Differential throttle

In Pitlab FPV System since version 2.71

Differential throttle is designed for two motor (twin motor) airplanes. It allows control of two engines. System can differentiate engines thrust helps making tighter turns or turns without use of rudder.

Differential throttle is available and works only with CPPM/SBUS/Diversity (serial) RC input modes. It is not available in parallel RC channels connections.

For proper differential throttle operation user have to configure his RC system (RC transmitter) for manual two engine (throttle) control, which depending on RC system will require proper channel assignment and rudder->differential throttle mixer settings.

In OFF (MANU) mode autopilot do not changes RC signals in any way, just transfer it from RC receiver into servo/ESC outputs, so all necessary mixers/reverses should be properly set in RC transmitter.

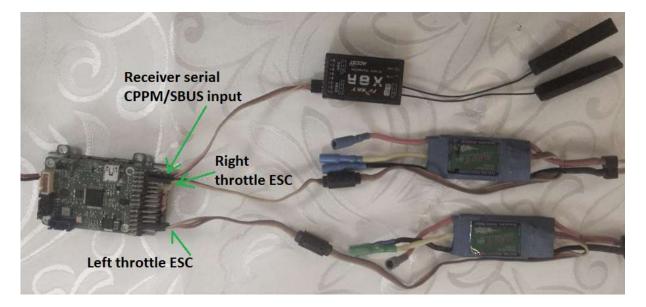
Autopilot uses fixed throttle channels assignment:

-Left throttle RC signal have to be assigned to autopilot's "Throttle" function

-Left engine ESC have to be connected to autopilot's regular throttle output (Out #4)

-Right throttle RC signal have to be assigned to autopilot's "Aux2" function

-Right engine ESC have to be connected to autopilot's AUX2 output (In#2)



OSD Autopilo	Ground Station	PitLab	Symulato	r						
Firmware	RC input mode and	channel mag	ping							
	O Parallel PPM In		_	Serial CPPM at	input #1					
Radio	 Serial S.Bus at 		-	Serial CPPM at						
	 Diversity: S.Bus 	- C.	-		1#1 <-> CPPM#6					
	Function R	C Channel	Input	pulse level	Pulse us	Trim	_			_
Settings	Aileron 1	1 🜩			1451	1504			Assign left throttle R	L
Settings	Elevator	2 🜲			1606	1504	-	_	🗂 channel here	
Graph	Rudder	3 🜩			1506	1504	Ļ			
(Throttle	4 ≑			1496	1000)			
	Aileron2	5 🜩			1501	1250)			
	AP mode AUTO	6 🜲			2001					
	OSD menu	7 🜲			1501				Assign right throttle	RC
	Out Aux2 (In #2)	8 🜩	-		1506	Slow	þ	÷	channel here	
	Out Aux3 (In #3)	9 ≑			1506	Slow	0	*		
	Out Aux4 (In #4)	10 🜲			0	Slow	0			
	Out Aux5 (In #5)	11 🌲			0	Slow	0			
	RSSI in CPPM	(Enable th	is only if your	receiver enecod	les RSSI into CPF	PM/SBU	S sig	inal)		
	NOTE: RSSI range	need to be	calibrated in ()SD menu Servi	ce->RSSI calibrati	ion				

To enable differential throttle open OSD menu ->Autopilot->AUTO flight->Throttle mode menu and open new Differential (Aux2) submenu.

Store base Waypoints Mautopilot Layout Runways Take-off su Ignore RTH: Power batte OSD battery Horizon til Service Settings use stabilisatio	Exit Store trim AUTO flight Roll stabilis Pitch stabili Heading stabi Acro roll 50 Acro pitch 5 Mixers Mode switch: System status	Exit Throttle mode Roll limit Back-to-cou Turn slowdd Side-wind c Minimum GPS Mode: >\Dow Minimum alt Maximum alt	Exit Exit Throttle limit 90% Stall margin 0% Altitude stabilisation 50% Throttle->Pitch 20% Differential (Aux2) 30% Use throttle trim No
	Options for au	Determines h in autonomou	Fixed Dynamic * On-off
			Turns with differential throttle for twin motor airplanes (right throttle o Aux2)

In this option you may disable differentia throttle (default settings) by selecting **OFF**, or enable it by selecting proper differential throttle mixer value (percentage). In most cases this value should be equal to transmitter's **rudder->differential throttle** mixer value.

Exit Throttle limit Stall margin (Altitude stab Throttle->Pit(Differential	0% ilisation 50% ch 20%
Use throttl Fixed Dynamic * On-off	Exit Off 5% 10% 15%
Turns with di twin motor ai Aux2)	20% 25% 30% * 35% 40% 45% 50%
	Turns with differential throttle for twin motor airplanes (right throttle on Aux2)

When differential throttle option is enabled, slow function for Aux2 output (available in FPV_manager) is automatically disabled.

In STAB mode, when heading stabilisation option is enabled autopilot may change throttle difference between left and right motor to help keeping straight line of flight.

In AUTO mode autopilot will differentiate throttle between left and right motor to make turn or to keep desired course.

We wish you many safe flights

Pitlab team