

YASKAWA

PRECISION HVAC FOR A PERFECT FIT



Step into the Future of Sustainable Living

Unlock top-tier energy efficiency and energy savings with YASKAWA VFDs designed for peak performance. These drives optimize your building energy use, slashing costs while ensuring smooth function. With YASKAWA HV600 you get the perfect blend of quality, innovation and reliability to keep your HVAC systems efficient and your budget happy.

HV600 Series VFD Product	Available Enclosure Types
Standalone VFDs	IP20/UL Type 1
	IP55/UL Type 12
Switch Disconnect	IP55/UL Type 12
Narrow Bypass	IP55/UL Type 12



Elevate your operations with Yaskawa's innovative solutions. Discover how our cutting-edge products can revolutionize your industries, delivering unparalleled efficiency and performance. Let's build a brighter future together.

Effortless HVAC Solution for Every Industry



Booster & HYPN Pump



Primary Pump



Secondary Pump



Condenser Pump



AHUs



Ventilation Fan



Cooling Tower

Why use HV600?

Optimum Energy Use & Save Operating Cost

Using the HV600 VFD, energy savings are achieved by adjusting motor speeds to match load demands. According to the Affinity Law, reducing speed by 20% can cut energy consumption by up to 50%. The VFD's precise control, soft start/stop, and energy optimization features further enhance efficiency and reduce costs.

Office buildings are probably the most common type of facility that benefit from using Variable Frequency Drives. But many other buildings can benefit from the energy savings and carbon footprint reduction provided by VFDs, including:

- Data Centers
- Educational Facilities
- Entertainment Venues
- Government Facilities
- Housing Developments
- Medical Facilities
- Parking Structures
- Retail Stores

A Yaskawa representative can help you wherever usage can deliver the biggest return on your investment.

- Booster pumps
- Chiller compressors
- Chilled water pumps
- Condenser water pumps
- Condensing fans
- Cooling tower fans
- Fan arrays
- Supply and return fans

Reduce Carbon Footprint

Variable Frequency Drives (VFDs) significantly reduce carbon footprints by optimizing motor speeds to match energy use with actual load requirements, minimizing waste. This results in lower electricity consumption and fewer greenhouse gas emissions. Furthermore, VFDs enhance equipment efficiency and lifespan, further supporting sustainability by reducing the need for replacement parts and associated energy consumption in manufacturing and transportation.

25%

AIR HANDLING SYSTEMS ACCOUNT FOR 25% OF ELECTRICITY USED IN A TYPICAL OFFICE BUILDING.

70%

VFDs CAN REDUCE HVAC ENERGY COSTS UP TO 70%.

1/8

BY USING A VFD FOR FAN OR PUMP APPLICATIONS OPERATING AT 50% CAPACITY DURING LOW-DEMAND SITUATIONS, ENERGY CONSUMPTION CAN BE REDUCED TO JUST 1/8TH OF WHAT IT WOULD BE AT FULL SPEED



ENERGY EFFICIENCY WITH REDUCTION OF CARBON FOOTPRINT

Merging Green and Technology

Discover the Power of HV600 for Your HVAC System

Choice of Protection Rating

The HV600 offers robust protection, featuring standard IP20/UL Type 1 and IP55/UL Type 12 ratings, and operating reliably in ambient temperatures up to 60°C.

IP20 /  Type 1

IP55 /  Type 12

Side by Side

Side-by-Side Installation of the HV600 module allows for multiple drives to be installed in a minimal mounting space, enabling a more compact and efficient control panel design.

Dedicated 24V Supply Port

The HV600 offers essential features for efficient building operation, including standard embedded customer-supplied 24V DC input control power. This ensures uninterrupted network communications during main power outages and keeps the control board healthy for monitoring and operating IOs.

Network Multiplexing

The HV600 incorporates a specialized network multiplexing feature that enables four drives to operate in a closed-loop lead-lag configuration, collectively achieving the desired pressure conditions using HYPN Booster technology.

Flexible Motor Control

The HV600 is compatible with a wide range of motor types, including induction motors, permanent magnet motors, and synchronous reluctance motors.

Plenum Rated

All HV600 IP20 & IP55 models are plenum rated for building automation applications.

Enhanced Pump Control

The HV600 is a high-performance pump control system engineered for maximum reliability and efficiency. The following features contribute to the system's robustness, efficiency, and longevity.

Emergency Over Ride

This function enables the drive to operate regardless of faults ensuring smoke clearance, preventing smoke infiltration, and providing fresh air in emergency situations to safeguard human safety.

Real Time Clock Operation

This feature enables users to adjust the operating speed or set point based on the day and time programmed into the VFD.

Dynamic Noise Operation

This feature optimizes the VFD's output voltage, enhancing energy efficiency by reducing voltage during low-load conditions.

Pump Thrust

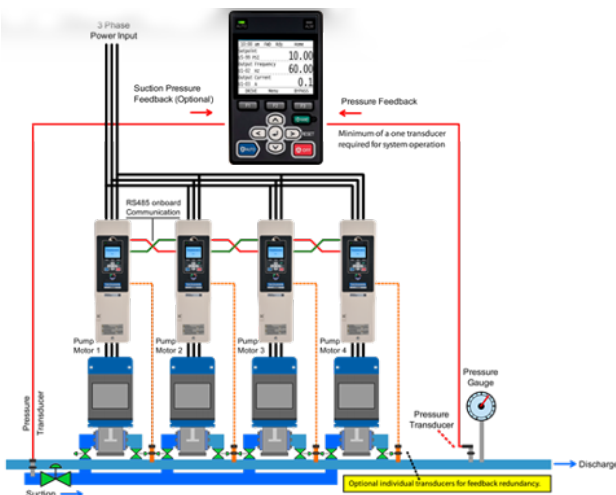
This feature prevents premature wear and tear of submersible pump motors by operating the pump at a minimum frequency for a specified duration.

Utility Start Delay

This feature enables a delay in VFD startup, even after receiving a RUN command, preventing peak power surges when multiple VFDs start simultaneously.

Low Water Level Detection

The HV600 VFD can detect low water levels by comparing the set level and the actual water level measured by (DPTs) sensor.



Extensive Programming Options

Program the HV600 with ease using its keypad, mobile device, or personal computer. Choose your preferred method for a streamlined experience, whether you're configuring setting, monitoring performance, or trouble shooting . The HV600 offers on intuitive navigation and step by step guided wizards to simplify each process, ensuring a smooth and efficient user experience.



1. Bluetooth keypad optional
2. Supports Android and iOS



Mobile Device Connectivity

Enjoy effortless mobile connectivity to the HV600 with the convenient USB port.

DriveWizard® Mobile

The DriveWizard Mobile app transforms your Android smartphone or tablet into a powerful interface for your HV600 drive. Access all parameter setup and troubleshooting information at your fingertips, anytime and anywhere. Conveniently save HV600 settings to your device or securely backup to the Yaskawa Drive Cloud service.

Drive Wizard Mobile also provides:

- Intuitive parameter editing with the help of search function
- Custom parameter and monitor lists
- Compare setting differences between the drive and backup files
- Simplify support activities and email drive setting files
- Parameter backup/verify with or without main power applied to the drive
- Backup and restore drive settings to the free and secure Yaskawa Drive Cloud service
- Export to DriveWizard

Convenient Programming without Main Power

Use the built-in USB On-The-Go connector to program the drive without the need for three-phase power. Simplify commissioning and make drive settings before installation. There is no need to remove the drive from the packaging!

Copy Function

Multiple sets of parameters can be stored and easily copied to additional drives.

High-Contrast Display

Contrast control offers clear and readable full-text descriptions.

Automatic Backup Function

Saves the current parameter settings after a user-defined period of inactivity. After an incident, settings can be easily retrieved from the keypad.



MicroSD Slot

MicroSD storage for data logging.

Real-Time Clock

Real-time clock for time and date stamp of fault information.

Advanced Keypad Navigation

Shortcuts, scrolling and function keys offer faster navigation.

Built in Network Compatibility

HV600 VFDs are compatible with the most popular HVAC protocols.



Keypad Benefits and Features

Reduce Setup Time

- Clear display of parameter and monitor functions
- Copy function integrated into the keypad
- Familiar parameter set
- Fast navigation

Drive Parameter Management

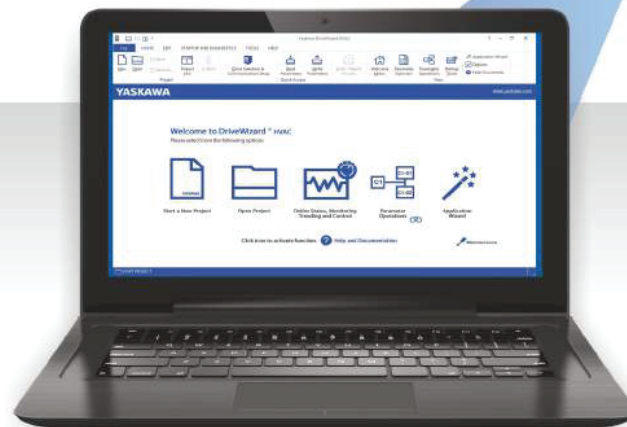
- Copy keypad
- Storage of up to four drive parameter sets
- Time and date stamped data and fault logging with up to 32 GB MicroSD
- Data trending for energy consumption analysis
- Automatic parameter set backup

Easy To Use

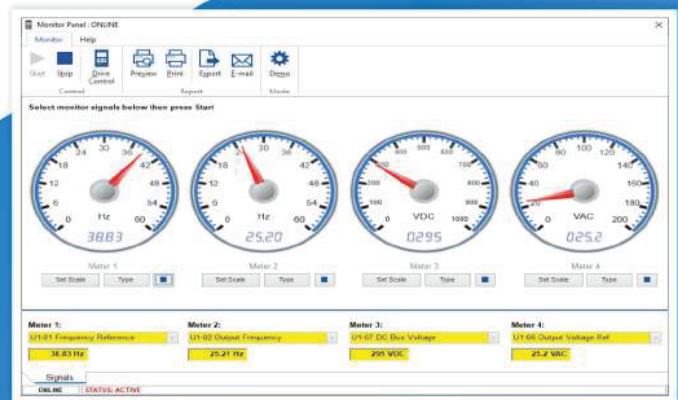
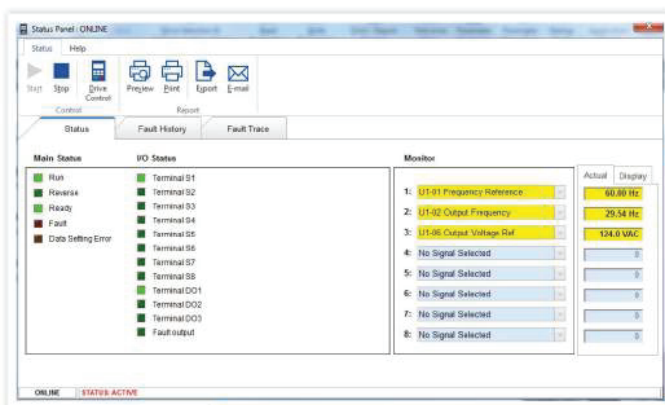
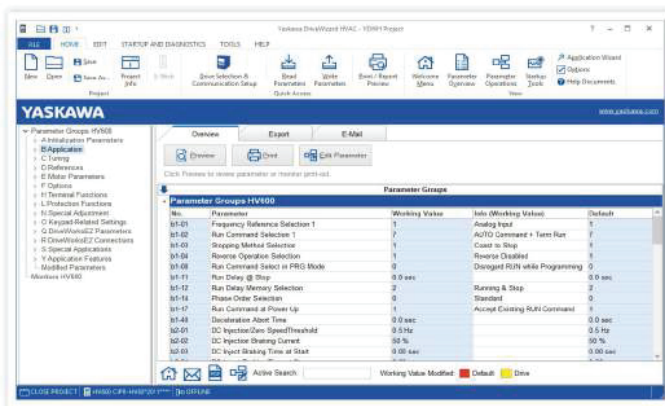
- 8-line, 32-character display LCD keypad
- Display contrast control
- Real-time clock with time and date stamp
- Tactile buttons
- Optional remote mounting of keypad using standard RJ45 extension cable
- Built in battery available

Drive Wizard Features

- Connect via USB and interface with HV600 without power.
- Create configurations offline, then later connect and download them to HV600.
- Monitor a dashboard of dynamic variable and discrete information.
- Chart your progress with up to six channels of recorded data.
- Create report for exporting and emailing.



**CONNECT VIA
USB WITHOUT
MAIN POWER!**



HV600 Product Portfolio

For All your HVAC VFD and package needs

STANDALONE VFDS



**IP20
UL TYPE 1**
Product Range

400 VAC:
1.5 - 160 kW
2 HP-215 HP



**IP55
UL TYPE 12**
Product Range

400 VAC:
1.5 - 75 kW
2 HP-100 HP

SWITCH DISCONNECT PACKAGE



**IP55
UL TYPE 12**
Product Range

400 VAC:
1.5 - 75 kW
2 HP-100 HP

NARROW BYPASS PACKAGE



**IP55
UL TYPE 12**
Product Range

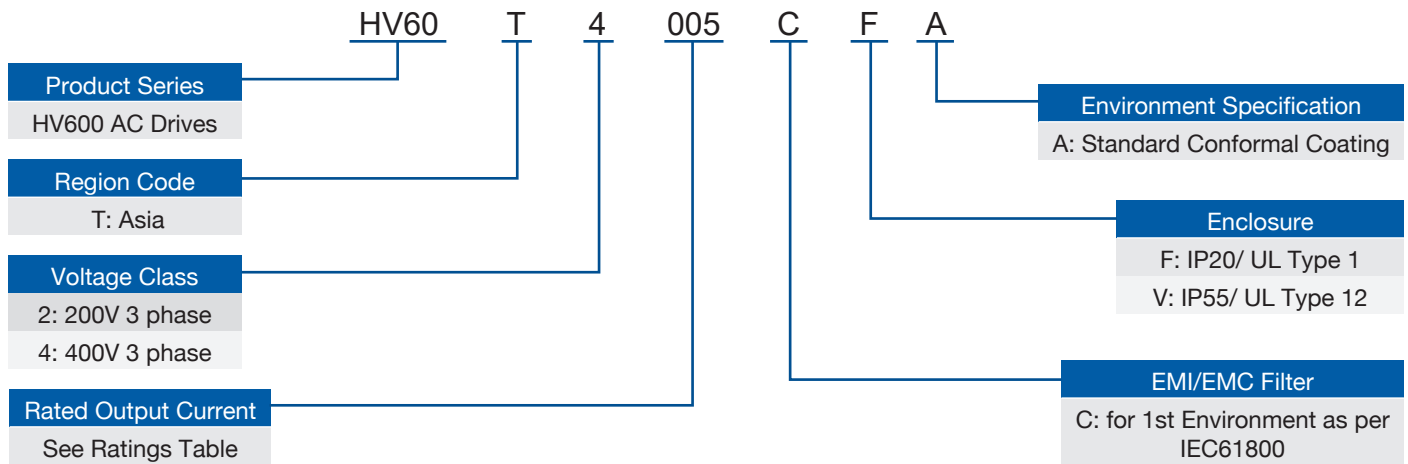
400 VAC:
1.5 - 30 kW
2 HP-50 HP

HV600

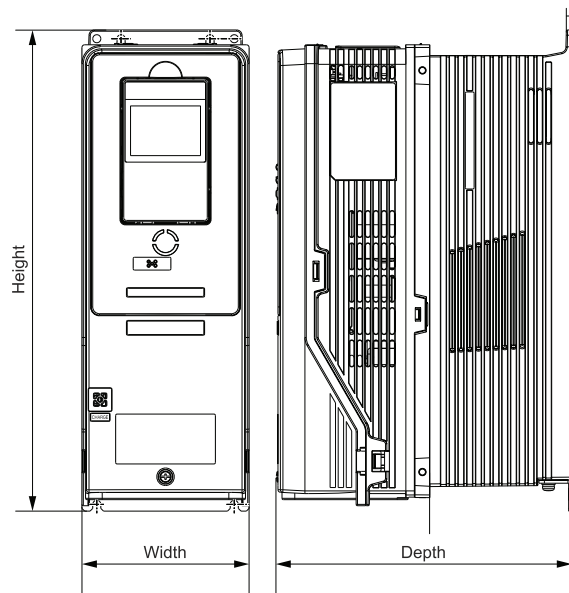
Standalone VFDs

The HV600 Variable-speed is engineered for use in HVAC building automation applications requiring reliable motor control. The HV600 features your choice of IP20/UL type 1 & IP55/UL type 12 protection.

Catalogue Code Designation



Dimension - Graphic Interpretation



Dimension

Model	Current (A)	Power (kW)	Power (hp)	IP20/ UL Type 1				IP55/ UL Type 12			
				Height (mm)	Width (mm)	Depth (mm)	Weight (kg)	Height (mm)	Width (mm)	Depth (mm)	Weight (kg)
4005	4.8	1.5	2	357	124	218	7	357	124	228	7
4006	5.4	2.2	3	357	124	218	7.5	357	124	228	7.5
4008	7.6	3	4	357	124	218	7.5	357	124	228	7.5
4011	11	4	5	357	124	218	7	357	124	228	7
4014	14	5.5	7	357	124	218	7	357	124	228	7
4021	21	7.5	10	447	124	233	9	447	124	243	9
4027	27	11	15	447	124	233	10	447	124	243	10
4034	34	15	20	447	124	233	11	447	200	243	11
4040	40	18.5	25	538	200	237	16	538	200	247	16
4052	52	22	30	538	200	237	18	538	200	247	18
4056	65	30	40	538	200	237	20	538	255	247	20
4077	77	37	50	590	255	263	28	590	255	273	28
4096	96	45	60	590	255	263	30	590	255	273	30
4124	124	55	75	590	255	263	33	590	255	273	33
4156	156	75	100	830	312	400	78	887	362	410	83
4180	180	90	125	731	312	420	79	-	-	-	-
4240	240	110	150	731	312	420	82	-	-	-	-
4302	302	160	215	831	440	472	125	-	-	-	-

Available as IP20 or IP55 with Built-in Building Automation Protocols!

HV600

Switch Disconnect

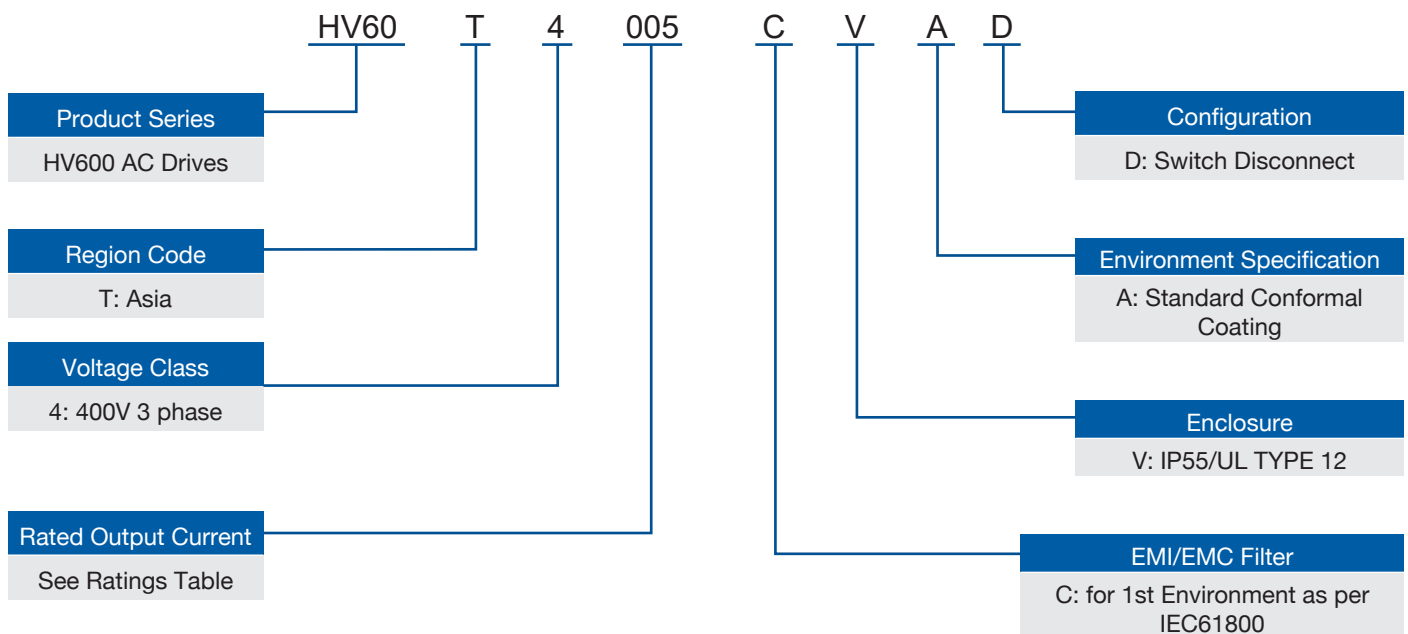
The HVAC Switch Disconnect solution is a highly versatile and reliable component designed specifically for HVAC application, including Air handling units (AHUS) and pumps. This switch disconnect solution is built to meet both IP55 and UL Type 12 standards, ensuring that it provides superior protection against dust, water ingress and other environmental factors.

Key Features Include

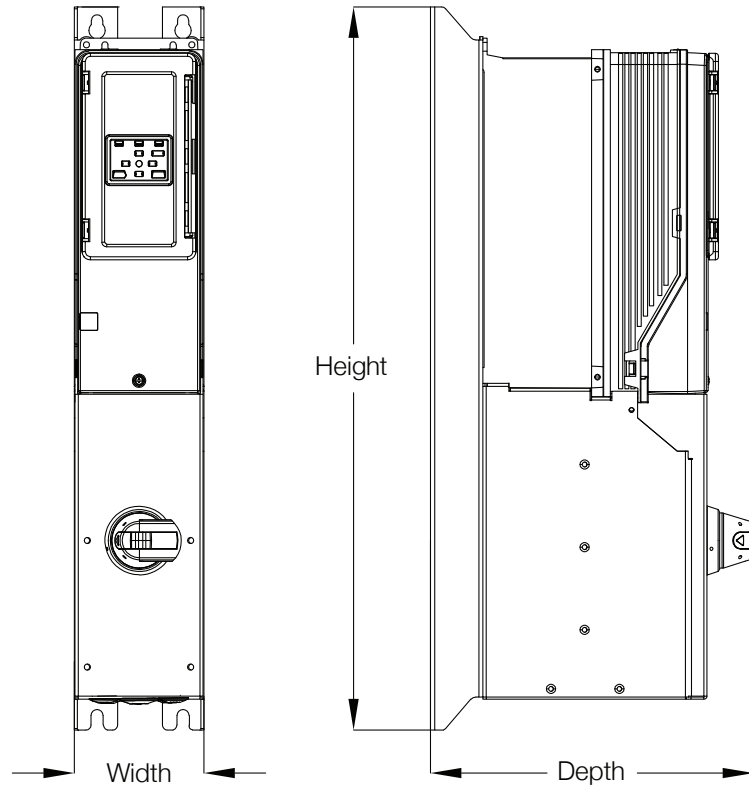
- 1. Durability and Protection**
With IP55 rating, the HV600 offers effective protection against dust and water.
- 2. UL Certification:**
The Switch disconnect is UL type certified, guaranteeing that it meets stringent safety and performance standards.
- 3. Compact and sleek design:**
Its modern, compact design allows for efficient space management, making it ideal for installations where space is limited.
- 4. Ease of Installation:**
The design emphasizes hassle free installation, allowing for quicker setup and reduced labor costs.
- 5. Versatility:**
Suitable for a range of HVAC applications, including AHUs and Pumps, providing reliable disconnect and switching capabilities.

This combination of features makes the HV600 an excellent choice for maintaining operational efficiency and safety in HVAC systems.

Catalogue Code Designation



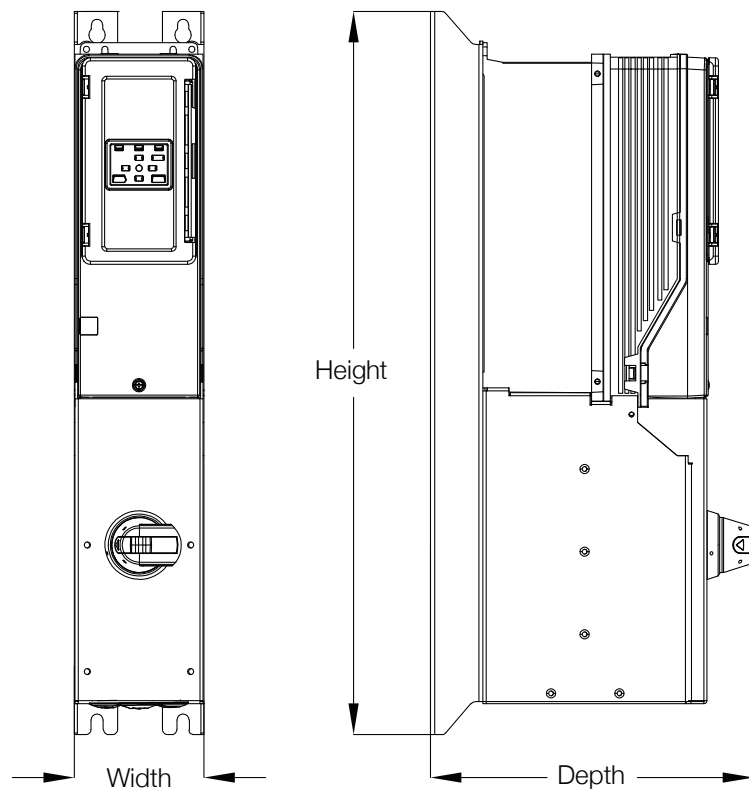
Dimension - Graphic Interpretation



Dimensions: 1.5kW to 5.5kW

Model	Current (A)	Power (kW)	Power (hp)	Height (mm)	Width (mm)	Depth (mm)	Weight (kg)
4005CVAD	4.8	1.5	2	700	125	313	9
4006CVAD	5.4	2.2	3	700	125	313	9.5
4008CVAD	7.6	3	4	700	125	313	9.5
4011CVAD	11	4	5	700	125	313	9
4014CVAD	14	5.5	7	700	125	313	9

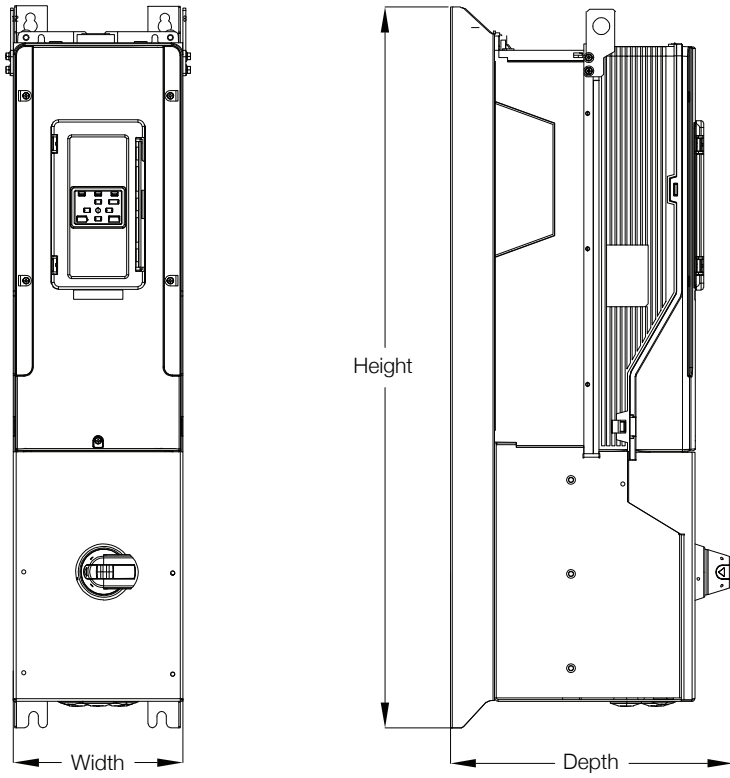
Dimension - Graphic Interpretation



Dimensions: 7.5kW to 15kW

Model	Current (A)	Power (kW)	Power (hp)	Height (mm)	Width (mm)	Depth (mm)	Weight (kg)
4021CVAD	21	7.5	10	795	125	328	13
4027CVAD	27	11	15	795	125	328	14
4034CVAD	34	15	20	795	125	328	15

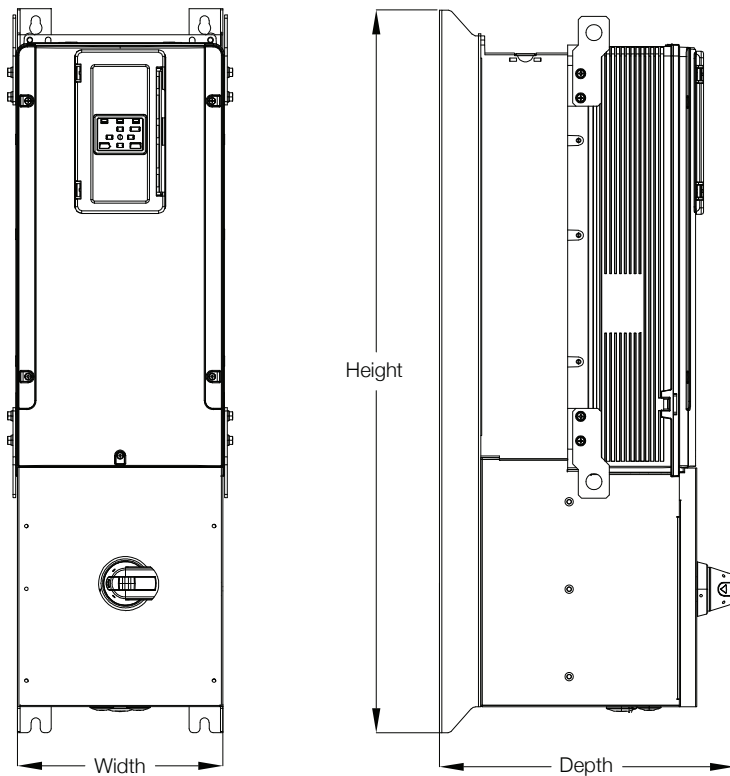
Dimension - Graphic Interpretation



Dimensions: 18.5kW to 30kW

Model	Current (A)	Power (kW)	Power (hp)	Height (mm)	Width (mm)	Depth (mm)	Weight (kg)
4040CVAD	40	18.5	25	850	195	332	21.5
4052CVAD	52	22	30	850	195	332	23.5
4065CVAD	65	30	40	850	195	332	25.5

Dimension - Graphic Interpretation

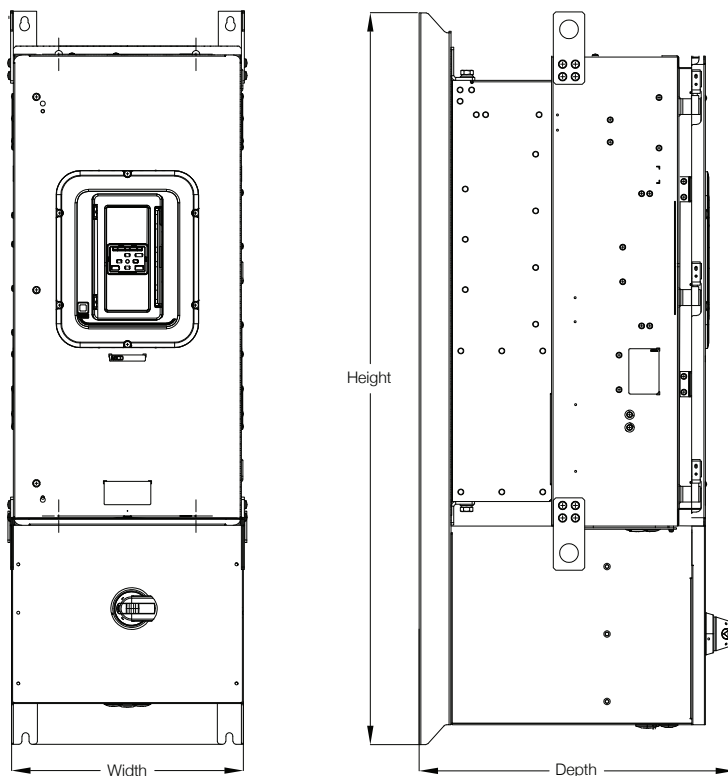


Dimensions: 37kW to 55kW

Model	Current (A)	Power (kW)	Power (hp)	Height (mm)	Width (mm)	Depth (mm)	Weight (kg)
4077CVAD	77	37	50	885	250	358	35
4096CVAD	96	45	60	885	250	358	37
4124CVAD	124	55	75	885	250	358	40

Dimension - Graphic Interpretation

Dimensions: 75kW



Model	Current (A)	Power (kW)	Power (hp)	Height (mm)	Width (mm)	Depth (mm)	Weight (kg)
4156CVAD	156	75	100	1165	372	460	93



DESIGNED FOR BUILDING AUTOMATION

- Built-in building automation protocols
- Emergency Override for occupant safety in fire events
- Compliance with global certifications and standards

BUILDING-SPECIFIC DESIGN

- Built-in line impedance for harmonic reduction
- On board EMC/RFI filter*
- Conformal coating for circuit board protection

APPLICATION PRESETS

- Fan
- Fan with PI Control
- Return Fan with PI Control
- Cooling Tower Fan
- Cooling Tower Fan with PI Control
- Pump
- Pump with PI Control

HV600

Narrow Bypass

The HV600 Narrow Bypass is a cutting-edge solution designed to optimize HVAC system performance and reliability. This product facilitates seamless switching between drive and bypass modes, ensuring uninterrupted system operation and maximum flexibility.

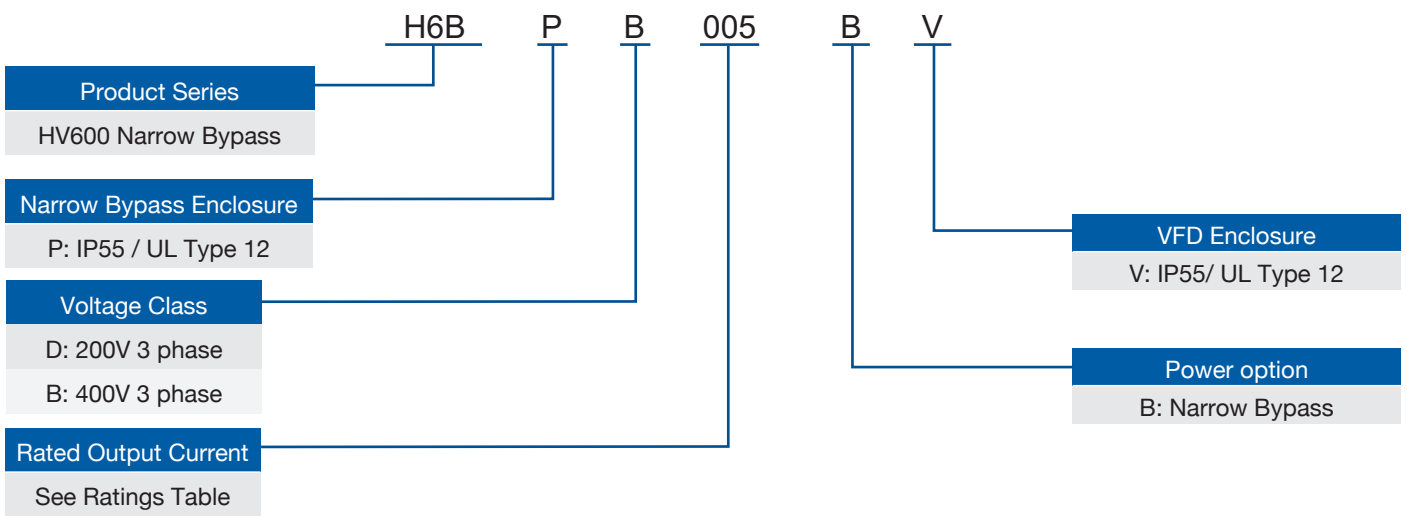
Key Features Include

Dual Operation modes

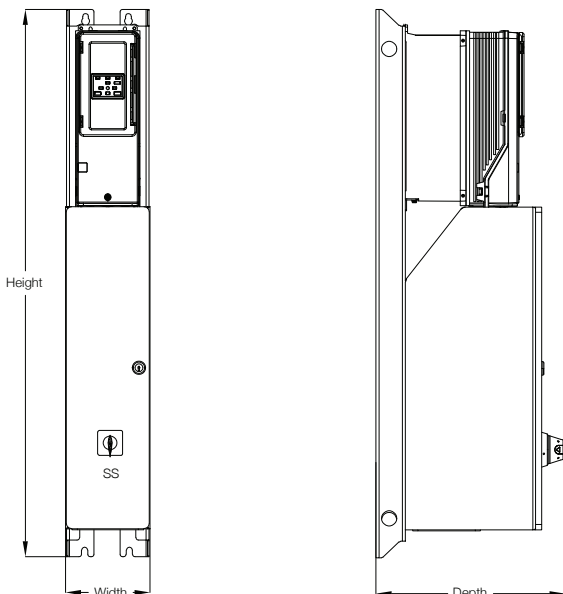
Drive Mode: Leverages the HV600 Variable Frequency Drive (VFD) to enable precise motor speed control and optimize energy efficiency.

Bypass Mode: In Bypass Mode, the VFD is bypassed, allowing the motor to connect directly to the power supply. This is essential for maintaining system operation during drive faults or maintenance.

Catalogue Code Designation



Dimension - Graphic Interpretation



Dimensions : 1.5kW to 30kW

Model	Current (A)	Power (kW)	Power (hp)	Height (mm)	Width (mm)	Depth (mm)	Weight (kg)
B005BV	4.8	1.5	2	1055	160	372	27
B006BV	5.4	2.2	3	1055	160	372	27.5
B008BV	7.6	3	4	1055	160	372	27.5
B011BV	11	4	5	1055	160	372	27
B014BV	14	5.5	7	1055	160	372	27
B021BV	21	7.5	10	1055	160	372	29
B027BV	27	11	15	1055	160	372	30
B034BV	34	15	20	1055	160	372	31
B040BV	40	18.5	25	1088	200	372	36
B052BV	52	22	30	1088	200	372	38
B065BV	65	30	40	1088	200	372	40

Environment Consider

Yaskawa maintains a corporate commitment to sustainability goals with an emphasis on the following environmental guidelines.

RoHS

RESTRICTION OF HAZARDOUS SUBSTANCES



LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN



EXCEPTIONAL DESIGN ENSURES MTBF OF 28 YEARS



ENERGY EFFICIENCY WITH REDUCTION OF CARBON FOOTPRINT

Merging Green and Technology

Item Specifications

Input Voltage	Three-phase 200 to 240 VAC or 380 to 480 VAC, +10%/-15%, 50/60 Hz +/-5%
Ambient Operating Temperature	-10°C to 50°C (Default- No Deration Required) 50°C to 60°C with Deration
Switching / Carrier Frequency	2 kHz to 12.5 kHz (Default: 5 kHz)
Ambient Storage Temperature	-20°C to +70°C
Overload Capacity	110% for 60 seconds, 140% for 2 seconds, 175% instantaneous
Output Frequency	0 to 400Hz
Environmental Specification	1,000 meters altitude, up to 4,000 meters with derating Class 3C2 and 3S2 operation for IP20/UL Type 1, Class 3C2 and 3S3 for IP55/UL Type 12 95% humidity, non-condensing IP20/UL Type 1 and IP55/Type 12 plenum rated
EMC and Harmonics	EMC filter built in; Complies with IEC 61800-3 restricted distribution for first environment Built-in 5% split choke on both positive and negative DC bus limb
Control Methods	V/F Open Loop Vector/PM EZ Open Loop Vector Control
Motor Types	Induction Permanent Magnet Synchronous Reluctance
Protective Design Types	IP20 IP55
Interface	LCD keypad with Hand-Off-Auto and Status Ring, Bluetooth keypad optional
Global Certifications	UL, cUL, CE, RoHS 2.0, WEEE, TUV SUD, SEMI F47
Functional Safety	Safe Torque Off, SIL3 according to IEC 62061, PLe according to ISO 1384
Standard I/O	(7) programmable multi-function digital inputs (24 VDC) (2) programmable multi-function analog inputs (0 to +10 VDC, 0-20 mA, 4-20 mA) (2) Functional Safety inputs (1) fault relay output (Form C) (3) programmable multi-function relay outputs (Form A) (2) programmable multi-function analog output (0 to +10 VDC, 0-20 mA, 4-20 mA)
24 VDC power	External supply input to maintain communications without main power 150 mA output for customer use
Network Communications	Built in: BACnet MSTP, Siemens APOGEE FLN P, Johnson Controls Metasys N2, and Modbus RTU Optional: LonWorks, PROFINET IP, EtherNet/IP, Modbus TCP/IP, BACnet IP
Software Support Tools	DriveWizard DriveWizard Mobile DriveWorks EZ
Humidity	95% RH or less Do not let condensation form on the drive.
Frequency Control Range	EZOLV: 0.01 Hz to 120 Hz V/f and OLV: 0.01 Hz to 400 Hz
Main Control Functions	Restart After Momentary Power Loss, Speed Search, Overtorque / Undertorque Detection, Torque Limit, 8 Step Speed (max.), Accel/Decel Switch, S-curve Acceleration/Deceleration, 3-wire Sequence, Auto-Tuning (Rotational and Stationary), Cooling Fan ON/OFF Switch, Slip Compensation, Torque Compensation, Jump Frequency, Upper/Lower Limits for Frequency Reference, DC Injection Braking at Start and Stop, Overexcitation Braking, High Slip Braking, PID Control (with Sleep Function), Energy Saving Control, Auto Restart, Application Presets, DriveWorksEZ (customized functions), KEB, Overexcitation Deceleration, Overvoltage Suppression

For Today and Tomorrow

- Built-in EMC Filter for First Environment reduced RF emissions
- Built in DC Link Choke to reduce harmonics
- Conformal coating resists contamination
- RoHS2-compliant for environmental friendliness



Versatile Building Automation

- Side-by-side mounting
- IP20, IP55 protection
- -10 to +60°C ambient operation
- Plenum rated
- Induction, permanent magnet, and synchronous reluctance motors



Network Flexibility

- BACnet[®]MS/TP
- Metasys[®]N2
- APOGEE[®]FLN P1
- Modbus[®]RTU
- Others optional



SUSTAINABLE

FLEXIBLE

Globally Certified
Building-Specific Design
RoHS2-Compliant

Space-Efficient
Extended Ratings
Flexible Connectivity

Quick and Easy Setup
Easy Installation

EASY

Simple Operation

- Simple set up for efficient commissioning
- DriveWizard Mobile for drive management with mobile devices
- Safe programming without main three-phase power
- Real-time clock for scheduled functions
- Hand-Off-Auto keypad with LCD display and tactile buttons
- EZ Vector Control Method allows tuning less operation



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Document YIND-M-BR-14-HK-Rev_A

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