A world leader in climate and energy technology

The Danfoss Group operates globally with the primary aims of making modern living possible for our stakeholders and being a leader in refrigeration, heating, power electronics, and mobile hydraulics.

We employ 24,000 people, 6,000 of whom work in Denmark at 11 different locations.

We produce approximately 250,000 components each day at our 76 factories in 25 countries.

We promise leadership in our businesses through reliability, excellence, and innovation – driving true customer satisfaction and solutions within climate and energy.

Extensive experience in all key HVAC/R segments

Danfoss plays a leading role in research, development and production in a wide spectrum of industries, and has been a key player in the HVAC/R field for more than 75 years. Our Refrigeration & Air Conditioning Division designs, produces and markets a comprehensive range of automated solutions and compressors for a wide variety of HVAC/R segments, including:

- Commercial Air Conditioning
- Residential Air Conditioning
- Heat Pumps
- Commercial Refrigeration
- Household, Light Commercial and Mobile Refrigeration
- Wholesalers & Installers
- Industrial Refrigeration
- Food Retail

Learn more at www.danfoss.com

Reduce energy consumption with precise flow control in A/C

ETS 6 Electronic Expansion Valve and EIM 336 Superheat Controller

Up to 15% increased energy efficiency when installed together: ETS 6 + EIM 336
Your air conditioning is only as efficient as two superheat control components

Effective superheat control depends on a pair of components to continuously adapt to exact capacity demands: a responsive electronic expansion valve and an intelligent, accurate superheat controller. That's why Danfoss engineered the new ETS 6 Electronic Expansion Valve and the EIM 336 Superheat Controller together.

Sometimes, good things really do come in pairs. Two of our latest innovations let you and your customers relax while their A/C works precisely and reliably. Both were designed to let you fine-tune systems in a cost-efficient way. The ETS 6 valve together with the EIM 336 can be used in the A/C units with evaporator capacity ranging from 3 kW to 37 kW. Because the EIM 336 controls ETS 6 in microsteps, it gives a smooth superheat curve and less noise. With EIM 336 and corresponding ETS 6 valve, you can achieve a Maximum Operating Pressure Differential (MOPD) of up to 45 bar.

ETS 6 Electronic Expansion Valve:
-・Flexible:
  - Minimum Stable Superheat algorithm keeps superheat at optimal level for capacity controlled systems
  - Individually calibrated for all OEM solutions
  - Easy to install
  - Controller works with Modbus interface or as stand-alone
  - Works with all common refrigerants
  - Compact and lightweight

**Technical specifications**

**ETS 6 Electronic Expansion Valve:**
- Supply voltage: 24 V AC/DC (+/-15%) Class II isolation
- Power consumption:
  - Idle: Max. 10 mA @ 24V DC
  - Operating: Max. 150 mA @ 24V DC
- Input signals:
  - Pₚ: AKS 32R (or similar ratiometric pressure transmitter)
  - S₂: PT1000
  - S₄: PT1000 or digital input from external contact
- EEV driver: Max. current 150 mA
- EEV: Uni-bipolar coil
- Data communication: R5485 – Modbus RTU
- Environment:
  - Storage: -34°C to 71°C (-30°F to 160°F)
  - Operating: -25°C to 60°C (-13°F to 140°F)
  - Humidity: <95% RH, non condensing
- Dimensions: 25 x 50 x 80 mm (0.98 x 1.97 x 3.15 inches)
- Operation: Via Modbus data communication

**EIM 336 Superheat Controller:**
- Supply voltage: 24 V AC/DC (+/-15%) Class II isolation
- Power consumption:
  - Idle: Max. 10 mA @ 24V DC
  - Operating: Max. 150 mA @ 24V DC
- Input signals:
  - Pₚ: AKS 32R (or similar ratiometric pressure transmitter)
  - S₂: PT1000
  - S₄: PT1000 or digital input from external contact
- EEV driver: Max. current 150 mA
- EEV: Uni-bipolar coil
- Data communication: RS485 – Modbus RTU
- Environment:
  - Storage: -34°C to 71°C (-30°F to 160°F)
  - Operating: -25°C to 60°C (-13°F to 140°F)
  - Humidity: <95% RH, non condensing
- Dimensions: 25 x 50 x 80 mm (0.98 x 1.97 x 3.15 inches)
- Operation: Via Modbus data communication

**A/C components in typical system**
- EIM 336 Superheat Controller
- AKS 11 Temperature Sensor
- Evaporator
- Condenser
- DML Filter Drier
- NRV Check Valves
- ETS 6 Electronic Expansion Valve
- AKS 32 Pressure Sensor
- 4-Way Reverse Valve
- Variable Speed Compressor
- SGH Sight Glass

**Save energy by utilising Minimum Stable Superheat**

- Minimise compressor strain by setting Maximum Operating Pressure limits if pressure exceeds this limit, then the controller adjusts the valve to reduce pressure, without lowering superheat.
- Instead of using built-in sensor inputs for suction pressure and evaporator temperature, external sensor values can be communicated to the EIM 336 via Modbus.
- Control defrost via Modbus.

**Development**

- Co-engineered for maximum energy efficiency
- Expertise in microsteps, it gives a smooth superheat curve and less noise. With EIM 336 and corresponding ETS 6 valve, you can achieve a Maximum Operating Pressure Differential (MOPD) of up to 45 bar.

**Applications**

- Condenser Variable Speed Compressor
- Evaporator 4-Way Reverse Valve
- AKS 11 Temperature Sensor
- AKS 32 Pressure Sensor
- EIM 336 Superheat Controller
- ETS 6 Electronic Expansion Valve
- DML Filter Drier
- SGN Sight Glass
- NRV Check Valves
- JST XHP-6 and JST XHP-5 stepper motor
- JST XHP-4 and JST XHP-5 stepper motor
- Permanent magnet type, direct operating stepper motor
- 0 to 480 pulses, no holding power required
- Examples: 16 sec @ 30 pps, 6 sec @ 80 pps
- Tested for 60 million total pulses supplied to partially open valve, which is comparable to 150,000 cycles if the valve is operated between 100 to 300 pulses when open. Tested for 30,000 full-stroke cycles, including 20 pulse overdrive at each closing.