



# MOTOR MANAGEMENT

Products of today, ready for tomorrow

[www.himel.com](http://www.himel.com)

# MOTOR MANAGEMENT



## HDC3 AC Contactors

---



HDC3

Rated current: 6-95A

Pole: 3P

\* 120~630A

## HJX2 4P AC Contactors

---



HJX2 4P

Rated current: 9-95A

Pole: 4P

## HDC3S AC Contactors

---



HDC3S

Rated current: 120-400A

Pole: 3P

## HJX2-F 4P AC Contactors

---



HJX2-F 4P

Rated current: 115-800A

Pole: 4P

## HDR3s Thermal Overload Relays

---



HDR3s

Frame rated current: 25, 38, 93A

Setting current: 0.1-93A

\* 120~630A

## HDC17K Miniature AC Contactors

---



HDC17K

Rated current: 6-12A

Pole: 3P/4P

# MOTOR MANAGEMENT

## HDZ3 Contactor Relays

---



HDZ3

Pole: 3P

## BASIC Series Variable Speed Drives

---



BASIC

Small and simple general-purpose applications

## HDP6 Motor Circuit Breakers

---



HDP6

Frame rated current: 32/80A

Setting Current : 0.1-0.16A, ..., 24-32A, 40-80A

## EXPERT Standard Variable Speed Drives

---



EXPERT Standard

Advanced General-Purpose Applications

## HDS3 Magnetic Starters

---



HDS3

Frame current: 38A, 95A

Rated current: 09-95A

Protection level: IP54

## SOLAR Variable Speed Drives

---



SOLAR

## BASIC & EXPERT Soft Starters

---



BASIC



EXPERT

## SMART Pump Solar Variable Speed Drives

---



SMART Pump

Pumps, fans and chillers

## MOTOR MANAGEMENT

# HDC3 AC Contactors

Standard: IEC60947-4



### Range Presentation

HDC3 is Himel 3 series range of contactors designed for Motor Control AC3 applications up to 630A .

HDC3 contactors are applicable to AC power systems 50Hz or 60Hz with rated operating voltage up to 690V.

HDC3 contactors can be combined with HDR3s thermal overload relays to form magnetic motor starters up to 630A.

### Features

- ◆ 5 Frame Sizes: 25, 38, 95, 225, 630A
- ◆ Wide range of operating voltage from 70%~120% Us
- ◆ Full range of accessories for any type of application
- ◆ Can be combined with HDR3s thermal overload relay

### Online Content



HDC3

### Selection Code

Range name	Current specification	Reversible	Auxiliary contact	Coil voltage	Coil frequency
<b>HDC3</b>	<b>06</b>	<b>N</b>	<b>11</b>	<b>M</b>	<b>5</b>
06-95A	<b>06:</b> 06A <b>09:</b> 09A <b>12:</b> 12A <b>18:</b> 18A <b>25:</b> 25A <b>32:</b> 32A <b>38:</b> 38A <b>40:</b> 40A <b>50:</b> 50A <b>65:</b> 65A <b>80:</b> 80A <b>95:</b> 95A	<b>N:</b> reversible AC Contact with mechanical interlock  <b>Default:</b> AC Contact	06A: <b>01:</b> 1NC <b>10:</b> 1NO 09-95A: <b>11:</b> 1NO+1NC	<b>B:</b> 24V <b>C:</b> 36V <b>E:</b> 48V <b>F:</b> 110V <b>S:</b> 127V <b>M:</b> 220/230V <b>U:</b> 240V <b>Q:</b> 380/400V <b>L:</b> 415V <b>X:</b> 440V	<b>5:</b> 50Hz <b>7:</b> 50/60Hz
120-630A	<b>120:</b> 120A <b>160:</b> 160A <b>185:</b> 185A <b>225:</b> 225A  <b>265:</b> 265A <b>330:</b> 330A <b>400:</b> 400A <b>500:</b> 500A <b>630:</b> 630A	<b>Default:</b> AC Contact	<b>Default: 22:</b> 2NO+2NC	<b>F:</b> 110V <b>S:</b> 127V <b>M:</b> 220V <b>Q:</b> 380V <b>EHE7:</b> 48-130V <b>KUE7:</b> 100-250V <b>URE7:</b> 250-500V  <b>EHE7:</b> 48-130V <b>KUE7:</b> 100-250V <b>URE7:</b> 250-500V	<b>Default: 5:</b> 50Hz <b>7:</b> 50/60Hz

Note: 265-630A only wide coil voltage ratings available ( EHE7 , KUE7 , URE7 )

# HDC3 AC Contactors





Standard: IEC60947-4



## AC Contactors HDC3 Series



### FEATURES

-  Wide range of operating voltage
-  Complete set of accessories
-  5 frame sizes
-  Can be combined with HDR3s (thermal overload relay)

### APPLICATIONS

-  Machine tool
-  Hoisting machinery
-  Textile machinery
-  Building material machines
-  Welding machine

## MOTOR MANAGEMENT

# HDC3 AC Contactors

Standard: IEC60947-4



Technical Parameter															
AC Contactors			HDC3												
Contactor model			06	09	12	18	25	32	38	40	50	65	80	95	
Main circuit characteristics															
Conventional thermal current(I <sub>th</sub> ), AC-1	380/400V	A	16	25	25	32	40	50	50	60	80	80	125	125	
		A	6	9	12	18	25	32	38	40	50	65	80	95	
Rated operating current (I <sub>e</sub> ), AC-3	220/230V	kW	1.1	2.2	3	4	5.5	7.5	11	11	15	18.5	22	25	
	380/400V	kW	2.2	4	5.5	7.5	11	15	18.5	18.5	22	30	37	45	
	660/690V	kW	3	5.5	7.5	10	15	18.5	18.5	30	33	37	45	45	
Rated operating power(P <sub>e</sub> ), AC-3															
Mechanical endurance		10k times	1200				1000			900			650		
Electrical endurance		10k times	110						90				65		
Operation frequency			AC-3	1200						600					
Number of poles			3P												
Rated insulation voltage(U <sub>i</sub> )		V	690												
Maximum rated operating voltage(U <sub>e</sub> )		V	660/690												
Certificate			CB, CE, SEMKO												
Coil															
Rated control circuit voltage(U <sub>s</sub> )	50Hz	V	24, 36, 48, 110, 127, 220/230, 240, 380/400, 415, 440												
	50/60Hz	V	24,36, 48, 110, 127, 220/230, 240, 380/400, 415, 440												
Allowable control circuit voltage(U <sub>s</sub> )	Operation	V	AC:70%~120% (vertical installation)												
	Drop-out	V	AC: 20%-75%												
Coil power	Actuation	VA	50	60			70			200			200		
	Holding	VA	6-9.5	6-9.5			6-9.5			15-20			15-20		
Main circuit terminal wiring capability															
Soft wire	1 wire	mm <sup>2</sup>	1...4				1.5...6			2.5..25			4...50		
	2 wire	mm <sup>2</sup>	1...4				1.5...6			2.5..16			4...25		
Hard wire	1 wire	mm <sup>2</sup>	1...4				1.5...6		1.5...10		2.5..25			4...50	
	2 wire	mm <sup>2</sup>	1...4				1.5...6		1.5...6		2.5..10			4...25	
Auxiliary contact															
Conventional thermal current(I <sub>th</sub> )		A	10												
Rated operating voltage	AC	V	380												
	DC	V	220												
Rated control capacity	AC-15	VA	380												
	DC-13	W	33												

## MOTOR MANAGEMENT

# HDC3 AC Contactors

Standard: IEC60947-4










Main technical parameter											
AC Contactor			HDC3								
Contactor model			120	160	185	225	265	330	400	500	630
<b>Main Circuit Characteristic</b>											
Conversional thermal current(I <sub>th</sub> ), AC-1	380/400V	A	200	200	275	275	315	380	450	630	700
		A	120	160	185	225	265	330	400	500	630
Rated operating current (I <sub>e</sub> ), AC-3	220/230V	kW	37	45	55	63	75	90	132	160	200
	380/400V	kW	55	75	90	110	132	160	220	250	355
	660/690V	kW	80	100	110	110	165	220	300	350	450
Mechanical Durabilities		10k times	600								
Electrical Durabilities		AC-3	10k times	120			80			60	
Operation Frequency			Times/hour	1200			600				
Number of Poles			3P								
Rated Insulation Voltage(U <sub>i</sub> )		V	1000								
Maximum Rated Operating Voltage(U <sub>e</sub> )		V	690								
Certificate			CB, CE, SEMKO								
<b>Coil</b>											
Rated Control Circuit Voltage(Us)	50Hz	V	110V,127V,220V,380V				-				
	50/60Hz	V	48-130V, 100-250V, 250-500V (AC-DC)								
Allowable Control Circuit Voltage(Us)	Operation	V	AC:85%-110% (vertical installation); AC-DC: 85%-110%								
	Drop-out	V	AC: 20%-75%; AC-DC: 10%-70%								
Coil Power	Actuation	VA	500			600			800		
	Holding	VA	78			18.5			18.5		
<b>Main Circuit terminal Wiring Capability</b>											
Soft Wire	1 wire	mm <sup>2</sup>	10~240								
	2 wire	mm <sup>2</sup>	10~75								
Hard Wire	1 wire	mm <sup>2</sup>	10-150				50-240				
	2 wire	mm <sup>2</sup>	10-75				50-240				
<b>Auxiliary Contact</b>											
Conventional Thermal Current(I <sub>th</sub> )		A	10								
Rated Operating Voltage	AC	V	380								
	DC	V	220								
Rated Control Capacity	AC-15	VA	380								
	DC-13	W	33								

# MOTOR MANAGEMENT

## HDC3 AC Contactors

Standard: IEC60947-4



Technical Parameter														
AC Contactors	HDC3													
Contactor model		06	09	12	18	25	32	38	40	50	65	80	95	
<b>Thermal relay</b>														
HDR3s thermal relay 6-95 A		HDR3s-25 P16 : 0.1-0.16A P25 : 0.16-0.25A ..... 25 : 17-25A					HDR3s-38 32 : 23-32A 38 : 30-40A			HDR3s-95 40 : 30-40A 50 : 37-50A ..... 93 : 80-93A				
Independent installation base		HJRS1D25J					HJRS1D38J			HJRS1D93J				
<b>Accessories</b>														
Top auxiliary contact		2 Poles : HF4-11, HF4-20, HF4-02 4 Poles : HF4-22, HF4-31, HF4-13, HF4-40, HF4-40												
Side auxiliary contact		2 Poles : HFC6-11, HFC6-20, HFC6-02												
Air delayed head		Making time delay : HFT6-20, HFT6-22, HFT6-24 Breaking time delay : HFT6-30, HFT6-32, HFT6-34												
Mechanical interlock		HDC3 09-32 horizontal installation : HRF6-32 HDC3 40-95 horizontal installation : HRF6-95												
Spare coil		HX3 + Contact AF + Ue + Hz EXP : HX395M7, HDC3 Coil 80-95A 220/230V 50/60Hz												








# MOTOR MANAGEMENT

## HDC3 AC Contactors

Standard: IEC60947-4



Technical Parameter											
AC Contactors	HDC3										
Contactor model HDC3		120	160	185	225	265	330	400	500	630	
<b>Thermal relay</b>											
HDR3s thermal relay 120-630 A				<b>HDR3s-185</b> 95 : 75-95A 135 : 105-135A ..... 185 : 150-185A			<b>HDR3s-630</b> 200F : 145-200A 250F : 180-250A ..... 630F : 460-630A				
<b>Accessories</b>											
Top auxiliary contact				2 Poles : HF4-11, HF4-20 , HF4-02 4 Poles : HF4-22, HF4-31 , HF4-13 , HF4-40 , HF4-40							
Side auxiliary contact				2 Poles : HFC4-11							
Air delayed head				Making time delay : HFT6-20 , HFT6-22 , HFT6-24 Breaking time delay : HFT6-30 , HFT6-32 , HFT6-34							
Mechanical interlock	Please connect with local Himel Sales to check availability										
Spare coil				EXP : HX3225M, HDC3 Coil 120-225A 220VAC 50Hz HX3225KUE7, HDC3 Coil 120-225A 100-250VAC/DC 50/60Hz							

# MOTOR MANAGEMENT

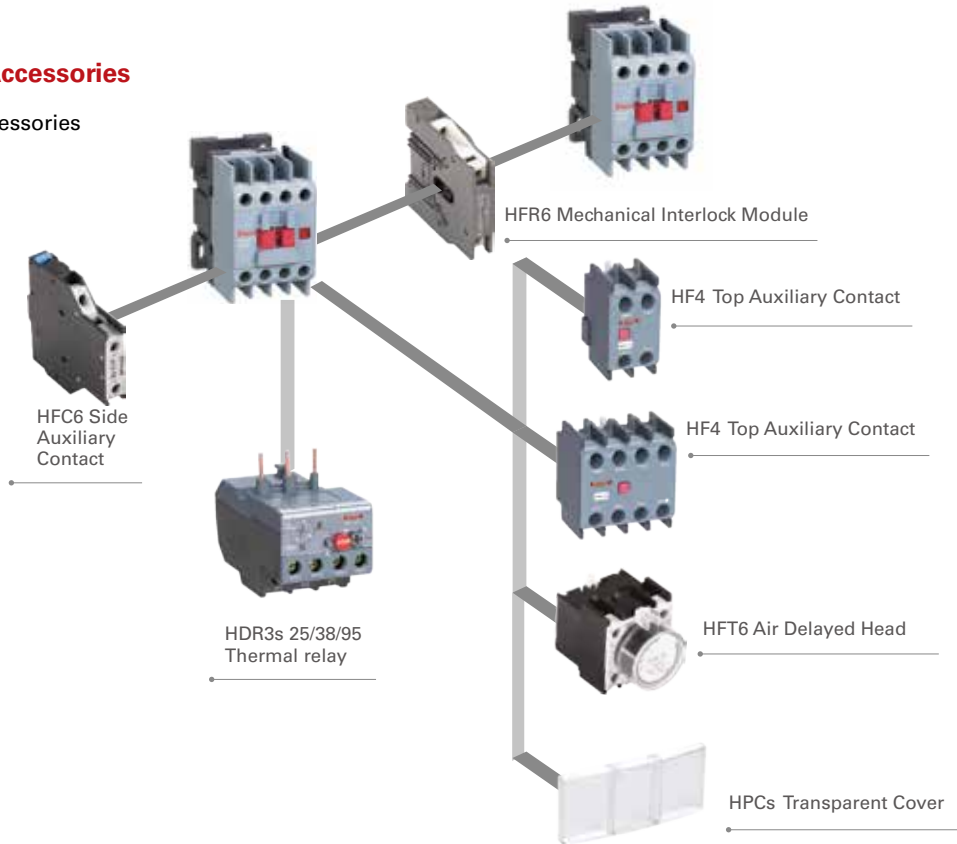
## HDC3 AC Contactors

Standard: IEC60947-4

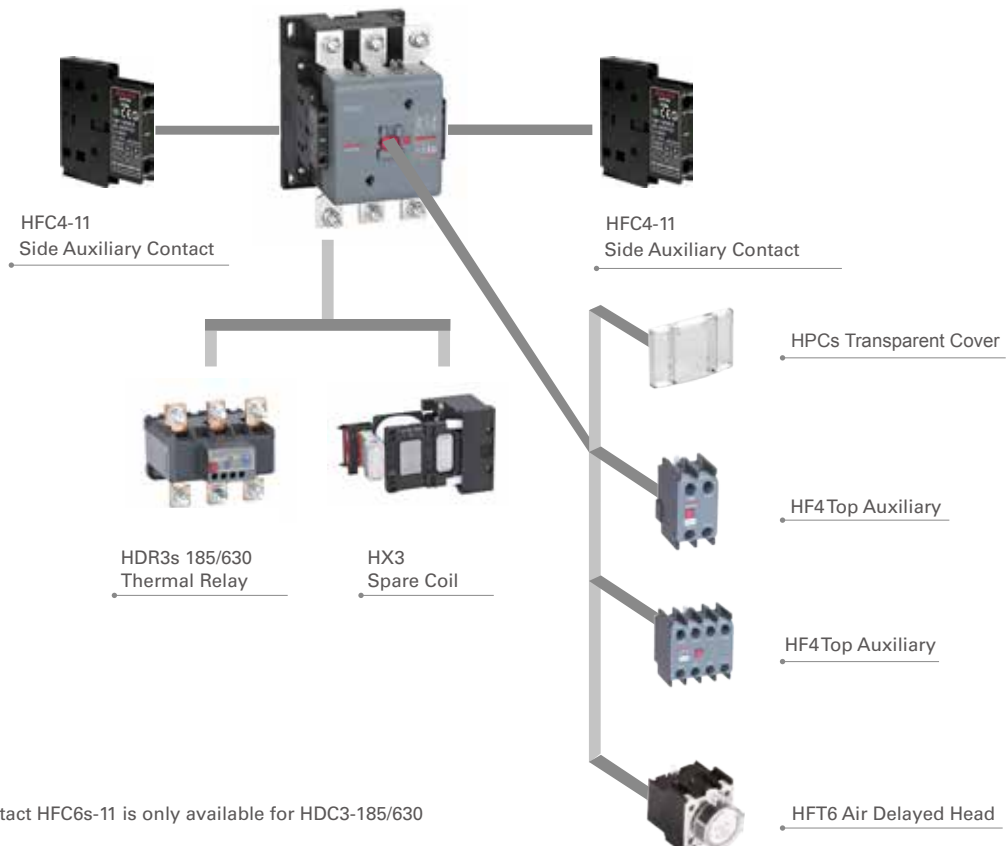


### Overview of Accessories

#### HDC3 09-95A Accessories



#### HDC3 120-630A Accessories



Note: Side Auxiliary Contact HFC6s-11 is only available for HDC3-185/630

# MOTOR MANAGEMENT

## HDC3 AC Contactors

Standard: IEC60947-4



### HDC3 6-95A & 120-630A Contactor Accessories

Transparent cover

Contactor Type	Reference
HDC3-6~38A/HDZ3	HPCs38
HDC3-40~65A	HPCs65
HDC3-80~630A	HPCs95

#### Auxiliary contact

Installation position	Pole	Auxiliary Contact NO	Auxiliary Contact NC	Contact point layout	Reference	
Top	2	0	2		HF4 02	
		1	1		HF4 11	
		2	0		HF4 20	
	4	0	4		HF4 04	
		1	3		HF4 13	
		2	2		HF4 22	
		3	1		HF4 31	
	Side	2	0	2		HFC6 02
			1	1		HFC6 11
			2	0		HFC6 20



#### Air Delayed Head

Installation Position	Delay type	Wiring diagram	Delay range	Reference
Top	Making time-delay		0.1-3s	HFT6 20
			0.1-30s	HFT6 22
			10-180s	HFT6 24
	Breaking time-delay		0.1-3s	HFT6 30
			0.1-30s	HFT6 32
			10-180s	HFT6 34



# MOTOR MANAGEMENT

## HDC3S AC Contactors

Standard:



### Range Presentation

HDC3S is Himel 3 series range of contactors designed for Motor Control AC3 applications form 120 to 400A.

HDC3S contactors are applicable to AC power systems 50Hz or 60Hz with rated operating voltage up to 690V.

HDC3S contactors can be combined with HDR3s thermal overload relays to form magnetic motor starters up to 630A.

HDC3S contactors can use all Himel 3 series accessories expect Spare Coil

### Online Content



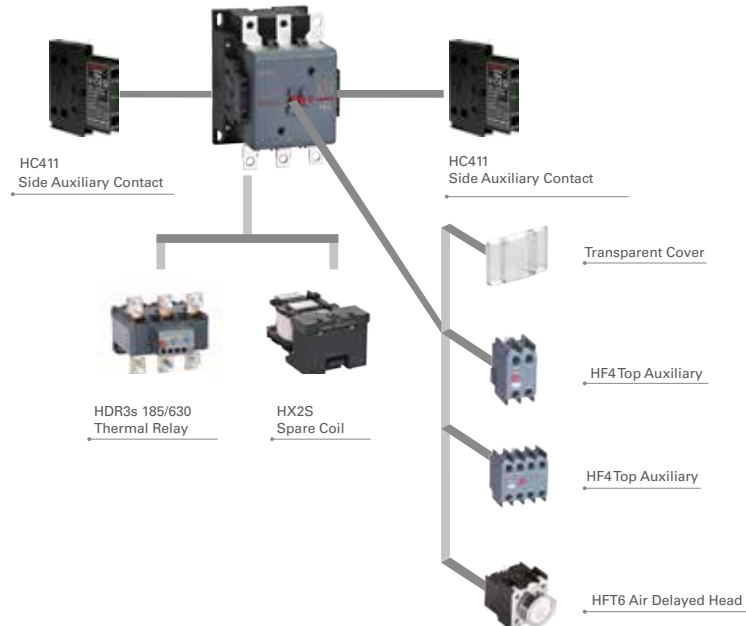
HDC3S

### Selection Code

Range name	Current specification	Reversible	Auxiliary contact	Coil voltage	Coil frequency
<b>HDC3S</b>	<b>120</b>			<b>F</b>	<b>7</b>
120-400A	<b>120:120A</b> <b>160:160A</b> <b>185:185A</b> <b>225:225A</b> <b>265:265A</b> <b>330:330A</b> <b>400:400A</b>	<b>Default:</b> AC Contact	<b>Default:</b> 2NO+2NC	<b>F:AC/DC 110V</b> <b>S:AC/DC 127V</b> <b>M:AC/DC 220/230V</b> <b>Q:AC/DC 380/400V</b>	<b>7:50/60Hz</b>

### Overview of Accessories

HDC3 120-630A Accessories



## MOTOR MANAGEMENT

# HDC3S AC Contactors

Standard: I



### specification







Main technical parameter									
AC Contactor		HDC3S							
Contactor model		120	160	185	225	265	330	400	
Number of Poles		3P							
Rated Insulation Voltage(Ui)		V							
Maximum Rated Operating Voltage(Ue)		V							
Conversional thermal current(Ith), AC-1		A							
Rated operating current (Ie)		AC-3;220/230V(A)	120	160	185	225	265	330	400
		AC-3;380/400V(A)	120	160	185	225	265	330	400
		AC-3;660/690V(A)	86	107	107	118	170	225	303
Rated Operating Power(Pe)		AC-3;220/230V(kW)	37	45	55	63	75	90	132
		AC-3;380/400V(kW)	55	75	90	110	132	160	220
		AC-3;660/690V(kW)	80	100	110	110	165	220	300
Mechanical Durabilities		10k times	1000	1000	1000	1000	600	600	600
Electrical Durabilities,AC-3		10k times	120	120	110	110	90	90	90
Operation Frequency,AC-3		Times/hour	1200	1200	600	600	600	600	600
Main Circuit terminal Wiring Capability									
Soft Wire		1 wire(mm <sup>2</sup> )	10-150	10-150	10-150	10-150	10-150	10-150	10-150
		2 wire(mm <sup>2</sup> )	10-75	10-75	10-75	10-75	10-75	10-75	10-75
Hard Wire		1 wire(mm <sup>2</sup> )	10-150	10-150	10-150	10-150	10-150	50-240	50-240
		2 wire(mm <sup>2</sup> )	10-75	10-75	10-75	10-75	10-75	50-240	50-240
Main loop tightening torque		N·m	12	12	12	12	14	14	14
Coil									
Rated Control Circuit Voltage(Us)		50/60Hz	AC/DC:110V、127V、220/230V、380/400V						
Allowable Control Circuit Voltage(Us)		Operation	85%-110% (vertical installation)						
		Drop-out	20%~60%Us						
Coil Power		Actuation(VA)	1500	1500	1500	1500	2800	2800	2800
		Holding(VA)	15	15	15	15	25	25	25
Auxiliary Contact									
Number of contacts		2NO+2NC							
Conventional Thermal Current(Ith)		A							
Rated Operating Voltage(Ue)		AC							
		DC							
Rated Control Capacity		AC-15							
		DC-13							
Certificate		CE/CB							

# MOTOR MANAGEMENT

## HDC3S AC Contactors

Standard:



Technical Parameter										
AC Contactors	HDC3S									
Contactor model HDC3	120	160	185	225	265	330	400	500	630	
Thermal relay										
HDR3s thermal relay 120-630 A					<b>HDR3s-185</b> 95 : 75-95A 135 : 105-135A ..... 185 : 150-185A			<b>HDR3s-630</b> 200F : 145-200A 250F : 180-250A ..... 630F : 460-630A		
Accessories										
Top auxiliary contact			2 Poles : HF4-11, HF4-20 , HF4-02 4 Poles : HF4-22, HF4-31 , HF4-13 , HF4-40 , HF4-40							
Side auxiliary contact			Side auxiliary contact HC411							
Air delayed head			Making time delay : HFT6-20 , HFT6-22 , HFT6-24 Breaking time delay : HFT6-30 , HFT6-32 , HFT6-34							
Mechanical interlock			FR4225 FR4400 FR4630							
Spare coil			HX2S225M7 :Spare Coil For HDC3S 120-225 A AC/DC 220/230V 50/60Hz							

## MOTOR MANAGEMENT

# HDC3S AC Contactors

Standard:



### Motor Power

Motor power of HDC3 (AC-4)

Product	Ith(A)	AC-4						Intermittent work; rated operating frequency at 40% load factor  AC-4
		Ie(A)			Pe(kW)			
		220/230V	380/400V	660/690V	220/230V	380/400V	660/690V	
HDC3S-120	200	54	54	48	18.5	30	50	220/380V : 120times/h 660V : 30times/h
HDC3S-160	200	68	68	57	22	37	55	
HDC3S-185	275	81	81	65	30	45	63	
HDC3S-225	275	96	96	85	30	55	80	
HDC3S-265	315	117	117	105	37	63	100	
HDC3S-330	380	125	125	115	40	75	110	
HDC3S-400	450	150	150	135	45	90	132	

### Normal Installation And Operation Conditions

#### Standards

- ◆ GB/T 14048.4
- ◆ IEC60947-4-1

#### Pollution class

- ◆ Class 3

#### Ambient temperature

- ◆ In normal operation, the ambient temperature range is between  $-5^{\circ}\text{C}$  and  $+40^{\circ}\text{C}$ , but average value in 24h is no more than  $+35^{\circ}\text{C}$ ;
- ◆ Storage temperature:  $-25^{\circ}\text{C} \sim +55^{\circ}\text{C}$ ; a short time (24h) is allowed with maximum  $+70^{\circ}\text{C}$

#### Altitude

- ◆ Altitude at normal installation position does not exceed 2000m.

#### Humidity

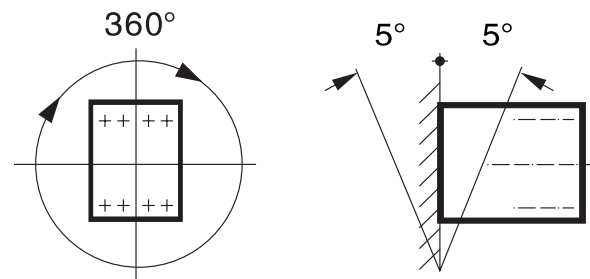
- ◆ The atmospheric relative humidity does not exceed 50% when the highest ambient temperature is  $+40^{\circ}\text{C}$ . It is allowed to have a relative higher humidity under lower temperature, e.g. up to 90% at  $+20^{\circ}\text{C}$ .

#### Product protection grade

- ◆ IP20

#### Installation Conditions

- ◆ Installation type: III
- ◆ Installation position: should be installed in the absence of a significant shock and vibration place. The installation site shall be vertical, and inclination at all directions shall not exceed  $\pm 5^{\circ}$ . When the coil control voltage is not lower than 85%Us, the inclination should be no more than  $\pm 30^{\circ}$ .



# MOTOR MANAGEMENT

## HDC3S AC Contactors

Standard:



### Temperature Derating

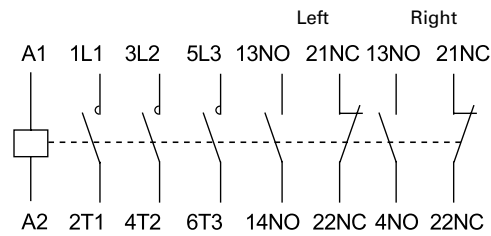
Ambient temperature(°C)	55°C	60°C	65°C	70°C
Correction factor	1	0.93	0.875	0.75

### Altitude Derating

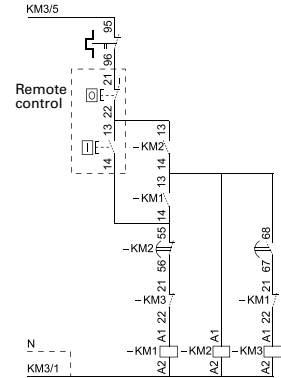
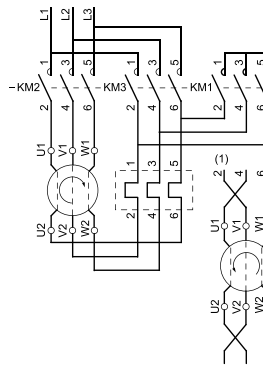
Altitude(m)	2000	3000	4000
Rated impulse withstand voltage coefficient	1	0.88	0.78
Rated working current coefficient	1	0.92	0.9

### Wiring Diagram

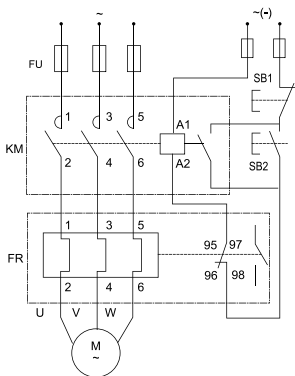
HDC3S 120-400A with 2NO+2NC Auxiliary Contact



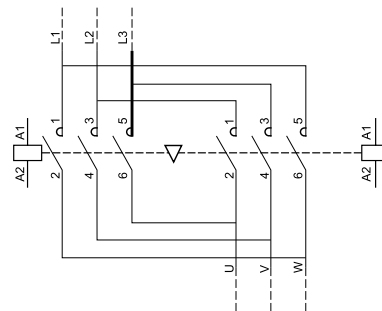
Star-Delta Control



DOL Control



Reversible Control





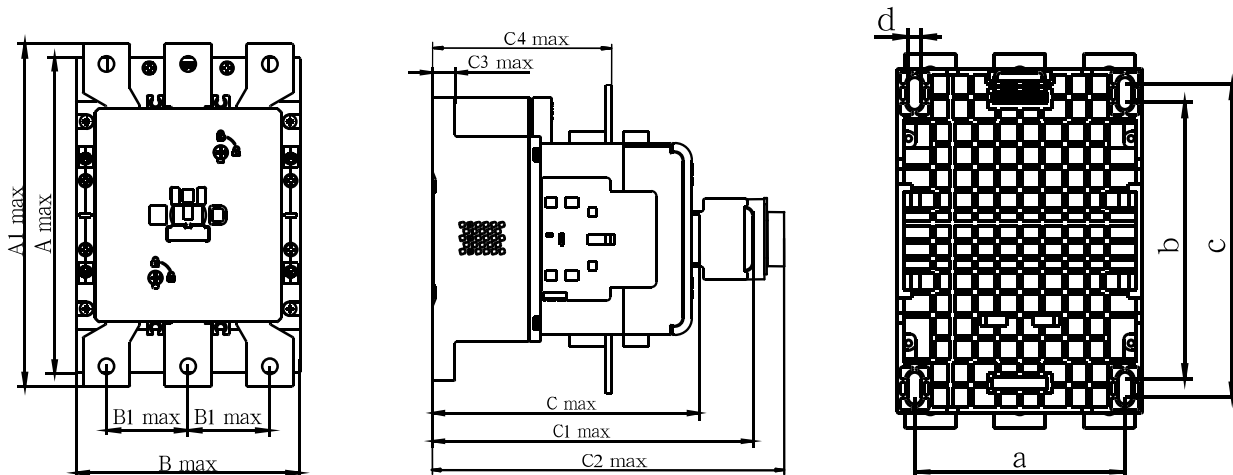
## MOTOR MANAGEMENT

# HDC3S AC Contactors

Standard:

CE

HDC3S-120~400A



Contactor	Amax	A1max	Bmax	B1max	Cmax	C1max	C2max	C3max	C4max	a	b	c	d
HDC3S-120	168.5	182.5	120	40.5	161	193	198	13.5	109	103	135	153	6.5
HDC3S-160	168.5	182.5	120	40.5	161	193	198	13.5	109	103	135	153	6.5
HDC3S-185	168.5	182.5	120	40.5	161	193	198	13.5	109	103	135	153	6.5
HDC3S-225	168.5	182.5	120	40.5	161	193	198	13.5	109	103	135	153	6.5
HDC3S-265	210	200	154	52.5	208	240	245	17	142	128	173	188	9
HDC3S-330	210	200	154	52.5	208	240	245	17	142	128	173	188	9
HDC3S-400	210	200	154	52.5	208	240	245	17	142	128	173	188	9

## MOTOR MANAGEMENT

# HDR3s Thermal Overload Relays

Standard: IEC60947-4



### Range Presentation

HDR3s is Himel 3 series range of thermal overload relays designed to provide protection against overload, phase loss and current imbalance.

HDR3s thermal overload relays can be combined with HDC3 contactors into motor starter.

### Features

- ◆ Frame Rating Current: 25, 38, 93, 185, 630A
- ◆ Setting Current: 0.1-630 A

### Online Content



HDR3s

### Selection Code

Range name

**HDR3s**

Frame Size

**25**

Setting currents

**P16**

HDR3s	25: 25A	38: 38A	93: 93A	185: 185A	630: 630A	P16: 0.1- 0.16A ..... 25: 17 - 25A	32: 25 - 32A 40: 32 - 38A	10: 7.0- 10A ..... 93: 80 - 93A	65: 48-65A ..... 185: 150-185A	200: 145-200A ..... 630: 460-630A

Technical Parameters					
Thermal overload relay	HDR3s				
Main technical parameters					
Temperature compensation	-5°C~+40°C				
HDR3s Thermal Relay	25	38	93	185	630
Trip level	10A		10		10A
Rated insulation voltage(Ui) V	660V			690V	
Base	HJRS1D25J	HJRS1D36J	HJRS1D93J	-	-
Certificate	CB, CE, SEMKO				
Product features					
Overload protection	Yes				
Phase-failure protection	Yes				
Manual reset	Yes				
Automatic reset	Yes				
Stop button	Yes				
Test button	Yes				
Trip indication	Yes				
Tolerance on slope in any direction	±5°				
Auxiliary circuit 1NO+1NC					
Utilization category	AC-15			DC-13	
Rated frequency Hz	50/60		50/60		
Rated insulation voltage (Ui) V	500		500		500
Rated operating voltage (Ue) V	230		400		230
Rated operating current Ie A	1.57		0.90		0.14
Conventional thermal current Ith A	5		5		5
Wiring	1mm <sup>2</sup>				

# HDR3s Thermal Overload Relays

Standard: IEC60947-4



The advertisement features a grey Himmel HDR3s Thermal Overload Relay in the foreground, with a worker in an orange safety vest in the background. The relay has a red 'STOP' button and a dial. The background is a grey gradient with red geometric patterns in the corners.

**Himmel**

## Thermal Overload Relays HDR3s Series

**FEATURES**

- Easy to Use
- Upgraded Components
- Strong Conformity

**APPLICATIONS**

- Machine Tool
- Hoisting Machinery
- Textile Machinery
- Building Material Machines
- Welding Machine
- HVAC

## MOTOR MANAGEMENT

# HJX2 4P AC Contactors

Standard: IEC60947-4



### Range Presentation

HJX2 & HJX2F 4P AC Contactor is Himel HJX series range of contactors designed for Motor Control AC3 applications up to 800A 690V.

HJX2 & HJX2F contactors are applicable to AC power systems 50Hz or 60Hz with rated operating voltage up to 690V.

HJX2 & HJX2F contactors can be combined with HDR3s thermal overload relays to provide overload protection.

### Features

- ◆ Current specifications: 9-800A
- ◆ Pole: 4-pole
- ◆ Coil voltage: 24-440V
- ◆ Coil frequency: 50/60Hz

### Online Content



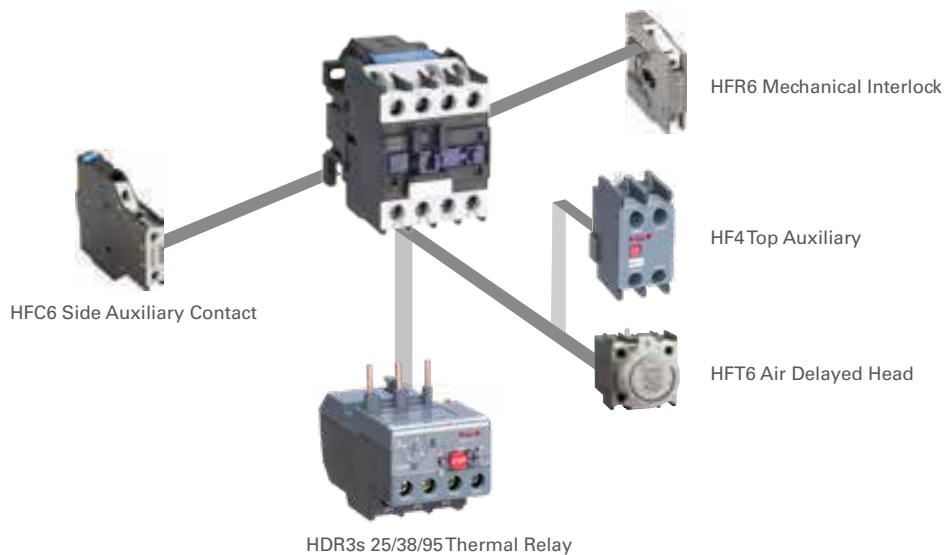
HJX2

### Selection Code

Range name	Current specification	Main contact	Coil voltage	Coil frequency
<b>HJX2</b>	<b>09</b>	<b>4</b>	<b>M</b>	<b>7</b>
<b>HJX2</b>	<b>09:</b> 09A ..... <b>95:</b> 95A	<b>04:</b> 4NO+0NC <b>08:</b> 2NO+2NC	<b>B:</b> 24V <b>C:</b> 36V <b>E:</b> 48V <b>F:</b> 110V <b>S:</b> 127V <b>M:</b> 220/230V <b>U:</b> 240V <b>Q:</b> 380/400V <b>L:</b> 415V <b>X:</b> 440V	<b>7:</b> 50/60Hz

### Overview of Accessories

HJX2 4P AC Contactor 09-95A



# MOTOR MANAGEMENT

## HJX2 4P AC Contactors

Standard: IEC60947-4



Technical Parameters									
AC Contactors		HJX2-09	HJX2-12	HJX2-25	HJX2-40	HJX2-50	HJX2-65	HJX2-80	HJX2-95
<b>Main circuit characteristics</b>									
Maximum rated operating voltage (Ue)		690V							
Rated insulation voltage (Ui)		690V							
Rated impulse withstand voltage (Uimp)		8kV							
Conventional thermal current A		25	25	40	60	80	80	125	125
Rated Operating Current	380/400V AC-3 A	9	12	25	40	50	65	80	95
	660/690V AC-3 A	6.6	8.9	18	34	39	42	49	49
	380/400V AC-4 A	3.3	5	8.5	18.5	24	28	37	44
	660/690V AC-4 A	1.5	2	4.4	9	12	14	17.3	21.3
Rated power of controlled 3-phase cage motor	380/400V AC-3 KW	4	5.5	11	18.5	22	30	37	45
	660/690V AC-3 KW	5.5	7.5	15	30	33	37	45	45
	380/400V AC-4 KW	1.2	2.2	4	7.5	11	15	18.5	22
	660/690V AC-4 KW	1.1	1.5	4	7.5	11	11	15	18.5
Electric durabilities	AC-3 ×10 <sup>4</sup> operations	100	100	100	80	80	80	60	60
	AC-4 ×10 <sup>4</sup> operations	20	20	20	15	15	15	10	10
Mechanical durabilities ×10 <sup>4</sup> operations		1000	1000	1000	800	800	800	600	600
Operating frequency	AC-3 cycles/h	1200	1200	1200	600	600	600	600	600
	AC-4 cycles/h	300	300	300	300	300	300	300	300
Matched fuse		HRT16-25	HRT16-25	HRT16-50	HRT16-63	HRT16-80	HRT16-80	HRT16-125	HRT16-125
Cable connection cross section mm <sup>2</sup>		1.5	1.5	4	10	16	16	25	35
Certificate		SEMKO							
<b>Coil</b>									
Coil voltage(Us)		V AC 24V, 36V, 110V, 220V, 380V							
Operating voltage		V 85%...110% Us							
Drop-out voltage		V 20%...75% Us							
Coil power	Actuation VA	70	70	110	200	200	200	200	200
	Holding VA	9	9	11	24	24	24	24	24
	Heat dissipation W	2.7	2.7	4	10	10	10	10	10
<b>Terminal wiring ability</b>									
Flexible wire without terminal block	1pc(Section of connecting conduction mm <sup>2</sup> )	1 - 4	1 - 4	1.5 - 6	2.5 - 25	2.5 - 25	2.5 - 25	4 - 50	4 - 50
	2pcs(Section of connecting conduction mm <sup>2</sup> )	1 - 4	1 - 4	1.5 - 6	2.5 - 16	2.5 - 16	2.5 - 16	4 - 25	4 - 25
Flexible wire with terminal block	1pc(Section of connecting conduction mm <sup>2</sup> )	1 - 4	1 - 4	1 - 6	2.5 - 25	2.5 - 25	2.5 - 25	4 - 50	4 - 50
	2pcs(Section of connecting conduction mm <sup>2</sup> )	1 - 2.5	1 - 2.5	1 - 4	2.5 - 10	2.5 - 10	2.5 - 10	4 - 16	4 - 16
Fixed wire without terminal block	1pc(Section of connecting conduction mm <sup>2</sup> )	1 - 4	1 - 4	1.5 - 6	2.5 - 25	2.5 - 25	2.5 - 25	4 - 50	4 - 50
	2pcs(Section of connecting conduction mm <sup>2</sup> )	1 - 4	1 - 4	1.5 - 6	2.5 - 16	2.5 - 16	2.5 - 16	4 - 25	4 - 25
<b>Auxiliary contact</b>									
Rated thermal Current (Ith)		A 10							
Rated operating Voltage (Ue)	AC	V 400							
	DC	V 220							
Rated control capacity	AC-15	VA 360							
	DC-13	VA 33							

# MOTOR MANAGEMENT

## HJX2-F 4P AC Contactors

Standard: IEC60947-4



### Range Presentation

HJX2 & HJX2F 4P AC contactor is Himel range of contactors designed for Motor Control AC3 applications up to 800A 690V.

HJX2 & HJX2F contactors are applicable to AC power systems 50Hz or 60Hz with rated operating voltage up to 690V.

HJX2 & HJX2F contactors can be combined with HDR3s thermal overload relays to provide overload protection.

### Features

- ◆ Current Specifications: 115-800A
- ◆ Pole: 4 poles
- ◆ Coil Voltage: 110-440V
- ◆ Coil Frequency: 50/60Hz

### Online Content



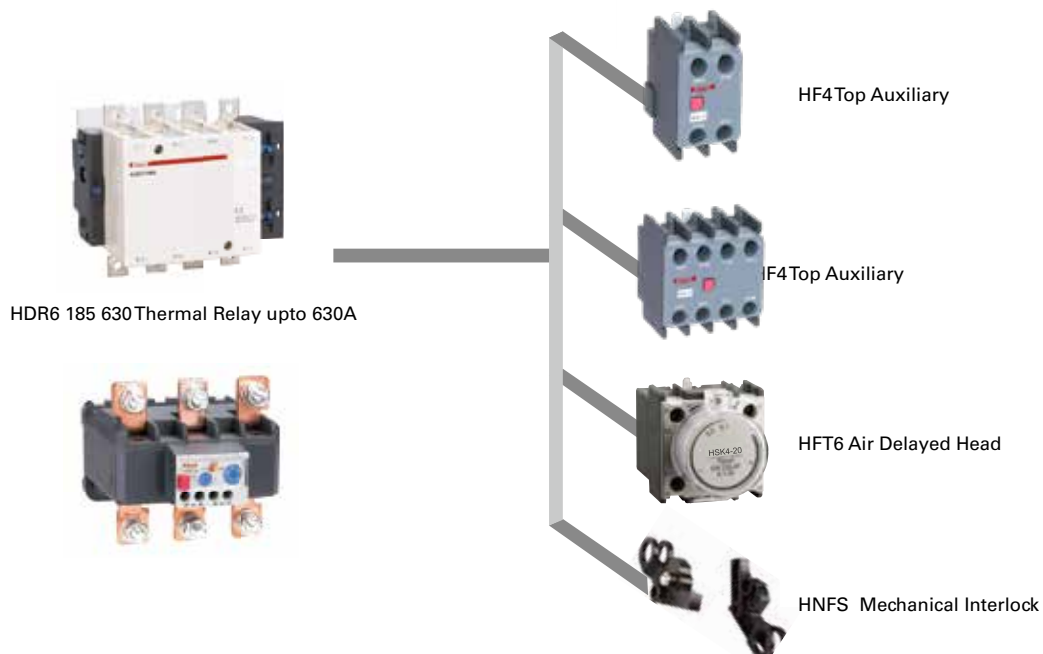
HJX2-F

### Selection Code

Range name	Current specification	Main contact	Coil voltage	Coil frequency
<b>HJX2F</b>	<b>115</b>	<b>4</b>	<b>M</b>	<b>7</b>
<b>HJX2F</b>	<b>115:</b> 115A <b>150:</b> 150A ..... <b>800:</b> 800A	<b>4:</b> 4NO+0NC	<b>F:</b> 110V <b>S:</b> 127V <b>M:</b> 220/230V <b>U:</b> 240V <b>Q:</b> 380/400V <b>L:</b> 415V <b>X:</b> 440V	<b>7:</b> 50/60Hz

### Overview of Accessories

HJX2F 4P AC Contactor 115-800A



# MOTOR MANAGEMENT

## HJX2-F 4P AC Contactors

Standard: IEC60947-4



Motor Control & Protection

Technical Parameters									
AC Contactors		HJX2-09	HJX2-12	HJX2-25	HJX2-40	HJX2-50	HJX2-65	HJX2-80	HJX2-95
<b>Main circuit characteristics</b>									
Maximum rated operating voltage (Ue)		690V							
Rated insulation voltage (Ui)		690V							
Rated impulse withstand voltage (Uimp)		8kV							
Conventional thermal current A		25	25	40	60	80	80	125	125
Rated Operating Current	380/400V AC-3 A	9	12	25	40	50	65	80	95
	660/690V AC-3 A	6.6	8.9	18	34	39	42	49	49
	380/400V AC-4 A	3.3	5	8.5	18.5	24	28	37	44
	660/690V AC-4 A	1.5	2	4.4	9	12	14	17.3	21.3
Rated power of controlled 3-phase cage motor	380/400V AC-3 KW	4	5.5	11	18.5	22	30	37	45
	660/690V AC-3 KW	5.5	7.5	15	30	33	37	45	45
	380/400V AC-4 KW	1.2	2.2	4	7.5	11	15	18.5	22
	660/690V AC-4 KW	1.1	1.5	4	7.5	11	11	15	18.5
Electric durabilities	AC-3 ×10 <sup>4</sup> operations	100	100	100	80	80	80	60	60
	AC-4 ×10 <sup>4</sup> operations	20	20	20	15	15	15	10	10
Mechanical durabilities ×10 <sup>4</sup> operations		1000	1000	1000	800	800	800	600	600
Operating frequency	AC-3 cycles/h	1200	1200	1200	600	600	600	600	600
	AC-4 cycles/h	300	300	300	300	300	300	300	300
Matched fuse		HRT16-25	HRT16-25	HRT16-50	HRT16-63	HRT16-80	HRT16-80	HRT16-125	HRT16-125
Cable connection cross section mm <sup>2</sup>		1.5	1.5	4	10	16	16	25	35
Certificate		SEMKO							
<b>Coil</b>									
Coil voltage(Us)		V AC 24V, 36V, 110V, 220V, 380V							
Operating voltage		V 85%...110% Us							
Drop-out voltage		V 20%...75% Us							
Coil power	Actuation VA	70	70	110	200	200	200	200	200
	Holding VA	9	9	11	24	24	24	24	24
	Heat dissipation W	2.7	2.7	4	10	10	10	10	10
<b>Terminal wiring ability</b>									
Flexible wire without terminal block	1pc(Section of connecting conduction mm <sup>2</sup> )	1 - 4	1 - 4	1.5 - 6	2.5 - 25	2.5 - 25	2.5 - 25	4 - 50	4 - 50
	2pcs(Section of connecting conduction mm <sup>2</sup> )	1 - 4	1 - 4	1.5 - 6	2.5 - 16	2.5 - 16	2.5 - 16	4 - 25	4 - 25
Flexible wire with terminal block	1pc(Section of connecting conduction mm <sup>2</sup> )	1 - 4	1 - 4	1 - 6	2.5 - 25	2.5 - 25	2.5 - 25	4 - 50	4 - 50
	2pcs(Section of connecting conduction mm <sup>2</sup> )	1 - 2.5	1 - 2.5	1 - 4	2.5 - 10	2.5 - 10	2.5 - 10	4 - 16	4 - 16
Fixed wire without terminal block	1pc(Section of connecting conduction mm <sup>2</sup> )	1 - 4	1 - 4	1.5 - 6	2.5 - 25	2.5 - 25	2.5 - 25	4 - 50	4 - 50
	2pcs(Section of connecting conduction mm <sup>2</sup> )	1 - 4	1 - 4	1.5 - 6	2.5 - 16	2.5 - 16	2.5 - 16	4 - 25	4 - 25
<b>Auxiliary contact</b>									
Rated thermal Current (Ith)		A 10							
Rated operating Voltage (Ue)	AC	V 400							
	DC	V 220							
Rated control capacity	AC-15	VA 360							
	DC-13	VA 33							

## MOTOR MANAGEMENT

# HDC17K Miniature AC Contactors

Standard: IEC60947-4



### Range Presentation

HDC17K is Himel Miniature AC Contactor for remote make and break of circuits. It facilitates seamless functioning of applications requiring frequent start and stop of small power motors.

### Features

- ◆ Current: 6-12A
- ◆ Pole: 3/4-pole
- ◆ Coil voltage: 24-400V
- ◆ Coil frequency: 50/60Hz

### Online Content



HDC17K

### Selection Code

Range name	Current specification	Main contact	Auxiliary contact	Coil voltage	Coil frequency
<b>HDC17K</b>	<b>06</b>	<b>30</b>	<b>10</b>	<b>M</b>	<b>5</b>
<b>HDC17K</b>	<b>06:</b> 06A <b>09:</b> 09A <b>12:</b> 12A	<b>30:</b> 3NO <b>40:</b> 4NO <b>22:</b> 2NO+2NC	<b>10:</b> 1NO <b>01:</b> 1NC	<b>B:</b> 24V <b>C:</b> 36V <b>F:</b> 110V <b>S:</b> 127V <b>M:</b> 220/230V <b>Q:</b> 380/400V	<b>7:</b> 50/60Hz

### Order Information

Motor P(kW) 380V	Rated current(A)	Main contact		Auxiliary contact		Reference
		NO	NC	NO	NC	
2.2	6	3	0	1	0	HDC17K63010*
		3	0	0	1	HDC17K63001*
		4	0	0	0	HDC17K64000*
		2	2	0	0	HDC17K62200*
4	9	3	0	1	0	HDC17K93010*
		3	0	0	1	HDC17K93001*
		4	0	0	0	HDC17K94000*
		2	2	0	0	HDC17K92200*
4	12	3	0	1	0	HDC17K123010*
		3	0	0	1	HDC17K123001*
		4	0	0	0	HDC17K124000*



## MOTOR MANAGEMENT

# HDC17K Miniature AC Contactors

Standard: IEC60947-4



Technical Parameters					
Miniature AC Contactors			HDC17-K06	HDC17-K09	HDC17-K12
<b>Main circuit characteristics</b>					
Rated operating current	380V/400V, AC-3	A	6	9	12
	380V/400V, AC-4	A	2.6	3.5	5
	660V/690V, AC-3	A	3.5	5	6
	660V/690V, AC-4	A	1.2	1.5	2
Rated operating voltage		V	220/230, 380/400, 660/690		
Rated insulation voltage		V	690		
Rated conventional thermal current		A	16	20	20
Pole			3, 4		
Power of controlled 3-phase cage motor	220V/230V, AC-3	kW	1.5	2.2	3
	380V/400V, AC-3	kW	2.2	4	5.5
	660V/690V, AC-3	kW	3	4	4
Electric endurance	AC-3	×10 <sup>4</sup> operations	100		
Operating rate			cycles/h	1200	
Electric endurance	AC-4	×10 <sup>4</sup> operations	20		
Operating rate			cycles/h	600	
Mechanical endurance			×10 <sup>4</sup> cycles	1000	
Matched Fuse			HRT16-16	HRT16-20	
Cable connection	Inflexible cable	number of piece	2		
	Cross Section of Cable	mm <sup>2</sup>	4		
Certificate			CB, CE		
<b>Coil</b>					
Coil voltage(Us)		V	AC 24V,36V,110V,127V,220/230V,380/400V		
Operating voltage		V	85%~110% Us		
Drop-out voltage		V	20%~75% Us		
Inrush		VA	30		
<b>Auxiliary contact</b>					
Rated conventional thermal current		V	690		
Rated insulation voltage		A	10		
Rated operating current		A	0.95		
Control capacity	380V, AC-15	A	0.15		
	220V, DC-13	VA	360		
	AC-15	W	33		
	DC-13				

## MOTOR MANAGEMENT

# HDZ3 Contactor Relays

Standard: IEC60947-4



### Range Presentation

HDZ3 is Himel 3 series range of contactor relays designed for industrial control applications.

HDZ3 contactor relays are suitable for both AC and DC 50/60Hz control circuits.

### Features

- ◆ For both DC and AC 50/60Hz control circuits
- ◆ 3 poles, similar design as HDC3 contactor
- ◆ 4 contacts with different NO+NC combinations
- ◆ Wide range of coil voltages 24V-440V

### Online Content

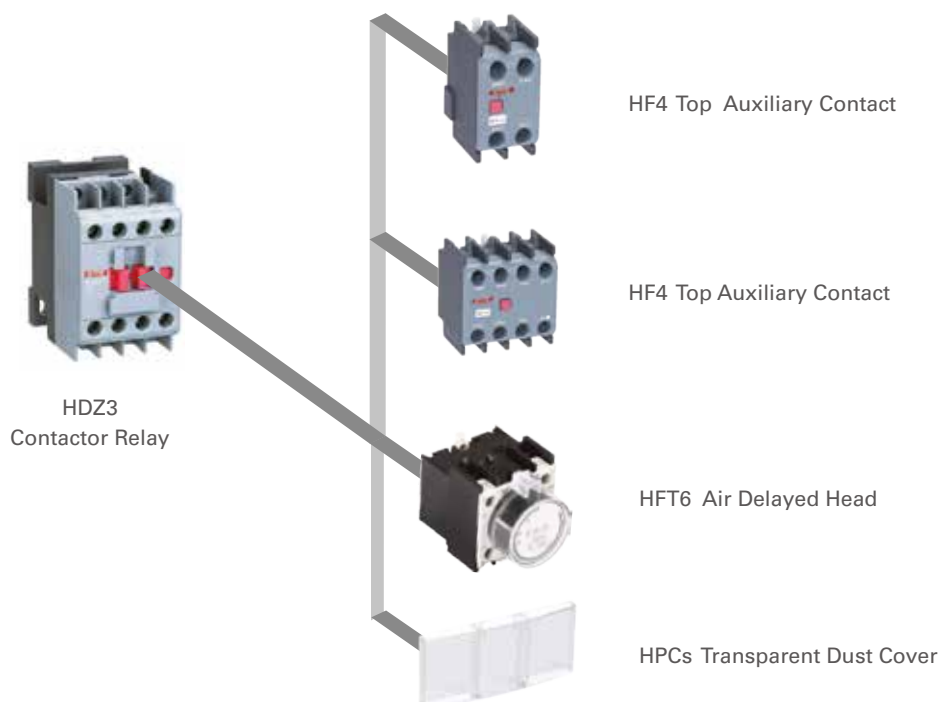


HDZ3

### Selection Code

Range name	Main contact	Coil voltage	Coil frequency
<b>HDZ3</b>	<b>22</b>	<b>M</b>	<b>5</b>
<b>HDZ3</b>	<b>22:</b> 2NO+2NC <b>31:</b> 3NO+1NC <b>40:</b> 4NO+0NC <b>13:</b> 1NO+3NC <b>04:</b> 0NO+4NC	<b>B:</b> 24V <b>C:</b> 36V <b>E:</b> 48V <b>F:</b> 110V <b>S:</b> 127V <b>M:</b> 220/230V <b>U:</b> 240V <b>Q:</b> 380/400V <b>L:</b> 415V <b>X:</b> 440V	<b>5:</b> 50Hz <b>7:</b> 50/60Hz

### Overview of Accessories



## MOTOR MANAGEMENT

# HDZ3 Contactor Relays

Standard: IEC60947-4



### Technical Parameters

Contactor Relays		HDZ3
Rated insulation voltage (Ui)	V	690
Conventional thermal current (Ith)	A	10
Rated operating current (Ie)	A	AC-15 380V: 0.95
		DC-13 220V: 0.15
Contact combination		2NO+2NC, 3NO+1NC, 4NO+0NC, 1NO+3NC, 0NO+4NC
Electrical endurance	10,000 times	110
Mechanical endurance	10,000 times	1100
Operating frequency	times/Hour	1200
Rated control circuit voltage(Us)	50Hz	24, 36, 48, 110, 127, 220/230, 240, 380/400, 415, 440
	50/60Hz	24, 36, 48, 110, 127, 220/230, 240, 380/400, 415, 440
Operating voltage range	V	AC 85%...110% Us
Drop-out voltage range	V	AC 20%...75% Us
Certificate		CE, CB, SEMKO

## MOTOR MANAGEMENT

# HDP6 Motor Circuit Breakers

Standard: IEC60947-4



### Range Presentation

HDP6 Motor Circuit Breaker range optimizes and secures your installation from HVAC to small genset applications. Proven for the best performance of packaging or pumping businesses, they facilitate superior protection from overload, phase-loss, and short circuit.

### Features

- ◆ Frame Current: 32A, 80A
- ◆ Setting Current: 0.1-32A, 25-80A

### Online Content



HDP6

### Selection Code

Range name	Frame Size	Setting currents
<b>HDP6</b>	<b>32</b>	<b>P16</b>
<b>HDP6</b>	<b>32: 32A</b>	<b>P16: 0.1-0.16A</b> ..... <b>32: 24-32A</b>
<b>HDP17Z</b>	<b>80: 80A</b>	<b>40: 25-40A</b> <b>63: 40-63A</b> <b>80: 56-80A</b>

### Order Information

Thermal release Setting current	Magnetic release Current Id	400/415V, 50/60Hz, AC-3 Rated operating power	Recommended Contactor	Reference
0.1-0.16A	1.5A	-	HDC3-0911	HDP632P16
0.16-0.25A	2.4A	0.06kW	HDC3-0911	HDP632P25
0.25-0.4A	5A	0.09kW	HDC3-0911	HDP632P4
0.4-0.63A	8A	0.12kW	HDC3-0911	HDP632P63
0.63-1A	13A	0.25kW	HDC3-0911	HDP6321
1-1.6A	22.5A	0.37kW	HDC3-0911	HDP6321P6
1.6-2.5A	33.5A	0.75kW	HDC3-0911	HDP6322P5
2.5-4A	51A	1.5kW	HDC3-0911	HDP6324
4-6.3A	78A	2.2kW	HDC3-0911	HDP6326P3
6-10A	138A	4kW	HDC3-0911	HDP63210
9-14A	170A	5.5kW	HDC3-1211	HDP63214
13-18A	223A	7.5kW	HDC3-1811	HDP63218
17-23A	327A	9kW	HDC3-2511	HDP63223
20-25A	327A	11kW	HDC3-2511	HDP63225
24-32A	416A	15kW	HDC3-3211	HDP63232
25-40A	480A	16kW	HDC3-4011	HDP17K8040
40-63A	756A	20kW	HDC3-6511	HDP17K8065
56-80A	960A	25kW	HDC3-8011	HDP17K8080

## MOTOR MANAGEMENT

# HDP6 Motor Circuit Breakers

Standard: IEC60947-4

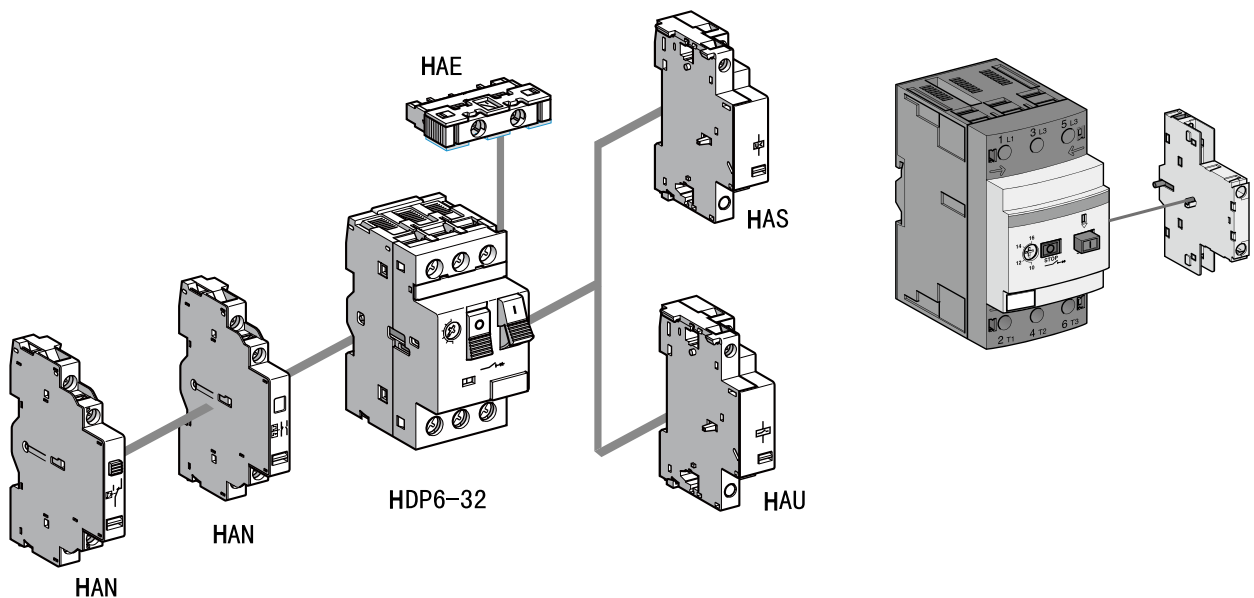


Technical Parameters		
Motor Circuit Breakers	HDP6-32	HDP17Z-80
Operation mode	Button operated	
Frame current	32A	80A
Rated impulse withstand voltage	6000V	
Maximum rated operating voltage	690V	
Rated insulation voltage	400/690V	
Rated operating frequency	50/60Hz	
Trip class	10A	
Fastening torque	1.7N • m	4 N • m
Mechanical durabilities	100,000	
Electrical durabilities AC-3 400V	100000	
Overload protection category	Thermal Overload Protection Open-phase Protection	
Short circuit protection	Yes	
Isolation function	Yes	
Temperature compensation function	Yes	
Accessories	Side Auxiliary Contact Top Auxiliary Contact Shunt release	Side Auxiliary Contact
Certificate	CE, SEMKO	

## Overview of Accessories

HDP6-32

HDP17Z-80



# MOTOR MANAGEMENT

## HDS3 Magnetic Starters

Standard: IEC60947-4



### Range Presentation

HDS3 is Himel 3 series range of Magnetic Starter mainly used for AC 50/60Hz control system and maximum rated working voltage up to 660V. Direct start and stop of three-phase squirrel cage induction motor with maximum rated working current up to 95A under AC-3 using type, and overload protection is provided for the motor.

### Features

- ◆ Frame Size 38 with plastic housing
- ◆ Frame Size 18/38/95 with metal housing
- ◆ IP54 Protection level
- ◆ With HDC3 series contactor and HDR3s series thermal relay

### Online Content



HDS3

### Selection Code

Range name	Frame size	Operation type	Rated current	Coil voltage	Coil frequency	Thermal relay	Housing
<b>HDS3</b>	<b>38</b>	<b>B</b>	<b>09</b>	<b>M</b>	<b>7</b>	<b>P16</b>	
<b>HDS3</b>	<b>18:</b> 18A <b>38:</b> 38A  <b>95:</b> 95A	<b>B:</b> with push button	<b>09:</b> 9A <b>12:</b> 12A <b>18:</b> 18A <b>25:</b> 25A <b>32:</b> 32A <b>38:</b> 38A  <b>40:</b> 40A <b>50:</b> 50A <b>65:</b> 65A <b>80:</b> 80A <b>95:</b> 95A	<b>C:</b> 36V <b>F:</b> 110V <b>S:</b> 127V <b>M:</b> 220/230V <b>Q:</b> 380/400V <b>L:</b> 415V <b>X:</b> 440V	<b>7:</b> 50/60Hz	<b>P16:</b> 0.1-0.16A <b>1P6:</b> 1.0-1.6 A ..... <b>93:</b> 80-93A	<b>Default:</b> Plastic <b>M:</b> Metal  <b>Default:</b> <b>M:</b> Metal

Note: Please refer to P(89) for detailed order information.

### Technical Parameters

Magnetic Starters	HDS3-18 Metal		HDS3-38 Metal				HDS3-95 Metal				
	HDS3-38 Plastic										
Rated operating current (Ie) AC-3	9A	12A	18A	25A	32A	38A	40A	50A	65A	80A	95A
Maximum motor power kW ( AC-3,380V )	4	5.5	7.5	11	15	18.5	18.5	22	30	37	45
Horse power hp ( AC-3,380V)	5.4	7.4	10.1	20.1	24.8	40.2	40.2	44.2	49.6	60.4	60.4
Mechanical endurance	10 thousand times		1200		1000		900		650		
Electrical endurance AC-3	10 thousand times		110				90		65		
Operation frequency AC-3	time/h		1200				600				
Rated insulataion voltage (Ui)	690V										
Rated operating voltage (Ue)	240V, 380V/400V, 440V, 660V										
Rated control circuit voltage (Uc)	36V, 110V, 127V, 220/230, 380/400, 415V, 440V										
Coil frequency	50/60Hz										
Operation type	With Pushbutton										
IP grade	IP54										
Certificate	CE, SEMKO										
Standard	IEC 60947-4-1										
Environmental requirement	Altitude	2000m									
	Ambient temperature	-5°C ~ +40°C									
	Storage temperature	-25°C ~ +70°C									
	Installation position	The inclination to the vertical plane does not exceed ±5°									
	Rated withstand voltage	6kV									
	Humidity requirement	The atmospheric relative humidity does not exceed 50% when the highest ambient temperature is +40°C. It is allowed to have a higher humidity under lower temperature, e.g. up to 90% at +25°C and the dew on the product due to the temperature change should be taken into consideration.									
	Installation condition	a. In a medium with no explosion danger, and minimal metal corrosion possibility or damage due to insulated gas and conductive dust b. Snow-proof equipment and lack of water vapour c. Without significant shock and vibration									

# HDS3 Magnetic Starters

Standard: IEC60947-4



## Magnetic Starters HDS3 Series



### FEATURES

- 3 3 frame sizes
- Available in plastic or metal housing
- IP54 protection level

### APPLICATIONS

- Machine tool
- Hoisting machinery
- Textile machinery
- Building material machines
- Welding machine
- HVAC

## MOTOR MANAGEMENT

# HDS3 Magnetic Starters

Standard: IEC60947-4



### Order Information

Motor power pe (KW, AC-3, 380V)	Rated current (A)	Frame Size		Setting current (A)		AC Contactor type	Thermal overload relay type	Order reference with pushbutton	
		HDS3		Range	Code	HDC3	HDR3s		
0.37	9	HDS3-18 Metallic		0.1~0.16	P16	HDC3-9A	HDR3s-25	HDS318B09*7P16M /HDS338B09*7P16	
				0.16~0.25	P25			HDS318B09*7P25M /HDS338B09*7P25	
				0.25~0.4	P4			HDS318B09*7P4M /HDS338B09*7P4	
				0.4~0.63	P63			HDS318B09*7P63M /HDS338B09*7P63	
				0.63~1	01			HDS318B09*701M /HDS338B09*701	
				1~1.6	1P6			HDS318B09*71P6M /HDS338B09*71P6	
				1.6~2.5	2P5			HDS318B09*72P5M /HDS338B09*72P5	
1.5	12	HDS3-38 Plastic		2.5~4	04	HDC3-12A	HDR3s-38	HDS318B09*704M /HDS338B09*704	
2.2				4~6	06			HDS318B09*706M /HDS338B09*706	
3				5.5~8	08			HDS318B09*708M /HDS338B09*708	
4				7~10	10			HDS318B12*710M /HDS338B12*710	
5.5				9~13	13			HDS318B18*713M /HDS338B18*713	
7.5				12~18	18			HDC3-25A	HDS338B25*718M /HDS338B25*718
11				17~25	25			HDC3-32A	HDS338B25*725M /HDS338B25*725
15	32	HDS3-38 Metallic		23~32	32	HDC3-38A	HDR3s-93	HDS338B32*732M /HDS338B32*732	
18.5	38			30~40	38			HDS338B38*740M /HDS338B38*740	
18.5	40	HDS3-95 Metallic		30~40	40	HDC3-40A	HDR3s-93	HDS395B40*740	
22	50			37~50	50			HDC3-50A	HDS395B50*750
30	65			48~65	65			HDC3-65A	HDS395B65*765
37	80			63~80	80			HDC3-80A	HDS395B80*780
45	93A			80~93	93			HDC3-95A	HDS395B95*793



# Himel Soft Starters

Himel Basic (HASBS) is a full-digital intelligent soft-starter for asynchronous motors to effectively control the starting current for asynchronous motors. It is a desired alternative to reduced-voltage motor starters like star-delta, resistance/reactance or auto transformer methods.



**Online Content**



HASBS

Himel Expert (HASXS) is an advanced soft-starter with a built-in bypass contactor that can control the starting inrush current of asynchronous motors. The integrated contactor reduces the total number of external components (wiring and contactor etc.)



**Online Content**



HASXS

Capacity Range (Motor capacity in kW)																			
11	15	19	22	30	37	45	55	75	90	110	132	160	200	250	320	400	450	500	600
										HAS-XS-4T									
										HAS-BS-4T									

## Multiple start methods

- Current limit soft start
- Ramp voltage soft start
- Ramp voltage + current limit soft start

## High robustness

- High anti-interference capability
- Compact design

## Motor protections

- Overcurrent, overload protection
- Phase-loss protection
- Over-heating protection
- 3-phase imbalance



## Easy to use

- 24 hour monitoring
- Quick diagnosis

# Highlights

Features	Your benefits	
<b>Multiple start methods</b>		
 <p>The graph plots current (I) on the vertical axis against time (t) on the horizontal axis. Three curves are shown: a red curve for 'Ramp Voltage' which rises linearly to a peak and then decays; a green curve for 'Current Limit' which rises linearly to a peak and then drops sharply to zero; and a blue curve for 'Ramp Voltage + Current Limit' which rises linearly to a peak, then decays to a lower level before dropping to zero.</p>	<ul style="list-style-type: none"><li>◆ Current limit soft start</li><li>◆ Ramp voltage soft start</li><li>◆ Ramp voltage + current limit soft start</li></ul>	<ul style="list-style-type: none"><li>◆ Provides multiple starting methods to meet different application needs</li></ul>
<b>High Robustness</b>		
 <p>The illustration shows a black power supply unit with a lightning bolt symbol on its left side and a red sine wave on its right side, representing electromagnetic interference and the device's ability to handle it.</p>	<ul style="list-style-type: none"><li>◆ High anti-interference capability</li><li>◆ Compact design</li><li>◆ 3 sets of thyristors to control start/stop voltage</li></ul>	<ul style="list-style-type: none"><li>◆ Better electromagnetic immunity against signal noises</li><li>◆ Supports longer connection cables.</li><li>◆ Unique compact design with double-layer shell consisting of plastic upper layer and metal lower layer makes it durable and nice looking</li><li>◆ 3 sets of thyristors provides better performance, safety and reliability</li></ul>
<b>Motor protections</b>		
 <p>A shield icon with a black and white checkered pattern, symbolizing protection and safety.</p>	<ul style="list-style-type: none"><li>◆ Overcurrent, overload protection</li><li>◆ Phase-loss protection</li><li>◆ Over-heating protection</li><li>◆ 3-phase imbalance</li></ul>	<ul style="list-style-type: none"><li>◆ Protect your motor against different abnormalities</li></ul>
<b>Easy to use</b>		
 <p>An icon showing a hand pointing at a screen with a magnifying glass, representing ease of use and quick diagnosis.</p>	<ul style="list-style-type: none"><li>◆ Easy tuning</li><li>◆ 24-hour monitoring</li><li>◆ Quick diagnosis</li></ul>	<ul style="list-style-type: none"><li>◆ 8 segment LED display to monitor different parameters and troubleshooting.</li><li>◆ Easy to maintain</li></ul>

# Himel Soft Starters

Range		HASBS	HASXS
Applications		Controlled acceleration/deceleration of simple and complex machines	
Design			
Power Range	Three Phase 380...440V	11...600kW	
Drive	Control Type	Current limit, voltage ramp, voltage ramp + current limit	
Functions	Bypass	Need to install externally	Integrated
	Operation control mode	Keypad/external terminals/RS485 Modbus communication	
	Start mode	Current limit/voltage limit/current + voltage limit	
	Adjustable Acceleration/Deceleration time	√	√
	Start delay	√	√
	Emergency stop	√	√
	Current Limit function	√	√
	Initial voltage setting	√	√
	No/Light load detection	Protects against accidents such as belt tripping	
	Auto-restart	√	√
	Fault signal	Relay output - AC 250V 5A, DC 30V 5A	
	Multifunction relay output	Start delay, start, running, stop, complete stop, restart	
	Analog output	0~20mA / 4~20mA, optional	
	Protections	Overcurrent, overload, overheat, phase imbalance, phase-loss, light load, external fault	
	Alarms	Emergency shutdown, light load and restart	
Keypad		Pluggable	
Working Conditions	Rated insulation voltage	660V	
	Rated impulse withstand voltage	4kV	
IP rating	IP20	11 to 55kW	-
	IP00	75 to 600kW	11 to 600kW
Environment	Operation frequency	≤ 12 times/h	
	Ambient temperature	-10°C~ 40°C(Derating above 40°C)	
	Storage temperature	-20 °C ~ 65 °C	
	Ambient humidity	Max. 90 % RH (no condensation)	
	Altitude	< 1,000 m (Deration above 1,000 m)	
	Vibration	< 5.9m/s <sup>2</sup> (=0.6g)	
Type	No corrosive/inflammable gas, oil mist, dust or others		
Cooling Method	Natural air cooling	11 to 600kW	11 to 75kW
	Forced air cooling	-	93 to 600kW

# BASIC Series (HASBS)

## Presentation

Himel BASIC soft-starter(HASBS) is an intelligent soft-starter featuring latest electronic, micro-processing and control technology. It offers effective control for the starting current of asynchronous motors via voltage control. It is an ideal alternative to the reduced voltage starters like star-delta, resistance/reactance or auto-transformer methods.

It can cover motors from 11kW to 600kW.

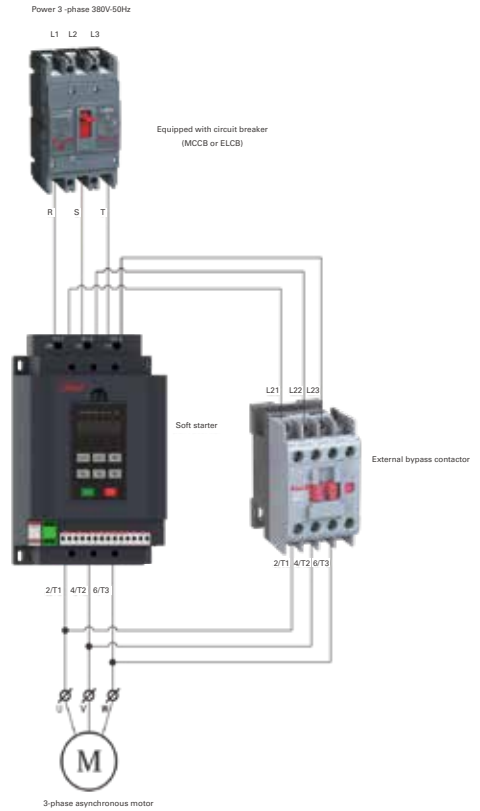
## Applications

With its unique, compact design it can be used in harsh environments with the focus on human and other equipment safety. It can be used in typical building or industrial applications:

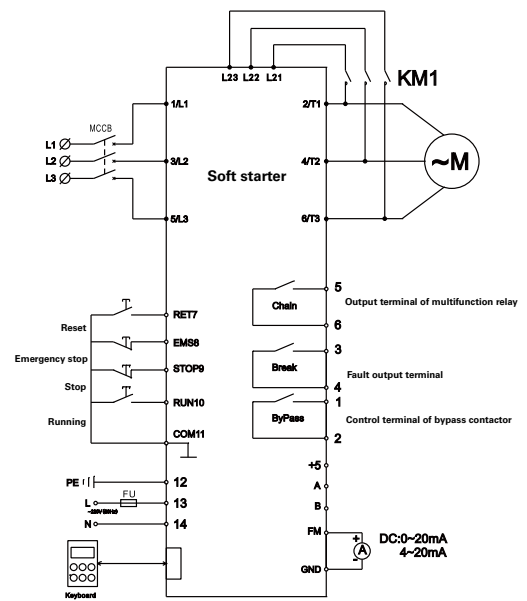
- Pumps
- Fans
- Compressors
- Conveyers
- Complex and advanced machines

## Features

- HASBS has 3 starting modes: current-limit, voltage ramp and current limit + voltage ramp.
- Built-in protections include overcurrent, phase loss, short circuit and overheat.
- Multiple control ways like keypad, I/O terminals and Modbus communication.
- Multifunctional output relays provide different signals based on application requirements.



Connection diagram



Wiring diagram

# EXPERT Series (HASXS)

## Presentation

Himel Expert Soft-starter(HASXS) is an advance soft-starter to control the starting and stopping of asynchronous motors via voltage control. It can cover motors from 11kW to 600kW. HASXS comes with a built-in bypass contactor hence reducing the total number of external components required by the system.

The starting inrush current to the motor is controlled by managing the voltage to the motor. Silicon-controlled rectifiers (SCRs) are used to control the voltage. These SCRs are bypassed at the end of starting phase using built-in contactor.

Integrated keypad allows user to program the soft-starter and monitor different parameters according to the customer requirements.

## Applications

Himel Expert soft-starter (HASXS) is designed for rugged applications with the focus on safety and reduced commissioning times. It can be used in typical building or industrial applications:

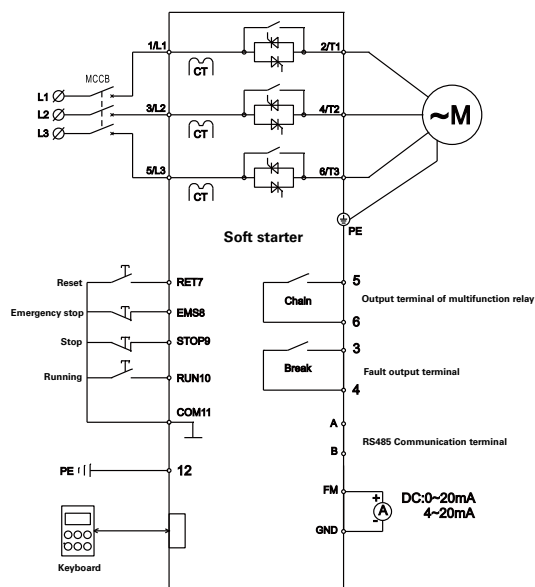
- Pumps
- Fans
- Compressors
- Conveyers
- Complex and advanced machines

## Features

- Integrated bypass contactor.
- HASXS has 3 starting modes: current-limit, voltage ramp and current limit + voltage ramp.
- High performance microprocessor makes it highly reliable.
- Opto-electronic isolation provides high anti-interference performance.
- New optimized and compact design
- Built-in protections include overcurrent, phase loss, short circuit and overheat.
- User can monitor different system parameters hence making it easy to maintain



Connection diagram



Wiring diagram

## Reference rules

Range name	Series Name	Input	Adaptation	Type
<b>HAS</b>	<b>BS</b>	<b>4T</b>	<b>0015</b>	<b>G</b>
<b>HA:</b> Himel Automation  <b>S:</b> Soft Starter	<b>BS:</b> Basic <b>XS:</b> Expert	<b>4:</b> 380V – 440V  <b>T:</b> Three-phase	<b>0110:</b> 11kW <b>0185:</b> 18.5kW <b>1100:</b> 110kW .....	<b>P:</b> Normal-Duty <b>G:</b> Heavy Duty

## References and Dimensions

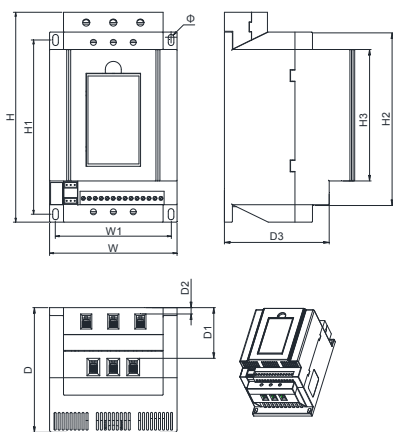
Range	Input Voltage	Himel reference	Motor Power (kW)	Motor Power (HP)	Rated Output Current (A)	Dimensions(mm)			Mounting Dimensions (mm)					Mounting Hole Diameter (mm)	CAD Diagram
						W	H	D	W1	H1	D1	D2	D3		
HASBS	380-440V Three Phase	HASBS4T0110G	11	15	25	160	265	164	145	220	67	10	111	8	(a)
		HASBS4T0150G	15	20	32	160	265	164	145	220	67	10	111	8	
		HASBS4T0185G	18.5	25	37	160	265	164	145	220	67	10	111	8	
		HASBS4T0220G	22	30	45	160	265	164	145	220	67	10	111	8	
		HASBS4T0300G	30	41	60	160	265	164	145	220	67	10	111	8	
		HASBS4T0370G	37	50	75	160	265	164	145	220	67	10	111	8	
		HASBS4T0450G	45	61	90	160	265	164	145	220	67	10	111	8	
		HASBS4T0550G	55	75	110	160	265	164	145	220	67	10	111	8	
		HASBS4T0750G	75	102	152	280	534	255	230	430	98	44	180	10	(b)
		HASBS4T0900G	93	127	176	280	534	255	230	430	98	44	180	10	
		HASBS4T1100G	110	150	210	280	534	255	230	430	98	44	180	10	
		HASBS4T1320G	132	180	253	280	534	255	230	430	98	44	180	10	
		HASBS4T1600G	160	218	300	280	534	255	230	430	98	44	180	10	
		HASBS4T2000G	200	272	380	310	594	255	265	475	98	44	180	10	
		HASBS4T2500G	250	340	480	310	594	255	265	475	98	44	180	10	
		HASBS4T3200G	320	435	600	310	594	255	265	475	98	44	180	10	
		HASBS4T4000G	400	544	750	416	740	275	375	555	106	44	200	10	
		HASBS4T4500G	450	612	892	416	740	275	375	555	106	44	200	10	
HASBS4T5000G	500	680	930	416	740	275	375	555	106	44	200	10			
HASBS4T6000G	600	816	1100	416	740	275	375	555	106	44	200	10			

# References and Dimensions

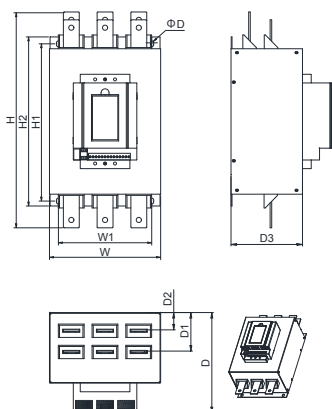
Range	Input Voltage	Himel reference	Motor Power (kW)	Motor Power (HP)	Rated Output Current (A)	Dimensions(mm)			Mounting Dimensions (mm)					Mounting Hole Diameter (mm)	CAD Diagram
						W	H	D	W1	H1	D1	D2	D3		
HASXS	380-440V Three Phase	HASXS4T0110G	11	15	25	150	264	170	128	262	242	96	96	7	(c)
		HASXS4T0150G	15	20	32	150	264	170	128	262	242	96	96	7	
		HASXS4T0185G	18.5	25	37	150	264	170	128	262	242	96	96	7	
		HASXS4T0220G	22	30	45	150	264	170	128	262	242	96	96	7	
		HASXS4T0300G	30	41	60	150	264	170	128	262	242	96	96	7	
		HASXS4T0370G	37	50	75	150	264	170	128	262	242	96	96	7	
		HASXS4T0450G	45	61	90	150	264	170	128	262	242	96	96	7	
		HASXS4T0550G	55	75	110	200	384	226	165	345	360	137.5	137.5	7	
		HASXS4T0750G	75	102	152	200	384	226	165	345	360	137.5	137.5	7	(d)
		HASXS4T0900G	93	127	176	255	579	230	180	520	545	160	151	9	
		HASXS4T1100G	110	150	210	255	579	230	180	520	545	160	151	9	
		HASXS4T1320G	132	180	253	255	579	230	180	520	545	160	151	9	
		HASXS4T1600G	160	218	300	255	579	230	180	520	545	160	151	9	
		HASXS4T2000G	200	272	380	300	684	235	235	620	650	159	154	9	
		HASXS4T2500G	250	340	480	300	684	235	235	620	650	159	154	9	
		HASXS4T3200G	320	435	600	300	684	235	235	620	650	159	154	9	
		HASXS4T4000G	400	544	750	520	810	240	400	715	740	166	163	9	(e)
		HASXS4T4500G	450	612	892	520	810	240	400	715	740	166	163	9	
		HASXS4T5000G	500	680	930	520	810	240	400	715	740	166	163	9	
		HASXS4T6000G	600	816	1100	520	810	240	400	715	740	166	163	9	

# CAD Diagrams

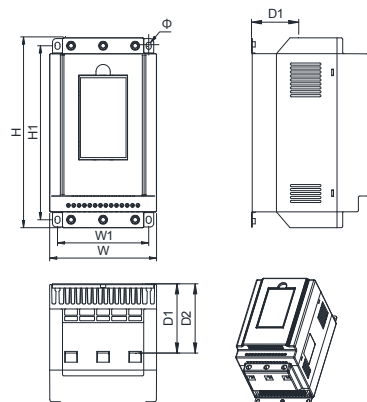
(a)



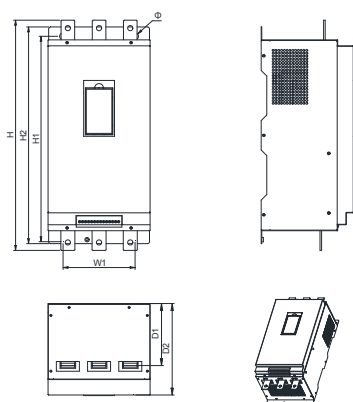
(b)



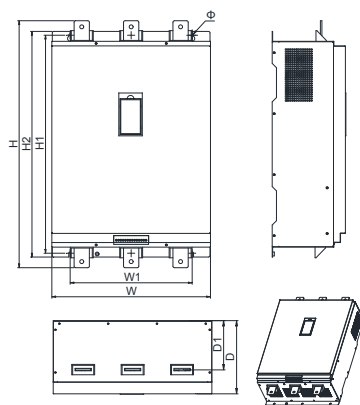
(c)



(d)



(e)



## Selection Reference

Machine Type	Load Type	Start Mode			Value Setting		StartTime
		Voltage	Current	Heavy Load	Voltage (%)	Current (%)	
Centrifugal pump	Standard load(ND)		√	√		250	5
Fan	Standard load(ND)		√			250	5
Compressor (pistol)	Standard load(ND)		√			300	10
Compressor (centrifugal)	Standard load(ND)	√			30		20
Conveyor	Standard load(ND)		√	√		250	10
Mixer	Standard load(ND)		√	√		350	5
Ball mill	Heavy load(HD)		√		70	400	50
Crusher	Heavy load(HD)	√			60		45





# VARIABLE SPEED DRIVES

Himel VSDs are designed and manufactured for applications that require high-efficiency components and future configurability.

They are suitable for industrial, HVAC, water/wastewater treatment, machinery OEM, and other applications. Himel VSDs meet performance requirements while saving space.



**High  
Performance**



**Improved  
Energy Savings**



**Multiple  
Functions**



**Easy to  
Use**



**Longer  
Lifespan**



## Basic Series

Economical range, with capacity from 0.75kW to 15kW

### Applications

BOILER WATER FEEDER PUMP,  
SAND BLASTING, GRINDER



## Expert Standard Series

Built-in breaking unit, with capacity from 0.75kW to 850kW

### Applications

CIRCULATING PUMP, INDUSTRIAL  
FAN, METAL WORK



## Smart Pump Series

Multi pump control, with power range from 2.2kW to 160kW

### Applications

WATER BOOSTER PUMP,  
VENTILATION, SCROLL CHILLERS

# VARIABLE SPEED DRIVES

Reliable motor control solutions to meet the demands of diverse applications



## HIGH PERFORMANCE

Excellent overload performance:  
150% 60s, 180% 3s, 200% 1s

High start torque performance:  
0.5Hz, 150%

Excellent current control capability

### BENEFITS

Improves machine productivity

Reduces production line interruptions

Sufficient stable output torque when the load is suddenly changed to avoid trip operation



## IMPROVED ENERGY SAVINGS

Integrated Eco-mode for V/f and V2/f

Improved special PID control with sleep mode

Energy-saving capabilities for pumps and fans

### BENEFITS

Energy savings during low load cycles

Increases potential savings by up to 70%

Reduces return time of investment



## MULTITUDE OF FUNCTIONS

New software platform supporting functions such as flexible V/F curve, 16-stage multi-speed control, command binding, industry specific functions, etc.

Built-in RS485 Modbus protocol

Easy system integration for large production lines

### BENEFITS

No need for additional upper controller

Simplifies system integration for large production line and long distance communication

Cost-effective solution for stand-alone machines



## EASY TO USE

Compact design and side-by-side or wall mounting and din-rail installation,

High accuracy motor parameters self-tuning

Supports pluggable keypad and extension keypad

### BENEFITS

Fits in smaller cabinets

No need to set motor parameters

Easy operation and maintenance



## LONGER LIFETIME

Reliable operation with net tension between 380V-440V (-15%/+10 %)

Fully coated PCB and dust shield cover

Better cooling and removable fan design

### BENEFITS

Wider voltage range increases robustness

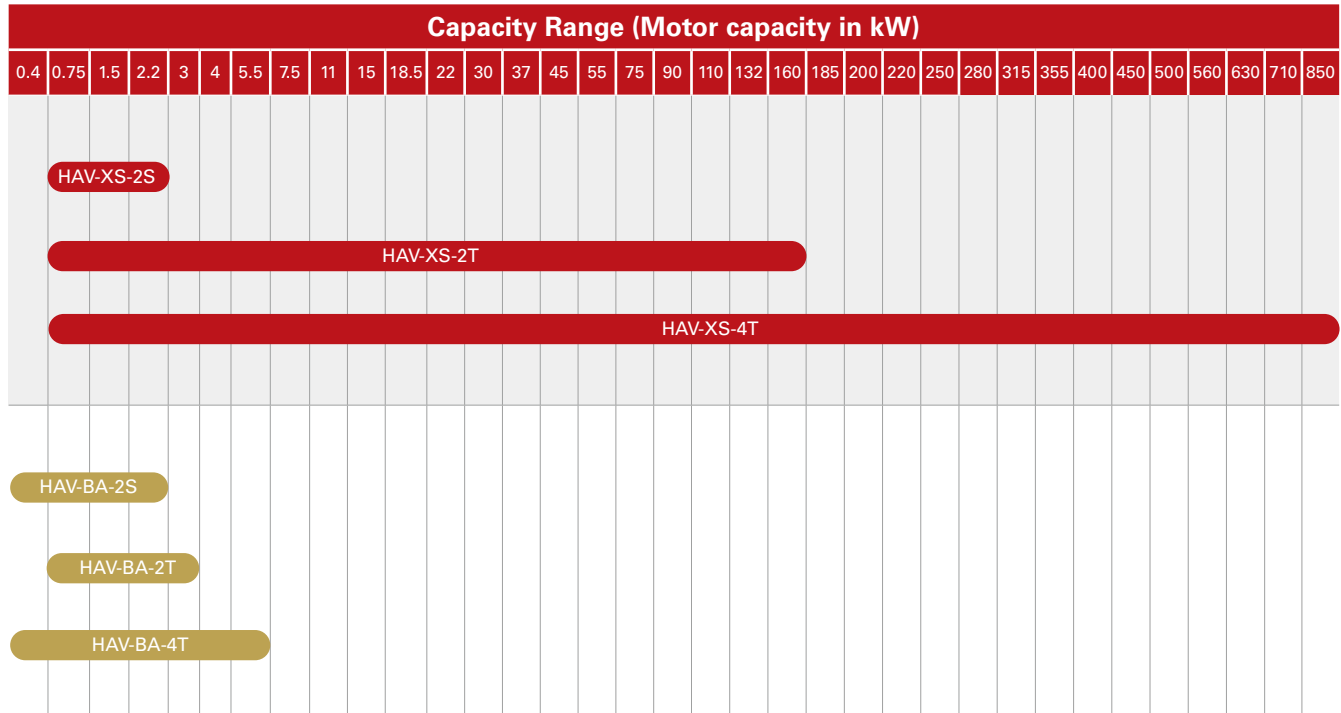
Automatic adaptation to unstable power supply

Longer life in high humid and high dust environments

# General Purpose Variable Speed Drives



## Range Selection



\* 2S = 200-240V Single Phase, 2T = 200-240V Three Phase, 4T = 380-440V Three Phase

## BASIC Range

### Range Presentation

Himel BASIC range Variable Speed Drives (VSDs) are for single phase/three phase asynchronous motors from 0.4 kW to 5.5 kW. Designed for your small machines and simple general purpose applications like pumps, fans, carving machines etc. Himel BASIC VSDs are designed to focus on essential needs in terms of hardware and software. It is a high performance economical range.

### Features

- ◆ Economical range
- ◆ Easy to use
- ◆ Robust design
- ◆ Embedded protection and communication functions
- ◆ Built in PLC

### Online Content



Basic

### Selection Code



Series name	Input	Power range	Drive type
<b>HAVBA</b>	<b>4T</b>	<b>0007</b>	<b>G</b>
<b>HAVBA: BASIC</b>	<b>2:</b> 200-220V <b>4:</b> 380V – 440V  <b>S:</b> Single-phase <b>T:</b> Three-phase	<b>0004:</b> 0.4kW <b>0007:</b> 0.75kW <b>0015:</b> 1.5kW <b>0022:</b> 2.2kW <b>0037:</b> 3.7kW <b>0040:</b> 4.0kW <b>0055:</b> 5.5kW <b>0075:</b> 7.5kW <b>0110:</b> 11kW <b>0150:</b> 15kW	<b>G:</b> Heavy Duty

# General Purpose Variable Speed Drives

## EXPERT Standard

### Range Presentation

Himel EXPERT Standard range Variable Speed Drives are for single/three phase asynchronous motors from 0.75kW to 850kW. EXPERT Standard is designed for advanced machines and advanced general purpose applications like material handling, wood machines, process machines, textile machines and packaging etc.

### Features

- ◆ Advanced functions and performances
- ◆ Embedded EMC filter
- ◆ Built-in braking unit
- ◆ Embedded protection and communication functions
- ◆ Different communication protocols options

### Online Content



EXPERT Standard

### Selection Code



Range name	Input	Power range	Drive type	Range	Drive type
<b>HAVXS</b>	<b>4T</b>	<b>0007</b>	<b>G</b>	<b>0015</b>	<b>P(W)</b>
<b>HAVXS:</b> EXPERT Standard	<b>2:</b> 200-240V <b>4:</b> 380V – 440V <b>S:</b> Single-phase <b>T:</b> Three-phase	<b>0007:</b> 0.75kW <b>0015:</b> 1.5kW <b>0022:</b> 2.2kW ..... <b>7100:</b> 710kW <b>8500:</b> 850kW	<b>G:</b> Heavy Duty	<b>0055:</b> 5.5kW <b>0075:</b> 7.5kW <b>0110:</b> 11kW ..... <b>7100:</b> 710kW <b>8500:</b> 850kW	<b>P:</b> Normal Duty <b>W:</b> Wall Mounted



Target Application		Small & Simple General Purpose Applications	P&F & Advanced General Purpose Applications
Range Name		BASIC	EXPERT XS
Capacity range	Single phase 200V Class	200V(-15%)-220V(+10%) 0.4~2.2kW	200V(-15%)-220V(+10%) 0.75~2.2kW
	Three phase 200V Class	—	200V(-15%)-240V(+10%) 0.75~160kW
	Three phase 400V Class	380V(-15%)-440V(+10%) 0.4~5.5kW	0.75~450kW [380V (-15%)~440V (+10%)] 500kW ~ 850kW (380V -15% +10%)
Frequency	Input frequency	50/60Hz	
	Output frequency	0-599Hz	0 - 550Hz
Overload capacity	Normal Duty	—	120% for 1min, 150% for 1s, 180% instant protection
	Heavy Duty	150% for 1min, 180% for 1s, 200% instant protection	150% for 1min, 180% for 3s, 200% instant protection
Control method	V/f	√	√
	Sensor less vector control		√
	Eco-mode control	√	√
Start torque	0.5Hz, 150%		
Inbuilt PID	√	√	
Keypad	Fixed	Pluggable	
Display	Single row LED	Double row LED	
Multispeed control	Up to 16 stages in one cycle		






# General Purpose Variable Speed Drives



Target Application		Small & Simple General Purpose Applications	P&F & Advanced General Purpose Applications
Range Name		BASIC	EXPERT XS
I/O	DI1-DI4	NPN/PNP, Input: 9-30VDC	
	DI5	NPN/PNP, Input: 15-30VDC, Pulse input: max. 50kHz	
	DO1	9-30VDC, max. 50mA	
	DO2	9-30VDC, max. 50mA Pulse output max. 50kHz	
	AI1	V: 0-10V I: 0-20mA Resolution: 1/1000	V: 0-10V I: 0-20mA Resolution: 1/1000
	AI2	V: 0-10V Resolution: 1/1000	
	AO1	V:0-10V	
	AO2	V:0-10V I: 0-20mA	
RO(Ta, Tb, Tc)	NO: 24VDC 3A / 250VAC 5A NC: 24VDC 3A / 250VAC 3A		
Inbuilt communication (Max. speed)		RS485, Modbus RTU (38.4kbps)	
Options	Extension I/O	—	DI/DO/AI/AO/RO/PT100/PT1000
	Extension keypad	Support, cable length:2m, 5m	
Installation Way		Wall mounted, cabinet, din-rail	Wall mounted, cabinet, flange installation
Dust Shields		—	Optional
EMC Filter C3		—	External card available (≥ 30kW)
Braking unit		Built-in	Built-in (≤ 22W)
Environment	Operation temperature	-10-40°C no capacity reduction, 40°C-50°C capacity reduction	
	Humidity	≤90%RH	
	Altitude	≤1000m, no capacity reduction	
	IP level	IP20	
Standards		EN 61800-3: 2004 +A1: 2012 +A1: 2012, EN 55011: 2016+A1: 2017, EN 61000-6-2: 2005, EN 61000-3-2: 2014, EN 61000-3-3: 2013, EN 61000-4-2: 2009, EN 61000-4-3: 2006+A1: 2008+A2: 2010, EN 61000-4-4: 2012, EN 61000-4-5: 2014, EN 61000-4-6: 2014, EN 61000-4-8: 2010, EN 61000-4-11: 2004	
Certificates		CE	CE
Features	Velocity ratio	1:100	
	Frequency precision	Digital setting: Max frequency X ±0.01% Analog setting: Max frequency X ±0.2%	
	Frequency resolution	Digital setting :Max frequency X ±0.01% Analog setting: Max frequency X ±0.1%	
	Torque rise	Integrated auto-torque rising function Manual- setting: 0.1%~30.0%	
	V/F control curve	Linear, Square, V <sup>1.7</sup> /F, V <sup>1.2</sup> /F	
	Acceleration/Deceleration Time	4 types of ACC/DEC time selection; optional time unit selection (Min/s); setting range: 0~60hours;	
	DC braking	Start frequency: 0.00~60.00Hz; braking time: 0.0~30.0s; braking current: 0.0~100%	
	Automatic voltage regulation(AVR)	√	
	Auto current limitation	√	
	Auto PWM adjustment	√	
Protection	Prevent mis operation	—	√
	Protection function	Over-current, over-voltage, under-voltage, over-heat, over-load, short circuit.	
	Cooling	Air- cooling	
Warranty		24 months	

# General Purpose Variable Speed Drives







## Accessories Selection

Category	Type	Range	Commercial Reference	Short Description	Applicable Product		Pictures
					Applicable Commercial Reference	Specifications	
ADD-ON	EMC filter card	Expert XS	HAV-XS-4T0370G-FL	Simple EMC filter	HAV-XS-4T0300G-0370P ~ HAV-XS-4T0370G-0450P	4T*: 30 - 37kW	
			HAV-XS-4T0550G-FL		HAV-XS-4T0450G-0550P ~ HAV-XS-4T0550G-0750P	4T*: 45 - 55kW	
HAV-XS-4T1850G-FL			HAV-XS-4T0750G-0900P ~ HAV-XS-4T1850G-2000P		4T*: 75 - 185kW		
	IO extension card	Expert XS	HAV-XS-IO-3DI-R	IO extension card with 3 Di and 1 relay	HAV-XS-4T0007G ~ HAV-XS-4T2800G-3150P	4T*:0.4kW - 280kW	
Dust Preventive Accessories	Dust cover	EXPERT XS	HAV-XS-FCB	Dust prevention cover	HAV-XS-2S0007 ~ HAV-XS-2S0022G HAV-XS-2T0007G ~ HAV-XS-2T0220G-0300P HAV-XS-4T0007G ~ HAV-XS-4T0220G-0300P	2S*: 0.75 - 2.2kW 2T*: 0.75 - 22kW 4T*: 0.75 - 22kW	
		BASIC BA	HAV-BA-4T0040		HAV-BA-2S0022G HAV-BA-4T0040G HAV-BA-4T0055G	2S*: 2.2kW 4T*: 4kW, 5.5kW	
	Dust Guaze	Expert XS	HAV-XS-4T0075-FSB	Dust guaze for Expert Series	HAV-XS-4T0055G-0075P HAV-XS-4T0075G-0110P	4T*: 5.5kW , 7.5kW	
			HAV-XS-4T0150-FSB		HAV-XS-4T0110G-0150P HAV-XS-4T0150G-0180P	4T*: 11kW, 15kW	
HAV-XS-4T0220-FSB			HAV-XS-4T0185G-0220P HAV-XS-4T0220G-0300P		4T*: 18.5kW, 22kW		
Dust Sticker	BASIC BA	HAV-BA-4T0022	Dust sticker for BASIC Series	HAV-BA-2S0004G ~ HAV-BA-2S0022G HAV-BA-4T0004G ~ HAV-BA-4T0055G	2S*:0.4 - 2.2kW 4T*:0.4 - 5.5kW		

# General Purpose Variable Speed Drives



## Accessories Selection

Category	Type	Range	Commercial Reference	Short Description	Applicable Product		Pictures
					Applicable Commercial Reference	Specifications	
Installation Accessories	Flange-mounting	Expert XS	HAV-XS-4T0040-QRZJ	Embedded installation accessories	HAV-XS-4T0007G ~ HAV-XS-4T0040G-0055P HAV-XS-2T0007G ~ HAV-XS-2T1600G	4T*: 0.75 - 4kW 2S*: 0.75 - 2.2kW	
			HAV-XS-4T0075-QRZJ		HAV-XS-4T0055G-0075P ~ HAV-XS-4T0075G-0110P	4T*: 5.5 - 75kW	
			HAV-XS-4T0150-QRZJ		HAV-XS-4T0110G-0150P ~ HAV-XS-4T0150G-0185P	4T*: 11 - 15kW	
			HAV-XS-4T0220-QRZJ		HAV-XS-4T0185G-0220P ~ HAV-XS-4T0220G-0300P	4T*: 18.5 - 22kW	
			HAV-XS-4T0370-QRZJ		HAV-XS-4T0300G-0370P ~ HAV-XS-4T0370G-0450P	4T*: 30 - 37kW	
			HAV-XS-4T0750-QRZJ		HAV-XS-4T0450G-0550P ~ HAV-XS-4T0750G-0900P	4T*: 45 - 75kW	
			HAV-XS-4T1320-QRZJ		HAV-XS-4T0900G-1100P ~ HAV-XS-4T1320G-1600P	4T*: 90 - 132kW	
			HAV-XS-4T1600-QRZJ		HAV-XS-4T1600G-1850P ~ HAV-XS-4T8500G	4T*: 160 ~ 850kW	
	Wall-mounting	Expert XS	HAV-XS-4T2200-BGZJ	Accessory for wall mounting installation	HAV-XS-4T2000G-2200P ~ HAV-XS-4T2200G-2500P	4T*: 200 - 220kW	
			HAV-XS-4T2800-BGZJ		HAV-XS-4T2500G-2800P ~ HAV-XS-4T8500G	4T*: 250 ~ 850kW	
	Floor-standing	Expert XS	HAV-XS-4T0370-DZ	Accessory for floor-standing installation	HAV-XS-4T0300G-0370P ~ HAV-XS-4T0370G-0450P	4T*: 30 - 37kW	
			HAV-XS-4T0750-DZ		HAV-XS-4T0450G-0550P ~ HAV-XS-4T0750G-0900P	4T*: 45 - 75kW	
HAV-XS-4T1100-DZ			HAV-XS-4T0900G-1100P ~ HAV-XS-4T1320G-1600P		4T*: 90 - 132kW		
HAV-XS-4T1600-DZ			HAV-XS-4T1600G-1850P ~ HAV-XS-4T8500G		4T*: 160 ~ 850kW		
Keypad & Accessories	Keypad bracket	Expert XS	HAV-XS-JPT	Keypad holder for external keypad	HAV-XS-2S0007G ~ HAV-XS-2S0022G HAV-XS-2T0007G ~ HAV-XS-2T1600G HAV-XS-4T0007G ~ HAV-XS-4T8500G	2S*: 0.75 - 2.2kW 2T*: 4 - 7.5kW 4T*: 0.75kW - 850kW	
	External Keypad	BASIC BA	HAV-BA-LKD	External Keypad for BASIC	HAV-BA-2S0004G ~ HAV-BA-2S0022G HAV-BA-4T0004G ~ HAV-BA-4T0055G	2S*: 0.4 - 2.2kW 4T*: 0.4 - 5.5kW	
		EXPERT XS	HAV-XS-LKD	External Keypad for EXPERT XS	HAV-XS-2S0007G ~ HAV-XS-2S0022G HAV-XS-2T0007G ~ HAV-XS-2T1600G HAV-XS-4T0007G ~ HAV-XS-4T8500G	2S*: 0.75 - 22 kW 2T*: 4 - 7.5kW 4T*: 0.75 ~ 850kW	
	Keypad cable	BASIC	HAV-XS-CAB2	Length 2m	Length 2m	HAV-BA-2S0004G ~ HAV-BA-2S0022G HAV-BA-4T0004G ~ HAV-BA-4T0055G	2S*: 0.4 - 2.2 kW 2T*: 0.75 - 160kW 4T*: 0.4 - 850kW
Expert XS		HAV-XS-CAB5	Length 5m	HAV-XS-2S0007G ~ HAV-XS-2S0022G HAV-XS-2T0007G ~ HAV-XS-2T1600G HAV-XS-4T0007G ~ HAV-XS-4T8500G			

\* 2S = 200-240V Single Phase, 2T = 200-240V Three Phase, 4T = 380-440V Three Phase



# Solar series VSD

Himel Solar VSD is an innovative solution that uses solar power as a reliable energy source for pumping water. It allows to harness maximum solar energy to run the pump for maximum duration in a day by controlling the speed of the motor based on the power available from the solar panel.

Series	Voltage Class	Motor Capacity Table																									
		0.4	0.75	1.5	2.2	4	5.5	7.5	11	15	19	22	30	37	45	55	75	90	110	132	160	185	200	220	250	280	315
Solar	Single-phase 220V±15%	■																									
	Three-phase 380V±15%	■																									
Solar -SM	Single-phase 220V±15% To drive single phase motor	■																									

- 2S = 220V±15% Single Phase; 4T = 380V±15% Three Phase;
- SM= Drive Single Phase Motor

## Build-in MPPT

Maximum power point tracking ensures that you get the most power output possible from your solar panel and maximizes the performance of your pump throughout the day.

## Dual supply (AC & DC) capability

The VSD is customized to operate in dual supply mode, so the grid connected supply is used in the absence of energy from PV cells.

## Automatic start-run-stop through out the day

With water level detection in the tank and pump overload and under-load protection.

## Easy to use

- Compact design
- Easy to install with Din rail
- Can run with default setting, no parameter set need
- One-key recovery function

## Special program function

- Energy meter
- Flow calculation
- Support single phase motor water pump

## Pump-specific protection

- Dry run detection.
- Voltage limit
- Overvoltage , overcurrent, overload protection
- Phase-loss protection
- Short-circuit protection

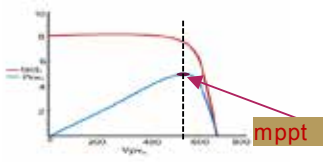

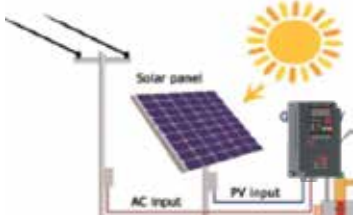
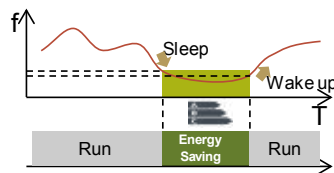
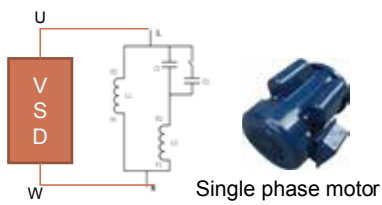



## Online Content

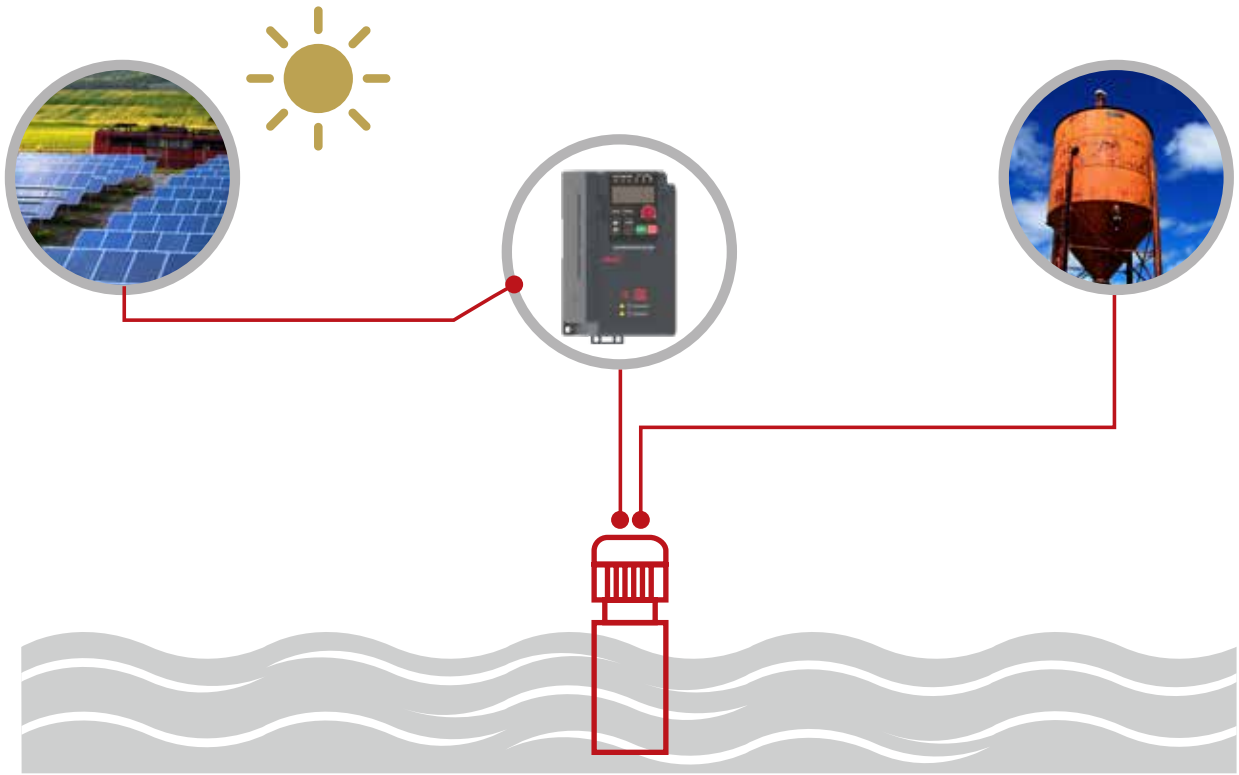


SOLAR Series

# General Highlights

Features	Your benefits
<b>Build-in MPPT</b>	
	<ul style="list-style-type: none"> <li>◆ Maximum power point tracking ensures that you get the most power output possible from your solar panel</li> <li>◆ maximizes the performance of your pump throughout the day</li> </ul>
<b>Easy to use</b>	
	<ul style="list-style-type: none"> <li>◆ Compact design</li> <li>◆ Easy to install with Din rail</li> <li>◆ Can run with default setting</li> <li>◆ One-key recovery function</li> <li>◆ Makes it possible to use in smaller cabinets</li> <li>◆ No need to set additional parameters anymore</li> <li>◆ Easy to operate and maintain</li> </ul>
<b>Dual supply (AC &amp; DC) capability</b>	
	<ul style="list-style-type: none"> <li>◆ The VSD is customized to operate in dual supply mode</li> <li>◆ The grid connected supply is used in the absence of energy from PV cells</li> </ul>
<b>Automatic start-run-stop</b>	
	<ul style="list-style-type: none"> <li>◆ Automatic start and stop according to the power of solar cell</li> <li>◆ With water level detection in the tank and pump overload and under-load protection</li> <li>◆ No need to operate</li> <li>◆ Save more time and maintain cost</li> </ul>
<b>Special program function</b>	
	<ul style="list-style-type: none"> <li>◆ AVR function</li> <li>◆ Energy meter</li> <li>◆ Flow calculation</li> <li>◆ Support single phase motor water pump</li> <li>◆ Automatic adaptation in case of unstable power supply</li> <li>◆ Visible energy savings and flow</li> <li>◆ Easy system upgrade</li> </ul>
<b>Pump-specific protection</b>	
	<ul style="list-style-type: none"> <li>◆ Dry run detection</li> <li>◆ Voltage limit</li> <li>◆ Overvoltage, overcurrent, overload protection</li> <li>◆ Phase-loss protection</li> <li>◆ Short-circuit protection</li> <li>◆ Automatic adaptation in case of unstable power supply</li> <li>◆ Long lifecycle running in high humidity and high dust occasions</li> <li>◆ Easy to maintain</li> </ul>

## Target Application



## Target Application



## Successful Applications



**Swimming Pool**



**Livestock**



**Fountain**



**Fish Farming**





**Irrigation**





**Domestic Water Supply**

# Specification

Range Name		Solar VSD	
Range type		*2S/2S*SM	*4T*
Design			
Capacity range	AC input voltage(V)	220(±15%)(1PH)	380(±15%)(3PH)
	Power rating	0.4~4kW	0.75~160kW
	Mix. DC voltage(V)	440	800
	Start voltage(V)	200	300
	Min. DC voltage(V)	150	250
	DC input range(V)	200~400	300~750
	MPPT working voltage(V)	330	550
Frequency	Input frequency	50/60Hz	50/60Hz
	Output frequency	0-400Hz	0-400Hz
Overload capacity	Capacity	150% for 1min, 190% for 3s, 200% for 1s	150% for 1min, 190% for 3s, 200% for 1s
Control method	V/f	√	√
	Sensorless vector control	√	√
	Eco mode control	-	-
Start torque		0.5Hz, 150%	
Built-in PID		√	√
Keypad		Removable Keyboard	Removable Keyboard
Display		LED	
Multispeed Sequence		-	
I/O	DI1-DI4	NPN/PNP;Input: 9-30VDC	
	DO1	9-30VDC, max.50mA	
	AI1	V: 0-10V	
		I:0-20mA	
	AO1	V: 0-10V	
		I:0-20mA	
RO(Ta, Tb, Tc)	NO: AC 250V below 3A/DC30V below 3A		
	NC: AC 250V below 3A/DC30V below 3A		
Built-in communication (Max. speed)		0.4~15kW: extension card; ≥18.5kW: Build in	
Option	Communication	RS485,Modbus RTU (38.4kbps)	
	Extension operation panel	Support, cable length:2m, 5m	
Functionality		MPPT function	
		Support AC/DC supply	
		Auto start-run-stop	
		Energy/ flow calculator	
		Low Light protection	
		Eco-mode/PID with sleep mode/Special pump protection	
Installation Way		Wall mounted,Din-rail	
Environment and certificate	Operation temperature	The ambient temperature of inverter is -10°C~50°C while air temperature change should be less than 0.5°C per minute.The inverter will be derated once ambient temperature exceeds 40°C. It is not recommended to use the inverter if ambient temperature is above 50°C	
	Humidity	≤95%RH	
	Altitude	≤1000m, no capacity reduction	
	IP level	IP20	
	Global certificates	CE	

# Specification

Range Name		Solar VSD	
Range type		*2S/2S*SM	*4T*
Design			
Features	Velocity ratio	1:200	
	Velocity precision at steady state	≤±0.2%	
	Frequency precision	±0.01Hz	
	Frequency resolution	±0.01%	
	Torque rise	Integrated auto-torque raising function; with manual- setting: 0.1%~10.0%	
	V/F control curve definition	1: Straight line V/F curve; applying to the constant torque load 2: Multi-dots V/F curve 3: Torque-stepdown characteristic curve (1.3 order) 4: Torque-stepdown characteristic curve (1.7 order) 5: Torque-stepdown characteristic curve (2.0 order) 6: Customized V/F(V/F separation)	
	Acceleration/Deceleration Time	four groups of ACC/DEC time which can be selected by F28	
	DC braking	Start frequency: 0.00~Max. output frequency; braking time: 0.0~50.0S braking current: 0.0~100%	
	Automatic voltage regulation(AVR)	The output voltage of the inverter is automatically adjusted to eliminate the influence of bus voltage fluctuations on the output voltage of the inverter	
	Auto current limitation	Limit current automatically to avoid tripping from frequent over current.	
	Auto PMW adjustment	Can adjust the PWM frequency automatically according to the load characteristic	
Protection	Special pump protection	Voltage limit, dry run,pump load monitor,Motor overload	
	VSD protection function	Over-current, over-voltage, under-voltage, over-heat, over-load, short circuit,phase loss	
	Cooling	Air- cooling, Forced air cooling	

# Reference Selection

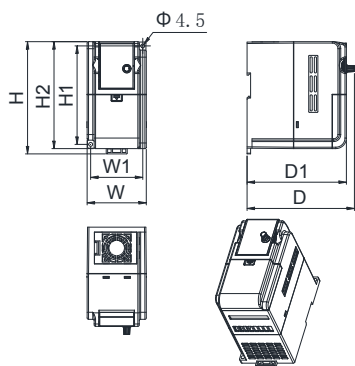
Range Name	Series Name	Input	Adaptation	Inverter
<b>HAV</b>	<b>SO</b>	<b>2S</b>	<b>0015</b>	<b>G-SM</b>
	↓	↓	↓	↓
HA: Himel Automation		2: 220V±15% 4: 380V±15%	<b>Adaptation</b> 0004: 0.4kW 0007: 0.75kW 0015: 1.5kW 0022: 2.2kW 0040: 4kW .....	<b>Torque Type</b> G: Heavy-duty SM: single phase motor
V: VSD M: Motion H: HMI P: PLC	SO: Solar	S: Single-phase T: Three-phase		

# Selection

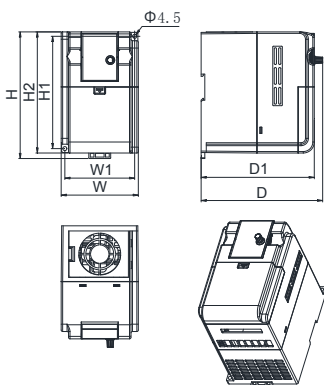
Range	Input Voltage	HIMEL-reference	Rated Capacity	Rated input current	Heavy duty(constant torque) G-type			Dimensions (mm)			Mounting Dimensions (mm)			CAD
					Motor Power (kW)	Motor Power (HP)	Continuous Output Current (A)	W	H	D	W1	H1	D1	
Solar	AC:220V(±15%) Single Phase DC:150V-440V	HAVSO2S0004GSM	1.5	9.5	0.4	0.5	5	84	152	148.4	74	140	141	(a)
		HAVSO2S0007GSM	2.7	15.7	0.75	1.0	7	105	165	161.4	95	153	154	(b)
		HAVSO2S0015GSM	3.8	27	1.5	2.0	10	105	165	161.4	95	153	154	(b)
		HAVSO2S0022GSM	5.3	29.4	2.2	3.0	14	145	230	177.4	133	218	170	(c)
		HAVSO2S0040GSM	6.5	32.8	4	5.0	17	145	230	177.4	133	218	170	(c)
		HAVSO2S0004G	0.8	6.5	0.4	0.5	3	84	152	148.4	74	140	141	(a)
		HAVSO2S0007G	1.5	9.5	0.75	1.0	5	84	152	148.4	74	140	141	(a)
		HAVSO2S0015G	2.7	15.7	1.5	2.0	7	105	165	161.4	95	153	154	(b)
		HAVSO2S0022G	3.8	27	2.2	3.0	10	105	165	161.4	95	153	154	(b)
		HAVSO2S0040G	6.5	32.8	4	5.0	17	145	230	177.4	133	218	170	(c)
	AC:380V(±15%) Three Phase DC:250V-800V	HAVSO4T0007G	1.5	3.4	0.75	1.0	3	84	152	148.4	74	140	141	(a)
		HAVSO4T0015G	3	5	1.5	2.0	4.5	84	152	148.4	74	140	141	(a)
		HAVSO4T0022G	4	6.8	2.2	3.0	6	105	165	161.4	95	153	154	(b)
		HAVSO4T0040G	5.9	10.5	4	5.0	9.5	105	165	161.4	95	153	154	(b)
		HAVSO4T0055G	8.5	15.5	5.5	7.5	13	145	230	177.4	133	218	170	(c)
		HAVSO4T0075G	11	20.5	7.5	10.0	17	145	230	177.4	133	218	170	(c)
		HAVSO4T0110G	17	26	11	15.0	25	180	285	167.4	168	273	160	(d)
		HAVSO4T0150G	21	35	15	20.0	32	180	285	167.4	168	273	160	(d)
		HAVSO4T0185G	24	38.5	18.5	25.0	37	260	340	223	245	325	210.5	(e)
		HAVSO4T0220G	30	46.5	22	30.0	45	260	340	223	245	325	210.5	(e)
		HAVSO4T0300G	40	62	30	40.0	60	250	430	-	160	415	220	(f)
		HAVSO4T0370G	50	76	37	50.0	75	250	430	-	160	415	220	(f)
		HAVSO4T0450G	60	92	45	60.0	90	300	530	-	240	515	270	(g)
		HAVSO4T0550G	72	113	55	75.0	110	300	530	-	240	515	270	(g)
		HAVSO4T0750G	100	157	75	100.0	152	340	580	-	260	565	313	(h)
		HAVSO4T0900G	116	180	90	120.0	176	340	580	-	260	565	313	(h)
		HAVSO4T1100G	138	214	110	150.0	210	340	580	-	260	565	313	(h)
HAVSO4T1320G	165	256	132	180.0	253	400	940	367	300/365	910	336	(i)		
HAVSO4T1600G	197	305	160	200.0	300	400	940	367	300/365	910	336	(i)		

# CAD Diagrams

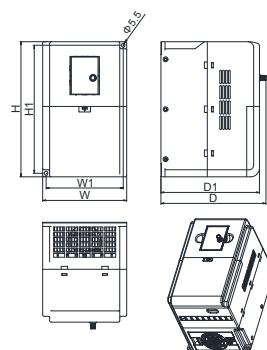
(a)



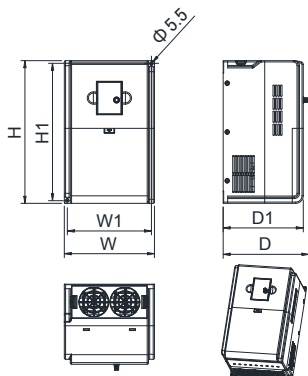
(b)



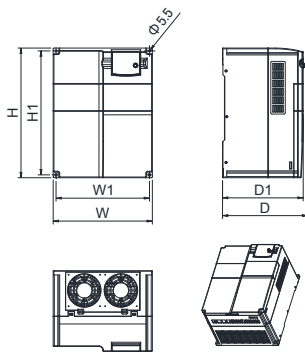
(c)



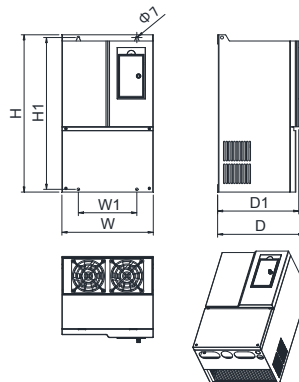
(d)



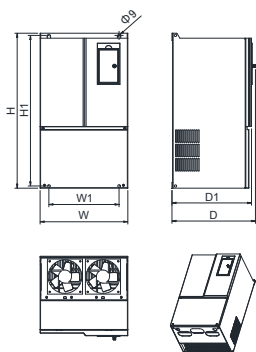
(e)



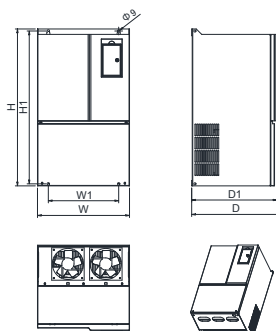
(f)



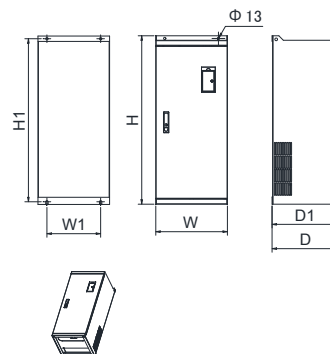
(g)



(h)

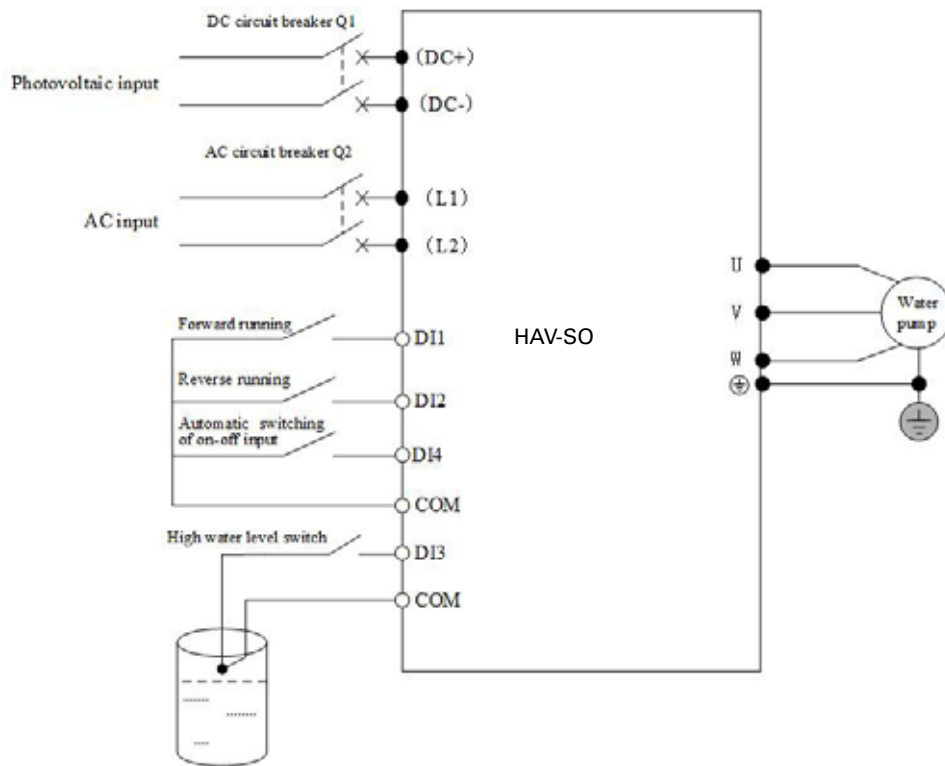


(i)

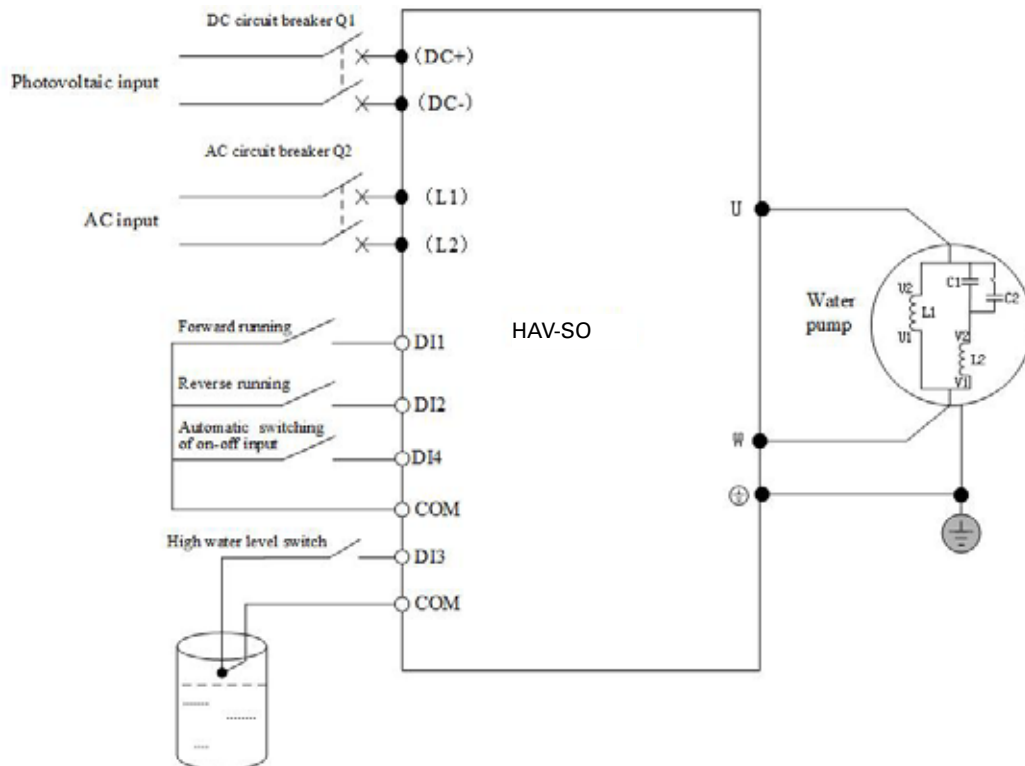




# Wiring Diagrams






**Three phase motor**



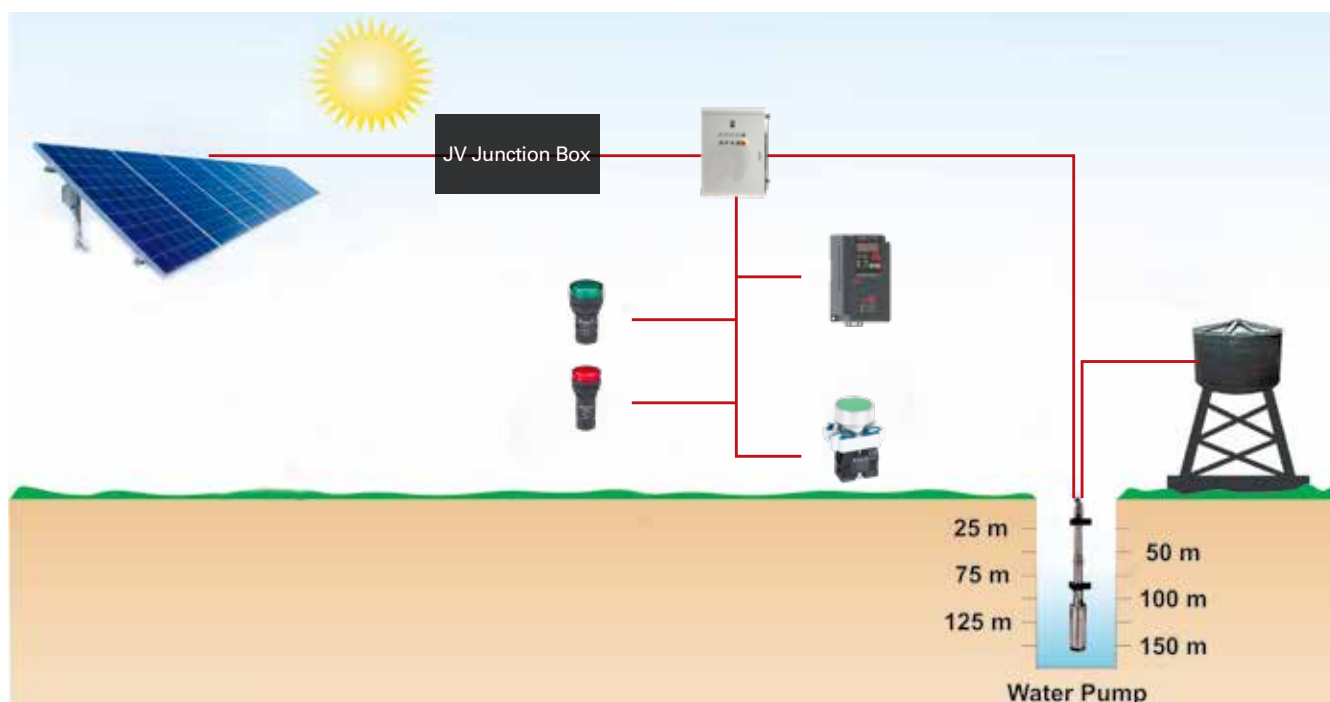
**Singler phase motor**

# Accessories

Type	Commercial Reference	Short Description	Applicable Product		Pictures
			Applicable Commercial Reference	Specifications	
Keypad cable	HAV-SO-CAB	Keyboard extension cable, Length: 2m, 5m	HAVSO Series(0.4~160kW)	2S:0.4-4.0kW 4T:0.7-160kW	
RS485 Communication Extension card	HAV-SO-485	Support MODBUS-RTU protocol	HAV-SO Series(0.4~15kW)	2S:0.4-4.0kW 4T:0.7-15kW	
Power frequency & PV switching solution	HAV-SO-AS055-2	Size: W×H×D:240×90×125 W1×H1×D:229×65×1254×Ø6	HAV-SO Series	2S:0.4-4.0kW	
	HAV-SO-AS055-4	Size: W×H×D:240×90×125 W1×H1×D:229×65×1254×Ø6	HAV-SO Series	4T:0.7-15kW	
	HAV-SO-AS110-4	Size: W×H×D:240×90×125 W1×H1×D:229×65×1254×Ø6	HAV-SO Series	4T:18.5-37kW	

\* 2S = 220V±15% Single Phase, 2T = 220V±15% Three Phase, 4T = 380V±15% Three Phase

# Solar Pump Solution



# Solar Array Selection

Range	Input Voltage	Commercial Reference	Solar panel selection			
			37±1V		45±1V	
			Cell panel power±5Wp	Panel per array*arraies	Panel power±5Wp	Panel per array*arraies
Solar	AC:220V(±15%) Single Phase DC:150V-440V	HAVSO2S0004GSM	250	11*1	300	9*1
		HAVSO2S0007GSM	250	11*1	300	9*1
		HAVSO2S0015GSM	250	11*1	300	9*1
		HAVSO2S0022GSM	250	11*1	300	9*1
		HAVSO2S0040GSM	250	11*2	300	9*2
		HAVSO2S0004G	250	11*1	300	9*1
		HAVSO2S0007G	250	11*1	300	9*1
		HAVSO2S0015G	250	11*1	300	9*1
		HAVSO2S0022G	250	11*1	300	9*1
		HAVSO2S0040G	250	11*2	300	9*2
	AC:380V(±15%) Three Phase DC:250V-800V	HAVSO4T0007G	250	18*1	300	15*1
		HAVSO4T0015G	250	18*1	300	15*1
		HAVSO4T0022G	250	18*1	300	15*1
		HAVSO4T0040G	250	18*2	300	15*2
		HAVSO4T0055G	250	18*2	300	15*2
		HAVSO4T0075G	250	18*2	300	15*2
		HAVSO4T0110G	250	18*3	300	15*3
		HAVSO4T0150G	250	18*4	300	15*4
		HAVSO4T0185G	250	18*5	300	15*5
		HAVSO4T0220G	250	18*6	300	15*6
		HAVSO4T0300G	250	18*8	300	15*8
		HAVSO4T0370G	250	18*10	300	15*10
		HAVSO4T0450G	250	18*12	300	15*12
		HAVSO4T0550G	250	18*15	300	15*15
		HAVSO4T0750G	250	18*20	300	15*20
		HAVSO4T0900G	250	18*25	300	15*25
		HAVSO4T1100G	250	18*30	300	15*30
		HAVSO4T1320G	250	18*36	300	15*36
		HAVSO4T1600G	250	18*43	300	15*43

# Electric Device Selection

Range	Input Voltage	Commercial Reference	AC Circuit Breaker	DC Circuit Breaker	AC contactor	SPD	Fuse
Solar	AC:220V(±15%) Single Phase DC:150V-440V	HAVSO2S0004GSM	16	16A/1000VDC	16	Type    1000VDC	30A Fast fuse
		HAVSO2S0007GSM	16		16		
		HAVSO2S0015GSM	25		25		
		HAVSO2S0022GSM	40	25A/1000VDC	40		
		HAVSO2S0040GSM	50	63A/1000VDC	50		
		HAVSO2S0004G	16	16A/1000VDC	16		
		HAVSO2S0007G	16		16		
		HAVSO2S0015G	25		25		
		HAVSO2S0022G	40	25A/1000VDC	40		
		HAVSO2S0040G	50	63A/1000VDC	50		
	AC:380V(±15%) Three Phase DC:250V-800V	HAVSO4T0007G	10	16A/1000VDC	12		
		HAVSO4T0015G	10		12		
		HAVSO4T0022G	10		12		
		HAVSO4T0040G	25		25		
		HAVSO4T0055G	25	25A/1000VDC	25		
		HAVSO4T0075G	40		40		
		HAVSO4T0110G	50		50		
		HAVSO4T0150G	63	63A/1000VDC	63		
		HAVSO4T0185G	63		63		
		HAVSO4T0220G	100	100A/1000VDC	95		
		HAVSO4T0300G	100		95		
		HAVSO4T0370G	125		115		

## MOTOR MANAGEMENT

# SMART Pump Variable Speed Drives



SMART Pump (SP) drives are full-featured dedicated drives for parabolic load applications like pumps, fans, and chillers. SP drives have a wide range of integrated features like multi-pump control, dry run protection, sensor-less flow and energy calculation, pump cleaning, fire override mode, frost, condensation and hammer effect protections to meet the needs of pump, fans and chillers for modern buildings.

### Online Content



Motor Capacity (kW)																	
2.2	3	4	5.5	7.5	11	15	19	22	30	37	45	55	75	90	110	132	160
HAV-SP-4T*																	
HAV-SP-2T**																	

\*4T: 380V 3 phase | \*\*2T: 220V 3 phase

### Improved Energy Savings

With many integrated control modes like ECO-mode, V<sup>2</sup>/F, and PID with sleep mode.

### High Robustness

- Stable operation in difficult environments
- Built-in category C3 EMC filter ( ≥ 11kW)

### Special program functions

- Multi-pump control
- Energy meter
- Flow calculation
- Pump cleaning
- Fire Override mode
- Dual Ramp

### Pump-specific protections

- Dry run detection
- Frost and condensation protection
- Hammer effect protection
- Undervoltage, overvoltage, overcurrent, overload protection
- Phase-loss protection
- Short-circuit protection

### PC Tool-Himel studio

- Parameters setting and copy
- Monitoring drive status
- Monitoring IO terminal status and test
- Drive debugging and trial run
- Fault record and measurement
- Firmware upgrade

### Support most communication protocols for the pump and fan

- One drive support most popular 3 protocols in the pump and fan applications
- Build in Modbus RTU/RS485 port
- Build in Modbus TCP/RJ45 port
- Provide BACnet IP extension card



# SMART Pump Variable Speed Drives



## SMART Pump Variable Speed Drive

Specialist for pump and fan



### IMPROVED ENERGY SAVINGS

- 3 integrated control modes – ECO-mode, V2/F, and PID with sleep mode



### ROBUST OPERATIONS

- Perfect for harsh environments
- Built-in category C3 EMC filter ( $\geq 11\text{kW}$ )



### SPECIAL PROGRAM FUNCTIONS

- Multi-pump control
- Energy meter
- Flow calculation
- Pump cleaning
- Fire override mode
- Dual Ramp



### PUMP SPECIFIC PROTECTION

- Dry run detection
- Frost and condensation protection
- Hammer effect protection
- Phase-loss and short-circuit protection



### PC TOOL - HIMEL STUDIO

- Parameters setting and copy
- Monitoring drive & IO terminal status
- Drive debugging and trial run
- Fault record and measurement
- Firmware upgrade




### SUPPORT FOR MOST COMMUNICATION PROTOCOLS

- Supports most popular 3 protocols in the pump & fan applications
- Build in Modbus RTU/RS485 port
- Build in Modbus TCP/RJ45 port
- BACnet IP extension card

# SMART Pump Variable Speed Drives




## Specifications

Range Name		SMART Pump
Design		
Capacity range	Three phase 200V Class	AC: 200V(-15%)-240V(+10%) 2.2~45kW
	Three phase 400V Class	AC:380V(-15%)~440V(+10%) 2.2~160kW
Frequency	Input frequency	50/60Hz
	Output frequency	0-599Hz
Overload capacity		120% for 1min
Control method	V/f	√
	Sensorless vector control	√
	Eco mode control	√
Start torque		0.5Hz, 120%
Built-in PID		√
Keypad		Pluggable
Display		LED/LCD
Multispeed control		16 stages in one cycle
I/O	DI1-DI4	NPN/PNP, Input: 9-30VDC
	DI5	NPN/PNP, Input: 15-30VDC
	DO1	Pulse input: max. 50kHz
	DO2	9-30VDC, max. 50mA
		Pulse output max.50kHz
	AI1	V: 0-10V
		I:0-20mA
	AI2	Resolution:1/1000
	AO1	V: 0-10V
		I:0-20mA
	AO2	Resolution:1/1000
	RO(Ta, Tb, Tc)	NO: 24VDC 3A/ 250VAC 5A NC: 24VDC 3A/ 250VAC 3A
Built-in communication (Max. speed)		RS485, ModbusTCP/RTU (38.4kbps)
Options	Extension I/O	DI/DO/RO
	Extension Keypad	Support, cable length:2m, 5m
	Extension Communication Card	BACnet (<18.5kW installed independent; ≥18.5kW installed in VSD)
Functionality		Multi-pump control Dry run protection Energy/ flow calculator Frost and condensation protection Pump cleaning Fire override mode Eco-mode/PID with sleep mode/Special pump protections
Installation Way		Wall mounted, cabinet, flange installation
Dust Shields		√
EMC Filter	C2	—
	C3	Built-in EMC filter (≥11kW)
Braking unit		Built-in (≤22kW)
Environment	Operation temperature	-10-40 °C no capacity reduction, 40° C-50° C capacity reduction
	Humidity	≤95%RH
	Altitude	≤1000m, no capacity reduction
	IP level	IP20
Global certificates		CE

# SMART Pump Variable Speed Drives

## Specifications

Range Name		SMART Pump
Design		
Features	Velocity ratio	1:100
	Frequency precision	Digital setting: Max frequency X ±0.01% Analog setting: Max frequency X ±0.2%
	Frequency resolution	Digital setting: Max frequency X ±0.01% Analog setting: Max frequency X ±0.1%
	Torque rise	Integrated auto-torque raising function; with manual- setting: 0.1%~30.0%
	V/F control curve definition	Linear, Square, V <sup>1.7</sup> /F, V <sup>1.2</sup> /F
	Acceleration/Deceleration Time	4 types of ACC/DEC time selection; optional time unit selection(Min/s); setting range: 0~60hours;
	DC braking	Start frequency: 0.00~60.00Hz; braking time: 0.0~30.0S; braking current: 0.0~100%
	Automatic voltage regulation(AVR)	√
	Auto current limitation	√
	Auto PMW adjustment	√
Protections	Special pump protection	Voltage limit, dry run, pump load monitor, frost and condensation protections
	VSD protection function	Over-current, over-voltage, under-voltage, over-heat, over-load, short circuit.
	Cooling	Air- cooling
Warranty		24 months

## Reference Selection

Range Name	Series Name	Input	Adaptation	Drive
<b>HAV</b>	<b>SP</b>	<b>4T</b>	<b>0110</b>	<b>P</b>
	↓	↓	↓	↓
HA: Himel Automation	S:SMART	2: 220V 4: 380V – 440V	0022: 2.2kW 0075: 7.5kW 0110: 11kW 0185: 18.5kW 1100: 110kW .....	P: Normal-duty
V: VSD	P: Pump	T: Three-phase		

# SMART Pump Variable Speed Drives



## References

Input Voltage	Commercial Reference	Selection			Overload Output Current	
		Motor Power (kW)	Motor Power (HP)	Continuous Output Current (A)	A	%
AC: 200 - 240V Three Phase	HAVSP2T0022P	2.2	3	10.08	12.1	120%
	HAVSP2T0030P	3	4	11.5	13.8	120%
	HAVSP2T0040P	4	5	16.2	19.4	120%
	HAVSP2T0055P	5.5	7.5	20.3	24.4	120%
	HAVSP2T0075P	7.5	10	26.7	32	120%
	HAVSP2T0110P	11	15	39	46.8	120%
	HAVSP2T0150P	15	20	52.5	63	120%
	HAVSP2T0185P	18.5	25	62.4	74.9	120%
	HAVSP2T0220P	22	30	73.6	88.3	120%
	HAVSP2T0300P	30	40	98.7	118.4	120%
	HAVSP2T0370P	37	50	121	145.2	120%
HAVSP2T0450P	45	60	147	176.4	120%	
AC: 380 - 440V Three Phase	HAVSP4T0022P	2.2	3	5	6	120%
	HAVSP4T0030P	3	4	7.5	9	120%
	HAVSP4T0040P	4	5	8.8	10.6	120%
	HAVSP4T0055P	5.5	7.5	13	15.6	120%
	HAVSP4T0075P	7.5	10	17	20.4	120%
	HAVSP4T0110P	11	15	25	30	120%
	HAVSP4T0150P	15	20	32	38.4	120%
	HAVSP4T0185P	18.5	25	37	44.4	120%
	HAVSP4T0220P	22	30	45	54	120%
	HAVSP4T0300P	30	40	60	72	120%
	HAVSP4T0370P	37	50	75	90	120%
	HAVSP4T0450P	45	60	90	108	120%
	HAVSP4T0550P	55	75	110	132	120%
	HAVSP4T0750P	75	100	157	188.4	120%
	HAVSP4T0900P	90	125	180	216	120%
	HAVSP4T1100P	110	150	214	256.8	120%
HAVSP4T1320P	132	175	256	307.2	120%	
HAVSP4T1600P	160	200	307	368.4	120%	



# SMART Pump Variable Speed Drives

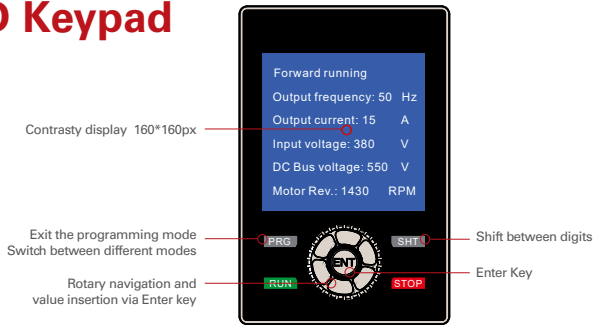


## Dimensions

Input Voltage	Commercial Reference	Dimensions(mm)			Mounting Dimensions (mm)				Mounting Hole Diameter (mm)	CAD Diagram
		W	H	D	W1	H1	D1	D2		
AC: 200-240V Three Phase	HAVSP2T0022P	120	215	163	109	204	133	85	5.5	(a)
	HAVSP2T0030P	120	215	163	109	204	133	85	5.5	
	HAVSP2T0040P	120	215	163	109	204	133	85	5.5	
	HAVSP2T0055P	150	259	181	138	248	150	104	5.5	
	HAVSP2T0075P	150	259	181	138	248	150	104	5.5	
	HAVSP2T0110P	205	322	215	188	305	176	130	6.5	
	HAVSP2T0150P	235	370	235	218	350	200	146	7	(b)
	HAVSP2T0185P	235	370	235	218	350	200	146	7	
	HAVSP2T0220P	305	490	275	200	470	270	211	10	
	HAVSP2T0300P	305	490	275	200	470	270	211	10	
AC: 380-440V Three Phase	HAVSP2T0370P	320	560	307	197	543	302	240	10	(b)
	HAVSP2T0450P	320	560	307	197	543	302	240	10	
	HAVSP4T0022P	120	215	163	109	204	133	85	5.5	(a)
	HAVSP4T0030P	120	215	163	109	204	133	85	5.5	
	HAVSP4T0040P	120	215	163	109	204	133	85	5.5	
	HAVSP4T0055P	120	215	163	109	204	133	85	5.5	
	HAVSP4T0075P	120	215	163	109	204	133	85	5.5	
	HAVSP4T0110P	150	259	181	138	248	150	104	5.5	
	HAVSP4T0150P	150	259	181	138	248	150	104	5.5	
	HAVSP4T0185P	205	322	215	188	305	176	130	6.5	
	HAVSP4T0220P	205	322	215	188	305	176	130	6.5	
	HAVSP4T0300P	235	370	235	218	350	200	146	7	
	HAVSP4T0370P	235	370	235	218	350	200	146	7	(b)
	HAVSP4T0450P	305	490	275	200	470	270	211	10	
	HAVSP4T0550P	305	490	275	200	470	270	211	10	
	HAVSP4T0750P	320	560	307	197	543	302	240	10	
HAVSP4T0900P	320	560	307	197	543	302	240	10		
HAVSP4T1100P	320	560	307	197	543	302	240	10		
HAVSP4T1320P	355	678	319	240	659	314	261	11	(b)	
HAVSP4T1600P	355	678	319	240	659	314	261	11		

# SMART Pump Variable Speed Drives

## LCD Keypad



Features	Benefits
Display	<ul style="list-style-type: none"> <li>◆ More visible status information</li> <li>◆ Intuitive operation</li> <li>◆ Short commissioning times</li> <li>◆ User-friendly interface</li> </ul>
Rotary navigation	<ul style="list-style-type: none"> <li>◆ Quick navigation and input of values</li> </ul>
Quick commissioning	<ul style="list-style-type: none"> <li>◆ Visible parameter names</li> <li>◆ Possible to commission without documentation</li> <li>◆ Easily copy parameters between multiple drives</li> </ul>

## VSD Accessories

Type	Commercial Reference	Short Description	Applicable Product		Pictures
			Applicable Commercial Reference	Specifications	
IO extension card	HAVSPIO3DI3R	IO extension card with 3 DI and 3 relay	HAVSP4T0022P ~ HAVSP4T1600P	4T*: 2.2 - 160kW	
Keypad bracket	HAVXSJPT	Keypad holder for external keypad	HAVSP4T0022P ~ HAVSP4T1600P	4T*: 2.2 - 160kW	
External Keypad	HAVSPLKD**	External keypad	HAVSP4T0022P ~ HAVSP4T1600P	4T*: 2.2 - 160kW	
	HAVSPLCD	LCD keypad	HAVSP4T0022P ~ HAVSP4T1600P	4T*: 2.2 - 160kW	
Keypad cable	HAVXSCAB2	Length 2m	HAVSP4T0022P ~ HAVSP4T1600P	4T*: 2.2 - 160kW	
	HAVXSCAB5	Length 5m	HAVSP4T0022P ~ HAVSP4T1600P	4T*: 2.2 - 160kW	
Communication card	HAVSPBACNET	Extension communication card	HAVSP4T0022P ~ HAVSP4T1600P	4T*:2.2-160kW	

\*4T: 380V 3 Phase | \*\* All VSDs have built-in removable keypad. HAVSPLKD is sold as a spare part.



## Contact us



Get in touch with Himel Team at <https://www.himel.com/contact-us>



Find a Local Himel Distributor at <https://www.himel.com/find-a-distributor>



Reach Himel Global Team at [support@himel.com](mailto:support@himel.com)



Contact Global Himel Marketing and Communication Team at [sm.himel.communications@himel.com](mailto:sm.himel.communications@himel.com)



Visit Himel website at  
<https://www.himel.com>  
or  
Scan QR Code ▼



Learn More about Himel's  
15-Years of Value Engineering  
Excellence  
Scan QR Code ▼

