Panasonic

WhisperGreen Select™
VENTILATION FAN

Fan Only Models: FV-0511VK2, FV-0511VKS2, FV-1115VK2

Fan/Light Models: FV-0511VKL2, FV-0511VKSL2, FV-1115VKL2

HEALTHY AIR, HEALTHY HOME

HVI-certified True Flow ratings at **0.375"** static pressure provide powerful CFM output to assure code compliant, healthy homes.

KEY FEATURES

■ Precision, whole-house ventilation solution ideal for use in the bathroom, laundry room, sun room, basement or garage

■ Helps assure good indoor air quality for a healthy home and healthy living

■ Operates as a standalone fan or as part of the Cosmos™ Healthy Home System through two-way wireless communication

■ Customizable, connected fan and fan/dimmable LED light combinations

■ Pick-A-Flow airflow selector (50-80-110 or 110-130-150 CFM models) combined with SmartFlow™ technology simplifies the selection process and ensures optimum performance to meet code and reduce callbacks

■ Elegant grille design complements the aesthetics of any room

■ Single-hinged Flex-Z Fast™ bracket provides flexible, fast and easy installation

■ Can be used to comply with ASHRAE 62.2, LEED, CALGreen, IAP, California Title 24, WA Ventilation Code and ENERGY STAR for Homes 3.0

ADDITIONAL BENEFITS

• Ideal IAQ solution for green builders

• Environmentally friendly 26 gauge housing using Zinc-Aluminum-Magnesium (ZAM) coating

• Integrated 4" or 6" dual duct adapter enhances installation options / Fits in 2 x 8 construction

• Built-in metal flange provides blocking for penetrations through drywall as an air barrier, and assists with the decrease in leakage in the building envelope during blower door testing

• Suitable for installation in ceilings insulated up to R60

• Dual access junction box simplifies wiring in tight spaces

• UL Listed for tub/shower enclosure when GFCI protected

• UL Listed for use with the Panasonic Ceiling Radiation Damper (model # PC-RD05C5)

• 6-year warranty on ECM motor, 5 years on LED, 3 years on parts

*Industry research indicates static pressure in typical installations ranges from 0.20" to 0.375".

BUILT-IN SELF ADJUSTING AIRFLOW CAPABILITY

reinventingventing.com

Most Efficient 2021 ENERGY STAR www.energystar.gov

PRECISION VENTILATION

WhisperGreen Select™

FV-0511VK2
(with Pre-Installed Multi-Speed module)

FV-1115VK2
(with Pre-Installed Multi-Speed module)

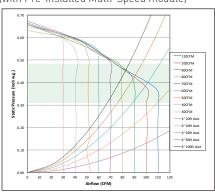**FV-0511VK2**

FV-1115VK2

FV-0511VKS2

HEALTHY AIR, HEALTHY HOME
HVI-certified True Flow ratings at **0.375"** static pressure provide powerful CFM output to assure code compliant, healthy homes.
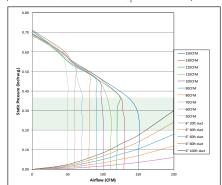
WhisperGreen® Select™ (Fan Only) — Base Fan

FV-0511VK2 / FV-1115VK2

Specifications	FV-0511VK2									FV-1115VK2								
Static Pressure (inches w.g.)	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375
Air Volume (CFM)	110	110	108	80	80	79	50	51	51	150	151	132	130	130	124	110	112	105
Noise (sones)	<0.3	0.8	-	<0.3	0.5	-	<0.3	0.4	-	<0.3	0.7	-	<0.3	0.4	-	<0.3	0.3	-
Power Consumption (watts)	9.9	15.4	20.0	5.1	9.6	13.4	3.1	6.2	9.6	12.9	22.0	24.4	9.2	16.5	22.1	6.9	12.8	17.9
Energy Efficiency (CFM/Watt)	11.1	7.1	5.4	15.7	8.3	5.9	16.2	8.3	5.3	11.7	6.8	5.4	14.2	7.9	5.6	16.0	8.7	5.8
Speed (RPM)	920	1182	1356	795	1113	1315	722	1054	1266	684	916	1084	645	900	1080	625	894	1083
Amps (Current)	0.10	0.16	0.20	0.06	0.10	0.14	0.04	0.07	0.10	0.14	0.22	0.24	0.10	0.17	0.22	0.08	0.13	0.18

Specifications	FV-0511VK2	FV-1115VK2
MAX. Amps (Current)	0.20	0.24
Power Rating (V/Hz)	120/60	120/60
Motor Type	ECM	ECM
Type of Motor Bearing	Ball	Ball
Thermal Fuse Protection	Yes	Yes
Blower Wheel Type	Sirocco	Sirocco
ENERGY STAR Qualified	Yes	Yes
Duct Diameter (Inches)	4 & 6	6
Mounting Opening (Inches sq.)	10-1/2	10-1/2
Grille Size (Inches sq.)	13	13
Lamp Watts	N/A	N/A
Lumens (lm)	N/A	N/A
Lumens Per Watt (LPW)	N/A	N/A
Color Rendering Index	N/A	N/A
Color Temperature (Kelvin)	N/A	N/A
Rated Life (hours)	N/A	N/A
Lamp Model #	N/A	N/A
Type of Lamp Socket	N/A	N/A
Night Light Watts	N/A*	N/A*
Gross Weight (lbs)	11.80	11.95
UL tub/Shower Enclosure	Yes	Yes
Washington VIAQ Code	Yes	Yes
Wall installation	No	No
California Title 24 Compliant	Yes	Yes
Mfg in ISO 9001 Certified Facility	Yes	Yes

WhisperGreen® Select™ (Fan Only) — Base Fan with Pre-Installed Multi-Speed

FV-0511VKS2

Static Pressure	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375
Air Volume (CFM)	110	110	108	100	101	101	90	90	90	80	80	79	70	71	70	60	60	60	50	51	51	40	41	40	30	30	30
Noise (sones)	<0.3	0.8	-	<0.3	0.6	-	<0.3	0.5	-	<0.3	0.5	-	<0.3	0.4	-	<0.3	0.4	-	<0.3	0.3	-	<0.3	0.3	-	<0.3	0.3	-
Power Consumption (watts)	9.9	15.4	20.0	7.9	13.1	17.8	6.5	11.2	16.0	5.1	9.6	13.4	4.3	8.5	12.1	3.7	6.9	10.5	3.1	6.2	9.6	2.7	5.5	7.8	2.4	4.6	6.8
Energy Efficiency (CFM/Watt)	11.1	7.1	5.4	12.7	7.7	5.7	13.9	8.0	5.6	15.7	8.3	5.9	16.7	8.5	5.9	16.3	8.7	5.7	16.2	8.3	5.3	14.8	7.4	5.1	12.6	6.6	4.4
Speed (RPM)	920	1182	1356	889	1164	1356	839	1135	1351	795	1113	1315	760	1112	1309	751	1061	1287	722	1054	1266	707	1057	1251	711	1039	1259
Amps (Current)	0.10	0.16	0.20	0.09	0.14	0.18	0.07	0.12	0.16	0.06	0.10	0.14	0.05	0.09	0.13	0.05	0.08	0.11	0.04	0.07	0.10	0.04	0.07	0.09	0.04	0.06	0.08

Specifications	FV-0511VKS2
MAX. Amps (Current)	0.20
Power Rating (V/Hz)	120/60
Motor Type	ECM
Type of Motor Bearing	Ball
Thermal Fuse Protection	Yes
Blower Wheel Type	Sirocco
ENERGY STAR Qualified	Yes
Duct Diameter (Inches)	4 & 6
Mounting Opening (Inches sq.)	10-1/2
Grille Size (Inches sq.)	13
Lamp Watts	N/A
Lumens (lm)	N/A
Lumens Per Watt (LPW)	N/A
Color Rendering Index	N/A
Color Temperature (Kelvin)	N/A
Rated Life (hours)	N/A
Lamp Model #	N/A
Type of Lamp Socket	N/A
Night Light Watts	N/A*
Gross Weight (lbs)	11.90
UL tub/Shower Enclosure	Yes
Washington VIAQ Code	Yes
Wall installation	No
California Title 24 Compliant	Yes
Mfg in ISO 9001 Certified Facility	Yes

WhisperGreen® Select™ (Fan Only) — Base Fan with Multi-speed Plug 'N Play Module

FV-0511VK2 + FV-V515VK1

Static Pressure	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375
Air Volume (CFM)	110	110	108	100	101	101	90	90	90	80	80	79	70	71	70	60	60	60	50	51	51	40	41	40	30	30	30
Noise (sones)	<0.3	0.8	-	<0.3	0.6	-	<0.3	0.5	-	<0.3	0.5	-	<0.3	0.4	-	<0.3	0.4	-	<0.3	0.3	-	<0.3	0.3	-	<0.3	0.3	-
Power Consumption (watts)	9.9	15.4	20.0	7.9	13.1	17.8	6.5	11.2	16.0	5.1	9.6	13.4	4.3	8.5	12.1	3.7	6.9	10.5	3.1	6.2	9.6	2.7	5.5	7.8	2.4	4.6	6.8
Energy Efficiency (CFM/Watt)	11.1	7.1	5.4	12.7	7.7	5.7	13.9	8.0	5.6	15.7	8.3	5.9	16.7	8.5	5.9	16.3	8.7	5.7	16.2	8.3	5.3	14.8	7.4	5.1	12.6	6.6	4.4
Speed (RPM)	920	1182	1356	889	1164	1356	839	1135	1351	795	1113	1315	1112	1309	751	1061	1287	722	1054	1266	707	1057	1251	711	1039	1259		
Amps (Current)	0.10	0.16	0.20	0.09	0.14	0.18	0.07	0.12	0.16	0.06	0.10	0.14	0.05	0.09	0.13	0.05	0.08	0.11	0.04	0.07	0.09	0.04	0.06	0.08			

Specifications	FV-0511VK2 + FV-V515VK1
MAX. Amps (Current)	0.20
Power Rating (V/Hz)	120/60
Motor Type	DC
Type of Motor Bearing	Ball
Thermal Fuse Protection	Yes
Blower Wheel Type	Sirocco
ENERGY STAR Qualified	Yes
Duct Diameter (Inches)	4" or 6"
Mounting Opening (Inches sq.)	10-1/2"
Grille Size (Inches sq.)	13"
Lamp Watts	N/A
Lumens (lm)	N/A
Lumens Per Watt (LPW)	N/A
Color Rendering Index	N/A
Color Temperature (Kelvin)	N/A
Rated Life (hours)	N/A
Lamp Model #	N/A
Type of Lamp Socket	N/A
Night Light Watts	N/A*
Gross Weight (lbs)	11.9
UL tub/Shower Enclosure	Yes
Washington VIAQ Code	Yes
Wall installation	No
California Title 24 Compliant	Yes
Mfg in ISO 9001 Certified Facility	Yes

*Industry research indicates static pressure in typical installations ranges from 0.20" to 0.375".

Characteristics (HVI tested data for 0.1" S.P.)

ECM Motor with SmartFlow™ Technology
WhisperGreen® Select™ is designed to perform as rated. When the fan senses static pressure, its speed is automatically increased to ensure optimal CFM output. This feature provides peace of mind, as the installer doesn't have to worry about compromising the fan's performance.

LED Lighting
Includes a 10 Watt dimmable LED chip panel/3000 Kelvin Warm White/90CRI/700 lumens/70 LPW/ENERGY STAR® 2.0 certified/JA-8 compliant for CA Title 24/50,000 hours rated average life / <1W LED night light.

WhisperGreen Select™ Ventilation Fan

HEALTHY AIR, HEALTHY HOME
HVI-certified True Flow ratings at **0.375"** static pressure provide powerful CFM output to assure code compliant, healthy homes.
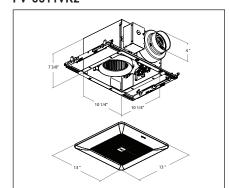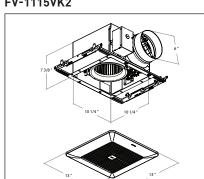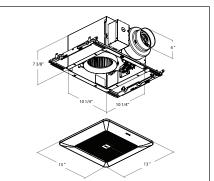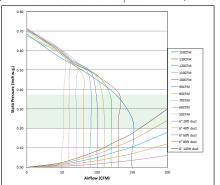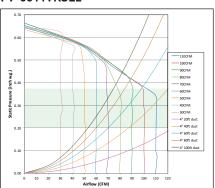
FV-1115VKL2
(with Pre-Installed Multi-Speed module)

FV-0511VKSL2

FV-1115VKL

FV-0511VKSL2

WhisperGreen® Select™ (Fan/LED Light) — Base Fan with LED Light

FV-0511VKL2

Characteristics (HVI tested data for 0.1" S.P.)									
Static Pressure in inches w.g.	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375
Air Volume (CFM)	110	110	103	80	80	78	50	50	50
Noise (sones)	0.4	0.9	-	<0.3	0.5	-	<0.3	0.4	-
Power Consumption (watts)	10.5	15.8	19.4	5.3	9.9	13.8	3.2	6.2	9.9
Energy Efficiency (CFM/Watt)	10.5	6.9	5.2	15.3	8.2	5.6	15.7	8.1	5.1
Speed (RPM)	958	1203	1375	811	1127	1341	730	1066	1281
Amps (Current)	0.11	0.16	0.19	0.06	0.10	0.14	0.04	0.07	1066

FV-1115VKL2

Characteristics (HVI tested data for 0.1" S.P.)															
Static Pressure in inches w.g.	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25
Air Volume (CFM)	150	150	127	130	130	131	110	110	107	110	110	103	100	101
Noise (sones)	0.4	0.8	-	<0.3	0.5	-	<0.3	0.3	-	0.4	0.8	-	<0.3	0.8
Power Consumption (watts)	14.9	22.5	23.8	10.4	17.9	25.4	7.5	13.4	18.8	10.5	15.8	19.4	8.2	13.6
Energy Efficiency (CFM/Watt)	10.1	6.7	5.3	12.5	7.2	5.1	14.6	8.2	5.7	10.5	6.9	5.2	12.2	7.4
Speed (RPM)	722	951	1105	682	932	1113	648	916	1108	958	1203	1375	908	1194
Amps (Current)	0.15	0.22	0.23	0.11	0.18	0.25	0.08	0.14	0.19	0.11	0.16	0.19	0.09	0.14

Specifications	FV-0511VKL2	FV-1115VKL2
MAX. Amps (Current)	0.19	0.23
Power Rating (V/Hz)	120/60	120/60
Motor Type	ECM	ECM
Type of Motor Bearing	Ball	Ball
Thermal Fuse Protection	Yes	Yes
Blower Wheel Type	Sirocco	Sirocco
ENERGY STAR Qualified	Yes	Yes
Duct Diameter (Inches)	4 & 6	6
Mounting Opening (Inches sq.)	10-1/2	10-1/2
Grille Size (Inches sq.)	13	13
Lamp Watts	10	10
Lumens (lm)	700lm per lamp*	700lm per lamp*
Lumens Per Watt (LPW)	70LPW	70LPW*
Color Rendering Index	90	90
Color Temperature (Kelvin)	3,000K	3,000K
Rated Life (hours)	50,000	50,000
Lamp Model #	N/A	N/A
Type of Lamp Socket	LED Chip	LED chip
Night Light Watts	0.2	0.2
Gross Weight (lbs)	12.4	12.55
UL tub/Shower Enclosure	Yes	Yes
Washington VIAQ Code	Yes	Yes
Wall installation	No	No
California Title 24 Compliant	Yes	Yes
Mfg in ISO 9001 Certified Facility	Yes	Yes

WhisperGreen® Select™ (Fan/LED Light) — Base Fan with LED Light and Pre-Installed Multi-Speed

FV-0511VKSL2

Characteristics (HVI tested data for 0.1" S.P.)																							
Static Pressure in inches w.g.	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375
Air Volume (CFM)	99	90	90	90	80	80	78	70	70	69	60	60	60	60	50	50	50	40	41	40	30	30
Noise (sones)	-	<0.3	0.6	-	<0.3	0.5	-	<0.3	0.5	-	<0.3	0.4	-	<0.3	0.4	-	<0.3	0.4	-	<0.3	0.4	-
Power Consumption (watts)	18.0	6.7	11.6	15.9	5.3	9.9	13.8	4.6	8.7	12.3	3.7	7.2	10.4	3.2	6.2	9.9	2.7	5.5	8.1	2.5	4.8	7.0
Energy Efficiency (CFM/Watt)	5.5	13.5	7.8	5.7	15.3	8.2	5.6	15.8	8.4	5.8	16.2	8.4	5.8	15.7	8.1	5.1	14.8	7.4	4.9	12.0	6.3	4.3
Speed (RPM)	1372	868	1160	1357	811	1127	1341	785	1118	1321	750	1082	1282	730	1066	1281	710	1062	1275	720	1067	1272
Amps (Current)	0.18	0.08	0.12	0.16	0.06	0.10	0.14	0.06	0.10	0.13	0.05	0.08	0.11	0.04	0.07	0.10	0.04	0.07	0.09	0.04	0.06	0.08

Specifications	FV-0511VKSL2
MAX. Amps (Current)	0.19
Power Rating (V/Hz)	120/60
Motor Type	ECM
Type of Motor Bearing	Ball
Thermal Fuse Protection	Yes
Blower Wheel Type	Sirocco
ENERGY STAR Qualified	Yes
Duct Diameter (Inches)	4 & 6
Mounting Opening (Inches sq.)	10-1/2
Grille Size (Inches sq.)	13
Lamp Watts	10W
Lumens (lm)	700lm per lamp*
Lumens Per Watt (LPW)	70LPW*
Color Rendering Index	90
Color Temperature (Kelvin)	3,000K
Rated Life (hours)	50,000
Lamp Model #	N/A
Type of Lamp Socket	LED chip
Night Light Watts	0.2
Gross Weight (lbs)	12.5
UL tub/Shower Enclosure	Yes
Washington VIAQ Code	Yes
Wall installation	No
California Title 24 Compliant	Yes
Mfg in ISO 9001 Certified Facility	Yes

WhisperGreen® Select™ (Fan/LED Light) — Base Fan with LED Light and Multi-speed Plug 'N Play Module

FV-0511VKL2 + FV-VS15VK1

Characteristics (HVI tested data for 0.1" S.P.)																											
Static Pressure in inches w.g.	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375
Air Volume (CFM)	110	110	103	100	101	99	90	90	90	80	80	78	70	70	69	60	60	60	50	50	50	40	41	40	30	30	30
Noise (sones)	0.4	0.8	-	<0.3	0.8	-	<0.3	0.6	-	<0.3	0.5	-	<0.3	0.4	-	<0.3	0.4	-	<0.3	0.4	-	<0.3	0.4	-	<0.3	0.4	-
Power Consumption (watts)	10.5	15.8	19.4	8.2	13.6	18.0	6.7	11.6	15.9	5.3	9.9	13.8	4.6	8.7	12.3	3.7	7.2	10.4	3.2	6.2	9.9	2.7	5.5	8.1	2.5	4.8	7.0
Energy Efficiency (CFM/Watt)	10.5	6.9	5.2	12.2	7.4	5.5	13.5	7.8	5.7	15.3	8.2	5.6	15.8	8.4	5.8	16.2	8.4	5.8	15.7	8.1	5.1	14.8	7.4	4.9	12.0	6.3	4.3
Speed (RPM)	958	1203	1375	908	1194	1372	868	1160	1357	811	1127	1341	785	1118	1321	750	1082	1282	730	1066	1281	710	1062	1275	720	1067	1272
Amps (Current)	0.11	0.16	0.19	0.09	0.14	0.18	0.08	0.12	0.16	0.06	0.10	0.14	0.06	0.10	0.13	0.05	0.08	0.11	0.04	0.07	0.10	0.04	0.07	0.09	0.04	0.06	0.08

Specifications	FV-0511VKL2 + FV-VS15VK1
MAX. Amps (Current)	0.19
Power Rating (V/Hz)	120/60
Motor Type	DC
Type of Motor Bearing	Ball
Thermal Fuse Protection	Yes
Blower Wheel Type	Sirocco
ENERGY STAR Qualified	Yes
Duct Diameter (Inches)	4" or 6"
Mounting Opening (Inches sq.)	10-1/2"
Grille Size (Inches sq.)	13"
Lamp Watts	10.0
Lumens (lm)	700
Lumens Per Watt (LPW)	70
Color Rendering Index	90
Color Temperature (Kelvin)	3,000
Rated Life (hours)	50,000
Lamp Model #	N/A
Type of Lamp Socket	LED chip
Night Light Watts	0.2
Gross Weight (lbs)	12.5
UL tub/Shower Enclosure	Yes
Washington VIAQ Code	Yes
Wall installation	No
California Title 24 Compliant	Yes
Mfg in ISO 9001 Certified Facility	Yes

*Industry research indicates static pressure in typical installations ranges from 0.20" to 0.375".

Scan code to view SelectCycler animation

Design and specifications subject to change without notice.

One Connected Fan. Endless Possibilities.

The customizable IAQ solution for virtually any space

For over 25 years, Panasonic has developed innovative solutions that promote better indoor air quality and healthy home building. On our mission to help you build healthy homes, WhisperGreen® Select™ offers a powerful connected IAQ solution that delivers healthy indoor air quality for healthy living in any space. Now even more versatile, it operates as a standalone fan or as part of the Cosmos™ Healthy Home System through two-way wireless communication.

WHISPERGREEN SELECT™ IS AS EASY AS 1-2-3!

Step 1: Select a Base Fan Model

Select a base model to start building the perfect IAQ solution that satisfies your ventilation design requirements.

Fan	Fan/Light
FV-0511VK2: 50 to 110 CFM single speed	FV-0511VKL2: 50 to 110 CFM single speed + LED Light
FV-0511VKS2: 30 to 110 CFM pre-installed multi-speed	FV-0511VKSL2: 30 to 110 CFM pre-installed multi-speed + LED Light
FV-1115VK2: 50 to 150 CFM single speed	FV-1115VKL2: 50 to 150 CFM single speed + LED Light

Pick-A-Flow™ Airflow Technology
Pick-A-Flow™ Airflow Selector – one fan, you choose the CFM. Provides the unique ability to select your required airflow (50-80-110 and 110-130-150 CFM models) with the simple flip of a switch.

Step 2: Select Value Added Features

WhisperGreen Select™ offers a unique set of three patented modules that allow you to further customize your fan:

Multi-Speed with Time Delay (FV-VS15VK1) – Allows you to select the proper CFM settings to satisfy ASHRAE 62.2 continuous ventilation requirements. The fan runs continuously at a pre-set lower level, then elevates to a maximum level of operation when the wall switch is turned on, or when the SmartAction® motion sensor or condensation sensor module is activated. A high/low delay timer returns the fan to the pre-set CFM level after a period of time set by the user.

SmartAction® Motion Sensor (FV-MSVK1) – Automatically activates when someone enters the room. Once the settings have been applied, the fan becomes truly automatic, making it ideal for people with disabilities and assisted living environments such as nursing homes and retirement communities. This module also activates an automatic 20-minute delay off timer for the fan.

Condensation Sensor (FV-CSVK1) – Helps control bathroom condensation to prevent mold and mildew. Advanced sensor technology detects relative humidity and temperature to anticipate dew point, automatically turning the fan on to control humidity. Built-in Relative Humidity (RH) sensitivity adjustment enables fine tuning for moist conditions (30% to 80%, in 10% increments) and for satisfying CALGreen requirements. When the condensation sensor is used in conjunction with multi-speed functionality, the fan will kick up to high speed when the condensation sensor detects moisture in the room. This module also activates an automatic 20-minute delay off timer for the fan.

Multi-Speed with Time Delay (FV-VS15VK1)

SmartAction® Motion Sensor (FV-MSVK1)

Condensation Sensor (FV-CSVK1)

Step 3: Install Your Ideal Fan with the New! Flex-Z Fast™ Installation System

Single-hinged articulating joints to easily position bracket in between the joist and/or through ceiling hole.

Easily position bracket in between the joist or ceiling hole.

Extend bracket to desired length.

Ingeniously designed installation bracket provides flexible, fast and easy installation for all your new construction or renovation projects.

Superior Installed Performance up to 0.375" and Certified Quiet Operation at 0.25" Static Pressure

Although ASHRAE, ENERGY STAR®, LEED for Homes, and HVI have set the industry standard for performance measurement at 0.1" and 0.25", WhisperGreen® Select™ fans provide powerful CFM output at 0.375" that is more representative of typical installations. Sones have also been certified at 0.25" to provide a more realistic, installed value, so they are quiet under pressure and after installation.