

Data Release for LDV Probe 1 July 10, 2020

Each of the LDV data files contains 48 columns of data, with the first row providing the parameter label for each column and the second row providing a zone label for Tecplot. There is one type of data file contained in the data package: the *_prof.dat files contain profiles that were acquired by surveying the flow field in the Y direction at a fixed X and Z location. In this case, the zone label specifies the X and Z location of the survey.

The column labels in the data files are defined as follows:

X, Y, Z: denote the (x, y, z)-coordinate of each measurement point in the profile in millimeters (mm). These coordinates are in a body-fixed coordinate system with the origin at the nose tip. Positive X is in the downstream direction, positive Y is toward the starboard side of the model, and positive Z is up.

Rec: Reynolds number based on the chord at the wing planform break divided by 10^6 .

alpha: model pitch angle in degrees.

u, v, w: denote the x, y, and z-components of the mean velocity. These values are non-dimensionalized by the freestream tunnel velocity.

uu, vv, ww, uv, uw, vw: denote the six independent components of the Reynolds-stress tensor. These values are non-dimensionalized by the freestream tunnel velocity squared.

uuu, vvv, www, uvw, uuv, uuw, uvv, uww, vvw, wwv: denote the ten independent components of the velocity triple products. These values are non-dimensionalized by the freestream tunnel velocity cubed.

U_X, U_Y, U_Z: denote the (x, y, z)-coordinate uncertainty for each measurement point in the profile in millimeters (mm).

U_Rec: denotes the uncertainty in the Reynolds number based on the chord at the wing planform break divided by 10^6 .

U_alpha: denotes the uncertainty in the model pitch angle in degrees.

U_u, U_v, U_w: denote the uncertainty in the x, y, and z-components of the mean velocity. These values are non-dimensionalized by the freestream tunnel velocity.

U_uu, U_vv, U_ww, U_uv, U_uw, U_vw: denote the uncertainty in the Reynolds stress components. These values are non-dimensionalized by the freestream tunnel velocity squared.

U_uuu, U_vvv, U_www, U_uvw, U_uuv, U_uuw, U_uvv, U_uww, U_vvw, U_wwv: denote the uncertainty in the velocity triple products. These values are non-dimensionalized by the freestream tunnel velocity cubed.

The following table provides a list of the profiles acquired on the F6 wing with leading-edge horn at a pitch angle of -2.5 degrees. The data files are located in folder **F6_Horn_AOA_m2p5** and the filenames follow the pattern: alpha-2.5_x*_z*_F6h_prof.dat. The parameter y_o in the table denotes the y location of the fuselage surface. All of the profiles indicated in the table were acquired with the model upright (roll angle of 0 degrees).

x (mm)	z (mm)	y_o (mm)	File Type
1168.40	-60.00	-236.1	Profile
1168.40	-30.00	-236.1	Profile
1168.40	0.00	-236.1	Profile
1168.40	30.00	-236.1	Profile
1168.40	60.00	-236.1	Profile
1864.20	98.05	-236.1	Profile
1869.20	98.05	-236.1	Profile
1874.20	98.05	-236.1	Profile
1879.20	98.05	-236.1	Profile
1884.20	98.05	-236.1	Profile
1889.20	98.05	-236.1	Profile
1894.20	98.05	-236.1	Profile
1899.20	98.05	-236.1	Profile
1904.20	98.05	-236.1	Profile
1909.20	98.05	-236.1	Profile
1914.20	98.05	-236.1	Profile
1859.20	55.05	-236.1	Profile
1904.20	71.20	-236.1	Profile
1864.20	6.20	-236.1	Profile
1879.20	6.20	-236.1	Profile
1904.20	6.20	-236.1	Profile
1919.20	6.20	-236.1	Profile

The following table provides a list of REPEAT profiles acquired on the F6 wing with leading-edge horn at a pitch angle of -2.5 degrees. The data files are located in folder **F6_Horn_AOA_m2p5_Repeats** and the filenames follow the pattern: alpha-2.5_x*_z*_F6h_prof_rep*.dat. The parameter y_o in the table denotes the y location of the fuselage surface. The rep* part of the filename denotes the repeat index, and the table denotes whether a repeat was taken with the model upright (roll angle of 0 deg) or with the model inverted (roll angle of 180 deg).

x (mm)	z (mm)	y_o (mm)	rep & (roll angle, deg)	File Type
1168.40	-60.00	-236.1	1 (0) 2 (180)	Profile
1168.40	0.00	-236.1	1 (0) 2 (0) 3 (180)	Profile
1168.40	30.00	-236.1	1 (0) 2 (0)	Profile
1168.40	60.00	-236.1	1 (0) 2 (180)	Profile
1859.20	55.05	-236.1	1 (0)	Profile
1869.20	98.05	-236.1	1 (0)	Profile
1904.20	6.20	-236.1	1 (0)	Profile
1919.20	6.20	-236.1	1 (0)	Profile

The following table provides a list of the profiles acquired on the F6 wing with leading-edge horn at a pitch angle of 5.0 degrees. The data files are located in folder **F6_Horn_AOA_5** and the filenames follow the pattern: alpha5.0_x*_z*_F6h_prof.dat. The parameter y_o in the table denotes the y location of the fuselage surface. All of the profiles indicated in the table were acquired with the model upright (roll angle of 0 degrees).

x (mm)	z (mm)	y_o (mm)	File Type
1168.40	-60.00	-236.1	Profile
1168.40	-30.00	-236.1	Profile
1168.40	0.00	-236.1	Profile
1168.40	30.00	-236.1	Profile
1168.40	60.00	-236.1	Profile
1864.20	98.05	-236.1	Profile
1869.20	98.05	-236.1	Profile
1874.20	98.05	-236.1	Profile
1879.20	98.05	-236.1	Profile
1884.20	98.05	-236.1	Profile
1889.20	98.05	-236.1	Profile
1894.20	98.05	-236.1	Profile
1899.20	98.05	-236.1	Profile
1904.20	98.05	-236.1	Profile
1909.20	98.05	-236.1	Profile
1914.20	98.05	-236.1	Profile
1921.19	98.05	-236.1	Profile

1859.20	55.05	-236.1	Profile
1904.20	71.20	-236.1	Profile
1864.20	6.20	-236.1	Profile
1879.20	6.20	-236.1	Profile
1904.20	6.20	-236.1	Profile
1919.20	6.20	-236.1	Profile

The following table provides a list of REPEAT profiles acquired on the F6 wing with leading-edge horn at a pitch angle of 5.0 degrees. The data files are located in folder **F6_Horn_AOA_5_Repeats** and the filenames follow the pattern: alpha5.0_x*_z*_F6h_prof_rep*.dat. The parameter y_o in the table denotes the y location of the fuselage surface. The rep* part of the filename denotes the repeat index, and the table denotes whether a repeat was taken with the model upright (roll angle of 0 deg) or with the model inverted (roll angle of 180 deg).

x (mm)	z (mm)	y_o (mm)	rep & (roll angle, deg)	File Type
1168.40	-60.00	-236.1	1 (0) 2 (0) 3 (0) 4 (180) 5 (180)	Profile
1168.40	0.00	-236.1	1 (0) 2 (0) 3 (0) 4 (180) 5 (180) 6 (0)	Profile
1168.40	30.00	-236.1	1 (0)	Profile
1168.40	60.00	-236.1	1 (180) 2 (180)	Profile
1859.20	55.05	-236.1	1 (0) 2 (0) 3 (0) 4 (0)	Profile
1879.20	6.20	-236.1	1 (0)	Profile
1904.20	71.20	-236.1	1 (0) 2 (0) 3 (0) 4 (0)	Profile

The following table provides a list of the profiles acquired on the F6 wing (no horn) at a pitch angle of 5.0 degrees. The data files are located in folder **F6_AOA_5** and the filenames follow the pattern: alpha5.0_x*_z*_F6_prof.dat. The parameter y_o in the table denotes the y location of the fuselage surface. All of the profiles indicated in the table were acquired with the model upright (roll angle of 0 degrees).

x (mm)	z (mm)	y_o (mm)	File Type
1168.40	-59.00	-236.1	Profile
1168.40	-30.00	-236.1	Profile
1168.40	0.00	-236.1	Profile
1168.40	30.00	-236.1	Profile
1168.40	60.00	-236.1	Profile
1993.40	47.30	-236.1	Profile
1998.40	46.90	-236.1	Profile
2001.20	46.50	-236.1	Profile
2004.00	46.20	-236.1	Profile
2009.00	45.70	-236.1	Profile
1983.40	93.30	-236.1	Profile
1993.40	93.30	-236.1	Profile
1998.40	93.30	-236.1	Profile
2003.40	93.30	-236.1	Profile
2008.40	93.30	-236.1	Profile
2018.40	93.30	-236.1	Profile
2023.40	93.30	-236.1	Profile
2028.40	93.30	-236.1	Profile
2033.40	93.30	-236.1	Profile
2038.40	93.30	-236.1	Profile
2043.40	93.30	-236.1	Profile
2048.40	93.30	-236.1	Profile
2053.40	93.30	-236.1	Profile
2058.40	93.30	-236.1	Profile
2063.40	93.30	-236.1	Profile
2093.40	93.30	-236.1	Profile

The following table provides a list of REPEAT profiles acquired on the F6 wing (no horn) at a pitch angle of 5.0 degrees. The data files are located in folder **F6_AOA_5_Repeats** and the filenames follow the pattern: alpha5.0_x*_z*_F6_prof_rep*.dat. The parameter y_o in the table denotes the y location of the fuselage surface. The rep* part of the filename denotes the repeat index, and the table denotes whether a repeat was taken with the model upright (roll angle of 0 deg) or with the model inverted (roll angle of 180 deg).

x (mm)	z (mm)	y_o (mm)	rep & (roll angle, deg)	File Type
1168.40	-30.00	-236.1	1 (0)	Profile
1168.40	0.00	-236.1	1 (0) 2 (0) 3 (0)	Profile
1168.40	30.00	-236.1	1 (0)	Profile
1168.40	60.00	-236.1	1 (0)	Profile
2009.00	45.70	-236.1	1 (0)	Profile