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Model : **HRflat 1000 / KWin (Weight: 165,5 kg)**

The HRflat heat recovery unit is compact unit with self-contained casing from galvanized metal sheet. Bottom part of the casing has lacquered finish advantage in case of shown installation. Casing's insulation thickness is 30 mm. The unit is equipped with radial fans with TAC motors low on consumption. On both inlet and outlet the unit is fitted with desk filters M5 (G4 for HRflat 450). Furthermore the unit is equipped with counterflow heat exchangers with efficiency up to 90%, condensation tub, modulating by-pass 100% and automatic condensation pumping. Total height of the unit enables easy mounting into ceiling. Condensed water does not drop into siphon but is drained away with pump. The unit is delivered with an prewired regulation. More details on [www.lemmens.com](http://www.lemmens.com).

**Supply : Fans + Regulation + Electric coil KWin**

Voltage : 1 x 230V - 50 Hz  
Intensity : 19,2 A max.  
Electrical protection : D20A - 10KA - AC3

**Fans - TAC**

Units are equipped with high efficiency TAC technology fans. They are driven by electronically commutated motors and allow accurate control of the fan's actual working point. The efficiency of the motor remains between 85% and 60%, whatever the working point. The motor is a permanent magnet DC driven motor but AC power supplied.

	<u>Supply</u>	<u>Exhaust</u>	
Airflow :	1000	1000	m³/h
Internal pressure drop :	159	184	Pa
External pressure drop :	300	300	Pa
Extra available pressure drop :	38	13	Pa
Rotation speed :	1417	1451	rpm
Voltage :	230	230	V
Intensity :	2,55	2,68	A
Power :	417	439	W
SFP W/(m³/h) [W/(l/s)] :	0,42 [1,50]	0,44 [1,58]	

Fan name : DS 11-4 TAC 1/2 HRf1000  
Number of fans : 1 + 1

Sound power spectrum (fan only)-(dB re.10E-12 W/m<sup>2</sup>)

	63	125	250	500	1000	2000	4000	8000	Hz
S	86,0	81,0	76,0	69,0	71,0	64,0	59,0	54,0	dBL
E	86,5	81,5	76,5	69,5	71,5	64,5	59,5	54,5	dBL

Radiated A weighted Sound pressure level for ducted unit  
in free field (d=3m) 43,7 dBA

(RF=600000000/DF=1/ZF=20.40)-(dB re. 20  $\mu$ Pa)

## Regulation

The units are delivered fully pre-wired as standard ('plug & play') with general switch and complete regulation of the unit. The latter includes all the necessary components and is fully wired to T° probes, fans, general switch, by-pass. Connect the power supply and configure the parameters and the unit is ready to run.

The regulation monitors each component:

- Setting and piloting of TAC fans in selected mode: CA (constant flow), CP (constant pressure measured by an optional external sensor) or LS (link with signal 0 - 10V, for example a CO2 air quality sensor).
- Automatic freecooling control with bypass
- Antifrost system of the air/air heat exchanger (airflow modulation or electrical coil). Device mounted outside the unit
- Control of external post-heating coil (water or electrical) or cooling coil (water), or reversible coil (heating or cooling water coil)
- Open/Close motorized dampers
- Time slot management (scheduling)
- Alarms management (fire, pressure, maintenance, component failure,...)
- Display and management of all system parameters via RC, GRC, BMS or web page (option)
- MODBUS communication (RTU, TCP/IP and GPRS) (option)

## Pre-heating (Electric) - KWin

An electrical pre-heating coil avoids the risk of frost. The KWin is delivered completely pre-wired with its regulation, allowing to operate at outside temperatures of -20°C for an inside temperature of +20°C, without risk of frost and without altering the balanced ventilation. If this option is chosen, the system standard anti frost system by unbalancing the in and out airflows is automatically made inactive.

Maximal capacity :	3 kW	Air speed :	2,23 m/s	Air inlet temperature :	-25,0 °C
Supply :	1 x 230V - 50 Hz	Pressure drop :	13 Pa	Air outlet temperature :	-16.1 °C (3.0 kW)

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**Heat Recovery unit - CF**

The heat exchanger is an air/air high efficiency counterflow heat exchanger, executed in sea water resistant aluminium, at a temperature of up to 80°C. The airtightness tests according to DIN1946 show a leakage rate of 0.017 % at 400 Pa difference between the 2 air streams. The heat exchanger is compliant to standard EN 308.

Air pressure : 1013 mbar

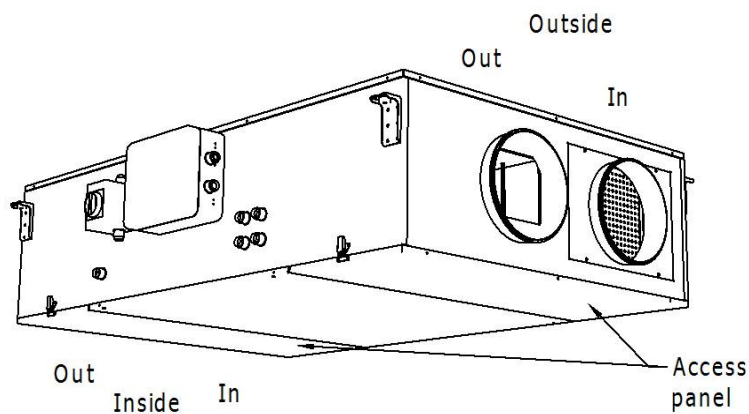
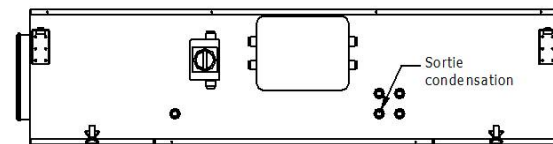
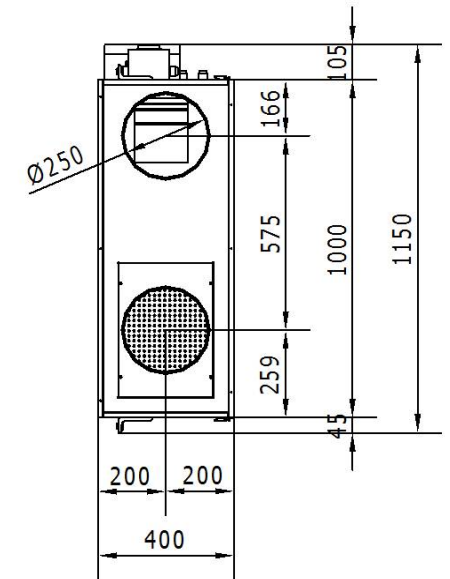
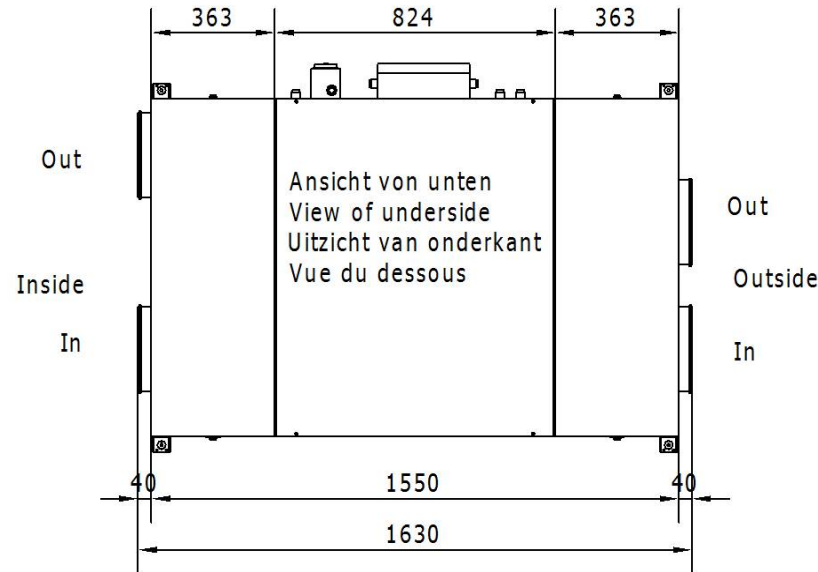
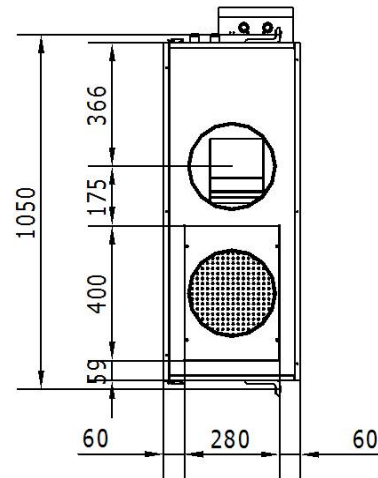
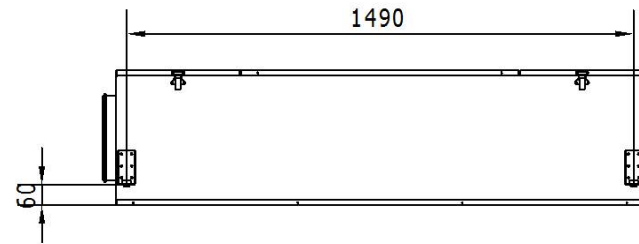
	<u>Supply</u>	<u>Exhaust</u>		<u>Supply</u>	<u>Exhaust</u>	
Airflow :	1000	1000	m³/h	Air outlet temperature :	18,0	-3,1 °C
	0,28	0,28	m³/s	Relative humidity out :	6,5	100,0 %
Airspeed through HRU :	1,68	1,93	m/s	Humidity out :	0,8	2,9 g/kg
Air inlet temperature :	-16,1	22,0	°C	Total capacity (W.B.) :	11,5	kW
Relative humidity in :	90,0	40,0	%	HRU efficiency (W.B.) :	89,6	%
Humidity in :	0,8	6,6	g/kg	Pressure drop in REC :	112	150 Pa

**Filter - G/F**

The heat recovery ventilation unit is equipped with M5 (G4 for 450) class plane filters at the inlet of the polluted air and M5 (G4 for 450) class plane filters at inlet of the fresh air, to correctly protect the heat exchanger and guarantee optimum air quality inside the building. However, the unit is originally delivered with a G4/G4 starter kit of filter. Once the unit has been running for a few weeks, filters need to be replaced by a M5/M5 (G4/G4 for 450) filters kit. Filters are easily accessible through the access doors for maintenance purposes. M5/F7 (G4/F7 for 450) filters kit are available as an additional option.

				<u>Supply</u>	<u>Exhaust</u>	
Filter class :	M5	Dimensions :	337 x 465 x 50 mm	Air speed :	1,77	m/s
		Quantity :	1	Filter pressure drop :	34	Pa
Filter class :	M5	Dimensions :	337 x 465 x 50 mm	Air speed :	1,77	m/s
		Quantity :	1	Filter pressure drop :	34	Pa

**Circular inlet - ER ø 250 mm**
**Circular outlet - SR ø 250 mm**



Index	Date	Modification	Par	Contrôlé
Toutes les cotes sont des cotes extérieures / All dimensions are outside dimensions				
Date : 17/10/2011 Unité : mm Dessiné par : M.H.		Titre : HRflat 1000 (PLC)		
		Client/Customer :		
		Code client/Customer code:		Numéro de plan : Drawing number :
				886207

## Regulation No 1253/2014 (Ecodesign Lot 6)

### Technical specifications for HRflat 1000

Manufacturer		P. Lemmens Company
Product identification code		886207
Typology		NRVU / BVU
Motorization		Variable speed
Type heat exchanger		Counterflow
Thermal efficiency (%)	@ nominal	80
Nominal airflow (m³/s)		0,28
Electrical power absorbed (W)	@ nominal	510
SFP int (W/(m³/s))	@ nominal	1148
Face velocity (m/s)	Supply	1,77
	Exhaust	1,77
Nominal external static pressure (Pa)		100
Internal pressure drop of ventilation components (Pa)	Supply	168
	Exhaust	168
Fan static efficiency as No 327/2011 (%)		40
External leakage rate (%)	@ 400 Pa	L3 ( < 3%)
Internal leakage rate or EATR (%)	@ 250 Pa	2
Radiated sound power level of the unit (dBA)	@ nominal	66
Energy consumption of the filters	Supply	NA
	Exhaust	NA
Disassembly instructions on internet		<a href="http://www.servolux.lv">www.servolux.lv</a>

To learn more about the directive Ecodesign, visit <http://eur-lex.europa.eu>

## Regulation No 1253/2014 (Ecodesign Lot 6)

### HRflat 1000 at working point

Dry thermal efficiency (supply) (%)	80
Dry thermal efficiency limit (2016) (%)	67
Efficiency bonus E (2016) (W/(m <sup>3</sup> /s))	390
Filter correction F (2016) (W/(m <sup>3</sup> /s))	200
SFP_int (W/(m <sup>3</sup> /s))	1110
SFP_int limit (2016) (W/(m <sup>3</sup> /s))	1348

### Compliance area LOT 6 2016

