



Hardware Manual

Vision AI Xcelerix

Version 1.0 – 9/2026

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1 Handling and Safety Instructions



Depending on the operating conditions, the housing temperature can exceed 60 °C. There is a risk of injury!



Handle with care! There may be sharp edges and pose a risk of injury!



EMC conformity according to EN/IEC 61000-6-2:2005 is qualified for cable lengths ≤ 30 m.



Electrical installation should be executed without power applied to the device and connected devices.



Only open if advised by IMAGO!

Warranty void if warranty seal is removed or broken.



Please take special note of the **voltage range** which may be applied to the device. Otherwise, permanent damage to the device may result!



Air Circulation

When mounting the device within an enclosure, adequate space for air circulation is required.



Avoid extreme environmental conditions and protect Vision AI Xcelerix from dust, humidity and heat.

2 Introduction

Thank you very much for your interest in our Vision AI Xcelerix. To get the most out of your purchase, please take some time to read all the information given here thoroughly.

The Vision AI Xcelerix is an industrial-grade external GPU expansion system designed to add scalable GPU performance to industrial computers via USB4. Engineered for cabinet installation and powered by a 24V supply, it integrates NVIDIA® GPUs to deliver high-performance acceleration for demanding image processing and AI applications. Unlike consumer eGPU solutions, the Xcelerix is built for long-term availability, industrial environments, and continuous operation. Its modular GPU architecture allows performance upgrades without replacing the host system, making it ideal for evolving processing requirements in machine vision and automation.

Vision AI Xcelerix connects to a Host Computer via USB4 or Thunderbolt3 or higher.

2.1 Concept

Vision AI Xcelerix integrates a MXM carrier with a USB4 device controller, a 24V power supply and a cooling solution.

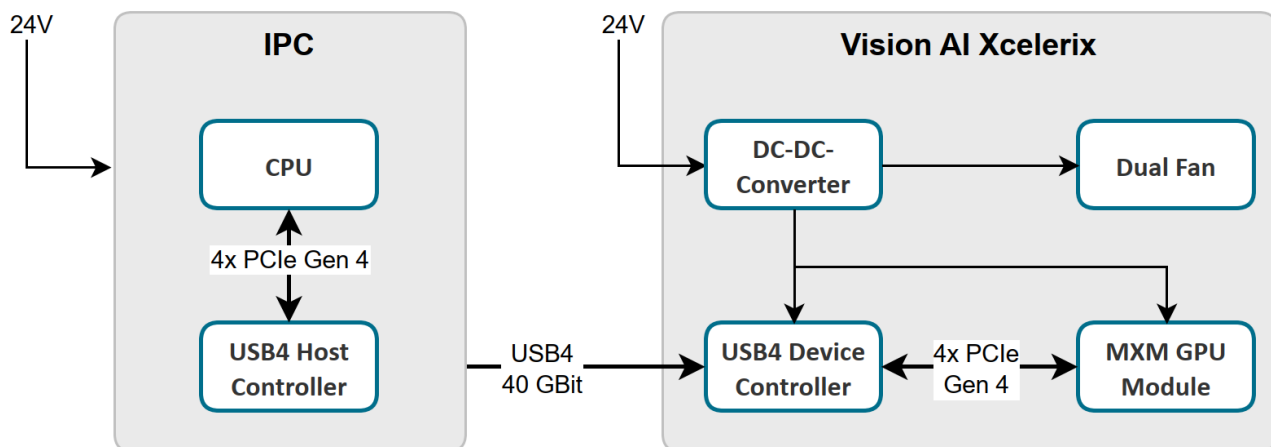


Figure 1: Overview diagram for Xcelerix with IPC

2.2 Configurations

The following table shows the different models of Vision AI Xcelerix:

	RTX Pro 500	RTX Pro 2000	RTX Pro 4000	RTX Pro 5000
Graphics Engine	1792 CUDA Cores GB207-925/ 14 RT Cores/ 56 Tensor Cores	3328 CUDA Cores GB206-950/ 26 RT Cores/ 104 Tensor Cores	7680 CUDA Cores GB203-925/ 60 RT Cores/ 240 Ten- sor Cores	10496 CUDA Cores GB203-952/ 80 RT Cores/ 320 Tensor Cores
Graphic Base Clock	2160 MHz	1522 MHz	1545	1402
Graphic Boost Clock	2565 MHz	2070 MHz	2197	1935
Memory	6GB GDDR7	8GB GDDR7	16GB GDDR7	24GB GDDR7
Memory Clock	12000 MHz	12000 MHz	14000 MHz	14000 MHz
Memory Interface Width	96-bit	128-bit	256-bit	256-bit
Memory Bandwidth (GB/sec)	288	384	896	896
USB4 Bandwidth (Gbit)	40			
OpenGL	>4.1			
OpenCL	3.0			
NVIDIA CUDA Support	yes			
Operation System	Windows 11 and Linux			
Max. MXM Board Power Consumption	60 W		115 W	
Supply Voltage	24 V			
Supply Current at 24 V	2.8 A		5.5 A	

Table 1: Feature overview

2.3 Block Diagrams

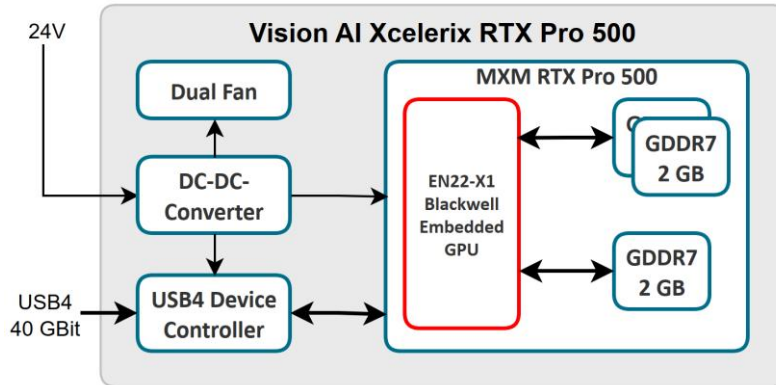


Figure 2: Block diagram Vision AI Xcelerix RTX Pro 500

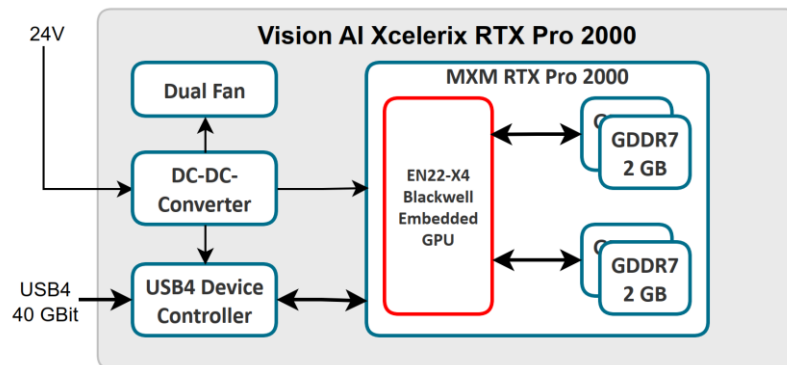


Figure 3: Block diagram Vision AI Xcelerix RTX Pro 2000

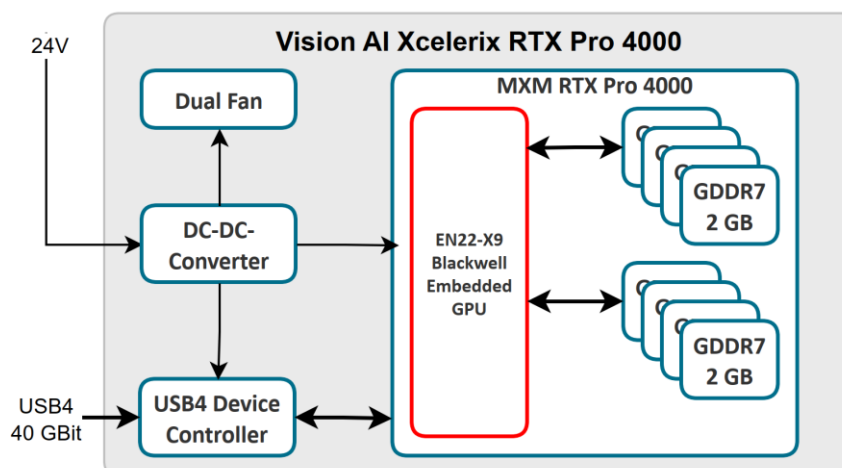


Figure 4: Block diagram Vision AI Xcelerix RTX Pro 4000

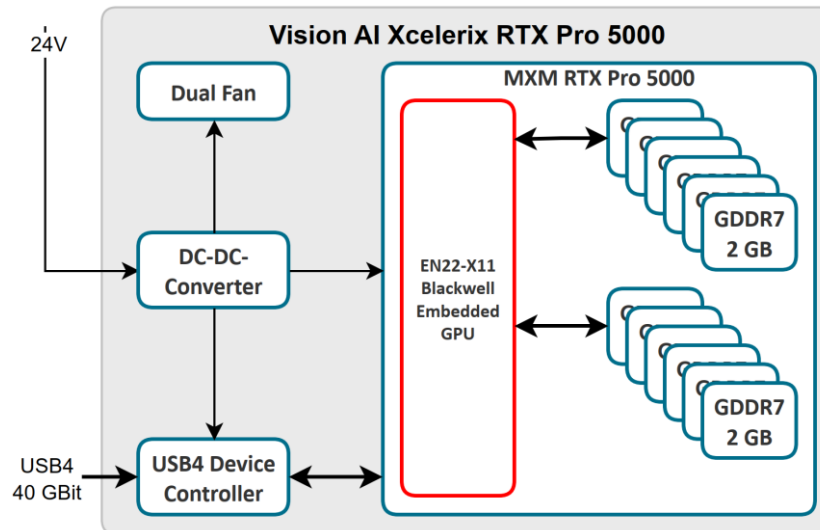


Figure 5: Block diagram Vision AI Xcelerix RTX Pro 5000

2.4 Hardware Naming Scheme

VAIX-AABC			
VAIX-		Product Family Code	
AA	MXM Module Type	05	RTX Pro 500
		20	RTX Pro 2000
		40	RTX Pro 4000
		50	RTX Pro 5000
B	RAM	A	6GB
		B	8GB
		C	16GB
		D	24GB
C	Power	1	70W
		2	110W
		3	125W
		4	160W

3 Operating Conditions

3.1 Power supply:

	RTX Pro 500	RTX Pro 2000	RTX Pro 4000	RTX Pro 5000	UNIT
Power supply	21.6 to 26.1				V
Peak Supply Current (GPU 45W)	Tbd.	3.0	-	-	A
Peak Supply Current (GPU 60W)	Tbd.	3.6	-	-	A
Peak Supply Current (GPU 80W)	-	-	Tbd.	Tbd.	A
Peak Supply Current (GPU 115W)	-	-	Tbd.	Tbd.	A
Typical Supply Current (45W mode)	Tbd.	2.3			A
Typical Supply Current (60W mode)	Tbd.	2.8			A
Typical Supply Current (80W mode)			Tbd.	Tbd.	A
Typical Supply Current (115W mode)			Tbd.	Tbd.	
Max. Continuous Supply Current	2.8	2.8	5.6	5.6	A
Max. Power Consumption	70	70	125	125	W

Table 2: Power Supply

3.2 Environment:

Parameter	Value	Unit
Operating Temperature	+5 ... +40	°C
Operating Humidity, relative, non-condensing	5 ... 85	%
Storage Temperature	-10 ... +70	°C
Storage Humidity, relative, non-condensing	5 ... 95	%
Device Weight	530	g

Table 3: Environment Conditions

3.3 Airflow

It is necessary to allow unrestricted airflow to prevent overheating. Keep the space above the Xcelerx housing free and the space on the front panel surrounding the power supply and USB-C connector.

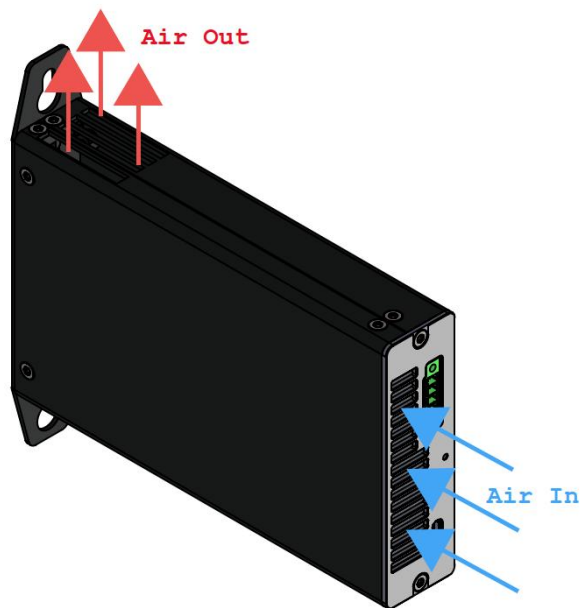


Figure 6: Air Flow

Note: Due to the lifetime of electronic components, we recommend not operating the device permanently under the maximum possible temperature and instead use a lower than max temperature. Laws of physics say: if the average operating temperature is increased by 7°C, the lifespan of an electronic component will be divided in half! Following are common scenarios in industrial applications:

- Multiple devices are mounted inside an electrical cabinet
→ The cabinet itself is equipped with an air conditioner.
- In a large electrical cabinet, a single device is mounted with other (low heat-producing) devices
→ It is enough when a fan provides air circulation inside the cabinet.
- It is recommended that the application software regularly checks internal temperatures.

3.4 Dimensions

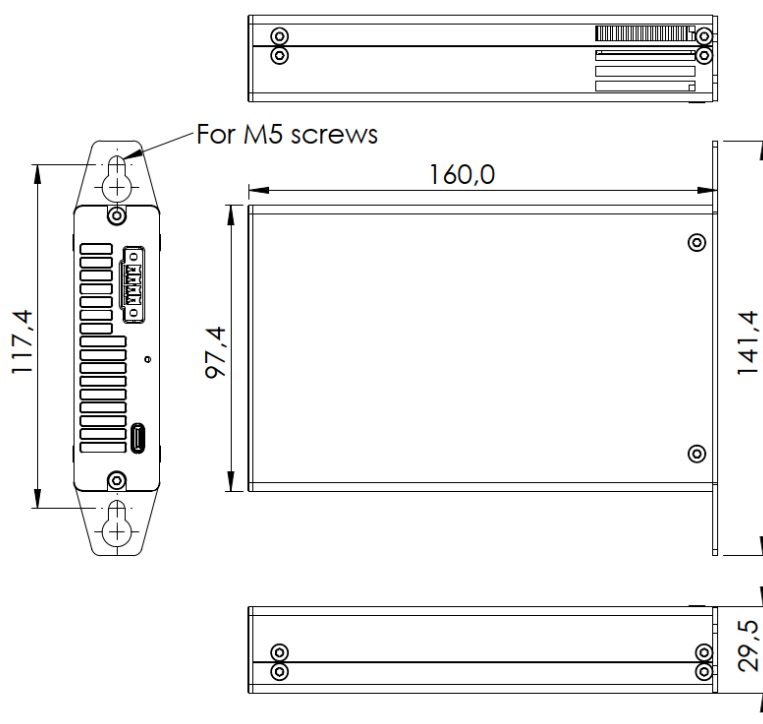


Figure 7: Housing dimensions (in mm)

4 Power Connector

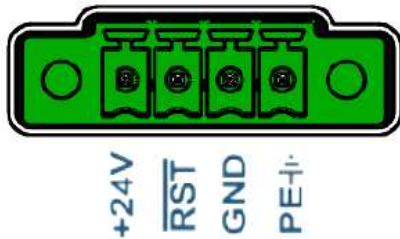


Figure 8: Power plug

Pin	Function
+24V	24 V power supply
RST	Reset input, low active
GND	Ground
PE	Shield / housing connection

Table 4: Power connector

The RST terminal can be pulled to GND to reset Vision AI Xcelerix. A falling edge will trigger the reset. Leaving the signal floating is the default mode for normal operation.

Phoenix Contact plug component: **MC 1,5/4-STF-3,5** (order no. 1847071)

5 USB4 Interface



Figure 9: USB4 / connector

Supported features:

- Up to 40 Gbit/s per port
- Thunderbolt 4 compatible

6 Cooling System

The fans constantly blow air through the heatsink of Vision AI Xcelerix. The life expectancy of the fans depends on the environment temperature.

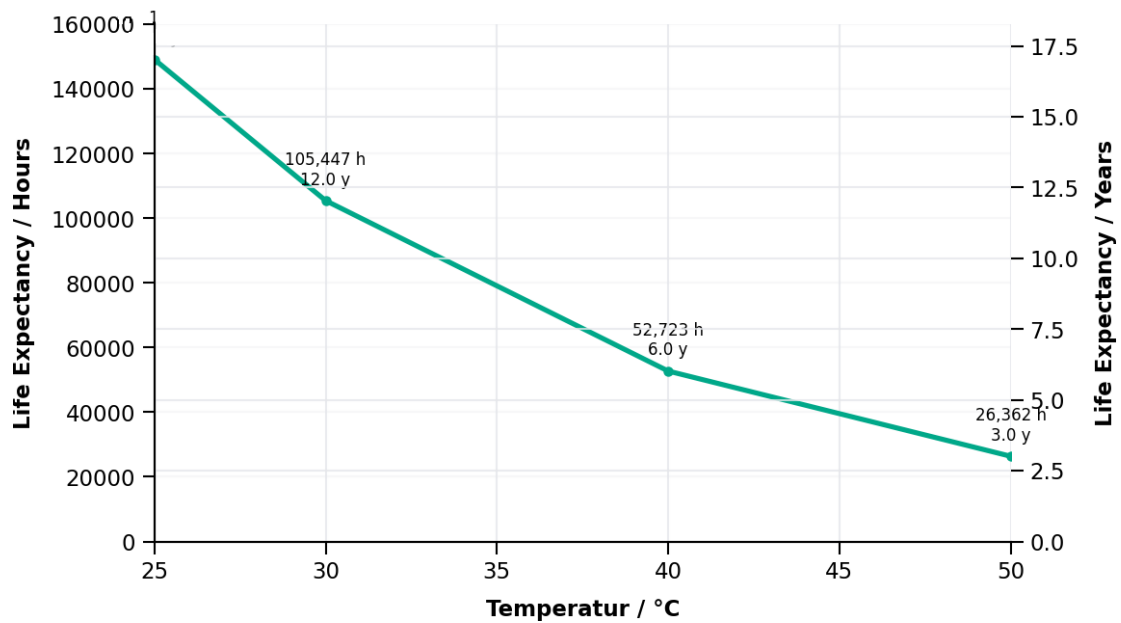


Figure 10: Life Expectancy for fans

Depending on the environment temperature the fans may need replacement in the lifetime of Xcelerix.



When opening the housing, make sure that Vision AI Xcelerix is disconnected from power and USB, interface and your environment is protected against ESD.



Figure 11: Remove front and top cover to access fans.

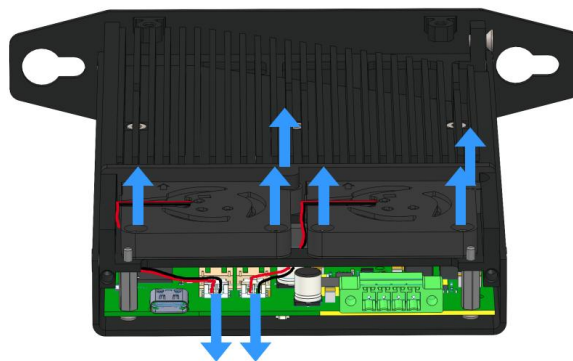


Figure 12: Remove air guide and screws to change fans.

7 Accessories

This list shows some compatible connectors, shells and plugs to support the device interfaces. Typically, the plugs are not included in the device package.

7.1 Third-party Components

Vendor:	Type:	Part Number:	Usage:
Phoenix	MC 1,5 / 4-STF-3,5	1847071	Power connector / camera trigger & LED interface

There is also a connector set with plugs available. Please refer to the following table or ask for more details.

7.2 IMAGO Accessories

Order Number	Description
10100071	Connector set: 1x 4 Pin power connector, 2x 18 Pin I/O
10101975	USB-C cable, 40 Gbit, 30 cm
10101976	USB-C cable, 40 Gbit, 50 cm
10101977	USB-C cable, 40 Gbit, 100 cm
10101922	Fan with connector for Xcelerix.

More accessories and upgrades are available upon request.

8 History

Revision	Date	Changes	Initials
0.9	09.2026	First version	Ab