

# Commercial Chiller Solutions



**COPELAND™**

  
**EMERSON™**





## Technical advantages of Emerson commercial chiller integrated solutions

- Provides a full range of core components developed by Emerson - peace of mind.
- Equipped with Emerson's full range of variable speed, fixed speed compressors and tandem for easy cooling capacity expansion.
- Powerful controller hardware platform, rich expansion modules, programmable technology to meet the various needs of customers.
- Optimized system control logic for optimal energy efficiency and reliability of IPLV systems.
- Powerful technical team and laboratory support to secure system development - effort and time savings.

### Controllers

- Modular design, flexible and scalable
- Ethernet interface connects to the Internet via LAN
- RS485 serial port can access XWEB monitoring system or third-party applications
- Uses VISOGRAPH graphic display with TGIPG touch display to instantly view system parameters



### Wired controllers

- Slim design
- Large LCD display
- Full touch buttons



### Electronic expansion valves

- Linear flow control features, precise control from 10% to 90% opening range
- Two-way maximum working pressure difference up to 35 bar, perfect for low ambient temperature environments
- 250,000 times (full on and off) cycle, IP65/67 protection, high reliability and long product life span



### Compressors

- Optimized design of variable speed drive compressors are based on permanent magnet DC brushless motor
- 1000~7200RPM wide speed range for improved partial load energy efficiency
- Tandem installation provides maximum flexibility for system design



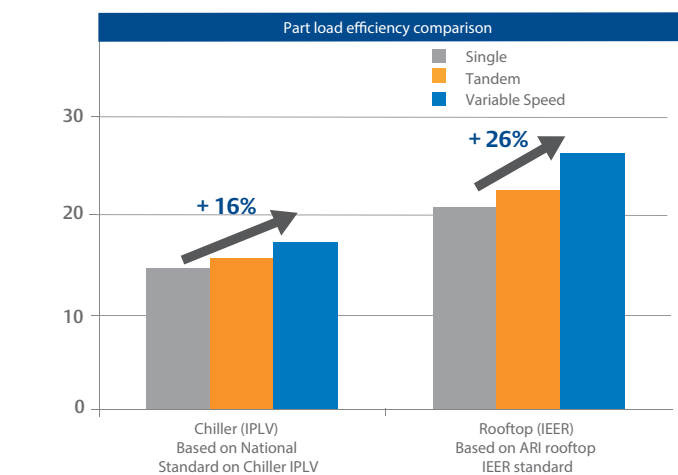
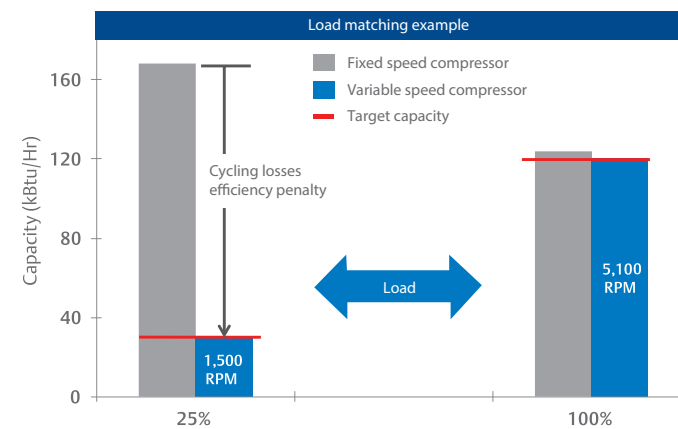


# Optimizing the performance of commercial air conditioning systems

## 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 and reliability
- High efficiency concentrated volume permanent magnet DC brushless motor
- Sound reduction technology for heat pump defrost conditions



The unparalleled energy efficiency of the Copeland Scroll variable speed compressor maximizes system efficiency

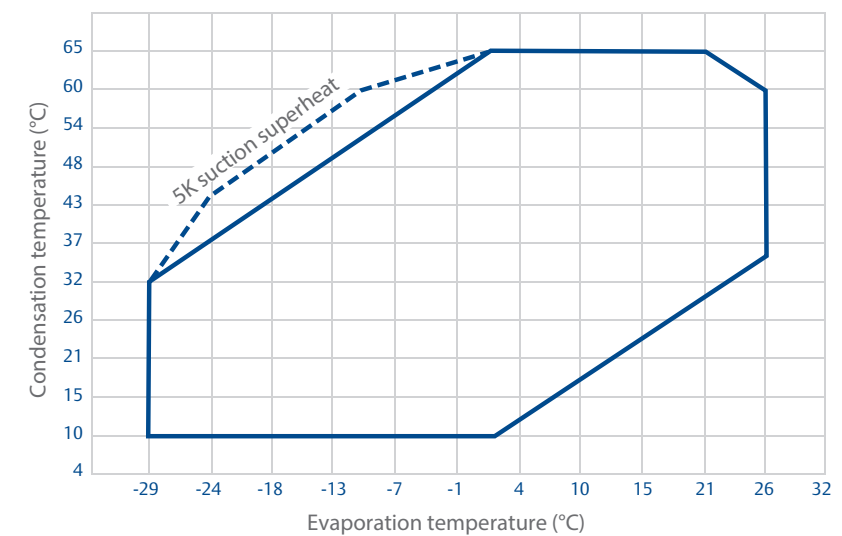


## Breakthrough efficiency

Emerson's Copeland Scroll variable speed compressors are designed to deliver maximum cooling and heating efficiency when you need it most. Our latest variable speed compressor technology allows system manufacturers and building owners to achieve superior performance, including:

- Expansive 1000 to 7200 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 'parallel' for maximum flexibility in system design

## Operating envelope



Test conditions are based on 11.1K superheat, 8.3K subcooling, 35.0°C ambient temperature (solid line area) Please refer to the application guide for the specific operating range and operating speed.

## Technical parameters

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	71.5
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
Input current (A)	27	27	38	Under development
Output current (A)	27	27	38	Under development
Drive model (Three-phase, 380V~400V, 50 Hz/60 Hz)	EVD1150B-D1-113 (Drive board) 143-0032-00 (Filter board) 143-0058-00 (Capacitor board) 037-0064-00 (Choke)	EVD1180B-D1-113 (Drive board) 143-0032-00 (Filter board) 143-0058-00 (Capacitor board) 037-0064-00 (Choke)	EVD1180B-D1-113 (Drive board) 143-0032-00 (Filter board) 143-0058-00 (Capacitor board) 037-0064-00 (Choke)	Under development

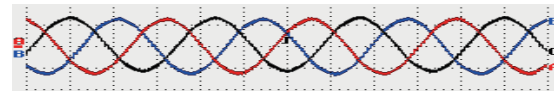
Conditions: ET =7.2°C, CT=54.4°C, SC=8.3K, SH=11.1K, Ambient temperature= 35°C



# The latest in technology and value

## Inverter features and benefits:

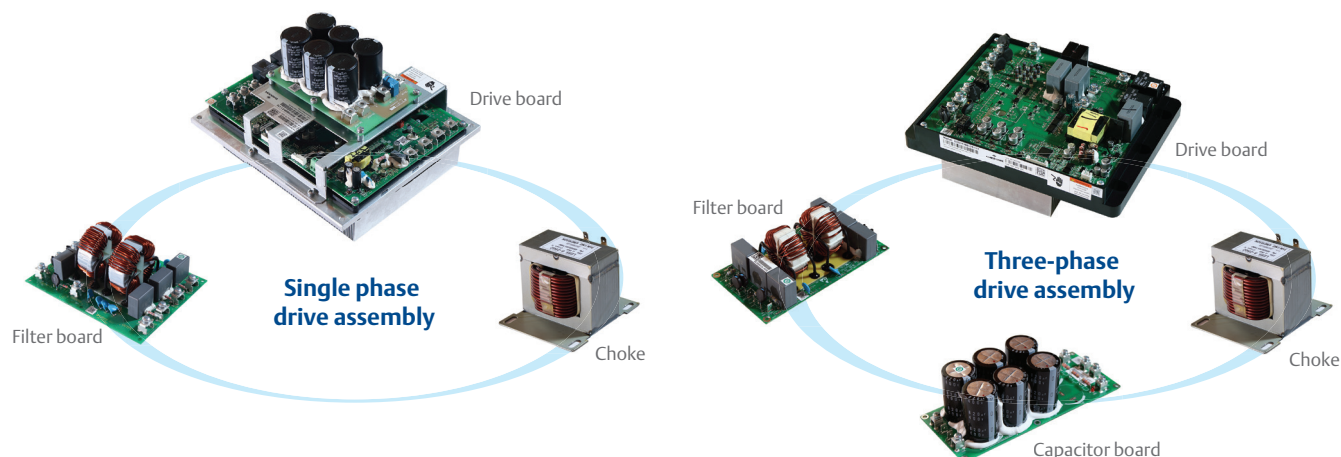
- Optimized inverter and motor parameters design
- Excellent air duct design and heat resistance of the drive board
- Full reliability verification
- Sine wave vector control
- Fully optimized control scheme to maximize compressor performance and noise
- Communication set up  
Baud rate 2400
- Full compressor compatibility, plug and play capability
- Built-in compressor protection for added reliability



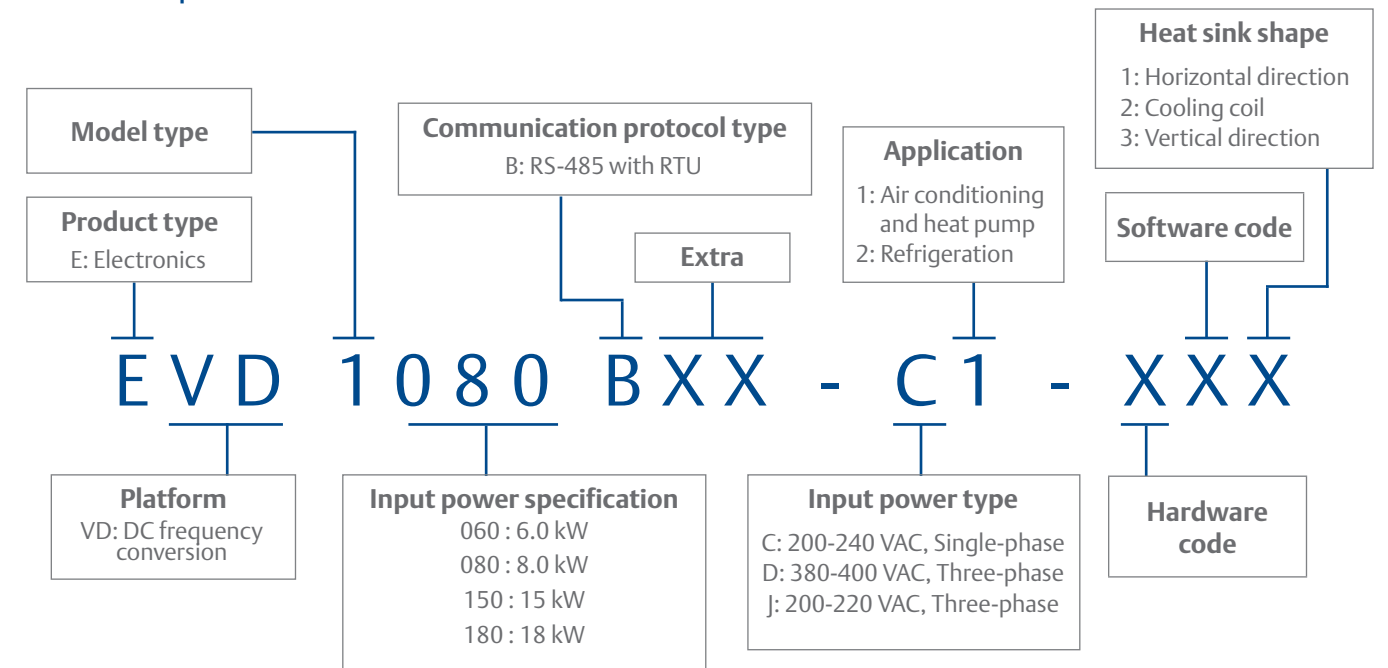
## Current specification

Variable speed 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-D1-111	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

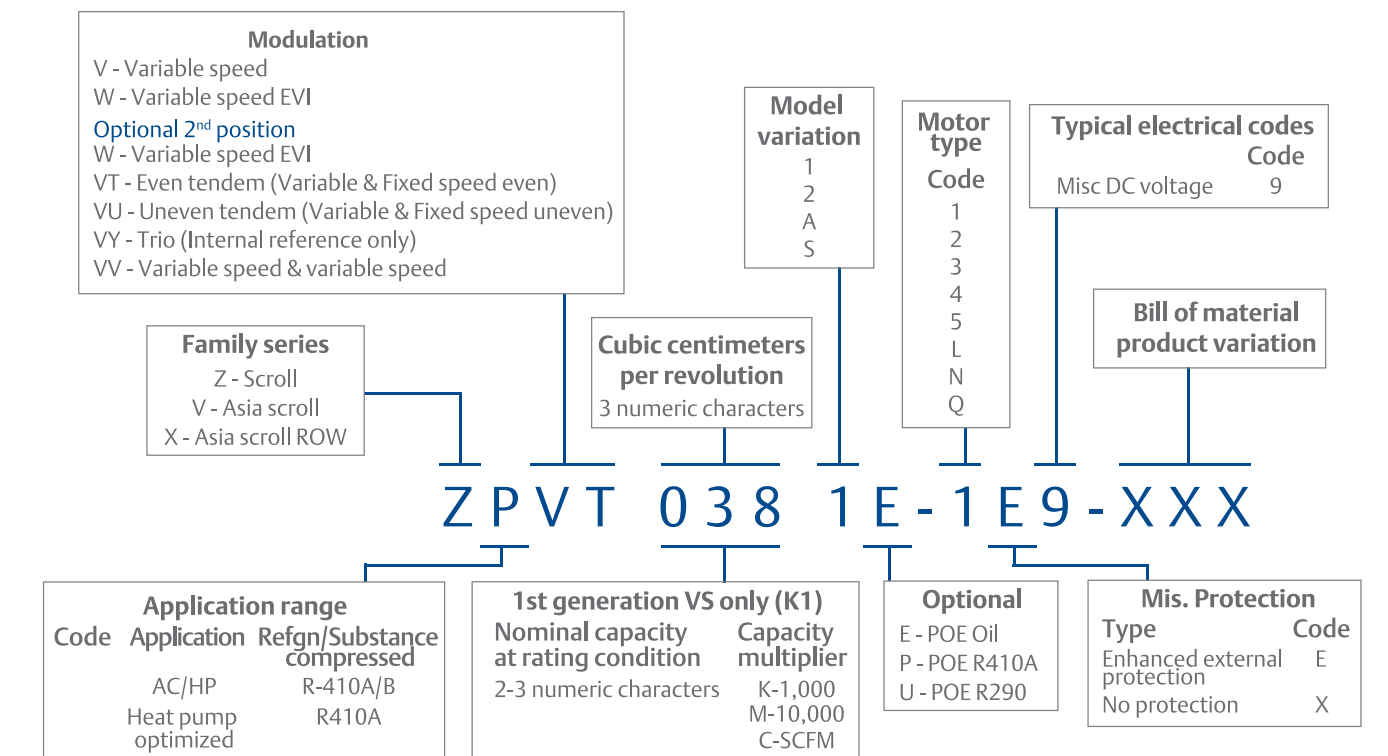
## Inverter component



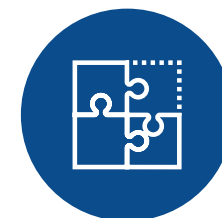
## Variable speed drive nomenclature



## Variable speed compressor nomenclature



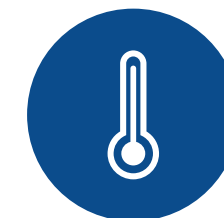
## Emerson variable speed drive advantage



Full compatibility with Emerson variable speed compressors



Trusted reliability



Excellent drive board heat resistance



Specially designed EMC



# Accessories

## IPG215D

- Power supply** 24V AC/DC
- Analog input** 10 channels available - NTC  
PTC/0~1V/0~5V/0~10V/4~20mA/DI
- Digital input** 20 channels are available
- Relay output** 15\*5A
- Analog output** 4 channels 0~10V signal  
2 channels can be equipped with 0~10V/ 4~20mA signal
- Other Output** Remote Display Control Panel (2\*VGIPG) RS485 bus,  
RS485 slave (ModBus RTU)  
USB, Ethernet, CAN BUS bus
- Other** RTC Real Time, Clock Internal Modem (optional analog cat)  
BACnet protocol (optional), LON protocol (optional)

## IPX206D

- Power supply** 24V AC/DC
- Analog input** 7 channels are available - NTC/  
PTC/0~1V/0~5V/0~10V/4~20mA/DI
- Digital input** 3 channels can be matched
- Relay output** 5\*5A + 1\*8A
- Analog output** 3 channels 0~10V signal
- Other Output** Can Bus
- Other** DIP switch configuration address

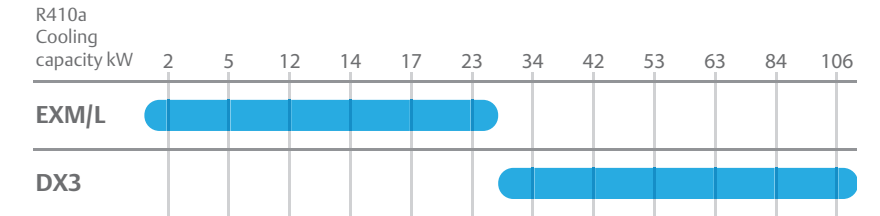
## XEV20D

- Supports all unipolar/bipolar stepper electronic expansion valves
- Improves system energy efficiency
- Single or dual circuit
- Temperature analog input (NTC, PTC, PT1000)
- Pressure analog input (0~5V, 4~20mA)
- 4-digit DIP switch for setting the address
- LAN output
- CANBUS network connected to IPRO series controller (XEV)

## Electronic expansion valve

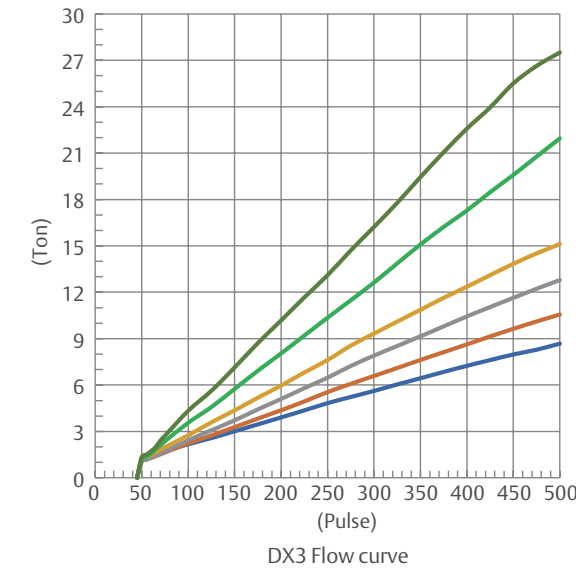
### EXM/L

- Suitable for variable speed, variable load systems;
- Controller with “self-learning” capabilities;
- Compressor Envelope control;
- Electronic expansion valves are optimized for low temperature heat pumps;
- Supports third-party controllers



### DX3

- Two-way application design
  - Two-way MOPD of 35 bar, stable control at low opening;
  - Low internal leakage rate, support for pump down, reduces refrigerant migration, no solenoid valve required;
  - Minimal forward and reverse flow backlash to avoid malignant out-of-step.
- Simple control
  - Fully linear flow for easy implementation of multiple control objectives;
  - Emerson offers a variety of control solutions;
  - Single pole motor, compatible with mainstream controllers.
- High reliability design for harsh environments
  - Operating temperature: -50°C ~ +70°C;
  - Long lifespan, high reliability: 250k cycles' reliability test
  - Take-apart valve body



## Sensors

Temperature sensor	Temperature range	Standard resistance (25°C)	Cable type	Temperature sensing component packaging material	Protection grade
Low temperature sensor <b>TS-110</b>	-40~110°C	10KΩ±1%	24AWG black	Stainless steel	IP 67
High temperature sensor <b>TS-150</b>	-50~150°C	50KΩ±1%	22AWG blue		

Pressure sensor	Measuring pressure range	Operating voltage	Output signal	Suitable refrigerant	Full error band	Protection grade
Low pressure sensor <b>PRS-30</b>	0~30barG	5.0 ± 0.5 VDC	0.5~4.5VDC	R410a, R134a, R404a, R407c, R507	±2.5%FS	IP 67
High pressure sensor <b>PRS-46</b>	0~46barG					



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