Typhoon H GUI replacement - the better GUI (H480GUI)

Abstract

This tool provides a replacement for the Typhoon H GUI. It offers a deep insight how the flight controller interacts with its sensors. It is a good tool for a first diagnosis in case of problems.

Download this tool from download area in my homepage: <u>http://h-elsner.mooo.com/html/downl.htm</u> Binaries for Windows (.zip) and LINUX (.tar.gz) are available.

Installation: No installation, simply unzip the file. It is a portable application. You need only the executable for your OS. Copy it somewhere in the home file system or to an USB stick.

Start

Power up the drone. Once fully booted connect the drone to PC via data-capable micro USB cable to the PC and start the YTHtool. Select the proper COM port. For Windows OS this is usually the last one in the list. It will be selected by default. If the COM port is missing double click on the port selection to refresh the list. For LINUX select '/dev/ttyACM0'.

Once connected we have three pages:

- Sensor information,
- GPS information,
- System / Settings.

Sensor information

/ttyACM0 🗸	Act as H480 GUI repla	cement 🛯 🖏 Act as gimbal che	cker for CGO3+ of A	ct as flight controll	er to CGO3+ (Demo)		
	Sensor information	GNSS information	item / Settings	orreptacement			
200 +	System status		GVEO		Accelerometer		
Connect	Key Va	lue	Key	Value	Key	Value	
	Sensors present 00	A0 FC2F	X	2	X [mG]	-59	
Disconnect	Sensors enabled 00	A0 FC2F	Y	6	Y [mG]	24	
	Sensors healty 00	80 FC2F	Z	5	Z [mG]	-641 644.16 -0.269	
ecord CSV	Drop rate 0		Gyro cali X	-0.009	Magnitude [mG]		
	Comm erros 0		Gyro cali Y	0.024	Acc cali X		
	Error count 0		Gyro cali Z	-0.008	Acc cali Y	-0.359	
	EKF status 00	00	IMU temperature	35.85°C	Acc cali Z	-0.780	
	Voltage 15	.05V					
Me et	Radio SR24						
K Close			Pressure sensor	lyalue	Orientation	Value	
			Pressure	956.05bPa	Roll	-3.0	
	GNSS O	IMU Sonar	Temperature	35.25°C	Pitch	-1.1	
	35-13 307	565 A Dullour	Height estimate	-4.01m	Yaw	266.2	
	35:15.590	ESC Real Sense	Height estimate -4.0 m		18W 200.2		
			-				
	Additonal data chart						
	IMU temperature	35					
		24					
		34-					
	🔿 Roll	33-					
		22					
		32					
	⊖ Yaw 31-						
	 Magnitude 	30-					
MERED		29-					
				0 0 0		0 0 0	

This page shows the values from IMU (Gyro and accelerometer), pressure sensor (Barometer) and the Orientation as output from the AHRS (Attitude Heading Reference System). For some values you can create a chart.

Sensor status (present, enabled, healty) for a Typhoon H should be **00A0 FC2F** and for a Typhoon H with RealSense module **02A0 FC6F**. The status represents a bitmap with flags for different internal systems. All three values should be the same.

The EKF (Extended Kalman Filter) status should always be **00A5**. The example in the screenshot above represents a flight controller with defective IMU.

GNSS information

Convect Act as H480 CUIreplacement Act as gimbal checker for CGO3+ Where Settings I15200 Sensor information CNSS information System / Settings Position Record CSV Sensor information COSS information System / Settings Record CSV Sets visible 20 Sets visible 20 Sets Sets O Sets Sets Vineex Sets	~			TyphoonH UART tool	00200031-33355115-33355115 - 🕫 😢							
Disconnect Position GNS5 information System / Settings I15200 © connect Position Connect 20 satellites visible 0 satellites in use Position Connect Indicate ref. 4.01m Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 Sate visible 20 VDOP 99.99 No position information, GPS is conne Visit visible 20 Visit	/dou/thuA.CM0	~	hct as H480 GU	I replacement 🗸 Act as gimbal chec	cker for CGO3+ 🛛 📆 Act as flight controller to CGO3+ (Demo)							
15200 Sensor information CNSS information 20 satellites visible 0 satellites in use Position Key Value 0 Bisconnect Latitude 0.0000000 0 Altitude MSL 522.8m Altitude VI 0 Altitude MSL 522.8m Altitude VI 0 Sats used 0 0 0 HOOP 99.99 99.99 0 VOOP 99.99 No position information, CPS is cone 1070-01-01 00:00:00 Not used Compass Value 142 142 142 Y 182 2 341 0 Compass variance 0.007 Mag offset Y 181 0 0.000//s Mag offset Y 181 Mag offset Y 181 0 122 0 120 0 120 0 120 0 120 0 120 0 120 0 120 0 0 0.000 0 0.000 0 0.000 0 0.000 0 0.000 0 0.000 0 0.000 0 0.000 0 0.000 0 0	JOEVICIACINIO				Yuneec Typhoon H GUI replacement							
Connect Position & Disconnect Latitude 0.0000000 Latitude 0.0000000 0 Altitude MSL 522.58m 0 Altitude MSL 522.58m 0 HOOP 99.99 0 VDOP 99.99 0 Mag offset X 142 0 X 142 0 Y 182 0 Z 341 0 Compass variance 0.007 Mag offset X 181 Mag offset X 181 Mag offset X 120	115200	~	Sensor informa	ation GNSS information Syst	tem / Settings							
Value Value Disconnect Latitude 0.00000000 Longitude 0.00000000 Altitude MS. 522.58m Altitude rel Altitude rel 4.01m Sats visible 20 Sats visible 20 Sats visible 20 Sats visible 20 VDOP 99.99 VOOP 99.99 VOOP 90.00 Mag offset X 142 Y 182 Z 341 Compass variance 0.007 Mag offset Z -106 Velocity 0.00m/s Vx -0.42m/s Vz -4.64m/s Variance 0.000 <td>Connect</td> <td>-</td> <td>Position</td> <td></td> <td>20 satellites visible 0 satellites in use</td>	Connect	-	Position		20 satellites visible 0 satellites in use							
Disconnect Latitude 0.0000000 Altitude 0.0000000 Altitude 0.0000000 Altitude 4.01m 0.000000 0.000000 Sats visible 20 0 0.000000 Sats visible 20 0 0.000000 HDOP 99.99 0.000000 0.0000000 0.0000000 VEOP 99.99 0.0000000 0.0000000 0.0000000 VEOP 99.99 0.0000000 0.0000000 0.0000000 VEOP 99.99 0.0000000 0.0000000 0.000000000000000000 0.00000000000000000000000000000000000		·	Key	Value	80							
Image: Second CSV Longitude 0.00000000 Altitude mSL 522.58m Altitude mSL 522.58m Altitude rel 4.01m Sats visible 20 Sats visible 20 Sats visible 20 VDOP 99.99 VDOP 90.007 Mag offset X -122 Mag offset X -122 Mag offset Z -106	- Disconner	a b	Latitude	0.0000000								
Record CSV Altitude MSL S22.58m Altitude rel -4.01m Sats visible 20 Sats visible 20 Sats visible 20 YOOP 99.99 Fik type No position information, GPS is come Image: Compass Value 142 X 142 Y 182 Z 341 Compass variance 0.007 Mag offset Y -181 Mag offset Y -181 Mag offset Y -181 Mag offset Y -106 Velocity (m/s) -106 Velocity 0.0007/s Va -0.42m/s Va -0.42m/s Va -0.42m/s Va -0.42m/s Variance 0.000 Variance 0.000	pr Disconneo	c	Longitude	0.00000000	0 60-							
Record CSV Altitude rel 4.01 m Sats visible 20 Sats used 0 HOOP 99.99 VDOP 99.99 Fix type No position information, GPS is come Key Value X 142 Y 182 Z 341 Compass variance 0.007 Mag offset X -181 Mag offset Y -181 Mag offset Y -181 Mag offset X -106 Velocity (m/s) -106 Velocity 0.00m/s Vx -0.42m/s Vy -0.20m/s Vz -64m/s Variance 0.000			Altitude MSL	522.58m								
Sats visible 20 Sats used 0 HDOP 99.99 YODP 99.99 Fix type No position information, GPS is come Key Value X 142 Y 182 Z 341 Compass variance 0.007 Mag offset X -181 Mag offset X -181 Mag offset X -106 Velocity (m/s) 142 Value 141 Velocity (m/s) -106 Value -106 Mag offset X -106 Value -106 Value -106 Value -106 Value	Record CSV		Altitude rel	-4.01m	<u><u></u> <u></u> <u></u> <u></u></u>							
Sats used 0 HOOP 99.99 VDOP 99.99 Fix type No position information, GPS is come Compass			Sats visible	20								
Image: Non-position information, GPS is connected by the second secon			Sats used	0	20							
VDOP 99.99 Fix type No position information, GPS is come Compass Organization Key Value X 142 Y 182 Z 341 Compass variance 0.007 Mag offset Y -181 Mag offset Y -181 Mag offset Y -181 Mag offset Z -106 Velocity (m/s) 22 Velocity (m/s) 22 Value 32 Value 32 Velocity (m/s) East Variance 0.000			HDOP	99.99	sig							
Close Fix type No position information, GPS is come Fix type No position information, GPS is come No N			VDOP	99.99								
Compass Value X 142 Y 182 Z 341 Compass variance 0.007 Mag offset X -122 Mag offset Y -181 Mag offset Z -106 Velocity [m/s] 116 Velocity [m/s] 23 Vy -0.42m/s Vy -0.20m/s Vz -6.46m/s Variance 0.000	🗶 Close		Fix type	No position information, GPS is conn	PRN1 PRN2 PRN3 PRN3 PRN3 PRN3 PRN2 PRN2 PRN2 PRN2 PRN2 PRN3 PRN2 PRN3 PRN3 PRN3 PRN3 PRN3 PRN3 PRN17 PRN17 PRN17 PRN17 PRN17 PRN17 PRN17 PRN17 PRN17 PRN17 PRN13 P							
Key Value X 142 Y 182 Z 341 Compass variance 0.007 Mag offset X -122 Mag offset Y -181 Mag offset Z -106 Velocity (m/s)			Compass		1970-01-01 00:00:00 Not used Used for calculation 03:39.033							
X 142 Y 182 Z 341 Compass variance 0.007 Mag offset X -122 Mag offset Y -181 Mag offset Z -106 Velocity (m/s) Key Value Velocity 0.00m/s Vx -0.42m/s Vz 4.64m/s Variance 0.000			Key	Value								
Y 182 Z 341 Compass variance 0.007 Mag offset X 122 Mag offset Y 181 Mag offset Z -106 Velocity (m/s) Key Value Velocity 0.00m/s Vx -0.42m/s Vy -0.20m/s Vz -4.64m/s Variance 0.000			x	142	17 X 🚽 X V X							
Z 341 Compass variance 0.007 Mag offset X -122 Mag offset Y -181 Mag offset Z -106 Velocity [m/s]			Y	182								
Compass variance 0.007 Mag offset X -122 Mag offset Y -181 Mag offset Z -106 Velocity (m/s) Key Value Velocity 0.00m/s Vx -0.42m/s Vy -0.20m/s Vz -4.64m/s Variance 0.000			z	341								
Mag offset X -122 Mag offset X -181 Mag offset Z -106 velocity (m/s)			Compass variar	nce 0.007	$1 \times A + A \times X + A$							
Mag offset Y -181 Mag offset Z -106 Velocity [m/s]			Mag offset X	-122	i / NA NA VANA							
Mag offset Z -106 Velocity [m/s]			Mag offset Y	-181								
Velocity [m/s] vz Velocity 0.00m/s Vx -0.42m/s Vy -0.20m/s Vz -4.64m/s Variance 0.000			Mag offset Z	-106								
Key Value Velocity 0.00m/s Vx -0.42m/s Vy -0.20m/s Vz -4.64m/s Variance 0.000			Velocity [m/s]	1								
Velocity 0.00m/s Vx -0.42m/s Vy -0.20m/s Vz -4.64m/s Variance 0.000			Key	Value								
Vx -0.42m/s Vy -0.20m/s Vz -4.64m/s Variance 0.000			Velocity	0.00m/s								
Vy -0.20m/s Vz 4.64m/s Variance 0.000			Vx	-0.42m/s	 ∕⊒_ ≥ _ ∖∎ / / /							
Vz -4.64m/s Variance 0.000			Vy	-0.20m/s								
Variance 0.000	SHERED P		Vz	-4.64m/s								
		ΒY	Variance	0.000	\wedge \vee \vee \vee \vee \vee							
✓ GPS ¥ GLONASS ¥ SBAS	ARUE		🗸 Gb2	🗙 GLONASS 🗙 SBAS								

This page shows the values from GPS module and magnetometer (Compass) and the velocity. Comprehensive information about the satellites gives us the possibility to estimate the status of the backup battery and the antenna of the module. More on this later...

SBAS (Satellite Based Augmentation System) satellites should be included in the calculation for accurate positioning. Check if SBAS is green.

System / Settings

dev/ttyACM0	~	ACL as H480 GO), Act as gimbal chec	Xupper Typhoop	of Act as riig	int contr	oller to t	-603+	(Demo)	
115200	~	Sensor informa	ation GNSS in	nformation Syst	em / Settings	Тооперас	emenc				
/ Connect		Device informati	ion		Flight Bounda	ries					
		Key	Value				Current	value	New va	lue	
🎤 Disconnect		Vehicle type	TyphoonH		Geo fence (20-2500m) 100				300 🗘		Update
		Vehicle ID	00200031-333	55115-33355115						•	
		FW version	1.35		Height limit (2	20-1000m)	120		120	0	Update
Record CSV		FW date 2017-03-03									
		Real Sense Not mounted									
		Test motors			Moscogor						
		- cocinocoro			WARNING	Diagno	sis:	AHRS	Not	Ready	
		Test motors on	ly without prope	llers!	WARNING	Diagno	sis:	AHRS	Not	Ready	
K Close		En al la bankina			WARNING	Diagno	sis:	AHRS	Not	Ready	
		Enable testing	High RPM		WARNING	Diagno	sis:	AHRS	Not	Ready	
					WARNING	Diagno	sis:	AHRS	Not	Ready	
		/	2/ \	1	WARNING	Diagno	sis:	AHRS	Not	Ready	
			1 B	19 Contraction of the second s	WARNING	Diagno	sis:	AHRS	Not	Ready	
		A	6	WARNING	Diagno	sis:	AHRS	Not	Ready		
	Δ		η Λ	WARNING	Diagno	sis:	AHRS	Not	Ready		
		2		H ()	WARNING	Diagno	sis:	AHRS	Not	Ready	
		(A ()	WARNING	Diagno	sis:	AHRS	Not	Ready	
		B	THE OF	5	WARNING	Diagno	SIS:	AHRS	Not	Ready	
				n ' U	WARNING	Diagno	sis:	AHRS	NOT	Ready	
		U	H	V	WARNING	Diagno	SIS:	AUDO	Not	Ready	
				WARNING	Diagno	eie.	AHRC	Not	Ready		
				WARNING	Diagno	sis.	AHRS	Not	Ready		
					WARNING	Diagno	sis.	AHRS	Not	Ready	
		- 0		WARNING	Diagno	sis:	AHRS	Not	Ready		
				WARNING	Diagno	sis:	AHRS	Not	Ready		
A LEO B					WARNING	Diagno	sis:	AHRS	Not	Ready	
					WARNING	Diagno	sis:	AHRS	Not	Ready	
					WARNING	Diagno	sis:	AHRS	Not	Ready	
		Create sens	or file		WARNING	Diagno	sis:	AHRS	Not	Ready	
					WARNING	Diagno	sis:	AHRS	Not	Ready	
	1	Limit toxt m	accord to 600	bull c i i i							

This page contains the system information, settings, text messages, and motor test. High RPM means the motor(s) spinning faster and have another sound.

Troubleshooting

UART connection problems

- If you start the app before you you connect the drone double click on the port selection field to update port list.
 For Windows usually the last (highest) COM port number is the one you need. It will be selected automatically.
 For LINUX the port /dev/ttyACM0 is for the drone. If more then ACM ports are in use again the highest port number is probably the one you need.
- For other connection problems unplug und plug again of the USB cable may help.
- Also a reboot of the connected device may help. Do reboot always when USB is disconnected.
- Disconnect the UART in the tool if you power off drone or the camera. It takes 2s before the app recognizes that the connection was cut.

Power cycling the drone

• Switch off and switch on is only correctly working if the USB cable is unplugged. Because the flight controller is supplied by USB 5V it will never fully shut down when connected to USB.