

**Data Sheet** 

# Pack controller Type **AK-PC 782A**

One controller for the entire CO<sub>2</sub> booster pack.



# The flexible AK-PC 782A pack controller delivers highest efficiency.

AK-PC 782A is a powerful and flexible controller that provides precise regulation, improved efficiency, and enhanced user friendliness for pack control in transcritical  $CO_2$  booster packs.

The controller flexibility and efficiency makes it the obvious choice for all sizes of packs in all climates.



#### **Features**

- One controller for the entire CO<sub>2</sub> booster pack
- Robust algorithms warrant safe initial start up and reliable operation
- Easy first-time use with wizard-like set-up
- Scalable to control large booster packs with up to 12 compressors
- Supports variable speed, digital scroll, CRII, Stream and unloader compressors
- Speed control of up to 2 compressors per suction group
- · Best fit step control handles mixed compressor sizes
- · Control of oil separator and oil receiver
- Liquid injection into suction line option
- Gas cooler capacity control of up to 8 fans
- · Gas cooler temperature optimisation with regard to ambient temperature
- · Optimal high pressure control
- Improved energy efficiency with Danfoss Multi Ejector<sup>™</sup>
- · Receiver pressure management with four 4 control modes
- Parallel compressor control with model based Smart IT start
- Setpoint management ensuring safe and reliable operation
- · Heat recovery management for tap water and space heating
- Support for external Air Conditioning unit KPI and COP calculation to compare and benchmark system efficiency
- General purpose functions with Quick Application Selection for independent control functions
- · Local and remote alarm management with readable text descriptions
- Built in RS485 Lon communication
- · Suction pressure optimisation of for the most heavily loaded refrigeration area
- Injection ON: stop case regulation in case of serious compressor alarms in the rack

# **Product specification**

# **Technical data**

Table 1: Technical data

Features	Description				
Supply voltage	24 V DC / AC ± 20%				
Power consumption	8 V A				
Analogue inputs	Pt 1000 ohm / 0 °C	Dissolution: 0.1 °C Accuracy: ± 0.5 °C			
	Pressure transmitter type AKS 32R / AKS 2050 / AKS 32 (1 – 5 V)	Dissolution 1 mV Accuracy $\pm$ 10 mV Max. connection of 5 pressure transmitters on one module			
	Contact function (ON / OFF)	On at R < 20 ohm Off at R > 2K ohm (Gold plated contacts not necessary)			
ON / OFF supply voltage inputs	Low voltage 0 / 80 V AC / DC	OFF : U < 2 V ON: U > 10 V			
	High voltage 0 / 260 V AC	OFF : U < 24 V ON: U > 80 V			
Relay outputs SPDT	AC-1 (ohmic)	5 A			
	AC-15 (inductive)	3 A			
	U	Min. 24 V - Max. 230 V Low and high voltage must not be connected to the same output group			
Solid state outputs	Can be used for loads that are frequent-	Max. 240 V AC, Min. 48 V AC - Max. 0.5 A			
	ly cut in and out e.g. unloaders, sole- noid valve	Leak < 1 mA			
	noid valve	Max. 1 AKV			
Ambient temperature	During transport	-40 – 70 °C			
	During operation	-20 – 55 $^{\circ}\text{C}$ 0 – 95% RH (non condensing) - No shock influences / vibrations			

# Pack controller, type AK-PC 782A

Features	Description				
Enclosure	Material	PC / ABS			
	Enclosure	IP10, VBG 4			
	Mounting	For mounting on wall or DIN rail			
Weight with screw terminals	Modules in 100- / 200- / controller series	Approx. 200 g / 500 g / 600 g			

# **Ordering**

#### Table 2: Ordering - AK-PC 782A

Type	Language	Code no.
AK-PC 782A	English, German, French, Italian, Dutch, Spanish, Portuguese, Danish, Finnish, Russian, Chech, Polish, Chinese	080Z0192

#### Table 3: Ordering Accessory - Extension modules and survey for inputs and outputs

	Analog inputs	ON / OFF outputs		ON / OFF supply voltage (DI signal)		Analog out- puts	Stepper out- puts	Module with switches		
Туре	For sensors, pressure transmitters	Relay (SPDT)	Solid state	Low voltage (max. 80 V)	High voltage (max. 260 V)	0 – 10 V DC	For valves with step con- trol	For override of relay out- puts	Code no.	
Controller	11	4	4	-	-	-	-	-	_	
AK-XM 101A	8	-	-	-	-	-	-	-	080Z0007	
AK-XM 102A	-	-	-	8	-	-	-	-	080Z0008	
AK-XM 102B	-	-	-	-	8	-	-	-	080Z0013	
AK-XM 103A	4	-	-	-	-	4	-	-	080Z0032	
AK-XM 204A	-	8	-	-	-	-	-	-	080Z0011	
AK-XM 204B	-	8	-	-	-	-	-	x	080Z0018	
AK-XM 205A	8	8	-	-	-	-	-	-	080Z0010	
AK-XM 205B	8	8	-	-	-	-	-	Х	080Z0017	
AK-XM 208C	8	-	-	-	-	-	4	-	080Z0023	

### **Table 4: Software**

Туре	Description	Code no.
AK-ST 500	Software for operation of AK controllers	080Z0161

# **Table 5: Remote display**

Туре	Description	Code no.
EKA 163B	Display unit	084B8574
EKA 164B	Display unit with operation buttons	084B8575
MMIGRS2	Graphic display with operation	080G0294

## **Table 6: Miscellaneous**

Туре	Description	Code no.
AK-CM 102	Communication modules for controllers where modules cannot be connected continuously	080Z0064

# Certificates, declarations, and approvals

The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

Some approvals may change over time. You can check the most current status at danfoss.com or contact your local Danfoss representative if you have any questions.

# Table 7: Certificates, declarations, and approvals

File name	Document type	Document topic	Approval authority
RU Д-DK.ГА02.В.05523	Electrical - Safety Certificate	EMC/LVE	EAC
080R1221.01	Manufacturer Declaration	China RoHS	China
080R1228.1	Manufacturers Declaration	RoHS	Danfoss
080R1206.03	EU Declaration	EMCD/LVD/RoHS	Danfoss



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