

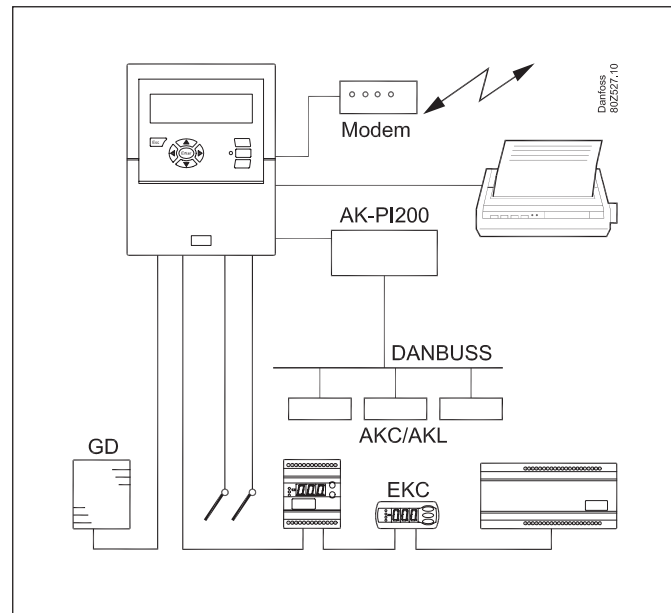


**Monitoring unit with alarm  
function and data collections  
AK-SM 350 -  
Appendix for code no. 080Z8508**

## Introduction

This order number is a variation of the basic version.  
The variation differs from the basic version as follows:

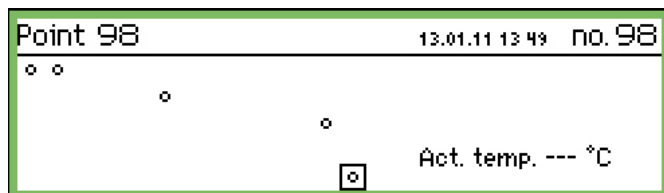
- The number of points displayed has been expanded to 98.
- Controllers with DANBUSS data communication can be connected via a Protocol Interface AK-PI 200.
- The system functions have been expanded to include the following:
  - Override function - Inject On is included (this closes the expansion valves when the last compressor is stopped)
  - Adaptive rail heating function (rail heating is controlled by a signal from the dew point sensor)
  - Signal to the Day/Night function can be sent via data communication from a selected controller function (the signal will have higher priority than the other signals that can control the Day/Night function)
  - Option of naming overriding groups
- The alarm display has been expanded to include the following:
  - Status on the alarm relay can be seen in the service menu
- The network list has been expanded as follows:
  - Maximum number of controllers increased to 200
  - Maximum number of EKC controllers increased to 120
- Maximum number of service logs increased to 200



## Ordering

Type	Measuring points	Description	Language	Code no.
AK-SM 350	16	With inputs for PT 1000 ohm, PTC 1000 ohm , NTC 5000 ohm Number of measuring point in the display = 98	English, Danish, Swedish, Finnish	<b>080Z8508</b>

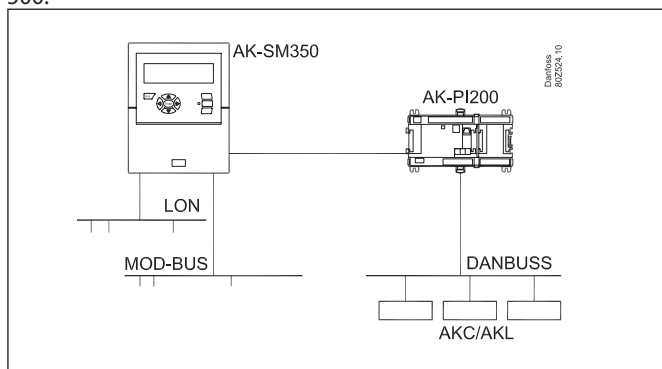
## Display with 98 points



All defined points can be seen in the overview display. Here we see points 1, 2, 30, 60 and 98.

## DANBUSS

The AK-PI 200 is an intermediary link allowing AKC and AKL type controllers to be operated via a system manager, e.g. AK-SM 350. The actual operation of the controllers is carried out with an AK-ST 500.



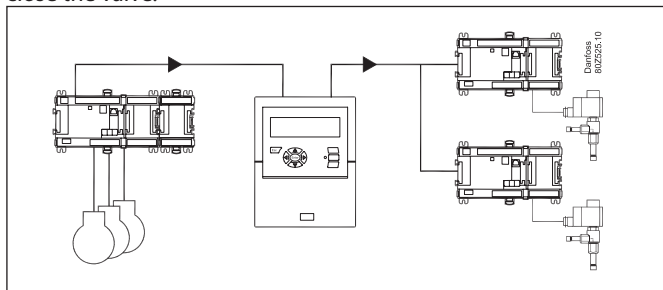
(AKC and AKL controllers use the DANBUSS data communication system. The communication is controlled by a gateway, e.g. AKA 245.

In a solution with an AK-PI 200 and a system manager, the gateway should not be used.)

## Inject ON Signal

This function is used to close the expansion valves on all evaporator controls when all of the associated compressors have been stopped by the automatic safety function. This avoids the presence of liquid in the evaporator, which is passed on to the compressor when it restarts.

For example: when the compressor stops, the compressor control transmits a signal via data communication. The system manager then forwards the signal to the defined controllers, which then close the valve.



Signals can be received from compressor controls of the following type:

- AK-PC
- EKC

Signals can be transmitted to controllers of the following type:

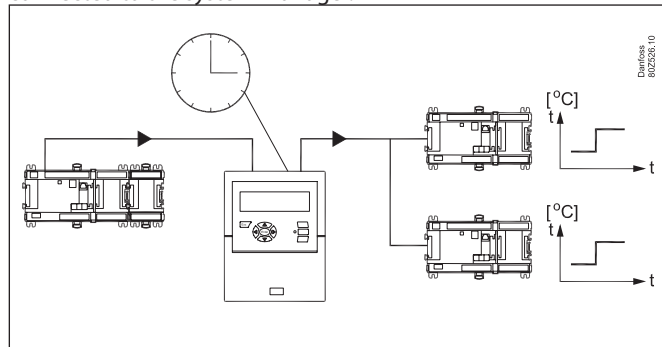
- AK-CC
- EKC.

## Day/night function

The function will transmit a signal for night operation to the various refrigeration sites. The function is used, for example, on appliances that are protected by a night cover during the night. The function here will displace the thermostat reference.

All of the defined controllers will follow the signal.

The signal is generated by a schedule or from a switch function connected to the system manager.



The planned sequence can be overridden by a signal from a parameter in an external controller.

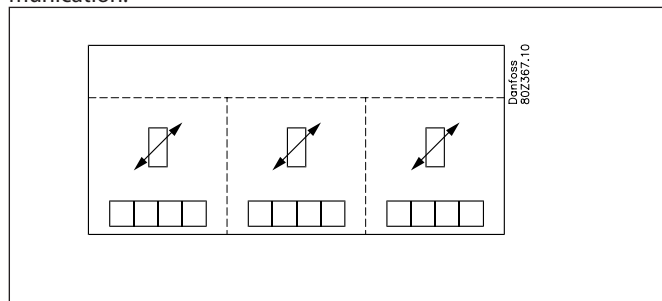
This signal is received via data communication.

## Adaptive rail heat

Adaptive rail heat is used to obtain energy-efficient control of the rail heat of refrigeration appliances.

Evaporator controls with this function must receive a signal with the current dew point value.

A dew point sensor is connected to the system manager, which then transmits the signal to the various controllers via data communication.



Up to three groups of evaporator controls can be defined. Each group must have its specific dew point sensor. The dew point sensor must be located in the same room as the refrigeration appliances that are to receive the signal.

One evaporator control can only be a member of one group. There can be up to 30 evaporator controls in a group.

The dew point sensor must be type 080Z2171.

### Possible problem

If the signal with the value of the dew point of an evaporator control is not available, the evaporator control will switch to an error compensation status, which takes account of the absent signal.

A point for temperature must be created (e.g. point 1). It will receive the temperature signal from an input (e.g. input 1).

A point for relative humidity must be created (e.g. point 2). It will receive a voltage signal in an input (e.g. input 2). The signal can be 0-10 V.

## Setup to DANBUSS

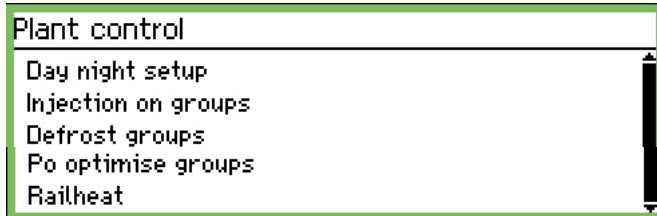
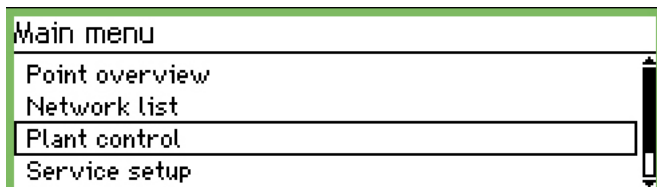
To make contact with the AK-PI 200 and then with DANBUSS, an address must be set for the AK-PI 200. This is performed as follows:



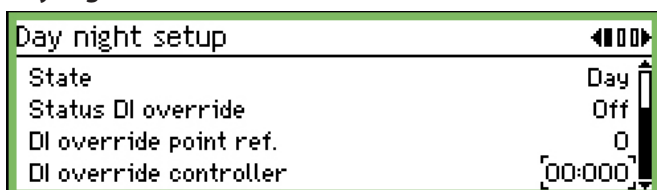
In the example the AK-PC 200 address is set at 21.  
For all other settings, refer to the AK-PI 200 manual.

## Set-up of override functions

This is performed as follows:



## Day/night function

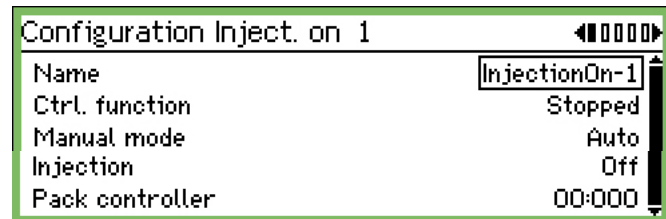
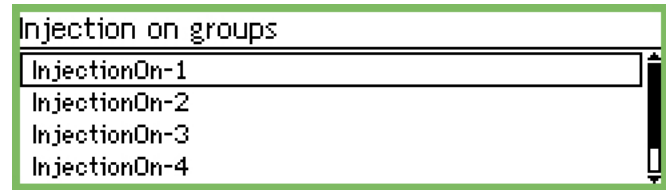


The bottom lines indicate where the signal comes from: either from one of the 16 inputs or from a controller via data communication (or both).

The address and parameter can be set via service tool type AK-ST 500. This is performed as follows:

1. Connect the AK-ST 500 to the monitoring unit
2. When the network overview is shown, press the plant control button
3. Select day/night group
4. Select the location from which the signal will come:
  - a. Press 'New'
  - b. Select controller address (e.g. 001:005)
  - c. Select the group from which the signal will come
  - d. Select which parameter will send the signal

## Inject ON signal



Name  
Enter the name of the group here.

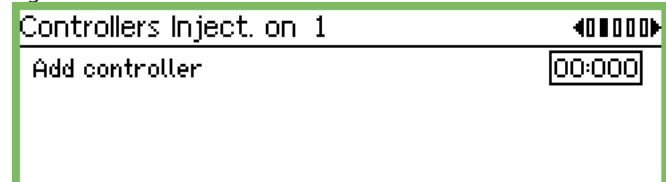
Status of the compressors  
Here the user can see if the compressor regulation is in operation or stopped.

Manual  
Here the Injection On regulation can be overridden

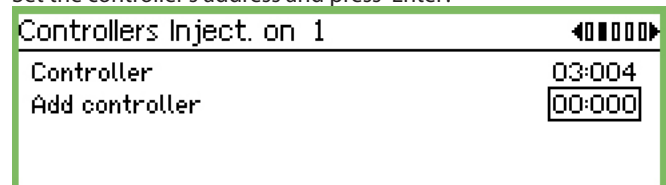
Injection  
Here the status of the Injection On function is shown

Pack controller  
The address of the controller regulating the compressors is set here.

Press 'right arrow' to define the controllers that will receive the signal.



Set the controller's address and press 'Enter'.



Continue with the addresses of the other controllers.

## Adaptive rail heat

```

Railheat
-----
Dew point sensors
Railheat groups
  
```

Set the desired values for the dew point sensor

```

Dew point sensor 1
-----
Name                               DP Sensor-1
Temp. point ref.                   1
RH% point ref.                     2
Actual dew point                   [--- °C]
Actual temperature                 [--- °C]
Actual RH                          [--- %]
  
```

### Name

Enter the name of the sensor.

### Temperature reading reference

Set the point established to register the temperature.

### Moisture reference

Set the point established to register the moisture.

The point must also be set to analogue input and the signal to e.g. 0-10 V. The moisture sensor must be set to deliver the same signal type.

### Reading

In the next three lines you can read the actual values for 'calculated dew point', 'measured temperature' and 'measured relative humidity'.

Press the 'right arrow' if there are several groups and thereby several sensors that must be set.

Define the controllers that are to be included in the group.

```

Railheat groups
-----
DP Zone-1
DP Zone-2
DP Zone-3
  
```

Select the current group

```

Configuration railheat group 1
-----
Name                               DP Zone-1
Ctrl. function                     Stopped
Dew point sensor                   DP sensor 1
Dew point                           [--- °C]
  
```

### Name

Enter the name of the group

### Status

The function is started and stopped here.

### Dew point sensor

Select one of the defined sensors here.

### Dew point

The actual dew point can be read here. The address is sent to the respective controllers.

Press the 'right arrow' to define which controllers will receive the signal and initiate the rail heating function.

```

Controllers railheat group 1
-----
Controller                          03:005
Add controller                       00:000
  
```

Set the controller's address and press 'Enter'.

Continue with the addresses of the other controllers.

## Information on alarm relay status

```

Alarm Relay A
-----
Mode                               Enabled
Relay no.                          Not used
Type                                Until reset
Priority range                       All
Auto mute time                      0 min.
Time schedule                       Allways
Relay status                        Off
  
```

In the set-up screen for the alarm relay, the relay's status can be read in the bottom line.

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