AMAX-7580 V2

Intel® Core™ IPC Controller



Features

- Optimized BIOS & Embedded OS for real-time control (Windows and Linux)
- Achieve 64-axis motion control with 500 µs EtherCAT cycle time under Linux
- OPC UA and Modbus TCP/RTU as IT connectivity enabled by CODESYS
- EtherCAT, Profinet, Ethernet I/P, CANopen as OT connectivity enabled by CODESYS
- Unlimited I/O points, fieldbus networks, and visualization variables for CODESYS applications
- CODESYS Visualization (Target and Web), SoftMotion and CNC/Robotics support by different package
- Advantech Data Connect (ADC) Library provides flexible and highly efficient data connection with 3rd party application software through symbols (PLC Handler) & shared memory (C++/C#)
- 13th Generation Intel® Core™ i7/i5 Processor with 8GB DDR5 memory
- Port isolation for 8 x DI, 8 x DO, 4 x COM
- Retain memory for CODESYS data retention function (optionally installation)
- Modular design for optional CODESYS-Ready iDoor extension
- Onboard TPM 2.0 provides hardware-based security
- Compliance with UL 61010-2 standard

Windows 10 Enterprise LTSC

Real-time Ubuntu

Introduction

AMAX-7580 V2, an Intel® Core™ IPC controller by a 13th generation processor, is designed for all IoT control requirement. Each AMAX control platform is system-level optimized (1ms real-time with low jitter) to provide good real-time environment for running CODESYS Softlogic under Windows OS and Linux OS respectively. The AMAX control platform will come with pre-install CODESYS license to enable EtherCAT for OT networks, and supports Modbus, OPC UA and MQTT for IT networks. With optional NVRAM installation, the data retention feature can be reliably executed while running CODESYS. Moreover, Advantech also provide flexible expansion modules, such as EtherCAT I/O from the Slice I/O series & Block I/O series and CODESYS-ready i-Door.

AMAX delivers a diverse array of control systems in various form factors tailored to meet the demands of different application scenarios.

Hardware Specifications

Part Number		AMAX-7580-100D5A AMAX-7580-102D5A AMAX-7580-106D5A AMAX-7580-108D5A AMAX-7580-200D5A AMAX-7580-202D5A AMAX-7580-206D5A AMAX-7580-208D5A	AMAX-7580-100D7A AMAX-7580-102D7A AMAX-7580-106D7A AMAX-7580-108D7A AMAX-7580-200D7A AMAX-7580-202D7A AMAX-7580-206D7A AMAX-7580-208D7A
System Hardware	Processor	Intel® Core™ i5-1335UE 1.3GHz, 2P8E, 12MB SmartCache	Intel® Core™ i7-1365UE 1.7GHz, 2P8E, 12MB SmartCache
	BIOS	Optimized BIOS for real-time performance	
	Memory	8 GB DDR5 SODIMM-4800 (up to 64 GB with 2 x slots)	
	Storage	2 x M.2 M 2280 key NVME optional	
	Retain Memory	Optional, PCM-2300MR-BE (4MB) for CODESYS Retain/Persistence	
	Ethernet	Intel® i219-LM GbE (LAN A) Intel® i226-IT GbE (LAN B/C)	
	LED Indicator	LEDs for power, RUN (CODESYS program run)	
	Expansion	Optional, 1 x iDoor & 1 x 2.5" SSD extension module (UNO-148-IS2EA)	
I/O Interface	Local Digital I/O	8DI/8DO, isolated 2500V_{DC}	
	Seriel Port	4 x RS-232/422/485 (Terminal), 50 ~ 115.2kbp, isolated 2500VDC	
	LAN Port	1 x 10/100/1000BASE-T Fast Ethernet (RJ45) 2 x 10/100/1000/2500BASE-T Fast Ethernet (RJ45)	
	USB Port	2 x USB 3.2 (Gen2), 1 x USB 3.2 (Gen1), 1 x USB 2.0	
	Display	2 x DP 1.4, up to 3840 x 2160 (4K) @ 60 Hz	
	Grounding Protection	Chassis grounding	
	Power Connector	1 x 2 pin	

Note. LAN A not supported EtherCAT at WinRTE

All product specifications are subject to change without notice.

Hardware Specifications (Cont.)

General	OS Support	Win10 2021 LTSC 64bits / Win11 2024 LTSC 64bits AdvLinuxTU V4 64bit (EdgeLinux 22.04)
	Power Requirements	10~36V_{DC}
	Power Consumption	41W (typical), 63W (max.)
	Enclosure	Aluminum alloy housing
	Mounting	DIN-rail
	Weight (Net)	Approximate 1.8kg
	Dimensions (W x D x H)	53 x 140 x 200 mm
	Certification	CE, FCC, UL 61010-2-201, CCC, BSMI
Environment	Operating Temperature	For TDP @ 15W, -20 ~ 60 °C/-4 ~ 140 °F with 0.7 m/s airflow
	Storage Temperature	-40 ~ 85°C (-40 ~ 185°F)
	Relative Humidity	10 ~ 95% RH @ 40°C, non-condensing
	Shock Protection	Operating, IEC 60068-2-27, 50G, half sine, 11 ms
	Vibration	Operating, IEC 60068-2-64, 2 Grms, random, 5 ~ 500 Hz, 1hr/axis (SSD)

CODESYS Package for Windows

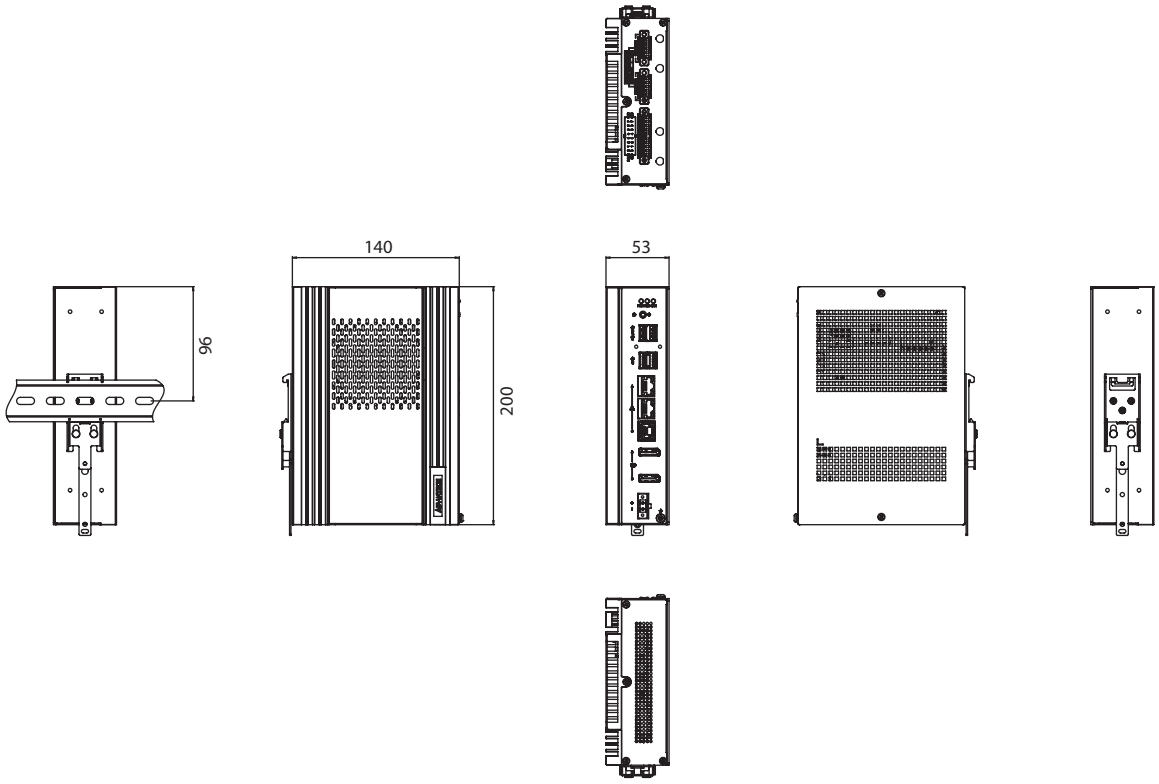
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CODESYS Basic Run Time	Runtime	CODESYS Control RTE V3.5 SP20			
	OT Network	EtherCAT MainDevice, Profinet Controller CIFX, Ethernet I/P Scanner CIFX, CANopen Manager			
	IT Network	Modbus/TCP Client and Server, Modbus/RTU Client, OPC UA Server			
	EtherCAT I/O Connection	No I/O Points Limitation			
CODESYS HMI	Visualization	N/A	Target Visualization (TV, Local HMI) & Web Visualization (WV, Web Browser).		
	Tags		Unlimited tags		
CODESYS SoftMotion	Motion Control Benchmark	N/A		32 axis with 1ms cycle time Tested under INTEL CPU P-core, Windows CODESYS, EtherCAT CSP mode, PTP (point-to-point) command	
	EtherCAT Servo Connection			No Axes Limitation in EtherCAT Servo Drive connections.	
CODESYS CNC & Robotics	CNC Interpolator	N/A	N/A	N/A	No axes interpolation limitations

CODESYS Package for Linux

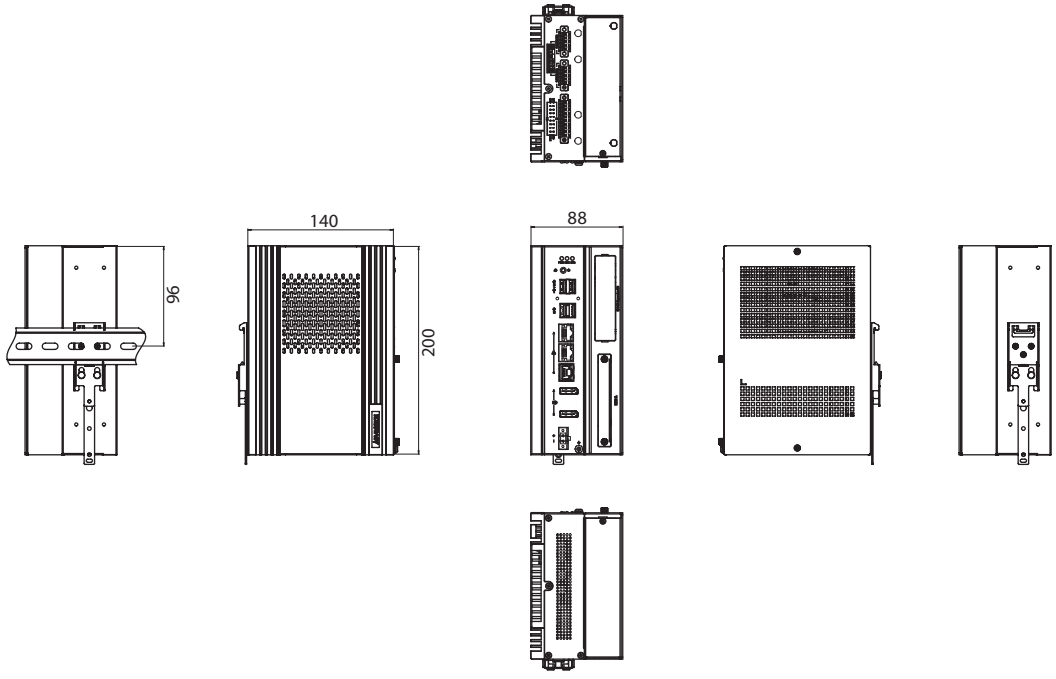
Part Number		AMAX-7580-200D5A AMAX-7580-200D7A	AMAX-7580-202D5A AMAX-7580-202D7A	AMAX-7580-206D5A AMAX-7580-206D7A	AMAX-7580-208D5A AMAX-7580-208D7A
CODESYS Basic Run Time	Runtime	CODESYS Linux Control V3 SP20			
	OT Network	EtherCAT MainDevice, PROFINET IO-Controller, Ethernet I/P Scanner (Master), CANopen Manager			
	IT Network	Modbus/TCP Client and Server, Modbus/RTU Client, OPC UA Server			
	EtherCAT I/O Connection	No I/O Points Limitation			
CODESYS HMI	Visualization	N/A	Web Visualization (WV, Web Browser)		
	Tags		Unlimited tags		
CODESYS SoftMotion	Motion Control Benchmark	N/A	N/A	64 axis with 500 µs cycle time [Tested under Linux CODESYS, EtherCAT CSP mode, PTP (point-to-point) command]	
	EtherCAT Servo Connection			No Axes Limitation in EtherCAT Servo Drive connections.	
CODESYS CNC & Robotics	CNC Interpolator	N/A	N/A	N/A	No axes interpolation limitations.

Dimensions

Unit: mm



(With optional extension kit)



Ordering Information

Below part number is ONLY controller platform with CODESYS license sticker. All working systems shipment shall **follow BTO process to complete the accessories selection, OS installation and CODESYS activation**.

P/N	Descriptio
AMAX-7580-100D5A	Intel IPC Controller, Intel Core i5-1335UE,Win CDS Control
AMAX-7580-102D5A	Intel IPC Controller, Intel Core i5-1335UE,Win CDS Control+Target/WebVisu
AMAX-7580-106D5A	Intel IPC Controller, Intel Core i5-1335UE,Win CDS Control+Target/WebVisu+SoftMotion
AMAX-7580-108D5A	Intel IPC Controller, Intel Core i5-1335UE,Win CDS Control+Target/WebVisu+SoftMotion+CNC & Robotics
AMAX-7580-100D7A	Intel IPC Controller, Intel Core i7-1365UE,Win CDS Control
AMAX-7580-102D7A	Intel IPC Controller, Intel Core i7-1365UE,Win CDS Control+Target/WebVisu
AMAX-7580-106D7A	Intel IPC Controller, Intel Core i7-1365UE,Win CDS Control+Target/WebVisu+SoftMotion
AMAX-7580-108D7A	Intel IPC Controller, Intel Core i7-1365UE,Win CDS Control+Target/WebVisu+SoftMotion+CNC & Robotics

P/N	Description
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AMAX-7580-208D7A	Intel IPC Controller, Intel Core i7-1365UE, linux CDS Control+WebVisu+SoftMotion+CNC&Robotics

AMAX Assembly Accessories

M.2 Mkey NVMe Storage Module

- **SQF-C8MV2-128GDEDM** SQF PCIe/NVMe Gen.3 M.2 2280 OPAL 720-D 128G 3D TLC BiCS5 (-20~85°C)
- **SQF-C8MV2-256GDEDM** SQF PCIe/NVMe Gen.3 M.2 2280 OPAL 720-D 256G 3D TLC BiCS5 (-20~85°C)
- **SQF-C8MV2-512GDEDM** SQF PCIe/NVMe Gen.3 M.2 2280 OPAL 720-D 512G 3D TLC BiCS5 (-20~85°C)
- **SQF-C8MV4-1TDEDM** SQF PCIe/NVMe Gen.3 M.2 2280 OPAL 720-D 1T 3D TLC BiCS5 (-20~85°C)
- **SQF-C8MV4-2TDEDM** SQF PCIe/NVMe Gen.3 M.2 2280 OPAL 720-D 2T 3D TLC BiCS5 (-20~85°C)
- **SQF-C8MV2-128GDEDE** SQF PCIe/NVMe Gen.3 M.2 2280 OPAL 720-D 128G 3D TLC BiCS5 (-40~85°C)
- **SQF-C8MV2-256GDEDE** SQF PCIe/NVMe Gen.3 M.2 2280 OPAL 720-D 256G 3D TLC BiCS5 (-40~85°C)
- **SQF-C8MV2-512GDEDE** SQF PCIe/NVMe Gen.3 M.2 2280 OPAL 720-D 512G 3D TLC BiCS5 (-40~85°C)
- **SQF-C8MV4-1TDEDE** SQF PCIe/NVMe Gen.3 M.2 2280 OPAL 720-D 1T 3D TLC BiCS5 (-40~85°C)
- **SQF-C8MV4-2TDEDE** SQF PCIe/NVMe Gen.3 M.2 2280 OPAL 720-D 2T 3D TLC BiCS5 (-40~85°C)

NVRAM Module

- **PCM-2300MR-BE** 4MB MRAM, mPCIE interface

Embedded OS

- **20701WX1HS0011** Img W10 LTSC x64 v6.09 B013 for UNO-148_V2 High
- **20701WX1VS0011** Img W10 LTSC x64 v6.09 B013 for UNO-148_V2 Value
- **20701U22DS0013** Image AdvLinuxTu-IOTG_x64 V4.3.5 for UNO1 series

Windows Real-Time Control Software (CODESYS RTE)

- **32OTADVWX86004** Software CODESYS WRTE Driver V3.5.2010.2

Linux Real-Time Control Software (CODESYS Control V3 for Linux)

- **32OTADVLX86004** SW CDS x86Linux Driver V3.5.20P4.2098(w/o TV)

Optional Accessories

iDoor Expansion (M.2 B+M) For AMAX-7580 (add UNO-148-IS2EA)

- **PCM-37D24DI-AE** 24ch Isolation Digital I/O, 16DI/ 8DO, DB37 x1
- **PCM-34D2R2-AE** Isolated RS-232, DB9 x2, M.2 Bkey(2242, USB)
- **PCM-34D2R4-AE** Isolated RS-422/485, DB9 x2, M.2 Bkey(2242, USB)
- **PCM-34R2GL-AE** 2 Port Giga LAN Intel i350, M.2 B+M key

Note: These listed iDoor modules are supported by Advantech CODESYS run time. For other iDoor support, please contact Advantech.

DIN-Rail Type Power Supply Module

- **96PSD-A120W24-DL** DIN RAIL A/D 100-240V 120W 24V
- **96PSD-A240W24-DF** DIN RAIL A/D 100-240V 240W 24V
- **PSD-A120W24** A/D 100-240V 120W 24V

System Fan kit

- **98R1U148201** UNO-148 V2-FAN KIT

Thermal kit

- **98R1U148200** Thermal kit for UNO-148V2 add-on NVME

(recommend: 256GB/above with 0.7 m/s airflow or any capacity w/o airflow)

- **98R1U148202** Thermal kit for UNO-148V2 2nd RAM (16GB/below)
- **98R1U148203** Thermal kit for UNO-148V2 2nd RAM (32GB/above)

Extension kit for iDoor module and SSD/HDD

- **UNO-148-IS2EA** 2nd Stack extension kit with 1 x iDoor slot + 1 x 2.5" SSD/HDD slot