

AFE-R770

Intel® 12th&13th&14th Gen Core™ i3/i5/i7/i9 AMR control system

NEW



Features

- Support Intel® 12th&13th&14th Gen. Core™ i3/i5/i7/i9 processor and Core™ Processors Series 2
- Dedicate I/Os for AMR : 4x 2.5GbE, 4x USB3.2, 2x CANBus, 4x RS-232/422/485, 16bit DIO
- 9-36V_{DC} with switchable Ignition/PC power on mode
- Contact 8KV, air 15KV ESD protection
- Wide operating temp from -20~65 °C
- Supports Ubuntu 22.04/24.04, Win10/11, Advantech Robotic Suite



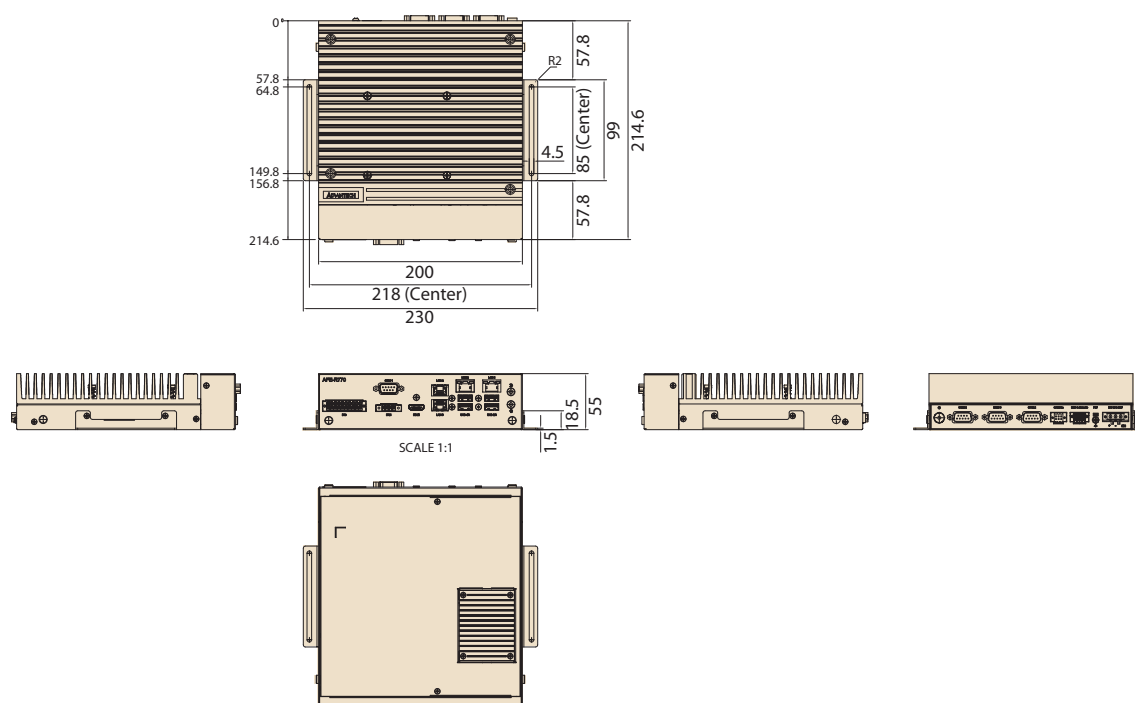
Specifications

Intel® Core™ Processors Series 2 (Bartlett Lake-S)*	CPU	273PTE	273PE	251E	253PE	213PE	213PTE	201E					
	Frequency	1.4 GHz	2.3 GHz	2.1 GHz	2.5 GHz	2.7 GHz	2.1 GHz	3.6 GHz					
	L3 Cache	36 MB	36 MB	36 MB	33 MB	24 MB	24 MB	12 MB					
	Cores	12	12	24	10	8	8	4					
	TDP	45W	65W	65W	65W	65W	45W	60W					
	Chipset	H610E (R680E coming soon)											
14th/13th/12th Generation Processor*	BIOS	AMI EFI 256Mbit											
	CPU	i9-14900T	i9-13900TE	i9-12900TE	i7-14700T	i7-13700TE	i7-12700TE	i5-14500T	i5-13500TE	i5-12500TE	i3-14100T	i3-13100TE	i3-12100TE
	Frequency	1.0-5.5GHz	1.0-5.0GHz	1.0-4.8GHz	1.0-5.2GHz	1.1-4.8GHz	1.0-4.6GHz	1.2-4.8GHz	1.1-4.5GHz	1.9-4.3GHz	2.7-4.4GHz	2.4-4.1GHz	2.1-4.0GHz
	L3 Cache	36MB	36MB	30MB	33MB	30MB	25MB	24MB	24MB	18MB	12MB	12MB	12MB
	Cores	24	24	16	20	16	12	14	14	6	4	4	4
	TDP	35W	35W	35W	35W	35W	35W	35W	35W	35W	35W	35W	35W
	Chipset	H610E/R680E											
	BIOS	AMI EFI 256Mbit											
Memory	Technology	DDR5 5600 MHz											
	Max. Capacity	64 GB											
	Socket	2 x 262-pin SODIMM											
Graphics	Chipset	Intel® UHD Graphics 770											
	Graphic Engine	DirectX 12, OpenGL 4.5 HW Encode: H.265/HEVC, H.264/MPEG-4 AVC, MPEG-2, JPEG/MJPEG and VP8. HW Decode: H.265/HEVC, H.264/MPEG-4 AVC, MPEG-2, VC-1/WMV9, JPEG/MJPEG, VP8 and VP9											
	HDMI	1 HDMI port, HDMI 1.4 for HD video playback, 4096x2160@24Hz											
	Ethernet	LAN1/2/3/4 10/100/1000/2500 Mbps Intel i226-LM GbE, support Wake On Lan											
Audio	Interface	Realtek ALC888S, High Definition Audio, Line-out and Mic-in											
Others	Watch dog Timer	255-level timer interval, setup by software											
	TPM	Infineon SLB9672XU2.0											
I/O Interface	Serial Port	4 x RS-232/422/485 port with auto flow control (COM2 with 5V/12V, COM3 isolated)											
	USB	4 x USB 3.2 (Power up to 1.5A for each port)											
	DIO	isolated 8bit DI/ 8bit DO (Open drain, voltage level 5V)											
	Remote switch	Power switch/Reset/WDT/Power LED/SATA LED											
	CANBus	2x CANBus											
	FAN	1x FAN connector (12V1A)											
Expansions	M.2 E Key	1x M.2 2230											
	M.2 B Key (Share with storage)	1x M.2 2280, 3042/3052 support by extend bracket											
Storage	IMU Socket	Support IMU/ VRU/ AHRS (Option AFE-RM05)											
	NVME+SATA	1x M.2 M key (PCIex4+SATA), 1x M.2 B key (PCIex2+SATA)											
Software Support	Microsoft Windows	Windows 10/11											
	Linux	Ubuntu 22.04/24.04 (Others support by project)											
	ROS2	Ready by Advantech Robotic Suite											
Power Requirements	Power Type	Switchable Ignition Power on (V mode) and PC power on (P mode), default P mode											
	Power Input Voltage	9-36V _{DC}											
	Power Source	DC Battery or AC to DC 150W adapter (Optional)											
Power Consumption (CPU/Memory Only)	Typical (OS idle mode)	23.2W											
	Max. (Full loading)	68.6W											
Mechanical	Construction	Aluminum housing											
	Mounting	Desk mounting, Wall mounting, DIN-Rail mounting											
	Dimensions (W x H x D)	200 x 55 x 215 mm											
	Weight	2.7 kg (6 lb)											
Environment	Operating Temperature	Up to 35W processor with extended temp peripherals: -20 ~ 65° C with 0.7m/s air flow Up to 35W processor with extended temp peripherals and system fan: -20~ 70° C with 0.7m/s air flow											
	Storage Temperature	-40 ~ 85° C											
	Relative Humidity	95% @ 40° C (non-condensing)											
	Vibration During Operation	3 Grms, IEC 60068-2-64, random, 5 ~ 500 Hz, 1 hr/axis.											
	Shock During Operation	30 G, IEC 60068-2-27, half sine, 11 ms duration											
	EMC	Heavy industrial certificates, CE/FCC Class B, UKCA, CCC, BSMI											
Safety	CB, UL, UKCA, CCC, BSMI												

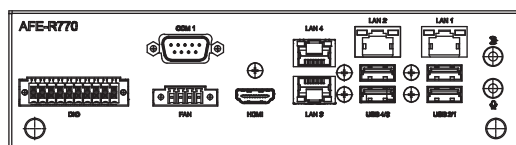
#1 SIM holder and M.2 slot are hardware interfaces for wireless communication integration only. System level RF certification is not available.

*BIOS default set up CPU as 35W to have better thermal operation

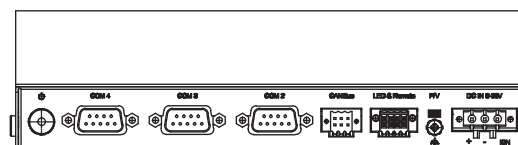
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Front Panel I/O



Real Panel I/O



Ordering Information

Part No.	PCH	CPU	DDR5	Gbe	HDMI	CANBus	RS-232/422/485	USB	M.2 B key	SIM	M.2 E Key	M.2 M key	DIO	vPro	Made in
AFE-R770-00A1	H610E	LGA1700 Socket Type	Up to 64GB	4	1	2	4	4	1	1	1	1	16bit	No	China
AFE-R770-00A1U	R680E	LGA1700 Socket Type	Up to 64GB	4	1	2	4	4	1	1	1	1	16bit	Yes	Taiwan

Note:

1. CPU/Memory/Storage and operating system bundled by request.

2. DIO spec: 16bit DIO (8bit DI/ 8bit DO)

Packing List

Part Number	Description
-	AFE-R770 Unit
-	User Manual (Simplified Chinese)
-	China RoHS
-	Mounting kit
1652004519	3P DC IN terminal block
1652008233-01	CANBus terminal block
1652005282	FAN terminal block
1652008721-01	LED & Remote terminal block
1652008720-01	DIO terminal block

Embedded OS

Part Number	Description
20706WX1HS0105	WIN10 IoT LTSC 21H2 64bit for i7/i9 (12th-14th)
20706WX1VS0105	WIN10 IoT LTSC 21H2 64bit for i3/i5 (12th-14th)
20706WLH1S0115	WIN11 IoT LTSC 21H2 64bit for i7/i9 (12th-14th)
20706WLV1S0115	WIN11 IoT LTSC 21H2 64bit for i3/i5 (12th-14th)
TBD	WIN11 IoT LTSC 21H2 64bit for i7/i9 (12th-BTL-S)
TBD	WIN11 IoT LTSC 21H2 64bit for i3/i5 (12th-BTL-S)
20706U22DS0050	UbuntuD AFE-R770 64b 22.04 PREEMPT_RT
20706U22DS0053	UbuntuD AFE-R770 64b 22.04 Xenomai
20706U24DS0039	UbuntuD AFE-R770 64b 24.04 PREEMPT_RT
20706U22DS0070	UbuntuD AFE-R770 64b 22.04 Optimized RT

Default SKU Option Items

Optional Item for Default SKU

Part Number	Description
96PSA-A150W24T2-4	AC to DC adapter, DC 24V 150W, -10 ~ 60 °C (10% derating @60 °C)
1702002600	Power cable 3-pin 183cm, USA type
1702002605	Power cable 3-pin 183cm, EU type
1702031801-11	Power cable 3-pin 183cm, UK type
1700000237	Power cable, 3-Pin 183cm, PSE type
1960103315N020	M.2 3042/3052 Extension Bracket for AFE-R770
AFE-RM05	Movella Xsens AHRS Sensor
199L000041S000	USB Bracket Nylon
1990040953S000-CM	Cable tie 120x2.5x1.1 Black
AMK-A0051	Fan Kit