions presented above. In order to do that special device for measuring maximum pressure in the ducts must be used.

5. VAV FUNCTION ACTIVATION AND SETTINGS

Before activating VAV function, air supply and exhaust devices of the ventilation system must be regulated and settled to supply air to all ventilated premises, i.e. all ducts, branches, dampers, etc. must be opened. On the control panel of the AHU following settings should be adjusted.

5.1. C5 automation

1. Enter the same pressure sensor range, that was set as stated in paragraph No. 4:

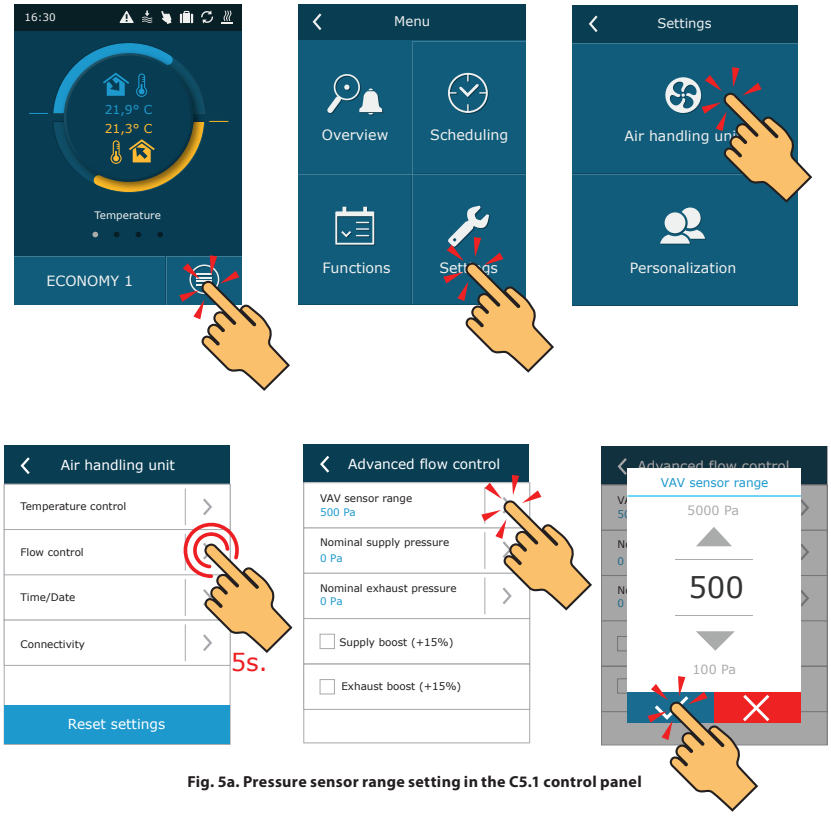


Fig. 5a. Pressure sensor range setting in the C5.1 control panel

2. Activate VAV function and perform calibration:

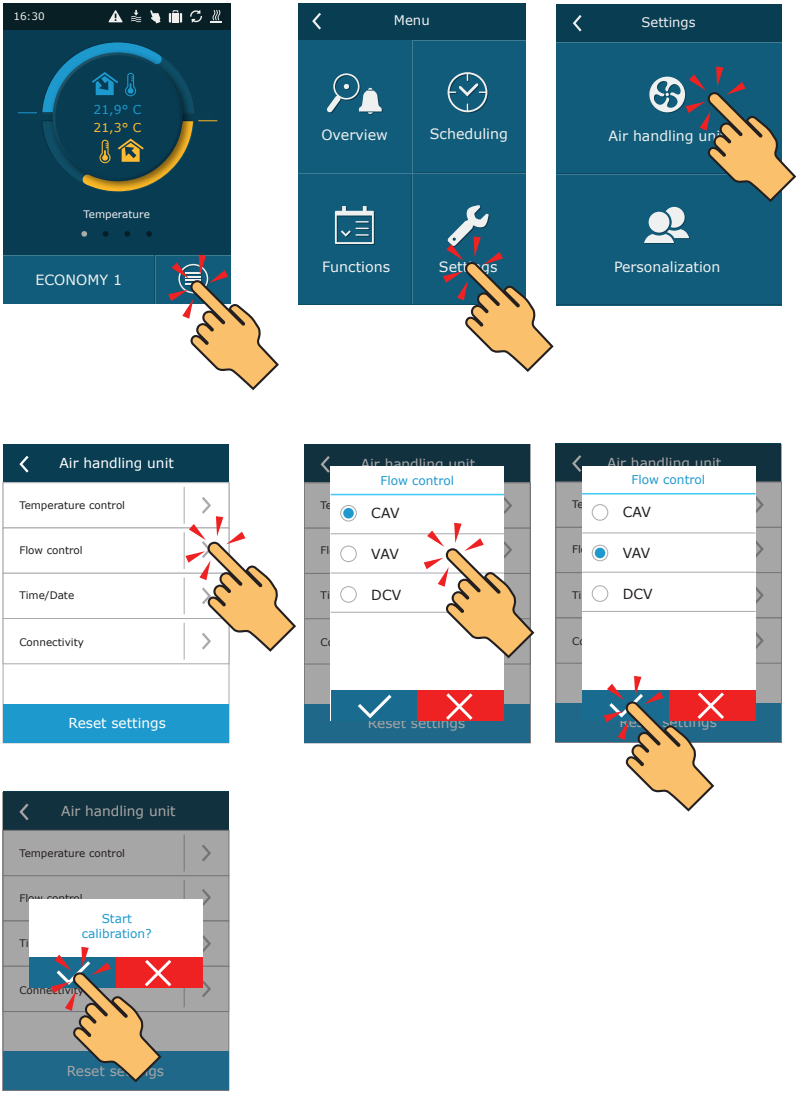


Fig. 5b. Flow control mode selection and VAV calibration in the C5.1 control panel

During VAV calibration AHU will run on maximum speed. Calibration duration is approximately 3 minutes. During this time do not change unit settings, do not open unit door or regulation dampers. After successful calibration AHU will be ready to run in VAV mode. In order to deactivate VAV function, select any other flow control mode (see figure 5b).

5.2. C6 automation

Function can be activated by selecting VAV flow control mode. It is necessary to enter pressure sensor range, that was set as stated in paragraph No. 4:

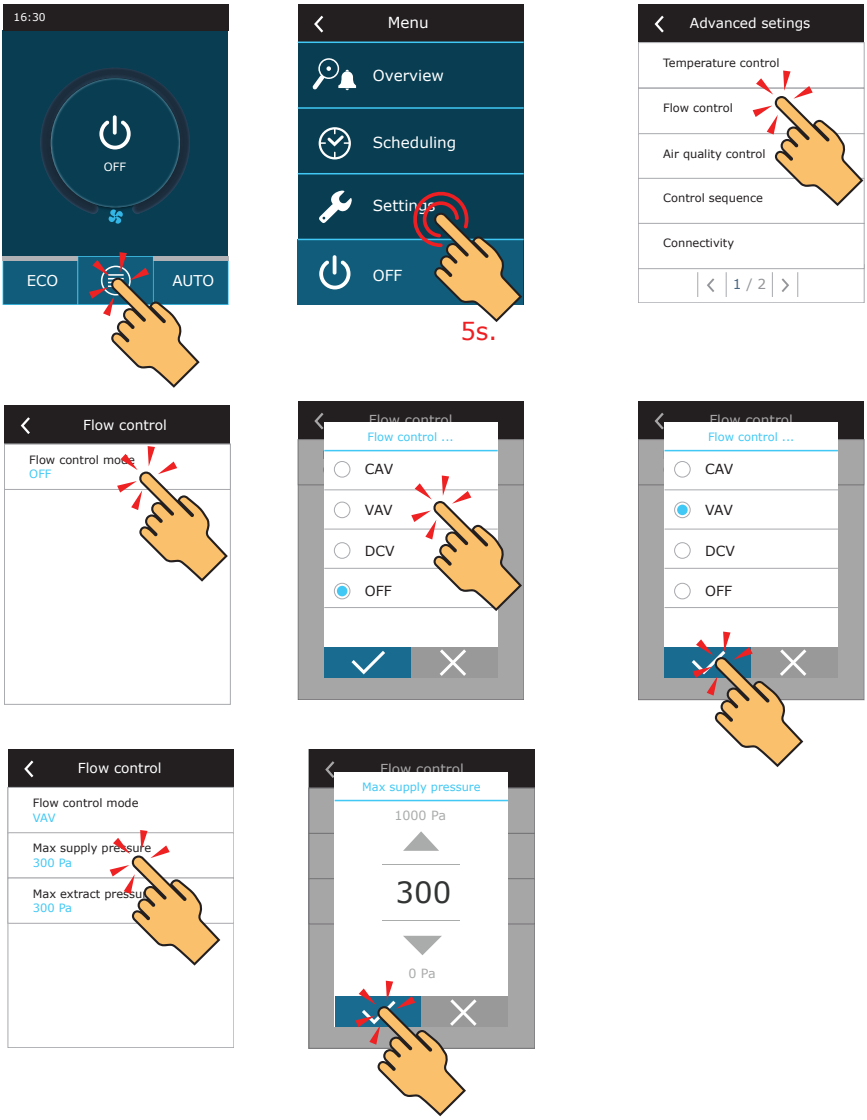


Fig. 5c. Activation and settings of VAV flow control mode in the C6.1 control panel

After activation of VAV function, in the settings of the operation mode, air measuring units automatically will change to Pa. AHU will run maintaining requested pressure in the duct, where pressure sensor is connected. In order to deactivate VAV function, select any other flow control mode (see figure 5c).

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