AL501 Specification

Front Panel Requirements:

Serial	Description	Features:
1	**General Requirement**	
	APP	arpha plus
2	**wireless requirement**	
	Wi-Fi Radio Frequency	* Wi-Fi、2.4G * All bands and channels shall be tested for RF noise interference.
	Wi-Fi Security	*Wi-Fi Support WPA, WPA2, WPA2/WPA3, WPA3 SAE security protocol and no wireless security issues.
	Wi-Fi Interactivity	* Wi-Fi radio capable of communicating with IEEE 802.11 a/b/g/n compliant routers.
	Wi-Fi RF Range	Unobstructed（Open Field）， It supports a minimum 100 metre transmission and reception without the use of an external antenna. Obstructed（Through the Wall）， It supports a minimum 60 metre transmission and reception without the use of external antenna.
	Wi-Fi Camera Performance	Camera Performance（Open Field）， The device is capable of transmitting audio/video smoothly using only the home router and built-in antenna. Measures performance against Tx/Rx throughput, 2.4GHz Wi-Fi，100 metres，4Mbps throughput（minimum），router bandwith 20Mbps setting, Camera Performance（Through the Wall）： The device is capable of transmitting audio/video smoothly with a home router at a minimum distance (reference 10 metres) on each side of a concrete wall with built-in antenna only. uplink throughput>=10Mbps，shielded room attenuation 80dB. downlink throughput>=10Mbps，shielded room attenuation 80dB.
	Wi-Fi Antenna	Antenna design and layout should be in accordance with the appropriate design standards.
3	**Bluetooth Requirements**	
	Bluetooth Range	Open Filed, The product supports a minimum transmission and reception range of 10 metres
	BLE Antenna	Antenna design and layout should be in accordance with the appropriate design standards.
4	**Battery Requirements**	
	Battery Type	* The door lock supports rechargeable and removable battery packs. Battery Specifications: Battery Type - Lithium Ion Operating Temperature Range: -20~60°C Minimum Capacity: 10000mah Charging Time: 6~8 hours Charging Port: Type C USB Self-Discharge Rate: 3%/ month
	Battery Life	* No live view: minimum 150 days in normal operation; 8 cycles/day (on + off = 1 full cycle) * With live view: 120 days minimum in normal operation; 8 events/day (on or off), 15 seconds/event live video streaming (up to 2 minutes/day of video) * Cycling tests should be performed at 25°C +/-5°C. (room temperature)
	Battery Failures	* If the battery or other door lock mechanism fails, the user is able to unlock the door from both the outside and the inside.
	Battery Compartment/Door	* The door lock is easy to insert and remove batteries. * Provide adequate battery compartment clearance for battery expansion. *Battery compartment compliance meets UL flammability standards.
5	**Fingerprint Sensor**	
	Door lock operation	Users are able to operate the lock using their fingerprint on the door lock.
	Maximum number of fingerprints supported	* Device supports up to 100 fingerprints * Memory full indication: * LNDU APP: Provide a memory full alert/warning when adding fingerprints within the app. Users are able to delete unused fingerprints to free up space.
	Detection Accuracy	FAR (False Admission Rate) < 1 in 100,000, FRR (False Rejection Rate) < 2 per cent
6	**Password Access**	

	Door Lock Operation	Users are able to operate the lock using the touch keypad on the door lock and the LNDU APP.
	PIN Length	The length of the password should be 6 to 8 digits.
	Password Type	Supports adding long-used user passwords and time-validated guest passwords.
	Maximum number of passwords supported	* Door locks support up to 100 sets of codes. * Memory full indication: * The app provides a memory full alert/warning when a password is added within the app. Users are able to delete unused fingerprints to free up space.
7	**Camera Requirements**	
	Camera View and Field of View	Angle of View (AOV) * The camera's viewing angle should be measured horizontally, vertically or diagonally and support optical FOV.: * 180 degrees (diagonal) Field of View * The lock mounting height and tilt angle on the door frame will determine the FOV. * The door lock needs to be able to have a complete view of the ground 30cm in front of the door.
	Night Version	The product allows video capture in day, night and all lighting conditions. *The product supports night vision so that it can be viewed in the absence of a light source by providing its own IR light. * Night vision uses infrared sensors and infrared LEDs to address low light (when it's not daytime). * The camera is able to detect the loss of visible light and switch on the IR light source. * The camera is able to detect the presence of visible light and switch off the infrared light source.
	Infrared Sensor	The product supports automatic detection of moving objects in all lighting conditions, day and night. IR Range Product IR Range of at Least 8 Metres Products see objects clearly at a distance of 8 metres. Product sees facial features (eyes, nose, mouth) at a distance of 4 metres IR Cut IR cut Three IR modes need to be supported: A.)IR Sensor (Always Off Mode) Products support always off, that is, manually prevent the IR LED from lighting up when the user configures it. B.) IR Sensor (Always On Mode) The product supports Always On, manually preventing the IR LED from turning off. C.) IR Sensor (automatic mode) Auto mode depends on the detection result of the ambient light sensor The product detects daytime and nighttime modes based on the following lighting conditions: Night mode, turns on IR-Cut and IR LED to 3 ±2 lux when light is available. Daytime mode, IR-Cut and IR LED off when luminosity is approx. 8 ± 2 lux
	Image Sensor	Product at least 3MP CMOS image sensor. *Pixel Count: >= 3Mp * Image Ratio: 3:4
	Infrared LED	* Wavelength 850nm * Maximum power consumption: 3.4W/PCS * Viewing angle: 150 degrees * Illumination distance: 8 metres maximum
	Optical Lens	f value and focal length: * FNO: Target = 2.0, final to be determined depending on image sensor * Focal length: target = 1.96mm, final TBD depending on image sensor Camera lenses should ideally have layers of anti-fog and anti-glare material.
	Ambient light perception	1) Light sensing is used to sense lux resolution for day/night detection. * Peak responsivity: 560nm Illuminance detector. * Digital sensor with 0.5 ~ 1 lux resolution. * The resolution is fixed at 10 bits. 2) The camera must detect the Day/Night mode under the following conditions. * Night mode: Switch on IR_CUT and IR LED when the illumination drops to 3±2 lux. * Daytime mode: IR_CUT and IR_LED are switched off when the illumination level reaches 8± 2 lux.
8	**Camera Audio and Video Requirements**	

	Half Duplex Audio	Supports duplex audio with echo cancellation
	Microphone	Built-in microphone of 38dB±2dB or better Audio range: 65 +/ -5 dB human voice to a device 6 meters away and overcomes 70dBA background noise within 1 meter. Microphone placement meets the requirements of echo cancellation. The microphone port has a large enough volume to achieve functional performance. Microphone ports are sealed to prevent audio leaks
	Loudspeaker	Built-in 1W/8ohm speakers Audio range: 65 +/ -5 dB device to a person 6 meters away, and overcome 70dBA background noise and transmit to a person 1 meter away. Loudspeaker placement meets the requirements of echo cancellation. Speaker ports are large enough for functionality. Speaker ports are sealed to prevent audio leaks.
	Audio Compressio	Supports the use of G.711 compression for real-time viewing event recording
	Video Coding	Encoding video using H.265 with high compression rate.
	Video Color	*Video color (live viewing and recording) * Video colors with sufficient ambient light should be recorded in color. * Low light video color should be recorded in black and white.
	Video Resolution	* Recording video: The product supports video recording streams with a resolution of 2K and frame rate of 15fps. * Live view video: The product supports 2K resolution live view video streaming at 15fps. * The product supports moving object detection with 360P resolution and frame rate of 5-10fps.
	Videofrequenz Bit (VBR)	* The product supports 2K video recording at 15 fps when using a video bit rate of 2Mbps. * The product supports 2K live video at 15 fps when using a video bit rate of
	Available Bit Rate Service (ABR)	Video and audio can use adaptive bit rate (ABR) to maintain the quality of the video stream during changes in bandwidth conditions.
	Recording Duration	Pre-recording and post-recording durations can be configured to total up to 60 seconds between pre-recording and post-recording. Up to 4 seconds is limited by the size of the memory buffer available in the system. (Example: 0 seconds pre-recording + 4 seconds post-recording = Max. 4 seconds - assuming moving object detection is not used.) .
	Camera Trigger Area	Door locks are able to capture ROI using PIR and cameras. * When a moving object is detected in the camera field of view, video recording and alarm are triggered, as defined by the motion detection requirements. * Each area should have the ability to trigger records. *Each area should have the ability to trigger alarms. Supports capturing moving objects within ROI.
9	**PIR Motion Detection**	
	Intelligent PIR	The locks include passive infrared sensors (PIR) to sense the movement of objects (humans, animals, and cars) triggered in the form of heat.
	Trig mode	Immediate trigger
	PIR Smart Alert	* The PIR module detects and filters repeated and continuous moving object events.
	PIR Misinformation	False alarms are predicted by the hypersensitivity of the PIR sensor to thermal events (e.g., thermal brakes/engines from passing vehicles, A/C condenser fans, sunlight glistening in pool water, wind on the surface, etc.). Each PIR can be set to a different PIR sensitivity level. Sudden changes in lighting conditions (i.e. changes in lights off/on, sunrise, sunset, or highly reflected light) do not trigger detection. *The PIR setting level controls the sensitivity of false positives. *At the default sensitivity level (default = 3), the false alarm rate is <10%.
	PIR Range and FOVFOV	The unit PIR should have both near and long distance FOV detection. Maximum sensitivity 3m, divided into 3 levels: *Close PIR: 1m, FOV@+120 degrees *Long distance PIR: 2m, FOV@+90 degrees *Long distance PIR: 3m, FOV@+60 degrees
	Recorded cooling time	The event log cooldown time can be adjusted through the APP, with a maximum of 10 minutes and a minimum of 15 seconds
	Recording	* Camera event logging starts when the PIR detects a moving object. *In no pre-recorded record, after the PIR is triggered, the propagation delay of the first video frame is 0.5-1 seconds. It means after the PIR detects movement and triggers, the camera can start and start recording the trigger event within 0.5-1s. * Camera video recording will stop recording when the moving object stops for 5
10	**Electrical Requirement**	

	Electrostatic Discharge (ESD)	ESD testing complies with CGI ESD specification # 191A0938. * The product operates at a direct contact discharge (Class C) of up to ±8 kV. * The product operates at ±15 kV (Class C) indirect air discharge. Use 5 times of exhaust; Wait at least 10 seconds between air discharges.
	Thermal Protection	The product has thermal management design provisions to sense increased temperatures and protect the camera. * When the camera overheats, the product goes into standby mode. * When the battery temperature (Ta) reaches 50 ° C, the camera will enter protection mode. * When the chip temperature drops to 50 degrees, the camera will recover from the protected mode and work normally. * The camera is capable of sending user notifications to the end user to enter and restore protected mode