

NAWRAY

# TD550

## Coaxial Unmanned Helicopter

High Loading Capacity Applicable to Diversified Applications



### Product Advantages

- Excellent plateau performance, high adaptability to complex climate environment, strong expandability, and feasibility of high-altitude take-off and landing
- High loading capacity, fast flight speed, long endurance, and continuous operation with heavy load at a high efficiency
- Strong control performance, dual-redundancy high-precision HeliAP flight control technology, high control accuracy, and preeminent stability
- High autonomous degree, and capable of autonomous take-off and landing, spot hovering, autonomous obstacle avoidance, emergency return to base, and precise targeted delivery
- Simple structure, easy to remove and install, low cost for manufacturing and maintenance, and small size which can facilitate its transportation

## TD550 Coaxial Unmanned Helicopter

TD550 coaxial unmanned helicopter is a high-speed plateau-type unmanned helicopter with the take-off weight of 550 kg. It is configured with multiple redundant flight control system, supercharged piston aeroengine, and integrated fiber-optic inertial navigation system (FINS) and BeiDou navigation satellite system (BDS). Supreme flight performance and extensive industrial customizability become its highlights on the strength of its diversified safety policies such as the flight control redundancy design, navigation redundancy design, flight envelop protection control, emergency power supply, emergency return to base, avoidance of no-fly zone, real-time safety monitoring in ground control station, and automatic monitoring, isolation, and warning for failures.

### Applications

TD550 coaxial unmanned helicopter is applicable to fields such as reconnaissance and surveillance, chemical detection, transportation and delivery, chemical reconnaissance, and nuclear radiation reconnaissance.

### Loadable Payloads

EO pod, suspension equipment for transportation, communication relay equipment, SAR, HD mapping equipment, onboard weapons, etc.



System Performance Specifications			
Airframe dimensions	4.2 × 1.5 × 1.8m (L × W × H)	Operating radius	200 km(single helicopter, radio intervisibility)
Max. take-off weight	550kg	Cruise speed	90-120km/h
Max. payload capacity	120kg	Endurance	8h (payload of 35 kg)
Service ceiling	6500m		5h (payload of 80 kg)
Hovering ceiling (OGE)	5000m		2h (payload of 120 kg)
Max. level speed	180km/h	Wind resistance capability	Resistance against wind force 6 (12 m/s)

# TD220

## Coaxial Unmanned Helicopter

Having a Brilliant Future While Taking Heavy Responsibilities



### Product Advantages

- Compact structure, flexible maneuverability, excellent adaptability to complex environment, and feasibility of take-off and landing in small-scale field
- High loading capacity, long endurance, compact structure, and rapid deployment and withdrawal
- Autonomous take-off and landing, autonomous flight along the preset course, accurate spot hovering, one-key return to base, and automatic return to base in case of data link interruption
- High control accuracy, stable flight, and strong multitasking capability

## TD220 Coaxial Unmanned Helicopter

TD220 coaxial unmanned helicopter is a utility unmanned helicopter with the take-off weight of 350 kg, featuring high autonomous degree, first-rate reliability and safety, and strong mission expansion ability. By leveraging the electronic control – individual control technology for rotor control, intelligent and modular design, and the cutting-edge  $H_{\infty}$  control algorithm, TD220 achieves high-accuracy self-adaptive control and strong anti-interference capability. As a domestically top-notch small unmanned helicopter, it is characterized by its high loading capacity, long endurance, high ceiling, small dimensions, excellent environmental adaptability, and marvelous industrial customizability.

### Applications

TD220 coaxial unmanned helicopter is applicable to fields such as lift-off test, aerial geophysical prospecting, aerial surveying and mapping, minefield detection, communication relay, intelligence reconnaissance, battle-field reconnaissance, and logistics support.

### Loadable Payloads

EO pod, communication relay equipment, SAR, weapons and military supplies, etc.



System Performance Specifications			
Airframe dimensions	2.16 × 1.01 × 1.76m (L × W × H)	Cruise speed	80km/h
Max. take-off weight	350kg	Max. payload capacity	50kg
Max. level speed	100km/h	Endurance	>4h (payload of 50 kg)
Operating radius	100km		5h (payload of 35 kg)
Hovering ceiling (OGE)	2500m	Wind resistance capability	Resistance against wind force 6 (12 m/s)
Take-off/landing mode	Vertical take-off and landing (VTOL)		



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# Q20

## Quadrotor Platform

### Product Advantages

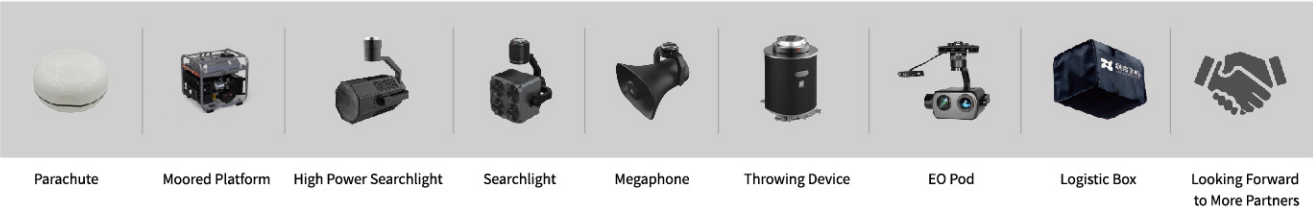
- **Extended Endurance:** 73 minutes of flight time, maximum payload of 10 kg, and 20 km communication range.
- **Enhanced Obstacle Avoidance:** Supports six-direction obstacle avoidance, multi-task payloads, and stronger adaptability to complex environments.
- **High-Performance Onboard Computer:** Built-in high-computation onboard computer platform with a high-definition, high-brightness integrated control screen.
- **Customization and Communication:** Supports custom development and satellite communication.

## Q20 Quadrotor Platform

The Q20 features advanced visual and TOF (Time-of-Flight) sensing technologies, equipped with a powerful onboard computer capable of 3D modeling and obstacle avoidance in complex environments. It utilizes deep learning for intelligent recognition and path planning. The high-density, high-capacity battery significantly extends its flight duration. The Q20 is cost-effective, highly efficient, and easy to operate, making it highly advantageous for inspection operations. It is widely used in industries such as logistics, power, energy, agriculture, forestry, and public security.

### Loadable Payloads

Maximum loading capacity to 4 kinds of payloads at the same time, including EO pod, megaphone, lighting facility, parachute, throwing device, moored platforms, etc.



### Application

- **Emergency Firefighting:** Close reconnaissance, fire point location, disaster mapping, communication relay, strong sound and light dispersal, emergency delivery.
- **Power Inspection:** Power station inspection, substation laser point cloud modeling, detailed inspection, transmission line inspection, network modeling and patrolling of transmission and distribution systems.
- **Low-Altitude Logistics:** Three-tier logistics distribution in counties, towns, and villages; transportation of industrial goods, consumer products, and agricultural products.

System Performance Specifications			
Unfolded dimensions	1595×884×527 mm	Max. Horizontal Speed	27m/s
Wheelbase	1160mm	Max. flight altitude	standard : 5000m (empty load) plateau: 7000m (empty load)
Max. Flight Time	73min (empty load)	Max. flight distance	60km (empty load\breeze)
	50min (payload of 5kg)		
Max. ascent speed	6m/s	Effective communication distance	20km (free of interference)
Max. descent speed	5m/s	Max. Wind Speed Resistance	15m/s
Max. payload	10kg (customized)   5.5kg (standard)	Integration Protection Level	IP55
Communication frequency	2.4GHz/1.4GHz	Six-direction view/TOF obstacle avoidance system	0.6~40m
RTK position accuracy	Vertical: 1.5cm±1ppm Horizontal: 1cm±1ppm	Operating temperature	-40°C~+60°C
Smart battery	Capacity: 27000mAh Voltage: 50.4V Battery Type: LiPo 12S	Remote control dimension	8-inch HD display
Remote control battery run time	6h	monitor brightness	1500cd/m²



# Q100

## Agricultural Drone

The All-Rounder in Agriculture



## Q100 Agricultural Drone

The Q100 agricultural drone is versatile and suitable for various tasks such as spraying, seeding, transportation, and aerial surveying. It can be used in different scenarios including open fields, orchards, fish farming, and agricultural transportation, providing high safety, reliability, and low cost. It is a multi-functional assistant in agricultural production. The Q100 comes equipped with a versatile variable-frequency charging station, intelligent remote controller, smart flight batteries, and charger. It also offers a customizable three-wheel professional operation platform and an integrated takeoff and landing platform, making crop protection tasks smarter and more efficient.

### Product Advantages

#### Efficiency, Reliability, Economy, Intelligence

- **High Load and Large Flow:** Capable of spreading 60 kg and spraying 50 kg at a rate of 20 liters per minute.
- **IPX6 Protection:** The entire machine is washable and effectively protected against pesticide corrosion.
- **AI System:** Equipped with visual and phased-array radar for intelligent obstacle avoidance.
- **Autonomous Operation:** Intelligent route planning with one-click autonomous operation.
- **Powerful Performance:** Features large motors and high-voltage batteries, achieving speeds of up to 50 km/h.
- **Smart Accessories:** Includes a versatile variable-frequency charging station, intelligent remote controller, smart flight batteries, and smart charger.

### Application

The Q100 agricultural drone is suitable for various tasks such as spraying, seeding, transportation, and aerial surveying, including:



System Performance Specifications			
Extended dimensions	2930X3200X750mm	Operation radius	2km
Endurance	20min (empty payload)	Max. flight altitude	30m
Max. take-off weight	124kg	Max. payload	60kg
Max. flight speed	13.8m/s	Wind resistance Capability	6m/s



# TA-Q12

## Multi-Rotor UAV

Lightweight Elite in the Air



### Product Advantages

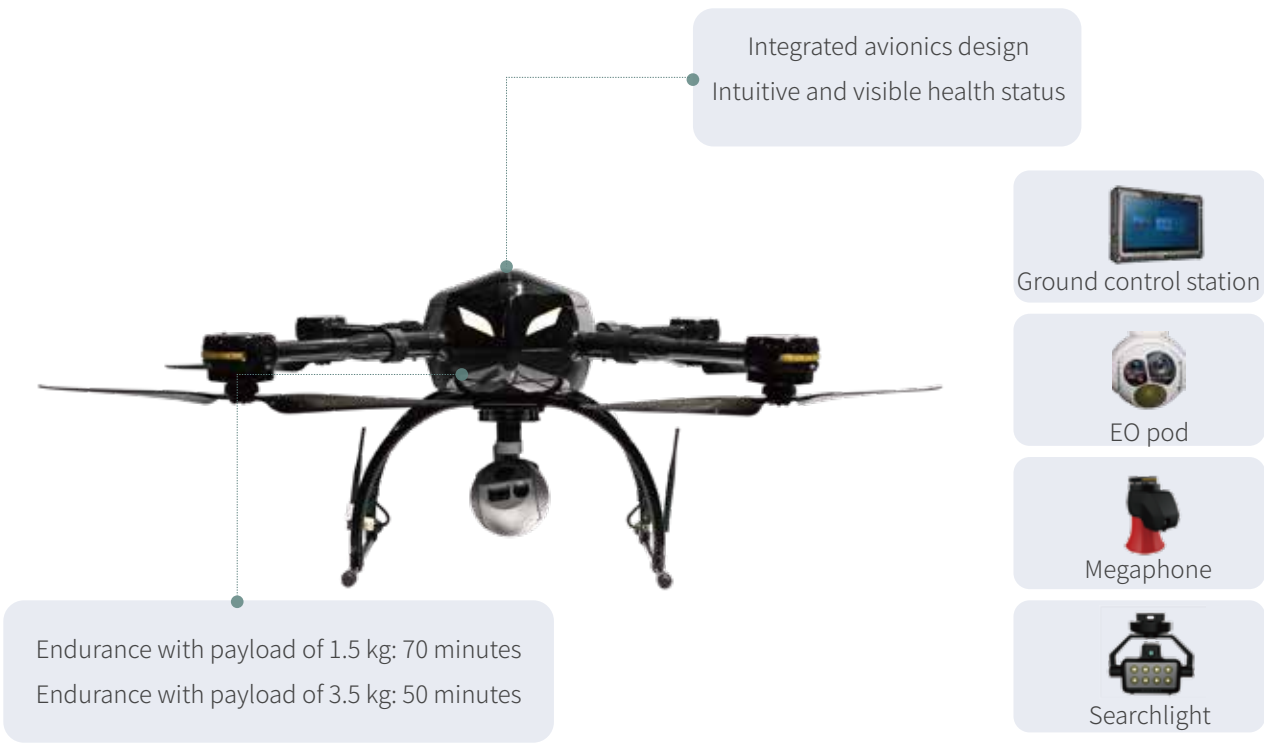
- Modular airframe design, and flexible and rapid storage, transportation, and removal
- Intelligent flight control design, and capable of autonomous take-off and landing, autonomous flight according to the preset waypoints, autonomous hovering, and environmental self-adaptability
- Integrated avionics design, convenient operation, flexible airframe, and high energy efficiency
- Carbon fiber isolation design, lightweight airframe, and rainproof design for electronic equipment protection

## TA-Q12 Multi-Rotor UAV

TA-Q12 is a small-size quad-rotor UAV completely made of carbon fiber materials. By leveraging the advanced algorithms such as active disturbance rejection, it shows stable flight attitude and is applicable to diversified complicated operating conditions. It can carry high-accuracy integrated navigation equipment and 3-light (visible light/IR/laser ranging) EO pod for executing missions such as reconnaissance, patrol, and search and rescue. This UAV is preponderant owing to its fast deployment, long operating range, long endurance, and easy maintenance.

### Loadable Payloads

Ground control station, megaphone, 3-light EO pod, integrated navigation equipment, searchlight, etc.



TA-Q12 Performance Specifications			
Airframe dimensions (with blade tips extended)	Extended by 1.37×1.37 m (L× W)	Distance between shafts	1.1 m
		Service ceiling	5500 m (plateau type)
Folded dimensions	52×52 cm (L×W)	Control radius	15km
Max. endurance	85 min (empty load)	Max. level speed	20m/s
	70 min (payload of 1.5 kg)		
	50 min (payload of 3.5 kg)	Wind resistance capability	Resistance against wind force 6 (12 m/s)
Take-off/landing mode	Vertical take-off and landing (VTOL)		



# TA-Q3

## Pipeline Patrol Mini UAV

Specialized in Centimeter-Sized Pipeline Inspection



### Product Advantages

- Fully automatic flight which greatly improves the inspection efficiency
- Absence of UAV manipulator, thus reducing the operation cost
- Mission planning unnecessary, flight feasible by setting the flying range
- Visual SLAM technology for perfect autonomous obstacle avoidance
- Automatic landing on ground in case of emergencies, and water floating feasible by using protection supports during landing on water

## TA-Q3 Pipeline Patrol Mini UAV

TA-Q3 pipeline patrol mini UAV is especially designed for autonomous flight and operation in sewages and rain water pipelines and comprehensive urban pipeline capsules where are dark and free of GPS signal. This UAV can automatically fly by visual and laser radar navigation. It can carry diversified gas sensors ( $\text{CH}_4$ ,  $\text{SO}_2$ ,  $\text{H}_2\text{S}$ ,  $\text{O}_2$ ) and 4K wide-angle detection camera simultaneously for data and information acquisition. With functions such as one-button startup and separation, simplified surface operations and downstream recovery become feasible. This UAV is mainly used for operations such as inspection on pipeline cracks, pipeline blockage, rebar exposure on pipeline surface, straight ladder at the pipeline exit, and vagrants in tunnels, as well as pre-flight inspection for pipeline explosive gas density. With the help of our patrol and inspection result analysis software matched to this UAV platform, the inspection report can be generated automatically, thus improving the pipeline inspection efficiency and reducing cost.

### Loadable Payloads

Visual and laser radar navigation, gas sensor, 4K wide-angle detection camera, etc.



TA-Q3 Performance Specifications			
Dimensions	647×767×435mm (L× W× H)	Flight duration	12 min
Weight (including battery)	2.9kg	Navigation sensor system	Binocular visual + 7 distance measuring sensors
Safety functions	Autonomous obstacle avoidance, return to base and landing at low battery capacity, water floating, rotor protection	Detection sensor system	Camera resolution: 4208×3120 LED illumination: ≥2400 lumens
Flight speed (automatic)	1m/s	Applicable Min. diameter of drain cover	0.7m
Applicable Min. pipeline section	2×1.5 m (W× H) or 2.4 m (diameter)	Applicable Max. pipeline length	500m



# TA-Q4

## Warehouse Patrol Mini UAV

Smart Warehousing — A Masterpiece

### Product Advantages

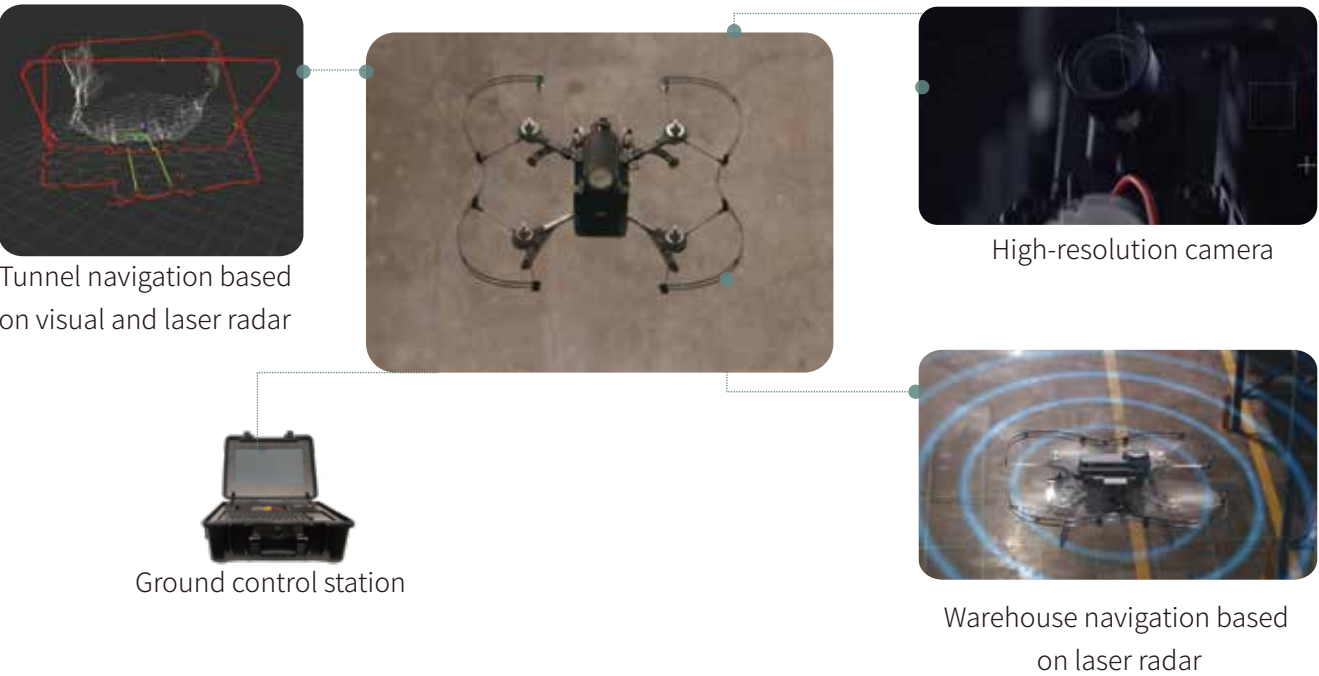
- Absence of UAV manipulator, thus reducing the operation cost and improving the cargo tally efficiency
- Manual aloft work unnecessary, thus eliminating the potential safety hazard incurred by manual operation
- Perfect autonomous obstacle avoidance capability to ensure the UAV safety
- Fully automatic execution of flight missions with accurate results, and permanent repeated operation feasible

## TA-Q4 Warehouse Patrol Mini UAV

TA-Q4 warehouse patrol mini UAV is capable of autonomous warehouse patrol, autonomous count of inventory, real-time 3D navigation and warehouse position marking, and smart scanning of cargo pallet data. It helps shorten the traditional manual operation from 4 hours to 15 minutes, and only 1 supervisor is needed to manage a whole warehouse.

### Loadable Payloads

Navigation sensor, binocular visual + laser radar, high-resolution camera, etc.



TA-Q4 Performance Specifications			
Dimensions	862×852×501 mm (L×W×H)	Flight duration	14min
Weight (including battery)	4.3kg	Navigation sensor system	Binocular visual + laser radar
Safety functions	Autonomous obstacle avoidance, return to base and landing at low battery capacity, rotor protection	Detection sensor system	Camera resolution: 4208×3120 LED illumination: ≥2400 lumens
Flight speed (automatic)	2m/s	Applicable Min. diameter of drain cover	0.9m
Applicable Min. pipeline section	3×2.5 m (W×H) or 3.6 m (diameter)	Applicable Max. pipeline length	2000m
Processing speed	45 FPS and multiple label processing	Intelligence level	Automatic generation and uploading of inventory sheet



# TA-Q5

## Tunnel Patrol Mini UAV

Tunnel Defender for Safe Escort

### Product Advantages

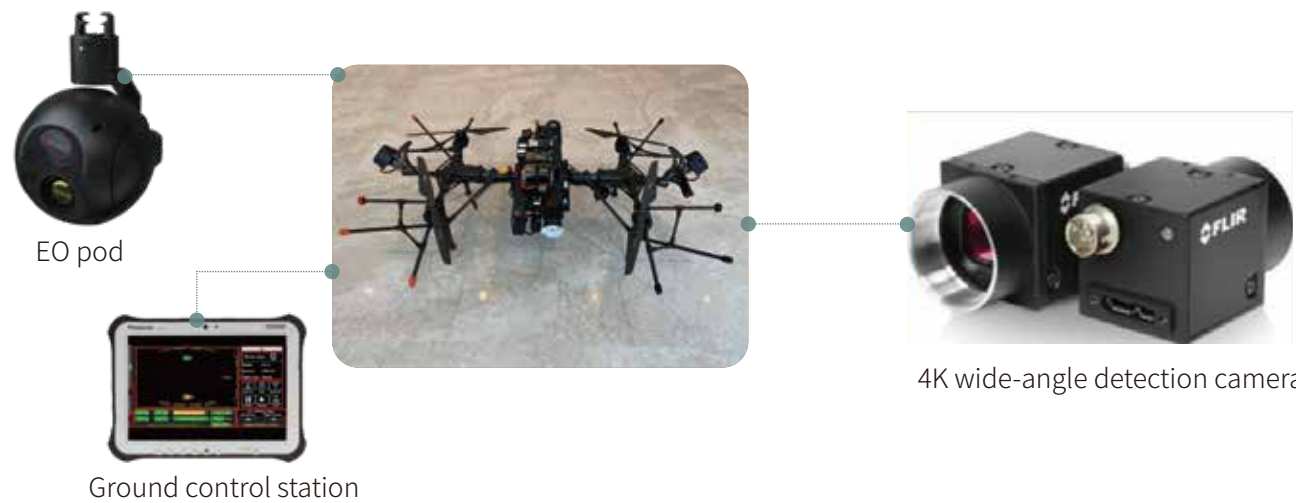
- Autonomous flight in GPS signal-free environment, small size, and flexible operation
- Acquisition of high-accuracy data in low-light environment
- Long-range and long-endurance patrol and inspection
- Automatic generation of inspection report, high operating efficiency, and accurate data without missing

# TA-Q5 Tunnel Patrol Mini UAV

TA-Q5 subway tunnel patrol UAV is designed for autonomous flight and operation in urban subway tunnels, highway tunnels, railway tunnels, and bottom areas of highway and railway bridges. Its autonomous flight is feasible by navigation based on the visual and laser radar. It can carry diversified types of EO pods and 4K wide-angle detection camera for data and information acquisition. This UAV supports the one-key startup function, which is mainly used for operations such as inspection on tunnel cracks, tunnel blockage, rebar exposure on tunnel surface, and vagrants in tunnels. With the help of our patrol and inspection result analysis software matched to this UAV platform, the inspection report can be generated automatically, thus improving the tunnel patrol efficiency and reducing cost.

### Loadable Payloads

Navigation sensor, binocular visual + laser radar, high-resolution camera, etc.



TA-Q5 Performance Specifications			
Dimensions	Deployed: 1113×888×339 mm	Weight (including battery) 6.9kg	
	Folded: 886×482×592 mm	Flight speed (automatic) 2m/s	
Flight duration	22min	Camera module	Max. frame rate: 75 FP
Safety functions	Autonomous obstacle avoidance, return to base and landing at low battery capacity, water floating, rotor protection		Read-out method: global shutter Pixels: 3.45 um
LED module	Max. power: 47 W	Applicable Min. pipeline section	2×1.5 m (W×H) Or 2.4 m (diameter)
	Optical output: 3000~5000 lm Angle of view: 90°with lens	Applicable Max. pipeline length	2.6km