

# AMAX-5580

## Intel® Core™ i7/i5/Celeron® Control IPC With EtherCAT Slice IO Expansion



### Features

- 6th generation Intel® Core™ i7/i5/Celeron processors up to 2.6 GHz with 4GB/8GB DDR4 memory
- 2 x GbE, 4 x USB 3.0, 2 x RS-232 /422/485, 1 x VGA, 1 x HDMI
- Dual power input with alarm output
- Compact and fanless design for DIN-rail mount in Control cabinet
- Maximum 4 expansion capability on left side for AMAX-54XX series module
- Wireless mPCIe module support for 3G/LTE/Wifi/GPS
- Chassis grounding protection
- Independent resource on Intel i210 GbE for better EtherCAT performance
- Upstream LAN redundancy (Intel Teaming Function)
- Downstream EtherCAT cable redundancy
- Optimized BIOS for CODESYS Real-time Control Kernel

### Introduction

Advantech's AMAX-5580 is a compact and powerful Control IPC with an Intel Core i7/i5/Celeron CPU. It is the ideal open control platform to be combined with AMAX-5000 Series EtherCAT Slice IO modules, and features flexible I/O expansion, real-time I/O control, network capability through various interfaces, and support dual power input for robust power system. It also has a built-in standard mini PCI express interface for wireless communication. The AMAX-5580 is the best solution for data gateway, concentrator and data server applications, its seamless integration with I/O can save costs and fulfill a diverse range of automation projects.

### Specifications

#### General

- **Certification** CE, FCC, UL
- **Dimensions (W x H x D)** 139 x 100 x 80 mm
- **Form Factor** Passive Cooling and Front Accessible
- **Enclosure** Aluminum housing
- **Mounting** DIN-rail
- **Weight (Net)** 1.3 kg
- **Power Requirement** 24 V<sub>DC</sub> ± 20%
- **Power Consumption** 15 W (Typical), 42 W (Max)
- **OS Support** Microsoft® Windows 7 32/64 bit, Windows 10 64bit

#### System Hardware

- **BIOS** AMI EFI 128Mbit Flash BIOS
- **Watchdog Timer** Programmable 255 levels timer interval, from 1 to 255 sec
- **Processor** Intel® Core™ i7-6600U 2.6GHz Skylake Dual Core, 4MB L2  
Intel® Core™ i5-6300U 2.4GHz Skylake Dual Core, 3MB L2  
Intel® Celeron 3955U 2.0GHz Skylake Dual Core, 2MB L2 Integrated PCH-LP
- **System Chip** Intel® Gen 9 LP GT2
- **Memory** Dual Channel DDR4, Build in 4G for Celeron, 8G for Core i5/i7
- **Graphics Engine** Intel® Gen 9 LP GT2
- **Ethernet** Intel® i210-IT GbE, 802.1Qav, IEEE1588/802.1AS, 802.3az
- **LED Indicators** LEDs for Power, Storage, Program and Abnormal status
- **Storage** 1 x M.2, 2280 M-Key
- **Expansion** 1x Full-size mPCIe Slot, for wireless module or NVRAM module  
AMAX-5400 function modules expansion from left side (max. 4)  
AMAX-5000 EtherCAT Slice IO from right side

#### I/O Interfaces

- **Serial Ports** 2 x RS-232/422/485, DB9, 50 ~ 115.2kbps
- **LAN Ports** 2 x RJ45, 10/100/1000 Mbps IEEE 802.3u 1000BASE-T Fast Ethernet
- **USB Ports** 4 x USB ports (4 x USB 3.0 compliant )  
1 x internal USB
- **Display** 1 x VGA, support up to 1920 x 1200 @ 60 Hz 24 bpp  
1 x HDMI, support up to 4096 x 2160 @ 24Hz 24bpp

- **Power Connector** Dual power input with alarm output
- **Grounding Protection** Chassis grounding

#### Environment

- **Operating Temperature** -10 ~ 60°C (-4 ~ 140°F) @ 5 ~ 85% RH with 0.7m/s airflow
- **Storage Temperature** -40 ~ 85°C (-40 ~ 185°F)
- **Relative Humidity** 95% RH @ 40°C, non-condensing
- **Shock Protection** Operating, IEC 60068-2-27, 10G, half sine, 11 ms
- **Vibration Protection** Operating, IEC 60068-2-64, 1 Grms, random, 5 ~ 500 Hz, 1hr/axis (M.2)

### Application Software

#### IEC-61131-3 Control Software: CODESYS RTE V3

#### Performance Data (1000 IL-Lines )

- **BOOL** 2.736 μs
- **BYTE** 2.736 μs
- **INT** 3.054 μs
- **DINT** 2.736 μs
- **REAL** 4.472 μs

#### Upstream Communication Function

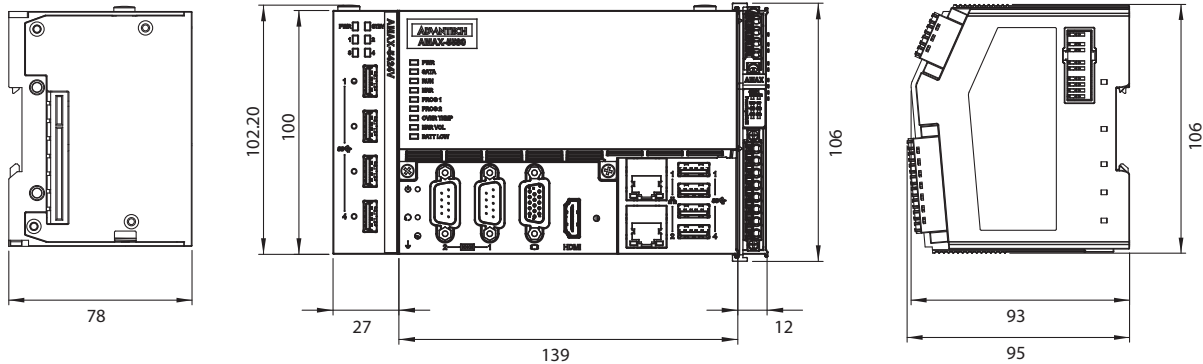
- Advantech Direct Database connection (FBD)
- OPC/DA & OPC/UA Server (supported after SP13)
- PLCHandle Driver for WebAccess
- Advantech MQTT Agent
- Advantech Data Connect (API)

#### Downstream Communication Protocols

- EtherCAT Master
- MODBUS/RTU Master (Client)
- MODBUS/TCP Master (Client) and Slave
- PROFINET Master
- ETHERNET/IP Master
- CANopen

## Dimensions

Unit: mm



AMAX-5400 Series Expansion

AMAX-5580 CPU Module

AMAX-5000 EtherCAT Slice IO

## Ordering Information

AMAX-5580 is an open-based controller and there are many combinations for different CPU/RAM/OS/Applications. To provide better user experience, those diverse configurations are converged into below part numbers in different product category. With these well integrated SRP offering, user will have better L/T for sample testing.

| Category             | Part Number        | CPU     | RAM | Storage | OS          | NVRAM | Application                       |
|----------------------|--------------------|---------|-----|---------|-------------|-------|-----------------------------------|
| Control IPC Barebone | AMAX-5580-C3000A   | Celeron | 4G  | -       | -           | -     | -                                 |
|                      | AMAX-5580-54000A   | i5      | 8G  | -       | -           | -     | -                                 |
|                      | AMAX-5580-74000A   | i7      | 8G  | -       | -           | -     | -                                 |
| CODESYS ready PAC    | ESRP-SCS-W5580-CR0 | Celeron | 4G  | 64G SSD | WIN7 64-bit | 2M    | CODESYS V3 Pure Control           |
|                      | ESRP-SCS-W5580-5M1 | i5      | 8G  | 64G SSD | WIN7 64-bit | 2M    | CODESYS V3 P2P Motion w/ HMI      |
|                      | ESRP-SCS-W5580-7C1 | i7      | 8G  | 64G SSD | WIN7 64-bit | 2M    | CODESYS V3 Advanced Motion w/ HMI |

## Accessories

### M.2 Storage Module

- SQF-SM8U2-32G-SBE** SQF M.2 2280 640 32G UMLC (-40~85°C)
- SQF-SM8U4-64G-SBE** SQF M.2 2280 640 64G UMLC (-40~85°C)
- SQF-SM8U4-128G-SBE** SQF M.2 2280 640 128G UMLC (-40~85°C)
- SQF-SM8U4-256G-SBE** SQF M.2 2280 640 256G UMLC (-40~85°C)
- SQF-SM8V4-512G-SBE** SQF M.2 2280 640 512G 3D TLC (-40~85°C)
- SQF-SM8V4-1T-SBE** SQF M.2 2280 640 1T 3D TLC (-40~85°C)

### NVRAM Module

- PCM-2300MR-AE** 2MB MRAM, mPCIe interface

### DIN-Rail Type Power Supply Module

- PSD-A60W24** DIN Rail AC to DC 100-240V 60W 24V
- PSD-A120W24** DIN Rail AC to DC 100-240V 120W 24V
- 96PSD-A240W24-MN** DIN Rail AC to DC 100-240V 240W 24V

## Accessory for Mounting

- AMAX-5580-USBK** USB/HDMI fix kit for AMAX-5580
- AMAX-5580-WMK** Wall Mount Kit for AMAX-5580
- AMAX-54XX-WMK** Wall Mount Kit for AMAX-54XX

## Embedded OS

- 20703WE7PS0023** WES7P X64 MUI for AMAX-5580
- 20703WE7PS0029** WES7P X86 MUI for AMAX-5580
- 20703WX9HS0003** W10 LTSC x64 for AMAX-5580 (i7)
- 20703WX9VS0003** W10 LTSC x64 for AMAX-5580 (i5/Celeron)

## Expansion Modules

### AMAX-5400 Series Expansion Module (left side)

- AMAX-5400E** PCIe-mini card with SIM card slot
- AMAX-5410** 2 x GigE expansion module
- AMAX-5410P** 2 x PoE expansion module
- AMAX-5424V** 4 x USB 3.0 with full bandwidth
- AMAX-5490** 2 x isolated RS-232/422/485
- AMAX-5495** 2 x CAN module

### AMAX-5000 EtherCAT Slice IO Module (right side)

- AMAX-5001** Smart Power Input module with 4-Ch DI
- AMAX-5015** 4-Ch RTD (2/3 wire)
- AMAX-5017V** 6-Ch Voltage AI, multi-gain 16-bit
- AMAX-5017C** 6-Ch Current AI, 0-20/4-20mA 16-bit
- AMAX-5018** 6-Ch T/C, J,K,T,E,R,S,B, mV, Open detect
- AMAX-5024** 4-Ch AO multi-gain, 16-bit
- AMAX-5051** 8-Ch Iso. DI
- AMAX-5052** 16-Ch Iso. DI
- AMAX-5056** 8-Ch Iso. DO sink type
- AMAX-5056SO** 8-Ch Iso. DO source type
- AMAX-5057** 16-Ch Iso. DO sink type
- AMAX-5057SO** 16-Ch Iso. DO source type
- AMAX-5080** 2-Ch Counter/Encoder 32-bit
- AMAX-5074** EtherCAT coupler
- AMAX-5079** EtherCAT extension
- AMAX-5051T** 2-Ch timestamp, 6-ch w/o timestamp DI
- AMAX-5056T** 2-Ch timestamp DO
- AMAX-5017H** 4-Ch 10KHz High speed AI (preliminary)
- AMAX-5081** 1-Ch TTL/RS-422 Encoder/Counter (preliminary)