

## Recommended Installation guide AK-SC255 Com-Trol local bus support

V1.0

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## Introduction

This document describes the main points concerning a Com-Trol to Danfoss AK-SC255 conversion process. Since January 2011 the Schneider Electric© group has formally granted Danfoss Inc the intellectual rights to its Com-Trol control products. Danfoss Inc is pleased to be the only official controls supplier which is recognized as the recommended replacement solution for your Com-Trol installation.

## Document scope

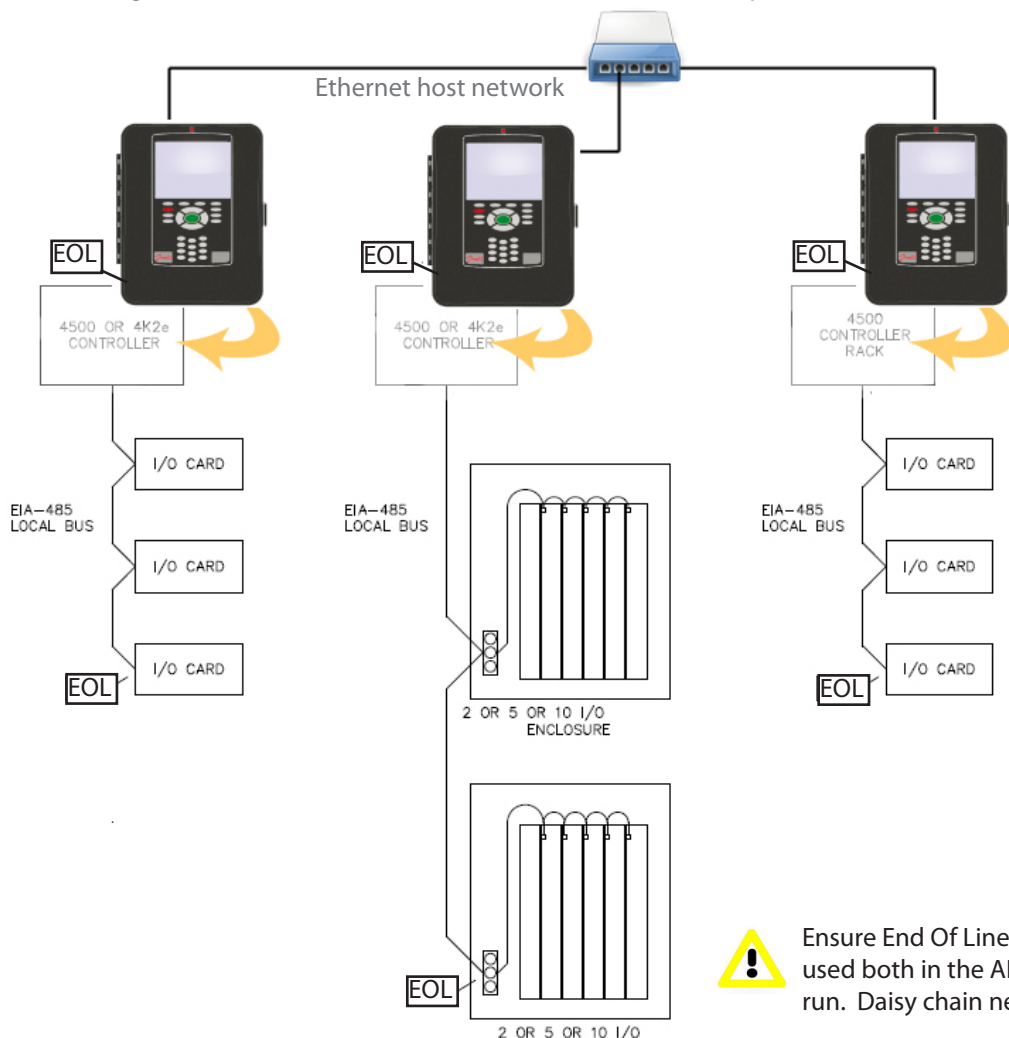
The scope of this document is intended to provide guidance when replacing Com-Trol 4k or 4K2e controllers for a Danfoss AK-SC255 on a existing Com-Trol local bus network. The Danfoss AK-SC255 is a comprehensive front end controller, capable of Refrigeration, Lighting and HVAC control and is used globally throughout the Food Retail market. Once the Danfoss AK-SC255 has been suitably installed it will provide many years of trouble free, efficient operation, in parallel with the existing Com-Trol local bus I/O boards.

This installation guide does not replace any existing documentation provided by Com-Trol, when working with Com-Trol equipment please refer to available Com-Trol documentation.

## Prerequisite knowledge and experience

It is expected that the service technician is already experienced and has a deep knowledge of the Danfoss AK-SC255 controller. Training is available from Danfoss upon request. In addition, knowledge about the actual site installation would be advantageous as many control changes may have occurred from the original configuration.

Figure 1 - Danfoss AK-SC255 used as Com-Trol 4k / 4k2e replacement (local bus)



Ensure End Of Line terminators (EOL) (120 Ohm) are used both in the AK-SC255 and end of Com-Trol I/O run. Daisy chain network topology only

## 1.0 Intended application (Hardware / Software)

The following important points define the intended application scope for a Com-Trol (local bus) retro-fit installation. Please read these fundamental requirements before continuing.

- One Com-Trol 4K/4K2e should be replaced with one Danfoss AK-SC255 unit
- The Danfoss AK-SC255 RS-485 (Modbus) port is used for communication to the Com-Trol I/O boards (figure 1). **Host communication to other AK -SC255 and/or AK-SC255 Loggers must be done via the Ethernet port.**
- Only one local bus loop can be connected to the AK-SC255 (figure 1) - No star wiring configurations allowed
- Valid local bus termination and wiring rules must be applied and maintained (see figure 3 below)
- Existing system capacity for number of Com-Trol I/O boards (defined by Com-Trol documentation) must be maintained
- AK-SC255 software version R2.151 and above must be used in order to provide Com-Trol support
- The AK-SC255 being used in the application must have a valid Com-Trol license installed. If a license is required contact Danfoss Customer service on 410-931-8714 with the AK-SC255 MAC address

Figure 2- AK-SC255 Internal port and connection layout

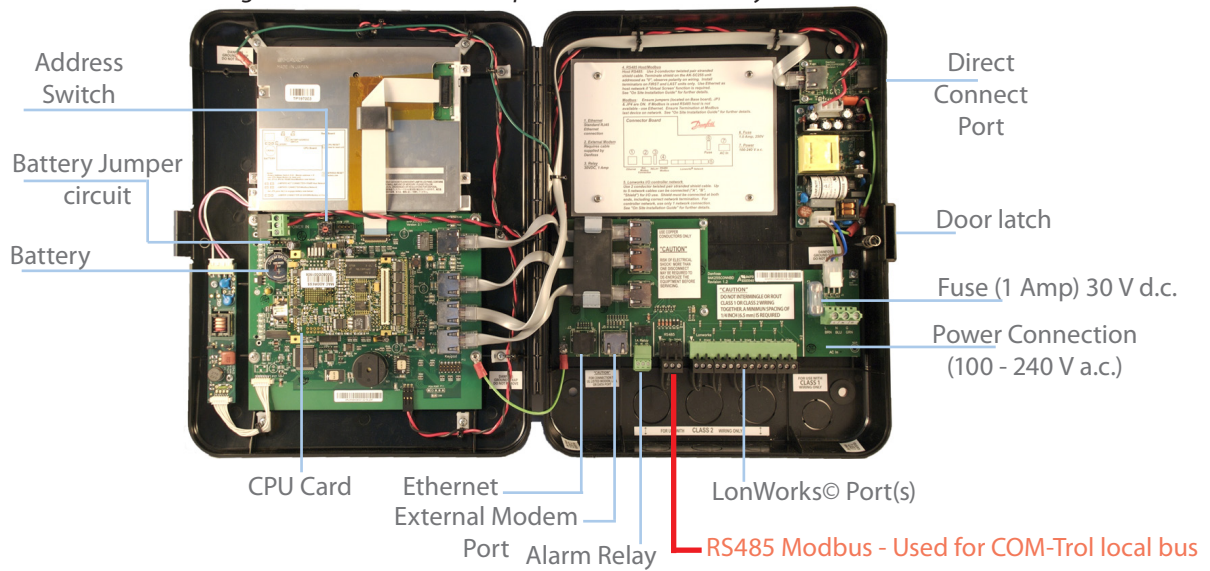
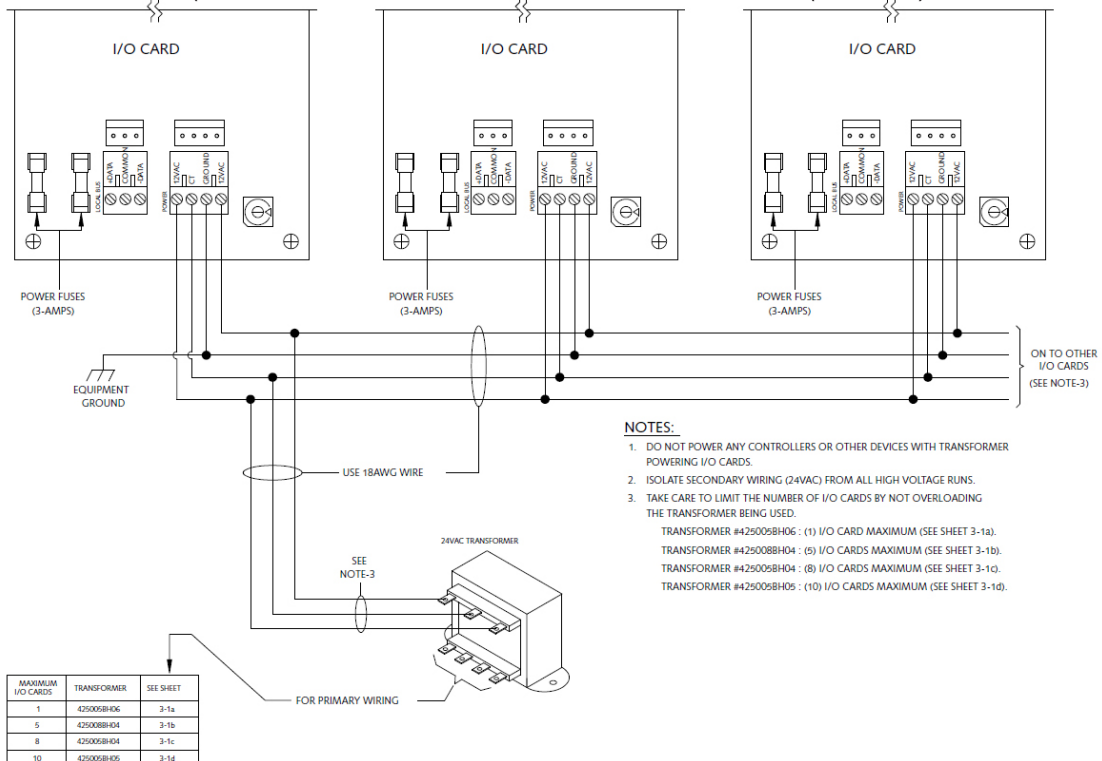


Figure 3- Com-Trol recommended wiring standard  
(extract from Com-Trol MCS-4xxx and 4K2e Install manual (F-27262-4))



## 2.0 Programming AK-SC255 Database

One of the central tasks involved in retro-fitting the Com-Trol front end unit is the configuration of the AK-SC255 database that allows the Danfoss controller to fully replace the Com-Trol unit(s). Review the following section for guidance in creating the AK-SC255 database, which replaces the Com-Trol 4k2/4K2e systems.

- 1 Using the Com-trol **EZCom** software, pull back and save the existing Com-Trol 4K or 4K2e controllers to be converted to the Danfoss AK-SC255
- 2 The Com-Trol files can be viewed with the Com-Trol **EzSet** software utility
- 3 Using the Danfoss AKA65 software service tool, create a blank database by using the simulate function. Ensure the correct version of simulated database is created to avoid compatibility issues on site (i.e. use the same version for the database programming that will be installed in the physical AK-SC255 unit)
  - 3a Start configuration of the AK-SC255 database by setting the Legacy I/O type to COMTL (found in the Store Info / Preferences) *Figure 4*
  - 3b Configure the Modbus channel under the Communications / I/O Network / Rescan Channels page. If Danfoss AK I/O boards are also to be used, ensure the channel 'LonWorks' is checked also. *Figure 5*
  - 3c When assigning Com-Trol board points, first press F4 to convert the board-point type to the Com-Trol format. *Figure 6*
- 4 Relay configuration (table 1)

Table 1

	Com-Trol format (EzSet)	Danfoss format (AKA65)
Relay	Normal	N-Closed
	Invert	N-Open
Digital Input	Normal	Open
	Invert	Closed

- 5 Sensor offsets used in Com-Trol controllers should be transferred to the AKA65 database

Preferences screen  
(set Legacy I/O to COMTL)

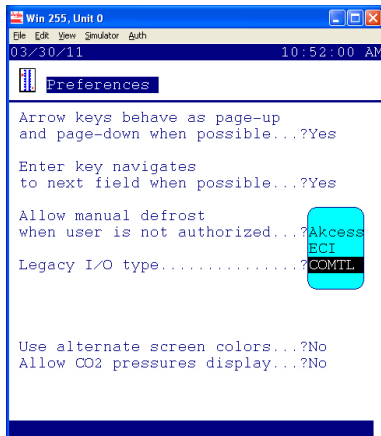


Figure 4

Rescan screen  
(check Modbus)

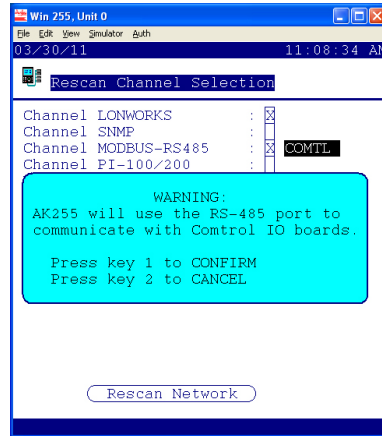


Figure 5

Sensor Configure screen  
(select from drop down type list)

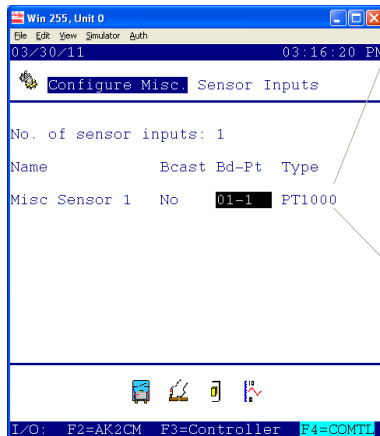


Figure 6

CMT RegTemp  
CMT HiTemp  
CMT Dewp F  
CMT P100  
CMT P200  
CMT P500  
CMT FtCnd1  
CMT CFreon  
CMT OilPres  
CMT HansLq  
CMT Percnt  
CMT P10X  
CMT P20X  
CMT P50X

new Com-Trol sensor selection

### 3.0 Appendix

#### Site Survey considerations

Location of Com-Trol 4k2 or 4k2e - Note whether box mount or panel-mount.	✓
Modem location (6k)	✓
Danfoss Logger requirements?	✓
Location of CWeb or 5K (if applicable)	✓
Leak detector location and type	✓
Note any HGM 300 units and number of zones	✓
Document Com-Trol hardware copyright dates. Dates prior to 1998 will cause compatibility issues (see figure 7)	✓
Determine optimum Ethernet switch location and Cat5 cable length	✓
Danfoss highly recommends that all power, communications, grounding connections and termination resistors pertaining to the Com-Trol I/O boards are reviewed before conversion to the Danfoss AK 255.	✓
Note any global bus devices that exist and considerations for each (Energy meters, lighting panels, etc.)	✓

Figure 7 - example of Com-Trol I/O board with copyright date of 1994 - this is **not** compliant or suitable for a Danfoss retro-fit operation. Seek to have older boards (pre 1998) to be either replaced with Danfoss I/O or newer Com-Trol I/O



NOTES



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