

EKE 1A / EKE 1B / EKE 1C, Superheat controllers

The flexible pre-programmed EKE 1 series of superheat controllers from Danfoss provides ultimate software control, allowing you to tailor the performance of your system to your exact requirements. EKE is ideal for controlling a wide range of commercial air conditioning and refrigeration applications, such control helps you to achieve the highest efficiency in the system reducing the operational cost by up to 20% with minimal effort. EKE is generally

used where there is a requirement for accurate control of superheat or temperature control in connection with air conditioning and refrigeration.

The superheat is regulated to the lowest possible value in the shortest period. It regulates the superheat of the evaporator by charging optimally even when there are great variations of load resulting in a reduction of energy consumption and operational cost.



Efficiency

- **Adaptive Superheat Control**
Several control algorithms available to match your application that guarantee low and stable superheat.
- **Compressor Feed Forward**
Provides proper superheat by synchronizing valve reactivity to compressor speed.
- **Heating & Cooling Selection Mode**
- **Optimizes evaporator performance** by allowing 2 different sets of superheat settings
- **Fast Start-Up**
Ensures optimal superheat in the shortest period of time by quickly opening the valve and avoiding low pressure cut-out during start-up.



System Protection

- **Fail Safe Operation**
In case of sensor error, system can continue cooling in emergency.
- **Low Operating Pressure (LOP)**
Allows applications to start-up at lower ambient conditions to prevent compressor from stopping. High Condensing Temperature Protection (HCTP) Ensures that the load on the condenser is reduced, in cases where the condensing temperature gets too high
- **Superheat Close**
When the superheat is below a set minimum value, the valve will close faster in order to protect the compressor
- **Max Operating Pressure (MOP)**
Keeps evaporating pressure below the MOP set point.

Ease of Use/Installation/Applied Costs

- **Share Power Supply**
Galvanic isolation eliminates the need of one transformer for every EKE.
- **Share Pressure Signal**
1 sensor can be used with multiple controllers.
- **Valves & Sensors**
Compatible with a wide range of valves and sensors.
- **Commutation Filter**
The filter is inside the EKE and eliminates the need of external filter for greater cable lengths.
- **KoolProg**
The Koolprog wizard tool will guide the user to set up the controller in a fast and easy way.

Facts

Applications:

- Chillers
- Processing plant / Cabinet cooling
- Cold store (air coolers)
- A/C plant / Air conditioning
- Heat pumps. Residential Heat Pump
- Transport cooling

- **Power Supply**
 - 24 V AC or 24 V power supply, Easy wiring layout
- **Drives bipolar and unipolar valves** with selectable driving method
- **Plug and Play installation.** Easy and fast configuration via Wizard
- **Analog and Digital Inputs**
 - Various programmable Analog and digital inputs available
- **External and flexible large graphical display**
- **Connectivity available with**
 - CAN / CAN RJ / MODbus RS485 RTU

- **Key Software**
 - Energy saving Superheat Control logic: Minimum stable superheat, LoadAp, Fixed SH, Delta Temperature
 - Safety protection: MOP, LOP, min. S4, HCTP, SH close
 - Improved and fast starts up with rapid temperature pull down time
 - Feature focus on specific application e.g Heat pump, chiller
 - Ensure longevity of the stepper valve

Technical data and ordering

EKE 1A / EKE 1B / EKE 1C

Hardware comparison

		EKE 1A	EKE 1B	EKE 1C
Power supply				
Power supply type	24 V AC / DC ± 20%	•	•	•
Share power supply		•	•	•
Battery backup input	18 – 24 V DC	•	•	•
Data Communication				
MODbus	RS 485 RTU	–	•	•
Wired CANbus	To link Danfoss products	–	–	•
CANbus RJ	Danfoss MMI service port	•	•	•
Inputs				
Temperature Sensor Type	PT1000	–	–	•
	NTC 10 K, type EKS	•	•	•
	NTC 10 K, type ACCPBT	•	•	•
	NTC 10 K, type Sensata	•	•	•
No of temperature sensors	1	2	3	
Pressure Transmitter types	Ratiometric 0.5 – 4.5 V DC	•	•	•
	0 – 20 mA signal	–	–	•
	1 – 5 V / 0 – 10 V	•	•	•
No of pressure sensors	1	1	2 or (1 P and 1 ext. ref.)	
Share Pressure Signal	Up to 5 devices	•	•	–
	Via wired CANbus	–	–	•
Read external sensor value	Via MODbus	–	•	•
External reference	4 – 20 mA	–	–	•
	0 – 20 mA	–	–	•
	User defined current	–	–	•
	0 – 10 V	•	•	•
	1 – 5 V	•	•	•
No. of external reference	User defined voltage	•	•	•
Digital Input Dry contact	(4 possible functions)	3	2	2
Outputs				
Digital output		1	1	1
Class of insulation	Class II	•	•	•
Relay	SPDT	1	1	1
Relay functions	Alarm or NC function	•	•	•

Ordering

Type	Description	Code no. single pack
EKE 1A	Superheat controller 1 temperature sensor	080G5300
EKE 1B	Superheat controller 2 temperature sensor	080G5350
EKE 1C	Superheat controller 3 temperature sensor	080G5400

Accessories

Type	Description	Code no. single pack
MMIGRS2 Remote Display	Graphic display with operation	080G0294
MMIMYK gateway	Interface to KoolProg PC software	080G0073