Danfoss AK PC 551 Module Controller Instructions

Contents

Danfoss AK PC 551 Module Controller

Specifications

- **Model:** AK-PC 551
- **Cable Length Options:** 1.5m (080G0075), 3.0m (080G0076)
- **Supply Voltage:** 230 V a.c. 20 VA or 24 V a.c. / d.c. 17 VA

Product Usage Instructions

Supply Voltage
The supply voltage can be either 24 V or 110-230 V. Check the label on the controller for the specific voltage requirement.

Modbus Installation
Ensure correct installation of the data communication cable for Modbus. Refer to literature No. RC8AC for proper installation guidelines and bus termination.

Digital Outputs (DO)
The device has 8 digital outputs labeled DO1 to DO8. DO5 and DO6 are solid-state relays. Ensure proper power supply to drive alarm relays and prevent dropouts during alarms.

Analogue Outputs (AO)
There are 2 analogue outputs, AO3 and AO4, which should be used with frequency converters or EC motors. Connect 24 V on N and L separately, avoid earth faults, and pay attention to polarity.

Analogue Inputs (AI)
The device features 4 analogue inputs, AI1 to AI4, with factory settings for different parameters. Configure the inputs based on your specific requirements.

Digital Switch Inputs (DI)
There are 8 digital switch inputs labeled DI1 to DI8. Configure these inputs for shutdown or interruption functions as needed.

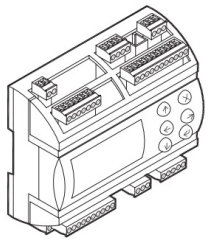
FAQ

Q: How should electric noise be managed?

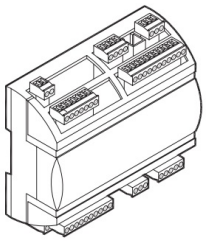
A: Keep signal cables separate from high-voltage electric cables, use separate cable trays, maintain a distance of at least 10 cm between cables, and avoid using cables longer than 3 m at the DI input.

Q: How can the compressor capacity be controlled?
A: The compressor capacity can be controlled using the signal to operate unloading valves connected to DO5 or DO6, distributing the capacity accordingly.

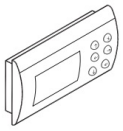
Identification



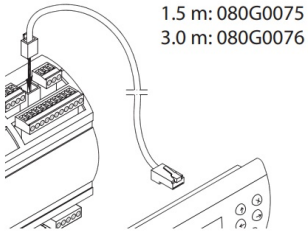
080G0281 = 230 V a.c. 20 VA
080G0283 = 24 V a.c. / d.c. 17 VA



080G0321 = 230 V a.c. 20 VA
080G0326 = 24 V a.c. / d.c. 17 VA

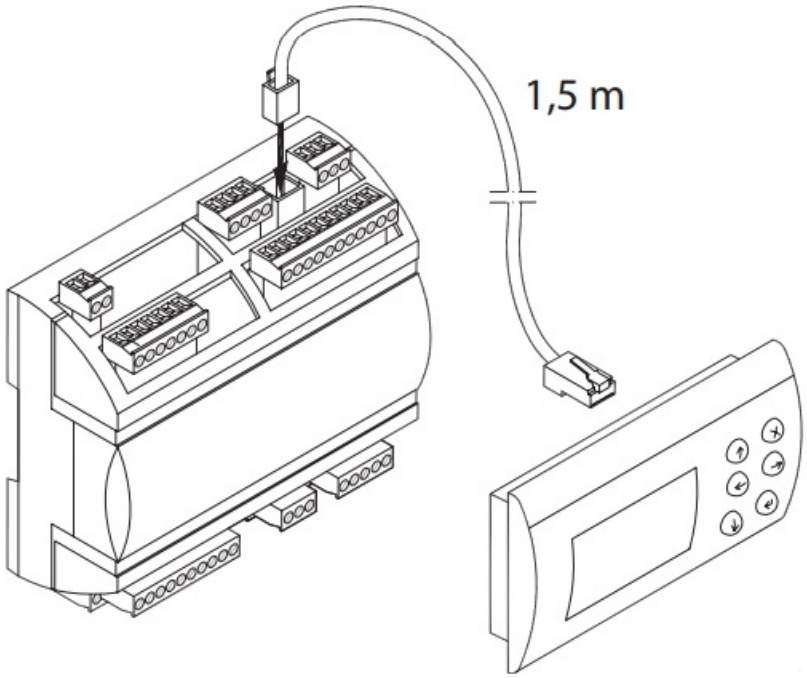


MMIGRS2: 080G0294



Kit

- 080G0282 = 080G0321 + 080G0294 + 080G0075 (230 V)
- 080G0288 = 080G0326 + 080G0294 + 080G0075 (24 V)

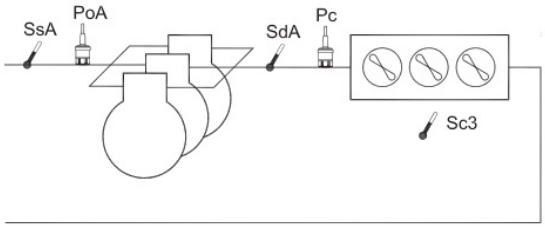


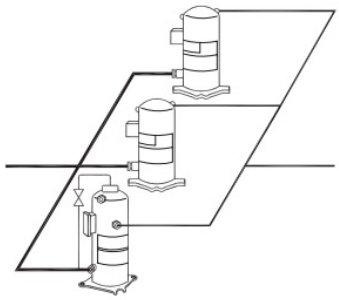
CE

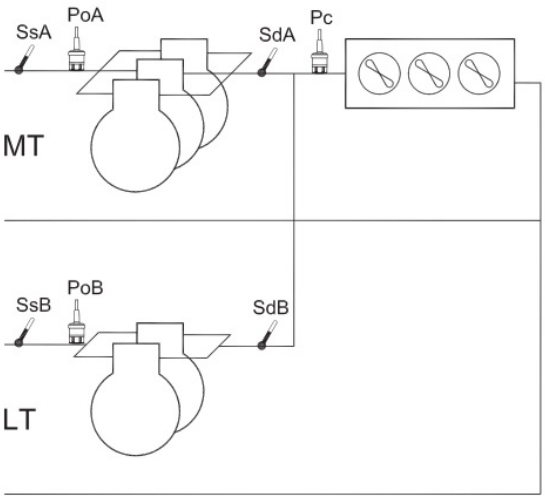
- IP 20
- -20 – 60°C
- (0 – 140°F)

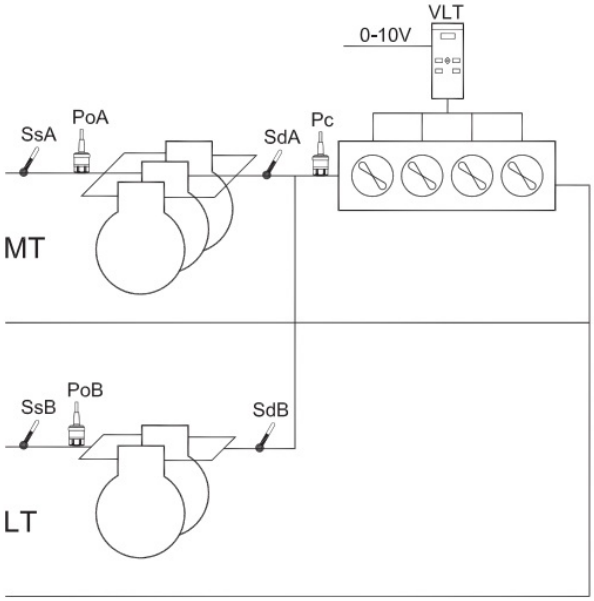
  RH max. 90% non condensing

Principle



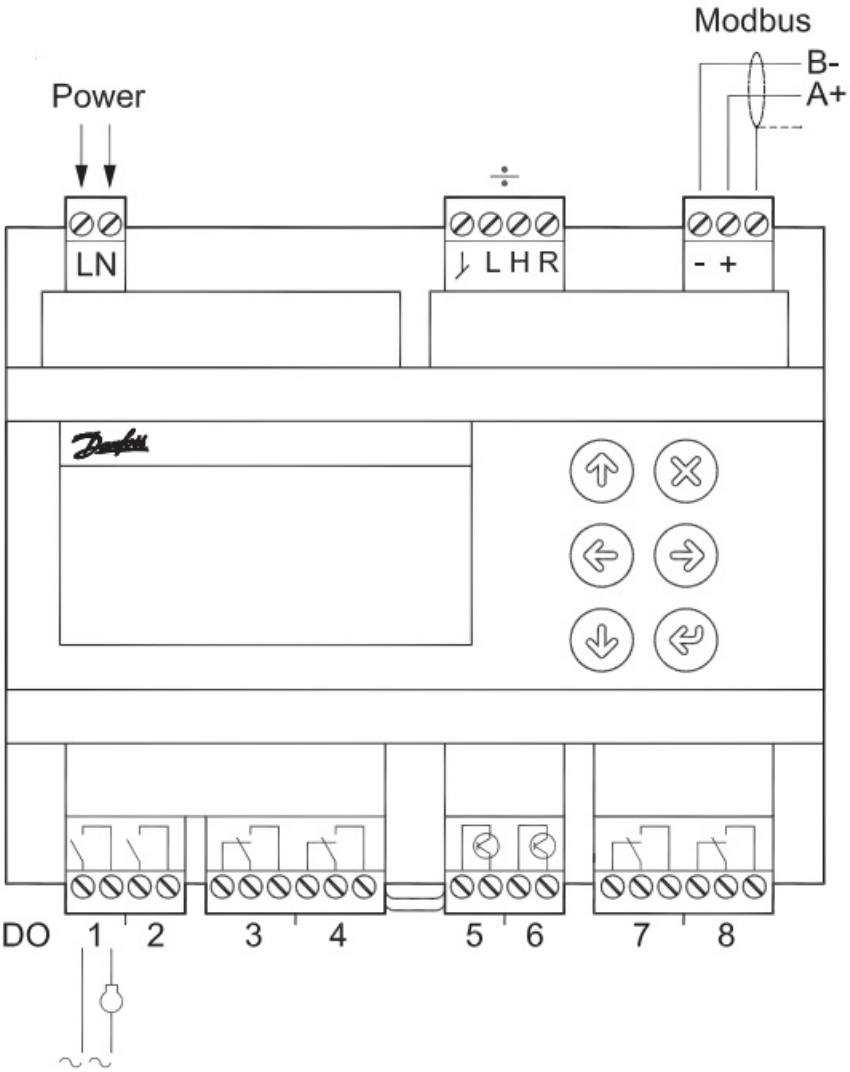






Connection

Connection, lower level



DO	DO1	DO2	DO3	DO4	DO5	DO6	DO7	DO8	*Σ 1-8*
I Max.	10 A	10 A	6 A	6 A	0.5 A	0.5 A	6 A	6 A	*32 A*
	(3,5)	(3,5)	(4)	(4)	min. 50 mA	min. 50 mA	(4)	(4)	
					Ioff < 1.5 mA	Ioff < 1.5 mA			
U	**All 24 V or all 230 V a.c.**								

Supply Voltage.

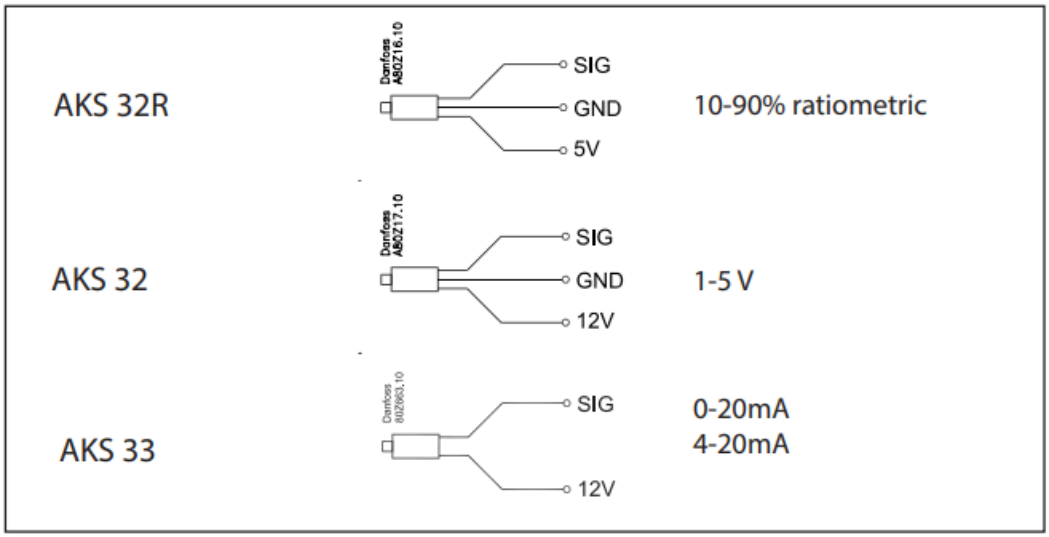
The supply voltage is either 24 V or 110-230 V. See the label on the reverse side of the controller.

÷ = Plugs normally not used
However, if connecting to an external display, a jumper must be inserted between the connections “H” and “R”.

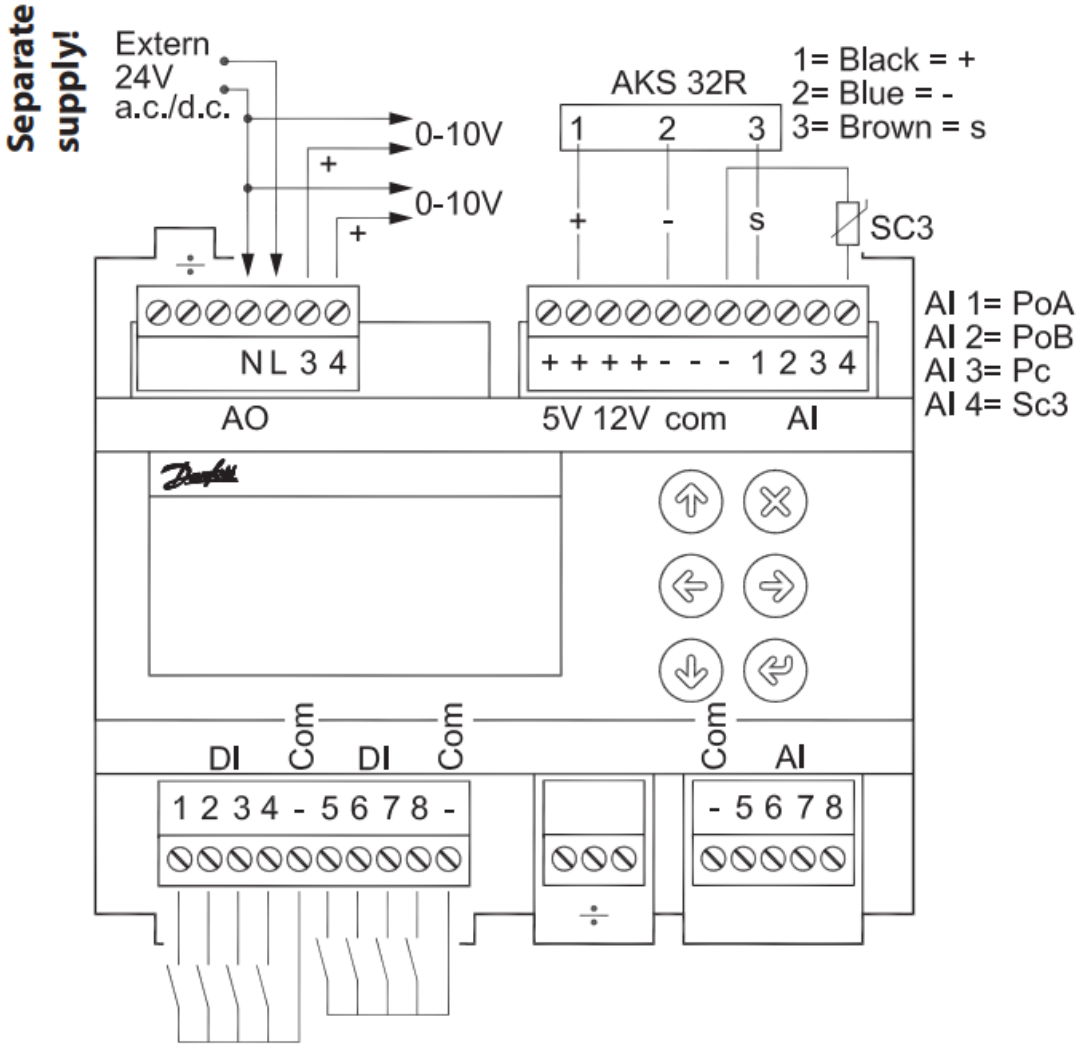
Modbus
It is important that the installation of the data communication cable be done correctly. Cf. separate literature No. RC8AC.
Remember termination at the bus termination.

DO – Digital outputs, 8 pcs. DO1 – DO8
DO5 and DO6 are solid-state relays.
The relays are de-rated to the specified values.

If an alarm relay is defined, it will be driven under normal operation and it will drop in the event of alarms and insufficient power to the controller.



Connection, upper level



Warning
The supply voltage of AI may not share the signal with other controllers.

Electric noise

Signal cables for sensors, DI inputs, data communication and display must be kept separate from high voltage (230 V) electric cables:

- Use separate cable trays
- Keep a distance between high voltage and signal cables of at least 10 cm
- Cables longer than 3 m at the DI input should be avoided

AO – Analogue output, 2 pcs. AO3 – AO4

- Must be used when using a frequency converter or EC motors.
- Connect 24 V on N and L (separate supply). Avoid earth fault current. Use double-insulated transformer. The secondary side must not be earthed.
- Obtain 0-10 volts from terminals N and AO3, respectively N and AO4. PAY ATTENTION TO THE POLARITY of N.

AI – Analogue inputs, 4 pcs. AI1 – AI4

Pressure transmitters

- Ratiometric: 10-90% of supply, AKS 32R
- Signal: 1-5 V, AKS 32
- Power: 0-20 mA / 4-20 mA, AKS 33 (supply = 12 V)

Temperature sensor

- Pt 1000 ohm, AKS 11 or AKS 21.
- NTC 86K ohm @ 25°C, from digital scroll.

Factory settings

- AI1=PoA, AI2=PoB, AI3=Pc, AI4=Outdoor temperature SC3.
- DI – Digital switch inputs, 8 pcs. DI1 – DI8
- The connection may be a shut-down or interruption function.
- Select what is to be activated during configuration.

÷ = Plugs normally not used

AI – Analogue inputs, 4 pcs. AI5 – AI8

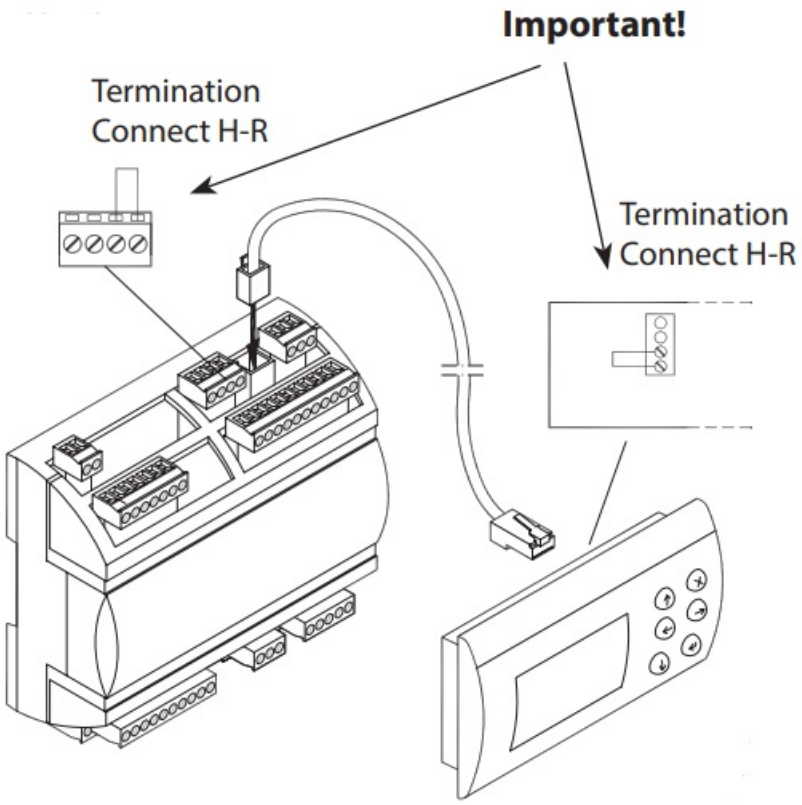
Pressure transmitters

- Ratiometric: 10-90% of supply, AKS 32R
- Signal: 1-5 V, AKS 32

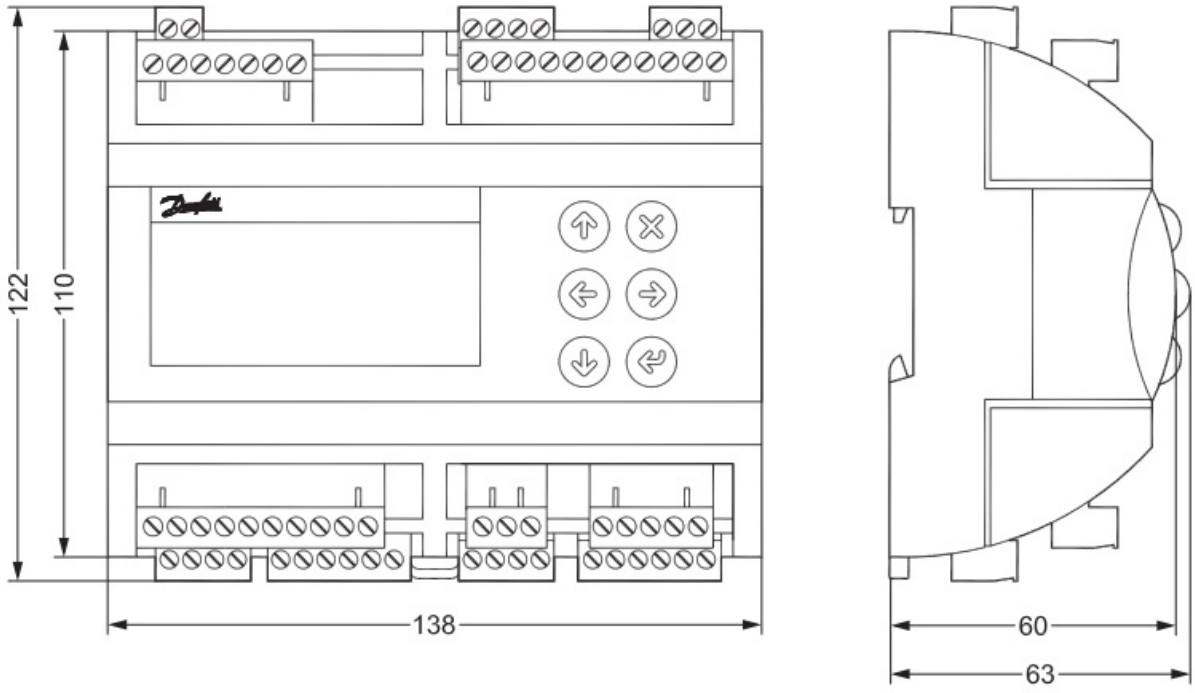
Temperature sensor

- Pt 1000 ohm, AKS 11 or AKS 21.
- NTC 86K ohm @ 25°C, from digital scroll

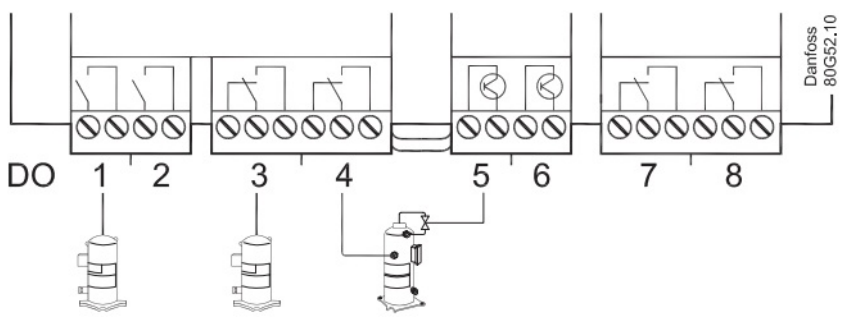
External display

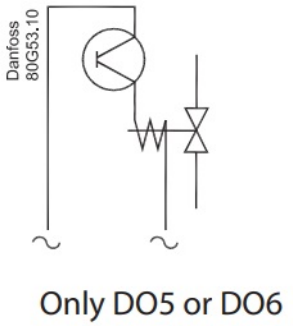


Dimensions



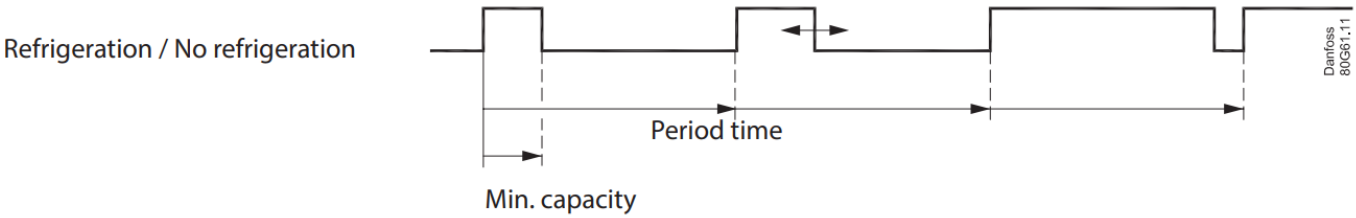
The capacity from the digital scroll compressor





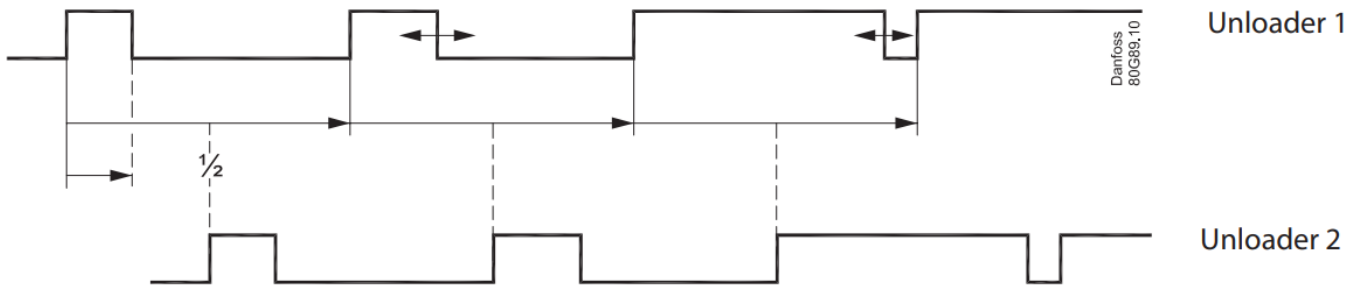
The capacity is divided into period times as “PWM period time”. 100% capacity is delivered when cooling takes place for the whole period.

An off time is required by the capacity control valve within the period and an on time is also permitted. There is “no cooling” when the valve is on.
The controller itself calculates the capacity needed and will then vary it according to the cut-in time of the capacity control valve.
A limit is introduced if low capacity is needed so that the cooling does not go below 10%. This is because the compressor can cool itself. This value can be increased if necessary.



Copeland Stream compressor
The signal can also be used to control one stream compressor with one unloading valve (4 cylinders version).
The compressor capacity is distributed by up to 50% for one relay and the remaining 50-100% for the unloader.
The unloader is connected to DO5 or DO6.

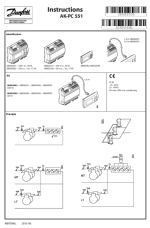
Bitzer CRII
The pulse signal can also be used to control one of the CRII with 2 unloaders (4 cylinders version).
Compressor capacity can be controlled from 10 to 100% depending on the pulsation of the unloaders. The unloader is connected to DO5 or DO6.



Unloader 2 follows unloader 1 but is offset a ½ period.

The Product contains electrical components
And may not be disposed together with domestic waste.
Equipment must be separate collected with Electrical and Electronic waste. According to Local and currently valid legislation.

Documents / Resources

	Danfoss AK PC 551 Module Controller [pdf] Instructions 080G0075, 080G0076, 080G0281, 080G0283, 080G0321, 080G0326, 080G0282, 080G0288, 080G0294, AK PC 551 Module Controller, AK PC 551, Module Controller, Controller

References

- User Manual