Variable Speed Compressors & Drive Solutions
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 model

<table>
<thead>
<tr>
<th>Compressor model</th>
<th>ZPV066</th>
<th>ZPV080/ZPW080</th>
<th>ZPV096</th>
<th>ZPV ** (25HP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displacement (cc/rev)</td>
<td>66</td>
<td>80</td>
<td>96</td>
<td>100+</td>
</tr>
<tr>
<td>Speed range (rpm)</td>
<td>1000–7200</td>
<td>1200–7200</td>
<td>1200–7200</td>
<td>1800–8400</td>
</tr>
<tr>
<td>Rated capacity (kW) @ 75 Hz</td>
<td>28.8</td>
<td>38</td>
<td>43</td>
<td>68Kw 105Hz</td>
</tr>
<tr>
<td>Input power (kW) @ 75 Hz</td>
<td>8.72</td>
<td>11.5</td>
<td>13</td>
<td>22.3</td>
</tr>
<tr>
<td>COP with drive</td>
<td>3.3</td>
<td>3.3</td>
<td>3.3</td>
<td>3.2</td>
</tr>
<tr>
<td>Noise (dBA) @ 80 Hz</td>
<td>77</td>
<td>80</td>
<td>80</td>
<td>90</td>
</tr>
<tr>
<td>Oil charge (L)</td>
<td>2.51</td>
<td>2.51</td>
<td>2.51</td>
<td>2.51</td>
</tr>
<tr>
<td>Net weight (kg)</td>
<td>40</td>
<td>42</td>
<td>44.7</td>
<td>Under development</td>
</tr>
<tr>
<td>Lubricating oil</td>
<td>POE</td>
<td>POE</td>
<td>POE</td>
<td>POE</td>
</tr>
<tr>
<td>Single/Tandem</td>
<td>Tandem</td>
<td>Tandem</td>
<td>Tandem</td>
<td>Tandem</td>
</tr>
<tr>
<td>Refrigerant</td>
<td>R410A</td>
<td>R410A</td>
<td>R410A</td>
<td>R410A</td>
</tr>
<tr>
<td>Drive Input current (A)</td>
<td>27</td>
<td>27</td>
<td>38</td>
<td>Under development</td>
</tr>
<tr>
<td>Drive Output current (A)</td>
<td>27</td>
<td>27</td>
<td>38</td>
<td>Under development</td>
</tr>
<tr>
<td>Drive model (Three-phase, 380V~400V, 50 Hz/60 Hz)</td>
<td>EVD1150B-D1-111 (Drive board)</td>
<td>143-0065-00 (Filter board)</td>
<td>143-0056-00 (Capacitor board)</td>
<td>137-0068-00 (Choke)</td>
</tr>
<tr>
<td>ZPV066</td>
<td>EVD1180B-D1-111 (Drive board)</td>
<td>143-0065-00 (Filter board)</td>
<td>143-0056-00 (Capacitor board)</td>
<td>137-0068-00 (Choke)</td>
</tr>
<tr>
<td>ZPV080/ZPW080</td>
<td>EVD1118B-D1-111 (Drive board)</td>
<td>143-0065-00 (Filter board)</td>
<td>143-0056-00 (Capacitor board)</td>
<td>137-0068-00 (Choke)</td>
</tr>
</tbody>
</table>

Note:
- ZPV = Non-EVI model
- ZPW = EVI model
- 832 under development

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

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, 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

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, 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
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

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

Variable speed compressor nomenclature

- Load matching example
- Part load efficiency comparison
- Capacity Efficiency Losses
- Cycling losses
- Efficiency penalty

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

Water chiller (IPLV)
Based on national air-cooled chillers IPLV standard

Roof machine (IEER)
Based on ARI roofing machine IEER standard
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

Variable speed drive nomenclature

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

Drive components

- Single-phase drive assembly
- Three-phase drive assembly
- Filter board
- Choke
- Capacitor board
- Drive board

Emerson drive advantage

- Full compatibility with Emerson variable speed compressors
- Trusted reliability
- Excellent drive board heat resistance
- Specially designed EMC

Full compressor compatibility, plug and play capability

Communication protocol type:
- B: RS-485 with RTU

Application:
- 1: Standard modbus
- 2~9: Customized

Heat sink shape:
- 1: Vertical
- 2: Cooling coil
- 3: Horizontal

Input power specification:
- C: 200-240 VAC, Single-phase
- D: 380-400 VAC, Three-phase
- J: 200-220 VAC, Three-phase

EVD 1080 BXX - C1 - XX

Platform
- VD: Variable speed drive

Product type:
- E: Electronics

Software code
- Hardware code

Input power type:
- 060: 6.0 kW
- 080: 8.0 kW
- 110: 11 kW
- 150: 15 kW
- 180: 18 kW
Contact lists

Asia Pacific Headquarters
Suite No. 2503-10A, 25/F,
Exchange Tower, 33 Wang Chiu Road,
Kowloon Bay, Kowloon, Hong Kong
Tel: (852) 2866 3108
Fax: (852) 2520 6227

Australia
356 Chisholm Road
Auburn NSW 2144, Australia
Tel: (612) 9795 2800
Fax: (612) 9738 1699

China - Beijing
Room 1203-1205,
North Wing Junefield Plaza Central Tower,
No. 10 Xuan Wu Men Wai Street,
XiCheng District, Beijing, PRC
Tel: (8610) 5095 2188

China - Guangzhou
Guangzhou Office
Unit 2202B, 22/F, Leatop Plaza,
32 Zhujiang East Road, Tianhe Dist.,
Guangzhou 510623, PRC
Tel: (8620) 8595 5188

China - Shanghai
Shanghai Sales Office
7F, Emerson Building, 1582 Gumei Rd,
Shanghai, PRC
Tel: (8621) 3338 7333

India - Mumbai
Delphi B-Wing, 601-602, 6th Floor
Central Avenue,
Hiranandani Business Park,
Powai, Mumbai 400076, India
Tel: (9122) 6786 0793
Fax: (9122) 6662 0500

India - Pune
Plot No. 23, Rajiv Gandhi Infotech Park,
Phase - II, Hinjewadi,
Pune 411 057, Maharashtra, India
Tel: (9120) 4200 2000
Fax: (9120) 4200 2099

Indonesia
BSD Taman Tekno 8
Jl. Tekno Widya Blok H10 No 2 & 3
Tangerang Selatan 15314
Indonesia
Tel: (6221) 2966 6242
Fax: (6221) 2966 6245

Japan
Shin-yokohama Tosho Building
No. 3-9-5 Shin-Yokohama, Kohoku-ku
Yokohama 222-0033 Japan
Tel: (8145) 475 6371
Fax: (8145) 475 3565

Malaysia
Level M2, Blk A, Menara PKNS-PJ
Jalan Yong Shook Lin
46050 Petaling Jaya, Selangor, Malaysia
Tel: (603) 7949 9222
Fax: (603) 7949 9333

Middle East & Africa
PO Box 26382
Jebel Ali Free Zone - South
Dubai, UAE
Tel: (9714) 811 8100
Fax: (9714) 886 5465

Philippines
10/F SM Cyber West Avenue, EDSA cor.
West Avenue, Barangay Bungad,
Diliman, Quezon City 1105 Philippines
Tel: (632) 689 7200

Saudi Arabia
PO Box 34332 - 3620 Building 7874
Unit 1, 67th street 2nd Industrial City
Dammam, Saudi Arabia
Toll Free: 800 844 3426
Tel: +966 3 8147560
Fax: +966 3 8147570

South Korea
3F, The Pinnacle Gangnam
343, Hakdong-ro, Gangnam-gu,
Seoul 06060, Republic of Korea
Tel: (822) 3483 1500
Fax: (822) 592 7883

Taiwan
3F No. 122 Lane 235,
Pao Chiau Rd., XinDianv Dist.,
New Taipei City 23145, Taiwan (R.O.C.)
Tel: (8862) 8912 1360
Fax: (8862) 8912 1890

Thailand
34th Floor, Interlink Tower,
1858/133, Bangna Trad,
Bangkok 10260, Thailand
Tel: (662) 716 4700
Fax: (662) 751 4241

United Arab Emirates
Jebel Ali Free Zone
PO Box 26382
Dubai UAE
Toll Free: 800 441 3428
Tel: +971 4 811 8100
Fax: +971 4 886 5465

Vietnam
Level 6, Melinh Point Tower,
2 Ngo Due Ke,
District 1, Ho Chi Minh City
Vietnam
Tel: (84) 908 009 189

Scan to visit:
Emerson Asia

Emerson.com
Asia 01 00 Issued 8/2019 Emerson is a trademark of Emerson Electric Co. or one of its affiliated companies.
©2019 Emerson Electric Co. All rights reserved.

EMERSON. CONSIDER IT SOLVED.