



# Novaerus Defend NV1050 Air Purifier User Manual

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## 1. Intended Purpose













Designed for rapid remediation in large spaces and situations with considerable risk of infection, the Novaerus Defend NV1050 uses patented ultra-low energy plasma technology combined with a triple-stage filter system to provide a combined solution for air dis-infection and particle removal.

The intended purpose of the Novaerus Defend NV1050 Air Purifier is to improve the quality of air.

This equipment is suitable for use in Hospitals and Long-term care facilities. The intended use of Novaerus NV1050 device includes intensive care units (ICU), high dependency units (HDU), and other health institutions, including isolation rooms and single patient rooms such as operating suites (OR).

Please read and follow all instructions in this manual.

## 2. Labelling Symbols

Symbol	Meaning
	Caution, Consult User's Manual
	Caution, High Voltage
	Date of Manufacture
	Manufactured for or by
	Serial Number
	This product conforms to the requirements of the applicable European Community directives.
	This product conforms to North American safety standard.
	Mains Power Switch On (Power)
	Mains Power Switch Off (Power)
	Accompanying documents must be consulted.
	Indicates the temperature limits to which the device can be safely exposed.
	Indicates the range of humidity to which the device can be safely exposed.

### 3. Control Panel Buttons

The control panel layout is shown in Figure 1. The control features are listed below;

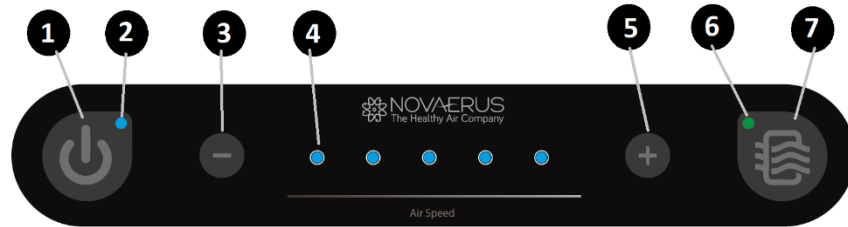


Figure 1: DEFEND NV1050 Control Panel layout.

1. ON/OFF power button
2. LED light indicator for ON/OFF power state
3. Airflow speed selection button, reduce airflow
4. LED lights (5 lights) indicating the active airflow speed
5. Airflow speed selection button, increase airflow
6. LED light indicator of pressure drop check across HEPA filter
7. Pressure drop check button across HEPA filter

Additional features:

To prevent disturbing patients at night and to save power, the LEDs on the panel will switch off after approximately two minutes


The last known speed can be saved to memory by holding down buttons ON/OFF (1) and '-' (3) for three seconds.

To clear the memory and to reset to default the memory can be cleared by holding down buttons ON/OFF (1) and '+' 5 for three seconds.

### 4. Classification of Equipment

Item	Classification
Protection of Harmful Ingress of Water	IPX0 (No protection, Indoor Use Only)
Mode of Operation	Continuous
Oxygen Rich Environments	Not intended for Oxygen Rich Environments

## 5. Warnings

	<b>General Warnings</b>
<p><b>CAUTION:</b> The product is not meant to be lifted by the handle. Castors are provided for mobility, risk of instability if power cord stops wheels from moving, ensure cord is lifted above the wheels.</p>	
<p><b>CAUTION:</b> Use two or more people to move and handle this unit. Failure to do so can result in back or other injury. Carefully remove the packaging materials and any shipping tape before using.</p>	
<p><b>CAUTION:</b> This equipment contains high voltage</p>	
<p><b>CAUTION:</b> To avoid the risk of electric shock, this equipment must only be connected to a supply mains with protective earth.</p>	
<p><b>CAUTION:</b> This equipment should be inspected frequently and collected dirt removed from it regularly to prevent excessive accumulation that may result in flashover or a risk of fire.</p>	
<p><b>CAUTION:</b> No modification of this equipment is allowed.</p>	
<p><b>CAUTION:</b> Do not modify this equipment without authorization of the manufacturer.</p>	
<p><b>CAUTION:</b> Do not restrict the air flow of the product.</p>	
<p><b>CAUTION:</b> Do not open the tamper proof screws on the casing of the unit. No serviceable parts are contained within. The units should be opened by qualified Novaerus personnel only.</p>	
<p><b>CAUTION:</b> Do not position the equipment where it is difficult to operate the power switch.</p>	
<p><b>CAUTION:</b> For continued protection against risk of fire, replace the fuse with the same type and rating, Listed, 120VAC 6.3 Amps.</p>	
<p><b>CAUTION:</b> Do not use outdoors or near water.</p>	
<p><b>CAUTION:</b> Not to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.  Children should be supervised to ensure that they do not play with the appliance.</p>	
<p><b>CAUTION:</b> To reduce the risk of electric shock, this equipment has a grounding type plug that has a third (grounding) pin. This plug will only fit into a grounding type power outlet. If the plug does not fit into the outlet, contact qualified personnel to install the proper outlet. Do not alter the plug in any way.</p>	



## 6. Technical Specifications

- a. Dimensions:  
39.4" (h) x 19.9" (w) x 18.3"(d)
- b. Weight:  
Approx. 112.4 Lbs
- c. Power Requirements:  
US: 120 VAC,  
60 Hz, 375 W
- d. Fuse Specification:  
Listed, 120 VAC, 6.3 A
- e. Mounting:  
Floor Standing Unit
- f. Airflow:  
107 – 533 CFM (181 – 906 m3/hr)
- g. Noise Levels:  
47.9 – 75.1 dBA at unit  
38.5 – 62.9 dBA at 1m away
- h. Filters:  
Stage 1 Pre-filter (M5):  
Part No. 715-00-0203,  
15.7" (h) x 15.7" (w) x 2.0" (d)  
Stage 2 HEPA filter (H13):  
Part No. 715-00-0163,  
15.7" (h) x 15.7" (w) x 4.3" (d)  
Stage 3 Carbon filter (G4):  
Part No. 715-00-0162,  
15.7" (h) x 15.7" (w) x 2.0" (d)  
Operating Conditions:  
50°F - 95°F (10° - 35°C),  
10 - 75% Relative Humidity



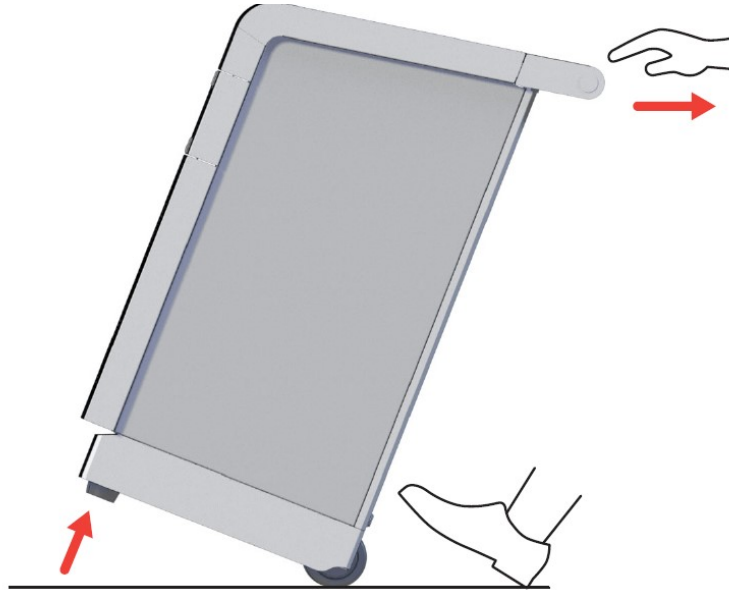
- i. Shipping / Storage Conditions:
  - 41°F - 122°F (5°C-50°C),
  - Maximum 95% Relative Humidity
- j. Area Coverage
  - 200.2 – 1000 ft<sup>2</sup> (4 air changes per hour)
  - 400.4 – 2000 ft<sup>2</sup> (2 air changes per hour)
- k. Volume Treated
  - 1589.2 – 7981.1 ft<sup>3</sup> (4 air changes per hour)
  - 3178.3 – 15962.2 ft<sup>3</sup> (2 air changes per hour)
- l. Movable and Stable
  - 2-wheeled base + handle

## 7. Instructions for Use

### a) Transporting the DEFEND NV1050

When transporting the DEFEND NV1050 care should be taken when moving the unit to the desired location.

Position yourself close to the back of the unit holding firmly the transport handle with both hands. Place your left foot against the base of the DEFEND NV1050 for anchorage and pull the handle slowly towards your body while stepping back onto your right foot.



Stabilize the DEFEND NV1050 at a comfortable angle, depending on transporters individual height, where minimal pressure is exerted against your body to ensure stability.

Once you have reached your destination, allow the unit to gently return to the upright position by placing your right foot against the base of the and gently extending your forearms allowing the unit to return to the front legs to stabilize the unit.

The DEFEND NV1050 should be placed in a dry location and connected to a suitable grounded outlet. The product is intended to be used as a floor standing unit only.

Once the product is installed, turn the power switch on the back of the unit to the ON position. The device is now ready to operate, please use the control panel (see section 3 above) to activate the unit to the desired speed.





## b) Control Panel and Location

The control is located on the top panel of the DEFEND NV1050 near the front of the unit.

## c) Power control

The control button on the furthest left-hand side of the control panel is for switching the device ON/OFF; the power button. The power button clearly illuminated with a 'blue' LED to indicate when the device is on. The 'blue' LED is illuminated when in the 'ON' mode and non-illuminated when the device is in the 'OFF' mode.

## d) Air flow control

The control allows the user to select the device airflow using selection buttons '+' on the right-hand side for incrementing the air flow setting to a higher airflow, and '-' on the left-hand side for decreasing the air flow setting to a lower air flow.

The air flow setting level is clearly indicated by illuminating a series of blue LEDs in sequence (from left to right) according to the speed setting (e.g. two LEDs for speed II, three LEDs for speed III). The DEFEND NV1050 has 5 selectable air flow speeds.

## e) Save airflow to memory

There is an ability to save a selected airflow to memory, so the device will revert to the last known speed on power-on.

The last known speed can be saved to memory by holding the ON/OFF (1) and '-' (3) buttons for three seconds. To revert to factory settings and to clear the air speed memory the ON/OFF (1) and '+' (5) buttons are held for three seconds.

## f) HEPA Filter replacement test

The HEPA Filter replacement test indicator is for information purposes only.

The Filter replace button is on the furthest right-hand side of the panel for testing the filter back pressure. Upon pressing the filter back pressure test, the device shall override the air flow setting to speed 5 air flow for testing the filter for a period of approx. 30 seconds.

The test button shall remain backlit illuminated 'blue' LED while the device is testing the air pressure.

The device shall indicate that the HEPA filter need to be inspected for replacement by illuminating the test button in 'Orange' or a continuous LED light in 'Orange'

The device shall indicate that the HEPA filter does not need to be inspected by illuminating the test button in 'green' or a continuous light in 'green'.



HEPA filter shall be replaced after every twelve-month (12) period or when the filter test check output indicates to do so, whichever comes first. Discolouration on The HEPA filter may indicate the filter has exceeded its life expectancy. The expected lifetime of these filters is approximately twelve months (12) under normal clean air conditions (such as that of a hospital ward).

## 8. Service and Maintenance Instructions

### a. Service

No serviceable parts are contained within the DEFEND NV1050 unit. The units should be opened by qualified Novaerus personnel only. The unit is designed with tamper-proof screws to ensure that it cannot be easily opened by anyone other than service personnel.

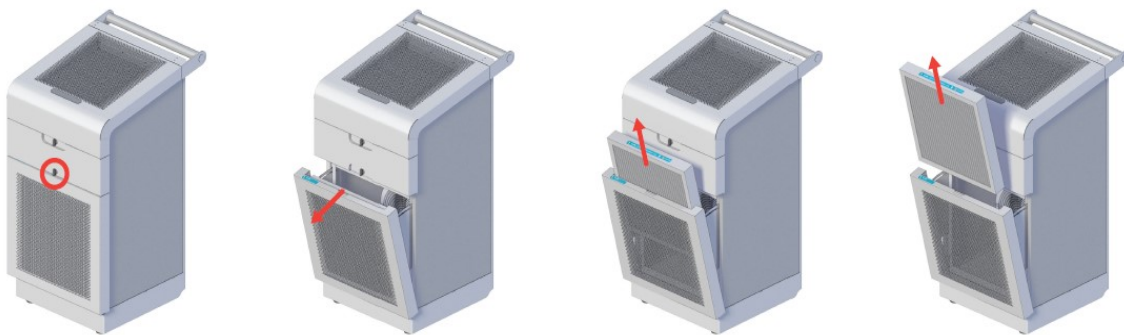
### b. Maintenance – Replacement of Filters

Before replacing Filters ensure the power is switched off at the rear mains switch. Ensure all filter doors are securely closed before switching the unit back on via the rear mains switch.

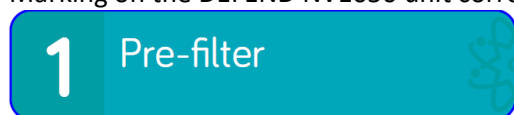
#### Pre-filter

The intake Pre-filter is located behind the front panel of the unit. The Pre-filter should be inspected monthly and should be replaced when dirty.

The Pre-filter can be removed by simply pulling the framing of the filter outwards and replacing with a new filter.



Marking on the DEFEND NV1050 unit correspond with the required filter.



Markings on the Filter to aid placement and correct orientation.



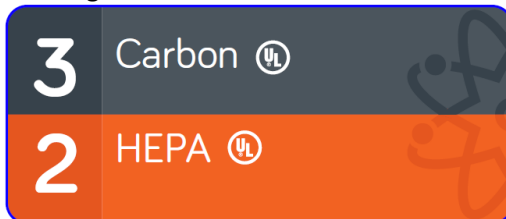
It is recommended to replace this filter after three (3) months of continuous use. It is recommended that the user inspect the intake pre-filter monthly during the first 2 months of use to determine the most appropriate cleaning period for its facility. If dust and debris has collected on the intake screen sufficient enough to cause a significant decrease in airflow, more frequent replacement of this filter may be required.

Only Novaerus supplied replacement filters should be used. Please contact Novaerus Customer Service for replacement filters.

## Carbon Filter and HEPA Filter

The Carbon filter and HEPA filter are located in the top of the unit and are accessible from opening the top panel. The Carbon filter should be removed before gaining access to the HEPA filter.

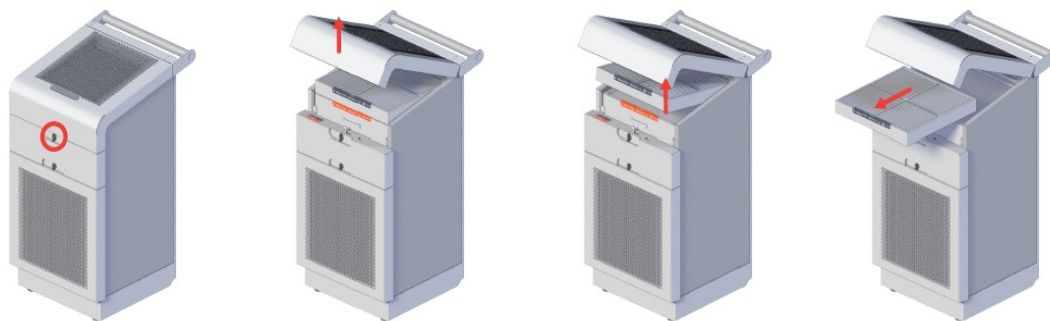
Marking on the DEFEND NV1050 unit correspond with the required filter.



The Carbon Filter and HEPA filter are fitted with a handle that can be used to pull the filter out of its housing in the DEFEND NV1050 unit.

## Carbon Filter

The Carbon Filter can be accessed from the Top Panel. The orientation of the filter is indicated on the filter frame itself, see illustration below.



Markings on the Filter to aid placement and correct orientation.



The expected lifetime of the Carbon filter is approximately four months (4) under normal clean air conditions (such as that of a hospital ward). It is recommended to replace this filter after four (4) months of continuous use.

Only Novaerus supplied replacement filters should be used. Please contact Novaerus Customer Service for replacement filters.

## HEPA Filter

The HEPA filter can be accessed from the Top Panel see illustration below. The orientation of the filter is indicated on the filter frame itself, see illustration below. The Carbon filter should be removed before gaining access to the HEPA filter.



Markings on the Filter to aid placement and correct orientation.



HEPA filter shall be replaced after every twelve-month (12) period or when the filter test check output indicates to do so, whichever comes first. Discoloration on The HEPA filter may indicate the filter has exceeded its life expectancy. The expected lifetime of these filters is approximately twelve months (12) under normal clean air conditions (such as that of a hospital ward).

Only Novaerus supplied replacement filters should be used. Please contact Novaerus Customer Service for replacement filters.



## 9. Filter Disposal

The following instructions are for filter disposal for filters used in non-hazardous environments,

Carbon Filter - Throw-away, dry type air filter

Stage 3 Carbon filter (G4):

Part No. 715-00-0162,  
15.7" (h) x 15.7" (w) x 2.0" (d)

Pre-Filter and HEPA Filter - Throw-away, dry type air filter units,

Stage 1 Pre-filter (M5):

Part No. 715-00-0203,  
15.7" (h) x 15.7" (w) x 2.0" (d)

Stage 2 HEPA filter (H13):

Part No. 715-00-0163,  
15.7" (h) x 15.7" (w) x 4.3" (d)

To properly dispose of a used non-hazardous air filter:

- Have a plastic bag on hand and turn off the unit before you begin.
- Carefully remove the used air filter from the HVAC unit.
- Place it gently into the bag without shaking it. This will prevent it from releasing the dust and particles into the air.
- Tie or tape the bag shut.
- Take the bagged air filter and place it in the waste disposal.

FOR FILTERS USED IN ENVIRONMENTALLY HAZARDOUS AND/OR BIOMEDICAL HAZARDOUS AIR STREAMS THEN FOLLOW THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION GUIDELINES IN THE COUNTRY OF ORIGIN.

## 10. Troubleshooting

Should the unit sustain severe damage and an increase in noise from the internal parts is observed discontinue use of the unit and contact a representative of the Novaerus technical team for assistance. This product is not intended to be repaired in the field.

To ensure the Defend NV1050 unit's optimal functionality when replacing the filters the power must be switched off at the rear mains switch before attempting to open either filter doors and ensure all filter doors are securely closed before switching the unit back on via the rear mains switch.

Should the unit power up to an unwanted airspeed the memory can be cleared by holding down the ON/OFF button and the '+' button for three seconds.

## 11. Product Certifications

DEFEND NV1050: UL marked.