

# **Flexit** air handling units C2 and UNI 2, 3,4



 energy efficient ventilation for a healthy indoor environment





# **Energy-efficient ventilation**

# Flexit C2 and UNI 2, 3, 4

The air handling units are well suited for both villas and apartments. The emphasis is very much on energy efficiency, quietness, ease of use and design.



# Save on building costs!

The UNI units are very efficient with a low SFP \*). This allows redistribution within the energy limits, making it possible to reduce the thickness of insulation or choose windows with a higher U-value, for example. The total cost of the building can be reduced by opting for the C2 and UNI 2, 3, 4.

# It can solve "problem houses"

The UNI's good energy values can solve some problem houses. In houses with extra large windows or other challenges when it comes to energy requirements it is possible to stay within the overall energy limits and have the building approved by using the C2 and UNI 2, 3, 4.

# **Right up to Passive House standard**

It goes without saying that the UNI air handling units have been developed to meet the requirements of the latest regulations. They also meets the Passive House standard. The Passive House standard sets minimum thermal efficiency requirements for heat recovery systems in excess of 80%, nominally 82% or above, and a specific fan power (SFP) of less than 1.5 for ventilation systems. Satisfying these requirements will give the house owner a highly energy-efficient ventilation system that satisfies the standards of the future today.

\*) The SFP (Specific Fan Power - kw/m³/s) is an expression of the energy required by the fans in the unit to transport air.

# High performance in every key area

The regulations set efficiency and SFP requirements with a view to limiting energy consumption in buildings. The C2 and UNI 2, 3, 4 offer high performance in every key area and have been optimised to deliver clean, fresh air with high heat recovery and low energy consumption – in the same time they're quiet.

## Low SFP

A good SFP requires not only an efficient motor, but also an efficient impeller and optimal fitting in the fan casing and unit. The result is low energy consumption and therefore a low SFP. Flexit has used new technology for the impeller and casing/fitting to ensure an optimum outcome and superior SFP. (SFP less than 1.5)



### High efficiency – low pressure drop

The UNI unit's have been optimised for energy saving. The geometry and flow of the rotor solution provide the highest possible efficiency and lowest possible pressure drop, resulting in turn in a better SFP. Efficiency well in excess of 80% offers good opportunities for redistribution in energy calculations. The rotor motor has low energy consumption – 3 watt.

Flexit UNI 3

#### Quiet

Virtually noiseless fans, optimal air flow design inside the unit and good soundproofing mean that the unit is extremely quiet. The result is low radiated noise in the room where the unit is located and low noise in bedrooms and living rooms. The suspension rail with its damper reduces the transmission of structural noise to the wall. All these factors combined mean that noise levels are well within requirements.

## **Requirement-controlled ventilation**

In addition to high efficiency and low SFP, energyefficient ventilation is also about supplying the right amount of air at the right time.

A number of control options make it possible to automate ventilation, ensuring a good indoor environment and low energy consumption.

## Serviceability

The unit has quick links for fans and rotor module so that service should be easy to perform.

## Clean, fresh air

Fine filters for both intake and exhaust remove contaminants from the outdoor air and protect the rotor from contamination. Separate filter cassettes make changing filters a simple matter.

## Efficient and reliable in the cold too

The rotor technology offers high efficiency even in the cold, which in turn ensures high annual efficiency. The UNI series are well insulated and have been tested in severe cold in SINTEF's cold laboratory.

## Patent pending on rotor system

# **Requirement-controlled ventilation**

In addition to high efficiency and low SFP, energy-efficient ventilation is also about supplying the right amount of air at the right time.



# the right amount of air at the right time

It is also possible to use a number of control options such as timer, CO<sub>2</sub>, pressure, humidity and the presence of people to automate ventilation so as to ensure a good indoor environment and low energy consumption.



#### Key to the colour codes used in the ventilation system:

- Extract air. Contaminated air is removed from wet rooms, bathrooms and toilets.
- Supply air. Filtered, conditioned air is supplied to bedrooms and living rooms.
- Exhaust air. Contaminated air is expelled from the house.
- Outdoor air. Clean, fresh air is drawn in from outside.

#### CO, sensor (art.nr. 110991)

in living room sends a signal to the unit regarding the contamination level in the room. increase ventilation to max setting. Requires 230V operation voltage and control cable between sensor and unit. Multiple sensors - paralleled connection.



#### Fireplace

A fireplace requires an adequate air supply to ensure a good updraught and prevent smoke from coming into the room. Wireless control panel (art.no. 113243) for in-creasing the air supply if a fireplace is used. It can be positioned near the fireplace for accessibility. Simple retrofitting without laying cables.





## Kitchen ventilation – two alternative solutions



1. Kitchen fan with direct exhaust out of the buildina. Wireless pressure guard (art.no. 113242) can be located in exhaust from kitchen hood. If the pressure changes when the damper is adjusted, the pressure sensor sends a signal to the unit to adjust the air supply.

**Pressure guard for kitchen** duct with cable (art no 111410).



## 2. Unit connected to external kitchen hood. During cooking the extract air from the kitchen hood bypasses the rotary wheel heat exchanger. The unit comes with a separate duct connection for a kitchen hood as standard.

# Flexit C2 - user friendliness and quality given priority

Air handling unit with high-efficiency rotating heat exchanger and low-energy fans. Specially designed to fit small apartments, row houses, and is well suited for barrack units and flats. The unit has a low overall height and are particularly suited for ceiling mounting. Its compact design makes the unit easy to place.

C2 unit can be placed under the ceiling, in the attic, on the wall. The unit controlled by control panel (CI 60 or CI 600) in white or black.



- 80% energy efficiency at 150 m<sup>3</sup>/h
- Can be placed both under ceiling, attic or wall
- Provides a very good indoor climate with balanced ventilation
- Low weight and height
- Stocked for short delivery





# Flexit UNI 2, 3, 4 - user friendliness and quality given priority

Balanced ventilation has become standard in new homes. This means that installation has to be made as simple and safe as possible. New users want products to be simple to operate. The cold Nordic climate makes tough demands with regard to



**Easy to install** The suspension rail for wall mounting has a rubber damper, which reduces the transmission of structural noise to the wall.



operation and functioning in the cold. The C2 and UNI 2, 3, 4 have been developed to satisfy all these requirements, guaranteeing occupants clean, fresh air in an energy-efficient way – all year round.



Flexit UNI 3. Details may differ on other models.

## **Smart opening mechanism**

The door opens in a single movement. The door hinge at the bottom of the unit makes the door easy to swing out and remove when necessary.







# **Protection against condensation**

To avoid the formation of condensation, it is particularly important for the outdoor and exhaust air ducts to have insulation and a plastic sleeve all the way down to the unit. The duct insulation should be taken right down to the polystyrene around the nipple and secured with the ties provided.

7

#### **Easy-to-change filters**

The units have filters (F7) with a high filter grade for supply air and extract air to ensure that the air entering the building is clean. The filters also ensure that the unit stays clean.

Regular filter changes and fan cleaning is necessary and will ensure that the air handling unit works optimally. Read more on www.flexit. com



## Attic installation, UNI 4

The back door on UNI 4 can be removed so the unit depths do not exceed the minimum width for the attic stairs (484 mm).



## **Connection options**

The Flexit UNI 3 and UNI 4 are universal, flexible units with several connection options for ducts. The units can be installed on the wall or floor – horizontally or sideways. They can be located in a cold zone such as the loft.

- 1. On the wall. Here we use the enclosed wall bracket. Duct cover is available as accessory.
- On the floor (lying on back). Recommended to use absorption feet (available as accessories).
- 3. The ceiling (UNI 2). Installation is done directly in the ceiling, without wall bracket.



## Sideways installation

The unit can be installed sideways on. In this case the door opens on a side hinge (UNI 3/4). Showed with duct cover in the bottom of the unit.



## **Flexible duct connetion**

Duct connections for outdoor air and extract air, if preferred, be moved to the bottom of the unit by exchanging the nipples and covers (UNI 3/4).



# Ceiling mounting plate UNI 2

Use ceiling bracket for easy mounting of UNI 2 in concrete ceiling or between wooden beams.



# Flexit C2

Art.no.	Туре	
700030	C2 RER	right model, EC-fan, with electric element
700031	C2 REL	left model, EC-fan, with electric element
700032	C2 R_R	right model, EC-fan, without electric element
700033	C2 R_L	left model, EC-fan, without electric element

# Flexit UNI 2

Art.no.	Туре	
700084	UNI 2 RER EC	right model, EC-fan, with el.element
700085	UNI 2 REL EC	left model, EC-fan, with el.element
700086	UNI 2 R_R EC	right model, EC-fan, without el.element
700087	UNI 2 R_L EC	left model, EC-fan, without el.element

# Flexit UNI 3

Art.no.	Туре	
700040	UNI 3 RER EC	right model, EC-fan, with el.element
700041	UNI 3 REL EC	left model, EC-fan, with el.element
700042	UNI 3 R_R EC	right model, EC-fan, without element
700043	UNI 3 R_L EC	left model, EC-fan, without element

# Flexit UNI 4

Art.no.	Туре	
700060	UNI 4 RER EC	right model, EC-fan, with el.element
700061	UNI 4 REL EC	left model, EC-fan, with el.element
700062	UNI 4 R_R EC	right model, EC-fan, without element
700063	UNI 4 R_L EC	left model, EC-fan, without element









# **Technical data**

	C2 R	C2 R	UNI 2 RE	UNI 2 R	UNI 3 RE	UNI 3 R	UNI 4 RE	UNI 4 R
	with el.element	without el.element	with el.element	without el.element	with el.element	without el.element	with el.element	without el.element
Rotated voltage	1 x 230 V	1 x 230 V	230v 50 Hz	230v 50 Hz	230v 50 Hz	230v 50 Hz	230v 50 Hz	230v 50 Hz
Fuse	1 x10 A	1 x10 A	10 A	10 A	10 A	10 A	10 A	10 A
Rated current total	3,0 A	1,5 A	4,4 A	0,9 A	6,16 A	1,4 A	7,2 A	2,1 A
Rated power total	670 W	170 W	1015 W	215 W	1416 W	216 W	1655 W	355 W
Rated power, el.element	500 W		800 W	-	1200 W		1300 W	
Rated power, fans	85 W	85 W	212 W	212 W	2 x 106 W	2 x 106 W	2 x 175 W	2 x 175 W
Rated power, rotor motor			3 W	3 W	3 W	3 W	3 W	3 W
Fan type	B-hjul	B-hjul	B-wheel	B-wheel	B-wheel	B-wheel	B-wheel	B-wheel
Fan motor control	0-10 V	0-10 V	0-10V	0-10V	0-10V	0-10V	0-10V	0-10V
Fan speed, max rpm	4050 rpm	4050 rpm	3390 rpm	3390 rpm	3 390rpm	3 390rpm	2 930rpm	2 930rpm
Auto. control standard	CU 60	CU 60	CS 60	CS 60	CS60	CS60	CS60	CS60
Filtertype	F7	F7	F7	F7	F7	F7	F7	F7
Filter dimensions (WxHxD)	293x226x48	293x226x48	335x130x113	335x130x113	419x192x31	419x192x31	459x207x31	459x207x31
Weight	46 kg	46 kg	45 kg	45 kg	67 kg	67 kg	86 kg	86 kg
Duct connection	Ø 125 mm	Ø 125 mm	Ø 125 mm	Ø 125 mm	Ø 160 mm	Ø 160 mm	Ø 160 mm	Ø 160 mm
Kitchen hood connection			Ø 125 mm	Ø 125 mm	Ø 125 mm	Ø 125 mm	Ø 125 mm	Ø 125 mm
Height	525 **	525 **	780 mm *)	780 mm *)	700 mm	700 mm	700 mm	700 mm
Width	900 **	900 **	632 mm	632 mm	720 mm	720 mm	900 mm	900 mm
Depth	350 **	350 **	408 mm	408 mm	520 mm	520 mm	540 mm	540 mm

\* see dimensioned drawing for dimensions, including fixing brackets.

9

# **Product description**

Flexit C2 and UNI 2, 3, 4 the air handling units with high efficiency rotary heat exchanger. The products are designed to be installed in technical rooms, washrooms, storage rooms, lofts or other suitable spaces. The units can be mounted vertical, horizontal or sideways and can be connected to the kitchen hood. Suitable for both new and existing homes and small offices. The units come with EC fans and are equipped with two F7 compact filters. C2 and UNI 2, 3, 4 controlled via the control panels CI 60 or CI 600.



**System drawing C2** (with electric battery) (shown as a right-hand model)

1	FI1	Supply air filter F7
2	FI2	Extract air filter F7
3	M1	Supply air fan
4	M2	Extract air fan
5	HR-R	Rotary heat exchanger
6	M4	Rotormotor
7		Control unit
8	К	Cooker hood
9	B1	Supply air temperature sensor
10	B4	Outdoor air temperature sensor
11	EB1	Heating element
12	F10	Heating overheating thermostat man
13	F20	Heating overheating thermostat auto



#### **General picture shows UNI 3**

(left model with heating element)

Go to www.flexit.com for other models.

1 (FI2)	Extract air filter F7
2 (FI1)	Supply air filter F7
3 (EB1)	Heating element
4 (F10)	Overheating thermostat (manual reset)
5 (F20)	Overheating thermostat (automatic reset)
6 (M1)	Supply air fan
7 (M2)	Extract air fan
8 (HR-R)	Heating rotor recovery system
9 (M4)	Rotor motor
10	Control board
11	Connection for external kitchen hood
12	Temperature sensor, supply air
13	Temperature sensor, outdoor air

# Symbols Used

These products have a number of symbols that are used to label the product itself and in the installation and user documentation.

SUPPLY AIR







EXTRACT AIR





# **Male connection**



#### UNI 3 and UNI 4



Left model , top



Left model , bottom



Left model , top



Right model , top



Right model , top



Right model , bottom

# **Control panels**

# Contemporary design, ease of use and automatic adjustment

With our control system the ventilation system can be controlled automatically or the system can be adjusted directly. There are two control panels to choose from and both are in an attractive design with user-friendly operation.

# Flexit CI 60

The CI 60 control panel has all the necessary control functions. It is possible to adjust and control speed and temperature on the panel. The panel gives a signal if there is a fault in the unit or the filter needs changing. The panel is the right size to fit a single wall box and comes with a low-voltage cable for connection to the unit. Several panels can be connected if ventilation needs to be controlled from several places in the dwelling.



The air handling unit is adjusted on the control panel. The picture shows the control panel open. The panel are in white or black and attractive with easy-to-understand buttons and indicators.

# Flexit CI 600

**The Flexit CI 600** has lots of extra refinements and control options. In addition to the standard functions on the CI 60, CI 600 has the following features:

- Timer function.
- Extract air control.
- Option of communication by Modbus.

• High-resolution colour display with text and symbols. The panel displays indoor and outdoor air temperature. Functions and alarms appear on the display with help messages. The panel is the right size to fit a single wall box and comes with a low-voltage cable for connection to the unit. If ventilation needs to be controlled from several places in the dwelling, a CI 60 panel and wireless forcing switch can be used.

#### The panel displays:

- Time and date
- Outdoor air temperature
- Room temperature
- Current speed of ventilation unit
- Daily/weekly timer active
- Additional heating activated/ deactivated



# **Advanced control and monitoring - Modbus**



#### **Advantages with Modbus**

- Remote control
- Monitoring
- Receive alarm
- Increased operational
- Demand control ventilation
- Quick and effective service

#### What is Modbus?

An accessory that allows the air handling unit can be controlled and monitored from a superior system. The superior system can be a system for houses and apartments that pairing control of ventilation with heat and lighting. This provides opportunities to integrate various systems that need control the number of cases. Example can be Home / Away function.

Communicates through standard MODBUS RTU/RS-485 to the superior system.



# **Control panels**

Art.no.	Туре
09410	CI 60 Control panel, black
09411	CI 60 Control panel, white
09415	CI 600 Control panel, black
09416	CI 600 Control panel, white



# **Kitchen hoods for external connection**

Art.no.	Model
110604	Vision-E/F, 60cm
110603	Vision-E/F, 90 cm
110607	Elegant–E/F, 60 cm steel
110608	Elegant–E/F, 60 cm black
110609	Elegant–E/F, 60 cm white
13750	Brasserie-E, white
13751	Brasserie–E, steel
13626	Bistro-E
13616	Fondue-E



Art.no.	Accessories	C2	UNI 2	UNI 3	UNI 4
114606	Filter set complete C2	~			
111738	Filter set complete UNI 2		~		
110716	Filter set complete UNI 3			~	
110898	Filter set complete UNI 4				~
09415	CI 600 Control panel, black w/timer	~	~	~	~
09416	CI 600 Control panel, white w/timer	~	~	~	~
09410	CI 60 Control panel, black	~	~	~	~
09411	CI 60 Control panel, white	•	~	~	~
113243	Forcing switch, wireless	~	~	~	~
113244	Extra forcing switch	~	~	~	~
09390	SP 450 Motion detector	~	~	~	~
113242	Pressure guard for kitchen duct, wireless	~	~	~	~
111410	Pressure guard for kitchen duct, w/cable	~	~	~	~
111156	Temperature sensor, NTC	~	~	~	~
110987	Humidity sensor	~	~	~	~
110991	CO <sub>2</sub> -sensor	~	~	~	~
09861	Smoke detector	~	~	~	~
111647	Modbus-adapter	~	~	~	~
114784	Electrical element complete C2	~			
111756	Electrical element complete UNI 2		~		
110861	Electrical element complete UNI 3			~	
110862	Electrical element complete UNi 4				~
114786	Vannbatteri komplett C2	~			
111805	Water coil Ø125 komplett		~		
112667	Water coil Ø160 Type A complete			~	
112668	Water coil Ø160 Type B complete			~	
112669	Water coil Ø160 Type C complete			~	
112670	Water coil Ø200 Type A complete				~
112671	Water coil Ø200 Type B complete				~
111801	Closing air damper w/spring Ø125		~		
14482	Closing air damper w/spring Ø160	~		~	~
14481	Closing air damper w/spring Ø200			<b>v</b>	~
14485	Closing air damper w/spring Ø250				~
56596	Motor shunt, 230V	~	~	<b>~</b>	~
110939	Valve, KVS 0,25 2-way	~	~	~	~
110940	Valve, KVS 0.4 2-way	<b>~</b>	~	~	~
111812	Valve, KVS 0,63 2-way	~	~	~	~
111814	Valve, KVS 1,0 2-way	~	~	~	~
112815	Valve, KVS 4,0 2-way	~		~	~
112817	Valve, KVS 1,6 2-way	~		~	~
110941	Valve, KVS 0,25 3-way	~	~	~	~
110942	Valve, KVS 0,4 3-way	~	~	~	~
111813	Valve, KVS 0,63 3-way	~	~	~	~
111815	Valve, KVS 1,0 3-way	~	~	~	~
112816	Valve, KVS 4,0 3-way	~		~	~
112818	Valve, KVS 1,6 3-way	~		~	~
114266	Ceiling mounting, left model		~		
114268	Ceiling mounting, right model		~		
114281	Ceiling mounting kit anti vibration		~		
114330	Ceiling mounting kit anti vibration		~		
111823	Duct cover, UNI 2, height 32,7cm		~		
110956	Duct cover, UNI 3, height 33.5cm			~	
111135	Duct cover, UNI 4, height 34.5cm				~
114788	Wall bracket C2	~			
110955	Absorption feet for floor mounting (4 pcs.)	~	~	~	~















**System drawing** (with heating element) *(left model)* 

- B1 Temperature sensor, supply air
- B4 Temperature sensor, outdoor air
- EB1 Heating element
- F10 Overheating thermostat, manual reset
- F20 Overheating thermostat, automatic reset
- FI1 Supply air filter
- FI2 Extract air filter
- M1 Supply air fan
- M2 Extract air fan
- HR-R Heat recovery system
- M4 Rotor motor
- K Kitchen hood



# **System drawing** (without heating element) *(left model)*

- B1 Temperature sensor, supply air
- B4 Temperature sensor, outdoor air
- FI1 Supply air filter
- FI2 Extract air filter
- M1 Supply air fan
- M2 Extract air fan
- HR-R Heat recovery system
- M4 Rotor motor
- K Kitchen hood





## Correction factor for Lw

Hz	63 Lw(dB)	125 Lw(dB)	250 Lw(dB)	500 Lw(dB)	1000 Lw(dB)	2000 Lw(dB)	4000 Lw(dB)	8000 Lw(dB)	LwA (dBA)
Supply	4	4	4	-2	-9	-11	-17	-24	
Extract	11	7	5	-4	-11	-18	-25	-30	
Radiated 1	-9	-17	-18	-31	-34	-33	-34	-38	-24
Radiated 2	-7	-9	-8	-27	-28	-29	-31	-35	-16

## Capacity and sound data – UNI 2





#### **Correction factor for Lw**

Hz	63 Lw(dB)	125 Lw(dB)	250 Lw(dB)	500 Lw(dB)	1000 Lw(dB)	2000 Lw(dB)	4000 Lw(dB)	8000 Lw(dB)	LwA (dBA)
Supply air	6	6	3	-1	-8	-13	-22	-30	
Extract air	9	9	6	-5	-18	-21	-33	-33	
Radiated	-39	-27	-21	-22	-31	-34	-39	-43	-18

**Sound data** is given at sound power level LwA in the capacity diagrams and is corrected with the table below for the various octave bands. Radiated noise produces Lw in the various octave bands and total LwA. This is read directly from the supply air table







#### **Correction factor for Lw**

Hz	63 Lw(dB)	125 Lw(dB)	250 Lw(dB)	500 Lw(dB)	1000 Lw(dB)	2000 Lw(dB)	4000 Lw(dB)	8000 Lw(dB)	LwA (dBA)
Supply air	7	5	4	-2	-9	-13	-23	-28	
Extract air	8	8	0	0	-15	-21	-31	-32	
Radiated	-17	-10	-13	-29	-38	-38	-41	-37	-19

**Sound data** is given at sound power level LwA in the capacity diagrams and is corrected with the table below for the various octave bands. Radiated noise produces Lw in the various octave bands and total LwA. This is read directly from the supply air table





#### **Correction factor for Lw**

Hz	63 Lw(dB)	125 Lw(dB)	250 Lw(dB)	500 Lw(dB)	1000 Lw(dB)	2000 Lw(dB)	4000 Lw(dB)	8000 Lw(dB)	LwA (dBA)
Supply air	6	8	3	-3	-10	-14	-23	-29	
Extract air	9	8	3	-1	-13	-25	-35	-36	
Radiated	-45	-31	-23	-32	-35	-35	-42	-46	-21

**Sound data** is given at sound power level LwA in the capacity diagrams and is corrected with the table below for the various octave bands. Radiated noise produces Lw in the various octave bands and total LwA. This is read directly from the supply air table

Our products are subject to continuous development and we therefore reserve the right to make changes. We also disclaim liability for any printing errors that may occur.

# Flexit – the safe choice!

Flexit specialises in home ventilation and delivers clean, fresh air solutions for a healthy indoor environment. Flexit is the market leader in home ventilation and has been supplying ventilation solutions to Norwegian homes since 1974. Flexit is a Norwegian company and all products are developed specially for the Nordic climate. Products are tested and documented in accordance with the latest standards.

# That gives you peace of mind!

# **The SPIRIT range**

# - energy efficient ventilation for a healthy indoor environment

Stricter energy requirements in the regulations and the new Passive House Standard demand efficient air handling units, and the SPIRIT range has been developed to meet that need. High targets for energy efficiency, quietness, user friendliness and quality characterise the whole range, and new models will be introduced in the future. All the models are equipped with high-efficiency rotating recovery systems and have low-energy fans. Together with the new control system, this means that the SPIRIT range sets a new standard in home ventilation.





Flexit K2R With an integrated kitchen hood. It's specially designed for flats. It has a highefficiency rotary recovery system and lowenergy fans. The unit is very quiet. Flexit C2 Specially designed to fit small apartments, row houses, and is well suited for barrack units and flats. The unit has a low overall height and are particularly suited for ceiling mounting.



Flexit UNI 2 Air handling unit with high-efficiency rotary recoversy system, low-energy fans and control system. Design for flats, small dwellings and passive houses.



Flexit UNI 3

Air handling unit with high-efficiency rotary recovery system, lowenergy fans and control system. Designed for small dwellings, singlefamily houses, small office buildings and passive houses..



Flexit UNI 4

Air handling unit with high-efficiency rotary recovery system, lowenergy fans and a new control system. Design for bigger homes, small office buildings and passive houses.



NORSK DESIGNRÅD NORWEGIAN DESIGN COUNCIL

**SINTEF,** working together with Flexit, has developed optimal technological solutions with the emphasis on energy efficiency and good indoor environment. The Norwegian Design Council, working together with Flexit, has conducted user surveys to ensure optimal user friendliness. Hareide Designmill has assisted Flexit with design development.



