

Construction

Pre-Construction Planning – Desired Altitude of 40,000'

SuperPressure Balloon Float Calc. (orig. by Steve Randall) (mods: Tony Messina - KDTOG - 2025)

Gas	Chosen Gas Density	Free Lift (g)	SP balloon vol (cu m)	SP balloon weight (g)	Payload Weight (g)	Gas Mass (g)	Total Mass (Kg)	Neck Lift (g)	Launch Gas Fill (cu m)
Helium 97%	0.2120	5.00	0.458	72.00	20.00	20.305477	0.1123	25.0000	0.0958

From orange table at right → Balloon Spec. → What we have control of ...

Total lift measurement used to fill balloon: 3.382461448 < Cu Ft

at 101.325kPa at MSL	0 deg C	15 deg C
Hydrogen	0.0899	0.0852
Helium 99.99%	0.1600	0.1517
Helium 99%	0.1786	0.1693
Helium 97%	0.2120	0.2010
Helium 80%	0.3800	0.3602
Air	1.292	1.22473169

Internal Pressure (kPa)	External Pressure (kPa)	Float Temp (deg C)	Altitude (m)	Atmospheric Pressure (kPa)
16.217235	15.48822	-56.46	13440 (44083.2 ft)	101.325

Differential Pressure at float (kPa): 0.7290 (psi): 0.1057

Super Pressure by... (kPa): 0.6896 (psi): 0.1000

Superpressure Onset (m): 13150 (43132 ft)

Don't edit these 4 cells!!!!

Identifier	Sug. Free Lift	Volume	Weight
36" Qualitex	2.50	0.111	37.00
32" Yako	6.50	0.213	47.00
50" PartyWoo	6.00	0.275	54.00
60" Cymylar	6.00	0.450	70.00
SBS - 13	6.50	0.600	105.00

All of the fields in the salmon colored cells are calculated based on the parameters that are entered in spreadsheet cells G6 through G6.

KD7TOG-5

10m WSPR - channel 429

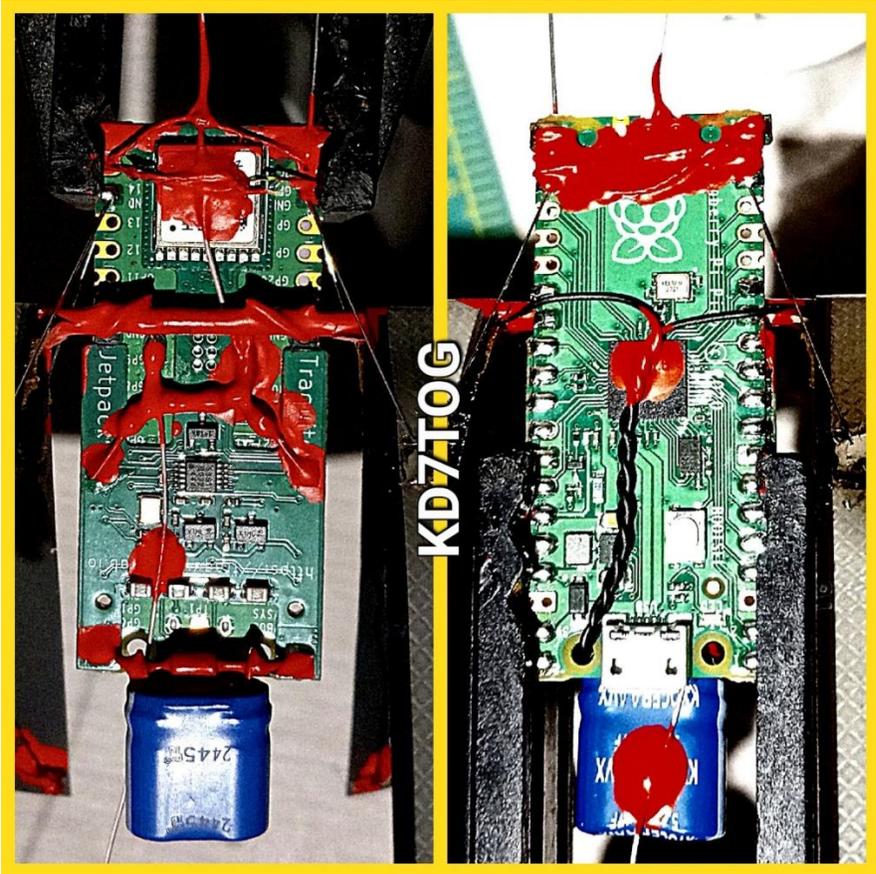
Balloon: Chinese 60 balloon



Power Storage: [Super Capacitor](#)



Electronic Package: [Traquito](#)



Solar Panels: [ZachTek](#) – One of several places to purchase them.

PowerFilm[®] SOLAR

MADE IN THE USA

MP3-37

Electrical Specifications:

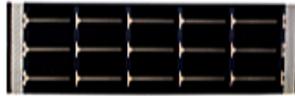
Full Sun
 Power: 150mW
 Operating Voltage: 3.0V
 Operating Current: 50mA

1/4 Sun
 Power: 34mW
 Operating Voltage: 3.0V
 Operating Current: 11.3mA

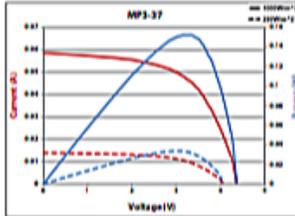
All Levels
 Average Voc: 4.1V
 Maximum Voc: 4.6V
 Isc: 63mA

Physical Specifications:

Dimensions:
 114.0 x 36.5 (mm)
 4.49 x 1.44 (in)
Weight: 0.04oz / 1.13g



IV Curve



MPT3.6-75

Electrical Specifications:

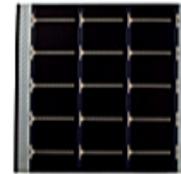
Full Sun
 Power: 180mW
 Operating Voltage: 3.6V
 Operating Current: 50mA

1/4 Sun
 Power: 41mW
 Operating Voltage: 3.6V
 Operating Current: 11.3mA

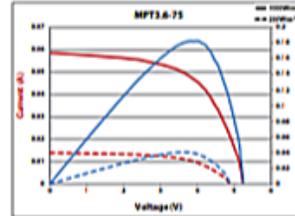
All Levels
 Average Voc: 4.9V
 Maximum Voc: 5.5V
 Isc: 64mA

Physical Specifications:

Dimensions:
 74.0 x 73.0 (mm)
 2.91 x 2.87 (in)
Weight: 0.06oz / 1.70g



IV Curve



MPT3.6-150

Electrical Specifications:

Full Sun
 Power: 360mW
 Operating Voltage: 3.6V
 Operating Current: 100mA

1/4 Sun
 Power: 81mW
 Operating Voltage: 3.6V
 Operating Current: 22.5mA

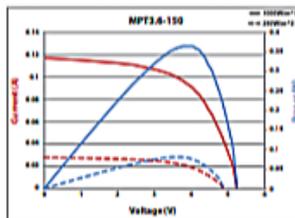
All Levels
 Average Voc: 4.9V
 Maximum Voc: 5.5V
 Isc: 128mA

Physical Specifications:

Dimensions:
 74.0 x 146.0 (mm)
 2.91 x 5.75 (in)
Weight: 0.10oz / 2.83g



IV Curve



SP4.2-37

Electrical Specifications:

Full Sun
 Power: 92mW
 Operating Voltage: 4.2V
 Operating Current: 22mA

1/4 Sun
 Power: 21mW
 Operating Voltage: 4.2V
 Operating Current: 5.0mA

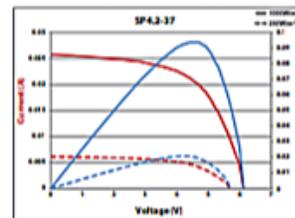
All Levels
 Average Voc: 5.9V
 Maximum Voc: 6.5V
 Isc: 28mA

Physical Specifications:

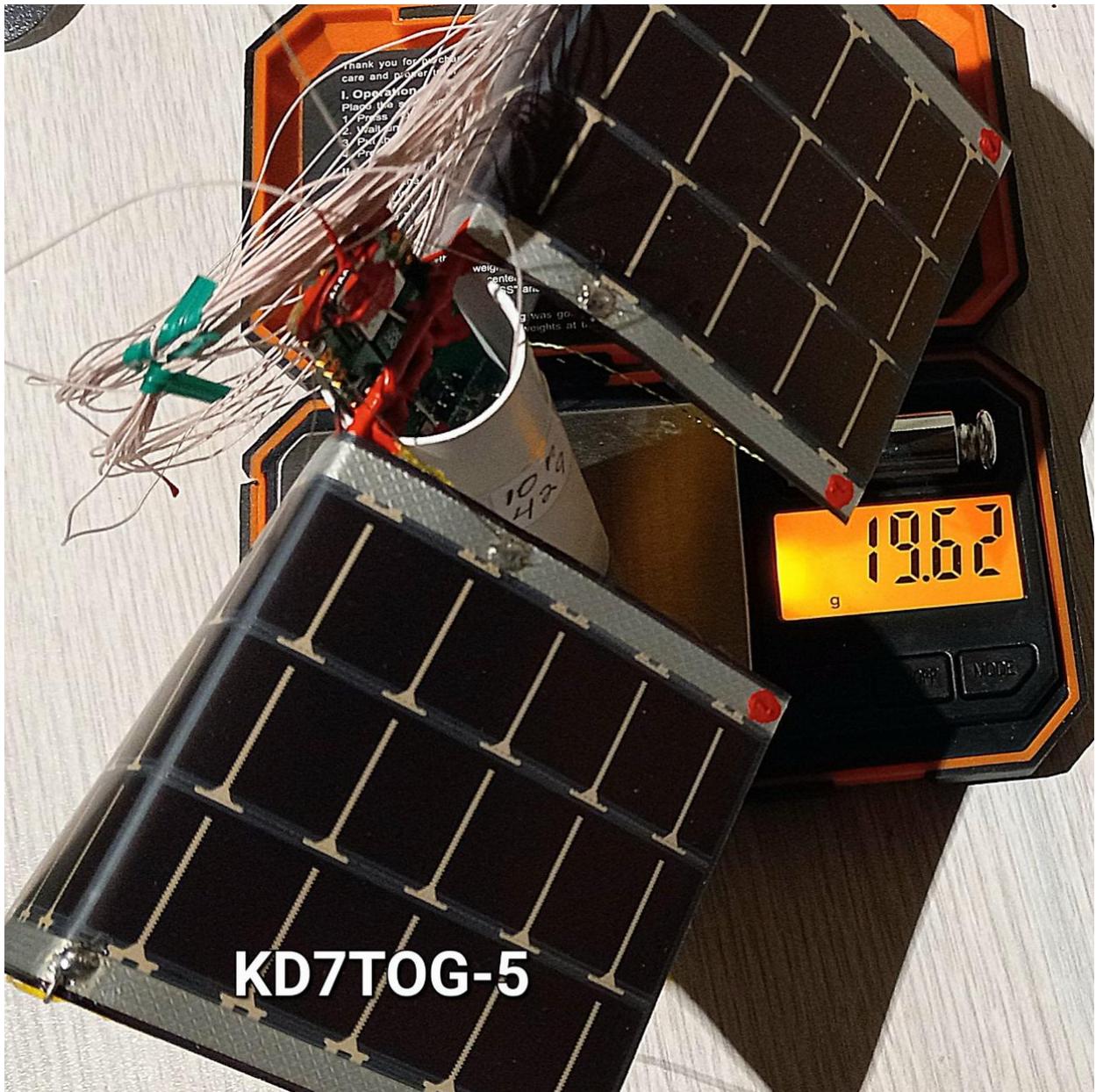
Dimensions:
 84.0 x 36.5 (mm)
 3.31 x 1.44 (in)
Weight: 0.03oz / 0.85g



IV Curve



KD7TOG-5 MPT3.6-150



KD7TOG-5

KD7TOG-5 Payload with Solar Panels and Antenna -- Mass of the Payload Shown on Scale

Antenna: 20m Dipole ~ 16' x 2