



Precision Pan-Tilt Unit

Low-Cost Stabilized Pointing for Sea, Air, Ground

Rugged, Compact, Feature-rich

The PTU-D300 is a family of modular computer-controlled pan-tilt units with built-in inertial stabilization designed for fast, accurate positioning of heavy payloads on-the-move. It provides high torque for payloads up to 40 lbs while maintaining speed, precision, and a small form-factor. It provides line-of-site stabilization of any type of payload aboard boats, ground vehicles, and aircraft. It offers multiple mounting options and a single connection point. The PTU-D300-ISM provides real-time control while stabilized, enabling applications such as tracking, radar slew-to-queue, and joystick operation. It is designed for demanding applications that require high duty-cycles and long-life in harsh all-weather environments. Key features include:

- Low-cost stabilization of any payload
- Solid and vibration-tolerant for vehicle-mounted applications
- Large payload capacity (20 lbs. top-mount; 40 lbs. side-mount)
- Wide-range of pan speeds ($0.0064^\circ/\text{sec}$. to $50^\circ/\text{sec}</math>)$
- Extremely precise positioning (0.0064° with microstep) allows translating object positions to global coordinates accurately
- Wide-range of pan speeds ($0.0064^\circ/\text{sec}$. to $100^\circ/\text{sec}</math>)$
- 360° continuous-pan including pass-through for many payload types (Video, IR, Microwave, Laser)
- Single connector for all video, control, power
- Flexible payload mounting (top or side)
- Precise control of position, speed & acceleration
- Simple control from host computer via RS-232/485
- Fully sealed for outdoor/marine applications (IP67)



Applications

- Maritime camera systems
- Airborne Surveillance cameras
- Airborne Antenna systems
- Satellite communications systems
- Wheeled vehicle camera systems
- Ship-to-shore/ship-to-ship communications
- Wheeled vehicle camera systems



General Features

- Rigid Design
- Solid and vibration-tolerant
- 360° continuous-pan with pass-through for any payload
- Single connector for all video, control, power
- Flexible payload mounting (top or side)
- Precise control of position, speed & acceleration
- CE Mark & FCC certified
- Single DC power input

Options

- Microwave payload pass-through (rotary joint)
- Side mount or top-mount bracket, dual-side+top bracket
- Alternate ranges of motion
- Geo-Pointing Module
- Ethernet/IP Interface
- Inertial Stabilization Module (ISM)
- Expanded payload pass-through wiring

Pan-Tilt Performance (Standard)

	Side Mount	Top Mount
Max Payload ^a	40 lbs (18.1 kg)	20 lbs (9.0 kg)
Max Speed ^b	50°/second	50°/second

^a Over-the-top payload assumes COG 6" from tilt axis; over the side payload assumes balanced COG.

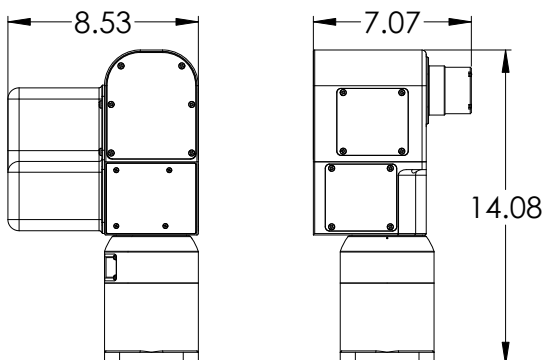
^b Max speed may depend on exact payload configuration and dynamics.

Pan-Tilt Performance (High-Speed Pan)

	Side Mount	Top Mount
Max Payload	30 lbs (13.6 kg)	15 lbs (6.8 kg)
Max Pan Speed	100°/second	100°/second
Max Tilt Speed	50°/second	50°/second

Pan-Tilt Features

Tilt Range (approx)	+30° to -90° from upright (120° range)
Pan Range	360° continuous
Pan Speed Min	.0064° /second
Tilt Speed Min	.0064° /second
Pan Position Resolution	.0064° /second (with microstepping)
Tilt Position Resolution	.0064° /second (with microstepping)
Duty Cycle	Up to 100% duty cycle, or 3-5 million cycles
Acceleration/Deceleration	Trapezoidal. On-the-fly speed and position changes



Stabilization

Type	2 Axis (3-axis strapdown gyro, no roll compensation)
Sine-wave Stability Error	< 0.25° sine-wave test (see graph)
Typical Stability Error	< 1° under real platform motion
External Control	Accepts pan-tilt commands while stabilized

Power Requirements

Input Voltage	Unregulated 9-30VDC (best performance @30VDC)
Power Consumption (Measured at 30VDC)	49.2W avg, peak 2.25A (high power mode) 34.2W avg, peak 1.60A (regular power mode) 18.2W avg, peak 0.78A (low power mode(default)) 1.6W (holding power off mode)

Connections & Communications

Base Connectors	PRIMARY: AMP (MIL-C-26482). Includes: PTU-Power (3c) - 9-30VDC + shield PTU-Control (7c) - RS-232/RS-485 Payload Signals (12c) SECONDARY Gyro (3c) - Gyro RS-232 signals Payload Signals (3c): 30VDC max @ 1A max
Payload Single Pass Through	Power (2c): 30VDC max @ 3A max Video (4c): 2x Video or 1xEthernet (10baseT) Other (3-9c): 30VDC max @ 1A max
Control Interface	RS-485 (DP Binary to ISM - see ISM Datasheet)

Mechanical

Weight	30.75 lbs. (13.94 kg) (Standard bracket: 1.25 lbs.)
Dimensions	Pan Tilt Only: 14.08" H x 7.07" W x 8.53" D (not including brackets)
Payload Mounting	Side-mount, top-mount, dual-side+top mount
PTU Mounting	Pedestal mount
Material	Machined aluminum

Packaging & Environmental

Standards	Designed to IP67
Operating Temperature	-30°C to 70°C
Non-Operating Temperature	-30°C to 70°C
Humidity	100% relative humidity, non-condensing
Ice (Operating)	Sustain operation with 0.25" ice buildup
Dust/Sand (Operating)	Sustain exposure to blowing dust/sand
Wind/Rain/Fog	IP67
Salt Spray	Sustain operation in salt spray environments
Color/Finish	Black anodized
EMI	CE Mark, FCC Part 15, part B Class B

Specifications subject to change without notice.



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