



Operating Guide

X-Gate: How to integrate the AK2 over CANbus

This guide focuses at the current moment on the integration of the AK2 controller via CANbus to the X-Gate. For the integration of the X-Gate with a BMS, PLC, SCADA, etc., please refer to the User Guide. This guide also does not cover how to obtain the ED3/ED4 file.

1. Equipment

What is needed

X-Gate + power supply 24V AC/DC



Display MMIGRS2 (080G0294) + ACCCBI Cable Telephone (080G0076)



AK-PC 78x family (080Z0192) + power supply 24 AC/DC



Cables for the wiring

2. Wiring with the MMIGRS2

General overview





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CANH-R connection should be done only on the first and last element of the network. AK-PC 78x is terminated internally and the last element of the network will be the X-Gate therefore do **not** terminate the display. Also do **not** connect a separate power supply for the display. Supply comes directly from the controller via cable.

2b. Connection between MMIGRS2 and X-Gate

Terminate the CANH-R on the X-Gate. Do **not** connect a separate power supply for the display.



3. Wiring without the MMIGRS2 (direct)

Terminate the CANH-R on the X-Gate. Do **not** connect a separate power supply for the display.







Skip chapter 4 if the MMIGRS2 is not being used.

4. Settings in MMIGRS2

Required App version: 3.29 or higher and BIOS: 1.17 or higher.

Depending on the configuration of AK-PC 78x, the main screen will appear slightly different. To access the MMIGRS2 display settings, simultaneously press 🛞 the and the 🕐 for a few seconds.



The BIOS displays "MCX:001" in the top right corner, indicating the CAN address of AK-PC 78x. The "50K" displayed represents the CAN baud rate.



These are the default settings, and no changes are needed. If for some reason you are seeing something different you can check the following settings:

• under "COM Selection," choose "CAN" from the available options: CAN, RS232, and RS485





• Back in the BIOS menu: Press the down arrow to access the CAN settings. These settings control various aspects of CAN communication: Node ID, Baud Rate, Active Nodes, Diagnostics, and LSS.



In Node ID you can select the CAN address for the display itself which is as default 126. In Baudrate
we need to select 50K:



• under "Active Nodes," you can see the connected devices:

Before the X-Gate configuration



After the X-Gate configuration

000	-1
032	
048	
080	
096	
112	

5. Settings in X-Gate

Access you X-Gate and log in using your credentials (default user: admin; password: PASS).

1. Ensure that you have version 5.22 or higher:

Multigateway → 100 - M 08/10/2024 13:54:55	ultigateway			Danfoss
X Overview	Settings			
E Parameter settings		Site name:	Multigateway	
Alarms	ž	Date format:	l°C / bar	
Runtime chart	•	Web server port	443	
Info	-	NTP enabled		
NETWORK	C			
Retwork overview		Set timezone	v	
() Network alarm	(Use current timezone		
Event log		Use current location		
CONFIGURATION	_			
Network configuration		Download <u>MIB</u> (only for Download <u>ED3/EPK file</u> Download CSV floc	r SNMP) IS	
2 Users configuration		Download COA lifes		
😥 Settings		Choose File No file ch	hosen	
Diagnostic		Update X-GATE versio		
D Files		Current version: 5.22 (2 Change log	2024-08-05 10:11)	
Editor CDF	-			
🕞 Logout		Open console		
	<u>D</u> .	Get <u>debuglog.zip</u> <u>RefreshAll devices</u>		
	C	Further Info: License M	fore licenses	
			SAVE	



2. Go to Files and upload the CDF file (or ED3/ED4) for the pack controller:

X-Gate v5.21 110/2024 to to 41							
NET	WORK	Ciles					
Q.	Network overview	Files	1000	0.70.10			
99			Size:	51.27 KB			
08	System overview		Date:	20-06-24 08:51:55			
80			Elle anne	01000 00070001 010			
IA	History		File name:	SM800_08022801_012x.cdl			
			Size:	2.19 KB			
+	History download		Date:	23-04-24 16:39:29			
_			F 1	011000 50 103 030 1/			
0	Network alarm		File name:	SM800_FC-103_032x.cdf			
			Size:	22./6 kB			
Ē	Event log		Date:	23-04-24 16:35:58			
CON	EIGUDATION		-	010000 00101000 015 ···			
CON	FIGURATION		File name:	SM800_084B4082_015x.cdf			
Ð	Network configuration		Size:	14.04 kB			
			Date:	25-04-24 16:34:33			
0	Users configuration		and forest the second				
			File name:	SM800_084B8537_021x.cdf			
∇	History configuration		Size:	5.08 kB	3		
			Date:	12-04-24 10:00:57			
203	Settings						
			File name:	MGTW.cdf			
÷	Diagnostic		Size:	11.59 kB			
-	100		Date:	24-06-24 10:55:34			
D	Files						
	File name: SM800_084B8520_021l.cdf						
E/	Ealtor CDF		Size:	5.46 kB			
	Lagout		Date:	23-04-24 16:36:17			
6	Logout						
			File name:	SM800HVAC.cdf			
			Size:	3.8 kB			
			Date:	19-09-22 18:45:02			
			File name:	SM800_MC250000_0170.cdf			
			Size:	13.74 kB			
			Date:	12-04-24 10:02:52			
			File name:	SM800_084B4056_010B.cdf			
		Size:	4.98 kB				
			Date:	23-04-24 16:37:22			
			File name:	SM800_084B8520_023x.cdf			
			Size:	5.49 kB	1		
			Date:	23-04-24 16:38:15			
					UPLOAD		

- 3. Go to "Network Configuration" and add a node with the following settings:
- Node ID: 1
- · Description: (Enter a descriptive name this field cannot be blank)
- Application: Select the appropriate CDF file.
- Protocol Address: Leave empty.

X-Gate v5.21 11/07/2024 15:22:13		<u>Danfošš</u>
NETWORK	Network configuration	
B System overview ↓ History History download	Node Id: 1 - AK-PC782A v4.1 ▼ Description: AK-PC782A v4.1 ▼ Application: SM800_08020192_041x ▼ Alarm mail: □ ▼ Protocol address ● ●	
Network alarm	100 X-Gate v5.21	
Event log	ADD NODE	
Network configuration	SAVE	
Users configuration	Protocol address help Select protocol v	
👸 Settings		
Diagnostic		
D Files		
Editor CDF		
🕞 Logout		



4. In the Network Overview, access the X-Gate settings by pressing the arrow next to it:

K-C	iate v5.21 1/2024 15:38:59					Danfoss	
ETW	IORK	Notwork overview	Network associate				
옮	Network overview	Network overview					
28	System overview		1	AK-PC782A v4.1 Application:	SM800_080Z0192_041x		
Δ	History		100	X-Gate v5.21 Application:	MGTW		
ŧ	History download						
D	Network alarm						
Ŧ	Event log						
ONF	IGURATION						
Ð	Network configuration						
0	Users configuration						
Λ	History configuration						
ŝ	Settings						
ĕ	Diagnostic						
D	Files						
Ð	Editor CDF						
t,	Logout						

5. Go to Client fieldbus and enable CANbus (G36):

X- 11/	Gate v5.21 → 100 - X-Ga	-6ate v5.21	Danfois
*	Overview	⊒>Main Menu → Client fieldbus	
=	Parameter settings	G14 Modbus TCP Client OFF	×
À	Alarms	G58 Modbus UDP Client OFF	× .
~	Runtime chart	G20 Modbus RTU Client OFF	×
٢	Backup / Restore	G29 Modbus ASCII Client OFF	× .
()	Info	G31 SM800 Xml OFF	~
NET	WORK	G36 Enable CANbus ON	×
88	System overview	G41 BACnet IP Client OFF	×
	History	G42 BACnet MSTP Client OFF	×
±	History download		
0	Network alarm		
Ē	Event log		
COM	FIGURATION		
•	Network configuration		
8	Users configuration		
	History configuration		
-	Settings		
ð	Diagnostic		
D	Files		
Ð	Editor CDF		
Đ	Logout		



6. Go to "Supervisor Settings" from the Main Menu and verify that the CAN Baud Rate (SU4) is set to 50kbps.

X-0 11/0	X-Gate v5.21 > 100 - X-Gate v5.21 1V012024 V5.205				
*	Overview	⇒Main Menu → Superv	sor		
≡	Parameter settings		UO Site name	X-Gate v5.21	
Ļ	Alarms	*	U1 Address	100	
~	Runtime chart		U2 Baudrate	38400	
0	Backup / Restore	X	U3 Serial Settings	8E1	
(Info	X	U4 CAN Baudrate	50kbps	
NET	VORK Network overview	X	35 Use external RS485	NO	
88	System overview		U7 Baudrate 2	38400	
	History		U8 Serial Settings 2	8E1	
±	History download	*	10 COM1 Protocol	Auto	
\odot	Network alarm	X	20 COM2 Protocol	Auto 🗸	
Ē	Event log				
CON	FIGURATION				
٢	Network configuration				
0	Users configuration				
\wedge	History configuration				
\$	Settings				
ø	Diagnostic				
D	Files				
Ð	Editor CDF				
Ð	Logout				

7. Go to the Network Overview, it can take 1-2 minutes to load the page. The question mark symbol next to the AK-PC 78x should now be replaced with an arrow, indicating a successful connection:

X-0	Sate v5.21 1/2004 v5.252					
NETWORK		Nahuark aver inv				
緣	Network overview	Network overview		NK D07004 44	-	
88	System overview		1	Application:	SM800_080Z0192_041x	
\square	History		100	X-Gate v5.21 Application:	MGTW	
<u>+</u>	History download			, approvide the		
\bigcirc	Network alarm					
Ē	Event log					
CONF	IGURATION					
<u>•</u>	Network configuration					
00	Users configuration					
\square	History configuration					
鐐	Settings					
ø	Diagnostic					
D	Files					
₽	Editor CDF					
₽	Logout					



8. Go to the Pack Controller settings. You should see various values displayed. Note that some values might appear as "NaN" if the corresponding functions are not used in the Pack Controller.

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X-Gate v5.21 → 1 - AK-PC7 11/07/2024 15:35:46	82A v4.1		Danfoss
🖈 Overview	⇒Root menu → MT control		
😑 Parameter settings	😥 🛛 Po Min Float	-55.0°C	*
🛕 Alarms	😿 Po Max Alarm	30.0°C	· · ·
Runtime chart	😸 Pump down MT	-16.0°C	~
Backup / Restore	😿 Neutral Zone K	5.0K	*
(i) Info	😸 Auto mode MT	OFF	~ 1
NETWORK	😥 Po Setpoint	10.0°C	×
System overview	😸 Offset at min. input	0.0K	*
History	😥 Offset at max. input	10.0K	×
History download	😿 Night Offset K	5.0K	~
Network alarm	Min reference MT	-40.0°C	×.
Event log	😿 Po Max Float	30.0°C	×.
CONFIGURATION	Reference MT	36.0barg	×
Network configuration	😥 Neutral Zone band MT	4.9barg	×
	MZ Iow MT	33.6barg	×
Settings	NZ high MT	38.5barg	×
Diagnostic	😥 Pump down MT	33.7barg	×
🗅 Files	😿 Po min. limit MT	4.5barg	×
Editor CDF	Min reference MT	8.9barg	×
🕞 Logout	😿 Po max. alarm MT	71.2barg	×
	Max reference MT	71.2barg	×
	😿 Neutral Zone Band MT	5.0K	×
	😿 Night offset MT	5.0K	×

6. Glossary of terms

ED3/ED4	These files are used to store configuration settings, and other information for Danfoss devices. They are essential for maintaining and updating Danfoss equipment, ensuring that the devices operate efficiently and according to the latest specifications.
CDF (Configuration Description File)	CDF is used to store configuration settings and parameters for controllers.
BMS (Building Management System)	A BMS , also known as a Building Automation System (BAS), is a control system used in buildings to manage and monitor the building's mechanical and electrical equipment.
PLC (Programmable Logic Controller)	A PLC is an industrial digital computer designed for the control and automation of manufacturing processes, such as assembly lines, robotic devices, or any activity that requires high reliability, ease of programming, and process fault diagnosis.
Scada (Supervisory Control and Data Acquisition)	Scada is a system used for remote monitoring and control of industrial processes. It gathers real-time data from remote locations to control equipment and conditions

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