AMAX-5580

Intel® Core™ / Celeron® Embedded Controller

Features

- Optimized BIOS & Emb. OS for 1ms real-time control (Windows and Linux)
- Achieve 64-axis motion control with 1ms EtherCAT cycle time under Windows (applies to AMAX-5580 Core i processor)
- OPC UA and Modbus TCP/RTU as IT connectivity enabled by CODESYS
- EtherCAT, PROFIT, 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#)
- Intel® Core™ i7/i5/Celeron® with 8GB/4GB DDR4 memory
- System I/O with 2 x GbE, 4 x USB 3.0, 2 x COM, 1 x HDMI, 1 x VGA, 1 x 7 pin terminal (dual power input with alarm output)
- Retain memory for CODESYS data retention function (optionally installation)
- AMAX-5000 EtherCAT Slice I/O expansion and AMAX-5400 PCIe modules, optional for left side (maximum 4)
- CB/UL 62368 certified for industrial applications

Introduction

AMAX-5580, an Intel® Core™ i Embedded Controller, is designed for all IoT control requirement. Each AMAX control platform is system-level optimized (1ms real-time with low jitter) to provide a robust real-time environment for running CODESYS Softlogic under Windows OS and Linux OS respectively. The AMAX control platform will pre-install a 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 provides flexible expansion modules, such as EtherCAT I/O from the Slice I/O series and Block I/O series, CODESYS-ready i-Door and embedded PCI express modules or iDAQ modules (only available for the AMAX Embedded Controller).

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

Hardware Specifications

		AMAX-5580-1006CA AMAX-5580-1026CA AMAX-5580-1066CA AMAX-5580-2006CA AMAX-5580-2026CA AMAX-5580-2066CA AMAX-5580-2086CA	AMAX-5580-10065A AMAX-5580-10265A AMAX-5580-10665A AMAX-5580-20065A AMAX-5580-20265A AMAX-5580-20665A AMAX-5580-20865A	AMAX-5580-10067A AMAX-5580-10267A AMAX-5580-10667A AMAX-5580-20067A AMAX-5580-20267A AMAX-5580-20667A AMAX-5580-20867A
Part Number				
System Hardware	Processor	Intel® Celeron® 3955U 2.0GHz, Dual Core, 2MB L2	Intel® Core™ i5-6300U 2.4GHz, Dual Core, 3MB L2	Intel® Core™ i7-6600U 2.6GHz, Dual Core, 4MB L2
	BIOS	AMI EFI 128Mbit Flash BIOS		
	Memory	On-board 4GB	On-board 8GB	On-board 8GB
	Storage	1 x M.2 M 2280 key SATA optional		
	Retain Memory	Optional, PCM-2300MR-BE (4MB) for CODESYS Retain/Persistence		
	Ethernet	Intel® i210-IT GbE (LAN1/2) Intel® i210-IT GbE (For AMAX-5000 Slice I/O Connection)		
	LED Indicator	LEDs for Power, Storage, RUN (CODESYS program run), 1 x prog. Error, 2 x Prog. LED, 1 x Over Temp., 1 x ERR VOL (dual power), 1 x RTC battery LED		
	Expansion	1 x full-size mini PCIe (PCIe/USB2.0) AMAX-5400 PCIe modules, optional for left side (max.4) AMAX-5000 Slice I/O modules, optional for right side		
I/O Interface	Local Digital I/O	N/A	N/A	N/A
	Seriel Port	2 x RS-232/422/485 (DB9), 50 ~ 115.2kbps		
	LAN Port	2 x 10/100/1000BASE-T Fast Ethernet (RJ45)		
	USB Port	4 x USB 3.0, 1 x internal USB 2.0		
	Display	1 x VGA, supports up to 1920 x 1200 @60Hz 1 x HDMI, supports up to 4096 x 2160 @24Hz		
	Grounding Protection	Chassis grounding		
	Power Connector	1 x 7 pin, dual power input with alarm output		

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Hardware Specifications (Cont.)

General	OS Support	Win10 LTSC 2019 LTSC 64 bit AdvLinuxTU v2.0.5.4 64 bit (Ubuntu 18)
	Power Requirements	24 V_{DC} ± 20%
	Power Consumption	42W (typical), 120W (Max)
	Enclosure	Aluminum and Ziny alloy housing
	Mounting	DIN-rail
	Weight (Net)	Approx. 1.3kg
	Dimensions (W x D x H)	139 x 80 x 100mm
	Certification	CE, FCC, CB/UL62368
Environment	Operating Temperature	–10 ~ 60°C (14 ~ 140°F)
	Storage Temperature	–40 ~ 85°C (–40 ~ 185°F)
	Relative Humidity	10 ~ 95% RH @ 40°C, non-condensing
	Shock Protection	Operating, IEC 60068-2-27, 10G, half sine, 11 ms (SSD)
	Vibration	Operating, IEC 60068-2-64, 1 Grms, random, 5 ~ 500 Hz, 1hr/axis (SSD)

CODESYS Package for Windows

Part Number		AMAX-5580-1006CA AMAX-5580-10065A AMAX-5580-10067A	AMAX-5580-1026CA AMAX-5580-10265A AMAX-5580-10267A	AMAX-5580-1066CA AMAX-5580-10665A AMAX-5580-10667A
CODESYS Basic Run Time	Runtime	CODESYS Control RTE V3.5 SP20		
	OT Network	EtherCAT MainDevice, PROFINET IO-Controller, EtherNet/IP Scanner (IEC/CIFX), PROFIBUS Master & CANopen Manager (Driver from netX of Hilscher®)		
	IT Network	Modbus TCP Client / Server, Modbus RTU Client, OPC UA Server, MQTT (Sparkplug), ODBC for Database (via Advantech CODESYS package)		
	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	N/A	64 axis with 1ms cycle time (valid for AMAX-5580 Core I Processor) [Tested under 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	Additionally order P/N: 36OTCDSW0CNCA0 to support CNC & Robotics package

CODESYS Package for Linux

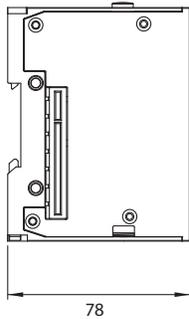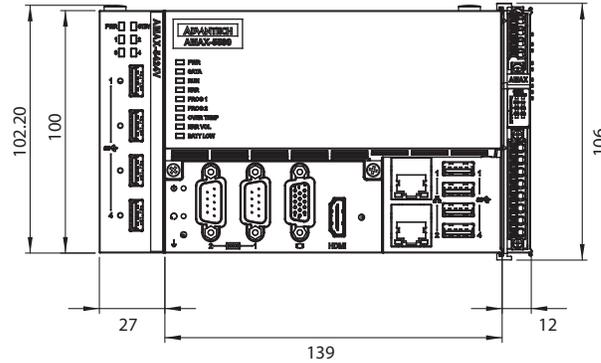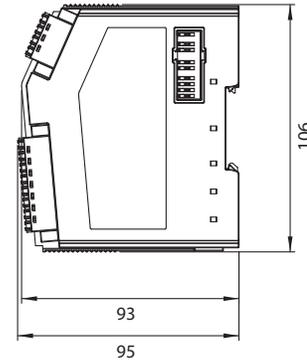|					
Part Number		AMAX-5580-2006CA AMAX-5580-20065A AMAX-5580-20067A	AMAX-5580-2026CA AMAX-5580-20265A AMAX-5580-20267A	AMAX-5580-2066CA AMAX-5580-20665A AMAX-5580-20667A	AMAX-5580-2086CA AMAX-5580-20865A AMAX-5580-20867A
CODESYS Basic Run Time	Runtime	CODESYS Linux Control V3 SP20			
	OT Network	EtherCAT 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	128 axis with 1m cycle time (valid for AMAX-5580 Core I Processor) [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

AMAX-5400 Series Expansion   AMAX-5580 CPU Module   AMAX-5000 EtherCAT Slice IO

Ordering Information

AMAX Pure HW Platform

P/N	Description
AMAX-5580-C3000A	Intel 6th Corei Control Platform, U3955, 4G, 2LAN2COM, BareBOM
AMAX-5580-54000A	Intel 6th Corei Control Platform, i5-6300U, 8G, 2LAN2COM, BareBOM
AMAX-5580-74000A	Intel 6th Corei Control Platform, i7-6600U, 8G, 2LAN2COM, BareBOM

AMAX CODESYS Controller

P/N	Description
AMAX-5580-1006CA	Intel Embedded Controller,Celeron-3955U, Win CDS Control
AMAX-5580-1026CA	Intel Embedded Controller,Celeron-3955U, Win CDS Control+Target/Web Visu
AMAX-5580-1066CA	Intel Embedded Controller,Celeron-3955U, Win CDS Control+Target/Web Visu+SoftMotion
AMAX-5580-10065A	Intel Embedded Controller,i5-6300U, Win CDS Control
AMAX-5580-10265A	Intel Embedded Controller,i5-6300U, Win CDS Control+Target/Web Visu
AMAX-5580-10665A	Intel Embedded Controller,i5-6300U, Win CDS Control+Target/Web Visu+SoftMotion
AMAX-5580-10067A	Intel Embedded Controller,i7-6600U, Win CDS Control
AMAX-5580-10267A	Intel Embedded Controller,i7-6600U, Win CDS Control+Target/Web Visu
AMAX-5580-10667A	Intel Embedded Controller,i7-6600U, Win CDS Control+Target/Web Visu+SoftMotion

P/N	Description
AMAX-5580-2006CA	Intel Embedded Controller,Celeron-3955U, Linux CDS Control
AMAX-5580-2026CA	Intel Embedded Controller,Celeron-3955U, Linux CDS Control+Web Visu
AMAX-5580-2066CA	Intel Embedded Controller,Celeron-3955U, Linux CDS Control+Web Visu+SoftMotion
AMAX-5580-2086CA	Intel Embedded Controller,Celeron-3955U, Linux CDS Control+Web Visu+SoftMotion+CNC&Robotics
AMAX-5580-20065A	Intel Embedded Controller,i5-6300U, Linux CDS Control
AMAX-5580-20265A	Intel Embedded Controller,i5-6300U, Linux CDS Control+Web Visu
AMAX-5580-20665A	Intel Embedded Controller,i5-6300U, Linux CDS Control+Web Visu+SoftMotion
AMAX-5580-20865A	Intel Embedded Controller,i5-6300U, Linux CDS Control+Web Visu+SoftMotion+CNC&Robotics
AMAX-5580-20067A	Intel Embedded Controller,i7-6600U, Linux CDS Control
AMAX-5580-20267A	Intel Embedded Controller,i7-6600U, Linux CDS Control+Web Visu
AMAX-5580-20667A	Intel Embedded Controller,i7-6600U, Linux CDS Control+Web Visu+SoftMotion
AMAX-5580-20867A	Intel Embedded Controller,i7-6600U, Linux CDS Control+Web Visu+SoftMotion+CNC&Robotics

AMAX Assembly Accessories

M.2 Mkey SATA Storage Module

- **SQF-S8BV1-64GDSDM**   SQF SATA M.2 2280 650-D 64G 3D TLC BiCS5 (-20~85°C)
- **SQF-S8BV1-128GDSDM**   SQF SATA M.2 2280 650-D 128G 3D TLC BiCS5 (-20~85°C)
- **SQF-S8BV1-256GDSDM**   SQF SATA M.2 2280 650-D 256G 3D TLC BiCS5 (-20~85°C)
- **SQF-S8BV2-512GDSDM**   SQF SATA M.2 2280 650-D 512G 3D TLC BiCS5 (-20~85°C)
- **SQF-S8BV4-1TDSDM**   SQF SATA M.2 2280 650-D 1T 3D TLC BiCS5 (-20~85°C)
- **SQF-S8BV4-2TDSDM**   SQF SATA M.2 2280 650-D 2T 3D TLC BiCS5 (-20~85°C)
- **SQF-S8BV1-64GDSDE**   SQF SATA M.2 2280 650-D 64G 3D TLC BiCS5 (-40~85°C)
- **SQF-S8BV1-128GDSDE**   SQF SATA M.2 2280 650-D 128G 3D TLC BiCS5 (-40~85°C)
- **SQF-S8BV1-256GDSDE**   SQF SATA M.2 2280 650-D 256G 3D TLC BiCS5 (-40~85°C)
- **SQF-S8BV2-512GDSDE**   SQF SATA M.2 2280 650-D 512G 3D TLC BiCS5 (-40~85°C)
- **SQF-S8BV4-1TDSDE**   SQF SATA M.2 2280 650-D 1T 3D TLC BiCS5 (-40~85°C)
- **SQF-S8BV4-2TDSDE**   SQF SATA M.2 2280 650-D 2T 3D TLC BiCS5 (-40~85°C)

NVRAM Module

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

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

Embedded OS

- **20703WX9HS0034**   Win10 LTSC 2019 x64 AMAX-5580 (i7)
- **20703WX9VS0038**   Win10 LTSC 2019 x64 AMAX-5580 (i5)
- **20704WX9ES0001**   Win10 LTSC 2019 x64 AMAX-5580 (Celeron)
- **20704U20DS0007**   Image AdvLinuxTu_x64 V3.4.1 for AMAX 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)

- **32OTADVLX86001**   SW CDS x86Linux Driver V3.5.20P4.2090(w/ TV)
- **32OTADVLX86002**   SW CDS x86Linux Driver V3.5.20P4.2090(w/o TV)

Optional Expansion Modules

AMAX-5400 PCIe Expansion Module (left side)

- **AMAX-5410**   2 x GigE expansion module
- **AMAX-5490**   2 x isolated RS-232/422/485
- **AMAX-5495**   2 x CAN module