

Ultron

AI enabled controller with sensor fusion capability

Preliminary



Features

- Powered by NVIDIA® Jetson™ Orin™ NX and Xavier™ NX
- Interoperable with GigE and IP cameras for real time vision AI tasks
- Supports various interfaces and up to 7 I/O blocks expansion capability



Specifications

* Ultron is by default shipped with one main block and one I/O block (SMCPN-D1)

General	Processor	NVIDIA Jetson Xavier NX 16GB/ Orin NX 16GB/ Orin NX 8GB	
	BSP	Jetpack 5.0.2	
	Power Input	24V DC input with 2-pin terminal block	
	Storage	128G NVMe SSD	
	IMU sensor	3D Gyroscope, 3D Accelerometer, 3D Magnetometer	
	Certification	CE / FCC / RoHS	
Physical I/O	Main Block	Ethernet	1x RJ45 GbE LAN (10/100/1000M) 1x RJ45 GbE LAN (2.5G)
		USB	1x USB3.1 Gen2 (Type A)
		OTG port	1x OTG for Jetson module (Micro USB)
		Serial Port	2x RS232 or RS485
		Communication	2x I2C 1x CAN bus
		Display	1x 0.96" OLED 1x mini DP
		SMA (Male)	5x SMA connectors for WWAN/WiFi/GNSS antenna
		LED indicator	1x Power status 4x LAN status ("Active & Link" for each LAN port) 2x Serial ports (active) 1x CAN bus (active)
		Button	1x Reset button
		SIM Slot	1x Nano SIM slot
	I/O Block (SMCPN-D1)	Inputs	4x Analog input, 0~10V 8x Digital isolated input, 5~24V
		Outputs	8x Digital isolated output relay, AC 250V/5A 4x Digital isolated phototransistor output, 5~24V
		Display	1x 0.96" OLED
		LED indicator	1x Power status 24x I/O status 1x GPIO_INT 1x ADC_INT 1x ADC_CNV

Expansion	WWAN (optional)	LTE or 5G NR (with GNSS) through M.2 B-key
	Wireless (optional)	Wifi through M.2 E-key ^[1]
	I/O Blocks ^[2]	- SMCPN-D1: Analog/Digital/Relays (up to 7 blocks) - SMCPN-D2: RS485/UART/GPIO (up to 4 blocks) - SMCPN-D4: SATA Storage (single expansion)
Environment	Operating Temp.	-20°C ~ +60°C
	Storage Temp.	-40°C ~ +85°C
	Storage Humidity	95% @ 40°C (non-condensing)
Mechanical	Dimension	117.7 x 100 x 112.5 mm (L x W x H)
	Weight	1 kg
	Housing Material	Aluminum
	Installation	DIN Rail

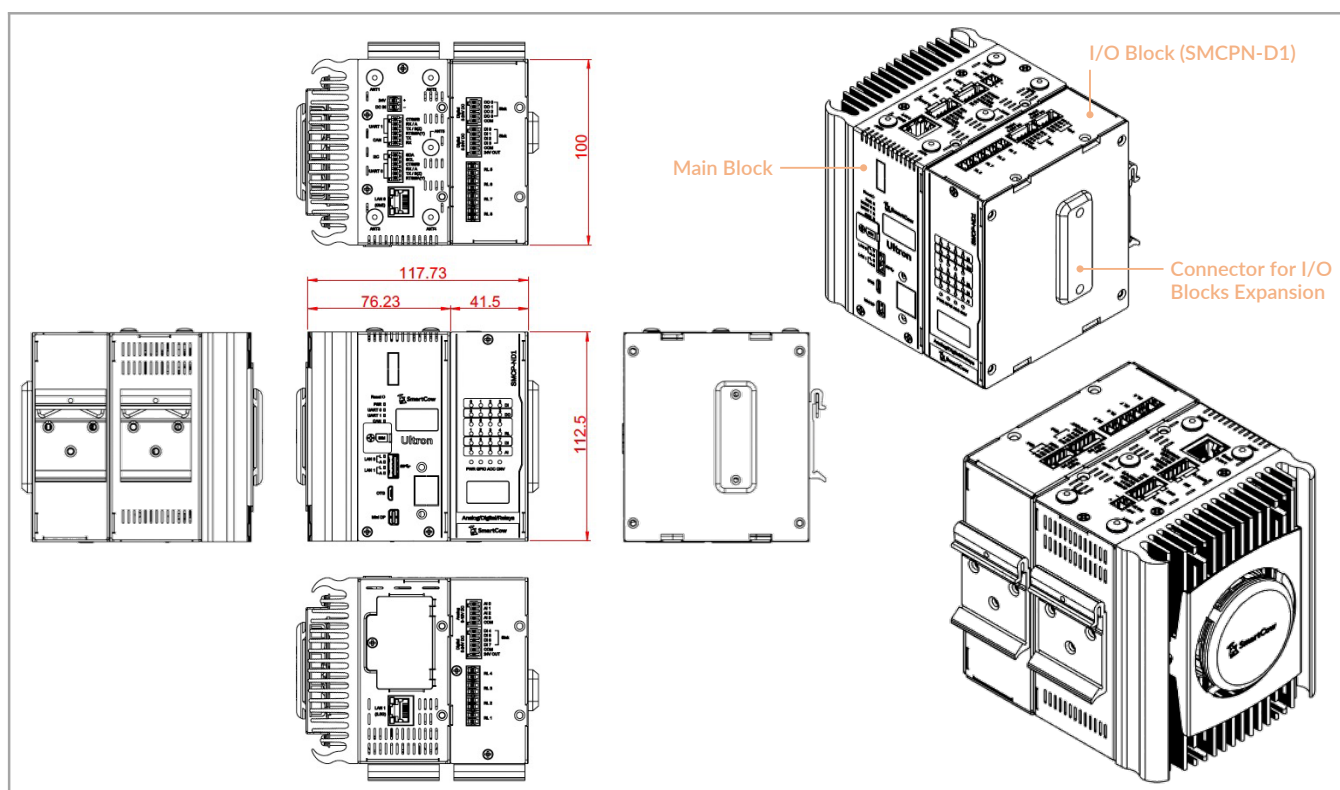
^[1] Either 2.5G LAN or M.2 E-key is available. Ultron by default with 2.5G LAN feature.

^[2] I/O blocks are expanded through 40 pin connector on rear side.

Compatible Jetson Module

	Xavier NX 16GB	Orin NX 16GB	Orin NX 8GB
CPU	6-core NVIDIA Carmel ARM®v8.2 64-bit CPU 6MB L2 + 4MB L3	8-core NVIDIA Arm® Cortex A78AE v8.2 64-bit CPU 2MB L2 + 4MB L3	6-core NVIDIA Arm® Cortex A78AE v8.2 64-bit CPU 1.5MB L2 + 4MB L3
GPU	384-core NVIDIA Volta™ GPU with 48 Tensor Cores	1024-core NVIDIA Ampere GPU with 32 Tensor Cores	
Memory	16 GB 128-bit LPDDR4x @ 59.7GB/s	16GB 128-bit LPDDR5 @3200MHZ 102.4 GB/s	8GB 128-bit LPDDR5 @3200 MHZ 102.4 GB/s
Storage	16 GB eMMC 5.1	External NVMe	

Mechanical



Ordering Information

Model Name	Description
SMCPN-XN16	AI enabled controller with Jetson Xavier NX 16G module, Main Block & I/O (SMCPN-D1) , NVMe 128G, 24V DC in, -20~60°C
SMCPN-RN16	AI enabled controller with Orin NX 16G module, Main Block & I/O (SMCPN-D1) , NVMe 128G, 24V DC in, -20~60°C
SMCPN-RN08	AI enabled controller Orin NX 8G module, Main Block & I/O (SMCPN-D1) , NVMe 128G, 24V DC in, -20~60°C

Accessories (Optional)

Part number	Description
TBD	AC/DC Power Adapter, Ming Well HDR-150-24, 150W, 24V 6.25A, DIN Rail
51-U0000000003	M.2 B-key 3042 LTE module
61-ULT00001RQU	M.2 B-key 3052 5G module
61-UWF000000IT	M.2 E-key 2230 WIFI module: Intel® Wireless-AC 9260, Wi-Fi 5 (802.11ac), BT5.1

I/O Blocks

I/O expansion to Ultron

Features

- Ultron is by default shipped with one Main block and one SMCPN-D1
- I/O blocks can be expanded through 40 pin connector on rear side.
- Maximum 7 I/O blocks can be attached to the Main block. ^[1]

^[1] Each I/O block has its Maximum expansion restriction. Please refer to the detailed specifications below.

SMCPN-D1 (Analog/Digital/Relay)



Inputs	4x Analog input, 0~10V 8x Digital isolated input, 5~24V
Outputs	8x Digital isolated output relay, AC 250V/5A 4x Digital isolated phototransistor output, 5~24V
Display	1x 0.96" OLED
LED indicator	1x Power status 24x I/O status 1x GPIO_INT 1x ADC_INT 1x ADC_CNV
Expandability	Up to 7 SMCPN-D1 blocks can be added to main block

SMCPN-D2 (RS485/UART/GPIO)



Serial Ports	4x RS485 or UART or GPIO (DB9 connectors) ^[2]
Display	1x 0.96" OLED
DIP Switch	4x DIP switches for RS485 or UART or 32 ports GPIO
LED indicator	1x Power status 3x LEDs for each port, 4 ports in total (Power, RS485, UART/GPIO)
Expandability	Up to 4 SMCPN-D2 blocks can be added to main block

^[2] Choose the feature through different settings on the DIP switches

SMCPN-D4 (SATA Removable Hard Drive Bay)



SATA revision	Support SATA III (6.0 Gbps)
Form Factor	2.5"
Storage Type	Support SATA hard drives (HDD) and solid-state drives (SSD)
LED indicator	1x Power status 1x HDD_ACT status
Expandability	Single expansion and needs to be the first I/O block connected to the main block