

## Variable Speed Technology

Pre-qualified compressor and drive solution with full operating envelope running capability

### How variable speed compressors can lower energy consumption:

Changing speed to match cooling demand – increased efficiency at part load – reduced pressure pulses due to less start/stops – no start up peak current – stable temperature lowering energy costs.

### Precise temperature control improves overall system performance

Varying the compressor speed to match changing demand precisely – improves system performance – achieved without using hot gas bypass valve – lowers machine cost – smooth and dynamic response to system demand – stable temperature control reduces operating costs.

### Fewer system components – lowering machine costs:

Soft Start managed by the drive – relays included in the drive – built in crankcase heater – Contactor-less solution utilising built-in STO in the drive

### Simple and Easy to Use – reducing testing and setup costs

Drive & compressors pre-qualified – parameter set confirmed with each OEM – reducing testing time – shortens time to market – simple plug-in copy & paste tool – lowers machine setup time – eliminates programming errors – Stationary autotune to quickly identify motor characteristics

### Improved reliability – low maintenance cost

Wide speed range – less compressor start stops – built-in soft start – lowers mechanical stress – extending machine life – system reliability – lower maintenance costs

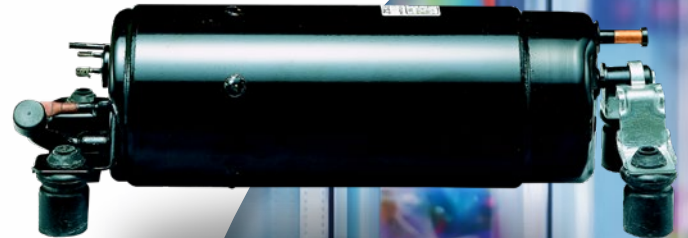
### Drive protection of compressors

Minimum on/off time – re-start delay – Intelligent load management with speed reduction – configurable demagnetising peak current limit – over temperature – short circuit – safe torque off input – added system protection.

### Matched compressor and drive combinations

Compressor	Drive Model	Power Source	Refrigerant	Min Cooling Capacity (W)	Max Cooling Capacity* (W)
ZS7798D1	CV-220070-3FHP	1x200-240V +/-10% 50/60Hz	R-404A	391	1816
ZS1216D1	CV-220120-3FHP	1x200-240V +/-10% 50/60Hz	R-404A	738	2901
ZS1520D1	CV-220120-3FHP	1x200-240V +/-10% 50/60Hz	R-404A	984	3507
ZS7798D1	CV-220070-3FHP	1x200-240V +/-10% 50/60Hz	R-448A/R-449A	391	1813
ZS1216D1	CV-220120-3FHP	1x200-240V +/-10% 50/60Hz	R-448A/R-449A	737	2896
ZS1520D1	CV-220120-3FHP	1x200-240V +/-10% 50/60Hz	R-448A/R-449A	982	3501

\* Performance at EN12900MT condition -10°C/45°C/SH=10K/SC=0K

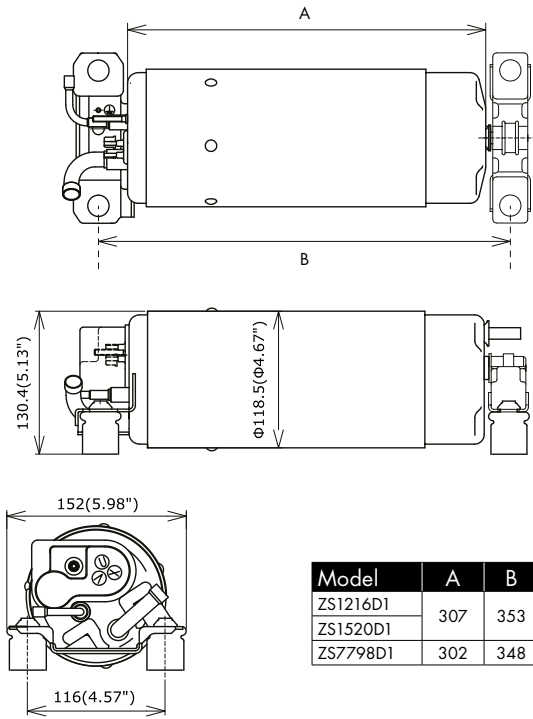


**PROVEN SOLUTION!**

Optimal performance & reliability

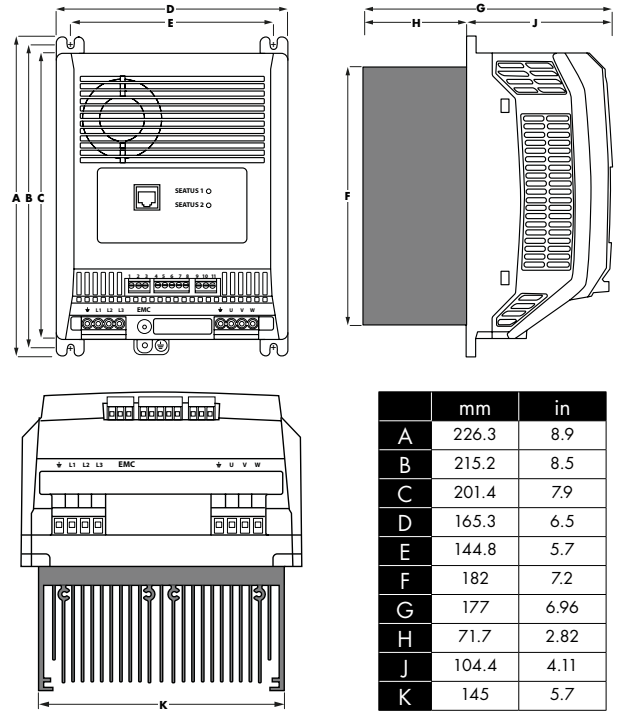


### Compressor



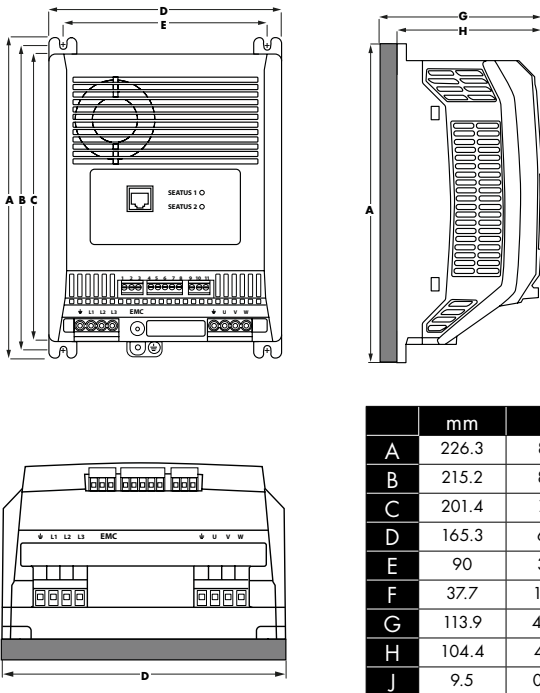
Model	A	B
ZS1216D1	307	353
ZS1520D1	302	348

### Variable speed drive heatsink version



	mm	in
A	226.3	8.9
B	215.2	8.5
C	201.4	7.9
D	165.3	6.5
E	144.8	5.7
F	182	7.2
G	177	6.96
H	71.7	2.82
J	104.4	4.11
K	145	5.7

### Variable speed drive coldplate version



	mm	in
A	226.3	8.9
B	215.2	8.5
C	201.4	7.9
D	165.3	6.5
E	90	3.5
F	37.7	1.48
G	113.9	4.48
H	104.4	4.11
J	9.5	0.37

Single-Phase Input Models (200-240Vac, 50/60Hz)	Rated Input Current	Rated Output Current	Output Power For Reference
CV-220070-1FHP	8.9 A	7.0 A	1.5 kW
CV-220120-1FHP	15.8 A	12.0 A	3.0 kW

Functionality		
3 - Stage start-up profile with 3 ramps	Yes	
Minimum On/Off/Restart Time		
Safe Torque Off (STO)		
Motor De-magnetisation protection		
Drive and motor thermal management		
Intelligent Load Management Features		
Coldplate version available		
Low Harmonic - Compliant with EN 61000-3-2		
-20°C to +60°C ambient temperature operation [-4°F to +140°F]		
Analogue Input (0-20mA/4-20mA/0-10V)		
Digital Input and Relay Output		
Crankcase Heating Function built-in		
Control modes: analogue speed/PI regulator/Fieldbus		0-20mA/4-20mA/0-10Vdc
On-board Fieldbus Communication		Modbus RTU (RS485)

Product Certification		
CE	Low Voltage Directive (LVD)	2014/30/EU (EMC)
		2014/35/EU (LVD)
		2006/42/EC (Machinery Directive)
		2011/65/EU (RoHS 2)
		2009/125/EC (Eco-design)
Product Safety	Electromagnetic Compatibility (EMC)	BSEN 61800-5-1:2007 & A1:2017
		BSEN 61800-3:2018
		BSEN 61000-3-2:2019+A1:2021
Ecodesign	BSEN 61/00-9-2:2017	
Functional Safety	Safe Torque Off (STO)	PL e / Cat. 3 according to EN ISO 13849-1
		SIL 3 / SIL CL 3 of IEC 61800-5-2 / IEC 6158 / IEC 62061
	Certification Body	TUV Rheinland
cUL*	Product Safety	ANSI/UL 61800-5-1, CAN/CSA C22.2 No. 274
		Certification Body

\* Pending

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