



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 ED3/ED4 or CDF files.

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

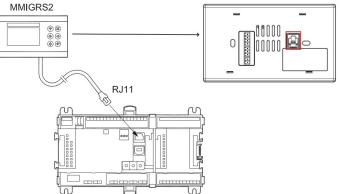
General overview





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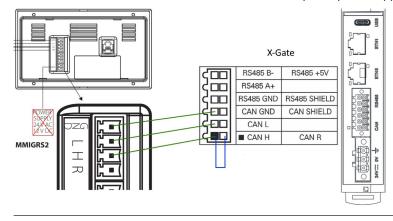




CANH-R connection should be done only on the first and last element of the network. AK-PC 78x is terminated internally and the last element of the network will be the X-Gate therefore do **not** terminate the display. Also do **not** connect a separate power supply for the display. Supply comes directly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

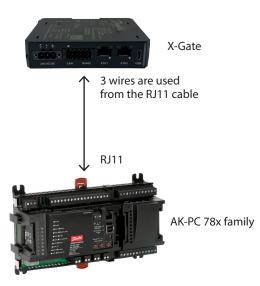
2b. Connection between MMIGRS2 and X-Gate

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

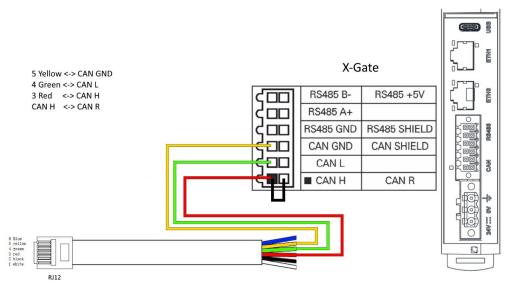


3. Wiring without the MMIGRS2 (direct)

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 AK-PC 782A's CAN address. 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.

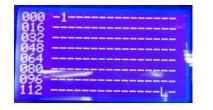


In Node ID you can select the CAN address for the display itself which is as default 126. In Baudrate
we need to select 50K:



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

Before the X-Gate configuration



After the X-Gate configuration

000	-1
032	
064	
096	1
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 - Multigater 08/10/2024 13:54:55	мау	Danfoss
🖈 Overview Sett	lings	
\ Parameter settings	Site name: Multigateway	
⚠ Alarms	Optic "C / bar Date format: Day month year	
🗠 Runtime chart	Web server port 443	
(i) Info	INTP enabled	
NETWORK	O Shire enabled	
Retwork overview	Set timezone	
() Network alarm	Use current timezone	
Event log	Use current location	
CONFIGURATION		
Network configuration	Download <u>MIB</u> (only for SNMP) Download <u>CSV/EPK files Download CSV files </u>	
🙎 Users configuration	Dominion 701 mm	
😥 Settings	Choose File No file chosen	
Diagnostic	Update X-GATE version	
D Files	Current version: 5.22 (2024-08-05 10:11) Change log	
Editor CDF		
🕞 Logout	Open console	
	Cot debuglog.zip RefreshAll devices	
	Further Info: License More licenses	
	SAVE	



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

(-Gate v5.21 1/07/2024 15:16:41			
TWORK			
R Network overview	Files		
6 Hernork overview	Size:	01.27 KD	E.
System overview	Date:	20-06-24 08:31:55	
	File name:	SM800_080Z2801_012x.cdf	
▲ History	Size:	2.19 kB	3
	Date:	23-04-24 16:39:29	
History download			
Network alarm	File name:	SM800_FC-103_032x.cdf	
	Size:	22.76 kB	3
Event log	Date:	23-04-24 16:35:58	
NFIGURATION	File name:	SM800_084B4082_015x.cdf	
a water and a second second second	Size:	14.04 kB	3
Network configuration	Date:	23-04-24 16:34:33	
Users configuration			
	File name:	SM800_084B8537_021x.cdf	
History configuration	Size:	5.08 kB	3
	Date:	12-04-24 10:00:57	
; Settings	File name:	MGTW.cdf	
Diagnostic	Size:	11.59 kB	2
	Date:	24-06-24 10:55:34	
Files			
Editor CDF	File name:	SM800_084B8520_021l.cdf	
- Calcor Con	Size:	5.46 kB	3
Logout	Date:	23-04-24 16:36:17	
	File name:	SM800HVAC.cdf	
	Size:	3.8 kB	3
	Date:	19-09-22 18:45:02	
		01/000 N0050000 0170 / /	
	File name:	SM800_MC250000_0170.cdf	
	Size:	13.74 kB	3
	Date:	12-04-24 10:02:52	
	File name:	SM800_084B4056_010B.cdf	
	Size:	4.98 kB	3
	Date:	23-04-24 16:37:22	
	File name:	SM800_084B8520_023x.cdf	
	Size:	5.49 kB	
	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	
오 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	Network overview				
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					
	Eventlog					
ONF	IGURATION					
Ð	Network configuration					
0	Users configuration					
Λ	History configuration					
ŝ	Settings					
ĕ	Diagnostic					
D	Files					
Ð	Editor CDF					
3	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	~
	WORK Network overview	G36 Enable CANbus ON	×
	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-Gate v5.21 → 100 - X- 11/07/2024 15:30.57	Gate v5.21			Danfo
🖈 Overview	⇒Main Menu → Sup	pervisor		
🗮 Parameter settings		* SUO Site name	X-Gate v5.21	*
🛕 Alarms		* SU1 Address	100	×
		* SU2 Baudrate	38400	× .
Backup / Restore		* SU3 Serial Settings	8E1	× .
i Info		SU4 CAN Baudrate	50kbps	×
NETWORK		🖈 G35 Use external RS485	NO	~
용 Network overview B System overview	1	* SU7 Baudrate 2	38400	~
History		* SU8 Serial Settings 2	8E1	~
 History download 		s10 COM1 Protocol	Auto	~
Network alarm		* S20 COM2 Protocol	Auto	~
Event log	_			_
CONFIGURATION				
Network configuration				
2 Users configuration				
History configuration				
👸 Settings				
Diagnostic				
Files				
Editor CDF				
🕞 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					<u>Danfoss</u>	
NETW	/ORK	Network overview				
緣	Network overview	Network overview		NK D07004 44	-	
88	System overview		1	AK-PC782A v4.1 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					
	Network configuration					
0º	Users configuration					
\square	History configuration					
鐐	Settings					
ø	Diagnostic					
D	Files					
Ð	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	X-Bate v5.21 → 1 - AK-PC782A v4.1 1/07/2024 15:35:46					
Cverview	⇒Root menu → MT control					
😑 Parameter settings	😥 Po Min Float	-55.0°C				
🗘 Alarms	😿 Po Max Alarm	30.0°C 🗸				
Kuntime chart	😥 Pump down MT	-16.0°C				
Backup / Restore	🛞 Neutral Zone K	5.0K				
(i) Info	🖈 Auto mode MT	OFF V				
NETWORK 움 Network overview	😥 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				
E Event log	🖈 Po Max Float	30.0°C				
CONFIGURATION	Reference MT	36.0barg				
Network configuration	Neutral Zone band MT	IT 4.9barg				
 Users configuration History configuration 	MZ low 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	ат 5.0К				
	★ 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, ensuring that the devices operate efficiently. ED3/ED4 are formats specifically used by Danfoss for the Danfoss System Manager AK-SM 800A.
CDF (Configuration Description File)	CDF is a more generic format used to store configuration settings and parameters for controllers. While it serves the same purpose as ED3/ED4 files, either format could be used depending on the system and application.
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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