ECU-1170

High-Performance All-in-One Gateway for Battery Energy Storage System

Features

- Ruggedized Design
  - Battery-powered RTC, Watchdog, and optional TPM support
  - Wide operating temperature range: -40 ~ 70°C
  - Optional 5 sec power backup with Supercapacitor
- Multi-Protocol Conversion
  - Supports IEC-61850, IEC-104, DNP3, Modbus, MQTT, and OPC UA
- Effortless Integration
  - Preloaded with Yocto Linux and Edgelink or Ubuntu Linux
- Powerful Performance & Rich Interfaces
  - Quad-core Cortex-A55 processor, 1.8GHz
  - Connectivity: 4 GbE, 8 RS-232/485, 2 CAN, 1 mPCIe and 1 M.2
  - I/O: 20 DI, 6 DO, 8 Relay, 2 AI

Introduction

The ECU-1170 is a purpose-built gateway designed specifically for Battery Energy Storage Systems (BESS) applications. Featuring integrated multi-I/O interfaces and paired with EdgeLink software, the ECU-1170 supports a wide range of communication protocols, enabling seamless connectivity between various BESS sub-systems. With its high computational performance, the ECU-1170 not only functions as a robust gateway but also serves as a local EMS (Energy Management System) or a BAU (Battery Auxiliary Unit), offering exceptional versatility and efficiency for energy storage solutions.

Specifications

General	Certification	CE, FCC, UL 62368, IEC-62368						
	Dimensions	183 x 108 x 43 mm						
	Power Input	10 ~ 30 V_{DC}						
	Power Consumption	Typical 12W, Maximum 27W						
	Mounting	Din Rail/Wall-Mount						
	Ingress Protection	IP30						
	Storage Temperature	-40~85°C						
	Operating Temperature	-40~70°C						
	Humiidity	5-95% (non-condensing)						
	Operating System	Yocto or Ubuntu22.04 Linux						
System	CPU	Rockchip RK3568J Quad-Core ARM Cortex A55 1.4GHz (Up to 1.8GHz)						
	RAM	4GB LPDDR4 (Up to 8GB)						
	eMMC	32GB eMMC (up to 128GB)						
	SIM Card	2 x Nano SIM card slot for redundancy						
	SD Card	1 x Micro SD Card Slot						
	Expansion Slot	Signal	1 x Mini-PCIe (Full-size)		1 x M.2 (2242/3042/3052/2280)				
		ECU-1170-551A	PCIE2.0		USB3.0+USB2.0 (B key)				
		ECU-1170-552A	USB2.0		USB3.0+PCIE2.0 (M key)				
	Extension Storage	1 x NVMe (Available for ECU-1170-552A, optional for ECU-1170-551A by customization[1])						
	Display	1 x HDMI (Up to 1080p@120Hz and 4096x2304@60Hz)						
	Real Time Clock	Yes						
	Watchdog Timer	Yes						
	TPM2.0	Optional by customization[1]						
	Super-Capacitor	Optional by customization[1] (5 seconds power hold upon power loss)						
	LED	6 x LED (1 x power, 5 x programmable LED)						
I/O Interfaces	Serial	8 x isolated RS-485/232, 2000V_{DC} isolation (120Ω optional by jumper)						
			COM1	COM2	COM3	COM4	COM5	COM6	COM7	COM8
		Mode	RS-232/485						
		Speed	50 ~ 115200 bps			1200 ~ 115200 bps			
		Data bit	5,6,7,8			8			
		Isolation	2000 V_{DC}						
	LAN	4 x 10/100/1000Mbps Ethernet						
	USB	1 x USB2.0 HOST, 1 x USB3.0 HOST (OTG function reserved)						

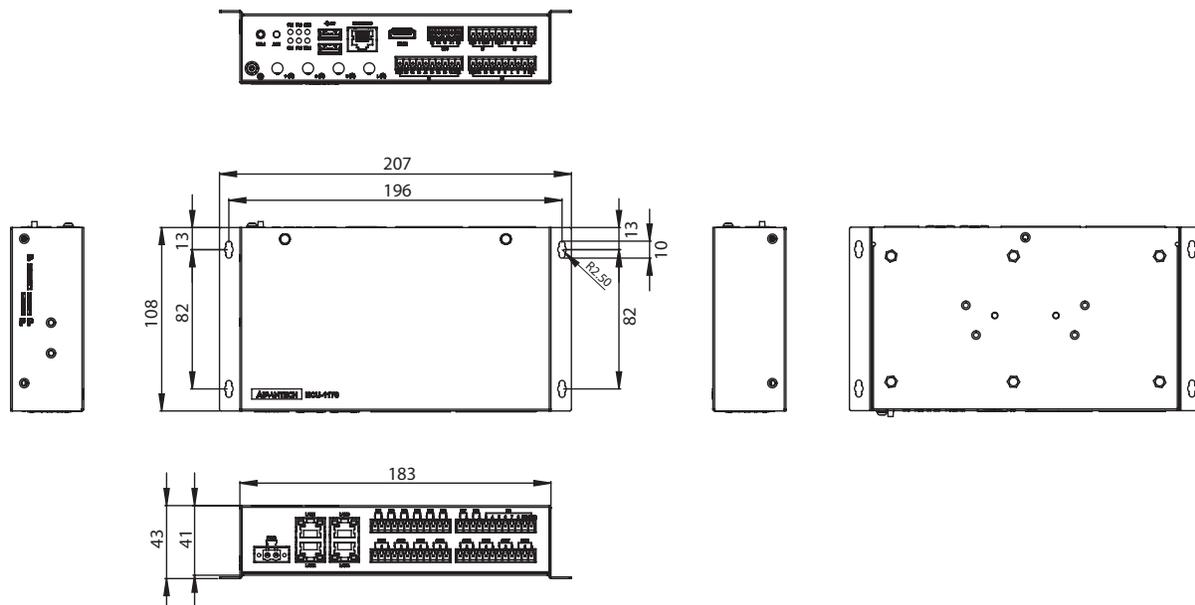## Specifications (Cont.)

I/O Interfaces	CAN	2 x isolated CAN2.0B, 2000V_{DC} isolation (20Kbps~1000Kbps,120Ω included)
	ADC	2 x AI 0-20mA or 0-10V (Jumper optional), Accuracy 1%, sampling rate: 40sps
	DI	4 x isolated DI (Wet Contact) 16 x isolated DI (Dry & Wet contact) 2000V_{DC} isolation
	DO (LSD, HSD)	4 x isolated HSD, Source Type, 10-30V, 1A 2 x isolated LSD, Sink Type, 10-30V, 1A 2000V_{DC} isolation
	DO (Relay Output)	8 x Isolated Relay (Form A): 5A@250V_{AC}; 3A@30V_{DC} Breakdown voltage: 750V_{AC} Initial Insulation 1GΩ at 500V_{DC}
	Console	1 x RS-232 (RJ45)
EdgeLink[2]: Pre-installed on ECU-1170-551A	NorthBound Protocol	IEC-61850*, IEC-104, Modbus Server, DNP3 Outstation, BACnet Server, OPC UA Server, SNMP
	SouthBound Protocol	IEC-61850*, Modbus Client, DNP3Master, DL/T645, IEC-101, IEC-103, IEC-104, OPC UA Client, BACnetIP, BACnet MS/TP, SNMP
	PLC driver	ABB/Advantech/Allen-Bradley/BECKHOFF/ DELTA/FATEK/GE/Honeywell/Keyence/Mitsubishi/Omron/Panasonic/ Schneider/Sharp/Siemens/Toyopuc/Wago 750/Yaskawa/Yokogawa
	Configuration Tool	EdgeLink Studio
	Data Monitoring	20000 Tags Max
	Cloud Connectivity(MQTT)	Azure, AWS, Google Cloud IoT Core and more
	Database Transmission	SQL Server, MySQL, ORACLE, FTP Server
	VPN	OpenVPN
IoTEdge Pre-installed on ECU-1170-552A	NorthBound Protocol	IEC-61850, IEC-104, OPC UA Server, MQTT
	SouthBound Protocol	Modbus TCP/RTU, DNP3.0, DL/T 645-2007, IEC-104, CAN, DIO
	Alarm Management	Flexible alarm rule configuration, alarm prioritization and categorization
	Control Strategy Implementation:	Supports control commands issued via IEC-61850, linkage control settings, and complex control script execution
	Visualization	Enables low-code monitoring and rapid building of alarm visualization pages
	Data Monitoring	5000 Tags recommended

1 Please contact Advantech for details of customization by TPN
2 Please refer to the EdgeLink specification for further details. Activation of the IEC-61850 protocol requires an additional fee

Dimensions

Unit: mm

Ordering Information

Part Number	RAM	eMMC	OS	IoT Software	LAN	COM	CAN	USB	DI	DO	AI	Mini-PCIE	M.2	Extension Storage	Country of Origin
ECU-1170-551A	4G	32G	Yocto	EdgeLink	4	8	2 (Rockchip CAN)	2	20	14	2	PCIE2.0	USB3.0+USB2.0 (B key)	SD	China
ECU-1170-552A	4G	32G	Ubuntu 22.04	IoTEdge	4	8	2 (SPI CAN)	2	20	14	2	USB2.0	USB3.0+PCIE2.0 (M key)	SD,NVMe	China

Optional Accessories

ECU-1170-551A				
Slot	Module	Part Number	Description	Qty
Mini PCIE	WiFi	EWM-W173H01E	Wi-Fi 6 + BT Module 2.4/5GHz Mini PCIe (Commercial Grade)	1
		1750008717-01	WiFi 2.4GHz+5GHz dipole antenna	1
		1750006043	Wi-Fi Coaxial Cable, 150 mm	1
		9656EWMG00E	Half-size miniPCIe to miniPCIe bracket set	1
		AIW-162BS-GI1	Industrial grade Wi-Fi 6 M.2 solution	1
		1751000635-01	Cable Ant. SMA/F-R MHF4L/113 BLK L200mm	2
		1751000651-01	Dipole Ant. WiFi 6E SMA/M-R BLK L111.7mm IP54	2
		EXM-CMPF1-M2E01E	M.2 E key to mPCIe adaptor board	1
		1930000016	Screw M2x3L for adaptor board	1
M.2	LTE	968DD00443	Cellular 4G M.2 3042 (Key-B) GNSS (For CN)	1
		968DD00420	Cellular 4G M.2 3042 (Key-B) GNSS (For Global)	1
		1750008303-01	Antenna AN0727-64SP6BSM	2
		1750008644-01	Cable Ant. SMA/F MHF4L/113 BLK L150mm IP65	2
		EWM-C401CQE01	Cellular 4G M.2 3042 Key B, no simslot, no GNSS (For EU)	1
		1751000590-01	Dipole Ant. LTE 2.23/3.96dBi SMA/M BLK L163.1mm	2
		1750008569-01	Cable Ant. SMA/F-BH MHF4L/113 BLK L300mm	2
	5G	AIW-356DQ-E01	5G Sub6+GNSS M.2 3052 Key B, USB only sku (For EU, AU)	1
		AIW-356DQ-C01	5G Sub6+GNSS M.2 3052 Key B, USB only sku (For CN)	1
		AIW-356DQ-N01	5G Sub6+GNSS M.2 3052 Key B, USB only sku (For US)	1
		AIW-356DQ-JK1	5G Sub6+GNSS M.2 3052 Key B, USB only sku (For JP, KR)	1
		1751000625-01	Cable Ant. SMA/F MHF4L/113 BLK L150mm	4
		1750009372-01	Ant.SMA/M 90/180 5G BLK 167mm RG178	4
		98531170000	5G Thermal kit for ECU-1170 w/ package	1

ECU-1170-552A				
Slot	Module	Part Number	Description	Qty
Mini PCIE	LTE	968DD00516	Cellular LTE 4G Mini PCIe 3051 (For CN)	1
		1751000821-01	External Sucker Ant. 4G SMA/M RG174 BLK L110 w/3M Base	1
		Y5A1051000-17	Ant Cable ecu-1051 YM0003AA 10CM	1
		96PD-EC25EFA	LTE Module Cat. 4, Mini-PCIe (For EU, TW, IN, KR, ASEAN)	1
		96PD-EC25JFA	LTE Module Cat. 4, Mini-PCIe (For JP)	1
		96PD-EG25GGB	LTE Module Cat. 4, Mini-PCIe (For Global)	1
		1750006264	SMA(F) Cable, 15 cm	2
		1751000532-01	Dipole Ant. LTE+5G 5.5dB SMA/M BLK L135.7mm	2
		96PD-MDG200AU0	AMIC 4G.Cat4 Socket Modem(For US)	1
		1750006264	SMA(F) Cable, 15 cm	2
		1750008303-01	Antenna, 13cm	2
	WiFi	96PD-RYUW131A1	WiFi 4 2.4GHz mPCIe with Antenna and Cable	1
		EWM-W172H01E	Wi-Fi 5+BT 4.2 Module 2.4/5GHz Mini PCIe	1
		1750008717-01	WiFi 2.4GHz+5GHz dipole antenna	1
		1750006043	SMA(M) Coaxial Cable, 150 mm	1
		9656EWMG00E	Half-size miniPCIe to miniPCIe bracket set	1
		EWM-W180H01E	Wi-Fi 5+BT 5.0 Module 2.4/5GHz Mini PCIe	1
		1750008717-01	WiFi 2.4GHz+5GHz dipole antenna	2
		1750006043	WiFi Coaxial Cable, 150 mm	2
		9656EWMG00E	Half-size miniPCIe to miniPCIe bracket set	1
M.2	NVMe	SQF-C8BV2-128GDEDE	SQF M.2 2280 720-D 128G 3D TLC BiCS5 (Industrial Grade)	1
		SQF-C8BV2-256GDEDE	SQF M.2 2280 720-D 256G 3D TLC BiCS5 (Industrial Grade)	1
		SQF-C8BV2-512GDEDE	SQF M.2 2280 720-D 512G 3D TLC BiCS5 (Industrial Grade)	1
		SQF-C8MV2-256GDEFE	SQF M.2 2280 730-D 256G 3D TLC BiCS5 (Industrial Grade)	1
		SQF-C8MV2-512GDEFE	SQF M.2 2280 730-D 512G 3D TLC BiCS5 (Industrial Grade)	1
		SQF-C8MV4-1TDEFE	SQF M.2 2280 730-D 1T 3D TLC BiCS5 (Industrial Grade)	1
		SQF-C8MV4-2TDEFE	SQF M.2 2280 730-D 2T 3D TLC BiCS5 (Industrial Grade)	1

Tento produkt můžete zakoupit u společnosti AutoCont IPC a.s.

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Váš dodavatel průmyslových počítačů, komponent a speciálních průmyslových IT systémů.

Uhlířská 1064/3, 710 00 Ostrava, Česká republika

obchod@autocont-ipc.cz   +420 552 301 002   www.autocont-ipc.cz

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