

# HVAC DRIVE H300



EFFICIENCY AND RELIABILITY IN HVAC

## HVAC Drive H300 Highlights

- Seamless integration with Building Automation Systems
- Flexibility without a Building Management System
- Onboard Fire mode.
- Quiet operation with Rotor Flux Control modes, high switching frequencies (up to 16 kHz).
- Intelligent 10 speed drive cooling fan
- Conformally coated PCBs as standard.
- Among the most compact VFD in its class
- Built-in dual process PID loops that can operate independently or be combined to provide more complex functionality.
- Exponential energy savings through fitting a Control Techniques Variable Frequency Drive into the application.
- HVAC Drive H300 provides high energy efficiency, up to 98% where very little energy is lost in the conversion.
- Dynamic Volts/Hertz energy optimization minimises power loss under low load conditions.

## KEY FUNCTIONS

Function	Function	Function
Guided set-up via 'Connect' commissioning software	✓	Temperature monitoring ✓
On Board Comms ModBus RTU, BACnet MSTP	✓	Digital inputs 3-6
Control mode: Induction motor operation	✓	Digital outputs 0-3
Control Mode: Sensor-less RFCA Induction Motor Operation	✓	Relays (normally open/normally closed) 2
Control mode: Sensor-less Permanent magnet motor operation	✓	Motorized potentiometer ✓
Auto-tune static	✓	Logic function control ✓
Auto-tune rotating	✓	Timer function control ✓
Filter Change Timer	✓	Variable selector/ Threshold Detectors ✓
Time before Filter Change Due	✓	PID controllers 2
Hand/Off/Auto control	✓	Energy meter ✓
User Security Access	✓	Trip time stamping ✓
Supply loss detection	✓	Trip logging 10
Low DC link operation	✓	Skip frequency dead bands ✓
Catch a spinning motor	✓	Control word ✓
Stop mode: Ramp	✓	Auto reset ✓
Stop mode: Coast	✓	Parameter cloning ✓
Stop mode: Fast ramp	✓	Additional application parameters 148
Programmable braking	✓	On-board oscilloscope function ✓
Motor pre-heat mode	✓	On-board PLC ✓
Bi-polar references	✓	SD card adapter ✓
Skip frequencies	✓	SMARTCARD ✓
Fire Mode	✓	Acceleration rates 4
Demand based sleep mode	✓	Deceleration rates 4
Analog inputs 2	2	S Ramp ✓
Analog outputs 2	2	

# SPECIFICATION

## H300

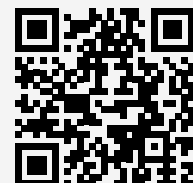
Items supplied with the drive	Step-By-Step Guide, safety information, grounding bracket, grounding clamp, DC terminal cover grommets, terminal nuts, supply and motor connector, surface mounting brackets, control terminals, relay connectors, 24V power supply connector and finger guard grommets
Storage temperature	-40 °F to 131 °F, -40 °C to 55 °C
Operating temperature without de-rate	-4 °F to 104 °F, -20 °C to 40 °C
Operating temperature with de-rate	104 °F to 131 °F, 40 °C to 55 °C
Supply requirements	Maximum supply imbalance: 2 % negative phase sequence (equivalent to 3 % voltage imbalance between phases). Input frequency 45 to 66 Hz
Switching frequency range	2, 3, 4, 6, 8, 12, 16 kHz (Factory default = 3 kHz)
Approvals	CE (European Union), cULus Listed (USA and Canada), RCM (Australia/ New Zealand), EAC (Russian Customs Union), UKCA
Product safety standard	EN61800-5-1
Functional safety	Single STO Function
Altitude	3280 ft (1000 m) – No de-rate. 3280 to 8942 ft (1000 m to 3000 m) - 1% de-rate / 328 ft (100 m)
Humidity	95 % Non-condensing
Pollution	Degree 2. Dry, non-conducting pollution only
IP Rating	IP20 – Pollution degree 2
Vibration	Reference standard IEC60068-2-29 bump test, IEC60068-2-64 random vibration test, IEC60068-2-6, EN61800-5-1 sinusoidal vibration test.
Mounting methods	Surface mount or through-panel mount via mounting brackets
Output frequency/speed range	599 Hz
Braking	In-built braking transistor, external resistor required.
Operating modes	Open Loop Induction Motor V/F, RFC-A (sensorless induction motor) RFC-S (sensorless, and feedback via option module)
Overload capability	110 % for 165 s from cold or for 9 s from 100 % load

Overvoltage category	Evaluated for OVC III.
Corrosive environments	Concentrations not exceeding levels set in: EN 50178:1998 Table A2 IEC 60721-3-3 Class 3C2
Immunity compliance	IEC61800-3, EN60800-6-2, IEC 61000-4-2, IEC 61000-4-3, IEC61000-4-4, IEC61000-4-5, IEC61000-4-6, IEC61000-4-11, IEC61000-6-1, IEC 61000-6-2.
Emission compliance	Capable of meeting the requirements of Equipment Category C3 without external filters or line reactors. Capable of meeting the requirements of Equipment Category C2 when installed with the recommended filters and line reactors. IEC61800-3, EN61000-6-4, EN61000-3-2, EN61000-3-12, EN61000-3-3, EN12015
Cooling	Forced cooled
Safe Torque off	Single STO. SIL 3
Communications	- RS485 with Modbus RTU - BACnet MS/TP - EtherNet/IP, EtherCAT, PROFIBUS, PROFINET, DeviceNet, POWERLINK and CANopen via option modules
Control I/O	2 x analog input, 2 x analog outputs, 3 x Digital I/O programmable, 3 x Digital input, 2 x Form C relays 250Vac Max., 5 x 0V common, 1 x 24V user output, 1 x 24V external input, 1 x STO input. Additional I/O available with SI-I/O option module.
Accuracy	Frequency 0.01%, Analog input 1 and 2: 11 bits plus sign, Current accuracy typical 2%.
On-Board user program capability	N/A, Only via additional MCI200/ 210 Option Module
Keypad (LCD)	KI- HOA keypad RTC (real time clock), optional HOA Remote Keypad
PC Tools	'Connect' commissioning and cloning tool including CT Oscilloscope, Machine Control Studio for On-board PLC programming.
Warranty	5 years
Supported options	HMI, Remote Keypad RTC, SI-I/O, Remote I/O, SI-Encoder (speed feedback), SI-Universal Encoder, MCI200 (second processor), MCI210 (second processor), SI-Ethernet, SI-EtherCAT, SI-DeviceNet, SI-PROFIBUS, SI-PROFINET, SI-POWERLINK, SI-CANopen, KI-485 comms adapter, SD card adapter, SMARTCARD
Accessories	Through-hole IP65 (frame 3 to 8) or IP55 (frame 9 to 11) mounting kits, UL type conduit kits, retrofit mounting brackets, external EMC filters and grounding bracket (supplied with the drive)

## Documentation & Downloads

Product documentation and PC tools available for download from:

[www.controltechniques.com/support](http://www.controltechniques.com/support)

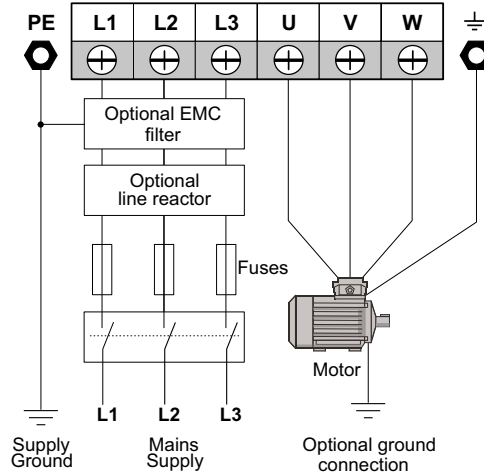


# DIMENSIONS

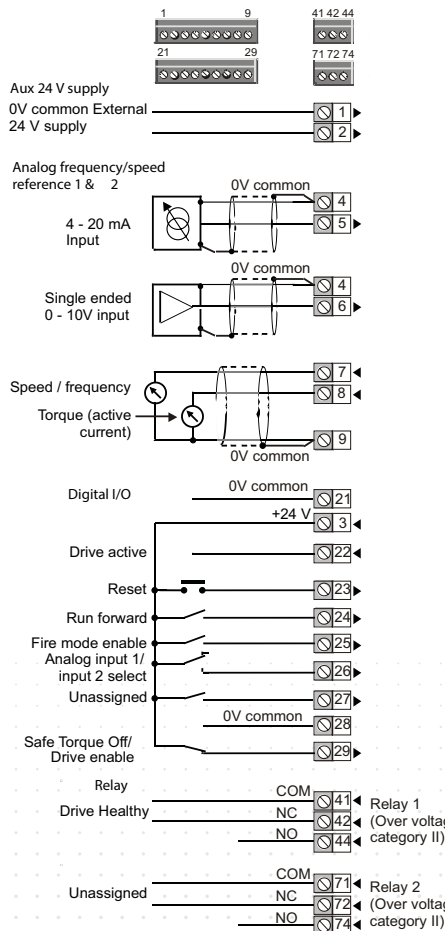


Frame Size	Overall Dimensions						Mounting Dimensions				Mounting Hole Diameter		Weight	
	in			mm			in		mm		in	mm	lb	kg
	H	W	D	H	W	D	H	W	H	W				
<b>3</b>	15.03	3.26	7.87	382	83	200	14.37	2.87	365	73	0.21	5.5	9.92	4.5
<b>4</b>	15.39	4.88	7.87	391	124	200	14.37	4.17	365	106	0.26	6.5	14.33	6.5
<b>5</b>	15.39	5.63	7.87	391	143	200	14.37	4.17	365	106	0.26	6.5	16.3	7.4
<b>6</b>	15.39	8.27	11.29	391	210	287	14.37	7.72	365	196	0.28	7	30.9	14
<b>7</b>	21.73	10.63	11.02	552	270	280	20	8.66	508	220	0.35	9	61.70	28
<b>8</b>	31.65	12.21	11.42	804	310	290	29.64	10.20	753	259	0.35	9	114.6	52
<b>9A</b>	43.62	12.59	11.42	1108	320	290	41.29	10.20	1049	259	0.35	9	101.4	46
<b>9E and 10E</b>	42.08	12.21	11.42	1069	310	290	39.76	10.20	1010	259	0.35	9	101.4	46
<b>11E</b>	48.89	12.21	12.32	1242	310	313	46.81	10.20	1189	259	0.35	9	138.8	63
<b>12</b>	68.90	11.61	20.71	1750	295	526	N/A	N/A	N/A	N/A	N/A	N/A	287	130

# CONNECTIONS

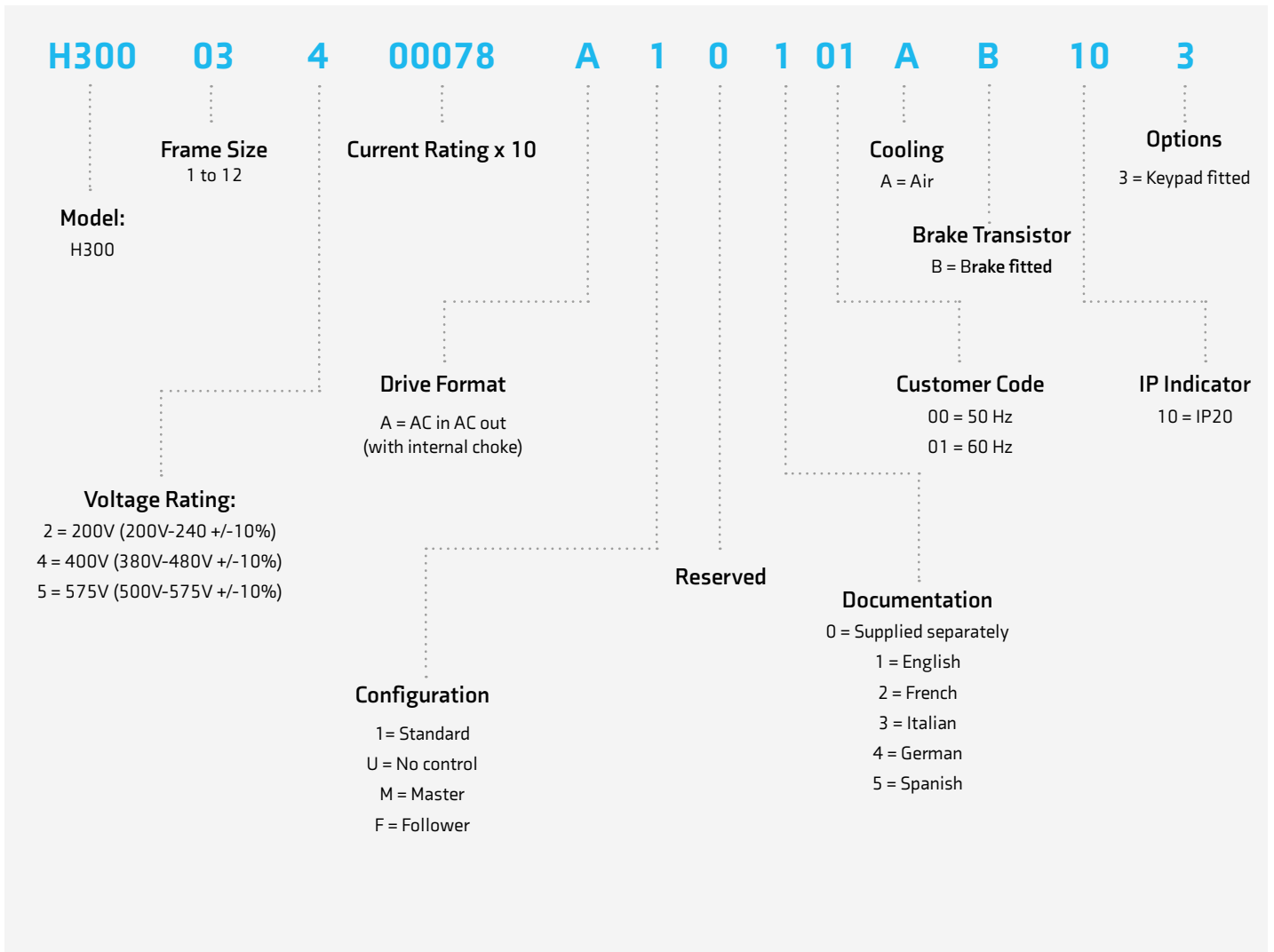


## Typical Power Connections



## Default Control Connections

# PART NUMBERS



# MODEL NUMBER AND RATINGS

200/240 Vac ±10%					380/480 Vac ±10%				
Product Code*	Normal Duty				Product Code*	Normal Duty			
	IP20 Max continuous current (A)	Motor shaft power (hp)	Motor shaft power (kW)	IP65 Max continuous current (A)		IP20 Max continuous current (A)	Motor shaft power (hp)	Motor shaft power (kW)	IP65 Max continuous current (A)
H300-03200066A	6.6	1.5	1.1	6.6	H300-03400034A	3.4	1.5	1.1	3.4
H300-03200080A	8	2	1.5	8	H300-03400045A	4.5	2	1.5	4.5
H300-03200110A	11	3	2.2	11	H300-03400062A	6.2	3	2.2	6.2
H300-03200127A	12.7	3	3	12.7	H300-03400077A	7.7	5	3	7.7
H300-04200180A	18	5	4	18	H300-03400104A	10.4	5	4	10.4
H300-04200250A	25	7.5	5.5	22	H300-03400123A	12.3	7.5	5.5	11
H300-05200300A	30	10	7.5	30	H300-04400185A	18.5	10	7.5	18.5
H300-06200500A	50	15	11	50	H300-04400240A	24	15	11	21
H300-06200580A	58	20	15		H300-05400300A	30	20	15	29
H300-07200750A	75	25	18.5		H300-06400380A	38	25	18.5	38
H300-07200940A	94	30	22		H300-06400480A	48	30	22	48
H300-07201170A	117	40	30		H300-06400630A	63	40	30	
H300-08201490A	149	50	37		H300-07400790A	79	50	37	
H300-08201800A	180	60	45		H300-07400940A	94	60	45	
H300-09202160A	216	75	55		H300-07401120A	112	75	55	
H300-09202660A	266	100	75		H300-08401550A	155	100	75	
H300-09202160E	216	75	55		H300-08401840A	184	125	90	
H300-09202660E	266	100	75		H300-09402210A	221	150	110	
H300-10203250E	325	125	90		H300-09402660A	266	200	132	
H300-10203600E	360	150	110		H300-09402210E	221	150	110	
					H300-09402660E	266	200	132	
					H300-10403200E	320	250	160	
					H300-10403610E	361	300	200	
					H300-11404370E	437	350	225	
					H300-11404870E	487	400	250	
					H300-11405070E	507	450	280	

380/480 Vac ±10%				
Product Code*	Normal Duty			
	IP20 Max continuous current (A)	Motor shaft power (hp)	Motor shaft power (kW)	IP65 Max continuous current (A)
H300-05500039A	608	500	315	
H300-05500061A	660	550	355	
H300-05500100A	755	650	400	
H300-06500120A	865	700	500	

500/575 Vac ±10%				
Product Code*	Normal Duty			
	IP20 Max continuous current (A)	Motor shaft power (hp)	Motor shaft power (kW)	IP65 Max continuous current (A)
H300-05500039A	3.9	3	2.2	3.9
H300-05500061A	6.1	5	4	6.1
H300-05500100A	10	7.5	5.5	10
H300-06500120A	12	10	7.5	12
H300-06500170A	17	15	11	17
H300-06500220A	22	20	15	22
H300-06500270A	27	25	18.5	27
H300-06500340A	34	30	22	34
H300-06500430A	43	40	30	
H300-07500530A	53	50	37	
H300-07500730A	73	60	45	
H300-08500860A	86	75	55	
H300-08501080A	108	100	75	
H300-09501250A	125	125	90	
H300-09501550A	155	150	110	
H300-09501250E	125	125	90	
H300-09501500E	150	150	110	
H300-10502000E	200	200	130	
H300-11502480E	248	250	175	
H300-11502880E	288	300	225	
H300-11503150E	315	350	250	

\*Note: this is the short product code, add A10101AB103 to this code when ordering

500/690 Vac ±10%				
Product Code*	Normal Duty			
	IP20 Max continuous current (A)	Motor shaft power (hp)	Motor shaft power (kW)	IP65 Max continuous current (A)
H300-07600230A	23	25	18.5	
H300-07600300A	30	30	22	
H300-07600360A	36	40	30	
H300-07600460A	46	50	37	
H300-07600520A	52	60	45	
H300-07600730A	73	75	55	
H300-08600860A	86	100	75	
H300-08601080A	108	125	90	
H300-09601250A	125	150	110	
H300-09601500A	150	175	132	
H300-09601250E	125	150	110	
H300-09601550E	155	175	132	
H300-10601720E	172	200	160	
H300-10601970E	197	250	185	
H300-11602250E	225	250	200	
H300-11602750E	275	300	250	
H300-11603050E	305	400	280	

