

CPC COOPERATIVE PATENT CLASSIFICATION

B PERFORMING OPERATIONS; TRANSPORTING (NOTES omitted)

TRANSPORTING

B64 AIRCRAFT; AVIATION; COSMONAUTICS

B64U UNMANNED AERIAL VEHICLES [UAV]; EQUIPMENT THEREFOR

NOTES

1. This subclass covers:
 - vehicles which are specially adapted for unmanned aeronautical use and the equipment therefor.
2. This subclass does not cover:
 - computer control systems for the control of position, course, altitude or attitude, which are covered by group [G05D 1/00](#);
 - traffic control of UAVs, which is covered by group [G08G 5/00](#).
3. Aircraft or equipment applicable to both manned and unmanned use should be classified in this subclass and in the subclasses of class [B64](#) which are appropriate for the manned use.
4. Details or features of UAVs and their equipment which are not covered by this subclass should be classified in the relevant subclasses of class [B64](#).
5. In this subclass it is desirable to add the indexing codes of group [B64U 2101/00](#), covering particular uses or applications of the UAVs.

10/00	Type of UAV	20/75	• . the body formed by joined shells or by a shell overlaying a chassis
10/10	• Rotorcrafts		
10/11	• . Autogyros	20/77	• . the body being formed integrally with wings or rotor supports
10/13	• . Flying platforms		
10/14	• . . with four distinct rotor axes, e.g. quadcopters	20/80	• Arrangement of on-board electronics, e.g. avionics systems or wiring
10/16	• . . with five or more distinct rotor axes, e.g. octocopters	20/83	• . Electronic components structurally integrated with aircraft elements, e.g. circuit boards carrying loads
10/17	• . Helicopters (flying platforms B64U 10/13)		
10/20	• Vertical take-off and landing [VTOL] aircraft (flying platforms B64U 10/13 ; helicopters B64U 10/17)	20/87	• . Mounting of imaging devices, e.g. mounting of gimbals
10/25	• Fixed-wing aircraft (VTOL aircraft B64U 10/20)	20/90	• Cooling
10/30	• Lighter-than-air aircraft, e.g. aerostatic aircraft	20/92	• . of avionics
10/40	• Ornithopters	20/94	• . of rotors or rotor motors
10/50	• Glider-type UAVs, e.g. with parachute, parasail or kite (for landing B64U 70/83)	20/96	• . using air
10/60	• Tethered aircraft	20/98	• . using liquid, e.g. using lubrication oil
10/70	• Convertible aircraft, e.g. convertible into land vehicles	30/00	Means for producing lift; Empennages; Arrangements thereof
10/80	• UAVs characterised by their small size, e.g. micro air vehicles [MAV]	30/10	• Wings
		30/12	• . Variable or detachable wings, e.g. wings with adjustable sweep
20/00	Constructional aspects of UAVs (of lift-producing means B64U 30/00)	30/14	• . . detachable
20/10	• for stealth, e.g. reduction of cross-section detectable by radars	30/16	• . . . movable along the UAV body
20/20	• for noise reduction	30/20	• Rotors; Rotor supports
20/30	• for safety, e.g. with frangible components (rotor guards B64U 30/299)	30/21	• . Rotary wings
20/40	• Modular UAVs	30/24	• . Coaxial rotors
20/50	• Foldable or collapsible UAVs (with frangible components B64U 20/30)	30/26	• . Ducted or shrouded rotors
20/60	• UAVs characterised by the material	30/27	• . Rim-driven rotors
20/65	• . Composite materials	30/29	• . Constructional aspects of rotors or rotor supports; Arrangements thereof
20/70	• Constructional aspects of the UAV body	30/291	• . . Detachable rotors or rotor supports
20/73	• . Monocoque body	30/292	• . . . Rotors or rotor supports specially adapted for quick release
		30/293	• . . Foldable or collapsible rotors or rotor supports
		30/294	• . . Rotors arranged in the UAV body

- 30/295 . . . Rotors arranged in the wings
- 30/296 . . . Rotors with variable spatial positions relative to the UAV body ([foldable or collapsible rotors B64U 30/293](#))
- 30/297 Tilting rotors
- 30/298 . . . Helicopter flybars
- 30/299 . . . Rotor guards ([ducted or shrouded rotors B64U 30/26](#); [guards used as ground propulsion B64U 60/60](#))
- 30/30 . Lift-producing means using radial airflow
- 30/40 . Empennages, e.g. V-tails ([foldable or collapsible UAVs B64U 20/50](#))
- 40/00 On-board mechanical arrangements for adjusting control surfaces or rotors; On-board mechanical arrangements for in-flight adjustment of the base configuration** ([control of position, course, altitude or attitude of air or space vehicles, e.g. automatic pilot, G05D 1/00](#))
- 40/10 . for adjusting control surfaces or rotors
- 40/20 . for in-flight adjustment of the base configuration
- 50/00 Propulsion; Power supply**
- 50/10 . Propulsion ([rotors specially adapted for rotorcraft or VTOL B64U 30/20](#))
- 50/11 . . using internal combustion piston engines
- 50/12 . . using turbine engines, e.g. turbojets or turboprops
- 50/13 . . using external fans or propellers
- 50/14 . . . ducted or shrouded
- 50/15 . . using combustion exhausts other than turbojets or turboprops, e.g. using rockets, ramjets, scramjets or pulse-reactors
- 50/16 . . using means other than air displacement or combustion exhaust, e.g. water or magnetic levitation
- 50/18 . . Thrust vectoring
- 50/19 . . using electrically powered motors
- 50/20 . Transmission of mechanical power to rotors or propellers
- 50/23 . . with each propulsion means having an individual motor
- 50/27 . . with a single motor serving two or more rotors or propellers
- 50/30 . Supply or distribution of electrical power
- 50/31 . . generated by photovoltaics

WARNING

Group [B64U 50/31](#) is incomplete pending reclassification of documents from group [B64D 27/353](#). Groups [B64U 50/31](#) and [B64D 27/353](#) should be considered in order to perform a complete search.

- 50/32 . . generated by fuel cells
- 50/33 . . generated by combustion engines
- 50/34 . . In-flight charging ([photovoltaics B64U 50/31](#))
- 50/35 . . . by wireless transmission, e.g. by induction
- 50/36 . . . by wind turbines, e.g. ram air turbines [RAT]
- 50/37 . . Charging when not in flight
- 50/38 . . . by wireless transmission
- 50/39 . . Battery swapping

60/00 Undercarriages

- 60/10 . specially adapted for use on water
- 60/20 . specially adapted for uneven terrain

- 60/30 . detachable from the body
- 60/40 . foldable or retractable
- 60/50 . with landing legs
- 60/55 . . the legs being also used as ground propulsion
- 60/60 . with rolling cages
- 60/70 . Movable wings, rotor supports or shrouds acting as ground-engaging elements

70/00 Launching, take-off or landing arrangements

- 70/10 . for releasing or capturing UAVs by hand
- 70/20 . for releasing or capturing UAVs in flight by another aircraft
- 70/30 . for capturing UAVs in flight by ground or sea-based arresting gear, e.g. by a cable or a net
- 70/40 . Landing characterised by flight manoeuvres, e.g. deep stall
- 70/50 . Launching from storage containers, e.g. from submarine missile tubes
- 70/60 . Take-off or landing of UAVs from a runway using their own power
- 70/70 . Launching or landing using catapults, tracks or rails ([launching from storage containers B64U 70/50](#))
- 70/80 . Vertical take-off or landing, e.g. using rockets ([rotorcrafts B64U 10/10](#); [VTOL aircraft B64U 10/20](#))
- 70/83 . . using parachutes, balloons or the like
- 70/87 . . using inflatable cushions
- 70/90 . Launching from or landing on platforms
- 70/92 . . Portable platforms
- 70/93 . . . for use on a land or nautical vehicle
- 70/95 . . Means for guiding the landing UAV towards the platform, e.g. lighting means
- 70/97 . . Means for guiding the UAV to a specific location on the platform, e.g. platform structures preventing landing off-centre
- 70/99 . . Means for retaining the UAV on the platform, e.g. dogs or magnets

80/00 Transport or storage specially adapted for UAVs

- 80/10 . with means for moving the UAV to a supply or launch location, e.g. robotic arms or carousels
- 80/20 . with arrangements for servicing the UAV
- 80/25 . . for recharging batteries; for refuelling
- 80/30 . with arrangements for data transmission
- 80/40 . for two or more UAVs
- 80/50 . the UAVs being disassembled
- 80/60 . by wearable objects, e.g. garments or helmets
- 80/70 . in containers ([B64U 80/60 takes precedence](#))
- 80/80 . by vehicles
- 80/82 . . Airborne vehicles
- 80/84 . . Waterborne vehicles
- 80/86 . . Land vehicles

Indexing scheme associated with groups [B64U 10/00](#) - [B64U 80/00](#)**2101/00 UAVs specially adapted for particular uses or applications**

- 2101/05 . for sports or gaming, e.g. drone racing
- 2101/10 . for generating power to be supplied to a remote station, e.g. UAVs with solar panels
- 2101/15 . for conventional or electronic warfare
- 2101/16 . . for controlling, capturing or immobilising other vehicles

- 2101/17 . . for detecting, disrupting or countering communications
- 2101/18 . . for dropping bombs; for firing ammunition
- 2101/19 . . for use as targets or decoys
- 2101/20 . for use as communications relays, e.g. high-altitude platforms
- 2101/21 . . for providing Internet access
- 2101/23 . . for providing telephone services
- 2101/24 . . for use as flying displays, e.g. advertising or billboards
- 2101/25 . for manufacturing or servicing
- 2101/26 . . for manufacturing, inspections or repairs
- 2101/28 . . for painting or marking
- 2101/29 . . for cleaning
- 2101/30 . for imaging, photography or videography
- 2101/31 . . for surveillance
- 2101/32 . . for cartography or topography
- 2101/35 . for science, e.g. meteorology
- 2101/40 . for agriculture or forestry operations
- 2101/45 . for releasing liquids or powders in-flight, e.g. crop-dusting
- 2101/47 . . for fire fighting
- 2101/55 . for life-saving or rescue operations; for medical use
- 2101/56 . . for locating missing persons or animals
- 2101/57 . . for bringing emergency supplies to persons or animals in danger, e.g. ropes or life vests
- 2101/58 . . for medical evacuation, i.e. the transportation of persons or animals to a place where they can receive medical care
- 2101/60 . for transporting passengers; for transporting goods other than weapons
- 2101/61 . . for transporting passengers
- 2101/64 . . for parcel delivery or retrieval
- 2101/66 . . . for retrieving parcels
- 2101/67 . . the UAVs comprising tethers for lowering the goods
- 2101/69 . . the UAVs provided with means for airdropping goods, e.g. deploying a parachute during descent
- 2101/70 . for use inside enclosed spaces, e.g. in buildings or in vehicles
- 2101/75 . for extra-terrestrial use, e.g. on the Moon or Mars

2201/00 UAVs characterised by their flight controls

- 2201/10 . autonomous, i.e. by navigating independently from ground or air stations, e.g. by using inertial navigation systems [INS]
- 2201/102 . . adapted for flying in formations
- 2201/104 . . using satellite radio beacon positioning systems, e.g. GPS
- 2201/20 . Remote controls
- 2201/202 . . using tethers for connecting to ground station