

1. Control Unit greenBOX Nxt



Control Unit greenBOX® Nxt Function

The greenBOX® Nxt control unit manages the entire dust collection system. It opens and closes workstation gates, starts and stops the ventilation fan via Power MASTER VFD, adjusts the fan speed, and maintains minimum transport air velocities in the duct system. The greenBOX® Nxt control system is based on a Ecogate Next Unit of Computing (NUC, Intel Industrial standard) with Linux operating system. The greenBOX® can control several ventilation systems and up to 75 gates. This is a standardized commercial product (i.e. not custom made on project to project basis), installed with the same software in hundreds of locations. This means the software is fully tested and does not need any last-minute improvisations or commissioning delays.

Dimensions & Weight

Dimensions: W=16.8" x H=9.8" x D=4.4", weight 20 Lb.; the greenBOX® should be installed on a wall at eye level. Max. power consumption is 350W at 115V AC.

Remote Access, Software Updates

greenBOX Nxt has built-in web server and can be accessed from any device (smartphone, tablet, PC, Mac), or via secure VPN over internet (mainly for support). greenBOX Nxt supports over internet operating system and software update (about 4 minutes)

Enclosure is 4.4" deep

System Status Light

greenBOX Nxt is equipped by output for LED status light with green, orange, and red lights; green light is on if system operates OK (ventilation is correct), orange light means warning (for example filter differential pressure reaches warning limit set by user), and red light is on if there is system error (ventilation cannot reach design values, if fan or filter pressure is too high that the duct system could collapse etc).

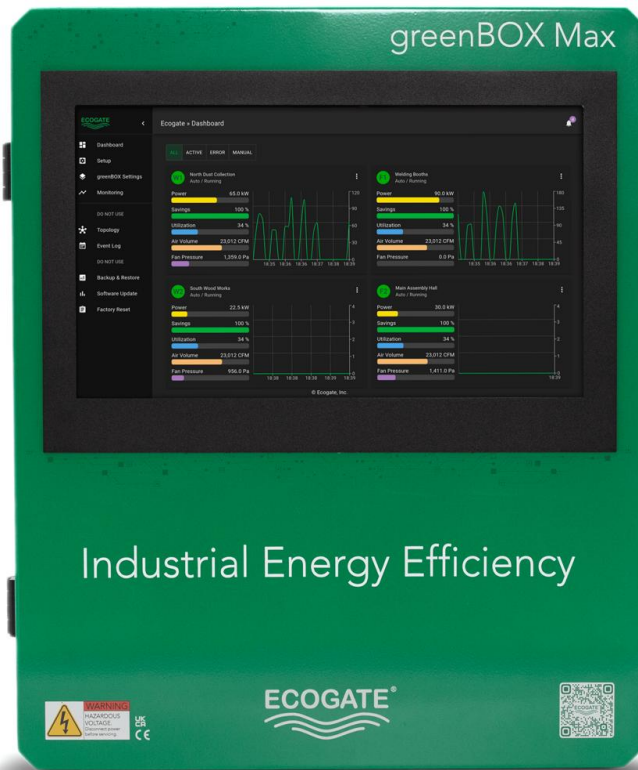


For detailed information see Ecogate document "Dust Collection Systems Sequence of Operation & Technical Description"
Contact: www.ecogate.com; info@ecogate.com; 888-ECOGATE

Ecogate greenBOX System Dimensional Drawings, updated August 25, 2026



1.a greenBOX Max, Master



greenBOX Max for up to 150 gates, dimensions 18" x 21" x 7", weight 45 Lb, power supply max. 720W at 120V AC.



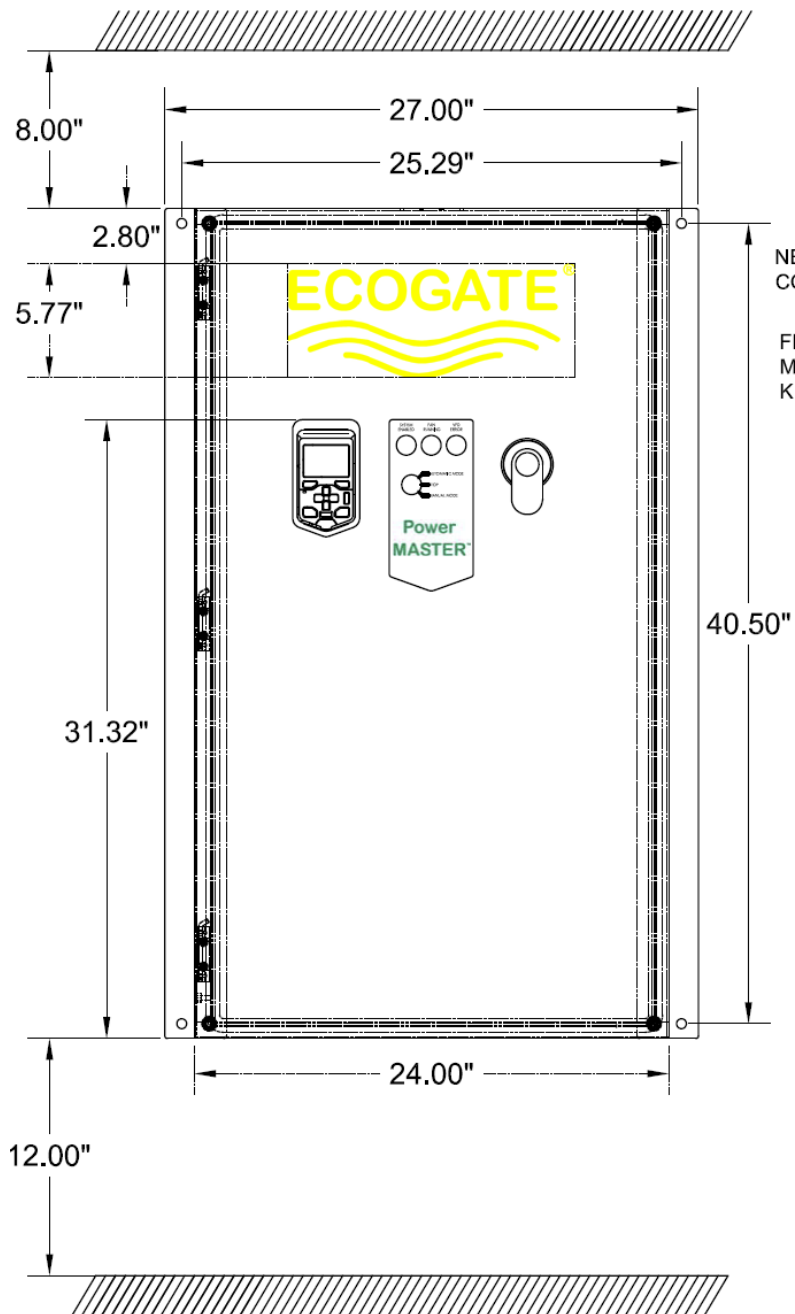
greenBOX Master for up to 225 gates, dimensions 18" x 21" x 7", weight 54 Lb, power supply max. 1,140W at 120V AC.

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2. Power MASTER VFDs up to 40 HP



Power MASTER Enclosure #1: up to **40 HP (460V)**
27" wide, 42" high, 22" deep
wall mounted

Available at 460V as 10, 15, 20, 25, 30, 40 HP

Power MASTER VFD Function

The Power MASTER VFD is controlled by greenBOX MASTER control unit via Modbus RS485. The Ecogate Power MASTER VFD starts, stops, and adjusts speed of the ventilation fan. Additionally, the Power MASTER protects the duct system against implosion collapse, starts the dust collector via free START contact (NO) and stops the dust collector via free STOP contact (NC).

The Power MASTER "Enable" Input is used to confirm to the Power MASTER that the dust collector is operating normally (i.e. no error). If there is any dust collector error (for example airlock is not working, cleaning is not working etc.) the dust collector PLC should open Enable input of the Power MASTER. The Power MASTER will stop the main fan to protect the dust collector. This VFD is a commercial product (i.e. not custom made on a project to project basis), installed with the same settings & software in hundreds of locations. This means that the software is fully tested and requires no last-minute parameter changes or commissioning delays.

Enclosure Rating, Door Selector & Indicators

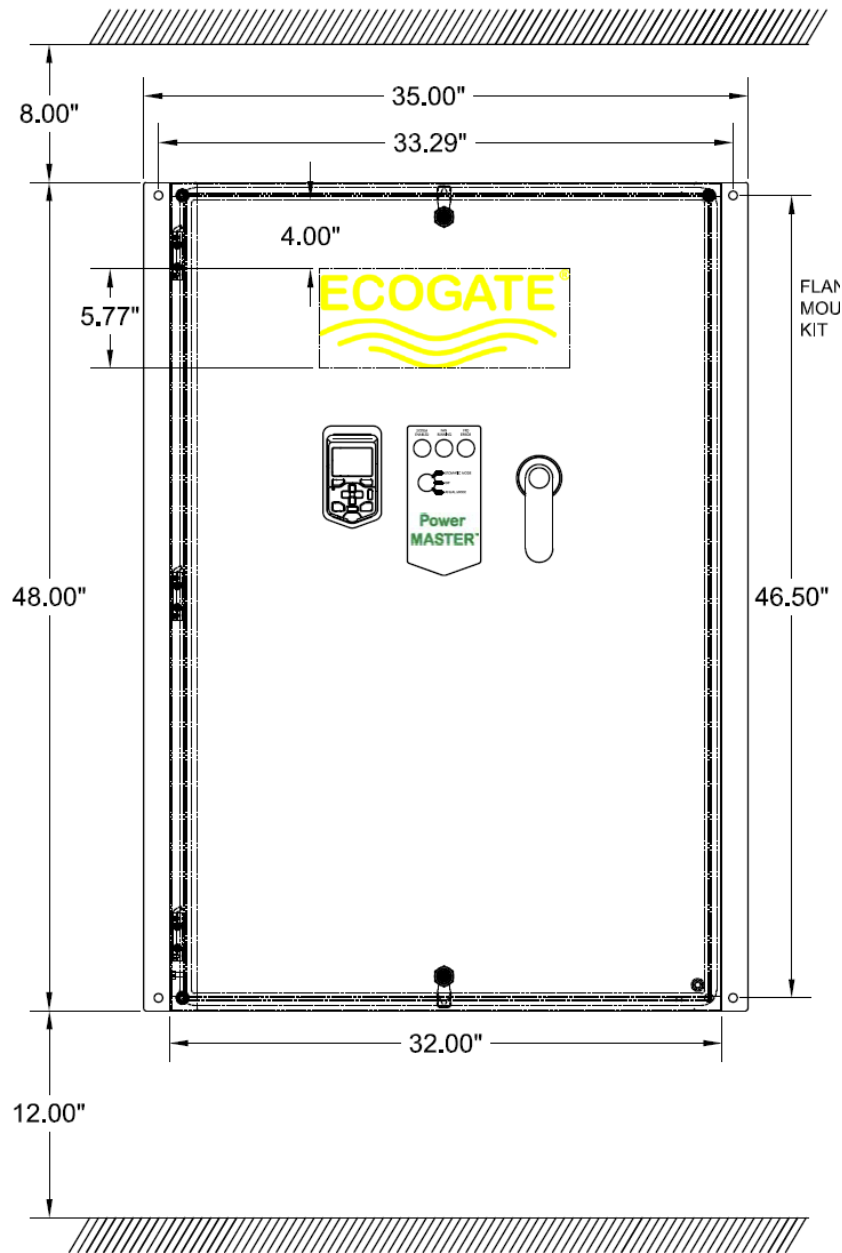
The Power MASTER VFD is based on the ACS880 VFD by ABB in a NEMA 12 rated enclosure (dust proof, for installation inside the building) with a simple door selector (Manual-Stop-Auto mode) and door Indicators (Enabled, Running, Error).

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Ecogate greenBOX System Dimensional Drawings, updated August 25, 2026



3. Power MASTER VFDs 50 to 200 HP



Power MASTER Enclosure #2: up to **50 – 200 HP (460V)**
35" wide, 48" high, 22" deep
wall mounted

Available at 460V as 50, 60, 75, 100, 125, 150, 200 HP

Power MASTER VFD Function

The Power MASTER VFD is controlled by greenBOX MASTER control unit via Modbus RS485. The Ecogate Power MASTER VFD starts, stops, and adjusts speed of the ventilation fan. Additionally, the Power MASTER protects the duct system against implosion collapse, starts the dust collector via free START contact (NO) and stops the dust collector via free STOP contact (NC).

The Power MASTER "Enable" Input is used to confirm to the Power MASTER that the dust collector is operating normally (i.e. no error). If there is any dust collector error (for example airlock is not working, cleaning is not working etc.) the dust collector PLC should open Enable input of the Power MASTER. The Power MASTER will stop the main fan to protect the dust collector. This VFD is a commercial product (i.e. not custom made on a project to project basis), installed with the same settings & software in hundreds of locations. This means that the software is fully tested and requires no last-minute parameter changes or commissioning delays.

Enclosure Rating, Door Selector & Indicators

The Power MASTER VFD is based on the ACS880 VFD by ABB in a NEMA 12 rated enclosure (dust proof, for installation inside the building) with a simple door selector (Manual-Stop-Auto mode) and door Indicators (Enabled, Running, Error).

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4. Power MASTER VFDs 250 to 400 HP

Power MASTER Enclosure #3:
up to **250 – 400 HP (460V)**

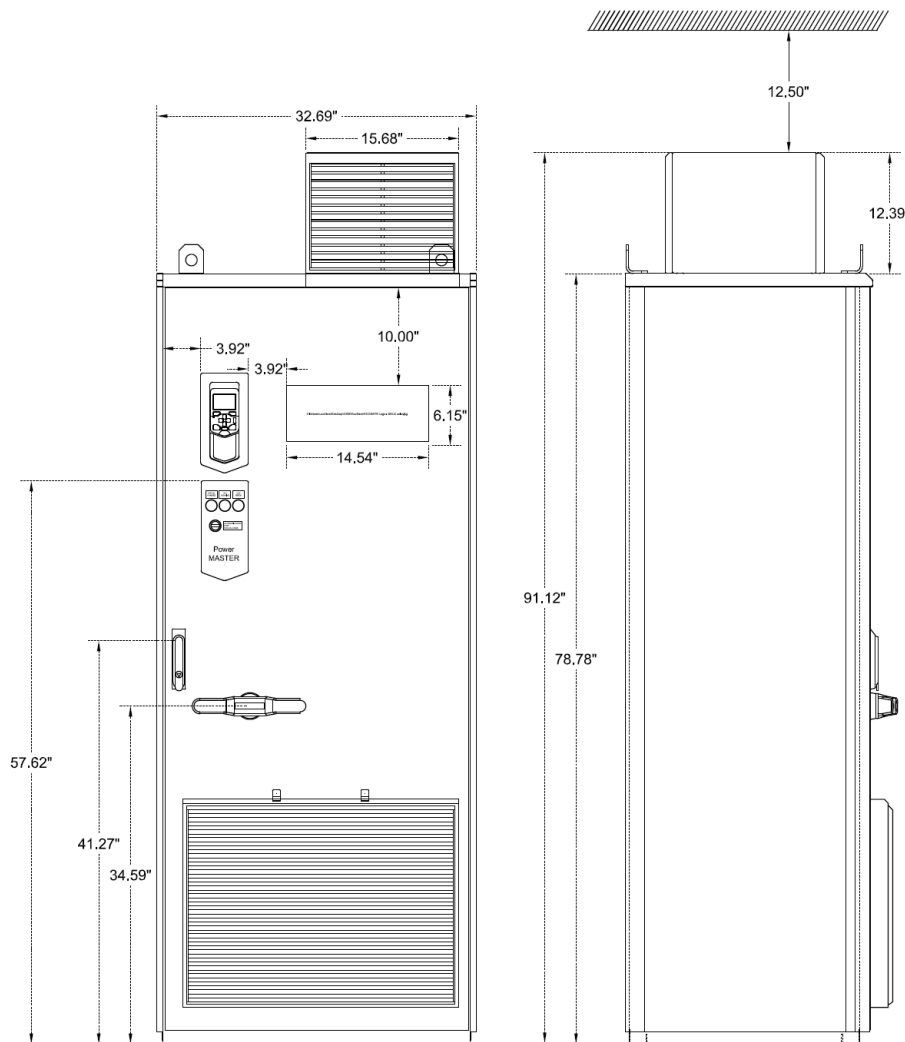
32.7" wide, 91.2" high, 25.3" deep

free standing

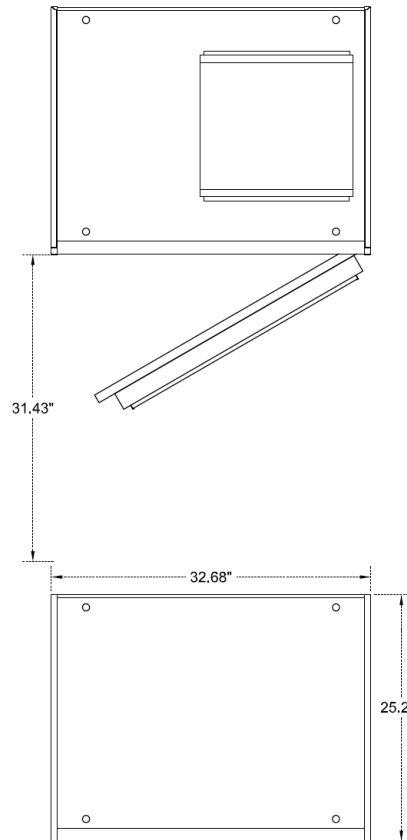
At 460V: 250, 300, 350, 400 HP

Note: 400 HP enclosure

have two ventilation fans on top



1. TYPICAL ENCLOSURE FOR 250HP - 350HP 460V
2. DISCONNECT AND DRIVE SHOWN AS 300HP 460V
3. NEMA TYPE 12 ENCLOSURE
4. DOOR PAINTED RAL 6024 TRAFFIC GREEN, OTHER WALLS PAINTED RAL 9017, TRAFFIC BLACK, FILTER COVERS AND TOP HATS PAINTED RAL 7035 LIGHT GREY
5. CABLE ENTRY TYPE: STEEL 3mm, UNDRILLED
6. FAN REPLACEMENT REQUIRES 12.28" OF FREE SPACE
7. DOOR MUST BE ABLE TO OPEN 120° TO REPLACE MODULE
8. MINIMUM 31.50" FREE SPACE REQUIRED IN FRONT OF CABINE



Power MASTER VFD Function

The Power MASTER VFD is controlled by greenBOX MASTER control unit via Modbus RS485. The Ecogate Power MASTER VFD starts, stops, and adjusts speed of the ventilation fan. Additionally, the Power MASTER protects the duct system against implosion collapse, starts the dust collector via free START contact (NO) and stops the dust collector via free STOP contact (NC).

Enclosure Rating, Door Selector & Indicators

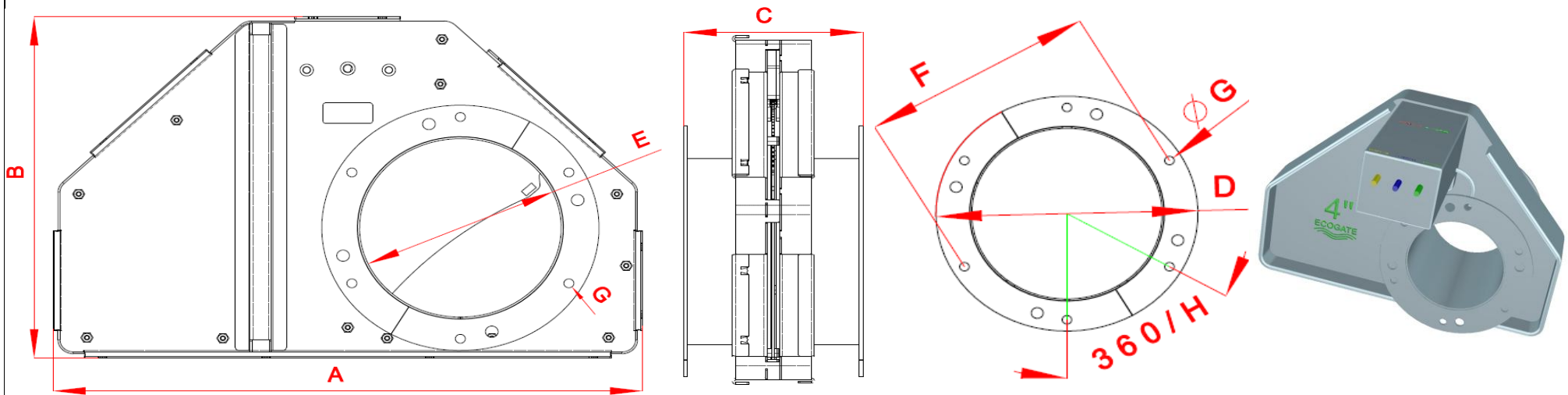
The Power MASTER VFD is based on the ACS880 VFD by ABB in a NEMA 12 rated enclosure (dust proof, for installation inside the building) with a simple door selector (Manual-Stop-Auto mode) and door Indicators (Enabled, Running, Error).

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5. Ecogates Gates



Ecogate Dimensions	A (inch)	B (inch)	C (inch)	D (inch)	E (inch)	F (inch)	G (inch)	H (Qty)	Weight
Gate Diameter	Width	Height	Depth	Flange Outside (dia)	Flange Inside (dia)	Holes Spacing	Hole Diameter	Holes (Qty)	without motor (Lb)
4"	12.6	8.7	5.1	6.1	3.9	5.3	0.30	6	6.6
5"	14.7	10.0	5.1	7.1	4.9	6.3	0.30	6	9.0
6"	17.2	11.2	5.1	8.1	5.9	7.3	0.30	6	11.9
7"	19.5	12.4	5.1	9.4	7.0	8.5	0.37	6	14.1
8"	23.0	14.2	5.1	10.4	7.9	9.6	0.39	6	17.6
9"	24.4	14.8	5.1	11.6	8.9	10.6	0.44	6	19.2
10"	26.8	16.0	5.1	12.9	9.9	11.8	0.45	6	23.4
12"	30.4	17.8	5.9	15.1	11.9	14.0	0.49	8	27.1
14"	35.1	20.2	6.0	17.1	13.9	16.0	0.49	8	36.2
16"	40.0	22.6	6.0	19.1	15.9	18.0	0.49	8	46.3
18"	46.3	25.7	6.0	21.1	17.9	20.0	0.49	8	59.7
20"	50.0	27.5	8.5	23.1	19.9	21.6	0.49	12	86.0
22"	55.0	30.0	8.5	25.2	21.9	23.6	0.49	12	97.0

Ecogate Function

Ecogate gates are used to close the ventilation drops at workstations that are not in operation. The Ecogate gates use an industrial duty 24V DC gear motor. The gates are equipped with magnetic limit switches for both the Open and Closed positions.

Workstation Activity Sensor Input

The workstation activity sensor input is located on the gate control board (24V DC, 10mA, the sensor output should be a dry contact; both NO and NC contacts are supported).

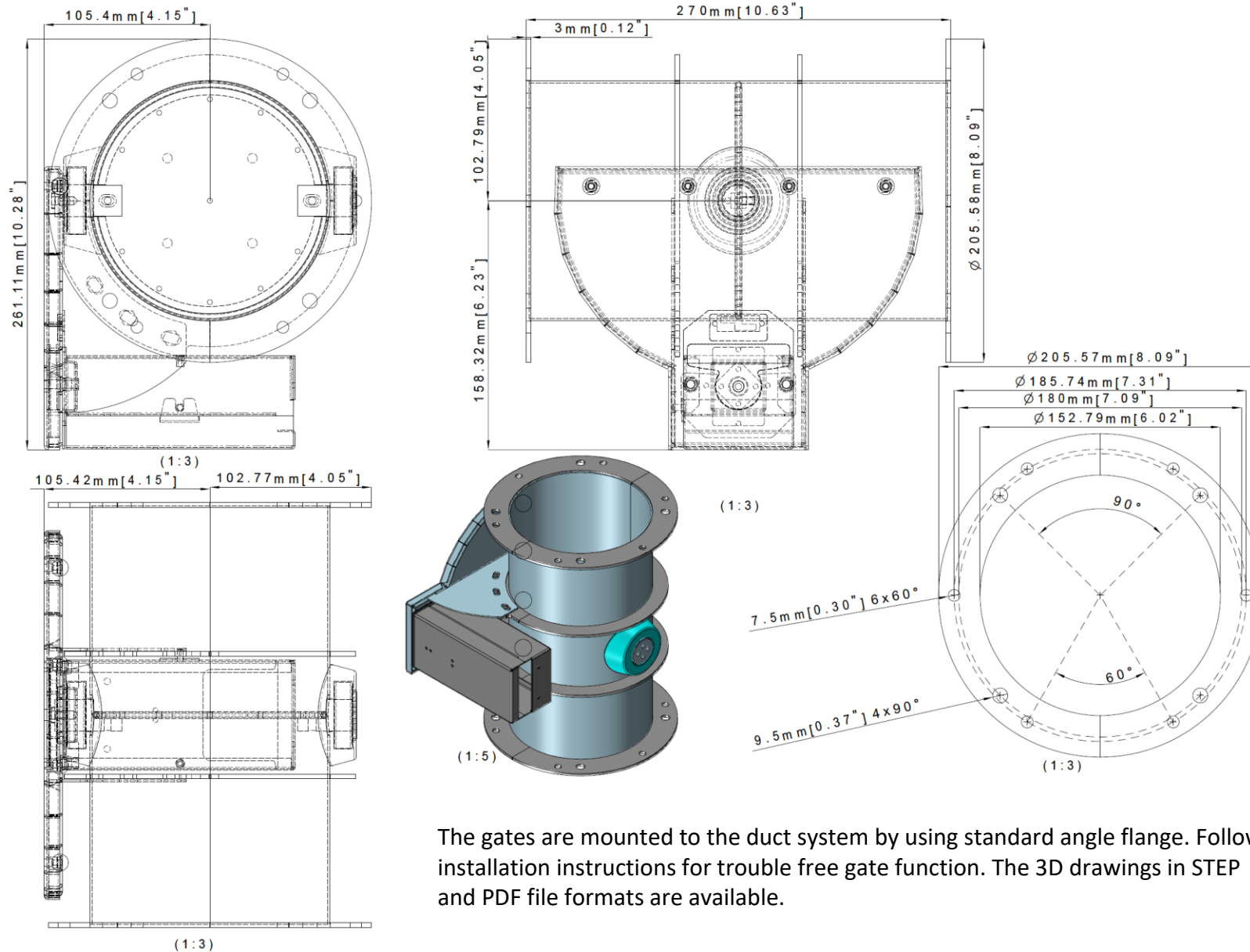
The gates are mounted to the duct system by using standard angle flange. Follow installation instructions for trouble free gate function. The 3D drawings in STEP and PDF file formats are available.

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Ecogate greenBOX System Dimensional Drawings, updated August 25, 2026



6. Ecogate 6" Butterfly Gate



The gates are mounted to the duct system by using standard angle flange. Follow installation instructions for trouble free gate function. The 3D drawings in STEP and PDF file formats are available.

Ecogate Function

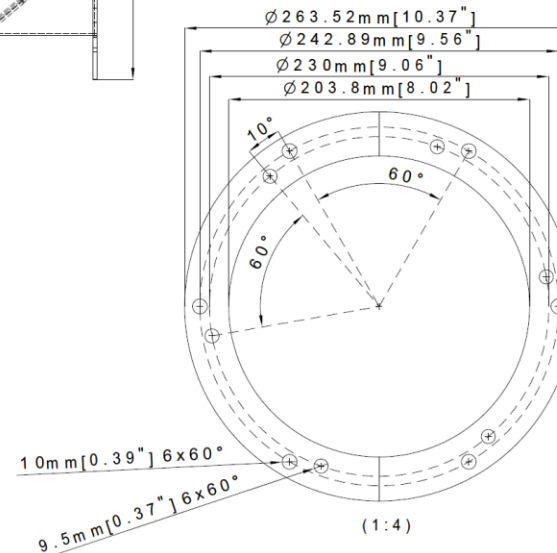
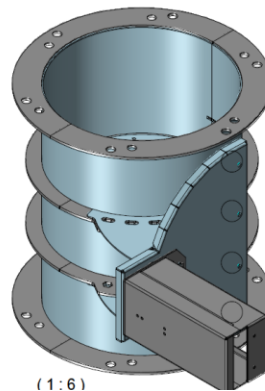
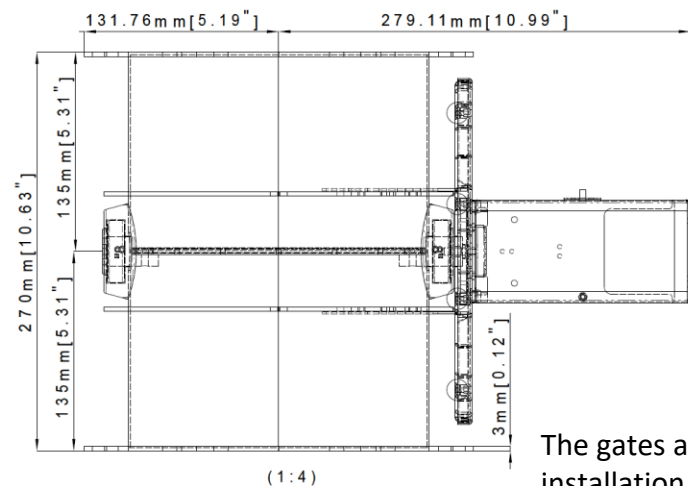
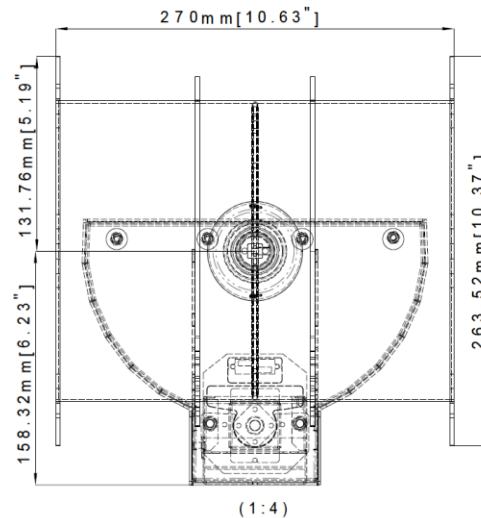
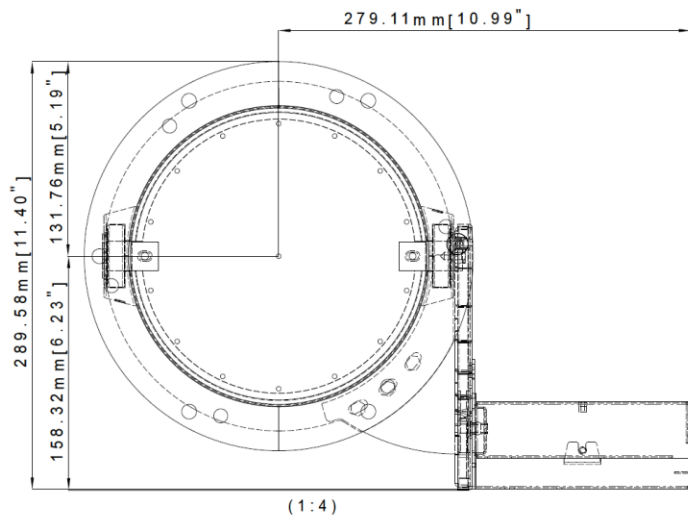
Ecogate gates are used to close the ventilation drops at workstations that are not in operation. The Ecogate gates use an industrial duty 24V DC gear motor. The gates are equipped with magnetic limit switches for both the Open and Closed positions. The rotating butterfly is using silicon seal.

Workstation Activity Sensor Input

The workstation activity sensor input is located on the gate control board (24V DC, 10mA, the sensor output should be a dry contact; both NO and NC contacts are supported).

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7. Ecogate 8" Butterfly Gate



The gates are mounted to the duct system by using standard angle flange. Follow installation instructions for trouble free gate function. The 3D drawings in STEP and PDF file formats are available.

Ecogate Function

Ecogate gates are used to close the ventilation drops at workstations that are not in operation. The Ecogate gates use an industrial duty 24V DC gear motor. The gates are equipped with magnetic limit switches for both the Open and Closed positions. The rotating butterfly is using silicon seal.

Workstation Activity Sensor Input

The workstation activity sensor input is located on the gate control board (24V DC, 10mA, the sensor output should be a dry contact; both NO and NC contacts are supported).

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8. VOLT- Workstation Activity Sensor

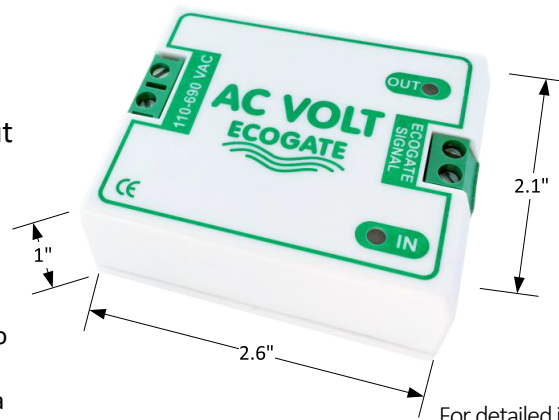
	Ecogate AC VOLT (EG.316)	Ecogate AC/DC VOLT (EG.319)
Input Voltage	110 - 690 V AC	24 - 230 V AC or DC
Input AC current	3 mA @ 115 V AC 6 mA @ 230 V AC 18 mA @ 600 V AC	4 mA @ 115 V AC 7 mA @ 230 V AC
Input Power	15 mW @ 115 V 80 mW @ 230 V AC 0,5 W @ 600 V AC	15 mW @ 115 V 80 mW @ 230 V AC
Output Current	for Ecogate Gate Driver; current up to 10 mA; can be used at VFD input; polarity independent	for Ecogate Gate Driver; current up to 10 mA; can be used at VFD input; polarity independent
Indicators (LED)	Input LED; Output LED	Input LED; Output LED
Input protected for overcurrent, overvoltage peaks	YES	YES
Input fuse	350 mA @ 1000 V AC	250 mA @ 250 V AC
Operating temperature:	0 - 50 °C (122 °F)	0 - 50 °C (122 °F)
Dimensions:	67 x 53 x 25 mm (2.6" x 2.1" x 1")	67 x 53 x 25 mm (2.6" x 2.1" x 1")
Weight:	66 g (2.3 oz)	66 g (2.3 oz)
VDE (UL) approved optocoupler	YES UL approved: No. E72422 DIN EN60747-5-2 (VDE0884 Part2)	YES UL approved: No. E72422 DIN EN60747-5-2 (VDE0884 Part2)
Retail Price	\$69	\$69

Ecogate AC Volt Sensor (input detects 110 – 690V AC)

Ecogate AC-DC Volt Sensor (input detects 24 – 230 V AC or DC)

Optional sensors:

- Hawkeye Current Sensor (reads current to the cutting motor; not to the overall workstation)
- Shutoff timer switch (user can set a timer up to 60 minutes with a wind-up mechanical timer)



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Workstation Activity Sensor Function

As mentioned in the gate description, the workstation activity sensor input is located on the gate control board. This is a way to tell the gate and greenBOX® control system that the workstation needs ventilation (dust/mist/fume collection). In most case we recommend using AC/DC VOLT sensor or AC VOLT workstation activity sensors.

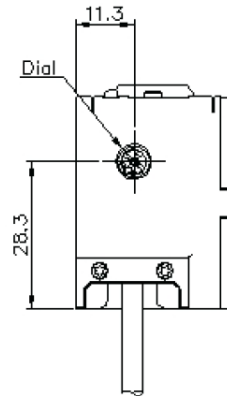
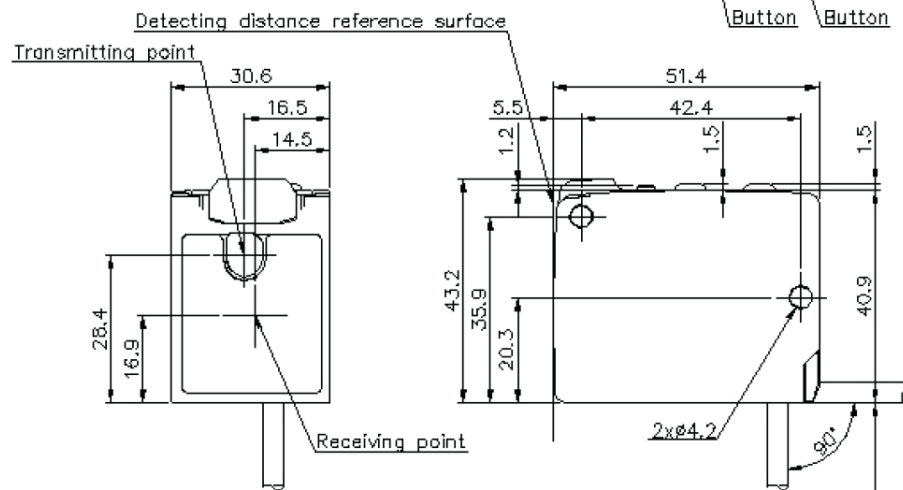
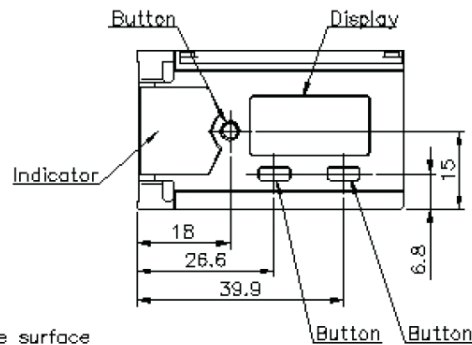
How Sensor should be connected to Workstation and to Ecogate Gate ?

First, it is necessary to specify which electrical circuit is active a few seconds before the workstation starts producing dust (on a panel saw this would be the circuit that is powering the arm holding material) and connect a VOLT sensor in parallel with this circuit.

The output of the workstation activity sensor is then connected to the gate board sensor input (S, -).



9. Room/Workstation Activity Laser Sensor



- **Keyence Laser Sensor LR-TB5000:** detects light beam interruption; for example, for material detection or as an occupancy sensor
- The dimensions: sensor without cable is 51 mm x 44 mm x 31 mm
- Weight: 160 g
- Power supply: 24V DC provided by greenBOX MASTER via Ecogate MASTER Cable



The Sensor Function

Detects product or operator or product in range 60 - 5,000 mm = 2.5 - 196 inches from sensor to automatically activate dust collection system. The detecting distance is programmable by using sensor's OLED display and buttons. The workstation activity sensor input is located on the gate control board. This is a way to tell the gate and greenBOX control system (via Modbus communication by using Ecogate MASTER cable) that the room and/or workstation needs ventilation (dust/mist/fume collection). It is possible to order a new workstation and specify that it should be equipped with a dry contact output that is closed a few seconds before the workstation needs ventilation and open when workstation no longer needs ventilation. If a workstation has such an output it is not necessary to use a Workstation Activity sensor. Most existing workstations do not have such a sensor. In this case we recommend using one of the following workstation activity sensors.

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10. Dust Collector Interface



Dust Collector Interface Air Velocity, Pressure, and Ambient Air Sensor Ranges

1. Air Velocity Sensor Range is 0- 8,000 FPM (pressure range 0-4" w.c., 1,000 Pa)
2. Filter Differential Pressure Sensor Range is 0-10" w.c. (0-2,500 Pa)
3. Fan Pressure Sensor Pressure Range is 0-40" w.c. (0- 10,000 Pa)
4. Cleaning Pump Pressure Sensor Range is 0-400 "w.c. (0-100,000 kPa = 14.5 PSIG)
5. Ambient Air Temperature, Humidity, and Atmospheric Pressure Sensors (-40F...185F, 0...100% r.h., 300...1,100 mbar)

The Ecogate Dust Collector Interface is built-in a green metal enclosure, measuring 10.7" x 7.7" x 3", that comes with a mounting bracket and weather shield. It operates on a 24V DC power supply from greenBOX, with a maximum consumption of ~ 10W. All measured values are transmitted to greenBOX via Modbus RTU. Multiple dust Collector Interfaces can be connected to one greenBOX.

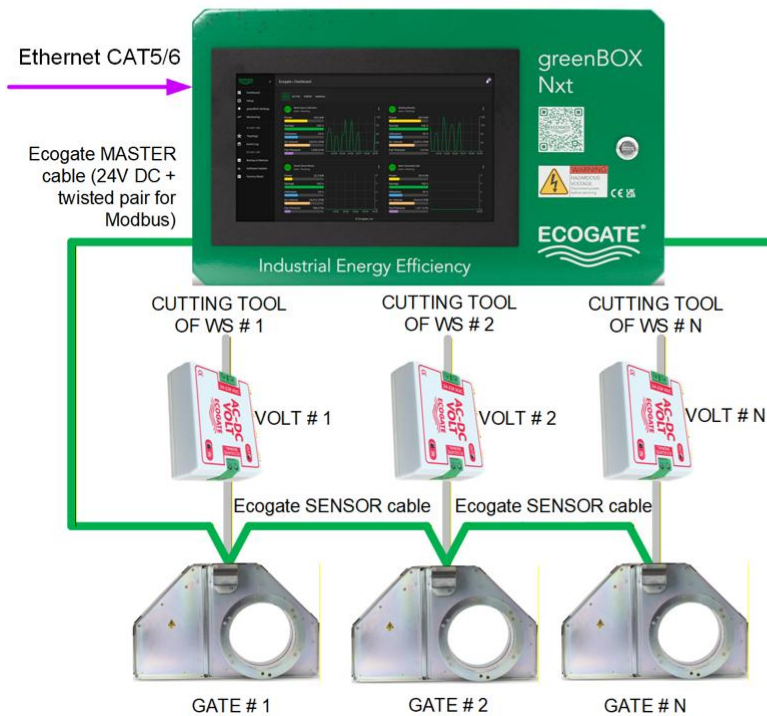
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Ecogate greenBOX System Dimensional Drawings, updated August 25, 2026



11. Schematic Diagram

A. greenBOX Control Unit (Pro, Nxt, Max), Gates, & Sensors

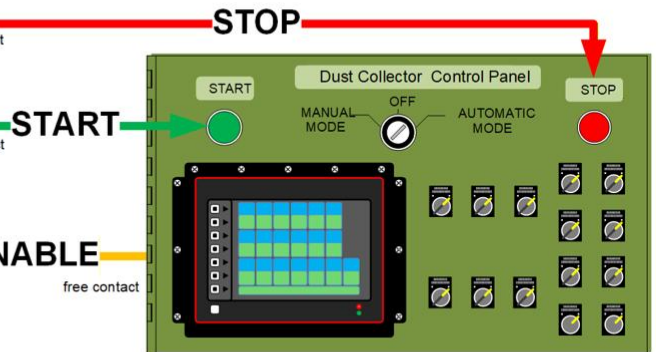


B. Ecogate Power MASTER VFD



STOP
Customer Safeties
(Spark detection,
Fire alarm etc.)

C. Ecogate Dust Collector Interface



D. Dust Collector Control Panel (PLC) for Automatic Dust Collector Start and Stop

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