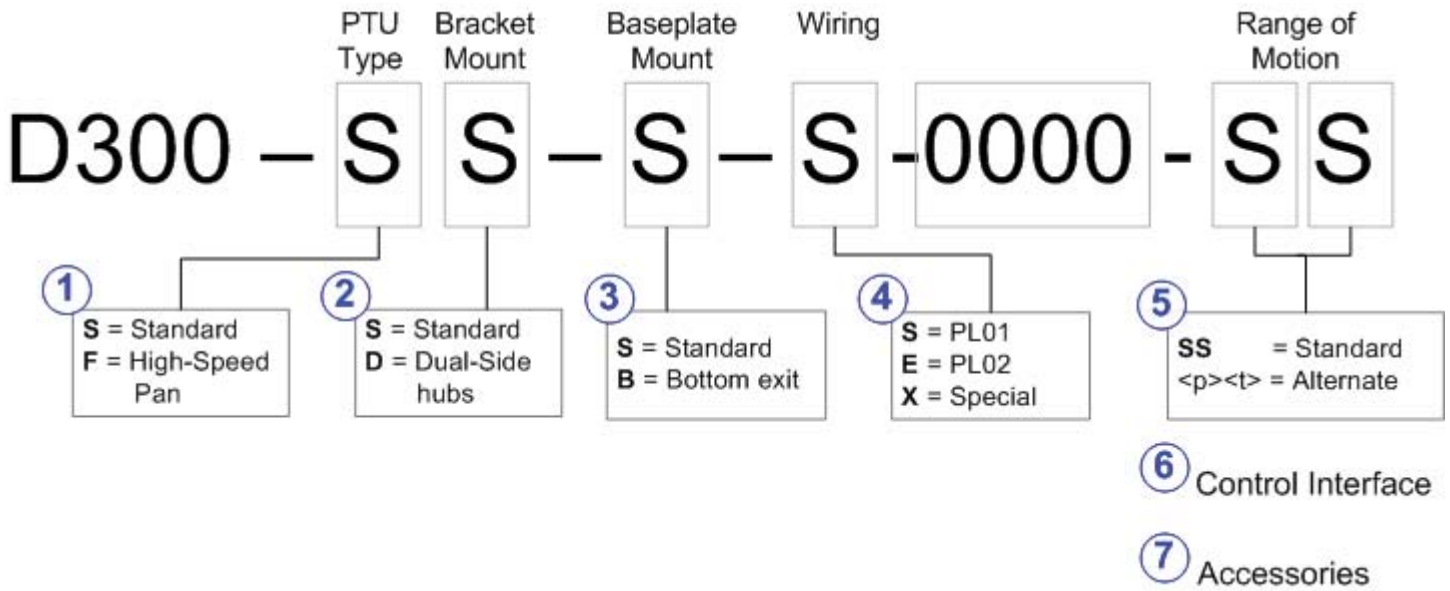




### PTU-D300: Quick Configuration Guide

This guide includes details on configuration options and accessories for the model PTU-D300 pan-tilt units. This guide will walk you through the configuration. Other relevant documents include:

- PTU-D300 Datasheet
- PTU-D300 User Manual
- Pan-Tilt Unit Command Reference Manual



The following are the configuration choices and accessories available for this model:

- ① The unit is available with standard or high-speed pan gearing.
- ② Payloads can be mounted on the top and/or side. A number of bracket options are available to suit each application.
- ③ Bottom exit wiring option is also available.
- ④ Different payload pass through wiring options are available for passing signals through the pan-tilt.
- ⑤ The pan-tilt can be ordered with standard ranges of motion, or with alternate ranges of motion.
- ⑥ Pan-tilt control options include ASCII or binary command set, Ethernet connection, and joystick or gamepad.
- ⑦ Available accessories include cables and converters, power supplies, and starter kits.

### 1 PTU-Type - High Speed Pan

D300-**F**S-S-S-0000-S S

The High-Speed Pan option provides pan velocities to 100°/second. Output torque in the pan-axis with the high-speed option is somewhat reduced in relation to the standard PTU-D300 configuration. This may result in lower payload capacities for applications requiring high acceleration and/or mounting in other than normal vertical position.

**Ordering:**

D300-**F**\_\_-\_\_-\_\_-0000-\_\_-\_\_ High-speed Pan option  
 D300-FS-S-S-0000-SS example

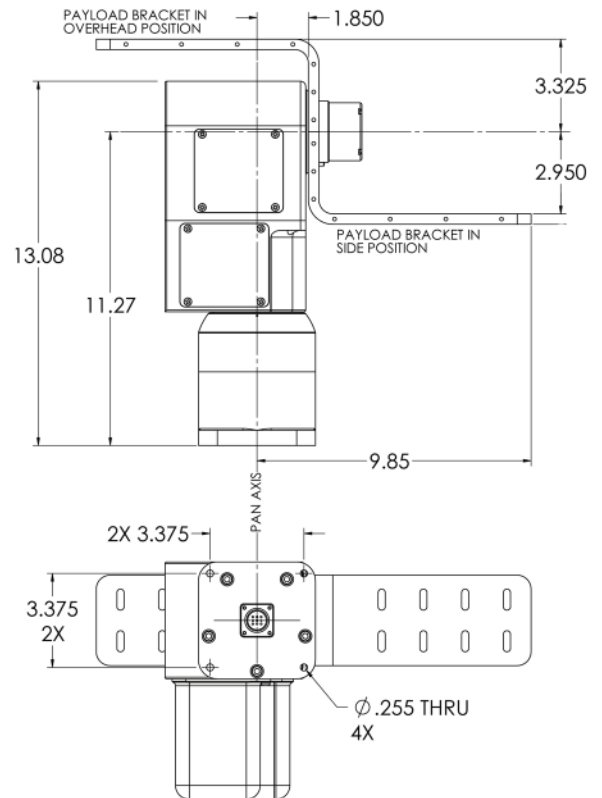
### 3 Baseplate Mount - Bottom Exit Connector

D300-S S-**B**-S-0000-S S

In this configuration the Base Connector is recessed into the bottom of the unit (instead of out the side). This allows for pole or deck mounting with no exposed wiring. The height of the PTU-D300 unit with the bottom exit configuration is taller than standard configurations. The base connector and pinout (and wiring options) of the bottom exit configuration is the same as for side-exit configurations.

**Ordering:**

D300-\_\_-\_\_-**B**-\_\_-0000-\_\_-\_\_ Bottom exit Base Connector  
 D300-SS-B-S-0000-SS example



## 2 Bracket Mount

Payloads can be mounted on the top or the side. Side mounting has a higher payload rating than top mount as it reduces the amount of torque on the tilt axis. The PTU-D300 itself can be mounted in any orientation. When mounting in non-vertical orientation, consideration should be given to gravity effects, depending on payload mounting orientation and balance.

Select among the following options for payload mounting bracket configurations.

### Single Side Hub

D300- **S** **S** - S - S -0000- **S** **S**

The PTU-D300 comes standard with a single payload mounting hub. This hub can accept "L" brackets that allow payloads to be mounted on the side, the top, or the top plus one side. There are two types of "L" brackets, standard (**D300AC-BKT-Lstd**) and "heavy duty" (**D300AC-BKT-HDS** and **D300AC-BKT-HDT**). Heavy duty brackets are recommended for payloads above 20 lbs. The standard bracket can be used either on the side or top. The heavy duty brackets are available for over the top, or for side use, but they are not interchangeable (see photos).

#### Ordering:

D300-__ <b>S</b> __-__-0000-__-__	single payload mounting hub
D300AC-Bkt-Lstd	Standard "L" bracket
D300AC-Bkt-HDS	Heavy duty side "L" bracket
D300AC-Bkt-HDT	Heavy duty top "L" bracket

### Dual Side Hubs:

D300- **S** **D** - S - S -0000- **S** **S**

The PTU-D300 is available with dual mounting hubs. This configuration includes a permanently affixed top bracket, and hubs on both sides. Standard "L" brackets (D300AC-BKT-Lstd) and heavy duty "L" brackets (D300AC-BKT-HDS) can be used on either or both sides. Payloads can be mounted on the top plate and/or on attached side "L" brackets. Heavy duty brackets are recommended for payloads above 20 lbs.

#### Ordering:

D300-__ <b>D</b> __-__-0000-__-__	dual payload mounting hubs
D300AC-Bkt-Lstd	Standard "L" bracket
D300AC-Bkt-HDS	Heavy duty side "L" bracket



Single Side Hub with D300AC-BKT-Lstd (side mounted)



Single Side Hub with D300AC-BKT-Lstd (top mounted)



Dual-Side Hubs - no "L" brackets



Dual-Side Hubs - with (2) D300AC-BKT-HDS



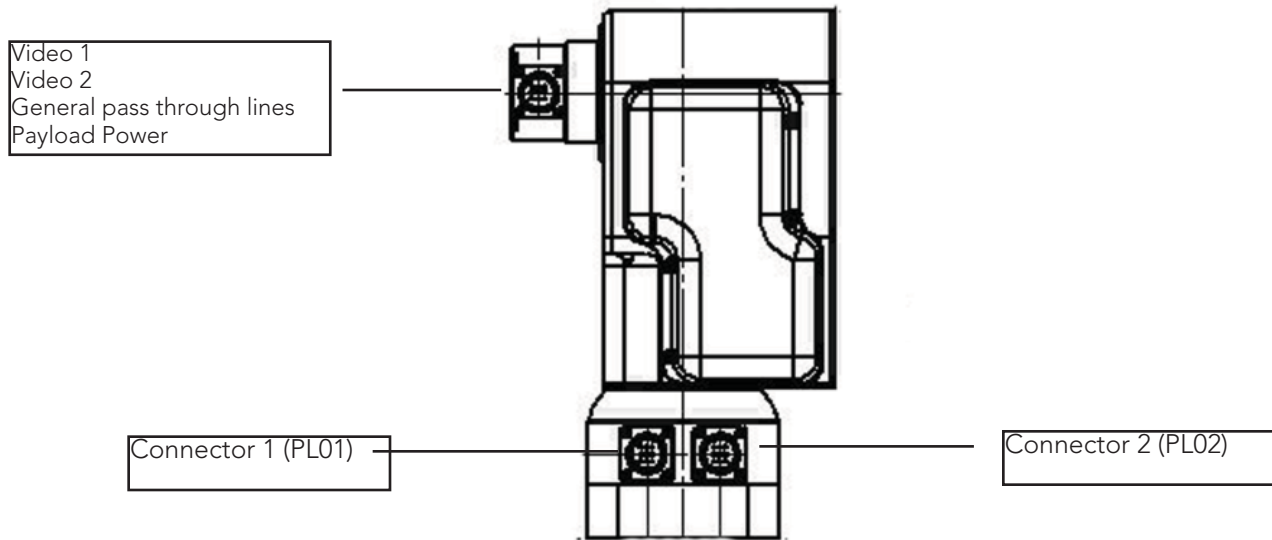
D300AC-Bkt-Lstd



D300AC-Bkt-HDS

## 4 Payload Wiring

The PTU-D300 includes internal pass through wiring with slip-ring in a couple different configurations. Payload signals are routed from a 19-pin MIL style connector at the top of the pan-tilt unit near the payload location through the slip-ring and to an identical connector on the base of the unit (Base Connector). The Base Connector also includes the pan-tilt controls and power. The internal wiring allows for continuous pan rotation and simplified cable management. Details of the wiring options are described below.



### PL01 wiring

D300-   -  -  -0000-

Allows you to route signals to the equipment mounted on the unit as shown in the table at the right. PL01 gives you 9 pass-through conductors dedicated to the payload. Includes mating connector for construction of payload cable. This option includes the slip-ring for continuous pan rotation.

#### Ordering:

D300-\_\_\_-\_\_\_-**S**-0000-\_\_\_-\_\_\_ PL01 payload pass-through wiring

### PL02 wiring

D300-   -  -  -0000-

Allows you to route signals to the equipment mounted on the unit as shown in the table at the right. PL02 gives you 12 pass-through conductors dedicated to the payload. Includes mating connector for construction of payload cable. This option includes the slip-ring for continuous pan rotation.

#### Ordering:

D300-\_\_\_-\_\_\_-**E**-0000-\_\_\_-\_\_\_ PL02 payload pass-through wiring

### PTU-D300 Payload Wiring Options

	No pass-through	PL01	PL02
	# of conductors		
<b>Passed Through</b>			
Power	0	2	2
Video	0	4	4
General	0	3	6
Total	0	9	12

#### Signals at Payload

TTL Outputs	0	1	3
PTU Host Control	0	0	3
CHA/CHB Serial	0	8	0

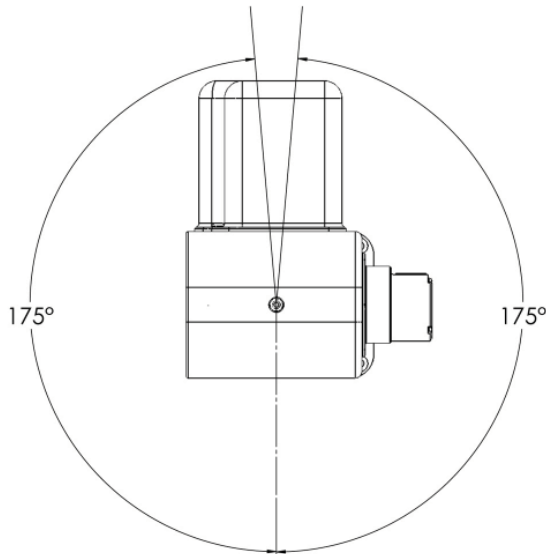
#### Base Connector

RS-232 Host Control	YES	YES	NO
RS-485 Host Control	YES	YES	YES

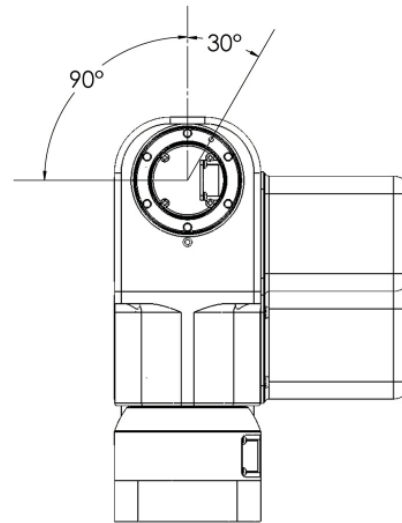
## 5 Ranges of Motion

The PTU-D300 calibrates automatically on power-up using an internal precision limit detection system. In order for the unit to calibrate successfully, it must explore the full range of motion in both axes. If this calibration sequence may potentially interfere with surrounding equipment, modified pan and tilt ranges can be specified at time of order. The calibration sequence can be software controlled, and suppressed at power up. However the sequence must be executed before absolute position commands will be accepted. Range of motion limits must be set at the factory and cannot be changed by the user.

All PTU-D300 configurations include a slip-ring for continuous pan rotation. Continuous pan mode is enabled with a software command. When not enabled, the pan ranges per below apply.



Pan axis  
+/- 175°



Tilt axis  
+30° to -90°

### Pan Range Options

#### Ordering:

D300-\_\_\_\_-\_\_\_\_-0000-\_\* <\* see below>

Example: D300-SS-S-S-0000-AS = +005/-005 Pan

#### Available Pan Range Values

S	+175 / -175 (plus continuous) (standard)
A	+005 / -005 Pan
B	+010/-010 Pan
C	+025 / -025 Pan
E	+035 / -035 Pan
F	+090 / -090 Pan
Z	Custom Pan (specify, requires engineering approval)

### Tilt Range Options

#### Ordering:

D300-\_\_\_\_-\_\_\_\_-0000-\_\* <\* see below>

Example: D300-SS-S-S-0000-SC = +025/-025 Tilt

#### Available Tilt Range Values

S	+030 / -090 (standard)
A	+005 / -005 Tilt
B	+010/-010 Tilt
C	+025 / -025 Tilt
E	+035 / -035 Tilt
F	+090 / -090 Tilt (** not compatible with top mount)
G	+000 / -040 Tilt
Z	Custom Tilt (specify, requires engineering approval)

If the standard ranges of motion are acceptable, but a different orientation or center point is desired, the mounting bracket may be differently positioned or rotated in 60 degree increments (may not apply to some top mount configurations). The home or zero position can be changed with a firmware command to correspond with physical orientation of payload.

## 6 Control Interface

The PTU-D300 supports serial, ethernet, and joystick control interfaces enabling a wide range of system control architectures. Options and configurations are described below.

### ASCII Command Set

The pan-tilt can be controlled over the built-in serial port (RS-232 and RS-485) using simple ASCII commands documented in the Command Reference Manual. This can be done using a terminal program such as Hyperterminal, or from a custom application. Performance using the ASCII command format is approximately 10 commands/second.

#### Ordering:

<included in all configurations>

### Binary Command Set (C API)

In addition to the ASCII format, the pan-tilt will accept binary forms of the commands. These binary formats are supported via our C Language Interface library (PTU-CPI) which is provided as ANSI C Source Code which can be compiled into your application on most any computing platform (CPU/OS). The binary command format supports over 60 commands/second and is recommended for high performance applications such as tracking.

#### Ordering:

PTU-CPI      "C Language Programmer's Interface..."

### Ethernet/Web Interface and Geo-Pointing

The pan-tilt can be controlled via commands sent over Ethernet/IP using the Geo-Pointing Module (GPM). A simple HTTP based command string format is documented in the Geo-Pointing Module User's Manual. The GPM also includes a graphical web interface that allows pan-tilt control and configuration from a mouse and entered commands. The GPM supports command rates of up to 2 commands/second.

The GPM also supports control of the pan-tilt by sending latitude, longitude, altitude commands over Ethernet. Operations of geo-pointing is described in the GPM User's Manual.

#### Ordering:

PTU-DGPM      "Geo-Pointing Module..."

### Rugged Joystick

A rugged joystick (PTU-DCJ) is available for direct control of the pan-tilt with no computer involved. The PTU-DCJ provides proportional joystick control and other inputs (see PTU-DCJ Datasheet for details).

#### Ordering:

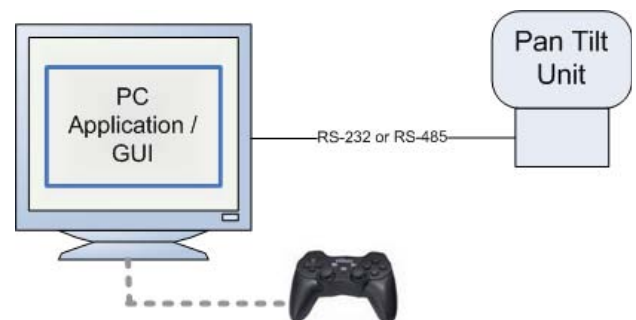
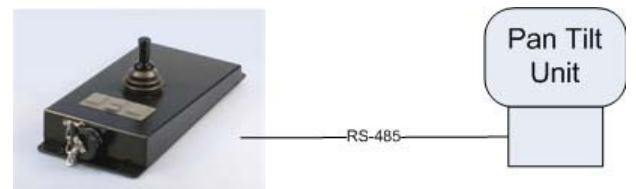
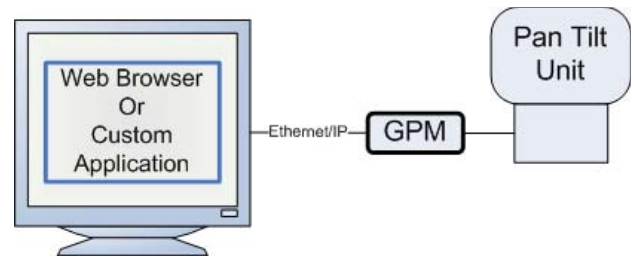
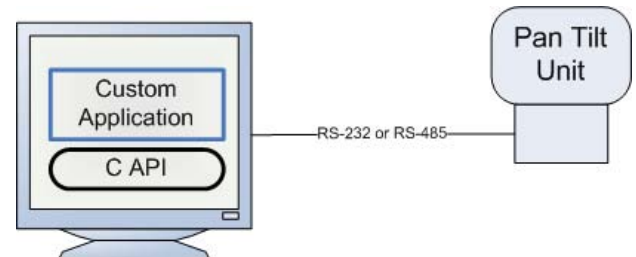
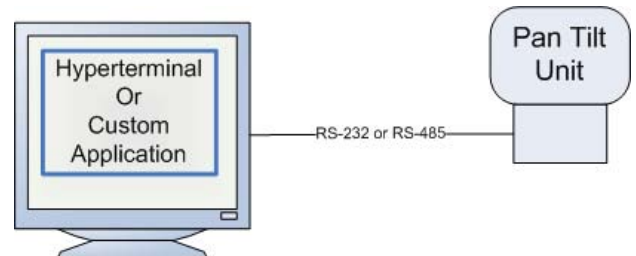
PTU-DCJ      "Rugged Joystick/Controller..."

### PC Control Interface (and gamepad option)

A PC-based software application (PT-AS-01) is available that accepts input from an attached gamepad controller (PT-PSC) and controls the pan-tilt via the PC's serial port.

#### Ordering:

PT-AS-01      "PC Software Application..."  
 PT-PSC      "Gamepad Controller, Cordless 2.4 GHz..."





## 7 Accessories

The PTU-D300 is available with several optional accessories to simplify prototyping and fielding of systems. These accessories are described below.

### Breakout Cable

Connects to mil-style (MIL-C-26482) base connector of pan-tilt unit and terminates to standard connectors for power, serial communication, payload signals. Terminating connectors are: Power (DIN), 2x video (composite), RS-232 (DB-9, female), RS-485 (RJ11), Length: 25 feet. Material:

**Ordering:**

PTU-AC-CAB-25BO "Cable harness..."



### Power Supply

AC/DC, 110/220VAC input, 30VDC output power source for the pan-tilt unit. Dimensions: 3.44"W x2.01"Hx7.61"L.

(NOTE: Input voltages under 30V can reduce the maximum speed of the unit, by an amount that is proportional to the voltage difference.)

**Ordering:**

PTU-AC-APS-30V "AC/DC International power supply..."



### Starter Kit

Includes one power supply (PTU-AC-APS-30V) and one breakout cable (PTU-AC-CAB-25BO).

(NOTE: Input voltages under 30V can reduce the maximum speed of the unit, by an amount that is proportional to the voltage difference.)

**Ordering:**

D300AC-Kit-Starter "Includes (1) PTU-AC-APS-30V, (1) PTU-AC-CAB-25BO..."

### Extension Cables

Extends length of breakout cable. Male connector on one end, female connector on the other. Available in 50' and 100' lengths.

**Ordering:**

PTU-AC-CAB-Ext-50 "50' extension cable..."  
 PTU-AC-CAB-Ext-100 "100' extension cable..."



### Mating Connector

Mating connector for Base and Payload pan-tilt connectors (MIL-C-26482). Can be used to make custom cables for pan-tilt and/or payload.

**Ordering:**

PTU-AC-cable01-19PmilC "Mating connector..."



### RS-485 to RS-232 converter

Bi-directional module to convert signals from RS-232 to RS-485. Includes power supply, coupler and cable.

**Ordering:**

PTU-AC-Conv-RS485C "RS232/485 converter..."



### Rugged Joystick and Cable

A rugged joystick that allows control of the pan-tilt with no host computer. Cable ordered separately.

**Ordering:**

PT-DCJ "Rugged Joystick/Controller..."  
 PT-DCJ-Cable "25' Cable to connect PT-DCJ to PTU..."



### Geo-Pointing Module and Ethernet/Web Interface

The Geo-Pointing Module provides ethernet/web interface to control the pan-tilt, as well as geo-pointing capabilities. See the Geo-Pointing Module datasheet and User's Manual for details.

**Ordering:**

PT-DGPM "Geo-Pointing Module..."

