

Multi-Drones Solution

Wireless Middle Range Distance Communication

Complex radio Systems

Hypercable JCDC sari



Features of Solution

- ISM Band
- Wireless Middle Range Distance Communication (5~20 KM Radius Coverage)
- Supports Multi-Drones transmission
- Lightweight of Drone radio
- 2x2 or 4x4 MIMO Drone Radio optional
- 2x2, 4x4 or 6x6 MIMO Ground Station optional
- PTP Quick Starter Kit, MESH Ad-Hoc or Tactical MESH Ad-hoc solutions for options
- Operating channel bandwidth from 2.5MHz narrow bandwidth up to 40MHz
- A 6x6 MIMO Ground Station supports 320Mbps net throughput for multi-drones missions
- Drones support seamless roaming
- Both Radio and Antenna provide customized service, included frequencies, output power and tactical applications, etc.

SPECIFICATIONS

DRONE RADIO & GROUND STATION

Hypercable 2x2 MIMO Drone Radio



↑
Ethernet
(IP Cam.)

↑
RS232
& Reset

↑
12 – 24V
DC

Items	ATHND4005-28	ATHND4001-27
Frequency	2200 - 2560 MHz	4900 - 6100 MHz
Max. RF Transmit Power	28 dBm ± 1.5 dB	27 dBm ± 1.5 dB
Channel Bandwidth	2.5 - 40 MHz	2.5 - 40 MHz
Operating RF channel	ONE	ONE
Modulation	CCK, DSSS, HT-OFDM	HT-OFDM
Receive Sensitivity	Varying between -96 dBm ± 1 dB and -73 dBm ± 2 dB	
Antenna System	2x2 MIMO	2x2 MIMO
Max. Physical Layer Data Rate	300 Mbps	300 Mbps
Protocol	Mesh Ad-Hoc	Mesh Ad-Hoc
Antenna connector	Type SMA Female x 2	Type SMA Female x 2
Interfaces	Lemo 3 pins (DC In)	Lemo 3 pins (DC In)
	Lemo 8 pins (Ethernet)	Lemo 8 pins (Ethernet)
	Lemo 5 pins (RS232 Data & Reset)	Lemo 5 pins (RS232 Data & Reset)
Input Voltage	12 - 24 VDC	12 - 24 VDC
Power Consumption	Max. 12 W	Max. 12 W
Weight	< 290 g	< 290 g
Dimension	115 x 73 x 23	115 x 73 x 23
Drone Distance	15 km Omnidirectional coverage 12dBi @ ground station, 5dBi @ drone	20 km Omnidirectional coverage 14dBi @ ground station, 10dBi @ drone
Advanced	HYC-N4555/HYC-N4111 ground station supports <i>Multi-Drones</i> transmission	

Hypercable 6x6 MIMO Ground Station



items	HYC-N4555-28	HYC-N4111-27
Frequency	2200 - 2560 MHz	4900 - 6100 MHz
Max. RF Transmit Power	28 dBm ± 1.5 dB	27 dBm ± 1.5 dB
Channel Bandwidth	2.5 - 40 MHz	2.5 - 40 MHz
Operating RF channel	THREE	THREE
Modulation	CCK, DSSS, HT-OFDM	HT-OFDM
Receive Sensitivity	Varying between -96 dBm ± 1 dB and -73 dBm ± 2 dB	
Antenna System	6x6 MIMO	6x6 MIMO
Max. Physical Layer Data Rate (Wireless)	300 + 300 + 300 Mbps	300 + 300 + 300 Mbps
Protocol	Mesh Ad-Hoc	Mesh Ad-Hoc
Capacity of Ethernet port	320 Mbps net	320 Mbps net
Antenna connector	Type N Female x 6	Type N Female x 6
Interfaces	M12 (DC In)	M12 (DC In)
	M12 (RS232) or GPS receiver optional	M12 (RS232) or GPS receiver optional
	M25 Cable Gland (Ethernet)	M25 Cable Gland (Ethernet)
Input Voltage	10 - 30 VDC	10 - 30 VDC
Power Consumption	Max. 19 W	Max. 19 W
Weight	1.8 Kg	1.8 Kg
Dimension	259 (L) * 250 (W) *75 (H) ; mm	259 (L) * 250 (W) *75 (H) ; mm
Drone Distance	15 km Omnidirectional coverage 12dBi @ ground station, 5dBi @ drone	20 km Omnidirectional coverage 14dBi @ ground station, 10dBi @ drone
Advanced	Supports <i>Multi-Drones</i> transmission	

MULTIROTOR ANTENNA

CUSTOMIZED SERVICE

Hypercable Customized Drone Antenna (I)

Frequency Band 4900 - 6100 MHz

Nominal Impedance 50 Ω

VSWR $\leq 2.0 : 1$

Gain 10 dBi

Polarization Linear, Vertical

HPBW – Azimuth 360°

HPBW – Elevation 7° (Approx.)

Max. Power handling 20 W

Operating Temperature -10°C~+70°C

Connector RG-316 Pig tail Coax. Cable with SMA Male (Cable Length : TBD)

Length <390 mm (Same as the length of the drone support stand)

Diameter Φ 20 mm (Same as drone support stand diameter)

Weight <200 g

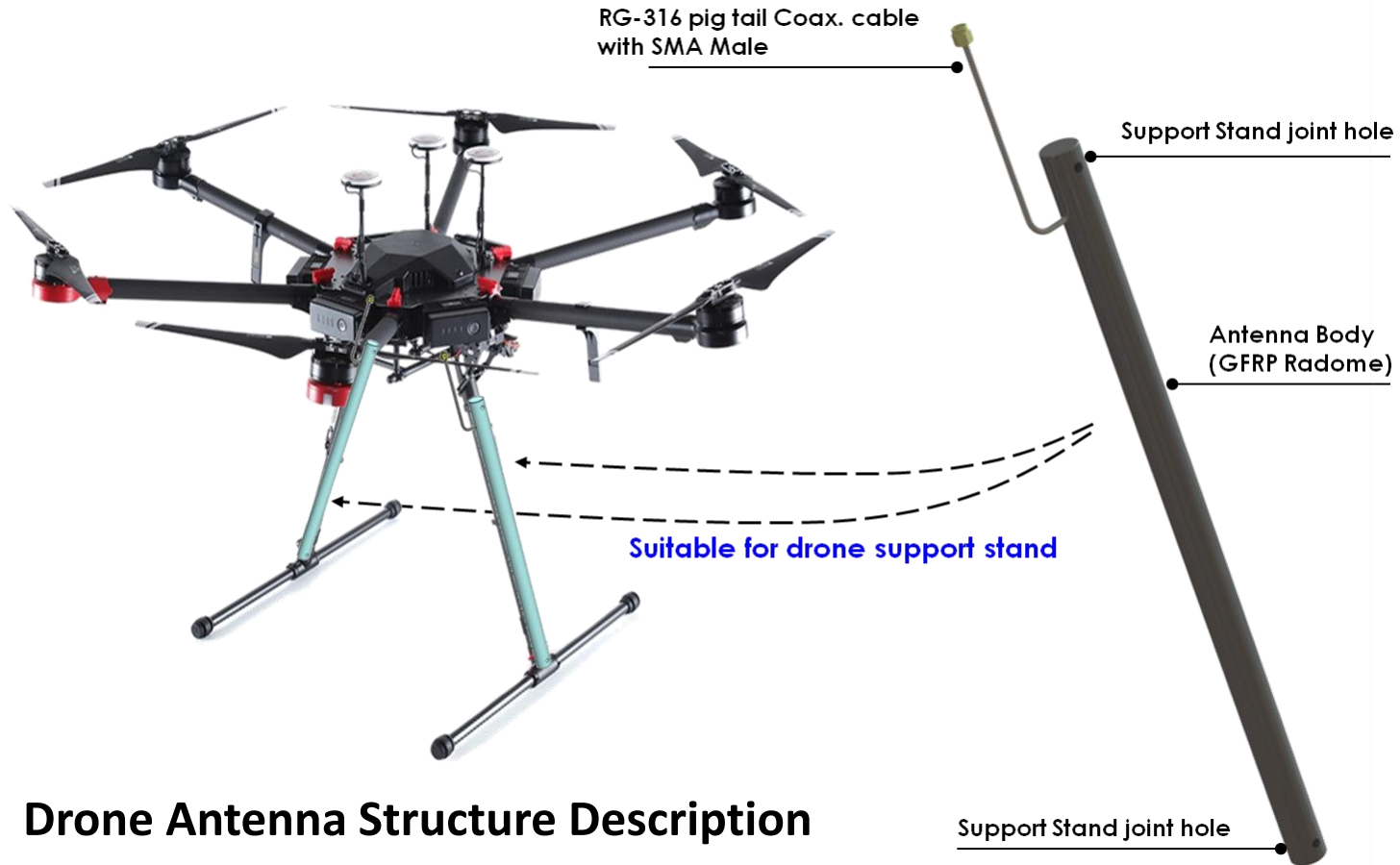
Color By Customer

Radome Material GFRP

Mounting Suitable for drone support stand



Hypercable Customized Drone Antenna (II)



Drone Antenna Structure Description

2x2 MIMO GROUND STATION & 10KM Radius Coverage

OMNI-DIRECTIONAL ANTENNA

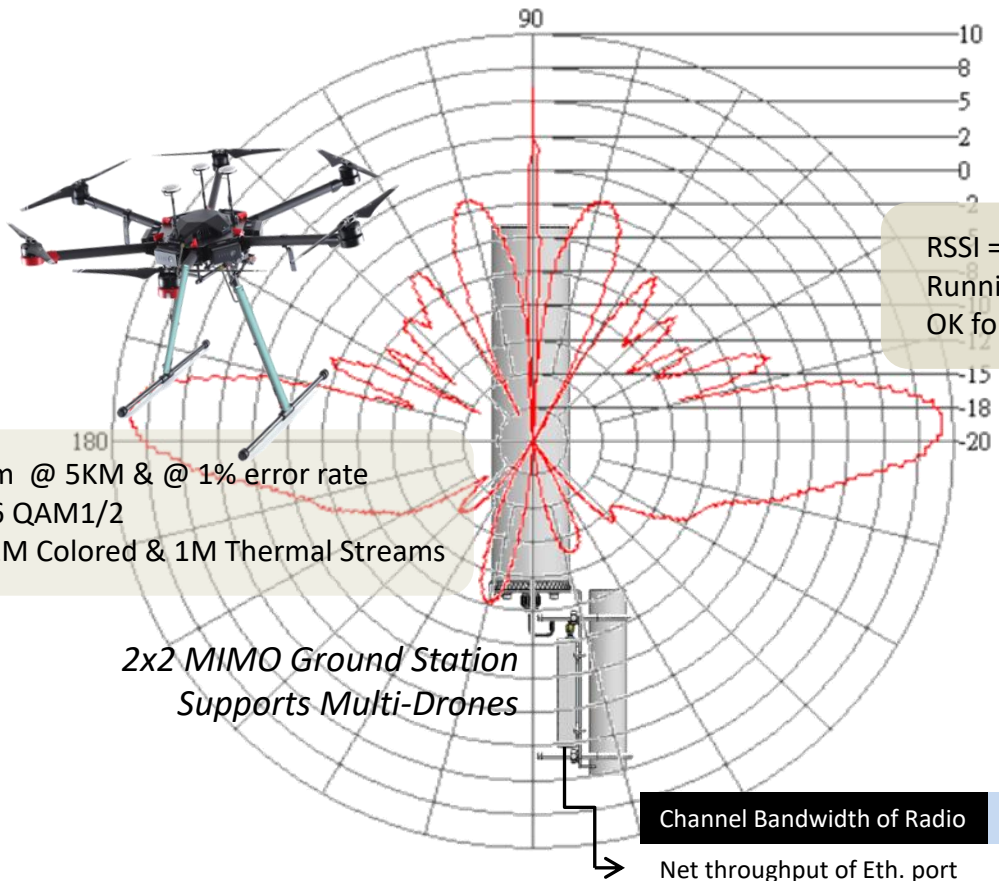


Hypercable Ground Station HYC-ND4001 via 2x2 MIMO Omni-Directional Antenna

Frequency Band	4900 - 6100 MHz
Gain	10 dBi
VSWR	$\leq 2.0 : 1$
Nominal Impedance	50 Ω
Polarization	Linear, Vertical & Horizontal
HPBW – Azimuth	360°
HPBW – Elevation	9° (Approx.)
Port to Port Isolation	-30 dB typ.
Max. Power handling	20 W
Connector	2 x N Type, Female
Dimensions	<400 (L) x 90 (OD) mm
Radome	UV Protected Polycarbonate
Weight	<500 g
Color	By customer specified
Mounting	Pole Mount for 40~60 mm Dia.



Radio Receiving Signal @ 5KM & 10KM Distance



RSSI = -86dBm @ 10KM & @ 1% error rate
 Running in QPSK1/2
 OK for both 2M Colored & 1M Thermal Streams

RSSI = -79dBm @ 5KM & @ 1% error rate
 Running in 16 QAM1/2
 OK for both 2M Colored & 1M Thermal Streams

*2x2 MIMO Ground Station
 Supports Multi-Drones*

Channel Bandwidth of Radio	5MHz	10MHz	20MHz	40MHz
Net throughput of Eth. port	25Mbps	51Mbps	104Mbps	215Mbps



6x6 MIMO GROUND STATION & 20KM Radius Coverage

OMNI-DIRECTIONAL ANTENNA

Hypercable Ground Station HYC-N4111 via 6x6 MIMO Omni-Directional Antenna

Frequency Band 4900 - 6100 MHz

Gain 6 x 14 dBi

VSWR $\leq 2.0 : 1$

Nominal Impedance 50 Ω

Polarization Circular

HPBW – Azimuth 120°

HPBW – Elevation 6° (Approx.)

Port to Port Isolation -25 dB typ.

Max. Power handling 20 W

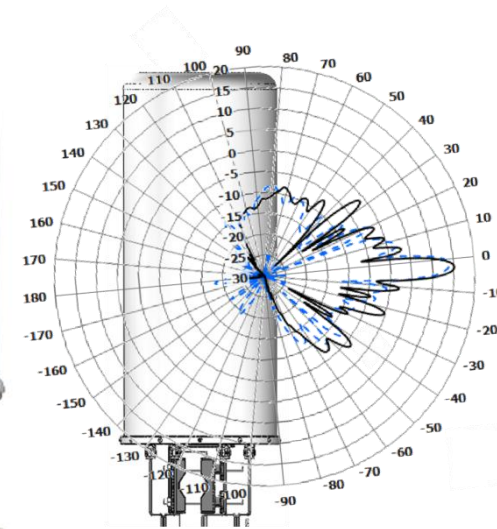
Operating Temperature -10°C~+70°C

Connector 6 x N Type, Female

Dimensions <700 (L) x 300 (OD) mm

Radome UV Protected Polycarbonate

Weight <2.0 Kg



Elevation Pattern - Side View

APPLICATIONS

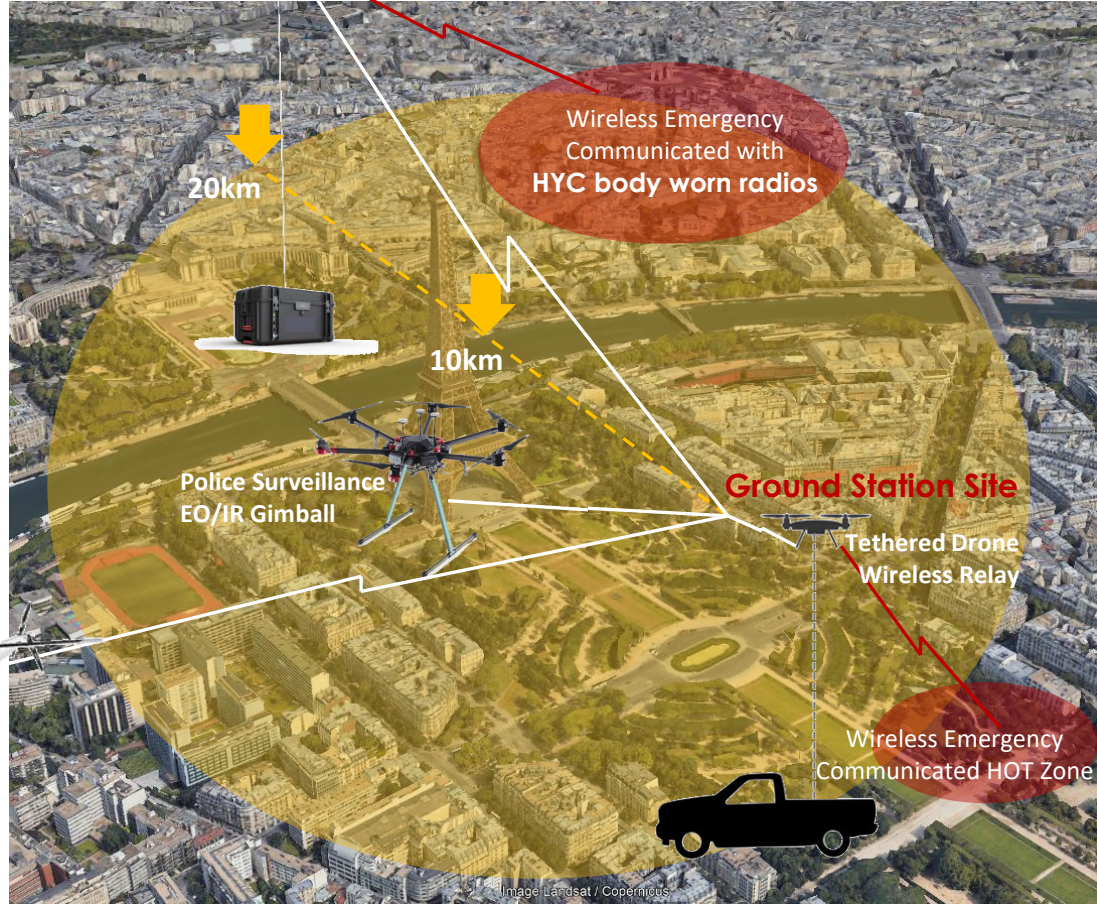
MISSIONS OF CITY GOVERNMENT

Missions of City Government

Use cases:

- Natural disaster
- Event
- Intervention accident
- Parade
- Protest demonstration
- Sporting events, etc.

Disaster Emergency
Unmanned Helicopter
EO/IR Gimball Surveillance



Ground Station

LEADING THE MIMO REVOLUTION – *Hypercable-JCDC*

THANK YOU