

Waterproof Rugged Industrial Edge IoT, AIoT & Mission Computer
Raspberry PI 5 & Hailo AI Ecosystems

PRODUCT HIGHLIGHTS

✓ **Raspberry PI CM5 based** waterproof rugged industrial edge IoT/AIoT gateway, embedded mission computer, In-vehicle/Boat Smart Hub, Roadside computer...

✓ Ecosystem with a **huge community** facilitating support, scalability, and updates

✓ **Future Proof and Highly customizable** modular design

✓ **Best in class wireless connectivity capability** (WiFi, BT, BLE, GNSS, 4G LTE, 5G, Direct-To-Cell Ready, NB-IoT NTN Ready, LoRa, SigFox, Matter, Thread, Zigbee...)

✓ Optional **Hailo AI Accelerator** providing up to 2x 26 TOPS of AI for machine learning, video analytics, smart automation and supervision

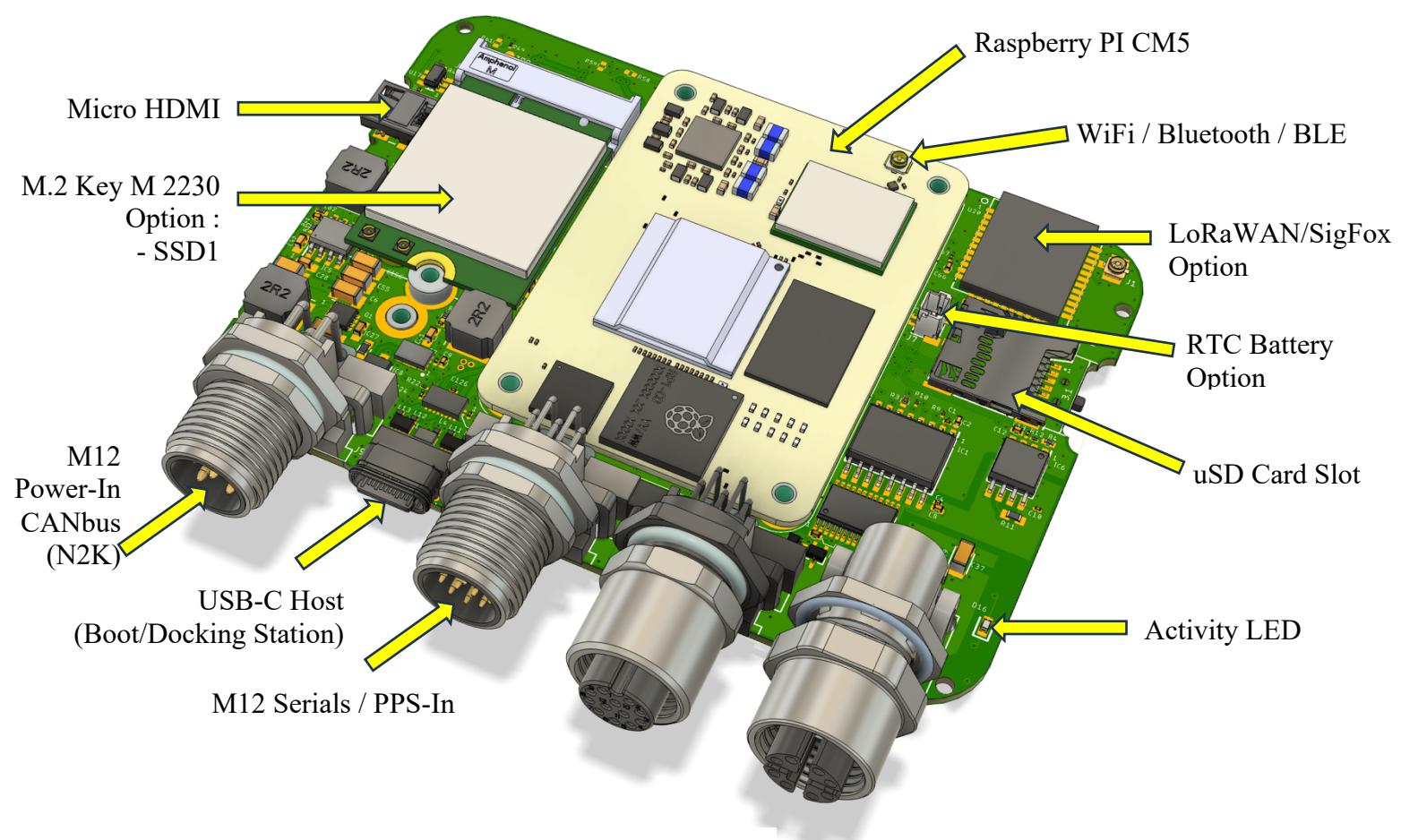
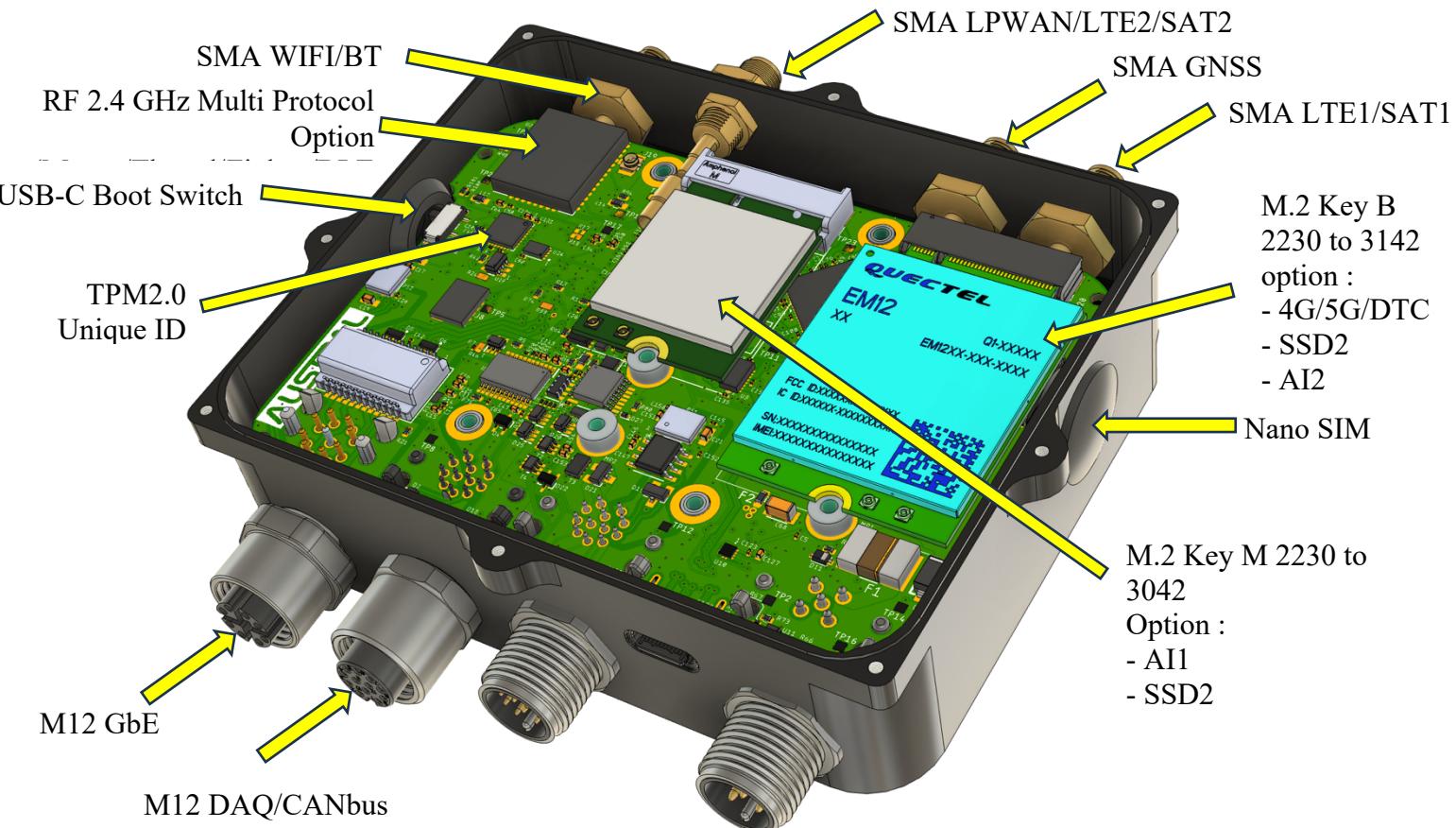
✓ **Rich in connectivity** and industrial field buses (1x GbE, 8x Serials, 2x CANbus, DAQ)

✓ **Numerous storage** solutions (eMMC, Multiples M.2 SSD, uSD card, USB-C drive)

✓ **Cybersecurity** (TPM2.0, AES256 SSD option, Unique ID, security uSD...)

✓ **B2B Ready** : customize configuration, markings and packaging

1 SWAP-C MODULAR DESIGN



2 TECHNICAL SPECIFICATIONS

FEATURE	DESCRIPTION	REMARK
PROCESSING @ MEMORY		
OPERATING SYSTEM	Linux (Debian, Ubuntu)	Contact us for Yocto, Balena...
CPU	Raspberry PI CM5 module, ARM Cortex A76 Quad-core, 64 bits, 2.4Ghz, Cryptographic Extension	30.2 Gflops, 2.75 Gflops/W
GPU	VideoCore VII, OpenGL ES 3.1, Vulkan 1.2, 4kp60 HEVC decoder	
SDRAM	2 GB, 4 GB, 8 GB, or 16 GB	
OPTIONAL TPU	M.2 key M 2242 : <ul style="list-style-type: none"> • Hailo-8 (26 TOPS, 3 TOPS/W) • Hailo-8L (13 TOPS, 3 TOPS/W) M.2 key B 2242 : <ul style="list-style-type: none"> • Hailo-8 (26 TOPS, 3 TOPS/W) • Hailo-8L (13 TOPS, 3 TOPS/W) 	Hailo-10H Ready (40 TOPS, 4/8GB RAM, 11.4 TOPS/W) subject to module size Deepx DX-M1M Ready (25 TOPS, 2GB RAM, <5W) Google Coral Edge (4 TOPS, 2 TOPS/W) in Option
EXPANDABILITY		
EXPENSION SLOTS	<ul style="list-style-type: none"> • M.2 key M 2230 (PCIe 2.0 x1) • M.2 key M 2230 to 3042 (PCIe 2.0 x1) • M.2 key B+B+M 2230 to 3042 (PCIe 2.0 x1 + USB 2.0) • Option LoRa module to be soldered • Option Matter module to be soldered 	
STORAGE		
EMMC	0, 16GB, 32GB or 64 GB	Read Only boot partition recommended
OPTIONAL NVME SSD	<ul style="list-style-type: none"> • M.2 Key M 2230 : Up to 2 TB and 4280 TBW • M.2 Key B : Up to 2 TB and 24000 TBW • M.2 Key M 2242 : Up to 2 TB and to 4280 TBW 	RAID 0 or 1 possible for a NAS AES256 SSD option
OPTIONAL REMOVABLE STORAGE	<ul style="list-style-type: none"> • µSD Card • External USB-C 3.0 Key/Disk 	µSD Card : Under a cap, No boot
NETWORK		
LAN	1x GbE with compliance with IEEE 1588-2008 for PTP	Industrial switch & OneNet M12 X 8 Pos
WIRELESS		
WLAN / BT	Dual-band Wi-Fi (2.4 GHz and 5.0 GHz IEEE 802.11 b/g/n/ac) Bluetooth 5.0 with BLE	External SMA Antenna. Option no wireless.
OPTIONAL 4G LTE + GNSS	4G LTE Global M.2 key B 3042 Module GNSS : GPS, Galileo, Glonass, BDS	Nano SIM Slot under a plug No GNSS, Regional, eSIM in option
OPTIONAL 5G NR / 5G NTN + GNSS	5G REDCAP Global M.2 key B 3042 Module 3GPP Rel-17 Redacp SA operation, Sub-6Ghz with Direct To Cell bands (n25, n26). GNSS : GPS, Galileo, GLONASS, BDS, NavIC	Nano SIM Slot under a plug Regional, eSIM in option
OPTIONAL MATTER/ZIGBEE	Soldered Module, 2.4 Ghz +20dBm Multiprotocol : Matter, Thread, Zigbee, Bluetooth 5.3 LE/Mesh, AoA, AoD	MGM240PB32VNA3 module Firmware Bootloader External SMA Antenna
OPTIONAL LORA/SIGFOX	Soldered Module, 868/915 Mhz +15/22dBm Multiprotocol : LoRa, SigFox	LSM100A/LSM110A Module External SMA Antenna
OPTIONAL RF	Contact us for BLE 6.0 Long Range, CAT-M1, NB-IoT, WiFi Halow, RF ID UHF, SDR, RF Modem, Wi-SUN, DECT NR+...	
OPTIONAL SAT	Contact us for NB-IoT NTN, Iridium, Kineis...	
POSITIONNING		
OPTIONAL GNSS RTK	M.2 Key B : GNSS RTK	PPS Input, PTP possible Contact us for 9 DOF IMU, Dual Antenna
CAMERA		
CAMERA	IP or USB-C external camera(s)	May require an ethernet switch
FIELD BUS		
ETHERNET BASED	Profinet, EtherNet/IP, NMEA OneNet	Industrial switch & NMEA OneNet M12 connector
CANBUS	<ul style="list-style-type: none"> • 1x CANFD • 1x Isolated CANFD 	NMEA2000 compatible M12 connector for the main CANbus
SERIALS	<ul style="list-style-type: none"> • 2x RS232 • 1x Isolated RS232/RS485/Modbus RTU (Software selectable) • 1x Isolated RS485/Modbus RTU (AutoDir) • Up to 4x RS232 Rx only (Share with Analog IN) 	
USB-C	1x USB-C Host & Dual Role, USB 2.0 & 3.0 (5Gbits/s, 5V 1A output) For Disk, Camera, Microphone, Loudspeaker, Docking station, DisplayLink Docking/Monitor/VR, KNX, LongWorks, Z-wave...	Optional locking connector.

OTHER	M.2 Module : Ethercat, FPGA (Contact us)	
DIGITAL ACQUISITION		
DAQ	<ul style="list-style-type: none"> • 2x Open Drain digital Output • 2x 12 bits Analog/Digital Output • 4x 12 bits Analog/Digital Input (share with RS232 Rx Only) 	AD5592R chip 0-5V or 0-2.5V, 400 kPSPS Overvoltage protection
SYSTEM		
RTC	• RTC with optional 3V rechargeable battery	Auto Wake-up possible
SYNCHRO IN	• 1x PPS Input, PTP synchro possible	RS232 Level, Polarity reversal in option
WATCHDOG	• Internal Watchdog	
CYBERSECURITY		
CYBERSECURITY	<ul style="list-style-type: none"> • TPM 2.0 • 2x Unique ID (TPM 2.0 + RPI CM5) • Option AES256 SSD • Option Security µSD Card 	SLB9673 Chip Post-quantum ready Security Card : Secure Acces Key , Hidden partition , Write Once Read Many
DEVELOPMENT / DEBUG		
DEBUG	<ul style="list-style-type: none"> • 1x µHDMI 4K • 1x USB-C Host / Dual role 2.0 & 3.0 (5Gbps) • USB-C NVMe/SSD Bootload 	µHDMI 4K under a cap USB-C Displaylink Docking Station Ready Bootload switch under a cap
ELECTRICAL		
POWER REQUIREMENT	8 to 33VDC Input Voltage Protection for UV, OV, and Reverse Voltage 4 to 12 W (0.3W in shutdown waiting a RTC Wake-up)	Can be powered directly by an NMEA2000/CANopen/DeviceNet bus
MECHANICAL		
DIMENSION / WEIGHT	114x104x28 mm, 230-270 g (Carbon Fiber base) Fan-less operation	
ASSEMBLY	Wall-mounted	DIN Rail in option, Pad in Option
ENCLOSURE BASE	Light Carbon Fiber plate for low-power applications Or CNC anodized aluminium heatsink for AI intensive applications	Butyl seal, O-ring seal in option
DEBUG PLUGS	2x Plugs for µSD + Boot switch, Nano SIM + µHDMI	
RELIABILITY		
MTBF	>100 000 hours (Ground, benign vibration), >11000 hours (mobile)	On demand : HALT IEC62506
WARRANTY	2 Years	
ENVIRONMENTAL		
OPERATIONAL TEMPERATURE	-20° to +60°C fanless	Vertical mount, Depending on loads and enclosure base material
STORAGE TEMPERATURE	-40° to +85°C	
HUMIDITY	5-95% Non-Condensing	
PROTECTION	IP66, optional IP67 (without the 2 side plugs)	With caps or all connectors connected
APPROVALS		
REGULATORY	CE, FCC Class A, ROHS Compliant <u>EMC:</u> EN 55032: 2015, EN 55035: 2017, EN 61000-3-2: 2014, EN 61000-3-3: 2013, IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11 <u>Safety:</u> IEC 62368-1:2018, EN IEC 62368-1:2020+A11:2020 Contact us for other countries (UKCA, IC/ISED, RCM, VCCI, SIRIM, BIS/WPC...) or for a Sector Specific Certification : <ul style="list-style-type: none"> • Marine : EN 60945, DNV / ABS / Lloyd's Register, IMO / SOLAS • Vehicles : E-MARK, ISO 26262, ISO 26262, CISPR 25 • Railway : EN 50155, EN 45545 • Defense : MIL-STD 810H, MIL-STD-461, MIL-STD-704, AECP500, STANAG 	
IMPORT & EXPORT		
HS CODE & COO	EU HSCODE : 8471707000 US HSCODE : 8517620090 CN HSCODE : 8537109090 UPC : COO : FRANCE	

3 ORDERING INFORMATION

Build your part number : In this example P/N 200-003-002(3.1)-W-8-32-256-N-4G-Y-C-B

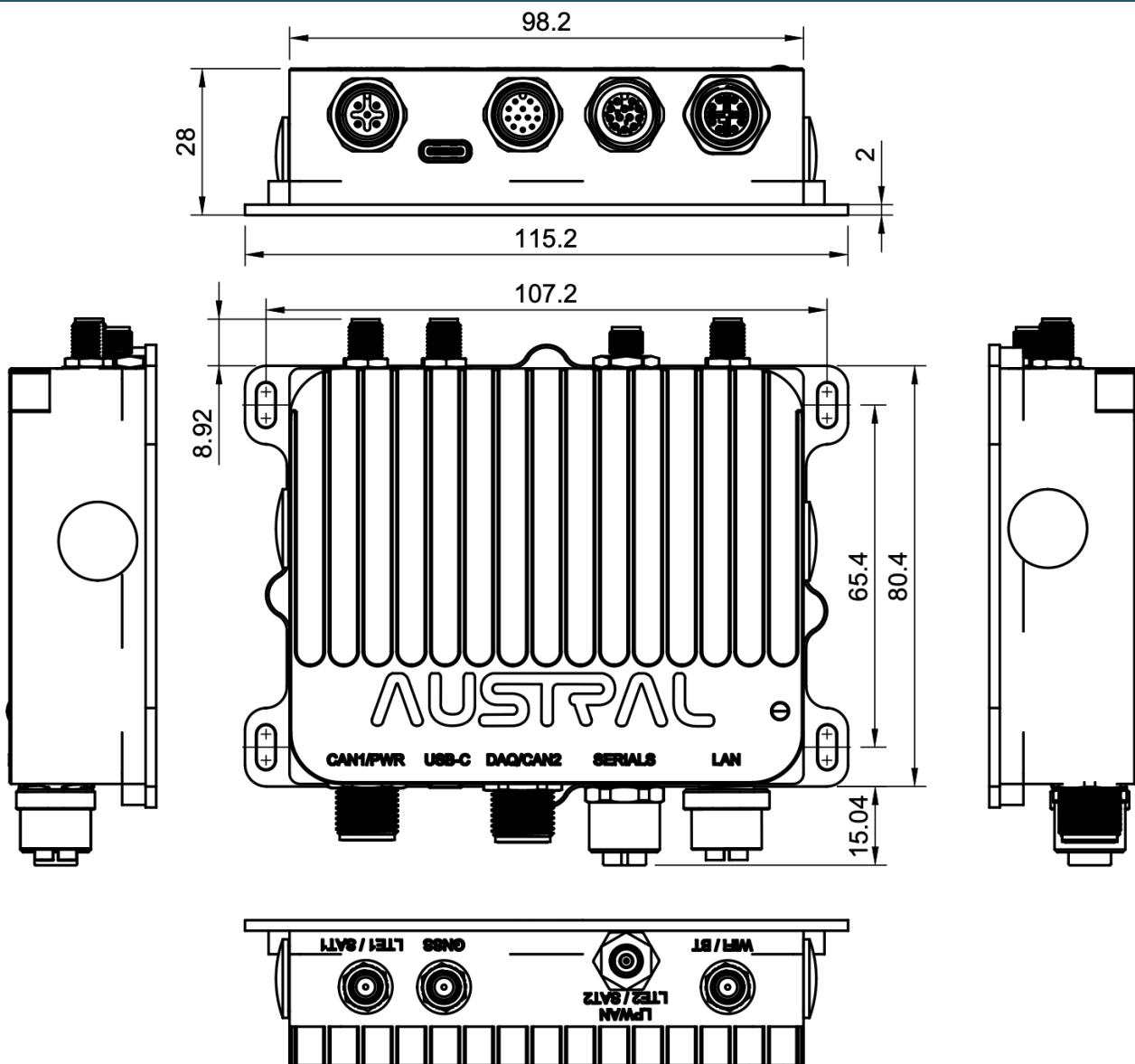
Features	P/N Example	Options	Description	Remark
Xplorer CM5 Family	200-003-002	200-003-002		
LPWAN (PCBA BOM)	(3.1)	(3.1) (3.2) (3.3) (3.4)	<ul style="list-style-type: none"> No LPWAN (Default) LoRaWAN / Sigfox (EU) LSM100A LoRaWAN / Sigfox (US) LSM110A Matter / Zigbee MGM240PA32VNA3 	PCBA with LPWAN options are made to order
CM5 Version	-W-8-32	-W-4-16 -W-8-32 -W-16-64 -N-16-64	<ul style="list-style-type: none"> RPI CM5 CM5104016 (Default) RPI CM5 CM5108032 RPI CM5 CM5116064 RPI CM5 CM5016064 (No wireless) 	Wireless - GB RAM - GB eMMC Contact us for other configuration
M.2 key M 2230 Module	-256	-N -256 -512 -1T	<ul style="list-style-type: none"> No module (Default) 256 GB NVMe SSD 512 GB NVMe SSD 1TB NVMe SSD 	Contact us for High Endurance or AES256 SSD
M.2 key M 2230 to 3042 Module	-N	-N -H8L -H8 -256 -512 -1T	<ul style="list-style-type: none"> No module (Default) TPU 13 TOPS Hailo-8L TPU 26 TOPS Hailo-8 256 GB NVMe SSD 512 GB NVMe SSD 1TB NVMe SSD 	Contact us for other TPU or SSD Hailo-10H : Expected Q4 25
M.2 key B 2230 to 3042 Module	-4G	-N -4G -5G -RTK	<ul style="list-style-type: none"> No module (Default) 4G LTE Global + GNSS 5G RedCap Global DTC Ready + GNSS GNSS RTK 	Contact us for LoRaWAN Concentrator, HaLow Software Defined Radio, UHF RFID, more AI...
RTC Battery	-Y	-N -Y	<ul style="list-style-type: none"> No Battery (Default) Rechargeable Battery (64mAh, 1000 cycles) 	
Bottom Plate & Mount	-C	-C -A	<ul style="list-style-type: none"> Wall mount Carbon Plate (Low Power App) Wall mount Aluminum Heat Sink (AI App) 	DIN mount on demand
Individual Packaging	-B	-B -C	<ul style="list-style-type: none"> Polyethylene bubble bag (Default) Cardboard 	Custom packaging contact us
Enclosure Anodization & Marking	Reserved		<ul style="list-style-type: none"> Black with Austral logo (Standard) 	Other color/marking, Contact us
Pre-installed Items	Reserved		<ul style="list-style-type: none"> Debian 13 Headless on eMMC, No uSD, No SIM, No pre installed software (Standard) 	Contact us for pre-installed Items

4 OPTIONAL ACCESSORIES

Order P/N	Description	Remark
200-003-100	Start accessory kit, includes : <ul style="list-style-type: none"> 2.4Ghz antenna, 30mm PowerIN/CAN1 M12 drop cable, 2m GbE cable, to RJ45, 2m Serials cable, to bare wires, 2m DAQ/CAN2 cable, to bare wires, 2m 	
Antennas		
GW.26.0111	Small 2.4Ghz monopole antenna, IP67, 1.2dBi, L=30mm, SMA male	On demand: High gain antenna
A-PUCK-0005-V2-01	All-In-One WiFi+BT+Matter+4G LTE+5G+GNSS antenna, IP69K, 5x SMA Male, Black, 2m	On demand: White
Cables		
HMC-000505-0MF-CSA02	PowerIN/CAN1 drop cable, M12 A 5P Male to Fem, Black, 2m	NMEA2000 / CANopen compliant On demand: 0.5m, 1m, 3m, 4m, 5m
80579	GbE cable, M12 X 8P Male to RJ45, Black, 2m	On demand: 1m, 3m, 5m, 10m
M12A-12BMMM-PL8D02	Serials cable, M12 12P Male Push-Pull to bare wires, IP68, Black, 2m	On demand: 1m, 3m, 4m, 5m, 10m
CBF12-S12N0-02BPUR	DAQ/CAN2 cable, M12 12P Fem to bare wires, PUR, IP67, Black, 2m	On demand: 1m, 5m, PVC
Mounting		
200-003-101	Mounting bracket to be glued with epoxy, M2.5	Hole-free mounting

All cables and antennas are standard and available for purchase off the shelf for reasonable prices.

5 DIMENSIONS



6 SOFTWARE SUPPORT & PRODUCT INTEGRATION GUIDE

Product web page : <https://austral-eng.com/en/xplorer-cm5/>
 Online support : <https://github.com/austral-electronics/Xplorer>

7 CONTACT

This product can be sold by unit for evaluation or in volume and is designed to fit to your needs (memories, wireless, AI, accessories...). It can be customized with your company's visual for 100 units (logo, colors, marking...). **Austral electronics** is a design office, we can support you on your specific needs in electronics, embedded computing, specific Linux, sector specific certification...

Contact us to begin the pricing and ordering process

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