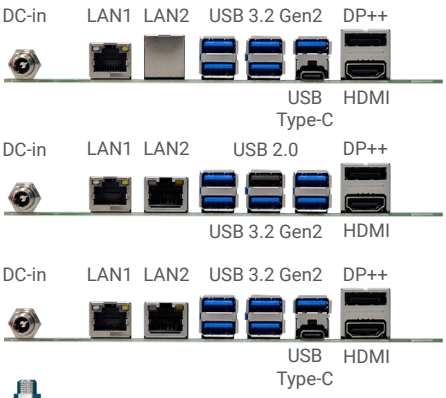
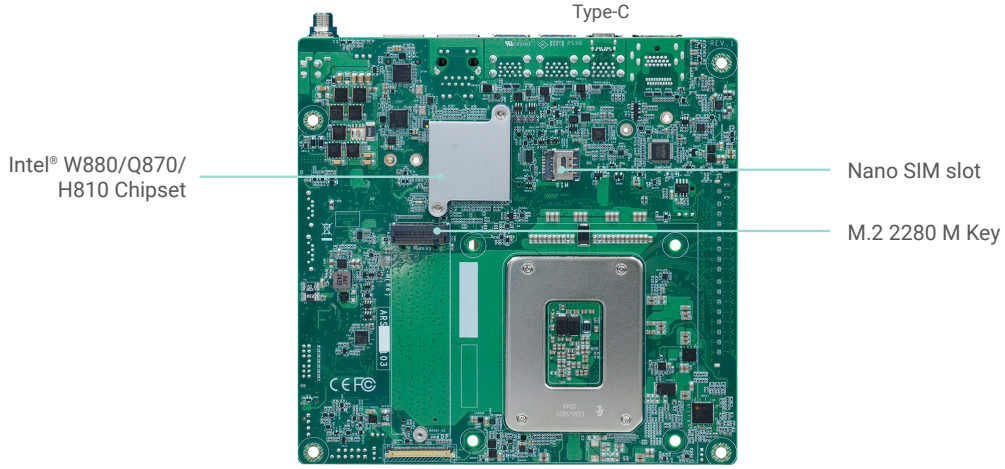
ARS101/ARS103-W880
ARS101/ARS103-Q870
ARS101/ARS103-H810

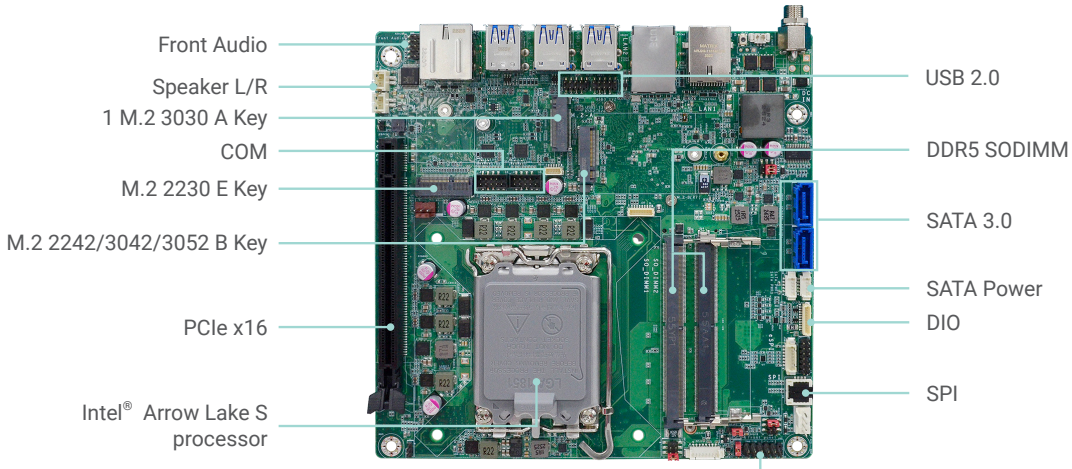
Desktop

Intel Arrow Lake S processor
Thin Mini-ITX





Bottom View



Top View

KEY FEATURES

DDR5

2 DDR5 SODIMM 5600/6400MHz up to 96GB

4K High Resolution

Supports 4K/ 2K resolution

Quad Displays

1 DP++, 1 HDMI 1.2,
1 USB Type C,
1 M2A-Display extension port (eDP/LVDS/HDMI/DVI/ VGA/DP/ available)

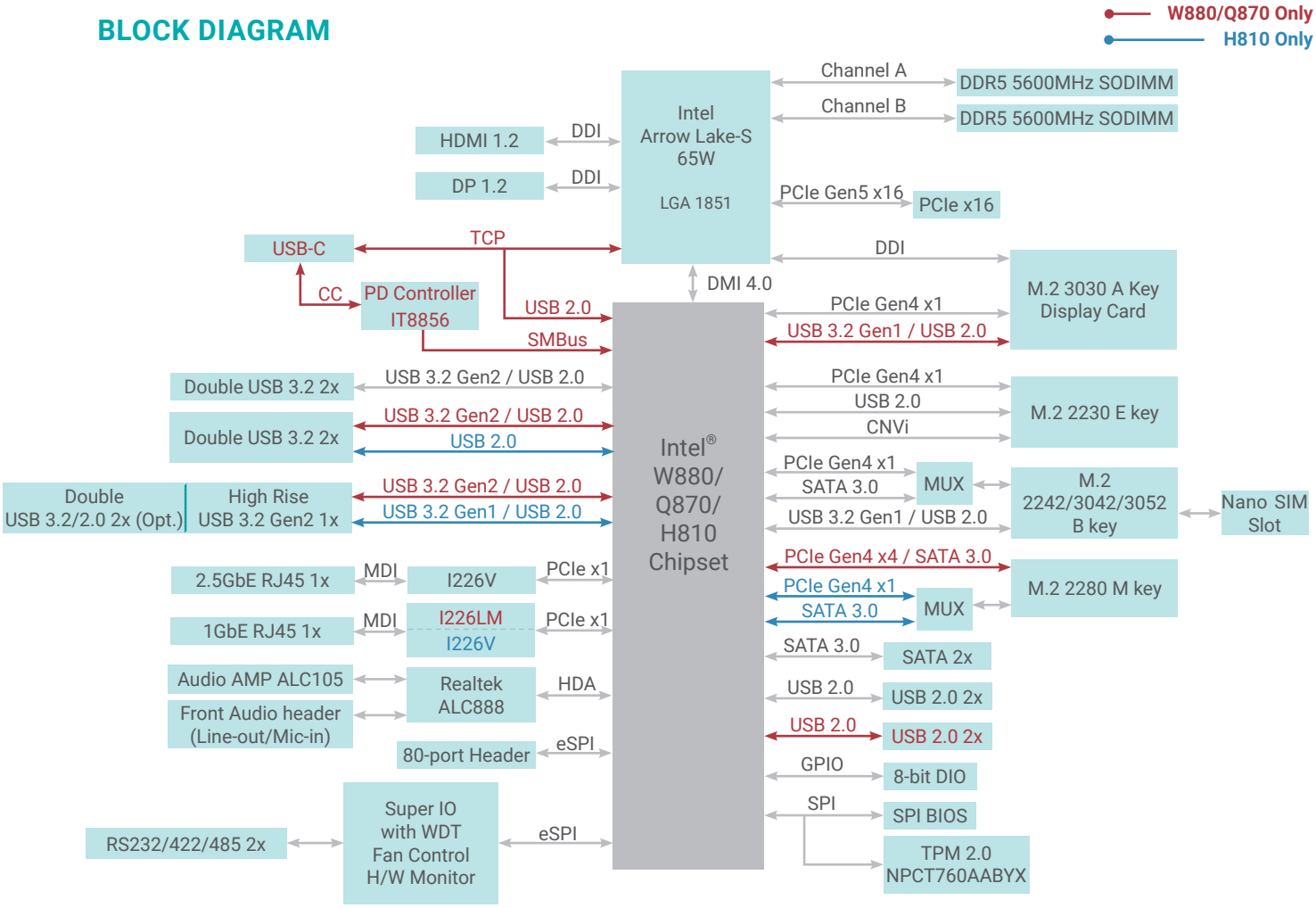
Multiple Expansion

1 PCIe Gen5 x16,
1 M.2 M Key,
1 M.2 B Key wi SIM,
1 M.2 E Key,
1 M.2 A Key

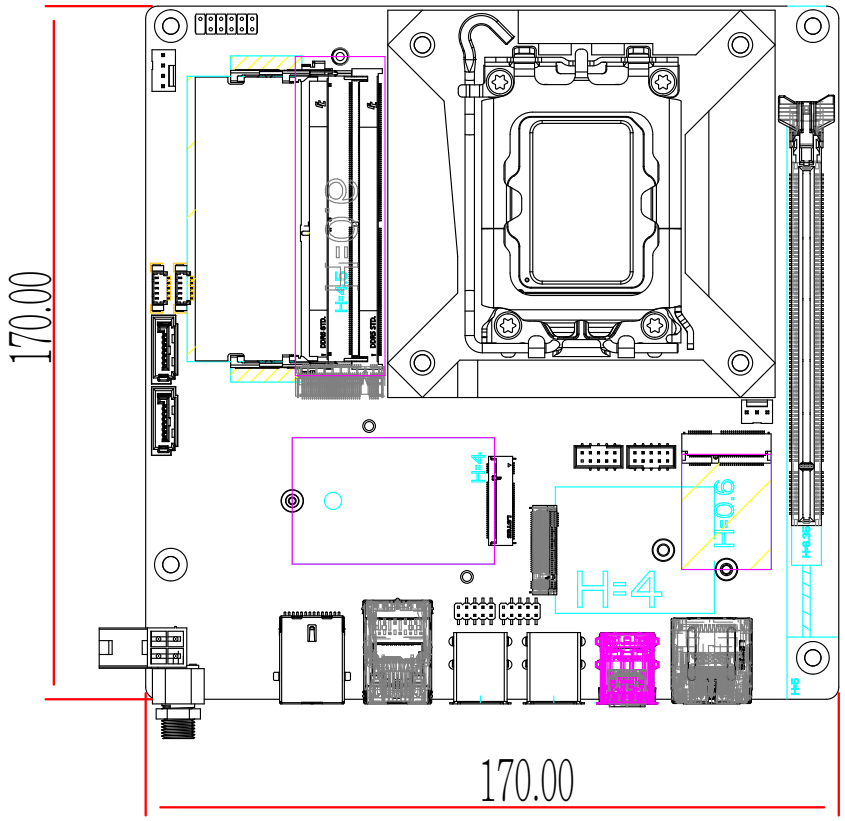
Rich I/O

Up to 2 Intel 2.5GbE, 2 COM,
6 USB 3.2 Gen2 Type A,
1 USB Type C (DP alt/USB3 Gen2x2 /PD 15W), 4 USB 2.0 header, 2 SATA 3.0,
Audio L/R 3W speaker

BLOCK DIAGRAM



MECHANICAL DRAWING



SPECIFICATION

Model Name		ARS101/ARS103-W880	ARS101/ARS103-Q870	ARS101/ARS103-H810
SYSTEM	**Processor**	Intel® Core™ Ultra LGA 1851 Socket Processors, support up to TDP 65W Intel® Core™ Ultra 9 285 (24 Cores, 36M Cache, up to 5.6 GHz); 65W Intel® Core™ Ultra 9 285T (24 Cores, 36M Cache, up to 5.4 GHz); 35W Intel® Core™ Ultra 7 265 (20 Cores, 30M Cache, up to 5.3 GHz); 65W Intel® Core™ Ultra 7 265T (20 Cores, 30M Cache, up to 5.3 GHz); 35W Intel® Core™ Ultra 5 245 (14 Cores, 24M Cache, up to 5.1 GHz); 65W Intel® Core™ Ultra 5 245T (14 Cores, 24M Cache, up to 5.1 GHz); 35W Intel® Core™ Ultra 5 225 (10 Cores, 20M Cache, up to 4.9 GHz); 65W Intel® Core™ Ultra 5 225T (10 Cores, 20M Cache, up to 4.9 GHz); 35W		
	Chipset	Intel® W880 Chipset	Intel® Q870 Chipset	Intel® H810 Chipset
	Memory	Two 262-pin SODIMM up to 96GB (ECC/Non-ECC) Dual Channel DDR5 5600 MHz (Ultra 5) / CSO-DIMM DDR5 6400 MHz(Ultra7,9)	Two 262-pin SODIMM up to 96GB (Non-ECC) Dual Channel DDR5 5600 MHz (Ultra 5) / CSO-DIMM DDR5 6400 MHz(Ultra7,9)	Two 262-pin SODIMM up to 96GB (Non-ECC) Dual Channel DDR5 5600 MHz (Ultra 5) / CSO-DIMM DDR5 6400 MHz (Ultra7,9)
	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit	AMI SPI 256Mbit
GRAPHICS	**Controller**	Intel® UHD Graphics 700 series	Intel® UHD Graphics 700 series	Intel® UHD Graphics 700 series
	Feature	OpenGL 4.5, DirectX 12, OpenCL 2.1 **HW Decode:** AVC/H.264, MPEG2, VC1/WMV9, JPEG/MJPEG, HEVC/H265, VP8, VP9 **HW Encode:** MPEG2, AVC/H264, JPEG, HEVC/H265, VP8, VP9	OpenGL 4.5, DirectX 12, OpenCL 2.1 **HW Decode:** AVC/H.264, MPEG2, VC1/WMV9, JPEG/MJPEG, HEVC/H265, VP8, VP9 **HW Encode:** MPEG2, AVC/H264, JPEG, HEVC/H265, VP8, VP9	OpenGL 4.5, DirectX 12, OpenCL 2.1 **HW Decode:** AVC/H.264, MPEG2, VC1/WMV9, JPEG/MJPEG, HEVC/H265, VP8, VP9 **HW Encode:** MPEG2, AVC/H264, JPEG, HEVC/H265, VP8, VP9
	Display	1 x HDMI 1.2 1 x DP++ 1.2 1 x USB Type-C 1 x M.2 A key (eDP/LVDS/DP/ HDMI2.0/DVI/VGA) (Option) *Note: onboard eDP panel & backlight power jumper select share with M2A-eDP/M2A-LVDS*	1 x HDMI 1.2 1 x DP++ 1.2 1 x USB Type-C 1 x M.2 A key (eDP/LVDS/DP/ HDMI2.0/DVI/VGA) (Option) *Note: onboard eDP panel & backlight power jumper select share with M2A-eDP/M2A-LVDS*	1 x HDMI 1.2 1 x DP++ 1.2 1 x M.2 A key (eDP/LVDS/DP/ HDMI2.0/DVI/VGA) (Option) *Note: onboard eDP panel & backlight power jumper select share with M2A-eDP/M2A-LVDS*
		HDMI: resolution up to 1080p @ 60Hz **DP++:** resolution up to 4096x2304 @ 60Hz **USB Type C:** resolution up to 4096x2304 @ 60Hz	**HDMI:** resolution up to 1080p @ 60Hz **DP++:** resolution up to 4096x2304 @ 60Hz **USB Type C:** resolution up to 4096x2304 @ 60Hz	**HDMI:** resolution up to 1080p @ 60Hz **DP++:** resolution up to 4096x2304 @ 60Hz
	Quad Displays	DP++ + HDMI + USB Type C + M2A-Display	DP++ + HDMI + USB Type C + M2A-Display	DP++ + HDMI + M2A-Display
EXPANSION	**Interface**	PCIe Gen5 x16 (1x16, 2x8, 1x8+2x4) switch by both GPIO (BIOS control), and jumper	PCIe Gen5 x16 (1x16, 2x8, 1x8+2x4) switch by both GPIO (BIOS control), and jumper	PCIe Gen5 x16 (1x16)
		Note: PCIe slot max 75W. For ARS103: CPU maximum turbo power is capped at 100W, or 80W when using a graphics card.		
	M.2	1 x M.2 2280 M Key (PCIe Gen4 x4 or SATA 3.0 x1) 1 x M.2 2242/3042/3052 B Key (PCIe Gen4 x1 / SATA 3.0 x1 / USB 3.2 Gen2 x1 / USB 2.0 x1) 1 x M.2 2230 E Key (PCIE Gen4 x1 / USB 2.0 x1 / CNVi x1) 1 x M.2 3030 A Key (DP x1 / PCIE Gen4 x1/ USB 3.2 Gen1 x1 / USB 2.0 x1)	1 x M.2 2280 M Key (PCIe Gen4 x4 or SATA 3.0 x1) 1 x M.2 2242/3042/3052 B Key (PCIe Gen4 x1 / SATA 3.0 x1 / USB 3.2 Gen2 x1 / USB 2.0 x1) 1 x M.2 2230 E Key (PCIE Gen4 x1 / USB 2.0 x1 / CNVi x1) 1 x M.2 3030 A Key (DP x1 / PCIE Gen4 x1/ USB 3.2 Gen1 x1 / USB 2.0 x1)	1 x M.2 2280 M Key (PCIe Gen4 x1 or SATA 3.0 x1) 1 x M.2 2242/3042/3052 B Key (PCIe Gen4 x1 / SATA 3.0 x1 / USB 3.2 Gen1 x1 / USB 2.0 x1) 1 x M.2 2230 E Key (PCIE Gen4 x1 / USB 2.0 x1 / CNVi x1) 1 x M.2 3030 A Key (DP x1 / PCIE Gen4 x1)
AUDIO	**Audio Codec**	Realtek ALC888	Realtek ALC888	Realtek ALC888
ETHERNET	**Controller**	1 x Intel® I226-LM (Core Ultra 9/7/5 support iAMT) 1 x Intel® I226-V	1 x Intel® I226-LM (Core Ultra 9/7/5 support iAMT) 1 x Intel® I226-V	2 x Intel® I226-V
REAR I/O	**Ethernet**	2 x 2.5GbE (RJ-45)	2 x 2.5GbE (RJ-45)	2 x 2.5GbE (RJ-45)
	USB	6 x USB 3.2 Gen2 Type A or 5 x USB 3.2 Gen2 Type A + 1 x USB 3.2 Gen2x2 Type C	6 x USB 3.2 Gen2 Type A or 5 x USB 3.2 Gen2 Type A + 1 x USB 3.2 Gen2x2 Type C	2 x USB 3.2 Gen2 Type A + 1 x USB 3.2 Gen1 + 3 x USB 2.0 Type A
	Display	1 x HDMI 1.4b 1 x DP++ 1.2 1 x USB Type-C	1 x HDMI 1.4b 1 x DP++ 1.2 1 x USB Type-C	1 x HDMI 1.4b 1 x DP++ 1.2

SPECIFICATION

Model Name		ARS101/ARS103-W880	ARS101/ARS103-Q870	ARS101/ARS103-H810
INTERNAL I/O	Serial	2 x RS-232/422/485 (w/o Power) Box header (2.0mm pitch)	2 x RS-232/422/485 (w/o Power) Box header (2.0mm pitch)	2 x RS-232/422/485 (w/o Power) Box header (2.0mm pitch)
	USB	4 x USB 2.0 header	4 x USB 2.0 header	2 x USB 2.0 header
	Display	1 x M2A-Display (eDP/LVDS/DP/ HDMI2.0 opt DVI with cable/VGA)	1 x M2A-Display (eDP/LVDS/DP/ HDMI 2.0 opt DVI with cable/VGA)	1 x M2A-Display (eDP/LVDS/DP/ HDMI 2.0 opt DVI with cable/VGA)
	Audio	1 x Front Audio Header (1 x Line-out, 1 x Mic-in) 3W L/R speaker connector	1 x Front Audio Header (1 x Line-out, 1 x Mic-in) 3W L/R speaker connector	1 x Front Audio Header (1 x Line-out, 1 x Mic-in) 3W L/R speaker connector
	SATA	2 x SATA 3.0 (up to 6Gb/s) 2 x SATA Power RAID 0/1/5/10 (w/ M.2 Key-M/B slot + 2 SATA Conn.)	2 x SATA 3.0 (up to 6Gb/s) 2 x SATA Power RAID 0/1/5/10 (w/ M.2 Key-M/B slot + 2 SATA Conn.)	2 x SATA 3.0 (up to 6Gb/s) 2 x SATA Power RAID 0/1/5/10 (w/ M.2 Key-M/B slot + 2 SATA Conn.)
	SMBus	1 x SMBus	1 x SMBus	1 x SMBus
	DIO	1 x 8-bit DIO	1 x 8-bit DIO	1 x 8-bit DIO
WATCHDOG TIMER	Output & Interval	System Reset, Programmable via Software from 1 to 255 Seconds	System Reset, Programmable via Software from 1 to 255 Seconds	System Reset, Programmable via Software from 1 to 255 Seconds
SECURITY	TPM	Nuvoton TPM 2.0	Nuvoton TPM 2.0	Nuvoton TPM 2.0
POWER	Type	**ARS101:** Single 12V +/-5% DC **ARS103:** Wide Range 12~28V	**ARS101:** Single 12V +/-5% DC **ARS103:** Wide Range 12~28V	**ARS101:** Single 12V +/-5% DC **ARS103:** Wide Range 12~28V
	Connector	DC-in Jack Right Angle Connector (4-pin) (available upon request) Straight Type Connector (4-pin) (available upon request)	DC-in Jack Right Angle Connector (4-pin) (available upon request) Straight Type Connector (4-pin) (available upon request)	DC-in Jack Right Angle Connector (4-pin) (available upon request) Straight Type Connector (4-pin) (available upon request)
	Consumption	TBD	TBD	TBD
	RTC Battery	CR2032 Coin Cell	CR2032 Coin Cell	CR2032 Coin Cell
OS SUPPORT	Microsoft	Windows 10 IoT Enterprise LTSC (64-bit) Windows 11 IoT Enterprise LTSC (64-bit)	Windows 10 IoT Enterprise LTSC (64-bit) Windows 11 IoT Enterprise LTSC (64-bit)	Windows 10 IoT Enterprise LTSC (64-bit) Windows 11 IoT Enterprise LTSC (64-bit)
	Linux	Ubuntu 24.04	Ubuntu 24.04	Ubuntu 24.04
ENVIRONMENT	Temperature	**Operating:** -5°C ~ 65°C **Storage:** -40°C ~ 85°C	**Operating:** -5°C ~ 65°C **Storage:** -40°C ~ 85°C	**Operating:** -5°C ~ 65°C **Storage:** -40°C ~ 85°C
	Humidity	**Operating:** 5% ~ 90% RH **Storage:** 5% ~ 90% RH	**Operating:** 5% ~ 90% RH **Storage:** 5% ~ 90% RH	**Operating:** 5% ~ 90% RH **Storage:** 5% ~ 90% RH
	MTBF	TBD	TBD	TBD
MECHANISM	Dimensions	Mini-ITX Form Factor 170mm (6.7") x 170mm (6.7")	Mini-ITX Form Factor 170mm (6.7") x 170mm (6.7")	Mini-ITX Form Factor 170mm (6.7") x 170mm (6.7")
	Height	**Top Side:** TBD mm **Bottom Side:** TBD mm	**Top Side:** TBD mm **Bottom Side:** TBD mm	**Top Side:** TBD mm **Bottom Side:** TBD mm
STANDARDS AND CERTIFICATION	Certifications	CE, FCC Class B, RoHS, UKCA	CE, FCC Class B, RoHS, UKCA	CE, FCC Class B, RoHS, UKCA

ORDERING INFORMATION

Model Name	P/N	Memory	Rear I/O			Internal I/O		TPM	Power	Operating Temp.
			Display	LAN	USB	M.2	USB			
ARS101-W880	770-ARS1011 -000G	2 DDR5	1 DP, 1 HDMI	2 2.5GbE	5 USB 3.2 Gen2, 1 USB Type C	M.2-M/B/E/A Key	4 USB 2.0	Nuvoton TPM 2.0	12V DC-IN	-5°C ~ 65°C
ARS101-Q870	770- ARS1011 -100G				6 USB 3.2 Gen2		4 USB 2.0		12V DC-IN	
ARS101-H810	770- ARS1011 -200G				3 USB 3.2 Gen1, 3 USB 2.0		2 USB 2.0		12V DC-IN	
ARS103-W880	770- ARS1031 -000G				6 USB 3.2 Gen2		4 USB 2.0		12~28V DC-IN	
ARS103-Q870	770- ARS1031 -100G				5 USB 3.2 Gen2, 1 USB Type C		4 USB 2.0		12~28V DC-IN	
ARS103-H810	770- ARS1031 -200G				3 USB 3.2 Gen1, 3 USB 2.0		2 USB 2.0		12~28V DC-IN	

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