AIR DESIGN
AIR HANDLING | HEAT RECOVERY

INSTALLATION & MAINTENANCE INSTRUCTIONS

PREMA CEILING VOID ENERGY RECOVERY VENTILATION UNITS

THESE INSTRUCTIONS MUST BE READ FULLY BEFORE COMMENCING INSTALLATION.

REF: AD PREMA INST ISSUE A: 12.09.17

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INSTALLATION & MAINTENANCE INSTRUCTIONS
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Introduction

The information contained in this document provides details of installation, operation and maintenance for installers and users. The PREMA ceiling void energy recovery ventilation range comprises a combination of high efficiency centrifugal fans with EC motors, a counter flow design plate heat exchanger and a casing with acoustic treatment.

General information regarding performance and specifications for the equipment may be obtained from our technical literature, and / or project specific documentation.

General

All maintenance procedures shall only be carried out whilst the product is isolated from electrical supplies. In order to minimise the risk of a fan motor unit being started accidentally during maintenance, it is recommended that central control panels / switchboards are clearly marked with a suitable warning sign.

In addition, before connecting an electrical supply cable to any terminal board, please ensure that the line voltage matches that stated on the product label. Should product labels become illegible over time it is recommended that these be replaced.

Delivery

All equipment is inspected prior to despatch and leaves the factory in good condition. Upon receipt of the equipment an inspection should be made and any damage indicated on the delivery note. No responsibility will be accepted for damage sustained during the offloading from the vehicle or on the site thereafter. All claims for damage and / or incomplete delivery must be reported within two days of receipt of the equipment.

The usual method of packing for these products is to be loaded onto pallets and shrink wrapped to minimise water ingress.

Safety Standards and “CE” Marking

In-line with our policy of continuous product improvement, we are constantly striving to deliver more efficient products that comply with current safety standards. The standards and guidance contained within this documentation therefore reflect compliance with these safety standards and regulations. In addition to the advice given within this document, we strongly recommend that all personnel who may be exposed to risks during the installation, use or maintenance of our equipment, should ensure that they comply with all relevant safety regulations that are in force within their respective countries.

Elta Group Building Services does not accept responsibility for personal injury or damage caused to property resulting from non-compliance with these safety standards, or as a result of any none approved product modifications.

Warning / Danger Labels

All internal cabling is situated within the bypass channel, behind the isolator panel. No drilling into this unit is permissible, as any such action may result in an electric shock and will void the external L2 leakage rating (this applies to all of the panels and controls area).

The units can have a number of different warning labels or symbols affixed to it, which should not be removed.

Product risks have been analysed in accordance with Machinery Directive 2006/42/CE. The associated directive handbook contains information and advice for all responsible personnel and is designed to minimise possible risks of personal injury or damage to property.

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Maintenance Regulations

Personnel responsible for maintenance must work in accordance with any accident prevention (safety) regulations that are in force in your area. In particular the following recommendations should be complied with:

- Wear suitable safety clothing and protection to minimise the risk of accident
- Ensure that a safety interlock is off and locked so that the units may not be started by non-authorised personnel

Disassembly and Re-assembly

Before starting any disassembly or re-assembly operation, please ensure that the product is isolated from its mains electrical supply in order to ensure that fans cannot be run. As disassembly and re-assembly are not part of routine maintenance, these should be carried out by qualified personnel.

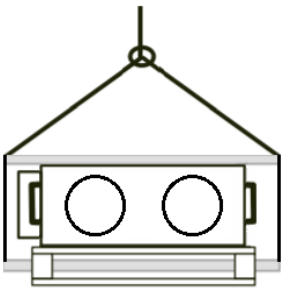
Disposal

Please ensure that products are dismantled and disposed of, in an environmentally friendly way, in accordance with the Waste Electrical and Electronic Equipment (WEEE) Directive 2012/19/EU together with the RoHS Directive 2002/95/EC, where applicable.

Handling and Offloading

Before offloading products, please ensure that the means of transport / lifting is suitable to accommodate the required weight and size. The units are shipped on a pallet; a forklift truck should be used. Lift the unit into position by passing the forks of a forklift truck through the pallet.

Alternatively, the equipment may be lifted from above using a crane. Lifting beams should be passed through the pallet in the same way as the forks of a forklift truck would be inserted. When lifting, spreaders must be used to avoid damage to the casing. Care must be taken to ensure that slings are correctly positioned.



CAUTION: Handles, controls enclosures, duct connectors or pipework connectors are NOT designed to be load-bearing, and under no circumstances must these be used to support or move the equipment during installation. Failure to observe this may result in severe damage to the equipment.

Storage

The equipment must be stored in a dry internal location. Ductwork connection apertures must be sealed against the ingress of dust, water and vermin. Do not stack units.

Whenever any access panels are removed for inspection purposes they must be replaced and made secure.

Filters

All filters must be suitably wrapped and sealed to prevent damp and ingress of dust or foreign bodies, and must be held in a dry store.

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Equipment Start-Up

Before operating the following checks must be made:

- Ensure that inlet / outlet connections are free from obstruction
- Check that all product components are securely fastened in their associated sealing gaskets
- Manually rotate each fan impeller to ensure that it does not rub or bind onto the inlet cone
- Ensure that any inspection or access doors are closed

CAUTION: If fan inlets or discharges are not connected to duct work, please ensure suitable guards are fitted for protection before the unit is started. Check that electrical connections have been made correctly, especially the earth connection.

IMPORTANT: Electrical connections must be made by qualified personnel.

Installation & Assembly

We recommend that the unit is fitted and fastened into its correct position before making connections to ductwork, condensate discharge pipe work or electrical connections.

The correct installation position for the units shall be decided with due regard to access and maintenance requirements. The units are heavy and should be mounted using the Ceiling Void Mounting Kit (CVMK) supplied as an optional extra.

The CVMK comprises of three (3) off appropriately sized Unistrut Support channels, c/w neoprene isolation pads and 6 Unit stops. Use the Unit stops to locate the unit centrally on the isolation pads and supporting channels.

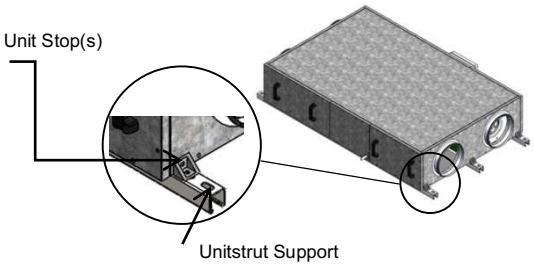
Threaded drop rods or suspension chains (supplied by others) must be used in order to facilitate ceiling fastening and levelling.

Other suitable methods of support can be used in conjunction with either a Teco pad or Rubber strip material (recommended running the full length of the unit) to isolate any vibration. This must be assessed for structural suitability.

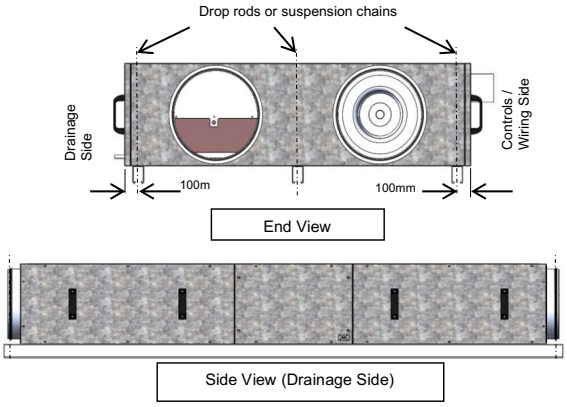
Heat recovery components may produce condensation during use. A condensate pump is not provided as standard, and is available as an optional extra.

We recommend the use of the Micro-V intelligent condensate removal pump (See page 9 for details). The drain connection terminates approximately 50mm outside from the panel and must be connected to a suitable drainage point. Introduce a small amount of water into the condensate tray to verify free flow into the drain.

Units must be installed in accordance with good industry practice.



Unit Size	CVMK
PREMA180	783-MK-180
PREMA330	783-MK-330
PREMA540	783-MK-540
PREMA900	783-MK-900



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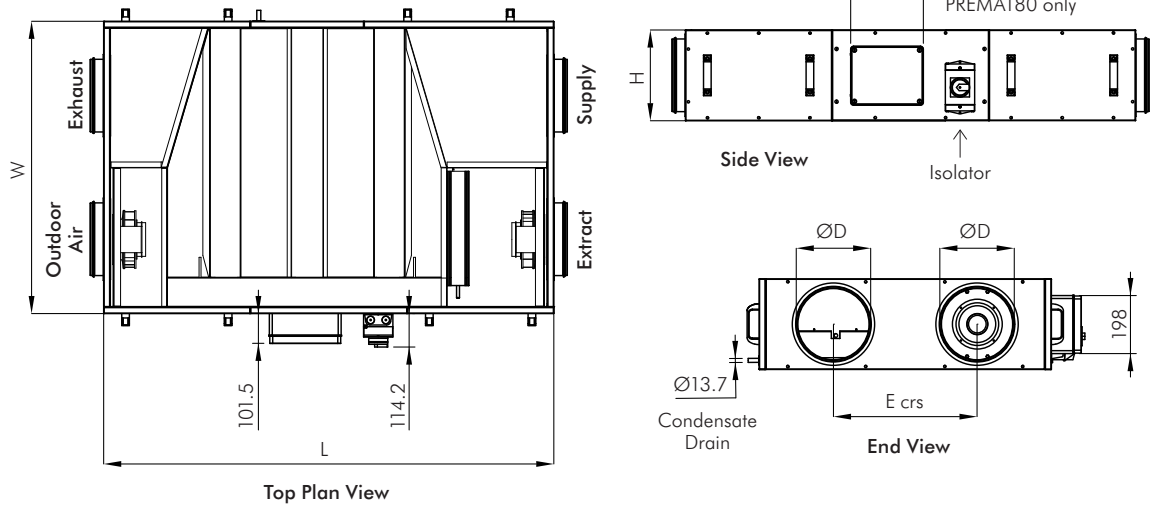
Unit Dimensions



Product	L	W	H	D	E	Weight kg
PREMA180	1537	997	308	250	490	125
PREMA330	1914	1286	363	315	610	194
PREMA540	2066	1496	474	355	750	241
PREMA900	2206	1496	624	500	750	330

All dimensions are expressed in mm.

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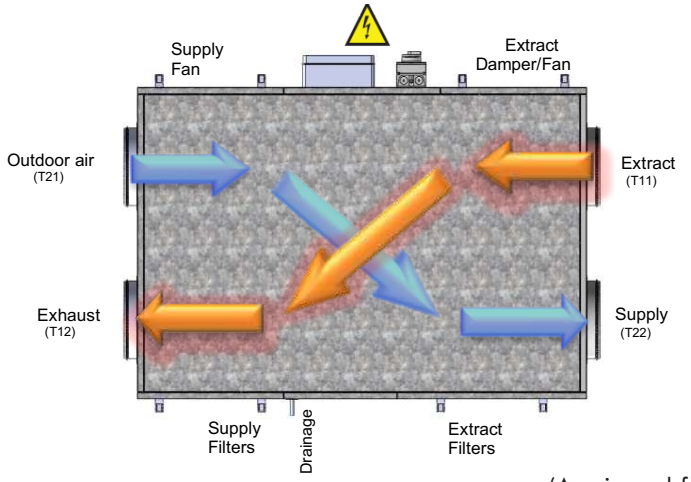
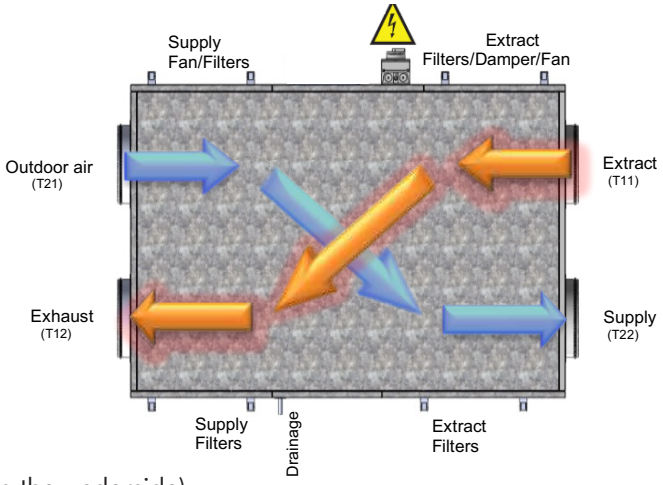
Unit Outline

Note: These units must be mounted and be fully levelled in the horizontal plane.

PREMA180

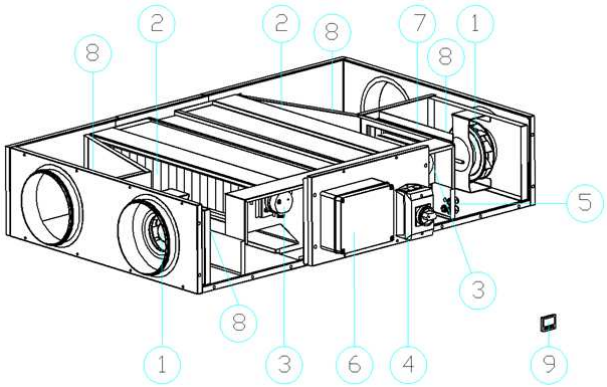


PREMA330, PREMA540 & PREMA900



(As viewed from the underside)

See page 8 for minimum maintenance and service space, maintenance purposes and removal of filters.



Item	Description	Notes
1	Fan(s)	Supply / Extract
2	Filter Set(s)	Supply filter Grade F7 Extract filter Grade M5
3	Pressure Switches	DPS83 – 50Pa to 500Pa
4	Isolator	220V to 240V 50/60Hz
5	Damper Actuator	Belimo TF230 – Spring return 230V 1Ph 50/60Hz
6	Control Board	Internal mounted on sizes 330,540 & 900
7	Face and Bypass Damper	-
8	Temperature Sensors (set of 4 pcs)	NTC sensors (10K @ 25°C)
9	Room Controller	Max cable length 30m
others	Grab Handles	-
	Panel Stop(s)	Manual loosening / Tightening

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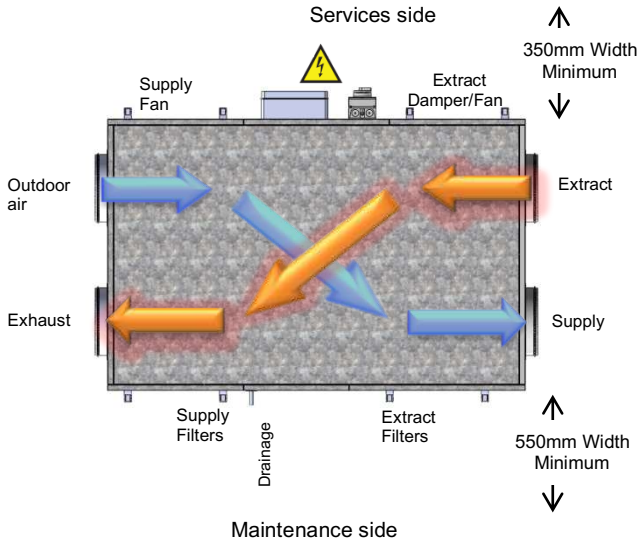
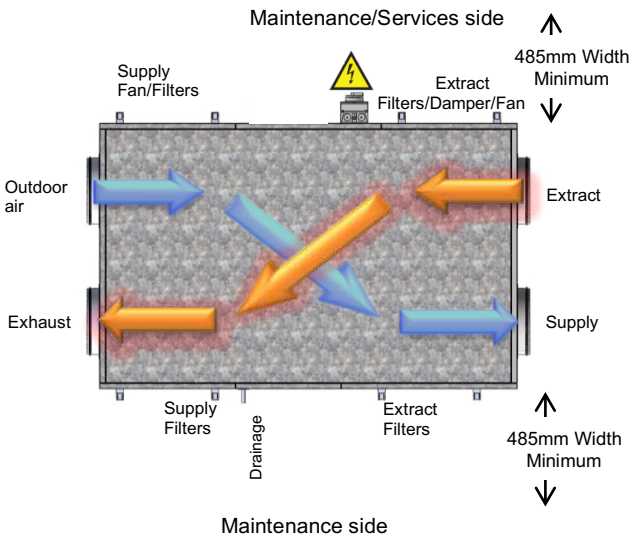
Minimum Space Required for Maintenance

Access into the equipment is via access panels located on proper functioning both sides of the unit.

PREMA180 & PREMA330



PREMA540 & PREMA900



(As viewed from the underside)

Unit Size	Unit Width (mm)
PREMA180	997
PREMA330	1286
PREMA540	1496
PREMA900	1496

Note: For convenience it is preferred that wherever possible, this minimum access provision is not adopted, and "the requirement could be satisfied if 600mm space is provided." (As stated in "The Building Regulations Part F").

Condensation Removal

Condensation removal is essential for the proper functioning of the energy recovery unit.

The unit is equipped with a condensate drainage point with an outside diameter of Ø13.7mm (¼" MDP), terminating approximately 50mm from the panel.

If not using the recommended "783-CDP" Micro-V intelligent condensate removal pump, a drain trap should be attached to ensure effective evacuation of water during normal operation.

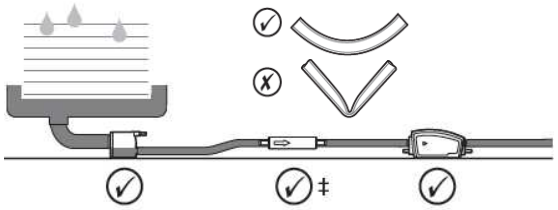
"783-CDP" Micro-V intelligent Condensate pump specification

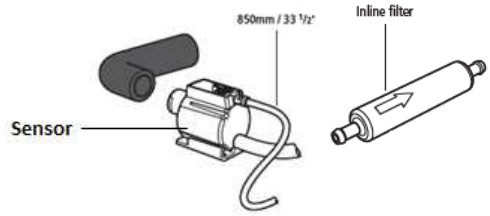
Maximum flow rate = 14.5 L/h

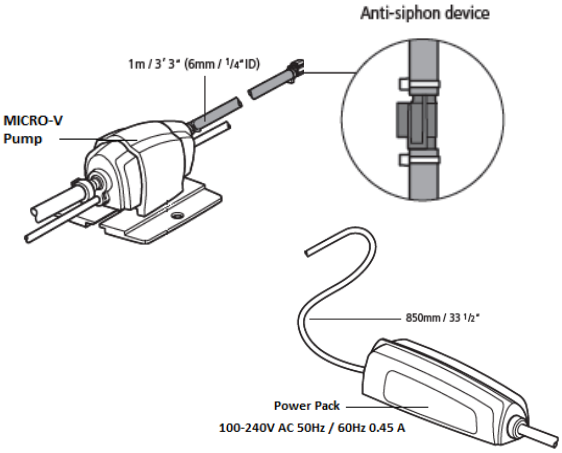
Maximum head = 10m Vertical

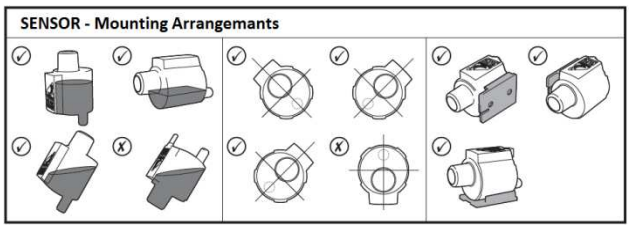
Pump power supply = 100V to 240V AC 50Hz / 60Hz 0.45 A

Pipe connection size = 12mm to16mm (Low pressure condensate connection)









Controls

The controller software is designed to handle four different applications. Each application has its own set of parameters (input value range, set points, p-band, min and max speeds, etc.) and control function. The application is pre-selected when manufactured but can be changed like the other parameters using the CTRL-DSP.

When the device is enabled, the fan speeds are controlled by the value of the 0-10VDC CONTROL INPUT SIGNAL, depending on the application e.g. CO_2 sensor, pressure control, BMS or manual.

Applications

0-10V control

Control input signal 0-10VDC determines the fans speed 0-100% of configured max. speed.
High input signal gives high fan speed.

CO_2 control

The room's CO_2 content (Control input signal 0-10VDC mapped to CO_2 sensor range) is controlled by a P controller (P band).
High CO_2 rate gives high fan speed.

Pressure control

Duct air pressure (Control input signal 0-10VDC mapped to pressure sensor range) is controlled by a Proportional, Integrating and Derivating (PID) controller.
High pressure value gives low fan speed.

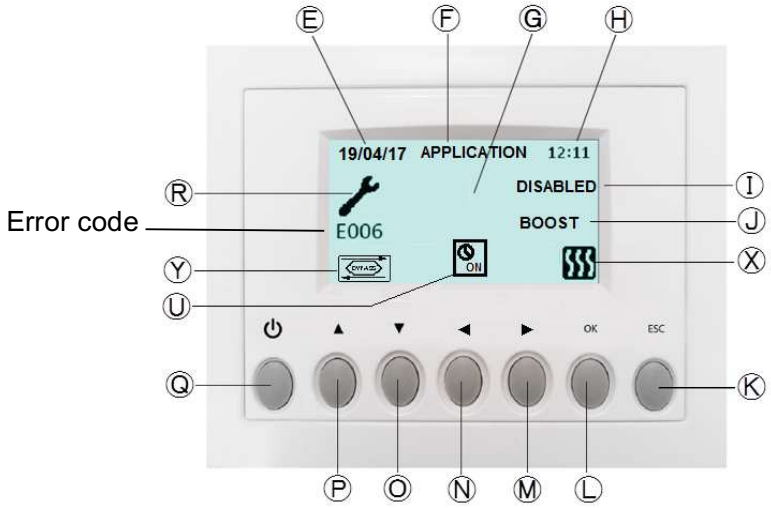
Manual fan speed control

The fan speed is set manually using the CTRL-DSP UP and DOWN buttons (resolution 1%).

Fixed speed

With the unit enabled and fixed speed input open, fans will run at fixed speed, settable in parameter P06.

CTRL-DSP Display



E	**DATE:** shows the current date
F	**APPLICATION:** shows the current application
G	**MODE:** shows auto fan [all modes except manual] or manual position
H	**TIME:** shows the time
I	**Remote Enable:** shows remote enable is disabled
J	**Boost:** fans run at full speed 10V
K	**ESC key:** to exit and go back to the previous menu
L	**OK key:** to enter the selected menu
M	Menu scroll **RIGHT**

N	Menu scroll **LEFT**
O	To go **DOWN** in menus
P	To go **UP** in menus
Q	**On / Off:** power the unit (hold for 5 seconds)
U	**TIMECLOCK:** shows timeclock on / off
R	**FAULT:** shows error alarm, refer to error codes
Y	**BYPASS:** shows when active
X	**HEATER:** shows heater output is active
	ERROR CODE – see page 26

To enter the main menu press OK or ESC
To exit the main menu press ESC or wait approx. 60 seconds

Auto mode applications

0-10V, CO_2 and pressure

Manual mode

Main menu on CTRL-DSP

Display Functions

Use ▲ or ▼ to select required menu

Press OK to enter any parameter

P02 to P04 only visible in selected applications Pressure or CO_2

P12 only visible if P11 set to 'Pre' or 'Post' heating type

Main Menu
Language
Date / Time
P01: Fan Application
P02: Sensor Range MIN
P03: Sensor Range MAX
P04: Setpoint
P05: PID Control
P06: Fixed Speed Value
P07: Run On Time (minutes)
P08: Min Fan Speed
P09: Max Fan Speed
P10: Extract Fan Speed Offset
P11: Heating Type
P12: Heating Threshold (only If P11 set)
P13: Desired Temperature
P14: Max Free Heating Temperature
P15: Min Free Cooling Temperature
Weekly Timer
Working Hours Counter
Save Settings
Load Settings
Restore Default Settings
Contrast
Debug Page

Main Menu Functions

Main Menu
Language

Allows selection of language between English and Italian*
Press OK to enter
Language is flashing: use ▲ or ▼ to choose
Press OK to select
*The factory setting (DEFAULT) is English

Main Menu
Date / Time

Allows selection of date and time
Press OK to enter
Use ▲ or ▼ to choose
Press OK for setting and again to confirm
Press ESC to go back to the previous menu

Main Menu
P01: Application

Allows selection of desired application
Press OK to enter
Application is flashing: use ▲ or ▼ to choose
Applications available:
0-10V: Input signal 0-10VDC determines the fans speed
0-100% of the configured max. Speed. High input signal gives high fan speed

MANUAL: The fan speed is set manually using the CTRL-DSP's UP and DOWN buttons

PRESSURE: Duct air pressure (control input signal 0-10VDC mapped to pressure sensor range) is controlled by a PID (proportional, integrating and derivating) controller. High pressure value gives low fan speed

CO_2: The room's CO_2 content (control input signal 0-10VDC mapped to CO_2 sensor range) is controlled by a P controller (P band). High CO_2 rate gives high fan speed

Press OK to select

The factory setting (DEFAULT) is 0-10V
Refer to Application Control Functions for further information

Main Menu
P02: Sensor Range MIN

Parameter is not visible when application is MANUAL or 0-10V
Allows selection of desired maximum sensor value
Press OK to enter
Value is flashing: use ▲ or ▼ to choose
Press OK to select
Available settings are:

Application	Default	Min	Max	Min Value Change	Unit Value
CO_2	0	0	1000	100	ppm
PRESSURE	0	0	0	0	Pa

Main Menu
P03: Sensor Range MAX

Parameter is not visible when application is MANUAL or 0-10V
Allows selection of desired minimum sensor value
Press OK to enter
Value is flashing: use ▲ or ▼ to choose
Press OK to select
Available settings are:

Application	Default	Min	Max	Min Value Change	Unit Value
CO_2	2000	1000	2500	100	ppm
PRESSURE	300	50	1000	10	Pa

Main Menu
P04: Setpoint

Parameter is not visible when application is MANUAL or 0-10V
Allows selection of desired minimum sensor value
Press OK to enter
Value is flashing: use ▲ or ▼ to choose
Press OK to select
Available settings are:

Application	Default	Min	Max	Min Value Change	Unit Value
CO_2	1000	0	2000	100	ppm
PRESSURE	150	0	300	10	Pa

Main Menu
P05: PID Control

Allows selection of PID response
Press OK to enter
PID mode is flashing: use ▲ or ▼ to choose
PID Modes available:
SLOW: Global gain set to 0.2, other PID values default
NORMAL: Global gain set to 0.5, other PID values default
FAST: Global gain set to 0.9, other PID values default
CUSTOM: Custom is automatically selected if advanced settings in service menu changed
Press OK to select

The factory setting (DEFAULT) is NORMAL
Refer to Control Functions and SERVICE Menu for advanced PID settings

Main Menu
P06: Fixed Speed Value

Allows selection of the fixed speed value
When the device is enabled and the fixed speed input is open, the unit runs at a fixed speed
Press OK to enter
Value is flashing: use ▲ or ▼ to choose
Press OK to select
Available settings are:

Default	Min	Max	Min Value Change	Unit Value
10	10	100	1	%

Main Menu
P07: Run On Time (minutes)

Allows selection of the Run On Time (minutes)
When the device is enabled and the remote enable input is open
Press OK to enter
Value is flashing: use ▲ or ▼ to choose
Press OK to select
Note: Run on is active only on supply fan (where heater is normally fitted)
Available settings are:

Default	Min	Max	Min Value Change	Unit Value
3	3	20	1	minutes

Main Menu
P08: Min Fan Speed

Allows adjustment of the minimum fan speed value
Press OK to enter
Value is flashing: use ▲ or ▼ to choose
Press OK to select
Available settings are:

Default	Min	Max	Min Value Change	Unit Value
20	10	50	1	%

Main Menu
P09: Max Fan Speed

Allows adjustment of the minimum fan speed value
Press OK to enter
Value is flashing: use ▲ or ▼ to choose
Press OK to select
Available settings are:

Default	Min	Max	Min Value Change	Unit Value
100	50	100	1	%

Main Menu
P10: Extract Fan Speed Offset

Allows adjustment of the fan speed value for the EXTRACT fan
Press OK to enter
Value is flashing: use ▲ or ▼ to choose
Press OK to select
Available settings are:

Default	Min	Max	Min Value Change	Unit Value
0	-20	+20	1	%

Main Menu
P11: Heating Type

Allows selection of Heating Type response
Press OK to enter
Heating Type mode is flashing: use ▲ or ▼ to choose
Heating Type Modes available: none, PRE, POST

HEATER: Heater runs depending on heating type:

- NONE: The HEATER output is never activated
- PRE: The HEATER output is activated if T21< P12
  Heating Threshold Hysteresis = ± 2.5°C
- POST: The HEATER output is activated if T22< P12
  Heating Threshold Hysteresis = ± 1°C

The heating is always off when the unit is disabled

Main Menu
P12: Heating Threshold

Parameter is only visible when application P11 is set to PRE or POST
Allows adjustment of the Heating Threshold value
Press OK to enter
Value is flashing: use ▲ or ▼ to choose
Press OK to select
Available settings are:

Heating type	Default	Min	Max	Min Value Change	Unit Value
Pre	6	0	15	1	°C
Post	20	15	25	1	°C

Main Menu
P13: Desired Temperature

Allows adjustment of the Desired Temperature value for bypass
Press OK to enter
Value is flashing: use ▲ or ▼ to choose
Press OK to select
Available settings are:

Default	Min	Max	Min Value Change	Unit Value
23	15	30	1	°C

BYPASS: Bypass Damper runs depending on temperature parameters and temperature values as follows:

SUMMER: Bypass is ON only if (P15 Tmin free cooling < T21 < T11-1°C) AND (T11 > P13 desired temperature)

WINTER: Bypass is ON only if (P14 Tmax free heating > T21 > T11+1°C) AND (T11 < P13 desired temperature)

In all other conditions BYPASS is not activated

See page 7 for temperature sensor locations

Main Menu
P14: Max Free Heating Temp

Winter Heating

Allows adjustment of the Max Free Heating Temperature value
Press OK to enter
Value is flashing: use ▲ or ▼ to choose
Press OK to select
Available settings are:

Default	Min	Max	Min Value Change	Unit Value
28	25	30	1	°C

Main Menu
P15: Min Free Cooling Temp

Summer Cooling

Allows adjustment of the Min Free Cooling Temperature value

Press OK to enter

Value is flashing: use ▲ or ▼ to choose

Press OK to select

Available settings are:

Default	Min	Max	Min Value Change	Unit Value
18	15	20	1	°C

Main Menu
Weekly Timer

Allows selection of 7 day / time clock configuration of daily timer ON / OFF settings

Press OK to enter

Value is flashing: use ▲ or ▼ to choose ON

Use ◀ or ▶ to select day of the week

Press OK to select ON time

Use ▲ or ▼ to select time

Use ◀ or ▶ to scroll through values

"Copy on [next day]": OK to choose YES, ESC to choose NO

"Save program?": OK to choose YES, ESC to choose NO

Unit to be internally enabled / disabled by internal time clock, resolution 15'

If day / time clock is activated, icon shows the unit status (enabled / disabled) via the dedicated clock icon (see Ⓤ on page 11)

Operation is "OR" mode – either one REMOTE ENABLE INPUT or CLOCK ENABLE must be active for the unit to run

Note: Remote enable input (HY / S1) is closed will over ride weekly timer function

Available settings are four ON / OFF times per day

Day	
ON	OFF
00:00	00:00
00:00	00:00
00:00	00:00
00:00	00:00

Main Menu
Working Hours Counter

Provides a count of number of unit working hours. This value cannot be changed. The data is saved both on the CTRL-DSP and the PCB

Press OK to enter

Press OK / ESC to return to main menu

Main Menu
Save Settings

Allows saving the setting of parameters in the internal memory of the CTRL-DSP to be loaded afterwards in other units

Press OK to enter

Use ▲ or ▼ to choose the position where to save the setting

Up to 8 different settings can be saved

Press OK to select

Press OK to confirm

Press ESC to go back to the previous menu

Main Menu
Load Settings

Allows loading of the saved setting on the next unit

Press OK to enter

Use ▲ or ▼ to choose the desired saved setting

Press OK to select

Press OK to confirm

Press ESC to go back to the previous menu

Main Menu
Restore Default Settings

Allows restoring all the factory settings (DEFAULT)

Press OK to enter

Press OK to confirm

Main Menu
Contrast

Allows you to set the LCD contrast

Use ▲ or ▼ to increase or decrease the contrast

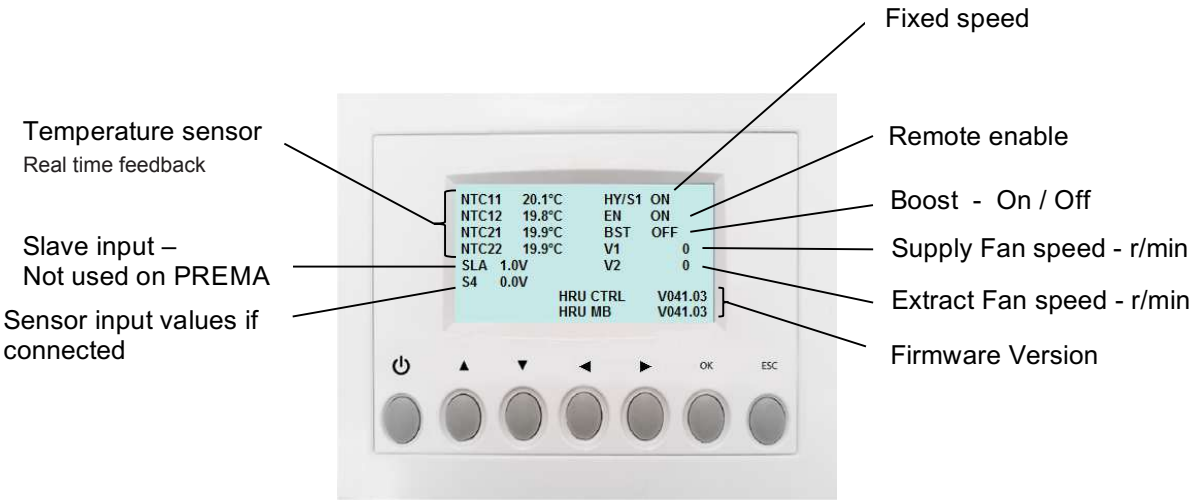
Press OK to confirm

Main Menu
Debug Page

Shows the internal functional parameters of the unit

Press OK to enter

Press ESC to go back to the previous menu



Fixed speed (HY / S1) – ON / OFF

Remote Enable (EN) – ON / OFF

Boost (BST) – ON / OFF

Fan speed r/min (V1 & V2) - only available if fan status signal (SO2) is set to tacho output.

Firmware version (HRU CTRL) - Controller Display

(HRU MB) - Mother board

Sensor input value (S4) – if sensor is connected

Slave input value (SLA) – not used on PREMA range

Temperature Sensor (NTC11 - 22) - real time sensor feedback

Service Menu Functions

Service Menu on CTRL-DSP

To enter the main menu press OK for 3 seconds

To exit the main menu press ESC or wait approx. 60 seconds

Service Menu
S01: Parameter Summary
S02: Fan Status Signal
S03: Custom PID - Global Gain
S04: Custom PID - Proportional Band
S05: Custom PID - Integration Time (Pressure)
S06: Custom PID - Derivation Time (Pressure)
Debug Page
Control Debug Page

Shows the extended functional parameters of the unit

Press OK to enter

Press ESC to go back to the previous menu

Service Menu
S01: Parameter Summary

Shows values for each parameter

Use ▲ or ▼ to view parameters

Press ESC to go back to the previous menu

Service Menu
S02: Fan Status Signal

Allows selection of the fan status method (normally FACTORY SET)

Press OK to enter

Value is flashing: use ▲ or ▼ to choose

Press OK to select

Available settings are:

Tacho	The fan(s) has a tacho output (open-collector - hall sensor) connected to RPM-GND. The running status is indicated by the presence of the RPM signal
Relay	The fan(s) healthy signal

Service Menu
S03: Global Gain

Allows adjustment of the global gain for applications to be fine-tuned / adjusted beyond P05

Press OK to enter

Value is flashing: Use ▲ or ▼ to choose

Press OK to select

Any change from default setting will drive P05 to CUSTOM

Available settings are:

Default	Min	Max	Min value change
0.5	0.1	1	0.1

Service Menu
S04: Proportional Band

Allows adjustment of the proportional band for applications to be fine-tuned / adjusted beyond P05

Press OK to enter

Value is flashing: use ▲ or ▼ to choose

Press OK to select

Any change from default setting will drive P05 to CUSTOM

Available settings are:

Application	Default	Min	Max	Min value change	Unit Value
0-10V	5	1	10	0.1	V
CO_2	1000	500	2000	100	ppm
PRESSURE	100	20	300	10	Pa

Service Menu
S05: Custom PID - Integration Time (Pressure)

Parameter is only visible when application is PRESSURE

Allows adjustment of the integration time for applications to be fine-tuned / adjusted beyond P05

Press OK to enter

Value is flashing: Use ▲ or ▼ to choose

Press OK to select

Any change from default setting will drive P05 to CUSTOM

Available settings are:

Application	Default	Min	Max	Min value change	Unit value
PRESSURE	10	5	500	5	Seconds

Service Menu
S06: Custom PID - Derivation Time (Pressure)

Parameter is only visible when application is PRESSURE

Allows adjustment of the derivation time for applications to be fine-tuned / adjusted beyond P05

Press OK to enter

Value is flashing: use ▲ or ▼ to choose

Press OK to select

Any change from default setting will drive P05 to CUSTOM

Available settings are:

Application	Default	Min	Max	Min value change	Unit value
PRESSURE	0	0	500	10	Seconds

Service Menu
Debug Page

Shows the internal functional parameters of the unit

Press OK to enter

Press ESC to go back to the previous menu

Service Menu
Control Debug Page

Shows the internal control parameters of the unit

Press OK to enter

Press ESC to go back to the previous menu

Selected Application		(e.g. temperature)
Set	Setpoint	(e.g. 20°C)
Meas	Measured Parameter	(e.g. 17.9°C)
Err	Error	The difference between the setpoint and measured parameter (e.g. -2.1°C)
Kp	Proportional Gain	A parameter of the PID controller, calculated from Global Gain and Proportional Band parameters (Service Menu)
Ki	Integral Gain	A parameter of the PID controller (used only in Pressure application), calculated from Kp and Integration Time (service menu)
Kd	Derivative Gain	A parameter of the PID controller (used only in Pressure application), calculated from Kp and Derivation Time (Service Menu)

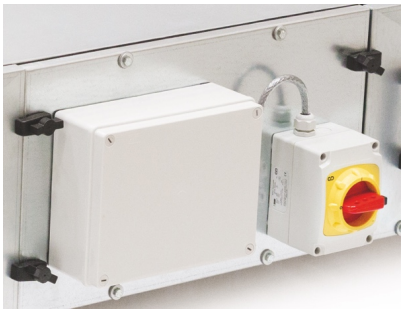
BOOST: When BST input is closed, fans run at full speed 10V. It overrides all other control inputs.

Installation - Wiring

All units are Single Phase 220V to 240V 50/60Hz. Mains must be wired directly into the 2P Single Phase Isolator. Mains is factory wired between the isolator and the main control box.

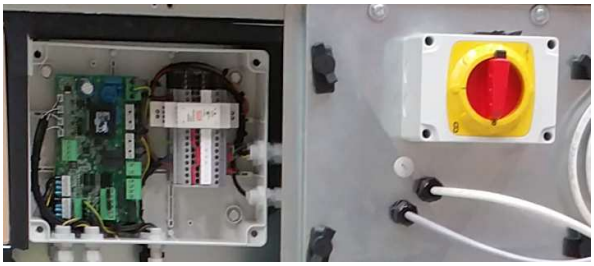
PREMA180

The control box is mounted on the outside of the unit.



PREMA330, PREMA540 and PREMA900

The control box is mounted behind the supply fan panel.
Remove to access



There are four pre-configured entry locations on the control box for external wiring entry.
The Single Phase 220V to 240V 50/60Hz mains from the isolator is factory wired.

The three remaining locations are used for:

1) Controller display
2) Filter indication
3) A N Other (BMS, external sensor etc.)

IP rated cable glands are supplied, bagged inside the control box.

Controls Board Connections

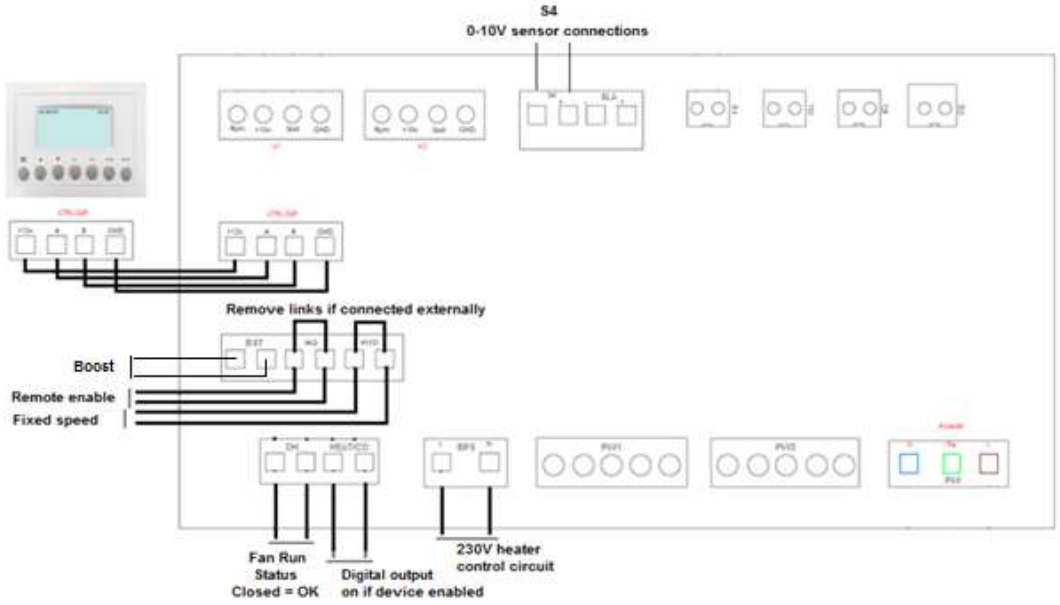
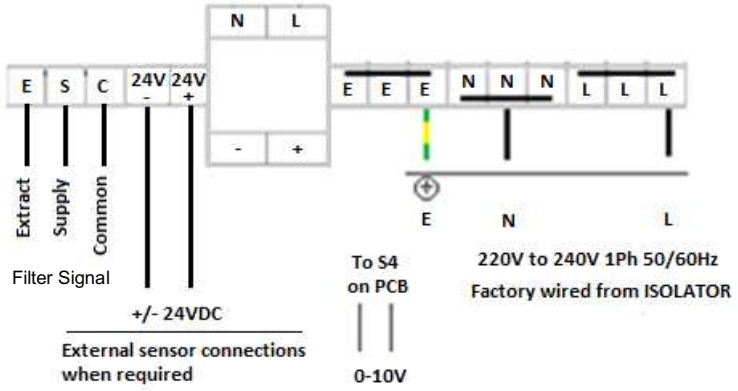
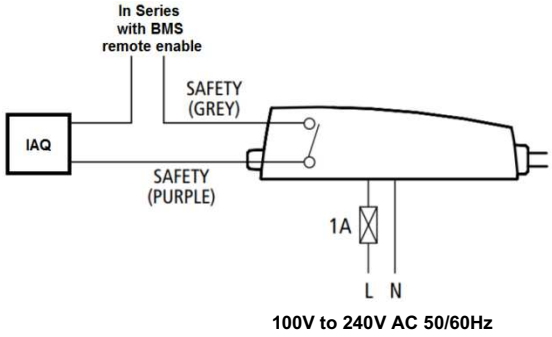


Figure 1 - Motherboard Layout

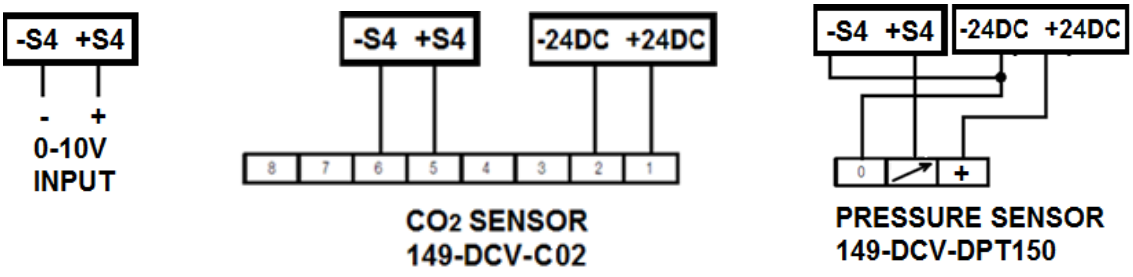
Power Supply Connections



Micro-V Intelligent Condensate Removal Pump "783-CDP"



Sensor Connections



Fault Diagnostics

In the event of a fault, Exx error code shows on user display.

Error Description

E000	No connection between CTRL-DSP and motherboard
E001	No rotation of fan 1 (supply)
E002	No rotation of fan 2 (extract)
E003	T11 thermistor fault
E004	T12 thermistor fault
E005	T21 thermistor fault
E006	T22 thermistor fault
E007	(Spare)
E008	CTRL-DSP internal clock error

INSTALLATION & MAINTENANCE INSTRUCTIONS
PREMA CEILING VOID ENERGY RECOVERY VENTILATION UNITS

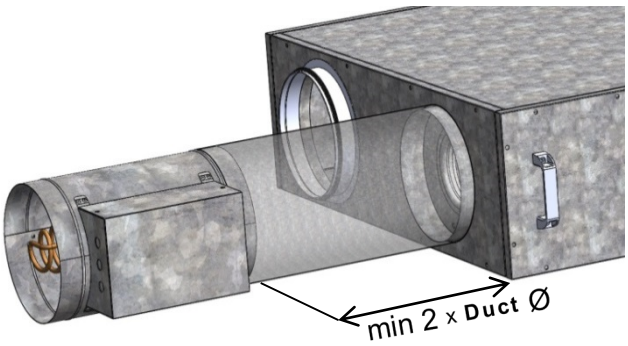
Installation, Fitting and Maintenance Instructions for Ducted Electric PRE / POST-heater

Electric PRE / POST-heater Battery

The electric heater battery is usually used for preventing frost damage to the heat exchanger and / or to bring the temperature up to its minimum operating level.

Fitting

The PRE-heater is a stand-alone electric heater battery device for duct mounted PRE-heating that is fitted to intake supply duct connection. The POST-heater is a stand-alone electric heater battery device for POST-heating, fitted to the supply duct connection. The airflow through the heater must be in the direction of the arrow located on the side of the heater close to the connection box. The heater can be fitted in either horizontal or vertical ducting but can only be fitted in ducts that are made of incombustible, hot and cold resistant material.

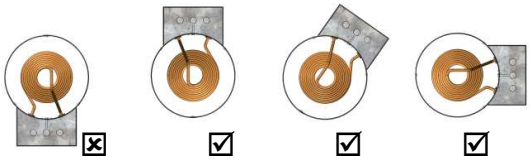


The heater must be equipped with a fixed guard which makes it impossible to touch the element.

The heater distance from the fresh air intake end should correspond to at least twice the duct diameter, otherwise there is a risk of uneven airflow through the heater, which can cause activation of the overheating cut out.

The heater must be connected by a separate suitably rated electrical supply. The heater load will vary according to unit size. Reference should be made to the information on the data sheets.

The electrical connection cabinet can be freely placed facing upwards or sideways to a maximum angle of 90°. Fitting with the terminal box facing downwards is NOT allowed.



The heater may be insulated in accordance with valid regulations for ventilation ducting. However, the insulation material must be incombustible. The cover of the heater must be free from insulation so that the name plate is visible and the cover can be removed.

The area where the heater is installed must be kept accessible to allow replacement and servicing. The distance from the heater's metal casing to any wood or other combustible material must not be less than 300mm.

Maintenance

No maintenance is required except a periodic functionality test. Work should only be carried out when the main electrical supply has been isolated and turned off.

Overheating

When the overheating cut out with manual reset has been activated, the heater must not be interfered with in any way, such as removal of the cover, except by an authorised electrical fitter. The mains power should also be turned off and an investigation carefully conducted in to the reason for activation of the cut out. When the fault has been eliminated then the cut out can be reset.

INSTALLATION & MAINTENANCE INSTRUCTIONS
PREMA CEILING VOID ENERGY RECOVERY VENTILATION UNITS

Installation, Fitting and Maintenance Instructions for Cylindrical Duct Silencers

Fitting Instructions for Cylindrical Duct Silencer

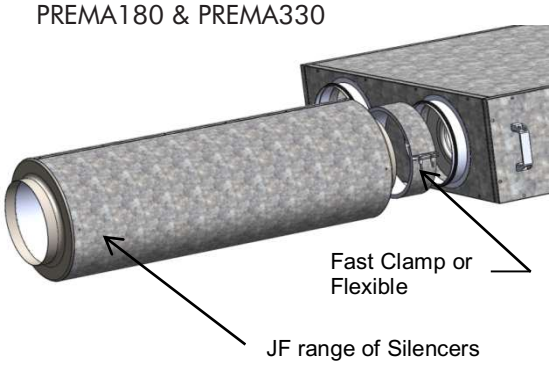
The PREMA units are supplied as standard with standard circular ducting spigots, fitted with EPDM (Ethylene Propylene) rubber U shaped seals (being ozone and UV stable) used to ensure a good seal back to the duct that is to be attached.

The spigotted range of cylindrical silencers should be attached by sliding a fast clamp connector over rubber seals on spigot and silencer spigot and tightening the bolts.

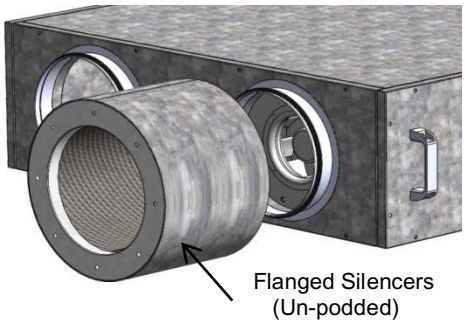
The flanged range of cylindrical silencers should be attached by sliding it over the rubber seals on the spigot.

Any attached silencer should be supported independent to the unit.

PREMA180 & PREMA330



PREMA540 & PREMA900



Maintenance Instruction for Cylindrical Duct Silencers

No specific maintenance is required. However, a periodic functionality check i out when the main electrical supply has been isolated and turned off.

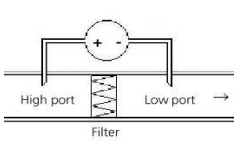
Maintenance: Filter Dirty Indication

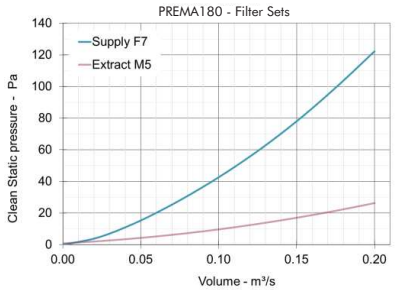
The PREMA range is factory fitted with two sensitive air differential pressure switches with scale in pascal of 50-500Pa. These switches monitor the static pressure across each of the fresh air intake and extract air filters and are used to reflect the status of the filter as being clean or dirty. The air differential pressure switches are located within the main housing. Adjusting the filter differential pressure switching set point is by means of a knob mounted under the main cover.

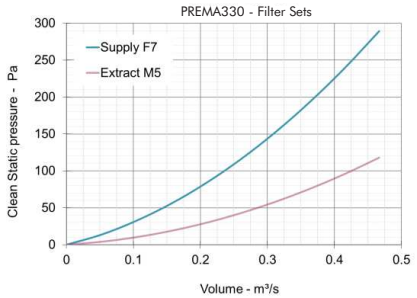
Filter pressure switches are factory set at 250Pa.

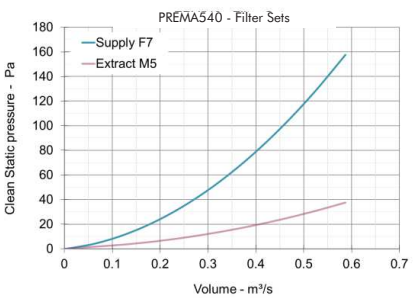
Filter Dirty Indication

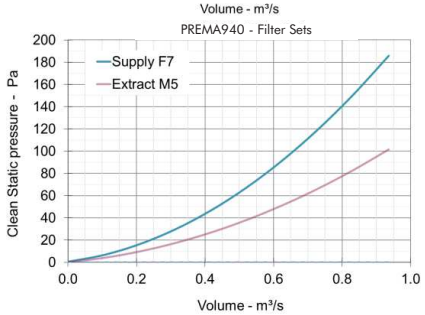
When the differential pressure across either filter reaches the switch setting value, the contacts within the switch will close. Contact status can be monitored at the appropriate terminal connections.











Maintenance: Filter Replacement (Side Access)

Filter pressure switches or indicators have been fitted and should be set or adjusted to reflect the commissioned system operation.

Filter pressure drops will depend on actual flow rate and condition. Observe and record filter pressure drops after performance commissioning.

As recommended by filter suppliers, the economical pressure drop change point is 250Pa.

To access the filters for replacement, remove the side access panel(s) by loosening the panel stops and then remove the M6 bolts (10mm spanner) from the panel. Use the plastic handle grabs to lift the panel away from the casing.

Access panels that are removed for maintenance operations should be placed at floor level in a safe location until they are ready to be re-fitted. Replace access panels at the same locations and in the same orientation as found.

Note: Please note the airflow directions on the filter label.

The filters used in all sizes are not one piece filters.

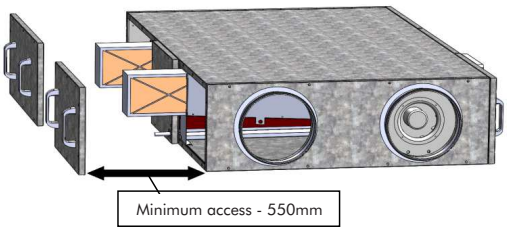
For PREMA180 & PREMA330, filter access is from the drainage side.

For PREMA540 & PREMA900, filter access is from both sides.

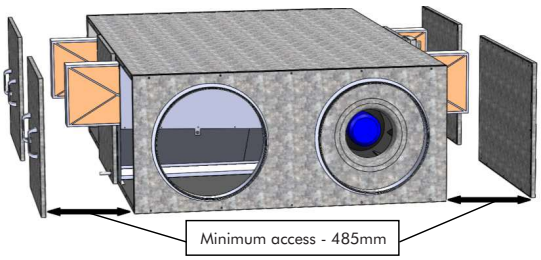
After new filters have been installed, replace the access panel(s) and tighten bolts and then the thumb screws.

Note: Do not over tighten the bolts, as you may crush the panels.
Hint: Stop when the weather tight washers squash up.

PREMA180 & PREMA330



PREMA540 & PREMA900



Model	Filter Sizes L x H x D	Quantity	Filter Set	
			Supply (F7)	Extract (M5)
PREMA180	300 x 150 x 100	1	783-SF-180-F7	783-EF-180-M5
	550 x 150 x 100	1		
PREMA330	550 x 150 x 100	2	783-SF-330-F7	783-EF-330-M5
PREMA540	482 x 210 x 100	3	783-SF-540-F7	783-EF-540-M5
PREMA900	482 x 290 x 100	3	783-SF-900-F7	783-EF-900-M5

Recommended Maintenance Interval

Replace filters after build commissioning. Filter replacement is variable dependent on environmental air pollution conditions (dust, fume, etc.).

Note: For convenience, it is preferred that wherever possible, this minimum access provision is not adopted, as stated in The Building Regulations Part F: "the requirement is satisfied if 600mm space is provided where access is required".

Service

In order to maximise the useful life of the equipment and keep it operating in good order, the maintenance checks and tasks detailed in these instructions should be performed as part of a regular and routine service schedule. Under normal operating conditions, the following schedule is recommended:

Maintenance Item	Frequency	
	6 Months	12 Months
Filter Sets	✔	
Counterflow Energy Recovery Block	✔	
Condensate Drip Trays and Drains	✔	
Fans		✔
Damper		✔
Damper Actuator		✔
Internal and External Surfaces		✔
Controls / PCB / Fuses		✔
Secure Nuts, Bolts and Fixings		✔

Spares parts are available by contacting the Elta Group Building Services sales office. Enquiries should include details off the identification label.

Filters

There are two air filter sets fitted in the equipment, one at the fresh air intake connection and one at the extract air connection.

The filters are disposable and the full set should be changed when they are damaged, heavily soiled with dust, or when the signals from the differential pressure switches indicate a dirty filter condition.

Counterflow Energy Recovery Blocks

The Counterflow Energy Recovery blocks are protected from contamination by upstream filters, and therefore should in normal circumstances require only periodic inspection to ensure that the face is not blocked by any debris, dust or dirt build-up.

The blocks are constructed with non-corroding aluminium alloy material that is resistant to sea water and extremely hygienic thanks to complete and optimised drainage of condensate. They are designed to be maintenance free, other than basic cleaning in situ, and built to last the life of the unit.

It is possible to clean the unit with compressed air in the case of dust deposits or by spraying with a mild detergent solution for grease deposits. Solvents, strong alkaline, acidic or any products that may be aggressive to aluminium should not be used.

Maximum cleaning water temperature not to exceed +50°C.
The cell is not designed to be removed for cleaning.

Condensate Drip Trays and Drains

Drain lines should be checked to ensure that they are unobstructed, free draining and free from debris. They should be periodically flushed out and chemically treated as necessary to remove any contamination.

Fans

EC fan motors operate from a permanent mains power supply; however their speed is controlled by application of a variable 0-10VDC input control signal from the control box. The EC fan assembly (comprising of the motorised impeller) should only be cleaned with a soft dry brush to remove dust deposits. Any excessive build-up of dust or debris may cause the impeller to become un-balanced. Fan / motor bearings are supplied as 'sealed for life'.

The fixings holding the fan motor to its mounting bracket should be checked and tightened if necessary. In addition, the fixing screws holding the motor bracket to the inner casing of the equipment should also be checked and tightened as required.

Damper

At regular intervals check that the blades move freely.

Trouble Shooting (General)

Fault	Possible Cause	Suggested Action
Fan(s) fail to start	Lack of voltage on motor terminals Insufficient control voltage Wrong connection Excessive load	Ensure voltage is consistent with label data
Insufficient performance volume / pressure	Clogged ductwork and / or extract points	Clean ductwork and supply / extract grilles
	Clogged impeller	Clean impeller
	Dirty filter(s)	Replace filter media. **Note:** Always use original media type to guarantee unit performance (replace the full filter set)
	Insufficient fan rotation speed	Check mains / control supply voltage
	Dirty heat exchanger	Clean heat exchanger block
Reduced airflow after acceptable operation (see above)	Air leak before and / or after the fan	Check duct connections and / or casing and restore to original "as installed" condition
	Damaged motor / impeller	Check motor / impeller (replace with original spare parts)
Heat exchanger discharge air temperature too low	External air lower than -5° C	Install a PRE / POST heating device
Insufficient Heat Exchanger performance	Build-up of dirt on Heat Exchange fins	Clean Heat Exchanger
Frost formation on Heat Exchanger	External air temperature below -5°C	Fit a PRE-heating device (frost protection heater)
Airflow hunting	System pressure too high	Modify the ductwork Check filter(s) pressure (dirty filter) / replace filter(s) Clean and / or replace the ducting

AIR DESIGN
AIR HANDLING | HEAT RECOVERY

EU Declaration of Incorporation

Herewith we declare that the air movement equipment below, on the basis of its design and construction in the form brought onto the market is in accordance within the relevant health and safety requirements of the EC Directive for use of machinery.

In accordance with the Machinery Directive 2006/42/EC

Designation of Equipment: Prema 180, 330, 540 & 900
Prema 180CP, 330CP, 540CP & 900CP

Type: Supply & Extract fans with energy recovery

NRVU BVU - Bidirectional Ventilation Unit

The design of the partly completed machines listed below complies with the Essential Health and Safety Requirements (EHSRs) of ANNEX I, sections 1.1.2, 1.1.5, 1.4.1, 1.5.1 in EC Machinery Directive 2006/42/EC

The partly completed machines comply with the requirements of :
Low Voltage Directive 2014/35/EU, Electromagnetic Compatibility (EMC) Directive 2014/30/EU,
Energy-Related Products (ErP) Directive 2009/125/EC and EU1253/2014

Applied harmonised and National standard in particular:
- BS EN ISO 12100: 2010
- BS EN 14694: 2003 + A1: 2011
- BS EN ISO 5801: 2007
- BS 848-2: 1985
- ISO 3741:2010

The machinery is incomplete and must not be put into service until such time as the machinery which is partly complete is to be incorporated and has been assessed and declared in conformity with the provisions of the Machinery Directive 2006/42/EC.

We undertake to transmit, upon reasoned request by appropriate national authorities, relevant information on the partly completed machinery identified above.

Manufacturer:
Elta Fans Limited,
46 Third Avenue,
Pensnett Trading Estate,
Kingswinford,
West Midlands, UK
DY6 7US

Date / Signature of Manufacturer: Date: 12th September 2017

Name / Position of Signatory: Mr. Robert Rees – Quality Manager

Issue A: 12.09.2017 Date: 12th September 2017

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Notes

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AIR DESIGN
AIR HANDLING | HEAT RECOVERY

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