

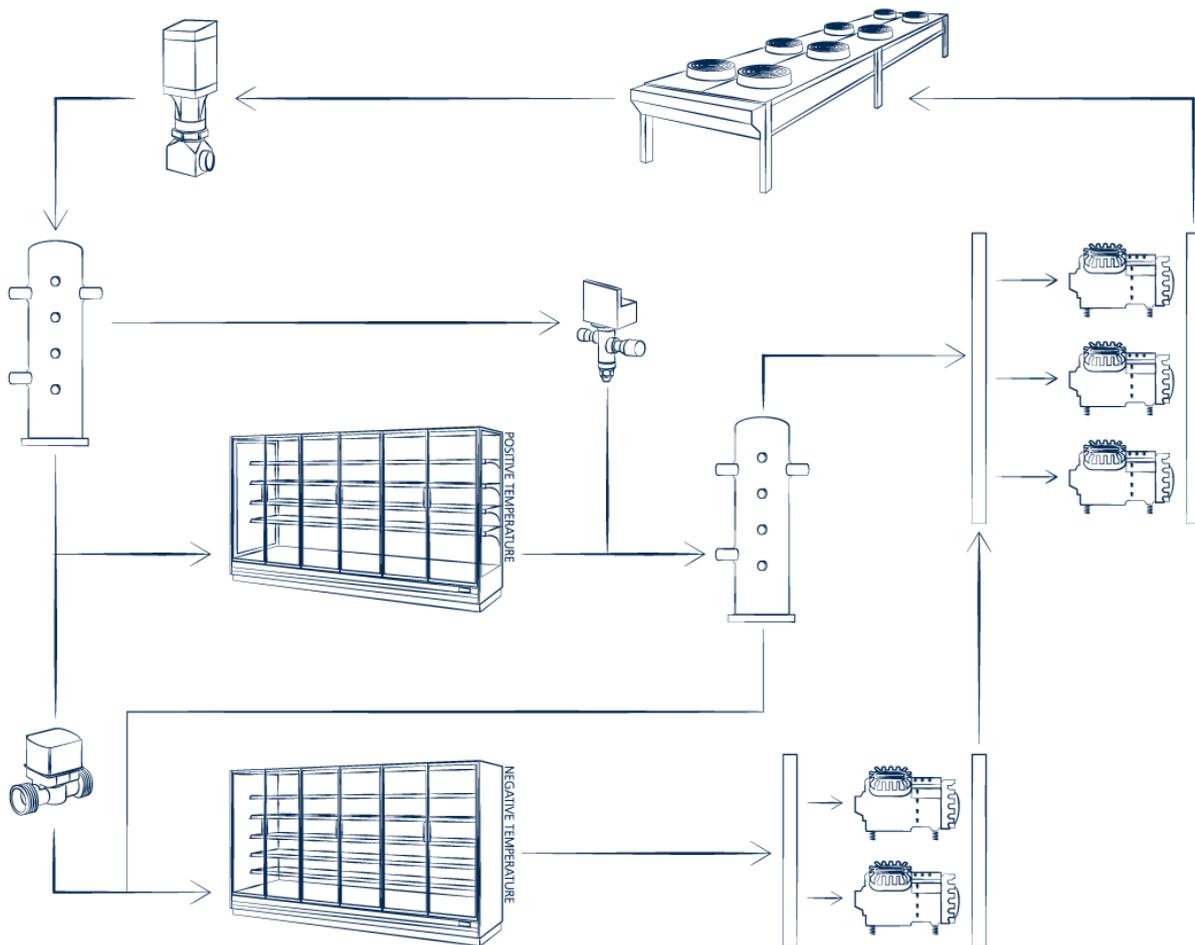
## FTE2.0 - SYSTEM REQUIREMENTS WITH DANFOSS

<i>Rev.</i>	<i>Date</i>	<i>Modification</i>
0	23/09/19	First Release

**This document is deemed as *Classified*. This means that first circulation is limited to selected people, who must diffuse it only as strictly necessary for correct operations.**

# 1. System requirements

Concept layout of a transcritical system equipped with the FTE technology



**FTE2.0 – System requirements with Danfoss**

### 1.1. Mechanical requirements

The mechanical requirements are the following:

Mechanical requirements	
<b>1</b>	Transcritical system with LT and MT loads
<b>2</b>	Bitzer compressors for LT and MT stage
<b>3</b>	Cooling power demand ratio between load LT and loads MT higher than 15%
<b>4</b>	Minimum number of LT loads equal or higher than 5
<b>5</b>	Two liquid line: <ul style="list-style-type: none"> <li>✓ One dedicated to the MT loads;</li> <li>✓ One dedicated to the LT loads.</li> </ul>
<b>6</b>	Maximum height difference between cabinets/ cold room and pack = 15 m
<b>7</b>	Maximum gas cooler internal volume for FTE/Liquid Receiver integrated in the pack: <ul style="list-style-type: none"> <li>- For EC91: max 60 dmc;</li> <li>- For EC93 4+3: max 90 dmc;</li> </ul> <p>In case gas coolers with bigger internal volume are needed, FTE is still available as a separated component, independent from the Liquid Receiver, with the standard internal volume as in the previous version: 110 – 180 – 250 – 300 dmc</p>

### 1.2. Electrical requirements

The electrical requirements are the following:

Electrical requirements	
<b>1</b>	Danfoss controllers for the loads (MT and LT)
<b>2</b>	Danfoss pack controller: Version 1.8 or higher
<b>3</b>	System Manager AKSM850 update at the version G08.074.007 or next
<b>4</b>	System Manager visible from remote
<b>5</b>	Because of many controllers in Modbus line, it is STRONGLY advised to PROVIDE the AKA222 repeater (EPTA code AA03387)

### 1.3 Elements required to connect FTE2.0 to Danfoss supervisor

Following the two available possibility to install the FTE2.0 in a system with Danfoss controllers.

	<u>Option 1 (temporary)</u>	<u>Option 2</u>
<b>FTE2.0 /EVCO controller</b>	Mandatory	Mandatory
<b>Belden cable from loads AKCC controllers to EVCO controller</b>	Mandatory	STRONGLY advised
<b>RS485 from EVCO controller to multigateway Exor</b>	Install it to pass to Option 2	Mandatory
<b>Mutigateway Exor</b>	-	Mandatory
<b>RS485 multigateway Exor to Danfoss Supervisor</b>	Install it to pass to Option 2	Mandatory

Consider that Option 1 is suggested for the commissioning in case of problem in lead time of the components (especially for the gateway Exware703).

**The Option 2 is the correct configuration of the system.**

- **Option 1:** the flooding of MT load is guaranteed, but the FTE2.0 controller is not visible from remote in the Danfoss Supervisor (it means that alarms and status of the FTE2.0 is not visible from remote)

**FTE2.0 – System requirements with Danfoss**

- **Option 2:** the flooding of MT load is guaranteed, the FTE2.0 controller is visible from Remote in the Danfoss Supervisor. The change of superheat with DI is anyway STRONGLY advised in case of lost connection between FTE2.0 and supervisor.

In case of Option 2, the codes to add are:

ITEM	Description
159688	GATEWAY Exware703
159691	Exor + PLCM04U0P1 (PLCM04 ADD-ON MODULE RS422/485)
65281072	Power supply

### 1.4 Generic requirements

The additional requirements are the following:

	Generic requirements
1	Additional refrigerant: at least the 50% of the volume of the FTE
2	Additional compressors oil: at least half of the volume of the oil reservoir
3	It is recommended to have at least one commissioning spare part kit for country