



National Centre for Physics

Detailed specification Document

A-306

Title of the Project – TRL Augmentation				
Sr. #	Item	Specification	A/U	QTY
1.	SIYI A8 mini Gimbal Camera	<p>Specifications</p> <p>General</p> <ul style="list-style-type: none"> • Video Output Ports: Ethernet; CVBS; Micro-HDMI • Control Signal Input Ports: S.Bus; UART; Ethernet (UDP/TCP) • Control Signal Output Ports: S.Bus • Stabilization Axes: 3-Axis (Yaw, Pitch, Roll) • Working Voltage: 11 ~ 25.2 V (3S to 6S) • Power Consumption: Average 5 W; Peak 12 W • Waterproof Level: IP4X • Working Temperature: -10°C ~ +50°C • Dimensions: 55 × 55 × 70 mm • Weight: 95 g <p>Gimbal</p> <ul style="list-style-type: none"> • Angular Vibration Range: ±0.01° • Controllable Pitch Angle: -135° ~ +45° • Controllable Yaw Angle: -160° ~ +160° • Roll Angle: -30° ~ +30° <p>Camera</p> <ul style="list-style-type: none"> • Image Sensor: Sony 1/1.7-inch CMOS; 8 MP effective • Lens: Fixed focal length; 6× digital zoom • Equivalent Focal Length: 21 mm • Aperture: F2.8 • Field of View (FOV): Diagonal 93°; Horizontal 81° • Video Recording Resolution (25 fps): <ul style="list-style-type: none"> ○ 4K (4096 × 2160) ○ 2K (2560 × 1440) ○ 1080p (1920 × 1080) ○ 720p (1280 × 720) • Video Bitrate (H.265): <ul style="list-style-type: none"> ○ 4K/2K: 20 Mbps ○ 1080p/720p: 15 Mbps • File System: FAT32; ExFAT • Image Format: JPG • Video Format: MP4 • Supported microSD: microSD Class 10, up to 256 GB • Still Photo Mode: Single • White Balance: Auto 	No.	2
2.	T-MOTOR Folding	Specifications	No.	4

	Propellers (MF1503-2PCS/PAIR)	General <ul style="list-style-type: none"> • Model No.: MF1503 • Series: T-MOTOR Folding • Configuration: 2PCS/PAIR • Material: Polymer + CF Dimensions <ul style="list-style-type: none"> • Diameter: 15 inch (381 mm) • Pitch: 5.4 inch (136.1 mm) Weight & Packaging <ul style="list-style-type: none"> • Weight (Single Blade): 24 g • Package Weight: 121 g • Package Size: 224 × 87 × 41 mm Performance <ul style="list-style-type: none"> • Recommended Thrust / RPM: 1 ~ 1.5 kg @ 4100–4900 RPM • Recommended Max Thrust / RPM: 3 kg @ 7000 RPM Environmental <ul style="list-style-type: none"> • Ambient Temperature: -40°C ~ +65°C • Storage Temperature / Humidity: -10°C ~ +50°C / < 85% 		
3.	Here4 Multiband RTK GNSS	Specifications Product Type <ul style="list-style-type: none"> • Professional High Precision Dual-band RTK Navigation module • Combines flight control and navigation functionalities in one device GNSS Support <ul style="list-style-type: none"> • BeiDou • Galileo • GLONASS • GPS • QZSS RTK / Positioning <ul style="list-style-type: none"> • Utilizes advanced algorithms and multi-frequency DGNSS signals • Quickly achieves an RTK Fix within seconds • Highly reliable positioning accuracy within centimeters Core Components	No.	2

		<ul style="list-style-type: none"> • uBlox NEO-F9P L1/L5 RTK Multi Constellation GNSS module • STM32H757 dual-core processor • RM3100 magnetic compass • IMU: ICM42688 <p>Outputs / Interfaces</p> <ul style="list-style-type: none"> • 8 PWM or BDSHOT outputs • RCIN • Hotshoe • Camera trigger <p>Communication / Expansion</p> <ul style="list-style-type: none"> • DRONECAN FD communication protocol (8Mbps) for fast and stable transmission • Based on the AP-Periph open source platform for further development and customization <p>Compliance</p> <ul style="list-style-type: none"> • <i>2024 NDAA compliant - all chips and components are sourced and assembled in Allied nations.</i> <p>What's Included</p> <ul style="list-style-type: none"> • HX4-06248 Here4 • 1x Here4 GNSS • 1x Complete cables set with OrangeCube cables with splitter 		
4.	SIYI MK32 Kit	<p>SIYI MK32 Enterprise Handheld Ground Station System</p> <p>1) SIYI MK32 Enterprise Handheld Ground Station Smart Controller - HDMI Combo</p> <p>A) Overall / Link (Important Specs)</p> <ul style="list-style-type: none"> • Max transmission range: 15 km (unobstructed, interference-free) • Channels: 16 physical / 16 communication channels • Datalink compatible flight controllers: PX4 / ArduPilot open-source flight controllers (incl. SIYI N7 etc.) • Certifications (as sold/listed): CE / FCC <p>B) Ground Unit (Handheld Controller) - Important Specs</p> <ul style="list-style-type: none"> • Display: 7-inch HD high-brightness LCD touchscreen • OS / Memory: Android 9.0, 4GB RAM, 64GB ROM • Battery: 10200 mAh, 7.4V (2S) Li-ion, 75.48 Wh • Charging: PD 30W, ~3.5 h charge time; battery life up to 10 h 	Kit	2

- Antennas: **Omni 5 dBi, Long-range 11 dBi** (optional lollipop 5 dBi)
- Ports (key): **HDMI video out, LAN (Ethernet), USB-A, Type-C, SIM slot, TF card slot**

C) Air Unit (HM30) - Important Specs (for Pixhawk integration)

- RC outputs: **16-ch SBUS, 5-ch PWM**
- Ports: **SBUS (GH1.25 3-pin), UART datalink to FC (GH1.25 4-pin), PWM CH1–CH5 (GH1.25 6-pin), LAN (GH1.25 8-pin), Type-C (upgrade)**
- Working voltage: **3S–6S (12.6–25.2V)**; expandable via **4S–18S power module (16.8–75.6V)**

D) Air Unit HDMI → Ethernet Converter (Included in HDMI Combo)

- Function: **Micro HDMI input → Ethernet output**
- Power: **12V, 3W**
- Recording support (TF/microSD): **H.265, 1080p/30, Class10 microSD ≤ 32GB, FAT32**

E) PWM Servo (Standard RC Servo - 3-wire)

- Purpose: **Payload release / pan-tilt / actuator control** (as required)
- Interface / Wiring: **Standard 3-wire servo lead (Signal / +V / GND)** to be driven by:
 - **MK32 HM30 Air Unit PWM output (CH1–CH5), or**
 - **Pixhawk PWM outputs (MAIN/AUX), depending on integration**
- Control type: **PWM servo control signal (RC-standard)**
- Accessory requirement: **Servo horn set + mounting hardware (recommended)**

Included Accessories (Official Packing List)

HDMI Combo - Package Includes

- **1 × MK32 Ground Unit**
- **2 × Standard Omni Antenna (Ground Unit)**
- **2 × Long Range Antenna (Ground Unit)**
- **1 × HM30 Air Unit**
- **2 × Standard Omni Antenna (Air Unit)**
- **1 × Air Unit HDMI Input Converter (Micro HDMI → Ethernet)**

		<ul style="list-style-type: none"> • 1 × 4S to 18S Power Module • 1 × PX4 / ArduPilot Flight Controller Telemetry Cable (UART to FC) • 1 × Air Unit SBUS Cable • 1 × PWM Cable (for CH1–CH5) • 1 × Ethernet Cable • 1 × 30W PD Fast Charger (Type-C, US Plug) • 1 × PD Fast Charging Cable (Type-C to Type-C) • 1 × Type-C to USB-A Converter • 1 × Carrying Case + straps (case strap + handheld strap) • 1 × PWM Servo (standard RC servo, 3-wire) - for payload release / pan-tilt / actuator (connect via MK32 air-unit PWM or via Pixhawk) 		
5.	3 Separate Dropping Mechanisms for DJI Mavic 3 for delivery	<p>3 Dropping Mechanisms for DJI Mavic 3 for delivery (Each Single Packet)</p> <p>1) SINGLE DROP</p> <ul style="list-style-type: none"> • Brand: Wailynice or similar • Type: Drone accessory – single-payload airdrop • Function: Relief-supply drop • MOQ: 50 pcs • Package: 10 × 5 × 5 cm, 0.5 kg <p>2) DOUBLE DROP</p> <ul style="list-style-type: none"> • Brand: Wailynice or similar • Type: Dual airdrop release (two payloads) • Function: Double-item delivery / rescue supply drop • MOQ: 50 pcs <p>3) GENERIC MAVIC 3 AIRDROP SYSTEM</p> <ul style="list-style-type: none"> • 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 	Kit	1
6.	SIYI ZT30 Optical Pod Gimbal Camera	<p>Specifications:</p> <ul style="list-style-type: none"> • Thermal Imaging: 640 x 512 resolution, high-accuracy thermometric capabilities. • Zoom: 4K 180X Hybrid Zoom, 30X Optical Zoom. • Laser Rangefinder: 1200-meter range, high-accuracy. • Camera: 4K Ultra HD video recording, still photo 	No.	1

resolution up to 4K.

- **Modes:** Nose Mode, Upside Down Mode.
- **Compatibility:** Works with ArduPilot & PX4 (Mavlink).
- **Stabilization:** High-accuracy 3-axis (Yaw, Pitch, Roll).
- **Control:** Supports S.Bus, UART, Ethernet UDP/TCP.

Mechanical & Electrical:

- **Voltage:** 11 ~ 25.2 V.
- **Power Consumption:** Average 9 W, Max 20 W.
- **Waterproof Level:** IP4X.
- **Operating Temperature:** -10 ~ 50 °C.
- **Dimensions:** 134.5 x 140 x 201 mm.
- **Weight:** 854 g (with quick-release anti-vibration claw).

Camera Specifications:

• **Zoom Camera:**

- **Lens:** 30X Optical Zoom (180X Hybrid).
- **Focal Length:** 4.8 ~ 149mm.
- **Image Sensor:** 1/2.7 Inch, 8 MP.
- **Aperture:** F1.3 ~ 4.8.
- **FOV:** 65.4° Diagonal, 58.1° Horizontal (without zoom).
- **Video Recording:** 4K (4096×2160) @ 30 fps, 2K (2560×1440) @ 30 fps, 1080p (1920×1080) @ 30 fps.
- **Still Photos:** 4K (4096×2160).

• **Thermal Imaging Camera:**

- **Sensor:** Uncooled VOx Microbolometer.
- **Resolution:** 640 x 512.
- **Zoom:** 2X Digital.
- **Temperature Range:** -20 ~ +150°C (High Gain), 0 ~ +550°C (Low Gain).
- **Accuracy:** ±2°C (-20 ~ +150°C), ±3°C (0 ~ +550°C).

• **Wide Angle Camera:**

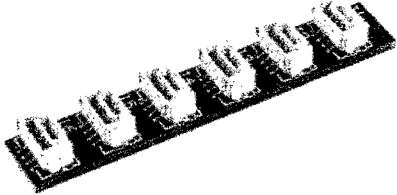
- **Sensor:** 1/2.8 Inch, 4 MP.
- **FOV:** 93° Diagonal, 84.5° Horizontal.
- **Resolution:** 2K (2560×1440) @ 30 fps for video, 2K for still photos.

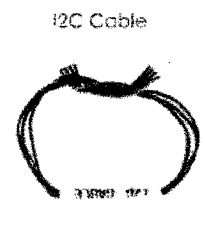
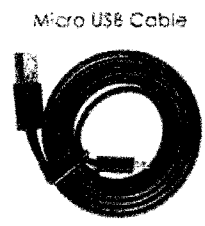
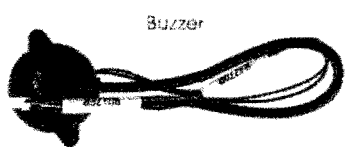
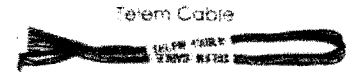
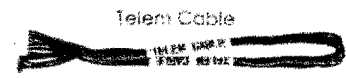
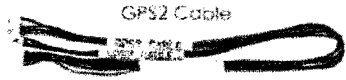
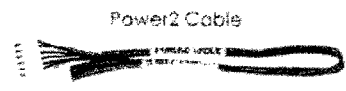
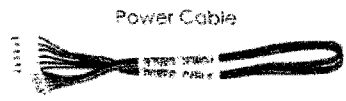
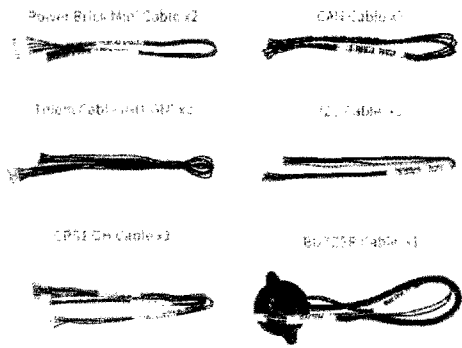
• **Laser Rangefinder:**

- **Range:** 5 ~ 1200 m.
- **Accuracy:** ±1 m (3 ~ 100 m), ±1 + L*0.25% m (100 ~ 600 m).
- **Laser Power:** 5 mW.
- **Pulse Frequency:** 3 Hz.

Storage & Formats:

		<ul style="list-style-type: none"> • Video Bitrate: 15 Mbps (H.265 Codec). • File Formats: FAT32, ExFAT. • Image Format: JPG. • Video Format: MP4. • Max Supported MicroSD: 256GB (MicroSD Class 10). <p>Control & Connectivity:</p> <ul style="list-style-type: none"> • Ethernet: Video output port. • Control Ports: S.Bus, UART, Ethernet UDP/TCP. <p>Stabilization: High-accuracy 3-axis.</p>		
7.	NPT Pressure Transducer	<p>Universal 5V 1/8 NPT Pressure Transducer Sender or equivalent</p> <p>Specifications:</p> <ul style="list-style-type: none"> • Material: Stainless Steel • Voltage: DC 5V • Thread Type: 1/8" NPT • Pressure Range: 30 psi, 100 psi, 150 psi, 200 psi, 300 psi, 500 psi • Accuracy: ±0.5% FS to ±2% FS (depending on range) • Output: 0.5V to 4.5V linear voltage output • Operating Temperature: -40°C to +120°C (varies by model) • Protection: IP67 (Waterproof) • Connector: Water-sealed quick disconnect • Response Time: ≤1 ms • Insulation Resistance: >100MΩ at 500VDC • Shock Resistance: 1000g 	No.	5
8.	Gyro GY-801 10DOF	<p>Gyro GY-801 10DOF Multi-Sensor Module or equivalent</p> <p>Specifications:</p> <ul style="list-style-type: none"> • Sensors: <ul style="list-style-type: none"> ○ Gyroscope: L3G4200D (3-Axis Angular Rate Sensor) ○ Accelerometer: ADXL345 (3-Axis Digital Accelerometer) ○ Magnetic Compass: HMC5883L (3-Axis Digital Compass) ○ Barometric Pressure: BMP085 (Barometric Pressure Sensor) • Interface: I2C Digital Interface • Operating Voltage: 3.3V/5.0V (supports both with built-in regulator and logic converter) • Module Size: 25.8mm x 16.8mm • Mounting Holes: 3mm • Pin Interface: Standard 2.54mm pin header for breadboard experiments 	No.	5
9.	I2C & CAN Splitter for Orange Cube	<p>Specifications</p> <p>Product Type</p> <ul style="list-style-type: none"> • CAN BUS interface expansion board. 	No.	5

		<p>Interfaces / Function</p> <ul style="list-style-type: none"> • Can be used for splitting I2C or CAN (use only one type of connection). • Allows the connection of multiple devices to one port. <p>Connectors</p> <ul style="list-style-type: none"> • Original I2C / CAN Splitter JST GH 4 Pin. • 4 pin JST GH connectors. <p>Ports</p> <ul style="list-style-type: none"> • 6 ports. <p>Compatibility</p> <ul style="list-style-type: none"> • For the cube and modern autopilots. <p>Physical</p> <ul style="list-style-type: none"> • Weight: 0.012 kg • Dimensions: 12 × 5 × 1 cm <p>Package Includes</p> <ul style="list-style-type: none"> • I2C / CAN Splitter * 1 <p>Notes</p> <ul style="list-style-type: none"> • Included with Cube standard sets. 		
10.	Orange Cube Cables Set	<ul style="list-style-type: none"> <input type="checkbox"/> Power Brick Mini x1 <input type="checkbox"/> Power Cable x1 <input type="checkbox"/> Power2 Cable x1 <input type="checkbox"/> CAN Cable x2 <input type="checkbox"/> I2C Cable x2 <input type="checkbox"/> Telem Cable (GH-GH) x2 <input type="checkbox"/> GPS1 GH Cable / GPS1 Cable x1 <input type="checkbox"/> GPS2 Cable x1 <input type="checkbox"/> Buzzer Cable / Buzzer x1 <input type="checkbox"/> Micro USB Cable x1 <input type="checkbox"/> I2C Board x1 - 6 connectors (ports) 	Set.	5

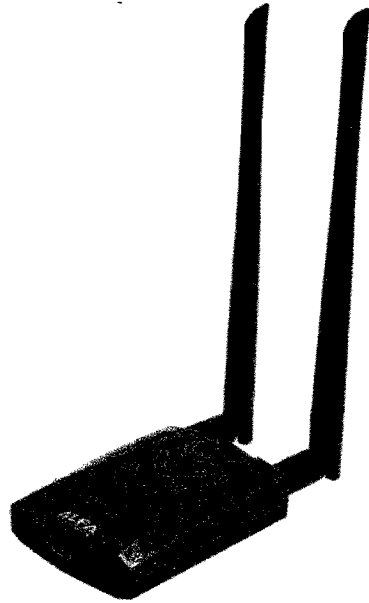


11. AWUS036 ACH WiFi Adapter or equivalent

- Specifications**
- Chipset: Realtek™ RTL8812AU
 - IEEE 802.11 standards: a/b/g/n/ac
 - Frequency: 2.4 GHz; 5 GHz

No. 4

- **Data rate:** 802.11b: 11 Mbps; 802.11a/g: 54 Mbps; 802.11n: 300 Mbps; 802.11ac: 867 Mbps
- **Antenna connectors:** 2× RP-SMA (female)
- **Antenna:** 2× dipole omni (5 dBi gain)
- **Interface:** Type-C SuperSpeed USB 5 Gbps (with USB 2.0 backward compatibility)
- **Operating systems:** Microsoft Windows XP, Vista, 7, 8, 10, 11; Linux
- **Power consumption (max.):** 0.7 A on 5 V
- **Dimensions:** 85 × 63 × 20 mm



AWUS036ACH - Package Includes

- 1× AWUS036ACH USB Wi-Fi adapter
- 2× detachable high-gain dipole omni antennas (5 dBi gain)
- 1× screen clip mount
- 1× USB docking base and other accessories

12.	Airvolute DroneCore 2	<p>Specifications</p> <ul style="list-style-type: none"> • AI Compute Module: NVIDIA Jetson Orin NX 16GB (replaces Jetson Xavier NX) • AI Performance: Up to 100 TOPS • Storage: 256GB M.2 SSD • Primary Flight Controller: CubePilot Cube Orange+ / Cube Blue • Secondary FMU: STM32H7 ARM Cortex-M7 @ 480 MHz • Autopilot Architecture: Dual redundant FMU design • ESCs: 4 × FOC UAVCAN / DroneCAN ESCs • ESC Rating: 20A continuous / 40A peak per ESC • Integrated Sensors: BMI088 IMU and BMP388 barometer • Wireless Connectivity: Integrated WiFi module • Ethernet: 5 × 1Gbit Ethernet lines • SDK Support: ROS2-based SDK with unified Python API • Supported Vehicle Types: VTOL, multicopter, plane, rover 	Kit	01
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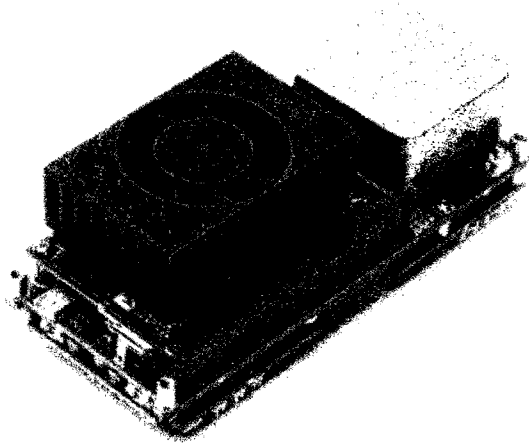
- Operating Voltage: 9V ~ 30V input (supports up to 6S LiHV batteries)
- Power Management: Redundant power supply with integrated DC/DC converter
- Cooling: Active heatsink with fan
- Dimensions: 119.5mm × 51mm × 41mm
- Weight: 206g

Interfaces & Connectivity:

- CAN Bus: 2 × CAN
- UART: 4 × UART
- I2C: 2 × I2C
- PWM Outputs: 14 channels (6 + 8 / 7 + 7)
- PPM Input: Supported
- USB: 4 × USB 3.0 + 1 × USB 2.0 debug port
- Camera Interfaces: 6 × CSI (22-pin)
- PCIe Expansion: M.2 Key E
- GPIO: 4 × GPIO
- Video Output: Micro HDMI
- Storage Expansion: MicroSD card support
- Interfaces Supported: UAVCAN, UART, I2C, SPI

Power Board Features:

- Integrated Power Sensor with battery voltage/current monitoring
- SMBUS support
- Analog battery cell monitoring inputs
- LED Driver support for 4 × WS2812B LED strips
- Current-protected peripheral connectors



Kit include All accessories including cables, converters.

13.	Pioneer External Blu-ray Drive BDR-XD08S (USB 3.2 Gen1 Type-C Slim	Specifications A) Overall / Link <ul style="list-style-type: none"> • Brand: Pioneer • Model: BDR-XD08S • Type: External Blu-ray / DVD / CD Writer (portable slim drive) • Optical formats supported: Blu-ray / DVD / CD (read + write) 	No.	2
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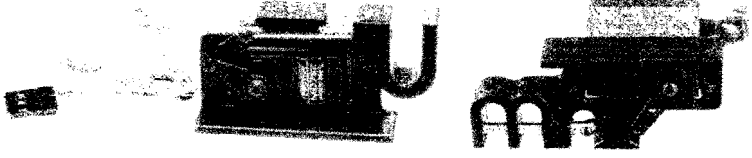
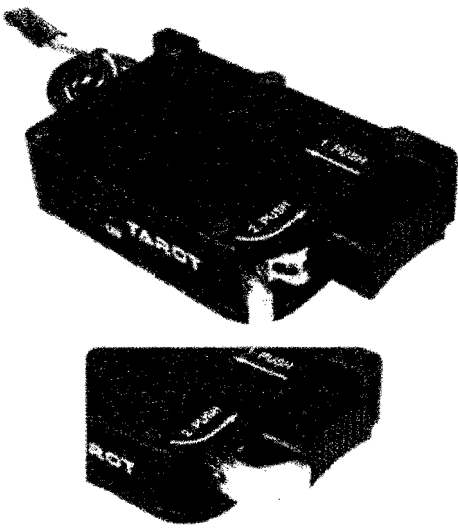
	Portable Writer) or equivalent	<ul style="list-style-type: none"> • Interface: USB 3.2 Gen 1 (5Gbps) + USB 2.0 backward compatible • Connector: USB Type-C (with adapter cable included) • Power: USB bus-powered (no external power needed) • Form factor: Ultra-slim portable external drive • Use cases: Backup, media playback, software installation, data archiving <p>B) Performance / Speed Specs</p> <ul style="list-style-type: none"> • Blu-ray write speed: up to 6X • DVD write speed: up to 8X (typical range) • CD write speed: up to 24X • CD read speed: up to 16X • Cache memory: 2MB • Media compatibility: BD-R / BD-RE / DVD±R / DVD±RW / CD-R / CD-RW / M-DISC (DVD supported) <p>C) Compatibility / Software Support</p> <ul style="list-style-type: none"> • Operating systems supported: <ul style="list-style-type: none"> • Windows 11 / 10 / 8.1 • macOS and Ubuntu • Compatible devices: <ul style="list-style-type: none"> • Laptops • PCs with USB Type-C / USB-A ports <p>D) Physical / Build Specs</p> <ul style="list-style-type: none"> • Dimensions: 15 × 12 × 0.1 cm • Weight: 8.1 oz (approx. 230g) • Color: Silver • Design: Slim portable tray-loading drive • Included accessories: <ul style="list-style-type: none"> • USB cable • USB Type-C adapter cable • Power/data cable set (as bundled) <p>E) Usage Features</p> <ul style="list-style-type: none"> • Portable optical drive • CD/DVD/Blu-ray reading & writing • Data backup & archiving • Movie playback • Software installation • Travel-friendly design 		
14.	Ease Mobile External DVD Writer (USB 3.0)	Specifications <p>A) Overall / Link</p> <ul style="list-style-type: none"> • Brand: Ease • Model: Mobile External DVD Writer 	No.	2

	<p>Portable Optical Drive) or equivalent</p>	<ul style="list-style-type: none"> • Type: External DVD/CD Writer (no Blu-ray support) • Interface: USB 3.0 (up to 5Gbps) + USB 2.0 backward compatible • Connector: USB + USB-C cable included • Power: USB powered • Form factor: Slim tray-loading portable drive • Use cases: Movies, music, data backup, software installation <p>B) Performance / Speed Specs</p> <ul style="list-style-type: none"> • USB transfer speed: up to 5Gbps (USB 3.0) • DVD write speed: up to ~8X (typical external DVD class) • CD write speed: up to ~24X (typical range) • Media support: <ul style="list-style-type: none"> • CD-R / CD-RW • DVD±R / DVD±RW • No Blu-ray support <p>D) Compatibility</p> <ul style="list-style-type: none"> • Windows (all modern versions) • macOS • Linux • Laptops & desktops (USB supported devices) <p>E) Design</p> <ul style="list-style-type: none"> • USB-C + USB-A flexible connectivity 		
15.	<p>Sony DVD-RW 4.7GB (Rewritable DVD) or equivalent</p>	<p>Specifications</p> <p>A) Overall / Link (Important Specs)</p> <ul style="list-style-type: none"> • Brand: Sony • Type: Blank rewritable DVD • Capacity: 4.7GB (Single Layer DVD-5) • Format: DVD-RW (Rewritable – can be erased & reused) • Rewritability: should have ~1000 rewrite cycles (typical standard DVD-RW limit) • Use: Temporary storage, reusable backups, data transfer <p>B) Performance / Recording Specs</p> <ul style="list-style-type: none"> • Write speed support: 1X – 6X (depends on disc/drive) • Storage capacity: 4.7GB • Data type: Files, videos, backups • Compatibility: Works with Pioneer BDR-XD08S and most DVD writers <p>C) Quality / Reliability</p> <ul style="list-style-type: none"> • Stable phase-change rewritable layer • Good durability for repeated reuse • Slightly lower archival stability than DVD-R (normal for RW) 	No.	5

		<p>discs)</p> <ul style="list-style-type: none"> • Can be fully erased and reused multiple times <p>D) Use Cases</p> <ul style="list-style-type: none"> • Reusable backups • Temporary file storage • Testing / repeated writing • Data transfer between devices 		
16.	VERBATIM DVD-RW 4.7GB (REWRITABLE DVD) or equivalent	<p>Specifications</p> <p>A) Overall / Link (Important Specs)</p> <ul style="list-style-type: none"> • Brand: Verbatim • Type: Rewritable DVD • Capacity: 4.7GB (Single Layer DVD-5) • Format: DVD-RW (Rewritable) • Rewritability: Should be erased and reused (~1000 times typical) • Use: Temporary storage, reusable backups <p>B) Performance / Recording Specs</p> <ul style="list-style-type: none"> • Write speed support: 1X – 6X (varies by disc/drive) • Storage capacity: 4.7GB • Data type: Files / media / backups • Compatibility: Works with Pioneer BDR-XD08S and most DVD drives <p>C) Quality / Reliability</p> <ul style="list-style-type: none"> • Reusable recording surface • Can be erased and rewritten multiple times • Slightly lower archival stability than DVD-R • Performance depends on usage cycles 	No.	5
17.	<u>ARK Flow MR (DroneCAN Optical Flow & Mid-Range Distance Sensor Module)</u>	<p>Specifications</p> <ul style="list-style-type: none"> • Function: GPS-denied hover stabilization, optical flow positioning, distance sensing • Application: UAV indoor flight, tunnels, GPS-denied environments • Firmware: UAVCAN firmware update supported • ROS2 Support: Yes <p>Sensors:</p> <ul style="list-style-type: none"> • Optical Flow Sensor: PixArt PAA3905 • Working Distance: 80 mm to infinity • Calibration: No focal length calibration required • Special Detection: Checker boards, stripes, glossy surfaces, yawing detection • IR LED: 40mW onboard IR LED for low-light operation • Field of View: 42° 	No.	2

		<p>Distance Sensor:</p> <ul style="list-style-type: none"> • Sensor: Broadcom AFBR-S50LX85D ToF Sensor • Distance Range: Up to 50 m • Ambient Light Tolerance: Up to 200k Lux • Laser Opening Angle: 2° × 2° <p>IMU:</p> <ul style="list-style-type: none"> • Model: Invensense IIM-42653 • Type: 6-Axis IMU <p>Connectivity:</p> <ul style="list-style-type: none"> • CAN Connectors: Two Pixhawk standard CAN connectors • Connector Type: 4-Pin JST GH • Debug Connector: 6-Pin JST SH <p>Mechanical & Electrical:</p> <ul style="list-style-type: none"> • Dimensions: 3 × 3 × 1.4 cm • Weight: 5 g • Voltage: 5V • Power Consumption: 86mA average, 90mA max • Indicators: LED status indicators • Compliance: NDAA compliant • Manufacturing: USA Built <p>Included:</p> <ul style="list-style-type: none"> • 1× ARK Flow MR Module • JST GH CAN Cable • Mounting Hardware / Screws 		
18.	<p>PLD80 Mini Gimbal</p>	<p>Specifications</p> <p>1. Introduction The PLD80 Mini Gimbal is a lightweight, two-axis stabilized EO/IR payload integrating:</p> <ul style="list-style-type: none"> • 8mm visible EO camera • 18mm uncooled thermal IR camera (8–14 μm band) <p>It uses digital stabilization and target tracking to follow moving objects in complex backgrounds. Designed for UAV platforms, it is suitable for surveillance, anti-terrorism operations, pipeline inspection, and reconnaissance applications.</p> <p>2. Key Features</p> <ul style="list-style-type: none"> • Dual sensor: 8mm EO + 18mm IR thermal • Built-in target tracking system • Two-axis gyro-stabilized structure • Lightweight design (≤280g) • Wide power input range (14–28V) • Ethernet + RS422/RS232 control & video interfaces • Real-time digital image stabilization <p>3. EO Sensor (Visible Camera)</p> <ul style="list-style-type: none"> • Sensor: CMOS (domestic) • Pixel size: 3.0 μm • Resolution: 2560 × 1440 @ 60 fps (2.5K HD) • Lens: 8 mm prime lens 	<p>Kit</p>	<p>1</p>

		<ul style="list-style-type: none"> • Field of View (FOV): 51° × 30° <p>4. IR Sensor (Thermal Camera)</p> <ul style="list-style-type: none"> • Detector: Uncooled microbolometer (8–14 μm) • Pixel size: 12 μm • Resolution: 640 × 512 @ 60 fps • Lens: 18 mm prime lens • Field of View (FOV): 24° × 18° • Color palettes: White hot / Black hot / color modes <p>5. Target Tracking System</p> <ul style="list-style-type: none"> • Tracking frequency: 60 Hz • Minimum contrast ratio: 5% • Target size range: 16 × 16 to 128 × 128 pixels • Tracking speed: ±48 pixels/frame <p>Effective Detection Range</p> <ul style="list-style-type: none"> • EO (day camera): ≥ 3.6 km (vehicle target ~6.5 × 3 m) • IR (thermal): ≥ 1 km (vehicle target ~6.5 × 3 m) <p>6. Interface & Control</p> <ul style="list-style-type: none"> • Video output: Ethernet (UDP / RTSP) • Control interface: RS232 / optional RS422 • Network support: IP streaming + control integration <p>7. Power System</p> <ul style="list-style-type: none"> • Input voltage: 14 – 28 V DC • Power consumption: <ul style="list-style-type: none"> ◦ Average: ≤ 12 W ◦ Maximum: ≤ 20 W <p>8. Environmental Specifications</p> <ul style="list-style-type: none"> • Operating temperature: -40°C to +60°C • Storage temperature: -40°C to +60°C <p>9. Mechanical Structure</p> <ul style="list-style-type: none"> • Stabilization: 2-axis (Pan + Tilt) • Pan range: +90° to -90° • Tilt range: +30° to -90° • Dimensions: 77 × 78 × 83 mm • Weight: ≤ 280 g 		
19.	<u>Remote Control Servo Driven Payload Release Mechanism Both Single & Double</u>	<p>Package should include both Single and Double Servo Payload Drop System Specifications:</p> <ul style="list-style-type: none"> • Function: Payload release, parcel delivery, rescue supply drop • Material: 6061 Aluminum Alloy • Servo: HENGE MD752 Metal Digital Servo • Operating Voltage: 4.8V ~ 6V • Application: Helicopters, Multicopters, FPV UAVs <p>Single Drop:</p> <ul style="list-style-type: none"> • Payload Capacity: 8–10 kg • Weight: 55 g • Dimensions: 54 × 40 × 33 mm <p>Double Drop:</p> <ul style="list-style-type: none"> • Payload Capacity: 10–14 kg • Weight: 110 g <p>Included:</p> <ul style="list-style-type: none"> • 1× Servo Payload Release Mechanism (TL2961-02 / TL2961-03) • Fixing Screws • Mounting Bracket • Servo Cable 	Package	2

				
20.	<u>Drone</u> <u>PWM</u> <u>Electronic</u> <u>Payload</u> <u>Release /</u> <u>Thrower</u>	<p>Specifications:</p> <ul style="list-style-type: none"> • Function: Electronic payload release / throw mechanism • Control: PWM signal control • Maximum Payload: Up to 20 kg <p>Mechanical:</p> <ul style="list-style-type: none"> • Weight: 91.5 g • Dimensions: 78.5 × 48 × 18 mm <p>Included:</p> <ul style="list-style-type: none"> • 1× PWM Payload Release Module • Mounting Screws • PWM Control Cable • Mounting Plate / Bracket 	No.	2
21.	Custom Built Steel Cupboard	<p>Specifications:</p> <ul style="list-style-type: none"> • Dimensions Width: 900 mm to 1200 mm (36" to 48") Depth: 450 mm to 600 mm (18" to 24") Height: 1800 mm to 2000 mm (72" to 78") • Material Body: Mild steel sheet Finish: Powder-coated or painted, rust-protected surface • Internal Structure Shelves: 3 to 5 fixed steel shelves Shelf load capacity: approximately 20–40 kg per shelf • Doors & Hardware Door type: Double-door steel cabinet Handles: Metal handles (chrome or coated finish) Lock: Central key lock system with 2 keys • Finish & Color Standard industrial finish in grey or similar neutral color Powder-coated surface finish 	No.	3