



## SMART Series

Himel variable speed drive for pumps and fans

Reliable made affordable.



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## TARGET APPLICATIONS

### Wide range for wide applications

Supporting up to 850kW AC motors, 220V to 440V power input, SMART series can meet most of your applications.

### Abundant functions

Built-in PID

Simple PLC function

Built-in braking unit under 18.5kW

### Environment adaptability

Humidity-proof, dust-proof and oil-proof PCBA boards

Dust preventing film accessory for heavy dusty environment



### PUMP

Irrigation  
Paper mill and pulp pump  
Fountain  
Sewage pump  
Sand pump  
Fire patrol pump  
Rod pump  
Circulation pump  
Photovoltaic pump  
...



### FAN

- Drying
- Ventilation
- Dust removing
- Industrial fan
- Air blowing
- Hot surface treatment
- Air supply fan for boiler
- ...



### High rating general purpose

Any general application for high rated power motor up to 850kW



## SMART SERIES



Sensor-less vector control variable speed drives designed for your pumps and fans

**Universal: 1kW...45kW, 220V, single phase AC**  
**11kW...850kW, 380V – 440V, three phase AC**

### Excellent performance

Optimized space voltage vector control algorithm:150% starting torque output at 1Hz

### Abundant Functions and Flexible Configuration

Built-in PID; Multi-speed (8 stages speed at most); Simple PLC  
 High speed Impulse input and output function  
 Built-in braking unit including and below 18.5kW; Built-in standard MODBUS communication protocol  
 Optional double analog (AO) output

### Excellent adaptability

All boards are coated with "Comprehensive anti-corrosion paint" to make frequency inverter humidity-proof, dust-proof and oil-proof.  
 Rich protection functions in order to adapt to different environments such as over-voltage, under-voltage, input phase-loss, over-load, over-heat, over-current etc.

## OVERALL DIMENSIONS

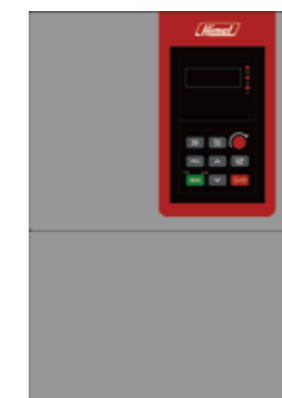
Motor Power (kW)	Dimensions(mm)					Mounting Holes(mm)	Installation
	W	H	D	W1*	H1*		
11...18.5	249	352	229	200	334	4.5	Wall mounting
22...30	320	506	289	200	482	4.5	
37...45	342	561	292	200	529	5.5	
55...75	394	669	315	200	645	6	
93...110	573	776	298	400	748	5	
132...160	575	956	333	400	928	5	
185...200	625	1101	358	480	1073	5	Cabinet
220...280	700	1100	446.5	500	1070	8	
160...200	563	1265	481				
220...280	700	1566	407				
315...400	850	1974	470.5				
500...630	950	1974	490.5				

\* W1 and H1 are mounting dimensions

## PRODUCT SPECIFICATION

Main control function	Modulation mode	Space voltage vector control
	Control mode	Sensor-less vector control (SVC)
	Frequency accuracy	Digital setting: Max frequency × ±0.01% Analog setting: Max frequency × ±0.2%
	Frequency resolution	Digital setting: 0.01Hz Analog setting: Max frequency × 0.1%
	Starting Frequency	0.0Hz ~ 10.00Hz
	Torque rise	Auto torque rise, manual torque rise 1% ~ 30.0% (valid for V/F)
	V/F curve	Three ways: Linear V/F curve, square V/F curve, user self-defined V/F curve
	Acceleration/deceleration time	Optional time unit (Min/s), Max time: 3600s (settable in the range of 0.1 ~ 3600s).
	DC braking	Optional for both starting and stopping, operating frequency: 0 ~ 20Hz, operating time: 0 ~ 30s
	Jogging	Jogging frequency range: 0.1Hz ~ 50.00Hz, Jogging acceleration and deceleration time: 0.1 ~ 3600s.
Sensor-less vector control	Built-in PID	Convenient for closed loop control system, applicable for course control like pressure and flow etc.
	Multi-speed operation	Realize multi-speed operation by built-in PLC or control terminal.
	Weaving wobble frequency	Can get wobble frequency of adjustable central frequency
	Auto voltage adjustment	When input voltage changes, the output voltage can be kept constant by adjusting PWM output (AVR function).
	Auto energy-saving	According to load condition, V/F curve can be optimized for automatic energy-saving.
	Auto current limiting	Limit in-service current automatically, so as to avoid tripping for a fault caused by frequent over current.
	Transient torque	150% output torque at 1Hz, rev accuracy: 0.1%
	Motor parameters automatic read	Can automatically read motor parameters, in order to achieve optimal control.
	Operational methods	Manual; using control terminal; using serial port; three way control using output collector terminals.
	Frequency setting methods	Using keypad analog potentiometer; keypad ▲, ▼ keys; setting functional code digits; using serial port; UP/DOWN terminal digit setting; using analog voltage/current signal, using pulse at a terminal; using combination of both voltage and current signals; switching between any of the above methods using external terminal.
Running function	Switch input methods	External forward/reverse command using terminals, using 6 input terminals to select 30 different functions.
	Analog input methods	Two analog signal input terminals with 0 ~ 20mA, 0 ~ 10V options available.
	Analog output methods	0 ~ 10V / 0 ~ 20mA analogue output signal for setting physical quantities such as frequency etc.
	Switch output methods	Three programmable open collector outputs; One relay output signal; can be used to set different physical quantities.
	LED display	27 different parameters like frequency, output voltage, output current etc. can be displayed on LED.
Operating panel	Display external instrument	Display output frequency, output current, and output voltage and so on.
	Protection function	Over-current, over-voltage, under-voltage, over-heat and over-load protection.
Optional	Braking unit, remote operating panel, remote cable and keypad tray.	
	Service location	Indoor/outdoor environments such as dusty, corrosive gas, oil fog, steam and so on.
Environment	Altitude	Lower than 1000m (derated use at higher than 1000m)
	Environment temperature	-10°C ~ +40°C
	Humidity	Less than 90% RH, no condensation
	Vibration	Less than 5.9m/s <sup>2</sup> (0.6M)
	Storage temperature	-20°C ~ +60°C
Structure	Protection class	IP20
	Cooling way	Air-blast cooling
Installation Way	Wall-hanging, cabinet	

## REFERENCES



SMART Series	Heavy duty (constant torque) G-type		Light overload (variable torque) P-type	
	Motor Power (kW)	Continuous Output Current (A)	Motor Power (kW)	Continuous Output Current (A)
Three-phase supply voltage: 200...240V				
HAV-SU-2T0075G-0110P	7.5	26.67	11	39
HAV-SU-2T0110G-0150P	11	39	15	52.5
HAV-SU-2T0150G-0185P	15	52.5	18.5	62.35
HAV-SU-2T0185G-0220P	18.5	62.35	22	73.6
HAV-SU-2T0220G-0300P	22	73.6	30	98.7
HAV-SU-2T0300G-0370P	30	98.7	37	121
HAV-SU-2T0370G-0450P	37	121	45	146.7
HAV-SU-2T0450G-0550P	45	146.7	55	188.8
Three-phase supply voltage: 380...415V				
HAV-SU-4T0110G-0150P	11	25	15	33
HAV-SU-4T0150G-0185P	15	33	18.5	39
HAV-SU-4T0185G-0220P	18.5	39	22	45
HAV-SU-4T0220G-0300P	22	45	30	60
HAV-SU-4T0300G-0370P	30	60	37	75
HAV-SU-4T0370G-0450P	37	75	45	91
HAV-SU-4T0450G-0550P	45	91	55	112
HAV-SU-4T0550G-0750P	55	112	75	150
HAV-SU-4T0750G-0930P	75	150	93	176
HAV-SU-4T0930G-1100P	93	176	110	210
HAV-SU-4T1100G-1320P	110	210	132	260
HAV-SU-4T1320G-1600P	132	260	160	310
HAV-SU-4T1600G-1850P	160	310	185	340
HAV-SU-4T1600G-1850P-S	160	310	185	340
HAV-SU-4T1850G-2000P	185	340	200	385
HAV-SU-4T1850G-2000P-S	185	340	200	385
HAV-SU-4T2000G-2200P	200	385	220	430
HAV-SU-4T2000G-2200P-S	200	385	220	430
HAV-SU-4T2200G-2500P	220	430	250	475
HAV-SU-4T2200G-2500P-S	220	430	250	475
HAV-SU-4T2500G-2800P	250	475	280	535
HAV-SU-4T2500G-2800P-S	250	475	280	535
HAV-SU-4T2800G-3150P	280	535	315	600
HAV-SU-4T2800G-3150P-S	280	535	315	600
HAV-SU-4T3150G-3550P-S	315	600	355	645
HAV-SU-4T3550G-4000P-S	355	645	400	750
HAV-SU-4T4000G-S	400	750	-	-
HAV-SU-4T4500G-5000P-S	450	875	500	920
HAV-SU-4T5000G-S	500	920	-	-
HAV-SU-4T5600G-S	560	1050	-	-
HAV-SU-4T6300G-S	630	1150	-	-
HAV-SU-4T8500G-S	850	1630	-	-