WISE-EdgeLink DataSheet
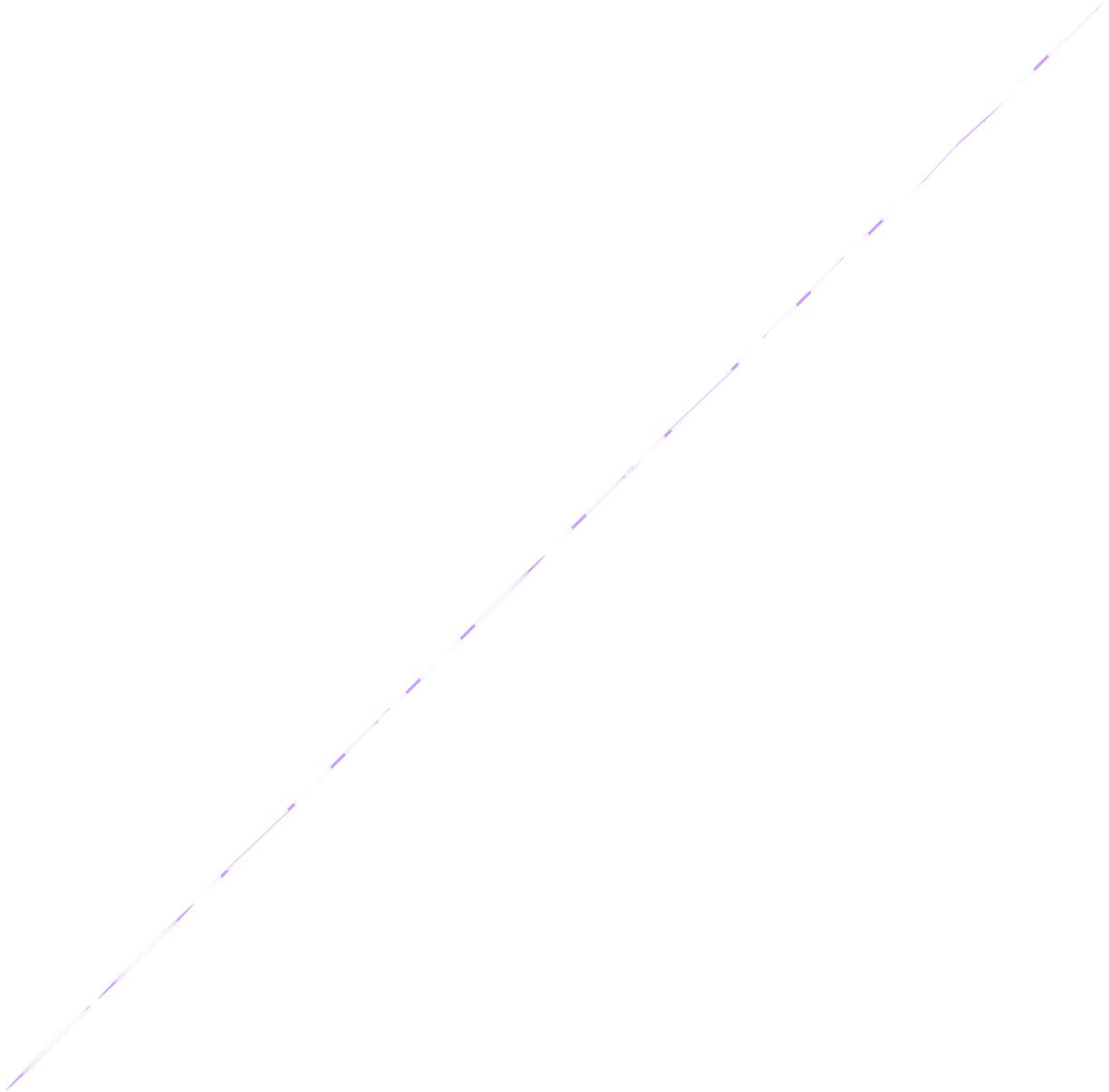
Revision History

Date	Revision	Description	Creator
Jan. 26,2022	v1.0	Release version	Lili.Zheng
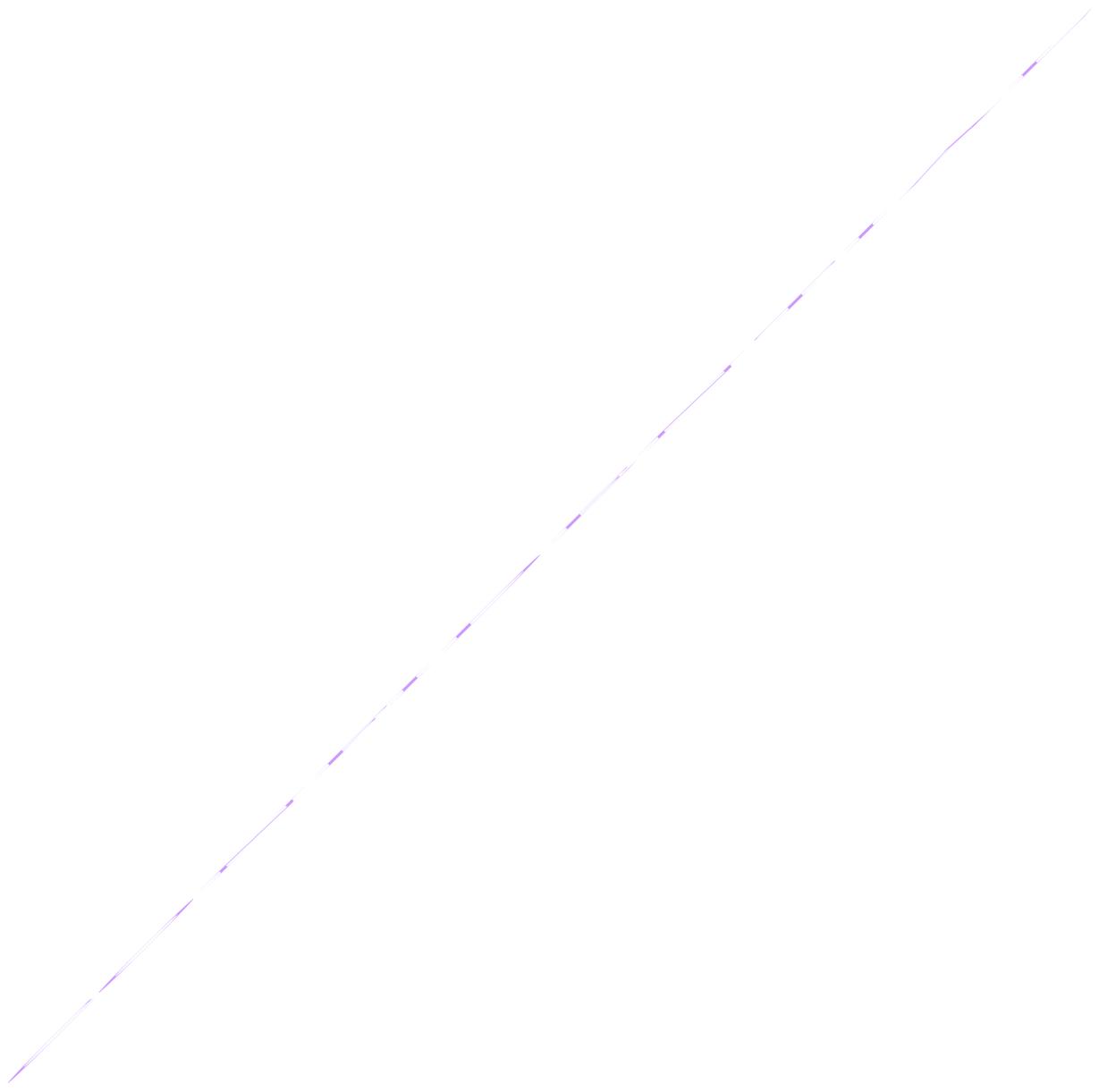
CONTENTS

# 1 Software Overview

1.1 What is EdgeLink?

In application scenarios, a gateway connects to various smart devices via the southbound interface and connects with different platforms via the northbound interface. In IoT-based businesses, a gateway acts as the IoT big data core hub, which manages data collection, processing, and forwarding, and is located in the middle layer between devices and platforms.

EdgeLink is a software system applied to Advantech gateway. It consists of EdgeLink Studio and EdgeLink Runtime.

EdgeLink Studio: a gateway configuration tool for off-line communication and network interface configuration. It supports one-click downloads to the gateways and supports online device status management and monitoring.

EdgeLink Runtime: EdgeLink services running on the gateway. It implements configurations set by EdgeLink Studio.

1.2 System Architecture
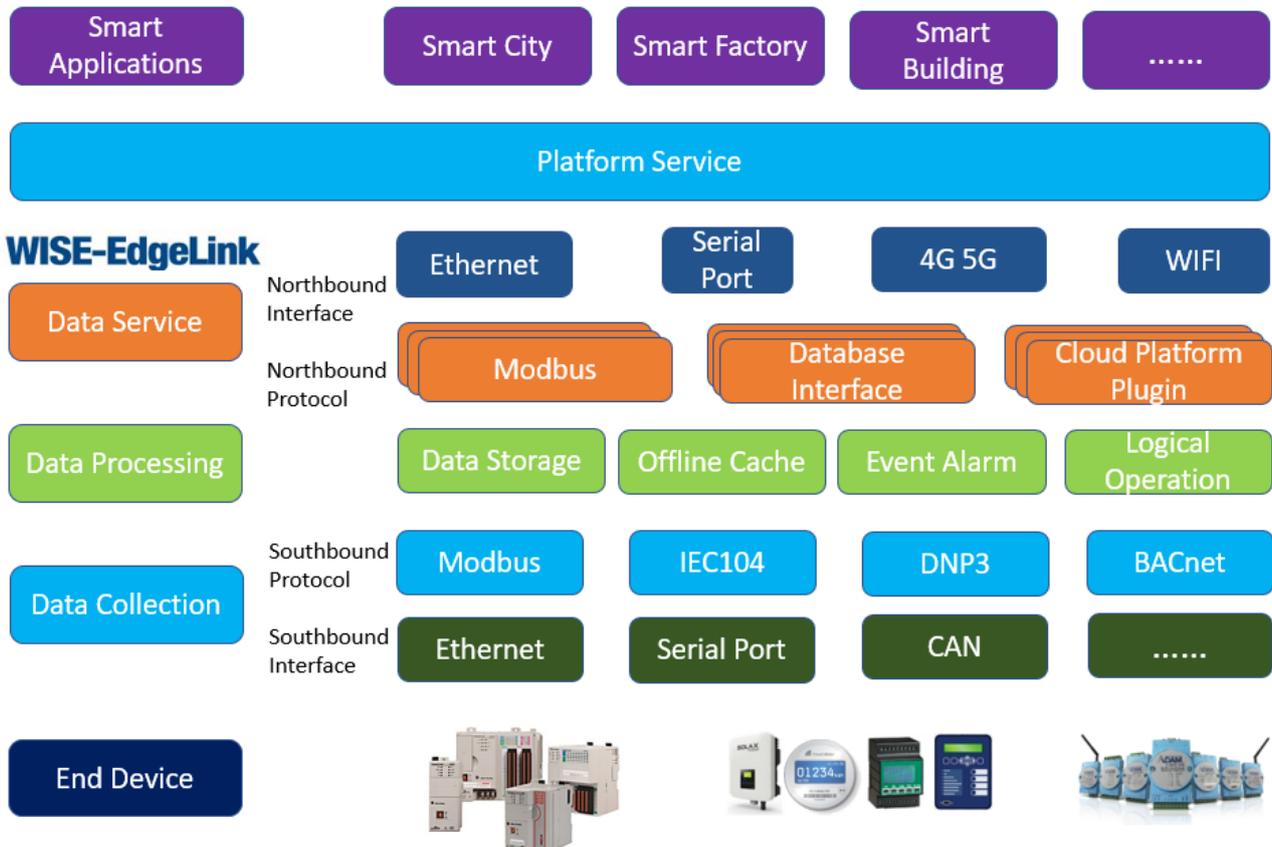
1.3 Features of EdgeLink

- Configure a gateway with Windows utility

- Support the collection and forwarding of multiple southbound and northbound communication protocols, such as MQTT, AMQP, LwM2M, OPC UA, Modbus, IEC-104, DNP3.0, etc.

- 'One-click' downloads for data communication and network configurations

- Unified device networking management

- Real-time gateway status monitoring

1.4 Function List

Function List	Function Classification	Function Description
Project Management	Project Setup	Setup a new project: Create a project file via EdgeLink Studio.
		Upload current projects of the gateway by using on-line devices.
	Implementation methods: Single gateway download Batch gateway download	On-line implementation There are 3 ways to recognize the node: **Node ID (Gateway hardware DIP switch for identifying the gateway)** **IP/domain name (Gateway network information which can be obtained by searching)** **Azure connection string (Connection string provided by Microsoft Azure)**
		Off-line implementation: Export the project to SD card, and manually import it to the device.
	Gateway replication	Make a copy of gateway configuration in the project.
	Show project tag count	Show the total number of tags in the project. (System tags are not included.)
	Add and delete device	Devices connected to the gateway can be managed flexibly.
	Excel import and export (all tags)	Export tags to Excel for further editing and import tags into the project.
Data Collection	Collect data from southbound interface	Ports: Ethernet Seral port CAN USB

		Devices: Southbound protocol Parameter configuration Add tag Tag property Device template
	System tag	Basic information and hardware status of the gateway.
	User tag	Virtual IO tag which can be selected and configured by the user.
	Calculated tag	Calculated results of an expression.
Data Processing	Data storage	Store data to the expansion card. Store data of Container to the /data path.
		Resume broken transfer: When network interrupt/recovery occurs during data forwarding, the data generated during the interrupt can be retransferred.
	Logic operation	Support complex logical operations.
	Event trigger (alarm)	Alarm modes: Sending SMS Sending e-mail Writing tag
	Data transmission	Different devices in the field can assign each other.
Data Forwarding	Industry protocol	Electric power: DNP3
		Electric power: IEC104
		BA: BACnet
		Common industrial protocol: Modbus
		Advantech Proprietary protocol: WASCADA
		OPC-UA

	Cloud connection	MQTT: AWS Azure Cumulocitylot DeviceOn/BI Google Cloud IoT Core IotConnect iSysCore OS MindSphere SimpleMQTT Sparkplug(B) T-System WebAccess WISE-Paas/DataHub Ali Cloud Baidu Tiangong Lanzhuo supOS Proudsmart
	Lightweight M2M	LwM2M
	Excel import /export (northbound protocol and cloud connection tags)	
	Database transmitting	SQL Server
		MySQL
		ORACLE
		FTP Server
Remote management	VPN	Open VPN
		WebAccess/VPN
		EdgeLink/VPN
	On-line monitoring	Tag read/write
		I/O status: I/O status monitoring of the gateway
		System information: Cellular status
		System log
		Storage data query
		System configuration: System upgrade Time setting
Connection	System connection	VPN:

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mechanism		OpenVPN (user-built)
		Dandelion VPN (user-built)
		Advantech VPN
		WebAccess/VPN (user-built)
		EdgeLink/VPN (Provide free trial within 10 gateways for domestic users)
		L2TP/IPsec
		PPPOE
	TCP connection	Active connection:
		Connect WebAccess/SCADA
		Connect Four-Faith
		Other customized connections
	Serial port bridging	
System Configuration	Network configuration	Basic configuration:
		DHCP
		Fixed IP
		WIFI/4G
		Reconnect:
		Network status monitoring and real-time repair
		Routing configuration
		Priority configuration
		Port forwarding
		NAT
		DHCP Server
	LED configuration	RUN
		Program
		Error
	Time configuration	Date
		Time
		Time zone
	Service configuration	SSH
		HTTPS
		Telnet
		FTP Server
	Firewall configuration	
Security Mechanism	Project download	Set password
		File transfer encryption TLS1.2
	On-line monitoring	Login with password
	Security strategy	Regular vulnerability scan
		Vulnerability repair

1.5 Southbound Driver List

▸Standard Protocol			
Device Type	Models/Protocol	EdgeLink Driver	Interface
Power Industry Protocol	DNP 3.0	DNP 3.0 (Only ADAM-3600/ECU-1051/ECU-1251/ECU-4553 supported)	SERIAL & TCP/IP
	IEC 60870-5-101	IEC 60870-5-101	SERIAL
	IEC 60870-5-103	IEC 60870-5-103	SERIAL
	IEC 60870-5-104	IEC 60870-5-104	TCP/IP
Power Meter	DL/T 645-2007	DL/T 645-2007	SERIAL
	DL/T 645-1997	DL/T 645-1997	SERIAL
	IEC 62056-21	IEC 62056-21	SERIAL
	WISE-M500 series (Advantech)	Modbus/RTU	SERIAL
Database	MS SQL Server	ODBC for Microsoft SQL Server	TCP/IP
	ORACLE	JDBC for ORACLE Database	TCP/IP
OPC UA	OPCUA Client	OPC UA	TCP/IP
BACnet	Standard protocol for building controllers	BACnet IP	TCP/IP
		BACnet MS/TP	SERIAL
SNMP	Simple Network Management Protocol	SNMP	TCP/IP
Modbus	Modbus GW	Modbus TCP with limited connections	TCP/IP
▸PLC Driver			
Manufacturer	Models	EdgeLink Driver	Type
ABB	Controller models: AC31, AC80, AC410, AC450. Modbus via MVI module.	Modicon (Modbus RTU)	SERIAL
	4600 Dissolved Oxygen Analyzer	Modicon (Modbus RTU)	SERIAL
	Commander 1900 Controller Recorders.	Modicon (Modbus RTU)	SERIAL
	INSUM Modbus-LON Network Gateway	Modicon (Modbus RTU)	SERIAL
	MODCELL, MOD 30ML and Commander 100, 150, 200, and 300	Modicon (Modbus RTU)	SERIAL

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	Loop Controllers.		
Advantech	ADAM-2000 series	Advantech ADAM 2000 Series (ADAM ASCII/Modbus RTU)	SERIAL
	ADAM-4000 series	Advantech ADAM 4000 Series (ADAM ASCII/Modbus RTU)	SERIAL
	ADAM-5000 series Ethernet	Advantech ADAM-5000 Ethernet (Modbus/TCP)	TCP/IP
	APAX series Controller	Advantech APAX Series PLC (CODESYS API)	SERIAL & TCP/IP
	WebCon 2000 Series	Advantech WebCon 2000 Series	SERIAL & TCP/IP
	WebOP HMI	Advantech WebOP HMI (Modbus RTU/TCP)	SERIAL & TCP/IP
Allen-Bradley	PLC-5 Series Models: PLC-5/11, 5/20, 5/30, 5/40, 5/40L, 5/60, 5/60L, Serial DF1 full duplex	Allen-Bradley PLC-5 Series (DF1 Protocol over Serial)	SERIAL
	SLC-500 Series Models: SLC 5/03, 5/04, 5/05, Serial DF1 full duplex	Allen-Bradley SLC-500 Series (DF1 Protocol over Serial)	SERIAL
	Micro Logix Series PLC	Allen-Bradley Micro Logix Series PLC (DF1 Protocol over Ethernet)	TCP/IP
	Allen Bradley CSP to Modbus Ethernet	Modicon (Modbus RTU/TCP)	SERIAL & TCP/IP
	ControlLogix series, CompactLogix series PLC	Allen-Bradley ControlLogix&CompactLogix Series PLC (Ethernet/IP)	TCP/IP
BECKHOFF	BECKHOFF TwinCAT PLC	BECKHOFF TwinCAT PLC (BECKHOFF ADS API)	TCP/IP
DELTA	DVP series PLC	Delta DVP Series PLC (Modbus RTU/TCP)	SERIAL & TCP/IP
FATEK	FACON FB series PLC	Fatek and Facon PLCs	SERIAL & TCP/IP
GE	GE Fanuc Series 90-30 via SNP, Serial SNP	GE Fanuc Series 90-30 via SNP, Serial SNP (SNP and SNP-X serial)	SERIAL & TCP/IP
	GE Fanuc Series 90-70 via SNP, Serial SNP	GE Fanuc Series 90-70 via SNP, Serial SNP (SNP and SNP-X serial)	SERIAL & TCP/IP
	FieldServer Modbus	Modicon (Modbus RTU/TCP)	SERIAL & TCP/IP
	GE Multilin Power Management Modules via Modbus	Modicon (Modbus RTU)	SERIAL

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	FieldServer Modbus Ethernet	Modicon (Modbus RTU/TCP)	SERIAL & TCP/IP
Honeywell	7800 series Burner Controls with S7810M ModBus Networking module	Modicon (Modbus RTU)	SERIAL
	DCP100 with Modbus communications	Modicon (Modbus RTU)	SERIAL
	DPR100 DPR180/250 Recorders with Modbus	Modicon (Modbus RTU)	SERIAL
	DR 4300/4500 Recorders with Modbus	Modicon (Modbus RTU)	SERIAL
	UDC700 UDC1000 UDC1500 Loop Controller with Modbus	Modicon (Modbus RTU)	SERIAL
	UDC 3000, UDC 3300 Loop Controllers with Modbus	Modicon (Modbus RTU)	SERIAL
	UDC 6000 Loop Controller with Modbus	Modicon (Modbus RTU)	SERIAL
	UMC800 Setpoint Programmer / Controller with Modbus	Modicon (Modbus RTU)	SERIAL
	VPR/VRX Recorders with Modbus	Modicon (Modbus RTU)	SERIAL
	Honeywell HC900 Hybrid Control System	Modicon (Modbus/TCP)	TCP/IP
Keyence	KEYENCE KV-700/ KV-1000 series PLCs	KEYENCE KV-700/ KV-1000 (Host Link)	SERIAL & TCP/IP
Mitsubishi	Melsec A	Mitsubishi MELSEC-A Series PLC(MC Protocol)	SERIAL & TCP/IP
	Melsec A1S	Mitsubishi MELSEC-AnS Series PLC(MC Protocol)	SERIAL & TCP/IP
	MitsuA2	Mitsubishi MELSEC-AnN Series PLC(MC Protocol)	SERIAL
	MitsuAnA	Mitsubishi MELSEC-AnA Series PLC(MC Protocol)	SERIAL & TCP/IP
	MitsuAnAD	Mitsubishi MELSEC-AnAD Series PLC(MC Protocol)	SERIAL
	Melsec FX Series PLC	Mitsubishi MELSEC-Fx Series PLC (MC Protocol)	SERIAL & TCP/IP
	Melsec FX - Series MultiDrop IO	Mitsubishi MELSEC-Fx Series PLC (MC Protocol)	SERIAL
	Melsec FX2 Series PLC	Mitsubishi MELSEC-Fx2 Series PLC (MC Protocol)	SERIAL & TCP/IP
	Melsec FX3 Series PLC	Mitsubishi MELSEC-Fx3 Series PLC (MC Protocol)	SERIAL & TCP/IP
	Melsec FX5 Series PLC	Mitsubishi MELSEC-Fx5 Series PLC (MC Protocol)	SERIAL & TCP/IP

	Melsec Q	Mitsubishi MELSEC-Q Series PLC with Extension Module(MC Protocol)	SERIAL & TCP/IP
	Melsec QCPU	Mitsubishi MELSEC-Q Series PLC(MC Protocol)	SERIAL
Omron	Omron C Series PLCs	Omron C Series PLC (HostLink)	SERIAL & TCP/IP
	Omron CJ Series PLCs	Omron CJ Series PLC (HostLink)	SERIAL & TCP/IP
	Omron CP Series PLCs	Omron CP Series PLC (HostLink)	SERIAL & TCP/IP
	Omron CS Series PLCs	Omron CS Series PLC (HostLink)	SERIAL & TCP/IP
	Omron CV Series PLCs	Omron CV Series PLC (HostLink)	SERIAL & TCP/IP
	Omron E5 Series PLCs	Omron E5 Series PLC (HostLink)	SERIAL
	Omron NX/NJ Series PLCs	Omron NX/NJ Series PLC (EtherNet/IP)	TCP/IP
Panasonic	FP3 Serial via Modbus MB Link module AFP3492	Modicon (Modbus RTU)	SERIAL
	FPSH10 Serial via Modbus MB Link module AFP3492	Modicon (Modbus RTU)	SERIAL
	FP0,FP-X, FP2 series PLC via Mewtocol	Panasonic FP0, FP-X, FP2 Series PLC (Mewtocol)	SERIAL & TCP/IP
Schneider	TSX Premium and TSX Micro Series via Modbus	Modicon (Modbus RTU)	SERIAL
	Modcion 484, 584, 884 PLCs	Modicon (Modbus RTU)	SERIAL
	Modicon 984 PLCs	Modicon (Modbus RTU)	SERIAL
	Quantum PLCs	Modicon (Modbus RTU)	SERIAL
	AEG Compact PLC	Modicon (Modbus RTU)	SERIAL
	ION6200	Schneider ION6200 (Modbus RTU)	SERIAL
	Modicon Momentum M1E PLCs	Modicon (Modbus TCP)	TCP/IP
	Modicon Quantum PLCs	Modicon (Modbus TCP)	TCP/IP
Sharp	Sharp JW series PLC	Sharp JW series PLC	SERIAL
Siemens	Siemens Cerberus MXL	Modicon (Modbus RTU/TCP)	SERIAL & TCP/IP
	Siemens S7-200 PLC	Siemens S7-200 PLC (PPI)	Serial
	Siemens S7-200 PLC via Modbus	Modbus RTU (Modicon)	RS-232, RS-485
	Siemens S7-300	Siemens S7-300/1200/1500 PLC (S7Comm TCP/IP)	SERIAL & TCP/IP

	Siemens S7-1200	Siemens S7-300/1200/1500 PLC (S8Comm TCP/IP)	SERIAL & TCP/IP
	Siemens S7-1500	Siemens S7-300/1200/1500 PLC (S9Comm TCP/IP)	SERIAL & TCP/IP
	Siemens LOGO! PLC via Ethernet	Siemens LOGO! PLC via Ethernet	TCP/IP
Toyopuc	Toyopuc PLCs	Toyopuc 2PORT-EFR PLC via Ethernet	SERIAL & TCP/IP
Wago 750	WAGO I/O System 750 Fieldbus Coupler for Modbus Serial. Models 750-312, 750-314, 750-315, 750-316, 750-812, 750-814, 750-815	WAGO I/O System 750	SERIAL
	WAGO I/O System 750 Fieldbus Coupler for Modbus. Models 750-342	WAGO I/O System 750	TCP/IP
Yaskawa	YASKAWA MP series	YASKAWA MP Series Ethernet (Extension)	TCP/IP
	MP900 series	YASKAWA MP900 series, MemoBus Modbus compatible (Modbus RTU/TCP)	SERIAL & TCP/IP
	MP3000 series	YASKAWA MP3000 series	TCP/IP
Yokogawa	FA-M3 RS-232 Factory ACE PLCs	Yokogawa FA-M3 Ethernet Factiry ACE PLC	SERIAL & TCP/IP

1.6 Northbound Service List

Service Classification	Service List
Northbound protocol and platform	ActiveConnection (WASCADA) MQTT Modbus RTU Modbus/TCP BACnet OPC UA IEC-104 DNP3 (Only for ADAM-3600 and ECU Series)
Northbound database	SQL Server MySQL ORACLE FTP Server

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Cloud Platform	Aliyun
	AWS
	Baidu Tiangong
	Cumulocitylot
	CustomMQTT
	DeviceOn/BI
	Google Cloud IoT Core
	IoTConnect
	iSysCore OS
	MindSphere
	Lanzhuo supOS
	Proudsmart
	SimpleMQTT
	Sparkplug(B)
	T-System
	WebAccess
	WISE-PaaS/DataHub
	Azure
	LwM2M

2 Hardware Platforms

2.1 Hardware with Built-in EdgeLink

	CPU*	system Storage	RAM	SRAM	I/O	Mini-PCIe*	SIM Card Slot	LAN	COM	CAN	USB
ADAM-3600-C2GL1	Cortex-A8 600 MHz	1G TF Card	256 MB	32 KB	OnBoard 　8 AI 　8 DI 　4 DO Expansion 　ADAM-3613 (4 RTD) 　ADAM-3617 (4 AI) 　ADAM-3618 (4 TC) 　ADAM-3651 (8 DI) 　ADAM-3656 (8 DO) 　ADAM-3624 (4 AO) 　ADAM-3668 (4 Relay Output)	1 x Half-Size 1 x Full-Size	1	2	3	-	1x Type-A USB
ADAM-3600-D1GL1	Cortex-A8 600 MHz	1G TF Card	256 MB	32 KB	OnBoard 　8 AI 　8 DI 　4 DO Expansion 　ADAM-3613 (4 RTD) 　ADAM-3617 (4AI) 　ADAM-3618 (4 TC) 　ADAM-3651 (8DI) 　ADAM-3656 (8DO) 　ADAM-3624 (4AO) 　ADAM-3668 (4 Relay Output)	1x Full-size	2	2	2	-	1x Type-A USB
ADAM-6717	Cortex-A8 1GHz		512 MB		5 DI 4 DO 8 AI			2		-	1x Type-A USB 1x Micro USB
ADAM-6750	Cortex-A8 1GHz		512 MB	-	12 DI 12 DO			2		-	1x Type-A USB 1x Micro USB
ADAM-6760D	Cortex-A8 1GHz		512 MB	-	8 DI 8 SSR Relay			2		-	1x Type-A USB 1x Micro USB
ECU-1050TL	Cortex-A8 600MHz	512 MB NAND	256 MB	-	-	2x Full-size	2	1	0		1x Type-A USB
ECU-1051TL-R10A	Cortex-A8 600 MHz	512 MB NAND	256 MB	-	-	1x Full-size	2	2	2	-	-
ECU-1051B	Cortex-A8 600 MHz	512 MB NAND	256 MB	-	-	1x Full-size	2	2	2	-	-
ECU-1051BF	Cortex-A8 600 MHz	512 MB NAND	256 MB	128 KB	-	1x Full-size	2	2	2	-	-
ECU-1051BGF	Cortex-A8 600 MHz	1 GB NAND	256 MB	128 KB	-	1x Full-size	2	2	2	-	-
ECU-1051E-R10AAE	Cortex-A8 300 MHz	512 MB NAND	128 MB	-	-	1x Full-size	1	2	2	-	-
ECU-1152TL-R11A	Cortex-A8 800 MHz	1G TF Card	512 MB	-	-	1x Full-size	1	2	6	-	-
ECU-1251TL-R10A	Cortex-A8 800 MHz	1G TF Card	256 MB	-	-	1x Full-size	1	2	4	-	1x Type-A USB
ECU-1251B	Cortex-A8 800 MHz	1G TF Card	256 MB	-	-	1x Full-size	1	2	4	-	-
ECU-1251D	Cortex A8 600 MHz	1G TF Card	256 MB	-	4 GPIO	1x Full-size	1	2	2	-	-
ECU-1252	Cortex A9 600 MHz	16GB eMMC	2 GB	-	-	1x Full-size	1	2	2	2	-
EKI-183	Cortex 1GHz A35 4Core	4GB eMMC	1 GB	-	-	1x Full-size	1	2	3	1	-
ECU-150	Cortex A53 1.3G	16GB eMMC	2 GB	-	-	1x Full-size	1	2	2	-	1x Type-A USB
ECU-4553TL	Cortex-A8 800 MHz	1G TF Card	1 GB	-	-	1x Full-size	1	4	16	2	1x Type-A USB
ECU-4553L	Cortex-A8 600 MHz	8GB eMMC	512 MB	-	-	1x Full-size	1	4	16	2	1x Type-A USB
UNO-2271	Intel® Atom™ E3825, 1.33GHz Processor	32GB eMMC	DDR3L 4GB	-	-	1x Full-size	-	2	2	-	1
UNO-1372G	Intel® Celeron J1900, 2.0GHz processor	1 x mSATA / 1 x SATA	DDR3L 4GB	-	4DI/4DO	2x Full-size	1	2	2	-	4
UNO-2372G	Intel® Celeron J1900, 2.0GHz processor	1 x mSATA / 1 x SATA	DDR3L 4GB	-	-	2x Full-size	1	2	4	-	4
UNO-2484G	Intel® Core™ i5-7300U, 2.6GHz Processor	1 x mSATA / 2 x SATA	DDR4 8GB	-	-	1x Full-size	1	4	4	-	4
UNO-420	Intel Atom™ E3815 Processor	32GB eMMC	2GB DDR3L	-	8 x GPIO	1 x Full-size 1 x Half-size		2 (1 x PoE)	3	-	1 x USB 3.0
UNO-137	Intel® Atom® E3940 processor (1.6 GHz)	128G SSD	8GB DDR3L	-	8DI/8DO	1 x M.2 1 x mPCIe	1	2	2	-	3 x USB 3.0 1 x USB 2.0
WISE-710	CPU Freescale i.MX 6 Dual Lite A9	8GB eMMC	DDR3 1GB	-	4DI/4DO	1x Full-size	-	2	3	1	1x Micro USB2.0
Note	*无特殊说明，CPU为32bit					*无特殊说明，Signal为USB					