



National Centre for Physics

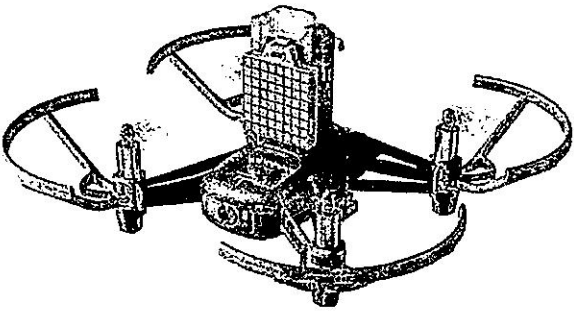
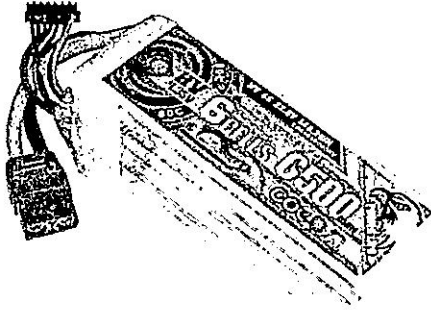
Detailed specification Document

Annex-B

Title of the Project – TRL Augmentation				
Sr. #	Item	Specification	A/U No.	QTY
1.	Jetson AGX Thor Developer Kit with Jetson T5000 Module or Equivalent	Jetson AGX Thor Developer Kit with Jetson T5000 Module or Equivalent • Specifications: ○ AI & Compute ▪ AI Performance: 2070 TFLOPS (FP4—Sparse) ▪ GPU: 2560-core NVIDIA Blackwell architecture GPU with 96 fifth-gen Tensor Cores; Multi-Instance GPU (MIG) with 10 TPCs ▪ GPU Max Frequency: 1.57 GHz ▪ CPU: 14-core Arm® Neoverse®-V3AE 64-bit; 1 MB L2 per core; 16 MB shared system L3 ▪ CPU Max Frequency: 2.6 GHz ▪ Vision Accelerator: 1× PVA v3 ○ Memory & Storage ▪ Memory: 128 GB 256-bit LPDDR5X, 273 GB/s ▪ Storage: 1 TB NVMe (M.2 Key M); supports NVMe via PCIe and SSD via USB 3.2 ○ Video Encode (max simultaneous) ▪ H.265: 6× 4K@60, 12× 4K@30, 24× 1080p@60, 50× 1080p@30 ▪ H.264: 6× 4K@60, 48× 1080p@30 ○ Video Decode (max simultaneous) ▪ H.265: 4× 8K@30, 10× 4K@60, 22× 4K@30, 46× 1080p@60, 92× 1080p@30 ▪ H.264: 4× 4K@60, 82× 1080p@30 ○ Camera ▪ Interfaces: HSB camera via QSFP slot; USB cameras ▪ Counts: Up to 20 cameras via HSB; up to 6 cameras via 16-lane MIPI CSI-2; up to 32 cameras via Virtual Channels ▪ PHY: C-PHY 2.1 (10.25 Gbps), D-PHY 2.1 (40 Gbps) ○ I/O & Expansion ▪ PCIe: ▪ M.2 Key M (x4 PCIe Gen5) ▪ M.2 Key E (x1 PCIe Gen5) ▪ Up to Gen5 (x8 lanes) fabric ▪ Root Port only — C1 (x1), C3 (x2) ▪ Root Port or Endpoint — C2 (x1), C4 (x8), C5 (x4) ▪ USB: 2× USB-A (3.2 Gen2), 2× USB-C (3.1); xHCI host with up to 3× USB 3.2 + 4× USB 2.0 ▪ Networking: 1× 5 GbE RJ45; 1× QSFP28 (4× 25 GbE); 4× 25 GbE		01

		▪ Display: 1× HDMI 2.0b, 1× DisplayPort 1.4a, up to 4× shared HDMI 2.1; VESA DP 1.4a (HBR2, MST) ▪ Other I/O: QSFP connector; M.2 Key E (WLAN/BT, x1 PCIe, USB2.0, UART, I2C, I2S); M.2 Key M (NVMe); PCIe x4 lane, I2C, PCIe x2 lane; 2× 13-pin CAN header; 2× 6-pin automation header; JTAG (2×5); 1× 12 V fan header (PWM/Tach); audio panel header (2×5); Micro-Fit power jack; RTC backup battery (2-pin); Status LEDs ▪ Serial/Audio Buses: 5× I2S / 2× audio hub (AHUB); 2× DMIS; 4× UART; 4× CAN; 3× SPI; 13× I2C; 6× PWM outputs ○ Power ▪ Consumption: 40 W – 130 W (configurable) ○ Mechanical & Thermal ▪ Developer Kit Dimensions: 243.19 mm × 112.40 mm × 56.88 mm ▪ Module Form-factor (Jetson T5000): 100 mm × 87 mm, 699-pin B2B connector ▪ Thermal: Integrated Thermal Transfer Plate (TTP) with heatpipe; supports optional fan or heatsink		
2.	NVIDIA DGX Spark (GB10 Grace-Blackwell) or Equivalent	NVIDIA DGX Spark (GB10 Grace-Blackwell) or Equivalent • Specifications: ○ Product Identifiers ▪ SKU: 904870 ▪ Mfr Part #: 940-54242-0000 ▪ UPC: 810152850299 ○ AI & Compute ▪ Processor (CPU): 20-core Arm (10× Cortex-X925 + 10× Cortex-A725) ▪ GPU / SoC: NVIDIA GB10 Grace-Blackwell Superchip (Blackwell architecture) ▪ AI Performance: Up to 1 petaFLOP (AI) ▪ Use Case Note: Ships with NVIDIA AI software stack; suitable for prototyping, fine-tuning, and inference of modern reasoning models up to ~200B parameters (local), with seamless deploy to data center/cloud ○ Memory & Storage ▪ System Memory: 128GB LPDDR5X (Unified) ▪ Storage: 4TB NVMe SSD (M.2) ○ Operating System & Software ▪ OS: NVIDIA DGX OS ▪ Software: NVIDIA AI software stack preinstalled ○ Networking & Wireless ▪ LAN: 10GbE RJ-45 (10/100/1000/10000 Mbps) ▪ WLAN: Wi-Fi 7 (802.11be); backward compatible with 802.11a/b/g/n (Wi-Fi 4), 802.11ac (Wi-Fi 5), 802.11ax (Wi-Fi 6/6E) ▪ Bluetooth: 5.3 / 5.4* ▪ <i>Specification varies in provided materials; confirm version at order time.</i> ○ Back-Panel I/O	No.	1

		▪ USB: 4× USB4 (Gen 3, Type-C) ▪ Video Out: 1× HDMI ▪ Network: 1× RJ-45 (10GbE) ○ Chassis & Physical ▪ Case Orientation: Horizontal ▪ Dimensions (W × D × H): 5.91 in × 5.91 in × 1.99 in (150.11 × 150.11 × 50.55 mm) ▪ Weight: 2.65 lb (1.20 kg)		
3.	RoboMaster TT Drone (with Extension Module Kit)	RoboMaster TT Drone (with Extension Module Kit) • Drone Module (Airframe) ○ Take-off Weight: 87 g (incl. propellers, prop guards, battery) ○ Dimensions: 98 × 92.5 × 41 mm ○ Propellers: 3" ○ Interfaces / Ports: Micro-USB (charging & data) ○ Built-in Functions / Sensors: Infrared height sensor, barometer, LED indicator, downward vision sensor, Wi-Fi, HD image transmission • Flight Performance ○ Max Flight Distance: 100 m ○ Max Flight Speed: 8 m/s ○ Max Flight Height: 30 m ○ Max Flight Time: 8 min [1] • Battery ○ Type: Removable Li-ion/LiPo pack ○ Capacity / Voltage: 1.1 Ah / 3.8 V • Camera ○ Stills: 5 MP ○ Field of View: 82.6° ○ Video: HD 720p @ 30 fps ○ Formats: JPG (photos), MP4 (video) ○ EIS: Electronic image stabilization (supported) • Extension Accessory: Open-Source Controller ○ Weight: 12.5 g (controller + ranging dot-matrix screen) ○ Dimensions: 49.5 × 32 × 15.2 mm ○ Wireless Modes: AP & Station ○ Wi-Fi Bands: 2.4 GHz & 5.8 GHz ○ Bluetooth: 2.4 GHz band ○ MCU: ESP32-D2WD, dual-core @ 160 MHz (≈400 MIPS) ○ Open-Source / Programming: SDK, Arduino, graphical programming, MicroPython ○ Scalability (I/O): 14-pin expansion for I²C, UART, SPI, GPIO, PWM, and power ○ Programmable LED: Full-color status/indicator LED • Ranging Dot-Matrix Screen Extension Module ○ Dimensions: 35.3 × 31.5 × 8.6 mm ○ Display: 8×8 red-and-blue programmable LED matrix ○ Driver / Interface: I²C (IIC), automatic matrix scanning ○ Brightness Control: 256-level overall + 256-level per-LED ○ Ranging Sensor: Infrared ToF distance sensor ○ Max Measured Distance: 1.2 m (indoors with white targets) • Adapter Extension Board ○ DIY Breakout: 14-pin extended interface → 2×7-pin 2.54-mm in-line pad ○ Indicators: 2× power LEDs, 2× debug LEDs • Wireless & Connectivity (Drone)	Kit.	02

		○ Control / Video Link: Wi-Fi (supports HD live view) ○ Image Transmission: HD stream to host device • What's in the Box (typical kit; may vary by SKU) ○ 1× RoboMaster TT drone (airframe with propellers & guards installed) ○ 1× Removable battery ○ 1× Open-source controller module ○ 1× Ranging dot-matrix screen module ○ 1× Adapter extension board (14-pin to 2×7-pin) ○ 1× Micro-USB cable ○ 2× Spare rubber/small mounting accessories & screws (as applicable) 		
4.	CODDAR RC LiPo Battery 6S 6500mAh 22.8V 80C XT90	CODDAR RC LiPo Battery 6S 6500mAh 22.8V 80C XT90 or equivalent • Electrical ○ Chemistry: LiPo (HV, 4.35 V per cell) ○ Cell Count: 6S (6 cells) ○ Nominal Voltage: 22.8 V ○ Capacity: 6500 mAh ○ Energy: 148.2 Wh ○ Discharge Rating: 80C • Connectors ○ Main Discharge: XT90 	No.	02
5.	Dropping Mechanisms for DJI Mavic 3 for delivery	3 Dropping Mechanisms for DJI Mavic 3 for delivery 1) SINGLE DROP • Brand: Waillynice or similar • Type: Drone accessory – single-payload airdrop • Function: Relief-supply drop • MOQ: 50 pcs • Package: 10 × 5 × 5 cm, 0.5 kg	Kit	1

		2) DOUBLE DROP • Brand: Wailynice or similar • Type: Dual airdrop release (two payloads) • Function: Double-item delivery / rescue supply drop • MOQ: 50 pcs 3) GENERIC MAVIC 3 AIRDROP SYSTEM • Brand: Generic • Compatibility: Mavic 3 / Mavic 3 Pro / Mavic 3 Classic • Material: ABS • Color: Dark grey • Load Capacity: 500 g • Battery: 150 mAh (LED-light trigger) • Standby: ~12 hrs • Size: 8.8 × 9.6 × 2.7 cm • Charging: Micro-USB, 1.5 hrs • Includes: Landing gear, USB cable, hook		
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Note: All the components installed should be compatible with the system and each other.

Please tick the relevant box

☐ Installation

☐ Testing

☐ Commissioning

☐ Training

☐ Warranty requirement ☐ Any other please specify