



# Pack controller

## AK-PC 782A

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

## Description

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<sub>2</sub> booster packs. The controller flexibility and efficiency makes it the obvious choice for all sizes of packs in all climates.

## Features & Benefits

- Comprehensive Control and Setup
  - ■ One controller for the entire CO<sub>2</sub> booster pack.
  - Easy first-time use with wizard-like set-up.
  - Quick Application Selection for independent control functions.
- Advanced Compressor Management
  - ■ 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.
  - Model-based Smart IT start for parallel compressor control.
  - Scalable to control large booster packs with up to 12 compressors.
- Efficient Pressure and Temperature Management
  - ■ Optimal high pressure control.
  - Receiver pressure management with four control modes.
  - Suction pressure optimisation for the most heavily loaded refrigeration area.
  - Gas cooler temperature optimisation with regard to ambient temperature.
- Energy Efficiency and Optimization
  - ■ Improved energy efficiency with Danfoss Multi Ejector™.
  - Ensuring safe and reliable operation.
  - KPI and COP calculation to compare and benchmark system efficiency.
- Robust Algorithms and Safety
  - ■ Robust algorithms warrant safe initial start-up and reliable operation.
  - Stops case regulation in case of serious compressor alarms in the rack.
- Comprehensive Oil and Liquid Management
  - ■ Control of oil separator and oil receiver
  - Option for liquid injection into the suction line.
- Advanced Gas Cooler Control
  - Capacity control of up to 8 fans.
- Heat Recovery and External Support
  - ■ Management for tap water and space heating.
  - Support for external Air Conditioning unit KPI and COP calculation to compare and benchmark system efficiency.
- Alarm and Communication Management
  - ■ Local and remote alarm management with readable text descriptions.
  - Built-in RS485 Lon communication.

## Product code numbers

Product Type	Supply voltage [V] AC/DC	Communication type	Code number
AK-PC 782A	24	LON RS485	080Z0192

## Accessories code numbers



080Z0161

### System software, AK-ST 500

Controller type: Service Tool,  
Application area: Service

Related products

080Z0192



080Z0064

### Communication module, AK-CM 102

Function: Pack contr to IO  
Extension, Communication type:  
RJ 45 to Controller, Application  
area: Additional In- and Outputs

Related products

080Z0192



080Z0058

### Electron. control accessories, AK-PS 130 STEP3 Accessory Power Supply, Power supply

AK-PS 130 STEP3 Accessory  
Power Supply, Used for product:  
Power supply, Packing format:  
Single pack, Quantity per  
packing format: 1

Related products

080Z0192



080Z0251

### I/O and communication modules, AK-OB 110, Accessory, Analog output, I/O module

AK-OB 110, Accessory, Analog  
output, Used for product: I/O  
module, Packing format: Multi  
pack, Quantity per packing  
format: 45

Related products

080Z0192



080Z0017

### I/O module, AK-XM 205B

Function: Analog Inputs, Digital  
Outputs, Communication type:  
AK2 LOCAL BUS, Packing format:  
Multi pack, Quantity per  
packing format: 12

Related products

080Z0192



080Z0018

### I/O module, AK-XM 204B

Function: Digital Outputs,  
Communication type: AK2 LOCAL  
BUS, Packing format: Multi pack,  
Quantity per packing format: 12

Related products

080Z0192



084B7298

**Electron. control accessories,  
Cable 2m, EKA displays, S/M-  
Pack, EKA 163 - 166**

Cable 2m, EKA displays, S/M-  
Pack, Used for product: EKA 163  
- 166, Packing format: Multi  
pack, Quantity per packing  
format: 24

Related products

080Z0192



080G0075

**Electron. control accessories,  
ACCCBI Cable, U.I. 1.5m, MCX  
series**

ACCCBI Cable, U.I. 1.5m, Used for  
product: MCX series, Packing  
format: Multi pack, Quantity per  
packing format: 100

Related products

080Z0192



080G0076

**Electron. control accessories,  
ACCCBI Cable Telephone U.I.  
3m, MCX series**

ACCCBI Cable Telephone U.I. 3m,  
Used for product: MCX series,  
Packing format: Multi pack,  
Quantity per packing format:  
100

Related products

080Z0192



080Z0013

**I/O module, AK-XM 102B**

Function: Digital Inputs,  
Communication type: AK2 LOCAL  
BUS, Packing format: Multi pack,  
Quantity per packing format: 16

Related products

080Z0192



080Z0007

**I/O module, AK-XM 101A**

I/O module, Product Type: AK-  
XM 101A, Controller type:  
Extension Module, Analog  
inputs (AI) [pc]: 8, Packing  
format: Multi pack, Quantity per  
packing format: 16

Related products

080Z0192



084B8563

**Electron. control accessories,  
EKA 164A, Display, Universal  
settings, EKC Controllers**

EKA 164A, Display, Universal  
settings, Used for product: EKC  
Controllers, Packing format: Multi  
pack, Quantity per packing  
format: 30

Related products

080Z0192



080Z0057

**Electron. control accessories,  
AK-PS 063 STEP3 Accessory  
Power Supply, Power supply**

AK-PS 063 STEP3 Accessory  
Power Supply, Used for product:  
Power supply, Packing format:  
Single pack, Quantity per  
packing format: 1

Related products

080Z0192



080Z0011

**I/O module, AK-XM 204A**

Function: Digital Outputs,  
Communication type: AK2 LOCAL  
BUS, Packing format: Multi pack,  
Quantity per packing format: 12

Related products

080Z0192



080Z0023

**I/O module, AK-XM 208C**

Function: 8AI, 4 Stepper out,  
Controller type: Extension  
Module, Packing format: Multi  
pack, Quantity per packing  
format: 12

Related products

080Z0192



080Z0059

**Electron. control accessories,  
AK-PS 250 STEP3 Accessory  
Power Supply, Power supply**

AK-PS 250 STEP3 Accessory Power  
Supply, Used for product: Power  
supply, Packing format: Single  
pack, Quantity per packing  
format: 1

Related products

080Z0192



084B7299

**Electron. control accessories,  
Cable 6m, EKA displays, S/M-  
Pack, EKA 163 - 166**

Cable 6m, EKA displays, S/M-  
Pack, Used for product: EKA 163  
- 166, Packing format: Multi  
pack, Quantity per packing  
format: 24

Related products

080Z0192



080Z0010

**I/O module, AK-XM 205A**

Function: Analog Inputs, Digital  
Outputs, Communication type:  
AK2 LOCAL BUS, Packing format:  
Multi pack, Quantity per packing  
format: 12

Related products

080Z0192



084B8562

**Electron. control accessories,  
EKA 163A, Display, Universal,  
EKC Controllers**

EKA 163A, Display, Universal,  
Used for product: EKC  
Controllers, Packing format:  
Multi pack, Quantity per  
packing format: 30

Related products

080Z0192



080Z0008

**I/O module, AK-XM 102A**

I/O module, Product Type: AK-XM  
102A, Controller type: Extension  
Module, Digital inputs (DI) [pc]: 8,  
Packing format: Multi pack,  
Quantity per packing format: 16

Related products

080Z0192



080Z0032

**I/O module, AK-XM 103A**

Function: Analog Inputs and  
Outputs, Controller type:  
Extension Module, Analog  
inputs (AI) [pc]: 4, Analog  
outputs (AO) [pc]: 4, Packing  
format: Multi pack, Quantity per  
packing format: 16

Related products

080Z0192



080G0294

**Control panel, MMIGRS2**

Function: Programmable  
controller, Supply voltage [V] AC:  
24, Communication type:  
CANBUS, Packing format: Single  
pack, Quantity per packing  
format: 1

Related products

080Z0192

## Product details

### General data

Parameter	Specification	
Supply voltage	24 V DC/AC $\pm 20\%$	
Power consumption	AK- (controller)	8 VA
	AK-XM 101, 102, 103, 107, AK-CM 102	2 VA
	AK-XM 204, 205, 208	5 VA
Analogue inputs	Pt 1000 ohm / 0 °C	Resolution: 0.1 °C Accuracy: $\pm 0.5$ °C $\pm 0.5$ °C between -50 °C and 50 °C $\pm 1$ °C between -100 °C and -50 °C $\pm 1$ °C between 50 °C and 130 °C
	Pressure transmitter type AKS 32R / AKS 2050 / MBS 2050 / AKS 32 (1 – 5 V)	Resolution: 1 mV Accuracy: $\pm 10$ mV Max. connection of 5 pressure transmitters on one module
	Other pressure transmitter: Ratiometric signal Min. and Max. pressure must be set	
	Voltage signal 0 – 10 V	
	Contact function (On/Off)	On at R < 20 ohm Off at R > 2k ohm (Gold-plated contacts not necessary)
Analogue outputs	0 – 10 V	Accuracy $\pm 100$ mV
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)	4 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 cut in and out frequently, e.g. Ejector valves, Oil valves, fans and AKV valves	Max. 240 V AC, Min. 48 V AC Max. 0.5 A Leak < 1 mA Max. 1 AKV
Stepper outputs	Used for valves with stepper input	20 – 500 steps/s Separate supply to stepper outputs: 24 AC/DC
Ambient temperature	During transport	-40 – 70 °C
	During operation	-20 – 55 °C 0 – 95% RH (non-condensing) No shock influences / vibrations
Enclosure	Material	PC / ABS
	Class	IP10, VBG 4
	Mounting	For mounting on panel wall or DIN rail
Weight with screw terminals	Modules in 100-/200-/ controller-series	Ca. 200 g / 500 g / 600 g

Table: Extension modules and survey for inputs and outputs

Type	Analog inputs	ON / OFF outputs		ON / OFF supply voltage (DI signal)		Analog outputs	Stepper outputs	Module with switches
	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 control	For override of relay outputs
Controller	11	4	4	–	–	–	–	–
AK-XM 101A	8	–	–	–	–	–	–	–
AK-XM 102A	–	–	–	8	–	–	–	–
AK-XM 102B	–	–	–	–	8	–	–	–
AK-XM 103A	4	–	–	–	–	4	–	–
AK-XM 204A	–	8	–	–	–	–	–	–
AK-XM 204B	–	8	–	–	–	–	–	x
AK-XM 205A	8	8	–	–	–	–	–	–
AK-XM 205B	8	8	–	–	–	–	–	x
AK-XM 208C	8	–	–	–	–	–	4	–

## 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.

When you click on the link you will be directed to the latest version of the 'Declaration of Conformity'. Products developed and sold before this date of issue conform to the directives/standards in force at the time of their sale.

Approval type	Title	Certification body	Approval topic
Manufacturer's Declaration	<a href="#">Danfoss MD 080R1237.01</a>	Danfoss	EAEU RoHS
EU-UK Declaration	<a href="#">Danfoss EU-UK 080R1206.05</a>	Danfoss	LVD
Manufacturer's Declaration	<a href="#">Danfoss MD 080R1221.02</a>	Danfoss	China RoHS
Export Control Declaration	<a href="#">Pack controllers</a>	Danfoss	
EAC Declaration	<a href="#">EAC KZ 7100841.13.12.01062</a>	EAC - Eurasian Customs Union	EMC
Manufacturer's Declaration	<a href="#">Danfoss MD-UK 080R1228.04</a>	Danfoss	EU RoHS
UA Declaration	<a href="#">Danfoss UA 8537</a>	Danfoss	UA RoHS
UA Declaration	<a href="#">UA 2024-06-27 electr.protection units for compressors</a>	Danfoss	LVD
Electrical Safety Certificate	<a href="#">EAC KZ 7100841.01.01.01245</a>	EAC - Eurasian Customs Union	LVD
Electrical Safety Certificate	<a href="#">UL E31024</a>	UL - Underwriters Laboratories inc.	



## Contact details

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