DUOVENT® MODULAR XLH / XLHL

DR
Digireg®

BP
Bypass

EC
EC motor

ErP
ErP conform

VCC
VAV-CAV-COP control types

Technické parametry

Cabinet
Individual chambers are made of frameless sandwich panels 50 mm thick, which are made of galvanized steel sheet with an external coating in RAL9002 (gray-white). The panels are filled with sound and heat insulation made of non-combustible glass mineral wool on the inside. To facilitate service, the unit chambers are equipped with openable doors with locks or fully removable panels. The chambers are equipped with a 130 mm high base frame in the lower part, which is made of galvanized steel profiles.
Casing parameters according to ČSN EN 1886:
- Strength of construction: D1
- Casing tightness: L1
- Thermal bridge factor: TB2
- Casing thermal transmittance: T3
- Leakage between filter and frame: < 0.5% (F9)

The individual chambers are connected to the functional unit using M8x16 Allen screws and special connectors that are included in the unit delivery. Up to and including unit size XLH (XLHL) 16, the chambers are connected from the outside of the unit. From size XLH (XLHL) 20, the chambers are connected from the inside of the unit.

Fans
Centrifugal backward-curve blades fans with impeller made out of composite materials. Each furnished fan is statically and dynamically balanced.

Fans
On the supply and exhaust sides of the unit, fans with backward-curved blades are mounted. The impeller is made of composite material or welded steel and is statically and dynamically balanced.

EC motors
An EC motor is mounted directly on the fan impeller. The fan motor can be continuously controlled by an external 0…10 V signal. The motor is equipped with its own built-in thermal protection. Motor efficiency class IE4, electric motor protection IP54.

AC motors
A foot-mounted AC motor is mounted directly on the fan impeller. The fan motor can be continuously controlled by an external 0…10 V signal using a frequency converter, which can be ordered as an accessory for the unit. The motor is equipped with its own built-in thermal protection. Motor efficiency class IE3, electric motor protection IP55.

Recuperator
A recuperative counter-flow exchanger or a cross-plate exchanger with completely separate supply and extract air flows is made of aluminum. The recuperator includes a bypass with a damper that fully controls the air inlet to the exchanger or to the bypass.

Regenerator
A rotary regenerative exchanger for heat transfer or for heat and moisture transfer at the same time. The exchanger is designed for operation with an ambient temperature of -20°C to +55°C. The regenerator rotor is alternately wound from a flat and shaped layer of aluminum foil. The rotor housing is made of galvanized support profiles. The seal between the rotor and the housing is provided by a brush seal. To increase the tightness of the regenerator, the exchanger wheel can be equipped with a so-called labyrinth seal with a leakage value below 1.5% of the volumetric air flow. The rotary exchanger drive consists of an electric motor with a worm gear, a pulley and a belt. The supply voltage of the electric motor is 1× 230 V/50 Hz or 3× 230 V/50 Hz. On request, the regenerator can be equipped with a continuous speed control with 0…10 V control using a frequency converter.

Filters
For air filtration purposes, the units use pocket filters, panel filters, activated carbon filters or grease filters. For pocket and panel filters, various filtration classes can be selected as standard in the range from G3 (ISO Coarse 50%) to F9 (ISO ePM1 85%). The unit can also be retrofitted with high-efficiency HEPA or ULPA filters. Access to the filters is via an inspection door on the service side of the unit.

Dampers
Aluminum control dampers with preparation for mounting an actuator are integrated for fresh air intake and exhaust air discharge. The dampers meet tightness class 2 according to EN1751. By combining dampers in the chamber, mixing blocks can be created that ensure air mixing or recirculation operation of the unit.

Air heaters and coolers
Depending on the design, the unit is equipped with a water or electric air heater. A water cooler or direct evaporator is installed for air cooling. For direct heating and cooling, the evaporator can be made reversible and operation with bivalent water or electric heating can be selected. Evaporators are designed for R410A or R32 refrigerant as standard. Water heaters, coolers and evaporators have copper pipes and aluminum fins in a galvanized steel frame as standard. For higher corrosion protection, the exchangers can be provided with additional anti-corrosion protection. Electric heaters have smooth heating rods as standard and are equipped with an operating thermostat with a start-up temperature of 60°C and an emergency thermostat with manual reset and a start-up temperature of 120°C.

Steam humidifier
The modular unit can be equipped with a free chamber for placing a steam humidifier. The chamber is equipped with a condensate tray and a siphon for draining condensed steam. The steam humidifier and autonomous steam humidifier control are not included in the unit's delivery. The steam humidifier cannot be controlled from the Digireg® control system.

Silencers
The slide-type silencers integrated in the unit are supplied in lengths of 600, 1000, 1200 and 1500 mm depending on the required attenuation level.

Electrical connection
The supply voltage is 3× 400 V/50 Hz or 1× 230 V/50 Hz depending on the unit design and the type of fans used. The supply cables, sensor cables and power cables are fed into the unit through plastic grommets in the unit wall. The delivery does not include fuses and the supply cable for the supply and exhaust fans and the main circuit breaker with the supply cable of the MaR switchboard for fan motors with a power of more than 6 kW on the supply side and 6 kW on the exhaust side. The fuses and power supply of the supply and exhaust fans and the main MaR switchboard are part of the delivery of the construction. The power supply diagram of the units is shown below.

Control system
The unit is equipped with Digireg® digital regulation as standard according to the unit configuration. The control box is located on the side service wall of the unit (in the case of an atypical location of the MaR system control box, this must be consulted with the manufacturer and specified in the order). The final electrical connection of the control system after mechanical assembly of the unit on the construction site occurs within the authorized start-up of the StartPACK unit.

Installation
In a vertical or horizontal position on the floor of the machine room or the roof of the building. The service side of the unit must be specified in the order, see below. It is necessary to maintain the prescribed service space in front of the unit for the needs of service interventions, filter replacement, etc. There must be space under the unit for installing a siphon for condensate drainage. The unit must be mounted on a flat and horizontal surface. The flatness and horizontality of the unit is one of the conditions for the proper functioning of the unit. The HVAC duct is connected to rectangular sockets integrated in the sandwich panel. We recommend installing flexible sleeves between the pipe sockets and the unit to eliminate the transmission of vibrations from the unit to the duct.

Noise
The noise data given in the technical specification of the unit indicate the sound power levels at the individual unit sockets (ODA, SUP, ETA, EHA) with A-weighted filter correction and the sound power level of the entire unit casing. The acoustic parameters are within a tolerance of ±3 dB.

Variants
The individual unit variants are distinguished by their equipment using a code. Atypical designs must be consulted.

Information
The Duovent® Modular XLH and XLHL units cover the range of air flows from 2,000 to 100,000 m3/h. The XLH series units have a square duct cross-section and the XLHL type units have a rectangular duct cross-section.
The unit is intended for ventilation of commercial premises. The unit is intended for permanent operation. The unit can be supplied in an outdoor or indoor version. The unit is delivered either in separate chambers or in separate blocks. The definition of the size of the transport blocks is part of the technical design of the unit by ELEKTRODESIGN ventilátory, s.r.o. The mechanical connection of the blocks or chambers is a matter of the installation procedure during the installation of the unit. The connecting material is part of the delivery. Units in the PROCESS version (i.e. outside the scope of EC Regulation No. 1253/2014) must be consulted.
Each XLH/XLHL unit must be designed in special SW, which generates a complete technical specification of the unit. The complete specification of the unit is provided by the technical department of ELEKTRODESIGN ventilátory, s.r.o.

Warranty conditions
The DUOVENT® MODULAR XLH/XLHL device, including the DVAV, DCAV and DCOP control system, must be put into operation exclusively by the Seller or by a person designated by the Seller. Failure to comply with this condition results in the Buyer's rights from defective performance and the Quality Guarantee being terminated. More detailed conditions are set out in the Seller's Complaints Procedure.

Model number abbreviation list

D	U	O	-	M	O	D	-	X	L	H	L	D	V	E	C	5	0	D	C	A	D	C	C	M	X	K	L	F	P	/	F	O	D	V	A	V	L	V	E	1	8	H	R	U	2	2	0	-	2	0
								1				2		3		4		5			6			7		8			9					10			11		12					13								

1 – unit's structural design:
DUO-MOD-XLH – square channel chamber section
DUO-MOD-XLHL – rectangular channel chamber section

2 – type of heat recovery module:
DV – fixed plates, cross-flow heat exchanger
RV – rotating wheel heat exchanger
BV – without heat exchanger

3 – electric motor type:
EC – elecronically commutated motors controlled by 0–10 V input
AC – alternating current motor, ON and OFF function
FC – frequency driven AC motor

4 – unit size: see table below.

5 – heating provision:
DI – electric strip heat
DCA – hot water coil

6 – cooling provisions:
DCC – chilled water coil
DX – direct evaporator
(DX coil selection must be accompanied with a type of condensing unit used, type of refrigerant used and total refrigerant capacity)
DXr – evaporator designated for heat pumpoperation. Provides both, heating and cooling

7 – **MX** – mixed air damper without actuator (when DIGIREG control system is selected actuators become part of the delivery)
C – circulation air damper, without power actuator (when DIGIREG control system is selected actuators become part of the delivery)

8 – **KL** – fresh air intake and return air dampers, without power actuators (when DIGIREG control system is selected actuators become part of the delivery)

9 – **FP** – unit is equipped with either single-stage or multi-stage SA filter
FO – unit is equipped with either single-stage or multi-stage RA filter

10 – type of control system:
DVAV – Digireg® with variable air flow
DCAV – Digireg® with constant air flow
DCOP – Digireg® with constant operation pressure flow

11 – modular unit configuration:
LV – vertical left (air chambers are stacked)
LP – floor mounted left (air chambers are side by side)
PV – vertical right (air chambers are stocked)
PP – floor mounted right (air chambers are side by side)

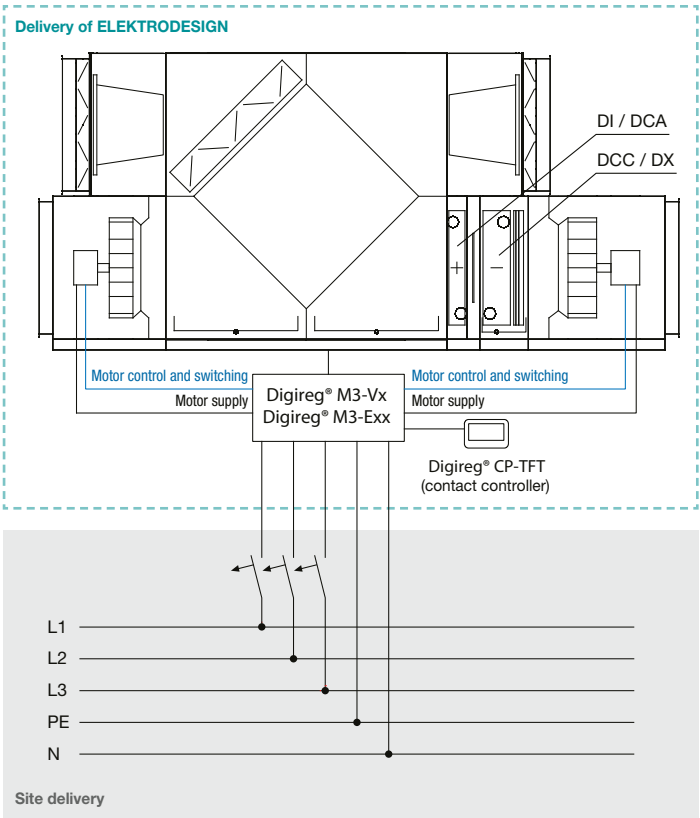
12 – **PRV** – unit arrangement for process ventilation (PROCESS) – for applications excluded from applicability of EC regulation no. 1253/2014, further for applications and markets beyond applicability of EC regulation no. 1253/2014.
E18 – nit arrangement complying with EC regulation no. 1253/2014- Ecodesign 2018.

13 – **HRU220-20** – internal no. of ELEKTRODESIGN ventilátory, s.r.o. The internal number is unique for each unit arrangement/variant.

Supplementing figures

I/C power supply logic schemes

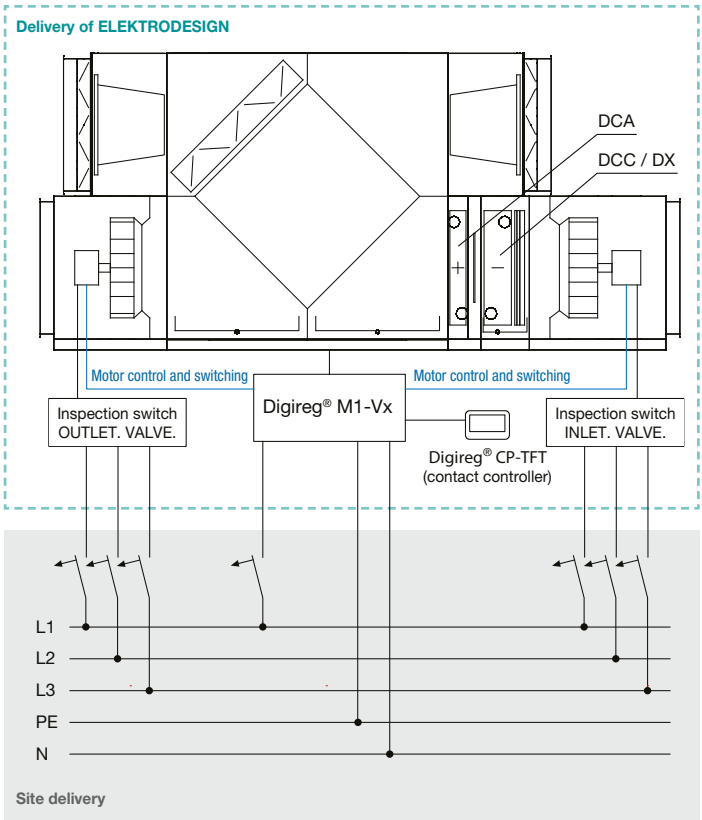
Variant for A/C units Modular XLH / XLHL of motor max. power to 2× 6 kW
(6 kW – unit inlet section,
6 kW – unit outlet section).
Max. power of electric heater in unit 72 kW (3× 400 V/50 Hz).



Note: Design of the main breaker and inlet cable to the Digireg® I/C system is part of electric project (the project is not within supply scope of ELEKTRODESIGN ventilátory, s.r.o.). Information on total electric inlet power of A/C unit is part of the unit technical specification.

I/C power supply logic schemes

Variant for A/C units Modular XLH / XLHL with motor power above 2× 6 kW
(6 kW and more – unit inlet section,
6 kW and more – unit outlet section).
The diagram applies only to water heating units (not electric heating).



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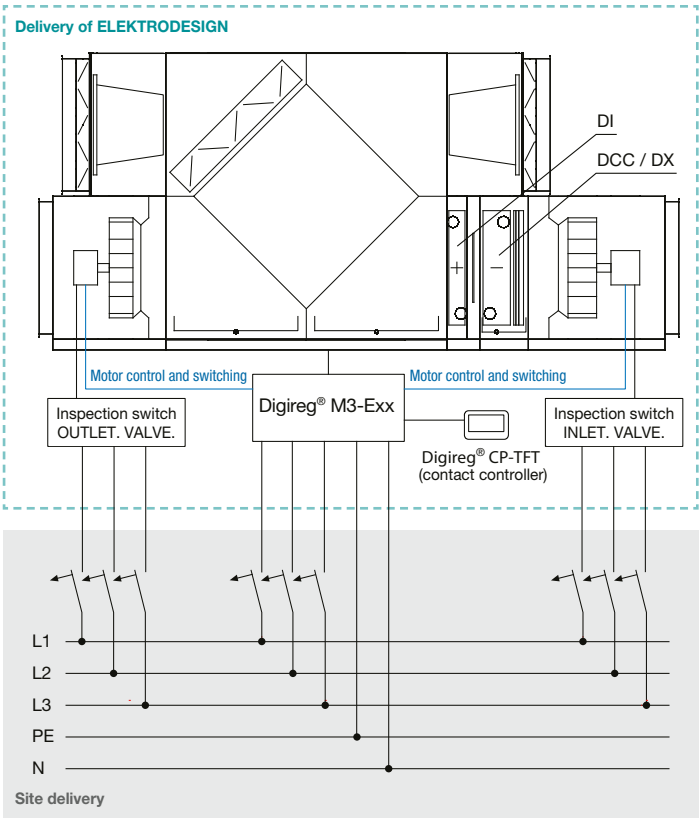
Soler&Palau Ventilation Group

I/C power supply logic schemes

Variant for A/C units Modular XLH / XLHL with motor power above 2× 6 kW
(6 kW and more – unit inlet section,
6 kW and more – unit outlet section).
The variant applies only for units with electric heating of max. power 72 kW.



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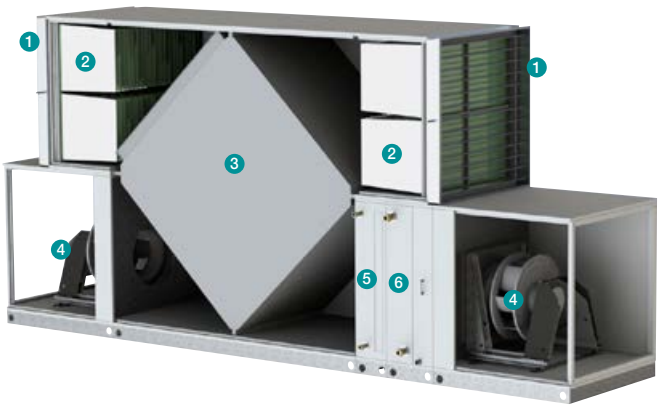
Supplementing figures

Basic components of the unit

1. Supply air and return air damper
2. Supply air and return air filter rack designed for type G3 to F9 filter efficiency and HEPA filter.
3. Heat recovery module. Cross-flow or rotating wheel type of heat exchanger.
4. Supply air and exhaust air motors. EC motors or AC motors with frequency drive.
5. Hot water coil with a capilary tube for freeze protection/ Electric heat strip
6. Chill water coil or DX coil with water droplets eliminator and condensation pan.



Performance tables of units
DUOVENT® MODULAR XLH / XLHL

Model	Nominal volumetric air flow [m³/h]
XLH 2, XLHL 2	2,000
XLH 2.5, XLHL 2.5	2,500
XLH 3.15, XLHL 3.15	3,150
XLH 4, XLHL 4	4,000
XLH 5, XLHL 5	5,000
XLH 6.3, XLHL 6.3	6,300
XLH 8, XLHL 8	8,000
XLH 10, XLHL 10	10,000
XLH 12.5, XLHL 12.5	12,500
XLH 16, XLHL 16	16,000
XLH 20, XLHL 20	20,000
XLH 25, XLHL 25	25,000
XLH 31.5, XLHL 31.5	31,500
XLH 40, XLHL 40	40,000
XLH 50, XLHL 50	50,000
XLH 63, XLHL 63	63,000
XLH 80, XLHL 80	80,000
XLH 100, XLHL 100	100,000

Minimum service space of units
DUOVENT® MODULAR XLH / XLHL

Before the final unit assembly, it is necessary to assure that all unit access clearances are met and the unit's service doors are accessible.

- At the fan chamber min. 0,7times of chamber part width, but minimum 600 mm to enable sliding the aggregate out.
- At the filter chamber min. 600 mm for removal of filtering cassettes.
- At the exchanger chamber (heaters or coolers) min. 1,15times width of the chamber part to slide the exchanger o ut.
- At the eliminator chamber min 1 ,15times width of the chamber part to s lide the exchanger out.
- At chamber with plate recuperation e xchanger min. 1.15times of chamber part width to slide the plate exchanger out.
- At chambers fitted with doors min. 600 mm for maintenance access.
- Distance of combustible objects min. 200 mm from the unit.