

X-Brain



Edge Super Cluster Board optimized for developing the deep-learning based unmanned vehicle and the control system of autonomous driving car

Possible to equip maximum 4 units of high-performance industrial SoM based on NVIDIA Carmel Architecture

With the built-in Gigabit switch hub, separate network cable connection among SoMs is not needed

Provides the interface for CAN, I2C, SPI and GPIO to utilize for research & development of various industrial fields

Provides Gigabit Ethernet, Wi-Fi, Bluetooth, USB 3.1 and USB OTG for connectivity

Supports storage extension by M.2 SSD

Provides the interface for CSI camera where maximum 2 cameras can be connected

Supports the development environment of ROS2 and artificial intelligence by Soda OS that is an IoT & AI operating system of Debian Linux

© Product Specifications

List	Specifications
Cluster board with up to 4 System-on-Modules connected to gigabit switches	260pin SODIMM Edge Connector x 4ea Cooling Fan connector x 4ea 5Port gigabit switches (Internal x 4ea, External x 1ea) Fully ISO 11898-2/5 & SAE J2284 Compliant CAN Transceiver x 1ea USB 3.1 x 4ea, OTG x 4ea HDMI 2.0 x 1ea M.2 Key-M NVMe with PCIe4 x 1ea, M.2-Key E with PCIe1 x 1ea MIPI CSI-2, D-PHY 1.2(up to 30 Gbps) x 2ea MicroSD card slot x 1ea
System-on-Modules with Industrial (Max 4ea)	CPU: NVIDIA 6-core Carmel ARM v8.2 64-bit GPU: NVIDIA 384 CUDA Cores and 48 Tensor cores DLA: 2x NVDLA Engines Memory: 8GB 128-bit LPDDR4x@51.2GB/s Storage: 16GB eMMC 5.1 Video Encoder: 4k@30(HEVC), 1080p@60/30(HEVC) Video Decoder: 4k@60/30(HEVC), 1080p@60/30(HEVC), 1080p@30(H.264)
Storage	NVMe(M.2) SSD 256GB
Connectivity	Dual Band Wireless WiFi 2GHz/5GHz Band, 867Mbps, 802.11ac Bluetooth 4.2 10/100/1000 Base-T Ethernet
External Interfaces	CAN x 1ea, SPI x 1ea, I2C x1ea, GPIO x 3ea
Operating Voltage	12V~20V
Size	178*155mm

© Essential Accessories



© Operating Program

List	Specifications	
Soda OS	Linux Kernel	aarch64 4.x
	Lightweight Desktop	X-Server, Openbox, lxdm, Tint2, blueman, network-manager, conky, pmanfm, lterminal
	CLI	Zsh with Oh-My-Zsh, Tmux, Peco, powerlevel10k thema, Powerline fonts
	Tool Chain	GCC (c, c++), JDK, Node JS, Python3, Cling, Clang
	IDE	Visual Studio Code, NeoVim
	Connectivity	SSH Server, Samba Server, Remote Desktop Server, mDNS(avahi), Bluez, MQTT Server(Mosquitto), Blynk Server,
	Multimedia	PulseAudio, sox (lame, oggenc), Google Assistant, OpenGL ES, CUDA, OpenCV 4, Qt5
	Data Science & AI	Numpy, Matplotlib, Pandas, Scipy, Seaborn, Scikit-learn, TensorFlow, TensorRT, Keras, PyTorch, TorchVision, OpenAI Gym, JAX Framework
	Middleware	ROS2 Eloquent(or Higher), Rviz, DDS, Colcon Build System
	Distribution Processing Framework	Kubernetes, MPI, docker
Pop Library	Output Object	Led, Laser, Buzzer, Relay, RGBLed, DCMotor, StepMotor, Oled, PiezoBuzzer, PixelDisplay, TextLCD, FND, Led Bar
	Input Object	Switch, Touch, Reed, LimitSwitch, Mercury, Knock, Tilt, Opto, Pir, Flame, LineTrace, TempHumi, UltraSonic, Shock, Sound, Potentiometer, Cds, SoilMoisture, Thermistor, Temperature, Gas, Dust, Psd, Gesture, Co2, Thermopile, Microwave, Lidar
	Multimedia Object	AudioPlay, AudioPlayList, AudioRecord, Tone, SoundMeter, Camera(Single & Stereo)
	Voice Assistant Object	GAssistant, create_conversation_stream
	AI Object	Linear Regression, Logistic Regression, Perceptron, ANN, DNN, CNN, DQN, Pilot with AutoCar & SerBot Series
PC linkage development environment	Jupyter Lab	Python3 and Cling support, IPython Widgets, Terminal support, Pop Library support
	Visual Studio Code Insiders	Remote SSH, Python3 and Debugging support, Terminal support, Pop Library support

© Application Example (Service Robot)



AloT SerBot AGV

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