



CRVS2/COP

Central ventilation system of housing units

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System description

CRVS2/COP central ventilation system provides air ventilation to individual apartments located inside apartment building. As part of this system, centrally located Duovent Heat Recovery unit delivers an adequate amount of fresh air while tempering temperature of the incoming air. Leaving the main Duovent distribution unit, the tempered air is further distributed thru a system of ductwork to terminal boxes, such as VarioflowBOX ECO. Terminal boxes control fresh air entering and exhausting from apartments by modulating from 0% to 100%. The actual air flow to each apartment is based on project design and it is controlled by a wall mounted controller located inside each apartment. **Ventilated Kitchen hoods cannot be connected to CRVS2/COP system.** Kitchen hood needs to be a self-contained re-circulating type of hood fitted with a grease collecting filter.

The central Duovent Heat Recovery unit comes equipped with Digireg[®] MAR control system. Digireg MAR controls Duovent's performance and function and also accommodates for unit's remote on/off switching. Each Duovent unit comes with a touch screen control panel which provides access to air temperature and air volume adjustments. In order to maintain constant operating pressure, **the central Duovent Heat Recovery unit comes equipped with a constant operating pressure regulator (COP).** The COP regulator maintains pre-adjusted set of air pressure while modulating air flow to meet constant air pressure requirement on both, the supply air side (SUP) and the return air side (ETA). F7 type filters are installed where outside air enters the unit, M5 type filters are installed where return air enters the unit.

The amount of supply air being delivered comparing to the amount of exhaust air processed either by the terminal box or the central Duovent unit should be equal ($V_{ETA} = V_{SUP}$). This configuration should provide equal air pressure inside each apartment.

Design recommendations

The central Duovent Heat Recovery unit should be equipped with either a hot

water coil or electric heater for heating purposes or with chilled water coil or DX coil for any cooling needs.

It is highly recommended to provide and install sound attenuators or silencers downstream of the central Duovent unit in order to reduce the sound level emitted by the unit.

Air pressure within the central ventilation system should be designed so the static pressure differential before and after the terminal unit is anywhere between 50–250 Pa (marked as PE and PS in schematics). System with higher air pressure should use terminal unit "HP" model which allows for pressures between 150–600 Pa. If terminal boxes are being used for unintended air pressures the air flow regulator will not function properly and sound noise will occur.

When designing ventilation system using CRVS2/COP terminal boxes it is necessary to consider the fact that CRVS2/COP system does not allow for total air flow closure.

The pressure regulator inside the ductwork system should be placed so there is a straight piece of ductwork before the regulator (min length of 1xD) and there is straight piece of ductwork after the regulator (min length of 3xD).

It is necessary to maintain tightness of ductwork, ductwork connections and associated accessories as part of the central ventilation system. The minimum tightness class of the system should be class C, according to EN12237 (or EN1507 for rectangular piping).

Service recommendations

In order to maintain Duovent's efficiency it is necessary to replace filters on regular bases. Each Duovent is equipped with a manostat that will generate alarm code when air restriction across filters is noted. Replace filter alarm will be automatically displayed on touch screen controller.

Terminal boxes are maintenance-free but we do recommend to inspect and clean air flow regulators once in every 2 years to remove any restriction blocking air nozzles. For this reason, there should be an adequate access provided to all terminal units.

Ventilation system components

Description of individual items as shown in the diagram of the CRVS2/COP ventilation system:

1 Compact DUOVENT unit, model DV, DV TOP or RV. Duovent heat recovery unit comes fitted with Digireg[®] MAR control system.

For more information refer to: „Commercial ventilation units with heat recovery” catalogue available at: www.elektrodesign.cz



2 Digireg CP digital touch screen controller. Digireg CP comes included with Duovent unit and provides easy access for air temperature and air pressure adjustments. In addition, Duovent unit can be switched ON/OFF and we can set 7-day programmable schedule.



3 Duovent's main power supply. Power supply cable, including power breakers and actual power cable connection to Duovent unit is not part of delivery from ELEKTRODESIGN Ventilatory, s.r.o. Table below provides recommended power cable size and main breaker size based on what type of Digireg is being used. Information that leads to the type of Digireg control system is part of technical specification that comes with the unit.

Type	main switch	supply cable	main breaker
	[A]	type	type
M1-E2	30	CYKY-J 3x4	1Px25A
M1-E8	30	CYKY-J 5x4	2Px32A
M1-E8-2	30	CYKY-J 5x6	3Px32A
M3-E15	40	CYKY-J 5x6	3Px40A
M3-E24	63	CYKY-J 5x10	3Px63A
M3-E36	80	CYKY-J 5x16	3Px80A
M3-E72	120	CYKY-J 5x35	3Px125A
M3-Vx	30	CYKY-J 5x4	3Px32A
M3-E8-2	40	CYKY-J 5x6	3Px32A
M1-Vx	30	CYKY-J 3x4	1Px16A

Ventilation system components

4 Remote ON/OFF power switch for Duvovent® Compact unit. Remote switch is not part of delivery from ELEKTRODESIGN Ventilatory, s.r.o. If needed, external ON/OFF control of the unit can be realized by adding a switch that can be connected to predetermined terminals located inside Digireg® control box. **Remote control of the unit is not mandated** since the unit can be switched ON/OFF from Digireg® CP unit controller (see item 2).

5, 6 Ductwork noise silencer and sound attenuators. Recommended type **MAA** or **IAA**.



7, 8 Sheet metal ductwork and fittings made out of galvanized sheet metal. Ductwork comes as rectangular ductwork or spiral round pipe.



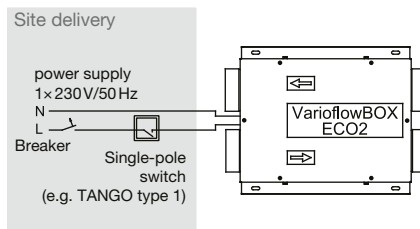
9 Terminal boxes **VarioflowBOX Eco2-v2**. The boxes can be delivered in sizes 125, 160, 200 mm. Designed to hang below ceiling. Mounting brackets are part of the unit.

Terminal box is equipped with removable lid that allows for easy service access. Each box contains two-stage electrical air flow regulator, one for supply air and one for exhaust air. Individual terminal boxes come with pre-set range of air volume. Min and Max airflow can be regulated by remote controller mounted inside each apartment. See all technical parameters as listed in the table below:

Type	Vmin [m³/h]	Vmax [m³/h]
VarioflowBOX ECO2-v2		
125	25	150
160	50	250
200	75	400

Type	El. input [W]	Weight [kg]
VarioflowBOX ECO2-v2		
125	5	14
160	5	18
200	5	20

Terminal boxes come without internal insulation. Armaflex thermal insulation is available upon demand. Box switch and power supply connection scheme:



10 Single pole switch is used for switching between MIN and MAX airflow. The MIN regime is set manually on an actuator mounted on the VAV damper. The MAX regime enables the maximal airflow, which is also set manually on an actuator mounted on the VAV damper. The switch is designed for wall mounting. A recommended placement of the switch is nearby main door to a flat. The switch is not part of a delivery from ELEKTRODESIGN Ventilatory spol., s.r.o.



11 Power supply for terminal box. Recommended type and size of power cable is CYSY 2Dx1. The power supply cable and wiring between the box and wall mounted switch is not included with ELEKTRODESIGN Ventilatory, s.r.o.

12 Sound attenuators and ductwork silencers. Recommended type is **MAA**, **MTS**, **Sonoultra**.

13 Ductwork for air distribution inside apartments. Ductwork of **ED Flex® System** or galvanized spiral pipe **SPIRO. ALUFLEX®, SEMIFLEX®, SONOFLEX®, TERMOFLEX®** flexible ductwork.



14 Grilles and diffusers. Recommended types **BDOP**, **KO**, **KOC**, **KI**, **KIC**, **IT**, **IT-PRO**, **VST**, **CTVK**, **WDZA**, **WDZA-F**, **RKO**.

15 **Optional safety manostat DTS PSA 100/1500 type**. The manostat is set to meet the maximum air pressure of the central ventilation system. If the designed pressure exceeded its settings the unit will shut down.



