

# AMAX-4540

Arm® Cortex®-A55 Quad-core Embedded Controller

NEW



## Features

- Optimized Linux OS for real-time control
- Achieve 16-axis motion control with 2ms EtherCAT cycle time
- OPC UA and Modbus TCP/RTU as IT connectivity enabled by CODESYS
- EtherCAT, and CANopen as OT connectivity enabled by CODESYS
- Unlimited I/O points, fieldbus networks, and visualization variables for CODESYS applications
- CODESYS Visualization (Target & Web), SoftMotion and CNC/Robotics support via different packages
- Advantech Data Connect (ADC) Library provides flexible and highly efficient data connection with 3rd party application software through symbols (PLC Handler) and shared memory (C++/C#)
- Rockchip RK3568J Quad-Core Arm® Cortex®-A55 1.4GHz (Up to 1.8GHz)
- Built in connectivity interface: 4 x GbE, 8 x RS-232/485, 2 x CAN 2.0B, 1 x mPCIe and 1 x M.2 B key 2280
- Rich onboard I/O: 20 x isolated DI, 6 x isolated DO, 8 x relay, 2 x analog input
- Battery-powered RTC, watchdog timer, and optional TPM support
- Optional 5 second power backup with supercapacitor
- Wide operating temperature range: -40 ~ 70°

## Introduction

The AMAX-4540, featuring a Rockchip RK3568J quad-core Arm® Cortex®-A55 processor, is designed for all IoT control requirements. AMAX-4540 is domain-specific controller which features multiple connectivity interface and rich of on-board I/O offering.

Each AMAX control platform is system-level optimized to provide an optimal real-time environment for running CODESYS Softlogic. The AMAX control platform comes pre-installed with a CODESYS license to enable EtherCAT for an OT networks, and supports Modbus and OPC UA for IT networks. Moreover, Advantech also provides flexible expansion modules, such as EtherCAT I/O via Slice I/O series and Block I/O series. AMAX delivers a diverse array of control systems in various form factors tailored to meet the demands of different application scenarios.

## Hardware Specifications

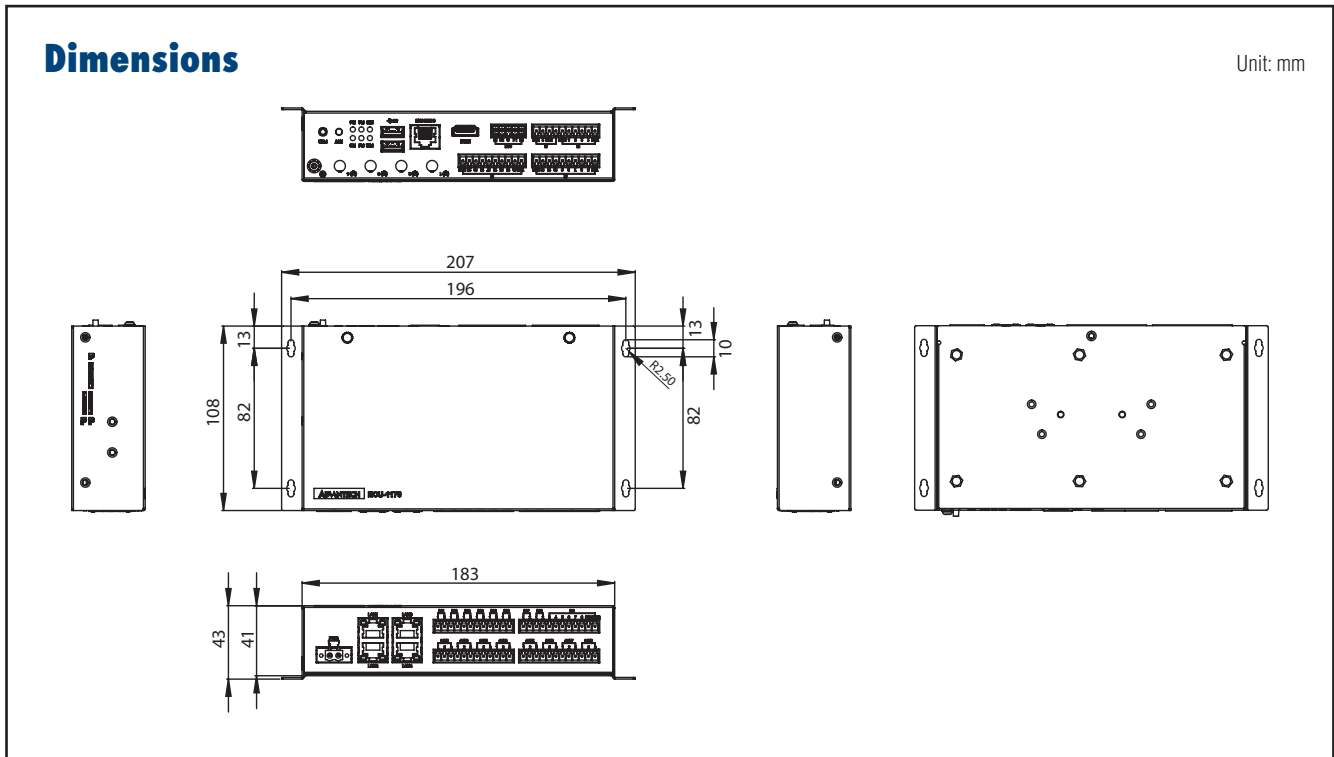
<b>Part Number</b>	AMAX-4540-20011A AMAX-4540-20211A AMAX-4540-20611A AMAX-4540-20811A	
<b>System Hardware</b>	Processor	Rockchip RK3568J Quad-Core Arm® Cortex®-A55 1.4GHz (Up to 1.8GHz)
	Memory	4GB LPDDR4
	Storage	32GB eMMC
	Retain Memory	N/A
	LED Indicator	6 x LED (1 x power, 5 x programmable LED)
	SD Card	1 x Micro SD Card Slot
	Expansion	1 x Mini-PCIe (full-size) Signal: PCIe for WIFI (optional USB2.0/SATA by customization) 1
<b>I/O Interface</b>	Local Digital I/O	4 x Isolated DI (Wet Contact), 2000V <sub>DC</sub> isolation 16 x Isolated DI (Dry & Wet contact), 2000V <sub>DC</sub> isolation 4 x isolated DO, Source Type, 10-30V, 1A, 2000V <sub>DC</sub> isolation 2 x isolated DO, Sink Type, 10-30V, 1A, 2000V <sub>DC</sub> isolation 8 x Isolated Relay (Form A): 5A@250V <sub>AC</sub> ; 3A@30V <sub>DC</sub> 2 x Analog input, 0-20mA or 0-10V (jumper optional), accuracy 1%, sampling rate: 40sps
	Serial Port	8 x RS-232/485, 2000V <sub>DC</sub> isolation
	CAN Port	2 x Isolated CAN2.0B, 2000V <sub>DC</sub> isolation (20Kbps~1000Kbps)
	LAN Port	4 x 10/100/1000BASE-T Ethernet (RJ45)
	USB Port	1 x USB2.0 HOST, 1 x USB3.0 HOST (OTG function reserved)
	Display	1 x HDMI (Up to 1080p@120Hz and 4096x2304@60Hz)
	Power Connector	1 x 2 pin
	<b>General</b>	OS Support
Power Requirements		10 ~ 30 V <sub>DC</sub>
Power Consumption		27W (Max)
Enclosure		Metal Shell
Mounting		Din Rail / Wall-Mount
Weight (Net)		Approx. 920g
Dimensions (W x D x H)		207 x 108 x 43 mm
Certification		CE, FCC, UL 62368, IEC-62368
<b>Environment</b>	Operating Temperature	-40 ~ 70°C (-4 ~ 158°F)
	Storage Temperature	-40 ~ 85°C (-40 ~ 185°F)
	Relative Humidity	5 ~ 95% RH @ 40°C, non-condensing
	Shock Protection	Operating, IEC 60068-2-27:2008, 15G, 11 ms
	Vibration	Operating, IEC60068-2-6:2007, 5 ~ 150 H

## CODESYS Package

Part Number		AMAX-4540-20011A	AMAX-4540-20211A	AMAX-4540-20611A	AMAX-4540-20811A
<b>CODESYS Basic Run Time</b>	Runtime	CODESYS Linux Control V3 SP20			
	OT Network	EtherCAT MainDevice, CANopen Manager			
	IT Network	Modbus/TCP Client and Server, Modbus/RTU Client, OPC UA Server			
	EtherCAT I/O Connection	No I/O Points Limitation			
<b>CODESYS HMI</b>	Visualization	N/A	Web Visualization (WV, Web Browser)		
	Tags		Unlimited Tags		
<b>CODESYS SoftMotion</b>	Motion Control Benchmark	N/A	N/A	16-Axis with 2 ms cycle time [Test under Linux CODESYS, EtherCAT CSP mode, PTP (point-to-point) command]	
	EtherCAT Servo Connection			No Axes Limitation in EtherCAT Servo Drive connections.	
<b>CODESYS CNC &amp; Robotics</b>	CNC Interpolator	N/A	N/A	N/A	No axes interpolation limitations.

## Dimensions

Unit: mm



## Ordering Information

AMAX P/N	Description	NVRAM Installable <sub>(3)</sub>	Linux Control V3 <sub>(1)</sub>	WV <sub>(2)</sub>	Soft Motion <sub>(2)</sub>	CNC & Robotics	Linux OS Version	CDS Runtime version (Version selectable)
AMAX-4540-20011A	ECU-1170, Rockchip Cortex-A55 quad-core processor, LCDS	N	✓				Linux Ubuntu	SP 20 Patch4
AMAX-4540-20211A	ECU-1170, Rockchip Cortex-A55 quad-core processor, LCDS+W	N	✓	✓				
AMAX-4540-20611A	ECU-1170, Rockchip Cortex-A55 quad-core processor, LCDS+WS	N	✓	✓	✓			
AMAX-4540-20811A	ECU-1170, Rockchip Cortex-A55 quad-core processor, LCDS+WSC	N	✓	✓	✓	✓		