

Variable Speed Compressors & Drive Solutions



COPELAND™



Superior energy efficiency, control and reliability

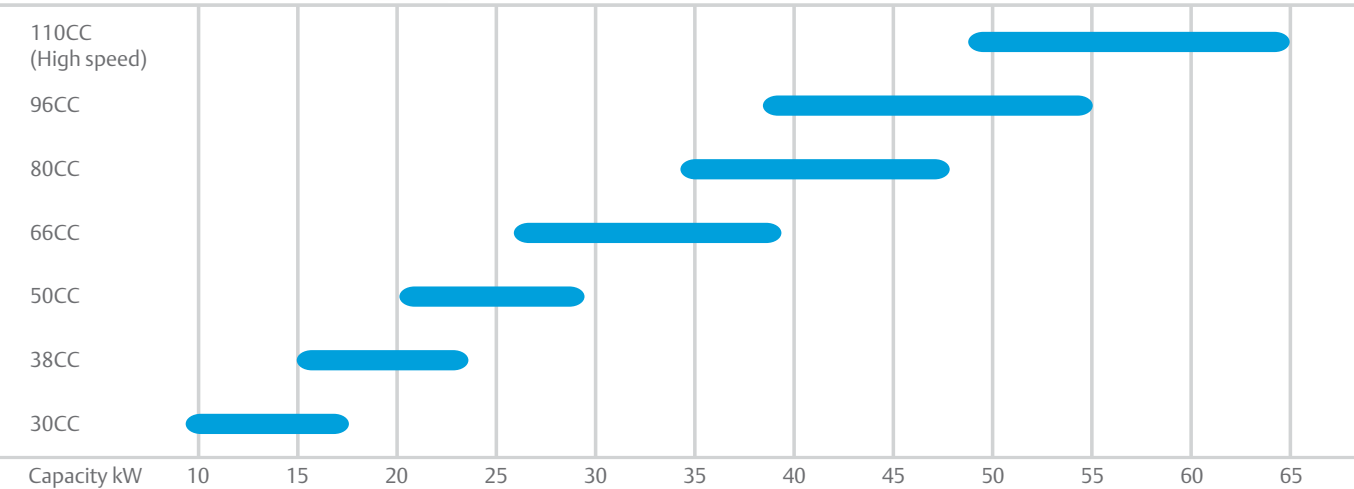
To help our customers adapt to the variable speed market trend, Emerson has developed integrated solutions for 4-25 HP variable speed compressors and drives. This line of solutions is equipped with innovative technologies to support the new era of energy efficient systems. Copeland vapor injection technology ensures system reliability even in ultra-low temperature environments. Emerson EVD series drives are specially designed with permanent magnet motors and are perfectly matched with each compressor. Emerson is your one-stop-shop for solutions to meet the industry’s demands.



Value for customer from Emerson solutions

- One-stop shop convenience
- Market-leading system performance
- Helps customers respond quickly to changing market trends
- Provides customers with full technical support

Compressor range



Compressor model	ZPV/ZPW030DE	ZPV/ZPW038DE	ZPV/ZPW050DE
Displacement (cc/rev)	30	38	49
Speed range (rpm)	900~7200	900~7200	1200~7200
Rated capacity (kW) @ 75 Hz	12.2	16.1	20.5
Input power (kW) @ 75 Hz	3.80	4.88	6.3
COP with drive	3.21	3.33	3.25
Noise (dBA) @ARI 75 Hz	74	74	74
Oil charge (L)	1.18	1.18	1.18
Net weight (kg)	17.8	19.8	23.5
Lubricating oil	POE	POE	POE
Single/Tandem	Single	Single	Single
Refrigerant	R410A	R410A	R410A
Drive Input current (A)	35 (Single-phase) 20 (Three-phase)	35 (Single-phase) 20 (Three-phase)	20 (Three-phase)
Drive Output current (A)	25 (Single-phase) 20 (Three-phase)	25 (Single-phase) 20 (Three-phase)	20 (Three-phase)
Drive model (Single-phase, 200V~240V, 50 Hz/60 Hz)	EVD2080B-C1-113 (Drive board) 143-0030-00 (Filter board) 037-0063-00 (Choke)	EVD2080B-C1-113 (Drive board) 143-0030-00 (Filter board) 037-0063-00 (Choke)	
Drive model (Three-phase, 380V~400V, 50 Hz/60 Hz)	EVD1080B-D1-113 (Drive board) 143-0065-00 (Filter board) 143-0066-00 (Capacitor board) 037-0068-00 (Choke)	EVD1080B-D1-113 (Drive board) 143-0065-00 (Filter board) 143-0066-00 (Capacitor board) 037-0068-00 (Choke)	EVD1110B-D1-113 (Drive board) 143-0065-00 (Filter board) 143-0066-00 (Capacitor board) 037-0068-00 (Choke)

Note:
• ZPV = Non-EVI model
• ZPW = EVI model
• R32 under development

Compressor model	ZPV066	ZPV080/ZPW080	ZPV096	ZPV** (25HP)
Displacement (cc/rev)	66	80	96	100+
Speed range (rpm)	1000~7200	1200~7200	1200~7200	1800~8400
Rated capacity (kW) @ 75 Hz	28.8	38	43	68Kw @ 105Hz (EVI ON)
Input power (kW) @ 75 Hz	8.72	11.5	13	22.3
COP with drive	3.3	3.3	3.3	3.2
Noise (dBA) @ARI 75 Hz	77	80	80	90
Oil charge (L)	2.51	2.51	2.51	2.51
Net weight (kg)	40	42	44.7	Under development
Lubricating oil	POE	POE	POE	POE
Single/Tandem	Tandem	Tandem	Tandem	Tandem
Refrigerant	R410A	R410A	R410A	R410A
Drive Input current (A)	27	27	38	Under development
Drive Output current (A)	27	27	38	Under development
Drive model (Three-phase, 380V~400V, 50 Hz/60 Hz)	EVD1150B-D1-111 (Drive board) 143-0032-00 (Filter board) 143-0058-00 (Capacitor board) 037-0064-00 (Choke)	EVD1150B-D1-111 (Drive board) 143-0032-00 (Filter board) 143-0058-00 (Capacitor board) 037-0064-00 (Choke)	EVD1180B-D1-111 (Drive board) 143-0032-00 (Filter board) 143-0058-00 (Capacitor board) 037-0064-00 (Choke)	Under development

Conditions: ET =7.2°C, CT=54.4°C, SC=8.3K, SH=11.1K, Ambient temperature= 35°C

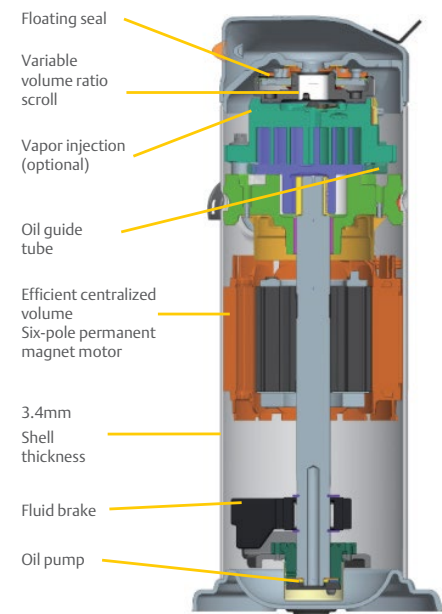
Durable, comfortable and reliable

Emerson Copeland Scroll™ variable speed compressors are revolutionizing home cooling and heating systems through Enhanced Vapor Injection (EVI) technology. Copeland Scroll variable speed compressors provide efficient and reliable heating performance at temperatures as low as -25°C.

The drive and compressor were specially developed by the Emerson Suzhou R&D Center for the Asian market and optimized according to IPLV/APF standards. The Enhanced Vapor Injection (EVI) technology significantly improves heating capacity at low ambient temperatures. The optimized design of the compressor, with the world's top energy efficiency ratio and lower noise performance, allows you to significantly reduce your electricity costs while enjoying indoor comfort throughout the year.

Enhanced vapor injection (EVI) technical features:

- Patented vapor injection design
- When the EVI circuit gas enters the compressor, it is injected into the scroll set through a specially designed channel. The gas is injected is compressed and discharged together and directed into the suction port entering the refrigeration cycle.
- EVI technology increases heating capacity while decreasing the discharge temperature.
- Capability for replacing auxiliary electric heating.



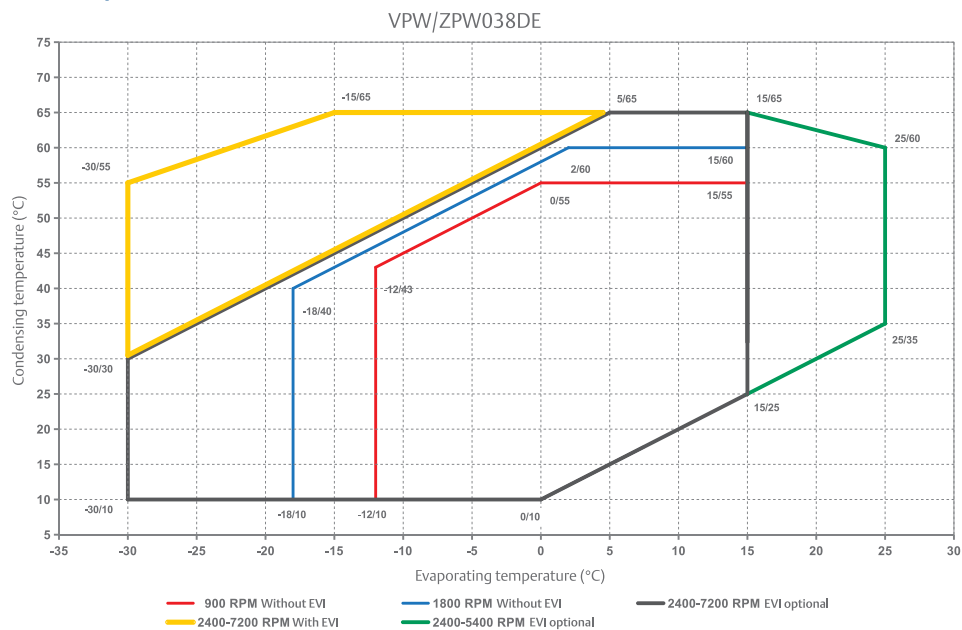
Copeland Scroll variable speed advantages:

- Excellent performance and low noise operation
- Outstanding reliability
- Efficient Emerson permanent magnet motor for efficient energy savings
- Suzhou R&D Center develops systems tailored for the Asia Pacific market
- Widely used in applications like variable speed VRF, cabinet air conditioner, floor heating etc.
- 900-7200 rpm wide operating envelope for flexible system design
- Variable volume ratio (VVR) significantly improves energy efficiency at low scroll speeds



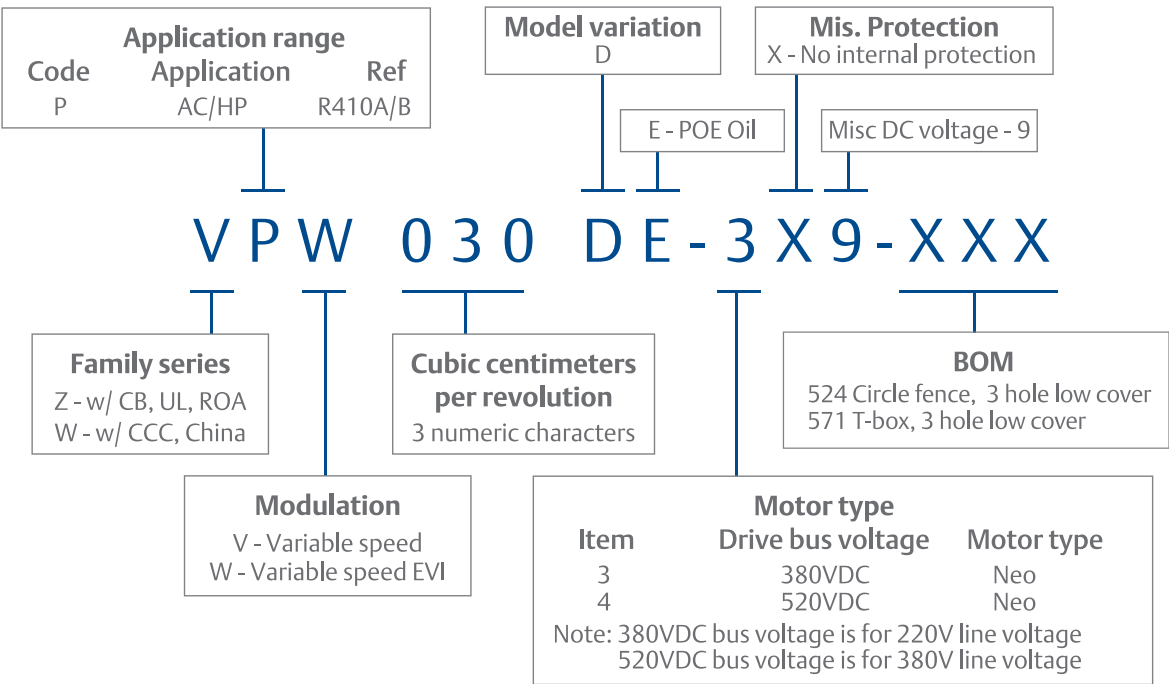
Innovation Product Award
China Refrigeration 2014

Operating envelope



EVI technology significantly improves the operating range of compressors at low temperatures

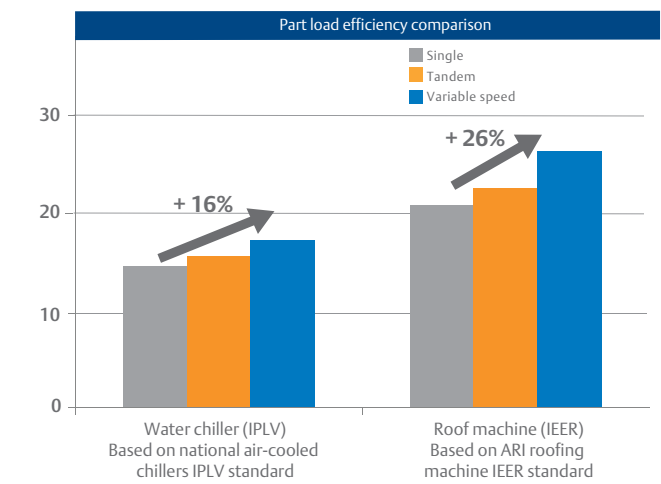
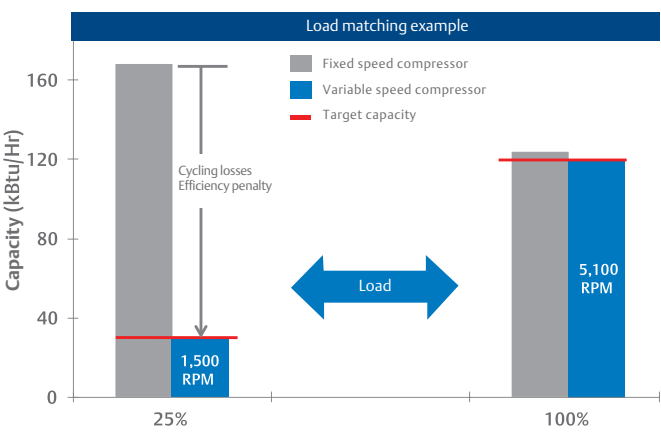
Nomenclature (53Fr Variable speed compressor)



Maximizing the performance of commercial air conditioning systems

Proven Copeland Scroll™ platform-enhanced and optimized for variable speed

- Optimized scroll elements for variable speed performance
- Low oil circulation compressor plus scroll oil injection for low speed performance
- BPM motor technology for highest efficiency
- Sound reduction technology for reversible chiller transition and defrost



The unparalleled energy efficiency of the Copeland Scroll inverter compressor maximizes system efficiency

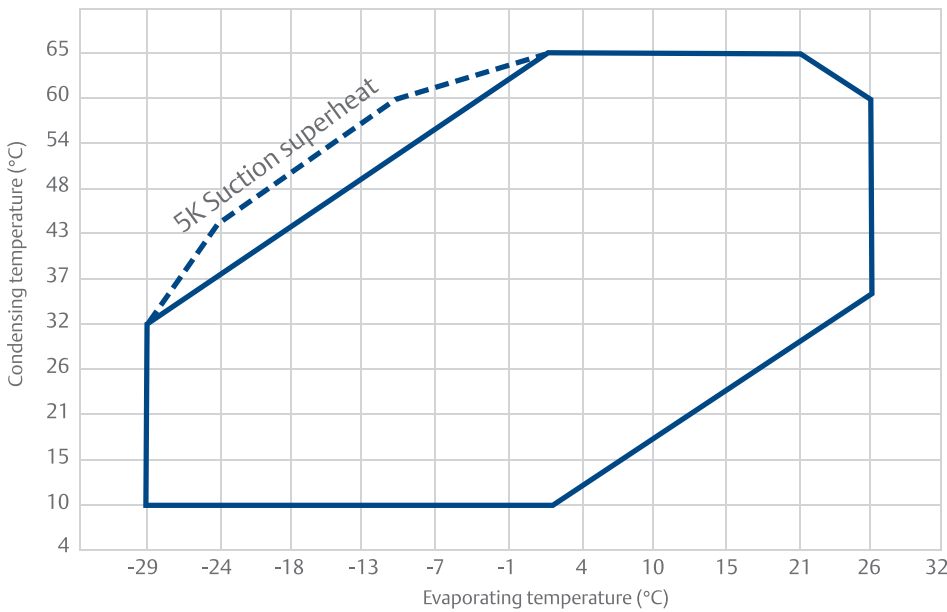


Breakthrough energy efficiency

Emerson's Copeland Scroll variable speed compressors are designed to deliver maximum cooling and heating efficiency when you need it the most. Whether designing for a roof-top unit in Australia or the United States or an air-cooled chiller in Europe or Asia, our latest variable speed compressor technology allows system manufacturers and building owners to achieve superior performance, including:

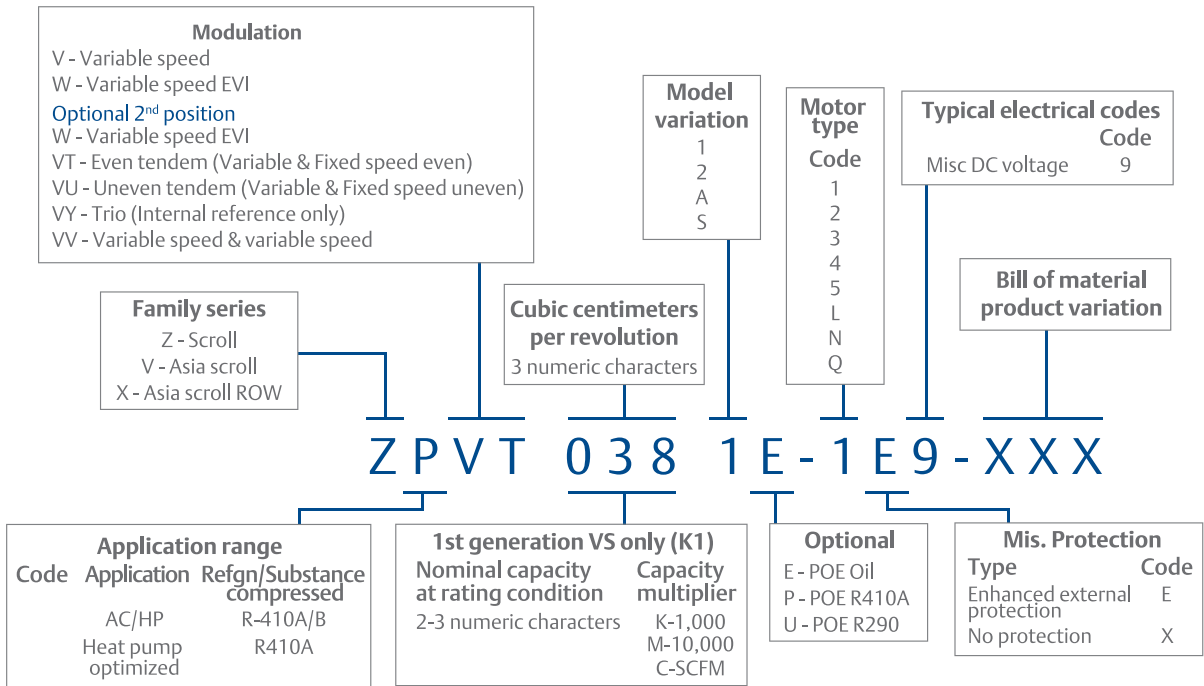
- Expansive 1,000-7,200 RPM speed range for enhanced light load efficiency and dehumidification.
- Highest part load efficiency in its class enabling significant energy savings and standards compliance
- Capability to 'tandemize' for maximum flexibility in system design
- Both compressor and drive are prequalified for reduced design time, cost and speed to market.

Operating envelope



Based on: 11.1K SH, 8.3K SC, 35.0 C Ambient (Solid line boundaries)
Refer to application engineering bulletin for details on the speed range throughout the operating envelope.

Variable speed compressor nomenclature

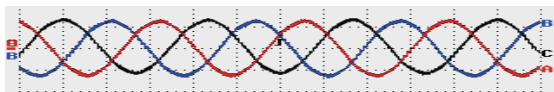


The latest in technology and value

Variable speed drives features and benefits:

- Fully optimized drive and motor design
- Improved reliability through protection and control features
- Reduced system design time and effort
- Communication set up Baud rate 2400

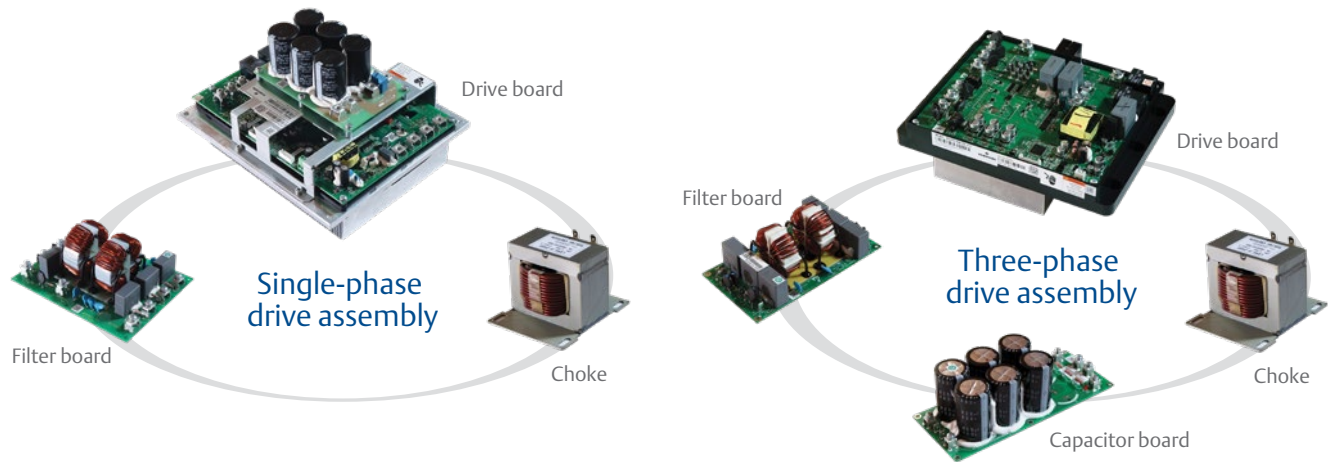
- Full compressor compatibility, plug and play capability



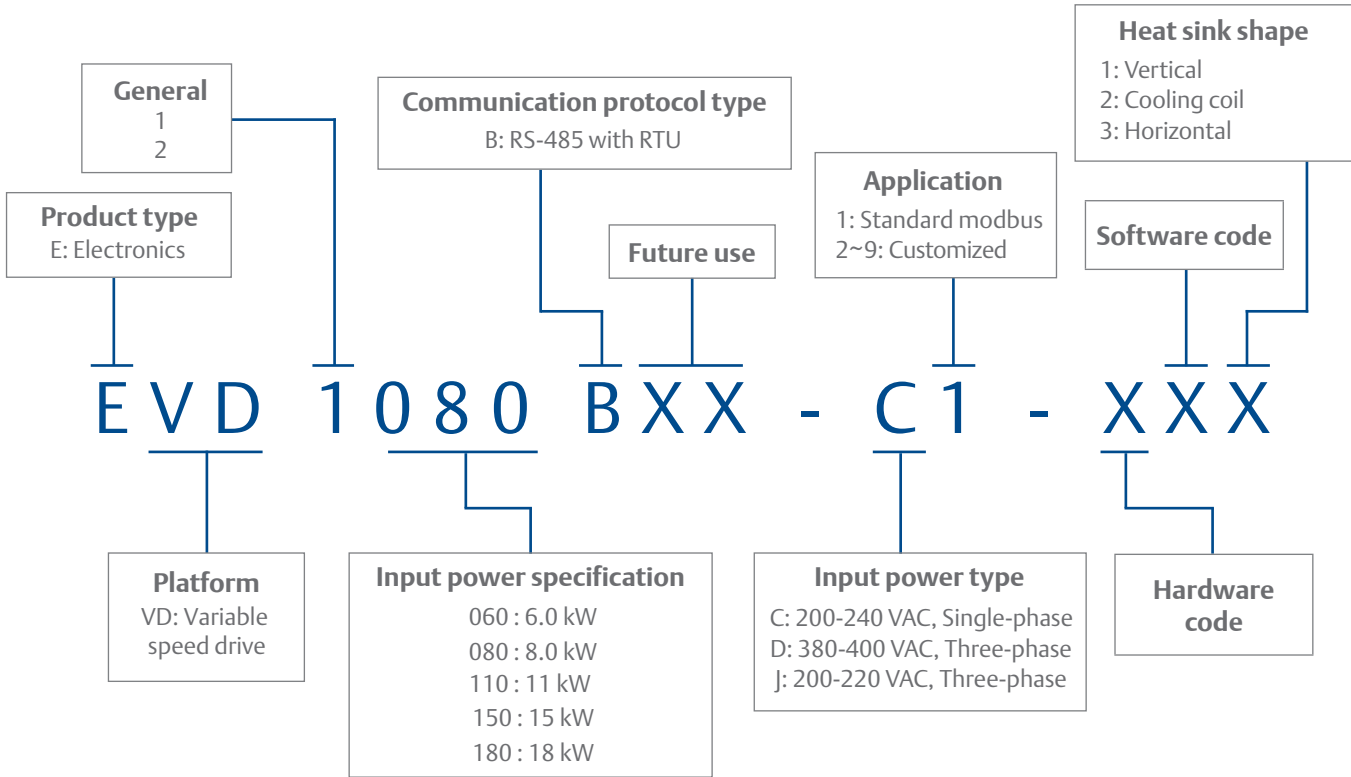
Current specification

Drive model	Input voltage	Maximum input current	Maximum output current
EVD1180B-D1-111	3PH, 340V~440V, 50 Hz/60 Hz	38A	38A
EVD1150B-D1-111	3PH, 340V~440V, 50 Hz/60 Hz	27A	27A
EVD1110B-D1-113	3PH, 340V~440V, 50 Hz/60 Hz	21A	21A
EVD1080B-D1-113	3PH, 340V~440V, 50 Hz/60 Hz	17A	17A
EVD2080B-C1-113	1PH, 160V~265V, 50 Hz/60 Hz	35A	25A

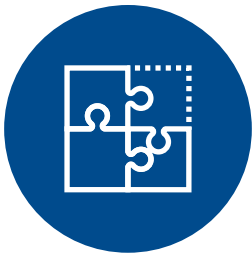
Drive components



Variable speed drive nomenclature



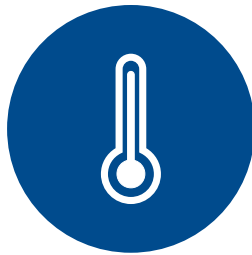
Emerson drive advantage



Full compatibility with
Emerson variable
speed compressors



Trusted reliability



Excellent drive board
heat resistance



Specially designed EMC

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