

ECU-1170

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

Preliminary



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 Edgelinek 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}								
	Mounting	Din Rail/Wall-Mount								
	Ingress Protection	IP30								
	Storage Temperature	-40~85°C								
	Operating Temperature	-40~70°C								
	Humidity	5-95% (non-condensing)								
	Operating System	Primary: Yocto Linux with Edgelinek Secondary: Ubuntu 22.04 (Linux kernel 5.10)								
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)								
	Extension Storage	1 x NVMe (Optional by customization)								
	Display	1 x HDMI (Up to 1080p@120Hz and 4096x2304@60Hz)								
	Real Time Clock	Yes								
	Watchdog Timer	Yes								
	TPM2.0	Optional by customization								
	Super-Capacitor	Optional by customization (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							
Mode			COM1	COM2	COM3	COM4	COM5	COM6	COM7	COM8
Speed			RS-232/485				RS-232/485			
Data bit			50 ~ 115200 bps				1200 ~ 115200 bps			
Isolation			5,6,7,8				8			
LAN		4 x 10/100/1000Mbps Ethernet								
USB		1 x USB2.0 HOST, 1 x USB3.0 HOST (OTG function reserved)								
CAN		2 x isolated CAN2.0B, 2000V _{DC} isolation (20Kbps-100Kbps)								
SD Card		1 x Micro SD Card Slot								
Expansion Slot		1 x Mini-PCIe (Full-size) Signal: PCIe for WIFI (Optional USB2.0/SATA by customization) 1 x M.2 B key (2280) Signal: USB2.0,USB3.0 for LTE or 5G (Optional PCIe for NVMe by customization)								
SIM Card		2 x Nano SIM card slot for redundancy								
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)								

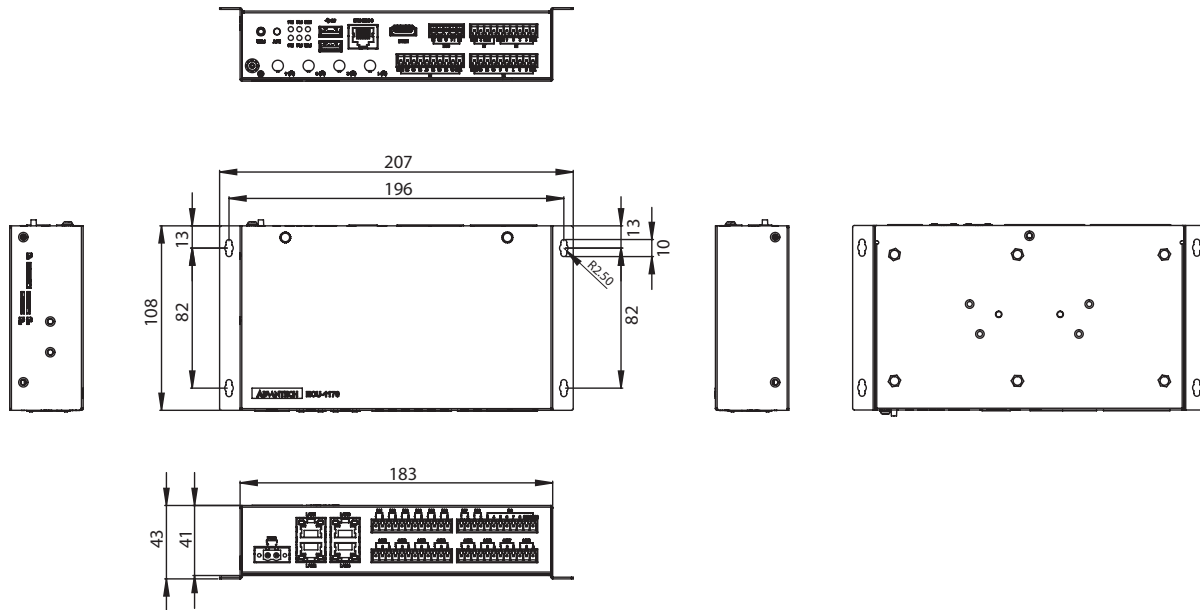
Specifications (Cont.)

Edgelink*	NorthBound Protocol	IEC-61850*, Modbus Server, DNP3 Outstation, BACnet Server, OPC UA Server
	SouthBound Protocol	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	WISE-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

*Please refer to the Edgelink specification for further details. Activation of the IEC-61850 protocol requires an additional fee.

Dimensions

Unit: mm



Ordering Information

- ECU-1170-551A Quad-Core ARM Cortex A55, 4G RAM, 32G eMMC, Edgelink

Optional Accessories

Slot	Module	Part Number	Description	Qty
Mini PCIE	WIFI	AIW-162BS-G11	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	EWM-C401CQE01	Cellular 4G M.2 3042 Key B, no simslot, no GNSS	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
		1960102502T000	Bracket 3042 to 3052	1
		19350304A0	Screw M3x4L for bracket	1
	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
		1960116055N001	5G thermal block	1
		1990042003N000	Support rubber for 5G module	1
		1990042007N000	Thermal pad for 5G module	1
		1930007459-01	Screw M3x8L for 5G thermal block	2
1930000071	Screw M3x6L for 5G thermal block connected to chassis	2		